Carrier

United Technologies

DESIGNING INNOVATIVE SOLUTIONS

HEATING, VENTILATION AND AIR CONDITIONING

CATALOGUE 2018/2019

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CARRIER

Since Willis Carrier developed the world's first modern air conditioning system in 1902, Carrier teams have been designing solutions tailored for each customer. Today, Carrier is the world's leader in high-technology heating, ventilation and air conditioning (HVAC) solutions. Carrier experts provide sustainable solutions, integrating energy-efficient products, building controls and energy services for all applications.

COOLING

Whether air conditioning is needed for a new building or a refurbishment project, for a commercial center, an office application or an industrial process, Carrier offers a wide range of solutions: air cooled, water cooled and absorption units, with scroll, rotary, screw and centrifugal compressors from 8 to 10,500 kW cooling capacity.

32

HEATING

Carrier offers a vast range of heating solutions from air-to-water heat pumps to water-to-water heat pumps, with heating only or reversible capability, with scroll and screw compressors from 5 to 1,980 kW heating capacity. Carrier's heating machines are designed to deliver up to 85°C hot water temperature.

368

AIR TREATMENT

An important aspect of any HVAC system is the correct supply of treated fresh air to the building occupants, improving indoor air quality (IAQ) levels. Carrier offers a vast range of close control units and packaged units, as well as standard and customized air handling solutions to ensure the best match to the requirements. Carrier also proposes a range of hybrid terminal, cassette, cabinet, concealed, ducted terminals to match any application requirements and installation criteria: in the room, in the ceiling, above a false ceiling, in a central plant room, and many more.

610

CONTROLS

Carrier equipment and system controls are available for standard system applications and customized, tailor made projects. Carrier offers a wide range of control solutions covering all HVAC applications.

900

UNITED TECHNOLOGIES

Carrier is part of UTC Climate, Controls & Security, a unit of United Technologies Corporation (UTC).
UTC serves customers in the aerospace and building industries and ranks among the world's most respected and innovative companies.

AEROSPACE

UTC Aerospace Systems

Pratt & Whitney
A United Technologies Company

BUILDING

United Technologies
Climate | Controls | Security

OTIS

Innovation is in our DNA

At UTC, we have a proud history of pioneering industries through innovation. Our leading world-class brands are the legacy of our founders, who invented technologies to meet real needs, turned them into businesses, and then innovated them to lead entire industries.

Chubb
United Technologies

OTIS
United Technologies

EDWARDS
United Technologies

Carrier
United Technologies

Kidde
United Technologies

A clear vision of innovation

We are a company of ideas that are nurtured by a commitment to research and development. The achievements of our founders inspire us to always reach for the next innovative and powerful ideas that will become cutting-edge technologies that support our customers in meeting the challenges of their industry. Our global Research & Development investment stood at $3.9 billion in 2017. Such is the importance of innovation at UTC.

204,700
employees

$3.9B
R&D investment

$60.2B
net sales

MOVING THE WORLD FORWARD

We do the big things that others cannot.

DISCOVER UTC ON
youtube.com/user/UTCNews
utc.com

WORLD-CLASS OPERATIONS TO BRING BEST-IN-CLASS SOLUTIONS

Our European Centers of Excellence and HVAC production sites are all world-class facilities in their own right. Each site focuses on its specific field of expertise.

Beroun
Light Commercial Chillers & Terminal Fan Coil Units

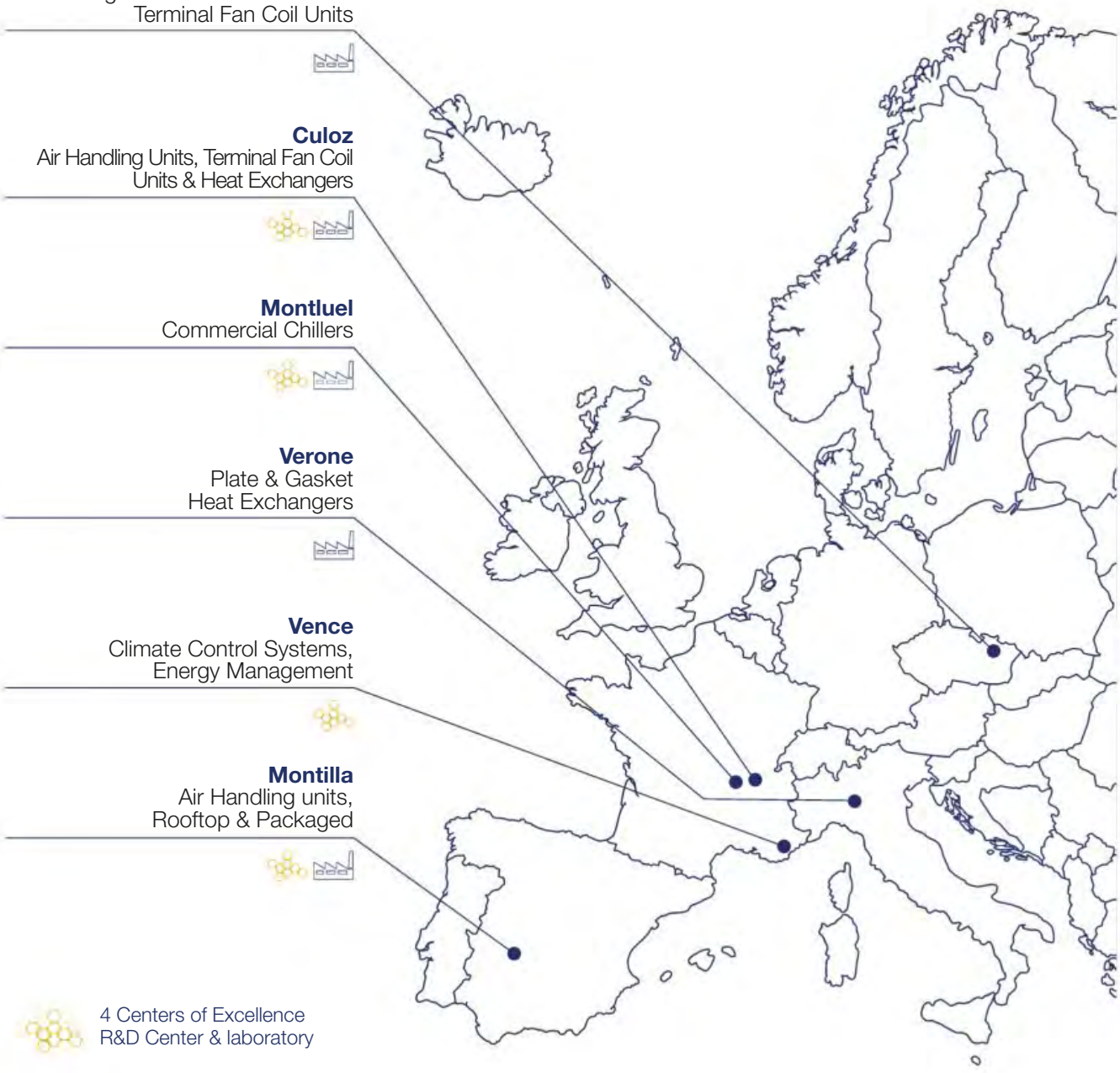
Culoz
Air Handling Units, Terminal Fan Coil Units & Heat Exchangers

Montluel
Commercial Chillers

Verone
Plate & Gasket Heat Exchangers

Vence
Climate Control Systems, Energy Management

Montilla
Air Handling units, Rooftop & Packaged



4 Centers of Excellence
R&D Center & laboratory

5 Production sites

MONTLUEL CENTER OF EXCELLENCE: AT THE FOREFRONT OF CHILLER AND HEAT PUMP TECHNOLOGIES

Our Montluel site is United Technologies' European Center of Excellence for Chillers and Heat Pumps. Located close to Lyon, France, the Research and Design Center and Laboratory are able to draw on fifty-plus years of world-class expertise.

Modeling Analysis Simulation & Computation (MASC)

The Center's numerical simulation platform capabilities include Model-Based Definition (MBD), Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA) and 3-D design.

Customisation

The Research and Design Center and Laboratory has a dedicated customization team specializing in bespoke solutions to meet the Chiller and Heat Pump needs of individual customers. This includes applied engineering in fields such as seismic, nuclear, marine or offshore applications.

Prototypes & Tests

The Montluel Center of Excellence carries out prototyping for internal development teams, and testing for costumers, acting as a third-party laboratory in compliance with ISO 17025 and COFRAC certification 1-0108.

15 Test Rooms

- Thermal, performance, endurance & acoustic tests
- A/C and W/C Chillers, as well as Terminal Units
- Ambient control from **-25°C to +55°C** with humidity conditions of **5% to 95%**
- **1,200** measurement sensors
- **3,600kW** maximum water-cooled unit test capacity
- **1,800kW** maximum air-cooled unit test capacity
- **6MW** total test capacity
- Ability to reach and maintain stable conditions
- High precision method for acoustic measurement
- Specific tests on request

CERTIFICATIONS

Quality Management System	**ISO 9001:2008**	Approved by Lloyd's Register Quality Assurance
	PED N° 97/23/EC	Approved by Bureau Veritas
Environmental Management System	**ISO 14001:2004**	Approved by Lloyd's Register Quality Assurance
Performances	**EUROVENT**	Approved by Eurovent Certifications, European reference label of the energy performance of air conditioning and refrigeration equipments
Test activities	**ISO 17025:2005**	Approved by Comité Français d'Accréditation
Quality System & case-by-case	**Marine Application**	Approved by Lloyd's Register, Det Norske Veritas (DNV) & Germanisher Lloyd's (GL).
Air-cooled & water-cooled performance	**AHRI**	Approved by AHRI, America reference label of the energy performance of air conditioning and refrigeration equipments

CULOZ CENTER OF EXCELLENCE: CUTTING EDGE AIRSIDE EXPERTISE

The Research and Design Center and Laboratory have seven innovation platforms, equipped with state-of-the-art test and measurement tools, fully dedicated to airside applications.

Modeling Analysis Simulation & Computation (MASC)

The numerical simulation platform focuses on Computational Fluid Dynamic (CFD) and indoor comfort simulation.

Indoor Environmental Quality

- Acoustic platforms
- Comfort test platform
  (Units and air diffusers according to EN ISO 7730 and EN 15726)
- Indoor Air Quality platform

Heat Exchangers

- Pressure, thermal, acoustic testing
- Dry Cooler and Plate Heat Exchanger up to **2,000 kW**

Air Handling Units

- Mechanical performance tests
- Aerodynamic tests up to 35,000 m^3/h

Thermal Units

- AHU and Rooftop thermal performance testing
- 2 Climatic chambers up to 200 KW / 23,000 m^3/h
- Range of controlled environment = -15°C to +40°C

Reliability Tests

- 24/7 corrosion tests
- Static, cycling or burst hydraulic pressure tests up to 250 Bar
- Vibration tests with a maximum force of 2000 N
- Endurance testing of fan coil units

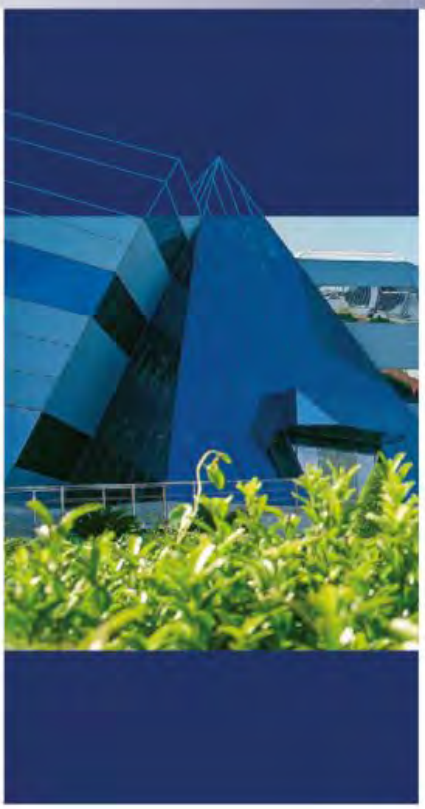
Heat recovery system and coils test platform

- Heat recovery efficiency and thermal capacity test
- Airflow capacity up to 30,000 m^3/h
- Thermal capacity up to 300 kW

CERTIFICATIONS

Quality Management System	**ISO 9001**	Approved by LRQA
	2014/68/EC	Certified by Apave & Bureau Véritas
	DAP 08.D /DAP 13.C	Certified by Efectis
	NF 414 rev. 9	Certified by Certita
Environmental Management System	**ISO 14001**	Approved by LRQA
Safety Management System	**OHSAS 18001**	Approved by LRQA

MONTILLA CENTER OF EXCELLENCE: EXPERTS IN ROOFTOPS AND PACKAGED SOLUTIONS



Our teams in Montilla, southern Spain have in-depth expertise in rooftop, packaged, preconditioned air (PCA) for aircraft and dehumidifier units. The center houses the largest HVAC factory in Spain and offers specialized laboratories, as well as Europe's biggest aircraft preconditioner air units laboratory.

Modeling Analysis Simulation & Computation (MASC)

The Montilla Center of Excellence offers numerical simulation capabilities in Model-Based Definition (MBD), Computational Fluid Dynamics (CFD) and 3-D design.

Customisation

The Montilla Center of Excellence has an engineering team specifically dedicated to customization projects. It can also mobilize its specialized commissioning PCA team worldwide and offers technical data acquisition for technical documentation, as well as remote test supervision for special on-site applications.

Prototypes & Tests

The Montilla Center of Excellence carries out prototyping and testing for our development team. It performs thermal, acoustic and vibration tests (2 test rooms), ambient control tests from -15°C to +55°C and specific tests for preconditioned air for aircraft and swimming pool dehumidification units.

CERTIFICATIONS

Performances	**EUROVENT**	Approved by Eurovent Certifications, European reference label of the energy performance of air conditioning and refrigeration equipments
Pressurized Equipment Directive	**PED 2014/68/EU-Module H**	Approved by Bureau Veritas
Quality Management System	**ISO 9001**	Approved by IQNET and AENOR
Environmental Management System	**ISO 14001**	Approved by LRQA
Health & Safety Management System	**OHSAS 18001**	Approved by LRQA

VENCE CENTER OF EXCELLENCE: CLIMATE CONTROL SYSTEMS

Developing customized control solutions and smart services for HVAC systems and plant room is the key activity at the Vence Center of Excellence.

Connected services & energy measurements

Our engineers focus on developing and offering technical support for smart energy services. We bring technical support during the design & engineering phase on plant room and thermal energy storage projects. The team is also in charge of monitoring solutions, with more than 1,300 equipment connected. Their know-how is unique and proven with dual cooling/ heating and automation in-depth knowledge.

Thermal Energy Storage (TES)

By storing the thermal energy during the night and releasing it during the day, the cutting-edge TES solution allows using the electricity at the lowest prices and avoids the peaks. By spreading the thermal energy production over 24 hours, TES can reduce the capacity of the chillers by 30% to 70%. 100% smart grid compatible, it is suited for HVAC systems with a peak cooling demand higher than ~500 kW. Our engineers optimize the design, adapt the hydraulic layout and the operation of your installation for each application.

Test platform

The Vence Center of Excellence has several test platforms, designed specifically for the development of innovative solutions for HVAC systems. Simulations are performed in real operating conditions and allow our engineers to check the efficiency of control systems.

R&D connections

The Vence Center of Excellence works closely with Europe's leading Science Park, located in Sophia-Antipolis in southern France. Our teams are frequently involved in major European research and innovation projects.

+ 1,300
Connected equipment

+ 3,000
Customers

+ 500 MW
Electricity saved

+ 6,000,000 KWH
Daily transfer

CARRIER'S HERITAGE: THE INVENTION THAT CHANGED THE WORLD

On July 17, 1902, Willis Carrier designed the first modern air-conditioning system to solve a problem at the Sackett & Wilhelms printing plant in Brooklyn, New York City, launching an industry that would fundamentally improve the way we live, work and play.

1904

Willis Carrier applied for a patent on his invention, an "Apparatus for Treating Air,": he had invented the world's first spray-type air conditioning equipment, able to both wash and humidify or dehumidify air. Modern air conditioning now had its fundamental building block.

1911

Willis Carrier writes a "Rational Psychrometric Formulae" for the calculation of the wet temperature that quickly becomes the predecessor of the charts used today. He becomes internationally recognized.

1917

Carrier hires America's first woman air-conditioning engineer, right around the time that the decision to allow U.S. women the right to vote was being debated by lawmakers.

1922

Carrier unveiled the first centrifugal chiller, which opened the door to large-scale comfort air-conditioning.

1926

Carrier introduces the first home air conditioner.

1931

Carrier takes the seas, with the M.V. Victoria, the first vessel to make its maiden voyage equipped with air conditioning.

1998

Willis Carrier is named one of Time magazine's "100 Most Influential People of the Century."

2014

Carrier designs a unique HVAC solution to ensure the preservation of the Sistine Chapel

2016

Carrier launches the first high temperature water-to-water heat pumps using the next generation of refrigerants: HFO.

Over time, Carrier has been recognized as the world's leader in high-technology heating, air conditioning and refrigeration solutions. The company continues to innovate in order to offer market-leading products and solutions.

CARRIER'S MISSION

At Carrier, our mission is to be the first choice for HVAC solutions worldwide. We work every day to make the world a better place to live, work and play. Our employees, products and services create comfortable, productive and healthy environments, regardless of climate. Our culture is rooted in our core values. They define who we are and guide every decision we make.

Expertise

Carrier delivers global solutions across the broadest range of air conditioning, ventilation and heating applications. With a proven track record of leadership and industry expertise, Carrier provides a portfolio of market-leading products and services.

Innovation

Carrier is a company of ideas, committed to research and development, whose founder still inspires the company to reach the next innovative, powerful and marketable idea. AdvanTEC, a global company Experts in Efficiency and Environment, supports customers around the world in developing strategic, energy-efficient and custom-engineered building solutions.

Performance

Carriers strives for continuous growth to reinforce its leadership position, continuously improving the productivity and quality of its assets and resources.

Quality

Carrier quality and reliability are incorporated and guaranteed in all products and systems. Products undergo extensive tests before delivery and are certified by internal organisations to ensure the highest levels of safety and quality.

Service Excellence

The Carrier Service delivery model maintains a reputation for high customer satisfaction and delivers service excellence with strong communication channels, the top technicians in the industry, continuous improvement of contracts and a highly experienced management team.

Sustainability

Carrier continuously works to improve the environmental performance of its products and services, operations and its culture to help lead the way to environmental sustainability. Sustainability is a growing concern to the building sector and a key factor for building owners and operators. A high efficiency air conditioning system with a low carbon footprint is a must to support green building design.

CARRIER, LEADING INNOVATION

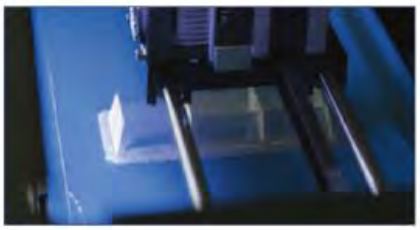
Carrier constantly builds upon its history of proven innovation with new solutions in air conditioning, building controls and energy services, setting the standard for performance, energy efficiency and sustainability.

Ideas for an inspired tomorrow

HVAC challenges aren't always as common as you might expect, and our engineers work to ensure we can all take reliable, efficient environmental control for granted—from cultural heritage preservation to heat recovery application for district heating, with the next generation heating, cooling and technologies. Evaluating and applying advanced refrigerants and developing control algorithms to optimize performance isn't taken for granted here, and our engineers work provides security to everyday living.

Ultra modern laboratories

Carrier's laboratories, among the largest such facilities dedicated to HVAC in Europe, and Research & Development teams, are an important part of what makes the company a natural leader. Carrier benefits from unique facilities, both in terms of cooling coverage, air treatment capacities and measurement accuracy.



Innovative projects throughout Europe

MuCEM, Marseille, France
June 2013
Seawater application

Carrier's expertise in seawater heating and cooling systems helped the national Museum of European and Mediterranean Civilisations (MuCEM) to meet its environmental goals for an energy efficient and sustainable solution.

© Bahnhof - www.bahnhof.net

Bahnhof, Stockholm, Sweden
January 2014
District heating, heat recovery application in three data centers

Carrier AdvanTE^{3}C engineers, working closely with the Swedish Internet service provider Bahnhof and hydraulic specialists have helped to optimize an innovative cooling & heating solution turning data centers into heat sources for local district heating systems.

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Sistine Chapel, Vatican City State
October 2014
Cultural heritage preservation

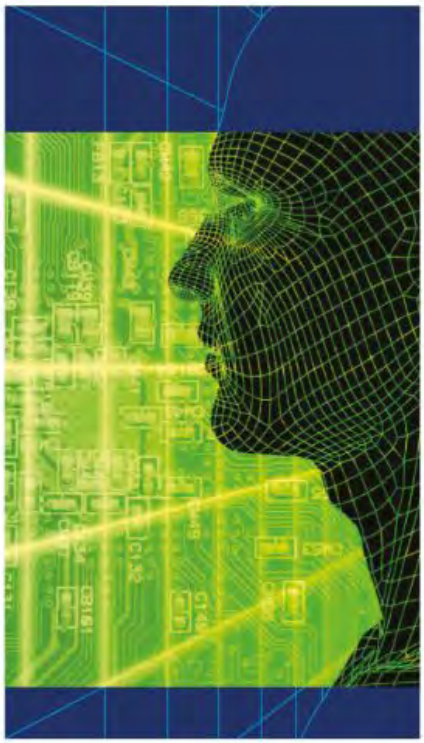
By harnessing the power of today's technology, international teams from UTC and Carrier developed a unique heating, ventilating and air conditioning solution to ensure the preservation of this World Heritage treasure for generations to come.

CADZIPLO, Geneva, Switzerland,
August 2015
Europe's first screw water-to-water heat pumps using HFO

Carrier has set a new milestone with Europe's first district heating project based on screw water-to-water heat pumps using low Global Warming Potential PUREtec™ refrigerant: HFO R1234ze(E).

Discover the story of CADZIPLO project on www.youtube.com/c/utcclimatecontrolssecurity

Our AdvanTEC experts work with customers to design, develop and deliver innovative building solutions to make buildings more efficient, improve user experiences and enhance occupant safety and security



Our global AdvanTEC team provides consultation and solution design to help enterprises solve their most complex building problems. Comprized of highly qualified engineers with wide range of building applications experience, our group of experts fully understand the challenge in designing and maintaining customer facilities, has in-depth knowledge of HVAC, elevator, fire & security and building automation solutions, in addition to industry-leading modelling tools and unique research facilities.
By working directly with customers to understand their specific business and application needs, our AdvanTEC team can address the specific challenges facing each customer which may also have worldwide benefits for many others.

The strength of a global group

Carrier leverages UTC's world-class research and development resources: **United Technologies Research Center** (UTRC). Since it was founded in 1929, United Technologies Research Center (UTRC) has been designing ideas for applications, culminating products, technologies and systems that impact the world. Its diverse teams includes some of the world's best scientific and engineering talents dedicated to creating cutting-edge technologies that provide elegant solutions to some of the world's most complex challenges. They are changing how people imagine buildings to be, taking a physics based approach to exploring the way a building's design, systems and inhabitants interact and establishing new solutions to long-standing energy, HVAC and mechanical challenges while improving the building's efficiency.

Carrier and UTRC technology co-developing program:

TECHNOLOGY / PRODUCT DEVELOPMENT

UTRC

Advanced technologies
600 engineers
* Otis * Pratt & whitney * UTC Aerospace Systems * UTC Climate, Controls & Security

CARRIER TECHNOLOGY

Applied technologies
300 engineers

CARRIER HVAC EUROPE Research & Design center

Product development
290 engineers
Largest laboratory in Europe for HVAC

CARRIER, NATURAL LEADER IN SUSTAINABILITY

At Carrier, sustainability leadership is something that comes naturally. The company's founder was an inventor, his brand pioneered industry and his products changed the world. And along the way, a focus on sustainability and preserving natural resources has endured as a guiding principle.

Natural leadership

Whether developing efficient, new products, building green factories or enhancing operations, Carrier has often been the first to reach new milestones in sustainability.

But leadership means more than being first. It means consistently getting better.
So Carrier innovates and sets more aggressive goals. It improves everything it does, every day. From fuelling the green building movement globally to improving the cold chain and feeding a growing planet, Carrier is **making our world a better place to live in today and for generations to come.**

Carrier is committed to limiting the environmental impact of its products and solutions and reducing energy consumption:

High performance design

The impact of the machines on global warming is mainly due to the primary energy used for their operation. Carrier designs products that achieve optimized energy performance throughout the year and limit the indirect release of CO_2 associated with the consumption of electricity.

Minimized refrigerant charge

Since 2011, a new generation of microchannel is available: Novation® Microchannel.
- Up to 50% refrigerant charge reduction vs. traditional Cu/Al (copper/aluminium) coils*
- Better thermal performance, better efficiency and lower air pressure drop vs. Cu/Al coils*

Carrier continues to work towards the reduction of refrigerant charge in its products and includes this as a key performance indicator for all new product developments.

Life cycle approach

Carrier products are extensively tested and maintained to a very high level, thanks to an extended service offering to ensure the best performance during the entire life cycle of the equipment.
Advanced monitoring solutions continuously collect information from equipments to anticipate and prevent loss of performance or any damage, optimizing the lifetime of the equipment.

Follow us on Twitter @CarrierGreen

THE CARRIER CO_2NSERVATION METER

Introduced in 2010, the Carrier CO2NSERVATION Meter calculates avoided greenhouse gas emissions as a result of the installation of high-efficiency Carrier air conditioning, heating and refrigeration systems by customers around the world since 2000. In 2017, the Carrier CO2NSERVATION Meter reached 213 million metric tonnes of greenhouse gases saved, the equivalent of:

Approximately 39,000,000 vehicles removed from the road for one year*

Saved the electricity consumed by **approximately 25,000,000 homes** during one year*

* According to the United States Environmental Protection Agency Green Power Equivalency Calculator
The model compares the projected GHG emissions from select Carrier products to emissions from comparable baseline products, with the difference representing the avoided emissions.
The meter also incorporates energy savings as measured from energy service contracts. Learn more on http://naturalleader.com/

The challenge raised by the European Union's F-gas Regulation means the entire industry must move to a new generation of refrigerants, that will not only protect the ozone layer but also have a very low global warming impact. Carrier is facing this challenge head on.

Carrier's solution: PUREtec™

Carrier has been working over the past years on selecting the right refrigerant for the future and has now taken the lead in introducing the next generation of refrigerants on screw compressor chillers and heat pumps: PUREtec.

With PUREtec, Carrier offers a range of new customized solutions using a refrigerant with zero impact on the ozone layer and nearly zero global warming potential: HFO R-1234ze.

Refrigerants assessment

Approximately **320 refrigerants** evaluated on:

- Ozone Depletion Potential (ODP)
- Global Warming Potential (GWP)
- Toxicity
- Flammability
- Performances
- Applied cost impact
- Technology impact

Detailed performance and cost analysis

Identification of **the best candidate** to replace HFC-R134a **for all screw units: HFO R-1234ze**:

- Limited impact on global warming GWP <1* (similar to natural substances: CO_2 GWP=1)
- Not affected by the F-gas 2014 phase down plan
- Highly efficient: supporting low primary energy consumption
- Extended operating envelope allowing new application opportunities

Key components testing and qualification

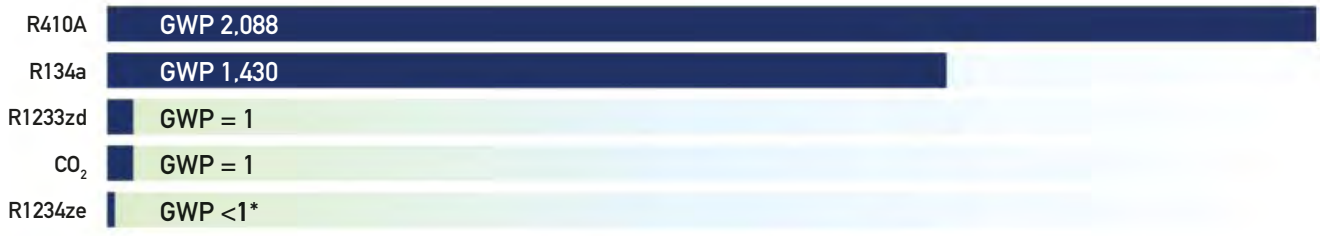
Association of components:

- New refrigerant and associated lubricant
- All chillers' subsystems components, including Carrier's proprietary technology: compressors and heat exchangers to ensure **proper and reliable operation**

System level testing and qualification

- **Extensive run tests** in Carrier's laboratory **for air and water-sourced screw units**
- Notified bodies involved in the unit quality certification
- Dedicated control algorithm to optimize machine operation

GLOBAL WARMING IMPACT OF GREENHOUSE GASES



*Source: IPCC Vth assessment report

AQUAFORCE® PURETEC™

All the reliability, efficiency, adaptability of the AquaForce range combined with PUREtec refrigerant: a full HFO range of chillers and heat-pumps, air-to-water and water-to-water, as well as a range of high temperature heat-pumps 85°C.

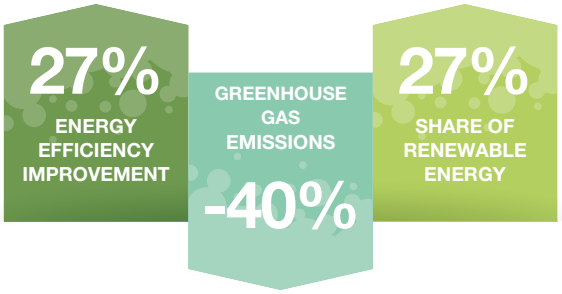
Discover PUREtec on www.youtube.com/c/utcclimatecontrolssecurity

CARRIER, MEETING THE CHALLENGE OF REGULATORY CHANGES

Carrier is committed to limiting the environmental impact of its products and solutions and reducing energy consumption. This commitment is in line with the targets of the European climate and energy package for 2030.

The energy efficiency improvement target strongly influences the HVAC market. Indeed buildings are the largest consumers of energy today and, of that consumption, HVAC systems account for considerably more than other equipment. Providing its customers with energy efficient solutions is therefore now a key sustainable development opportunity for the HVAC industry.

In order to achieve these objectives, the European Union has developed a regulation to reduce energy consumption in buildings: **Ecodesign.**



Regulation 1253/2014
has been setting energy efficiency requirements since 2016 for **ventilation units** equipped with filters, energy recovery devices, fans and motors. The requirements were reinforced in January 2018.

Regulation 2016/2281
sets new energy efficiency requirements for **chillers of up to 2000 kW used in air conditioning applications for comfort cooling.**
It comes into force in January 2018. It also sets new energy efficiency requirements for **industrial process cooling chillers of up to 2000 kW** with a positive leaving water temperature.

In addition, the regulation sets new energy efficiency requirements and informative requirements for **air conditioners, rooftops and packaged units in comfort cooling and space heating applications.** It came into force in January 2018 and will be reinforced in January 2021.

Regulation 2015/1095
has introduced energy efficiency requirements in 2016 for **industrial process cooling chillers** with negative leaving water temperatures and will be reinforced from July 2018.

Under regulation 813/2013
air- and water-to-water heat pumps up to 400 kW must comply with higher energy efficiency requirements as from September 2017. **Heat pumps up to 70 kW must also carry Energy Labelling** in line with regulation 811/2013 from September 2015 onwards.

Air Handling Units : overall product improvement

Since 2016, the AHU must comply with Ecodesign technical and minimum efficiency requirements as well:

ENERGY EFFICIENCY / SPECIFIC FAN POWER

A ventilation unit with higher energy efficiency (less absorbed energy per m^3 of air treated): higher fan efficiency, lower internal drop in pressure.

ENERGY RECOVERY

More efficient heat recovery, lower drop in pressure

INDOOR AIR QUALITY

Better filtration for better air quality and energy efficiency

INFORMATION

Reinforced product information

Chillers, heat pumps, roof-tops and air conditioners: New metrics because seasonal efficiency matters

With all new buildings expected to be close to zero energy by January 2021, calculations of the energy efficiency of buildings require accurate indicators of the efficiency of their equipment. These indicators must be representative of actual operations throughout the year, measuring the performance of equipment on a seasonal basis.

EER & COP belong to the past. Now, and in the future, the focus is on seasonal efficiency. With a broad new product range, Carrier is fully engaged to take up the challenge of energy efficiency.
Compliance with the Ecodesign regulations therefore involves the use of new, more meaningful seasonal efficiency metrics. The Seasonal Energy Efficiency Ratio (**SEER**), Seasonal Energy Performance Ratio (**SEPR**) and Seasonal Coefficient of Performance (**SCOP**) all ensure precise evaluation of the energy actually consumed by chillers and heat pumps, by including seasonal variations in their measurements. Previous metrics (EER & COP) measured operations only at a single point, at full thermal load, and were therefore less representative of consumption over entire heating and cooling seasons.

FOR MORE INFORMATION VISIT

www.ecodesign.hvac.carrier.com

SEPR is the new metric for **chillers in industrial process cooling applications**.

SEER is the new metric for **chillers in comfort cooling applications**.

SCOP is the new metric for **space heating applications**.

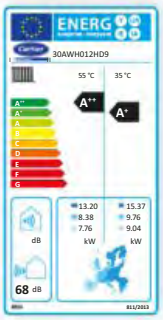
Eta$_s$ (η_s):

In order to **compare the energy efficiency of products using different sources of energy**, the Ecodesign regulation introduces a new measurement expressed in primary energy: η_s cool is the equivalent of SEER for comfort cooling applications and η_s heat is the equivalent of SCOP for space heating.

These new seasonal performance metrics are now the key indicator used for all product ranges, in all applications. They are calculated according to technical standard EN 14825 and compliance is mandatory for a product to obtain CE marking.

Energy Labelling

In addition, European Energy Labelling regulation 811/2013 classifies heat pumps up to 70 kW from G to A++, according to their energy efficiency. This enhanced consumer information drives the market towards more energy-efficient products. From September 2019, the E, F and G classes will no longer exist. A new A+++ class will identify the most energy efficient products.



ECODESIGN

Ecodesign is an approach to product design that encourages manufacturers to consider the environmental impact of the product over its entire lifecycle.

In the European Union, the Ecodesign Directive 2009/125/EC establishes a framework for the setting of mandatory energy efficiency requirements for all energy-related products (ERPs).

SPECIFIC APPROACH DEDICATED TO BUILDING PERFORMANCE

With an array of technologies and skills around building systems, Carrier has the opportunity to create the next step of innovation in intelligent building technologies. In accordance with this dynamic, Carrier provides sustainable and energy saving solutions for the entire building lifecycle.

Pioneer in green building

As the first founding company of the U.S. Green Building Council® (USGBC), Carrier has been a leader from the beginning. Carrier serves as a consultant on some of the world's most advanced Green Building projects and offers Green Building training and education services to customers and employees across the globe, through the Carrier University Institute for Sustainability. Carrier is also USGBC's largest LEED® education provider.

**LEED, or Leadership in Energy & Environmental Design, is a green building certification program that recognizes best-in-class building strategies and practices. To receive LEED certification, building projects must satisfy prerequisites and earn points to achieve different levels of certification.*

Proven expertise

Whether retrofitting an existing structure or designing and constructing a record setting skyscraper, today's buildings demand sustainable solutions.
For more than a century, Carrier has been leading the industry with a whole building approach that leverages its technological and engineering expertise.

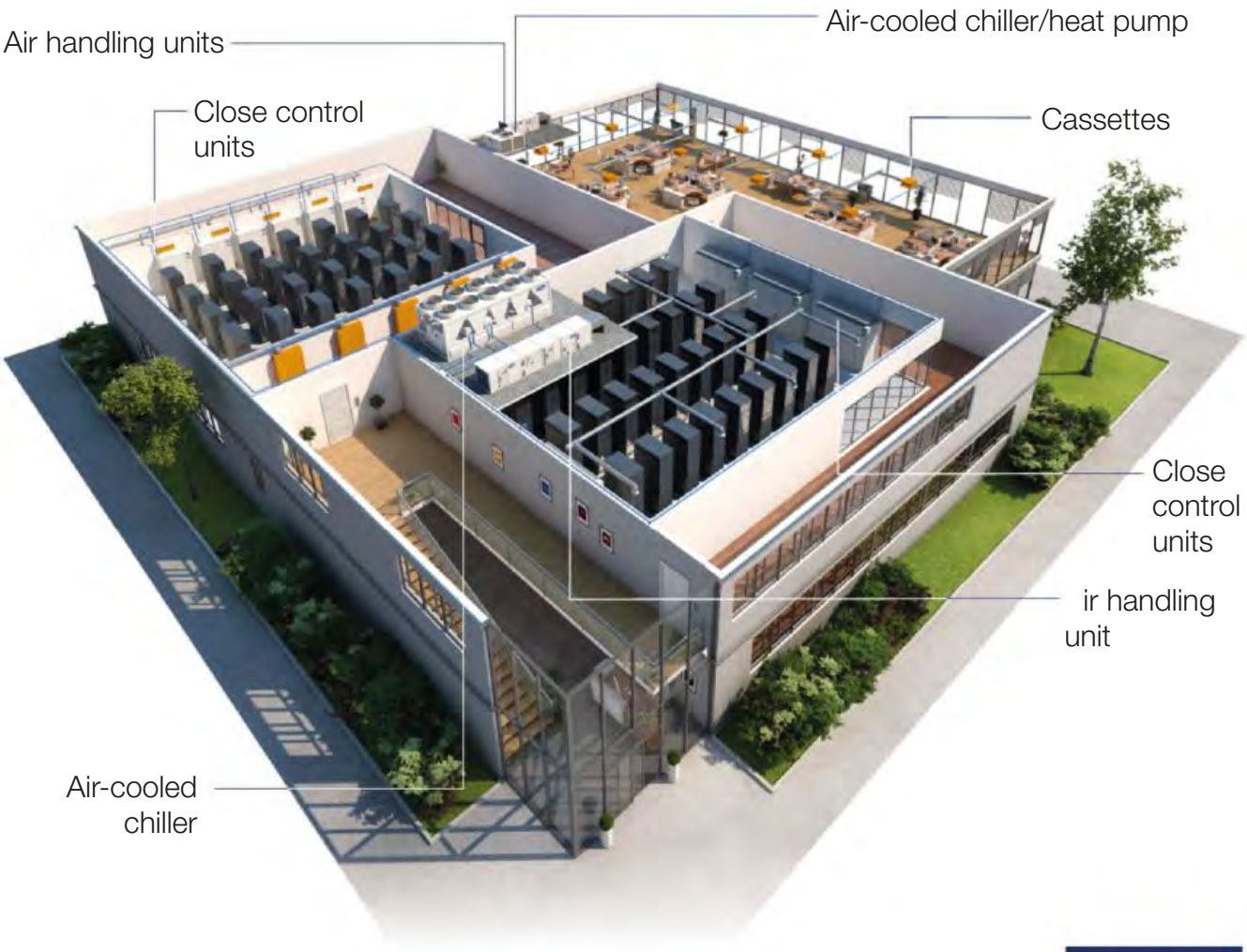
Sustainable design

Carrier building solutions are designed to meet the requirements of a variety of building types and applications. Carrier solutions deliver industry leading performance with less energy and lower environmental impact.

Smart energy management

Carrier understands that efficient building control, operations and maintenance can help manage costs and maintain high standards for energy efficiency, and provides the services needed for optimal performance.
These include automated building systems, vibration testing, thermal imaging and operational monitoring.

DATA CENTER



KEY ADVANTAGES

Fast capacity recovery

Maximum uptime is a priority for data center applications. To meet this challenge, the IT cooling system must be reliable and able to respond to unexpected variations. Carrier developed its dedicated fast capacity recovery feature, offering significant reduction of recovery time in case of power failure.

Reliability

Products undergo extensive tests before they are shipped to the customer and are also certified by internal organisations to ensure the highest levels of safety and quality.

Total free cooling

Air-or water-based free cooling systems are popular for data center applications where the climate is suitable, resulting in energy savings through reduced use of the number of compressor running hours during the cold season. Carrier offers airside free cooling options on air handling units and hydraulic free cooling options for chiller systems, either with Carrier patented DX free cooling integrated system or using non-integrated systems using dry coolers or towers.

Smart Energy Management

Advanced control solutions such as Carrier® PlantCTRL™ allow to control the HVAC system and to optimize it as a whole for maximum availability and minimized energy consumption.

PUE optimized

OFFICE

KEY ADVANTAGES

Green Building approach

Carrier solutions not only offer efficiency to reduce the overall building energy consumption but are also designed for easy system integration: variable-speed pumps for efficient operation, time-scheduling, double-set-point; night-mode operation to optimize the chiller operation according to the requirements of the building; several communication protocols and remote monitoring to secure consistent efficiency through the entire lifetime of the equipment.

Partial free cooling

For applications with moderate cooling demand throughout the entire year including the cold season, units can be equipped with a patented Carrier DX free cooling system with a dedicated pump by-passing the compressor on one or both refrigerant circuits during winter operation. Operating without glycol, no extra free cooling coil. This results in significant energy savings.

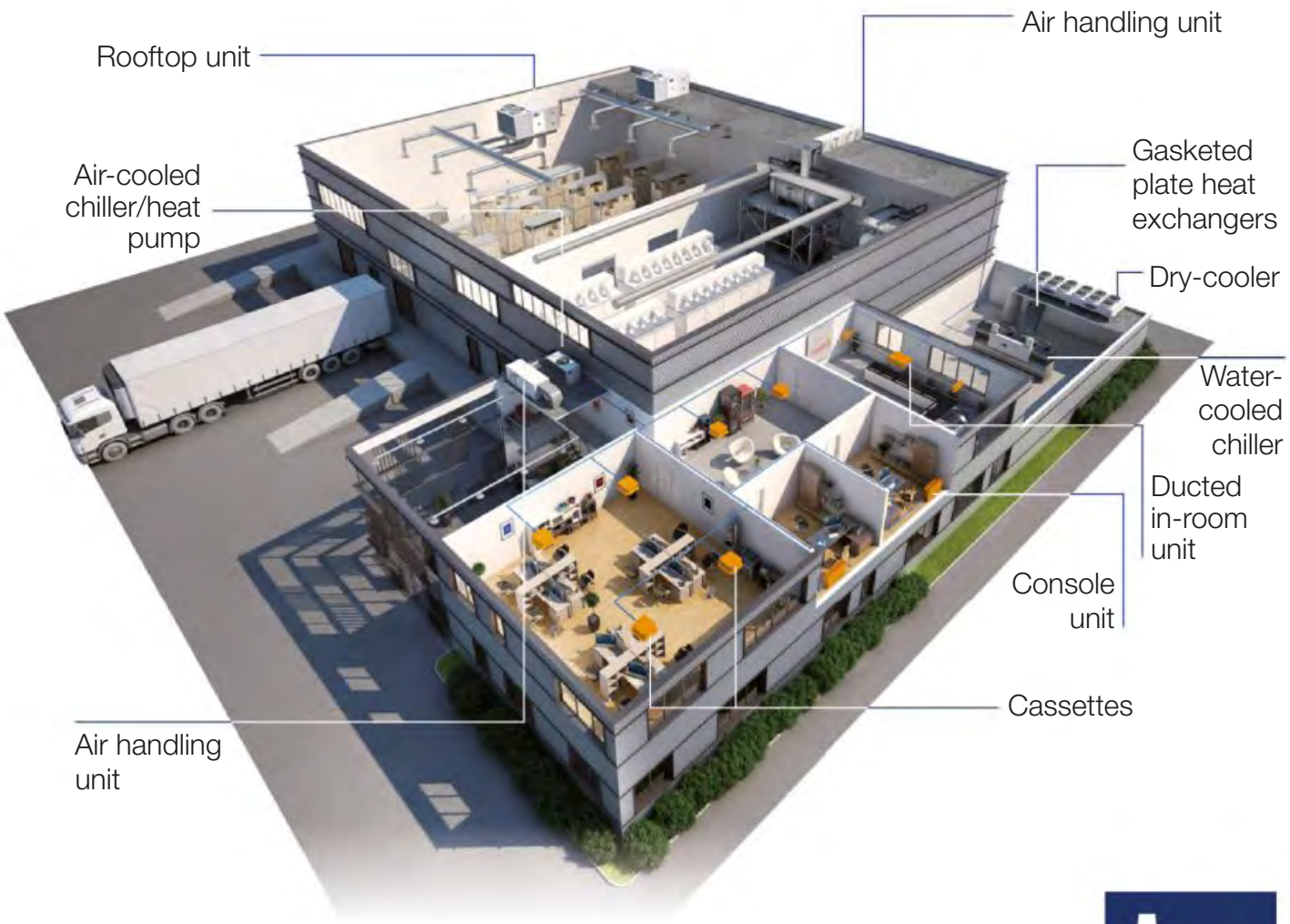
Hybrid terminal

The 36XB Hybrid terminal combines the advantages of both chilled beams and fan coils: energy efficiency, high levels of comfort, extremely low noise and high indoor air quality. The primary ventilation air volume can be controlled based on CO_2 levels in rooms to maximize comfort and minimize system energy consumption.

Comfort management

From open space to individual offices, comfort can be personalized and controlled according to occupancy. The Aquasmart® system manages building zoning, occupancy and room temperature in accordance with needs. The system offers a remote access (WebCTRL®) and records historical data of the HVAC equipment.

INDUSTRY



KEY ADVANTAGES

Chilled water production down to -15°C

Low temperature chilled water production down to -6°C (medium) or to -12°C (low) covers specific applications such as ice storage and industrial process cooling.

High efficiency at full and partial load

An inverter-driven machine usually offered very high efficiency at partial load, but achieving high efficiency at partial load often means sacrificing efficiency at full load. Thanks to AquaForce® with Greenspeed® intelligence, you can have both.

Proximity and proactivity to ensure no downtime

Advanced monitoring service offering continuously collects information from equipment to anticipate and prevent loss of performances or any damage. This solution enables users to track and monitor their HVAC system performance and to take preventive and corrective actions remotely, optimizing the lifetime of the equipment.

Smart Energy Management

Advanced control solutions such as Carrier® PlantCTRL™ allow to control the HVAC system and to optimize it as a whole for maximum availability and minimized energy consumption.

In addition, Carrier designs, engineers and implements custom-made Thermal Energy Storage (TES) solutions for HVAC systems with peak cooling demand > 500 kW. 100% smart grid compatible, the TES solution reduces the capacity of the chillers by 30% to 70%, secures the cooling production and optimizes occupants' comfort.

HOSPITAL

KEY ADVANTAGES

Air quality

Carrier solutions can help to ensure and maintain a highly controlled microclimate, regulating the temperature and humidity levels, as well as ensuring optimal indoor air quality (filtration efficiency levels, management of CO_2 levels).

Free cooling

For healthcare applications with 24/7 operations, a cooling demand may exist throughout the entire year. Units equipped with a patented Carrier DX free cooling can offer significant energy savings without need for the use of glycol or extra free cooling coils and controls.

Heat recovery

Carrier offers a range of heat recovery options, including high efficiency heat recovery on air handling units and desuperheaters or heat recovery condensers on chiller systems to contribute to reduced heating energy usage.

System control

Hospitals often have dedicated control rooms to monitor the proper operation of all equipment in the entire building. Thanks to the availability of open protocol communication interfaces, Carrier equipment can be easily integrated in the building management system on site and, thanks to Carrier® PlantCTRL™, owners and plant managers may benefit from optimized control of the HVAC system plant room to reduce energy consumption and ensure continued delivery of comfort and air quality.

In addition, Carrier designs, engineers and implements custom-made Thermal Energy Storage (TES) solutions for HVAC systems with peak cooling demand > 500 kW. 100% smart grid compatible, the TES solution reduces the capacity of the chillers by 30% to 70%, secures the cooling production and optimizes occupants' comfort.

HOTEL

KEY ADVANTAGES

Low noise features (night mode)

Air conditioning, ventilation and heating (depending on the region and season) are among the first things guests experience. Carrier terminal solutions and diffusion capabilities offer the low noise performance that guests require in a relaxing environment.

Advanced temperature controls

Personalising a guest's stay is vital to building a relationship that will keep them coming back. Carrier's easy-to-use, aesthetically pleasing user interfaces supported by energy management systems, from Aquasmart® to WebCTRL®, make providing individualized climate settings cost effective and intuitive. User interfaces are available in a wide variety of options in Carrier's range.

Large range of heat pumps (5-5,000 kW)

Carrier has introduced dedicated heat pumps designed for heating applications. They deliver superior energy efficiency both during cooling and heating operation whatever the external weather conditions: from -20 to 46°C outdoor air temperature.

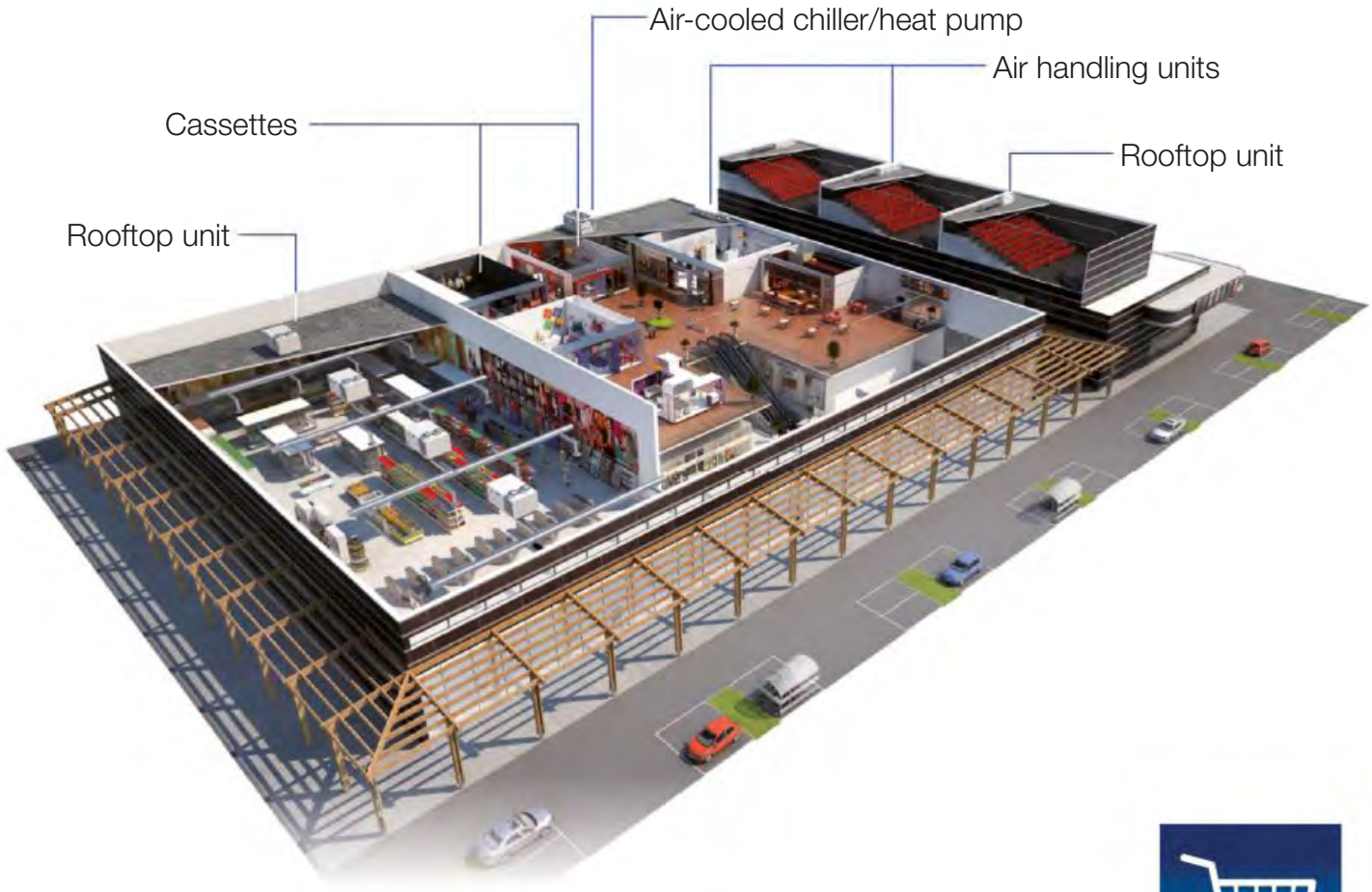
Heat recovery

Carrier offers a range of heat recovery options, including high efficiency heat recovery on air handling units and desuperheaters or heat recovery condensers on chiller systems to contribute to reduced heating energy usage.

Sanitary hot water

Hotels require a constant supply of sanitary hot water for various areas. Heat recovery at very high temperature is possible for many Carrier chillers offering energy to pre-heat the hot storage tank normally heated by traditional boilers. Furthermore dedicated high temperature heat pumps capable of hot water production up to 68°C offer further opportunities to reduce energy consumption of the system.

COMMERCIAL CENTER



KEY ADVANTAGES

For small/medium individual needs

Cost-effective self-contained air conditioning solutions for retail applications and/or warehouses are rooftop units. Designed for outside installation, these systems provide an easy, versatile solution for both new and retrofitted buildings. A range of types and options provide cooling, heating and ventilation and allow a variety of system designs from constant volume to variable volume designs.

For larger centers

Centralized chiller systems and air handling units distribute chilled water and treated ventilation air to the shopping complex. Individual shops select the most appropriate chilled water terminals or packaged air treatment solutions for their comfort needs and to suit interior design.

Heat recovery

Carrier offers a range of heat recovery options, including high efficiency heat recovery solutions on rooftop and air handling units. These can contribute to reduced heating energy usage or in some cases replace components that use alternative fuels.

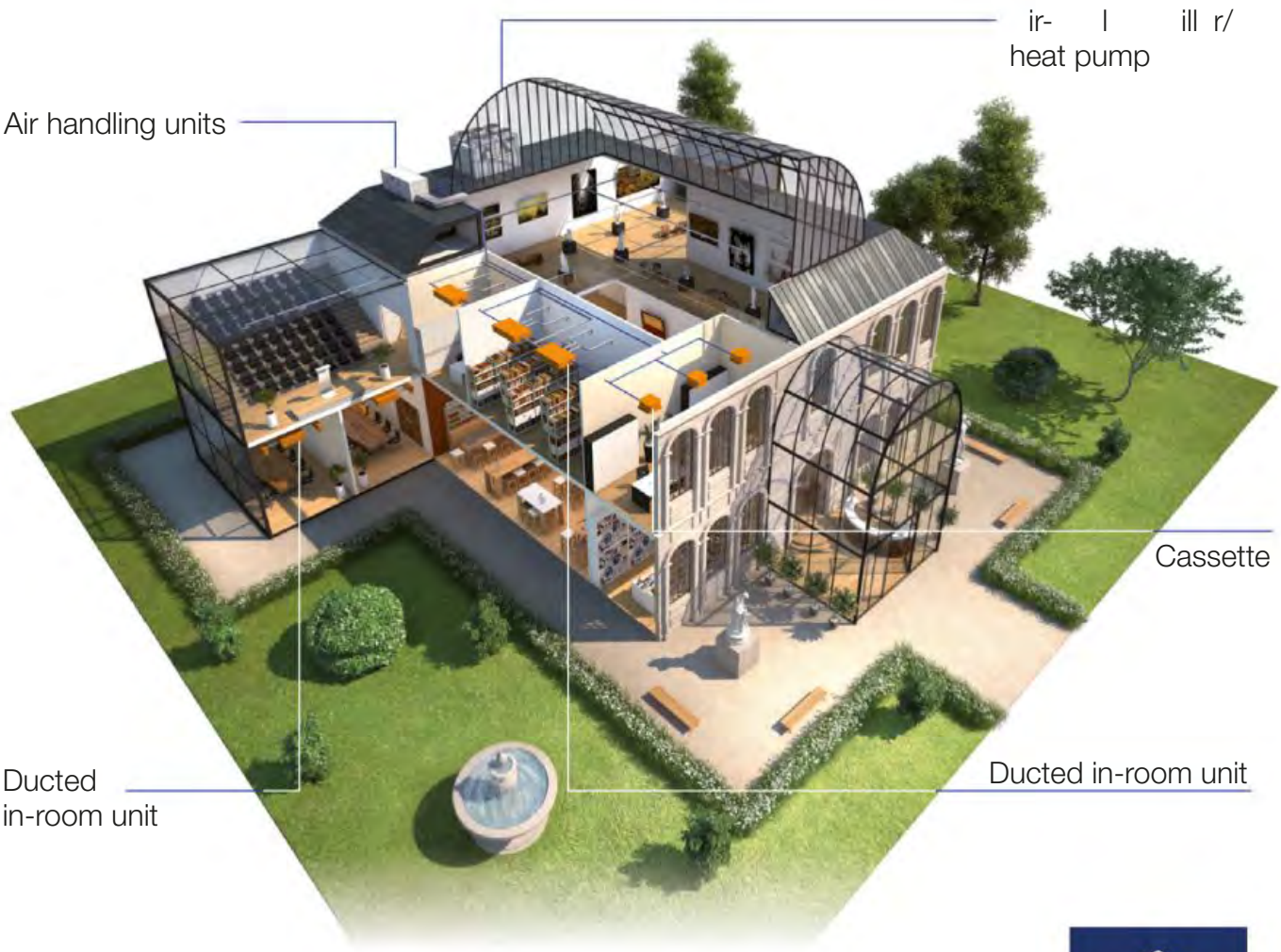
Indoor air quality

Carrier solutions can help to ensure and maintain a highly controlled microclimate, regulating the temperature and humidity levels, as well as ensuring optimal indoor air quality (filtration efficiency levels, CO_2 levels management).

Climate control systems

Carrier designs, engineers and implements custom-made Thermal Energy Storage (TES) solutions for HVAC systems with peak cooling demand > 500 kW.
100% smart grid compatible, the TES solution reduces the capacity of the chillers by 30% to 70%, secures the cooling production and optimizes occupants' comfort.

CULTURAL HERITAGE



KEY ADVANTAGES

Low noise emission

Carrier units have dedicated low noise options to be virtually unnoticeable and to respect the need for “church-quiet” noise levels.

Precise adaptability to load variation

Conditions inside buildings change as a result of many factors including the local climate, the time of the day and the number of visitors. Carrier solutions equipped with precise electronic capacity controls and variable-speed motors adapt to meet load variations in just a few seconds, assuring exceptional comfort and in turn ensuring minimum energy consumption.

Indoor air quality

Carrier solutions can help to ensure and maintain a highly controlled microclimate necessary to protect the works of art, regulating the temperature and humidity levels, as well as ensuring optimal airflow quality and velocity.

Smart Energy Management

Night-mode operation, time-scheduling and precise room temperature control are key features for any cooling or heating device operating in a museum. Thanks to advanced control systems such as Aquasmart® and Carrier® PlantCTRL™, the HVAC system can be controlled and optimized as a whole for maximum comfort and minimized energy consumption.

In addition, Carrier designs, engineers and implements custom-made Thermal Energy Storage (TES) solutions for HVAC systems with peak cooling demand > 500 kW. 100% smart grid compatible, the TES solution reduces the capacity of the chillers by 30% to 70%, secures the cooling production and optimizes occupants’ comfort.

LIGHT COMMERCIAL

KEY ADVANTAGES

Indoor air quality

Carrier solutions can help to ensure and maintain a controlled microclimate, regulating the temperature and humidity levels, as well as ensuring optimal indoor air quality.

Large range of heat pumps

Carrier has introduced dedicated heat pumps designed for heating applications. They deliver superior energy efficiency both during cooling and heating operation whatever the external weather conditions: from -20 to 46°C outdoor air temperature.

Energy savings

With a Seasonal Coefficient of Performance (SCOP) up to 4.7, AquaSnap 30AWH is the best value for air conditioning and heating solution in light commercial applications: the Heating Optimized technologies improve significantly the heating capacity at low temperature, while the EnergySoft innovative defrosting technology improve the energy efficiency.

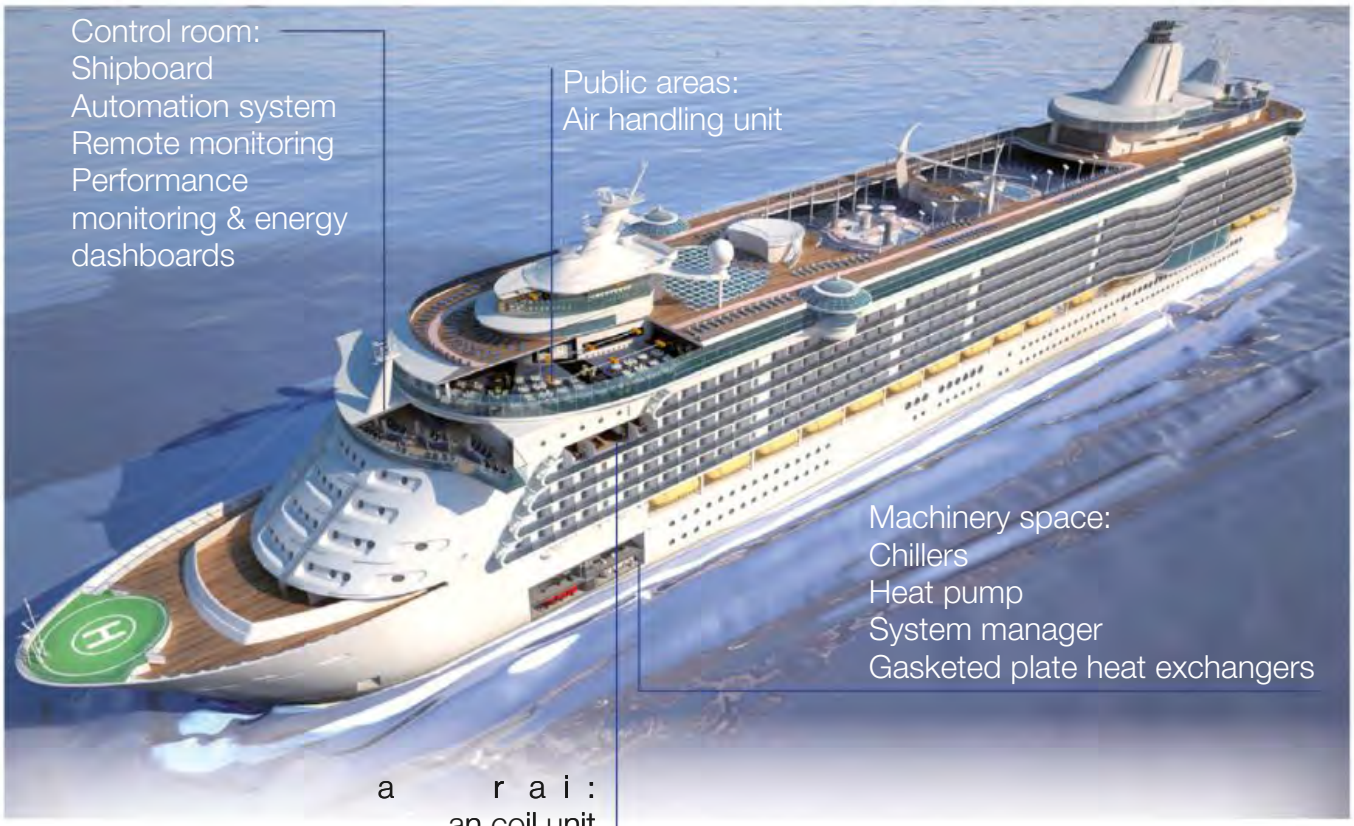
Plug and play compact solutions

With complete factory wiring, easy handling features, factory-installed options and intuitive interface, the AquaSnap 30AWH and 30RQV set up is fast and straightforward. Their compact size allows easy integration for small offices and shops.

Advanced control

The new generation of control, NHC, perfectly meets the thermal needs of commercial buildings while insuring the Energy efficiency optimisation. NHC integrates master-slave configuration up to 4 units, with JBUS connection.

MARINE



SPECIFIC SOLUTIONS

Machinery space

- AquaEdge™ two-stage chillers
- AquaForce® 30XWHV water-to-water heat pump
- PlantCTRL™ system manager
- 10TE gasketed plate heat exchangers

Passenger cabin

- 42MS passenger cabin fan coil
- 36XH hybrid terminal
- WTC controller
- Room controller
- CO_2 sensor with active ventilation
- Lights and blinds module

Public areas

- 39CQ compact air handling unit
- 39HQ AiroVision air handling unit
- 39CZ AiroVision air handling unit

CARRIER, YOUR SERVICE PARTNER

Your daily challenge is a complex balance between maintaining optimal comfort levels, maximising system uptimes and minimising cost of ownership. Carrier teams are committed to ensuring your peace of mind and supporting your business objectives throughout the lifecycle of your equipment.

Customer needs come first

• Proximity & Responsiveness

Carrier's expert technicians are there to take action, quickly. Comprehensive and highly efficient maintenance processes mean your equipment works at peak performance level.

If necessary, you can rely on Carrier Rental Systems and readily available spare parts to avoid extended downtime.

• Expertise & Consultancy

Carrier has experienced teams, an extensive network of branches, top grade logistics and powerful information systems. These industry-leading resources come together to deliver a best-in-class service.

Your Carrier experts will help you to find the right balance between enhancing energy efficiency and maximising your investments.

• Proactivity

As your preferred partner, Carrier designs tailored maintenance programs to meet your goals and optimize your business performance.

Worldwide-recognized experts

• Asset Management

- Advise on fast-moving regulatory environment.
- Guidance for energy optimization solution.
- Information on EH&S guidance.
- Providing educational sessions.

• Technical expertise

Carrier technicians benefit from a multifaceted training program based on 115 years of industry experience to bring you top level, up-to-date service.

- Technical training to ensure the teams remain familiar with all equipment types.
- Environmental, Health and Safety (EH&S) training to ensure the highest standards of ongoing safety.

Present in more than **60** countries

24/7 -site availability

More than **115** years of experience

A COMPREHENSIVE SERVICE RANGE TO BEST FIT OUR CUSTOMER NEEDS

MAINTENANCE

- **Reduced, tightly controlled running costs**
- **Maximized equipment lifetime**
- **Full F-gas compliance for chillers**

Carrier offers a comprehensive range of service agreements for all brands of chillers, rooftops, split and VRF (Variable Refrigerant Flow) air conditioning, air handling units, controls and accessories, from preventive to predictive maintenance.

REPAIR

- **Minimized downtime and losses**
- **Increased occupant satisfaction**
- **Emergency Repair Kits available on site**

Carrier's factory-trained technicians fix your systems expertly and efficiently. For quick and easy repairs, Carrier designed repairs kit solutions. All around Europe, our customers benefit from a dense network of experts to get the efficient support for all application and business needs.

SPARE PARTS

- **State-of-the-art logistics with reliable next day deliveries**
- **Facilitated parts selection**
- **Comprehensive parts solutions for all equipment**

Carrier's powerful supply chain provides you with genuine manufacture parts and consumables with high service levels.
The dedicated expert team facilitates your selection.

MODERNISATION

- **Compliance with new regulations**
- **Refrigerant conversion for chillers**
- **Improved reliability and optimized performance**

Carrier experts support you all along the lifecycle of your building, HVAC plant and equipment. We propose turnkey solutions to replace and enhance equipment & systems. The flexibility & full support of these solutions based on your specific needs, secure and guarantee the performance of your cooling and heating production.

RENTAL

- **Ready on-site temperature control or pump solution**
- **Secured production and optimal comfort**
- **Alternative to asset investments**

Whenever you need a temporary cooling or heating solution, Carrier Rental Systems organization provides tailored solutions from design through installation to decommissioning. (For seasonal capacity requirement, emergency, planned service work, facility refurbishment, event, contingency planning…)

CONSULTANCY & REGULATION

- **HVAC expertize & recommendations**
- **Guidance for understanding & complying with energy regulations**
- **Educational sessions for your asset management**

As an expert on its equipment, Carrier offers you consultancy services on how to manage & optimize your energy consumptions and your maintenance costs. We help you to understand the fast-moving regulatory environment and to comply with it by taking into account your activity needs.

CONTROL & MONITORING

- **Equipment, plant & system management**
- **Easy and fully secure access to your HVAC system**
- **BMS compatibility**

Advanced control and monitoring services allow you to track and monitor your HVAC system performance & energy consumptions and take preventive and corrective actions remotely.

ANALYSIS & OPTIMISATION

- **Actionable analysis by nearby experts**
- **Analyse plant operating data to maximize equipment lifetime**
- **Saving opportunities & optimize performance**

We innovate constantly to find the best solution for analysing and optimising your installation. Our HVAC experts provide you with diagnostics to help you save on maintenance costs and to analyze the data of your systems and their energy consumption.

ENERGY STORAGE

- **Turnkey system solutions for all HVAC applications**
- **For peak cooling systems >500 kW**
- **Shift your electricity consumptions from peak to off peak hours**

Reducing electricity costs with continuous air conditioning throughout the year is a strong challenge for cities and customers.
Installing a Thermal Energy Storage solution optimizes the design and the operation of your HVAC installation.

EUROPEAN PARTS CENTER: BUILDING SERVICE EXCELLENCE FOR CUSTOMER

Thanks to our dedicated ERCD (EMEA Replacement Components Division) team and our factories located throughout Europe, Carrier is able to deliver 250 orders daily and ship efficiently more than 1,600 shipments per week around the world.

A robust supply chain

• Dedicated team & expert advices

An experienced and attentive team will support you throughout the process of spare parts procurement: parts selection, management orders follow-up and logistics until delivery.

Our powerful purchasing negotiations ensures optimized pricing and lead-times. Thanks to our manufacturing expertise, we provide advice to help you find the best service solution to meet your specific needs.

- State-of-the art logistics with reliable next day delivery for Europe
- Storage permanently adjusted according to customer demand
- Accessible and reactive contacts
- Dedicated online shop to facilitate the selection of parts

A comprehensive parts offering

• High added value parts solutions

With more than 10,000 items in stock, we propose a comprehensive parts offering including compressors, universal parts and manufactured components.

- Factory Authorized & Proprietary and universal spare parts
- Parts kits solutions
- Consultancy services
- Dedicated solutions for railways, mining & marine business

• Quality & reliability

The quality and the reliability of Carrier are integrated and guaranteed for all products & systems and extended to every spare part.

+80,000
Managed parts number*

99%
Deliveries on time*

5.9/7
Customer satisfaction*

*2017 Carrier data

CARRIER RENTAL SYSTEMS: TAILOR MADE HIRE SOLUTIONS FOR COOLING & HEATING

Specialized in temperature control, pumps and power solutions, Carrier Rental Sytems operates around Europe providing comfortable, efficient, healthy, safe and secure environments for many critical and diverse applications: industry, events, data centers, hospitals, retail, offices.

Turnkey solutions

Carrier Rental Systems provides temporary short-, medium- and long-term cooling and heating solutions for customer needs including seasonal capacity requirements, breakdown emergencies, planned service work, facility refurbishment, special events and contingency planning.

With tailored systems for commercial and industrial applications, the Carrier Rental team is committed to ensuring on-time and on-budget delivery, from system design to installation and decommissioning.

Customized solutions
Meet changing needs throughout the year to suit fluctuations in demand or seasonal temperature changes

Inclusive 24/7 call out
Dedicated technicians to support your daily business

Testing before buying
Trial the equipment before buying with Carrier Rental Systems

New premises & short term leases
Provide the time to install a new air-conditioning system until you have expanded or refurbished your installation

Fixed monthly costs
Constant rental prices

No extra charges
Price maintenance included with the rental fee

No need for capital expenditure
Contract based on a temporary plant basis

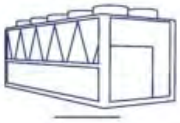
Tax relief
100% allowable against corporation tax

Industry:
Cooling solutions for industrial petrochemical, pharmaceutical, logistics…

Hospital:
Heating and air-conditioning rentals for hospitals and their clinic's.

Event:
Rentals for heating and cooling units (Red bull crashed ice in Belfast).

Hotel:
Cooling unit rentals following a system failure (Royal Garden hotel in London).



+8,000
Available equipment

+40
Depots

24/7
Incluse call out

Cooling

33

Type		Range	Refrigerant	Cooling capacity, kW	Page
Air-cooled units					
With rotary compressors		30RB 008-015	R-410A	8-14	35
With scroll compressors		30PA	R-410A	11-22	43
		30RBV	R-410A	15-18	71
		30RBY	R-410A	16-32	79
		30RB 017-040	R-410A	16-41	89
		30RBSY	R-410A	40-153	97
		30RBS	R-410A	40-156	113
		38RBS	R-410A	40-160	125
		30RBM / 30RBP	R-410A	164-528	133
	NEW	30RB 604-804	R-410A	607-774	149
With screw compressors		30XAS	R-134a	232-467	157
	NEW	30XB / 30XBP	R-134a	267-1682	169
	NEW	30KAV	R-134a	493-1079	197
Water-cooled units					
With scroll compressors		30RW / 30RWA	R-410A	220-315	219
	NEW	30WI	R-410A	220-720	227
With screw compressors		30XW / 30XWP	R-134a	273-1756	235
		30XW-V	R-134a	587-1741	261
		30XW-PZE	R-1234ze	269-1110	273
		30XW-VZE	R-1234ze	269-1110	287
With centrifugal compressors	NEW	19PV	R-134a	550-1600	299
	NEW	19DV	R-1233zd	1400-3500	317
		19XR/XRV single stage	R-134a	1000-5300	323
		19XR/XRV two-stage	R-134a	2800-10500	327
Air-cooled drycoolers					
With axial fan		09PE	-	100-1100	331
		09VE	-	180-1870	337
Absorption chillers					
Single-effect					
Hot water-fired absorption chillers		16LJ-A	-	83-3956	341
Steam-fired absorption chillers		16TJ	-	350-2500	349
Double-effect					
Steam-fired absorption chillers		16NK	-	345-4652	359
Gasketed plate heat exchangers		10TE	-	-	363

AIR-COOLED LIQUID CHILLERS

Easy and fast installation

Compact, reliable and efficient

Class A variable speed circulator available

30RB 008-015

AQUASNAP.

Nominal cooling capacity 8-14 kW

The new generation of AquaSnap liquid chillers was designed for commercial applications such as the air conditioning of offices and hotels etc.

The new AquaSnap units integrate the latest technological innovations:

- Non-ozone depleting refrigerant R410A
- Scroll or rotary compressors
- Low-noise fans
- Auto-adaptive microprocessor control

The AquaSnap units are available with or without integrated hydraulic module depending on the application. AquaSnap units equipped with a hydraulic module integrated into the unit chassis, limit installation to straightforward operations like connection of the power supply and the water supply and the return piping.

For better efficiency and to be in accordance with ECODESIGN's rules, hydraulic modules include a class A variable speed circulator. This circulator allows a power input reduction and offers better available pressure for small sizes.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

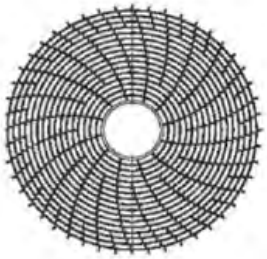
Quiet operation

- Compressors
  - Low-noise scroll or rotary compressors with low vibration levels
  - The compressors are placed on anti-vibration mountings and maintenance-free.
- Air heat exchanger section
  - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
  - Rigid fan installation for reduced start-up noise

Advanced technology and performance

- The air management system, consisting of the propeller fan, orifice and air discharge grille, guarantees minimised sound levels.
- Wide temperature operating range: AquaSnap units can operate efficiently in extreme temperature conditions. To suit the requirements of all applications, the new AquaSnap units can work at low-ambient conditions in cooling mode (down to -10°C and up to 46°C outside temperature).

New patented fan blade shape and grille profile with low pressure drop



Fast and simple installation and service

- Easy access to all internal components: simply undo three screws to remove the complete front panel to access the refrigerant piping connections, control box and electrical connections, as well as the compressor and other key parts.
- Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small foot-print that is easy to transport even through narrow doors.
- Reduced operating weight and a handle on the unit panels to facilitate transport.
- 3 bar pressure relief valve as standard
- Internal expansion tank
- High-pressure refrigerant protection
- Water flow switch to ensure that the circuits operate with the correct water flow rate.
- Various power cable outlet options: pre-punched holes in the cabinet panels permit cable exit on the side, front or rear.
- An HMI graphic service interface can be used to monitor and set the unit operating parameters.
- All units are equipped with 1 inch gas MPT water connections.
- Option for an integrated hydraulic module reduces space requirements and simplifies the installation. Only the power and the water supply and the return piping need to be connected

- Specially shaped anchorage feet ensure correct and safe unit fixing to the foundation.

Economical operation

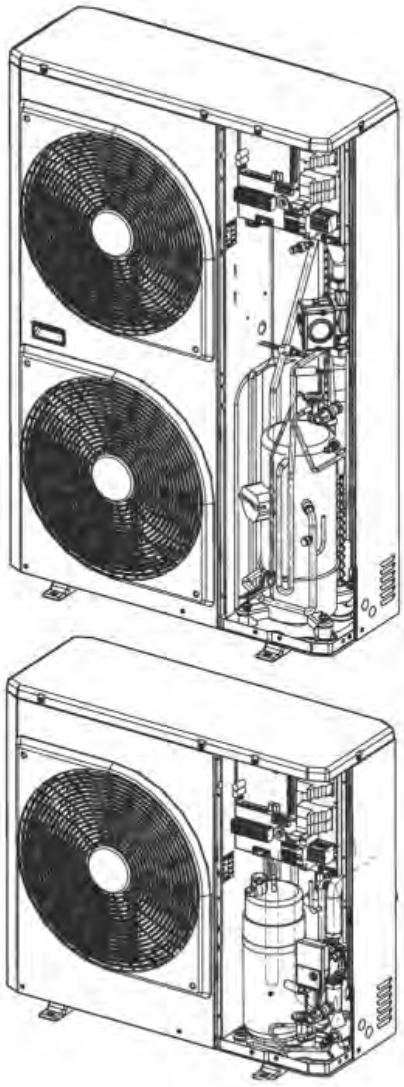
- Increased energy efficiency
  - The high energy efficiency of the AquaSnap units is the result of a long qualification and optimisation process.
  - AquaSnap units have Eurovent energy efficiency class A (size 008) or B (sizes 012 and 015)
- Reduced maintenance costs
  - Maintenance-free scroll or rotary compressors
  - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
  - R410A refrigerant is easier to use than other refrigerant blends

FEATURES

Environmental care

- Non-ozone depleting refrigerant R410A
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
- The components of AquaSnap systems are free of any hazardous substances.
- The new packaging ensures high protection during transport and handling and is 100% recyclable.

Hydraulic module



Superior reliability

- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.
  - Packaging crash test to ensure that the units are adequately protected against accidental shocks.
- All units are tested at various stages on the production line for circuit leakage, electrical compliance, water and refrigerant pressures.
  - End-of-line test of all unit operating parameters.
  - Third-party testing and certification - all performances are certified by Eurovent and unit safety is certified by DEKRA.

Corrosion-resistant casing

User interfaces

- The AquaSnap can use the following user interfaces:
  - dry contacts
  - the AquaSnap Junior remote controller (option)

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

- Energy management
  - Seven-day internal time schedule clock: permits unit on/off control and operation at a second set-point
  - Set-point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T
  - Master/slave control of two units operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
  - Change-over based on the outside air temperature
- Integrated features
  - Night mode: capacity and fan speed limitation for reduced noise level

TYPE KEY

30RB 008 - 9 - - - B

Liquid chilling packages

Nominal size

008 - nominal size 8 kW
012 - nominal size 12 kW
015 - nominal size 15 kW

Unit options

- - With hydraulic module
X - Without hydraulic module

400V 3-phases + N

Not used

Revision status

ACCESSORY

Option	Description	Advantages	Use
Remote User Interface HMI	Remotely installed user interface (via communication bus)	Remote unit control up to 300 m	All sizes

PHYSICAL DATA

30RB				8	12	15
Cooling						
Standard unit	CA1	Nominal capacity	kW	7,95	10,8	13,99
Full load performances*		EER	kW/kW	3,1	2,93	2,90
		Eurovent class		A	B	B
	CA2	Nominal capacity	kW	10,26	14,88	17,98
		EER	kW/kW	3,74	3,63	3,49
		Eurovent class		B	B	D
	CA3	Nominal capacity	kW	5,10	7	8,40
		EER	kW/kW	2,24	1,95	1,90
Standard unit		**SEER $_{23/18°c}$ Comfort medium temp.**	**kWh/kWh**	**4,00**	**3,89**	**3,80**
Seasonal energy efficiency**		□s cool $_{23/18°C}$	%	157	153	149
Sound levels						
Standard unit						
Sound power level(1) (CA1)			dB(A)	68	70	71
Sound pressure level at 4 m(2) (CA1)			dB(A)	48	50	51
Dimensions						
Length			mm	908	908	908
Depth			mm	350	350	350
Height			mm	821	1363	1363
Operating weight(3)						
Unit without circulator (X version)			kg	73,3	108	110
Unit with circulator (- version)			kg	75,5	114	116
Compressors				One hermetic rotary compressor	One hermetic scroll compressor	One hermetic scroll compressor
Refrigerant				R410A		
Circuit charge(3)			kg	2,15	2,63	3,18
			teqCO_2	4,5	5,5	6,6
Air heat exchangers				Copper tubes and aluminum fins		
Fans				3 blades fan		
Quantity				1	2	2
Water heat exchanger (X version)						
Water pressure drop (CA1)			kPa	15	21	33
Water pressure drop (CA2)			kPa	28	36	49
Min. system water content			l	28	42	52
Max. water-side operating pressure			kPa	300	300	300
Hydraulic module (- version)						
Pump				Variable speed circulator		
Expansion tank volume			l	2	2	2
Availabale static pressure (CA1)			kPa	52	74	60
Availabale static pressure (CA2)			kPa	37	54	33
Min. system water content			l	28	42	52
Max. water-side operating pressure			kPa	300	300	300
Water connections with or without hydraulic module						
Diameter			inch	1 M	1 M	1 M
Outside tube diameter			mm	25.4 M	25.4 M	25.4 M
Chassis paint colour				Beige		

* In accordance with standard EN14511-3:2013.
** In accordance with standard EN14825:2016, average climate
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
CA3 Cooling mode conditions: evaporator water entering/leaving temperature 0°C/-5°C, outside air temperature 35°C, evaporator fouling factor 0 m² K/W, with 20% ethylene glycol
□s cool $_{23/18°C}$ & SEER $_{23/18°C}$ Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application
Note: Low temperature comfort application not allowed in European Union, Iceland, Norway, Liechtenstein and Turkey according to Ecodesign Regulation (EU) N°2016/2281
(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Weights are guideline only. Refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

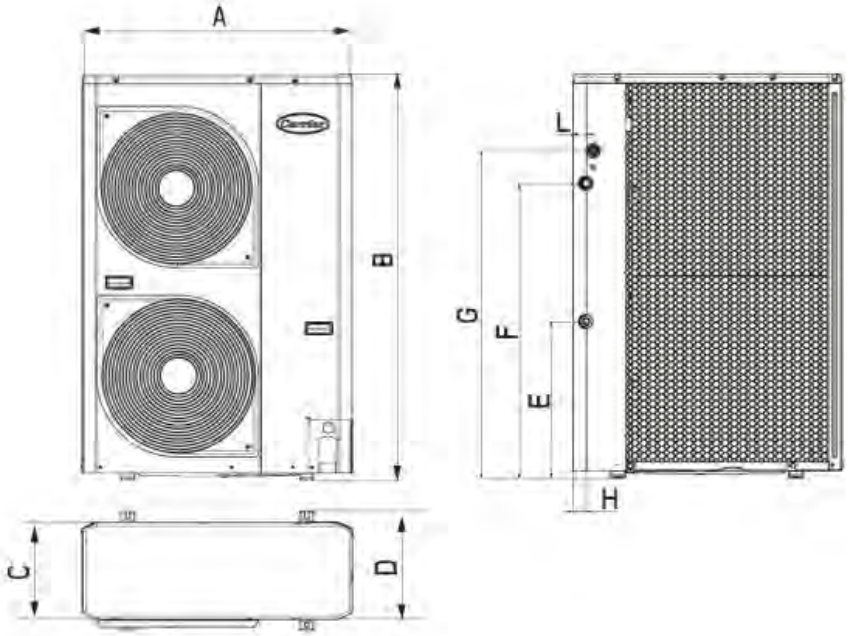
ELECTRICAL DATA

30RB/RQ		008	012	015
Power circuit				
Nominal power supply	V-ph-Hz	400-3-50 + neutral		
Voltage range	V	376-424		
Control circuit supply		24 V via internal transformer		
Maximum start-up current (Un)(1)	A	30	66	73
Unit power factor at nominal capacity(2)		0.88	0.84	0.85
Maximum operating power input(2)	kW	3.1	4.4	5.5
Nominal unit operating current draw(3)	A	4.5	6.3	9.1
Power fuse current (gL fuse)	A	10	16	20
Power supply cable section	mm^2	H07RN-F - 5 x 2.5 mm^2	H07RN-F - 5 x 2.5 mm^2	H07RN-F - 5 x 2.5 mm^2
Maximum pump current (external pump or water circulator)	A	2	2	2
Number of fan motor capacitors (5 µF/450 V)		1	2	2
Power supply cable section, remote controller	mm^2	H03VV-F - 7 x 0.5 mm^2	H03VV-F - 7 x 0.5 mm	H03VV-F - 7 x 0.5 mm

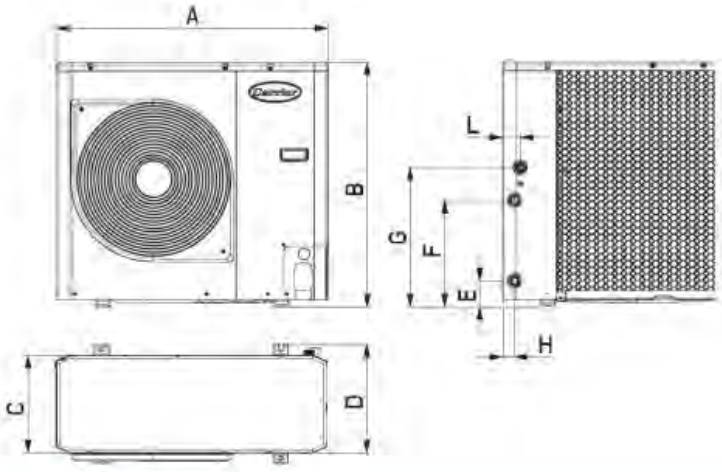
(1) Maximum instantaneous start-up current (locked rotor current of the compressor).
(2) Power input, compressors and fans, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).
(3) Standardised Eurovent conditions: water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

DIMENSIONS, MM

30RB 012-015



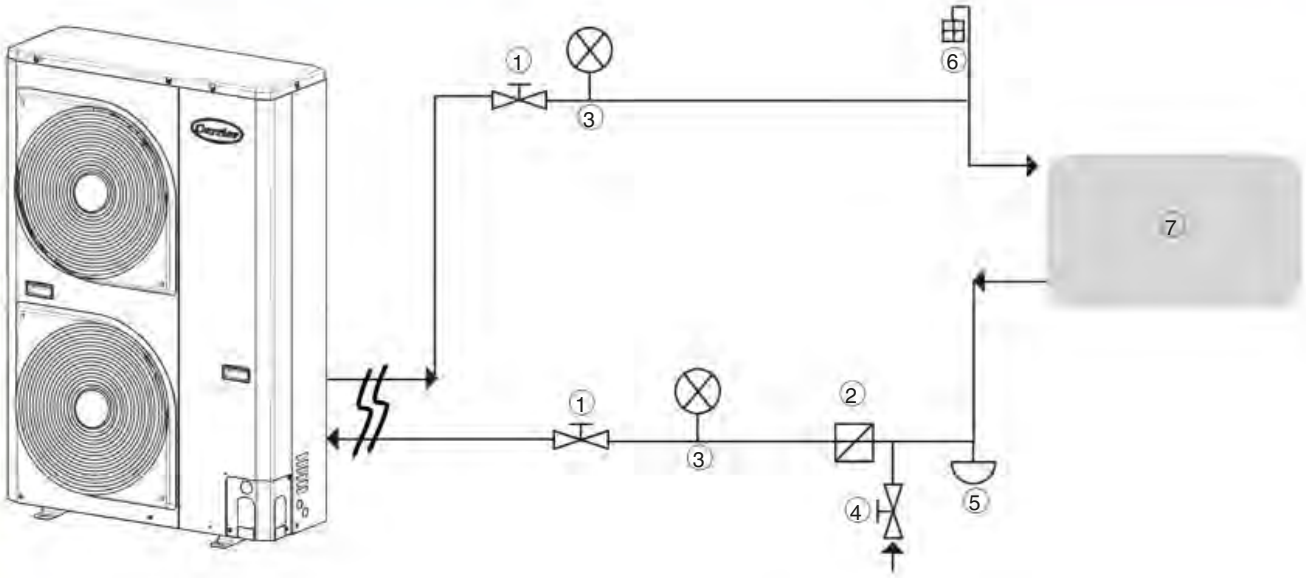
30RB 008



30RB	A	B	C	D	E	F	G	H	L	Net weight, kg	Gross weight, kg
008-9 with hydraulic module	908	821	326	350	87	356	466	40	60	75.5	82.5
008X9 without hydraulic module	908	821	326	350	87	356	466	40	60	73.5	80.5
012-9 with hydraulic module	908	1363	326	350	529	995	1105	44	69	114	121
012X9 without hydraulic module	908	1363	326	350	529	995	1105	44	69	108	114
015-9 with hydraulic module	908	1363	326	350	529	995	1105	44	69	116	123
015X9 without hydraulic module	908	1363	326	350	529	995	1105	44	69	110	116

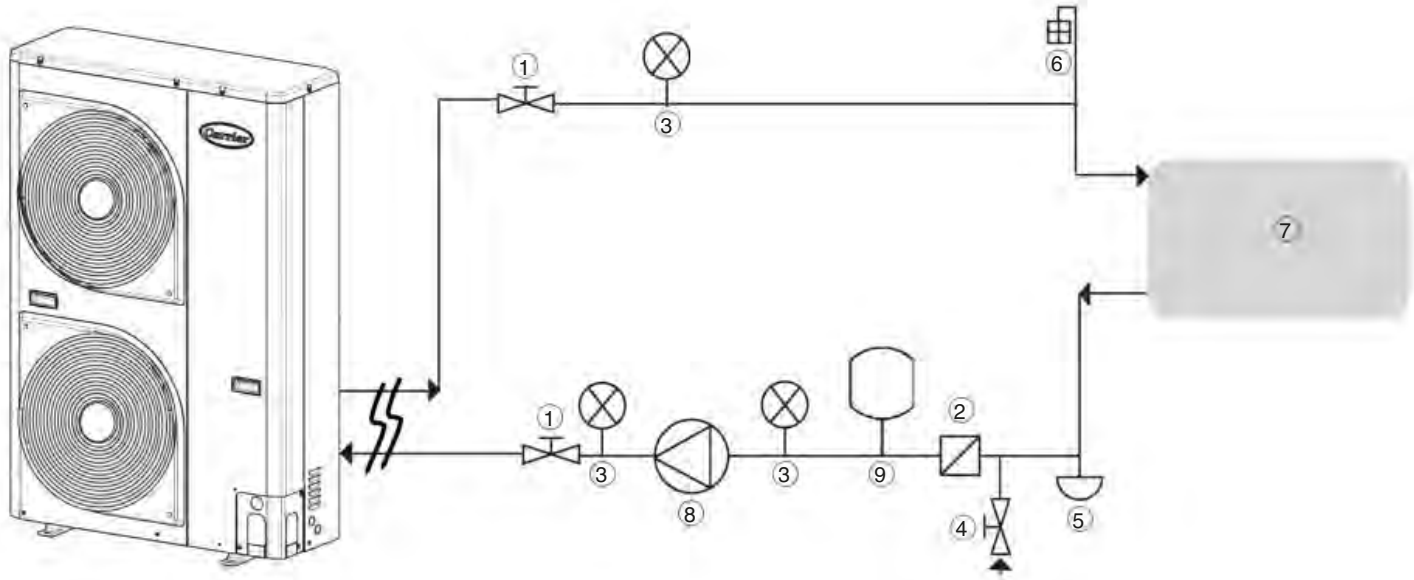
RECOMMENDED HYDRAULIC CIRCUIT INSTALLATION

Typical water circuit diagram, 30RB units with integrated water pump



Legend
1 Shut-off valves
2 Line filter for water (10 mesh/inch)
3 Pressure gauges
4 Charge valve
5 System drain valve (at the lowest point of the circuit)
6 Air vent valve (in the highest part of the circuit)
7 Customer system

Typical water circuit diagram, 30RB units without integrated water pump



Legend
1 Shut-off valves
2 Line filter for water (10 mesh/inch)
3 Pressure gauges
4 Charge valve
5 System drain valve (at the lowest point of the circuit)
6 Air vent valve (in the highest part of the circuit)
7 Customer system
8 Water circulation pump
9 Expansion tank

DUCTABLE AIR-COOLED SCROLL CHILLERS

- Packaged unit all in one
- High efficiency
- Silent operation
- Configuration flexibility
- Ductable feature for indoor installation

30PA

Nominal cooling capacity 11-22kW

The 30PA cooling only are compact outdoor air/water units. Available in two versions: STD (Standard) and HEE (High Energy Efficiency).

These units have been made for operation indoors, offers an optimal solution for all process cooling applications.

They are equipped with centrifugal fan (STD version) or electronic plug-fan (HEE version), plate exchanger, hermetic scroll compressor, and electronic control with microprocessor, components optimised for the R-410A refrigerant.

The entire range also has the option to include a desuperheater circuit that allows for the production of hot water at a temperature greater than in the condensation circuits.

All units are charged with refrigerant and are tested at the factory, verifying the correct operation of all their components.

EUROVENT CERTIFIED PERFORMANCE
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CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

SEASONAL PERFORMANCE

The Seasonal Energy performance Ratio (SEPR) measures the seasonal energy efficiency of liquid chillers for process applications by calculating the ratio between the annual process cooling demand and the cooler's annual energy demand.

It takes into account the energy efficiency at each outdoor temperature for the average European climate weighted by the number of hours observed for each of these temperatures. The SEPR is a new way of measuring the energy efficiency of process liquid chillers over an entire year. The new indicator provides a more realistic overview of the cooling system's energy efficiency and its actual impact on the environment (Ecodesign regulation 2015/1095).

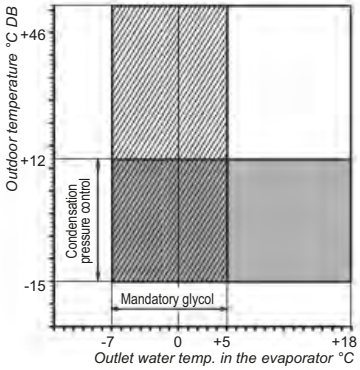
RANGE

Models	STD version (Standard)	HEE version (High Energy Efficiency)
1 circuit 1 compressor	90 / 100 / 120 / 160 / 180	90 / 100 / 120 / 160 / 180

OPERATION LIMITS

Series	Cooling mode			
	Air		Water (outlet T.)	
	ax.	in.	ax.	in.
30PA	46°C	12°C (1)	18°C	5°C (2)

(1) With control of the condensation pressure operating up to -15°C.
(2) Minimum outlet temperature. With the option of glycol water for lower temperature operation from 5°C to -7°C.



UNIT COMPONENTS

Casing

- Casing made of galvanised steel metal with polyester paint, colour RAL 7035. Self-supporting and isolated frame.

Outdoor circuit

- Coil with copper pipes and aluminium fins.
- Condensate drain pan.
- Choice of air supply position:
  • HORIZONTAL: M00 assembly or vertical: M01 assembly.
- Supply fan:

STD Version (Standard):
• Centrifugal fan coupling by pulleys and belts.
• Electric motor with tensioner, energy-efficient IE2 motors, class F, IP55, and internal thermal protection.
• One double-intake turbine, with an impeller with front-curved blades. Greased spherical bearings, with no maintenance required.
• Choice of available pressure from 7 to 35 mm.w.c.

HEE Version (High Energy Efficiency):
• Variable speed electronic plug-fan(s) with condensation pressure control which adapt their rotation speed to the installation requirements, thereby reducing electricity consumption, the sound level at partial charge, and improving the average seasonal output of the unit (ESEER).
• Energy-efficient ErP 2015 motor, Class F, IP54, and internal thermal protection.

Cooling circuit

- Hermetic scroll-type compressor, with acoustic insulating cover, assembled over antivibration mounts. Control of phase equilibrium and the direction of rotation.
- Crankcase heater.
- Thermostatic expansion valve with external equalisation.
- Anti-acid dehydrating filter.

UNIT COMPONENTS

Indoor circuit

- Thermally isolated, welded stainless steel plate exchanger.

Protections

- High and low pressure pressostats.
- Differential pressure switch for control of water flow.
- Water anti-freeze protection built into the control, depending on the temperature measured by the probe placed on the exchanger outlet.
- Refrigerant anti-freeze protection.
- Compressor discharge temperature control.
- Non-return valve built into the compressor discharge.
- Compressor thermal protection.
- Main door switch.
- Automatic switch in the control circuit.
- Magnetothermic protection switches for the compressor and fan motor power line.
- Timing the disconnection of the circulation pump.
- Failure safety device for the circulation pump.

Electric panel

- Complete and fully wired electric panel. Insulated panel cover to prevent condensation.
- IP55 protection.
- Power supply with neutral and main ground connection.
- Compressor and fan motor contacts.

Electronic control 30PA

The **30PA control** l is basically comprised of a µPC SMALL control board, a pGD1 graphic terminal, a TCO user terminal (optional for remote control) and sensors.

This control allows the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex, Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.

Main functions:.

- Selection of inlet water temperature set-points
- Permanent control and optimization of the operating parameters
- Safety management.
- Timing of the compressor.
- Control of condensation and evaporation pressures.
- Control of outdoor electronic plug-fan (HEE version).
- Control of the circulation pump.
- Regulation of the water outlet temperature.
- Compensation of the set-point based on the outdoor temperature.
- Timer and weekly programming.
- Failure diagnosis and main alarm.

pGD1 terminal

This graphic terminal, installed on the electric panel of the machine, allows:

- The initial programming of the unit
- Modification of operating parameters.
- Unit ON / OFF.
- Selection of the operating mode.
- Setting of set-points.
- On-screen display of controlled variables and sensor values measured.
- On-screen display of active alarms and historical record of alarms.

TCO user terminal (optional for remote control):

The TCO user terminal, for remote control, allows:

- Modification of some operating parameters.
- Unit ON / OFF.
- Selection of the operating mode and setting of set-points.
- On-screen display some controlled variables and probe values.
- On-screen display of alarms codes.

OPTIONS

Configuration

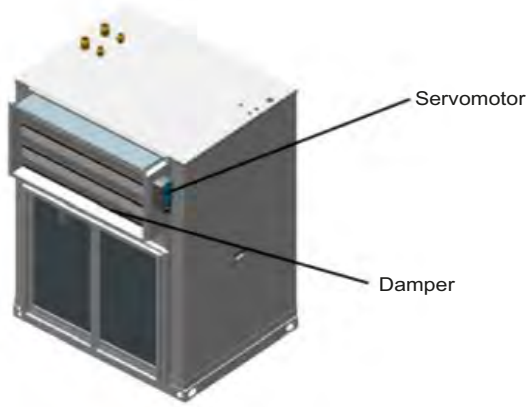
- Vertical air supply, M01 assembly (default horizontal supply, M00 assembly).
- In the STD version: Different configurations of available pressure from 7 to 35 mm.w.c. Configuration
- Vertical air supply, M01 assembly (default horizontal supply, M00 assembly).
- In the STD version: Different configurations of available pressure from 7 to 35 mm.w.c.

M00

M01

Climatic conditions

- In units with the STD version that work in cooling with an outdoor temperature lower than 12ºC, the condensation pressure control allowing an “all seasons” operation (up to -15ºC) is mandatory. This is performed per motorized damper in the fan outlet.



- Coils protection:
  - Coil with copper pipes and copper fins (upon request).
  - Coil with copper pipes and aluminium fins with polyurethane and blygold coating.
- During periods with low outdoor temperatures, anti-freeze protection for the unit:
  - Electrical heaters in the condensate drain pan. Mandatory when outdoor temperatures are below 3°C.
  - Operation with glycol water up to a minimum outlet temperature of -7ºC.
  - Anti-freeze protection with flexible electrical heaters around the pipe of the hydraulic circuit.

Installation

- Antivibration mounts made of rubber.
- Protection grille for the coil.
- Gravimetric filters in the return air. The filters frame is removable, and upon request, it is possible to supply the frame independently with the unit, to be joined on site.
- Flexible ducts for supply and return air.
- Flexible hydraulic connections (500mm), supplied in the kit.

Available for:

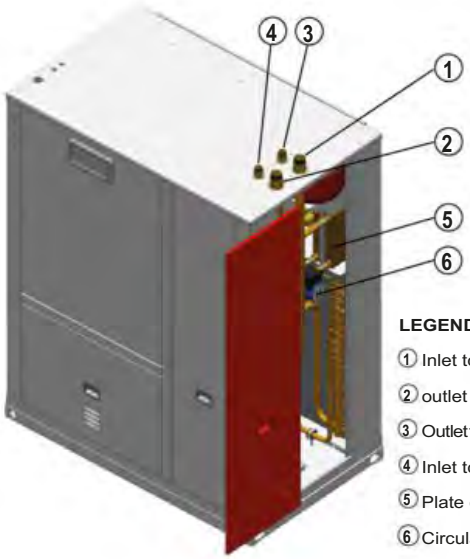
- Inlet / outlet of the unit.
- Inlet / outlet of the desuperheater circuit.

- For 30PA units, filter with stainless steel mesh (500 microns), supplied in the kit.
- Cut-off and water control valves, supplied in the kit.
- High-pressure and low-pressure gauges in the cooling circuit.

Energy recovery

Desuperheater circuit which includes:

- Thermally isolated, welded stainless steel plate exchanger for working in a closed circuit in the recovery of hot gases.
- Draining valve and ball valve
- Hot water recovery control thermostat.
- Option for a 3-speed hot water circulation pump.



LEGEND

1. Inlet to the indoor circuit
2. outlet from the indoor circuit
3. Outlet from the recovery circuit
4. Inlet to the recovery circuit
5. Plate exchanger
6. Circulation pump (optional)

Electric panel

- Compressor soft starter.
- Transformer for power supply without neutral.
- Voltage 400 / 440V - 60 Hz (upon request).
- Energy meter for monitoring of the power consumption of the installation.

Control / communications management

- TCO user terminal, for remote control.
- RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnetTM MSTP, Konnex.
- Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnetTM Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.

STD VERSION: TECHNICAL CHARACTERISTICS

30PA		90STD	100STD	120STD	160STD	180STD
Cooling capacities	Net cooling capacity (1) (kW)	17,7	21,1	25,2	32,7	36
	Net power input (2) (kW)	7,75	9,15	10	12,6	14,4
	Net efficiency EER	2,29	2,31	2,51	2,6	2,49
	Net cooling capacity (3) (kW)	11,42	11,92	15,6	20,15	22,12
	Net power input (2) (kW)	7,35	8,54	9,73	11,69	13,46
	SEPR $_{-2/-8°C}$ Process medium temp (4) (kWh/kWh)	**2,72**	**2,57**	**2,9**	**2,93**	**2,89**
Outdoor circuit centrifugal fan	Nominal air flow (m^3/h)	6500	7000	10000	12200	12200
	Available static pressure (mm.w.c.)	20				
	Number / turbines	1				
	Motor output (kW)	2,2	2,2	3,0	4,0	4,0
	Power input (kW) (5)	1,46	1,77	2,33	2,83	2,83
	Speed (r.p.m.)	973	1027	837	734	734
Indoor circuit	Nominal water flow (m^3/h)	3,1	3,7	4,3	5,7	6,2
	Pressure drop (m.w.c.)	2,3	3,2	2,9	4,7	2,9
	Minimum water flow (m^3/h)	2,2	2,7	3,1	4,1	4,3
	Maximum water flow (m^3/h)	6,2	7,4	8,8	11,3	12,7
	Type of hydraulic connections	Gas threaded				
	Diameter of connections	1 1/4" M		1 1/2" M		
Compressor	Type	Scroll				
	Number of compressors / stages / circuits	1 / 1 / 1				
	Oil type	Copeland 3MAF 32 cST, Danfoss POE 160 SZ, ICI Emkarate RL 32 CF, Mobil EAL Artic 22 CC				
	Volume of oil (l)	3,0	3,3	3,3	3,3	6,2
Refrigerant	Type	R-410A				
	Global warming potential (GWP) (6)	2.088				
	Charge (kg)	5,9	6,1	6,6	6,9	7,6
	Environment impact (tCO2 e)	12,3	12,7	13,8	14,4	15,9
Electrical characteristics	Electrical power supply	400 V / III ph / 50 Hz (±10%)				
	Power supply	3 Wires + Ground + Neutral				
Maximum absorbed current	Compressor (A)	15,2	17,3	20,5	25,4	30,5
	Fan (A)	5,0	5,0	6,9	8,9	8,9
	Control (A)	0,9	0,9	0,9	0,9	0,9
	Total (A)	21,1	23,2	28,3	35,2	40,3
Dimensions	Length (mm)	1117		1398		
	Width (mm)	860		860		
	Height (mm)	1447		1727		
Weight	Empty (kg)	302	310	372	390	388
	In operation (kg)	306	315	379	397	396

(1) Cooling capacity calculated in accordance with the EN-14511-2013 standard given for outlet water temperature conditions of 7°C and 35°C outdoor temperature
(2) Total power input by compressor, motorised fan and electronic control under nominal conditions, calculated in accordance with the EN-14511-2013 standard. Options are not included.
(3) Cooling capacity calculated in accordance with outlet water temperature conditions of -2/-8°C and 35°C outdoor temperature.
(4) **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
(5) Energy-efficient motors IE2.
(6) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEE VERSION: TECHNICAL CHARACTERISTICS

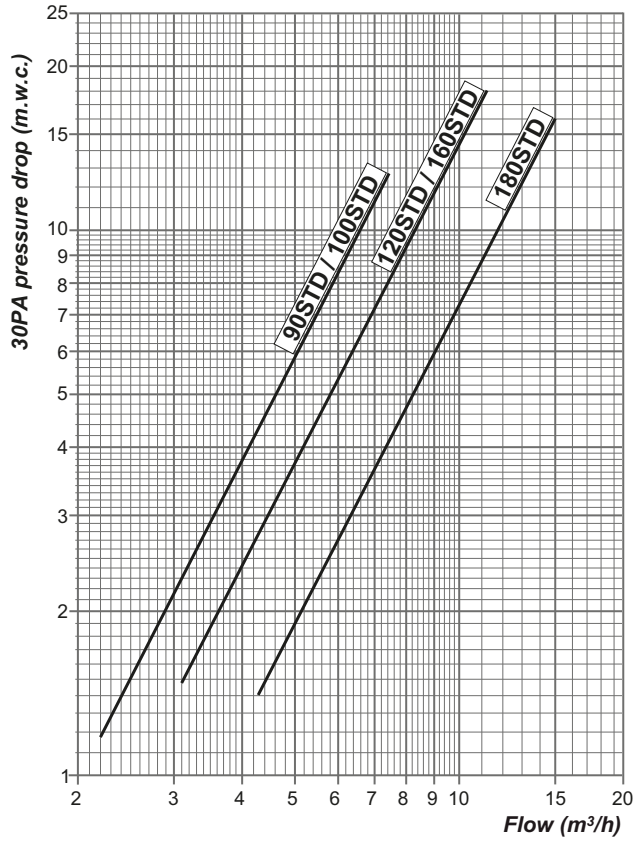
30PA		90HEE	100HEE	120HEE	160HEE	180HEE
Cooling capacities	Net cooling capacity (1) (kW)	18,4	21	25,5	31,4	35,7
	Net power input (2) (kW)	7,2	7,95	9,1	11,5	13,6
	Net efficiency EER	2,55	2,64	2,81	2,74	2,62
	Net cooling capacity (3) (kW)	10,98	12,89	15,66	19,28	20,74
	Net power input (2) (kW)	6,7	7,32	8,44	10,3	12,11
	SEPR $_{-2/-8ºC}$ Process medium temp (4) (kWh/kWh)	**2,99**	**3,28**	**3,54**	**3,34**	**3,09**
Outdoor circuit plug-fan	Nominal air flow (m^3/h)	6500	7000	10000	12200	14000
	Nominal available static pressure (mm.w.c.)	20				
	Maximum available static pressure (mm.w.c.)	63,7	70,3	45,6	65,1	62,7
	Number / diameter	1 / 500		1 / 560	2 / 560	
	Motor output (kW)	2,7	2,8	3,0	2 x 3,0	
	Power input (kW) (5)	1,33	1,21	1,87	2,20	2,52
	Speed (r.p.m.)	1700	1780	1500	1500	
Indoor circuit	Nominal water flow (m^3/h)	3,2	3,7	4,5	5,4	6,2
	Pressure drop (m.w.c.)	1,6	2,1	1,6	2,4	3,1
	Minimum water flow (m^3/h)	2,5	2,9	3,4	4,1	4,6
	Maximum water flow (m^3/h)	6,6	7,4	9,1	11,3	12,8
	Type of hydraulic connections	Rosca gas				
	Diameter of connections	1 1/4" M		1 1/2" M		
Compressor	Type	Scroll				
	Number of compressors / stages / circuits	1				
	Oil type	Copeland 3MAF 32 cST, Danfoss POE 160 SZ, ICI Emkarate RL 32 CF, Mobil EAL Artic 22 CC				
	Volume of oil (l)	3,0	3,3	3,3	3,3	6,2
Refrigerant	Type	R-410A				
	Global warming potential (GWP) (6)	2.088				
	Charge (kg)	6,0	6,3	6,8	8,9	9,2
	Environment impact (tCO2 e)	12,5	13,2	14,2	18,6	19,2
Electrical characteristics	Electrical power supply	400 V / III ph / 50 Hz (±10%)				
	Power supply	3 Hilos + Tierra + Neutro				
Maximum absorbed current	Compressor (A)	15,2	17,3	20,5	25,4	30,5
	Fan (A)	4,2	4,3	4,6	9,2	9,2
	Control (A)	0,9	0,9	0,9	0,9	0,9
	Total (A)	20,3	22,5	26,0	35,5	40,6
Dimensions	Length (mm)	1117	1398		2113	
	Width (mm)	860	860		860	
	Height (mm)	1447	1727		1447	
Weight	Empty (kg)	294	351	368	450	455
	In operation (kg)	298	358	376	465	468

(1) Cooling capacity calculated in accordance with the EN-14511-2013 standard given for outlet water temperature conditions of 7ºC and 35ºC outdoor temperature
(2) Total power input by compressor, motorised fan and electronic control under nominal conditions, calculated in accordance with the EN-14511-2013 standard. Options are not included.
(3) Cooling capacity calculated in accordance with outlet water temperature conditions of -2/-8ºC and 35ºC outdoor temperature.
(4) **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
(5) Energy-efficient motors IE2.
(6) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

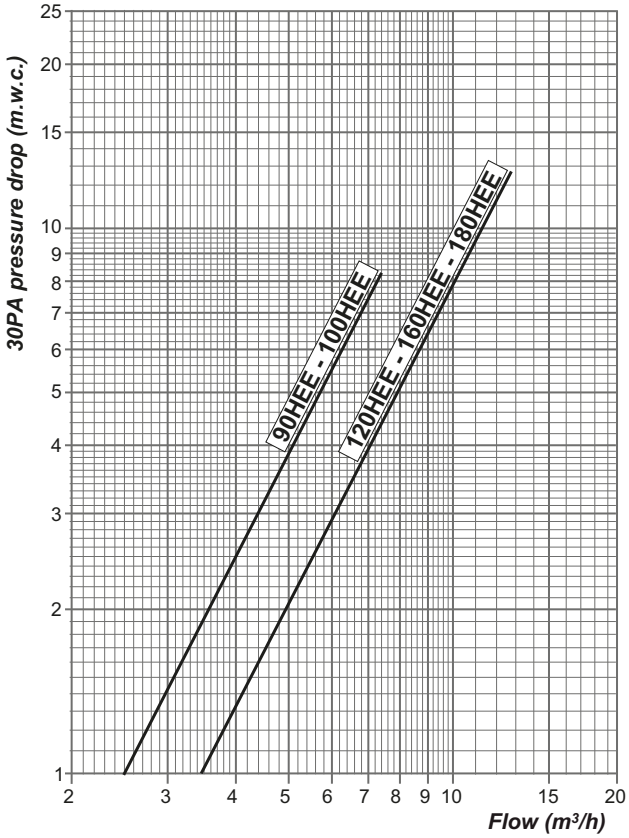
EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

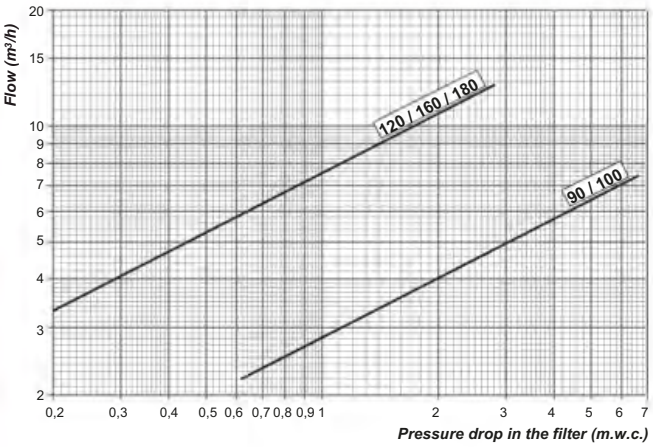
GRAPHS OF PRESSURE DROPS IN STD VERSION



GRAPHS OF PRESSURE DROPS IN HEE VERSION



PRESSURE DROPS IN THE MESH FILTER (SENT IN THE KIT)



It is also necessary to install a filter in the hydraulic power supply to the unit in order to prevent clogging of the plate exchanger. Non-compliance with this recommendation can cause reduced flow which can lead to freezing and breaking of the exchanger.

Optionally, this kit can be supplied for 30PA units.

MINIMUM VOLUME OF WATER ADMISSIBLE IN THE INSTALLATION (COOLING MODE)

The electronic control for the 30PA units incorporates an auto-adaptive control for the compressor operating time based on the time set for anti-short-cycle. This control reduces the number of times the compressor is started up and permanently adjusts the system's thermal inertia, favouring the reduction of the minimum volume of water in the installation. The size of the buffer tank can also be decreased since the unit will be stopped for less time.

30PA	STD version					HEE version				
	90STD	100STD	120STD	160STD	180STD	90HEE	100HEE	120HEE	160HEE	180HEE
Minimum volume (litres)	101	120	143	187	204	107	132	152	189	210

The calculation of the minimum water volume has been done for nominal EUROVENT conditions, only in cooling mode. This value is applicable for the majority of refrigeration applications (group with fan-coil units).

Note: the buffer tank is indispensable in installations that operate with a reduced volume of water (group with an air handling unit) or for industrial processes.

SOUND LEVELS

Unit sound power level

Measurement conditions: ducted discharge and return. For nominal operating conditions EN 14511 – Acoustic power reference: 10E-12 W, tolerance of ±2 dB (partial charge of ±4 dB).

30PA		STD version					HEE version				
		90STD	100STD	120STD	160STD	180STD	90HEE	100HEE	120HEE	160HEE	180HEE
63 Hz	dB(lin)	73,8	74,2	74,4	74,4	74,4	71,1	73	73,1	73,1	73,1
125 Hz	dB(lin)	73,2	73,6	73,8	73,8	73,8	70,9	72,8	72,9	72,9	72,9
250 Hz	dB(lin)	70,2	70,6	70,8	70,8	70,8	67,5	69,4	69,5	69,5	69,5
500 Hz	dB(lin)	65,3	65,7	65,9	65,9	65,9	65,4	67,3	67,4	67,4	67,4
1000 Hz	dB(lin)	63,0	63,4	63,6	63,6	63,6	62,4	64,3	64,4	64,4	64,4
2000 Hz	dB(lin)	62,2	62,6	62,8	62,8	62,8	59,5	61,3	61,5	61,5	61,4
4000 Hz	dB(lin)	58,2	58,6	58,8	58,8	58,8	56,5	58,4	58,5	58,5	58,5
8000 Hz	dB(lin)	49,3	49,7	49,9	49,9	49,9	49,4	51,3	51,4	51,4	51,4
Total	dB(A)	69,4	69,8	70,0	70,0	70,0	68,0	69,9	70,0	70,0	70,0

Note: The unit has acoustic insulating cover for compressor (Low Noise version).

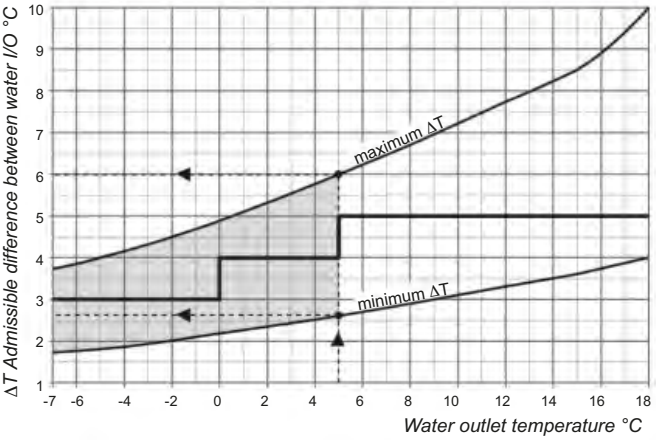
Sound pressure level

Measurement conditions: in a clear field, measured at a distance of 10 metres, directivity 2 and at 1,5 metres from the ground.

30PA		STD version					HEE version				
		90STD	100STD	120STD	160STD	180STD	90HEE	100HEE	120HEE	160HEE	180HEE
Total	dB(A)	38,0	38,4	38,4	38,4	38,4	36,6	38,3	38,4	38,4	38,4

Note: The sound pressure level depends on the installation conditions and, as such, is only indicated as a guide. Values obtained according to standard ISO 3744.

EVAPORATOR OPERATING LIMITS



The curves represent the minimum and maximum admissible temperature increases based on the outlet temperature, for both pure water and glycol water.

The minimum outlet temperature for the unit will be +5ºC with pure water and -7ºC with glycol water.

For temperature changes that are not listed between the curves, please consult.

• Example

For an outlet water temperature of +5ºC:

Minimum ΔT: 2,6ºC → T. condition 7,6ºC / 5ºC

Maximum ΔT: 6,0ºC → T. condition 11ºC / 5ºC

OPERATION WITH GLYCOL WATER

Correction coefficients			Positive conditions		Negative conditions	
			K	Calculation method	K	Calculation method
Evaporator	Cooling capacity	E1	0,98	Pfc = Pf x 0,98	1,0	According to the table of capacities
	Cold water flow	E2	1,05	Qc = [(Pfc x 0,86) / ΔT] x 1,05	1,1	Qc = [(Pfc x 0,86) / ΔT] x 1.1
	Water flow resistance	E3	1,15	ΔPc = ΔP x 1,15	1,3	ΔPc = ΔP x 1.3
	Average working conditions		12 / 7 ºC		See evaporator operating limits	
Condenser	Heating capacity	E1	0,97	Pfc = Pf x 0,97	--	
	Hot water flow	E2	1,05	Qc = [(Pfc x 0,86) / ΔT] x 1,05	-	
	Water flow resistance	E3	1,10	ΔPc = ΔP x 1,10	--	
	Average working conditions		35 / 40 ºC		--	

Example selection for operation with glycol water in the evaporator

Positive condition - Anti-freeze operation

DATA
- Unit: 30PA-100TD
- Temperature of inlet cold water: +12ºC
- Temperature of outlet cold water: +7ºC
  ΔT = +5ºC
- Outdoor air temperature: 35 ºC
- Mono-ethylene glycol (MEG): 30%

DETERMINE
- Cooling capacity, glycol water flow, and pressure available.

SOLUTION
- Cooling capacity (table of capacities): 21,29 x 860 = 18.309 kcal/h
- Correction coefficient E1 = 0,98
- Corrected cooling capacity: Pfc = 18.309 x 0,98 = 17.943 kcal/h
- Cold water flow: Q = 17.943 / 5 = 3.589 l/h = 3,59 m3/h
- Correction coefficient E2 = 1,05
- Corrected flow: Qc = 3,59 x 1,05 = 3,77 m3/h
- Water flow resistance (according to the graph): ΔP = 3,9 m.w.c.
- Correction coefficient E3 = 1,15
- Corrected water flow resistance: ΔPc = 3,9 x 1,15 = 4,5 m.w.c.

Negative conditions

DATA
- Unit: 30PA-180STD
- Temperature of inlet cold water -1ºC
- Temperature of outlet cold water: -4ºC
  ΔT = +3ºC
- Outdoor air temperature: 30 ºC
- Mono-ethylene glycol (MEG): 30%

DETERMINE
- Cooling capacity, glycol water flow, and pressure available.

SOLUTION
- Cooling capacity (table of capacities): 26,51 x 860 = 22.799 kcal/h
- Correction coefficient E1 = 1,0
- Corrected cooling capacity: Pfc = 22.799 x 1,0 = 22.799 kcal/h
- Cold water flow: Q = 22.799 / 3 = 7.599 l/h = 7,60 m3/h
- Correction coefficient E2 = 1,1
- Corrected flow: Qc = 7,60 x 1,1 = 8,36 m3/h
- Water flow resistance (according to the graph): ΔP = 8,0 m.w.c.
- Correction coefficient E3 = 1,3
- Corrected water flow resistance: ΔPc = 8,0 x 1,3 = 10,4 m.w.c.

EVAPORATOR OPERATING LIMITS

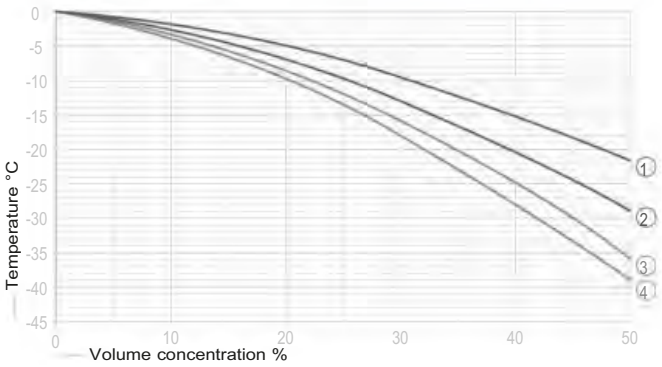
Anti-freeze protection with glycol water: Freezing point

The following table and curves feature the minimum glycol percentages required for the installation in accordance with the freezing point.

Warning: the glycol concentration must keep the fluid at least 6ºC below the outlet water temperature foreseen in the evaporator in order to allow a correct adjustment of the evaporator's minimum pressure regulation. If the concentration is below the necessary amount, there is a risk of freezing. Conversely, over-concentration could lead to a drop in performance.

Concentration	%	0	10	20	30	40	50
Mono-ethylene glycol (MEG)	ºC	0	-3	-7	-13	-20	-29
Mono-propylene glycol (MPEG)	ºC	0	-2	-5	-10	-15	-21

Note: The values are offered as a guide according to the standard characteristics of the MEG. These may vary based on the MEG manufacturer, which is why it is necessary to consult the manufacturer data in order to guarantee protection up to the desired temperature.



Minimum usage temperature:
① Mono-propylene glycol
② Mono-ethylene glycol

Freezing temperature:
③ Mono-propylene glycol
④ Mono-ethylene glycol

CORROSION BEHAVIOUR

Corrosion problems may be present in the hydraulic circuit, and in particular the plate exchangers, if the characteristics of the water and its variations are not adequate.

It is recommended that the water filling the hydraulic circuits be filtered and treated, if necessary.

The units' hydraulic circuits are made of copper pipes. The exchanger plates are made of AISI-316 stainless steel, and the material used for soldering the plates is copper.

The following table indicates corrosion behaviour for copper and the AISI-316 stainless steel with regard to water with different compositions.

IMPORTANT: For open-circuit installations, if it is not possible to maintain the water conditions within the values indicated in the previous table, it will be necessary to install an exchanger that separates the unit's circuit from the water circuit to be treated by using materials compatible with these characteristics, whether stainless steel or titanium.

Water content	Concentration (mg/l)	AISI 316	Copper
Organic substances		+	0
Electrical conductivity	< 500 mS/cm	+	+
	> 500 mS/cm	+	-
NH3	< 2	+	+
	2 - 20	+	
	> 20	+	-
Chlorides *	< 300	+	+
	> 300	0	+
Sulphites, chloride-free	< 5	0	+
	> 5	0/-	0
Iron in solution	< 10	+	+
	> 10	+	0
Free carbonic acid	< 20	+	0
	20 - 50	+	-
	50	+	-
Manganese in solution	< 1	+	+
	> 1	+	0
pH value	< 6	0	+
	6 - 9	0/+	+
	> 9	+	0
Oxygen	< 2	+	+
	> 2	+	+
Sulphates	< 70	+	+
	70 - 300	+	0
	> 300	-	-

* Max. 60ºC
\+ Good resistance under normal conditions.
0 There may be corrosion problems, especially if other factors intervene.
\- Not advisable.

COOLING RECOVERY CIRCUIT (OPTIONAL)

The system consists in a hot water supplying by an heat recovery system on the compressor discharge gas, on an auxiliary desuperheater exchanger.

This optional equipment is only available on request, and factory mounted.

Operating mode

The heat recovery is possible only if the machine is running.

For the same cooling or heating capacity, the desuperheater system allows a free heating of hot water with a reduction of the total input power of the machine.

Principle and precautions of hydraulic connection

In order to allow the unit to start up and to run under good conditions, the circuit must be as short as possible, and the water flow of the desuperheater must start slowly to normal operating condition, with a water flow equal to 10% of its standard value, and must be calculated for a hot water inlet temperature of +50°C.

Thus, it is recommended to have a hydraulic diagram making it possible to obtain very quickly a hot water at the inlet of the desuperheater (3 ways valve + controller + temperature sensor on the exchanger water inlet).

The controller set-point must be adjusted to +50°C minimum.

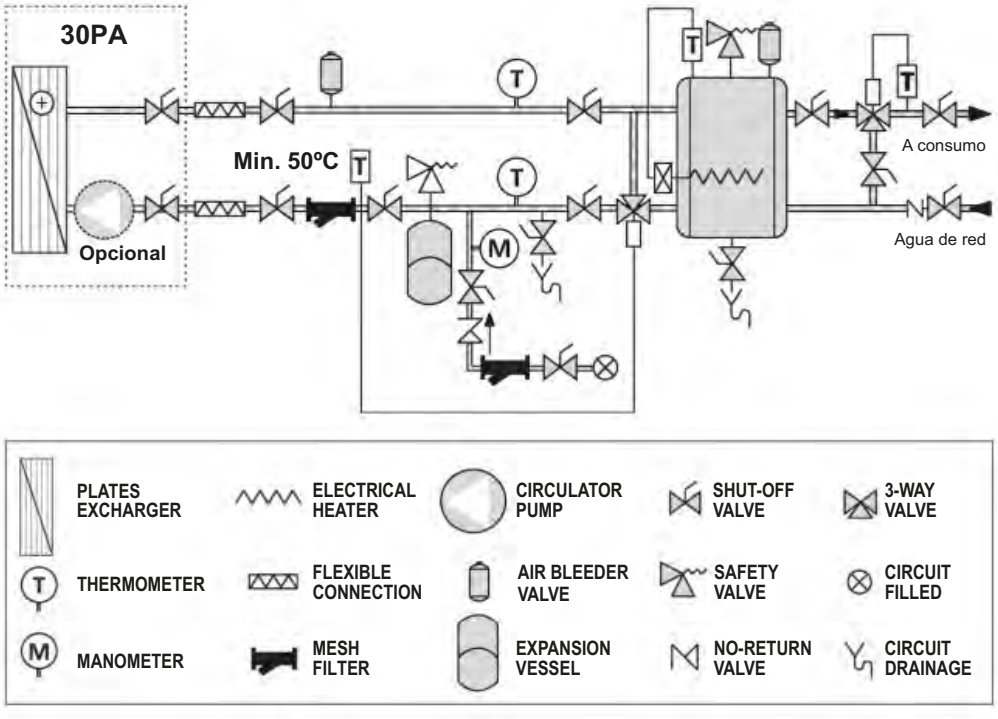
The recovery circuit must be done in accordance with the standards in force and plan all of the necessary elements in a closed circuit: circulation pump (optionally supplied), expansion vessel, safety valve, mesh filter, filler, drainer, bleeders, thermometers, pressure gauges and cut-off and insulation valves.

The circulation pump can only work in a closed circuit. The command is performed from a thermostat located on the unit.

Attention: a detailed attention must carried with the selection of the expansion tank, because the recovery water circuit can reach the temperature of 120°C in the event of stopping of the circulator or non hot water consumption.

- Install heating elements on all pipes that could be exposed to freezing temperatures.

Installation diagram

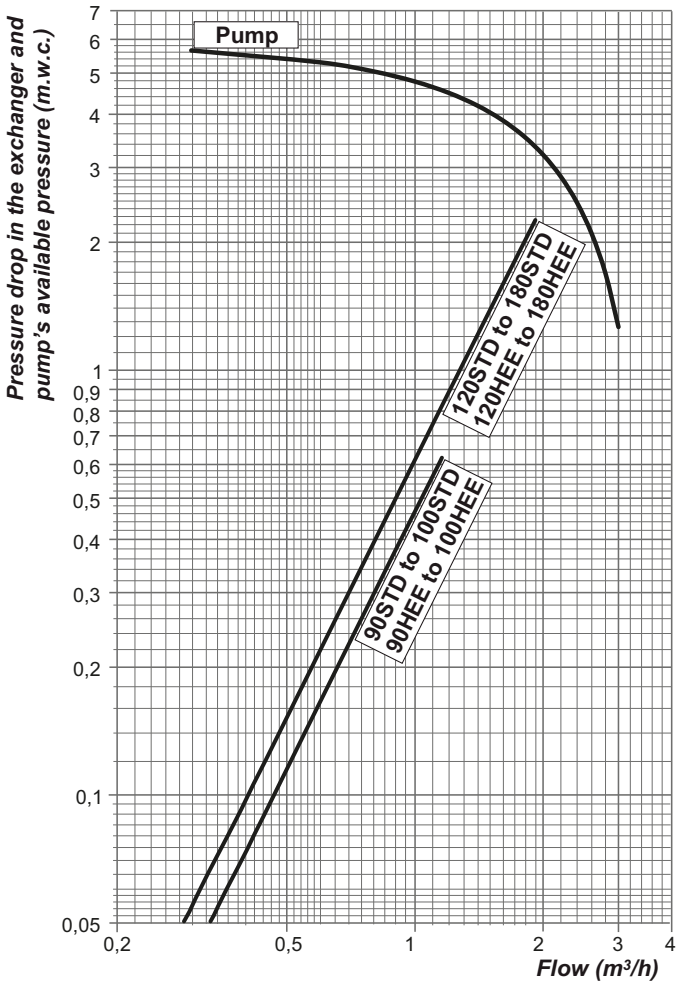


COOLING RECOVERY CIRCUIT (OPTIONAL)

Technical characteristics of the recovery circuit

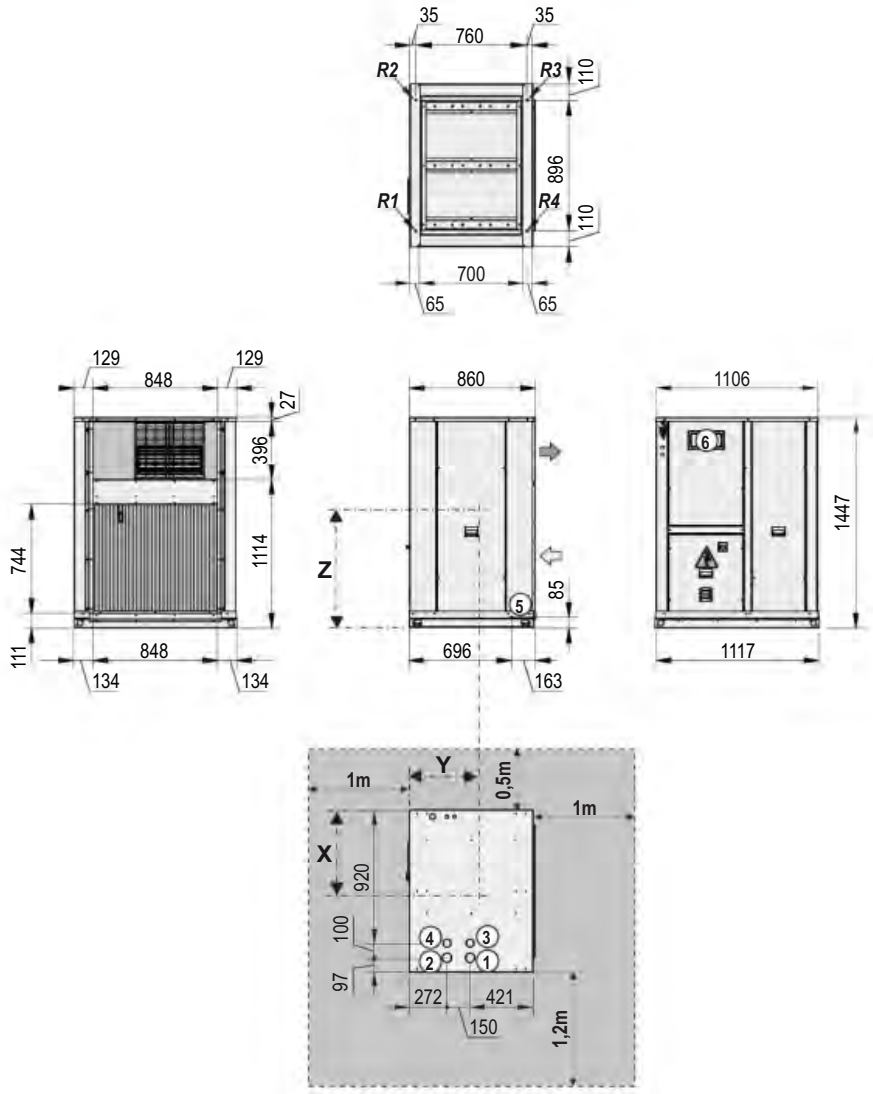
30PA		STD version					HEE version				
		90STD	100STD	120STD	160STD	180STD	90HEE	100HEE	120HEE	160HEE	180HEE
Recovery capacity (1) (kW)		4,4	5,2	6,2	8,1	8,9	4,5	5,2	6,3	7,7	8,8
Nominal water flow (m3/h)		0,38	0,45	0,53	0,70	0,76	0,39	0,44	0,54	0,67	0,76
Pressure drop (m.w.c.)		0,06	0,09	0,17	0,30	0,36	0,07	0,09	0,18	0,27	0,35
Cooling capacity (kW)		17,8	21,3	25,3	33,0	36,2	18,5	21,1	25,6	31,6	35,8
Power input (kW)		6,8	7,9	8,6	10,8	12,7	6,2	7,1	7,8	10,0	11,9
Hydraulic connections	Type	Threaded					Threaded				
	Diameter	1" M					1" M				
Pump (optional)	Type	Humid rotor					Humid rotor				
	Number	1					1				
	Motor output (kW)	0,05					0,05				
	Max. absorbed current (A)	0,4					0,4				
	Avail. pressure (m.w.c.) (max. pump speed) (2)	5,54	5,45	5,35	5,15	5,07	5,52	5,46	5,34	5,19	5,07
Additional weight	Recovery circuit (kg)	5,3	5,3	6,8	6,8	6,8	5,3	5,3	6,8	6,8	6,8
	Pump (optional) (kg)	3,2					3,2				

(1) Capacity recovered by the desuperheater circuit for nominal conditions and recovery water at 50/60°C.
(2) The change of speed of the pump is made by a button that changes color according to the selected speed (blue: low; green: medium; yellow: high).



DIMENSION SCHEMES FOR THE STD VERSION

30PA - 90STD / 100STD with horizontal supply, M00 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ①② protrude 58 mm

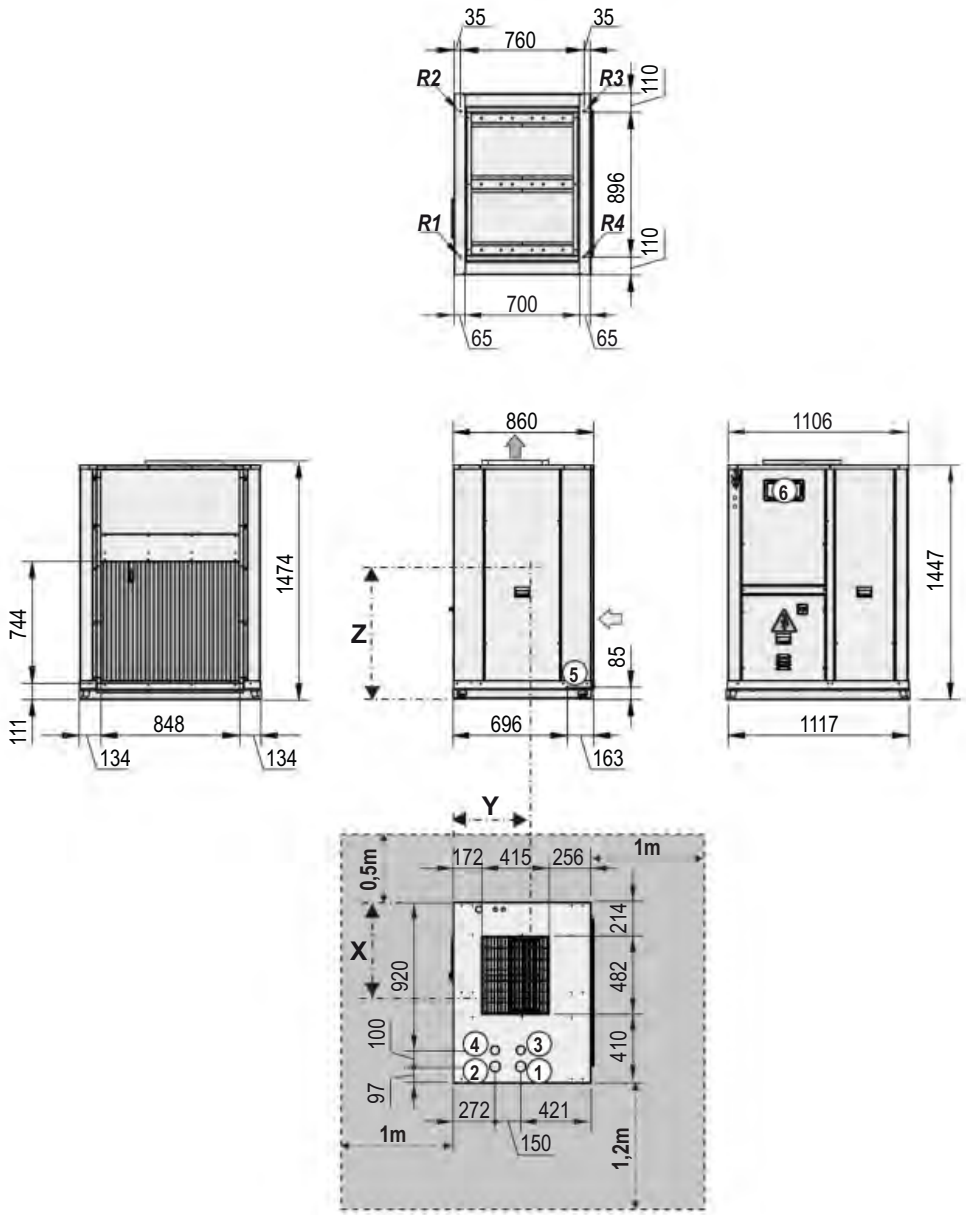
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)				Reactions in the supports (kg)			
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	90STD	453	384	528	306	66	101	87	52
	100STD	488	398	576	315	69	93	84	60

DIMENSION SCHEMES FOR THE STD VERSION

30PA - 90STD / 100STD with VERTICal supply, M01 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ①② protrude 58 mm

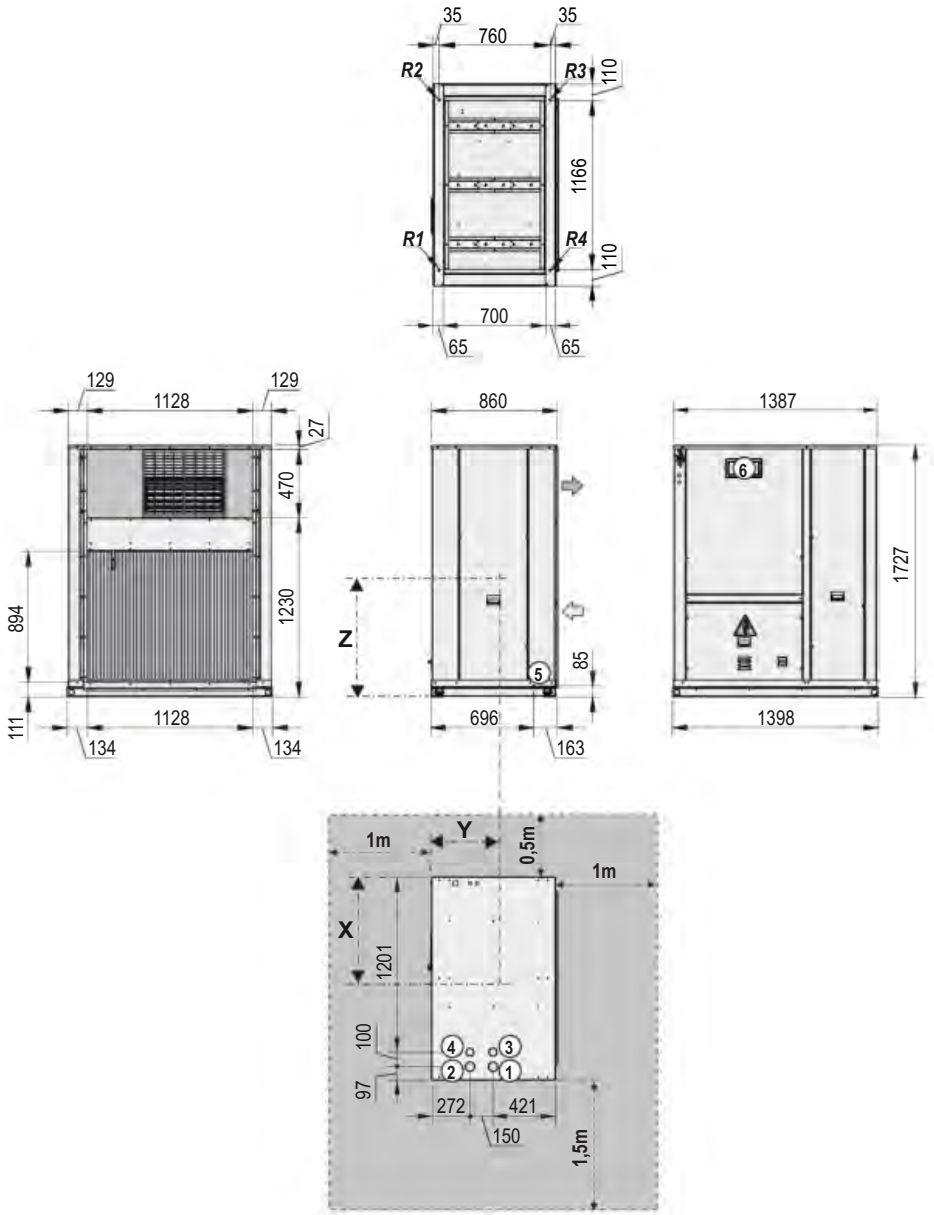
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)			Reactions in the supports (kg)				
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	90STD	453	384	528	306	66	101	87	52
	100STD	488		576	315	69	93	4	6

DIMENSION SCHEMES FOR THE STD VERSION

30PA - 120STD / 160STD / 180STD with horizontal supply, M00 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ① ② protrude 58 mm

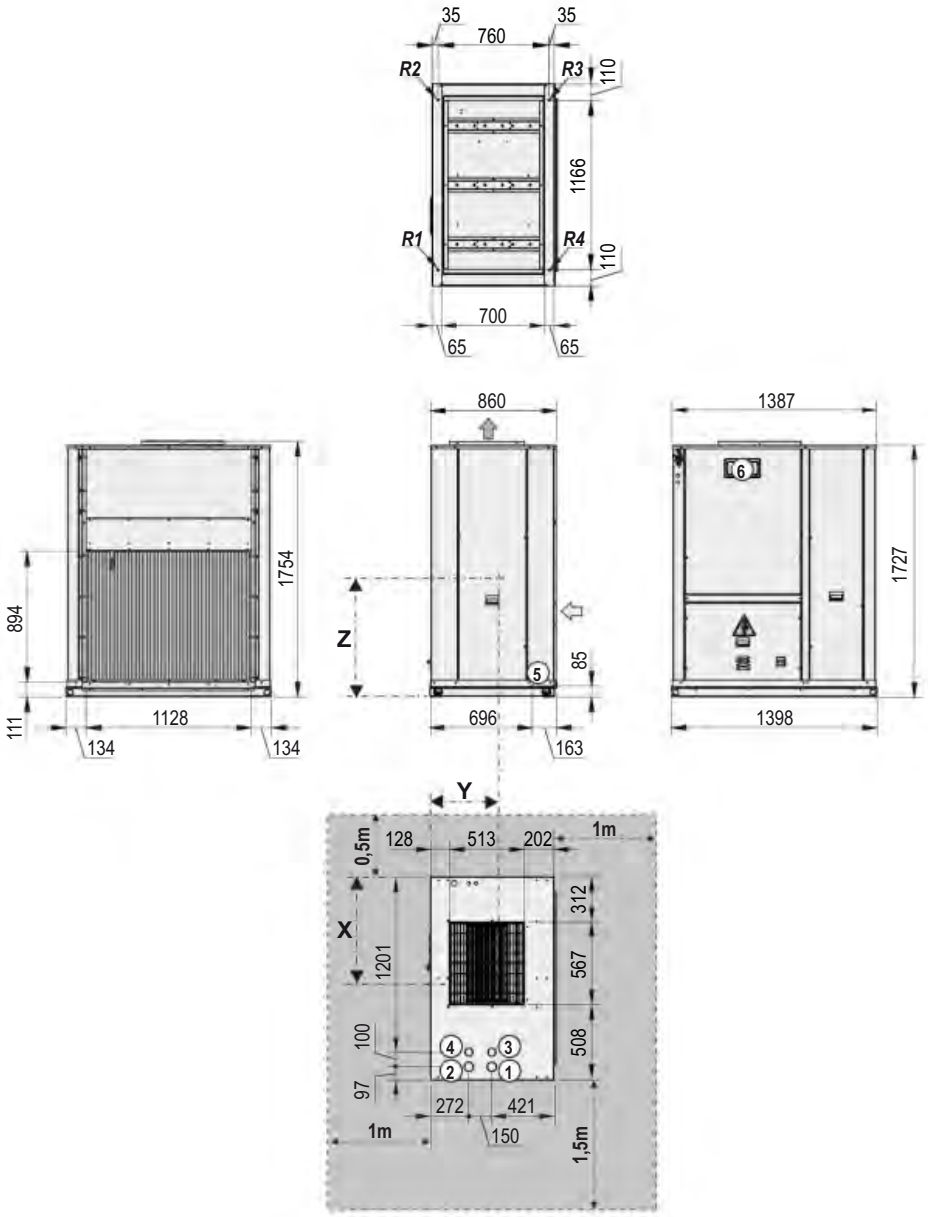
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)				Reactions in the supports (kg)			
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	120STD	625	399	676	379	89	112	101	7
	160STD	619	400	666	397	92	119	107	79
	180STD	625	397	674	396	93	119	105	79

DIMENSION SCHEMES FOR THE STD VERSION

30PA - 120STD / 160STD / 180STD with VERTICal supply, M01 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ①② protrude 58 mm

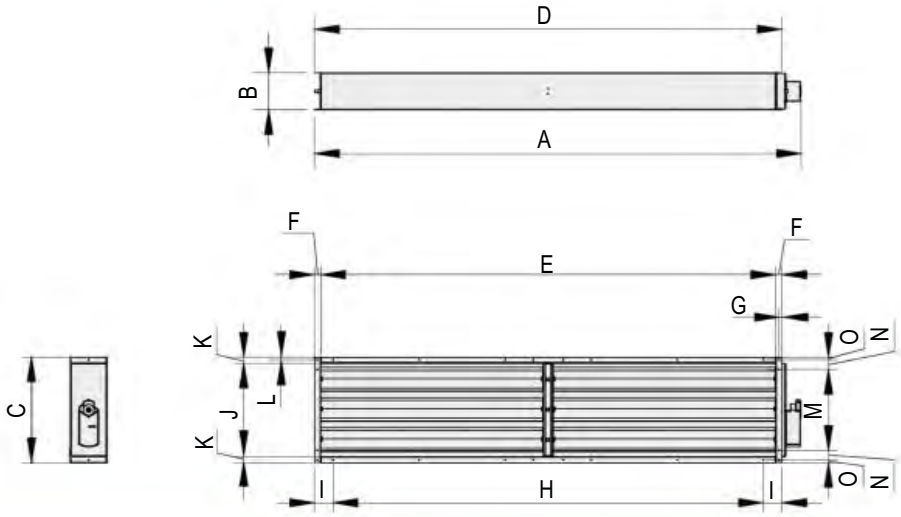
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)			Reactions in the supports (kg)				
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	120STD	625	399	676	379	89	112	101	7
	160STD	619	400	666	397	92	119	107	79
	180STD	625	397	674	396	93	119	105	79

DIMENSION SCHEMES FOR THE STD VERSION

Condensation pressure control damper (mm)



30PA	Assembly	Servos per damper	Total weight (kg)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
90STD / 100STD	M00	1	13	978	150	446	895	845	25	11	3 x 266	49	396	25	11	296	64	11
120STD to 180STD		1	1	1258	1	520	1175	1125	5	11	4 x 269	4	47	25	11	7	64	11
90STD / 100STD	M01	1	13	633	150 (*)	428	550	500	25	11	1 x 400	75	378	25	11	278	64	11
120STD to 180STD		1	17	733	150 (*)	550	650	600	25	11	2 x 250	75	500	25	11	400	64	11

(*) In the case of vertical discharge (M01 assembly), the damper incorporates a frame (60 mm height) to fit the damper to the fan supply. This frame may be removed for duct installation.

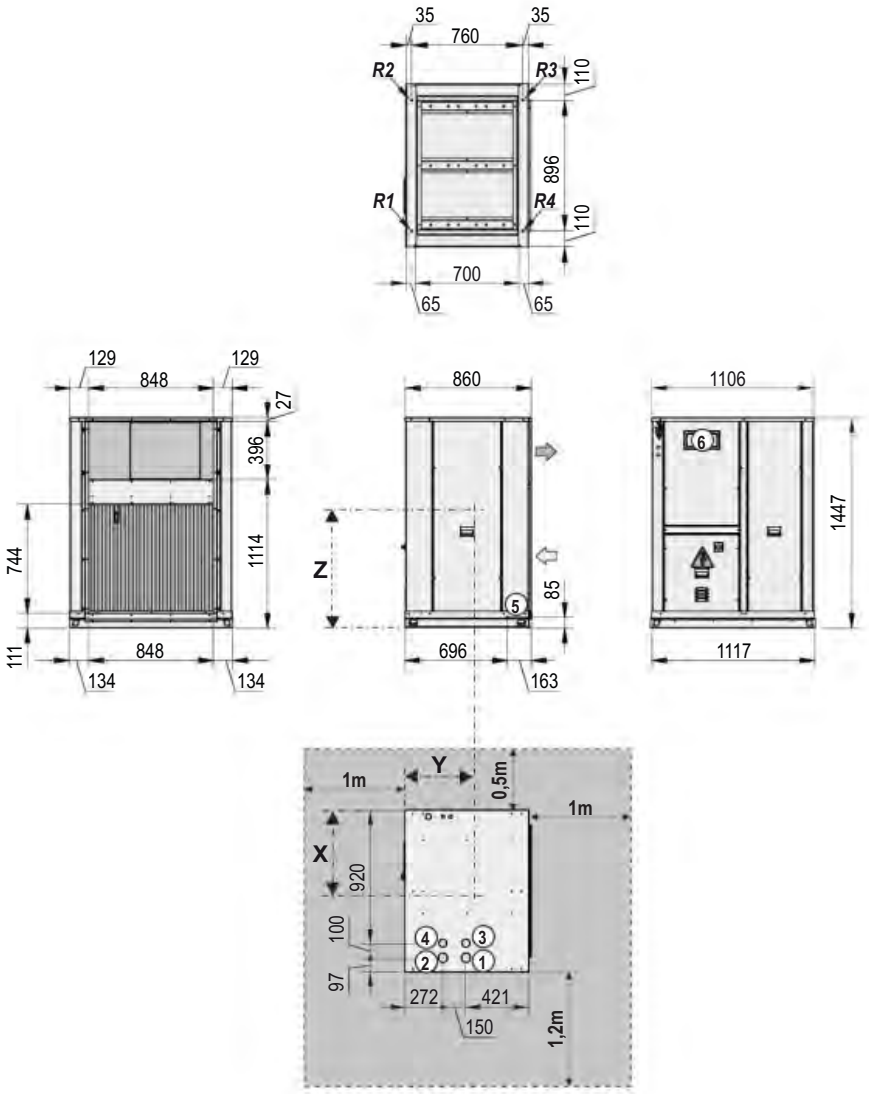
00 assembly

01 assembly

Note: By default this damper is sent attached to the unit. For duct installation it is necessary to unscrew from the unit and disconnect the electrical supply of the servomotor.

DIMENSION SCHEMES FOR THE HEE VERSION

30PA - 90HEE with horizontal supply, M00 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ① ② protrude 58 mm

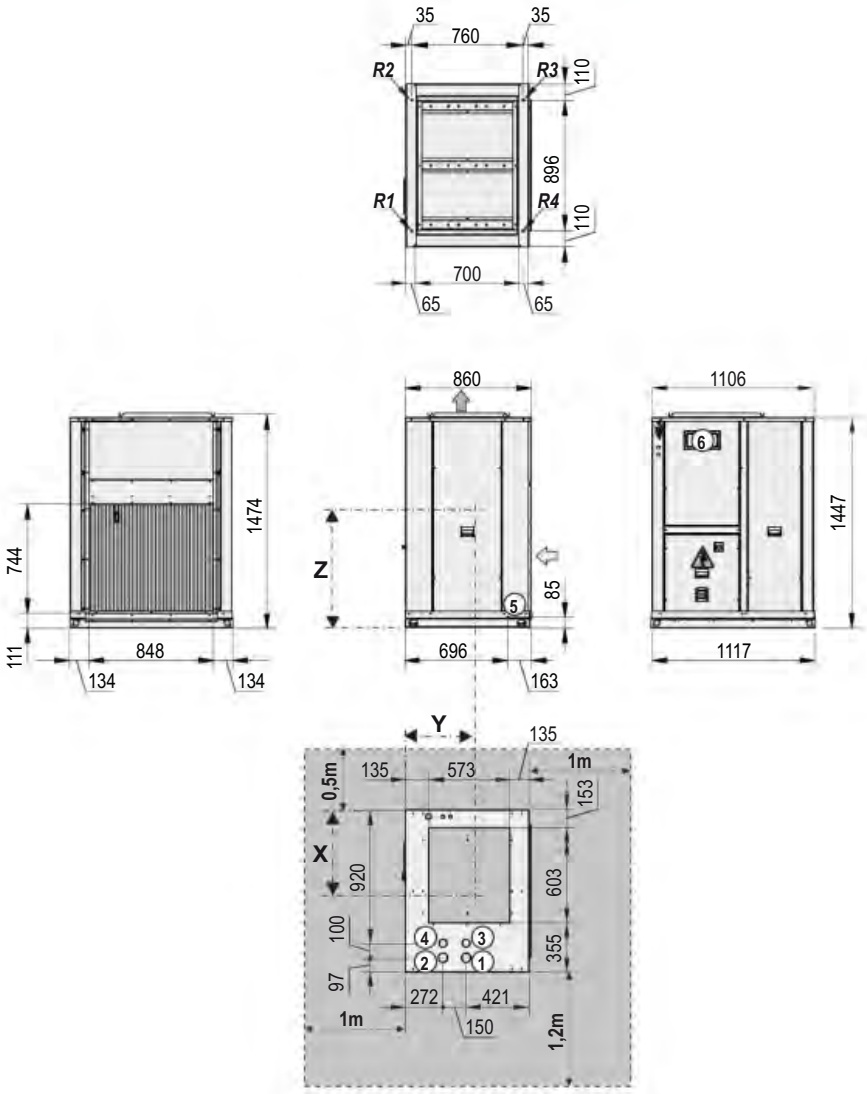
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)			Reactions in the supports (kg)				
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	90HEE	502	422	614	298	64	100	85	50

DIMENSION SCHEMES FOR THE HEE VERSION

30PA - 90HEE with VERTICal supply, M01 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ①② protrude 58 mm

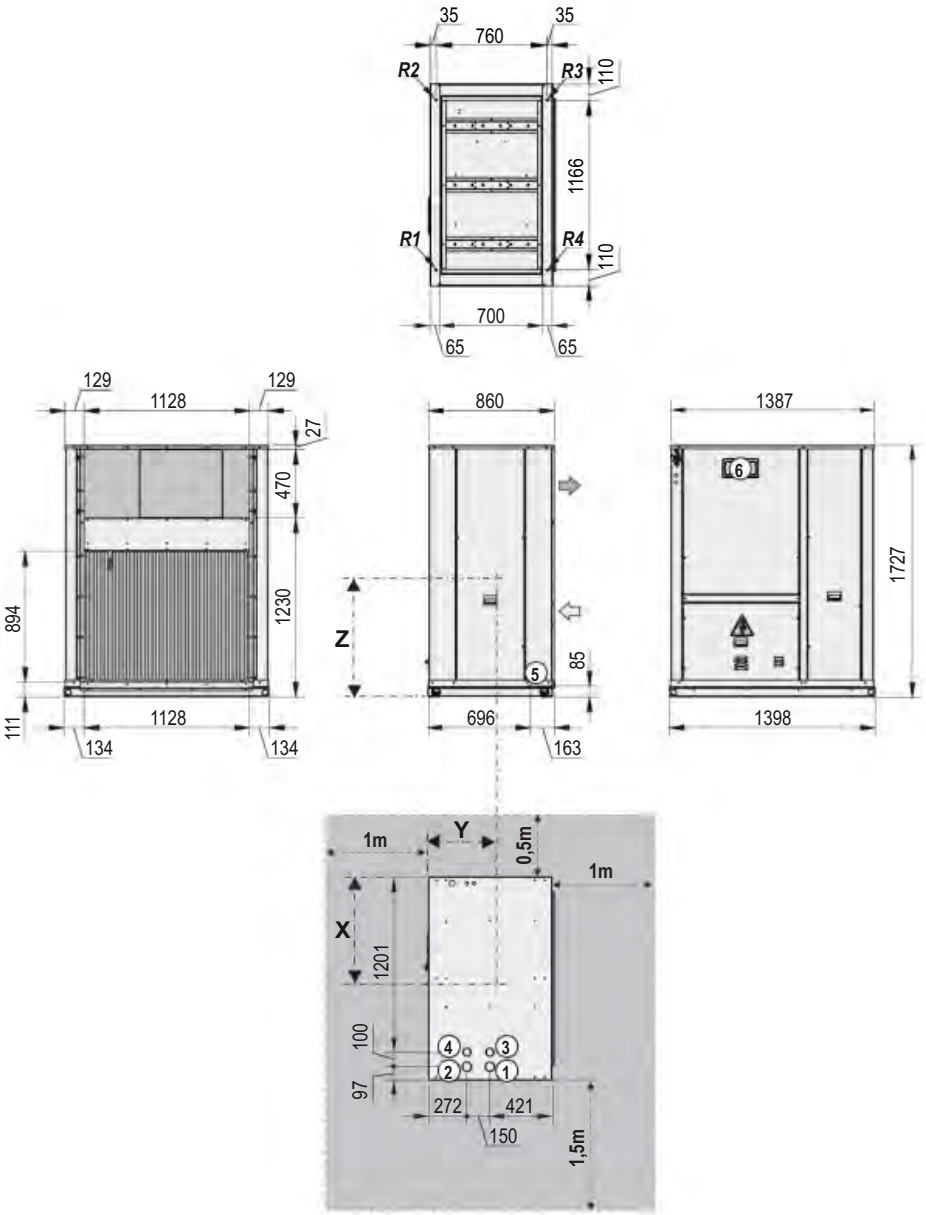
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)				Reactions in the supports (kg)			
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	90HEE	502	422	614	298	64	100	85	50

DIMENSION SCHEMES FOR THE HEE VERSION

30PA - 100HEE / 120HEE with horizontal supply, M00 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ①② protrude 58 mm

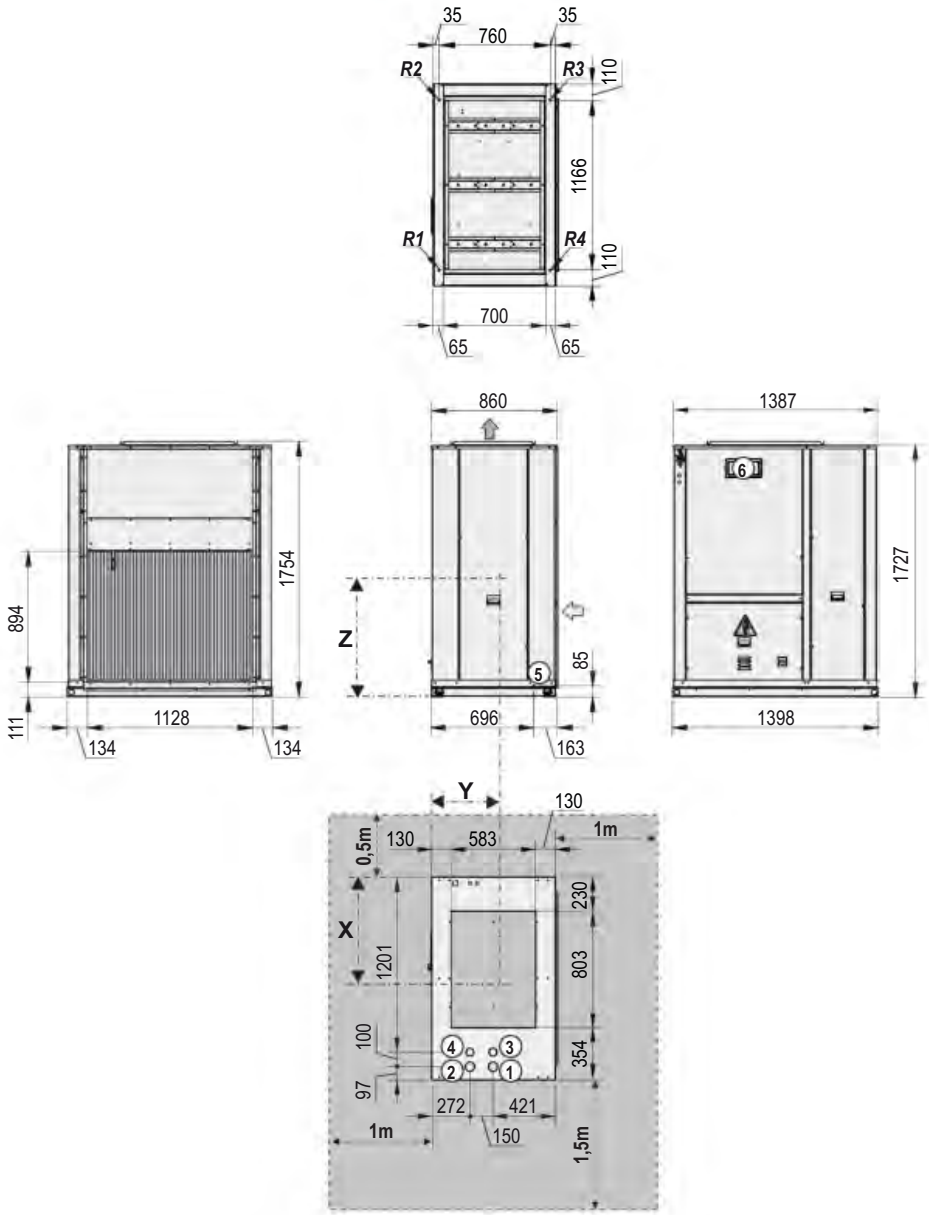
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)			Reactions in the supports (kg)				
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	100HEE	569	417	673	358	63	127	116	52
	120HEE	628	426	742	376	88	112	100	77

DIMENSION SCHEMES FOR THE HEE VERSION

30PA - 100HEE / 120HEE with VERTICal supply, M01 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
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- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ①② protrude 58 mm

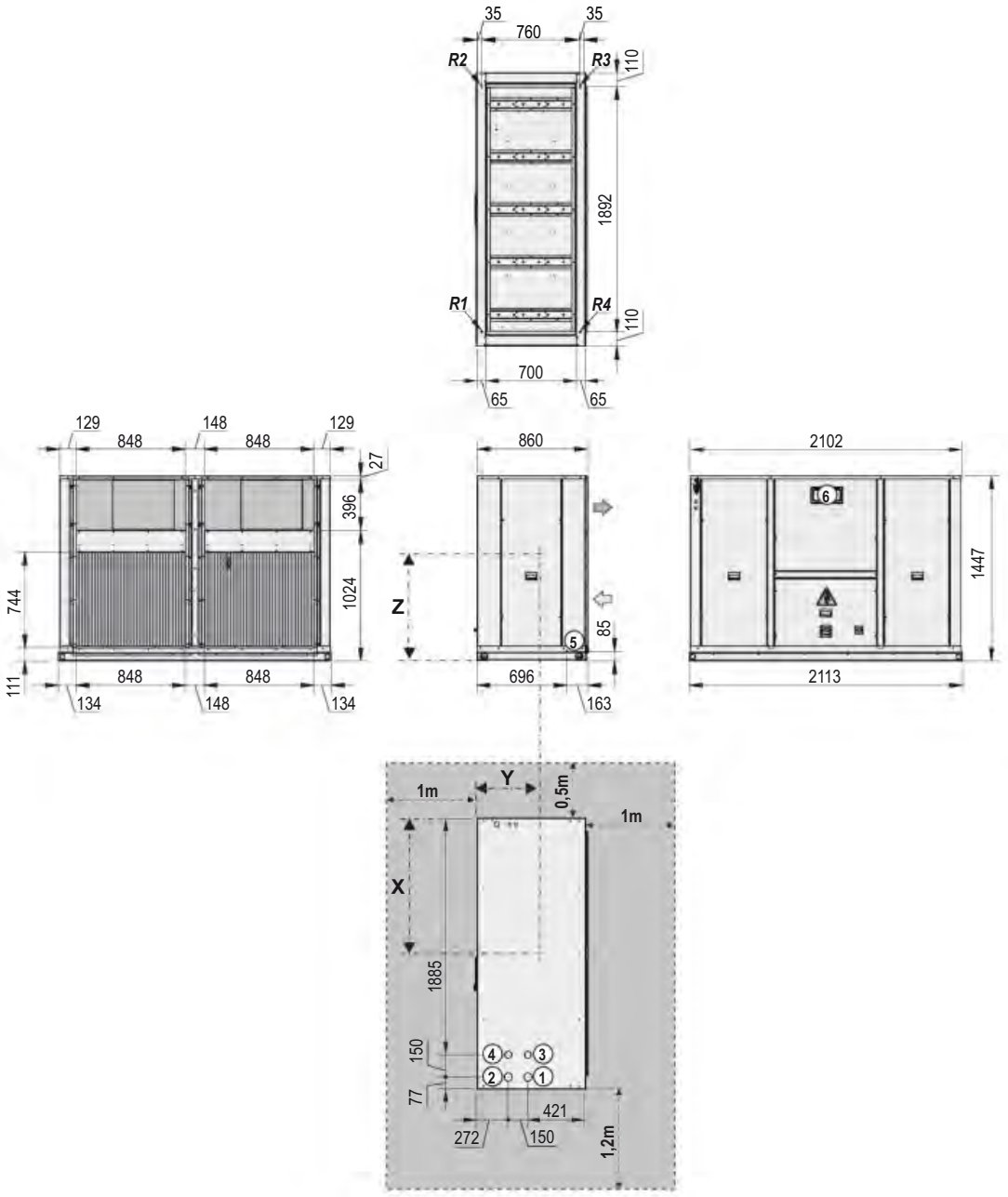
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)				Reactions in the supports (kg)			
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	100HEE	569	417	673	358	63	127	116	52
	120HEE	628	426	742	376	88	112	100	77

DIMENSION SCHEMES FOR THE HEE VERSION

30PA - 160HEE / 180HEE with horizontal supply, M00 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ① ② protrude 58 mm

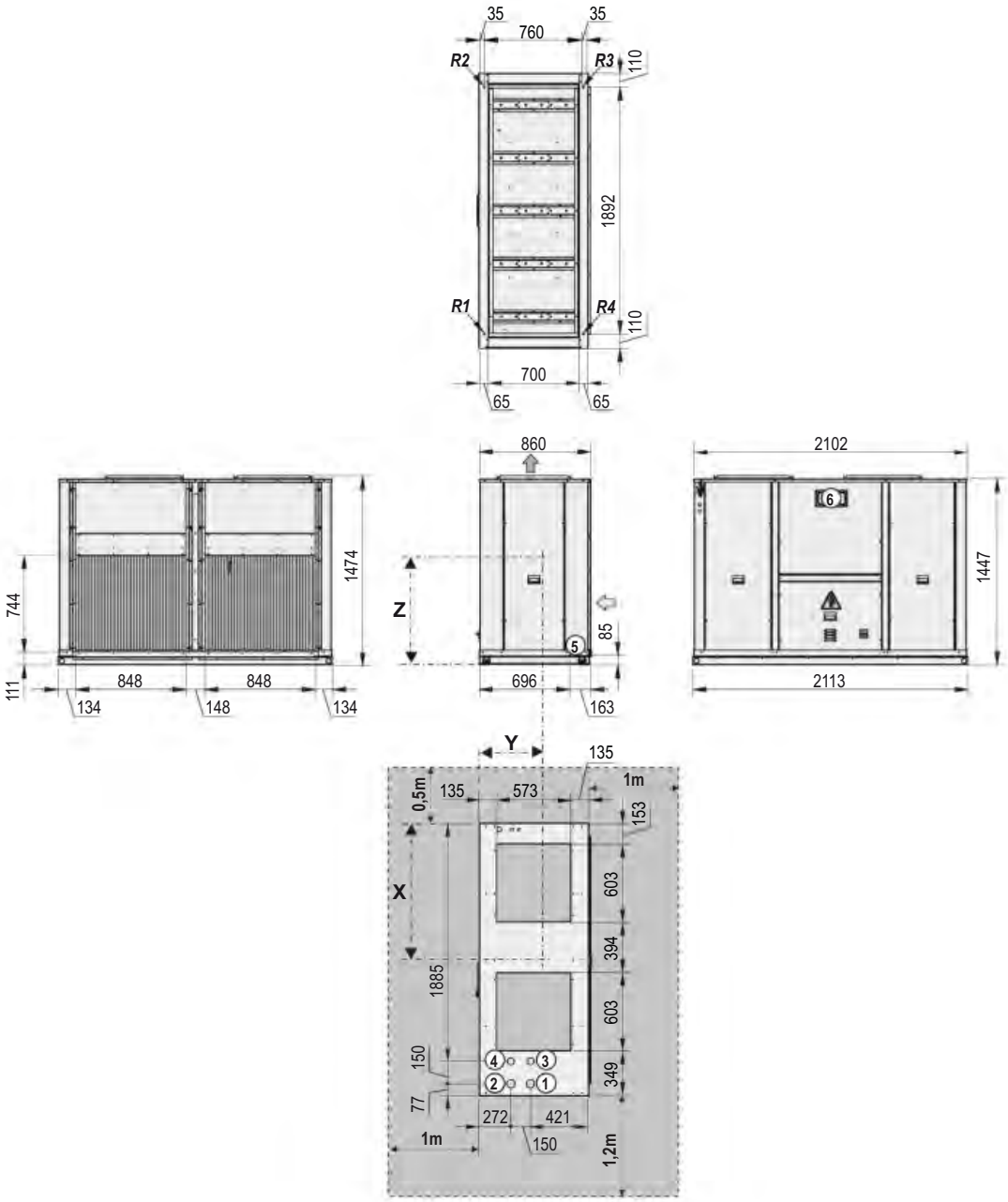
Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)			Reactions in the supports (kg)				
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	160HEE	940	435	573	465	69	177	163	56
	180HEE	936	434	579	468	71	178	163	56

DIMENSION SCHEMES FOR THE HEE VERSION

30PA - 160HEE / 180HEE with VERTICal supply, M01 assembly (mm)



LEGEND

- HORIZONTAL outdoor circuit air supply
- Outdoor circuit air return
- Electric panel
- Electric power supply
- Door switch
- ① Water inlet to the indoor circuit
- ② Water outlet from the indoor circuit
- ③ Water outlet from the recovery circuit (optional)
- ④ Water inlet to the recovery circuit (optional)
- ⑤ Condensate outlet: trunk 3/4" M
- ⑥ Collapsible window for access to control panel (it protrudes 12 mm)

Note: the hidraulic connections ① ② protrude 58 mm

Anti-vibration anchoring: rivet nut M10

Clear space to be observed for maintenance operations and unit start-up

Models		Center of gravity coordinates (mm)				Reactions in the supports (kg)			
		X	Y	Z	Weight	R1	R2	R3	R4
30PA	160HEE	940	435	573	465	69	177	163	56
	180HEE	936	434	579	468	71	178	163	56

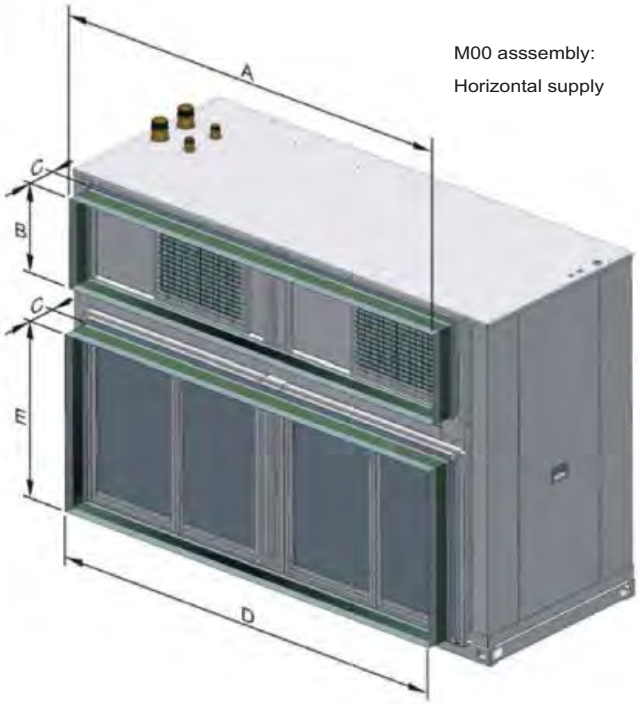
DIMENSIONS OF AIR FLEXIBLE DUCTS (OPTION)

Supply ducts

STD version	Dimensions (mm)			Weight (kg)
	A	B	C	
M00 assembly without damper (1)				
90STD / 100STD	859	407	132	4
120STD / 160STD / 180STD	1139	481	132	5
M00 assembly with damper (1)				
90STD / 100STD	859	407	132	4
120STD / 160STD / 180STD	1139	481	132	5
M01 assembly without damper (1)				
90STD / 100STD	552	430	152	4
120STD / 160STD / 180STD	652	552	152	5
M01 assembly with damper (1)				
90STD / 100STD	513	391	132	4
120STD / 160STD / 180STD	613	513	132	5

HEE version	Dimensions (mm)			Weight (kg)
	A	B	C	
M00 assembly				
90HEE	859	407	132	4
100HEE / 120HEE	1139	481	132	5
160HEE / 180HEE	1 4	40	132	7
M01 assembly				
90HEE	633	589	132	4
100HEE / 120HEE	817	639	132	5
160HEE / 180HEE	1619	590	132	7

M00 asssembly:
Horizontal supply

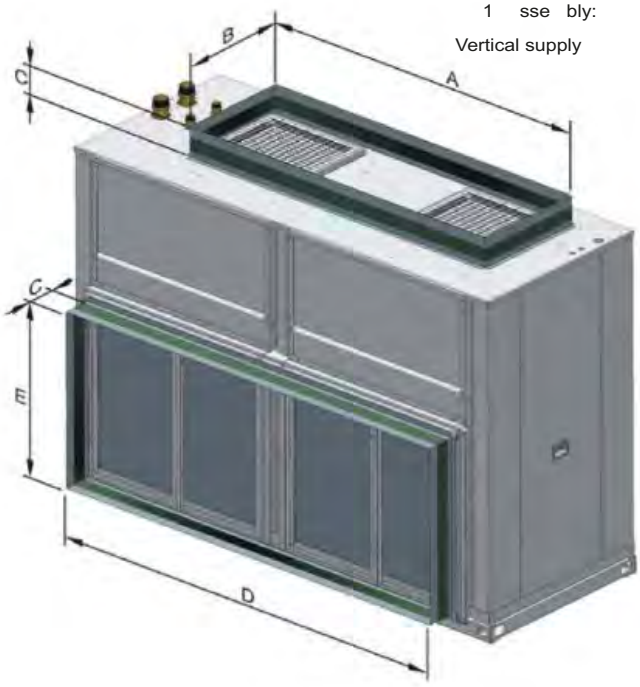


Return ducts

STD version	Dimensions (mm)			Weight (kg)
	C	D	E	
Assembly without filters				
90STD / 100STD	132	903	800	5
120STD / 160STD / 180STD	132	1183		7
Assembly with filters				
90STD / 100STD	109	903	800	5
120STD / 160STD / 180STD	109	1183	950	7

HEE version	Dimensions (mm)			Weight (kg)
	C	D	E	
Assembly without filters				
90HEE	132	903	800	5
100HEE / 120HEE	132	1183	950	7
160HEE / 180HEE	132	1897	800	8
Assembly with filters				
90HEE	109	903	800	5
100HEE / 120HEE	109	1183	950	7
160HEE / 180HEE	109	1897	800	8

1 sse bly:
Vertical supply



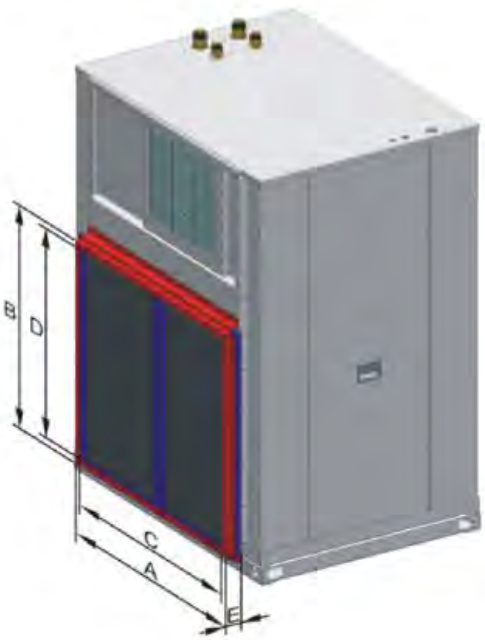
(1) Damper for condensation pressure control (optional): add the height of the damper to the flexible duct.

GRAVIMETRIC FILTERS IN THE RETURN AIR (OPTION)

Air pressure drop

30PA	Nominal air flow (m3/h)	Pressure drop (mm.w.c.)
90STD	6500	4,9
100STD	7000	5,7
120STD	10000	4,6
160STD / 180STD	12200	6,8

30PA	Nominal air flow (m3/h)	Pressure drop (mm.w.c.)
90HEE	6500	4,9
100HEE	7000	2,2
120HEE	10000	4,6
160HEE	12200	4,3
180HEE	14000	5,7



Dimensions (mm)

30PA	Frames number	Frame dimensions (mm)					Distance between frames (mm)	Cells number	Cell thickness (mm)	Cell size (mm)	Total weight (mm)
		A	B	C	D	E					
90STD / 100STD	1	896	795	848	744	53	---	2	25	818 x 468	6
120STD / 160STD / 180STD	1	1176	945	1128	894	53	---	3	25	968 x 405	8

30PA	Frames number	Frame dimensions (mm)					Distance between frames (mm)	Cells number	Cell thickness (mm)	Cell size (mm)	Total weight (mm)
		A	B	C	D	E					
90HEE	1	896	795	848	744	53	---	2	25	818 x 468	6
100HEE / 120HEE	1	1176	945	1128	894	53	---	3	25	968 x 405	8
160HEE / 180HEE	2	896	795	848	744	53	100	4	25	818 x 468	12

Filters frame is removable, and on request, can be supplied separate from the unit for connection on site.

AIRFLOW CHARACTERISTICS: SELECTION OF FAN MOTORS

STD version:

Centrifugal fan coupling by pulleys and belts

30PA	Nominal air flow (m3/h)	Available pressure (mm.w.c)	Motor output (kW)	Power input (kW)	Fan speed (r.p.m.)	Code
90STD	6500	7	1,5	1,16	821	OPK0337
		10	1,5	1,22	856	OPK0337
		15	1,5	1,33	915	OPK0048
		20	2,2	1,46	973	OPK0512
		25	2,2	1,58	1030	OPK0363
		30	2,2	1,72	1087	OPK0509
		35	--		--	--
100STD	7000	7	2,2	1,44	886	OPK0513
		10	2,2	1,52	919	OPK0513
		15	2,2	1,64	973	OPK0512
		20	2,2	1,77	1027	OPK0363
		25	3,0	1,90	1081	OPK0370
			3,0	2,05	1134	OPK0354
		35	3,0	2,19	1186	OPK0369
120STD	10000	7	2,2	1,90	723	OPK0408
		10	3,0	2,00	750	OPK0415
		15	3,0	2,16	794	OPK0385
		20	3,0	2,33	837	OPK0387
		25	3,0	2,50	880	OPK0386
		30	4,0	2,68	923	OPK0388
		35	4,0	2,87	965	OPK0388
160STD	12200	7	3,0	2,22	627	OPK0190
		10	3,0	2,35	652	OPK0397
		1	4,0	2,59	694	OPK0198
		20	4,0	2,83	734	OPK0399
		25	4,0	3,07	773	OPK0197
		30	4,0	3,32	812	OPK0197
		35	5,5	3,59	849	OPK0547
180STD	12200	7	3,0	2,22	627	OPK0190
		10	3,0	2,35	652	OPK0397
		15	4,0	2,59	694	OPK0198
		20	4,0	2,83	734	OPK0399
		25	4,0	3,07	773	OPK0197
		30	4,0	3,32	812	OPK0197
			,5	,59	849	OPK0547

HEE version:

Electronic plug-fan

30PA	Nominal air flow (m3/h)	Available pressure (mm.w.c)	Motor output (kW)	Power input (kW)	Fan speed (r.p.m.)
90HEE	6500	7	2,7	1,00	1240
		10	2,7	1,07	1266
		15	2,7	1,19	1309
		20	2,7	1,33	1352
		25	2,7	1,46	1392
		30	2,7	1,60	1434
		35	2,7	1,73	1475
100HEE	7000	7	2,8	0,87	1220
		1	2,8	0,9	1247
		15	2,8	1,07	1292
		20	2,8	1,21	1344
		25	2,8	1,33	1388
		30	2,8	1,48	1435
		35	2,8	1,62	1476
120HEE	10000	7	3,0	1,41	1225
		10	3,0	1,50	1243
		15	3,0	1,67	1276
		20	3,0	1,87	1307
		25	3,0	2,04	1343
			3,0	2,23	1378
		35	3,0	2,42	1413
160HEE	12200	7	2 x 3,0	2 x 0,77	937
		10	2 x 3,0	2 x 0,85	969
		15	2 x 3,0	2 x 0,98	1022
		20	2 x 3,0	2 x 1,10	1072
		25	2 x 3,0	2 x 1,27	1122
		30	2 x 3,0	2 x 1,42	1172
		35	2 x 3,0	2 x 1,58	1220
180HEE	14000	7	2 x 3,0	2 x 0,88	991
		10	2 x 3,0	2 x 0,96	1020
		15	2 x 3,0	2 x 1,11	1070
		20	2 x 3,0	2 x 1,26	1117
		25	2 x 3,0	2 x 1,41	1163
		30	2 x 3,0	2 x 1,57	1209
		35	2 x 3,0	2 x 1,73	1249

ASSEMBLY RECOMMENDATIONS

It is mandatory to follow the recommendations and instructions in the user's brochure for installation, commissioning, operation, and maintenance (No 10057).

Lifting and handling operations

The lifting and handling operations must be done in safe conditions.

Accurately follow the lifting plan present in the unit and in the user's brochure for installation, commissioning, operation, and maintenance.

Before beginning the handling, carefully check that there is sufficient access space so that the unit can enter into the facility.

Maintenance must be done only while vertical, which is why the unit must not be laid or turned horizontally.

Location

The 30PA air-cooled chillers are ductable units to be installed indoors.

Clear space must be planned around the unit (indicated on the dimensions schemes) for maintenance operations and normal operation. No obstacle may impede the air aspiration into the coil or make the outlet of the fan difficult.

The unit's location must be carefully studied. A suitable positioning must be selected in accordance with the demands of the surroundings (integration in the environment, noise emission, etc.) and where only authorised persons have access.

According to the guidelines in place in the place of installation, certain new air ventilation standards must be respected so as not to cause any discomfort or danger in the case of refrigerant fluid leakage.

In the event of connection by pipes, study the network carefully (flows, pressure drops, speeds, etc.). A poorly studied network (excessive speeds, poor stiffness, etc.) can cause a significant sound level.

30PA units must have the ducted supply. The weight of an air discharge duct must not rest on the unit at any time.

The pipe must ensure that the people in front of the fan are protected.

In particular, avoid installing the units in areas where those under the age of 14 could come into contact with them. If necessary, access to the units will be protected using a suitable enclosure or fencing.

All of the units are fully charged with refrigerant and tested in the factory.

Safety devices

The units have the necessary control and safety elements; cold water temperature controlling, water circulation controller, anti-freeze safety, high- and low-pressure pressostats, anti-short-cycle timing, compressor and ventilator thermal protection, etc.

Electrical connections

The indications required for the electrical connections are indicated on the electrical diagram enclosed with the unit.

These connections are always established as per the norms in force. The electric and control panel is completely wired. Only the main electric power supply has to be set up (the engineer must plan for the protections: main switch, differential switch, etc.).

The installer must perform a command remotely from the unit and have operation and failure indicators.

It is important to remember that the unit is not protected against radiation, from the electrical point of view. Therefore, safety devices to protect against these temporary phenomena must be placed in the installation and incorporated into the electrical supply panel.

Water quality criteria

Warning: During installation, it is mandatory that an 500 micron water be placed in the unit's water inlet.

The proper and suitable operation of a cold/hot water production unit with a respectable useful life depends directly on the quality of the water used, particularly if the water can cause phenomena such as clogging, corrosion, formation of algae or micro-organisms.

It is mandatory to analyse the water in order to verify that it can be used in the unit and to determine whether a chemical treatment will be sufficient to confer an acceptable quality level or whether a softening and demineralisation system is necessary.

This analysis must confirm whether or not the water present in the work is compatible with the following nomenclature for the various materials present in the 30PA unit circuit:

- 99.9% copper tubes with copper and silver welding.
- Bronze threaded hoses.
- AISI 316 - 1.4401 stainless steel plate exchangers and connections with copper and silver welding.

Warning: If these instructions are not respected, the unit's warranty shall lose its validity.

ASSEMBLY RECOMMENDATIONS

Hydraulic connections

The direction of water circulation must be observed as indicated on the unit.

Plan the anti-freeze protection for the unit and the installation when the outdoor temperature is low and the unit does not function: water with anti-freeze, draining the installation, etc.

In installations to open circuits, if it is not possible to maintain the water conditions within the values indicated in the corrosion behaviour table, it will be necessary to install an exchanger that separates the unit circuit from the circuit of the water circuit to be dealt with by using materials compatible with these characteristics, whether stainless steel or titanium.

The tubes must not transmit any force or vibrations to the water exchanger. It is advisable to use flexible hoses for connecting the piping to the unit in order to reduce the transmission of vibrations to the building to the greatest degree. It is mandatory to assemble hoses if the unit is installed over antivibration mounts.

Hydraulic circuit

All essential accessories for the hydraulic circuits must be planned (expansion vessel, air bleeder valves, safety valve, cut-off valve, drainage holes, thermometers, etc.).

Check the water content of the installation, if necessary, to plan a buffer tank.

It is also necessary to install a filter in the hydraulic power supply to the unit (for particulates of Ø < 500 microns) in order to prevent clogging of the plate exchanger (this can cause a decrease in flow that could lead to freezing and breaking the exchanger).

Warnings:

- Ensure that the pressure of the water circuits is below 4.0 bars.
- Place the expansion vessel in front of the pump.
- Do not assembly any valve on the expansion vessel.
- Ensure that the water circulation pumps are located in the entrance of the plate exchangers.
- Ensure that the water pressure in the aspiration of the circulation pumps is equal to or greater than the minimum nominal pressure (NPSHR), particularly in the case of an “open” hydraulic circuit.
- Analyse the water quality criteria in accordance with the technical recommendations.
- Plan the anti-freeze protections that the unit and the hydraulic installations need, such as the possibility of purging the circuit. In the presence of glycol for anti-freeze protection, it is mandatory to supervise its nature and concentration prior to commissioning.
- Before making the final hydraulic connections, rinse the tubes with clean water to remove impurities.

Commissioning

Non-exhaustive list of operations that must be performed during commissioning:

- Check for the proper installation of the unit.
- Check for electrical power supply protection.
- Check for phases and the direction of rotation.
- Verification of the electronic wiring of the unit.
- Check of the water circulation direction in the unit.
- Verification of the cleanliness of the hydraulic circuit.
- Control of the water flow according to the specified value.
- Check of the cooling circuit pressures.
- Verification of the rotation direction of the compressors.
- Check of the pressure drops and the water flow drops.
- Report on the operating values.

Problems in commissioning

Problems could occur during the start of the units’ operation if the conditions under which the start is performed are not suitable:

- Insufficient water flow. Very high temperature differences between water inlet into and outlet from the unit caused by:
  - Insufficient air bleeding.
  - Small water circulation pump or anti-clockwise rotation.
  - Other situations which may prevent correct water circulation.
- Insufficient thermal charge in the installation. The limiting operating values are quickly reached by:
  - Incorrect operation of the emissions system (fan coils, air conditioning exchangers, etc.).
- Air recirculation in the unit caused by an obstacle in the air aspiration or in its outlet.

To prevent such problems, the electric and hydraulic connections must be verified prior to starting the unit, checking the correct operation of the water circulation pump, the filling and draining of the hydraulic circuit, etc.

It is necessary to maintain the main electric supply to the unit for 24 hours before starting it so that the compressor’s crankcase heater may start.

When the unit is operating, its main power supply must not be cut. The shutdown must be done from a remote command. The crankcase heater must always be with voltage (except for prolonged shut-downs of the unit).

Note: Check that the water flow in the circuit is constant and sufficient (see evaporator operation limit). In case there should be a variation in the flow (control by two-way valves, closing and opening circuits), it is necessary to assemble a pressure differential valve or circulation pumps on each circuit.

INVERTER AIR-COOLED LIQUID CHILLERS

Easy and fast installation

Hydraulic module available

Inverter technology compressor and fans

Superior reliability

30RBV

greenspeed AQUASNAP

Nominal cooling capacity 15-18 kW

The AquaSnap Greenspeed® liquid chiller/heat pump range was designed for commercial applications such as the air conditioning of offices, hotels and large residential houses.

The units integrate the latest technological innovations: Non-ozone depleting refrigerant R410A, DC inverter twin-rotary compressors, low-noise variable speed fans and microprocessor control.

With exceptional energy efficiency values the inverter chillers qualify for local tax reductions and incentive plans in all EU countries.

For added flexibility the AquaSnap Greenspeed® units are available with or without hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

The AquaSnap Greenspeed® heat pump systems can be used with a wide choice of Carrier terminal fan coil units - cassettes, low, medium and high-pressure satellite units, console units, underceiling units and high-wall units.

Ecodesign is the European Directive that sets mandatory requirements for Energy related Products (ErP) to improve their energy efficiency. Carrier supports initiatives to reduce the environmental impact of its products.

Quiet operation

- Compressors
  - Low-noise INVERTER Twin rotary compressor with low vibration levels
  - Advanced technology providing maximum energy-efficiency with high capacity available at peak conditions and optimised efficiency at low and mid compressor speeds. The AquaSnap Greenspeed® heat pump DC inverter uses Intelligent Power Drive Unit (IPDU) hybrid inverter technology. An electronic management logic is used to optimised compressor operation in all conditions, minimised temperature fluctuation to give a perfect individual comfort control with significant reduction of energy comsuption :
  - PWM: pulse width modulation of the direct current controls the compressor at partial load conditions, adjusting the frequency at fixed voltage. The compressor speed is fine-tuned and the system provides high-level comfort (no temperature fluctuations) at exceptionally efficient working conditions.

Compressor frequency is increased continuously up to the maximum level. This ensures that there are no current draw peaks in the start-up phase. Inverter ramp-up speed makes soft starts unnecessary and ensures immediate maximum power.

  - The two rotary compression cylinders, offset from each other by 180°, and the DC brushless motor with the shaft in perfect balance ensure reduced vibration and noise, even at very low operating speeds. This results in an extremely wide range between minimum and maximum capacity with continuous operation, guaranteeing that the system is always optimised and provides maximum comfort at exceptionally high efficiency levels.
  - Twin-rotary cylinders, low vibrations and low load to the shaft ensure highest compressor reliability and a long trouble-free operating life.
  - All DC brushless twin-rotary compressors are equipped with internal system to secure the motor against oil issues due to colder climate.
  - A double compressor shield for acoustic insulation further reduces noise levels.

- Air heat exchanger section
  - Vertical air heat exchanger coils
  - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
  - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- Integrated hydraulic module (option)
  - Fixed speed water pump or variable speed circulator
  - Water filter protecting the water pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit (option)
  - Overpressure valve, set to 3 bar
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater and pump cycling.
  - Integrated water fill system to ensure correct water pressure (option)

No additional buffer tank required, simplyfing and speeding up the installation process (to be checked with the water volume of installation).

- Physical features
  - Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small footprint that is easy to transport even through narrow doors.

Reduced operating weight and a handle on the unit panels to facilitate transport.

  - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- A neutral color (RAL 7035) to facilitate the intregration in residential area
- Simplified electrical connections
  - Main disconnect switch with high trip capacity (option)
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Increased saesonal efficiency
  - In accordance with EN 14825:2013, Average Climate, energy label reach A+ (see Physical data RQV units). The exceptionally high energy efficiency of the AquaSnap Greenspeed® unit is the result of a long qualification and optimisation process.
- Reduced maintenance costs
  - Maintenance-free twin rotary compressors
  - Fast diagnosis of possible incidents and their history via the user interface WUI
  - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

FEATURES

Superior reliability

■ State-of-the-art concept
- Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/ discharge piping etc.

■ Auto-adaptive control
- Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)

■ Exceptional endurance tests
- Corrosion resistance tests in salt mist in the laboratory
- Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
- Transport simulation test in the laboratory on a vibrating table.

NHC Control

NHC control associate with compressor and fan variable frequency driver combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressor, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

■ Ease-of-use
- NHC control can be associated with a new User interface (WUI) which allow an easy access to the configuration parameters (frequency compressor, refrigerant circuit temperature, sets points, air temp, entering water temp, alarm report…).
- This user interface is also very intuitive in its use. It allows reading and easy selection of the operating mode. The functions are represented by icons on the LCD backlit screen.
- To facilitate the use of this interface, 3 levels of access are available: end user, installer and factory.

■ Key features
- Heating and cooling mode
- Domestic hot water
- Master/slave control of 4 units operating in parallel with operating time equalisation and automatic changeover in case of a unit fault (need Master slave sensor in accessory).
- Scheduling period

■ Choice of control product
- 3 options are available to drive the 30 RBV / RQV 17-21:
  • Dry contact
  • User interface WUI
  • ModBus protocol

User Interface WUI

- This interface can be installed up to 50 m away. It is connected to the NHC board with a 4 wires cable.
- 2 installation possibilities:
  • Inside the room (with remote interface accessory) : IAT sensor is an accessory, it is not mandatory to operate in remote user interface, because WUI has an internal sensor to measure the room temperature take with the internal sensor, set-point selected is air temperature.
  • On the HP/chiller (with local user interface option) : set-point is on water temperature are water temperature

Local User Interface configuration

■ ModBus

Direct access with Modbus connection to set, configure and monitor the 30 RBV/RQV

■ Input remote contact :
- Remote On/Off Contact
- Remote Heat/Cool Contact: This switch is used to select the Cooling Mode (contact opened) or the Heating Mode (contact closed).
- Remote Economic Contact: This switch is used to select the regular Home Mode when contact is opened or the Economic Away Mode when contact is closed.
- Safety Input Contact: This switch is normally closed type, according to configuration it is used either to stop the unit, to ban the Heating Mode or to ban the Cooling Mode when contact is opened.

FEATURES

■ Large choice of Input Contacts

Several functions can be configured by the installer. They allow to adapt to the environment of the machine:

- Power Limitation / Night Mode: This switch is used to reduce the compressor maximum frequency to avoid noise.
- Off Peak: If the General Purpose Contact, configured to “Off Peak”, is closed then the Electric Heat Stages are not allowed.
- Loadshed Request: If the General Purpose Contact, configured to “Loadshed Request”, is closed then unit shall be stopped as soon as possible.
- Solar Input: If the General Purpose Contact, configured to “Solar Input”, is closed then the unit is not allowed to run in Heating or DHW Mode because hot water is produced from a solar source.
- DHW Request Switch from tank : When this input is closed, the Domestic Hot Water production is requested (need DHW sensor delivered in accessory).
- DHW Priority : When this input is closed, the unit is switching to Domestic Hot Water production regardless of the Space Heating demand and the current DHW schedule (need DHW sensor delivered in accessory).
- Anti-Legionella Cycle Request : When this input is closed, the Domestic Hot Water production is requested with the Anti-Legionella set-point.
- Summer Switch : This switch is used to select the Winter (contact opened) or the Summer Mode (contact closed).
- Energy Meter Input : This input is used to count the number of pulses received from an external energy meter (not supplied)
- External Alarm Indication Input : When this input is opened, alarm is tripped. This alarm is for information only, it does not affect the unit operation.

■ Output remote contact available

2 Output contacts could be chosen on the NHC board, upon configuration for the following purposes:

alert, alarm , Standby, running (Cool, Heat, DHW or Defrost Modes), IAT Reached, electrical Heat Stage 2, electrical Heat Stage 3

TYPE KEY

30R B V 021 C H E - B B - - -

Range

B - Cooling
Q - Heat pump

V - Variable speed

017 - nominal size 17 kW
021 - nominal size 21 kW

T - Power supply with neutral cable w/o disconnect switch
C - Power supply with neutral with disconnect switch

X - Without hydraulic module
H - With hydraulic module with expansion tank
F - With hydraulic module with expansion tank and water filling system
R - With hydraulic and without expansion tank*
Z - With hydraulic, w/o expansion tank and with water filling system
M - With variable speed circulator with expansion tank
N - With variable speed circulator with expansion tank and water filling system
P - With variable speed circulator without expansion tank
Q - With variable speed circulator, w/o expansion tank and with water filling system

- Without coil protection
E - Epoxy coil protection (Gold-fin)

- Standard

B -CCN Jbus gateway as standard
C - CCN Bacnet gateway
D -CCN LONtalk gateway

- Standard
B - Local Interface WUI

Revision status

Accessories
- Remote User Interface (00PSG002521900A)
- DHW sensor (00PSG002501300A)
- Master /slave sensor (00PSG000596400A)
- Additional OAT sensor (00PSG002522000A)

PHYSICAL DATA, 30RBV UNITS

30RBV				17	21
Cooling					
Standard unit Full load performances*	CA1	Nominal capacity	kW	15,6	18,6
		EER	kW/kW	3,3	3,1
		Eurovent class		A	A
	CA2	Nominal capacity	kW	21,6	25,5
		EER	kW/kW	4,0	3,9
		Eurovent class		A	A
Seasonal energy efficiency		**SEER 12/7°C Comfort low temp.**	**kWh/kWh**	**4,52**	**4,56**
		ηs cool 12/7°C	**%**	**178**	**180**
Sound levels					
Standard unit					
Sound power level(1)			dB(A)	71	74
Sound pressure level at 10 m(2)			dB(A)	40	43
Dimensions - Standard unit					
Length(3)			mm	1109	1109
Width			mm	584	584
Height			mm	1579	1579
Operating Weight(4)					
Standard unit			kg	168,9	176,9
Compressors			Rotary compressor	1	1
Refrigerant			R410A		
Charge (4)			kg	6,25	6,25
Capacity control					
Minimum capacity(5)			%	33 %	41 %
Condenser				Grooved copper tubes, aluminium fins	
Fans - Standard unit				Axial type fan	
Quantity				2	2
Maximum total air flow			l/s	2000	2400
Maximum rotational speed			rps	14	16
Evaporator				Brazed plate heat exchanger	
Water volume			l	1,52	1,9
Max water-side operating pressure without hydraulic module			kPa	1000	1000
Hydraulic module (option)				Pump, relief valve, paddle flow switch, expansion tank (option)	
Pump				Centrifugal pump	
Expansion tank volume			l	8	8
Max. water-side operating pressure with hydraulic module(6)			kPa	300	300
Water connections (Without Hydraulic Module)					
Inlet diameter (MPT GAS)			inch	1	1
Outlet diameter (MPT GAS)			inch	1	1
Water connections (With Hydraulic Module)					
Inlet diameter (MPT GAS)			inch	1-1/4	1-1/4
Outlet diameter (MPT GAS)			inch	1	1
Water Filling System (Option)					
Diameter (MPT GAS)			inch	1/2	1/2
Chassis paint colour			Colour code:	RAL 7035	RAL 7035

* In accordance with standard EN14511-3:2013.

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool 12/7°C & SEER 12/7°C **Applicable Ecodesign regulation: (EU) No 2016/2281**

(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20 µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Length = 1141 mm if main disconnect switch

(4) Values are guidelines only. Refer to the unit nameplate.

(5) Cooling Eurovent condition

(6) Min. water-side operating pressure with fixed speed hydraulic module is 50 kPa and with variable speed hydraulic module is 40 kPa.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

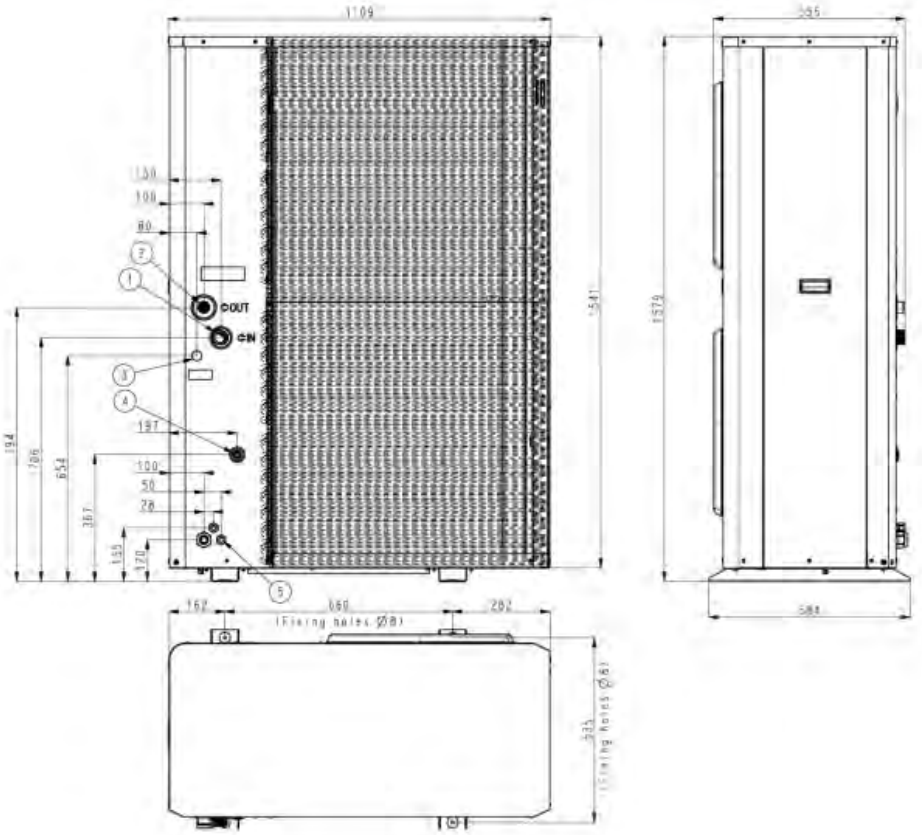
ELECTRICAL DATA, 30RBV/RQV UNITS

30RBV (full options)		17	21
Power circuit			
Nominal power supply	V-ph-Hz	400-3+N-50	400-3+N-50
Voltage range	V	360-440	360-440
Control circuit supply		24V AC via internal transformer	
Nominal unit current drawn (Un) *	A	12,5	14,3
Maximum unit power input (Un) **	kW	10,8	12,4
Cos Phi unit at maximum power **		0,93	0,93
Maximum unit current drawn (Un-10%)***	A	18,5	21,2
Maximum unit current drawn (Un) ****	A	16,7	19,2
Maximum Start-up current, standard unit †	A	Not Applicable (less than the operating current)	

* Conditions equivalent to the standardised Eurovent conditions (evaporator water entering-leaving temperature = 12 °C/7 °C, outside air temperature = 35 °C).
** Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15 °C, saturated condensing temperature 68.3 °C) and nominal voltage of 400 V (data given on the unit nameplate).
*** Maximum unit operating current at maximum unit power input and at 360 V.
**** Maximum unit operating current at maximum unit power input and at 400 V (values given on the unit nameplate).
† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).
Fan motor electrical data: at Eurovent equivalent conditions and motor ambient air temperature of 50 °C at 400 V: 3.8 A, start-up current 20 A, power input 1.75 kW

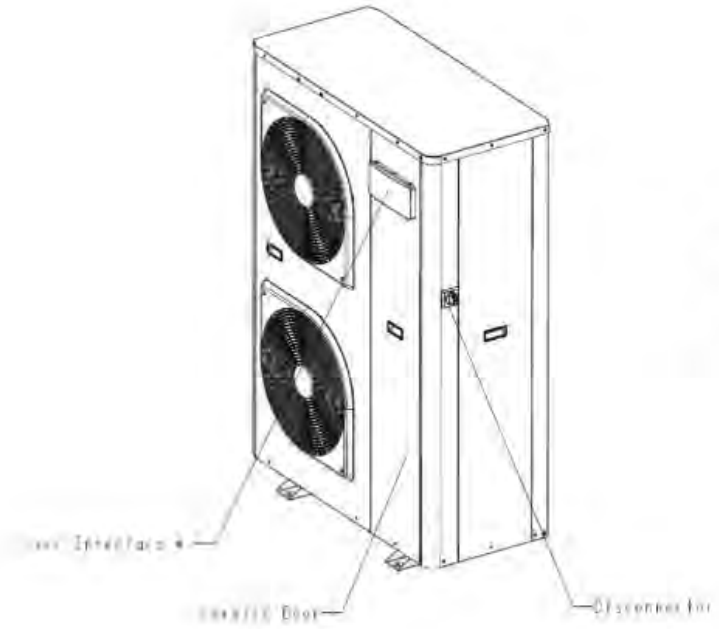
DIMENSIONS/CLEARANCES

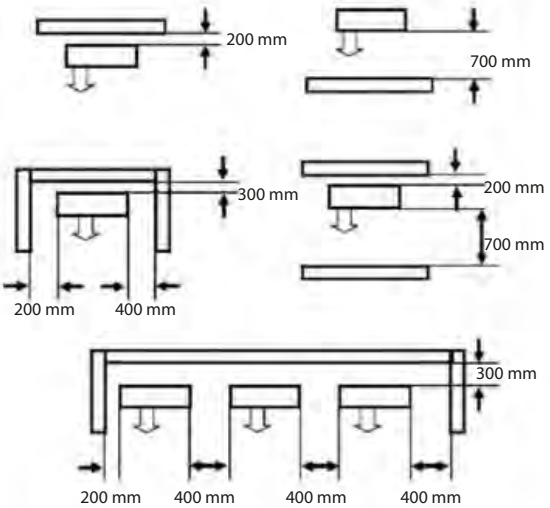
30RBV 017-021



Legend
All dimensions are in mm

1. Water inlet
2. Water outlet
3. Fill kit connection
4. Safety valve outlet
5. Electrical connections





DUCTABLE AIR-COOLED LIQUID CHILLERS

Easy and fast installation

Hydraulic module available

Economical operation

Superior reliability

AQUASNAP.

30RBY

Nominal cooling capacity 30RBY: 16-32 kW

The AquaSnap liquid chiller pump range was designed for commercial applications such as the air conditioning of offices and hotels etc.

The new AquaSnap units integrate the latest technological innovations:

- Non-ozone depleting refrigerant R410A
- Scroll compressors
- Low-noise fans
- Auto-adaptive microprocessor control

The AquaSnap units are equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration levels
  - The compressor assembly is supported by anti-vibration mountings

Access panels, 30RBY 017-021

Easy and fast installation

- Integrated hydraulic module
  - Fixed speed circulator
  - Water filter protecting the water pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Overpressure valve, set to 4 bar
  - Automatic purge valve positioned at the highest point of the hydraulic module to remove air from the system.
  - Thermal insulation and frost protection down to -10°C, using an electric resistance heater and pump cycling.
  - Integrated water fill system to ensure correct water pressure (option)
- Physical features
  - With its small footprint the unit blends in with any architectural styles.
  - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Simplified electrical connections
  - A single power supply point (power supply without neutral available as an option and in standard for units size 40kW)
  - Main disconnect switch with high trip capacity
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.
- Easy duct connection (30RBY version only)
  - Rectangular discharge air connection.
  - Fan with 80 Pa available pressure. Centrifugal fan for sizes 017 and 021, and axial fan for sizes 026 and 033.
  - Rectangular suction and filter connection option (sizes 017 and 021 only).

Inlet filters, RBY 017-021

Economical operation

- Increased energy efficiency at part load
  - In accordance with standard EN 14825/2013 in average climate, the Seasonal Coeficent of performance (SCOP) reaches 3.01 for an energy label of A.
  - Specific Free Defrost algorithm is present to optimise performance and comfort even during defrost period.
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
  - R410A refrigerant is easier to use than other refrigerant blends

FEATURES

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Hydraulic module, sizes 026-040

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

Pro-Dialog+ interface

- Energy management
  - Seven-day internal time schedule clock: Permits unit on/off control and operation at a second set-point
  - Set-point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T
  - Master/slave control of two units operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
  - Change-over based on the outside air temperature
- Integrated features
  - Night mode: Capacity and fan speed limitation for reduced noise level
- Ease-of-use
  - The new backlighted LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
  - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier)
  - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set-point, air temperature, entering/leaving water temperature.

FEATURES

Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the AquaSnap and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: Unoccupied mode)
- Alert indication: This volt-free contact indicates the presence of a minor fault
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of the unit
- User safety: This contact can be used for any customer safety loop, closing of the contact generates a specific alarm
- Out of service: This signal indicates that the unit is completely out of service
- Unit capacity: This analogue output (0-10 V) gives an immediate indication of the unit capacity
- Compressor operation: This contact signals that the compressor is in operation

Remote interface (option)

This interface allows access to the same menus as the unit interface and can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24V transformer supplied.

Interface access, sizes 026-040

TYPE KEY

30R B Y 021 C H E - B A -- -

Range

B - Cooling
Q - Heat pump

- - Standard
Y - High static fan

017 - nominal size 17 kW
021 - nominal size 21 kW
026 - nominal size 26 kW
033 - nominal size 33 kW

C - Power supply with neutral cable (only sizes 017-033)
D - Power supply without neutral

X - Without hydraulic module
H - With hydraunic module with expansion tank
F - With hydraunic module with expansion tank and water filling system
R - With hydraunic and without expansion tank
Z - With hydraunic, w/o expansion tank and with water filling system

- - Without coil protection
E - Epoxy coil protection (Gold-fin)

- - Standard

- - Without gateway
B -CCN JBus gateway
C - CCN Bacnet gateway
D -CCN LONtalk gateway

- - Standard
A - Remote user Interface HMI (As accessory)

Not used

Revision status

PHYSICAL DATA, 30RBY UNITS

30RBY				017	021	026	033
Cooling							
Standard unit		Nominal capacity	kW	15,7	20,3	27,0	32,3
Full load performances*	CA1	EER	kW/kW	2,65	2,60	2,88	3,05
		Eurovent class		B	B	A	A
	CA2	Nominal capacity	kW	19,9	24,8	36,1	42,3
		EER	kW/kW	3,07	2,85	3,49	3,67
		Eurovent class		E	E	D	B
Seasonal energy efficiency		**SEPR $_{-2/-8°C}$ Process medium temp.**	**kWh/kWh**	**2,61**	**2,64**	**2,62**	**2,61**
		SEPR $_{12/7°C}$ Process high temp.	kWh/kWh	4,17	4,03	4,29	4,06
		SEER $_{12/7°C}$ Comfort low temp.	kWh/kWh	2,76	2,72	2,86	3,08
		SEER $_{23/18°C}$ Comfort medium temp.	kWh/kWh	3,10	3,05	3,28	3,52
Integrated Part Load Value		IPLV.SI	kW/kW	3,34	3,3	3,49	3,69
Operating weight(1)							
Standard unit, with hydraulic module			kg	209	228	255	280
Standard unit, without hydraulic module			kg	193	213	237	262
Sound pressure level(2)			dB(A)	50	50	53	53
Sound power level radiated from the unit(3)			dB(A)	82	82	85	85
Sound power level at unit discharge(3)			dB(A)	80	80	91	91
Dimensions							
Length			mm	1135	1135	1002	1002
Depth			mm	584	584	824	824
Height			mm	1608	1608	1829	1829
Compressor				One hermetic scroll compressor			
Refrigerant charge R-410A			kg	5,5	6,4	5,8	8,6
			teqCO_2	11,5	13,4	12,1	18,0
Control				Pro-Dialog+			
Fans				Two 2-speed centrifugal fans, 5 backward-curved		One 2-speed axial fan, 7 blades	
Diameter			mm	454	454	630	630
Number of blades				5	5	7	7
Available static pressure			Pa	80	80	80	80
Air flow			l/s	1640	1640	3472	3472
Speed			r/s	20,5	20,5	21,5	21,5
Water heat exchanger				One plate heat exchanger			
Water volume			l	1,52	1,90	2,28	2,85
Maximum operating pressure			kPa	1000	1000	1000	1000
Air heat exchanger				Copper tubes and aluminum fins			
Pipe diameter			in	3/8	3/8	3/8	3/8
Number of rows				2	2	2	3
Number of pipes per row				60	60	60	60
Fin spacing			mm	1,69	1,69	1,69	1,69
Standard unit							
Water connections (MPT gas)			in	1	1	1-1/4	1-1/4
Unit with hydraulic module				Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, relief valve, water circuit drain valve			
Pump				One single-speed pump, maximum water-side operating pressure 400 kPa			
Expansion tank capacity			l	5	5	8	8
Entering water connection			in	1-1/4	1-1/4	1-1/4	1-1/4
Leaving water connection			in	1	1	1-1/4	1-1/4
Chassis paint colour				Colour code: RAL 7035			

* In accordance with standard EN14511-3:2013

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

SEPR $_{-2/-8°C}$ **Applicable Ecodesign regulation: (EU) No 2015/1095**

SEER $_{12/7°C}$ & SEPR $_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

SEER $_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) For information, calculated from the sound power level Lw(A)

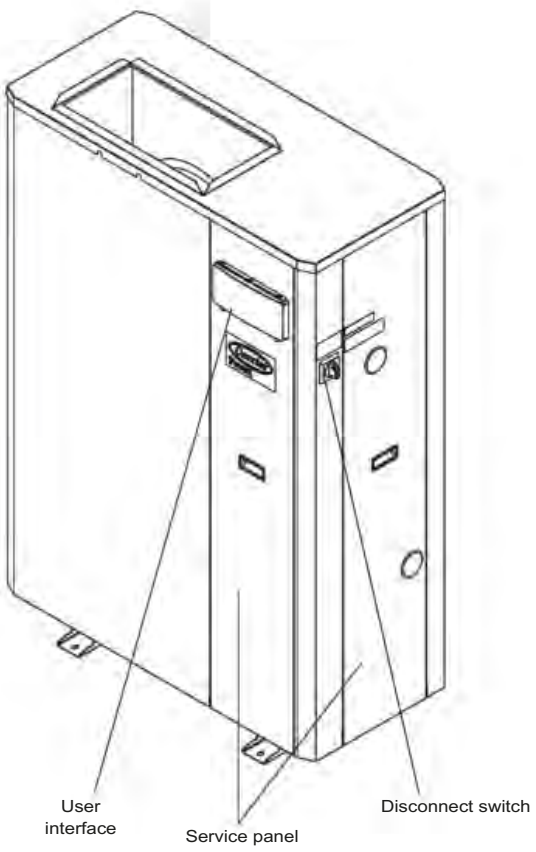
(3) In accordance with ISO 9614 (10^{-12} W)

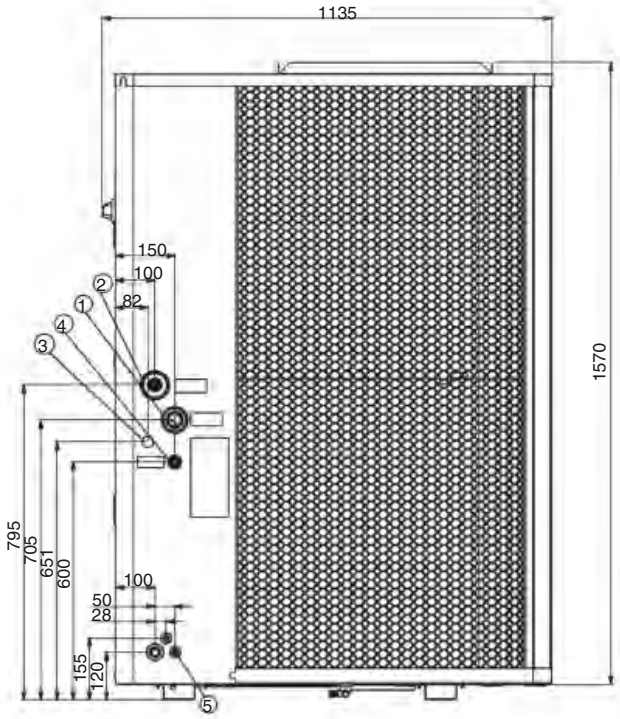
EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

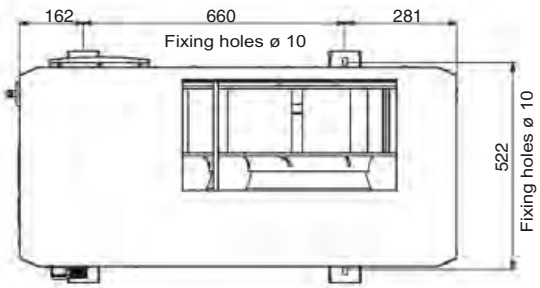
Eurovent certified values

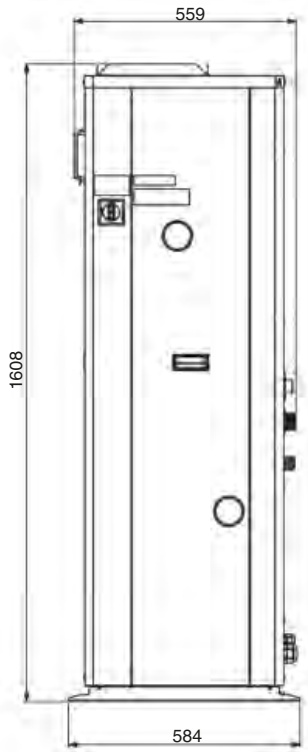
DIMENSIONS/CLEARANCES

30RBY 017-021 - standard units





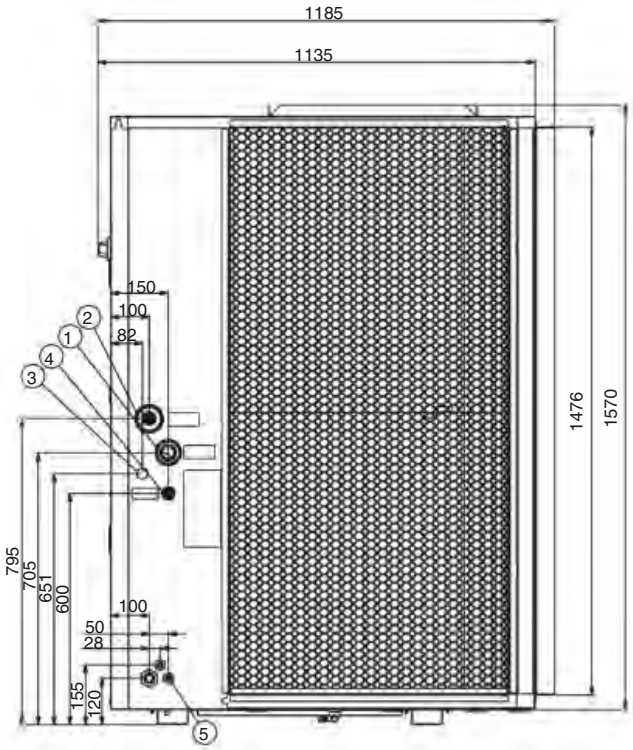


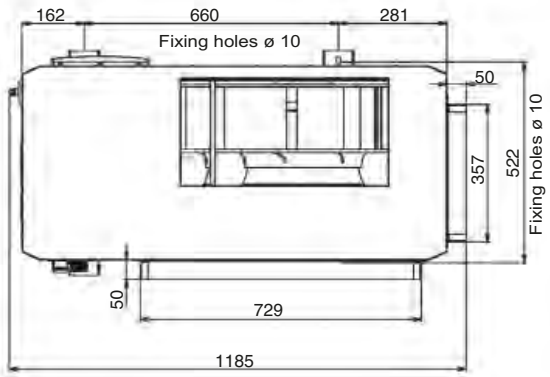


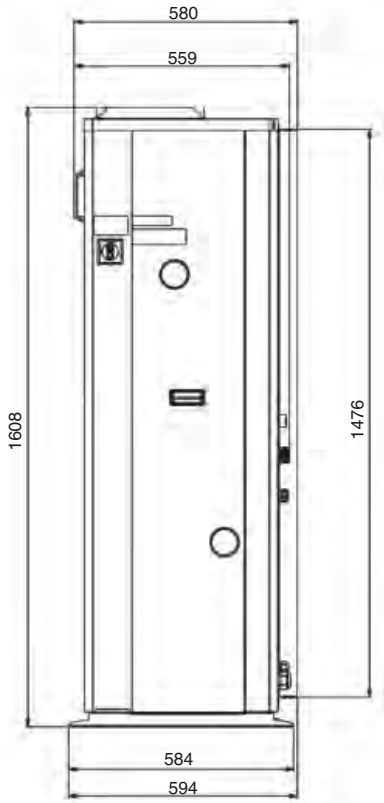
Legend
All dimensions are in mm
1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Relief valve
5. Power connections

DIMENSIONS/CLEARANCES

30RBY 017-021 - units with return air ducts



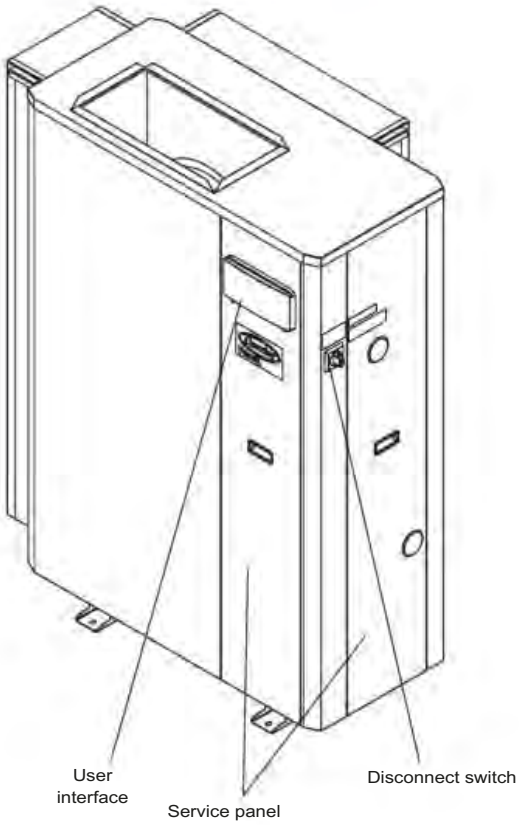


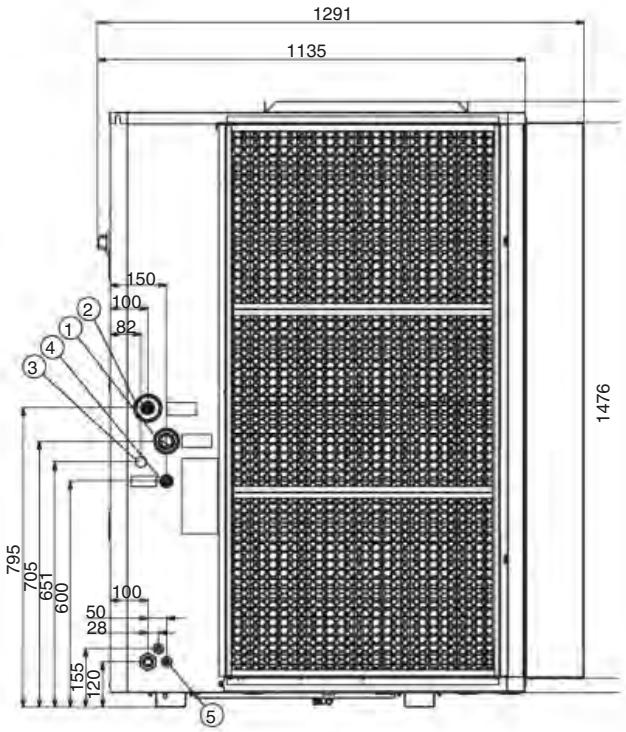


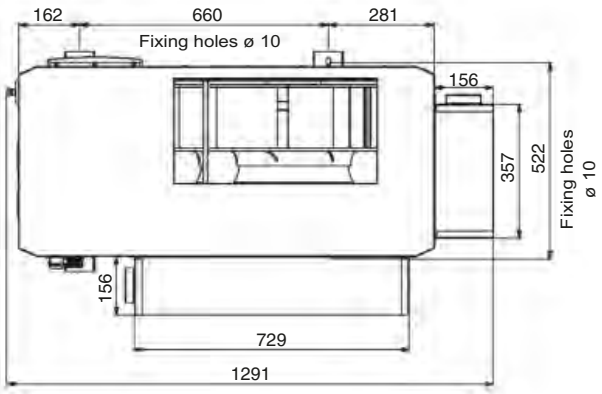
Legend
All dimensions are in mm
1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Relief valve
5. Power connections

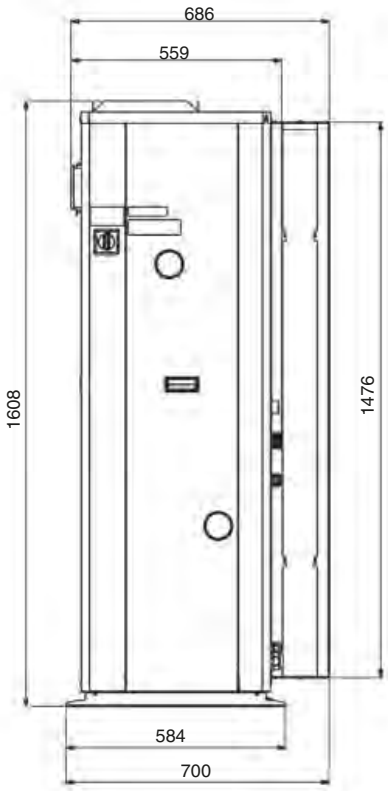
DIMENSIONS/CLEARANCES

30RBY 017-021 - units with filter frame on the return air side





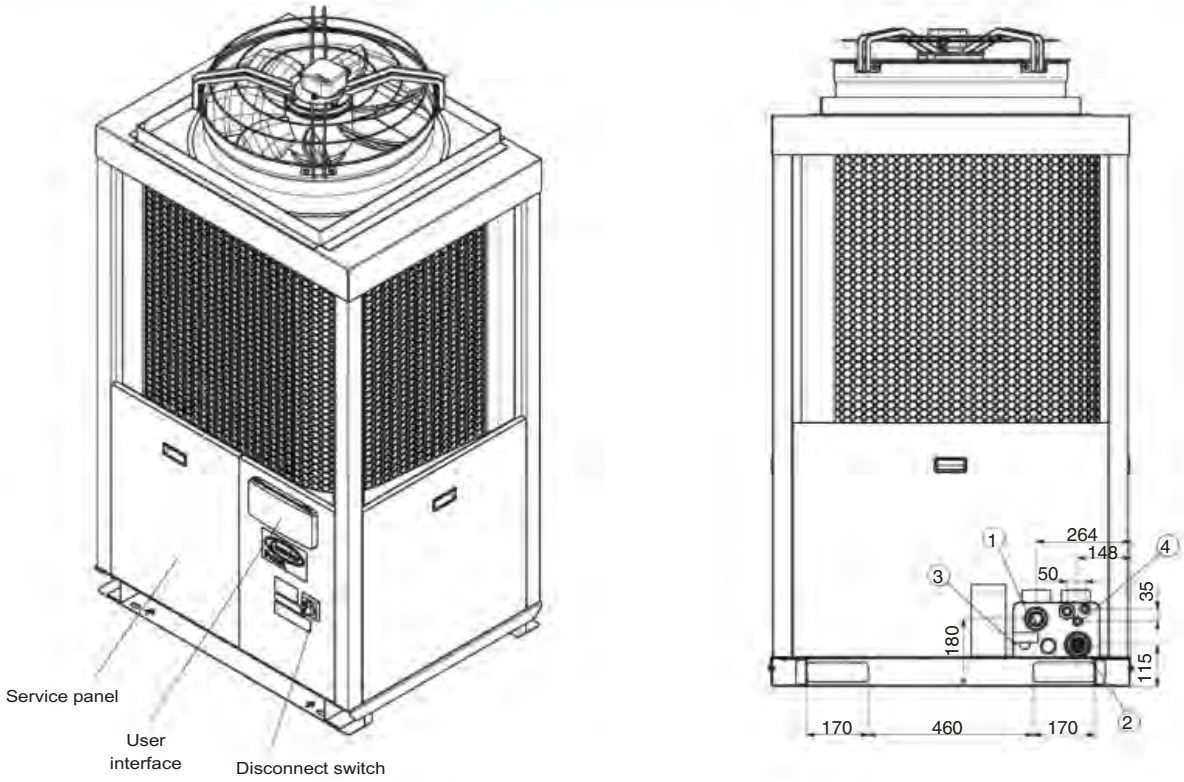


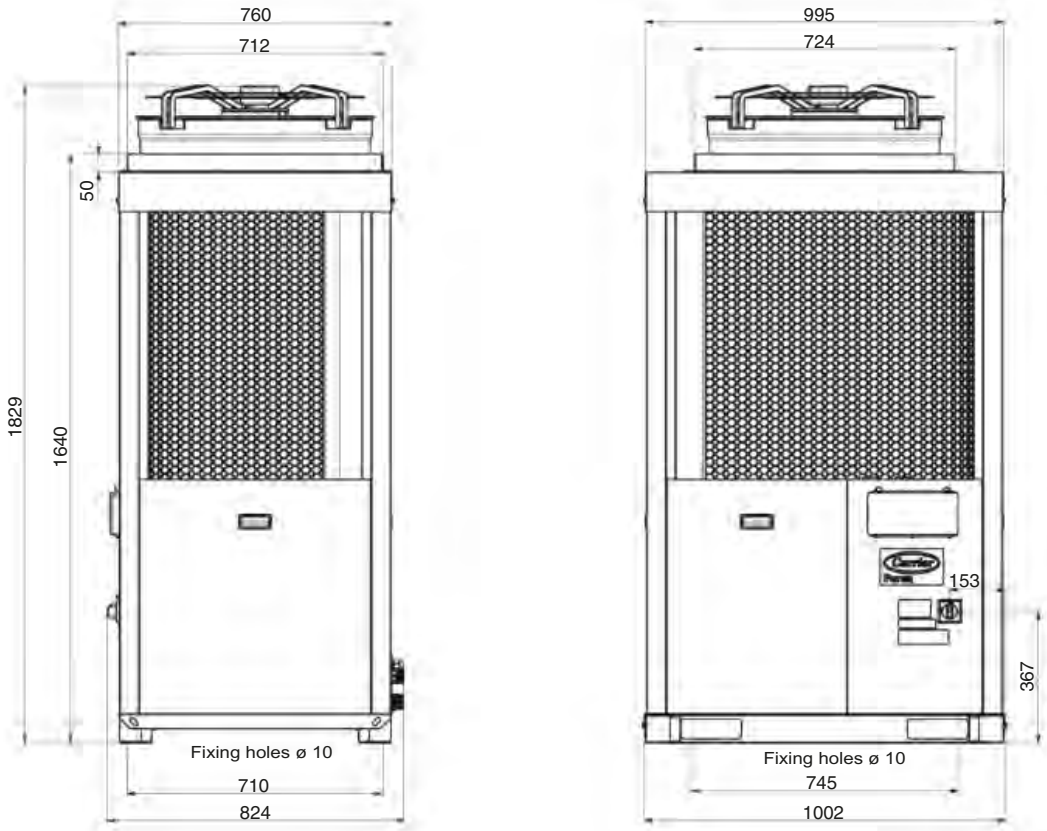


Legend
All dimensions are in mm
1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Relief valve
5. Power connections

DIMENSIONS/CLEARANCES

30RBY 026-033





Legend
All dimensions are in mm
1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

AIR-COOLED LIQUID CHILLERS

Easy and fast installation

Hydraulic module available

Economical operation

Superior reliability

AQUASNAP.

30RB 017-040

Nominal cooling capacity 30RB: 16-41 kW

The AquaSnap liquid chiller pump range was designed for commercial applications such as the air conditioning of offices and hotels etc.

The new AquaSnap units integrate the latest technological innovations:

- Non-ozone depleting refrigerant R410A
- Scroll compressors
- Low-noise fans
- Auto-adaptive microprocessor control

The AquaSnap units are equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration levels
  - The compressor assembly is supported by anti-vibration mountings

Access panels, 30RB 017-021

Easy and fast installation

- Integrated hydraulic module
  - Fixed speed circulator
  - Water filter protecting the water pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Overpressure valve, set to 4 bar
  - Automatic purge valve positioned at the highest point of the hydraulic module to remove air from the system.
  - Thermal insulation and frost protection down to -10°C, using an electric resistance heater and pump cycling.
  - Integrated water fill system to ensure correct water pressure (option)
- Physical features
  - With its small footprint the unit blends in with any architectural styles.
  - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Simplified electrical connections
  - A single power supply point (power supply without neutral available as an option and in standard for units size 40kW)
  - Main disconnect switch with high trip capacity
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Increased energy efficiency at part load
  - In accordance with standard EN 14825/2013 in average climate, the Seasonal Coeficent of performance (SCOP) reaches 3.01 for an energy label of A.
  - Specific Free Defrost algorithm is present to optimise performance and comfort even during defrost period.
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
  - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Hydraulic module, sizes 026-040

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

FEATURES

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

Pro-Dialog+ interface

- Energy management
  - Seven-day internal time schedule clock: Permits unit on/off control and operation at a second set-point
  - Set-point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T
  - Master/slave control of two units operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
  - Change-over based on the outside air temperature
- Integrated features
  - Night mode: Capacity and fan speed limitation for reduced noise level
- Ease-of-use
  - The new backlighted LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
  - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier)
  - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set-point, air temperature, entering/leaving water temperature.

Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the AquaSnap and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: Unoccupied mode)
- Alert indication: This volt-free contact indicates the presence of a minor fault
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of the unit
- User safety: This contact can be used for any customer safety loop, closing of the contact generates a specific alarm
- Out of service: This signal indicates that the unit is completely out of service
- Unit capacity: This analogue output (0-10 V) gives an immediate indication of the unit capacity
- Compressor operation: This contact signals that the compressor is in operation

Remote interface (option)

This interface allows access to the same menus as the unit interface and can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24V transformer supplied.

Interface access, sizes 026-040

TYPE KEY

30R B - 021 C H E - B A -- -

Range

B - Cooling
Q - Heat pump

- - Standard
Y - High static fan

017 - nominal size 17 kW
021 - nominal size 21 kW
026 - nominal size 26 kW
033 - nominal size 33 kW
040 - nominal size 40 kW

C - Power supply with neutral cable (only sizes 017-033)
D - Power supply without neutral

X - Without hydraulic module
H - With hydraunic module with expansion tank
F - With hydraunic module with expansion tank and water filling system
R - With hydraunic and without expansion tank
Z - With hydraunic, w/o expansion tank and with water filling system

- - Without coil protection
E - Epoxy coil protection (Gold-fin)

- - Standard

- - Without gateway
B -CCN JBus gateway
C - CCN Bacnet gateway
D -CCN LONtalk gateway

- - Standard
A - Remote user Interface HMI (As accessory)

Not used

Revision status

PHYSICAL DATA, 30RB UNITS

30RB				017	021	026	033	040
Cooling								
Standard unit		Nominal capacity	kW	16,4	21,4	27,3	33,3	41,4
Full load performances*	CA1	EER	kW/kW	3,04	3,11	3,08	3,28	2,96
		Eurovent class		B	A	B	A	B
	CA2	Nominal capacity	kW	22,7	29,5	38,6	45,8	56,9
		EER	kW/kW	3,80	3,86	4,01	4,11	3,52
		Eurovent class		A	A	A	A	C
Seasonal energy efficiency		**SEPR $_{-2/-8°C}$ Process medium temp.**	**kWh/kWh**	**2,99**	**3,03**	**3,16**	**3,02**	**3,07**
		SEPR $_{12/7°C}$ Process high temp.	kWh/kWh	5,29	5,28	5,13	5,16	5,13
		SEER $_{12/7°C}$ Comfort low temp.	kWh/kWh	3,37	3,37	3,30	3,51	3,44
		SEER $_{23/18°C}$ Comfort medium temp.	kWh/kWh	3,99	3,92	3,92	4,04	3,95
Integrated Part Load Value		IPLV.SI	kW/kW	4,35	4,34	4,34	4,54	4,03
Operating weight(1)								
Standard unit, with hydraulic module			kg	189	208	255	280	291
Standard unit, without hydraulic module			kg	173	93	237	262	273
Sound power level(2)			dB(A)	72	74	78	78	80
Sound pressure level at 10 m(3)			dB(A)	40	42	46	46	48
Dimensions								
Length			mm	1136		1002		
Depth			mm	584		824		
Height			mm	1579		1790		
Compressor				One hermetic scroll compressor				
Refrigerant charge R-410A			kg	5,5	6,4	5,8	8,6	8,8
			teqCO_2	11,5	13,4	12,1	18,0	18,4
Control				Pro-Dialog+				
Fans				Two twin-speed axial fans, 3 blades		One twin-speed axial fan, 7 blades		
Diameter			mm	495	495	710	710	710
Air flow			l/s	2212	2212	3530	3530	3530
Speed			r/s	14,5	14,5	15	15	15
Water heat exchanger				Plate heat exchanger, maximum operating pressure 1000 kPa				
Water volume			l	1,52	1,9	2,28	2,85	3,8
Air heat exchanger				Copper tubes and aluminum fins				
Pipe diameter			in	3/8	3/8	3/8	3/8	3/8
Number of rows				2	2	2	3	3
Number of pipes per row				60	60	60	60	60
Fin spacing			mm	1,69	1,69	1,69	1,69	1,69
Standard unit								
Water connections (MPT gas)			in	1	1	1-1/4	1-1/4	1-1/4
Unit with hydraulic module				Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, relief valve				
Pump				One single-speed pump, maximum water-side operating pressure 400 kPa				
Expansion tank capacity			l	5	5	8	8	8
Entering water connection			in	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4
Leaving water connection			in	1	1	1-1/4	1-1/4	1-1/4
Nominal operating current			A	1,3	1,4	2,4	2,6	2,8
Chassis paint colour				Beige				

* In accordance with standard EN14511-3:2013

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

SEPR $_{-2/-8°C}$ **Applicable Ecodesign regulation: (EU) No 2015/1095**

SEER $_{12/7°C}$ & SEPR $_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

SEER $_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(3) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL DATA, 30RB UNITS

30RB		017	021	026	033	040
Power circuit						
Nominal power supply	V-ph-Hz	400-3+N-50 (power supply option C) or 400-3-50 (power supply option D)				400-3-50 (STD - no option)
Voltage range	V	340-460				360-440
Control circuit supply		24 V via internal transformer				
Maximum start-up current (Un)*	A	75	95	118	118	176
Unit power factor at nominal capacity**		0.84	0.79	0.77	0.81	0.9
Maximum operating power input**	kW	7.8	9.1	11	13.8	17.5
Nominal current drawn***	A	8	12	16	17	25
Maximum operating current draw (Un)****	A	13	16	20	24	30
Maximum operating current draw (Un-15%)†	A	15	18	23	27	36

* Maximum instantaneous start-up current (locked rotor current of the compressor).

** Power input, compressors and fans, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).

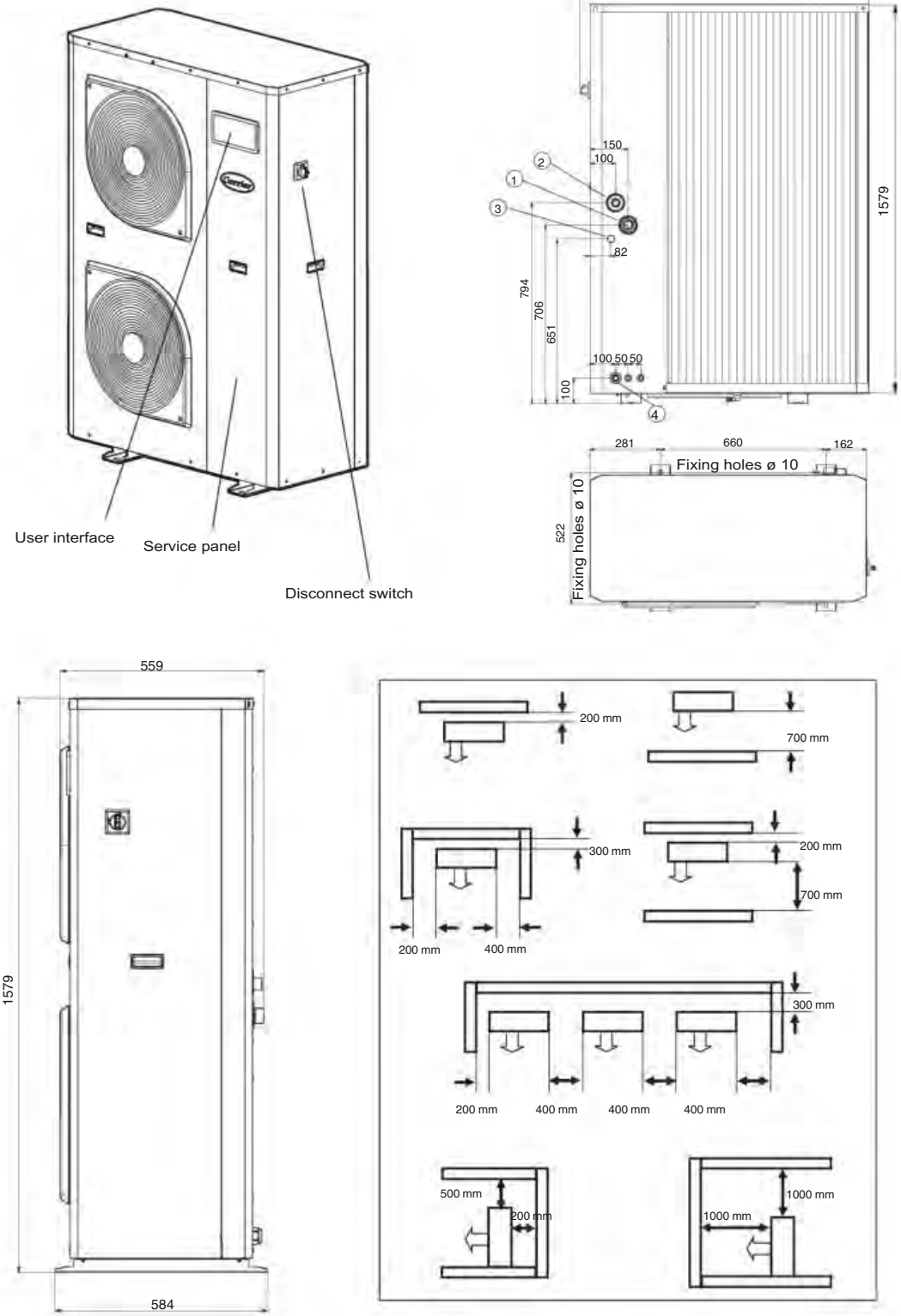
*** Standardised Eurovent conditions: Water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

**** Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).

† Maximum unit operating current at maximum unit power input and 340-460V for sizes 017 to 033 or 360-440V for size 040.

DIMENSIONS/CLEARANCES

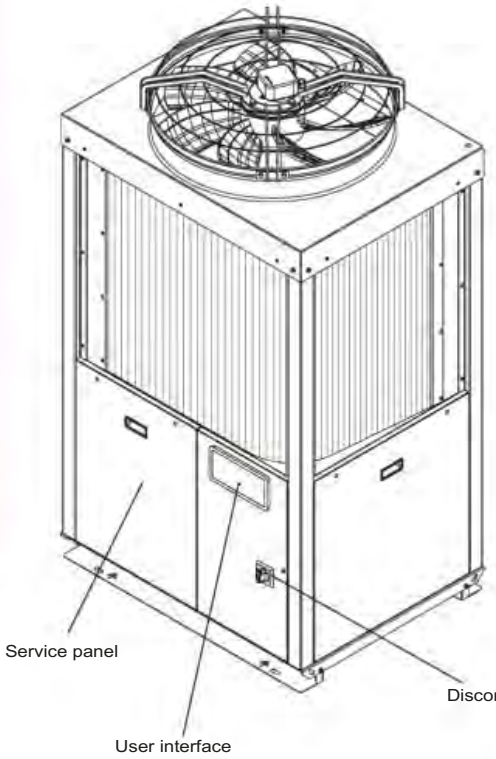
30RB 017-021

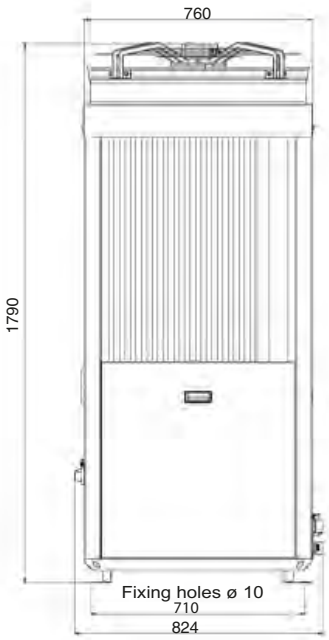


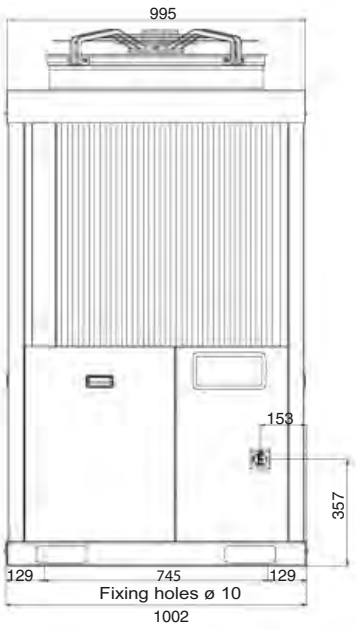
Legend
All dimensions are in mm
1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

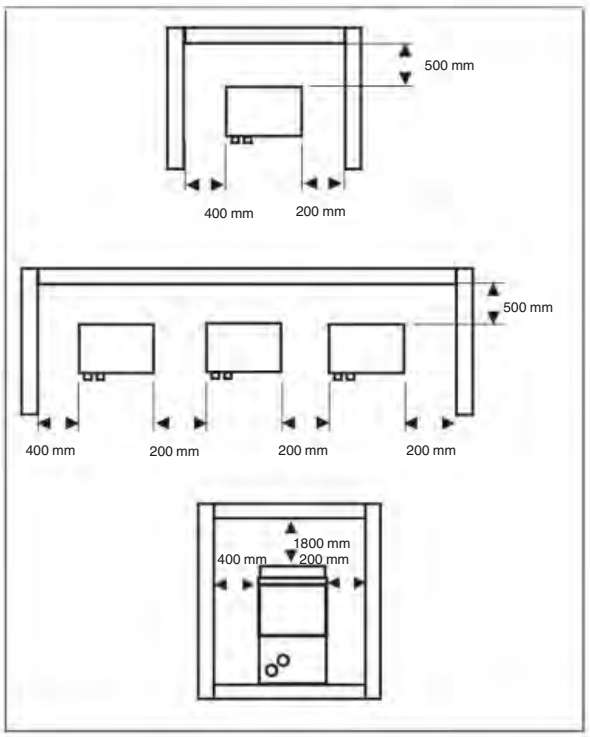
DIMENSIONS/CLEARANCES

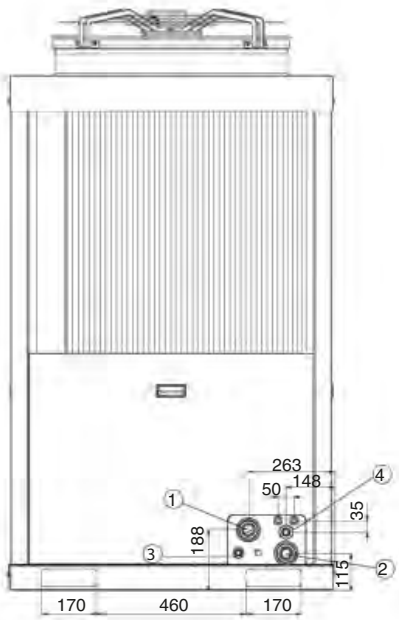
30RB 026-040











Legend
All dimensions are in mm
1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

DUCTABLE AIR-COOLED LIQUID CHILLERS

Compact design

High static available pressure

Quiet operation

Variable speed fans

Variable water flow

30RBSY

AQUASNAP

Nominal cooling capacity 30RBSY: 40-153 kW

The AquaSnap liquid chiller pump range was designed for commercial (air conditioning of offices, hotels etc.) or industrial (low-temperature process units etc.) applications.

It integrates the latest technological innovations:

- Non-ozone depleting refrigerant R410A
- All-aluminium microchannel heat exchangers for the cooling only units
- Scroll compressors
- Low-noise fans made of a composite material
- Auto-adaptive microprocessor control
- Electronic expansion valve
- Variable-speed pump (option)

The AquaSnap can be equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the chilled water supply and return piping.

EUROVENT CERTIFIED PERFORMANCE
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Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration level
  - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
  - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
- Condenser (30RBSY) section
  - Vertical condenser coils
  - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks (30RBSY 090-160 (optional).
  - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
  - Fan motor controlled by a variable-frequency controller, to allow adjustment of the fan speed in accordance with the ducting for optimised efficiency.
  - Rigid fan installation for reduced start-up noise (Carrier patent)

Easy and fast installation

- Physical features
  - Flying Bird IV fans controlled by a variable-frequency controller to provide up to 240 Pa available pressure (depending on the size) at nominal flow rate
  - Flow control in accordance with the ducting for optimised efficiency with the possibility to program a maximum supply air flow.
  - Supply air duct connection frame.
  - Suction air connection frame standard for sizes 30RBSY 039-080
  - Suction air filters optional (30RBSY 039-080)
  - Small unit footprint with a low height (1371 mm) for easy installation in most buildings
  - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Integrated hydraulic module (option)
  - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation.

Hydraulic module

-

  - Single or dual water pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter protects the water pump against circulating debris
  - Pressure measurement, using two pressure transducers and allowing indication of water flow rate, water pressure and lack of water.
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Overpressure valve, set to 4 bar
  - Speed variator on the pumps (option) to ensure the correct flow rate, based on the system requirements
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
- Simplified electrical connections
  - A single power supply point without neutral
  - Main disconnect switch (option 70) with high trip capacity
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors

Economical operation

- Variable-speed pump (option)
  - The control algorithm adjusts the water flow rate in accordance with the actual system requirements. This saves energy and makes the flow control valve unnecessary.
- Variable-speed fan
  - Variable-speed ventilation permits adjustment to any duct type and variation of the air flow rate for maximised unit performances under any operating conditions.
- Increased energy efficiency at part load
  - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
  - The electronic expansion device (EXV) allows operation at a lower condensing pressure (SEER and SCOP seasonal performances optimisation).
  - Dynamic superheat management for better utilisation of the water heat exchanger surface.
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Touch Pilot Junior control
  - R410A refrigerant is easier to use than other refrigerant blends

FEATURES

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio
  - 50% reduction in the refrigerant charge through the use of micro-channel heat exchangers for the cooling only units
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Reduction of leaks due to reduced vibration levels and elimination of capillary tubes (TXVs)
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Supply air connection frame

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
  - All aluminium micro-channel heat exchanger (MCHE) on cooling only units, offers increased corrosion resistance compared to traditional coils. The all-aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
  - Hydraulic module with integrated pressure transducers allowing measurement of the water pressure at two points, as well as measurement of the water flow rate and detection of lack of water and pressure. This considerably reduces the risk of problems such as frost accumulation on the water heat exchanger.
  - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) AquaSnap continues to operate, but at reduced capacity.
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

Touch Pilot Junior control

The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3” colour touch screen.

- Energy management
  - Internal time schedule clock: Controls heat pump on/off times and operation at a second set-point
  - Set-point offset based on the outside air temperature
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
- Integrated advanced communication features
  - Night mode: Capacity and fan speed limitation for reduced noise level
  - With hydraulic module: Water pressure display and water flow rate calculation
  - Easy and high-speed communication technology over Ethernet (IP) to a building management system
  - Access to multiple unit parameters.
  - Without hydraulic module: 0-10V output is available for external variable speed pump controL
- 4.3" Touch Pilot user interface

  - Intuitive and user-friendly 4.3 inch touch screen interface
  - Concise and clear information is available in local languages
  - Complete menu, customised for different users (end user, service personnel or Carrier engineers).

FEATURES

Remote management (standard)

Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap also communicates with other building management systems via optional communication gateways.

- A connection terminal allows remote control of the AquaSnap by wired cable:
- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

Variable fan speed controller

All-aluminium micro-channel heat exchanger (MCHE)

Already utilised in the automobile and aeronautical industries for many years, the MCHE micro-channel heat exchanger is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers.

As an option, the Enviro-Shield and Super Enviro-Shield anti-corrosion protections have been developed to increase the application range of the MCHE coil from medium to very corrosive environments. With Enviro-Shield protection, corrosion resistance of the MCHE coil is doubled without any impact on heat exchange.

With Super Enviro-Shield protection corrosion resistance of the MCHE coil is multiplied by four, and allows use in very corrosive industrial or marine environments

The MCHE heat exchanger allows a reduction in chiller refrigerant charge by up to 50%.

The low thickness of the MCHE reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHE heat exchanger is very fast using a dry air jet or a high-pressure washer, while observing the usage precautions.

OPTIONS

Options	No.	Description	Advantages	Use
Coil with anti-corrosion post treatment	2B	Factory application of Blygold Polual treatment on the copper/aluminum coils	Improved corrosion resistance, recommended for industrial, rural and marine environments	30RBSY 039-160 with option 49, 5 or 6
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30RBSY 039-160 with option 49, 5 or 6
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBSY 039-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBSY 039-160
Very low noise level	15LS	Acoustic compressor enclosure	Compressor noise emission reduction	30RBSY 039-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	30RBSY 039-160
Suction filter	23B	Washable G2 efficiency filter in accordance with EN 779	Prevents pollution of the air-heat exchanger	30RBSY 039-80
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RBSY 039-160
Hydraulic module frost protection	42	Electric heater on the hydraulic module	hydraulic module frost protection at low outside temperatures down to -20°C	30RBSY 039-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit. Note: In this configuration the units are equipped with traditional coils (Cu/Al).	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RBSY 039-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallel operation with operating time equalisation	30RBSY 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RBSY 039-160
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RBSY 039-160 Brine only
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter(expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBSY 039-160 Brine only
HP evap. variable-speed single-pump	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter(expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBSY 039-160
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBSY 039-160
J-Bus gateway	148B	Bi-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30RBSY 039-160
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RBSY 039-160
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RBSY 039-160

OPTIONS

Options	No.	Description	Advantages	Use
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30RBSY 039-160
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30RBSY 039-160
Evaporator screw connection sleeves (kit)	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30RBSY 039-160
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RBSY 039-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RBSY 039-160
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RBSY 039-160
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RBSY 039-160
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	30RBSY 039-160
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system managment, Extended control capabilities to a dryccoler used in Free Cooling mode	30RBSY 039-160

PHYSICAL DATA, 30RBSY

30RBSY				39	45	50	60	70	80	90	100	120	140	160
Cooling														
Standard unit		Nominal capacity	kW	39,6	44,0	51,2	58,1	66,2	77,7	86,7	97,1	114,4	132,8	153,4
	CA1	EER	kW/kW	2,89	2,78	2,66	2,68	2,66	2,63	2,69	2,70	2,66	2,64	2,58
		Eurovent class		A	A	B	B	B	B	B	A	B	B	B
Full load performances*	CA2	Nominal capacity	kW	53,0	58,9	68,5	80,8	83,6	97,0	114,3	126,5	150,8	168,9	191,7
		EER	kW/kW	3,47	3,35	3,11	3,33	2,89	2,97	3,13	3,06	3,09	2,91	2,92
Seasonal efficiency		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**3,83**	**3,99**	**4,04**	**4,00**	**3,80**	**3,89**	**4,00**	**4,03**	**4,02**	**4,23**	**4,41**
		ηs cool $_{12/7°C}$	**%**	**150**	**156**	**158**	**157**	**149**	**152**	**157**	**158**	**158**	**166**	**173**
		SEER $_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	**4,63**	**4,94**	**4,76**	**4,80**	**4,59**	**4,94**	**4,99**	**4,79**	**5,13**	**4,99**	**5,37**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,68**	**5,71**	**5,50**	**5,35**	**5,17**	**5,24**	**4,94**	**5,14**	**5,62**	**5,13**	**5,60**
		SEPR $_{-2/-8°C}$ Process medium temp.	kWh/kWh	3,29	3,70	3,21	3,11	3,55	3,05	3,14	3,43	3,44	3,40	3,30
Integrated Part Load Value		IPLV.SI	kW/kW	3,69	3,89	3,99	3,95	3,66	3,78	3,52	3,61	3,76	3,69	4
Sound levels														
Standard unit - for 160 Pa external static pressure														
Sound power level at discharge (1)			dB(A)	84	84	84	84	87	87	87	87	87	90	90
Sound power level radiated (1)				84	84	84	84	87	87	87	87	87	90	90
Sound pressure level at 10 m (2)			dB(A)	53	53	53	53	55	55	56	56	56	58	58
Dimensions				If two values are shown the first one is for standard units and the second one for units with option 23B										
Length			mm	2142/2307	2142/2307	2142/2307	2142/2307	2142/2307	2142/2307	2273	2273	2273	2273	2273
Width			mm	1132/1297	1132/1297	1132/1297	1132/1297	1132/1297	1132/1297	2122	2122	2122	2122	2122
Height			mm	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371
Operating weight with MCHE coil (3)														
Standard unit without hydraulic module			kg	436	443	449	464	461	480	771	780	793	901	932
Standard unit with hydraulic module														
Single high-pressure pump			kg	466	473	479	494	491	510	803	812	829	940	971
Dual high-pressure pump			kg	491	499	504	520	517	536	848	857	877	977	1008
Compressors				Hermetic scroll compressors, 48.3 r/s										
Circuit A				2	2	2	2	2	2	3	3	3	2	2
Circuit B				-	-	-	-	-	-	-	-	-	2	2
No of control stages				2	2	2	2	2	2	3	3	3	4	4
Refrigerant charge with MCHE coil (3)				R-410A										
Circuit A			kg	4.7	5.3	5.9	6.7	6.2	7.3	10.7	10.8	11.4	6.5	7.4
			teqCO_2	9.8	11.1	12.3	14.0	12.9	15.2	22.3	22.6	23.8	13.6	15.5
Circuit B			kg	-	-	-	-	-	-	-	-	-	6.5	7.4
			teqCO_2	-	-	-	-	-	-	-	-	-	13.6	15.5
Capacity control				Touch Pilot Junior										
Minimum capacity			%	50	50	50	50	50	50	33	33	33	25	25
Condensers				All aluminium microchannel heat exchanger (MCHE)										
Fans				Axial Flying Bird IV with rotating shroud										
Quantity				1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow			l/s	3885	3883	3687	3908	4982	5267	6940	6936	7370	9958	10534
Maximum rotation speed			r/s	16	16	16	16	18	18	16	16	16	18	18
Evaporator				Direct expansion, plate heat exchanger										
Water volume			l	2.6	3	3.3	4	4.8	5.6	8.7	9.9	11.3	12.4	14.7
Without hydraulic module (option)														
Max. water-side operating pressure			kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
With hydraulic module (option)														
Single or dual pump (as selected)				Pump, Victaulic screen filter, relief valve, expansion tank, purge valves (water + air), pressure sensors										
Expansion tank volume			l	12	12	12	12	12	12	35	35	35	35	35
Expansion tank pressure(4)			bar	1	1	1	1	1	1	1.5	1.5	1.5	1.5	1.5
Max. water-side operating pressure			kPa	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module				Victaulic										
Diameter			in	2	2	2	2	2	2	2	2	2	2	2
Outside tube diameter			mm	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3
Chassis paint colour				Colour code: RAL7035										

* In accordance with standard EN14511-3:2013

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool $_{12/7°C}$ & SEER $_{12/7°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

SEER $_{23/18°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

SEPR $_{12/7°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

SEPR $_{-2/-8°C}$ Applicable Ecodesign regulation: (EU) No 2015/1095

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Values shown are a guideline only. Please refer to the unit nameplate

(4) When delivered, the standard pre-inflation of the tank is not necessarily the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL DATA, 30RBSY

30RBSY without hydraulic module		039	045	050	060	070	080	090	100	120	140	160
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V via internal transformer										
Maximum start-up current (Un)*												
Standard unit	A	116	137	145	148	176	213	179	213	253	244	287
Unit with electronic starter option	A	75	87	94	96	114	140	130	155	181	186	215
Unit power factor at maximum capacity**		0.83	0.81	0.81	0.83	0.81	0.78	0.83	0.81	0.79	0.81	0.78
Maximum operating power input**	kW	21	24	26	30	32	36	46	49	56	64	73
Nominal unit operating current draw***	A	28	32	36	39	43	53	61	67	83	86	106
Maximum operating current draw (Un)****	A	37	47	49	55	67	73	86	104	113	135	147
Maximum operating current draw (Un-10%)†	A	41	52	54	61	75	80	94	116	123	150	160
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table 9.1										

* Maximum instantaneous start-up current at operating limit value (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).
** Power input, at the unit permanent maximum operating conditions (data given on the unit nameplate)
*** Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.
**** Maximum unit current at 400 V, non permanent operating conditions (values given on the unit nameplate).
† Maximum unit operating current at 360 V, non permanent operating conditions.

Short-circuit stability current (TN system*)

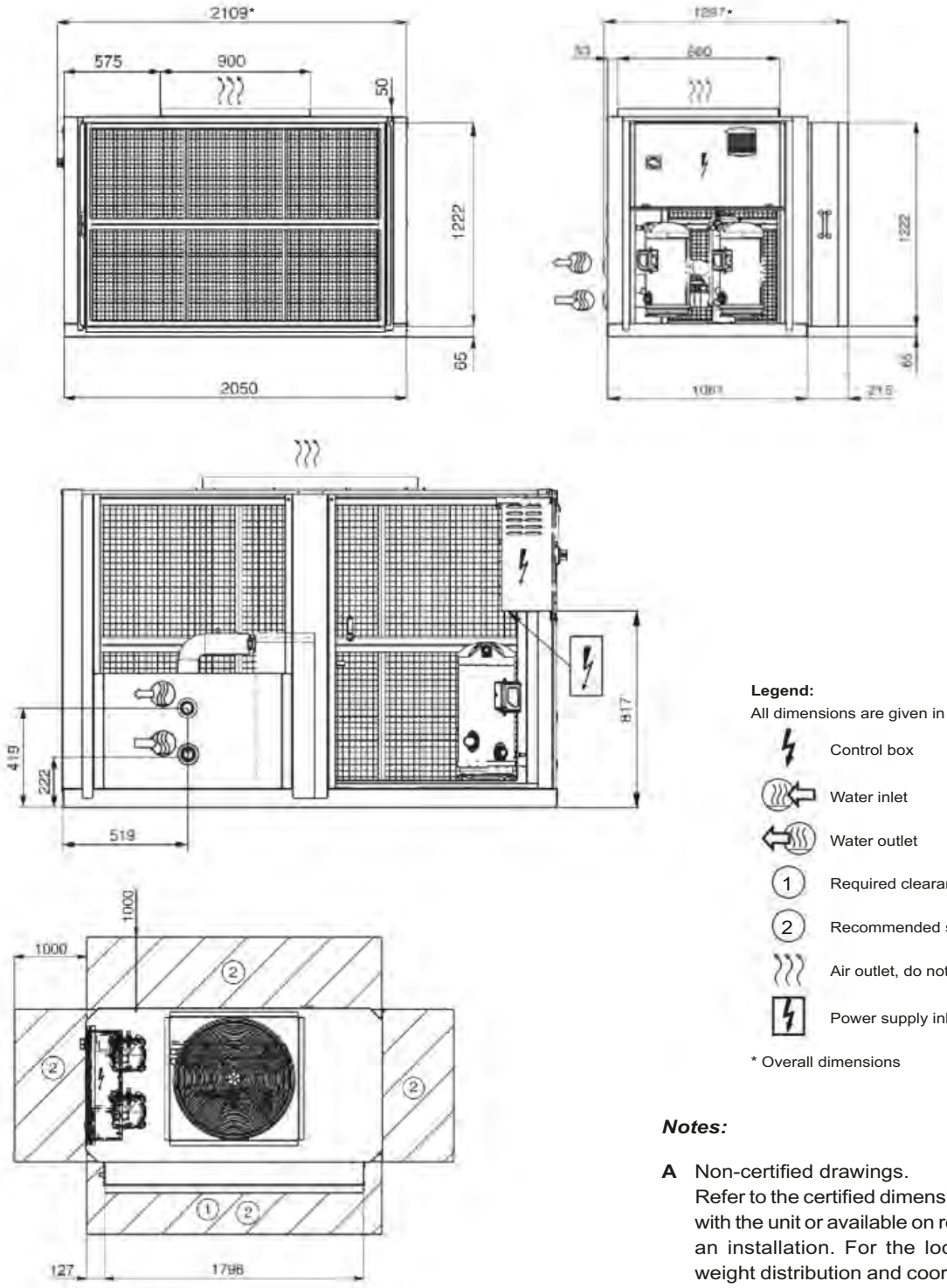
30RBSY	039	045	050	060	070	080
Value with unspecified upstream protection						
Short-term current at 1s - Icw – kA rms	3.36	3.36	3.36	3.36	3.36	3.36
Admissible peak current - Ipk - kA pk	20	20	20	20	20	15
Max. value with upstream protection by circuit breaker						
Conditional short-circuit current Icc - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H
Reference No.**	29670	29670	29670	29670	29670	29670

30RBSY	090	100	120	140	160
Value with unspecified upstream protection					
Short-term current at 1s - Icw – kA rms	5.62	5.62	5.62	5.62	5.62
Admissible peak current - Ipk - kA pk	20	20	15	20	15
Max. value with upstream protection by circuit breaker					
Conditional short-circuit current Icc - kA rms	40	40	40	30	30
Schneider circuit breaker - Compact series	NS100H	NS160H	NS160H	NS250H	NS250H
Reference No.**	29670	30670	30670	31671	31671

* Earthing system type
** If another current limitation protection system is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 039-050 and 070, units with and without hydraulic module, without filter frame



Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- 1 Required clearances for air entry
- 2 Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

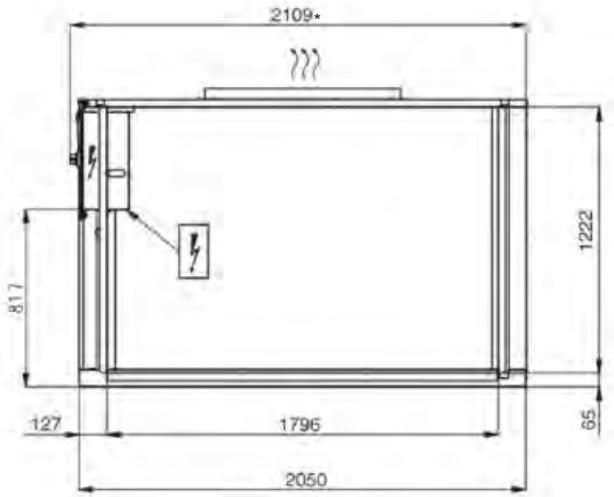
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RBSY 039-080).

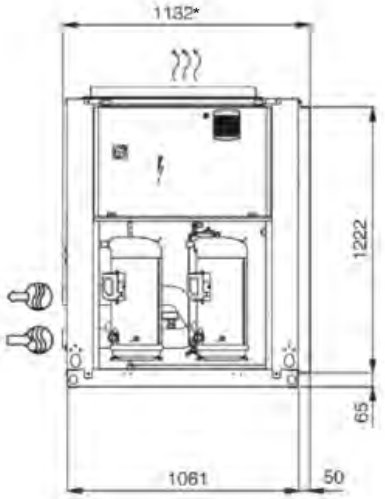
C The unit must be installed level (less than 2 mm per metre deviation in both axes).

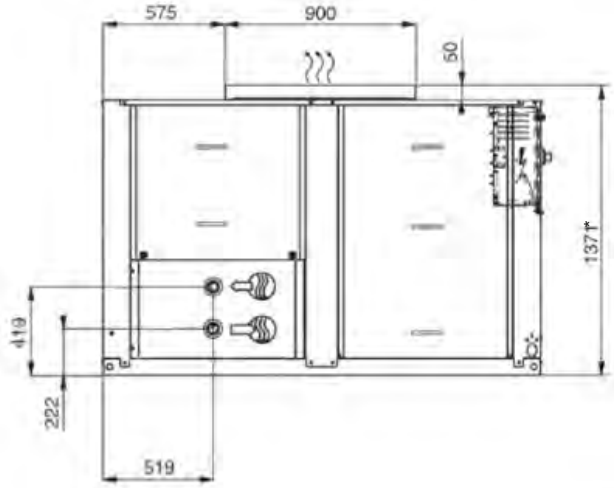
D Units 30RBSY 039-080 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

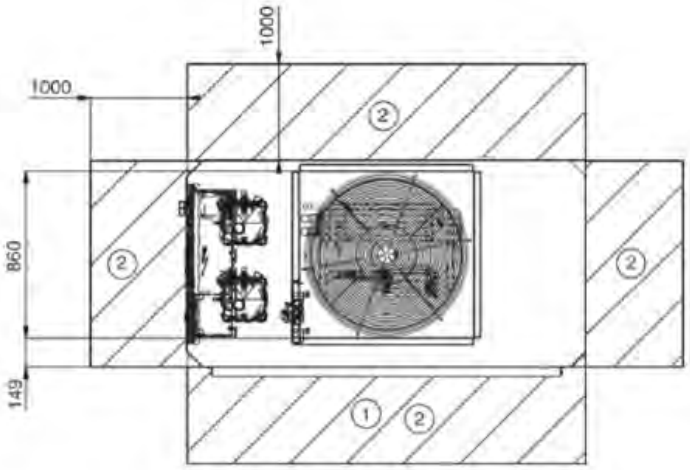
DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 039-050 and 070, option 23B, units with and without hydraulic module, with filter frame









Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

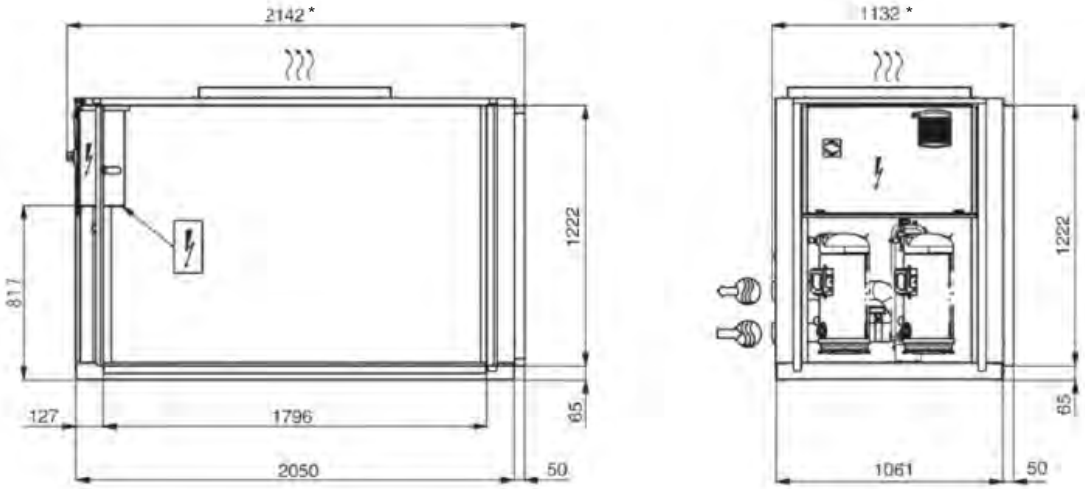
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RBSY 039-080).

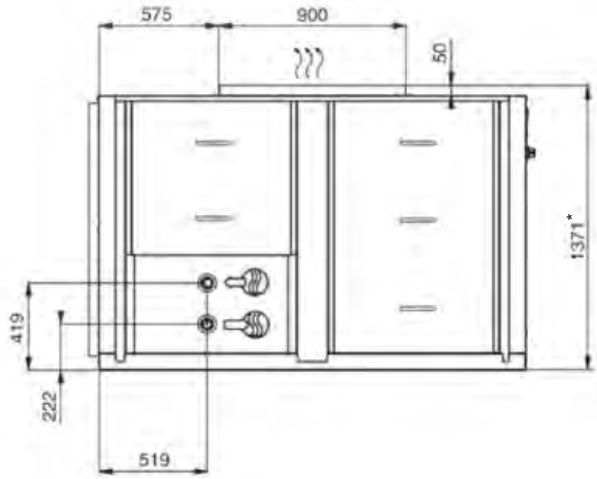
C The unit must be installed level (less than 2 mm per metre deviation in both axes).

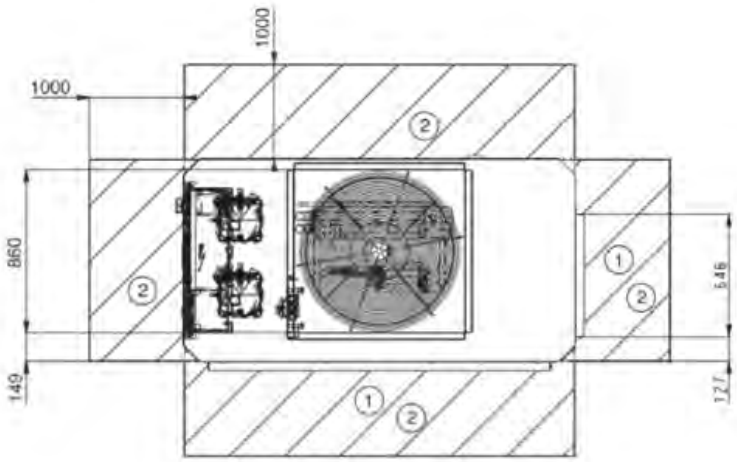
D Units 30RBSY 039-080 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 060 and 080, units with and without hydraulic module, without filter frame







Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

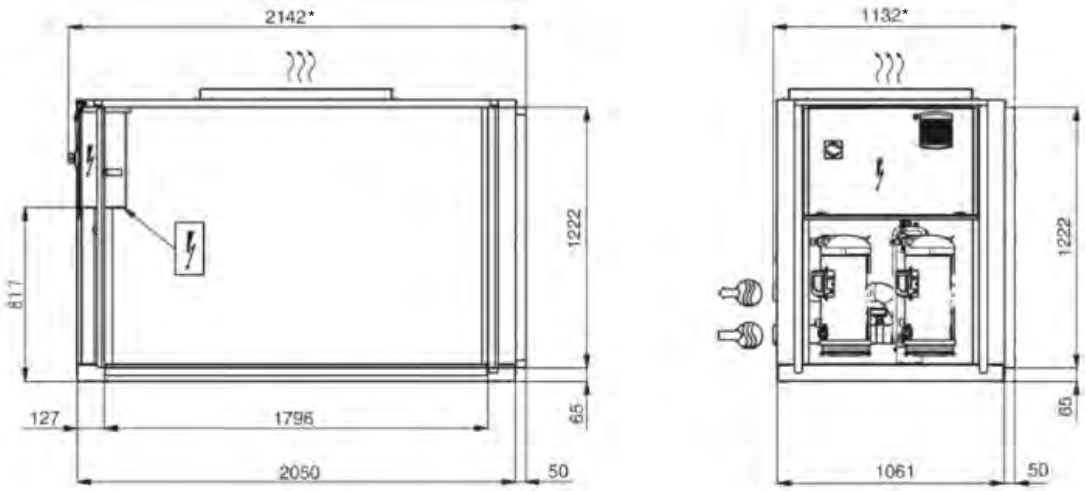
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RBSY 039-080).

C The unit must be installed level (less than 2 mm per metre deviation in both axes).

D Units 30RBSY 039-080 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 060 and 080, option 23B, units with and without hydraulic module, with filter frame



Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- 1 Required clearances for air entry
- 2 Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

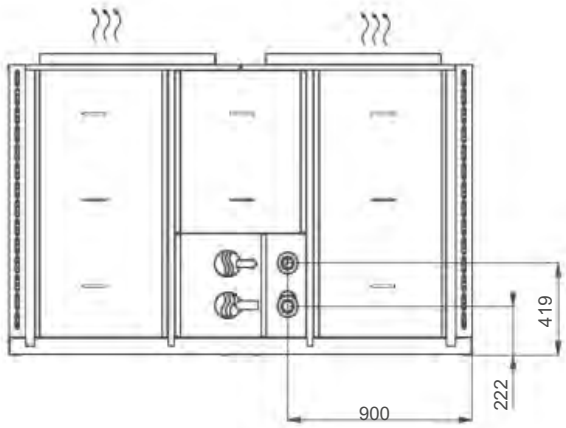
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RBSY 039-080).

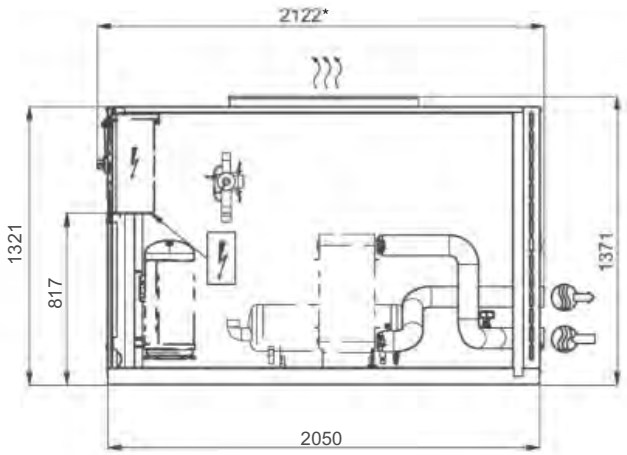
C The unit must be installed level (less than 2 mm per metre deviation in both axes).

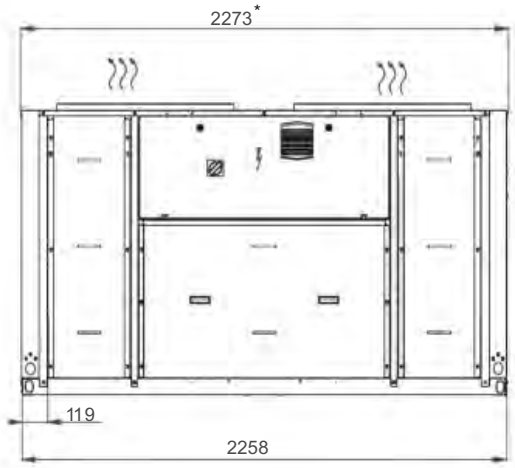
D Units 30RBSY 039-080 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

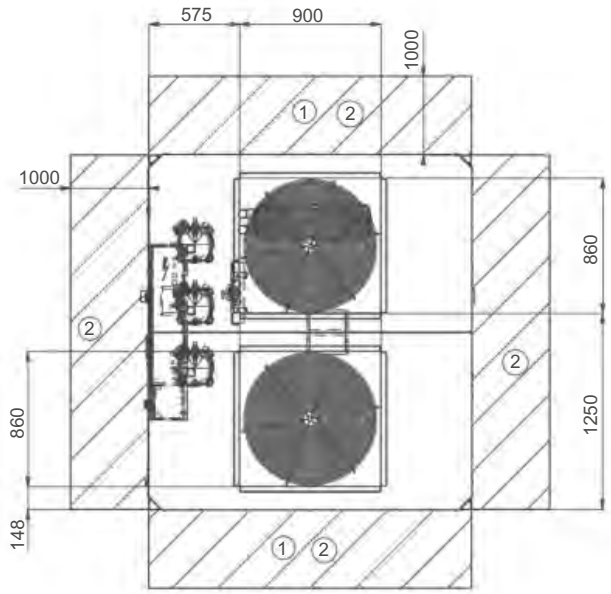
DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 090-120, units with and without hydraulic module









Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

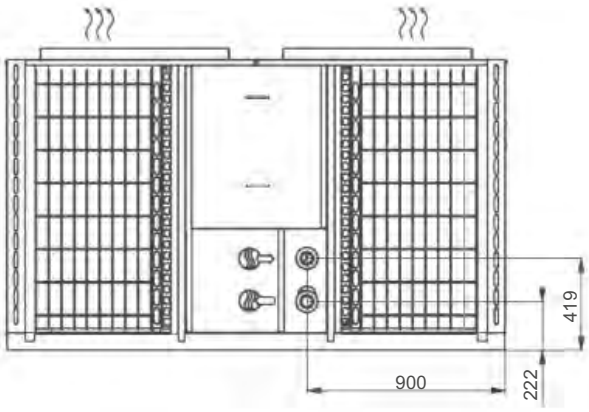
Notes:

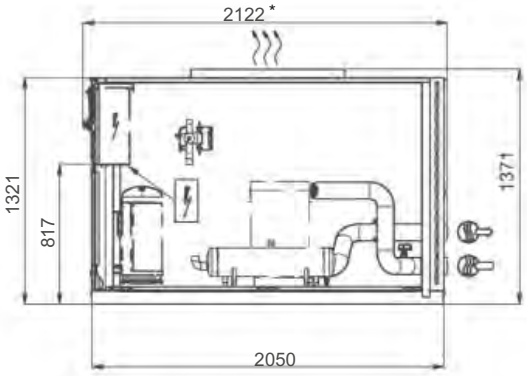
A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

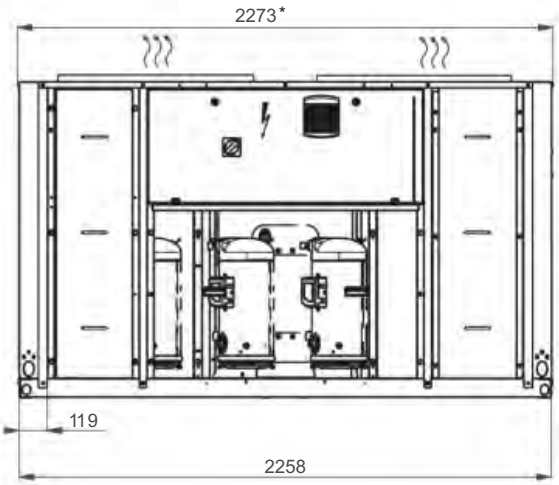
B The unit must be installed level (less than 2 mm per metre deviation in both axes).

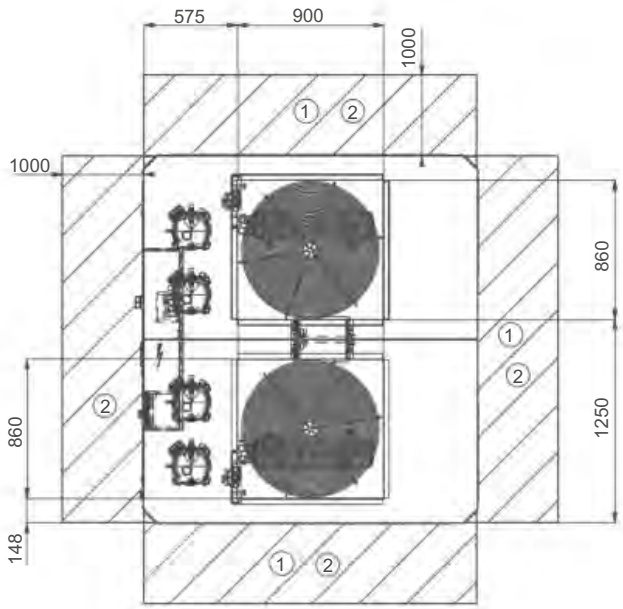
DIMENSIONS/CLEARANCES, 30RBSY

30RBSY 140-160, units with and without hydraulic module









Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

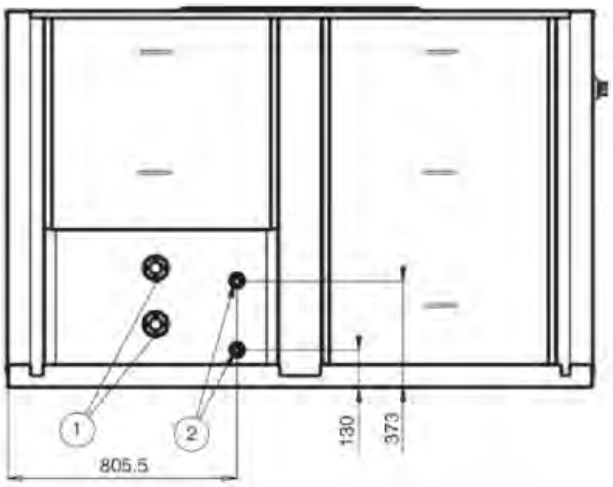
A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

B The unit must be installed level (less than 2 mm per metre deviation in both axes).

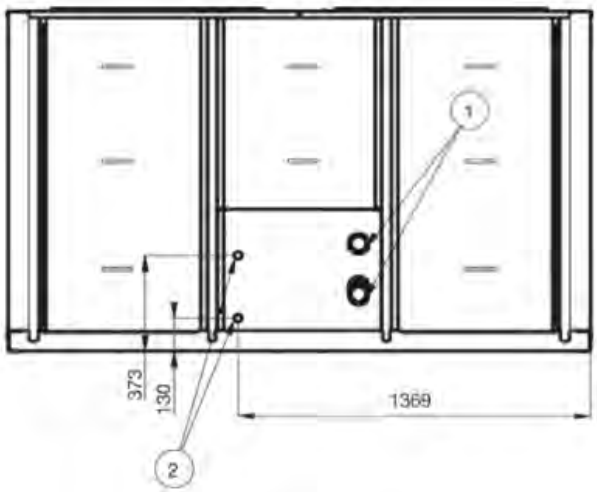
DIMENSIONS/CLEARANCES FOR 30RBSY UNITS WITH OPTION 49

Position of the desuperheater inlets and outlets

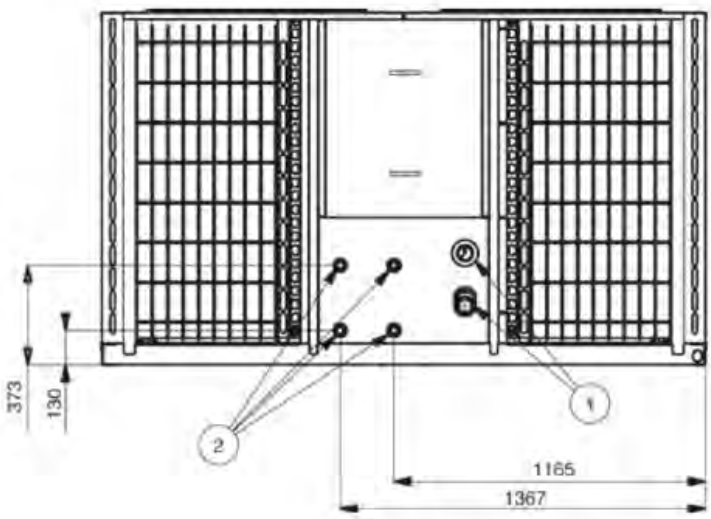
30RBSY 039-080



30RBSY 090-120



30RBSY 140-160



(1) Unit water inlet and outlet

(2) Water inlet and outlet, unit with option 49

AIR-COOLED LIQUID CHILLERS

Commercial and industrial applications

Compact design

Quiet operation

Variable water flow

Partial heat reclaim

30RBS

AQUASNAP

Nominal cooling capacity 30RBS: 40-156 kW

The AquaSnap range of liquid chillers pumps was designed for commercial (air conditioning of offices, hotels etc.) or industrial (low-temperature process units etc.) applications.

The AquaSnap integrates the latest technological innovations:

- Non-ozone depleting refrigerant R410A
- All-aluminium microchannel heat exchangers for the cooling only units
- Scroll compressors
- Low-noise fans made of a composite material
- Auto-adaptive microprocessor control
- Electronic expansion valve
- Variable-speed pump (option)

The AquaSnap can be equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the chilled water supply and return piping.

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Check ongoing validity of certificate:
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FEATURES

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration level
  - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
  - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent).
- Condenser (30RBS) section
  - Vertical condenser coils
  - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks (optional on 30RBS 039-160).
  - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
  - Rigid fan installation for reduced start-up noise (Carrier patent).

Easy and fast installation

- Integrated hydraulic module (option)
  - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation

Hydraulic module

  - Single or dual water pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter protects the pump against circulating debris
  - Pressure measurement, using two pressure transducers and allowing indication of water flow rate, water pressure and lack of water.
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Overpressure valve, set to 4 bar
  - Speed variator on the pumps (option) to ensure the correct flow rate, based on the system requirements
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
- Physical features
  - The unit has a small footprint and a low height (1330 mm) allowing it to blend in with any architectural styles.
  - The unit is enclosed by easily removable panels, covering all components (except air heat exchangers and fans).
- Simplified electrical connections
  - A single power supply point without neutral
  - Main disconnect switch (option 70) with high trip capacity
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

  - Optional variable-speed pump for economical operation
  - The control algorithm adjusts the water flow rate based on the actual system requirements and obsoletes the need for the control valve at the unit outlet.
- Increased energy efficiency at part load
  - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
  - The electronic expansion device (EXV) allows operation at a lower condensing pressure (SEER and SCOP Seasonal performances optimisation).
  - Dynamic superheat management for better utilisation of the water heat exchanger surface.
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Touch Pilot Junior control
  - R410A refrigerant is easier to use than other refrigerant blends.

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio
  - 50% reduction in the refrigerant charge through the use of micro-channel heat exchangers for the cooling only units
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Reduction of leaks due to reduced vibration levels and elimination of capillary tubes (TXVs)
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.

Partial view of the hydraulic circuit

FEATURES

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
  - All aluminium micro-channel heat exchanger (MCHE) on cooling only units (30RBS), offers increased corrosion resistance compared to traditional coils. The all-aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
  - Hydraulic module with integrated pressure transducers allowing measurement of the water pressure at two points, as well as measurement of the water flow rate and detection of lack of water and pressure. This considerably reduces the risk of problems such as frost accumulation on the water heat exchanger.
  - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) AquaSnap continues to operate, but at reduced capacity.
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

Touch Pilot Junior control

The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3” colour touch screen.

- Energy management
  - Internal time schedule clock: Controls heat pump on/off times and operation at a second set-point
  - Set-point offset based on the outside air temperature
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
- Integrated advanced communication features
  - Night mode: Capacity and fan speed limitation for reduced noise level
  - With hydraulic module: Water pressure display and water flow rate calculation
  - Easy and high-speed communication technology over Ethernet (IP) to a building management system
  - Access to multiple unit parameters.
  - Without hydraulic module: 0-10V output is available for external variable speed pump controL
- 4.3" Touch Pilot Junior user interface

  - Intuitive and user-friendly 4.3 inch touch screen interface
  - Concise and clear information is available in local languages
  - Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

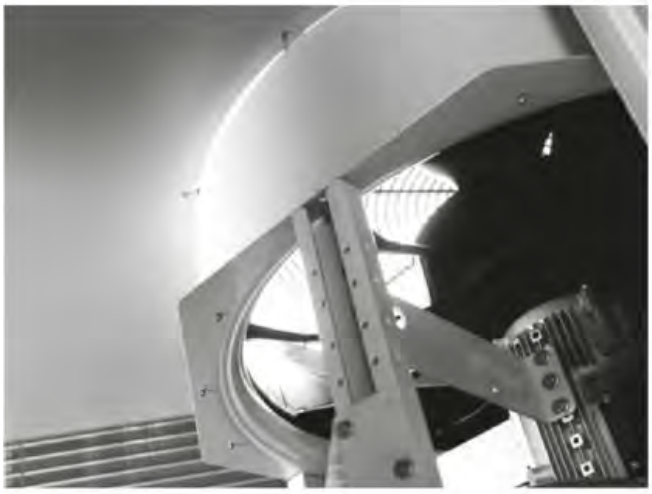
The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap also communicates with other building management systems via optional communication gateways.

A connection terminal allows remote control of the AquaSnap by wired cable:

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

Flying Bird IV fan



FEATURES

All-aluminium micro-channel heat exchanger (MCHE)

Already utilised in the automobile and aeronautical industries for many years, the MCHE micro-channel heat exchanger is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers.

As an option, the Enviro-Shield and Super Enviro-Shield anti-corrosion protections have been developed to increase the application range of the MCHE coil from medium to very corrosive environments. With Enviro-Shield protection, corrosion resistance of the MCHE coil is doubled without any impact on heat exchange.

With Super Enviro-Shield protection corrosion resistance of the MCHE coil is multiplied by four, and allows use in very corrosive industrial or marine environments

The MCHE heat exchanger allows a reduction in chiller refrigerant charge by up to 50%.

The low thickness of the MCHE reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHE heat exchanger is very fast using a dry air jet or a high-pressure washer, while observing the usage precautions.

OPTIONS

Options	No.	Description	Advantages	Use
Condenser with anti-corrosion post treatment	2B	Factory application of Blygold Polual treatment on the copper/aluminium coils	Improved corrosion resistance, recommended for industrial, rural and marine environments	30RBS 039-160 with option 49, 5 or 6
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30RBS 039-160 with option 49, 5 or 6
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBS 039-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBS 039-160
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise emission reduction at reduces fan speed	30RBS 039-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	30RBS 039-160
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RBS 039-160
Winter operation down to -20°C	28	Fan speed control via frequency converter	Stable unit operation when the air temperature is between -10°C and -20°C.	30RBS 039-160
Frost protection down to -20°C	42	Electric heater on the hydraulic module	Hydraulic module frost protection at low outside temperatures	30RBS 039-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit. **Note:** In this configuration the units are equipped with traditional coils (Cu/Al).	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RBS 039-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30RBS 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RBS 039-160
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RBS (Brine only) 039-160
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBS (Brine only)
HP variable-speed single-pump hydraulic mod.	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBS 039-160

OPTIONS

Options	No.	Description	Advantages	Use
HP variable-speed dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), water filter, electronic flow switch, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBS 039-160
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30RBS 039-160
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RBS 039-160
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RBS 039-160
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30RBS 039-160
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30RBS 039-160
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30RBS 039-160
Evaporator screw connection sleeves	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30RBS 039-160
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RBS 039-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RBS 039-160 with option 5B, 6B or 28
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RBS 039-160 with option 116V or 116W
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (require option 116)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RBS 039-160
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	30RBS 039-160
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system managment, Extended control capabilities to a dryccoler used in Free Cooling mode	30RBS 039-160

PHYSICAL DATA, 30RBS

30RBS				039	045	050	060	070	080	090	100	120	140	160
Cooling														
Standard unit Full load performances*	CA1	Nominal capacity	kW	40	44	51	58	67	79	87	97	114	135	156
		EER	kW/kW	2,87	2,76	2,67	2,66	2,72	2,70	2,73	2,73	2,67	2,70	2,65
		Eurovent class		C	C	D	D	C	C	C	C	D	C	D
	CA2	Nominal capacity	kW	53	59	69	81	85	98	114	126	151	171	194
		EER	kW/kW	3,44	3,32	3,12	3,31	2,97	3,06	3,18	3,09	3,10	2,99	3,01
Seasonal efficiency*		**SEER 12/7°C Comfort low temp.**	**kWh/kWh**	**3,95**	**4,11**	**4,21**	**4,10**	**3,90**	**4,02**	**4,21**	**4,19**	**4,10**	**3,93**	**4,18**
		ηs cool 12/7°C	**%**	**155**	**161**	**166**	**161**	**153**	**158**	**165**	**165**	**161**	**154**	**164**
		SEER 23/18°C Comfort medium temp.	**kWh/kWh**	**4,65**	**5,07**	**4,94**	**4,90**	**4,74**	**5,13**	**5,03**	**4,96**	**5,24**	**4,71**	**5,11**
		SEPR 12/7°C Process high temp.	**kWh/kWh**	**5,27**	**5,31**	**5,26**	**5,09**	**4,92**	**5,16**	**4,95**	**5,12**	**5,51**	**4,90**	**5,30**
		SEPR -2/-8°C Process medium temp.	kWh/kWh	**2,77**	**3,18**	**2,85**	**2,79**	**3,02**	**2,63**	**2,68**	**2,97**	**3,03**	**3,04**	**2,90**
Integrated Part Load Value		IPLV.SI	kW/kW	4,54	4,71	4,81	4,58	4,26	4,39	4,55	4,53	4,55	4,29	4,64
Sound levels														
Standard unit														
Sound power level(1)			dB(A)	80	81	81	81	87	87	84	84	84	90	90
Sound pressure level at 10 m(2)			dB(A)	49	49	49	49	55	55	52	52	52	58	58
Unit with option 15LS														
Sound power level(1)			dB(A)	79	80	80	80	80	80	83	83	83	83	83
Sound pressure level at 10 m(2)			dB(A)	48	48	48	48	48	48	51	51	51	51	51
Dimensions														
Length			mm	1061	1061	1061	1061	1061	1061	2258	2258	2258	2258	2258
Width			mm	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050	2050
Height			mm	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330
Operating weight with MCHE coil(3)														
Standard unit without hydraulic module			kg	429	436	442	454	454	471	766	776	789	896	928
Standard unit with hydraulic module														
Single high-pressure pump			kg	459	466	472	484	484	501	798	808	825	935	967
Dual high-pressure pump			kg	484	492	497	510	510	527	843	853	873	972	1004
Compressors				Hermetic scroll compressors, 48.3 r/s										
Circuit A				2	2	2	2	2	2	3	3	3	2	2
Circuit B				-	-	-	-	-	-	-	-	-	2	2
No of control stages				2	2	2	2	2	2	3	3	3	4	4
Refrigerant charge with MCHE coil(3)				R-410A										
Circuit A			kg	4.7	5.3	5.9	6.7	6.2	7.3	10.7	10.8	11.4	6.5	7.4
			teqCO_2	9.8	11.1	12.3	14.0	12.9	15.2	22.3	22.6	23.8	13.6	15.5
Circuit B			kg	-	-	-	-	-	-	-	-	-	6.5	7.4
			teqCO_2	-	-	-	-	-	-	-	-	-	13.6	15.5
Capacity control				Touch Pilot Junior										
Minimum capacity			%	50	50	50	50	50	50	33	33	33	25	25
Condensers				All-aluminium microchannel heat exchanger (MCHE)										
Fans				Axial Flying Bird IV with rotating shroud										
Quantity				1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow			l/s	3885	3883	3687	3908	5013	5278	6940	6936	7370	10026	10556
Maximum rotation speed			r/s	12	12	12	12	16	16	12	12	12	16	16
Evaporator				Direct expansion. plate heat exchanger										
Water volume			l	2.6	3.0	3.3	4.0	4.8	5.6	8.7	9.9	11.3	12.4	14.7
Without hydraulic module (option)														
Max. water-side operating pressure			kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
With hydraulic module (option)														
Single or dual pump (as selected)				Pump, Victaulic screen filter, relief valve, expansion tank, purge valves (water + air), pressure sensors										
Expansion tank volume			l	12	12	12	12	12	12	35	35	35	35	35
Expansion tank pressure(4)			bar	1	1	1	1	1	1	1.5	1.5	1.5	1.5	1.5
Max. water-side operating pressure			kPa	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module				Victaulic										
Diameter			in	2	2	2	2	2	2	2	2	2	2	2
Outside tube diameter			mm	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3
Chassis paint colour				Colour code: RAL7035										

* In accordance with standard EN14511-3:2013

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool$_{12/7°C}$ & SEER $_{12/7°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

SEER $_{23/18°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

SEPR $_{12/7°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

SEPR $_{-2/-8°C}$ Applicable Ecodesign regulation: (EU) No 2015/1095

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Values shown are a guideline only. Please refer to the unit nameplate

(4) When delivered, the standard pre-inflation of the tank is not necessarily the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL DATA, 30RBS

30RBS without hydraulic module		039	045	050	060	070	080	090	100	120	140	160
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V via internal transformer										
Maximum start-up current (Un)*												
Standard unit	A	114	135	143	146	176	213	174	208	248	243	286
Unit with electronic starter option	A	75	87	94	96	114	140	125	150	176	186	215
Unit power factor at maximum capacity**		0.83	0.81	0.81	0.83	0.81	0.78	0.83	0.81	0.79	0.81	0.78
Maximum operating power input**	kW	20	22	25	28	31	36	42	46	53	62	72
Nominal unit operating current draw***	A	26	29	33	36	42	53	55	62	77	85	106
Maximum operating current draw (Un)******	A	35	45	47	53	67	73	81	99	108	134	146
Maximum operating current draw (Un-10%)†	A	38	49	51	58	75	80	89	110	118	150	159
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table 9.1										

* Maximum instantaneous start-up current at operating limit value (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).
** Power input, at the unit permanent maximum operating conditions (data given on the unit nameplate)
*** Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.
**** Maximum unit current at 400 V, non permanent operating conditions (values given on the unit nameplate).
† Maximum unit operating current at 360 V, non permanent operating conditions.

Short-circuit stability current (TN system*)

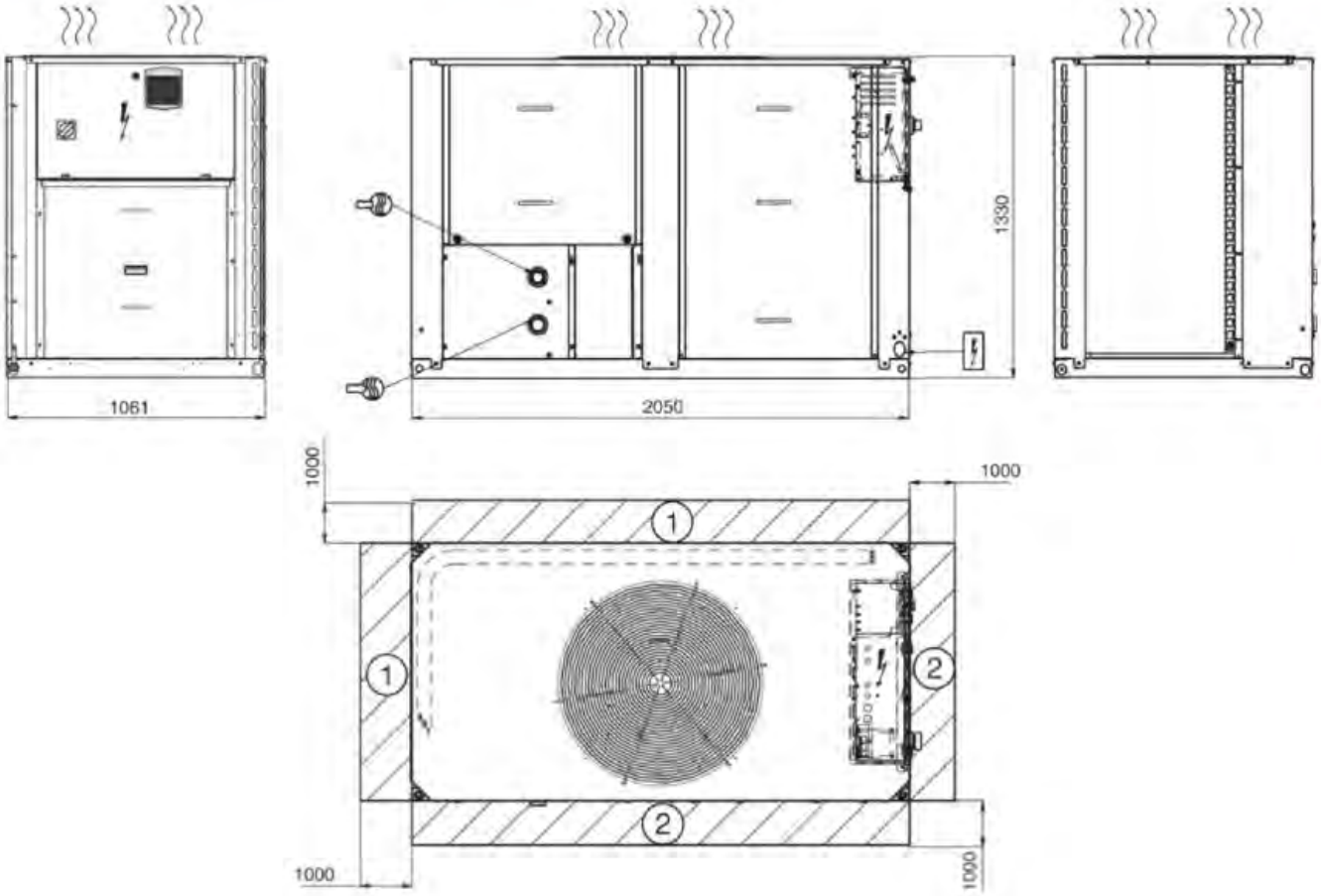
30RBS	039	045	050	060	070	080
Value without upstream protection						
Short-term current at 1s - Icw – kA rms	3.36	3.36	3.36	3.36	3.36	3.36
Admissible peak current - Ipk - kA pk	20	20	20	20	20	15
Value with upstream protection by circuit breaker						
Conditional short-circuit current Icc - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H
Reference No.**	29670	29670	29670	29670	29670	29670

30RBS	090	100	120	140	160
Value without upstream protection					
Short-term current at 1s - Icw – kA rms	5.62	5.62	5.62	5.62	5.62
Admissible peak current - Ipk - kA pk	20	20	15	20	15
Value with upstream protection by circuit breaker					
Conditional short-circuit current Icc - kA rms	40	40	40	30	30
Schneider circuit breaker - Compact series	NS100H	NS160H	NS160H	NS250H	NS250H
Reference No.**	29670	30670	30670	31671	31671

* Earthing system type
** If another current limitation protection system is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

DIMENSIONS/CLEARANCES, 30RBS

30RBS 039-080, units with and without hydraulic module



Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

Notes:

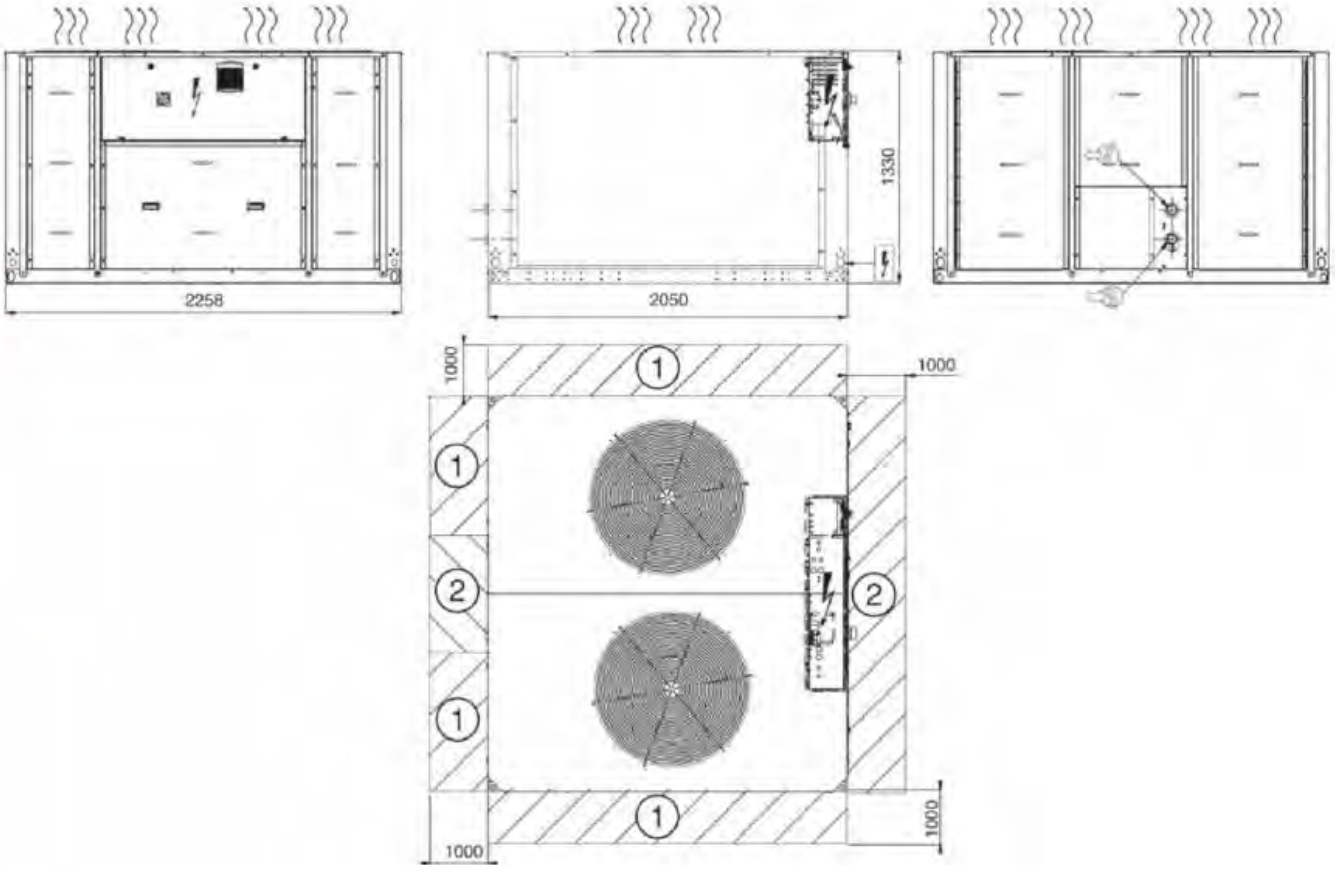
A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

B In multiple-chiller installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

DIMENSIONS/CLEARANCES, 30RBS

30RBS 090-160, units with and without hydraulic module



Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

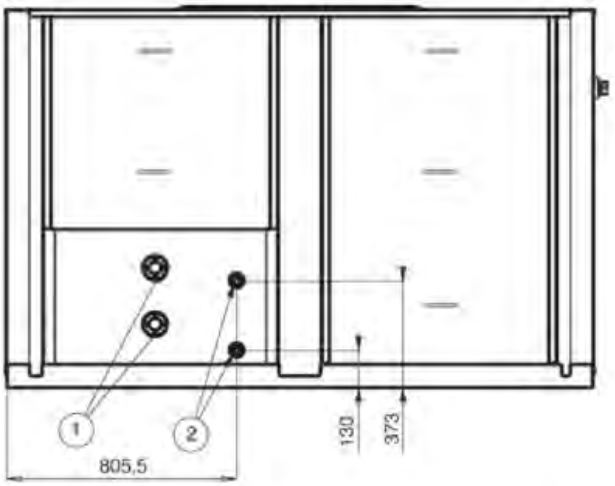
B In multiple-chiller installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

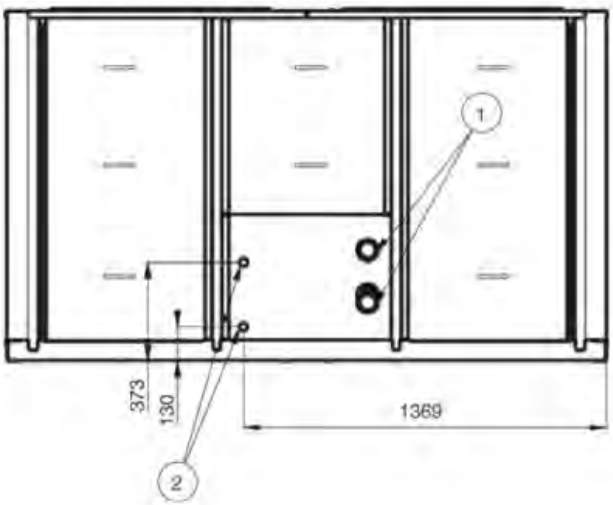
DIMENSIONS/CLEARANCES FOR 30RBS UNITS WITH OPTION 49

Position of the desuperheater inlets and outlets

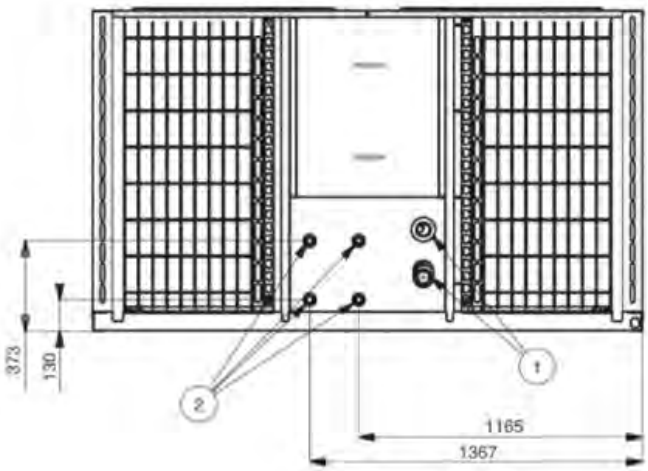
30RBS 039-080



30RBS 090-120



30RBS 140-160



(1) Unit water inlet and outlet
(2) Water inlet and outlet, unit with option 49

AIR-COOLED CONDENSING UNITS

Commercial and industrial applications

Compact design

Quiet operation

38RBS

AQUASNAP™

Nominal cooling capacity 40-160 kW

The 38RBS condensing unit range was designed for commercial (air conditioning of offices, hotels etc.).

The units integrate the latest technological innovations:

- non-ozone depleting refrigerant R410A
- scroll compressors
- low-noise fans made of a composite material
- auto-adaptive microprocessor control

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CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
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FEATURES AND BENEFITS

Features

- Compressors
  - Low-noise scroll compressors with low vibration level
  - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
  - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
- Condenser section
  - Vertical condenser coils
  - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks.
  - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
  - Fan motor controlled by a variable-frequency controller, to allow reduction of the fan speed, if the extra low noise option 15LS is selected.
  - Rigid fan installation for reduced start-up noise (Carrier patent)
- The refrigerant circuit includes all components for easy connection to a direct-expansion air handling unit: filter drier, moisture sight glass, high and low pressure switch, as well as solenoid valves for pumpdown (to be installed on the evaporator). All pipes and the refrigeration components are welded. From size 38RBS 140 onwards, two independent refrigerant circuits ensure partial cooling capacity in all circumstances, and more flexible operation at part load.
- Year-round operation
  The 38RBS units are designed for year-round operation, and operate without the use of accessories down to -10°C. A control algorithm intelligently manages operation of the fans. Option 28 allows stable unit operation at air temperatures below -10°C and down to -20°C.

Easy and fast installation

- Physical features
  - Small unit footprint with a low height (1371 mm) for easy installation in any application.
  - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Simplified electrical connections
  - A single power supply point without neutral
  - Main disconnect switch (option 70) with high trip capacity
- The control circuit of the 38RBS units is equipped with a standard low-voltage transformer (24 V). This transformer can also supply the other electrical components of the air conditioning system: room thermostat and pumpdown solenoid valves.
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors

Economical operation

- Increased energy efficiency at part load
  The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
  - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio (EER and ESEER)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness (factory nitrogen charge)
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Superior reliability

- State-of-the-art concept
  Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
  Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) the condensing unit continues to operate, but at reduced capacity.
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors and fans for optimum energy efficiency.

- Energy management
  - Seven-day internal time schedule clock: permits unit on/off control and operation at a second set-point
  - Set-point reset by the user via a room sensor (option).
- Integrated features
  - Night mode: capacity and fan speed limitation for reduced noise level
  - Solenoid valve control for evaporator pumpdown (valves supplied as a kit with the unit).

Carrier Comfort Network (CCN) operating mode

A simple two-wire communication bus between the RS485 port and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

Remote operating mode with volt-free contacts (standard)

- Start/stop: opening of this contact will shut down the unit
- Alarm indication using an LED: availability of a volt-free contact that indicates the presence of a major fault that has led to the shut-down of one or two refrigerant circuits.
- User safety: this contact can be used for any customer safety loop, opening of the contact generates a specific alarm.

FEATURES AND BENEFITS

Remote Pro-Dialog+ interface (option)

This interface can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24 V transformer supplied.

- Ease-of-use
  - Backlit LCD interface (option) includes a manual control potentiometer to ensure legibility under any lighting conditions.
  - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier)
  - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. They are user-friendly and permit quick access to the principal operat-ing parameters: number of compressors operating, suction/ discharge pressure, compressor operating hours, set-point, air temperature.

Pro-Dialog+ interface

Room temperature and supply air temperature sensors for capacity control (option)

- The room temperature sensor permits temperature adjust-ment using a potentiometer.
- The supply air temperature sensor must be installed in the air handling unit air flow to control the minimum supply air temperature (adjustable via the remote Pro-Dialog+ interface.

Adjustable room temperature sensor (option)

OPTIONS

Options	No.	Description	Advantages	Use
Condenser with anti-corrosion post-treatment	2B	Coils with factory-applied Blygold Polual treatment	Improved corrosion resistance, recommended for urban, industrial and rural environments	38RBS 039-160
Condenser with pre-treated fins	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for marine environments	38RBS 039-160
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise emission reduction at reduced fan speed	38RBS 039-160
Soft starter	25	Electronic compressor starter	Reduced compressor start-up current	38RBS 039-080
Winter operation	28	Fan speed control by frequency variator	Stable unit operation, when the air temperature is between -10°C and -20°C	38RBS 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	38RBS 039-160
Suction and liquid line valves	92B	Ball valves on the suction and liquid line	Unit isolation from the rest of the refrigerant circuit	38RBS 039-160
JBus gateway	148B	Two-directional communications board, complies with JBus protocol	Easy connection by communication bus to a building management system	38RBS 039-160
Bacnet gateway	148C	Two-directional communications board, complies with Bacnet protocol	Easy connection by communication bus to a building management system	38RBS 039-160
LonTalk gateway	148D	Two-directional communications board, complies with LonTalk protocol	Easy connection by communication bus to a building management system	38RBS 039-160
Remote Pro-Dialog+ user interface	275	Pro-Dialog+ user interface for remote installation	Remote control of the unit and its operating parameters	38RBS 039-160
Replaceable filter drier	277	Filter drier with cartridge to replace hermetic filter	Easy filter replacement without emptying the refrigerant circuit	38RBS 039-160
Temperature sensor kit	278	Room temperature sensor with adjustable set-point and supply air sensor for installation in the air handling unit for capacity control	Optimisation of the unit capacity control, based on the usage conditions	38RBS 039-160
Reinforced ECM filtration for fan VFD*	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	38RBS 039-160

* 38RBS 039-160 with option 28

PHYSICAL DATA

38RBS		039	045	050	060	070	080	090	100	120	140	160
Nominal cooling capacity, standard unit†	kW	40.4	45.9	52.4	58.5	66.7	77.9	90.4	100.9	119.4	139.6	161.7
Power input	kW	13.8	16.3	19.0	21.2	24.4	28.8	31.8	36.0	43.6	50.2	58.7
EER	kW/kW	2.92	2.81	2.75	2.76	2.74	2.7	2.84	2.81	2.74	2.78	2.75
Sound levels												
Standard unit												
Sound power level*	dB(A)	80	81	81	81	87	87	84	84	84	90	90
Sound pressure level at 10 m**	dB(A)	49	49	49	49	55	55	52	52	52	58	58
Standard Unit + option 15LS* **												
Sound power level*	dB(A)	79	80	80	80	80	80	83	83	83	83	83
Sound pressure level at 10 m**	dB(A)	48	48	48	48	48	48	51	51	51	51	51
Weight ex-factory, standard unit** **	kg	390	399	416	439	426	450	689	692	710	796	836
Compressors		Hermetic scroll compressor, 48.3 r/s										
Circuit A		2	2	2	2	2	2	3	3	3	2	2
Circuit B		-	-	-	-	-	-	-	-	-	2	2
Number of capacity stages		2	2	2	2	2	2	3	3	3	4	4
Refrigerant		R-410A										
Control		Pro-Dialog+										
Minimum capacity	%	50	50	50	50	50	50	33	33	33	25	25
Capacity split, circuit A/B	%	100/0	100/0	100/0	100/0	100/0	100/0	100/0	100/0	100/0	50/50	50/50
Condensers		Grooved copper tubes, aluminium fins										
Fans		Axial Flying Bird 4 fans with rotating shroud										
Quantity		1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow	l/s	3885	3883	3687	3908	5013	5278	6940	6936	7370	10026	10556
Maximum rotation speed	r/s	12	12	12	12	16	16	12	12	12	16	16
Refrigerant connections												
Suction line diameter	in	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8
Liquid line diameter	in	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Chassis paint colour		Colour code: RAL 7035										

† Nominal evaporating temperature condition: 5°C, outdoor air temperature 35°C, superheat 5 K, 15 m equivalent length

* In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

** In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

*** Option 15LS= Very low noise.

**** Weight shown is a guideline only. Please refer to the unit nameplate.

ELECTRICAL DATA

38RBS		039	045	050	060	070	080	090	100	120	140	160
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V, via internal transformer										
Maximum start-up current (Un)*												
Standard unit	A	114.2	132.4	141.3	143.7	170.4	209.4	169.4	196.4	240.4	226.2	275.2
Unit with electronic starter option	A	74.7	86.5	93.8	96.2	114.4	139.8	-	-	-	-	-
Unit power factor at maximum capacity**		0.83	0.81	0.81	0.83	0.81	0.78	0.83	0.81	0.79	0.81	0.78
Maximum unit power input**	kW	19.5	22.3	24.5	27.9	31.2	35.8	42.3	45.6	52.5	62.4	71.6
Nominal unit current draw***	A	26.2	30.4	34.6	37.6	44.2	53.8	57.8	64.4	78.8	88.4	107.6
Maximum unit current draw (Un)******	A	35.6	40.0	43.8	48.6	55.8	65.8	74.3	81.8	96.8	11.6	131.6
Maximum unit current draw (Un-10%)†	A	38.0	49.0	51.2	57.8	73.2	79.8	88.1	107.9	117.9	146.4	159.6
Customer-side unit power reserve	kW	Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table "Short-circuit stability current" below										

* Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).
** Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).
*** Nominal conditions: suction temperature 5°C, outside air temperature 35°C.
**** Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).
† Maximum unit operating current at maximum unit power input and 360 V.

Short-circuit stability current (TN system*)

38RBS	039	045	050	060	070	080	090	100	120	140	160
Value with unspecified upstream protection											
Short-term current at 1 s - Icw - kA rms	3.36	3.36	3.36	3.36	3.36	3.36	5.62	5.62	5.62	5.62	5.62
Admissible peak current - Ipk - kA pk	20	20	20	20	20	15	20	20	15	20	15
Max. value with upstream protection (circuit breaker)											
Conditional short-circuit current Icc - kA rms	40	40	40	40	40	40	40	40	40	30	30
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS160H	NS160H	NS250H	NS250H
Reference number**	29670	29670	29670	29670	29670	29670	29670	30670	30670	31671	31671

* Earthing system type
** If another current limitation protection system is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker. Contact your nearest Carrier office.
The short-circuit stability current values above are in accordance with the TN system.

Electrical data and operating conditions notes

- 38RBS 039-160 units have a single power connection point located immediately upstream of the field power connections.
- The control box includes the following standard features:
  - starter and motor protection devices for each compressor, the fans and the pump,
  - the control devices.
  - A main disconnect switch can be installed within the box with the option 70.
- Field connections:
  All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The 38RBS units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical equipment*.
- An auxiliary contactor is available with the QF breaker allowing a safety channel installation to ensure a feedback output about heater and board power supply status and then prevent evaporator from frosting when heaters and boards are off.

NOTES:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.
- The operating environment for the 38RBS units is specified below:

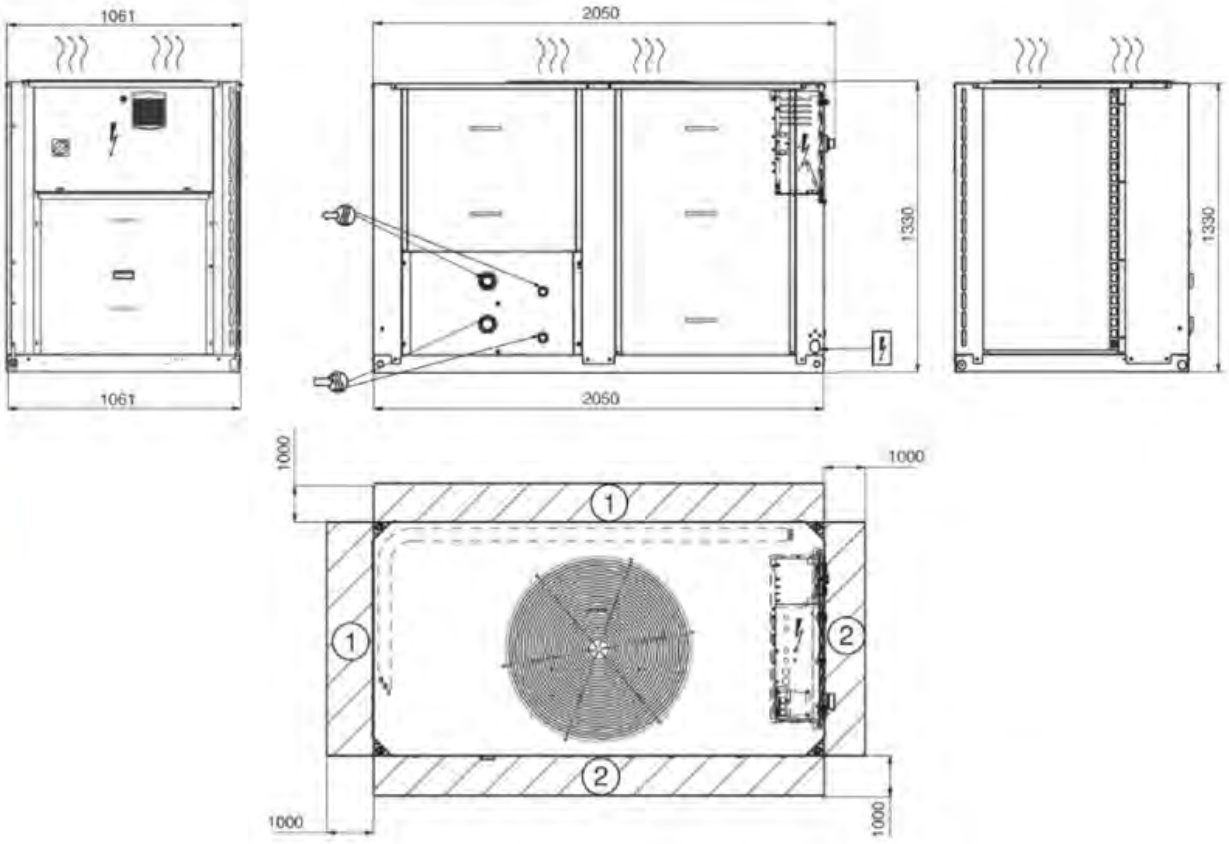
1. Environment** - Environment as classified in EN 60721 (corresponds to IEC 60721):
   - outdoor installation**
   - ambient temperature range: -10°C to +48°C, class 4K4H
   - altitude: ≤ 2000 m
   - presence of hard solids, class 4S2 (no significant dust present)
   - presence of corrosive and polluting substances, class 4C2 (negligible)
2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch (option 70) is of a type suitable for power interruption in accordance with EN 60947.
6. The units are designed for connection to TN(S) networks (IEC 60364). For IT networks the earth connection must not be at the network earth. Provide a local earth, consult competent local organisations to complete the electrical installation.

Caution: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

* The absence of main power disconnect switch on standard machines is an exception that must be taken in account at field installation level.
** The required protection level for this class is IP43BW (according to reference document IEC 60529). All 38RBS units are protected to IP44CW and fulfil this protection condition.
- Closed electrical box is IP44CW
- Open electrical box (when accessing to interface) is IPxxB

DIMENSIONS/CLEARANCES

38RBS 039-080



Legend

All dimensions are given in mm.

1. Required space for maintenance
2. Refrigerant inlet
3. Refrigerant outlet
4. Power wiring connection
5. Power supply
6. Air outlet – do not obstruct

NOTES:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

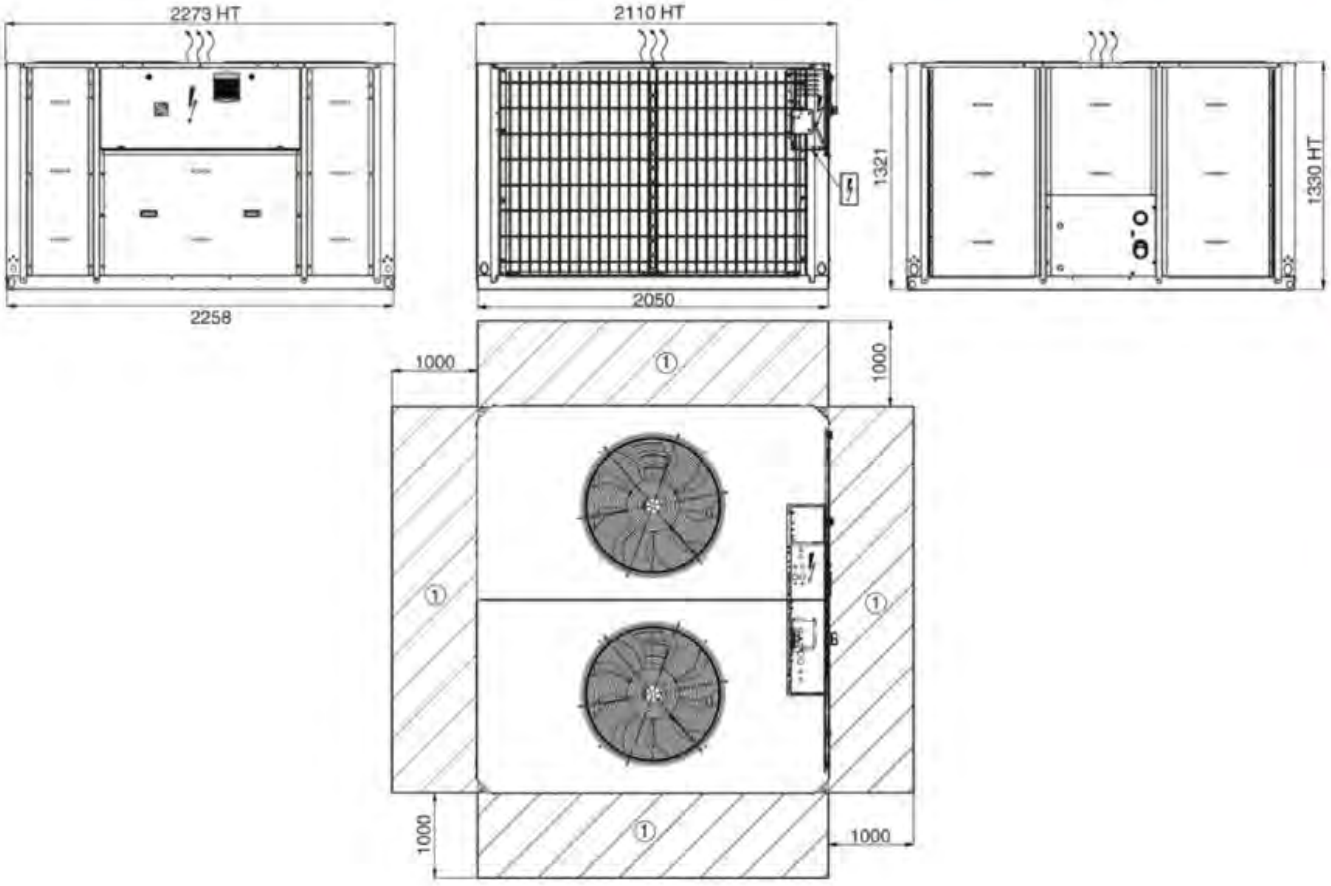
B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

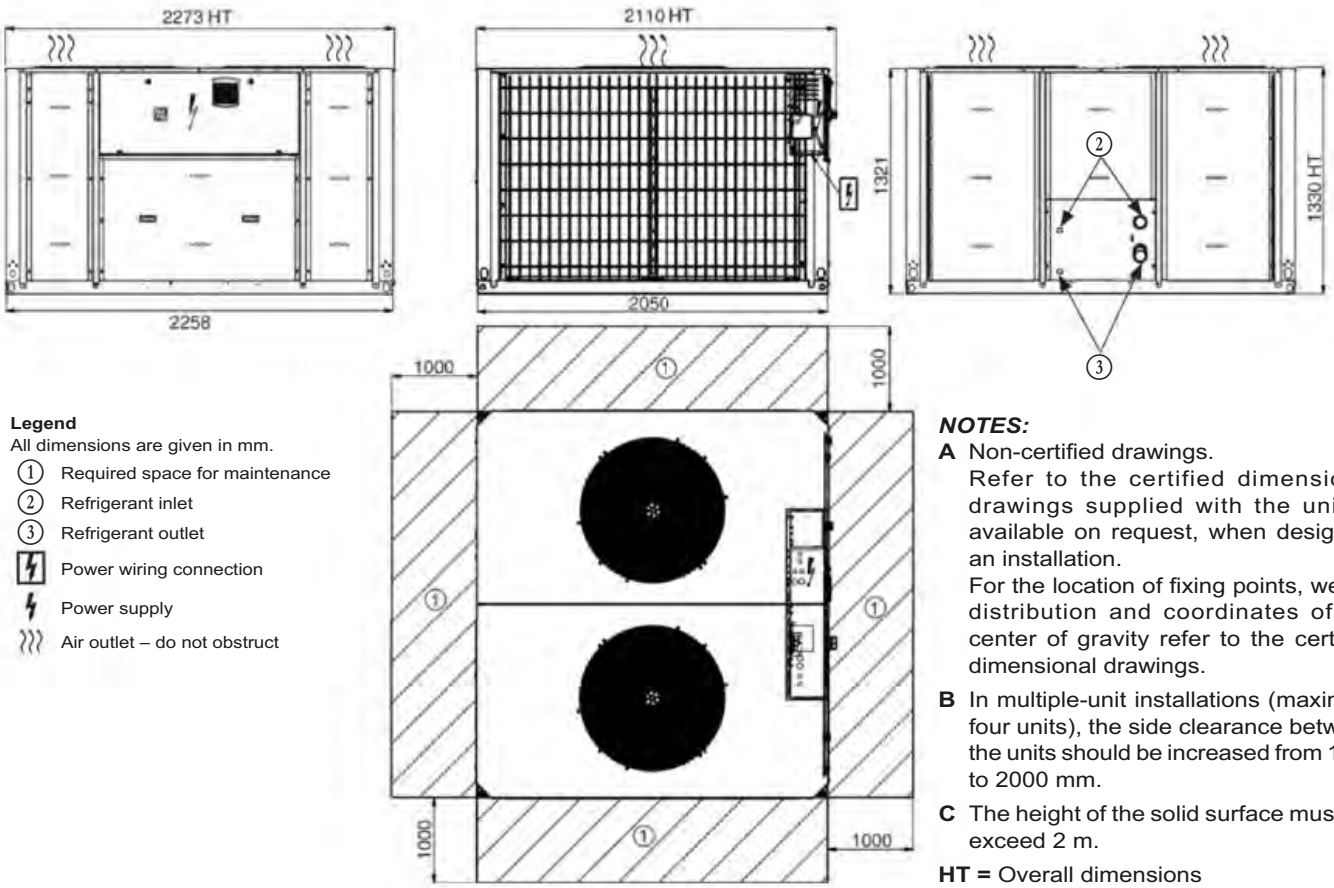
HT = Overall dimensions

DIMENSIONS/CLEARANCES

38RBS 090-120



38RBS 140-160



Legend
All dimensions are given in mm.

1. Required space for maintenance
2. Refrigerant inlet
3. Refrigerant outlet

Power wiring connection

Power supply

Air outlet – do not obstruct

NOTES:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

HT = Overall dimensions

AIR-COOLED SCROLL CHILLERS WITH GREENSPEED® INTELLIGENCE

nit with low noise level option

- High full-load and part-load efficiency
- Compact and simple to install
- Low sound level
- Low refrigerant charge
- Superior reliability

30RBM/30RBP

Nominal cooling capacity 164-528 kW

AquaSnap liquid chillers are the best solution for commercial and industrial applications where installers, engineering and design departments and building owners require reduced installation costs, optimal performance and the highest quality.

The new generation of AquaSnap liquid chillers feature two new versions:

- The AquaSnap (30RBM) version features a compact all-in-one package optimised for full-load applications where reduced investment cost (low CapEx) is required. For cold or hot climates, the AquaSnap can be equipped with specific options to operate from -20°C up to +52°C.
  The AquaSnap Greenspeed® (30RBP) version is a compact all-in-one package optimised for part-load applications where high ESEER, SEPR and IPLV are required. The AquaSnap Greenspeed®, equipped with a variable speed pump and fans, provides premium part-load efficiency to reduce maintenance costs over the lifespan of the chiller. Additionally, the low sounds levels achieved at part load conditions can be very beneficial for sensitive acoustic applications. Besides operating efficiently and quietly, the AquaSnap Greenspeed® operates from -20°C up to +48°C as standard.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES AND BENEFITS

AquaSnap liquid chillers are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO_2 emissions. They use the best technologies available today:

- Reduced refrigerant charge of non-ozone depleting refrigerant R-410A
- Scroll compressors
- Greenspeed® variable-speed fans (30RBP models)
- Novation® micro-channel heat exchangers with a new aluminium alloy
- Brazed-plate heat exchangers with reduced pressure drops
- Auto-adaptive microprocessor control with Greenspeed® intelligence
- Colour touch screen with web connectivity options
- Extra energy savings through multiple options: direct-expansion free-cooling system on one or two circuits, partial heat recovery.

Both AquaSnap versions can be equipped with a built-in hydraulic module, limiting the installation to conventional operations such as connection of the power supply and the supply and return piping (plug & play), according to the dimensions of the standard unit.

Recommended by Carrier, AquaSnap can be equipped with one or two Greenspeed® variable-speed pumps to significantly reduce energy costs linked to pumping (reduction of more than two-thirds), ensure optimum water flow rate control, and improve overall system reliability.

For use in the harshest environments combining high temperatures, dust and sand, the AquaSnap (30RBM) can be equipped with an optional IP54 electrical box and cabinet fan enabling it to operate at outdoor air temperatures of up to 52°C.

Very economical operation

- High unit full- and part-load energy efficiency and efficient design of the water side:
  - Eurovent energy efficiency class A or B
    $SEER_{12/7°C}$ of up to 4.52 (30RBP version) in line with the new Ecodesign 2016/2281 regulations
    Multiple scroll compressors equipped with a high-efficiency motor which can exactly match the cooling capacity to the load required
  - Electronic expansion valve permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control)
  - Condenser with high-efficiency Novation® aluminium micro-channel heat exchangers and Greenspeed® variable-speed fans (30RBP version)
  - Low pressure drop brazed plate heat exchangers (< 45 kPa under Eurovent conditions).
- Specific control functions to reduce unit cooling energy use during occupied and unoccupied periods:
  - Internal timer: switches the chiller on/off and controls operation at a second set-point
  - Set-point automatically offset based on the outside air temperature or room air temperature (via an option)
  - Floating high pressure management
  - Variable-speed fan control
  - Cooling demand limitation.

Refer to control chapter for more information.

- Greenspeed® variable-speed pump to reduce pumping energy consumption by up to two-thirds (option recommended by Carrier):
  - Eliminate energy losses through the water flow control valve by electronically setting the nominal water flow
  - Save energy during stand-by periods or part-load operation by automatically reducing the water pump speed. The energy consumption of the pump motor varies according to the cube of the speed, so that a reduction in speed of just 40% can reduce energy consumption by 80%
  - Improved unit part-load performance (Increased SEER value with variable water flow according to EN14825 standard).

Refer to the hydraulic option chapter for more information.

- Extra energy savings through multiple options:
  - Direct expansion free-cooling without glycol (Carrier patented) on one or two refrigerating circuits
  - Partial heat recovery.
- Reduced maintenance costs:
  - Fast diagnosis of possible incidents and their history via the control
  - R-410A refrigerant is easier to use than other refrigerant blends.

FEATURES AND BENEFITS

Low sound level

- Condenser with fixed-speed fans (30RBM models):
  - Optional low-speed fans (700 rpm) and compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
  - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
  - Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent)
  - Rigid fan installation for reduced noise (Carrier patent).
- Condenser with Greenspeed® variable-speed fans (30RBP models recommended by Carrier for even quieter operation):
  - Optional factory setting of the fan to low speed, with compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
  - Exceptional acoustic signature during part-load operation through smooth fan speed variation.
- Specific control functions or features to reduce noise level during the night or unoccupied periods:
  Night-time sound control with cooling capacity and fan speed limitation
  Low-noise scroll compressors with low vibration level
  - The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mounts
  - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
  Acoustic compressor enclosure, reducing noise emissions (optional).

Quick and easy installation

- Compact design:
  - AquaSnap units are designed with compact dimensions for easy installation.
  - With a length of approximately 4.8 m for 520 kW and a width of 2.25 m, the units require minimal floor space.
- Integrated hydraulic module (optional):
  - Low or high-pressure water pump (as required)
  - Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter protects the water pump against circulating debris
  - Pressure transducers for direct numerical display of the water flow rate and water pressures
  - Thermal insulation and frost protection down to -20°C, using a heater (optional)
  - High-capacity membrane expansion tank (option).
- Built-in hydraulic module with Greenspeed® variable-speed pump (option recommended by Carrier):
  - Quick and easy electronic setting of the nominal water flow rate when the unit is commissioned, thus eliminating the need to adjust the water flow rate control valve
  - Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.
- Simplified electrical connections
  - A single power supply point without neutral
  - Main disconnect switch with high trip capacity
  - 24 V control circuit using an integrated transformer.
- Fast unit commissioning
  - Systematic factory test before shipment
  - Quick-test function for step-by-step verification of the sensors, electrical components and motors.

Reduced installation costs

- Optional Greenspeed® variable-speed pump with hydraulic module (option recommended by Carrier)
  - Cut costs relating to the water flow control valve
  The design of the water system with variable primary flow (VPF) can provide significant installation cost savings compared with traditional constant primary systems with variable secondary circuits; elimination of the secondary distribution pump, etc.
  - Water system design with fan coils fitted with 2-way valves instead of 3-way valves.
- No buffer tank required thanks to Carrier's advanced control algorithm
  - Minimum water loop volume reduced to 2.5 l/kW.

Environmentally responsible

- R-410A non-ozone depleting refrigerant.
- Reduced direct warming potential (10% of total equivalent warming impact):
  - Low R410-A refrigerant charge, below 0.14 kg/kW, through the use of Novation® micro-channel heat exchangers
  - Leak-tight refrigerant circuit with minimum brazed connections
  Qualified Carrier maintenance personnel carry out refrigerant servicing operations
  - ISO14001-certified site of manufacture.
- Reduced indirect warming potential (90% of total equivalent warming impact):
  - Reduced unit energy use (high full- and part-load efficiency)
  - Pumping energy consumption can be reduced by up to 2/3 using Greenspeed® variable-speed pumps.

FEATURES AND BENEFITS

Superior reliability

- State-of-the-art concept
  - Two independent refrigerant circuits; the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances
  - All compressor components are easily accessible on site minimising down-time
  - All-aluminum Novation® micro-channel heat exchanger (MCHE) with higher corrosion resistance than a conventional coil. The all-aluminum construction eliminates the formation of galvanic currents between aluminum and copper that are responsible for the coil corrosion in saline or corrosive atmospheres.
  - V-coil design to protect the coils against hail impact
  - Optional Enviro-shield anti-corrosion coil coating for use in moderately corrosive environments. Coating applied through conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117.
  - Optional Super Enviro-shield anti-corrosion coil coating for use in extremely corrosive environments. Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process with a final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794.
  - Optional IP54 protection level of compressor control boxes and cabinet fan to guarantee safe operation in hot, dusty, sandy environments
    Electronic flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the water loop (Carrier patent)
  - Automatic compressor unloading in case of abnormally high condensing pressure
  - Automatic fan speed adjustment in case of coil fouling (30RBP models)
  - Smooth fan start to increase unit lifetime (30RBP models).
- Exceptional endurance tests
  Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components
  - Transport simulation test on an endurance circuit based on a military standard.

Touch Pilot control

The Touch Pilot control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the evaporator water pump for optimum energy efficiency.

The Touch Pilot control features advanced communication technology over Ethernet (IP), and a user-friendly and intuitive user interface with 5-inch colour touch screen.

- Energy management configuration
  - Internal timer: controls chiller on/off times and operation at a second set-point
  - Set-point offset based on the outside air temperature
  - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
- Integrated features
  - Night mode: Capacity and fan speed limitation for reduced noise level
  - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
  - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
    Access to multiple unit parameters.
- Maintenance functions
  - F-Gas regulation leak check reminder alert
  - Maintenance alert can be configured to days, months or hours of operation
- 5-inch Touch Pilot user interface

  - Intuitive and user-friendly 5 inch touch screen interface
  - Concise and clear information is available in local languages
  - Complete menu, customised for different users (end user, service personnel or Carrier engineers).

FEATURES AND BENEFITS

Remote management (standard)

Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows remote control of the AquaSnap unit by wired cable:

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: closing of this contact activates a second set-point (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

Energy management module (optional)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: enables the set-point to be reset based on the indoor air temperature of the building (with Carrier thermostat).
  Set-point reset: the cooling set-point is reset based on a 4-20 mA signal.
  Demand limit: Enables the maximum chiller power to be limited based on a 4-20 mA signal.
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller power or current to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: when ice storage has finished, this input is used to return to the second set-point (unoccupied mode).
- Timer override: closing of this contact cancels the effects of the timer.
- Out of service: This signal indicates that the chiller is completely out of service.
- Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Boiler control: this on/off output controls an independent boiler to provide hot water.

Novation® Aluminium micro-channel heat exchanger

The Novation® is the latest generation of Carrier Micro-Channel Heat Exchanger (MCHE) with a new, extra-resistant aluminium alloy. Already used in the automotive and aeronautical industries for many years, the micro-channel heat exchanger (MCHE) on the AquaSnap is made entirely of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in conventional heat exchangers.Unlike traditional heat exchangers, MCHEs can be used in moderate marine and urban environments.

In terms of energy efficiency, MCHEs are approximately 10% more efficient than a traditional coil and enable a 40% reduction in the amount of refrigerant used in the chiller. The slim design of the MCHE reduces air pressure losses by 50% and, compared to a traditional coil, makes it less susceptible to fouling (e.g. by sand). The MCHE can be cleaned very quickly using a high-pressure washer.

OPTIONS

Options	No.	Description	Advantages	Use
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBM/30RBP 160-520
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RBM/P 160-400 for chilled water down to -15°C
High pressure static fans	12	Unit equipped with high pressure static variable-speed fans (maximum 200 Pa), each fan being equipped with a connection flange for connection to the ducting system.	Ducted fan discharge, optimised condensing temperature (or evaporating temperature on Heat pump version) control, based on the operating conditions and system characteristics	30RBP160-520
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction by 1 to 2 dB(A)	30RBM/30RBP 160-520
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise level reduction by 6 to 7 dB(A)	30RBM/30RBP 160-520
High ambient temperature	16	Unit equipped with electrical panel cooling fan	Extended unit part-load operation up to 52°C ambient temperature	30RBM 160-520
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the control panel from dust, water and sand. As a rule, this option is recommended for installations located in polluted environments	30RBM/30RBP 160-520
Grilles and enclosure panels	23	Metal grilles on the 4 sides of the unit, plus side enclosure panels at each end of the coil	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30RBM/30RBP 160-520
Enclosure panels	23A	Side enclosure panels at each end of the coil	Improved aesthetics, coil and piping protection against impacts.	30RBM/30RBP 160-520
Soft starter	25	Electronic starter on each compressor	Reduced start-up current	30RBM/30RBP 160-520
Winter operation down to -20°C	28	Fan speed control of lead fan for each circuit using a variable frequency drive	Stable unit operation for outside air temperatures from 0°C down to -20°C in cooling mode	30RBM 160-520
Winter operation down to -10°C	28B	Two-speed lead fan for each circuit	Stable unit operation for outside air temperature from 0°C down to -10°C	RBM 160-520
Winter operation down to -10°C low speed	28C	Two Low speed fans on lead fan on each circuit	Reduces the noise level and enables stable unit operation for outside air temperatures down to -10°C	30RBM 160-520
Water exchanger frost protection	41	Electric heater on the water exchanger and the water piping	Water exchanger module frost protection between 0°C and -20°C outside air temperature	30RBM/30RBP 160-520
Exchanger & hydraulic frost protection	42A	Electric heater on the water exchanger hydraulic module and optional expansion tank	Water exchanger and hydraulic module frost protection between 0°C and -20°C outside air temperature	30RBM/30RBP 160-520
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RBM/30RBP 160-520
Shell and tube evaporator aluminium insulation	88	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30 RBM/RBP 160-260
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallel operation with operating time equalisation	30RBM/30RBP 160-520
Compressor suction and discharge valves	92A	Shut-off valves on the compressor suction and discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the cooler or condenser side during servicing	30RBM/30RBP 160-520
Compressor discharge valves	93A	Shut-off valves on the compressor common discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the condenser side during servicing	30RBM/30RBP 160-520
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included; Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RBM/30RBP 160-520

OPTIONS

Options	No.	Description	Advantages	Use
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included); Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBM/30RBP 160-520
LP single-pump hydraulic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included; Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBM/30RBP 160-520
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included; Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RBM/30RBP 160-520
HP evap. variable-speed single-pump	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included; Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RBM/30RBP 160-520
HP VSD dual-pump hydraulic mod.	116W	ual high-pressure water pump with variable speed drive (VSD), water filter, electronic flow switch, pressure transducers. ultiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included; Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings , tighter water flow control, improved sytem reliability	30RBM/30RBP 160-520
DX Free-cooling system on two circuits	118A	Patented Carrier free-cooling system with cooling micro-pump on both refrigerant circuits. Operation without glycol, no extra free-cooling coil. See DX Free-cooling option chapter	Energy savings for applications with cooling demand throughout the entire year	30RBM/30RBP 220-520
DX Free-cooling system on one circuit	11	Patented Carrier free-cooling system with cooling micro-pump on one refrigerant circuit. Operation without glycol, no extra free-cooling coil. See DX Free-cooling option chapter	Energy savings for applications with reduced demand for cooling in winter (e.g. offices with a computer room, meeting rooms etc.)	30RBM/30RBP 160-520 Not available on 30RBP 360/400
J-Bus gateway	148B	Bi-directional communication board complying with JBus protocol	Connects the unit by communication bus to a centralised building management system	30RBM/30RBP 160-520
Lon gateway	148D	i-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a centralised building management system	30RBM/30RBP 160-520
BACnet/IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system.Allows access to multiple unit parameters	30RBM/30RBP 160-52
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30RBM/30RBP 160-520
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	30RBM/30RBP 160-519
Power factor correction	231	Capacitors for automatic regulation of power factor (cos phi) value to 0,95.	Reduction of the apparent electrical power, compliance with minimum power factor limit set by utilities	30RBM/30RBP 160-520
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, salt spray resistance test for 4000 hours (ASTM B117)	Improved corrosion resistance, recommended for use in moderately corrosive environments	30RBM/30RBP 160-520

OPTIONS

Options	No.	Description	Advantages	Use
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30RBM/30RBP 160-520
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RBM/30RBP 160-520
Shell and tubes heat exchanger	280	Brazed plate heat exchanger replaced by shell & tube heat exchanger	Extension of the water flow rate range, improved resistance to fouling	30RBM/RBP 160-260
230 V electric plug	284	230 VAC power supply source provided with plug socket and transformer (180 VA, 0.8 A)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30RBM/30RBP 160-520
Expansion tank	293	6-bar expansion tank integrated into the hydraulic module (option 116 required)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RBM/30RBP 160-520
Screwed water connection sleeve kit for DSH	303	DSH connections with screw connection sleeves	Easy installation.Allows unit connection to a screw connector	30RBM/30RBP 160-520
Welded water connection kit for DSH	304	DSH inlet/outlet welded connection sleeves	Easy installation	30RBM/30RBP 160-520
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	30RBM/30RBP 160-520
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system managment, Extended control capabilities to a dryccoler used in Free Cooling mode	30RBM/30RBP 160-520

PHYSICAL DATA, SIZES 160 TO 520

30RBM				160	180	200	220	260	300
Standard unit		Nominal capacity	kW	168	181	198	216	261	300
Full load performances*	CA1	EER	kW/kW	3,04	3,12	2,98	2,97	2,90	2,97
		Eurovent class		B	A	B	B	B	B
	CA2	Nominal capacity	kW	215,7	247,3	262,8	296,7	336,1	392,6
		EER	kW/kW	3,6	3,89	3,59	3,7	3,37	3,53
		Eurovent class		C	A	C	B	D	C
Seasonal energy efficiency		**SEER $_{12/7\ °C}$ Comfort low temp.**	**kWh/kWh**	**4,15**	**4,17**	**4,10**	**4,10**	**4,10**	**4,15**
		ηs cool $_{12/7°C}$	**%**	**163**	**164**	**161**	**161**	**161**	**163**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**4,77**	**4,71**	**4,29**	**4,76**	**4,33**	**4,56**
		SEPR $_{-2/-8°C}$ Process medium temp.	**kWh/kWh**	**3,07**	**3,20**	**3,25**	**3,10**	**3,25**	**3,12**
Part Load integrated values		IPLV.SI	kW/kW	4,566	4,57	4,538	4,508	4,5	4,61
Sound levels									
Standard unit									
Sound power(3)			dB(A)	91	92	92	92	92	93
Sound pressure level at 10 m (4)			dB(A)	59	60	60	60	60	60
Standard unit + option 15(1)									
Sound power(3)			dB(A)	89	90	90	90	90	91
Sound pressure at 10 m(4)			dB(A)	57	58	58	58	58	59
Standard unit + option 15LS(1)									
Sound power(3)			dB(A)	85	85	85	86	86	86
Sound pressure at 10 m(4)			dB(A)	53	53	53	54	54	54
Dimensions - standard unit									
Length			mm	2410					3604
Width			mm	2253					2253
Height			mm	2297					2297
Operating weight(2)									
Standard unit			kg	1216	1257	1257	1387	1408	1865
Standard unit + option 15(1)			kg	1299	1339	1340	1495	1516	1991
Standard unit + option 15 + option 116S(1)			kg	1438	1479	1479	1634	1670	2151
Compressors				Hermetic scroll 48.3 tr/s					
Circuit A				1	1	1	2	2	2
Circuit B				2	2	2	2	2	3
No. of control stages				3	3	3	4	4	5
Refrigerant(2) - Standard unit				R410A					
Circuit A			kg	8.40	10.90	10.90	12.60	13.10	14.70
			tCO_2e	17.5	22.8	22.8	26.3	27.4	30.7
Circuit B			kg	12.25	12.60	12.60	12.70	13.10	20.20
			tCO_2e	25.6	26.3	26.3	26.5	27.4	42.2
Capacity control				Pro-Dialog+ Control					
Minimum capacity			%	33	33	33	25	25	20
Condensers				Aluminium micro-channel coils (MCHE)					
Fans - Standard unit				FLYING BIRD 4 axial fans with rotating impeller					
Quantity				3	4	4	4	4	5
Maximum total air flow			l/s	13542	18056	18056	18056	18056	22569
Maximum rotation speed			rps	16	16	16	16	16	16
Evaporator				Dual-circuit plate heat exchanger					
Water volume			l	15	15	15	15	19	27
Max. water-side operating pressure without hydraulic module			kPa	1000	1000	1000	1000	1000	1000
Hydraulic module (option)				Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)					
Pump				Centrifugal pump, monocell, 48.3 rps, low or high pressure (as required), single or dual (as required)					
Expansion tank volume			l	50	50	50	50	50	80
Max. water-side operating pressure with hydraulic module			kPa	400	400	400	400	400	400
Water connections with or without hydraulic module				Victaulic type					
Diameter			inch	3	3	3	3	3	4
External diameter			mm	88.9	88.9	88.9	88.9	88.9	114.3
Casing paintwork				Colour code RAL 7035					

* In accordance with standard EN14511-3:2013.

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

CA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

ηs cool $_{12/7°C}$ & SEER $_{12/7°C}$ **Applicable Ecodesign regulation (EU) No. 2016/2281**

SEPR $_{12/7°C}$ **Applicable Ecodesign regulation (EU) No. 2016/2281**

SEPR $_{2/-8°C}$ **Applicable Ecodesign regulation (EU) No. 2015/1055**

IPLV.SI Calculated as per AHRI standard 551-591.

(1) Options: 15 = Low noise level, 15LS = Very Low Noise level, 116S = High pressure dual-pump hydraulic module

(2) Weights are guidelines only. Refer to the unit name plate.

(3) In dB ref=10^{-12} W, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent

(4) In dB ref 20µPa, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information, calculated from the sound power Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

COOLING

PHYSICAL DATA, SIZES 160 TO 520

30RBM				330	360	400	430	470	520
Standard unit		Nominal capacity	kW	331	365	397	430	464	523
Full load performances*	CA1	EER	kW/kW	2,92	2,95	2,90	2,94	2,90	2,90
		Eurovent class		B	B	B	B	B	B
	CA2	Nominal capacity	kW	428,1	475,1	510	556,3	593,2	676
		EER	kW/kW	3,4	3,47	3,37	3,45	3,34	3,38
		Eurovent class		D	D	D	D	E	D
Seasonal energy efficiency		**SEER $_{12/7\ °C}$ Comfort low temp.**	**kWh/kWh**	**4,19**	**4,21**	**4,16**	**4,15**	**4,12**	**4,10**
		ηs cool $_{12/7°C}$	**%**	**165**	**165**	**163**	**163**	**162**	**161**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**4,46**	**4,67**	**4,50**	**4,79**	**4,64**	**4,74**
		SEPR $_{-2/-8°C}$ Process medium temp.	**kWh/kWh**	**3,34**	**2,83**	**3,32**	-	-	-
Part Load integrated values		IPLV.SI	kW/kW	4,612	4,69	4,579	4,618	4,555	4,579
Sound levels									
Standard unit									
Sound power(3)			dB(A)	93	93	93	94	94	94
Sound pressure level at 10 m (4)			dB(A)	60	61	61	62	62	62
Standard unit + option 15(1)									
Sound power(3)			dB(A)	91	92	92	93	93	93
Sound pressure at 10 m(4)			dB(A)	59	60	60	61	61	61
Standard unit + option 15LS(1)									
Sound power(3)			dB(A)	86	87	87	88	88	88
Sound pressure at 10 m(4)			dB(A)	54	55	55	55	55	56
Dimensions - standard unit									
Length			mm		3604			4797	
Width			mm		2253			2253	
Height			mm		2297			2297	
Operating weight(2)									
Standard unit			kg	1901	2069	2125	2545	2563	2761
Standard unit + option 15(1)			kg	2027	2212	2269	2707	2726	2941
Standard unit + option 15 + option 116S(1)			kg	2231	2416	2472	2950	2967	3221
Compressors				Hermetic scroll 48.3 tr/s					
Circuit A				2	3	3	3	3	4
Circuit B				3	3	3	4	4	4
No. of control stages				5	6	6	7	7	8
Refrigerant(2) - Standard unit				R410A					
Circuit A			kg	15.40	20.30	21.10	23.50	23.50	26.75
			tCO_2e	32.2	42.4	44.1	49.1	49.1	55.9
Circuit B			kg	20.20	20.40	22.20	26.70	26.80	26.95
			tCO_2e	42.2	42.6	46.4	55.7	56.0	56.3
Capacity control				Pro-Dialog+ Control					
Minimum capacity			%	20	17	17	14	14	13
Condensers				Aluminium micro-channel coils (MCHE)					
Fans - Standard unit				FLYING BIRD 4 axial fans with rotating impeller					
Quantity				5	6	6	7	7	8
Maximum total air flow			l/s	22569	27083	27083	31597	31597	36111
Maximum rotation speed			rps	16	16	16	16	16	16
Evaporator				Dual-circuit plate heat exchanger					
Water volume			l	35	33	42	44	47	53
Max. water-side operating pressure without hydraulic module			kPa	1000	1000	1000	1000	1000	1000
Hydraulic module (option)				Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)					
Pump				Centrifugal pump, monocell, 48.3 rps, low or high pressure (as required), single or dual (as required)					
Expansion tank volume			l	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module			kPa	400	400	400	400	400	400
Water connections with or without hydraulic module				Victaulic type					
Diameter			inch	4	4	4	4	4	4
External diameter			mm	114.3	114.3	114.3	114.3	114.3	114.3
Casing paintwork				Colour code RAL 7035					

* In accordance with standard EN14511-3:2013.

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

CA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

ηs cool$_{12/7°C}$ & SEER $_{12/7°C}$ **Applicable Ecodesign regulation (EU) No. 2016/2281**

SEPR $_{12/7°C}$ **Applicable Ecodesign regulation (EU) No. 2016/2281**

SEPR$_{-2/-8°C}$ **Applicable Ecodesign regulation (EU) No. 2015/1055**

IPLV.SI Calculated as per AHRI standard 551-591.

(1) Options: 15 = Low noise level, 15LS = Very Low Noise level, 116S = High pressure dual-pump hydraulic module

(2) Weights are guidelines only. Refer to the unit name plate.

(3) In dB ref=10^{-12} W, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent

(4) In dB ref 20µPa, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information, calculated from the sound power Lw(A).

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Eurovent certified values

PHYSICAL DATA, SIZES 160 TO 520

30RBP				160	180	200	220	260	300
Standard unit		Nominal capacity	kW	168	180	197	216	261	300
Full load performances*	CA1	EER	kW/kW	3,04	3,12	2,98	2,97	2,90	2,97
		Eurovent class		B	A	B	B	B	B
	CA2	Nominal capacity	kW	215,7	247,3	262,8	296,7	336,1	392,6
		EER	kW/kW	3,6	3,89	3,59	3,7	3,37	3,53
		Eurovent class		C	A	C	B	D	C
Seasonal energy efficiency		**SEER $_{12/7\ °C}$ Comfort low temp.**	**kWh/kWh**	**4,32**	**4,29**	**4,18**	**4,24**	**4,20**	**4,51**
		ηs cool $_{12/7°C}$	**%**	**170**	**169**	**164**	**167**	**165**	**178**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,43**	**5,61**	**5,32**	**5,56**	**5,16**	**5,60**
		SEPR $_{-2/-8°C}$ Process medium temp.	**kWh/kWh**	**3,30**	**3,53**	**3,51**	**3,45**	**3,33**	**3,48**
Part Load integrated values		IPLV.SI		4,758	4,855	4,733	4,849	4,749	4,999
Sound levels									
Standard unit									
Sound power(3)			dB(A)	91	92	92	92	92	93
Sound pressure level at 10 m (4)			dB(A)	59	60	60	60	60	60
Standard unit + option 15(1)									
Sound power(3)			dB(A)	89	90	90	90	90	91
Sound pressure at 10 m(4)			dB(A)	57	58	58	58	58	59
Standard unit + option 15LS(1)									
Sound power(3)			dB(A)	85	85	85	86	86	86
Sound pressure at 10 m(4)			dB(A)	53	53	53	54	54	54
Dimensions - standard unit									
Length			mm	2410					3604
Width			mm	2253					2253
Height			mm	2297					2297
Operating weight(2)									
Standard unit			kg	1252	1293	1293	1423	1445	1901
Standard unit + option 15(1)			kg	1334	1376	1376	1531	1553	2027
Standard unit + option 15 + option 116S(1)			kg	1473	1515	1516	1670	1707	2187
Compressors				Hermetic scroll 48.3 tr/s					
Circuit A				1	1	1	2	2	2
Circuit B				2	2	2	2	2	3
No. of control stages				3	3	3	4	4	5
Refrigerant(2) - Standard unit				R410A					
Circuit A			kg	8.40	10.90	10.90	12.60	13.10	14.70
			tCO_2e	17.5	22.8	22.8	26.3	27.4	30.7
Circuit B			kg	12.25	12.60	12.60	12.70	13.10	20.20
			tCO_2e	25.6	26.3	26.3	26.5	27.4	42.2
Capacity control				Pro-Dialog+ Control					
Minimum capacity			%	33	33	33	25	25	20
Condensers				Aluminium micro-channel coils (MCHE)					
Fans - Standard unit				FLYING BIRD 4 axial fans with rotating impeller					
Quantity				3	4	4	4	4	5
Maximum total air flow			l/s	13542	18056	18056	18056	18056	22569
Maximum rotation speed			rps	16	16	16	16	16	16
Evaporator				Dual-circuit plate heat exchanger					
Water volume			l	15	15	15	15	19	27
Max. water-side operating pressure without hydraulic module			kPa	1000	1000	1000	1000	1000	1000
Hydraulic module (option)				Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)					
Pump				Centrifugal pump, monocell, 48.3 r/s, low- or high-pressure (as required), single or dual (as required)					
Expansion tank volume			l	50	50	50	50	50	80
Max. water-side operating pressure with hydraulic module			kPa	400	400	400	400	400	400
Water connections with/without hydraulic module				Victaulic type					
Diameter			inch	3	3	3	3	3	4
External diameter			mm	88.9	88.9	88.9	88.9	88.9	114.3
Casing paintwork				Colour code RAL 7035					

* In accordance with standard EN14511-3:2013.

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

CA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

ηs cool $_{12/7°C}$ & SEER $_{12/7°C}$ **Applicable Ecodesign regulation (EU) No. 2016/2281**

SEPR $_{12/7°C}$ **Applicable Ecodesign regulation (EU) No. 2016/2281**

SEPR $_{-2/-8°C}$ **Applicable Ecodesign regulation (EU) No. 2015/1055**

IPLV.SI Calculated as per AHRI standard 551-591.

(1) Options: 15 = Low noise level, 15LS = Very Low Noise level, 116S = High pressure dual-pump hydraulic module

(2) Weights are guidelines only. Refer to the unit name plate.

(3) In dB ref=10^{-12} W, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent

(4) In dB ref 20µPa, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information, calculated from the sound power Lw(A).

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Eurovent certified values

PHYSICAL DATA, SIZES 160 TO 520

30RBP				330	360	400	430	470	520
Standard unit		Nominal capacity	kW	331	365	397	430	464	523
Full load performances*	CA1	EER	kW/kW	2,92	2,95	2,90	2,94	2,90	2,90
		Eurovent class		B	B	B	B	B	B
	CA2	Nominal capacity	kW	428,1	475,1	510	556,3	593,2	676
		EER	kW/kW	3,4	3,47	3,37	3,45	3,34	3,38
		Eurovent class		D	D	D	D	E	D
Seasonal energy efficiency		**SEER $_{12/7\,°C}$ Comfort low temp.**	**kWh/kWh**	**4,40**	**4,52**	**4,37**	**4,45**	**4,52**	**4,40**
		ηs cool $_{12/7°C}$	**%**	**173**	**178**	**172**	**175**	**178**	**173**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,24**	**5,62**	**5,32**	**5,50**	**5,38**	**5,26**
		SEPR $_{-2/-8°C}$ Process medium temp.	**kWh/kWh**	**3,36**	**3,58**	**3,52**	-	-	-
Part Load integrated values		IPLV.SI		4,833	5,004	4,815	4,925	4,999	4,839
Sound levels									
Standard unit									
Sound power(3)			dB(A)	93	93	93	94	94	94
Sound pressure level at 10 m (4)			dB(A)	60	61	61	62	62	62
Standard unit + option 15(1)									
Sound power(3)			dB(A)	91	92	92	93	93	93
Sound pressure at 10 m(4)			dB(A)	59	60	60	61	61	61
Standard unit + option 15LS(1)									
Sound power(3)			dB(A)	86	87	87	88	88	88
Sound pressure at 10 m(4)			dB(A)	54	55	55	55	55	56
Dimensions - standard unit									
Length			mm		3604			4797	
Width			mm		2253			2253	
Height			mm		2297			2297	
Operating weight(2)									
Standard unit			kg	1937	2105	2162	2603	2621	2827
Standard unit + option 15(1)			kg	2063	2249	2306	2765	2783	3007
Standard unit + option 15 + option 116S(1)			kg	2267	2452	2509	3007	3024	3287
Compressors				Hermetic scroll 48.3 tr/s					
Circuit A				2	3	3	3	3	4
Circuit B				3	3	3	4	4	4
No. of control stages				5	6	6	7	7	8
Refrigerant(2) - Standard unit				R410A					
Circuit A			kg	15.40	20.30	21.10	23.50	23.50	26.75
			tCO_2e	32.2	42.4	44.1	49.1	49.1	55.9
Circuit B			kg	20.20	20.40	22.20	26.70	26.80	26.95
			tCO_2e	42.2	42.6	46.4	55.7	56.0	56.3
Capacity control				Pro-Dialog+ Control					
Minimum capacity			%	20	17	17	14	14	13
Condensers				Aluminium micro-channel coils (MCHE)					
Fans - Standard unit				FLYING BIRD 4 axial fans with rotating impeller					
Quantity				5	6	6	7	7	8
Maximum total air flow			l/s	22569	27083	27083	31597	31597	36111
Maximum rotation speed			rps	16	16	16	16	16	16
Evaporator				Dual-circuit plate heat exchanger					
Water volume			l	35	33	42	44	47	53
Max. water-side operating pressure without hydraulic module			kPa	1000	1000	1000	1000	1000	1000
Hydraulic module (option)				Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)					
Pump				Centrifugal pump, monocell, 48.3 r/s, low- or high-pressure (as required), single or dual (as required)					
Expansion tank volume			l	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module			kPa	400	400	400	400	400	400
Water connections with/without hydraulic module									
Diameter			inch	4	4	4	4	4	4
External diameter			mm	114.3	114.3	114.3	114.3	114.3	114.3
Casing paintwork				Colour code RAL 7035					

* In accordance with standard EN14511-3:2013.

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

CA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

ηs cool $_{12/7°C}$ & SEER $_{12/7°C}$ **Applicable Ecodesign regulation (EU) No. 2016/2281**

SEPR $_{12/7°C}$ **Applicable Ecodesign regulation (EU) No. 2016/2281**

SEPR $_{-2/-8°C}$ **Applicable Ecodesign regulation (EU) No. 2015/1055**

IPLV.SI Calculated as per AHRI standard 551-591.

(1) Options: 15 = Low noise level, 15LS = Very Low Noise level, 116S = High pressure dual-pump hydraulic module

(2) Weights are guidelines only. Refer to the unit name plate.

(3) In dB ref=10^{-12} W, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent

(4) In dB ref 20µPa, (A) weighting. Declared dual-number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information, calculated from the sound power Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL SPECIFICATIONS

30RBM		160	180	200	220	260	300	330	360	400	430	470	520
Power circuit													
Nominal voltage	V-ph-Hz	400 - 3 - 50											
Voltage range	V	360 - 440											
Control circuit supply		24 V via internal transformer											
Nominal unit current draw(1)													
Circuit A&B	A	100	110	124	133	161	180	201	221	242	261	282	322
Max. operating input power (2)													
Circuit A&B	kW	80	88	99	107	129	145	161	177	194	210	226	258
Cosine Phi unit at maximum power (2)		0,88	0,87	0,87	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88
Maximum unit current draw (Un-10%)(3)													
Circuit A&B	A	144	158	176	192	230	259	288	317	345	374	403	460
Maximum unit current draw (Un)(4)													
Circuit A&B - Standard Unit	A	133	146	163	177	212	239	266	292	319	345	372	425
Circuit A&B - Unit with option 231	A	100	110	125	133	163	181	204	222	244	262	285	326
Maximum start-up current, standard unit (Un)†													
Circuit A&B	A	307	356	374	352	423	450	476	503	529	556	583	636
Max. start-up current, unit with soft starter (Un)†													
Circuit A&B	A	261	283	300	305	349	376	403	429	456	482	509	562

(1) Conditions equivalent to the standardised Eurovent conditions (evaporator water input-output temperature = 12 °C/7 °C, outside air temperature = 35 °C)
(2) Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15°C, saturated condensing temperature 68.3°C) and nominal voltage of 400 V (data given on the unit nameplate).
(3) Maximum unit operating current at maximum unit input power and 360 V.
(4) Maximum unit operating current at maximum unit input power and 400 V (values given on the unit's nameplate).
† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + current of the fan(s) + locked rotor current of the largest compressor).

Fan motor electrical data reported upstream the variable speed drive at Eurovent equivalent conditions and motor ambient air temperature of 50°C at 400 V: Current 3.8 A; In-rush current 20 A; Power input: 1.75 kW.

30RBP		160	180	200	220	260	300	330	360	400	430	470	520
Power circuit													
Nominal voltage	V-ph-Hz	400 - 3 - 50											
Voltage range	V	360 - 440											
Control circuit supply		24 V via internal transformer											
Nominal unit current draw(1)													
Circuit A&B	A	97	107	121	130	158	176	197	216	237	255	276	316
Cosine Phi unit at maximum power (2)													
Circuit A&B	kW	81	88	99	108	129	145	162	178	194	210	226	259
Cosine Phi unit at maximum power (2)		0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88
Maximum unit current draw (Un-10%)(3)													
Circuit A&B	A	142	154	173	189	227	255	284	312	340	369	397	454
Maximum unit current draw (Un)(4)													
Circuit A&B - Standard Unit	A	131	142	160	174	209	235	262	287	314	340	366	419
Circuit A&B - Unit with option 231	A	98	108	123	131	161	178	201	219	241	259	281	321
Maximum start-up current, standard unit (Un)†													
Circuit A&B	A	305	353	371	349	420	446	472	498	525	550	577	629
Max. start-up current, unit with soft starter (Un)†													
Circuit A&B	A	259	279	297	302	346	372	399	424	451	477	503	556

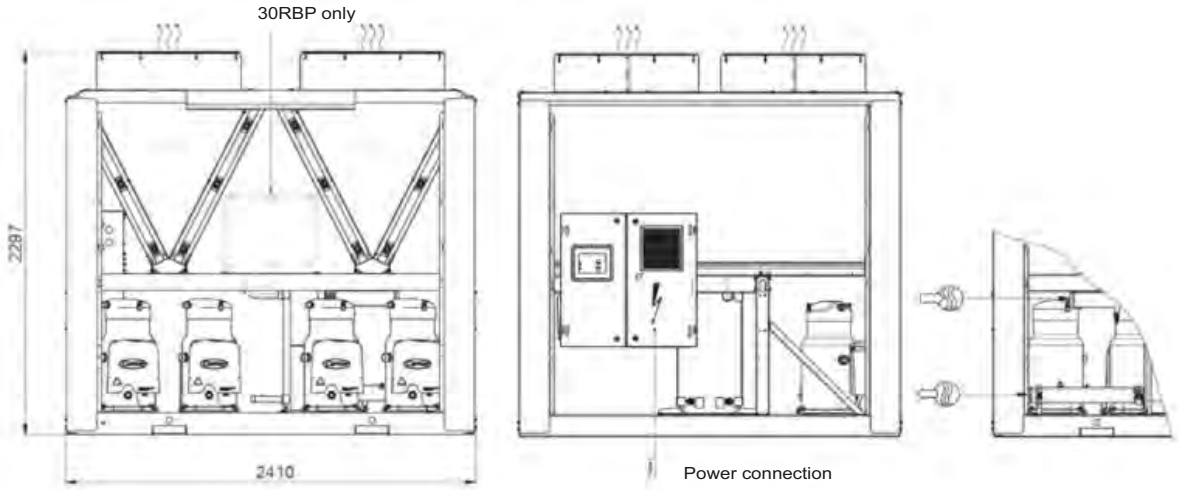
(1) Conditions equivalent to the standardised Eurovent conditions (evaporator water input-output temperature = 12 °C/7 °C, outside air temperature = 35 °C)
(2) Input power, compressors + fans, at the unit operating limits (saturated suction temperature: 15°C, saturated condensing temperature: 68.3°C) and nominal voltage of 400 V (data given on the unit nameplate).
(3) Maximum unit operating current at maximum unit input power and 360 V.
(4) Maximum unit operating current at maximum unit input power and 400 V (values given on the unit's nameplate).
† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + current of the fan(s) + locked rotor current of the largest compressor).

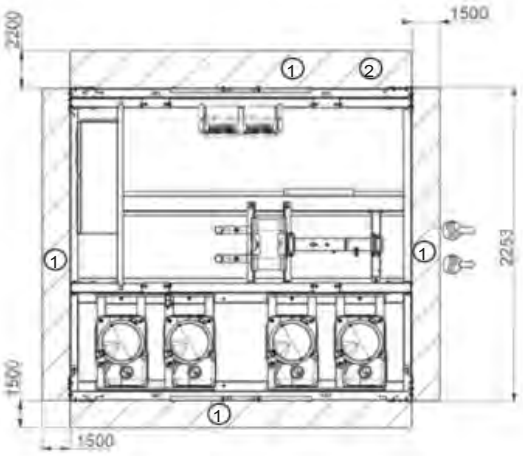
Fan motor electrical data reported upstream of the variable drive at Eurovent equivalent conditions and motor ambient air temperature of 50°C at 400 V: Current 3.0 A; Start-up current 20 A; Power input: 1.75 kW.

DIMENSIONS/CLEARANCES

30RBM/30RBP 160-260 (with/without hydraulic module)

Without hydraulic module





Key:
All dimensions are in mm.

1 Clearances required for maintenance and air flow

2 Clearance recommended for coil removal

Water inlet

Water outlet

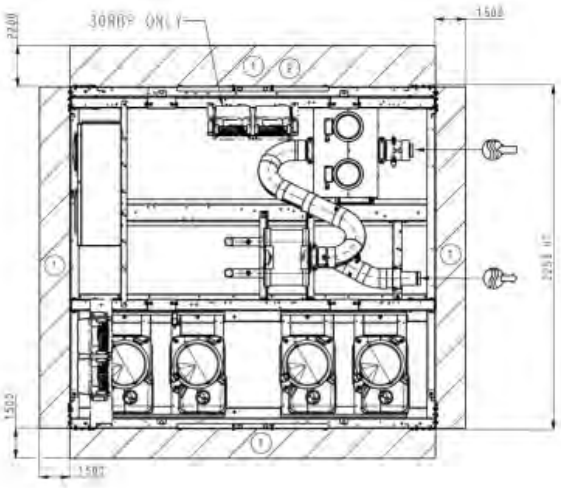
Air outlet, do not obstruct

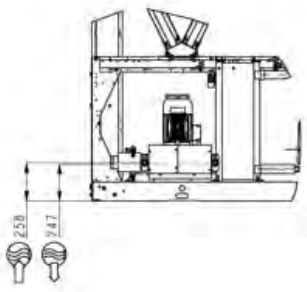
Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

For the location of fixing points, weight distribution and coordinates of the center of gravity, refer to the certified dimensional drawings.

With hydraulic module

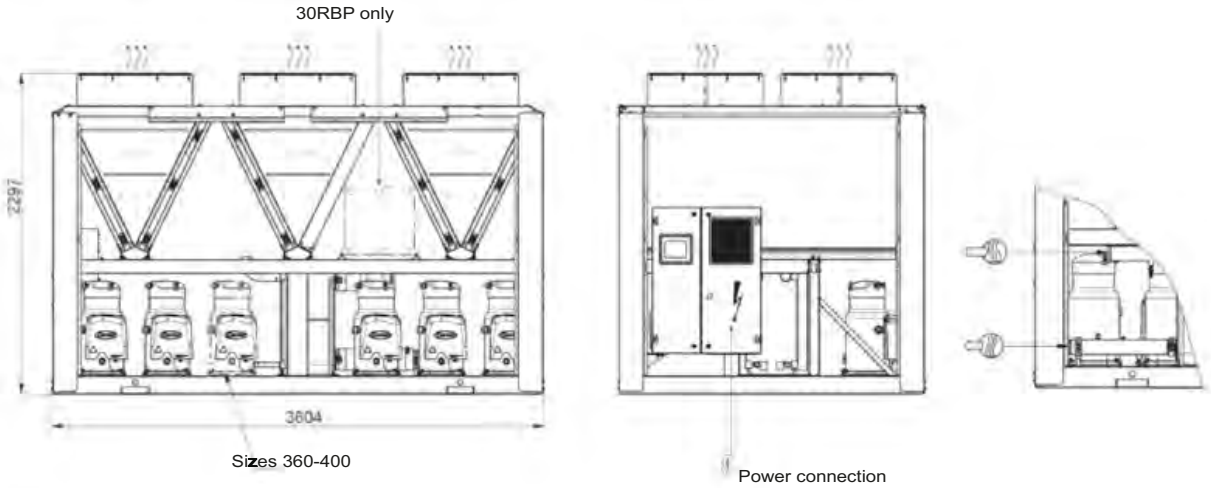


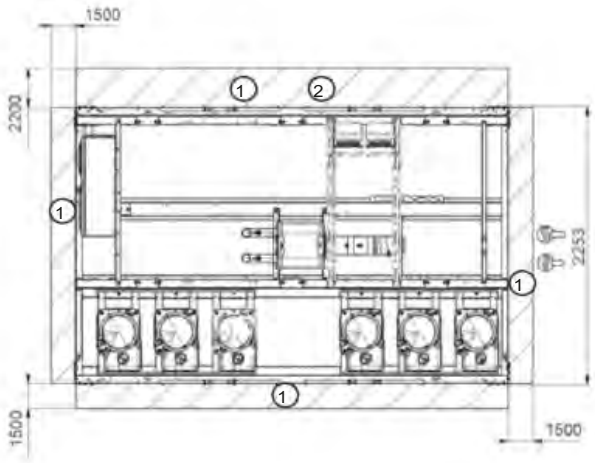


DIMENSIONS/CLEARANCES

30RBM/30RBP 300-400 (with and without hydraulic module)

Without hydraulic module





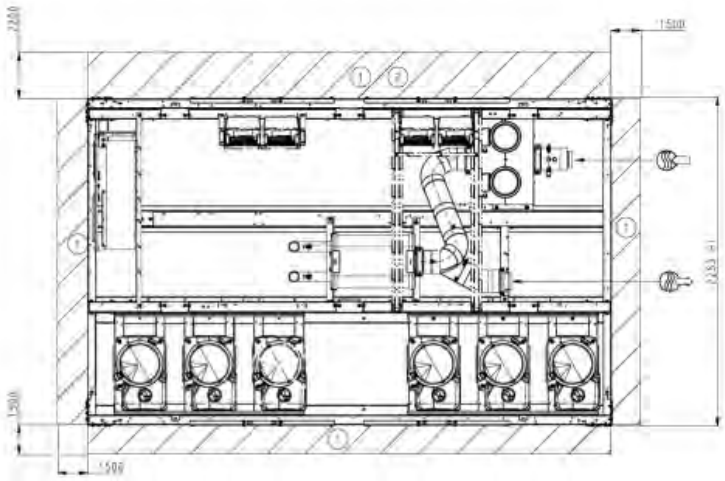
Key:
All dimensions are in mm.

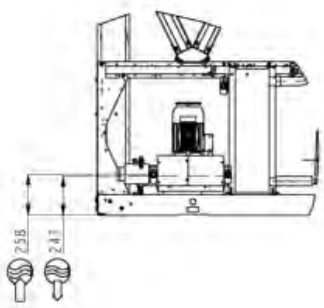
- (1) Clearances required for maintenance and air flow
- (2) Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

For the location of fixing points, weight distribution and coordinates of the center of gravity, refer to the certified dimensional drawings.

With hydraulic module

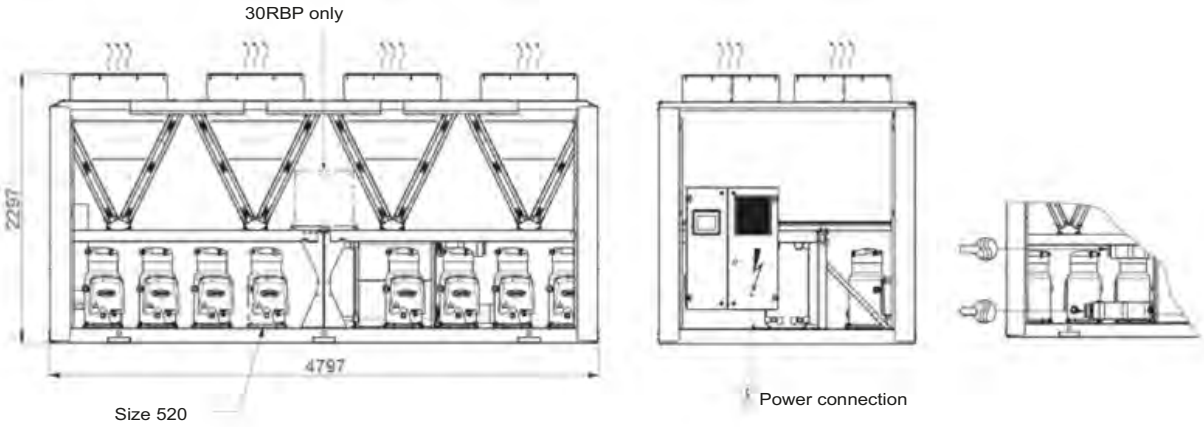


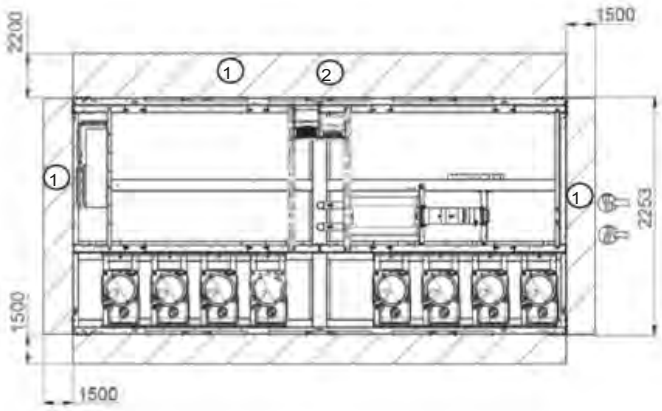


DIMENSIONS/CLEARANCES

30RBM/30RBP 430-520 (with and without hydraulic module)

Without hydraulic module





Key:
All dimensions are in mm.

1 Clearances required for maintenance and air flow

2 Clearance recommended for coil removal

Water inlet

Water outlet

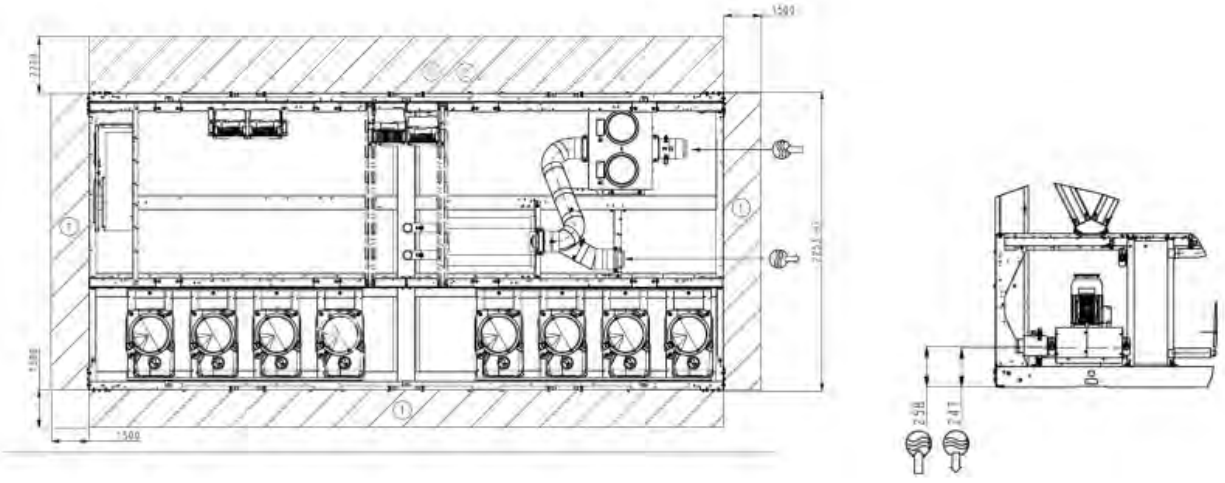
Air outlet, do not obstruct

Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, av ilable on re st.

For the location of fixing points, weight distribution and coordinates of the center of gravity, refer to the certified dimensional drawings.

With hydraulic module



NEW

AIR-COOLED LIQUID CHILLERS

- High seasonal efficiency
- Compact design
- Alluminium micro-channel heat exchanger technology
- Partial heat reclaim
- Low sound level

30RB 604-804

AQUASNAP

Nominal cooling capacity 607-774 kW

The AquaSnap liquid chiller range 604-804 features the latest technological innovations:

- non-ozone depleting refrigerant R-410A
- scroll compressors
- low-noise fans made of a composite material
- auto-adaptive microprocessor control
- aluminium micro-channel heat exchangers (MCHE)

The AquaSnap (30RB604-804) version features a compact all-in-one package optimised for part-load applications where high SEER, SEPR, IPLV are required. The AquaSnap (30RB604-804), equipped with a variable speed fans and 0-10V signal for customer variable speed pump management, provides premium part-load efficiency to reduce maintenance costs over the lifespan of the chiller.

Additionally, the low sound levels achieved under part-load conditions can be very beneficial for sensitive acoustic applications. Besides operating efficiently and quietly, the AquaSnap operates from -20°C up to 48°C as standard.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration level
  - The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mountings
  - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
  - Acoustic compressor enclosure, reducing radiated noise emissions (option)
- Condenser with Greenspeed® variable-speed fans section
  - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
  - Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
  - Rigid fan installation for reduced noise (Carrier patent)

Easy and fast installation

- High-capacity membrane expansion tank ensures pressurisation of the water circuit
- Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
- Pressure gauge to check filter pollution and measure the system water flow rate (option)
- Water flow control valve (option)
- Simplified electrical connections
  - Main disconnect switch with high trip capacity (see table of options)
  - 24 V control circuit without risk from a transformer included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors

Economical operation

- Increased energy efficiency at part load
  - Unit meets the new Ecodesign regulation 2016/2281 for positive process and comfort applications.
  - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are even more energy efficient, as they use the total condenser and evaporator capacity.
  - The electronic expansion device (EXV) allows operation at a lower condensing pressure (Energy efficiency optimisation).
  - Dynamic superheat management for better utilisation of the evaporator heat exchange surface
  - All-aluminium micro-channel condenser (MCHE), more efficient than a copper/aluminium coil
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Pro-Dialog Plus control
  - R-410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R-410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio in part load operation (IPLV, SEER, SEPR)
  - 40% reduction in the refrigerant charge through use of the micro-channel heat exchangers (MCHE)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping
  - Compressor control box installed on the cold side of the compressor (Carrier patent)
  - All-aluminium micro-channel heat exchanger (MCHE) offers 3.5 times higher corrosion resistance than a conventional coil. The all-aluminium construction eliminates the formation of galvanic currents between aluminium and copper that are responsible for the coil corrosion in saline or corrosive atmospheres.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent).
  - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled condenser coil, fan failure) AquaSnap continues to operate, but at reduced capacity.
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.

Pro-Dialog Plus operator interface

FEATURES

Pro-Dialog Plus control

Pro-Dialog Plus combines intelligence with operating simplicity. The control constantly monitors all machine para-meters and precisely manages the operation of compressors, expansion devices, fans and of the evaporator water pump for optimum energy efficiency.

- Energy management
  - Internal time schedule clock: permits chiller on/off control and operation at a second set-point
  - Set-point reset based on the outside air temperature or the return water temperature
  - Master/slave control of two chillers operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
  - Start/stop control based on the air temperature
  - 0-10V output for external variable speed pump controL
- Ease-of-use
  - User interface with synoptic diagram for intuitive display of the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set-point, air temperature, entering/leaving water temperature
  - Ten menus for direct access to all machine commands, including fault history, allowing fast and complete chiller diagnostics

Remote management (standard)

A simple two-wire communication bus between the RS485 port of the AquaSnap and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode)
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value
- User safety: This contact is connected in series with the water flow switch and can be used for any customer safety loop
- Heat reclaim (option): Closing of this contact allows heat reclaim mode operation
- Water pump 1 and 2 control*: These outputs control the contactors of one or two evaporator water pumps
- Water pump on reversal*: These contacts are used to detect a water pump operation fault and automatically change over to the other pump
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load) or that it is ready to operate (no cooling load)
- Alert indication: This volt-free contact indicates the presence of a minor fault
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or two refrigerant circuits

FEATURES

Remote management (EMM option)

- Room temperature: Permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set-point reset: Ensures reset of the cooling set-point based on a 4-20 mA or 0-5 V signal
- Demand limit: Permits limitation of the maximum chiller demand based on a 4-20 mA or 0-5 V signal
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to three predefined values
- User safety: This contact can be used for any customer safety loop, closing of the contact generates a specific alarm
- Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: Closing of this contact cancels the time schedule effects
- Out of service: This signal indicates that the chiller is completely out of service
- Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Compressor operation: This contact signals that one or several compressors are in operation

All aluminium micro-channel heat exchanger (MCHE)

Already utilised in the automobile and aeronautical industries for many years, the MCHE heat exchanger is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers. Unlike traditional heat exchangers the MCHE heat exchanger can be used in moderate marine and urban environments.

From an energy efficiency point-of-view the MCHE heat exchanger is approximately 10% more efficient than a traditional coil and allows a 40% reduction in the amount of refrigerant used in the chiller. The low thickness of the MCHE reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHE heat exchanger is very fast using a high-pressure washer.

OPTIONS

Options	No.	Description	Advantages	Use
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction	30RB 604-804
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction for sensible site	30RB 604-804
Grilles and enclosure panels	23	Metal grilles on the 4 unit sides, plus side enclosure panels at each end of each coil	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30RB 604-804
Enclosure panels	23A	Side enclosure panels at each end of each coil	Improves aesthetics, coil and piping protection against impacts.	30RB 604-804
Water exchange frost protection	41	Electric heater on the water exchanger and the water piping	Water exchanger module frost protection between 0°C and -20°C outside air temperature	30RB 604-804
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RB 604-804
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallel operation with operating time equalisation	30RB 604-804
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RB 604-804
Fuses on main disconnect switch	70D	Factory installed additional fuses, one per each phase, to protect main switch and associated cables from over-current flow (Note: frequency drives and electronic boards are protected as standard by dedicated fuses. Option 70D recommended when compliant protection devices on field not present)	No need for separate fuse box. Save time and money on site installation and avoid additional space requirement	30RB 604-804
Shell and tubes evaporator with aluminum jacket	88	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30RB 604-804
Compressor suction valve	92	Valve set for the compressor suction side to isolate it in the refrigerant circuit	Simplified service and maintenance	30RB 604-804
J-Bus gateway	148B	Bi-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30RB 604-804
BacNet gateway	148C	Bi-directional communication board complying with BacNet protocol	Easy connection by communication bus to a building management system	30RB 604-804
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RB 604-804
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30RB 604-804
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the shell and tubes evaporator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	30RB 604-804
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	30RB 604-804
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30RB 604-804
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30RB 604-804
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RB 604-804
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30RB 604-804

PHYSICAL DATA

30RB604-804 units

30RB				604	674	734	804
Cooling							
Standard unit		Nominal capacity	kW	607	657	712	774
Full load performances *	CA1	EER	kW/kW	2,72	2,68	2,59	2,58
		Eurovent class		C	D	D	D
Seasonal energy efficiency		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,32**	**4,16**	**4,14**	**4,19**
		ηs cool $_{12/7°C}$	**%**	**170**	**163**	**162**	**164**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,21**	**5,07**	**5,07**	**5,03**
Integrated Part Load Value		IPLV.SI	kW/kW	4.48	4.32	4.36	4.42
Operating weight(1)							
Unit with option 15			kg	4626	4864	5342	5583
Standard unit(2)			kg	4410	4630	5090	5313
Sound levels							
Unit with option 15LS (very low noise level)							
Sound power level 10^{-12} W(3)			dB(A)	89	89	89	90
Sound pressure level at 10 m(4)			dB(A)	57	57	56	57
Unit with option 15 (low noise level)							
Sound power level 10^{-12} W(3)			dB(A)	93	94	94	94
Sound pressure level at 10 m(4)			dB(A)	61	62	61	61
Unit without option 15							
Sound power level 10^{-12} W(3)			dB(A)	95	95	96	96
Sound pressure level at 10 m(4)			dB(A)	63	63	63	63
Dimensions							
Length			mm	5992		7186	
Depth			mm	2253		2253	
Height			mm	2297	2297	2297	2297
Compressors				Hermetic scroll, 48.3 r/s			
Circuit A				3	3	4	4
Circuit B				3	3	4	4
Circuit C				3	4	3	4
No. of control stages				9	10	11	12
Refrigerant				R-410A			
Circuit A			kg	22	22	26	26
			$teqCO_2$	45	45	54	54
Circuit B			kg	22	22	28	28
			$teqCO_2$	46	45	58	58
Circuit C			kg	24	28	24	31
			$teqCO_2$	49	58	50	65
Capacity control				Pro-Dialog Plus			
Minimum capacity			%	11	10	9	8
Condensers				All aluminum micro-channel heat exchanger (MCHE)			
Fans				Axial Flying Bird 4 with rotating shroud			
Quantity				9	10	11	12
Total air flow			l/s	40623	45139	49653	54167
Speed			r/s	16	16	16	16
Evaporator				Direct-expansion, dual-circuit shell-and-tube			
Water volume			l	284	284	284	284
Max. water-side operating pressure without hydraulic module			kPa	1000	1000	1000	1000
Water connections without hydraulic module				Victaulic			
Diameter			inch	6	6	6	6
Outside tube diameter			mm	168,3	168,3	168,3	168,3
Chassis paint colour				Colour code: RAL7035			

* In accordance with standard EN14511-3:2013.

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool$_{12/7°C}$ & SEER $_{12/7°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

SEPR $_{12/7°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) Weight shown is a guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate.

(2) Standard unit: base unit without option 15.

(3) In accordance with ISO 9614-1 and certified by Eurovent.

(4) Average sound pressure level, unit in a free field on a reflective surface.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL DATA

30RB 604-804 units

30RB		604	674	734	804
Power circuit					
Nominal power supply	V-ph-Hz	400-3-50			
Voltage range	V	360-440			
Control circuit supply		24 V, via internal transformer			
Nominal unit current draw(1)					
Circuits A + B (one supply)	A	237	237	316	316
Circuit C (separate supply)	A	118	158	118	158
Maximum unit power input(2)					
Circuits A + B (one supply)	kW	194	194	259	259
Circuit C (separate supply)	kW	97	129	97	129
Cosine phi, unit at max. capacity(2)		0,88	0,88	0,88	0,88
Maximum unit current draw (Un-10%)(3)					
Circuits A + B (one supply)	A	340	340	454	454
Circuit C (separate supply)	A	170	227	170	227
Maximum unit current draw(4)					
Circuits A + B (one supply)	A	314	314	419	419
Circuit C (separate supply)	A	157	209	157	209
Maximum start-up current, standard unit (Un)(5)					
Circuits A + B	A	525	525	629	629
Circuit C	A	368	420	368	420

(1) Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0.18 x 10-4 (m^2K)/W.
(2) Power input, compressors and fans, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).
(3) Maximum unit operating current at maximum unit power input and 360 V.
(4) Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).
(5) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

Short-circuit stability current (TN system)*

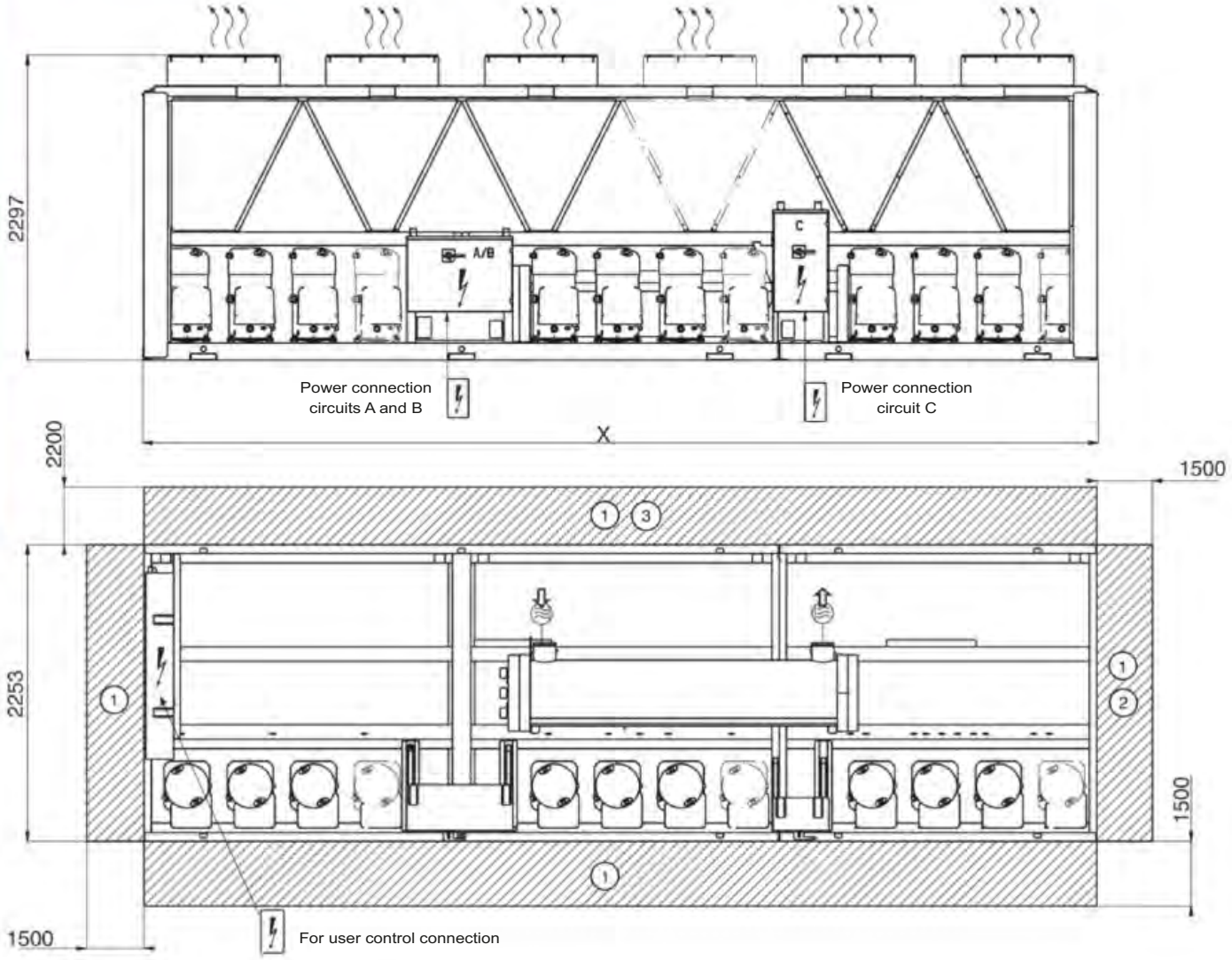
30RB		604	674	734	804
Unit without main disconnect					
With fuses upstream - maximum fuse values assigned (gL/gG)					
Circuits A and B	A	630/500	630/500	630/500	630/500
Circuit C	A	400	400	400	400
With fuses upstream - admissible rms current value (gL/gG)					
Circuits A and B	kA	70	70	60/70	60/70
Circuit C	kA	60	60	60	60
Unit with optional main disconnect without fuse					
Short-time assigned current Icw(2) (1s) rms value/peak Ipk(6)					
Circuits A and B	kA/kA	13/26	13/26	15/30	15/30
Circuit C	kA/kA	13/26	13/26	13/26	13/26
With fuses upstream - maximum fuse values assigned (gL/gG)					
Circuits A and B	A	400	400	630	630
Circuit C	A	400	400	400	400
With fuses upstream - conditional short-circuit assigned current Icc/Icf†					
Circuits A and B	kA	50	50	50	50
Circuit C	kA	50	50	50	50
Unit with optional main disconnect with fuses					
Short-circuit stability current Icc/Icf(4) increased with fuses - maximum fuse values assigned (gL/gG)					
Circuits A and B	kA	400	400	630	630
Circuit C	kA	250	250	250	250
Short-circuit stability current Icc/Icf† increased with fuses - admissible rms current value (gL/gG)					
Circuits A and B	kA	50	50	50	50
Circuit C	kA	50	50	50	50

(1) Type of system earthing
(2) Icw: assigned short-time current
(3) Ipk: assigned current, admissible peak
(4) Icc/Icf: assigned conditional short-circuit current

IT system: The short-circuit holding current values given above for the TN system are not valid for IT; modifications are required.

DIMENSIONS/CLEARANCES

30RB 604-804



30RB	X
604-674	5992
734-804	7186

Legend
All dimensions are given in mm.

① Clearances required for maintenance and air flow
② Clearances recommended for evaporator tube removal
Clearances recommended for heat exchanger removal
Water inlet
Water outlet
Air outlet, do not obstruct

NOTE: Non-contractual drawings.

When designing an installation, refer to the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution points and center of gravity coordinates please refer to the dimensional drawings.

AIR-COOLED LIQUID CHILLERS

Compactness

Extended operating envelope

Reduced refrigerant charge

Full list of options - maximum configurability

Unit with option 279 (compressor enclosure)

30XAS

AQUAFORCE

Nominal cooling capacity 232-467 kW - 50 Hz

The Aquaforce liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality. The units are designed to operate up to 55 °C outside air temperature.

The Aquaforce liquid chillers are designed to meet current and future requirements in terms of energy efficiency and operating sound levels. They use the best technologies available today:

- Twin-rotor screw compressors with a variable capacity valve.
- Single refrigerant R-134a.
- Low-noise generation IV Flying Bird fans made of composite material.
- Aluminium micro-channel heat exchangers (MCHE)
- Touch Pilot control system.

To meet to all environmental and economic requirements, the Aquaforce is available in two versions:

- One offers an extremely low noise level while at the same time boasting superior energy efficiency.
- The other offers unequalled energy efficiency to satisfy the most stringent demands of building owners wanting to reduce operating costs to the minimum. This version is also recommended for applications in geographical zones where the air temperature is very high.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Very economical operation

- Exceptionally high full load and part load energy efficiency:
  - Eurovent energy efficiency class A and C.
  - Standardised Eurovent values in accordance with EN14511-3:2013: EER up to 3,2 and SEER up to 4,1.
  - New twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
  - All aluminium condenser with high-efficiency micro-channels.
  - Flooded shell-and-tube evaporator to increase the heat exchange efficiency.
  - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control).
  - Economiser system with electronic expansion device for increased cooling capacity.

Low operating sound levels

- Compressors
  - Discharge dampers integrated in the oil separator (Carrier patent).
  - Silencer on the economiser return line.
  - Acoustic compressor and oil separator enclosure reducing radiated noise (option).
- Condenser section
  - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
  - Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
  - Rigid fan mounting preventing start-up noise (Carrier patent).

Easy and fast installation

- Integrated hydraulic module (option)
  - Centrifugal high-pressure water pump
  - Dual pump with operating time balancing and auomatic changeover to the back-up pump if a fault develops
  - Water filter protecting the water pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Thermal insulation and aluminium protection (option)
  - Pressure sensor to check filter pollution and for direct numerical display of the water flow rate with an estimate of the instantaneous cooling capacity at the control interface
  - Water flow control valve.
- Simplified electrical connections
  - Main disconnect switch with high trip capacity
  - Transformer to supply the integrated control circuit (400/24 V).
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, expansion devices, fans and compressors.

Environmental care

- R-134a refrigerant
  - Refrigerant of the HFC group with zero ozone depletion potential
  - 30% reduction in the refrigerant charge through the use of micro-channel heat exchangers
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Liquid line service valve for simplified maintenance (option).

Absolute reliability

- Screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - All compressor components are easily accessible on site minimising down-time.
  - Protection increased by an electronic board.
- Air condenser
  - All aluminium micro-channel heat exchanger (MCHE) with high corrosion resistance. The all aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion in saline or corrosive environments.
- Evaporator
  - Thermal insulation with aluminium sheet finish (option) for perfect resistance to external aggression (mechanical and UV protection).
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling (Carrier patent)
  - Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity
- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.
  - Salt mist corrosion resistance test in the laboratory for increased corrosion resistance.

TECHNICAL INSIGHTS

Touch Pilot Control

Touch Pilot control, 5" user interface

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 5'' interface (7" optional)
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the controller box with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
  - Internal time schedule clock controls chiller on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).
- Aquaforce also communicates with other building management systems via optional communication gateways.
- The following commands/visualisations are possible from remote connection:
  - Start/stop of the machine
  - Dual set-point management: through a dedicated contact is possible to activate a second set-point (example: unoccupied mode)
  - Demand limit setting: to limit the maximum chiller capacity to a predefined value
  - Water pump control: these outputs control the contactors of one/two evaporator water pums
  - Operation visualisation: indication if the unit is operating or if it's in stand-by (no cooling load) - alarm visualisation.

Remote Management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
  - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostat are installed)
  - Set-point reset: Ensures reset of the cooling set-point based on a 4-20 mA signal
  - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
  - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values
  - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm
  - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode)
  - Time schedule override: Closing of this contact cancels the time schedule effects
  - Out of service: This signal indicates that the chiller is completelt out of service
  - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity
  - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault
  - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

TECHNICAL INSIGHTS

06T Screw Compressor

The Carrier 06T screw compressor benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high outside temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The compressor is equipped with a separate oil separator that minimises the amount of oil in circulation in the refrigerant circuit and with its integrated silencer considerably reduces discharge gas pulsations for much quieter operation.

Novation® Heat Exchangers with Micro-Channel coil Technology

Already utilised in the automobile and aeronautical industries for many years, the MCHE micro-channel heat exchanger used in the Aquaforce is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers. Unlike traditional heat exchangers the MCHE heat exchanger can be used in moderate marine and urban environments (Carrier recommendation).

From an energy efficiency point-of-view the MCHE heat exchanger is approximately 10% more efficient than a traditional coil and allows a 30% reduction in the amount of refrigerant used in the chiller. The low thickness of the MCHE reduces air pressure losses by 50% and makes it susceptible to very little fouling (e.g. by sand). Cleaning of the MCHE heat exchanger is very fast using a high-pressure washer.

To ensure constant level of performance during time and protect coils from early deterioration or, what's worse, refrigerant leaks, Carrier offers (as options) dedicated treatments for installations in corrosive environments.

The Novation® heat exchangers with Enviro-Shield protection (option 262) are recommended for installations in moderately corrosive environments. The Enviro-Shield protection utilises corrosion inhibitors which actively arrest oxidation in case of mechanical damage.

The Novation® heat exchangers with the exclusive Super Enviro-Shield protection (option 263) are recommended for installations in corrosive environments. The Super Enviro-Shield protection consist in an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.

OPTIONS

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	2B	Factory application of Blygold Polual treatment on the copper/aluminium coils	Improved corrosion resistance, recommended for industrial, rural and marine environments	30XAS 242-482
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30XAS 242-482
Unit equipped for air discharge ducting	10	Fans equipped with discharge connection flanges - maximum available pressure 60 Pa	Facilitates connections to the discharge ducts	30XAS 242-482
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrical box from dusts, water and sand. In general, this option is recommended for installations in polluted environments	30XAS 242-482
Grilles and enclosure panels	23	Metal grilles on the 4 unit sides, plus side enclosure panels at each end of the coil	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30XAS 242-482
Enclosure panels	23A	Side enclosure panels at each end of the coil	Improves aesthetics, coil and piping protection against impacts.	30XAS 242-482
Winter operation down to -20 °C	28	Fan speed control via frequency converter	Stable unit operation for air temperature down to -20 °C	30XAS 242-482
Evaporator frost protection	41A	Electric resistance heater on the evaporator and discharge valve	Evaporator frost protection down to -20 °C outside temperature	30XAS 242-482
Evap.and hydraulic mod. frost protection	41B	Electric resistance heater on evaporator, discharge valve and hydraulic module	Evaporator and hydraulic module frost protection down to -20 °C outside temperature	30XAS 282-482
Total heat recovery	50	Unit equipped with additional heat exchanger in parallel with the condenser coils.	Production of free hot-water simultaneously with chilled water production	30XAS 242-482
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in master/slave operation with operating time equalisation	30XAS 242-482
Service valve set	92	Liquid line valve (evaporator inlet), compressor suction and discharge line valves and economiser line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	30XAS 242-482
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	30XAS 242-482
HP dual-pump hydraulic module	116C	Complete hydraulic module equipped with water filter, expansion tank with relief valve, two high pressure pumps, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XAS 282-482
High energy efficiency	119	Higher air flow through the condenser coils improving heat exchange efficiency on the condenser	Energy cost reduction and extended operating envelope (full load operation at higher air temperature)	30XAS 242-482
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30XAS 242-482
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30XAS 242-482
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	asy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30XAS 242-482
Energy Management Module	156	Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30XAS 242-482
Touch Pilot control, 7" user interface	158A	Touch Pilot control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	30XAS 242-482
Leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controlller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	30XAS 242-482
Dual relief valves installed w/ 3-way valve	194	Three-way valve upstream of the relief valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	30XAS 242-482
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30XAS 242-482
Compliance with Australian regulations	200	nit approved to Australian code	Conformance with Australian regulations	30XAS 242-482
Power factor correction	231	Capacitors for automatic regulation of power factor (cos phi) value to 0.95.	Reduction of the real electrical power, compliance with minimum power factor limit set by utilities	30XAS 242-482
Traditional coils (Cu/Al)	254	Coils made of copper tubes with aluminium fins	None	30XAS 242-482
Traditional coils (Cu/Al) without slots	255	Coils made of copper tubes with aluminium fins without slots	None	30XAS 242-482

OPTIONS

Options	No.	Description	Advantages	Use
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/ leaving refrigerant lines with flexible, anti-UV insulant	Prevents condensation on the evaporator entering/leaving refrigerant lines	30XAS 242-482
Low noise level	257	Sound insulation of main noise sources (includes option 279)	5 to 12 dB(A) quiter than standard unit (depending model and size). Refer to the physical data table for detailed values	30XAS 242-482
Very low sound level	258	Enhanced sound insulation of main noise sources combined with fans speed management (includes option 279)	2 to 3 dB(A) quiter than unit with option 257. Refer to the physical data table for detailed values	30XAS 242-482
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30XAS 242-482
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30XAS 242-482
Compressor enclousure	279	Compressor sound enclosure	4 to 10 dB(A) quiter than standard unit. Refer to the physical data table for detailed values	30XAS 242-482
vaporator with aluminium jacket	281	vaporator covered with an aluminium sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30XAS 242-482
230 V electrical plug	284	230 V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30XAS 242-482
Carrier Connect link (BSS regions only)	298	3G router board **Note 1:** Require option 149 **Note 2:** When more than one machine is installed on site, only one of them shall be equipped with option 298, while all of them must be equipped with option 149 **Note 3:** If a Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	30XAS 242-482

PHYSICAL DATA, SIZES 242 TO 482

30XAS				242	282	342	442	482
Standard unit		Nominal capacity	kW	232	284	334	430	467
Full load performances*	CA1	EER	kW/kW	2,76	3,00	3,08	2,93	2,87
		Eurovent class		C	B	B	B	C
Seasonal energy efficiency		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**3,86**	**4,04**	**4,14**	**4,10**	**4,10**
		ηs cool $_{12/7°C}$	**%**	**151**	**158**	**163**	**161**	**161**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,12**	**5,42**	**5,79**	**5,42**	**5,32**
Integrated Part Load Value		IPLV.SI	kW/kW	4,227	4,550	4,718	4,549	4,604
Unit with option 119		Nominal capacity	kW	245	285	345	461	486
Full load performances*	CA1	EER	kW/kW	2,97	3,15	3,24	3,15	3,09
		Eurovent class cooling		B	A	A	A	B
Seasonal energy efficiency		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**3,79**	**3,79**	**3,95**	-	-
		ηs cool $_{12/7°C}$	**%**	**149**	**149**	**155**	-	-
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**4,85**	**5,27**	**5,63**	**5,09**	**4,96**
Integrated Part Load Value		IPLV.SI	kW/kW	4,159	4,227	4,440	4,362	4,413
Sound levels - Standard unit								
Sound power level(1)			dB(A)	99	98	98	103	102
Sound pressure level at 10 m(2)			dB(A)	67	66	66	70	70
Standard unit + option 279(3)								
Sound power level(1)			dB(A)	94	94	93	97	96
Sound pressure level at 10 m(2)			dB(A)	62	62	61	65	64
Standard unit + option 257(3)								
Sound power level(1)			dB(A)	92	92	91	95	94
Sound pressure level at 10 m(2)			dB(A)	60	60	59	62	61
Standard unit + option 258(3)								
Sound power level(1)			dB(A)	89	89	88	92	91
Sound pressure level at 10 m(2)			dB(A)	57	57	56	59	58
Standard unit + option 119(3)								
Sound power level(1)			dB(A)	96	96	96	98	98
Sound pressure level at 10 m(2)			dB(A)	64	64	63	66	66
Standard unit + option 119 + 279								
Sound power level(1)			dB(A)	96	96	96	98	98
Sound pressure level at 10 m(2)			dB(A)	64	64	63	66	66
Dimensions - standard unit								
Length			mm	2410	3604	3604	4798	4798
Width			mm	2253	2253	2253	2253	2253
Height			mm	2297	2297	2297	2297	2297
Dimensions - unit + options 254/255(3)								
Length			mm	3604	3604	4798	4798	4798
Width			mm	2253	2253	2253	2253	2253
Height			mm	2297	2297	2297	2297	2297
Operating weight(4)								
Standard unit			kg	2390	2810	2870	3630	3720
Standard unit + option 119			kg	-	3070	3190	3990	4150
Standard unit + option 254 or 255			kg	2540	3060	3140	3950	4070
Compressors				06T semi-hermetic screw compressors, 50 r/s				
Oil charge			l	23,5	23,5	23,5	27,6	27,6

* In accordance with standard EN14511-3:2013.

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool $_{12/7°C}$ & SEER $_{12/7°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

SEPR $_{12/7°C}$ **Applicable Ecodesign regulation: (EU) No 2016/2281**

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) in dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) in dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Options: 119 = High energy efficiency, 257 = low noise level, 279 = compressor enclosure, 258,= very low sound level

(4) Weights are guidelines only. Refer to the unit nameplate.

Notes: Option 119 can be used with options 254 or 255. Contact your Carrier representative for the performances.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, SIZES 242 TO 482

30XAS		242	282	342	442	482
Refrigerant(4)		R-134a				
No of circuits	kg	1	1	1	1	1
Standard unit						
Refrigerant charge	kg	60	72	73	83	88
	teqCO_2	85,8	103	104,4	118,7	125,8
Standard unit + option 254/255						
Refrigerant charge	kg	85	95	105	120	130
	teqCO_2	121,6	135,9	150,2	171,6	185,9
Capacity control		Touch Pilot, electronic expansion valve (EXV)				
Minimum capacity	%	30	30	30	30	30
Condensers		All-aluminum microchannel heat exchanger (MCHE)				
Fans		Axial Flying Bird IV fans with rotating shroud				
Standard unit and unit + options 119/254						
Quantity		4	5	6	7	8
Standard unit						
Maximum total air flow	l/s	13667	17083	20500	23917	27333
Max speed	r/s	11,7	11,7	11,7	11,7	11,7
Standard unit + option 119						
Maximum total air flow	l/s	18055	22569	27083	31597	36111
Max speed	r/s	15,7	15,7	15,7	15,7	15,7
Evaporator		Flooded multi-pipe type				
Water content	l	53	53	53	75	75
Without hydraulic module						
Water inlet/outlet connections		Victaulic				
Nominal diameter	in	5	5	5	5	5
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3
Maximum water-side pressure(5)	kPa	1000	1000	1000	1000	1000
With hydraulic module (option 116C)						
Water inlet/outlet connections		Victaulic				
Nominal diameter	in	-	4	4	4	4
Actual outside diameter	mm	-	114,3	114,3	114,3	114,3
Expansion tank valume	l	-	50	50	50	50
Maximum water-side pressure	kPa	-	400	400	400	400
Chassis paint colour		Colour code: RAL7035				

(4) Weights are guidelines only. Refer to the unit nameplate.
(5) Max. water-side operating pressure without hydraulic module.

ELECTRICAL DATA

30XAS		242	282	342	442	482
Power circuit						
Nominal power supply	V-ph-Hz	400-3-50				
Voltage range	V	360-440				
Maximum supply cable section	mm²	2 x 150	2 x 95	2 x 150	2 x 150	2 x 240
Short-circuit stability current (TN system)(1)	kA	38	50	50	50	50
Control circuit		24 V via internal transformer				
Start-up current(2)	A	303	388	388	587	587
Standard unit						
Cosine Phi maximum(3)		0.89	0.88	0.88	0.87	0.87
Cosine Phi nominal(4)		0.85	0.85	0.86	0.84	0.85
Total harmonic distortion	%	0	0	0	0	0
Maximum power input†	kW	101	113	134	184	213
Nominal unit current draw(4)	A	141	153	174	258	278
Maximum unit current draw (Un)(5)	A	165	185	218	305	353
Maximum unit current draw (Un) with option 231(5)	A	148	167	201	284	333
Maximum current draw (Un -10%)(5)	A	180	198	231	324	375
High energy efficiency unit (option 119)						
Cosine Phi maximum(3)		0.88	0.88	0.88	0.87	0.87
Cosine Phi nominal(4)		0.84	0.85	0.85	0.83	0.84
Maximum power input(5)	kW	105	118	139	190	221
Nominal current draw(4)	A	141	153	175	254	271
Maximum current draw (Un)(5)	A	172	194	229	318	368
Maximum current draw (Un -10%)(3)	A	187	207	242	337	390

(1) kA eff: efficiency value: rms for English version
(2) Instantaneous start-up current (locked rotor current in star connection of the compressor).
(3) Values obtained at operation with maximum unit power input.
(4) Values obtained at standard Eurovent unit operating conditions: air 35°C, water 12/7°C.
(5) Values obtained at operation with maximum unit power input. Values given on the unit name plate.

Note:
Motor and fan electrical data if the unit operates at Eurovent conditions (motor ambient temperature 50°C): 1.9 A
Start-up current: 8.4 A
Power input: 760 W

Electrical data notes and operating conditions for 30XAS units:

- 30XAS 242-482 units have a single power connection point located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
  - One general disconnect switch
  - Starter and motor protection devices for the compressor, the fan(s) and the pump
  - Control devices

  Field connections:
- All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 30XAS units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60 204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1: general regulations) are specifically taken into account, when designing the electrical equipment.

IMPORTANT:

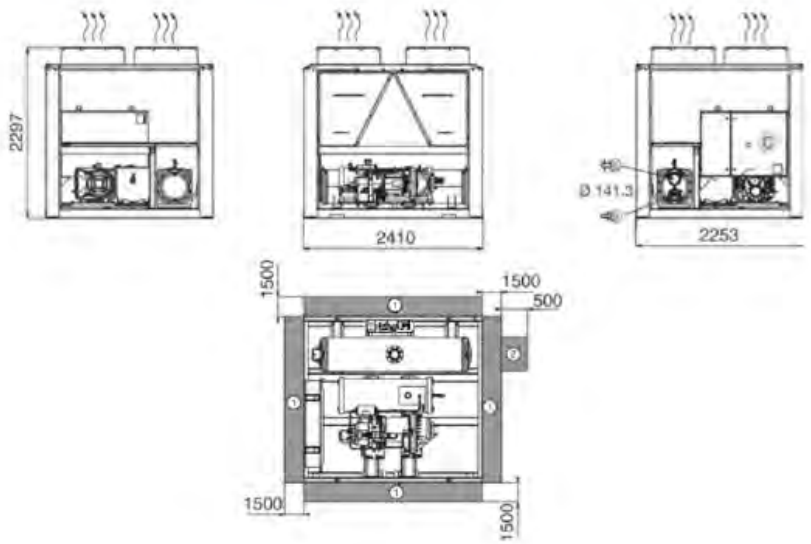
- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives.
  Conformance with EN 60 204 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.
  1. Environment* - Environment as classified in EN 60 364 (corresponds to IEC 60364) :
     - Outdoor installation*
     - Ambient temperature range: from -20 °C to +55 °C**
     - Altitude less than or equal to 2000 m (for hydraulic module, see paragraph 4.3 in the IOM)
     - Presence of hard solids, class AE3 (no significant dust present)*
     - Presence of corrosive and polluting substances, class AF1 (negligible)
     - Competence of persons: BA4 (Persons wise); 30XAS machines are not intended to be installed in locations open to anyone, including people with disabilities and children.
  2. Power supply frequency variation: ± 2 Hz.
  3. The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).
  4. Overcurrent protection of the power supply conductors is not provided with the unit.
  5. The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).
  6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks derived currents may interfere with network monitoring elements, and it is recommended to create an IT type divider for the system units that require this and/or a TN type divider for Carrier units. Please consult the appropriate local organisations to define the monitoring and protection elements and carry out the electrical installation. Units delivered with speed drive (options 28) are not compatible with IT network.
  7. Derived currents: If protection by monitoring of derived currents is necessary to ensure the safety of the installation, the control of the cut-out value must take the presence of leak currents into consideration that result from the use of frequency converters in the unit. A value of at least 150 mA is recommended to control differential protection devices.
- Capacitors that are integrated as part of the option 231 can generate electrical disturbances in the installation the unit is connected to. Presence of these capacitors must be considered during the electrical study prior to the start-up.

  NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

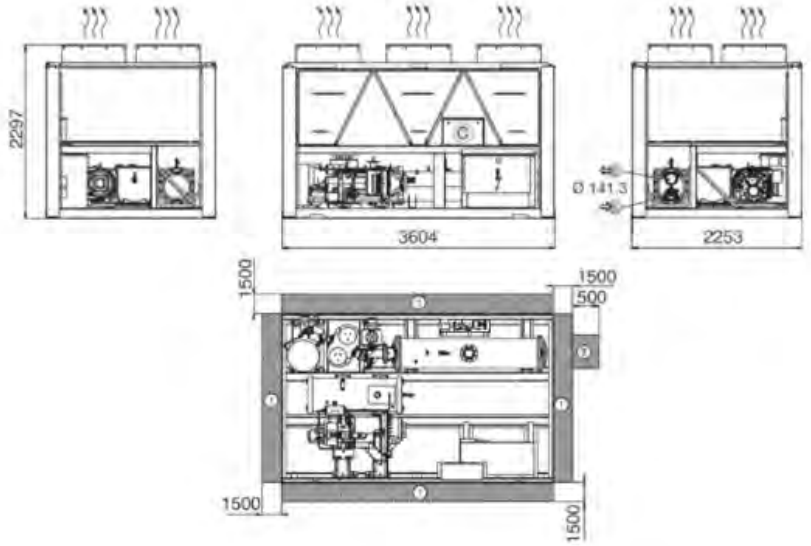
* The required protection level for this class is IP43BW (according to reference document IEC 60529). All 30XAS units are protected to IP44CW and fulfil this protection condition.
** The maximum ambiant temperature allowed for machines equipped with option 231 is +40°C.

DIMENSIONS/CLEARANCES

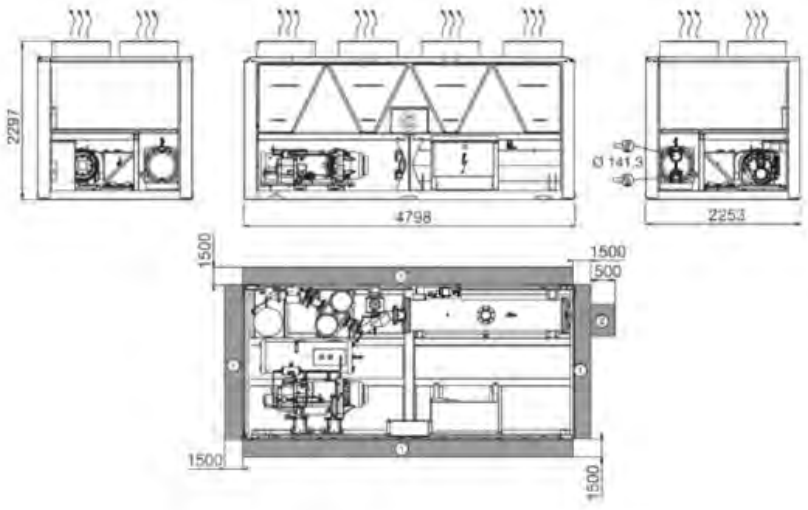
30XAS 242



30XAS 282-342



30XAS 442-482



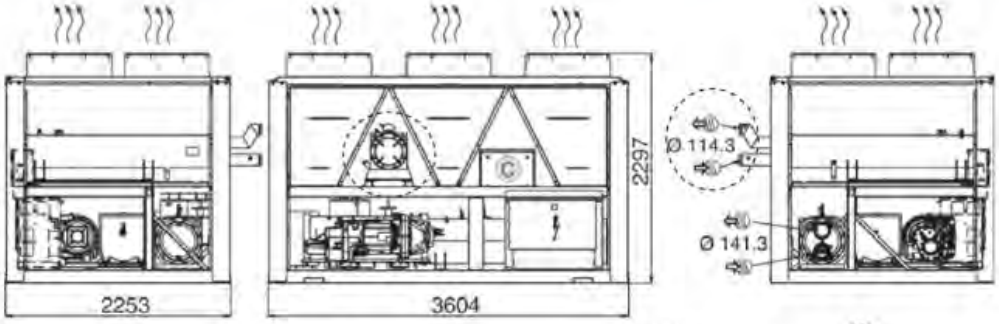
Legend
All dimensions are given in mm.

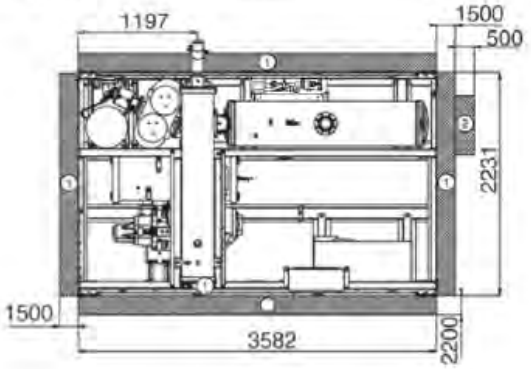
1. Required clearances for maintenance and air flow
2. Recommended space for evaporator tube removal
- Water inlet
- Water outlet
- Air outlet – do not obstruct
- Power supply connection
- Control circuit connection

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request·

DIMENSIONS/CLEARANCES

30XAS 282-342 - heat reclaim unit (option 50)





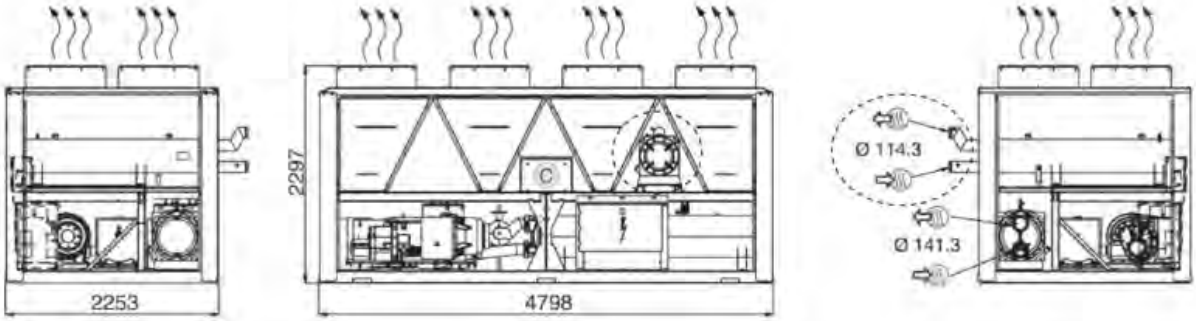
Specific elements for option 50

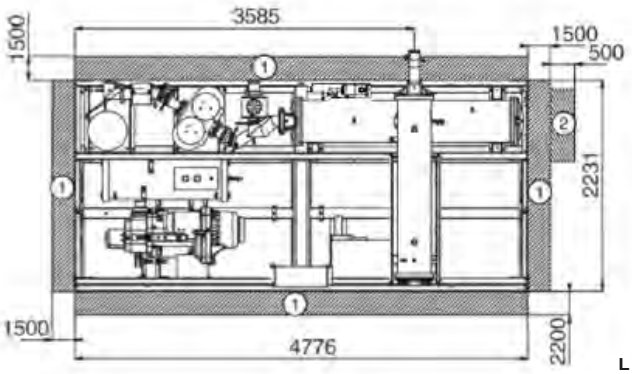
Attention: The Victaulic flange sleeves of the condenser are not installed, but supplied with the unit. The sealing joints are in the control box. The temperature sensors and the condenser flow switch are wired and fixed in the machine. They must be installed as described in the chapter "Condenser water connections" in the Installation Manual.

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.

For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.

30XAS 442-482 - heat reclaim unit (option 50)





L end

All dimensions are given in mm.

1. Required clearances for maintenance and air flow
2. Recommended space for evaporator tube removal

Water inlet

Water outlet

Air outlet – do not obstruct

Power supply connection

C Control circuit connection

NEW

AIR-COOLED FIXED-SPEED SCREW CHILLER

- Very economical operation
- Low sound levels
- Simple installation
- Environmentally responsible
- Exceptional reliability

30XB / 30XBP
30XB-ZE available during 2018

AQUAFORCE

Nominal cooling capacity 267-1682 kW - 50 Hz

The AquaForce™ 30XB and 30XBP liquid chillers are the economic solution for commercial and industrial applications where high reliability and economic operation in all climate conditions are key customer requirements.

The AquaForce™ 30XB and 30XBP liquid chillers are designed to meet current and future regulations for energy efficiency and operating sound levels. They use the latest Carrier technologies:

- Carrier 06T twin-rotor fixed-speed screw compressors.
- Low noise 6th generation of Carrier Flying Bird™ fans with AC motor (30XB) or EC motor (30XBP).
- Carrier flooded shell-and-tube evaporator with new copper tube design for low pressure drops
- 2nd generation of "V" shape Carrier Novation™ microchannel heat exchangers with optional Enviro-Shield coatings.
- Carrier Touch Pilot® control with color touch screen user interface that includes 10 langages and integrated web-server.

AHRI CERTIFIED® www.ahridirectory.org
Air-Cooled Chillers
AHRI Standards 550/590 and 551/591

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

The range is available in 3 efficiency levels.

- 30XB standard unit
  The AquaForce™ 30XB is equipped with fixed-speed screw compressors and fixed-speed fans with AC motors. The 30XB offers an economical solution whilst providing high full load efficiency for process applications and operation in high ambients.
  (Average SEPR of 5.2, average SEER of 4.2, average EER of 3.1)
- 30XB with variable-speed AC fan motors (Option 17)
  The 30XB with variable-speed AC fan motors offers an economical solution to enhance seasonal energy efficiency levels for comfort applications.
  (Average SEPR of 5.5, average SEER of 4.3, average EER of 3.1)
- 30XBP premium unit
  The 30XBP premium unit is equipped with EC fans and additional heat exchange surface to improve both the full load and part load energy efficiency. The 30XBP provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology. (Average SEPR of 5.9, average SEER of 4.4, average EER of 3.2)

Very economical operation

Exceptionally high full load and part load energy efficiency:

- 30XB version with Eurovent energy efficiency class A, B, and SEER 12/7°C up to 4.4 with option 17 in accordance with EN14825.
- 30XBP version with Eurovent energy efficiency class A, and SEER 12/7°C up to 4.6 in accordance with EN14825.
- Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Novation™ aluminium condenser with high-efficiency micro-channels.
- Flooded shell-and-tube evaporator with new generation of cooler tubes to reduce exchanger pressure drops, especially in applications with high percentage of glycol.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control).
- Economiser system with electronic expansion device for increased cooling capacity.

Low operating sound levels

- Compressors
  - Discharge dampers integrated in the oil separator (Carrier patent).
  - Silencer on the economiser return line.
  - Compressor and oil separator acoustic enclosure, reducing radiated noise (option).
- Condenser section
  - Condenser coils in wide angle V configuration, allowing quieter air flow across the coil
  - Low-noise 6th generation Flying Bird fans, made of a composidte material (Carrier patent), are now even quieter and do not generate intrusive low-frequency noise
  - Inverter driven EC fans on 30XBP version eliminate start stop noise during part load operation.
  - Rigid fan mounting preventing start-up noise (Carrier patent).

Simple installation

- Integrated hydraulic module (option)
  - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation
  - Single or dual pump (as required) with run time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter to protect pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Thermal insulation and aluminium cladding (option)
  - Pressure sensor to check filter condition and for direct numerical display of the water flow rate with an estimate of the instantaneous cooling capacity at the control interface
  - Water flow control valve.
- Simplified electrical connections
  - Main disconnect switch with high trip capacity
  - Transformer to supply the integrated control circuit (400/24 V).
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the controls, expansion devices, fans and compressors.

Environmental responsibility

- R-134a refrigerant
  Range designed for use with R-134a refrigerant with the possibility to upgrade to ultra-low global warming potential R-1234ze refrigerant on site in the future.
  - 40% reduction in the refrigerant charge through the use of micro-channel heat exchangers
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Liquid line service valve for simplified maintenance (option).

Exceptional reliability

- Screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - All compressor components are easily accessible on site minimising down-time.
  - Dedicated electronic compressor protection module.
- Air condenser
  2nd generation of "V" shape Carrier Novation™ aluminium microchannel heat exchangers (MCHE) with high corrosion resistance. The all aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion in saline or corrosive environments.
- Evaporator
  Thermal insulation with aluminium sheet finish (option) for improved resistance to mechanical and UV damage.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling (Carrier patent)
  - Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity

CUSTOMER BENEFITS

- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of sophisticated finite element stress analysis for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.
  - Salt mist corrosion resistance test in the laboratory for increased corrosion resistance.

TECHNICAL INSIGHTS

Touch Pilot Control

Touch Pilot, user interface

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 5" interface (7" optional)
  - Direct access to the unit's technical drawings and the main service documents
    Screen-shots with concise and clear information in local languages
    Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the control panel with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
  - Internal time schedule clock controls chiller on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), , and in conjunction with one of Carrier's network products (Chiller System Manager or Plant system Manager) it forms part of a fully integrated and balanced HVAC system (optional).
- Aquaforce also communicates with other building management systems via optional communication gateways.
- The following commands/visualisations are possible from remote connection:
  Start/stop of the machine
  - Dual set-point management: through a dedicated contact is possible to activate a second set-point (for example, during unoccupied mode).
  - Demand limit setting: to limit the maximum chiller capacity to a predefined value
  - Water pump control: these outputs control the contactors of one/two evaporator water pums
  - Automatic changeover of pumps in the event of a fault (only with options 116C/116G).
    Operation visualisation: indication if the unit is operating or in stand-by (no cooling load), (no cooling load) - alarm visualisation.

Remote Management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
  - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostat are installed)
  - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
    Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
  - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values
  - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm
    Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode)
  - Time schedule override: closing this contact cancels the programmed time schedule.
  - Out of service: This signal indicates that the chiller is completely out of service
  - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity
  - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault
  - Compressors running status: Set of outputs (one for each compressor) indicating which compressors are running.

TECHNICAL INSIGHTS

06T Screw Compressor

99.7%* of units without a compressor failure

* Quality rate measured over a period of 15 years operation

The Carrier 06T screw compressor benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high outside temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The compressor is equipped with a separate oil separator that minimises the amount of oil in circulation in the refrigerant circuit and, with its integrated silencer, considerably reduces discharge gas pulsations for much quieter operation.

Novation® Heat Exchangers with Micro-Channel coil Technology

Already utilised in the automobile and aeronautical industries for many years, the Novation™ MCHE micro-channel heat exchanger used in the Aquaforce is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers. Unlike traditional heat exchangers the Novation™ MCHE heat exchanger can be used in moderate marine and urban environments (Carrier recommendation).

From an energy efficiency point-of-view the Novation™ MCHE heat exchanger is approximately 10% more efficient than a traditional coil and allows a 40% reduction in the amount of refrigerant used in the chiller. The low thickness of the Novation™ MCHE reduces air pressure losses by 50% and makes it susceptible to very little fouling (e.g. by sand). Cleaning of the Novation™ MCHE heat exchanger is very fast using a high-pressure washer.

Carrier Novation MCHE with Super Enviro-shield coating, the ideal customer choice

To further enhance long-term performance, and to protect coils from early deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.

The Novation™ MCHE with Enviro-Shield protection (option 262) are recommended for installations in moderately corrosive environments. The Enviro-Shield protection utilises corrosion inhibitors which actively arrest oxidation in case of mechanical damage.

The Novation™ MCHE with the exclusive Super Enviro-Shield protection (option 263) are recommended for installations in corrosive environments. The Super Enviro-Shield protection consist in an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.

TECHNICAL INSIGHTS

Novation® Heat Exchangers with Micro-Channel coil Technology

After a total of more than 7,000 hours of testing following various test standards in UTC laboratories, the Carrier Novation® MCHE with Super Enviro-shield® coating appears to be the ideal customer choice to minimize the harmful effects of corrosive atmospheres and ensure long equipment life.

- Best corrosion resistance per ASTM B117/D610 test
- Best heat transfer performance per Carrier Marine 1 test
- Proven reliability per ASTM B117 test

Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Very good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	Bad	Bad	No coil leak	Bad

New Generation of Flying Bird VI fans with EC motor

The 30XB and 30XBP utilize Carrier's 6th generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and wide operating range. The fan includes Carrier patented rotating shroud technology and back-swept blades with a unique wave-serration trailing edge inspired from nature.

It was designed and optimized for the 30XB air management system configuration and heat exchanger technology and is offered with induction and EC motor options. The fan meets the latest European eco-design requirements for fan efficiency. The fan uses Carrier's robust and proven injection molded composite-thermoplastic construction.

OPTIONS

Options	No.	Description	Advantages	Use for 30XB / 30XBP
Coil with anti-corrosion post treatment	2B	Factory application of Blygold Polual treatment on the copper/aluminum coils	Improved corrosion resistance, recommended for industrial, rural and marine environments	30XB/30XBP 250-1700
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30XB/30XBP 250-1700
Medium-temperature brine solution	5	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -12°C when ethylene glycol is used (-8°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	30XB/30XBP 250-1700
Low-temperature brine solution	6	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -15°C when ethylene glycol is used (-10°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	30XB/30XBP 250-1700
Light-brine solution, down to -3°C	8	Implementation of new control algorithms to allow chilled brine solution production down to -6°C when ethylene glycol is used (-3°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	30XB/30XBP 250-1700
Unit equipped for air discharge ducting	10	Fans equipped with discharge connection flanges - maximum available pressure 60 Pa	Facilitates connections to the discharge ducts	30XB/30XBP 250-1700
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction	30XB/30XBP 250-1700
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction in sensitive environments	30XB/30XBP 250-1700
Ultra low noise level	15LS+	Acoustic compressor enclosure, low-speed fans and enhanced sound insulation of main noise sources	Noise level reduction in sensitive environments	30XB 250-1700
Variable speed fans	17	Unit equipped with variable speed fans	Enhances the unit seasonal energy efficiency performance and reduces the noise emission thanks to a smooth fan speed variation.	30XB 250-1700
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrical box from dust, water and sand. In general this option is recommended for installations in polluted environments	30XB/30XBP 250-1700
Tropicalisation of the electrical box	22	Electrical box equipped with an electrical heater and a fan. Electrical connections on the compressors painted with a special varnish and covered with an anti-condensation foam.	Allows safe operation in typical "tropical" climate. This option is recommended for all applications where humidy inside the electrical box can reach 80% at 40°C and unit can remain in stand-by for a long time under these conditions.	30XB/30XBP 250-1700
Grilles and enclosure panels	23	Metal grilles on the 4 unit sides, plus side enclosure panels at each end of each coil	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30XB/30XBP 250-1700
Enclosure panels	23A	Side enclosure panels at each end of each coil	Improves aesthetics, coil and piping protection against impacts.	30XB/30XBP 250-1700
Low inrush current	25C	Specific compressor loading and unloading sequence to limit the unit start-up current	Reduced start-up current	30XB/30XBP 250-1700
Winter operation down to -20°C	28	Fan speed control via frequency converter	Stable unit operation for air temperature down to -20°C	30XB 250-1700
Water exchanger frost protection	41A	Electric resistance heater on the water exchanger and discharge valve	Water exchanger frost protection down to -20°C outside temperature	30XB/30XBP 250-1700
Evaporator & hydraulic module frost protection	41B	Electric resistance heater on water exchanger, discharge valve and hydraulic module	Water exchanger and hydraulic module frost protection down to -20°C outside temperature	30XB/30XBP 250-500
Total heat recovery	50	Unit equipped with additional heat exchanger in parallel with the condenser coils.	Production of free hot-water simultaneously with chilled water production	30XB/30XBP 250-1000
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30XB/30XBP 250-1700
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	30XB/30XBP 1100-1550
Service valve set	92	Liquid line valve (evaporator inlet), compressor suction and discharge line valves and economiser line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	30XB/30XBP 250-1700
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	30XB/30XBP 250-1700
Evaporator with one pass more	100A	Evaporator with one pass more on the water side	Optimise chiller operation when the chilled water circuit is designed with low waterflows (high evaporator delta T)	30XB/30XBP 250-1700
Evaporator with one pass less	100C	Evaporator with one pass less on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	30XB/30XBP 250-1000
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high-rise buildings)	30XB/30XBP 250-1700
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	30XB/30XBP 250-1700
HP single-pump hydraulic module	116B	Complete hydraulic module equipped with water filter, expansion tank with relief valve, one high pressure pump, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XB/30XBP 250-500
HP dual-pump hydraulic module	116C	Complete hydraulic module equipped with water filter, expansion tank with relief valve, two high pressure pumps, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XB/30XBP 250-500

OPTIONS

Options	No.	Description	Advantages	Use for 30XB / 30XBP
LP single-pump hydraulic module	116F	Complete hydraulic module equipped with water filter, expansion tank with relief valve, one low pressure pump, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XB/30XBP 250-500
LP dual-pump hydraulic module	116G	Complete hydraulic module equipped with water filter, expansion tank with relief valve, two low pressure pumps, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XB/30XBP 250-500
Dx Free Cooling system on two circuits	118A	Patented Carrier free-cooling system with cooling micro-pump on both refrigerant circuits. Operation without glycol, no extra free-cooling coil. See Dx Free-cooling option chapter	Energy savings for applications with cooling demand throughout the entire year	30XB/30XBP 250-1000
J-Bus gateway	148B	Bi-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30XB/30XBP 250-1700
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30XB/30XBP 250-1700
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30XB/30XBP 250-1700
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30XB/30XBP 250-1700
7" user interface	158A	Control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	30XB/30XBP 250-1700
Input contact for Refrigerant leack detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controlller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	30XB/30XBP 250-1700
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	30XB/30XBP 250-1000
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	30XB/30XBP 250-1700
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30XB/30XBP 250-1700
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	30XB/30XBP 250-1700
Power factor correction	231	Capacitors for automatic regulation of power factor (cos phi) value to 0,95.	Reduction of the apparent electrical power, compliance with minimum power factor limit set by utilities	30XB/30XBP 250-1000
Traditional coils (Cu/Al)	254	Coils made of copper tubes with aluminum fins	None	30XB 250-1700 (not available for size 1500)
Traditional coils (Cu/Al) without slots	255	Coils made of copper tubes with aluminum fins without slots	None	30XB 250-1700 (not available for size 1500)
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/ leaving refrigerant lines	30XB/30XBP 250-1700
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30XB/30XBP 250-1700
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30XB/30XBP 250-1700
Welded evaporator connection kit	266	Victaulic pipe adapters for welded joints	Easy installation	30XB/30XBP 250-1700
Compressor enclosure	279a	Compressor enclosure	Improved aesthetic, compressor protection against external elements (dust, sand, water…)	30XB/30XBP 250-1700
Evaporator with aluminum jacket	281	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30XB/30XBP 250-1700
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30XB/30XBP 250-1700
Carrier Connect link (only European distribution companies)	298	3G router board NOTE 1: require option 149 NOTE 2: when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 NOTE 3: if the Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	30XB/30XBP 250-1700
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE 5010-5 :2014.	30XB/30XBP 250-1700
Compliance with Qatar regulation	319	Specific nameplate on the unit with power supply 415 V+/-6%	Compliance with KAHRAMAA regulation in Qatar.	30XB/30XBP 250-1700

PHYSICAL DATA, SIZES 30XB-250 TO 800

30XB				250	300	350	400	450	500	600	700	750	800
Cooling													
Standard unit		Nominal capacity	kW	274	299	327	393	444	496	615	682	726	788
Full load performances*	CA1	EER	kW/kW	3,14	3,11	3,11	3,22	3,11	3,1	3,15	3,34	3,11	3,14
		Eurovent class		A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**SEER $_{12/7°c}$ Comfort low temp.**	**kWh/kWh**	**4,05**	**4,10**	**4,16**	**3,96**	NA	NA	NA	**4,21**	NA	**4,15**
		Ƞs cool $_{12/7°c}$	**%**	**159**	**161**	**163**	**155**	NA	NA	NA	**166**	NA	**163**
		SEPR $_{12/7°c}$ Process high temp.	**kWh/kWh**	**4,74**	**5,15**	**5,51**	**4,95**	**5,33**	**4,98**	**5,20**	**5,50**	**5,06**	**5,09**
		SEPR $_{-2/-8°C}$ Process medium temp.**	**kWh/kWh**	**3,02**	**3,27**	**3,41**	**3,13**	**3,33**	**2,97**	**3,40**	**3,64**	**3,31**	**3,29**
Unit with option 15LS (+)		Nominal capacity	kW	270	294	321	382	430	485	606,9	660,9	698	767
Full load performances*	CA1	EER	kW/kW	3,1	3,05	3,07	3,17	2,98	2,93	3,12	3,2	3	2,97
		Eurovent class		A	B	B	A	B	B	A	A	B	B
Seasonal energy efficiency		**SEER $_{12/7°c}$ Comfort low temp.**	**kWh/kWh**	**4,18**	**4,22**	**4,42**	**4,22**	**4,14**	NA	NA	**4,29**	NA	NA
		Ƞs cool $_{12/7°c}$	**%**	**164**	**166**	**174**	**166**	**163**	NA	NA	**169**	NA	NA
		SEPR $_{12/7°c}$ Process high temp.	**kWh/kWh**	**5,03**	**5,24**	**5,98**	**5,17**	**5,50**	**5,13**	**5,66**	**5,69**	**5,40**	**5,52**
		SEPR $_{-2/-8°C}$ Process medium temp.**	**kWh/kWh**	**3,09**	**3,51**	**3,75**	**3,3**	**3,48**	**3,06**	**3,74**	**,88**	**,59**	**,67**
Sound levels													
Standard unit													
Sound power(1)			dB(A)	99	99	99	99	101	99	101	99	103	103
Sound pressure at 10 m(2)			dB(A)	67	67	67	67	69	67	68	67	70	70
Unit + option 15(3)													
Sound power(1)			dB(A)	93	93	94	95	95	95	97	96	97	98
Sound pressure at 10 m(2)			dB(A)	61	61	62	63	63	63	65	63	64	65
Unit + option 15LS(3)													
Sound power(1)			dB(A)	87	87	87	90	91	91	93	92	94	94
Sound pressure at 10 m(2)			dB(A)	54	54	54	5	58	58	59	58	60	60
Unit + option 15LS+(3)													
Sound power(1)			dB(A)	-	-	-	-	89	89	91	90	91	92
Sound pressure at 10 m(2)			dB(A)	-	-	-	-	56	56	57	56	58	58
imensions													
Standard unit													
Length			mm	3604	3604	3604	4798	4798	4798	7186	7186	7186	7186
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297
Operating weight(4)													
Standard unit			kg	3025	3059	3080	3669	3734	3802	4797	4928	5211	5522
Unit + option 15(3)			kg	3293	3327	3348	3968	4033	4101	5128	5259	5542	5853
Unit + option 118a(3)			kg	3109	3143	3164	3773	3838	4186	4929	5060	5358	5669
Unit + option 50(3)			kg	3370	3404	3425	4102	4245	4601	1	57 2	065	6382

* In accordance with standard EN14511-3:2013.

** With option_6 Low temperature brine solution

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

Ƞs cool$_{12/7°c}$ & SEPR Applicable Ecodesign reuglation (EU) No 2016/2281

(1) In dB ref=10^{-12} W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, SIZES 30XB-250 TO 800

30XB		250	300	350	400	450	500	600	700	750	800
Compressors		06T semi-hermetic screw compressor, 50 r/s									
Circuit A		1	1	1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1	1	1
No. of control stages											
Refrigerant(4)		R134a									
Circuit A	kg	37	35	35	51	52	54	58	58	65	69
	teqCO_2	52,9	50,1	50,1	72,2	74,4	76,5	82,9	82,9	93,0	98,7
Circuit B	kg	39	36	37	37	37	33	59	62	58	65
	teqCO_2	55,1	51,5	52,9	52,2	52,9	46,5	84,4	88,7	82,9	93,0
Oil											
Circuit A	l	20,8	20,8	20,8	23,5	23,5	23,5	23,5	23,5	27,6	27,6
Circuit B	l	20,8	20,8	20,8	20,8	20,8	20,8	23,5	23,5	23,5	23,5
Capacity control		Touch Pilot, , Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		6	6	6	8	8	8	11	12	12	12
Maximum total air flow	l/s	28920	28920	28920	38560	38560	38560	53020	57840	57840	57840
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	23580	23580	23580	31440	31440	31440	43230	47160	47160	47160
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	58	61	61	66	70	77	79	94	98	119
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)									
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)									
Expansion vessel volume	l	50	50	50	50	50	80				
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400				
Water connections without or with hydraulic module		Victaulic® type									
Connections	inch	5 or 4	5 or 4	5 or 4	5 or 4	5 or 4	5 or 4	5	6	6	6
External diameter(5)	mm	114,3 or 141,3	114,3 or 141,3	114,3 or 141,3	114,3 or 141,3	114,3 or 141,3	114,3 or 141,3	141,3	168,3	168,3	168,3
Casing paint		Colour code RAL 7035									

(4) Values are guidelines only. Refer to the unit name plate.
(5) Depends of options

PHYSICAL DATA, SIZES 30XB-850 TO 1700

30XB				850	900	1000	1100	1200	1300	1400	1500	1550	1700
Cooling													
Standard unit		Nominal capacity	kW	828	890	965	1126	1244	1332	1440	1492	1532	1689
Full load performances*	CA1	EER	kW/kW	3,13	3,13	2,97	3,08	3,1	3,18	3,08	3,12	3,23	3,25
		Eurovent class		A	A	B	B	A	A	B	A	-	-
Seasonal energy efficiency		**SEER $_{12/7°c}$ Comfort low temp.**	**kWh/kWh**	NA	**4,09**	NA	NA	**4,16**	NA	NA	NA	**4,15**	NA
		ηs cool $_{12/7°c}$	**%**	NA	**161**	NA	NA	**164**	NA	NA	NA	**163**	NA
		SEPR $_{12/7°c}$ Process high temp.	**kWh/kWh**	**5,17**	**5,08**	**5,13**	**5,31**	**5,46**	**5,33**	**5,43**	**5,11**	**5,31**	**5,24**
		SEPR $_{-2/-8°c}$ Process medium temp.**	**kWh/kWh**	**3,11**	**3,08**	**3,40**	**3,21**	**3,62**	**3,49**	**3,67**	**3,11**	**3,46**	**3,50**
Unit with option 15LS (+)		Nominal capacity	kW	775	859	929	1111	1211	1298	1391	1418	1457	1627
Full load performances*	CA1	EER	kW/kW	2,8	2,97	2,96	2,9	3,03	2,9	2,77	2,94	2,96	3,1
		Eurovent class		C	B	B	B	B	B	C	B	-	-
Seasonal energy efficiency		**SEER $_{12/7°c}$ Comfort low temp.**	**kWh/kWh**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		ηs cool $_{12/7°c}$	**%**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		SEPR $_{12/7°c}$ Process high temp.	**kWh/kWh**	**5,23**	**5,37**	**5,31**	**5,10**	**5,34**	**4,98**	**4,93**	**4,93**	**5,39**	**5,23**
		SEPR $_{-2/-8°c}$ Process medium temp.**	**kWh/kWh**	**3,13**	**3,08**	**3,75**	**3,14**	**3,60**	**3,57**	**3,66**	**3,13**	**3,61**	**3,71**
Sound levels													
Standard unit													
Sound power(1)			dB(A)	101	104	102	103	102	104	104	104	104	104
Sound pressure at 10 m(2)			dB(A)	70	71	69	70	69	71	71	71	71	7
Unit + option 15(3)													
Sound power(1)			dB(A)	97	99	98	98	98	100	99	99	100	100
Sound pressure at 10 m(2)			dB(A)	65	66	65	65	65	67	65	65	67	66
Unit + option 15LS(3)													
Sound power(1)			dB(A)	94	95	94	94	94	99	95	96	96	96
Sound pressure at 10 m(2)			dB(A)	60	62	65	65	61	65	61	-1	61	61
Unit + option 15LS+(3)													
Sound power(1)			dB(A)	91	93	92	93	93	97	94	95	93	93
Sound pressure at 10 m(2)			dB(A)	58	60	59	60	60	66	61	62	60	60
Dimensions													
Standard unit													
Length			mm	7186	7186	8380	9574	10770	11962	11962	13157	9574/ 479	8380/ 0
Width				2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297
Operating weight(4)													
Standard unit			kg	5570	5848	6318	7292	77	8625	8702	9016	3422/ 6714	5957/ 5957
Unit + option 15(3)			kg	5901	6179	6649	7663	8126	8997	9074	9388	3588/ 7046	6288/ 6288
Unit + option 118(3)			kg	6004	6302	6771	-	-	-	-	-	-	-
Unit + option 50(3)			kg	6430	6805	7272	-	-	-	-	-	-	-

* In accordance with standard EN14511-3:2013.

** With option 6 Low temperature brine solution

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool$_{12/7°c}$ & SEPR Applicable Ecodesign regulation (EU) No 2016/2281

(1) In dB ref=10^{-12} W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, SIZES 30XB-850 TO 1700

30XB		850	900	1000	1100	1200	1300	1400	1500	1550	1700
Compressors		06T semi-hermetic screw compressor, 50 r/s									
Circuit A		1	1	1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1	1	1
Circuit C										1	1
Circuit D											1
Refrigerant(4)		R134a									
Circuit A	kg	69	67	71	76	76	110	116	132	85	72
	$teqCO_2$	98,7	95,8	100,8	108,7	108,7	157,3	165,9	188,8	121,6	103,0
Circuit B	kg	65	67	72	108	120	116	124	120	88	63
	$teqCO_2$	93,0	95,8	103,0	154,4	171,6	165,9	177,3	171,6	125,8	90,1
Circuit C	kg									80,0	72,0
	$teqCO_2$									114,4	103,0
Circuit D	kg										63,0
	$teqCO_2$										90,1
Oil		Oil type									
Circuit A	l	27,6	27,6	27,6	27,6	27,6	36,0	36,0	36,0	27,6	27,6
Circuit B	l	23,5	27,6	27,6	36,0	36,0	36,0	36,0	36,0	27,6	23,5
Circuit C	l									27,6	27,6
Circuit D	l										23,5
Capacity control		Touch Pilot, Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	10	8
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		12	12	14	16	18	20	20	22	24	28
Maximum total air flow	l/s	57840	57840	67480	77120	86760	96400	96400	106040	115680	134960
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	47160	47160	55020	62880	70740	78600	78600	86460	94320	110040
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	119	130	140	164	174	180	189	189	240	240
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Water connections without or with hydraulic module		Victaulic® type									
Connections	inch	6	6	6	6	6	6	6	6	8/6	6
External diameter(5)	mm	168,3	168,3	168,3	168,3	168,3	168,3	168,3	168,3	219,1/ 168,3	168,3
Casing paint		Colour code RAL 7035									

(4) Values are guidelines only. Refer to the unit name plate.
(5) Depends of options

PHYSICAL DATA, SIZES 30XBP-250 TO 800

30XBP				250	300	350	400	450	500	600	700	750	800
Cooling													
Standard unit		Nominal capacity	kW	274	299	327	394	444	501	615	682	727	789
Full load performances*	CA1	EER	kW/kW	3,22	3,19	3,15	3,32	3,13	3,22	3,23	3,34	3,17	3,19
		Eurovent class		A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**SEER $_{12/7°c}$ Comfort low temp.**	**kWh/kWh**	**4,36**	**4,44**	**4,43**	**4,38**	**4,24**	**4,40**	**4,12**	**4,54**	**4,21**	**4,45**
		ηs cool $_{12/7°c}$	**%**	**171**	**174**	**174**	**172**	**167**	**173**	**162**	**179**	**165**	**175**
		SEPR $_{12/7°c}$ Process high temp.	**kWh/kWh**	**6,06**	**6,22**	**6,34**	**5,93**	**5,88**	**6,05**	**5,81**	**6,30**	**5,68**	**5,74**
		SEPR $_{-2/-8°c}$ Process medium temp.**	**kWh/kWh**	**3,59**	**3,80**	**3,90**	**3,61**	**3,76**	**3,85**	**3,82**	**4,11**	**3,68**	**3,75**
Unit with Option 15LS		Nominal capacity	kW	270	294	321	382	430	478	607	661	698	767
Full load performances *	CA1	EER	kW/kW	3,12	3,1	3,11	3,2	2,99	3,04	3,14	3,22	3,01	2,99
		Eurovent class		A	A	A	A	B	B	A	A	B	B
Seasonal energy efficiency		**SEER $_{12/7°c}$ Comfort low temp.**	**kWh/kWh**	**4,30**	**4,42**	**4,56**	**4,35**	**4,25**	**4,34**	**4,17**	**4,43**	**4,13**	**4,15**
		ηs cool $_{12/7°c}$	**%**	**169**	**174**	**179**	**171**	**167**	**170**	**164**	**174**	**162**	**163**
		SEPR $_{12/7°c}$ Process high temp.	**kWh/kWh**	**5,93**	**6,15**	**6,45**	**5,88**	**5,81**	**5,88**	**5,97**	**6,19**	**5,65**	**5,75**
		SEPR $_{-2/-8°c}$ Process medium temp.**	**kWh/kWh**	**3,54**	**3,82**	**4,01**	**3,65**	**3,72**	**3,77**	**3,92**	**4,08**	**3,71**	**3,80**
Sound levels													
Standard unit													
Sound power(1)			dB(A)	99	99	99	99	101	99	101	99	103	103
Sound pressure at 10 m(2)			dB(A)	67	67	67	67	69	67	68	67	70	70
Unit + option 15(3)													
Sound power(1)			dB(A)	93	93	94	95	95	95	97	96	97	98
Sound pressure at 10 m(2)			dB(A)	61	61	62	63	63	63	65	63	64	65
Unit + option 15LS(3)													
Sound power(1)			dB(A)	87	87	87	90	91	91	93	92	94	94
Sound pressure at 10 m(2)			dB(A)	55	55	55	58	59	59	60	59	61	61
Dimensions													
Standard unit													
Length			mm	3604	3604	3604	4798	4798	5992	7186	7186	7186	7186
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297
Operating weight(4)													
Standard unit			kg	3190	3224	3245	3834	3899	4261	4962	5093	5376	5687
Unit + option 15(3)			kg	3458	3492	3513	4133	4198	4560	5293	5424	5707	6018
Compressors				06T semi-hermetic screw compressor, 50 r/s									
Circuit A				1	1	1	1	1	1	1	1	1	1
Circuit B				1	1	1	1	1	1	1	1	1	1
Refrigerant(4)				R134a									
Circuit A			kg	37,0	35,0	35,0	50,5	52,0	53,5	58,0	58,0	65,0	69,0
			teqCO_2	52,9	50,1	50,1	72,2	74,4	76,5	82,9	82,9	93,0	98,7
Circuit B			kg	38,5	36	37	36,5	37	32,5	59	62	58	65
			teqCO_2	55,1	51,5	52,9	52,2	52,9	46,5	84,4	88,7	82,9	93,0

* In accordance with standard EN14511-3:2013.

** With option 6 Low temperature brine solution

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool$_{12/7°c}$ & SEPR Applicable Ecodesign regulation (EU) No 2016/2281

(1) In dB ref=10^{-12} W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, SIZES 30XBP-250 TO 800

30XBP		250	300	350	400	450	500	600	700	750	800
Oil											
Circuit A	l	20,8	20,8	20,8	23,5	23,5	23,5	23,5	23,5	27,6	27,6
Circuit B	l	20,8	20,8	20,8	20,8	20,8	20,8	23,5	23,5	23,5	23,5
Capacity control		Touch Pilot, , Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		6	6	6	8	8	9	11	12	12	12
Maximum total air flow	l/s	28920	28920	28920	38560	38560	43380	53020	57840	57840	57840
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	23580	23580	23580	31440	31440	35370	43230	47160	47160	47160
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	58	61	61	66	70	77	79	94	98	119
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)									
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)									
Expansion vessel volume	l	50	50	50	50	50	80				
ax. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400				
Water connections without or with hydraulic module		Victaulic® type									
Connections	inch	5 or 4	5 or 4	5 or 4	5 or 4	5 or 4	5 or 4	5	6	6	6
External diameter(5)	mm	114,3 or 141,3	114,3 or 141,3	114,3 or 141,3	114,3 or 141,3	114,3 or 141,3	114,3 or 141,3	141,3	168,3	168,3	168,3
Casing paint		Colour code RAL 7035									

(5) Depends of options

PHYSICAL DATA, SIZES 30XBP-850 TO 1500

30XBP				850	900	1000	1100	1200	1300	1400	1500
Cooling											
Standard unit		Nominal capacity	kW	845	890	980	1150	1253	1333	1440	1493
Full load performances*	CA1	EER	kW/kW	3,32	3,19	3,2	3,36	3,3	3,22	3,12	3,19
		Eurovent class		A	A	A	A	A	A	A	A
Seasonal energy efficiency		**SEER $_{12/7°c}$ Comfort low temp.**	**kWh/kWh**	**4,53**	**4,20**	**4,14**	**4,49**	**4,51**	**4,21**	**4,25**	**4,10**
		ηs cool $_{12/7°c}$	**%**	**178**	**165**	**162**	**177**	**177**	**165**	**167**	**161**
		SEPR $_{12/7°c}$ Process high temp.	**kWh/kWh**	**5,96**	**5,76**	**5,65**	**5,93**	**5,91**	**5,73**	**5,67**	**5,49**
		SEPR $_{-2/-8°c}$ Process medium temp.**	**kWh/kWh**	**3,88**	**3,77**	**3,70**	**3,58**	**3,87**	**3,66**	**3,84**	**3,56**
Unit with Option 15LS		Nominal capacity	kW	815	884	976	1118	1230	1298	1391	1443
Full load performances *	CA1	EER	kW/kW	3,1	3,02	3,06	3,12	3,16	2,97	2,83	2,94
		Eurovent class		A	B	B	A	A	B	C	B
Seasonal energy efficiency		**SEER $_{12/7°c}$ Comfort low temp.**	**kWh/kWh**	**4,43**	**4,10**	**4,13**	**4,21**	**4,33**	NA	NA	**4,21**
		ηs cool $_{12/7°c}$	**%**	**174**	**161**	**162**	**165**	**170**	NA	NA	**165**
		SEPR $_{12/7°c}$ Process high temp.	**kWh/kWh**	**5,85**	**5,68**	**5,72**	**5,57**	**5,68**	**5,34**	**5,30**	**5,48**
		SEPR $_{-2/-8°c}$ Process medium temp.**	**kWh/kWh**	**3,82**	**3,76**	**3,78**	**3,76**	**3,76**	**3,90**	**3,85**	**3,88**
Sound levels											
Standard unit											
Sound power(1)			dB(A)	101	104	102	103	102	104	104	104
Sound pressure at 10 m(2)			dB(A)	70	71	69	70	69	71	71	71
Unit + option 15(3)											
Sound power(1)			dB(A)	97	99	98	98	98	100	99	99
Sound pressure at 10 m(2)			dB(A)	65	66	65	65	65	67	65	65
Unit + option 15LS(3)											
Sound power(1)			dB(A)	94	95	94	94	94	99	95	96
Sound pressure at 10 m(2)			dB(A)	61	62	61	61	61	66	62	63
Dimensions											
Standard unit											
Length			mm	8380	8380	9574	11962	11962	11962	11962	13157
Width				2253	2253	2253	2253	2253	2253	2253	2253
Height				2297	2297	2297	2297	2297	2297	2297	2297
Operating weight(4)											
Standard unit			kg	6072	6376	6827	8070	8211	8790	8867	9181
Unit + option 15(3)			kg	6403	6707	7158	8441	8582	9162	9239	9553
Compressors				06T semi-hermetic screw compressor, 50 r/s							
Circuit A				1	1	1	1	1	1	1	1
Circuit B				1	1	1	1	1	1	1	1
Refrigerant(4)				R134a							
Circuit A			kg	72	69	75	76	76	110	116	132
			teqCO_2	103,0	98,7	107,3	108,7	108,7	157,3	165,9	188,8
Circuit B			kg	63	76	79	108	120	116	124	120
			teqCO_2	90,1	108,7	113,0	154,4	171,6	165,9	177,3	171,6

* In accordance with standard EN14511-3:2013.

** With option 6 Low temperature brine solution

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool$_{12/7°c}$ & SEPR Applicable Ecodesign regulation (EU) No 2016/2281

(1) In dB ref=10^{-12} W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.

(4) Values are guidelines only. Refer to the unit name plate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, SIZES 30XBP-850 TO 1700

30XBP		850	900	1000	1100	1200	1300	1400	1500
Oil									
Circuit A	l	27,6	27,6	27,6	27,6	27,6	36,0	36,0	36,0
Circuit B	l	23,5	27,6	27,6	36,0	36,0	36,0	36,0	36,0
Capacity control		Touch Pilot, , Electronic Expansion Valve (EXV)							
Minimum capacity	%	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)							
Fans		FLYING-BIRD 6, axial fan with rotating impeller							
Standard unit									
Quantity		14	14	16	20	20	20	20	22
Maximum total air flow	l/s	67480	67480	77120	96400	96400	96400	96400	106040
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS									
Maximum total air flow	l/s	55020	55020	62880	78600	78600	78600	78600	86460
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type							
Water volume	l	119	130	140	164	174	180	189	189
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)							
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)							
Water connections without or with hydraulic module		Victaulic® type							
Connections	inch	6	6	8	6	6	6	6	6
External diameter(5)	mm	168,3	168,3	219,1	168,3	168,3	168,3	168,3	168,3
Casing paint		Colour code RAL 7035							

(5) Depends of options

ELECTRICAL DATA, 30XB-250 TO 1000

30XB		250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power(1) - 30XB														
Standard unit	kW	119	133	147	168	195	214	264	285	319	338	367	392	454
Unit + option 15LS	kW	112	126	140	159	185	204	251	271	305	324	353	378	437
Power factor at maximum power(1) - 30XB														
Standard unit														
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,90	0,90
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,90	0,90
Nominal operating current draw(2) - 30XB														
Standard unit	A	151	167	182	210	239	267	324	349	402	430	446	511	541
Unit + option 15LS	A	141	157	172	197	226	254	306	330	383	411	427	492	519
Maximum operating current draw (Un)(1) - 30XB														
Standard unit	A	198	220	242	278	319	349	430	464	519	549	595	634	734
Unit + option 15LS	A	188	210	232	265	306	336	412	445	500	530	576	615	711
Maximum current (Un-10%)(1) - 30XB														
Standard unit	A	198	220	242	278	319	349	430	464	519	549	595	634	734
Unit + option 15LS	A	188	210	232	265	306	336	412	445	500	530	576	615	711
Nominal start-up current(3) - 30XB														
Standard unit	A	246	246	261	379	479	479	535	561	734	757	760	843	857
Unit + option 15LS	A	245	245	262	378	480	480	536	562	735	759	761	845	865
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756
Maximum start-up current(Un)(2) - 30XB														
Standard unit	A	274	274	292	407	510	510	583	616	782	812	812	902	951
Unit + option 15LS	A	264	264	282	394	497	497	565	597	763	793	793	883	929
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XB-1100 TO 1700

30XB		1100	1200	1300	1400	1500	1550	1700
Power circuit supply								
Nominal voltage	V-ph-Hz	400-3-50						
Voltage range	V	360-440						
Control circuit supply		24 V via internal transformer						
Maximum operating input power(1) - 30XB								
Standard unit	kW							
Circuit 1(a)	kW	196	225	267	286	309	459	366
Circuit 2(a)	kW	286	312	286	307	309	230	366
Option 081	kW	483	537	553	593	619	689	
Unit + option 15LS								
Circuit 1(a)	kW	190	218	258	276	299	451	354
Circuit 2(a)	kW	277	301	276	297	299	222	354
Option 081	kW	467	520	534	574	598	666	
Power factor at maximum power(1) - 30XB								
Standard unit								
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,88	0,89	0,89
Unit + option 15LS								
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,88	0,89	0,89

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XB-1100 TO 1700

30XB		1100	1200	1300	1400	1500	1550	1700
Nominal operating current draw(2) - 30XB								
Standard unit								
Circuit 1(a)	A	258	274	341	356	390	543	446
Circuit 2(a)	A	358	392	356	386	390	273	446
Option 081	A	616	666	697	742	780	820	
Unit + option 15LS								
Circuit 1(a)	A	247	263	325	340	372	530	427
Circuit 2(a)	A	344	374	340	370	372	260	427
Option 081	A	590	637	665	710	745	782	
Maximum operating current draw (Un)(1) - 30XB								
Standard unit								
Circuit 1(a)	A	320	366	440	470	509	740	593
Circuit 2(a)	A	466	509	470	505	509	370	593
Option 081	A	788	877	912	977	1020	1113	
Unit + option 15LS								
Circuit 1(a)	A	309	355	424	454	491	727	574
Circuit 2(a)	A	452	491	454	489	491	357	574
Option 081	A	762	848	880	945	985	1074	
Maximum current (Un-10%)(1) - 30XB								
Standard unit								
Circuit 1(a)	A	320	366	440	470	509	740	593
Circuit 2(a)	A	466	509	470	505	509	370	593
Option 081	A	788	877	912	977	1020	1113	
Unit + option 15LS								
Circuit 1(a)	A	309	355	424	454	491	727	574
Circuit 2(a)	A	452	491	454	489	491	357	574
Option 081	A	762	848	880	945	985	1074	
Nominal start-up current(3) - 30XB								
Standard unit								
Circuit 1(a)	A	587	587	629	629	629	954	812
Circuit 2(a)	A	629	629	629	629	629	477	812
Option 081	A	940	980	985	1015	1019	1316	
Option 081 & Opt 25c	A	802	820	844	862	862		
Unit + option 15LS								
Circuit 1(a)	A	576	576	613	613	611	941	793
Circuit 2(a)	A	615	611	613	613	611	464	793
Option 081	A	914	951	953	983	984	1290	
Option 081 & Opt 25c	A	776	791	812	830	826		
Maximum start-up current(Un)(2) - 30XB								
Standard unit								
Circuit 1(a)	A	587	587	629	629	629	954	812
Circuit 2(a)	A	629	629	629	629	629	477	812
Option 081	A	1046	1095	1095	1130	1134	1431	
Option 081 & Opt 25c		802	820	844	862	862		
Unit + option 15LS								
Circuit 1(a)	A	576	576	613	613	611	941	793
Circuit 2(a)	A	615	611	613	613	611	464	793
Option 081		1020	1066	1063	1098	1099	1393	
Option 081 & Opt 25c	A	776	791	812	830	826		

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XBP-250 TO 1000

30XBP		250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power(1) - 30XBP														
Standard unit	kW	117	131	145	165	192	211	259	279	314	333	362	386	447
Unit + option 15LS	kW	114	127	141	160	187	206	252	272	306	325	354	379	438
Power factor at maximum power(1) - 30XBP														
Standard unit														
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,90	0,90
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,90	0,90
Nominal operating current draw(2) - 30XBP														
Standard unit	A	145	161	176	202	231	259	313	337	390	418	434	499	527
Unit + option 15LS	A	139	155	170	194	223	251	302	325	378	406	422	487	513
Maximum operating current draw (Un)(1) - 30XBP														
Standard unit	A	192	214	236	270	311	341	419	452	507	537	583	622	720
Unit + option 15LS	A	186	208	230	262	303	333	408	440	495	525	571	610	706
Maximum current (Un-10%)(1) - 30XBP														
Standard unit	A	192	214	236	270	311	341	419	452	507	537	583	622	720
Unit + option 15LS	A	186	208	230	262	303	333	408	440	495	525	571	610	706
Nominal start-up current(3) - 30XBP														
Standard unit	A	240	240	255	371	471	471	524	549	722	745	748	831	843
Unit + option 15LS	A	234	234	249	363	463	463	513	537	710	733	736	819	829
Unit + option 25C	A	207	218	218	338	434	434	481	480	664	679	679	721	742
Maximum start-up current(Un)(2) - 30XBP														
Standard unit	A	268	268	286	399	502	502	572	604	770	800	800	890	937
Unit + option 15LS	A	262	262	280	391	494	494	561	592	758	788	788	878	923
Unit + option 25C	A	207	218	218	338	434	434	481	480	664	679	679	721	742

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XBP-1100 TO 1500

30XBP		1100	1200	1300	1400	1500
Power circuit supply						
Nominal voltage	V-ph-Hz	400-3-50				
Voltage range	V	360-440				
Control circuit supply		24 V via internal transformer				
Maximum operating input power(1) - 30XBP						
Standard unit						
Circuit 1(a)	kW	154	164	201	211	230
Circuit 2(a)	kW	214	234	210	229	230
Option 081	kW	368	397	411	439	460
Unit + option 15LS						
Circuit 1(a)	kW	145	157	193	200	219
Circuit 2(a)	kW	200	220	199	215	216
Option 081	kW	348	380	397	419	439
Power factor at maximum power(1) - 30XBP						
Standard unit						
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,88
Unit + option 15LS						
Displacement Power Factor (Cos Phi)		0,86	0,87	0,87	0,86	0,86

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XBP1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XBP-1100 TO 1500

30XBP		1100	1200	1300	1400	1500
Nominal operating current draw(2) - 30XBP						
Standard unit						
Circuit 1(a)	A	251	267	331	346	379
Circuit 2(a)	A	349	381	346	376	379
Option 081	A	600	648	677	722	758
Unit + option 15LS						
Circuit 1(a)	A	244	260	321	336	368
Circuit 2(a)	A	335	363	330	360	361
Option 081	A	584	630	657	702	736
Maximum operating current draw (Un)(1) - 30XBP						
Standard unit						
Circuit 1(a)	A	313	359	430	460	498
Circuit 2(a)	A	457	498	460	495	498
Option 081	A	772	859	892	957	998
Unit + option 15LS						
Circuit 1(a)	A	306	352	420	450	487
Circuit 2(a)	A	448	487	450	485	487
Option 081	A	584	630	657	702	736
Maximum current (Un-10%)(1) - 30XBP						
Standard unit						
Circuit 1(a)	A	313	359	430	460	498
Circuit 2(a)	A	457	498	460	495	498
Option 081	A	772	859	892	957	998
Unit + option 15LS						
Circuit 1(a)	A	306	352	420	450	487
Circuit 2(a)	A	448	487	450	485	487
Option 081		584	630	657	702	736
Nominal start-up current(3) - 30XBP						
Standard unit						
Circuit 1(a)	A	580	580	619	619	618
Circuit 2(a)	A	620	618	619	619	618
Option 081	A	923	962	965	995	997
Option 081 & Opt 25c	A	786	801,5	824	841,5	839,5
Unit + option 15LS						
Circuit 1(a)	A	573	573	609	609	607
Circuit 2(a)	A	611	607	609	609	607
Option 081	A	907	944	945	975	975
Option 081 & Opt 25c	A	770	783,5	804	821,5	817,5
Maximum start-up current(Un)(2) - 30XBP						
Standard unit						
Circuit 1(a)	A	580	580	619	619	618
Circuit 2(a)	A	620	618	619	619	618
Option 081	A	1030	1077	1075	1110	1112
Option 081 & Opt 25c	A	786	801,5	824	841,5	839,5
Unit + option 15LS						
Circuit 1(a)	A	573	573	609	609	607
Circuit 2(a)	A	611	607	609	609	607
Option 081	A	1014	1059	1055	1090	1090
Option 081 & Opt 25c	A	770	783,5	804	821,5	817,5

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XBP1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XB WITH OPTION CU/AL HEAT EXCHANGER

30XB with option 254 or 255		250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power(1) - 30XB														
Standard unit	kW	119	133	149	168	195	216	264	285	321	340	371	398	460
Unit + option 15LS	kW	112	126	141	159	185	205	251	271	306	325	355	381	438
Power factor at maximum power(1) - 30XB														
Standard unit														
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,90	0,90
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,90	0,90
Nominal operating current draw(2) - 30XB														
Standard unit	A	151	167	185	210	239	270	324	349	405	433	452	520	550
Unit + option 15LS	A	141	157	174	197	226	256	306	330	385	413	431	498	525
Maximum operating current draw (Un)(1) - 30XB														
Standard unit	A	198	220	245	278	319	352	430	464	522	552	601	643	743
Unit + option 15LS	A	188	210	234	265	306	338	412	445	502	532	580	621	717
Maximum current (Un-10%)(1) - 30XB														
Standard unit	A	198	220	245	278	319	352	430	464	522	552	601	643	743
Unit + option 15LS	A	188	210	234	265	306	338	412	445	502	532	580	621	717
Nominal start-up current(3) - 30XB														
Standard unit	A	24	246	264	37	47	482	53	561	73	60	766	852	866
Unit + option 15LS	A	245	245	263	378	480	481	536	562	738	761	765	851	871
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756
Maximum start-up current(Un)(2) - 30XB														
Standard unit	A	274	274	295	407	510	513	583	616	785	815	818	911	960
Unit + option 15LS	A	264	264	284	394	497	499	565	597	765	795	797	889	935
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XB WITH OPTION CU/AL HEAT EXCHANGER

30XB with option 254 or 255		1100	1200	1300	1400	1500	1550	1700
Power circuit supply								
Nominal voltage	V-ph-Hz	400-3-50						
Voltage range	V	360-440						
Control circuit supply		24 V via internal transformer						
Maximum operating input power(1) - 30XB								
Standard unit								
Circuit 1(a)	kW	200	225	267	286	309	459	366
Circuit 2(a)	kW	294	312	286	307	309	230	366
Option 081	kW	488	537	553	593	619	689	
Unit + option 15LS								
Circuit 1(a)	kW	190	220	258	276	299	451	354
Circuit 2(a)	kW	277	303	276	297	299	222	354
Option 081	kW	467	524	534	574	598	666	
Power factor at maximum power(1) - 30XB								
Standard unit								
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,88	0,89	0,89
Unit + option 15LS								
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,88	0,89	0,89
Nominal operating current draw(2) - 30XB								
Standard unit								
Circuit 1(a)	A	261	274	341	356	390	543	446
Circuit 2(a)	A	364	392	356	386	390	273	446
Option 081	A	625	666	697	742	780	820	
Unit + option 15LS								
Circuit 1(a)	A	247	265	325	340	372	530	427
Circuit 2(a)	A	344	376	340	370	372	260	427
Option 081	A	590	641	665	710	745	782	
Maximum operating current draw (Un)(1) - 30XB								
Standard unit								
Circuit 1(a)	A	323	366	440	470	509	740	593
Circuit 2(a)	A	472	509	470	505	509	370	593
Option 081	A	787	877	912	977	1020	1113	
Unit + option 15LS								
Circuit 1(a)	A	309	357	424	454	491	727	574
Circuit 2(a)	A	452	493	454	489	491	357	574
Option 081	A	762	852	880	945	985	1074	
Maximum current (Un-10%)(1) - 30XB								
Standard unit								
Circuit 1(a)	A	319	366	440	470	509	740	593
Circuit 2(a)	A	464	509	470	505	509	370	593
Option 081	A	785	877	912	977	1020	1113	
Unit + option 15LS								
Circuit 1(a)	A	309	357	424	454	491	727	574
Circuit 2(a)	A	452	493	454	489	491	357	574
Option 081	A	762	850	880	945	985	1074	
Nominal start-up current(3) - 30XB								
Standard unit								
Circuit 1(a)	A	590	587	629	629	629	954	812
Circuit 2(a)	A	635	629	629	629	629	477	812
Option 081	A	949	986	985	1015	1019	1316	
Option 081 & Opt 25c	A	811	820	844	862	862		
Unit + option 15LS								
Circuit 1(a)	A	576	578	613	613	611	941	793
Circuit 2(a)	A	615	613	613	613	611	464	793
Option 081	A	1020	1070	1063	1098	1099	1393	
Option 081 & Opt 25c	A	776	795	812	830	826		

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XB WITH OPTION CU/AL HEAT EXCHANGER

30XB with option 254 or 255		1100	1200	1300	1400	1500	1550	1700
Maximum start-up current(Un)(2) - 30XB								
Standard unit								
Circuit 1(a)	A	590	590	629	629	629	954	812
Circuit 2(a)	A	635	632	629	629	629	477	812
Option 081	A	1055	1101	1095	1130	1134	1431	
Option 081 & Opt 25c	A	811	820	844	862	862		
Unit + option 15LS								
Circuit 1(a)	A	576	578	613	613	611	941	793
Circuit 2(a)	A	615	613	613	613	611	464	793
Option 081	A	1020	1070	1063	1098	1099	1393	
Option 081 & Opt 25c	A	776	795	812	830	826		

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA

Electrical data notes and operating conditions for 30XB units:

- 30XB&XBP 250 to 1000 units have a single power connection point; 30XB & XBP 1100 to 1700 units have two connection points.
- The control box includes the following standard features:
  - One general disconnect switch per circuit
  - Starter and motor protection devices for each compressor, the fan(s) and the pump
  - Control devices

Field connections:

- All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 30XB & 30XBP units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1: General regulations) are specifically taken into account, when designing the electrical equipment.

IMPORTANT:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation regulations.
- Conformance with EN 60204 is the best means of ensuring compliance with the Machines Directive ˜ 1.5.1.
  Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

1. Environment* . Environment as classified in EN 60364 (corresponds to IEC 60364):
   - Outdoor installation*
   - Ambient temperature range: from -20°C to +55°C**
   - Altitude less than or equal to 2000 m (for hydraulic module, see paragraph 4.7 in the IOM)
   - Presence of hard solids, class AE3 (no significant dust present)*
   - Presence of corrosive and polluting substances, class AF1 (negligible)
   - Competence of persons: BA4 (Persons wise); 30XB &30XBP machines are not intended to be installed in locations open to anyone, including people with disabilities and children.
2. Compatibility for low-frequency conducted disturbances according to IEC61000-2-2 and to class 2 levels per IEC61000-2-4 standard:
   - Power supply frequency variation : +-2Hz
   - Phase imbalance : 2%
   - Total Voltage Harmonic Distortion (THDV) : 8%”
3. The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory.installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).
6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation. Units delivered with variable frequency drive(s) (options : 28, 17) are not compatible with IT network. 30XB units are designed to use for domestic / residential and industrial environments:
   - Machines that are not equipped with variable frequency drive(s) are in accordance with the codes :
     - 61000-6-3: General standards - Standard emission for residential, commercial and light industry.
     - 61000-6-2: General standards - Immunity for industrial environments.
   - Machines that are equipped with variable frequency drive(s) (options : 28, 17) are in accordance with standard EN61800 - 3 electric power variable speed drives - art 3: EMC requirements and specific test methods for the following classifications:-
     - Use in the first and second environments***.
     - Category C2 applicable in the first environment, on stationary devices designed to be installed and commissioned by a professional.

Warning: In a residential environment, this product may cause radio interference in which case additional mitigation measures could be required.

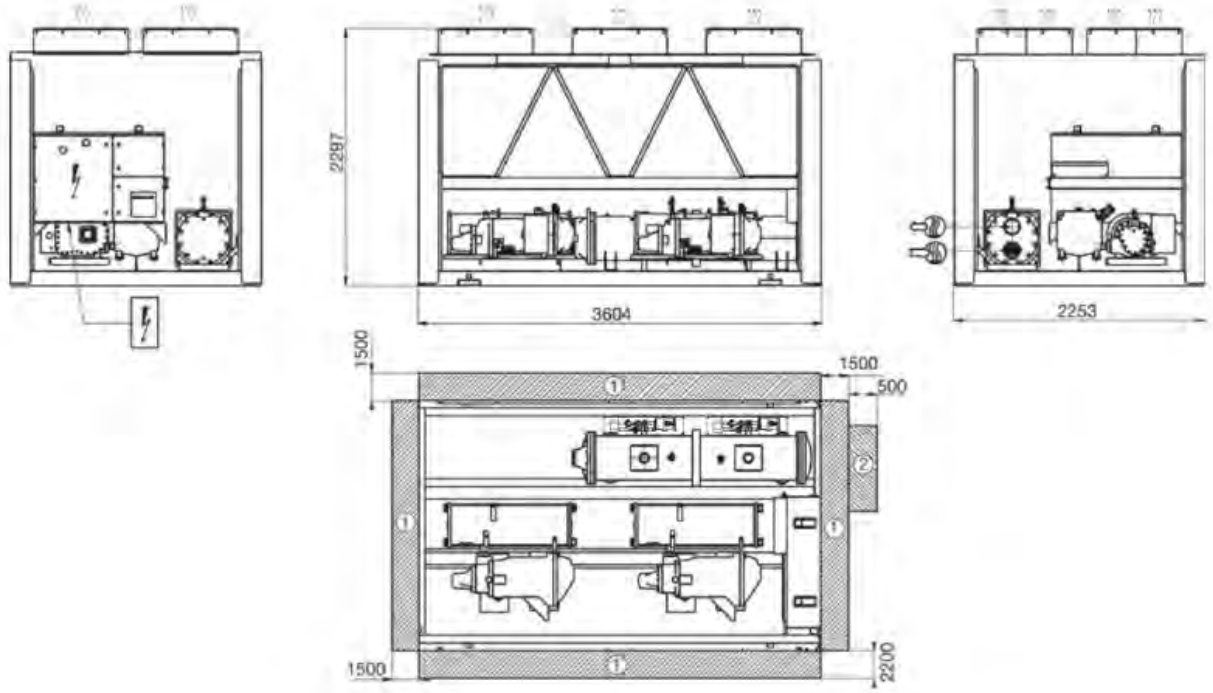
- Leakage currents: If protection by monitoring the leakage currents is necessary to ensure the safety of the installation, the presence of additional leakage currents introduced by the use of variable frequency drive(s) in the unit must be considered. In particular these protection devices shall be of reinforced immunity types and have a threshold not lower than 150 mA.
- Capacitors that are integrated as part of the option 231 can generate electrical disturbances in the installation the unit is connected to. Presence of these capacitors must be considered during the electrical study prior to the start-up.

NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

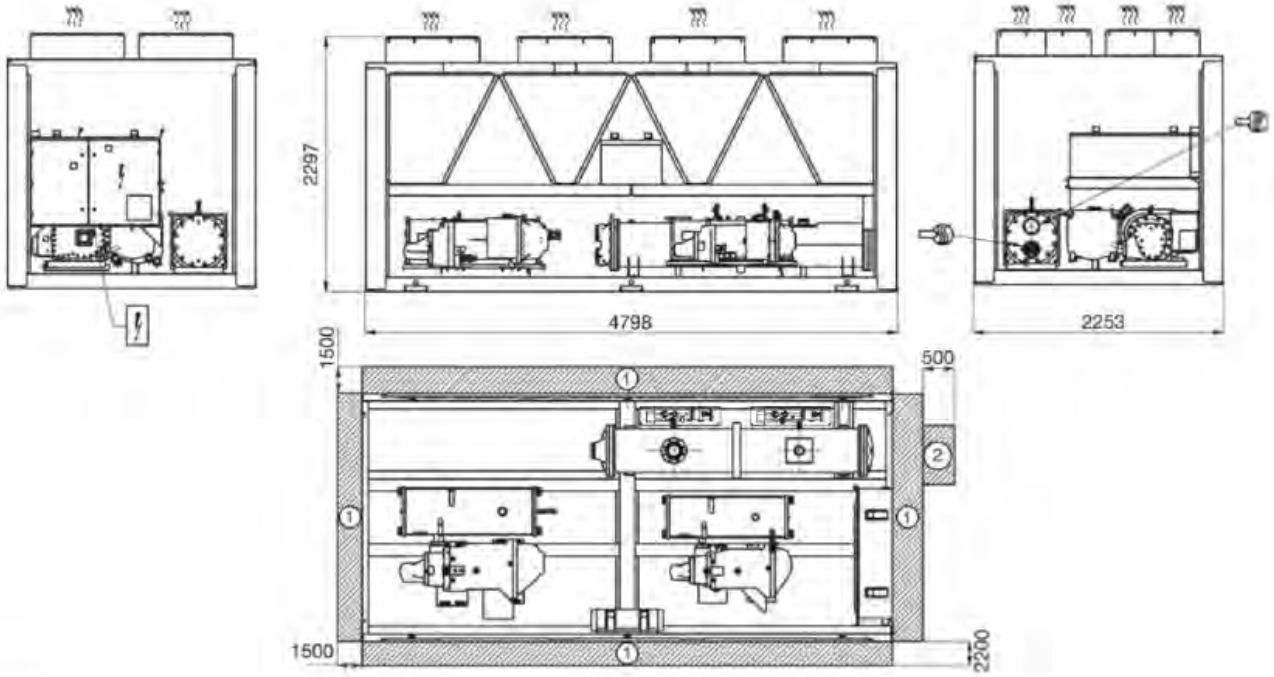
* The required protection level for this class is IP43BW (according to reference document IEC 60529). All 30XB & XBP units are protected to IP44CW and fulfil this protection condition.
** The maximum ambiant temperature allowed for machines equipped with option 231 is +40°C

DIMENSIONS / CLEARANCES

30XB250 to 350, 30XBP250 to 350
30XB250 to 300 with option 254/255



30XB400 to 450, 30XBP400 to 500
30XB350 to 400 with option 254/255



Legend

All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

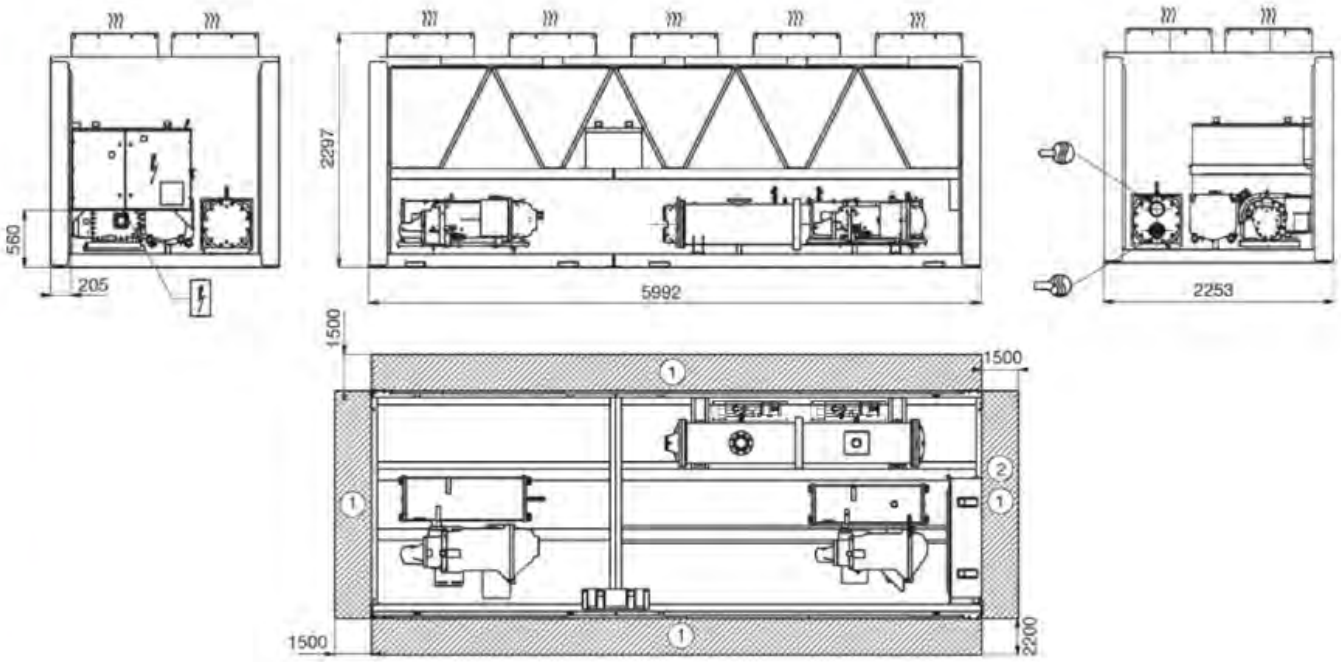
Power supply and control connection

NOTES:

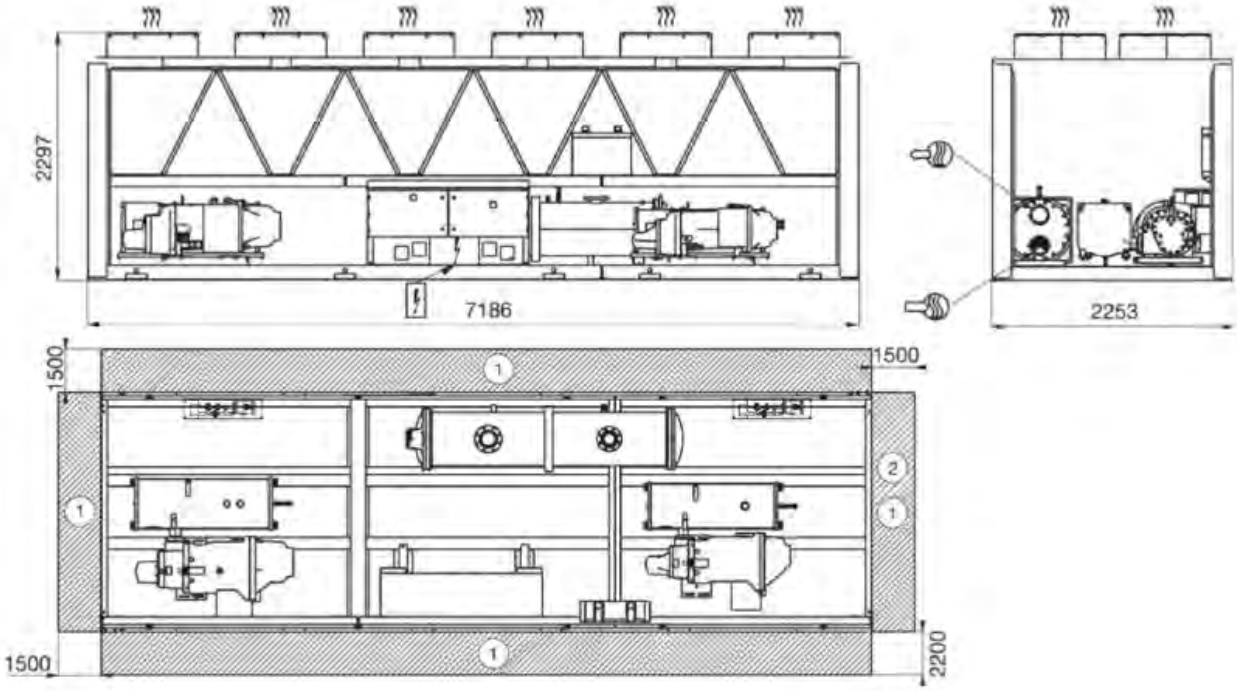
- ***Drawings are not contractually binding.***
- ***Before designing an installation, consult the certified dimensional drawings, available on request.***
- ***If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required.***

DIMENSIONS / CLEARANCES

30XBP500, 30XB500 with options 254/255, 50 (heat recovery) or 118A (free cooling)



30XB600 to 900, 30XBP600 to 800, 30XB600 to 700 with option 254/255



Legend
All dimensions are given in mm.

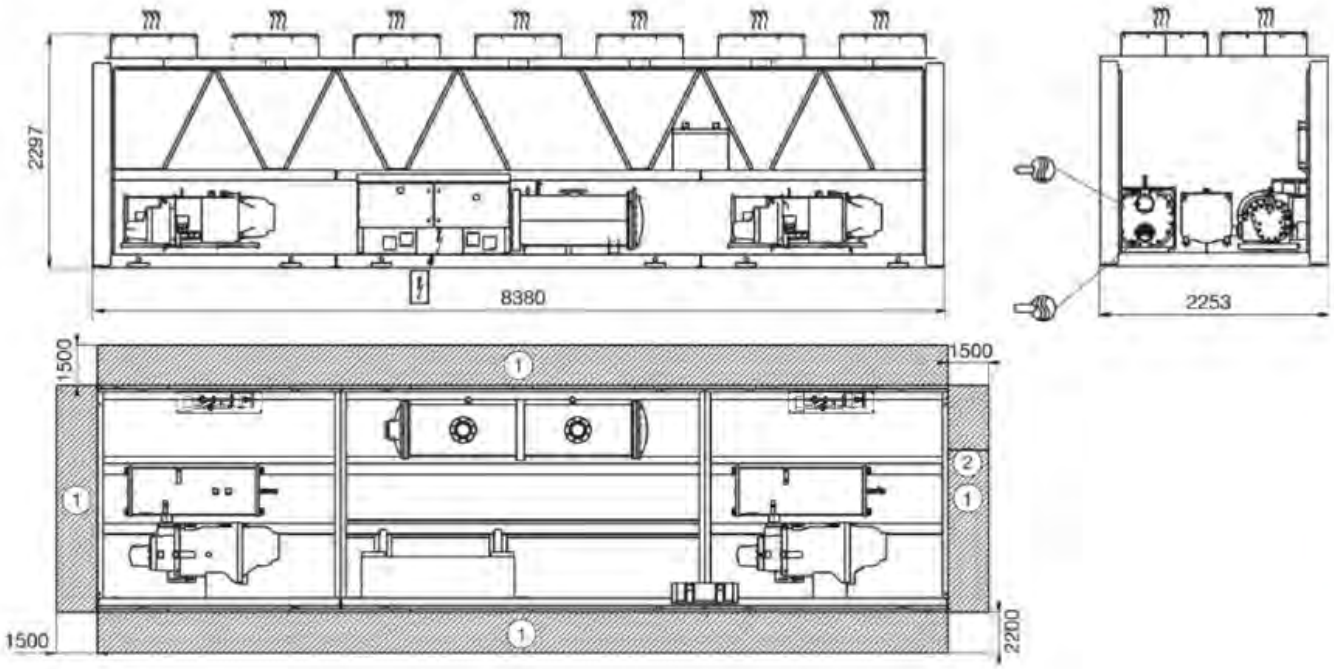
- (1) Required clearances for maintenance (see note)
- (2) Recommended space for evaporator tube removal
- Water inlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.
- Water outlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.
- Air outlet – do not obstruct
- Power supply and control connection

NOTES:

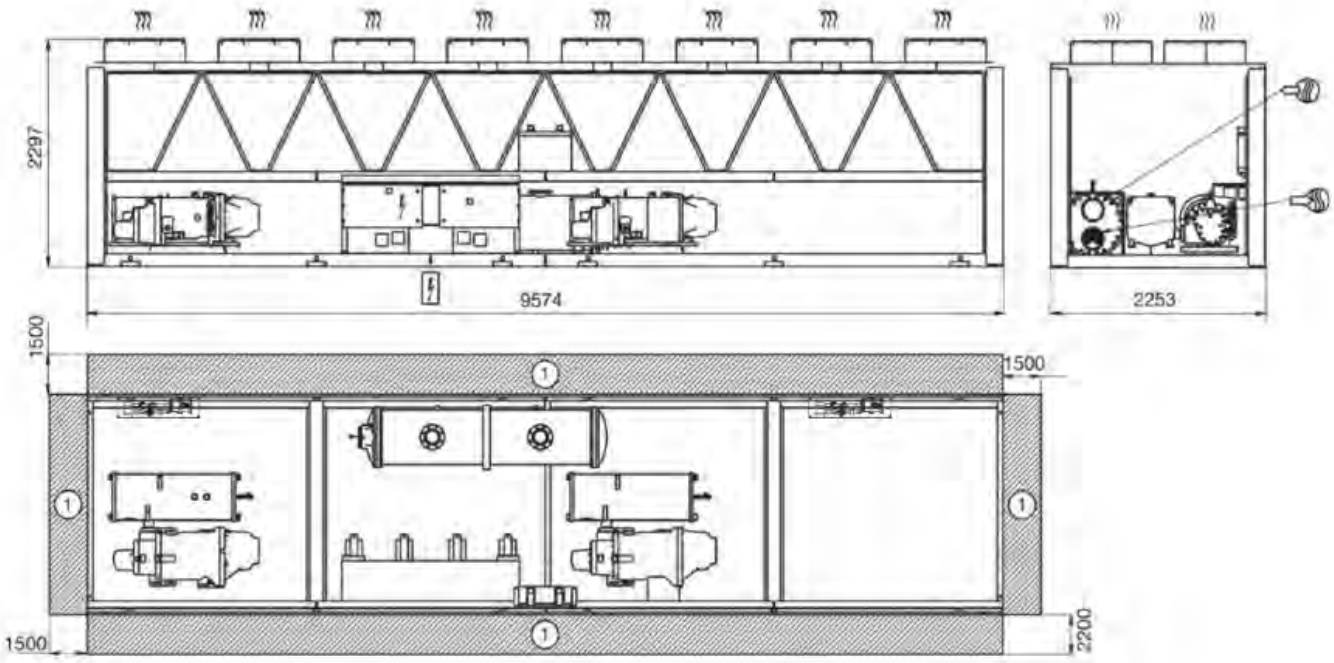
- ***Drawings are not contractually binding.***
- ***Before designing an installation, consult the certified dimensional drawings, available on request.***
- ***If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required.***

DIMENSIONS / CLEARANCES

30XB1000, 30XBP850 to 900, 30XB750 to 850 with option 254/255



30XBP1000, 30XB900 option 254/255, 30XB1000 with options 50 (heat recovery) & 118 (free cooling)



Legend

All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

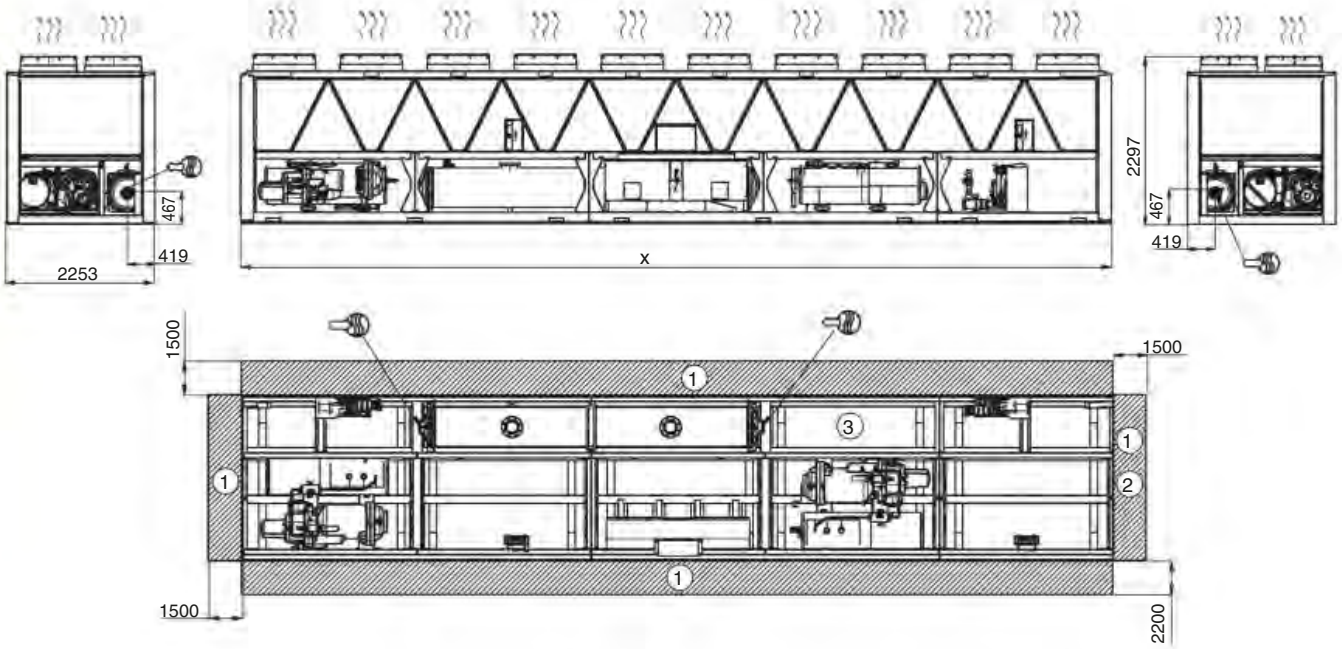
Power supply and control connection

NOTES:

- ***Drawings are not contractually binding.***
- ***Before designing an installation, consult the certified dimensional drawings, available on request.***
- ***If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required.***

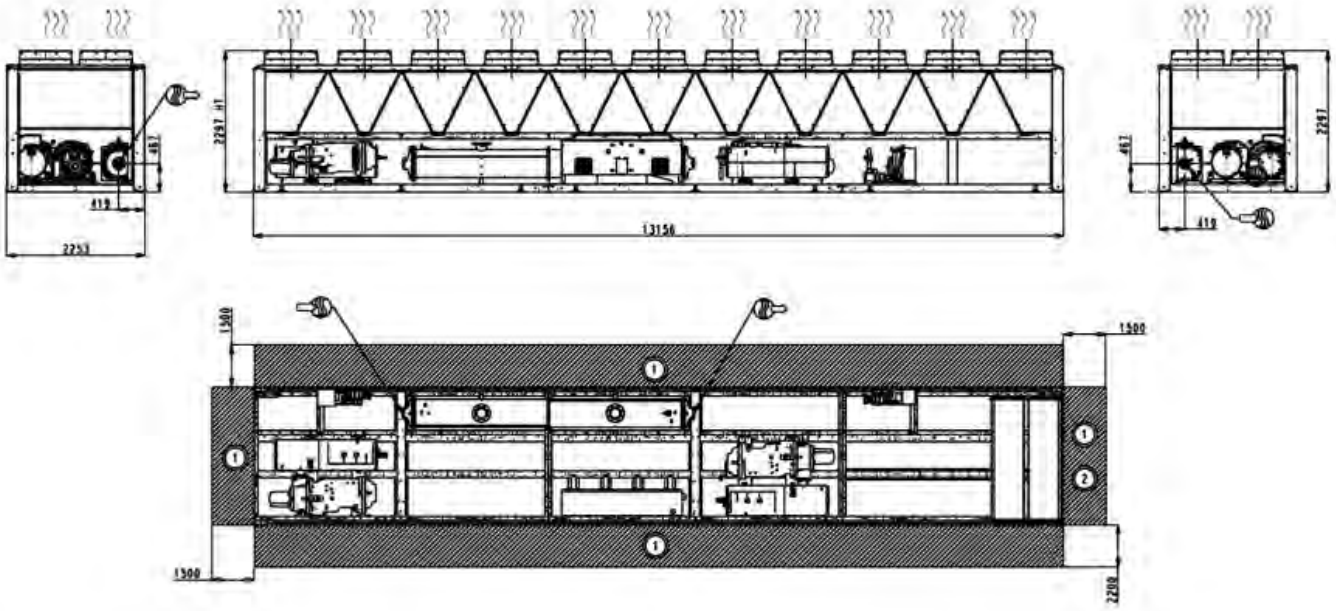
DIMENSIONS / CLEARANCES

30XB1100 to 1400, 30XBP1100 to 1400



30XA1114 : X = 9574
30XA1214 : X = 10770
30XA1112, 1212, 1312, 1382 : X = 11962

30XB1500, 30XBP1500



Legend
All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

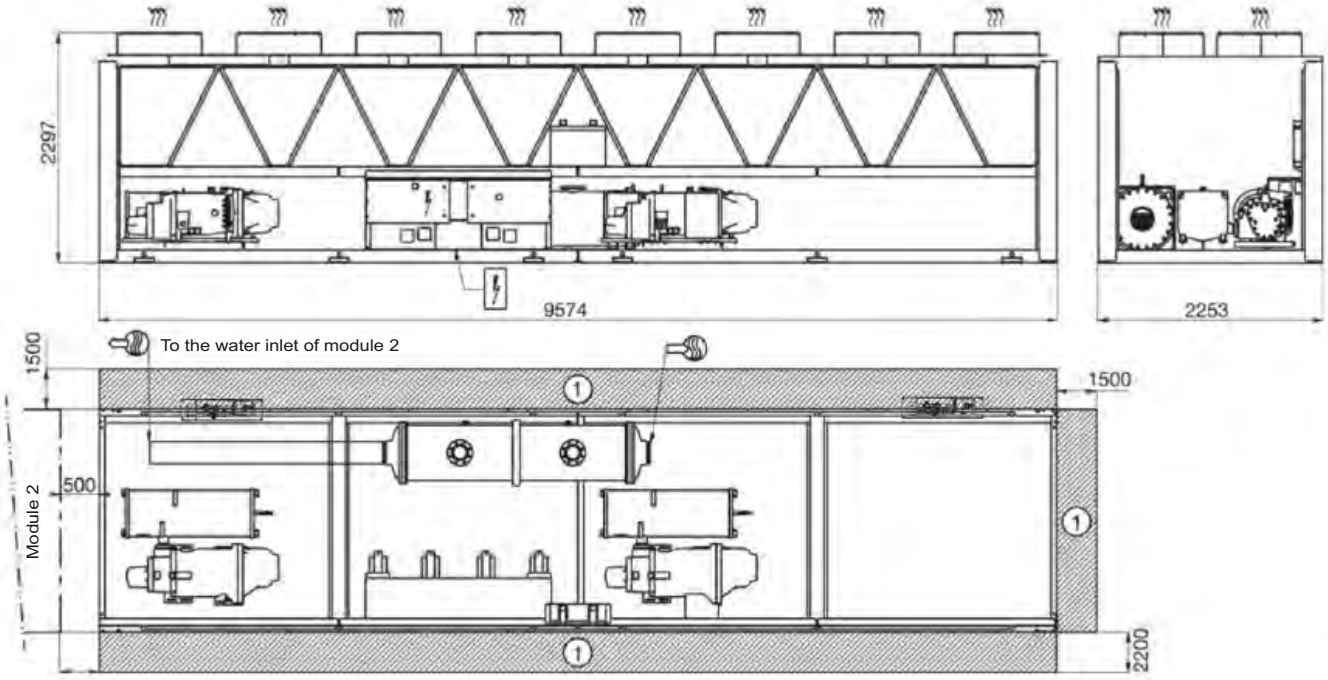
Power supply and control connection

NOTES:

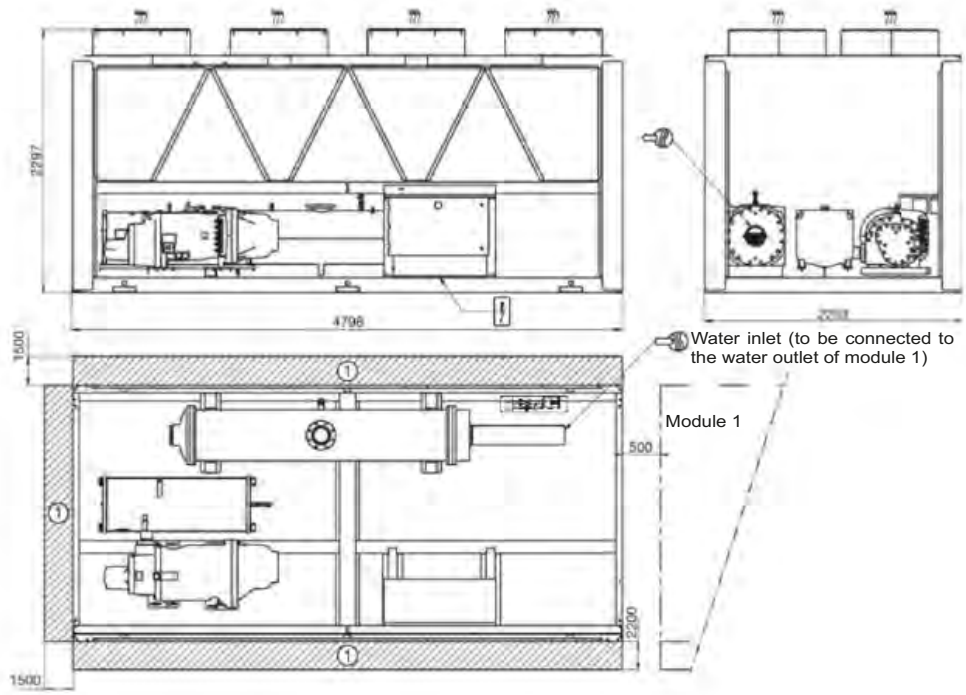
- ***Drawings are not contractually binding.***
- ***Before designing an installation, consult the certified dimensional drawings, available on request.***
- ***If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required.***

DIMENSIONS / CLEARANCES

30XB1550 module 1/2



30XB1550 module 2/2



Legend

All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

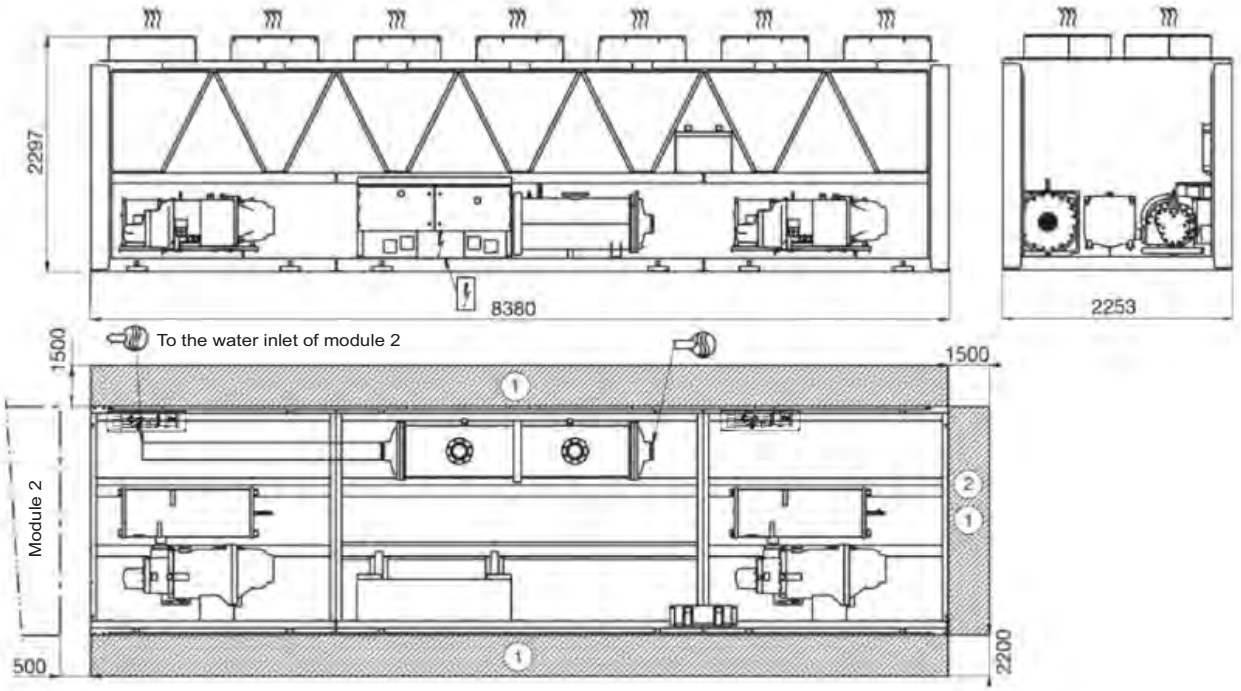
Power supply and control connection

NOTES:

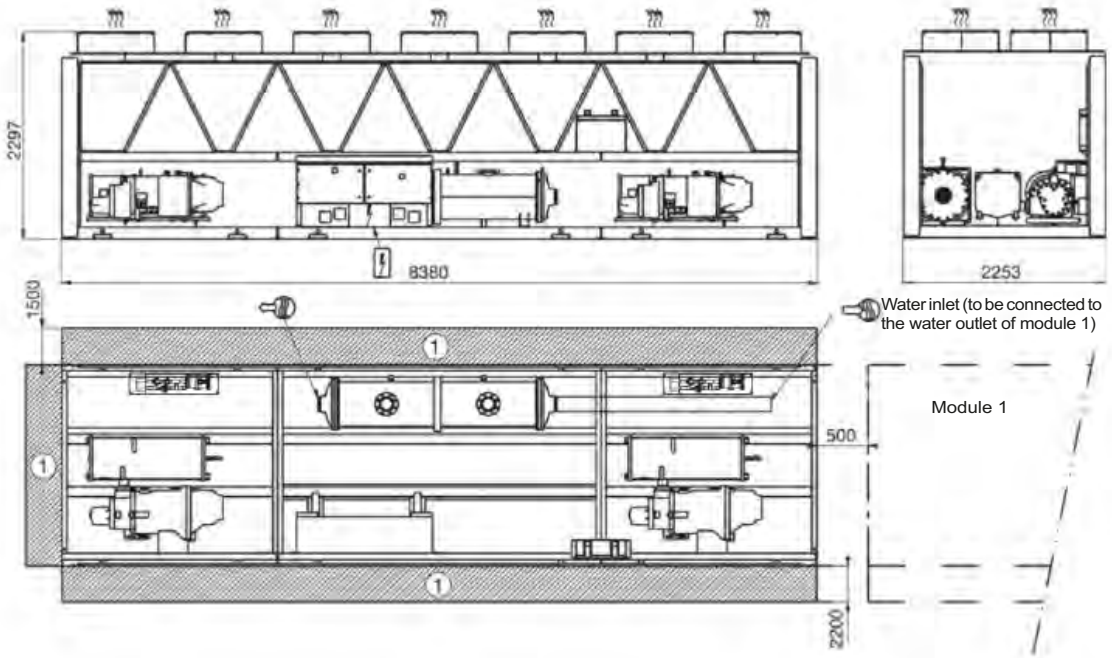
- ***Drawings are not contractually binding.***
- ***Before designing an installation, consult the certified dimensional drawings, available on request.***
- ***If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required.***

DIMENSIONS / CLEARANCES

30XB1700 module 1/2



30XB1700 module 2/2



Legend
All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

Power supply and control connection

NOTES:

- ***Drawings are not contractually binding.***
- ***Before designing an installation, consult the certified dimensional drawings, available on request.***
- ***If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required.***

NEW

VARIABLE-SPEED SCREW LIQUID CHILLER WITH GREENSPEED® INTELLIGENCE

- Outstanding performance
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30KAV-ZE available in 2018

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The AquaForce® Vision 30KAV liquid chillers with Greenspeed® Intelligence are the premium solution for commercial and industrial applications where installers, consultants and building owners require superior reliability and optimal performances, especially at part load.

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- 2nd generation of high-efficiency variable-speed twin screw compressors with built in volume index control (Vi) valve for optimal full and part load performance and Integrated Resonator Array (IRA) for low sound operation
- 6th generation of Carrier Flying Bird™ fans with AC or EC motor depending on options.
- Carrier flooded shell-and-tube evaporator with new copper tubes for low pressure drops
- 3rd generation of "W" profile Carrier Novation™ microchannel heat exchangers with optional Enviro-Shield coatings.
- Carrier Touch Pilot® control with color touch screen user interface that includes 10 langages and new smart energy monitoring function.

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CUSTOMER BENEFITS

AquaForce® Vision 30KAV liquid chillers with Greenspeed® Intelligence adapt effortlessly to a wide range of applications. An extended operating range covering ambient temperatures from-20 to 55°C makes it ideal for all areas of activity. From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, 30KAV meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate and wherever the location.

Furthermore, the advanced Touch Pilot™ intelligent control system displays operating parameters in real time, making it intuitive and particularly user-friendly. 30KAV also features innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios. For further energy savings, 30KAV can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.

The range is available in 4 efficiency levels.

- 30KAV standard unit

  The AquaForce® 30KAV is equipped with variable-speed screw compressor and variable-speed fans with AC motors. The 30KAV is optimised to meet the most demanding technical and economic requirements while offering high seasonal energy efficiency levels.
  (Average SEER of 5.17, average EER of 3.0)

- 30KAV with EC fans (option 17)

  The 30KAV with EC fans option enhances the seasonal energy efficiency and offers state of the art EC fan technology as standard.
  (Average SEER of 5.23, average EER of 3.0)

- 30KAV with High Energy Efficiency (option 119)

  The 30KAV with High Energy Efficiency option is equipped with variable-speed fans with AC motor and additional heat exchange surface to deliver optimum performance at both full load and part load.
  (Average SEER of 5.35, average EER of 3.4)

- 30KAV with High Energy Efficiency+ (option 119+)

  The 30KAV with High Energy Efficiency+ option is equipped with EC fans and additional heat exchange surface to provide the highest possible seasonal energy efficiency.
  (Average SEER of 5.45, average EER of 3.4)

Outstanding energy performance

- The 30KAV with “High energy efficiency+” is designed for very high performance both at full and part load: average SEER 5.45, average EER 3.4 as per EN14825 & EN14511.
- The high energy efficiency is achieved through:
  - 2nd generation of Carrier high-efficiency variable-speed twin-screw compressors with built in volume index control (Vi) valve for both optimal full and part load performance
    Variable-speed Flying Bird™ fans with EC motor minimising power consumption while delivering optimum air flow
  - Novation™ aluminum condenser with high-efficiency micro-channel coils technology
  - New Carrier flooded shell-and-tube evaporator with new copper tubes for low pressure drops
  - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control)
  - Economiser system with electronic expansion device for increased cooling capacity.
- Optimised electrical performance:
  - Negligible start-up current (value is lower than the maximum unit current draw)
  - High displacement power factor (above 0.98)
  - EMC compliance with Class 3 requirements of the EU standard EN61800-3 (Class 2 is possible as an option).
- Hydraulic module with variable-speed dual pump
  - Variable-speed, dual pumps which automatically adjust the water flow to match the needs of the building or process load variations.
  - 3 pump control modes available: constant water flow with possibility to reduce the pump speed when there is no cooling demand, variable water flow with constant delta T or constant delta P control.
- Smart energy monitoring
  - Innovative smart energy monitoring providing users with smart data such as real time electric energy consumption, cooling cooling capacity, and instantaneous and average seasonal energy efficiency ratios.
  - For further energy savings, 30KAV can be monitored remotely by Carrier experts for energy consumption diagnosis and optimization.

Built-in reliability and easy servicing

The 30KAV units offer enhanced performance as well as Carrier’s acclaimed product quality and reliability. Major components were chosen, selected and tested to minimise the possibility of failure.

- 2nd generation of variable-speed twin-screw compressors:
  - The screw compressors are industrial-type with oversized bearings and motor cooled by suction gas, with a proven failure rate lower than 0.1%.
  - Air-cooled compressor variable-speed drive (VSD) to ensure reliable operation and easy maintenance. (Glycol-cooled variable-speed drive (VSD) types are subject to higher failure rates due to glycol pump issue. Refrigerant-cooled variable-speed drive (VSD) types are subject to higher compressor vibration levels causing possible failures in the long term).
  - Compressor bearing life exceeding 100 000 hours
  - All components related to the compressor assembly are easily accessible on site minimising down-time.
- Variable-speed fans:
  - 30KAV is fitted with variable-speed asynchronous fan-motors as standard. One variable-speed drive (VSD) is sized to manage a group of fans per refrigerant circuit reducing first cost while ensuring high part-load efficiency.
  - 30KAV with High Energy Efficiency+ option is fitted with variable-speed EC fan-motors. Each EC fan is controlled independently ensuring continuous chiller operation in case of motor or drive failure.

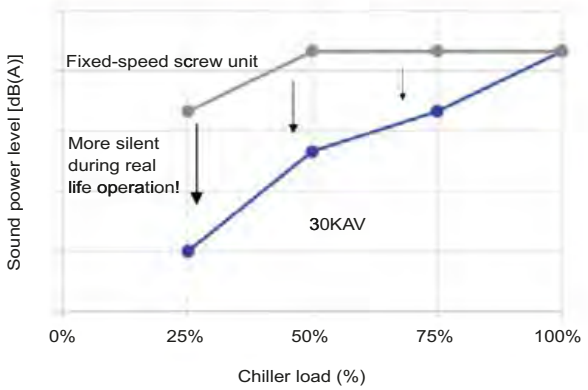
CUSTOMER BENEFITS

- Air-cooled condenser:
  - Novation™ aluminum micro-channel heat exchanger (MCHE) with high corrosion resistance. The all aluminum design eliminates the formation of galvanic currents between aluminum and copper that cause coil corrosion in saline or corrosive environments.
  - Enviro-shield™ coating for MCHE used in standard and mildly corrosive environments with superior durability confirmed through 5000 hours testing in constant neutral salt spray per ASTM B117 and superior heat transfer performances confirmed through 2000 hours testing per CM1 (Carrier proprietary testing).
  - Super Enviro-shield™ coating for MCHE used in highly corrosive environments (industry or marine applications) with superior durability confirmed through 5000 hours testing in constant neutral salt spray per ASTM B117 and superior heat transfer performances confirmed through 2000 hours testing per CM1 (Carrier proprietary testing).
- Evaporator:
  - Carrier designed flooded evaporator with mechanically cleanable water tubes
  - Electronic paddle-free flow switch to ensure prompt alarm in case of poor liquid flow rate
  - Thermal insulation with aluminum sheet finish (option) improved resistance to mechanical and UV damage.
- Refrigerant circuits:
  - Two independent refrigerant circuits to secure partial cooling, if one of the two develops a fault.
- Auto-adaptive control:
  - Control algorithm prevents excessive compressor cycling (Carrier patent)
    Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity.
- Exceptional endurance tests:
  - To design critical components and sub-assemblies to minimise the risk of failure on site, Carrier uses specialised laboratories and advanced dynamic simulation tools.
  - To ensure that the units reach customer sites in the same condition as they are when tested in the factory, Carrier tests the machine behavior while being moved along a 250 km trial. The test-route is based on a military standard and is the equivalent to 5000km by truck in a normal road.
  - To ensure coils corrosion resistance, salt mist corrosion resistance test are performed in UTC's laboratory.

In addition, to maintain unit performance throughout its operating life, whilst minimising maintenance costs, end users can access the “Carrier Connect” remote monitoring service.

Minimised operating sound levels

- The Greenspeed® Intelligence, featuring variable-speed screw compressors and condenser fans, minimises noise levels at part load operation.



- Standard unit features include:
  - The new generation of Carrier 06Z variable-speed twin screw compressor with integrated resonator array to reduce the noise level by 6 dB(A) compared with 06T twin screw compressor previous generation.
  - The 6th generation of silent Flying Bird™ fans with new fan blade design inspired by nature, help reduce airflow noise.
- 30KAV is available with 4 sound levels to match the most sensitive environments:
  - Standard: standard unit configuration with new generation of low sound screw compressor and fans
  - Low noise option: addition of high-performance compressor sound enclosure
  - Very low noise option: addition of high-performance compressor sound enclosure and fan operation at lower rotational speed.
  - Ultra low noise option: option under development (available during 2018).

Easy and fast installation

- Built-in variable speed pumps up to 800 kW
  - Full hydraulic module with dual pumps (low or high pressure as required) and optional expansion tank
  - Automatic nominal water flow adjustment through electronic control on the user display
- Compact units for easy transportation and installation.
  - Dimensions 25% smaller than the previous 30XAV generation
  - Similar dimensions as the old 30GX chillers for easy replacement of the installed base.
- Simplified electrical connections:
  - Main disconnect switch
  - Transformer supply to the integrated control circuit (400/24V)
  - Single electrical point of connection
- Simplified water connections:
  - Victaulic connections on the evaporator
  - Clearly identified entering and practical reference marks for entering and leaving water connections
  - Possibility to choose different evaporator configurations, 1 or 2 passes.
- Fast commissioning:
  - Systematic factory operating test before shipment
  - Functional test for main components, expansion devices, fans and compressors.

CUSTOMER BENEFITS

Environmental care

- The AquaForce® Vision 30KAV liquid chillers with Greenspeed® Intelligence is a boost for green cities and contributes to a sustainable future. Combining a reduced charge of R134a refrigerant and exceptional energy efficiency it significantly lowers energy consumption while reducing carbon dioxide emissions by 25% throughout its life cycle (compared to previous fixed-speed screw liquid chiller generation).
- The AquaForce® Vision 30KAV liquid chiller is equipped with an automatic energy meter that provides estimated instantaneous and cumulative cooling energy output, instantaneous and cumulative electric energy consumption, instantaneous and average seasonal energy efficiency ratios (Accuracy: +/- 5% at nominal condition, +/-10% elsewhere) for unit performance monitoring and verification.
- The AquaForce® Vision 30KAVZE version with PUREtec™ refrigerant designed exclusively for HFO R-1234ze will be available during the course of 2018.
- R-134a: HFC refrigerant with zero ozone depletion potential
- 40% less refrigerant charge: The micro-channel technology used for condenser coils optimises heat transfer while minimising the refrigerant volume.
- Leak tight refrigerant circuits:
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Discharge line shut-off valve and liquid line service valve for simplified maintenance.
- Refrigerant leak alert: The AquaForce® Vision 30KAV liquid chiller is equipped with an automatic refrigerant leak detection algorithm that can detect serious refrigerant loss at any point on the system (Sensitivity: 25% refrigerant charge loss per circuit, depending on the conditions). The automatic refrigerant leak detection system can help to achieve recognition within pollution prevention assessment programs, ideal for assisting in the design of sustainable buildings.
- Refrigerant leak detection: Available as an option, this additional dry-contact allows reporting of possible leaks. The leak detector (by others) should be mounted in the most likely leak location.

Designed to support Green Building Design

A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment.

The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year 30KAV units offer a solution to this important challenge.

A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.

The following example looks at how Carrier's new 30KAV range helps customers involved in LEED® building certification.

30KAV and LEED® certification

The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a preeminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

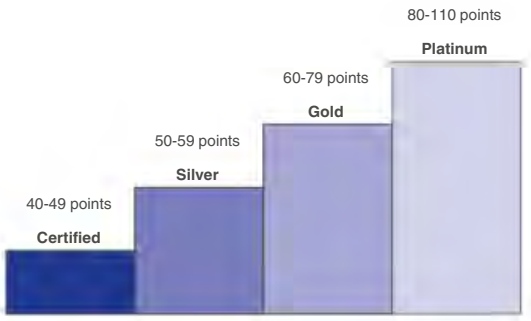
- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points



The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

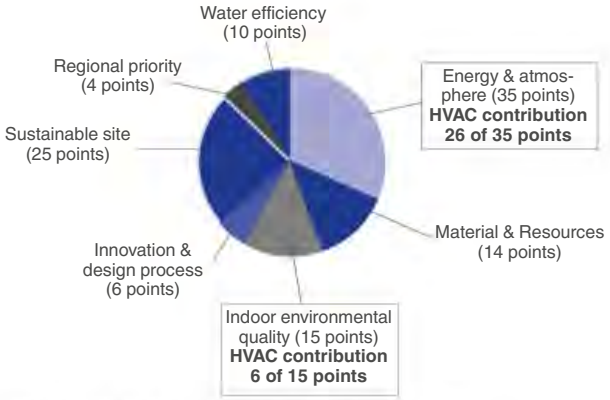
While the LEED green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

CUSTOMER BENEFITS

Designed to support Green Building Design

Overview of LEED® for new construction and major renovations



The new 30KAV units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: Minimum energy Performance
  The 30KAV exceeds the energy efficiency requirements of ASHRAE 90,1-2007; therefore it complies with the presequisite standard.

- EA prerequisite 3: Fundamental Refrigerant Management
  The 30KAV does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.

- EA credit 1: Optimise energy performance (1 to 19 points):
  Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90,1-2007 reference. The 30KAV, which is designed for high performance especially during part load operation, contributes to reducing the energy consumption of the building and therefore helps in gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED templates.

- EA credit 4: Enhanced refrigerant management (2 points):
  With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Globlal Warming Potential (GWP) of the system. The 30KAV uses a reduced R134a charge and therefore contributes toward satisfying this credit under LEED .

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30KAV. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

i-Vu®, Carrier's open control system, has features that can be valuable for:
- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

Touch Pilot control

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 7" interface
  - 10 languages available on choice: DE, EN, ES, FR, IT, NL, PT, TR, TU + one additional customer choice
  - Screen-shots with concise and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the controller box with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: Password protection ensures that unauthorised people cannot modify any advanced parameters
    Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
  - Night-mode: Cooling capacity management for reduced noise level.
- Energy management:
  - Innovative smart energy monitoring, providing users with smart data such as real time electric energy consumption, cooling capacity, and instantaneous and average seasonal energy efficiency ratios.
  - Internal time schedule clock controls chiller on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote management (standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).
- The 30KAV also communicates with other building management systems via optional communication gateways (BACnet, LON or JBus).
- The following commands/visualisations are possible from remote connection:
  - Start/Stop of the machine
  - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
  - Demand limit setting: To limit the maximum chiller capacity to a predefined value
  - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
  - Water pumps changeover (only with hydraulic module options): These contacts are used to detect a water pump operation fault and automatically change over to the other pump.
  - Operation visualisation: Indication if the unit is operating or if it is in stand-by (no cooling load)
  - Alarm visualisation.

Remote management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
  - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostats are installed)
  - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
  - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
  - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values.
  - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
  - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
  - Time schedule override: Closing of this contact cancels the programmed time schedule.
  - Out of service: This signal indicates that the chiller is completely out of service.
  - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity.
  - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
  - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

TECHNICAL INSIGHTS

New generation of Carrier 06Z variable-speed twin screw compressor

The new generation of 06Z variable-speed twin screw compressors benefits for Carrier's long experience in the development of twin-rotor screw compressors. The 06Z compressor design is based on the successful 06T screw compressor, core of the well-known Aquaforce series with a number of modifications to reduce noise level and improve the energy efficiency especially during part load operation.

- New 06Z twin screw compressor optimized for variable speed operation: elimination of the slide valve, built in volume index control (Vi) valve for both optimal full and part load performance, high efficiency AC motor with stepless inverter control from 20% to 100%
- Separate air-cooled inverter drive for increased reliability
- New 06Z twin screw compressor design with Integrated Resonator Array (IRA) to reduce the sound level by up to 6 dB(A) when compared with previous 06T generation
- Integrated Check Valve for quiet shutdown
- Bearing life exceeding 100 000 hours.
- A dedicated oil separator is installed at the discharge of each compressor to ensure maximum oil return: Oil separates from refrigerant by gravity and returns to the low pressure side of the compressor without use of additional pumps.
- Volume index control (Vi) valve provides a reliable method of adjusting the compression ratio to better match system demand. It provides optimal performance regardless of operating condition
- Screw compressors work on the positive displacement principle to compress gas to a higher pressure. As a result, if there is an unusually high pressure in the condenser (due for example to coil fouling or operation in harsh climate) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode).
- The silencer in the oil separator line (at the compressor outlet) considerably reduces discharge gas pulsations for much quieter operation.

TECHNICAL INSIGHTS

Novation® Heat Exchangers with Microchannel Coil Technology

Already utilised in the automobile and aeronautical industries for many years, the Novation™ Micro-Channel Heat Exchanger (MCHE) used in the Aquaforce is entirely made of aluminum. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminum) come into contact in traditional heat exchangers.

- From the energy efficiency point-of-view the Novation® heat exchangers are approximately 10% more efficient than traditional coils and micro-channel coil technology allows a 40% reduction in the amount of refrigerant used in the chiller.
- The reduced depth of the Novation™ MCHE reduces air pressure losses by 50% and makes it much less susceptible to fouling (e.g. by sand). Cleaning of the Novation™ MCHE heat exchanger is very fast using a high pressure washer.
- To further enhance long-term performance, and protect coils from early deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.
  - The Novation™ MCHE with Enviro-Shield protection (option 262) is recommended for installations in moderately corrosive environments. The Enviro-Shield protection utilises corrosion inhibitors which actively arrest oxidation in case of mechanical damage.
  - The Novation™ MCHE with exclusive Super Enviro-Shield protection (option 263) is recommended for installations in corrosive environments. The Super Enviro-Shield protection consist of an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.
- After a total of more than 7,000 hours of testing following various test standards in UTC laboratories, the Carrier Novation® MCHE with Super Enviro-shield® coating appears to be the best-suited customer choice to minimize the harmful effects of corrosive atmospheres and ensure long equipment life.
  - Best corrosion resistance per ASTM B117/D610 test
  - Best heat transfer performance per Carrier Marine 1 test
  - Proven reliability per ASTM B117 test

Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Very good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	ad	Bad	No coil leak	Bad

TECHNICAL INSIGHTS

New generation of Flying Bird VI fans with EC motors

The 30KAV utilizes Carrier's the 6th generation Flying BirdTM fan technology, engineered for maximum efficiency, super low noise, and wide operating range. The fan includes Carrier patented rotating shroud technology and back-swept blades with a unique wave-serration trailing edge inspired from nature.

It was designed and optimized for the 30KAV air management system configuration and heat exchanger technology and is offered with induction and EC motor options. The fan meets the latest European eco-design requirements for fan efficiency. The fan uses Carrier's robust and proven injection molded composite-thermoplastic construction.

OPTIONS

Options	No.	Description	Advantages	30KAV models
Low noise level	15	Sound absorbing & aesthetic compressor enclosure and oil separator acoustic treatment	Noise level reduction by 1 to 2 dB(A)	500-1100
Very low noise level	15LS	Sound absorbing & aesthetic compressor enclosure and oil separator, evaporator and suction line acoustic treatment, combined with low-speed fans	Noise level reduction in sensitive environments	500-1100
High ambient temperature	16	Electrical components sized for part load operation up to 55°C air ambient	Extended unit part-load operation up to 55°C ambient temperature	500-1100
EC fans	17	Unit equipped with EC fans	Enhances the unit energy efficiency	500-1100
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrical box from dust, water and sand. In general this option is recommended for installations in polluted environments	500-1100
Grilles and enclosure panels	23	Metallic protection grilles and side enclosure panels	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	500-1100
Enclosure panels	23A	Side enclosure panels	Improves aesthetics and piping protection against impacts.	500-1100
Water exchanger frost protection	41A	Electric resistance heater on the water exchanger and discharge valve	water exchanger frost protection down to -20°C outside temperature	-11
Evaporator & hydraulic module frost protection	41B	Electric resistance heater on water exchanger, discharge valve and hydraulic module	Water exchanger and hydraulic module frost protection down to -20°C outside temperature	500-800
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallel operation with operating time equalisation	500-1100
Main disconnect switch with short-circuit protection	70D	Circuit breaker equipped with an external disconnect switch handle	Ensure protection of main disconnect switch and associated cables against short-circuits when building devices are not compliant	500-1100
Evap. and pumps with aluminum jacket	88A	Evaporator and pumps covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	500-800
Service valve set	92	Liquid line valve (evaporator inlet), compressor suction and discharge line valves and economiser line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	500-1100
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	500-1100
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	500-1100
LP VSD dual-pump hydraulic mod.	116A	Dual low-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter.	Easy and fast installation (plug & play), significant pumping energy cost savings, tighter water flow control, improved sytem reliability	500-800
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter.	Easy and fast installation (plug & play), significant pumping energy cost savings, tighter water flow control, improved sytem reliability	500-800
High Energy Efficiency	119	Additional condenser coil to improve unit energy efficiency	Enhances the unit energy efficiency performance	-11
High Energy Efficiency+	119+	Additional condenser coil plus EC fans to improve unit energy efficiency	Enhances the unit energy efficiency performance	500-1100
J-Bus gateway	148B	Bi-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	500-1100
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	500-1100
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	500-1100
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	500-1100
Refrigerant leak detection	159	One refrigerant leak detector per circuit	Minimises refrigerant loss	500-1100

OPTIONS

Options	No.	Description	Advantages	30KAV models
Dual relief valves on 3-way valve	194	Three-way valve upstream of the relief valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	500-1100
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	500-1100
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	500-1100
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	500-1100
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	500-1100
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	500-1100
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	500-1100
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	asy installation	500-1100
Evaporator with aluminum jacket	281	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	500-1100
EMC class. C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interference. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allows compliance with emissions level required in category C2	500-1100
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	500-1100
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	500-800
Carrier Connect link (only uropean distributor company)	298	3G router board NOTE 1: require option 149 NOTE 2: when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 NOTE 3: if the Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	500-1100
Variable Water Flow control	299	hydraulic control function package that permits control of the water flow rate based on different possible logics (at customer choice): constant ΔT, constant outlet pressure and "fixed-speed" control	When variable-speed pumps on the primary circuit, the VWF control modulates flow rate through the evaporator, minimising pump consumption while ensuring safe/optimised chiller operation	500-1100
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE 5010-5 :2014.	500-1100
Compliance with Qatar regulation	19	Specific nameplate on the unit with power supply 415 V+/-6%	Compliance with KAHRAMAA regulation in Qatar.	0-11

PHYSICAL DATA

Standard units and Units with EC fans option (17)

30KAV				500	550	600	650	720	800	900	1000	1100
Cooling												
Standard unit Full load performances*	CA1	Nominal capacity	kW	493	537	600	636	723	791	892	975	1079
		EER	kW/kW	3,00	2,91	3,14	2,98	3,19	3,03	3,07	2,98	3,05
		Eurovent class		B	B	A	B	A	B	B	B	B
Standard unit Seasonal energy efficiency		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,97**	**4,95**	**5,23**	**5,21**	**5,34**	**5,15**	**5,24**	**5,13**	**5,27**
		ηs cool $_{12/7°C}$	**%**	**196**	**195**	**206**	**205**	**211**	**203**	**207**	**202**	**208**
		SEER $_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	**6,25**	**6,28**	**6,73**	**6,70**	**6,96**	**6,30**	**6,66**	**6,47**	**6,81**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,81**	**5,77**	**6,49**	**6,37**	**6,54**	**5,63**	**6,17**	**5,70**	**6,03**
Unit + option 17 Seasonal energy efficiency		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,02**	**5,00**	**5,29**	**5,27**	**5,42**	**5,21**	**5,32**	**5,20**	**5,35**
		ηs cool $_{12/7°C}$	**%**	**198**	**197**	**209**	**208**	**214**	**205**	**210**	**205**	**211**
		SEER $_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	**6,34**	**6,36**	**6,84**	**6,80**	**7,08**	**6,39**	**6,78**	**6,59**	**6,94**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,86**	**5,81**	**6,55**	**6,43**	**6,62**	**5,69**	**6,25**	**5,76**	**6,10**
Sound levels												
Standard unit												
Sound power(1)			dB(A)	95	95	96	98	99	98	99	98	100
Sound pressure at 10 m(2)			dB(A)	63	63	64	65	66	65	67	65	67
Unit + option 15(3)												
Sound power(1)			dB(A)	94	94	94	96	97	96	97	97	98
Sound pressure at 10 m(2)			dB(A)	62	62	61	64	64	63	65	64	65
Unit + option 15LS(3)												
Sound power(1)			dB(A)	90	90	90	92	94	92	94	93	94
Sound pressure at 10 m(2)			dB(A)	57	58	58	59	61	60	62	60	61
Dimensions												
Standard unit												
Length			mm	4350	4350	5540	5540	6735	6735	7925	7925	9120
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2297	2297	2297	2297	2297	2297	2297	2297	2297
Unit + options 116A/116W(3)												
Length			mm	5540	5540	5540	5540	6735	6735	-	-	-
Operating weight(4)												
Standard unit			kg	4800	4813	5197	5223	5705	6127	6604	7057	7484
Unit + options 116A/116W(3)			kg	5314	5428	5623	5649	6261	6682	-	-	-
Compressors				Inverter driven 06Z twin screw compressor with AC motor								
Circuit A			Quantity	1	1	1	1	1	1	1	1	1
Circuit B			Quantity	1	1	1	1	1	1	1	1	1
Unit minimum capacity(5)			%	13	12	11	10	10	10	10	11	10
Refrigerant(4)				R134a (GWP=1430, ODP=0)								
Circuit A			kg	51	51	56	63	70	79	95	89	99
			teqCO_2	73	73	80	90	100	113	136	127	142
Circuit B			kg	52	52	57	64	71	61	75	90	100
			teqCO_2	74	74	82	92	102	87	107	129	143

* In accordance with standard EN14511-3:2013.

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

ηs cool$_{12/7°C}$ & SEPR$_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

(1) in dB ref=10^{-12} W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod.

(4) Values are guidelines only. Refer to the unit name plate.

(5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.

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Eurovent certified values

PHYSICAL DATA

Standard units and Units with EC fans option (17)

30KAV		500	550	600	650	720	800	900	1000	1100
Oil		SW220								
Circuit A	l	20	20	20	20	20	20	20	20	20
Circuit B	l	20	20	20	20	20	20	20	20	20
Unit control		Touch Pilot with 7 inch coloured touch screen interface								
Languages		10 languages (DE, EN, ES, FR, IT, NL, PT, TR, TU + one on customer choice)								
Smart energy metering		Standard feature								
Wireless connectivity		Option								
Expansion valve		Electronic expansion valve								
Air heat exchanger		Novation™ Micro Channel Heat Exchanger								
Fans										
Standard unit		Inverter driven Flying Bird™ VI fans with AC motor								
Unit + option 17		Inverter driven Flying Bird™ VI fans with EC motor								
Quantity		6	6	8	8	10	10	12	12	14
Maximum total air flow	l/s	35580	35580	47440	47440	59300	59300	71160	71160	83020
Maximum rotation speed	r/s	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0
Maximum total air flow + option 15LS(3)	l/s	28920	26100	41600	43200	56000	50000	67200	57840	72800
Maximum rotation speed + option 15LS(3)	r/s	13,2	12,0	14,2	14,7	15,2	13,7	15,2	13,2	14,2
Water heat exchanger		Flooded shell and tube heat exchanger								
Water volume	l	83	88	96	100	115	126	144	165	183
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Double pump, screen filter, relief valve, water drain valve, pressure sensors, expansion tank (option), heaters (option)								
Pump		Inverter driven dual pumps with AC motor								
Expansion vessel volume	l	80	80	80	80	80	80	-	-	-
Max. water-side operating pressure	kPa	400	400	400	400	400	400	-	-	-
Water connections		Victaulic® type								
Without options 116A/116W(3)										
Connections	pouces	5	5	6	6	6	6	8	8	8
Outside tube diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	219,1	219,1	219,1
With options 116A/116W(3)										
Connections	pouces	5	5	5	5	5	5	-	-	-
Outside tube diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	-	-	-
Casing paint		Colour code RAL 7035								

(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod.
(5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.

PHYSICAL DATA

Units with High energy efficiency option (119) and High energy efficiency+ option (119+)

30KAV options 119/119+				500	550	600	650	720	800	900	1000	1100
Cooling												
Unit + option 119+ Full load performances*	CA1	Nominal capacity	kW	517	575	611	661	731	819	907	1010	1097
		EER	kW/kW	3,49	3,41	3,42	3,32	3,37	3,35	3,29	3,30	3,25
		Eurovent class		A	A	A	A	A	A	A	A	A
Unit + option 119 Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,32**	**5,32**	**5,40**	**5,38**	**5,44**	**5,36**	**5,31**	**5,29**	**5,33**
		ηs $cool_{12/7°C}$	**%**	**210**	**210**	**213**	**212**	**215**	**212**	**209**	**209**	**210**
		$SEER_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	**6,94**	**6,97**	**7,03**	**7,00**	**7,15**	**6,76**	**6,84**	**6,74**	**6,94**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**7,03**	**6,92**	**6,97**	**6,83**	**6,87**	**6,58**	**6,55**	**6,49**	**6,47**
Unit + option 119+ Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,43**	**5,43**	**5,50**	**5,47**	**5,53**	**5,47**	**5,41**	**5,40**	**5,43**
		ηs $cool_{12/7°C}$	**%**	**214**	**214**	**217**	**216**	**218**	**216**	**213**	**213**	**214**
		$SEER_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	**7,12**	**7,15**	**7,19**	**7,16**	**7,32**	**6,92**	**6,99**	**6,92**	**7,12**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**7,14**	**7,03**	**7,07**	**6,94**	**6,98**	**6,68**	**6,66**	**6,60**	**6,57**
Sound levels												
Unit + option 119+												
Sound power(1)			dB(A)	96	96	97	98	99	98	100	98	100
Sound pressure at 10 m(2)			dB(A)	63	63	64	66	66	65	67	65	67
Unit + options 15 + 119+(3)												
Sound power(1)			dB(A)	95	95	94	96	97	96	98	98	98
Sound pressure at 10 m(2)			dB(A)	62	62	62	64	64	64	65	65	65
Unit + options 15LS + 119+(3)												
Sound power(1)			dB(A)	90	91	91	92	94	92	94	93	94
Sound pressure at 10 m(2)			dB(A)	57	58	58	59	61	60	61	60	61
Dimensions												
Unit + option 119/119+												
Length			mm	6735	6735	6735	6735	7925	9120	9120	10305	10305
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2297	2297	2297	2297	2297	2297	2297	2297	2297
Unit + option 119/119+ + options 116A/116W(3)												
Length			mm	6735	6735	6735	6735	7925	9120	-	-	-
Operating weight(4)												
Unit + option 119+			kg	5570	5583	5606	5632	6075	6879	7026	7813	7875
Unit + options 116A/116W(3) + 119+			kg	5979	6093	6081	6107	6678	7524	-	-	-
Compressors				Inverter driven 06Z twin screw compressor with AC motor								
Circuit A			Quantity	1	1	1	1	1	1	1	1	1
Circuit B			Quantity	1	1	1	1	1	1	1	1	1
Unit minimum capacity(5)			%	13	12	11	10	10	10	10	11	10
Refrigerant(4)				R134a (GWP=1430, ODP=0)								
Circuit A			kg	65	65	63	70	74	93	102	103	106
			$teqCO_2$	93	93	90	100	106	133	146	147	152
Circuit B			kg	66	66	64	71	75	75	82	104	107
			$teqCO_2$	94	94	92	102	107	107	117	149	153

* In accordance with standard EN14511-3:2013.
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
ηs $cool_{12/7°C}$ & $SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281
(1) in dB ref=10^{-12} W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod.
(4) Values are guidelines only. Refer to the unit name plate.
(5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.

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Eurovent certified values

PHYSICAL DATA

Units with High energy efficiency option (119) and High energy efficiency+ option (119+)

30KAV options 119/119+		500	550	600	650	720	800	900	1000	1100
Oil		SW220								
Circuit A	l	20	20	20	20	20	20	20	20	20
Circuit B	l	20	20	20	20	20	20	20	20	20
Unit control		Touch Pilot with 7 inch colored touch screen interface								
Languages		10 languages (DE, EN, ES, FR, IT, NL, PT, TR, TU + one on customer choice)								
Smart energy metering		Standard feature								
Wireless connectivity		Option								
Expansion valve		Electronic expansion valve								
Air heat exchanger		Novation™ Micro Channel Heat Exchanger								
Fans										
Unit + option 119		Inverter driven Flying Bird™ VI fans with AC motor								
Unit + option 119+		Inverter driven Flying Bird™ VI fans with EC motor								
Quantity		10	10	10	10	12	14	14	16	16
Maximum total air flow	l/s	59300	59300	59300	59300	71160	83020	83020	94880	94880
Maximum rotation speed	r/s	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0
Maximum total air flow + option 15LS(3)	l/s	44700	43500	52000	52000	64800	67480	75600	74080	83200
Maximum rotation speed + option 15LS(3)	r/s	12,3	12	14,2	14,2	14,7	13,2	14,7	12,7	14,2
Water heat exchanger		Flooded shell and tube heat exchanger								
Water volume	l	83	88	96	100	115	126	144	165	183
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Double pump, screen filter, relief valve, water drain valve, pressure sensors, expansion tank (option), heaters (option)								
Pump		Inverter driven dual pumps with AC motor								
Expansion vessel volume	l	80	80	80	80	80	80	-	-	-
Max. water-side operating pressure	kPa	400	400	400	400	400	400	-	-	-
Water connections		Victaulic® type								
Without options 116A/116W(3)										
Connections	pouces	5	5	6	6	6	6	8	8	8
Outside tube diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	219,1	219,1	219,1
With options 116A/116W(3)										
Connections	pouces	5	5	5	5	5	5	-	-	-
Outside tube diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	-	-	-
Casing paint		Colour code RAL 7035								

(3) Options: 15=Low noise level ; 15LS=Very low noise level ; 116A=LP VSD dual-pump hydraulic mod. ; 116W=HP VSD dual-pump hydraulic mod.
(5) For standard conditions. Depending on operating conditions, unit might have a different minimum capacity or cycle.

ELECTRICAL DATA

Standard units

30KAV		500	550	600	650	720	800	900	1000	1100
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via internal transformer								
Maximum operating input power(1)										
Standard unit	kW	230	251	281	295	329	370	416	458	502
Unit + option 16	kW	248	270	300	315	352	402	451	502	551
Power factor at maximum power(1) (2)		0.91-0.93								
Displacement Power Factor (Cos Phi)		>0.98								
Total harmonic distortion (THDi)(1) (2)	%	35-45								
Nominal operating current draw(3)										
Standard unit	A	265	297	316	340	362	422	468	524	564
Maximum operating current draw (Un)(1)										
Standard unit	A	358	390	436	459	511	575	646	712	780
Unit + option 16	A	385	420	466	490	546	625	701	781	856
Maximum operating current draw (Un-10%)										
Standard unit	A	392	426	477	502	545	629	688	779	831
Unit + option 16	A	422	459	510	537	582	684	747	855	912
Start-up current		Not Applicable (less than the operating current)								

(1) Values obtained at operation with maximum operating power input (data given on the unit nameplate)
(2) May vary depending on short-circuit ratio of the installation
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

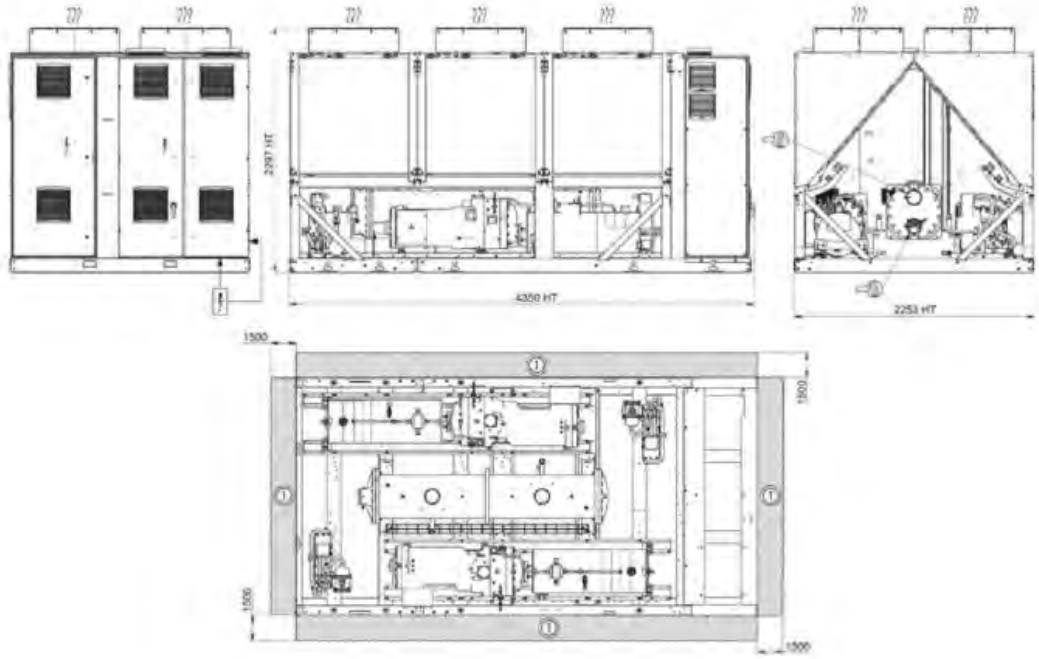
Units with option High energy efficiency (119) and option High energy efficiency+ (119+)

30KAV options 119/119+		500	550	600	650	720	800	900	1000	1100
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via internal transformer								
Maximum operating input power(1)										
Unit + option 119	kW	228	254	264	286	319	362	401	446	484
Unit + option 119+	kW	226	252	261	283	316	359	397	442	479
Unit + option 119 + option 16	kW	245	273	283	306	342	394	436	490	533
Unit + option 119+ + option 16	kW	243	271	280	303	339	391	432	486	528
Power factor at maximum power(1) (2)		0.91-0.93								
Displacement Power Factor (Cos Phi)		>0.98								
Total harmonic distortion (THDi)(1) (2)	%	35-45								
Nominal operating current draw(3)										
Unit + option 119	A	228	260	285	318	346	374	441	466	535
Unit + option 119+	A	225	257	281	314	341	369	435	460	528
Maximum operating current draw (Un)(1)										
Unit + option 119	A	355	395	410	445	495	563	623	693	752
Unit + option 119+	A	352	392	406	441	490	558	617	687	745
Unit + option 119 + option 16	A	382	425	440	476	530	613	678	762	828
Unit + option 119+ + option 16	A	379	422	436	472	525	608	672	756	821
Maximum operating current draw (Un-10%)										
Unit + option 119	A	387	425	448	485	533	614	673	757	811
Unit + option 119+	A	384	422	444	481	528	609	667	751	804
Unit + option 119 + option 16	A	417	458	481	520	570	669	732	833	892
Unit + option 119+ + option 16	A	414	455	477	516	565	664	726	827	885
Start-up current		Not Applicable (less than the operating current)								

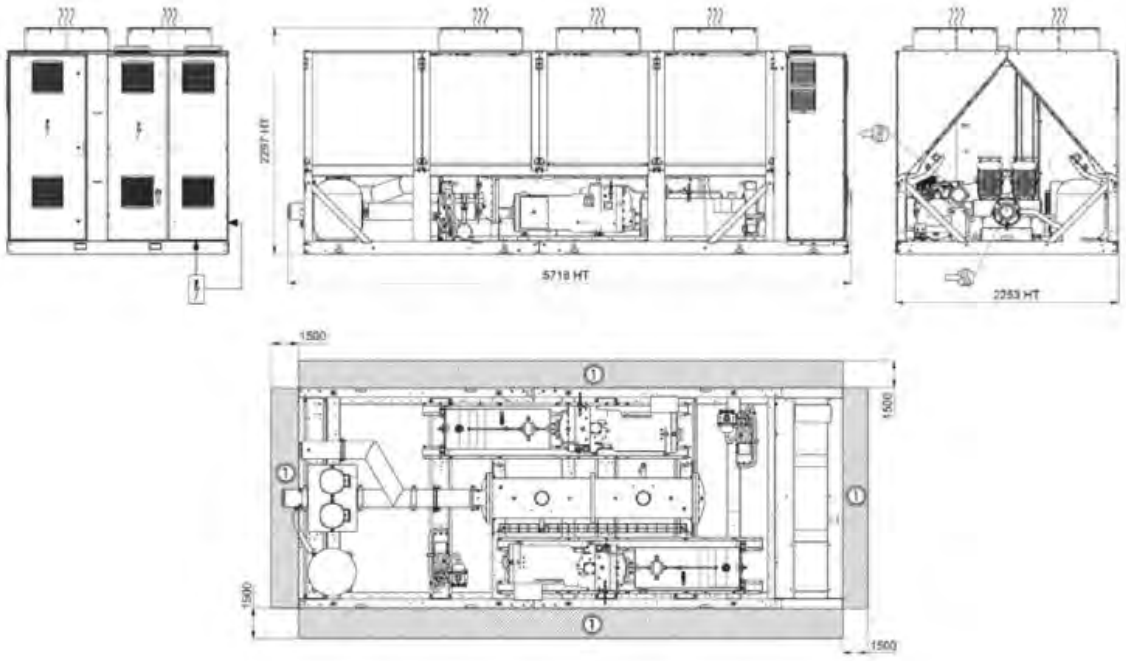
(1) Values obtained at operation with maximum operating power input (data given on the unit nameplate)
(2) May vary depending on short-circuit ratio of the installation
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

DIMENSIONS/CLEARANCES

30KAV 500 & 550 without Hydraulic module



30KAV 500 & 550 with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

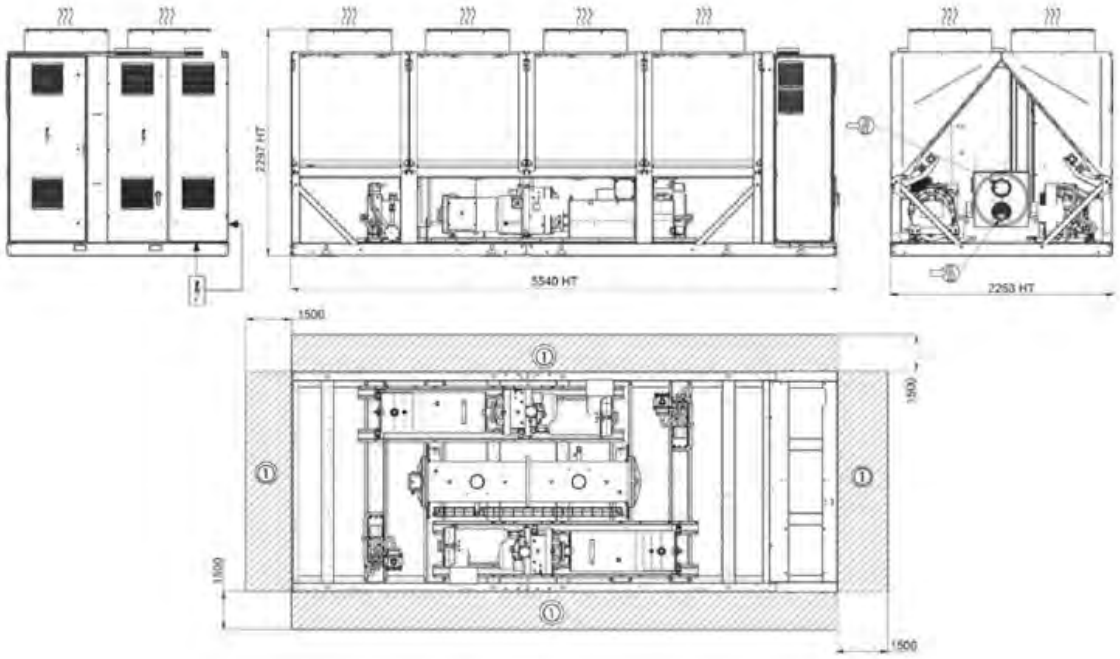
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.

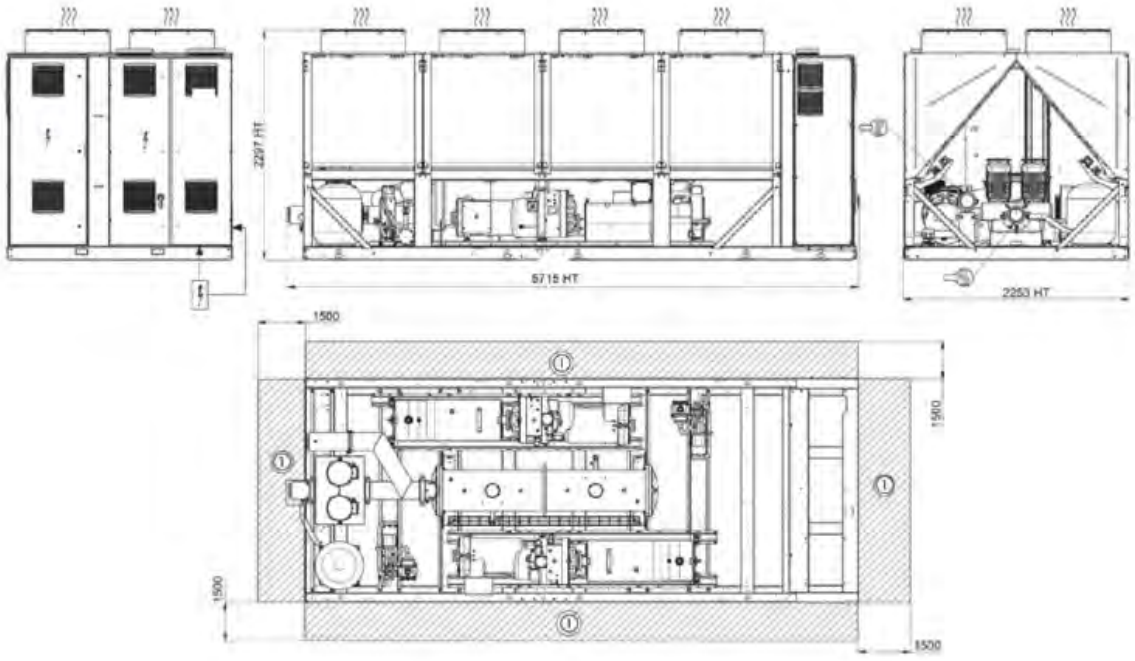
If any unit(s) are close to walls, please refer to chapter "Distance to the wall" of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 600 & 650 without Hydraulic module



30KAV 600 & 650 with Hydraulic module



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
- Water inlet for standard unit
- Water outlet for standard unit
- Air outlet – do not obstruct
- Power electrical connection

NOTES:

Drawings are not contractually binding.

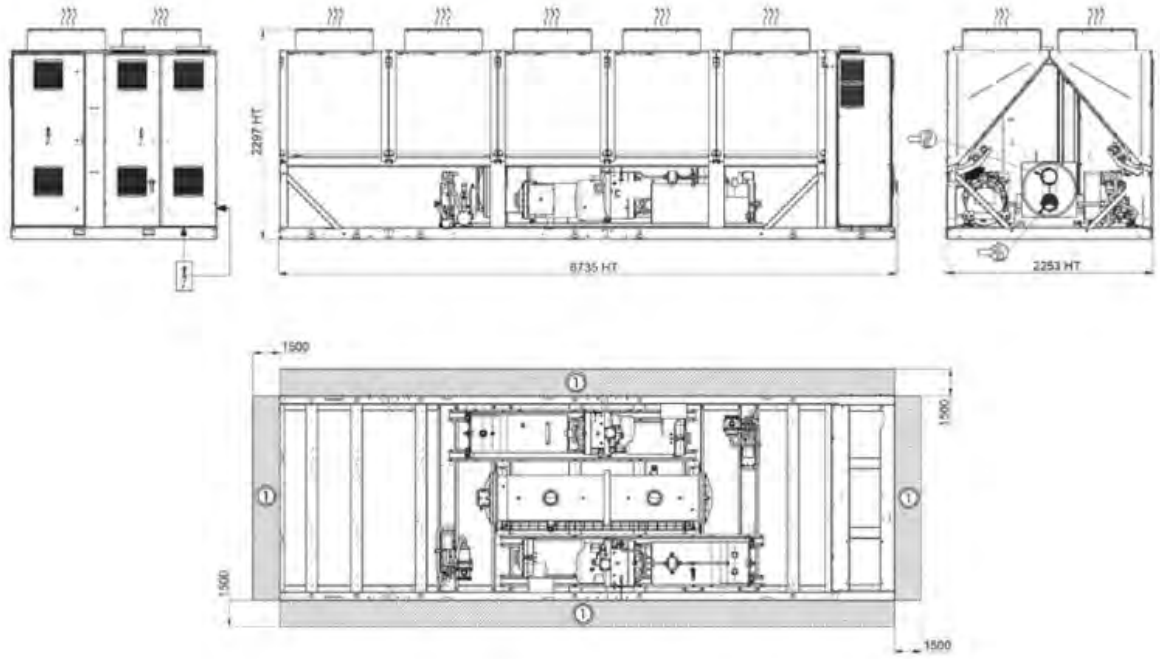
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.

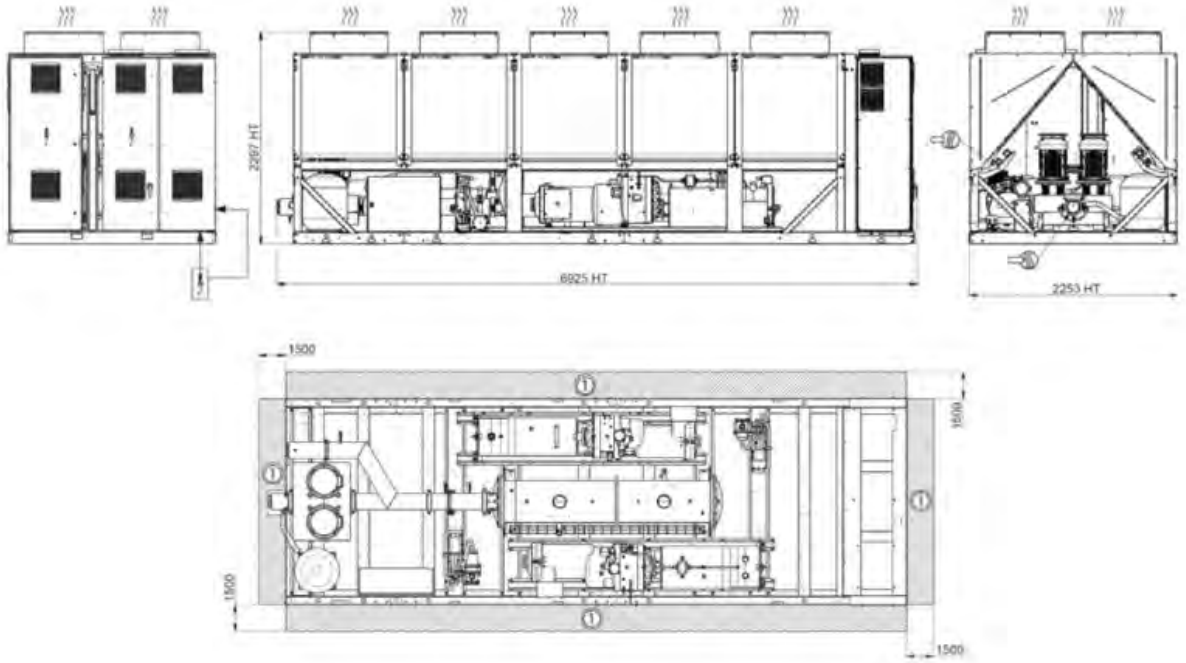
If any unit(s) are close to walls, please refer to chapter "Distance to the wall" of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 500, 550, 600 & 650 opt. 119/119+ 30KAV 720 & 800 without Hydraulic module



30KAV 500, 550, 600 & 650 opt. 119/119+ & 30KAV 720 & 800 with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

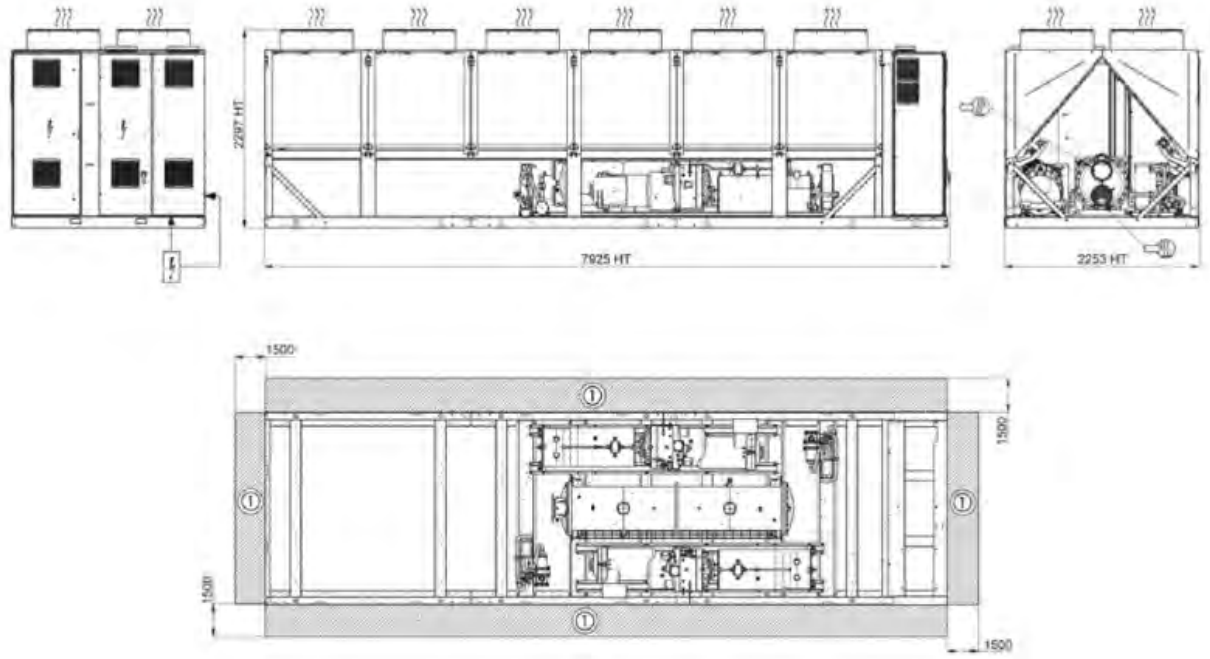
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.

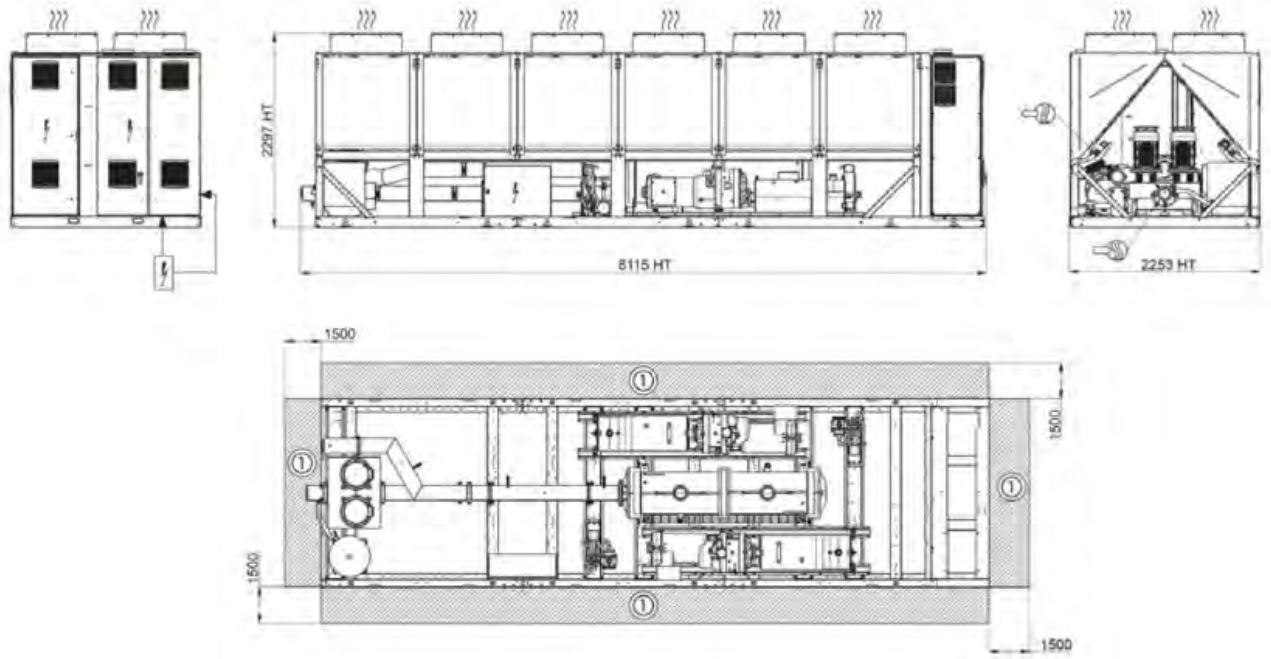
If any unit(s) are close to walls, please refer to chapter "Distance to the wall" of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 720 opt. 119/119+ 30KAV 900 & 1000 without Hydraulic module



30KAV 720 opt. 119/119+ with Hydraulic module



Legend

All dimensions are given in mm.

- ① Required clearances for maintenance (see note)
- Water inlet for standard unit
- Water outlet for standard unit
- Air outlet – do not obstruct
- Power electrical connection

NOTES:

Drawings are not contractually binding.

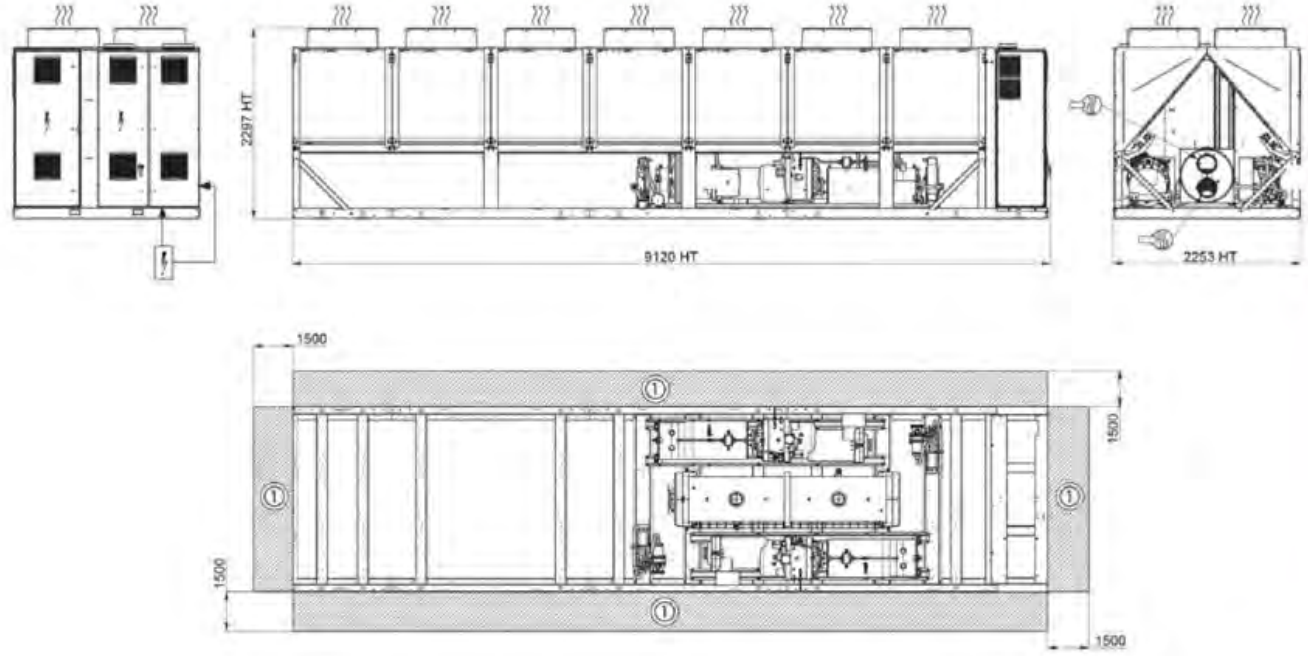
Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.

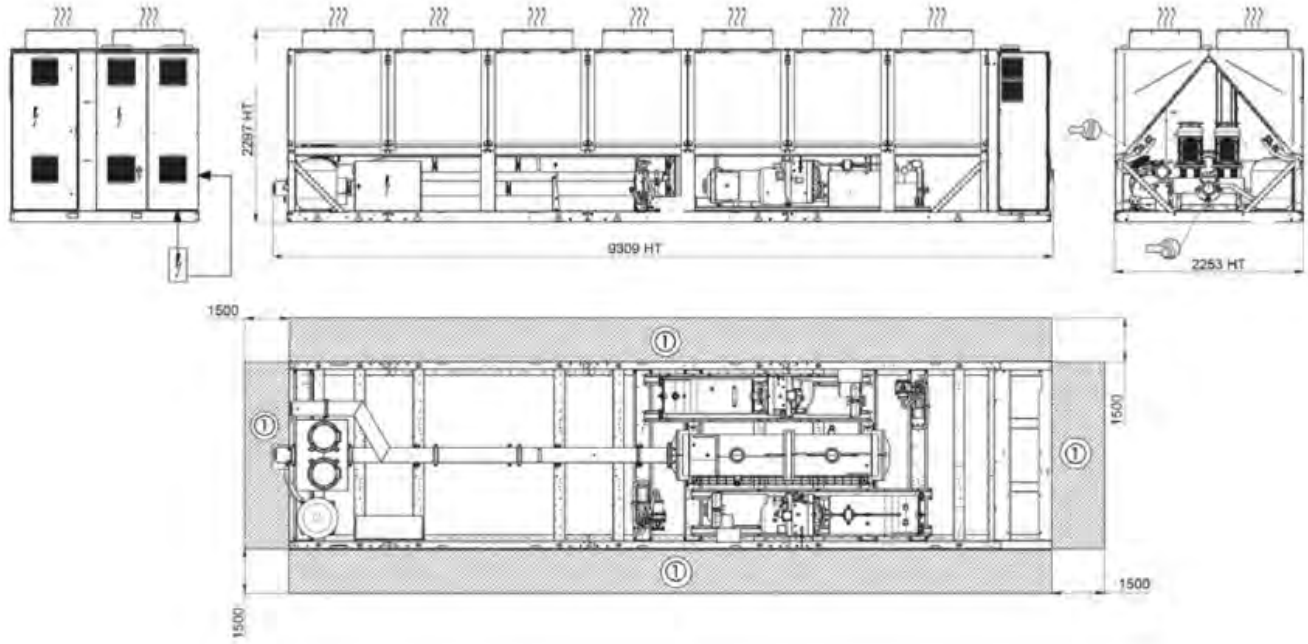
If any unit(s) are close to walls, please refer to chapter "Distance to the wall" of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 800 & 900 opt. 119/119+ 30KAV 1100, without Hydraulic module



30KAV 800 opt. 119/119+ with Hydraulic module



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

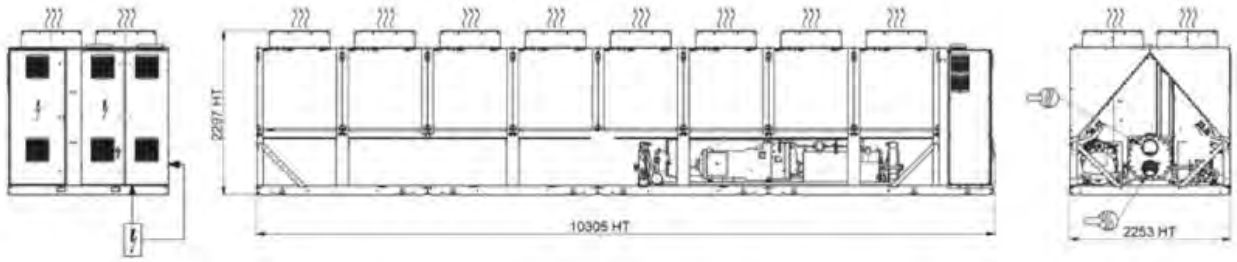
Before designing an installation, consult the certified dimensional drawings, available on request.

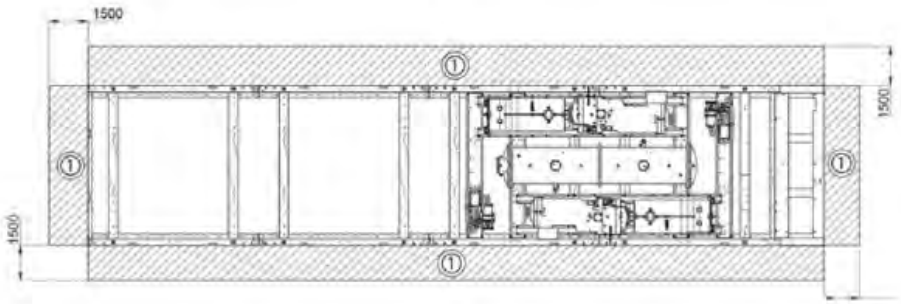
For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.

If any unit(s) are close to walls, please refer to chapter "Distance to the wall" of this document to determine the space required.

DIMENSIONS/CLEARANCES

30KAV 1000 & 1100 opt. 119/119+





Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

Water inlet for standard unit

Water outlet for standard unit

Air outlet – do not obstruct

Power electrical connection

NOTES:

Drawings are not contractually binding.

Before designing an installation, consult the certified dimensional drawings, available on request.

For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.

If any unit(s) are close to walls, please refer to chapter "Distance to the wall" of this document to determine the space required.

Multiple chiller installation

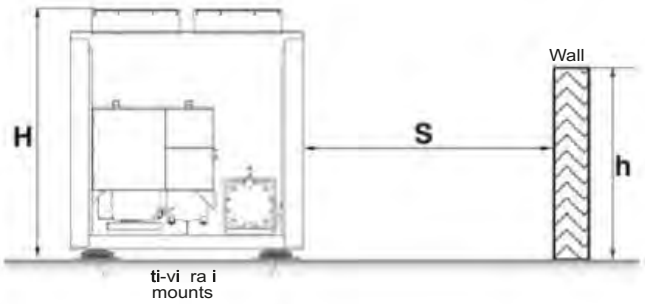
It is recommended to install multiple chillers in a single row, arranged as shown in the example below, to avoid recycling of warm air from one unit to another.

If the situation at the site does not permit this arrangement, contact your Carrier distributor to evaluate the various possible arrangements. In certain situations an accessory (supplied loose at the time of purchase) can be added.

Distance to the wall

To ensure correct operation for most cases:

- If h < H (2,3 m), S minimum = 3 m
- If h > H ou S < 3 m, contact your Carrier distributor to evaluate the various possible arrangements. In certain situations an accessory (supplied loose at the time of purchase) can be added.



WATER-COOLED/CONDENSERLESS LIQUID CHILLERS WITH INTEGRATED HYDRAULIC MODULE

30RW optimized for cooling & heating

30RWA condenserless version

Compact design

Plug and play approach

30RW/30RWA

AQUASNAP.

Nominal cooling capacity 220-315 kW

The 30RW/30RWA AquaSnap liquid chiller range features the latest technological innovations: scroll compressors, digital auto-adaptive Pro-Dialog control and non-ozone depleting refrigerant HFC-407C. AquaSnap can be supplied with hydraulic evaporator and condenser modules as standard, limiting the installation to simple operations such as the entering and leaving water piping connection. An auto-adaptive control algorithm intelligently controls the condenser water pump speed and the operation of the glycol cooler fans (30RW) or of the air-cooled condenser fans (30RWA) to ensure reliable and economical operation under any climate conditions.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

TECHNICAL INSIGHT

“Plug and Play” installation

- Integrated hydraulic modules: they minimise site installation complexity and reduce the required space for the chiller installation.

Evaporator hydraulic module

This consists of a removable screen filter, single or twin-head water pump, expansion tank, water flow switch, relief valve, pressure gauge, and purge valve. A control valve permits adjustment of the flow rate to the water system characteristics. All components are isolated to prevent condensation.

Condenser hydraulic module

This consists of a removable screen filter, single or twin-head variable-speed water pump, expansion tank, relief valve, pressure gauge, and purge valve. The variable-speed pump controls the chiller condensing pressure and makes the installation of a three-way mixing valve on the condenser water circuit unnecessary.

- Fan control: Pro-Dialog also controls the fans of the glycol cooler or remote air-cooled condenser. There are two methods: up to 8 stages maximum with balancing of fan operation times (30RW/RWA), or continuous speed variation (30RWA).
- Quick electrical connections: AquaSnap is equipped with a general disconnect switch and a 24 V control circuit supply transformer as standard. A single power supply entry (three-phase without neutral) supplies the chiller.

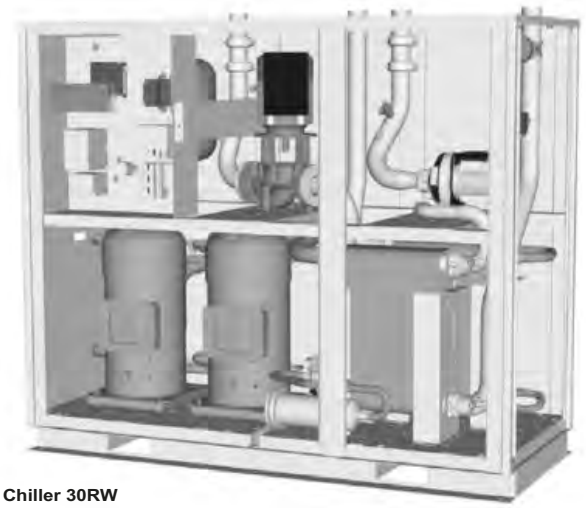
Economical operation

- The condensing pressure is optimised by a patented auto-adaptive algorithm. At part load or moderate outside tempe-rature an algorithm intelligently controls the condenser water pump speed and the operation of the glycol cooler (30RW) or the condenser (30RWA) fans to maintain the condensing pressure at its lowest possible value. The standard 30RW chiller can operate down to -20°C outside temperature.

OPTIONS

Options	No.	Description	Advantages	Use
Low-temperature brine solution	6	Low temperature glycol solution production down to -10 °C with ethylene glycol	Covers specific applications such as ice storage and industrial processes	30RW 210-300
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RW 210-300 30RWA 210-300
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallel operation with operating time equalisation	30RW 210-300
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	30RWA 210-300
HP single-pump hydraulic module	116B	Complete hydraulic module equipped with water filter, expansion tank with relief valve, one high pressure pump, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30RW 210-300 30RWA 210-300
HP dual-pump hydraulic module	116C	Complete hydraulic module equipped with water filter, expansion tank with relief valve, two high pressure pumps, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30RW 210-300 30RWA 210-300
J-Bus gateway	148B	i-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30RW 210-30 30RWA 210-300
BacNet gateway	148C	Bi-directional communication board complying with BacNet protocol	Easy connection by communication bus to a building management system	30RW 210-300 30RWA 210-300
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RW 210-300 30RWA 210-300
High condensing temperature	150	Increased condenser leaving water temperature up to 63°C. Control of the leaving water temperature.	Allows applications with high condensing temperature (for heat reclaim or dry cooler applications)	30RW 210-300
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30RW 210-300 30RWA 210-300
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RW 210-300 30RWA 210-300
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	30RW 210-300
HP cond. variable-speed single-pump	270B	Single high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control.	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RW 210-300
HP cond. variable-speed dual-pump	270C	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control.	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RW 210-30

The drycoolers or air-cooled condensers of the Carrier 09 series are supplied ready for installation with a control box. A simple communication bus connects the liquid chiller to the heat rejection unit. As all control components are installed and tested in the factory, installation and start-up of the chiller and its associated glycol cooler are simplified.



Chiller 30RW

Drycooler 09 PE

PHYSICAL DATA

30RW/RWA				210	245	275	300
30RW							
Cooling							
Standard unit Full load performances*	CW1	Nominal capacity	kW	219	251	288	315
		EER	kW/kW	4,38	4,25	4,36	4,32
		Eurovent class		C	C	C	C
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	kWh/kWh	5,45	5,27	5,47	5,35
		$\eta s\ cool_{12/7°C}$	%	210	203	211	206
		$SEPR_{-2/-8°C}$ Process medium temp.	kWh/kWh	3,65	3,57	3,73	3,75
30RWA							
Cooling							
Standard unit Full load performances*	CS1	Nominal capacity	kW	212	243	282	309
		EER	kW/kW	4	3,92	4,09	4,12
Operating weight(1)							
30RW unit without pump			kg	1357	1471	1557	1557
30RWA unit without pump			kg	1159	1273	1311	1311
Extra weight							
30RW: single evaporator pump (option 116B)			kg	245	245	245	245
30RWA: single evaporator pump (option 116B)				245	285	285	285
30RW/RWA: dual evaporator pump (option 116C)			kg	358	358	358	358
30RW: single condenser pump (option 270B)			kg	265	265	265	265
30RW: dual condenser pump (option 270C)			kg	368	368	368	368
Sound power level - 30RW(2)			dB(A)	81	83	82	82
Sound pressure level at 10 m - 30RW(3)			dB(A)	51	51	52	52
Sound power level - 30RWA(2)			dB(A)	81	83	82	82
Sound pressure level at 10 m - 30RWA(3)			dB(A)	51	51	52	52
Dimensions (length x depth x height)							
Standard unit with or without hydraulic module			mm	2300 x 922 x 1963			
Unit with hydraulic module (options 116B, 116C, 270B, 270C)			mm	2950 x 922 x 19			
Refrigerant				R407C, The RWA units only have a nitrogen holding charge			
Circuit A			kg	19	19	24	24
Circuit B			kg	19	19	24	24
Compressors				Hermetic scroll, 48.3 r/s			
Circuit A				2	2	2	2
Circuit B				2	2	2	2
Capacity steps				4	4	4	4
Minimum capacity			%	21	25	23	25

* In accordance with standard EN14511-3:2013.
CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CS1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, saturated condensing temperature 45°C, subcooling 5 K, evaporator fouling factor 0 m².K/W
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281
$SEPR_{-2/-8°C}$ Applicable Ecodesign regulation: (EU) No 2015/1095
(1) Weight shown is a guideline only.
(2) In accordance with ISO 9614-1 and certified by Eurovent.
(3) For information, calculated from the sound power level Lw(A)).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA

30RW/RWA		210	245	275	300
Control		Pro-Dialog Plus			
Condensers (30RW only)					
Water volume	l	34.9	34.9	46.6	46.6
Max. water-side operating pressure with/without hydraulic module	kPa	-	-	-	-
Condenser hydraulic module (30RW only)					
Pump		Frequency-variator controlled variable-speed composite single or dual centrifugal pump depending on option used, (48.3 r/s at 50 Hz)			
Quantity		1	1	1	1
Capacity	kW	6.7	6.7	6.7	6.7
Expansion tank volume	l	35	50	50	50
Evaporator		Welded direct-expansion plate heat exchanger			
Water volume	l	34.9	34.9	46.6	46.6
Max. water-side operating pressure with/without hydraulic module	kPa	400/1000			
Evaporator hydraulic module, 30RW/RWA					
Pump (centrifugal composite)		Single or dual pump depending on option used, 48.3 r/s			
Expansion tank volume	l	35	50	50	50
Water connection diameter(4)		Victaulic			
Standard field connection	in	3	3	3	3
Welded field connection	mm	88.9	88.9	88.9	88.9
Refrigerant pipe field outside connection diameter, 30RWA		Soldered copper pipe			
Discharge pipe					
Circuit A	in	1 3/8	1 3/8	1 3/8	1 3/8
Circuit B	in	1 3/8	1 3/8	1 3/8	1 3/8
Liquid refrigerant return pipe					
Circuit A	in	1 1/8	1 1/8	1 1/8	1 1/8
Circuit B	in	1 1/8	1 1/8	1 1/8	1 1/8

(4) With tubular sleeve, supplied with the unit, consisting of a Victaulic connection at one end and a plain section at the other end.

ELECTRICAL DATA

Units without hydraulic module

30RW/RWA		210	245	275	300
Power circuit					
Nominal power supply	V-ph-Hz	400-3-50			
Voltage range	V	360-440			
Control circuit supply		The control circuit is supplied via the unit-mounted transformer			
Max. power input* - 30RW/RWA	kW	84.9	97.6	107.9	118.2
Nominal current drawn					
30RW**	A	96.1	108.0	122.0	136.0
30RWA***	A	102.8	116.0	129.4	142.8
Max. current drawn - 30RW/RWA****	A	138.5	156.0	174.0	192.0
Max. start-up current, standard units without soft starter - 30RW/ RWA†	A	314.5	332.0	396.0	414.0
Max. start-up current, units with optional soft starter - 30RW/ RWA††	A	228.5	246.0	288.0	306.0
Three-phase short-circuit holding current - 30RW/RWA	kA	18	18	18	18

* Power input of the compressor(s) at maximum unit operating conditions: entering/leaving evaporator water temperature = 15°C/10°C, maximum condensing temperature of 65°C, and 400 V nominal voltage.

** Nominal unit current draw at standard conditions: evaporator entering/leaving water temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C. The current values are given at 400 V nominal voltage.

*** Nominal unit current draw at standard conditions: evaporator entering/leaving water temperature 12°C/7°C, saturated condensing temperature (dew point) 45°C, subcooling 5 K The current values are given at 400 V nominal voltage.

† Maximum unit operating current at maximum unit power input and 400 V.

†† Maximum instantaneous starting current at 400 V nominal voltage and with compressor in across-the-line start (maximum operating current of the smallest compressor(s) + locked rotor current of the largest compressor).

‡ Maximum instantaneous starting current at 400 V nominal voltage and with compressor with electronic starter (maximum operating current of the smallest compressor(s) + reduced start-up current of the largest compressor).

Electrical data, units with hydraulic modules

The pumps that are factory-installed in these units comply with the European Ecodesign directive ErP. The additional electrical data required by regulation 640/2009 is given in the installation, operation and maintenance manual.This regulation concerns the application of directive 2009/125/EC on the eco-design requirements for electric motors.

Electrical data notes and operating conditions:

- 30RW and 30RWA units have a single power connection point.
- The control box includes the following standard features:
  - the starter and motor protection devices for each compressor and the pumps
  - the control devices
- **Field connections:**
  All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 30RW and 30RWA units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical unit equipment.

NOTES:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

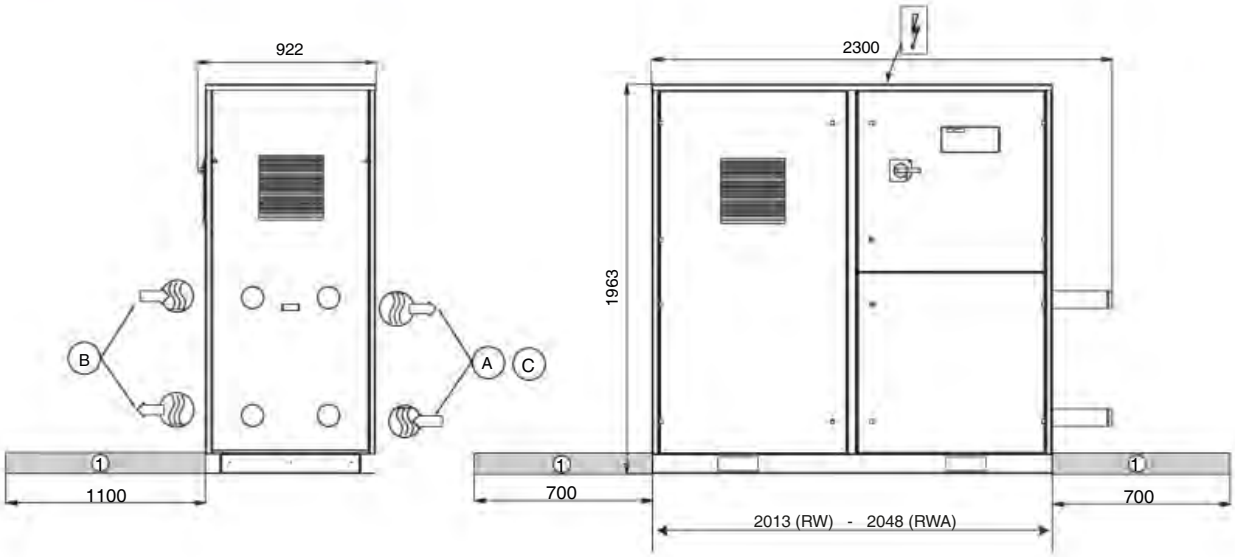
1. The operating environment for the 30RW and 30RWA chillers is specified below:
   - Environment* - Environment as classified in IEC 60364 § 3:
     - ambient temperature range: +5°C to +40°C, class AA4
     - humidity range (non-condensing)*:
       50% relative humidity at 40°C
       90% relative humidity at 20°C
     - altitude: ≥ 2000 m (for hydraulic kit see chapter 4.4 of the installation manual)
     - indoor installation*
     - presence of water: class AD2* (possibility of water droplets)
     - presence of hard solids, class AE2* (no significant dust present)
     - presence of corrosive and polluting substances, class AF1 (negligible)
     - vibration and shock, class AG2, AH2
     - competence of personnel, class BA4* (trained personnel - IEC 60364)
2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
4. Over-current protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947.
6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation.
7. Derived currents: If protection by monitoring of derived currents is necessary to ensure the safety of the installation, the control of the cut-out value must take the presence of leak currents into consideration that result from the use of optional frequency converters in the unit. A value of at least 150 mA is recommended to control differential protection devices.

NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

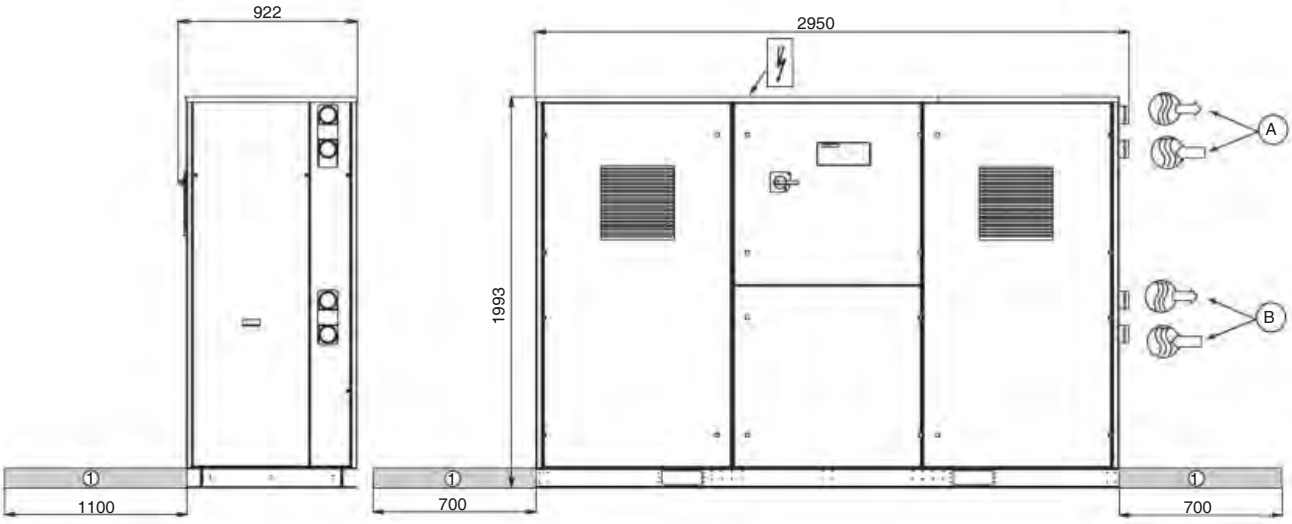
* The protection level of the control boxes required to conform to this class is IP21B (according to reference document IEC 60529). All 30RW and 30RWA units with correctly installed casing panels fulfil this protection condition.

DIMENSIONS/CLEARANCES

30RW/30RWA 210-300 - unit without hydraulic module (standard)



30RW/30RWA 210-300 - unit with hydraulic module (option)



Legend

All dimensions are given in mm

	Water inlet
	Water outlet
A	Condenser (water inlet/outlet for 30RW
B	Evaporator
C	Refrigerant inlet/outlet (30RWA units only)
①	Required clearances for maintenance
	Power supply

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

NEW

HEAT PUMPS AND LIQUID COOLERS WITH WATER COOLED CONDENSER

- Cooling and heating application
- High energy efficiency
- Compact design
- Low sound level
- Broad field of application

30WI

AQUASNAP

Cooling capacity: 220 - 720 kW
Heating capacity: 250 - 820 kW

The new generation of AquaSnap 30WI water cooled heat pumps and water chillers offers an optimal solution for all heating process or cooling applications.

These units are designed to be installed in machine rooms that are protected against freezing temperatures and inclement weather.

The new range has been optimised to use non-ozone depleting HFC R410A refrigerant. The use of this refrigerant guarantees compliance with the most demanding requirements for environmental protection and increased seasonal energy efficiency.

EUROVENT CERTIFIED PERFORMANCE
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CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com
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RANGE

AQUASNAP 30WI

Cooling-only or heating-only models with water-cooled condenser.

Acoustic configuration:
a - STANDARD version
b - LOW NOISE version. Compressor casing
c - VERY LOW NOISE version. Casing with compressor sound insulation

DESCRIPTION

AQUASNAP series 30WI units are packaged machines supplied as standard with the following components:
- SCROLL hermetic compressors,
- Chilled water evaporator with brazed plates,
- Hot water condenser with brazed plates,
- Electrical power and remote control cabinet:
  - 400V-3ph-50Hz general electrical power supply (+10%/-10%) + earth,
  - Transformer fitted as standard on the machine for supplying the remote control circuit with 230V-1ph-50Hz,
- 30WI Control electronic control module.

The AQUASNAP 30WI range complies with the following European standards and directives:
- Machinery directive 2006/42/EC.
- Electromagnetic compatibility directive 2004/108/EC.
- EMC immunity and emissions EN 61800-3 'C3'
- Low voltage directive 2006/95/EC.
- RoHS 2011/65/EU
- Pressure equipment directive (PED) 97/23/EC
- Machinery directive EN 60-204 -1

DESIGNATION

30WI	>	cooling only or heating only version
1200	>	unit size
V	>	R410A refrigerant

DESCRIPTION OF THE MAIN COMPONENTS

■ ***Compressors***

- Hermetic SCROLL type.
- Built-in electric motor cooled by intake gases.
- Motor protected by internal winding thermostat.
- Placed on anti-vibration mounts.

■ ***Evaporator***

- Brazed plate exchanger.
- Stainless steel plates (AISI 316).
- Plate patterns optimised for high efficiency.
- Armaflex thermal insulation.

■ ***Condenser***

- Brazed plate exchanger.
- Stainless steel plates (AISI 316).
- Plate patterns optimised for high efficiency.

■ ***Refrigerating accessories***

- Dehumidifier filters with rechargeable cartridges.
- Hygroscopic sight glasses.
- Solenoid valves on refrigerant lines (700 V to 1200 V models).
- Electronic expansion valves.

■ ***Control and safety instruments***

- High and low pressure sensors.
- High pressure safety valves.
- Water temperature control sensors.
  Evaporator frost protection sensor.
- Factory-assembled evaporator water flow controller.

■ ***Electrical box***

- IP 21.
  400V-3Ph-50 Hz power supply + Earth (+10%/-10%).
- Main safety switch with handle on front.
- Control circuit transformer.
- Circuit breaker for compressor motor.
- Compressor motor switches.
- 30WI Control microprocessor-controlled electronic control module.
  Wire numbering.
- Marking of the main electrical components.
- RAL 7035.

■ ***30WI Control electronic control module.***

The electronic control module performs the following main functions:

- Regulation of the chilled or hot water temperature
- Regulation of the water temperature based on the outdoor temperature (water law).
- Regulation for low temperature energy storage.
- Second set-point management.
- Complete management of compressors with start-up sequence, metering and runtime balancing.
- Self-adjusting and proactive functions with adjustment of parameters on drift control.
- In-series staged capacity-reduction system on compressors based on cooling and heating demands.
- Management of compressor short cycle protection.
- Management of the machine operation limit according to outdoor temperature.
- Operating and fault status diagnostics.
- Management of a fault memory allowing a log of the last 20 incidents to be accessed, with operating readings taken when the fault occurs.
- Master/slave management of the two machines in parallel with runtime balancing and automatic changeover if a fault occurs on one machine.
- Machine time schedule.
- Display and access to the operating parameters via a multilingual LCD screen with 4 lines of 24 characters.

■ ***Remote management***

30WI Control is equipped as standard with an RS485 serial port offering a range of remote management, monitoring and diagnostic options via the communication bus.
Several contacts are available as standard, enabling the AQUASNAP 30WI to be controlled remotely by wired link:

- Automatic operation control: when this contact is open, the machine stops.
- Set-point 1/set-point 2 selector: when this contact is closed, a second cooling set-point is activated (energy storage mode, for example).
- Heating/cooling mode selector: this input switches from one operating mode to another. Contact closed = heating mode.
  Contact open = cooling mode.
- Set-point adjustable via 4-20 mA signal: this input is used to adjust the set-point in heating or cooling mode.
- Compressor load shedding: closing the contact(s) concerned allows the power or refrigerating consumption of the machine to be limited by stopping one or more compressors.
- Water pump 1 and 2 control: these outputs control the switches for one or two water pumps.
- Fault reporting: this contact indicates the presence of a major fault which has caused one or both refrigerating circuits to stop.

■ ***Capacity control***

In-series staged power control system on the compressors:

- 4 stages for 700 V to 1600 V models.
- 6 stages for 1800 V and 2400 V models.
- 8 stages for 2100 V models.

■ ***Casing***

Casing made from RAL 7035 painted panels.

OPTIONS

Options	No.	Description	Advantages	Use
Soft starter	25	Electronic starter for the compressor	Reduced compressor start-up in-rush current	30WI 700-2400
LP/HP pressure gauges	26	Pressure gauges installed on each refrigerating circuit	Direct pressure reading without HMI	30WI 700-2400
Master/Slave	58	Unit equipped with an additional water outlet temperature sensor, to be installed on site, enabling Master/Slave operation of 2 coolers connected in parallel	Optimised operation of two chillers connected in parallel with operating time equalisation	30WI 700-2400
Compressor suction valve	92	Shut-off valve on the compressor suction piping	Easy maintenance	30WI 700-2400
Bacnet gateway	148C	Two-directional communication board using Bacnet protocol	Connects the unit by communication bus to a building management system	30WI 700-2400
Lon gateway	148D	Two-directional communication board using Lon Talk protocol	Connects the unit by communication bus to a building management system	30WI 700-2400
Bacnet/IP	149	Two-directional high-speed communication using Bacnet protocol over Ethernet network (IP)	Easy and high-speed connection by Ethernet line to a building management system. Allows access to multiple unit parameters	30WI 700-2400
Low noise level	257	Compressor casing	Noise level reduction by 3 to 6 dB(A) compared to the standard version	30WI 700-2400
Extremely low noise level	258	Compressor casing + noise insulation	Noise level reduction by 8 to 10 dB(A) compared to the standard version	30WI 700-2400
Remote control unit	275	Remote HMI	Easy remote control of the machine	30WI 700-2400
Electrical energy meter	294	Display of the instantaneous consumption (voltage, current, electrical power) and cumulative consumption (kWh). Reduction of the unit's power consumption based on a maximum electrical power configured in the controller.	Enables acquisition, surveillance and optimisation of the machine's power consumption	30WI 700-2400
Refrigerant leak detection		Refrigerant detector installed inside the compressor casing (option 257 or 258 compulsory)	Enables automatic detection of a refrigerant leak on the machine	30WI 700-2400
Phase monitor		Phase control relay mounted in the electrical cabinet	Reinforced compressor protection with monitoring of rotation direction, absence and asymmetry of phases	30WI 700-2400
elay board with potential-free (dry) contacts		Remote information reporting board with modulating potential-free (dry) contacts for the main operating statuses and faults	Easy remote diagnostics on the machine	30WI 700-2400

TECHNICAL SPECIFICATIONS

30WI			700 V	800 V	900 V	1000 V	1100 V	1200 V	1400 V	1600 V	1800 V	2100 V	2400 V
Version Standard Low Noise Very Low Noise	Cooling capacity(1)	kW	217	251	288	327	356	385	443	499	582	657	713
	Input power(1)	kW	48,2	55,2	64,2	73	79,2	85,6	97,4	110,4	125	146	168
	EER(1)	kW/kW	4,5	4,55	4,48	4,48	4,49	4,50	4,55	4,52	4,66	4,51	4,24
	SEPR -2/-8° Process medium temp.*	kWh/kWh	3,99	4,10	4,04	4,08	4,01	4,01	4,26	4,29	4,56	4,69	4,67
	ESEER	kW/kW	5,53	5,59	5,48	5,38	5,44	5,47	5,44	5,34	5,64	5,48	5,34
	Net Seasonal Coefficient of Performance (SCOP)(2)	kW/kW	5,59	5,63	5,7	5,54	5,49	5,49	5,55	5,55	4,72	4,99	4,54
	ηs heat	%	216	217	220	213	212	212	214	214	181	192	174
	Prated	kW	257,76	296,29	332,64	375,45	411,63	451,4	520,6	580,25	687,35	754,11	868,65
	Lw / Lp - standard(3)	dB(A)	89 / 57	90 / 58	90 / 58	89 / 57	90 / 58	91 / 59	95 / 63	96 / 64	93 / 61	95 / 63	97 / 65
	Lw / Lp Low Noise(3)	dB(A)	84 / 52	85 / 53	85 / 53	86 / 54	87 / 55	88 / 56	90 / 58	91 / 59	89 / 57	90 / 58	91 / 59
	Lw / Lp Very Low Noise(3)	dB(A)	79 / 47	80 / 48	80 / 48	80 / 48	81 / 49	82 / 50	85 / 53	86 / 54	85 / 53	86 / 54	87 / 55
Refrigerating circuit	Refrigerant (GWP)		R410 (GWP=2088)										
	Number		2										
	Refrigerant circuit 1	kg	13,5	15,5	16,4	17	19,7	21,3	21,5	23	31	33	34
	Refrigerant circuit 2	kg	14	15	16,4	17,2	19,7	21,3	21	22	31	34	34
	Tonne of CO_2 equivalent	TCO_2Eq	57,42	63,68	68,49	71,41	82,27	88,95	88,74	93,96	129,46	139,9	141,98
Compressor	Type		Hermetic scroll (- 2900 rpm)										
	Number		4	4	4	4	4	4	4	4	6	6	6
	Start-up mode		Direct in line in series										
	Number of stages		6	4	6	4	6	4	6	4	6	8	6
	Capacity control %		100-78-71-50-28-21-0	100-75-50-25-	100-78-71-50-28-21-0	100-75-50-25-0	100-78-71-50-28-21-0	1 - 75-50-25-0	100-78-71-50-28-21-0	1 - 75-50-25-0	100-83-66-50-33-16-0	100-84- 6-48-36-30-1 - 15-0	100-83-66-50-33-16-0
	Type of oil for R410A		Polyolester POE										
	Oil load per circuit	l	6.7+6.7	6.7+6.7	6.7+6.7	6.7+6.7	6.7+7.2	7.2+7.2	6.3+6.3	6.3+6.3	3x6.3	3x6.3	3x6.3
Evaporator	Type		Brazed-plate heat exchanger										
	Number		1										
	Water capacity	l	20	23	26	29	32	37	50	57	64	77	77
	Victaulic connection	Ø	DN100	DN100	DN100	DN125	DN125	DN125	DN125	DN125	DN150	DN150	DN150
	Max. pressure, water end	bar	10 bar										
	Min/max water flow	m^3/h	22/70	26/81	29/92	33/105	35/113	38/124	44/137	51/151	61/150	68/150	74/150
Water-cooled condenser	Type		Brazed-plate heat exchanger										
	Number		1										
	Water capacity	l	23	26	29	32	37	40	55	61	73	77	77
	Victaulic connection	Ø	DN100	DN100	DN100	DN125	DN125	DN125	DN125	DN125	DN150	DN150	DN150
	Max. pressure, water end	bar	10 bar										
	Min/max water flow	$^3/h$	19/64	22/74	25/84	28/95	31/103	33/112	38/129	43/143	52/150	59/150	66/163
Dimensions	Length		2099	2099	2099	2099	2099	2099	2499	2499	3350	3350	3350
	Width		996										
	Height	mm	1869	1869	1869	1869	1869	1869	1887	1887	1970	1970	1970
Weight	Weight (empty)	kg	1044	1156	1189	1312	1363	1425	1613	1708	2284	2376	2418
	Weight in operation	kg	1088	1205	1246	1378	1436	1510	1713	1818	2472	2588	2637
ax. storage temperature		°C	+50°C										

* SEPR -2/-8° applicable Ecodesign Regulation (EU) No. 2015/1095

(1) Chilled water 12°C / 7°C and hot water 30°C / 35°C according to standard EN 1411-3:2013

(2) Hot water 30°C/35°C - Average climate conditions according to standard EN 14825-2013

(3) Lw: overall sound power level as per ISO3744
Lp: overall pressure level at 10 metres in a free field calculated using the formula Lp=Lw-10logS

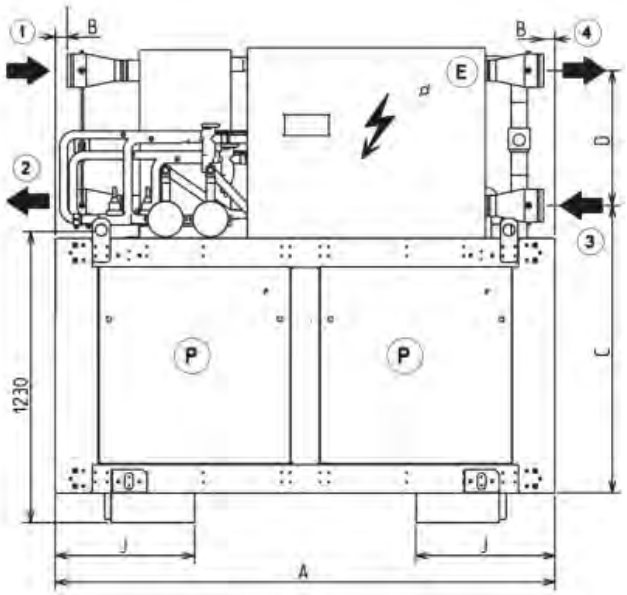
ELECTRICAL SPECIFICATIONS

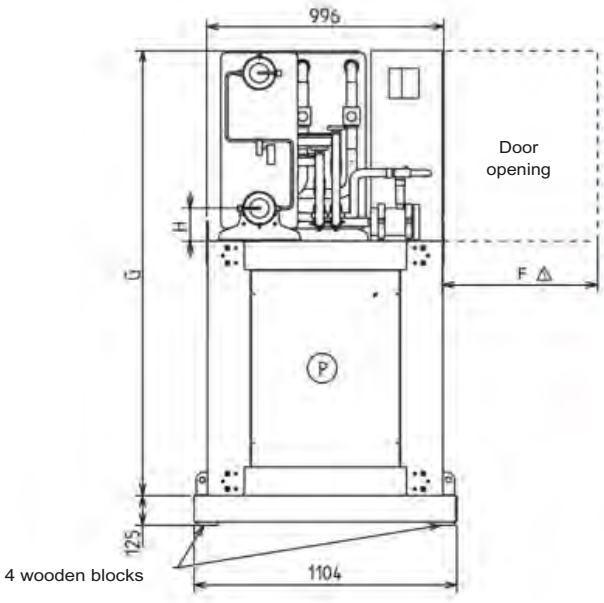
30WI		700 V	800 V	900 V	1000 V	1100 V	1200 V	1400 V	1600 V	1800 V	2100 V	2400 V
		COMPRESSOR										
Voltage	V	400V - 3Ph - 50Hz (+10/- 10%)										
Maximum nominal current	A	140	160	182	205	218	232	266	295	356	399	443
Starting current(1)	A	316	334	391	414	480	494	586	615	607	720	763
Starting current with Soft Start option(1)	A	230	248	287	310	352	366	429	458	483	562	605
		REMOTE CONTROL AUXILIARY CIRCUIT										
Voltage	V	230V - 1Ph - 50Hz (+10/- 10%)										
Maximum nominal current	A	0,8	0,8	0,8	0,8	0,8	0,8	1,3	1,3	1,3	1,3	1,3
Transformer capacity	VA	160	160	160	160	160	160	250	250	250	250	250
Machine protection rating		IP 21										

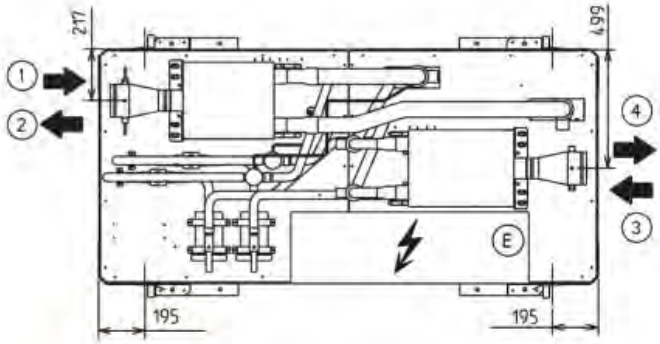
(1) Starting current of largest compressor + maximum current of other compressors under full load
Cable selection nominal current = sum of maximum nominal currents in above tables

DIMENSIONS

■ ***700 V to 1600 V models***







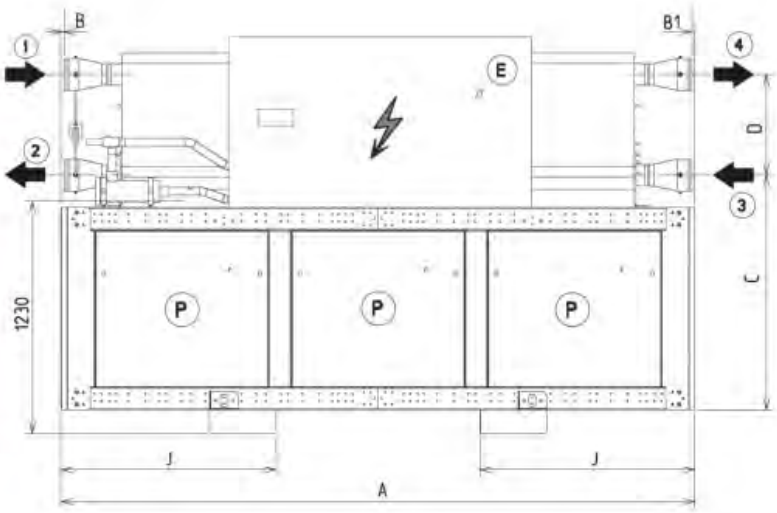
(E) Electrical connection on the side

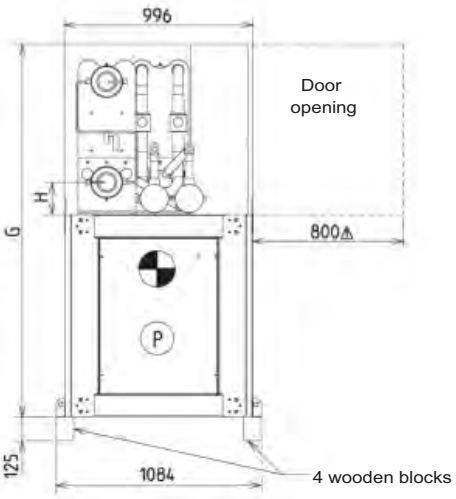
(P) Noise insulation panels option

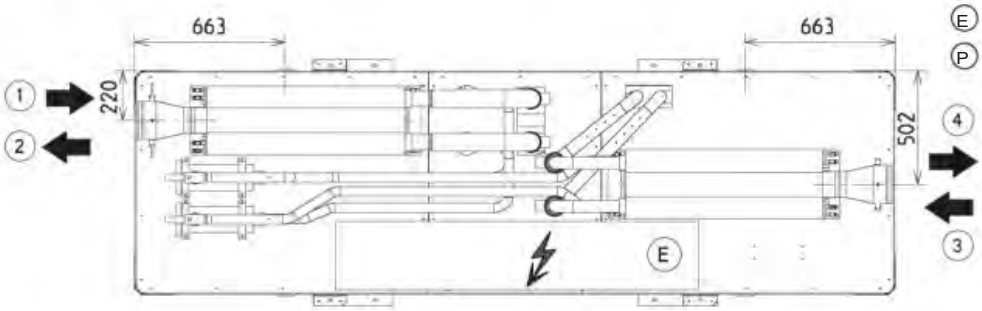
Models	Dimensions (mm)								Chilled water		Hot water		Weight (kg)	
	A	B	C	D	F	G	H	J	Inlet 1	Outlet 2	Inlet 3	Outlet 4	empty	in operation
700 V	2099	49	1207	568	1000	1869	137	585	VICTAULIC DN 100				1044	1088
800 V	2099	49	1207	568	1000	1869	137	585					1156	1205
900 V	2099	49	1207	568	1000	1869	137	585					1189	1246
1000 V	2099	49	1207	568	1000	1869	137	585	VICTAULIC DN 125				1312	1378
1100 V	2099	49	1207	568	1	1869	13						136	1436
1200 V	2099	49	1207	568	1000	1869	137	585					1425	1510
1400 V	2499	60	1240	532	600	1887	170	715					1613	1713
1600 V	2499	60	1240	532	600	1887	170	715					1708	1818

DIMENSIONS

■ *1800 V to 2400 V models*







E Electrical connection on the side

P Noise insulation panels option

Models	Dimensions (mm)								Chilled water		Hot water		Weight (kg)	
	A	B	B1	C	D	G	H	J	Inlet 1	Outlet 2	Inlet 1	Outlet 2	empty	in operation
1800 V	3350	63	63	1240	532	1970	170	1135	VICTAULIC DN 150				2284	2472
2100 V	3350	15	15	1240	532	1970	170	1135					2376	2588
2400 V	3350	1	1	1240	532	1 7	170	1135					241	2637

WATER-COOLED SCREW CHILLERS

Low energy consumption

High reliability

Easy and fast installation

Low operating sound levels

Environmental care

30XW/30XW-P

AQUAFORCE

Nominal cooling capacity 273-1756 kW
Nominal cooling capacity 317-1989 kW

The 30XW liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal perfor-mances and maximum quality.

The 30XW liquid chillers are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- Refrigerant R134a
- Touch Pilot control system
- Flooded heat exchangers that are mechanically cleanable

To meet to all environmental and economic requirements, the 30XW is available in two efficiency classes:

- Entry-level efficiency 30XW units that offer an optimised balance of technical and economical aspects,
- Premium-efficiency 30XW-P units that offer unequalled energy efficiency to satisfy the most stringent demands of building owners wanting to reduce operating costs to the minimum.

The 30XW Aquaforce range is also split into two versions:

- 30XW for air conditioning and refrigeration applications
- 30XWH for heating applications

As standard, the unit can provide an evaporator leaving temperature down to 3,3°C (-12°C optional), and when operating as a heat pump, it can deliver up to 50°C (63°C optional) on the condenser side.

AHRI CERTIFIED® www.ahridirectory.org
Air-Cooled Chillers
AHRI Standards 550/590 and 551/591

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- SEPR up to 8,0 and SEER up to 7,2
- The high energy efficiency is reached through:
- Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Economizer system with electronic expansion device for increased cooling capacity (30XW-P).

Low operating sound levels

■ Standard unit features include:
- Silencers on the compressors discharge line.
- Silencers on the economiser return line.
- Acoustic insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

Easy and fast installation

■ Compact design
- The 30XW units are designed to offer the most compact dimensions on the market.
- With a width of approximately 1 m up to 1600 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

Compact, accessible unit - side view - sizes up to 1600 KW

■ Simplified electrical connections
- Main disconnect switch with high trip capacity
- Transformer to supply the integrated control circuit (400/24 V)

■ Simplified hydraulic connections
- Victaulic connections on the evaporator and condenser
- Practical reference marks for entering and leaving water connections
- Possibility to reverse the heat exchanger water inlet and outlet at the factory
- Possibilty to modify the number of heat exchanger passes

■ Fast commissioning
- Systematic factory operation test before shipment
- Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care

■ R-134a refrigerant
- HFC refrigerant with zero ozone depletion potential

■ Leak-tight refrigerant circuit
- Reduction of leaks as no capillary tubes and flare connections are used
- Verification of pressure transducers and temperature sensors without transferring refrigerant charge
- Discharge line shut-off valve and liquid line service valve for simplified maintenance.

High reliability and easy servicing

■ The 30XW units offer increased global performance as well as Carrier's acclaimed product quality and reliability.

■ Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.

■ Screw compressors
- Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
- All compressor components are easily accessible on site minimising down-time.

■ Refrigerant circuit
- Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.

■ Evaporator
- Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.

■ Auto-adaptive control
- Control algorithm prevents excessive compressor cycling (Carrier patent)
- Automatic compressor unloading in case of abnormally high condensing pressure.

■ Exceptional endurance tests
- Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
- Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

TECHNICAL INSIGHTS

Touch Pilot Control

Touch Pilot control, 5" user interface

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 5'' interface (7» optional)
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the controller box with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and «smart» intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
  - Internal time schedule clock controls chiller on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- The 30XW also communicates with other building management systems via optional communication gateways.
- The 30XW is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/stop of the machine
  - Dual set-point management: through a dedicated contact is possible to activate a second set-point (example: unoccupied mode)
  - Demand limit setting: to limit the maximum chiller capacity to a predefined value
  - Operation visualization: indication if the unit is operating or if it's in stand-by (no cooling load) alarm visualization.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
  - Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
  - Set-point reset: ensures reset of the cooling set-point based on a 4-20 mA signal
  - Demand limit: permits limitation of the maximum chiller power or current based on a 4-20 mA signal
  - Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
  - User safety: this contact can be used for any customer safety loop; opening of the contact generates a specific alarm
  - Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
  - Time schedule override: closing of this contact cancels the time schedule effects
  - Out of service: this signal indicates that the chiller is completely out of service
  - Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
  - Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.

06T screw compressor

The new generation of the Carrier 06T screw compressors benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	No.	Description	Advantages	Use
Medium-temperature brine solution	5	Implementation of new algorithms of control and evaporator redesign to allow chilled brine solution production down to -6°C when ethylene glycol is used (-3°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	Only sizes 512/562/1012/1154
Low-temperature brine solution	6	Implementation of new algorithms of control and evaporator redesign to allow chilled brine solution production down to -12°C when ethylene glycol is used (-8°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	Only sizes 512/562/1012/1154
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	254-1762
Unit supplied in two assembled parts	51	The unit is equipped with flanges that allow disassembly of the unit on site	Facilitates installation in plant rooms with limited access	Only sizes 1612/1652/1702/1762
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two chillers connected in parallel with operating time equalisation	254-1762
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	1002-1762
No disconnect switch, but short circuit protection	82A	Unit without disconnect switch, but with short-circuit protection device	Permits an external electrical disconnect system for the unit (field-supplied), while ensuring unit short circuit protection	254-1762
Evaporator pump electrical power / control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	254-1252, 1314
Evaporator dual pumps electrical power / control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	254-1252, 1314
Condenser pump electrical power / control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	254-1252, 1314
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	254-1762
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	254-1762
Evaporator with one pass	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	254-1762
Condenser with one pass	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	254-1762
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	254-1762
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	254-1762
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	254-1762
eversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	254-1762

OPTIONS

Options	No.	Description	Advantages	Use
JBus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	254-1762
LON gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	254-1762
Bacnet over IP gateway	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	254-1762
High condensing temperature	150	Optimized compressor for operation at high condensing temperature	Increased condenser leaving water temperature up to 63°C. Allows applications with high condensing temperature (heat pumps, installations with not generously sized dry-coolers or more generally, installations with dry-coolers in hot climate). NOTE: to ensure control of the condenser leaving water temperature, this option must be fitted with 30XWH units.	30XWH- / XW-P / XWHP 254-1762 & 30XW--254/304/354
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	254-1762
Control for low condensing temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	254-1762
Energy Management Module EMM	15	Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	254-1762
Touch Pilot control, 7" user interface	158A	Touch Pilot control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use	254-1762
Leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controlller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	254-1762
Compliance with Swiss regulations	1	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	254-1762
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	254-1762
Low noise level	257	vaporator sound insulation	3 dB(A) quiter than standard unit	254-1762
Welded evaporator water connection kit	266	Victaulic piping connections with welded joints	Easy installation	254-1762
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	254-1762
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	254-1762
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	254-1762
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	254-1762
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	254-1762
Carrier Connect link (BSS regions only)	298	3G router board NOTE 1: require option 149 NOTE 2: when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 NOTE 3: if a CARRIER-PSM is on site, option 298 shall be integrated in the PSM while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	254-1762

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-				254	304	354	402	452	552	602	652	702	802
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	323	365	428	546	560	632	642	799	864	941
		COP	kW/kW	6,07	6,07	6,02	5,96	6,09	5,92	5,89	6,10	5,99	5,86
	HW2	Nominal capacity	kW	317	358	421	516	529	599	632	751	813	887
		COP	kW/kW	4,59	4,57	4,61	4,54	4,59	4,47	4,52	4,56	4,49	4,46
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	5,94	6,05	5,83	5,88	5,92	5,92	5,79	6,07	6,01	5,83
		$\eta s\ heat_{30/35°C}$	%	230	234	225	227	229	229	224	235	232	225
		P_{rated}	kW	382	432	507	650	666	748	760	952	1029	1102
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	273	307	359	459	473	532	538	677	730	792
		EER	kW/kW	5,32	5,30	5,24	5,21	5,35	5,21	5,17	5,39	5,30	5,19
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	345	365	458	585	566	596	656	845	884	887
		EER	kW/kW	6,71	6,24	6,57	6,40	6,28	5,74	6,21	6,50	6,21	5,70
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,84**	**5,80**	**5,64**	**5,77**	**5,75**	**5,81**	**5,77**	**6,20**	**6,13**	**5,87**
		$\eta s\ cool_{12/7°C}$	**%**	**231**	**229**	**223**	**228**	**227**	**229**	**228**	**245**	**242**	**232**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**7,57**	**6,92**	**7,66**	**7,47**	**7,58**	**6,56**	**7,28**	**7,91**	**7,54**	**7,30**
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	6,76	6,60	6,50	6,22	6,05	6,57	6,31	6,87	6,70	6,42
Integrated Part Load Value		IPLV.SI	kW/kW	6,843	6,708	6,722	6,664	6,897	6,905	6,891	7,351	7,321	7,184
Sound levels - standard unit													
Sound power level (1)			dB(A)		9	9	99	99	99	99			99
Sound pressure level at 1 m (2)			dB(A)	78	78	78	82	82	82	82	82	82	82
Sound levels - standard unit + option 257(3)													
Sound power level (1)			dB(A)	-	-	-	96	96	96	96	96	96	96
Sound pressure level at 1 m (2)			dB(A)	-	-	-	78	78	78	78	78	78	78
Dimensions - standard unit													
Length				2724	2724	2724	2741	2741	2741	2741	3059	3059	3059
Width			mm	928	928	928	936	936	936	936	1040	1040	1040
Height			mm	1567	1567	1567	1692	1692	1692	1692	1848	1848	1848
Operating weight (4)			kg	1	2036	2072	2575	2575	2613	2644	3247	32 6	282
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	-	-	-	-	-

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CW2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEER_{23/18°C}$	Applicable Ecodesign regulation: (EU) No 2016/2281
IPLV.SI	Calculations according to standard performances AHRI 551-591.
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level.
(4)	Weight shown is guideline only. Please refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

AHRI CERTIFIED www.ahridirectory.org Air-Cooled Chillers AHRI Standards 550/590 and 551/591

AHRI certified values 30XW-only

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Refrigerant (4)		R-134a									
Circuit A	kg	84	80	78	82	82	82	82	145	135	125
	$teqCO_2$	120	114	112	117	117	117	117	207	193	179
Circuit B	kg	-	-	-	-	-	-	-	-	-	-
	$teqCO_2$	-	-	-	-	-	-	-	-	-	-
Oil - standard unit		SW220									
Circuit A	l	23,5	23,5	23,5	32	32	32	32	36	36	36
Circuit B	l	-	-	-	-	-	-	-	-	-	-
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capacity (5)	%	15	15	15	15	15	15	15	15	15	15
Evaporator		Multi-pipe flooded type									
Water volume	l	50	56	61	70	70	70	70	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	55	55	76	76	76	76	109	109	109
Water connections (Victaulic)	in	5		5		5	5		6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-				852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	992	1204	1258	1349	1473	1578	1714	1829	1941	2027
		COP	kW/kW	6,04	5,88	5,79	5,89	6,26	6,03	5,84	5,73	6,01	5,98
	HW2	Nominal capacity	kW	967	1138	1190	1320	1384	1481	1612	1717	1891	1969
		COP	kW/kW	4,64	4,48	4,42	4,54	4,73	4,57	4,46	4,41	4,67	4,68
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	5,90	6,05	5,96	5,99	6,19	5,84	5,64	5,47	5,73	5,70
		$\eta s\ heat_{30/35°C}$	%	228	234	231	232	240	226	218	211	221	220
		P_{rated}	kW	1160	1433	1498	1599	1754	1879	2041	2178	2292	2389
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	839	1017	1060	1141	1257	1342	1453	1547	1654	1728
		EER	kW/kW	5,39	5,26	5,21	5,30	5,69	5,51	5,36	5,29	5,59	5,60
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	922	1297	1348	1351	1678	1837	1916	1903	1944	2009
		EER	kW/kW	5,84	6,44	6,33	6,13	7,25	7,12	6,70	6,25	6,36	6,30
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency	**$SEER_{12/7°C}$ Comfort low temp.**		**kWh/kWh**	**6,27**	**6,47**	**6,53**	**6,44**	**7,14**	**6,93**	**6,75**	**6,63**	**7,05**	**7,03**
	$\eta s\ cool_{12/7°C}$		**%**	**248**	**256**	**258**	**255**	**283**	**274**	**267**	**262**	**279**	**278**
	$SEPR_{12/7°C}$ Process high temp.		**kWh/kWh**	**6,97**	**7,56**	**7,47**	**7,17**	**8,42**	**8,19**	**7,61**	**7,43**	**7,44**	**7,32**
	$SEER_{23/18°C}$ Comfort medium temp.		kWh/kWh	6,68	7,30	7,24	7,13	8,11	8,05	7,72	7,20	7,67	7,56
Integrated Part Load Value	IPLV.SI		kW/kW	7,175	7,539	7,751	7,596	8,066	7,835	7,730	7,575	7,957	7,892
Sound levels - standard unit													
Sound power level (1)			dB(A)		102	102	102	1 2	102	102	102	102	102
Sound pressure level at 1 m (2)			dB(A)	82	84	84	84	83	83	83	83	83	83
Sound levels - standard unit + option 257(3)													
Sound power level (1)			dB(A)	96	99	99	99	99	99	99	99	99	99
Sound pressure level at 1 m (2)			dB(A)	78	80	80	80	80	80	80	80	80	80
Dimensions - standard unit													
Length				2780	4025	4025	4025	4730	4730	4730	4730	4790	4790
Width			mm	1042	1036	1036	1036	1156	1156	1156	1156	1902	1902
Height			mm	1898	1870	1870	1925	2051	2051	2051	2051	1515	1515
Operating weight (4)			kg	492	70	408	5698	7066	7267	730	7	8 1	699
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	1	1	1	1	1	1	1	1	1

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CW2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEER_{23/18°C}$	Applicable Ecodesign regulation: (EU) No 2016/2281
IPLV.SI	Calculations according to standard performances AHRI 551-591.
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level.
(4)	Weight shown is guideline only. Please refer to the unit nameplate.

Eurovent certified values

AHRI certified values 30XW-only

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Refrigerant (4)		R-134a									
Circuit A	kg	158	85	85	105	120	115	110	105	195	195
	$teqCO_2$	226	122	122	150	172	164	157	150	279	279
Circuit B	kg	-	85	85	105	120	115	110	105	195	195
	$teqCO_2$	-	122	122	150	172	164	157	150	279	279
Oil - standard unit		SW220									
Circuit A	l	36	32	32	32	36	36	36	36	36	36
Circuit B	l	-	32	32	32	32	36	36	36	36	36
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capacity (5)	%	15	10	10	10	10	10	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	98	182	182	205	301	301	301	301	354	354
Water connections (Victaulic)	in	6	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	137	193	193	193	340	340	340	340	426	426
Water connections (Victaulic)	in	8		8		8	8	8	8		8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP				512	562	712	812	862	1012	1162	1314	1464	1612	1762
Heating														
Standard unit Full load performances*	HW1	Nominal capacity	kW	596	676	860	923	1009	1216	1352	1545	1705	1890	2048
		COP	kW/kW	6,48	6,39	6,58	6,36	6,35	6,42	6,35	6,38	6,14	6,46	6,35
	HW2	Nominal capacity	kW	583	662	842	904	982	1191	1320	1509	1663	1846	1989
		COP	kW/kW	4,91	4,84	4,97	4,80	4,85	4,90	4,86	4,89	4,71	4,89	4,87
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	6,27	6,33	6,50	6,27	6,27	6,43	6,37	6,22	6,01	6,38	6,29
		$\eta s\ heat_{30/35°C}$	%	243	245	252	243	243	249	247	241	232	247	244
		P_{rated}	kW	706	802	1019	1093	1196	1441	1600	1831	2021	2241	2428
Cooling														
Standard unit Full load performances*	CW1	Nominal capacity	kW	509	577	737	786	861	1039	1157	1323	1452	1626	1756
		EER	kW/kW	5,71	5,64	5,83	5,62	5,65	5,73	5,78	5,80	5,58	5,87	5,79
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	616	705	936	1007	1088	1251	1395	1683	1926	2062	2215
		EER	kW/kW	6,85	6,81	7,24	7,00	6,92	6,85	6,83	7,14	7,10	7,21	7,00
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,79**	**6,02**	**6,6**	**6,37**	**6,28**	**6,75**	**7,17**	**7**	**6,83**	**7,27**	**7,25**
		$\eta s\ cool_{12/7°C}$	%	**229**	**238**	**261**	**252**	**248**	**267**	**284**	**277**	**270**	**288**	**287**
		$SEPR_{12/7°C}$ Process high temp.	kWh/kWh	**7,87**	**7,91**	**8,13**	**7,69**	**7,53**	**7,88**	**7,99**	**8,16**	**7,84**	**8,02**	**7,66**
		$SEER_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	7,88	6,90	7,69	8,26	7,32	7,66	8,01	7,84	7,76	8,52	8,13
Integrated Part Load Value		IPLV.SI	kW/kW	7,323	7,468	7,666	7,513	7,439	7,747	8,125	8,068	7,852	8,201	7,900
Sound levels - standard unit														
Sound power level (1)			dB(A)			99	99	99	102	102	102	102	102	102
Sound pressure level at 1 m (2)			dB(A)	82	82	81	81	81	83	83	83	83	83	83
Sound levels - standard unit + option 257(3)														
Sound power level (1)			dB(A)	96	9	96	96	96	99	99	99			99
Sound pressure level at 1 m (2)			dB(A)	7	7	7	78	78	80	80	80			
Dimensions - standard unit														
Length					9	3290	3290	3290	4730	4730	473	47	4 2	4832
Width			mm	936	936	1069	1069	1069	1039	1039	1162	1162	2129	2129
eight				174	174	19 0	19 0	1950	1997	199	2051	2051	15 2	1562
Operating weight (4)			kg	2981	3020	3912	3947	3965	6872	6950	7542	7752	10910	10946
Compressors				Semi-hermetic 06T screw compressors, 50 r/s										
Circuit A			-	1	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	1	1	1	1	1	1

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEER_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/- 3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/- 3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level.

(4) Weight shown is guideline only. Please refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

AHRI CERTIFIED www.ahridirectory.org Air-Cooled Chillers AHRI Standards 550/590 and 551/591

AHRI certified values 30XW-only

PHYSICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Refrigerant (4)		R-134a										
Circuit A	kg	130	130	180	175	170	120	120	130	130	240	250
	teqCO_2	186	186	257	250	243	172	172	186	186	343	358
Circuit B	kg	-	-	-	-	-	120	120	150	130	240	250
	teqCO_2	-	-	-	-	-	172	172	215	186	343	358
Oil - standard unit												
Circuit A	l	32	32	36	36	36	32	32	36	36	36	36
Circuit B	l	-	-	-	-	-	32	32	32	36	36	36
Capacity control		Touch Pilot, electronic expansion valves (EXV)										
Minimum capacity (5)	%	15	15	15	15	15	10	10	10	10	10	10
Evaporator		Multi-pipe flooded type										
Water volume	l	101	101	154	154	154	293	293	321	321	473	473
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type										
Water volume	l	103	103	148	148	148	316	316	340	340	623	623
Water connections (Victaulic)	in	6	6	8	8	8		8		8	1	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

ELECTRICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	233	233	303	414	414	414	414	587	587	587
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum start-up current**											
Circuit A	A	233	233	303	414	414	414	414	587	587	587
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Cosine phi											
Nominal***		0.83	0.85	0.83	0.87	0.88	0.89	0.89	0.88	0.89	0.90
Maximum****		0.89	0.89	0.88	0.90	0.90	0.91	0.91	0.90	0.91	0.92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	76	89	97	128	135	151	151	184	200	223
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Nominal current drawn***											
Circuit A	A	84	96	113	136	144	162	162	193	214	232
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un)†											
Circuit A	A	123	145	160	206	217	242	242	295	317	351
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un -10%)****											
Circuit A	A	138	162	178	218	230	260	260	304	340	358
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum power input with option 150B†											
Circuit A	kW	67	79	87	114	118	133	134	173	183	205
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un) with option 150B†											
Circuit A	A	109	129	142	183	191	212	212	278	290	325
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	587	414	414	414	587	587	587	587	587	587
Circuit B	A	-	414	414	414	414	587	587	587	587	587
Option 81	A	-	558	574	574	747	780	801	819	819	819
Maximum start-up current**											
Circuit A	A	587	414	414	414	587	587	587	587	587	587
Circuit B	A	-	414	414	414	414	587	587	587	587	587
Option 81	A	-	631	656	656	829	882	904	938	938	938
Cosine phi											
Nominal***		0.90	0.88	0.89	0.89	0.88	0.88	0.89	0.9	0.9	0.9
Maximum****		0.92	0.90	0.91	0.91	0.90	0.90	0.91	0.92	0.92	0.92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	223	150	151	151	184	184	200	223	223	223
Circuit B	kW	-	135	151	151	151	184	200	223	202	223
Option 81	kW	-	284	301	301	334	367	399	447	425	447
Nominal current drawn* **											
Circuit A	A	232	162	162	162	193	193	214	232	232	232
Circuit B	A	-	144	162	162	162	193	214	232	214	232
Option 81	A	-	306	324	324	355	386	427	464	446	464
Maximum current drawn (Un)†											
Circuit A	A	351	242	242	242	295	295	317	351	351	351
Circuit B	A	-	217	242	242	242	295	317	351	317	351
Option 81	A	-	459	484	484	537	590	634	702	668	702
Maximum current drawn (Un -10%)**											
Circuit A	A	358	260	260	260	304	304	340	358	358	358
Circuit B	A	-	230	260	260	260	304	340	358	340	358
Option 81	A	-	490	520	520	564	608	680	716	698	716
Maximum power input with option 150B†											
Circuit A	kW	205	133	133	133	173	173	183	207	207	207
Circuit B	kW	-	118	133	133	133	173	183	207	185	207
Option 81	kW	-	251	265	265	305	346	365	414	391	414
Maximum current drawn (Un) with option 150B†											
Circuit A	A	325	212	212	212	278	278	290	325	325	325
Circuit B	A	-	191	212	212	212	278	290	325	290	325
Option 81	A	-	403	424	424	490	556	580	650	615	650

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit		24 V via the built-in transformer										
Nominal start-up current*												
Circuit A	A	414	414	587	587	587	414	414	587	587	587	587
Circuit B	A	-	-	-	-	-	414	414	414	587	587	587
Option 81	A	-	-	-	-	-	556	574	747	780	801	819
Maximum start-up current**												
Circuit A	A	414	414	587	587	587	414	414	587	587	587	587
Circuit B	A	-	-	-	-	-	414	414	414	587	587	587
Option 81	A	-	-	-	-	-	631	656	829	882	904	938
Cosine phi												
Nominal***		0.88	0.89	0.88	0.89	0.90	0.86	0.87	0.88	0.88	0.89	0.90
Maximum****		0.90	0.90	0.90	0.91	0.92	0.89	0.90	0.90	0.90	0.91	0.92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0	0
Maximum power input†												
Circuit A	kW	135	151	184	200	223	134	151	184	184	200	223
Circuit B	kW	-	-	-	-	-	134	151	151	184	200	223
Option 81	kW	-	-	-	-	-	267	301	334	367	399	447
Nominal current drawn***												
Circuit A	A	144	162	193	214	232	144	162	193	193	214	232
Circuit B	A	-	-	-	-	-	144	162	162	193	214	232
Option 81	A	-	-	-	-	-	288	324	355	386	427	464
Maximum current drawn (Un)†												
Circuit A	A	217	242	295	317	351	217	242	295	295	317	351
Circuit B	A	-	-	-	-	-	217	242	242	295	317	351
Option 81	A	-	-	-	-	-	434	484	537	590	634	702
Maximum current drawn (Un -10%)****												
Circuit A	A	230	260	304	340	358	230	260	304	304	340	358
Circuit B	A	-	-	-	-	-	230	260	260	304	340	358
Option 81	A	-	-	-	-	-	460	520	564	608	680	716
Maximum power input with option 150B†												
Circuit A	kW	118	133	173	183	207	118	133	173	173	183	207
Circuit B	kW	-	-	-	-	-	118	133	133	173	183	207
Option 81	kW						235	265	305	346	365	414
Maximum current drawn (Un) with option 150B†												
Circuit A	A	191	212	278	290	325	191	212	278	278	290	325
Circuit B	A	-	-	-	-	-	191	212	212	278	290	325
Option 81	A	-	-	-	-	-	382	424	490	556	580	650

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-				254	304	354	402	452	552	602	652	702	802
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	334	373	421	511	542	607	626	769	847	890
		COP	kW/kW	5,59	5,59	5,54	5,22	5,47	5,36	5,48	5,39	5,38	5,3
	HW2	Nominal heating capacity	kW	325	362	408	478	506	566	606	716	789	829
		COP	kW/kW	4,62	4,59	4,55	4,29	4,50	4,43	4,54	4,45	4,45	4,41
	HW3	Nominal capacity	kW	316	352	396	446	471	527	587	665	734	773
		COP	kW/kW	3,85	3,83	3,79	3,50	3,68	3,63	3,78	3,65	3,65	3,63
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	5,81	5,93	5,89	5,57	5,70	5,69	5,62	5,53	5,57	5,30
		$\eta s\ heat_{30/35°C}$	%	224	229	227	215	220	220	217	213	215	204
	HW3	$SCOP_{47/55°C}$	kWh/kWh	4,56	4,61	4,55	4,20	4,37	4,41	4,42	4,24	4,31	4,46
		$\eta s\ heat_{47/55°C}$	%	174	176	174	160	167	169	169	162	164	170
		P_{rated}	kW	416	419	473	540	571	638	700	807	890	936
Cooling													
Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	282	313	352	NA	NA	NA	NA	NA	NA	NA
		EER	kW/kW	4,89	4,87	4,82	NA	NA	NA	NA	NA	NA	NA
		Eurovent class		B	B	B	NA	NA	NA	NA	NA	NA	NA
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,76**	**5,83**	**5,80**	NA	NA	NA	NA	NA	NA	NA
		$\eta s\ cool_{12/7°C}$	**%**	**227**	**230**	**229**	NA	NA	NA	NA	NA	NA	NA
		$SEPR_{12/7°C}$ Process high temp.	kWh/kWh	**6,45**	**6,49**	**6,35**	NA	NA	NA	NA	NA	NA	NA
Integrated Part Load Value		IPLV.SI	kW/kW	6,491	6,657	6,658	6,051	6,301	6,425	6,306	6,052	6,332	6,180
Sound levels - unit with option 150													
Sound power level(1)			dB(A)	95			99	99		99	10	102	102
Sound pressure level at 1 m(2)			dB(A)	78	78	78	82	82	82	82	84	84	84
Sound levels - unit with option 150 + option 257(3)													
Sound power level(1)			dB(A)	-	-	-	96	96	96	96	100	100	100
Sound pressure level at 1 m(2)			dB(A)	-	-	-	78	78	78	78	82	82	82
Dimensions - unit with option 150													
Length				2724	2724	2724	2741	2741	2741	2741	3059	3059	3059
Width			mm	928	928	928	936	936	936	936	1090	1090	1090
Height			mm	1567	1567	1567	1692	1692	1692	1692	1858	1858	1858
Operating weight(4)			kg	2017	203	72	2575	2575	261	2644	3407	4 8	3462
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	-	-	-	-	-

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C,evaporator and condenser fouling factor 0 m^2. k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Refrigerant (4)		R-134a									
Circuit A	kg	84	80	78	82	82	82	82	145	135	125
	$teqCO_2$	120	114	112	117	117	117	117	207	193	179
Circuit B	kg	-	-	-	-	-	-	-	-	-	-
	$teqCO_2$	-	-	-	-	-	-	-	-	-	-
Oil - unit with option 150		SW220									
Circuit A	l	23,5	23,5	23,5	32	32	32	32	36	36	36
Circuit B	l	-	-	-	-	-	-	-	-	-	-
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capacity (5)	%	30	30	30	30	30	30	30	15	15	15
Evaporator		Multi-pipe flooded type									
Water volume	l	50	56	61	70	70	70	70	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	55	55	76	76	76	76	109	109	109
Water connections (Victaulic)	in	5	5			5	5		6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-				852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	983	1181	1250	1345	1466	1576	1702	1821	1962	2032
		COP	kW/kW	5,49	5,44	5,37	5,47	5,69	5,4	5,32	5,28	5,45	5,41
	HW2	Nominal heating capacity	kW	958	1099	1163	1294	1348	1465	1583	1678	1904	1975
		COP	kW/kW	4,57	4,52	4,47	4,55	4,71	4,52	4,45	4,45	4,57	4,59
	HW3	Nominal capacity	kW	932	1019	1078	1246	1275	1357	1469	1573	1845	1915
		COP	kW/kW	3,80	3,73	3,69	3,8	3,91	3,71	3,67	3,7	3,85	3,84
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	5,68	5,70	5,61	5,61	5,78	5,42	5,46	5,14	5,52	5,47
		$\eta s\ heat_{30/35°C}$	%	219	220	216	216	223	209	210	198	213	211
	HW3	$SCOP_{47/55°C}$	kWh/kWh	4,66	4,66	4,63	4,63	4,71	4,43	4,50	4,56	4,70	4,68
		$\eta s\ heat_{47/55°C}$	%	178	178	177	177	181	169	172	175	180	179
		P_{rated}	kW	1111	1237	1309	1490	1549	1648	1783	1907	2203	2285
Cooling													
Integrated Part Load Value		IPLV.SI	kW/kW	6,593	6,849	6,853	6,757	6,950	6,411	6,918	6,954	6,947	7,118
Sound levels - unit with option 150													
Sound power level(1)			dB(A)	102	102	102	102	105	105	105	105	105	105
Sound pressure level at 1 m(2)			dB(A)	84	84	84	84	86	86	86	86	86	86
Sound levels - unit with option 150 + option 257(3)													
Sound power level(1)			dB(A)	100	99	99	99	103	103	103	103	103	103
Sound pressure level at 1 m(2)			dB(A)	82	80	80	80	84	84	84	84	84	84
Dimensions - unit with option 150													
Length				2780	4 25	4025	4025	4730	47	4730	4730	4790	47
Width				1090	1036	1036	1036	1201	1201	1201	1201	1947	1947
Height			mm	1920	1870	1870	1925	2071	2071	2071	2071	1535	1535
Operating weight(4)			kg	3672	5370	5408	5698	7233	7554	7622	7670	9006	9032
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	1	1	1	1	1	1	1	1	1

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W
HW3	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C,evaporator and condenser fouling factor 0 m^2. k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
IPLV.SI	Calculations according to standard performances AHRI 551-591.
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level
(4)	Weight shown is guideline only. Please refer to the unit nameplate

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Refrigerant (4)		R-134a									
Circuit A	kg	158	85	85	105	120	115	110	105	195	195
	$teqCO_2$	226	122	122	150	172	164	157	150	279	279
Circuit B	kg	-	85	85	105	120	115	110	105	195	195
	$teqCO_2$	-	122	122	150	172	164	157	150	279	279
Oil - unit with option 150		SW220									
Circuit A	l	36	32	32	32	36	36	36	36	36	36
Circuit B	l	-	32	32	32	32	36	36	36	36	36
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capacity (5)	%	15	15	15	15	10	10	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	98	182	182	205	301	301	301	301	354	354
Water connections (Victaulic)	in	6	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	137	193	193	193	340	340	340	340	426	426
Water connections (Victaulic)	in	8	8			8	8			8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-P / 30XWHP				512	562	712	812	862	1012	1162	1314	1464	1612	1762
Heating														
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	607	676	854	924	995	1208	1397	1537	1723	1909	2028
		COP	kW/kW	5,94	5,95	5,82	5,66	5,87	5,71	5,85	5,64	5,47	5,83	5,88
	HW2	Nominal heating capacity	kW	584	651	828	897	1003	1164	1341	1485	1669	1850	1997
		COP	kW/kW	4,88	4,89	4,81	4,68	4,94	4,73	4,86	4,69	4,58	4,84	4,93
	HW3	Nominal capacity	kW	563	627	801	871	984	1123	1288	1433	1610	1789	1989
		COP	kW/kW	4,02	4,04	3,97	3,87	4,11	3,90	4,02	3,91	3,83	4,00	4,14
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	6,13	6,17	6,38	6,10	6,12	5,88	5,99	5,93	5,92	6,04	6,20
		$\eta s\ heat_{30/35°C}$	%	237	239	247	236	237	227	232	229	229	234	240
	HW3	$SCOP_{47/55°C}$	kWh/kWh	4,72	4,78	4,94	4,72	4,97	4,72	4,89	4,81	4,87	5,04	5,06
		$\eta s\ heat_{47/55°C}$	%	181	183	189	181	191	181	187	185	187	194	194
		P_{rated}	kW	674	750	957	1039	1175	1343	1543	1713	1926	2139	2377
Cooling														
Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	517	576	725	781	844	1024	1192	1302	1453	1633	1727
		EER	kW/kW	5,20	5,24	5,09	4,94	5,17	5,05	5,29	5,02	4,89	5,22	5,29
		Eurovent class		A	A	A	B	A	A	A	B	B	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	6,03	6,14	6,44	6,21	,75	6,19	6,55	6,38	6,48	6,95	6,55
		$\eta s\ cool_{12/7°C}$	**%**	238	242	255	245	227	245	259	252	256	275	259
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	6,54	6,56	6,81	6,53	6,63	6,37	6,67	6,67	6,53	6,92	7,00
Integrated Part Load Value		IPLV.SI	kW/kW	6,735	6,920	7,116	6,861	7,056	6,706	7,277	7,156	7,265	7,544	7,818
Sound levels - unit with option 150														
Sound power level(1)			dB(A)	99	99	102	102	102	102	102	105	105	105	105
Sound pressure level at 1 m(2)			dB(A)	82	82	84	84	84	83	83	86	86	86	86
Sound levels - unit with option 150 + option 257(3)														
Sound power level(1)			dB(A)	96	9	1	100	10	99	99	1	103	1	103
Sound pressure level at 1 m(2)			dB(A)	78	78	82	82	82	80	80	84	84	84	84
Dimensions - unit with option 150														
Length			mm	3059	3059	3290	3290	3290	4730	4730	4730	4730	4832	4832
Width			mm	936	936	1105	1105	1105	1039	1039	1202	1202	2174	2174
Height				1743	1743	1970	1970	1970	1997	1997	2071	2071	1585	1585
Operating weight(4)			kg	2981	3020	4072	4117	4145	6872	6950	7721	8059	11225	11279
Compressors				Semi-hermetic 06T screw compressors, 50 r/s										
Circuit A			-	1	1	1	1	1	1	1	1	1	1	1
Circuit B				-	-		-		1	1	1	1	1	1

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C,evaporator and condenser fouling factor 0 m^2. k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

AHRI CERTIFIED® www.ahridirectory.org Air-Cooled Chillers AHRI Standards 550/590 and 551/591

AHRI certified values 30XW-only

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-P / 30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Refrigerant (4)		R-134a										
Circuit A	kg	130	130	180	175	170	120	120	130	130	240	250
	$teqCO_2$	186	186	257	250	243	172	172	186	186	343	358
Circuit B	kg	-	-	-	-	-	120	120	150	130	240	250
	$teqCO_2$	-	-	-	-	-	172	172	215	186	343	358
Oil - unit with option 150		SW220										
Circuit A	l	32	32	0	36	36	32	32	36	36	36	36
Circuit B	l	-	-	-	-	-	32	32	32	36	36	36
Capacity control		Touch Pilot, electronic expansion valves (EXV)										
Minimum capacity (5)	%	30	30	15	15	15	15	15	10	10	10	10
Evaporator		Multi-pipe flooded type										
Water volume	l	101	101	154	154	154	293	293	321	321	473	473
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type										
Water volume	l	103	103	148	148	148	316	316	340	340	623	623
Water connections (Victaulic)	in		6	8			8	8	10	10	1	1
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	303	388	388	587	587	587	587	772	772	772
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum start-up current**											
Circuit A	A	303	388	388	587	587	587	587	772	772	772
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Cosine phi											
Nominal***		0.79	0.78	0.79	0.83	0.85	0.85	0.85	0.84	0.86	0.87
Maximum****		0.88	0.87	0.88	0.90	0.90	0.91	0.91	0.90	0.90	0.90
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	97	111	122	156	173	191	191	249	268	286
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Nominal current drawn***											
Circuit A	A	95	109	125	150	162	171	171	193	214	232
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un)†											
Circuit A	A	160	185	200	250	275	300	300	400	430	460
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un -10%)****											
Circuit A	A	176	206	224	270	300	330	330	419	455	476
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	772	587	587	587	772	772	772	772	772	772
Circuit B	A	-	587	587	587	587	772	772	772	772	772
Option 81	A	-	757	757	757	943	965	986	1004	1004	1004
Maximum start-up current**											
Circuit A	A	772	587	587	587	772	772	772	772	772	772
Circuit B	A	-	587	587	587	587	772	772	772	772	772
Option 81	A	-	887	887	887	1072	1172	1202	1232	1004	1232
Cosine phi											
Nominal***		0.87	0.85	0.85	0.85	0.86	0.85	0.86	0.87	0.86	0.87
Maximum****		0.90	0.90	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	286	191	191	191	252	252	271	290	290	290
Circuit B	kW	-	173	191	191	191	252	271	290	271	290
Option 81	kW	-	364	382	382	443	504	542	580	562	580
Nominal current drawn***											
Circuit A	A	232	171	171	171	210	210	230	250	250	250
Circuit B	A	-	162	171	171	171	210	230	250	230	250
Option 81	A	-	333	342	342	381	420	460	500	480	500
Maximum current drawn (Un)†											
Circuit A	A	460	300	300	300	400	400	430	460	460	460
Circuit B	A	-	275	300	300	300	400	430	460	430	460
Option 81	A	-	575	600	600	700	800	860	920	890	920
Maximum current drawn (Un -10%)****											
Circuit A	A	476	330	330	330	419	419	455	476	476	476
Circuit B	A	-	300	330	330	330	419	455	476	455	476
Option 81	A	-	630	660	660	749	838	910	952	931	952

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

High-efficiency units (option 150)

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit		24 V via the built-in transformer										
Nominal start-up current*												
Circuit A	A	587	587	772	772	772	587	587	772	772	772	772
Circuit B	A	-	-	-	-	-	587	587	587	772	772	772
Option 81	A	-	-	-	-	-	749	757	943	965	986	1004
Maximum start-up current**												
Circuit A	A	587	587	772	772	772	587	587	772	772	772	772
Circuit B	A	-	-	-	-	-	587	587	587	772	772	772
Option 81	A	-	-	-	-	-	862	887	1072	1172	1202	1232
Cosine phi												
Nominal***		0.88	0.88	0.84	0.86	0.87	0.87	0.88	0.86	0.85	0.86	0.87
Maximum****		0.91	0.92	0.90	0.90	0.90	0.91	0.92	0.91	0.91	0.91	0.91
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0	0
Maximum power input†												
Circuit A	kW	173	191	52	271	290	173	191	252	252	271	290
Circuit B	kW	-	-	-	-	-	173	191	191	252	271	290
Option 81	kW	-	-	-	-	-	346	382	443	504	542	580
Nominal current drawn***												
Circuit A	A	162	171	210	230	250	162	171	210	210	230	250
Circuit B	A	-	-	-	-	-	162	171	171	210	230	250
Option 81	A	-	-	-			324	342	381	420	460	500
Maximum current drawn (Un)†												
Circuit A	A	275	300	400	430	460	275	300	400	400	430	460
Circuit B	A	-	-	-	-	-	275	300	300	400	430	460
Option 81	A	-	-	-	-	-	550	600	700	800	860	920
Maximum current drawn (Un -10%)****												
Circuit A	A	300	330	419	455	476	300	330	419	419	455	476
Circuit B	A	-	-	-	-	-	300	330	330	419	455	476
Option 81	A	-	-	-	-	-	600	660	749	838	910	952

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

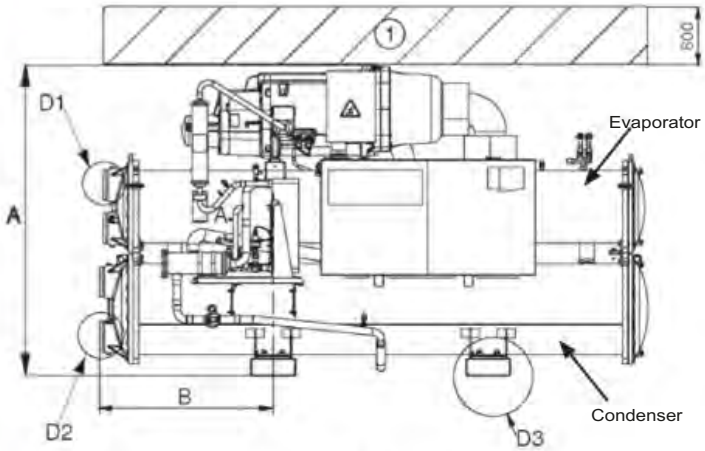
*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

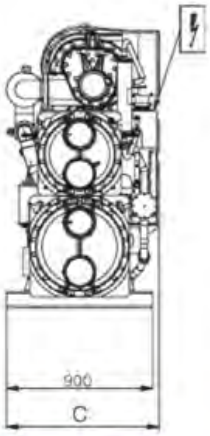
**** Values obtained at operation with maximum unit power input.

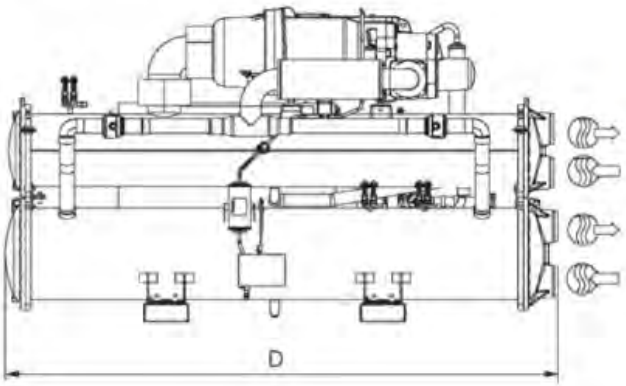
† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

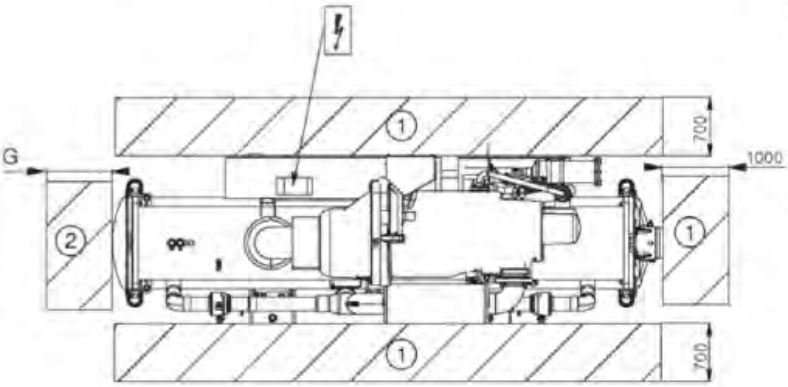
DIMENSIONS/CLEARANCES

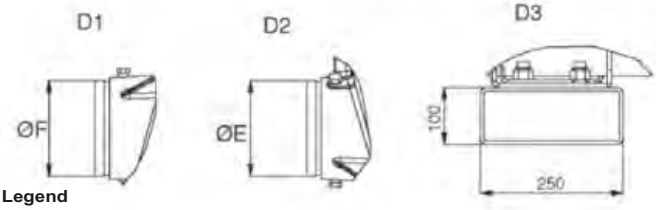
30XW--/30XWH- 254-852
30XW-P/30XWHP 512-862











	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
254	1567	800	928	2724	141.3	141.3	2600
304	1567	800	928	2724	141.3	141.3	2600
354	1567	800	928	2724	141.3	141.3	2600
402	1693	810	936	2742	141.3	141.3	2600
452	1693	810	936	2742	141.3	141.3	2600
552	1693	810	936	2742	141.3	141.3	2600
602	1693	810	936	2742	141.3	141.3	2600
652	1848	968	1044	3059	168.3	168.3	2800
702	1848	968	1044	3059	168.3	168.3	2800
802	1848	968	1044	3059	168.3	168.3	2800
852	1898	828	1044	2780	219.1	168.3	2600
High-efficiency units 30XW-P/30XWHP							
512	1743	968	936	3059	168.3	168.3	2800
562	1743	968	936	3059	168.3	168.3	2800
712	1950	1083	1065	3290	219.1	219.1	3100
812	1950	1083	1070	3290	219.1	219.1	3100
862	1950	1 83	1 7	3290	219.1	219.1	3100
Standard-efficiency units 30XW--/30XWH- (option 150)							
254	1567	800	928	2724	141.3	141.3	2600
304	1567	800	928	2724	141.3	141.3	2600
354	1567	800	928	2724	141.3	141.3	2600
402	1693	810	936	2742	141.3	141.3	2600
452	1693	810	936	2742	141.3	141.3	2600
552	1693	810	936	2742	141.3	141.3	2600
602	1693	810	936	2742	141.3	141.3	2600
652	1868	968	1090	3059	168.3	168.3	2800
702	1868	968	1090	3059	168.3	168.3	2800
802	1868	968	1090	3059	168.3	168.3	2800
852	1920	828	1090	2780	168.3	219.1	2600
High-efficiency units 30XW-P/30XWHP (option 150)							
512	1743	968	936	3059	168.3	168.3	2800
562	1743	968	936	3059	168.3	168.3	2800
712	1970	1083	1105	3290	219.1	219.1	3100
812	1970	1 83	11	3290	219.1	219.1	3100
862	1970	1083	1105	3290	219.1	219.1	3100

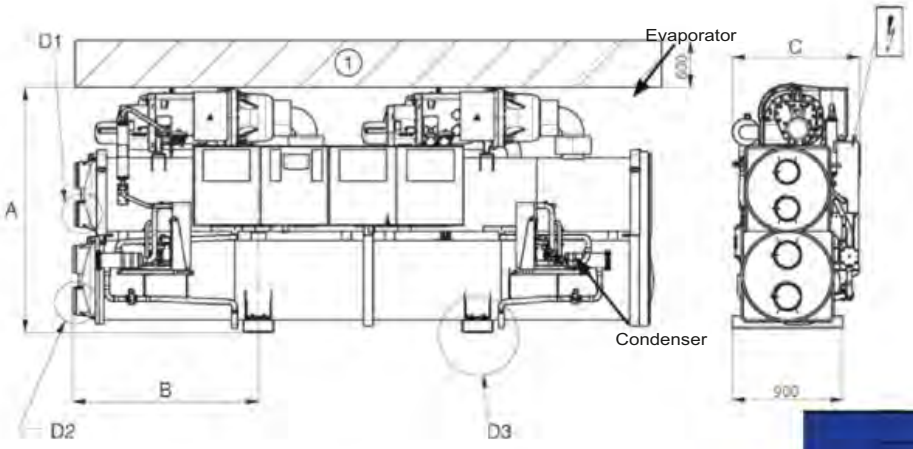
Legend
All dimensions are given in mm.

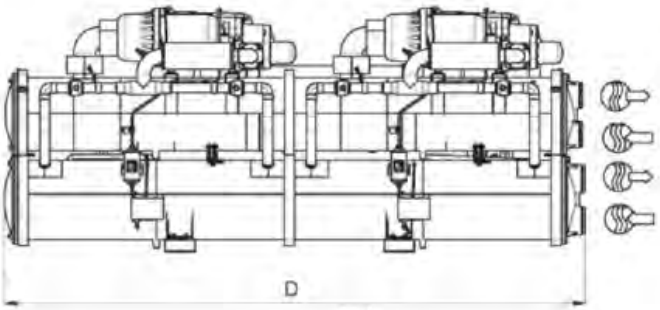
(1) Required clearance for maintenance
(2) Recommended clearance for tube removal
Water inlet
Water outlet
Air outlet – do not obstruct
Power supply connection

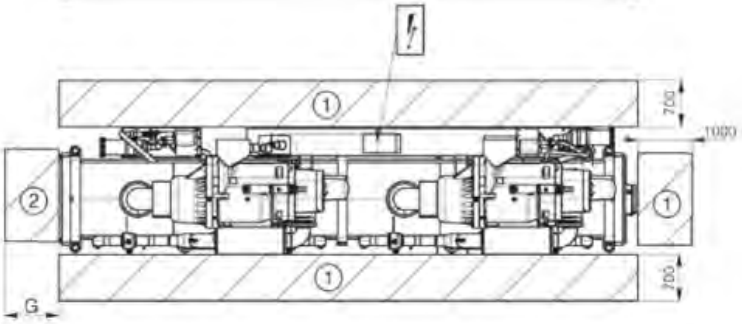
NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

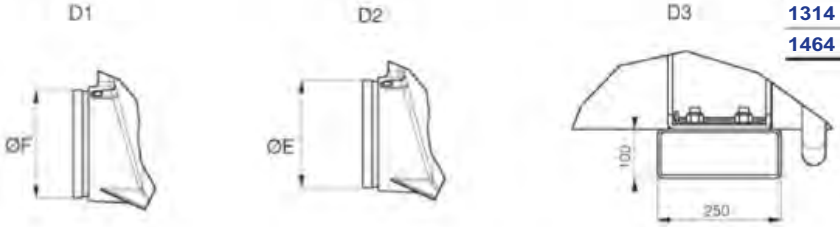
DIMENSIONS/CLEARANCES

30XW--/30XWH- 1002-1552
30XW-P/30XWHP 1012-1464









Dimensions in mm	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
1002	1870	950	1036	4025	219.1	168.3	3800
1052	1870	950	1 36	4025	219.1	168.3	3800
1152	1925	950	1036	4025	219.1	219.1	3800
1252	2051	1512	1162	4730	219.1	219.1	4500
1352	2051	1512	1162	4730	219.1	219.1	4500
1452	2051	1512	1162	4730	219.1	219.1	4500
1552	2051	1512	1162	4730	219.1	219.1	4500
High-efficiency units 30XW-P/30XWHP							
1012	1997	1512	1039	4730	219.1	219.1	4500
1162	1997	1512	1039	4730	219.1	219.1	4500
1314	2051	1512	1162	4730	219.1	219.1	4500
1464	2051	1512	1162	4730	219.1	219.1	4500
Standard-efficiency units 30XW--/30XWH- (option 150)							
1002	1870	950	1036	4025	219.1	168.3	3800
1052	1870	950	1 36	4025	219.1	168.3	3800
1154	2925	950	1036	4025	219.1	219.1	3800
1252	2071	1512	1202	4730	219.1	219.1	4500
1352	2071	1512	1202	4730	219.1	219.1	4500
1452	2071	1512	1202	4730	219.1	219.1	4500
1552	2071	1512	1202	4730	219.1	219.1	4500
High-efficiency units 30XW-P/30XWHP (option 150)							
1012	1997	1512	1039	4730	219.1	219.1	4500
1162	1997	1512	1039	4730	219.1	219.1	4500
1314	2071	1512	1202	4730	219.1	219.1	4500
1464	2071	1512	1202	4730	219.1	219.1	4500

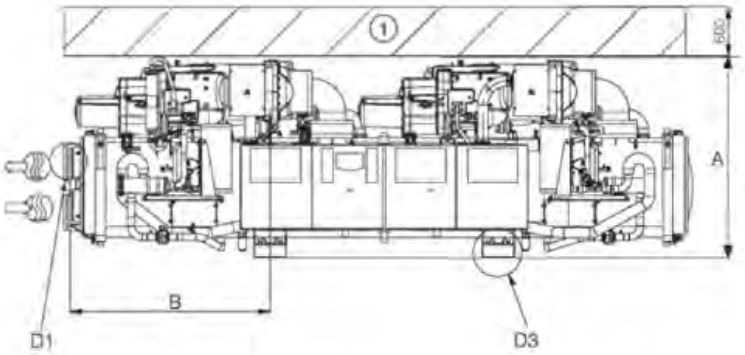
Legend
All dimensions are given in mm.

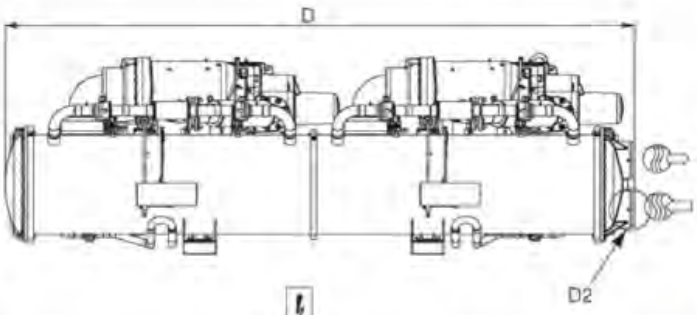
(1) Required clearance for maintenance
(2) Recommended clearance for tube removal
Water inlet
Water outlet
Air outlet – do not obstruct
Power supply connection

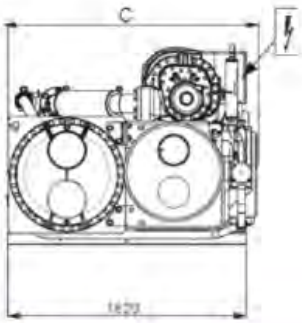
NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

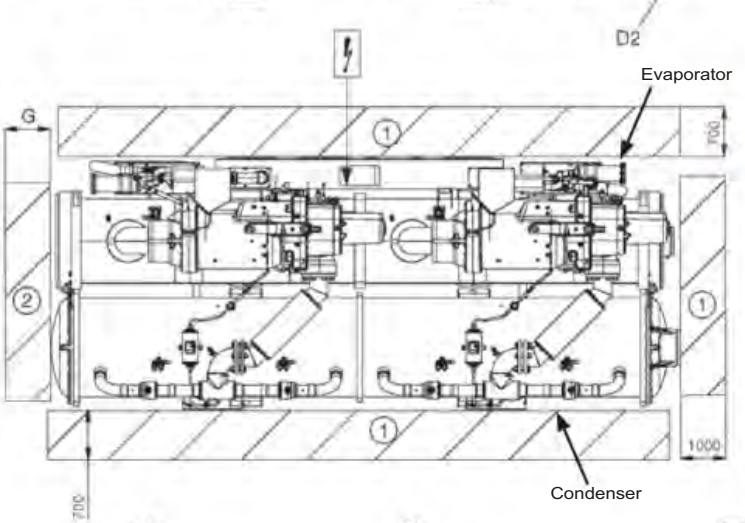
DIMENSIONS/CLEARANCES

30XW--/30XWH- 1652-1702
30XW-P/30XWHP 1612-1762

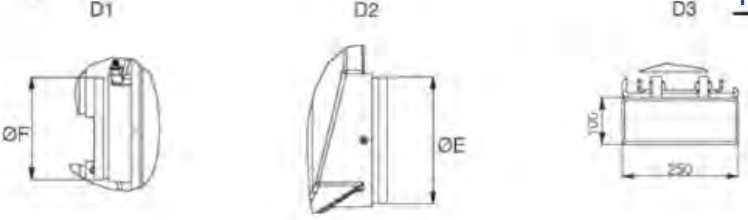








	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
1652	1515	1568	1902	4790	219.1	219.1	4500
1702	1515	1568	1902	4790	219.1	219.1	4500
High-efficiency units 30XW-P/30XWHP							
1612	1562	1591	2129	4832	273.1	273.1	4600
1762	1562	1591	2129	4832	273.1	273.1	4600
Standard-efficiency units 30XW--/30XWH- (option 150)							
1652	1535	1568	1947	4790	219.1	219.1	4500
1702	1535	1568	1947	4790	219.1	219.1	4500
High-efficiency units 30XW-P/30XWHP (option 150)							
1612	1585	1591	2174	4832	273.1	273.1	4600
1762	1585	1591	2174	4832	273.1	273.1	4600



Legend
All dimensions are given in mm.

- (1) Required clearance for maintenance
- (2) Recommended clearance for tube removal
- Water inlet
- Water outlet
- Air outlet – do not obstruct
- Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

WATER-COOLED VARIABLE-SPEED SCREW CHILLERS

- Low energy consumption
- High reliability
- Easy and fast installation
- Minimised operating sound levels
- Environmental care
- Designed to support green building design

AQUAFORCE

30XW-V

Nominal cooling capacity 587-1741 kW
Nominal heating capacity 648-1932 kW

The 30XW-V water-sourced units are the premium solution for commercial and industrial applications where installers, consultants and building owners require maximum quality and optimal performances, especially at part load.

The 30XW-V unit are designed to meet current and future requirements in terms of energy efficiency, versatility and compactness. They feature exclusive inverter-driven screw compressors - an evolution of the proven traditional Carrier twin-rotor screw compressor design. Other features include:

- the new Touch Pilot control
- mechanically cleanable flooded heat exchangers
- refrigerant R-134a

The 30XW-V/30XWHV range is split into two versions:

- 30XW-V for air conditioning applications
- 30XWHV for heating applications

As standard, the unit can provide an evaporator leaving water temperature down to 3.3°C, and when operating as a heat pump, it can deliver up to 50°C on the condenser side.

AHRI CERTIFIED® www.ahridirectory.org
Air-Cooled Chillers
AHRI Standards 550/590 and 551/591

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- The 30XW-V/30XWHV was designed for high performance both at full load and at part load.
  - Eurovent certified values per EN14511-3:2013: SEPR up to 8.07 and SEER up to 8.43
- High energy efficiency
  - Inverter-driven twin-rotor screw compressors allow precise capacity matching of building load changes and significantly reduce unit power input, especially at part-load.
  - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
  - Electronic expansion device permits operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Optimised electrical performance
  - All 30XW-V/30XWHV units comply with class 3 of standard EN61800-3. Category C3 refers to industrial environments. With option 282 category C2 compliance is possible.
  - Inverter-driven motors ensure negligible start-up current (value is lower than the maximum unit current draw)

High reliability

- The 30XW-V and 30XWHV ranges offer increased global performance as well as Carrier's acclaimed product quality and reliability. Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Inverter-driven screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - The inverter is optimised for each compressor motor to ensure reliable operation and easy maintenance.
  - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuits
  - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
  - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling
  - Automatic compressor unloading in case of abnormally high condensing pressure or discharge temperature.
- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

Easy and fast installation

- Compact design
  - The 30XW-V/30XWHV units are designed to offer compact dimensions for easy installation.
  - With a width of approximately 1.25 m up to 1000 kW the units can pass through standard door openings and only require minimum floor space in the plant room.
- Simplified electrical connections
  - Main disconnect switch with high trip capacity
  - Transformer supply to the integrated control circuit (400/24 V)
- Simplified water connections
  - Victaulic connections on the evaporator and condenser
  - Practical reference marks for entering and leaving water connections
  - Possibility to reverse the heat exchanger water inlet and outlet at the factory
  - Possibilty to modify the number of heat exchanger passes
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Minimised operating sound levels

- The inverter technology used for the compressor motors minimises noise levels at part load operation. In two-compressor units at 25% of the maximum load the unit sound power level is reduced by 10 dB(A).
- Standard unit features include:
  - Silencers on the compressor discharge line.
  - Sound insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

Environmental care

- R-134a refrigerant
  - HFC-refrigerant with zero ozone depletion potential
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support green building design

- A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment. The underlying principles of this approach: The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

CUSTOMER BENEFITS

- The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year. 30XW-V/30XWHV units offers a solution to this important challenge.
- A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.
- The following example looks at how Carrier's new 30XW-V/30XWHV range helps customers involved in LEED® building certification.

30XW-V/30XWHV and LEED® certification

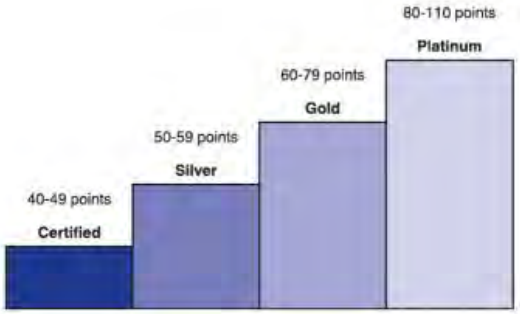
The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
  Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare. All programmes now use the same point scale:

110 Possible LEED® points

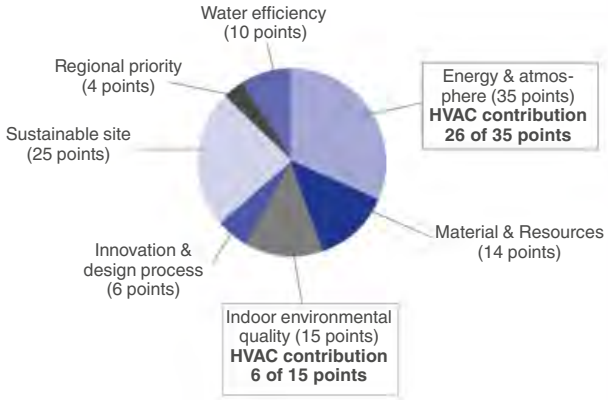


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

Overview of LEED® for new construction and major renovations



The new 30XW-V/30XWHV units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: Minimum energy Performance
  The 30XW-V/30XWHV exceeds the energy efficiency requirements of ASHRAE 90,1-2007; therefore it complies with the presequisite standard.
- EA prerequisite 3: Fundamental Refrigerant Management
  The 30XW-V/30XWHV does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.
- EA credit 1: Optimise energy performance (1 to 19 points)
  Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90,1-2007 reference. The 30XW-V/30XWHV, which is designed for high performance especially during part load operation, contributes reducing the energy consumption of the building and therefore helps gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- EA credit 4: Enhanced refrigerant management (2 points)
  With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Globlal Warming Potential (GWP) of the system. The 30XW-V/30XWHV uses a reduced R134a charge and therefore contributes toward satisfying this credit under LEED®.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30XW-V/30XWHV. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

Touch Pilot control

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 7'' interface
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management
  - Internal time schedule clock: controls chiller on/off times and operation at a second set-point
  - Set-point reset based on the return water temperature
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote management (standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).
- The 30XW-V/30XWHV also communicates with other building management systems via optional communication gateways.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/Stop of the machine
    Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
  - Demand limit setting: To limit the maximum chiller capacity to a predefined value
    Water pump control: These outputs control the contactors of one/two evaporator water pumps.
  - Operation visualisation: Indication if the unit is operating or if it is in stand-by (no cooling load)
  - Alarm visualisation.

TECHNICAL INSIGHTS

Remote management (EMM option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set-point reset: ensures reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
- User safety: this contact can be used for any customer safety loop; opening the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status : set of outputs (as many as the compressors number) indicating which compressors are running.

New inverter-driven Thunderbolt screw compressor

- The new generation of Carrier inverter-driven screw compressors benefits for Carrier's long experience in the development of twin-rotor screw compressors. The design of the Thunderbolt compressors is based on the successful 06T screw compressor, core of the well-known Aquaforce series.
- Advanced control algorithms combine inverter frequency output with motor input logic to minimise mechanical part stress, resulting in best compression performance and high chiller reliability. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.
- Screw compressors use positive displacement principle to compress gases at higher pressure. As a result, in case of exceptional high temperature condenser side (due for example to water-pipes fouling or operation in harsh climate with an external dry-cooler) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode.
- The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.
- The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	No.	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	580-1710 (see dedicated paragraph)
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two chillers connected in parallel with operating time equalisation	580-1710
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	1150-1710
Evap. pump power/ control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Evaporator dual pumps electrical power / control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Cond. pump power/ control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Cond. dual pumps power/control circuit	84T	nit equipped with an electrical power and control circuit for two pumps condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	580-1710
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	580-1710
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	580-1710
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	asy to install, depending on site. educed pressure drops	580-1710
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	580-1710
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	580-1710
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	580-1710
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	580-1710
JBus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	580-1710
LON gateway	148D	Two-directional communication board complying with LON protocol	Connects the unit by communication bus to a building management system	580-1710
Bacnet over IP gateway	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	580-1710
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	580-1710
Control for low condensing temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	580-1710
Energy Management Module EMM	156	Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	580-1710

OPTIONS

Options	No.	Description	Advantages	Use
Leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controlller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	580-1710
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	580-1710
Low noise level	257	Evaporator sound insulation	3 dB(A) quiter than standard unit	580-1710
Welded evaporator water connection kit	266	Victaulic piping connections with welded joints	Easy installation	580-1710
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	580-1710
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	580-1710
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	580-1710
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	580-1710
EMC classification C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allow its compliancy with emissions level required in category C2	580-1710
Fast Capacity Recovery	QM295	New software algorithms to allow quick restart and fast loading while preserving unit-reliability	Full capacity recovery in less than 5 minutes after power failure. Matches requirements of typical critical missions applications	580-1710
Carrier Connect link (BSS regions only)	298	3G router board **NOTE 1:** Require option 149 **NOTE 2:** When more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 **NOTE 3:** If a CARRIER-PSM is on site, option 298 shall be integrated in the PSM while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	580-1710

PHYSICAL DATA, 30XW-V UNITS

30XW-V / 30XWHV				580	630	810	880	1150	1280	1470	1570	1710
Heating												
Standard unit Full load performances *	HW1	Nominal capacity	kW	649	719	890	974	1261	1428	1594	1761	1932
		COP	kW/kW	4,64	4,53	4,56	4,43	4,62	4,61	4,55	4,33	4,16
	HW2	Nominal capacity	kW	687	767	956	1021	1335	1524	1712	1898	2067
		COP	kW/kW	6,15	5,98	5,96	5,81	6,05	6,00	5,82	5,49	5,34
Seasonal energy efficiency **	HW2	$SCOP_{30/35°C}$	kWh/kWh	7,32	7,05	7,21	6,96	6,95	6,66	6,37	6,13	5,87
		$\eta s\ heat_{30/35°C}$	%	285	274	280	270	270	259	247	237	227
		P_{rated}	kW	818	913	1134	1216	1589	1815	2041	2263	2463
Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	587	652	812	858	1140	1305	1461	1604	1741
		EER	kW/kW	5,44	5,31	5,25	5,07	5,45	5,50	5,38	5,05	4,94
		Eurovent class		A	A	A	A	A	A	A	A	B
	CW2	Nominal capacity	kW	791	846	1023	970	1528	1688	1703	2093	2272
		EER	kW/kW	6,96	6,50	6,22	5,63	6,86	6,64	5,99	5,99	5,99
		Eurovent class		A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**8,00**	**7,66**	**8,43**	**7,93**	**8,31**	**8,19**	**7,74**	**7,70**	**7,34**
		$\eta s\ cool_{12/7°C}$	**%**	**317**	**303**	**334**	**314**	**329**	**325**	**307**	**305**	**290**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**8,07**	**8,02**	**7,73**	**6,76**	**8,04**	**8,07**	**7,96**	**7,89**	**7,49**
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	383	358	365	352	398	383	313	366	348
Integrated Part Load Value		IPLV.SI	kW/kW	9,060	9,120	9,450	8,950	9,240	9,300	9,170	9,300	8,980
Sound levels - standard unit												
Sound power level (1)			dB(A)	105	105	105	105	106	106	106	106	106
Sound pressure level at 1 m (2)			dB(A)	87	87	87	87	87	87	87	87	87
Sound levels - standard unit + option 257 (3)												
Sound power level (1)			dB(A)	102	102	102	102	103	103	103	103	103
Sound pressure level at 1 m (2)			dB(A)	4	84	4	84	84	84	84	84	84
Dimensions - standard unit												
Length			mm	3059	3059	3290	3290	4730	4730	4730	4730	4730
Width			mm	1087	1087	1237	1237	1164	1164	1255	1255	1255
Height			mm	1743	1743	1950	1950	1997	1997	2051	2051	2051
Operating weight (4)			kg	3152	3190	4157	4161	7322	7398	7574	7770	7808
Compressors				Semi-hermetic 06T screw compressors, 60 r/s								
Circuit A			-	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	1	1	1	1	1
Oil - standard unit				SW220 or RL220H								
Circuit A			l	32	32	36	36	32	32	36	36	36
Circuit B			l	-	-	-	-	32	32	32	36	36

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m2. k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m2. k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) in dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEER_{23/18°C}$ Applicable Ecodesign regulation (EU) No 2016/2281

IPLV.SI Calculations according to standard performances AHRI 551-591.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

AHRI CERTIFIED www.ahridirectory.org Air-Cooled Chillers AHRI Standards 550/590 and 551/591

AHRI certified values 30XW-only

PHYSICAL DATA, 30XW-V UNITS

30XW-V / 30XWHV		580	630	810	880	1150	1280	1470	1570	1710
Refrigerant - standard unit		R-134a								
Circuit A	kg	130	130	180	175	120	120	115	115	110
	$teqCO_2$	186	186	257	250	172	172	164	164	157
Circuit B	kg	-	-	-	-	120	120	120	115	110
	$teqCO_2$	-	-	-	-	172	172	172	164	157
Capacity control		Touch Pilot, inverter-driven compressor, electronic expansion valve (EXV)								
Minimum capcity	%	20	20	20	20	10	10	10	10	10
Evaporator		Multi-pipe flooded type								
Water volume	l	106	106	154	154	297	297	297	297	297
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type								
Water volume	l	112	112	165	165	340	340	340	340	340
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

ELECTRICAL DATA

30XW-V/30XWHV		580	630	810	880	1150	1280	1470	1570	1710
Power circuit										
Nominal power supply	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit		24 V via the built-in transformer								
Start-up current*	A	Lower than the operating current								
Maximum power factor**		0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93
Cosine phi		>0.98	>0.98	>0.98	>0.98	>0.98	>0.98	>0.98	>0.98	>0.98
Total harmonic distortion†	%	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45
Maximum power input***										
Circuit A	kW	155	193	222	246	155	193	222	222	246
Circuit B	kW	-	-	-	-	155	193	193	222	246
With option 81	kW	-	-	-	-	310	386	415	444	492
Eurovent current draw****										
Circuit A	A	175	200	240	265	175	200	240	240	265
Circuit B	A	-	-	-	-	175	200	200	240	265
With option 81	A	-	-	-	-	350	400	440	480	530
Maximum current draw (Un)***										
Circuit A	A	245	300	346	383	245	300	346	346	383
Circuit B	A	-	-	-	-	245	300	300	346	383
With option 81	A	-	-	-	-	490	600	646	692	766
Maximum current draw (Un -10%)***										
Circuit A	A	270	330	380	421	270	330	380	380	421
Circuit B	A	-	-	-	-	270	330	330	380	421
With option 81	A	-	-	-	-	540	660	710	760	842
Maximum power input with option 150B***										
Circuit A	kW	141	173	199	221	141	173	199	199	221
Circuit B	kW	-	-	-	-	141	173	173	199	221
With option 81	kW	-	-	-	-	282	346	372	398	442
Maximum current draw (Un) with option 150B***										
Circuit A	A	222	272	314	348	222	272	314	314	348
Circuit B	A	-	-	-	-	222	272	272	314	348
With option 81	A	-	-	-	-	444	544	586	628	696
Dissipated power†	W	3000	4200	4700	5300	6000	8400	8900	9400	10600

* Instantaneous start-up current

** This can vary as a function of the short-circuit current/maximum current ratio of the system transformer. Values obtained at operation with maximum unit power input.

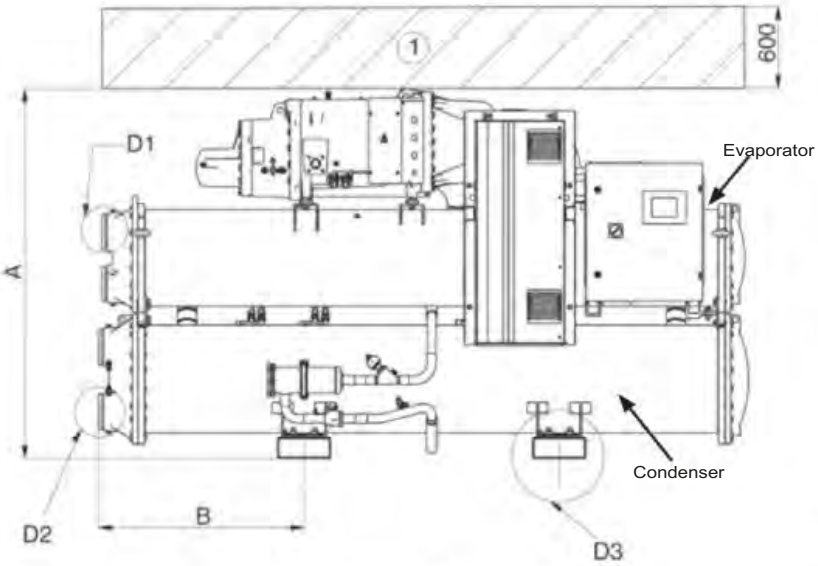
*** Values obtained at operation with maximum unit power input. Values given on the unit name plate.

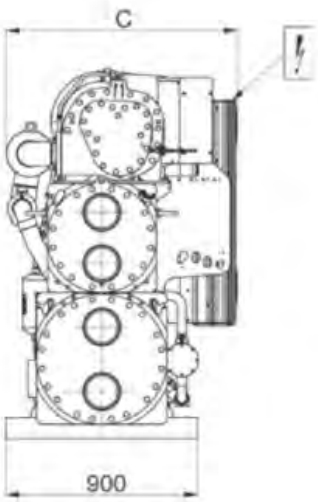
**** Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C. Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

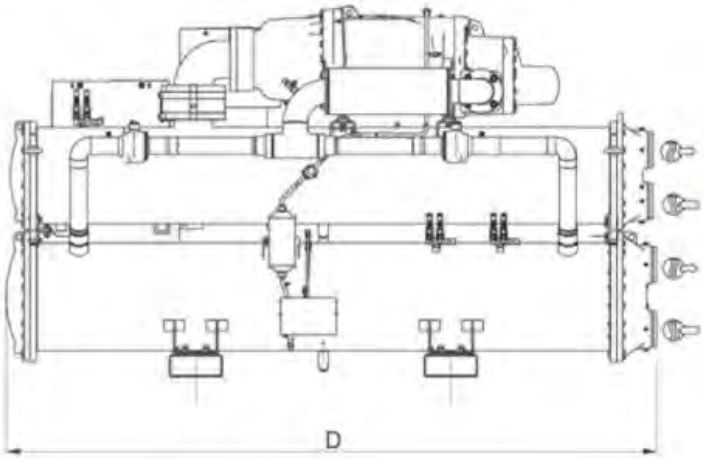
† Values obtained at operation with maximum unit power input.

DIMENSIONS/CLEARANCES

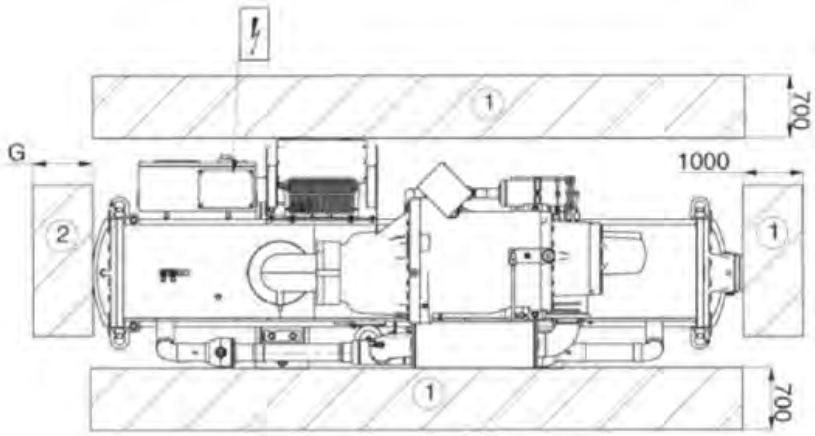
30XW-V/30XWHV 580-880







Dimensions in mm							
	A	B	C	D	E	F	G
30XW-V/30XWHV							
580	1743	968	1087	3059	168.3	168.3	2900
630	1743	968	1087	3059	168.3	168.3	2900
810	1950	1083	1237	3290	219.1	219.1	100
880	1950	1083	1237	3290	219.1	219.1	3100



Legend:

All dimensions are in mm.

① Required clearance for maintenance

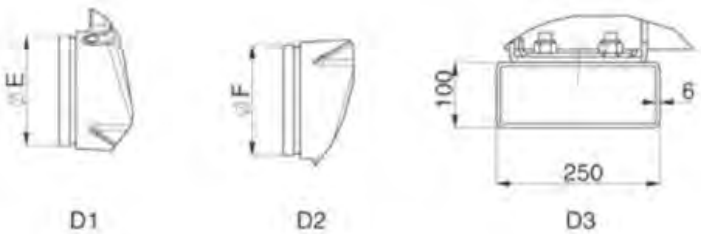
② Recommended clearance for tube removal

Water inlet

Water outlet

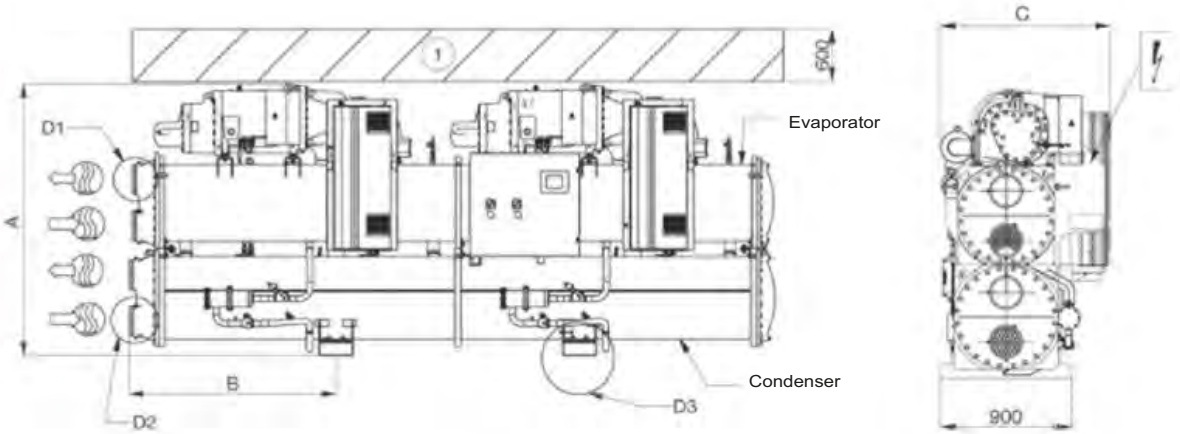
Power supply connection

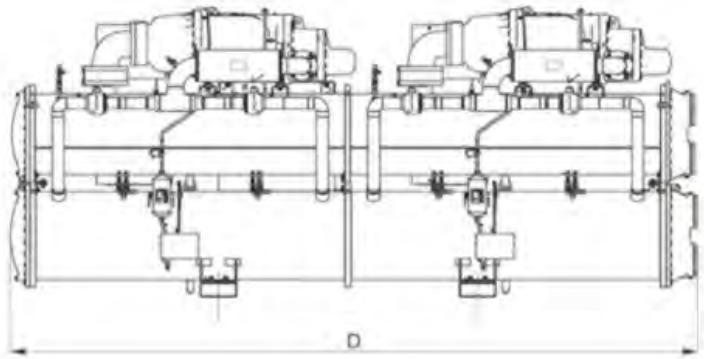
NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.



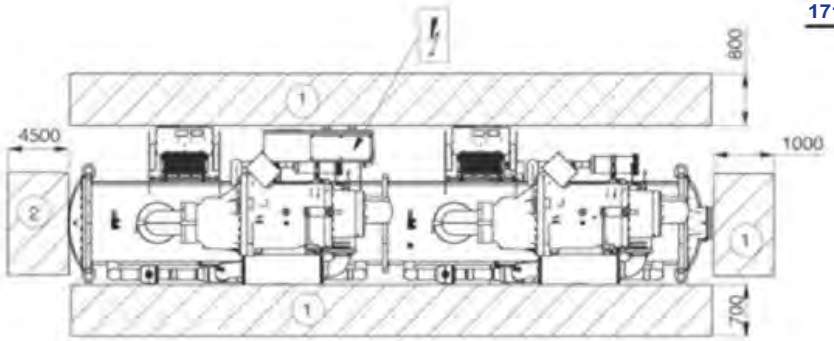
DIMENSIONS/CLEARANCES

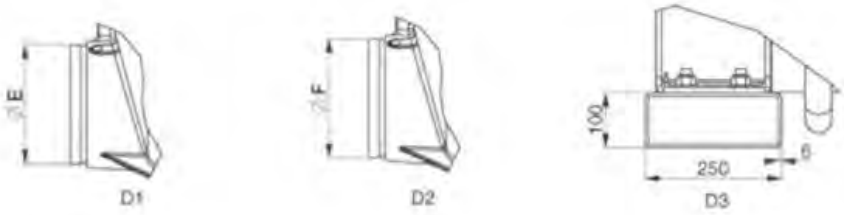
30XW-V/30XWHV 1150-1710





Dimensions in mm						
	A	B	C	D	E	F
30XW-V/30XWHV						
1150	1997	1514	1164	4730	219.1	219.1
1280	1997	1514	1164	4730	219.1	219.1
1470	2051	1514	1255	4730	219.1	219.1
1570	2051	1514	1255	4730	219.1	219.1
1710	2051	1514	1255	4730	219.1	219.1





Legend:

All dimensions are in mm.

① Required clearance for maintenance

② Recommended clearance for tube removal

Water inlet

Water outlet

Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

WATER-COOLED SCREW CHILLERS

Low energy consumption

High reliability

Safe Design

Easy and fast installation

Minimised operating sound levels

Environmental care

30XW-PZE

AQUAFORCE PUREtec

Nominal cooling capacity 269-1110 kW

The 30XW-PZE liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.

The 30XW-PZE liquid chillers are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- R-1234ze refrigerant
- Touch Pilot control system
- Flooded heat exchangers that are mechanically cleanable

The AquaForce PUREtec range is splitted into two versions:

- 30XW-PZE for air conditioning and refrigeration applications
- 30XWHPZE for heating applications

As standard, the unit can provide an evaporator leaving temperature down to 3,3°C, and when operating as a heat pump, it can deliver up to 55°C (70°C optional) on the condenser side.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- 30XW-PZE range is compliant with EU Eco-design Minimum Efficiency Performance Standards (MEPS) in cooling that apply from January 2018
- SEER 12/7°C up to 7.3 and SEPR 12/7°C up to 9.3
- 30XWHPZE range is compliant with EU Eco-design Minimum Efficiency Performance Standards (MEPS) in heating that apply from September 2015
- COP of up to 6.7 and SCOP up to 6,5
- The high energy efficiency is reached through:
- Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
  Economizer system with electronic expansion device for increased cooling capacity.

Low operating sound levels

- Standard unit features include:
  - Silencers on the compressors discharge line.
  - Silencers on the economiser return line.
    Acoustic insulation on the components that are most subjected to radiated noise.
  - Option 257 further reduces the global unit sound level.

Easy and fast installation

- Compact design
  - The 30XW units are designed to offer the most compact dimensions on the market.
  - With a width of approximately 1 m up to 1300 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

Compact, accessible unit - side view - sizes up to 1300 KW

- Simplified electrical connections
  - Main disconnect switch with high trip capacity
    Transformer to supply the integrated control circuit (400/24 V)
- Simplified hydraulic connections
  - Victaulic connections on the evaporator and condenser
  - Practical reference marks for entering and leaving water connections
  - Possibility to reverse the heat exchanger water inlet and outlet at the factory
  - Possibilty to modify the number of heat exchanger passes
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care

PUREtec

- R-1234ze long-term refrigerant solution
  - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
  - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
  - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

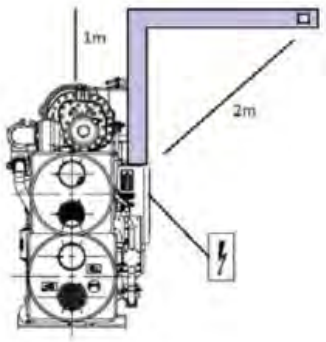
High reliability and easy servicing

- The 30XW units offer increased global performance as well as Carrier's acclaimed product quality and reliability.
- Major components are selected and tested with R-1234ze refrigerant to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuit
  Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
  Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling (Carrier patent)
  - Automatic compressor unloading in case of abnormally high condensing pressure.
- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

CUSTOMER BENEFITS

Safe Design

- Specific polyol ester oil qualified by Carrier for using with HFO-1234ze to guarantee and maintain reliable bearing lubrication.
- Specific compressor gaskets compatible with HFO-1234ze, tested and validated by Carrier.
- New relief valves designed for operation with HFO-1234ze
- Specific electrical box with increased tightness and integrated blower that maintains positive air pressure to avoid any risk of ignition.
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.



TECHNICAL INSIGHTS

Touch Pilot Control

Touch Pilot control, 5" user interface

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 5" interface (7" optional)
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the controller box with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
  - Internal time schedule clock controls chiller on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- The 30XW also communicates with other building management systems via optional communication gateways.
- The 30XW is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/stop of the machine
  - Dual set-point management: through a dedicated contact is possible to activate a second set-point (example: unoccupied mode)
  - Demand limit setting: to limit the maximum chiller capacity to a predefined value
  - Operation visualization: indication if the unit is operating or if it's in stand-by (no cooling load)
  - alarm visualization.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
  - Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
  - Set-point reset: ensures reset of the cooling set-point based on a 4-20 mA signal
  - Demand limit: permits limitation of the maximum chiller power or current based on a 4-20 mA signal
  - Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values

TECHNICAL INSIGHTS

- User safety: this contact can be used for any customer safety loop; opening of the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.

06T screw compressor

The Carrier 06T screw compressor designed for operation with HFO-1234ze refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	N°	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	301-1101
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	301-1101
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	801-1101
No disc.switch but short circ.protection	82A	Unit without disconnect switch, but with short-circuit protection device	Permits an external electrical disconnect system for the unit (field-supplied), while ensuring unit short circuit protection	301-1101
Evap. pump power/ control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Evap. dual pumps power/ control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Cond. pump power/ control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	301-1101
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	1-11 1
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	301-1101
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	301-1101
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	301-1101
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	301-1101
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	301-1101
eversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	301-1101
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	301-1101
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	301-1101
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	asy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	301-1101
High condensing temperature	150	Optimized compressor for operation at high condensing temperature	Increased condenser leaving water temperature up to 70°C. Allows applications with high condensing temperature (heat pumps, installations with not generously sized dry-coolers or more generally, installations with dry-coolers in hot climate). NOTE: to ensure control of the condenser leaving water temperature, this option must be fitted with 30XWH units.	301-1101
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	301-1101
Control for low cond. temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	301-1101

OPTIONS

Options	N°	Description	Advantages	Use
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	301-1101
Touch Pilot control, 7" user interface	158A	Touch Pilot control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	301-1101
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	301-1101
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	301-1101
Low noise level	257	Evaporator sound insulation	3 dB(A) quiter than standard unit	401-1101
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	301-1101
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	301-1101
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	301-1101
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	301-1101
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	301-1101
Carrier Connect link (BSS regions only)	298	3G router board **NOTE 1:** require option 149 **NOTE 2:** when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 **NOTE 3:** if the Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	301-1101

PHYSICAL DATA, STANDARD UNITS

30XW-PZE / 30XWHPZE				301	401	451	551	601	651	801	901	1001	1101
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	319	440	501	642	714	785	894	1035	1191	1296
		COP	kW/kW	6,23	6,43	6,42	6,65	6,53	6,39	6,62	6,63	6,61	6,36
	HW2	Nominal capacity	kW	315	433	492	630	701	766	876	1011	1165	1268
		COP	kW/kW	4,74	4,86	4,85	5,00	4,89	4,84	5,02	5,03	5,03	4,84
	HW3	Nominal capacity	kW	311	427	485	621	690	747	862	992	1144	1242
		COP	kW/kW	3,70	3,74	3,75	3,82	3,75	3,76	3,85	3,87	3,89	3,73
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kW/kW	6,41	6,66	6,72	6,79	6,68	6,68	6,88	6,95	6,73	6,53
		$\eta s\ heat_{30/35°C}$	%	237	251	253	256	251	251	259	261	253	245
	HW3	$SCOP_{47/55°C}$	kW/kW	4,43	4,88	4,82	4,62	4,64	4,73	5,14	5,14	4,86	4,64
		$\eta s\ heat_{47/5\ 5°C}$	%	164	183	181	173	174	177	193	193	182	174
		P_{rated}	kW	414	546	619	796	848	913	1113	1228	1413	1567
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	269	375	427	550	610	668	766	892	1026	1110
		EER	kW/kW	5,39	5,58	5,60	5,83	5,72	5,60	5,85	5,96	5,94	5,71
		Eurovent class		A	A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	378	536	611	787	869	941	1096	1275	1466	1588
		EER	kW/kW	7,62	7,85	7,94	8,33	8,04	7,54	8,30	8,35	8,28	7,91
		Eurovent class		A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,70**	**5,81**	**6,07**	**6,58**	**6,44**	**6,44**	**6,82**	**7,29**	**7,06**	**6,90**
		$\eta s\ cool_{12/7°C}$	**%**	**225**	**230**	**240**	**260**	**254**	**255**	**270**	**289**	**279**	**273**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**8,98**	**8,66**	**8,84**	**9,25**	**8,72**	**8,42**	**8,68**	**9,10**	**9,27**	**9,00**
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	7,23	7,32	7,41	8,45	7,85	7,93	8,34	8,57	8,46	8,15

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEER_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

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Eurovent certified values

PHYSICAL DATA, STANDARD UNITS

30XW-PZE / 30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Sound levels - standard unit											
Sound power level (1)	dB(A)	93	97	97	97	97	97	100	100	100	100
Sound pressure level at 1 m (2)	dB(A)	76	80	80	79	79	79	81	81	81	81
Sound levels - standard unit + option 257 (3)											
Sound power level (1)	dB(A)	-	94	94	94	94	94	97	97	97	97
Sound pressure level at 1 m (1)	dB(A)	-	76	76	76	76	76	78	78	78	78
Dimensions - standard unit											
Length	mm	2724	3059	3059	3290	3290	3290	4730	4730	4730	4730
Width	mm	928	936	936	1069	1069	1069	1039	1039	1162	1162
Height	mm	1567	1743	1743	1950	1950	1950	1997	1997	2051	2051
Operating weight (4)	kg	2157	3050	3050	3942	3977	3995	6932	7010	7665	7875
Compressors		Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A	-	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	-	1	1	1	1
Refrigerant - standard unit		R1234ze									
Circuit A	kg	78	130	130	180	175	170	120	120	130	130
	teq CO_2	0,5	0,9	0,9	1,3	1,2	1,2	0,8	0,8	0,9	0,9
Circuit B	kg	-	-	-	-	-	-	120	120	150	130
	teq CO_2	-	-	-	-	-	-	0,8	0,8	1,1	0,9
Oil - standard unit		HATCOL-4496									
Circuit A	l	20	20	20	25	25	25	20	20	25	25
Circuit B	l	-	-	-	-	-	-	20	20	20	25
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capcity	%	15	15	15	15	15	15	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	61	101	101	154	154	154	293	293	321	321
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	103	103	148	148	148	316	316	340	340
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level

(4) Weight shown is guideline only. Please refer to the unit nameplate

ELECTRICAL DATA, STANDARD UNITS

30XW-PZE / 30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Power circuit											
Nom. power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current(1)											
Circuit A	A	303	414	414	587	587	587	414	414	587	587
Circuit B	A	-	-	-	-	-	-	414	414	414	587
Option 81	A	-	-	-	-	-	-	529	543	716	751
Maximum start-up current(2)											
Circuit A	A	303	414	414	587	587	587	414	414	587	587
Circuit B	A	-	-	-	-	-	-	414	414	414	587
Option 81	A	-	-	-	-	-	-	597	621	794	855
Cosine phi											
Nominal(3)		0,79	0,86	0,87	0,85	0,87	0,89	0,86	0,87	0,85	0,85
Maximum(4)		0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90
Total harmonic distortion(4)	%	Closed to 0% (negligible)									
Maximum power input(5)											
Circuit A	kW	86	112	126	148	165	174	112	126	148	148
Circuit B	kW	-	-	-	-	-	-	112	126	126	148
Option 81	kW	-	-	-	-	-	-	224	252	274	296
Nominal current drawn(3)											
Circuit A	A	91	115	129	164	177	194	115	129	164	164
Circuit B	A	-	-	-	-	-	-	115	129	129	164
Option 81	A	-	-	-	-	-	-	230	258	293	328
Maximum current drawn (Un)(5)											
Circuit A	A	140	180	205	240	268	282	180	205	240	240
Circuit B	A	-	-	-	-	-	-	180	205	205	240
Option 81	A	-	-	-	-	-	-	360	410	445	480
Maximum current drawn (Un -10%)(4)											
Circuit A	A	153	196	223	261	292	307	196	223	261	261
Circuit B	A	-	-	-	-	-	-	196	223	223	261
Option 81	A	-	-	-	-	-	-	392	446	484	522
Maximum power input with option 150B(5)											
Circuit A	kW	76	97	110	129	146	153	97	110	129	129
Circuit B	kW	-	-	-	-	-	-	97	110	110	129
Option 81	kW	-						195	220	239	258
Maximum current drawn (Un) with option 150B(5)											
Circuit A	A	123	158	179	209	237	249	158	179	209	209
Circuit B	A	-	-	-	-	-	-	158	179	179	209
Option 81	A	-	-	-	-	-	-	316	358	388	418

(1) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.
(2) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.
(3) Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C
(4) Values obtained at operation with maximum unit power input.
(5) Values obtained at operation with maximum unit power input. Values given on the unit nameplate.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-ZE / 30XWHZE				301	401	451	551	601	651	801	901	1001	1101
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	315	475	521	658	716	774	919	1068	1127	1254
		COP	kW/kW	5,74	6,01	6,00	5,76	5,74	5,79	5,88	6,02	5,88	5,68
	HW2	Nominal capacity	kW	306	457	502	640	696	755	886	1027	1091	1217
		COP	kW/kW	4,68	4,93	4,92	4,75	4,73	4,79	4,84	4,97	4,86	4,71
	HW3	Nominal capacity	kW	298	442	485	621	678	736	856	986	1055	1178
		COP	kW/kW	3,83	4,03	4,03	3,89	3,88	3,94	3,95	4,06	3,99	3,89
	HW4	Nominal capacity	kW	290	428	469	602	662	717	831	952	1021	1140
		COP	kW/kW	3,10	3,26	3,25	3,17	3,16	3,19	3,20	3,27	3,24	3,17
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	6,29	6,42	6,46	6,66	6,41	6,51	6,25	6,48	6,34	6,39
		$\eta s\ heat_{30/35°C}$	%	227	242	243	251	241	245	235	243	238	240
	HW3	$SCOP_{47/55°C}$	kWh/kWh	4,81	4,87	4,90	5,06	4,88	4,98	4,88	5,10	5,00	5,07
		$\eta s\ heat_{47/55°C}$	%	175	183	184	190	183	187	183	191	188	190
		Prated	kW	425	546	608	770	837	927	1085	1246	1378	1548
Cooling													
Unit + option 150 Full load performances*	CW1	Nominal capacity	kW	265	404	444	556	606	655	781	915	962	1064
		EER	kW/kW	4,94	5,22	5,23	4,96	4,96	5,02	5,14	5,36	5,18	4,99
		Eurovent class		B	A	A		B		A	A	A	
	CW2	Nominal capacity	kW	375	578	637	767	834	892	1123	1313	1354	1464
		EER	kW/kW	6,01	6,39	6,42	5,91	5,87	5,84	6,36	6,52	6,24	5,88
		Eurovent class		A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,97**	**6,29**	**6,33**	**6,50**	**6,32**	**6,41**	**6,39**	**6,82**	**6,51**	**6,64**
		$\eta s\ cool_{12/7°C}$	**%**	**236**	**249**	**250**	**257**	**250**	**253**	**253**	**270**	**257**	**263**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**7,02**	**7,11**	**7,18**	**7,44**	**7,10**	**7,26**	**6,93**	**7,34**	**7,27**	**7,21**

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W

HW4 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 55°C/65°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

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Eurovent certified values

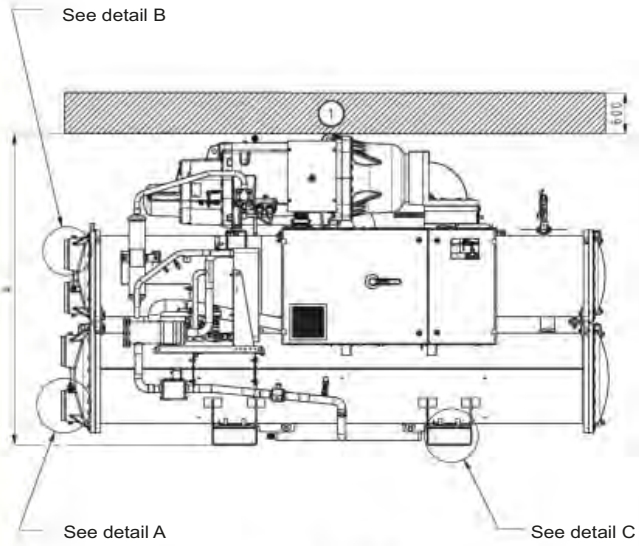
ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

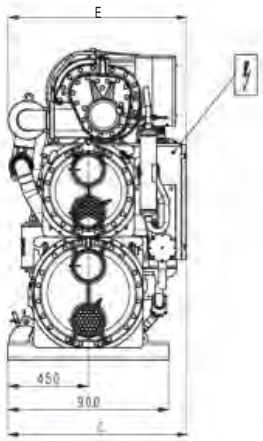
30XW-PZE / 30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current(1)											
Circuit A	A	388	587	587	629	629	629	587	587	629	629
Circuit B	A	-	-	-	-	-	-	587	587	587	629
Option 81	A	-	-	-	-	-	-	712	725	767	815
Maximum start-up current(2)											
Circuit A	A	388	587	587	629	629	629	587	587	629	629
Circuit B	A	-	-	-	-	-	-	587	587	587	629
Option 81	A	-	-	-	-	-	-	833	860	902	972
Cosine phi nominal(3)		0,75	0,80	0,81	0,80	0,81	0,83	0,80	0,81	0,80	0,80
Cosine phi maximum(4)		0,90	0,90	0,90	0,89	0,89	0,89	0,90	0,90	0,89	0,89
Total harmonic distortion(4)	%	Closed to 0% (negligible)									
Maximum power input(5)											
Circuit A	kW	107	144	158	202	219	228	144	158	202	202
Circuit B	kW	-	-	-	-	-	-	144	158	158	202
Option 81	kW	-	-	-	-	-	-	288	317	360	404
Nominal current drawn(3)											
Circuit A	A	102	125	138	186	197	213	125	138	186	186
Circuit B	A	-	-	-	-	-	-	125	138	138	186
Option 81	A	-	-	-	-	-	-	250	276	324	372
Maximum current drawn (Un)(5)											
Circuit A	A	174	234	257	328	356	371	234	257	328	328
Circuit B	A	-	-	-	-	-	-	234	257	257	328
Option 81	A	-	-	-	-	-	-	468	514	585	656
Max. current drawn (Un -10%)(4)											
Circuit A	A	190	255	280	357	387	404	255	280	357	357
Circuit B	A	-	-	-	-	-	-	255	280	280	357
Option 81	A	-	-	-	-	-	-	510	560	637	714

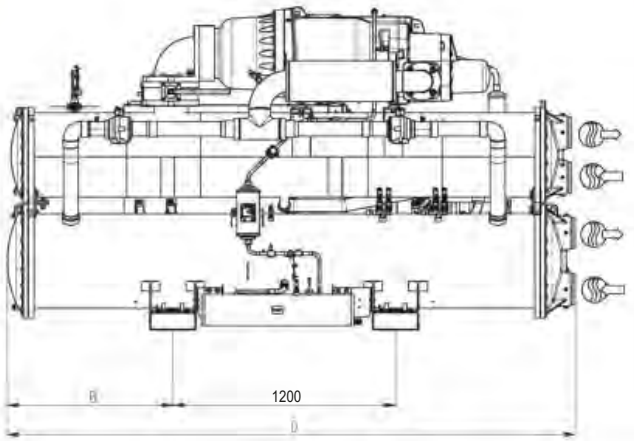
(1) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.
(2) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.
(3) Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C
(4) Values obtained at operation with maximum unit power input.
(5) Values obtained at operation with maximum unit power input. Values given on the unit nameplate.

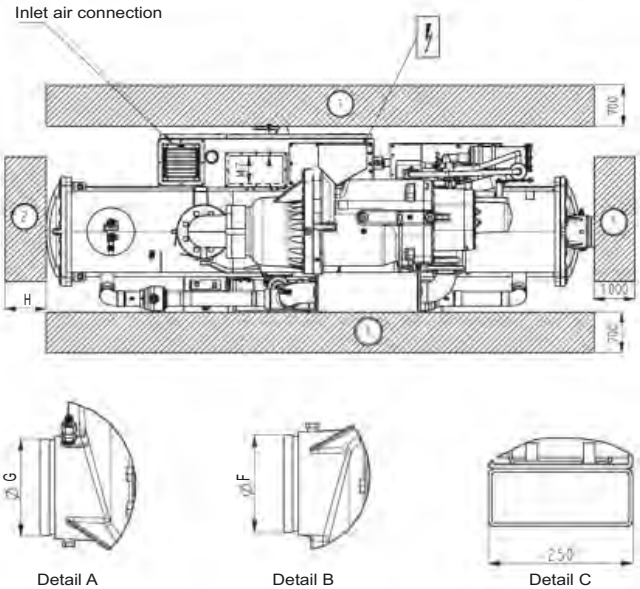
DIMENSIONS/CLEARANCES

30XW-PZE/30XWHPZE 301-651









Dimensions en mm	A	B	C	D	E	F	G	H
30XW-PZE / 30XWHPZE								
301	1612	800	982	2724	983	141,3	141,3	2600
401	1743	968	980	3059	982	168,3	168,3	2800
451	174	968	980	3059	982	168,3	168,3	2800
551	1950	1083	1080	3290	1180	219,1	219,1	3100
601	1950	1083	1080	3290	1180	219,1	219,1	3100
651	1950	1083	1080	3290	1180	219,1	219,1	3100
30XW-PZE / 30XWHPZE (option 150)								
301	1612	800	982	2724	983	141,3	141,3	2600
401	1743	968	980	3059	982	168,3	168,3	2800
451	1743	968	1040	3059	1042	168,3	168,3	2800
551	1968	1083	1	3290	11	219,1	219,1	3100
601	1968	1083	1080	3290	1180	219,1	219,1	3100
651	1968	1083	1080	3290	1180	219,1	219,1	3100

Legend

All dimensions are given in mm

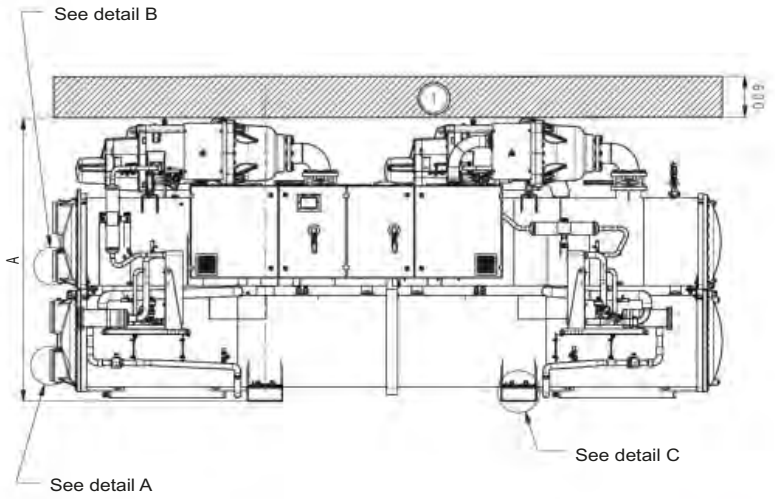
1. Services clearances required
2. Space required to remove cooler tubes
- Inlet water
- Outlet water
- Electrical supply entry

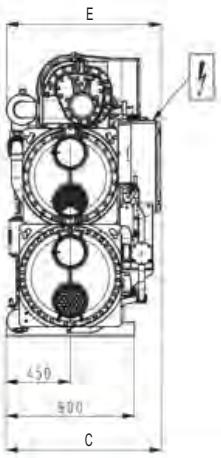
NOTES:

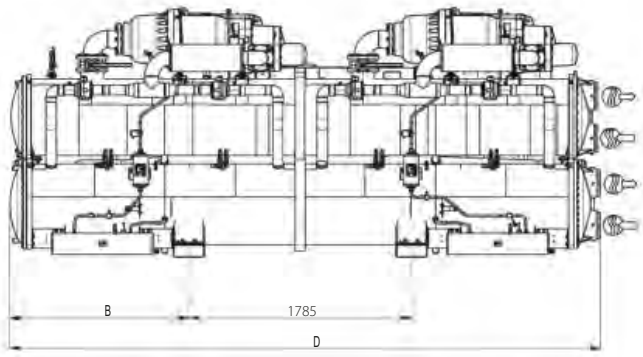
- ***Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.***
- ***For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.***

DIMENSIONS/CLEARANCES

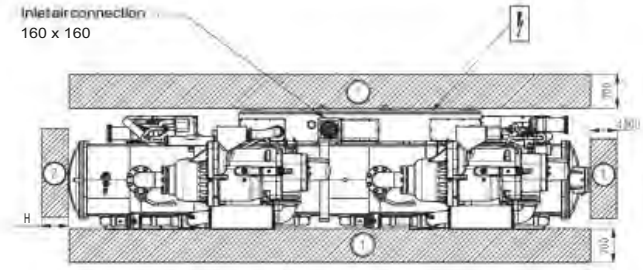
30XW-PZE/30XWHPZE 801-1101

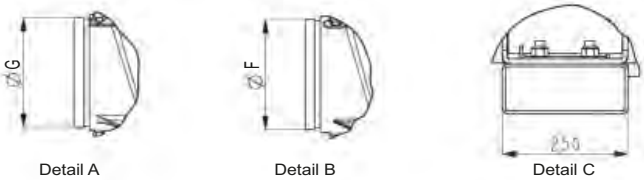






Dimensions en mm	A	B	C	D	E	F	G	H
30XW-PZE / 30XWHPZE								
801	1998	1512	1121	4730	1124	219,1	219,1	4500
901	1998	1512	1125	4730	1124	219,1	219,1	4500
1001	2051	1512	123	4730	1238	219,1	219,1	4500
1101	2051	1512	1238	4730	1238	219,1	219,1	4500
30XW-PZE / 30XWHPZE (option 150)								
801	1998	1512	1121	4730	1124	219,1	219,1	4500
901	1998	1512	1125	4730	1124	219,1	219,1	4500
1001	2070	1512	1238	4730	1238	219,1	219,1	4500
1101	2051	1512	1238	4730	1238	219,1	219,1	4500





Detail A Detail B Detail C

Legend

All dimensions are given in mm

1 Services clearances required

2 Space required to remove cooler tubes

Inlet water

Outlet water

Electrical supply entry

NOTES:

- ***Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.***
- ***For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.***

WATER-COOLED VARIABLE-SPEED SCREW CHILLERS

- Low energy consumption
- High reliability
- Safe Design
- Easy and fast installation
- Minimised operating sound levels
- Environmental care
- Designed to support green building design

30XW-VZE

AQUAFORCE PUREtec

Nominal cooling capacity 269-1110 kW
Nominal heating capacity 319-1296 kW

The 30XW-VZE water-sourced units are the premium solution for commercial and industrial applications where installers, consultants and building owners require maximum quality and optimal performances, especially at part load.

The 30XW-VZE units are designed to meet current and future requirements in terms of energy efficiency, versatility and compactness. They feature exclusive inverter-driven screw compressors - an evolution of the proven traditional Carrier twin-rotor screw compressor design. Other features include:

- the new Touch Pilot control
- mechanically cleanable flooded heat exchangers
- refrigerant R-1234ze

The 30XW-VZE/30XWHVZE range is splitted into two versions:

- 30XW-VZE for air conditioning applications
- 30XWHVZE for heating applications

As standard, the unit can provide an evaporator leaving water temperature down to 3.3°C, and when operating as a heat pump, it can deliver up to 55°C on the condenser side.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

* Evaporator with aluminium jacket shown in the picture not standard - available as special order only

CUSTOMER BENEFITS

Low energy consumption

- The 30XW-VZE/30XWHVZE are designed for high performance both at full load and at part load.
  - Eurovent certified values per EN14511-3:2013: SEPR up to 10.7 and SEER up to 8.8
- High energy efficiency
  - Inverter-driven twin-rotor screw compressors allow precise capacity matching of building load changes and significantly reduce unit power input, especially at part-load.
  - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
  - Electronic expansion device permits operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Optimised electrical performance
  - All 30XW-VZE/30XWHVZE units comply with class 3 of standard EN61800-3. Category C3 refers to industrial environments. With option 282 category C2 compliance is possible.
  - Inverter-driven motors ensure negligible start-up current (value is lower than the maximum unit current draw)

High reliability

- The 30XW-VZE and 30XWHVZE ranges offer increased global performance as well as Carrier's acclaimed product quality and reliability. Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Inverter-driven screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - The inverter is optimised for each compressor motor to ensure reliable operation and easy maintenance.
  - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuits
  - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
  - All components have been selected and tested with R-1234ze refrigerant
- Evaporator
  - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling
  - Automatic compressor unloading in case of abnormally high condensing pressure or discharge temperature.
- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard)

Safe Design

- Specific polyol ester oil qualified by Carrier for using with HFO-1234ze to guarantee and maintain reliable bearing lubrication.
- Specific compressor gaskets compatible with HFO-1234ze, tested and validated by Carrier.
- New relief valves designed for operation with HFO-1234ze
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.

Easy and fast installation

- Compact design
  - The 30XW-VZE/30XWHVZE units are designed to offer compact dimensions for easy installation.
  - With a width of approximately 1.25 m up to 1000 kW the units can pass through standard door openings and only require minimum floor space in the plant room.
- Simplified electrical connections
  - Main disconnect switch with high trip capacity
  - Transformer supply to the integrated control circuit (400/24 V)
- Simplified water connections
  - Victaulic connections on the evaporator and condenser
  - Practical reference marks for entering and leaving water connections
  - Possibility to reverse the heat exchanger water inlet and outlet at the factory
  - Possibilty to modify the number of heat exchanger passes
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Minimised operating sound levels

- The inverter technology used for the compressor motors minimises noise levels at part load operation. In two-compressor units at 25% of the maximum load the unit sound power level is reduced by 10 dB(A).
- Standard unit features include:
  - Silencers on the compressor discharge line.
  - Sound insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

CUSTOMER BENEFITS

Environmental care

PUREtec

- R-1234ze long-term refrigerant solution
  - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
  - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
  - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support green building design

- A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment. The underlying principles of this approach: The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.
- The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year 30XW-VZE/30XWHVZE units offers a solution to this important challenge.
- A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.
- The following example looks at how Carrier's new 30XW-VZE/30XWHVZE range helps customers involved in LEED® building certification.

30XW-VZE/30XWHVZE and LEED® certification

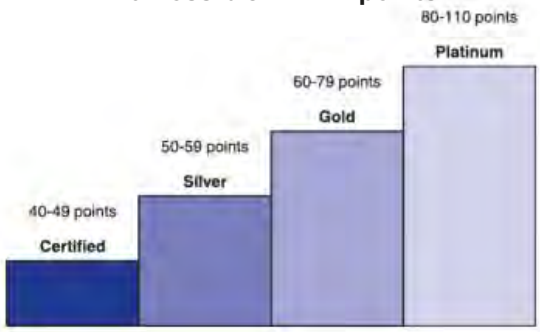
The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:
- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points

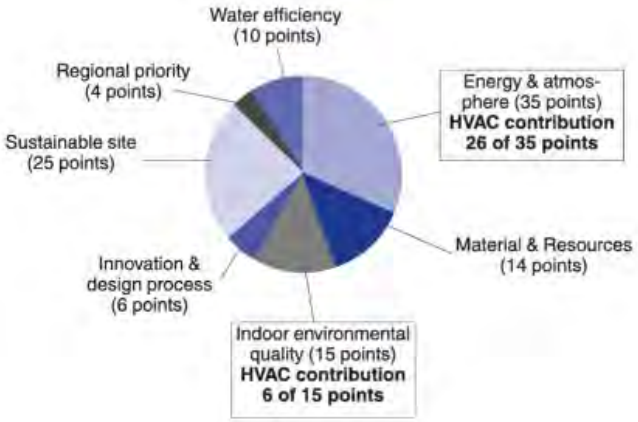


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

Overview of LEED® for new construction and major renovations



The new 30XW-VZE/30XWHVZE units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: Minimum energy Performance
  The 30XW-VZE/30XWHVZE exceeds the energy efficiency requirements of ASHRAE 90,1-2007; therefore it complies with the presequisite standard.
- EA prerequisite 3: Fundamental Refrigerant Management
  The 30XW-VZE/30XWHVZE does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.

CUSTOMER BENEFITS

- EA credit 1: Optimise energy performance (1 to 19 points)
  Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90,1-2007 reference. The 30XW-VZE/30XWHVZE, which is designed for high performance especially during part load operation, contributes reducing the energy consumption of the building and therefore helps gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- EA credit 4: Enhanced refrigerant management (2 points)
  With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Globlal Warming Potential (GWP) of the system. The 30XW-VZE/30XWHV-ZE uses HFO-1234ze refrigerant with Global Warming Potential Index below 1 and therefore contributes toward satisfying this credit under LEED®.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30XW-V-ZE/30XWHV-ZE. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

Touch Pilot control

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 7'' interface
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and «smart» intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management
  - Internal time schedule clock: controls chiller on/off times and operation at a second set-point
  - Set-point reset based on the return water temperature
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote management (standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).
- The 30XW-VZE/30XWHVZE also communicates with other building management systems via optional communication gateways.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/Stop of the machine
  - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
  - Demand limit setting: To limit the maximum chiller capacity to a predefined value
  - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
  - Operation visualisation: Indication if the unit is operating or if it is in stand-by (no cooling load)
  - Alarm visualisation.

TECHNICAL INSIGHTS

Remote management (EMM option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set-point reset: ensures reset of the cooling set-point based on a 0-10 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
- User safety: this contact can be used for any customer safety loop; opening the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status : set of outputs (as many as the compressors number) indicating which compressors are running.

New inverter-driven Thunderbolt screw compressor

- The Carrier 06T screw compressor designed for operation with HFO-1234ze refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The design of the Thunderbolt compressors is based on the successful 06T screw compressor, core of the well-known Aquaforce series.
- Advanced control algorithms combine inverter frequency output with motor input logic to minimise mechanical part stress, resulting in best compression performance and high chiller reliability. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.
- Screw compressors use positive displacement principle to compress gases at higher pressure. As a result, in case of exceptional high temperature condenser side (due for example to water-pipes fouling or operation in harsh climate with an external dry-cooler) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode.
- The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.
- The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	N°	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	451-1301 (see dedicated paragraph)
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	451-1301
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	451-1301
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	451-1301
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	451-1301
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	451-1301
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	451-1301
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	451-1 1
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	451-1301
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	451-1301
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	451-1301
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	451-1301
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	451-1301
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	451-1301
Control for low cond. temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	451-1301
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	451-1301
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	451-1301
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	451-1301
Low noise level	257	Evaporator sound insulation	3 dB(A) quiter than standard unit	451-1301
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	451-1301
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	451-1301
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	451-1301
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	asy installation	451-1301

OPTIONS

Options	N°	Description	Advantages	Use
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	451-1301
EMC classification C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allow its compliancy with emissions level required in category C2	451-1301
Fast Capacity Recovery	QM295	New software algorithms to allow quick restart and fast loading while preserving unit-reliability	Full capacity recovery in less than 5 minutes after power failure. Matches requirements of typical critical missions applications	451-1301
Carrier Connect link (BSS regions only)	298	3G router board **NOTE 1:** require option 149 **NOTE 2:** when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 **NOTE 3:** if the Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	451-1301

PHYSICAL DATA, 30XW-VZE UNITS

30XW-V ZE / 30XWHVZE				451	501	601	651	851	1001	1101	1201	1301
Heating												
Standard unit Full load performances*	HW1	Nominal capacity	kW	524	588	737	795	1016	1129	1255	1395	1485
		COP	kW/kW	6,22	6,16	6,07	5,97	6,19	6,10	6,06	5,87	5,72
	HW2	Nominal capacity	kW	493	550	684	744	996	1058	1184	1350	1480
		COP	kW/kW	4,68	4,62	4,57	4,45	4,84	4,58	4,67	4,69	4,56
	HW3	Nominal capacity	kW	468	514	634	703	943	989	1098	1241	1384
		COP	kW/kW	3,48	3,42	3,43	3,29	3,59	3,38	3,51	3,57	3,43
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	7,83	7,57	7,80	7,75	7,63	7,59	7,35	6,80	6,73
		$\eta s\ heat_{30/35°C}$	%	298	288	297	295	290	288	279	257	254
	HW3	$SCOP_{47/55°C}$	kWh/kWh	5,42	5,38	5,34	5,29	5,39	5,47	5,55	5,26	5,20
		$\eta s\ heat_{47/55°C}$	%	206	204	202	201	204	207	210	199	197
		P_{rated}	kW	559	614	761	827	1086	1217	1361	1507	1645
Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	448	502	627	674	864	962	1067	1178	1243
		EER	kW/kW	5,44	5,41	5,29	5,20	5,46	5,38	5,37	5,24	5,10
		Eurovent class		A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	670	730	898	818	1156	1379	1465	1554	1617
		EER	kW/kW	7,74	7,48	7,12	6,20	7,02	7,38	6,95	6,48	6,29
		Eurovent class		A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**8,15**	**7,92**	**8,81**	**8,43**	**8,40**	**8,50**	**7,48**	**7,33**	**7,13**
		$\eta s\ cool_{12/7°C}$	**%**	**323**	**314**	**349**	**334**	**333**	**337**	**296**	**290**	**282**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**10,49**	**10,23**	**10,42**	**10,0**	**10,71**	**10,71**	**9,66**	**9,12**	**9,10**
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	9,71	8,95	9,73	9,31	10,17	10,15	7,98	7,56	7,32

*	In accordance with standard EN14511-3:2013
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
HW3	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CW2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	in dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level
(4)	Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEER_{23/18°C}$	Applicable Ecodesign regulation: (EU) No 2016/2281

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, 30XW-VZE UNITS

30XW-V ZE / 30XWHVZE		451	501	601	651	851	1001	1101	1201	1301
Sound levels - standard unit										
Sound power level(1)	dB(A)	103	103	103	103	104	104	104	104	104
Sound pressure level at 1 m(2)	dB(A)	85	85	85	85	85	85	85	85	85
Sound levels - standard unit + option 257(3)										
Sound power level(1)	dB(A)	100	100	100	100	101	101	101	101	101
Sound pressure level at 1 m(2)	dB(A)	82	82	82	82	82	82	82	82	82
Dimensions - standard unit										
Length	mm	3059	3059	3290	3290	4730	4730	4730	4730	4730
Width	mm	1087	1087	1237	1237	1164	1164	1264	1264	1264
Height	mm	1743	1743	1948	1948	1997	1997	2051	2051	2051
Operating weight(4)	kg	3223	3261	4263	4267	7477	7553	7731	7932	7970
Compressors		Semi-hermetic 06T screw compressors, 60 r/s								
Circuit A	-	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	1	1	1	1	1
Oil - standard unit		HATCOL-4496								
Circuit A	l	20	20	25	25	20	20	25	25	25
Circuit B	l	-	-	-	-	20	20	20	25	25
Refrigerant - standard unit		R1234ze (E)								
Circuit A	kg	130	130	180	175	120	120	115	115	110
	teq CO_2	0,9	0,9	1,3	1,2	0,8	0,8	0,8	0,8	0,8
Circuit B	kg	-	-	-	-	120	120	120	115	110
	teq CO_2	-	-	-	-	0,8	0,8	0,8	0,8	0,8
Capacity control		Touch Pilot, inverter-driven compressor, electronic expansion valve (EXV)								
Minimum capcity	%	20	20	20	20	10	10	10	10	10
Evaporator		Multi-pipe flooded type								
Water volume	l	106	106	154	154	297	297	297	297	297
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type								
Water volume	l	112	112	165	165	340	340	340	340	340
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) in dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Option 257 = Low noise level
(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate

ELECTRICAL DATA

30XW-VZE /30XWHVZE		451	501	601	651	851	1001	1101	1201	1301
Power circuit										
Nominal power supply	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit		24 V via the built-in transformer								
Start-up current*	A	Negligible (lower than maximum current drawn)								
Maximum power factor**		0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93
Cosine phi		> 0.98	> 0.98	> 0.98	> 0.98	> 0.98	> 0.98	> 0.98	> 0.98	> 0.98
Harmonic distortion rate***	%	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45
Maximum power input******										
Circuit A	kW	125	157	189	208	125	157	189	189	208
Circuit B	kW	-	-	-	-	125	157	157	189	208
With option 81	kW	-	-	-	-	250	314	346	378	416
Eurovent current draw†										
Circuit A	A	129	148	180	197	129	149	180	180	197
Circuit B	A	-	-	-	-	129	149	149	180	197
With option 81	A	-	-	-	-	258	298	329	360	394
Maximum current draw (Un)******										
Circuit A	A	195	245	295	325	195	245	295	295	325
Circuit B	A	-	-	-	-	195	245	245	295	325
With option 81	A	-	-	-	-	390	490	540	590	650
Maximum current draw (Un -10%)***										
Circuit A	A	206	260	313	345	206	260	313	313	345
Circuit B	A	-	-	-	-	206	260	260	313	345
With option 81	A	-	-	-	-	412	520	573	626	690
Maximum power input with option 150B******										
Circuit A	kW	106	134	161	177	106	134	161	161	177
Circuit B	kW	-	-	-	-	106	134	134	161	177
With option 81	kW	-	-	-	-	212	268	295	322	354
Maximum current draw (Un) with option 150B******										
Circuit A	A	169	213	257	283	169	213	257	257	283
Circuit B	A	-	-	-	-	169	213	213	257	283
With option 81	A	-	-	-	-	338	426	470	514	566
Dissipated power***	W	3000	4200	4700	5300	6000	8400	8900	9400	10600

* Instantaneous start-up current.

** May vary, based on the short-circuit current/max. current draw ratio of the system transformer. Values obtained at operation with maximum unit power input.

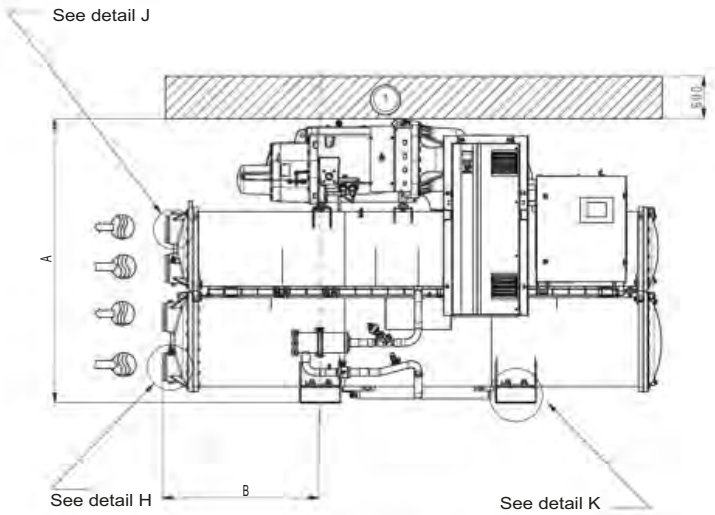
*** Values obtained at operation with maximum unit power input.

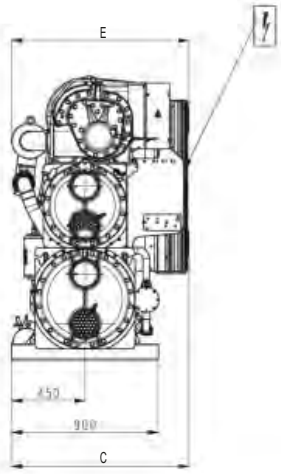
**** Values obtained at operation with maximum unit power input. Values given on the unit name plate.

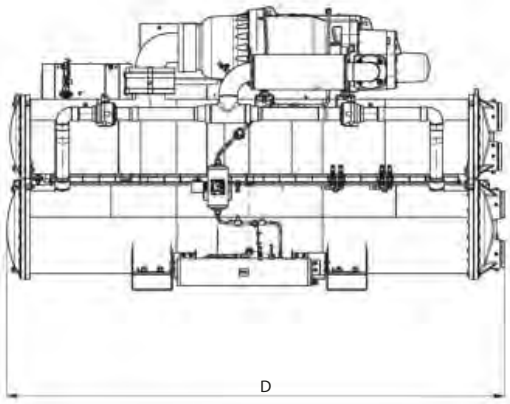
† Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C. Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

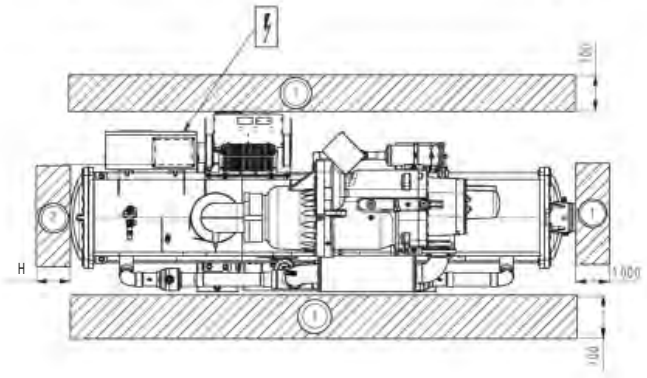
DIMENSIONS/CLEARANCES

30XW-VZE/30XWHVZE 451-651









Dimensions in mm								
	A	B	C	D	E	F	G	H
30XW-VZE/30XWHVZE								
451	1743	968	1087	3059	1086	168.3	168.3	2800
501	1743	968	1087	3059	1086	168.3	168.3	2800
601	1948	1083	1137	3290	1237	219.1	219.1	3100
651	1 4	1083	11	3290	12	219.1	219.1	3100

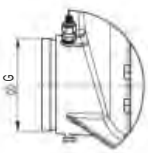
Legend

All dimensions are given in mm

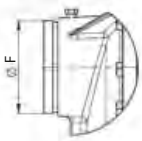
1. Services clearances required
2. Space required to remove
- Inlet water
- Outlet water
- Electrical supply entry

NOTES:

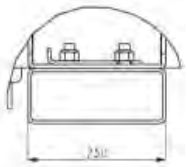
- ***Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.***
- ***For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.***



Detail H



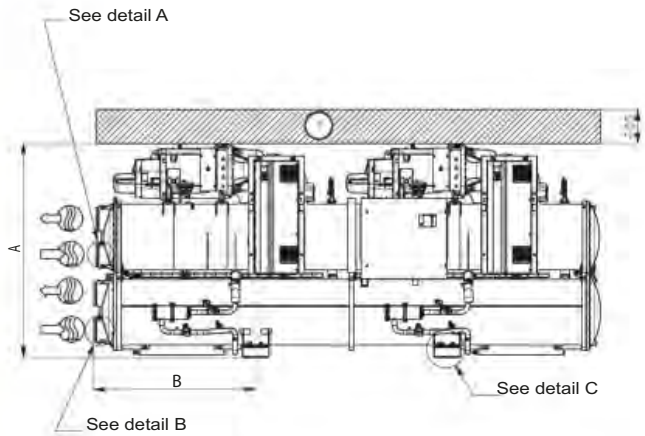
Detail J

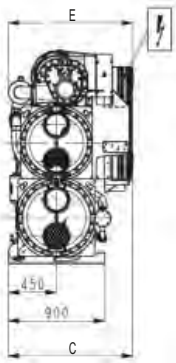


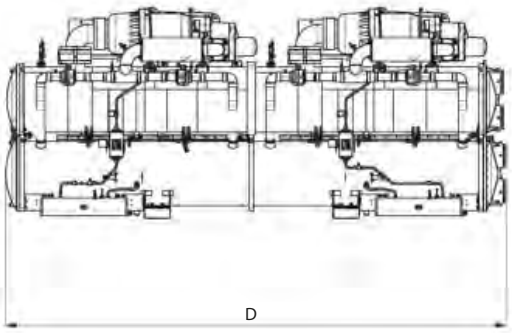
Detail K

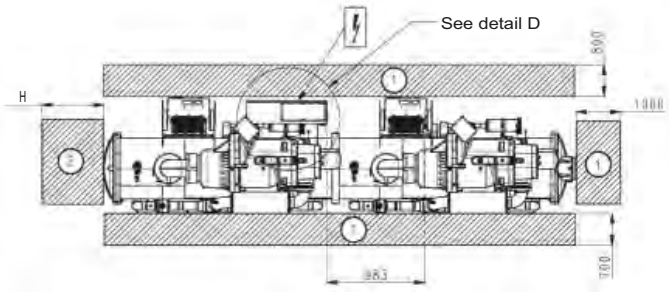
DIMENSIONS/CLEARANCES

30XW-VZE/30XWHVZE 851-1301









Dimensions in mm								
	A	B	C	D	E	F	G	H
30XW-VZE/30XWHVZE								
851	1998	1514	1164	4730	1162	219.1	219.1	4500
1001	1998	1514	1164	4730	1162	219.1	219.1	4500
1101	2051	1514	1164	4730	1264	219.1	219.1	4500
1201	2051	1514	11 4	4730	1264	219.1	219.1	4500
1301	2051	1514	1164	4730	1264	219.1	219.1	4500

Legend

All dimensions are given in mm

1. Services clearances required
2. Space required to remove
- Inlet water
- Outlet water
- Electrical supply entry

NOTES:

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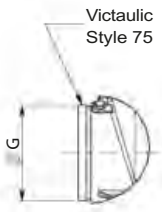
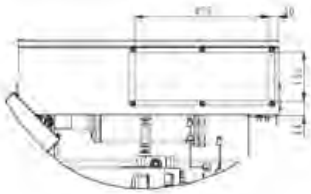
- ***For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.***



Detail A

Detail B

Detail C



Detail D

NEW

WATER CHILLERS HEAT PUMPS

- Energy excellence
- Compact and reliable
- Twin-turbine centrifugal compressors
- Oil-Free compressors
- Flooded shell and tubes evaporator
- Self-adjusting electronic control
- Touch screen control interface

19PV

AQUAEDGE

Cooling capacity 550-1600 kW
Heating capacity 650-1875 kW

The latest generation of **19PV** water chillers and water-to-water heat pumps are the perfect solution for all heating and cooling applications in the Office, Healthcare, Industry, Administration, Shopping centers, data centers and Collective Housing markets.

19PV is optimised to use non-ozone depleting HFC R134a refrigerant.

This range guarantees compliance with the most demanding requirements for high energy efficiency and CO_2 reduction to comply with the various applicable European directives and regulations.

When producing chilled water, these units can be connected to a drycooler or a water cooling tower.

With the heat pump option, the units can produce hot water for heating applications. They can also be used in cooling mode by reversing the cycle on the hydraulic circuits using a set of valves (hydraulic valves not supplied).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

DESCRIPTION

■ ***19PV, series***

Very High Efficiency cooling or heating version

The product is optimised to meet the most demanding technical and economic requirements.

The product is optimised for very high energy efficiency applications for which optimum seasonnal performance SEER values are required, ensuring operating costs are kept to a minimum.

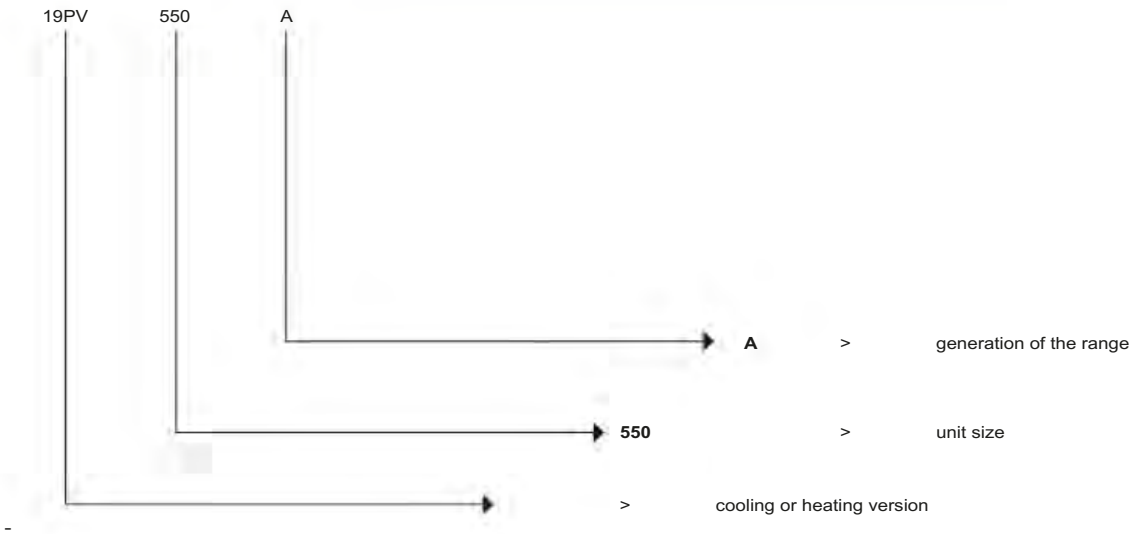
19PV units are packaged machines supplied as standard with the following components:

- Maglev centrifugal semi-hermetic compressors
- No oil
- Shell and tube type chilled-water evaporator
- Shell and tube type hot water condenser
- Electrical power and remote control cabinet:
  - 400 V-3ph-50 Hz general power supply (+/-10%) + Earth
  - transformer fitted as standard on the machine for supplying the remote control circuit with 24 V
- Touch'Pilot electronic control module
- Casing for indoor installation

The entire 19PV range complies with the following EC directives and standards:

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2014/30/EU
- EMC immunity and emissions EN 61800-3 'C2'
- Low Voltage Directive 2014/35/EU
- RoHS 2011/65/EU
- Pressure Equipment Directive (PED) 2014/68/EU
- Machinery Directive EN 60-204 -1
- Refrigeration systems and heat pumps EN 378-2.
- Regulation (EU) 2016/2281 implementing Directive 2009/125/EC with regard to ecodesign requirements

DESIGNATION



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TECHNICAL INSIGHTS

Twin-turbine centrifugal compressors,

- 2 Stages centrifugal compressors
- Optimized for R134a refrigerant
- Oil-free type
- Noiseless, vibration less via Magnetic levitation
- Compression ratio: from 1.5 to 5.0
- High efficiency permanent-magnet synchronous inverter motor.
- Linear step less capacity control via integrated inverter motor (up to 36000 rpm)
- Compressor equipped with Inlet Guide Valve at the turbine suction
- Compressor capacity control by successive use of speed variation swept volume variation at the turbine
- Integrated Soft- Start system (starting current limited to 5A)
- High Power Factor motor (cosφ > 0.9 for main operating conditions)
- Motor and electronic power section cooled by refrigerant
- Full electronic protection of motor against thermal and electrical overload via Internal sensors
- Rotation direction, no phase, under voltage, over voltage and power failure control
- Sensor on refrigerant suction and discharge for temperature monitoring
- Degree of protection: IP54

Shell and tube evaporator

- High performance glandless technology
- Copper tube bundle with internal and external grooves
- 19 mm thermal insulation
- Victaulic type coupling
- Maximum pressure, water side, of 10 bar.

Shell and tube condenser

- Copper tube bundle with internal and external grooves
- 19 mm thermal insulation (option)
- Built-in oil separator
- Victaulic type coupling
- Maximum pressure, water side, of 10 bar.

Refrigerant accessories

- Dehumidifier filters with rechargeable cartridges
- Hygroscopic sight glasses
- Electronic expansion valves
- Check-valve to prevent fluid recirculation in the compressor during transition phase

Regulation and safety instruments

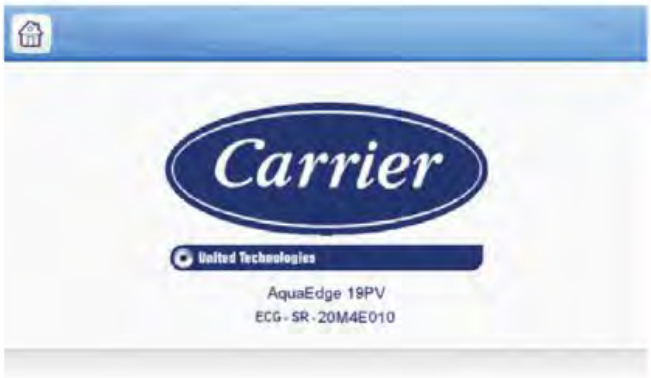
- High and low pressure sensors
- Safety relief valves on refrigerating circuit
- High pressure switch on each compressor
- Evaporator antifreeze protection sensor
- Chilled water and hot water control sensors
- Electronic evaporator water circulation controller

Electrical cabinet

- Electrical cabinet index of protection IP23
- Safety disconnect switch
- 24 V control circuit
- Remote control transformer circuit
- Protection of the power and control circuits
- Touch'Pilot microprocessor-controlled electronic control module
- Electrical cabinet wire numbers
- Location of main components
- EMC filters and line reactors
- Door contact protection

Touch'Pilot control module

- User interface with 7 inch touchscreen
- Intuitive, user-friendly navigation using icons
- Clear information display in 10 languages (English, Spanish, French, German, Dutch, Turkish, Italian, Portuguese, Russian +1 Free)



The electronic control module performs the following main functions:

- regulation of the chilled water temperature (at the return or at the outlet)
- regulation of the water temperature based on the outdoor temperature (water law)
- regulation for low temperature energy storage
- second set-point management
- complete management of compressors with start-up sequence, timer and operating time balancing
- self-regulating and proactive functions with adjustment of settings on drift control
- continuous power control slide system on the compressors according to the thermal requirements
- management of compressor short cycle protection
- phase reversal protection
- management of occupied/unoccupied modes (according to the time schedule)
- equalisation of compressor operating hours
- condensing temperature limitation (Option 152)
- diagnosis of fault and operating statuses
- management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
- blackbox memory
- master/slave management of two machines with equalisation of operating hours and automatic switching in case of a machine fault
- weekly and hourly time schedule for the machine, including 16 periods of absence
- display of all machine parameters (3 access levels, User/ Maintenance/Factory, password-protected): temperature, set-points, pressures, flow rate, operation time. display of trend curves for the main values
- storage of maintenance manual, wiring diagram and spare parts list.

Unit construction

- Electrical cabinet in light grey (RAL 7035)

TECHNICAL INSIGHTS

Remote management

Touch'Pilot is equipped as standard with an ETHERNET (IP) connection, offering a range of options for remote management, monitoring and diagnostics.

Using the integrated Webserver, a simple internet connection uses the unit's IP address to access the Touch'Pilot interface on the PC, facilitating everyday management tasks and maintenance operations.

Numerous communication protocols are available: MODBUS/ JBUS TC/IP as standard, BACNET IP optional, enabling integration with most CMS/BMS

Several contacts are available as standard, enabling the machine to be controlled remotely by wired link:

- automatic operation control: when this contact is open, the machine stops
- set-point 1/set-point 2 selector: when this contact is closed, a second cooling set-point is activated (energy storage or unoccupied mode, for example)
- heating/cooling operating mode selection
- fault reporting: this contact indicates the presence of a major fault which has caused one or both refrigerating circuits to stop
- operational status reporting indicates that the unit is in production mode
- Condenser flow switch
- set-point adjustable via 4-20 mA signal: this input is used to adjust the active set-point.
- power limitation adjustable by 4-20 mA signal
- power indication: analogue output (0-10 V) providing an indication of the unit's load rate.
- user fault reporting enables integration of a fault in the water loop
- general fault reporting: this contact indicates that the unit has stopped completely
- User interlock (open=unit shuts down / closed = enable to operate)
- alert reporting: this contact indicates the presence of a minor fault which has not caused the circuit affected to stop.
- end of storage signal: enables return to the second set-point at the end of the storage cycle
- schedule override: closing this contact cancels the time schedule.
- Evaporator pump control (control by 0-10V command)

Maintenance alert as standard

Touch'Pilot has two maintenance reminder functions as standard, making users aware of the need to regularly perform maintenance operations and to guarantee the service life and performance of the unit. These two functions can be activated independently.

A reminder message appears on the unit's HMI screen, and stays there until it is acknowledged by the maintenance operator. The information and alert relating to these functions are available on the communication bus to be used on the CMS/BMS.

- the scheduled maintenance reminder: when activated, this function enables the period between two maintenance inspections to be set. This period may be set by the operator in either days, months or operating hours, depending on the application.
- the compulsory F-GAS sealing test maintenance reminder: when activated, this function, which is the default factory setting, enables the period between two sealing tests to be selected, according to the refrigerant charge, in compliance with the F-GAS regulations.

OPTIONS

Option	No.	Description	Advantage	Use 19PV
Low noise level	15	Discharge piping acoustic insulation	Up to 3 dB(A) quieter than standard unit	0550-1600
Master/slave operation	58A	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel over Ethernet network (IP)	Optimised operation of two units connected in parrallel operation with operating time equalisation	0550-1600
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	0900-1600
Evap. single pump power/ control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	0550-1180
Cond. single pump power/ control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	0550-1180
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications)	0550-1600
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	0550-1600
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	0550-1600
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	0550-1600
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	0550-1600
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	0550-1600
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	0550-1600
Control for low cond. temperature	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so conden	0550-1600
Dry-cooler control	154	Remote control of 09PE or 09VE dry-cooler based on a 0-10V signal. The 09PE or 09VE dry-cooler shall be selected with control cabinet option	Easy system management, extended control capabilities of a remote dry-cooler	0550-1600
Input contact for Refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controlller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	0550-1600
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	0550-1600
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	0550-1600
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	0550-1600
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	0550-1600
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	0550-1600
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	0550-1600
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	0550-1600
Free-cooling dry-cooler control	313	Remote control of 09PE or 09VE dry-cooler based on a 0-10V signal. The 09PE or 09VE dry-cooler shall be selected with control cabinet option	Easy system management, extended control capabilities of a remote dry-cooler used in free-cooling mode	0550-1600
Heat Pump application	322	Unit configurated for Heat Pump application, includes thermal condenser insulation	Optimisation on heating mode & minimize thermal dispersions condenser side	0550-1600

PHYSICAL DATA, STANDARD UNITS

19PV				550	720	800	900	1010	1180	1300	1450	1600
Heating												
Standard unit Full load performances*	HW1	Nominal capacity	kW	649	844	939	1050	1198	1389	1538	1700	1875
		COP	kW/kW	6,13	6,26	5,93	5,79	5,89	5,76	5,97	5,89	5,67
	HW2	Nominal capacity	kW	629	817	915	1039	1186	1351	1491	1648	1820
		COP	kW/kW	4,89	4,81	4,63	4,68	4,68	4,53	4,72	4,62	4,50
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kW/kW	7,43	7,42	7,35	7,30	7,23	6,82	6,90	6,47	6,54
		$\eta s\ heat_{30/35°C}$	%	289	289	286	284	281	265	268	251	254
		P_{rated}	kW	762,9	992,6	1103,3	1235,2	1409,4	1633,7	1808,7	2001,5	2202,7
Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	550,3	717,3	790,8	879,8	1007,0	1167,2	1302,3	1441,7	1577,8
		EER net	kW/kW	5,39	5,53	5,18	5,02	5,15	5,13	5,38	5,42	5,13
		Eurovent class		A	A	A	B	A	A	A	A	A
		EER gross***		5,55	5,70	5,32	5,14	5,30	5,33	5,63	5,69	5,39
	CW2	Nominal capacity	kW	631	823	917	1014	1134	1348	1441	1638	1794
		EER net	kW/kW	8,00	8,43	7,79	7,61	7,86	7,80	8,04	8,11	7,49
		Eurovent class		A	A	A	A	A	A	A	A	A
		EER gross***		8,41	8,88	8,19	7,94	8,25	8,37	8,68	8,78	8,17
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kW/kW**	**,70**	**9,55**	**9,5**	**,79**	**9,59**	**9,49**	**9,50**	**,48**	**9,14**
		$SEER_{23/18°C}$ Comfort medium temp.	**kW/kW**	**10,91**	**11,65**	**12,00**	**11,42**	**11,21**	**11,01**	**11,03**	**11,05**	**10,65**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**9,48**	**10,31**	**9,78**	**9,05**	**9,26**	**9,44**	**9,49**	**9,75**	**9,32**
		ESEER	kW/kW	8,55	8,47	8,40	8,70	8,21	8,15	8,00	8,04	7,93
		ESEER gross***	kW/kW	9,74	9,62	9,48	9,79	8,96	9,66	9,51	9,74	9,77
Sound levels												
standard unit												
Sound power(1)			dB(A)	89	92	94	92	94	95	94	95	97
Sound pressure at 10 m(2)			dB(A)	57	60	62	60	62	63	62	63	65
imensions												
Standard unit												
Length			mm	3140	3160	3360	4345	4345	4345	4800	4800	4800
Width			mm	1270	1310	1335	1385	1385	1385	1385	1390	1410
eight				1780	1880	1965	2036	2036	2036	200	2050	2100
Operating weight(3)												
Standard unit			kg	2402	2930	3376	4831	4855	4904	5504	6164	6730
Compressors				MagLev compressor TT300 / TT350								
Circuit A				2	2	2	1	1	1	2	2	2
Circuit B					-	-	2	2	2	2	2	2

* In accordance with standard EN14511-3:2013.
** In accordance with standard EN14825:2013, average climate
*** Values not Eurovent certified. Calculation without the impact of the exchanger pressure drop.
HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
$SEER_{12/7°C}$ & $SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281
$SEER_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281
(1) in dB ref=10^{-12} W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).
(3) Values are guidelines only. Refer to the unit name plate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, STANDARD UNITS

19PV		550	720	800	900	1010	1180	1300	1450	1600
Refrigerant(3)		R-134a								
Circuit A	kg	95,0	120,0	140,0	100,0	100,0	100,0	125,0	135,0	150,0
	teqCO_2	135,9	171,6	200,2	143,0	143,0	143,0	178,8	193,1	214,5
Circuit B	kg	-	-	-	125,0	125,0	125,0	125,0	135,0	150,0
	teqCO_2	-	-	-	178,8	178,8	178,8	178,8	193,1	214,5
Capacity control		Touch'Pilot, electronic expansion valves (EXV)								
Minimum capacity	%	15	10	10	10	10	10	10	10	10
Evaporator		Flooded multi-pipe type								
Water volume	l	115	165	180	285	285	285	330	330	365
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Flooded multi-pipe type								
Water volume	l	145	157	187	308	308	308	339	487	487
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

(3) Values are guidelines only. Refer to the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

19PV		550	720	800	900	1010	1180	1300	1450	1600
Power circuit supply										
Nominal voltage	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit supply		24 V via the built-in transformer								
Maximum operating input power(1)- Standard unit										
Circuit 1(a)	kW	140	201	230	76	116	111	133	187	222
Circuit 2(a)	kW	-	-	-	152	152	222	204	187	222
Unit with option 81	kW	-	-	-	229	269	333	337	375	445
Power factor at maximum power(1)		0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92
Total Harmonic Distortion Intensity	%	<45	<45	<45	<45	<45	<45	<45	<45	<45
Nominal operating current draw(2)- Standard unit										
Circuit 1(a)	A	162	208	244	93	129	119	151	210	243
Circuit 2(a)	A	-	-	-	185	187	237	229	210	243
Unit with option 81	A	-	-	-	278	315	356	380	420	486
Maximum operating current draw (Un)(1)- Standard unit										
Circuit 1(a)	A	220	315	361	119	183	174	209	294	349
Circuit 2(a)	A	-	-	-	239	239	349	319	294	349
Unit with option 81	A	-	-	-	358	422	523	528	588	697
Maximum current (Un-10%)(1)- Standard unit										
Circuit 1(a)	A	237	340	390	129	197	188	225	318	377
Circuit 2(a)	A	-	-	-	258	258	377	345	318	377
Unit with option 81	A	-	-	-	387	456	565	570	635	753
Maximum start-up current(Un) - Standard unit(3)		Lower than max current								
Dissipated power of electrical equipment(1)	W	782	1249	1249	1144	1347	1814	1884	2351	2351

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C
(3) Start-up current is limited by the soft-start controller included in the compressor.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B

Note: Options 84 and 84R are not included in these values.

19PV		550	720	800	900	1010	1180	1300	1450	1600
Short-circuit whistand current (TN system)										
Circuit A+B	A			0	50	50			50	50

(1) If another current limitation protection device is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended protection.

Note: The short-circuit stability current values above are suitable with the TN system.

ELECTRICAL DATA, STANDARD UNITS

Electrical data notes and operating conditions, 19PV units

- **As standard:**

19PV 550 to 19PV800 units have a single power connection point located immediately upstream of the main supply disconnect switche.
19PV 900 to19PV 1600 units have two connection points located immediately upstream of the main supply disconnect switches.

- **Control box includes the following standard features:**
  - Two disconnect switches per circuit: One main supply disconnect switch and one disconnect switch for the supply of the control part, the undervoltage protection circuit and the motor mechanism module,
  - Filtering compressor currrent devices
  - Anti-short cycle protection devices
  - Control devices supply by internal transformers.

- **Field connections:**

All connections to the system and the electrical installations must be in accordance with all applicable codes.*

- 19PV units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1:general regulations) are specifically taken into account, when designing the electrical equipment.
- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation regulation.
- Annex B of standard EN 60204-1 specifies the electrical features used for the operation of the units. The features below complete the informations given in this document:

1. Physical environment:

The classification of environment is specified in standard EN 60364:
   - Indoor installation**,
   - Ambient temperature range: minimum temperature +5°C to +42°C, class AA4
   - Altitude: AC1 of 2000 m or less,
   - Presence of water: Class AD2 (possibility of water droplets)**
   - Presence of hard solid: Class AE2 (no significant dust present)**,
   - Presence of corrosive and polluting substances, class AF1 (negligible),
   - Competence of persons: BA4 (Persons wise),
   - Overvoltage category: II (2,5KV).
2. Compatibility for low-frequency conducted disturbances according to class 2 levels per IEC61000-2-4 standard:
   - Power supply frequency variation: +- 2Hz
   - Phase imbalance : 2%
3. The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch(es)/circuit breaker(s) are of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).
6. The units are designed for connection to TN networks (IEC 60364). In IT networks,if noise filters are integrated into the compressor(s) variable frequency drive(s), this will render the units unsuitable for their intended purpose. In addition, the equipment characteristics in case of insulation failure are modified.
   For IT networks, the earth connection must not be at the network earth. Provide a local earth; consult competent local organisations to complete the electrical installation.
7. Electromagnetic environment: classification of the electromagnetic environment is described in standard EN 61800-3 (corresponds to IEC 61800-3):
   - Immunity to external interference defined by the second environment***
   - Interference emission as defined in category C2

Warning: In a residential environment, this product may cause radio interference in which case additional mitigation measures could be required.

The compressor variable frequency drive is a source of perturbations from the harmonic currents. An investigation could be necessary to check that the perturbations don't exceed the compatibility limits with the other devices connected on the same power supply network. In an electrical installation, the levels of compatibility to be observed at the internal coupling point (IPC) to which other loads are connected are described in standard IEC 61000-2-4.

- Leakage currents: If protection by monitoring the leakage currents is necessary to ensure the safety of the installation, the presence of additional leakage currents introduced by the use of variable frequency drive(s) in the compressor must be considered.

In particular, the reinforced immunity protection types and a control value not lower than 150 mA are recommended when selecting differential protective devices.

Note: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

* Generally, the recommendations of the standard of International Electrotechnical Commission (IEC60364) are identified to meet the requirements of the installation guidelines.

** The required protection level for this class is IP21B or IPX1B (according to reference document IEC 60529). All 19PV units are IP23 and fulfil this protection condition.

***Example of second environnement installations: Industrial areas, technical facilities supplied by a dedicated transformer

PARTIAL LOAD PERFORMANCE

With the rapid increase in energy costs and the care about environmental impacts of electricity production, power consumption of air conditioning equipment has become an important topic.

The energy efficiency of a unit at full load is rarely representative of the actual performance of the units, as on average a unit works less than 5% of the time at full load.

SEER for comfort chillers (in accordance with EU ECODESIGN)

The **SEER** (**S**easonal **E**nergy **E**fficiency **R**atio) measures the seasonal energy efficiency of comfort **chillers** by calculating the ratio between annual cooling demand of the building and annual energy demand of the chiller. It takes into account the energy efficiency achieved for each outdoor temperature weighted by the number of hours observed for each of these temperatures, using actual climate data.

SEER is a new way of measuring the true energy efficiency of chillers for comfort cooling over an entire year. This new indicator gives a more realistic indication of the real energy efficiency and environmental impact of a cooling system (Ecodesign Regulation 2016/2281).

The heat load of a building depends on many factors, such as the outdoor air temperature, the exposure to the sun and its occupancy.

Consequently, it is preferable to use the average seasonal energy efficiency, calculated at several operation points that are representative of unit use.

ESEER (in accordance with EUROVENT)

The **ESEER** (**E**uropean **S**easonal **E**nergy **E**fficiency **R**atio) permits evaluation of the average energy efficiency at part load, based on four operating conditions defined by Eurovent. The ESEER is the average value of energy efficiency ratios (EER) at different operating conditions, weighted by the operating time.

Load %	Condenser entering water temperature, °C	Energy efficiency	Operating time, %
100	30	EER_1	3
75	26	EER_2	33
0	22		41
25	18	EER_4	23
$ESEER = EER_1 \times 3\% + EER_2 \times 33\% + EER_3 \times 41\% + EER_4 \times 23\%$			

Note: Constant leaving chilled water temperature 7°C.

SEPR for process chillers (in accordance with EU ECODESIGN)

The **SEPR** (**S**easonal **E**nergy **P**erformance **R**atio) measures the seasonal energy efficiency of **process chillers** by calculating the ratio between annual cooling demand of the process and annual energy demand of the chiller. It takes into account the energy efficiency achieved at each outdoor temperature of an average climate weighted by the number of hours observed for each of these temperatures.

SEPR is a new way of measuring the true energy efficiency of chillers for **process cooling** over an entire year. This new indicator gives a more realistic indication of the real energy efficiency and environmental impact of the cooling system (Ecodesign Regulation 2015/1095 or 2016/2281).

SOUND LEVELS

Standard Units

Sound power levels ref 10^{-12} W ±3 dB (Lw)

19PV	SOUND POWER LEVEL SPECTRUM (dB)							Overall power level dB(A)
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
550	71	77	78	85	80	79	84	89
720	72	77	84	84	80	86	89	92
800	76	81	85	86	83	87	92	94
900	76	82	82	88	84	82	88	92
1010	77	82	85	88	84	85	91	94
1180	77	82	86	87	84	88	93	95
1300	75	80	85	88	83	87	90	94
1450	75	80	87	87	83	89	92	95
1600	79	84	88	89	86	90	95	97

Sound pressure level ref $2x10^{-5}$ Pa ±3 dB (Lp)

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

19PV	SOUND PRESSURE SPECTRUM (dB)							Overall power level dB(A)
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
550	39	45	46	54	48	48	52	57
720	40	4	52	52	48	54	57	60
800	44	49	53	54	51	55	60	62
900	44	49	50	55	52	50	56	60
1010	45	50	53	56	52	53	59	62
1180	44	50	54	55	52	55	61	63
1300	42	48	53	56	51	55	58	62
1450	42	48	55	55	50	56	60	63
1600	46	52	56	57	54	57	63	65

Note: The sound levels by octave bands are given for information only and not contractually binding.
Only the overall power level is contractual.

Low noise option (Option 15)

Sound power levels ref 10^{-12} W ±3 dB (Lw)

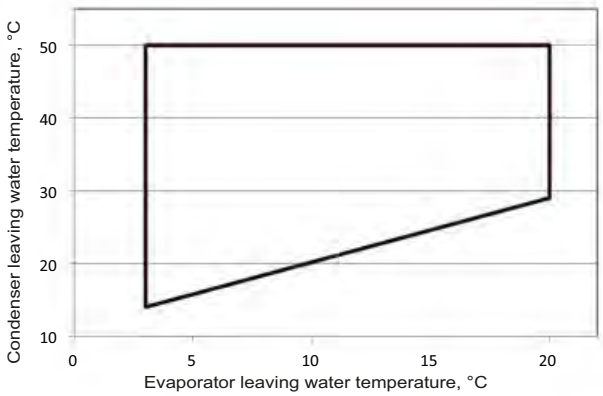
19PV	SOUND POWER LEVEL SPECTRUM (dB)							Overall power level dB(A)
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
550	72	78	79	85	79	77	81	88
720	71	78	83	82	78	83	84	89
800	84	82	85	85	81	83	87	91
900	71	82	82	88	83	79	84	91
1010	81	83	84	88	83	82	86	92
1180	85	83	86	86	82	84	88	92
1300	75	81	85	87	82	84	86	92
1450	74	81	86	85	81	86	87	92
1600	87	85	88	88	84	86	90	94

OPERATING LIMITS AND OPERATING RANGES

19PV		Minimum	Maximum
Evaporator			
Entering temperature at start-up	°C	-	35
Leaving temperature during operation	°C	3,3	20
Entering/leaving water temperature difference	K	3	11,1
Condenser			
Entering temperature at start-up	°C	13(1)	-
Leaving temperature during operation	°C	14(1)	50
Entering/leaving water temperature difference	K	3	11,1

(1) For lower condenser temperatures a water flow control valve must be used at the condenser (two or three-way valve). Please refer to Control for low condensing temperature option to ensure the correct condensing temperature.

19PV MAP



NOTES: Ambient temperatures: During storage and transport of the 19PV units (including by container) the minimum and maximum permissible temperatures are -20°C and 66°C.

For more precise details refer to the unit selection program.

SYSTEM WATER VOLUME - EXCHANGER WATER FLOW RATE

The Touch'Pilot controller is equipped with anticipation logic making it highly flexible in adjusting operation to parameter drift, particularly on hydraulic systems with low water volumes. By adjusting compressor running times, it prevents short-cycle protection cycles from starting and, in most cases, eliminates the need for a buffer tank.

Note: The minimum volumes of water are calculated on EUROVENT rated conditions:
- Chilled water temperature =12°C/7°C
- Condenser water temperature =30°C/35°C

This value is applicable for most air conditioning applications (unit with fan coil units).

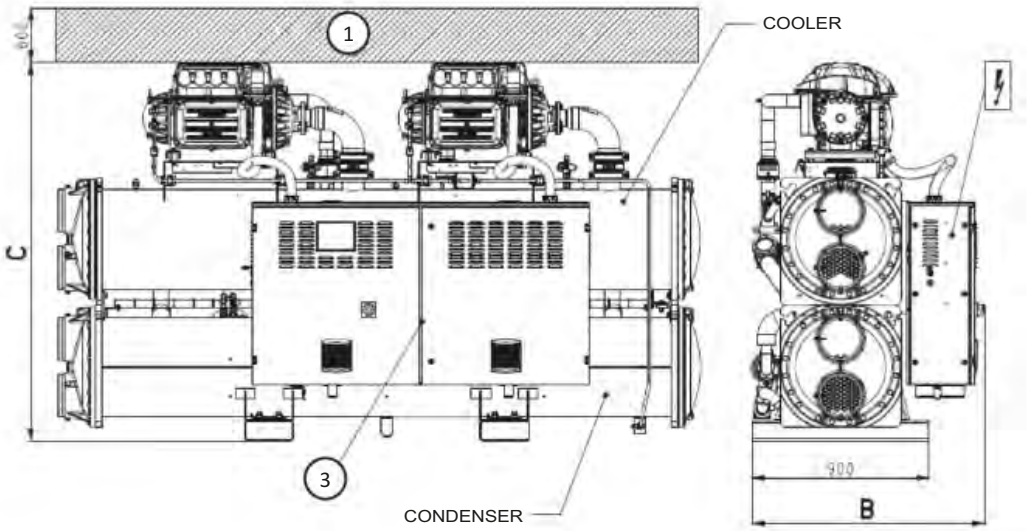
Note: For installations running with a low volume of water (unit with air handling unit) or for industrial processes, the buffer tank is essential.

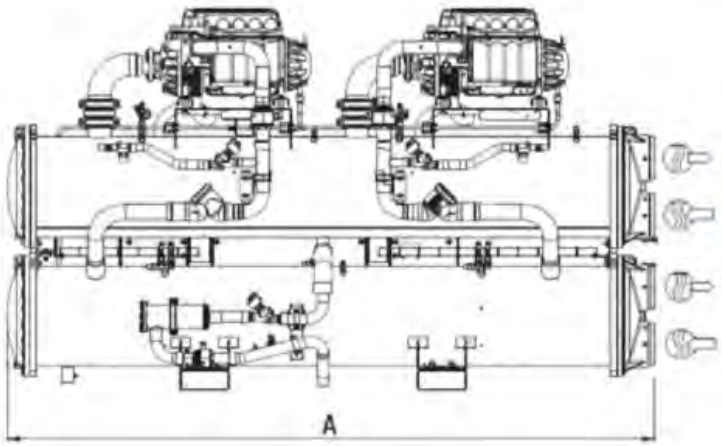
19PV	550	720	800	900	1010	1180	1300	1450	1600
Minimum installation volume (l)									
Air conditioning application	1770	2310	2570	2890	3240	3790	4170	4640	5130
Industrial process application	3530	4620	5140	5780	6480	7570	8330	9290	10250
Evaporator water flow rate (m³/h)									
Minimum(1)	34	34	34	34	61	61	61	61	61
aximum(3)	179	235	257	1	289	286	295	295	329
Condenser water flow rate (m³/h)									
Minimum(2)	21	21	36	36	36	36	36	36	36
Maximum(3)	245	299	346	486	457	454	428	594	526

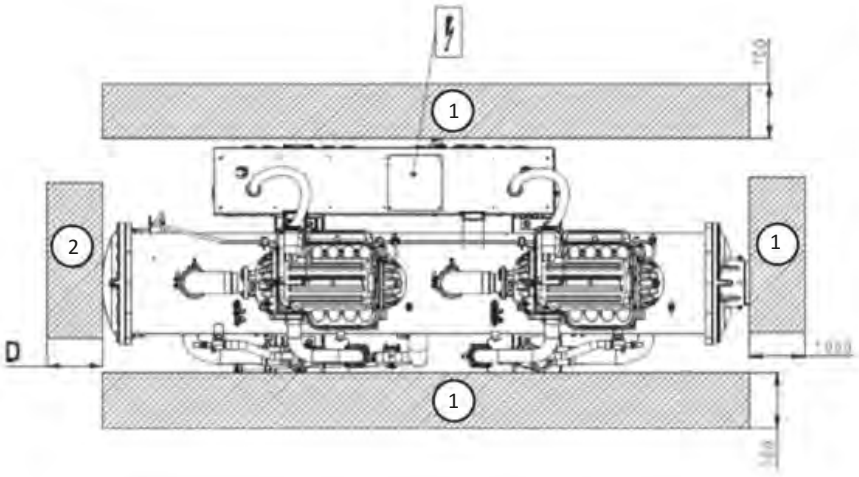
(1) Minimum evaporator flow rate based on a water velocity of 0,5 m/s.
(2) Minimum condenser flow rate based on a water velocity of 0,3 m/s.
(3) Maximum flow rate based on a pressure drop of 120 kPa (units with two evaporator passes and two condenser passes).

DIMENSIONS

19PV 550 to 800







Units sizes	Dimensions in mm			
	A	B	C	D
19PV				
550	3045	1120	1745	2800
0	70	1155	1846	800
800	3270	1190	1925	3000

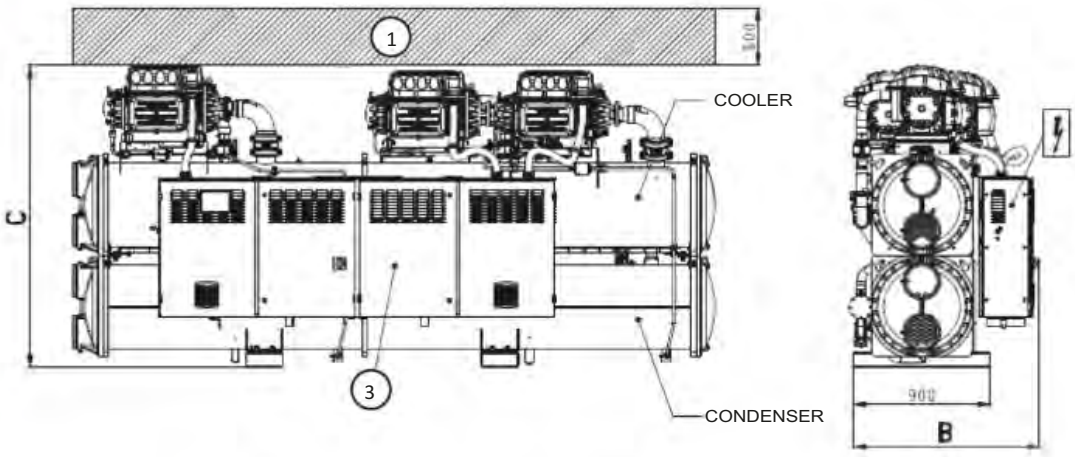
Legend:
All dimensions are given in mm.

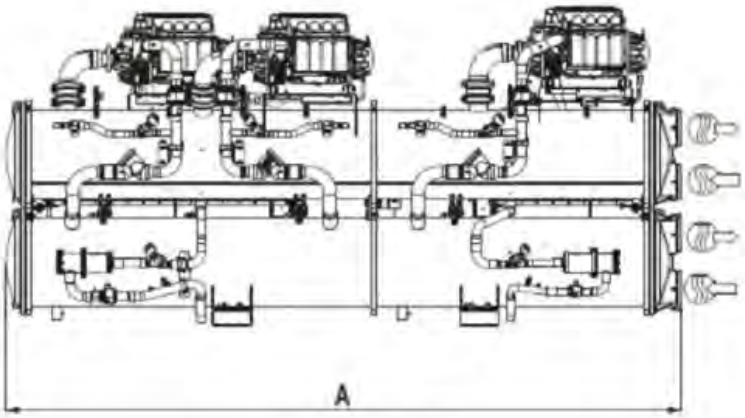
- (1) Required clearance for maintenance
- Recommended clearance for tube removal
- Water inlet
- Water outlet
- Electrical cabinet

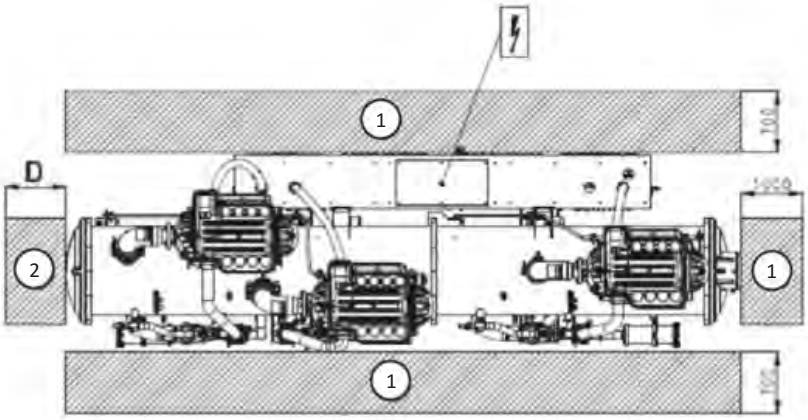
NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

DIMENSIONS

19PV 900 to 1180







Units sizes	Dimensions in mm			
	A	B	C	D
19PV				
900	4257	1290	1955	3950
1010	4257	1290	1955	3950
1180	4257	1290	1955	3950

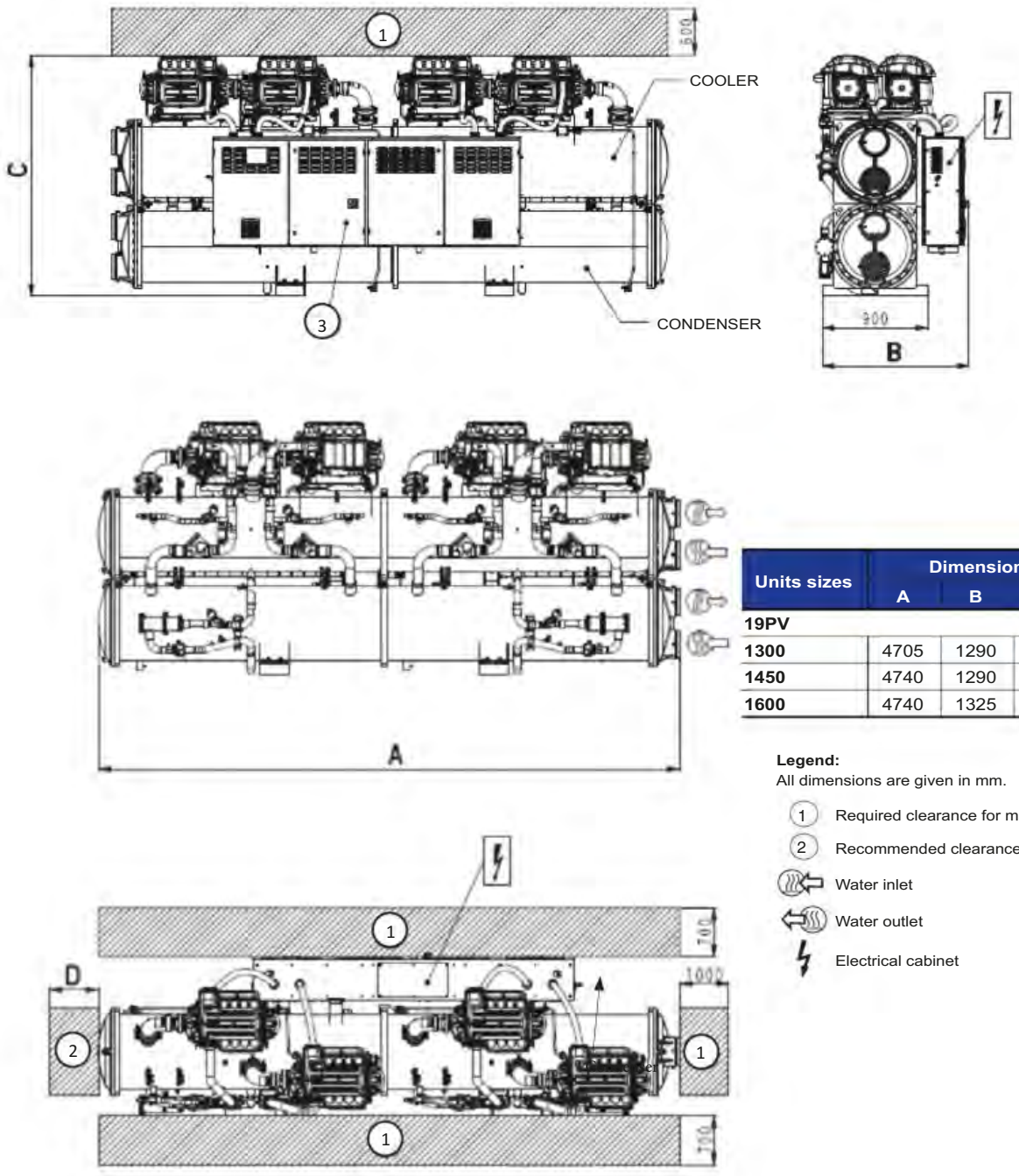
Legend:
All dimensions are given in mm.

(1) Required clearance for maintenance
(2) Recommended clearance for tube removal
Water inlet
Water outlet
Electrical cabinet

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

DIMENSIONS

19PV 1300 to 1600



Units sizes	Dimensions in mm			
	A	B	C	D
19PV				
1300	4705	1290	1955	4400
1450	4740	1290	2011	4400
1600	4740	1325	2065	4400

Legend:
All dimensions are given in mm.

1. Required clearance for maintenance
2. Recommended clearance for tube removal
- Water inlet
- Water outlet
- Electrical cabinet

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

DRYCOOLERS

CARRIER's **09PE** and **09VE** dry coolers are compatible with 19PV water-cooled water chillers.

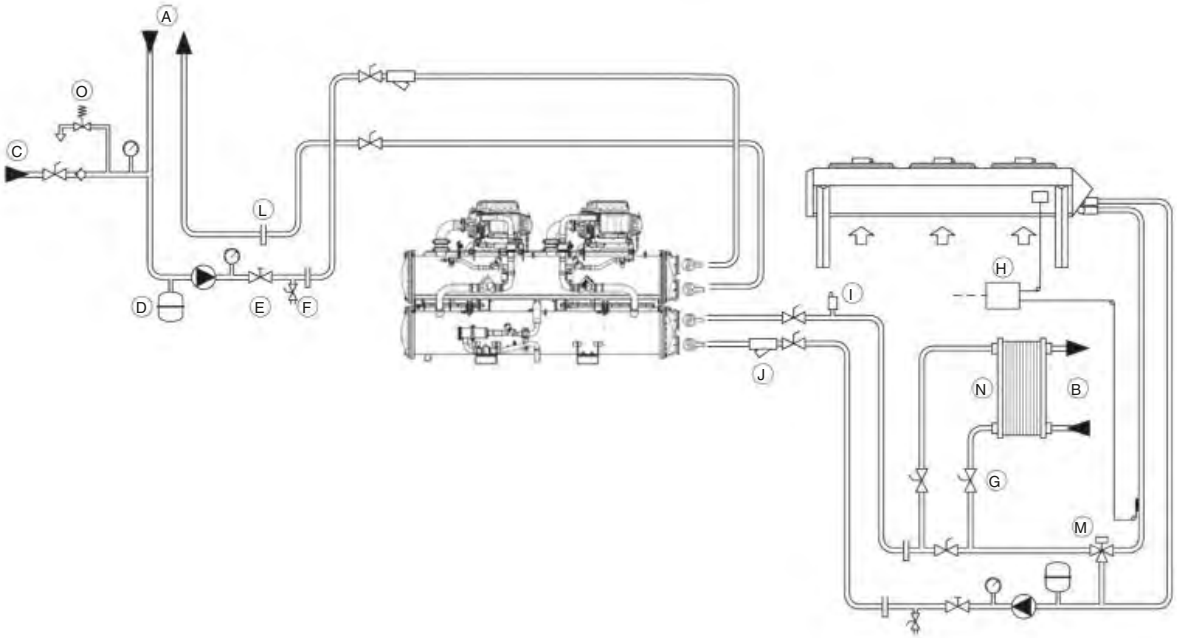
09PE et **09VE** are available in a wide selection of sizes and with various fan speeds to meet the size and acoustic requirements of any site.

09PE

09VE

COOLING SCHEMATIC INSTALLATION DIAGRAM

Cooling installation with drycooler



- (A) Chilled water circuit
- (B) Recovery water circuit
- (C) Water supply valve
- (D) Expansion vessel
- (E) Control valve
- (F) Drain
- (G) Shut-off valve
- (H) Temperature controller
- (I) Air bleed valve
- (J) Water filter
- (L) Thermowell
- (M) 3-way hydraulic valve
- (N) Cleanable heat exchanger
- (O) Safety valve

CONTROL

USER-FRIENDLY INTERFACE CONSOLE

- User-friendly 7 inch touchscreen.
- Technical literature include on the controller
- Information displayed in a choice of languages.
- Temperature and pressure readings.
- Operating and fault status diagnostics.
- Master/slave control of two machines in parallel.
- Fault memory management.
- Pump management.
- Time schedule.
- ***IP Web server connectivity.***
- Programmable maintenance.
- Preventive maintenance.
- FGAS maintenance.
- ***E-mail alerts.***

PRODUCT FUNCTIONALITY

Via dry contact

COMMUNICATION
Customer BMS

Via BUS communication

DRYCOOLER Control

Touch'Pilot management for CARRIER 09PE - 09VE drycooler via a simple bus

Dry cooler used as

- Heat rejection
- Free cooling source

POTENTIAL-FREE (DRY) CONTACTS AVAILABLE AS STANDARD

Inputs:

- Unit On/Off switch
- Heat/cool Switch (used to switch mode in remote)
- Set-point switch (volt free contact to determine active set-point 1/2)
- Set-point offset (4-20 mA signal to offset the active set-point of the unit)
- Condenser flow switch
- Capacity limit control (4-20mA to set demand limit)
- Ice set-point (closing this input disables ice set-point)
- Remote interlock
- Customer interlock (open=unit shuts down / closed = enable to operate)
- Time schedule override Switch

Outputs:

- Alarm relay (report alarm state)
- Running relay (Signal running status)
- Evaporator pump control (control by 0-10V command)
- Chiller Alert state
- Chiller shutdown general fault reporting
- Chiller capacity information output (0 to 10 V signal)
- Compressor status

AVAILABLE OUTPUTS

- MODBUS-JBUS TC/IP (standard) open protocol
- BACNET IP protocol (option)

NEW

CERAMIC BEARING CENTRIFUGAL LIQUID CHILLER WITH PURETEC™ REFRIGERANT AND GREENSPEED® INTELLIGENCE

Reliability
Efficiency
Acoustic comfort
Flexibility
Footprint

19DV

AQUAEDGE greenspeed PUREtec

Two-stage: 1400 > 3500 kw

Designed to perfectly meet the new requirements in terms of energy performance, acoustic comfort, refrigerant sustainability, low maintenance and total cost of ownership, the 19DV is the new standard for the medium cooling capacity centrifugal chiller market.

FEATURES AND BENEFITS

Reliable

Advanced back-to-back two-stage compressor naturally balances both radial and axial thrust on shaft.

Simple and robust ceramic bearing system enables refrigerant lubrication that doesn't request oil lubrication which is requested by conventional chillers. Customers won't be troubled by oil related failures as well as maintenance cost and efforts.

High tier variable speed starter equipped with harmonic filter(optional), total harmonic distortion (THD) ≤5% and fully complies with IEEE519 standard.

Swift restart - 19DV can restart within 30 seconds (with UPS) after power recovery and achieve to required cooling load more rapidly, especially reliable for data center application.

Efficient

Carrier back-to-back two-stage compressor integrated with inter-stage economizer which improves both cooling capacity and efficiency.

High speed direct drive motor reduces mechanical loss by 75% resulting from the removal of gear driven system.

By application of refrigerant lubricated ceramic bearings, the efficiency decline by oil in heat exchangers is not existed in 19DV.

Pioneer falling film evaporator is designed for low pressure refrigerant, which performs a significantly enhanced heat transfer efficiency by mitigating submergence effect especially at part load conditions.

High performance tubing with internally and externally enhanced fins improves chiller efficiency by reducing overall resistance to heat transfer.

Greenspeed® variable speed control gives a moment-to-moment control of compressor speed to adapt building load changes perfectly, which ensures the chiller always operating efficiently at both full load and part load.

19DV chillers can achieve up to 7.0 full load COP and 11.8 IPLV at AHRI conditions.

Sustainable

R-1233zd(E) is new non-Ozone Depletion Substances, the ultra low Global Warming Potential of ~ 1, non-flammability and non-toxicity refrigerant that provides a safe and environmentally steward solution to centrifugal chillers.

Carrier pioneer falling film evaporator design helps reduce the refrigerant charge significantly.

The industry leading energy efficiency of 19DV chiller leads to lower electrical power consumption and significant reduction of related CO2 emissions.

Flexible

System layout of 19DV chillers is well optimized and specific crescent shape economizer is designed to best leverage the space between evaporator and condenser that brings up to -15% smaller footprint versus legacy R-123 unit.

Patented re-locatable control panel could be installed at any of the four corners of the chiller, which makes the layout of chillers more flexible to fit the site conditions.

Bolt together modular design is ideal for retrofit project or installation in limited place.

Miscellaneous optional offerings (such as marine water box) help to facilitate daily maintenance on jobsite.

Quiet

Refrigerant-cooled hermetic motor, no gear driven, optimized flow channel and 60% impeller speed of legacy design, all these features contribute to reduce refrigerant airflow noise.

Greenspeed® variable speed control adaptively turns down impeller speed at part load for better acoustic performance.

19DV chillers can meet 18001 standard recommended by Occupational Health and Safety Advisory Services (OHSAS).

Smart

PIC5+ intelligent control - color touch screen, intuitive menu, animated component level interface, graphic trending, auto pushed alarm mail, smart password and more than 10 languages for choice.

Multiple remote access methods present the users a flexible way to monitor and control the chillers.

Carrier lifecycle data management system supports online data management and analysis, daily and key performance reports, prognostics and preventative maintenance, which will help the users continuously optimize the chiller and system operation.

Carrier PIC5+ Control System - Intelligent Colorful Touch Screen

Carrier two-stage centrifugal chiller equips the latest PIC5+ control system with strong control and monitoring function during chiller operation. The control system applies a 10.4 inch high resolution touch screen, which can support more than ten language choices for customer, real time display of operation parameters with pictures makes it more human friendly and comfortable interface for operation. The control system simulates and monitors chiller operation, adjusts cooling or heating capacity according to load change and provides various protections during operation.

FEATURES AND BENEFITS

Reliable Start-up and Operation

PIC5+ control system provides customer the smart password to avoid any setting change without authorization.

When chiller receives start-up order, controller will conduct following pre-start safety checking, to ensure parameters like condensing pressure, bearing temperature, motor winding temperature, discharge temperature, evaporator saturated temperature and average line voltage etc. are normal.

During chiller operation, except for the function of monitoring main operation parameters the control system also has capability to record and display trend curve, which is real time trend of key components during operation. It ensures effective and reliable operation of chiller by optimized intelligent and dynamic control algorithm.

The control system has comprehensive protection during operation, such as surge protection, overvoltage and overcurrent protection, discharge temperature overheat protection, bearing temperature overheat protection, evaporator and condenser anti-freeze protection, low discharge superheat protection etc. in order to ensure chiller long time reliable operation.

The optional envelope stability control is advanced parametric solution to control both chiller system and compressor to best balance the chiller efficiency and reliability. In real time, the controller optimizes compressor speed, guide vane position and stabilizer valve position to find the most efficient operating point throughout the operating range, without comprising the chiller stability.

Effective Failure Diagnostic

The PIC5+ control system has failure diagnostic function and can be easily accessed via touch screen for detail chiller operation parameters. If control system detects failure the alarm will be initiated and related code will be recorded in alarm menu. The alarm records can be automatically saved by control system. Carrier service technician can read and delete alarm records by Carrier service/PCDCT tools.

The control system has additional pre-diagnostic function. Different with diagnostic function, information displayed from this function is mainly for maintenance purpose. For an example, to inform customer periodically replace filter from this function.

The control system has email alarm function. The control system can automatically send out an email with one or more alarm information to customer or service people through effective email address when alarm exists.

Flexible Interface and Connection

The installation of Carrier colorful touch screen is very flexible. It greatly improves the convenience that customer can install touch screen at any corner of the chiller.

The customer can not only directly operate on touch screen but also use the port to connect with BAS system. The control system facilitates various accesses, such as CCN to meet customer requirements. PIC5+ is compatible with Carrier i-Vu control network and integrated BACnet/IP protocol. PIC5+ also facilitates protocol such as native Modbus and converter for LonWorks to simplify the seamless connection with building automation systems.

Carrier LDMS (Lifecycle Data Management System) is based on “Big Data Processing” and supports more value-added customer service such as online data management and analysis, daily and key performance reports, prognostics and preventative maintenance. The enhanced data management and analysis will help the users to achieve continuous optimization of the chiller and system operation.

Main Page

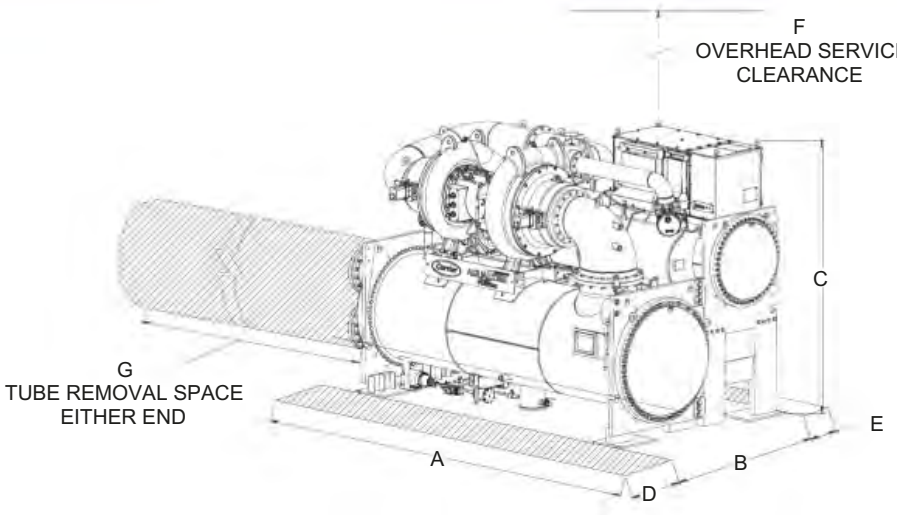
Control system main page operation and primary parameters monitored:

- Main page button
- Menu page button
- Log in/Language button
- Start-up/Stop page button
- Alarm menu button
- Setting point
- Chiller load percentage
- Inlet Guide Vane position percentage
- Condensing water pump status
- Chilled water pump status
- Condenser water inlet/outlet temperature
- Evaporator water inlet/outlet temperature
- Condenser saturated temperature and pressure
- Evaporator saturated temperature and pressure

Customer can easily read the primary information of chiller, components status and access to other interfaces from this page. They are:

- General parameter page
- Temperature/Pressure page
- Input/Output parameter page
- Water system parameter page
- Operation time
- Mode
- Graphic data trend

DIMENSIONS/CLEARANCE



NOTES:
1. Dished head waterbox shown.
2. Service areas shown are minimum space required. For major compressor service, it is desirable to have an 2.4m wide service area on the cooler or condenser side to allow the compressor to be positioned on the floor next to the chiller, unless arrangements are made that allow for rigging the compressor elsewhere.
3. Refer to Table 1 for A, B and C.

Table 1-1— 19DV Chiller Dimensions (Nozzle-In–Head Waterbox)

19DV Dimensions (Nozzle-In-Head Waterbox)				
Cooler heat exchanger sizer	Condenser haet exchanger size	A (length, dished head waterbox) 2-Pass Mm	B (width) Mm	C (height) Mm
G2*	G2*	4778.5	2595.8	2928.1
G4*	G4*	5299.2	2595.8	2928.1
H2*	H2*	4778.5	2761.2	3073.0
H4*	H4*	5299.2	2761.2	3073.0

*Assumes both cooler and condenser nozzle on same end of chiller.

NOTES:
1. Service access should be provided per American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15, latest edition, National Fire Protection Association (NFPA) 70, and local safety code.
2. Overhead clearance for service rigging 19DV compressor should be at least 1524 mm.
3. Dimensions are approximate. Certified drawings available upon request.
4. Marine waterboxes typically add to the width of the machine. See certified drawings for details.
5. 'A' length dimensions shown are for standard 1034kPa design and flanges connections. The 2068kPa design and flanges will add length. See certified drawings.
6. Table contains heat exchanger dimensions. For arrangements where the compressor motor housing extends past the waterbox, consult the 19DV certified drawings.
7. Consult factory for configurations not listed in the above table.

Table 1-2— 19DV Chiller Dimensions (Marine Waterbox)

19DV Dimensions (Nozzle-In-Head Waterbox)				
Cooler heat exchanger sizer	Condenser haet exchanger size	A (length, dished head waterbox) 2-Pass Mm	B (width) Mm	C (height) Mm
G2*	G2*	5343.5	2595.8	2928.1
G4*	G4*	5864.2	2595.8	2928.1

*Assumes both cooler and condenser nozzle on same end of chiller.

NOTES:
1. Service access should be provided per American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15, latest edition, National Fire Protection Association (NFPA) 70, and local safety code.
2. Overhead clearance for service rigging 19DV compressor should be at least 1524 mm.
3. Dimensions are approximate. Certified drawings available upon request.
4. 'A' length dimensions shown are for standard 1034kPa design and flanges connections. The 2068kPa design and flanges will add length. See certified drawings.
5. Table contains heat exchanger dimensions. For arrangements where the compressor motor housing extends past the waterbox, consult the 19DV certified drawings.
6. Consult factory for configurations not listed in the above table.

PHYSICAL DATA

Air-conditioning (380V-3Ph-50Hz)

Model	Cooling Capacity	Input Power	Chiller Line Amps	Footprint		
				Length	Width	Height
	kW	kW	A	mm	mm	mm
19DV-G24G234425B9	2110	321,2	523	4762	2508	2882
19DV-G24G244525D9	2462	377,9	616	4762	2508	2882
19DV-G44G444625D9	2813	434,8	688	5284	2508	2882

Note:

1. The above selections are based on entering/leaving chilled water temperature 12/7°C, entering/leaving cooling water temperature 32/37°C, evaporator fouling factor 0.0176 m^2°C/kW and condenser fouling factor 0.044 m^2°C/kW.
2. Carrier will select specific models using E-Cat on different requests for tonnage, lift, and efficiency. For details, please contact local agencies.
3. Standard evaporator and condenser water side pressure is 1.0MPa. For more requirements, please contact local agencies.
4. For more details or customized selections, please contact local agencies.

SINGLE-STAGE CENTRIFUGAL
LIQUID CHILLERS

Single-stage compressor

Industry-leading Efficiency with VFD

Standard or high-tier VFD on choice

Wide Application

Stable Operation

Low Sound Level

Modular Construction

19XR/XRV Single-stage

AQUAEDGE

Nominal cooling capacity 1000-5300 kW

The Carrier 19XR/19XRV centrifugal chillers provide exceptional value by achieving energy efficiency levels as high as 6.8 (COPr) utilising proven technology designed specifically for chlorine-free refrigerants:

- Unique concept of the hermetic compressor:
  - Single-stage aerodynamic impeller
  - Tunnel diffusers, based on aircraft engine technology
  - Motor cooled by refrigerant gas injection
- Possibility to control the compressors using a variable frequency drive (19XRV) to maximise machine energy efficiency.
- Use of high-efficiency evaporator and condenser tubes
- Expansion sub-cooler integrated into the condenser
- Patented float valve technology for optimised sub-cooling and refrigerant level in the evaporator

These advantages, together with the modularity of the units and their efficiency, economical operation and dimensional constraints allow the use of the Carrier 19XR/19XRV centrifugal chillers in any high-capacity water cooling applications.

PHYSICAL DATA

heat exchanger frame size	Compressor frame size	Dimensions (mm)					
		Length		Width		Height	
		Min	Max	Min	Max	Min	Max
3	XR3	4230	4820	1670	1800	2055	2465
4	XR3	4365	4950	1880	1880	2140	2550
5	XR3	4390	4980	1995	1995	2150	2720
5	XR4	4390	4980	2055	2301	2250	2915
6	XR4	4415	5005	2145	2480	2365	2970
7	XR4	5050	5210	2430	2935	2850	3283
7	XR5	5160	5210	2470	2935	3015	3283
8	XR5	5200	5845	2710	3165	3040	3335

heat exchanger frame size	Compressor frame size	Weight (kg)					
		net (chiller + R134a)		operating (net + water)		R134a	
		Min	Max	Min	Max	Min	Max
3	XR3	6780	8100	7200	8700	277	390
4	XR3	7180	9180	7985	10200	381	508
5	XR3	8090	10890	9145	12160	493	674
5	XR4	89	12680	10000	13950	4	674
6	XR4	9500	13430	10785	14995	546	740
7	XR4	13045	16835	14950	18700	836	1168
7	XR5	15500	20420	17400	22760	836	1168
8	XR5	18035	23800	20725	26870	984	1309

Data for unit with two-pass nozzle-in-head water boxes being at the same end (compressor end / DS code)

FEATURES AND ADVANTAGES

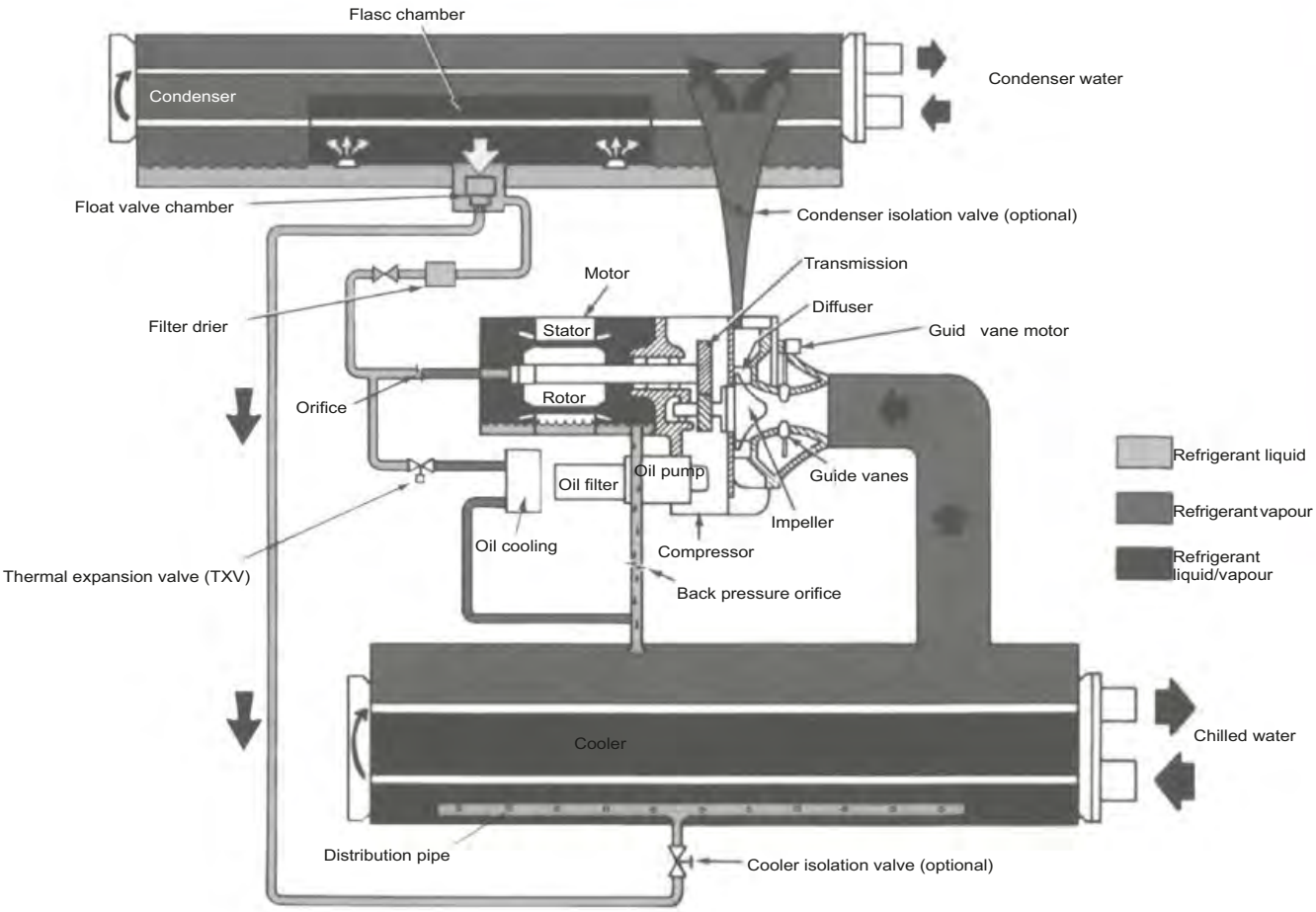
- Nominal cooling capacities from 1000 to 5300 kW.
- Mix-match capabilities – a complete line of compressors and heat exchangers to ensure the optimal combination of machine components regardless of capacity, lift and efficiency specifications.
- Hermetic compressor – elimination of leak risks from the compressor/motor shaft sealing in an open compressor.
- Single-stage compressor with special features – aerodynamically contoured impellers, variable inlet guide vanes and movable diffusers for better compressor part and full-load operating efficiency.
- Variable speed compressor capability – improvement of part load efficiency and electrical performance.
- Heat exchangers certified by the European pressure vessels code (PED), and all marine code certifications.
- International Chiller Visual Control (ICVC) -a large english LCD (liquid crystal display) features 4 menu-specific soft keys. The default display offers all in one glance review of key chiller operation data, simplifying the interaction between chiller and user.

OPTIONS/ACCESSORIES

- Two types of unit-mounted variable frequency drives (VFDs): standard and high tier, to match different customer requirements in terms of cost and electrical performances
- Refrigerant isolation valves allow the refrigerant to be stored inside the chiller during service
- Hot gas by-pass for surge prevention during operation at high condensing temperature or for optimized operation at low load conditions
- Spring isolators adapted for all chiller configurations
- Unit-mounted starter reduces machine installation time and expense
- High-voltage motors available: 3000 V, 3300V, 5500V, 6300V, 10 kV, 11 kV, 50 Hz or 60 Hz
- CCN/JBus or CCN/BACnet: remote connection
- 21 bar water heat exchanger
- Waterbox with flanges and counterflanges
- Delivered in multiple sections to facilitate the installation
- Refrigerant leak detector module : unit-mounted sensor (not compatible with 19XRV VFD)
- Tailor maid request Marine, Oil & Gas, Chemical, other customization

OPTIONS/ACCESSORIES

19XR refrigeration cycle



CONTROLS

Touch Pilot control system with strong control and monitoring function during chiller operation. The Touch Pilot control system applies a 10.5 inch high resolution touch screen, which can support more than ten language choices for customer, real time display of operation parameters with pictures makes it more human friendly and comfortable interface for operation.

TWO-STAGE CENTRIFUGAL LIQUID CHILLERS

- Interstage economizer
- Two-stage compressor
- Industry-leading Efficiency with VFD
- Wide Application
- Stable Operation
- Low Sound Level
- Modular Construction

19XR/XRV Two-stage

AQUAEDGE

Nominal cooling capacity 2800 - 10500 kW

The Carrier 19XR/19XRV with a COP up to 6.5 (AHRI conditions) and an IPLV up to 7.4 or up to 10.5 with VFD centrifugal chillers provide exceptional value by achieving energy efficiency levels as high as 6.8 (COPr) utilising proven technology designed specifically for chlorine-free refrigerants:

- Interstage economizer to improve efficiency and increase capacity.
- Unique concept of the hermetic compressor:
  - Dual-stage aerodynamic impeller
  - Vane-less diffuser to meet high lift application requirement with stable operation
  - Motor cooled by spraying liquid refrigerant on the motor windings.
- Possibility to control the compressors using a variable frequency drive (19XRV) to maximise machine energy efficiency.
- Use of high-efficiency evaporator and condenser tubes
- Expansion sub-cooler integrated into the condenser
- Patented float valve technology for optimised sub-cooling and refrigerant level in the evaporator

These advantages, together with the modularity of the units and their efficiency, economical operation and dimensional constraints allow the use of the Carrier 19XR/19XRV two-stage centrifugal chillers in any high-capacity water cooling applications such as air-conditioning, heat-pump, energy recovery, ice thermal storage, marine, VFD and high-voltage applications.

PHYSICAL DATA

Heat exchanger frame size	Compressor frame size	Dimensions (mm)					
		Length		Width		Height	
		Min	Max	Min	Max	Min	Max
7	XRE	5160	5210	2470	2935	3015	3283
8	XRE	5200	5845	2710	3165	3040	3335

Heat exchanger frame size	Compressor frame size	Weight (kg)					
		net		operating		R134a	
		Min	Max	Min	Max	Min	Max
7	XRE	16015	20815	17920	23155	836	1168
8	XRE	18505	24270	21195	27340	984	1309

heat exchanger frame size		Compressor frame size	Dimensions (mm)		
cooler frame size	condenser frame size		Length	Width	Height
A4	A4	XR6	5175	3130	3485
A6	A6	XR6	5785	3130	3485
A4	B4	XR6	5195	3255	3485
A6	6	R6	5805	3255	4
B6	C6	XR7	5925	3670	3745
C6	C6	XR7	5975	3800	3815
C6	D6	XR7	5975	4015	3815

heat exchanger frame size		Compressor frame size	Weight (kg)		
			net	operating	R134a
cooler frame size	condenser frame size		Max	Max	Max
A4	A4	XR6	30830	35466	1277
A6	A6	R6	2330	37580	1465
A4	B4	XR6	33080	38432	1416
A6	B6	XR6	34900	40813	1623
B6	C6	XR7	44270	52132	1709
C6	C6	XR7	49110	58055	1997
C6	D6	XR7	54190	64647	2218

Data for unit with two-pass nozzle-in-head water boxes being at the same end (compressor end / DS code)

FEATURES AND ADVANTAGES

- Nominal cooling capacities from 2800-10500 kW.
- Mix-match capabilities – a complete line of compressors and heat exchangers to ensure the optimal combination of machine components regardless of capacity, lift and efficiency specifications.
- Hermetic compressor – elimination of leak risks from the compressor/motor shaft sealing in an open compressor.
- Dual stage compressor with non-blade diffuser designed, combined with inner-stage economizer for chiller performance improvement and high lift application. The innovative two-stage compressor provides a dramatic range of capabilities. With a maximum LWT of 65°C and a minimum LCWT of -6°C, the 19XR two-stage centrifugal chiller is ideal wherever energy conservation and environmental protection are required.
- Variable speed compressor capability on 19XRV-E AquaEdge chiller - Improvement of part load efficiency and electrical performance.
- 19XRV/XR(V)-E equipped with a LF2 VFD that designs with total harmonic distortion (THD)<5% and fully meets IEEE519-1992 requirement. The 19XRV/XR(V)-E becomes a more cost-effective choice for installations with a high percentage of time operating at part load.
- Heat exchangers certified by the European pressure vessels code (PED), and all marine code certifications.
- Touch Pilot control system with strong control and monitoring function during chiller operation. The Touch Pilot control system applies a 10.5 inch high resolution touch screen, which can support more than ten language choices for customer, real time display of operation parameters with pictures makes it more human friendly and comfortable interface for operation.

OPTIONS/ACCESSORIES

- Two types of unit-mounted variable frequency drives (VFDs): standard and high tier, to match different customer requirements in terms of cost and electrical performances (VFD available on 19XRE only)
- Refrigerant isolation valves allow the refrigerant to be stored inside the chiller during service
- Hot gas by-pass for surge prevention during operation at high condensing temperature or for optimized operation at low load conditions
- Spring isolators adapted for all chiller configurations
- Unit-mounted starter reduces machine installation time and expense (VFD available on 19XRE only)
- High-voltage motors available: 400V (19XRE only), 3kV, 3.3kV, 6.3kV, 10kV, 11kV
- CCN/JBus or CCN/BACnet: remote connection
- 21 bar water heat exchanger
- Waterbox with flanges and counterflanges
- Nozzle with flanges (water inlet/outlet with flanges)
- Delivered in multiple sections sections to facilitate the installation
- Refrigerant leak detector module : unit-mounted sensor (not compatible with 19XRE with unit-mounted VFD)

DRYCOOLERS

Performance

Flexibility

Intelligence

Energy optimisation

Acoustic optimisation

09PE

From 10 to 1100 kW

The 09PE range is particularly suited to tertiary, industrial and healthcare applications.

Drycoolers in the 09PE range are mainly designed for cooling water or glycol/water mix for:

- Condensers for water chillers,
- Free cooling,

These devices are designed to be installed outdoors.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for HE
Check ongoing validity of certificate:
www.eurovent-certification.com

DESCRIPTION

Excellent resistance to corrosion

The casing boasts category C3 protection against corrosion, in line with ISO standard 12944-2 – RAL 7035 (light grey)

① **Coil**
Copper tubing and manifolds, high-performance aluminium fins, resistant to fouling.
Anti-shear system for bundle tubing.
Piping: ISO PN16 02A type rotating flanges as per DIN 2642 in 304L stainless steel (1 or 2 inlets/outlets depending on flow rate).

② **Fan motor assemblies**
Profiled collars in galvanised steel with RAL7035 polyester powder paint or RAL9005 composite depending on the motor reference.
Aluminium and polypropylene impeller.
Class F motor - IP54 - three-phase 400 V +/-10 % 50 Hz+/-2 % - Standard connection to the motor terminal boxes.
Black protective grille compliant with standard BS ISO 12499.
Individual partitioning.
The motors are also available in a 60 Hz version or in other voltages.

③ **Casing**
Galvanised steel with polyester powder paint. Assembly using stainless rivets and LANTHANUM nuts and bolts for the feet.

④ **Feet**
Galvanised steel with polyester powder paint.

⑤ **Protective enclosures on the elbows and manifolds**

Each device is tested:
- The coil sealing is subjected to an underwater airtightness test.
- For devices with the terminal strip or electrical cabinet option: rotation tests, dielectric tests, current measurement.

The 09PE range complies with the following European directives:
- Machinery directive 2006/42/EC,
- EMC directive 2014/30/EU,
- Pressure Equipment Directive (PED) 2014/68 EU.

RANGE

09PE is a large modular range, which offers:
- 3 casing lengths (S, M or L module), allowing either the dimensions, the capacity or the power consumption to be optimised.
- A range of sizes, from 1 to 14 fans.
- 2 impeller diameters, 800 or 910 mm.
- Several rotation speeds, from 340 to 1270 rpm (AC motor).
- Configuration: horizontal or vertical unit.

Various combinations of these elements, as well as the choice of a number of options, allow us to provide devices that are adapted to a range of applications and environments.

DESCRIPTION

09PE DLN 9 12 4- 2 SHI 690A 9A

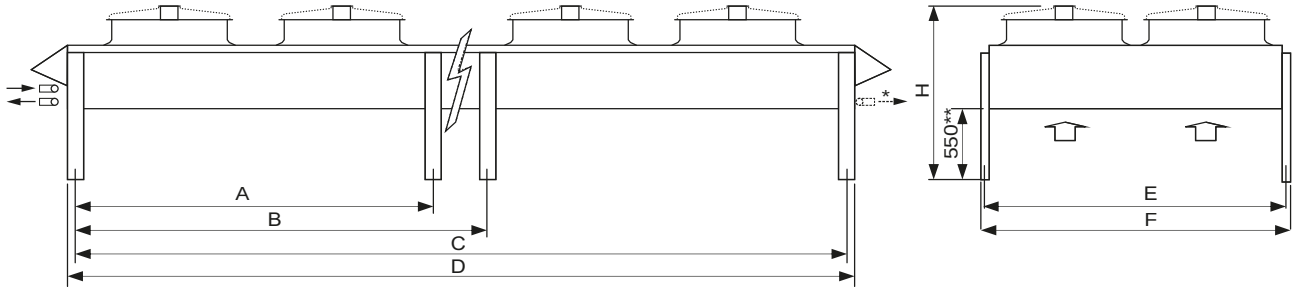
- Motor (A=AC, E=EC, B=AC 60 Hz, M=1st EC stage)
- Rotation speed
- Induced draught
- Position (H = Horizontal, V = Vertical)
- Coil type (S = Single, T = Twin, Z = Drainable)
- Number of fan lines (1 or 2)
- Number of coil rows
- Number of fans
- Impeller diameter (8 = 800, 9 = 910 mm)
- Module size (S=Short, M=Medium, L=Long)
- D = Drycooler

OPTIONS FOR EACH APPLICATION

	Options	Description/Advantages
Protection adapted for the environment	Pre-coated aluminium fins	Improves the resistance of the fins to corrosion. For low corrosion environments.
	High-efficiency coating on fins: ALUCOAT®507/HERESITE (on request)	Improves the resistance of the fins to corrosion. For corrosive environments.
	Stainless steel tubing bundle	For corrosive fluids.
	Corrosiveness resistance category C5M	Casing and fan motor assemblies for corrosive environments.
	ATEX II 2G/3G	For explosive atmospheres.
Quick, simple installation	Terminal box	Connection to the terminals of each motor on the front panel of the device.
	Protection cabinet	Protected by a thermal-magnetic circuit breaker on each motor.
	Control cabinet	Motor and control protection, either by electronic board, depending on the temperature, or by the chiller if compatible.
	Maintenance switch	For stopping individual motors.
	Counter-flanges	In stainless steel, with gaskets, bolts and collar.
	Raised feet	To ensure a good flow of air depending on how the units are installed: against a wall, side by side, etc.
	Blade protective screen	Protection against hail, impacts, etc. For vertical position.
Installation surface constraints	Vertical position	For narrow terraces.
Optimised, secure transport	Stacking of 2 identical devices	
	Skid for transport by container	Secure transport and easy loading/unloading.
Optimisation of electrical consumption and noise	EC motor (with electronic switching)	Variable speed control from 0 to 100% using a 0/10V signal.
Application for water without glycol	Drainable coil	Device located on a slope to prevent frost - drainage by gravity
Free cooling application	Free cooling valve kit	Valves with motor, controlled by the control cabinet. Controlled according to the operation of the drycooler or chiller.
Adiabatic cooling application	ADIABATIC COOLER (water misting into the air flow)	Size of the unit reduced by cooling of the ambient air. Operates completely safely due to the antibacterial treatment applied to the water (Option).

DIMENSIONS

Horizontal Position - Induced Draught

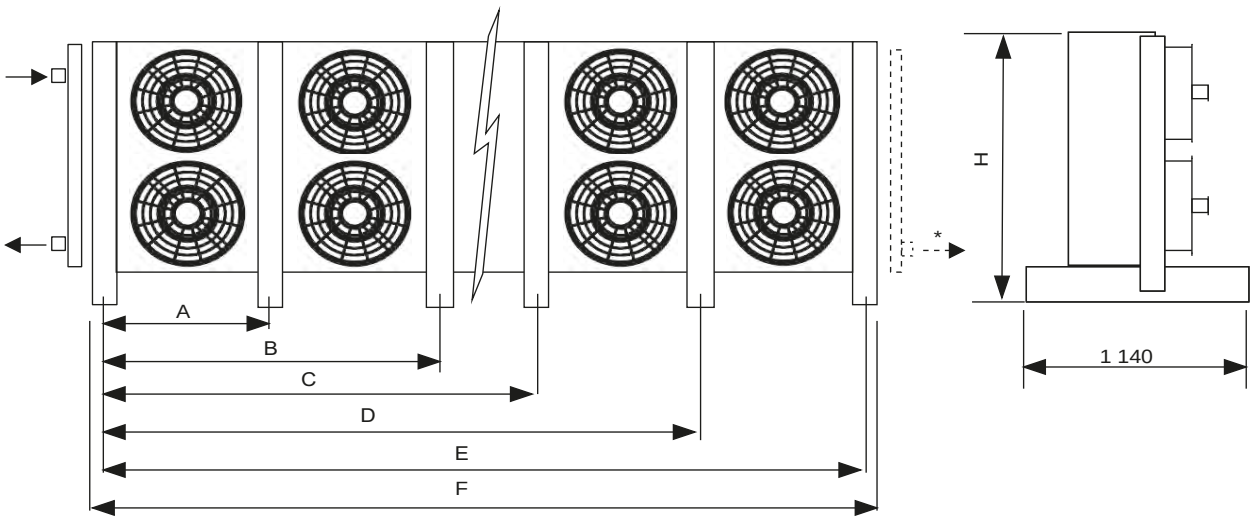


Unit shown has 2 fan lines - no. of motors between the feet is not contractually binding
* for units with input/output piping on the opposite side
** standard feet

	No. of motors	1	2	3	4	5	6	4	6	8	10	12	14
DSNS module	A	-	-	-	-	1840	1840	-	-	-	1840	1840	1840
	B	-	-	-	-	2790	3740	-	-	-	2790	3740	4690
	C	830	1780	2730	3680	4630	5580	1780	2730	3680	4630	5580	6530
	D	950	1900	2850	3800	4750	5700	1900	2850	3800	4750	5700	6650
	H	1390 max											
	Max empty weight without options +/-10% (kg)	233	369	503	666	809	928	638	875	1135	1393	1617	1874
DMNM module	A	-	-	-	3140	3140		-	-	3140	3140	4740	3140
	B	-	-	-	-	4740		-	-	-	4740	-	7940
	C	1480	3080	4680	6280	7880		3080	4680	6280	7880	9480	11080
	D	1600	3200	4800	6400	8000		3200	4800	6400	8000	9600	11200
	H	IMPELLER ø 800: 1390 max - IMPELLER ø 910: 1460 max											
	Max empty weight without options +/-10% (kg)	314	523	712	958	1183		918	1298	1645	2029	2388	2772
DLNL module	A	-	-	-	3740	3740		-	-	3740	3740	5640	
	B	-	-	-	-	5640		-	-	-	5640	-	
	C	1780	3680	5580	7480	9380		3680	5580	7480	9380	11280	
	D	1900	3800	5700	7600	9500		3800	5700	7600	9500	11400	
	H	IMPELLER ø 800: 1390 max - IMPELLER ø 910: 1460 max											
	Max empty weight without options +/-10% (kg)	352	599	846	1110	1373		1036	1474	1929	2384	2806	
All	E	1240						2360					
	F	1280						2400					

Dimensions in mm, excluding options

Vertical position



Unit shown has 2 fan lines - no. of motors between the feet is not contractually binding
* for units with input/output piping on the opposite side

DIMENSIONS

	No. of motors	1	2	3	4	5	6	4	6	8	10	12	14
DSN S module	A	-	-	-	1840	1840	1840	-	-	1840	1840	1840	1840
	B	-	-	-	-	2790	3740	-	-	-	2790	3740	4690
	C	-	-	-	-	-	-	-	-	-	-	-	-
	D	-	-	-	-	-	-	-	-	-	-	-	-
	E	830	1780	2730	3680	4630	5580	1780	2730	3680	4630	5580	6530
	F	950	1900	2850	3800	4750	5700	1900	2850	3800	4750	5700	6650
	Max empty weight without options +/-10% (kg)	282	419	554	705	915	1039	684	922	1181	1497	1727	1983
DMN M module	A	-	-	1540	1540	1540		-	1540	1540	1540	3140	3140
	B	-	-	3140	4740	3140		-	3140	4740	3140	6340	4740
	C	-	-	-	-	4740		-	-	-	4740	-	6340
	D	-	-	-	-	6340		-	-	-	6340	-	7940
	E	1480	3080	4680	6280	7880		3080	4680	6280	7880	9480	11080
	F	1600	3200	4800	6400	8000		3200	4800	6400	8000	9600	11200
	Max empty weight without options +/-10% (kg)	356	558	835	1046	1339		927	1383	1734	2187	2464	2920
DLN L module	A	-	-	1840	1840	1840		-	1840	1840	1840	3740	
	B	-	-	3740	5640	3740		-	3740	5640	3740	7540	
	C	-	-	-	-	5640		-	-	-	5640	-	
	D	-	-	-	-	7540		-	-	-	7540	-	
	E	1780	3680	5580	7480	9380		3680	5580	7480	9380	11280	
	F	1900	3800	5700	7600	9500		3800	5700	7600	9500	11400	
	Max empty weight without options +/-10% (kg)	399	639	972	1204	1537		1053	1572	1986	2501	2842	
All	H				1370						2490		

Dimensions (mm)

INSTALLATION RECOMMENDATIONS

- These units are designed to operate outside. When starting up, frost and snow could adversely affect the operation of horizontal units.

  As a general measure, all steps should be taken to avoid the risk of air recycling. This is especially important when the installation comprises several units.

  It is not recommended to install units near the hot air extraction duct outlet or close to deciduous plants (this could cause fouling).
- **A horizontal unit** must have a surrounding clearance of 1.5 m. Where the use of anti-vibration mounts is required, use a rigid frame which locks the feet together.
- **A vertical unit** should preferably be placed parallel to the direction of the wind. It is not recommended for use with low fan rotation speeds. In addition, we recommend that these units be stabilised using braces connecting their two upper ends to fixed supports (wall or framework).
- If **speed regulators** other than those recommended by the manufacturer are used, check that these are compatible with the electric motors.
- **Commissioning and maintenance**: refer to the instruction manual.
- These units **comply with the European directives.** The installer is responsible for ensuring the compliance of the installation. The installer must ensure safety and protective devices (emergency stop, shut-off valves, lightning protection, etc.) are put in place and are accessible.

DRYCOOLERS

Compact design

Acoustic comfort

40% smaller footprint

09VE

From 100 to 1870 kW

Drycoolers in this range are mainly designed for cooling water or glycol/water mix for:
- Condensers for water chillers,
- Free cooling.

These devices are designed to be installed outdoors.

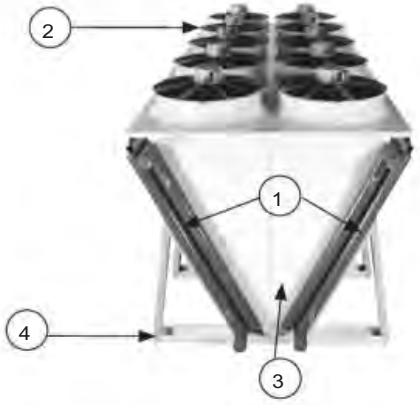
EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for HE
Check ongoing validity of certificate:
www.eurovent-certification.com

DESCRIPTION

Excellent resistance to corrosion

Casing with corrosiveness resistance category as per ISO 12944-2.



① **2 Coils**
Copper tubes and high-performance aluminium fins, resistant to fouling.
Manifolds and piping: RAL 7024 graphite grey painted steel.

② **Fan motor assemblies**
Profiled collars in galvanised steel with RAL7035 polyester powder paint or RAL7035 composite depending on the motor reference.
Aluminium + polypropylene propeller.
Class F motors - IP54 - TRI400V +/-10% 50Hz+/-2% - Standard connection to motor terminal boxes
Black protective grille compliant with standard BS ISO 12499.
The motors are also available in a 60 Hz version or in other voltages.
Partitioning in pairs.

③ **Casing**
Galvanised steel with polyester powder paint in RAL7035 light grey.

④ **Feet**
Galvanised steel with polyester powder paint in RAL7035 light grey

Each device is tested:
- The coil sealing is subjected to an underwater airtightness test.
- For devices with the terminal strip or electrical cabinet option: rotation tests, dielectric tests, current measurement.

The entire range complies with the following European directives:
- Machinery directive 2006/42/EC,
- EMC directive 2014/30/EU,
- Pressure Equipment Directive (PED) 2014/68 EU.

RANGE

- A range of sizes, from 6 to 20 fans.
- 2 impeller diameters, 800 or 910 mm.
- Several rotation speeds, from 340 to 1270 rpm (AC motor).

Various combinations of these elements, as well as the choice of a number of options, allow us to provide devices that are adapted to a range of applications and environments.

DESCRIPTION

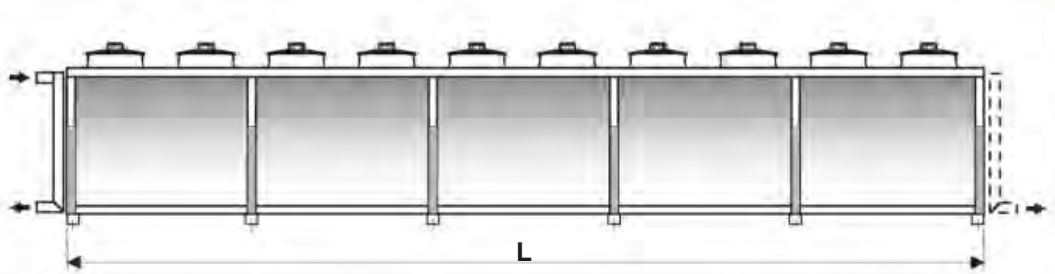
09VE 1 16 4 UI 690 A 9A

- 9A: Impeller diameter (8 = 800 mm, 9 = 910 mm)
- A: Motor type
  - A: AC -3 ph 400 V 50 Hz
  - B: AC- other supply
  - E: EC
  - M: 1st stage with EC motor
- 690: Rotation speed
- 4: Number of rows
- 16: Number of fans

OPTIONS FOR EACH APPLICATION

	Options	Description/advantages
Protection adapted for the environment	Pre-coated aluminium fins	Improves the resistance of the fins to corrosion. For low corrosion environments.
	High-efficiency coating on fins: ALUCOAT®507/HERESITE (on request)	Improves the resistance of the fins to corrosion. For relatively corrosive environments.
	Stainless steel tubing bundle	For corrosive fluids.
	Corrosiveness resistance category C5M	Casing and fan motor assemblies for corrosive environments.
	ATEX II 2G/3G	For explosive atmospheres
Quick, simple installation	Terminal box	Connection to the terminals of each motor on the front panel of the device.
	Protection cabinet	Protected by a thermal-magnetic circuit breaker on each motor.
	Control cabinet	Motor and control protection, either by electronic board, depending on the temperature, or by the chiller if compatible.
	Flanges	NFE 1092-1 type 01A PN16 steel
	Counter-flanges	In steel, with gaskets and bolts.
	Blade protective screen	Impact protection
Optimisation of electrical consumption and noise	EC (electrically commutated) motor	Variable speed control from 0 to 100% using a 0/10V signal.
Application for water without glycol	Drainable coil	Device located on a slope to prevent frost - drainage by gravity
Free cooling application	Free cooling valve kit	Valves with motors controlled by the control cabinet. Controlled according to the operation of the drycooler or water chiller.
Adiabatic cooling application	ADIABATIC COOLER (water misting into the air flow)	Size of the unit reduced by cooling of the ambient air. Operates completely safely due to the antibacterial treatment applied to the water (Option).

DIMENSIONS



	1060	1080	1100	1120	1140	1160	1180	1200
L (mm)	3550	4700	5850	7000	8150	9300	10450	11660
w (mm)	2305 to 2420 depending on the model							

Up to size 1180, these units can be transported by container.
Dimensions without options

INSTALLATION RECOMMENDATIONS

- These units are designed to operate outside. When starting up, frost and snow could adversely impair its operation.

  As a general measure, all steps should be taken to avoid the risk of air recycling. This is especially important when the installation comprises several units.

  It is not recommended to install units near the hot air extraction duct outlet or close to deciduous plants (this could cause clogging).
- Allow a clearance of 1.5 m around the device. Where the use of anti-vibration mounts is required, use a rigid frame which locks the feet together.
- If **speed regulators** other than those recommended by the manufacturer are used, check that these are compatible with the electric motors.
- **Commissioning and maintenance:** refer to the instruction manual.
- These units **comply with the European directives.** The installer is responsible for ensuring the compliance of the installation. The installer must ensure safety and protective devices (emergency stop, shut-off valves, lightning protection, etc.) are put in place and are accessible.

SINGLE-EFFECT HOT WATER-FIRED ABSORPTION CHILLERS

Complete range 80 to 4000 kW

HFC-refrigerant free

Hot water source from

COPr up to 0.78

16LJ01-03
16LJ-A11-82

Nominal cooling capacity 83-3956 kW

The Carrier 16LJ & 16LJ-A single-effect absorption chillers are designed to provide chilled water from waste heat sources generated from industrial processes and cogeneration systems.

Carrier absorption chillers allow diversification of critical cooling requirements. Critical cooling loads are met with minimal electrical power input.

They allow smaller emergency generators compared to an electrical driven chiller.

The units are ozone-safe and CFC-free. Cooling requirements are met without chlorine-based refrigerants.

They reduce the contribution to global warming and minimise the global impact by greatly reducing electricity consumption and production of greenhouse gases.

The solution inhibitor has no impact on the environment.

An absorption chiller does not utilise mechanical moving parts, and this leads to quiet, vibration-free operation.

The use of high-efficiency heat transfer surface has reduced the space required for installation of the absorption chiller, resulting in a smaller footprint.

PHYSICAL DATA

16LJ/16LJ-A		LJ			LJ-A									
Size		01	02	03	11	12	13	14	21	22	23	24	31	32
Capacity	kW	83	131	166	264	316	387	475	545	633	738	844	949	1055
Chilled water system*														
Flow rate	l/sec	3.58	5.64	7.14	12.6	15.1	18.5	22.7	26	30.3	35.3	40.3	45.3	50.3
Pressure drop	kPa	73	60	60	72.2	78.4	48.5	52.9	46.8	50.2	102	105	104	106
Connection(ANSI)	inch	2	2 1/2	2 1/2	3	3	4	4	5	5	5	5	6	6
Retention volume	m^3	0.06	0.08	0.08	0.11	0.13	0.15	0.17	0.22	0.25	0.28	0.30	0.35	0.38
Cooling water system*														
Flow rate	l/sec	5.4	8.5	10.8	20.8	25	30.6	37.5	43.1	50	58.3	66.7	75	83.3
Pressure drop	kPa	23	16	15	78.8	81.8	86.6	95.4	89.1	93.4	58.4	62.5	49.8	51.6
Connection(ANSI)	inch	3	4	4	5	5	5	5	6	6	8	8	8	8
Retention volume	m^3	0.13	0.18	0.23	0.33	0.37	0.40	0.45	0.58	0.63	0.69	0.76	0.98	1.05
Hot water system*														
Flow rate	l/sec	3.28	5.17	6.56	8.4	10.1	12.3	15.1	17.3	20.1	23.4	26.8	30.1	33.5
Pressure drop	kPa	58	41	41	24.7	26.4	65.6	72.8	31.5	32.5	22.0	22.1	22.4	22.3
Connection(ANSI)	inch	2	2 1/2	2 1/2	4	4	4	4	5	5	6	6	6	6
Retention volume	m^3	0.04	0.04	0.07	0.07	0.08	0.09	0.10	0.13	0.14	0.15	0.17	0.21	0.22
Rupture disk connection	inch	2	2	2	2	2	2	2	2	2	2	2	2	2
Dimensions														
Length (L)	mm	1745	2450	2450	2 740	2 740	3 750	3 750	3 850	3 850	4 870	4 870	4 920	4 920
Height (H)	mm	2115	2115	2115	2 330	2 330	2 330	2 330	2 480	2 480	2 480	2 480	2 775	2 775
Width (W)	mm	1255	1255	1435	1 400	1 400	1 400	1 400	1 560	1 560	1 560	1 560	1 630	1 630
Tube removal	mm	900	1350	1350	2 400	2 400	3 400	3 400	3 400	3 400	4 500	4 500	4 500	4 500
Weight														
Operation weight	kg	2070	2680	3150	4 000	4 200	5 200	5 500	6 600	6 900	8 100	8 600	10 500	11 000
Max shipping weight	kg	1820	2380	2720	3 500	3 600	4 500	4 700	5 600	5 900	7 000	7 300	9 000	9 300
Shipping method	u	1	1	1	1	1	1	1	1	1	1	1	1	1
Power supply	V-ph-Hz	400-3-50			400-3-50									
Apparent power	kVA	3.1	3.1	3.1	5.0	5.0	5.0	6.8	6.9	6.9	6.9	6.9	10.5	10.5
Total electric current	A	4.8	4.8	4.8	7.5	7.5	7.5	10.2	10.3	10.3	10.3	10.3	15.5	15.5
Absorbent pump N°1, power input	kW	0.75	0.75	0.75	1.1	1.1	1.1	2.2	2.2	2.2	2.2	2.2	3.0	3.0
Absorbent pump N°1, electric current	A	2.2	2.2	2.2	2.8	2.8	2.8	5.5	5.5	5.5	5.5	5.5	7.5	7.5
Absorbent pump N°2, power input	kW	/	/	/	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	1.5	1.5
Absorbent pump N°2, electric current	A	/	/	/	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	4.7	4.7
Refrigerent pump, power input	kW	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Refrigerent pump, electric current	A	0.7	0.7	0.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Purge pump, power input	kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Purge pump, electric current	A	1.1	1.1	1.1	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
PD cell heater	kW	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Control circuit	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

* Condition for LJ 12,2/6,7 °C (Fouling Factor = 0.0176 m2°C/kW)
29.4/38.4°C (Fouling Factor = 0.044 m2°C/kW)
95/86°C (Fouling Factor = 0.0176 m2°C/kW)

* Condition for LJ-A 12/7 °C (Fouling Factor = 0.018 m2°C/kW)
29.4/36.3°C (Fouling Factor = 0.044 m2°C/kW)
90/80°C (Fouling Factor = 0.018 m2°C/kW)

Notes : These performance data are provided to support early design activity. For selection outside ARI operating conditions, contact Carrier

PHYSICAL DATA

16LJ-A		LJ-A												
Size		41	42	51	52	53	61	62	63	71	72	73	81	82
Capacity	kW	1 178	1 319	1 477	1 653	1 846	2 110	2 373	2 637	2 901	3 165	3 428	3 692	3 956
Chilled water system*														
Flow rate	l/sec	56.4	63.1	70.6	78.9	88.3	100.8	113.3	126.1	138.6	151.1	163.9	176.4	188.9
Pressure drop	kPa	102	88.5	74.3	37.4	49.3	95.6	45.9	59.9	114	50.7	62.7	50.8	61.7
Connection(ANSI)	inch	8	8	8	8	8	10	10	10	12	12	12	14	14
Retention volume	m^3	0.49	0.56	0.70	0.77	0.83	1.06	1.13	1.21	1.43	1.53	1.63	1.82	1.94
Cooling water system*														
Flow rate	l/sec	93.1	104.2	116.7	130.6	145.8	166.7	187.5	208.3	229.2	250	270.8	291.7	312.5
Pressure drop	kPa	52.8	55.4	94.4	128	43.1	78.1	105	70.6	45.6	57.4	70.8	59.2	71.4
Connection(ANSI)	inch	10	10	12	12	12	14	14	14	16	16	16	16	16
Retention volume	m^3	1.31	1.41	1.97	2.13	2.27	2.87	3.05	3.23	3.79	4.02	4.23	4.75	5.10
Hot water system*														
Flow rate	l/sec	37.4	41.8	46.8	52.4	58.5	66.9	75.2	83.6	91.9	101	109	117	126
Pressure drop	kPa	21.7	22.1	63.8	28.6	37.8	27.2	36.4	47.5	37.9	47.9	59.2	49.3	59.8
Connection(ANSI)	inch	8	8	8	8	8	10	10	10	10	10	10	10	10
Retention volume	m^3	0.29	0.32	0.35	0.37	0.40	0.69	0.72	0.76	0.82	0.86	0.90	0.99	1.03
Rupture disk connection	inch	2	2	2	2	2	2	2	2	2	2	2	2	2
Dimensions														
Length (L)	mm	5 070	5 070	5 210	5 750	6 250	5 750	6 250	6 750	6 490	6 990	7 490	7 090	7 590
Height (H)	mm	3 015	3 015	3 390	3 390	3 390	3 790	3 790	3 790	3 950	3 950	3 950	4 210	4 210
Width (W)	mm	1 750	1 750	1 990	1 990	1 990	2 420	2 420	2 420	2 650	2 650	2 650	2 820	2 820
Tube removal	mm	4 500	4 500	4 600	5 200	5 700	5 200	5 700	6 200	5 700	6 200	6 700	6 200	6 700
Weight														
Operation weight	kg	13 000	13 600	18 400	20 000	21 400	28 300	30 300	32 400	38 700	41 200	43 700	46 900	49 600
Max shipping weight	kg	10 900	11 300	15 400	16 600	17 900	11 500	12 200	13 100	16 000	17 000	18 000	19 000	19 900
Shipping method	u	1	1	1	1	1	2	2	2	2	2	2	2	2
Power supply	V-ph-Hz	400-3-50												
Apparent power	kVA	10.6	10.6	10.6	10.6	10.8	18.7	18.7	18.7	24.2	24.2	25.6	25.6	25.6
Total electric current	A	15.6	15.6	15.6	15.6	15.9	27.4	27.4	27.4	35.3	35.3	37.4	37.4	37.4
Absorbent pump N°1, power input	kW	3.0	3.0	3.0	3.0	3.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Absorbent pump N°1, electric current	A	7.5	7.5	7.5	7.5	7.5	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Absorbent pump N°2, power input	kW	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.7	3.7	3.7	3.7	3.7
Absorbent pump N°2, electric current	A	4.7	4.7	4.7	4.7	5.0	5.0	5.0	5.0	11.0	11.0	11.0	11.0	11.0
Refrigerent pump, power input	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.75	0.75	1.2	1.2	1.2
Refrigerent pump, electric current	A	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.5	2.5	4.6	4.6	4.6
Purge pump, power input	kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.75	0.75	0.75	0.75	0.75
Purge pump, electric current	A	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.9	1.9	1.9	1.9	1.9
PD cell heater	kW	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Control circuit	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

* Condition for LJ-A 12/7 °C (Fouling Factor = 0.018 m2°C/kW)
29.4/36.3°C (Fouling Factor = 0.044 m2°C/kW)
90/80°C (Fouling Factor = 0.018 m2°C/kW)

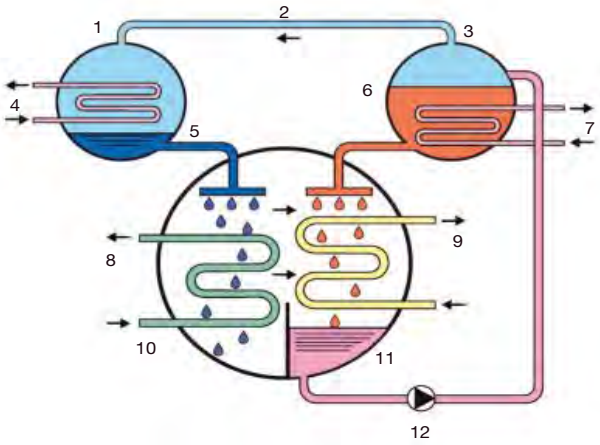
Notes : These performance data are provided to support early design activity. For selection outside ARI operating conditions, contact Carrier

THE ABSORPTION CYCLE

The absorption cooling cycle, like the mechanical vapour compression refrigeration cycle, utilizes the latent heat of evaporation of a refrigerant to remove heat from the entering chilled water. Vapour compression refrigeration systems use a chlorine-based refrigerant and a compressor to transport the refrigerant vapour to be condensed in the condenser. The absorption cycle, however, uses water as the refrigerant and an absorbent lithium bromide solution to absorb the vaporised refrigerant. Heat is then applied to the solution to release the refrigerant vapour from the absorbent. The refrigerant vapour is then condensed in the condenser.

The basic single-effect absorption cycle (see Figure 1) includes generator, condenser, evaporator and absorber with refrigerant (liquid) and lithium bromide as the working solutions. The generator utilizes a heat source (steam or hot water) to vaporise the diluted lithium bromide solution. The water vapour that is released travels to the condenser where it is condensed back into a liquid, transferring the heat to the cooling tower water. Once condensed, the liquid refrigerant is distributed over the evaporator tubes, removing the heat from the chilled water and vaporising the liquid refrigerant. The concentrated lithium bromide solution from the generator passes into the absorber, absorbs the refrigerant vapour solution from the evaporator and dilutes itself. The diluted lithium bromide solution is then pumped back to the generator where the cycle is started again.

Figure 1 - Simplified absorption cycle

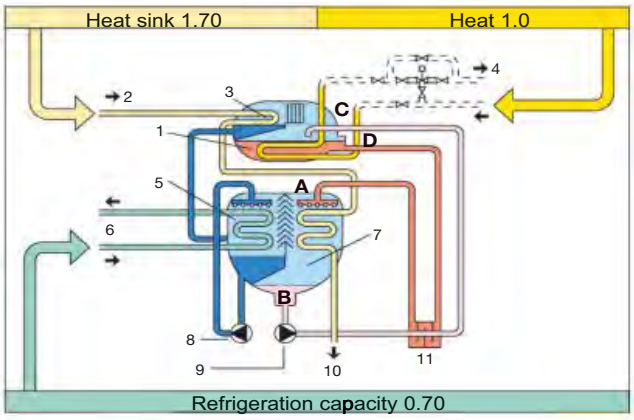


Legend

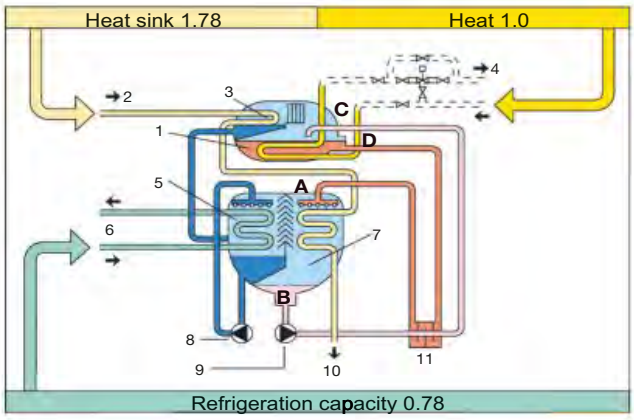
1. Condenser
2. Refrigerant vapour
3. Generator
4. Cooling water
5. Liquid refrigerant
6. Concentrated solution
7. Heat source
8. Chilled water
9. Cooling water
10. Evaporator
11. Absorber
12. Absorbent pump

Cooling cycle schematic

LJ 01/02/03

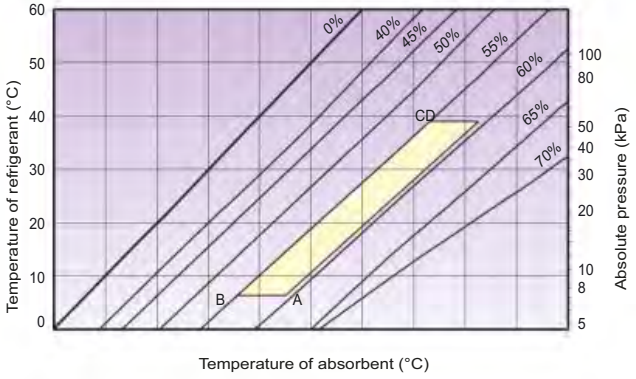


LJA 11-82



Legend

1. Generator
2. Cooling water
3. Condenser
4. Hot water
5. Evaporator
6. Chilled water
7. Absorber
8. Refrigerant pump
9. Absorbent pump
10. Heat exchanger
11. Cooling water
12. Concentrated solution
13. Diluted solution
14. Liquid solution
15. Refrigerant vapour
16. Cooling water
17. Chilled water
18. Hot water



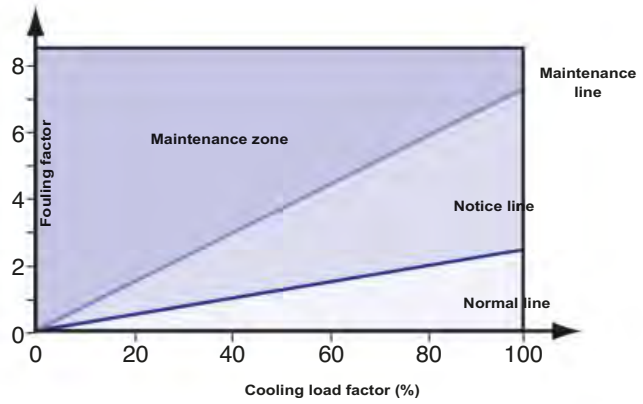
FEATURES AND ADVANTAGES

Expert self-diagnosis function

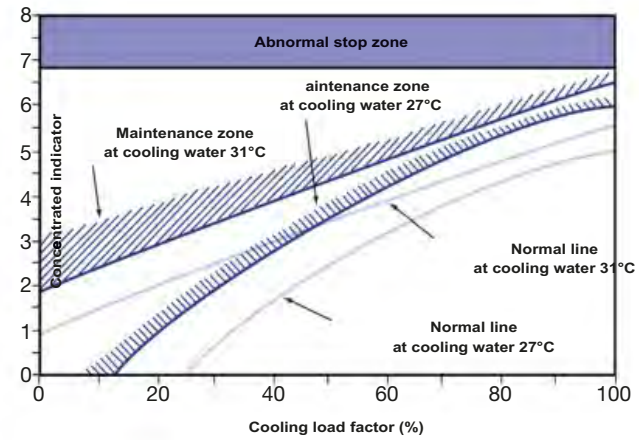
The expert function is provided to monitor operating conditions, predict chiller information and maintain stable operation.

Predictive maintenance information

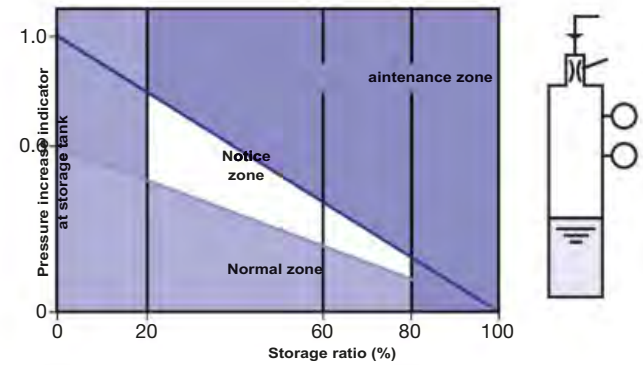
Graph 1 - Fouling of heat transfer tubes in cooling water system



Graph 2 - Tend of absorbent concentration



Graph 3 - Vacuum condition monitoring



Legend

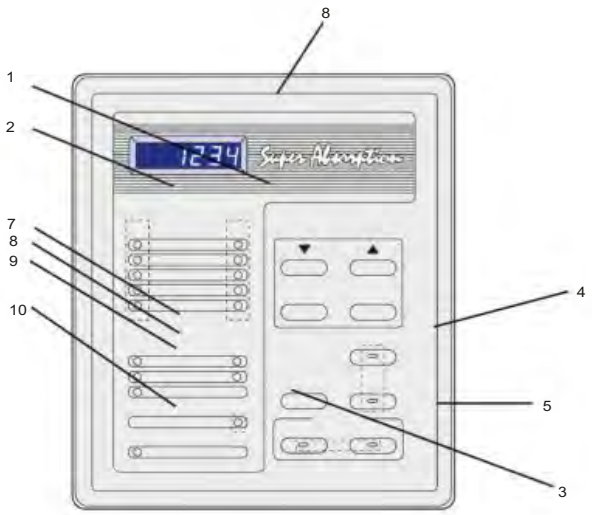
1. Storage tank
2. Diluted solution
3. Purge nozzle
4. Pd cell
5. Pressure sensor

Control system

- The Carrier control system surpasses other proportional only control systems available today. The digital PID (proportional plus integral plus derivative) control maximises unit performance by maintaining a ±0.5 K variance in leaving chilled-water temperature from the set-point. Proportional controls can typically only maintain a ±1 K variance from the set-point. The controller's innovative design also incorporates the ability to start and stop the system chilled/ hot and cooling water pumps. During shutdown these pumps are sequenced to ensure a complete dilution cycle
- The leaving chilled-water temperature is measured every five seconds and steam input is changed according to the gradient of the leaving chilled-water temperature curve. System temperatures, set-points, and operational records are displayed along with indicator lights for the chiller and pumps.
- The Carrier control system offers its users selfdiagnostics by constantly monitoring the chiller status and will automatically shut the chiller down if a fault occurs. The cause of shutdown will be retained in the memory and can be displayed for immediate operator review. The controller's memory will also retain and display the cause of the last three system fault conditions. This method of retaining fault conditions is extremely useful for maintaining an accurate

Display and control board

Figure 2 - Indication lights



Legend

Name		LED colour
1.	Operation indication light	Green
2.	Stop indication light	Orange
3.	Alarm indication light	Red
4.	Remote/local select button with LED	Green
5.	Operation select button with LED	Green
6.	Data display	7 segment LED (red)
7.	Stand-by indication light	Green
8.	Dilution indication light	Green
9.	Safety circuit indication light	Green
10.	Power indication light	orange
GL*.	Purge indication light	
43P*.	Purge pump on-off switch	
43ES*.	Emergency stop switch	

*On the control panel door

FEATURES AND ADVANTAGES

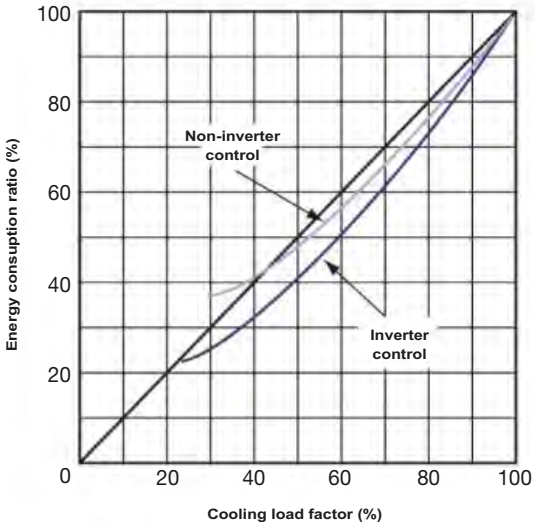
Fast digital PID control

The introduction of new digital PID control stabilises the chilled/hot water temperature with high accuracy. It quickly responds to the load fluctuation and supplies stable chilled/hot water temperature. It is suitable for air-conditioning intelligent buildings which require sophisticated control.

Saving energy with the inverter (option)

Balancing the load and flow rate with the absorbent pump's inverter control enables efficient and energy-saving operation. As a result, it reduces input energy and electric power consumption. Running cost is decreased by 5% compared to non-inverter control.

Graph 4 - Running cost curve



Notes
1. Chilled water leaving temperature 7°C constant
2. Cooling water entering temperature:

Load factor (%)	Temperature (°C)
100	32
50	27
30	25

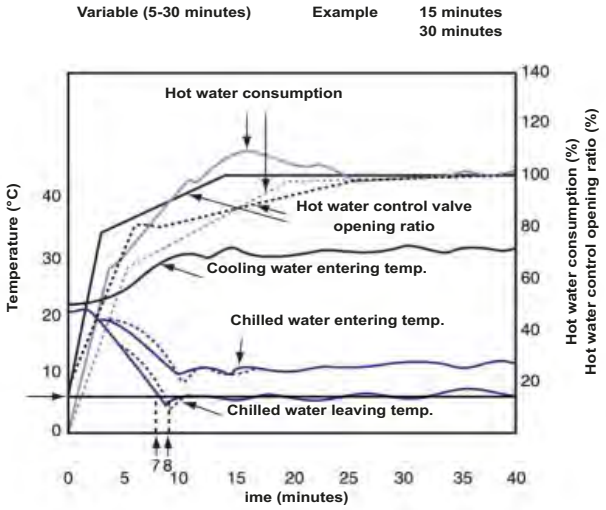
Purge system

The high-performance purge system maintains the required operating pressure, preserves chiller performance characteristics, minimises chiller maintenance to one purge operation per season (for year-round operation).

Hot-water valve opening control

- At the start-up, the opening angle of the hot-water control valve is controlled in three stages, reducing the amount of hot water and the time needed to reach the desired level, compared with the previous model.
- Adjusting the opening speed of the hot-water control valve at the second and third stage, it is possible to set up the most suitable conditions for the site auxiliary equipment.

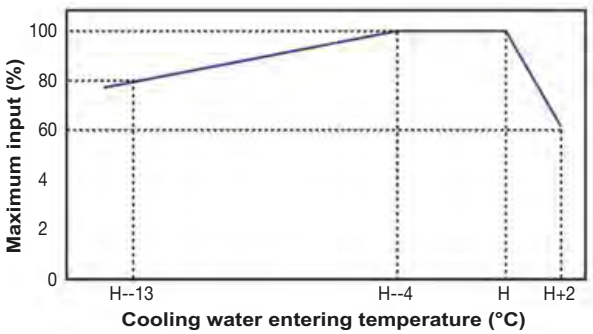
Graph 5 - Hot water valve opening control



Expansion of safe operating zone

- This ensures quick response to rapid changes and maintains stable operation.
- The safe operating zone is between 19 °C and 34 °C cooling water temperature (for a nominal cooling water entering temperature of 32 °C).

Graph 6 - Safe operating zone chart



Crystallisation protection

A microprocessor monitors the absorbent concentration.Steam supply is stopped, and the unit is returned to normal operation, when the concentration is over a certain limit, to prevent the crystallisation of absorbent

FOUNDATION DIMENSIONS, MM

Figure 3 - LJ-A 11 to LJ-A 42

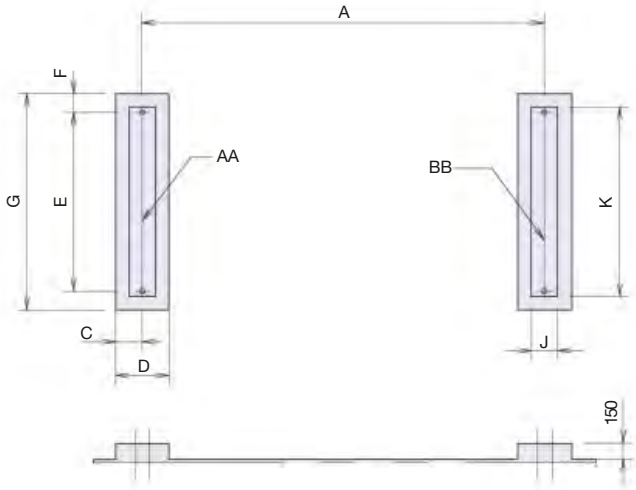


Figure 5 - LJ-A 51 to LJ-A82

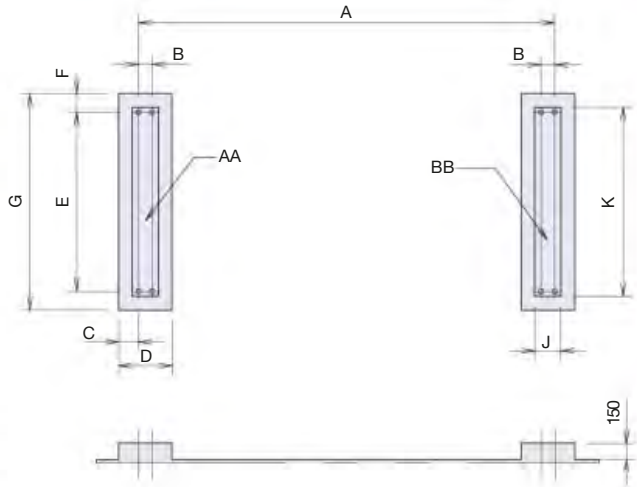
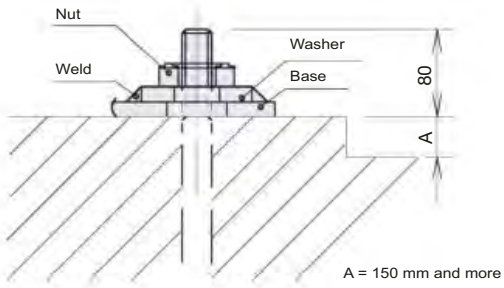


Figure 4 - Details of weld



NOTES:

1. The machine base has ø50-mm hole for the anchor bolt.
2. The anchor bolt should be fixed as shown in the detail drawing.Washer should be welded to the base (see Fig. 4)
3. There should be a drain channel around the foundation.
4. The floor surface should be made waterproof to facilitate maintenance work.
5. The surface of the foundation should be made flat.(Leveling tolerance is 1 mm for 1000 mm)
6. Anchor bolts and nuts are to be supplied by customer.

Table 1 - Foundation dimensions

		Weight			Dimensions								
Model	**Size**	**AA+BB**	**AA**	**BB**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**J**	**K**
16LJ-A	11	4000	2000	2000	1896	-	175	360	800	150	1100	160	900
16LJ-A	12	4200	2100	2100	1896	-	175	360	800	150	1100	160	900
16LJ-A	1	5200	2600	2600	291	-	17	360	0	1	11	160	
16LJ-A	14	5500	2750	2750	2916	-	175	360	800	150	1100	160	900
16LJ-A	21	6600	3300	3300	2866	-	200	400	1000	150	1300	200	1100
16LJ-A	22	6900	3450	3450	2866	-	200	400	1000	150	1300	200	1100
16LJ-A	23	8100	4050	4050	3886	-	200	400	1000	150	1300	200	1100
16LJ-A	24	8600	4300	4300	3886	-	200	400	1000	150	1300	200	1100
16LJ-A	31	10500	5250	5250	3836	-	225	450	1100	150	1400	250	1200
16LJ-A	32	11000	5500	5500	3836	-	225	450	1100	150	1400	250	1200
16LJ-A	41	13000	6500	6500	3836	-	225	450	1150	150	1450	250	1250
16LJ-A	42	13600	6800	6800	3836	-	225	450	1150	150	1450	250	1250
16LJ-A	51	18400	9200	9200	3966	130	190	510	1600	180	1960	250	1700
16LJ-A	52	20000	1	10000	4	1	19	510	1600	1	19 0	250	1700
16LJ-A	53	21400	10700	10700	5006	130	190	510	1600	180	1960	250	1700
16LJ-A	61	28300	14150	14150	4468	140	220	580	1800	180	2160	320	1900
16LJ-A	62	30300	15150	15150	4966	140	220	580	1800	180	2160	320	1900
16LJ-A	63	32400	16200	16200	5491	140	220	580	1800	180	2160	320	1900
16LJ-A	71	38700	19350	19350	4566	140	220	580	2200	180	2560	320	2300
16LJ-A	72	41200	00	20600	1	14	220	580	2200	1	5 0	320	2300
16LJ-A	73	43700	21850	21850	5591	140	220	580	2200	180	2560	320	2300
16LJ-A	81	46900	23450	23450	5091	140	220	580	2400	180	2760	320	2500
16LJ-A	82	49600	24800	24800	5591	140	220	580	2400	180	2760	320	2500

SINGLE-EFFECT STEAM-FIRED ABSORPTION CHILLERS SUPER ABSORPTION

Complete range
350 to 2500 kW

HFC-refrigerant free

Steam supply pressure
50 to 100 kPa

16TJ

Nominal cooling capacity 350-2500 kW

The Carrier Corporation has more than 100 years experience in providing HVAC systems and equipment around the world and offers a complete product solutions for many different type of applications: From residential to industrial.

For all cases where power grid is not available on site or either not extensively developed, or where thermal energy sources (water or steam) are available on site, Carrier offers a complete range of absorption chillers.

PHYSICAL DATA

Single effect steam-fired absorption chillers

16TJ		11	12	13	14	21	22	23	24
Cooling capacity	kW	352	422	527	633	738	844	985	1125
Chilled water system*									
Flow rate	l/s	15.1	18.2	22.7	27.3	31.7	36.4	42.5	48.3
Pressure drops	kPa	50	51	64	67	60	64	42	45
Connection (ANSI)	in	4	4	4	4	5	5	6	6
Retention volume	m^3	0.12	0.13	0.15	0.17	0.22	0.25	0.29	0.31
Cooling water system*									
Flow rate	l/s	22.7	27.3	34.2	40.8	47.8	54.4	63.6	72.8
Pressure drops	kPa	34	37	32	36	32	35	65	70
Connection (ANSI)	in	5	5	5	5	6	6	8	8
Retention volume	m^3	0.33	0.37	0.41	0.45	0.58	0.63	0.69	0.76
Steam system									
Consumption	kg/h	780	940	1170	1410	1640	1880	2190	2500
Steam inlet (ANSI)	in	5	5	5	5	6	6	8	8
Drain outlet (ANSI)	in	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
Control valve	in	2	2	2-1/2	2-1/2	2-1/2	3	3	4
Shutoff valve	in	2	2	2-1/2	2-1/2	2-1/2	3	3	4
Dimensions									
Length	mm	2690	2690	3690	3690	3790	3790	4850	4850
Height	mm	2200	2200	2200	2200	2350	2350	2370	2370
Width	mm	1400	1400	1400	1400	1560	1560	1560	1560
Tube removal space	mm	2400	2400	3400	3400	3400	3400	4500	4500
Weight									
Operating weight	kg	4000	4300	5100	5400	6700	6900	7900	8300
Max shipping weight**	kg	3500	3700	4500	4700	5800	6000	6900	7200
Power supply	V-ph-Hz	400-3-50							
Apparent power	kVA	4.0	4.0	4.0	4.0	5.8	5.8	5.9	5.9
Total electric current	A	6.1	6.1	6.1	6.1	8.8	8.8	8.9	8.9
Absorbent pump, power input	kW	1.1	1.1	1.1	1.1	2.2	2.2	2.2	2.2
Absorbent pump, electric current	A	2.8	2.8	2.8	2.8	5.5	5.5	5.5	5.5
Refrigerant pump, power input	kW	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Refrigerant pump, electric current	A	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4
Purge pump, power input	kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Purge pump, electric current	A	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
PD cell heater	kW	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Control circuit	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

* In accordance with ARI 560 - 2000
12.2 / 6.7 °C (fouling factor = 0.0176 m2 K/kW)
29.4 / 38.4°C (fouling factor = 0.044 m2 K/kW)
Saturated steam 100 kPa

** All sizes shipped as one-piece

Notes: These performance data are provided to support early design activity. For selection outside ARI operating conditions contact Carrier.

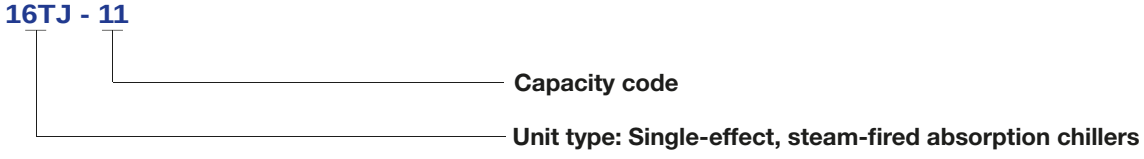
PHYSICAL DATA

16TJ		31	32	41	42	51	52	53
Cooling capacity	kW	1266	1407	1582	1758	1969	2215	2461
Chilled water system*								
Flow rate	l/s	54.4	60.6	68.1	75.8	84.7	95.3	106.1
Pressure drops	kPa	48	51	44	39	35	47	61
Connection (ANSI)	in	6	6	8	8	8	8	8
Retention volume	m^3	0.35	0.38	0.49	0.56	0.7	0.77	0.83
Cooling water system*								
Flow rate	l/s	81.7	90.8	102.2	113.6	127.2	143.1	158.9
Pressure drops	kPa	54	57	59	63	39	52	68
Connection (ANSI)	in	8	8	10	10	12	12	12
Retention volume	m^3	0.98	1.05	1.31	1.41	1.98	2.13	2.28
Steam system								
Consumption	kg/h	2810	3120	3510	3900	4370	4920	5460
Steam inlet (ANSI)	in	8	8	8	8	10	10	10
Drain outlet (ANSI)	in	2	2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2
Control valve	in	4	4	4	4	4	5	5
Shutoff valve	in	4	4	4	4	4	5	5
Dimensions								
Length	mm	4940	4940	4990	4990	5060	5600	6100
Height	mm	2610	2610	2860	2860	3210	3210	3210
Width	mm	1630	1630	1700	1700	1990	1990	1990
Tube removal space	mm	4500	4500	4500	4500	4600	5200	5700
Weight								
Operating weight	kg	10300	10600	12500	12800	17500	18900	20200
Max shipping weight**	kg	8900	9100	10700	10900	14800	16000	17100
Power supply	V-ph-Hz	400-3-50						
Apparent power	kVA	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Total electric current	A	10.9	10.9	10.9	10.9	10.9	10.9	10.9
Absorbent pump, power input	kW	3	3	3	3	3	3	3
Absorbent pump, electric current	A	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Refrigerant pump, power input	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Refrigerant pump, electric current	A	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Purge pump, power input	kW	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Purge pump, electric current	A	1.1	1.1	1.1	1.1	1.1	1.1	1.1
PD cell heater	kW	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Control circuit	kW	0.3	0.3	0.3	0.3	0.3	0.3	0.3

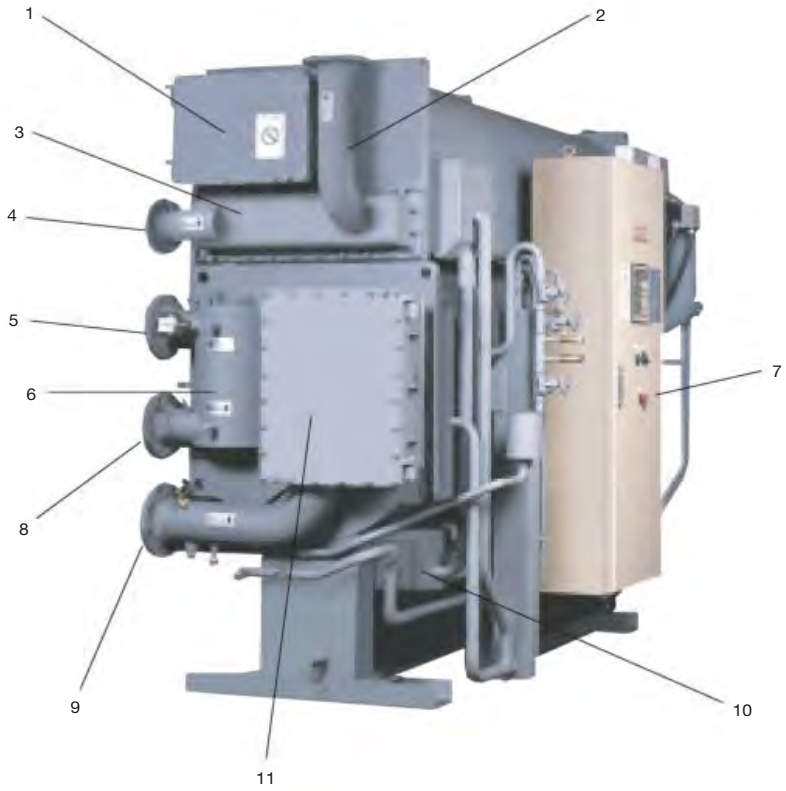
* In accordance with ARI 560 - 2000
12.2 / 6.7 °C (fouling factor = 0.0176 m2 K/kW)
29.4 / 38.4°C (fouling factor = 0.044 m2 K/kW)
Saturated steam 100 kPa
** All sizes shipped as one-piece

Notes: These performance data are provided to support early design activity. For selection outside ARI operating conditions contact Carrier.

NOMENCLATURE



COMPONENT IDENTIFICATION



Legend
1. Condenser
2. Steam inlet
3. Generator
4. Chilled-water outlet
5. Control panel
6. Evaporator
7. Chilled-water inlet
8. Cooling water inlet
9. Heat exchanger
10. Heat reclaimer
11. Absorber

SCOPE OF SUPPLY

1. Standards met

The units comply with the following standards:
- ARI 560-2000
- 2006/42/EC (machine directive)
- 2006/95/EC (low-voltage directive)
- 2004/108/EC (electromagnetic compatibility directive)
- 97/23/EC (pressure equipment directive).

2. Absorption chiller, comprising:

1. Lower shell
   - Evaporator and refrigerant dispersion tray
   - Absorber and absorbent dispersion tray with eliminators
   - Bases.
2. Upper shell
   - Generator with eliminators
   - Condenser with eliminators
   - Rupture disk.
3. Heat exchangers with refrigerant drain heat reclaimer
4. Pumps
   - Absorbent pump with isolating valves
   - Refrigerant pump with isolating valves
   - Purge pump.
5. Purge unit
   - Purge tank with ejector device
   - Diaphram valves and piping with liquid trap
   - Pressure sensor
   - Palladium cell with heater.
6. Control panel
   - Controller with data display
   - LEDs and operation buttons
   - Inverter for absorbent pump (option)
   - Circuit breaker
   - Transformer
   - Relays and terminal blocks
   - Purge pump operation switch.
7. Locally mounted parts
   - Temperature sensors
   - Chilled-water flow switch.
8. Interconnecting piping and wiring
   - Refrigerant and absorbent piping
   - Internal power and control wiring.
9. Initial charge
   - Absorbent (lithium bromide)
   - Refrigerant (water)
   - Inhibitor (lithium molybdate).
10. Painting
   - ain unit: Rust-preventive paint
   - Control panel: Finish paint.
11. Accessories
   - Operation manual
   - Washer (for fixing foundation bolts)
   - Gasket and sealant for rupture disk
   - Purge pump oil
   - Matching flanges, gaskets, bolts and nuts.

SCOPE OF SUPPLY

3. Factory test

1. Check of external dimensions
2. Hydraulic pressure test of water headers Test pressure is 1.5 times of maximum working pressure
3. Vacuum-side leak test
4. Electric insulation resistance test
5. Dielectric breakdown test
6. Function test of electric circuit and safety devices

4. Scope of supply of the purchaser

1. Building and foundations
2. External chilled water, cooling water and steam piping work including various safety valves, isolation valves, mating flanges, gaskets, bolts and nuts, etc.
3. External wiring and piping for the chillers including necessary parts
4. Insulation for the chillers including necessary parts.
5. Finish painting of the chillers (if needed)
6. Cooling water entering temperature control device
7. Cooling water treatment device
8. Various temperature/pressure gauges for steam and water lines.
9. Cooling tower(s), chilled-water pump(s) and steam control valve and steam shut-off valve
10. Electric power supply (as specified)
11. Supply of chilled water, cooling water, steam and air* at rated conditions
12. Maintenance of the chiller
13. Necessary tools, labour and materials for installation and site test operation
14. Any other item not specifically mentioned in the scope of supply

* If pneumatic steam valve control is used.

SCOPE OF ORDER

Item	Standard	Option
Chilled water		
Temperature	Entering: 12.2 °C, leaving: 5 °C through 12 °C Leaving: 6.7 °C, temperature difference 3 K through 10 K	
Flow rate	0.043 l/s x kW - Changes depending on chilled water temperature difference (min 50%)	
Max. working pressure	1034 kPa	1540 kPa, 2068 kPa
ydraulic test pressure	Max.working pressure x 1.5	Max working pressure x 1.5
Fouling factor	0.018 m2 K/kW Max. 0.18 m2 K/kW	
Tube material	Copper tube	Cu Ni tube
Water quality	Refer to JRA-GL02E-1994	No option
Structure of water header	Removable type and epoxy treated	No option
Manufacturing standard of water header	Flanged ANSI	No option
Cooling water		
Temperature	Entering: 29.4 °C Leaving: 38.4 °C, entering: 20 °C through 33 °C	
Flow rate	0.065 l/s per kW. Within the water flow rate range of each model	
Max. working pressure	1034 kPa	1540 kPa, 2068 kPa
Hydraulic test pressure	Max. working pressure x 1.5	
Fouling factor	0.044 m2 K/kW. Max. 0.18 m2 K/kW	
Tube material	Copper tube	Cu Ni tube
Water quality	Refer to JRA-GL02E-1994	No option
Structure of water header	Hinged type and epoxy treated	No option
Manufacturing standard of water header	Flanges ANSI	No option
Steam		
Supply pressure Specific steam consumption	100 kPa, 50 kPa through 100 kPa, max. 5 K superheat 2.22 kg/h/kW. Changes depend on the specifications.	
Max. working pressure	146 kPa	No option
Hydraulic test pressure	Max. working pressure x 1.5	No option
Tube material	9/1 Copper nickel tube	No option
Steam quality	Refer to JIS-B-8223	No option
Manufacturing standard of water header	Flanged ANSI	No option
Electricity		
Power supply	400 V - 3 phase - 50Hz (Voltage control within ±10%, frequency control within ±5%)	Contact the Carrier representative
Shipment	One section	ulti-shipment

SCOPE OF ORDER

Item	Standard	Option
Control		
Safety functions	Refrigerant temperature Chilled water freeze protection Chilled water flow switch Cooling water temperature HT generator temperature HT generator pressure HT generator solution level Crystallisation protection Motor protection	Cooling water flow switch
Capacity control	Digital PID control by chilled-water temperature	Inverter control of #1 absorbent pump
Parts	Selected by Carrier	No option
Control panel		
Painting	Munsell 5Y-7/1	No option
Indication lights	Operation Stop Alarm	No option No option No option
Display	LED	No option
External terminals (volt-free normally open contact)	Operation indication Stop indication Alarm indication Feedback indication Cooling mode indication	No option
Structure Parts	Indoor type Selected by Carrier	No option No option
Electrical wiring and piping	Wire: 600 V polyvinyl grade (chloride-insulated wires) Pipe: Plicatube (flexible metal conduits)	No option No option
Insulation condition		
Place Ambient temperature Ambient humidity	Indoor 5 °C through 40 °C Relative humidity: Max. 90 % at 45 °C	No option No option No option
Atmosphere	Be sure the following are not present: - Corrosive gas - Explosive gas - Poisonous gas	No option

FEATURES AND ADVANTAGES

- The Carrier 16TJ single-effect absorption chillers are designed for cooling applications where low-pressure steam is available as waste heat.
- They can tie into district steam systems.
- Carrier absorption chillers allow diversification of critical cooling requirements. Critical cooling loads are met with minimal electrical power input.
- They allow smaller emergency generators compared to an electrical driven chiller.
- The units are ozone-safe and CFC-free. Cooling requirements are met without chlorine-based refrigerants.
- They reduce the contribution to global warming and minimise the global impact by greatly reducing electricity consumption and production of greenhouse gases.
- The solution inhibitor has no impact on the environment.
- An absorption chiller does not utilise mechanical moving parts, and this leads to quiet, vibration-free operation.
- The use of high-efficiency heat transfer surfaces has reduced the space required for installation of the absorption chiller, resulting in a smaller footprint.

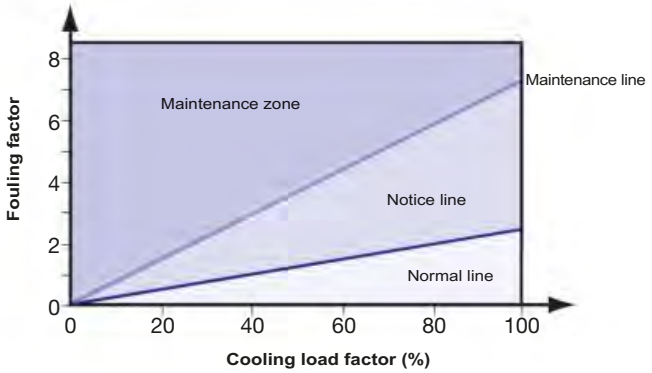
CONTROLS

Expert self-diagnosis function

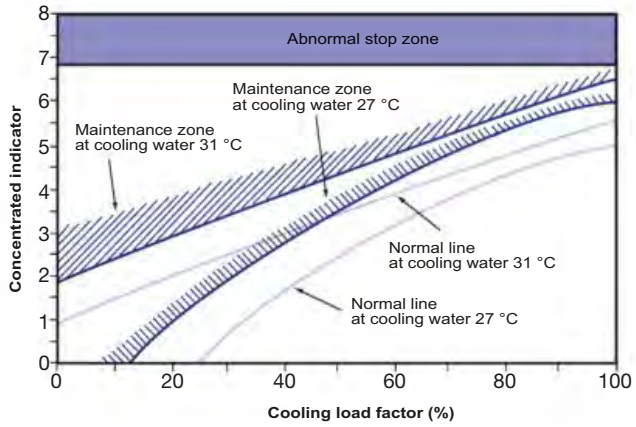
- The expert function is provided to monitor operating conditions, predict chiller information and maintain stable operation.

Predictive maintenance information

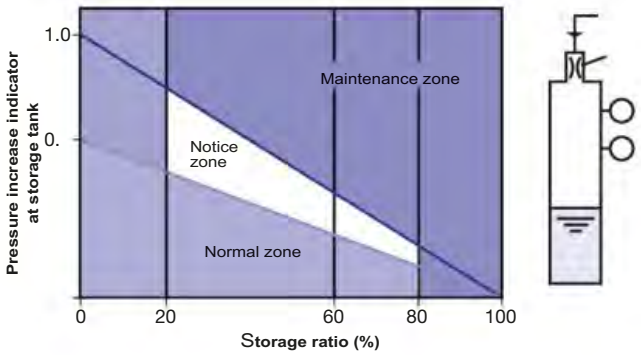
Graph 1 - Fouling of heat transfer tubes in cooling water system



Graph 2 - Trend of absorbent concentration



Graph 3 - Vacuum condition monitoring



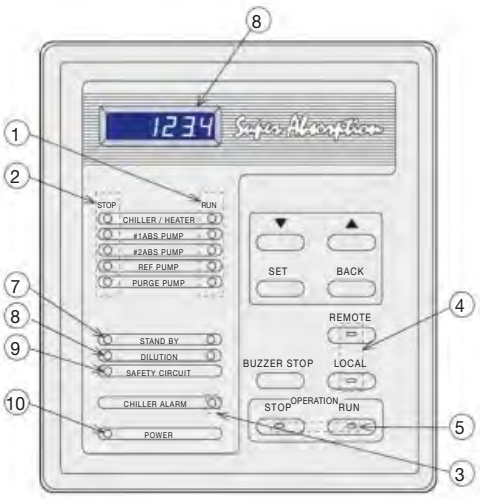
Legend
1. Storage tank
2. Diluted solution
3. Purge nozzle
4. Pd cell
5. Pressure sensor

Carrier control system

- The Carrier control system surpasses other proportional only control systems available today. The digital PID (proportional plus integral plus derivative) control maximises unit performance by maintaining a ±0.5 K variance in leaving chilled-water temperature from the set-point. Proportional controls can typically only maintain a ±1 K variance from the set-point. The controller's innovative design also incorporates the ability to start and stop the system chilled and cooling water pumps. During shutdown these pumps are sequenced to ensure a complete dilution cycle.
- The leaving chilled-water temperature is measured every five seconds and steam input is changed according to the gradient of the leaving chilled-water temperature curve. System temperatures, set-points, and operational records are displayed along with indicator lights for the chiller and pumps.
- The Carrier control system offers its users selfdiagnostics by constantly monitoring the chiller status and will automatically shut the chiller down if a fault occurs. The cause of shutdown will be retained in the memory and can be displayed for immediate operator review. The controller's memory will also retain and display the cause of the last three system fault conditions. This method of retaining fault conditions is extremely useful for maintaining an accurate record of unit performance and fault history.

Display and control board

Figure 2 - Indication lights



Legend

Name		LED colour
(1)	Operation indication light	Green
(2)	Stop indication light	Orange
(3)	Alarm indication light	Red
(4)	Remote/local select button with LED	Green
(5)	Operation select button with LED	Green
(6)	Data display	7 segment LED (red)
(7)	Stand-by indication light	Green
(8)	Dilution indication light	Green
(9)	Safety circuit indication light	Green
(10)	Power indication light	Orange
GL.	Purge indication light	Green
43P.	Purge pump on-off switch	
43ES.	Emergency stop switch	

CONTROLS

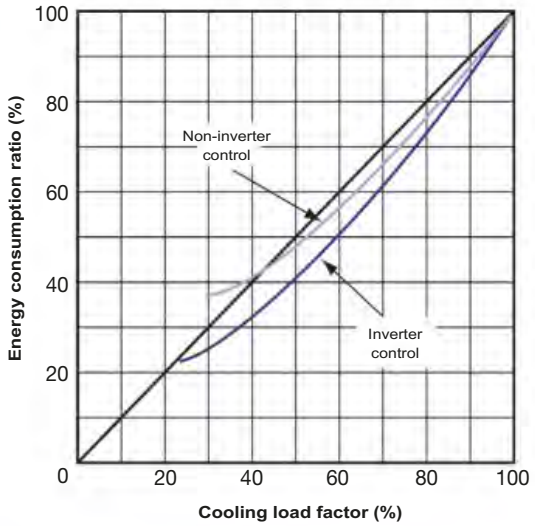
Fast digital PID control

The introduction of new digital PID control stabilises the chilled water temperature with high accuracy. It quickly responds to the load fluctuation and supplies stable chilled water temperature. It is suitable for air-conditioning intelligent buildings which require sophisticated control.

Saving energy with the inverter (option)

Balancing the load and flow rate with the absorbent pump's inverter control enables efficient and energy-saving operation. As a result, it reduces input energy and electric power consumption. Running cost is decreased by 5% compared to non-inverter control.

Graph 4 - Running cost curve



Notes:
1. Chilled-water leaving temperature 7 °C constant
2. Cooling water entering temperature:

Load factor (%)	Temperature (°C)
100	32
50	27
30	25

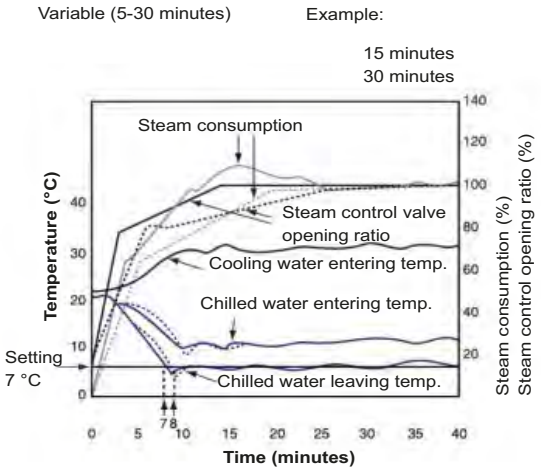
Purge system

- The high-performance purge system maintains the required operating pressure, preserves chiller performance characteristics, minimises chiller maintenance to one purge operation per season (for year-round operation).

Steam valve opening control

- At the start-up, the opening angle of the steam control valve is controlled in three stages, reducing the amount of steam and the time needed to reach the desired level, compared with the previous model.
- Adjusting the opening speed of the steam control valve at the second and third stage, it is possible to set up the most suitable conditions for the site auxiliary equipment.

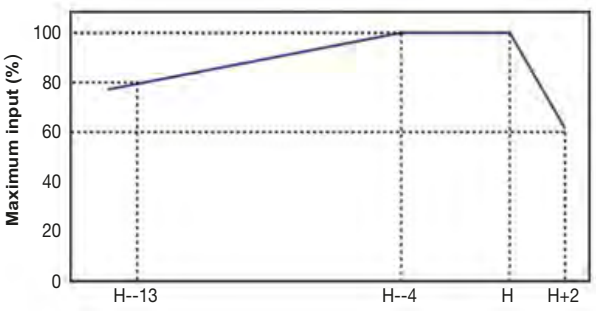
Graph 5 - Steam valve opening control



Expansion of safe operating zone

- This ensures quick response to rapid changes and maintains stable operation.
- The safe operating zone is between 19 °C and 34 °C cooling water temperature (for a nominal cooling water entering temperature of 32 °C).

Graph 6 - Safe operating zone chart



Cooling water entering temperature (°C)
H = 32 °C (variable from 20 °C to 33 °C)

Crystallisation protection

- A microprocessor monitors the absorbent concentration. Steam supply is stopped, and the unit is returned to normal operation, when the concentration is over a certain limit, to prevent the crystallisation of absorbent.

FOUNDATION DIMENSIONS, MM

Figure 3 - 16TJ-11 through 16TJ-42

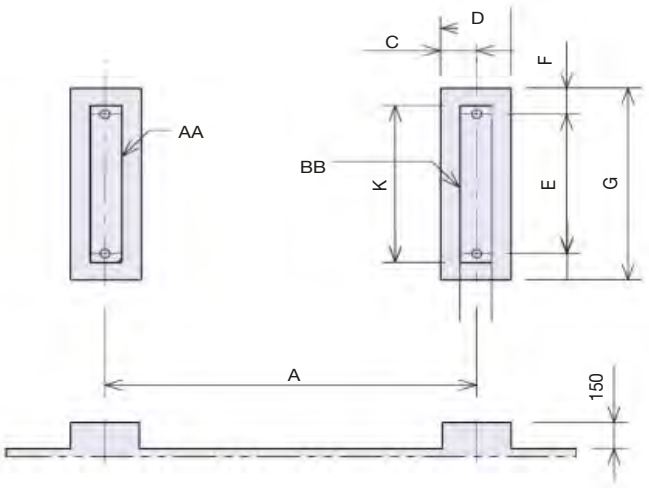


Figure 5 - 16TJ-51 through 16TJ-53

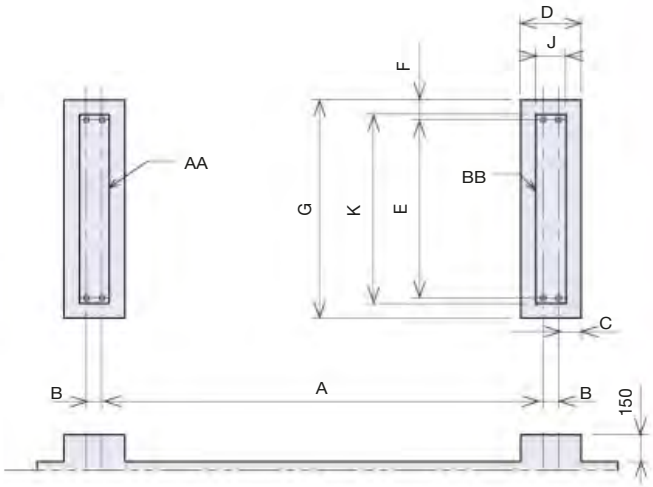
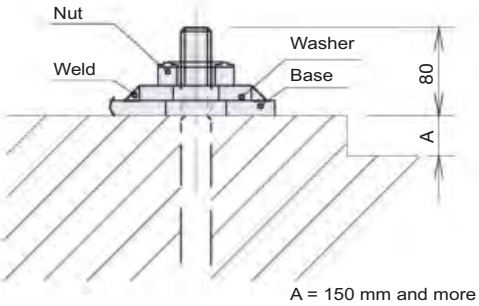


Figure 4 - Details of weld



A = 150 mm and more

Notes:

1. The machine base has ø50-mm hole for the anchor bolt.
2. The anchor bolt should be fixed as shown in the detail drawing.Washer should be welded to the base (see Fig. 4)
3. There should be a drain channel around the foundation.
4. The floor surface should be made waterproof to facilitate maintenance work.
5. The surface of the foundation should be made flat.
6. Anchor bolts and nuts are to be supplied by customer.

Dimensional data

16TJ	Weight, kg			Dimensions. mm								
	AA + BB	AA	BB	A	B	C	D	E	F	G	J	K
11	3800	1900	1900	1890	--	175	360	800	150	1100	160	900
12	4000	2000	2000	1890	-	175	360	800	150	1100	160	900
13	4900	2450	2450	2916	--	175	360	800	150	1100	160	900
14	5100	2550	2550	2916	--	175	360	800	150	1100	160	900
21	6200	3100	3100	2866	--	200	400	1000	150	1300	200	1100
22	6500	3250	3250	2866	-	200	4	1 0	150	1300	200	11
23	7600	3800	3800	3886	--	200	400	1000	150	1300	200	1100
24	8000	4000	4000	3886	--	200	400	1000	150	1300	200	1100
31	9800	4900	4900	3836	--	225	450	1100	150	1400	250	1200
32	10200	5100	5100	3836	--	225	450	1100	150	1400	250	1200
41	11800	5900	5900	3836	-	225	450	1150	150	1450	250	1250
42	12300	6150	6150	3836	--	225	450	1150	150	1450	250	1250
51	16900	8450	8450	3706	130	190	510	1600	180	1960	250	1700
52	18300	9150	9150	4248	130	190	510	1600	180	1960	250	1700
	19600	9800	980	4746	130	190	1	1600	180	1960	250	17

DOUBLE-EFFECT STEAM-FIRED ABSORPTION CHILLERS

SUPER ABSORPTION

16NK

Nominal cooling capacity 345 to 4652 kW

Eighteen sizes with nominal cooling capacities from 345 to 4652 kW.

The 16NK absorption chillers are designed for cooling applications where low-pressure steam is available as waste heat.

Minimises global warming effect by greatly reducing power consumption and eliminating the generation of greenhouse gases.

Allows diversification of critical cooling requirements. Critical cooling loads are met with minimal electrical power input.

Allows use of smaller emergency generators since the electrical load associated with an absorption chiller is minimal.

PHYSICAL DATA

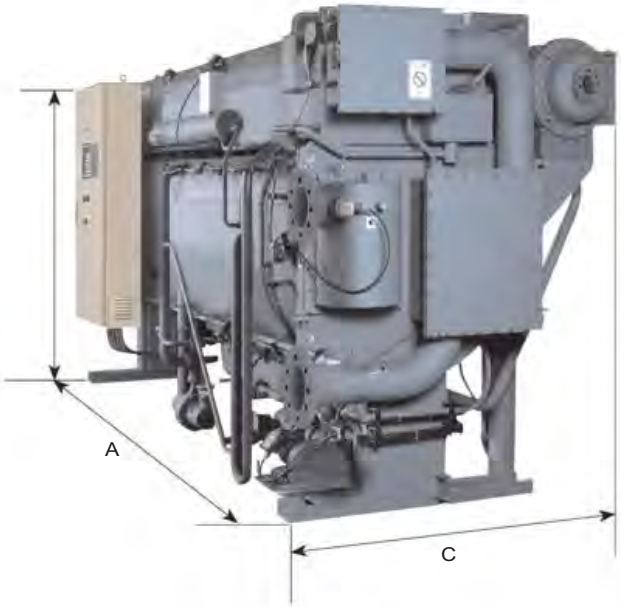
16NK		11	12	13	21	22	31	32	41	42
Cooling capacity	kW	345	447	549	689	861	1034	1238	1378	1551
Chilled water system*										
Flow rate	l/s	14.8	19.2	23.6	29.7	37.2	44.4	53.3	59.4	66.7
Pressure drop	kPa	44	64	64	57	42	41	49	46	41
Connection (ANSI)	in	4	4	4	5	6	6	6	8	8
Retention volume	m³	0.13	0.15	0.17	0.24	0.28	0.34	0.36	0.46	0.48
Cooling water system*										
Flow rate	l/s	24.7	31.9	39.4	49.4	61.9	74.2	88.9	98.9	111.4
Pressure drop	kPa	68	40	49	109	74	53	65	67	73
Connection (ANSI)	in	5	5	5	6	8	8	8	10	10
Retention volume	m³	0.34	0.38	0.42	0.58	0.63	0.89	0.95	1.11	1.9
Steam system		Saturated steam 784 kPa								
Consumption	kg/h	400	510	630	790	980	1180	1410	1570	1770
Dimensions	mm									
Length A		2810	3850	3850	3880	4920	5040	5040	5100	5100
Height B		2200	2200	2200	2250	2250	2390	2390	2600	2600
Width C		2050	1910	1910	2240	2070	2170	2170	2400	2400
Operating weight	kg	4600	5800	6100	7500	8800	11200	11800	13900	14500
Power supply	V-ph-Hz	400-3-50								
Total current drawn	A	10.8	10.8	10.8	13.3	13.3	13.6	13.6	20.7	20.7

16NK		51	52	53	61	62	63	71	72	81
Cooling capacity	kW	1723	1927	2170	2412	2757	3101	3446	3963	4652
Chilled water system*										
Flow rate	l/s	74.2	83.1	93.9	103.9	118.6	133.6	148.3	170.6	200.3
Pressure drop	kPa	98	46	61	123	83	78	54	81	84
Connection (ANSI)	in	8	8	8	10	10	10	12	12	14
Retention volume	m³	0.65	0.71	0.77	0.99	1.06	1.13	1.41	1.61	1.94
Cooling water system*										
Flow rate	l/s	123.6	138.3	155.6	173.1	197.8	222.5	247.2	284.4	333.9
Pressure drop	kPa	53	71	94	61	83	111	77	113	122
Connection (ANSI)	in	12	12	12	14	14	14	16	16	16
Retention volume	m³	1.87	2.01	2.14	2.79	2.97	3.15	3.67	4.11	4.76
Steam system		Saturated steam 784 kPa								
Consumption	kg/h	1960	2200	2470	2750	3140	3530	3920	4510	5300
Dimensions	mm									
Length A		5330	5870	6370	6100	6190	6710	6440	7460	7460
Height B		2900	2900	2900	3330	3330	3330	3450	3450	3650
Width C		2770	2800	2800	2970	3000	3000	3300	3300	3500
Operating weight	kg	18800	20800	22300	26500	30000	32100	38000	42300	47300
Power supply	V-ph-Hz	400-3-50								
Total current drawn	A	22.7	24.5	24.5	25.5	25	25	33.5	33.5	33.5

Cooling per ARI 560 2000:
* 12.2 —> 6.7°C (fouling factor = 0.0176 m2 K/kW)
** 29.4 —> 35.4°C (fouling factor = 0.044 m2 K/kW)

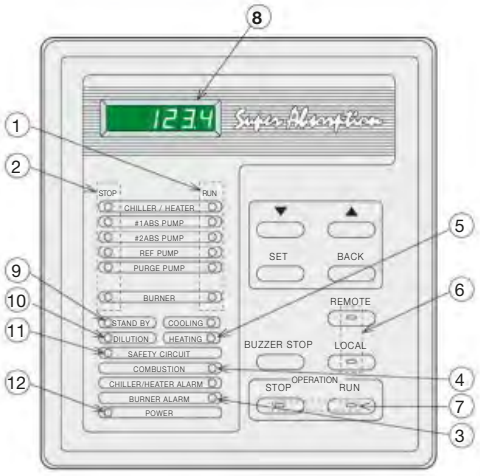
FEATURES AND ADVANTAGES

- Eighteen sizes with nominal cooling capacities from 345 to 4652 kW.
- The 16NK absorption chillers are designed for cooling applications where low-pressure steam is available as waste heat.
- Can tie into district steam systems.
- Allows diversification of critical cooling requirements. Critical cooling loads are met with minimal electrical power input.
- Allows use of smaller emergency generators since the electrical load associated with an absorption chiller is minimal.
- Environmentally balanced and CFC-free.
- Minimises global warming effect by greatly reducing power consumption and eliminating the generation of greenhouse gases.
- Reduced noise and vibration levels. The absorption chiller does not use a large motor-compressor, leading to quiet, vibration-free operation.
- Small footprint. The high efficiency associated with double-effect chillers results in a reduction of the required installation space.
- Auto-diagnosis system monitors operating conditions, predicts chiller information and maintains stable operation.
- Advanced high-precision control system.
- Absorption pump with inverter control for efficient, energy-saving operation.
- High-performance purge system minimises maintenance requirements.
- State-of-the-art protection devices guarantee enhanced operating safety.



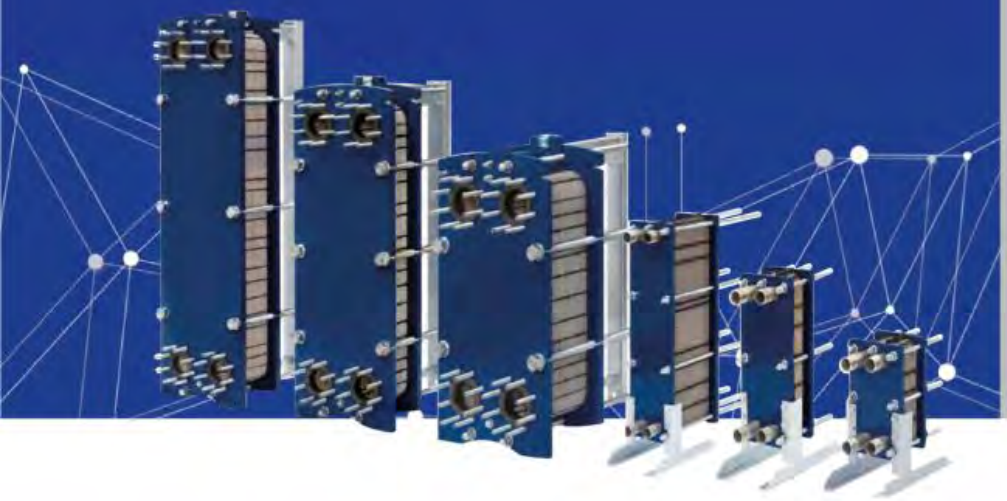
CONTROLS

Display and control board



1	Operation indication	7	Operation mode selection
2	Stop indication	8	Data display
3	Alarm indication	9	Stand-by indication
4	Combustion indication	10	Dilution indication
5	Cooling/heating indication	11	Safety circuit indication
6	Remote/local select button	12	Power indication

GASKETED PLATE HEAT EXCHANGERS



Decoupling of the machines to the system

Cost efficient design

Qualified and reliable

High heat transfer coefficient

Close temperature approach

10TE

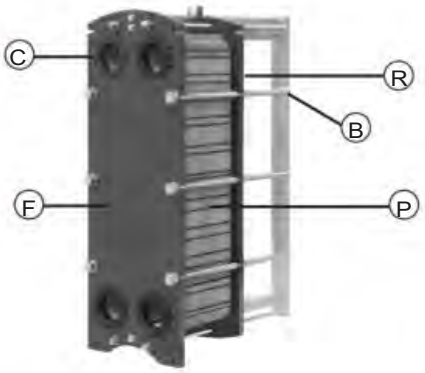
Large range capable to handle water flow rate up to 800m³/h

10TE gasketed plate heat exchangers are particularly well-suited for a wide range of applications:

- Water source heat pump and water cooled chillers
- Heat recovery
  Space heating
- Domestic hot water production
- Swimming pool heating
- Recovery on corrosive waste
- Geothermal energy recovery
- Industrial processes in general

DESCRIPTION

Gasketed plate heat exchanger consists of a number of corrugated heat transfer plates (P) compressed by means of tightening bolts (B) between a front fixed frame plate (F) and a rear moveable frame plate (R). Specific rubber gaskets (G) fastened on each plates generates two alternating independent circuits where the heat transfer between the two fluids take place in parallel and countercurrent flow. The unit is connected with the pipe system by means of pipe or flanged connections (C).



SELECTION

Due to the range's extreme modularity, the thermal selection must be optimised on the thermal requirements and the allowable pressure drops for the fluids utilised. The importance pressure drops must not be underestimated when selecting a heat exchanger, as it influences the choice and number of plates and thus the heat transfer area.

The heat transfer area is also influenced by other factors, such as the height to width ratio, the gap between the plates, and the angle and depth of the chevron patterns. The product and the configuration able to match individual duty's requirement in the most efficient way is selected with a dedicated and user-friendly selection software.

ADVANTAGES

- Excellent heat transfer coefficient
- Very low pinch point temperatures possible
- igh corrosion resistance
- Compact footprint
- Easy to install and to maintain
- Low-capacity circuits and fluid retention volume
- Possibility of heat transfer area extension
- Maximum differential pressure equal to maximum operating pressure

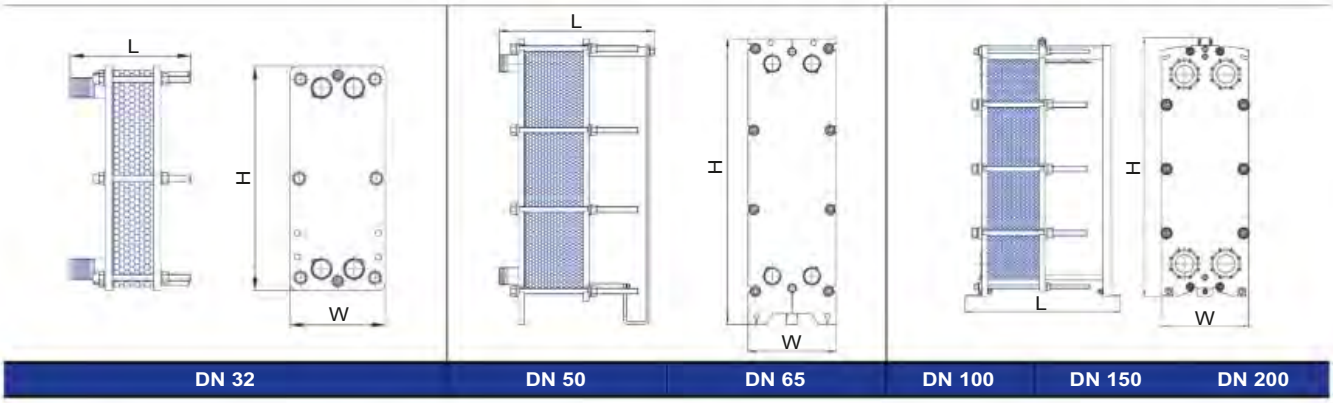
PRECAUTIONS

- Ensure the exchanger gaskets are not damaged:
  - Avoid water hammering, pressure/temperature spikes, and limit on/off cycles.
  - Do not use $^1/_4$-turn valves.
  - Use with steam between 0 and 3 bar (effective).
  - Provide a control system adapted to the requirements and which takes the low capacity of the circuits into account.
- Ensure the plates are kept clean so they maintain their thermal efficiency:
  - Filter fluids containing suspended particles.
  - Ensure the fluids are constantly circulating in the exchanger to prevent any build-up or scale.

RANGE

		10TE020+	10TE040+	10TE030+	10TE070+	10TE160+	10TE260+	10TE125+	10TE180+
Connection size		DN 32			DN 50			DN 65	
Maximum flow rate (m³/h)		19			63			80	83
Max. design pressure (bar)		25			25			16	10
Dimensions (mm)	W	200			310			310	392
	H	320	470	775	678	1008	1353	819	1030
	L (min-max)	248-557	248-557	248-671	408-918	408-1383	408-1383	438-948	401-871
Plate patterns		H	H	H	H / L	H / L	H / L	H / L	H / L
Max. number of plates		75	75	101	151	251	251	151	151
Max. heat transfer area (m²)		1.6	3.1	8.2	11.6	40.8	63.3	19	27
Plate materials and thickness	304 stainless steel	0.4	0.4	0.4	0.4	0.4	0.4	-	-
	316L stainless steel	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.5	0.5
	254 SMO	0.6	0.6	0.6	0.6	0.6	0.6	0.6	-
	Titanium	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Gasket materials	NBR	☒	☒	☒	☒	☒	☒	☒	☒
	EPDMprx	☒	☒	☒	☒	☒	☒	☒	☒
	FPM	☒	☒	☒	☒	☒	☒	☒	-

		10TE300+	10TE450+	10TE700+	10TE400+	10TE600+	10TE900+	10TE650+	10TE990+
Connection		DN 100			DN 150			DN 200	
Maximum flow rate (m³/h)		240			380			800	730
Max. design pressure (bar)		10			10			10	10
Dimensions (mm)	W	530			609			810	790
	H	1124	1569	2014	1372	1819	2317	1707	2206
	L (min-max)	938-2453	941-2446	941-2446	946- 56	946-325	946-4064	1366- 277	1357-3 7
Plate patterns		H / L	H / L	H / L	H / L	H / L	H / L	H / L	H / L
Max. number of plates		401	401	401	551	551	701	551	551
Max. heat transfer area (m²)		107.5	193	279.5	215	355	631	334	534
Plate materials and thickness	304 stainless steel	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6
	316L stainless steel	0.4/0.5/0.6	0.4/0.5/0.6	0.4/0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6	0.5/0.6
	254 SMO	0.6	0.6	0.6	0.6	0.6	0.6	0.6	-
	Titanium	0.6	0.6	0.6	0.6	0.6	-	0.7	0.6
Gasket materials	NBR	☒	☒	☒	☒	☒	☒	☒	☒
	PD prx	☒	☒	☒	☒	☒	☒	☒	☒
	FPM	☒	☒	☒	☒	☒	☒	☒	-



DN 32 | DN 50 | DN 65 | DN 100 | DN 150 | DN 200

OPTIONS AND ACCESSORIES

TF insulation (DN 32, DN 50 and DN 65 models)

Description

TF is the thermal insulation specifically designed for HVAC applications of our small size plate heat exchangers.

TF is a thermoformed and semi-rigid prefabricated case easy to install and to adjust to the specific configuration of the heat exchanger and to eventual particular customer needs.

The special “double-layered” structure, comprising two different expanded elastomers (thickness up to 30 mm), makes it suitable for heating and cooling applications.

Supplied as a kit, it can be easily and quickly assembled with no need for special tools (only a cutter is required) supported by the assembly instruction sheet and the templates pre-marked on each case.

Advantages

- Heat exchanger completely contained inside the insulation: minimized energy losses and condensation, higher level of safety and comfort for those who work around the heat exchanger.
- Easy to adapt on site to all product’s configurations (single or multi-pass, with or without mounting brackets, with our without drip tray, etc.) and to adjust to different customer’s needs (specific installation supports or devices, non-standard position of connections, etc.).
- Low installation costs.
- Available from stock.
- Lightweight and resilient.

Technical specifications

- Exterior finish: semi-rigid high density dark greys foam.
- Insulating materials: cross-linked, closed-cell, polyolefin (PO) foam with a density of 84 kg/m^3 (outer layer) and cross-linked, closed-cell, polyolefin (PO) foam with a density of 35 kg/m^3 (inner layer).
- Thermal conductivity coefficient (λ-value) of the insulating materials at 40°C: 0,0372 W/mk (outer layer) and 0,038 W/mk (inner layer).
- Operating temperature limits: -10°C / + 130°C.
- Classification of fire resistance of the insulating materials: conform to the FMVSS 302 standard of flame containment at less than 100 mm/min

PB insulation (DN 100, DN 150 and DN 200 models)

Description

PB is the thermal insulation specifically designed for HVAC applications of our larger size plate heat exchangers.

PB is a self-supporting modular structure made with insulating panels (thickness 45 mm) anchored together by means of locking hooks and coupled in such a way as to minimize the thermal bridges.

The particular sandwich structure of the insulating panels, obtained by coupling two Aluminum foils to the polyurethane foam, ensures to the case high thermal insulation, good structural rigidity and appropriate surface finish.

Supplied as a kit, it is easily and quickly assembled without the use of special tools.

Advantages

- Heat exchanger completely contained inside the insulation: minimized energy losses and condensation, higher level of safety and comfort for those who work around the heat exchanger.
- Low installation costs.
- Available from stock.
- Quick and easy access to the heat exchanger for inspection.

Technical specifications

- Exterior finish of the panels: smooth sheet of pre-painted Aluminum RAL 2306 (thickness 0.5 mm).
- Insulating material: rigid foam of polyurethane with a high percentage of closed cells (above 95%) and a density of 48 kg/m .
- Initial thermal conductivity coefficient (λ-value) of the insulating material: 0.024 W/m °C (measured at an average temperature of 10°C according to ISO 8302).
- Operating temperature: -10°C / + 130°C.
- Classification of fire resistance of the insulating material: B - 2s, d0 (according to EN 13501-1: 2007).

OPTIONS AND ACCESSORIES

Drip tray (all models)

Description

The drip tray is a safeguard device specifically designed to collect water or other fluids in case of unexpected fluid leakage or when the heat exchangers is open for maintenance.

Strongly recommended in case of hazardous media and when further protection for the outside environment is required, it is also used in cooling applications to collect condensate formed on the outside of the heat exchanger.

Designed to be positioned under the heat exchanger and fixed by fastening bolts on the anchor brackets, the drip tray is dimensioned to hold the entire plate pack and the two frame plates. In this way all eventual fluids coming from the heat exchanger can be collected in the drip tray and drained by mean of the apposite draining pipe.

Advantages

- Reduced risk of flooding in case of condensate, unexpected fluid leakage or when the heat exchangers is open for maintenance.
- Possibility to adjust tilt to facilitate drainage.
- Low installation costs.
- Available from stock

Technical specifications

Material of construction: Stainless steel AISI 304 (thickness 1mm).

Draining pipe: 3/4” sleeve internally threaded

Main dimensions

The drip trays are available in various sizes to be fitted to all models of the standard range of gasketed plate heat exchangers.

Heating

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Type	Range	Refrigerant	Cooling capacity, kW	Heating capacity, kW	Page
Air-to-water heat pumps, axial fan					
With scroll or rotary compressors	30AWH	R-410A	4-17	4-15	371
	38AW / 80AW	R-410A	4.2-15.8	5-15	379
	61AF 014-019	R-410A	-	14-20	401
	30RQV	R-410A	15-18	17-21	409
	30RQ	R-410A	16-39	17-41	417
	61AF 022-105	R-410A	-	21-102	425
	30RQS	R-410A	38-148	42-150	435
	30RQSY	R-410A	37-147	42-151	445
	30RQM / 30RQP	R-410A	154-510	179-434	461
Water-to-water heat pumps					
with scroll compressors	61WG	R-410A	-	29-230	473
	30WG / 30WGA	R-410A	25-190	29-230	493
with screw compressors	30HXC	R-134a	-	338-1557	527
	30XWH / 30XWHP	R-134a	273-1756	317-1989	537
	30XWHV	R-134a	587-1741	648-1932	563
	30XWHP-ZE	R-1234ze	269-1110	319-1296	575
	30XWH-VZE	R-1234ze	269-1110	319-1296	589
	61XWH-ZE	R-1234ze	-	200-2500	601

REVERSIBLE AIR-TO-WATER HEAT PUMP

Monobloc inverter

Compact, reliable and efficient

More than a Heat Pump

30AWH

AQUASNAP.

Nominal heating capacity 4-15 kW
Nominal cooling capacity 3-16 kW

The new reversible AquaSnap PLUS air-to-water heat pumps/chillers with built-in inverter technology were designed for residential and light commercial applications. They offer excellent energy efficiency values, exceptionally quiet operation and meet the most stringent operating temperature demands.

The units integrate the latest technological innovations: Non-ozone depleting refrigerant R410A, DC inverter twin-rotary compressors, low-noise fan and microprocessor control.

With exceptional energy efficiency values the inverter mini-chillers qualify for local tax reductions and incentive plans in all EU countries.

The 30AW units were specifically designed for ease-of-installation and service and underline Carrier's reputation for highest product quality and reliability.

For added flexibility the AquaSnap PLUS units are available with or without hydraulic module. The AquaSnap PLUS can be used with complementary accessories to suit the installation, 200 or 300 litres domestic hot water tank with or without thermal solar panel connection.

The AquaSnap PLUS heat pump systems can be used with a wide choice of Carrier terminal fan coil units - cassettes, low, medium and high-pressure satellite units, console units, underceiling units and high-wall units.

Ecodesign is the European Directive that sets mandatory requirements for Energy related Products (ErP) to improve their energy efficiency. Carrier supports initiatives to reduce the environmental impact of its products.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES AND BENEFITS

Features

- Wide operating range in both heating and cooling mode offering high performance in a wide temperature range.
- DC inverter twin-rotary compressors with Pulse Amplitude Modulation (PAM) and Pulse Width Modulation (PWM) for enhanced reliability, low energy consumption and smooth vibration-free operation under all operating conditions.
- Variable-speed fans with an innovative patented fan blade shape ensure improved air distribution at exceptionally low noise levels
- Pre-set or customised selection of the appropriate climate curve for stable output capacity to match the heat load.
- Output to link and integrate the unit with existing heat sources or a back-up heating source (single or dual-energy approach) for increased savings and optimum comfort all year round.
- Connection and control of an external dehumidifer through the ComfortTM Series programmable thermostat 33AW-CS1 to monitor and regulate the relative humidity.
- Input and output connections to the three-way valve for connection to a domestic hot-water buffer-tank. Provides increased flexibility for any application.
- Leaving water temperature up to 60°C for radiator and domestic hot water applications.
- Plug-and-play control for failsafe serviceability.
- Alarm input to force the unit off for increased safety, and matching with external control systems or safety devices.
- Output to operate an additional water pump for increased installation flexibility.

Advanced technology

- Electronic system management: several sensors placed in key positions in the refrigerant circuit electronically detect the operational system status. Two micro-controllers receive the input from the sensors, manages them using advanced control algorithms and optimises the refrigerant flow and the functioning of all core components - the compressor, fan motors and the pulse modulation valve.
- The pulse modulation valve, a bi-flow electronic expansion device, optimises the refrigerant amount in the circuit and the superheat, preventing refrigerant migration back into the compressor. This device further enhances high system performance and reliability.
- The air management system, consisting of the propeller fan, orifice and air discharge grille guarantees minimised noise levels.

New patented fan blade shape and grille profile with low pressure drop

Advanced performance

- The AquaSnap PLUS heat pump systems have an extremely high energy efficiency ratio in both cooling and heating mode, ensuring significant energy savings. Large, efficient coils and optimised circuiting ensure that all combinations meet the European tax rebate efficiency targets. Efficiency at part load conditions (seasonal energy efficiency) reaches the highest level in the industry.
- Year-round comfort - the advanced technology used in the new AquaSnap PLUS heat pump condensing units provides optimised comfort levels for the end users, both in terms of water temperature control and quietness. The desired temperature is quickly reached and effectively maintained without fluctuations. The 30AW offers optimised indivi-dual comfort levels - both in winter and in summer.
- Wide temperature operating range: AquaSnap PLUS heat pumps can operate efficiently in extreme temperature conditions. To suit the requirements of IT applications, the new AquaSnap PLUS can work at low-ambient conditions in cooling mode (down to 0°C and up to 46°C outside temperature). For end user comfort the units also operate down to -20°C outdoor temperature in heating mode, and in the summer season they produce hot water up to 60°C at up to 30°C outside temperature for domestic hot water applications.

Environmental care

- Non-ozone depleting refrigerant R410A.
- Chlorine-free refrigerant of the HFC group with zero ozone depletion potential.
- High-density refrigerant, therefore less refrigerant required.
- Very efficient - gives an increased energy efficiency ratio (EER).
- The components of AquaSnap PLUS heat pump systems are free of any hazardous substances.
- The new packaging ensures high protection during transport and handling and is 100% recyclable.

Fast and simple installation and service

- Easy access to all internal components: simply undo three screws to remove the complete front panel to access the refrigerant piping connections, control box and electrical connections, as well as the compressor and other key parts.
- Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small foot-print that is easy to transport even through narrow doors.
- Reduced operating weight and a handle on the unit panels to facilitate transport.
- No additional buffer tank required, simplyfing and speeding up the installation process.
- 3 bar pressure relief valve as standard.
- Two or three-litre internal expansion tank.
- High-temperature refrigerant protection.
- Water flow switch to ensure that the circuits contain enough water to operate correctly.
- Various power cable outlet options: pre-punched holes in the cabinet panels permit cable exit on the side, front or rear.
- Dealer service tool connection kit includes the software and connections to monitor the operating parameters from a personal computer, giving an easy-to-read display with visual graphs and statistics indicators.
- All 30AW units are equipped with 1 inch gas MPT water connections.

FEATURES AND BENEFITS

- Option for an integrated hydronic module reduces space requirements and simplifies the installation. Only the power and the water supply and return piping need to be connected.

- Condensate drain piping connection to the unit includes a leak-proof pipe rubber joint.
- Specially shaped anchorage feet ensure correct and safe unit fixing to the foundation.
- The ComfortTM Series programmable thermostat periodically runs system checks to monitor and assess the unit operating parameters (standard parameters for the H version (AC) are 45°C LWT in heating and 7°C LWT in cooling, and for the X version (CHF) 35°C LWT in heating and 15°C LWT in cooling,). If a problem occurs, troubleshooting fault codes and messages help the service technician to identify the fault.

DC inverter twin-rotary compressor

- Advanced technology providing maximum energy-efficiency with high capacity available at peak conditions and optimised efficiency at low and mid compressor speeds. The AquaSnap PLUS heat pump DC inverter uses Intelligent Power Drive Unit (IPDU) hybrid inverter technology, combining two electronic management logics: Pulse Amplitude Modulation (PAM) and Pulse Width Modulation (PWM) for optimised compressor operation in all conditions, minimised temperature fluctuations, and providing perfect individual comfort control with significantly reduced energy consumption:
  - PAM: pulse amplitude modulation of the direct current controls the compressor at maximum load conditions (start-up and peak load), increasing the voltage at fixed frequency. The compressor works at high speed to rapidly achieve the desired temperature.
  - PWM: pulse width modulation of the direct current controls the compressor at partial load conditions, adjusting the frequency at fixed voltage. The compressor speed is fine-tuned and the system provides high-level comfort (no temperature fluctuations) at exceptionally efficient working conditions.

- Compressor frequency is increased continuously up to the maximum level. This ensures that there are no current draw peaks in the start-up phase and safe connection to a single-phase power supply even in large-capacity systems. The maximum operating current of AquaSnap PLUS systems is below 7.2 A (systems up to 4 kW) and below 23 A for larger systems (12 kW). Inverter ramp-up speed makes soft starts unnecessary and ensures immediate maximum power.
- The two rotary compression cylinders, offset from each other by 180°, and the DC brushless motor with the shaft in perfect balance ensure reduced vibration and noise, even at very low operating speeds. This results in an extremely wide range between minimum and maximum capacity with con- tinuous operation, guaranteeing that the system is always optimised and provides maximum comfort at exceptionally high efficiency levels.
- Twin-rotary cylinders, low vibrations and low load to the shaft ensure highest compressor reliability and a long trouble-free operating life.
- All DC brushless twin-rotary compressors are equipped with crankcase heaters as standard.
- A double compressor shield for acoustic insulation further reduces noise levels.

Superior reliability

- Exceptional endurance tests
  - Third-party testing and certification - all performances are certified by Eurovent and unit safety is certified by IMQ.
  - All units are tested at various stages on the production line for circuit leakage, electrical compliance, water and refrigerant pressures.
  - End-of-line test of all unit operating parameters.
  - Corrosion resistance test.
  - Accelerated ageing test on critical components and complete assembled units, simulating thousands of hours of continuous operation
  - Packaging crash test to ensure that the units are adequately protected against accidental shocks.
  - Extensive field and site testing.

Corrosion-resistant casing

HEATING

FEATURES AND BENEFITS

Economical operation

- Increased energy efficiency at part load
  - The exceptionally high energy efficiency of the AquaSnap PLUS heat pumps is the result of a long qualification and optimisation process.
  - Use of ambient air as primary source of energy in domestic heating applications significantly reduces the overall energy consumption and minimises CO2 emissions.
  - Night mode operation at reduced compressor speed, resulting in low-noise operation and a significant reduction in energy consumption.
  - Easy-to-set and economical silent mode, reducing the compressor speed.
  - R410A refrigerant is easier to use than other refrigerant blends.

GMC board

- The new GMC controller was specifically developed for the AquaSnap PLUS inverter heat pumps, and incorporates new control algorithms. It features customised or pre-defined climate curves, domestic hot water control, a night-time noise reduction function, a defrost/alarm output signal, an external heat source, a pump block prevention function, freeze protection and compressor operation management.

User interfaces

- The AquaSnap PLUS can use the following user interfaces:
  - the 33AW-CS1 ComfortTM Series programmable thermostat with easy-to-read LCD screen. It provides enhanced control capability for maximised performance, reliability and indoor comfort and has extended programming features such as weekly scheduling and dehumidifier/humidifier signals. The sleek contemporary design blends in with any room decor.
  - the AquaSnap PLUS 33AW-RC1 remote controller
  - dry contacts

ComfortTM Series programmable thermostat 33AW-CS1

Remote controller 33AW-RC1

TYPE KEY

30AW H 006 H D 9

9 — Power supply: 9 = Three-phase + neutral

D — Liquid chilling packages/ heat pumps

H — Unit options
H - With hydronic kit
X - Without hydronic kit

30AW — Air-to-water heat pump

H — H - Standard version

006 — Nominal size
004 - nominal size 4 kW
006 - nominal size 6 kW
008 - nominal size 8 kW
012 - nominal size 12 kW
015 - nominal size 15 kW

OPTIONS AND ACCESSORIES

Options	Description	Advantages	Use
Additional outdoor sensor	Additional outdoor sensor 33AW-RAS01	Better reading of outdoor air temperature	30AW 004-015
Remote controller	33AW-RC1 remote controller	On/off, heating/cooling and ECO mode	30AW 004-015
Programmable thermostat	33AW-CS1 Comfort™ series programmable thermostat	Extensive control features like weekly scheduling	30AW 004-015

PHYSICAL DATA

30AW				004	006	008	012	015	12-3Ph	15-3Ph
Cooling										
H version	C1	Nominal capacity	kW	3.33	4.73	5.84	10.24	13.04	10.20	13.00
Full load performances*	C1	EER	kW/kW	3.02	3.00	2.98	2.96	2.95	3.00	2.91
		Eurovent class cooling		B	B	B	B	B	B	B
	C2	Nominal capacity	kW	4.93	7.04	7.84	13.54	16.04	13.50	16.00
		EER	kW/kW	4.20	3.70	3.99	3.66	3.85	4.15	3.81
		Eurovent class cooling		A	B	A	B	A	A	A
Seasonal efficiency*		ESEER	kW/kW	4.36	4.51	4.15	4.22	4.31	4.4	4.31
Heating										
H version	H1	Nominal capacity	k	4.	5.7	7.16	11.86	14.46	12	1
Full load performances*	H1	COP	kW/kW	4.15	4.28	3.97	3.95	4.09	4.3	4.2
		Eurovent class cooling		A	A	B	B	A	A	A
	H2	Nominal capacity	kW	3.87	5.76	7.36	12.91	13.96	11.20	14.50
		COP	kW/kW	3.26	3.05	3.19	3.03	3.23	3.35	3.30
		Eurovent class cooling		A	B	B	B	A	A	A
	H3	Nominal capacity	kW	4.27	5.43	7.25	10.89	12.36	11.43	12.17
		COP	kW/kW	2.92	2.77	2.81	2.79	3.02	3.12	2.98
Seasonal efficiency**	H3	SCOP	kW/kW	3.53	3.37	2.84	2.95	3.25	3.47	3.33
		ηs heat	%	138	132	111	115	127	136	130
		Prated	kW	3.28	4.22	4.65	8.68	9.05	8.38	9.37
		Annual energy consumption	kWh	1900	2571	3367	6077	5748	4975	5806
		Energy efficiency class		A++	A++	A+	A+	A++	A++	A++
Sound levels										
Standard unit										
Sound power level(1) (H3)			dB(A)	62	62	64	67	68	68	68
Sound pressure level at 4m(2) (H3)			dB(A)	42	42	44	47	48	48	48
Sound power level(1) (C1)			dB(A)	64	64	65	68	69	69	69
Sound pressure level at 4 m(2) (C1)			dB(A)	44	44	45	48	49	49	49

* In accordance with standard EN14511-3:2013
** In accordance with standard EN14825:2013, average climate
C1 Cooling mode conditions: evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fooling factor 0 m² K/W
C2 Cooling mode conditions: evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fooling factor 0 m² K/W
H1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, fouling factor 0 m2 K/W. Outside air temperature 7°C db/6°C wb,
H2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, fouling factor 0 m2 K/W. Outside air temperature 7°C db/6°C wb,
H3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, fouling factor 0 m2 K/W. Outside air temperature 7°C db/6°C wb,
(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA

30AW		004	006	008	012	015	12-3Ph	15-3Ph
Dimensions								
Length	mm	908	908	908	908	908	908	908
Depth	mm	350	350	350	350	350	350	350
Height	mm	821	821	821	1363	1363	1363	1363
Operating weight(3)								
Unit without circulator (X version)	kg	54	58	66	101	109	113	113
Unit with circulator (H version)	kg	57	61	69	104	112	116	116
Compressors		DC Inverter Twin-Rotary						
Refrigerant		R410A						
Circuit charge(3)	kg	1.195	1.35	1.81	2.45	3.385	2.45	3.385
	CO_2 eq.	2.5	2.8	3.8	5.1	7.1	5.1	7.1
Air heat exchangers		Copper tubes and aluminium fins						
Fans		Variable speed 3 blades fan						
Quantity		1	1	1	2	2	2	2
Water heat exchanger (X version)								
Water pressure drop (C1)	kPa	10	8	10	20	28	20	28
Water pressure drop (H1)	kPa	17	12	14	25	33	25	33
Water pressure drop (H2)	kPa	16	12	14	29	31	29	31
Min. system water content	l	14	21	28	42	49	42	49
Max. water-side operating pressure	kPa	300	300	300	300	300	300	300
Hydronic module (H version)								
Pump		Variable speed circulator						
Expansion tank volume	l	2	2	2	3	3	3	3
Availabale static pressure (C1)	kPa	65	65	66	76	66	76	66
Availabale static pressure (H1)	kPa	60	60	56	70	58	70	55
Availabale static pressure (H2)	kPa	62	60	55	72	60	73	58
Min. system water content	l	14	21	28	42	49	42	49
Max. water-side operating pressure	kPa	300	300	300	300	300	300	300
Water connections with or without hydronic module								
Diameter	inch	1 M	1 M	1 M	1 M	1 M	1 M	1 M
Outside tube diameter	mm	25.4 M	25.4 M	25.4 M	25.4 M	25.4 M	25.4 M	25.4 M
Chassis paint colour		Beige						

C1 Cooling mode conditions: evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fooling factor 0 m² K/W
C2 Cooling mode conditions: evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fooling factor 0 m² K/W
H1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, fouling factor 0 m2 K/W. Outside air temperature 7°C db/6°C wb,
H2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, fouling factor 0 m2 K/W. Outside air temperature 7°C db/6°C wb,
H3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, fouling factor 0 m2 K/W. Outside air temperature 7°C db/6°C wb,
(3) Weights are guideline only. Refer to the unit nameplate

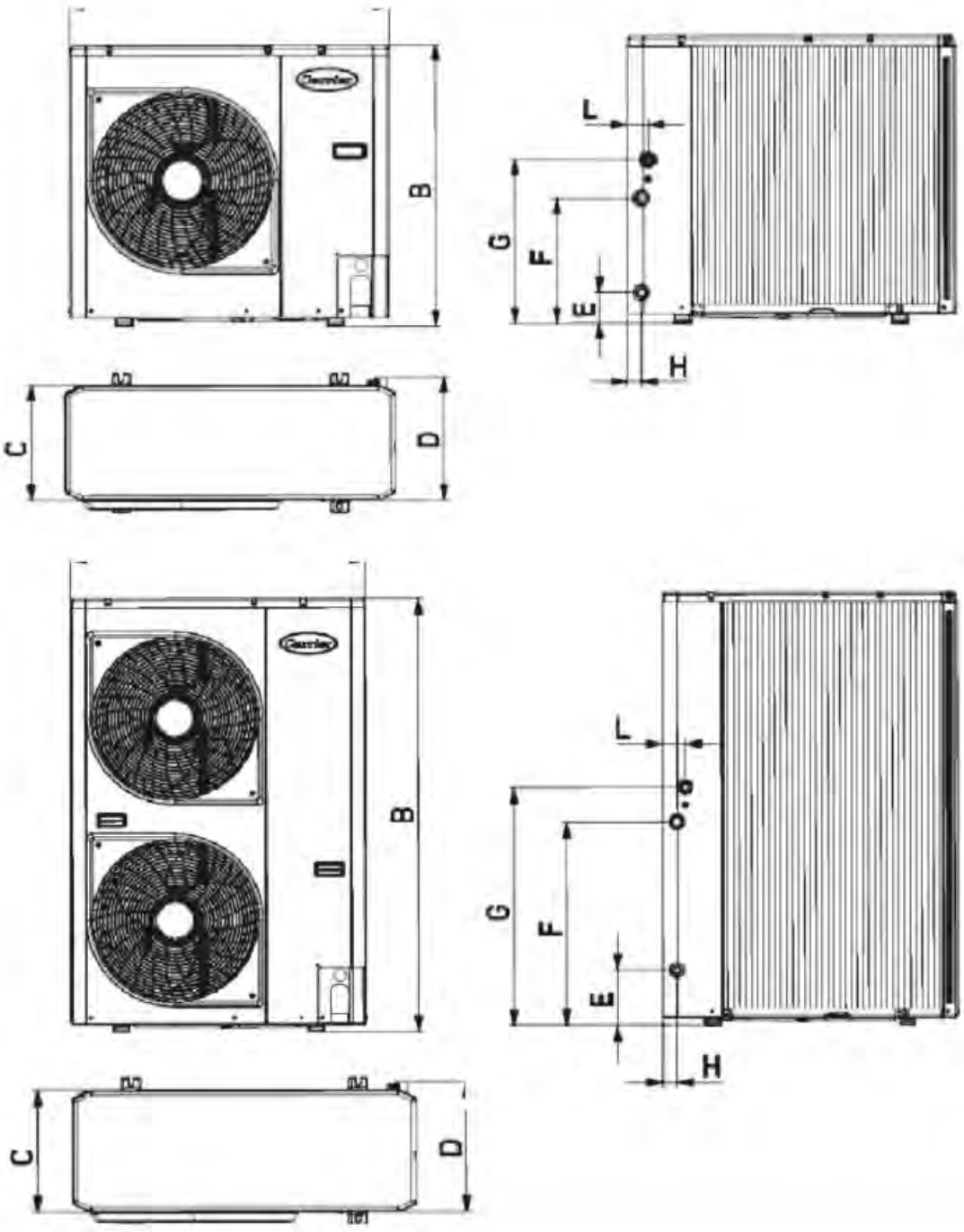
EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL DATA

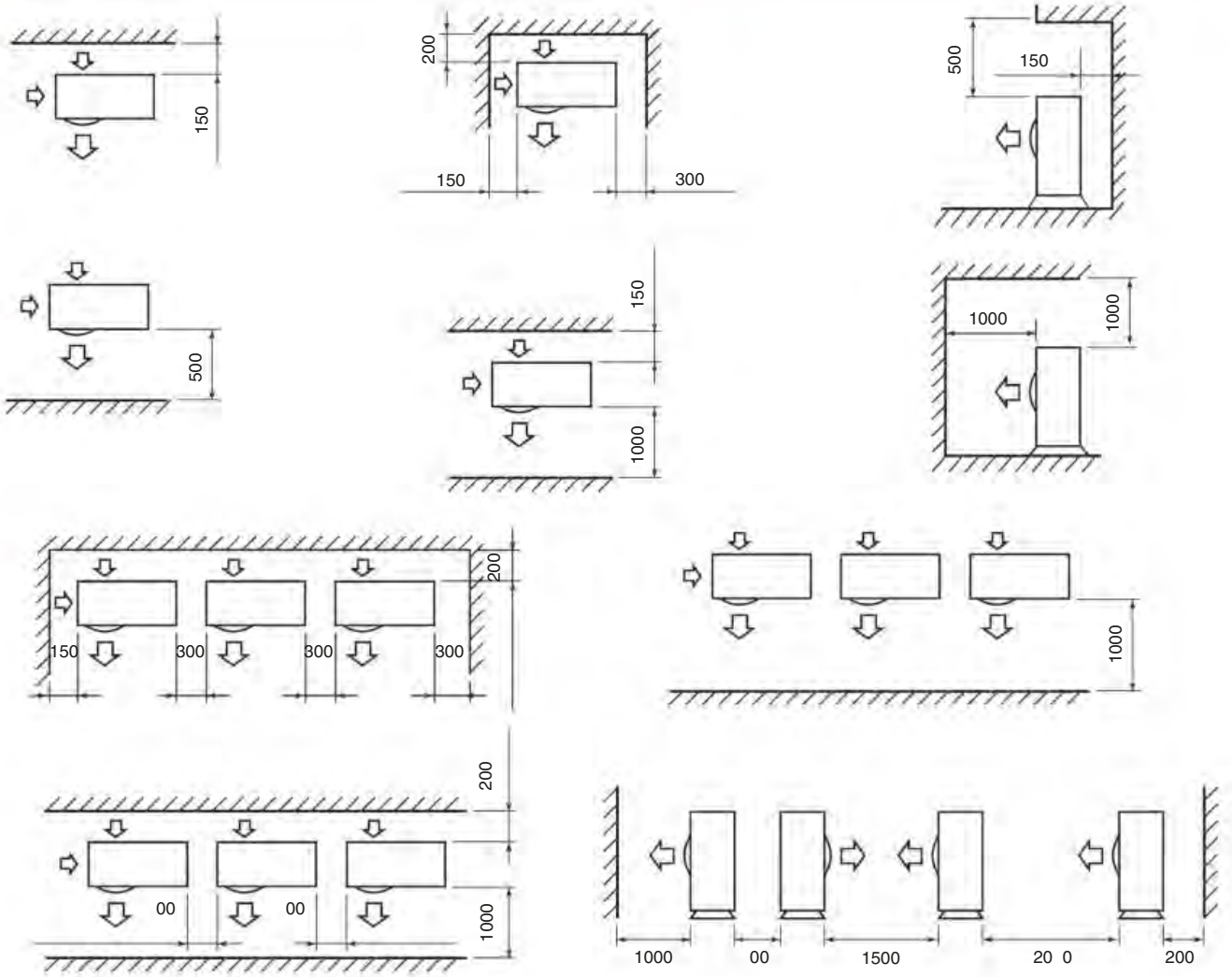
30AW		004	006	008	012	015	012-3Ph	015-3Ph
Power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	400-3N-50	400-3N-50
Voltage range	V	198-264	198-264	198-264	198-264	198-264	376-424	376-424
Full load current	A	9	11	14.5	20.7	22.6	11.1	11.1
Fuse rating	A	10	16	16	25	25	16	16
Main power cable section	mm^2	2.5	2.5	2.5	2.5	2.5	2.5	2.5

DIMENSIONS (MM)



30AW	A	B	C	D	E	F	G	H	L
004	908	821	326	350	87	356	466	40	60
006		821	326		8	356	46	40	
008	908	821	326	350	87	356	466	40	60
012	908	1363	326	350	174	640	750	44	69
015	908	1363	326	350	174	640	750	44	69

CLEARANCES, MM



AIR-TO-WATER SPLIT HEAT PUMP & COMFORT MODULE

Inverter-driven outdoor unit

Compact comfort module

System energy efficiency

Easy heating solution

38AW/80AW

XP ENERGY INVERTER AIR TO WATER split

Nominal Heating capacity 5-15.0 kW
Nominal Cooling capacity 4.2-15.8 kW

The new reversible XP Energy air-to-water split system heat pumps with built-in inverter technology are designed for residential and light commercial applications. They offer excellent energy efficiency values, exceptionally quiet operation and meet the most stringent operating temperature demands.

The units integrate the latest technological innovations: Non-ozone depleting refrigerant R410A, DC inverter twin-rotary compressors, low-noise fan and microprocessor control.

With exceptional energy efficiency values, the inverter air-to-water split-system heat pumps qualify for local tax reductions and incentive plans in all the EU countries.

The 38AW/80AW systems are specifically designed for ease-of-installation and service and underline Carrier's reputation for highest product quality and reliability.

For added flexibility, the XP Energy systems are available in heating only or reversible versions, to suit the demand.

The XP Energy heat pump systems can be used with a wide choice of Carrier terminal fan coil units - cassettes, low, medium and high-pressure satellite units, console units, under-ceiling units and high-wall units.

Ecodesign is the European Directive that sets mandatory requirements for Energy related Products (ErP) to improve their energy efficiency. Carrier supports initiatives to reduce the environmental impact of its products.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES AND BENEFITS

Features

- Wide operating range in both heating and cooling mode offers high performance in a wide temperature range.
- DC inverter twin-rotary compressors with Pulse Amplitude Modulation (PAM) and Pulse Width Modulation (PWM) provide enhanced reliability, low energy consumption and smooth vibration-free operation under all operating conditions.
- Variable-speed fans with an innovative patented fan blade shape ensure improved air distribution at exceptionally low noise levels.
- Pre-set or customised selection of the appropriate climate curve for stable output capacity to match the heat load.
- Output to link and integrate the unit with the existing heat sources offers a dual-energy approach, increased savings and optimum comfort in all weather conditions.
- Able to control two independent comfort zones with a two-zone kit added to the main comfort module.
- Leaving water temperature up to 60 °C for radiator and domestic hot water applications, making hot water readily available.

Adapted to your needs

- Heating only or reversible comfort module
- Backup heating, either electrical (single-energy applications) or gas boiler (dual-energy applications)
- Comfort is ensured via the user interface and the possibility of integrating two leaving water temperature zones.

Advanced technology

- Electronic system management: Several sensors placed in key positions in the refrigerant circuit electronically detect the operational system status. Two micro-controllers receive the input from the sensors, manage them using advanced control algorithms and optimise the refrigerant flow and the functioning of all the core components - the compressor, fan motors and the pulse modulation valve.
- The pulse modulation valve, a bi-flow electronic expansion device, optimises the refrigerant amount in the circuit and the superheat, and prevents the refrigerant migration back into the compressor. This device further enhances high system performance and reliability.
- The air management system, which consists of a propeller fan, orifice and an air discharge grille, guarantees minimised noise levels.

New patented fan blade shape and grille profile with low pressure drop

Advanced performance

- The XP Energy heat pump systems have an extremely high energy efficiency ratio in both cooling and heating mode, ensuring significant energy savings. Large and efficient coils and optimised circuiting feature ensure that all the combinations meet the European tax rebate efficiency targets. Efficiency at part-load conditions (seasonal energy efficiency) reaches the highest level in the industry.
- Year-round comfort: The advanced technology used in the new XP Energy heat pump condensing units provides optimised comfort levels for the end users, both in terms of water temperature control and silent operation. The desired temperature is quickly reached and effectively maintained without fluctuations. The XP Energy offers optimised individual comfort levels - both in winter and in summer.
- Wide temperature operating range: XP Energy heat pumps can operate efficiently in extreme temperature conditions. For end user comfort the units operate down to -20 °C outdoor temperature in heating mode, and in the summer, they produce hot water up to 60 °C at up to 30 °C outside temperature for domestic hot water applications.

Environmental care

- Non-ozone depleting refrigerant R410A:
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - High-density refrigerant, therefore less refrigerant required
  - Very efficient, therefore gives an increased energy efficiency ratio (EER)
- The new packaging ensures high protection during transport and handling and is 100% recyclable.

Fast and simple installation and service

- Easy access to all internal components: Unscrew only three screws to remove the complete front panel to access the refrigerant piping connections, control box and electrical connections, as well as the compressor and other key parts.
- Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small foot-print that is easy to transport through narrow doors.
- Reduced weight and a handle on the unit panels to facilitate transport.
- No additional buffer tank required. This simplies and speeds up the installation process.
- 3-bar pressure relief valve as standard
- 8-litre internal expansion tank
- High-temperature refrigerant protection
- Water flow switch to ensure that the circuits contain enough water to operate correctly.
- Various power cable outlet options: Pre-punched holes in the cabinet panels permit cable exit on the side, front or rear.
- Dealer service tool connection kit includes the software and connections to monitor the operating parameters from a personal computer, giving an easy-to-read display with visual graphs and statistics indicators.
- All 80AW units are equipped with 1 inch gas MPT water connections.
- The 80AW comfort module reduces space requirements and simplifies the installation. Only the power and the water supply and return piping need to be connected.
- Condensate drain piping connection
- Specially shaped anchorage feet ensure correct and safe fixing of the unit.
- The programmable NUI thermostat periodically runs system checks to monitor and assess the unit operating parameters. If a problem occurs, troubleshooting fault codes and messages help the service technician to identify the fault.

FEATURES AND BENEFITS

DC inverter twin-rotary compressor

- Advanced technology provides maximum energy-efficiency with high capacity available at peak conditions and optimised efficiency at low and mid compressor speeds. The XP Energy heat pump DC inverter uses Intelligent Power Drive Unit (IPDU) hybrid inverter technology, combining two electronic management logics: Pulse Amplitude Modulation (PAM) and Pulse Width Modulation (PWM) for optimised compressor operation in all conditions, minimised temperature fluctuations, and provides perfect individual comfort control with significantly reduced energy consumption:
  - PAM: Pulse Amplitude Modulation of the direct current controls the compressor at maximum load conditions (start-up and peak load), and increases the voltage at fixed frequency. The compressor works at high speed to rapidly achieve the desired temperature.
  - PWM: Pulse Width Modulation of the direct current controls the compressor at partial load conditions, and adjusts the frequency at fixed voltage. The compressor speed is fine-tuned and the system provides high-level comfort (no temperature fluctuations) at exceptionally efficient working conditions.
- Compressor frequency is increased continuously up to the maximum level. This ensures that there are no current draw peaks in the start-up phase and safe connection to a single-phase power supply even in large-capacity systems. The maximum operating current of XP Energy systems is below 12 A (systems up to 6.5 kW) and below 23 A for larger systems (up to 11.5 kW). Inverter ramp-up speed makes soft starts unnecessary and ensures immediate maximum power.
- The two rotary compression cylinders, offset from each other by 180°, and the DC brushless motor with the shaft in perfect balance ensure reduced vibration and noise, even at very low operating speeds. This results in an extremely wide range between minimum and maximum capacity with continuous operation, guaranteeing that the system is always optimised and provides maximum comfort at exceptionally high efficiency levels.
- Twin-rotary cylinders, low vibrations and low load to the shaft ensure highest compressor reliability and a long trouble-free operating life.
- All DC brushless twin-rotary compressors are equipped with crankcase heaters as standard.
- A double compressor shield for acoustic insulation further reduces noise levels.

Superior reliability

- Exceptional endurance tests:
  - Third-party testing and certification: All the performances are certified by Eurovent and unit safety is certified by IMQ.
  - All the units are tested at various stages on the production line for circuit leakage, electrical compliance, water and refrigerant pressures.
  - End-of-line test of all unit operating parameters
  - Corrosion resistance test
  - Accelerated ageing test on critical components and complete assembled units, simulating thousands of hours of continuous operation.
  - Packaging crash test to ensure that the units are adequately protected against accidental shocks
  - Extensive field and site testing.

Corrosion-resistant casing

Economical operation

- Increased energy efficiency at part load:
  - The exceptionally high energy efficiency of the XP Energy heat pumps is the result of a long qualification and optimisation process.
  - Use of ambient air as primary source of energy in domestic heating applications significantly reduces the overall energy consumption and minimises CO2 emissions.
  - Night mode operation at reduced compressor speed, results in low-noise operation and a significant reduction in energy consumption.
  - Easy-to-set and economical silent mode, reduces the compressor speed.
  - R-410A refrigerant is easier to use than other refrigerant blends.

GMC board

- The new GMC controller is specifically developed for the XP Energy inverter heat pumps, and incorporates new control algorithms. It features customised or pre-defined climate curves, domestic hot water control, a night-time noise reduction function, a defrost/alarm output signal, an external heat source, a pump block prevention function, freeze protection and compressor operation management.

FEATURES AND BENEFITS

New user interface

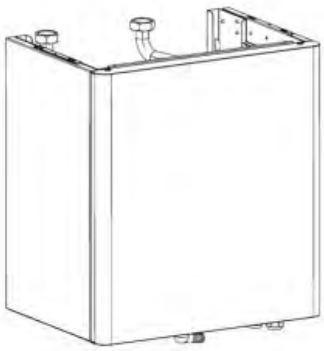
- The XP Energy has an easy-to-use user interface with easy-to-read LCD screen. It provides enhanced control capability for maximised performance, reliability and indoor comfort and has extended programming features such as weekly scheduling. The sleek contemporary design blends in with any room decor.

New comfort module

- With its enhanced aesthetics and compactness, combined with new features and options, the new XP Energy sets new standards in energy savings and comfort. Using the two-zone kit, two separate terminal units or two independent comfort zones can be closely monitored. Domestic hot water production is made easy and can be interfaced with solar thermal panels.

Two-zone kit

- The new design facilitates the installation process and makes two independent comfort zones, which are easy to control. This kit includes a hydraulic disconnection collector, the necessary circulating pumps and modulating valve. Installed together with the domestic hot water tank, the two-zone kit can integrate all accessories, such as the diverting valve and T-connection.



Domestic hot water tank

- The tank is of 200 or 300 litres, with or without connection to a solar thermal panel. Built-in electric heater backup and anti-legionnella protection, controlled by the comfort module, make domestic hot water readily available, safe and energy-efficient.

TYPE KEY

Outdoor unit

38 AW 050 H7

- 38 AW — Air-cooled condensing unit
- 38 AW — Air-to water unit
- 050 — Outdoor unit with nominal size 5.0 kW
- 065 — Outdoor unit with nominal size 6.5 kW
- 090 — Outdoor unit with nominal size 9.0 kW
- 115 — Outdoor unit with nominal size 11.5 kW
- 120 — Outdoor unit with nominal size 12.0 kW
- 150 — Outdoor unit with nominal size 15.0 kW
- H9 — Three-phase 3x400 V/50 Hz + neutral
- H7 — Single-phase 1 x 230 V/50 Hz

Indoor unit

80AW X 065 M 6 - - B

- 80AW — Product range
- X — Heating and cooling
- H — Heating only
- 065 — Heating capacity, kW
- M — Power supply
  - M = single-phase
  - T = three-phase + neutral
- 6 — Electric heater capacity, kW
  - 0 = boiler backup
- B — Revision status

HEATING

COMBINATION TABLE, OUTDOOR AND INDOOR UNITS

Outdoor unit		Indoor unit	
38AW 050H7 38AW 065H7	5 kW nominal capacity 6.5 kW nominal capacity	80AWX 065M0	Reversible, 1 zone, max. heating capacity 6.5 kW for boiler backup
		80AWX 065M3	Reversible, 1 zone, max. heating capacity 6.5 kW with 3 kW 1-ph electric heater backup
		80AWX 065M6	Reversible, 1 zone, max. heating capacity 6.5 kW with 6 kW 1-ph electric heater backup
		80AWX 065T6	Reversible, 1 zone, max. heating capacity 6.5 kW with 6 kW 3-ph electric heater backup
		80AWH 065M0	Heating only, 1 zone, max. heating capacity 6.5 kW for boiler backup
		80AWH 065M3	Heating only, 1 zone, max. heating capacity 6.5 kW with 3 kW 1-ph electric heater backup
		80AWH 065M6	Heating only, 1 zone, max. heating capacity 6.5 kW with 6 kW 1-ph electric heater backup
		80AWH 065T6	Heating only, 1 zone, max. heating capacity 6.5 kW with 6 kW 3-ph electric heater backup
38AW 090H7 38AW 115H7	9 kW nominal capacity 11.5 kW nominal capacity	80AWX 115M0	Reversible, 1 zone, max. heating capacity 11.5 kW for boiler backup
		80AWX 115M3	Reversible, 1 zone, max. heating capacity 11.5 kW with 3 kW 1-ph electric heater backup
		80AWX 115M6	Reversible, 1 zone, max. heating capacity 11.5 kW with 6 kW 1-ph electric heater backup
		80AWX 115T6	Reversible, 1 zone, max. heating capacity 11.5 kW with 6 kW 3-ph electric heater backup
		80AWX 115T9	Reversible, 1 zone, max. heating capacity 11.5 kW with 9 kW 3-ph electric heater backup
		80AWH 115M0	Heating only, 1 zone, max. heating capacity 11.5 kW for boiler backup
		80AWH 115M3	Heating only, 1 zone, max. heating capacity 11.5 kW with 3 kW 1-ph electric heater backup
		80AWH 115M6	Heating only, 1 zone, max. heating capacity 11.5 kW with 6 kW 1-ph electric heater backup
		80AWH 115T6	Heating only, 1 zone, max. heating capacity 11.5 kW with 6 kW 3-ph electric heater backup
		80AWH 115T9	Heating only, 1 zone, max. heating capacity 11.5 kW with 9 kW 3-ph electric heater backup
38AW 120H9 38AW 150H9	12 kW nominal capacity 15 kW nominal capacity	80AWX 150M0	Reversible, 1 zone, max. heating capacity 15 kW for boiler backup
		80AWX 150T6	Reversible, 1 zone, max. heating capacity 15 kW with 6 kW 3-ph electric heater backup
		80AWX 150T9	Reversible, 1 zone, max. heating capacity 15 kW with 9 kW 3-ph electric heater backup
		80AWH 150M0	Heating only, 1 zone, max. heating capacity 15 kW for boiler backup
		80AWH 150T6	Heating only, 1 zone, max. heating capacity 15 kW with 6 kW 3-ph electric heater backup
		80AWH 150T9	Heating only, 1 zone, max. heating capacity 15 kW with 9 kW 3-ph electric heater backup

ACCESSORIES

Part No.	Description	Advantages	Use
33AW-CS2	Additional user interface	Monitors two independent comfort zones or used together with comfort module interface	80AW 9025 & 80AWX or H
33AW-CB01	Communication kit	Necessary when adding a user interface and keeping the one on comfort module	80AWX or H
33AW-RAS02	Remote outdoor sensor	Positioned in the right place, the OAT sensor maximises comfort compared to using the condensing unit OAT sensor.	80AWX or H
33AW-RRS01	Room temperature sensor	Monitors indoor climate if user interface is left on indoor unit, or if two zones are covered and only one user interface is installed.	80AW 9025 & 80AWX or H
60STS020E03	Domestic hot water tank, 1 coil - 200 l	Storage, 200 l of domestic hot water	80AW 9025 & 80AWX or H
60STS030E03	Domestic hot water tank, 1 coil - 300 l	Storage, 300 l of domestic hot water	80AW 9025 & 80AWX or H
60STD020E03	Domestic hot water tank, 2 coils - 200 l	Storage, 200 l of domestic hot water with thermal solar panel connection	80AW 9025 & 80AWX or H
60STD030E03	Domestic hot water tank, 2 coils - 300 l	Storage, 300 l of domestic hot water with thermal solar panel connection	80AW 9025 & 80AWX or H
80AW9017	CDU rubber vibration isolators	Reduce the noise and vibration of the unit.	38AW
80AW9023	Domestic hot-water three-way valve and actuator	Necessary to connect domestic hot water tank.	80AWX or H
80AW9024	Thermal cut-out, floor heating	Necessary when connecting under-floor heating zone	80AWX or H
80AW9025	Two-zone kit	Allows independent control of two comfort zones	80AWX or H
80AW9026	Piping kit to install domestic hot-water valve and actuator (80AW9023) inside the unit	Specific DHW piping kit for the installation, used together with 80AW9025	80AW 9025 & 80AWX or H
80AW9027	Cover panel to install two-zone kit (80AW9025) detached from comfort module	Hides piping and connections, if two-zone kit is installed remotely from the main comfort module.	80AW 9025 & 80AWX or H
80AW9028	Additional 3-way valve kit	Possibility to have a 3-way valve also on the 2nd zone circuit	80AW 9025 & 80AWX or H

PHYSICAL DATA, OUTDOOR AND INDOOR UNITS

Outdoor unit (heat pump)				38AW050H7	38AW065H7	38AW090H7	38AW115H7	38AW120H9	38AW150H9
Indoor unit (confort module)				**80AW 065**	**80AW 065**	**80AW 115**	**80AW 115**	**80AW 150**	**80AW 150**
80AWX and 80AWH									
Heating									
Standard unit Full load performances*	HA1	Nominal capacity	kW	5.01	6.55	9.27	11.50	12.00	15.01
		COP	kW/kW	4.15	4.15	4.48	4.10	4.65	4.30
	HA2	Nominal capacity	kW	4.37	5.70	8.70	11.30	11.20	14.02
		COP	kW/kW	3.41	3.34	3.45	3.32	3.70	3.40
	HA3	Nominal capacity	kW	4.25	5.52	7.88	10.95	11.48	11.91
		COP	kW/kW	2.65	2.86	2.90	2.79	3.12	3.10
Seasonal energy efficiency** (80AWX only)	HA1	$SCOP_{30/35°C}$	kWh/kWh	3,10	3,00	3,20	3,19	3,82	3,67
		$\eta s\ heat_{30/35°C}$	%	121	117	125	125	150	144
	HA3	**$SCOP_{47/55°C}$**	**kWh/kWh**	**3.00**	**2.98**	**2.99**	**2.94**	**3.45**	**3.29**
		$\eta s\ heat_{47/55°C}$	**%**	**117**	**116**	**117**	**115**	**135**	**128**
		P_{rated}	kW	1.90	2.16	7.60	8.75	8.37	9.38
		Energy labelling		A+	A+	A+	A+	A++	A++
Seasonal energy efficiency** (80AWH only)	HA1	$SCOP_{30/35°C}$	kWh/kWh	2,94	,85	3,16	3,15	3,76	3,62
		$\eta s\ heat_{30/35°C}$	%	115	111	123	123	147	142
	HA3	$SCOP_{47/55°C}$	kWh/kWh	2.81	2.81	2.94	2.90	3.39	3.24
		$\eta s\ heat_{47/55°C}$	%	110	110	115	113	133	127
		P_{rated}	k	1.90	2.16	7.60	8.75	8.37	9.38
		Energy labelling		A+	A+	A+	A+	A++	A++
80AWX only									
Cooling									
Standard unit Full load performances*	CA1	Nominal capacity	kW	3.57	4.73	5.95	6.80	10.30	12.60
		EER	kW/kW	2.60	2.60	3.07	2.88	3.41	3.17
		Eurovent class		D	D	B	C	A	A
	CA2	Nominal capacity	kW	5.10	6.55	7.88	9.00	13.50	15.79
		EER	kW/kW	3.40	3.40	4.05	3.80	4.74	4.24
		Eurovent class		D		A	A	A	A
Seasonal energy effciciency		$SEER_{12/7°C}$ Comfort low temp.	kWh/kWh	3,73	3,86	4,76	4,64	4,33	4,16

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m^2.K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m^2.K/W

HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m^2.K/W

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m^2.K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m^2.K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$SEER_{12/7°C}$ & $SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA, OUTDOOR AND INDOOR UNITS

Outdoor unit (heat pump)		38AW050H7	38AW065H7	38AW090H7	38AW115H7	38AW120H9	38AW150H9
Indoor unit (confort module)		**80AW 065**	**80AW 065**	**80AW 115**	**80AW 115**	**80AW 150**	**80AW 150**
80AW							
Sound levels							
Sound power level(1) (H3)	dB(A)	40.9	40.9	40.9	40.9	40.9	40.9
Sound power level(1) (C1)	dB(A)	40.9	40.9	40.9	40.9	40.9	40.9
Dimension, H x L x D	mm	800 x 450 x 320	800 x 450 x 320	800 x 450 x 320	800 x 450 x 320	800 x 450 x 320	800 x 450 x 320
Operating weight(3)	kg	48	48	50	50	52	52
Hydraulic module							
Pump		Variable speed circulator					
Expansion tank volume	l	8	8	8	8	8	8
Availabale static pressure (C1)	kPa	70	68	68	65	55	41
Availabale static pressure (H1)	kPa	66	60	54	40	45	25
Availabale static pressure (H2)	kPa	68	64	57	41	50	31
Min. system water content	l	21	28	42	42	42	49
Max. water-side operating pressure	kPa	300	300	300	300	300	300
Water connections with or without hydraulic module							
Diameter	inch	1 M	1 M	1 M	1 M	1 M	1 M
Outside tube diameter	mm	25.4 M	25.4 M	25.4 M	25.4 M	25.4 M	25.4 M
Connections, Liquid / Gas side	inch	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8
Chassis paint colour		White					
38AW							
Sound levels							
Sound power level(1) (H3)	dB(A)	64	65	69	70	68	68
Sound pressure level at 4m(2) (H3)	dB(A)	44	45	4	50	48	4
Sound power level(1) (C1)	dB(A)	64	65	68	70	68	68
Sound pressure level at 4 m(2) (C1)	dB(A)	44	45	48	50	48	48
Dimension, H x L x D	mm	690 x 900 x 320	820 x 900 x 320	1360 x 900 x 320	1360 x 900 x 320	1360 x 900 x 20	1360 x 900 x 320
Operating weight(3)	kg	49	51	88	88	100	100
Refrigerant		R410A					
Circuit charge(3)	kg	1.17	1.36	2.1	2.1	3.9	3.9
	CO_2 eq.	2.4	2.8	4.4	4.4	8.1	8.1
Compressors		DC Inverter Twin-Rotary					
Fans		Variable speed 3 blades fan					
Quantity		1	1	2	2	2	2
Air flow	m^3/h	2620	2820	5970	6360	5770	5770
aximum connection pipe length		50	30	7	70	70	7
Maximum height difference		30	30	30	30	30	30
Precharged length	m	20	20	20	30	30	30
Connections, Liquid / Gas side	inch	1/4 - 1/2	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8	3/8 - 5/8
Chassis paint colour		Beige					

(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Weights are guideline only. Refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, OUTDOOR AND INDOOR UNITS

Indoor unit for 38AW 050H7 and 38AW 065H7		80AWX 065M0	80AWX 065M3	80AWX 065M6	80AWX 065T6	80AWH 065M0
Number of comfort zones		1	1	1	1	1
Electric heater element	kW	0	3	6	6	0
Heating only		No	No	No	No	Yes
Heating and cooling		Yes	Yes	Yes	Yes	No
Connection of backup boiler		Yes	No	No	No	Yes
Power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	400-3N-50	230-1-50
Indoor unit for 38AW 090H7 and 38AW 115H7		**80AWX 115M0**	**80AWX 115M3**	**80AWX 115M6**	**80AWX 115T6**	**80AWX 115T9**
Number of comfort zones		1	1	1	1	1
Electric heater element	kW	0	3	6	6	9
Heating only		No	No	No	No	No
Heating and cooling		Yes	Yes	Yes	Yes	Yes
Connection of backup boiler		Yes	No	No	No	No
Power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	400-3N-50	400-3N-50
Indoor unit for 38AW 120H9 and 38AW 150H9		**80AWX 150M0**	**80AWX 150T6**	**80AWX 150T9**	**80AWH 150M0**	**80AWH 150T6**
Number of comfort zones		1	1	1	1	1
Electric heater element	kW	0	6	9	0	6
Heating only		No	No	No	Yes	Yes
Heating and cooling		Yes	Yes	Yes	No	No
Connection of backup boiler		Yes	No	No	Yes	No
Power supply	V-ph-Hz	230-1-50	400-3N-50	400-3N-50	230-1-50	400-3N-50

Indoor unit for 38AW 050H7 and 38AW 065H7		80AWH 065M3	80AWH 065M6	80AWH 065T6		
Number of comfort zones		1	1	1		
Electric heater element	kW	3	6	6		
Heating only		Yes	Yes	Yes		
Heating and cooling		No	No	No		
Connection of backup boiler		No	No	No		
Power supply	V-ph-Hz	230-1-50	230-1-50	400-3N-50		
Indoor unit for 38AW 090H7 and 38AW 115H7		**80AWH 115M0**	**80AWH 115M3**	**80AWH 115M6**	**80AWH 115T6**	**80AWH 115T9**
Number of comfort zones		1	1	1	1	1
Electric heater element	kW	0	3	6	6	9
Heating only		Yes	Yes	Yes	Yes	Yes
Heating and cooling		No	No	No	No	No
Connection of backup boiler		Yes	No	No	No	No
Power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	400-3N-50	400-3N-50
Indoor unit for 38AW 120H9 and 38AW 150H9		**80AWH 150T9**				
Number of comfort zones		1				
Electric heater element	kW	9				
Heating only		Yes				
Heating and cooling		No				
Connection of backup boiler		No				
Power supply	V-ph-Hz	400-3N-50				

ELECTRICAL DATA, OUTDOOR AND INDOOR UNITS

Outdoor unit		38AW 050	38AW 065	38AW 090	38AW 115	38AW 120	38AW 150
Power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	400-3N-50	400-3N-50
Voltage range	V-ph-Hz	198-264	198-264	198-264	198-264	376-424	376-424
Full load current	A	12	12	23	23	15.4	15.4
Fuse rating*	A	16	16	25	25	16	16
Operating current	A	5.3	6.91	9.43	12.22	6.45	8.72
Power consumption	W	1220	1590	2170	2810	2580	3490
Main power wire size	mm²	2.5	2.5	4	4	2.5	2.5
Power factor	%	0.95	0.95	0.95	0.95	0.95	0.95

* Time delay fuse

Indoor unit (comfort module)		80AW 065				80AW 115					80AW 150		
		M0	M3	M6	T6	M0	M3	M6	T6	T9	M0	T6	T9
Outdoor units		38AW 050H7/38AW 065H7				38AW 090H7/38AW 115H7					38AW 120H9/38AW 150H9		
Power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	400-3N-50	230-1-50	230-1-50	230-1-50	400-3N-50	400-3N-50	230-1-50	400-3N-50	400-3N-50
Voltage range	V-ph-Hz	207-253	207-253	207-253	360-440	207-253	207-253	207-253	360-440	360-440	207-253	376-424	376-424
Power input	kW	-	3	6	6	-	3	6	6	9	-	6	9
Operating current													
L1	A	-	13.0	26	8.7	-	13.0	26	8.7	13.0	-	8.7	13.0
L2	A	-	-	-	8.7	-	-	-	8.7	13.0	-	8.7	13.0
L3	A	-	-	-	8.7	-	-	-	8.7	13.0	-	8.7	13.0
N	A	-	13.0	26	-	-	13.0	26	-	-	-	-	-
Power factor	%	1	1	1	1	1	1	1	1	1	1	1	1
Indoor unit power supply and communication cable - H07 RN-F	mm2	2G x 1	2G x 1	2G x 1	2G x 1	2G x 1	2G x 1	2G x 1	2G x 1	2G x 1	2G x 1	2G x 1	2G x 1
Backup heater power supply cable - H07 RN-F	mm2	-	3G x 4	3G x 6	5G x 2.5	-	3G x 4	3G x 6	5G x 2.5	5G x 4	-	5G x 2.5	5G x 4
User interface cable (additional or remote) - FROH2R	mm2	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75	4 x 0.75
Booster heater power supply cable - H05VV-F	mm2	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5	3G x 2.5
DHW booster heater activation cable - FROH2R	mm2	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1
DHW hot water sensor cable - FROH2R	mm2	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5
Remote outdoor sensor cable - FROH2R	mm2	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5	2 x 0.5

SOUND LEVELS, OUTDOOR UNITS

Cooling mode

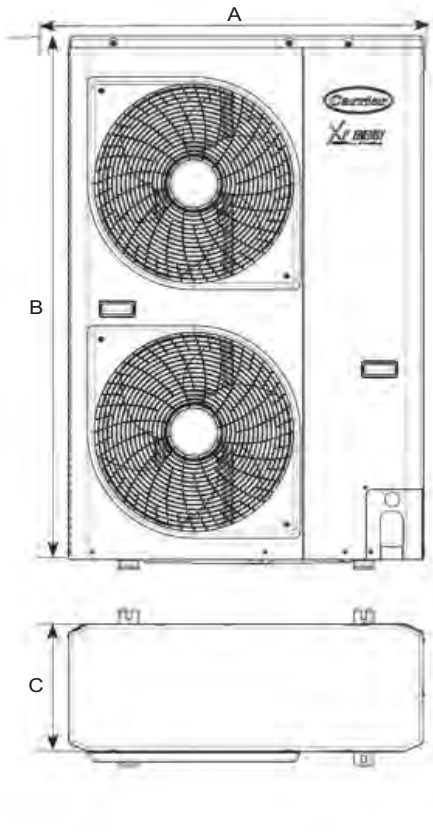
38AW		Octave bands, Hz							Sound power levels	
		125	250	500	1000	2000	4000	8000		
050	dB	67	68	60	58	52	52	47	dB(A)	64
065	dB	66	63	63	60	55	52	51	dB(A)	65
090	dB	70	66	68	63	56	56	49	dB(A)	68
115	dB	68	69	70	64	59	58	52	dB(A)	70
120	dB	71	69	66	63	59	56	49	dB(A)	68
150	dB	72	68	66	63	60	54	50	dB(A)	68

Heating mode

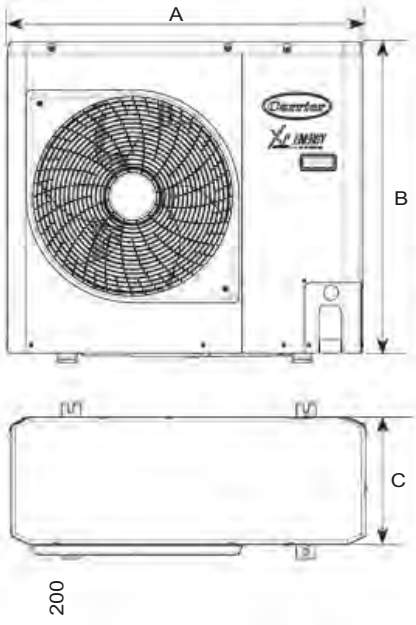
38AW		Octave bands, Hz							Sound power levels	
		125	250	500	1000	2000	4000	8000		
050	dB	68	62	61	60	54	54	46	dB(A)	64
065	dB	73	67	67	63	56	56	51	dB(A)	68
090	dB	73	66	68	63	57	56	51	dB(A)	69
115	dB	70	68	69	64	60	57	51	db(A)	70
120	dB	72	69	66	63	59	56	50	dB(A)	68
150	dB	72	68	67	63	59	56	50	dB(A)	68

DIMENSIONS (MM), OUTDOOR UNITS

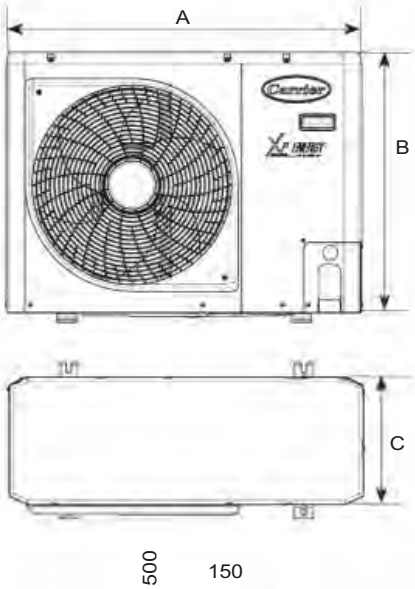
38AW 090-115H7
38AW 120-150H9



38AW 065H7

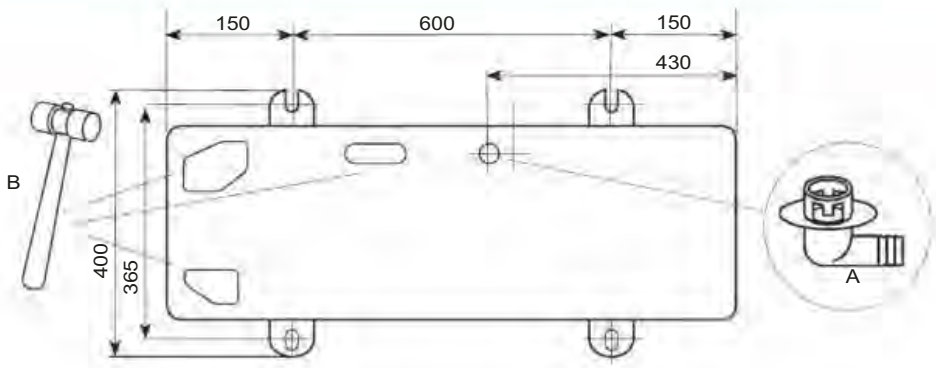


38AW 050H7



imensions, mm		B	C	Weight, kg
38AW 050H7	900	690	320	49
38AW 065H7		820	320	1
38AW 090H7/115H7	900	1360	320	88
38AW 120H9/150H9	900	1360	320	100

DRAIN HOSE AND BASE PAN KNOCKOUTS

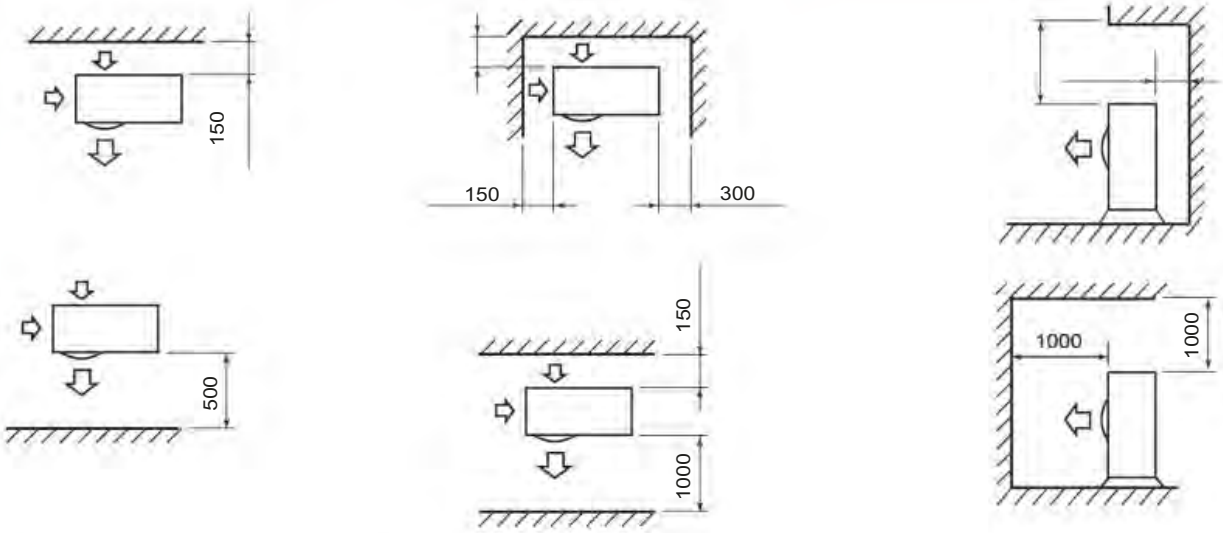


In case of draining through the drain pipe, attach the drain nipple (A) and use a drain hose with an inside diameter of 16 mm (to be provided). In cold outside temperatures when the drain pipe can freeze up, ensure that drainage is not obstructed.

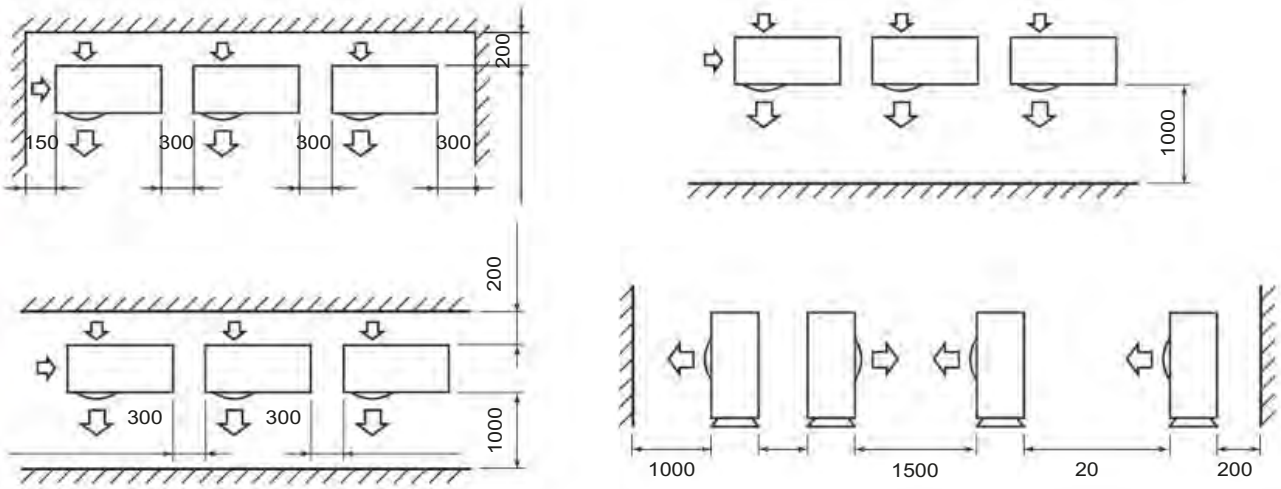
Open the knockout holes in the base pan to improve the drainage capacity. Use a hammer (B) to open the knockout holes.

CLEARANCES (MM), OUTDOOR UNITS

Single unit installation

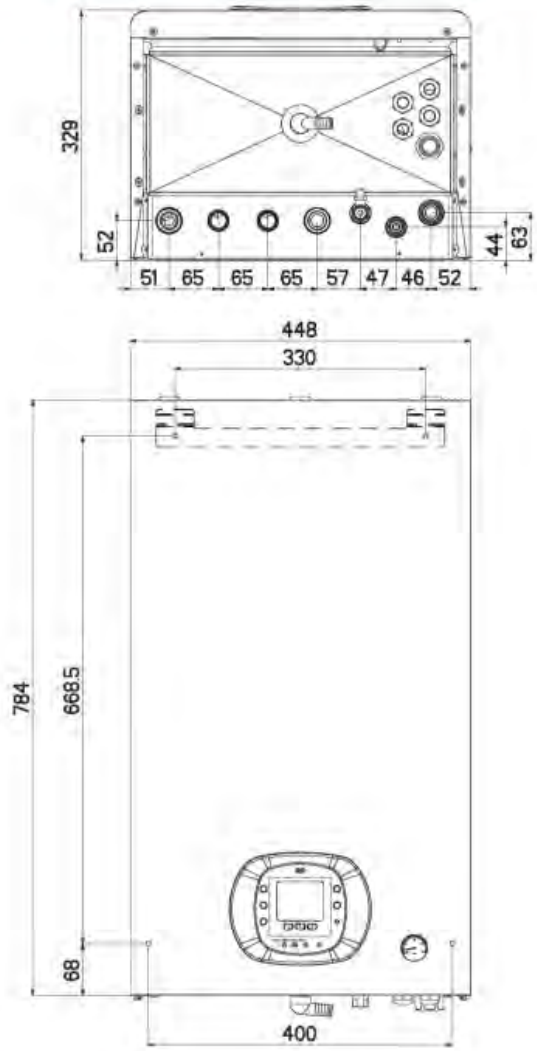


Multiple unit installation

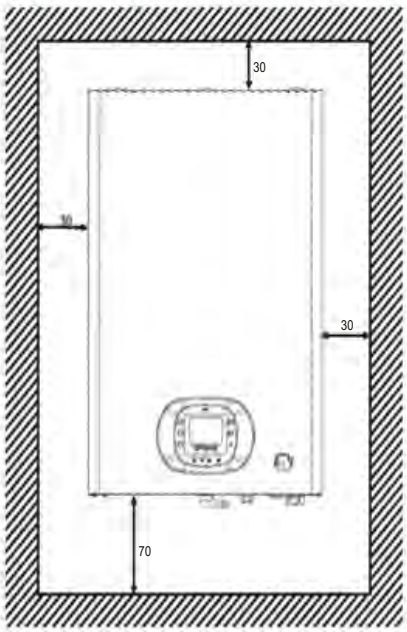


Note: The height of any obstacle at both the front and rear should be less than the outdoor unit height.

DIMENSIONS, INDOOR UNITS



CLEARANCES, INDOOR UNITS



Note: All dimensions are in millimetres.

HEATING CAPACITIES IN ACCORDANCE WITH EN14511-3:2013

38AW/80AW units

		Outside air dry-bulb (wet-bulb) temperature, °C																				
		-20 (-21)							-15 (-16)							-7 (-8)						
	LWT	Qh			COP			q	Qh			COP			q	Qh			COP			q
	°C	kW			kW/kW			l/s	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
38AW 050/80AWH 065 - 80AWX 065	35	2.44	0.61	2.44	2.40	2.40	2.40	0.116	2.80	0.79	3.50	2.25	2.50	2.10	0.134	3.49	0.85	4.20	2.50	2.70	2.40	0.167
38AW 065/80AWH 065 - 80AWX 065		2.34	0.59	2.34	2.40	2.40	2.40	0.112	3.50	0.70	4.15	2.25	2.65	2.00	0.167	3.72	0.82	4.50	2.50	2.88	2.27	0.178
38AW 090/80AWH 115 - 80AWX 115		4.04	2.02	4.04	2.02	2.02	2.02	0.193	5.35	2.32	6.12	2.31	2.42	1.94	0.256	6.15	2.79	7.04	2.97	3.09	2.49	0.294
38AW 115/80AWH 115 - 80AWX 115		4.00	2.00	4.00	2.00	2.00	2.00	0.191	6.00	2.30	7.20	1.90	2.40	1.50	0.287	6.90	2.76	8.10	2.45	3.05	2.30	0.330
38AW 120/80AWH 150 - 80AWX 150		4.71	0.93	4.71	1.85	1.49	1.85	0.225	5.31	1.28	6.25	2.33	1.97	2.19	0.254	7.54	2.88	10.64	3.17	2.69	3.04	0.360
38AW 150/80AWH 150 - 80AWX 150		5.54	0.94	5.54	1.74	1.47	1.74	0.265	6.25	1.29	7.65	2.19	1.93	2.13	0.299	8.85	2.89	11.20	2.97	2.65	2.88	0.423
38AW 050/80AWH 065 - 80AWX 065	45	1.42	0.53	1.42	2.00	2.00	2.00	0.068	2.70	0.60	3.10	1.94	2.15	1.80	0.129	3.04	0.74	3.45	2.08	2.29	1.90	0.145
38AW 065/80AWH 065 - 80AWX 065		1.37	0.51	1.37	1.90	1.90	1.90	0.065	3.09	0.60	3.65	1.90	2.20	1.70	0.147	3.26	0.72	3.93	2.04	2.35	1.85	0.156
38AW 090/80AWH 115 - 80AWX 115		3.98	1.99	3.98	1.89	1.89	1.89	0.190	4.53	2.27	4.53	2.10	2.10	2.10	0.216	5.78	2.75	6.94	2.38	2.51	2.04	0.276
38AW 115/80AWH 115 - 80AWX 115		3.94	1.97	3.94	1.87	1.87	1.87	0.188	4.58	2.29	4.58	2.12	2.12	2.12	0.219	6.80	2.72	8.29	2.00	2.49	1.85	0.325
38AW 120/80AWH 150 - 80AWX 150		4.64	0.92	4.64	1.73	1.38	1.73	0.222	5.23	1.26	6.16	2.18	1.84	2.05	0.250	6.21	2.66	8.75	2.27	2.18	2.27	0.297
38AW 150/80AWH 150 - 80AWX 150		5.46	0.93	5.46	1.63	1.37	1.63	0.261	6.16	1.27	7.54	2.05	1.80	1.99	0.294	8.05	2.66	9.30	2.37	2.02	2.16	0.384
38AW 050/80AWH 065 - 80AWX 065	55	-	-	-	-	-	-	-	1.03	0.62	1.03	1.70	1.70	1.70	0.049	2.43	0.71	3.29	1.78	1.81	1.74	0.116
38AW 065/80AWH 065 - 80AWX 065		-	-	-	-	-	-	-	1.00	0.60	1.00	1.70	1.70	1.70	0.048	3.10	0.68	3.72	1.64	1.92	1.51	0.148
38AW 090/80AWH 115 - 80AWX 115		-	-	-	-	-	-	-	4.20	2.10	4.20	1.72	1.72	1.72	0.201	5.20	2.52	6.37	1.70	1.97	1.60	0.248
38AW 115/80AWH 115 - 80AWX 115		-	-	-	-	-	-	-	4.16	2.08	4.16	1.70	1.70	1.70	0.199	6.24	2.50	7.21	1.57	1.95	1.45	0.298
38AW 120/80AWH 150 - 80AWX 150		-	-	-	-	-	-	-	4.80	1.16	5.65	1.77	1.50	1.66	0.229	5.79	2.32	7.80	1.86	1.87	2.05	0.277
38AW 150/80AWH 150 - 80AWX 150		-	-	-	-	-	-	-	5.65	1.16	6.92	1.66	1.46	1.61	0.270	6.73	2.32	8.30	1.96	1.82	1.88	0.322
38AW 050/80AWH 065 - 80AWX 065	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.40	0.69	3.22	1.52	1.55	1.49	0.115
38AW 065/80AWH 065 - 80AWX 065		-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.00	0.66	3.48	1.63	1.75	1.34	0.143
38AW 090/80AWH 115 - 80AWX 115		-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.99	2.31	5.84	1.48	1.70	1.38	0.238
38AW 115/80AWH 115 - 80AWX 115		-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.72	2.29	6.59	1.35	1.69	1.25	0.273
38AW 120/80AWH 150 - 80AWX 150		-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.34	2.26	7.20	1.61	1.72	1.78	0.255
38AW 150/80AWH 150 - 80AWX 150		-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.07	2.25	7.49	1.65	1.47	1.58	0.290

		Outside air dry-bulb (wet-bulb) temperature, °C																				
		-3(-4)							0 (-1)							2 (1)						
	LWT	Qh			COP			q	Qh			COP			q	Qh			COP			q
	°C	kW			kW/kW			l/s	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
38AW 050/80AWH 065 - 80AWX 065	35	3.60	0.96	4.46	2.80	2.95	2.70	0.172	3.80	1.00	4.70	3.00	3.22	2.90	0.182	3.90	1.15	4.90	3.10	3.27	3.00	0.186
38AW 065/80AWH 065 - 80AWX 065		4.28	0.92	5.05	2.80	3.12	2.49	0.204	4.64	1.00	5.50	3.00	3.30	2.66	0.222	4.88	1.05	5.80	3.10	3.35	2.71	0.233
38AW 090/80AWH 115 - 80AWX 115		6.33	2.87	7.24	3.23	3.30	2.71	0.302	6.95	3.15	7.96	3.44	3.48	2.89	0.332	7.22	3.27	8.26	3.58	3.59	3.00	0.345
38AW 115/80AWH 115 - 80AWX 115		7.10	2.84	8.30	2.66	3.27	2.48	0.339	7.80	3.12	8.50	2.83	3.44	2.65	0.373	8.10	3.24	9.00	2.95	3.55	2.76	0.387
38AW 120/80AWH 150 - 80AWX 150		7.56	3.08	10.70	3.19	2.74	3.04	0.361	7.60	3.29	10.89	3.21	2.77	3.10	0.363	8.50	3.39	11.57	3.70	2.84	3.15	0.406
38AW 150/80AWH 150 - 80AWX 150		8.88	3.09	11.21	2.99	2.70	2.88	0.424	8.93	3.29	11.40	3.01	2.74	2.93	0.427	9.50	3.39	12.12	3.15	2.80	2.98	0.454
38AW 050/80AWH 065 - 80AWX 065	45	3.10	0.84	3.89	2.29	2.48	2.20	0.148	3.24	0.91	4.23	2.45	2.62	2.30	0.155	3.40	0.96	4.45	2.55	2.66	2.35	0.162
38AW 065/80AWH 065 - 80AWX 065		3.75	0.81	4.44	2.25	2.54	2.03	0.179	4.07	0.88	4.81	2.40	2.68	2.17	0.194	4.28	0.92	5.06	2.50	2.73	2.21	0.205
38AW 090/80AWH 115 - 80AWX 115		5.87	2.79	7.04	2.50	2.71	2.23	0.280	6.72	3.19	8.06	2.66	2.85	2.38	0.321	7.14	3.39	8.57	2.77	2.95	2.48	0.341
38AW 115/80AWH 115 - 80AWX 115		6.90	2.76	8.80	2.19	2.68	2.04	0.330	7.90	3.16	10.00	2.33	2.82	2.19	0.377	8.40	3.36	10.70	2.43	2.92	2.28	0.401
38AW 120/80AWH 150 - 80AWX 150		6.23	2.85	9.50	2.29	2.22	2.28	0.298	6.27	3.03	9.76	2.31	2.25	2.30	0.299	7.50	3.13	11.41	2.70	2.30	2.68	0.358
38AW 150/80AWH 150 - 80AWX 150		8.07	2.84	10.09	2.39	2.06	2.30	0.385	8.11	3.03	10.37	2.41	2.09	2.34	0.388	9.10	3.12	12.11	2.60	2.14	2.55	0.435
38AW 050/80AWH 065 - 80AWX 065	55	2.74	0.80	3.72	1.92	1.96	1.86	0.131	2.98	0.87	4.03	2.03	2.07	1.95	0.142	3.13	0.92	4.24	2.07	2.11	1.98	0.15
38AW 065/80AWH 065 - 80AWX 065		3.55	0.77	4.20	1.81	2.08	1.66	0.17	3.86	0.83	4.56	2.00	2.19	1.77	0.184	4.06	0.88	4.80	2.01	2.23	1.80	0.194
38AW 090/80AWH 115 - 80AWX 115		5.83	2.83	7.14	1.86	2.13	1.75	0.279	6.48	3.14	7.94	1.98	2.24	1.87	0.31	6.85	3.32	8.38	2.07	2.31	1.95	0.327
38AW 115/80AWH 115 - 80AWX 115		7.00	2.80	7.98	1.72	2.10	1.60	0.334	7.78	3.11	9.03	1.83	2.22	1.71	0.372	8.22	3.29	9.50	1.91	2.29	1.79	0.393
38AW 120/80AWH 150 - 80AWX 150		6.35	2.48	8.56	1.87	1.91	2.06	0.304	6.39	2.65	8.79	1.88	1.93	2.08	0.305	7.49	2.73	8.89	2.28	1.98	2.25	0.358
38AW 150/80AWH 150 - 80AWX 150		6.75	2.48	9.10	1.98	1.86	1.90	0.322	6.79	2.64	9.35	2.05	1.89	1.95	0.324	7.96	2.72	9.83	2.40	1.95	2.14	0.38
38AW 050/80AWH 065 - 80AWX 065	60	2.70	0.78	3.68	1.65	1.68	1.59	0.129	2.94	0.85	4.00	1.74	1.77	1.67	0.14	3.09	0.90	4.20	1.77	1.80	1.69	0.148
38AW 065/80AWH 065 - 80AWX 065		3.39	0.75	3.92	1.78	1.90	1.47	0.162	3.67	0.81	4.26	1.83	1.95	1.57	0.176	3.87	0.85	4.48	1.86	1.98	1.60	0.185
38AW 090/80AWH 115 - 80AWX 115		5.44	2.52	6.37	1.63	1.84	1.52	0.26	6.10	2.83	7.14	1.73	1.93	1.61	0.291	6.27	2.91	7.34	1.80	2.00	1.68	0.3
38AW 115/80AWH 115 - 80AWX 115		6.24	2.50	7.46	1.49	1.83	1.41	0.298	7.00	2.80	8.00	1.58	1.91	1.50	0.334	7.20	2.88	8.20	1.65	1.98	1.54	0.344
38AW 120/80AWH 150 - 80AWX 150		5.86	2.42	7.89	1.62	1.76	1.79	0.28	5.90	2.57	8.11	1.63	1.78	1.81	0.282	7.00	2.65	8.31	2.04	1.82	2.02	0.334
38AW 150/80AWH 150 - 80AWX 150		6.09	2.41	8.21	1.66	1.50	1.59	0.291	6.12	2.57	8.44	1.72	1.52	1.64	0.293	7.77	2.65	9.60	2.32	1.86	2.07	0.371

HEATING CAPACITIES IN ACCORDANCE WITH EN14511-3:2013

38AW/80AW units

		Outside air dry-bulb (wet-bulb) temperature, °C																				
		7 (6)							10 (9)							20 (19)						
	LWT	Qh			COP			q	Qh			COP			q	Qh			COP			q
	°C	kW			kW/kW			l/s	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
38AW 050 / 80AWH 065 - 80AWX 065	35	5.01	1.46	6.30	4.15	4.18	4.00	0.239	5.43	1.59	7.00	4.48	4.56	4.20	0.259	6.86	2.00	8.70	5.74	5.85	5.40	0.328
38AW 065 / 80AWH 065 - 80AWX 065		6.55	1.40	8.00	4.15	4.28	3.53	0.313	7.06	1.52	9.00	4.48	4.67	3.85	0.337	8.91	1.92	10.90	5.74	5.99	5.10	0.426
38AW 090 / 80AWH 115 - 80AWX 115		9.27	4.64	11.73	4.48	4.76	4.18	0.443	10.20	5.11	12.90	4.69	5.00	4.38	0.487	12.90	6.46	16.32	5.14	5.46	4.80	0.616
38AW 115 / 80AWH 115 - 80AWX 115		11.50	4.60	13.40	4.10	4.71	3.91	0.549	12.65	5.06	14.85	4.29	4.95	4.10	0.604	16.00	6.40	19.00	4.70	5.41	4.48	0.764
38AW 120 / 80AWH 150 - 80AWX 150		12.00	6.00	15.02	4.65	4.06	4.57	0.573	12.86	6.50	17.47	5.41	4.50	4.99	0.614	16.14	7.70	20.24	6.54	5.38	6.00	0.771
38AW 150 / 80AWH 150 - 80AWX 150		15.01	5.99	16.05	4.30	4.01	4.25	0.717	16.13	6.49	18.66	4.96	4.44	4.70	0.771	20.24	7.69	21.12	6.00	5.31	5.49	0.967
38AW 050 / 80AWH 065 - 80AWX 065	45	4.37	1.28	5.92	3.41	3.60	2.80	0.209	4.74	1.39	6.42	3.74	3.90	3.10	0.227	5.99	1.75	8.11	4.79	4.95	4.01	0.286
38AW 065 / 80AWH 065 - 80AWX 065		5.70	1.23	7.20	3.34	3.49	2.87	0.272	6.19	1.34	7.97	3.65	3.81	3.14	0.296	7.82	1.69	10.07	4.67	4.88	4.02	0.373
38AW 090 / 80AWH 115 - 80AWX 115		8.70	4.56	11.53	3.45	3.83	3.37	0.416	9.57	5.02	12.68	3.70	4.03	3.53	0.457	12.09	6.34	16.01	4.05	4.40	3.86	0.578
38AW 115 / 80AWH 115 - 80AWX 115		11.30	4.52	13.52	3.32	3.79	3.15	0.540	12.43	4.97	14.60	3.46	3.99	3.30	0.594	15.70	6.28	18.80	3.78	4.35	3.60	0.750
38AW 120 / 80AWH 150 - 80AWX 150		11.20	5.54	13.90	3.70	3.31	3.40	0.535	11.97	6.01	16.17	4.07	3.67	3.78	0.572	15.03	7.12	18.72	4.92	4.38	4.58	0.718
38AW 150 / 80AWH 150 - 80AWX 150		14.02	5.53	15.76	3.40	3.07	3.12	0.670	14.92	5.99	16.42	3.78	3.40	3.62	0.713	18.72	7.10	20.65	4.58	4.07	4.21	0.894
38AW 050 / 80AWH 065 - 80AWX 065	55	4.17	1.22	5.65	2.64	2.69	2.58	0.199	4.53	1.32	6.13	2.88	2.94	2.81	0.216	5.72	1.67	7.74	3.69	3.76	3.61	0.273
38AW 065 / 80AWH 065 - 80AWX 065		5.43	1.17	6.70	2.64	2.85	2.35	0.259	5.86	1.27	7.30	2.98	3.11	2.56	0.28	7.41	1.60	9.25	3.82	3.99	3.40	0.354
38AW 090 / 80AWH 115 - 80AWX 115		8.00	4.18	10.56	2.62	3.00	2.64	0.382	8.80	4.60	11.61	2.74	3.16	2.77	0.42	10.74	5.61	14.18	3.00	3.45	3.03	0.513
38AW 115 / 80AWH 115 - 80AWX 115		10.35	4.14	11.40	2.59	2.97	2.47	0.495	11.39	4.55	12.35	2.71	3.13	2.59	0.544	13.90	5.56	14.73	2.97	3.42	2.83	0.664
38AW 120 / 80AWH 150 - 80AWX 150		10.81	4.84	13.25	3.08	2.85	3.01	0.517	11.76	5.24	15.56	3.32	3.16	3.24	0.562	14.76	6.22	17.77	4.02	3.78	3.92	0.705
38AW 150 / 80AWH 150 - 80AWX 150		12.02	4.83	14.83	3.19	2.73	2.85	0.574	13.07	5.24	17.41	3.44	2.95	3.02	0.624	16.40	6.21	19.88	4.16	3.50	3.60	0.784
38AW 050 / 80AWH 065 - 80AWX 065	60	4.12	1.19	5.60	2.26	2.30	2.21	0.197	4.48	1.29	6.09	2.47	2.51	2.41	0.214	5.67	1.63	7.50	3.16	3.22	3.00	0.271
38AW 065 / 80AWH 065 - 80AWX 065		5.15	1.13	6.00	2.42	2.53	2.08	0.246	5.59	1.23	6.50	2.64	2.76	2.30	0.267	7.06	1.55	8.45	3.39	3.54	3.00	0.337
38AW 090 / 80AWH 115 - 80AWX 115		7.65	3.83	9.67	2.28	2.59	2.28	0.366	8.42	4.21	10.64	2.39	2.73	2.39	0.402	9.30	4.65	11.76	2.61	2.98	2.61	0.444
38AW 115 / 80AWH 115 - 80AWX 115		9.48	3.79	10.89	2.24	2.57	2.13	0.453	10.43	4.17	11.52	2.34	2.70	2.23	0.498	11.52	4.61	12.16	2.56	2.95	2.44	0.551
38AW 120 / 80AWH 150 - 80AWX 150		10.52	4.70	12.89	2.85	2.63	2.79	0.503	11.44	5.10	15.14	3.07	2.91	3.00	0.547	14.04	6.04	16.89	3.72	3.48	3.63	0.671
38AW 150 / 80AWH 150 - 80AWX 150		11.67	4.69	14.39	3.00	2.61	2.72	0.557	12.69	5.09	16.90	3.20	2.82	2.88	0.606	15.59	6.03	18.89	3.80	3.34	3.44	0.745

Legend

LWT Leaving Water Temperature,°C
Qh Heating Capacity, kW
Nom Nominal
Min Minimum
Max Maximum
COP Coefficient of Performance
q Condenser water flow rate, l/s

Application Data

Standard units, refrigerant: R-410A
Condenser entering/leaving water temperature difference: 5 K
Condenser fluid: water
Fouling Factor: 0.m^2 K/W

Performance in accordance with EN 14511-3: 2013

COOLING CAPACITIES IN ACCORDANCE WITH EN14511-3:2013

38AW/80AW units

		Outside air Temperature, oC																			
		5							15							25						
	LWT	Qc			EER			q	Qc			EER			q	Qc			EER			q
	oC	kW			kW/kW			l/s	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
38AW 050 / 80AWX 065	5	4.57	1.21	5.20	7.74	8.83	7.44	0.219	4.16	1.11	4.73	4.95	5.57	4.76	0.199	3.75	1.00	4.26	3.44	3.88	3.31	0.179
38AW 065 / 80AWX 065		5.98	1.61	8.28	7.71	8.56	7.06	0.286	5.44	1.47	7.54	4.92	5.36	4.50	0.26	4.90	1.32	6.79	3.43	3.74	3.13	0.234
38AW 090 / 80AWX 115		7.02	3.65	8.19	5.46	6.47	5.22	0.336	6.46	3.36	7.54	4.59	5.45	4.40	0.309	6.02	3.14	7.02	3.64	4.40	3.48	0.288
38AW 115 / 80AWX 115		8.03	3.62	10.60	5.12	6.41	4.13	0.384	7.39	3.33	9.76	4.31	5.39	3.48	0.353	6.88	3.10	9.28	3.41	4.36	2.82	0.329
38AW 120 / 80AWX 150		12.15	6.19	15.44	6.05	4.67	5.20	0.58	11.52	5.82	14.56	5.27	4.25	4.53	0.55	10.54	5.45	13.43	4.24	3.72	3.65	0.504
38AW 150 / 80AWX 150		15.04	6.20	15.39	4.81	4.79	4.71	0.719	14.05	5.82	14.37	4.36	4.36	4.27	0.671	13.08	5.45	13.36	3.81	3.81	3.73	0.625
38AW 050 / 80AWX 065	7	4.94	1.18	5.61	7.98	9.74	7.62	0.236	4.50	1.07	5.11	5.27	6.43	5.03	0.215	4.05	0.97	4.60	3.65	4.46	3.49	0.194
38AW 065 / 80AWX 065		6.44	1.54	8.49	7.98	9.74	7.36	0.308	5.87	1.40	7.73	5.27	6.43	4.86	0.28	5.29	1.26	6.97	3.65	4.46	3.37	0.253
38AW 090 / 80AWX 115		7.46	3.88	8.70	5.83	6.87	5.58	0.357	6.87	3.57	8.01	4.90	5.78	4.69	0.328	6.40	3.33	7.46	3.86	4.68	3.70	0.306
38AW 115 / 80AWX 115		8.53	3.84	11.26	5.47	6.80	4.39	0.408	7.85	3.54	10.37	4.60	5.73	3.69	0.375	7.31	3.30	9.86	3.62	4.63	3.00	0.349
38AW 120 / 80AWX 150		12.95	6.63	16.43	6.20	4.93	5.34	0.619	12.25	6.23	15.53	5.45	4.48	4.69	0.585	11.25	5.83	14.27	4.47	3.92	3.85	0.537
38AW 150 / 80AWX 150		15.58	6.63	16.23	5.11	5.03	4.94	0.744	14.64	6.23	15.25	4.65	4.57	4.50	0.7	13.70	5.83	14.27	4.06	4.00	3.93	0.655
38AW 050 / 80AWX 065	10	5.48	1.12	6.23	8.34	11.11	7.88	0.262	5.00	1.02	5.68	5.76	7.73	5.44	0.239	4.51	0.92	5.12	3.97	5.33	3.75	0.215
38AW 065 / 80AWX 065		7.14	1.42	8.80	8.39	11.52	7.82	0.341	6.51	1.29	8.02	5.79	8.05	5.41	0.311	5.88	1.16	7.23	3.99	5.54	3.73	0.281
38AW 090 / 80AWX 115		8.12	4.22	9.47	6.38	7.47	6.10	0.388	7.47	3.89	8.71	5.37	6.29	5.14	0.357	6.96	3.62	8.12	4.20	5.08	4.02	0.333
38AW 115 / 80AWX 115		9.28	4.18	12.26	5.98	7.40	4.77	0.443	8.54	3.85	11.28	5.04	6.22	4.02	0.408	7.96	3.59	10.73	3.94	5.03	3.26	0.38
38AW 120 / 80AWX 150		14.16	7.28	17.89	6.44	5.31	5.55	0.677	13.34	6.84	16.99	5.72	4.83	4.93	0.637	12.31	6.40	15.68	4.82	4.22	4.16	0.588
38AW 150 / 80AWX 150		16.39	7.27	17.48	5.56	5.38	5.30	0.783	15.52	6.83	16.56	5.08	4.90	4.83	0.742	14.64	6.39	15.62	4.45	4.28	4.24	0.699
38AW 050 / 80AWX 065	15	6.39	1.02	7.26	8.93	13.39	8.32	0.305	5.83	0.93	6.62	6.56	9.90	6.11	0.278	5.26	0.84	5.98	4.50	6.78	4.19	0.251
38AW 065 / 80AWX 065		8.31	1.22	9.32	9.06	14.49	8.59	0.397	7.59	1.11	8.50	6.66	10.73	6.32	0.363	6.85	1.01	7.68	4.56	7.35	4.33	0.327
38AW 090 / 80AWX 115		4.80	4.80	4.80	8.47	8.47	8.47	0.229	8.48	4.41	9.89	6.14	7.13	5.88	0.405	7.90	4.11	9.21	4.76	5.76	4.56	0.378
38AW 115 / 80AWX 115		4.75	4.75	4.75	8.38	8.38	8.38	0.227	9.70	4.37	12.81	5.76	7.06	4.55	0.463	9.03	4.07	12.18	4.47	5.70	3.69	0.432
38AW 120 / 80AWX 150		16.17	8.36	19.90	6.83	5.94	5.90	0.773	15.17	7.85	18.94	6.16	5.40	5.33	0.725	14.08	7.35	18.04	5.40	4.72	4.67	0.673
38AW 150 / 80AWX 150		17.75	8.34	19.57	6.32	5.98	5.88	0.848	16.99	7.84	18.75	5.79	5.44	5.39	0.812	16.20	7.33	17.88	5.09	4.76	4.74	0.774
38AW 050 / 80AWX 065	18	6.93	0.96	7.88	9.28	14.75	8.58	0.331	6.33	0.88	7.19	7.05	11.20	6.52	0.302	5.72	0.79	6.50	4.81	7.64	4.45	0.273
38AW 065 / 80AWX 065		9.01	1.10	9.63	9.46	16.26	9.04	0.431	8.23	1.01	8.79	7.18	12.35	6.86	0.393	7.44	0.91	7.94	4.90	8.43	4.69	0.355
38AW 090 / 80AWX 115		5.14	5.14	5.14	9.07	9.07	9.07	0.245	9.09	4.73	10.60	6.61	7.63	6.32	0.434	8.47	4.41	9.87	5.10	6.17	4.88	0.405
38AW 115 / 80AWX 115		5.09	5.09	5.09	8.98	8.98	8.98	0.243	10.39	4.68	13.72	6.20	7.55	4.87	0.496	9.68	4.37	13.05	4.78	6.11	3.95	0.462
38AW 120 / 80AWX 150		17.38	9.01	20.98	7.06	6.32	6.11	0.83	16.26	8.46	20.39	6.43	5.75	5.57	0.777	15.15	7.92	19.45	5.75	5.02	4.98	0.724
38AW 150 / 80AWX 150		18.56	8.99	20.83	6.77	6.33	6.24	0.887	17.87	8.44	20.06	6.22	5.76	5.73	0.854	17.14	7.89	19.24	5.47	5.04	5.04	0.819

COOLING CAPACITIES IN ACCORDANCE WITH EN14511-3:2013

38AW/80AW units

		Outside air Temperature, oC													
		35							45						
	LWT	Qc			EER			q	Qc			EER			q
	oC	kW			kW/kW			l/s	kW			kW/kW			l/s
		Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	Max	Nom	Min	Max	Nom
38AW 050 / 80AWX 065	5	3.29	0.88	3.79	2.45	2.77	2.37	0.157	3.5	0.77	4.01	1.51	2	1.41	0.167
38AW 065 / 80AWX 065		4.4	1.18	6.03	2.45	2.67	2.23	0.21	4.61	1.03	6.14	1.44	1.92	1.26	0.22
38AW 090 / 80AWX 115		5.6	2.91	6.53	2.89	3.53	2.77	0.268	5.04	2.62	5.87	2.5	3.04	2.39	0.241
38AW 115 / 80AWX 115		6.4	2.88	8.63	2.71	3.49	2.28	0.306	5.76	2.59	7.77	2.35	3.01	1.99	0.275
38AW 120 / 80AWX 150		9.72	4.89	12.26	3.16	2.87	2.86	0.465	8.99	4.23	11.14	2.33	2.22	2.26	0.429
38AW 150 / 80AWX 150		12.02	4.89	12.3	2.98	2.94	2.92	0.574	10.94	4.24	11.17	2.35	2.28	2.3	0.523
38AW 050 / 80AWX 065	7	3.57	0.86	4.09	2.60	3.17	2.48	0.171	3.14	0.75	3.57	1.87	2.29	1.79	0.15
38AW 065 / 80AWX 065		4.73	1.12	6.19	2.60	3.17	2.4	0.226	4.1	0.98	5.4	1.87	2.29	1.73	0.196
38AW 090 / 80AWX 115		5.95	3.09	6.94	3.07	3.74	2.94	0.284	5.35	2.78	6.24	2.66	3.23	2.54	0.256
38AW 115 / 80AWX 115		6.80	3.06	9.17	2.88	3.71	2.42	0.325	6.12	2.75	8.25	2.49	3.19	2.11	0.292
38AW 120 / 80AWX 150		10.30	5.23	13.13	3.41	3.02	3.02	0.492	9.42	4.53	11.93	2.56	2.34	2.38	0.45
38AW 150 / 80AWX 150		12.60	5.23	13.13	3.17	3.08	3.08	0.602	11.47	4.53	11.93	2.5	2.39	2.43	0.548
38AW 050 / 80AWX 065	10	3.99	0.82	4.54	2.82	3.78	2.65	0.191	2.6	0.71	2.91	2.42	2.72	2.36	0.124
38AW 065 / 80AWX 065		5.23	1.04	6.43	2.82	3.93	2.65	0.25	3.35	0.9	4.29	2.53	2.83	2.43	0.16
38AW 090 / 80AWX 115		6.48	3.36	7.55	3.34	4.07	3.19	0.309	5.83	3.03	6.79	2.89	3.51	2.76	0.278
38AW 115 / 80AWX 115		7.4	3.33	9.98	3.13	4.03	2.63	0.354	6.66	3	8.98	2.71	3.47	2.3	0.318
38AW 120 / 80AWX 150		11.17	5.74	14.43	3.77	3.25	3.26	0.534	10.07	4.97	13.11	2.9	2.52	2.57	0.481
38AW 150 / 80AWX 150		13.47	5.73	14.38	3.46	3.3	3.32	0.643	12.26	4.96	13.06	2.72	2.56	2.62	0.586
38AW 050 / 80AWX 065	15	4.68	0.75	5.28	3.18	4.79	2.92	0.224	1.7	0.66	1.82	3.34	3.45	3.32	0.081
38AW 065 / 80AWX 065		6.05	0.9	6.84	3.18	5.2	3.06	0.289	2.09	0.78	2.44	3.63	3.74	3.59	0.1
38AW 090 / 80AWX 115		7.35	3.82	8.57	3.78	4.61	3.62	0.351	6.61	3.44	7.71	3.27	3.98	3.13	0.316
38AW 115 / 80AWX 115		8.4	3.78	11.33	3.55	4.57	2.98	0.401	7.56	3.4	10.2	3.07	3.94	2.6	0.361
38AW 120 / 80AWX 150		12.63	6.59	16.6	4.38	3.64	3.66	0.603	11.15	5.7	15.08	3.47	2.82	2.89	0.533
38AW 150 / 80AWX 150		14.92	6.57	16.45	3.95	3.67	3.72	0.713	13.57	5.68	14.94	3.09	2.85	2.93	0.648
38AW 050 / 80AWX 065	18	5.10	0.71	5.72	3.40	5.4	3.08	0.244	1.16	0.62	1.16	3.89	3.89	3.89	0.055
38AW 065 / 80AWX 065		6.55	0.81	7.09	3.40	5.96	3.31	0.313	1.33	0.71	1.33	4.29	4.29	4.29	0.064
38AW 090 / 80AWX 115		7.88	4.09	9.18	4.05	4.94	3.88	0.376	7.08	3.68	8.26	3.5	4.26	3.35	0.339
38AW 115 / 80AWX 115		9.00	4.05	12.14	3.80	4.89	3.19	0.43	8.1	3.65	10.92	3.29	4.21	2.79	0.387
38AW 120 / 80AWX 150		13.50	7.1	17.9	4.74	3.87	3.9	0.645	11.8	6.14	16.26	3.82	3	3.08	0.564
38AW 150 / 80AWX 150		15.79	7.07	17.7	4.24	3.89	3.96	0.754	14.35	6.12	16.08	3.31	3.02	3.12	0.686

Legend

LWT Leaving Water Temperature, °C
Qc Cooling Capacity, kW
Nom Nominal
Min Minimum
Max Maximum
EER Energy Efficiency Ratio, kW/kW
q Evaporator water flow rate, l/s

Application Data

Standard units, refrigerant: R-410A
Evaporator entering/leaving water temperature difference: 5 K
Evaporator fluid: Water
Fouling Factor: 0.m² K/W

Performance in accordance with EN 14511-3:2013

PHYSICAL DATA, TWO-ZONE KIT

Dimensions		
Unit H x L x D	mm	485 x 450 x 330
Packaging H x L x D	mm	565 x 530 x 410
Unit weight	kg	22
Gross weight	kg	27
Hydraulic data		
Water connections	in	1" male
Operating water pressure	kPa (bar)	100 (1)
Maximum pressure	kPa (bar)	300 (3)
Hydraulic components		
Pump		Two water-cooled pumps, variable speed, 75 kPa static pressure
Three-way valve		One modulating valve, 6.3 Kv, switching time (90°) 240 seconds, 230-V, 3-point SPDT actuator
Collector volume	l	1
Draining valve		√
Outside air operating range, heating and cooling		See Comfort module

ELECTRICAL DATA, TWO-ZONE KIT

Power supply	V-ph-Hz	230-1-50
Voltage range	V	207-253
ower input	W	260

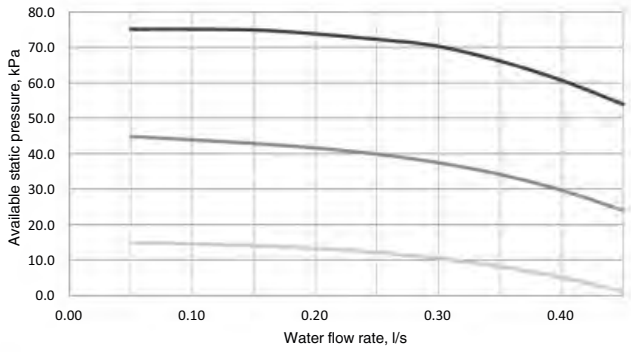
SOUND LEVELS, TWO-ZONE KIT

		Without comfort module	With comfort module
Sound power level	dB(A)	44	46
Sound pressure level*	dB(A)	30	32

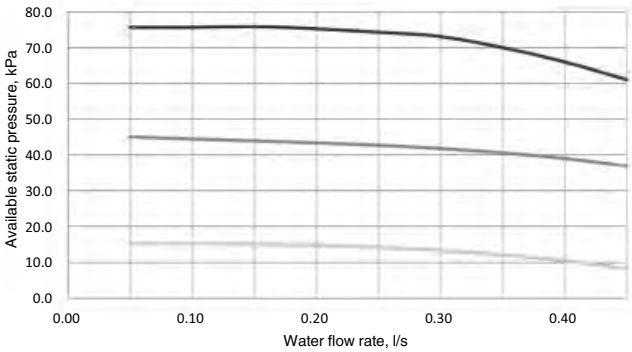
* Measured at 2 m distance, in accordance with UNI EN ISO 3741.

AVAILABLE STATIC PRESSURE, TWO-ZONE KIT

Zone with modulating valve

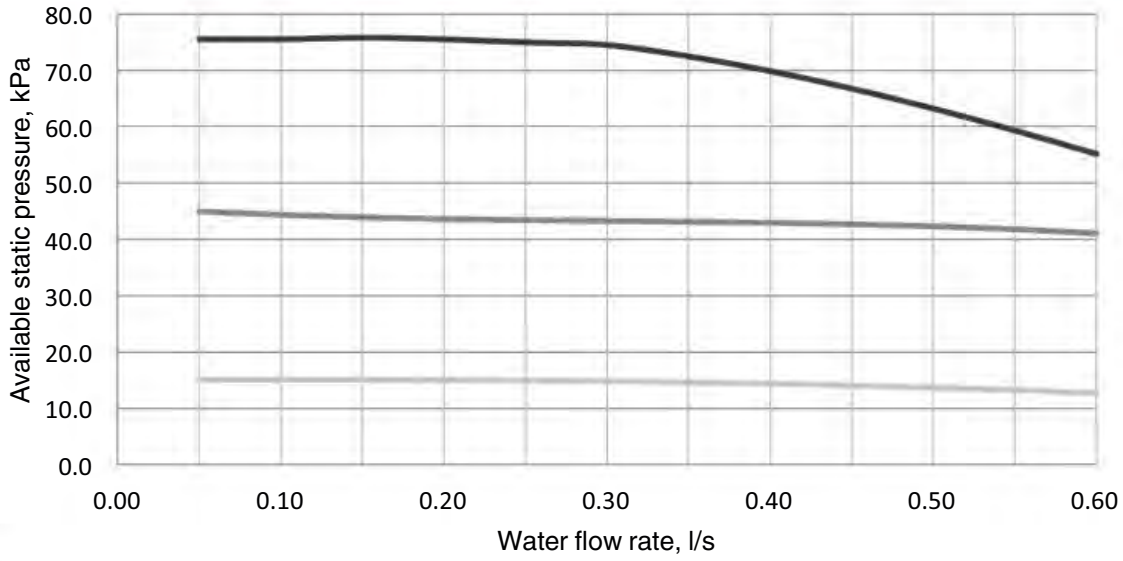


Zone without modulating valve



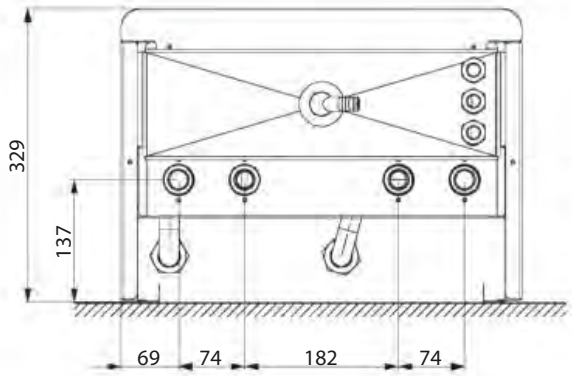
High water pump speed
Medium water pump speed
Low water pump speed

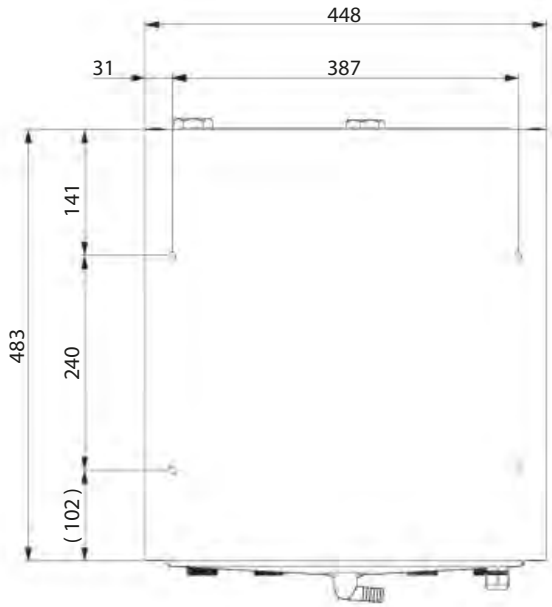
PRESSURE, CIRCULATING PUMP 80AW



High water pump speed
Medium water pump speed
Low water pump speed

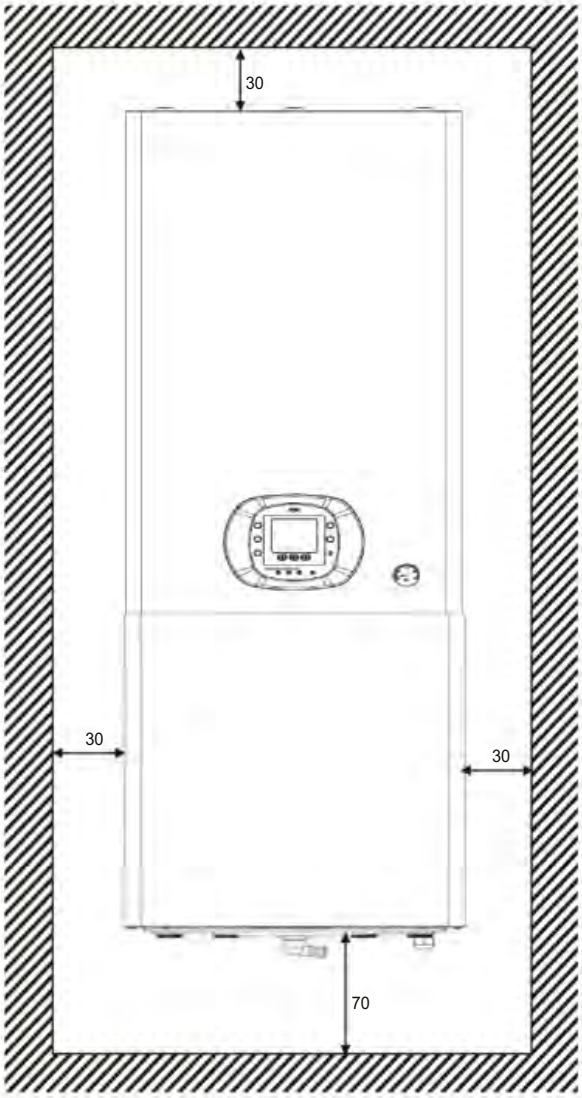
DIMENSIONS (MM), TWO-ZONE KIT



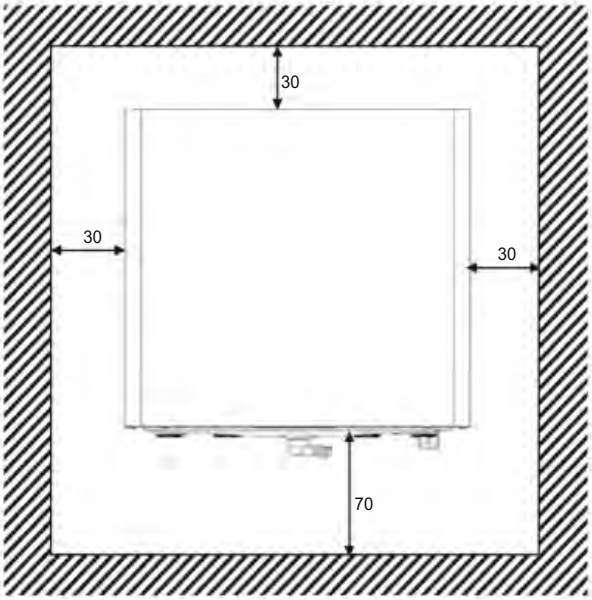


CLEARANCES (MM), TWO-ZONE KIT

Connected to the comfort module



Detached from the comfort module



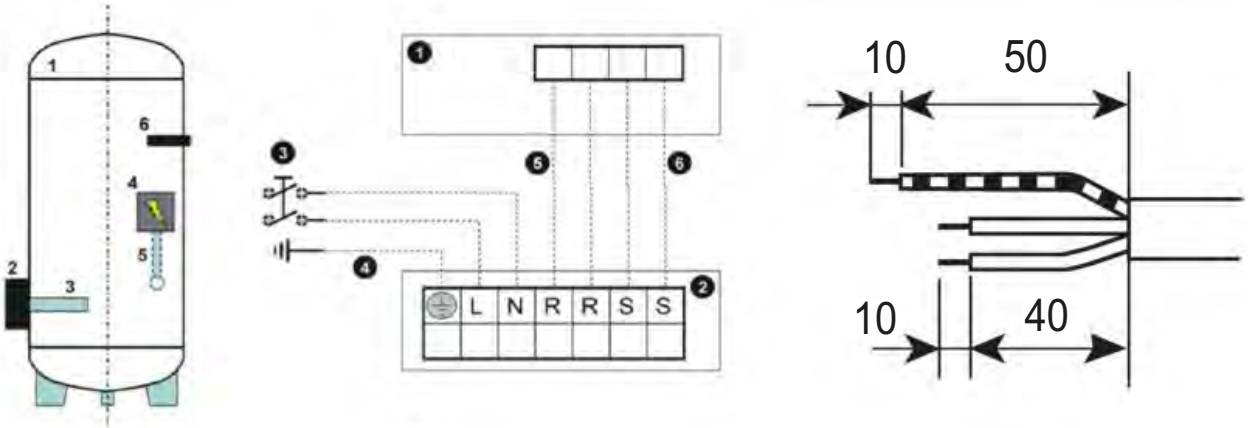
PHYSICAL DATA, DOMESTIC HOT WATER (DHW) MODULE

		60STS 020E03	60STD 020E03	60STS 030E03	60STD 030E03
Water tank size	l	212	212	291	291
Number of coils		1	2	1	2
Electric heater backup	kW	3.3, single-phase	3.3, single-phase	3.3, single-phase	3.3, single-phase
Voltage	V	230 ± 10%	230 ± 10%	230 ± 10%	230 ± 10%
Operating temperature range	°C	5 to 95	5 to 95	5 to 95	5 to 95
Operating pressure DHW module	bar	0 to 10	0 to 10	0 to 10	0 to 10
Operating pressure heat exchangers	bar	0 to 6	0 to 6	0 to 6	0 to 6
Ambient operating temperature range	°C	5 to 45 °C	5 to 45 °C	5 to 45 °C	5 to 45 °C
Storage temperature range	°C	-20 to +75°C	-20 to +75 °C	-20 to +75 °C	-20 to +75 °C
Lower heat exchanger	m2	1.2	1.2	1.5	1.5
Upper heat exchanger	m2		0.5		1.1
Diameter	mm	600	600	600	600
Height	mm	1215	1215	1615	1615

ELECTRICAL DATA, DOMESTIC HOT WATER (DHW) MODULE

Model		60ST-020/60ST-030
Maximum operating current	A	15
Power supply	V-ph-Hz	230-1-50
Voltage range	V	207-253

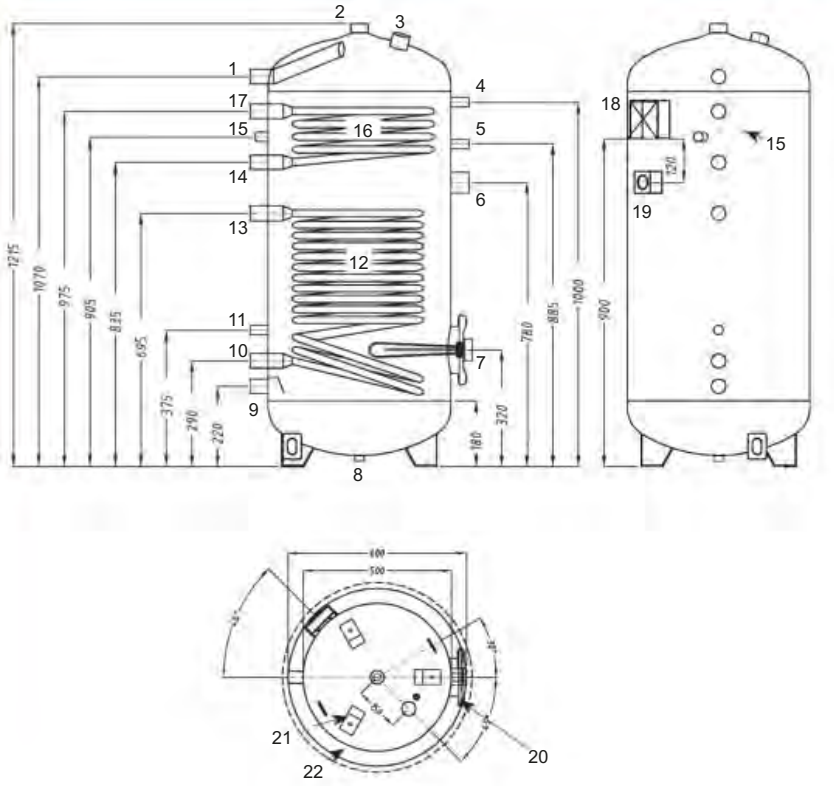
Cable type and size (4): H05VV-F	3G x 2.5 mm2
Cable type and size (5): FROH2R	2 x 1 mm2
Cable type and size (6): FROH2R	2 x 0.5 mm2



(1) Main unit
(2) Domestic hot water tank control box
(3) Circuit breaker
(4) Mains supply connecting cable
(5) Booster heater activation cable
(6) Temperature sensor cable

⏚ Earth
L Live power supply
N Neutral power supply

DIMENSIONS (MM), DOMESTIC HOT WATER (DHW) MODULE

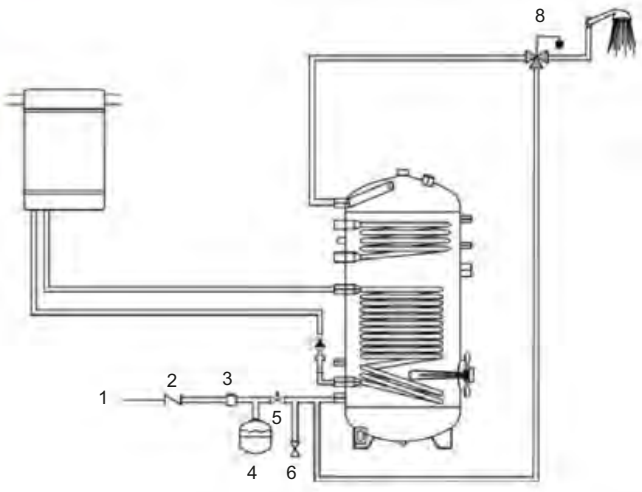


Legend

1 Water outlet (hot water)
2 Water outlet (hot water)
3 Anode connection
4 Connection for temperature sensor/pressure gauge
5 Connection for temperature sensor/pressure gauge
6 Connection
7 Electric heater (flange-mounted)
8 Fastening hole
9 Water inlet (cold water)
10 Lower coil outlet
11 Connection for temperature sensor/pressure gauge
12 Lower coil
13 Lower coil inlet
14 Upper coil outlet
15 Temperature sensor
16 Upper coil
17 Upper coil inlet
18 Control box
19 Cable holder
20 M6 nut earth
21 Insulation
22 Aesthetical cover

TYPICAL INSTALLATION DIAGRAMS, DOMESTIC HOT WATER (DHW) MODULE

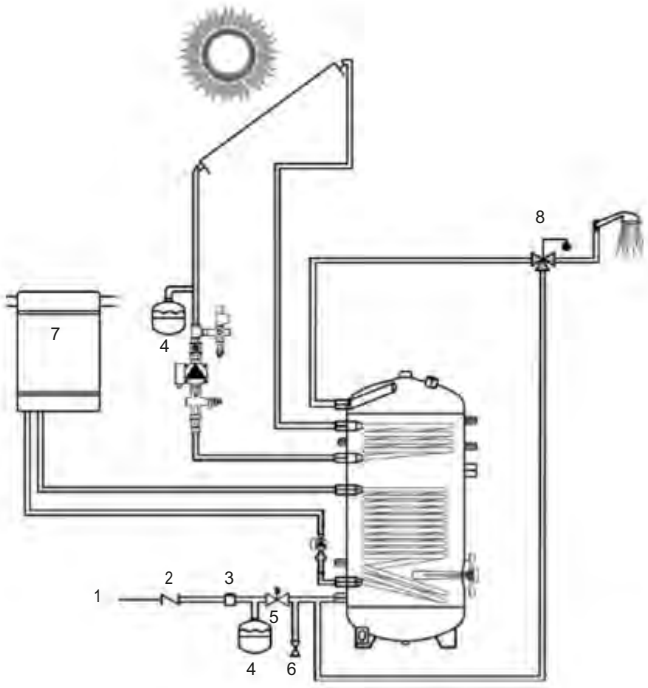
System without solar panel and tanks 60STS 020E03 or 60STS 030E03



Legend

1 Water circuit
2 Check valve
3 Pressure reduction device
4 Expansion tank
5 Safety valve
6 Drain valve
7 Boiler
8 Thermostatic valve

System with solar panel and tanks 60STD 020E03 or 60STD 030E03



HIGH-TEMPERATURE MONOBLOC AIR-TO-WATER HEAT PUMPS WITH INTEGRATED HYDRAULIC MODULE

Hot water up to 65°C

High energy efficiency level

Hydraulic module with Class A circulator

Superior reliability

61AF 014-019

AQUASNAP Heating

Nominal heating capacity 14-20 kW

The AquaSnap high-temperature heat pump range was designed for commercial applications such as the heating of offices, apartments and hotels as well as domestic hot water production in new and refurbished buildings.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES AND BENEFITS

Features

The main features of this product range are:

- Energy savings
  The 61AF range is certified to the Eurovent energy efficiency class A with a coefficient of performance (COP) of over 4. This complies with the COP required by the Ecolabel certification.
- Ease-of-installation
  The high-temperature AquaSnap heat pumps incorporate a hydraulic module with a variable speed pump, in option.
- Easy integration
  The low noise levels of the 61AF heat pump and its very compact chassis reduce the noise disturbance from the unit.
- Application flexibility
  The operating range allows outside temperatures down to -20°C and leaving water temperatures up to 65°C for domestic hot water applications.
- Availability
  - Intelligent unit control permits unit operation in extreme conditions, minimising unit shut-down times.
  - Hot water production at 65°C is available continuously.

Carrier quality is your guarantee for the safety and durability of the installation.

The high-temperature heat pump range incorporates the latest technological features:

- scroll compressors with vapour injection
- low-noise fans made of a composite material
- auto-adaptative microprocessor control
- electronic expansion valve
- variable speed pump.

The high-temperature AquaSnap heat pumps can be equipped with a hydraulic module that is integrated into the heat pump chassis, limiting the installation to straight-forward operations like the wiring and the connection of the hot water supply and return piping.

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration level.
  - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings.
  - Dynamic suction and discharge piping supports, minimising vibration transmission (Carrier patent).
- Evaporator section
  - Vertical evaporator coils
  - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks.
  - Latest-generation low-noise Flying Bird fans are now even quieter and do not generate intrusive low-frequency noise.
  - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- Integrated hydraulic module (option)
  - Variable speed water pump.
  - Water filter protects the water pump against circulating debris (option).
  - Overpressure valve, set to 3 bar for the 61AF 014 and to 4 bar for the 61AF 019.
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater.
- Physical features
  - The unit has a small footprint and a low height (1103 mm for the 61AF 014 and 1550 mm for the 61AF 019), allowing it to blend in with any architectural styles.
  - The unit is enclosed by easily removable panels, covering all components (except condensers and fans).
- Simplified electrical connections
  - Single power supply point with neutral.
  - Main disconnect switch with high trip capacity (standard only for 61AF 019).
  - Transformer for safe 24 V control circuit supply included.
- Fast commissioning
  - Systematic factory operation test before shipment.
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Seasonnal heating performance optimized
  - In accordance with standard EN 14825/2013 in average climate, the Seasonal Coeficent of performance (SCOP) reaches 2.83 for an energy label of A+.
  - The electronic expansion device (EXV) allows operation at a lower condensing pressure (COP optimisation).
  - Dynamic superheat management for better utilisation of the condenser surface.
  - Specific Free Defrost algorithm is present to optimise performance and comfort even during defrost period.
- Reduced maintenance costs
  - Maintenance-free scroll compressors with vapour injection.
  - Pro-Dialog+ control offers fast diagnosis of possible incidents and their history.

Environmental care

- Non-ozone depleting R-407C refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential.
  - Very efficient - ensures an increased energy efficiency ratio (COP).
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness.
  - Reduction of leaks due to elimination of capillary tubes (TXVs).
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.

FEATURES AND BENEFITS

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/ discharge piping etc.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling.
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory.
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports.
  - Transport simulation test in the laboratory on a vibrating table.

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the condenser water pump for optimum energy efficiency.

- Energy management
  - Seven-day internal time schedule clock: permits unit on/ off control and operation at a second set-point.
  - Set-point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T.
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault (option).
  - Start/stop based on the outside air temperature.
- Ease-of-use
  - The new backlighted LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
  - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier).
  - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet browers. They are user-friendly and permit quick access to the principal operat-ing parameters: number of compressors operating, suction/ discharge pressure, compressor operating hours, set-point, air temperature, entering/leaving water temperature.
  - As standard the unit includes a board for the control of a boiler and four electric resistance heater stages.

Pro-Dialog+ operator interface

Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the AquaSnap high-temperature heat pumps and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities.

Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of a heating system. Please consult your Carrier representative for more information on these products.

- Start/stop: opening of this contact will shut down the heat pump.
- Dual set-point: closing of this contact activates a second heating set-point (example: unoccupied mode).
- Demand limit: closing of this contact limits the maximum heat pump capacity to a predefined value.
- User safety: this contact is connected in series with the water flow switch and can be used for any customer safety loop.
- Water pump control.
- Alert indication: this volt-free contact indicates the presence of a minor fault.
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of the refrigerant circuit.

Remote interface (accessory)

This accessory includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24 V transformer supplied. This interface allows access to the same menus as the unit interface and can be installed up to 300 m from the 61AF unit.

TYPE KEY

61 A F - 0 14 P 7 B - - - - A

- 61 — Range
- A — Standard version
- F — Nominal capacity
- 014 — Nominal capacity
- P — X - Without hydraulic module; P - With variable speed circulator without expansion tank
- 7 — 7 - Single phase power supply (230/1+N/50) (Only size 14); 9 - Power supply with neutral cable (400/3+N/50)
- B — - - Without gateway; B - CCN Jbus gateway; C - CCN Bacnet gateway; D - CCN LONtalk gateway
- - — - - Standard; A - Remote User Interface HMI (as accessory)
- - — - - Standard; A - Master/Slave (lead/lag)
- - — - - New option (Not used)
- - — - - New option (Not used)
- A — - - Revision status

ACCESSORIES

Accessories	Description	Advantages	Use
Water filter	External water filter on the hydraulic module	Water pump protection against circulating debris	61AF 014-019

HEATING

PHYSICAL DATA

61AF				014-7	014-9	019-9
Heating						
Standard unit Full load performances *	HA1	Nominal capacity	kW	13,8	13,4	19,9
		COP	kW/kW	3,88	4,14	4,23
	HA2	Nominal capacity	kW	14,0	13,6	19,6
		COP	kW/kW	3,31	3,49	3,45
	HA3	Nominal capacity	kW	14,0	13,6	19,5
		COP	kW/kW	2,89	2,99	2,93
	HA4	Nominal capacity	kW	13,8	13,5	19,8
		COP	kW/kW	2,41	2,47	2,41
Seasonal energy efficiency**	HA1	$SCOP_{30/35°C}$	kWh/kWh	3,32	3,52	3,45
		$\eta s\ heat_{30/35°C}$	%	130	138	135
	HA3	**$SCOP_{47/55°C}$**	**kWh/kWh**	**2,89**	**3,02**	**3,05**
		$\eta s\ heat_{47/55°C}$	**%**	**113**	**118**	**119**
		P_{rated}	kW	14,00	13,33	14,12
		Energy labelling		A+	A+	A+
Operating weight(1)						
Standard unit (without hydraulic kit)			kg	159	159	206
Standard unit (plus hydraulic module option)			kg	169	169	216
Sound levels						
Sound power level (2)			dB(A)	71	71	72
Sound pressure level at 10 m (3)			dB(A)	40	40	41
Dimensions						
Length			mm	1103	1103	1135
Depth			mm	333	333	559
Height			mm	1278	1278	1579
Compressor				One, hermetic scroll, 48.3 r/s, one capacity stage		
Refrigerant				R-407C		
Charge			kg	4.0	4.0	8.0
			$teqCO_2$	7.1	7.1	14.2
Capacity control				Pro-Dialog+		
Minimum capacity			%	100	100	100
Condenser				Direct-expansion plate heat exchanger		
Water volume			l	3.7	3.7	3.9
Max. water-side operating pressure with and without hydraulic module			kPa	300	300	400
Fan				Two, axial twin-speed fans		
Total air flow (high speed)			l/s	2050	2050	2000
Speed			r/s	11.7	11.7	14.5
Evaporator				Grooved copper tubes and aluminium fins		
Pump				Variable speed pump		
Water connections with/without hydraulic module				Victaulic		
Connections			inch	1 female	1 female	1 male in/1-1/4 male out
Outside diameter			mm	25	25	25 in/32 out
Chassis paint colour				Colour code: RAL 7035		

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA4 Heating mode conditions: Water heat exchanger water entering/leaving temperature 55°C/65°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(3) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

ELECTRICAL DATA

		Without pump			With pump		
61AF - standard unit		**014-7**	**014-9**	**019**	**014-7**	**014-9**	**019**
Power circuit							
Nominal power supply	V-ph-Hz	230-1-50	400-3-50	400-3-50	230-1-50	400-3-50	400-3-50
Voltage range	V	207-253	360-440	360-440	207-253	360-440	360-440
Control circuit supply		24 V, via internal transformer			24 V, via internal transformer		
Maximum start-up current (Un)*							
Standard unit	A	-	66	102	-	67	103
Unit with electronic starter option	A	47	-	-	48	-	-
Unit power factor at maximum capacity**		0.82	0.82	0.82	0.82	0.82	0.82
Maximum unit power input**	kW	6.4	5.9	8.8	6.5	6.0	8.9
Nominal unit current draw***	A	22.9	7.9	12.4	24.0	9.0	13.5
Maximum unit current draw (Un)****	A	30.7	10.8	16.0	31.8	11.9	17.1
Maximum unit current draw (Un-10%)†	A	36.4	11.9	16.6	37.5	13.0	17.7

* Maximum instantaneous start-up current (maximum operating current of the compressor + fan current + locked rotor current of the compressor).
** Power input, compressor and fan, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).
*** Standardised Eurovent conditions: condenser entering/leaving water temperature = 40°C/45°C, outside air temperature db/wb = 7°C/6°C.
**** Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).
† Maximum unit operating current at maximum unit power input and 360 V.

Electrical data and operating conditions notes:

- 61AF 014-019 units have a single power connection point located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
  - a main disconnect switch (size 019 only),
  - starter and motor protection devices for the compressor, the fan and the pump,
  - the control devices.
- Field connections:
  All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61AF units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations
  - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical equipment.

Notes:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machinery Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.
- The operating environment for the 61AF units is specified below:

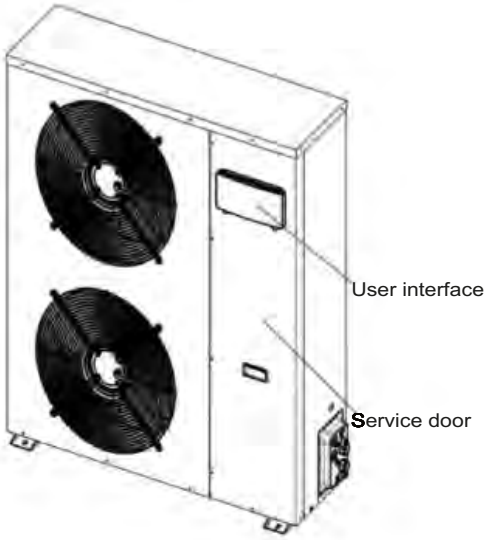
1. Environment* - Environment as classified in EN 60721 (corresponds to IEC 60721):
   - outdoor installation*
   - ambient temperature range: -20°C to +40°C, class 4K4H
   - altitude: ≤ 2000 m
   - presence of hard solids, class 4S2 (no significant dust present)
   - presence of corrosive and polluting substances, class 4C2 (negligible)
2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch is of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3)
6. The units are designed for connection to TN networks (IEC 60364). For IT networks the earth connection must not be at the network earth. Provide a local earth, consult competent local organisations to complete the electrical installation.

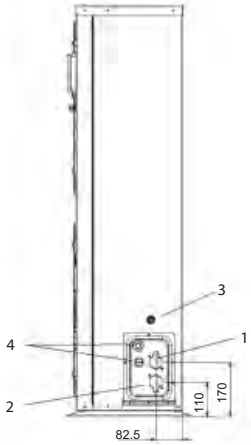
Caution: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

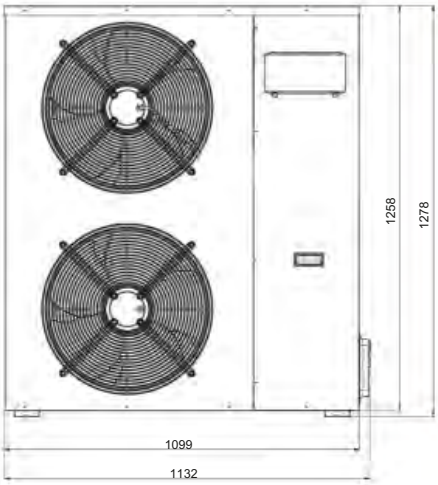
* The required protection level for this class is IP43BW (according to reference document IEC 60529). All 61AF units are protected to IP44CW and fulfil this protection condition.

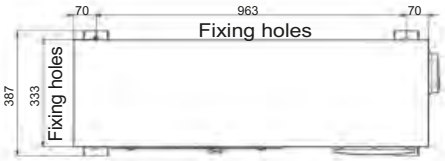
DIMENSIONS, MM

61AF 014 unit with and without hydraulic module



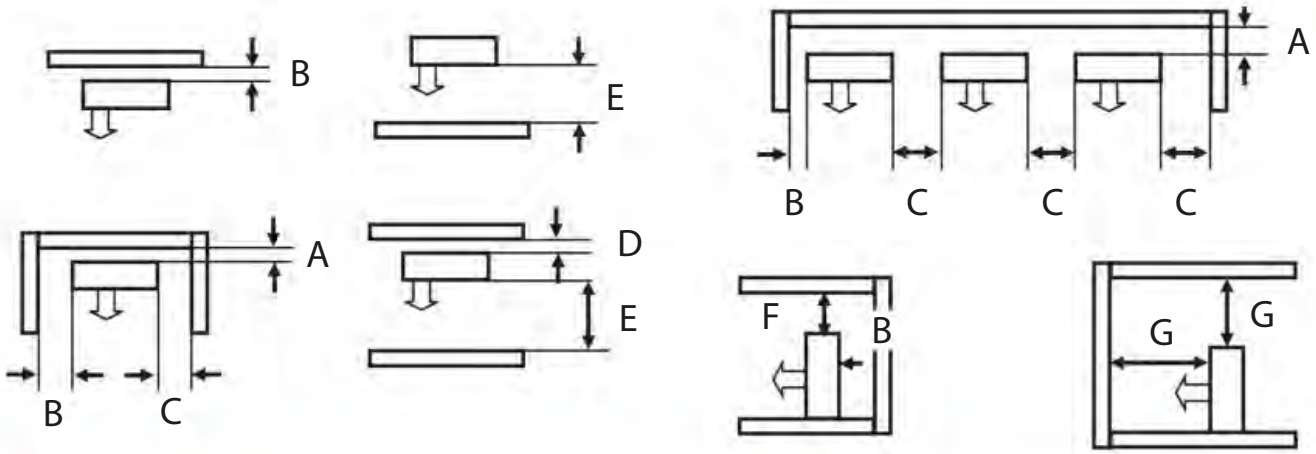






1. Water outlet
2. Water inlet
3. Relief valve outlet
4. Electrical connections

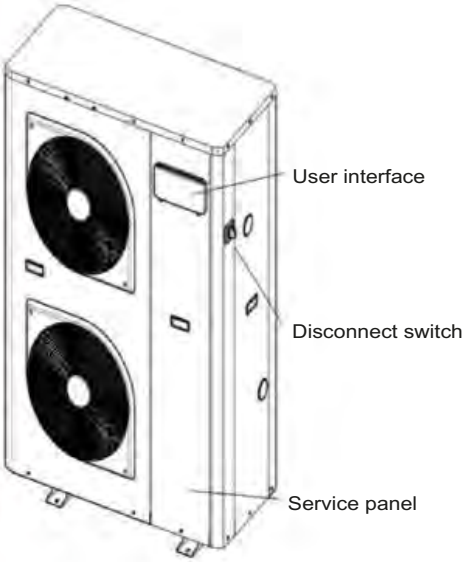
CLEARANCES, MM

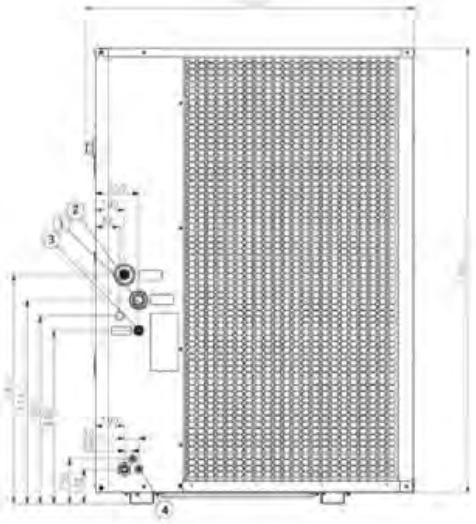


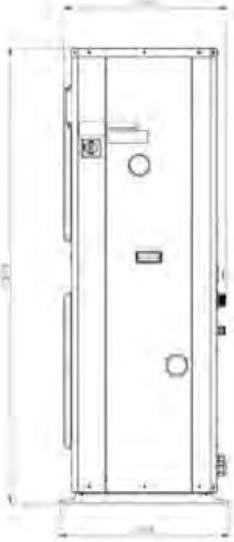
61AF 014	A	B	C	D	E	F	G
	100	250	500	100	670	400	670

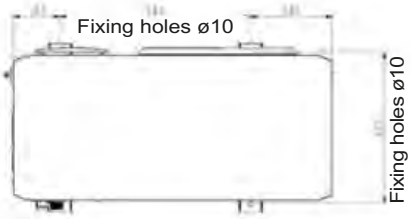
DIMENSIONS, MM

61AF 019 unit with and without hydraulic module



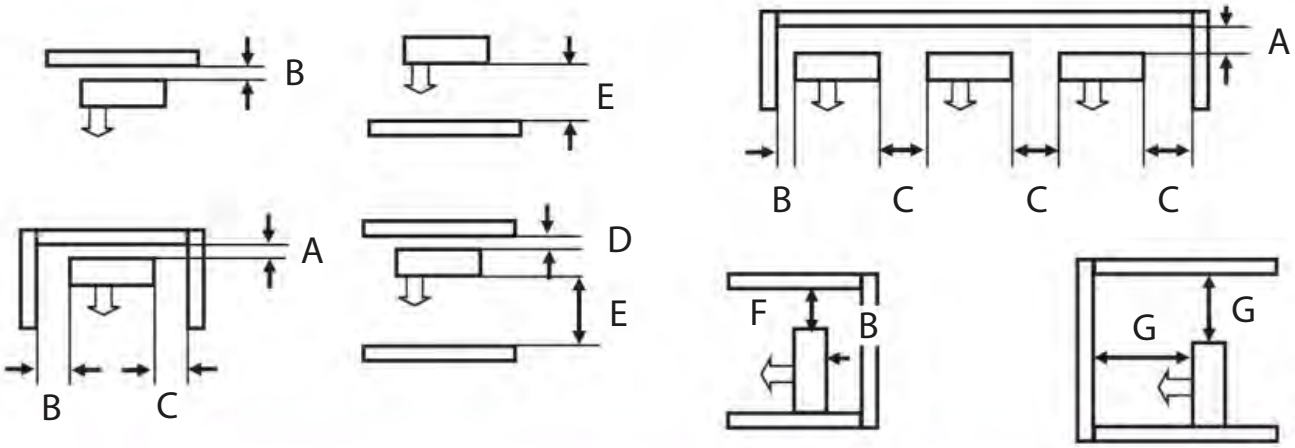






1. Water outlet
2. Water inlet
3. Relief valve outlet
4. Power connections

CLEARANCES, MM



61AF 019	A	B	C	D	E	F	G
	300	200	400	200	700	500	1000

INVERTER AIR-COOLED LIQUID CHILLERS & REVERSIBLE AIR TO WATER HEAT PUMPS

Easy and fast installation

Hydraulic module available

Inverter technology compressor and fans

Superior reliability

HEATING

30RQV

Nominal heating capacity 17-21 kW
Nominal cooling capacity 15-18 kW

The AquaSnap Greenspeed® liquid chiller/heat pump range was designed for commercial applications such as the air conditioning of offices, hotels and large residential houses.

The units integrate the latest technological innovations: Non-ozone depleting refrigerant R410A, DC inverter twin-rotary compressors, low-noise variable speed fans and microprocessor control.

With exceptional energy efficiency values the inverter chillers qualify for local tax reductions and incentive plans in all EU countries.

For added flexibility the AquaSnap Greenspeed® units are available with or without hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES AND BENEFITS

Features

The AquaSnap Greenspeed® heat pump systems can be used with a wide choice of Carrier terminal fan coil units - cassettes, low, medium and high-pressure satellite units, console units, underceiling units and high-wall units.

Ecodesign is the European Directive that sets mandatory requirements for Energy related Products (ErP) to improve their energy efficiency. Carrier supports initiatives to reduce the environmental impact of its products.

Quiet operation

- Compressors
  - Low-noise INVERTER Twin rotary compressor with low vibration levels
  - Advanced technology providing maximum energy-efficiency with high capacity available at peak conditions and optimised efficiency at low and mid compressor speeds. The AquaSnap Greenspeed® heat pump DC inverter uses Intelligent Power Drive Unit (IPDU) hybrid inverter technology. An electronic management logic is used to optimised compressor operation in all conditions, minimised temperature fluctuation to give a perfect individual comfort control with significant reduction of energy comsuption :
  - PWM: pulse width modulation of the direct current controls the compressor at partial load conditions, adjusting the frequency at fixed voltage. The compressor speed is fine-tuned and the system provides high-level comfort (no temperature fluctuations) at exceptionally efficient working conditions.

Compressor frequency is increased continuously up to the maximum level. This ensures that there are no current draw peaks in the start-up phase. Inverter ramp-up speed makes soft starts unnecessary and ensures immediate maximum power.

  - The two rotary compression cylinders, offset from each other by 180°, and the DC brushless motor with the shaft in perfect balance ensure reduced vibration and noise, even at very low operating speeds. This results in an extremely wide range between minimum and maximum capacity with continuous operation, guaranteeing that the system is always optimised and provides maximum comfort at exceptionally high efficiency levels.
  - Twin-rotary cylinders, low vibrations and low load to the shaft ensure highest compressor reliability and a long trouble-free operating life.
  - All DC brushless twin-rotary compressors are equipped with internal system to secure the motor against oil issues due to colder climate.
  - A double compressor shield for acoustic insulation further reduces noise levels.

- Air heat exchanger section
  - Vertical air heat exchanger coils
  - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
  - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- Integrated hydraulic module (option)
  - Fixed speed water pump or variable speed circulator
  - Water filter protecting the water pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit (option)
  - Overpressure valve, set to 3 bar
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater and pump cycling.
  - Integrated water fill system to ensure correct water pressure (option)

No additional buffer tank required, simplyfing and speeding up the installation process (to be checked with the water volume of installation).

- Physical features
  - Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small footprint that is easy to transport even through narrow doors.

Reduced operating weight and a handle on the unit panels to facilitate transport.

  - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- A neutral color (RAL 7035) to facilitate the intregration in residential area
- Simplified electrical connections
  - Main disconnect switch with high trip capacity (option)
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Increased saesonal efficiency
  - In accordance with EN 14825:2013, Average Climate, energy label reach A+ (see Physical data RQV units). The exceptionally high energy efficiency of the AquaSnap Greenspeed® unit is the result of a long qualification and optimisation process.
- Reduced maintenance costs
  - Maintenance-free twin rotary compressors
  - Fast diagnosis of possible incidents and their history via the user interface WUI
  - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

FEATURES AND BENEFITS

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/ discharge piping etc.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

NHC Control

NHC control associate with compressor and fan variable frequency driver combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressor, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

- Ease-of-use
  - NHC control can be associated with a new User interface (WUI) which allow an easy access to the configuration parameters (frequency compressor, refrigerant circuit temperature, sets points, air temp, entering water temp, alarm report…).
  - This user interface is also very intuitive in its use. It allows reading and easy selection of the operating mode. The functions are represented by icons on the LCD backlit screen.
  - To facilitate the use of this interface, 3 levels of access are available: end user, installer and factory.

- Key features
  - Heating and cooling mode
  - Domestic hot water
  - Master/slave control of 4 units operating in parallel with operating time equalisation and automatic changeover in case of a unit fault (need Master slave sensor in accessory).
  - Scheduling period
- Choice of control product
  - 3 options are available to drive the 30 RBV / RQV 17-21:
    - Dry contact
    - User interface WUI
    - ModBus protocol

User Interface WUI

- This interface can be installed up to 50 m away. It is connected to the NHC board with a 4 wires cable.
- 2 installation possibilities:
  - Inside the room (with remote interface accessory) : IAT sensor is an accessory, it is not mandatory to operate in remote user interface, because WUI has an internal sensor to measure the room temperature take with the internal sensor, set-point selected is air temperature.
  - On the HP/chiller (with local user interface option) : set-point is on water temperature are water temperature

Local User Interface configuration

- ModBus

Direct access with Modbus connection to set, configure and monitor the 30 RBV/RQV

- Input remote contact :
  - Remote On/Off Contact
  - Remote Heat/Cool Contact: This switch is used to select the Cooling Mode (contact opened) or the Heating Mode (contact closed).
  - Remote Economic Contact: This switch is used to select the regular Home Mode when contact is opened or the Economic Away Mode when contact is closed.
  - Safety Input Contact: This switch is normally closed type, according to configuration it is used either to stop the unit, to ban the Heating Mode or to ban the Cooling Mode when contact is opened.

FEATURES AND BENEFITS

■ Large choice of Input Contacts

Several functions can be configured by the installer. They allow to adapt to the environment of the machine:

- Power Limitation / Night Mode: This switch is used to reduce the compressor maximum frequency to avoid noise.
- Off Peak: If the General Purpose Contact, configured to “Off Peak”, is closed then the Electric Heat Stages are not allowed.
- Loadshed Request: If the General Purpose Contact, configured to “Loadshed Request”, is closed then unit shall be stopped as soon as possible.
- Solar Input: If the General Purpose Contact, configured to “Solar Input”, is closed then the unit is not allowed to run in Heating or DHW Mode because hot water is produced from a solar source.
- DHW Request Switch from tank : When this input is closed, the Domestic Hot Water production is requested (need DHW sensor delivered in accessory).
- DHW Priority : When this input is closed, the unit is switching to Domestic Hot Water production regardless of the Space Heating demand and the current DHW schedule (need DHW sensor delivered in accessory).
- Anti-Legionella Cycle Request : When this input is closed, the Domestic Hot Water production is requested with the Anti-Legionella set-point.
- Summer Switch : This switch is used to select the Winter (contact opened) or the Summer Mode (contact closed).
- Energy Meter Input : This input is used to count the number of pulses received from an external energy meter (not supplied)
- External Alarm Indication Input : When this input is opened, alarm is tripped. This alarm is for information only, it does not affect the unit operation.

■ Output remote contact available

2 Output contacts could be chosen on the NHC board, upon configuration for the following purposes:

alert, alarm , Standby, running (Cool, Heat, DHW or Defrost Modes), IAT Reached, electrical Heat Stage 2, electrical Heat Stage 3

TYPE KEY

30R Q V 021 C H E - B B - - -

Range

B - Cooling
Q - Heat pump

V - Variable speed

017 - nominal size 17 kW
021 - nominal size 21 kW

T - Power supply with neutral cable w/o disconnect switch
C - Power supply with neutral with disconnect switch

X - Without hydraulic module
H - With hydraulic module with expansion tank
F - With hydraulic module with expansion tank and water filling system
R - With hydraulic and without expansion tank*
Z - With hydraulic, w/o expansion tank and with water filling system
M - With variable speed circulator with expansion tank
N - With variable speed circulator with expansion tank and water filling system
P - With variable speed circulator without expansion tank
Q - With variable speed circulator, w/o expansion tank and with water filling system

- Without coil protection
E - Epoxy coil protection (Gold-fin)

- Standard

B -CCN Jbus gateway as standard
C - CCN Bacnet gateway
D -CCN LONtalk gateway

- Standard
B - Local Interface WUI

Revision status

Accessories
- Remote User Interface (00PSG002521900A)
- DHW sensor (00PSG002501300A)
- Master /slave sensor (00PSG000596400A)
- Additional OAT sensor (00PSG002522000A)

PHYSICAL DATA, 30RQV UNITS

30RQV				17	21
Heating					
Standard unit Full load performances*	HA1	Nominal capacity	kW	17,1	21,1
		COP	kW/kW	4,1	4,1
	HA2	Nominal capacity	kW	16,2	20,0
		COP	kW/kW	3,4	3,3
	HA3	Nominal capacity	kW	15,3	19,1
		COP	kW/kW	2,7	2,7
Seasonal energy efficiency**	HA1	$SCOP_{30/35°C}$	kWh/kWh	3,68	3,56
		$\eta s\ heat_{30/35°C}$	%	144	139
	HA3	**$SCOP_{47/55°C}$**	**kWh/kWh**	**3,1**	**2,9**
		$\eta s\ heat_{47/55°C}$	**%**	**121**	**113**
		P_{rated}	kW	9,5	15,43
		Energy labelling		A+	A+
Cooling					
Standard unit Full load performances*	CA1	Nominal capacity	kW	14,9	18,6
		EER	kW/kW	3,0	3,1
		Eurovent class		B	A
	CA2	Nominal capacity	kW	19,8	25,8
		EER	kW/kW	3,9	3,8
		Eurovent class		A	A
Seasonal energy efficiency		SEER $_{12/7°C}$ Comfort low temp.	kWh/kWh	151	149
Sound levels					
Standard unit					
Sound power level(1)			dB(A)	71	74
Sound pressure level at 10 m(2)			dB(A)	40	43
Dimensions - Standard unit					
Length(3)			mm	1109	1109
Width			mm	584	584
Height			mm	1579	1579
Operating Weight(4)					
Standard unit			kg	190,9	199,4
Compressors			Rotary compressor	1	1
Refrigerant			R410A		
Charge (4)			kg	8	8
Capacity control					
Minimum capacity(5)			%	33 %	41 %
Air heat exchanger				Grooved copper tubes, aluminium fins	
Fans - Standard unit				Axial type fan	
Quantity				2	2
Maximum total air flow			l/s	2000	2400
Maximum rotational speed			rps	14	16
Water heat exchanger				Brazed plate heat exchanger	
Water volume			l	1,52	1,9
Max water-side operating pressure without hydraulic module			kPa	1000	1000

* In accordance with standard EN 14511-3:2013

** In accordance with standard EN 14825:2013, Average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

SEER 12/7°C Applicable Ecodesign regulation: (EU) No 2016/2281

(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20 µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Length = 1141 mm if main disconnect switch

(4) Values are guidelines only. Refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, 30RQV UNITS

30RQV		17	21
Hydraulic module (option)		Pump, relief valve, paddle flow switch, expansion tank (option)	
Pump		Centrifugal pump	
Expansion tank volume	l	8	8
Max. water-side operating pressure with hydraulic module(6)	kPa	300	300
Water connections (Without Hydraulic Module)			
Inlet diameter (MPT GAS)	inch	1	1
Outlet diameter (MPT GAS)	inch	1	1
Water connections (With Hydraulic Module)			
Inlet diameter (MPT GAS)	inch	1-1/4	1-1/4
Outlet diameter (MPT GAS)	inch	1	1
Water Filling System (Option)			
Diameter (MPT GAS)	inch	1/2	1/2
Chassis paint colour	Colour code:	RAL 7035	RAL 7035

(6) Min. water-side operating pressure with fixed speed hydraulic module is 50 kPa and with variable speed hydraulic module is 40 kPa.

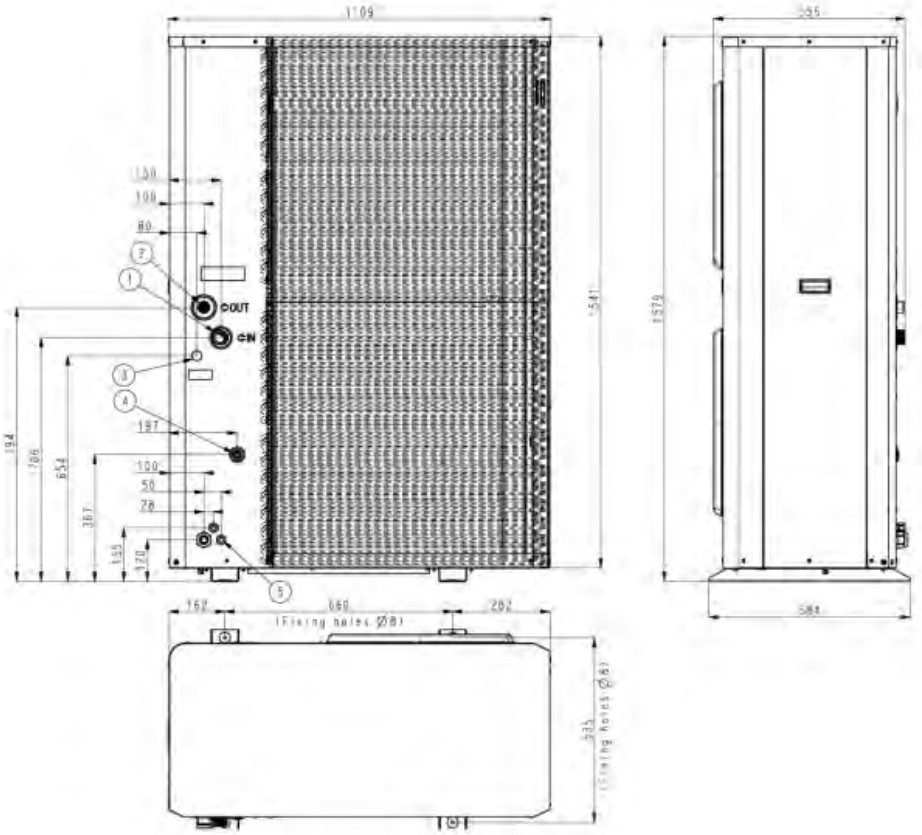
ELECTRICAL DATA, 30RQV UNITS

30RQV (full options)		17	21
Power circuit			
Nominal power supply	V-ph-Hz	400-3+N-50	400-3+N-50
Voltage range	V	360-440	360-440
Control circuit supply		24V AC via internal transformer	
Nominal unit current drawn (Un) *	A	12,5	14,3
Maximum unit power input (Un) **	kW	10,8	12,4
Cos Phi unit at maximum power **		0,93	0,93
Maximum unit current drawn (Un-10%)***	A	18,5	21,2
Maximum unit current drawn (Un) ****	A	16,7	19,2
Maximum Start-up current, standard unit †	A	Not Applicable (less than the operating current)	

* Conditions equivalent to the standardised Eurovent conditions (evaporator water entering-leaving temperature = 12 °C/7 °C, outside air temperature = 35 °C).
** Power input, compressors and fans, at the unit operating limits (saturated suction temperature 15 °C, saturated condensing temperature 68.3 °C) and nominal voltage of 400 V (data given on the unit nameplate).
*** Maximum unit operating current at maximum unit power input and at 360 V.
**** Maximum unit operating current at maximum unit power input and at 400 V (values given on the unit nameplate).
† Maximum instantaneous start-up current at operating limits (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).
Fan motor electrical data: at Eurovent equivalent conditions and motor ambient air temperature of 50 °C at 400 V: 3.8 A, start-up current 20 A, power input 1.75 kW

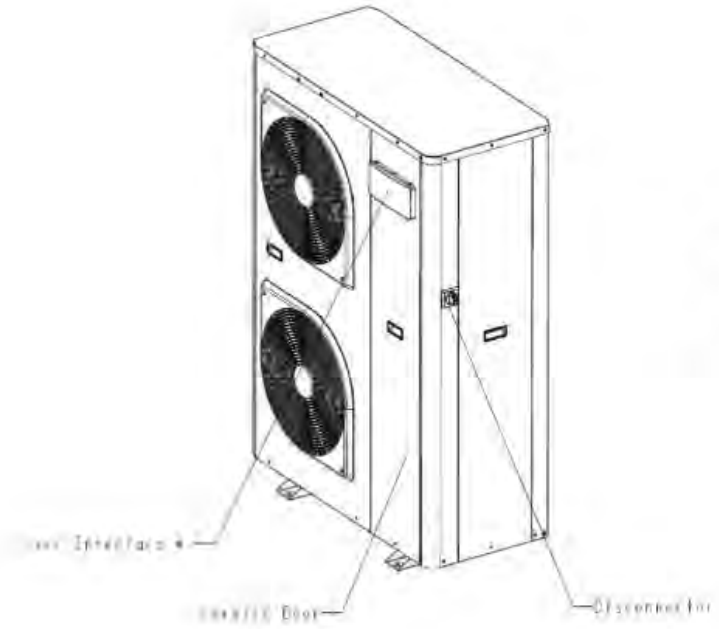
DIMENSIONS/CLEARANCES

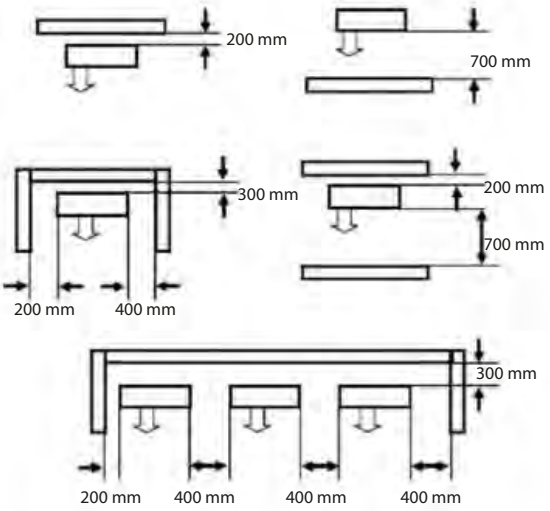
30RQV 017-021



Legend
All dimensions are in mm

1. Water inlet
2. Water outlet
3. Fill kit connection
4. Safety valve outlet
5. Electrical connections





HEATING

AIR-TO-WATER HEAT PUMPS

Easy and fast installation
Hydraulic module available
Economical operation
Superior reliability

AQUASNAP Reversible

30RQ

Nominal heating capacity 30RQ: 17-41 kW
Nominal cooling capacity 30RQ: 16-39 kW

The AquaSnap liquid chiller/heat pump range was designed for commercial applications such as the air conditioning of offices and hotels etc.

The new AquaSnap units integrate the latest technological innovations:
- Non-ozone depleting refrigerant R410A
- Scroll compressors
- Low-noise fans
- Auto-adaptive microprocessor control

The AquaSnap units are equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration levels
  - The compressor assembly is supported by anti-vibration mountings
- Air heat exchanger section
  - Vertical air heat exchanger coils
  - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
  - Rigid fan installation for reduced start-up noise.

Easy and fast installation

- Integrated hydraulic module
  - Fixed speed circulator
  - Water filter protecting the water pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Overpressure valve, set to 4 bar
  - Automatic purge valve positioned at the highest point of the hydraulic module to remove air from the system.
  - Thermal insulation and frost protection down to -10°C, using an electric resistance heater and pump cycling.
  - Integrated water fill system to ensure correct water pressure (option)
- Physical features
  - With its small footprint the unit blends in with any architectural styles.
  - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Simplified electrical connections
  - A single power supply point (power supply without neutral available as an option and in standard for units size 40kW)
  - Main disconnect switch with high trip capacity
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Increased energy efficiency at part load
  - In accordance with standard EN 14825/2013 in average climate, the Seasonal Coeficent of performance (SCOP) reaches 3.01 for an energy label of A.
  - Specific Free Defrost algorithm is present to optimise performance and comfort even during defrost period.
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
  - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Hydraulic module, sizes 026-040

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

FEATURES

Pro-Dialog+ control

Pro-Dialog+ combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

Pro-Dialog+ interface

- Energy management
  - Seven-day internal time schedule clock: Permits unit on/off control and operation at a second set-point
  - Set-point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T
  - Master/slave control of two units operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
  - Change-over based on the outside air temperature
- Integrated features
  - Night mode: Capacity and fan speed limitation for reduced noise level
- Ease-of-use
  - The new backlighted LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
  - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier)
  - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set-point, air temperature, entering/leaving water temperature.

Remote operating mode with volt-free contacts (standard)

A simple two-wire communication bus between the RS485 port of the AquaSnap and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: Unoccupied mode)
- Alert indication: This volt-free contact indicates the presence of a minor fault
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of the unit
- User safety: This contact can be used for any customer safety loop, closing of the contact generates a specific alarm
- Out of service: This signal indicates that the unit is completely out of service
- Unit capacity: This analogue output (0-10 V) gives an immediate indication of the unit capacity
- Compressor operation: This contact signals that the compressor is in operation

Remote interface (option)

This interface allows access to the same menus as the unit interface and can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24V transformer supplied.

Interface access, sizes 026-040

TYPE KEY

30R Q - 021 C H E - B A -- -

Range

B - Cooling
Q - Heat pump

- - Standard
Y - High static fan

017 - nominal size 17 kW
021 - nominal size 21 kW
026 - nominal size 26 kW
033 - nominal size 33 kW
040 - nominal size 40 kW

C - Power supply with neutral cable (only sizes 017-033)
D - Power supply without neutral

X - Without hydraulic module
H - With hydraunic module with expansion tank
F - With hydraunic module with expansion tank and water filling system
R - With hydraunic and without expansion tank
Z - With hydraunic, w/o expansion tank and with water filling system

- - Without coil protection
E - Epoxy coil protection (Gold-fin)

- - Standard

- - Without gateway
B -CCN JBus gateway
C - CCN Bacnet gateway
D -CCN LONtalk gateway

- - Standard
A - Remote user Interface HMI (As accessory)

Not used

Revision status

HEATING

PHYSICAL DATA, 30RQ UNITS

30RQ				017	021	026	033	040
Heating								
Standard unit Full load performances*	HA1	Nominal capacity	kW	17,6	22,0	30,8	34,3	38,6
		COP	kW/kW	4,03	3,98	3,98	3,98	3,52
	HA2	Nominal capacity	kW	17,0	21,5	29,6	33,0	40,7
		COP	kW/kW	3,21	3,28	3,21	3,19	3,16
Seasonal energy efficiency**	HA1	**SCOP $_{30/35°c}$**	**kW/kW**	**3,23**	**3,20**	**3,26**	**3,27**	**3,25**
		ηs heat $_{30/35°c}$	**%**	**126**	**125**	**127**	**128**	**127**
		P_{rated}	kW	13	13	21	23	31
		Energy labelling		A+	A+	A+	A+	A+
Cooling								
Standard unit Full load performances*	CA1	Nominal capacity	kW	15,8	19,9	26,3	32,3	39,2
		EER	kW/kW	3,10	3,03	2,94	3,14	2,85
		Eurovent class		A	B	B	A	C
	CA2	Nominal capacity	kW	21,9	26,9	34,0	42,9	54,2
		EER	kW/kW	3,93	3,68	3,56	3,88	3,44
		Eurovent class		A	B	C	A	D
Seasonal energy efficiency		SEER $_{12/7°c}$ Comfort low temp.	kWh/kWh	3,42	3,28	3,25	3,45	3,32
		SEER $_{23/18°c}$ Comfort medium temp.	kWh/kWh	4,08	3,78	3,74	3,96	3,85
		SEPR $_{12/7°c}$ Process high temp.	kWh/kWh	5,43	5,20	4,95	5,10	3,94
Integrated Part Load Value		IPLV.SI	kW/kW	4,4	4,172	4,068	4,352	3,846
Operating weight(1)								
Standard unit, with hydraulic module			kg	206	223	280	295	305
Standard unit, without hydraulic module			kg	191	208	262	277	287
Sound power level(2)			dB(A)	72	74	78	78	80
Sound pressure level at 10 m(3)			dB(A)	40	42	46	46	48
Dimensions								
Length			mm	1136		1002		
Depth			mm	584		824		
Height			mm	1579		1790		
Compressor				One hermetic scroll compressor				
Refrigerant charge R-410A			kg	6,4	7,7	7,6	9,5	9,8
			teqCO_2	13,4	16,1	15,9	19,8	20,5
Control				Pro-Dialog+				
Fans				Two twin-speed axial fans, 3 blades		One twin-speed axial fan, 7 blades		
Diameter			mm	495	495	710	710	710
Air flow			l/s	2217	1978	3530	3530	3530
Speed			r/s	14,5	14,5	15	15	15
Water heat exchanger				Plate heat exchanger, maximum operating pressure 1000 kPa				
Water volume			l	1,52	1,9	2,28	2,85	3,8
Air heat exchanger				Copper tubes and aluminum fins				
Pipe diameter			in	3/8	3/8	3/8	3/8	3/8
Number of rows				2,5	3	2,5	3	3
Number of pipes per row				60	60	60	60	60
Fin spacing			mm	1,69	1,69	1,69	1,69	1,69
Standard unit								
Water connections (MPT gas)			in	1	1	1-1/4	1-1/4	1-1/4
Unit with hydraulic module				Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, relief valve				
Pump				One single-speed pump, maximum water-side operating pressure 400 kPa				
Expansion tank capacity			l	5	5	8	8	8
Entering water connection			in	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4
Leaving water connection			in	1	1	1-1/4	1-1/4	1-1/4
Nominal operating current			A	1,3	1,4	2,4	2,6	2,8
Chassis paint colour				Beige				

* In accordance with standard EN14511-3:2013
** In accordance with standard EN14825:2013, average climate
HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
CA1 Cooling mode conditions: evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
CA2 Cooling mode conditions: evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
ηs heat $_{30/35°C}$ & SCOP $_{30/35°C}$ **Applicable Ecodesign regulation: (EU) No 813/2013**
SEER $_{12/7°C}$ & SEPR $_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281
SEER $_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281
IPLV.SI Calculations according to standard performances AHRI 551-591.
(1) Weight shown is a guideline only. Please refer to the unit nameplate
(2) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(3) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

ELECTRICAL DATA, 30RQ UNITS

30RQ		017	021	026	033	040
Power circuit						
Nominal power supply	V-ph-Hz	400-3+N-50 (power supply option C) or 400-3-50 (power supply option D)				400-3-50 (STD - no option)
Voltage range	V	340-460				360-440
Control circuit supply		24 V via internal transformer				
Maximum start-up current (Un)*	A	75	95	118	118	176
Unit power factor at nominal capacity**		0.84	0.79	0.77	0.81	0.9
Maximum operating power input**	kW	7.8	9.1	11	13.8	17.5
Nominal current drawn***	A	8	12	16	17	25
Maximum operating current draw (Un)******	A	13	16	20	24	30
Maximum operating current draw (Un-15%)†	A	15	18	23	27	36

* Maximum instantaneous start-up current (locked rotor current of the compressor).

* Power input, compressors and fans, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit nameplate).

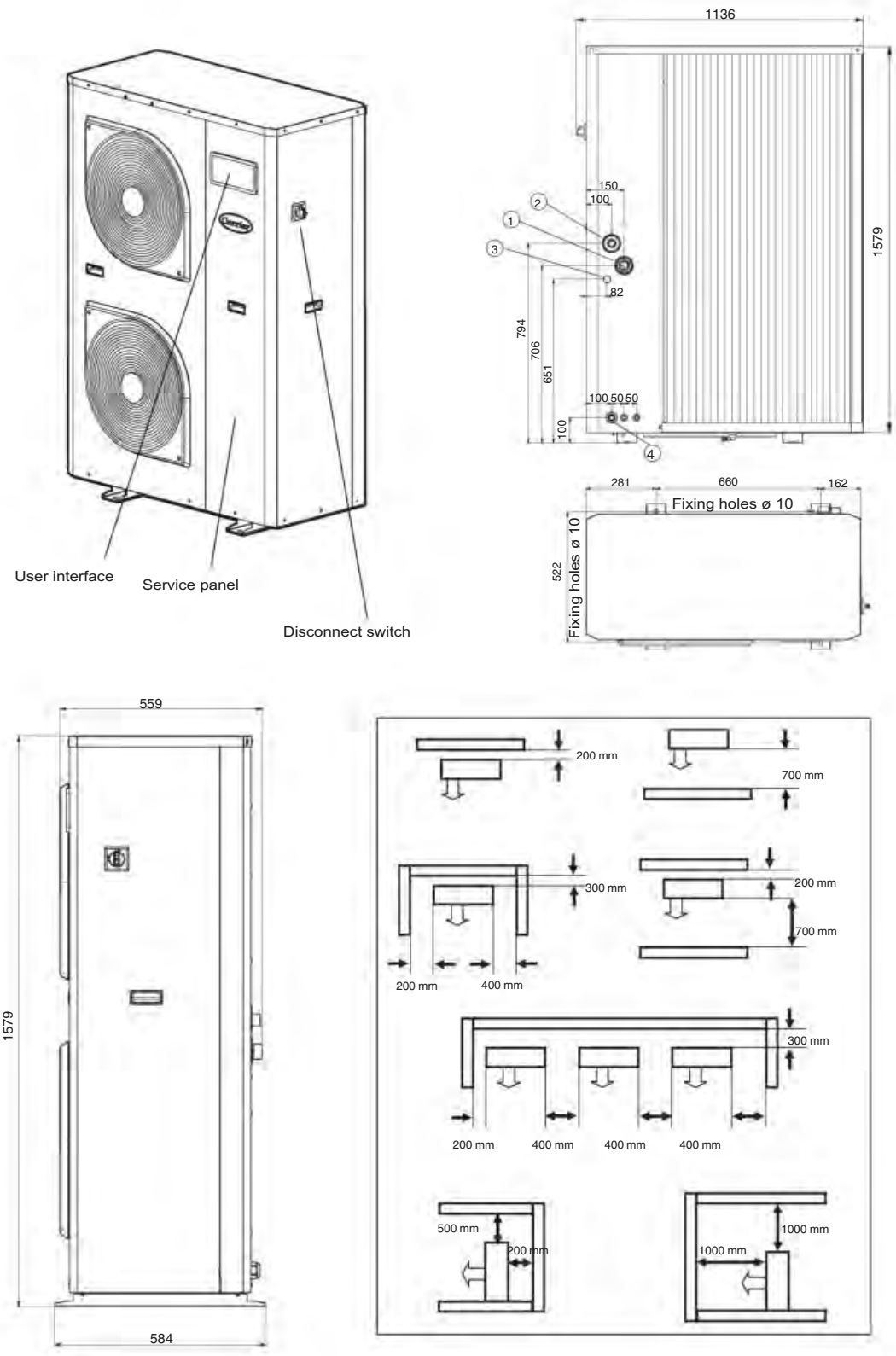
*** Standardised Eurovent conditions: Water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

**** Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).

† Maximum unit operating current at maximum unit power input and 340-460V for sizes 017 to 033 or 360-440V for size 040.

DIMENSIONS/CLEARANCES

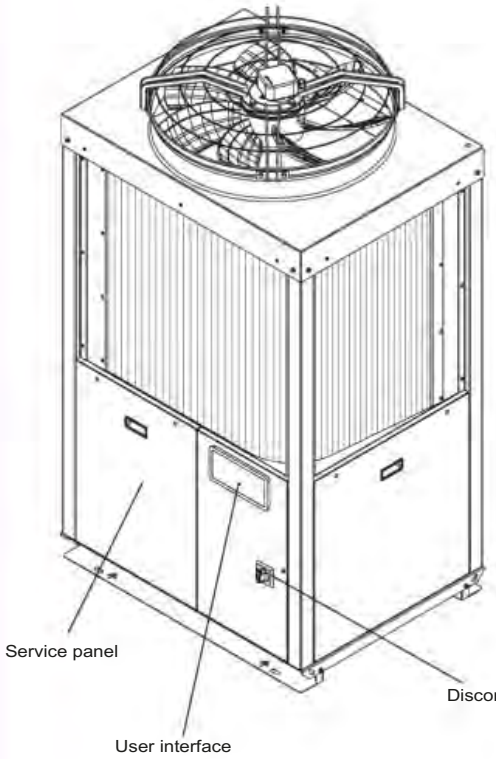
30RQ 017-021

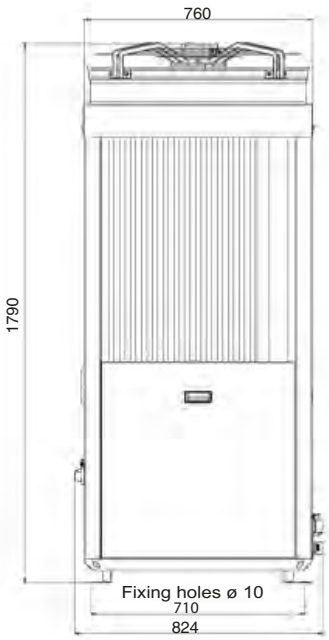


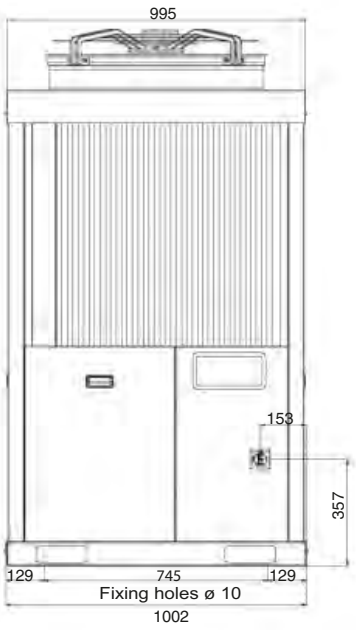
Legend
All dimensions are in mm
1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

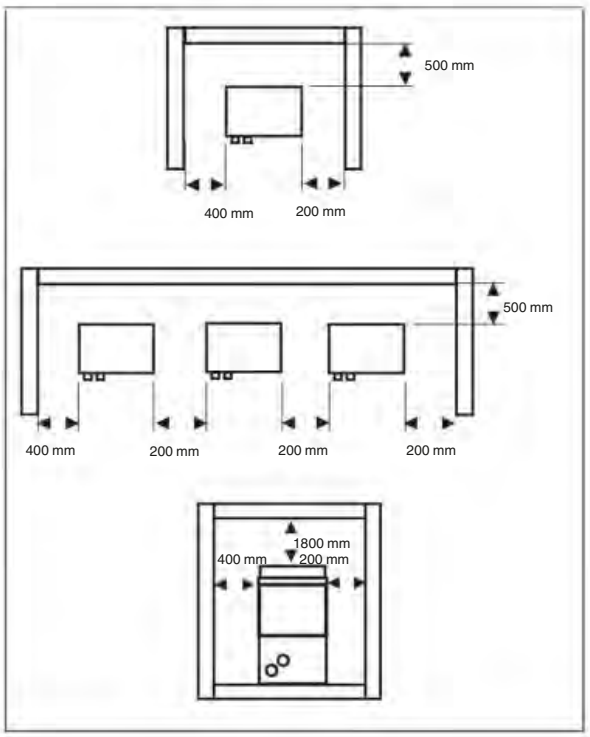
DIMENSIONS/CLEARANCES

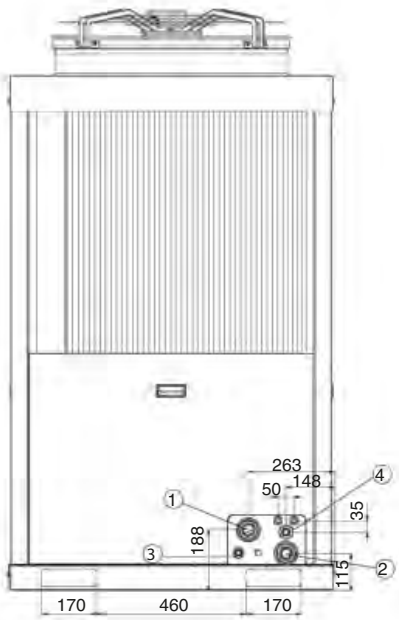
30RQ 026-040











Legend
All dimensions are in mm
1. Water inlet
2. Water outlet
3. Water fill kit connection (option)
4. Power connections

HIGH-TEMPERATURE MONOBLOC AIR-TO-WATER HEAT PUMPS WITH INTEGRATED HYDRAULIC MODULE

61AF optimized for heating

Compact design

Plug & play approach

High temperature 65°C

Heating system control (accessory)

61AF 022-105

AQUASNAP Heating

HEATING

Nominal heating capacity 21-102 kW 50 Hz

The AquaSnap high-temperature heat pump range was designed for commercial applications such as the heating of offices, apartments and hotels as well as domestic hot water production in new and refurbished buildings.

The main features of this product range are:

■ Energy savings

The 61AF range is certified to the Eurovent energy efficiency class A with a coefficient of performance (COP) of over 4. This complies with the COP required by the Ecolabel certification.

■ Ease-of-installation

The high-temperature AquaSnap heat pumps incorporate an optional hydraulic module with a variable speed pump.

■ Easy integration

The low noise levels of the 61AF heat pump and its very compact chassis reduce the noise disturbance from the unit.

■ Application flexibility

The operating range allows outside temperatures down to -20°C and leaving water temperatures up to 65°C for domestic hot water applications.

■ Availability

- Intelligent unit control permits unit operation in extreme conditions, minimising unit shut-down times.
- Hot water production at 65°C is available continuously.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES AND BENEFITS

Carrier quality is your guarantee for the safety and durability of the installation.

The AquaSnap high-temperature heat pumps incorporate the latest technological features:
- scroll compressors with vapour injection
- low-noise fans made of a composite material
- auto-adaptative microprocessor control
- electronic expansion valve
- variable speed.

The AquaSnap high-temperature heat pumps can be equipped with a hydraulic module that is integrated into the heat pump chassis, limiting the installation to straight-forward operations like the wiring and the connection of the hot water supply and return piping.

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration level.
  - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings.
  - Dynamic suction and discharge piping supports, minimising vibration transmission (Carrier patent).
- Evaporator section
  - Vertical evaporator coils
  - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks.
  - Latest-generation low-noise Flying Bird fans, made of a composite material (Carrier patent), are now even quieter and do not generate intrusive low-frequency noise.
  - Rigid fan installation for reduced start-up noise (Carrier patent).

Easy and fast installation

- Integrated hydraulic module (option)
  - Variable speed pump, based on the pressure loss of the hydraulic installation.
  - Water filter protects the water pump against circulating debris.
  - Pump protected against cavitation by a pressure transducer that measures the entering water pressure.
  - Overpressure valve, set to 4 bar.
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options).
- Physical features
  - The unit has a small footprint and a low height (1329 mm) allowing it to blend in with any architectural styles.
  - The unit is enclosed by easily removable panels, covering all components (except condensers and fans).
- Simplified electrical connections
  - Single power supply point without neutral.
  - Main disconnect switch with high trip capacity.
  - Transformer for safe 24 V control circuit supply included.
- Fast commissioning
  - Systematic factory operation test before shipment.
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

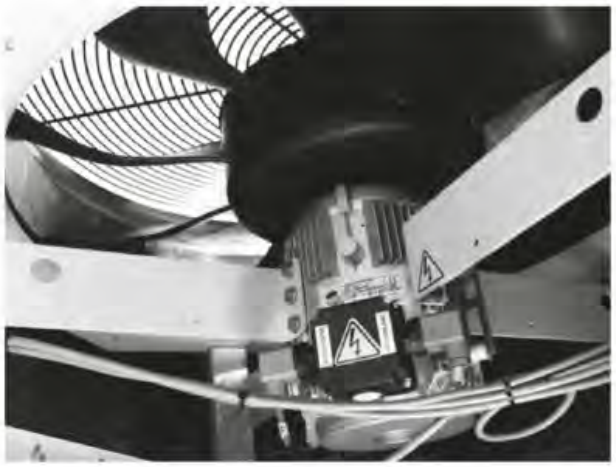
Economical operation

- Increased energy efficiency
  - Eurovent energy efficiency class A (in accordance with EN14511-3:2011).
  - The exceptional energy efficiency level (COP) of the high-temperature AquaSnap heat pumps in the heating mode is the result of a long qualification and optimisation process.
  - The electronic expansion device (EXV) allows operation at a lower condensing pressure (COP optimisation).
  - Dynamic superheat management for better utilisation of the condenser surface.
  - Patented FreeDefrost algorithm without reverse the circuit in order to optimised energy during defrost and increase energy performance.
- Reduced maintenance costs
  - Maintenance-free scroll compressors with vapour injection.
  - Touch Pilot Junior control offers fast diagnosis of possible incidents and their history.

Environmental care

- Non-ozone depleting R-407C refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential.
  - Very efficient - ensures an increased energy efficiency ratio (COP).

Flying Bird IV fan



- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness.
  - Reduction of leaks due to elimination of capillary tubes (TXVs).
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.

FEATURES AND BENEFITS

Superior reliability

■ State-of-the-art concept

Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.

■ Auto-adaptive control

Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent).

■ Exceptional endurance tests
- Corrosion resistance tests in salt mist in the laboratory.
- Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports.
- Transport simulation test in the laboratory on a vibrating table.

Touch Pilot Junior control

The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3" colour touch screen.

■ Energy management
- Internal time schedule clock: Controls heat pump on/off times and operation at a second set-point
- Set-point offset based on the outside air temperature
- Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.

■ Integrated advanced communication features
- Night mode: Capacity and fan speed limitation for reduced noise level
- With hydraulic module: Water pressure display and water flow rate calculation
- Easy and high-speed communication technology over Ethernet (IP) to a building management system
- Access to multiple unit parameters.

■ 4.3" Touch Pilot Junior user interface

Remote management (standard)

Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap also communicates with other building management systems via optional communication gateways.
- A connection terminal allows remote control of the AquaSnap by wired cable:
- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

OPTIONS AND ACCESSORIES

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	61AF 022-105
Unit with ductable fans	11	Fans with 100 Pa maximum available pressure	Allows connection to discharge ducts in order to facilitate air evacuation	61AF 035-105
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction by 1 to 2 dB(A)	61AF 022-105
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction for sensible site	61AF 035-105
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	61AF 022-105
Water Exchanger frost protection	42	Electric heater on the hydraulic module	hydraulic module frost protection at low outside temperatures down to -20°C	61AF 022-105 with option 116X
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	61AF 022-105
LP VSD single-pump	116X	Variable speed single pump, For more details, refer to the dedicated chapter (expansion tank not included)	Easy and fast installation (plug & play),significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	61AF 022-105
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	61AF 022-105
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	61AF 022-105
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	61AF 022-106
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	61AF 022-105
Condenser screw connection sleeves kit	265	Condenser inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	61AF 022-105
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	61AF 035-105
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	61AF 022-105

Accessories	Description	Advantages	Use
00PPG000488000- Heating System Manager type A: controls one heat emitter type with an auxiliary electric heater or boiler	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61AF 022-105
00PPG000488100- Heating System Manager type B: controls two heat emitter types (or independent zones) and domestic hot water production with an auxiliary electric heater or boiler	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61AF 022-105
00PPG000488200- Heating System Manager type C: controls two heat emitter types (or independent zones) and domestic hot water production with a district heating system as auxiliary source	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61AF 022-105

PHYSICAL DATA

61AF				022	030	035	045	055	075	105
Heating										
Standard unit Full load performances*	HA1	Nominal capacity	kW	20,6	25,9	32,3	43,6	51,6	64,9	102
		COP	kW/kW	4,07	3,97	3,99	4,31	4,35	3,98	4,25
	HA2	Nominal capacity	kW	20,6	25,5	32,0	43,1	51,8	66,8	102
		COP	kW/kW	3,43	3,33	3,31	3,59	3,66	3,43	3,59
	HA3	Nominal capacity	kW	20,7	25	31.6	42,8	52,3	68	102
		COP	kW/kW	2,99	2,9	2,88	3,14	3,19	3,01	3,13
	HA4	Nominal capacity	kW	20,9	24,5	31,3	42,7	53,3	68,1	103,4
		COP	kW/kW	2,50	2,43	2,41	2,64	2,68	2,54	2,64
Seasonal energy efficiency**	HA1	$SCOP_{30/35°C}$	kWh/kWh	3,26	3,23	3,38	3,52	3,60	3,50	3,57
		ηs heat $_{30/35°C}$	%	127	126	132	138	141	137	140
		Prated	kW	14,79	19,25	32,81	44,73	56,21	65,51	96,25
	HA3	**$SCOP_{47/55°C}$**	**kWh/kWh**	**2,85**	**2,87**	**2,91**	**3,07**	**3,12**	**2,96**	**3,12**
		ηs heat $_{47/55°C}$	**%**	**111**	**112**	**113**	**120**	**122**	**115**	**122**
		P_{rated}	kW	14,53	19,42	31,31	43,29	54,55	62,83	94,01
		Energy labelling		A+	A+	A+	A+	A+	A+	NA
Operating weight(1)										
Standard unit (without hydraulic module)			kg	353	409	426	540	564	904	1024
Standard unit (with hydraulic module option)			kg	362	418	435	555	579	919	1039
Sound levels										
Sound power level(2)			dB(A)	77	78	83	82	84	84	85
Sound pressure level at 10 m(3)			dB(A)	46	46	51	51	53	52	53
Dimensions										
Lenght			mm	1110			1114		2273	
Depth			mm	1327			2100		2100	
Height			mm	1330			1330		1330	
Compressor				Hermetic scroll compressors, 48,3 r/s						
Quantity				1	1	1	1	1	2	2
Number of capacity stages				1	1	1	1	1	2	2
Refrigerant				R407C						
Charge			kg	8	8,8	9,7	10	13,2	22	26,5
			teqCO2	14,2	15,6	17,2	17,7	23,4	39,0	47,0
Capacity control				Touch Pilot Junior						
Minimum capacity			%	100	100	100	100	100	50	50
Condenser				Direct expansion, plate heat exchanger						
Water volume			l	4,9	6,4	8,2	9,6	12,1	16,4	22,7
Max. water-side operating pressure without hydraulic module			kPa	1000	1000	1000	1000	1000	1000	1000
Max. water-side operating pressure plus hydraulic module			kPa	400	400	400	400	400	400	400
Fan				Axial Flying Bird IV with rotating shroud						
Quantity				1	1	1	1	1	2	2
Maximum total air flow			l/s	3770	3748	3736	4035	4036	7479	8072
Max speed, standard unit			tr/s	12	12	12	12	12	12	12
Max speed, unit with option 11			tr/s	-	-	16	16	16	16	16
Evaporator				Grooved copper tubes and aluminium fins						
Hydraulic module (option 116)										
Variable speed pump				Pump, Victaulic screen filter, relief valve, purge valves (water and air), cavitation pressure sensors						
Water connections with / without hydraulic module				Victaulic						
Connections			inch	1-1/4	1-1/4	1-1/2	1-1/2	1-1/2	2	2
Outside diameter			mm	42,4	42,4	48,3	48,3	48,3	60,3	60,3
Chassis paint colour				Colour code RAL7035						

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA3 Heating mode conditions: Water heat exchanger water entering/leaving temperature 47°C/55°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA4 Heating mode conditions: Water heat exchanger water entering/leaving temperature 55°C/65°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

ηs heat $_{30/35°C}$ & SCOP $_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

ηs heat $_{47/55°C}$ & SCOP $_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(3) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL DATA

61AF - standard unit (without hydraulic module)		022	030	035	045	055	075	105
Power circuit								
Nominal power supply	V-ph-Hz	400-3-50						
Voltage range	V	360-440						
Control circuit supply		24 V, via internal transformer						
Maximum start-up current (Un)*								
Standard unit	A	103	101	129	169	201	157	241
Unit with electronic starter option	A	55	54	68	89	101	94	142
Unit power factor at maximum capacity**		0,82	0,82	0,83	0,87	0,87	0,83	0,87
Maximum unit power input**	kW	9	11	15	19	23	30	46
Nominal unit current draw***	A	13	16	19	23	28	39	55
Maximum unit current draw (Un)****	A	16	20	26	32	38	53	76
Maximum unit current draw (Un-10%) †	A	18	22	29	35	42	57	83
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit						
Short-circuit stability and protection		See table below.						

* Maximum instantaneous start-up current (maximum operating current of the compressor + fan current + locked rotor current of the compressor).
** Power input, compressor and fan, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400V (data given on the unit nameplate).

*** Standardised Eurovent conditions: evaporator entering/leaving water temperature 40°C/45°C, outside air temperature db/wb = 7°C/6°C.
**** Maximum unit operating current at maximum unit power input and 400V (values given on the unit nameplate).
† Maximum unit operating current at maximum unit power input and 360V.

Short-circuit stability current, main disconnect without fuse (TN system*)

61AF - standard unit (main disconnect switch)		022	030	035	045	055	075	105
Value with unspecified upstream protection								
Short-term current at 1 s (Icw)	kA rms	0.6	0.6	0.6	1.26	1.26	1.26	2
Admissible peak current (Ipk)	kA pk	4.5	4.5	4.5	6	6	6	10
Maximum value with upstream protection by circuit breaker								
Conditional short-circuit current (Icc)	kA rms	5.4	7	7	7.7	7.7	6.1	10
Circuit breaker - Compact range		32	40	40	50	63	80	100
Reference number**		5SY6332-7	5SY6340-7	5SY6340-7	5SY4350-7	5SY4363-8	5SP4380-7	5SP4391-7
Maximum value with upstream protection by fuses (gL/gG)								
Conditional short-circuit current (Icc)	kA rms	17	50	50	50	50	14.5	22
Fuse (gL/gG)		40	40	40	63	63	80	125

* Earthing system type
** If another current limitation protection system is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

Electrical data and operating conditions notes:

- 61AF 022-105 units have a single power connection point located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
  - a main disconnect switch,
  - starter and motor protection devices for the compressor, the fan and the pump,
  - the control devices.
- Field connections:
  All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61AF units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical equipment.

Notes:

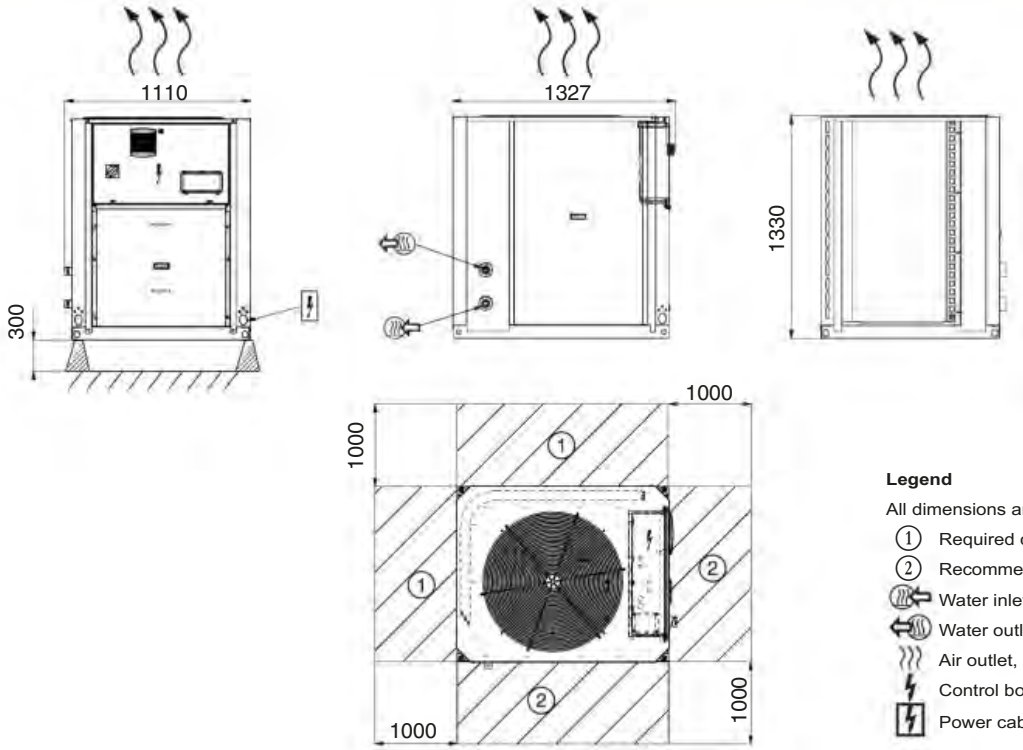
- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machinery Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.
- The operating environment for the 61AF units is specified below:

1. Environment* - Environment as classified in EN 60721 (corresponds to IEC 60721):
   - outdoor installation*
   - ambient temperature range: -20°C to +40°C, class 4K4H
   - altitude: ≤ 2000 m
   - presence of hard solids, class 4S2 (no significant dust present)
   - presence of corrosive and polluting substances, class 4C2 (negligible)
2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch is of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3)
6. The units are designed for connection to TN networks (IEC 60364). For IT networks the earth connection must not be at the network earth. Provide a local earth, consult competent local organisations to complete the electrical installation. Units delivered with speed drive (option 116) are not compatible with IT network.
   Caution: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

* The required protection level for this class is IP43BW (according to reference document IEC 60529). All 61AF units are protected to IP44CW and fulfil this protection condition.

DIMENSIONS/CLEARANCES

61AF 022-035 units with and without hydraulic module

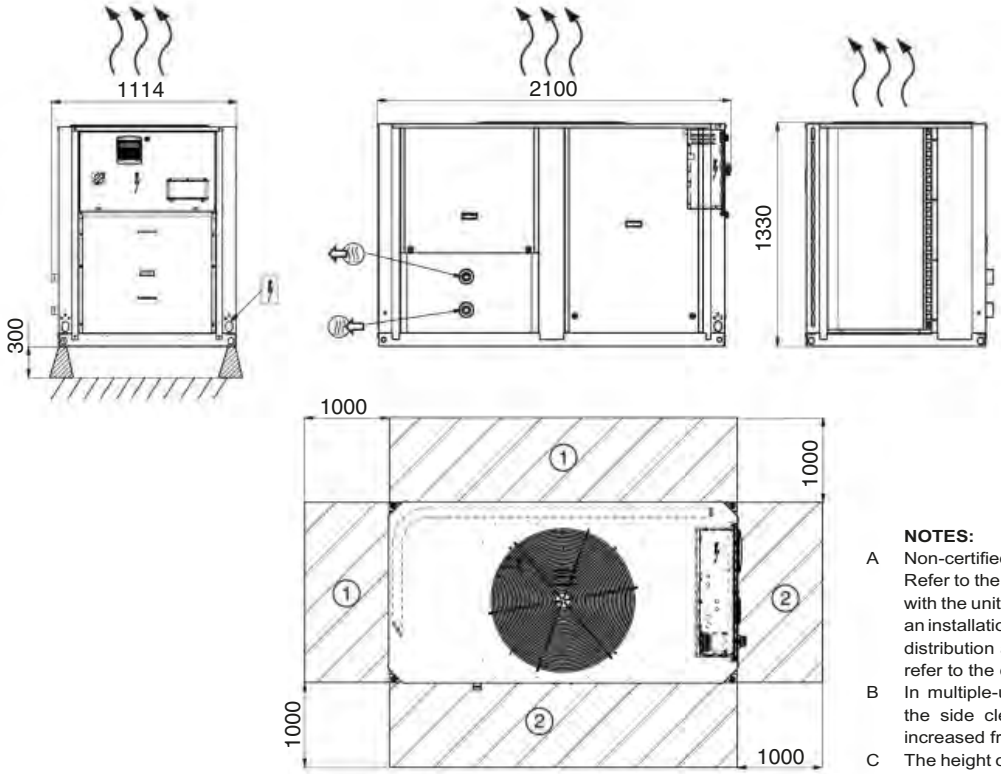


Legend

All dimensions are in mm

1. Required clearances for air flow
2. Recommended space for maintenance
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Control box
- Power cable connection

61AF 045-055 units with and without hydraulic module



NOTES:

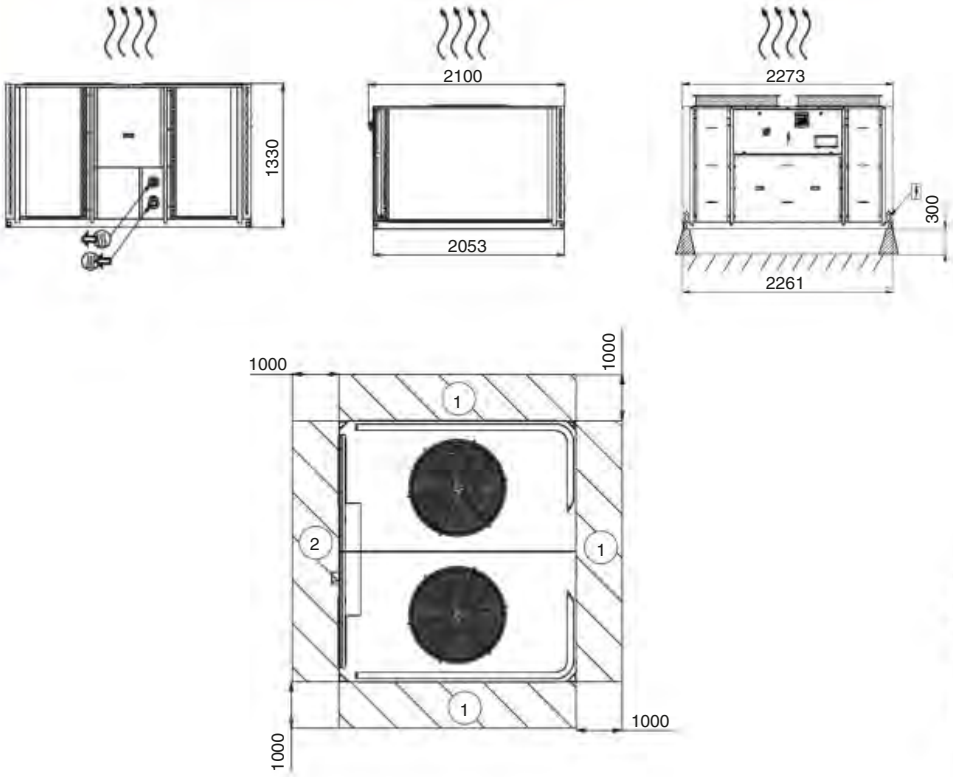
A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

DIMENSIONS/CLEARANCES

61AF 075-105 units with and without hydraulic module

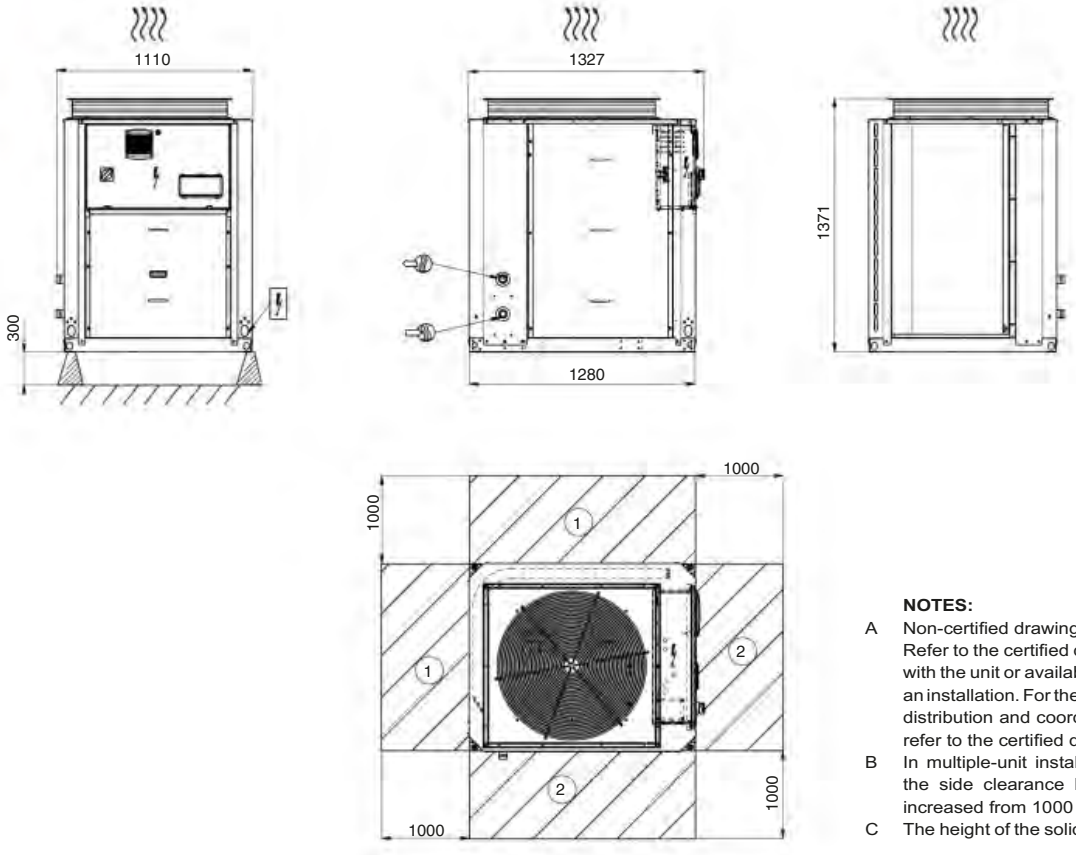


Legend

All dimensions are in mm

1. Required clearances for air flow
2. Recommended space for maintenance
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Control box
- Power cable connection

61AF 035 with option 11, units with and without hydraulic module



NOTES:

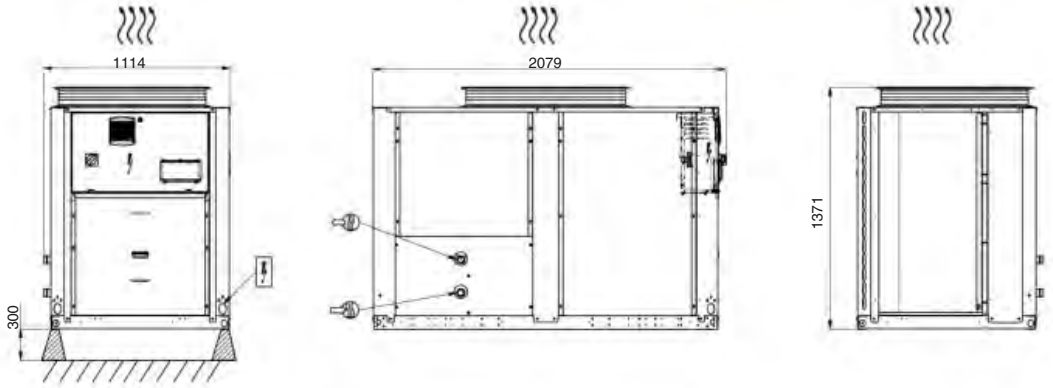
A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

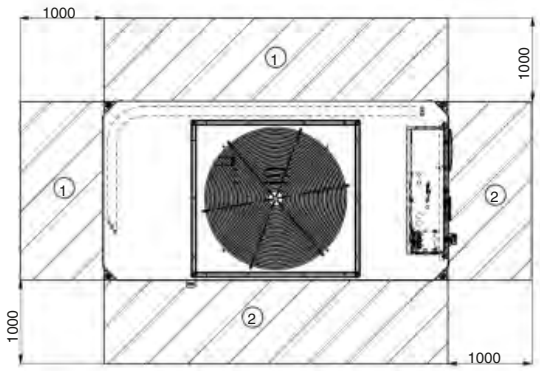
B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

DIMENSIONS/CLEARANCES

61AF 045-055 with option 11, units with and without hydraulic module



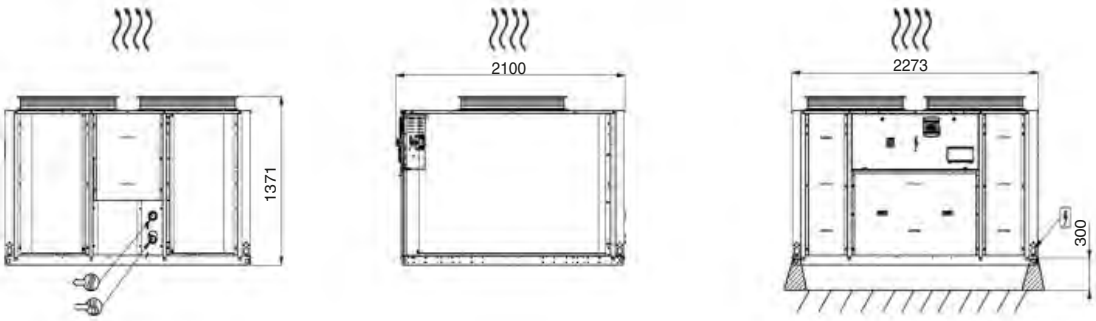


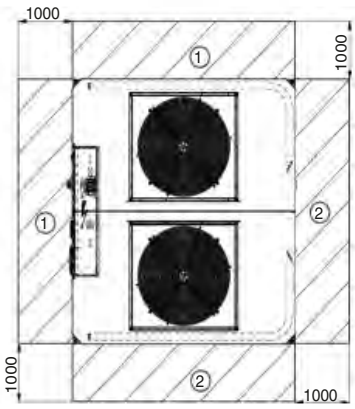
Legend

All dimensions are in mm

1. Required clearances for air flow
2. Recommended space for maintenance
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Control box
- Power cable connection

61AF 075-105 with option 11, units with and without hydraulic module





NOTES:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

B In multiple-unit installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

REVERSIBLE AIR-TO-WATER HEAT PUMPS

Commercial and industrial applications

Compact design

Quiet operation

Variable water flow

Partial heat reclaim

30RQS

AQUASNAP Reversible

Nominal heating capacity 30RQS: 42-150 kW
Nominal cooling capacity 30RQS: 38-148 kW

The AquaSnap range of liquid chillers/air-to-water heat pumps was designed for commercial (air conditioning of offices, hotels etc.) or industrial (low-temperature process units etc.) applications.

The AquaSnap integrates the latest technological innovations:

- Non-ozone depleting refrigerant R410A
- Scroll compressors
- Low-noise fans made of a composite material
- Auto-adaptive microprocessor control
- Electronic expansion valve
- Variable-speed pump (option)

The AquaSnap can be equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the chilled water supply and return piping.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration level
  - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
  - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent).
- Air evaporator/condenser (30RQS) section
  - Vertical condenser coils
  - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks.
  - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
  - Rigid fan installation for reduced start-up noise (Carrier patent).

Easy and fast installation

- Integrated hydraulic module (option)
  - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation

Hydraulic module

  - Single or dual water pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter protects the pump against circulating debris
  - Pressure measurement, using two pressure transducers and allowing indication of water flow rate, water pressure and lack of water.
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Overpressure valve, set to 4 bar
  - Speed variator on the pumps (option) to ensure the correct flow rate, based on the system requirements
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
- Physical features
  - The unit has a small footprint and a low height (1330 mm) allowing it to blend in with any architectural styles.
  - The unit is enclosed by easily removable panels, covering all components (except air heat exchangers and fans).
- Simplified electrical connections
  - A single power supply point without neutral
  - Main disconnect switch (option 70) with high trip capacity
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

- Optional variable-speed pump for economical operation
- The control algorithm adjusts the water flow rate based on the actual system requirements and obsoletes the need for the control valve at the unit outlet.
- Increased energy efficiency at part load
  - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
  - The electronic expansion device (EXV) allows operation at a lower condensing pressure (SEER and SCOP Seasonal performances optimisation).
  - Dynamic superheat management for better utilisation of the water heat exchanger surface.
  - Defrost cycle optimisation (30RQS).
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Touch Pilot Junior control
  - R410A refrigerant is easier to use than other refrigerant blends.

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - Very efficient - gives an increased energy efficiency ratio
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Reduction of leaks due to reduced vibration levels and elimination of capillary tubes (TXVs)
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.

Partial view of the hydraulic circuit

FEATURES

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
  - Hydraulic module with integrated pressure transducers allowing measurement of the water pressure at two points, as well as measurement of the water flow rate and detection of lack of water and pressure. This considerably reduces the risk of problems such as frost accumulation on the water heat exchanger.
  - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) AquaSnap continues to operate, but at reduced capacity.
  - On Heat pump version 30RQS specific Free Defrost algorithm to optimise performance and comfort even during defrost period.
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

Touch Pilot Junior control

The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3” colour touch screen.

- Energy management
  - Internal time schedule clock: Controls heat pump on/off times and operation at a second set-point
  - Set-point offset based on the outside air temperature
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
- Integrated advanced communication features
  - Night mode: Capacity and fan speed limitation for reduced noise level
  - With hydraulic module: Water pressure display and water flow rate calculation
  - Easy and high-speed communication technology over Ethernet (IP) to a building management system
  - Access to multiple unit parameters.
  - Without hydraulic module: 0-10V output is available for external variable speed pump controL
- 4.3" Touch Pilot Junior user interface

  - Intuitive and user-friendly 4.3 inch touch screen interface
  - Concise and clear information is available in local languages
  - Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

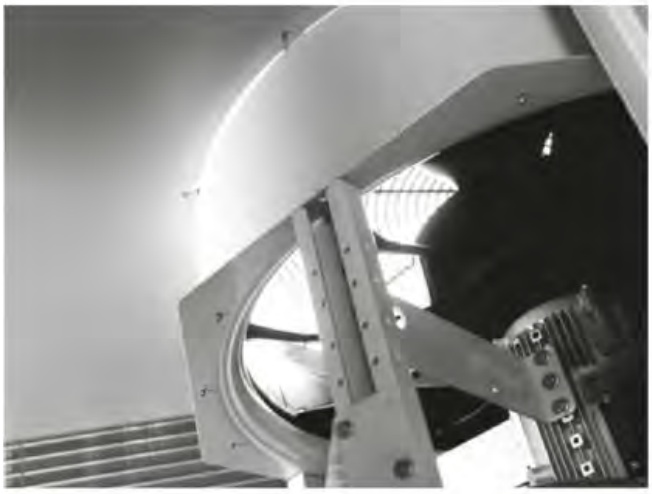
The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap also communicates with other building management systems via optional communication gateways.

A connection terminal allows remote control of the AquaSnap by wired cable:

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

Flying Bird IV fan



OPTIONS

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30RQS 039-160
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RQS 039-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RQS 039-160
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise emission reduction at reduces fan speed	30RQS 039-160
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RQS 039-160
Winter operation down to -20°C	28	Fan speed control via frequency converter	Stable unit operation when the air temperature is between -10°C and -20°C.	30RQS 039-160
Frost protection down to -20°C	42	Electric heater on the hydraulic module	Hydraulic module frost protection at low outside temperatures	30RQS 039-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit. **Note:** In this configuration the units are equipped with traditional coils (Cu/Al).	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RQS 039-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30RQS 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RQS 039-160
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RQS 039-160
LP single-pump hydraulic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RQS 039-160
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RQS 039-160
HP variable-speed single-pump hydraulic mod.	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQS 039-160

OPTIONS

Options	No.	Description	Advantages	Use
HP variable-speed dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), water filter, electronic flow switch, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQS 039-160
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30RQS 039-160
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RQS 039-160
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RQS 039-160
External boiler management	156a	Control board factory-installed on the unit to control a boiler	Extended remote control capabilities to a boiler on/off command.Permits easy control of a basic heating system	30RQS 039-160
Electric heaters management	156b	Control board factory-installed on the unit with additional inputs/outputs in order to manage up to 4 externals heating stage (electrical heaters…)	Extended remote control capabilities to up to 4 electrics heaters. Permits easy control of a basic heating system	30RQS 039-160
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30RQS 039-160
Evaporator screw connection sleeves	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30RQS 039-160
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RQS 039-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RQS 039-160 with option 5B, 6B or 28
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RQS 039-160 with option 116V or 116W
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (require option 116)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RQS 039-160
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	30RQS 039-160

PHYSICAL DATA, 30RQS

30RQS				39	45	50	60	70	78	80	90	100	120	140	160
Heating															
Standard unit	HA1	Nominal capacity	kW	42,3	46,4	53,2	61,2	68,0	77,6	81,7	92,2	100	116	135	155
Full load performances*		COP	kW/kW	3,69	3,69	3,76	3,72	3,64	3,46	3,78	3,80	3,76	3,68	3,61	3,47
	HA2	Nominal capacity	kW	41,5	46,3	51,7	59,3	65,9	75,0	78,9	89,5	97,4	112	130	150
		COP	kW/kW	3,05	3,02	3,01	3,01	2,98	2,85	3,11	3,05	3,06	3,00	2,94	2,86
Seasonal efficiency*	HA1	**SCOP 30/35°C**	**kWh/kWh**	**3,32**	**3,39**	**3,53**	**3,40**	**3,40**	**3,28**	**3,51**	**3,50**	**3,57**	**3,54**	**3,44**	**3,42**
		ηs heat 30/35°C	**%**	**130**	**133**	**138**	**133**	**133**	**128**	**137**	**137**	**140**	**139**	**135**	**134**
		P_{rated}	kW	35,5	31,6	36,3	43,8	50,1	55,7	56,8	81,5	72,3	84,2	99,4	111
		Energy labelling		A+	A+	A+	A+	A+	A+	A+	NA	NA	NA	NA	NA
Cooling															
Standard unit	CA1	Nominal capacity	kW	37,7	43,1	49,4	58,0	63,1	70,2	77,0	84,9	95,1	112	131	148
Full load performances*		EER	kW/kW	2,80	2,66	2,61	2,72	2,66	2,43	2,75	2,66	2,66	2,65	2,73	2,54
		Eurovent class		C	D	D	C	D	E	C	D	D	D	C	D
	CA2	Nominal capacity	kW	47,1	53,9	62,7	70,7	78,2	88,5	96,5	106,9	116,6	142	162	185
		EER	kW/kW	3,23	3,11	3,04	3,08	3,04	2,81	3,14	3,09	3,05	3,05	3,12	2,88
Seasonal efficiency		SEER 12/7°C Comfort low temp.	kWh/kWh	3,64	3,67	3,70	3,53	3,50	3,37	3,83	3,70	3,76	4,00	3,65	3,61
		SEPR 12/7°C Process high temp.	kWh/kWh	5,00	4,96	4,74	4,53	4,44	4,72	5,16	4,67	4,62	5,15	4,59	4,95
		SEPR -2/-8°C Process medium temp.	kWh/kWh	-	2,55	2,61	2,96	2,98	2,86	2,70	2,86	3,04	2,94	2,80	2,68
Integrated Part Load Value		IPLV.SI	kW/kW	4,464	4,447	4,409	4,127	4,102	4,033	4,475	4,314	4,378	4,795	4,246	4,295
Sound levels															
Standard unit															
Sound power level(1)			dB(A)	80	81	81	86	87	87	84	84	84	84	90	90
Sound pressure level at 10 m(2)			dB(A)	49	49	49	55	55	55	52	52	52	52	58	58
Unit with option 15LS															
Sound power level(1)			dB(A)	79	80	80	80	80	80	83	83	83	83	83	83
Sound pressure level at 10 m(2)			dB(A)	48	48	48	48	48	48	51	51	51	51	51	51
Dimensions															
Length			mm	1090	1090	1090	1090	1090	1090	2273	2273	2273	2273	2273	2273
Width			mm	2109	2109	2109	2109	2109	2109	2136	2136	2136	2136	2136	2136
Height			mm	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330
Operating weight(3)															
Standard unit without hydraulic module			kg	497	504	533	546	547	554	739	886	894	953	1054	1072
Standard unit with hydraulic module															
Single high-pressure pump			kg	529	537	563	576	576	584	769	918	926	989	1093	1111
Dual high-pressure pump			kg	555	563	588	602	602	610	795	963	971	1037	1130	1148
Compressors				Hermetic scroll compressors, 48.3 r/s											
Circuit A				2	2	2	2	2	2	3	3	3	2	2	
Circuit B				-	-	-	-	-	-	-	-	-	-	2	2
No of control stages				2	2	2	2	2	2	2	3	3	3	4	4
Refrigerant charge(3)				R-410A											
Circuit A			kg	12.5	13.5	16.5	17.5	18	16.5	21.5	27.5	28.5	33	19	18.5
			$teqCO_2$	26.1	28.2	34.5	36.5	37.6	34.5	44.9	57.4	59.5	68.9	39.7	38.6
Circuit B			kg	-	-	-	-	-	-	-	-	-	-	19	18.5
			$teqCO_2$	-	-	-	-	-	-	-	-	-	-	39.7	38.6
Capacity control				Touch Pilot Junior											
Minimum capacity			%	50	50	50	50	50	50	50	33	33	33	25	25
Air heat exchangers				Grooved copper tubes and aluminium fins											
Fans				Axial Flying Bird IV with rotating shroud											
Quantity				1	1	1	1	1	1	2	2	2	2	2	2
Maximum total air flow			l/s	3692	3690	3910	5285	5284	5282	7770	7380	7376	7818	10568	10568
Maximum rotation speed			r/s	12	12	12	16	16	16	12	12	12	12	16	16
Water heat exchanger				Direct expansion. plate heat exchanger											
Water volume			l	2.6	3	4	4.8	4.8	5.6	8.7	8.7	9.9	11.3	12.4	14.7
Without hydraulic module															
Max. water-side operating pressure			kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
With hydraulic module (option)															
Single or dual pump (as selected)				Pump, Victaulic screen filter, relief valve, expansion tank, purge valves (water + air), pressure sensors											
Expansion tank volume			l	12	12	12	12	12	12	35	35	35	35	35	35
Expansion tank pressure(4)			bar	1	1	1	1	1	1	1	1.5	1.5	1.5	1.5	1.5
Max. water-side operating pressure			kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module				Victaulic											
Connections			in	2	2	2	2	2	2	2	2	2	2	2	2
Outside diameter			mm	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3
Chassis paint colour				Colour code: RAL7035											

* In accordance with standard EN14511-3:2013
** In accordance with standard EN14825:2013, average climate
HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
ηs heat 30/35°C & SCOP 30/35°C **Applicable Ecodesign regulation: (EU) No 813/2013**
SEER 12/7°C & SEPR 12/7°C Applicable Ecodesign regulation: (EU) No 2016/2281
SEER 23/18°C Applicable Ecodesign regulation: (EU) No 2016/2281
SEPR -2/-8°C Applicable Ecodesign regulation: (EU) No 2015/1095
IPLV.SI Calculations according to standard performances AHRI 551-591.
(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Values shown are a guideline only. Please refer to the unit nameplate
(4) When delivered, the standard pre-inflation of the tank is not necessarily the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL DATA, 30RQS

Electrical data, 30RQS

30RQS without hydraulic module		039	045	050	060	070	078	080	090	100	120	140	160
Power circuit													
Nominal power supply	V-ph-Hz	400-3-50											
Voltage range	V	360-440											
Control circuit supply		24 V via internal transformer											
Maximum start-up current (Un)*													
Standard unit	A	114	135	143	146	176	213	214	174	208	248	243	286
Unit with electronic starter option	A	75	87	94	96	114	140	140	125	150	176	186	215
Unit power factor at maximum capacity**		0.83	0.81	0.81	0.83	0.81	0.78	0.78	0.83	0.81	0.79	0.81	0.78
Maximum operating power input**	kW	20	22	25	28	31	36	36	42	46	53	62	72
Nominal unit operating current draw***	A	26	29	33	36	42	53	53	55	62	77	85	106
Maximum operating current draw (Un)****	A	35	45	47	53	67	73	74	81	99	108	134	146
Maximum operating current draw (Un-10%)†	A	38	49	51	58	75	80	80	89	110	118	150	159
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit											
Short-circuit stability and protection		See table 9.1											

* Maximum instantaneous start-up current at operating limit value (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).
** Power input, at the unit permanent maximum operating conditions (data given on the unit nameplate)
*** Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.
**** Maximum unit current at 400 V, non permanent operating conditions (values given on the unit nameplate).
† Maximum unit operating current at 360 V, non permanent operating conditions.

Short-circuit stability current (TN system*)

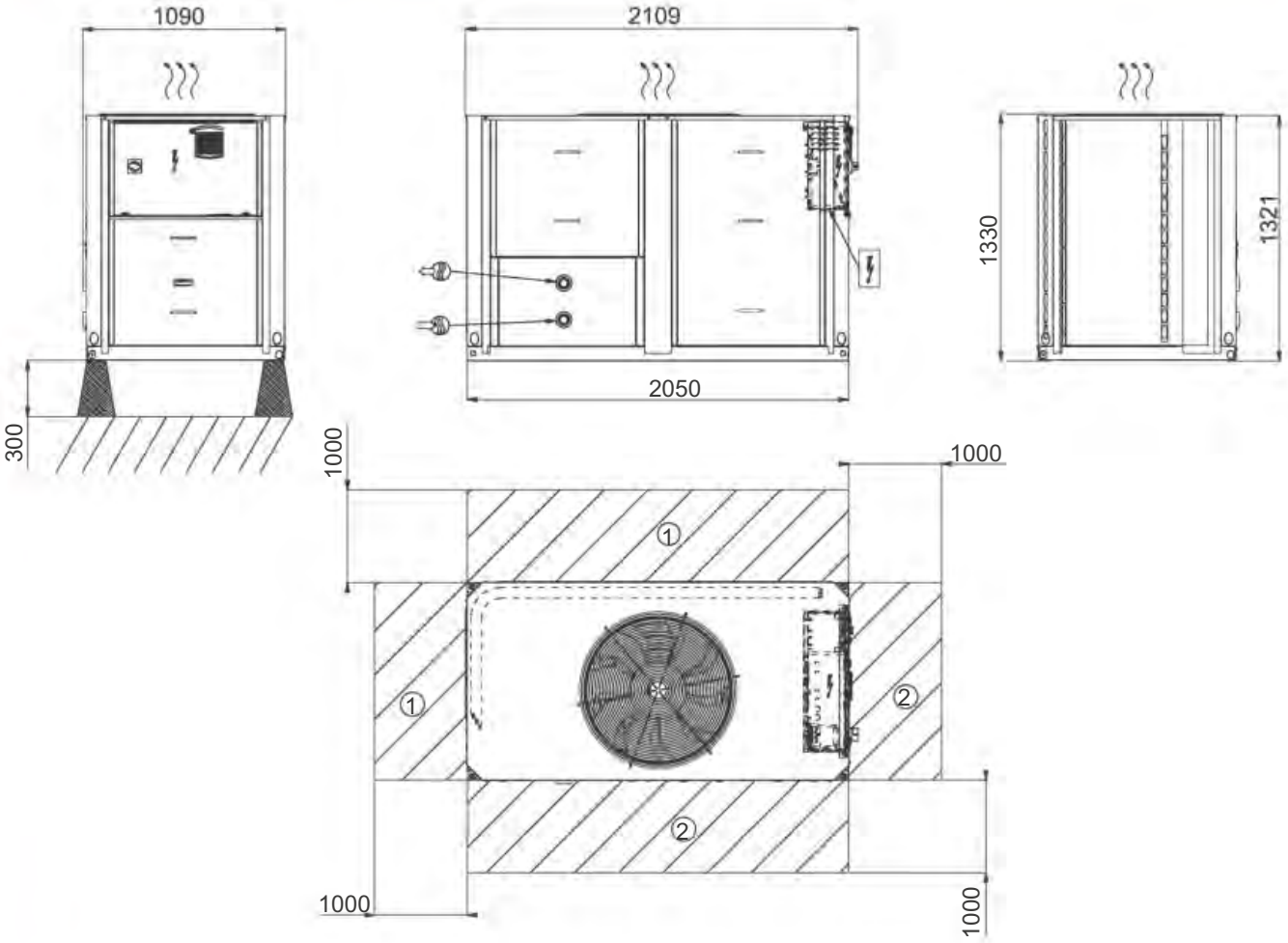
30RQS	039	045	050	060	070	078
Value without upstream protection						
Short-term current at 1s - Icw – kA rms	3.36	3.36	3.36	3.36	3.36	3.36
Admissible peak current - Ipk - kA pk	20	20	20	20	20	15
Value with upstream protection by circuit breaker						
Conditional short-circuit current Icc - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H
Reference No.**	29670	29670	29670	29670	29670	29670

30RQS	080	090	100	120	140	160
Value without upstream protection						
Short-term current at 1s - Icw – kA rms	3.36	5.62	5.62	5.62	5.62	5.62
Admissible peak current - Ipk - kA pk	15	20	20	15	20	15
Value with upstream protection by circuit breaker						
Conditional short-circuit current Icc - kA rms	40	40	40	40	30	30
Schneider circuit breaker - Compact series	NS100H	NS100H	NS160H	NS160H	NS250H	NS250H
Reference No.**	29670	29670	30670	30670	31671	31671

* Earthing system type
** If another current limitation protection system is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

DIMENSIONS/CLEARANCES, 30RQS

30RQS 039-078, units with and without hydraulic module



Legend:

All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

Notes:

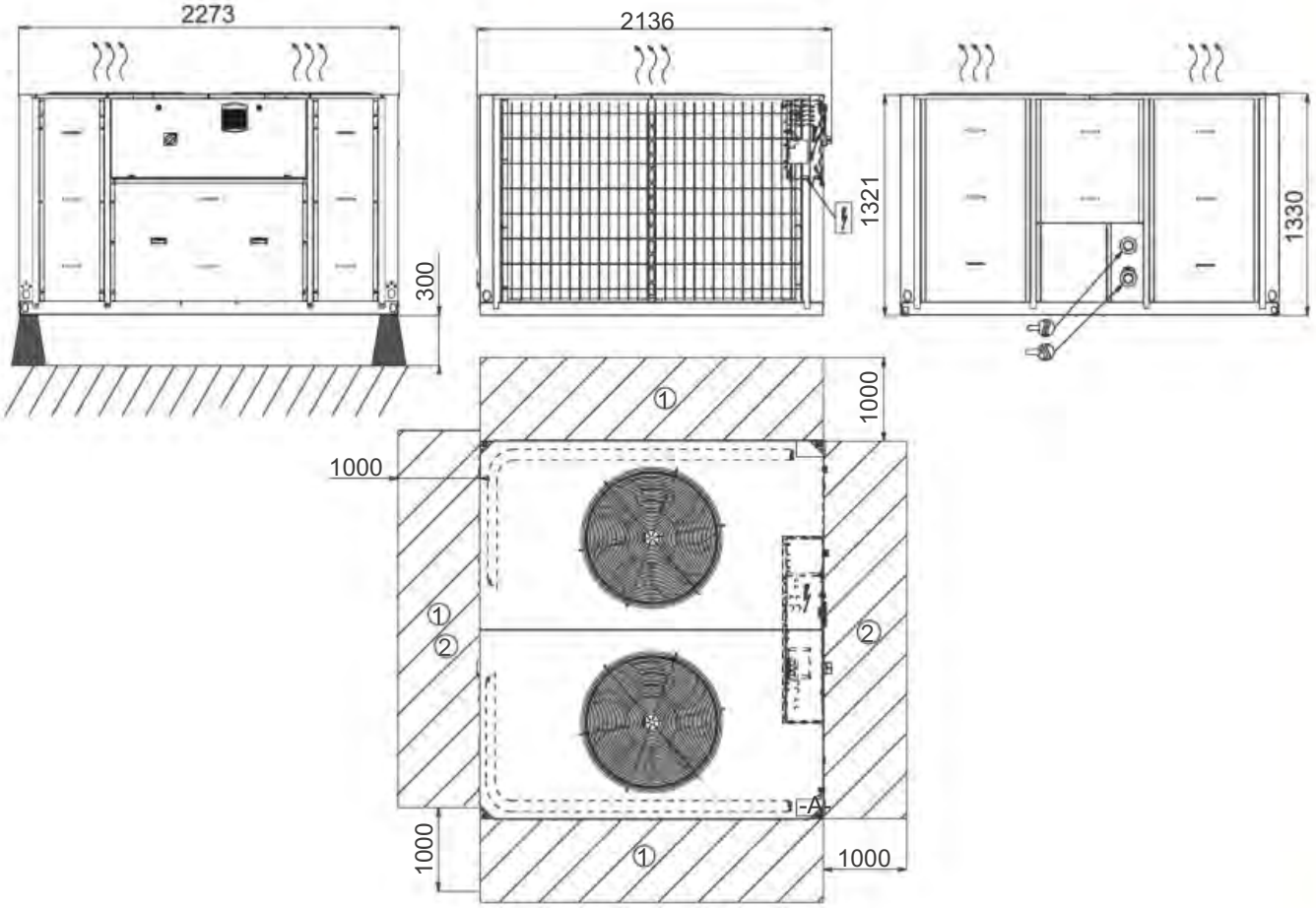
A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

B In multiple-chiller installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

DIMENSIONS/CLEARANCES, 30RQS

30RQS 080-160, units with and without hydraulic module



Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- 1 Required clearances for air entry
- 2 Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

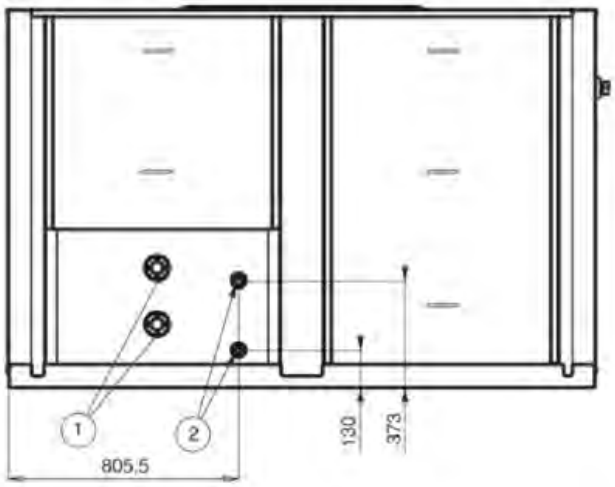
B In multiple-chiller installations (maximum four units), the side clearance between the units should be increased from 1000 to 2000 mm.

C The height of the solid surface must not exceed 2 m.

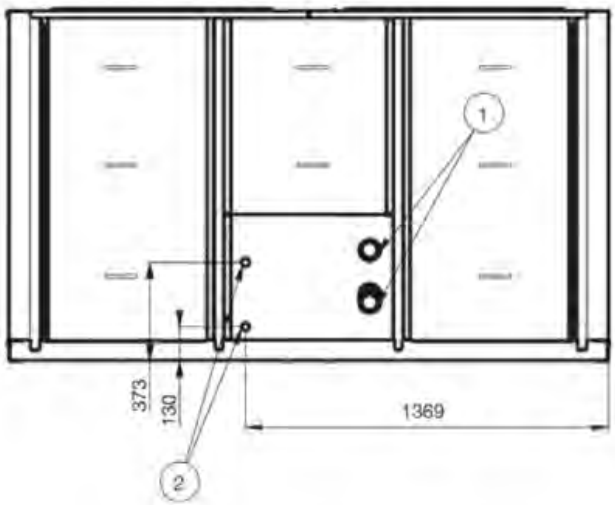
DIMENSIONS/CLEARANCES FOR 30RQS UNITS WITH OPTION 49

Position of the desuperheater inlets and outlets

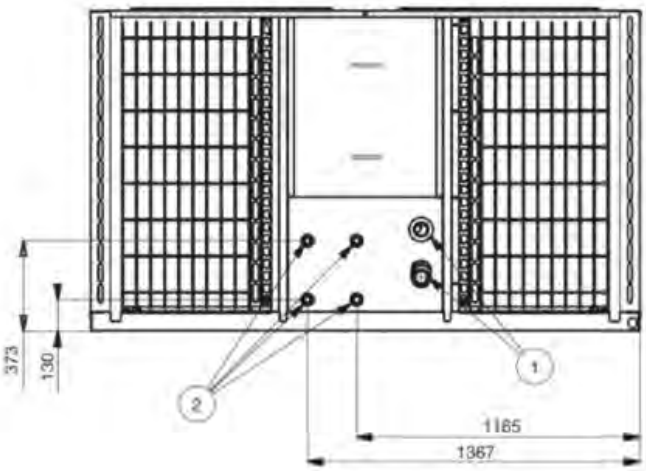
30RQS 039-080



30RQS 090-120



30RQS 140-160



(1) Unit water inlet and outlet
(2) Water inlet and outlet, unit with option 49

DUCTABLE REVERSIBLE AIR-TO-WATER HEAT PUMPS

- Compact design
- High static available pressure
- Quiet operation
- Variable speed fans
- Variable water flow

HEATING

30RQSY

AQUASNAP Reversible

Nominal heating capacity 30RQSY: 42-151 kW
Nominal cooling capacity 30RQSY: 37-147 kW

The AquaSnap heat pump range was designed for commercial (air conditioning of offices, hotels etc.) or industrial (low-temperature process units etc.) applications.

It integrates the latest technological innovations:

- Non-ozone depleting refrigerant R410A
- Scroll compressors
- Low-noise fans made of a composite material
- Auto-adaptive microprocessor control
- Electronic expansion valve
- Variable-speed pump (option)

The AquaSnap can be equipped with a hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the chilled water supply and return piping.

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CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
  - Low-noise scroll compressors with low vibration level
  - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
  - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
- Air evaporator/condenser (30RQSY) section
  - Vertical condenser coils
  - Protection grilles on anti-vibration mountings to protect the heat exchanger against possible shocks (30RQSY 080-160 only).
  - Low-noise latest-generation Flying Bird IV fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
  - Fan motor controlled by a variable-frequency controller, to allow adjustment of the fan speed in accordance with the ducting for optimised efficiency.
  - Rigid fan installation for reduced start-up noise (Carrier patent)

Easy and fast installation

- Physical features
  - Flying Bird IV fans controlled by a variable-frequency controller to provide up to 240 Pa available pressure (depending on the size) at nominal flow rate
  - Flow control in accordance with the ducting for optimised efficiency with the possibility to program a maximum supply air flow.
  - Supply air duct connection frame.
  - Suction air connection frame standard for sizes 30RQSY 039-078
  - Suction air filters optional (30RQSY 039-078 only)
  - Small unit footprint with a low height (1371 mm) for easy installation in most buildings
  - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Integrated hydraulic module (option)
  - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation.

Hydraulic module

  - Single or dual water pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter protects the water pump against circulating debris
  - Pressure measurement, using two pressure transducers and allowing indication of water flow rate, water pressure and lack of water.
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Overpressure valve, set to 4 bar
  - Speed variator on the pumps (option) to ensure the correct flow rate, based on the system requirements
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
- Simplified electrical connections
  - A single power supply point without neutral
  - Main disconnect switch (option 70) with high trip capacity
  - Transformer for safe 24 V control circuit supply included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors

Economical operation

- Variable-speed pump (option)
  - The control algorithm adjusts the water flow rate in accordance with the actual system requirements. This saves energy and makes the flow control valve unnecessary.
- Variable-speed fan
  - Variable-speed ventilation permits adjustment to any duct type and variation of the air flow rate for maximised unit performances under any operating conditions.
- Increased energy efficiency at part load
  - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are more energy efficient, as they use the total condenser and evaporator capacity.
  - The electronic expansion device (EXV) allows operation at a lower condensing pressure (SEER and SCOP seasonal performances optimisation).
  - Dynamic superheat management for better utilisation of the water heat exchanger surface.
  - Defrost cycle optimisation (30RQSY)
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Touch Pilot Junior control
  - R410A refrigerant is easier to use than other refrigerant blends

FEATURES

Environmental care

- Non-ozone depleting R410A refrigerant
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
- Very efficient - gives an increased energy efficiency ratio
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Reduction of leaks due to reduced vibration levels and elimination of capillary tubes (TXVs)
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Supply air connection frame

Superior reliability

- State-of-the-art concept
  - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping etc.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit (Carrier patent)
  - Hydraulic module with integrated pressure transducers allowing measurement of the water pressure at two points, as well as measurement of the water flow rate and detection of lack of water and pressure. This considerably reduces the risk of problems such as frost accumulation on the water heat exchanger.
  - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled air heat exchanger coil, fan failure) AquaSnap continues to operate, but at reduced capacity.
  - On Heat pump version 30RQSY specific Free Defrost algorithm to optimise performance and comfort even during defrost period.
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
  - Transport simulation test in the laboratory on a vibrating table.

Touch Pilot Junior control

The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3” colour touch screen.

- Energy management
  - Internal time schedule clock: Controls heat pump on/off times and operation at a second set-point
  - Set-point offset based on the outside air temperature
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
- Integrated advanced communication features
  - Night mode: Capacity and fan speed limitation for reduced noise level
  - With hydraulic module: Water pressure display and water flow rate calculation
  - Easy and high-speed communication technology over Ethernet (IP) to a building management system
  - Access to multiple unit parameters.
  - Without hydraulic module: 0-10V output is available for external variable speed pump controL
- 4.3" Touch Pilot user interface

  - Intuitive and user-friendly 4.3 inch touch screen interface
  - Concise and clear information is available in local languages
  - Complete menu, customised for different users (end user, service personnel or Carrier engineers).

FEATURES

Remote management (standard)

Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap also communicates with other building management systems via optional communication gateways.

- A connection terminal allows remote control of the AquaSnap by wired cable:
- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

Variable fan speed controller

OPTIONS

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30RQSY 039-160
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RQSY 039-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -15°C with ethylene glycol and -12°C with propylene glycol.	Covers specific applications such as ice storage and industrial processes	30RQSY 039-160
Very low noise level	15LS	Acoustic compressor enclosure	Compressor noise emission reduction	30RQSY 039-160
Suction filter	23B	Washable G2 efficiency filter in accordance with EN 779	Prevents pollution of the air-heat exchanger	30RQSY 039-78
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RQSY 039-160
Hydraulic module frost protection	42	Electric heater on the hydraulic module	hydraulic module frost protection at low outside temperatures down to -20°C	30RQSY 039-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit. Note: In this configuration the units are equipped with traditional coils (Cu/Al).	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RQSY 039-160
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallel operation with operating time equalisation	30RQSY 039-160
Main disconnect switch without fuse	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RQSY 039-160
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RQSY 039-160
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter(expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RQSY 039-160
HP evap. variable-speed single-pump	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter(expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQSY 039-160
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQSY 039-160
J-Bus gateway	148B	Bi-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30RQSY 039-160
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30RQSY 039-160
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RQSY 039-160

OPTIONS

Options	No.	Description	Advantages	Use
Evaporator screw connection sleeves (kit)	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30RQSY 039-160
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RQSY 039-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RQSY 039-160
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliance to IEC 61800-3 C1 class	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	30RQSY 039-160 with option 116V or 116W
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RQSY 039-160
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	30RQSY 039-160

PHYSICAL DATA, 30RQSY

30RQSY				39	45	50	60	70	78	80	90	100	120	140	160
Heating															
Standard unit Full load performances*	HA1	Nominal capacity	kW	42,3	46,4	53,2	61,5	68,3	78,0	81,8	92,2	100	116	135	156
		COP	kW/kW	3,65	3,66	3,70	3,80	3,69	3,63	3,82	3,81	3,64	3,60	3,62	3,46
	HA2	Nominal capacity	kW	41,5	46,3	51,8	59,6	66,3	75,4	78,9	89,5	97,4	112	131	151
		COP	kW/kW	3,03	3,01	2,99	3,05	3,01	2,98	3,15	3,08	2,97	2,95	2,95	2,85
Seasonal energy efficiency**	HA1	**SCOP 30/35°C**	**kWh/kWh**	**3,27**	**3,29**	**3,26**	**3,38**	**3,38**	**3,35**	**3,40**	**3,37**	**3,30**	**3,36**	**3,44**	**3,35**
		ηs heat 30/35°C	**%**	**128**	**128**	**127**	**132**	**132**	**131**	**133**	**132**	**129**	**132**	**135**	**131**
		P_{rated}	kW	35,50	31,63	36,35	44,08	50,45	56,05	56,84	82,36	73,02	84,11	100	112
		Energy labelling		A+	A+	A+	A+	A+	A+	A+	NA	NA	NA	NA	NA
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	36,9	43,1	49,4	57,1	62,1	69,1	77,0	84,9	95,1	112	129	146
		EER	kW/kW	2,80	2,72	2,66	2,71	2,65	2,41	2,73	2,66	2,66	2,67	2,70	2,50
		Eurovent class		C	C	D	C	D	E	C	D	D	D	C	D
	CA2	Nominal capacity	kW	46,1	53,9	62,7	69,5	76,8	87,0	96,5	107	117	142	159	182
		EER	kW/kW	3,23	3,18	3,09	3,06	3,03	2,77	3,13	3,10	3,06	3,07	3,08	2,83
Seasonal energy efficiency		SEER 12/7°C Comfort low temp.	kWh/kWh	3,53	3,65	3,63	3,53	3,50	3,35	3,59	3,52	3,62	3,90	3,93	3,87
		SEER 23/18°C Comfort medium temp.	kWh/kWh	-	-	-	-	4,16	4,07	4,30	-	4,26	4,70	4,58	4,56
		SEPR 12/7°C Process high temp.	kWh/kWh	5,00	5,41	4,84	4,90	4,77	4,88	5,08	4,62	4,60	5,23	4,81	5,31
		SEPR -2/-8°C Process medium temp.	kWh/kWh	-	2,55	2,61	2,96	2,97	2,86	2,70	2,86	3,04	2,94	2,80	-
Integrated Part Load Value		IPLV.SI	kW/kW	3,67	3,816	3,715	3,568	3,596	3,58	3,532	3,398	3,543	3,916	3,681	3,802
Sound levels															
Standard unit - for 160 Pa external static pressure															
Sound power level at discharge (1)			dB(A)	84	84	84	87	87	87	87	87	87	87	90	90
Sound power level radiated(1)				84	84	84	87	87	87	87	87	87	87	90	90
Sound pressure level at 10 m(2)			dB(A)	53	53	53	55	55	55	56	56	56	56	58	58
Dimensions				If two values are shown the first one is for standard units and the second one for units with option 23B											
Length			mm	2142/ 2307	2142/ 2307	2142/ 2307	2142/ 2307	2142/ 2307	2142/ 2307	2273	2273	2273	2273	2273	2273
Width			mm	1132/ 1297	1132/ 1297	1132/ 1297	1132/ 1297	1132/ 1297	1132/ 1297	2122	2122	2122	2122	2122	2122
Height			mm	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371	1371
Operating weight (3)															
Standard unit without hydraulic module			kg	512	519	553	567	567	574	753	921	930	988	1084	1101
Standard unit with hydraulic module															
Single high-pressure pump			kg	542	549	582	596	597	604	783	952	962	1024	1123	1140
Dual high-pressure pump			kg	568	575	608	622	623	630	809	997	1007	1072	1160	1177
Compressors				Hermetic scroll compressors, 48.3 r/s											
Circuit A				2	2	2	2	2	2	2	3	3	3	2	2
Circuit B				-	-	-	-	-	-	-	-	-	-	2	2
No of control stages				2	2	2	2	2	2	2	3	3	3	4	4
Refrigerant charge (3)				R-410A											
Circuit A			kg	12.5	13.5	16.5	17.5	18	16.5	21.5	27.5	28.5	33	19	18.5
			$teqCO_2$	26.1	28.2	34.5	36.5	37.6	34.5	44.9	57.4	59.5	68.9	39.7	38.6
Circuit B			kg	-	-	-	-	-	-	-	-	-	-	19	18.5
			$teqCO_2$	-	-	-	-	-	-	-	-	-	-	39.7	38.6
Oil charge (3)				POE SZ160 (EMKARATE RL-32-3MAF)											
Circuit A			l	5.8	7.2	7.2	7.2	7.0	7.0	7.2	7.0	7.0	7.0	7.0	7.0
Circuit B			l	-	-	-	-	-	-	-	-	-	-	7.0	7.0
Capacity control				Touch Pilot Junior											
Minimum capacity			%	50	50	50	50	50	50	50	33	33	33	25	25

* In accordance with standard EN14511-3:2013
** In accordance with standard EN14825:2013, average climate
HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
ηs heat 30/35°C & SCOP 30/35°C **Applicable Ecodesign regulation: (EU) No 813/2013**
SEER 12/7°C & SEPR 12/7°C Applicable Ecodesign regulation: (EU) No 2016/2281
SEER 23/18°C Applicable Ecodesign regulation: (EU) No 2016/2281
SEPR -2/-8°C Applicable Ecodesign regulation: (EU) No 2015/1095
IPLV.SI Calculations according to standard performances AHRI 551-591.
(1) In dB ref=10-12 W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Values shown are a guideline only. Please refer to the unit nameplate

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA, 30RQSY

30RQSY		39	45	50	60	70	78	80	90	100	120	140	160
Air heat exchangers		Grooved copper tubes and aluminium fins											
Fans		Axial Flying Bird IV with rotating shroud											
Quantity		1	1	1	1	1	1	2	2	2	2	2	2
Maximum total air flow	l/s	3692	3690	3910	5278	4982	5267	7770	7380	7376	7818	9964	10534
Maximum rotation speed	r/s	16	16	16	18	18	18	16	16	16	16	18	18
Water heat exchanger (direct-expansion type)		Plate heat exchanger, max. water-side operating pressure without hydraulic module 1000 kPa											
Water volume	l	2.6	3	4	4.8	4.8	5.6	8.7	8.7	9.9	11.3	12.4	14.7
With hydraulic module (option)													
Single or dual pump (as selected)		Pump, Victaulic screen filter, relief valve, expansion tank, purge valves (water + air), pressure sensors											
Expansion tank volume	l	12	12	12	12	12	12	35	35	35	35	35	35
Expansion tank pressure (4)	bar	1	1	1	1	1	1	1	1.5	1.5	1.5	1.5	1.5
Max. water-side operating pressure	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with/without hydraulic module		Victaulic											
Connections	in	2	2	2	2	2	2	2	2	2	2	2	2
Outside diameter	mm	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3
Chassis paint colour		Colour code: RAL7035											

(4) When delivered, the standard pre-inflation of the tank is not necessarily the optimal value for the system. To permit changing the water volume, change the inflation pressure to a pressure that is close to the static head of the system. Fill the system with water (purging the air) to a pressure value that is 10 to 20 kPa higher than the pressure in the tank

ELECTRICAL DATA, 30RQSY

30RQSY without hydraulic module		039	045	050	060	070	078	080	090	100	120	140	160
Power circuit													
Nominal power supply	V-ph-Hz	400-3-50											
Voltage range	V	360-440											
Control circuit supply		24 V via internal transformer											
Maximum start-up current (Un)*													
Standard unit	A	116	137	145	148	176	213	219	179	213	253	244	287
Unit with electronic starter option	A	75	87	94	96	114	143	149	130	155	181	186	215
Unit power factor at maximum capacity**		0.83	0.81	0.81	0.83	0.81	0.83	0.83	0.83	0.81	0.79	0.81	0.78
Maximum operating power input**	kW	21	24	26	30	32	36	39	46	49	56	64	73
Nominal unit operating current draw***	A	28	32	36	39	43	53	59	61	67	83	86	106
Maximum operating current draw (Un)****	A	37	47	49	55	67	73	79	86	104	113	135	147
Maximum operating current draw (Un-10%)†	A	41	52	54	61	75	80	85	94	116	123	150	160
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit											
Short-circuit stability and protection		See table 9.1											

* Maximum instantaneous start-up current at operating limit value (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).
** Power input, at the unit permanent maximum operating conditions (data given on the unit nameplate)
*** Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.
**** Maximum unit current at 400 V, non permanent operating conditions (values given on the unit nameplate).
† Maximum unit operating current at 360 V, non permanent operating conditions.

Short-circuit stability current (TN system*)

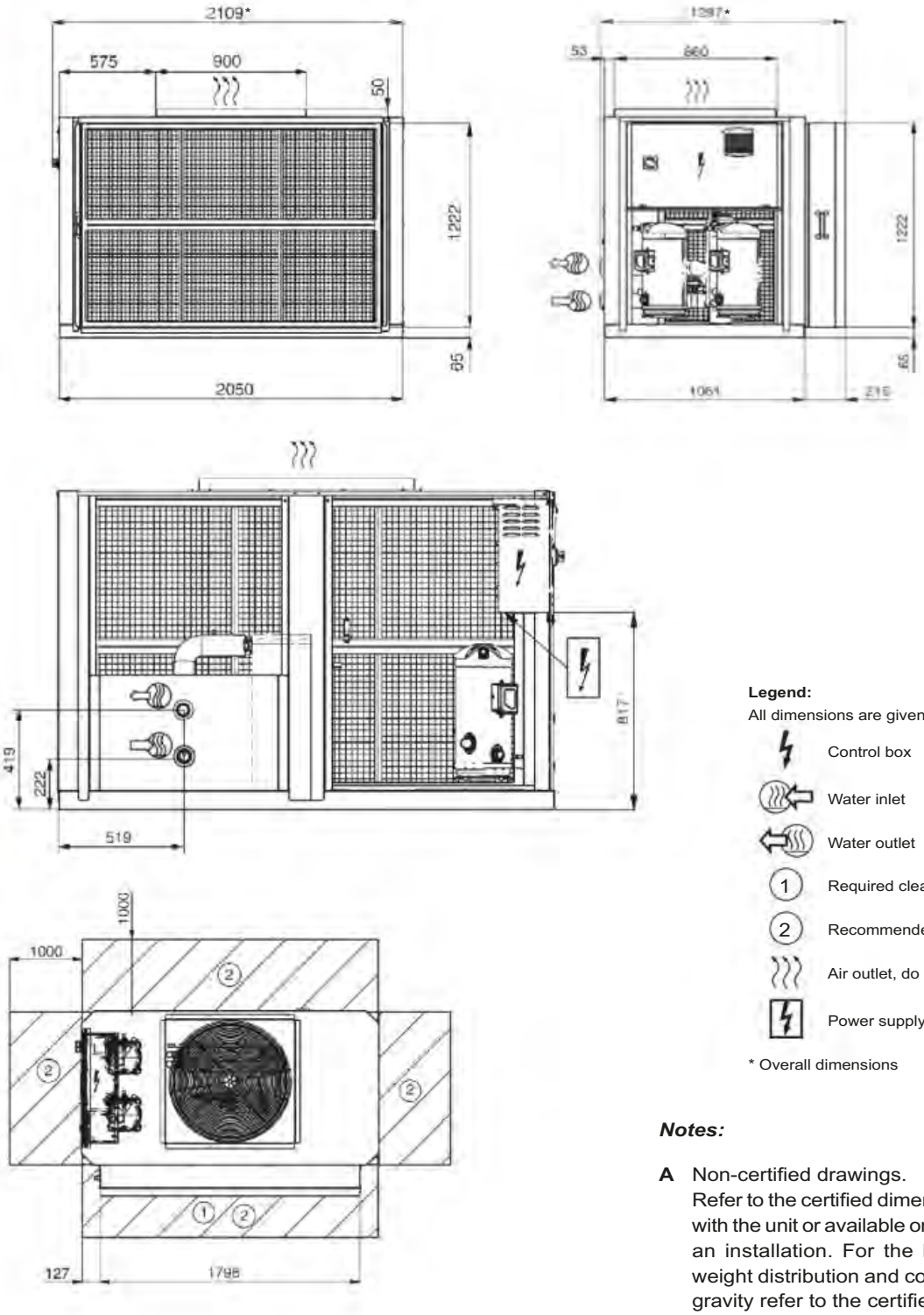
30RQSY	039	045	050	060	070	078
Value with unspecified upstream protection						
Short-term current at 1s - Icw – kA rms	3.36	3.36	3.36	3.36	3.36	3.36
Admissible peak current - Ipk - kA pk	20	20	20	20	20	15
Max. value with upstream protection by circuit breaker						
Conditional short-circuit current Icc - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H
Reference No.**	29670	29670	29670	29670	29670	29670

30RQSY	080	090	100	120	140	160
Value with unspecified upstream protection						
Short-term current at 1s - Icw – kA rms	3.36	5.62	5.62	5.62	5.62	5.62
Admissible peak current - Ipk - kA pk	15	20	20	15	20	15
Max. value with upstream protection by circuit breaker						
Conditional short-circuit current Icc - kA rms	40	40	40	40	40	40
Schneider circuit breaker - Compact series	NS100H	NS100H	NS160H	NS160H	NS250H	NS250H
Reference No.**	29670	29670	30670	30670	31671	31671

* Earthing system type
** If another current limitation protection system is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 039-045, units with and without hydraulic module, without filter frame



Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- 1 Required clearances for air entry
- 2 Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

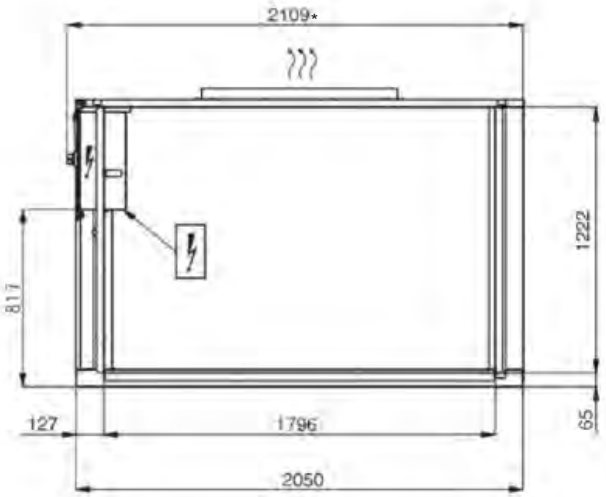
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RQSY 039-078).

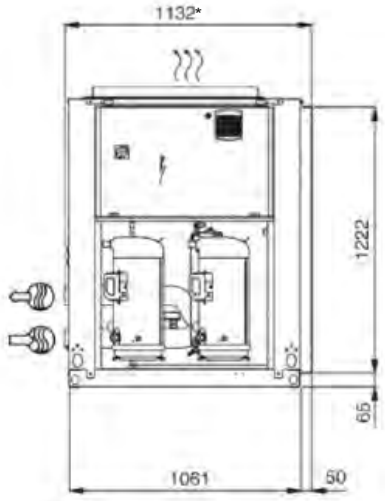
C The unit must be installed level (less than 2 mm per metre deviation in both axes).

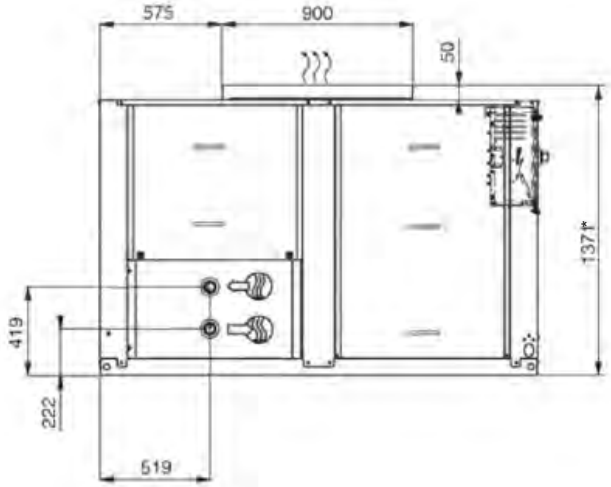
D Units 30RQSY 039-078 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

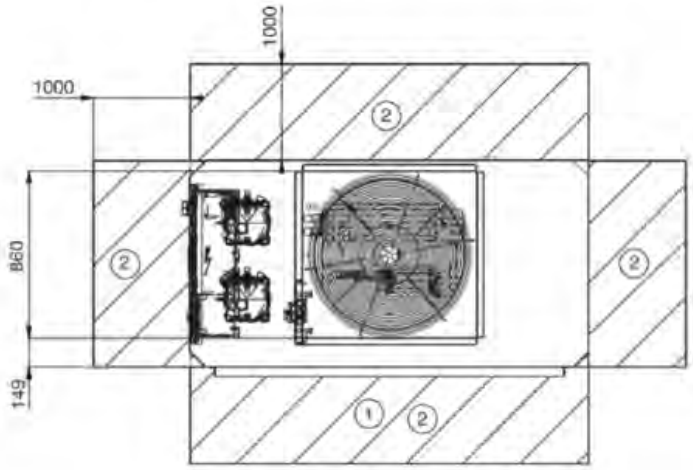
DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 039-045, option 23B, units with and without hydraulic module, with filter frame









Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

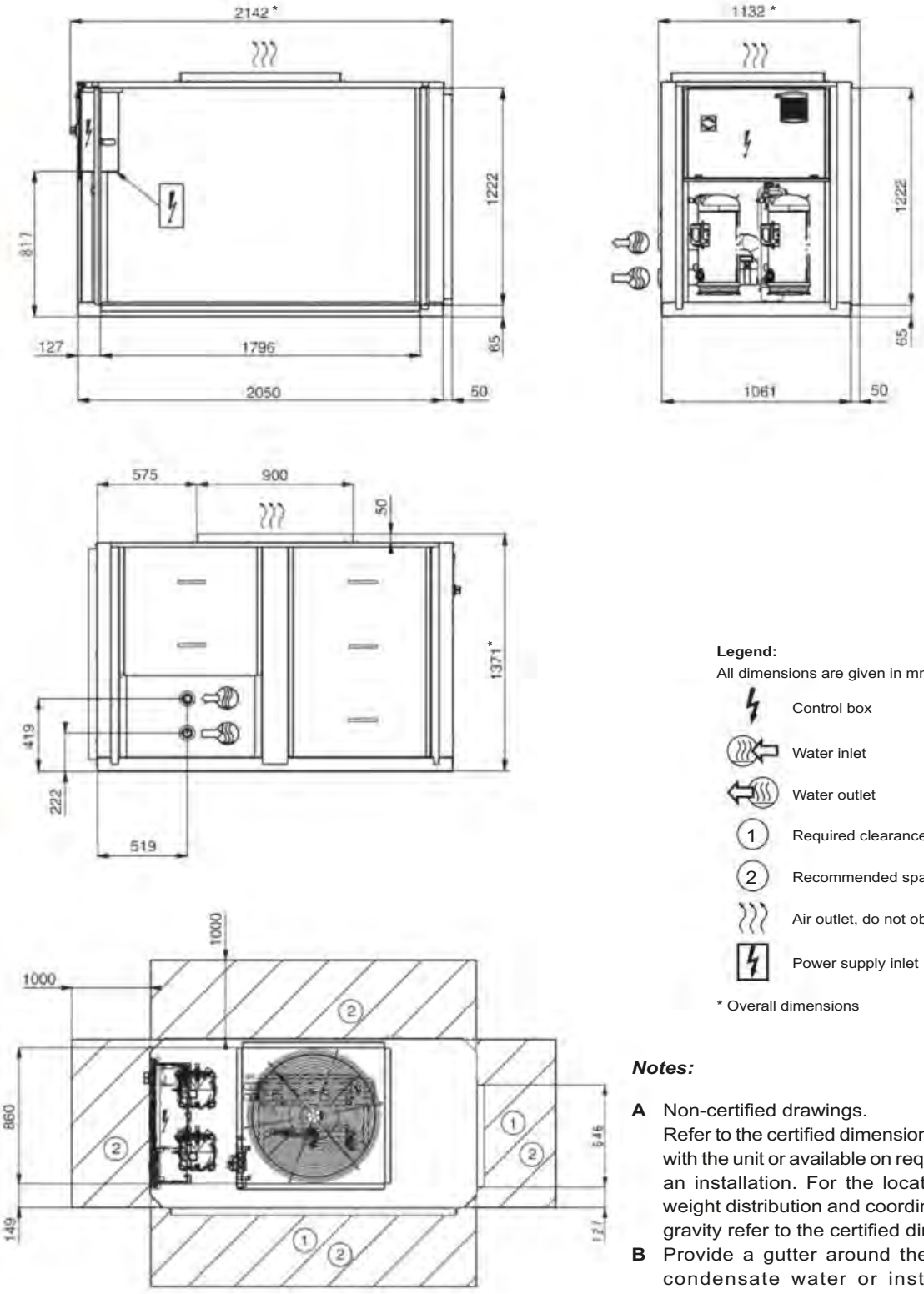
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RQSY 039-078).

C The unit must be installed level (less than 2 mm per metre deviation in both axes).

D Units 30RQSY 039-078 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 050-078, units with and without hydraulic module, without filter frame



Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

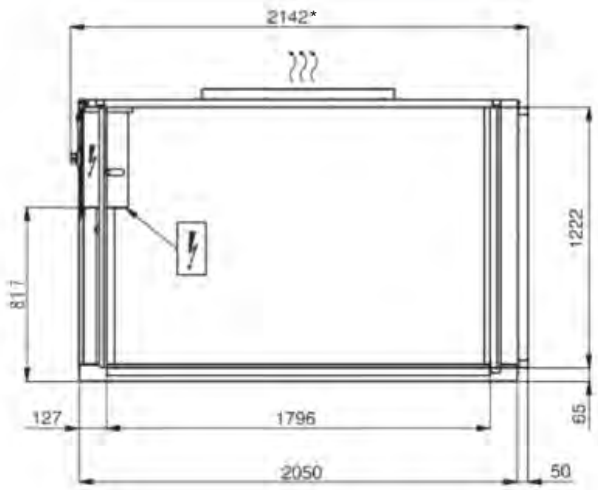
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RQSY 039-078).

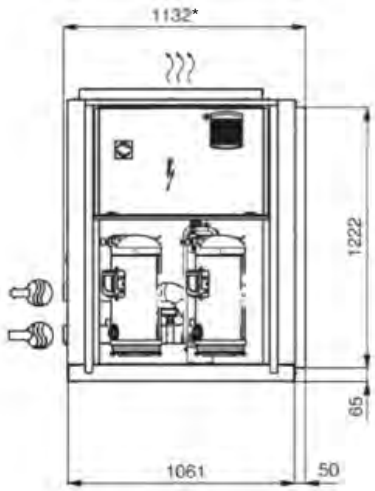
C The unit must be installed level (less than 2 mm per metre deviation in both axes).

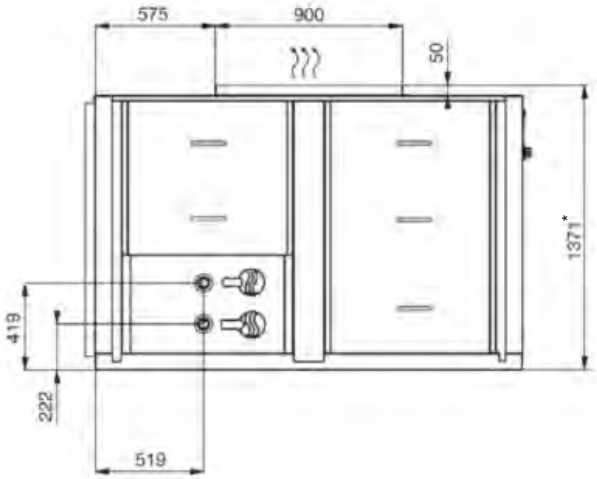
D Units 30RQSY 039-078 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

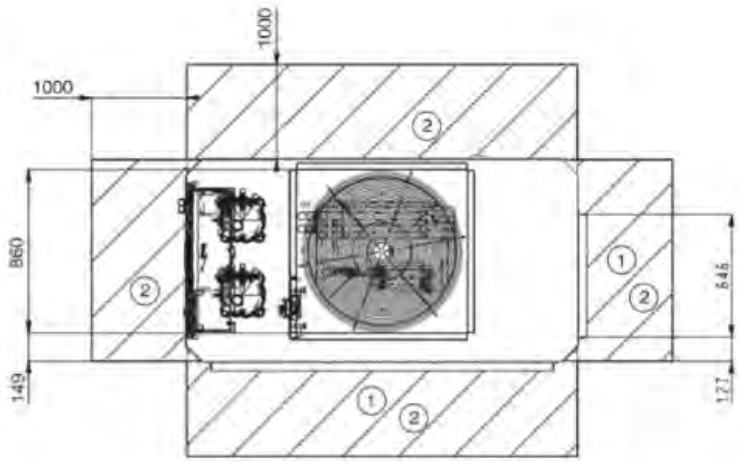
DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 050-078, option 23B, units with and without hydraulic module, with filter frame









Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- 1 Required clearances for air entry
- 2 Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

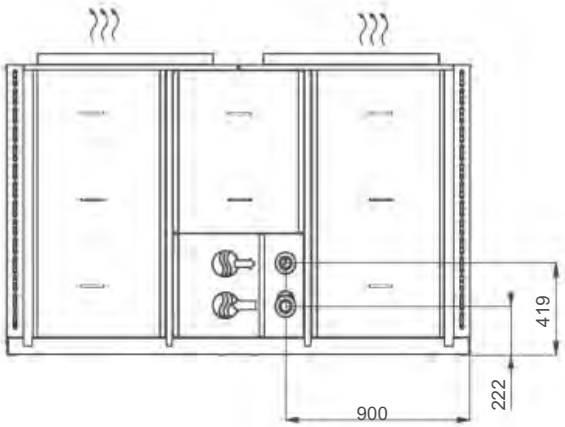
B Provide a gutter around the unit to collect the condensate water or install the accessory condensate collection pan (30RQSY 039-078).

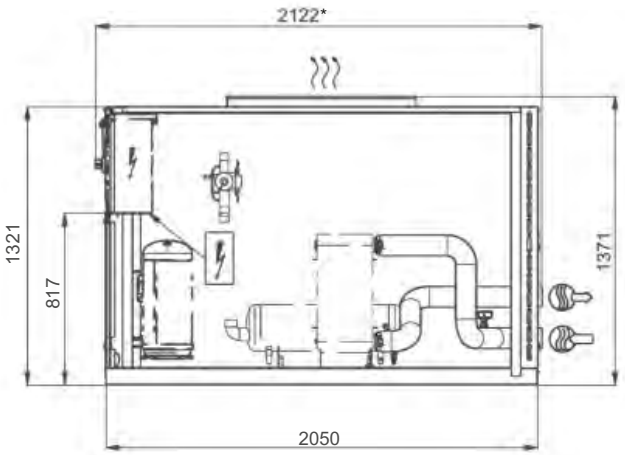
C The unit must be installed level (less than 2 mm per metre deviation in both axes).

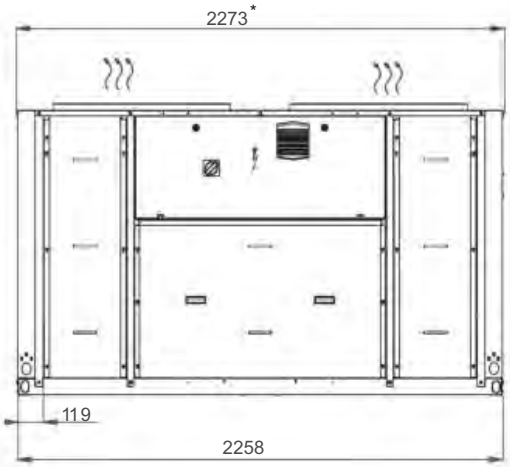
D Units 30RQSY 039-078 are equipped with a sleeve on the air heat exchanger side to allow connection of a suction air frame.

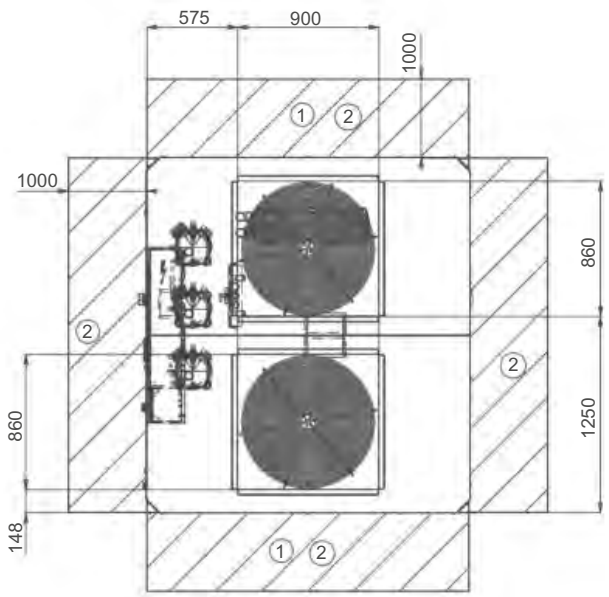
DIMENSIONS/CLEARANCES,30RQSY

30RQSY 080-120, units with and without hydraulic module









Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

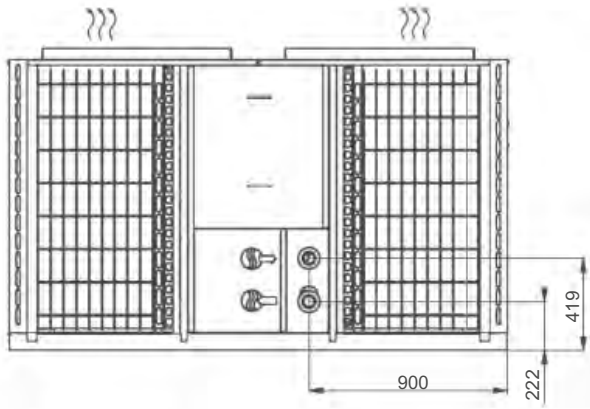
Notes:

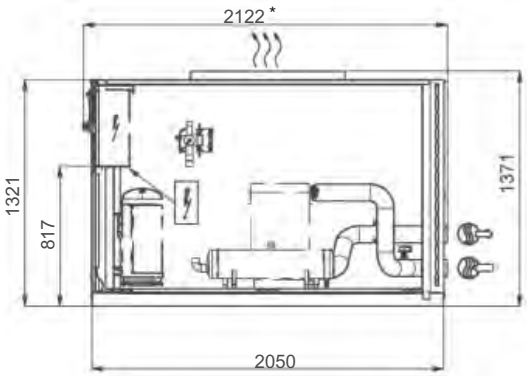
A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

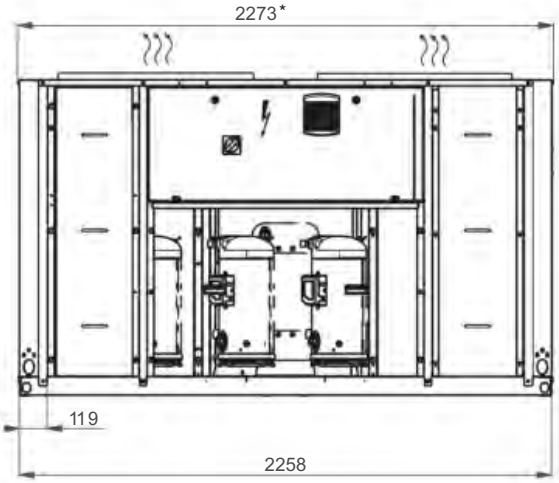
B The unit must be installed level (less than 2 mm per metre deviation in both axes).

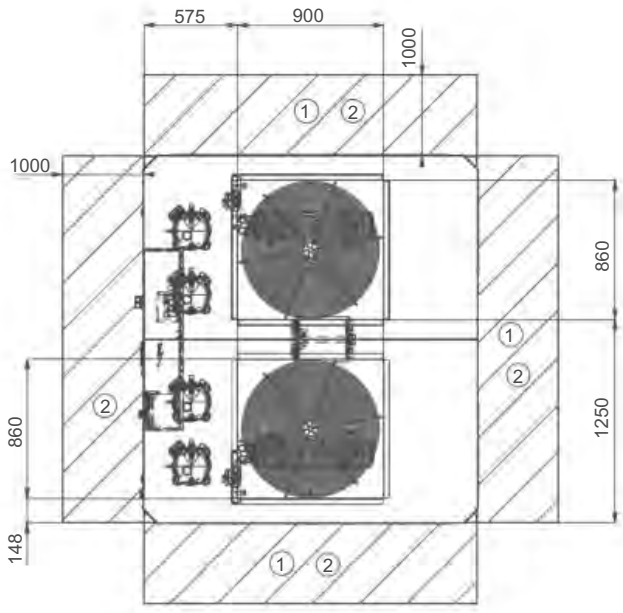
DIMENSIONS/CLEARANCES, 30RQSY

30RQSY 140-160, units with and without hydraulic module









Legend:
All dimensions are given in mm

- Control box
- Water inlet
- Water outlet
- (1) Required clearances for air entry
- (2) Recommended space for maintenance
- Air outlet, do not obstruct
- Power supply inlet

* Overall dimensions

Notes:

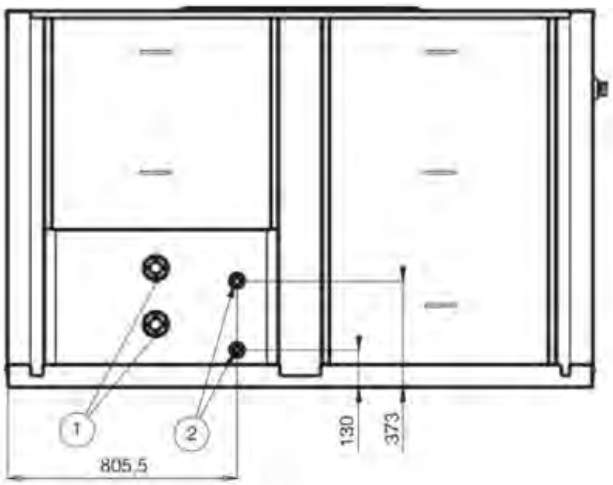
A Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation. For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

B The unit must be installed level (less than 2 mm per metre deviation in both axes).

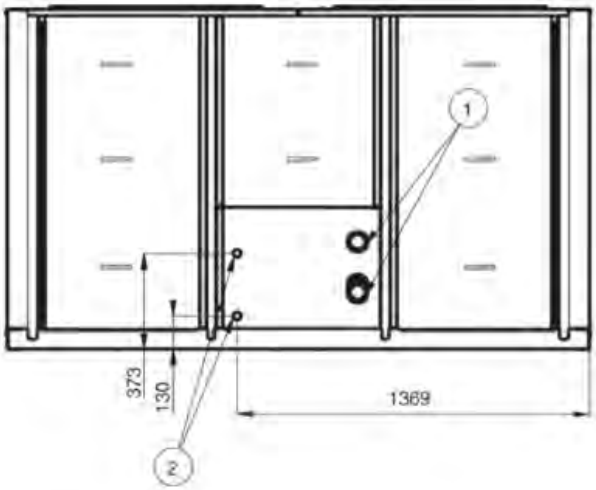
DIMENSIONS/CLEARANCES FOR 30RQSY UNITS WITH OPTION 49

Position of the desuperheater inlets and outlets

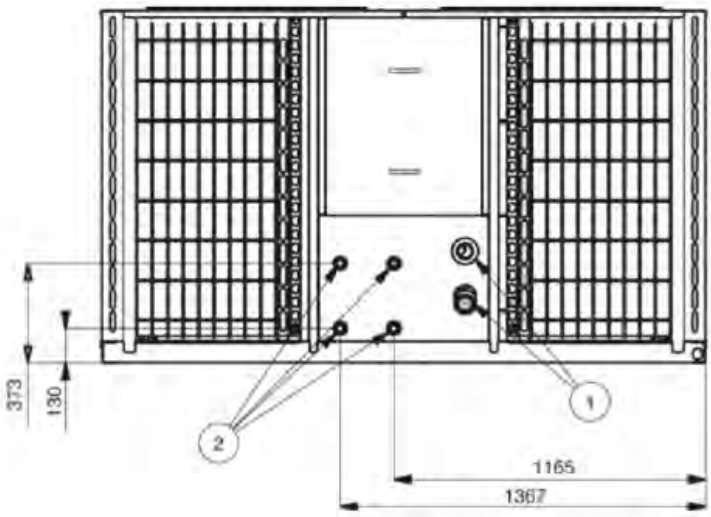
30RQSY 039-080



30RQSY 090-120



30RQSY 140-160



(1) Unit water inlet and outlet

(2) Water inlet and outlet, unit with option 49

AIR-TO-WATER SCROLL HEAT PUMP WITH GREENSPEED® INTELLIGENCE

High full and part-load efficiency

Compact and simple to install

Low sound level

Low refrigerant charge

Superior reliability

Unit with low noise level option

30RQM/30RQP

Nominal heating capacity 179-434 kW
Nominal cooling capacity 154-510 kW

The AquaSnap heat pumps are the best value solution for commercial and industrial applications where installers, consultants and building owners require reduced installed costs, optimal performances and maximum quality.

The new generation AquaSnap features two new versions:

- The AquaSnap (30RQM) version features a compact all-in-one package optimised for full-load applications where reduced investment cost (low Capex) is required.
- The AquaSnap Greenspeed® (30RQP) version features a compact all-in-one package optimised for part-load applications where high SCOP and SEER are required. The AquaSnap Greenspeed® equipped with variable speed fans and variable speed pump provides premium part load efficiency to reduce utility costs over the lifespan of the heat pump. Additionally, the low sounds levels achieved at part load conditions can be very beneficial for sensitive acoustic applications.

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

HEATING

FEATURES AND BENEFITS

The AquaSnap heat pumps are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO2 emissions. They use the best technologies available today:

- Reduced refrigerant charge of non-ozone depleting R-410A refrigerant
- Scroll compressors
- Greenspeed® variable-speed driven fans (30RQP models)
- Brazed plate heat exchangers with reduced pressure drops
- Auto-adaptive microprocessor control with Greenspeed® intelligence
- Touch Pilot control with web connectivity possibilities and colour touch screen user display
- Extra energy savings through partial heat recovery

Both AquaSnap versions can be equipped with an integrated hydraulic module, limiting the installation to conventional operations such as connection of the power supply and the supply and return piping (plug & play), according to the dimensions of the standard unit.

Recommended by Carrier, AquaSnap can be equipped with one or two Greenspeed® variable-speed pumps to significantly reduce energy costs linked to pumping (reduction of more than two-thirds), ensure optimum water flow rate control, and improve overall system reliability.

Highly economical operation

- High unit full and part load energy efficiency and efficient design of the water side:
  - Standardised Eurovent values in accordance with EN 14511-3:2013 EER up to 2.9 (30RQP version)
  - 30RQP and 30RQM ranges are compliant with EU Eco-design Tier 2 Minimum Efficiency Performance Standards (MEPS) in heating that apply from September 2017
  - Multiple scroll compressors equipped with a high-efficiency motor that permit exact matching of the capacity to the load
  - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control)
  - Air heat exchanger with Greenspeed® variable speed fans (30RQP version)
  - Low pressure drop brazed plate heat exchangers (pressure drops < 45 kPa at Eurovent conditions).
- Specific control functions to reduce unit energy use during occupied and unoccupied periods:
  - Internal timer programming: Permits heat pump on/off control and operation at a second set-point
  - Set-point automatically offset based on the outside air temperature or room air temperature (via an option)
  - Floating high-pressure management
  - Variable-speed fan control
  - Cooling and heating demand limitation.

Refer to control chapter for more information.

- On Heat pump version 30RQM/30RQP specific Free Defrost algorithm to optimise performance & comfort even during defrost period.

- Greenspeed® variable-speed pump to reduce pumping energy use up to 2/3 (option recommended by Carrier):
  - Eliminate energy losses through the water flow rate control valve by electronically setting the nominal water flow rate
  - Save energy during stand-by periods or part-load operation by automatically reducing the water pump speed. The energy consumption of the pump motor varies according to the cube of the speed, so that a reduction in speed of just 40% can reduce energy consumption by 80%
  - Improved unit part-load performance (Increased SCOP and SEER values with variable water flow rate as per the EN14825 standard).

Refer to hydraulic option chapter for more information.

Extra energy savings through partial heat recovery option that permits free hot water production.

Reduced maintenance costs

- Fast diagnosis of possible incidents and their history via the control
- R-410A refrigerant is easier to use than other refrigerant blends.

Low sound level

Coil section with fixed speed fans (30RQM models):

- Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
- Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent)
- Rigid fan installation for reduced noise (Carrier patent).

Coil section with Greenspeed® variable-speed fans (30RQP models recommended by Carrier for even quieter operation):

- Exceptional acoustic signature during part-load operation through smooth fan speed variation.

- Specific control functions or features to reduce noise level during night or unoccupied periods:
  - Night time sound control with capacity and fan speed limitation
  - Low-noise scroll compressors with low vibration level
  - The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mountings.
  - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
  - Acoustic compressor enclosure, reducing radiated noise emissions (option).

FEATURES AND BENEFITS

Quick and easy installation

- Compact design
  - The AquaSnap units are designed to offer compact dimensions and low weight for easy installation.
- Integrated hydraulic module (option)
  - Low or high-pressure water pump (as required)
  - Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter protecting the water pump against circulating debris
  - Pressure transducers for direct numerical display of the water flow rate and water pressures
  - Thermal insulation and frost protection down to -20 °C, using an electric resistance heater (option)
  - High-capacity membrane expansion tank (option).
- Integrated hydraulic module with Greenspeed® variable-speed pump (option recommended by Carrier)
  - Quick and easy electronic setting of the nominal water flow rate when the unit is commissioned, thus eliminating the need to adjust the water flow rate control valve
  - Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.
- Simplified electrical connections
  - A single power supply point without neutral
  - Main disconnect switch with high trip capacity
  - 24 V control circuit without risk from a transformer included.
- Fast unit commissioning
  - Systematic factory test before shipment
  - Quick-test function for step-by-step verification of the sensors, electrical components and motors.

Reduced installation costs

- Optional Greenspeed® variable-speed pump with hydraulic module (option recommended by Carrier)
  - Elimination of the water flow control valve cost
  - Water system design with variable primary flow (VPF) can provide significant installation cost savings compared with traditional constant primary-variable secondary systems; elimination of the secondary distribution pump, etc.
  - Water system design with fan coils fitted with 2-way valves instead of 3-way valves.

Environmental responsibility

- R-410A non-ozone depleting refrigerant.
- Reduced direct warming potential (10% of total equivalent warming impact):
  - Low R410-A refrigerant charge
  - Leak-tight refrigerant circuit with minimum brazed connections
  - Qualified Carrier maintenance personnel to provide refrigerant servicing
  - ISO 14001 manufacturing site.
- Reduced indirect warming potential (90% of total equivalent warming impact):
  - Reduced unit energy use (high full- and part-load efficiency)
  - Pumping energy consumption can be reduced by up to 2/3 using Greenspeed® variable-speed pumps.

Superior reliability

- State-of-the-art concept
  - Two independent refrigerant circuits; the second one automatically takes over if the first one develops a fault, maintaining partial cooling under all circumstances
  - All compressor components are easily accessible on site, minimising downtime
  - V-coil design to protect the coils against hail impact
  - Optional anti-corrosion coil coating for use in moderately corrosive environments.
  - Electronic flow switch. Auto-setting according to cooler size and fluid type
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling and reduces the quantity of water in the water loop (Carrier patent)
  - Automatic compressor unloading in case of abnormally high condensing pressure
  - Automatic fan speed adjustment in case of coil fouling (30RQP models)
  - Smooth fan start to increase unit lifetime (30RQP models).
- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of simulation tools (finite element analysis) for the design of critical components
  - Transport simulation test on an endurance circuit based on a military standard.

FEATURES AND BENEFITS

Touch Pilot Control

The Touch Pilot features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 5" colour touch screen.

- Energy management configuration
  - Internal time schedule clock: Controls heat pump on/off times and operation at a second set-point
  - Set-point offset based on the outside air temperature
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
- Advanced communication features
  - Night mode: Capacity and fan speed limitation for reduced noise level
  - With hydraulic module: Water pressure display and water flow rate calculation
  - High-speed user-friendly communication technology over Ethernet (IP) to a centralised building management system
  - Access to multiple unit parameters.
- Functionality of maintenance
  - Compulsory maintenance reminder– FGAS sealing check
  - Periodic maintenance reminder Maintenance alarm which can be configured to days, months or hours of operation
- 5-inch Touch Pilot user interface

  - Intuitive and user-friendly 5 inch touch screen interface
  - Concise and clear information is available in local languages
  - Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.

The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows remote control of the AquaSnap by wired cable:

- Start/stop: Opening of this contact will shut down the unit
- Dual set-point: closing of this contact activates a second set-point (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
- Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

Energy management module (option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: Permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set-point reset: Ensures reset of the cooling set-point based on a 4-20 mA
- Demand limit: Permits limitation of the maximum heat pump power based on a 4-20 mA signal
- Demand limit 1 and 2: Closing of these contacts limits the maximum heat pump power or current to two predefined values.
- User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm.
- Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode).
- Time schedule override: Closing of this contact cancels the time schedule effects.
- Out of service: This signal indicates that the heat pump is completely out of service.
- Unit capacity: This analogue output (0-10 V) gives an immediate indication of the unit capacity.
- Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Boiler control: This on/off output controls an independent boiler to provide hot water.
- Electric heater control: this on/off output controls up to 4 electric heater stages to provide additional heating capacity during the cold season.

OPTIONS

Options	No.	Description	Advantages	Use
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30RQM/30RQP 160-520
Low temperature brine solution	6B	Low temperature chilled water production down to -8°C with ethylene or propylene glycol	Covers specific applications such as ice storage and industrial processes	30RQP 180-230-270-310
High static fans	12	Unit equipped with high static variable speed fan (maximum 200Pa), each fan being equipped with a connection flange allowing the connection to the ducting system.	Ducted fan discharge, optimised temperature control, based on the operating conditions and system characteristics	30RQM/30RQP 160-520
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction by 1 to 2 dB(A)	30RQM/30RQP 160-520
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise level reduction for sensible site	30RBM 160-520
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrics box from dust, water and sand. In general this option is recommended for installations in polluted environments	30RQM/30RQP 160-520
Grilles and enclosure panels	23	Metal grilles on the 4 unit sides, plus side enclosure panels at each end of the coils	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30RQM/30RQP 160-520
Enclosure panels	23A	Side enclosure panels at each end of the coil	Improves aesthetics, coil and piping protection against impacts.	30RQM/30RQP 160-520
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30RQM/30RQP 160-520
Winter operation down to -20°C	28	Fan speed control of lead fan for each circuit using a variable frequency drive	Stable unit operation for outside air temperatures from 0°C down to -20°C in cooling mode	30RQM 160-520
Water exchanger frost protection	41	Electric heater on the water exchanger and the water piping	Water exchanger module frost protection between 0°C and -20°C outside air temperature	30RQM/30RQP 160-520
Exchanger & hydraulic frost protection	42A	Electric heater on the water exchanger hydraulic module and optional expansion tank	Water exchanger and hydraulic module frost protection down to an outside air temperature of -20°C	30RQM/30RQP 160-520
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30RQM/30RQP 160-520
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30RQM/30RQP 160-520
Compressor discharge valves	93A	Shut-off valves on the compressor discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the condenser side during servicing	30RQM/30RQP 160-520
HP single-pump hydraulic module	116	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play)	30RQM/30RQP 160-520
dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play)	30RQM/30RQP 160-520
LP single-pump hydraulic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play)	30RQM/30RQP 160-520
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play)	30RQM/30RQP 160-520
Evap. HP variable-speed single-pump	116V	Single high-pressure water pump with variable speed drive (VSD), water filter, electronic water flow control, pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQM/30RQP 1 -520

OPTIONS

Options	No.	Description	Advantages	Use
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers.Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30RQM/30RQP 160-520
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30RQM/30RQP 160-520
Lon gateway	148D	Two-directional communication board complying with LonTalk protocol	Connects the unit by communication bus to a building management system	30RQM/30RQP 160-520
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30RQM/30RQP 160-520
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30RQM/30RQP 160-520
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	30RQM/30RQP 160-520
Compliance with Australian regulations	200	Unit approved to Australian code	Compliance with Australian regulations	30RQM/30RQP 160-520
Power factor correction	231	Capacitors for automatic regulation of power factor (cos phi) value to 0,95.	Reduction of the apparent electrical power, compliance with minimum power factor limit set by utilities	30RQM/30RQP 160-520
Coil defrost resistance heaters	5	Electric heaters under the coils and the condensate	Prevents frost formation on the coils; compulsory in the heating mode, if the outdoor is below 0°C	30RQM/30RQP 160-520
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30RQM/30RQP 160-520
230 V electric plug	284	230 VAC power supply source provided with plug socket and transformer (180 VA, 0.8 A)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30RQM/30RQP 160-520
Expansion vessel	293	6-bar expansion tank integrated into the hydraulic module (option 116 required)	Easy and fast installation (plug & play), & Protection of closed water systems from excessive pressure	30RQM/30RQP 16 -520
Screwed water connection sleeve kit for DSH	303	DSH connections with screw connection sleeves	Easy installation. Allows unit connection to a screw connector	30RQM/30RQP 160-520
Welded water connection kit for DSH	304	DSH inlet/outlet welded connection sleeves	Easy installation	30RQM/30RQP 160-520
Set-point adjustment by 4-20 mA signal	311	Connections enabling a 4-20 mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	30RQM/30RQP 160-520

PHYSICAL DATA. SIZES 160 TO 520

30RQM				160	180	210	230	240	270	310	330	380	430	470	520
Heating															
Standard unit Full load performances*	HA1	Nominal capacity	kW	181	198	240	216	272	294	342	359	415	474	457	436
		COP	kW/kW	3,75	3,79	3,81	3,56	3,86	3,75	3,74	3,82	3,72	3,72	3,62	3,57
	HA2	Nominal capacity	kW	174	191	232	245	262	282	329	345	399	456	498	537
		COP	kW/kW	2,99	3,05	3,04	2,91	3,11	2,96	2,98	3,04	2,95	2,97	2,95	2,94
Seasonal energy efficiency**	HA1	**$SCOP_{30/35°C}$**	**kWh/kWh**	**3,20**	**3,21**	**3,23**	**3,21**	**3,20**	**3,22**	**3,20**	**3,20**	**3,30**	**3,35**	**3,34**	**3,31**
		$\eta s\ heat_{30/35°C}$	**%**	**125**	**125**	**126**	**125**	**125**	**126**	**125**	**125**	**129**	**131**	**131**	**130**
		P_{rated}	kW	121	134	159	169	159	194	211	231	268	305	339	356
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	154	168	201	225	232	264	297	322	372	424	458	510
		EER	kW/kW	2,76	2,87	2,73	2,74	2,89	2,86	2,86	2,87	2,87	2,90	2,75	2,74
		Eurovent class		C	C	C	C	C	C	C	C	C	B	C	C
Seasonal energy efficiency		$SEER_{12/7°C}$ Comfort low temp.	kWh/kWh	3,89	3,89	3,93	3,99	3,95	4,03	4,06	4,00	4,04	4,11	4,09	4,04
		$SEPR_{12/7°C}$ Process high temp.	kWh/kWh	4,40	4,31	4,41	4,12	4,64	4,77	4,72	5,09	5,03	4,86	4,78	4,58
		$SEPR_{-2/-8°C}$ Process medium temp.	kWh/kWh	-	-	-	-	-	-	-	-	-	-	-	-
Sound levels															
Standard unit															
Sound power level(1)			dB(A)	90	91	91	91	92	92	93	93	94	94	94	94
Sound pressure level at 10 m (2)			dB(A)	58	59	59	59	60	60	61	61	62	62	62	62
Standard unit + option 15(3)															
Sound power level(1)			dB(A)	89	90	90	90	91	91	91	92	92	93	93	93
Sound pressure level at 10 m(2)			dB(A)	57	58	58	58	59	59	59	60	60	61	61	61
Dimensions															
Length			mm	2410	2410	2410	2410	3604	3604	3604	3604	4797	4797	4797	4797
Width				2253	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height				2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297
Operating weight(4)															
Standard unit			kg	1426	1505	1633	1656	2068	2216	2341	2572	3040	3289	3302	3342
Standard unit + option 15				15	1	1741	1764	2176	2342	2467	2716	3202	47	482	3522
Standard unit + option 15 + option 116S (3)			kg	1605	1683	1824	1846	2267	2463	2596	2813	3281	3571	3620	3660
Compressors				Hermetic Scroll 48.3 r/s											
Circuit A				1	1	2	2	2	2	2	2	3	4	4	4
Circuit B				2	2	2	2	2	3	3	4	4	4	4	4
No. of control stages				3	3	4	4	4			6		8	8	8

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2013, average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ **Applicable Ecodesign regulation: (EU) No 813/2013**

$SEER_{12/7°C}$ & $SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{-2/-8°C}$ Applicable Ecodesign regulation: (EU) No 2015/1095

(1) In dB ref=10^{-12} W. (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent at nominal conditions EN14511 - cooling mode.

(2) In dB ref 20 µPa. (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information. calculated from the sound power level Lw(A).

(3) Options: 15 = Low noise level. 116S = High Pressure dual-pump hydraulic module

(4) Weights are guidelines only. Refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA. SIZES 160 TO 520

30RQM		160	180	210	230	240	270	310	330	380	430	470	520
Refrigerant(4)		R410A											
Circuit A charge	kg	14.5	22.0	23.0	24.0	27.0	27.0	30.0	33.0	42.0	53.0	54.0	56.0
	teqCO_2	30.3	45.9	48.0	50.1	56.4	56.4	62.6	68.9	87.7	110.7	112.8	116.9
Circuit B charge	kg	23.0	23.0	23.0	24.0	35.0	36.0	48.5	53.0	53.0	53.0	54.0	56.0
	teqCO_2	48.0	48.0	48.0	50.1	73.1	75.2	101.3	110.7	110.7	110.7	112.8	116.9
Capacity control		Touch Pilot Control											
Minimum capacity	%	33%	33%	25%	25%	25%	20%	20%	17%	14%	13%	13%	13%
Air heat exchangers		Grooved copper tubes and aluminium fins											
Fans		Axial Flying Bird 4 with rotating shroud											
Quantity		3	4	4	4	5	5	6	6	7	8	8	8
Maximum total air flow	l/s	13542	18056	18056	18056	22569	22569	27083	27083	31597	36111	36111	36111
Maximum rotation speed	r/s	16	16	16	16	16	16	16	16	16	16	16	16
Water heat exchanger		Dual-circuit plate heat exchanger											
Water content	l	15	15	15	19	27	27	35	44	44	44	47	53
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic Module (option)		Pump. Victaulic screen filter. relief valve. water valve and air purge. pressure sensors. expansion tank (option)											
Pump		Centrifugal. monocell. 48.3 r/s. low or high pressure (as required). single or dual pump (as required)											
Expansion vessel volume	l	50	50	50	50	80	80	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module	k a	400	400	400	400	400	4	4	4	400	400	400	400
Water connections with or without hydraulic module		Victaulic type											
Diameter	inch	3	3	3	3	4	4	4	4	4	4	4	4
External diameter	mm	88.9	88.9	88.9	88.9	114.3	114.3	114.3	114.3	114.3	114.3	114.3	114.3
Chassis paint colour		Colour code RAL 7035											

(4) Weights are guidelines only. Refer to the unit nameplate.

PHYSICAL DATA, SIZES 160 TO 520

30RQP				160	180	210	230	240	270	310	330	380	430	470	520
Heating															
Standard unit Full load performances*	HA1	Nominal capacity	kW	181	198	240	216	272	294	342	359	415	474	457	436
		COP	kW/kW	3,75	3,79	3,81	3,56	3,86	3,75	3,74	3,82	3,72	3,72	3,62	3,57
	HA2	Nominal capacity	kW	174	191	232	245	262	282	329	345	399	456	498	537
		COP	kW/kW	2,99	3,05	3,04	2,91	3,11	2,96	2,98	3,04	2,95	2,97	2,95	2,94
Seasonal energy efficiency**	HA1	**$SCOP_{30/35°C}$**	**kWh/kWh**	**3,38**	**3,38**	**3,39**	**3,39**	**3,38**	**3,38**	**3,40**	**3,40**	**3,43**	**3,46**	**3,46**	**3,41**
		$\eta s\ heat_{30/35°C}$	**%**	**132**	**132**	**133**	**133**	**132**	**132**	**133**	**133**	**134**	**135**	**135**	**133**
		P_{rated}	kW	121	134	159	169	159	194	211	231	268	305	339	356
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	154	168	201	225	232	264	297	322	372	424	458	510
		EER	kW/kW	2,76	2,87	2,73	2,74	2,89	2,86	2,86	2,87	2,87	2,90	2,75	2,74
		Eurovent class		C	C	C	C	C	C	C	C	C	B	C	C
Seasonal energy efficiency		SEER $_{12/7°C}$ Comfort low temp.	kWh/kWh	4,07	4,08	4,09	4,13	4,16	4,21	4,16	4,23	4,32	4,33	4,30	4,22
		SEPR $_{12/7°C}$ Process high temp.	kWh/kWh	5,24	5,29	5,29	5,16	5,13	5,39	5,52	5,45	5,56	5,64	5,40	5,18
		SEPR $_{-2/-8°C}$ Process medium temp.	kWh/kWh	-	3,55	-	3,47	-	3,36	3,67	-	-	-	-	-
Sound levels															
Standard unit															
Sound power level(1)			dB(A)	90	91	91	91	92	92	93	93	94	94	94	94
Sound pressure level at 10 m(2)			dB(A)	58	59	59	59	60	60	61	61	62	62	62	62
Standard unit + option 15(3)															
Sound power level(1)			dB(A)	89	90	90	90	91	91	91	92	92	93	93	93
Sound pressure level at 10 m(2)			dB(A)	57	58	58	58	59	59	59	60	60	61	61	61
Standard unit + option 15LS(3)															
Sound power level(1)			dB(A)	84			6	86	87	87	8	8		9	9
Sound pressure level at 10 m(2)			dB(A)	52	53	54	54	54	55	55	55	56			
Dimensions															
Length			mm	2410	2410	2410	2410	3604	3604	3604	3604	4797	4797	4797	4797
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height				2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297
Operating weight(4)															
Standard unit			kg	1462	1542	1670	1693	2105	2252	2378	2608	3076	3347	3359	3408
Standard unit + option 15/15LS			kg	1545	1624	1778	1801	2213	2378	2504	2752	3239	3527	3539	3588
Standard unit + option 15/15LS + option 116S (3)			kg	164	1720	1	1882	2304	2500	2632	2849	331	3629	7	3726
Compressors				Hermetic Scroll 48.3 r/s											
Circuit A				1	1	2	2	2	2	2	2	3	4	4	4
Circuit B				2	2	2	2	2	3	3	4	4	4	4	4
No. of control stages				3	3	4	4	4	5	5	6	7	8	8	8

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2013, average climate

HA1 Heating mode conditions: Water heat exchanger water entering/leaving temperature 30°C/35°C, outside air temperature tdb/twb = 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

HA2 Heating mode conditions: Water heat exchanger water entering/leaving temperature 40°C/45°C, outside air temperature tdb/twb= 7°C db/6°C wb, evaporator fouling factor 0 m².K/W

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ **Applicable Ecodesign regulation: (EU) No 813/2013**

SEER $_{12/7°C}$ & SEPR $_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

SEPR $_{-2/-8°C}$ Applicable Ecodesign regulation: (EU) No 2015/1095

(1) In dB ref=10^{-12} W. (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent at nominal conditions EN14511 - cooling mode.

(2) In dB ref 20 µPa. (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3 dB(A)). For information. calculated from the sound power level Lw(A).

(3) Options: 15 = Low noise level. 116S = High Pressure dual-pump hydraulic module

(4) Weights are guidelines only. Refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

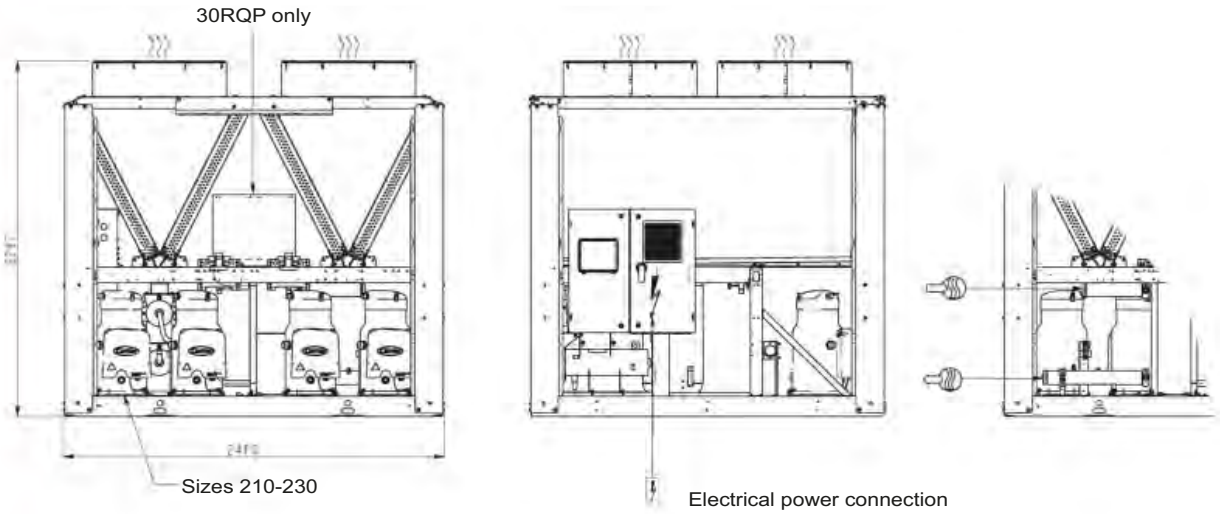
Eurovent certified values

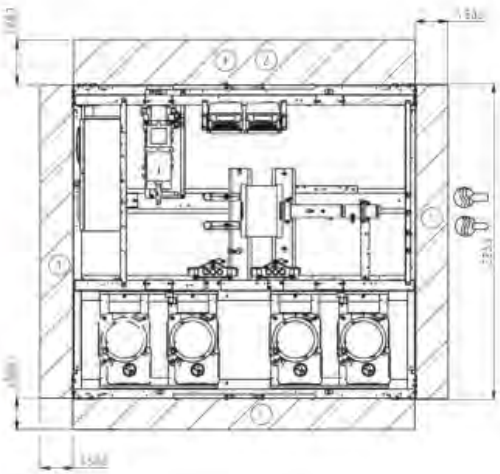
HEATING

DIMENSIONS/CLEARANCES

30RQM/30RQP 160-230 (with and without hydraulic module)

Unit without hydraulic module





Key:
All dimensions are in mm.

① Clearances required for maintenance and air flow

② Clearances recommended for removal of the coils

Water inlet

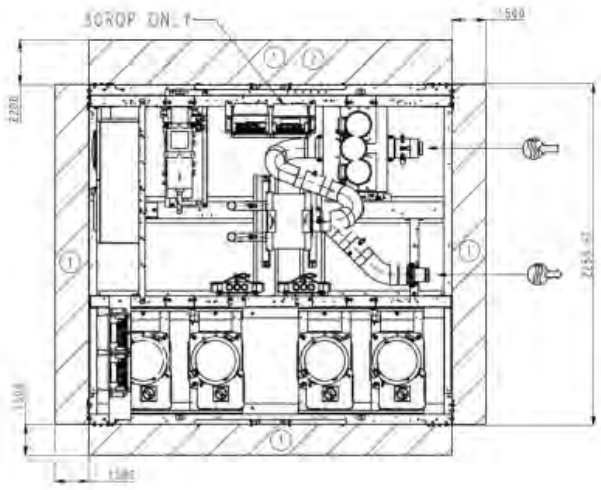
Water outlet

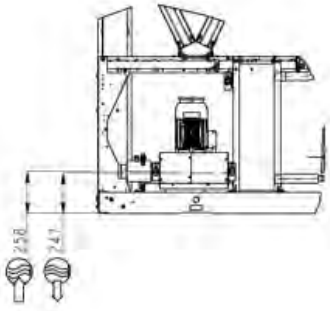
Air outlet, do not obstruct

Control box

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.
For the positioning of the fixing points, weight distribution points and center of gravity coordinates please refer to the dimensional drawings.

Unit with hydraulic module

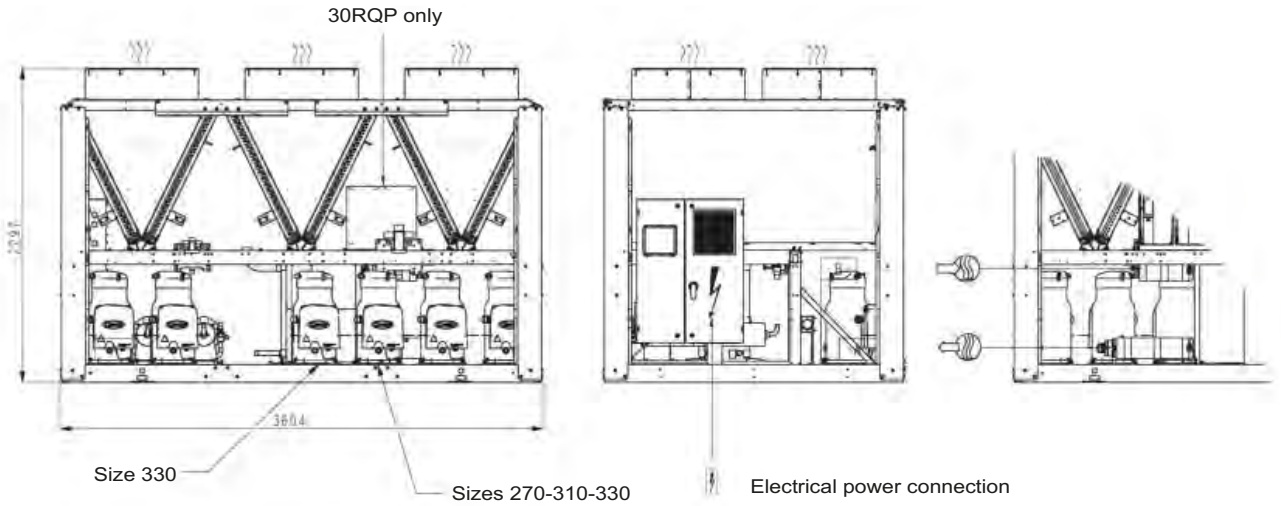


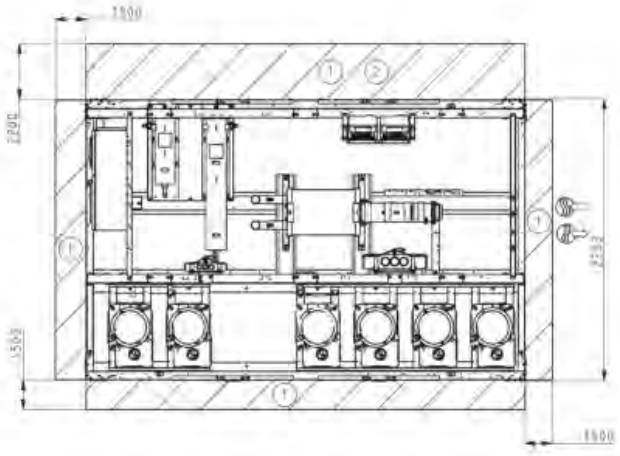


DIMENSIONS/CLEARANCES

30RQM/30RQP 240-330 (with and without hydraulic module)

Unit without hydraulic module





Key:
All dimensions are in mm.

① Clearances required for maintenance and air flow

② Clearances recommended for removal of the coils

Water inlet

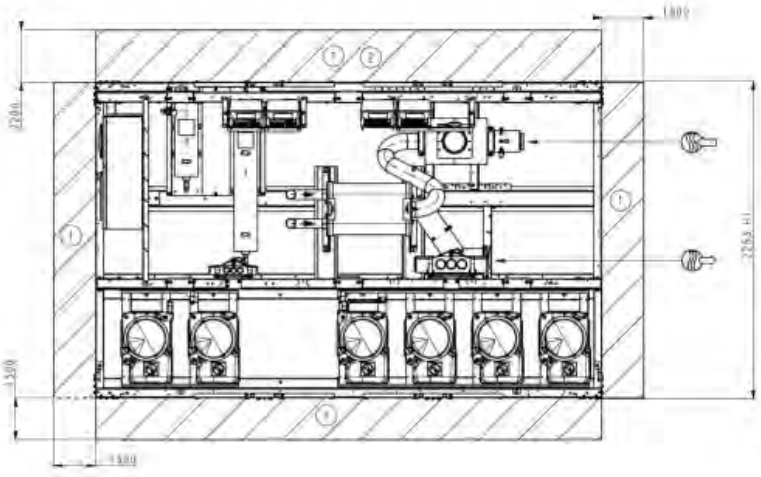
Water outlet

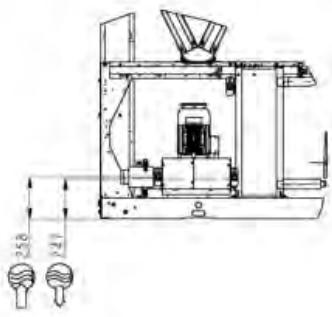
Air outlet, do not obstruct

Control box

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.
For the positioning of the fixing points, weight distribution points and center of gravity coordinates please refer to the dimensional drawings.

Unit with hydraulic module

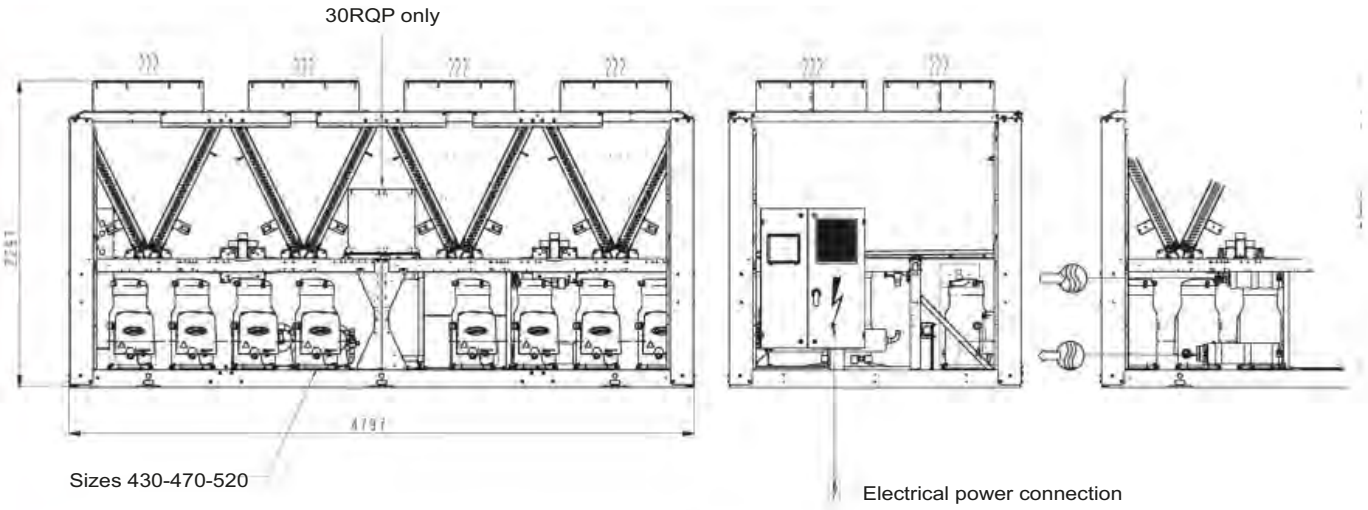


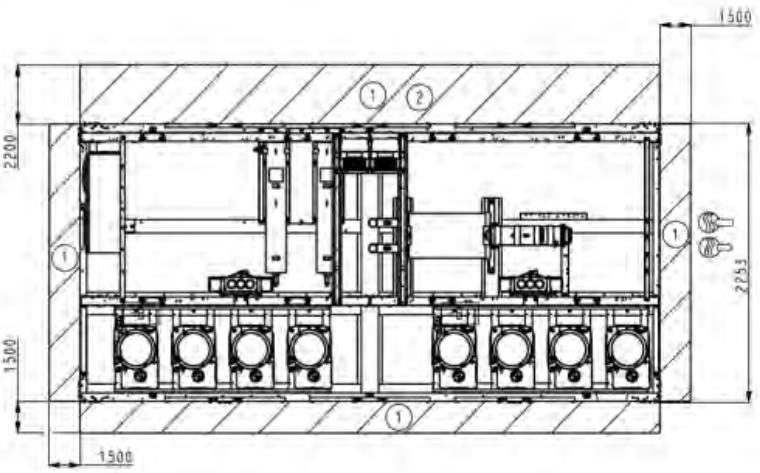


DIMENSIONS/CLEARANCES

30RQM/30RQP 380-520 (with and without hydraulic module)

Unit without hydraulic module





Key:
All dimensions are in mm.

① Clearances required for maintenance and air flow

② Clearances recommended for removal of the coils

Water inlet

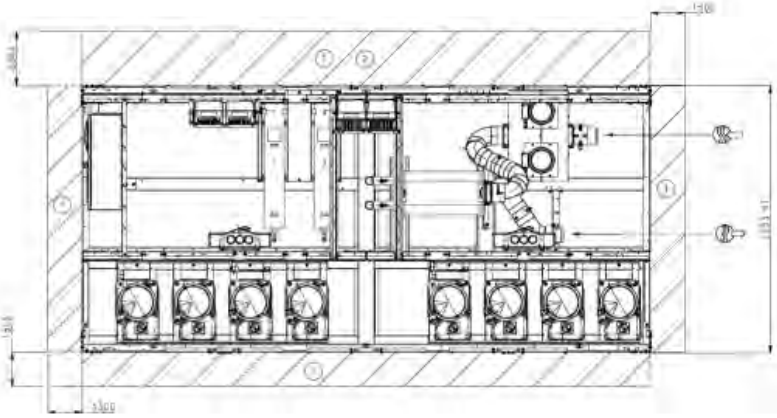
Water outlet

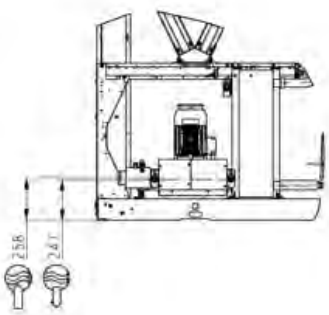
Air outlet, do not obstruct

Control box

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.
For the positioning of the fixing points, weight distribution points and center of gravity coordinates please refer to the dimensional drawings.

Unit with hydraulic module





WATER-SOURCED HEAT PUMPS

61WG optimized for heating

Compact design

Plug and play approach

High efficiency

HEATING

61WG

AQUASNAP Heating

Nominal heating capacity 29-230 kW

The 61WG units are new Carrier heat pumps designed for commercial (offices, small hotels, leisure facilities), residential and industrial applications. All units offer a unique combination of high performance and functionality in an exceptionally compact chassis.

61WG units are designed for high-temperature heating applications with hot water production possible up to 65 °C.

A large number of options is available for the whole range:

- hydraulic modules with or without variable water flow rate,
- reinforced sound insulation,
- stacking and connection of two units

61WG 110-190 availability: Q2.2018

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Features

- Reduced footprint
- Scroll compressors and R-410A refrigerant
- Variable-flow pump
- Low-noise option (-3 dB(A))
- Stacking of two units for increased capacity (up to size 090)
- Several communication protocols available: JBus, BacNet, MS/TP, LON
- Water connection at the top or rear

Available versions

61WG - optimised for heating

- High temperature up to +65 °C
- Evaporator temperature down to -5 °C
- Control of the three-way diverter valve for domestic hot water and space heating requirements
- System approach - the Heating System Manager maximises the global efficiency of complex systems where the 61WG units are combined with an auxiliary heating source to serve multi-zone space heating and domestic hot water production.

The right unit for any application

- The high temperature of the 61WG units makes them compatible with most heating systems, both in new and refurbished buildings and permits domestic hot water production (with a dedicated temperature set-point).
- Option 153 “Built-in DHW and space heating control” allows control of both domestic hot water and space heating requirements:
  - Domestic hot water production: a built-in three-way valve is directed to divert the heat flow from the space heating loop to the domestic hot water loop and vice versa.
  - Space heating control: the set-point is adjustable, based on the daily schedule or the outside air temperature (weather compensation function).
  - Control of auxiliary systems: if an alarm is detected at the 61WG or if there is insufficient heating capacity, a digital signal starts an auxiliary electric heater (1 to 4 stages) or boiler.
  - Pump control: allows control of the built-in pump as well as the pump in the secondary loop (to terminals).
- In 61WG units the Heating System Manager (HSM) accessory allows control of systems with several heat sources and different additional systems: electric heat, boiler or for the most complex systems district heating (see pages 9 to 11).

Adaptability and simple installation

- The 61WG units can be provided with several hydraulic module options, both on the evaporator and/or condenser side, with different levels of available pressure and variable or fixed-speed pumps (see page 7).
- If option 153 is selected domestic hot water production is controlled via a built-in three-way diverter valve (not supplied).
- 61WG units offer water-side heating reversibility.

Water connections at the rear of the unit

Internal view of 61WG unit with hydraulic module

HEATING

CUSTOMER BENEFITS

Water connections at the top of the unit

A compact high-performance product range

- Small footprint, ideal for refurbished buildings, allows access in very tight plant rooms.
- 61WG: High SCOP satisfies even the most stringent standards, with a leaving water temperature of up to 65 °C without supplementary system.
- Variable-flow pumps reduce system energy consumption.
- The entire range offers low sound levels, allowing installation in any building type. The low-noise option ensures enhanced acoustic comfort (-3 dB(A)).
- 61WG units are equipped with the latest generation R410A scroll compressor, optimised for typical operating conditions for water-sourced units.

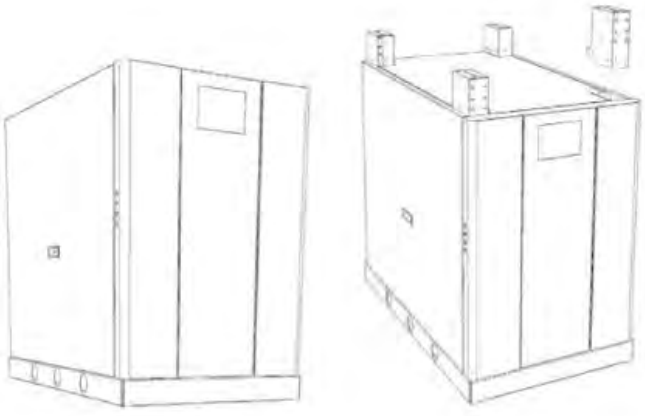
Component acessibility

See photos below.

Access to scroll compressors

Access to control panel

Two-unit stacking option for reduced footprint size 020-090



CUSTOMER BENEFITS

Advance control

The control is a numerical control that combines intelligence with operating simplicity. Depending on the options used, the unit manages the operation of compressors, evaporaor and condenser water pumps and fans (drycooler)

- Optimised energy management
  - A patented auto-adaptive algorithm optimizes the condensing pressure at part load to reduce compressor load and ensure perfect supply for the evaporator with liquid refrigerant. The algorithm controls the operation of the variable-speed condenser water pump and the fans (drycooler)- Controler automatically resets the chilled-water temperature set-point based on the outside air temperature or the return water temperature. The control can also operate on a second set-point (example: unoccupied mode).
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic changeover in case of a unit fault. The CCN clock board connection offers other control possibilities:
  - Two independent time schedules to control:
  - Unit start/stop
  - Operation at a second chilled-water set-point (for example: unoccupied mode)

- Total unit protection
  - A patented auto-adaptive algorithm controls compressor operation and permanently adapts to the system characteristics (water loop inertia). Dangerous compressor cycling is prevented. The unit can operate safely with a low water volume, and this frequently makes a buffer tank unnecessary (see minimum water volume later in this document).
  - The controller permanently analyses the compressor suction and discharge pressures and temperatures. If an abnormal situation is detected, the control reacts, e.g. by reducing the capacity. As a result the compressors always operate in their ideal temperature range and many unit shut-downs due to a fault can be prevented.

- Remote control

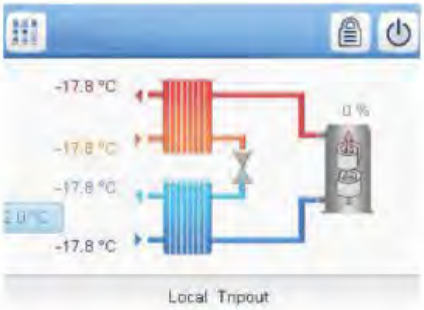
  A connection terminal allows remote control of the AquaSnap by wired cable:
  - Start/stop: Opening of this contact will shut down the unit
  - Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
  - Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
  - Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
  - Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

- Remote management

  The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

  The AquaSnap also communicates with other building management systems via optional communication gateways.

Touch Pilot Junior control



The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3" colour touch screen.

- Integrated advanced communication features
  - With hydraulic module: Water pressure display and water flow rate calculation
  - Easy and high-speed communication technology over Ethernet (IP) to a building management system

- 4.3" Touch Pilot user interface
  - Access to multiple unit parameters
  - Concise and clear information is available in local languages
  - Complete menu, customised for different users (end user, service personnel or Carrier engineers)

- Remote management (standard)

  Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection.

  This makes remote control quick and easy and offers significant advantages for service operations.

- Maintenance function (standard)

  The Touch Pilot Junior include functionality of maintenance
  - Compulsory Maintenance Reminder– FGAS sealing check
  - Periodic Maintenance Reminder. Configurable alarm of maintenance in days, month or hours of operation

OPTIONS

Options	No.	Description	Advantages	Use
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	61WG 020-190
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	61WG 020-190
External disconnect handle	70F	The handle of the electrical disconnect switch is on the outside of the unit	Quick access to the unit disconnect switch	61WG 020-190
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	61WG 110-190
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	61WG 110-190
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	61WG 020-190
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	61WG 110-190
LP evap. single-pump	116T	Evaporator hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	61WG 020-190
HP evap. variable-speed single-pump	116V	Evaporator hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	61WG 020-190
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	61WG 110-190
LP VSD single-pump	116Y	Evaporator hydraulic module equipped with low -pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	61WG 110-190
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	61WG 020-190
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	61WG 020-190
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	61WG 020-190
Built-in DHW & space heating control	153	Control board factory-installed on the unit, control using weather compensation, control of supplementary electric heater (4 stages) or boiler, needle valve for domestic hot-water production with programmable time schedule.	Permits easy control of a basic heating system	61WG 020-090
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	61WG 020-190
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, anti-UV insulant	Prevents condensation on the evaporator entering/leaving refrigerant lines	61WG 020-190

OPTIONS

Options	No.	Description	Advantages	Use
Low noise level	257	Compressor sound enclosure	Reduced sound emissions	61WG 020-190
Very low sound level	258	Enhanced sound insulation of main noise sources (Material classified CD0S2 fire class according to Euroclass 13-501).	6 dB(A) quiter than standard . Refer to the physical data table for detailed values	61WG 020-090
Evaporator screw connection sleeves kit	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	61WG 020-140
Condenser screw connection sleeves kit	265	Condenser inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	61WG 020-140
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	61WG 020-190
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	61WG 020-190
HP single-pump, cond. side	270R	Condenser hydraulic module equipped with high pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	61WG 110-190
LP single-pump, cond. side	270T	Condenser hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	61WG 020-190
HP cond. variable-speed single-pump	270V	Condenser hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	61WG 020-190
HP cond. variable-speed dual-pump	270W	Condenser hydraulic module equipped with dual high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	61WG 110-190
LP cond. variable-speed single-pump	270Y	Condenser hydraulic module equipped with low-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	61WG 110-190
High-temp. water prod. with glycol solution on the evap.	272	Condenser side water production up to 65 °C, with glycol solution on the evaporator side to -5 °C	Geothermal application and domestic hot-water production	61WG 020-190
Unit stackable for operation	273	Unit stackable for operation	Reduced footprint size	61WG 020-090
water connection at the top	274	Customer water connection at the top of the unit	Reduced footprint size	61WG 020-190
Safety hydraulic components, evap. side	293	Screen filter, expansion tank and relief valve integrated in the evaporator hydraulic module	Easy and fast installation (plug & play), operating safety	61WG 020-190
Safety hydraulic components, cond. side	293A	Screen filter, expansion tank and relief valve integrated in the condenser hydraulic module	Easy and fast installation (plug & play), operating safety	61WG 020-190
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust	61WG 020-190
External temperature sensor	312	External temperature sensor control for using weather compensation	Allow to adjust set-point using weather compensation and define autorisation operation mode to external temperature	61WG 020-190

ACCESSORIES

Accessories	Description	Advantages	Use
00PPG000488000- Heating System Manager type A: It controls one heat emitter type with an auxiliary electric heater or boiler.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61WG 020-190
00PPG000488100- Heating System Manager type B: It controls two heat emitter types (or independent zones) and domestic hot water production with an auxiliary electric heater or boiler.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61WG 020-190
00PPG000488200- Heating System Manager type C: It controls two heat emitter types (or independent zones) and domestic hot water production with a district heating network as auxiliary source.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	61WG 020-190

PHYSICAL DATA, 61WG UNITS

61WG				020	025	030	035	040	045	050	060	070	080	090
Heating														
Standard unit Full load performances*	HW1	Nominal capacity	kW	29	34	38	44	50	57	69	78	88	100	117
		COP	kW/kW	5,42	5,29	5,21	5,29	5,34	5,32	5,49	5,36	5,46	5,28	5,33
	HW2	Nominal capacity	kW	28	33	37	43	49	55	66	76	84	95	109
		COP	kW/kW	4,35	4,34	4,20	4,27	4,32	4,36	4,51	4,32	4,35	4,27	4,31
	HW3	Nominal capacity	kW	27	32	35	41	47	52	64	74	80	90	103
		COP	kW/kW	3,65	3,68	3,52	3,59	3,56	3,66	3,75	3,64	3,63	3,56	3,60
	HW4	Nominal capacity	kW	26	31	34	40	43	49	61	71	76	85	97
		COP	kW/kW	2,96	2,96	2,86	2,93	2,88	2,96	2,98	3,04	2,99	2,94	2,97
	HB1	Nominal capacity	kW	22	26	29	34	38	42	50	57	67	75	87
		COP	kW/kW	4,24	4,26	4,29	4,27	4,27	4,25	4,25	4,27	4,26	4,28	4,29
Seasonal efficiency**	HW1	$SCOP_{30/35°C}$	kW/kW	5,36	5,20	5,11	5,19	5,23	5,19	5,84	5,93	5,93	5,83	5,82
		$\eta s\ heat_{30/35°C}$	%	206	200	197	200	201	200	226	229	229	225	225
	HW3	**$SCOP_{47/55°C}$**	**kW/kW**	**4,37**	**4,32**	**4,20**	**4,28**	**4,32**	**4,35**	**4,86**	**4,88**	**4,80**	**4,89**	**4,80**
		$\eta s\ heat_{47/55°C}$	**%**	**167**	**165**	**160**	**163**	**165**	**166**	**186**	**187**	**184**	**188**	**184**
		P_{rated}	kW	32	38	42	49	56	63	76	88	97	109	124
		Energy labelling		A++	A++	A++	A++	A++	A++	-	-	-	-	-
Operating weight[1]			kg	191	200	200	207	212	220	386	392	403	413	441
Operating weight with option 258[1]			kg	198	207	207	214	219	227	399	405	416	426	454
Sound levels[2]														
Sound power level, standard unit			dB(A)	67	68	69	69	70	70	72	72	72	73	73
Sound power level, option 257			dB(A)	65	66	66	67	68	68	68	69	69	69	70
Sound power level, option 258			dB(A)	61	62	63	63	64	64	66	66	66	67	67
Sound power level, option 257+258			dB(A)	60	62	62	62	64	63	65	65	65	66	66
Dimensions, standard unit[3]														
Width			mm	600	600	600	600	600	600	880	880	880	880	880
Length			mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
Height			mm	901	901	901	901	901	901	901	901	901	901	901
Compressors				Hermetic scroll 48.3 r/s										
Quantity				1	1	1	1	1	1	2	2	2	2	2
Number of capacity stages				1	1	1	1	1	1	2	2	2	2	2
Minimum capacity			%	100	100	100	100	100	100	50	50	50	50	50

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m^2. k/W

HW4 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 55°C/65°C, evaporator and condenser fouling factor 0 m^2. k/W

HB1 Heating mode conditions: Evaporator entering/leaving water temperature 0°C/-3°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W, evaporator fluid: 30% ethylene glycol.

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.

(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, 61WG UNITS

61WG		020	025	030	035	040	045	050	060	070	080	090
Refrigerant(1)		R410A										
Charge, standard unit	kg	3,5	3,5	3,6	3,7	4,0	4,6	7,6	7,8	7,9	8,7	11,5
	$teqCO_2$	7,2	7,3	7,4	7,6	8,2	9,5	15,9	16,3	16,5	18,2	24
Charge, unit with option 272	kg	2,7	2,9	2,9	3,0	3,2	3,9	7,2	7,3	7,4	7,6	10,5
	$teqCO_2$	5,6	6,0	6,1	6,3	6,7	8,1	14,9	15,2	15,5	15,9	21,9
Capacity control		Touch Pilot Junior										
Evaporator		Direct-expansion plate heat exchanger										
Water volume	l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections		Raccordements Victaulic										
Inlet/outlet	in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger										
Net water volume	l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections		Victaulic										
Inlet/outlet	in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Chassis paint color		Color code: RAL7035										

(1) Weight shown is a guideline only. Please refer to the unit nameplate

PHYSICAL DATA, 61WG UNITS

61WG		110	120	140	150	170	190
Operating weight (1)	kg	707	733	758	841	877	908
Sound levels (2)							
Sound power level, standard unit	dB(A)	76	77	78	76	77	78
Sound power level, option 257	dB(A)	73	74	75	73	74	75
Dimensions, standard unit (3)							
Width	mm	880	880	880	880	880	880
Length	mm	1583	1583	1583	1583	1583	1583
Height	mm	1574	1574	1574	1574	1574	1574
Compressors		Hermetic scroll 48.3 r/s					
Quantity		3	3	3	4	4	4
Number of capacity stages		3	3	3	4	4	4
Minimum capacity	%	33	33	33	25	25	25
Refrigerant(1)		R410A					
Charge, standard unit	kg	13,3	14,5	15,6	21,0	23,0	24,2
	teqCO_2	27,8	30,3	32,6	43,8	48,0	50,5
Capacity control		Touch Pilot Junior					
Evaporator		Direct-expansion plate heat exchanger					
Water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections		Victaulic					
Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger					
Net water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections		Victaulic					
Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Chassis paint color		Color code: RAL7035					

(1) Weight shown is a guideline only. Please refer to the unit nameplate
(2) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings

ELECTRICAL DATA

61WG without hydraulic module		020	025	030	035	040	045	050	060	070	080	090
Power circuit												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V, via internal transformer										
Maximum start-up current draw (Un)(1)												
Standard unit	A	98	142	142	147	158	197	161,6	163	171,4	184,7	227,9
Unit with electronic starter option	A	53,9	78,1	78,1	80,9	86,9	108,4	97,7	99,2	105,2	113,6	139,2
Unit power factor at maximum capacity(2)		0,9	0,8	0,9	0,9	0,9	0,9	0,8	0,9	0,9	0,9	0,9
Maximum operating power input(2)	kW	9,5	11,3	12,4	14,4	15,9	18,2	22,5	24,9	28,7	31,8	36,4
Nominal unit operating current draw(3)	A	10,6	12,9	13,3	15,2	16,5	19,7	25,8	26,6	30,4	33,0	39,4
Maximum operating current draw (Un)(4)	A	16,1	19,6	21,1	24,4	26,7	30,9	39,2	42,2	48,8	53,4	61,8
Maximum operating current draw (Un-10%)†	A	17,9	21,8	23,4	27,1	29,7	34,3	43,6	46,9	54,2	59,3	68,7
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table below "Short-circuit stability current"										

61WG without hydraulic module		110	120	140	150	170	190
Power circuit							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V, via internal transformer					
Maximum start-up current draw (Un)(1)							
Standard unit	A	195,8	211,4	258,8	220,2	238,1	289,7
Unit with electronic starter option	A	129,7	140,3	170,2	154,1	167	201,1
Unit power factor at maximum capacity(2)		0,87	0,85	0,85	0,87	0,85	0,85
Maximum operating power input(2)	kW	44	47	55	59	63	73
Nominal unit operating current draw(3)	A	45,6	49,5	59,1	60,8	66	78,8
Maximum operating current draw (Un)(4)	A	73,2	80,1	92,7	97,6	106,8	123,6
Maximum operating current draw (Un-10%)†	A	81,3	89	103	108,4	118,7	137,3
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit					
Short-circuit stability and protection		See table below "Short-circuit stability current"					

(1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).
(2) Maximum power input at the unit operating limits.
(3) Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 10 °C/7 °C, condenser entering/leaving water temperature 30 °C/35 °C.
(4) Maximum unit operating current at maximum unit power input and 400 V.
† Maximum unit operating current at maximum unit power input and 360 V.

ELECTRICAL DATA

Short-circuit stability current (TN system(1)) - standard unit (with main disconnect switch)

61WG		020	025	030	035	040	045	050	060	070	080	090
Value with non-specified upstream protection												
Short-term current at 1 s - Icw	kA rms	3	3	3	3	3	3	3	3	3	3	3
Admissible peak current - Ipk	kA pk	6	6	6	6	6	6	6	6	6	6	6
Maximum value with upstream protection (by circuit breaker)												
Conditional short-circuit current Icc	kA rms	40	40	40	40	40	40	40	40	40	40	40
Schneider circuit breaker - Compact series		NSX 100N										
Reference number(2)		LV429795										

(1) Earthing system type
(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

61WG		110	120	140	150	170	190
Value with non-specified upstream protection							
Short-term current at 1 s - Icw	kA rms	5,5	5,5	5,5	5,5	5,5	5,5
Admissible peak current - Ipk	kA pk	20	20	20	20	20	20
Maximum value with upstream protection (by circuit breaker)							
Conditional short-circuit current Icc	kA rms	154	154	154	154	154	154
Schneider circuit breaker - Compact series		NSX 100N					
Reference number(2)		LV429795					

(1) Earthing system type
(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

Electrical data notes and operating conditions:

- 61WG/30WG/30WGA units have a single power connection point, located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
  - a main disconnect switch,
  - the starter and motor protection devices for each compressor and the pumps
  - the control devices
- Field connections:
  All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61WG/30WG/30WGA units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical unit equipment.

Notes:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

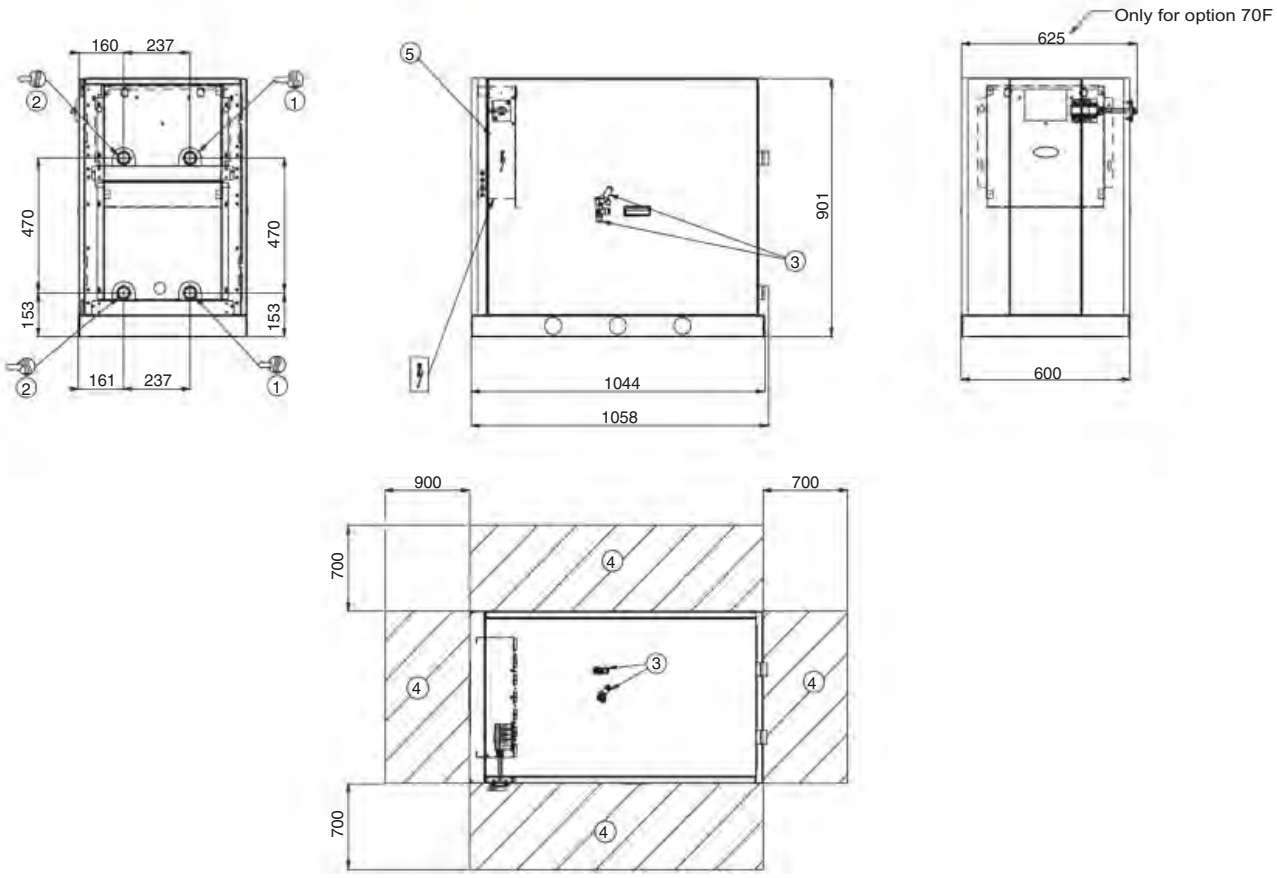
1. The operating conditions for the units are specified below:
   Environment(1) - Environment as classified in EN 60721 (equivalent to CEI60721):
   - Indoor installation,
   - ambient temperature range: +5 °C for the temperature minimum to +40 °C, class 4K4H,
   - humidity range (non-condensing)(1):
   - 50% relative humidity at 40 °C
   - 90% relative humidity at 20 °C
   - altitude: ≤ 2000 m (see note for table 4.7 in the IOM) indoor installation(1)
   - presence of water: class AD2 (possibility of water droplets)
   - presence of hard solids, class 4S2 (no significant dust present)
   - presence of corrosive and polluting substances, class 4C2 (negligible)
   - vibration and shock, class AG2, AH2
   - competence of personnel, class BA4(1) (trained personnel - IEC 60364)
2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
4. Over-current protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947.
6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation. Units delivered with speed drive are not compatible with IT network.
7. Derived currents: If protection by monitoring of derived currents is necessary to ensure the safety of the installation, the control of the cut-out value must take the presence of leak currents into consideration that result from the use of frequency converters in the unit. A value of at least 150 mA is recommended to control differential protection devices.

NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

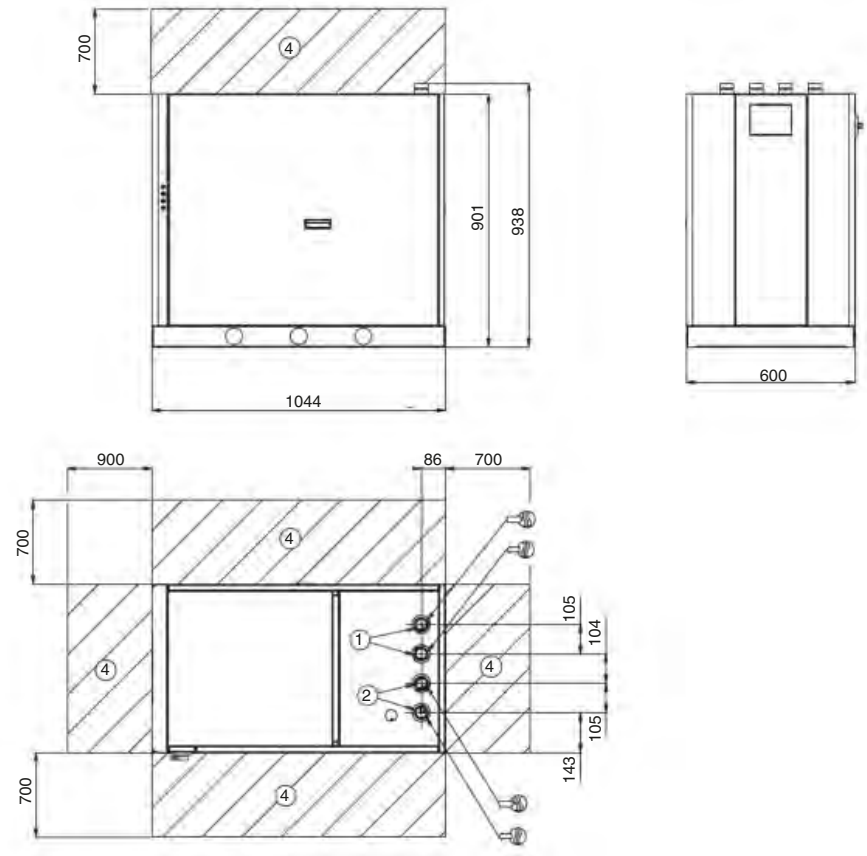
(1) The protection level of the control boxes required to conform to this class is IPX1B (according to reference document IEC 60529). All 61WG/30WG/30WGA units fulfil this protection condition.
Units equipped with front casing panel meet class IP23. If the casing panel has been removed, access to energised components is protected to level IPXXB.

DIMENSIONS/CLEARANCES

61WG 020-045 - standard unit



61WG 020-045 - unit with top connections (option 274)



Legend
All dimensions are in mm.

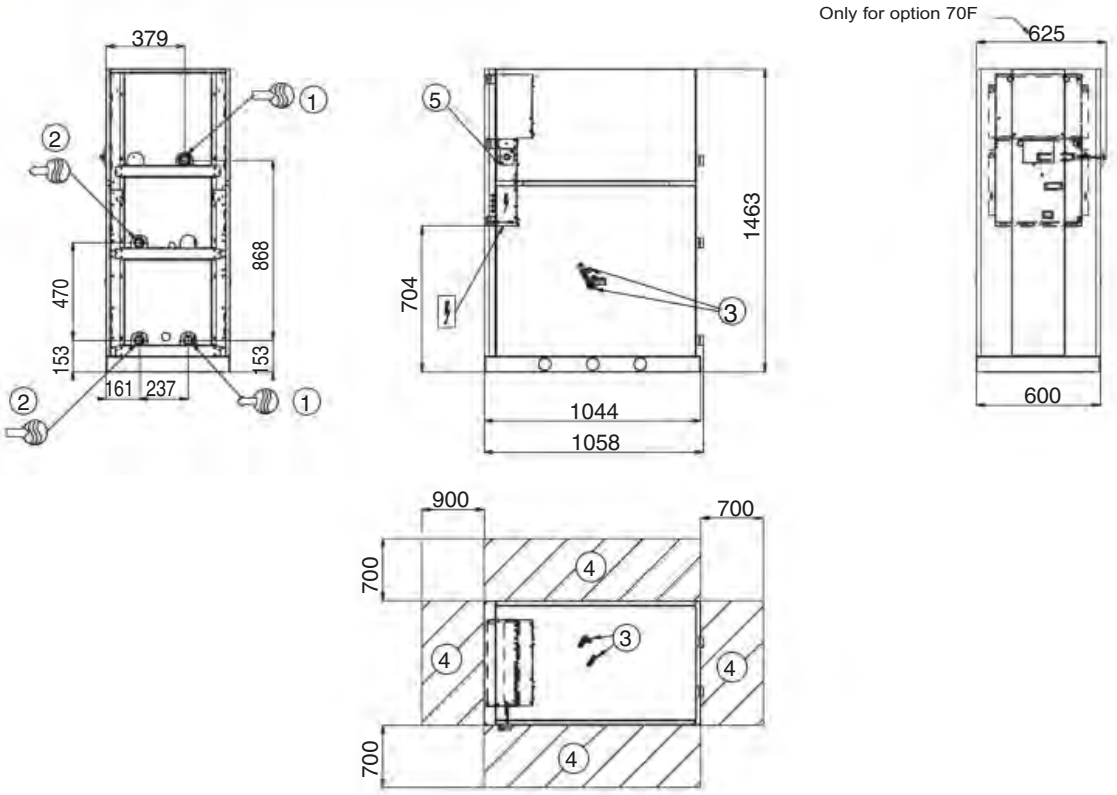
1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.
Water outlet
Power wiring connection

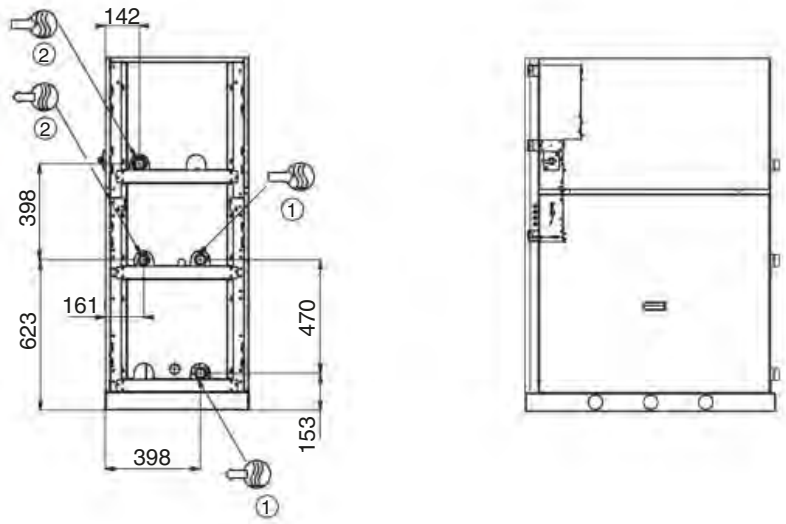
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

61WG 020-045 - unit with evaporator hydraulic module (option 116)



61WG 020-045 - unit with condenser hydraulic module (option 270)



Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.

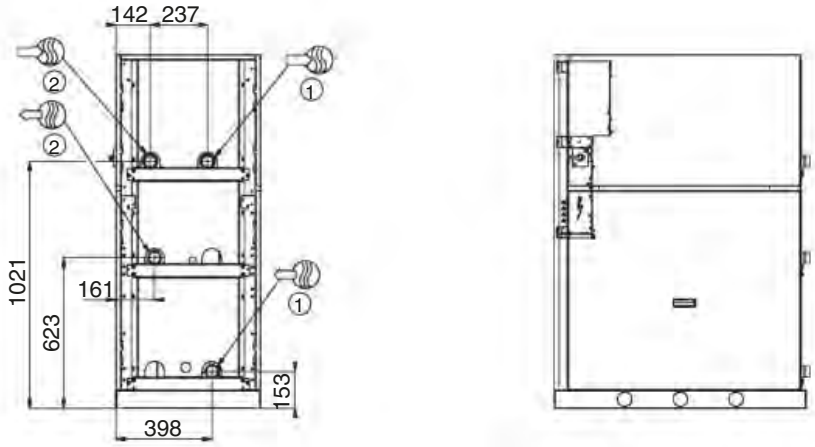
Water outlet

Power wiring connection

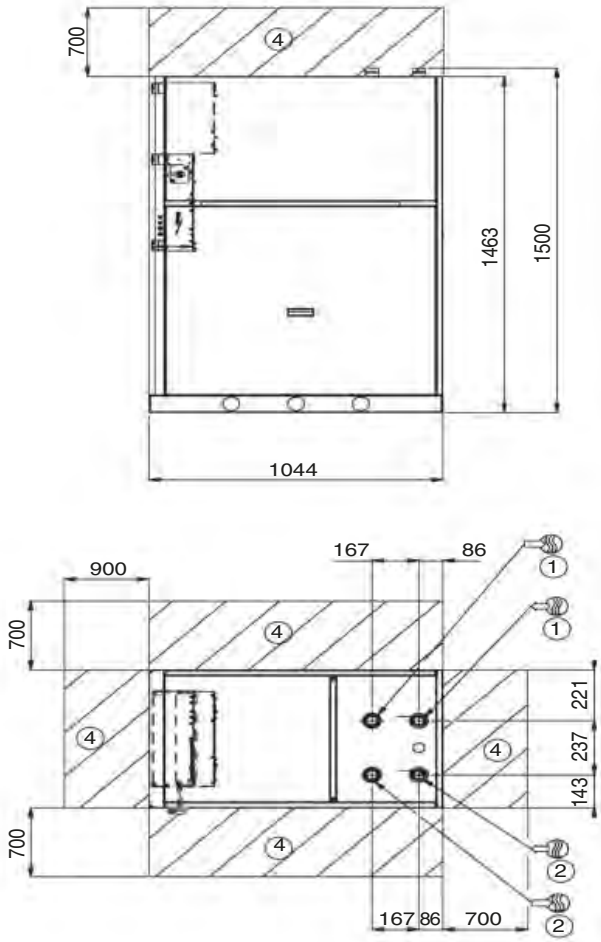
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

61WG 020-045 - unit with evaporator/condenser hydraulic modules (options 116 + 270)



61WG 020-045 - unit with hydraulic module and top connections (options 116 + 274 or 270 + 274 or 116 + 270 + 274)



Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

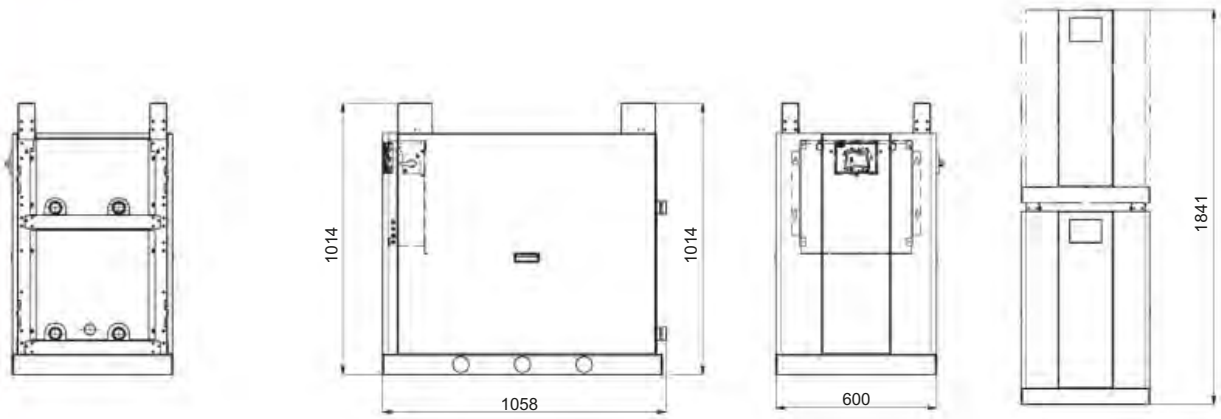
Water inlet.
Water outlet
Power wiring connection

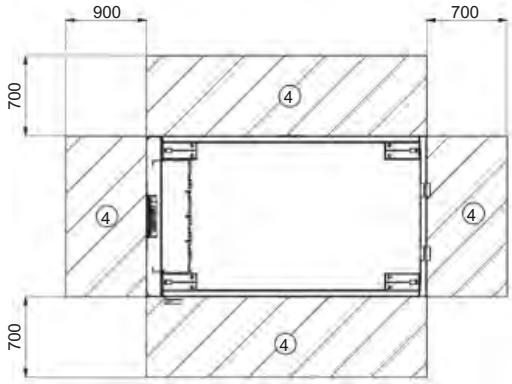
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

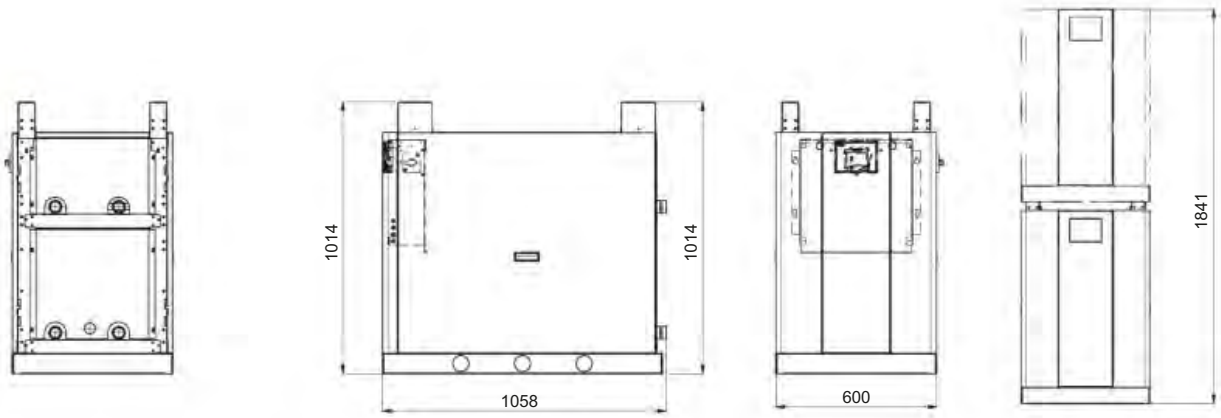
61WG 020-045 - stackable unit (option 273)

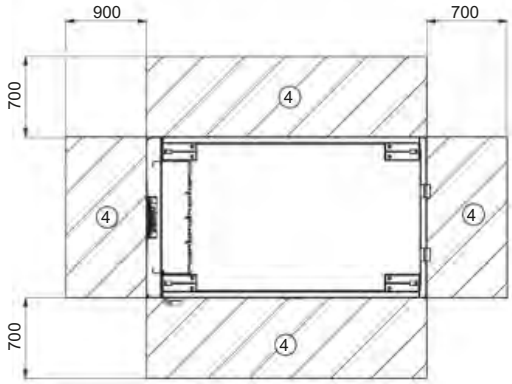
NOTE: The water and electrical connections are identical to those of the standard unit.





61WG 050-090 - standard unit





Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.

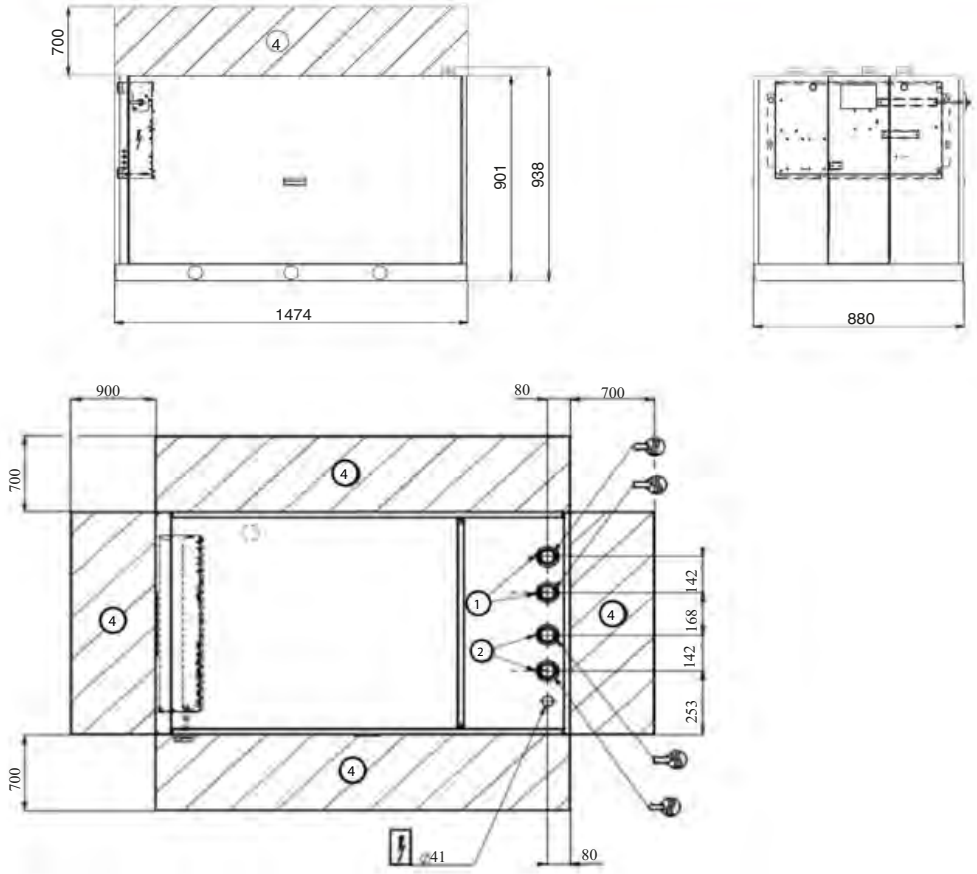
Water outlet

Power wiring connection

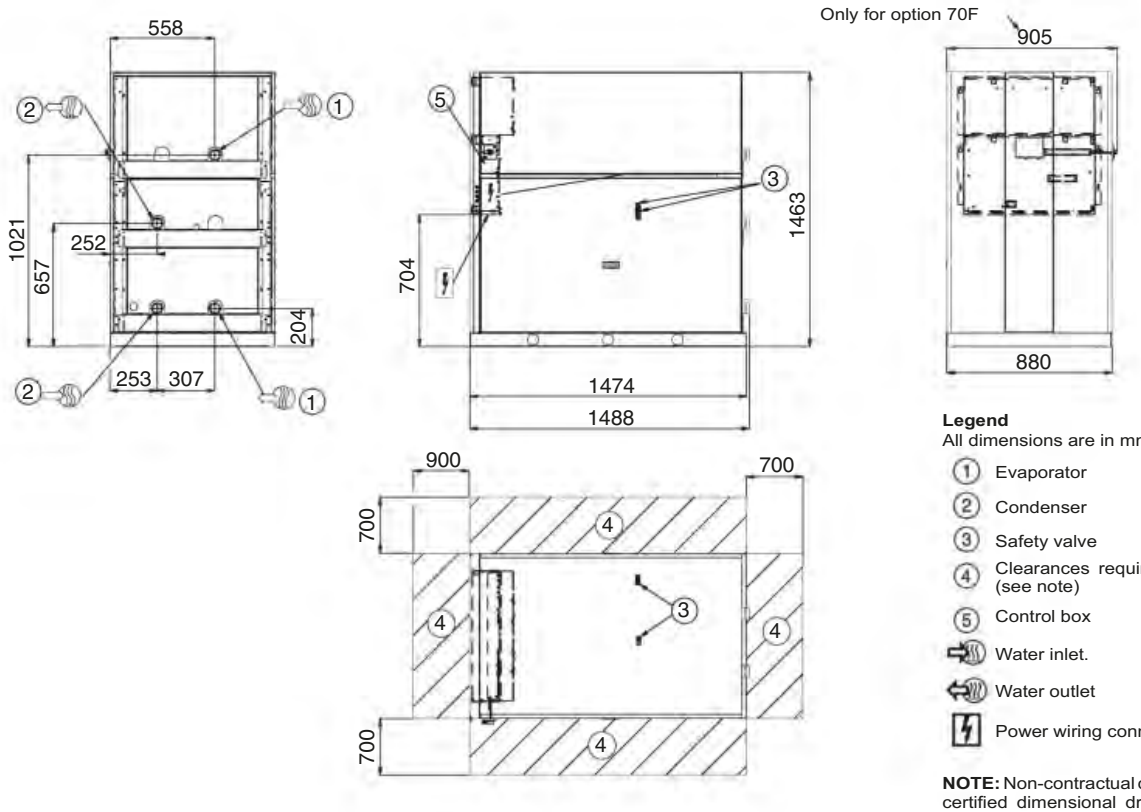
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

61WG 050-090 - unit with top connections (option 274)



61WG 050-090 - unit with evaporator hydraulic module (option 116)



Legend
All dimensions are in mm.

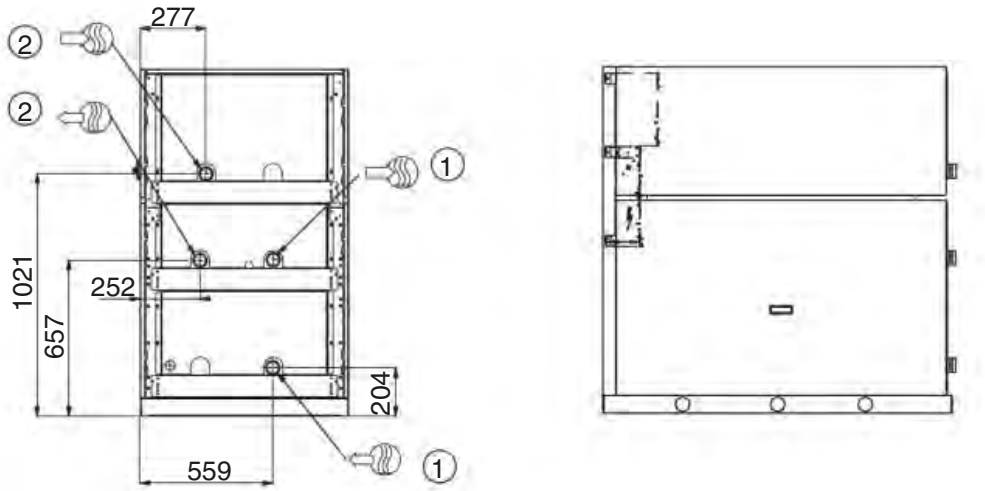
1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

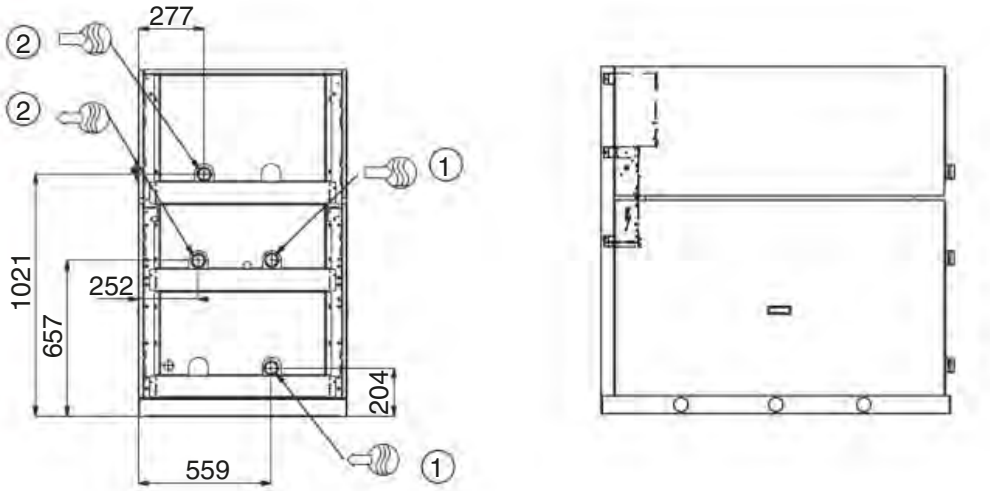
HEATING

DIMENSIONS/CLEARANCES

61WG 050-090 - unit with condenser hydraulic module (option 270)



61WG 050-090 - unit with evaporator/condenser hydraulic modules (options 116 + 270)



Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.

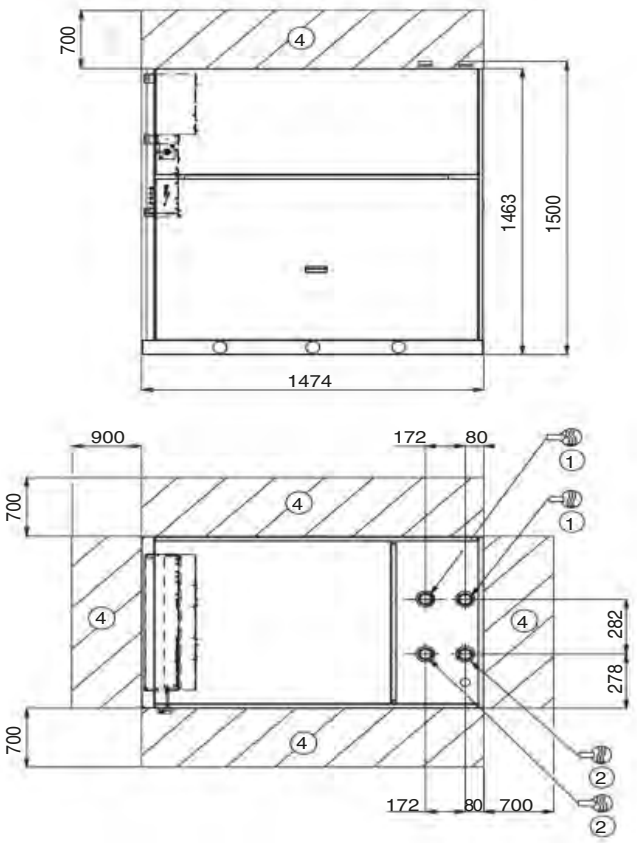
Water outlet

Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

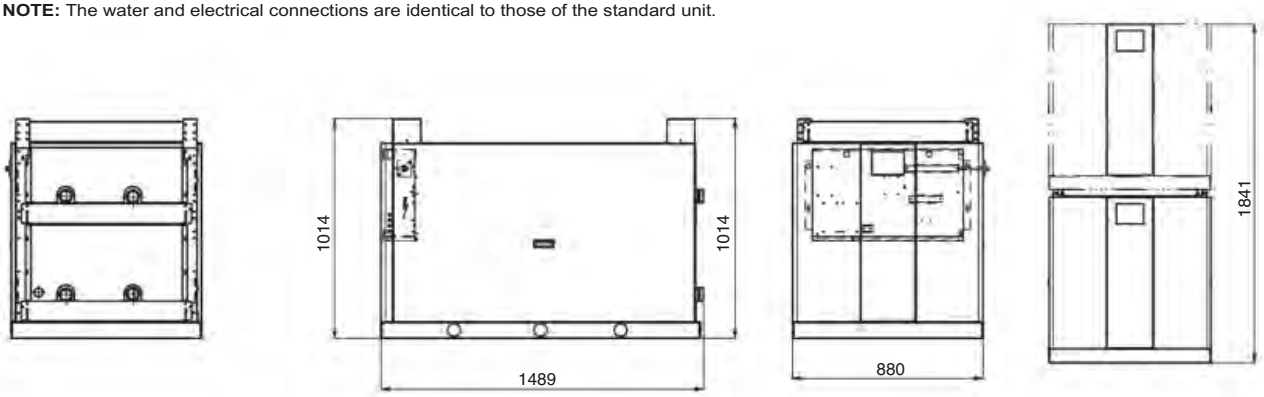
DIMENSIONS/CLEARANCES

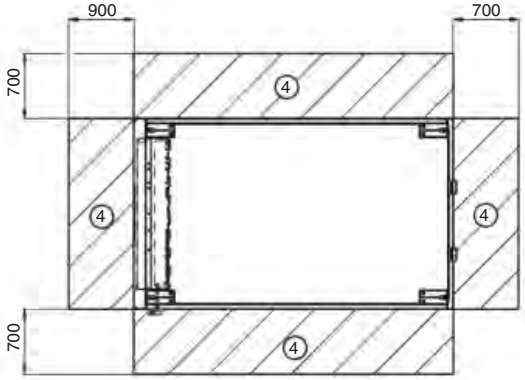
61WG 050-090 - unit with hydraulic module and top connections (options 116 + 274 or 270 + 274 or 116 + 270 + 274)



61WG 050-090 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.





Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

WATER-COOLED AND CONDENSERLESS LIQUID CHILLERS WATER-SOURCED HEAT PUMPS

30WG optimized for cooling

Compact design

Plug and play approach

High efficiency

HEATING

30WG/30WGA

AQUASNAP.

Nominal heating capacity 29-230 kW
Nominal cooling capacity 25-190 kW

The 30WG/30WGA units are new Carrier chillers and heat pumps designed for commercial (offices, small hotels, leisure facilities), residential and industrial applications. All units offer a unique combination of high performance and functionality in an exceptionally compact chassis.

The 30WG, also available as a condenserless version (30WGA), is designed for air-conditioning applications with a high SEER value. As they can produce chilled water down to -12 °C they are also suitable for process applications.

A large number of options is available for the whole range:

- hydraulic modules with or without variable water flow rate,
- reinforced sound insulation,
- stacking and connection of two units
- low-temperature applications down to -12 °C (30WG only).

30WG 110-190 with option 49 availability: Q2.2018

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Features

- Reduced footprint
- Scroll compressors and R-410A refrigerant
- Variable-flow pump
- Low-noise option (-3 dB(A))
- Stacking of two units for increased capacity (up to size 090)
- Several communication protocols available: JBus, BacNet, MS/TP, LON
- Water connection at the top or rear (30WG)

Available versions

30WG - optimised for air conditioning and process Heating & Cooling

- Evaporator temperature down to -12 °C
- Condenser temperature up to +60 °C
- Condensing pressure control devices available

30WGA - optimised for air conditioning

- Continuous operation up to 62 °C saturated condensing temperature
- Compatible remote condensers available
- Optimised remote condenser fan control

The right unit for any application

- Option 153 “Built-in DHW and space heating control” allows control of both domestic hot water and space heating requirements:
  - Domestic hot water production: a built-in three-way valve is directed to divert the heat flow from the space heating loop to the domestic hot water loop and vice versa.
  - Space heating control: the set-point is adjustable, based on the daily schedule or the outside air temperature (weather compensation function).
  - Control of auxiliary systems: if an alarm is detected at the 30WG or if there is insufficient heating capacity, a digital signal starts an auxiliary electric heater (1 to 4 stages) or boiler.
  - Pump control: allows control of the built-in pump as well as the pump in the secondary loop (to terminals).
- In 30WG units the pressure control signal ensures safe unit operation and maximised performance at low source-side water temperatures.
- The condenserless 30WGA units are ideal for refurbishment projects where a remote condenser exists on site, and for all projects without geothermal/natural sinks for heat rejection.
- In 30WG units the Heating System Manager (HSM) accessory allows control of systems with several heat sources and different additional systems: electric heat, boiler or for the most complex systems district heating (see pages 9 to 11).

Adaptability and simple installation

- The 30WG units can be provided with several hydraulic module options, both on the evaporator and/or condenser side, with different levels of available pressure and variable or fixed-speed pumps (see page 7).
- If option 153 is selected domestic hot water production is controlled via a built-in three-way diverter valve (not supplied).
- 30WG units offer water-side cooling/heating reversibility.
- Remote condenser fan control possible for 30WGA units.

Water connections at the rear of the unit

HEATING

CUSTOMER BENEFITS

Internal view of 30WG 170

Water connections at the top of the unit

Component acessibility

See photos below.

Access to scroll compressors

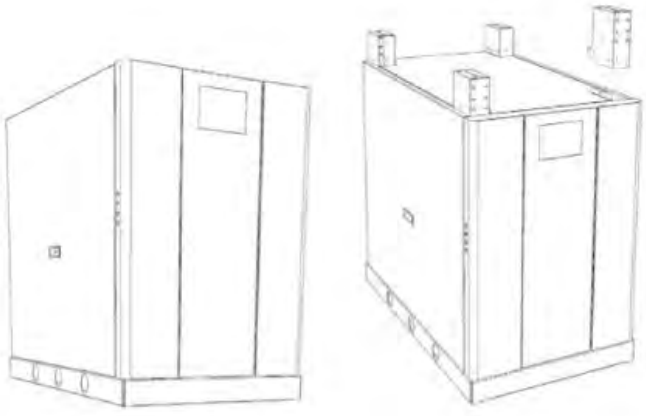
Access to control panel

A compact high-performance product range

- Small footprint, ideal for refurbished buildings, allows access in very tight plant rooms.
- 30WG: High SEER and SEPR

  Units optimized for process and comfort applications.
- The 30WGA is based on the 30WG design to ensure efficient operation for applications with remote air-cooled condensers.
- Variable-flow pumps reduce system energy consumption.
- The entire range offers low sound levels, allowing installation in any building type. The low-noise option ensures enhanced acoustic comfort (-3 dB(A)).
- 30WG/30WGA units are equipped with the latest generation R410A scroll compressor, optimised for typical operating conditions for water-sourced units.

Two-unit stacking option for reduced footprint size 020-090



HEATING

CUSTOMER BENEFITS

Advance control

The control is a numerical control that combines intelligence with operating simplicity. Depending on the options used, the unit manages the operation of compressors, evaporaor and condenser water pumps and fans (drycooler)

- Optimised energy management
  - A patented auto-adaptive algorithm optimizes the condensing pressure at part load to reduce compressor load and ensure perfect supply for the evaporator with liquid refrigerant. The algorithm controls the operation of the variable-speed condenser water pump and the fans (drycooler)- Controler automatically resets the chilled-water temperature set-point based on the outside air temperature or the return water temperature. The control can also operate on a second set-point (example: unoccupied mode).
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic changeover in case of a unit fault. The CCN clock board connection offers other control possibilities:
  - Two independent time schedules to control:
  - Unit start/stop
  - Operation at a second chilled-water set-point (for example: unoccupied mode)

- Total unit protection
  - A patented auto-adaptive algorithm controls compressor operation and permanently adapts to the system characteristics (water loop inertia). Dangerous compressor cycling is prevented. The unit can operate safely with a low water volume, and this frequently makes a buffer tank unnecessary (see minimum water volume later in this document).
  - The controller permanently analyses the compressor suction and discharge pressures and temperatures. If an abnormal situation is detected, the control reacts, e.g. by reducing the capacity. As a result the compressors always operate in their ideal temperature range and many unit shut-downs due to a fault can be prevented.

- Remote control

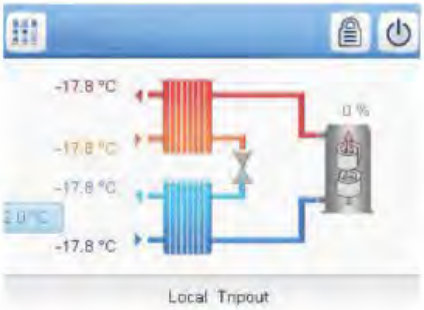
  A connection terminal allows remote control of the AquaSnap by wired cable:
  - Start/stop: Opening of this contact will shut down the unit
  - Dual set-point: Closing of this contact activates a second set-point (example: unoccupied mode).
  - Demand limit: Closing of this contact limits the maximum heat pump capacity to a predefined value.
  - Operation indication: This volt-free contact indicates that the heat pump is operating (cooling load).
  - Alarm indication: This volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

- Remote management

  The AquaSnap is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

  The AquaSnap also communicates with other building management systems via optional communication gateways.

Touch Pilot Junior control



The Touch Pilot Junior features a control with advanced communication technology over Ethernet (IP), user-friendly and intuitive user interface with 4.3" colour touch screen.

- Integrated advanced communication features
  - With hydraulic module: Water pressure display and water flow rate calculation
  - Easy and high-speed communication technology over Ethernet (IP) to a building management system

- 4.3" Touch Pilot user interface
  - Access to multiple unit parameters
  - Concise and clear information is available in local languages
  - Complete menu, customised for different users (end user, service personnel or Carrier engineers)

- Remote management (standard)

  Units with Touch Pilot Junior control can be easily accessed from the internet, using a PC with an Ethernet connection.

  This makes remote control quick and easy and offers significant advantages for service operations.

- Maintenance function (standard)

  The Touch Pilot Junior include functionality of maintenance
  - Compulsory Maintenance Reminder– FGAS sealing check
  - Periodic Maintenance Reminder. Configurable alarm of maintenance in days, month or hours of operation

CUSTOMER BENEFITS

30WG/30WGA units compatible the Carrier 09 series drycoolers/remote condensers

The Carrier 09 series drycoolers and remote condensers are compatible with the 30WG and 30WGA units.

The chiller 30WG/30WGA can control the fans of the dry cooler / remote condenser via digital or analogue outputs (according to AC or EC motors) with following options :

- For chiller 30WG/30WGA : option 154
- For dry cooler / remote condenser : dedicated control cabinet with an auxiliary board.

A simple communication bus is required between the chiller and the dry cooler/ remote condenser.

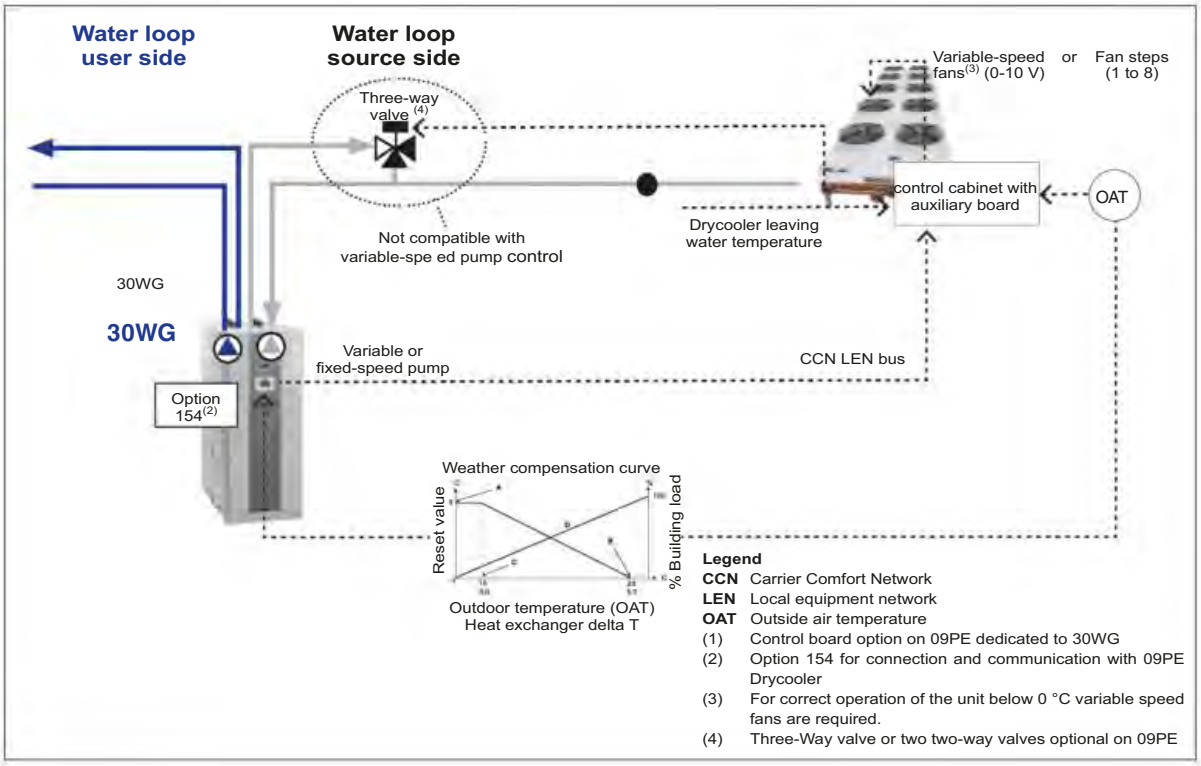
As all control components are installed and tested in the factory, installation and start-up of the unit and its associated drycooler/ remote condenser are simplified.

Control board algorithms optimise energy consumption based on:

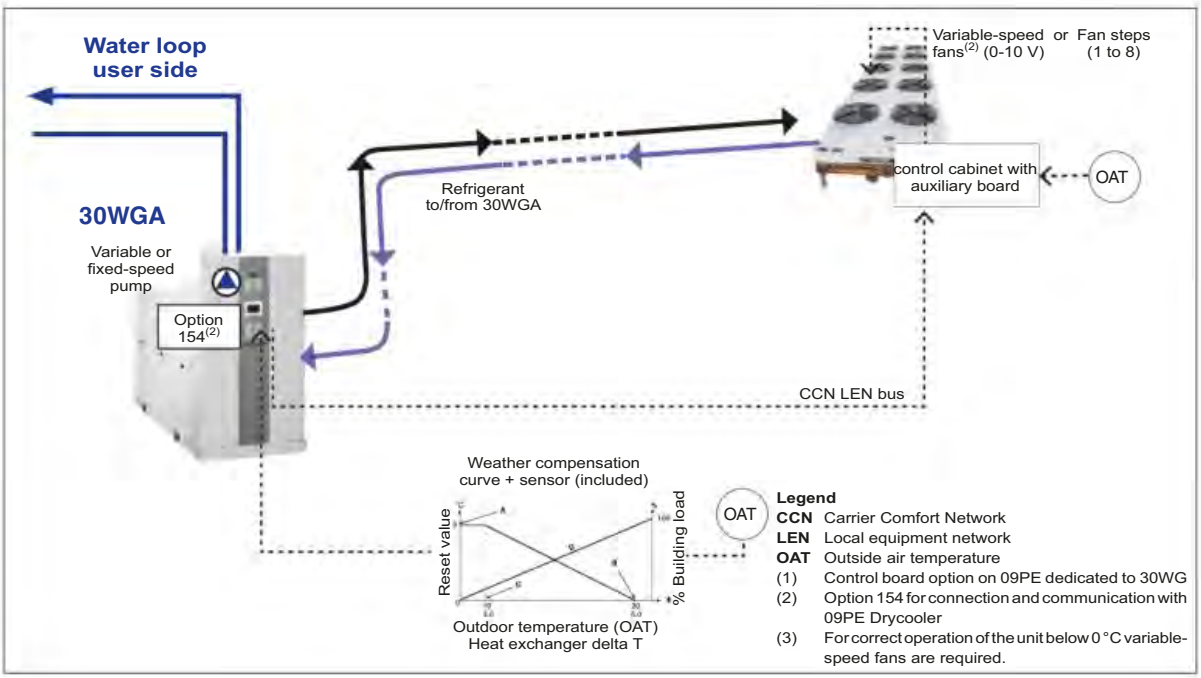
- the outside temperature and chilled-water temperature read for drycoolers
- the outside temperature and saturated refrigerant discharge temperature read for remote condensers.

A simple communication bus is required downstream to connect the control board to the unit control.

30WG system concept



30WGA system concept



OPTIONS

Options	No.	Description	Advantages	Use
Medium-temperature brine solution	5B	Low temperature chilled water production down to 0°C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	30WGA 020-190
Low-temperature brine solution	6B	Low temperature glycol solution production down to -12 °C with ethylene glycol	Covers specific applications such as ice storage and industrial processes	30WG 020-190
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	30WG 020-190 30WGA 020-190
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot-water simultaneously with chilled water production (or hot water for Heat pump)	30WG 110-190
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30WG 020-190 30WGA 020-190
External disconnect handle	70F	The handle of the electrical disconnect switch is on the outside of the unit	Quick access to the unit disconnect switch	30WG 020-190 30WGA 020-190
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	30WG 110-190
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	30WG 110-190
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	30WG 020-190
HP single-pump hydraulic module	116R	Single high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30WG 110-190 30WGA 110-190
LP evap. single-pump	116T	Evaporator hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30WG 020-190 30WGA 020-190
HP evap. variable-speed single-pump	116V	Evaporator hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 020-190 30WGA 020-190
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive (VSD), pressure transducers. Multiple possibilities of water flow control. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 110-190 30WGA 110-190
LP VSD single-pump	116Y	Evaporator hydraulic module equipped with low -pressure variable-speed pump, drain valve, air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included.Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved sytem reliability	30WG 110-190 30WGA 110-190
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30WG 020-190 30WGA 020-190
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30WG 020-190 30WGA 020-190

OPTIONS

Options	No.	Description	Advantages	Use
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30WG 20-190 30WGA 020-190
Built-in DHW & space heating control	153	Control board factory-installed on the unit, control using weather compensation, control of supplementary electric heater (4 stages) or boiler, needle valve for domestic hot-water production with programmable time schedule.	Permits easy control of a basic heating system	30WG 020-190
Specific dry cooler control	154	Dedicated connection and software for 09PE drycooler managment. For 09PE drycooler need to select the option control cabinet manage by the chiller	Permits the use of an energy-efficient plug-and-play system	30WG 020-190
Condenser control	154	Control box for communication with the condenser via a bus. For OPERA condenser need to select the cabinet with option control cabinet manage by the chiller Connect'Touch control	Permits the use of an energy-efficient plug-and-play system	30WGA 020-190
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30WG 020-190 30WGA 020-190
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, anti-UV insulant	Prevents condensation on the evaporator entering/leaving refrigerant lines	30WG 020-190 30WGA 020-190
Low noise level	257	Compressor sound enclosure	Reduced sound emissions	30WG 020-190 30WGA 020-190
Very low sound level	258	Enhanced sound insulation of main noise sources (Material classified CD0S2 fire class according to Euroclass 13-501).	6 dB(A) quiter than standard . Refer to the physical data table for detailed values	30WG 020-090 30WGA 020-090
Evaporator screw connection sleeves kit	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30WG 020-140 30WGA 020-140
Condenser screw connection sleeves kit	265	Condenser inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	30WG 020-140
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	30WG 020-190 30WGA 020-190
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	30WG 020-190
HP single-pump, cond. side	270R	Condenser hydraulic module equipped with high pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	30WG 110-190
LP single-pump, cond. side	270T	Condenser hydraulic module equipped with low pressure fixed-speed pump, drain valve, air vent and pressure sensors. Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play)	30WG 020-190
HP cond. variable-speed single-pump	270V	Condenser hydraulic module equipped with high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 020-190
HP cond. variable-speed dual-pump	270W	Condenser hydraulic module equipped with dual high-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 110-190
LP cond. variable-speed single-pump	270Y	Condenser hydraulic module equipped with low-pressure variable-speed pump, drain valve, air vent and pressure sensors. (expansion tank not included) Built-in safety hydraulic components available in option.	Easy and fast installation (plug & play), reduced power consumption of the water circulation pump	30WG 110-190
Unit stackable for operation	273	Unit stackable for operation	Reduced footprint size	30WG 020-090 30WGA 020-090
water connection at the top	274	Customer water connection at the top of the unit	Reduced footprint size	30WG 020-190 30WGA 020-190

OPTIONS

Options	No.	Description	Advantages	Use
Replaceable filter drier	277	Filter drier with cartridge to replace hermetic filter	Easy filter replacement without emptying the refrigerant circuit	30WGA 020-190
Safety hydraulic components, evap. side	293	Screen filter, expansion tank and relief valve integrated in the evaporator hydraulic module	Easy and fast installation (plug & play), operating safety	30WG 020-190 30WGA 020-190
Safety hydraulic components, cond. side	293A	Screen filter, expansion tank and relief valve integrated in the condenser hydraulic module	Easy and fast installation (plug & play), operating safety	30WG 020-190
Set-point adjustment by 4-20mA signal	311	Connections to allow a 4-20mA signal input	Easy energy managment, allow to adjust set-point by a 4-20mA external signal	30WG 020-190 30WGA 020-190
External temperature sensor	312	External temperature sensor control for using weather compensation	Allow to adjust set-point using weather compensation and define autorisation operation mode to external temperature	30WG 020-190 30WGA 020-190
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system managment, Extended control capabilities to a dryccoler used in Free Cooling mode	30WG 020-190 30WGA 020-190

ACCESSORIES

Accessories	Description	Advantages	Use
00PPG000488000- Heating System Manager type A: It controls one heat emitter type with an auxiliary electric heater or boiler.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	30WG 020-190
00PPG000488100- Heating System Manager type B: It controls two heat emitter types (or independent zones) and domestic hot water production with an auxiliary electric heater or boiler.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	30WG 020-190
00PPG000488200- Heating System Manager type C: It controls two heat emitter types (or independent zones) and domestic hot water production with a district heating network as auxiliary source.	Additional control box not supplied with the unit, to be installed remotely	Heating system control facilitated	30WG 020-190

PHYSICAL DATA, 30WG UNITS , SIZES 020 TO 090

30WG				020	025	030	035	040	045	050	060	070	080	090
Heating														
Full load performances*	HW1	Nominal capacity	kW	28	33	35	41	47	52	65	73	81	93	103
		COP	kW/kW	3,59	3,63	3,61	3,60	3,67	3,61	3,58	3,62	3,54	3,70	3,56
	HW2	Nominal capacity	kW	29	33	36	43	49	54	68	74	85	97	108
		COP	kW/kW	4,34	4,37	4,35	4,36	4,40	4,35	4,39	4,35	4,32	4,40	4,32
	HW3	Nominal capacity	kW	30	35	38	44	50	56	70	77	89	101	114
		COP	kW/kW	5,53	5,53	5,49	5,52	5,49	5,51	5,58	5,48	5,53	5,46	5,50
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kW/kW	5,46	5,45	5,36	5,40	5,35	5,38	6,12	6,08	6,09	6,11	6,09
		$\eta s\ heat_{30/35°C}$	%	211	210	206	208	206	207	237	235	235	236	235
	HW3	**$SCOP_{47/55°C}$**	**kW/kW**	**4,36**	**4,37**	**4,34**	**4,37**	**4,40**	**4,34**	**4,91**	**4,96**	**4,85**	**5,08**	**4,91**
		$\eta s\ heat_{47/55°C}$	**%**	**167**	**167**	**166**	**167**	**168**	**166**	**188**	**190**	**186**	**195**	**188**
		P_{rated}	kW	32	37	40	47	54	59	75	83	93	106	118
		Energy labelling		A++	A++	A++	A++	A++	A++	-	-	-	-	-
Cooling														
Standard unit Full load performances*	CW1	Nominal capacity	kW	25	29	32	37	42	47	58	63	74	84	95
		EER	kW/kW	4,72	4,72	4,69	4,73	4,69	4,72	4,72	4,65	4,69	4,65	4,68
		Eurovent class		B	B	B	B	B	B	B	B	B	B	B
	CW2	Nominal capacity	kW	34	39	43	50	57	66	79	86	102	113	129
		EER	kW/kW	6,42	6,10	6,03	6,04	5,90	6,06	6,12	5,95	6,19	5,93	6,13
		Eurovent class		A	A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		$SEER_{12/7°C}$ Comfort low temp.	kW/kW	4,94	4,97	4,88	4,84	4,81	4,72	5,60	5,62	5,49	5,57	5,62
		$SEPR_{12/7°C}$ Process high temp.	kW/kW	6,42	6,44	6,26	6,22	6,26	6,31	6,63	6,50	6,48	6,59	6,62
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	5,96	5,76	5,62	5,60	5,52	5,57	6,56	6,33	6,19	6,22	6,14
		$SEPR_{-2/-8°C}$ Process medium temp.	kWh/kWh	3,86	4,23	4,41	4,32	4,44	3,98	4,24	4,83	4,65	4,89	4,87
Integrated part load value		IPLV.SI	kW/kW	5,84	5,85	5,76	5,78	5,77	5,82	6,58	6,68	6,56	6,81	6,72
Operating weight(1)			kg	191	200	200	207	212	220	386	392	403	413	441
Operating weight with option 258(1)			kg	198	207	207	214	219	227	399	405	416	426	454
Sound levels(2)														
Sound power level, standard unit			dB(A)	67	68	69	69	70	70	72	72	72	73	73
Sound power level, option 257			dB(A)	65	66	66	67	68	68	68	69	69	69	70
Sound power level, option 258			dB(A)	61	62	63	63	64	64	66	66	66	67	67
Sound power level, option 257 + 258			dB(A)	60	62	62	62	64	63	65	65	65	66	66
Dimensions, standard unit(3)														
Width			mm	600	600	600	600	600	600	880	880	880	880	880
Length			mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
Height			mm	901	901	901	901	901	901	901	901	901	901	901

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m^2. k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$SEER_{12/7°C}$ & $SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEER_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{-2/-8°C}$ Applicable Ecodesign regulation: (EU) No 2015/1095

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/- 3dB(A)). Measured in accordance with ISO 9614-1.

(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA, 30WG UNITS , SIZES 020 TO 090

30WG		020	025	030	035	040	045	050	060	070	080	090
Compressors		Hermetic scroll 48.3 r/s										
Quantity		1	1	1	1	1	1	2	2	2	2	2
Number of capacity stages		1	1	1	1	1	1	2	2	2	2	2
Minimum capacity	%	100	100	100	100	100	100	50	50	50	50	50
Refrigerant(1)		R410A										
Charge, standard unit	kg	3,5	3,5	3,6	3,7	4,0	4,6	7,6	7,8	7,9	8,7	11,5
	$teqCO_2$	7,2	7,3	7,4	7,6	8,2	9,5	15,9	16,3	16,5	18,2	24
Capacity control		Touch Pilot Junior										
Evaporator		Direct-expansion plate heat exchanger										
Water volume	l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections		Victaulic										
Inlet/outlet	in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger										
Net water volume	l	3,3	3,6	3,6	4,2	4,6	5,0	8,4	9,2	9,6	10,4	12,5
Water connections		Victaulic										
Inlet/outlet	in	1,5	1,5	1,5	1,5	1,5	1,5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Chassis paint color		Color code: RAL7035										

(1) Weight shown is a guideline only. Please refer to the unit nameplate

PHYSICAL DATA, 30WG UNITS, SIZES 110 TO 190

30WG				110	120	140	150	170	190
Heating									
Full load performances*	HW1	Nominal capacity	kW	137	156	172	183	206	230
		COP	kW/kW	5,63	5,61	5,53	5,67	5,62	5,59
	HW2	Nominal capacity	kW	131	148	163	174	197	218
		COP	kW/kW	4,44	4,45	4,38	4,41	4,50	4,38
	HW3	Nominal capacity	kW	125	140	155	167	189	209
		COP	kW/kW	3,59	3,63	3,57	3,60	3,76	3,60
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kW/kW	6,31	6,37	6,29	6,31	6,32	6,18
		$\eta s\ heat_{30/35°C}$	%	244	247	244	244	245	239
	HW3	**$SCOP_{47/55°C}$**	**kW/kW**	**5,05**	**5,09**	**5,05**	**5,02**	**5,17**	**4,96**
		$\eta s\ heat_{47/55°C}$	**%**	**194**	**196**	**194**	**193**	**199**	**190**
		P_{rated}	kW	143	161	178	191	216	239
Cooling									
Standard unit Full load performances*	CW1	Nominal capacity	kW	115	130	144	153	172	192
		EER	kW/kW	4,79	4,77	4,70	4,83	4,78	4,79
		Eurovent class		B	B	B	B	B	B
	CW2	Nominal capacity	kW	155	176	196	207	231	262
		EER	kW/kW	6,20	6,10	6,01	6,23	5,97	6,14
		Eurovent class		A	A	A	A	A	A
Seasonal energy efficiency		$SEER_{12/7°C}$ Comfort low temp.	kW/kW	6,12	6,24	6,17	5,97	6,06	5,96
		$SEER_{23/18°C}$ Comfort medium temp.	kW/kW	6,95	7,10	6,95	6,72	6,72	6,74
		$SEPR_{12/7°C}$ Process high temp.	kWh/kWh	6,98	7,13	6,90	6,54	6,62	6,41
		$SEPR_{-2/-8°C}$ Process medium temp.	kWh/kWh	4,01	4,40	4,35	4,52	4,65	4,45
Integrated part load value		IPLV.SI	kW/kW	6,86	6,98	6,90	6,82	6,89	6,82
Operating weight (1)			kg	707	733	758	841	877	908
Sound levels (2)									
Sound power level, standard unit			dB(A)	76	77	78	76	77	78
Sound power level, option 257			dB(A)	73	74	75	73	74	75
Dimensions, standard unit (3)									
Width			mm	880	880	880	880	880	880
Length			mm	1583	1583	1583	1583	1583	1583
Height			mm	1574	1574	1574	1574	1574	1574
Compressors				Hermetic scroll 48.3 r/s					
Quantity				3	3	3	4	4	4
Number of capacity stages				3	3	3	4	4	4
Minimum capacity			%	33	33	33	25	25	25
Refrigerant (1)				R410A					
Charge, standard unit			kg	13,3	14,5	15,6	21,0	23,0	24,2
			$teqCO_2$	27,8	30,3	32,6	43,8	48,0	50,5

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m^2. k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$SEER_{12/7°C}$ & $SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEER_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{-2/-8°C}$ Applicable Ecodesign regulation: (EU) No 2015/1095

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) Weight shown is a guideline only. Please refer to the unit nameplate

(2) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/- 3dB(A)). Measured in accordance with ISO 9614-1.

(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.

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Eurovent certified values

HEATING

PHYSICAL DATA, 30WG UNITS, SIZES 110 TO 190

30WG		110	120	140	150	170	190
Capacity control		TouchPilot Junior					
Evaporator		Direct-expansion plate heat exchanger					
Water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections	-	Victaulic					
Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Condenser		Plate heat exchanger					
Net water volume	l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections	-	Victaulic					
Inlet/outlet	in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000
Chassis paint color		**Color** code: RAL7035					

HEATING

PHYSICAL DATA, 30WGA UNITS

30WGA				020	025	030	035	040	045	050	060	070	080	090
Standard unit Full load performances*	CS1	Nominal capacity	kW	23	27	30	35	39	44	54	60	69	78	88
		EER	kW/kW	3,75	3,84	3,87	3,93	3,94	3,90	3,82	3,85	3,86	3,91	3,88
	CS2	Nominal capacity	kW	32	38	42	49	55	63	76	84	98	111	125
		EER	kW/kW	5,51	5,36	5,44	5,51	5,44	5,53	5,36	5,37	5,45	5,42	5,42
Operating weight(1)			kg	164	171	171	177	180	185	321	324	332	339	354
Operating weight with option 258(1)			kg	171	178	178	184	187	192	334	337	345	352	367
Sound levels(2)														
Sound power level, standard unit			dB(A)	67	68	69	69	70	70	72	72	72	73	73
Sound power level, option 257			dB(A)	65	66	66	67	68	68	68	69	69	69	70
Sound power level, option 258			dB(A)	61	62	63	63	64	64	66	66	66	67	67
Sound power level, option 257 + 258			dB(A)	60	62	62	62	64	63	65	65	65	66	66
Dimensions, standard unit(3)														
Width			mm	600	600	600	600	600	600	880	880	880	880	880
Length			mm	1044	1044	1044	1044	1044	1044	1474	1474	1474	1474	1474
Height			mm	901	901	901	901	901	901	901	901	901	901	901
Compressors				Hermetic scroll 48.3 r/s										
Circuit A				1	1	1	1	1	1	2	2	2	2	2
Circuit B				-	-	-	-	-	-	-	-	-	-	-
Number of capacity stages				1	1	1	1	1	1	2	2	2	2	2
Minimum capacity			%	100	100	100	100	100	100	50	50	50	50	50
Refrigerant				R410A										
Capacity control				Touch Pilot Junior										
Evaporator				Direct-expansion plate heat exchanger										
Water volume			l	3.3	3.6	3.6	4.2	4.6	5.0	8.4	9.2	9.6	10.4	12.5
Water connections				Victaulic										
Inlet/outlet			in	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2
Max. water-side operating pressure without hydraulic module			kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Refrigerant connections														
Discharge line diameter			in	7/8	7/8	7/8	7/8	7/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Liquid line diameter			in	5/8	5/8	5/8	5/8	5/8	5/8	7/8	7/8	7/8	7/8	7/8
Chassis paint color				Color code: RAL7035										

* In accordance with standard EN14511-3:2013. Refrigerant piping equivalent length (without drier and valves) = 3 m.
CS1 Cooling mode conditions: evaporator entering/leaving water temperature 12 °C/7 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m^2K/W.
CS2 Cooling mode conditions: evaporator entering/leaving water temperature 23 °C/18 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m^2K/W.
(1) Weight shown is a guideline only. Please refer to the unit nameplate
(2) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.

PHYSICAL DATA, 30WGA UNITS

30WGA				110	120	140	150	170	190
Standard unit Full load performances*	CS1	Nominal capacity	kW	106	119	132	140	159	175
		EER	kW/kW	3,78	3,78	3,72	3,75	3,81	3,72
	CS2	Nominal capacity	kW	146	166	185	195	218	247
		EER	kW/kW	5,24	5,17	5,12	5,32	5,17	5,26
Operating weight(1)			kg	762	787	814	909	944	975
Sound levels(2)									
Sound power level			dB(A)	76	77	78	76	77	78
Sound power level, option 257			dB(A)	73	74	75	73	74	75
Dimensions, standard unit (3)									
Width			mm	880	880	880	880	880	880
Length			mm	1583	1583	1583	1583	1583	1583
Height			mm	1574	1574	1574	1574	1574	1574
Compressors				Hermetic scroll 48.3 r/s					
Circuit A				3	3	3	4	4	4
Number of capacity stages				3	3	3	4	4	4
Minimum capacity			%	33	33	33	25	25	25
Refrigerant				R410A					
Capacity control				PRO-DIALOG Plus					
Evaporator				Direct-expansion plate heat exchanger					
Water volume			l	15,18	17,35	19,04	23,16	26,52	29,05
Water connections				Victaulic					
Inlet/outlet			in	2 1/2	2 1/2	2 1/2	3	3	3
Max. water-side operating pressure without hydraulic module				1000	1000	1000	1000	1000	1000
Refrigerant connections									
Discharge line diameter			in	1"3/8	1"3/8	1"3/8	1"1/8	1"1/8	1"1/8
Liquid line diameter			in	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"
Chassis paint color				Color code: RAL7035					

* In accordance with standard EN14511-3:2013. Refrigerant piping equivalent length (without drier and valves) = 3 m.
CS1 Cooling mode conditions: evaporator entering/leaving water temperature 12 °C/7 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m^2K/W.
CS2 Cooling mode conditions: evaporator entering/leaving water temperature 23 °C/18 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m^2K/W.
(1) Weight shown is a guideline only. Please refer to the unit nameplate
(2) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
(3) The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.

ELECTRICAL DATA

30WG without hydraulic module		020	025	030	035	040	045	050	060	070	080	090
Power circuit												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V, via internal transformer										
Maximum start-up current draw (Un)(1)												
Standard unit	A	98	142	142	147	158	197	161	162	170	183	226
Unit with electronic starter option	A	53,9	78,1	78,1	80,9	86,9	108,4	96,8	97,9	104,1	112,3	137,4
Unit power factor at maximum capacity(2)		0,9	0,8	0,9	0,9	0,9	0,9	0,8	0,9	0,9	0,9	0,9
Maximum operating power input(2)	kW	9,2	10,8	11,7	13,7	15,1	17,1	21,5	23,3	27,3	30,3	34,2
Nominal unit operating current draw(3)	A	10,5	13,2	13,8	15,6	16,2	20,2	26,4	27,6	31,2	32,4	40,4
Maximum operating current draw (Un)(4)	A	15,6	18,7	19,8	23,2	25,4	29	37,4	39,6	46,4	50,8	58
Maximum operating current draw (Un-10%)†	A	17,3	20,8	22	25,8	28,2	32,2	41,6	44	51,6	56,4	64,4
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table below "Short-circuit stability current"										

(1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).
(2) Maximum power input at the unit operating limits.
(3) Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 30 °C/ 35 °C.
(4) Maximum unit operating current at maximum unit power input and 400 V.

† Maximum unit operating current at maximum unit power input and 360 V.

30WG without hydraulic module		110	120	140	150	170	190
Power circuit							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V, via internal transformer					
Maximum start-up current draw (Un)(1)							
Standard unit	A	193,4	208,8	255	216,6	234,2	284
Unit with electronic starter option	A	127,3	137,7	166,4	150,5	163,1	195,4
Unit power factor at maximum capacity(2)		0,87	0,85	0,85	0,87	0,85	0,85
Maximum operating power input(2)	kW	41	45	51	55	60	68
Nominal unit operating current draw(3)	A	46,8	48,6	60,6	62,4	64,8	80,8
Maximum operating current draw (Un)(4)	A	69,6	76,2	87	92,8	101,6	116
Maximum operating current draw (Un-10%)†	A	77,3	84,7	96,7	103,1	112,9	128,9
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit					
Short-circuit stability and protection		See table below "Short-circuit stability current"					

(1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).
(2) Maximum power input at the unit operating limits.
(3) Values obtained at standardised Eurovent conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 30 °C/ 35 °C.
(4) Maximum unit operating current at maximum unit power input and 400 V.
† Maximum unit operating current at maximum unit power input and 360 V.

ELECTRICAL DATA

30WGA without hydraulic module		020	025	030	035	040	045	050	060	070	080	090
Power circuit												
Nominal voltage	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit supply		24 V, via internal transformer										
Maximum start-up current draw (Un)(1)												
Standard unit	A	98	142	142	147	158	197	161	162	170	183	226
Unit with electronic starter option	A	53,9	78,1	78,1	80,9	86,9	108,4	96,8	97,9	104,1	112,3	137,4
Unit power factor at maximum capacity(2)		0,9	0,8	0,9	0,9	0,9	0,9	0,8	0,9	0,9	0,9	0,9
Maximum operating power input(2)	kW	9,2	10,8	11,7	13,7	15,1	17,1	21,5	23,3	27,3	30,3	34,2
Nominal unit operating current draw(3)	A	11,4	13,8	14,7	16,5	18,1	21,2	27,6	29,4	33,1	36,4	42,5
Maximum operating current draw (Un)(4)	A	15,6	18,7	19,8	23,2	25,4	29	37,4	39,6	46,4	50,8	58
Maximum operating current draw (Un-10%)†	A	17,3	20,8	22	25,8	28,2	32,2	41,6	44	51,6	56,4	64,4
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit										
Short-circuit stability and protection		See table below "Short-circuit stability current"										

30WGA without hydraulic module		110	120	140	150	170	190
Power circuit							
Nominal voltage	V-ph-Hz	400-3-50					
Voltage range	V	360-440					
Control circuit supply		24 V, via internal transformer					
Maximum start-up current draw (Un)(1)							
Standard unit	A	193,4	208,8	255	216,6	234,2	284
Unit with electronic starter option	A	127,3	137,7	166,4	150,5	163,1	195,4
Unit power factor at maximum capacity(2)		0,87	0,85	0,85	0,87	0,85	0,85
Maximum operating power input(2)	kW	41	45	51	55	60	68
Nominal unit operating current draw(3)	A	49,5	54,3	63,6	66	72,4	84,8
Maximum operating current draw (Un)(4)	A	69,6	76,2	87	92,8	101,6	116
Maximum operating current draw (Un-10%)†	A	77,3	84,7	96,7	103,1	112,9	128,9
Customer-side unit power reserve		Customer reserve at the 24 V control power circuit					
Short-circuit stability and protection		See table below "Short-circuit stability current"					

(1) Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).
(2) Maximum power input at the unit operating limits.
(3) Values obtained at the following conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 45 °C.
(4) Maximum unit operating current at maximum unit power input and 400 V.
† Maximum unit operating current at maximum unit power input and 360 V.

ELECTRICAL DATA

Short-circuit stability current (TN system(1)) - standard unit (with main disconnect switch)

30WG/30WGA		020	025	030	035	040	045	050	060	070	080	090
Value with non-specified upstream protection												
Short-term current at 1 s - Icw	kA rms	3	3	3	3	3	3	3	3	3	3	3
Admissible peak current - Ipk	kA pk	6	6	6	6	6	6	6	6	6	6	6
Maximum value with upstream protection (by circuit breaker)												
Conditional short-circuit current Icc	kA rms	40	40	40	40	40	40	40	40	40	40	40
Schneider circuit breaker - Compact series		NSX 100N										
Reference number(2)		LV429795										

(1) Earthing system type
(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

30WG/30WGA		110	120	140	150	170	190
Value with non-specified upstream protection							
Short-term current at 1 s - Icw	kA rms	5,5	5,5	5,5	5,5	5,5	5,5
Admissible peak current - Ipk	kA pk	20	20	20	20	20	20
Maximum value with upstream protection (by circuit breaker)							
Conditional short-circuit current Icc	kA rms	154	154	154	154	154	154
Schneider circuit breaker - Compact series		NSX 100N					
Reference number(2)		LV429795					

(1) Earthing system type
(2) If another current limitation protection system is used, its time-current and thermal constraint (I²t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker.
The short-circuit stability current values above are suitable with the TN system.

Electrical data notes and operating conditions:

- 61WG/30WG/30WGA units have a single power connection point, located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
  - a main disconnect switch,
  - the starter and motor protection devices for each compressor and the pumps
  - the control devices
- Field connections:
  All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61WG/30WG/30WGA units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical unit equipment.

Notes:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

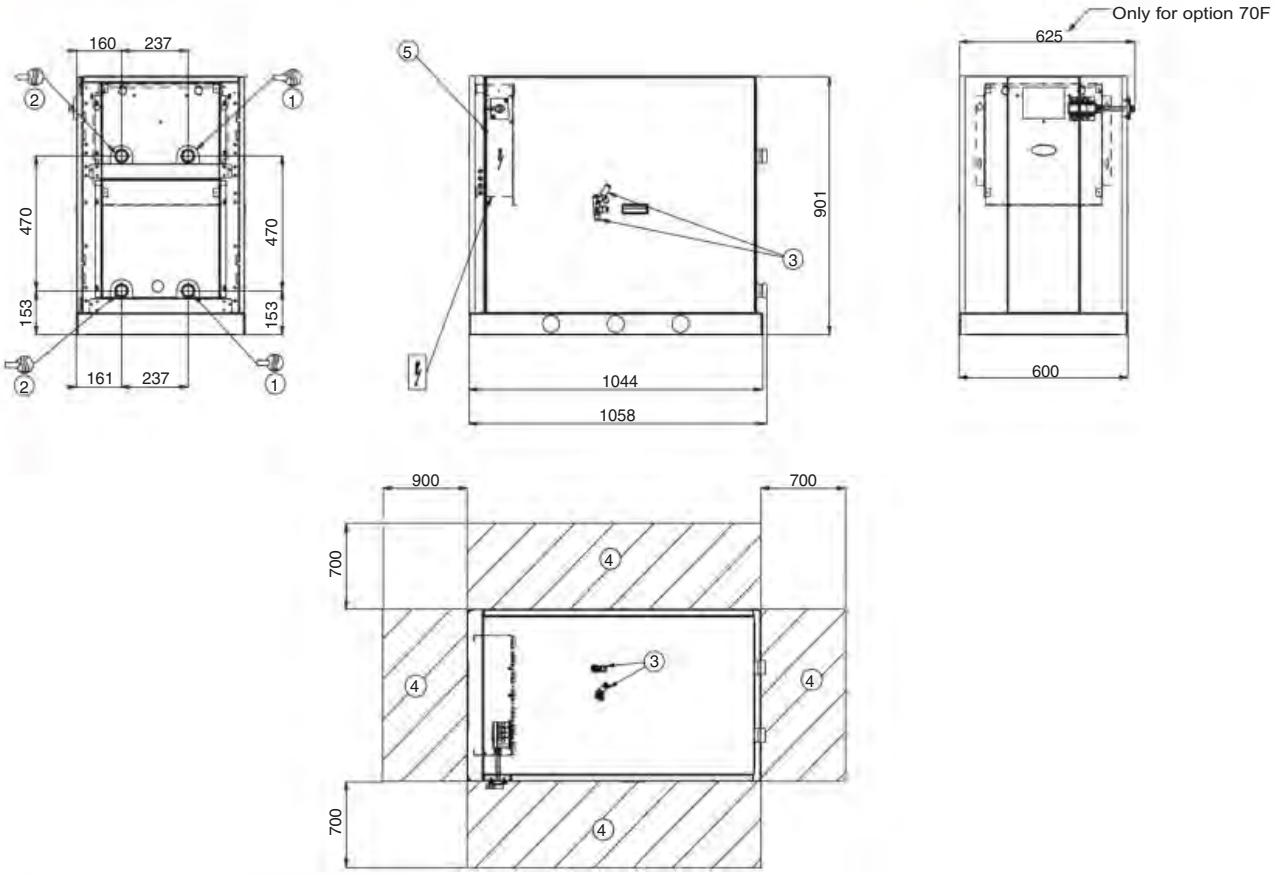
1. The operating conditions for the units are specified below:
   Environment(1) - Environment as classified in EN 60721 (equivalent to CEI60721):
   - Indoor installation,
   - ambient temperature range: +5 °C for the temperature minimum to +40 °C, class 4K4H,
   - humidity range (non-condensing)(1):
   - 50% relative humidity at 40 °C
   - 90% relative humidity at 20 °C
   - altitude: ≤ 2000 m (see note for table 4.7 in the IOM) indoor installation(1)
   - presence of water: class AD2 (possibility of water droplets)
   - presence of hard solids, class 4S2 (no significant dust present)
   - presence of corrosive and polluting substances, class 4C2 (negligible)
   - vibration and shock, class AG2, AH2
   - competence of personnel, class BA4(1) (trained personnel - IEC 60364)
2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
4. Over-current protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947.
6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation. Units delivered with speed drive are not compatible with IT network.
7. Derived currents: If protection by monitoring of derived currents is necessary to ensure the safety of the installation, the control of the cut-out value must take the presence of leak currents into consideration that result from the use of frequency converters in the unit. A value of at least 150 mA is recommended to control differential protection devices.

NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

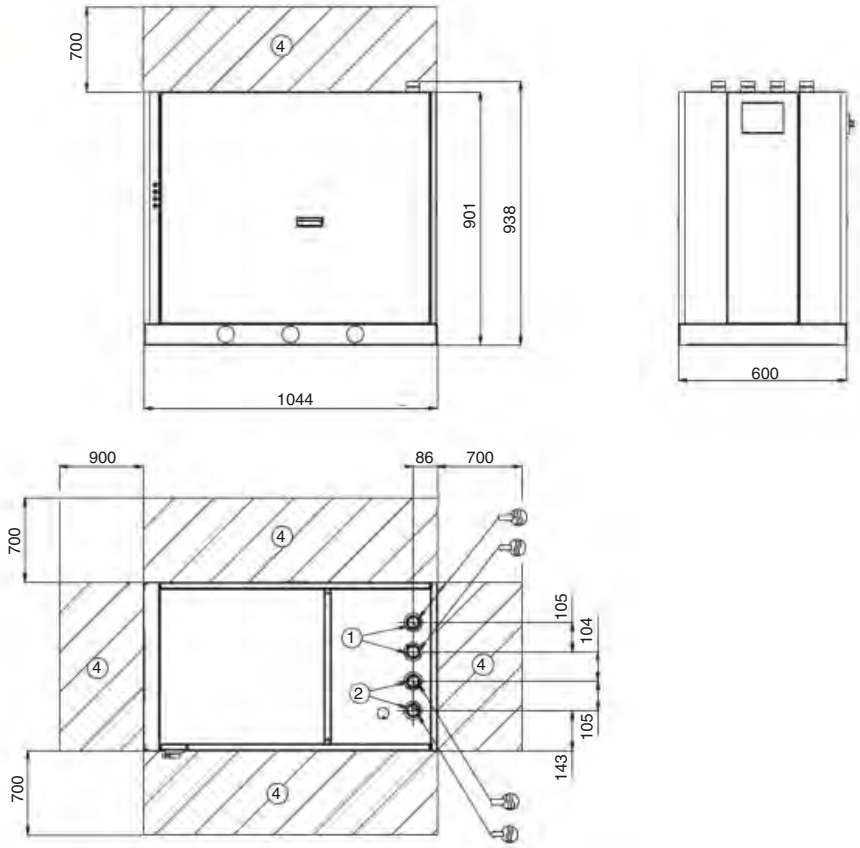
(1) The protection level of the control boxes required to conform to this class is IPX1B (according to reference document IEC 60529). All 61WG/30WG/30WGA units fulfil this protection condition.
Units equipped with front casing panel meet class IP23. If the casing panel has been removed, access to energised components is protected to level IPXXB.

DIMENSIONS/CLEARANCES

30WG 020-045 - standard unit



30WG 020-045 - unit with top connections (option 274)



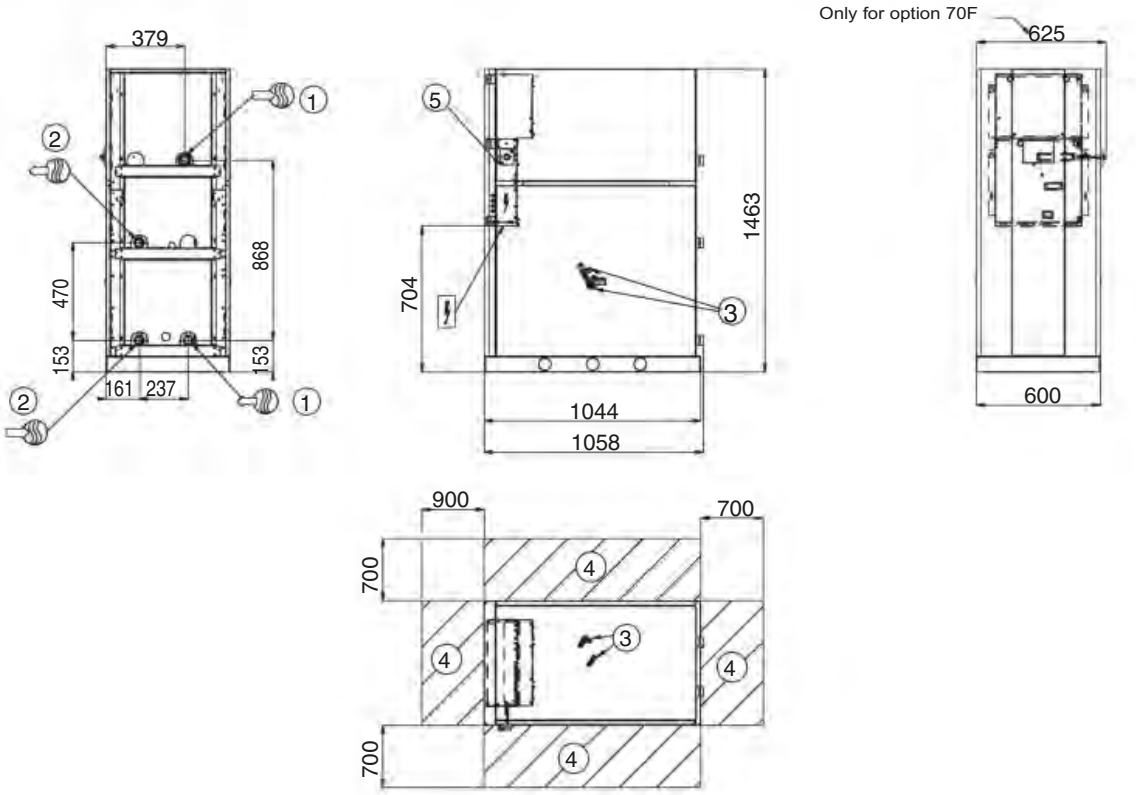
Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

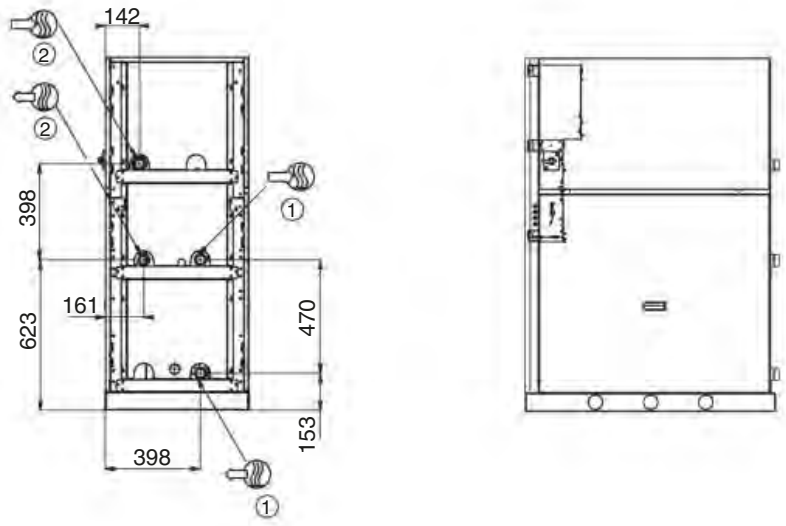
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 020-045 - unit with evaporator hydraulic module (option 116)



30WG 020-045 - unit with condenser hydraulic module (option 270)



Legend
All dimensions are in mm.

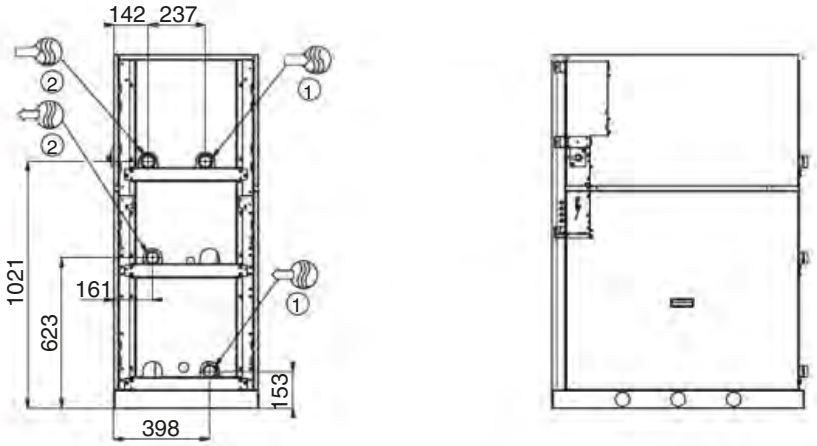
1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

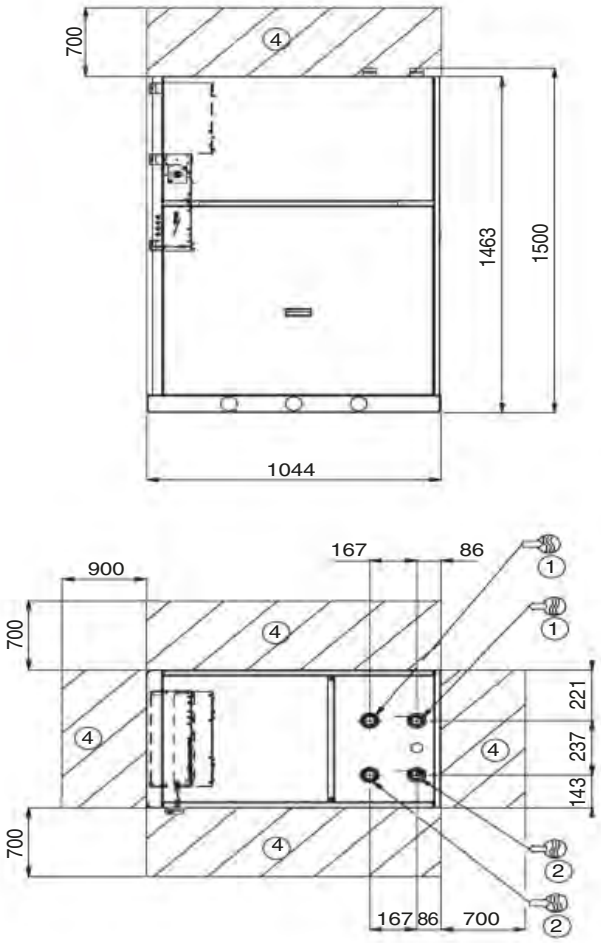
HEATING

DIMENSIONS/CLEARANCES

30WG 020-045 - unit with evaporator/condenser hydraulic modules (options 116 + 270)



30WG 020-045 - unit with hydraulic module and top connections (options 116 + 274 or 270 + 274 or 116 + 270 + 274)



Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.

Water outlet

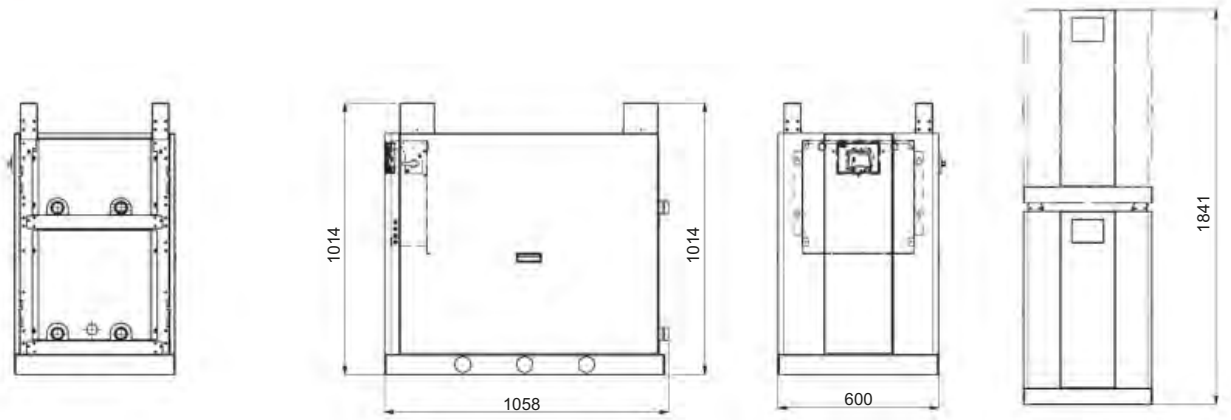
Power wiring connection

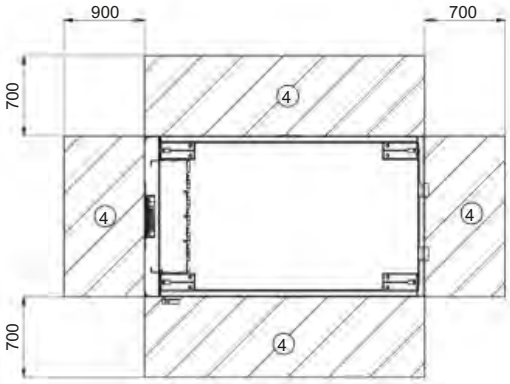
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

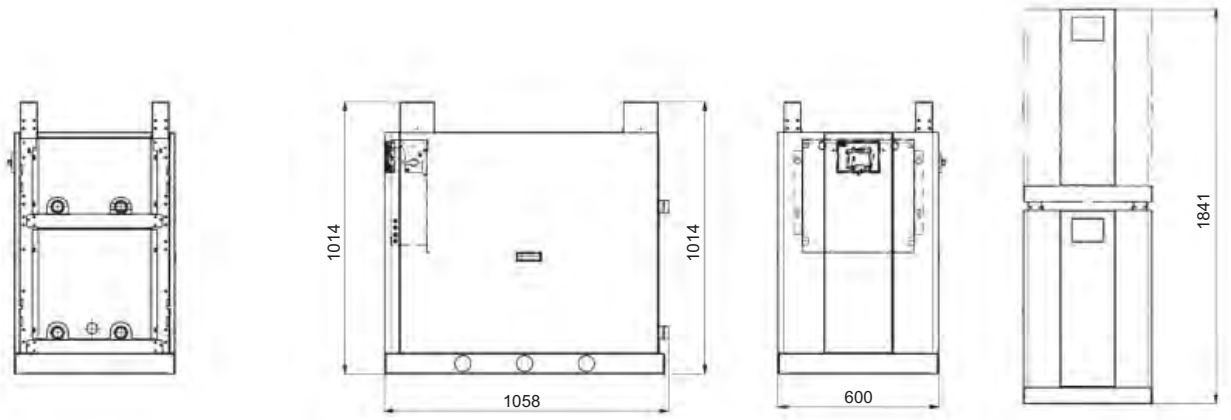
30WG 020-045 - stackable unit (option 273)

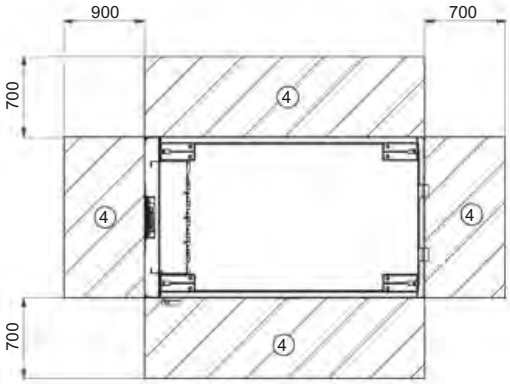
NOTE: The water and electrical connections are identical to those of the standard unit.





30WG 050-090 - standard unit





Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.

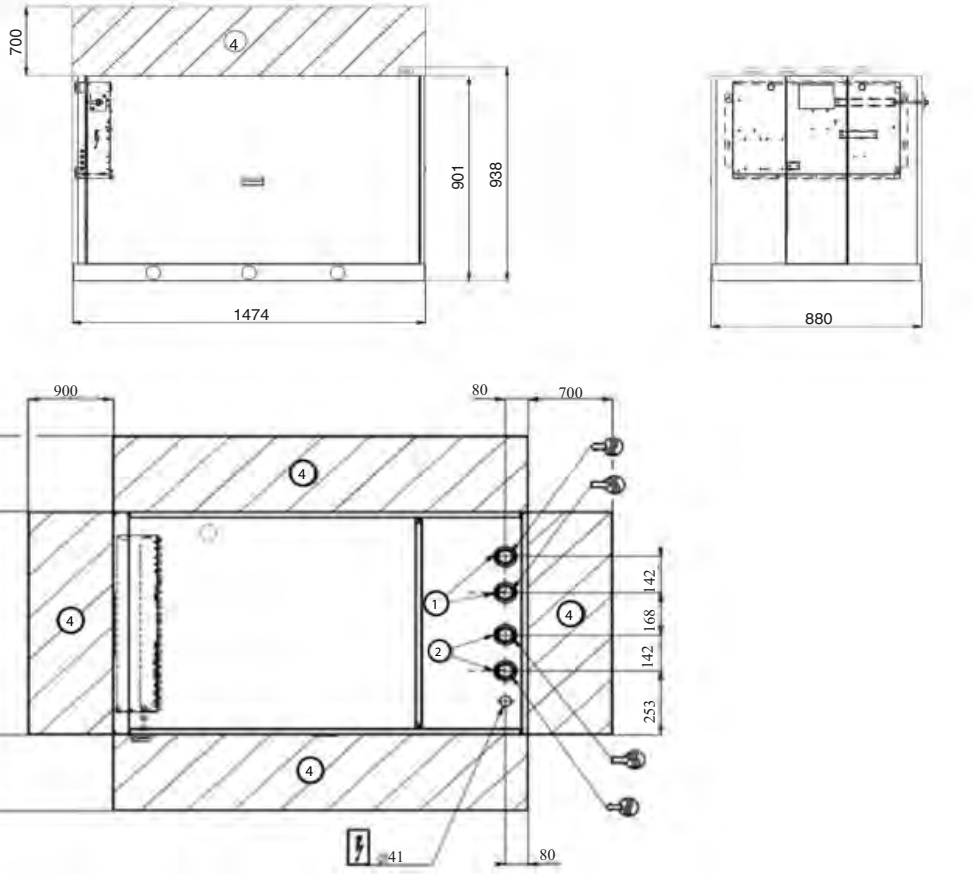
Water outlet

Power wiring connection

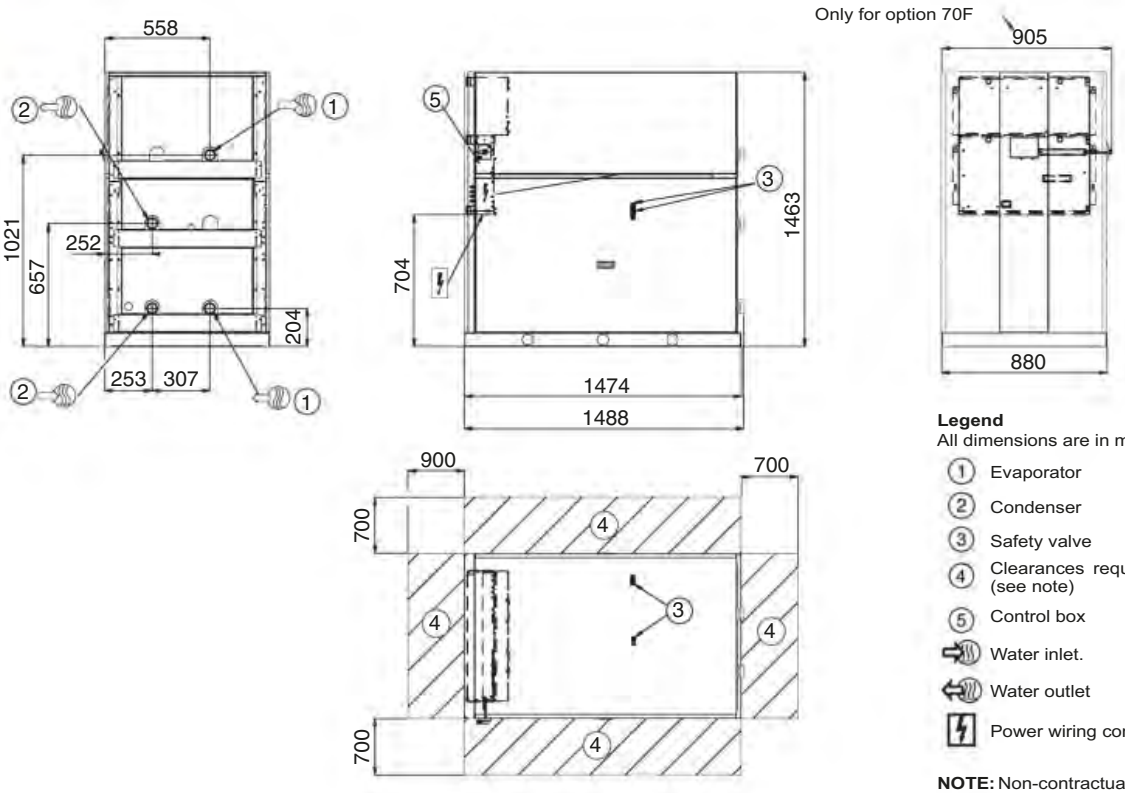
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 050-090 - unit with top connections (option 274)



30WG 050-090 - unit with evaporator hydraulic module (option 116)



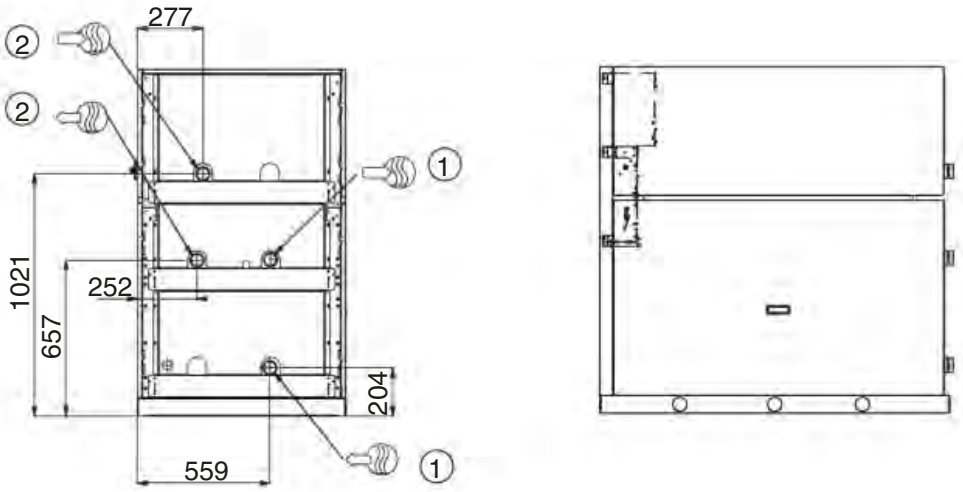
Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

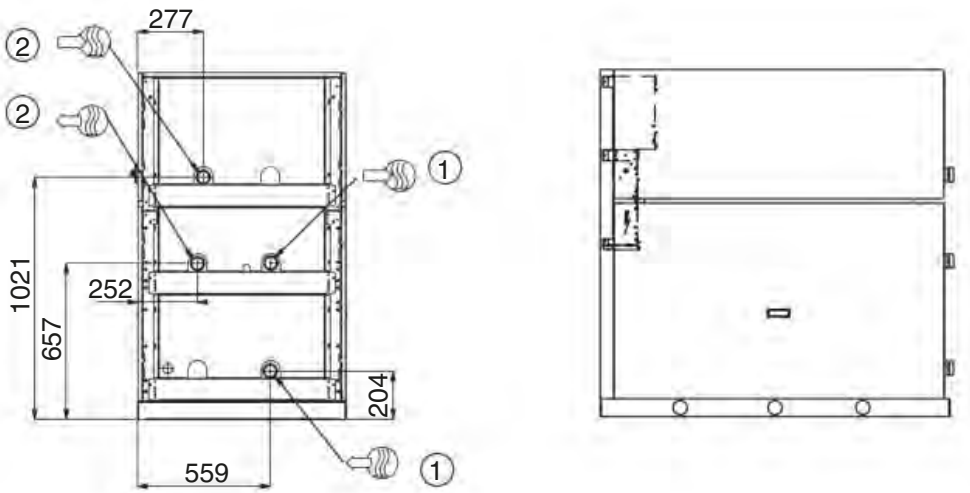
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 050-090 - unit with condenser hydraulic module (option 270)



30WG 050-090 - unit with evaporator/condenser hydraulic modules (options 116 + 270)



Legend
All dimensions are in mm.

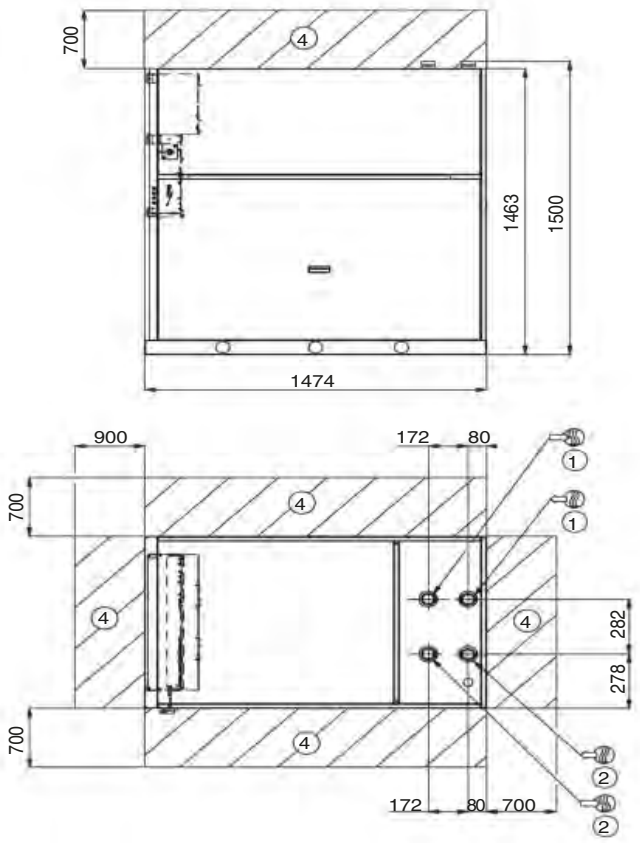
1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.
Water outlet
Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

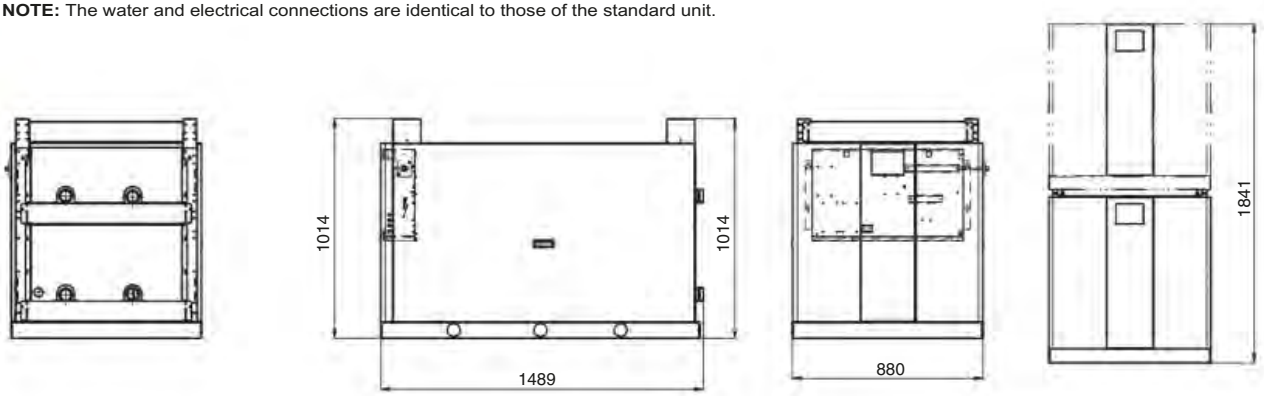
DIMENSIONS/CLEARANCES

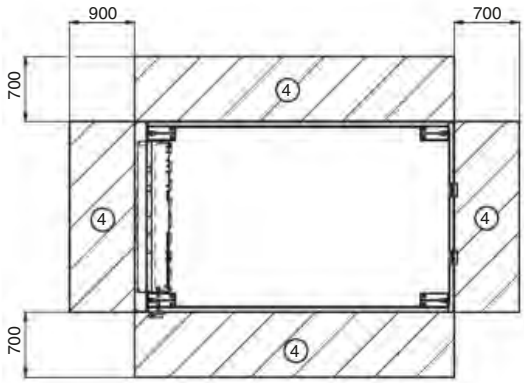
30WG 050-090 - unit with hydraulic module and top connections (options 116 + 274 or 270 + 274 or 116 + 270 + 274)



30WG 050-090 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.





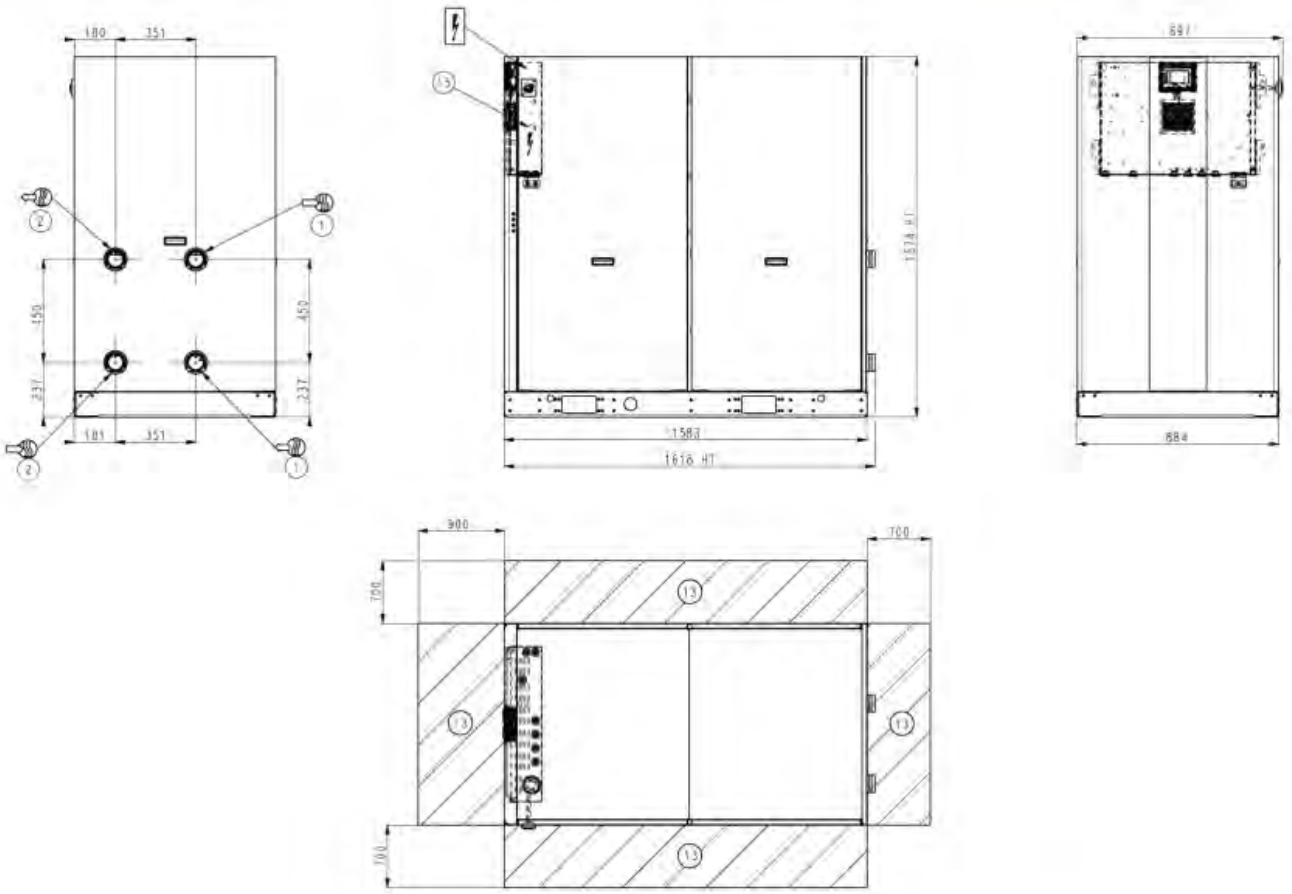
Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

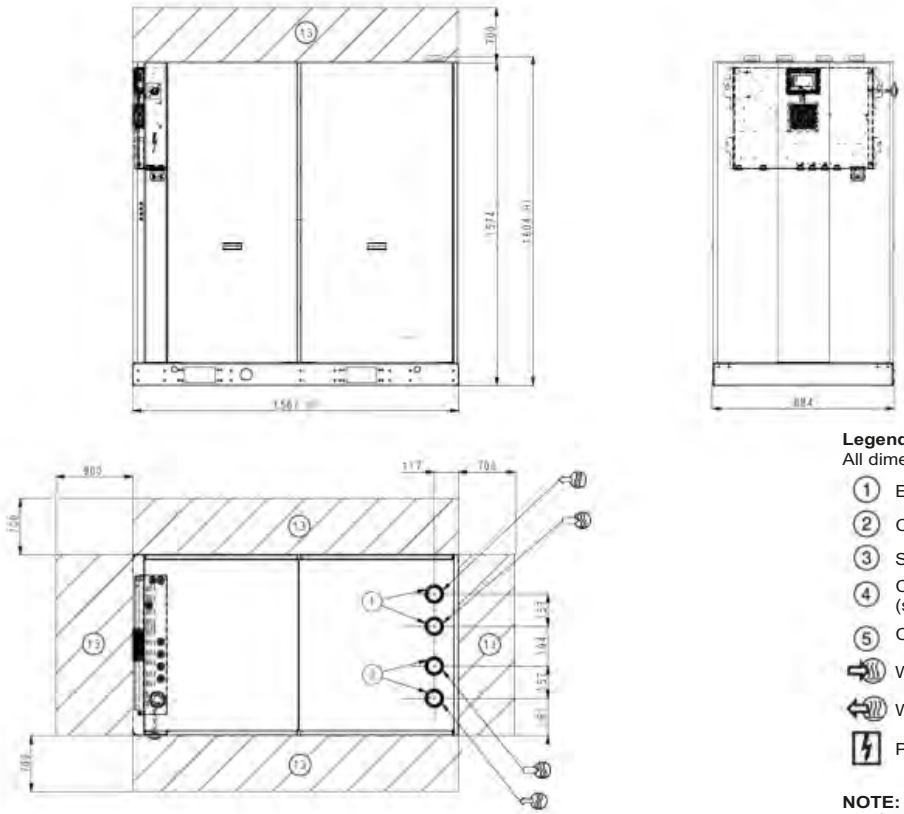
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 110-140 - standard unit



30WG 110-140 - unit with top connections (option 274)



Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.

Water outlet

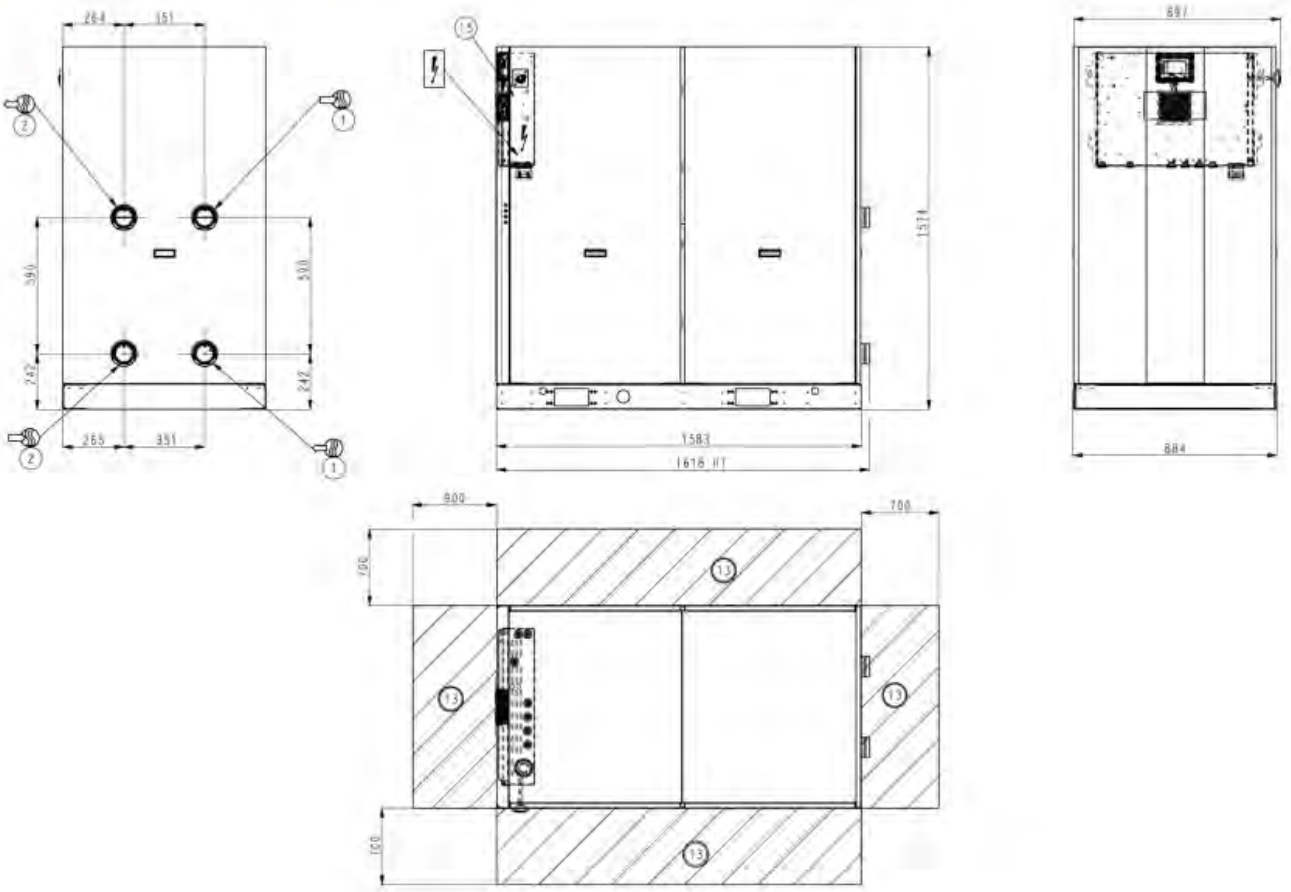
Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

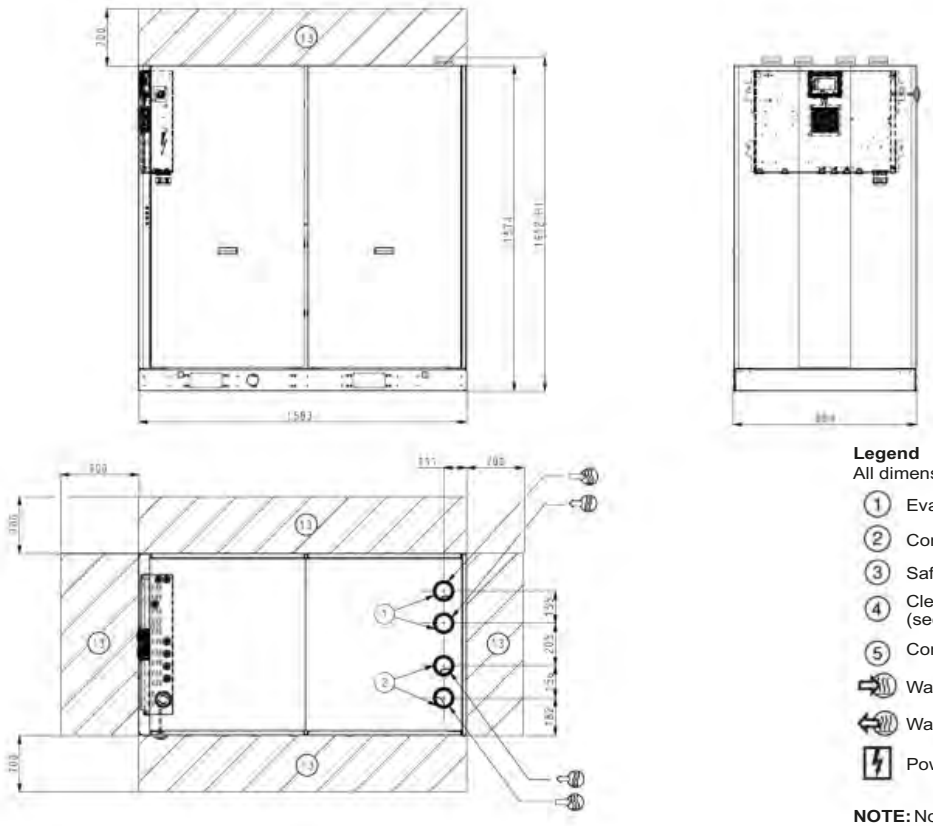
HEATING

DIMENSIONS/CLEARANCES

30WG 150-190 - standard unit



30WG 150-190 - unit with top connections (option 274)



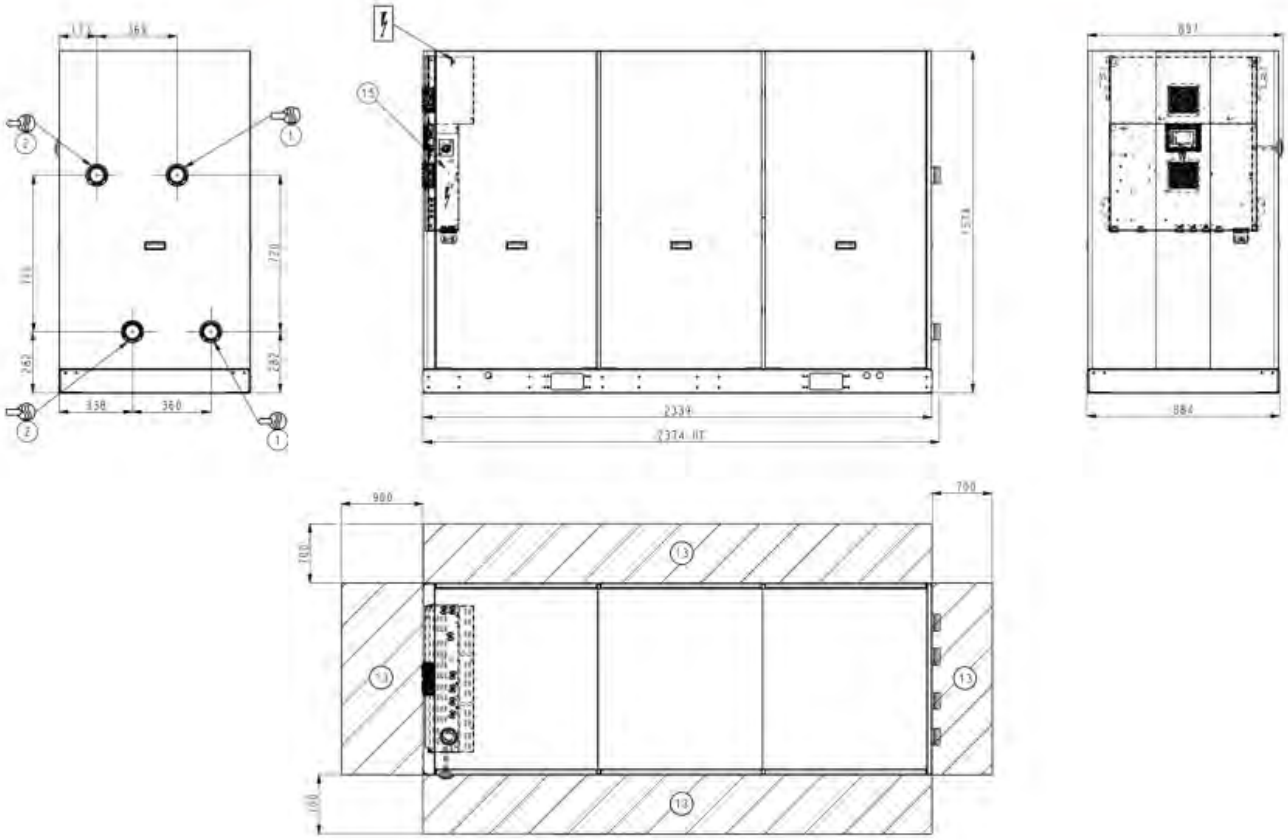
Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

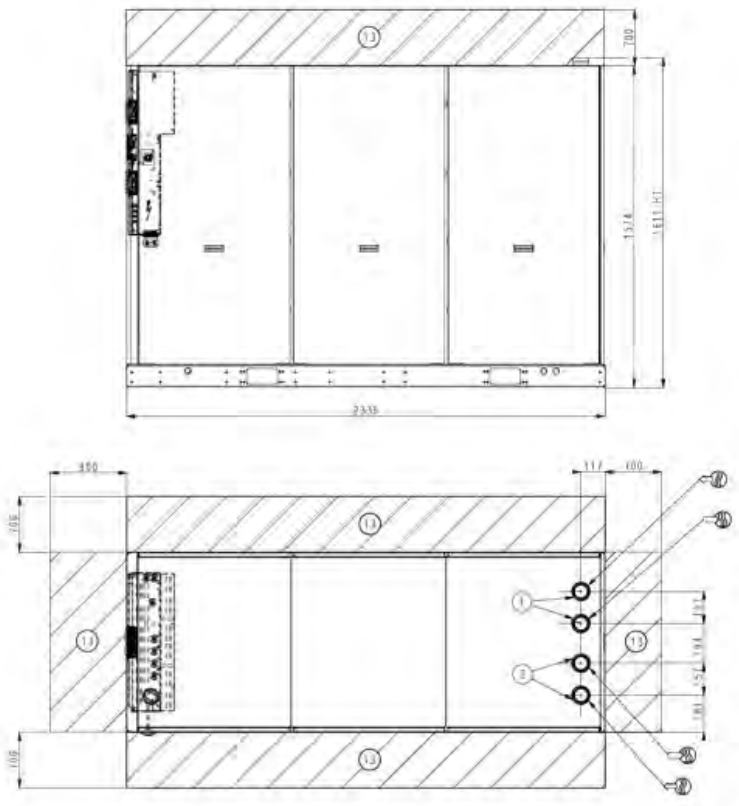
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 110-140 - unit with hydraulic module (option 116-270)



30WG 110-140 - unit with hydraulic module and top connections (option 116-270 and 274)



Legend
All dimensions are in mm.

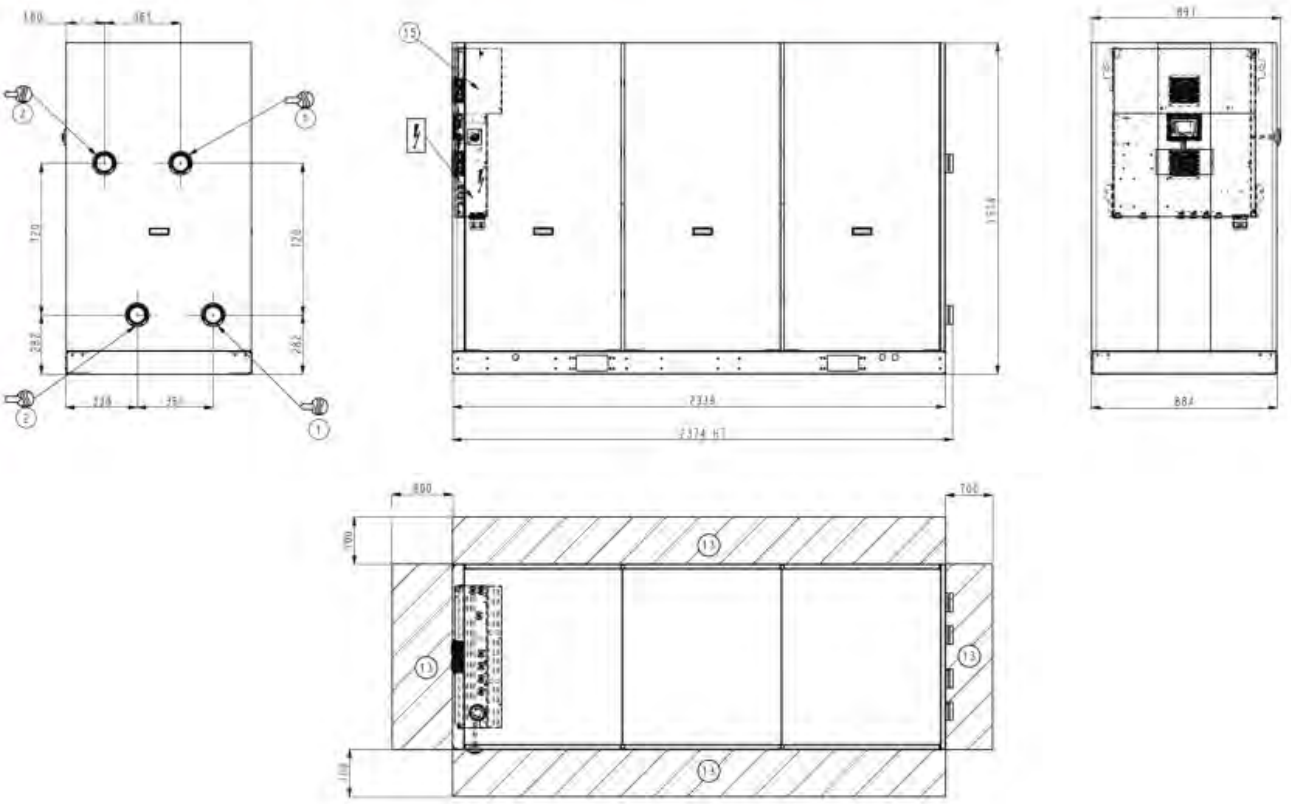
1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.
Water outlet
Power wiring connection

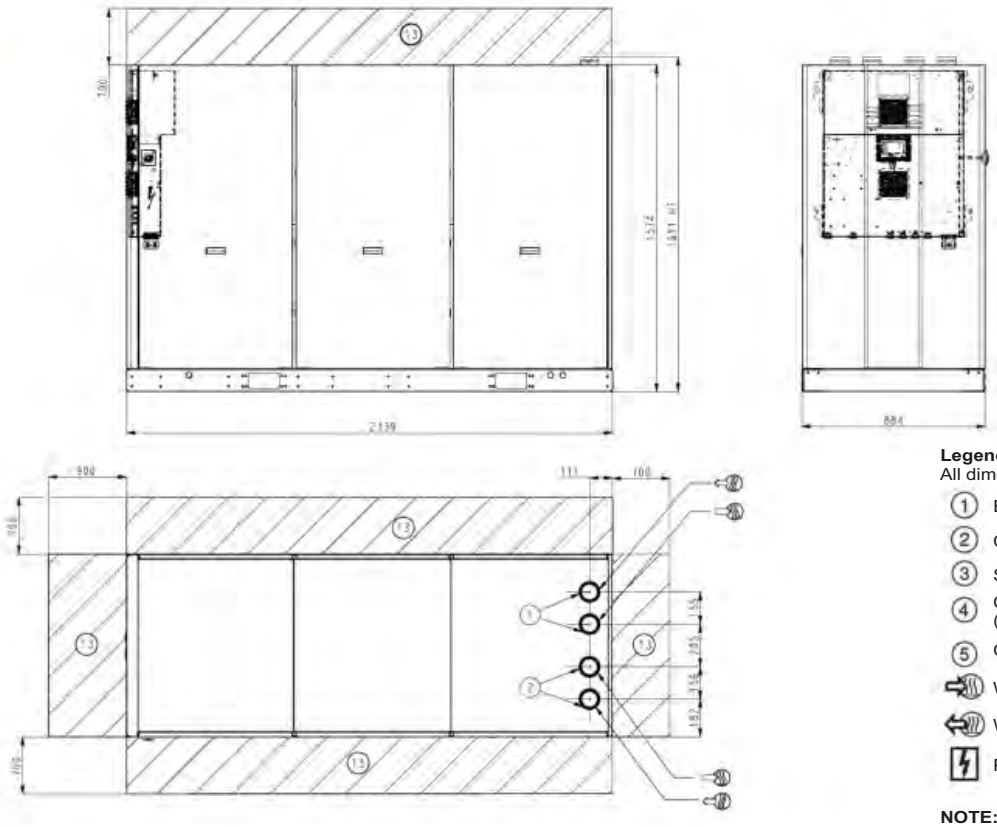
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WG 150-190 - unit with hydraulic module (option 116-270)



30WG 150-190 - unit with hydraulic module and top connections (option 116-270 and 274)



Legend
All dimensions are in mm.

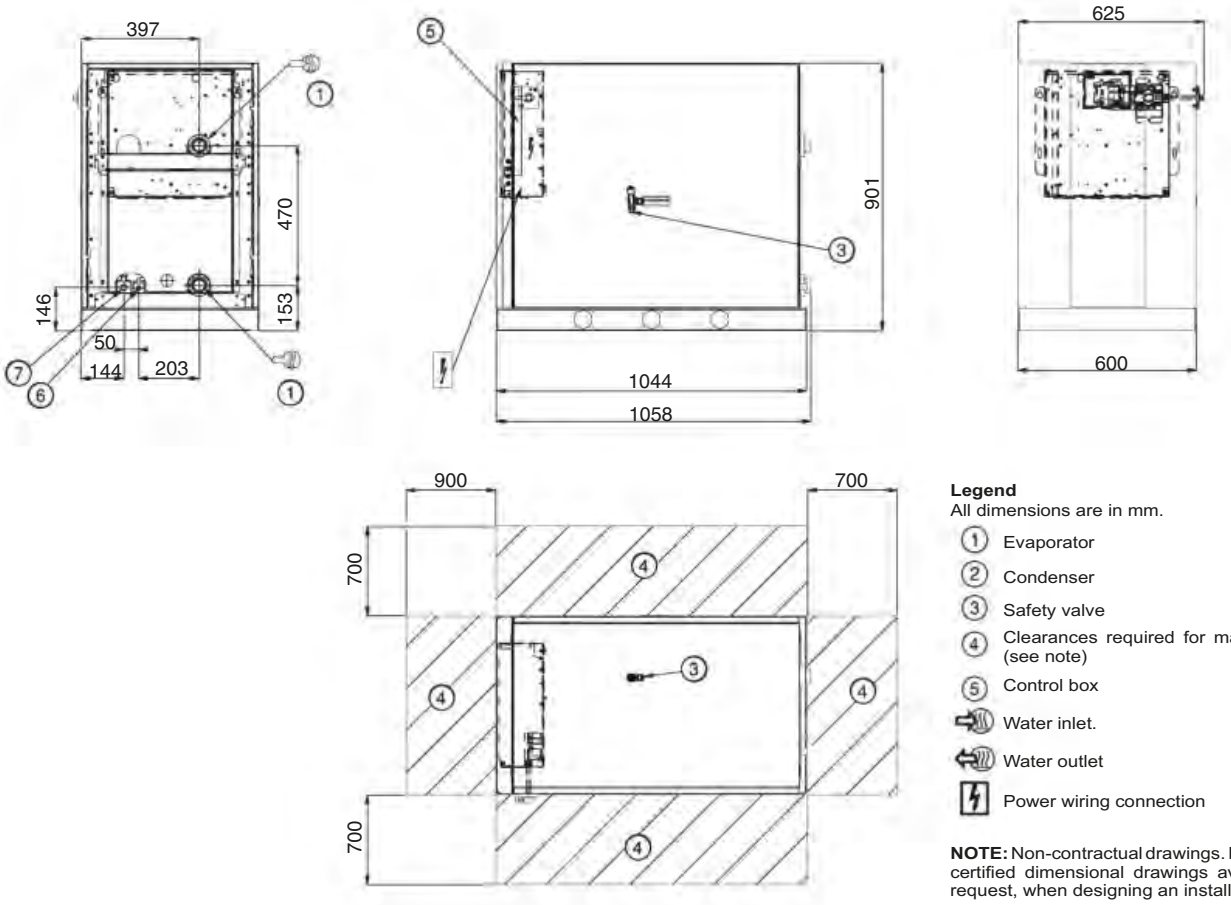
1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box

Water inlet.
Water outlet
Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

DIMENSIONS/CLEARANCES

30WGA 020-045 - standard unit

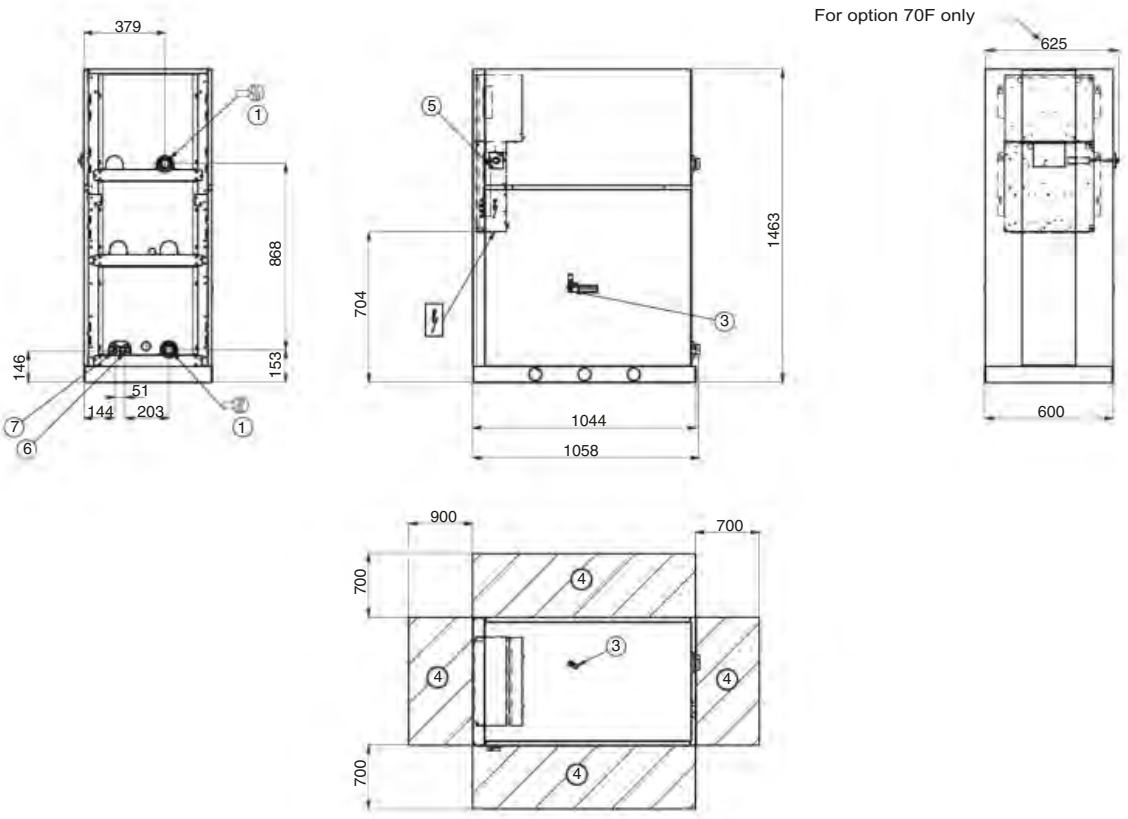


Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

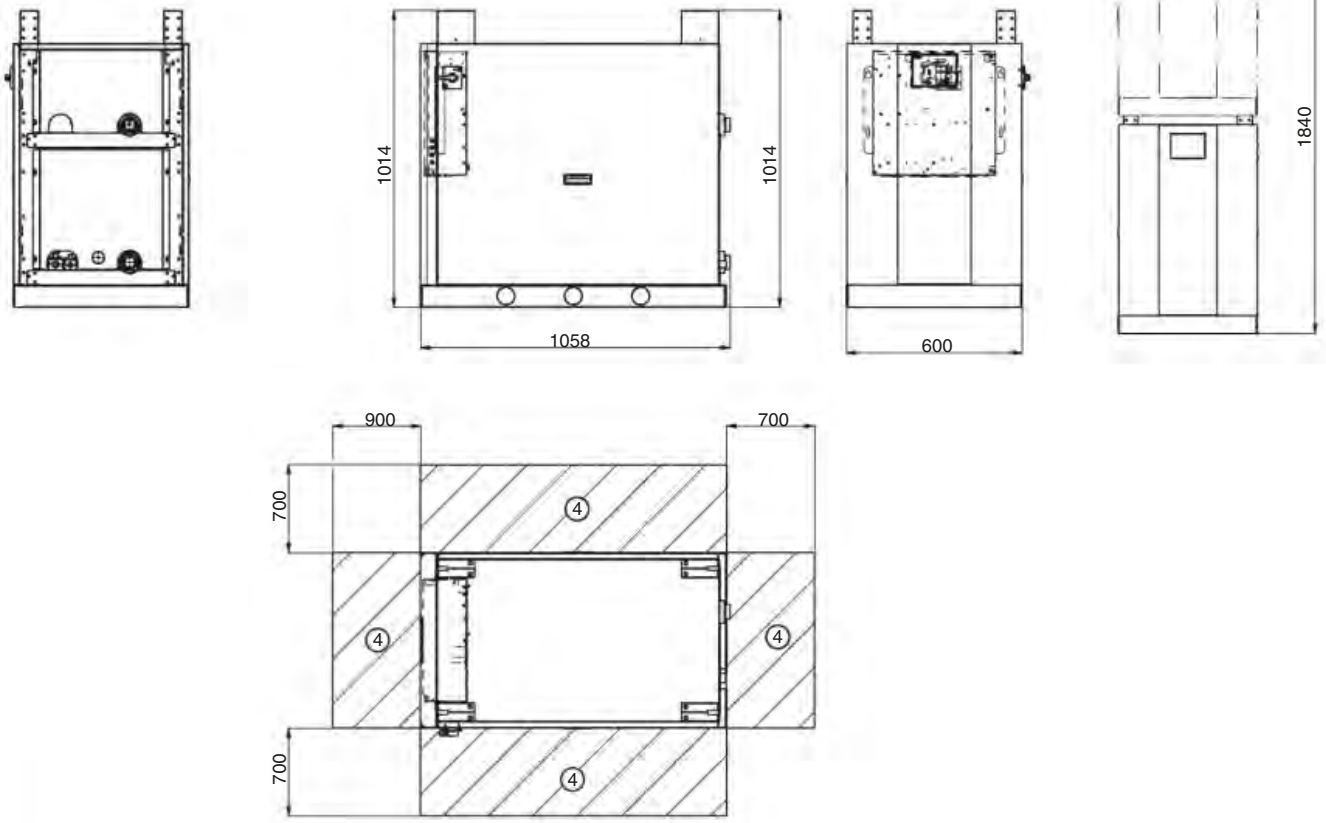
30WGA 020-045 - unit with evaporator hydraulic module (option 116)



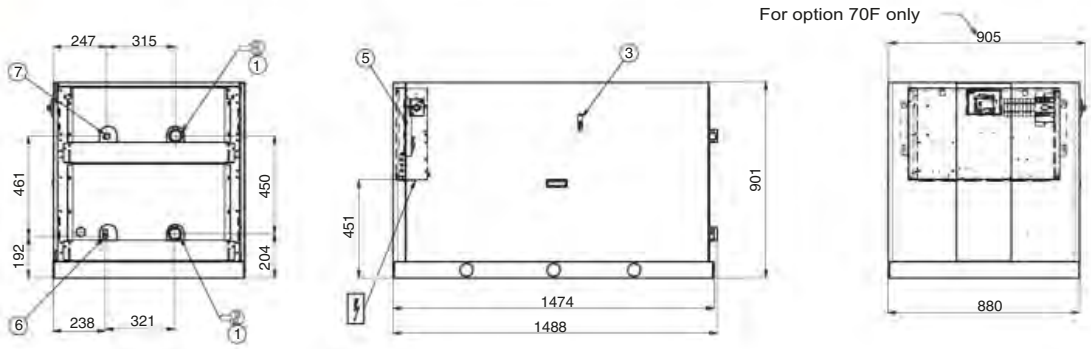
DIMENSIONS/CLEARANCES

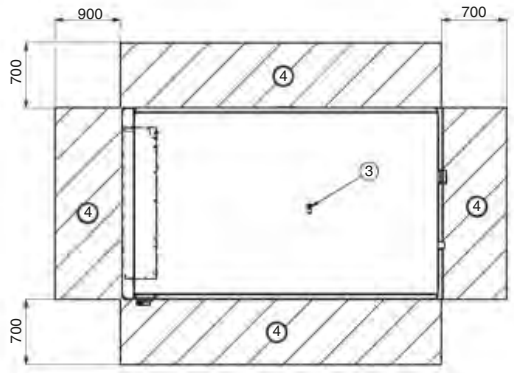
30WGA 020-045 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.



30WGA 050-090 - standard unit





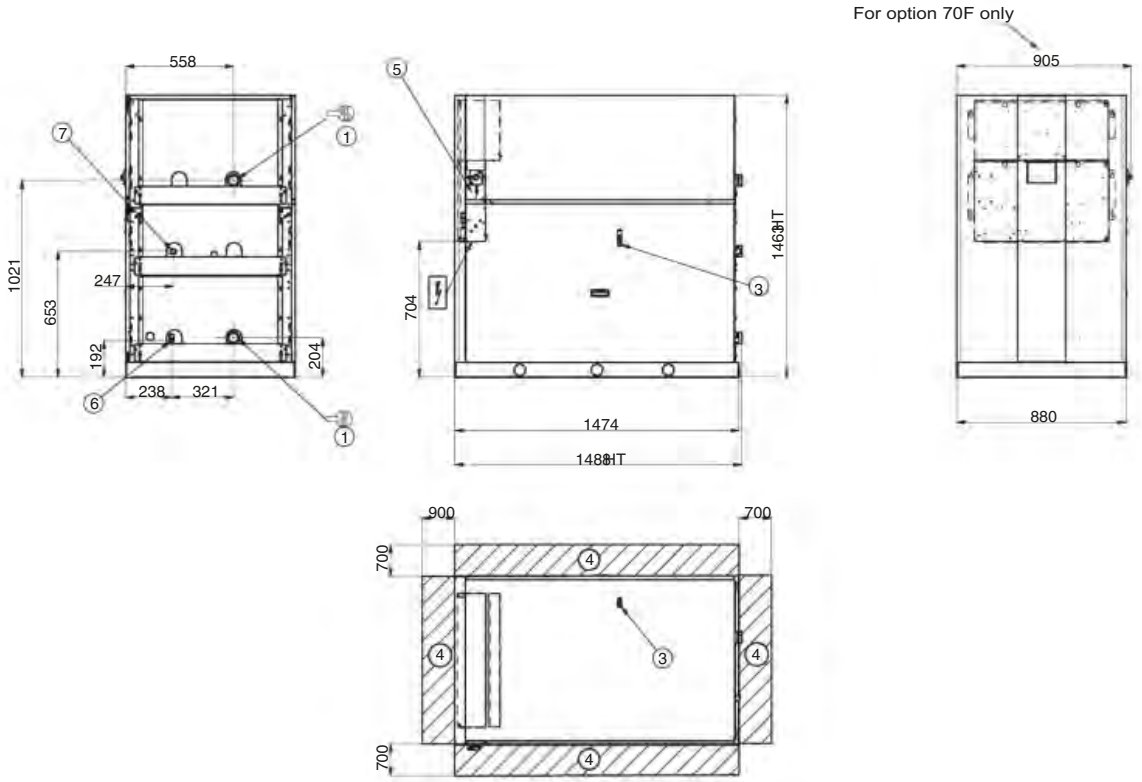
Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

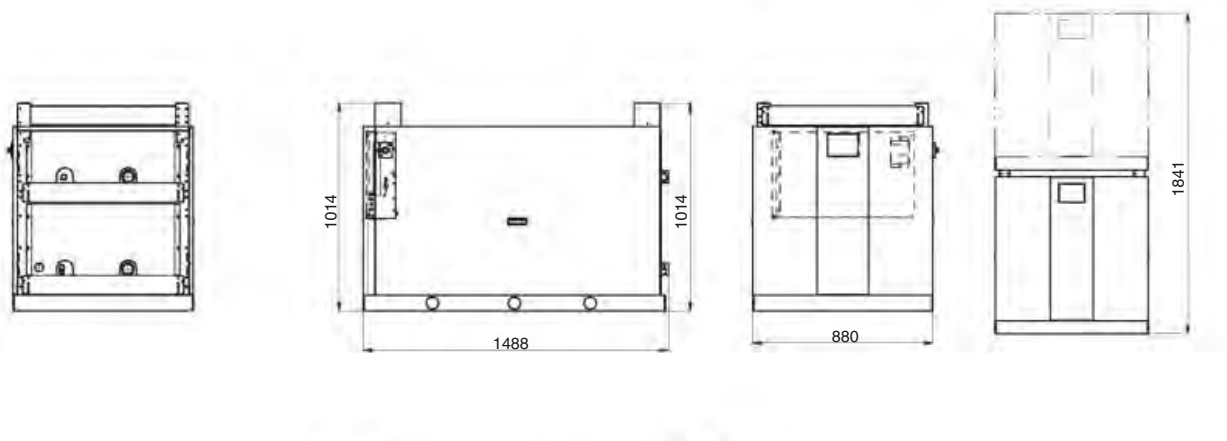
DIMENSIONS/CLEARANCES

30WGA 050-090 - unit with evaporator hydraulic module (option 116)



30WGA 050-090 - stackable unit (option 273)

NOTE: The water and electrical connections are identical to those of the standard unit.



Legend
All dimensions are in mm.

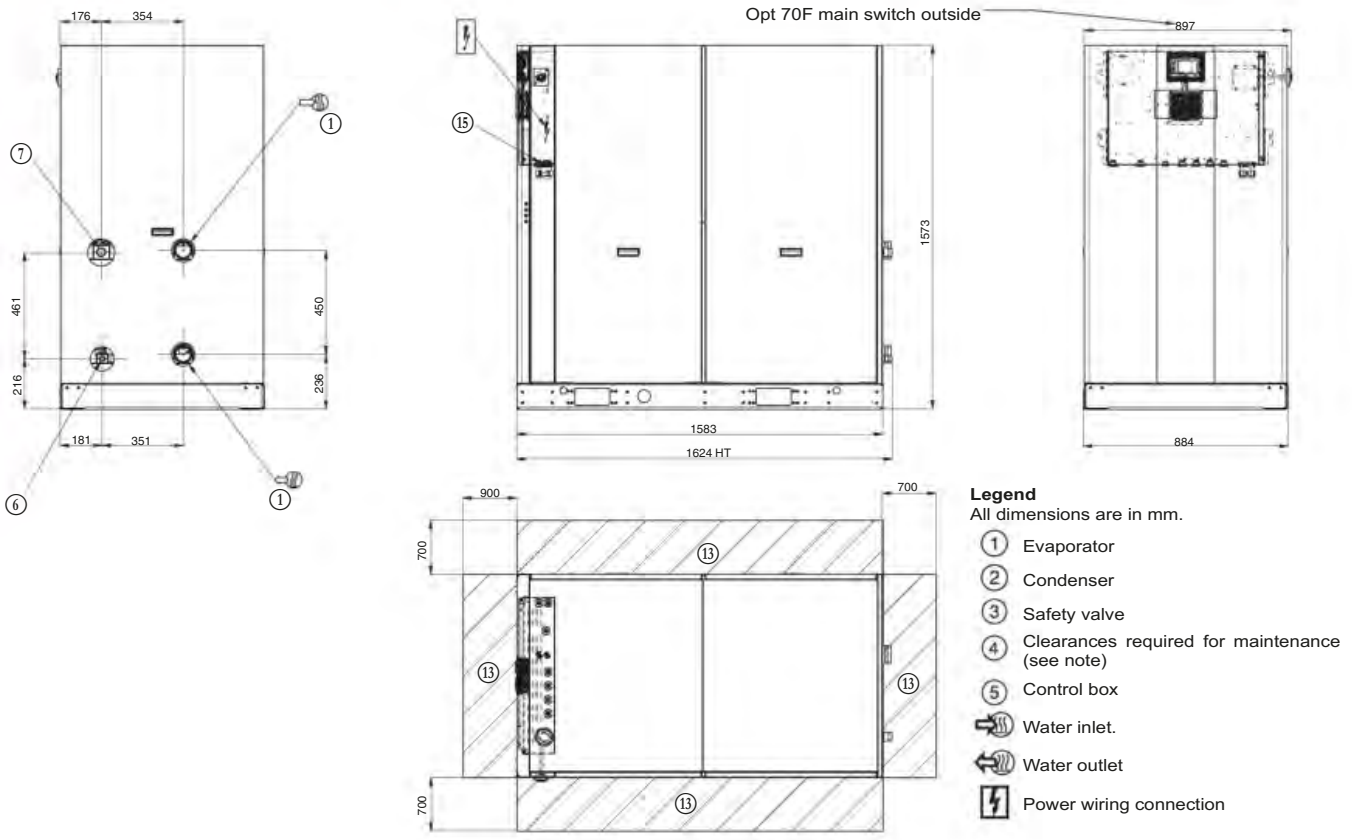
1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

HEATING

DIMENSIONS/CLEARANCES

30WGA 110-140 - Standard unit

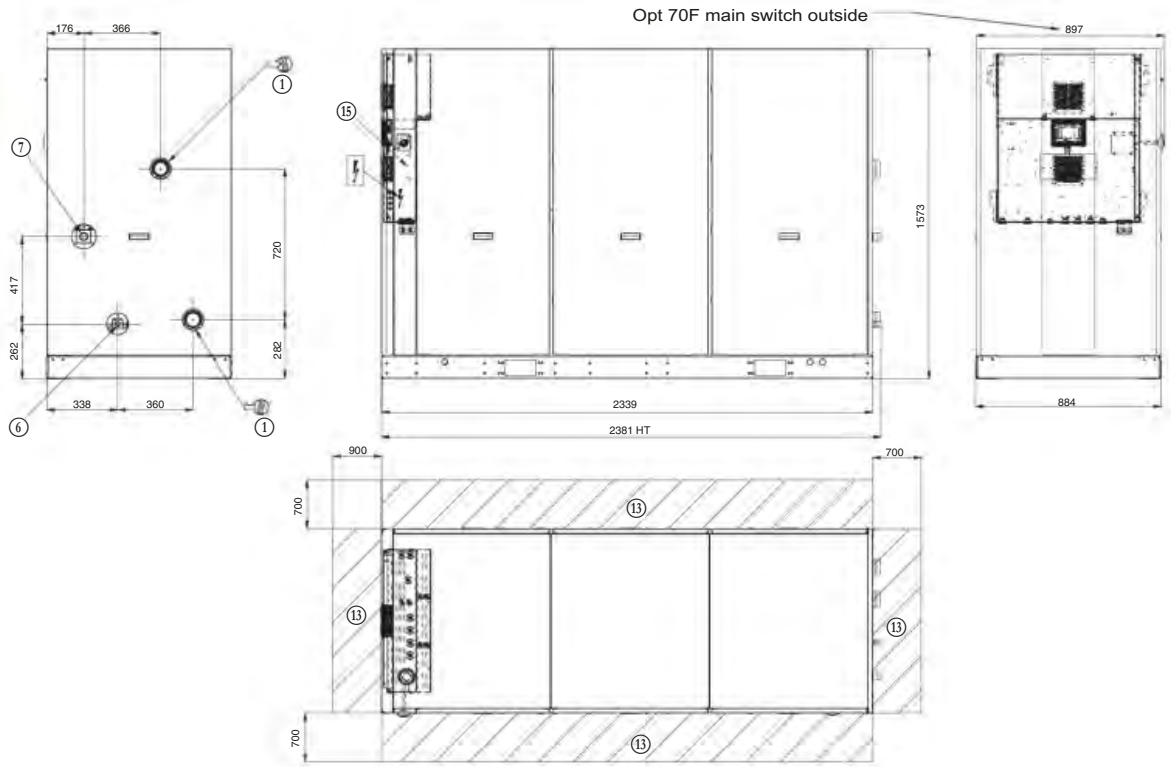


Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

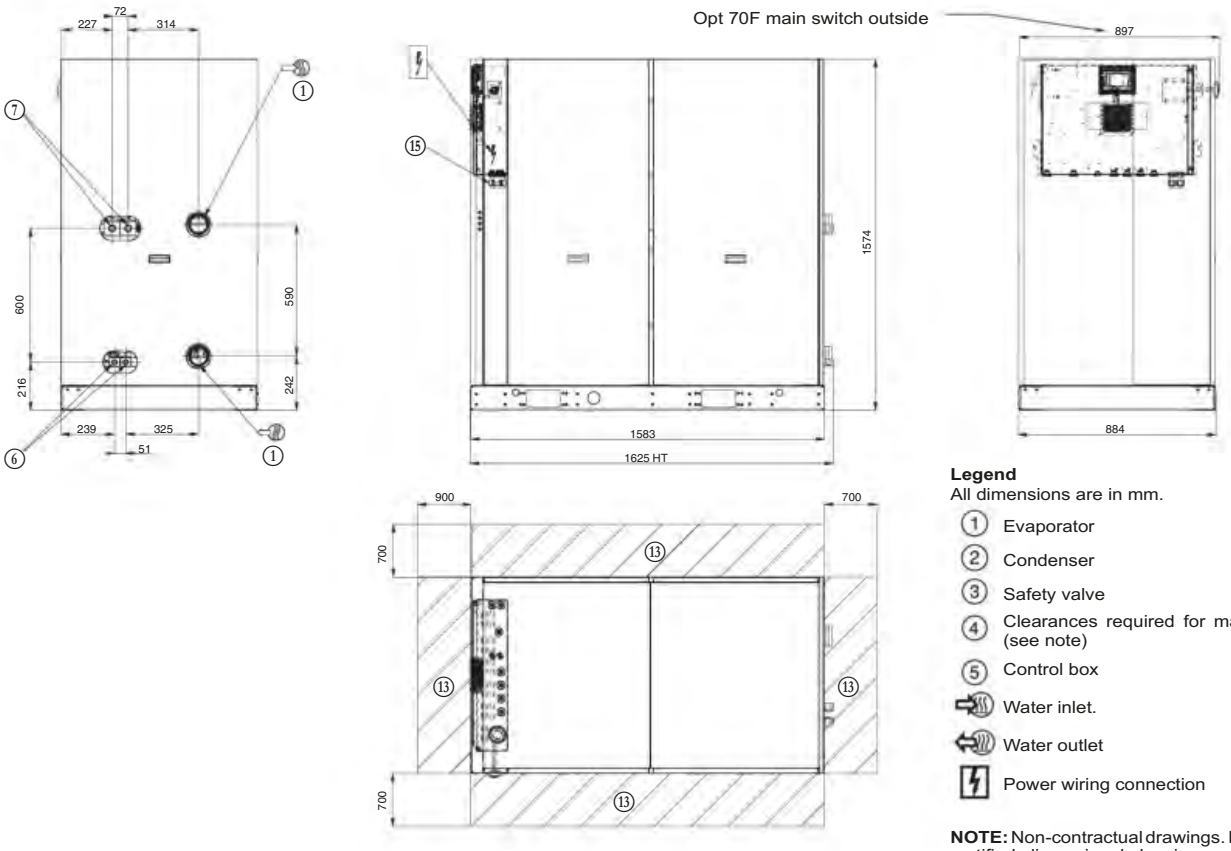
NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

30WGA 110-140 - Unit with hydraulic module (option 116)



DIMENSIONS/CLEARANCES

30WGA 150-190 - Standard unit

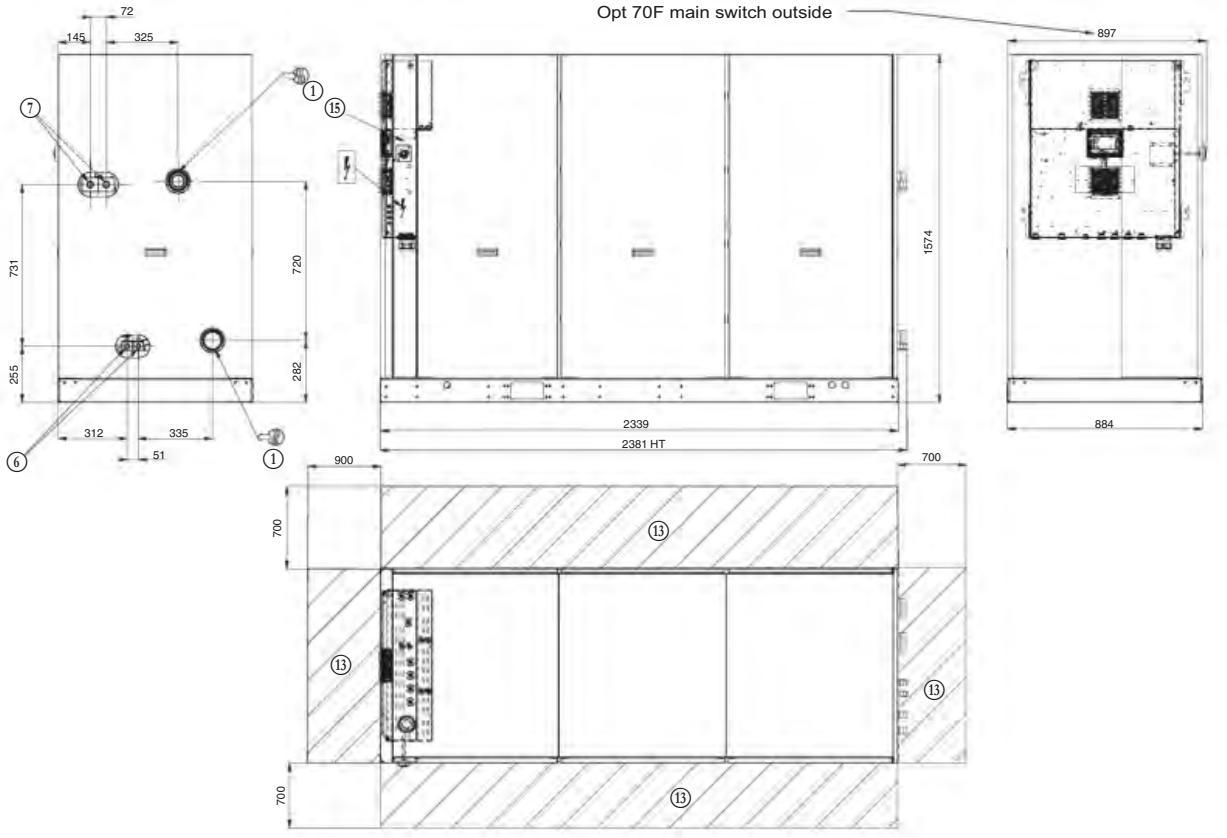


Legend
All dimensions are in mm.

1. Evaporator
2. Condenser
3. Safety valve
4. Clearances required for maintenance (see note)
5. Control box
- Water inlet.
- Water outlet
- Power wiring connection

NOTE: Non-contractual drawings. Refer to the certified dimensional drawings available on request, when designing an installation.

30WGA 150-190 - Unit with hydraulic module (option 116)



HEATING

WATER-SOURCED SCREW HEAT PUMPS

Quality design and construction

Very compact dimensions for easy installation

Two independent refrigerant circuits

Specific options for marine and process applications

Simple to service

30HXC

Nominal Heating capacity 338-1557 kW

The 30HXC units are water-cooled heat pump, designed from the ground up to meet the needs of today and tomorrow:

non-ozone depleting HFC-134a refrigerant
- screw compressors
- fits through a standard door with no disassembly required
- mechanically cleanable evaporators and condensers

All units are equipped with Pro-Dialog Plus control to optimise the efficiency of the refrigerant circuit.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

HEATING

CUSTOMER BENEFITS

Features

- Quality design and construction make the 30HXC unit the preferred choice.
- Non-controlled, non-ozone depleting HFC-134a refrigerant.
- HCF-134a is a proven, non-toxic, non-flammable refrigerant.
- Medium-pressure refrigerant HFC-134a minimises stress on the compressors and ensures their long operating life.
- The 30HXC units are equipped with screw compressors for extremely quiet operation and low-vibration levels.
- The 30HXC units exceed the efficiency level of average industry standards for both full- and part-load operation, saving on operating costs, through lower electrical costs.
- The 30HXC control is fully automatic. The leaving water temperature is continuously monitored to detect load and flow changes. This combination provides the most precise temperature control available.
- Two independent refrigerant circuits - the second one takes over automatically, when the first one malfunctions, maintening partial heating under all circumstances.
- Easy installation - the 30HXC heat pump are supplied with a full refrigerant charge, and conveniently located power supply and water inlet and outlet connections.
- Auto-diagnostics - quick display of the machine status.
- Multiple compressor concept for optimised part-load efficiency and minimised starting current.
- Series star/delta starter, limiting the start-up current on 30HXC 080-190 units.
- All units are also available as high condensing temperature with condenser insulation (option 150A). Their application range is the same as for the standard units, on which they are based, but they also allow condenser leaving water temperatures of up to 63°C. Pro-Dialog control offers all the advantages of the standard units, plus control of the leaving condenser water temperature.

Easy installation

- The 30HXC has a compact design that fits through a standard door opening and requires minimal indoor space. The 30HXC is supplied as a complete package for easy installation. There are no extra controls, timers, starters or other items to install.
- 30HXC units have a single power point and one main disconnect/isolator switch for sizes 30HXC 080 to 190, and one power point and one main disconnect/isolator switch per circuit for sizes 30HXC 200 to 375. The hydraulic connections are simple and facilitated by the use of Victaulic connections for the evaporator and condenser.

Simple to service

- Mechanically-cleanable evaporator and condenser
- Twin-screw compressors which require minimum routine service or maintenance.
- Easily accessed suction and discharge pressure and temperature information via a display module.

Pro-Dialog Plus control

Pro-Dialog Plus is an advanced numeric control system that combines intelligence with great operating simplicity.

Pro-Dialog Plus ensures intelligent leaving water temperature control and optimises energy requirements.

- The PID control algorithm with permanent compensation for the difference between the heat exchanger entering and leaving temperature, anticipates load variations, guarantees leaving water temperature stability and prevents unnecessary compressor cycling.
- The long-stroke electronic expansion valves (EXV), together with refrigerant level control via heat exchange in the evaporator, allows a significant energy efficiency improvement at part load conditions, and faultless heat pump operation in a wider temperature range.
- Adjustable ramp loading, according to the inertia of the application, avoids load increases that are too fast and too frequent, increasing unit life and limiting power consumption peaks.
- Several capacity loading possibilities ensure improved start-up at low outdoor air temperature, and permit use of one of the refrigerant circuits as a back-up circuit.

Pro-Dialog Plus ensures preventive protection and enhances heat pump reliability.

- Equalisation of compressor operating hours
- No capillary tubes or pressostats (except as safety device)
- Pro-Dialog Plus monitors all heat pump safety parameters.
- The fault history function and the fault codes facilitate immediate location of faults and in certain cases the conditions causing the alarm. Prognostic and preventive maintenance functions (incorrect water loop, oil filter dirty etc.) permit anticipation of possible problems.

Pro-Dialog Plus operator interface

CUSTOMER BENEFITS

Pro-Dialog Plus offers extended communications capabilities

- Clear and easy-to-understand operator interface. The LEDs, numeric displays and touch keys are well-positioned on the schematic heat pump diagram. The user immediately knows all operating parameters: pressures, temperatures, operating hours, etc.
- The extensive heat pump remote control capabilities (wired connection) allow integration into building management systems (see Technical Description)
- RS485 series port for connection to the Carrier Comfort Network (CCN) or any other monitoring system (optional communications interface with open protocol allows transfer of almost 40 parameters).
- Parallel piloting of two units as standard, or of several units with Flotronic System Manager (FSM) and Chiller System Manager (CSM III) options.
- The control permits:
  - Control in master/slave configuration of two units operating in parallel.
  - Programming of operating time schedules (up to 8 periods per week)
  - Programming of operating time schedules for the second set-point (up to 8 periods per week)
  - Definition of operating time period with demand limit.
  - Integration of the unit into a building management system (BMS): serial port RS 485.
- Control of the customer's water pump (dual pump with automatic change-over optional).
- Control at the second set-point (example: room unoccupied).
- Set-point reset as a function of the air temperature or the difference between entering and leaving water temperature.

The 30HXC fits through a standard door opening, minimising installation cost.

OPTIONS

Options	No.	Description	Advantages	Use
Low-temperature brine solution	6	Low temperature glycol solution production down to -10 °C with ethylene glycol	Covers specific applications such as ice storage and industrial processes	090, 110, 130, 155, 175, 200, 230, 260, 310, 345
IP44C electrical protection level	20	Control box thightness reinforced	Permits unit installation in more severe envrionments	080-375
Tropicalisation	22	Unit control box suitable for tropical climates	Reduced relative humidity in the control boxes for operation in tropical climates (warm and humid)	080-375
Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	200-375
Cu/Ni condensers	33	Condenser tubes and tubes sheets in 90-10 Copper/Nickel alloy	Allows applications with sea water	080-375
Cu/Ni cond. + Sakaphen coated water boxes	34A	Condenser tubes and tubes sheets in 90-10 Copper/Nickel alloy and Sakaphen treatment inside water boxes	Allows applications with sea water, improved durability of water boxes	080-375
Unit supplied in two assembled parts	51	The unit is equipped with flanges that allow disassembly of the unit on site	Facilitates installation in plant rooms with limited access	080-375
460V-3-60Hz power supply	60	460V-3-60Hz power supply	Permits unit connection to 460V-3-60Hz power supply	080-375
380V-3-60Hz power supply	61	380V-3-60Hz power supply	Permits unit connection to 380V-3-60Hz power supply	080-375
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	080-375
Evap. dual pumps power/ control circuit	84D	nit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	080-375
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	080-375
Compressor suction valve	92	Valve set for the compressor suction side to isolate it in the refrigerant circuit	Simplified service and maintenance	080-375
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	080-375
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	080-375
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	080-375
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	080-375
eversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	080-375
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	080-375
J-Bus gateway	148B	Bi-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	080-375
BacNet gateway	148C	Bi-directional communication board complying with BacNet protocol	Easy connection by communication bus to a building management system	080-375
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	080-375
High condensing temperature with condenser insulation	150A	Increased condenser leaving water temperature up to 63°C with thermal condenseur insulation	Allows applications with high condensing temperature and minimizes thermal dispersions condenser side	080-375
Control for low cond. temperature	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	080-375
RS 485 interface with open protocol	155	Additional RS 485 communication board	Communication via CCN protocol	080-375

OPTIONS

Options	No.	Description	Advantages	Use
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	080-190
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	080-375
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	080-375
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	080-375
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	080-375
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	080-375
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	080-375
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	080-375

PHYSICAL DATA

30HXC				080	090	100	110	120	130	140	155	175
Heating												
Standard unit Full load performances*	HW1	Nominal capacity	kW	340	371	415	449	491	538	610	651	717
		COP	kW/kW	5,59	5,38	5,43	5,26	5,54	5,36	5,39	5,22	5,32
	HW2	Nominal capacity	kW	326	358	393	434	468	529	582	633	682
		COP	kW/kW	4,29	4,21	4,18	4,21	4,33	4,23	4.25	4,11	4,11
Sound levels - standard unit												
Sound power level (1)			dB(A)	94	94	94	94	94	97	98	100	101
Sound pressure level at 1m (2)			dB(A)	77	77	77	77	76	79	80	82	83
Operating weight			kg	2274	2279	2302	2343	2615	2617	2702	2712	3083
Compressor size				Semi-hermetic, twin-screw				The compressor size is identified by its nominal heating capacity in tons of refrigeration (1 ton = 3.517 kW).				
Circuit A				39	46	46	56	56	66	80	80	80
Circuit B				39	39	46	46	56	56	56	66	80
Refrigerant - standard unit (3)				R-134a								
Circuit A			kg	33	33	32	31	49	51	48	54	54
			$teqCO_2$	47	47	46	44	70	73	69	77	77
Circuit B			kg	34	34	30	35	52	47	48	57	50
			$teqCO_2$	49	49	43	50	74	67	69	82	72
Oil - standard unit (4)				Polyolester oil CARRIER SPEC. PP 47-32								
Circuit A/B			l	17/17	17/17	17/17	17/17	17/17	17/17	17/17	17/17	17/17
Capacity control				PRO-DIALOG Plus control								
No. of control steps				6	6	6	6	6	6	6	6	6
Minimum step capacity			%	19	19	21	19	21	19	17	19	21
Evaporator				Shell and tube with internally finned copper tubes								
Net water volume			l	50	50	58	69	65	65	75	75	88
Water connections				Victaulic connections								
Inlet/outlet			in	4	4	4	5	5	5	5	5	5
Drain and vent (NPT)			in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure			kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser				Shell and tube with internally finned copper tubes								
Net water volume			l	48	48	48	48	78	78	90	90	108
Water connections				Victaulic connections								
Inlet/outlet			in	5	5	5	5	5	5	5	5	6
Drain and vent (NPT)			in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure			kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

* In accordance with standard EN14511-3:2013

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Values shown are a guideline only. Please refer to the unit nameplate

(4) For options 150 and 150A the units are supplied with an additional charge of 3 litres per compressor.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA

30HXC				190	200	230	260	285	310	345	375
Heating											
Standard unit Full load performances*	HW1	Nominal capacity	kW	780	838	974	1084	1178	1326	1454	1563
		COP	kW/kW	5,32	5,36	5,39	5,14	5,38	5,42	5,22	5,28
	HW2	Nominal capacity	kW	773	834	927	1025	1171	1266	1369	1554
		COP	kW/kW	4,18	4.23	4,19	4.07	4,11	4,12	4.09	4,13
Sound levels - standard unit											
Sound power level (1)			dB(A)	101	99	101	102	102	103	104	104
Sound pressure level at 1 m (2)			dB(A)	83	80	82	83	83	84	85	85
Operating weight			kg	3179	3873	4602	4656	4776	5477	5553	5721
Compressor size				The compressor size is identified by its nominal heating capacity in tons of refrigeration (1 ton = 3.517 kW).							
Circuit A				80+	66/56	80/56	80/80	80+/80+	80/66	80/80	80+/80+
Circuit B				80+	66	80	80	80+	80/66	80/80	80+/80+
Refrigerant - standard unit (3)											
Circuit A			kg	75	92	115	117	132	109	96	119
			$teqCO_2$	100	132	164	167	189	156	137	170
Circuit B			kg	75	68	63	75	80	106	109	137
			$teqCO_2$	100	97	90	107	114	152	156	196
Oil - standard unit (4)				Polyolester oil CARRIER SPEC. PP 47-32							
Circuit A/B			l	17/17	30/17	30/17	30/17	30/17	34/34	34/34	34/34
Capacity control				PRO-DIALOG Plus control							
No. of control steps				6	8	8	8	8	10	10	10
Minimum step capacity			%	21	14	14	14	14	10	10	10
Evaporator				Shell and tube with internally finned copper tubes							
Net water volume			l	88	126	155	170	170	191	208	208
Water connections				Victaulic connections							
Inlet/outlet			in	5	6	6	6	6	8	8	8
Drain and vent (NPT)			in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure			kPa	1000	1000	1000	1000	1000	1000	1000	1000
Condenser				Shell and tube with internally finned copper tubes							
Net water volume			l	108	141	190	190	190	255	255	255
Water connections				Victaulic connections							
Inlet/outlet			in	6	6	8	8	8	8	8	8
Drain and vent (NPT)			in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure			kPa	1000	1000	1000	1000	1000	1000	1000	1000

* In accordance with standard EN14511-3:2013

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Values shown are a guideline only. Please refer to the unit nameplate

(4) For options 150 and 150A the units are supplied with an additional charge of 3 litres per compressor.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

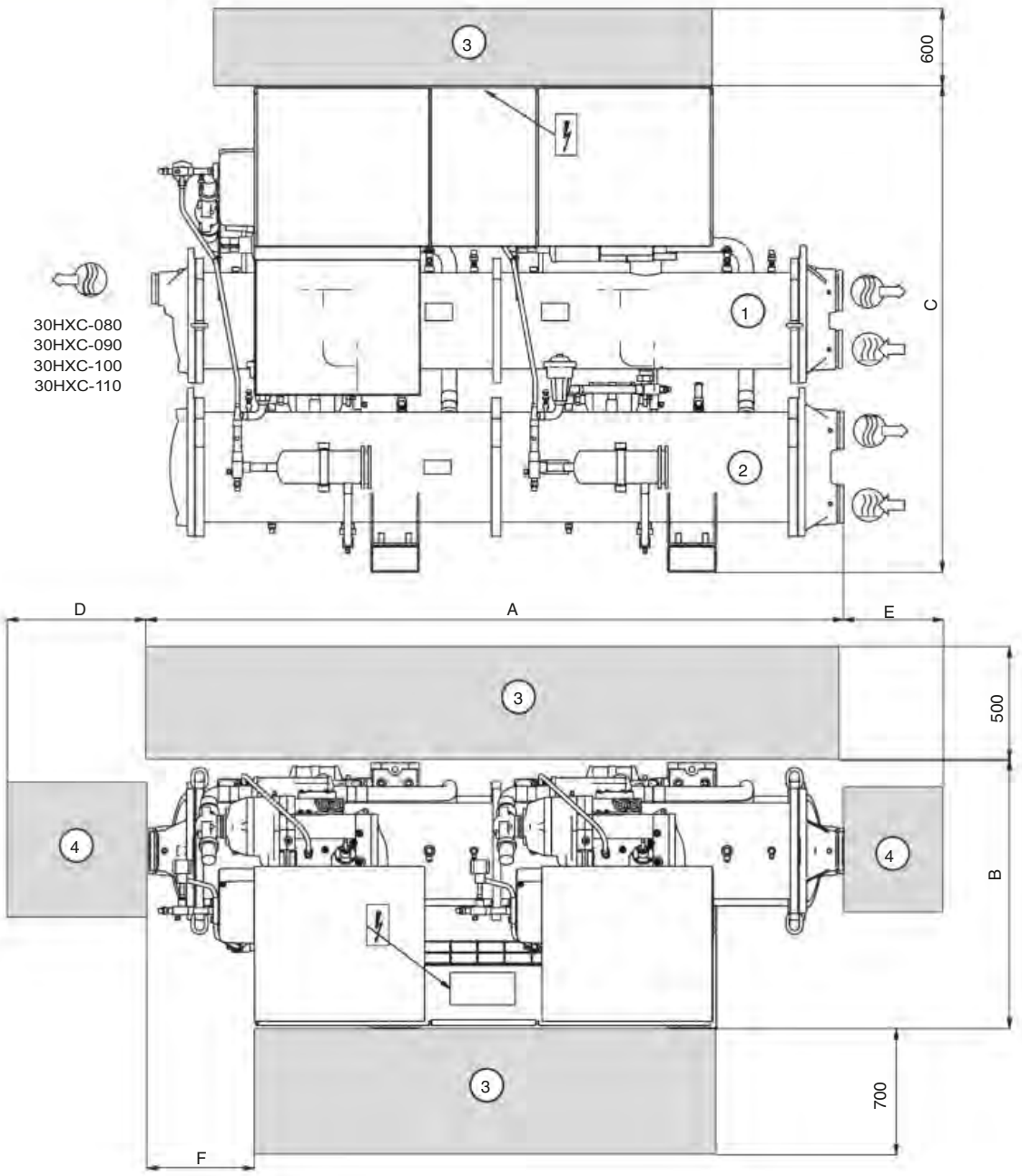
ELECTRICAL DATA

30HXC		080	090	100	110	120	130	140	155	175	190	200	230	260	285	310	345	375
Power circuit																		
Nominal power supply (Un)(1)	V-ph-Hz	400-3-50																
Voltage range	V	360-440																
Control circuit supply		The control circuit is supplied via the factory-installed transformer																
Nominal power input(1)	kW	53	62	67	76	80	89	102	112	121	129	140	164	192	195	221	250	263
Nominal current drawn(1)	A	101	115	127	143	149	168	190	207	226	234	255	294	337	354	399	448	477
Max. power input(2)	kW	87	97	108	119	131	144	161	175	192	212	223	257	288	318	350	384	424
Circuit A	kW	-	-	-	-	-	-	-	-	-	-	144	161	192	212	175	192	212
Circuit B	kW	-	-	-	-	-	-	-	-	-	-	79	96	96	106	175	192	212
Cosine phi, unit at full load		0.88	0.88	0.88	0.88	0.89	0.88	0.88	0.89	0.89	0.89	0.88	0.89	0.89	0.89	0.89	0.89	0.89
Total harmonic distortion(3)	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max. current drawn (Un - 10%)(3)	A	158	176	195	215	235	259	289	314	344	379	401	461	517	568	628	688	758
Circuit A	A	-	-	-	-	-	-	-	-	-	-	259	289	344	379	314	344	379
Circuit B	A	-	-	-	-	-	-	-	-	-	-	142	172	172	189	314	344	379
Max. current drawn (Un)(3)	A	143	160	177	195	213	236	263	285	312	344	365	419	468	516	570	624	688
Circuit A(3)	A	-	-	-	-	-	-	-	-	-	-	236	263	312	344	285	312	344
Circuit B(3)	A	-	-	-	-	-	-	-	-	-	-	129	156	156	172	285	312	344
Max. starting current, std. unit (Un)(4)	A	181	206	223	249	267	298			82	442	841	978	1027	1200	1129	1184	1373
Circuit A(4)	A	-	-	-	-	-				-	-	712	822	871	1028	844	871	1028
Circuit B(4)	A	-	-	-	-	-	-	-	-	-	-	605	715	715	856	844	871	1028
Max. starting current/max. current draw ratio, unit		1.26	1.28	1.26	1.27	1.25	1.26	1.27	1.24	1.22	1.28	2.31	2.33	2.19	2.32	1.98	1.89	1.99
Max. starting current/max. current																		
draw ratio, circuit A		-	-	-	-	-	-	-	-	-	-	3.02	3.13	2.79	2.99	2.96	2.79	2.99
Max. starting current/max. current																		
draw ratio, circuit B		-	-	-	-	-				-		4.70	4.58	4.58	4.97	2.96	2.79	2.99
Max. starting current - reduced current start (Un)(4)	A	std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	636	683	732	824	4	9	
Circuit A	A	std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	07	527	76	652	49	7	65
Circuit B	A	std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	330	370	370	385	549	576	652
Max. starting current - red. current start/max. current draw ratio, unit		std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	1.74	1.63	1.56	1.60	1.46	1.42	1.45
Circuit A		std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	2.15	2.00	1.84	1.89	1.93	1.84	1.98
Circuit B		std.	std.	std.	std.	std.	std.	std.	std.	std.	std.	2.56	2.37	2.37	2.24	1.93	1.84	1.89
Three-phase short circuit holding current	kA	25	25	25	25	25	25	25	25	25	25	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Circuit A	kA	-	-	-	-	-	-	-	-	-	-	25	25	25	25	25	25	25
Circuit B	kA	-	-	-	-	-	-	-	-	-	-	15	15	15	15	25	25	25
Customer standby capacity, unit or circuit B, for evaporator water pump connections†	kW	8	8	8	11	11	11	15	15	15	15	15	18	18	30	30	30	30

(1) Standard Eurovent conditions: Evaporator entering/leaving water temperature 12°C and 7°C. Condenser entering/leaving water temperature 30°C/35°C.
(2) Power input, compressor, at unit operating limits (evaporator water entering/leaving temperature = 15°C/10°C, condenser entering/leaving water temperature = 45°C/50°C) and a nominal voltage of 400 V (data given on the unit name plate).
(3) Maximum unit operating current at maximum unit power input.
(4) Maximum instantaneous starting current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced starting current of the largest compressor)
† Current and power inputs not included in the values above.
N/A Not applicable.

DIMENSIONS/CLEARANCES

30HXC 080-190



Legend
All dimensions are given in mm.

1. Evaporator
2. Condenser
3. Required clearances for maintenance
4. Recommended space for tube removal (clearances D and E can be either on the right or the left-hand side).

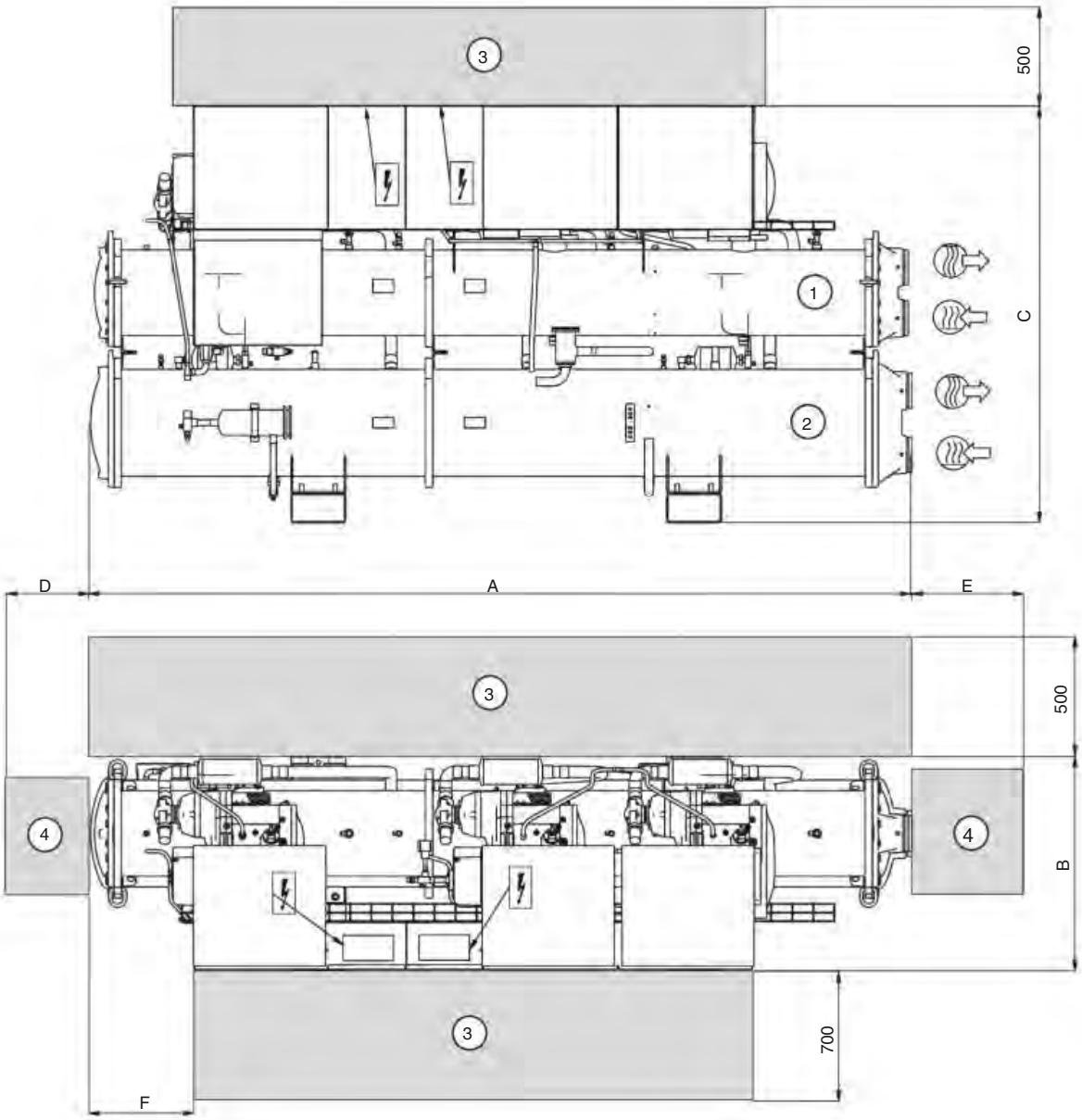
Water outlet
Water inlet
Power supply connection

Notes:
Non-certified drawings.
Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.
For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

30HXC	A	B	C	D	E	F
080-100	2558	980	1800	2200	1 0	
110	2565	980	1850	2200	1000	385
120-155	3275	980	1816	2990	1000	689
175-190	3275	980	1940	2990	1000	689

DIMENSIONS/CLEARANCES

30HXC 200-375



Legend

All dimensions are given in mm.

1. Evaporator
2. Condenser
3. Required clearances for maintenance
4. Recommended space for tube removal (clearances D and E can be either on the right or the left-hand side).

Water outlet

Water inlet

Power supply connection

Notes:

Non-certified drawings.

Refer to the certified dimensional drawings supplied with the unit or available on request, when designing an installation.

For the location of fixing points, weight distribution and coordinates of the center of gravity refer to the certified dimensional drawings.

30HXC	A	B	C	D	E	F
200	3903	1015	1980	3600	1000	489
230-285	3924	1015	2060	3600	1000	489
310-375	4533	1015	2112	4200	1000	503

WATER-COOLED SCREW CHILLERS
WATER-SOURCED SCREW HEAT PUMPS

Low energy consumption

High reliability

Easy and fast installation

Low operating sound levels

Environmental care

30XWH/30XWHP

AQUAFORCE

Nominal heating capacity 317-1989 kW
Nominal cooling capacity 273-1756 kW

The 30XWH/30XWHP heat-pumps are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal perfor-mances and maximum quality.

The 30XWH/30XWHP heat-pumps are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- Refrigerant R134a
- Touch Pilot control system
- Flooded heat exchangers that are mechanically cleanable

To meet to all environmental and economic requirements, the 30XWH/30XWHP is available in two efficiency classes:

- Entry-level efficiency 30XWH units that offer an optimised balance of technical and economical aspects,
- Premium-efficiency 30XWHP units that offer unequalled energy efficiency to satisfy the most stringent demands of building owners wanting to reduce operating costs to the minimum.

The 30XW Aquaforce range is also split into two versions:

- 30XW for air conditioning and refrigeration applications
- 30XWH for heating applications

As standard, the unit can provide an evaporator leaving temperature down to 3,3°C (-12°C optional), and when operating as a heat pump, it can deliver up to 50°C (63°C optional) on the condenser side.

AHRI CERTIFIED® www.ahridirectory.org
Air-Cooled Chillers
AHRI Standards 550/590 and 551/591

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- SEPR up to 8,0 and SEER up to 7,2
- The high energy efficiency is reached through:
- Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Economizer system with electronic expansion device for increased cooling capacity (30XW-P).

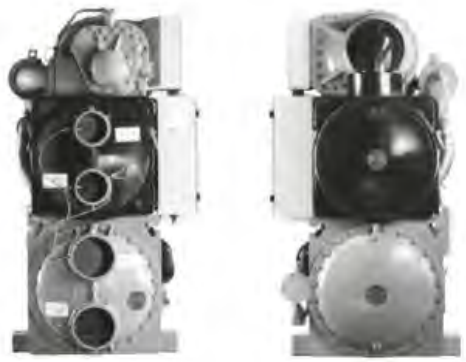
Low operating sound levels

■ Standard unit features include:
- Silencers on the compressors discharge line.
- Silencers on the economiser return line.
- Acoustic insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

Easy and fast installation

■ Compact design
- The 30XW units are designed to offer the most compact dimensions on the market.
- With a width of approximately 1 m up to 1600 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

Compact, accessible unit - side view - sizes up to 1600 KW



■ Simplified electrical connections
- Main disconnect switch with high trip capacity
- Transformer to supply the integrated control circuit (400/24 V)

■ Simplified hydraulic connections
- Victaulic connections on the evaporator and condenser
- Practical reference marks for entering and leaving water connections
- Possibility to reverse the heat exchanger water inlet and outlet at the factory
- Possibilty to modify the number of heat exchanger passes

■ Fast commissioning
- Systematic factory operation test before shipment
- Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care

■ R-134a refrigerant
- HFC refrigerant with zero ozone depletion potential

■ Leak-tight refrigerant circuit
- Reduction of leaks as no capillary tubes and flare connections are used
- Verification of pressure transducers and temperature sensors without transferring refrigerant charge
- Discharge line shut-off valve and liquid line service valve for simplified maintenance.

High reliability and easy servicing

■ The 30XW units offer increased global performance as well as Carrier's acclaimed product quality and reliability.

■ Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.

■ Screw compressors
- Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
- All compressor components are easily accessible on site minimising down-time.

■ Refrigerant circuit
- Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.

■ Evaporator
- Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.

■ Auto-adaptive control
- Control algorithm prevents excessive compressor cycling (Carrier patent)
- Automatic compressor unloading in case of abnormally high condensing pressure.

■ Exceptional endurance tests
- Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
- Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

TECHNICAL INSIGHTS

Touch Pilot Control

Touch Pilot control, 5" user interface

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 5'' interface (7» optional)
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the controller box with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and «smart» intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
  - Internal time schedule clock controls chiller on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- The 30XW also communicates with other building management systems via optional communication gateways.
- The 30XW is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/stop of the machine
  - Dual set-point management: through a dedicated contact is possible to activate a second set-point (example: unoccupied mode)
  - Demand limit setting: to limit the maximum chiller capacity to a predefined value
  - Operation visualization: indication if the unit is operating or if it's in stand-by (no cooling load) alarm visualization.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
  - Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
  - Set-point reset: ensures reset of the cooling set-point based on a 4-20 mA signal
  - Demand limit: permits limitation of the maximum chiller power or current based on a 4-20 mA signal
  - Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
  - User safety: this contact can be used for any customer safety loop; opening of the contact generates a specific alarm
  - Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
  - Time schedule override: closing of this contact cancels the time schedule effects
  - Out of service: this signal indicates that the chiller is completely out of service
  - Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
  - Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.

06T screw compressor

The new generation of the Carrier 06T screw compressors benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	No.	Description	Advantages	Use
Medium-temperature brine solution	5	Implementation of new algorithms of control and evaporator redesign to allow chilled brine solution production down to -6°C when ethylene glycol is used (-3°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	Only sizes 512/562/1012/1154
Low-temperature brine solution	6	Implementation of new algorithms of control and evaporator redesign to allow chilled brine solution production down to -12°C when ethylene glycol is used (-8°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	Only sizes 512/562/1012/1154
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	254-1762
Unit supplied in two assembled parts	51	The unit is equipped with flanges that allow disassembly of the unit on site	Facilitates installation in plant rooms with limited access	Only sizes 1612/1652/1702/1762
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two chillers connected in parallel with operating time equalisation	254-1762
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	1002-1762
No disconnect switch, but short circuit protection	82A	Unit without disconnect switch, but with short-circuit protection device	Permits an external electrical disconnect system for the unit (field-supplied), while ensuring unit short circuit protection	254-1762
Evaporator pump electrical power / control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	254-1252, 1314
Evaporator dual pumps electrical power / control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	254-1252, 1314
Condenser pump electrical power / control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	254-1252, 1314
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	254-1762
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	254-1762
Evaporator with one pass	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	254-1762
Condenser with one pass	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	254-1762
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	254-1762
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	254-1762
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	254-1762
eversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	254-1762

OPTIONS

Options	No.	Description	Advantages	Use
JBus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	254-1762
LON gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	254-1762
Bacnet over IP gateway	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	254-1762
High condensing temperature	150	Optimized compressor for operation at high condensing temperature	Increased condenser leaving water temperature up to 63°C. Allows applications with high condensing temperature (heat pumps, installations with not generously sized dry-coolers or more generally, installations with dry-coolers in hot climate). NOTE: to ensure control of the condenser leaving water temperature, this option must be fitted with 30XWH units.	30XWH- / XW-P / XWHP 254-1762 & 30XW--254/304/354
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	254-1762
Control for low condensing temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	254-1762
Energy Management Module EMM	1	Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	254-1762
Touch Pilot control, 7" user interface	158A	Touch Pilot control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use	254-1762
Leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controlller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	254-1762
Compliance with Swiss regulations	1	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	254-1762
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	254-1762
Low noise level	257	Evaporator sound insulation	3 dB(A) quiter than standard unit	254-1762
Welded evaporator water connection kit	266	Victaulic piping connections with welded joints	Easy installation	254-1762
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	254-1762
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	254-1762
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	254-1762
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	254-1762
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	254-1762
Carrier Connect link (BSS regions only)	298	3G router board NOTE 1: require option 149 NOTE 2: when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 NOTE 3: if a CARRIER-PSM is on site, option 298 shall be integrated in the PSM while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	254-1762

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-				254	304	354	402	452	552	602	652	702	802
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	323	365	428	546	560	632	642	799	864	941
		COP	kW/kW	6,07	6,07	6,02	5,96	6,09	5,92	5,89	6,10	5,99	5,86
	HW2	Nominal capacity	kW	317	358	421	516	529	599	632	751	813	887
		COP	kW/kW	4,59	4,57	4,61	4,54	4,59	4,47	4,52	4,56	4,49	4,46
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	5,94	6,05	5,83	5,88	5,92	5,92	5,79	6,07	6,01	5,83
		$\eta s\ heat_{30/35°C}$	%	230	234	225	227	229	229	224	235	232	225
		P_{rated}	kW	382	432	507	650	666	748	760	952	1029	1102
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	273	307	359	459	473	532	538	677	730	792
		EER	kW/kW	5,32	5,30	5,24	5,21	5,35	5,21	5,17	5,39	5,30	5,19
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	345	365	458	585	566	596	656	845	884	887
		EER	kW/kW	6,71	6,24	6,57	6,40	6,28	5,74	6,21	6,50	6,21	5,70
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,84**	**5,80**	**5,64**	**5,77**	**5,75**	**5,81**	**5,77**	**6,20**	**6,13**	**5,87**
		$\eta s\ cool_{12/7°C}$	**%**	**231**	**229**	**223**	**228**	**227**	**229**	**228**	**245**	**242**	**232**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**7,57**	**6,92**	**7,66**	**7,47**	**7,58**	**6,56**	**7,28**	**7,91**	**7,54**	**7,30**
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	6,76	6,60	6,50	6,22	6,05	6,57	6,31	6,87	6,70	6,42
Integrated Part Load Value		IPLV.SI	kW/kW	6,843	6,708	6,722	6,664	6,897	6,905	6,891	7,351	7,321	7,184
Sound levels - standard unit													
Sound power level (1)			dB(A)		9	9	99	99	99	99			99
Sound pressure level at 1 m (2)			dB(A)	78	78	78	82	82	82	82	82	82	82
Sound levels - standard unit + option 257(3)													
Sound power level (1)			dB(A)	-	-	-	96	96	96	96	96	96	96
Sound pressure level at 1 m (2)			dB(A)	-	-	-	78	78	78	78	78	78	78
Dimensions - standard unit													
Length				2724	2724	2724	2741	2741	2741	2741	3059	3059	3059
Width			mm	928	928	928	936	936	936	936	1040	1040	1040
Height			mm	1567	1567	1567	1692	1692	1692	1692	1848	1848	1848
Operating weight (4)			kg	1	2036	2072	2575	2575	2613	2644	3247	32 6	282
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	-	-	-	-	-

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CW2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEER_{23/18°C}$	Applicable Ecodesign regulation: (EU) No 2016/2281
IPLV.SI	Calculations according to standard performances AHRI 551-591.
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level.
(4)	Weight shown is guideline only. Please refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

AHRI CERTIFIED www.ahridirectory.org Air-Cooled Chillers AHRI Standards 550/590 and 551/591

AHRI certified values 30XW-only

HEATING

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Refrigerant (4)		R-134a									
Circuit A	kg	84	80	78	82	82	82	82	145	135	125
	$teqCO_2$	120	114	112	117	117	117	117	207	193	179
Circuit B	kg	-	-	-	-	-	-	-	-	-	-
	$teqCO_2$	-	-	-	-	-	-	-	-	-	-
Oil - standard unit		SW220									
Circuit A	l	23,5	23,5	23,5	32	32	32	32	36	36	36
Circuit B	l	-	-	-	-	-	-	-	-	-	-
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capacity (5)	%	15	15	15	15	15	15	15	15	15	15
Evaporator		Multi-pipe flooded type									
Water volume	l	50	56	61	70	70	70	70	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	55	55	76	76	76	76	109	109	109
Water connections (Victaulic)	in	5		5		5	5		6		6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-				852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	992	1204	1258	1349	1473	1578	1714	1829	1941	2027
		COP	kW/kW	6,04	5,88	5,79	5,89	6,26	6,03	5,84	5,73	6,01	5,98
	HW2	Nominal capacity	kW	967	1138	1190	1320	1384	1481	1612	1717	1891	1969
		COP	kW/kW	4,64	4,48	4,42	4,54	4,73	4,57	4,46	4,41	4,67	4,68
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	5,90	6,05	5,96	5,99	6,19	5,84	5,64	5,47	5,73	5,70
		$\eta s\ heat_{30/35°C}$	%	228	234	231	232	240	226	218	211	221	220
		P_{rated}	kW	1160	1433	1498	1599	1754	1879	2041	2178	2292	2389
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	839	1017	1060	1141	1257	1342	1453	1547	1654	1728
		EER	kW/kW	5,39	5,26	5,21	5,30	5,69	5,51	5,36	5,29	5,59	5,60
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	922	1297	1348	1351	1678	1837	1916	1903	1944	2009
		EER	kW/kW	5,84	6,44	6,33	6,13	7,25	7,12	6,70	6,25	6,36	6,30
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**6,27**	**6,47**	**6,53**	**6,44**	**7,14**	**6,93**	**6,75**	**6,63**	**7,05**	**7,03**
		$\eta s\ cool_{12/7°C}$	**%**	**248**	**256**	**258**	**255**	**283**	**274**	**267**	**262**	**279**	**278**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**6,97**	**7,56**	**7,47**	**7,17**	**8,42**	**8,19**	**7,61**	**7,43**	**7,44**	**7,32**
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	6,68	7,30	7,24	7,13	8,11	8,05	7,72	7,20	7,67	7,56
Integrated Part Load Value		IPLV.SI	kW/kW	7,175	7,539	7,751	7,596	8,066	7,835	7,730	7,575	7,957	7,892
Sound levels - standard unit													
Sound power level (1)			dB(A)		102	102	102	1 2	102	102	102	102	102
Sound pressure level at 1 m (2)			dB(A)	82	84	84	84	83	83	83	83	83	83
Sound levels - standard unit + option 257(3)													
Sound power level (1)			dB(A)	96	99	99	99	99	99	99	99	99	99
Sound pressure level at 1 m (2)			dB(A)	78	80	80	80	80	80	80	80	80	80
Dimensions - standard unit													
Length				2780	4025	4025	4025	4730	4730	4730	4730	4790	4790
Width			mm	1042	1036	1036	1036	1156	1156	1156	1156	1902	1902
Height			mm	1898	1870	1870	1925	2051	2051	2051	2051	1515	1515
Operating weight (4)			kg	492	70	408	5698	7066	7267	730	7	1	99
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	1	1	1	1	1	1	1	1	1

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CW2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEER_{23/18°C}$	Applicable Ecodesign regulation: (EU) No 2016/2281
IPLV.SI	Calculations according to standard performances AHRI 551-591.
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level.
(4)	Weight shown is guideline only. Please refer to the unit nameplate.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Refrigerant (4)		R-134a									
Circuit A	kg	158	85	85	105	120	115	110	105	195	195
	$teqCO_2$	226	122	122	150	172	164	157	150	279	279
Circuit B	kg	-	85	85	105	120	115	110	105	195	195
	$teqCO_2$	-	122	122	150	172	164	157	150	279	279
Oil - standard unit		SW220									
Circuit A	l	36	32	32	32	36	36	36	36	36	36
Circuit B	l	-	32	32	32	32	36	36	36	36	36
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capacity (5)	%	15	10	10	10	10	10	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	98	182	182	205	301	301	301	301	354	354
Water connections (Victaulic)	in	6	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	137	193	193	193	340	340	340	340	426	426
Water connections (Victaulic)	in	8		8		8	8	8	8		8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP				512	562	712	812	862	1012	1162	1314	1464	1612	1762
Heating														
Standard unit Full load performances*	HW1	Nominal capacity	kW	596	676	860	923	1009	1216	1352	1545	1705	1890	2048
		COP	kW/kW	6,48	6,39	6,58	6,36	6,35	6,42	6,35	6,38	6,14	6,46	6,35
	HW2	Nominal capacity	kW	583	662	842	904	982	1191	1320	1509	1663	1846	1989
		COP	kW/kW	4,91	4,84	4,97	4,80	4,85	4,90	4,86	4,89	4,71	4,89	4,87
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	6,27	6,33	6,50	6,27	6,27	6,43	6,37	6,22	6,01	6,38	6,29
		$\eta s\ heat_{30/35°C}$	%	243	245	252	243	243	249	247	241	232	247	244
		P_{rated}	kW	706	802	1019	1093	1196	1441	1600	1831	2021	2241	2428
Cooling														
Standard unit Full load performances*	CW1	Nominal capacity	kW	509	577	737	786	861	1039	1157	1323	1452	1626	1756
		EER	kW/kW	5,71	5,64	5,83	5,62	5,65	5,73	5,78	5,80	5,58	5,87	5,79
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	616	705	936	1007	1088	1251	1395	1683	1926	2062	2215
		EER	kW/kW	6,85	6,81	7,24	7,00	6,92	6,85	6,83	7,14	7,10	7,21	7,00
		Eurovent class	-	A	A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,79**	**6,02**	**6,6**	**6,37**	**6,28**	**6,75**	**7,17**	**7**	**6,83**	**7,27**	**7,25**
		$\eta s\ cool_{12/7°C}$	**%**	**229**	**238**	**261**	**252**	**248**	**267**	**284**	**277**	**270**	**288**	**287**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**7,87**	**7,91**	**8,13**	**7,69**	**7,53**	**7,88**	**7,99**	**8,16**	**7,84**	**8,02**	**7,66**
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	7,88	6,90	7,69	8,26	7,32	7,66	8,01	7,84	7,76	8,52	8,13
Integrated Part Load Value		IPLV.SI	kW/kW	7,323	7,468	7,666	7,513	7,439	7,747	8,125	8,068	7,852	8,201	7,900
Sound levels - standard unit														
Sound power level (1)			dB(A)			99	99	99	10	102	102	102	102	102
Sound pressure level at 1 m (2)			dB(A)	82	82	81	81	81	83	83	83	83	83	83
Sound levels - standard unit + option 257(3)														
Sound power level (1)			dB(A)	6		9	96	96	99	99	99			99
Sound pressure level at 1 m (2)			dB(A)	7	7	7	78	78	80	80	80			
Dimensions - standard unit														
Length					9	3290	3290	3290	4730	4730	473	47	4832	4832
Width			mm	936	936	1069	1069	1069	1039	1039	1162	1162	2129	2129
eight				174	174	19 0	19 0	1950	1997	199	2051	2051	15 2	1562
Operating weight (4)			kg	2981	3020	3912	3947	3965	6872	6950	7542	7752	10910	10946
Compressors				Semi-hermetic 06T screw compressors, 50 r/s										
Circuit A			-	1	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	1	1	1	1	1	1

* In accordance with standard EN14511-3:2013.

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEER_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/- 3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/- 3dB(A)). For information, calculated from the sound power level Lw(A).

(3) Option 257 = Low noise level.

(4) Weight shown is guideline only. Please refer to the unit nameplate.

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Eurovent certified values

HEATING

PHYSICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Refrigerant (4)		R-134a										
Circuit A	kg	130	130	180	175	170	120	120	130	130	240	250
	teqCO_2	186	186	257	250	243	172	172	186	186	343	358
Circuit B	kg	-	-	-	-	-	120	120	150	130	240	250
	teqCO_2	-	-	-	-	-	172	172	215	186	343	358
Oil - standard unit												
Circuit A	l	32	32	36	36	36	32	32	36	36	36	36
Circuit B	l	-	-	-	-	-	32	32	32	36	36	36
Capacity control		Touch Pilot, electronic expansion valves (EXV)										
Minimum capacity (5)	%	15	15	15	15	15	10	10	10	10	10	10
Evaporator		Multi-pipe flooded type										
Water volume	l	101	101	154	154	154	293	293	321	321	473	473
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type										
Water volume	l	103	103	148	148	148	316	316	340	340	623	623
Water connections (Victaulic)	in	6	6	8	8	8		8		8	1	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate.
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

ELECTRICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	233	233	303	414	414	414	414	587	587	587
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum start-up current**											
Circuit A	A	233	233	303	414	414	414	414	587	587	587
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Cosine phi											
Nominal***		0.83	0.85	0.83	0.87	0.88	0.89	0.89	0.88	0.89	0.90
Maximum****		0.89	0.89	0.88	0.90	0.90	0.91	0.91	0.90	0.91	0.92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	76	89	97	128	135	151	151	184	200	223
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Nominal current drawn* **											
Circuit A	A	84	96	113	136	144	162	162	193	214	232
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un)†											
Circuit A	A	123	145	160	206	217	242	242	295	317	351
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un -10%)**											
Circuit A	A	138	162	178	218	230	260	260	304	340	358
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum power input with option 150B†											
Circuit A	kW	67	79	87	114	118	133	134	173	183	205
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un) with option 150B†											
Circuit A	A	109	129	142	183	191	212	212	278	290	325
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

Standard-efficiency units

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	587	414	414	414	587	587	587	587	587	587
Circuit B	A	-	414	414	414	414	587	587	587	587	587
Option 81	A	-	558	574	574	747	780	801	819	819	819
Maximum start-up current**											
Circuit A	A	587	414	414	414	587	587	587	587	587	587
Circuit B	A	-	414	414	414	414	587	587	587	587	587
Option 81	A	-	631	656	656	829	882	904	938	938	938
Cosine phi											
Nominal***		0.90	0.88	0.89	0.89	0.88	0.88	0.89	0.9	0.9	0.9
Maximum****		0.92	0.90	0.91	0.91	0.90	0.90	0.91	0.92	0.92	0.92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	223	150	151	151	184	184	200	223	223	223
Circuit B	kW	-	135	151	151	151	184	200	223	202	223
Option 81	kW	-	284	301	301	334	367	399	447	425	447
Nominal current drawn* **											
Circuit A	A	232	162	162	162	193	193	214	232	232	232
Circuit B	A	-	144	162	162	162	193	214	232	214	232
Option 81	A	-	306	324	324	355	386	427	464	446	464
Maximum current drawn (Un)†											
Circuit A	A	351	242	242	242	295	295	317	351	351	351
Circuit B	A	-	217	242	242	242	295	317	351	317	351
Option 81	A	-	459	484	484	537	590	634	702	668	702
Maximum current drawn (Un -10%)**											
Circuit A	A	358	260	260	260	304	304	340	358	358	358
Circuit B	A	-	230	260	260	260	304	340	358	340	358
Option 81	A	-	490	520	520	564	608	680	716	698	716
Maximum power input with option 150B†											
Circuit A	kW	205	133	133	133	173	173	183	207	207	207
Circuit B	kW	-	118	133	133	133	173	183	207	185	207
Option 81	kW	-	251	265	265	305	346	365	414	391	414
Maximum current drawn (Un) with option 150B†											
Circuit A	A	325	212	212	212	278	278	290	325	325	325
Circuit B	A	-	191	212	212	212	278	290	325	290	325
Option 81	A	-	403	424	424	490	556	580	650	615	650

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, STANDARD UNITS

High-efficiency units

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit		24 V via the built-in transformer										
Nominal start-up current*												
Circuit A	A	414	414	587	587	587	414	414	587	587	587	587
Circuit B	A	-	-	-	-	-	414	414	414	587	587	587
Option 81	A	-	-	-	-	-	556	574	747	780	801	819
Maximum start-up current**												
Circuit A	A	414	414	587	587	587	414	414	587	587	587	587
Circuit B	A	-	-	-	-	-	414	414	414	587	587	587
Option 81	A	-	-	-	-	-	631	656	829	882	904	938
Cosine phi												
Nominal***		0.88	0.89	0.88	0.89	0.90	0.86	0.87	0.88	0.88	0.89	0.90
Maximum****		0.90	0.90	0.90	0.91	0.92	0.89	0.90	0.90	0.90	0.91	0.92
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0	0
Maximum power input†												
Circuit A	kW	135	151	184	200	223	134	151	184	184	200	223
Circuit B	kW	-	-	-	-	-	134	151	151	184	200	223
Option 81	kW	-	-	-	-	-	267	301	334	367	399	447
Nominal current drawn***												
Circuit A	A	144	162	193	214	232	144	162	193	193	214	232
Circuit B	A	-	-	-	-	-	144	162	162	193	214	232
Option 81	A	-	-	-	-	-	288	324	355	386	427	464
Maximum current drawn (Un)†												
Circuit A	A	217	242	295	317	351	217	242	295	295	317	351
Circuit B	A	-	-	-	-	-	217	242	242	295	317	351
Option 81	A	-	-	-	-	-	434	484	537	590	634	702
Maximum current drawn (Un -10%)****												
Circuit A	A	230	260	304	340	358	230	260	304	304	340	358
Circuit B	A	-	-	-	-	-	230	260	260	304	340	358
Option 81	A	-	-	-	-	-	460	520	564	608	680	716
Maximum power input with option 150B†												
Circuit A	kW	118	133	173	183	207	118	133	173	173	183	207
Circuit B	kW	-	-	-	-	-	118	133	133	173	183	207
Option 81	kW						235	265	305	346	365	414
Maximum current drawn (Un) with option 150B†												
Circuit A	A	191	212	278	290	325	191	212	278	278	290	325
Circuit B	A	-	-	-	-	-	191	212	212	278	290	325
Option 81	A	-	-	-	-	-	382	424	490	556	580	650

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values obtained at standard Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-				254	304	354	402	452	552	602	652	702	802
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	334	373	421	511	542	607	626	769	847	890
		COP	kW/kW	5,59	5,59	5,54	5,22	5,47	5,36	5,48	5,39	5,38	5,3
	HW2	Nominal heating capacity	kW	325	362	408	478	506	566	606	716	789	829
		COP	kW/kW	4,62	4,59	4,55	4,29	4,50	4,43	4,54	4,45	4,45	4,41
	HW3	Nominal capacity	kW	316	352	396	446	471	527	587	665	734	773
		COP	kW/kW	3,85	3,83	3,79	3,50	3,68	3,63	3,78	3,65	3,65	3,63
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	5,81	5,93	5,89	5,57	5,70	5,69	5,62	5,53	5,57	5,30
		$\eta s\ heat_{30/35°C}$	%	224	229	227	215	220	220	217	213	215	204
	HW3	$SCOP_{47/55°C}$	kWh/kWh	4,56	4,61	4,55	4,20	4,37	4,41	4,42	4,24	4,31	4,46
		$\eta s\ heat_{47/55°C}$	%	174	176	174	160	167	169	169	162	164	170
		P_{rated}	kW	416	419	473	540	571	638	700	807	890	936
Cooling													
Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	282	313	352	NA	NA	NA	NA	NA	NA	NA
		EER	kW/kW	4,89	4,87	4,82	NA	NA	NA	NA	NA	NA	NA
		Eurovent class		B	B	B	NA	NA	NA	NA	NA	NA	NA
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,76**	**5,83**	**5,80**	NA	NA	NA	NA	NA	NA	NA
		$\eta s\ cool_{12/7°C}$	**%**	**227**	**230**	**229**	NA	NA	NA	NA	NA	NA	NA
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**6,45**	**6,49**	**6,35**	NA	NA	NA	NA	NA	NA	NA
Integrated Part Load Value		IPLV.SI	kW/kW	6,491	6,657	6,658	6,051	6,301	6,425	6,306	6,052	6,332	6,180
Sound levels - unit with option 150													
Sound power level(1)			dB(A)	95			99	99		99	10	102	102
Sound pressure level at 1 m(2)			dB(A)	78	78	78	82	82	82	82	84	84	84
Sound levels - unit with option 150 + option 257(3)													
Sound power level(1)			dB(A)	-	-	-	96	96	96	96	100	100	100
Sound pressure level at 1 m(2)			dB(A)	-	-	-	78	78	78	78	82	82	82
Dimensions - unit with option 150													
Length				2724	2724	2724	2741	2741	2741	2741	3059	3059	3059
Width			mm	928	928	928	936	936	936	936	1090	1090	1090
Height			mm	1567	1567	1567	1692	1692	1692	1692	1858	1858	1858
Operating weight(4)			kg	2017	203	72	2575	2575	261	2644	3407	4 8	3462
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	-	-	-	-	-	-

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W
HW3	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C,evaporator and condenser fouling factor 0 m^2. k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
IPLV.SI	Calculations according to standard performances AHRI 551-591.
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level
(4)	Weight shown is guideline only. Please refer to the unit nameplate

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Eurovent certified values

HEATING

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Refrigerant (4)		R-134a									
Circuit A	kg	84	80	78	82	82	82	82	145	135	125
	$teqCO_2$	120	114	112	117	117	117	117	207	193	179
Circuit B	kg	-	-	-	-	-	-	-	-	-	-
	$teqCO_2$	-	-	-	-	-	-	-	-	-	-
Oil - unit with option 150		SW220									
Circuit A	l	23,5	23,5	23,5	32	32	32	32	36	36	36
Circuit B	l	-	-	-	-	-	-	-	-	-	-
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capacity (5)	%	30	30	30	30	30	30	30	15	15	15
Evaporator		Multi-pipe flooded type									
Water volume	l	50	56	61	70	70	70	70	109	109	109
Water connections (Victaulic)	in	5	5	5	5	5	5	5	6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	55	55	76	76	76	76	109	109	109
Water connections (Victaulic)	in	5	5			5	5		6	6	6
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-				852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	983	1181	1250	1345	1466	1576	1702	1821	1962	2032
		COP	kW/kW	5,49	5,44	5,37	5,47	5,69	5,4	5,32	5,28	5,45	5,41
	HW2	Nominal heating capacity	kW	958	1099	1163	1294	1348	1465	1583	1678	1904	1975
		COP	kW/kW	4,57	4,52	4,47	4,55	4,71	4,52	4,45	4,45	4,57	4,59
	HW3	Nominal capacity	kW	932	1019	1078	1246	1275	1357	1469	1573	1845	1915
		COP	kW/kW	3,80	3,73	3,69	3,8	3,91	3,71	3,67	3,7	3,85	3,84
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	5,68	5,70	5,61	5,61	5,78	5,42	5,46	5,14	5,52	5,47
		$\eta s\ heat_{30/35°C}$	%	219	220	216	216	223	209	210	198	213	211
	HW3	$SCOP_{47/55°C}$	kWh/kWh	4,66	4,66	4,63	4,63	4,71	4,43	4,50	4,56	4,70	4,68
		$\eta s\ heat_{47/55°C}$	%	178	178	177	177	181	169	172	175	180	179
		P_{rated}	kW	1111	1237	1309	1490	1549	1648	1783	1907	2203	2285
Cooling													
Integrated Part Load Value		IPLV.SI	kW/kW	6,593	6,849	6,853	6,757	6,950	6,411	6,918	6,954	6,947	7,118
Sound levels - unit with option 150													
Sound power level(1)			dB(A)	102	102	102	102	105	105	105	105	105	105
Sound pressure level at 1 m(2)			dB(A)	84	84	84	84	86	86	86	86	86	86
Sound levels - unit with option 150 + option 257(3)													
Sound power level(1)			dB(A)	100	99	99	99	103	103	103	103	103	103
Sound pressure level at 1 m(2)			dB(A)	82	80	80	80	84	84	84	84	84	84
Dimensions - unit with option 150													
Length				2780	4 25	4025	4025	4730	47	4730	4730	4790	47
Width				1090	1036	1036	1036	1201	1201	1201	1201	1947	1947
Height			mm	1920	1870	1870	1925	2071	2071	2071	2071	1535	1535
Operating weight(4)			kg	3672	5370	5408	5698	7233	7554	7622	7670	9006	9032
Compressors				Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A			-	1	1	1	1	1	1	1	1	1	1
Circuit B			-	-	1	1	1	1	1	1	1	1	1

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W
HW3	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C,evaporator and condenser fouling factor 0 m^2. k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
IPLV.SI	Calculations according to standard performances AHRI 551-591.
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level
(4)	Weight shown is guideline only. Please refer to the unit nameplate

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Refrigerant (4)		R-134a									
Circuit A	kg	158	85	85	105	120	115	110	105	195	195
	$teqCO_2$	226	122	122	150	172	164	157	150	279	279
Circuit B	kg	-	85	85	105	120	115	110	105	195	195
	$teqCO_2$	-	122	122	150	172	164	157	150	279	279
Oil - unit with option 150		SW220									
Circuit A	l	36	32	32	32	36	36	36	36	36	36
Circuit B	l	-	32	32	32	32	36	36	36	36	36
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capacity (5)	%	15	15	15	15	10	10	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	98	182	182	205	301	301	301	301	354	354
Water connections (Victaulic)	in	6	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	137	193	193	193	340	340	340	340	426	426
Water connections (Victaulic)	in	8	8			8	8			8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-P / 30XWHP				512	562	712	812	862	1012	1162	1314	1464	1612	1762
Heating														
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	607	676	854	924	995	1208	1397	1537	1723	1909	2028
		COP	kW/kW	5,94	5,95	5,82	5,66	5,87	5,71	5,85	5,64	5,47	5,83	5,88
	HW2	Nominal heating capacity	kW	584	651	828	897	1003	1164	1341	1485	1669	1850	1997
		COP	kW/kW	4,88	4,89	4,81	4,68	4,94	4,73	4,86	4,69	4,58	4,84	4,93
	HW3	Nominal capacity	kW	563	627	801	871	984	1123	1288	1433	1610	1789	1989
		COP	kW/kW	4,02	4,04	3,97	3,87	4,11	3,90	4,02	3,91	3,83	4,00	4,14
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	6,13	6,17	6,38	6,10	6,12	5,88	5,99	5,93	5,92	6,04	6,20
		$\eta s\ heat_{30/35°C}$	%	237	239	247	236	237	227	232	229	229	234	240
	HW3	$SCOP_{47/55°C}$	kWh/kWh	4,72	4,78	4,94	4,72	4,97	4,72	4,89	4,81	4,87	5,04	5,06
		$\eta s\ heat_{47/55°C}$	%	181	183	189	181	191	181	187	185	187	194	194
		P_{rated}	kW	674	750	957	1039	1175	1343	1543	1713	1926	2139	2377
Cooling														
Unit + option 150 Full load performances*	CW1	Nominal cooling capacity	kW	517	576	725	781	844	1024	1192	1302	1453	1633	1727
		EER	kW/kW	5,20	5,24	5,09	4,94	5,17	5,05	5,29	5,02	4,89	5,22	5,29
		Eurovent class		A	A	A	B	A	A	A	B	B	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	6,03	6,14	6,44	6,21	5,75	6,19	6,55	6,38	6,48	6,95	6,55
		$\eta s\ cool_{12/7°C}$	**%**	238	242	255	245	227	245	259	252	256	275	259
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	6,54	6,56	6,81	6,53	6,63	6,37	6,67	6,67	6,53	6,92	7,00
Integrated Part Load Value		IPLV.SI	kW/kW	6,735	6,920	7,116	6,861	7,056	6,706	7,277	7,156	7,265	7,544	7,818
Sound levels - unit with option 150														
Sound power level(1)			dB(A)	99	99	102	102	102	102	102	105	105	105	105
Sound pressure level at 1 m(2)			dB(A)	82	82	84	84	84	83	83	86	86	86	86
Sound levels - unit with option 150 + option 257(3)														
Sound power level(1)			dB(A)	96		1	100	10	99	99	1	103	1	103
Sound pressure level at 1 m(2)			dB(A)	78	78	82	82	82	80	80	84	84	84	84
Dimensions - unit with option 150														
Length			mm	3059	3059	3290	3290	3290	4730	4730	4730	4730	4832	4832
Width			mm	936	936	1105	1105	1105	1039	1039	1202	1202	2174	2174
Height				1743	1743	1970	1970	1970	1997	1997	2071	2071	1585	1585
Operating weight(4)			kg	2981	3020	4072	4117	4145	6872	6950	7721	8059	11225	11279
Compressors				Semi-hermetic 06T screw compressors, 50 r/s										
Circuit A			-	1	1	1	1	1	1	1	1	1	1	1
Circuit B				-	-		-		1	1	1	1	1	1

*	In accordance with standard EN14511-3:2013.
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2. k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m^2. k/W
HW3	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C,evaporator and condenser fouling factor 0 m^2. k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m^2.K/W
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
IPLV.SI	Calculations according to standard performances AHRI 551-591.
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level
(4)	Weight shown is guideline only. Please refer to the unit nameplate

Eurovent certified values

AHRI certified values 30XW-only

HEATING

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-P / 30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Refrigerant (4)		R-134a										
Circuit A	kg	130	130	180	175	170	120	120	130	130	240	250
	$teqCO_2$	186	186	257	250	243	172	172	186	186	343	358
Circuit B	kg	-	-	-	-	-	120	120	150	130	240	250
	$teqCO_2$	-	-	-	-	-	172	172	215	186	343	358
Oil - unit with option 150		SW220										
Circuit A	l	32	32	0	36	36	32	32	36	36	36	36
Circuit B	l	-	-	-	-	-	32	32	32	36	36	36
Capacity control		Touch Pilot, electronic expansion valves (EXV)										
Minimum capacity (5)	%	30	30	15	15	15	15	15	10	10	10	10
Evaporator		Multi-pipe flooded type										
Water volume	l	101	101	154	154	154	293	293	321	321	473	473
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type										
Water volume	l	103	103	148	148	148	316	316	340	340	623	623
Water connections (Victaulic)	in		6	8			8	8	10	10	1	1
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(4) Weight shown is guideline only. Please refer to the unit nameplate
(5) Minimum unit capacity corresponds to a physical state of the unit and is given for indication only. The actual capacity at this stage depends on operating conditions.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		254	304	354	402	452	552	602	652	702	802
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	303	388	388	587	587	587	587	772	772	772
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum start-up current**											
Circuit A	A	303	388	388	587	587	587	587	772	772	772
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Cosine phi											
Nominal***		0.79	0.78	0.79	0.83	0.85	0.85	0.85	0.84	0.86	0.87
Maximum****		0.88	0.87	0.88	0.90	0.90	0.91	0.91	0.90	0.90	0.90
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	97	111	122	156	173	191	191	249	268	286
Circuit B	kW	-	-	-	-	-	-	-	-	-	-
Option 81	kW	-	-	-	-	-	-	-	-	-	-
Nominal current drawn***											
Circuit A	A	95	109	125	150	162	171	171	193	214	232
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un)†											
Circuit A	A	160	185	200	250	275	300	300	400	430	460
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-
Maximum current drawn (Un -10%)****											
Circuit A	A	176	206	224	270	300	330	330	419	455	476
Circuit B	A	-	-	-	-	-	-	-	-	-	-
Option 81	A	-	-	-	-	-	-	-	-	-	-

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW--/30XWH-		852	1002	1052	1154	1252	1352	1452	1552	1652	1702
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current*											
Circuit A	A	772	587	587	587	772	772	772	772	772	772
Circuit B	A	-	587	587	587	587	772	772	772	772	772
Option 81	A	-	757	757	757	943	965	986	1004	1004	1004
Maximum start-up current**											
Circuit A	A	772	587	587	587	772	772	772	772	772	772
Circuit B	A	-	587	587	587	587	772	772	772	772	772
Option 81	A	-	887	887	887	1072	1172	1202	1232	1004	1232
Cosine phi											
Nominal***		0.87	0.85	0.85	0.85	0.86	0.85	0.86	0.87	0.86	0.87
Maximum****		0.90	0.90	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0
Maximum power input†											
Circuit A	kW	286	191	191	191	252	252	271	290	290	290
Circuit B	kW	-	173	191	191	191	252	271	290	271	290
Option 81	kW	-	364	382	382	443	504	542	580	562	580
Nominal current drawn***											
Circuit A	A	232	171	171	171	210	210	230	250	250	250
Circuit B	A	-	162	171	171	171	210	230	250	230	250
Option 81	A	-	333	342	342	381	420	460	500	480	500
Maximum current drawn (Un)†											
Circuit A	A	460	300	300	300	400	400	430	460	460	460
Circuit B	A	-	275	300	300	300	400	430	460	430	460
Option 81	A	-	575	600	600	700	800	860	920	890	920
Maximum current drawn (Un -10%)****											
Circuit A	A	476	330	330	330	419	419	455	476	476	476
Circuit B	A	-	300	330	330	330	419	455	476	455	476
Option 81	A	-	630	660	660	749	838	910	952	931	952

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

**** Values obtained at operation with maximum unit power input.

† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

High-efficiency units (option 150)

30XW-P/30XWHP		512	562	712	812	862	1012	1162	1314	1464	1612	1762
Power circuit												
Nominal power supply	V-ph-Hz	400-3-50										
Voltage range	V	360-440										
Control circuit		24 V via the built-in transformer										
Nominal start-up current*												
Circuit A	A	587	587	772	772	772	587	587	772	772	772	772
Circuit B	A	-	-	-	-	-	587	587	587	772	772	772
Option 81	A	-	-	-	-	-	749	757	943	965	986	1004
Maximum start-up current**												
Circuit A	A	587	587	772	772	772	587	587	772	772	772	772
Circuit B	A	-	-	-	-	-	587	587	587	772	772	772
Option 81	A	-	-	-	-	-	862	887	1072	1172	1202	1232
Cosine phi												
Nominal***		0.88	0.88	0.84	0.86	0.87	0.87	0.88	0.86	0.85	0.86	0.87
Maximum****		0.91	0.92	0.90	0.90	0.90	0.91	0.92	0.91	0.91	0.91	0.91
Total harmonic distortion****	%	0	0	0	0	0	0	0	0	0	0	0
Maximum power input†												
Circuit A	kW	173	191	252	271	290	173	191	252	252	271	290
Circuit B	kW	-	-	-	-	-	173	191	191	252	271	290
Option 81	kW	-	-	-	-	-	346	382	443	504	542	580
Nominal current drawn***												
Circuit A	A	162	171	210	230	250	162	171	210	210	230	250
Circuit B	A	-	-	-	-	-	162	171	171	210	230	250
Option 81	A	-	-	-	-	-	324	342	381	420	460	500
Maximum current drawn (Un)†												
Circuit A	A	275	300	400	430	460	275	300	400	400	430	460
Circuit B	A	-	-	-	-	-	275	300	300	400	430	460
Option 81	A	-	-	-	-	-	550	600	700	800	860	920
Maximum current drawn (Un -10%)****												
Circuit A	A	300	330	419	455	476	300	330	419	419	455	476
Circuit B	A	-	-	-	-	-	300	330	330	419	455	476
Option 81	A	-	-	-	-	-	600	660	749	838	910	952

* Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

** Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.

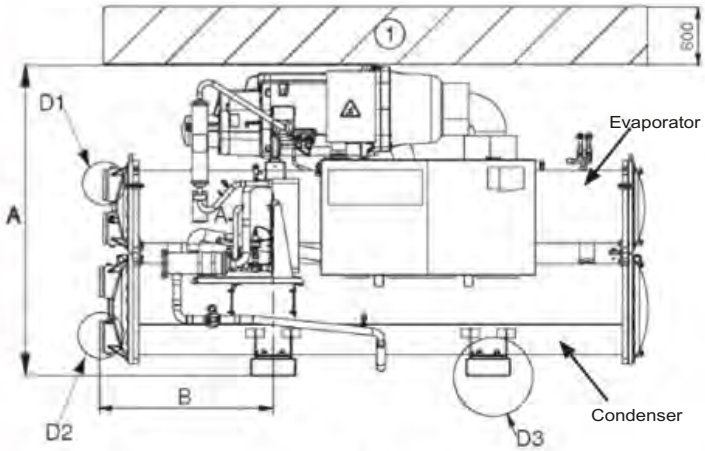
*** Values based on standard Eurovent unit operating conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.

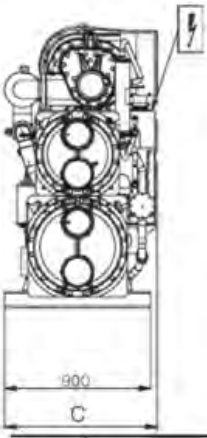
**** Values obtained at operation with maximum unit power input.

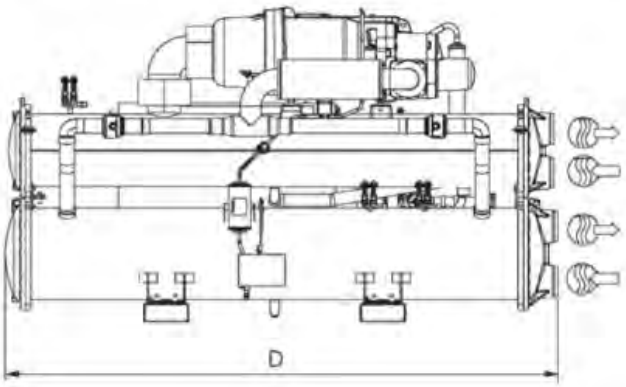
† Values obtained at operation with maximum unit power input. Values given on the unit name plate.

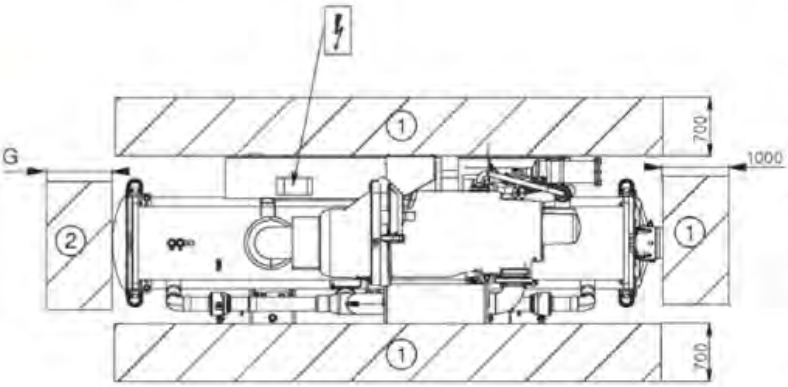
DIMENSIONS/CLEARANCES

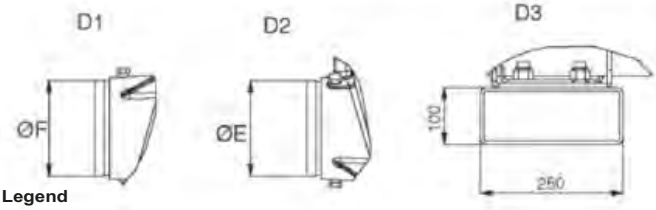
30XW--/30XWH- 254-852
30XW-P/30XWHP 512-862











	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
254	1567	800	928	2724	141.3	141.3	2600
304	1567	800	928	2724	141.3	141.3	2600
354	1567	800	928	2724	141.3	141.3	2600
402	1693	810	936	2742	141.3	141.3	2600
452	1693	810	936	2742	141.3	141.3	2600
552	1693	810	936	2742	141.3	141.3	2600
602	1693	810	936	2742	141.3	141.3	2600
652	1848	968	1044	3059	168.3	168.3	2800
702	1848	968	1044	3059	168.3	168.3	2800
802	1848	968	1044	3059	168.3	168.3	2800
852	1898	828	1044	2780	219.1	168.3	2600
High-efficiency units 30XW-P/30XWHP							
512	1743	968	936	30	16 .3	168.3	2800
562	1743	968	936	3059	168.3	168.3	2800
712	1950	1083	1065	3290	219.1	219.1	3100
812	1950	1083	1070	3290	219.1	219.1	3100
862	1950	1083	1070	3290	219.1	219.1	3100
Standard-efficiency units 30XW--/30XWH- (option 150)							
254	1567	800	928	2724	141.3	141.3	2600
304	1567	800	928	2724	141.3	141.3	2600
354	1567	800	928	2724	141.3	141.3	2600
402	1693	810	936	2742	141.3	141.3	2600
452	1693	810	936	2742	141.3	141.3	2600
552	1693	810	936	2742	141.3	141.3	2600
602	1693	810	936	2742	141.3	141.3	2600
652	1868	968	1090	3059	168.3	168.3	2800
702	1868	968	1090	3059	168.3	168.3	2800
802	1868	968	1090	3059	168.3	168.3	2800
852	1920	828	1090	2780	168.3	219.1	2600
High-efficiency units 30XW-P/30XWHP (option 150)							
512	1743	968	936	3059	168.3	168.3	2800
562	1743	968	936	3059	168.3	168.3	2800
712	1970	1083	1105	3290	219.1	219.1	3100
812	1970	1 83	11	3290	219.1	219.1	3100
862	1970	1083	1105	3290	219.1	219.1	3100

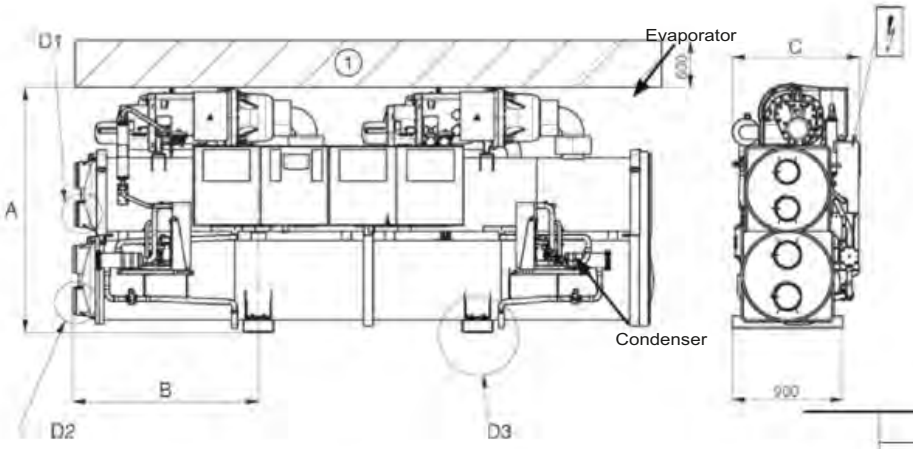
Legend
All dimensions are given in mm.

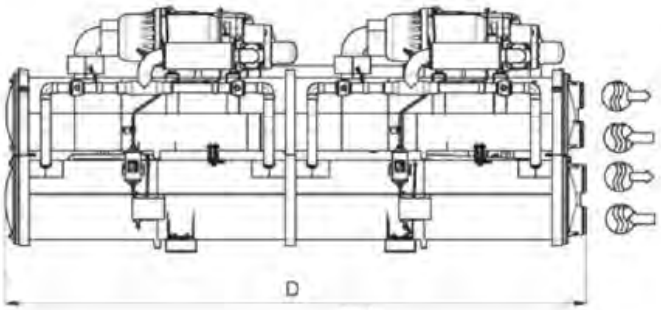
1. Required clearance for maintenance
2. Recommended clearance for tube removal
- Water inlet
- Water outlet
- Air outlet – do not obstruct
- Power supply connection

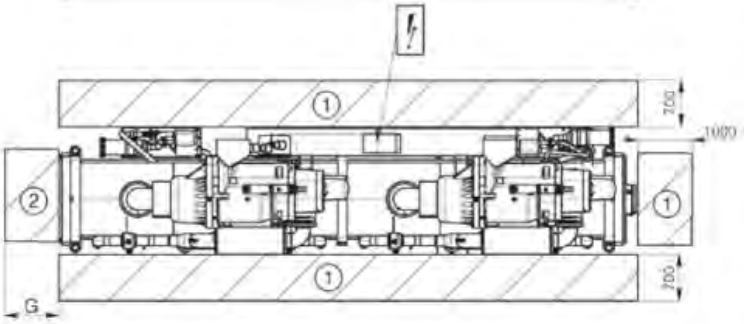
NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

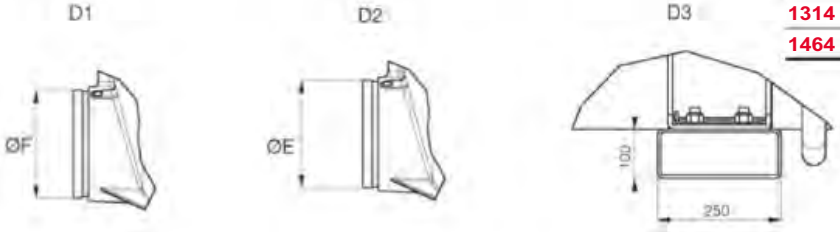
DIMENSIONS/CLEARANCES

30XW--/30XWH- 1002-1552
30XW-P/30XWHP 1012-1464









	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
1002	1870	950	1036	4025	219.1	168.3	3800
1052	1870	950	1	4025	219.1	168.3	3800
1152	1925	950	1036	4025	219.1	219.1	3800
1252	2051	1512	1162	4730	219.1	219.1	4500
1352	2051	1512	1162	4730	219.1	219.1	4500
1452	2051	1512	1162	4730	219.1	219.1	4500
1552	2051	1512	1162	4730	219.1	219.1	4500
High-efficiency units 30XW-P/30XWHP							
1012	1997	1512	1039	4730	219.1	219.1	4500
1162	1997	1512	1039	4730	219.1	219.1	4500
1314	2051	1512	1162	4730	219.1	219.1	4500
1464	2051	1512	1162	4730	219.1	219.1	4500
Standard-efficiency units 30XW--/30XWH- (option 150)							
1002	1870	950	1036	4025	219.1	168.3	3800
1052	1870	950	1	4025	219.1	168.3	3800
1154	2925	950	1036	4025	219.1	219.1	3800
1252	2071	1512	1202	4730	219.1	219.1	4500
1352	2071	1512	1202	4730	219.1	219.1	4500
1452	2071	1512	1202	4730	219.1	219.1	4500
1552	2071	1512	1202	4730	219.1	219.1	4500
High-efficiency units 30XW-P/30XWHP (option 150)							
1012	1997	1512	1039	4730	219.1	219.1	4500
1162	1997	1512	1039	4730	219.1	219.1	4500
1314	2071	1512	1202	4730	219.1	219.1	4500
1464	2071	1512	1202	4730	219.1	219.1	4500

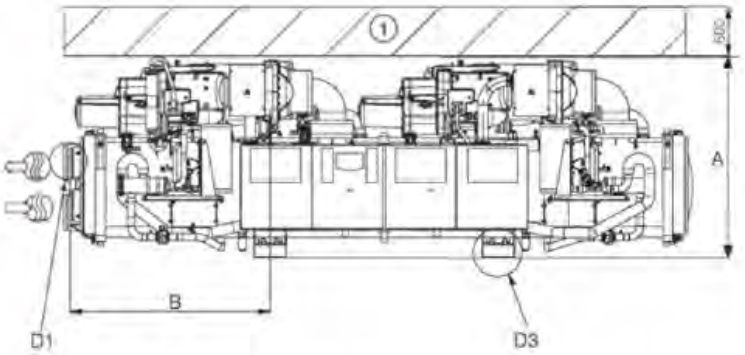
Legend
All dimensions are given in mm.

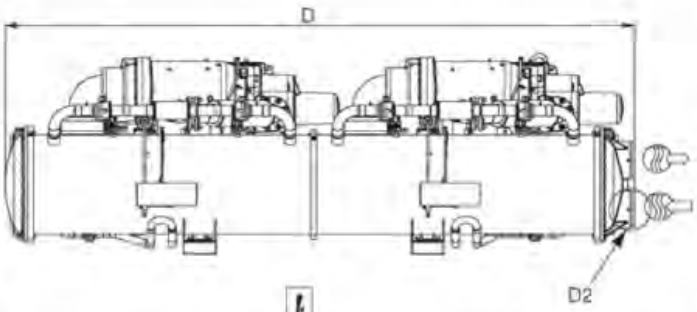
(1) Required clearance for maintenance
(2) Recommended clearance for tube removal
Water inlet
Water outlet
Air outlet – do not obstruct
Power supply connection

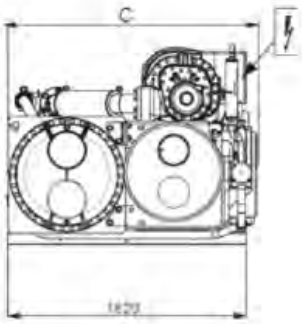
NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

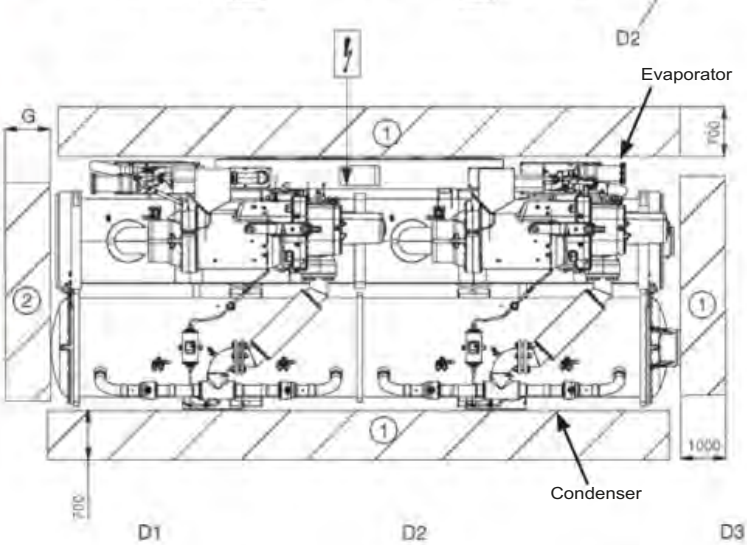
DIMENSIONS/CLEARANCES

30XW--/30XWH- 1652-1702
30XW-P/30XWHP 1612-1762

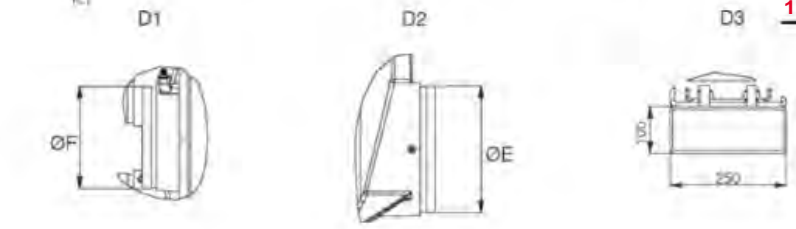








	Dimensions in mm						
	A	B	C	D	E	F	G
Standard-efficiency units 30XW--/30XWH-							
1652	1515	1568	1902	4790	219.1	219.1	4500
1702	1515	1568	1902	4790	219.1	219.1	4500
High-efficiency units 30XW-P/30XWHP							
1612	1562	1591	2129	4832	273.1	273.1	4600
1762	1562	1591	2129	4832	273.1	273.1	4600
Standard-efficiency units 30XW--/30XWH- (option 150)							
1652	1535	1568	1947	4790	219.1	219.1	4500
1702	1535	1568	1947	4790	219.1	219.1	4500
High-efficiency units 30XW-P/30XWHP (option 150)							
1612	1585	1591	2174	4832	273.1	273.1	4600
1762	1585	1591	2174	4832	273.1	273.1	4600



Legend
All dimensions are given in mm.

1. Required clearance for maintenance
2. Recommended clearance for tube removal
- Water inlet
- Water outlet
- Air outlet – do not obstruct
- Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

WATER-COOLED VARIABLE-SPEED SCREW CHILLERS
WATER-SOURCED VARIABLE-SPEED SCREW HEAT PUMPS

Low energy consumption

High reliability

Easy and fast installation

Minimised operating sound levels

Environmental care

Designed to support green building design

AQUAFORCE

30XWHV

Nominal heating capacity 648-1932 kW
Nominal cooling capacity 587-1741 kW

The 30XWHV water-sourced units are the premium solution for commercial and industrial applications where installers, consultants and building owners require maximum quality and optimal performances, especially at part load.

The 30XWHV units are designed to meet current and future requirements in terms of energy efficiency, versatility and compactness. They feature exclusive inverter-driven screw compressors - an evolution of the proven traditional Carrier twin-rotor screw compressor design. Other features include:

- the new Touch Pilot control
- mechanically cleanable flooded heat exchangers
- refrigerant R-134a

The 30XW-V/30XWHV range is split into two versions:

- 30XW-V for air conditioning applications
- 30XWHV for heating applications

As standard, the unit can provide an evaporator leaving water temperature down to 3.3°C, and when operating as a heat pump, it can deliver up to 50°C on the condenser side.

AHRI CERTIFIED® www.ahridirectory.org
Air-Cooled Chillers
AHRI Standards 550/590 and 551/591

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- The 30XW-V/30XWHV was designed for high performance both at full load and at part load.
  - Eurovent certified values per EN14511-3:2013: SEPR up to 8.07 and SEER up to 8.43
- High energy efficiency
  - Inverter-driven twin-rotor screw compressors allow precise capacity matching of building load changes and significantly reduce unit power input, especially at part-load.
  - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
  - Electronic expansion device permits operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Optimised electrical performance
  - All 30XW-V/30XWHV units comply with class 3 of standard EN61800-3. Category C3 refers to industrial environments. With option 282 category C2 compliance is possible.
  - Inverter-driven motors ensure negligible start-up current (value is lower than the maximum unit current draw)

High reliability

- The 30XW-V and 30XWHV ranges offer increased global performance as well as Carrier's acclaimed product quality and reliability. Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Inverter-driven screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - The inverter is optimised for each compressor motor to ensure reliable operation and easy maintenance.
  - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuits
  - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
- Evaporator
  - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling
  - Automatic compressor unloading in case of abnormally high condensing pressure or discharge temperature.
- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

Easy and fast installation

- Compact design
  - The 30XW-V/30XWHV units are designed to offer compact dimensions for easy installation.
  - With a width of approximately 1.25 m up to 1000 kW the units can pass through standard door openings and only require minimum floor space in the plant room.
- Simplified electrical connections
  - Main disconnect switch with high trip capacity
  - Transformer supply to the integrated control circuit (400/24 V)
- Simplified water connections
  - Victaulic connections on the evaporator and condenser
  - Practical reference marks for entering and leaving water connections
  - Possibility to reverse the heat exchanger water inlet and outlet at the factory
  - Possibilty to modify the number of heat exchanger passes
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Minimised operating sound levels

- The inverter technology used for the compressor motors minimises noise levels at part load operation. In two-compressor units at 25% of the maximum load the unit sound power level is reduced by 10 dB(A).
- Standard unit features include:
  - Silencers on the compressor discharge line.
  - Sound insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

Environmental care

- R-134a refrigerant
  - HFC-refrigerant with zero ozone depletion potential
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support green building design

- A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment. The underlying principles of this approach: The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

CUSTOMER BENEFITS

- The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year. 30XW-V/30XWHV units offers a solution to this important challenge.
- A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.
- The following example looks at how Carrier's new 30XW-V/30XWHV range helps customers involved in LEED® building certification.

30XW-V/30XWHV and LEED® certification

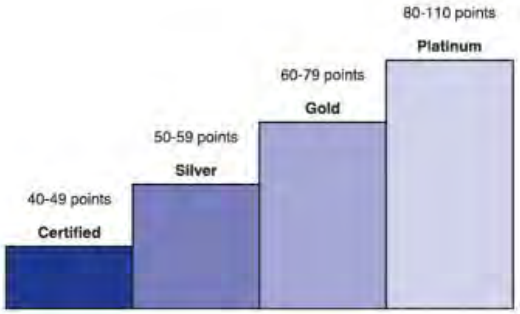
The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
  Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare. All programmes now use the same point scale:

110 Possible LEED® points

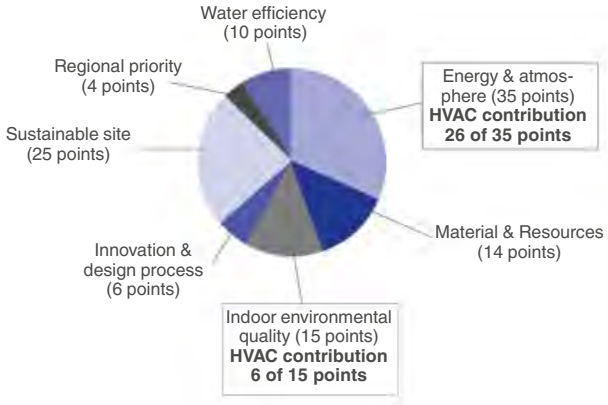


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

Overview of LEED® for new construction and major renovations



The new 30XW-V/30XWHV units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: Minimum energy Performance
  The 30XW-V/30XWHV exceeds the energy efficiency requirements of ASHRAE 90,1-2007; therefore it complies with the presequisite standard.
- EA prerequisite 3: Fundamental Refrigerant Management
  The 30XW-V/30XWHV does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.
- EA credit 1: Optimise energy performance (1 to 19 points)
  Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90,1-2007 reference. The 30XW-V/30XWHV, which is designed for high performance especially during part load operation, contributes reducing the energy consumption of the building and therefore helps gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- EA credit 4: Enhanced refrigerant management (2 points)
  With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Globlal Warming Potential (GWP) of the system. The 30XW-V/30XWHV uses a reduced R134a charge and therefore contributes toward satisfying this credit under LEED®.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30XW-V/30XWHV. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

Touch Pilot control

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 7'' interface
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management
  - Internal time schedule clock: controls chiller on/off times and operation at a second set-point
  - Set-point reset based on the return water temperature
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote management (standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).
- The 30XW-V/30XWHV also communicates with other building management systems via optional communication gateways.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/Stop of the machine
    Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
  - Demand limit setting: To limit the maximum chiller capacity to a predefined value
    Water pump control: These outputs control the contactors of one/two evaporator water pumps.
  - Operation visualisation: Indication if the unit is operating or if it is in stand-by (no cooling load)
  - Alarm visualisation.

TECHNICAL INSIGHTS

Remote management (EMM option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set-point reset: ensures reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
- User safety: this contact can be used for any customer safety loop; opening the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status : set of outputs (as many as the compressors number) indicating which compressors are running.

New inverter-driven Thunderbolt screw compressor

- The new generation of Carrier inverter-driven screw compressors benefits for Carrier's long experience in the development of twin-rotor screw compressors. The design of the Thunderbolt compressors is based on the successful 06T screw compressor, core of the well-known Aquaforce series.
- Advanced control algorithms combine inverter frequency output with motor input logic to minimise mechanical part stress, resulting in best compression performance and high chiller reliability. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.
- Screw compressors use positive displacement principle to compress gases at higher pressure. As a result, in case of exceptional high temperature condenser side (due for example to water-pipes fouling or operation in harsh climate with an external dry-cooler) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode.
- The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.
- The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	No.	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	580-1710 (see dedicated paragraph)
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two chillers connected in parallel with operating time equalisation	580-1710
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	1150-1710
Evap. pump power/ control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Evaporator dual pumps electrical power / control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Cond. pump power/ control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Cond. dual pumps power/control circuit	84T	nit equipped with an electrical power and control circuit for two pumps condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	580-1710
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	580-1710
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	580-1710
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	580-1710
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	asy to install, depending on site. educed pressure drops	580-1710
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	580-1710
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	580-1710
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	580-1710
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	580-1710
JBus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	580-1710
LON gateway	148D	Two-directional communication board complying with LON protocol	Connects the unit by communication bus to a building management system	580-1710
Bacnet over IP gateway	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	580-1710
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	580-1710
Control for low condensing temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	580-1710
Energy Management Module EMM	156	Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	580-1710

OPTIONS

Options	No.	Description	Advantages	Use
Leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controlller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	580-1710
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	580-1710
Low noise level	257	Evaporator sound insulation	3 dB(A) quiter than standard unit	580-1710
Welded evaporator water connection kit	266	Victaulic piping connections with welded joints	Easy installation	580-1710
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	580-1710
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	580-1710
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	580-1710
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	580-1710
EMC classification C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allow its compliancy with emissions level required in category C2	580-1710
Fast Capacity Recovery	QM295	New software algorithms to allow quick restart and fast loading while preserving unit-reliability	Full capacity recovery in less than 5 minutes after power failure. Matches requirements of typical critical missions applications	580-1710
Carrier Connect link (BSS regions only)	298	3G router board **NOTE 1:** Require option 149 **NOTE 2:** When more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 **NOTE 3:** If a CARRIER-PSM is on site, option 298 shall be integrated in the PSM while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	580-1710

PHYSICAL DATA, 30XWH-V UNITS

30XW-V / 30XWHV				580	630	810	880	1150	1280	1470	1570	1710
Heating												
Standard unit Full load performances *	HW1	Nominal capacity	kW	649	719	890	974	1261	1428	1594	1761	1932
		COP	kW/kW	4,64	4,53	4,56	4,43	4,62	4,61	4,55	4,33	4,16
	HW2	Nominal capacity	kW	687	767	956	1021	1335	1524	1712	1898	2067
		COP	kW/kW	6,15	5,98	5,96	5,81	6,05	6,00	5,82	5,49	5,34
Seasonal energy efficiency **	HW2	$SCOP_{30/35°C}$	kWh/kWh	7,32	7,05	7,21	6,96	6,95	6,66	6,37	6,13	5,87
		$\eta s\ heat_{30/35°C}$	%	285	274	280	270	270	259	247	237	227
		P_{rated}	kW	818	913	1134	1216	1589	1815	2041	2263	2463
Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	587	652	812	858	1140	1305	1461	1604	1741
		EER	kW/kW	5,44	5,31	5,25	5,07	5,45	5,50	5,38	5,05	4,94
		Eurovent class		A	A	A	A	A	A	A	A	B
	CW2	Nominal capacity	kW	791	846	1023	970	1528	1688	1703	2093	2272
		EER	kW/kW	6,96	6,50	6,22	5,63	6,86	6,64	5,99	5,99	5,99
		Eurovent class		A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**8,00**	**7,66**	**8,43**	**7,93**	**8,31**	**8,19**	**7,74**	**7,70**	**7,34**
		$\eta s\ cool_{12/7°C}$	**%**	**317**	**303**	**334**	**314**	**329**	**325**	**307**	**305**	**290**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**8,07**	**8,02**	**7,73**	**6,76**	**8,04**	**8,07**	**7,96**	**7,89**	**7,49**
		$SEER_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	**383**	**358**	**365**	**352**	**398**	**383**	**313**	**366**	**348**
Integrated Part Load Value	IPLV.SI		kW/kW	9,060	9,120	9,450	8,950	9,240	9,300	9,170	9,300	8,980
Sound levels - standard unit												
Sound power level (1)			dB(A)	105	105	105	105	106	106	106	106	106
Sound pressure level at 1 m (2)			dB(A)	87	87	87	87	87	87	87	87	87
Sound levels - standard unit + option 257 (3)												
Sound power level (1)			dB(A)	102	102	102	102	103	103	103	103	103
Sound pressure level at 1 m (2)			dB(A)	4	84	4	84	84	84	84	84	84
Dimensions - standard unit												
Length			mm	3059	3059	3290	3290	4730	4730	4730	4730	4730
Width			mm	1087	1087	1237	1237	1164	1164	1255	1255	1255
Height			mm	1743	1743	1950	1950	1997	1997	2051	2051	2051
Operating weight (4)			kg	3152	3190	4157	4161	7322	7398	7574	7770	7808
Compressors				Semi-hermetic 06T screw compressors, 60 r/s								
Circuit A			-	1	1	1	1	1	1	1	1	1
Circuit B			-	-	-	-	-	1	1	1	1	1
Oil - standard unit				SW220 or RL220H								
Circuit A			l	32	32	36	36	32	32	36	36	36
Circuit B			l	-	-	-	-	32	32	32	36	36

* In accordance with standard EN14511-3:2013.
** In accordance with standard EN14825:2013, average climate
HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m2. k/W
HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m2. k/W
CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) in dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Option 257 = Low noise level
(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281
$SEPR_{12/7°C}$ Applicable Ecodesign regulation (EU) No 2016/2281
$SEER_{23/18°C}$ Applicable Ecodesign regulation (EU) No 2016/2281
IPLV.SI Calculations according to standard performances AHRI 551-591.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com — Eurovent certified values

AHRI CERTIFIED www.ahridirectory.org Air-Cooled Chillers AHRI Standards 550/590 and 551/591 — AHRI certified values 30XW-only

HEATING

PHYSICAL DATA, 30XWH-V UNITS

30XW-V / 30XWHV		580	630	810	880	1150	1280	1470	1570	1710
Refrigerant - standard unit		R-134a								
Circuit A	kg	130	130	180	175	120	120	115	115	110
	$teqCO_2$	186	186	257	250	172	172	164	164	157
Circuit B	kg	-	-	-	-	120	120	120	115	110
	$teqCO_2$	-	-	-	-	172	172	172	164	157
Capacity control		Touch Pilot, inverter-driven compressor, electronic expansion valve (EXV)								
Minimum capcity	%	20	20	20	20	10	10	10	10	10
Evaporator		Multi-pipe flooded type								
Water volume	l	106	106	154	154	297	297	297	297	297
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type								
Water volume	l	112	112	165	165	340	340	340	340	340
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

ELECTRICAL DATA

30XW-V/30XWHV		580	630	810	880	1150	1280	1470	1570	1710
Power circuit										
Nominal power supply	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit		24 V via the built-in transformer								
Start-up current*	A	Lower than the operating current								
Maximum power factor**		0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93
Cosine phi		>0.98	>0.98	>0.98	>0.98	>0.98	>0.98	>0.98	>0.98	>0.98
Total harmonic distortion†	%	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45
Maximum power input***										
Circuit A	kW	155	193	222	246	155	193	222	222	246
Circuit B	kW	-	-	-	-	155	193	193	222	246
With option 81	kW	-	-	-	-	310	386	415	444	492
Eurovent current draw****										
Circuit A	A	175	200	240	265	175	200	240	240	265
Circuit B	A	-	-	-	-	175	200	200	240	265
With option 81	A	-	-	-	-	350	400	440	480	530
Maximum current draw (Un)***										
Circuit A	A	245	300	346	383	245	300	346	346	383
Circuit B	A	-	-	-	-	245	300	300	346	383
With option 81	A	-	-	-	-	490	600	646	692	766
Maximum current draw (Un -10%)***										
Circuit A	A	270	330	380	421	270	330	380	380	421
Circuit B	A	-	-	-	-	270	330	330	380	421
With option 81	A	-	-	-	-	540	660	710	760	842
Maximum power input with option 150B***										
Circuit A	kW	141	173	199	221	141	173	199	199	221
Circuit B	kW	-	-	-	-	141	173	173	199	221
With option 81	kW	-	-	-	-	282	346	372	398	442
Maximum current draw (Un) with option 150B***										
Circuit A	A	222	272	314	348	222	272	314	314	348
Circuit B	A	-	-	-	-	222	272	272	314	348
With option 81	A	-	-	-	-	444	544	586	628	696
Dissipated power†	W	3000	4200	4700	5300	6000	8400	8900	9400	10600

* Instantaneous start-up current

** This can vary as a function of the short-circuit current/maximum current ratio of the system transformer. Values obtained at operation with maximum unit power input.

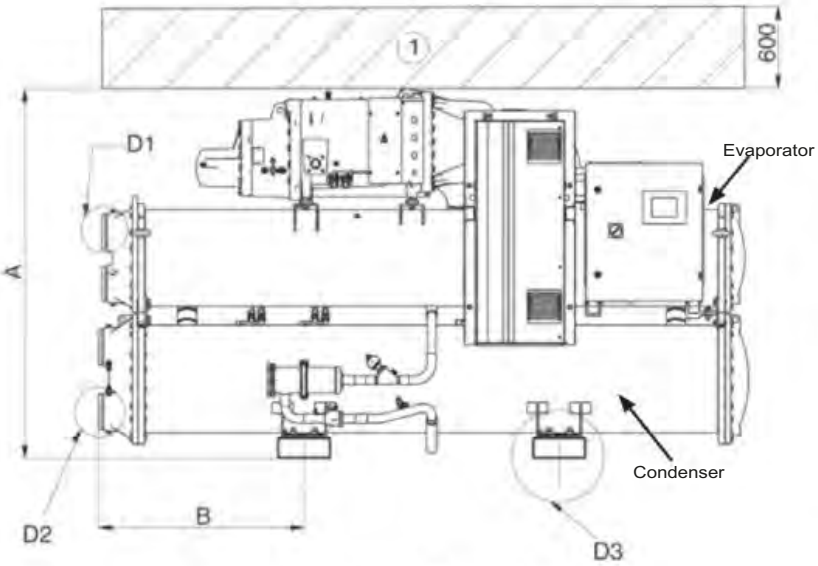
*** Values obtained at operation with maximum unit power input. Values given on the unit name plate.

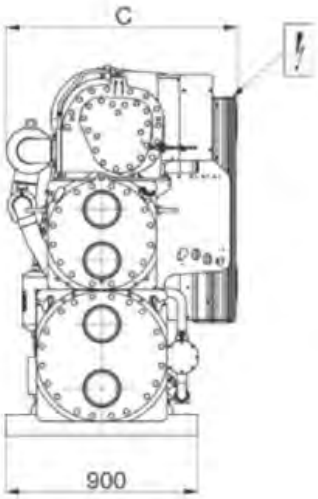
**** Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C. Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

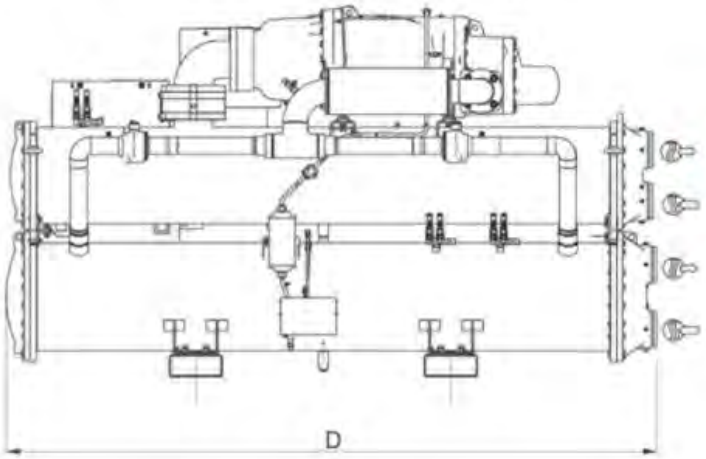
† Values obtained at operation with maximum unit power input.

DIMENSIONS/CLEARANCES

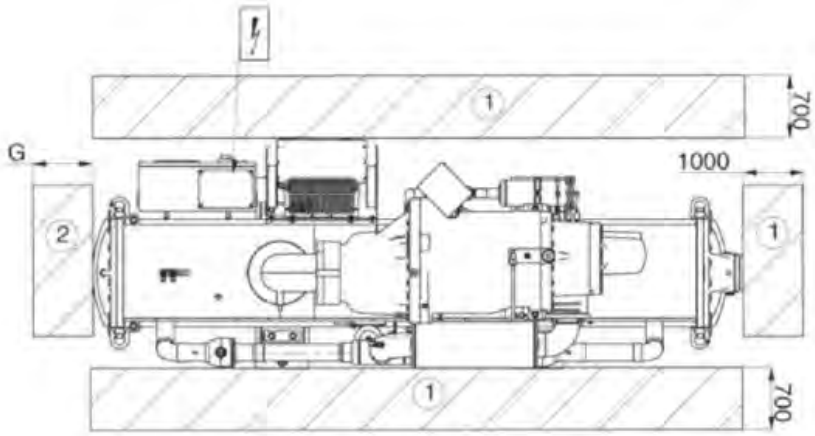
30XW-V/30XWHV 580-880







Dimensions in mm							
	A	B	C	D	E	F	G
30XW-V/30XWHV							
580	1743	968	1087	3059	168.3	168.3	2900
630	1743	968	1087	3059	168.3	168.3	2900
810	1950	1083	1237	3290	219.1	219.1	100
880	1950	1083	1237	3290	219.1	219.1	3100



Legend:

All dimensions are in mm.

① Required clearance for maintenance

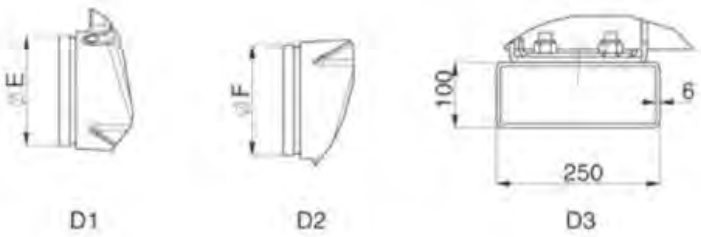
② Recommended clearance for tube removal

Water inlet

Water outlet

Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

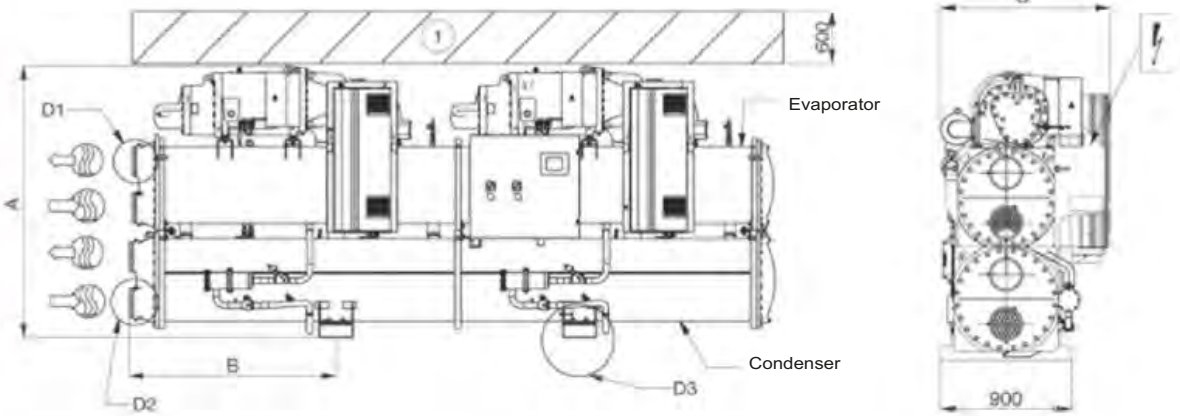


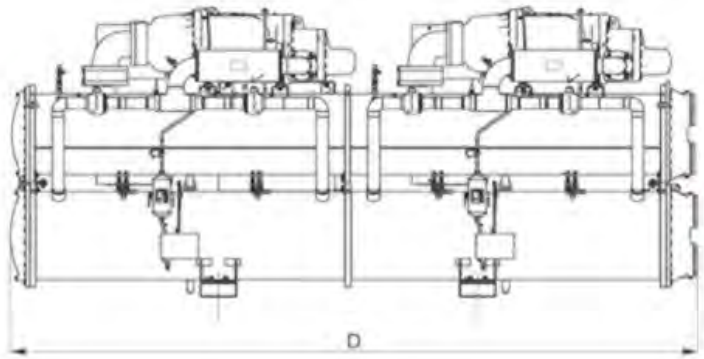
HEATING

HEATING

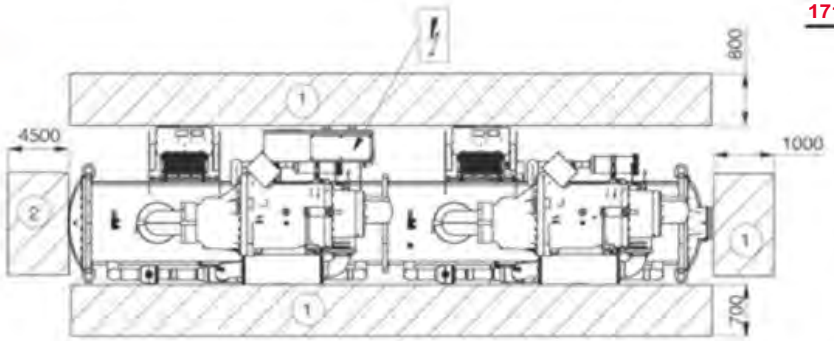
DIMENSIONS/CLEARANCES

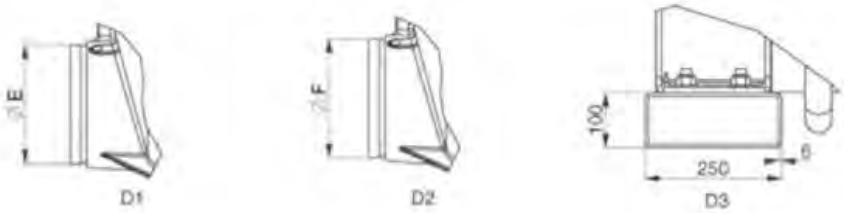
30XW-V/30XWHV 1150-1710





Dimensions in mm						
	A	B	C	D	E	F
30XW-V/30XWHV						
1150	1997	1514	1164	4730	219.1	219.1
1280	1997	1514	1164	4730	219.1	219.1
1470	2051	1514	1255	4730	219.1	219.1
1570	2051	1514	1255	4730	219.1	219.1
1710	2051	1514	1255	4730	219.1	219.1





Legend:

All dimensions are in mm.

① Required clearance for maintenance

② Recommended clearance for tube removal

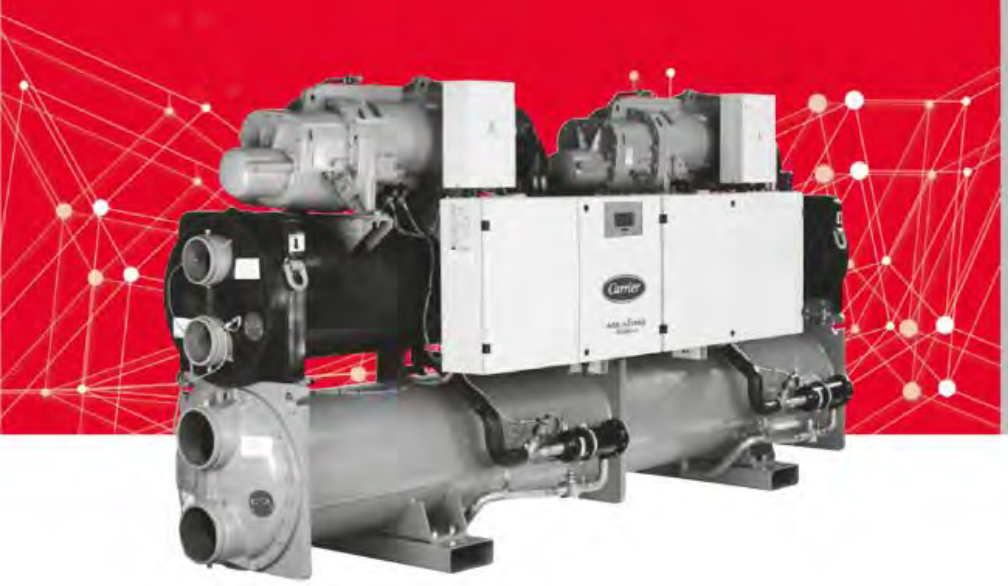
Water inlet

Water outlet

Power supply connection

NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

WATER-COOLED SCREW CHILLERS
WATER-SOURCED SCREW HEAT PUMPS



Low energy consumption

High reliability

Safe Design

Easy and fast installation

Minimised operating sound levels

Environmental care

HEATING

30XWHPZE

AQUAFORCE PUREtec

Nominal heating capacity 319-1296 kW
Nominal cooling capacity 269-1110 kW

The 30XWHPZE heat-pumps are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.

The 30XWHPZE heat-pumps are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- R-1234ze refrigerant
- Touch Pilot control system
- Flooded heat exchangers that are mechanically cleanable

The AquaForce PUREtec range is splitted into two versions:

- 30XW-PZE for air conditioning and refrigeration applications
- 30XWHPZE for heating applications

As standard, the unit can provide an evaporator leaving temperature down to 3,3°C, and when operating as a heat pump, it can deliver up to 55°C (70°C optional) on the condenser side.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

CUSTOMER BENEFITS

Low energy consumption

- SEER 12/7°C up to 7.3 and SEPR 12/7°C up to 9.3
- 30XWHPZE range is compliant with EU Eco-design Minimum Efficiency Performance Standards (MEPS) in heating that apply from September 2015
- COP of up to 6.7 and SCOP up to 6,5
- The high energy efficiency is reached through:
- Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Economizer system with electronic expansion device for increased cooling capacity.

Low operating sound levels

■ Standard unit features include:
- Silencers on the compressors discharge line.
- Silencers on the economiser return line.
- Acoustic insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

Easy and fast installation

■ Compact design
- The 30XW units are designed to offer the most compact dimensions on the market.
  With a width of approximately 1 m up to 1300 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

Compact, accessible unit - side view - sizes up to 1300 KW

■ Simplified electrical connections
- Main disconnect switch with high trip capacity
- Transformer to supply the integrated control circuit (400/24 V)

■ Simplified hydraulic connections
- Victaulic connections on the evaporator and condenser
- Practical reference marks for entering and leaving water connections
- Possibility to reverse the heat exchanger water inlet and outlet at the factory
- Possibilty to modify the number of heat exchanger passes

■ Fast commissioning
- Systematic factory operation test before shipment
- Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care

PUREtec

■ R-1234ze long-term refrigerant solution
- HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
- Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
- Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.

■ Leak-tight refrigerant circuit
- Reduction of leaks as no capillary tubes and flare connections are used
- Verification of pressure transducers and temperature sensors without transferring refrigerant charge
- Discharge line shut-off valve and liquid line service valve for simplified maintenance.

High reliability and easy servicing

■ The 30XW units offer increased global performance as well as Carrier's acclaimed product quality and reliability.

■ Major components are selected and tested with R-1234ze refrigerant to minimize failures possibility, as well as many design choices have been taken in this perspective.

■ Screw compressors
- Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
- All compressor components are easily accessible on site minimising down-time.

■ Refrigerant circuit
Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.

■ Evaporator
Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.

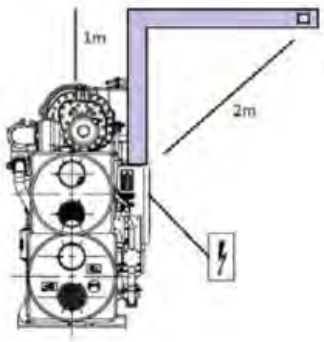
■ Auto-adaptive control
- Control algorithm prevents excessive compressor cycling (Carrier patent)
- Automatic compressor unloading in case of abnormally high condensing pressure.

■ Exceptional endurance tests
- Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
- Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

CUSTOMER BENEFITS

Safe Design

- Specific polyol ester oil qualified by Carrier for using with HFO-1234ze to guarantee and maintain reliable bearing lubrication.
- Specific compressor gaskets compatible with HFO-1234ze, tested and validated by Carrier.
- New relief valves designed for operation with HFO-1234ze
- Specific electrical box with increased tightness and integrated blower that maintains positive air pressure to avoid any risk of ignition.
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.



TECHNICAL INSIGHTS

Touch Pilot Control

Touch Pilot control, 5" user interface

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 5" interface (7" optional)
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the controller box with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
  - Internal time schedule clock controls chiller on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- The 30XW also communicates with other building management systems via optional communication gateways.
- The 30XW is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/stop of the machine
  - Dual set-point management: through a dedicated contact is possible to activate a second set-point (example: unoccupied mode)
  - Demand limit setting: to limit the maximum chiller capacity to a predefined value
  - Operation visualization: indication if the unit is operating or if it's in stand-by (no cooling load)
  - alarm visualization.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
  - Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
  - Set-point reset: ensures reset of the cooling set-point based on a 4-20 mA signal
  - Demand limit: permits limitation of the maximum chiller power or current based on a 4-20 mA signal
  - Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values

TECHNICAL INSIGHTS

- User safety: this contact can be used for any customer safety loop; opening of the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.

06T screw compressor

The Carrier 06T screw compressor designed for operation with HFO-1234ze refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	N°	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	301-1101
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	301-1101
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	801-1101
No disc.switch but short circ.protection	82A	Unit without disconnect switch, but with short-circuit protection device	Permits an external electrical disconnect system for the unit (field-supplied), while ensuring unit short circuit protection	301-1101
Evap. pump power/ control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Evap. dual pumps power/ control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Cond. pump power/ control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	301-1001
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	301-1101
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	1-11 1
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	301-1101
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	301-1101
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	301-1101
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	301-1101
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	301-1101
eversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	301-1101
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	301-1101
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	301-1101
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	301-1101
High condensing temperature	150	Optimized compressor for operation at high condensing temperature	Increased condenser leaving water temperature up to 70°C. Allows applications with high condensing temperature (heat pumps, installations with not generously sized dry-coolers or more generally, installations with dry-coolers in hot climate). NOTE: to ensure control of the condenser leaving water temperature, this option must be fitted with 30XWH units.	301-1101
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	301-1101
Control for low cond. temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	301-1101

OPTIONS

Options	N°	Description	Advantages	Use
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	301-1101
Touch Pilot control, 7" user interface	158A	Touch Pilot control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	301-1101
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents supplementary certificates and test certifications	Conformance with Swiss regulations	301-1101
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	301-1101
Low noise level	257	Evaporator sound insulation	3 dB(A) quiter than standard unit	401-1101
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	301-1101
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	301-1101
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	301-1101
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	301-1101
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	301-1101
Carrier Connect link (BSS regions only)	298	3G router board **NOTE 1:** require option 149 **NOTE 2:** when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 **NOTE 3:** if the Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	301-1101

PHYSICAL DATA, STANDARD UNITS

30XWHPZE				301	401	451	551	601	651	801	901	1001	1101
Heating													
Standard unit Full load performances*	HW1	Nominal capacity	kW	319	440	501	642	714	785	894	1035	1191	1296
		COP	kW/kW	6,23	6,43	6,42	6,65	6,53	6,39	6,62	6,63	6,61	6,36
	HW2	Nominal capacity	kW	315	433	492	630	701	766	876	1011	1165	1268
		COP	kW/kW	4,74	4,86	4,85	5,00	4,89	4,84	5,02	5,03	5,03	4,84
	HW3	Nominal capacity	kW	311	427	485	621	690	747	862	992	1144	1242
		COP	kW/kW	3,70	3,74	3,75	3,82	3,75	3,76	3,85	3,87	3,89	3,73
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kW/kW	6,41	6,66	6,72	6,79	6,68	6,68	6,88	6,95	6,73	6,53
		$\eta s\ heat_{30/35°C}$	%	237	251	253	256	251	251	259	261	253	245
	HW3	$SCOP_{47/55°C}$	kW/kW	4,43	4,88	4,82	4,62	4,64	4,73	5,14	5,14	4,86	4,64
		$\eta s\ heat_{47/55°C}$	%	164	183	181	173	174	177	193	193	182	174
		P_{rated}	kW	414	546	619	796	848	913	1113	1228	1413	1567
Cooling													
Standard unit Full load performances*	CW1	Nominal capacity	kW	269	375	427	550	610	668	766	892	1026	1110
		EER	kW/kW	5,39	5,58	5,60	5,83	5,72	5,60	5,85	5,96	5,94	5,71
		Eurovent class		A	A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	378	536	611	787	869	941	1096	1275	1466	1588
		EER	kW/kW	7,62	7,85	7,94	8,33	8,04	7,54	8,30	8,35	8,28	7,91
		Eurovent class		A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,70**	**5,81**	**6,07**	**6,58**	**6,44**	**6,44**	**6,82**	**7,29**	**7,06**	**6,90**
		$\eta s\ cool_{12/7°C}$	**%**	**225**	**230**	**240**	**260**	**254**	**255**	**270**	**289**	**279**	**273**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**8,98**	**8,66**	**8,84**	**9,25**	**8,72**	**8,42**	**8,68**	**9,10**	**9,27**	**9,00**
		$SEER_{23/18°C}$ Comfort medium temp.	kWh/kWh	7,23	7,32	7,41	8,45	7,85	7,93	8,34	8,57	8,46	8,15

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEER_{23/18°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA, STANDARD UNITS

30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Sound levels - standard unit											
Sound power level (1)	dB(A)	93	97	97	97	97	97	100	100	100	100
Sound pressure level at 1 m (2)	dB(A)	76	80	80	79	79	79	81	81	81	81
Sound levels - standard unit + option 257 (3)											
Sound power level (1)	dB(A)	-	94	94	94	94	94	97	97	97	97
Sound pressure level at 1 m (1)	dB(A)	-	76	76	76	76	76	78	78	78	78
Dimensions - standard unit											
Length	mm	2724	3059	3059	3290	3290	3290	4730	4730	4730	4730
Width	mm	928	936	936	1069	1069	1069	1039	1039	1162	1162
Height	mm	1567	1743	1743	1950	1950	1950	1997	1997	2051	2051
Operating weight (4)	kg	2157	3050	3050	3942	3977	3995	6932	7010	7665	7875
Compressors		Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A	-	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	-	1	1	1	1
Refrigerant - standard unit		R1234ze									
Circuit A	kg	78	130	130	180	175	170	120	120	130	130
	teq CO_2	0,5	0,9	0,9	1,3	1,2	1,2	0,8	0,8	0,9	0,9
Circuit B	kg	-	-	-	-	-	-	120	120	150	130
	teq CO_2	-	-	-	-	-	-	0,8	0,8	1,1	0,9
Oil - standard unit		HATCOL-4496									
Circuit A	l	20	20	20	25	25	25	20	20	25	25
Circuit B	l	-	-	-	-	-	-	20	20	20	25
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capcity	%	15	15	15	15	15	15	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	61	101	101	154	154	154	293	293	321	321
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l	55	103	103	148	148	148	316	316	340	340
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Option 257 = Low noise level
(4) Weight shown is guideline only. Please refer to the unit nameplate

ELECTRICAL DATA, STANDARD UNITS

30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Power circuit											
Nom. power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current(1)											
Circuit A	A	303	414	414	587	587	587	414	414	587	587
Circuit B	A	-	-	-	-	-	-	414	414	414	587
Option 81	A	-	-	-	-	-	-	529	543	716	751
Maximum start-up current(2)											
Circuit A	A	303	414	414	587	587	587	414	414	587	587
Circuit B	A	-	-	-	-	-	-	414	414	414	587
Option 81	A	-	-	-	-	-	-	597	621	794	855
Cosine phi											
Nominal(3)		0,79	0,86	0,87	0,85	0,87	0,89	0,86	0,87	0,85	0,85
Maximum(4)		0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90
Total harmonic distortion(4)	%	Closed to 0% (negligible)									
Maximum power input(5)											
Circuit A	kW	86	112	126	148	165	174	112	126	148	148
Circuit B	kW	-	-	-	-	-	-	112	126	126	148
Option 81	kW	-	-	-	-	-	-	224	252	274	296
Nominal current drawn(3)											
Circuit A	A	91	115	129	164	177	194	115	129	164	164
Circuit B	A	-	-	-	-	-	-	115	129	129	164
Option 81	A	-	-	-	-	-	-	230	258	293	328
Maximum current drawn (Un)(5)											
Circuit A	A	140	180	205	240	268	282	180	205	240	240
Circuit B	A	-	-	-	-	-	-	180	205	205	240
Option 81	A	-	-	-	-	-	-	360	410	445	480
Maximum current drawn (Un -10%)(4)											
Circuit A	A	153	196	223	261	292	307	196	223	261	261
Circuit B	A	-	-	-	-	-	-	196	223	223	261
Option 81	A	-	-	-	-	-	-	392	446	484	522
Maximum power input with option 150B(5)											
Circuit A	kW	76	97	110	129	146	153	97	110	129	129
Circuit B	kW	-	-	-	-	-	-	97	110	110	129
Option 81	kW	-						195	220	239	258
Maximum current drawn (Un) with option 150B(5)											
Circuit A	A	123	158	179	209	237	249	158	179	209	209
Circuit B	A	-	-	-	-	-	-	158	179	179	209
Option 81	A	-	-	-	-	-	-	316	358	388	418

(1) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.
(2) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.
(3) Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C
(4) Values obtained at operation with maximum unit power input.
(5) Values obtained at operation with maximum unit power input. Values given on the unit nameplate.

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XW-ZE / 30XWHZE				301	401	451	551	601	651	801	901	1001	1101
Heating													
Unit + option 150 Full load performances*	HW1	Nominal capacity	kW	315	475	521	658	716	774	919	1068	1127	1254
		COP	kW/kW	5,74	6,01	6,00	5,76	5,74	5,79	5,88	6,02	5,88	5,68
	HW2	Nominal capacity	kW	306	457	502	640	696	755	886	1027	1091	1217
		COP	kW/kW	4,68	4,93	4,92	4,75	4,73	4,79	4,84	4,97	4,86	4,71
	HW3	Nominal capacity	kW	298	442	485	621	678	736	856	986	1055	1178
		COP	kW/kW	3,83	4,03	4,03	3,89	3,88	3,94	3,95	4,06	3,99	3,89
	HW4	Nominal capacity	kW	290	428	469	602	662	717	831	952	1021	1140
		COP	kW/kW	3,10	3,26	3,25	3,17	3,16	3,19	3,20	3,27	3,24	3,17
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	6,29	6,42	6,46	6,66	6,41	6,51	6,25	6,48	6,34	6,39
		$\eta s\ heat_{30/35°C}$	%	227	242	243	251	241	245	235	243	238	240
	HW3	$SCOP_{47/55°C}$	kWh/kWh	4,81	4,87	4,90	5,06	4,88	4,98	4,88	5,10	5,00	5,07
		$\eta s\ heat_{47/55°C}$	%	175	183	184	190	183	187	183	191	188	190
		Prated	kW	425	546	608	770	837	927	1085	1246	1378	1548
Cooling													
Unit + option 150 Full load performances*	CW1	Nominal capacity	kW	265	404	444	556	606	655	781	915	962	1064
		EER	kW/kW	4,94	5,22	5,23	4,96	4,96	5,02	5,14	5,36	5,18	4,99
		Eurovent class		B	A	A	B	B	B	A	A	A	B
	CW2	Nominal capacity	kW	375	578	637	767	834	892	1123	1313	1354	1464
		EER	kW/kW	6,01	6,39	6,42	5,91	5,87	5,84	6,36	6,52	6,24	5,88
		Eurovent class		A	A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**5,97**	**6,29**	**6,33**	**6,50**	**6,32**	**6,41**	**6,39**	**6,82**	**6,51**	**6,64**
		$\eta s\ cool_{12/7°C}$	**%**	**236**	**249**	**250**	**257**	**250**	**253**	**253**	**270**	**257**	**263**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**7,02**	**7,11**	**7,18**	**7,44**	**7,10**	**7,26**	**6,93**	**7,34**	**7,27**	**7,21**

* In accordance with standard EN14511-3:2013

** In accordance with standard EN14825:2013, average climate

HW1 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W

HW2 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W

HW3 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W

HW4 Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 55°C/65°C, evaporator and condenser fouling factor 0 m². k/W

CW1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

CW2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$ Applicable Ecodesign regulation: (EU) No 813/2013

$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

$SEPR_{12/7°C}$ Applicable Ecodesign regulation: (EU) No 2016/2281

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

Standard-efficiency units (option 150)

30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Sound levels - unit with option 150											
Sound power level(1)	dB(A)	93	97	97	100	100	100	100	100	103	103
Sound pressure level at 1 m(2)	dB(A)	76	80	80	82	82	82	81	81	84	84
Sound levels - standard unit + option 257(3)											
Sound power level(1)	dB(A)	-	94	94	98	98	98	97	97	101	101
Sound pressure level at 1 m(2)	dB(A)	-	76	76	80	80	80	78	78	82	82
Operating weight(4)	kg	2157	3050	3050	4102	4147	4175	6932	7010	7844	8182
Compressors		Semi-hermetic 06T screw compressors, 50 r/s									
Circuit A	-	1	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	-	-	1	1	1	1
Refrigerant - unit with option 150		R1234ze									
Circuit A	kg	78	130	130	180	175	170	120	120	130	130
	teq CO_2	0,5	0,9	0,9	1,3	1,2	1,2	0,8	0,8	0,9	0,9
Circuit B	kg	-	-	-	-	-	-	120	120	150	130
	teq CO_2	-	-	-	-	-	-	0,8	0,8	1,1	0,9
Oil - unit with option 150		HATCOL-4496									
Circuit A	l	20	20	20	25	25	25	20	20	25	25
Circuit B	l	-		-		-		2	20		25
Capacity control		Touch Pilot, electronic expansion valves (EXV)									
Minimum capcity	%	30	30	30	15	15	15	10	10	10	10
Evaporator		Multi-pipe flooded type									
Water volume	l	61	101	101	154	154	154	293	293	321	321
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type									
Water volume	l		103	103	148	148	148	316	316	340	340
Water connections (Victaulic)	in	5	6	6	8	8	8	8	8	10	10
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) In dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Option 257 = Low noise level
(4) Weight shown is guideline only. Please refer to the unit nameplate

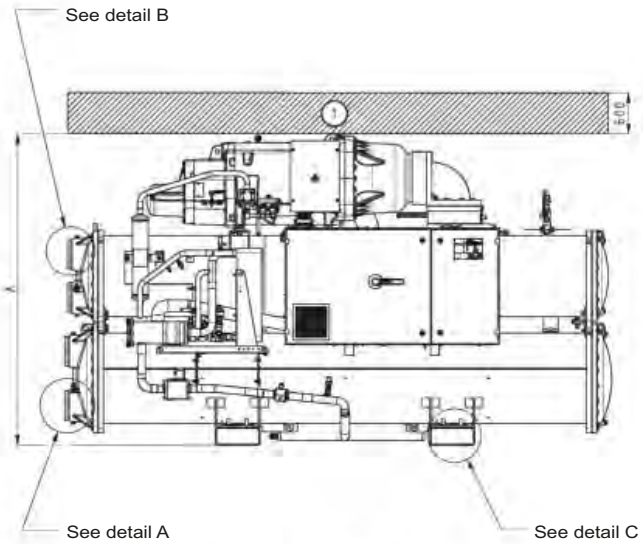
ELECTRICAL DATA, UNITS FOR HIGH CONDENSING TEMPERATURES

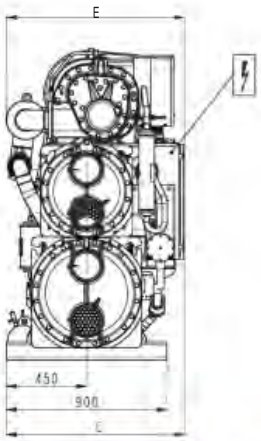
30XWHPZE		301	401	451	551	601	651	801	901	1001	1101
Power circuit											
Nominal power supply	V-ph-Hz	400-3-50									
Voltage range	V	360-440									
Control circuit		24 V via the built-in transformer									
Nominal start-up current(1)											
Circuit A	A	388	587	587	629	629	629	587	587	629	629
Circuit B	A	-	-	-	-	-	-	587	587	587	629
Option 81	A	-	-	-	-	-	-	712	725	767	815
Maximum start-up current(2)											
Circuit A	A	388	587	587	629	629	629	587	587	629	629
Circuit B	A	-	-	-	-	-	-	587	587	587	629
Option 81	A	-	-	-	-	-	-	833	860	902	972
Cosine phi nominal(3)		0,75	0,80	0,81	0,80	0,81	0,83	0,80	0,81	0,80	0,80
Cosine phi maximum(4)		0,90	0,90	0,90	0,89	0,89	0,89	0,90	0,90	0,89	0,89
Total harmonic distortion(4)	%	Closed to 0% (negligible)									
Maximum power input(5)											
Circuit A	kW	107	144	158	202	219	228	144	158	202	202
Circuit B	kW	-	-	-	-	-	-	144	158	158	202
Option 81	kW	-	-	-	-	-	-	288	317	360	404
Nominal current drawn(3)											
Circuit A	A	102	125	138	186	197	213	125	138	186	186
Circuit B	A	-	-	-	-	-	-	125	138	138	186
Option 81	A	-	-	-	-	-	-	250	276	324	372
Maximum current drawn (Un)(5)											
Circuit A	A	174	234	257	328	356	371	234	257	328	328
Circuit B	A	-	-	-	-	-	-	234	257	257	328
Option 81	A	-	-	-	-	-	-	468	514	585	656
Max. current drawn (Un -10%)(4)											
Circuit A	A	190	255	280	357	387	404	255	280	357	357
Circuit B	A	-	-	-	-	-	-	255	280	280	357
Option 81	A	-	-	-	-	-	-	510	560	637	714

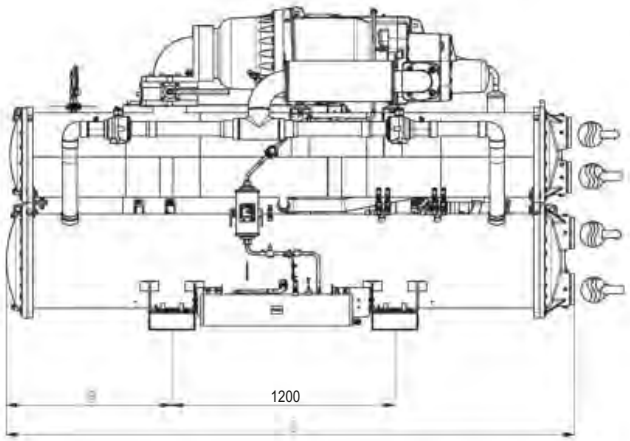
(1) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C.
(2) Instantaneous start-up current (maximum operating current of the smallest compressor(s) + locked rotor current or reduced start-up current of the largest compressor). Values obtained at operation with maximum unit power input.
(3) Values obtained at standard Eurovent conditions: evaporator entering/leaving water temp. = 12°C/7°C, condenser entering/leaving water temp. = 30°C/35°C
(4) Values obtained at operation with maximum unit power input.
(5) Values obtained at operation with maximum unit power input. Values given on the unit nameplate.

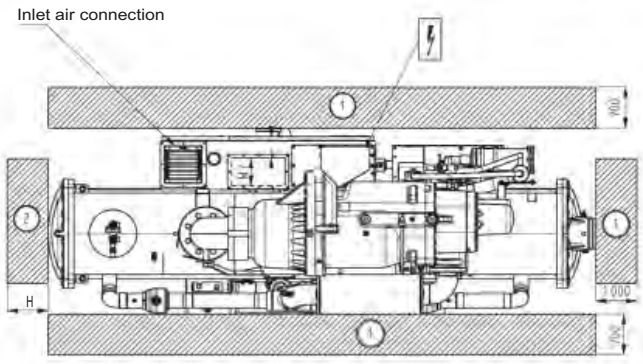
DIMENSIONS/CLEARANCES

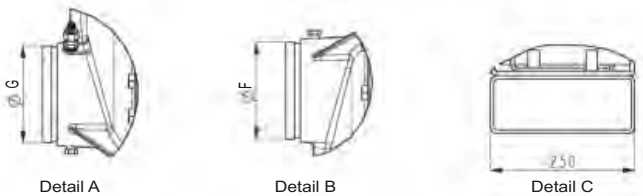
30XWHPZE 301-651











Dimensions en mm	A	B	C	D	E	F	G	H
30XWHPZE								
301	1612	800	982	2724	983	141,3	141,3	2600
401	1743	968	980	3059	982	168,3	168,3	2800
451	174	6	980	3059	982	168,3	168,3	2800
551	1950	1083	1080	3290	1180	219,1	219,1	3100
601	1950	1083	1080	3290	1180	219,1	219,1	3100
651	1950	1083	1080	3290	1180	219,1	219,1	3100
30XWHPZE (option 150)								
301	1612	800	982	2724	983	141,3	141,3	2600
401	1743	968	980	3059	982	168,3	168,3	2800
451	1743	968	1040	3059	1042	168,3	168,3	2800
551	1 6	1083	1	3290	11	219,1	219,1	3100
601	1968	1083	1080	3290	1180	219,1	219,1	3100
651	1968	1083	1080	3290	1180	219,1	219,1	3100

Legend

All dimensions are given in mm

1. Services clearances required
2. Space required to remove cooler tubes
- Inlet water
- Outlet water
- Electrical supply entry

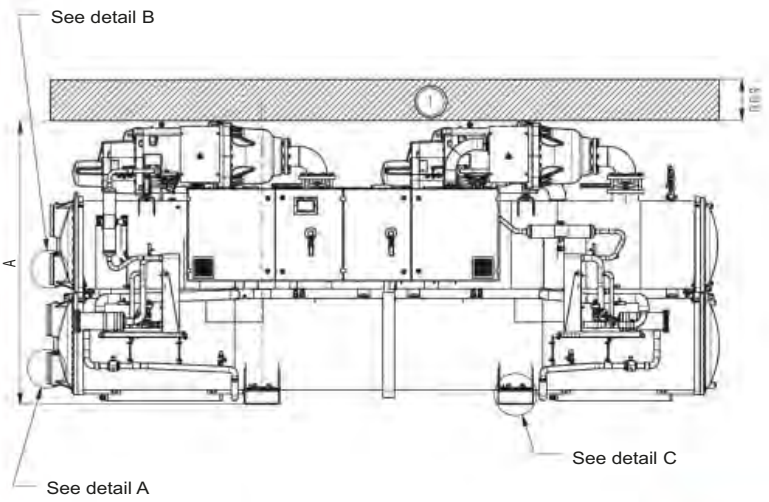
NOTES:

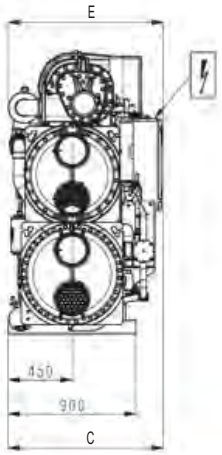
- ***Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.***
- ***For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.***

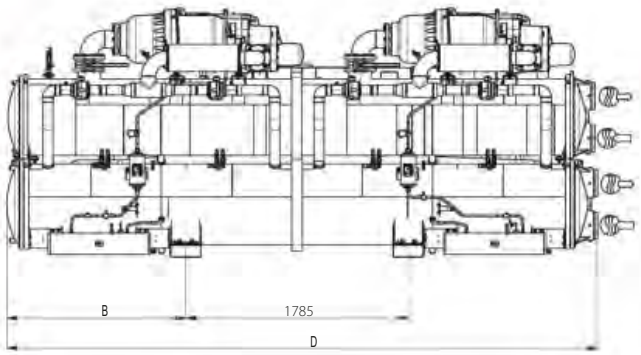
HEATING

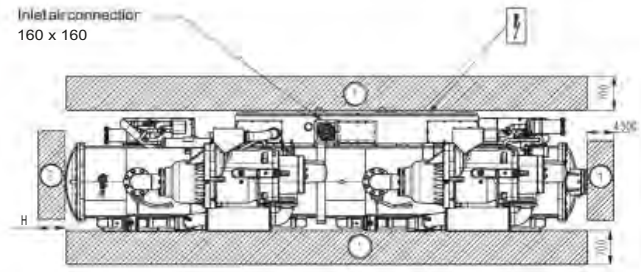
DIMENSIONS/CLEARANCES

30XWHPZE 801-1101









Dimensions en mm								
	A	B	C	D	E	F	G	H
30XWHPZE								
801	1998	1512	1121	4730	1124	219,1	219,1	4500
901	1998	1512	1125	4730	1124	219,1	219,1	4500
1001	2051	1512	1238	4730	1238	219,1	219,1	4500
1101	2051	1512	1238	4730	1238	219,1	219,1	4500
30XWHPZE (option 150)								
801	1998	1512	1121	4730	1124	219,1	219,1	4500
901	1998	1512	1125	4730	1124	219,1	219,1	4500
1001	2070	1512	1238	4730	1238	219,1	219,1	4500
1101	2051	1512	1238	4730	1238	219,1	219,1	4500

Legend

All dimensions are given in mm

1 → Services clearances required

2 → Space required to remove cooler tubes

Inlet water

Outlet water

Electrical supply entry

NOTES:

- ***Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.***
- ***For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.***

WATER-COOLED VARIABLE-SPEED SCREW CHILLERS
WATER-SOURCED VARIABLE-SPEED SCREW HEAT PUMPS

- **Low energy consumption**
- **High reliability**
- **Safe Design**
- **Easy and fast installation**
- **Minimised operating sound levels**
- **Environmental care**
- **Designed to support green building design**

HEATING

30XWHVZE

AQUAFORCE PUREtec

Nominal cooling capacity 269-1110 kW
Nominal heating capacity 319-1296 kW

The 30XWHVZE water-sourced units are the premium solution for commercial and industrial applications where installers, consultants and building owners require maximum quality and optimal performances, especially at part load.

The 30XWHVZE units are designed to meet current and future requirements in terms of energy efficiency, versatility and compactness. They feature exclusive inverter-driven screw compressors - an evolution of the proven traditional Carrier twin-rotor screw compressor design. Other features include:

- the new Touch Pilot control
- mechanically cleanable flooded heat exchangers
- refrigerant R-1234ze

The 30XW-VZE/30XWHVZE range is splitted into two versions:

- 30XW-VZE for air conditioning applications
- 30XWHVZE for heating applications

As standard, the unit can provide an evaporator leaving water temperature down to 3.3°C, and when operating as a heat pump, it can deliver up to 55°C on the condenser side.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

* Evaporator with aluminium jacket shown in the picture not standard - available as special order only

CUSTOMER BENEFITS

Low energy consumption

- The 30XW-VZE/30XWHVZE are designed for high performance both at full load and at part load.
  - Eurovent certified values per EN14511-3:2013: SEPR up to 10.7 and SEER up to 8.8
- High energy efficiency
  - Inverter-driven twin-rotor screw compressors allow precise capacity matching of building load changes and significantly reduce unit power input, especially at part-load.
  - Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
  - Electronic expansion device permits operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface.
- Optimised electrical performance
  - All 30XW-VZE/30XWHVZE units comply with class 3 of standard EN61800-3. Category C3 refers to industrial environments. With option 282 category C2 compliance is possible.
  - Inverter-driven motors ensure negligible start-up current (value is lower than the maximum unit current draw)

High reliability

- The 30XW-VZE and 30XWHVZE ranges offer increased global performance as well as Carrier's acclaimed product quality and reliability. Major components are selected and tested to minimize failures possibility, as well as many design choices have been taken in this perspective.
- Inverter-driven screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - The inverter is optimised for each compressor motor to ensure reliable operation and easy maintenance.
  - All compressor components are easily accessible on site minimising down-time.
- Refrigerant circuits
  - Two independent refrigerant circuits (from 1000 kW upwards); the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.
  - All components have been selected and tested with R-1234ze refrigerant
- Evaporator
  - Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling
  - Automatic compressor unloading in case of abnormally high condensing pressure or discharge temperature.
- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard)

Safe Design

- Specific polyol ester oil qualified by Carrier for using with HFO-1234ze to guarantee and maintain reliable bearing lubrication.
- Specific compressor gaskets compatible with HFO-1234ze, tested and validated by Carrier.
- New relief valves designed for operation with HFO-1234ze
- New control algorithms
- Specific documentation that contains all the installation, operation, maintenance and safety Instructions.

Easy and fast installation

- Compact design
  - The 30XW-VZE/30XWHVZE units are designed to offer compact dimensions for easy installation.
  - With a width of approximately 1.25 m up to 1000 kW the units can pass through standard door openings and only require minimum floor space in the plant room.
- Simplified electrical connections
  - Main disconnect switch with high trip capacity
  - Transformer supply to the integrated control circuit (400/24 V)
- Simplified water connections
  - Victaulic connections on the evaporator and condenser
  - Practical reference marks for entering and leaving water connections
  - Possibility to reverse the heat exchanger water inlet and outlet at the factory
  - Possibilty to modify the number of heat exchanger passes
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Minimised operating sound levels

- The inverter technology used for the compressor motors minimises noise levels at part load operation. In two-compressor units at 25% of the maximum load the unit sound power level is reduced by 10 dB(A).
- Standard unit features include:
  - Silencers on the compressor discharge line.
  - Sound insulation on the components that are most subjected to radiated noise.
- Option 257 further reduces the global unit sound level.

CUSTOMER BENEFITS

Environmental care

PUREtec

- R-1234ze long-term refrigerant solution
  - HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
  - Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
  - Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Discharge line shut-off valve and liquid line service valve for simplified maintenance.

Designed to support green building design

- A green building is a building that is environmentally sustainable and has been designed, constructed and is operated to minimise the total impact on the environment. The underlying principles of this approach: The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.
- The air conditioning system can use between 30 and 40% of the annual building energy consumption. Selection of the right air conditioning system is one of the main aspects to consider when designing a green building. For buildings with a variable load throughout the year 30XW-VZE/30XWHVZE units offers a solution to this important challenge.
- A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.
- The following example looks at how Carrier's new 30XW-VZE/30XWHVZE range helps customers involved in LEED® building certification.

30XW-VZE/30XWHVZE and LEED® certification

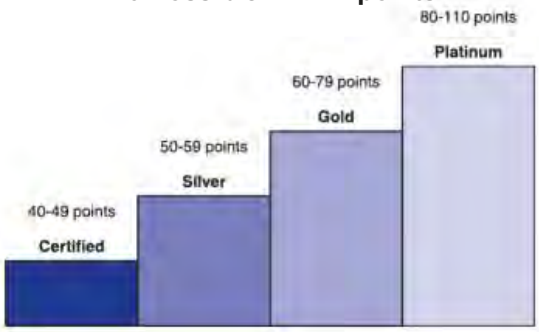
The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:
- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy & Atmosphere (EA)
- Materials & Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:

110 Possible LEED® points

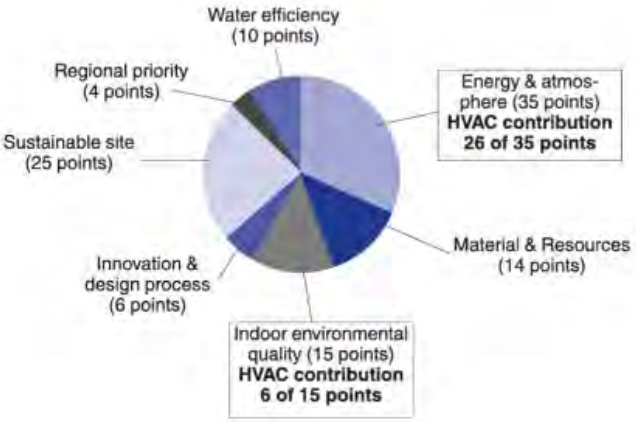


The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impacts of each component or sub-system to the overall building.

While the LEED® green building certification programs do not certify products or services, the selection of the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points.

Overview of LEED® for new construction and major renovations



The new 30XW-VZE/30XWHVZE units from Carrier can assist building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: Minimum energy Performance
  The 30XW-VZE/30XWHVZE exceeds the energy efficiency requirements of ASHRAE 90,1-2007; therefore it complies with the presequisite standard.
- EA prerequisite 3: Fundamental Refrigerant Management
  The 30XW-VZE/30XWHVZE does not use chlorofluorocarbon (CFC) refrigerants thus satisfying the prerequisite statement.

CUSTOMER BENEFITS

- EA credit 1: Optimise energy performance (1 to 19 points)
  Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90,1-2007 reference. The 30XW-VZE/30XWHVZE, which is designed for high performance especially during part load operation, contributes reducing the energy consumption of the building and therefore helps gaining points within this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used as an energy analyses program complying with the modeling requirements for this credit and produce reports that are easily transferable to LEED® templates.
- EA credit 4: Enhanced refrigerant management (2 points)
  With this credit, LEED® awards systems that minimise the Ozone Depletion Potential (ODP) and Globlal Warming Potential (GWP) of the system. The 30XW-VZE/30XWHV-ZE uses HFO-1234ze refrigerant with Global Warming Potential Index below 1 and therefore contributes toward satisfying this credit under LEED®.

NOTE: This section describes the prerequisites and credit requirements in LEED® for New Construction and is directly related to the 30XW-V-ZE/30XWHV-ZE. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the complete HVAC system.

i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: Fundamental commissioning of energy management system
- EA credit 3: Enhanced commissioning (2 points)
- EA credit 5: Measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

TECHNICAL INSIGHTS

Touch Pilot control

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 7'' interface
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and «smart» intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management
  - Internal time schedule clock: controls chiller on/off times and operation at a second set-point
  - Set-point reset based on the return water temperature
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote management (standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce with Greenspeed® Intelligence is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional).
- The 30XW-VZE/30XWHVZE also communicates with other building management systems via optional communication gateways.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/Stop of the machine
  - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example, unoccupied mode)
  - Demand limit setting: To limit the maximum chiller capacity to a predefined value
  - Water pump control: These outputs control the contactors of one/two evaporator water pumps.
  - Operation visualisation: Indication if the unit is operating or if it is in stand-by (no cooling load)
  - Alarm visualisation.

TECHNICAL INSIGHTS

Remote management (EMM option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set-point reset: ensures reset of the cooling set-point based on a 0-10 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values
- User safety: this contact can be used for any customer safety loop; opening the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.
- Compressors running status : set of outputs (as many as the compressors number) indicating which compressors are running.

New inverter-driven Thunderbolt screw compressor

- The Carrier 06T screw compressor designed for operation with HFO-1234ze refrigerant benefits from Carrier's long experience in the development of twin-rotor screw compressors. The design of the Thunderbolt compressors is based on the successful 06T screw compressor, core of the well-known Aquaforce series.
- Advanced control algorithms combine inverter frequency output with motor input logic to minimise mechanical part stress, resulting in best compression performance and high chiller reliability. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.
- Screw compressors use positive displacement principle to compress gases at higher pressure. As a result, in case of exceptional high temperature condenser side (due for example to water-pipes fouling or operation in harsh climate with an external dry-cooler) the compressor does not switch off, but continues operation at reduced capacity (unloaded mode.
- The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.
- The condenser includes an oil separator that minimises the amount of oil in circulation in the refrigerant circuit and re-directs it to the compressor function.

OPTIONS

Options	N°	Description	Advantages	Use
Light-brine solution, down to -3°C	8	Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	451-1301 (see dedicated paragraph)
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parallele operation with operating time equalisation	451-1301
Condenser insulation	86	Thermal condenser insulation	Minimizes thermal dispersions condenser side (key option for heat pump or heat recovery applications) and allows compliancy with special installation criteria (hot parts insulated)	451-1301
Service valve set	92	Liquid line valve (evaporator inlet) and compressor suction line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	451-1301
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	451-1301
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	451-1301
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	451-1301
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	451-1 1
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	451-1301
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	451-1301
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	451-1301
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	451-1301
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	451-1301
Condensing temperature limitation	150B	Limitation of the maximum condenser leaving water temperature to 45°C	Reduced maximum power input and current absorption: power cables and protection elements can therefore be downsized	451-1301
Control for low cond. temperature systems	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	451-1301
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	451-1301
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	451-1301
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	451-1301
Low noise level	257	Evaporator sound insulation	3 dB(A) quiter than standard unit	451-1301
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	451-1301
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	451-1301
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	451-1301
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	451-1301

OPTIONS

Options	N°	Description	Advantages	Use
Thermal compressor insulation	271	The compressor is covered with a thermal insulation layer	Prevents air humidity to condensate on the compressor surface	451-1301
EMC classification C2, as per EN 61800-3	282	Additional RFI filters on the unit power line	Reduces electromagnetic interferences. Increase the variable frequency drive (VFD) immunity level according to first environment (so called, residential environment) requirements and allow its compliancy with emissions level required in category C2	451-1301
Fast Capacity Recovery	QM295	New software algorithms to allow quick restart and fast loading while preserving unit-reliability	Full capacity recovery in less than 5 minutes after power failure. Matches requirements of typical critical missions applications	451-1301
Carrier Connect link (BSS regions only)	298	3G router board **NOTE 1:** require option 149 **NOTE 2:** when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 **NOTE 3:** if the Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	451-1301

PHYSICAL DATA, 30XWH-VZE UNITS

30XW-V ZE / 30XWHVZE				451	501	601	651	851	1001	1101	1201	1301
Heating												
Standard unit Full load performances*	HW1	Nominal capacity	kW	524	588	737	795	1016	1129	1255	1395	1485
		COP	kW/kW	6,22	6,16	6,07	5,97	6,19	6,10	6,06	5,87	5,72
	HW2	Nominal capacity	kW	493	550	684	744	996	1058	1184	1350	1480
		COP	kW/kW	4,68	4,62	4,57	4,45	4,84	4,58	4,67	4,69	4,56
	HW3	Nominal capacity	kW	468	514	634	703	943	989	1098	1241	1384
		COP	kW/kW	3,48	3,42	3,43	3,29	3,59	3,38	3,51	3,57	3,43
Seasonal energy efficiency**	HW1	$SCOP_{30/35°C}$	kWh/kWh	7,83	7,57	7,80	7,75	7,63	7,59	7,35	6,80	6,73
		$\eta s\ heat_{30/35°C}$	%	298	288	297	295	290	288	279	257	254
	HW3	$SCOP_{47/55°C}$	kWh/kWh	5,42	5,38	5,34	5,29	5,39	5,47	5,55	5,26	5,20
		$\eta s\ heat_{47/55°C}$	%	206	204	202	201	204	207	210	199	197
		P_{rated}	kW	559	614	761	827	1086	1217	1361	1507	1645
Cooling												
Standard unit Full load performances*	CW1	Nominal capacity	kW	448	502	627	674	864	962	1067	1178	1243
		EER	kW/kW	5,44	5,41	5,29	5,20	5,46	5,38	5,37	5,24	5,10
		Eurovent class		A	A	A	A	A	A	A	A	A
	CW2	Nominal capacity	kW	670	730	898	818	1156	1379	1465	1554	1617
		EER	kW/kW	7,74	7,48	7,12	6,20	7,02	7,38	6,95	6,48	6,29
		Eurovent class		A	A	A	A	A	A	A	A	A
Seasonal energy efficiency		**$SEER_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**8,15**	**7,92**	**8,81**	**8,43**	**8,40**	**8,50**	**7,48**	**7,33**	**7,13**
		$\eta s\ cool_{12/7°C}$	**%**	**323**	**314**	**349**	**334**	**333**	**337**	**296**	**290**	**282**
		$SEPR_{12/7°C}$ Process high temp.	**kWh/kWh**	**10,49**	**10,23**	**10,42**	**10,0**	**10,71**	**10,71**	**9,66**	**9,12**	**9,10**
		$SEER_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	**9,71**	**8,95**	**9,73**	**9,31**	**10,17**	**10,15**	**7,98**	**7,56**	**7,32**

*	In accordance with standard EN14511-3:2013
**	In accordance with standard EN14825:2013, average climate
HW1	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m². k/W
HW2	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 40°C/45°C, evaporator and condenser fouling factor 0 m². k/W
HW3	Heating mode conditions: Evaporator entering/leaving water temperature 10°C/7°C, condenser entering/leaving water temperature 47°C/55°C, evaporator and condenser fouling factor 0 m². k/W
CW1	Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
CW2	Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, condenser entering/leaving water temperature 30°C/35°C, evaporator and condenser fouling factor 0 m².K/W
(1)	In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2)	in dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3)	Option 257 = Low noise level
(4)	Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate
$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ heat_{47/55°C}$ & $SCOP_{47/55°C}$	Applicable Ecodesign regulation: (EU) No 813/2013
$\eta s\ cool_{12/7°C}$ & $SEER_{12/7°C}$	**Applicable Ecodesign regulation: (EU) No 2016/2281**
$SEPR_{12/7°C}$	**Applicable Ecodesign regulation (EU) No 2016/2281**
$SEER_{23/18°C}$	Applicable Ecodesign regulation (EU) No 2016/2281

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

HEATING

PHYSICAL DATA, 30XW-VZE UNITS

30XW-V ZE / 30XWHVZE		451	501	601	651	851	1001	1101	1201	1301
Sound levels - standard unit										
Sound power level(1)	dB(A)	103	103	103	103	104	104	104	104	104
Sound pressure level at 1 m(2)	dB(A)	85	85	85	85	85	85	85	85	85
Sound levels - standard unit + option 257(3)										
Sound power level(1)	dB(A)	100	100	100	100	101	101	101	101	101
Sound pressure level at 1 m(2)	dB(A)	82	82	82	82	82	82	82	82	82
Dimensions - standard unit										
Length	mm	3059	3059	3290	3290	4730	4730	4730	4730	4730
Width	mm	1087	1087	1237	1237	1164	1164	1264	1264	1264
Height	mm	1743	1743	1948	1948	1997	1997	2051	2051	2051
Operating weight(4)	kg	3223	3261	4263	4267	7477	7553	7731	7932	7970
Compressors		Semi-hermetic 06T screw compressors, 60 r/s								
Circuit A	-	1	1	1	1	1	1	1	1	1
Circuit B	-	-	-	-	-	1	1	1	1	1
Oil - standard unit		HATCOL-4496								
Circuit A	l	20	20	25	25	20	20	25	25	25
Circuit B	l	-	-	-	-	20	20	20	25	25
Refrigerant - standard unit		R1234ze (E)								
Circuit A	kg	130	130	180	175	120	120	115	115	110
	teq CO_2	0,9	0,9	1,3	1,2	0,8	0,8	0,8	0,8	0,8
Circuit B	kg	-	-	-	-	120	120	120	115	110
	teq CO_2	-	-	-	-	0,8	0,8	0,8	0,8	0,8
Capacity control		Touch Pilot, inverter-driven compressor, electronic expansion valve (EXV)								
Minimum capcity	%	20	20	20	20	10	10	10	10	10
Evaporator		Multi-pipe flooded type								
Water volume	l	106	106	154	154	297	297	297	297	297
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type								
Water volume	l	112	112	165	165	340	340	340	340	340
Water connections (Victaulic)	in	6	6	8	8	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000

(1) In dB ref=10^{-12} W, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.
(2) in dB ref 20µPa, (A) weighting. Declared dualnumber noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Option 257 = Low noise level
(4) Weight shown is guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate

ELECTRICAL DATA

30XW-VZE /30XWHVZE		451	501	601	651	851	1001	1101	1201	1301
Power circuit										
Nominal power supply	V-ph-Hz	400-3-50								
Voltage range	V	360-440								
Control circuit		24 V via the built-in transformer								
Start-up current*	A	Negligible (lower than maximum current drawn)								
Maximum power factor**		0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93	0.91-0.93
Cosine phi		> 0.98	> 0.98	> 0.98	> 0.98	> 0.98	> 0.98	> 0.98	> 0.98	> 0.98
Harmonic distortion rate***	%	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45	35-45
Maximum power input******										
Circuit A	kW	125	157	189	208	125	157	189	189	208
Circuit B	kW	-	-	-	-	125	157	157	189	208
With option 81	kW	-	-	-	-	250	314	346	378	416
Eurovent current draw†										
Circuit A	A	129	148	180	197	129	149	180	180	197
Circuit B	A	-	-	-	-	129	149	149	180	197
With option 81	A	-	-	-	-	258	298	329	360	394
Maximum current draw (Un)******										
Circuit A	A	195	245	295	325	195	245	295	295	325
Circuit B	A	-	-	-	-	195	245	245	295	325
With option 81	A	-	-	-	-	390	490	540	590	650
Maximum current draw (Un -10%)***										
Circuit A	A	206	260	313	345	206	260	313	313	345
Circuit B	A	-	-	-	-	206	260	260	313	345
With option 81	A	-	-	-	-	412	520	573	626	690
Maximum power input with option 150B******										
Circuit A	kW	106	134	161	177	106	134	161	161	177
Circuit B	kW	-	-	-	-	106	134	134	161	177
With option 81	kW	-	-	-	-	212	268	295	322	354
Maximum current draw (Un) with option 150B******										
Circuit A	A	169	213	257	283	169	213	257	257	283
Circuit B	A	-	-	-	-	169	213	213	257	283
With option 81	A	-	-	-	-	338	426	470	514	566
Dissipated power***	W	3000	4200	4700	5300	6000	8400	8900	9400	10600

* Instantaneous start-up current.

** May vary, based on the short-circuit current/max. current draw ratio of the system transformer. Values obtained at operation with maximum unit power input.

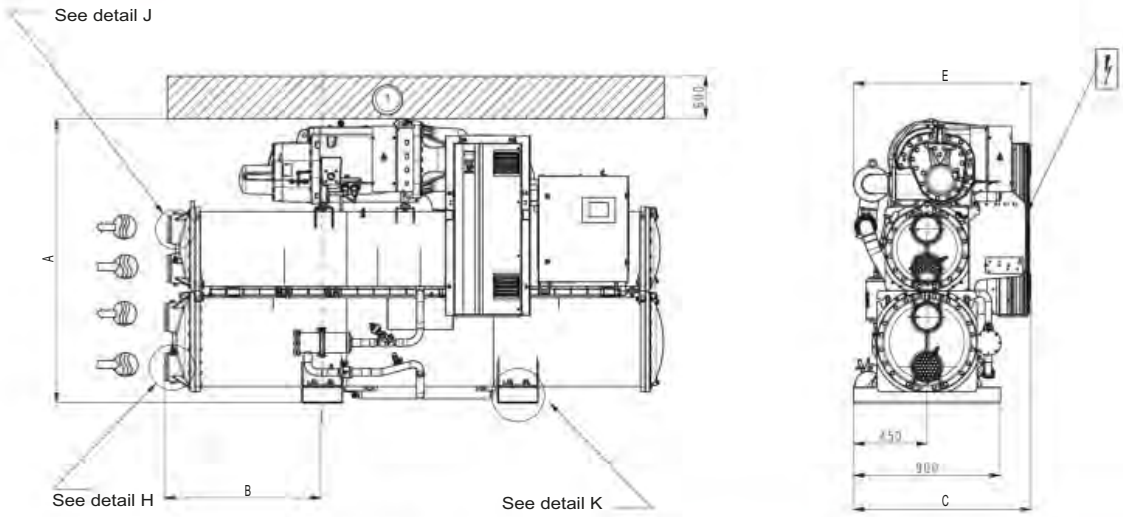
*** Values obtained at operation with maximum unit power input.

**** Values obtained at operation with maximum unit power input. Values given on the unit name plate.

† Eurovent unit operating conditions: evaporator entering/leaving water temperature = 12°C/7°C, condenser entering/leaving water temperature = 30°C/35°C. Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

DIMENSIONS/CLEARANCES

30XW-VZE/30XWHVZE 451-651



Dimensions in mm

	A	B	C	D	E	F	G	H
30XW-VZE/30XWHVZE								
451	1743	968	1087	3059	1086	168.3	168.3	2800
501	1743	968	1087	3059	1086	168.3	168.3	2800
601	1948	1083	1137	3290	1237	219.1	219.1	3100
651	1 4	1083	11	3290	12	219.1	219.1	3100

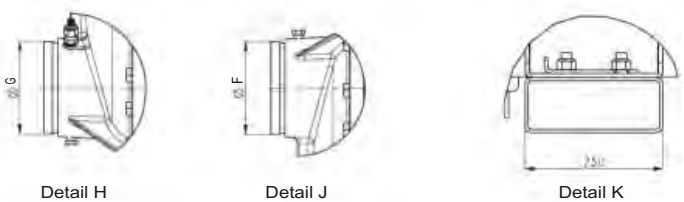
Legend

All dimensions are given in mm

1. Services clearances required
2. Space required to remove
- Inlet water
- Outlet water
- Electrical supply entry

NOTES:

- ***Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.***
- ***For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.***

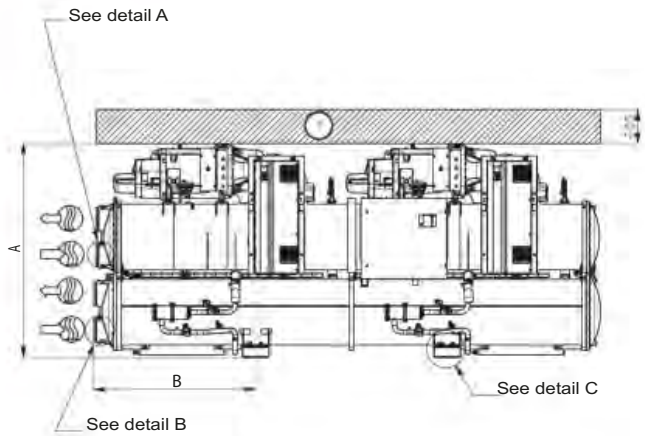


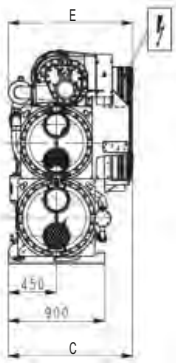
Detail H Detail J Detail K

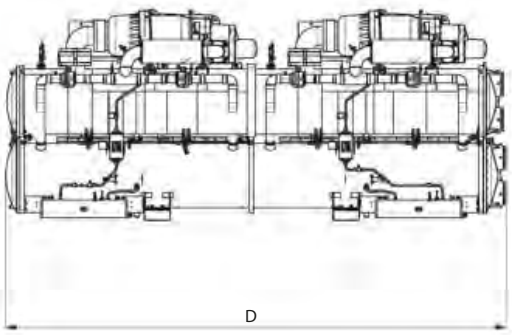
HEATING

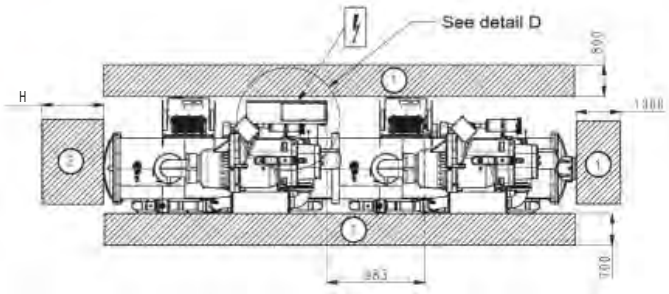
DIMENSIONS/CLEARANCES

30XW-VZE/30XWHVZE 851-1301









Dimensions in mm								
	A	B	C	D	E	F	G	H
30XW-VZE/30XWHVZE								
851	1998	1514	1164	4730	1162	219.1	219.1	4500
1001	1998	1514	1164	4730	1162	219.1	219.1	4500
1101	2051	1514	1164	4730	1264	219.1	219.1	4500
1201	2051	1514	11 4	4730	1264	219.1	219.1	4500
1301	2051	1514	1164	4730	1264	219.1	219.1	4500

Legend

All dimensions are given in mm

1. Services clearances required
2. Space required to remove
- Inlet water
- Outlet water
- Electrical supply entry

NOTES:

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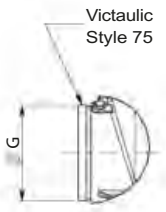
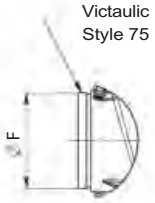
- ***For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.***

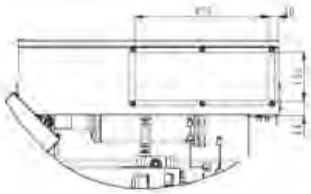


Detail A



Detail B

Detail C



Detail D

HIGH TEMPERATURE WATER-SOURCE HEAT PUMP

Renewable heat solution able to produce hot water up to 85°C

Multiple applications: district heating, space heating, process heating

Mutiple renewable energy sources: waste heat from data centers, from industry, grey waters, ground source water

61XWHLZE
61XWH-ZE
61XWHHZE

AQUAFORCE PUREtec

Nominal heating capacity 200 - 2500 kW

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps are the premium solution for industrial and commercial heating applications where end users, consultants and building owners require optimal performances, very hot water temperature, environmental solution and maximum reliability.

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness.

They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- R-1234ze refrigerant
- Touch Pilot control system
- Flooded heat exchangers that are mechanically cleanable

The 61XWHZE Aquaforce range is available into three versions:

- 61XWHLZE for low heat source temperatures
- 61XWH-ZE for medium heat sour temperatures
- 61XWHHZE for high heat source temperatures

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

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www.eurovent-certification.com

INTRODUCTION

Forecasts indicate that 75% of the European citizens will live in urban areas in 2020 and that this share will increase to 84% by 2050. People in cities use three times as much energy as people who live in the country. This has tremendous implications for the environment today and in the future if we do nothing.

Recent European surveys have demonstrated that there is enough waste heat produced in the European Union to heat the entire building stock. Think about Industrial waste heat, think about waste heat from grey waters, think about waste heat from process cooling, data centers… All this waste energy too frequently released into the air or into water bodies.

More and more, developers, consultants, cities, politics will need to imagine intelligent, sustainable cities with smart heating and cooling solutions. More and more industrial end users will need to imagine new solutions to value waste heat from industrial processes.

Heat pumps have been already used to such purpose for many years.

More recently CARRIER has supported customers across various markets on big projects like data centers, hospitals,

schools, district heating with large heat-pumps using HFC 134a.

Higher with PUREtec

Now the combination of Carrier technology and HFO refrigerant enables to offer high temperature PUREtec heat pumps capable of delivering hot water up to 85°C!

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps can recover, updgrade and value the waste heat for reuse in applications like local or district heating. Selecting the 61XWH-ZE, you can now have an alternative and complement as traditionnal boiler in applications such as district heating or industrial processes.

While the boilers are heating only, 61XWHZE heat-pumps can provide heating, cooling and transfert energy from waste energy with much higher energy efficiency performance ratios than boilers.

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps are the premium solution for industrial and commercial heating applications where installers, consultants and building owners require optimal performances hot water temperature, environmental solution, maximum reliability and safety.

The AQUAFORCE PUREtec 61XWHZE water-source heat pumps are designed to meet current and future requirements in terms of energy efficiency, flexibility of use and compactness. They use the most reliable technologies available today:

- Twin-rotor screw compressors with a variable capacity valve
- R-1234ze refrigerant
- Touch Pilot control system
- Flooded heat exchangers that are mechanically cleanable

Customer Benefits

Renewable Heat Solution

- The perfect solution for district heating systems
  - The 61XWHZE contribute both towards the EU 2020 ambition of 27% energy mix coming from renewable sources and the expansion of district heating from the present level of around 12% to 50% in 2050 in EU.
  - Multiple 61XWHZE high temperature water-source heat pumps can be combined to reach the best efficiency and higher capacities.
  - The district heating networks using 61XWHZE high temperature water-source heat pumps are being illegible for financial incentives in many countries.
- The perfect solution for smart cities
  - The 61XWHZE high temperature water-source heat pumps can recover energy from industrial process wasted heat, IT cooling systems, grey waters, to produce very hot water up to 85°C to supply residential buildings, commercial buidlings, hotels, hospitals, public offices, schools, industries located in the district.
- The perfect solution for process heating and facilities space heating
  - The 61XWHZE high temperature water-source heat pumps can be used in the industrial sector to recover, upgrade and value any water stream up to 55°C as a source to higher temperature levels of 85°C which make it attractive for several usages. Some examples are the heat removed from electrical motors, industrial machines, paper industry, steel industry, non-metallic industry (glass, ciment, tile, brick, food, beverage), chemical industries or also facilities space heating.

Low energy consumption

- Renewable energy source to comply with EU 2020 targets (27% of renewable energy)
- No need for a gas network
- The heat pump technology is more efficient and sustainable than any fossil fuel combustion system.
- 61XWHZE achieves great Coefficient Of Performance (COP of 6 or more), with very low carbon impact when compared with traditional boilers.
- The high energy efficiency is reached through:
- Twin-rotor screw carrier compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the heating capacity to the load.
- Flooded multi-pipe heat exchangers for increased heat exchange efficiency.
- Electronic expansion device permitting improved utilisation of the evaporator heat exchange surface.
- Economizer system with electronic expansion device for increased heating/cooling capacity.

Low sound level

- Standard unit features include:
  - Silencers on the compressors discharge line.
  - Silencers on the economiser return line.
  - Acoustic insulation on the components that are most subjected to radiated noise.
  - Specific attenuation possible upon request.

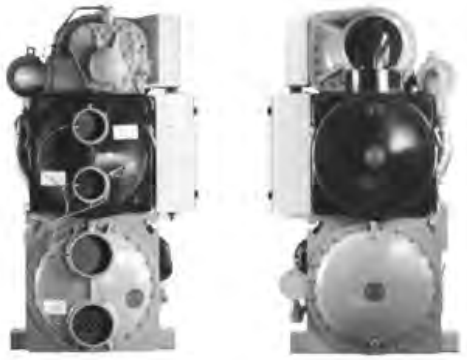
INTRODUCTION

Easy and fast installation

- The 61XWHZE units just need an electrical connection and a water source.

■ Compact design
- The 61XWHZE water-source heat pumps are designed to offer the most compact dimensions on the market.
- With a width of less than 1.4 m up to 2500 kW the units can pass through standard door openings and only require minimum floor space in the plant room.

Compact, accessible unit - side view



■ Simplified electrical connections
- Main disconnect switch with high trip capacity
- Transformer to supply the integrated control circuit (400/24 V)

■ Simplified hydraulic connections
- Victaulic connections on the evaporator and condenser
- Practical reference marks for entering and leaving water connections
- Possibility to reverse the heat exchanger water inlet and outlet at the factory
- Possibilty to modify the number of heat exchanger passes

■ Fast commissioning
- Systematic factory operation test before shipment
- Quick-test function for step-by-step verification of the instruments, expansion devices and compressors.

Environmental care

PUREtec

■ R-1234ze long-term refrigerant solution
- HFO refrigerant with nearly zero global warming potential (GWP < 1) and zero ozone depletion potential (ODP = 0).
- Not impacted by the HFC phase-down plan in Europe (79% HFC reduction in EU member states at 2030 horizon)
- Compliant with refrigerant regulation in Switzerland that bans the use of HFC refrigerant in large capacity air-conditioning equipment.

■ Leak-tight refrigerant circuit
- Reduction of leaks as no capillary tubes and flare connections are used
- Verification of pressure transducers and temperature sensors without transferring refrigerant charge
- Discharge line shut-off valve and liquid line service valve for simplified maintenance.

High reliability and easy servicing

■ The 61XWHZE water-source heat pumps offer increased global performance as well as Carrier's acclaimed product quality and reliability.

■ Major components are selected and tested with R-1234ze refrigerant to minimize failures possibility, as well as many design choices have been taken in this perspective.

■ Screw compressors
- Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
- All compressor components are easily accessible on site minimising down-time.

■ Refrigerant circuit
- One or two independent refrigerant circuits the second one automatically takes over, if the first one develops a fault, maintaining partial cooling under all circumstances.

■ Evaporator
- Electronic paddle-free flow switch. Auto-setting according to cooler size and fluid type.

■ Auto-adaptive control
- Control algorithm prevents excessive compressor cycling (Carrier patent)
- Automatic compressor unloading in case of abnormally high condensing pressure.

■ Exceptional endurance tests
- Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
- Transport simulation test in the laboratory on a vibrating table and then on an endurance circuit (based on a military standard).

Safe Design Carrier

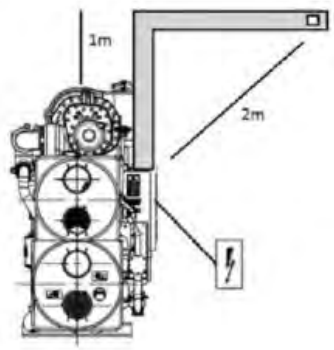
■ Specific compressor gaskets compatible with HFO-1234ze, tested and validated.

■ New relief valves designed for operation with HFO-1234ze and high temperature

■ Specific electrical box with increased tightness and integrated blower that maintains positive air pressure to avoid any risk of ignition.

■ New control algorithms

■ Specific documentation that contains all the installation, operation, maintenance and safety Instructions.



HEATING

INTRODUCTION

Technical insights

Touch Pilot Control

Touch Pilot control, 5” user interface

- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 5'' interface (7" optional)
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with coincisive and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the controller box with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
  - Internal time schedule clock controls heat pump on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- The 61XWHZE also communicates with other building management systems via optional communication gateways.
- The 61XWHZE is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.
- The following commands/visualisations are possible from remote connection:
  - Condenser pumps control: a digital input allows verification of condenser water flow (the flow switch must be supplied by the installer)
  - Start/stop of the machine
  - Dual set-point management: through a dedicated contact is possible to activate a second set-point (example: unoccupied mode)
  - Demand limit setting: to limit the maximum heat pump capacity to a predefined value
  - Operation visualization: indication if the unit is operating or if it's in stand-by no heating load
  - alarm visualization.

Remote management (EMM option)

- The Energy Management Module offers extended remote control possibilities:
  - Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
  - Set-point reset: ensures reset of the heating set-point based on a 4-20 mA signal
  - Demand limit: permits limitation of the maximum heat pump power or current based on a 4-20 mA signal
  - Demand limit 1 and 2: closing of these contacts limits the maximum heat pump power or current to two predefined values
  - User safety: this contact can be used for any customer safety loop; opening of the contact generates a specific alarm
  - Time schedule override: closing of this contact cancels the time schedule effects
  - Out of service: this signal indicates that the heat pump is completely out of service
  - Heat pump capacity: this analogue output (0-10 V) gives an immediate indication of the heat pump capacity
  - Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault.

06T screw compressor

The Carrier 06T screw compressor designed for operation with HFO-1234ze refrigerant benefits from Carrier’s long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor heating capacity and ensures exceptionally high stability of the hot water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high water temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The silencer in the discharge line considerably reduces discharge gas pulsations for much quieter operation.

OPTIONS

Options	No.	Description	Advantages	Use for 61XWH range
Star / delta start	25A	Star / Delta start on each compressor	Reduced start-up current	3-5, 10
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit to be field-installed allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	3-17
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	10-17
No disconnect switch	82A	Unit without disconnect switch, but with short-circuit protection device	Permits an external electrical disconnect system for the unit (field-supplied), while ensuring unit short circuit protection	3-17
Evap. single pump power/control circuit	84	Unit equipped with an electrical power and control circuit for one pump evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	3-10 Not available on 61XWHHZE
Evap. dual pumps power/control circuit	84D	Unit equipped with an electrical power and control circuit for two pumps evaporator side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	3-10 Not available on 61XWHHZE
Cond. single pump power/control circuit	84R	Unit equipped with an electrical power and control circuit for one pump condenser side	Quick and easy installation: the control of fixed speed pumps is embedded in the unit control	3-10 Not available on 61XWHHZE
Evaporator with one pass more	100A	Evaporator with one pass more on the water side	Optimise chiller operation when the chilled water circuit is designed with low waterflows (high delta T evaporator inlet/oulet)	3-17
Evaporator with one pass less	100C	Evaporator with one pass on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	3-17
Condenser with one pass more	102A	Condenser with three passes on the water side. Condenser inlet and outlet on opposite sides.	Adapted to sites where larger temperature differences and smaller water flow rates are required	3-17
Condenser with one pass less	102C	Condenser with one pass on the water side. Condenser inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	3-17
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high buildings)	3-17
21 bar condenser	104A	Reinforced condenser for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column condenser side (typically high buildings)	3-17
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	3-17
Reversed condenser water connections	107A	Condenser with reversed water inlet/outlet	Easy installation on sites with specific requirements	3-17
J-Bus gateway	148B	Two-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	3-17
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	3-17
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	3-17
Control for low cond. temperature	152	Output signal (0-10 V) to control the condenser water inlet valve	Simple installation: for applications with cold water at condenser inlet (ex. ground-source, groundwater-source, superficial water-source applications) the signal permits to control a 2 or 3-way valve to maintain condenser water temperature (and so condensing pressure) at acceptable values	3-17
Energy Management Module	156	EMM Control board with additional inputs/outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	3-17
7" user interface	158A	Control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	3-17
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	3-17
Low noise level	257	Evaporator sound insulation	3 dB(A) quiter than standard unit	5-17

OPTIONS

Options	No.	Description	Advantages	Use for 61XWH range
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	3-17
Welded condenser water connection kit	267	Victaulic piping connections with welded joints	Easy installation	3-17
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	3-17
Flanged condenser water connection kit	269	Victaulic piping connections with flanged joints	Easy installation	3-17
Carrier Connect link (only European distributor company)	298	3G router board **NOTE 1:** require option 149 **NOTE 2:** when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 **NOTE 3:** if the Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	3-17

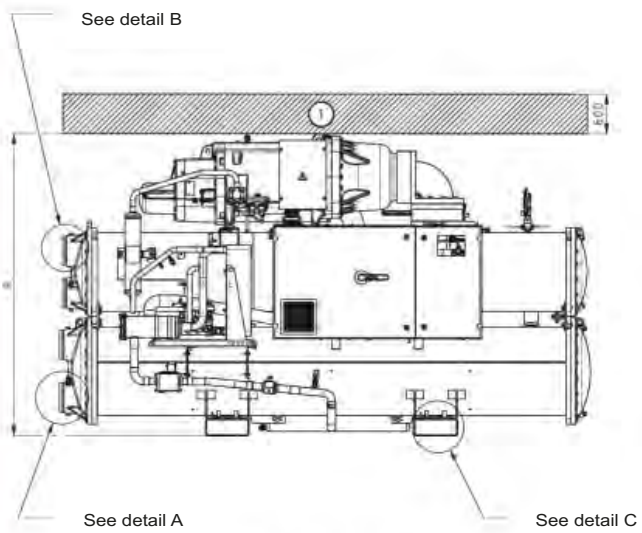
PHYSICAL DATA

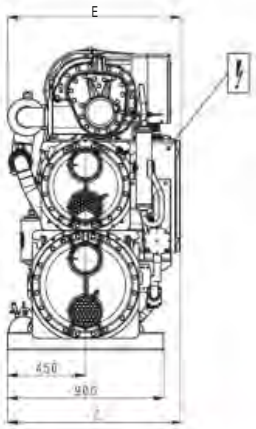
61XWHLZE/61XWH-ZE/61XWHHZE	Model	3	5	7	10	14	15	17
Sound levels - standard unit								
Sound power level(1)	dB(A)	98	102	102	105	105	105	105
Sound pressure level at 1 m(2)	dB(A)	81	85	84	86	86	86	86
Sound levels - option 257(3)								
Sound power level(1)	dB(A)	-	99	99	102	102	102	102
Sound pressure level at 1 m(2)	dB(A)	-	82	81	83	83	83	83
Dimensions - 61XWHLZE/61XWH-ZE								
Length	mm	2724	3059	3290	4730	4730	4790	4790
Width	mm	981	1041	1079	1125	1148	1399	1399
Height	mm	1594	1745	1968	2002	2070	2305	2305
Dimensions - 61XWHHZE								
Length	mm	2724	3059	3290	4730	-	4790	-
Width	mm	981	1041	1079	1125	-	1417	-
Height	mm	1594	1745	1968	2002	-	2305	-
Operating weight(4)	kg	2054	2942	4147	7265	8031	9519	9519
Compressors		Semi-hermetic 06T screw compressors, 50 r/s						
Circuit A	-	1	1	1	1	1	1	1
Circuit B	-	-	-	-	1	1	1	1
Refrigerant - 61XWHLZE (5)		R1234ze						
Circuit A	kg	107	168	237	154	176	215	215
	teq CO_2	0.7	1.2	1.7	1.1	1.2	1.5	1.5
Circuit B	kg	-	-	-	154	187	215	215
	teq CO_2	-	-	-	1.1	1.3	1.5	1.5
Refrigerant - 61XWH-ZE (5)								
Circuit A	kg	97	153	215	140	160	195	195
	teq CO_2	0.7	1.1	1.5	1.0	1.1	1.4	1.4
Circuit B	kg	-	-	-	140	170	195	195
	teq CO_2	-	-	-	1.0	1.2	1.4	1.4
Refrigerant - 61XWHHZE (5)		R1234ze						
Circuit A	kg	88	138	194	126	-	195	-
	teq CO_2	0,6	1	1,4	0,9	-	1,4	-
Circuit B	kg	-	-	-	126	-	195	-
	teq CO_2	-	-	-	0,9	-	1,4	-
Oil - standard unit		HATCOL4496						
Circuit A	l	20	20	25	20	25	25	25
Circuit B	l	-	-	-	20	25	25	25
Capacity control		Touch Pilot, electronic expansion valves (EXV)						
Unit minimum stage	%	50	50	50	25	25	25	25
Evaporator		Multi-pipe flooded type						
Water volume	l	61	101	154	293	321	354	354
Water connections (Victaulic)	in	5	6	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000
Condenser		Multi-pipe flooded type						
Water volume	l	55	103	148	316	340	426	426
Water connections (Victaulic)	in	5	6	8	8	8	8	8
Drain and vent connections (NPT)	in	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Max. water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000

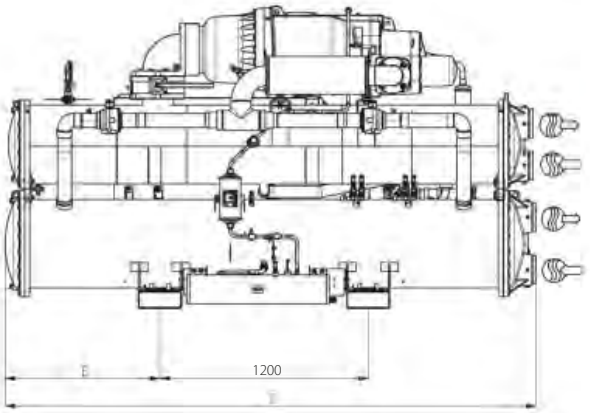
(1) In dB ref=10-12 W, (A) weighting. Dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1.
(2) In dB ref 20µPa, (A) weighting. Dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). For information, calculated from the sound power level Lw(A).
(3) Option 257 = Low noise level
(4) Weight shown is guideline only. Please refer to the unit name plate
(5) Refrigerant charge shown is guideline only. Charge may differ according to options. Please refer to the unit name plate

DIMENSIONS/CLEARANCES

61XWHLZE/61XWH-ZE/61XWHHZE 03-05-07







61XWHLZE/61XWH-ZE/61XWHHZE								
	A	B	C	D	E	F	G	H
Model	Dimensions in mm							
	1 94	723	1	2724	982	141,3	141,3	600
5	1745	891	1041	3059	1039	168,3	168,3	2900
7	1968	1007	1079	3290	1170	219,1	219,1	3100

Legend

All dimensions are given in mm

1 → Services clearances required

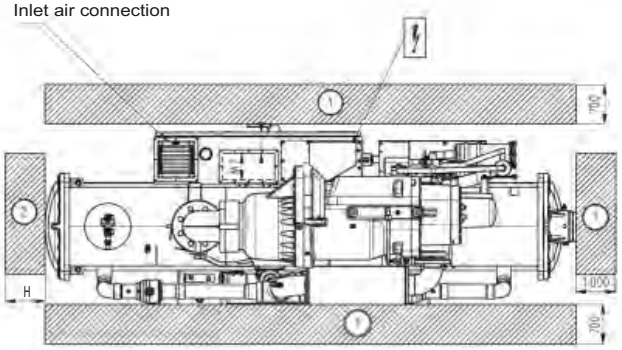
2 → Space required to remove cooler tubes

Inlet water

Outlet water

Electrical supply entry

Inlet air connection



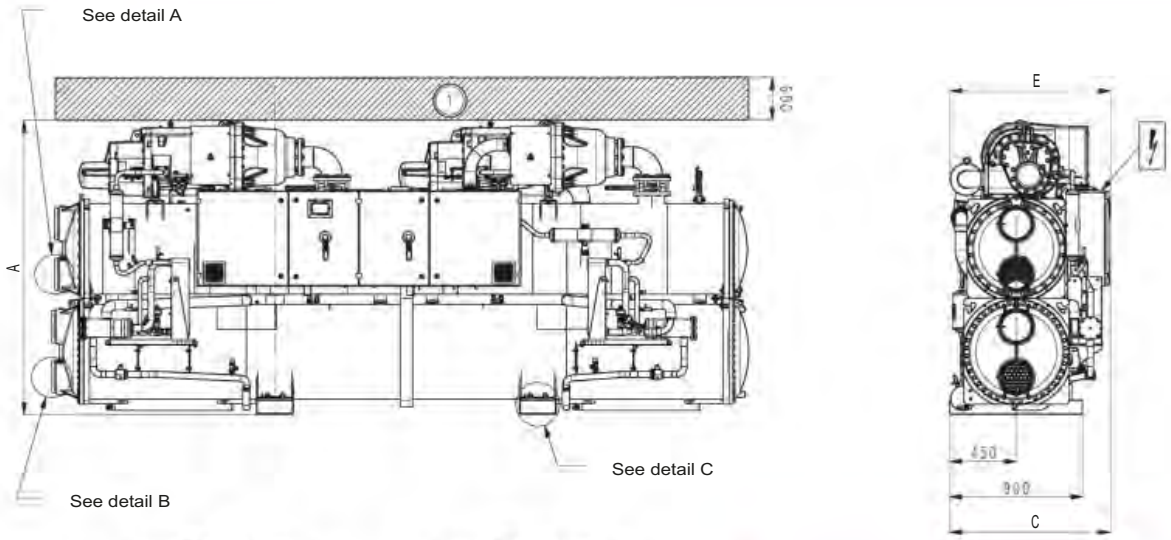
Detail A Detail B Detail C

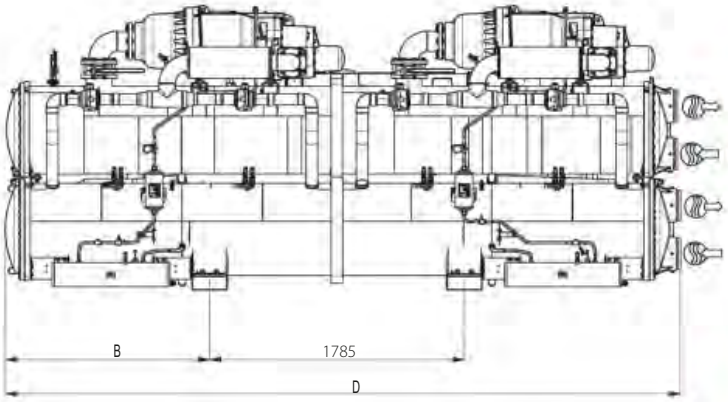
NOTES:

- **Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings supplied with the unit or available on request.**
- **For the positioning of the fixing points, weight distribution and center of gravity coordinates please refer to the dimensional drawings.**

DIMENSIONS/CLEARANCES

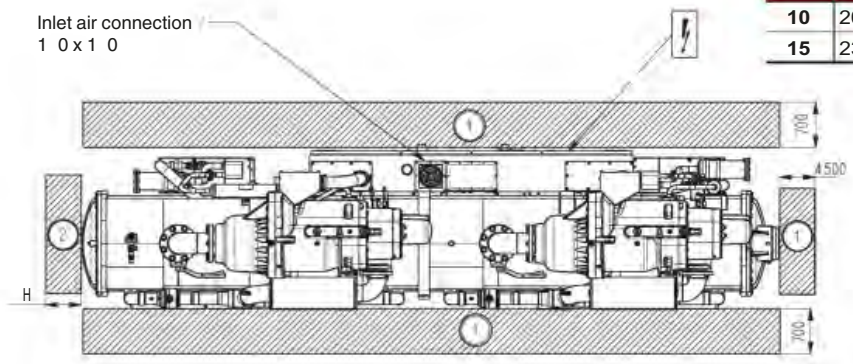
61XWHLZE/61XWH-ZE 10-14-15-17; 61XWHHZE 10-15





61XWHLZE/61XWH-ZE								
	A	B	C	D	E	F	G	H
Model	Dimensions in mm							
10	2002	1432	1124	4730	1124	219,1	219,1	4500
14	2070	1432	1148	4730	1237	219,1	219,1	4500
15	2305	1458	1399	4790	1264	219,1	219,1	4500
17	2305	1458	1399	4790	1264	219,1	219,1	4 00

61XWHHZE								
	A	B	C	D	E	F	G	H
Model	Dimensions in mm							
10	2002	1432	1124	4730	1124	219,1	219,1	4500
15	2305	1458	1417	4790	1282	219,1	219,1	4500



Legend

All dimensions are given in mm

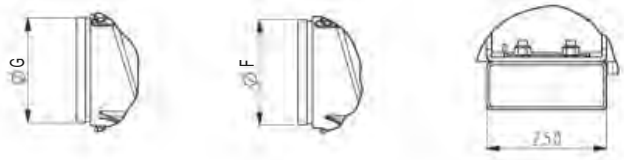
1 → Services clearances required

2 → Space required to remove cooler tubes

Inlet water

Outlet water

Electrical supply entry



Detail A Detail B Detail C

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Air treatment

611

Type			Range	Cooling capacity, kW	Heating capacity, kW	Air flow m^3/h	Page
Hybrid Terminal			36XB	0.27-2	0.25-8	-	613
		NEW	36XH	0.4-1.8	-	-	617
Air heaters			42AM	-	-	-	621
Chilled-water terminal units							
Cassette	Cabinet	Ducted					
x			42GW	1.5-8.5	1.9-10.3	-	639
x			42KY	1-6	2-10	-	653
	x		42N	0.6-6	0.9-9.3	-	665
		x	42NL/NH	1.2-12.7	1.25-17.5	-	679
		x	42BJ	0.5-6	0.5-12.2	-	727
		x	42GM	-	-	-	739
		x	42GR	-	-	-	743
		NEW	42WM	1.2-3.8	1.3-4.3	-	753
Air systems and terminal units							
Linear air diffuser: Moduboot			35BD/SR	-	-	100-648	763
System-power linear VAV air diffusors			37AG	-	-	169-2242	767
Moduline			37AH	-	-	169-849	767
			37AS	-	-	68-208	-4
Air handling units							
			39CQ	-	-	1000-6000	771
			39HX	-	-	300-18000	777
			39CP	-	-	1000-30000	785
			39HQ	-	-	5000-130000	797
			39CZ	-	-	1000-70000	801
Close control units							
			50CJ	05-55	4.5-41	-	815
			50CO	40-130	36-73	-	825
Rooftop units							
			50EN/EH	92-283	98-294	18000-460000	831
		NEW	50FF/FC	22-90	21-89	5100-16000	851
Packaged units							
		NEW	38ZS/ZF	20-138	23-148	--	873
		NEW	40ZS/ZF	20-135	20-145	4000-24000	881
		NEW	50NI	19-52	57-118	4000-21000	887

HYBRID TERMINAL

36XB

Cooling capacity 0.27-2 kW
Heating capacity 0.25-8 kW

The 36XB Hybrid Terminal combines the advantages of both chilled beams and fan coils: energy efficiency, high levels of comfort, extremely low noise and high indoor air quality.

The low height profile (<200mm) of the unit facilitates installation in low height ceilings and allows increased room heights for refurbishment projects.

Unit aesthetics can be tailored to suit site specific ceiling layouts, colour schemes and return air grill design.

Unlike conventional chilled beams, the Carrier 36XB Hybrid terminal is fitted with a coil condensate drain pan as standard. Even if the cooling coil is supplied with chilled water at 6°C, there is no danger of condensate falling into the occupied space.

PHYSICAL DATA

Cooling capacities

Room Temperature: Dry bulb = 27°C and humidity = 47% - Fresh air temperature 14°C

Air flow m3/h	LEC Fan speed V	Chilled water temperature 7-12°C				Chilled water temperature 14-17°C				Fan consumption W	Air pressure drop Pa	Noise Pressure level dB(A)*	Noise level NR*
		Total cooling capacity W	Sensible cooling capacity W	Coil Water flow l/h	Water pressure drop KPa	Total cooling capacity W	Sensible cooling capacity W	Coil Water flow l/h	Water pressure drop KPa				
30	0	269	249	43	1	256	252	36	1	0	9	< 20	< 20
	2	537	416	68	2	330	325	58	1	3.7	10	< 20	< 20
	5	891	672	130	4	508	503	108	3	5.7	11	32	27
	8	1297	977	202	10	719	714	169	7	10.6	14	44	39
60	0	753	609	83	2	504	499	68	1	0	28	< 20	< 20
	2	830	664	97	2	542	537	79	2	3.7	29	< 20	< 20
	5	1145	895	151	6	703	697	126	4	5.7	30	32	27
	8	1465	1136	205	10	870	865	173	7	10.6	32	44	39
90	0	1107	902	122	4	748	743	101	2	0	57	< 20	< 20
	3	1128	917	126	4	759	754	104	3	3.7	57	< 20	< 20
	5	1414	1129	173	7	906	901	144	5	5.7	59	32	27
	8	1698	1346	223	12	1055	1051	187	9	10.6	61	44	39
120	0	1443	1184	158	6	985	989	130	4	0	98	35	30
	2	1508	1233	169	7	1018	1013	140	5	3.7	98	35	30
	5	1730	1401	205	10	1135	1130	173	7	5.7	99	35	30
	8	1987	1600	252	15	1271	1268	212	11	10.6	100	45	40
150	0	1767	1460	191	9	1217	1212	158	6	0	149	41	36
	2	1797	1484	194	9	1233	1228	162	7	3.7	149	41	36
	5	1980	1624	227	12	1329	1325	191	9	5.7	150	42	37
	8	2194	1791	263	71	1444	1441	223	12	10.6	151	46	41

Preliminary Data :

* Sound Level guidance with acoustic atenuation -9 dB(A)

Heating capacities

Room Temperature: 20°C - Fresh air temperature 20°C

Air flow m3/h	LEC Fan speed V	Hot water temperature 70-50°C			Hot water temperature 45-40°C			Fan consumption W	Air pressure drop Pa	Noise Pressure level dB(A)*	Noise level NR*
		Total heating capacity W	Coil Water flow l/h	Water pressure drop KPa	Total heating capacity W	Coil Water flow l/h	Water pressure drop KPa				
30	0	444	18	1	241	43	1	0	9	< 20	< 20
	2	718	32	1	390	68	1	3.7	10	< 20	< 20
	5	1365	61	1	749	130	4	5.7	11	32	27
	8	2127	94	2	1179	205	9	10.6	14	44	39
60	0	873	40	1	475	83	2	0	28	< 20	< 20
	2	1009	43	1	551	97	1	3.7	29	< 20	< 20
	5	1593	68	1	877	151	5	5.7	30	32	27
	8	2195	97	2	1219	212	9	10.6	32	44	39
90	0	1275	58	1	699	122	3	0	57	< 20	< 20
	3	1316	61	1	722	126	4	3.7	57	< 20	< 20
	5	1849	83	2	1021	176	7	5.7	59	32	27
	8	2383	104	2	1327	230	11	10.6	61	44	39
120	0	1654	72	1	912	158	6	0	98	35	30
	2	1777	79	1	981	169	6	3.7	98	35	30
	5	2195	97	2	1219	212	9	5.7	99	35	30
	8	2684	119	3	1500	259	13	10.6	100	45	40
150	0	2013	90	2	1115	194	8	0	149	41	36
	2	2070	94	2	1148	198	8	3.7	149	41	36
	5	2416	104	3	1346	234	11	5.7	150	42	37
	8	2829	126	3	1583	274	15	10.6	151	46	41

Preliminary Data :

* Sound Level guidance with acoustic atenuation -9 dB(A)

OPTIONS

Communicating controller

- BMS compatible controller
- For 2 pipe, 2 pipe + electric heater and 4 pipe applications
- Aquasmart Evolution System compatible
- Variable fan speed control, demand based ventilation (CO2 monitoring) and coil condensation control.
- Integrated window blind and lighting control.
- Motorised blinds & lighting control

Aquasmart System Manager

FEATURES AND ADVANTAGES

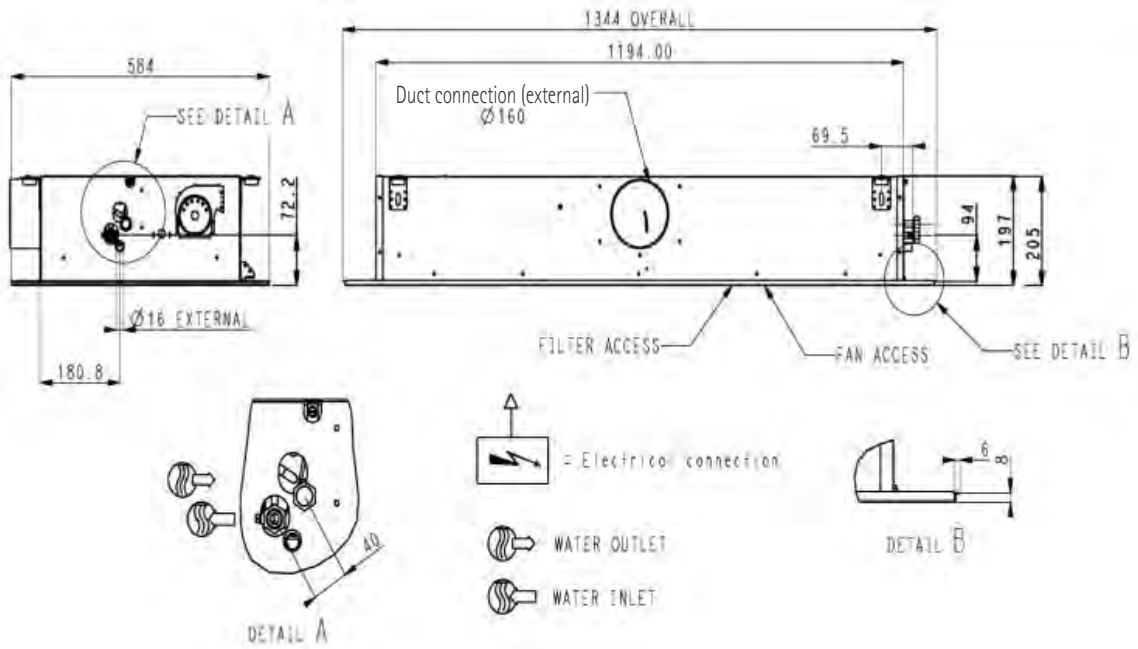
Features

- The 36XB Hybrid Terminal combines the advantages of both chilled beams and fan coils: energy efficiency, high levels of comfort, extremely low noise and high indoor air quality.
- The low height profile (<200mm) of the unit facilitates installation in low height ceilings and allows increased room heights for refurbishment projects.
- Unit aesthetics can be tailored to suit site specific ceiling layouts, colour schemes and return air grill design.
- Unlike conventional chilled beams, the Carrier 36XB Hybrid terminal is fitted with a coil condensate drain pan as standard. Even if the cooling coil is supplied with chilled water at 6°C, there is no danger of condensate falling into the occupied space.
- A unit mounted changeover valve allows the coil to be connected to a 4 pipe water system so providing either cooling or heating, as required.
- If required, the Carrier 36XB Hybrid Terminal can be fitted with a room air return filter G3 to F5. This filter is accessible for cleaning / replacement without disturbing the unit / ceiling.

Principals of Operation

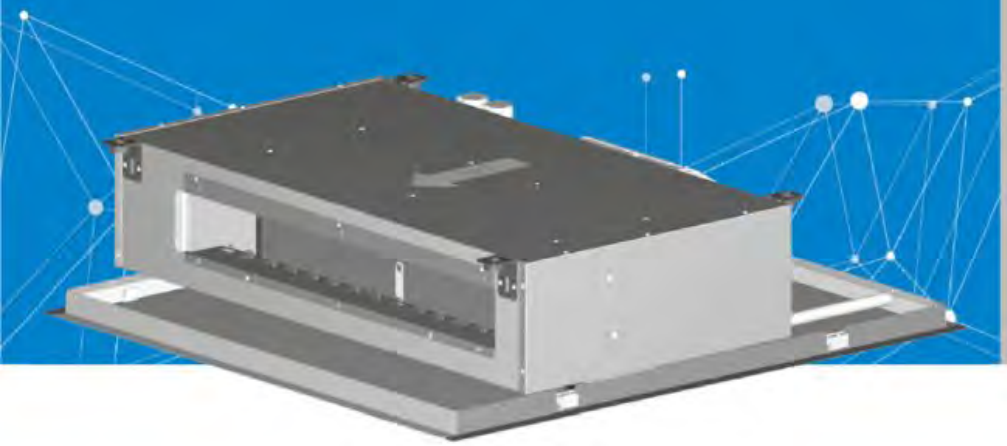
- Primary ventilation air is supplied to each unit inducing secondary (room) air flow over the cooling / heating coil without the need to run the unit fan.
- During periods of peak demand, the unit fan may be energised to increase secondary air flow hence and boosting the unit cooling / heating output.
- Unique Carrier supply air diffuser design ensures excellent air distribution, no 'dumping' and minimal room temperature gradients in both cooling and heating.
- The primary ventilation air volume can be controlled based on room CO2 levels to maximise comfort and minimise system energy consumption
- The CO2 sensor (optional) mounted in the secondary (room) air flow can modulate the supply of primary ventilation air to the unit from 2.8 to 33 l/s, depending on room occupancy.
- Using the unit fan only when there is a peak demand in the occupied space offers energy savings for up to 80% of the annual building occupancy.
- Based on a typical office profile & loads this economy can result in an average annual unit specific fan power (A-SFP) <0.05 W/l/s
- Assured air quality; in addition to varying the quantity of hygienic air, the hybrid terminal 36XB may receive a filter on the return air available from the grid.
- Energy efficiency, easy installation, comfort, low noise and high indoor air quality.

DIMENSIONS/CLEARANCES



NEW

HYBRID TERMINAL



- Thermal and acoustical comfort
- Full system design flexibility
- Energy savings
- Improved indoor air quality
- Ease of control and integration

36XH

Cooling capacity 0.4-1.8 kW

Specially designed for the hotel market, the 36XH meets low energy building requirements whilst delivering highest guest room comfort standards.

The hybrid solution offers all the benefits of the traditional systems with none of the disadvantages. The hybrid generate energy efficiency improvements over standard fan coil solutions and offering whenever applicable, the same free cooling and increased ventilation air benefits of chilled beam solutions.

As with all hydraulic solutions the elimination of sudden and rapid air temperature swings, typically the 'bane' of refrigerant based systems, contributes to better room temperature control and avoids cold drafts.

PERFORMANCES IN COOLING MODE

Conditions:

Room temperature : 26°C/19.5°CWB - Water temperature: 7°C/12°C

Fresh air: air flow : 60 m^3/h - Temperature : 24°C

Air flow m3/h	Fan voltage V	Total cooling capacity W	Sensible cooling Capacity W	Fan consumption W	Pressure Sound level* dB(A)**
48	0	368	278	0	28
100	2	685	493	4	30
250	3.5	1351	972	11	34
400	6	1822	1338	29	45

Preliminary data

* Theorical acoustic attenuation 9dB

** Tolerance on value is +/-2dB(A)

FEATURES AND BENEFITS

Features

- Fully integrated concept including the base unit and integrated supply & return grille, drain pan / filter options (if required) and all necessary controls and valves
- Operation as a chilled beam, a fan coil unit OR in a mixed mode combining the benefits of both
- Integrated unit, grille & all control elements within design simplifies installation and saves time & money
- Ability to operate with low water temperatures if required and manage latent loads
- Capability to respond to rapid load changes
- Use of EC unit fan only when there is a peak demand in the occupied space offers energy savings for up to 80% of the annual building occupancy period
- Low noise performance
- Low height profile (<200mm) unit facilitates installation in low height ceiling voids allowing increased room heights for new and refurbishment projects
- Supply air diffuser ensures excellent air distribution with no 'dumping' in both cooling and heating modes over the full range of operating airflows
- Adaptable design to suit customer project aesthetics needs (specific ceiling layouts, colour schemes and return air grille design

Occupant comfort

The 36XH offers flexibility of operation to deliver the right amount of cooling or heating as needed minimising energy consumption and acoustic level whilst maximising comfort at the unit.

Occupant control

The three different control operating modes operate seamlessly to offer flexibility for hotels where the three modes could be customised to meet room occupant needs and address issues of noise particular at 'sleep periods' for example:

ECO: NIGHT TIME / SLEEP PERIOD

- Primary ventilation air is supplied to each unit inducing and mixing with secondary (room) to be diffused into the occupied space.
- The cooling/heating is supplied by the pre-treated ventilation air that unlike a fan coil system design can be increased to the same quantities as for a chilled beam system providing the possibility of improved IAQ air quality and when outdoor conditions allow maximising the potential of primary free cooling.
- A CO_2 sensor (optional) mounted in the secondary (room) air flow provides the controls the information required to modulate the supply of primary ventilation air depending on room occupancy. Hence primary ventilation air volume can be controlled based on room CO_2 levels to maximise comfort and minimise system energy consumption whenever possible.

NORMAL: NIGHT TIME / SLEEP PERIOD / DAY USE (early mornings)

- This mode builds upon the comfort being supplied already in the ECO mode by energising the unit cooling / heating valve to deliver increased cooling / heating via the integrated coil.
- Unit cooling / heating output is thus boosted according to operating conditions chosen.

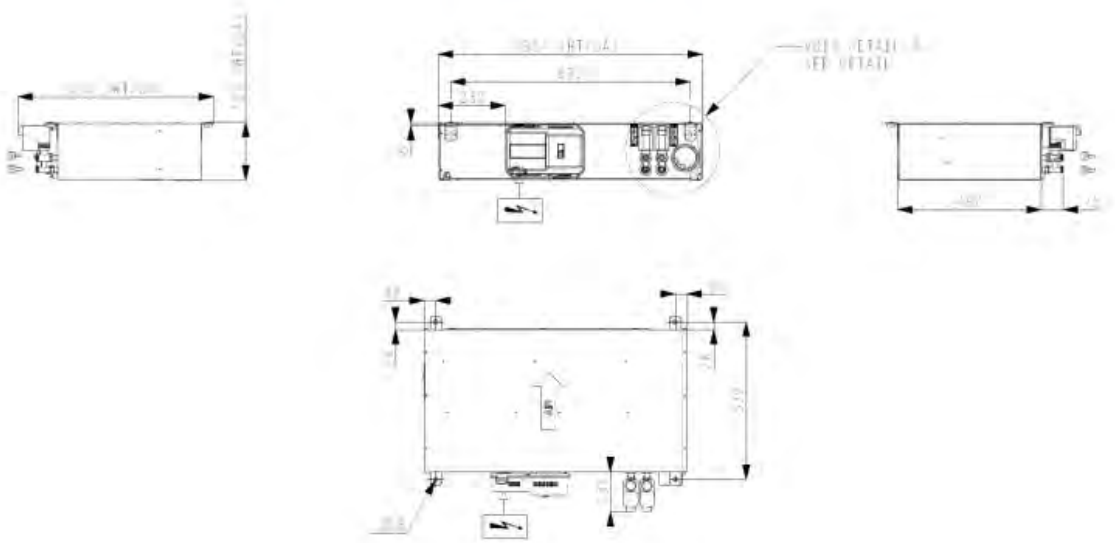
BOOST: DAY USE (afternoon/early evenings with solar gains etc.)

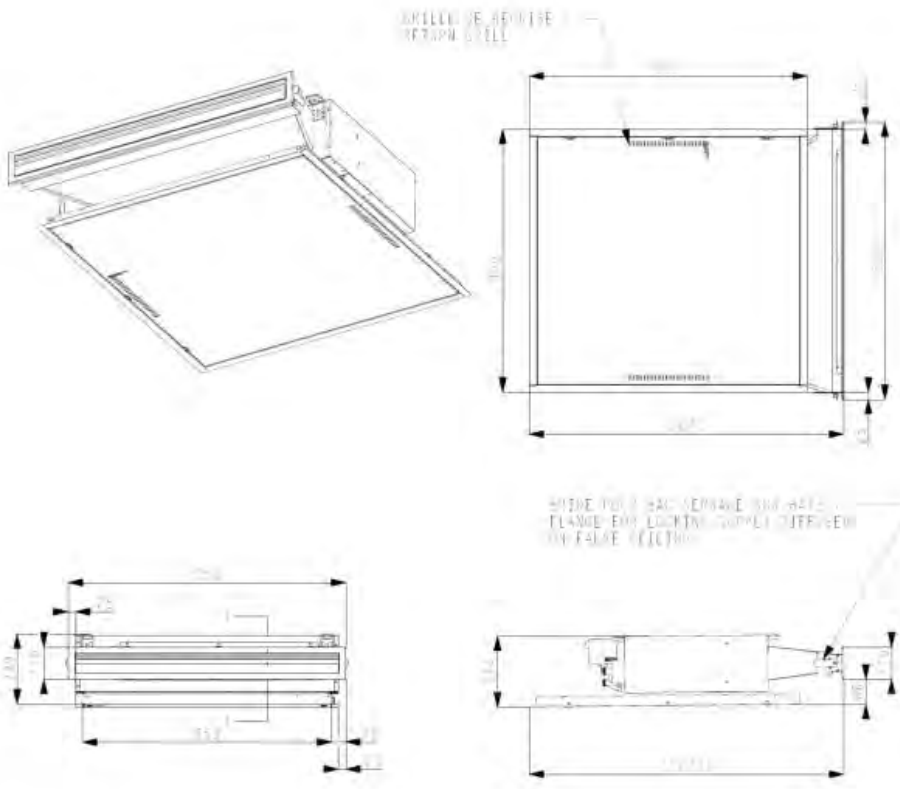
- Should loads change rapidly in the space and/or exceed that supplied by the normal modes due to increased occupancy and or other thermal gains (ex: solar) then the unit fan is energised increasing secondary air flow over the unit coil rapidly boosting cooling / heating output.
- Unit fan is a variable speed fan (EC motor) & the required extra air flow / capacities are thus managed accordingly.

System energy savings

A system based upon the 36X hybrid terminal offers energy savings over fan coil and chilled beam systems in areas of fan energy (terminal & ventilation systems), heating & cooling of ventilation air etc. that ultimately depend in quantity upon final system design requirements however system analysis and comparisons suggest between 8-15% savings may be expected.

DIMENSIONS/CLEARANCE





AIR HEATERS DESTRATIFIER

The best solution for heating and/or cooling large spaces

Ensures buildings warm up ultra fast

Excellent diffusion via patented JET+ double deflection technology

Available with low consumption EC motor

Destratifier for better air mixing in heating mode

42AM
42AMA

In wall-mounted or ceiling-mounted versions, the **air heater** is the simple, affordable heating/cooling solution for all your applications: for your premises in the tertiary sector (sales area, gym, multi-purpose rooms etc.) or in industry (workshop, garage, storage unit, logistics platform, etc.).

The air heater may have associated **destratifiers** (42AMA-) to promote mixing of the building air. (Anti-stratification solution).

The 42AM range meets APSAD and NFPA recommendations on unit peripheral air speeds.

All are less than 5 m/s at 0.5 m from the diffuser and thus do not interfere with sprinkler systems.

RANGE

Heating version

Heating/cooling medium	LP water	
Motorisation	THREE-PHASE 2 speeds – SINGLE-PHASE 1 variable speed IP44/54 depending on the model	1-phase variable speed with 0-10 V signal IP 54
Coil (tubing/row)	Copper/Alu	
Casing	Precoated off-white (RAL 7035) galvanised steel	

Air flow range: 1400 to 11,500 m³/h
Heating capacity range: 5 to 133 kW

Heating or Cooling version

Heating/cooling medium	LP water	
Standard drive	SINGLE-PHASE 1 variable speed IP44/54 depending on the model	1-phase variable speed with 0-10 V signal IP 54
Coil (tubing/row)	Copper/Alu	
Casing	Precoated off-white (RAL 7035) galvanised steel Condensate drain pain + built-in quick-release fitting	

Air flow range: 1200 to 6000 m³/h
Heating capacity range: 7 to 80 kW
Cooling capacity range: 4.5 to 21.5 kW

CODES

	Range						Size		Coil type	FUNCTION	Coil specification	Power supply		Modif. index
Product ref.	**4**	**2**	**A**	**M**	**-**	**-**	**3**	**5**	**1**	**H**	**0**	**M**	**9**	**A**
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Digits 1 to 6

- 42AM--: STANDARD
- 42AMS-: Special (Logistic)
- 42AMEX: ATEX *

Digits 7 & 8

- 30
- 35
- 40
- 45
- 50
- 63

Digit 9

- 0 = Electrical *
- **1 = 1 row**
- 2 = 2 rows
- 3 = 3 rows

Digit 10

- **= ot ater only**
- C = Cold Water only or Hot water/Cold water
- P = Superheated water *
- S = Steam *
- E = Electrical *

Digit 11

- **0 = Standard**
- 1 = Stainless steel pipes *
- 2 = 9.6 kW (Electrical) *
- 3 = 18.9 kW (Electrical) *
- 4 = 28.8 kW (Electrical) *
- 5 = 43.2 kW (Electrical) *

Digits 12 & 13

- **M0 = 230 V/1 Ph - AC motor**
- M9 = 230 V/1 Ph - EC motor
- T0 = 380 V/3 Ph - AC motor
- T1 = 380 V/3 Ph - ATEX IIBT4 motor *
- T2 = 380 V/3 Ph - ATEX IIBT5 motor *
- T3 = 380 V/3 Ph - ATEX IICT4 motor *
- T4 = 380 V/3 Ph - ATEX IICT6 motor *

* By special request

Units in Hot Water only, Superheated Water or Steam versions are delivered as standard with left-hand connection (opposite the air heater). Right-hand connection is possible simply by reversing the unit.

Units in Cold Water only or Hot Water/Cold Water versions are delivered as standard with left-hand connection. To request right-hand connection, please consult us.

ATEX versions are only available with left-hand connection.

TECHNICAL DESCRIPTION

High-efficiency fan motor assembly

Silent FMA featuring an aluminium epoxy polyester-coated airfoil propeller to ensure the best compromise between air flow efficiency and acoustic comfort.

The ROTOREX design (windings inserted in the fan hub) keeps the motor cool to ensure that it operates at optimum efficiency.

Three versions are available :

- THREE-PHASE 2 speeds (accessory: LS/HS switch)
- SINGLE-PHASE 1 variable speed (accessory: 5-speed autotransformer)

Low consumption EC FMA

Fan motor assembly equipped with a powerful high-efficiency EC (electronically commutated) motor. These EC motors (single-phase 230 V drive) will be progressively controlled by the 0-10 V signal, to ensure acoustic comfort and air flow efficiency and to optimise consumption of electricity. A shunt can be used to operate the air heater at maximum speed.

Casing

- Elegant galvanised steel casing, pre-painted in RAL 7035 (light grey).
- Built-in condensate drain pan for cooling applications, featuring an antibacterial design (perforated bottom) and quick-release fitting.
- Inlet cone optimised for improved air flow performance and acoustic comfort level.
- Advantages:
  - Its classic design means that it can easily blend into the architecture of the installation site.
  - No need to add an unsightly condensate drain pan.
  - Condensate pipes quick and extremely simple to connect, without any need for a clamp.

Diffuser

Double deflection diffuser made from rigid aluminium sections, based on the BERNOULLI fluid flow principle and on NACA0012 airfoils, creating a high induction rate on the primary air, in order to increase the air throws, limit the stratification phenomenon and thereby reduce energy consumption.

Basic version (only for the 42AMS-631H0T0LR):

- Single-deflection diffuser with directional louvre
- Light-grey galvanised steel louvre

JET+ version (fitted as standard):

- Double-deflection diffuser
- JET+ aluminium louvre with NACA0012 airfoil design
- Each louvre is directional
- Advantages:
  - Air flows adjustable in 4 directions for optimum coverage of the area to be handled, while limiting draughts.
  - Laminar flow of the airstream for improved acoustic comfort (no turbulence at the diffuser outlet).
  - Increased velocity of the air streams thanks to the aerodynamics of the curved airfoil (low pressure on the underside of the wing) increases the coverage of the air streams and the induction rate.
  - Limits stratification.
  - Reduced building warm-up time:
  - Recorded energy savings of 15 to 20%.

Heat exchanger

HIGH EFFICIENCY heat exchanger coil with tapered intake baffles, to help pressurise the finned block, available in four versions:

LP hot or cold water version – Available with 1, 2 or 3 rows:

- Copper tube Ø 9.52 mm
- Embossed aluminium fins – Thickness 10/100 mm
- Fin spacing 2.1 mm
- Equilateral geometry 32 mm
- Advantage: Excellent thermal yield (dry transfer coefficient > 50 W/m².k)

Control

A range of "Plug & Play" proportional air-source/water-source controllers with heat exchanger (or electric heater) are used to control the air flow of the fan motor assembly and the heating capacity required for the room, according to the occupancy periods (built-in timer).

LP water + 1-PH HEE FMA with EC motor application: 1-PH EC BOX can control 3 x 42AM-- 1-PH with EC motor + 3 x 42AMA- 1-PH with EC motor or 6 x 42AM-- 1-PH with EC motor or 6 x 42AMA- 1-PH with EC motor.

Options and accessories

- Wall bracket, ceiling bracket, IPN additional kit
- Filter box
- 2-channel mixing box with built-in filter
- Specific diffuser (on door, high-level etc.)
- Damper and outdoor kit
- Room thermostat for THREE-PHASE or SINGLE-PHASE installation
- LS/HS switch for 3-PH fan motor assembly
- 5-speed autotransformer for single-phase AC FMAs

By special request:

- Air heater in Superheated Water or Steam version
- All-electric air heater
- ATEX air heater

42AM PERFORMANCE 230 V/1 PH/50 HZ MOTOR - AC AND EC

HEATING - 230 V/1 Ph/50 Hz motor - AC and EC							
Size	No. rows	Air supply speed	Flow rate	Air speed	Throw (metres)		Sound pressure
		SINGLE-PHASE	m³/h	m/s	Wall-mounted	Suspended	dB(A)
30	2	**Direct**	**1 420**	**3.16 m/s**	**15**	**3**	**45**
35	1	**Direct**	**2 600**	**3.92 m/s**	**22**	**6**	**48**
		R3*	2 360	3.56 m/s	18	4	46
	2	**Direct**	**2 400**	**3.62 m/s**	**20**	**5**	**49**
		R3*	2 030	3.06 m/s	15	2,5	47
	3	**Direct**	**2 075**	**3.13 m/s**	**15**	**2,5**	**50**
		R3*	1 780	2.68 m/s	14	2	48
40	1	**Direct**	**4 200**	**4.57 m/s**	**26**	**8,5**	**54**
		R3*	3 914	4.26 m/s	24	7,5	52
	2	**Direct**	**3 800**	**4.13 m/s**	**23**	**7**	**55**
		R3*	3 550	3.86 m/s	19	4,5	53
	3	**Direct**	**3 450**	**3.75 m/s**	**23**	**7**	**56**
		R3*	3 220	3.50 m/s	20	5,5	54
45	1	**Direct**	**5 200**	**4.20 m/s**	**27**	**8,5**	**56**
		R3*	4 100	3.31 m/s	24	6	49
	2	**Direct**	**4 700**	**3.80 m/s**	**21**	**4,5**	**58**
		R3*	3 700	2.99 m/s	18	4	51
	3	**Direct**	**4 550**	**3.68 m/s**	**18**	**3,5**	**59**
		R3*	3 650	2.95 m/s	17	3	52
50	1	Direct	7 100	4.22 m/s	28	9	56
		R3*	5 700	3.39 m/s	26	7	50
	2	Direct	6 600	3.92 m/s	26	7	57
		R3*	5 380	3.20 m/s	24	6	51
	3	Direct	6 200	3.69 m/s	24	6,5	58
		R3*	5 055	3.01 m/s	23	5,5	52
63	1	Direct	10 450	4.19 m/s	28	10,5	54
		R3*	8 900	3.57 m/s	22	8	47
	2	Direct	9 610	3.86 m/s	24	8,5	55
		R3*	7 630	3.06 m/s	20	6	46
	3	Direct	8 280	3.32 m/s	21	6,5	56
		R3*	6 270	2.52 m/s	19	5	44

HEATING - COOLING - 230 V/1 Ph/50 Hz motor - AC and EC						
Size	No. rows	Air supply speed	Air flow rate	Air speed	Throw (metres)	Sound pressure
			m³/h	m/s	Wall-mounted	dB(A)
35M0 (AC)	3	Direct	1640	2.47 m/s	23	30
40M0 (AC)			2160	2.35 m/s	26	48
45M0 (AC)			3025	2.44 m/s	24	45
50M0 (AC)			4060	2.41 m/s	23	54
63M0 (AC)						
30M9 (EC)	2	Direct	1200	2.67 m/s	12	43
35M9 (EC)	3	Direct	1640	2.47 m/s	23	30
40M9 (EC)			2160	2.35 m/s	26	48
45M9 (EC)			3025	2.44 m/s	24	45
50M9 (EC)			4060	2.41 m/s	23	54
63M9 (EC)			5960	2.39 m/s	21	53

Specifications determined using the following information:

Air stream: * with JET+ diffuser for a residual speed of 0.1 m/s
* defined with an OT/RT ΔT of 15 °C (heating) and 7 °C (cooling)
* with LP water or electric heating

Air speed: JET+ diffuser outlet

Sound pressure: measured 5 metres from unit, directivity 2, attenuation of 22 dB

Direct: speed obtained when wired directly to single-phase motor.

R3*: supply air velocity obtained with autotransformer set to "3". Other operation points (5 in total) can be supplied by your agent on request via our technical selection software.

DESTRATIFIER DETERMINATION AND SELECTION EXAMPLE

S = Supply (released at the top of the building)
TR = Temperature under roof
TW = Temperature set-point in the work area

Calculated flow rate for destratifiers = $\frac{A}{0.3 \times (TR-TW)}$

Selection example:

Supply under building roof = S = 45,000 kcal (52,200 Watts)
Temperature under roof = TR = 30°C
Temperature set-point in the work area = TW = 16°C

Calculated flow rate for destratifiers = $\frac{45\,000}{0.3 \times (30-16)}$ = 10714 m³/h

Either: 2 X 42AMA-50---T0 at HS or 1 x 42AMA-63---T0 at HS.

42AM PERFORMANCE 400 V/3 PH/50 HZ MOTOR

HEATING - 400 V/3 Ph/50 Hz motor								
Model	No. rows	Air supply speed		Flow rate	Air speed	Throw (metres)		Sound pressure
		3-PH		m³/h	m/s	Wall-mounted	Suspended	dB(A)
35	1	**HS**	△	**2 600**	**3.92 m/s**	**22**	**6**	**48**
		LS	★	2 210	3.33 m/s	17	3,5	44
	2	**HS**	△	**2 480**	**3.74 m/s**	**20**	**5**	**49**
		LS	★	2 040	3.07 m/s	15	2,5	45
	3	**HS**	△	**2 165**	**3.26 m/s**	**18**	**4,5**	**50**
		LS	★	1 775	2.67 m/s	14	2	46
40	1	**HS**	△	**4 000**	**4.35 m/s**	**25**	**8**	**55**
		LS	★	3 480	3.79 m/s	21	5	51
	2	**HS**	△	**3 800**	**4.13 m/s**	**23**	**7**	**55**
		LS	★	3 310	3.60 m/s	18	4	51
	3	**HS**	△	**3 400**	**3.70 m/s**	**22**	**6,5**	**56**
		LS	★	2 960	3.22 m/s	17	3,5	52
45	1	**HS**	△	**5 400**	**4.36 m/s**	**28**	**9**	**56**
		LS	★	3 910	3.16 m/s	23	5,5	49
	2	**HS**	△	**5 300**	**4.28 m/s**	**25**	**8**	**57**
		LS	★	4 140	3.34 m/s	21	4,5	50
	3	**HS**	△	**5 000**	**4.04 m/s**	**24**	**7,5**	**59**
		LS	★	3 910	3.16 m/s	20	4	52
50	1	**HS**	△	**7 500**	**4.46 m/s**	**30**	**10**	**56**
		LS	★	5 740	3.41 m/s	26	7	50
	2	**HS**	△	**6 900**	**4.10 m/s**	**28**	**9**	**57**
		LS	★	5 400	3.21 m/s	24	6	51
	3	**HS**	△	**6 500**	**3.86 m/s**	**26**	**8,5**	**58**
		LS	★	5 020	2.98 m/s	23	5,5	52
63	1	**HS**	△	**11 140**	**4.47 m/s**	**29**	**11,5**	**55**
		LS	★	9 635	3.87 m/s	24	8,5	48
	2	**HS**	△	**10 510**	**4.22 m/s**	**26**	**10,5**	**56**
		LS	★	8 820	3.54 m/s	22	7,5	49
	3	**HS**	△	**9 175**	**3.68 m/s**	**25**	**10**	**57**
		LS	★	7 545	3.03 m/s	21	7	49
63S	1	**HS**	△	**11 140**	**4.47 m/s**	**29**	**11,5**	**55**
		LS	★	9 635	3.87 m/s	24	8,5	48

Specifications determined using the following information:

Air stream: * with JET+ diffuser for a residual speed of 0.1 m/s
* defined with an OT/RT ΔT of 15 °C
* with LP water or electric heating

Air speed: JET+ diffuser outlet

Sound pressure: measured 5 metres from unit, directivity 2, attenuation of 22 dB

42AMA AIR FLOW & ACOUSTIC PERFORMANCE

42AMA-		40		45		50		63	
THREE-PHASE motor (3-phase 400 V coupling)		HS △	LS *	HS △	LS *	HS △	LS *	HS △	LS *
SINGLE-PHASE AC and SINGLE-PHASE EC motor		Direct	-	Direct	-	Direct	-	Direct	-
Flow rate	m³/h	4400	3000	6000	4100	8000	5500	11500	8800
Air stream	m	15	8	14	9	16	10	19	14
Sound pressure	dB(A)	51	43	54	46	57	47	55	50

Specifications determined using the following information:

Air stream: * with JET+ diffuser for a residual speed of 0.1 m/s
Sound pressure:* measured 8 metres from unit, directivity 2, attenuation of 26 dB

42AM - HOT WATER - 230 V/1 PH/50 HZ MOTOR - AC AND EC

Water inlet/ outlet temperature °C		42AM--302* Air flow rate (m³/h) Direct 1420 Air inlet dry-bulb temperature (°C)				42AM--351 Air flow rate (m³/h) Direct 2600 Air inlet dry-bulb temperature (°C)				42AM--351 Air flow rate (m³/h) R3* 2360 Air inlet dry-bulb temperature (°C)				42AM--352 Air flow rate (m³/h) Direct 2400 Air inlet dry-bulb temperature (°C)				42AM--352 Air flow rate (m³/h) R3* 2030 Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	17,1	15,8	14,8	13,9	11,9	11	10,3	9,62	11,5	10,6	9,93	9,28	21,3	19,6	18,4	17,1	19,6	18,1	16,9	15,8
	PD	42,7	36,8	32,7	28,9	7,91	6,95	6,11	5,4	7,41	6,42	5,73	5,07	7,94	6,82	6,04	5,31	6,82	5,86	5,18	4,58
60-40	Hc	10,7	9,4	8,46	7,52	7,12	6,19	5,49	4,77	6,87	5,9	5,29	4,6	12,8	11,1	9,8	8,51	11,	10,2	9	7,84
	PD	18,4	14,6	12	9,65	3,37	2,63	2,12	1,65	3,17	2,46	1,99	1,55	3,24	2,48	2	1,54	2,77	2,14	1,7	1,33
45-40	Hc					7,08	6,17	5,49	4,81	6,83	5,95	5,29	4,65	12,6	11	9,74	8,53	11,6	10,1	8,96	7,85
	PD					40,4	31,7	25,7	20,3	37,9	29,5	24	19,1	41,4	31,9	25,6	20	35,4	27,3	22	17,2
50-42	Hc					7,52	6,62	5,94	5,27	7,26	6,38	5,74	5,09	13,4	11,8	10,6	9,36	12,4	10,8	9,73	8,62
	PD					19,3	15,3	12,6	10,1	18,1	14,4	11,9	9,52	19,3	15,2	12,4	9,87	16,6	13	10,6	8,48

Water inlet/ outlet temperature °C		42AM--353 Air flow rate (m³/h) Direct 2075 Air inlet dry-bulb temperature (°C)				42AM--353 Air flow (m³/h) R3* 1780 Air inlet dry-bulb temperature (°C)				42AM--401 Air flow rate (m³/h) Direct 4200 Air inlet dry-bulb temperature (°C)				42AM--401 Air flow (m³/h) R3* 3914 Air inlet dry-bulb temperature (°C)				42AM--402 Air flow rate (m³/h) Direct 3800 Air inlet dry-bulb temperature (°C)				42AM--402 Air flow (m³/h) R3* 3550 Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	25,9	23,9	22,3	20,8	23,7	21,8	20,4	19	17,2	15,9	14,9	13,9	16,8	15,5	14,5	13,5	31,9	29,4	27,5	25,7	30,9	28,5	26,7	24,9
	PD	7,65	6,53	5,77	5,03	6,43	5,5	4,87	4,24	7,24	6,25	5,55	4,9	6,91	5,96	5,3	4,68	13,9	11,9	10,5	9,24	13	11,2	9,9	8,7
60-40	Hc	15,5	13,4	11,9	10,4	14,1	12,3	10,8	9,45	10,2	8,81	7,78	6,72	9,93	8,58	7,58	6,55	19,3	16,9	15	13,1	18,7	16,4	14,5	12,7
	PD	3	2,29	1,82	1,43	2,51	1,93	1,54	1,21	2,99	2,3	1,85	1,42	2,86	2,2	1,76	1,36	5,66	4,4	3,53	2,76	5,33	4,15	3,32	2,6
45-40	Hc	15,2	13,2	11,	10,3	13,8	1	10,7	9,35	10,3	8,97	,98	6,99	10	,74	,77	6,81	18,8	16,3	14,5	12,7	18,2	15,8	14,1	12,3
	PD	40	30,3	24,4	18,9	33,5	25,6	20,4	15,8	38,1	29,5	23,8	18,7	36,3	28,1	22,6	17,9	72,4	55,6	44,6	34,8	68	52,3	42	32,8
50-42	Hc	16,3	14,3	12,8	11,3	14,8	13	11,7	10,3	10,9	9,6	8,61	7,62	10,6	9,35	8,39	7,43	20	17,6	15,8	14	19,4	17,1	15,3	13,6
	PD	18,5	14,4	11,7	9,29	15,5	12,1	9,81	7,81	17,9	14	11,5	9,22	17,1	13,4	11	8,79	33,7	26,4	21,6	17,2	31,7	24,8	20,3	16,2

42AM - HOT WATER - 230 V/1 PH/50 HZ MOTOR - AC AND EC

Inlet/Outlet water temperature, °C		42AM--403								42AM--451								42AM--452							
		Air flow rate (m³/h) Direct				Air flow (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow (m³/h) R3*			
		3450				3220				5200				4100				4700				3700			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	40,1	36,9	34,6	32,3	38,6	35,5	33,2	31	23,4	21,6	20,3	19	21,3	19,7	18,5	17,3	41,7	38,5	36,1	33,7	37	34,1	32	29,9
	PD	13,3	11,4	10,1	8,9	12,3	10,6	9,37	8,26	14,6	12,7	11,3	10	12,4	10,7	9,55	8,46	13,3	11,5	10,2	8,96	10,7	9,16	8,14	7,18
60-40	Hc	24,2	20,9	18,5	16,1	23,2	20,1	17,8	15,5	14,3	12,5	11,2	9,92	13,1	11,5	10,2	9,01	25,6	22,4	20	17,6	22,8	19,9	17,7	15,5
	PD	5,47	4,22	3,36	2,63	5,09	3,93	3,13	2,45	6,43	5,12	4,2	3,37	5,5	4,34	3,57	2,83	5,73	4,47	3,69	2,92	4,61	3,64	2,95	2,34
45-40	Hc	23,5	20,4	18,2	15,9	22,6	19,6	17,4	15,3	13,7	12	10,7	9,38	12,5	10,9	9,71	8,53	24,4	21,2	18,9	16,6	21,5	18,7	16,7	14,6
	PD	67,9	52,4	42,2	32,9	63,2	48,7	39	30,6	72,4	56,8	45,9	36,5	61,3	48	38,9	30,8	67,1	51,7	41,9	33	53,5	41,3	33,2	26,2
50-42	Hc	25,2	22,1	19,8	17,5	24,2	21,2	19	16,8	14,7	12,9	11,6	10,3	13,4	11,8	10,6	9,42	26,1	23	20,6	18,3	23,1	20,3	18,2	16,2
	PD	32,1	25,1	20,5	16,4	29,8	23,3	19	15,2	34,9	27,8	23	18,6	29,5	23,6	19,5	15,8	31,9	25,2	20,6	16,6	25,5	20,1	16,5	13,2

Inlet/Outlet water temperature, °C		42AM--453								42AM--501								42AM--502							
		Air flow rate (m³/h) Direct				Air flow (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow (m³/h) R3*			
		4550				3650				7100				5700				6600				5380			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	54,4	50,2	47	43,8	47,8	44	41,2	38,5	31	28,6	26,9	25,1	28,5	26,3	24,7	23,1	56,2	51,8	48,5	45,2	50,9	46,9	43,9	41
	PD	13,5	11,6	10,3	9,02	10,6	9,08	8,04	7,06	7,9	6,84	6,1	5,4	6,8	5,89	5,25	4,65	8,2	7,1	6,28	5,52	6,87	5,9	5,22	4,6
60-40	Hc	33,5	29,3	26,1	22,9	29,4	25,6	22,8	20	18,6	16,2	14,3	12,5	17,1	14,8	13,1	11,4	33,7	29,2	25,8	22,4	30,5	26,4	23,3	20,3
	PD	5,69	4,44	3,57	2,81	4,47	3,46	2,8	2,18	3,39	2,65	2,13	1,66	2,92	2,27	1,83	1,42	3,37	2,59	2,07	1,59	2,79	2,14	1,7	1,34
45-40	Hc	31,6	27,5	24,4	21,4	27,6	24	21,3	18,7	18,4	16,1	14,3	12,5	16,9	14,7	13,1	11,5	33,2	28,9	25,7	22,5	30	26,1	23,2	20,3
	PD	68,6	53	42,4	33,2	53,5	41	33	25,7	40,3	31,4	25,5	20,2	34,5	26,9	21,8	17,3	43	33,1	26,6	20,9	35,6	27,3	22,1	17,2
50-42	Hc	34	29,8	26,8	23,7	29,7	26,1	23,4	20,8	19,6	17,2	15,5	13,7	18	15,8	14,2	12,6	35,4	31,1	27,9	24,7	32	28,1	25,2	22,3
	PD	32,5	25,4	20,8	16,6	25,3	19,9	16,2	12,9	19,2	15,2	12,6	10,1	16,6	13,1	10,9	8,69	20,1	15,8	12,9	10,3	16,7	13,1	10,7	8,5

Inlet/Outlet water temperature, °C		42AM--503								42AM--631								42AM--632							
		Air flow rate (m³/h) Direct				Air flow (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow (m³/h) R3*				Air flow rate (m³/h) Direct				Air flow (m³/h) R3*			
		6200				5055				10450				8900				9610				7630			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	74,3	68,4	64,1	59,8	65,9	60,8	56,9	53,1	45,4	41,9	39,3	36,7	42,7	39,4	37	34,5	84,2	77,7	72,8	68	75,1	69,2	64,9	60,6
		12,8	11	9,74	8,56	10,3	8,81	7,8	6,87	6,89	5,94	5,28	4,65	6,16	5,32	4,72	4,16	14,1	12,1	10,7	9,41	11,3	9,74	8,63	7,59
60-40	Hc	45,8	40,1	35,7	31,3	40,7	35,5	31,7	27,8	26,9	23,3	20,6	17,8	25,3	21,9	19,3	16,7	51,4	44,9	40,1	35	45,8	40,1	35,5	31,1
	PD	5,46	4,27	3,44	2,71	4,39	3,42	2,77	2,17	2,79	2,14	1,71	1,32	2,5	1,91	1,53	1,19	5,8	4,52	3,67	2,84	4,69	3,66	2,92	2,29
45-40	Hc	43,1	37,5	33,3	29,2	38,2	33,2	29,5	25,9	27,2	23,7	21	18,5	25,5	22,2	19,8	17,3	49,5	43,1	38,3	33,6	44	38,3	34,1	29,9
		64,8	49,9	39,9	31,4	51,6	39,9		2	36,3	28,1	22,7	17,9	3 ,4	5,1	,3	15,9	3,6	56,5	45,3	35,3	58,8	45,2	36,3	28,5
50-42	Hc	46,3	40,7	36,5	32,4	41,1	36,1	32,4	28,8	28,8	25,3	22,7	20,1	27,1	23,8	21,4	18,9	52,9	46,6	41,8	37,1	47,1	41,4	37,2	33
	PD	30,7	24,1	19,7	15,7	24,5	19,3	15,7	12,6	17	13,4	11	8,75	15,1	12	9,77	7,81	34,2	27	22	17,6	27,6	21,6	17,7	14,1

Inlet/Outlet water temperature, °C		42AM--633							
		Air flow rate (m³/h) Direct				Air flow rate (m³/h) R3*			
		8280				6270			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18
80-60	Hc	106	97,5	91,4	85,4	89,1	82,2	7	72
	PD	21,5	18,3	16,2	14,3	15,5	13,3	11,8	10,4
60-40	Hc	66,1	58,2	52,3	46,3	56	49,2	44	38,9
	PD	9,2	7,26	5,94	4,76	6,74	5,31	4,31	3,43
45-40	Hc	/	53,1	47,3	41,5	51,1	44,5	39,7	34,9
	PD	/	82,5	66,5	52,2	76,9	59,2	47,7	37,6
50-42	Hc	65,8	57,9	52,1	46,3	55,3	48,7	43,8	38,9
	PD	50,9	40,1	32,8	26,3	36,8	28,9	23,8	1

Hc Heating capacity (kW)
PD Water pressure drop (kPa)
* Only available in EC version

42AM - CHILLED WATER & HOT WATER - 230 V/1 PH/50 HZ MOTOR - AC AND EC

Inlet/Outlet water temperature, °C		42AM--302*				42AM--353				42AM--403				42AM--453				42AM--503				42AM--633*			
		Air flow rate (m³/h) - Direct				Air flow rate (m³/h) - Direct				Air flow rate (m³/h) - Direct				Air flow rate (m³/h) - Direct				Air flow rate (m³/h) - Direct				Air flow rate (m³/h) - Direct			
		1200				1640				2160				3025				4060				4060			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	17,1	15,8	14,8	13,9	21,4	19,7	18,5	17,2	28,9	26,6	24,9	23,2	40,6	37,4	35,1	32,8	54,9	50,6	47,4	44,3	82	75,7	71	66,4
	PD	42,7	36,8	32,7	28,9	5,32	4,5	4	3,5	7,2	6,2	5,5	4,8	7,8	6,7	6	5,2	7,3	6,3	5,6	4,9	13,2	11,4	10,1	8,9
60-40	Hc	10,7	9,4	8,46	7,52	12,8	11,1	9,8	8,6	17,3	15	13,3	11,7	25	21,9	19,5	17,1	33,9	29,6	26,4	23,2	51,6	45,4	40,6	35,9
	PD	18,4	14,6	12	9,65	2,1	1,6	1,3	1	3	2,3	1,9	1,5	3,3	2,6	2,1	1,7	3,1	2,4	2	1,6	5,8	4,6	3,7	3
45-40	Hc					12,5	10,9	9,7	8,5	16,8	14,6	13	11,4	23,5	20,5	18,2	16	31,7	27,6	24,6	21,6	46	41,1	36,6	32,2
	PD					27,6	21,3	16,9	13,1	36,6	28,4	22,7	17,8	39,4	30,6	24,5	19,2	36,5	28,3	22,8	17,9	44,9	51,1	41,2	32,4

Inlet/Outlet water temperature, °C		42AM--302*			42AM--353			42AM--403			42AM--453			42AM--503			42AM--633*		
		Relative humidity 50%			Relative humidity 50%			Relative humidity 50%			Relative humidity 50%			Relative humidity 50%			Relative humidity 50%		
		Air flow rate (m³/h) Direct			Air flow rate (m³/h) Direct			Air flow rate (m³/h) Direct			Air flow rate (m³/h) Direct			Air flow rate (m³/h) Direct			Air flow rate (m³/h) Direct		
		1200			1640			2160			3025			4060			5960		
		Air inlet dry bulb temperature (°C)			Air inlet dry bulb temperature (°C)			Air inlet dry bulb temperature (°C)			Air inlet dry bulb temperature (°C)			Air inlet dry bulb temperature (°C)			Air inlet dry bulb temperature (°C)		
		23	25	27	23	25	27	23	25	27	23	25	27	23	25	27	23	25	27
7-12	TCC	2,95	3,65	4,59	3,38	4,28	5,6	4,6	5,91	7,64	7,13	8,87	11,6	9,66	12,1	15,7	15,2	19,3	24,4
	SCC	2,95	3,5	3,99	3,38	4,28	5,17	4,6	5,85	6,98	7,13	8,67	10,2	9,66	11,8	13,7	15,2	18,2	20,8
	D	24,4	36,1	5	2,34	3, 9	6,22	3,46	5,55	9,0	4,44	6,75	11,3	4,22	6,55	10,	8,4	13,3	20,6
8-13	8-13	2,69	3,28	4,06	2,96	3,9	4,93	4,04	5,3	6,71	6,39	8,08	10,2	8,66	10,9	13,9	13,8	17,1	21,7
	SCC	2,69	3,24	3,75	2,96	3,9	4,78	4,04	5,3	6,46	6,39	8,02	9,47	8,66	10,9	12,9	13,8	16,8	19,6
	PD	20,4	29,5	43,8	1,82	3,1	4,86	2,68	4,53	7,06	3,6	5,65	8,76	3,43	5,37	8,52	6,98	10,6	16,5
10-15	TCC	2,15	2,71	,31	2,16	,1	3,99	2,92	4,22	5,4	4,84	6,54	8,19	6,55	8,86	11,1	10,	14	17,3
	SCC	2,15	2,71	3,26	2,16	3,1	3,99	2,92	4,22	5,43	4,84	6,54	8,12	6,55	8,86	11	10,8	14	16,9
	PD	13,4	20,6	29,7	0,993	1,98	3,22	1,43	2,92	4,74	2,11	3,75	5,79	2,01	3,57	5,5	4,38	7,11	10,7

Hc Heating capacity (kW)
TCC Total cooling capacity
SCC Sensible cooling capacity (kW)
PD Water pressure drop (kPa)
* Only available in EC version

42AM - HOT WATER - 400 V/3PH/50 HZ MOTOR

Inlet/Outlet water temperature, °C		42AM--351								42AM--352								42AM--353							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		2600				2210				2480				2040				2165				1775			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	11,9	11	10,3	9,62	11,2	10,3	9,69	9,05	21,7	20	18,7	17,4	19,7	18,1	17	15,9	26,6	24,5	22,9	21,4	23,7	21,8	20,4	19
	PD	7,92	6,86	6,12	5,41	7,09	6,14	5,48	4,84	8,19	7,04	6,23	5,48	6,86	5,89	5,22	4,61	8,04	6,86	6,07	5,3	6,42	5,49	4,86	4,24
60-40	Hc	7,13	6,2	5,5	4,78	6,71	5,83	5,17	4,49	13	11,3	9,98	8,67	11,8	10,2	9,04	7,87	15,9	13,8	12,2	10,7	14,1	12,3	10,8	9,47
	PD	3,38	2,63	2,13	1,66	3,03	2,36	1,9	1,48	3,35	2,57	2,06	1,59	2,79	2,15	1,71	1,34	3,15	2,4	1,91	1,5	2,51	1,93	1,55	1,21
45-40	Hc	7,08	6,18	5,5	4,82	6,66	5,8	5,16	4,53	12,8	11,2	9,92	8,69	11,6	10,1	9	7,88	15,6	13,6	12,1	10,6	13,8	12	10,7	9,36
	PD	40,5	31,7	25,7	20,3	36,3	28,3	22,9	18,3	42,8	33	26,8	20,7	35,6	27,5	22,2	17,3	42	32,4	25,7	20	33,5	25,6	20,4	15,8
50-42	Hc	7,53	6,63	5,95	5,28	7,08	6,23	5,59	4,96	13,7	12	10,8	9,53	12,4	10,9	9,77	8,66	16,7	14,7	13,1	11,6	14,8	13	11,7	10,3
	PD	19,3	15,3	12,7	10,2	17,3	13,7	11,3	9,11	20	15,7	12,8	10,2	16,7	13,1	10,7	8,55	19,5	15,2	12,3	9,79	15,5	12,1	9,82	7,82

Inlet/Outlet water temperature, °C		42AM--401								42AM--402								42AM--403							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		4000				3480				3800				3310				3400				2960			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	16,9	15,6	14,6	13,6	16,1	14,8	13,9	13	31,9	29,4	27,5	25,7	29,9	27,5	25,8	24,1	39,8	36,6	34,3	32	36,8	33,8	31,7	29,5
	PD	7,01	6,04	5,37	4,74	6,38	5,51	4,9	4,33	13,9	11,9	10,5	9,24	12,2	10,5	9,31	8,18	13,1	11,2	9,92	8,76	11,3	9,69	8,63	7,55
60-40	Hc	10	8,65	7,64	6,6	9,51	8,21	7,26	6,29	19,3	16,9	15	13,1	18,1	15,8	14,1	12,3	24	20,8	18,4	16	22,1	19,2	17	14,8
	PD	2,9	2,23	1,79	1,37	2,65	2,03	1,63	1,27	5,66	4,4	3,53	2,76	4,99	3,92	3,13	2,45	5,39	4,16	3,31	2,59	4,66	3,58	2,88	2,26
45-40	Hc	10,1	8,81	7,83	6,86	9,61	8,37	7,44	6,52	18,8	16,3	14,5	12,7	17,6	15,3	13,6	11,9	23,3	20,3	18	15,8	21,5	18,7	16,6	14,6
	PD	36,8	28,5	23	18,1	33,5	26	21	16,4	72,4	55,6	44,6	34,8	63,6	49,2	39,4	30,8	66,9	51,6	41,6	32,4	57,6	44,5	35,7	28
50-42	Hc	10,7	9,42	8,45	7,48	10,2	8,96	8,03	7,11	20	17,6	15,8	14	18,8	16,5	14,8	13,1	25	21,9	19,6	17,4	23,1	20,2	18,1	16,1
	PD	17,3	13,6	11,1	8,91	15,7	12,4	10,1	8,13	33,7	26,4	21,6	17,2	29,8	23,3	19,1	15,2	31,6	24,7	20,2	16,1	27,4	21,3	7,4	13,9

Inlet/Outlet water temperature, °C		42AM--451								42AM--452								42AM--453							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		5400				3910				5300				4140				5000				3910			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	23,7	21,9	20,6	19,2	21	19,4	18,2	17	44,2	40,8	38,2	35,7	39,2	36,2	33,9	31,7	57,4	52,9	49,6	46,2	49,8	45,9	43	40,1
	PD	14,9	13	11,6	10,2	12	10,4	9,24	8,19	14,8	12,7	11,3	9,96	11,9	10,2	9,08	8,01	15	12,8	11,3	9,97	11,5	9,84	8,71	7,65
60-40	Hc	14,5	12,7	11,4	10,1	12,8	11,3	10,1	8,84	27	23,7	21,2	18,7	24,1	21,1	18,8	16,5	35,3	30,9	27,5	24,1	30,7	26,8	23,9	20,9
	PD	6,58	5,24	4,31	3,45	5,32	4,23	3,46	2,74	6,31	4,99	4,08	3,27	5,13	4,04	3,31	2,61	6,27	4,89	3,95	3,1	4,84	3,76	3,03	2,37
45-40	Hc	13,9	12,1	10,8	9,5	12,3	10,7	9,54	8,38	25,8	22,5	20	17,5	22,9	19,9	17,7	15,5	33,4	29	25,8	22,6	28,9	25,1	22,3	19,6
	PD	74,2	58,2	47,3	37,4	59,3	46,4	37,7	29,9	74,7	57,9	46,6	36,6	59,8	46,2	37,2	29,2	76,5	58,7	47	36,7	58,1	44,7	35,9	28
50-42	Hc	14,9	13,1	11,8	10,5	13,1	11,6	10,4	9,25	27,7	24,3	21,9	19,4	24,5	21,6	19,4	17,2	35,8	31,5	28,3	25,1	31,1	27,3	24,5	21,7
	PD	35,7	28,5	23,6	19,1	28,6	22,8	18,8	15,3	35,4	28	23,1	18,5	28,4	22,5	18,4	14,9	35,9	28,1	23	18,3	27,4	21,6	17,6	14

Inlet/Outlet water temperature, °C		42AM--501								42AM--502								42AM--503							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		7500				5740				6900				5400				6500				5020			
		Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)				Air inlet dry-bulb temperature (°C)			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	31,7	29,2	27,4	25,6	28,6	26,4	24,8	23,2	57,4	52,9	49,5	46,2	51	47	44	41,1	76,4	70,4	65,9	61,6	65,7	60,6	56,7	53
	PD	8,2	7,1	6,33	5,6	6,84	5,93	5,29	4,68	8,6	7,38	6,54	5,74	6,9	5,93	5,25	4,65	13,5	11,6	10,3	9,03	10,2	8,76	7,16	6,83
60-40	Hc	19	16,5	14,6	12,7	17,2	14,9	13,2	11,5	34,4	29,8	26,4	22,9	30,6	26,5	23,4	20,3	47,1	41,2	36,8	32,3	40,6	35,5	31,6	27,7
	PD	3,51	2,75	2,21	1,73	2,94	2,28	1,84	1,43	3,5	2,69	2,15	1,65	2,83	2,16	1,72	1,33	5,75	4,49	3,67	2,86	4,37	3,4	2,76	2,16
45-40	Hc	18,8	16,4	14,6	12,8	17	14,8	13,2	11,6	33,9	29,5	26,2	23	30,1	26,2	23,3	20,4	44,4	38,6	34,3	30,1	38,1	33,1	29,5	25,8
	PD	41,9	32,6	26,4	20,9	34,8	27,1	22	17,5	44,8	34,5	27,7	21,7	35,8	27,5	22,2	17,3	68,5	52,7	42,3	33,1	51,3	39,7	31,8	24,9
50-42	Hc	20	17,6	15,8	14	18,1	15,9	14,3	12,7	36,2	31,7	28,5	25,2	32,1	28,2	25,3	22,4	47,7	41,9	37,6	33,4	41	36	32,3	28,7
	PD	19,9	15,8	13	10,5	16,7	13,2	10,9	8,77	21	16,4	13,5	10,7	16,8	13,1	10,7	8,57	32,4	25,4	20,8	16,6	24,4	19,2	15,7	12,5

Hc Heating capacity (kW)
PD Water pressure drop (kPa)

42AM - HOT WATER - 400 V/3PH/50 HZ MOTOR

Inlet/Outlet water temperature, °C		42AM--631								42AM--632								42AM--633							
		Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS				Air flow rate (m³/h) HS				Air flow rate (m³/h) LS			
		11140				9635				10510				8820				9175				7545			
		"Air inlet dry-bulb temperature (°C)"				"Air inlet dry-bulb temperature (°C)"				"Air inlet dry-bulb temperature (°C)"				"Air inlet dry-bulb temperature (°C)"				"Air inlet dry-bulb temperature (°C)"				"Air inlet dry-bulb temperature (°C)"			
		8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18	8	12	15	18
80-60	Hc	46,5	42,9	40,2	37,5	44,1	40,7	38,1	35,6	87,9	81	75,9	70,9	80,8	74,5	69,8	65,2	112	103	97	90,6	100	92,2	86,5	80,8
	PD	7,19	6,2	5,5	4,85	6,51	5,62	4,99	4,4	15,3	13,1	11,6	10,2	13	11,2	9,9	8,7	24	20,5	18,2	16	19,2	16,5	14,6	12,9
60-40	Hc	27,6	23,9	21	18,2	26,1	22,6	19,9	17,2	53,5	46,8	41,8	36,5	49,3	43,1	38,3	33,5	70	61,7	55,4	49,1	62,7	55,1	49,5	43,7
	PD	2,91	2,24	1,78	1,38	2,64	2,02	1,61	1,25	6,27	4,88	3,96	3,07	5,37	4,19	3,36	2,63	10,2	8,1	6,6	5,3	8,36	6,56	2,17	4,26
45-40	Hc	27,8	24,2	21,5	18,9	26,3	22,9	20,4	17,9	51,7	45	40	35,1	47,4	41,3	36,8	32,2	/	56,4	50,2	44,1	57,6	50,1	44,6	39,2
	PD	37,9	29,4	23,7	18,6	34,3	26,6	21,5	16,9	79,8	61,2	49,2	38,4	67,9	52,2	41,9	32,8	/	92,9	74,5	58,3	96,6	74,2	59,5	46,7
50-42	Hc	15,7	25,9	23,3	20,6	16,4	24,6	22	19,5	23,1	48,6	43,6	38,7	24,5	44,6	40,1	35,6	29,9	61,5	55,3	49,1	31,6	54,7	49,2	43,8
	PD	17,7	13,9	11,5	9,12	16	12,6	10,3	8,26	37	29,1	23,8	19	31,6	24,8	20,3	16,2	56,9	44,8	36,8	29,4	45,6	36,1	29,5	23,8

Hc Heating capacity (kW)
PD Water pressure drop (kPa)

ELECTRIC MOTOR SPECIFICATIONS

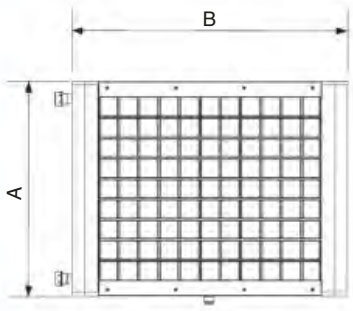
Use	Family	Size	Motor	Rotation speed in rpm	I. Name A	P. Abs W	IP	Thermal cut-out	Class	Operating temp.
HEATING	42AM--	35H	THREE-PHASE 230/400 V – 50 Hz	HS -△ 1385	0,35	110	44	YES 6.3 A - 165 °C	F	-40°C / +60°C
				LS - ✶ **1175**	0,15	70				-40 °C / +70 °C
	42AM--/ 42AMA-	40H/40-		HS - △ 1404	0,5	260	54			
				LS - ✶ **1176**	0,3	170				
	42AM--/ 42AMA-	45H/45-		HS - △ 1385	1,13	550				
				LS - ✶ **1040**	0,64	380				
	42AM--/ 42AMA-	50H/50-		HS - △ 1391	1,51	770				
				LS - ✶ **1176**	0,9	520				
	42AM--/ 42AMA-	63H/63-		HS - △ 1000	1,3	590				
				LS - ✶ **750**	0,63	250				
	42AMS-	63H		HS - △ 1000	1,3	590				
				LS - ✶ **750**	0,63	250				
HEATING	42AM--	35H	SINGLE-PHASE 230 V – 50 Hz	Direct **1330**	0,7	150	44	YES 6.3 A - 165 °C	F	-40°C / +60°C
	42AM--/42AMA-	40H/40-		Direct **1400**	1,3	300	54			-40 °C / +70 °C
	42AM--/42AMA-	45H/45-		Direct **1380**	2,01	480				
	42AM--/42AMA-	50H/50-		Direct **1403**	2,78	630				
	42AM--/42AMA-	63H/63-		Direct **913**	2,6	580				
COOLING	42AM--	35C		Direct **880**	0,3	70	44			40 °C/+60 °C
	42AM--	40C		Direct **890**	0,5	110	54			40 °C/+70 °C
	42AM--	45C		Direct **933**	0,6	140				
	42AM--	50C		Direct **890**	1	230				
	42AM--	63C								
EC FMA										
HEATING	42AM--	30H	1-PH 230 V 50/60 Hz	**1530**	0,65	72	54	PTC	B	-25°C/+60°C
	42AM--	35H		**1480**	1,35	165	54	PTC	B	-25°C/+60°C
	42AM--/42AMA-	40H/40-		**1760**	2,2	500	54	Thermal cut-out	B	-25°C/+60°C
	42AM--/42AMA-	45H/45-		**1500**	2,2	500	54	Thermal cut-out	B	-25°C/+60°C
	42AM--/42AMA-	50H/50-		**1440**	3,25	740	54	Thermal cut-out	B	-40°C/+60°C
	42AM--/42AMA-	63H/63-		**1020**	3,2	730	54	Thermal cut-out	B	-40°C/+60°C
COOLING	42AM--	30C		**1530**	0,65	72	54	PTC	B	-25°C/+60°C
	42AM--	35C		**1040**	0,65	73	54	PTC	B	-25°C/+60°C
	42AM--	40C		**1760**	2,2	500	54	Thermal cut-out	B	-25°C/+60°C
	42AM--	45C		**1500**	2,2	500	54	Thermal cut-out	B	-25°C/+60°C
	42AM--	50C		**970**	1,1	250	54	Thermal cut-out	B	-25°C/+60°C
	42AM--	63C		**770**	1,1	250	54	Thermal cut-out	B	-25°C/+60°C

COIL SPECIFICATIONS

		30	35			40			45			50			63		
WATER COIL	Number of heating rows	2	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	Number of cooling rows	2	3														
	Coil capacity (L)	0,8	0,68	1,18	1,66	0,96	1,59	2,28	1,38	2,27	3,22	2,18	3,38	4,55	2,97	4,7	6,4
	Connection diameter	1/2"	¾"						1"			1" ¼					
	Connection type	Threaded unions 243 GCU F/M															
	Maximum operating pressure	8 bar															
	Test pressure	16 bar															
	Max T°	110°C															

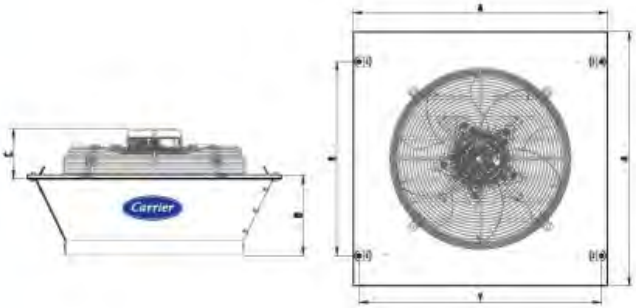
DIMENSIONS

42AM air heater



Size	A	B	C	D		Weight (kg)		
	mm			STD	EC	1 row	2 rows	3 rows
30	395	600	286	115	115	-	18	-
35	460	646	286	101	126	21	24	26
40	557	700	286	142	143	30	32	34
45	620	813	286	142	143	40	42	44
50	716	918	336	142	188	50	53	56
63	876	1050	336	142	200	62	67	72
63S	872	1050	295	126		60	-	-

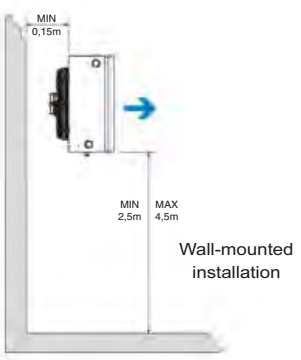
42AMA Destratifier



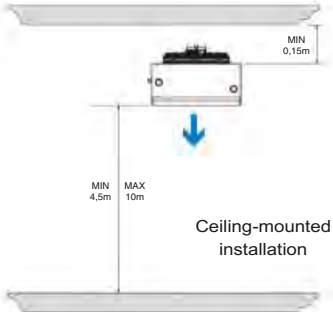
Size	A	B	C		X	Y	Weight kg
			STD	EC			
40	586	183	143	143	370	552	17
45	666	212	143	143	470	632	22
50	747	225	143	188	570	712	25
63	907	273	143	200	705	872	33

INSTALLATION

42AM air heater



Wall-mounted installation



Ceiling-mounted installation

42AMA Destratifier

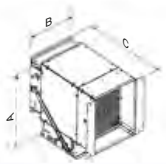
ASSEMBLY ACCESSORIES

A different assembly for each use.

RETURN AIR ACCESSORIES

Size	A	B	C	Codes
35	440		220	7185105
40	520			7185106
45	600			7185107
50	680			7185108
63/63S	840			7185110

Filter box (G1 filter in accordance with EN 779)
Prevents premature clogging of exchanger coils
Not ductable



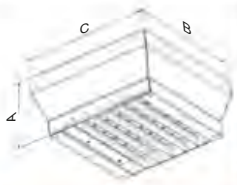
Size	A	B	C	Codes
35	585	455	788	7185127
40	665	535	868	7185128
45	745	615	949	7185129
50	825	695	1029	7185131
63	985	855	1189	7185132

2-channel mixing box with built-in filter
Adjusts the supply of fresh air to levels required by current regulations and mixes it with return air.
Built-in G1 filter and connecting flange for cubic ducts.
Air access sides configurable on-site.
For compliance with standard ERP 2016, the air heater can only operate with a maximum of 10% fresh air.

DIFFUSION ACCESSORIES

Size	A	B	C	Codes
35	750	700	300	7185133
40	850	750	325	7185134
45	970	850	350	7185135
50	1100	970	375	7185136
63/63S	1250	1170	400	7185137

Diffuser on door
Create an air curtain that limits energy loss when doors are opened.



Size	A	B	C	Codes
35	_		_	
40	178	555	522	7185138
45	136	637	618	7185139
50	132	74	714	7185140
63/63S	282	872	814	7185141

Diffuser for large spaces
Reduction cone for increasing the air throws.

ASSEMBLY SUPPORT ACCESSORIES

Size	Codes
All	7181226

Wall bracket

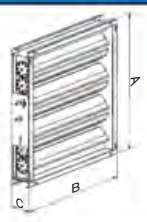
Size	Codes
35 to 45	718122
50 to 63/63S	7181230

Additional kit for fastening on an IPN

Size	Codes
All	7282116

Suspension support for ceiling mounting

DUCT ACCESSORIES



Size	A	B	C	Codes
35	443		130	7043051
40	523			7043052
45	603			7043053
50	683			7043054
63	843			7043055

Antifreeze damper

ELECTRICAL ACCESSORIES

ELECTRICAL & USER SAFETY

Codes	
0596142	**Padlockable proximity switch** Available in a 1 or 2-speed version, this accessory must be placed at least 2 metres from any rotating part, to comply with French standard IT 246, Art. 4-7-3, and EC requirements.
0596147	

Use	Circuit breaker unit - FMA 1-PH heating	Circuit breaker unit - FMA SINGLE-PHASE EC heating	Circuit breaker unit - FMA 1-PH cooling	Circuit breaker unit - FMA SINGLE-PHASE EC cooling	Circuit breaker unit - 3-PH
42AM--30		7252526		7252526	
42AM--35	7252526	7252527	7252523	7252526	7252523
42AM--40	7252527	7252528	7252525	7252528	7252525
42AM--45	7252528	7252528	7252526	7252528	7252527
42AM--50	7252529	7252529	7252526	7252527	72525227
42AM--63	7252529	7252529		7252527	7252527
42AMS-63					7252527
42AMA-40	7252527	7252528			7252525
42AMA-45	7252528	7252528			7252527
42AMA-50	7252529	7252529			7252527
42AMA-63	7252529	7252529			7252527

THERMOSTATS

Codes	**Manual/auto room thermostat – SINGLE-PHASE installation**
33TC-EC01	3-speed EC thermostat kit (for EC SINGLE-PHASE FMA) - Heating and cooling with manual toggle switch - Inductive breaking capacity 3.53A
33TA-AC01	1-speed AC thermostat kit (for AC SINGLE-PHASE FMA) Heating and cooling with manual toggle switch - Inductive breaking capacity 3.53A

Codes	**IP54 industrial environment thermostat – THREE-PHASE installation**
7113335	7133335: 1 stage
7113336	7133336: 2 stages

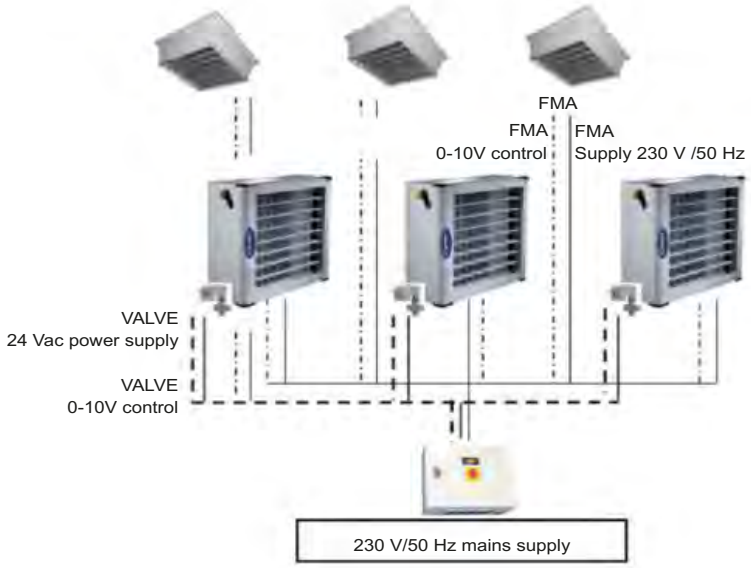
SUPPLY AIR SPEED SELECTION

Codes	**LS/HS switch** For 3-phase motor, selects two motor rotation speeds and stop.
7169961	

Codes	**Autotransformer with selector switch (3.5 A)** Adjusts the voltage on single-phase motors with one variable speed to achieve up to five supply air speeds.
7166982	

42AM SINGLE-PHASE EC AIR HEATER CONTROL

EC MONO BOX range, controls six 42AM-- air heaters or three 42AM-- air heaters + three 42AM--



Description

- Complete "PLUG & PLAY" control solution for air-source (0-10 V SINGLE-PHASE EC FMA) and/or water-source (0-10 V three-way valve) for 42AM air heaters equipped with SINGLE-PHASE EC FMAs.
- Proportional control system adjusts the supply air velocity and coil water supply based on the difference between the indoor temperature (measured by the built-in sensor) and the programmed temperature set-point (summer or winter).
- Built-in timer featuring 3 operating modes: COMFORT, ECO and FROST PROTECTION (weekly setting).
- Electrical components (circuit breaker, padlockable proximity switch, contactor, thermostat, timer, etc.) included. Remote control On/Off function, with two fault summaries. Communication possible via ModBus/JBUS protocols or BACnet IP (optional expansion card).

Advantages

- All your air heaters will be controlled centrally via an EC MONO BOX master controller
- You can adjust the heating or cooling to meet your needs as water is supplied to one or more heat exchangers in proportion to your building's heating demand (available with the optional valve kit).
- Supply air temperatures are controlled to maintain the necessary air streams. You can choose between fresh air only or mix with frost protection via the actuator to be installed on the 2-channel mixing box with built-in filter (available with the fresh air kit + damper actuator + frost protection thermostat kit) or 100% recirculated air.
- You will bring the fresh air rate of your building in line with current regulations or according to the space occupancy (via the built-in timer) thanks to an internal timer which can be configured on a weekly basis using 3 operating modes (Comfort, Eco, Frost protection). Fresh air damper controlled via the EC MONO BOX (On/off) depending on optional fresh air kit (Antifreeze thermostat + servomotor).
- A building's heat gain will depend on its occupancy, using centralised management of the 42AM air heaters via the controller (one EC MONO BOX controls six 42AM- heaters or six 42AMA- heaters or three 42AM- heaters + three 42AMA- heaters).
- The display shows the operating status of each individual 42AM heater (fresh air or return air, motor fault, risk of frost, etc.)
- No need to size and wire the electrical components (circuit breaker, padlockable proximity switch, contactor, thermostat, timer, etc.) as this all-in-one control solution makes for faster installation:.
- Two user levels: USER (restricted access) and INSTALLER (full access) for greater simplicity, ease of use and security.
- Option to use a remote control On/Off function with two fault summaries. Communication possible via ModBus/JBUS protocols or BACnet IP (optional expansion card).

Electrical data notes

- Single-phase EC BOX unit supply: Single-phase 230 V
- Index of Protection: IP54
- Built-in motor overload and user protections as required by French standard NF C 15-100

COMPARATIVE STUDY OF AC AND EC FMAS

Study comparing two air heaters in heating mode, (1) an AIR HEATER fitted with an AC FMA (without JET+ diffuser) and (2) an AIR HEATER fitted with an EC FMA (with JET+ diffuser).

Space volume:	1240 m² under 5 metres of ceiling, i.e. **6200 m³**
Type of insulation:	light (such as in a workshop or small distribution center)
Temperature to be maintained in occupied space:	17°C
Average outdoor temperature used:	5°C
Heating period:	**November** to **March**
Heating time range:	from **07.00** to **19.00**
Necessary heating capacity:	**80W/m²** i.e. **99.2 kW** (at 5 °C)

AIR HEATER WITH AC FMA	HELIOTHERME WITH EC FMA
COST OF INSTALLATION	
Mixing rate: **6** (or 37,200 m³/h to be provided)	Mixing rate: **4** (or 24,800 m³/h to be provided) *(Lower rate achieved by adjusting the air flow via the 0-10 V signal of the FMA connected to the EC BOX)*
Unit selected: - 6 x 42AM--503H0T0LR Total flow rate supplied = 37,200 m³/h Total heating capacity delivered = 194 kWh	Unit selected: - 6 x 42AM--453H0M9LR Total flow rate supplied = 24,800 m³/h Total heating capacity delivered = 146 kWh
Total price of air heaters	**Total price of air heaters**
€8 586	**€9 192**
ECO+ 1-PH BOX control + installation costs **€2 781**	**"Plug & Play' EC BOX control** **€2 480**
OPERATING COST	
Basis for analysis: Energy price assessed according to the Pegase database for energy statistics Total number of heating days = 100 (20 per month from November to March)	
Running time needed each day to maintain 17°C in the comfort zone 960 minutes a day ➠ or **1600 hours per year**	Running time needed each day to maintain 17°C in the comfort zone 760 minutes a day ➠ or **1268 hours a year:** **423 hours at maximum power and 845 hours at 1/2 power (or 332 hours of economy operation)**
158,720 kW of boiler power used Annual heating expenses **€9 047**	**125,786 kW** of boiler power used Annual heating expenses **(savings of 25%)** **€7 170**
Annual electricity expenses for AC FMA **€605**	Annual electricity expenses for EC FMA **(savings of 60%)** **€226**
Total annual expenses **€21,019**	Total annual expenses **(savings of 10%)** **€19,068**

AIR TREATMENT

OPERATING LIMITS

42AM-- and 42AMA- with SINGLE-PHASE AC MOTOR		
Water circuit	Maximum pressure: PN16	Minimum water inlet temperature: 5 °C (consult us for other values)
		Maximum water inlet temperature: 110 °C (consult us for other values)
Indoor air temperature		Minimum air inlet temperature: -15 °C (consult us for other values)
		Maximum air inlet temperature: 60 °C (consult us for other values)
Power supply		1 PH/230 V/50 Hz
IP		44 (for size 35) and 54 (for sizes 40-45-50-63)
42AM-- and 42AMA- with SINGLE-PHASE EC motor		
Water circuit	Maximum pressure: PN16	Minimum water inlet temperature: 5 °C (consult us for other values)
		Maximum water inlet temperature: 110 °C (consult us for other values)
Indoor air temperature		Minimum air inlet temperature: -15 °C (consult us for other values)
		Maximum air inlet temperature: 60 °C (consult us for other values)
Power supply		1 PH/230 V/50/60 Hz
IP		54
42AM-- and 42AMA- with SINGLE-PHASE AC MOTOR		
Water circuit	Maximum pressure: PN16	Minimum water inlet temperature: 5 °C (consult us for other values)
		Maximum water inlet temperature: 110 °C (consult us for other values)
Indoor air temperature		Minimum air inlet temperature: -15 °C (consult us for other values)
		Maximum air inlet temperature: 60 °C (consult us for other values)
Power supply		3 PH/400 V/50 Hz
IP		44 (for size 35) and 54 (for sizes 40-45-50-63)

4-WAY CASSETTE

- Easy installation
- Centralised diffusion
- Low energy consumption
- Optimised comfort
- Aesthetically integrated into suspended ceilings
- Quiet operation

42GW

Cooling capacity 1.5-8.5 kW
Heating capacity 1.9-10.3 kW

Carrier's Idrofan cassettes 42GW_AC/LEC offer a modern solution for a host of commercial applications. They are particularly suitable for big offices, stores, restaurants, bars, hotel receptions, meeting rooms, banks, laboratories and exhibition rooms.

CARRIER participates in the ECP programme for FC/FCP
Check ongoing validity of certificate:
www.eurovent-certification.com

CODING

	Range				size & motor type			Coil type	Control	Valves	Electric heater	Valve servomotors	Elec. box
Product ref.	**4**	**2**	**G**	**W**	**2**	**0**	**0**	**C**	**A**	**G**	**A**	**A**	**-**
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13

Digit 8
C = 2-pipe
D = 4-pipe

Digit 5 - 6 -7			
2	0	0	AC motor
2	0	9	EC motor
3	0	0	AC motor
3	0	9	EC motor
4	0	0	AC motor
4	0	9	EC motor
5	0	0	AC motor
5	0	9	EC motor
6	0	0	AC motor
6	0	9	EC motor
7	0	1	AC motor
7	0	9	EC motor

Digit 10
- = No valves
G = 2-way valve
H = 4-way valve

Digit 11
- = None
A = Elec. batt.

Digit 13
- = Without CARRIER valve, for customer 230V ON/OFF valve
X = Without CARRIER valve, for customer 230V - 3PTS valve
Y = Without CARRIER valve, for customer 24V - 3PTS valve
Z = Without CARRIER valve, for customer 24V ON/OFF valve

Digit 12
- = None
A = 230 V ON/OFF actuator
B = 24V ON/OFF servomotor (mandatory, digit 9 = -)
C = 3-POINT 230 V actuator (with NTC or WTC)
B = 24V 3-POINT servomotor (mandatory, digit 9 = -)

Digit 9
- = None
A = 33TA Thermostat for AC motor (2-PIPE)
B = 33TB Thermostat for AC motor (4-pipe or 2-pipe + elec.)
C= 33TC Thermostat for EC motor (2-pipe)
D = 33TD Thermostat for EC motor (4-pipe or 2-pipe + elec.)
K = NTC control (AQUASMART EVOLUTION®)
L = WTC LON control (manual louvres grille, without IR)
M = WTC BACNET control (manual louvres grille, without IR)
L = WTC LON control (grille with motorised louvres and/or IR receiver)
M = WTC BACNET control (grille with motorised louvres and/or IR receiver)

TECHNICAL DESCRIPTION

- The 42GW_AC is available with a 3-speed AC motor. The 42GW_LEC is available with a variable speed low energy consumption (LEC) motor.
- The 42GW is installed in suspended ceilings, and can provide two, three or four-way diffusion. These units maintain the requisite temperature and humidity degree with precision, while preventing draughts and formation of areas of stagnant air.
- The air inlet grille blends in nicely with all types of interior.
- Carrier's hydraulic cassette is available in 6 sizes, to suit a vast range of applications, with air flows ranging from 100 to 402 l/s (360 to 1450 m^3/h). The Idrofan cassette offers an ultra-low noise level, for situations where low noise level is the most important selection criterion.

General specifications

- The slimline 42GW is light and easy to install. The small frame is perfectly suited to conventional ceiling tiles, and is easy to install anywhere.
- Comfort is ensured by a four-way air supply, and the opening of each diffuser can also be set, or even closed completely.
- Integrated cooling and heating coils, which come factory-fitted, for two-pipe or two-pipe plus electrical heater applications, as well as 4-pipe applications.

Designed for quiet

- 42GW units have been designed especially to operate very quietly, with noise levels which represent new comfort levels for buildings. The unique design of the centrifugal fan ensures very quiet operation.
- The new design of the fan/motor block ensures quiet operation (half the noise of the previous model). Particular attention has been paid to low-speed operation of the fan.
- The special shape of the diffuser ensures a rapid mix of supply air and ambient air. Conditioned air is blown against the ceiling, and then distributed uniformly throughout the room. The return air enters the cassette via a large grille. It is then cleaned by a removable and washable synthetic filter, conditioned and then supplied again.

Motors

- The Idrofan is available with a three-speed AC motor, with ultra-low noise levels, which makes it one of the quietest cassettes on the market.
- The Idrofan is also available with variable speed LEC motors (low energy consumption), which meet the new building energy performance objectives. The low energy consumption solution improves the unit's performances, bringing you:
  - Lower energy costs – the LEC motor reduces the unit's energy consumption by 50 to 70%. This option meets the new regulations in terms of building energy management.
  - Better comfort – the variable speed low energy consumption motor reduces the noise level compared to multi-speed motors, making for an ultra-quiet air flow, even at very low operating levels. Thanks to the NTC control, a maximum fan speed can be set to better manage noise level.
  - Maximum flexibility – the air flow automatically adapts from 0 to 100%, ensuring perfect cooling or heating conditions in the room.
  - Extended service life – low energy consumption LEC technology motors run at lower fan motor temperatures, which extends their service life.

Filters

- The standard filter used for the Idrofan range has a pleated filtration surface, which provides a surface area 87% larger than a traditional filter, as well as the following additional advantages:
  - Low pressure drop, consumption and noise level.
  - The mean filter cleaning interval is three times longer than for standard filters.
  - EU1 grade polypropylene-based filter.
- In the Idrofan cassette range, the filter is situated in the unit's grille. Cleaning is simple: you need only detach the filter manually from the support on the grille. The filter frame can be lowered, and the filter can be easily removed. Refitting is just as simple, you need only follow the procedure in reverse. Washable filters are supplied in the standard version.

Condensate drain pump

- Self-contained, very high-performance condensate drain pump flush-mounted in soundproofing material, for better condensate management - quick and quiet.
- The cassette's main condensate pan has been improved thanks to use of the very latest composite materials, to provide better noise absorption, easier cleaning and better condensed water transfer from the coil to the discharge pump.

TECHNICAL DESCRIPTION

Electrics box

- All the units are equipped with an electrics box, which contains the terminal strips. This box is located on the outside of the unit, with a fuse to protect the unit and the control. The box cover is easy to open: you need only remove a mounting bolt. For more details on the electrical connections, please consult the appropriate wiring prints.

Carrier controllers range

- The Idrofan is available with the complete range of Carrier controllers. Several types facilitate installation. The number of controllers offers an abundance of solutions and makes selection easy, according to its application.
  - A-B-C-D type electronic thermostats
  - The Carrier electronic thermostats range is available for all Carrier hot water terminal ranges
  - Type A: a two-pipe application equipped with alternating current motors
  - Type B: four or two-pipe applications equipped with electric heating and alternating current motors.
  - Type C: a two-pipe application equipped with EC motors
  - Type D: four or two-pipe applications equipped with electric heating and EC motors.
- The thermostat for FCU with EC motors option manages 3 intermittent and configurable speeds, via a 0-10V signal.
- The thermostats come in an elegant square shape with a coaxial button enabling the room temperature to be set, as well as three buttons for setting the ventilation speed, cooling or heating mode, and START or STOP mode, as the customer wishes.
- Wall-mounted controls can easily and discreetly be integrated into any room environment.
- The operating range of the electronic thermostats goes from 10°C to 30°C, with the option of limiting the temperature in public buildings where low energy consumption is a paramount requirement. This is done via a micro-switch which is inside the control (cooling set-point between 23°C and 30°C, heating between 10°C and 21°C).

The following characteristics are available as parameters:

- **Auto ventilation:** the fan speed is automatically set by the thermostat; when the ambient temperature drifts away from the setting, maximum speed is selected. When the ambient temperature nears the desired value, the speed decreases until reaching minimum speed or stopping in the deadband.
- **Automatic changeover:** automatic changeover from cooling mode to heating mode, depending on the water temperature, ensures that the ideal ambient temperature is maintained.
- **Remote changeover:** automatic changeover from cooling mode to heating mode, depending on the remote signal emitted by the control system.
- **Draught protection:** this function stops the fan if the water temperature is too low or too high in relation to demand, thereby ensuring that the room's occupants are not disturbed by a warm draught.
- **Air temperature sensor:** this sensor is mounted on the unit. If the thermostat is installed on a wall, a second sensor situated in the thermostat may be used to correctly set the desired ambient temperature.
- **Low water temperature cutout:** this function ensures that the ambient temperature is maintained above the minimum level. If the unit has been shut down and ambient temperature has dropped below 7°C, low water temperature cutout is activated and the unit operates in heating mode until the temperature reaches above 9°C. The unit is them switched off again.
- **Optimised heating management (available with the electrical heater option):** if the water temperature is below 30°C, the system operates in heating demand mode, and the electrical heater is the only available heating source. If the water temperature is above 35°C, the system operates in auxiliary heating mode, powering up the water coil and electrical heater at the same time. The auxiliary heating function is deactivated if the temperature reaches above 45°C (the electrical heater is then de-energized).
- **Unoccupied mode:** this temperature function saves energy when the room is unoccupied, without needing to switch off the unit. When the unoccupied mode button is held down, the current set-point is modified as follows, without changing the position of the set-point selection button:
  - Cooling: set-point increased by 4 K
  - Heating: set-point decreased by 4 K

The unit reverts to normal operation when the unoccupied mode button is held down again.

- **LED intensity:** for office applications or light commercial applications, 10 seconds after the user interface has last been used, all the necessary LEDs are dimmed. As soon as the user touches the user interface again, the LEDs revert to normal brightness. To prevent disruption to hotel customers, the thermostat can be configured from Night Mode to Dark Mode: in this case, 10 seconds after the user interface has last been used, all the LEDs will switch off. As soon as the user touches the user interface again, the current status LEDs will switch on, and revert to normal brightness.

TECHNICAL DESCRIPTION

- **Air sampling:** if no ventilation demand is made and the air sampling jumper is in the ON position, the command executes the air sampling function: the air moves, to ensure a more reliable ambient temperature reading.
- **Continuous ventilation:** if there is no ventilation demand and the continuous ventilation jumper is in the ON position, the control selects low, medium or high fan speed, depending on the ventilation speed selection, regardless of the thermal conditions. If the fan is controlled by automatic ventilator mode and the control is not in demand phase, the fan is activated permanently in low speed mode.
- **External contact:** a high voltage input signal for external contact is displayed. If the external contact is activated, the device will respond according to its local configuration:
  - Presence detection (empty room with a hotel door card), energy saving mode is activated, the internal temperature is increased by 4°C in cooling mode and is decreased by 4°C in heating mode
  - Window contact: during STOP mode (window open), all the outputs are disconnected (fan, valves, etc.), and only the frost protection function is active if it has been started up via its micro-switch.
- **Master/slave control:**
  - Thermostat type A_AC and B_AC: the accessories grouped control panel (42N9006) provides a ventilation speed relay only (the water valves must be wired or related separately) for up to 300 units with air temperature-based control (no water valves), or for 10 two-pipe units with water control, or 5 four-pipe units with water control
  - Thermostat type C_EC and D_EC: the EC motor thermostat version can control up to 10 LEC units thanks to parallel wiring of the analogue output signal with two 0-10 cables (the water valves and electric heaters must be wired or relayed separately).

NTC

- A PID controller can communicate and combine energy savings algorithms with solutions providing compete control functions, compatible with the Aquasmart Evolution system. The NTC control is compatible with the low energy consumption motor option, and combines energy savings with optimised comfort.

Valve types available

- Valve bodies: both types of valve, two-way or four-way (three-way with integral by-pass) are factory-fitted and subjected to factory tests. These chilled water valves are completely insulated in a moulded insulant jacket, which prevents condensation from forming on the valve body. This new jacket reduces the complexity of the range and prevents the risk of water leaks. These valves can be factory-fitted on the unit side.

WTC controller

- Open Communication protocol BACnet or LON
- Communication PID controller
- Large range of user interfaces, wall mounted or remote
- Manage the motorized louvers of the grill in manual or automatic
- Manages the EC motor for optimised comfort
- Manages a CO2 sensor to improve air quality
- Optional lighting and/or blinds management modules, controlled from the same user interface
- Large range of sensors (light, presence, etc.)

Valve types available

- Valve bodies: both types of valve, two-way or four-way (three-way with integral by-pass) are factory-fitted and subjected to factory tests. These chilled water valves are completely insulated in a moulded insulant jacket, which prevents condensation from forming on the valve body. This new jacket reduces the complexity of the range and prevents the risk of water leaks. These valves can be factory-fitted on the unit side.

Insulating moulded jacket for the valve

- Valve actuators: Carrier has a vast range of valve actuators with two or four-way valve bodies, which offer the most suitable solution whatever the control type and the customer's requirements, from on/off to proportional type, and a 230 V or 24 V power supply:
  - 230 V on/off actuator
  - 24 V on/off actuator
  - 230 V 3-point floating actuator
  - 24 V 3-point floating actuator
- When combining low energy consumption motors with an NTC control, it is recommended to use 230 V three-point floating actuators, to increase energy savings and improve comfort.

TECHNICAL DESCRIPTION

Auxiliary condensate pan

- An auxiliary condensate pan is available as an accessory if the water valves, shut-off valves or balancing valves are customer supplied. Conversely, the auxiliary condensate pan is not required if you have water valves factory-fitted by Carrier, since they come supplied with an insulated valve body (insulating moulded jacket), which prevents condensation.*

Auxiliary drain pan for units 42GW_S/E 200/209, 300/309, 400/409

Auxiliary drain pan for units 42GW_S/E 500/509, 600/609, 701/709

Electrical heater option

- There is an electrical heater option only on models with a two-pipe coil. There is an electrical heater available for each Idrofan cassette size, factory-fitted to ensure reliable and completely safe operation.

Fresh air inlet option

- All the units have couplings provided for fresh air inlet ducts, which can considerably improve the indoor air quality, while the fresh air intake volume is regulated by the CO_2 sensor by means of the NTC control.
- The fresh air flow must represent less than 10% of the total air flow, to prevent operating problems and excessive noise. For a higher air flow, there is a primary air kit which can be fitted on the precut hole provided for an air duct in the adjacent room, and a noise barrier, such that the fresh air enters the room via a diffuser.

Conditioned air supply via a duct in an adjacent room

- This option supplies conditioned air in a room situated near the Idrofan cassette, via an air duct (customer supplied). If this option is used, the supply air opening corresponding to the duct must be closed, using the air discharge outlet closing kit supplied. This kit cannot be used in units fitted with an electrical heater. An air inlet grille must be fitted (if possible near the floor) between the air conditioned room (where the unit is) and the adjacent room; or a cut-out can be made at the bottom of the door.
- The duct lengths can be calculated in accordance with the "air distribution in an adjacent room" diagram, which figures in the installation, operation and maintenance manual, also taking into account the pressure drop via the air diffusers and the fresh air filters.

Ease of maintenance

- All of the main components (motors, fans and discharge pump) are accessible from the unit base; you need only remove the grille. These components can also be removed without having to touch the other components or removing the surrounding ceiling tiles.

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH AC MOTORS

42GW		200C			300C			400C			500C			600C			701C		
Coil type		2-pipe			2-pipe			2-pipe			2-pipe			2-pipe			2-pipe		
Fan speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	l/s	183	125	100	204	140	89	249	173	134	272	199	147	321	229	139	402	299	166
	m^3/h	660	450	360	735	505	320	900	625	485	980	720	530	1160	825	500	1450	1080	600
Cooling																			
Total cooling capacity	kW	2.33	1.74	1.53	3.96	2.86	1.86	4.64	3.46	2.77	6.03	4.41	3.33	7.13	5.43	3.68	8.54	6.43	4.02
Sensible cooling capacity	kW	1.95	1.46	1.28	3.01	2.16	1.41	3.57	2.64	2.11	4.68	3.44	2.58	5.37	4.03	2.66	6.4	4.81	2.95
Water flow	l/s	0.11	0.09	0.08	0.19	0.14	0.09	0.23	0.17	0.13	0.29	0.21	0.16	0.34	0.26	0.18	0.41	0.31	0.19
	l/h	410	310	270	690	500	320	810	600	480	1050	760	580	1240	940	640	1490	1120	700
Water pressure drop, cooling	kPa	11.1	6.8	5.6	15.2	8.6	4.7	19.8	11.6	7.9	23.8	13.4	8.3	12.4	7.8	4.6	21.9	13.1	6
Heating mode																			
Heating capacity	kW	2.74	2.17	1.92	3.68	3.15	1.94	5.28	3.92	3.16	6.84	5.08	3.8	8.51	6.26	3.85	10.28	7.95	4.38
Water flow	l/s	0.13	0.11	0.09	0.18	0.15	0.09	0.26	0.19	0.15	0.33	0.24	0.18	0.41	0.30	0.19	0.50	0.38	0.21
	l/h	480	380	330	640	550	340	920	680	550	1190	880	660	1480	1090	670	1790	1380	760
Water pressure drop, heating	kPa	11.	8.4	7.1	12.8	10.1	.0	1 .6	11.	8.4	2 .1	14.4	9.	15.3	9.6	4.	18	11	5
Water volume	l	0.55			1.1			1.1			1.6			2.4			2.4		
Sound levels																			
Sound power level	dB(A)	49	41	37	53	47	35	57	48	42	49	40	35	54	46	38	59	52	40
Sound pressure level	dB(A)	40	32	28	44	38	26	48	39	33	40	31	26	4	37	29	50	43	31
NR value**		36	28	25	40	31	20	43	34	28	35	26	21	40	32	22	45	38	25
Power input	W	58	35	25	58	34	17	99	58	38	66	41	28	88	61	34	125	92	44
Current	A	0.27	0.17	0.12	0.24	0.14	0.07	0.41	0.24	0.16	0.30	0.17	0.12	0.46	0.27	0.14	0.63	0.41	0.19
EUROVENT FCEER energy class (cooling mode)					C			D			C			C					
EUROVENT FCCOP energy class (heating mode)		E			D			D			C			C			D		
Electrical heater																			
High capacity @240V	W	1500			2500			2500			3000			3000			3000		
Current (high capacity) @240V	A	6.3			10.4			10.4			12.5			12.5			12.5		
Coil connection diameter	inches	3/4 " gas			3/4" gas			3/4 " gas			1" gas			1" gas			1" gas		
Condensate diameter		16			16			16			16			16			12.5		
Weight, unit	kg	14.8			16.5			16.5			37			39.6			39.6		
Weight, grille	kg	3			3			3			5			5			5		

Based on Eurovent conditions:

Cooling mode (2 and 4-pipe coils): entering air temperature 27°C dry bulb/19°C wet bulb, 7°C/12°C entering and leaving water temperature
Heating mode (2-pipe coil): air temperature 20°C, 45°C/40°C entering and leaving water temperature
Heating mode (4-pipe coil): air temperature 20°C, 65°C/55°C entering and leaving water temperature

* Speeds: 1 = high, 2 = medium, 3 = low

** Sound pressure level and NR values with hypothetical noise attenuation of the room of -9 dB(A).

Note: the version with an electrical heater is available on all 2-pipe units

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

AIR TREATMENT

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH AC MOTORS

42GW		200D			300D			400D			600D			701D		
Coil type		**4-pipe**			**4-pipe**			**4-pipe**			**4-pipe**			**4-pipe**		
Fan speed	l/s	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air flow	m^3/h	183	125	100	204	140	89	249	173	134	321	229	139	402	299	166
		660	450	360	735	505	320	900	625	485	1160	825	500	1450	1080	600
Cooling																
Total cooling capacity	kW	1.97	1.49	1.34	3.34	2.67	1.98	3.95	3.18	2.53	6.58	4.93	2.96	7.49	5.97	3.14
Sensible cooling capacity	kW	1.84	1.37	1.18	2.62	2.05	1.49	3.25	2.55	2.04	5.08	3.78	2.31	5.89	4.64	2.53
Water flow	l/s	0.10	0.07	0.06	0.17	0.13	0.10	0.20	0.16	0.12	0.32	0.24	0.14	0.39	0.32	0.18
	l/h	350	260	230	580	460	340	700	560	440	1140	860	510	1310	1040	550
Water pressure drop, cooling	kPa	14.9	9.1	7.6	12.6	8.6	5.6	16.5	11.2	7.6	25.2	15.3	6.5	31.5	21.8	7.1
Water volume, cooling	l	0.4			1.1			1.1			2.4			2.4		
Heating mode																
Heating capacity	kW	1.67	1.27	1.09	5.46	4.4	3.1	5.8	5	4.32	10.04	7.79	5.28	12.77	10.07	6.43
Water flow rate	l/s	0.04	0.03	0.03	0.15	0.12	0.09	0.16	0.14	0.12	0.27	0.21	0.14	0.35	0.27	0.17
	l/h	150	110	100	548	439	310	585	499	430	989	765	516	1247	989	628
Water pressure drop, heating	kPa	29.5	18.8	14.8	21.1	14.8	8.5	24.2	18.9	15	12.3	8.4	5.1	17.9	12.3	6.5
Water volume	l	0.1			0.6			0.6			1.2			1.2		
Sound levels																
Sound power level	**dB(A)**	49	40	36	53	44	35		48	42	54	46	38	59	52	40
Sound pressure level	dB(A)	40	31	27	44	35	26	48	39	33	45	37	29	50	43	31
NR value**		35	27	23	39	30	20	43	34	28	40	32	22	45	38	25
Power input	W	58	35	25	58	34	17	99	58	38	88	61	34	125	92	44
Current	A	.2	0.1	0.1	0.24	0.14	0.07	.41	.24	.16	0.46	0.2	0.14	0.	0.41	.19
EUROVENT FCEER energy class (cooling mode)		E			C			D			C			D		
EUROVENT FCCOP energy class (heating mode)		E			C			D			C			C		
Connection diameter																
Cooling coil	inches	3/4 " gas			3/4 " gas			3/4 " gas			1" gas			1" gas		
Heating coil	inches	1/2 " gas			1/2 " gas			1/2 " gas			3/4 " gas			3/4 " gas		
Condensate diameter	mm	16			16			16			16			16		
nit weight	kg	14.8			16.5			16.5			39.6			39.6		
Grille weight	kg	3			3			3			5			5		

Based on Eurovent conditions:

Cooling mode (2 and 4-pipe coils): entering air temperature 27°C dry bulb/19°C wet bulb, 7°C/12°C entering and leaving water temperature
Heating mode (2-pipe coil): air temperature 20°C, 45°C/40°C entering and leaving water temperature
Heating mode (4-pipe coil): air temperature 20°C, 65°C/55°C entering and leaving water temperature

* Speeds: 1 = high, 2 = medium, 3 = low

** Sound pressure level and NR values with hypothetical noise attenuation of the room of -9 dB(A).

Note: the version with an electrical heater is available on all 2-pipe units

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH LEC MOTORS

42GW		209C			309C			409C			509C			609C			709C		
Coil type		2-pipe			2-pipe			2-pipe			2-pipe			2-pipe			2-pipe		
Fan speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Voltage (DC)	V	10	6	2	10	6	2	10	6	2	10	6	2	10	6	2	10	6	2
Air flow	l/s	183	125	100	204	140	89	249	173	134	272	199	147	321	229	139	443	299	166
	m^3/h	660	450	360	735	505	320	900	625	485	980	720	530	1160	825	500	1600	1080	600
Cooling																			
Total cooling capacity	kW	2.36	1.77	1.54	3.98	2.88	1.87	4.68	3.5	2.79	6.08	4.44	3.35	7.19	5.47	3.71	9.55	6.49	4.05
Sensible cooling capacity	kW	1.98	1.49	1.29	3.04	2.18	1.42	3.61	2.67	2.13	4.72	3.47	2.6	5.43	4.07	2.68	7.16	4.86	2.98
Water flow rate	l/s	0.11	0.09	0.08	0.19	0.14	0.09	0.23	0.17	0.13	0.29	0.21	0.16	0.34	0.26	0.18	0.46	0.31	0.19
	l/h	410	310	270	690	500	320	810	600	480	1050	760	580	1240	940	640	1660	1120	700
Water side pressure drop, cooling	kPa	11.1	6.8	5.6	15.2	8.6	4.7	19.8	11.6	7.9	23.8	13.4	8.3	12.4	7.8	4.6	26.9	13.1	6
Heating mode																			
Heating capacity	kW	2.74	2.17	1.92	3.68	3.15	1.94	5.28	3.92	3.16	6.84	5.08	3.8	8.51	6.26	3.85	11.03	7.95	4.38
Water flow	l/s	0.13	0.11	0.09	0.18	0.15	0.09	0.26	0.19	0.13	0.33	0.24	0.18	0.41	0.30	0.19	0.53	0.38	0.21
	l/h	480	380	330	640	550	340	920	680	480	1190	880	660	1480	1090	670	1920	1380	760
Water pressure drop, heating	kPa	11.8	8.4	7.1	12.8	10.1	5	18.6	11.7	8.5	23.1	14.4	9.2	15.3	9.6	4.8	30.6	18	7.2
Water volume	l	0.55			1.1			1.1			1.6			2.4			2.4		
Sound levels																			
Sound power level	**dB(A)**	49	40	36	53	44	35	57	48	42	49	40	35	54	46	38	61	52	40
Sound pressure level	dB(A)	40	31	27	44	35	26	48	39	33	40	31	26	45	37	29	52	43	31
NR value**		35	27	23	40	31	20	43	35	29	35	26	20	39	32	22	47	38	25
Power input	W	29	13	9	33	14	7	57	23	13	25	12	7	45	23	9	115	40	11
Current	A	.19	0.1	0.08	0.2	0.1	0.	0.4	0.2	.12	.23	.12	.08	0.4	0.22	.1	0. 9	0.	0.1
EUROVENT FCEER energy class (cooling mode)		B			A			B			A			A			A		
EUROVENT FCCOP energy class (heating mode)		B			B			B			A			A			B		
Electrical heater																			
High capacity @240V	W	1500			2500			2500			3000			3000			3000		
Current (high capacity) @240V	A	6.3			10.4			10.4			12.5			12.5			12.5		
Coil connection diameter	inches	3/4 " gas			3/4" gas			3/4 " gas			1" gas			1" gas			1" gas		
Condensate diameter		16			16			16			16			16			12.5		
Weight, unit	kg	14.8			16.5			16.5			37			39.6			39.6		
Weight, grille	kg	3			3			3			5			5			5		

Based on Eurovent conditions:

Cooling mode (2 and 4-pipe coils): entering air temperature 27°C dry bulb/1 9°C wet bulb, 7/12°C entering and leaving water temperature
Heating mode (2-pipe coil): air temperature 20°C, 45°C/40°C entering and leaving water temperature
Heating mode (4-pipe coil): air temperature 20°C, 65°C/55°C entering and leaving water temperature
Sound pressure level and NR values with hypothetical noise attenuation of the room of -9 dB(A).

Note: the version with an electrical heater is available on all 2-pipe units

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Eurovent certified values

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH LEC MOTORS

42GW		209D			309D			409D			609D			709D		
Coil type		**4-pipe**			**4-pipe**			**4-pipe**			**4-pipe**			**4-pipe**		
Fan speed																
Voltage (DC)	V	10	6	2	10	6	2	10	6	2	10	6	2	10	6	2
Air flow	l/s	183	125	100	204	140	89	249	173	134	321	229	139	443	299	166
	m^3/h	660	450	360	735	505	320	900	625	485	1160	825	500	1600	1080	600
Cooling																
Total cooling capacity	kW	1.97	1.49	1.34	3.34	2.67	1.98	3.95	3.18	2.53	6.58	4.93	2.96	7.49	5.97	3.14
Sensible cooling capacity	kW	1.84	1.37	1.18	2.62	2.05	1.49	3.25	2.55	2.04	5.08	3.78	2.31	5.89	4.64	2.53
Water flow	l/s	0.10	0.07	0.06	0.17	0.13	0.10	0.20	0.16	0.12	0.32	0.24	0.14	0.36	0.29	0.15
	l/h	350	260	230	580	460	340	700	560	440	1140	860	510	1310	1040	550
Water pressure drop, cooling	kPa	14.9	9.1	7.6	12.6	8.6	5.6	16.5	11.2	7.6	25.2	15.3	6.5	31.5	21.8	7.1
Water volume, cooling	l	0.4			1.1			1.1			2.4			2.4		
Heating mode																
Heating capacity	kW	1.67	1.27	1.09	5.46	4.4	3.1	5.8	5	4.32	10.04	7.79	5.28	13.99	10.07	6.43
Water flow	l/s	0.04	0.03	0.03	0.13	0.11	0.08	0.14	0.12	0.11	0.24	0.19	0.13	0.31	0.24	0.16
	l/h	150	110	100	480	390	270	510	440	380	880	680	460	1120	880	560
Water pressure drop, heating	kPa	29.5	18.8	14.8	21.1	14.8	8.5	24.2	18.9	15	12.3	8.4	5.1	20.7	12.3	6.5
Water volume	l	0.1			0.6			0.6			1.2			1.2		
Sound levels																
Sound power level	dB(A)	49	40	36	53	44	35	57	48	42	54	46	38	61	52	40
Sound pressure level	dB(A)	40	31	27	44	35	26	48	39	33	45	37	29	52	43	31
NR value**		35	27	23	40	31	20	43	35	29	39	32	22	47	38	25
Power input		29	13	9	33	14	7		23	13	45	23	9	115	4	11
Current	A	0.19	0.1	0.08	0.27	0.13	0.08	0.46	0.2	0.12	0.4	0.22	0.1	0.89	0.35	0.12
EUROVENT FCEER energy class (cooling mode)		B			A			B			A			B		
EUROVENT FCCOP energy class (heating mode)		C			A			B			A			A		
Connection diameter																
Cooling coil	inch	3/4 " gas			3/4 " gas			3/4 " gas			1" gas			1" gas		
Heating coil	inch	1/2 " gas			1/2 " gas			1/2 " gas			3/4 " gas			3/4 " gas		
Condensate diameter		16			16			16			16			12.		
Weight, unit	kg	14.8			14.8			14.8			39.6			39.6		
Heaters weight	kg	3			3			3			5			5		

Based on Eurovent conditions:

Cooling mode (2 and 4-pipe coils): entering air temperature 27°C dry bulb/1 9°C wet bulb, 7/12°C entering and leaving water temperature
Heating mode (2-pipe coil): air temperature 20°C, 45°C/40°C entering and leaving water temperature
Heating mode (4-pipe coil): air temperature 20°C, 65°C/55°C entering and leaving water temperature
Sound pressure level and NR values with hypothetical noise attenuation of the room of -9 dB(A).

Note: the version with an electrical heater is available on all 2-pipe units

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

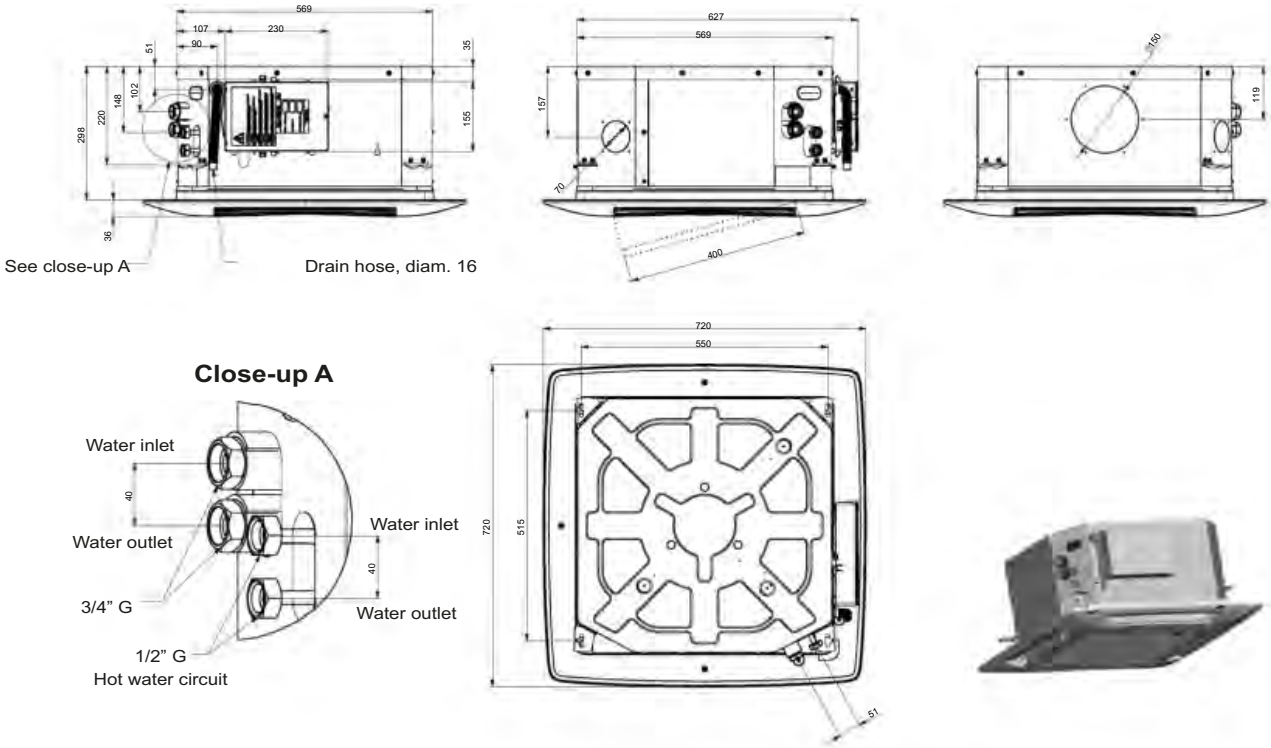
Eurovent certified values

AIR TREATMENT

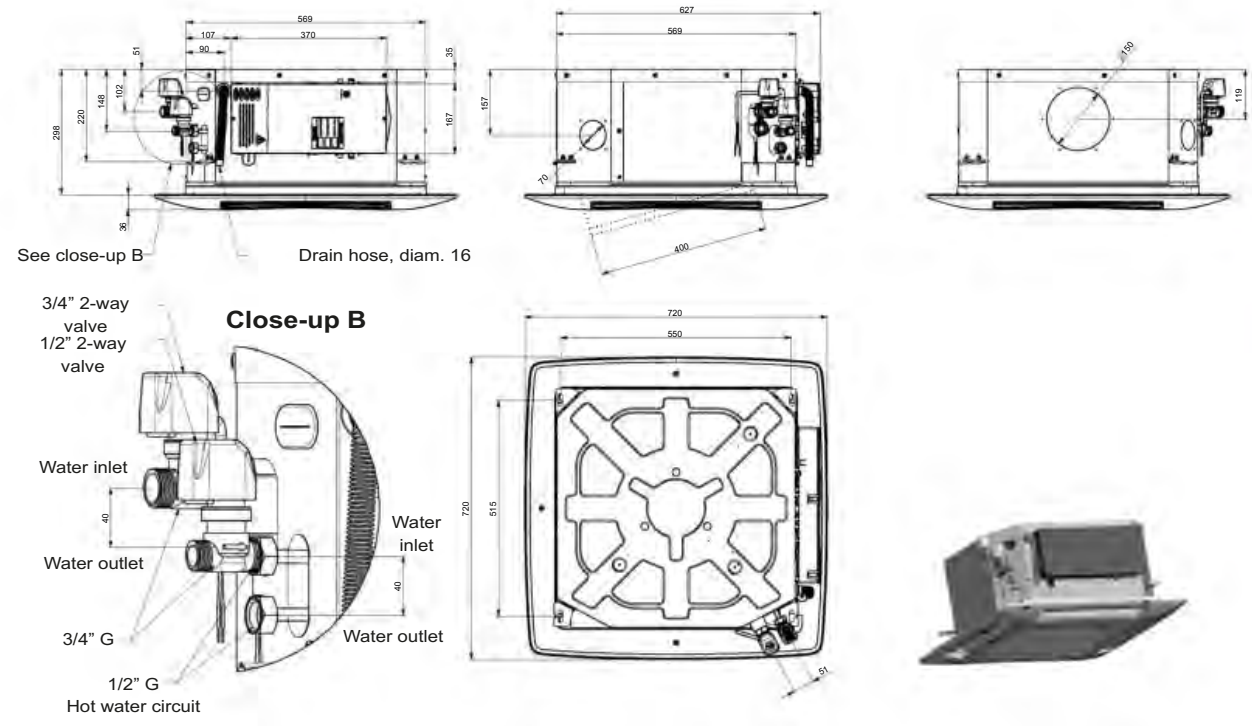
DIMENSIONS, MM

42GW 200/209 - 300/309 - 400/409 (compact chassis)

Unit without valve



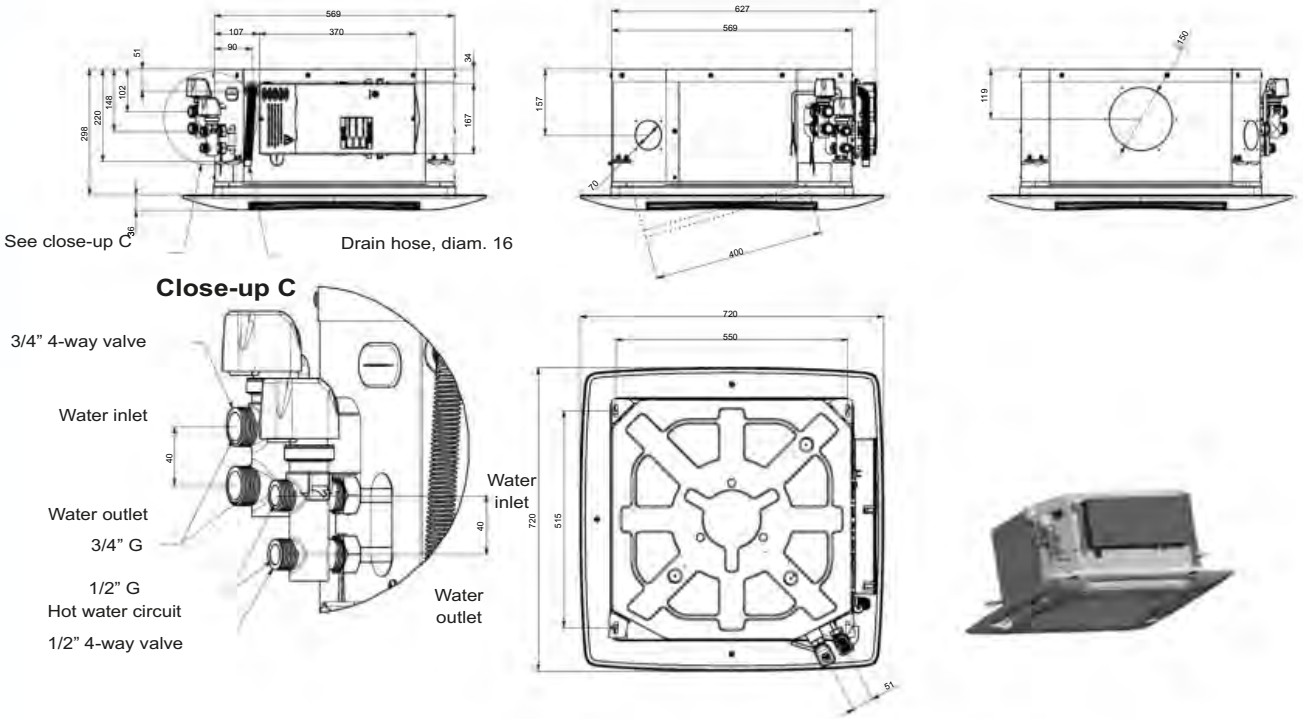
Unit with 2-way valve



DIMENSIONS, MM

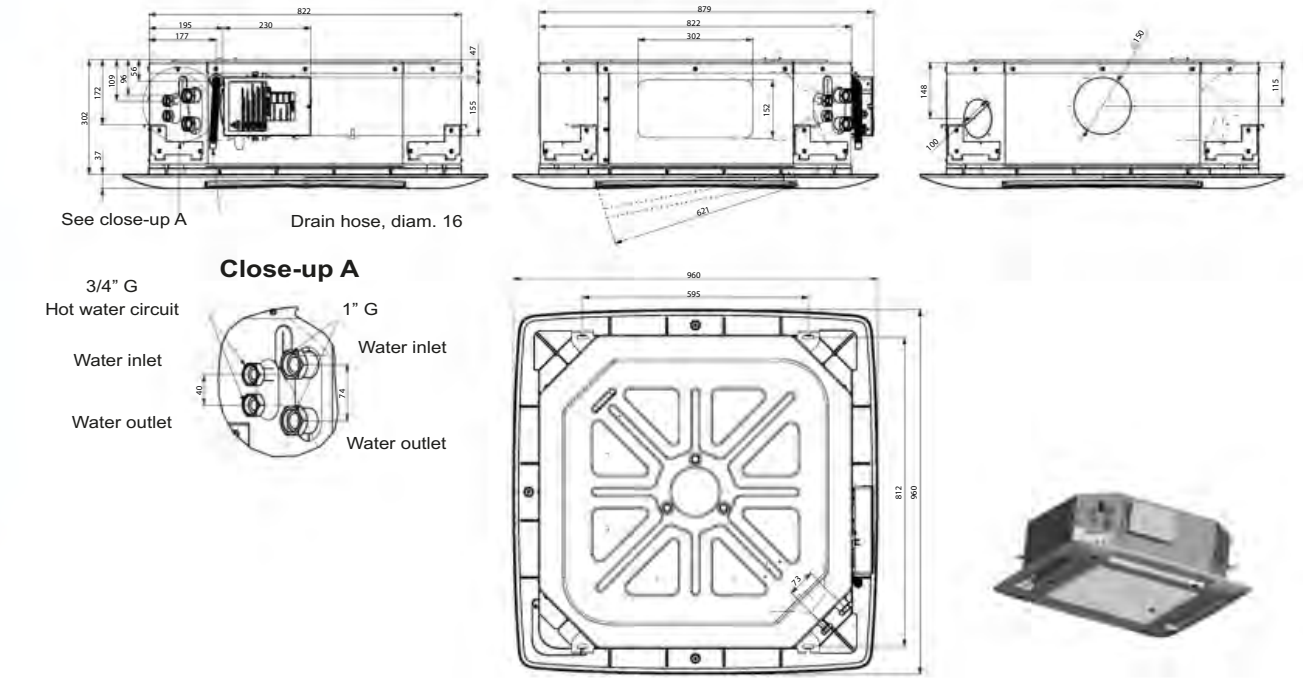
42GW 200/209 - 300/309 - 400/409 (compact chassis)

Unit with 4-way valves



42GW 500/509 - 600/609 - 701/709 (big chassis)

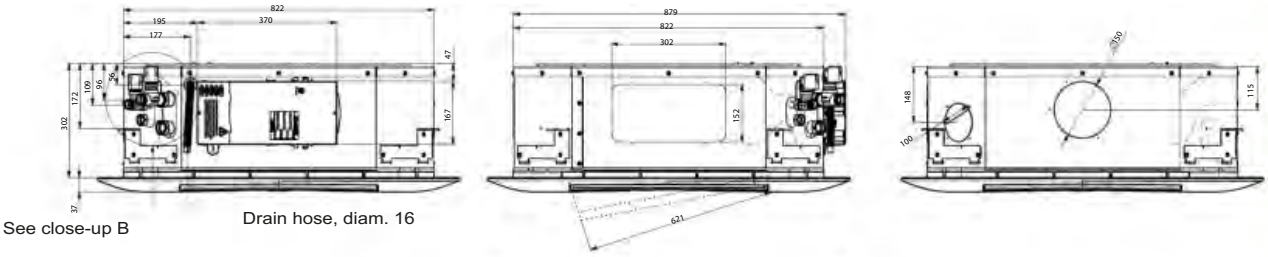
Unit without valve

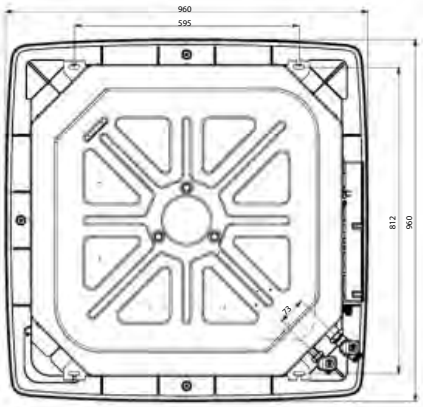


DIMENSIONS, MM

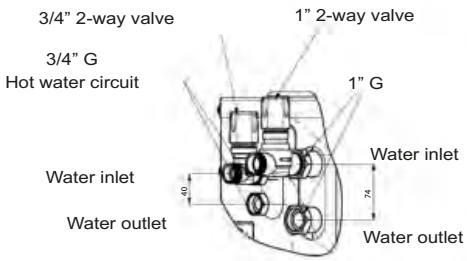
42GW 500/509 - 600/609 - 701/709 (big chassis)

Unit with 2-way valve

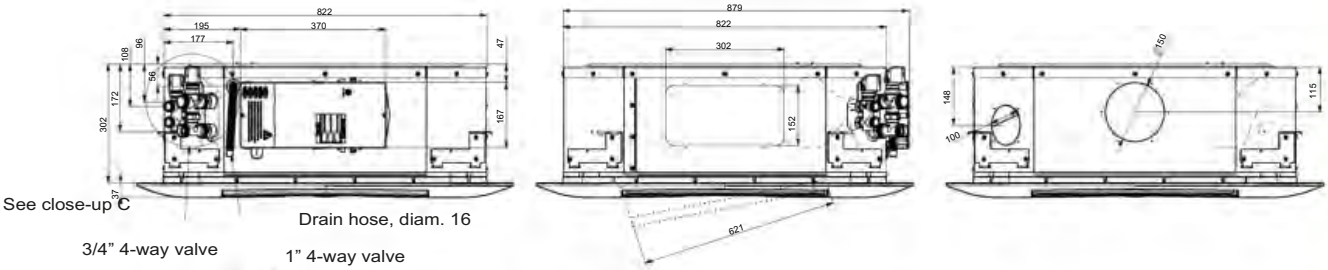


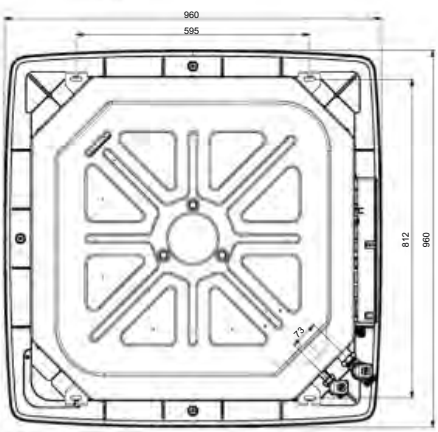


Close-up B

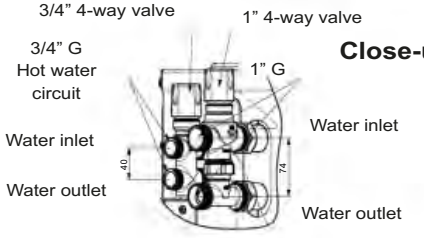


Unit with 4-way valve





Close-up C



COIL WATER CAPACITY

42GW		200/209	300/309	400/409	500/509	600/609	701/709
Coil volume	l	0,55	1,1	1,1	1,6	2,4	2,4

AIR STREAM, IN METRES

42GW	All louvres open			One louvre closed			Two louvres closed		
	High speed	Medium speed	Low speed	High speed	Medium speed	Low speed	High speed	Medium speed	Low speed
200/209	3,8	3,2	2,7	4,3	3,7	3,0	4,8	4,1	3,4
300/309	4,0	3,4	2,8	4,5	3,8	3,2	5,0	4,3	3,5
400/409	4,8	4,1	3,4	5,3	4,5	3,7	5,8	4,9	4,1
500/509	3,0	2,6	2,1	3,5	3,0	2,5	4,0	3,4	2,8
600/609	3,4	2,9	2,4	3,9	3,3	2,7	4,4	3,7	3,1
701/709	4,3	3,7	3,0	4,8	4,1	3,4	5,3	4,5	3,7

Notes:
1. The louvres were set so as to use the Coanda effect to obtain an air flow model parallel to the ceiling, and adhering to it as much as possible.
2. The air discharge is defined as the distance between the point where the air flow emerges from the unit parallel to the ceiling, and the point where its speed drops to 0.2 m/s.
3. These values are supplied as a guide; they may vary according to the ceiling type, the room dimensions and even its furniture.

OPERATING LIMITS

Water circuit	Maximum water side pressure: 1400 kPa (142 m WG)	Minimum entering water temperature: 5°C Maximum entering water temperature: 80°C
Indoor temperature		Minimum temperature: 5°C Maximum temperature: 32°C in heating mode with electric heating device
Power supply	Nominal voltage Operating limits	230 V - 1 ph - 50/60 Hz Min. 207 V - max. 253 V - units without electric heating device Min. 216 V - max. 244 V - units with electric heating device

VALVE KIT

Valve kit	42GW 9029	42GW 9031	42GW 9030	42GW 9032	42GW 9033	42GW 9035	42GW 9034	42GW 9036
Unit option (10th letter)	H - 4-way	H - 4-way	H - 4-way	H - 4-way	G - 2-way	G - 2-way	G - 2-way	G - 2-way
Description	3/4" cooling	1" cooling	3/4" cooling + 1/2" heating	1" cooling + 3/4" heating	3/4" cooling	1" cooling	3/4" cooling + 1/2" heating	1" cooling + 3/4" heating
Valve centre-to-centre, mm	40	73	40/40	73/40	40	73	40/40	73/40
Valve gasket coupling type	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat
2-pipe								
200C, 300C, 400C	x				x			
209C, 309C, 409C	x				x			
500C, 600C, 701C		x				x		
509C, 609C, 709C		x				x		
4-pipe								
200D, 300D, 400D			x				x	
209D, 309D, 409D			x				x	
600D, 701D				x				x
609D, 709D				x				x

COANDA EFFECT CASSETTE

- Optimised Coanda Effect diffusion
- Indoor comfort
- Air quality
- Responsiveness of the system and individual adjustment
- Low energy consumption
- Acoustic comfort
- Design
- Ease of maintenance

42KY

Cooling capacity 1-6 kW
Heating capacity 2-10 kW

Energy performance, comfort and indoor air quality: Carrier's new 42KY cassette is the all-in-one solution to meet heating and cooling requirements for commercial buildings and provide optimum comfort for users.

This low consumption (LEC) variable speed active comfort unit makes it possible to adapt the indoor temperature automatically and independently to the preferences of occupants with very quick response times.

Optimisation of the Coanda Effect diffusion, to meet the requirements of the standard NF EN ISO 7730, ensures perfect control of thermal phenomena that can cause discomfort. Carrier's new 42KY cassette makes it possible to eliminate the draughts that are felt with sweeping diffusion systems or those with direct airflow onto the occupant.

Eco-designed product that is 90% recyclable. The 42KY cassette has been developed to limit its impact on the environment throughout its life cycle.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

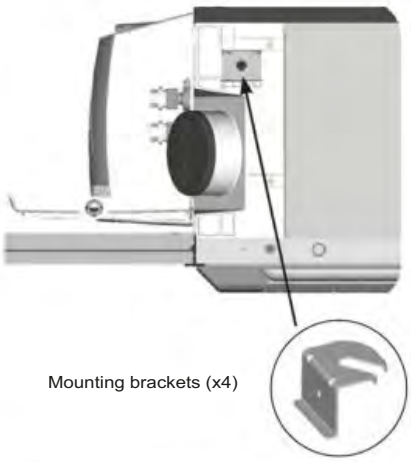
CARRIER participates in the ECP programme for FC/FCP
Check ongoing validity of certificate:
www.eurovent-certification.com

OPERATION AND ADVANTAGES

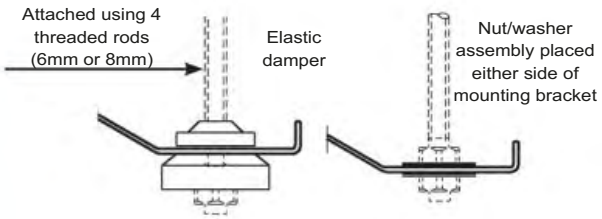
Use

The air treatment unit is fitted within the suspended ceiling, at the edge of the room, with the outlet facing the windows. It has all the economical advantages that come from installing and operating a central heated and chilled water production unit. The location facilitates hydraulic connection via the suspended ceiling of the adjoining corridor, and gravity draining of condensate (no pump).

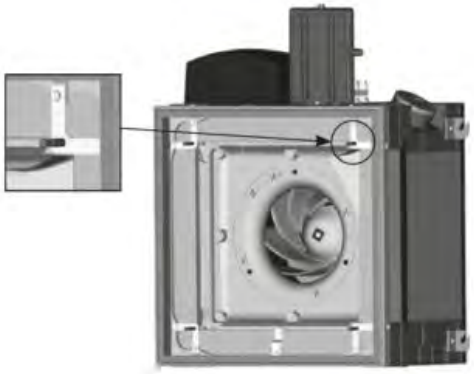
The 42KY cassette must be suspended from the ceiling with four 6 mm or 8 mm threaded rods (not supplied), that are fixed to the four mounting brackets of the device with elastic anti-vibration mounts or a nut/washer assembly fitted either side of the mounting bracket.



Mounting principle
2 methods



Diffuser mounting system with 4 captive screws



Operating principle

The centrifugal turbine draws air through a perforated metal intake grille. The air is filtered, then heated or cooled through a temperature exchange coil fed with either hot or chilled water. The air is then pulsed horizontally at 180° or 360°, by means of the Coanda Effect in the room to be treated.

The Coanda effect

Coanda effect diffuser:

The single slot peripheral outlet with its narrow opening and specific internal profile will increase the initial speed of the air as it leaves the diffuser. The high speed of the moving flow of air causes an area of low pressure which keeps it close to the ceiling, (there is no direct blast on occupants) and the ambient air is drawn in by induction to be reinjected in the air stream. The air mix rate, the range and the coverage of the air flow are improved, which reduces thermal phenomena that cause discomfort in the occupied area (residual air flow rate, asymmetric temperatures, radiation caused by walls, etc.).

"Anti cold shower" system

The one-way 180° diffuser is fitted with an "anti cold shower" system that maximises comfort by preventing cold air from falling between two cassettes.

The system incorporates two deflectors in the insulation which offsets the air stream slightly in the lateral axis. When the units are placed side by side in the same room, the air flows do not oppose one another and cross over in parallel, which avoids any cold air draughts.

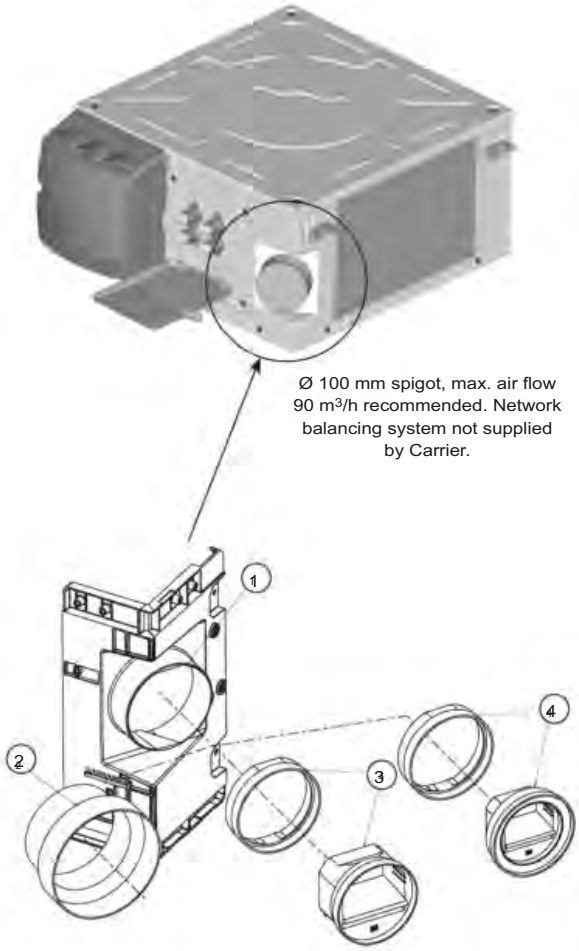
This patented system removes the discomfort caused by draughts without having to reduce the outlets and with no increased noise levels, while maintaining the air flow necessary for the thermal requirements.

with anti "cold shower" system

without anti "cold shower" system

OPERATION AND ADVANTAGES

Fresh air inlet spigot



1) Fresh air inlet on device
2) Ø100 / Ø125 mm adapter
3) 60/75/90 m³/h air flow controller kit
4) 15/30/45 m³/h air flow controller kit

Innovative design

- Next generation chassis that combines high density EPS for its thermal and phonic properties, ABS PC and a ribbed galvanised sheet steel base to stiffen the assembly.
- Chassis with unique dimensions for all sizes, adapted to the suspended ceiling grid size 600 x 600 mm.
- Hydraulic, air and electrical connections on the same side to facilitate installation and access for maintenance operations.
- Fresh air inlet with 100 mm sleeve integrated to the chassis with removable plug.

Range

The 42KY one-way cassette range includes 3 models that cover a flow rate of 250 to 770 m3/h which meet the most stringent of sound level requirements.

The 42KY is available as:

- 2-tube system, with heating or cooling mode.
- 2-tube + 2-wire system, with heating + cooling/cooling + electric mode.
- 4-tube system, with heating and cooling mode.

Advantages

- The use of a heat transfer fluid is an ecological and durable solution.
- Individual adjustment of the indoor temperature.
- Responsive system.
- Large power range.
- Coanda effect diffusion over 180 or 360° for even coverage and perfect control of the thermal phenomena that can cause discomfort.
- Acoustic comfort.
- LEC low consumption motor.
- G3 filter.
- Optimised hydraulic coil.
- Condensate drain by gravity avoiding the need for a drain pump.
- Modern and elegant design for perfect integration.
- Environmentally responsible product.
- Ease of maintenance.

Greater comfort

Optimised Coanda Effect diffusion for perfect control of thermal phenomena that can cause discomfort and make the room feel draughty.

Compliance with energy requirements

- Specially developed temperature exchange coils to meet the requirements of low energy buildings.
- Optimised temperature exchange coils to limit cost and consumption in comparison with the other components of the installation.
- LEC low consumption motor.
- Reduction in power of the electric heating coils to match the requirements of new buildings.

Eco-design

Raw materials

30% saving in weight and 21% saving in volume thanks to a compact and well thought out architecture.

Use of easily recyclable materials (EPS and ABS).

Transport

Raw material suppliers selected from those that are less than 100 km from our manufacturing and packaging factory, enabling a 50% gain in volumes transported (reduction in CO_2 emissions).

Recycling and ease of disassembly

90% recyclable products.

Materials can be completely separated and fixings have been reduced by 40% to allow

greater efficiency at recycling plants.

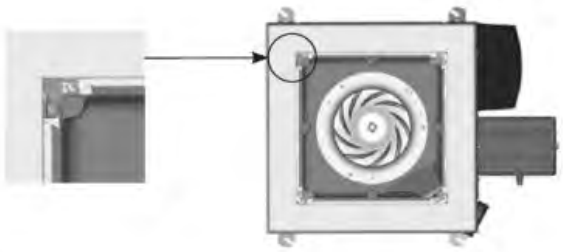
7
ABS

AIR TREATMENT

OPERATION AND ADVANTAGES

Ease of installation and operation

- The 42KY cassette is designed to be easy to fit and not require many on-site operations:
- Fitting template provided with each unit to mark out the anchoring points on the ceiling.
- Optimised weight and size to facilitate handing during installation.
- Mounting brackets equipped with anti-slip system to hold the threaded rods when attaching and levelling the unit.
- Safety system to suspend the diffuser leaving the technician's hands free to tighten the mounting bolts.



- Technical plate containing all connections (electrical, air and hydraulic) on one face.
- Fresh air inlet sleeve with plug integrated directly to the chassis (no fitting necessary).
- Large electrical box with single latch that can house all the control systems of the CARRIER range.
- Access to internal components without the need to open suspended ceilings, easy to open filter hatch grille that is hinged to facilitate maintenance operations.
- Diffusion panels supplied in individual packaging, making it easier to fit the unit with no risk of damaging or soiling visible parts during installation.

CODES

	Range				Size	Motor	Coils	Control	Valves	Elec heater	Valve servomotors	Sensors	Condensate drainage	Grille adaptation	Coil protection	Modif. index
Product ref.	4	2	K	Y	1	9	C	-	G	A	-	A	P	T	-	A
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Digit 5
1
2
3

Digit 6
0 = 5-speed motor
9 = LEC 0 -10 V motor

Digit 7
C = 2-tube
D = 4-tube

Digit 8
- = **No control**
K = NTC control with fuse protection
K = WTC Lon control with fuse protection
K = WTC BaCNet control with fuse protection

Digit 9
- = No valves
G = 2-way valve
H = 4-way valve

Digit 10
- = No valves
A = Elec heater (digit 7 = "C")

Digit 11
- = None
A = 230V ON/OFF servomotor
B = 24V ON/OFF servomotor (digit 8 =" - " no control)
C = 230V 3-POINT servomotor (digit 8 = - or K, L or M)
B = 24V 3-POINT servomotor (digit 8 =" - " no control)
E = 24V 0-10V modulating servomotor (digit 8 =" - " no control)

Digit 12
- = None
A = Return sensor
B = changeover sensor (2-tube only digit 9 =H)
C = return sensor and changeover sensor (2-tube only digit 9 =H)

Digit 13
- = None
P = Condensate drain pump
H = Lift kit

Digit 13
- = None
T = 675 x 675 ceiling adapter
S = Staff ceiling adapter

Digit 10
- = **None**
C= Coil protection

TECHNICAL DESCRIPTION

Return/supply interface

Coanda Effect diffusion through a single slot with a narrow opening and specific internal profile.

- 180° diffusion (1-way) or 360°C diffusion (4-way)
- In sheet metal painted in RAL 9010 to be fitted over the chassis with exactly the same dimensions as a standard suspended ceiling tile.
- Perforated metal return grille with hinge-mounted filter housing that requires no tools to open it.
- PSE insulation, M1 fire resistance with very low heat transfer coefficient.
- Flat G3 filter on metal frame.

Chassis

- Unique chassis and reduced footprint for all sizes fitted in place of a suspended ceiling tile, either 600 x 600 mm or 675 x 675 mm (optional).
- Ribbed galvanised steel motor support base panel, 10/10th thick.
- High-density PSE casing integrating thermal and acoustic functionalities. 15 mm thick base and 25 to 30 mm thick vertical sides that make up the casing.
- Low emission of TVOCs and no halogenated compounds.
- ABS corner reinforcements fitted with open galvanised steel mounting brackets with one-way system for assembly of threaded rods.
- M1 fire rating.
- Hydraulic, air and electrical connections on the same side of the technical panel at the rear of the unit providing a single access point.
- Galvanised 0.8 mm sheet metal frame finished in RAL 9010 to which the diffusion interface is fixed.

Water coil

- 1 hot water or cold water circuit (2-tube system).
- 1 hot water circuit + 1 cold water circuit (4-tube system).
- One-piece coupling with 40 mm center to center distance with integrated sealed flush fitting female revolving unions and gaskets, for easy fitting of the control valves.
- One, two or three row circular coil with low pressure drop.
- Copper tubes, one-piece aluminium fins (1.6 mm pitch).
- Bleeding and draining.
- Rated pressure of 16 bar (at 20°C).
- Test pressure: 24 bar.
- Max hot water inlet temperature:
  - 4-tube application: 80°C,
  - 2-tube application: 70°C,
  - 2-tube/2-wire application: 55°C (min air flow rate: 200m3/h).
- Min cold water inlet temperature: 6°C.

Electric heater (2-tube + electric system)

- 230/1/50 single-tube electrical elements inserted into the aluminium housing.
- 2 temperature limiters, manually and automatically reset, inserted in the aluminium block with easy access that does not require the suspended ceiling to be opened, via the return/supply air interface.
- Heater element power supply on the connection terminal inside the electrics box.
- Option to deactivate a heater element on site by means of a shunt on the terminal to reduce the electrical power.
- Condensate drain pan
- Single-piece all-climate primary pan in high density watertight EPS, naturally tilted and can be removed from underneath with no need to open the suspended ceiling.
- M1 fire rating class.
- PC ABS auxiliary pan (configured to prevent standing water) to be used to catch condensate from valves from the primary pan.
- Gravity drain: height 70mm.
- Drainage bushing: external Ø 15 to 20 mm.

Fan motor assembly

LEC motor (low energy consumption)

Low energy motor making it possible to reduce electrical consumption by up to 85%.

- Sealed, tropicalised, with protected shaft.
- Progressive control with 0-10V control signal.
- Internal automatic heat protection with serial opening on winding.
- Mounted on rubber mounts.
- 230V/1Ph/50 Hz power supply (60Hz compatible).

Note: The minimum voltage to start up the motor is 2V.

Or

Asynchronous motor

5 factory-wired speeds connected to a terminal strip for customisation.

- Sealed, tropicalised, with protected shaft.
- Permanent capacitor.
- Ball bearings.
- Internal automatic heat protection with serial opening on winding.
- Resilient mounts.
- 230V/1Ph/50 Hz power supply (60Hz compatible).
- High efficiency and power factor.

Fan(s)

- Balanced centrifugal impeller (Ø 282 mm) with airfoil blades.
- Polymer impeller.
- Single-point mounting system with foolproofing device.

TECHNICAL DESCRIPTION

Electrics box

- Large ABS electrics box, with a hinge to keep it open and screw closure.
- Protection rating IP20.
- Terminal block on DIN rail in accordance with EN 50022, depth 7.5 mm.
- Junction block located with tension clamp. Cross section 0.5 to 2.5 mm² - Max current: 24A – Shock resistance: 8 kV. Cable routing for customer connections.

Fresh air inlet sleeve

Connecting sleeve for fresh air inlet, Ø100 mm, integrated to the chassis with removable plug.

Filtration

- Regenerative flexible polyester fibre filter element.
- Positioned at the fan inlet.
- EN779 efficiency Class: G3.
- On rigid metal frame.
- Accessed via the hinged inlet grille.
- Low energy impact.
- M1 fire rating.
- A protected air stream which prevents particles being drawn into suspended ceilings.
- Uniform treatment of the room thanks to optimised diffusion using the Coanda effect.
- Suitable mixing rate.

Device mounting

- Open mounting brackets, factory-fitted, made from galvanised steel, 15/10th thick, with check valve for securing the threaded rods during fitting and levelling.

Packaging

- Strapped cardboard crate for the casing.
- Fitting template and direction of fitting printed on the cardboard.
- Return/supply air interface supplied separately in protective cardboard packaging.
- Delivered on a plastic-wrapped pallet.

Control systems

- A-B-C-D type electronic thermostats.
- NTC / Aquasmart Evolution networked electronic control.
- WTC LON or BACnet networked electronic control.

Options (factory assembled)

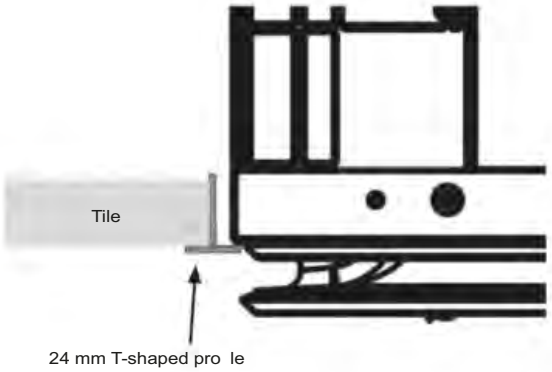
- Condensate drain pump.
- Lift kit.
- Finishing trim frame for 675 x 675 mm suspended ceiling tiles.
- Finishing trim frame for STAFF ceilings.
- Hydraulic coil with protected fins for aggressive / corrosive areas (locations close to the sea or to chemical industries).

Accessories (available separately)

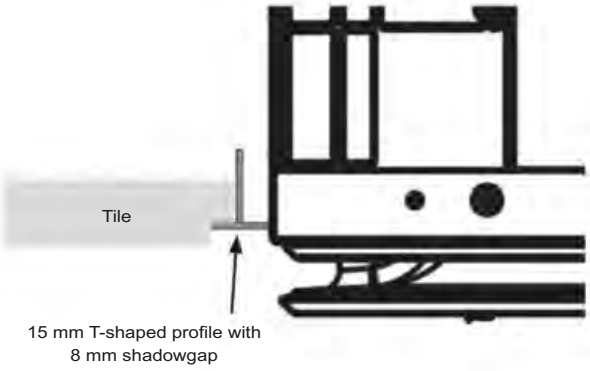
- Vibration damping rubber mounts for mounting brackets.
- Self-regulating conditioned fresh air inlet module (3 flow rates adjustable using a set of shims).
- Ø 100-125 mm sleeve adapter.
- Condensate drain pump kit with high safety device.
- 80 mm riser kit for gravity drainage without condensate drain pump.
- Finish counter frame kit for 675 mm suspended ceiling tile.

INTEGRATION INTO THE SUSPENDED CEILING

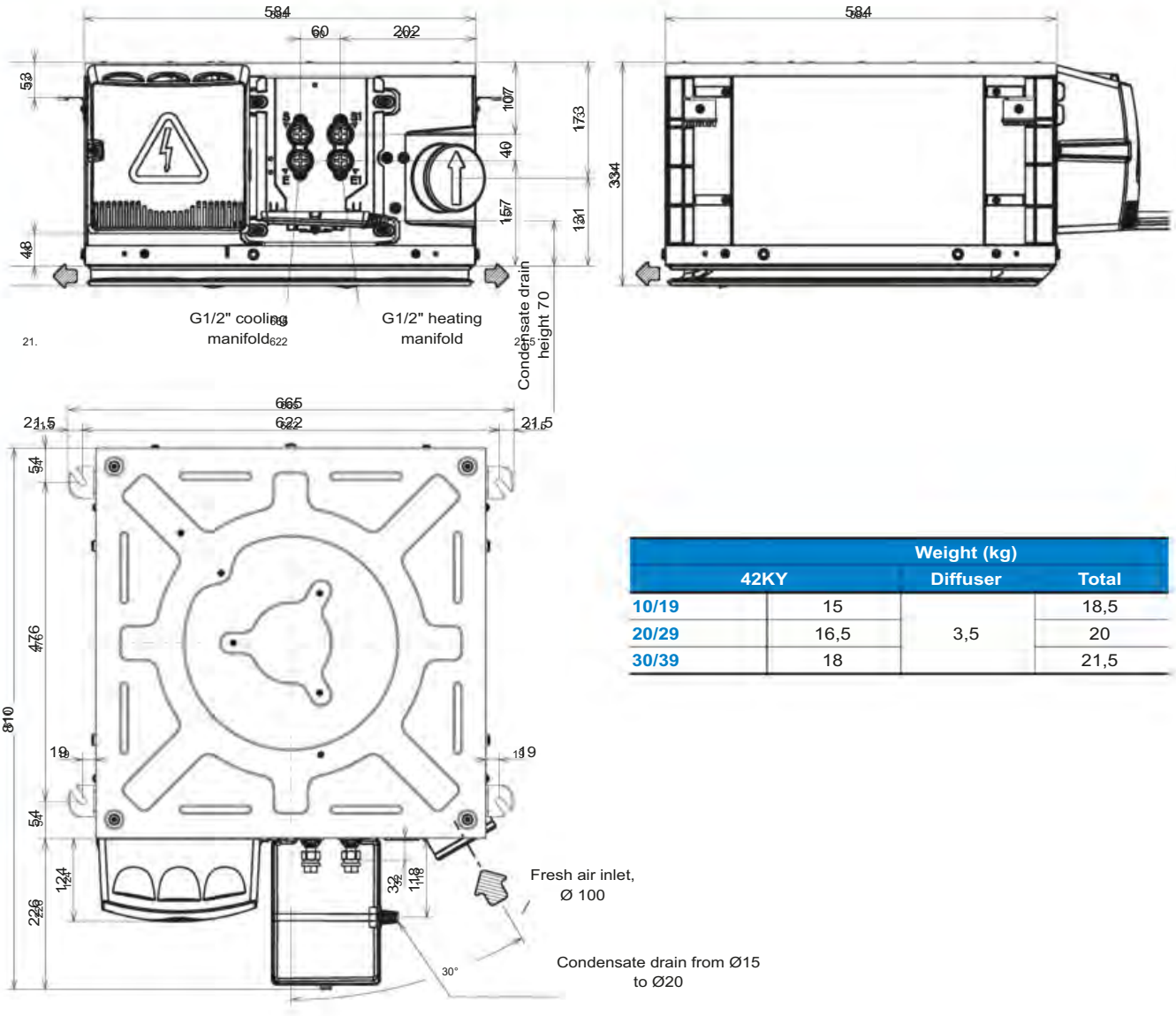
Mounting position with 600 x 600 mm suspended ceiling on T-shaped profile



Mounting position with 600 x 600 mm suspended ceiling on T-shaped profile with 8 mm shadowgap



DIMENSIONS



	Weight (kg)		
	42KY	Diffuser	Total
10/19	15	3,5	18,5
20/29	16,5		20
30/39	18		21,5

AIR TREATMENT

SPECIFICATIONS FOR UNITS UNDER EUROVENT CONDITIONS

2 pipes application

Model	Speed	Voltage	Input Power	Air flow	Heating capacity	Pressure drop	Cooling capacity		Lw	LP	Comfort level (ISO or NR)	Average air temperature rise in K Auxiliary electric heater 230/1/50	
		v	W	m³/h	W	kPa	Total W	Sensible W	dB(A)	dB(A)			
	HS		45	440	2 000	1 700	1 550	49	49	37	32		
42KY10C--------	MS		41	380	1 800	1 530	1 390	46	46	34	29		
	LS		34	235	1 350	1 190	1 030	37	37	25	19		
	HS	4,9	17	440	2 070	1 700	1 550	49	49	37	32		
42KY19C--------	MS	3,4	8	310	1 650	1 370	1 220	46	42	34	29		
	LS	2,5	5	235	1 400	1 190	1 040	37	37	25	19		
	HS		45	420	2 700	2 600	2 030	51	51	39	34		
42KY20C--------	MS		41	360	2 300	2 280	1 750	47	47	35	30		
	LS		34	215	1 550	1 580	1 150	35	35	23	18		
	HS	4,9	17	420	2 700	2 590	2 020	51	51	39	34		
42KY29C--------	MS	4,2	12	360	2 300	2 280	1 760	47	47	35	30		
	LS	2,5	5	215	1 550	1 580	1 150	35	35	23	18		
	HS		45	420	2 390	2 050	1 800	51	51	39	34		6,4
42KY20C--A-----	MS		41	360	2 200	1 870	1 580	47	47	35	30	900W (2R)	7,4
	LS		34	215	1 600	1 420	1 090	35	35	23	18		12,4
	HS	4,9	17	420	2 390	2 040	1 790	51	51	39	34		6,4
42KY29C--A-----	MS	4,2	12	360	2 200	1 870	1 590	47	47	35	30	900W (2R)	7,4
	LS	2,5	5	215	1 600	1 420	1 090	35	35	23	18		12,4
	HS		77	660	4 150	4 340	3 260	58	51	46	40		
42KY30C--------	MS		56	525	3 350	3 540	2 620	51	47	39	34		
	LS		40	405	2 600	2 840	2 070	45	35	33	27		
	HS	6,7	38	660	4 150	4 350	3 270	58	51	46	40		
42KY39C--------	MS	5,3	21	525	3 350	3 540	2 630	51	47	39	34		
	LS	3	6	290	1 900	2 210	1 570	38	35	26	19		
	HS		77	660	4 050	3 833	3 009	58	58	46	40		5,4
42KY30C--A-----	MS		56	525	3 300	3 169	2 442	51	51	39	34	1200W (2R)	6,8
	LS		40	405	2 720	2 600	1 955	45	45	33	27		8,8
	HS	5,3	21	525	3 320	2 260	2 890	51	58	39	34		6,8
42KY39C--A-----	MS	4,6	15	460	2 950	2 610	2 010	48	51	36	30	1200W (2R)	7,7
		3	6	290	2 110	1 910	1 400	38	40	26	19		12,3

4-tube

Model	Speed	Voltage	Input Power	Air flow	Heating capacity	Pressure drop	Cooling capacity		Lw	LP	Comfort level (ISO or NR)
		v	W	m³/h	W	kPa	Total W	Sensible W	dB(A)	dB(A)	
	HS		45	420	2 400	2 050	1 800	51	39	34	32
42KY20D--------	MS		41	360	2 200	1 870	1 580	47	35	30	29
	LS		34	215	1 700	1 420	1 090	35	23	18	19
	HS	4,9	17	420	2 400	2 040	1 790	51	39	34	40
42KY29D--------	MS	4,2	12	360	2 200	1 870	1 590	47	35	30	34
	LS	2,5	5	215	1 700	1 420	1 090	35	23	18	19
	HS		77	660	3 000	3 833	3 009	58	46	40	40
42KY30D--------	MS		56	525	2 600	3 169	2 442	51	39	34	34
	LS		40	405	2 200	2 600	1 955	45	33	27	27
	HS	5,3	21	525	2 600	2 260	2 890	51	39	34	34
42KY39D--------	MS	4,6	15	460	2 400	2 610	2 010	48	36	30	30
	LS	3	6	290	1 900	1 910	1 400	38	26	19	19

EUROVENT Conditions

- Cooling mode: water temperature: 7/12°C, inlet air temperature: 27°C - 19°C (WB)
- Heating mode (2T): water temperature: 45°/40°C, inlet air temperature: 20°C
- Heating mode (4T): water temperature: 65°/55°C, inlet air temperature: 20°C
- The sound pressure levels (Lp) and ISO NR level are based on hypothetical attenuation of the room of 12 dB(A)

TECHNICAL SPECIFICATIONS

Coil capacity (L)

42KY cassette		10/19	20/29	30/39
2-tube coil		0.4	0.8	1.1
2-tube coil + electric heater		-	0.6	1
4-tube coil	Cooling	-	0.6	1
	Heating	-	0.2	0.2

Diameters of coil couplings

Coil connection type: flush fit female threaded union nuts

Valve connection type: install flush fit male threaded unions

42KY cassette		10/19	20/29	30/39
2-tube coil		G 1/2"	G 1/2"	G 1/2"
2-tube coil + electric heater		-	G 1/2"	G 1/2"
4-tube coil	Cooling	-	G 1/2"	G 1/2"
	Heating	-	G 1/2"	G 1/2"

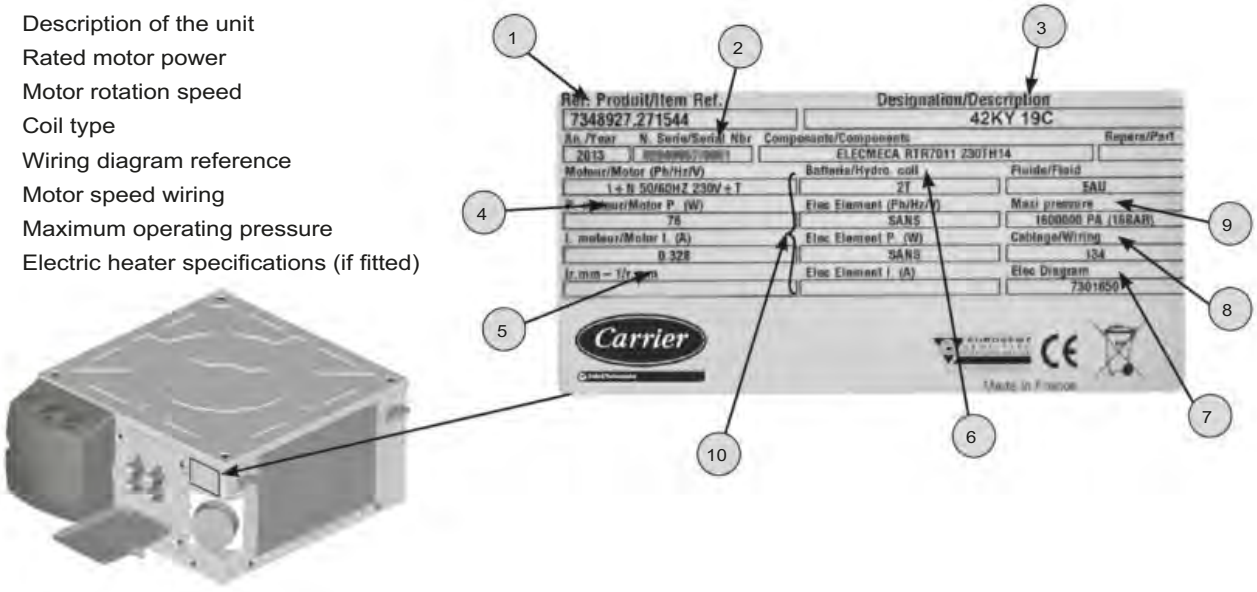
Motor electrical specifications

42KY	Motor information	AC asynchronous motor			LEC motor		
		10	20	30	19	29	39
Input power (W)	V5	70	70	101	38	38	56
	V4	45	45	77	17	17	38
	V3	41	41	56	12	12	21
	V2	38	38	47	8	8	15
	V1	34	34	40	5	5	11
Input current (A)	V5	0,30	0,30	0,32	0,18	0,18	0,40
	V4	0,21	0,21	0,29	0,09	0,09	0,28
	V3	0,19	0,19	0,24	0,07	0,07	0,17
	V2	0,18	0,18	,22	0,04	0,04	0,13
	V1	0,17	0,17	0,21	0,02	0,02	0,10

NB: Specifications given for a 230 V +/-10% - 50 Hz power supply.
- For operation at 60Hz, the power input and rotation speed values are generally higher.
- Motor operating range: min. return T°C: 0°C, max. return T°C: 40°C Unit information plate

The information plate shows all the information needed to identify the unit and its configuration. This plate is placed on the technical side that has all the connections, above the fresh air inlet.

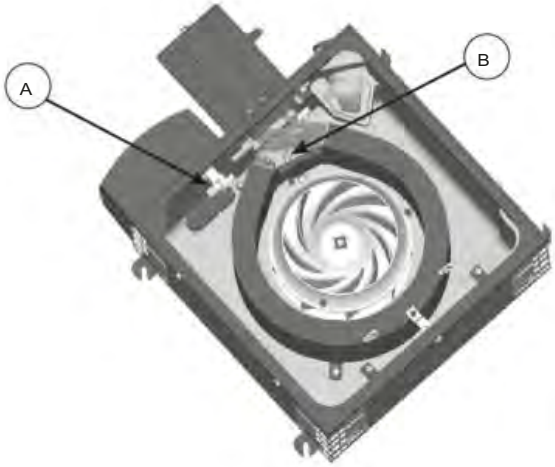
① Code
② Serial number
③ Description of the unit
④ Rated motor power
⑤ Motor rotation speed
⑥ Coil type
⑦ Wiring diagram reference
⑧ Motor speed wiring
⑨ Maximum operating pressure
⑩ Electric heater specifications (if fitted)



TECHNICAL SPECIFICATIONS

Electrical heaters

2 single-tube 230/1/50 electrical elements inserted into the aluminium housing and bent around the hydraulic coil.



Remove shunt to deactivate a heater (reduction of 300w)

A Temperature limiter with manual reset
B Temperature limiter with automatic reset

Electrical heater specifications - Input voltage 230V - 1 ph - 50Hz

42KY cassette	10/19	20/29	30/39
Electrical power (W)	-	900	1200
Input current (A)	-	3.6	4.8

Limitations of use

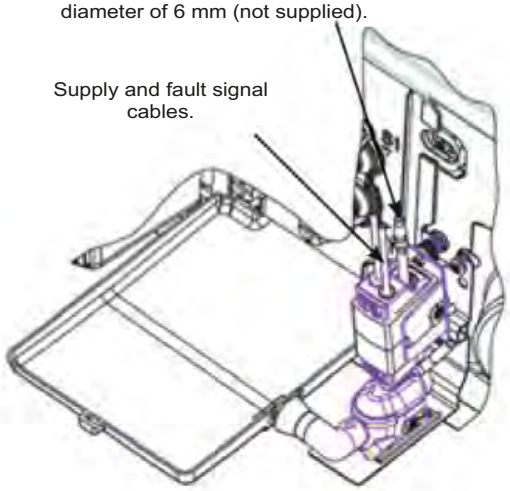
42KY cassette	Operating pressure max. 16 Bar	Minimum water inlet temperature: 6°C
		Maximum water inlet temperature:
		4-tube coil: 80°C
		2-tube coil: 70°c
		2-tube coil + electric heater: 55°C (min air flow rate 200m3/h)
Indoor temperature	-	Minimum temperature: 5°C
	-	Maximum temperature: 40°C
ower supply	ominal usage limitations	Min 207 - Max 253 V for units without electrical heater
		Min 216 - Max 244 V for units with electrical heater

OPTIONS (FACTORY ASSEMBLED)

Condensate drain pump

The pump discharge must be connected to the wastewater pipe by a flexible tube with an internal diameter of 6 mm (not supplied).

Supply and fault signal cables.



Maximum flow rate	10.4 l/h
Maximum discharge height	7 m (flow rate 4 l/h)
Maximum pressure	10 m (flow rate 0 l/h)
Sound level at 1 m in accordance with EN ISO 3744 and 4871 (measurements taken at LNE, pump in water, outside of application)	20.2 dBA
Power supply	230V +10%/-15% - 50/60Hz – 19W
Electric insulation class	Class 1
Detection levels	ON: 14.7 mm, OFF: 10.7 mm, AL: 17 mm
Safety switch	NF: 5A resistance – 250V AgNI 90/10 gold-plated contacts.
Thermal protection (overheating)	70°C (automatic restart)
Operating cycle (operating factor)	100%
Protection (as per NF EN 60529)	IP64
Safety standard	CE
RoHS directive	Compliant
WEEE directive	Compliant

Pump performance Water flow in litres per hour (-15% / +20%)				
Discharge height	**Horizontal length of the discharge pipe**			
	5 metres	**10 metres**	**20 metres**	**30 metres**
1 metre	**10.4**	**9.1**	**8.3**	**7.3**
2 metres	**.5**	**.8**	**7**	**6.4**
3 metres	**7.9**	**7.1**	**6.3**	**5.8**
4 metres	**7**	**6**	**5.3**	**4.9**

Operating limit:

Drain: flexible tube int. Ø 6 mm, end piece Ø 8.8 mm. This accessory must be paired with a valve control to allow the upper safety limit to control the valve's closure (stopping condensate).

Condensate flow rate (l/h) =

$$\frac{\text{Total capacity - Sensible capacity (W)}}{680}$$

Accessories (available separately)

Description	
Condensate drain pump kit	
Elastic dampers (4 per device)	
Lift kit	
Self adjusting module kit, diameter 100 mm	15/30/45 m /h
	60/75/90 m³/h
AN adapter kit, diameter 100/125 mm	
Frame kit for suspended ceiling 675x675	
LEC motor speed control 3 speed ON/OFF unit kit (only for thermostat or controllers not from CARRIER that have 3 x 230V speed outputs)	

Description
Condensate drain pump
Lift kit
Frame for 675 x 675 suspended ceiling tiles
Finishing trim frame for STAFF ceilings
Hydraulic coil with protected blades

IDROFAN INDIVIDUAL FAN COIL UNITS

- Cased or uncased fan coil unit
- Extremely quiet operation
- Low energy consumption (EC motors)
- Simplified installation and wide range of options
- Self-regulating PTC electrical heater

42N

Cooling capacity 0.6-6 kW
Heating capacity 0.9-9.3 kW

The 42N_S and 42N_E ranges combine elegance and aesthetics, and can adapt to all types of installation, whether offices, hotel rooms, stores or individual houses.

The 42N range comprises 6 sizes, with air flows of 35 to 422 l/s (126 to 1520 m^3/h).

AIR TREATMENT

CARRIER participates in the ECP programme for FC/FCP
Check ongoing validity of certificate:
www.eurovent-certification.com

TECHNICAL DESCRIPTION

- With their refined contours, the casings of the 42N blend in perfectly with any interior. The steel panels are protected by a pre-applied coat of high quality paint.
- The 42N can be installed either vertically or horizontally, without adding a specific accessory, thanks to the design of the condensate pan.
- Water coil
  - 2-pipe coils for cooling only, heating only or heating/cooling reversible operation, equipped with 3/4" female couplings.
  - 4-pipe coil: for heating and cooling operation, equipped with 1/2" female couplings for heating and 3/4" for cooling.
- Motors

  The 42N_S is equipped with an asynchronous motor (230V - 1Ph - 50Hz/60 Hz):
  - Sizes 15 - 20 - 30 - 45: 5-speed motor
  - Sizes 26 and 42: 3-speed motor
  - Permanent capacitor in the electrics box

  The 42N_E is equipped with a variable speed LEC motor (low energy consumption), meeting the new building energy performance objectives.
  The low energy consumption solution improves the unit's performances, bringing you:
  - Lower energy costs – the LEC motor reduces the fan coil unit's energy consumption by 50 to 70%
  - Better comfort – the low energy consumption motor with variable speed via a 0 -10V signal reduces the noise level compared to multi-speed motors, even at very low operating levels. Thanks to CARRIER's controls (NTC or WTC), you can control the maximum noise level by adjusting the operating voltage.
  - Maximum flexibility – the air flow automatically adapts from 0 to 100%, ensuring perfect cooling or heating conditions in the room.
  - Extended service life – Brushless technology LEC motors have a lower overheating temperature, thereby extending their service life
- Fans
  - The 42N is available with two types of fan;
  - a cross-flow fan for the smallest sizes and a centrifugal fan for all other sizes.
- Filters

  The standard filter used is a pleated polypropylene filter, with class G1 filtration efficiency (as per EN 779). Pleated technology provides a larger filtering surface area than a flat filter (87% more), and the following advantages:
  - Smaller air flow in each unit area, leading to a smaller pressure drop and a lower noise level,
  - The mean filter cleaning interval is three times longer than for standard filters,

  The filter is situated in the lower part of the unit. Cleaning is simple: after removing the retaining bolt, manually detach the filter sides. The filter frame can be lowered, and the filter can be easily removed. Refitting is just as simple, you need only follow the procedure in reverse. The filter and the filter's position in the unit were designed so as to prevent any air infiltration around the filter, in order to guarantee that the air is always filtered and clean.
- Easy installation

  42N fan coil units provide exceptional flexibility in terms of installation. For horizontal installations under ceilings with casing or suspended ceiling applications for uncased versions with a rectangular duct connection, the installer's task is considerably simplified.

  The solid hooks make the unit quick and easy to mount; the installer need only place it horizontally. There is no need to calculate the correct slope required to ensure correct condensate drainage.
  For flush-mounted applications, equipped with an air supply duct, the air outlet flange can be fitted on the unit before installing as an assembly in the suspended ceiling. Even installing floor-mounted units is easy. The new dimensions and positions of the hook mean that units can be securely wall-mounted.
  All these aspects of the design reduce the installation time and improve the long-term reliability, which prevents small errors that could eventually impair the operating reliability of the installed units.

Carrier controllers range

The 42N fan coil unit is available with the complete range of Carrier controllers.

A-B-C-D electronic thermostats

- The Carrier electronic thermostats range is available for all Carrier water terminal ranges
  - **Type A:** for 2-pipe applications with asynchronous motor
  - **Type B:** for 4-pipe or 2-pipe+electrical heater applications with asynchronous motor
  - **Type C:** for 2-pipe applications with EC motor
  - **Type D:** for 4-pipe or 2-pipe+electrical heater applications with EC motor

  C & D thermostats manage 3 DIP configurable speeds, via a 0-10V signal.

  The thermostats are square shaped with a coaxial button enabling the room temperature to be set, as well as three buttons for setting the ventilation speed, cooling or heating mode, and START or STOP mode, as the customer wishes.
- Wall-mounted controls can easily and discreetly be integrated into any room environment.

TECHNICAL DESCRIPTION

- The operating range of the electronic thermostats goes from 10°C to 30°C, with the option of limiting the temperature in public buildings where low energy consumption is a paramount requirement. This is done via a micro-switch which is inside the control (cooling set-point between 23°C and 30°C, heating between 10°C and 21°C).

The following characteristics are available as parameters:

- **Auto ventilation:** the fan speed is automatically set by the thermostat; when the ambient temperature drifts away from the setting, maximum speed is selected. When the ambient temperature nears the desired value, the speed decreases until reaching minimum speed or stopping in the deadband.
- **Automatic changeover:** automatic changeover from cooling mode to heating mode, depending on the water temperature, ensures that the ideal ambient temperature is maintained.
- **Remote changeover:** automatic changeover from cooling mode to heating mode, depending on the remote signal emitted by the control system.
- **Draught protection:** this function stops the fan if the water temperature is too low or too high in relation to demand, thereby ensuring that the room's occupants are not disturbed by a warm draught.
- **Air temperature sensor:** this sensor is mounted on the unit. If the thermostat is installed on a wall, a second sensor situated in the thermostat may be used to correctly set the desired ambient temperature.
- **Low water temperature cutout:** this function ensures that the ambient temperature is maintained above the minimum level. If the unit has been shut down and ambient temperature has dropped below 7°C, low water temperature cutout is activated and the unit operates in heating mode until the temperature reaches above 9°C. The unit is them switched off again.
- **Optimised heating management (available with the electrical heater option):** if the water temperature is below 30°C, the system operates in heating demand mode, and the electrical heater is the only available heating source. If the water temperature is above 35°C, the system operates in auxiliary heating mode, powering up the water coil and electrical heater at the same time. The auxiliary heating function is deactivated if the temperature reaches above 45°C (the electrical heater is then de-energized).
- Unoccupied mode: this temperature function saves energy when the room is unoccupied, without needing to switch off the unit. When the unoccupied mode button is held down, the current set-point is modified as follows, without changing the position of the set-point selection button:
  - Cooling: set-point increased by 4 K
  - Heating: set-point decreased by 4 K

  The unit reverts to normal operation when the unoccupied mode button is held down again.
- LED intensity: for office applications or light commercial applications, 10 seconds after the user interface has last been used, all the necessary LEDs are dimmed. As soon as the user touches the user interface again, the LEDs revert to normal brightness. To prevent disruption to hotel customers, the thermostat can be configured from Night Mode to Dark Mode: in this case, 10 seconds after the user interface has last been used, all the LEDs will switch off. As soon as the user touches the user interface again, the current status LEDs will switch on, and revert to normal brightness.
- Air sampling: if no ventilation demand is made and the air sampling jumper is in the ON position, the command executes the air sampling function: the air moves, to ensure a more reliable ambient temperature reading.
- Continuous ventilation: if there is no ventilation demand and the continuous ventilation jumper is in the ON position, the control selects low, medium or high fan speed, depending on the ventilation speed selection, regardless of the thermal conditions. If the fan is controlled by automatic ventilator mode and the control is not in demand phase, the fan is activated permanently in low speed mode.
- **External contact:** a high voltage input signal for external contact is displayed. If the external contact is activated, the device will respond according to its local configuration:
  - Presence detection (empty room with a hotel door card), energy saving mode is activated, the internal temperature is increased by 4°C in cooling mode and is decreased by 4°C in heating mode
  - Window contact: during STOP mode (window open), all the outputs are disconnected (fan, valves, etc.), and only the frost protection function is active if it has been started up via its micro-switch.
  - Optimised heating management (available with the electrical heater option): if the water temperature is below 30°C, the system operates in heating demand mode, and the electrical heater is the only available heating source. If the water temperature is above 35°C, the system operates in auxiliary heating mode, powering up the water valve and electric heating at the same time. The auxiliary heating function is deactivated if the temperature reaches above 45°C (the electric heating is then de-energized).
  - Energy saving: this temperature function saves energy when the room is unoccupied, without needing to switch off the unit. When the energy saving mode button is held down, the current set-point is modified as follows, without changing the position of the set-point selection button:
    Cooling: set-point increased by 4°C
    Heating: set-point decreased by 4°C
    The unit reverts to normal operation when the energy saving mode button is held down again.

TECHNICAL DESCRIPTION

NTC

A PID controller can communicate and combine energy savings algorithms with solutions providing compete control functions, compatible with the Aquasmart Evolution system. The NTC control is compatible with the low energy consumption motor option, and combines energy savings with optimised comfort.

WTC controller

- Open Communication protocol BACnet or LON
- Communication PID controller
- Large range of user interfaces wall mounted or remote
- Manage the motorized louvers of the grill in manual or automatic
- Manage the EC motor to optimise the comfort
- Manage a CO_2 sensor to improve Air Quality
- Optional Light and/or Blinds management modules from same user interface
- Large range of sensors (light, presence, etc.)

Valve types available

- Valve bodies: both types of valve, two-way or four-way (three-way with integral bypass) are factory-fitted and subjected to factory tests. These chilled water valves are completely insulated in a moulded insulant jacket, which prevents condensation from forming on the valve body, for both horizontal and vertical applications. This new jacket reduces the complexity of the range and prevents the risk of water leaks. These valves can be factory-fitted on the left or right-hand side.
- Valve actuators: we have a vast range of valve actuators with two or four-way valve bodies, which offer the most suitable solution whatever the control type and the customer's requirements, from open/closed to proportional type, and a 230 V or 24 V power supply:
  - 230 V on/off actuator
  - 24 V on/off actuator
  - 230 V 3-point floating actuator
  - 24 V 3-point floating actuator
  - 0-10 volt modulating actuator, 24 V
- When combining low energy consumption motors with an NTC or WTC control, it is recommended to use 230 V three-point floating actuators, to increase energy savings and improve comfort.

Main condensate pan and insulation:

- The main condensate pan integrates the following technological solutions:
  - Horizontal installation: the units can be perfectly well installed horizontally. The new structure of the condensate pan factors in the slope, so that the installer does not need to resort to complex, lengthy calculations to install the units correctly.
  - The condensate connection on the left or right-hand side is standard: the installer can easily choose to connect the unit on one side or the other, simply by fitting the plastic cap on the opposite side.
  - Insulation: the condensate pan model provides closer contact between the condensate pan and the insulation, which is reinforced by metal mountings used to keep the insulation in place. This improves reliability and prevents any water draining from the unit.
  - The condensate pan is made from moulded plastic right across range; so it is more solid and easier to service.

Electric heater

Resistive wire electric heater (230V - 1 ph-50 Hz)

The coil has a double safety feature:
- Integrated safety self-hold thermostat with manual reset
- Destructive thermofuse link

This option is only available for 2-pipe coils.

Support feet or subbase

Installation of the support feet or subbase has been simplified considerably, and both sides have been painted in the cased version. A mounting is sufficient to attach the feet or subbases to the units. For this reason, but also due to better safety during transport, they are sold as an option and supplied with the unit in the factory (order codes Z or P for the 4th digit), but are not factory-fitted.

Reversibility

If the unit received does not match the request, the coil and control unit can be reversed on-site from left to right and vice-versa (except for units equipped with valves since they are optimised for fitting on this side, the valves set must be replaced by a new valves kit.

Simplified accessories

- The number of accessories has been reduced to simplify the customer's choice and reduce stocks. The accessories proposed have not been modified to satisfy all application requirements, but the number of codes has been considerably reduced.
- Aesthetic
  - Mounting brackets
  - Mounting brackets and casing panel
  - Air return grille for the unit's casing
  - Rear closing panel
  - Box for flush-mounted units
  - Air supply sleeve (suspended ceiling units only)
  - Mounting brackets (20 + 20 items for left and right)
- Controllers and user interfaces
  - A/B/C/D thermostat
  - Kit for installing 33TA0001/33TB0001 on the model 42NM/Z
  - Cold draught prevention kit – all two-pipe sizes
  - Automatic mode changeover switch – all models
  - Air sensor kit with 15 m wire
  - Water sensor kit with 15 m wire
  - Infrared remote control (IR2)
  - Infrared remote control receiver kit (IRR)
  - ZUI2 1- Wago interface
  - ZUI2 2- RJ11 interface
  - SUI1 (with fan speed selection)
  - SUI2 (without fan speed selection)
- The units comply with international standards EN60335-1 and EN60335-2-40, and are approved in accordance with the relevant Eurovent standards relating to the fan coil units program without supply air duct.
- Make sure that the unit's constituent materials comply with local regulations, especially in terms of fire safety.

PHYSICAL AND ELECTRICAL SPECIFICATIONS, ASYNCHRONOUS MOTOR TWO-PIPE COIL

42N 2-pipe coil		S15					S20					S26		
Fan speed		R1	R2	R3	R4	R5	R1	R2	R3	R4	R5	R1	R2	R3
Fan type		One, cross-flow					One, centrifugal					One, centrifugal		
Air flow	l/s	96	82	69	55	34	126	106	91	79	59	189	148	93
	m³/h	345	296	247	198	123	453	382	327	283	214	681	534	334
Cooling mode*														
Total cooling capacity	kW	1.2	1,09	0,97	0,83	0,58	2,13	2,01	1,78	1,54	1,15	3,52	2,98	2,09
Sensible cooling capacity	kW	1,1	1,01	0,89	0,74	0,5	1,77	1,62	1,42	1,23	0,93	2,84	2,35	1,6
Water flow rate	l/s	0,06	0,05	0,05	0,04	0,03	0,10	0,09	0,09	0,07	0,06	0,17	0,14	0,10
	l/h	210	190	170	140	100	370	340	310	260	200	600	510	360
	m³/h	0,21	0,19	0,17	0,14	0,1	0,37	0,34	0,31	0,26	0,2	0,60	0,51	0,36
Coil water side pressure drop	kPa	12	10	8	6	3	5	5	4	3	2	12	9	5
Heating mode**														
Heating capacity	kW	1,87	1,74	1,48	1,29	0,88	3,01	2,72	2,36	2,05	1,59	4,28	3,68	2,56
Coil water side pressure drop	kPa	10	8	7	5	3	4	4	3	2	1	10	8	4
Water volume	l	0.6					1.4					1.4		
Sound levels														
Sound power level	dB(A)	52	47	43	37	29	52	46	43	37	32	61	54	44
Sound pressure level***	dB(A)	43	38	34	28	20	43	37	34	28	23	52	45	35
NR value		39	34	29	23	16	36	32	29	22	15	47	40	31
Electrical specifications														
Power input	W	30	23	19	17	16	36	34	31	30	29	45	55	65
Current	A	0.13	0.11	0.09	0.08	0.08	0.16	0.15	0.14	0.13	0.12	0.3	0.25	0.2
Electrical heater														
High capacity	W	800					1000					1000		
Current	A	3.48					4.35					4.35		
Low capacity	W	500					500					500		
Current	A	2.18					2.18					2.18		
Eurovent FCEER/FCCOP data class		E/E					E/E					E/E		
Coupling diameter	inches	3/4 gas					3/4 gas					3/4 gas		

42N 2-pipe coil		S30					S42			S45					S65†		
Fan speed		R1	R2	R3	R4	R5	R1	R2	R3	R1	R2	R3	R4	R5	R1	R2	R3
Fan type		Two, centrifugal					Two, centrifugal			Two, centrifugal					Two, centrifugal		
Air flow	l/s	205	181	152	126	97	267	221	147	332	275	224	184	146	420	330	236
	m³/h	739	651	547	454	349	960	795	530	1195	991	805	663	524	1511	1187	851
Cooling mode*																	
Total cooling capacity	kW	3,68	3,34	2,91	2,45	1,92	4,44	3,93	3	5,32	4,76	3,94	3,25	2,58	6,24	5,4	3,85
Sensible cooling capacity	kW	3,04	2,73	2,35	1,97	1,4	3,64	3,17	2,33	4,58	4	3,3	2,73	2,1	5,15	4,5	3,2
Water flow rate	l/s	0,18	0,16	0,14	0,12	0,09	0,21	0,19	0,14	0,25	0,23	0,19	0,16	0,12	0,30	0,26	0,18
	l/h	630	570	500	420	330	760	670	510	910	820	680	560	440	1070	930	660
	m³/h	0,63	0,57	0,50	0,42	0,33	0,76	0,67	0,51	0,91	0,82	0,68	0,56	0,44	1,07	0,93	0,66
Coil water side pressure drop	kPa	16	14	11	8	5	22	18	11	11	9	7	4	3	14	11	6
Heating mode**																	
Heating capacity	kW	4,77	4,33	3,78	3,25	2,62	6,4	5,57	4,07	8,04	7	5,84	4,9	3,96	9,5	8,03	6,08
Coil water side pressure drop	kPa	13	11	8	6	4	18	14	9	9	7	5	4	3	12	9	5
Water volume	l	1.8					1.8			2.1					2.1		
Sound levels																	
Sound power level	dB(A)	56	51	47	42	36	62	57	47	62	57	55	47	41	68	62	54
Sound pressure level***	dB(A)	47	42	38	33	27	53	48	38	53	48	46	38	32	59	53	45
NR value		41	37	33	28	22	48	43	34	48	43	41	34	28	54	49	40
Electrical specifications																	
Power input	W	57	50	46	44	42	100	75	45	129	92	83	77	69	165	125	90
Current	A	0.25	0.23	0.21	0.2	0.19	0.45	0.35	0.21	0.55	0.4	0.37	0.34	0.31	0.7	0.6	0.4
Electrical heater																	
High capacity	W	2000					2000			2000					2000		
Current	A	8.7					8.7			8.7					8.7		
Low capacity	W	1000					1000			1000					1000		
Current	A	4.35					4.35			4.35					4.35		
Eurovent FCEER/FCCOP data class		E/E					E/E			E/E					E/E		
Coupling diameter	inches	3/4 gas					3/4 gas			3/4 gas					3/4 gas		

* Eurovent standard conditions: air temperature 27°C dry bulb/19°C wet bulb, 7°C/12°C entering and leaving water temperature, at high fan speed.

** Eurovent standard conditions: air temperature 20°C, entering water temperature 50°C, same water flow as under cooling conditions.

*** Level of sound pressure and comfort with a hypothetical noise attenuation of the room of -9 dB(A)

† This device is compliant with all current standards in terms of CE marking (for more details, refer to the declaration of compliance). With the exception of unit 42N_S65 which does not have the CE marking because of Directive 327/2011 (ErP) in terms of fan efficiency, but which is fully compliant with the Machinery Directive (2006/42/EC) and Electromagnetic Compatibility Directive (2004/108/EC)

PHYSICAL AND ELECTRICAL SPECIFICATIONS, ASYNCHRONOUS MOTOR FOUR-PIPE COIL

42N 4-pipe coil		S15					S20					S26		
Fan speed		R1	R2	R3	R4	R5	R1	R2	R3	R4	R5	R1	R2	R3
Fan type		One, cross-flow					One, centrifugal					One, centrifugal		
Air flow	l/s	96	82	69	55	34	126	106	91	79	59	189	148	93
	m³/h	345	296	247	198	123	453	382	327	283	214	681	534	334
Cooling mode*														
Total cooling capacity	kW	1,46	1,3	1,15	1,04	0,75	2,04	1,89	1,65	1,47	1,19	2,7	2,29	1,67
Sensible cooling capacity	kW	1,25	1,13	0,98	0,86	0,6	1,71	1,55	1,35	1,19	0,96	2,34	1,94	1,37
Water flow rate	l/s	0,07	0,06	0,06	0,05	0,04	0,10	0,09	0,08	0,07	0,06	0,13	0,11	0,08
	l/h	250	220	200	180	130	350	320	280	250	210	460	390	290
	m³/h	0,25	0,22	0,20	0,18	0,13	0,35	0,32	0,28	0,25	0,21	0,46	0,39	0,29
Coil water side pressure drop	kPa	17	14	11	9	5	5	5	4	3	2	8	5	3
Water volume	l	0.6					1.1					1.1		
Heating mode**														
Heating capacity	kW	1,44	1,29	1,15	0,95	0,58	2,89	2,59	2,41	2,23	1,81	3,76	3,21	2,49
Water flow rate	l/s	0,04	0,03	0,03	0,02	0,01	0,07	0,06	0,06	0,06	0,04	0,09	0,08	0,06
	l/h	130	110	100	80	50	250	230	210	200	160	330	280	220
	m³/h	0,13	0,11	0,10	0,08	0,05	0,25	0,23	0,21	0,20	0,16	0,33	0,28	0,22
Coil water side pressure drop	kPa	3	2	2	1	1	10	8	7	6	4	15	11	7
Water volume	l	0.2					0.3					0.3		
Sound levels														
Sound power level	dB(A)	52	47	43	37	29	52	46	43	37	32	61	54	44
Sound pressure level***	dB(A)	43	38	34	28	20	43	37	34	28	23	52	45	35
NR value		39	34	29	23	16	36	32	29	22	15	47	40	31
Electrical specifications														
Power input	W	30	23	19	17	16	36	34	31	30	29	45	55	65
Current	A	0.13	0.11	0.09	0.08	0.08	0.16	0.15	0.14	0.13	0.12	0.3	0.25	0.2
Eurovent FCEER/FCCOP data class		E/E					E/E					E/E		
Coupling diameter														
Cooling	inches	3/4 gas					3/4 gas					3/4 gas		
Heating	inches	1/2 gas					1/2 gas					1/2 gas		

42N 4-pipe coil		S30					S42			S45					S65†		
Fan speed		R1	R2	R3	R4	R5	R1	R2	R3	R1	R2	R3	R4	R5	R1	R2	R3
Fan type		Two, centrifugal					Two, centrifugal			Two, centrifugal					Two, centrifugal		
Air flow	l/s	205	181	152	126	97	267	221	147	332	275	224	184	146	420	330	236
	m³/h	739	651	547	454	349	960	795	530	1195	991	805	663	524	1511	1187	851
Cooling mode*																	
Total cooling capacity	kW	3,2	2,97	2,72	2,41	1,98	3,81	3,41	2,66	4,82	4,28	3,8	3,25	2,69	5,75	4,97	4
Sensible cooling capacity	kW	2,71	2,49	2,23	1,94	1,57	3,24	2,84	2,14	4,13	3,61	3,13	2,65	2,17	4,88	4,1	3,2
Water flow rate	l/s	0,15	0,14	0,13	0,11	0,09	0,18	0,16	0,13	0,23	0,21	0,18	0,16	0,13	0,28	0,24	0,19
	l/h	550	510	470	410	340	650	580	460	830	740	650	560	460	990	850	700
	m³/h	0,55	0,51	0,47	0,41	0,34	0,65	0,58	0,46	0,83	0,74	0,65	0,56	0,46	0,99	0,85	0,70
Coil water side pressure drop	kPa	13	11	10	8	5	15	13	8	26	21	17	13	9	36	28	19
Water volume	l	1.5					1.5			1.8					1,8		
Heating mode**																	
Heating capacity	kW	4,16	3,76	3,47	3,18	2,7	5,02	4,43	3,39	6,05	5,58	4,95	4,49	3,86	7,16	6,06	5,07
Water flow rate	l/s	0,10	0,09	0,08	0,08	0,07	0,12	0,11	0,08	0,15	0,14	0,12	0,11	0,09	0,18	0,15	0,13
	l/h	370	330	300	280	240	440	390	300	530	490	440	390	340	630	530	450
	m³/h	0,37	0,33	0,30	0,28	0,24	0,44	0,39	0,30	0,53	0,49	0,44	0,39	0,34	0,63	0,53	0,45
Coil water side pressure drop	kPa	22	18	16	14	10	31	25	15	46	40	33	27	21	63	47	34
Water volume	l	0.4					0.4			0.5					0.5		
Sound levels																	
Sound power level	dB(A)	56	51	47	42	36	62	57	47	62	57	55	47	41	68	62	54
Sound pressure level***	dB(A)	47	42	38	33	27	53	48	38	53	48	46	38	32	59	53	45
NR value		41	37	33	28	22	48	43	34	48	43	41	34	28	54	49	40
Electrical specifications																	
Power input	W	57	50	46	44	42	100	75	45	129	92	83	77	69	165	125	90
Current	A	0.25	0.23	0.21	0.2	0.19	0.45	0.35	0.21	0.55	0.4	0.37	0.34	0.31	0.7	0.6	0.4
Eurovent FCEER/FCCOP data class		E/E					E/E			E/E					E/E		
Coupling diameter																	
Cooling	inches	3/4 gas					3/4 gas			3/4 gas					3/4 gas		
Heating	inches	1/2 gas					1/2 gas			1/2 gas					1/2 gas		

* Eurovent standard conditions: air temperature 27°C dry bulb/19°C wet bulb, 7°C/12°C entering and leaving water temperature, at high fan speed.

** Eurovent standard conditions: air temperature 20°C, entering water temperature 70°C, at high fan speed, water temperature difference = 10 K.

*** Sound pressure level with a hypothetical noise attenuation of the room and air distribution system of -9 dB(A)

† This device is compliant with all current standards in terms of CE marking (for more details, refer to the declaration of compliance). With the exception of unit 42N_S65 which does not have the CE marking because of Directive 327/2011 (ErP) in terms of fan efficiency, but which is fully compliant with the Machinery Directive (2006/42/EC) and Electromagnetic Compatibility Directive (2004/108/EC).

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH LEC MOTORS, TWO-PIPE COIL

42N coil Pipes		E19					E29					E39				
Fan speed	%	100	80	60	40	20	100	80	60	40	20	100	80	60	40	20
Fan type		One, cross-flow					One, centrifugal					Two, centrifugal				
Air flow	l/s	96	82	69	55	34	126	106	91	79	59	205	181	152	126	97
	m³/h	345	296	247	198	123	453	382	327	283	214	739	651	547	454	349
Cooling mode*																
Total cooling capacity	kW	1.2	1,09	0,97	0,83	0,58	2,13	2,01	1,78	1,54	1,15	3,68	3,34	2,91	2,45	1,92
Sensible cooling capacity	kW	1,1	1,01	0,89	0,74	0,5	1,77	1,62	1,42	1,23	0,93	3,04	2,73	2,35	1,97	1,4
Water flow rate	l/s	0,06	0,05	0,05	0,04	0,03	0,10	0,09	0,09	0,07	0,06	0,18	0,16	0,14	0,12	0,09
	l/h	210	190	170	140	100	370	340	310	260	200	630	570	500	420	330
	m³/h	0,21	0,19	0,17	0,14	0,1	0,37	0,34	0,31	0,26	0,2	0,63	0,57	0,50	0,42	0,33
Coil water side pressure drop	kPa	12	10	8	6	3	5	5	4	3	2	16	14	11	8	5
Heating mode**																
Heating capacity	kW	1,87	1,74	1,48	1,29	0,88	3,01	2,72	2,36	2,05	1,59	4,77	4,33	3,78	3,25	2,62
Coil water side pressure drop	kPa	10	8	7	5	3	4	4	3	2	1	13	11	8	6	4
Water volume	l	0.6					1.4					1.8				
Sound levels																
Sound power level	dB(A)	52	47	43	37	29	52	46	43	37	32	56	51	47	42	36
Sound pressure level***	dB(A)	43	38	34	28	20	43	37	34	28	23	47	42	38	33	27
NR value		39	34	29	23	16	36	32	29	22	15	41	37	33	28	22
Electrical specifications																
Power input	W	14	10	7	4	3	17	12	8	4	3	39	26	17	11	6
Current	A	0.15	0,14	0,13	0,12	0,10	0.16	0,13	0,12	0,11	0,10	0.29	0.21	0.16	0.12	0.1
Electrical heater																
High capacity	W	800					1000					2000				
Current	A	3.48					4.35					8.7				
Low capacity	W	500					500					1000				
Current	A	2.18					2.18					4.35				
Eurovent FCEER/FCCOP data class		B/B					A/A					A/A				
Coupling diameter	inches	3/4 gas					3/4 gas					3/4 gas				

42N coil Pipes		E49					E69				
Fan speed		100	80	60	40	20	100	80	60	40	20
Fan type		Two, centrifugal					Two, centrifugal				
Air flow	l/s	332	323	314	306	385	410	399	388	378	476
	m³/h	1195	991	805	663	524	1476	1314	1134	954	792
Cooling mode*											
Total cooling capacity	kW	5,32	4,76	3,94	3,25	2,58	6	5,52	4,85	4,26	3,57
Sensible cooling capacity	kW	4,58	4	3,3	2,73	2,1	5,1	4,7	4,1	3,57	2,97
Water flow rate	l/s	0,25	0,23	0,19	0,16	0,12	0,29	0,26	0,23	0,20	0,18
	l/h	910	820	680	560	440	1040	950	840	730	630
	m³/h	0,91	0,82	0,68	0,56	0,44	1,04	0,95	0,84	0,73	0,63
Coil water side pressure drop	kPa	11	9	7	4	3	15	13	11	8	6
Heating mode**											
Heating capacity	kW	8,04	7	5,84	4,9	3,96	9,3	8,56	7,55	6,67	5,65
Coil water side pressure drop	kPa	9	7	5	4	3	12	10	9	6	5
Water volume	l	2.1					2.1				
Sound levels											
Sound power level	dB(A)	62	57	55	47	41	68	65	62	57	53
Sound pressure level***	dB(A)	53	48	46	38	32	59	56	53	48	44
NR value		48	43	41	34	28	54	51	48	43	40
Electrical specifications											
Power input	W	64	41	25	14	8	127	90	62	40	25
Current	A	0.52	0.35	0.22	0.15	0.10	0.94	0.68	0.46	0.31	0.21
Electrical heater											
High capacity	W	2000					2000				
Current	A	8.7					8.7				
Low capacity	W	1000					1000				
Current	A	4.35					4.35				
Eurovent FCEER/FCCOP data class		A/A					C/C				
Coupling diameter	inches	3/4 gas					3/4 gas				

Based on Eurovent conditions:

* Cooling mode (two and four-pipe coil): air temperature 27°C dry bulb/19°C wet bulb, 7°C/12°C entering and leaving water temperature, at high fan speed.

** Heating mode (two-pipe coil): air temperature 20°C, entering water temperature 50°C, same water flow as under cooling conditions.
Heating mode (four-pipe coil): air temperature 20°C, entering water temperature 70°C, at high fan speed, water temperature difference = 10 K.

*** Sound pressure level with a hypothetical noise attenuation of the room and air distribution system of -9 dB(A).

PHYSICAL AND ELECTRICAL SPECIFICATIONS, UNITS WITH LEC MOTORS, FOUR-PIPE COIL

42N 4-pipe coil		E19					E29					E39				
Fan speed		100	80	60	40	20	100	80	60	40	20	100	80	60	40	20
Fan type		One, cross-flow					One, centrifugal					Two, centrifugal				
Air flow	l/s	96	93	91	88	111	126	122	119	116	146	205	200	194	189	238
	m³/h	345	296	247	198	123	453	382	327	283	214	739	651	547	454	349
Cooling mode*																
Total cooling capacity	kW	1,46	1,3	1,15	1,04	0,75	2,04	1,89	1,65	1,47	1,19	3,2	2,97	2,72	2,41	1,98
Sensible cooling capacity	kW	1,25	1,13	0,98	0,86	0,6	1,71	1,55	1,35	1,19	0,96	2,71	2,49	2,23	1,94	1,57
Water flow rate	l/s	0,07	0,06	0,06	0,05	0,04	0,10	0,09	0,08	0,07	0,06	0,15	0,14	0,13	0,11	0,09
	l/h	250	220	200	180	130	350	320	280	250	210	550	510	470	410	340
	m³/h	0,25	0,22	0,20	0,18	0,13	0,35	0,32	0,28	0,25	0,21	0,55	0,51	0,47	0,41	0,34
Coil water side pressure drop	kPa	17	14	11	9	5	5	5	4	3	2	13	11	10	8	5
Water volume	l	0.6					1.1					1.5				
Heating mode**																
Heating capacity	kW	1,44	1,29	1,15	0,95	0,58	2,89	2,59	2,41	2,23	1,81	4,16	3,76	3,47	3,18	2,7
Water flow rate	l/s	0,04	0,03	0,03	0,02	0,01	0,07	0,06	0,06	0,06	0,04	0,10	0,09	0,08	0,08	0,07
	l/h	130	110	100	80	50	250	230	210	200	160	370	330	300	280	240
	m³/h	0,13	0,11	0,10	0,08	0,05	0,25	0,23	0,21	0,20	0,16	0,37	0,33	0,30	0,28	0,24
Coil water side pressure drop	kPa	3	2	2	1	1	10	8	7	6	4	22	18	16	14	10
Water volume	l	0.2					0.3					0.4				
Sound levels																
Sound power level	dB(A)	52	47	43	37	29	52	46	43	37	32	56	51	47	42	36
Sound pressure level***	dB(A)	43	38	34	28	20	43	37	34	28	23	47	42	38	33	27
NR value		39	34	29	23	16	36	32	29	22	15	41	37	33	28	22
Electrical specifications																
Power input	W	14	10	7	4	3	17	12	8	4	3	39	26	17	11	6
Current	A	0.15	0,14	0,13	0,12	0,10	0.16	0,13	0,12	0,11	0,10	0.29	0.21	0.16	0.12	0.1
Eurovent FCEER/FCCOP data class		A/B					A/A					A/A				
Coupling diameter																
Cooling	inches	3/4 gas					3/4 gas					3/4 gas				
Heating	inches	1/2 gas					1/2 gas					1/2 gas				

42N 4-pipe coil		E49					E69				
Fan speed		100	80	60	40	20	100	80	60	40	20
Fan type		Two, centrifugal					Two, centrifugal				
Air flow	l/s	332	275	224	184	146	410	399	388	378	476
	m³/h	1195	991	805	663	524	1476	1314	1134	954	792
Cooling mode*											
Total cooling capacity	kW	4,82	4,28	3,8	3,25	2,69	5,47	5,19	4,75	4,34	3,8
Sensible cooling capacity	kW	4,13	3,61	3,13	2,65	2,17	4,65	4,36	3,9	3,53	3,05
Water flow rate	l/s	0,23	0,21	0,18	0,16	0,13	0,26	0,25	0,23	0,21	0,19
	l/h	830	740	650	560	460	940	890	820	750	670
	m³/h	0,83	0,74	0,65	0,56	0,46	0,94	0,89	0,82	0,75	0,67
Coil water side pressure drop	kPa	26	21	17	13	9	31	27	23	19	20
Water volume	l	1.8					1.8				
Heating mode**											
Heating capacity	kW	6,05	5,58	4,95	4,49	3,86	6,99	6,57	6,04	5,43	4,81
Water flow rate	l/s	0,15	0,14	0,12	0,11	0,09	0,17	0,16	0,15	0,13	0,12
	l/h	530	490	440	390	340	610	580	530	480	420
	m³/h	0,53	0,49	0,44	0,39	0,34	0,61	0,58	0,53	0,48	0,42
Coil water side pressure drop	kPa	46	40	33	27	21	63	56	49	40	32
Water volume	l	0.5					0.5				
Sound levels											
Sound power level	dB(A)	62	57	55	47	41	68	65	62	57	53
Sound pressure level***	dB(A)	53	48	46	38	32	59	56	53	48	44
NR value		48	43	41	34	28	54	51	48	43	40
Electrical specifications											
Power input	W	64	41	25	14	8	127	90	62	40	25
Current	A	0.52	0.35	0.22	0.15	0.10	0.94	0.68	0.46	0.31	0.21
Eurovent FCEER/FCCOP data class		A/A					C/C				
Coupling diameter											
Cooling	inches	3/4 gas					3/4 gas				
Heating	inches	1/2 gas					1/2 gas				

Based on Eurovent conditions:

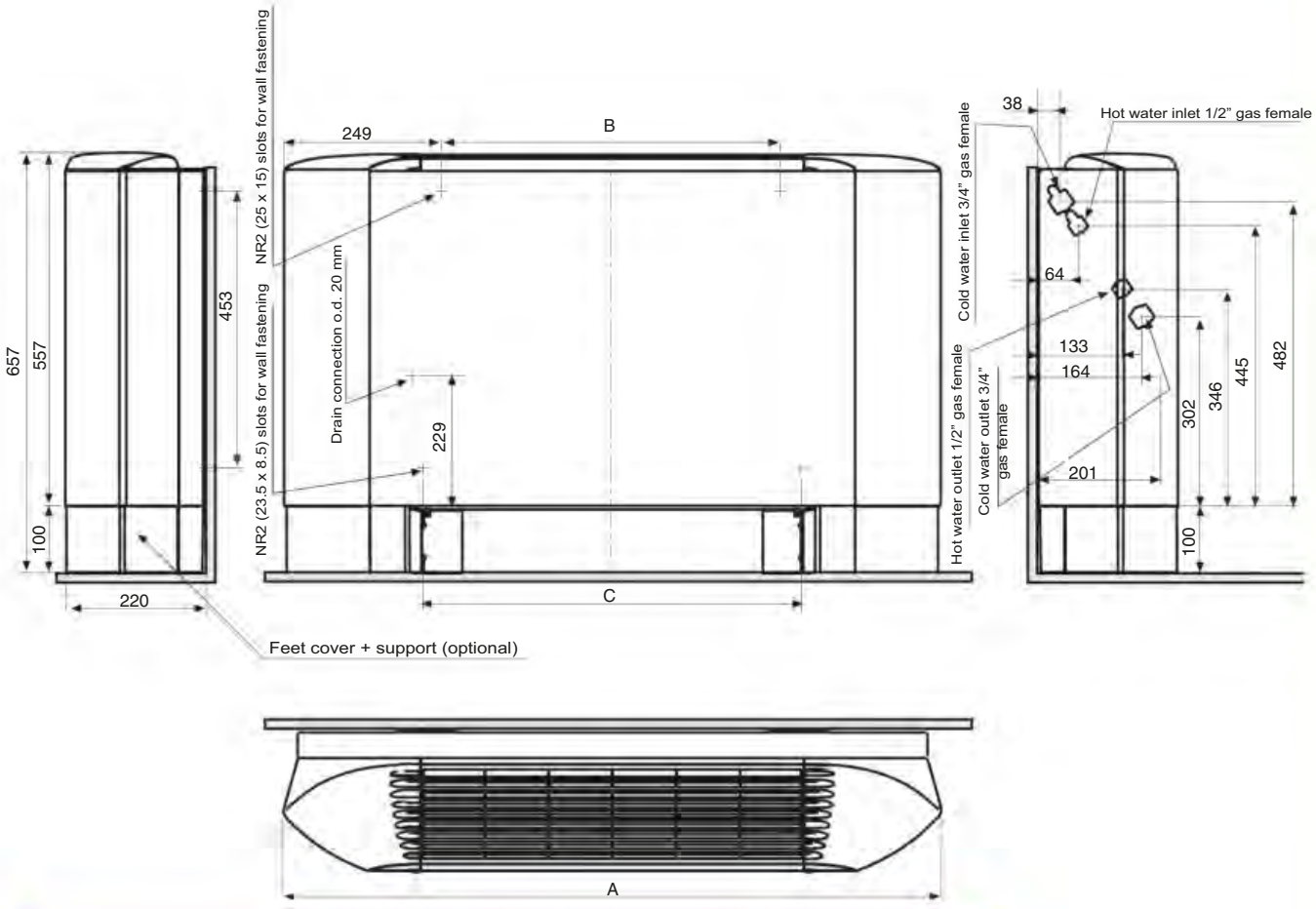
* Cooling mode (two and four-pipe coil): air temperature 27°C dry bulb/19°C wet bulb, 7°C/12°C entering and leaving water temperature, at high fan speed.

** Heating mode (two-pipe coil): air temperature 20°C, entering water temperature 50°C, same water flow as under cooling conditions.
Heating mode (four-pipe coil): air temperature 20°C, entering water temperature 70°C, at high fan speed, water temperature difference = 10 K.

*** Sound pressure level with a hypothetical noise attenuation of the room and air distribution system of -9 dB(A).

DIMENSIONS, VERTICAL UNITS WITH CASING

42N_S 15-20-26-30-42-45-65 and 42N_E 19-29-39-49-69

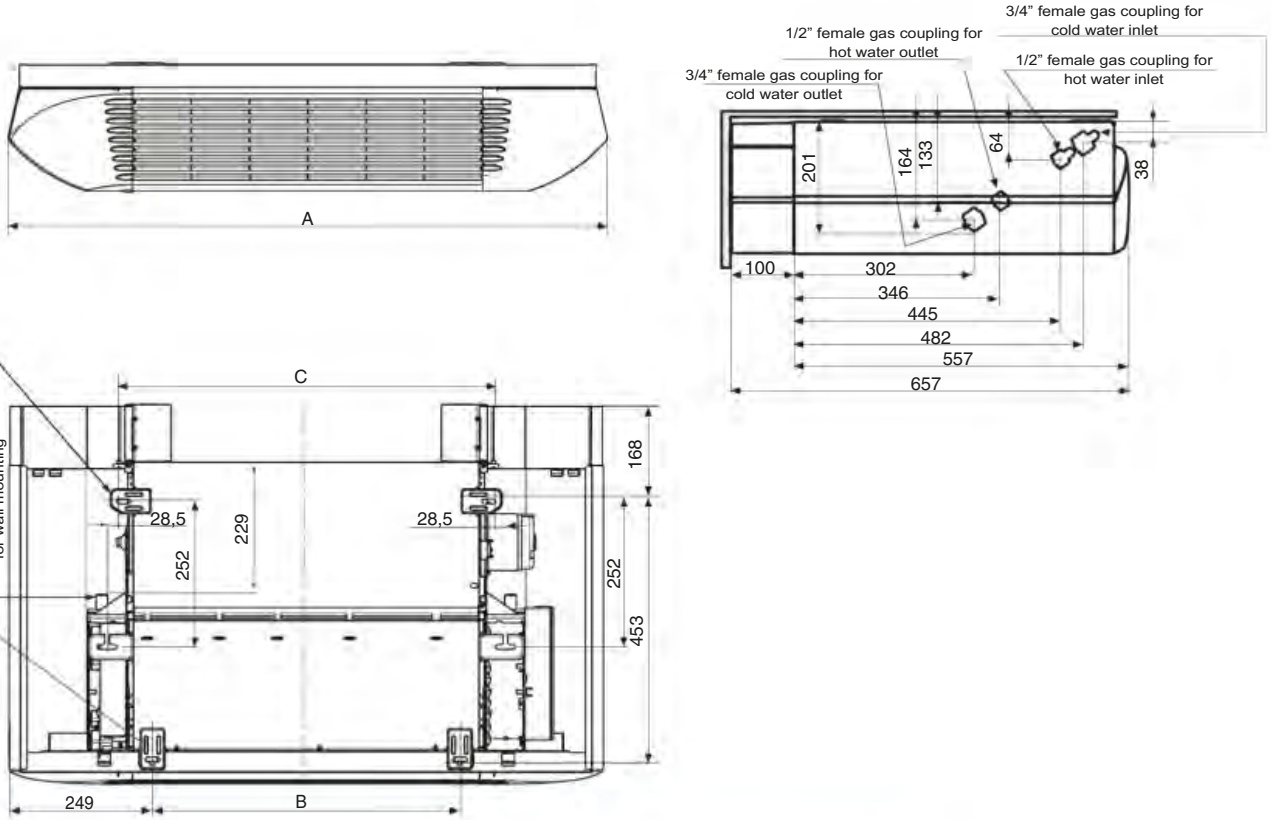


42N		S15 - E19	S20 - S26 - E29	S30 - E39 - S42	S45 - E49 - S65 - E69
A		830	1030	1230	1430
B		332	532	732	932
C		432	632	832	1032
Filter dimensions		189 x 391	189 x 591	189 x 790	189 x 990
Weight	kg	17	19	22	35

Dimensions in mm.

DIMENSIONS, HORIZONTAL UNITS WITH CASING

42N_S 15-20-26-30-42-45-65 and 42N_E 19-29-39-49-69

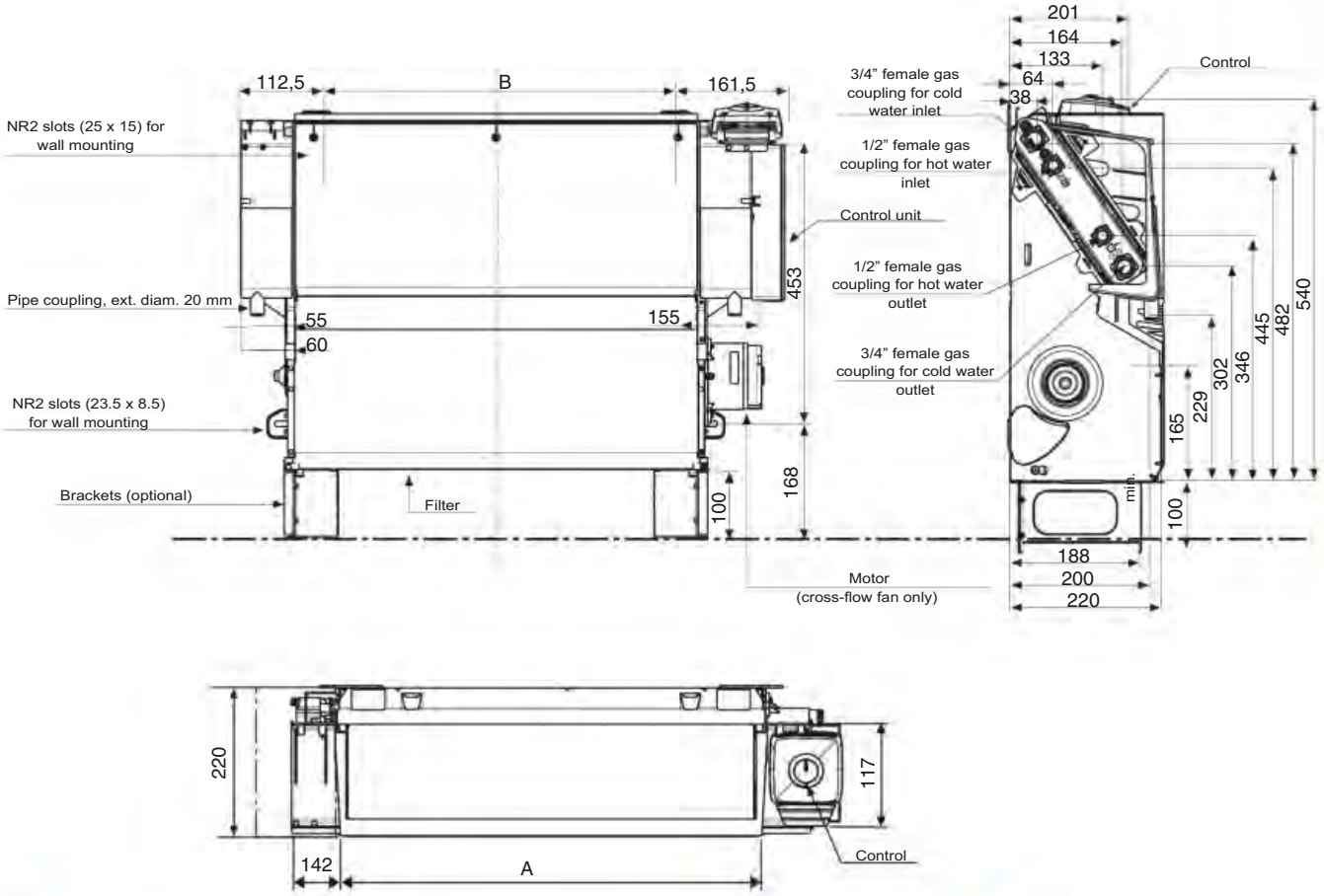


42N	S15 - E19	S20 - S26 - E29	S30 - E39 - S42	S45 - E49 - S65 - E69
A	830	1030	1230	1430
B	332	532	732	932
C	432	632	832	1032
Filter dimensions	189 x 391	189 x 591	189 x 790	189 x 990
Weight kg	17	19	22	35

Dimensions in mm.

DIMENSIONS, VERTICAL FLUSH-MOUNTED UNITS

42N_S 15-20-26-30-42-45-65 and 42N_E 19-29-39-49-69

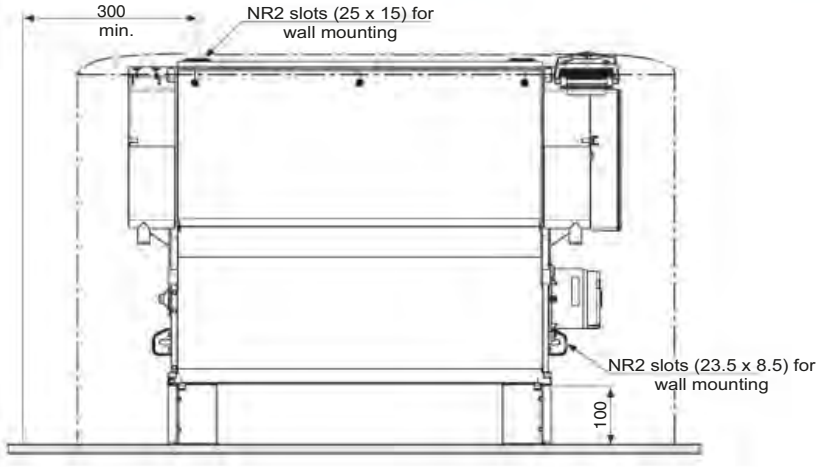


42N		S15 - E19	S20 - S26 - E29	S30 - E39 - S42	S45 - E49 - S65 - E69
A		415	615	815	1015
C		332	532	732	932
Filter dimensions		189 x 391	189 x 591	189 x 790	189 x 990
Weight	kg	13	15	16	28

Dimensions in mm.

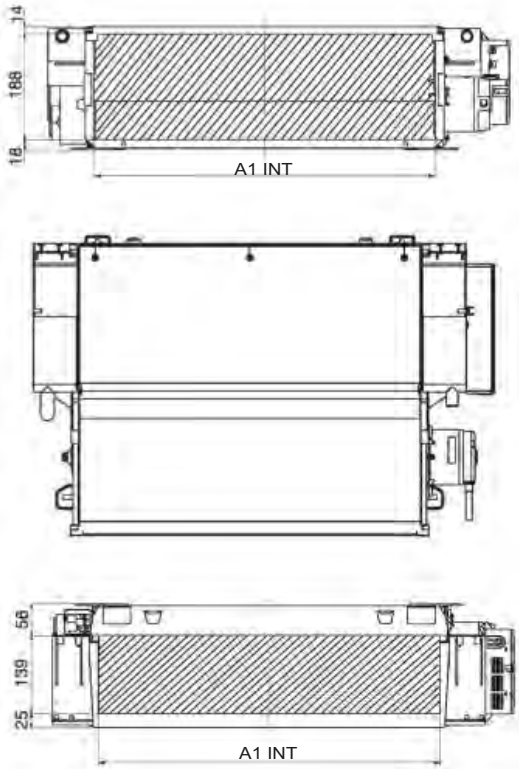
STANDARD INSTALLATIONS

Vertical wall-mounted units



Dimensions in mm.

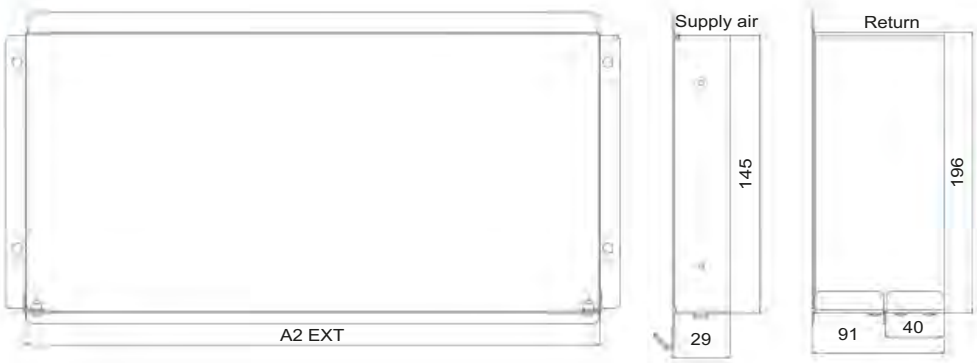
Dimensions of air inlet and outlet openings



42N	A1 INT
S15 - E19	397
S20 - S26 - E29	597
S30 - E39 - S42	797
S45 - E49 - S65 - E69	997

Dimensions in mm.

Air supply and return duct, optional

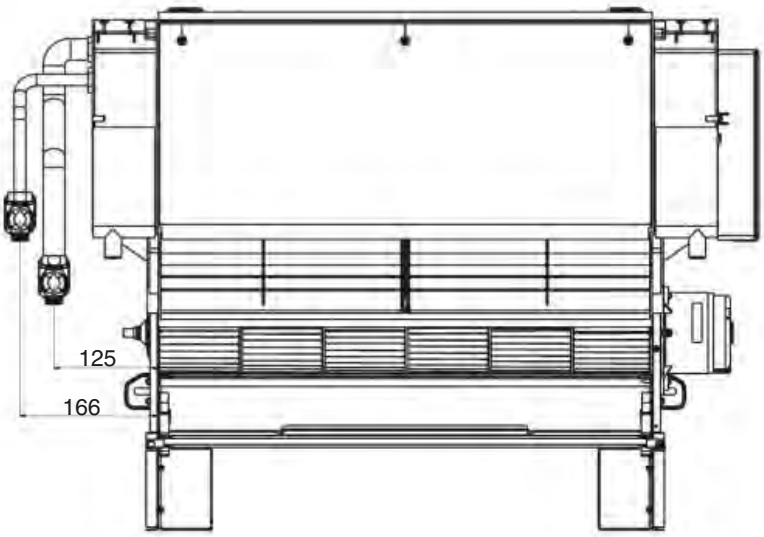


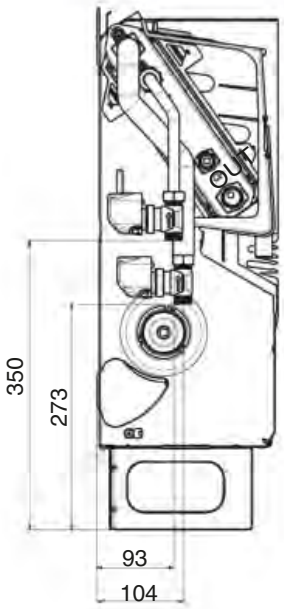
42N	A2 EXT
S15 - E19	402
S20 - S26 - E29	602
S30 - E39 - S42	802
S45 - E49 - S65 - E69	1002

Dimensions in mm.

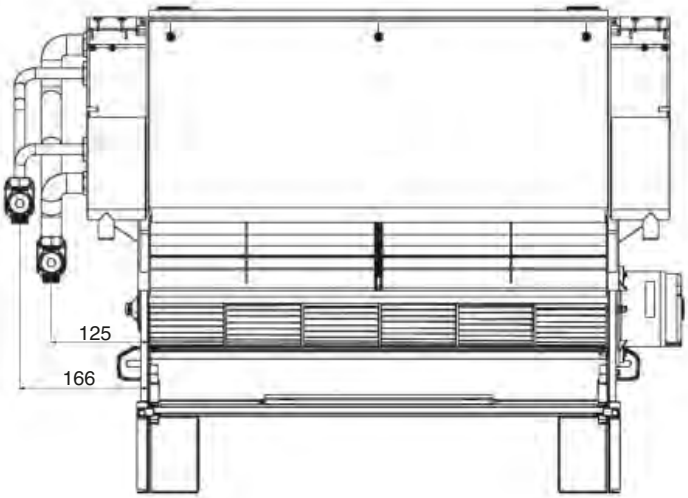
VALVES

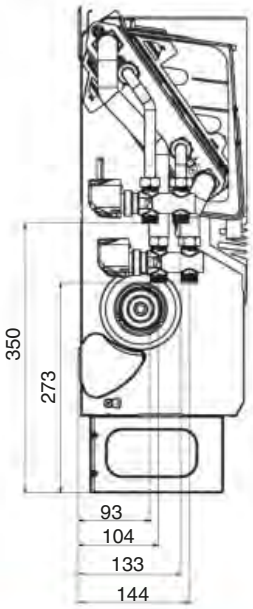
Two-way valves





Four-way valves





Dimensions in mm.

Unit option (10th letter)		H 4-way valve	H 4-way valve	H 4-way valve	H 4-way valve	G 2-way valve	G 2-way valve	G 2-way valve	G 2-way valve
Valve kit		42N9185	42N9186	42N9187	42N9188	42N9194	42N9195	42N9196	42N9197
Description		1/2" cooling	3/4" cooling	1/2" cooling + 1/2" heating	3/4" cooling + 1/2" heating	1/2" cooling	3/4" cooling	1/2" cooling + 1/2" heating	3/4" cooling + 1/2" heating
2-pipe	S 15-E 19	X	-	-	-	X	-	-	-
	S 20-S 26-E 29	X	-	-	-	X	-	-	-
	S 30-E 39-S 42	-	X	-	-	-	X	-	-
	S 45-E 49-S 65-E 69	-	X	-	-	-	X	-	-
4-pipe	S 15-E 19	-	-	X	-	-	-	X	-
	S 20-S 26-E 29	-	-	X	-	-	-	X	-
	S 30-E 39-S 42	-	-	-	X	-	-	-	X
		-	-	-	X	-	-	-	X

Note: instead of being on the left hand-side, the coil can be placed on the right in the installation area. The unit is factory-fitted with a water valve; if necessary, a new installation kit can be ordered.

AIR DISCHARGE

The air discharge indicates the position where the air velocity is 0.2 m/s when the air is blown horizontally with the grille pointing up. The air discharge figures are given for guidance only, and vary according to room dimensions and furniture.

42N		42N_S15 - E19 two-pipe			42N_S15 - E19 four-pipe			42N_S20 - E29			42N_S26		
S15 - S20 -S30 - S45 E19 - E29 - E39 - E49 - E69	S26 - S42 - S65	m	l/s	m³/h	m	l/s	m³/h	m	l/s	m³/h	m	l/s	m³/h
Speed 5	-	0,4	35,8	129	0,4	35,4	127	0,9	59,1	213	-	-	-
Speed 4	-	1,7	55,6	200	1,7	56,2	202	1,8	79,8	287	-	-	-
Speed 3	Speed 3	2,3	69,4	250	2,3	69,2	249	2,2	91,9	331	2,2	93,0	335
Speed 2	Speed 2	2,8	83,6	301	2,8	84,6	304	2,7	107,4	387	3,6	148,9	536
Speed 1	Speed 1	3,2	97,2	350	3,2	97,8	352	3,2	127,6	459	4,4	190,3	685

42N		42N_S30 - E39			42N_S42			42N_S45 - E49			42N_S65 - E69		
S15 - S20 - S30 - S45 E19 - E29 - E39 - E49 - E69	S26 - S42 - S65	m	l/s	m³/h	m	l/s	m³/h	m	l/s	m³/h	m	l/s	m³/h
Speed 5	-	0,5	97,1	350	-	-	-	0,8	145,6	524	0,8	145,6	524
Speed 4	-	2,1	126,0	454	-	-	-	2,9	185,3	667	2,9	185,3	667
Speed 3	Speed 3	3,2	153,2	552	3,0	147,5	531	4,6	223,6	805	5,1	236,9	853
Speed 2	Speed 2	4,3	181,8	654	5,4	221,7	798	6,4	276,7	996	8,0	330,8	1191
Speed 1	Speed 1	5,0	207,2	746	6,6	268,0	965	8,1	332,6	1197	10,2	421,9	1519

OPERATING LIMITS

Water circuit	Maximum water side pressure: 1400 kPa (142 m WG)	Minimum entering water temperature: 5°C
		Maximum entering water temperature: 80°C
Indoor temperature		Minimum temperature: 5°C
		Maximum temperature: 32°C*
Power supply	Nominal voltage	230 V - 1 ph - 50 Hz **
	Operating limits	Min. 207 V - max. 253 V - units without electric heating device Min. 216 V - max. 244 V - units with electric heating device

* In heating mode with electric heating device

** 60 Hz is available for sizes E19; E29; E39; E49; E69; S26; S42; S65

HYDRAULIC DUCTED FAN COIL UNITS

Modular Horizontal

ducted unit

Extremely quiet operation

Low Energy Consumption

Flexibility for simplified installation

Improved comfort

Efficient Indoor Air Quality

42NL / 42NH

IDROFAN.

Cooling capacity 1.2-12.7 kW
Heating capacity 1.25-17.5 kW

The Carrier 42NH and 42NL are available in different sizes with 2-pipe, 2-pipe plus electric heater or 4-pipe coils, with an air flow range from 100 to 2300 m^3/h, a total cooling capacity range from 0.6 kW to 12 kW and a nominal heating capacity range from 0.8 kW to 17 kW.

AIR TREATMENT

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for FC/FCP
Check ongoing validity of certificate:
www.eurovent-certification.com

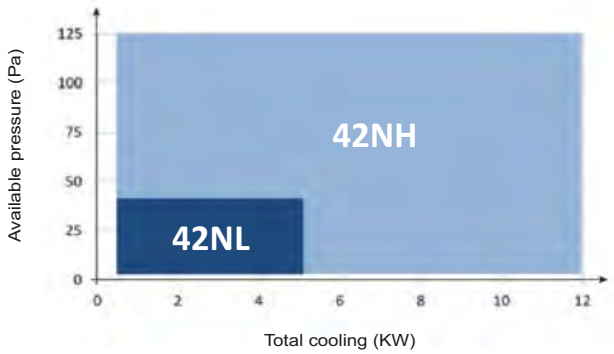
1 - FUNCTIONS AND CONFIGURATIONS

- Compact and modular ducted unit, designed for any false ceiling installation.
- Reliable and economical for tertiary building as hotel guest rooms, offices or light commercial applications.
- Low height of 235 mm (sizes 2/3/4/5) and 285 mm (sizes 6/7)
- Compatible with the Carrier diffuser ranges.
- Extremely low sound levels for ducted applications.
- Five- to Six- speed fan AC motors offers a wide choice of medium speeds.
- Available with Low Energy Consumption variable-speed EC motor.
- High-pressure centrifugal fan for 42NH Range
- G1 filter as standard.
- Safe factory installed electric heater with multiple capacity stages choices.
- Low water pressure drop with factory installed valves.
- Factory installed options (valves and controllers) for fast and easy installation in false ceilings.

1.1 - Modularity

With its two versions, the range is able to address all applications.

The 42NL version is optimised for simple soffit installations while the 42NH is optimised for air return and supply ducted installations.

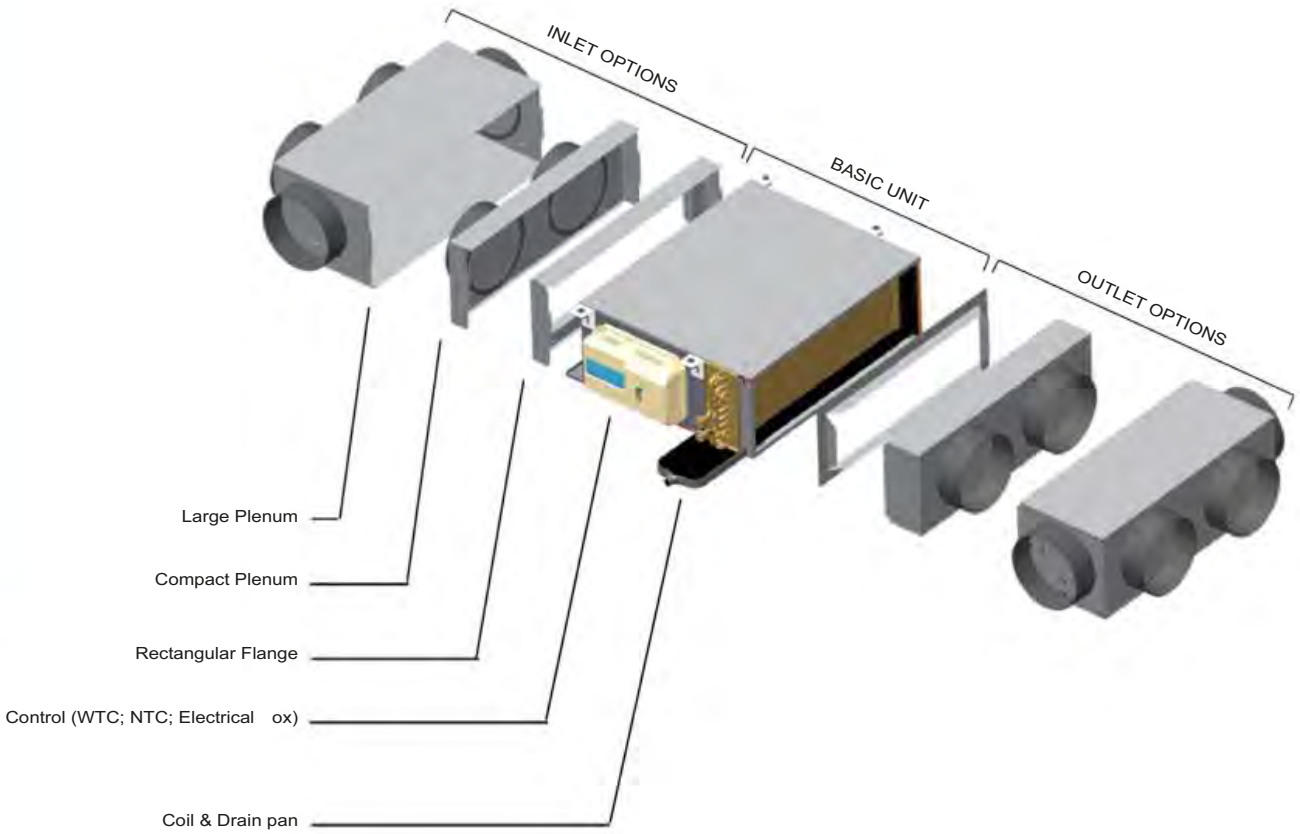


1.2 - Configuration flexibility

Each of the 42NL and 42NH sizes can be provided:

- -With free inlet and/or outlet
- With a rectangular flange air inlet and/or outlet (practical to connect the fan-coil unit to the air ductwork).
- With inlet and/or outlet plenums including large number of spigots diameters 160, 200 or 250 mm according to unit size.

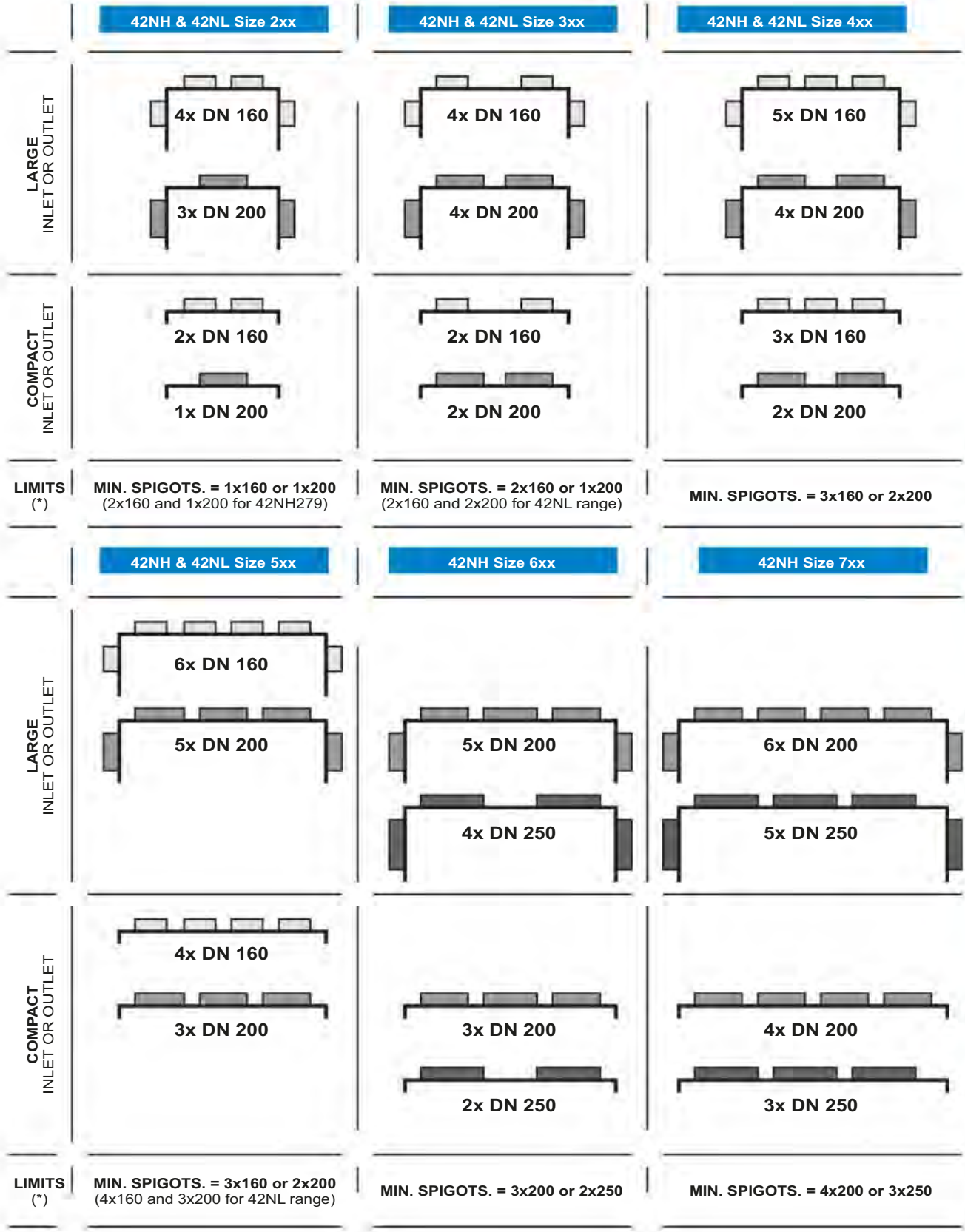
Below picture shows all available air distribution configurations on 42NL or 42NH (size 3 for example) with spigot diameter 200 mm.



1 - FUNCTIONS AND CONFIGURATIONS

1.3 - Standard spigots configuration

Large and small plenums for inlet and outlet are available for all sizes according to the drawings below:



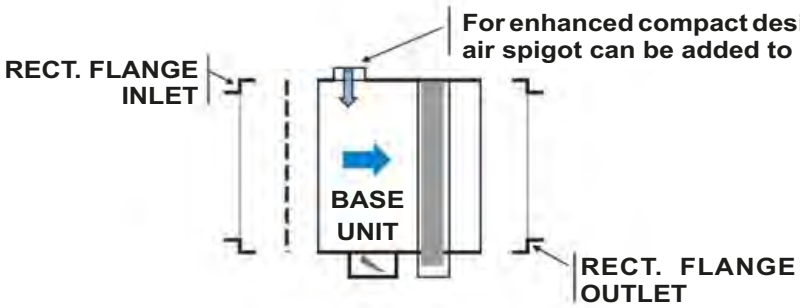
(*) = Minimum number of spigots required to ensure sufficient available static pressure and fan reliability

NOTE:

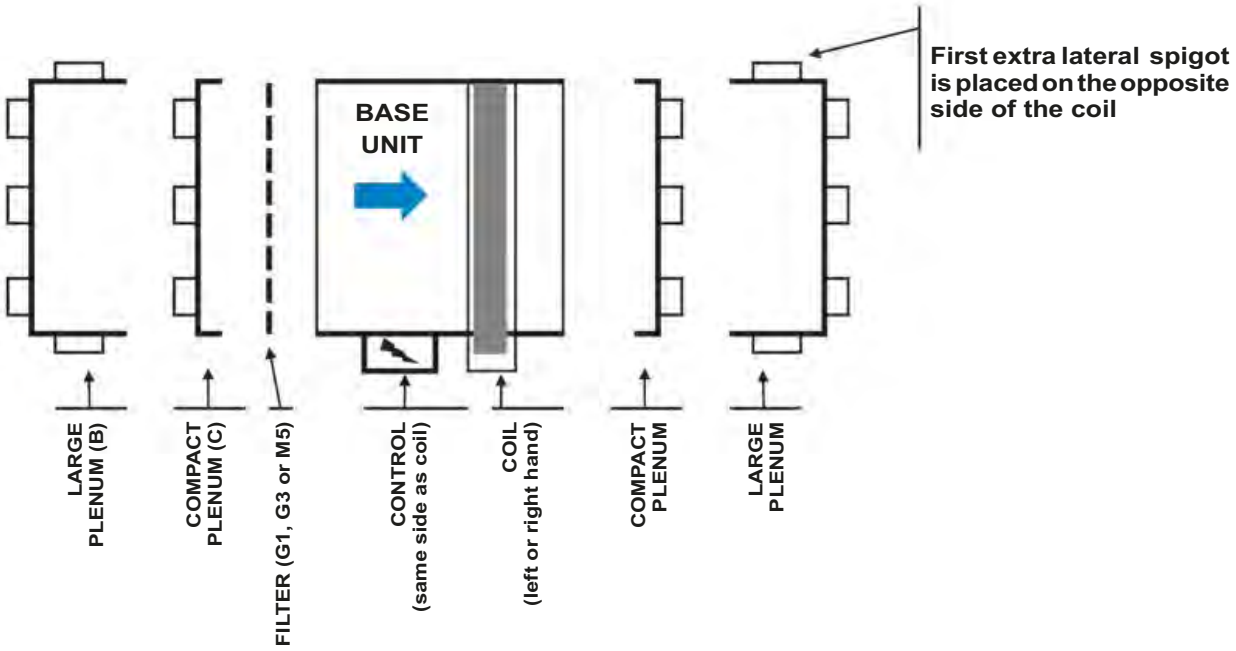
- Electrical heater are not available for 42NL Units when plenum are selected (due to minimum airflow requirement)
- Non-standard configurations not listed above can be provided upon special request. Contact your local Carrier representative.

1 - FUNCTIONS AND CONFIGURATIONS

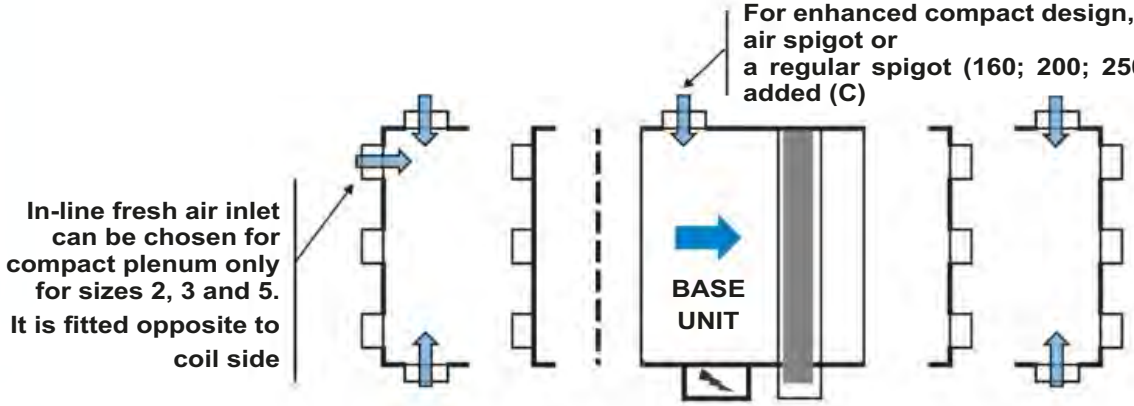
Standard Configuration with inlet and outlet rectangular flanges:



Standard Configuration with spigots without fresh air:



Standard Configuration with fresh air inlet possibilities:



Air flow direction

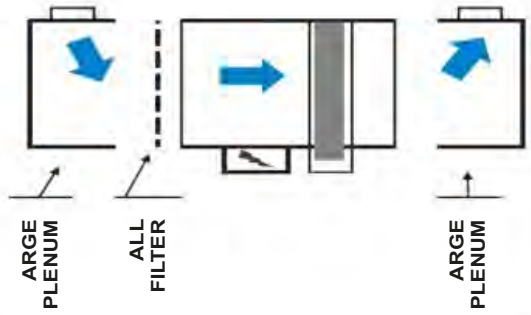
Fresh air inlet

(A) In this case, the air must be filtered beforehand to prevent any damage to the fan and the soiling of the coil.
(B) Large plenum is required to fit the M5filter
(C) Without any filter the small inlet plenum is flat for improved compacity.

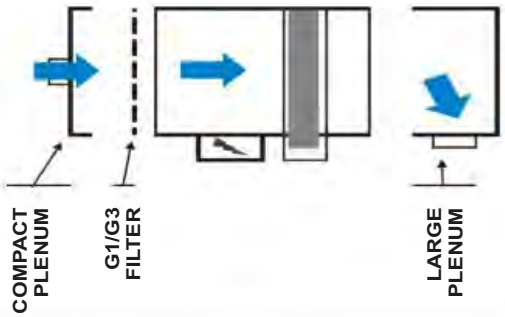
1 - FUNCTIONS AND CONFIGURATIONS

Useful configurations are displayed below:

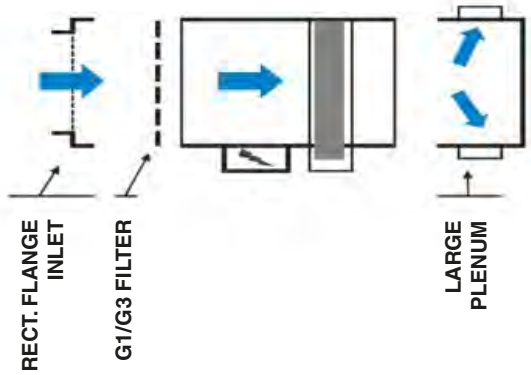
U-shaped



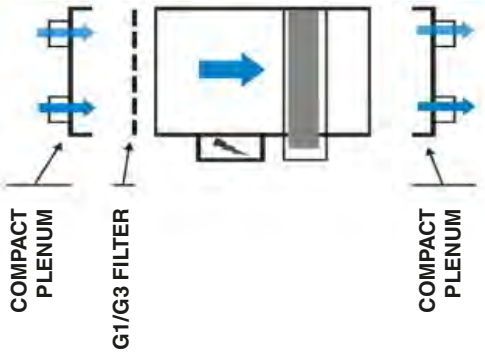
L-shaped



T-shaped

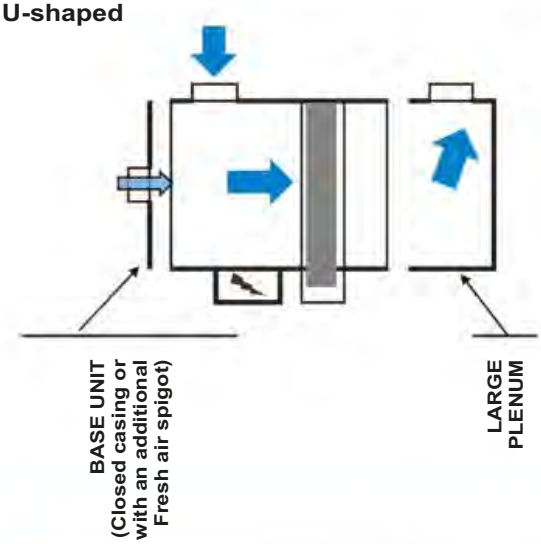


H-shaped or I-shaped

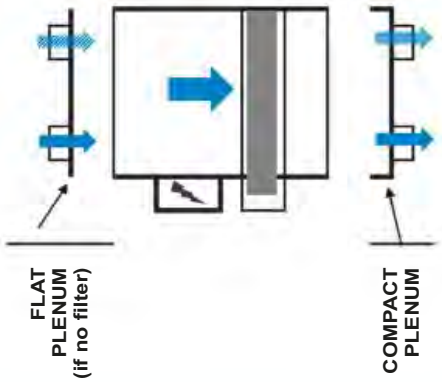


Without filter configurations (Ultra Compact Design)

U-shaped



H-shaped or I-shaped



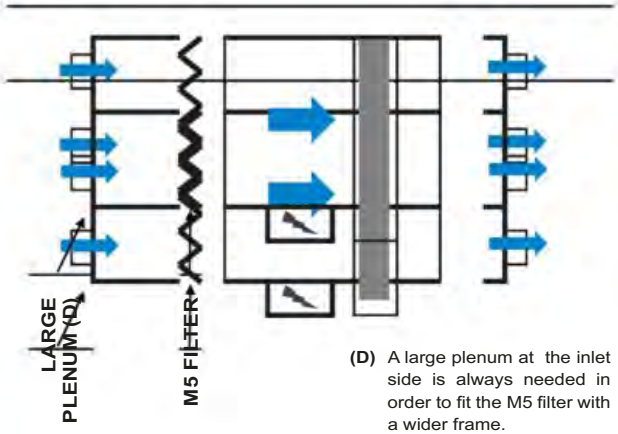
Compatibility Reminder	Size 2		Size 3	Sizes 4 to 7
	22x / 23x	279		
1x160	NH/NL	n.a.	n.a.	n.a.
1x200	NH/NL	NH	NH	n. .
1x250	.a	.a.	n. .	n. .

Compatibility Reminder	Size 2 to 3	Size 4	Size 5	Size 6	Size 7
2x160	NH/NL	n. .	.a.	.a.	n.
2x200	NH/NL	NH/NL	NH	n.a.	n.a
2x250	n.a.	n.a.	n.a.	NH	n.a

n.a.: Not Available

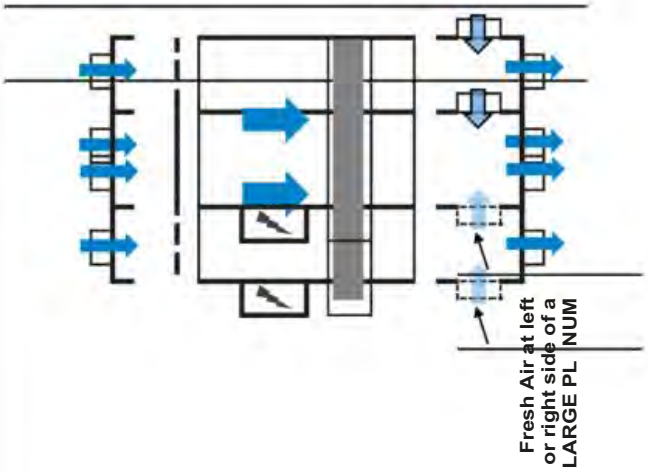
1 - FUNCTIONS AND CONFIGURATIONS

M5 Filter configurations



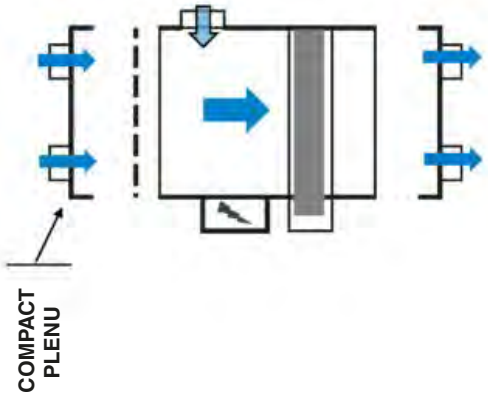
(D) A large plenum at the inlet side is always needed in order to fit the M5 filter with a wider frame.

"Fresh Air" Configuration at outlet side



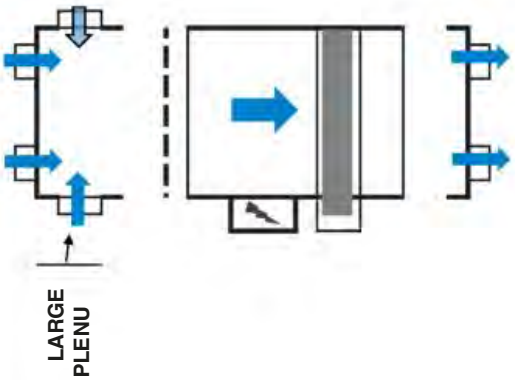
"Fresh Air" Configurations at inlet side

Lateral Fresh Air (opposite to coil hand)
Option 1 "Optimized"



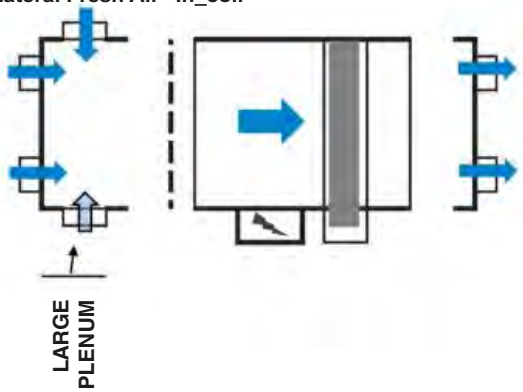
Inlet optimized: For compact design, the fresh air is fitted in base unit (oppositae to coil hand).

Option 2 "In_opp"

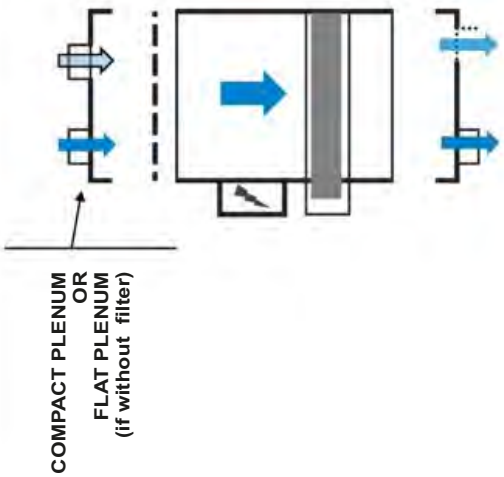


With this option, the fresh air position is opposite to coil hand and always fits into a large plenum.

Lateral Fresh Air "In_coil"



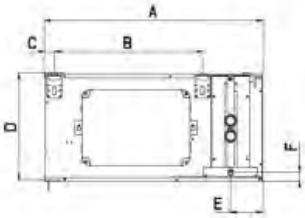
"In_line" Fresh Air (for sizes 2, 3 & 5)

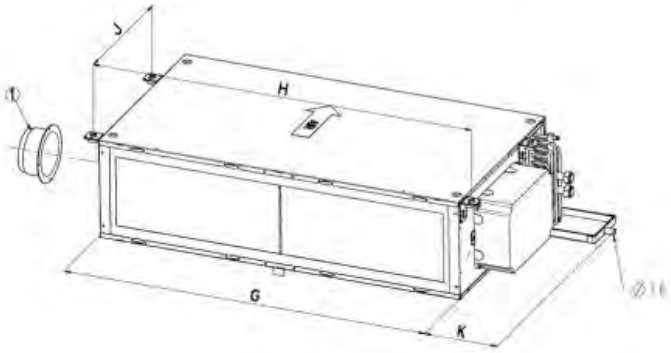


2 - DIMENSIONAL DRAWINGS

NOTE: All drawings shown have the coil connections on the right-hand side. Units with left-hand connections are symmetrical.

Standard unit with free air inlet and outlet

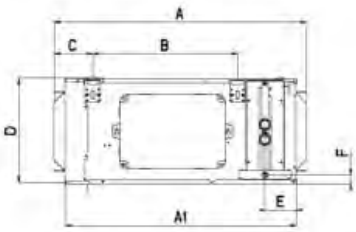


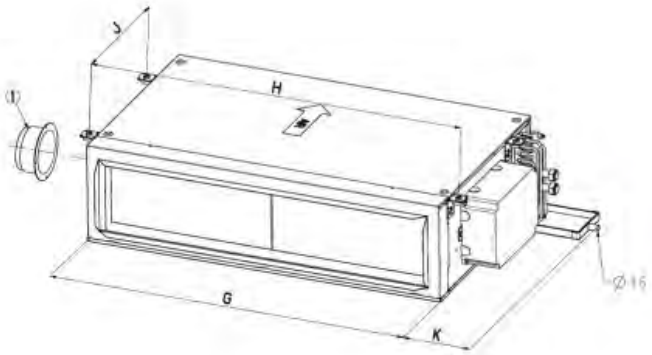


Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	520	520	520	520	7	575
B	330	330	330	330	385	385
C	25	25	25	25	25	25
D	235	235	235	235	285	285
E	85	85	85	85	85	85
F	17	17	17	17	25	25

Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
G	450	620	820	1020	1020	1320
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	230	230	230	230	230	230
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	15	18	23	27	30	36

Unit with rectangular flanges at air inlet and outlet





Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	520	520	520	520	575	575
B	330	330	330	330	385	385
C	25	25	25	25	25	25
D	2	23	235	2	2	285
E	85	85	85	85	85	85
Rectangular Flanges	380 x 160	550 x 160	750 x 160	950 x 160	950 x 210	1250 x 210

Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
F	17	17	17	17	25	25
A1	561	561	561	561	615	615
G	450	620	820	1020	1020	1320
H		670	870	1070	107	1 7
J	330	330	330	330	385	385
K	230	230	230	230	230	230
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	15	18	23	27	30	36

LEGEND

1 Lateral optimized fresh air position in base unit (opposite to coil hand at inlet)

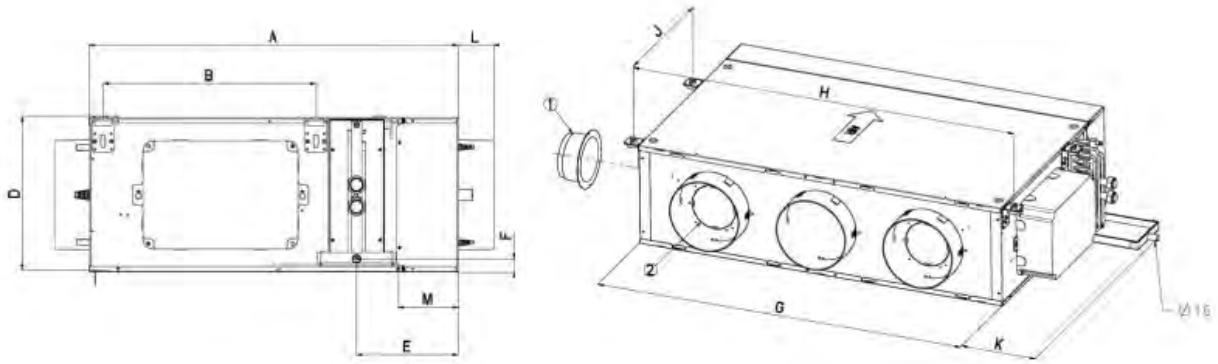
* Maximum weight 42NL/NH (AC or EC motor version) - without valve option - without water

⇨ Air flow direction

All dimensions are in mm.

2 - DIMENSIONAL DRAWINGS

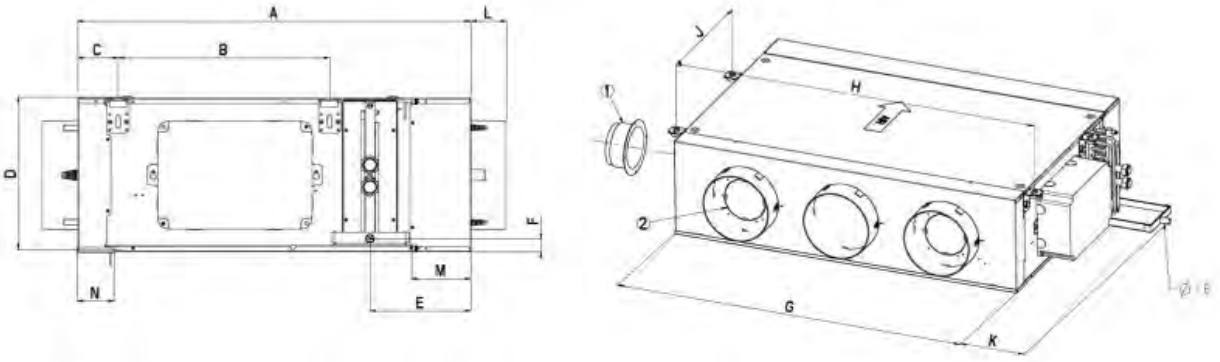
Unit without filter with compact plenum at air inlet and outlet (optimized lenght)



Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	611	611	611	611	666	666
B	330	330	330	330	385	385
C	25	25	2	25	25	2
D	235	235	235	235	285	285
E	185	185	185	185	185	185
F	17	17	17	17	25	25
G	450	620	820	1020	1020	1320

Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	2	230	230	2	230	230
L	63	63	63	63	76	76
M	100	100	100	100	100	100
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	19	23	29	33	37	44

Unit with G1 or G3 filter with compact plenum at air inlet and outlet



Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	660	660	660	660	715	715
B	330	330	330	330	385	385
C	75	75	7	75	75	7
D	235	235	235	235	285	285
E	185	185	185	185	185	185
F	17	17	17	17	25	25
G	450	620	820	1020	1020	1320

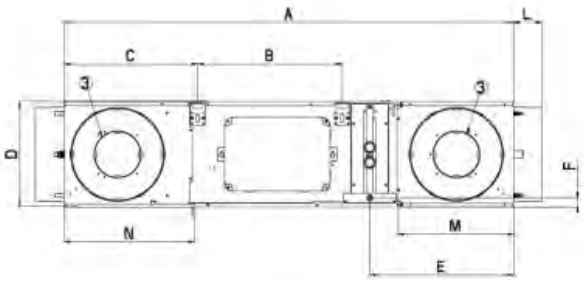
Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	2	230	230	2	230	230
L	63	63	63	63	76	76
M	100	100	100	100	100	100
N	50	50	50	50	50	50
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	19	23	29	33	37	44
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	19	23	29	33	37	44

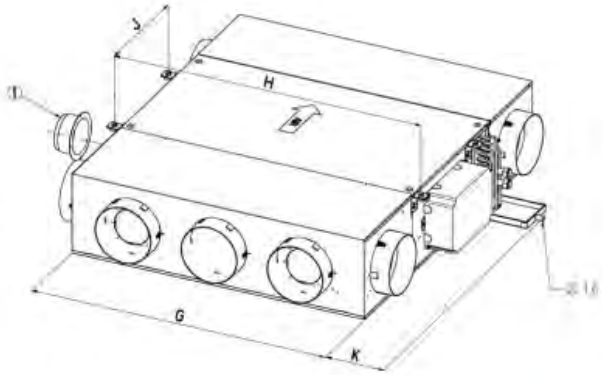
LEGEND

1 Lateral optimized fresh air position in base unit (opposite to coil hand at inlet)
2 In line fresh air position for compact plenum (with or without filter)
* Maximum weight 42NL/NH (AC or EC motor version) - without valve option - without water
⇨ Air flow direction
All dimensions are in mm.

2 - DIMENSIONAL DRAWINGS

Unit with G1, G3 or M5 filter with large plenum at air inlet and outlet





Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
A	1040	1040	1040	1040	1195	1195
B	330	330	330	330	385	385
C	305	305	305	305	355	355
D	235	235	235	235	285	285
E	333	333	333	333	382	382
F	17	17	17	17	25	25
G	450	620	820	1020	1020	1320

Dimensions in mm						
Size	2xx	3xx	4xx	5xx	6xx	7xx
H	500	670	870	1070	1070	1370
J	330	330	330	330	385	385
K	230	230	230	230	230	230
L	63	63	63	63	76	76
M	250	250	250	250	297	297
N	280	280	280	280	330	330
G + K	680	850	1050	1250	1250	1550
Weight* [kg]	22	27	34	40	45	53

LEGEND

1 Lateral optimized fresh air position in base unit (opposite to coil hand at inlet)
3 Lateral fresh air position in large plenum (at inlet or outlet side)
* Maximum weight 42NL/NH (AC or EC motor version) - without valve option - without water
⇨ Air flow direction
All dimensions are in mm.

3 - MAIN MODULES AND COMPONENTS

3.1 - Casing

In order to further enhance occupant comfort this product range offers especially low noise levels. The casing is made of galvanised sheet steel with full high-efficiency internal lining for optimised thermal and sound insulation of the unit.

In order to comply with the various local regulations (fire class) the fan-coil unit is available with both class M1 type insulation (according to NF P 92-507) and Euroclass level B-s3-d0 (according to EN 13501). It is also equipped with anti-vibration mounts as standard.

In order to reduce the dimensions to the minimum, the units are equipped with high-efficiency heat exchangers with very high cooling capacity/treated air flow ratios. The condensate drain pan height is optimised.

3.2 - Fan motors

3.2.1 -Multi-speed fan motor assembly compliant with ErP 2015 regulation

Motor description

- Asynchronous motors, 4 poles with internal overload protection
- Permanent capacitor
- Class B winding insulation, varnish class F
- See operating limits in chapter 8.

The 42NH and 42NL have a multi-speed fan motor assembly with forward curved, double inlet, simple, double or triple wheel fans according to the unit size.

Five speeds are available as standard for 42NH (Six speeds for 42NL). Three speeds must be selected to allow connection of the fan motor in accordance with applicable electromechanical or electronic control.

- Minimum speed: R5 for 42NH; R6 for 42NL
- Maximum speed: R1
- Units can be supplied with Carrier electronic controls and prewired to a selection of three speeds.
- For other fan motor Speed wiring combinaisons refer to the unit options list (chapter 6).

3.2.2 - Low-consumption fan motor assembly (variable-speed LEC)

Motor description

- Permanent magnet brushless motor
- Electronically commutated
- Class B winding insulation, varnish class F
- See operating limits in chapter 8.

42NH and 42NL units are equipped with the variable-speed LEC fan motor, that is controlled by a 0 to 10 V signal, available with the Carrier NTC or WTC type electronic control.

NOTE: In this case the minimum control signal that allows motor start-up is 2 V for two- and four-pipe versions and 3 V for the versions equipped with electric heaters.

If the product is supplied without a Carrier control device, verification of EMC conformity is the responsibility of the installer.

3.3 - Fan wiring solutions

3.3.1 - Multi-speed unit with bare wires (standard)

As an option, all speeds of the multi-speed fan are available with bare wires (six speeds for 42NL and five speeds for 42NH) offering the unit greater flow control flexibility.

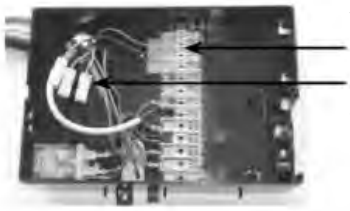
Minimum speed = R6 or R5, maximum speed = R1.

3.3.2 - Multi-speed unit with optional controller or electrical box

When ordering, three of the five speeds must be selected to allow connection of the fan motor in accordance wih the applicable control (NTC, WTC or Electrical box for Carrier Thermostats).

With the electrical box, the installer can connect the unit to a terminal board. The electrical box can be opened with a screw driver.

The electrical box permits changing the speed wiring without access to the motor. All available speeds are connected.



Wiring example: By default R5 R3 R1 are connected on the terminal board.
Other 2 or 3 remaining speeds available, easy access

NOTE: The standard wiring for all ranges of units is always R5 R3 R1.

3.3.3 - Variable-speed low energy consumption (LEC) fan motor option with bare wires (standard)

The variable-speed low energy consumption (LEC) fan motor must be controlled by a 0-10 V d.c. signal.

3.3.4 - Variable-speed low energy consumption (LEC) fan motor with electrical box

This option allows the installer to connect the unit to a terminal board inside an electrical box. The electrical box can be opened with a screw driver.

The 0-10 V d.c. signal that controls the variable fan speed is directly accessible at the terminal board.

3.3.5 - Cover only option

An accessory plastic cover can be provided for a control supplied by the customer (max. dimensions L = 200 mm x D = 100 mm x H = 95 mm) and is installed on site or at the factory on a multi-speed unit or a variable-speed low energy consumption (LEC) fan motor.

NOTE: This option is not compatible with the electrical box option.

3 - MAIN MODULES AND COMPONENTS

3.3.6 - Fuse holder option

A fuse holder can be provided as an option for all controllers or with the electrical box.

3.4 - Water coil

- Aluminium fins mechanically bonded by expansion onto copper tubes
- 1/2" threaded water inlet and outlet connections (female) for sizes 2 to 5
- 3/4" threaded water inlet and outlet connections (female) for sizes 6 and 7
- Air purge valves and drain are standard.
-

The coil is integral with the drain pan and coil access door to ease of removal during service and maintenance.

3.5 - One-piece condensate drain pan

One-piece condensate drain pan made in polypropylene and insulated with 5 mm of foam.

Drain connection diameter : Ø 16 mm external

Fire rating M1 (according to NFP92-507).

3.6 - Filter

3.6.1 - Specifications

The 42NL and 42NH include as standard a non regenerable G1 filter according to EN 779.

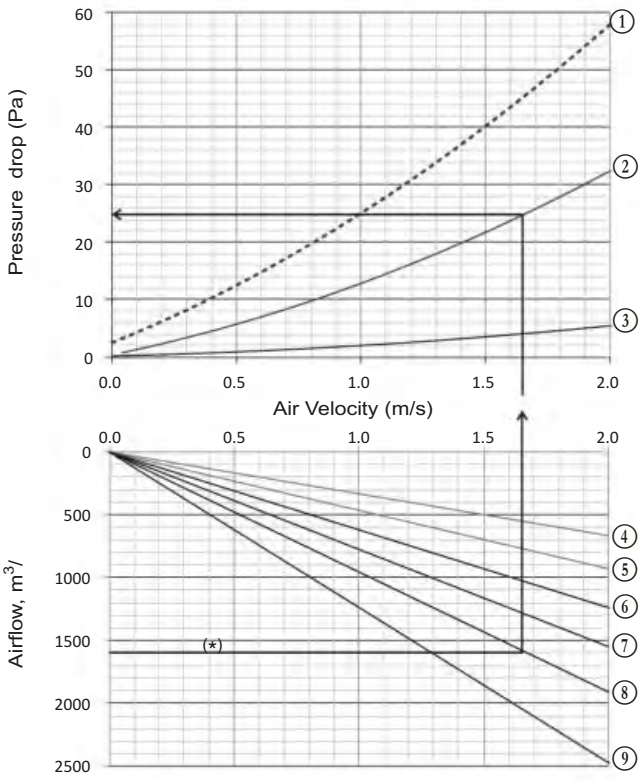
A G3 filter and a pleated M5 filter (for range 42NH only) according to EN 779 are also available. G3 and M5 filters have medium fire rating M1 (according to NFP 92-507) and a metal frame.

The "without filter" option is only available for units with a plenum or a rectangular flange at the air inlet side to ensure that a ductwork will be connected when the unit operates.

To prevent coil soiling, Carrier recommends the usage of a filter either fitted in the fan-coil unit or in return air grille.

42NH offers four filters configurations:

- Without filter: only available for units with an inlet plenum with spigots or with a rectangular flange inlet
- G1 filter: supplied as standard
- G3 filter: metal wire frame, medium efficiency
- M5 filter (only for 42NH): metal wire frame, high efficiency, thickness = 55 mm.



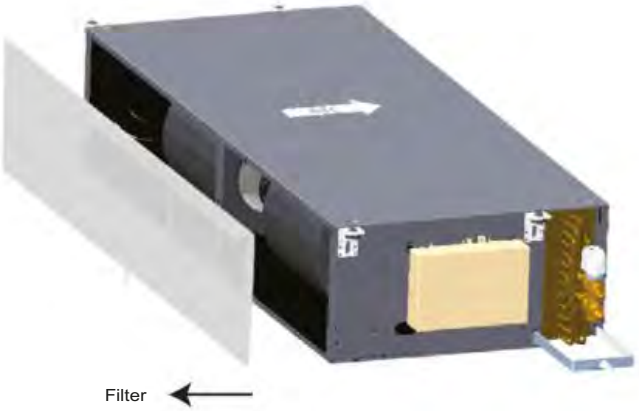
Legend

1 M5 filter
2 G3 filter
3 G1 filter
4 Airflow for 42NH/NL Size 2
5 Airflow for 42NH/NL Size 3
6 Airflow for 42NH/NL Size 4
7 Airflow for 42NH/NL Size 5
8 Airflow for 42NH Size 6
9 Airflow for 42NH Size 7
(*) Example: The pressure drop of a G3 filter used in a 42NH645 is 25Pa for a 1600 m^3/h airflow.

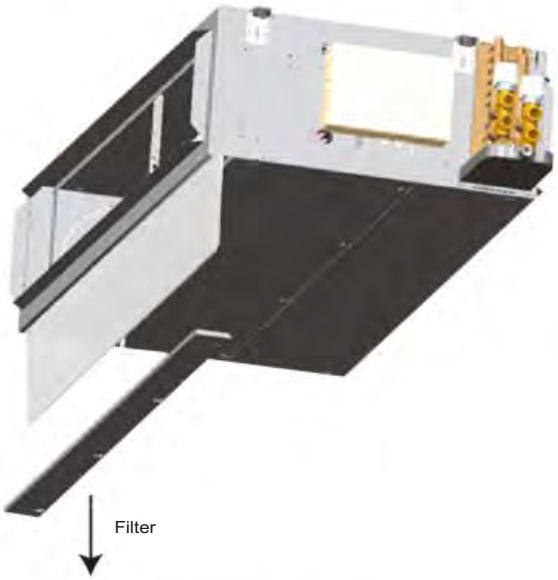
3 - MAIN MODULES AND COMPONENTS

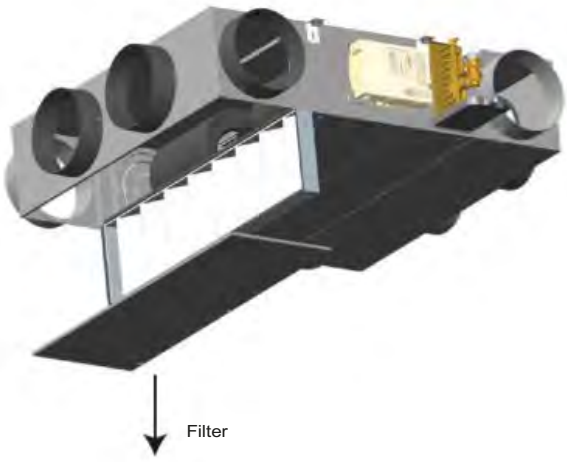
3.6.2 - Filter access

Without rectangular flange inlet, the filter removal is from the rear.



With rectangular flange inlet or plenums, the filter removal is from below (trapdoor).





4 - OPTIONS SPECIFICATIONS

4.1 - Electric heater (option for 2-pipe coil)

Electric heater-resistance wire type

- Supply voltage: 230 V - 1 ph - 50 Hz
- Heater size and capacity per unit (+5% ; -10%):

Electrical Heater Capacity	Low	Medium	High	Very High
42NH/NL 2-5	1 x 500 W	1 x 800 W	1 x 1000 W	NA
42NH/NL 2-9	1 x 500 W	1 x 800 W	1 x 1000 W	NA
42NH/NL 3-5	1 x 500 W	1 x 800 W	1 x 1000 W	1 x 1600 W
42NH/NL 3-9	1 x 500 W	1 x 800 W	1 x 1000 W	1 x 1600 W
42NH/NL 4-5	2 x 500 W	2 x 800 W	2 x 1000 W	NA
42NH/NL 4-9	1 x 500 W	1 x 800 W	1 x 1000 W	1 x 1600 W
42NH/NL 5-5	2 x 500 W	2 x 800 W	2 x 1000 W	NA
42NH/NL 5-9	2 x 500 W	2 x 800 W	2 x 1000 W	NA
42NH 6-5	2 x 500 W	2 x 800 W	2 x 1000 W	2 x 1600 W
42NH 6-9	2 x 500 W	2 x 800 W	2 x 1000 W	2 x 1600 W
42NH 7-5	2 x 500 W	2 x 800 W	2 x 1000 W	2 x 1600 W
42NH 7-9	2 x 500 W	3 x 500 W	3 x 800 W	3 x 1000 W

- The heater is protected with a dual safety device:
  a) Self-holding automatically reset integrated safety thermostat
  b) Destructive thermofuse link
- Available for 2-pipe coil only.

WARNING: Minimum air flow must be maintained to avoid damaging the electric heaters.

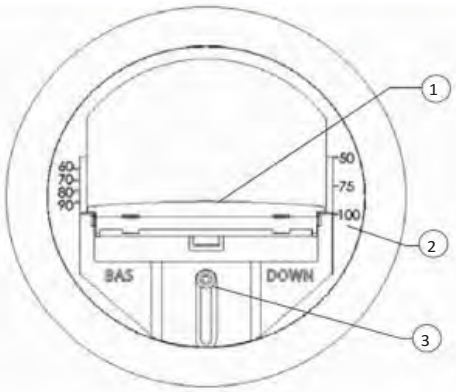
A minimum control signal of 3V is selected by default with Electronic Carrier controller (NTC / WTC). To prevent low airflow with 42NL range, plenum cannot be chosen as an option.

4.2 - Fresh air controller (option)

4.2.1 - Constant volume fresh air controller

The fan coil can be fitted with a constant fresh air flow controller adjustable from 15 m^3/h to 180 m^3/h to allow control of the introduction of fresh air and of the air change rate.

The fresh air supply can be located in the air supply plenum, in the air return plenum or in the side of the base unit casing for compact design.



Example: Range 50-100 m^3/h

1 Air Damper
2 Fresh airflow damper position setting (in m^3/h)
3 Airflow adjustment screw

The fresh air controller may be modified on site by relocating the damper (adjustable screw). Three ranges of air-controller are provided: 15 to 50m^3/h, 60 to 100m^3/h and 110 to 180m^3/h.

IMPORTANT: If an optional return air temperature sensor is provided, the constant fresh air flow rate must not exceed 50% of the unit supply air flow rate at minimum speed.

NOTE: To operate correctly,the fresh air flow controller requires a differential pressure in the range of 60 Pa to 210 Pa.

4.2.2 - Variable volume fresh air controller

The unit can be equipped with an optional variable fresh air flow controller from 0-55 l/s (0-200 m^3/h). It is connected to the numeric Carrier controller and can regulate the fresh air intake in two ways:

- Either using a fixed rate set by the installer that can be reconfigured as required
- Or based on the CO_2 level; in this case it is connected to a CO_2 sensor via the Carrier numeric controller.

NOTE: With the variable fresh air flow controller the upstream pressure in the fresh air duct must be 180 Pa.

4 - OPTIONS SPECIFICATIONS

4.3 - Valves and actuators (option)

NOTE: The motor valve assembly is normally closed.

4.3.1 - Valve actuators

A wide choice of actuators is available with two or four-way valve bodies (three-way with integral bypass) to offer the right solution for any controller type and customer requirement, from on/off to proportional types, with either 230 V or 24 V power supply:

- •On/off 230 V actuator
- On/off 24 V actuator
- Floating 3-point 230 V actuator
- Floating 3-point 24 V actuator
- Modulating 0-10 V/24 V actuator

When combined with LEC motors and WTC or NTC controllers, floating 3-point 230-V actuators are recommended to increase energy savings and enhance comfort.

NOTE: 24V power supply actuators are not compatible with Carrier controllers (Thermostats A/B/C/D, WTC & NTC).

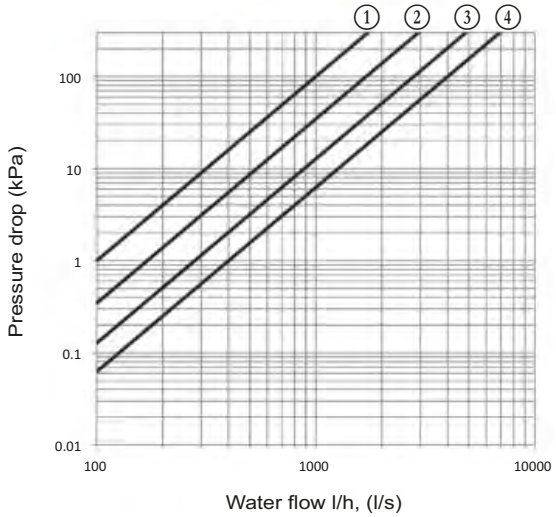
4.3.2 - Standard two-way valve body and three-way valve body (with integral bypass)

Features of the 1/2" two-way and three-way valves for 42NL/NH sizes 2 to 5

- 1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN15 for 1/2" valve
- Nominal pressure: PN 16 bar

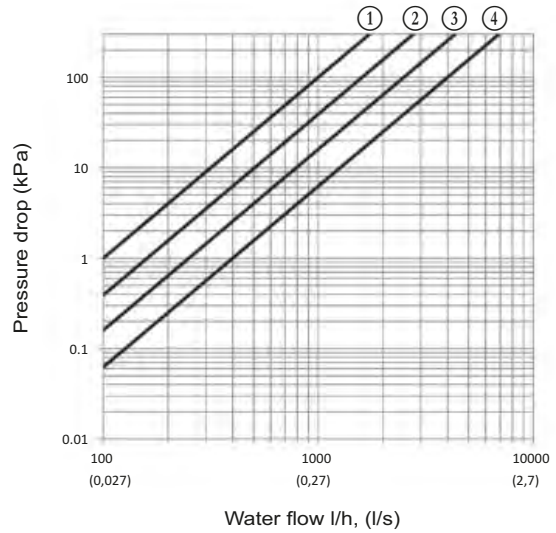
Features of the 3/4" two-way and three-way valves for 42NH sizes 6 and 7

- 3/4" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN20 for 3/4" valve
- Nominal pressure: PN 16 bar



Legend

1 1/2" - ON/OFF valve 42NL/NH - Size 2 Kvs = 1
2 1/2" - ON/OFF valve 42NL/NH - Sizes 3, 4, 5 Kvs = 1.7
3 3/4" - ON/OFF valve 42NL/NH - Size 6 Kvs = 2.8
4 3/4" - ON/OFF valve 42NL/NH - Size 7 Kvs = 4



Legend

1 1/2" - Modulating valve (3-points & 0-10V) 42NL/NH - Size 2 Kvs = 1
2 1/2" - Modulating valve (3-points & 0-10V) 42NL/NH - Sizes 3, 4, 5 Kvs = 1.6
3 3/4" - Modulating valve (3-points & 0-10V) 42NL/NH - Size 6 Kvs = 2.5
4 3/4" - Modulating valve (3-points & 0-10V) 42NL/NH - Size 7 Kvs = 4

4 - OPTIONS SPECIFICATIONS

4.3.3 - Two way balancing valve body

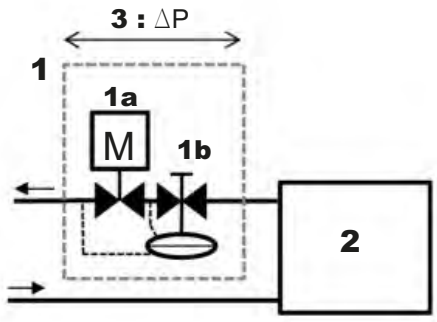
New two-way valves with embedded balancing function technology are available as an option with 42NH and 42NL units. The Carrier two-way valve with balancing function combines the functionality of a dynamic balancing valve and a control valve in one product.

The dynamic balancing function maintains a constant differential pressure over the control valve.

The control valve regulates the flow by means of a variable orifice which is controlled by the actuator.

The dynamic balancing function maintains a constant differential pressure over the control valve.

The control valve regulates the flow by means of a variable orifice which is controlled by the actuator.



Legend

1. Two-way valve with balancing function
   1a. Valve actuator for waterflow control
   1b. Differential pressure controller & balancing feature
2. Fan-coil unit
3. Minimum operating pressure drop at nominal waterflow:
   20 kPa for sizes 4 & 5

The constant differential pressure across the control valve ensures accurate control and maximizes valve authority, independently of the pressure conditions in the system.

Advantages versus standard two-way valve

- Improved and reliable commissioning. The water flow can be set and controlled on site.
- Higher energy efficiency due to optimal waterflow and maximized valve authority.
- Enhanced comfort thanks to stable and precise ambient temperature control.

Features of the 1" two-way valves with balancing function for 42NL/NH sizes

- 1" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body
- Nominal size DN 20 for 1'' valve
- Nominal pressure: PN 16 bar
- Minimum operating differential pressure = 20 kPa at nominal flow.

As a secondary option, two pressure points can be added to the valve body in order to measure precisely the waterflow during the commissioning and the maintenance stages.

4.4 - Flexible water pipes (option)

4.4.1 - Materials

- Pipes: MEPD-based elastomer (modified ethylene-propylene-diene)
- Braid: 304L stainless steel
- Insulation: cellular foam rubber with M1 fire rating (9 mm thick, flexible water pipes).

4.4.2 - Characteristics

- Minimum bend radius (insulated pipes): 106 mm
- The flexible water pipes are designed for treated or untreated water.
- Maximum operating pressure: 16 bar
- 1/2" female flat gas connections for sizes 2, 3, 4 and 5
- 3/4" female flat gas connections for sizes 6 and 7
- Length: 1 m.

4 - OPTIONS SPECIFICATIONS

4.5 - Sensors (option)

4.5.1 - Water sensor

A water temperature sensor can be provided as an option for NTC and WTC controllers.

- For 2-pipe coil: The sensor is installed on a cooling/ heating water pipe (for change-over function).
- For 4-pipe coil: The sensor is installed on a heating water pipe (for cold-draft function that prevents the operation of the unit when the heating network is off).

In case of fan-coil unit delivered with an electrical box, the "water sensor" option is actually a switch that will be connected to the Carrier thermostat.

NOTE:

- ***The water sensor option (switch) with electrical box is only available for 2-pipe coil without electrical heater.***
- ***A water probe can also be provided as an accessory only in order to use the cold draft function of the thermostat.***

4.5.2 - Air sensor

Two air sensors, factory fitted, are available as an option for NTC and WTC controllers. They measure the air temperature at the inlet and/or at the outlet side.

4.5.3 - CO_2 sensor

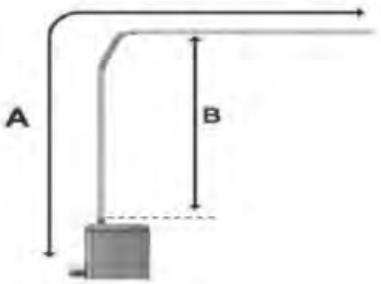
For indoor air quality control, a CO_2 sensor is available as an option for NTC and WTC controllers. The sensor is factory fitted at the inlet side.

4.6 - Condensate pump (option)

The condensate pump option is designed to fit on the side of the unit drain pan. Electrical power supply 230V-50/60Hz.

Condensate pump discharge performances :

TABLE OF ACTUAL DISCHARGE (l/h)				
	Total length of pipe (Ø int. 6 mm) A			
Discharge head (B)	5 m	10 m	20 m	30 m
0 m	20	19	18	17
2 m	16	15	14	13.5
4 m	11.5	11	10.5	10
6 m		8.5	7.5	6.5
8 m		6	5	4
10 m		4	3.5	2.5



5 - CONTROL (OPTION)

The unit can be supplied with a wide range of Carrier controls. These offer functions to suit the various application requirements, summarised in the table below.

	Thermostats	NTC	WTC
Communication Protocols			
Carrier Communication Network (CCN) Aquasmart compatible		x	
BACnet MSTP			x
LON			x
Control algorithms			
On-off	x		
Proportional-integral		x	x
Carrier Energy saving algorithm		x	x
Fan control			
AC motors 3 speeds descreet	Type A&B	x	x
Automatic optimum fan speed selection	x	x	x
EC motors 3 speeds descreet	Type C&D	x	x
EC motors Variable speed		x	x
Water Valve management			
Air flow control only (no water valve)	x		
230V On-off actuators	x	x	x
230V Modulating actuators (floating 3pts)		x	x
Main functions			
Set-point control	x	x	x
Occupied/unoccupied mode	x	x	x
Frost protection mode	x	x	x
Window / Door contact input	x	x	x
Measurement of water inlet temperature for automatic seasonal changeover (2 pipes)	Type A&C	x	x
Measurement of water inlet temperature to prevent cold-draft (4 pipes and 2 pipes + electric heater)	Type B&D	x	x
Manual changeover	x	x	x
Frost protection mode	x	x	x
Continuous ventilation within dead-band	x	x	x
Periodical ventilation within dead-band	x	x	x
On-site configuration	x	x	x
Unit grouping Master/Slave	x	x	x
Cassette Louvers control		x	x
Supply air temperature monitoring limiting		x	x
Electrical heater loadshed		x	x
Dirty filter alarm		x	x
Alarm reporting		x	x
Indoor Air Quality control (CO_2 sensor)		o	o
Demand control ventilation (DCV) (0-10V fresh air valve)		o	o
Free cooling mode			o
Presence detection			o
User interfaces			
Automatic or manual fan speed control	x	x	x
Set-point adjustment	x	x	x
Occupancy (eco) button	x	x	o
Digital display		o	o
Remote control (infra-red)		o	o
CO_2 sensor		o	o
Luminosity sensor			o
Motion detection			o
Easy connection RJ45 jack (on wall mounted UI)			x
Light & Blinds management			
Light power modules			o
Blinds power modules			o
Control kit			
On site control kit solution			o

Legend
X Feature available as standard
O Optional

NOTE: For the features and specifications of the Carrier controllers refer to the technical documentation for each controller.

Upon special request other controller types can be factory-installed on the units (supplied by Carrier or the customer).

6 - PRODUCT CHARACTERISTICS LIST

Characteristic Name		Digit n° Codification	Value	Description	Pack.	Compatibility	
Range		1-2	42				
		3-4	NH				
			NL				
UNIT SIZE (Digits 5 - 6 - 7)	Chassis size	5	2	Chassis Size 2	Yes	Unit size availability (Digit n° 5-6-7):	
			3	Chassis Size 3			
			4	Chassis Size 4		2-pipe:	4-pipe:
			5	Chassis Size 5		NL / NH 225;235;229;239;279	NL / NH 235;239;279
			6	Chassis Size 6			
			7	Chassis Size 7		NL / NH 325;335;329;339	NL / NH 335;339
	Efficiency	6	2	Standard efficiency	Yes	NL / NH 425;435;429;439	NL / NH 435;439
			3	Medium efficiency		NL / NH 525;535;529;539	NL / NH 535;545;539;549
			4	High efficiency			
			7	Extra High efficiency		NH 635;645;639;649	NH 645;649
	Fan type	7	5	AC multispeed motor	Yes	NH 735;745;739;749	NH 735;745;739;749
			9	EC low consumption motor			
Coil hand & type		8	F	2 pipes coil Left Hand	Yes		
			G	2 pipes coil Right Hand			
			C	4 pipes coil Left Hand			
			D	4 pipes coil Right Hand			
Control		9	-	Bare wires	Yes	Valves and actuators must be selected with NTC	
			E	Electrical Box			
			K	NTC			
			L	WTC LON			
			M	WTC BACNET			
Valve body		10	-	Without valve	Yes	Balancing valves are not available for unit sizes 6xx and 7xx	
			G	2-way valve	Yes		
			H	4-way valve	Yes		
			L	2-way balancing valve	No		
			T	2-way balancing valve and pressure points	No		
Electrical heater		11	-	Without electric heater	Yes	Electrical heaters are not compatible with 42NL with plenum.	
			E	500W electric heater			
			F	800W electric heater			
			G	1000W electric heater		Highest capacity for unit size 2xx	
			H	1500W electric heater			
			J	1600W electric heater		Highest capacity for unit sizes 3xx and 4x9	
			K	2000W electric heater		Highest capacity for unit sizes 4x5 and 5xx	
			L	2400W electric heater			
			M	3000W electric heater		Highest capacity for unit sizes 7x9	
			N	3200W electric heater		Highest capacity for unit sizes 6xx and 7x5	
Valve actuator		12	-	Without actuator	Yes	24V actuators are not available with Carrier controllers 3 points floating actuators are not available with Electrical Box	
			A	230V ON/OFF actuator	Yes		
			C	230V floating actuator (3 points)	No		
			B	24V ON/OFF actuator	Yes		
			D	24V floating actuator (3 points)	No		
			E	24V 0-10V modulating actuator	No		
Rectangular flanges		13	-	Without rectangular flange	Yes		
			A	Outlet rectangular flange only	Yes		
			B	Inlet rectangular flange only	Yes		
			C	Inlet and outlet rectangular flanges	Yes		
Specific (options selection)		14	-	Without specific option	Yes		
			A	With specific options (factory fitted)	Yes		

Legend:

Default value for mandatory characteristic

Pack: Available with individual packaging

6 - PRODUCT CHARACTERISTICS LIST

Specific options (can be selected if digit n°14 = A*)

Characteristic Name	Value	Description	Pack.	Compatibility
Indoor air quality	Without	Filter	Yes	Only available with rect. flanges or plenum
	G1		Yes	
	G3		Yes	
	M5		No	M5 filter only available for 42NH units with plenum
Fan speed wiring for AC motor	654	AC motor speeds arrangement:	Yes	R6 not available for 42NH range
	653			
	652			
	651	R6 = minimum speed for 42NL		
	643	R5 = minimum speed for 42NH		
	642	R1 = maximum speed		
	641			
	632			
	631	When this option is not selected, the standard wiring for all 42NL and 42NH units is always R5-R3-R1		
	621			
	543			
	542			
	541			
	531			
	521			
	432			
	431			
	421			
	321			
Packaging	Bundle	Filmed on a pallet (shrink wrap)	-	
	Individual	Individual packaging		
Inlet plenum	1_inline	1 spigot in line	No	According to unit sizes, filter and fresh air position Use selection software for more informations
	1_lat_op	1 lateral spigot opposite to coil side		
	1_lat	1 lateral spigot at coil side		
	2	2 spigots		
	2_lat	2 lateral spigots		
	3	3 spigots		
	4	4 spigots		
	5	5 spigots		
	6	6 spigots		
		7 spigots		
Outlet plenum	1_inline	1 spigot in line	No	According to unit sizes, filter and fresh air position Use selection software for more informations
	1_lat_op	1 lateral spigot opposite to coil side		
	1_lat	1 lateral spigot at coil side		
	2	2 spigots		
	2_lat	2 lateral spigots		
	3	3 spigots		
	4	4 spigots		
		5 spigots		
	6	6 spigots		

Legend:
Default value for mandatory characteristic
Pack: Available with individual packaging

* If Digit n°14 = "-" then default values are selected.
Boolean: yes or no

6 - PRODUCT CHARACTERISTICS LIST

Characteristic Name	Value	Description	Pack.	Compatibility
Inlet spigots diameter	DN160	Spigot diameter	No	DN160 Not available for unit sizes 6xx to 7xx
	DN200			
	DN250			DN250 Not available for unit sizes 2xx to 5xx
Outlet spigots diameter	DN160	Spigot diameter	No	DN160 Not available for unit sizes 6xx to 7xx
	DN200			
	DN250			DN250 Not available for unit sizes 2xx to 5xx
Fresh air	DN125	Without controller - spigot only	No	Motorized air damper compatible with NTC and WTC only (Position feedback is not available if WTC and CO2 sensor are also selected)
	DN125_15_50	15 to 50 m^3/h controller		
	DN125_50_100	50 to 100 m^3/h controller		
	DN125_100_180	100 to 180 m^3/h controller		
	Adaptor_D125	For motorized air damper (to be ordered separately)		
Fresh air position	In_opp	At inlet side opposite to coil hand	No	According to unit sizes, filter and spigots selection Use selection software for more informations
	In_coil	At inlet side same as coil hand		
	In_line	At inlet rear side		
	Optimized	Inlet optimized: opposite to coil hand in base unit for compact design		
	Out_opp	At outlet side opposite to coil hand		
	Out_coil	At outlet side same as coil hand		
Fuse holder	boolean	Fuse holder	Yes	
lastic cover	boolean	Plastic cover	es	For bare wires (without control only)
Condensate pump	boolean	Condensate pump	No	
Flexible	boolean	Flexible hoses	No	
Return air sensor	boolean	Return air temperature sensor	Yes	Compatible with NTC and WTC only
Supply air sensor	boolean	Supply air temperature sensor	es	Compatible with NTC and WTC only
Water temperature sensor	boolean	Water temperature sensor	Yes	According to controller and coil type
CO_2 sensor	boolean	CO_2 sensor	Yes	Compatible with NTC and WTC only

Legend:
Pack: Available with individual packaging

* If Digit n°14 = "-" then default values are selected.
Boolean: yes or no

AIR TREATMENT

7 - 42NH AND 42NL PERFORMANCE DATA

7.1 - Physical and electrical data at Eurovent conditions - 42NL - Sizes 2 and 3

With G1 filter - without plenum

42NL		225						235					
Fan speed		**R6**	**R5**	**R4**	**R3**	**R2**	**R1**	**R6**	**R5**	**R4**	**R3**	**R2**	**R1**
(Eurovent certification speeds)		(L)	(M)	(H)			(Max)	(L)	(M)	(H)			Max
Air flow	l/s	59	69	96	109	125	138	59	69	96	109	125	138
	m^3/h	214	248	346	393	449	496	214	248	346	393	449	496
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	1,17	1,33	1,72	1,87	2,03	2,13	1,35	1,54	2,04	2,25	2,46	2,62
Sensible cooling capacity	kW	0,93	1,06	1,40	1,54	1,69	1,80	1,03	1,18	1,59	1,76	1,96	2,10
Water flow rate	l/s	0,06	0,06	0,08	0,09	0,10	0,11	0,07	0,08	0,10	0,11	0,12	0,13
	l/h	210	230	300	330	360	380	240	270	360	400	430	460
Water pressure drop	kPa	16,2	20,4	31,4	36,5	42	46,3	12,2	15,6	26,5	31	36,3	40,7
Water content	l	0,4						0,5					
Heating mode, two pipes**													
Heating capacity	kW	1,39	1,58	2,07	2,28	2,50	2,68	1,57	1,80	2,41	2,69	2,99	3,23
Water flow rate	l/s	0,07	0,08	0,10	0,11	0,12	0,13	0,08	0,09	0,12	0,13	0,14	0,16
	l/h	240	270	360	400	440	470	270	310	420	470	520	560
Water pressure drop	kPa	17,9	22,1	35	41,3	48,6	54,7	13,9	17,3	28,4	34,2	41	46,8
Water content	l	0,4						0,5					
Cooling mode, four pipes*													
Total cooling capacity	kW	NA						1,02	1,16	1,51	1,65	1,80	1,90
Sensible cooling capacity	kW							0,86	0,98	1,30	1,44	1,58	1,69
Water flow rate	l/s							0,05	0,06	0,08	0,08	0,09	0,09
	l/h							180	200	270	290	320	340
Water pressure drop	kPa							5,4	6,6	10,5	12,4	14,6	16,4
Water content	l							0,3					
Heating mode, four pipes***													
Heating capacity	kW	NA						1,63	1,84	2,36	2,56	2,76	2,91
Water flow rate	l/s							0,04	0,04	0,06	0,06	0,07	0,07
	l/h							140	160	210	220	240	260
Water pressure drop	kPa							4,8	5,7	8,3	9,5	10,7	11,6
Water content	l							0,2					
Electric heater		230V ±10% - 1ph - 50Hz						230V ±10% - 1ph - 50Hz					
Maximum capacity	W	1000						1000					
Current drawn	A	4.6						4.6					
Sound levels													
Sound power level (global)	dB(A)	38	41	48	51	54	57	38	41	48	51	54	57
Electrical data, motor													
Power input	W	28	31	45	54	65	80	28	31	45	54	65	80
Current drawn	A	0.14	0.17	0.20	0.23	0.28	0.35	0.14	0.17	0.20	0.23	0.28	0.35
FCEER [energy class] - 2 pipes		43	[E]					50	[E]				
FCCOP [energy class]		60	[E]					67	[E]				
FCEER [energy class] - 4 pipes								32	[E]				
FCCOP [energy class]								67	[E]				

Fan speed: L = Low, M = Medium, H = High

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL		229				239			
Fan speed		**2V**	**4V**	**6V**	**10V**	**2V**	**5V**	**7V**	**10V**
(Eurovent certification speeds)		(L)	(M)	(H)	Max	(L)	(M)	(H)	(Max)
Air flow	l/s	43	58	73	102	43	65	81	102
	m^3/h	153	210	261	368	153	234	292	368
Available static pressure	Pa	0	0	0	0	0	0	0	0
Cooling mode, two pipes*									
Total cooling capacity	kW	0.89	1.17	1.41	1.83	1.00	1.48	1.81	2.17
Sensible cooling capacity	kW	0.70	0.94	1.14	1.50	0.76	1.14	1.40	1.71
Water flow rate	l/s	0.04	0.06	0.07	0.09	0.05	0.07	0.09	0.11
	l/h	150	200	240	320	170	260	310	380
Water pressure drop	kPa	9.4	15.7	22.1	33.8	7	14.1	20.3	28.7
Water content	l	0.4				0.5			
Heating mode, two pipes**									
Heating capacity	kW	1.03	1.37	1.65	2.17	1.13	1.70	2.08	2.55
Water flow rate	l/s	0.05	0.07	0.08	0.11	0.06	0.08	0.10	0.12
	l/h	180	240	290	380	200	300	360	440
Water pressure drop	kPa	11	17.5	23.8	37.9	8.3	15.8	22.2	31.1
Water content	l	0.4				0.5			
Cooling mode, four pipes*									
Total cooling capacity	kW	NA				0.76	1.12	1.35	1.61
Sensible cooling capacity	kW					0.65	0.96	1.16	1.40
Water flow rate	l/s					0.04	0.05	0.06	0.08
	l/h					130	190	230	280
Water pressure drop	kPa					3.4	6.1	8.3	11.4
Water content	l					0.3			
Heating mode, four pipes***									
Heating capacity	kW	NA				1.21	1.75	2.09	2.46
Water flow rate	l/s					0.03	0.04	0.05	0.06
	l/h					110	150	180	220
Water pressure drop	kPa					3.3	5.4	6.9	8.9
Water content	l					0.2			
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	1600				1600			
Current drawn	A	7.3				7.3			
Sound levels									
Sound power level (global)	dB(A)	37	46	53	60	37	46	53	60
Electrical data, motor									
Power input	W	4	10	20	49	4	10	20	49
Current drawn	A	0.06	0.10	0.17	0.39	0.06	0.10	0.17	0.39
FCEER [energy class] - 2 pipes		187	[A]			223	[A]		
FCCOP [energy class]		254	[B]			284	[A]		
FCEER [energy class] - 4 pipes						228	[A]		
FCCOP [energy class]						360	[A]		

Fan speed: L = Low, M = Medium, H = High

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL		325						335					
Fan speed		**R6**	**R5**	**R4**	**R3**	**R2**	**R1**	**R6**	**R5**	**R4**	**R3**	**R2**	**R1**
(Eurovent certification speeds)		(L)	(M)	(H)			(Max)	(L)	(M)	(H)			(Max)
Air flow	l/s	84	94	124	144	154	168	84	94	124	144	154	168
	m^3/h	302	338	447	517	555	606	302	338	447	517	555	606
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	1,43	1,56	1,90	2,11	2,20	2,33	1,75	1,94	2,48	2,80	2,95	3,16
Sensible cooling capacity	kW	1,21	1,32	1,65	1,84	1,94	2,06	1,38	1,54	1,98	2,24	2,38	2,56
Water flow rate	l/s	0,07	0,08	0,09	0,11	0,11	0,12	0,09	0,09	0,12	0,14	0,14	0,16
	l/h	250	270	340	380	390	420	310	340	440	490	520	560
Water pressure drop	kPa	10,5	12,2	17,9	21,3	23,1	25,6	11,6	13,9	22	27,5	30,3	33,8
Water content	l	0,7						0,9					
Heating mode, two pipes**													
Heating capacity	kW	1,97	2,16	2,67	2,96	3,10	3,27	2,23	2,48	3,17	3,57	3,77	4,02
Water flow rate	l/s	0,09	0,11	0,13	0,14	0,15	0,16	0,11	0,12	0,15	0,17	0,18	0,19
	l/h	340	380	460	510	540	570	390	430	550	620	660	700
Water pressure drop	kPa	15,2	17,7	25,3	30	32,5	35,7	15,3	18,1	27,2	33,3	36,6	40,9
Water content	l	0,7						0,9					
Cooling mode, four pipes*													
Total cooling capacity	kW	NA						1,75	1,91	2,35	2,60	2,73	2,88
Sensible cooling capacity	kW							1,37	1,50	1,88	2,10	2,21	2,36
Water flow rate	l/s							0,09	0,09	0,11	0,13	0,13	0,14
	l/h							310	340	410	460	480	510
Water pressure drop	kPa							15,9	18,8	26,9	32	34,7	38,3
Water content	l							0,6					
Heating mode, four pipes***													
Heating capacity	kW	NA						2,43	2,66	3,21	3,48	3,61	3,78
Water flow rate	l/s							0,06	0,06	0,08	0,09	0,09	0,09
	l/h							210	230	280	310	320	330
Water pressure drop	kPa							11	12,6	17,2	19,7	20,9	22,5
Water content	l							0,3					
Electric heater		230V ±10% - 1ph - 50Hz						230V ±10% - 1ph - 50Hz					
Maximum capacity	W	1600						1600					
Current drawn	A	7.3						7.3					
Sound levels													
Sound power level (global)	dB(A)	43	46	54	57	59	61	43	46	54	57	59	61
Electrical data, motor													
Power input	W	38	45	62	74	86	99	38	45	62	74	86	99
Current drawn	A	0,16	0,20	0,27	0,32	0,37	0,44	0,16	0,20	0,27	0,32	0,37	0,44
FCEER [energy class] - 2 pipes		36	[E]					45	[E]				
FCCOP [energy class]		50	[E]					57	[E]				
FCEER [energy class] - 4 pipes								44	[E]				
FCCOP [energy class]								62	[D]				

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL		329				339			
Fan speed		**2V**	**4V**	**6V**	**10V**	**2V**	**5V**	**7V**	**10V**
(Eurovent certification speeds)		(L)	(M)	(H)	(Max)	(L)	(M)	(H)	(Max)
Air flow	l/s	55	88	120	165	55	88	120	165
	m^3/h	198	318	431	594	198	318	431	594
Available static pressure	Pa	0	0	0	0	0	0	0	0
Cooling mode, two pipes*									
Total cooling capacity	kW	1,05	1,52	1,89	2,35	1,21	1,87	2,44	3,16
Sensible cooling capacity	kW	0,87	1,29	1,64	2,08	0,95	1,48	1,95	2,56
Water flow rate	l/s	0,05	0,07	0,09	0,11	0,06	0,09	0,12	0,15
	l/h	180	260	330	410	210	320	420	550
Water pressure drop	kPa	5,9	11,2	17	25	5,9	12,6	20,7	32,9
Water content	l	0,7				0,9			
Heating mode, two pipes**									
Heating capacity	kW	1,37	2,05	2,60	3,23	1,50	2,34	3,06	3,96
Water flow rate	l/s	0,07	0,10	0,13	0,16	0,07	0,11	0,15	0,19
	l/h	240	360	450	560	260	410	530	690
Water pressure drop	kPa	8,5	16,3	24,1	34,9	8,2	16,5	25,7	39,8
Water content	l	0,7				0,9			
Cooling mode, four pipes*									
Total cooling capacity	kW	NA				1,27	1,87	2,36	2,95
Sensible cooling capacity	kW					0,98	1,47	1,89	2,43
Water flow rate	l/s					0,06	0,09	0,11	0,14
	l/h					220	320	400	510
Water pressure drop	kPa					8	16	25	37
Water content	l					0,6			
Heating mode, four pipes***									
Heating capacity	kW	NA				1,95	2,90	3,58	4,27
Water flow rate	l/s					0,05	0,07	0,09	0,11
	l/h					170	250	310	380
Water pressure drop	kPa					7	13	19	26
Water content	l					0,3			
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	1600				1600			
Current drawn	A	7.3				7.3			
Sound levels									
Sound power level (global)	dB(A)	37	46	53	60	37	46	53	60
Electrical data, motor									
Power input	W	4	10	20	49	4	10	20	49
Current drawn	A	0,06	0,10	0,17	0,39	0,06	0,10	0,17	0,39
FCEER [energy class] - 2 pipes		187	[A]			223	[A]		
FCCOP [energy class]		254	[B]			284	[A]		
FCEER [energy class] - 4 pipes						228	[A]		
FCCOP [energy class]						360	[A]		

Fan speed: L = Low, M = Medium, H = High

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.2 - Physical and electrical data at Eurovent conditions - 42NL - Size 4

With G1 filter - without plenum

42NL		425						435					
Fan speed		**R6**	**R5**	**R4**	**R3**	**R2**	**R1**	**R6**	**R5**	**R4**	**R3**	**R2**	**R1**
(Eurovent certification speeds)		(L)	(M)	(H)			(Max)	(L)	(M)	(H)			(Max)
Air flow	l/s	129	149	209	234	267	301	129	149	209	234	267	301
	m^3/h	464	537	751	842	960	1085	464	537	751	842	960	1085
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	2,37	2,67	3,44	3,70	4,01	4,26	2,69	3,12	4,25	4,67	5,15	5,59
Sensible cooling capacity	kW	1,93	2,19	2,87	3,13	3,43	3,70	2,12	2,45	3,35	3,70	4,13	4,53
Water flow rate	l/s	0,12	0,13	0,17	0,18	0,20	0,21	0,13	0,15	0,21	0,23	0,25	0,28
	l/h	420	470	610	660	710	760	470	550	750	820	910	990
Water pressure drop	kPa	14,8	18,5	28,3	32,2	36,8	41,2	19,4	25,7	43,7	51,3	60,8	70,2
Water content	l	1,0						1,3					
Heating mode, two pipes**													
Heating capacity	kW	2,95	3,40	4,61	5,07	5,60	6,09	3,15	3,64	5,04	5,60	6,29	6,97
Water flow rate	l/s	0,14	0,16	0,22	0,24	0,27	0,29	0,15	0,18	0,24	0,27	0,30	0,34
	l/h	510	590	800	880	970	1060	550	630	880	970	1090	1210
Water pressure drop	kPa	17,70	22,40	37,50	44,10	52,30	60,50	21,70	27,80	48,20	57,90	70,90	84,70
Water content	l	1,0						1,3					
Cooling mode, four pipes*													
Total cooling capacity	kW	NA						2,46	2,77	3,58	3,88	4,23	4,56
Sensible cooling capacity	kW							1,99	2,25	2,97	3,25	3,58	3,90
Water flow rate	l/s							0,12	0,14	0,18	0,19	0,21	0,23
	l/h							430	490	630	690	750	810
Water pressure drop	kPa							20,1	24,9	38,5	44,2	51,3	58,7
Water content	l							0,9					
Heating mode, four pipes***													
Heating capacity	kW	NA						3,17	3,68	5,01	5,50	6,05	6,54
Water flow rate	l/s							0,08	0,09	0,12	0,13	0,15	0,16
	l/h							280	320	440	480	530	570
Water pressure drop	kPa							18,9	24,3	41,2	48,4	57,1	65,4
Water content	l							0,5					
Electric heater		230V ±10% - 1ph - 50Hz						230V ±10% - 1ph - 50Hz					
Maximum capacity	W	2000						2000					
Current drawn	A	9.1						9.1					
Sound levels													
Sound power level (global)	dB(A)	45	48	55	58	60	63	45	48	55	58	60	63
Electrical data, motor													
Power input	W	57	69	98	113	129	157	57	69	98	113	129	157
Current drawn	A	0,25	0,30	0,43	0,49	0,57	0,69	0,25	0,30	0,43	0,49	0,57	0,69
FCEER [energy class] - 2 pipes		40	[E]					46	[E]				
FCCOP [energy class]		51	[E]					54	[E]				
FCEER [energy class] - 4 pipes								42	[E]				
FCCOP [energy class]								55	[E]				

Fan speed: L = Low, M = Medium, H = High

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL		429						439					
Fan speed		**2V**	**3.5V**	**4V**	**6V**	**8V**	**10V**	**2V**	**3.5V**	**4V**	**6V**	**8V**	**10V**
(Eurovent certification speeds)		(L)	(M)	(H)			(Max)	(L)	(M)	(H)			(Max)
Air flow	l/s	67	110	123	169	206	226	67	111	123	169	206	226
	m^3/h	240	397	444	610	743	814	240	398	444	610	743	814
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*													
Total cooling capacity	kW	1.34	2.12	2.34	3.04	3.52	3.74	1.37	2.37	2.65	3.62	4.32	4.66
Sensible cooling capacity	kW	1.09	1.73	1.91	2.52	2.96	3.17	1.10	1.87	2.08	2.86	3.43	3.71
Water flow rate	l/s	0.06	0.10	0.11	0.14	0.17	0.18	0.06	0.11	0.13	0.17	0.21	0.22
	l/h	230	360	400	520	600	640	230	400	450	620	740	800
Water pressure drop	kPa	4	11	13	21	27	30	4	11	14	27	36	41
Water content	l	1.0						1.3					
Heating mode, two pipes**													
Heating capacity	kW	1,49	2,52	2,82	3,83	4,57	4,93	1,59	2,68	3,00	4,12	4,98	5,42
Water flow rate	l/s	0,07	0,12	0,14	0,19	0,22	0,24	0,08	0,13	0,14	0,20	0,24	0,26
	l/h	260	440	490	670	800	860	280	470	520	720	870	940
Water pressure drop	kPa	6,10	13,60	16,40	27,30	36,90	42,00	7,30	16,70	20,10	34,20	47,30	54,70
Water content	l	1,0						1,3					
Cooling mode, four pipes*													
Total cooling capacity	kW	NA						1,40	2,18	2,40	3,09	3,57	3,79
Sensible cooling capacity	kW							1,11	1,76	1,94	2,54	2,96	3,17
Water flow rate	l/s							0,07	0,11	0,11	0,15	0,18	0,19
	l/h							240	380	410	540	630	670
Water pressure drop	kPa							7	15,6	18,6	29,6	37,9	42,3
Water content	l							0,9					
Heating mode, four pipes***													
Heating capacity	kW	NA						1,50	2,68	3,02	4,15	4,96	5,35
Water flow rate	l/s							0,04	0,07	0,07	0,10	0,12	0,13
	l/h							130	240	260	360	430	470
Water pressure drop	kPa							5,9	14,4	17,5	29,8	40,5	46,1
Water content	l							0,5					
Electric heater		230V ±10% - 1ph - 50Hz						230V ±10% - 1ph - 50Hz					
Maximum capacity	W	1600						1600					
Current drawn	A	7,3						7.3					
Sound levels													
Sound power level (global)	dB(A)	38	49	52	60	65	67	38	49	52	60	65	67
Electrical data, motor													
Power input	W	6	15	18	42	78	99	6	14	18	42	78	99
Current drawn	A	0,07	0,15	0,18	0,38	0,65	0,80	0,07	0,15	0,18	0,38	0,65	0,80
FCEER [energy class] - 2 pipes		173	[B]					189	[A]				
FCCOP [energy class]		205	[B]					225	[B]				
FCEER [energy class] - 4 pipes								187	[A]				
FCCOP [energy class]								218	[B]				

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.3 - Physical and electrical data at Eurovent conditions - 42NL - Size 5

With G1 filter - without plenum

42NL		525						535						545					
Fan speed		R6	R5	R4	R3	R2	R1	R6	R5	R4	R3	R2	R1	R6	R5	R4	R3	R2	R1
(Eurovent certification speeds)		(L)		(M)	(H)		(Max)	(L)		(M)	(H)		(Max)	(L)		(M)	(H)		(Max)
Air flow	l/s	150	170	233	275	313	359	150	170	233	275	313	359	150	170	233	275	313	359
	m^3/h	540	612	840	991	1127	1291	540	612	840	991	1127	1291	540	612	840	991	1127	1291
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*																			
Total cooling capacity	kW	2.69	2.97	3.78	4.23	4.61	5.00	3.14	3.54	4.68	5.32	5.80	6.30						
Sensible cooling capacity	kW	2.21	2.46	3.17	3.59	3.95	4.34	2.47	2.78	3.71	4.26	4.70	5.18						
Water flow rate	l/s	0.13	0.14	0.19	0.21	0.23	0.25	0.15	0.17	0.23	0.26	0.28	0.31	NA					
	l/h	470	520	670	750	810	890	550	620	820	930	1020	1110						
Water pressure drop	kPa	16.8	20.3	31.3	37.9	43.9	50.8	21	26.4	43.7	54	62.9	72.7						
Water content	l	1.4						1.8											
Heating mode, two pipes**																			
Heating capacity	kW	3.45	3.87	5.08	5.75	6.27	6.80	3.56	4.04	5.41	6.14	6.68	7.18						
Water flow rate	l/s	0.17	0.19	0.24	0.28	0.30	0.33	0.17	0.19	0.26	0.30	0.32	0.35						
	l/h	600	670	880	1000	1090	1180	620	700	940	1 70	1160	1250	A					
Water pressure drop	kPa	21.6	26.1	41.5	51.3	59.5	68.6	25.3	31.3	51.4	64	74	83.8						
Water content	l	1.4						1.8											
Cooling mode, four pipes*																			
Total cooling capacity	kW							2.70	3.00	3.86	4.33	4.71	5.11	2.92	3.27	4.32	4.93	5.44	5.98
Sensible cooling capacity	kW							2.20	2.45	3.19	3.62	3.98	4.37	2.35	2.64	3.51	4.04	4.49	4.99
Water flow rate	l/s							0.13	0.15	0.19	0.21	0.23	0.25	0.14	0.16	0.21	0.24	0.27	0.29
	l/h	NA						470	530	680	760	830	910	510	570	760	870	960	1060
Water pressure drop	kPa							17.9	22	34.3	41.8	48.3	55.8	18	22.4	37.4	47	55.5	65.6
Water content	l							1.1						1.4					
Heating mode, four pipes***																			
Heating capacity	k							2.99	3.29	4.14	4.60	4.95	5.32	3.44	3.86	5.00	5.57	5.96	6.31
Water flow rate	l/s							0.07	0.08	0.10	0.11	0.12	0.13	0.08	0.09	0.12	0.14	0.14	0.15
	l/h	NA						260	290	360	400	430	470	300	340	440	490	520	550
Water pressure drop	kPa							5.9	6.8	9.6	11.4	12.8	14.4	6.8	8.1	12.1	14.3	16	17.6
Water content	l							0.5						0.6					
Electric heater		230V ±10% - 1ph						230V ±10% - 1ph						230V ±10% - 1ph					
Maximum capacity	W	2000						2000						2000					
Current drawn	A	9.1						9.1						9.1					
Sound levels																			
Sound power level (global)	dB(A)	42	46	53	57	59	62	42	46	53	57	59	62	42	46	53	57	59	62
Electrical data, motor																			
Power input	W			99	11	1	17	58	6		118	13	17	58	67	99	118	137	170
Current drawn	A	0.26	0.30	0.43	0.52	0.60	0.74	0.26	0.30	0.43	0.52	0.60	0.74	0.26	0.30	0.43	0.52	0.60	0.74
FCEER [energy class] - 2 pipes		42	[E]					51	[E]										
FCCOP [energy class]		56	[E]					58	[E]										
FCEER [energy class] - 4 pipes								43	[E]					47	[E]				
FCCOP [energy class]								47	[E]					55	[E]				

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NL		529						539						549					
Fan speed		**2V**	**4V**	**5V**	**6V**	**8V**	**10V**	**2V**	**4V**	**5.5V**	**6V**	**8V**	**10V**	**2V**	**4V**	**5.5V**	**6V**	**8V**	**10V**
(Eurovent certification speeds)		(L)		(M)	(H)		(Max)	(L)		(M)	(H)		(Max)	(L)		(M)	(H)		(Max)
Air flow	l/s	82	141	172	188	231	255	82	141	179	187	230	254	81	140	179	187	230	254
	m^3/h	294	508	618	675	831	918	294	507	645	673	828	915	290	505	644.5	674	829	916
Available static pressure	Pa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling mode, two pipes*																			
Total cooling capacity	kW	1.65	2.60	3.04	3.26	3.80	4.06	1.70	2.99	3.78	3.93	4.69	5.06						
Sensible cooling capacity	kW	1.33	2.14	2.52	2.71	3.19	3.44	1.36	2.36	2.98	3.10	3.72	4.04						
Water flow rate	l/s	0.08	0.13	0.15	0.16	0.18	0.20	0.08	0,14	0.18	0.19	0.23	0.24				NA		
	l/h	280	450	530	560	660	710	290	520	650	680	810	880						
Water pressure drop	kPa	6.8	15.3	20.6	23.5	30.8	34.7	6.7	18.6	29.1	31.5	42.9	48.9						
Water content	l	1.4						1.8											
Heating mode, two pipes**																			
Heating capacity	kW	1.90	3.25	3.90	4.22	5.03	5.43	1.70	3.32	4.26	4.44	5.35	5.79						
Water flow rate	l/s	0.09	0.16	0.19	0.20	0.24	0.26	0.08	0,16	0.21	0.21	0.26	0.28						
	l/h	330	570	680	730	870	940	300	580	740	770	930	1010				NA		
Water pressure drop	kPa	8.3	19.6	26.5	30.3	40.7	46.5	7.6	22.6	34.2	36.7	50.4	57.9						
Water content	l	1.4						1.8											
Cooling mode, four pipes*																			
Total cooling capacity	kW							1.59	2.60	3.19	3.31	3.88	4.15	1.64	2.79	3.49	3.63	4.33	4.69
Sensible cooling capacity	kW							1.29	2.12	2.62	2.72	3.21	3.46	1.33	2.25	2.83	2.94	3.53	3.84
Water flow rate	l/s							0.08	0,13	0.15	0.16	0.19	0.20	0.08	0.13	0.17	0.18	0.21	0.23
	l/h				NA			270	450	550	570	670	720	280	480	605	630	750	810
Water pressure drop	kPa							6.7	16.2	24	2 .7	.8	.2	6.3	16.1	24.65	26.	36.	42.5
Water content	l							1.1						1.4					
Heating mode, four pipes***																			
Heating capacity	kW							1.80	2.84	3.43	3.54	4.10	4.38	1.76	3.23	4.04	4.20	4.95	5.31
Water flow rate	l/s							0.04	0,07	0.08	0.09	0.10	0.11	0.04	0.08	0.10	0.10	0.12	0.13
	l/h				NA			160	250	300	310	360	380	150	280	355	370	430	470
Water pressure drop	kPa							3	5.5	7.2	7.6	9.5	10.5	2.7	6.2	8.65	9.2	11.9	13.3
Water content	l							0.5						0.6					
Electric heater		230V ±10% - 1ph						230V ±10% - 1ph						230V ±10% - 1ph					
aximum capacity	W	200						2000						2000					
Current drawn	A	9.1						9.1						9.1					
Sound levels																			
Sound power level (global)	dB(A)	32	43	47	51	55	58	32	43	49	51	55	58	32	43	49	51	55	58
Electrical data, motor																			
Power input	W	4	11	18	24	43	58	4	11	21	24	43	58	4	11	21	24	43	58
Current drawn	A	0.04	0.09	0.13	0.17	0.28	0.39	0.04	0.09	0.15	0.17	0.28	0.39	0.04	0.09	0.15	0.17	0.28	0.39
FCEER [energy class] - 2 pipes		233	[A]					241	[A]										
FCCOP [energy class]		296	[A]					268	[A]										
FCEER [energy class] - 4 pipes								213	[A]					227	[A]				
FCCOP [energy class]								248	[B]					265	[A]				

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.4 - Physical and electrical data at Eurovent conditions - 42NH - Sizes 2 and 3

With G1 filter - without plenum

42NH		225			235			229		
Fan speed		**R5**	**R2**	**R1**	**R5**	**R2**	**R1**	**2V**	**7V**	**8V**
(Eurovent certification speeds)		(L)	(M)	(H)	(L)	(M)	(H)	(L)	(M)	(H)
Air flow	l/s	23	63	76	23	63	76	25	64	70
	m^3/h	81	228	272	81	228	272	91	229	253
Available static pressure	Pa	6	50	71	6	50	71	8	50	61
Cooling mode, two pipes*										
Total cooling capacity	kW	0.48	1.22	1.42	0.54	1.42	1.66	0.55	1.26	1.36
Sensible cooling capacity	kW	0.37	0.97	1.14	0.40	1.08	1.28	0.43	1.00	1.09
Water flow rate	l/s	0.02	0.06	0.07	0.03	0.07	0.08	0.03	0.06	0.07
	l/h	80	220	250	90	250	290	90	220	240
Water pressure drop	kPa	3.6	17.9	23.3	3.4	13.7	18.2	4.3	18	21.1
Water content	l		0.4			0.5			0.4	
Heating mode, two pipes**										
Heating capacity	kW	0.57	1.47	1.71	0.62	1.67	1.96	0.64	1.48	1.61
Water flow rate	l/s	0.03	0.07	0.08	0.03	0.08	0.09	0.03	0.07	0.08
	l/h	100	260	300	110	290	340	110	260	280
Water pressure drop	kPa	4.5	19.6	25.2	3.3	15.4	20	5.4	19.8	22.8
Water content	l		0.4			0.5			0.4	
Cooling mode, four pipes*										
Total cooling capacity	kW				0.44	1.07	1.24			
Sensible cooling capacity	kW				0.36	0.90	1.06			
Water flow rate	l/s				0.02	0.05	0.06			
	l/h		NA		80	190	220		NA	
Water pressure drop	kPa				2.3	5.9	7.6			
Water content	l					0.3				
Heating mode, four pipes***										
Heating capacity	kW				0.68	1.72	1.98			
Water flow rate	l/s				0.02	0.04	0.05			
	l/h		NA		60	150	170		NA	
Water pressure drop	kPa				1.8	5.2	6.4			
Water content	l					0.2				
Electric heater			230V ±10%			230V ±10%			230V ±10%	
Maximum capacity	W		1000			1000			1000	
Current drawn	A		4.6			4.6			4.6	
Sound levels										
Sound power level (return and radiated)	dB(A)	32	49	53	32	49	53	36	50	52
Sound power level (supply)	dB(A)	31	47	50	31	47	50	37	51	53
Electrical data, motor										
Power input	W	13	43	44	13	43	44	3	18	22
Current drawn	A	0.13	0.23	0.24	0.13	0.23	0.24	0.05	0.22	0.28
FCEER [energy class] - 2 pipes		32	[D]		37	[D]		95	[A]	
FCCOP [energy class]		39	[D]		43	[C]		117	[A]	
FCEER [energy class] - 4 pipes					28	[D]				
FCCOP [energy class]					46	[C]				

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		239			279			289		
Fan speed		**2V**	**7V**	**8V**	**2V**	**6V**	**7V**	**2V**	**6V**	**7V**
(Eurovent certification speeds)		(L)	(M)	(H)	(L)	(M)	(H)	(L)	(M)	(H)
Air flow	l/s	25	64	70	32	85	97	36	96	108
	m^3/h	91	229	253	116	305	349	128	347	387
Available static pressure	Pa	8	50	61	7	50	65	7	50	62
Cooling mode, two pipes*										
Total cooling capacity	kW	0.62	1.45	1.58	0.78	1.86	2.07	1.00	2.44	2.67
Sensible cooling capacity	kW	0.46	1.11	1.22	0.59	1.44	1.61	0.71	1.79	1.97
Water flow rate	l/s	0.03	0.07	0.08	0.04	0.09	0.10	0.05	0.12	0.13
	l/h	110	250	280	130	320	360	170	420	470
Water pressure drop	kPa	3.7	13.8	16.2	4.7	21.9	26.9	4.4	21	25.1
Water content	l		0.5			0.5			0.6	
Heating mode, two pipes**										
Heating capacity	kW	0.70	1.68	1.84	0.88	2.17	2.44	1.05	2.78	3.09
Water flow rate	l/s	0.03	0.08	0.09	0.04	0.11	0.12	0.05	0.13	0.15
	l/h	120	290	320	150	380	420	180	480	540
Water pressure drop	kPa	3.9	15.5	18	5.7	23.7	28.9	4.9	23.3	27.8
Water content	l		0.5			0.5			0.6	
Cooling mode, four pipes*										
Total cooling capacity	kW	0.49	1.10	1.19	0.60	1.39	1.53	0.94	2.17	2.35
Sensible cooling capacity	kW	0.41	0.93	1.01	0.50	1.19	1.32	0.68	1.66	1.81
Water flow rate	l/s	0.02	0.05	0.06	0.03	0.07	0.08	0.04	0.11	0.11
	l/h	80	190	210	100	240	270	160	380	410
Water pressure drop	kPa	2.4	6	6.8	2.8	8.9	10.7	5.9	26	30
Water content	l		0.3			0.3			0.4	
Heating mode, four pipes***										
Heating capacity	kW	0.77	1.73	1.88	0.96	2.16	2.37	0.97	2.29	2.53
Water flow rate	l/s	0.02	0.04	0.04	0.02	0.05	0.06	0.03	0.06	0.06
	l/h	70	150	160	80	190	210	90	200	220
Water pressure drop	kPa	2	5.3	5.9	2.5	7.3	8.4	2.5	7.8	9.1
Water content	l	0.2			0.2			0.3		
Electric heater		230V ±10%			230V ±10%			230V ±10%		
Maximum capacity	W	1000			1000			1000		
Current drawn	A	4.6			4.6			4.6		
Sound levels										
Sound power level (return and radiated)	dB(A)	36	50	52	34	52	54	36	54	57
Sound power level (supply)	dB(A)	37	51	53	34	55	58	35	56	59
Electrical data, motor										
Power input	W	3	18	22	4	25	36	7	36	49
Current drawn	A	0.05	0.22	0.28	0.06	0.29	0.40	0.08	0.31	0.40
FCEER [energy class] - 2 pipes		109	[A]		98	[A]		85	[A]	
FCCOP [energy class]		130	[A]		118	[A]		97	[A]	
FCEER [energy class] - 4 pipes		84	[B]		74	[B]		78	[B]	
FCCOP [energy class]		138	[A]		123	[A]		84	[B]	

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		325					335				
Fan speed		**R5**	**R4**	**R3**	**R2**	**R1**	**R5**	**R4**	**R3**	**R2**	**R1**
(Eurovent certification speeds)			(L)	(M)	(H)	Max		(L)	(M)	(H)	Max
Air flow	l/s	55	79	102	131	160	55	79	102	131	160
	m^3/h	197	284	366	471	577	197	284	366	471	577
Available static pressure	Pa	14	30	50	83	124	14	30	50	83	124
Cooling mode, two pipes*											
Total cooling capacity	kW	0.94	1.27	1.55	1.87	2.16	1.10	1.57	1.98	2.48	2.95
Sensible cooling capacity	kW	0.76	1.06	1.31	1.61	1.89	0.84	1.22	1.55	1.96	2.36
Water flow rate	l/s	0.05	0.07	0.08	0.10	0.11	0.06	0.08	0.10	0.13	0.15
	l/h	180	240	290	350	400	210	290	370	460	540
Water pressure drop	kPa	5.9	9.6	13.6	19.1	24.2	5	9	15	23	31
Water content	l	0.7					0.9				
Heating mode, two pipes**											
Heating capacity	kW	0.57	1.87	2.30	2.77	3.18	0.57	2.11	2.66	3.30	3.88
Water flow rate	l/s	0.07	0.09	0.11	0.13	0.15	0.07	0.10	0.13	0.16	0.19
	l/h	240	320	400	480	550	260	370	460	570	680
Water pressure drop	kPa	8.5	14.0	19.6	26.9	33.9	8.2	13.9	20.3	29.2	38.5
Water content	l	0.7					0.9				
Cooling mode, four pipes*											
Total cooling capacity	kW	NA					1.15	1.58	1.94	2.34	2.70
Sensible cooling capacity	kW						0.86	1.21	1.51	1.86	2.18
Water flow rate	l/s						0.06	0.08	0.10	0.12	0.14
	l/h						220	290	360	430	500
Water pressure drop	kPa						8.5	14.5	21.0	28.6	36.3
Water content	l						0.3				
Heating mode, four pipes***											
Heating capacity	kW	NA					1.71	2.32	2.81	3.31	3.69
Water flow rate	l/s						0.04	0.06	0.07	0.08	0.09
	l/h						150	200	250	290	320
Water pressure drop	kPa						6.4	10.2	13.8	18	21.6
Water content	l						0.2				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	1600					1600				
Current drawn	A	7.3					7.3				
Sound levels											
Sound power level (return and radiated)	dB(A)	42	45	49	56	60	42	45	49	56	60
Sound power level (supply)	dB(A)	46	48	54	61	66	46	48	54	61	66
Electrical data, motor											
Power input	W	109	126	146	168	190	109	126	146	168	190
Current drawn	A	0.50	0.57	0.65	0.75	0.88	0.50	0.57	0.65	0.75	0.88
FCEER [energy class] - 2 pipes		10	[E]				13	[E]			
FCCOP [energy class]		15	[E]				17	[E]			
FCEER [energy class] - 4 pipes							13	[E]			
FCCOP [energy class]							19	[E]			

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		329				339			
Fan speed		**2V**	**3.7V**	**4.5V**	**9V**	**2V**	**3.7V**	**4.5V**	**9V**
(Eurovent certification speeds)		(L)	(M)	(H)	Max	(L)	(M)	(H)	Max
Air flow	l/s	59	125	147	212	59	124	146	212
	m^3/h	213	450	528	764	212	447	527	763
Available static pressure	Pa	11	50.1	69	143	11	50	70	145
Cooling mode, two pipes*									
Total cooling capacity	kW	1.11	1.93	2.15	2.64	1.29	2.50	2.85	3.70
Sensible cooling capacity	kW	0.92	1.68	1.89	2.38	1.01	2.00	2.29	3.04
Water flow rate	l/s	0.05	0.10	0.11	0.13	0.06	0.12	0.14	0.19
	l/h	190	342	380	480	220	433	500	670
Water pressure drop	kPa	6.5	18	22	32.7	6.6	22	28	45.3
Water content	l	0.7				0.9			
Heating mode, two pipes**									
Heating capacity	kW	1.46	2.68	2.99	3.74	1.61	3.16	3.61	4.70
Water flow rate	l/s	0.07	0.13	0.14	0.18	0.08	0.15	0.17	0.23
	l/h	250	466	520	650	280	547	625	820
Water pressure drop	kPa	9.4	25.5	30.7	44.8	9.0	27.2	34.1	53.5
Water content	l	0.7				0.9			
Cooling mode, four pipes*									
Total cooling capacity	kW	NA				1.22	2.97	3.35	4.30
Sensible cooling capacity	kW					1.15	2.23	2.54	3.33
Water flow rate	l/s					0.08	0.14	0.16	0.21
	l/h					280	520	585	770
Water pressure drop	kPa					18.9	57.3	70.75	112.9
Water content	l					0.6			
Heating mode, four pipes***									
Heating capacity	kW	NA				1.82	3.20	3.51	4.34
Water flow rate	l/s					0.04	0.08	0.08	0.11
	l/h					160	278	305	380
Water pressure drop	kPa					7.0	17.14	19.9	28.6
Water content	l					0.3			
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	1600				1600			
Current drawn	A	7.3				7.3			
Sound levels									
Sound power level (return and radiated)	dB(A)	42	45	49	60	37	54	58	67
Sound power level (supply)	dB(A)	46	48	54	66	40	59	63	71
Electrical data, motor									
Power input	W	109	126	146	190	8	37	58.5	172
Current drawn	A	0.50	0.57	0.65	0.88	0.11	0.57	0.79	1.35
FCEER [energy class] - 2 pipes		10	[E]			90	[A]		
FCCOP [energy class]		15	[E]			118	[A]		
FCEER [energy class] - 4 pipes						96	[A]		
FCCOP [energy class]						127	[A]		

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.5 - Physical and electrical data at Eurovent conditions - 42NH - Size 4

With G1 filter - without plenum

42NH		425					435				
Fan speed		**R5**	**R4**	**R3**	**R2**	**R1**	**R5**	**R4**	**R3**	**R2**	**R1**
(Eurovent certification speeds)		(L)	(M)	(H)		Max	(L)	(M)	(H)		Max
Air flow	l/s	104	149	181	196	205	104	149	181	196	205
	m^3/h	375	537	650	706	739	375	537	650	706	739
Available static pressure	Pa	24	50	73	86	95	24	50	73	86	95
Cooling mode, two pipes*											
Total cooling capacity	kW	1,93	2,65	3,08	3,28	3,38	2,12	3,10	3,73	4,02	4,17
Sensible cooling capacity	kW	1,56	2,17	2,55	2,73	2,82	1,67	2,42	2,93	3,16	3,28
Water flow rate	l/s	0,10	0,13	0,15	0,16	0,17	0,11	0,15	0,18	0,20	0,21
	l/h	350	470	550	580	600	380	550	660	710	740
Water pressure drop	kPa	10,5	18,5	23,9	26,3	27,8	12,8	25,6	35,3	40	42,7
Water content	l	1,0					1,3				
Heating mode, two pipes**											
Heating capacity	kW	2,38	3,40	4,07	4,38	4,55	2,53	3,64	4,39	4,75	4,96
Water flow rate	l/s	0,11	0,16	0,20	0,21	0,22	0,12	0,18	0,21	0,23	0,24
	l/h	410	590	710	760	790	440	630	760	830	860
Water pressure drop	kPa	12,5	22,4	30,2	34,2	36,6	15,2	27,8	38,2	43,7	47
Water content	l	1,0					1,3				
Cooling mode, four pipes*											
Total cooling capacity	kW	NA					2,01	2,75	3,21	3,41	3,52
Sensible cooling capacity	kW						1,61	2,23	2,63	2,82	2,91
Water flow rate	l/s						0,10	0,14	0,16	0,17	0,17
	l/h						360	490	570	600	620
Water pressure drop	kPa						14,3	24,9	32,1	35,7	37,7
Water content	l						0,9				
Heating mode, four pipes***											
Heating capacity	kW	NA					2,53	3,68	4,42	4,76	4,95
Water flow rate	l/s						0,06	0,09	0,11	0,12	0,12
	l/h						220	320	390	420	430
Water pressure drop	kPa						13,1	24,3	33,2	37,7	40,3
Water content	l						0,5				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	2000					2000				
Current drawn	A	9,1					9,1				
Sound levels											
Sound power level (return and radiated)	dB(A)	43	51	55	57	58	43	51	55	57	58
Sound power level (supply)	dB(A)	47	54	58	60	61	47	54	58	60	61
Electrical data, motor											
Power input	W	83	91	97	104	119	83	91	97	104	119
Current drawn	A	0,43	0,51	0,62	0,67	0,72	0,43	0,51	0,62	0,67	0,72
FCEER [energy class] - 2 pipes		26	[D]				29	[D]			
FCCOP [energy class]		32	[D]				34	[D]			
FCEER [energy class] - 4 pipes							27	[D]			
FCCOP [energy class]							34	[D]			

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		429					439				
Fan speed		**2V**	**3.7V**	**5V**	**7V**	**9V**	**2V**	**3.7V**	**5V**	**7V**	**9V**
(Eurovent certification speeds)		(L)	(M)	(H)		Max	(L)	(M)	(H)		Max
Air flow	l/s	61	131	168	215	220	61	131	168	215	220
	m^3/h	220	471,7	603	773	792	220	471,7	603	773	792
Available static pressure	Pa	11	50,4	81	134	140	11	50,4	81	134	140
Cooling mode, two pipes*											
Total cooling capacity	kW	1,23	2,42	2,93	3,46	3,49	1,21	2,76	3,50	4,31	4,37
Sensible cooling capacity	kW	0,99	1,98	2,42	2,89	2,92	0,99	2,17	2,74	3,39	3,44
Water flow rate	l/s	0,06	0,12	0,14	0,17	0,18	0,06	0,13	0,17	0,21	0,22
	l/h	210	423	520	620	630	210	477	610	770	780
Water pressure drop	kPa	4,6	15,32	21,6	29,3	30,1	4,7	20,19	31,9	45,6	47,2
Water content	l	1,0					1,3				
Heating mode, two pipes**											
Heating capacity	kW	1,35	3,00	3,80	4,73	4,83	1,45	3,19	4,08	5,18	5,30
Water flow rate	l/s	0,07	0,15	0,18	0,23	0,23	0,07	0,16	0,20	0,25	0,26
	l/h	240	524	660	820	840	250	558	710	900	920
Water pressure drop	kPa	5,3	18,26	26,9	39,1	40,5	6,3	22,45	33,7	50,6	52,6
Water content	l	1,0					1,3				
Cooling mode, four pipes*											
Total cooling capacity	kW	NA					1,29	2,50	3,04	3,61	3,65
Sensible cooling capacity	kW						1,03	2,03	2,49	2,99	3,03
Water flow rate	l/s						0,06	0,12	0,15	0,18	0,18
	l/h						220	436	530	650	660
Water pressure drop	kPa						6,2	20,58	29,2	39,9	41,1
Water content	l						0,9				
Heating mode, four pipes***											
Heating capacity	kW	NA					1,36	3,22	4,12	5,14	5,24
Water flow rate	l/s						0,03	0,08	0,10	0,13	0,13
	l/h						120	279	360	450	460
Water pressure drop	kPa						5,1	19,59	29,4	43	44,5
Water content	l						0,5				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	1600					1600				
Current drawn	A	7,3					7,3				
Sound levels											
Sound power level (return and radiated)	dB(A)	37	54	60	66	66	37	54	60	66	66
Sound power level (supply)	dB(A)	40	62	67	72	72	40	62	67	72	72
Electrical data, motor											
Power input	W	8	37	76	148	174	8	37	76	148	174
Current drawn	A	0,12	0,43	0,98	1,26	1,31	0,12	0,43	0,98	1,26	1,31
FCEER [energy class] - 2 pipes		83	[B]				89	[A]			
FCCOP [energy class]		101	[A]				108	[A]			
FCEER [energy class] - 4 pipes							87	[A]			
FCCOP [energy class]							105	[A]			

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.6 - Physical and electrical data at Eurovent conditions - 42NH - Size 5

With G1 filter - without plenum

42NH		525					535					545				
Fan speed		**R5**	**R4**	**R3**	**R2**	**R1**	**R5**	**R4**	**R3**	**R2**	**R1**	**R5**	**R4**	**R3**	**R2**	**R1**
(Eurovent certification speeds)		(L)	(M)	(H)		Max	(L)	(M)	(H)		Max	(L)	(M)	(H)		Max
Air flow	l/s	213	240	257	268	279	213	240	257	268	279	213	240	257	268	279
	m^3/h	767	863	924	964	1004	767	863	924	964	1004	767	863	925	964	1004
Available static pressure	Pa	40	50	57	62	68	40	50	57	62	68	40	50	57	62	68
Cooling mode, two pipes*																
Total cooling capacity	kW	3,52	3,84	4,03	4,15	4,25	4,33	4,77	5,05	5,21	5,36					
Sensible cooling capacity	kW	2,94	3,23	3,41	3,51	3,62	3,41	3,79	4,02	4,16	4,29					
Water flow rate	l/s	0,17	0,19	0,20	0,20	0,21	0,21	0,23	0,25	0,26	0,26					
	l/h	620	680	710	730	750	760	840	890	920	940					
Water pressure drop	kPa	28,5	32,3	35	36,8	38,5	38,2	45,3	49,6	52,3	55					
Water content	l	1,4					1,8									
Heating mode, two pipes**																
Heating capacity	kW	4,72	5,19	5,47	5,64	5,81	5,00	5,53	5,84	6,03	6,20					
Water flow rate	l/s	0,23	0,25	0,26	0,27	0,28	0,24	0,27	0,28	0,29	0,30					
	l/h	820	900	9		1010	870	960	1020	1050	1080					
Water pressure drop	kPa	36,5	43	47,1	49,7	52,2	45	53,4	58,7	62	65,1					
Water content	l	1,4					1,8									
Cooling mode, four pipes*																
Total cooling capacity	kW						3,59	3,93	4,13	4,25	4,36	3,99	4,40	4,66	4,82	4,97
Sensible cooling capacity	kW						2,96	3,25	3,43	3,55	3,65	3,23	3,58	3,81	3,95	4,08
Water flow rate	l/s						0,18	0,19	0,20	0,21	0,21	0,19	0,22	0,23	0,24	0,24
	l/h	NA					640	690	730	750	770	700	780	820	850	880
Water pressure drop	kPa						30,6	35,5	38,7	40,5	42,5	32,8	38,9	43	45,6	47,9
Water content	l						1,1					1,4				
Heating mode, four pipes***																
Heating capacity	k						3,89	4,21	4,41	4,52	4,64	4,67	5,10	5,34	5,48	5,61
Water flow rate	l/s						0,09	0,10	0,11	0,11	0,11	0,11	0,13	0,13	0,13	0,14
	l/h	NA					340	370	390	400	410	410	450	470	480	490
Water pressure drop	kPa						8,7	9,9	10,6	11,1	11,5	10,8	12,4	13,4	14	14,5
Water content	l						0,5					0,6				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	2000					2000					2000				
Current drawn	A	9,1					9.1					9.1				
Sound levels																
Sound power level (return and radiated)	dB(A)	55	56	57	58	58	55	56	57	58	58	55	56	57	58	58
Sound power level (supply)	dB(A)		5	59	60	61			59	60	61			5	60	61
Electrical data, motor																
Power input	W	105	113	117	124	134	105	113	117	124	134	105	113	117	124	134
Current drawn	A	0,59	0,64	0,67	0,71	0,76	0,59	0,64	0,67	0,71	0,76	0,59	0,64	0,67	0,71	0,76
FCEER [energy class] - 2 pipes		34	[D]				42	[C]								
FCCOP [energy class]		45	[C]				48	[C]								
FCEER [energy class] - 4 pipes							34	[D]				38	[D]			
FCCOP [energy class]							37	[D]				45	[C]			

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		529					539					549				
Fan speed		**2V**	**5V**	**6V**	**8V**	**10V**	**2V**	**5V**	**6V**	**8V**	**9V**	**2V**	**5V**	**6V**	**8V**	**9V**
(Eurovent certification speeds)		(L)	(M)	(H)		Max	(L)	(M)	(H)		Max	(L)	(M)	(H)		Max
Air flow	l/s	85	213	244	307	0	85	213	244	307	335	85	213	244	307	335
	m^3/h	306	765	878	1105	0	306	765	878	1105	1205	306	765	878	1105	1205
Available static pressure	Pa	8	50	66	104	0	8	50	66	104	124	8	50	66	104	124
Cooling mode, two pipes*																
Total cooling capacity	kW	1,70	3,57	3,93	4,54	0,00	1,77	4,37	4,88	5,72	6,02	NA				
Sensible cooling capacity	kW	1,37	2,98	3,31	3,89	0,00	1,41	3,46	3,88	4,63	4,90					
Water flow rate	l/s	0,08	0,17	0,19	0,22	0,00	0,08	0,21	0,24	0,28	0,30					
	l/h	290	620	690	800	0	300	760	850	1010	1070					
Water pressure drop	kPa	7,2	28,4	33	42,9	0	7,2	38,1	46,5	61,6	67,7					
Water content	l	1,4					1,8									
Heating mode, two pipes**																
Heating capacity	kW	1,98	4,71	5,26	6,20	0,00	1,80	4,99	5,61	6,61	6,94					
Water flow rate	l/s	0,09	0,23	0,26	0,30	0,00	0,09	0,24	0,27	0,32	0,34	NA				
	l/h	340	820	920	1080	0	310	870	980	1150	1210					
Water pressure drop	kPa	8,8	36,4	44	58,3	0	8,4	44,8	54,8	72,6	79					
Water content	l	1,4					1,8									
Cooling mode, four pipes*																
Total cooling capacity	kW	NA					1,65	3,64	4,01	4,64	4,88	1,73	4,03	4,51	5,35	5,67
Sensible cooling capacity	kW						1,34	3,00	3,33	3,92	4,14	1,39	3,28	3,68	4,42	4,70
Water flow rate	l/s						0,08	0,18	0,19	0,23	0,24	0,08	0,19	0,22	0,26	0,28
	l/h						280	630	700	820	870	300	700	790	940	1010
Water pressure drop	kPa						7,2	30,5	36,3	47,3	52	6,8	32,8	40	54,3	60,4
Water content	l						1,1					1,4				
Heating mode, four pipes***																
Heating capacity	kW	NA					1,87	3,88	4,26	4,90	5,14	1,88	4,66	5,16	5,91	6,15
Water flow rate	l/s						0,04	0,09	0,10	0,12	0,13	0,04	0,11	0,13	0,14	0,15
	l/h						160	340	370	430	450	160	410	450	520	540
Water pressure drop	kPa						3,2	8,7	10,1	12,6	13,6	2,9	10,8	12,7	15,8	16,9
Water content	l						0,5					0,6				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	2000					2000					2000				
Current drawn	A	9,1					9.1					9.1				
Sound levels																
Sound power level (return and radiated)	dB(A)	35	53	57	63	0	35	53	57	63	65	35	53	57	63	65
Sound power level (supply)	dB(A)	36	57	61	66	0	36	57	61	66	68	36	57	61	66	68
Electrical data, motor																
Power input	W	9	52	78	146	0	9	52	78	146	187	9	52	78	146	187
Current drawn	A	0,12	0,67	0,95	1,58	1,88	0,12	0,67	0,95	1,58	1,88	0,12	0,67	0,95	1,58	1,88
FCEER [energy class] - 2 pipes		94	[A]				107	[A]								
FCCOP [energy class]		122	[A]				120	[A]								
FCEER [energy class] - 4 pipes							93	[A]				101	[A]			
FCCOP [energy class]							107	[A]				118	[A]			

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.7 - Physical and electrical data at Eurovent conditions - 42NH - Sizes 6 and 7

With G1 filter - without plenum

42NH		635					645				
Fan speed		**R5**	**R4**	**R3**	**R2**	**R1**	**R5**	**R4**	**R3**	**R2**	**R1**
(Eurovent certification speeds)			(L)	(M)	(H)	Max		(L)	(M)	(H)	Max
Air flow	l/s	200	298	397	460	499	200	298	397	460	499
	m^3/h	720	1072	1428	1657	1796	720	1072	1428	1657	1796
Available static pressure	Pa	13	28	50	67	79	13	28	50	67	79
Cooling mode, two pipes*											
Total cooling capacity	kW	4.03	5.81	7.31	8.08	8.47	4.57	6.80	8.62	9.52	9.97
Sensible cooling capacity	kW	3.17	4.62	5.94	6.67	7.06	3.44	5.14	6.65	7.49	7.92
Water flow rate	l/s	0.20	0.29	0.36	0.40	0.42	0.23	0.33	0.42	0.47	0.49
	l/h	720	1030	1290	1430	1500	820	1200	1520	1680	1760
Water pressure drop	kPa	12.3	24	35	41.3	45.1	12.1	25	38.6	45.1	49
Water content	l	1.5					2				
Heating mode, two pipes**											
Heating capacity	kW	5.21	7.59	9.76	11.00	11.67	5.56	8.21	10.59	11.92	12.64
Water flow rate	l/s	0.25	0.37	0.47	0.53	0.56	0.27	0.40	0.51	0.58	0.61
	l/h	910	1320	1700	1910	2030	970	1430	1840	2070	2200
Water pressure drop	kPa	15.9	29.7	45.6	56	62.1	14.8	28.1	43.4	53.1	58.8
Water content	l	1.5					2				
Cooling mode, four pipes*											
Total cooling capacity	kW	NA					3.80	5.38	6.63	7.22	7.52
Sensible cooling capacity	kW						3.05	4.40	5.56	6.18	6.50
Water flow rate	l/s						0.19	0.27	0.33	0.36	0.37
	l/h						680	960	1180	1280	1340
Water pressure drop	kPa						11.1	20.9	29.9	34.4	37.1
Water content	l						1.3				
Heating mode, four pipes***											
Heating capacity	kW	NA					4.92	6.79	8.05	8.57	8.82
Water flow rate	l/s						0.12	0.17	0.20	0.21	0.21
	l/h						430	600	710	750	770
Water pressure drop	kPa						6.6	10.8	14.2	15.7	16.5
Water content	l						0.7				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	3200					3200				
Current drawn	A	14.6					14.6				
Sound levels											
Sound power level (return and radiated)	dB(A)	50	56	58	61	62	50	56	58	61	62
Sound power level (supply)	dB(A)	50	59	62	65	66	50	59	62	65	66
Electrical data, motor											
Power input	W	185	217	225	242	286	185	217	225	242	286
Current drawn	A	0.96	1.11	1.28	1.38	1.55	0.96	1.11	1.28	1.38	1.55
FCEER [energy class] - 2 pipes		29	[D]				34	[D]			
FCCOP [energy class]		38	[D]				41	[C]			
FCEER [energy class] - 4 pipes							26	[D]			
FCCOP [energy class]							33	[D]			

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		639				649			
Fan speed		**2V**	**6V**	**7V**	**10V**	**2V**	**7V**	**8V**	**10V**
(Eurovent certification speeds)		(L)	(M)	(H)	Max	(L)	(M)	(H)	Max
Air flow	l/s	102	269	303	389	90	327	364	426
	m^3/h	368	967	1089	1400	323	1176	1310	1532
Available static pressure	Pa	7	50	63	105	4	50	62	85
Cooling mode, two pipes*									
Total cooling capacity	kW	1.76	5.44	5.99	7.21	1.87	7.49	8.14	9.04
Sensible cooling capacity	kW	1.40	4.34	4.80	5.85	1.51	5.71	6.25	7.04
Water flow rate	l/s	0.08	0.26	0.29	0.36	0.09	0.36	0.39	0.44
	l/h	300	950	1050	1280	320	1300	1420	1590
Water pressure drop	kPa	3.5	20.3	24.6	34.2	3.7	29.1	34.4	41.3
Water content	l	1.5				2			
Heating mode, two pipes**									
Heating capacity	kW	2.19	6.90	7.70	9.60	2.33	8.94	9.84	11.21
Water flow rate	l/s	0.11	0.33	0.37	0.46	0.11	0.43	0.48	0.54
	l/h	380	1200	1340	1670	410	1550	1710	1950
Water pressure drop	kPa	4.1	25.3	30.4	44.4	3.7	32.5	38.3	47.8
Water content	l	1.5				2			
Cooling mode, four pipes*									
Total cooling capacity	kW	NA				1.83	5.90	6.33	6.91
Sensible cooling capacity	kW					1.48	4.87	5.27	5.85
Water flow rate	l/s					0.09	0.29	0.31	0.34
	l/h					310	1030	1110	1230
Water pressure drop	kPa					3.6	23.9	27.7	32
Water content	l					1.3			
Heating mode, four pipes***									
Heating capacity	kW	NA				2.17	7.22	7.70	8.30
Water flow rate	l/s					0.05	0.18	0.19	0.20
	l/h					190	630	670	730
Water pressure drop	kPa					2.3	11.9	13.2	14.9
Water content	l					0.7			
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	3200				3200			
Current drawn	A	14.6				14.6			
Sound levels									
Sound power level (return and radiated)	dB(A)	38	58	61	67	38	61	64	67
Sound power level (supply)	dB(A)	46	60	63	69	46	63	66	69
Electrical data, motor									
Power input	W	8	76	106	222	9	111	153	233
Current drawn	A	0.09	0.71	1.02	2.01	0.09	0.71	1.02	2.01
FCEER [energy class] - 2 pipes		92	[A]			83	[B]		
FCCOP [energy class]		122	[A]			105	[A]		
FCEER [energy class] - 4 pipes						70	[B]		
FCCOP [energy class]						89	[A]		

Fan speed: L = Low, M = Medium, H = High

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		735					745				
Fan speed		**R5**	**R4**	**R3**	**R2**	**R1**	**R5**	**R4**	**R3**	**R2**	**R1**
(Eurovent certification speeds)				(L)	(M)	(H)			(L)	(M)	(H)
Air flow	l/s	148	218	374	533	600	148	218	374	533	600
	m^3/h	534	785	1346	1918	2161	534	785	1346	1918	2161
Available static pressure	Pa	4	8	25	50	63	4	8	25	50	63
Cooling mode, two pipes*											
Total cooling capacity	kW	3.19	4.66	7.62	9.97	10.76	3.43	5.09	8.52	11.32	12.25
Sensible cooling capacity	kW	2.42	3.55	5.92	7.98	8.72	2.55	3.77	6.41	8.75	9.60
Water flow rate	l/s	0.16	0.23	0.38	0.49	0.53	0.17	0.25	0.42	0.56	0.60
	l/h	580	840	1360	1770	1910	620	910	1510	2000	2160
Water pressure drop	kPa	9.1	18.1	42.5	66.4	75.8	7.9	16	41.8	66.2	75.9
Water content	l	2					2.6				
Heating mode, two pipes**											
Heating capacity	kW	3.81	5.46	9.03	12.49	13.86	3.85	5.62	9.55	13.38	14.88
Water flow rate	l/s	0.18	0.26	0.44	0.60	0.67	0.19	0.27	0.46	0.65	0.72
	l/h	660	950	1570	2170	2410	670	980	1660	2330	2590
Water pressure drop	kPa	10.7	19.1	44.7	78.2	93.7	9	16.3	39.5	70.5	84.8
Water content	l	2					2.6				
Cooling mode, four pipes*											
Total cooling capacity	kW	2.80	3.95	6.29	8.28	8.99	3.33	4.94	8.11	10.46	11.18
Sensible cooling capacity	kW	2.22	3.17	5.16	6.96	7.61	2.50	3.69	6.18	8.25	8.96
Water flow rate	l/s	0.14	0.20	0.31	0.41	0.44	0.17	0.25	0.40	0.51	0.55
	l/h	510	720	1130	1480	1600	600	890	1440	1850	1980
Water pressure drop	kPa	8.9	16.5	36	56.8	65.6	9.9	20.3	47.6	72.9	81.9
Water content	l	1.3					1.7				
Heating mode, four pipes***											
Heating capacity	kW	3.64	5.20	8.43	11.16	12.13	4.14	6.31	10.54	13.74	14.80
Water flow rate	l/s	0.09	0.13	0.21	0.27	0.29	0.10	0.15	0.26	0.33	0.36
	l/h	320	460	740	980	1060	360	550	920	1200	1300
Water pressure drop	kPa	5.1	8.6	18.5	29.7	34.3	5.4	10.2	23.6	36.9	41.9
Water content	l	0.7					0.9				
Electric heater		230V ±10% - 1ph - 50Hz					230V ±10% - 1ph - 50Hz				
Maximum capacity	W	3200					3200				
Current drawn	A	14.6					14.6				
Sound levels											
Sound power level (return and radiated)	dB(A)	41	48	57	63	64	41	48	57	63	64
Sound power level (supply)	dB(A)	42	48	58	66	68	42	48	58	66	68
Electrical data, motor											
Power input	W	174	227	282	316	356	174	227	282	316	356
Current drawn	A	0.84	1.08	1.40	1.74	1.86	0.84	1.08	1.40	1.74	1.86
FCEER [energy class] - 2 pipes		29	[D]				32	[D]			
FCCOP [energy class]		34	[D]				37	[D]			
FCEER [energy class] - 4 pipes		24	[E]				30	[D]			
FCCOP [energy class]		32	[D]				39	[D]			

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

42NH		739				749			
Fan speed		**2V**	**7V**	**8V**	**10V**	**2V**	**7V**	**8V**	**10V**
(Eurovent certification speeds)		(L)	(M)	(H)	Max	(L)	(M)	(H)	Max
Air flow	l/s	124	441	477	529	124	441	477	529
	m^3/h	445	1586	1717	1906	445	1586	1717	1906
Available static pressure	Pa	4	50	59	72	4	50	59	72
Cooling mode, two pipes*									
Total cooling capacity	kW	2.79	8.84	9.34	10.00	2.97	9.94	10.56	11.34
Sensible cooling capacity	kW	2.16	6.99	7.43	8.01	2.25	7.60	8.11	8.78
Water flow rate	l/s	0.13	0.43	0.45	0.49	0.14	0.48	0.51	0.55
	l/h	480	1540	1630	1760	510	1730	1840	1990
Water pressure drop	kPa	6.6	52.7	58.2	65.9	5.8	51.8	57.7	65.7
Water content	l	2				2.6			
Heating mode, two pipes**									
Heating capacity	kW	3.22	10.51	11.31	12.42	2.33	8.94	9.84	11.21
Water flow rate	l/s	0.16	0.51	0.55	0.60	0.11	0.43	0.48	0.54
	l/h	560	1830	1970	2160	410	1550	1710	1950
Water pressure drop	kPa	8.3	58	65.8	77.4	3.7	32.5	38.3	47.8
Water content	l	2							
Cooling mode, four pipes*									
Total cooling capacity	kW	2.51	7.33	7.75	8.31	2.89	9.36	9.86	10.50
Sensible cooling capacity	kW	2.02	6.10	6.48	6.99	2.21	7.27	7.71	8.29
Water flow rate	l/s	0.12	0.36	0.38	0.41	0.14	0.45	0.48	0.51
	l/h	430	1280	1360	1470	500	1630	1720	1840
Water pressure drop	kPa	6.7	44.7	49.5	56.4	7.1	58.7	64.6	72.4
Water content	l	1.3				1.7			
Heating mode, four pipes***									
Heating capacity	kW	3.07	9.65	10.28	11.11	3.36	12.02	12.75	13.68
Water flow rate	l/s	0.08	0.24	0.25	0.27	0.08	0.29	0.31	0.33
	l/h	270	850	900	970	290	1050	1120	1200
Water pressure drop	kPa	4	23.3	25.9	29.5	4.1	29.4	32.5	36.7
Water content	l	0.7				0.9			
Electric heater		230V ±10% - 1ph - 50Hz				230V ±10% - 1ph - 50Hz			
Maximum capacity	W	3000				3000			
Current drawn	A	13.7				13.7			
Sound levels									
Sound power level (return and radiated)	dB(A)	45	60	62	63	45	60	62	63
Sound power level (supply)	dB(A)	44	61	63	65	44	61	63	65
Electrical data, motor									
Power input	W	10	137	177	240	10	137	177	240
Current drawn	A	0.11	1.11	1.38	1.85	0.11	1.11	1.38	1.85
FCEER [energy class] - 2 pipes		87	[A]			96	[A]		
FCCOP [energy class]		109	[A]			113	[A]		
FCEER [energy class] - 4 pipes		75	[B]			92	[A]		
FCCOP [energy class]		101	[A]			120	[A]		

Fan speed: L = Low, M = Medium, H = High

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Eurovent certified values

* Eurovent conditions: Entering air temperature = 27°C db/47% rh – entering water temperature = 7°C, water temperature difference = 5 K.
** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 50°C, same water flow rate as in cooling.
*** Eurovent conditions: Entering air temperature = 20°C, entering water temperature = 70°C, water temperature difference = 10 K.

7 - 42NH AND 42NL PERFORMANCE DATA

7.8 - Sound power levels

7.8.1 - 42NL

42NL 2-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	GLOBAL	52	57	56	53	48	**57**
R2	GLOBAL	49	54	54	49	44	**54**
R3	GLOBAL	47	51	51	46	41	**51**
R4	GLOBAL	44	47	48	42	37	**48**
R5	GLOBAL	42	42	42	34	27	**41**
R6	GLOBAL	40	39	39	31	24	**38**

42NL 3-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	GLOBAL	57	61	60		52	**61**
R2	GLOBAL	56	60	58	55	50	**59**
R3	GLOBAL	53	57	56	52	47	**57**
R4	GLOBAL	50	54	53	49	45	**54**
	GLOBAL	42	47	46	4	36	**46**
R6	GLOBAL	40	44	43	37	32	**43**

42NL 4-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	GLOBAL	58	62	62	58	54	**63**
R2	GLOBAL	56	60	59	56	51	**60**
R3	GLOBAL	53	57	57	53	49	**58**
R4	GLOBAL	50	54	54	49	45	**55**
	GLOBAL	42	48	4	41	3	**48**
R6	GLOBAL	40	46	44	38	32	**44**

42NL 5-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	GLOBAL	60	63	61		52	**62**
R2	GLOBAL	57	61	58	54	49	**59**
R3	GLOBAL	55	57	56	51	47	**57**
R4	GLOBAL	53	54	52	48	43	**53**
	GLOBAL	47	47	4	9	3	**46**
R6	GLOBAL	45	44	42	36	30	**42**

42NL 2-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	GLOBAL	45	48	49	43	36	**48**
8V	GLOBAL	43	44	45	38	30	**44**
6V	GLOBAL	42	40	39	31	22	**39**
4V	GLOBAL	52	33	29	20	11	**37**
2V	GLOBAL	46	30	22	17	10	**31**

42NL 3-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	GLOBAL	54	59	58	56	52	**60**
8V	GLOBAL	52	57	56	53	49	**58**
6V	GLOBAL	46	52	52	48	44	**53**
4V	GLOBAL	41	46	46	40	34	**46**
2V	GLOBAL	50	36	33	27	16	**37**

42NL 4-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	GLOBAL	61	66	63	64	59	**67**
8V	GLOBAL	59	64	61	61	57	**65**
6V	GLOBAL	54	59	57	55	52	**60**
4V	GLOBAL	47	51	51	47	45	**52**
2V	GLOBAL	40	40	36	33	24	**38**

42NL 5-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	GLOBAL	52	58	58	52	47	**58**
8V	GLOBAL	50	55	56	49	44	**55**
6V	GLOBAL	45	51	51	44	39	**51**
4V	GLOBAL	41	45	44	37	29	**44**
2V	GLOBAL	40	36	31	23	14	**32**

7 - 42NH AND 42NL PERFORMANCE DATA

7.8.2 - 42NH

42NH 2-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	RET + RAD	58	57	52	43	34	**53**
	SUP	50	54	47	45	41	**50**
R2	RET + RAD	55	53	49	39	30	**49**
	SUP	46	51	45	41	38	**47**
R3	RET + RAD	50	53	47	36	35	**48**
	SUP	46	49	43	38	36	**45**
R4	RET + RAD	47	43	42	33	33	**43**
	SUP	38	42	37	30	30	**38**
R5	RET + RAD	31	31	27	24	28	**32**
	SUP	30	33	25	22	27	**31**

42NH 279 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	RET + RAD	62	63	61	54	47	**61**
	SUP	64	67	62	60	55	**64**
8V	RET + RAD	59	59	57	50	42	**57**
	SUP	61	63	58	56	51	**61**
6V	RET + RAD	55	54	53	45	36	**52**
	SUP	56	58	53	50	44	**55**
4V	RET + RAD	47	45	42	33	24	**42**
	SUP	47	48	44	36	32	**44**
2V	RET + RAD	39	35	31	21	15	**34**
	SUP	38	37	31	21	17	**34**

42NH 229 and 239 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	RET + RAD	57	58	55	49	41	**56**
	SUP	59	60	55	53	48	**58**
8V	RET + RAD	53	54	51	44	36	**52**
	SUP	55	56	51	48	43	**53**
6V	RET + RAD	49	51	48	40	31	**47**
	SUP	51	52	48	43	37	**49**
4V	RET + RAD	40	40	38	33	35	**40**
	SUP	41	45	38	31	32	**41**
2V	RET + RAD	36	36	34	29	31	**36**
	SUP	37	41	34	27	28	**37**

42NH 289 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	R + A	59	60	61		51	**62**
	SUP	61	64	61	59	58	**65**
8V	RET + RAD	57	58	59	53	48	**59**
	SUP	59	61	58	57	55	**62**
6	RET + RAD	53	54	55	49	43	**54**
	SUP	55	56	53	52	47	**56**
4V	RET + RAD	47	46	48	41	32	**47**
	SUP	51	49	47	43	38	**48**
2V	RET + RAD	36	36	37	27	14	**36**
	SUP	39	38		2	19	**36**

NOTE: All tables are based on Eurovent declaration conditions.

The measurements are based on ISO standards and are without supply and return octopus plenums.

The room sound level calculations must take account of the sound absorption of the duct, the plenum, the room and ceiling.

For a selected speed the sound level can vary within a tolerance of ± 2.5 dB(A), depending on the available static pressure.

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42NH 3-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	RET + RAD	57	61	59	54	50	**60**
	SUP	61	65	61	62	61	**66**
R2	RET + RAD	53	56	54	50	44	**55**
	SUP	56	59	55	57	54	**60**
R3	RET + RAD	51	51	48	45	38	**49**
	SUP	52	53	49	51	46	**54**
R4	RET + RAD	48	45	43	40	26	**45**
	SUP	50	48	45	44	38	**48**
R5	RET + RAD	42	39	35	31	40	**42**
	SUP	47	46	42	42	36	**46**

42NH 4-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	RET + RAD	61	60	58	52	46	**59**
	SUP	60	62	59	56	51	**61**
R2	RET + RAD	60	59	57	51	45	**58**
	SUP	59	61	59	55	50	**60**
R3	RET + RAD	58	57		49	42	**55**
	SUP	57	59	57	53	48	**58**
R4	RET + RAD	53	52	52	44	37	**51**
	SUP	52	55	53	48	43	**54**
R5	R + AD	45	44	4		26	**44**
	SUP	46	48	47	39	33	**47**

42NH 5-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	RET + RAD	58	61		52	47	**58**
	SUP	62	61	59	57	53	**61**
R2	RET + RAD	57	60	57	51	46	**58**
	SUP	61	61	59	56	52	**60**
R3	R + AD	56	59	6		4	**57**
	SUP	60	59	57	54	50	**59**
R4	RET + RAD	55	57	55	49	43	**55**
	SUP	59	58	56	52	48	**57**
	RET + RAD	52	55	54	46	40	**53**
	SUP	55	55	53	49	45	**55**

42NH 6-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	RET + RAD	66	64	60	55	49	**62**
	SUP	67	67	62	61	55	**66**
R2	RET + RAD	65	63	59	54	48	**61**
	SUP	65	66	60	59	53	**65**
R3	RET + RAD	63	60	57	52	46	**58**
	SUP	63	64	58	57	51	**62**
R4	RET + RAD	60	57	56	48	42	**56**
	SUP	60	61	56	54	47	**59**
R5	RET + RAD	52	50	53	40	33	**50**
	SUP	53	53	52	45	39	**50**

42NH 7-5 (AC - multi-speed version)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
R1	R + A	66	66		8	52	**64**
	SUP	69	70	65	65	59	**68**
R2	RET + RAD	63	63	59	55	49	**63**
	SUP	66	67	62	61	55	**66**
	RET + RAD	58	58	58	49	43	**57**
	SUP	58	58		52	47	**58**
R4	RET + RAD	50	48	48	35	28	**48**
	SUP	53	49	47	38	33	**48**
R5	RET + RAD	37	40	43	24	16	**41**
	SUP	51	43	44	0	26	**42**

42NH 3-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10	RET + RAD	64	66	64	59	57	**65**
	SUP	66	70	65	64	65	**70**
8V	RET + RAD	64	66	64	59	57	**65**
	SUP	65	69	65	63	65	**70**
6V	RET + RAD	61	63	60	56	52	**61**
	SUP	61	65		0	60	**65**
4V	RET + RAD	54	56	54	50	43	**55**
	SUP	56	57	54	54	49	**57**
2V	RET + RAD	42	43	44	36	27	**43**
	SUP	46	46	43	38	34	**44**

Legend:
SUP Supply (dB re = 10^{-12} W)
RET Return (dB re = 10^{-12} W)
RAD Radiated (dB re = 10^{-12} W)
GLOBAL = SUP + RET +RAD
R Fixed speed

7 - 42NH AND 42NL PERFORMANCE DATA

42NH 5-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	RET + RAD	69	70	65	59	55	**67**
	SUP	68	71	67	66	62	**70**
8V	RET + RAD	66	67	62	55	51	**63**
	SUP	65	67	63	61	58	**66**
6V	RET + RAD	60	61	57	50	46	**58**
	SUP	60	62	59	56	53	**61**
4V	RET + RAD	51	53	49	40	36	**49**
	SUP	51	53	52	46	43	**53**
2V	RET + RAD	39	42	32	21	19	**35**
	SUP	45	39	35	25	23	**36**

42NH 6-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	RET + RAD	73	73	68	63	61	**70**
	SUP	66	68	64	63	60	**68**
8V	RET + RAD	71	70	65	60	58	**67**
	SUP	64	65	60	59	56	**64**
6V	RET + RAD	65	65	60	54	53	**62**
	SUP	58	60	55	54	50	**58**
4V	RET + RAD	55	54	50	41	39	**51**
	SUP	50	52	49	44	41	**50**
2V	RET + RAD	42	45	35	24	22	**39**
	SUP	45	47	44	39	36	**45**

42NH 4-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	RET + RAD	67	68	62	60	57	**65**
	SUP	68	71	66	66	65	**71**
8V	RET + RAD	66	67	61	59	56	**64**
	SUP	67	70	66	65	65	**70**
6V	RET + RAD	60	62	56		52	**60**
	SUP	62	65	61	62	61	**66**
4V	RET + RAD	57	57	52	51	46	**55**
	SUP	57	59	55	57	55	**61**
2V	R + AD	42	43	44		2	**43**
	SUP	46	46	43	38	34	**44**

42NH 7-9 (EC - brushless motor)

		Octave band frequency (Hz)					
Speed	Type	125	250	500	1K	2K	dB(A)
10V	RET + RAD	66	66	63	56	53	**64**
	SUP	67	68	63	62	56	**66**
8V	RET + RAD	64	64	62	55	51	**62**
	SUP	65	66	61	58	54	**63**
6V	RET + RAD	59	59	58	50	50	**58**
	SUP	61	61	56	53	49	**58**
4V	RET + RAD	50	51	52	41	40	**51**
	SUP	52	52	49	43	41	**50**
2V	R + A	45	46	4		35	**46**
	SUP	47	47	44	38	36	**45**

Legend:
SUP Supply (dB re = 10^{-12} W)
RET Return (dB re = 10^{-12} W)
RAD Radiated (dB re = 10^{-12} W)
GLOBAL = SUP + RET +RAD
R Fixed speed

Air plenum attenuation:

The sound power level measurements were carried out on a non-ducted unit without return or supply air plenums.
If the unit includes a plenum, correct the sound power levels (RET or SUP) using the correction factors in the tables below:

Return plenum attenuation						
Unit Size 42NH/42NL	Octave band frequency (Hz)					
	125	250	500	1K	2K	dB(A)
2	-3.8	-6.8	-9.0	-8.9	-10.3	-6.7
3	-3.3	-7.8	-8.6	-9.5	-10.2	-7.0
4	-1.9	-5.2	-8.0	-6.6	-7.1	-4.9
5	-2.4	-6.1	-7.3	-5.5	-5.7	-5.1
6	-6.1	-10.0	-10.2	-10.5	-12.9	-9.0
7	-2.2	-5.8	-7.1	-6.9	-7.4	-5.3

Supply plenum attenuation						
Unit Size 42NH/42NL	Octave band frequency (Hz)					
	125	250	500	1K	2K	dB(A)
2	-1.2	-8.2	-9.8	-7.6	-8.4	-6.8
3	-1.3	-8.2	-8.8	-11.2	-10.2	-8.2
4	-1.0	-5.7	-8.3	-7.6	-8.6	-6.3
5	-2.6	-6.2	-9.1	-8.2	-9.4	-6.3
6	-1.9	-6.9	-9.1	-9.2	-10.1	-7.4
7	-2.2	-5.9	-6.6	-5.3	-5.7	-4.6

7 - 42NH AND 42NL PERFORMANCE DATA

7.10 - Electrical data

7.10.1 - 42NL

42NL 2-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP G1 Filter
	(A)	(W)	(l/s)	(m^3/h)	(Pa)
R1	0.35	80	138	495	0
	0.35	80	136	490	3
	0.35	79	131	470	12
	0.35	79	125	450	19
	0.35	78	119	430	26
	0.35	77	114	410	33
	0.34	77	108	390	38
	0.34	76	103	370	44
	0.34	76	97	350	48
	0.34	75	92	330	53
	0.34	75	86	310	57
	0.34	75	81	290	60
	0.33	73	56	200	73
R2	0.28	65	125	450	0
	0.28	65	119	430	7
	0.28	64	114	410	14
	0.28	64	108	390	21
	0.27	63	103	370	27
	0.27	63	97	350	33
	0.27	62	92	330	38
	0.27	62	86	310	43
	0.27	61	81	290	48
	0.26	61	75	270	52
	0.26	60	69	250	56
	0.26	59	64	230	60
	0.26	59	58	210	63
	0.26	58	53	190	67
	0.26	58	47	170	70
R3	0.23	54	110	394	0
	0.23	53	103	370	10
	0.23	53	97	350	18
	0.23	52	92	330	25
	0.23	51	86	310	30
	0.23	51	81	290	35
	0.23	50	75	270	40
	0.22	50	69	250	44
	0.22	49	64	230	49
	0.22	49	58	210	53
	0.21	48	53	190	57
	0.21	48	47	170	62
	0.21	48	42	150	68
R4	0.20	45	96	345	0
	0.20	45	94	340	2
	0.20	45	89	320	9
	0.20	44	83	300	15
	0.19	44	78	280	21
	0.19	43	72	260	27
	0.19	43	67	240	32
	0.19	42	61	220	38
	0.18	42	56	200	43
	0.18	41	50	180	49
	0.18	41	44	160	55
R5	0.14	31	69	247	0
	0.14	31	68	245	1
	0.14	31	65	235	4
	0.13	31	56	200	13
	0.13	31	50	180	18
	0.13	31	47	170	21
	0.13	31	44	160	24
	0.13	30	42	150	27
	0.13	30	39	140	30
	0.13	30	36	130	33
	0.13	29	33	120	36
	0.13	29	31	110	39
R6	0.12	28	61	211	0
	0.12	27	50	180	6
	0.12	27	47	170	8
	0.12	27	44	160	11
	0.12	27	42	150	13
	0.12	27	39	140	15
	0.12	27	36	130	18
	0.12	27	28	100	26

42NL 2-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP G1 Filter
	(A)	(W)	(l/s)	(m^3/h)	(Pa)
10V	0.14	13	103	370	0
	0.13	13	97	350	4
	0.13	13	90	325	9
	0.13	13	94	340	6
	0.13	13	89	320	10
	0.13	12	83	300	14
	0.12	12	78	280	18
	0.11	10	56	200	30
	0.09	8	28	100	42
9V	0.12	12	97	350	0
	0.12	12	90	325	5
	0.12	11	83	300	10
	0.12	11	76	275	15
	0.12	10	69	250	19
	0.11	10	63	225	23
	0.11	9	56	200	26
	0.10	9	49	175	29
	0.09	8	28	100	37
8V	0.11	10	89	320	0
	0.11	10	83	300	4
	0.11	9	75	270	10
	0.10	9	67	240	14
	0.10	8	58	210	19
	0.09	8	50	180	22
	0.09	7	42	150	26
	0.09	7	33	120	30
	0.08	7	25	90	33
7V	0.10	9	81	292	0
	0.10	8	76	275	3
	0.09	8	69	250	8
	0.09	8	64	230	11
	0.09	7	58	210	14
	0.08	7	42	150	21
	0.08	6	28	100	26
	0.07	6	21	75	28
6V	0.08	7	74	261	0
	0.07	7	69	250	2
	0.07	6	64	230	4
	0.07	6	58	210	7
	0.07	6	53	190	10
	0.07	6	47	170	13
	0.07	5	42	150	15
	0.07	5	31	110	20
	0.07	5	21	75	23
5V	0.06	5	65	235	0
	0.06	5	60	215	2
	0.06	5	56	200	4
	0.06	5	50	180	7
	0.06	5	44	160	9
	0.06	5	39	140	11
	0.06	4	33	120	13
	0.06	4	28	100	15
	0.05	4	17	60	18
4V	0.06	5	58	210	0
	0.06	4	56	200	1
	0.06	4	49	175	4
	0.06	4	42	150	7
	0.06	4	35	125	10
	0.06	4	28	100	12
	0.06	4	21	75	14
	0.05	3	14	50	16
3V	0.06	4	51	182	0
	0.06	3	47	170	1
	0.06	3	42	150	3
	0.05	3	28	100	8
	0.05	3	14	50	11
2V	0.05	3	43	155	0
	0.05	3	38	135	2
	0.05	3	32	115	3
	0.05	3	26	95	5
	0.04	2	11	40	8

Legend
I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
ESP Available external static pressure
R Fixed speed

7 - 42NH AND 42NL PERFORMANCE DATA

42NL 3-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP G1 Filter
	(A)	(W)	(l/s)	(m^3/h)	(Pa)
R1	0.44	99	168	605	0
	0.44	99	167	600	3
	0.43	98	161	580	11
	0.43	96	156	560	18
	0.42	95	150	540	25
	0.41	94	144	520	31
	0.41	93	139	500	37
	0.41	92	133	480	43
	0.40	91	128	460	48
	0.40	90	122	440	53
	0.39	90	117	420	58
	0.39	89	111	400	62
	0.39	89	106	380	66
	0.39	88	100	360	70
R2	0.37	86	154	555	0
	0.37	85	153	550	2
	0.36	84	147	530	11
	0.35	82	142	510	20
	0.35	81	136	490	27
	0.34	80	131	470	34
	0.34	79	125	450	40
	0.34	78	119	430	46
	0.33	77	114	410	51
	0.33	77	108	390	56
	0.33	76	103	370	61
	0.32	75	97	350	65
	0.32	75	92	330	69
	0.32	75	90	325	70
R3	0.32	74	143	515	0
	0.31	73	139	500	8
	0.31	72	133	480	16
	0.30	71	128	460	24
	0.30	70	122	440	31
	0.29	69	117	420	37
	0.29	68	111	400	43
	0.29	67	106	380	48
	0.28	66	100	360	53
	0.28	65	94	340	57
	0.28	64	89	320	62
	0.27	64	83	300	66
	0.27	63	78	280	69
R4	0.27	62	124	445	0
	0.27	62	122	440	4
	0.26	60	117	420	13
	0.26	59	111	400	22
	0.25	57	106	380	30
	0.25	57	100	360	37
	0.24	56	94	340	43
	0.24	55	89	320	48
	0.24	55	83	300	54
	0.24	54	78	280	58
	0.24	54	72	260	63
	0.23	54	67	240	67
R5	0.20	45	94	340	0
	0.19	44	89	320	7
	0.19	43	83	300	15
	0.18	42	78	280	22
	0.18	42	72	260	29
	0.18	41	67	240	36
	0.18	41	61	220	42
	0.18	41	56	200	48
R6	0.16	38	83	300	0
	0.16	37	78	280	7
	0.16	37	72	260	14
	0.16	37	67	240	20
	0.16	37	61	220	26
	0.16	36	56	200	32
	0.16	36	50	180	38
	0.15	36	44	160	44

42NL 3-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP G1 Filter
	(A)	(W)	(l/s)	(m^3/h)	(Pa)
10V	0.39	49	168	605	0
	0.39	49	167	600	2
	0.38	48	161	580	8
	0.37	47	156	560	14
	0.37	46	150	540	20
	0.36	45	144	520	27
	0.35	44	139	500	33
	0.34	43	133	480	39
	0.31	39	111	400	64
9V	0.35	41	153	550	0
	0.34	40	147	530	9
	0.33	39	142	510	17
	0.31	38	136	490	24
	0.30	37	131	470	31
	0.30	37	125	450	37
	0.29	36	119	430	43
	0.28	35	114	410	49
	0.27	33	103	370	59
8V	0.30	34	144	517	0
	0.30	34	142	510	3
	0.28	33	136	490	11
	0.27	32	131	470	19
	0.26	31	125	450	25
	0.25	31	119	430	31
	0.24	30	114	410	37
	0.23	27	97	350	51
	0.22	26	89	320	56
7V	0.27	33	133	480	0
	0.26	32	128	460	6
	0.25	31	122	440	13
	0.24	30	117	420	19
	0.24	29	111	400	24
	0.23	29	106	380	29
	0.23	28	100	360	33
	0.22	25	83	300	44
	0.20	23	69	250	53
6V	0.17	20	119	430	0
	0.16	19	111	400	8
	0.16	18	106	380	13
	0.16	18	100	360	17
	0.15	17	94	340	21
	0.15	16	83	300	28
	0.14	15	69	250	37
	0.13	14	56	200	46
	0.12	14	53	190	48
5V	0.14	15	103	370	0
	0.13	14	97	350	5
	0.13	14	92	330	10
	0.13	13	86	310	14
	0.12	13	81	290	18
	0.12	12	75	270	22
	0.12	12	69	250	25
	0.11	11	56	200	33
	0.09	10	42	150	42
4V	0.10	10	89	320	0
	0.10	9	83	300	4
	0.10	9	78	280	9
	0.09	9	72	260	12
	0.09	8	67	240	15
	0.09	8	61	220	18
	0.09	8	56	200	21
	0.09	7	42	150	26
	0.08	7	28	100	32
3V	0.08	7	69	250	0
	0.08	6	56	200	10
	0.07	6	42	150	16
	0.07	5	28	100	21
	0.05	4	14	50	26
2V	0.06	4	54	195	0
	0.06	4	42	150	6
	0.06	4	28	100	10
	0.05	3	14	50	13
	0.05	3	7	25	15

Legend

I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
ESP Available external static pressure
R Fixed speed

7 - 42NH AND 42NL PERFORMANCE DATA

42NL 4-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP
					G1 Filter
	(A)	(W)	(l/s)	(m^3/h)	(Pa)
R1	0.69	157	299	1075	0
	0.69	156	292	1050	6
	0.68	155	278	1000	17
	0.68	154	264	950	26
	0.67	152	250	900	35
	0.67	150	236	850	42
	0.66	149	222	800	50
	0.65	147	208	750	56
	0.65	145	194	700	62
	0.64	144	181	650	68
	0.63	142	167	600	73
	0.63	141	153	550	78
R2	0.57	129	267	960	0
	0.57	129	264	950	3
	0.56	128	257	925	10
	0.56	127	250	900	16
	0.55	126	242	870	23
	0.55	125	233	840	29
	0.54	123	225	810	35
	0.54	122	217	780	40
	0.53	121	208	750	45
	0.52	118	181	650	59
	0.51	116	167	600	65
	0.50	114	153	550	70
R3	0.49	113	233	840	0
	0.49	111	228	820	7
	0.48	110	222	800	14
	0.48	109	217	780	20
	0.47	107	211	760	26
	0.47	106	206	740	31
	0.46	105	200	720	35
	0.46	104	194	700	39
	0.46	103	189	680	43
	0.45	103	183	660	46
	0.45	102	178	640	49
	0.44	99	153	550	60
R4	0.43	98	208	750	0
	0.42	96	201	725	9
	0.41	94	194	700	17
	0.40	92	188	675	24
	0.40	91	181	650	30
	0.39	89	174	625	35
	0.39	89	167	600	40
	0.38	88	160	575	44
	0.38	87	153	550	48
	0.38	87	146	525	51
	0.38	86	139	500	55
	0.37	86	132	475	58
R5	0.30	68	149	535	0
	0.30	68	147	530	3
	0.29	66	139	500	14
	0.29	65	133	480	20
	0.28	65	128	460	24
	0.28	64	122	440	28
	0.28	64	119	430	30
	0.28	64	117	420	31
	0.28	64	114	410	33
	0.28	64	111	400	35
	0.28	64	108	390	36
	0.28	63	106	380	37
R6	0.25	57	129	465	0
	0.25	57	125	450	5
	0.25	56	119	430	11
	0.25	56	114	410	17
	0.24	56	108	390	21
	0.24	55	103	370	25
	0.24	55	97	350	28
	0.24	55	92	330	31
	0.24	55	86	310	33

42NL 4-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP
					G1 Filter
	(A)	(W)	(l/s)	(m^3/h)	(Pa)
10V	0.80	99	226	815	0
	0.79	99	222	800	7
	0.79	99	215	775	19
	0.79	99	208	750	31
	0.78	98	201	725	43
	0.77	97	194	700	54
	0.76	95	188	675	64
	0.74	93	181	650	74
	0.73	91	174	625	83
9V	0.75	91	217	780	0
	0.72	89	208	750	14
	0.70	87	201	725	26
	0.69	85	194	700	36
	0.67	83	188	675	46
	0.66	81	181	650	56
	0.64	79	174	625	65
	0.63	77	167	600	73
	0.61	75	160	575	81
8V	0.65	78	207	745	0
	0.63	76	201	725	8
	0.60	73	194	700	19
	0.58	71	188	675	29
	0.57	70	181	650	38
	0.56	68	174	625	46
	0.55	66	167	600	53
	0.54	65	160	575	60
	0.53	64	153	550	67
7V	0.54	58	192	690	0
	0.53	58	188	675	5
	0.50	57	181	650	13
	0.48	55	174	625	21
	0.46	54	167	600	28
	0.44	53	160	575	35
	0.43	52	153	550	42
	0.42	51	146	525	49
	0.41	49	139	500	55
6V	0.38	42	169	610	0
	0.37	42	167	600	3
	0.35	41	160	575	10
	0.33	40	153	550	17
	0.32	39	146	525	24
	0.31	38	139	500	31
	0.30	36	132	475	37
	0.30	35	125	450	44
	0.29	34	118	425	49
5V	0.29	30	150	540	0
	0.28	29	146	525	3
	0.27	28	139	500	9
	0.25	28	132	475	15
	0.24	27	125	450	21
	0.23	26	118	425	27
	0.22	25	111	400	32
	0.22	24	104	375	37
	0.21	23	97	350	41
4V	0.18	18	124	445	0
	0.17	18	118	425	4
	0.16	17	111	400	8
	0.15	17	104	375	13
	0.14	16	97	350	17
	0.14	15	90	325	21
	0.13	15	83	300	25
	0.13	14	76	275	28
	0.13	13	69	250	32
3V	0.12	11	97	350	0
	0.11	10	83	300	8
	0.10	9	69	250	15
	0.10	9	56	200	21
	0.09	8	42	150	26
2V	0.07	6	67	240	0
	0.07	5	56	200	4
	0.07	5	42	150	9
	0.06	4	28	100	12
	0.06	4	14	50	15

Legend

I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
ESP Available external static pressure
R Fixed speed

7 - 42NH AND 42NL PERFORMANCE DATA

42NL 5-5 (AC multi-speed version)

Speed	I	P	Qv	Qv	ESP G1 Filter
	(A)	(W)	(l/s)	(m^3/h)	(Pa)
R1	0.74	170	358	1290	0
	0.74	169	354	1275	2
	0.73	168	347	1250	6
	0.73	167	340	1225	10
	0.73	166	333	1200	14
	0.72	164	319	1150	21
	0.71	162	306	1100	28
	0.70	160	292	1050	35
	0.69	158	278	1000	41
	0.69	156	264	950	48
	0.68	155	250	900	54
	0.66	150	208	750	71
R2	0.60	137	313	1125	0
	0.60	136	306	1100	5
	0.59	135	299	1075	9
	0.59	134	292	1050	13
	0.58	132	278	1000	21
	0.57	129	264	950	29
	0.56	128	250	900	37
	0.55	126	236	850	44
	0.54	124	222	800	51
	0.54	122	208	750	58
	0.53	121	194	700	64
	0.52	119	181	650	70
R3	0.52	118	275	990	0
	0.51	116	264	950	8
	0.50	115	257	925	13
	0.50	113	250	900	18
	0.49	112	243	875	23
	0.49	111	236	850	28
	0.48	110	229	825	32
	0.48	109	222	800	37
	0.47	108	215	775	41
	0.47	107	208	750	45
	0.46	106	194	700	53
	0.45	103	167	600	66
R4	0.43	99	233	840	0
	0.43	97	222	800	10
	0.42	95	215	775	15
	0.42	94	208	750	21
	0.41	94	201	725	26
	0.41	93	194	700	31
	0.40	92	188	675	35
	0.40	91	181	650	39
	0.40	90	174	625	43
	0.40	90	167	600	47
	0.39	89	160	575	51
	0.39	89	153	550	54
R5	0.30	67	169	610	0
	0.30	67	167	600	2
	0.30	67	160	575	8
	0.29	66	153	550	13
	0.29	66	146	525	17
	0.29	66	139	500	22
	0.29	65	132	475	26
	0.29	65	125	450	30
	0.28	64	118	425	34
	0.28	64	111	400	37
	0.28	64	104	375	41
	0.28	63	97	350	45
R6	0.26	58	149	535	0
	0.25	58	139	500	8
	0.25	57	132	475	12
	0.25	57	125	450	16
	0.25	57	118	425	20
	0.25	57	111	400	24
	0.25	56	104	375	27
	0.25	56	97	350	31
	0.25	56	90	325	35

42NL 5-9 (EC brushless motor)

Speed	I	P	Qv	Qv	ESP G1 Filter
	(A)	(W)	(l/s)	(m^3/h)	(Pa)
10V	0.39	58	254	915	0
	0.39	57	250	900	3
	0.37	55	236	850	11
	0.36	54	222	800	18
	0.35	52	208	750	26
	0.34	50	194	700	33
	0.33	49	181	650	41
	0.32	47	167	600	48
	0.29	44	139	500	62
9V	0.34	51	243	875	0
	0.34	50	236	850	4
	0.32	48	222	800	11
	0.31	46	208	750	18
	0.30	44	194	700	25
	0.28	42	181	650	32
	0.27	41	167	600	38
	0.26	39	153	550	45
	0.24	36	125	450	58
8V	0.28	43	229	825	0
	0.28	42	222	800	4
	0.26	39	208	750	10
	0.25	37	194	700	16
	0.24	36	181	650	23
	0.23	34	167	600	29
	0.22	33	153	550	35
	0.22	32	139	500	42
	0.20	30	111	400	54
7V	0.22	33	208	750	0
	0.21	31	194	700	6
	0.20	29	181	650	13
	0.19	28	167	600	19
	0.19	27	153	550	25
	0.18	26	139	500	31
	0.17	25	125	450	36
	0.17	24	111	400	42
	0.15	22	83	300	52
6V	0.17	24	186	670	0
	0.16	23	181	650	3
	0.16	22	167	600	9
	0.15	21	153	550	14
	0.14	20	139	500	20
	0.14	19	125	450	24
	0.13	18	111	400	29
	0.13	17	97	350	34
	0.11	15	69	250	42
5V	0.13	18	169	610	0
	0.13	17	167	600	1
	0.12	16	153	550	5
	0.12	16	139	500	10
	0.11	15	125	450	14
	0.11	14	111	400	19
	0.10	13	97	350	23
	0.10	13	83	300	27
	0.09	11	56	200	35
4V	0.09	11	139	500	0
	0.08	10	125	450	4
	0.08	10	111	400	8
	0.08	9	97	350	12
	0.07	9	83	300	16
	0.07	8	69	250	20
	0.07	8	56	200	23
	0.06	7	42	150	26
	0.06	7	28	100	29
3V	0.06	7	111	400	0
	0.06	7	97	350	4
	0.06	6	83	300	8
	0.06	6	69	250	11
	0.05	5	28	100	19
2V	0.04	4	83	295	0
	0.04	4	69	250	2
	0.04	4	56	200	5
	0.04	3	42	150	7
	0.04	3	28	100	9

Legend

I Current drawn by the fan motor
P Power input to the fan motor
Qv Air flow rate
ESP Available external static pressure
R Fixed speed

LOW-CONSUMPTION INDIVIDUAL COMFORT MODULE FOR VARIABLE AIR VOLUME SYSTEMS

All-in-one offer: minimal installation costs thanks to factory-tested and -fitted options

Easy integration into a centralised zone

Very low sound level

Available static pressure: 100 to 350 Pa

42BJ ICM LEC

Cooling capacity 0.5-6 kW
Heating capacity 0.5-12.2 kW

The Carrier 42BJ ICM (Individual Comfort Module) is a compact air conditioning system available in 3 sizes, designed for conditioning rooms measuring 25 to 50 m².

OVERVIEW AND ADVANTAGES

The 42BJ module is connected by flexible sound-absorbing ducts (heat insulated air discharge duct) to one or more plenums incorporating a linear diffuser which is seamlessly integrated into the suspended ceiling of the room to be air-conditioned (CARRIER ModuBoots 35BD/35SR range).

The units can be fitted in suspended ceilings or raised floors, ideally in corridors, where they are connected to hot water, chilled water and fresh air circuits.

These circuits installed in the building's circulation zones (for easy maintenance) never cross into air-conditioned spaces. Only the 35BD/35SR diffuser(s), inert components of the system, are located in the occupied space. This means that maintenance is performed outside of the occupied space and facilitates programming when the building is occupied.

The Individual Comfort Module has been designed to be ultra quiet; moreover, thanks to its available static pressure, it can be located away from the air-conditioned space.

■ Comfort

The 42BJ ICM LEC can be equipped with a Carrier digital control, providing each occupant with a remote user interface located on their desktop or wall, enabling individual selection of preferred comfort conditions:

- Room temperature of the room
- Forced air function (quick renewal of air in the office)
- Set to occupied or unoccupied mode by the user of each ICM LEC to meet energy-saving requirements.

The Aquasmart Evolution is used to control and optimise each module according to the requirements of the operator or local regulations. Thanks to this central energy-monitoring system, the comfort conditions can be controlled at all times to obtain the best balance between energy savings and individual comfort.

If the product is supplied without a Carrier control device, the integrator is responsible for ensuring EMC conformity.

Air quality

■ Indoor Air quality (IAQ)

Carrier is committed to developing a system for managing Indoor Air Quality (IAQ) built into air conditioning units. A major innovation which paves the way for the air conditioning systems of the future.

In this application, each individual comfort module (ICM LEC) is equipped with a fresh air intake control and high-efficiency filtration to successfully protect against any type of pollutant.

This therefore guarantees excellent indoor air quality as explained below in 2 steps:

- High-efficiency filtration: type F5 or F6
- Fresh air flow modulation: CARRIER units may be equipped with a fresh air flow modulation system to control the air flow diffused in a room.

■ Three objectives:

Adapt the ventilation flow rate to the actual occupancy of the rooms.

Maintain excellent indoor air quality to ensure the comfort and health of occupants, in accordance with the labour code.

Control energy costs relating to air change in rooms to avoid “over-ventilating” the building and to minimise operating costs, particularly when the building is unoccupied.

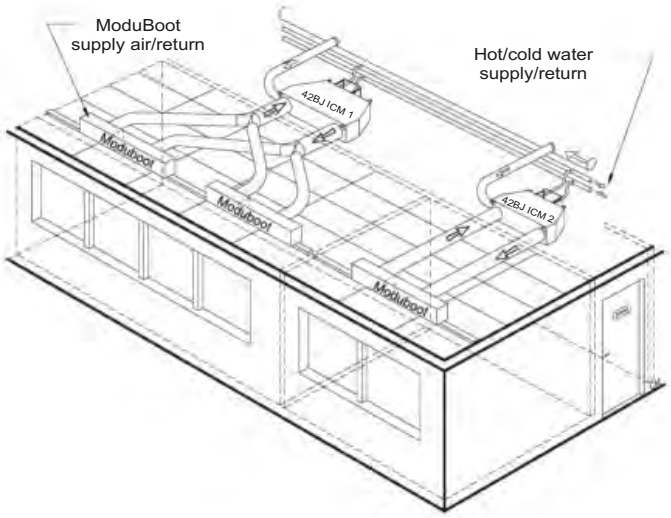
■ Operating principle

The occupants of a room release an average of 0.0045 l/s (16.2 l/h) of CO_2. A CO_2 sensor, located in the terminal's return air duct, measures the concentration of the room air conditioned by the unit. This concentration measured represents the actual occupancy of the room.

This sensor sends a signal to the Carrier digital controller which, in turn, sends a signal to actuate the fresh air valve:

If the concentration of CO_2 is below a threshold value: the fresh air flow is at minimum or zero,

if it is above: the flow rate is increased to the maximum level set.



AIR TREATMENT

CODES

	Range				Size		Modification index	Coils	Supply and return air plenum	Valves	Valve actuators	Control	Sensors	Filters and access	Fresh air	Motor wiring
Product ref.	4	2	B	J	1	9	D	A	T	C	A	A	A	G	-	W
Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Digit 5/6	
1	9
2	9
4	9

Digit 7
D

Digit 8
A = 2 RH pipes
B = 2 LH pipes
C = 4 RH pipes
D = 4 LH pipes
E = 2 pipes/2 RH wires (LP) (PTC 2 wired stages)
F = 2 pipes/2 LH wires (LP) (PTC 2 wired stages)
G = 2 pipes/2 RH wires (HP) (PTC 5 wired stages)
H = 2 pipes/2 LH wires (HP) (PTC 5 wired stages)
J = 2 pipes/2 RH wires (MP) (PTC 4 wired stages)
K = 2 pipes/2 LH wires (MP) (PTC 4 wired stages)

Digit 9
T = 1x supply air collar, 1x return air collar
Sizes 19-29: Ø200 mm
Size 49: Ø250 mm

Digit 10
- = No valves
C = 2-way valve
D = 4-way valve
J = 2-way valve + insulated flexible connections
K = 4-way valves + insulated flexible connections

Digit 11
- = None
A = 230 V ON/OFF actuator
C = 3-POINT 230 V actuator (with NTC or WTC)

Digit 12
- = None
A = NTC control
K = NTC control + fuse disconnect switch
D = NTC control + IAQ board
L = NTC control + IAQ board + fuse disconnect switch
S = WTC LON control
T = WTC BACNET control
U = WTC LON control + fuse disconnect switch
V = WTC BACNET control + fuse disconnect switch

Digit 13
- = None
A = Return sensor
B = Supply air sensor
C = Changeover sensor
D = Supply air + return sensors
F = Return + Changeover sensors
G = Supply air + Changeover sensors
E = Return + Supply air + Changeover sensors
H = CO_2 sensor
J = Return air + CO_2 sensors
K = Supply air + CO_2 sensors
L = Changeover + CO_2 sensors
M = Return + Supply air + CO_2 sensors
N = Return air + Changeover + CO_2 sensors
P = Supply air + Changeover + CO_2 sensors
Q = Return + Supply air + Changeover + CO_2 sensors

Digit 14
F = Access from under filter F5
G = Access from side STANDARD filter F5
H = Access from above filter F5
K = Access from under filter F6
L = Access from side filter F6
M = Access from above filter F6

Digit 15
- = None
A = Ø125 mm collar (without flow controller)
B = Ø125 mm fixed 30 m^3/h flow controller
C = Ø125 mm adjustable 60 -160 m^3/h flow controller
E = Ø125 mm adapter for motorised fresh air valve

TECHNICAL DESCRIPTION

■ Frame:

The 42BJ ICM LEC features a galvanised steel sheet metal box; the inside is covered with sound and heat insulation (fire protection rating M1)

■ “LEC” fan motor assembly with electronically commutated variable-speed direct-drive motor (commonly called an "EC motor"), controlled by a 0-10 V signal enabling it to operate over a broad range of rotation speeds

■ Water coil

Aluminium fins mechanically bonded by expansion onto a copper tube.

1/2” gas union nut inlet/outlet connections. Air bleed valves as standard. Coil attached to the condensate pan and coil access door forming a drawer which is easily removed for maintenance.

Coils available:

- 2 pipes with changeover or for use with an electric heater
- 4 pipes.

■ PTC electric heater

Positive Temperature Coefficient

The PTC electric heater belongs to a new generation of powerful heater rods which combine two technologies: electric heating and surface temperature limitation (cutting-edge technology based on the use of ceramics).

The actual cooling capacity depends on the air flow and its inlet temperature.

This modern technology guarantees safe, self-regulation of the cooling capacity. Moreover, each coil is equipped with a safety thermostat with automatic reset (contact opens when the temperature rises, triggered at 70 °C and average differential 20 K).

Warning: Before carrying out any work on the electric heater, the mains power supply to the unit must be disconnected.

Enhanced comfort without stratification: Supply air temperature = 35 °C

■ Thermoformed condensate pan

Main condensate pan under the coil and auxiliary pan under the valves forming a packaged assembly to prevent any risks of leaks. As the coil is placed on the fan intake to facilitate spraying, condensate is drained via a check valve, the height of the water between the main pan and the auxiliary pan is sufficient to overcome the negative pressure inside the unit. A siphon does not need to be fitted with this device.

Insulated auxiliary pan.

Drain ext. dia. 16 mm.

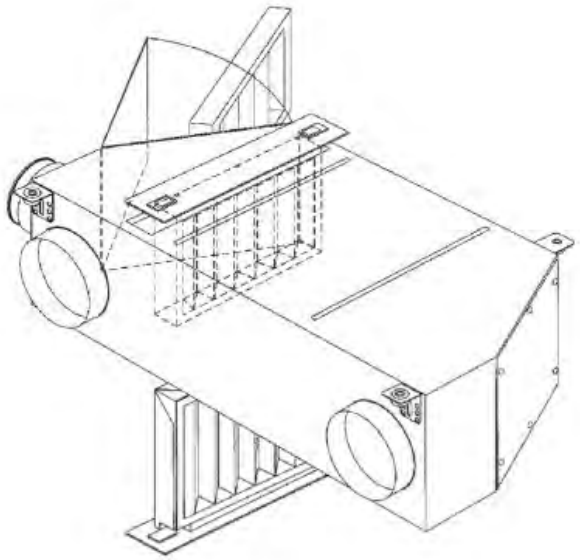
■ Filter and access

The Carrier Individual Comfort Module is equipped with a high-efficiency type F5 or F6 filter.

Fire protection rating for the medium is M1, metal frame.

The filter can be accessed via one of 3 sides of the 42BJ ICM LEC:

- Access from above: for use in a raised floor
- Access from below: for use in a suspended ceiling
- Side access: all uses



TECHNICAL DESCRIPTION

■ Constant fresh air flow controller (optional)

The Individual Comfort Module can be equipped with a constant fresh air flow controller, for controlling the air intake and air change. Depending on the room occupancy, the constant fresh air flow controller may prove essential.

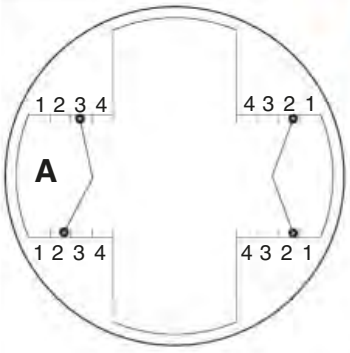
Range of fresh air flow controllers available:

8.3 l/s or 30 m³/h (-10%; + 20%)

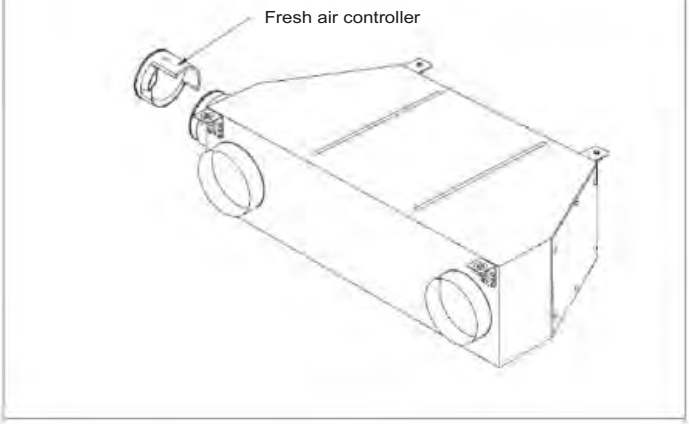
16.6 l/s or 60 m³/h (-10%; + 20%)

The fresh air feed is located before the water coils. The collar retaining the controller is made from ABS, connection diameter:

- 125 mm for 16.6 l/s (60 m³/h controller)
- 74 mm for 8.3 l/s (30 m³/h controller).



	l/s	m³/h	A	B
MR60	17	60	4-4	4-4
MR75	21	75	4-3	4-3
MR85	24	85	3-3	3-2
MR90	25	90	3-2	2-2
MR100	28	100	2-1	2-1
MR105	29	10	2-1	1-1
MR110	31	110	1-1	1-1
MR120	33	120	3-3	-
MR130	36	1 0	2-1	-
MR140	39	140	1-1	-
MR160	44	160	-	-



Important: if the 42BJ ICM LEC is equipped with a return air temperature sensor, the constant fresh air flow must not exceed 50% of the unit supply air flow rate at low speed.

Note: The 16.6 l/s (60 m³/h) fresh air controller can be modified on site by moving or removing two plastic restrictors to increase capacity up to a maximum constant fresh air flow of 44.4 l/s (160 m³/h).

A label affixed to the 42BJ explains how to adjust the setting of the two plastic restrictors.

Note: the 8.3 l/s (30 m³/h) constant fresh air flow controller requires a differential pressure of 50 Pa to 200 Pa to operate. The 16.6 l/s (60 m³/h) constant fresh air flow controller requires a differential pressure of 70 Pa to 200 Pa.

OPTIONS

Valves

■ Valve actuators

A range of actuators is available with two- or four-way valve bodies (three-way with integral bypass) to offer the appropriate solution for any controller type and customer requirement, from on/off to proportional types, with 230 V power supply

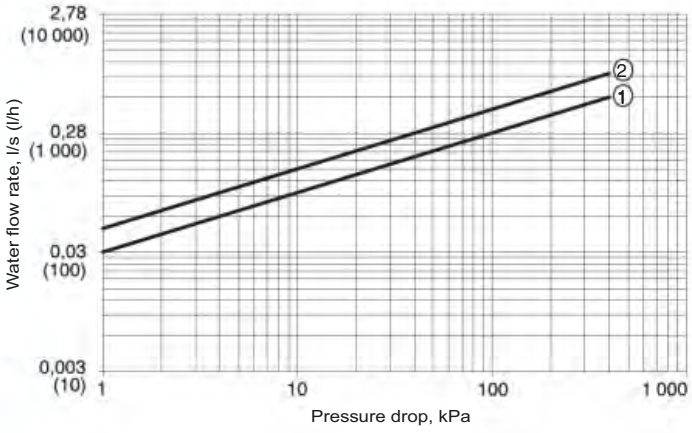
- 230 V ON/OFF actuator
- Floating 3-point 230 V actuator

When combined with LEC motors and WTC or NTC controllers, floating 3-point 230-V actuators are recommended to increase energy savings and enhance comfort.

■ 1/2" two-way valve body
- G1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body.
- DN 15 for 1/2" valve
- Fluid: water and glycol solution (max. 40% glycol)
- Operating range: 2-90 °C
- Rated pressure: 1600 kPa (RP 16 bar)
- Kvs = 1.6

■ Three-way 1/2" valve body (with integral bypass)
- G1/2" male BSP connection for union nuts
- Straight valve body with arrow indicating direction of flow embossed on valve body.
- DN 15 for 1/2" valve
- Fluid: water and glycol solution (max. 40% glycol)
- Operating range: 2-90 °C
- Rated pressure: 1600 kPa (RP 16 bar)
- Kvs = 1

Valve pressure drop



1 Kvs = 1
2 Kvs = 1.6

Flexible connections

- Pipe: EPDM elastomer
- 304L stainless braid
- Connections: brass
- Insulation: cellular elastomer with M1 fire resistance rating, Ø18 mm
- thickness 9 mm, class 3 (in accordance with standard EN 12828).
- Maximum hot operating temperature 90 °C
- water mixture max. 40% ethylene glycol or propylene glycol
- Operating pressure: 1600 kPa (16 bar)
- Minimum curve radius: 106 mm
- 1/2" union nut connections
- Length: approx. 1 m

Transducers and sensors

■ Water temperature sensor

A water temperature sensor can be provided as an option for NTC and WTC controllers

- For 2-pipe coil: The sensor is installed on a hot/cold water pipe (for changeover function).
- For 4-pipe coil: The sensor is installed on a hot water pipe (for cold-draught function that prevents the operation of the unit when the hot water network is off).

■ Air temperature sensors

Two air temperature sensors, factory fitted, are available as an option for NTC and WTC controllers. They measure the air temperature at the inlet and/or at the outlet side.

■ CO_2 sensor

For indoor air quality control, a CO_2 sensor is available as an option for NTC and WTC controllers. The sensor is factory fitted at the inlet side.

OPTIONS

Accessories

There are many accessories available to facilitate installation of the 42BJ ICM LEC. Contact your local representative.

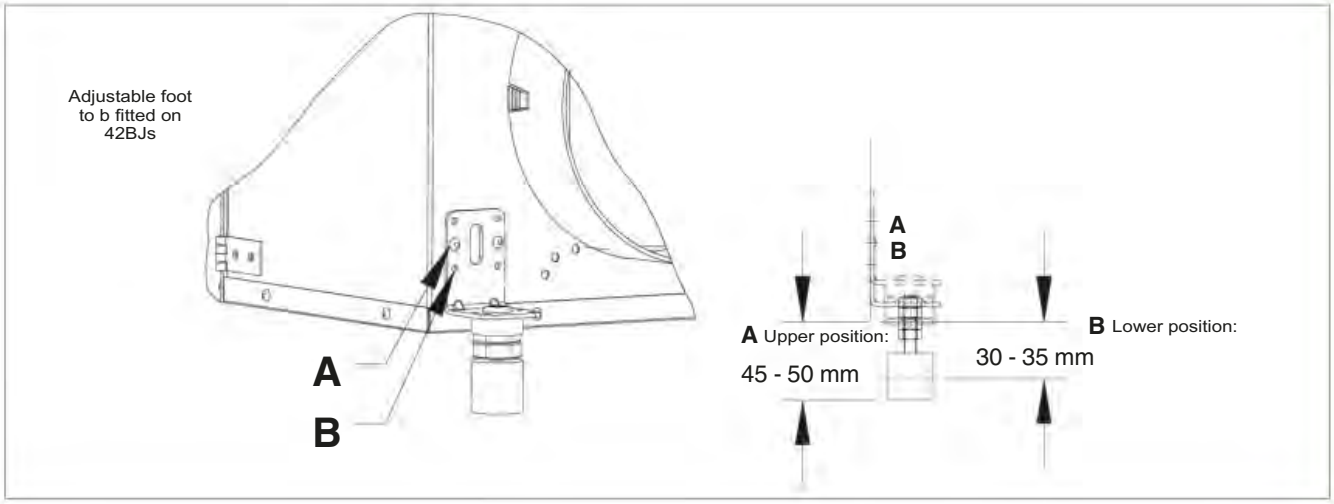
■ Condensate drain pump

A condensate drain pump can be installed on 42BJ ICM LECs either before (ideally) or after the units are installed in suspended ceilings or raised floors.

■ Adjustable feet for installation of the 42BJ ICM LEC in a raised floor: Allow for filter access from above or the side.

The 42BJ ICM LEC can be installed in a raised floor; anti-vibration adjustable feet are sold as accessories and designed to be installed on site. Contact your local representative.

Fitting procedure



CONTROL

The unit can be supplied with a wide range of Carrier controls. These controls offer functions to suit the various application requirements, summarised in the table below.

	Thermostats	NTC	WTC
Communication Protocols			
Carrier Communication Network (CCN) Aquasmart compatible		x	
BACnet MSTP			x
LON			x
Control algorithms			
On-off	x		
Proportional-integral		x	x
Carrier Energy saving algorithm		x	x
Fan control			
3 fixed speeds for AC motors	Type A&B	x	x
Automatic optimum fan speed selection	x	x	x
3 fixed speeds for EC motors	Type C&D	x	x
EC motors Variable speed		x	x
Water Valve management			
Air flow control only (no water valve)	x		
230 V On-off actuators	x	x	x
230 V Modulating actuators (floating 3pts)		x	x
Main functions			
Set-point control	x	x	x
Occupied/unoccupied mode	x	x	x
Frost protection mode	x	x	x
Window/Door switch input	x	x	x
Measurement of water inlet temperature for automatic seasonal changeover (2 pipes)	Type A&C	x	x
Measurement of water inlet temperature to prevent cold-draught (4 pipes and 2 pipes + electric heater)	Type B&D	x	x
Manual changeover	x	x	x
Frost protection mode	x	x	x
Continuous ventilation within dead-band	x	x	x
Periodical ventilation within dead-band	x	x	x
On-site configuration	x	x	x
Unit grouping Master/Slave	x	x	x
Cassette Louvers control		x	x
Supply air temperature monitoring limiting		x	x
Electrical heater loadshed		x	x
Dirty filter alarm		x	x
Alarm reporting		x	x
Indoor Air Quality control (CO_2 sensor)		o	o
Demand-controlled ventilation (DCV) (0-10 V fresh air valve)		o	o
Free cooling mode			o
Presence detection			o
User interfaces			
Automatic or manual fan speed control	x	x	x
Set-point adjustment	x	x	x
Occupancy (eco) button	x	x	o
Digital display		o	o
Remote control (infra-red)		o	o
CO_2 sensor		o	o
Luminosity sensor			o
Motion detection			o
Easy connection RJ45 jack (on wall mounted UI)			x
Light & Blinds management			
Light power modules			o
Blinds power modules			o
Control kit			
On site control kit solution			o

Key
X Feature available as standard
O Optional

NOTE: Please refer to the technical documentation for the aforementioned Carrier controller for details of the applicable specifications and characteristics. Upon special request other controller types can be factory-installed on the units (supplied by Carrier or the customer).

TECHNICAL AND ELECTRICAL CHARACTERISTICS

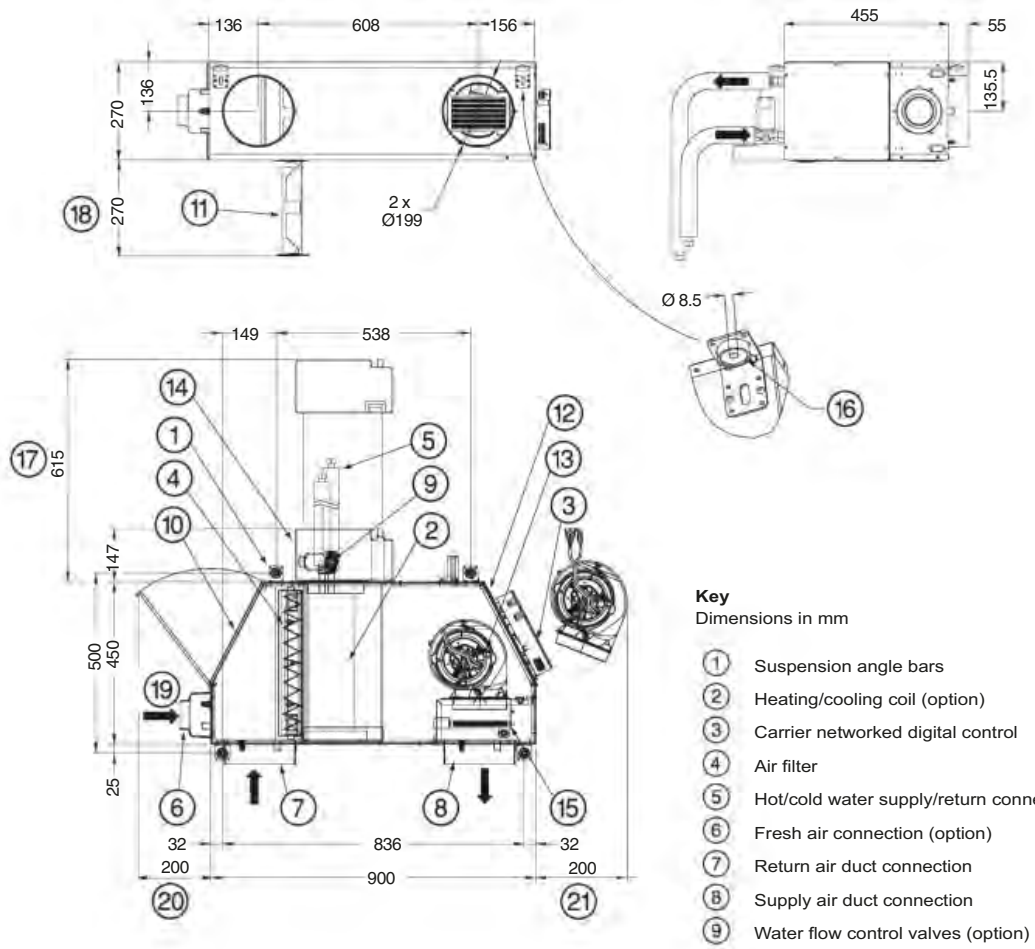
42BJ		1.9			2.9			4.9		
Ventilation speeds (1)		**L**	**M**	**H**	**L**	**M**	**H**	**L**	**M**	**H**
Voltage	V	2	5	10	2	6	10	2	8	10
Air flow	l/s	40	113	189	52	160	223	69	231	244
	m^3/h	144	405	680	187	576	804	250	831	880
Available static pressure	Pa	6	50	141	5	50	97	5	50	56
Cooling mode (2)										
Total cooling capacity	kW	1,06	2,46	3,43	1,37	3,88	5,09	2,09	5,23	5,41
Sensible cooling capacity	kW	0,77	1,88	2,7	0,96	2,84	3,77	1,45	3,81	3,95
Water flow rate	l/h	180	430	620	240	680	910	360	920	960
	l/s	0,05	0,12	0,17	0,07	0,19	0,25	0,10	0,26	0,27
Water pressure drop	kPa	4,3	17,3	31,6	4,4	25,8	42,1	11,9	60,9	65,2
Heating mode, two pipes (3)										
Heating capacity	kW	1,04	2,46	3,55	1,33	3,93	5,27	1,97	5,54	5,79
Water flow rate	l/h	180	430	620	230	680	920	340	960	1010
	l/s	0,05	0,12	0,17	0,06	0,19	0,26	0,09	0,27	0,28
Water pressure drop	kPa	4,1	14,9	27,7	4,3	23	37,9	12,4	70,9	76,6
Water capacity	L	0,9	0,9	0,9	1,2	1,2	1,2	1,5	1,5	1,5
Heating mode, four pipes (4)										
Heating capacity	kW	1,32	2,62	3,48	1,76	3,76	4,52	2,63	5,73	5,92
Water flow rate	l/h	120	230		150	330	400	0	500	520
	l/s	0,03	0,06	0,08	0,04	0,09	0,11	0,06	0,14	0,14
Water pressure drop	kPa	2,4	5,8	9	3,5	10,4	14,1	14,1	53,6	56,7
Water capacity	L	0,2	0,2	0,2	0,29	0,29	0,29	0,45	0,45	0,45
Electric heater		1 ph - 50 Hz - 230 V								
Maximum capacity	kW	0,5	1,9	2,23	0,75	2,12	2,25	1	2,25	2,25
Maximum input current	A	11	11	11	11	11	11	11	11	11
Sound levels										
Lw (global): Global sound power level	dB(A)			67	38		69	42	70	72
Lw (inlet + radiated): Sound power level, return + radiated	dB(A)	5	0	59	35		59	38	60	61
Lw (outlet): Sound power level, supply air	dB(A)	6	7	66	34		69	40	70	72
Lp (global): Sound pressure level (5)	dB(A)	21	41	50	21	46	52	25	53	55
NC value (5)	dB(A)	14		46	18	4	48	18	4	50
NR value (5)	dB(A)	16	37	48	20	44	50	20	50	52
Electrical data, motor		1 ph - 50 Hz - 230 V; low energy consumption EC type								
Power input	W	6	4	1	8		175	7	148	186
F5 or F6 air filter	mm	240 x 400			240 x 550			315 x 550		
Physical data		1/2" gas			1/2" gas			1/2" gas		
Heating and cooling coils connection diameter	in	1/2" gas			1/2" gas			1/2" gas		
Connection collar diameter	mm	200			200			250		
Height (standard)	mm	270			270			345		
Width (standard)	mm	665			815			815		
Length (standard)	mm	900			1100			1100		
Unit weight (standard)	kg	1			4			50		

(1) Fan speed: L = Low, M = Medium, H = High
(2) Conditions: Air inlet temperature 27 °C/47% RH, water inlet temperature 7 °C, water temperature difference 5 K.
(3) Conditions: Air inlet temperature 20 °C/% RH, water inlet temperature 45 °C, water temperature difference 5 K.
(4) Conditions: Air inlet temperature 20 °C/% RH, water inlet temperature 65 °C, water temperature difference 10 K.
(5) Based on hypothetical noise attenuation of the room and the system of -17 dB(A).

DIMENSIONS AND CLEARANCE

42BJ ICM LEC 1.9

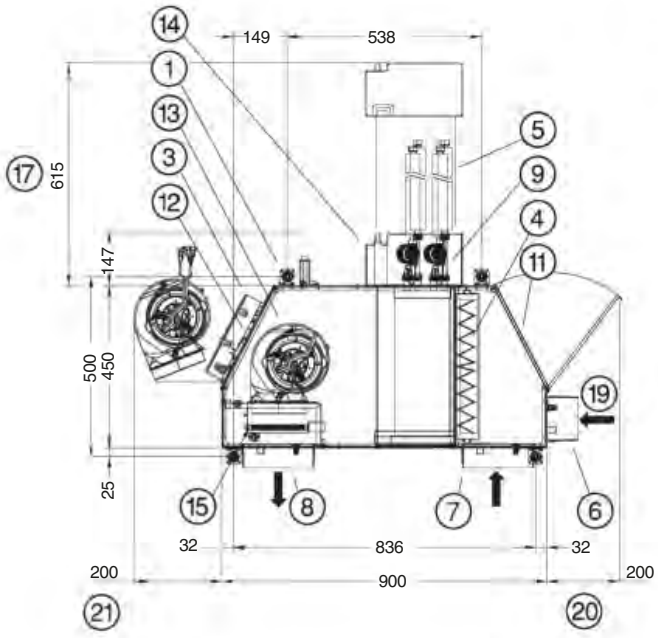
Clearance on left



Key
Dimensions in mm

1. Suspension angle bars
2. Heating/cooling coil (option)
3. Carrier networked digital control
4. Air filter
5. Hot/cold water supply/return connection
6. Fresh air connection (option)
7. Return air duct connection
8. Supply air duct connection
9. Water flow control valves (option)
10. Side filter access door
11. Motor access door
12. LEC fan motor assembly
13. Condensate drain pan
14. Electric heater (option)
15. Electric heater
16. Rubber damper
17. Coil-pan assembly free space
18. Free space for filter access via base (option)
19. Fresh air (option)
20. Side filter access free space
21. Fan free space

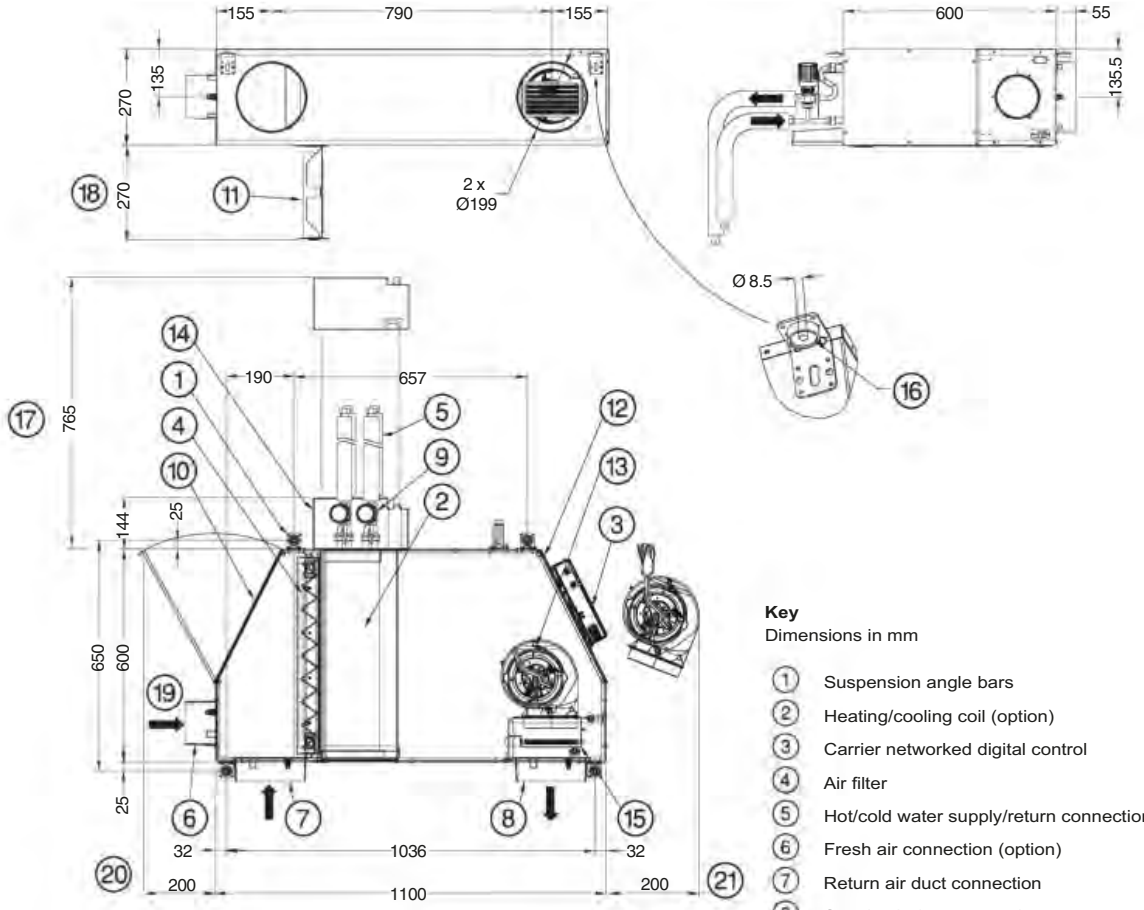
Clearance on right



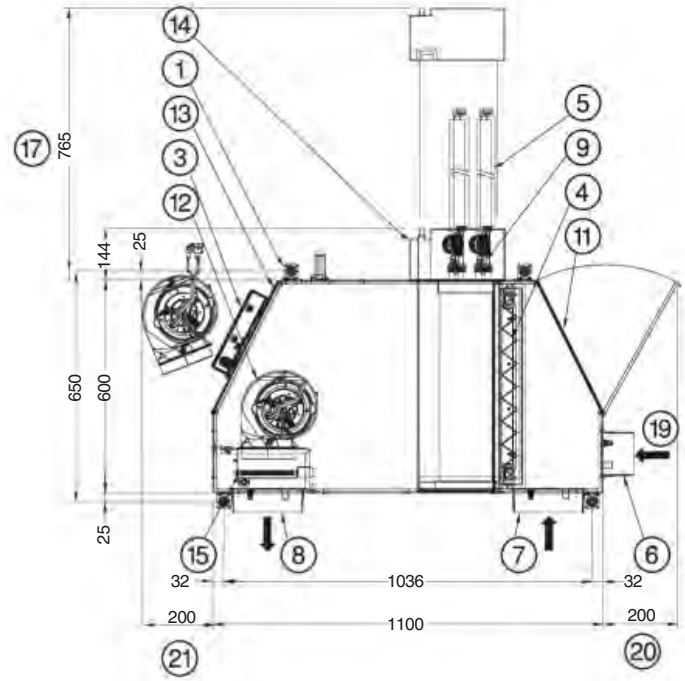
DIMENSIONS AND CLEARANCE

42BJ ICM LEC 2.9

Clearance on left



Clearance on right



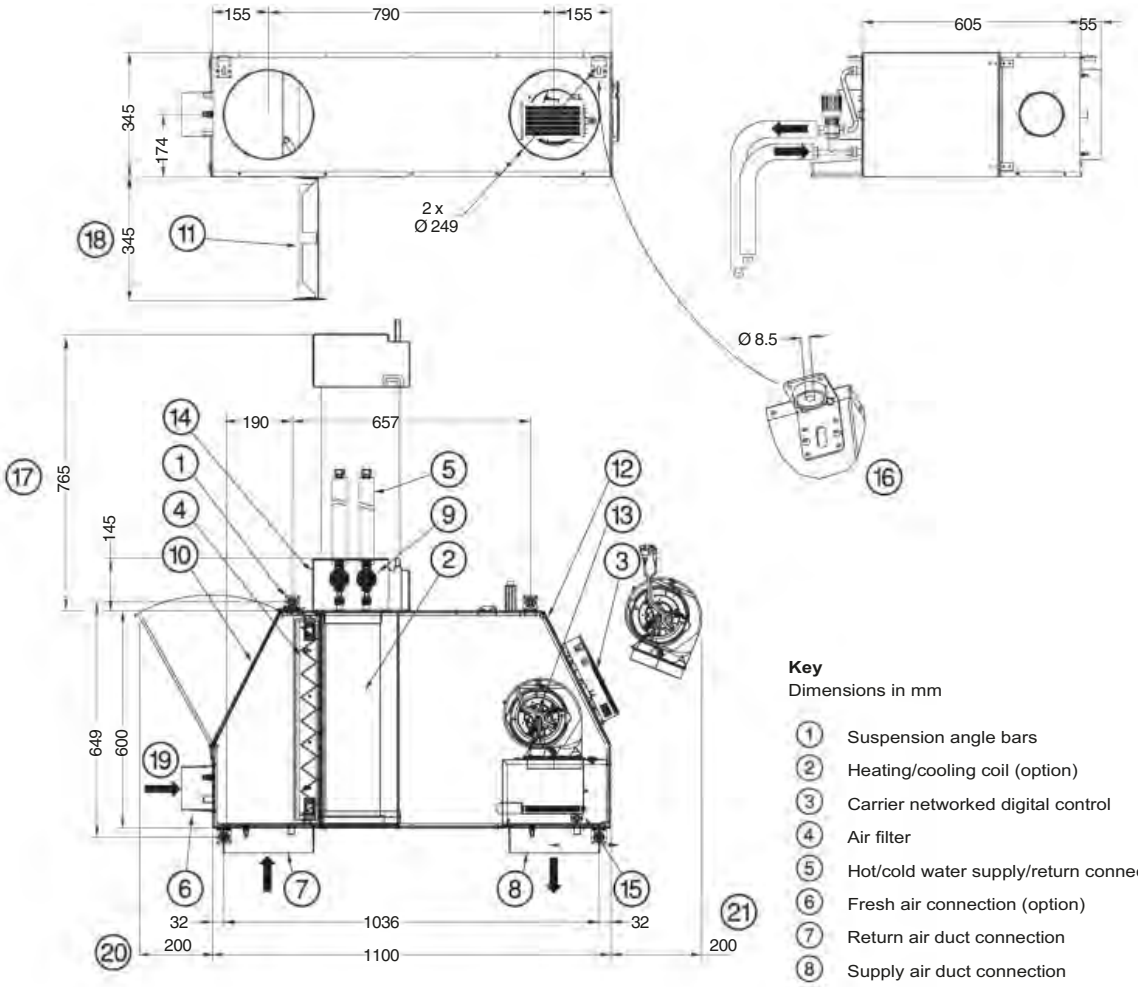
Key
Dimensions in mm

1. Suspension angle bars
2. Heating/cooling coil (option)
3. Carrier networked digital control
4. Air filter
5. Hot/cold water supply/return connection
6. Fresh air connection (option)
7. Return air duct connection
8. Supply air duct connection
9. Water flow control valves (option)
10. Side filter access door
11. Motor access door
12. LEC fan motor assembly
13. Condensate drain pan
14. Electric heater (option)
15. Electric heater
16. Rubber damper
17. Coil-pan assembly free space
18. Free space for filter access via base (option)
19. Fresh air (option)
20. Side filter access free space
21. Fan free space

DIMENSIONS AND CLEARANCE

42BJ ICM LEC 4.9

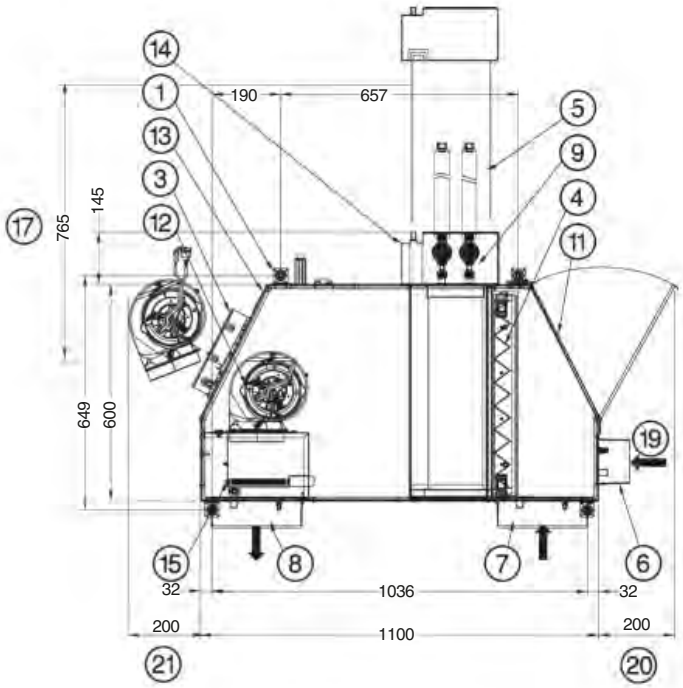
Clearance on left

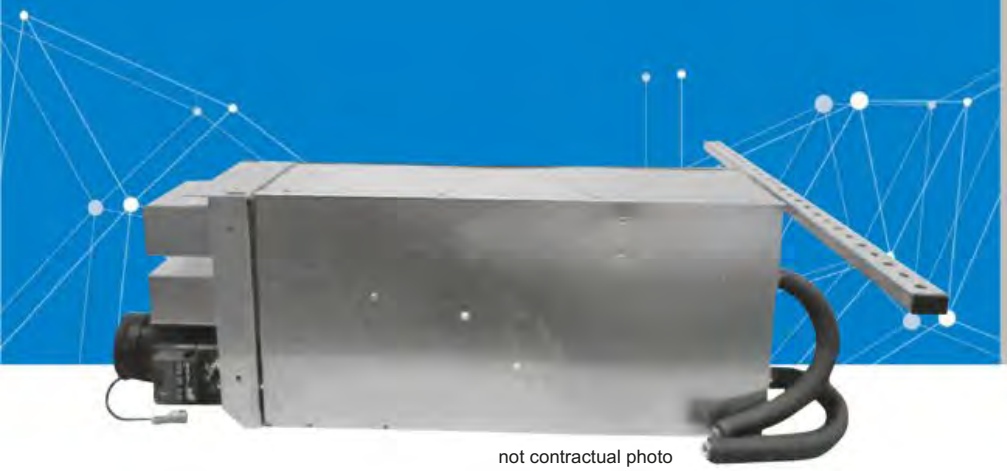


Key
Dimensions in mm

1. Suspension angle bars
2. Heating/cooling coil (option)
3. Carrier networked digital control
4. Air filter
5. Hot/cold water supply/return connection
6. Fresh air connection (option)
7. Return air duct connection
8. Supply air duct connection
9. Water flow control valves (option)
10. Side filter access door
11. Motor access door
12. LEC fan motor assembly
13. Condensate drain pan
14. Electric heater (option)
15. Electric heater
16. Rubber damper
17. Coil-pan assembly free space
18. Free space for filter access via base (option)
19. Fresh air (option)
20. Side filter access free space
21. Fan free space

Clearance on right





not contractual photo

42GM

The 42GM Individual Air Treatment Module (ITM) is something more than a simple air conditioner which enables room air temperature to be controlled. It is a total, integrated comfort system in the building.

The Carrier 42GM is a compact central station air handler to supply conditioned air at a rate of 125 l/s to rooms with floor areas of approximately 25 m^2. The main components of the unit are an air filter, a fresh air supply, equipped with an air flow controller (option), a chilled water cooling coil, a hot water heating coil or an electric resistance heater, a centrifugal fan. The unit is controlled by a Carrier numeric controller.

not contractual photo

PHYSICAL DATA

42GM		Size 19	
		2 pipes or 2 pipes +electrical heater	4 pipes
Variable Speed	Volt	10	10
Air Flow Rate	l/s	93	93
	m³/h	335	335
External Static Pressure	Pa	290	290
Cooling Mode **			
Total cooling capacity	kW	2,09	2,09
Sensible cooling capacity	kW	1,57	1,57
Water flow rate	l/h	380	380
	l/s		
Water pressure drop	kPa	22,2	22,2
Two-pipe heating Mode ***			
Heating capacity	kW	2,47	
Water flow rate	l/h	430	
	l/s		
Water pressure drop	kPa	17,3	
Four-pipe heating Mode ****			
Heating capacity	kW		1,91
Water flow rate	l/h		170
	l/s		
Water pressure drop	kPa		4,30
Electrical heater (PTC)		1 ph - 50 Hz - 230 V	
Low Capcity	W	800	
Medium capacity	W	1440	
High capacity	W	1735	
Maximum current drawn	A	11	
Sounds levels			
Lw (global): Sound power level	dB(A)	69	69
Lw (inlet + radiated): Sound power level	dB(A)	60	60
Lw (outlet): Sound power level	dB(A)	68	68
Lp (global):Sound pressure level ‡	dB(A)	52	52
NC level ‡	dB(A)	45	45
NR level ‡	dB(A)	47	47
Electrical data, motor		1 ph - 50 Hz - 230 V	
Power input	W	115	115
Air filter F5 or F6	mm	240x400	
Physical data			
Connection diameter, chilled and hot-water coil	in	1/2» gaz	
Length (standard)	mm	1202	
Height (standard)	mm	412	
Depth (standard)	mm	300	
Unit weight (standard)	kg	30	

Based on EUROVENT rating standards

** Cooling mode : Entering air temperature 27°C/47% wb, entering/leaving water temperature : 7°C/12°C

*** Heating mode (2 pipes) : Entering air temperature 20°C, entering/leaving water temperature : 45°C/40°C

**** Heating mode (4 pipes) : Entering air temperature 20°C, entering/leaving water temperature : 65°C/55°C

‡ Based on a hypothetical sound attenuation for the room and the system of - 17 dB(A)

OPTIONS/ACCESSORIES

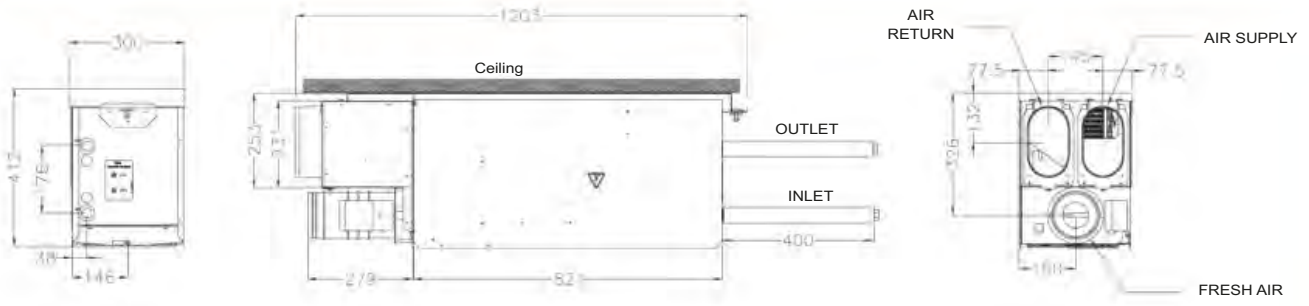
■ Customised product on request

35BD linear diffuser (supply and return air)

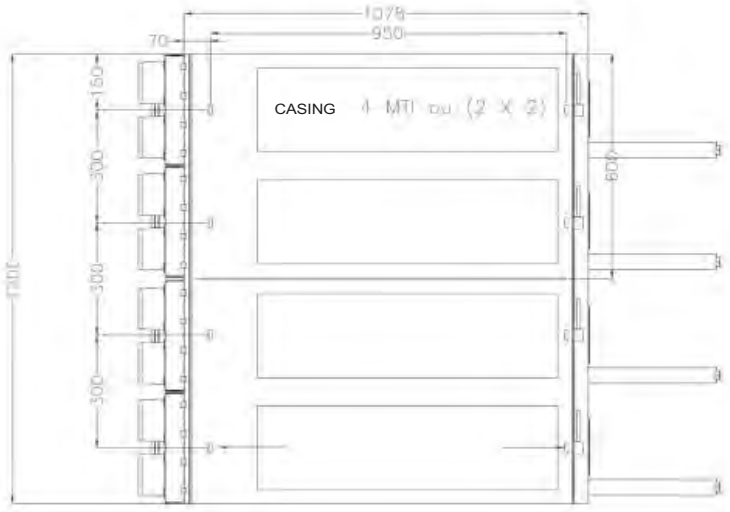
FEATURES AND ADVANTAGES

- One size with two-pipe plus electric heater or four-pipe coils, with an air flow of 93 l/s, a cooling capacity of 2.1 kW and a heating capacity of 2.5 kW in two-pipe coil and 1.9 kW in four-pipe coils.
- Decentralised compact ducted chilled-water fan coil system, designed for installation in plant rooms. This allows centralised service and maintenance.
- Reliable and efficient heating and cooling for office blocks and institutional buildings.
- High efficiency EU6 filter.
- Extremely low sound level.
- The LEC (low energy consumption) fan motor assembly is available as standard. This direct-drive motor is electronically commutated (EC motor), controlled by a 0–10 V signal and allows precise, simple and quiet unit operation in a wide range of rotational speeds in variation from the original speed.
- High-pressure centrifugal fans, compatible with air distribution systems up to 300 Pa.
- Compatible with the 35BD air diffuser range.
- Safe factory-installed electric heater for single or two-stage hot water heating.
- Available with demand control ventilation (DCV) and CO2 sensor.
- Available with control fitted in factory : NTC (CCN protocol) or WTC LON or BacNet
- Can be equipped with a UV-PCO IAQ module.
- Low hydraulic pressure drop with a valve mounted, compatible with all chiller pump kits.
- Quick installation with factory-installed options (controls, valves).

DIMENSIONS/CLEARANCES

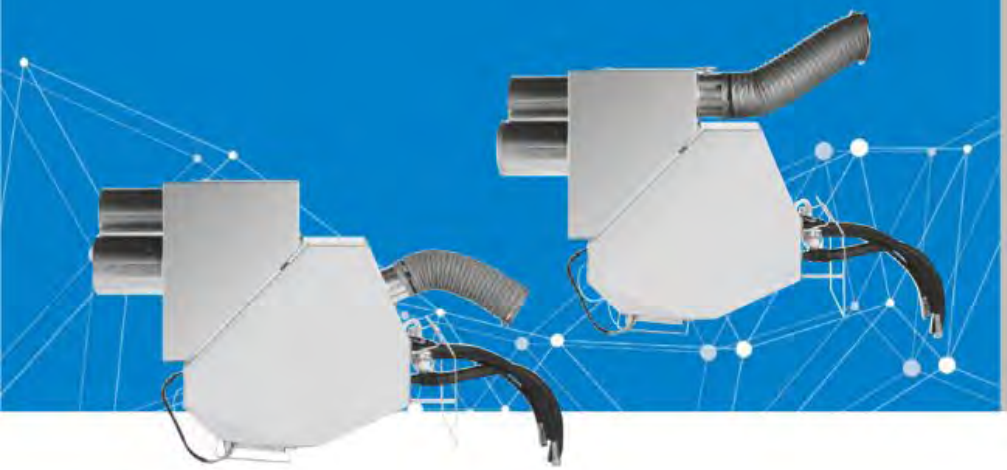


with motorized fresh air damper



Dimensions are given in mm.

AIR TREATMENT MODULES



42GR

Two sizes with two-pipe plus electric heater or four-pipe coils, with an air flow range from 103 to 109 l/s, a cooling capacity of 3.1 kW and a heating capacity range from 2.9 to 3.5 kW.

Decentralised compact ducted chilled-water fan coil system, designed for installation in plant rooms. This allows centralised service and maintenance.

Reliable and efficient heating and cooling for office blocks and institutional buildings.

The LEC (low energy consumption) fan motor assembly is available as standard. This direct-drive motor is electronically commutated (EC motor), controlled by a 0–10 V signal and allows precise, simple and quiet unit operation in a wide range of rotational speeds in variation from the original speed.

PHYSICAL DATA

42GR		1.9			2.9		
Fan speed *		**L**	**M**	**H**	**L**	**M**	**H**
Variable Speed	V	4	6	10	4	6	10
Air Flow Rate	l/s	44	70	100	52	88	123
	m3/h	160	250	360	187	316	441
External Static Pressure	Pa	64	151	310	57	164	320
Cooling Mode **							
Total cooling capacity	kW	1,32	1,86	2,36	1,67	2,65	3,44
Sensible cooling capacity	kW	0,92	1,33	1,72	1,13	1,81	2,37
Water flow rate	l/h	230	330	430,0	290	460	610
	l/s						
Water pressure drop	kPa	7	12,9	19,9	4	8,5	13,4
Two-pipe heating Mode ***							
Heating capacity	kW	1,32	1,95	2,65	1,49	2,39	3,16
Water flow rate	l/h	230	340	460	260	420	550
	l/s						
Water pressure drop	kPa	6,6	12,2	20,3	3,7	7,2	11,1
Water content	l		0,83			1,5	
Four-pipe heating Mode ****							
Heating capacity	kW	1,44	1,92	2,39	1,86	2,76	3,45
Water flow rate	l/h	130	170	210	160	240	300
	l/s						
Water pressure drop	kPa	2,5	3,6	4,7	4,4	7,8	11,2
Water content	l		0,17				
Electrical heater		1 ph - 50 Hz - 230 V					
Maximum capacity	kW		1,7			1,8	
Maximum current drawn	A		11			11	
Sounds levels							
Lw (global): Sound power level	dB(A)	45	57	65	51	60	66
Lw (inlet + radiated): Sound power level	dB(A)	41	50	59	49	58	64
Lw (outlet): Sound power level	dB(A)	43	56	64	46	55	61
Lp (global):Sound pressure level ‡	dB(A)	28	40	48	34	43	49
NC level ‡	dB(A)	24	36	44	29	36	43
NR level ‡	dB(A)	26	38	46	31	38	45
Electrical data, motor		1 ph - 50 Hz - 230 V ; type EC low energy consumption					
Power input	W	15	42	113	16	56	137
Air filter F5 or F6	mm	225 x 350			395 x 350		
Physical data							
Connection diameter, chilled and hot-water coil	in	1/2" gaz			1/2" gaz		
Length (standard)	mm	960			960		
Height (standard)	mm	962			962		
Depth (standard)	mm	250			420		
Unit weight (standard)	kg	35			50		

* Fan speed: L= Low, M: Medium, H=High
** Cooling mode: Entering air temperature 27°C/47% rh, entering/leaving water temperature 7°C/12°C
*** Heating mode (2 pipe): Entering air temperature 20°C, entering/leaving water temperature 45°C/40°C.
**** Heating mode (4 pipe)s: Entering air temperature 20°C, entering/leaving water temperature 65°C/55°C
‡ Based on an hypothetical attenuation for the room and the air distribution system of -17dB(A)

COOLING CAPACITIES, KW

42GR19

Water temperatures (°C) Inlet - Outlet		Relative Humidity 50 %														
		Air flow rate l/s (m³/h)														
		28 (100)			56 (200)			83 (300)			97 (350)			111 (400)		
		Dry bulb Air Temperature inlet (°C)														
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
6 - 12	TC	0.94	0.78	0.64	1.70	1.40	1.10	2.32	1.91	1.51	2.60	2.13	1.69	2.85	2.34	1.86
	SHC	0.61	0.55	0.49	1.14	1.01	0.89	1.60	1.42	1.26	1.81	1.61	1.43	2.01	1.79	1.59
	TSA	8.7	8.7	8.5	9.9	9.9	9.8	11.0	10.8	10.5	11.4	11.2	10.8	11.9	11.6	11.2
	DE	134	112	91	243	200	157	332	273	216	371	305	242	407	335	266
7 - 12	TC	0.91	0.75	0.60	1.66	1.36	1.07	2.27	1.87	1.47	2.54	2.09	1.65	2.78	2.29	1.82
	SHC	0.60	0.53	0.47	1.12	1.00	0.88	1.58	1.41	1.24	1.79	1.59	1.41	1.98	1.77	1.57
	TSA	9.1	9.1	9.1	10.2	10.1	10.0	11.2	11.0	10.7	11.7	11.4	11.0	12.1	11.8	11.3
	DE	156	129	102	284	234	183	390	322	252	436	360	283	478	394	312
8 - 13	TC	0.83	0.67	0.53	1.51	1.22	0.94	2.08	1.67	1.30	2.32	1.88	1.46	2.54	2.07	1.62
	SHC	0.56	0.50	0.44	1.06	0.93	0.82	1.50	1.32	1.16	1.69	1.50	1.33	1.88	1.67	1.48
	TSA	10.1	10.2	9.9	11.1	11.1	10.8	12.0	11.8	11.4	12.5	12.2	11.7	12.9	12.5	12.0
	DE	143.3	116	92	260	209	161	357	288	223	398	322	252	436	356	279
10 - 15	TC	0.67	0.54	0.42	1.21	0.95	0.73	1.67	1.31	1.03	1.87	1.48	1.17	2.06	1.64	1.30
	SHC	0.4	0.44	0.3	.93	.82	.72	1.32	1.16	1.02	1.51	1.32	1.16	1.68	1.48	1.29
	TSA	12.2	12.0	11.4	13.0	12.8	12.3	13.7	13.4	12.8	14.0	13.6	13.1	14.3	13.9	13.3
	DE	115	92	71	208	163	126	287	226	178	322	254	201	354	282	224

42GR29

Water temperatures (°C) Inlet - Outlet		Relative Humidity 50 %																	
		Air flow rate l/s (m³/h)																	
		28 (100)			56 (200)			83 (300)			111 (400)			139 (500)			167 (600)		
		Dry bulb Air Temperature inlet (°C)																	
		27	25	23	27	25	23	27	25	23	27	25	23	27	25	23	27	25	23
- 12	TC	1.0	.88	.72	1.9	1. 4	1.	2.81	2.34	1.86	3.	2.	2.3	4.28	.57	2.84	4.91	4.1	.28
	SHC	0.65	0.59	0.53	1.26	1.12	0.99	1.83	1.63	1.44	2.36	2.11	1.86	2.86	2.56	2.26	3.32	2.98	2.65
	TSA	7.1	7.2	7.3	7.9	8.1	8.2	8.5	8.7	8.7	9.1	9.1	9.1	9.7	9.6	9.5	10.2	10.1	9.8
	DE	147	126	103	279	234	186	401	335	266	513	427	339	612	510	406	702	587	469
7 - 12	TC	0.98	0.83	0.67	1.88	1.57	1.24	2.71	2.25	1.78	3.46	2.88	2.27	4.14	3.44	2.72	4.76	3.96	3.15
	SHC	0.63	0.57	0.50	1.22	1.09	0.96	1.78	1.59	1.40	2.31	2.06	1.82	2.80	2.50	2.21	3.26	2.91	2.59
	TSA	7.9	8.0	8.0	8.4	8.6	8.7	9.0	9.1	9.1	9.5	9.5	9.4	10.0	10.0	9.8	10.6	10.4	10.1
	DE	168	142	115	323	269	213	466	387	305	595	494	390	711	591	468	818	679	541
8 - 13	TC	0.90	0.76	0.60	1.73	1.41	1.09	2.48	2.03	1.57	3.17	2.59	2.00	3.78	3.11	2.41	4.34	3.57	2.78
	SHC	0.60	0.53	0.47	1.15	1.02	0.89	1.68	1.49	1.30	2.18	1.93	1.69	2.64	2.35	2.07	3.08	2.74	2.42
	TSA	9.0	9.0	9.0	9.5	9.7	9.7	10.0	10.1	10.0	10.5	10.5	10.3	11.0	10.9	10.7	11.5	11.2	11.0
	DE	155.4	130	103	297	243	188	427	349	269	544	445	344	650	534	413	747	613	477
10 - 15	TC	0.75	0.60	0.46	1.41	1.11	0.84	2.02	1.59	1.20	2.57	2.02	1.54	3.08	2.43	1.87	3.54	2.80	2.18
	SHC	0.5	.46	.41	1.01	0. 9	0.7	1.48	1.30	1.14	1.9	1.	1.4	2.34	2.06	1.81	2.	2.41	2.13
	TSA	11.0	11.0	10.8	11.6	11.7	11.4	12.0	12.0	11.7	12.4	12.3	11.9	12.8	12.6	12.2	13.2	12.9	12.4
	DE	129	104	79	242	190	144	347	273	206	443	348	266	530	418	322	609	482	375

Legend:
TC - Total cooling capacity, kW
SHC - Sensible heat capacity, kW
TSA - Air discharge temperature, °C
WF - Water flow, l/s

OPTIONS/ACCESSORIES

- Custom-made product on request

FEATURES AND ADVANTAGES

- Two sizes with two-pipe plus electric heater or four-pipe coils, with an air flow range from 103 to 109 l/s, a cooling capacity of 3.1 kW and a heating capacity range from 2.9 to 3.5 kW.
- Decentralised compact ducted chilled-water fan coil system, designed for installation in plant rooms. This allows centralised service and maintenance.
- Reliable and efficient heating and cooling for office blocks and institutional buildings.
- High efficiency EU6 filter.
- Extremely low sound level.
- The LEC (low energy consumption) fan motor assembly is available as standard. This direct-drive motor is electronically commutated (EC motor), controlled by a 0–10 V signal and allows precise, simple and quiet unit operation in a wide range of rotational speeds in variation from the original speed.
- High-pressure centrifugal fans, compatible with air diffusion systems up to 300 Pa.
- Compatible with the 35BD air diffuser range.
- Safe factory-installed electric heater for single or two-stage hot water heating.
- Available with demand control ventilation (DCV) and CO_2 sensor.
- Can be equipped with a UV-PCO IAQ module.
- Low hydraulic pressure drop with a valve mounted, compatible with all chiller pump kits.
- Quick installation with factory-installed options (controls, valves).
- Available with NTC controller (Aquasmart Evolution) or WTC controller (LON or BACNET)

35BD linear diffuser (supply and return air)

ELECTRICAL DATA

42GR19

Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m³/h)	Qv (l/s)	P (Pa)
10V	0.90	0.54	112	492	137	2
	0.90	0.54	112	447	124	106
	0.91	0.53	112	397	110	232
	0.90	0.53	111	351	97	327
	0. 1	0.	11	30	4	418
	0.90	0.54	112	254	71	497
	0.80	0.53	98	197	55	560
9V	0.90	0.54	112	489	136	3
	0.90	0.54	111	448	125	98
	0.90	0.54	112	399	111	224
	0.92	0.53	112	349	97	330
	0.85	0.53	103	301	84	387
	0.78	0.52	93	249	69	413
	0.70	0.51	82	201	56	449
	0.61	0.50	71	154	43	485
8V	0.92	0.53	112	489	136	2
	0.92	0.53	111	449	125	93
	0. 4	0.	1 1	39	110	184
	0.77	0.51	91	349	97	239

Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m³/h)	Qv (l/s)	P (Pa)
8V	0.70	0.51	81	301	83	285
	0.	0.	72	24	69	319
	0.57	0.49	63	198	55	345
	0.50	0.48	55	152	42	374
7V	0.75	0.51	88	450	125	1
	0.68	0.50	80	399	111	78
	0.62	0.49	70	350	97	141
	0.56	0.49	62	301	84	188
	0.49	0.48	54	249	69	227
	0.43	0.47	48	198	55	251
	0.	0.4	41	1 4	43	276
	0.34	0.46	36	110	31	298
6V	0.48	0.55	60	390	108	6
	0.44	0.54	55	350	97	59
	0. 9	0. 4	48		83	112
	0.34	0.54	42	249	69	157
	0.30	0.53	36	202	56	181
	0.25	0.52	30	151	42	194
	0.22	0.52	26	101	28	221
5V	0.30	0.53	37	324	90	2
	0.29	0.52	35	302	84	28
	0.25	0.51	29	249	69	74

legend:
V - Fan motor control voltage supply

ELECTRICAL DATA

42GR19

Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m³/h)	Qv (l/s)	P (Pa)
5V	0.22	0.50	25	201	56	103
	0.19	0.48	21	142	39	123
	0.17	0.45	18	102	28	143
4V	0.18	0.51	21	256	71	3
	0.15	0.50	17	199	55	46
	0.13	0.49	15	149	41	72
	0.11	0.48	13	104	29	82
	0.10	0.48	11	66	18	98

Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m³/h)	Qv (l/s)	P (Pa)
3V	0.11	0.45	11	184	51	0
	0.10	0.42	10	151	42	20
3V	0.09	0.41	8	106	29	38
	0.07	0.40	7	48	13	53
2V	0.06	0.39	5	106	29	2
	0.06	0.39	5	83	23	10
	0.05	0.38	4	33	9	22

legend:
V - Fan motor control voltage supply

42GR29

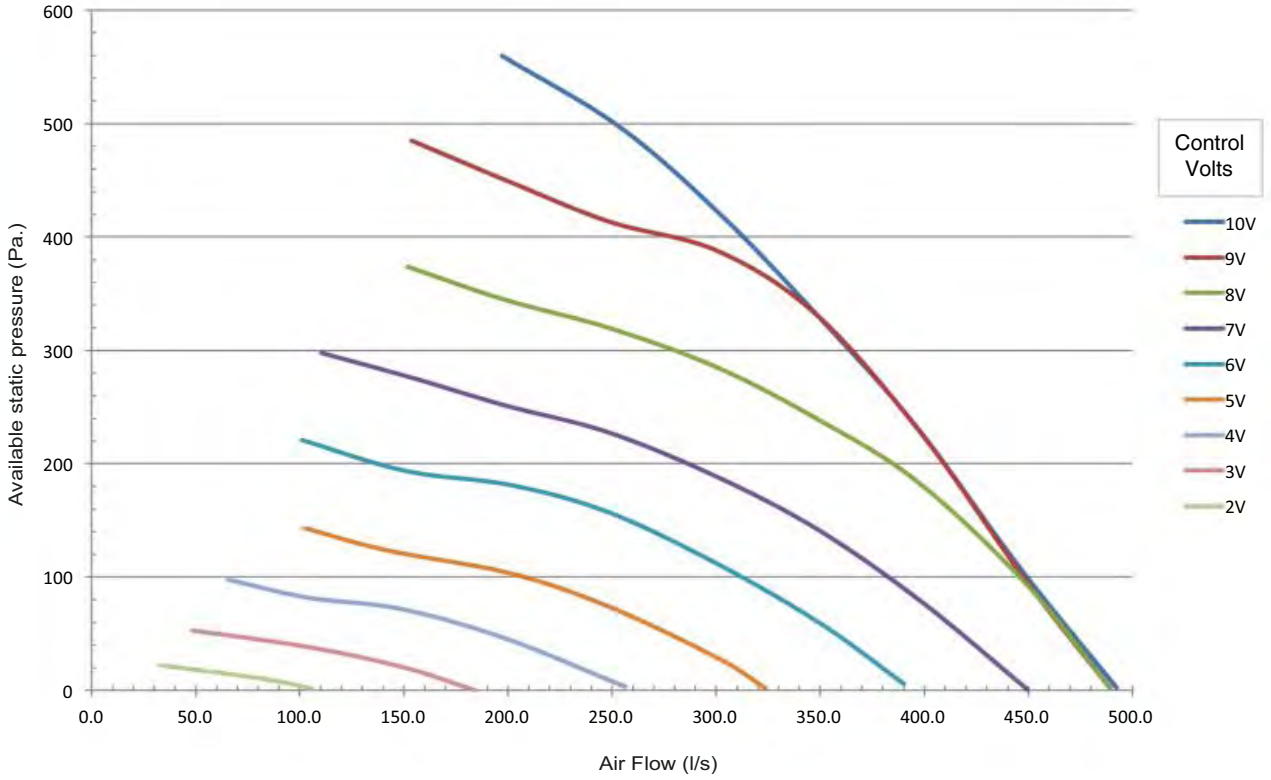
Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m3/h)	Qv (l/s)	P (Pa)
10V	1.44	0.55	179	806	224	2
	1.39	0.55	172	763	212	52
	1.37	0.53	165	728	202	94
	1.34	0.54	162	695	193	126
	1.31	0.52	159	590	164	224
	1.29	0.51	150	527	147	271
	1.21	0.53	146	497	138	290
	1.15	0.54	141	459	128	305
	1.02	0.54	128	374	104	352
	0.96	0.52	113	320	89	369
	0.78	0.52	94	183	51	406
9V	1.24	0.51	150	754	209	4
	1.24	0.52	148	716	199	47
	1.18	0.55	147	676	188	92
	1.07	0.53	140	621	173	151
	1.17	0.56	136	562	156	200
	1.05	0.54	127	511	142	239
	1.02	0.55	123	436	121	278
	0.86	0.54	108	373	104	307
	0.74	0.52	89	260	72	335
	0.68	0.52	82	186	52	350
8V	0.81	0.53	101	658	183	0
	0.81	0.53	101	605	168	62
	0.85	0.52	101	557	155	108
	0.86	0.54	105	506	140	153
	0.82	0.56	99	454	126	184
	0.73	0.54	90	404	112	209
	0.67	0.50	81	350	97	236
	0.60	0.52	69	302	84	249
	0.56	0.49	64	253	70	257
	0.48	0.56	56	158	44	273
7V	0.57	0.52	69	563	156	0
	0.56	0.55	69	517	144	48
	0.55	0.52	67	478	133	71
	0.57	0.49	71	431	120	115

Control (Volts)	I (A)	Cos	Puis. (W)	Qv (m3/h)	Qv (l/s)	P (Pa)
7V	0.52	0.55	63	366	102	145
	0.45	0.53	51	301	84	168
	0.41	0.52	47	252	70	180
	0.39	0.51	45	201	56	188
	0.35	0.49	40	160	45	193
	0.33	0.46	36	124	35	195
6V	0.36	0.49	39	455	126	0
	0.35	0.48	39	395	110	45
	0.35	0.53	40	354	98	72
	0.31	0.53	33	298	83	91
	0.29	0.49	32	254	71	104
	0.26	0.73	28	198	55	113
	0.23	1.00	25	151	42	120
	0.21	1.00	23	119	33	123
5V	0.22	0.91	23	352	98	0
	0.21	1.00	21	300	83	25
	0.18	1.00	19	252	70	42
	0.17	1.00	17	201	56	54
	0.15	1.00	14	142	40	65
	0.14	1.00	12	95	26	69
	0.13	1.00	12	67	19	72
4V	0.16	1.00	15	290	80	1
	0.14	1.00	15	249	69	20
	0.14	1.00	14	205	57	32
	0.13	1.00	12	150	42	43
	0.12	1.00	10	110	31	49
	0.13	1.00	10	82	23	52
3V	0.11	1.00	8	200	55	1
	0.10	1.00	8	184	51	4
	0.09	1.00	7	140	39	16
	0.10	1.00	7	101	28	21
	0.09	1.00	7	86	24	22
2V	0.07	1.00	4	106	29	1
	0.06	1.00	2	74	21	5
	0.07	1.00	4	45	12	8

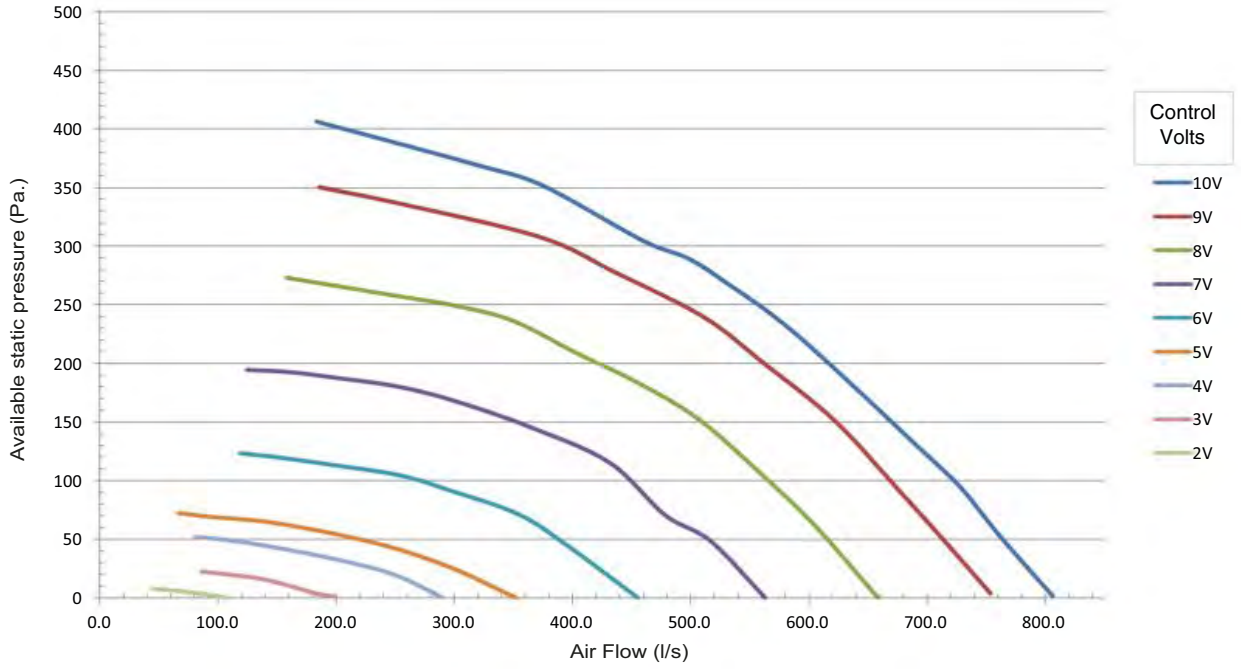
legend:
V - Fan motor control voltage supply

AIR FLOW/AVAILABLE STATIC PRESSURE DATA

42GR19



42GR29



legend:
V - Fan motor control voltage supply

SOUND POWER LEVEL

42GR19

Volts	Type	Octave band frequency (Hz)						
		125	250	500	1K	2K	4K	dB(A)
10V	SUP	49	51	47	60	60	54	64
	RET	39	43	41	46	49	39	52
	RAD	50	48	51	55	53	46	58
	SUP	48	51	46	59	58	52	62
9V	RET	39	42	40	47	46	38	51
	RAD	47	47	50	54	51	45	57
	SUP	47	50	45	58	56	51	61
8V	RET	38	42	39	48	44	37	50
	RAD	48	47	49	53	50	44	56
	SUP	44	47	43	56	51	47	58
7V	RET	35	38	36	43	39	32	45
	RAD	46	43	47	50	45	40	53
	SUP	41	43	40	54	46	42	56
6V	RET	31	34	33	38	34	28	41
	RAD	44	40	44	47	41	35	49
	SUP	36	39	36	48	40	38	49
5V	RET	26	29	30	34	27	24	36
	RAD	39	36	41	42	36	33	45
	SUP	32	34	32	41	34	32	43
4V	RET	22	23	26	31	21	20	32
	RAD	34	32	37	38	31	29	41
	SUP	28	30	28	35	28	27	37
3V	RET	17	20	23	27	17	16	29
	RAD	30	28	33	34	26	24	37
	SUP	25	28	26	32	25	23	34
2V	RET	15	18	20	25	15	15	27
	RAD	27	25	30	31	22	20	33

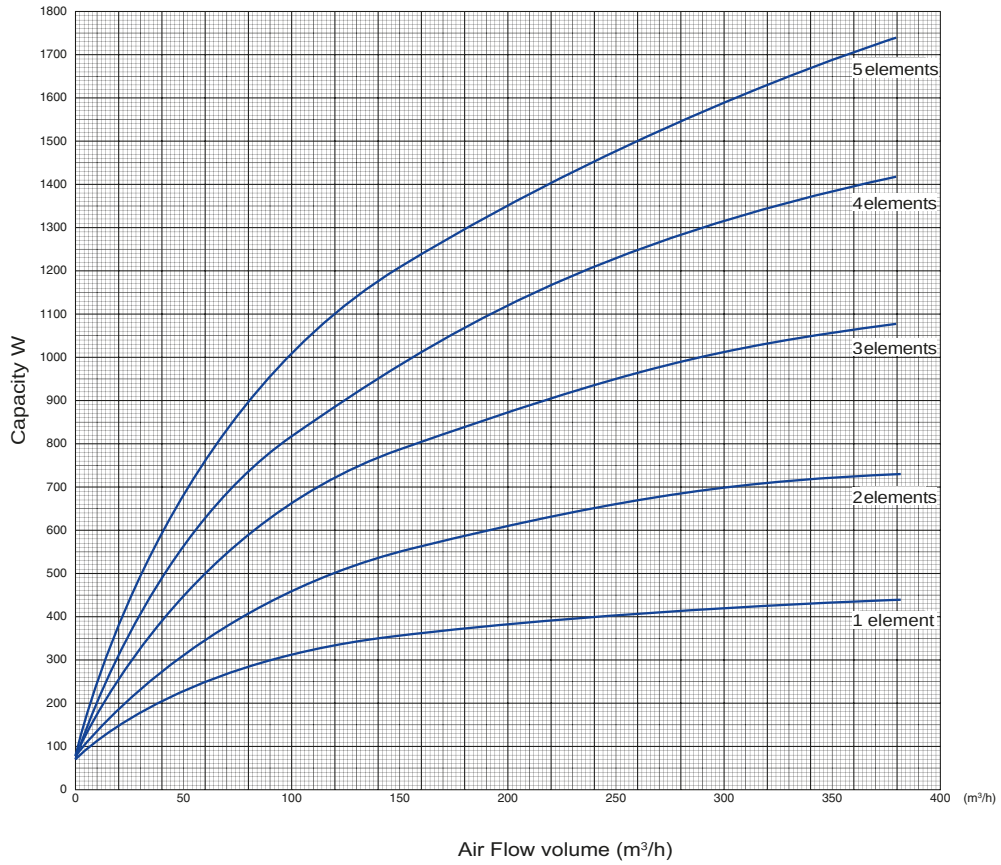
42GR29

Volts	Type	Octave band frequency (Hz)						
		125	250	500	1K	2K	4K	dB(A)
10V	SUP	66	64	60	50	46	52	61
	RET	66	54	53	48	50	45	57
	RAD	61	56	56	58	58	51	63
	SUP	65	62	58	48	45	50	60
9V	RET	65	52	51	47	48	43	55
	RAD	60	55	54	57	56	49	62
	SUP	64	60	57	47	43	48	58
8V	RET	63	50	49	45	46	41	53
	RAD	59	54	53	56	54	46	60
	SUP	61	57	53	44	38	43	55
7V	RET	61	48	47	44	43	38	51
	RAD	56	50	50	54	51	42	57
	SUP	58	53	49	42	34	38	51
6V	RET	59	45	45	42	39	34	48
	RAD	54	47	48	52	47	37	54
	SUP	54	48	44	38	26	29	46
5V	RET	54	39	39	36	30	-	42
	RAD	49	41	42	47	39	-	49
	SUP	49	43	38	34	18	20	40
4V	RET	49	34	32	30	21	-	36
	RAD	45	36	36	42	31	-	43
	SUP	41	36	33	28	16	-	34
3V	RET	43	31	30	28	18	-	30
	RAD	36	30	31	34	27	-	37
	SUP	34	29	27	22	14	-	28
2V	RET	38	29	28	26	15	-	23
	RAD	28	24	25	26	23	-	30

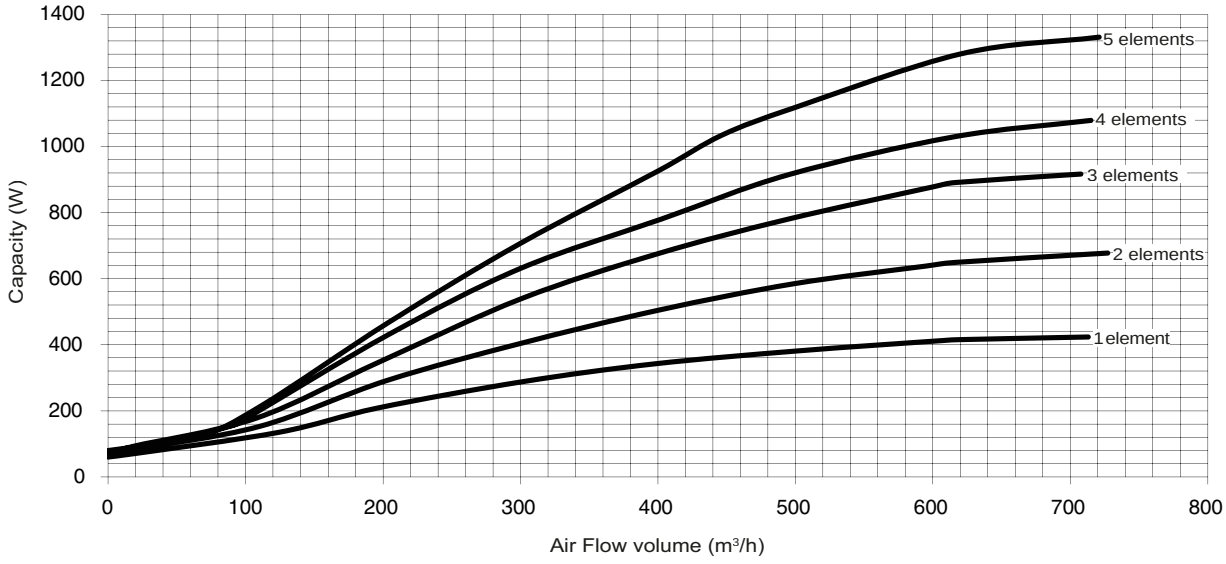
Legend:
V - Fan motor control voltage supply SUP - Supply (dB re = 10-12 W) RET - Return (dB re = 10-12 W) RAD - Radiated (dB re = 10-12 W)

ELECTRICAL HEATER PERFORMANCES

42GR Size 19

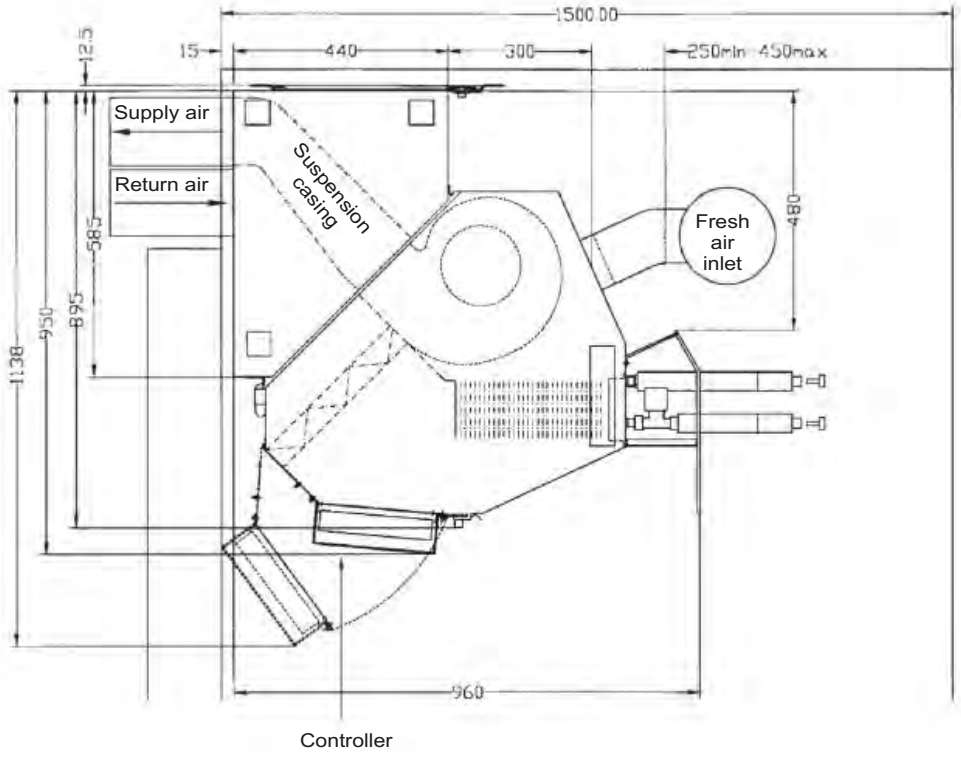


42GR Size 29



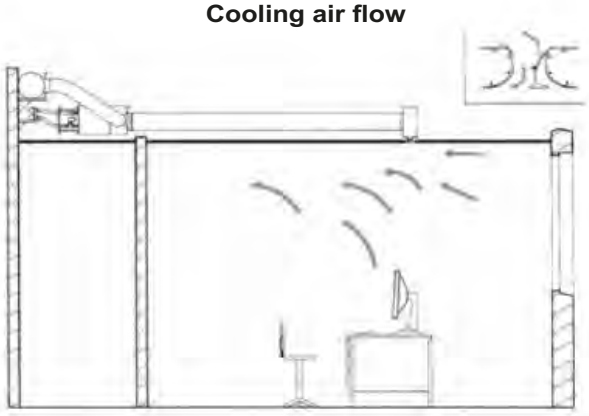
DIMENSIONS/CLEARANCES, MM

Standard installation

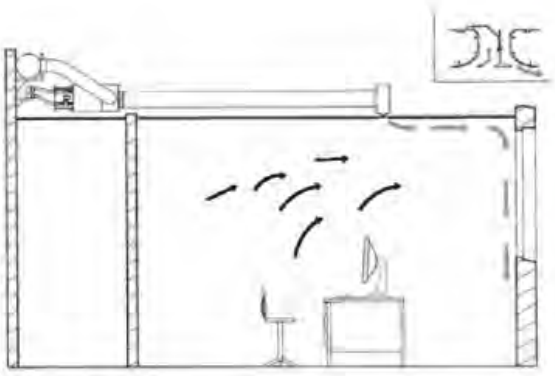


Air distribution with Optimix linear diffusers

Cooling air flow



Heating air flow



NEW

HIGH WALL FAN COIL

- Easy installation
- Modern & design
- Low energy consumption
- Low noise level

42WM

Cooling capacity 1.2-3.8 kW
Heating capacity 1.3-4.3 kW

The 42WM is an hydraulic high wall fan coil available in 2 models and 4 sizes

The modern and appealing design of the unit in RAL 9003 colour allows the use in any environment.

All the models perform very low electric consumption and extremely quite sound levels according to the request of today's new projects.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

RANGE

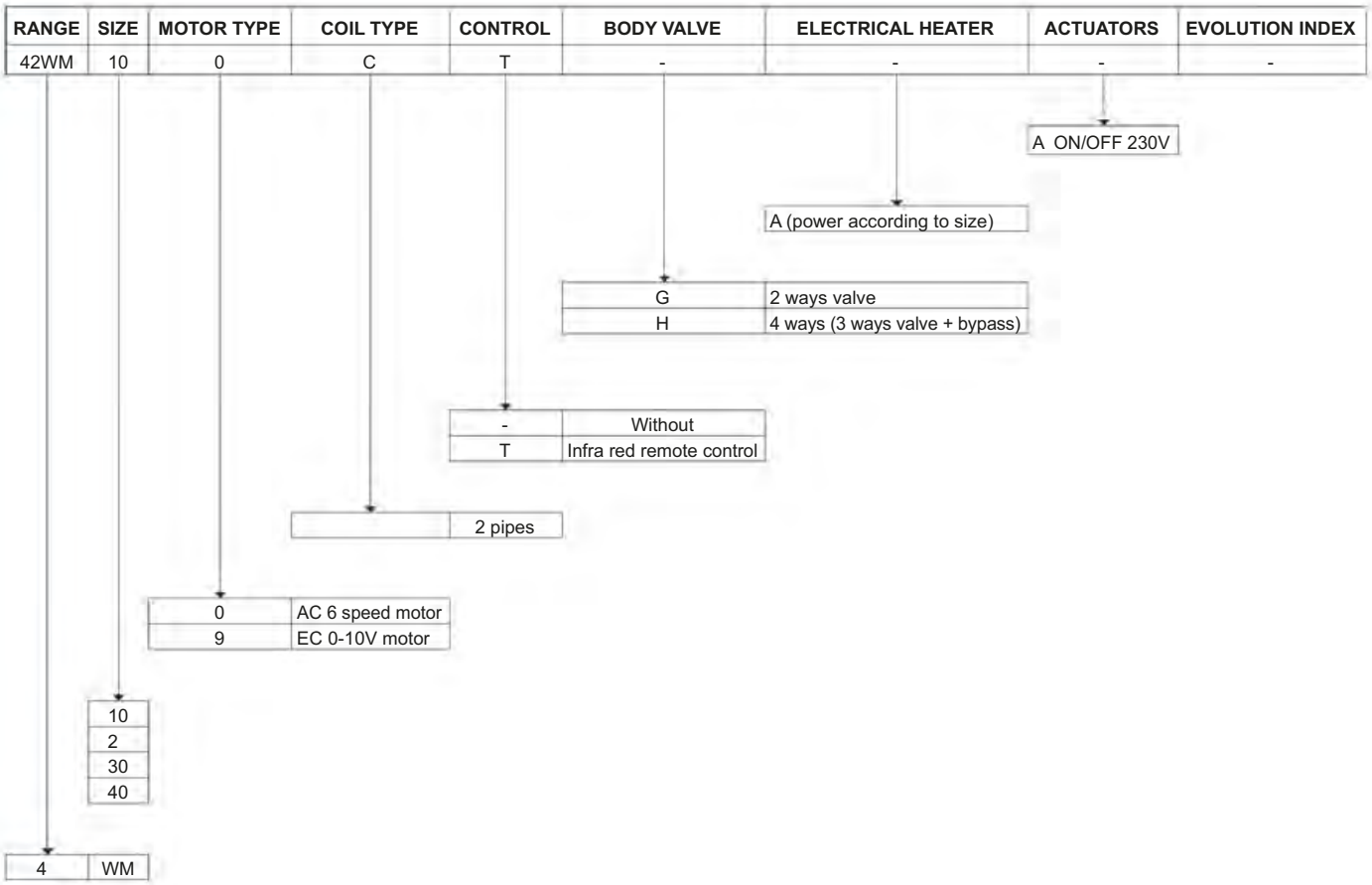
The 42WM range includes 2 models and 4 sizes .

It covers a range of cooling capacity from 1.2 kW to 3.8 kW at Eurovent conditions

The 42WM is available in :

- 2 pipe system heating or cooling
- 2 pipes and electrical heater cooling and/or heating + electrical heater

CODIFICATION



TECHNICAL DESCRIPTION

Casing

Made of auto-extinguishing ABS UL94 HB plastic with high specifications and great resistance to aging.

The diffusion flap is adjusted manually in the basic version, with remote control in T version.

Air Filter

Washable-regenerable synthetic filter, readily accessible.

Fan Assembly

Made of plastic tangential fan.

Electric motor

AC version

The motor is for single phase power supply and has six speeds, three of which are connected, with capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Internal thermal protection with automatic reset, protection IP 20, class B. The speeds connected in the factory are indicated by “MIN, MED and MAX” in the following tables.

EC version

Electronic motor with permanent magnet brushless electronic motor that is controlled with reconstructed current according to a BLAC sinusoidal wave.

The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phases frequency modulated, wave form power supply.

The electric power supply required for the machine is therefore single-phase with voltage of 230-240V and frequency of 50- 60Hz.

Heat exchange coil

It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.

The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

The connections are on the left side facing the unit only.

Electrical heater (option)

The heater is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.

The electric heaters are single phase 230V supply.

The electric heater is fitted with a overheat protection.

The unit is fitted with two safety thermostats:

- one thermostat with manual reset;
- one thermostat with automatic reset

Condensate Collection Tray

Made from polypropylene; the outside diameter of the condensate discharge pipe is 16mm.

Installation template

A cardboard installation template is supplied with every unit to help the mounting on the wall.

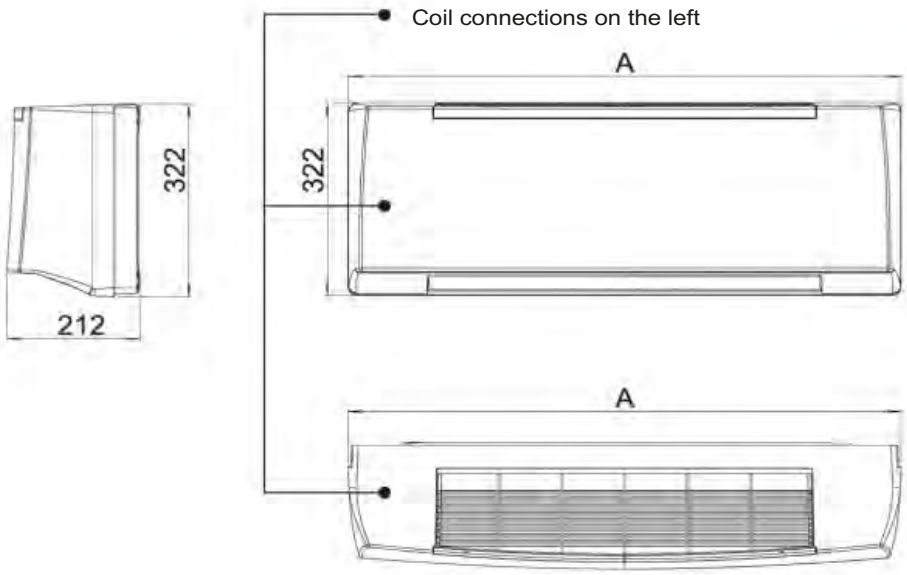
Options fitted in factory

- 2 ways valve
- 3 ways valve
- ON/OFF 230V actuator
- control with infra-red remote

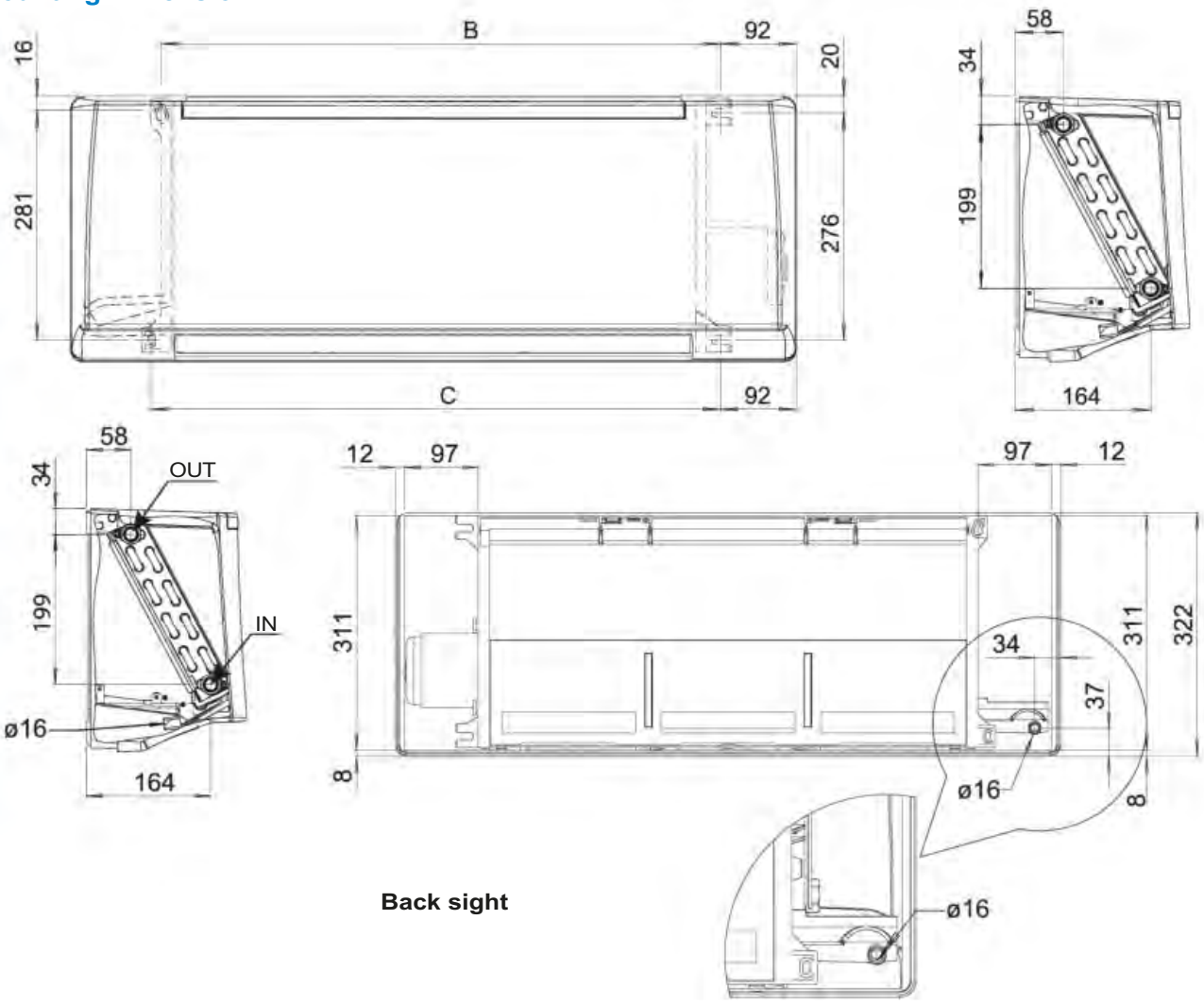
Accessoiries available in kit

- Condensate drain pump
- Kit 2 ways valve
- Kit 3 ways valve

DIMENSION, WEIGHT

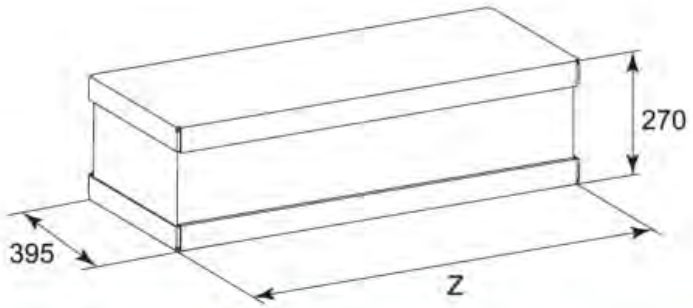


Mounting Dimension



Back sight

DIMENSION, WEIGHT



Dimension (mm)

Model	10	20	30	40
A	880	880	1185	1185
B	678	678	983	983
C	691	691	996	996
Z	950	950	1255	1255

Weight (kg)

	Weight packed unit				Weight unpacked unit			
Model	10	20	30	40	10	20	30	40
without valve	12	12	16	16	10	10	13	13
with valve	13	13	17	17	11	11	14	14

TECHNICAL CARATERISTIC

Max. entering water temperature..... + 70 °C
Min. entering water temperature..... + 6 °C
for entering water temperatures below + 6°C, contact technical support
Max. rated pressure.....1000 kPa (10 bars)
Max. ambient temperature with electric coil in heating mode: 25°C.

Water content (l)

Model	10	20	30	40
Liters	0,85	0,85	1,28	1,28

Installation height (m)

Model	sizes 10 to 40
Minimum	2
Maximum	3

AC motor electrical data (max. absorption)

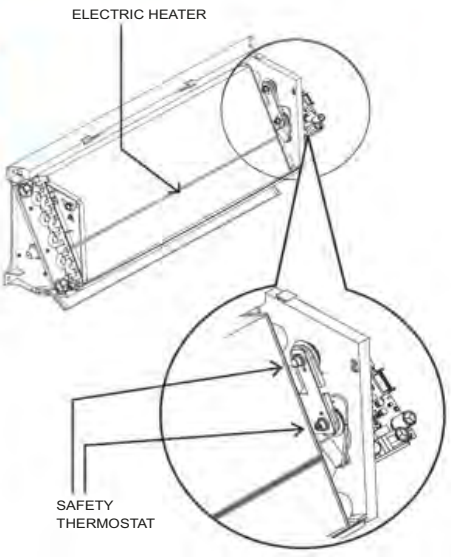
Model		42WM100	42WM200	42WM300	42WM400
230/1 50Hz	W	30	32	46	48
	A	0,16	0,16	0,23	0,23

EC Motor electrical data (max. absorption)

Model		42WM109	42WM209	42WM309	42WM409
230/1 50Hz	W	15	21	20	30
	A	0,14	0,19	0,18	0,26

Electrical heater

Model	42WM100/109	42WM200/209	42WM300/309	42WM400/409
omina nsta led power	1000 Watt	1000 Watt	1500 Watt	1500 Watt
Nominal power voltage	230V ~	230V ~	230V ~	230V ~
Number and section of connecting wires	3 x 1,5mm²	3 x 1,5mm²	3 x 1,5mm²	3 x 1,5mm²
Current input	4,5 A	4,5 A	7 A	7 A
Recommended fuse (Type gG) for overload protection	6 A	A	8 A	8 A



AIR TREATMENT

EUROVENT PERFORMANCES

2-pipe units

Size	Speed	Air flow m³/h	Heating capacity W	Pressure Drop kPa	Cooling Capacity		Pressure Drop kPa	Pabs W	Lw dB(A)	LP * dB(A)	EUROVENT FCEER	EUROVENT FCCOP
					Total W	Sensible W					Class	Class
42WM100	1	205	1 340	4,5	1 230	910	4,8	12	35	26	C	C
	2	270	1 680	6,8	1 490	1 130	6,8	14	41	32		
	3	340	2 020	9,4	1 750	1 330	9,2	17	46	37		
	4	375	2 180	10,8	1 850	1 440	10,1	18	48	39		
	5	470	2 585	14,7	2 150	1 680	13,2	24	52	43		
	6	500	2 705	15,9	2 230	1 745	14,1	30	53	44		
42WM200	1	250	1580	6,1	1 420	1 060	6,2	12	39	30	C	C
	2	305	1850		1 640	1 230	8,0	14	43	34		
	3	365	2130	10,4	1 820	1 410	9,8	18	47	38		
	4	400	2290		1 953	1 495	11,1	20	49	40		
	5	480	2620	15,1	2 160	1 730	13,3	24	53	44		
	6	545	2880		2 350	1 855	15,5	30	55	46		
42WM300	1	280	1890	9,1	1 870	1 330	11,2	16	35	26	C	C
	2	375	1130	13,8	2 300	1 670	16,2	21	40	31		
	3	480	2930	20,1	2 770	2 030	22,7	26	45	36		
	4	545	3230	24,1	3 000	2 240	26,2	29	48	39		
		730	4 40	35,9	630	2 755	37,1	38	55	4		
	6	780	4240	39,2	3 770	2 880	39,8	46	57	48		
42WM400	1	300	2 000	10,1	1 980	1 409	12,4	17	36	27	C	C
	2	440	2730	22,2	2 600	1 910	23,0	23	43	34		
	3	500	3020	28,2	2 845	2 090	30,3	27	46	37		
	4	610	3530	35,2	3 230	2 440	34,0	32	51	42		
		675	3800	39,9	3 460	2 610	40,4	35	54	45		
	6	790	4280	49,8	3 760	2 930	45,1	48	57	48		

Size	Speed (Voltage)	Air flow m³/h	Heating capacity W	Pressure Drop kPa	Cooling Capacity		Pressure Drop kPa	Pabs W	Lw dB(A)	LP *$ (A)	EUROVENT FCEER	EUROVENT FCCOP
					Total W	Sensible W					Class	Class
42WM109	1V	190	1 260	4,0	1 160	850	5,0	6	37	28	B	B
	3V	240	1 530	5,7	1 390	1 025	6,0		39	30		
	5V	290	1 780	7,5	1 570	1 190	7,7	9	46	37		
	7,5V	355	2 090	10,0	1 810	1 370	9,6		48	39		
	10	415	2	12,4	1 990	1 560	11,2	15	52	4		
42WM209	1V	260	1 630	6,4	1 460	1 090	6.9.	7	40	31	B	B
	3V	315	1 900	8,4	1 680	1 260	8,3		44	35		
	5V	375	2 180	10,8	1 860	1 450	10,1	12	47	38		
	7,5V	440	2 460	13,4	2 070	1 600	12,3		51	42		
	10V	510	2 740	16,3	2 240	1 810	13,7	21	55	46		
42WM309	1V	270	1 830	8,7	1 820	1 300	10,7	6	37	28	A	A
	3V	345	2 240	12,5	2 200	1 580	14,9		42	33		
	5V	420	2 630	16,6	2 520	1 850	19,0	11	45	36		
	7,5V	420	3 110	11,5	2 930	2 160	25,1		49	40		
	10V	620	3 570	28,8	3 270	2 480	30,4	20	53	44		
42WM409	1	375	2 4	14,1	2 330	1 690	16,5		43	4	A	A
	3V	465	2 850	19,3	2 720	1 990	21,9		46	37		
	5V	550	3 260	24,4	3 030	2 270	26,6	16	49	40		
	7,5V	665	3 760	31,7	3 430	2 590	33,4		53	44		
	10V	770	4 200	38,6	3 720	2 890	38,7	30	57	48		

EUROVENT conditions
Cooling mode : Entering air temperature : 27°C/19°CBH, entering/leaving water temperature : 7°C/12°C
Heating mode : Entering air temperature : 20°C, entering/leaving water temperature: 45°C/40°C
* Acoustic pressure level is based on an hypothetical sound attenuation of the room of 9 dB(A)

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

AIR TREATMENT

ACCESSORIES

Condensate drain pump

	Code
Not fitted on the unit	9025309

Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5m	10 m
1	7,6	7,2
2	5,6	5,2
3	4,0	3,7
4	3,2	2,9

Wall or concealed installation kit

Model	ID	Code
10-20	KIF 10-20	9025191
30-40	KIF 30-40	9025193

Wall or concealed installation kit to be used as an installation template or in case the right connections are previously designed (the units are provided only with left connections).

The technical space within the frame allows to unit the right connections of the installation and the left connections of the unit.Two variants are available:

- Recessed box installation
- Wall installation with aesthetic frame.

In the first case the frame is recessed, whereas in the second case it fits the unit esthetically.

The aesthetic frame characteristics are:

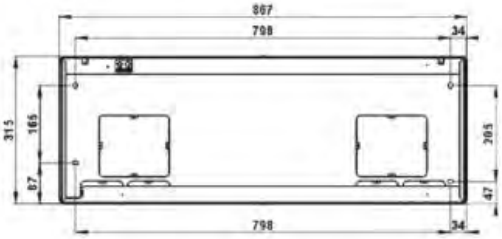
- Galvanized steel painted RAL 9003
- Pre-drilled panels for cables and ductworks
- Internal insulation.

Recessed box installation

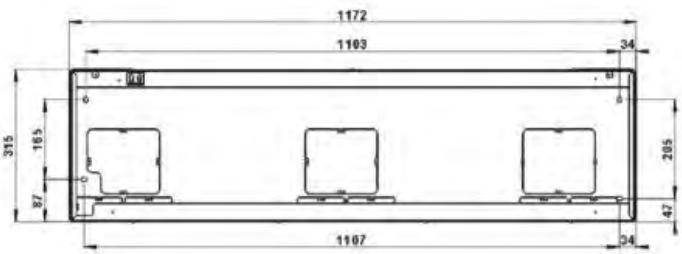
Wall installation

Dimensions

Gr. 1 - 2



Gr. 3 - 4



AIR TREATMENT

ACCESSORIES

3 way valve

Mod.	Valve			Code
	DN	(Ø)	Kvs	Not fitted
10-20	15	1/2"	1,6	9025321H
30-40	20	3/4"	2,5	9025323H

2 way valve

Mod.	Valve			Code
	DN	(Ø)	Kvs	Not fitted
10-20	15	1/2"	1,6	9025311H
30-40	20	3/4"	2,5	9025313H

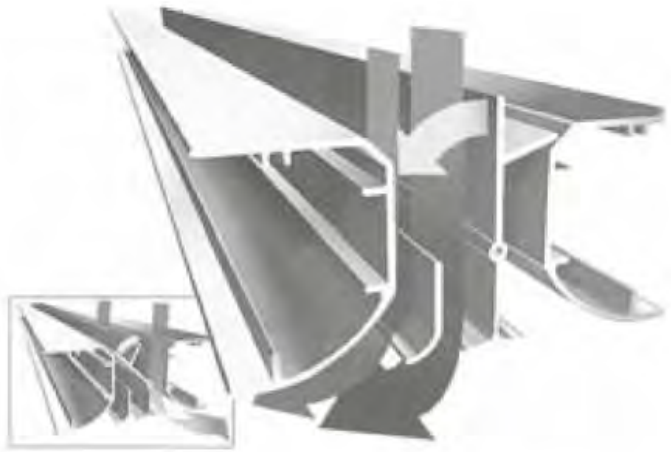
MODUBOOT AIR DIFFUSERS

35BD/SR

Air flow 100-648 m^3/h

The Moduboot ceiling mounted diffuser is the result of Carrier's unique experience and expertise in the domain of air flow.

Due to the profile of its diffuser, which makes use of the «Coanda» effect, the Moduboot provides an unequalled level of comfort without inconvenience to the occupants.



PHYSICAL DATA

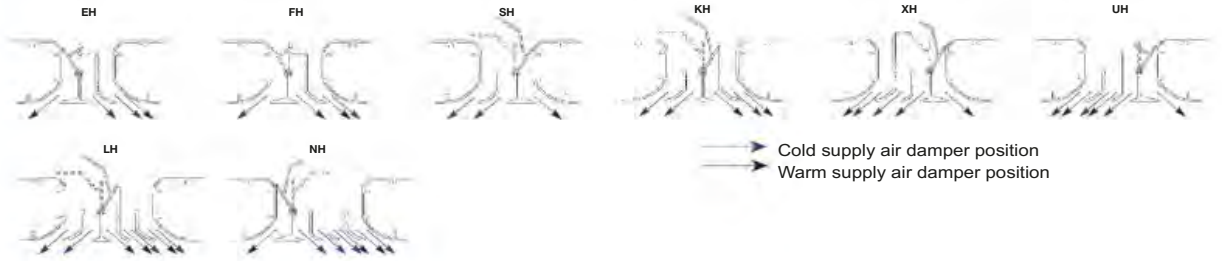
35BD supply or return air

Model	No. of slots	Duct diameter mm	Nominal diffuser length mm	Plenum length mm	Overall height mm
AG	2	159/199	600	473	270.4
	2	159/199	1200	939	270.4
	2	159/199	1500	1235	270.4
AH	2	199			
VH/MH	3	199	600	539	280.8
GH/JH	4	199	1200-1350	1139	280.8
BH/QH	5	199	1500	1439	280.8
CH	5	199			

35BD supply or return air Optimix

Model	No. of slots	Duct diameter mm	Nominal diffuser length mm	Plenum length mm	Overall height mm
SH	3	199			
EH/FH	3	199	1200-1350	1139	280.8
KH/XH	4	199	1500	1439	220.8
UH	4	199			
LH/NH	5	199			

Optimix diffuser profiles



35SR supply/return air

Model	No. of slots	Duct diameter mm	Nominal diffuser length mm	Plenum length mm	Supply section length mm	Return section length mm	Overall height mm
VH/MH	3	159/199*					
GH	4	159/199**	1200-1350	1139	742	388	280.8
JH	4	159/199**	1500	1439	867	563	280.8
CH/QH	5	159/199***	1800	1739	1067	663	280.8
B		159/199***					

* 159 mm for diffuser length 1200-1350 mm only
** 159 mm for diffuser length 1500 mm only
*** 159 mm for diffuser length 1800 mm only

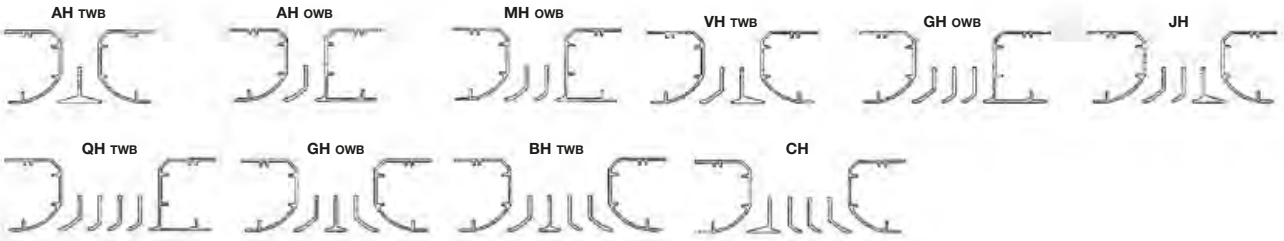
PHYSICAL DATA

35SR supply/return air Optimix

Model	No. of slots	Duct diameter mm	Nominal diffuser length mm	Plenum length mm	Supply section length mm	Return section length mm	Overall height mm
EH/FH	3	199					
SH	3	199					
XH	4	199	1200-1350	1139	742	388	280.8
UH	4	199	1500	1439	867	563	280.8
KH	4	199	1800	1739	1067	563	280.8
LH	5	199					
NH	5	199					

OWB - One-way blow
TWB - Two-way blow

Other diffuser profiles



ACCESSORIES

- Return air diffusers
- Dummy diffusers
- Diffuser end trim strips
- Alignment channels
- Mounting brackets

FEATURES AND ADVANTAGES

Features

- Linear diffusers with high induction, specially designed to be connected to the Carrier 42GR Air Treatment Modules, 42BJ Individual Comfort Modules, 42EM Atmosphera and 42DW ducted fan coil units.
- Two main types:
  - AG and AH profiles, two slots one-way and two-way blow for cold air diffusion and return air.
  - FH, SH, XH, LH profiles: two to five slots with Optimix damper for cold and warm air diffusion.
- 35BD models have a supply or return air Moduboot, 35SR models have a supply and return air Moduboot.
- 35BD – 19 diffuser profiles with two to five slots, and one-way or two-way blow for cold air diffusion or return air.
- 35SR – 17 diffuser profiles with three to five slots for cold and warm air diffusion.
- Four nominal lengths: 600 - 1200 – 1350 - 1500 mm for the 35BD and 1200 – 1350 – 1500 – 1800 mm for the 35SR.
- Choice of models allows air throw adjustment according to the required air flow.
- Damper position of the Optimix diffuser changes automatically with the primary air temperature.
- Comprises a galvanized sheet metal plenum with 13 mm thick fibreglass acoustic and thermal internal insulation.
- Aerodynamic diffuser design provides uniform air distribution without disturbing draughts.
- From fully cold to fully warm position, the damper operation provides adjusted air diffusion to ensure optimum comfort in the occupied space.

FEATURES AND ADVANTAGES

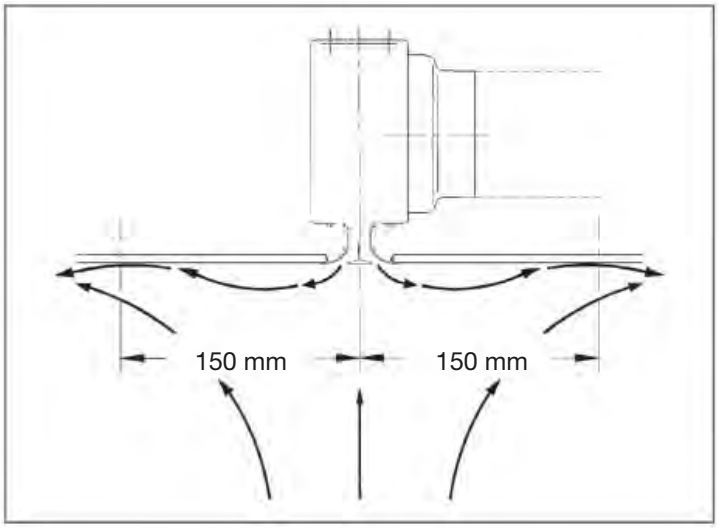
Air Distribution

Air distribution is a fundamental comfort factor.

The Carrier «Moduboot» diffuser uses the «Coanda» effect for air distribution.

The design of the Carrier Moduboot linear diffuser maintains the Coanda effect down to 15% of nominal unit air flow.

At lower air flows, the air velocity is such that the air feels still, and cold air drafts are avoided. At lower air flows it is unlikely that the space would be occupied, since it is mainly the occupants, lighting and other internal gains that make up the space heat load.

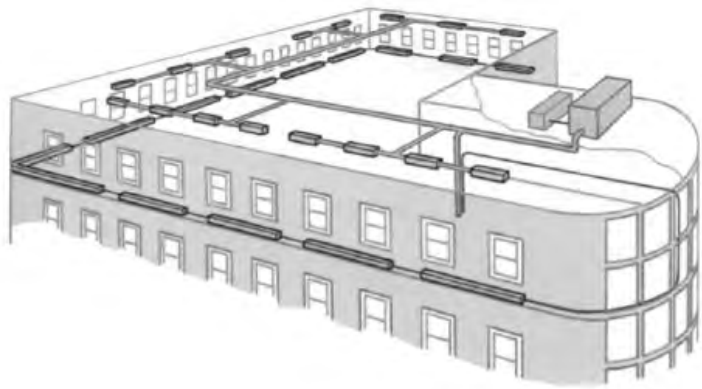


MODULINE AIR DIFFUSERS

37A

37AG: Air flow 169-2242 m^3/h
37AH: Air flow 169-849 m^3/h
37AS: Air flow 68-208 m^3/h

Carrier Moduline air conditioning terminals integrate air distribution and air volume flow control, constant volume or variable volume, in the terminal itself. The prime function of the unit is to control, automatically and accurately, the air flowing from it so that the temperature of the space which it serves stays sensibly constant at the level selected by the occupants.



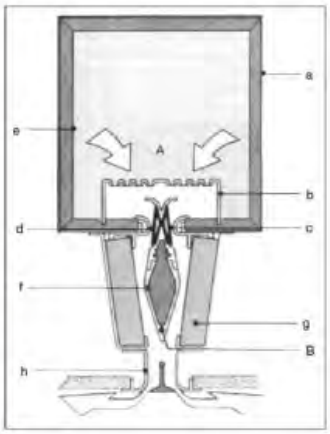
PHYSICAL DATA

37AG – nominal lengths 1200 and 1500 mm (active length 900 mm), air flow 56 l/s				
Nominal plenum height	mm	180	230	280
Plenum size	mm	178 x 178	229 x 229	279 x 279
Overall unit height	mm	327	378	428
Width	mm	181.5	232.5	282.5
Weight	kg	10	12	16

37AG – nominal length 1500 mm (active length 1200 mm) – air flow 74 l/s				
Nominal plenum height	mm	180	230	280
Plenum size	mm	178 x 178	229 x 229	279 x 279
Overall unit height	mm	327	378	428
Width	mm	181.5	232.5	282.5
Weight	kg	12	15	19

37AH – nominal lengths of 1200 and 1500 mm (active length 900 mm) – air flow 97 l/s			
Nominal plenum height		230	280
Plenum size	mm	229 x 229	279 x 279
Overall unit height	mm	388	438
Width	mm	232.5	282.5
Weight	kg	15	16

37AS – nominal lengths of 1200 and 1500 mm (active length 900 mm) – air flow 56 l/s		
Nominal plenum height	mm	127
Plenum size		127 x 178
Overall unit height		170
Width	mm	288
Weight	kg	11.5



oduline unit in cross section

37AG: Air flow range: 19-173 l/s

37AH: Air flow range: 47-236 l/s

37AS: Air flow range: 19-78 l/s

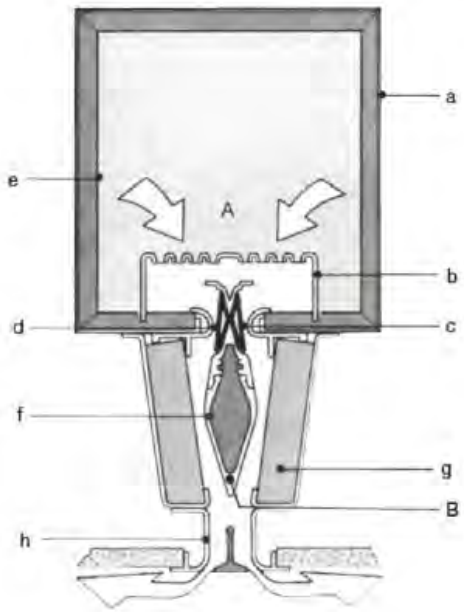
ACCESSORIES

- One- or two-way T-bar or continuous, 2-way return air diffuser (AG, AH)
- One- or two-way T-bar or continuous dummy units (AG, AH)
- End trimming piece (all)
- Alignment channels (AG, AS)
- Plastic blanking piece (all)
- Constant volume control kit (all)
- Variable air volume controller with Moduline thermostat (all)
- Variable air volume controll with room thermostat (all)
- Minimum air flow controller
- Warm-up switch
- Various suspension accessories
- Various plenum accessories
- Various control accessories

FEATURES AND ADVANTAGES

Features

- Three types of terminals with nominal air flows from 19 to 236 l/s.
- Wide range of capacities, weights and physical dimensions.
- Air distribution and air volume flow control, constant or variable volume are integrated in the terminal itself.
- One-piece, self-contained units, can be used in any type of air treatment unit: ducted central station air handlers or packaged indoor or outdoor air conditioners.
- Conditioned air is distributed through linear diffuser slots in the ceiling.
- Available in sizes to match standard false ceiling modules.
- Galvanised steel plenums (a).
- Perforated sheet steel distribution plate (b).
- Neoprene bellows which expand and contract with the control pressure (c).
- Felt-coated bellows stops control the noise level (d).
- Thermal and acoustic insulation (e).
- Aerodynamically profiled central air guide (f).
- Acoustic insulation, attenuates air flow noise (g).
- Air diffuser assembly of extruded aluminium (h).



COMPACT AIR HANDLING UNIT

The modular Ultra-Slim AHU is the guaranteed perfect solution

Ideal for a compact installation

Available in single-flow or aligned or adjacent dual-flow versions

39CQ

Air flow 1000-6000 m^3/h

The 39CQ air handling unit is a modular ventilation unit, which can be configured to meet all your requirements whilst complying with current standards.

It is available in several versions: single-flow, aligned dual-flow, adjacent dual-flow.

The 39CQ AHU is used for fresh air change, air recirculation, air extraction and air handling using its filtration, heating, cooling, recovery and ventilation functions…

USE

There are three different installations in the range, so it can be adapted to meet your needs:
- horizontal ceiling-mounted version, accessed from underneath,
- horizontal floor-mounted version, accessed from the top,
- vertical wall-mounted version, accessed via the front.

It is available in three sizes to meet all your needs, able to handle air flows from 1000 to 6000 m^3/h.

At 400 mm thick, it is ultra compact and can be fitted into the tightest of spaces.

This range is particularly well-suited to tertiary buildings:
- administration, offices,
- education facilities, libraries, community centers,
- cafés, hotels, restaurants,
- shopping centers, nursing homes, healthcare facilities,
- collective housing

All installations requiring ventilation.

RANGE

The 39CQ range comprises 3 sizes from 1000 to 6000 m^3/h.

There are four standardised lengths of casing, adapted to the configuration and options selected.

The AHU will therefore comprise one or several casings, depending on your selection; 610, 830, 1100 and 1400 mm modules.

39CQ		025	040		060
ssembly		Ceiling-mounted (C), Floor-mounted (F), Vertical (V)			
Width/Height		750*400	1310*400		1880*400
Nominal air flow (m^3/h) (Speed: 3.1 m/s across finned layer)		2000	4000		6000
Plug fan, AC motor	Plug fan	1	1	2	2
	Electric motor	1	1	2	2
	Available power	0.55 kW - 4-pole/1.1 kW - 2-pole/1.4 kW - 2 pole			
	Number of inverters	1	1	1	1
Plug fan, AC motor	Plug fan	1	1	2	2
	EC motor	1	1	2	2
	Available power	1 kW			
Pleated filters		G4 / M5 / F7 HEE / F9 HEE			
Opacimetric filters (Short flexible pockets)		M6 / F7			
Opacimetric filters (Rigid pockets)		M6 / F7 / F8 / F9			
Hydraulic heating coil		1/2/3 rows	1/2/4 rows		1/2/4 rows
Hydraulic cooling coil		3/4/6 rows			
Direct expansion cooling oil		3/6 rows			
Electric heating coil		15 kW	24 kW		33 kW
Adjacent plate heat exchanger		Yes	Yes		No

DESCRIPTION

Casing
- Double-skin panels made from sheet steel, galvanised on both sides, thickness 8/10 mm
- RAL 7035 lacquer coated finish on external panels
- M0/A1 fire rating
- Mineral wool, thickness 25 mm

Connection and utilities
- Hydraulic connection possible on the right or left (to be specified when ordering).
- The access doors are positioned according to the choice of model:
  - horizontal ceiling-mounted model: access doors located underneath the unit,
  - horizontal floor-mounted model: access doors located on top of the unit,
  - vertical wall-mounted model: access doors on the front of the unit

Damper
- Uncased external damper
- Damper in choice of sealing class 1 or 3, as per EN 1751
- Damper thickness 110 mm and height 310 mm
- Optional servomotor

Filtration
- Filter cell with universal dimensions
- Three filtration stages possible per air flow rate
- Pleated filters in efficiency class G4, M5, F7 and F9 HPE
- Short bag filters in efficiency classes M6 to F7
- Rigid bag filters in efficiency classes M6 to F9
- Pressure tapping as standard on each filtration stage
- Option, pressure switch, pressure gauge, …

DESCRIPTION

Heat exchange coil

- Hydraulic coil
  - Copper tubes, aluminium fins
  - Choice of 3 coil sizes for each AHU size
  - Optional frost protection thermostat with automatic reset
    Condensate drain pan in stainless steel
- Evaporator coil
  - Copper tubes, aluminium fins
  - Choice of 3 coil sizes for each AHU size
  - Stainless condensate drain pan
- Electric heater
  - Shielded resistors in scrolled finned pipes
  - 2 high-limit safety thermostats: one automatic and one manual reset
  - Anti-radiation screen, depending on the upstream and downstream elements

Output power supplied by the electric heaters

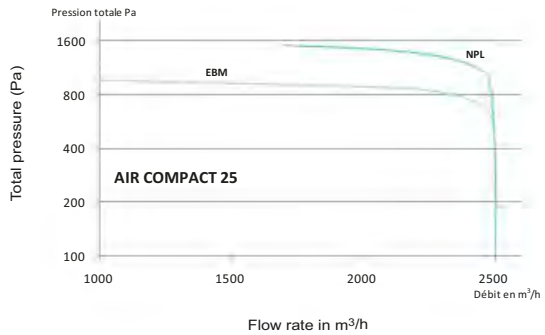
AHU size	Main casing	Additional box	
	2 stages	2 stages	4 stages
025	2 * 7.5 = 15 kW	2 * 7.5 = 15 kW	4 * 7.5 = 30 kW
040	2 * 12 = 24 kW	2 * 12 = 24 kW	4 * 12 = 48 kW
060	2 * 16.5 = 33 kW	2 * 16.5 = 33 kW	4 * 16.5 = 66 kW

Ventilation

- "Plug Fan" type direct drive FMA.
- 1 or 2 FMA for each air flow rate, depending on the size and conditions.
- Plug fan combined with a motor at the end of the shaft.
- AC motor with optional frequency inverter.
- EC motor (electronically commutated motor with built-in variable speed control).

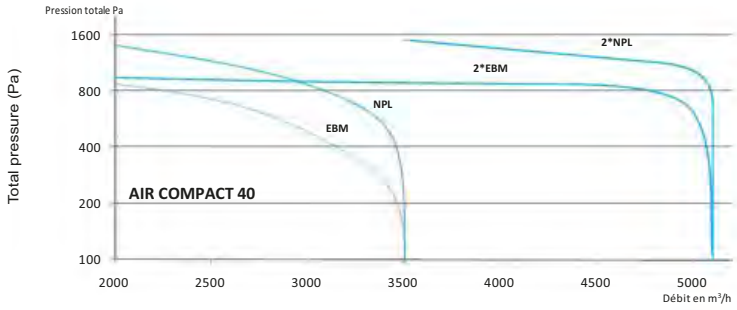
39CQ		025	040		060
Assembly		**Ceiling-/floor-mounted/vertical**			
Nominal air flow (m³/h) (Speed: 3.1 m/s across finned layer)		2000	4000		6000
Plug fan, AC motor	Plug fan	1	1	2	2
	Electric motor	1	1	2	2
	Available power	0.55 kW - 4-pole/1.1 kW - 2-pole/1.4 kW - 2 pole			
	Number of inverters	1	1	1	1
Plug fan, EC motor	Plug fan	1	1	2	2
	EC motor	1	1	2	2
	Available power	1 kW			

39CQ 025



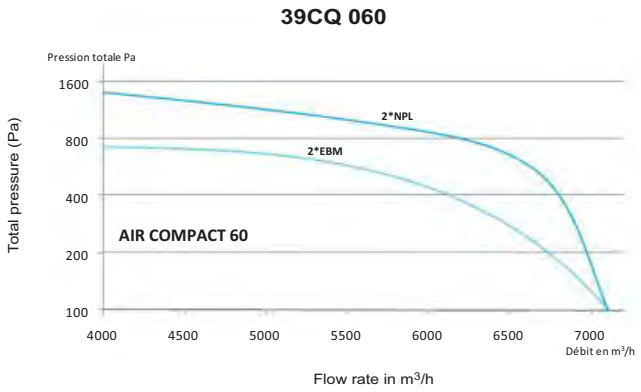
Flow rate in m³/h

39CQ 040



Flow rate in m³/h

DESCRIPTION



Accessories and options

- 2-channel mixing box: 3 air flow positions available
- 3-way mixing box
- Angled or straight plenum
- Sound attenuator
- Adjacent plate heat exchanger (sizes 025 and 040 only)
- Control

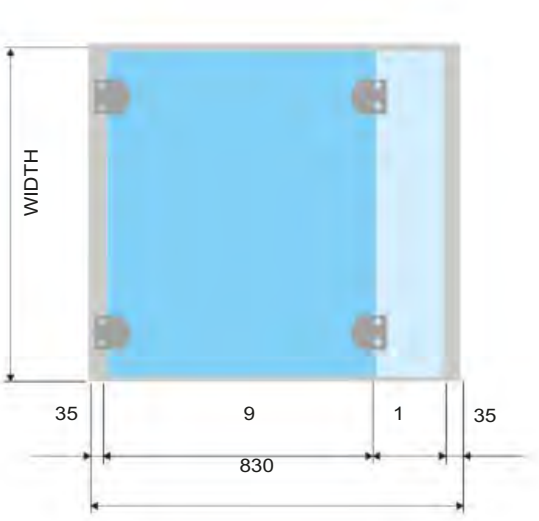
Control

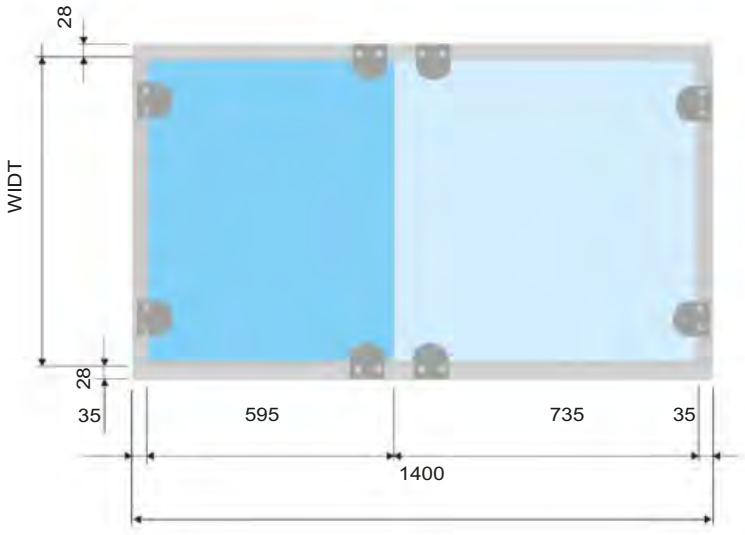
■ Electrics box for power, control and internal regulation of the unit, comprising as standard:
- Three-phase 400 V power supply + Earth
- main disconnect switch
- protected transformer
- protection and control of all electrical components by a circuit-breaker and switch
- peripheral options and power terminal block
- surface-mounted electric heater unit, or delivered unassembled
- control by factory preprogrammed controller, algorithm created in-house
- hand-held cabled micro-terminal
- fault summary contact
- control by constant flow/constant pressure/CO²
- pressure and temperature sensors, depending on the selection
- numerous options and functions available

SPACE REQUIREMENTS AND DIMENSIONS:

DIMENSIONAL SPECIFICATIONS			
AHU size	**025**	**040**	**060**
External dimensions (in mm)	750 * 400	1310 * 400	1880 * 400
Casing length (in mm)	610 - 830 - 1100 - 1400: Four standardised lengths of casing, automatically adapted to the components and options selected		

- 610 mm module ► 1 x 540 mm door
- 830 mm module ► 1 x 595 mm door
- 1100 mm module ► 1 x 595 mm door + 1 x 435 mm door
- 1400 mm module ► 1 x 595 mm door + 1 x 735 mm door

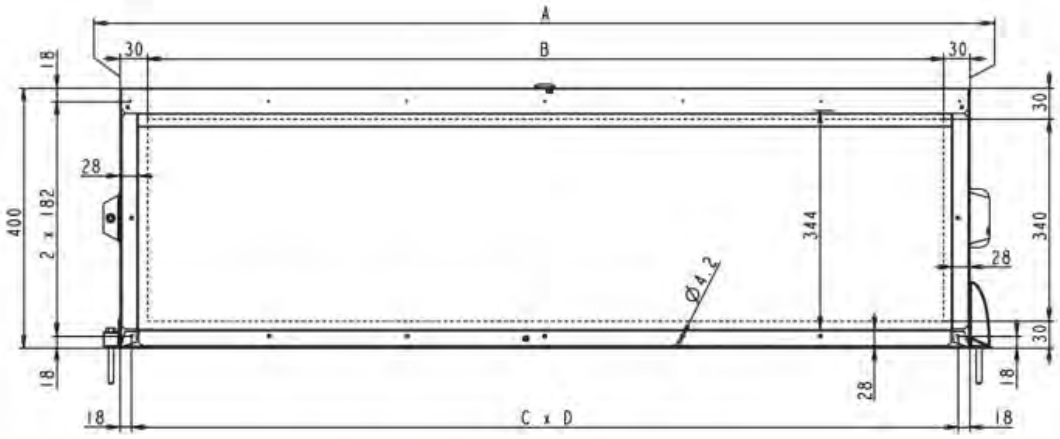




AIR CONNECTION

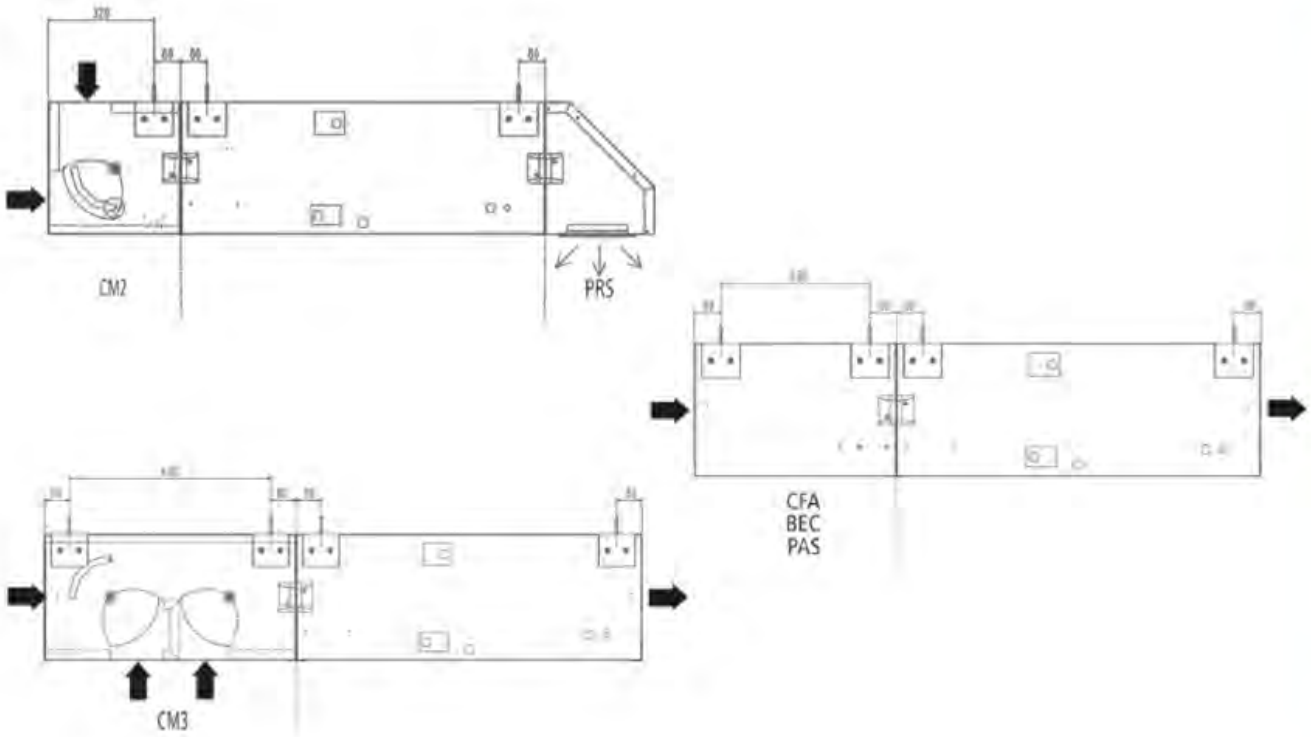
Air connection

Air connection AHU intake - AHU discharge - Mixing and plate heat exchanger



	A	B	C	D
39CQ 025	750	690	3	238
39CQ 040	1310	1250	6	212,3
39CQ 060	1880	1820	8	230,5

Examples of compositions



HIGH-EFFICIENCY DUAL-FLOW AIR HANDLING UNIT

Plug & play unit (built-in control)

Class A+ across entire range

Classic/Vertical/ceiling-mounted dual-flow units

High-efficiency heat recovery unit

High performance plug fan

39HX

Air flow 300-18000 m³/h

The 39HX dual-flow air handling unit is a PLUG & PLAY ventilation unit equipped with a highly efficient heat recovery unit with plug fans and high performance EC motors, designed to meet all the requirements of recent ecodesign regulations.

Unit supplied ready to use, prewired, preprogrammed in the factory and supplied with a remote control.

It draws clean, fresh air indoors using, on average, 80% less energy than that needed for air conditioning (cooling and heating).

EUROVENT CERTIFIED PERFORMANCE
AHU N° 15.05.006
Range: 39HX
www.eurovent-certification.com

www.eurovent-certification.com

USE

These units are designed for use in the following applications:
- Administrative buildings, Offices
- Education facilities, Libraries, Community centers
- Cafés, Hotels, Restaurants
- Shopping centers
- Nursing homes, Healthcare facilities
- Collective Housing

⇨ All facilities where ventilation is required.

Specifications	Class
Mechanical strength	D2
Airtightness	L2
Filter bypass leak	F9
Thermal transmission	T3
Thermal bridge	TB2

39HXE model: 9 sizes, air flow from 300 to 18,000 m³/h. Floor-mounted horizontal unit with horizontal air flows and air connections on the sides.

39HXA model: 5 sizes, air flow from 350 to 8500 m³/h.

39HXC model: 5 sizes, air flow from 300 to 6600 m³/h. Ground installation, horizontal position, horizontal air flow, air circuits on the sides.

39HXV model: 3 sizes, air flow from 300 to 2600 m³/h. Ground installation, vertical position, vertical air flow, air circuits on the top.

39HXH model: 3 sizes, air flow from 300 to 1900 m³/h. Ceiling-mounted horizontal unit with vertical air flows and air connections on the sides.

High energy-efficiency heat recovery unit

Depending on its layout, the 39HX offers two different high-efficiency heat recovery systems:

"CONTRA FLOW" plate heat exchanger equipped with a bypass (C, V, H models)

Rotary heat exchanger (39HXA and 39HXE models) Year-round optimal heat recovery unit

RANGE

Classic 39HXC & 39HXE

Sizes	Nominal flow rate (m³/h)	Max. power* (kW)	Max current* (A)	Voltage (V)
010	1000	1,43	6,2	1-Ph 230
020	2000	2,50	3,6	3-Ph 400
030	3000	3,82	5,5	
040	4000	4,23	6,1	
050	5000	4,23	6,1	
060	6000	6,03	8,7	
075	7500	6,03	8,7	
100	10000	12,06	17,4	
150	15000	15,45	22,3	

39HXA

Sizes	Nominal flow rate (m³/h)	Max. power* (kW)	Max current* (A)	Voltage (V)
010	1000	1,2	5,4	1-Ph 230
020	2000	2,5	2,9	3-Ph 400
030	3000	4,2	6,1	
050	5000	6,1	8,8	
075	7500	7,1	10,3	

Vertical 39HXV

Sizes	Nominal flow rate (m³/h)	Max. power* (kW)	Max current* (A)	Voltage (V)
007	1000	1,43	6,2	1-Ph 230
015	1500	2,50	3,6	3-Ph 400
020	2000	2,50	3,6	

Ceiling-mounted 39HXH

Sizes	Nominal flow rate (m³/h)	Max. power* (kW)	Max current* (A)	Voltage (V)
007	700	1,43	6,2	1-Ph 230
012	1200	1,43	6,2	
016	1600	2,50	3,6	3-Ph 400

* These values are provided for guidance only and are based on a standard dual-flow unit without electric heater option.

DESCRIPTION

Casing

- Double-skin panels made from steel sheet metal, galvanised on both sides, thickness 8/10 mm.
- RAL 7035 grey precoated external panels.
- Class M0/A1.
- Mineral wool, 50 mm thick.

Filtration

- M5 HEE, F7 HEE, F9 HEE filters.
- Filter cells kept compressed by a special system to ensure a leaktight seal.
- HXC, HXV, HXH models: fouling value monitored by analogue sensor and displayed by controller.
- HXA model: pressure switch control on each air flow. Pressure switch status displayed by controller.

Ventilation

- Plug fan driven by an electronically commutated motor (EC motor, built-in variable speed control).

Heat recovery units

- "Contra Flow" plate heat exchanger equipped with a motorised bypass (HXC, HXH and HXV models). é Efficiency greater than 80% across the range of air flows.
- Rotary heat exchanger equipped with rotation variable speed control (39HXE model).
  - ⇨ Efficiency > 80% at nominal flow rate.
- Constant speed rotary heat exchanger (HXA model)
  - ⇨ Efficiency > 80% at nominal flow rate.

Hydraulic coil

- Copper pipes, aluminium fins.
- Coil can be integrated or additional (cased).
- With the accessory fitted, 2- or 3-way control valve and 0-10 V actuator controlled by 39HX Control for set-point accuracy.
- Stainless steel condensate drain pan (cooling coil or mixed coil only).

DX coil

- Copper tubes, aluminium fins.
- For reversible heating/cooling operation.
- Internal space optimised for VRV units.
- Stainless steel condensate drain pan.

List of outdoor units optimised for 39HXA DX available on request.

Electrics box

- Electrics box for power, control and internal regulation of the unit, comprising as standard:
  - Power supply (3-Ph 400 V + Earth or 1-Ph 230 V + Earth).
  - Main disconnect switch.
  - Protected transformer.
  - Protection and control of all electrical components by a circuit breaker and contact switch.
  - Peripheral options and power terminal block.
  - Factory-programmed PLC control.
  - Hand-held cabled micro-terminal.
  - Fault summary contact.
  - 3 temperature sensors.
  - 4 pressure sensors (2 pressure sensors and 2 pressure switches on the 39HXA model).
  - Control unit option for factory-fitted/wired DX unit (39HXA model)

Accessories

Damper formed of airfoil blades, powered by a servomotor

On/off with return spring.

Flexible sleeve.

Adjustable feet.

CO_2 air quality sensor

Roof.

Canopy.

Mixing section.

Remote ambience control.

ModBus RTU, LON, KNX, ModBus communication

TCP, Bacnet IP, web interface.

Electric heaters

- High-limit safety thermostat with automatic and manual reset.
- Control by 2-stage on/off operation fully controlled by 39HX Control.

MODELS & SIZES	Power (kW)	Current (A)	Voltage (V)
C 010 & E 010 V 007 H 070 & H 012	4,5	20	1-Ph 230
V 015 (additional casing) H 016 (additional casing)	7,20	11	3-Ph 400
V 015	8,1	12	
C 020 & E 020	10,8	16	
C 030 & E 030	12,6	19	
C 040 & E 040	16,8	25	
E 050	19,8	29	
C 060 & E 060	22,8	34	
E 075	31,2	46	
E 100	N/A	N/A	
E 150	N/A	N/A	

CONTROL

39HX Control

The 39HX features, as standard, an electrics box equipped with a factory-programmed PLC and a hand-held micro-terminal.

39HX Control function				Included	Options*
Fan time schedule	Built-in timer: management in series	4 events per year, per week and per day		X	
Safety	Frost protection	By fresh air temperature control		X	
		By monitoring the pressure difference from the heat recovery unit on the flow of exhaust air (analogue sensor)			X
	Monitoring of sensor status			X	
	Monitoring operation values (thresholds)			X	
	Operating control of EC fan motor assemblies			X	
	Monitoring filter fouling (via analogue sensor or pressure switch depending on the model)			X	
	Fault summary			X	
	Fire monitoring (input available for potential free (dry) contact (normally closed))			X	
Alarms	Management of alarms and log (100)			X	
Control mode	Control of return air or supply air temperature			X	
	Regulated temperature control based on outdoor temperature			X	
	Control of room temperature with a room terminal				X
Hot and/or cold air production	Gradual action on the 2- or 3-way control valve on the hydraulic coil				X
	Gradual action on the electric heater TRIAC				X
	On/Off action on the various stages of the electric heater				X
DX* coil**	Gradual action on a VRV outdoor unit				X
	Heating/cooling control				X
	Optimised defrost cycle management				X
Free cooling	Shut down the rotary heat exchanger (HXE and HXA models)			X	
	Open the bypass on the Contra Flow plate heat exchanger (HXC, HXV and HXH models)			X	
Night cooling function	Shut down the rotary heat exchanger (HXE and HXA models)			X	
	Open the bypass on the Contra Flow plate heat exchanger (HXC, HXV and HXH models)			X	
Morning heating function	Mixing opening level control (HXE model)				X
Eco-recycling function	Mixing opening level control (HXE model)				X
Efficiency optimisation	Variation of the rotation speed of the rotary recovery unit (HXE model)			X	
Configuration of the air flow rate	2 air flow rate set-points per air flow			X	
	Display of the air flow rate			X	
Constant flow rate operation	Keeps the air flow rate constant regardless of how fouled the filters are			X	
Flow rate modulation operation	Single zone	Signal 0-10V	CO_2 sensor		X
		Contact	Presence contact		X
			External contact		X
	Multi zone	Air supply duct constant pressure operation			X
Communicating mode	Management by CMS	ModBus RS485 protocol			X
		LON protocol			X
		KNX protocol			X
		ModBus TCP/BACNET IP protocol			X
		Web interface			X
Miscellaneous	Languages supported (French/English/German/Dutch/Spanish/Italian)			X	
	Integrated temperature sensors (*3: fresh air supply and extraction, exhaust air extraction)			X	
	Integrated pressure checks (*4: fresh air and exhaust air filter fouling level, fresh air and exhaust air fan)			X	
	Damper control				X
	Information provided to the user via the hand-held micro terminal			X	
	Contact for controlling the pumps for the hydraulic coils (with operating control)**			X	
	Contact for controlling an external outdoor heat production system (boiler, etc.)**			X	
	Contact for controlling a humidifier**			X	
	Electric heater load shedding input**			X	

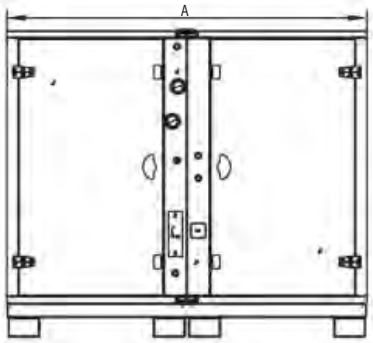
Option*: Requires the component to be selected as an option: damper, coil, CO_2 sensor, etc.
** Except 39HXA model
*** Only available on the 39HXA model

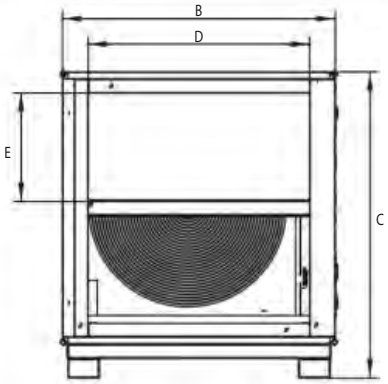
AIR FLOW DIMENSIONS AND ORIENTATION

Classic 39HXC, 39HXE & 39HXA

Sizes	39HXC, 39HXE & 39HXA							
	Height (C) (mm)	Width (B) (mm)	Length (A) (mm)			Weight (kg)*		
			HXC	HXA	HXE	HXC	HXA	HXE
010	958	810	1580**	1266	1266**	200	180	201
020	1158	1010	1150 + 800**	1310	510 + 800**	350	250	309
030	1359	1210	1264 + 800	1600	800 + 800	465	330	432
040	1659	1510	1264 + 800	-	800 + 800	580	-	558
050	1659	1510	-	1600	800 + 800	-	445	604
060	1959	1810	1407 + 800	-	800 + 800	765	-	702
075	1959	1810	-	1600	800 + 800	-	580	751
100	2090	1920	-	-	1100 + 1100	-	-	955
150	2340	2192	-	-	1100 + 1200	-	-	1250

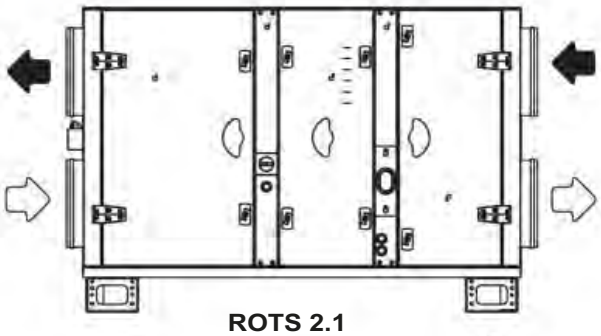
* Without internal option.
** Circular coupling; protrudes 47 mm on either side.



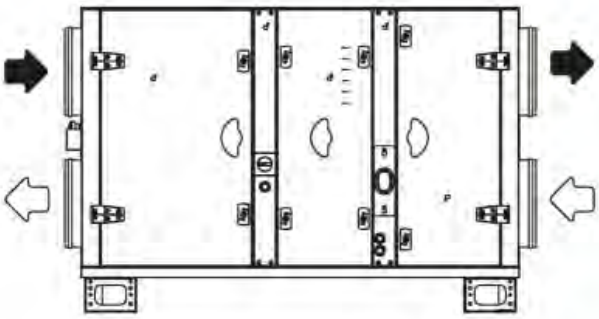


AIR FLOW ORIENTATION

39HXE & 39HXA models



ROTS 2.1

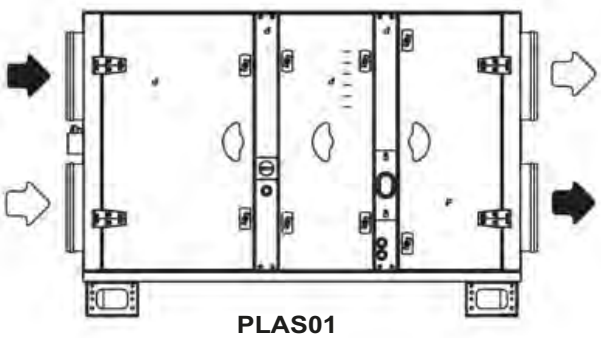


ROTS 2.2

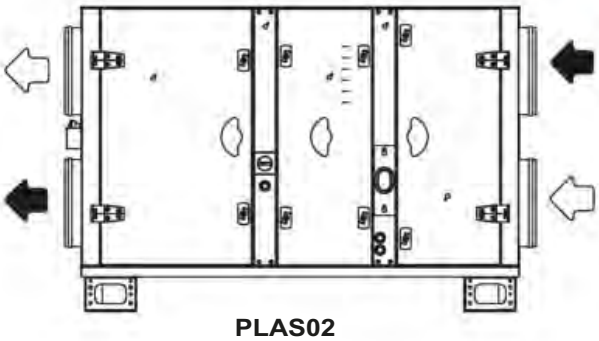
WHITE ARROW = FRESH AIR

BLACK ARROW = EXTRACTED AIR

39HXC models



PLAS01



PLAS02

AIR TREATMENT

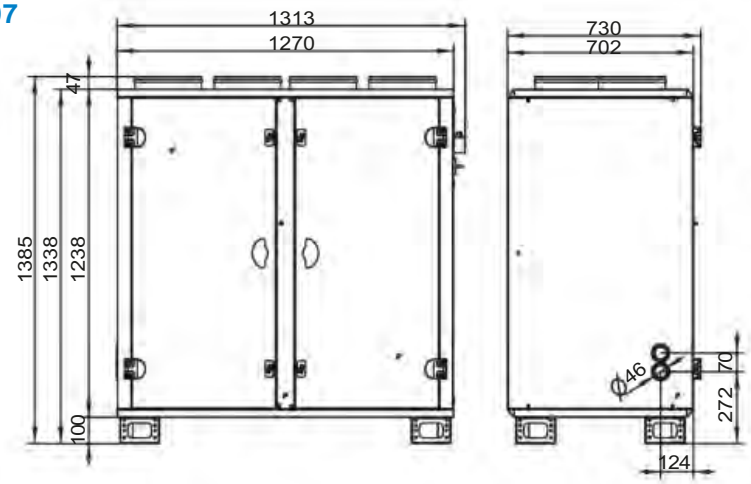
AIR FLOW DIMENSIONS AND ORIENTATION

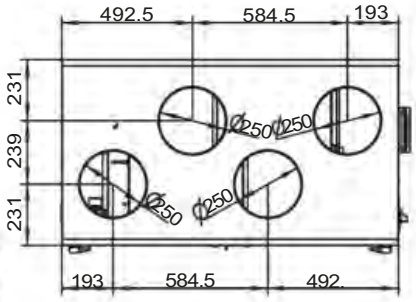
Vertical 39HXV

Sizes	Dimensions			Weight (kg)*
	Height	Length	Width	
007	1385	1313	730	202
015	1758	1593	832	330
020	1901	1735	832	389

* Without internal option

Size 007

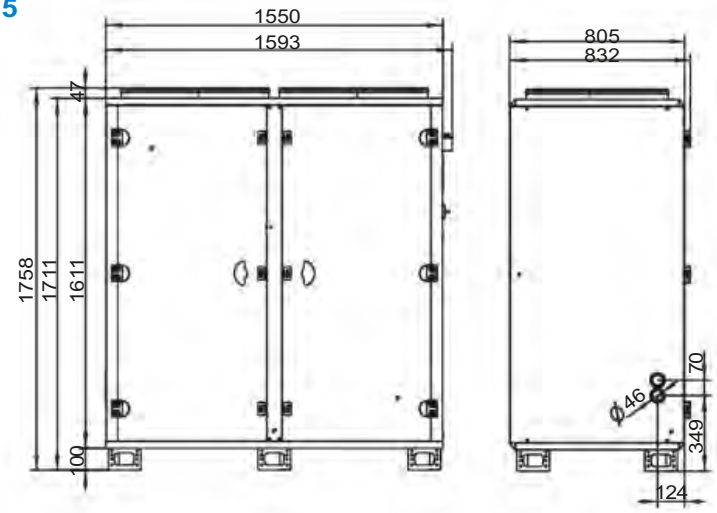


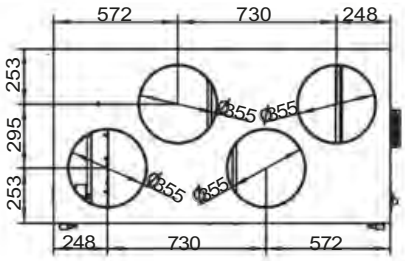


WHITE ARROW = FRESH AIR

BLACK ARROW = EXTRACTED AIR

Size 015





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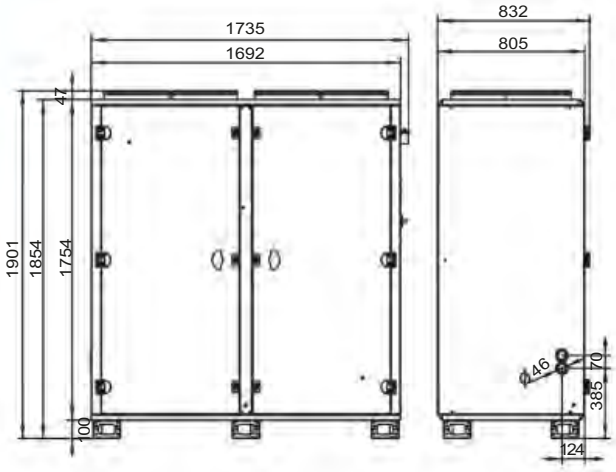
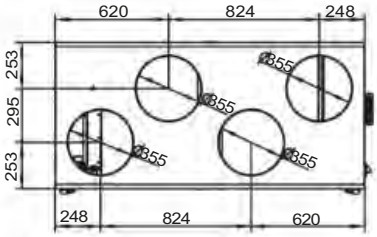
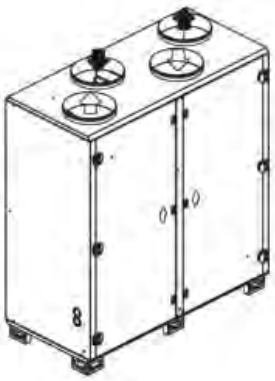






WHITE ARROW = FRESH AIR

BLACK ARROW = EXTRACTED AIR

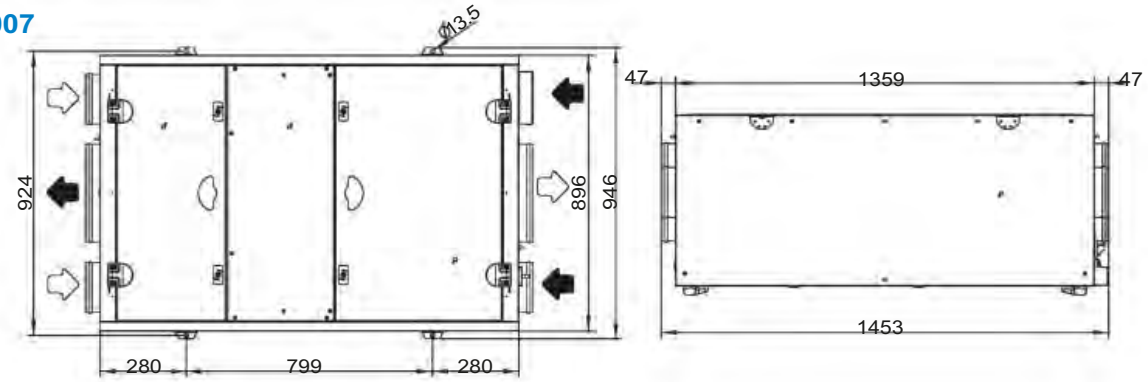
AIR FLOW DIMENSIONS AND ORIENTATION

Ceiling-mounted 39HXH

Sizes	Dimensions			Weight (kg)
	Height	Length	Width	
007	585	1453	896	161
012	585	1592	1174	206
016	585	1850	1456	279

Ø 16 mm condensate drain pipe.

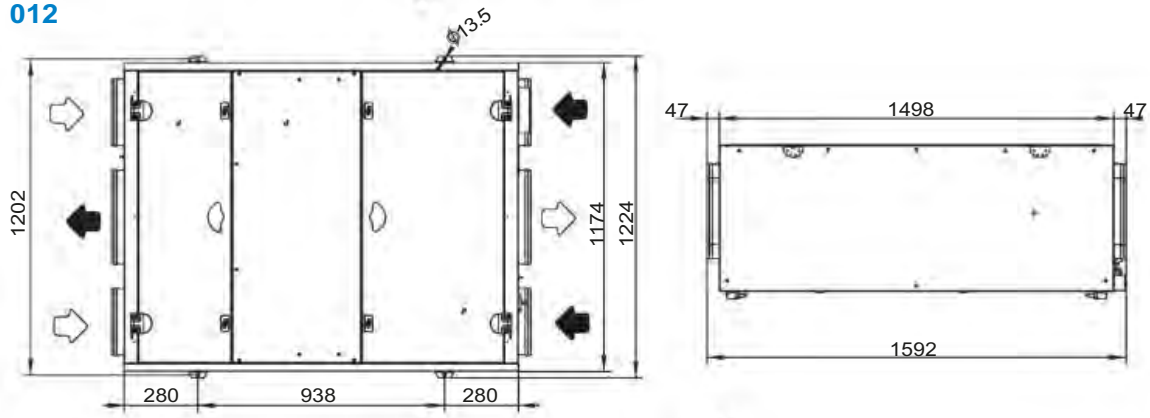
Size 007



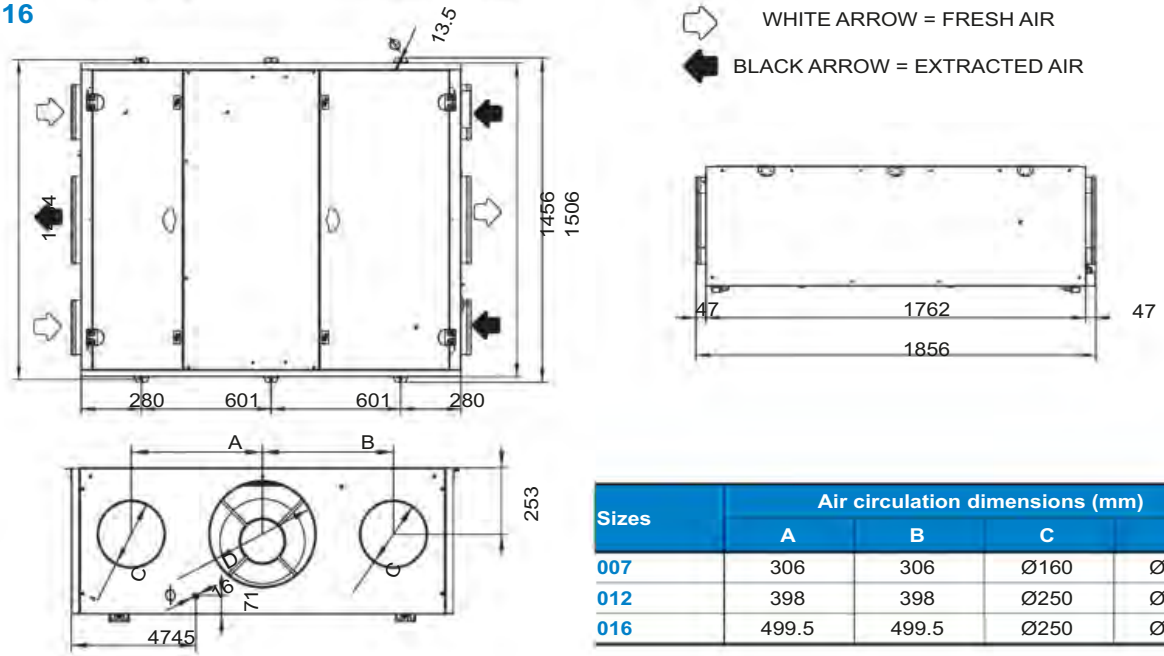
WHITE ARROW = FRESH AIR

BLACK ARROW = EXTRACTED AIR

Size 012



Size 016



WHITE ARROW = FRESH AIR

BLACK ARROW = EXTRACTED AIR

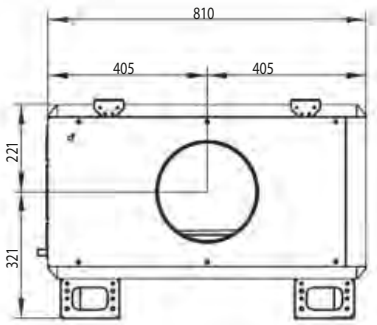
Sizes	Air circulation dimensions (mm)			
	A	B	C	D
007	306	306	Ø160	Ø315
012	398	398	Ø250	Ø355
016	499.5	499.5	Ø250	Ø400

AIR FLOW DIMENSIONS AND ORIENTATION

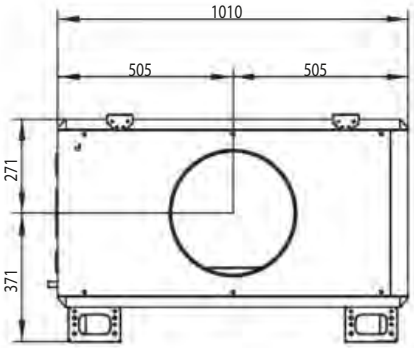
Additional casing (MUST ONLY BE POSITIONED IN A HORIZONTAL AIR FLOW)

39HX MODELS	Additional casing sizes (mm)	Weight (kg)
E 010 & C 010 V 007 H 007	Size1 542 x 496 x 810	49 kg
E 020 & C 020 V 015 & V 020 P 012 & P 016	Size 2 642 x 496 x 1010	62 kg
E 030 & C 030	Size 3 759 x 400 x 1210	68 kg
E 040 & E 050 C 040 & C 050	Size 4 909 x 400 x 1510	88 kg
E 060 & E 075 C 060 & C 075	Size 5 1059 x 400 x 1810	112 kg

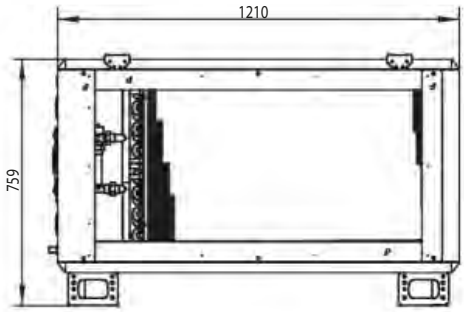
Size 1



Size 2



Size 3



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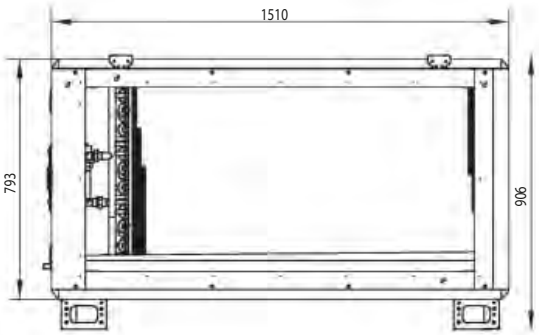

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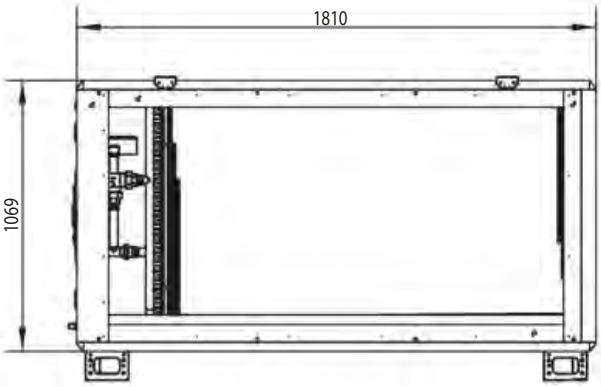


AIR TREATMENT

AIR HANDLING UNIT

AHU for all applications

Designed to conform to standards

EN 13053 and EN 1886

For all service sector, industry and healthcare applications

39CP

Air flow: 1000 to 30,000m³/h

Air handling unit: 39CP

The new range of 39CP air handling units is the latest generation of AHUs developed to meet the EN 1886 and EN13053 standards, integrating the most innovative components (filters, recovery units, fans, electric motors, etc.).

This range has been designed to meet rigorous standards and stringent environmental requirements. As confirmation of its quality processes, the production facility has received certifications in the following standards: ISO 9001, ISO14001, ISO18001.

The 39CP range has EUROVENT AHU programme certification. This generation has been designed to meet these criteria, providing a high level of classification, and ensuring it is suited to all types of application.

The range was developed by the European Air Side research and test center. It was designed using cutting edge digital resources, and all steps were confirmed by testing in climatic test and acoustic chambers.

The test center also enables CARRIER to offer its customers performance tests on manufactured products before they leave the facility in certain cases.

The painting, machining, panelwork, frame, fitting of gaskets, welding, and control tests are performed on production lines devoted entirely to the 39CP range.

The facility also produces air-water or refrigerant exchangers. Carrier uses its own calculating and sizing tools.

These factors give Carrier complete control of both its performances and its procurement cycles.

All of the above aspects combine to help create a high quality product which gives you complete satisfaction in a diverse range of applications from office and service sector administration to industrial processes and controlled environments in industry, and even the healthcare sector.

EUROVENT CERTIFIED PERFORMANCE
AHU No.16.06.004
Range: 39CP
www.eurovent-certification.com

www.eurovent-certification.com

USE

The 39CP range is designed for the service sector, industry and healthcare to meet different requirements in terms of air mixing, filtration, heating, refrigeration, dehumidification, humidification, ventilation, recovery and sound attenuation. It is available as a horizontally-mounted version for installation indoors or outdoors with a roof and accessories to protect it from the weather. The range is available in a single or dual-flow version.

Thanks to the broad spectrum of solutions on offer, and the product's excellent modularity, the specifications for this product will always comply with the EN 13053 and EN 1886 standards, whatever its configuration.

39CP L: tertiary sector applications

- Casing resistance: class D2
- Casing airtightness: class L1 (-400 Pa)/ L2 (+700 Pa)
- Thermal transmission: class T3
- Thermal bridging factor: class TB3
- Filter bypass: class F9

39CP H and 39CP C: all applications

- Casing resistance: class D1
- Casing airtightness: class L1
- Thermal transmission: class T2
- Thermal bridging factor: class TB1
- Filter bypass: class F9

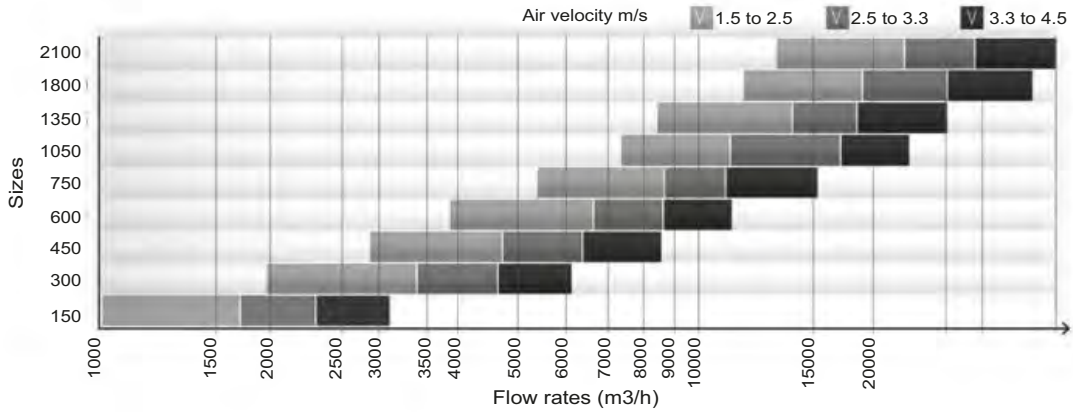
RANGE

The 39CP range consists of 9 sizes to handle air flow rates from 1000 to 30,000 m3/h.

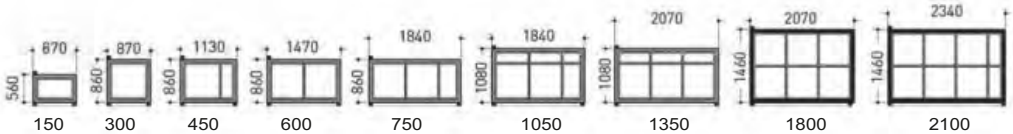
The diagram below is used to pre-select the required size according to:

- The air velocity in the front active section of the heat exchange coils
- The air flow rate to be handled.

Selection table



AHU sections (mm)



GENERAL DESCRIPTION OF THE 39CP RANGES

Casing

- Self-supporting panel construction up to size 2100
- Double-skin panels with 50 mm mineral wool insulation with long fibres with a high insulation coefficient.
- Moulded high strength bi-component polyurethane gaskets for the casing and door, guaranteeing a perfect seal.
- Inside of the AHU is perfectly smooth and even, with no protruding screws, as per the specifications in European standard EN 13053 (no internal handles).
- Doors hung on high quality frames, guaranteeing durability, performance and easy access for maintenance with adjustable hinges, external twist-lock handles and decompression system.
- AHUs delivered in several units are equipped with specific factory-fitted connective pieces, which ensure perfect alignment to simplify assembly.
- Each component unit of the AHU is equipped with an 80 mm ground insulation frame and multifunction ergonomic supports (handling, assembly).
- Each component is fitted with its own service panels. This allows independent removal for each function.

Standard:

39CP L
- Conventional double-skin panels
- External wall made from sheet metal with RAL 7035 lacquer coating
- Internal wall made from Z275 galvanised steel

39CP H
- Highly-insulated panels, with thermal bridge break profiles
- External wall made from sheet metal with RAL 7035 lacquer coating
- Internal wall made from Z275 galvanised steel

39CP C
- Highly-insulated panels, with thermal bridge break profiles
- External wall made from galvanised steel with RAL 9010 lacquer coating
- Internal wall made from galvanised steel with RAL 9010 lacquer coating

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Textured RAL 7035 paintwork on external panels	Standard	Standard	NA
Textured RAL 7035 paintwork on internal panels	X	X	NA
Smooth RAL 9010 paintwork on external panels	NA	X	Standard
Smooth RAL 9010 paintwork on internal panels	NA	X	Standard
Internal and/or external panels in 304 L or Z3CN 18.10 stainless steel	NA	X	X
Internal and/or external panels in 316 L or Z3CND 17.11.02 stainless steel	NA	X	X
Stainless steel base	X	X	X
Sloped stainless steel base with drain	NA	X	X
Galvanised ground insulation frame (h = 80mm)	Standard	Standard	Standard
Painted frame	X	X	X
Stainless steel frame	NA	X	X
Factory-assembled AHU on single unit frame: max size 1350 or maximum length 6 m	X	X	X
Container kit (for assembled air handling unit)	X	X	X
Adjustable support feet with 60 mm extension	X	X	X
Fixed extension feet up to 400 mm	X	X	X
Sloped roof to match external casing finish	X	X	X
Louvres with grilles to match external casing finish	X	X	X
Protective cover for external components to match external casing finish	X	X	X
Factory-fitted cable raceway	X	X	X
Lateral technical unit	NA	X	X
DIN 1946-4 hygienic option	NA	NA	X

X: Option NA: Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Mixing and air intakes

The air inlet and mixing section may be installed at the intake, inserted between the functions or installed at the device outlet.

These functions are equipped with dampers formed of counter-rotating profiled blades, with lateral gaskets, and driven by conrods.

These dampers are installed outside of or inside the casing, depending on the solution chosen.

Independent control of the louvres: manual, motorised or ready to be motorised

The functions provided depend on the selection:
- Isolation damper
- Two-way mixing with air intake
- Two-way flow distributions: top, front or lateral
- Three-way mixing: aligned, stacked or juxtaposed

Depending on the finishes:

39CP L
- Class 1 galvanised steel blades and frame as per EN1751

39CP H / 39CP C
- Class 3 aluminium blades and frame as per EN1751

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Servomotor	Kit	Kit	Kit
Manual control	X	X	X
Electrical heaters for warming the mechanisms <−25°C	X	X	X
Class 4 airtightness as per EN 1751	NA	X	X
Paintwork on damper	X	X	X
Stainless steel damper	NA	X	X
ATEX damper	NA	X	X
Safety container with stainless steel panel and drain	X	X	X
Hinged access door	X*	X*	X*
Removable access door	X	X*	X*
Porthole on door	X	X	X
Lighting	X	X	X
Door contact	NA	X	X

* Availability depends on the configuration X: Option NA: Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Filters

To meet the requirements of all the applications, a very wide range of filter efficiencies, technologies and dimensions is available.

Across the entire range, and for each type of filter, cells with international dimensions of 24'' x 24'' and 12'' x 24'' are available.

On sizes 150 to 1350, compact filters which are 50mm thick are available in full section (FS) to optimise energy consumption.

Different types of filter assembly are available, depending on the efficiency level, technology and location within the AHU.

There are 6 specific assembly systems:

Assembly A available for filters with international dimensions and **Assembly A FS** for filters with a full section
- Traditional tracks designed for efficiency levels G1 to M6: For Compact cells, 50 mm thick, side door

Assembly B available for filters with international dimensions and **Assembly B FS** for filters with a full section
- Compressible tracks designed for efficiency levels G4 to F9 or Activated Carbon (urban pollution) for Compact cells and flexible or rigid bag with side door.

Assembly C for filters with international dimensions:
- Universal frames designed for efficiency levels G4 to F9, E10 or Activated Carbon (urban pollution) for Compact cells and flexible or rigid bag with access section and side door

Assembly D for Absolute filters with international dimensions
- Absolute large-media frames for EPA and HEPA Absolute cubic cells

Assembly ED for Absolute filters with international dimensions
- Absolute plate for EPA and HEPA Absolute cubic cells for industrial applications (e.g. pharmaceuticals).

Assembly F for Cubic carbon filters with international dimensions
- Large-media frames for Activated Carbon cubic cells.

Description	Construction Code	Assembly	Efficiency	Cell descriptive code
50mm flat metal filter	C	A or C	G1	Galvanised steel metal medium and frame
50mm flat filter	C	A, B or C	G4	Galvanised steel metal frame and synthetic medium
			M5	
			M6	
			F7	
50mm flat filter (full section) up to size 1350	C FS	A FS or B FS	G4	Galvanised steel metal frame and synthetic medium
			M5	
			M6	
			F7	
292mm rigid bag filter	RB	B or C	M6	Polypropylene frame and fibreglass medium
			F7	
			F8	
			F9	
			E10	
380mm short flexible bag filter	SB	B or C	G4	Galvanised steel metal frame and synthetic medium
			M5	
			M6	
			F7	
600mm long flexible bag filter	LB	B or C	M6	Galvanised steel metal frame and synthetic medium
			F7	
			F9	
292mm Absolute filter	CUBIC 610x610	D	E10	Polypropylene frame and fibreglass medium
			H13	
			H14	
292 mm rigid bag carbon filter + fine filter, std universal frame	RB	B or C	Carbon+F7	Polypropylene frame, synthetic + carbon medium
Flexible carbon bag filter + 600mm long bag fine filter	LB	B or C	Carbon + F7	ABS frame, synthetic + carbon medium
292mm rigid bag carbon filter	RB	B or C	Carbon	Carbon polypropylene frame
Cubic carbon filter	CUBIC 595x595	F	Carbon	Metal frame + carbon panel

C: 50 mm compact filter
C FS: 50 mm compact filter, full section
RB: 290mm rigid bag filter
SB: 380mm short flexible bag filter
LB: 600 mm long flexible bag filter
CUBIC: 292 mm cubic

GENERAL DESCRIPTION OF THE 39CP RANGES

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Removable door	Standard	Standard	Standard
Hinged doors	Standard	Standard	Standard
Pressure tapping per filter stage	Standard	Standard	Standard
Spare cell	X	X	X
Galvanised safety container	X	X	X
Stainless steel safety container	X	X	X
Liquid-filled pressure gauge supplied loosely	X	X	X
Contact pressure gauge	X	X	X
Magnehelic pressure gauge supplied loosely	X	X	X
Magnehelic pressure gauge factory fitted	X	X	X
Double glass porthole	X	X	X
Lighting kit supplied loosely	X	X	X
Lighting connected on switch	X	X	X
Door contact	X	X	X
Paint on tracks	X	X	Standard
Paint on frame	X	X	Standard
304 L or 316 L stainless steel tracks	X	X	X
Stainless steel universal frame (fine filters •F")	X	X	X
Painted large-media frame (EPA/HEPA filters)	X	X	Standard
Stainless steel large-media frame (HEPA filters •H")	X	X	X
Hatch for pressure measurement	NA	X	X
Range of ATEX filter cells	NA	X	X

X: Option NA: Not applicable

Plate recovery unit

Three efficiency levels available: from 60% to 85%

The plate heat exchangers are always equipped with a total bypass on fresh air and access door to the servomotor

Condensate drain pan on exhaust air side, made from galvanised steel with condensate drain piping as standard

Available in a stacked configuration for all sizes

Access door to the condensate drain pan(s)

In the standard construction, the heat exchanger has aluminium plates, and can be used routinely up to an air temperature of 90°C (if the plate heat exchanger is a component of an AHU, the standard limit temperature is 80°C). The leakage flow rate is 0.1%, the nominal flow rate for a pressure difference of 400 Pa between the 2 air streams.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Pre-painted aluminium plates	X	X	X
Condensate drain pan (exhaust air side) made from stainless steel panels	X	X	X
Condensate drain pan (fresh air side) made from galvanised panels	X	X	X
Condensate drain pan (fresh air side) made from stainless steel panels	X	X	X
Paint on baffle, partition and support	X	X	X
Baffle, partition and support made from 304 L or 316 L stainless steel	NA	X	X
Paintwork on bypass damper	X	X	X
Frame and bypass dampers in stainless steel	NA	X	X
Damper control, manual, motorised or ready to be motorised	X	X	X
Fresh air & exhaust air pressure tapping	Standard	Standard	Standard
Additional access door	X	X	X
Door porthole	x	x	x

X: Option NA: Not applicable General description of the 39CP ranges

GENERAL DESCRIPTION OF THE 39CP RANGES

Rotary recovery

Three efficiency levels available: from 75% to 85%
- Corrugated aluminium exchange medium
- Adjustable midway and peripheral gasket to guarantee a minimum leak flow rate
- Lateral inspection panel
- Constant speed gear motor (230 / 400 V three-phase power supply)
- Maintenance-free ball bearing
- For sensible power exchange as standard.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Gear motor and variable frequency drive for variable speeds from 0 to 10 rpm – 230 V single-phase	X	X	X
Coated aluminium rotor	X	X	X
Hygroscopic rotor (for humidity exchange)	X	X	X
Enthalpic rotor (for total power exchange)	X	X	X
Pool bearing and condensate drain pan	NA	X	X
316 stainless steel with drainage system	NA	X	X
Painted internal panelling	NA	X	X
304 L or 316 L stainless steel interior panelling	NA	X	X
Pressure tapping	X	X	X
Purge sector	X	X	X
Door porthole	X	X	X

X: Option NA: Not applicable

Heating coil

Fluids:
- **Hot water**
  - Construction with copper tubes and aluminium fins.
  - Maximum primary fluid temperature = 120 °C.
  - Operating pressure for water: 8 bar as standard - Higher pressures on consultation.
  - Removable sealing flanges between the casing and manifolds (up to 3" diameter prevent damage to the sealing system during connection operations).

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:
- Copper tubes with unions up to a diam. of 2"1/2.
- Grooved steel tubes for larger diameters.

- **Superheated water**
  - Construction with steel tubes and aluminium fins.
  - Maximum primary fluid temperature = 200 °C.
  - Operating pressure for water: 30 bar max.
  - Supply manifolds and tubes made from steel with smooth ends.
- **Refrigerant**
  - Construction with copper tubes and aluminium fins.
  - Supply tubes made from copper with smooth ends.
- **Steam**
  - Max pressure 2 to 8 bar - stainless steel tubes, aluminium fins.
  - Manifolds and supply tubes are stainless steel tubes with smooth ends

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Smooth pipe coil (without fins)	X	X	X
Superheated water coil	X	X	X
Steam coil	X	X	X
Condensation coil	X	X	X
Pressure tapping, upstream and downstream	X	X	X
Precoated fins/ max. primary fluid temperature 110°C	X	X	X
Stainless steel tubes on consultation, for water	X	X	X
Coil with ALTENA treatment, max. temperature 160°C	X	X	X
Coil with BLYGOLD treatment, max. temperature 90°C	X	X	X
Coil with HERESITE treatment, max. temperature 180°C	X	X	X
Copper fins	X	X	X
Paint on tracks	X	X	X
304 L or 316 L stainless steel tracks	X	X	X
304 L or 316 L stainless steel coil panelling	X	X	X
Standard screw flanges	Kit	Kit	Kit
Stainless steel screw flanges	Kit	Kit	Kit
Quick connections kit (copper tubes) (victaulic type)	Kit	Kit	Kit
Threaded connections (steel tubes)	Kit	Kit	Kit
Frost protection sensor slide	X	X	X
Frost protection thermostat with automatic reset supplied in kit form	X	X	X
Frost protection thermostat with automatic reset supplied assembled	X	X	X

X: Option NA: Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Electric heater

- Shielded resistors in stainless steel scrolled finned tubes
- Connected to copper strips.
- Double insulation assembly.
- Equipped with two safety thermostats: one with manual reset, second with automatic reset.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Paint on tracks	X	X	X
304 L or 316 L stainless steel tracks	X	X	X
304 L or 316 L stainless steel coil panelling	X	X	X
Single- or three-phase connection	X	X	X

X: Option NA: Not applicable

Cooling coil

- Chilled water / direct expansion coil
- Construction with copper tubes and aluminium fins.
- Operating pressure for water: 8 bar as standard - Higher pressures on consultation.
- Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
- Droplet separator as standard if necessary, as an option on request.
- Removable sealing flanges between the casing and manifolds up to 3" diameter, preventing damage to the sealing system during connection operations.

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:

- Copper tubes with unions up to a diam. of 2"1/2.
- Grooved steel tubes for larger diameters.
- Direct expansion evaporation
  - Construction with copper tubes and aluminium fins.
  - Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
  - Droplet separator as standard if necessary, as an option on request.
  - Standard smooth copper refrigerant supply tubes (supplied capped)
  - Manifold on fluid intake as standard.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Chilled water coil	X	X	X
Direct expansion evaporation coil	X	X	X
Access panel on droplet separator	as standard if compulsory		
Precoated fins/ max. primary fluid temperature 110°C	X	X	X
Stainless steel tubes on consultation, for water	X	X	X
Copper fins	X	X	X
Coil with ALTENA treatment, max. temperature 160°C	X	X	X
Coil with BLYGOLD treatment, max. temperature 90°C	X	X	X
Coil with HERESITE treatment, max. temperature 180°C	X	X	X
Paint on tracks	X	X	X
Stainless steel tracks	X	X	X
304 L or 316 L stainless steel coil panelling	X	X	X
316 L stainless steel condensate drain pan	X	X	X
316L stainless steel hygienic tank	NA	X	X
Standard tray insulation	X	X	X
Manifold insulation	X	X	X
All stainless steel droplet separator (frame and medium)	X	X	X
Polypropylene blade separator, galvanised frame	X	X	X
Polypropylene blade separator, stainless steel frame	NA	X	X
Aluminium blade separator, galvanised frame	NA	X	X
Aluminium blade separator, stainless steel frame	NA	X	X
Pressure tapping, upstream and downstream	X	X	X
Standard screw flanges	Kit	Kit	Kit
Stainless steel screw flanges	Kit	Kit	Kit
Tubes with quick connections (copper tubes) (victaulic type)	Kit	Kit	Kit
Threaded connections (steel tubes)	Kit	Kit	Kit
Frost protection sensor slide	X	X	X

X: Option NA: Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Fans

- Forward-curved dual-inlet fan.
- Backward-curved dual-inlet fan.
  Steel scroll and impeller.
  Belt and pulley transmission on the dual-inlet fans.
  Assembly on anti-vibration frame with flexible internal sleeve and damper mounts.
- Metal impeller plug fan turbine with AC motor
  Assembly on anti-vibration frame with flexible internal sleeve and damper mounts.
- Standard motor: asynchronous three-phase, 230 / 400 V - 50 Hz up to 3 kW - 400 V - 50 Hz from 4 kW, IP 55 protection, class F with PTC
- Steel plug fan with EC motor with integrated variator, three-phase 400 V n- 50 Hz
- Assembly on partition.
- Inspection hatch with bolts in compliance with the "MECHANICAL SAFETY" specification in the EN 1886 standard and the machinery directive.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Forward curved centrifugal fan with pulley belt transmission	X	X	X
Backward curved centrifugal fan with pulley belt transmission	X	X	X
Plug fan	X	X	X
EC plug fan	X	X	X
ATEX fan	NA	X	X
Removable access pannel	X	X	X
Access panel mounted on hinges	Standard	Standard	Standard
Pressure tappings	X	X	X
Door contact	X	X	X
Panel window	X	X	X
Smoke detector (NF S61961)	X	X	X
230V light kit supplied loosely	X	X	X
230V light installed with on-off switch	X	X	X
Paint protection on fan assembly (scroll and AC motor plug fan)	X	X	X
Frame, stainless steel smoke detector (scroll and AC motor plug fan)	NA	X	X
Epoxy painted scroll and impeller	NA	X	X
Antirain hood for fresh inlet air damper	X	X	X
Access protected by screen	X	X	X
Housing for belt - pulley transmission	X	X	X
Double motor assembly	X	X	X
Special lifting supports	X	X	X
Variable frequency drive not mounted	X	X	X
Installed variable frequency drive	X	X	X
Security access panel switch	X	X	X
Proximity switch in kit form	X	X	X
Antirain hood for supply air damper	X	X	X

X: Option NA: Not applicable

Sound attenuator

- Different lengths of baffle depending on the required attenuation.
- Mineral wool of different densities, the faces are covered with an anti-erosion shield.
- Galvanised panels.

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Baffle lengths (in mm)	600 - 900 - 1200 - 1500		
Antishredding Glass Cloth	NA	X	X
Protective paint on tracks	X	X	X
Painted baffle panels	X	X	X
304 L or 316 L stainless steel tracks	X	X	X
Earth strip on baffle (ATEX)	NA	X	X

X: Option NA: Not applicable

GENERAL DESCRIPTION OF THE 39CP RANGES

Standalone production steam humidifier

With steam production (standalone with electrodes)

The supply includes

- Aluminium steam distributor.
- Steamer with electrical cabinet and controller (IP20).
- Proportional or on/off control.
- Duct/cylinder connection.
  - Condensate return tubes and connections.
  - Three-phase 400 V - 415 V supply voltage depending on capacity
  - Min and max supply water conductivity limits 125 - 1250 microsiemens/cm (8000 - 800 ohm).
  - Hardness of supply water 15 - 30 degrees (French).

OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Stainless steel safety container	X	X	X
Fully galvanised droplet separator	X	X	X
Fully stainless steel droplet separator	X	X	X
Double glass porthole	X	X	X
Lighting connected on switch	X	X	X
Removable door	X	X	X
Door contact	X	X	X

X: Option NA: Not applicable

Control

The electrics box is integrated into the unit and the electrical cables are protected by an enclosed cable raceway, factory-fitted.

The unit can be supplied as a single unit, equipped with a control which is fully assembled and tested in the factory if it is formed of one block, or a multi-block assembled on the optional multi-block frame.

Plug & Play solution: the electrics box is powered by a 400 V + earth power supply

The control software for the 39CP range enables the following:

- Temperature regulation*: sensor on supply air / return air / room air
- Humidification and dehumidification regulation*: sensor on return or room air
- Fan management: constant flow / constant pressure
- Filter fouling management (4-stage filtration as maximum)
- Single-zone air quality management (CO_2) sensor on return air or room air
- Water coils: cooling/heating/mixed/direct expansion (3 maximum)
  - 2-way valve
  - Three-way valve.
- Electric heater (4-stage heaters as maximum)
  - Proportional and On/Off control
  - 1 TRIAC type proportional stage (compulsory)
  - Independent power supply, control by the AHU PLC.
- Steam humidifier with electrode:
  - Independent power supply, control by the AHU PLC.
- Management of cooling modes: Free cooling / Night cooling
- Management of frost protection faults
- Fire protection
- Communication board available:
  - Modbus RTU RS485 / Modbus TCP IP / KNX / LON / BACNET IP

The control does not enable the following elements to be managed:

- Steam coil / Superheated water coil / Glycol/water mix coils / Condenser coil
- Make-up / gas burner
- Adiabatic humidifier

* availability depends on options; see specific control document

Extra accessories:

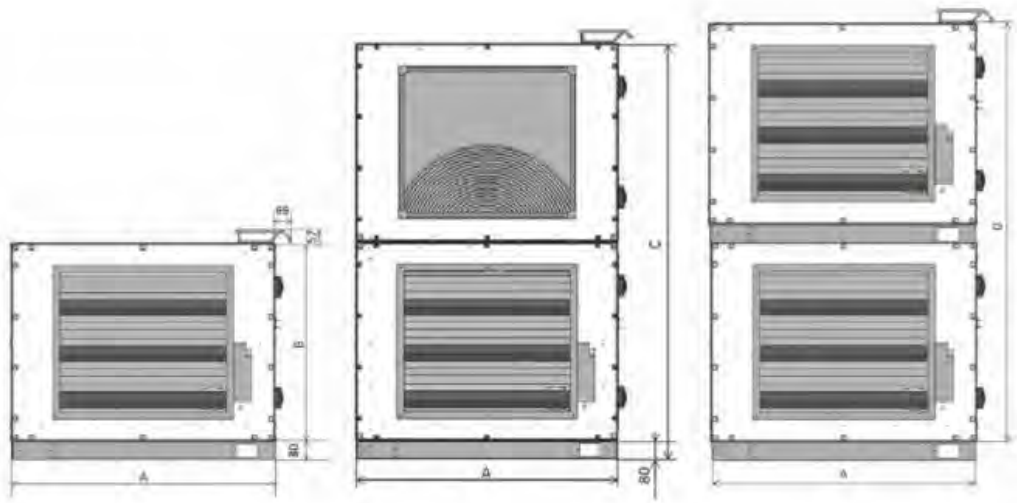
OPTIONS AVAILABLE PER RANGE	39CP L	39CP H	39CP C
Standard flexible sleeves for the outside of the casing	X	X	X
Insulated flexible sleeves for the outside of the casing	X	X	X
Rain protection frame with bird screen	X	X	X
Grille frame for protection of the air handling orifices on AHUs	X	X	X
Factory-assembled AHU on single unit frame: max size 1350 or maximum length 6 m	X	X	X

X: Option NA: Not applicable

DIMENSIONS

External dimensions and raceway details*

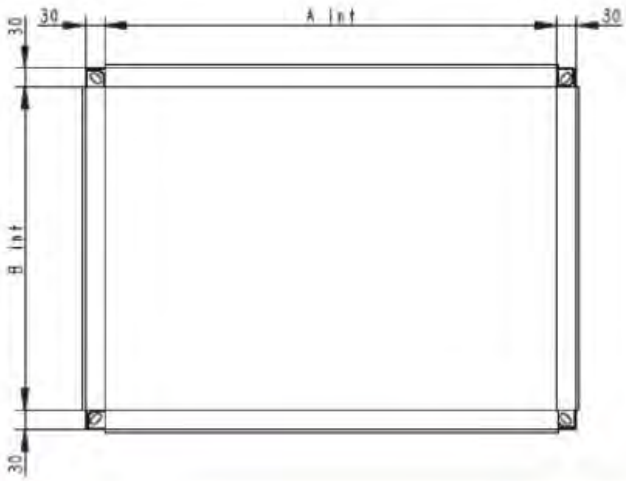
* raceway optional



Sizes	Casing external dimension				Block length*
	A	B	C	D	
150	870	560	1122		250 < L < 2800
300	870	860	1722		250 < L < 2800
450	1130	860	1722		250 < L < 2800
600	1470	860	1722		250 < L < 2800
750	1840	860	1722		250 < L < 2800
1050	1840	1080	2162		250 < L < 2800
1350	2070	1080	2162		250 < L < 2800
1800	2070	1460		3000	250 < L < 2800
2100	2340	1460		3000	250 < L < 2300

*Length excluding the unit end panel

Connection flanges



- Reference 00: Lateral air intake
- Reference 1: Air intake, small section
- Reference 2: Air intake, large section
- Reference 3: Scroll fan discharge air intake

39CP L 39CP H 39CP C		150	300	450	600	750	1050	1350	1800	2100
Reference 00 - LATERAL	A	320	320	470	620	720	770	970	870	970
	B	370	670	670	670	670	870	870	1270	1270
Reference 1 - SMALL SECTION	A	515	515	775	1115	1485	1485	1715	1715	1985
	B	220	370	370	370	370	470	470	670	670
Reference 2 - LARGE SECTION	A	515	515	775	1115	1485	1485	1715	1715	1985
	B	370	670	670	670	670	870	870	1270	1270
Reference 3: FAN DISCHARGE	A	-	520	520	520	520	620	620	920	920
	B	-	520	520	520	520	620	620	920	920

AIR HANDLING UNITS

AIROVISION

39HQ

Air flow 5000-130000 m³/h

Airovision is a modular construction that can be fully customised to provide the required performance for any application.

Special new casings encompass only high-quality components, including filters, heat recovery systems, fan assemblies, cooling and heating coils, humidifiers and attenuators.

The Airovision range also pays special attention to air quality and reduction of the energy required to cool, heat, humidify and supply the conditioned air.

Airovision is available in a large selection of sizes and arrangements, suitable for many different applications.

Controls (Option)

EUROVENT CERTIFIED PERFORMANCE
N° : 08.02.365
Range: 39HQ
www.eurovent-certification.com

www.eurovent-certification.com

OPTIONS

- 100% stainless steel
- Direct-drive fans
- All types of humidification systems, including infrasonic
- Flat pack option for site assembly
- Heat recovery systems (run-around coil, plate heat exchanger and thermal wheels)
- Wide selection of standard accessories
- 316L stainless steel drain pan with PVC wall lining in the outside air inlet section and filter section
- Plug fan EC motors
- Pro-Dialog controller with human interface (local or remote installation)

FEATURES AND ADVANTAGES

- Airovision is a modular construction that can be fully customised to provide the required performance for any application.
- Special new casings encompass only high-quality components, including filters, heat recovery systems, fan assemblies, cooling and heating coils, humidifiers and attenuators.
- The Airovision range also pays special attention to air quality and reduction of the energy required to cool, heat, humidify and supply the conditioned air.
- Airovision is available in a large selection of sizes and arrangements, suitable for many different applications.
- Applications include leisure and event complexes, theatres, museums, libraries, offices in companies and government institutions, shopping centers, super-markets, department stores and educational establishments, as well as oil drilling rigs, airports and cruise ships.
- In addition Airovision is also ideal in health care and in industries with stringent hygiene requirements.

Environmentally sound

- No paint treatment required after the production process
- 100% recyclable components
- Low energy usage due to optimised component selection
- High-efficiency heat recovery systems available

Technical specification (in accordance with EN1886)

- Heat transfer factor class T2
- Thermal bridging factor TB 2
- Air tightness class B (L2)
- Mechanical strength class 1A (DI)
- Filter bypass leakage
  - class F7 for standard slide-in construction
  - class F9 for special slide-in construction
  - class F9 for built-in construction

High-efficiency centrifugal fan

Special sorption heat recovery wheels

Filters are easily removable

Generously sized access doors

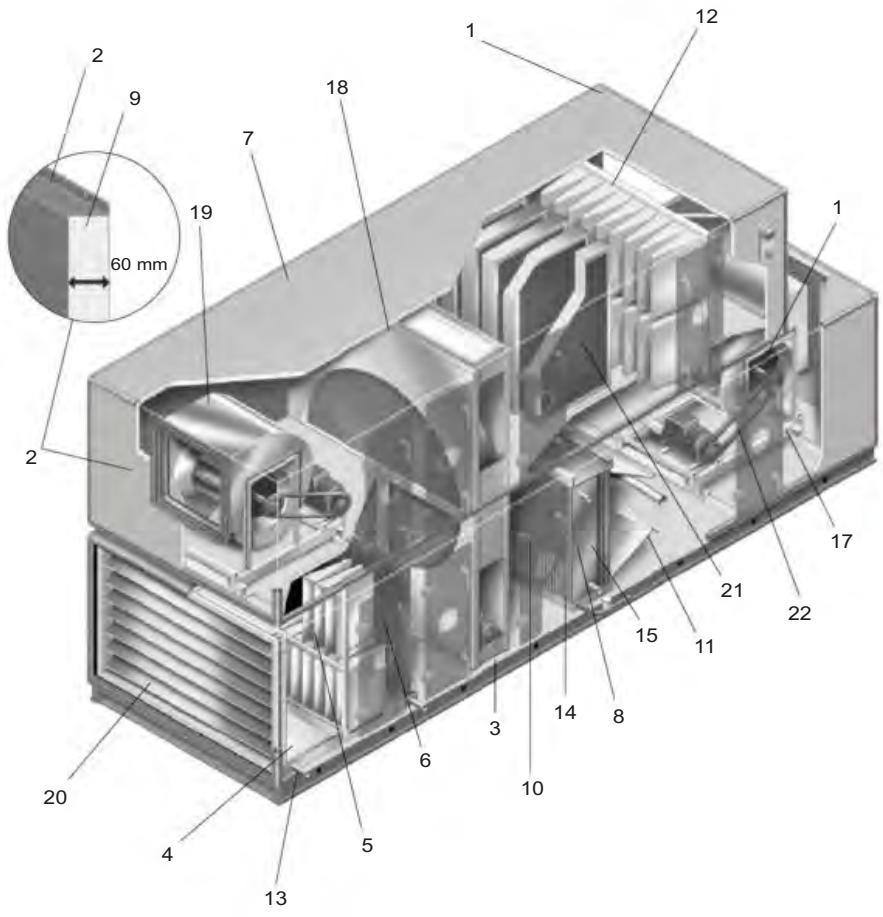
FEATURES AND ADVANTAGES

Rigid construction

1 Carrier profiled steel frame construction with purpose-built corner and center posts
2 Panels with 60 mm thick thermal insulation
3 Robust base frame made of galvanised steel box profile

High corrosion resistance

4 316L stainless steel drain pan with PVC wall lining in the outside air inlet section and filter section (option)
5 Filters held in 316L stainless steel frames
6 Anti-corrosion protection available
7 Internal and external panels made of high-quality prepainted galvanised sheet steel
8 Cooling coils with integrated stainless steel drain pan and plastic droplet eliminator housed in an aluminium frame
9 Special panel design and frame detail eliminate the risk of condensation forming in the panels



Easy maintenance

10 Various inspection options with generously sized clear opening access doors
11 Completely smooth internal surfaces
12 Filters easily removable
13 Drain pan in the outside air inlet section and filter section equipped with drain (option)
14 Cooling coil drain pan fully accessible for cleaning/ disinfection
15 Moisture eliminator after the cooling coil easily removable
16 Long-life fan and motor bearings
17 Fans removable from the side

High-quality built-in components

18 Special sorption heat recovery wheels for optimised recovery of heat, cold and humidity
19 High-efficiency centrifugal low-noise fans, mounted on vibration isolators with low transmission factor
20 Aluminium dampers with UV-resistant double nylon bearings
21 Skrim faced sound absorption splitters
22 Matched high-efficiency belt drives

FEATURES AND ADVANTAGES

Central station air handling unit range (based on a nominal filter loading of 1.11 m³/s)

Height \ Width	4	5	6	7	8	9	10	11	12	13	14
2.5	0.56	0.69	0.83								
4	1.11	1.39	1.67	1.81	2.22	2.50	2.78	3.06	3.33		
6	1.67	2.22	2.50	2.92	3.33	3.75	4.17	4.72	5.00	5.56	5.83
8			3.33	3.89	4.44	5.00	5.56	6.11	6.67	7.22	7.78
10					5.56	6.39	6.94	7.64	8.33	9.03	9.72
12						7.50	8.33	9.17	10.00	10.83	11.67
14									11.67	12.78	13.61
16										14.44	15.56
18											
20											

Height \ Width	15	16	17	18	19	20	21	22	23	24	25
2.5											
4											
6	6.39	6.67	7.22	7.50							
8	8.33	8.89	9.44	10.00	10.56	11.11	11.67	12.22	12.78	13.33	
10	10.56	11.11	11.94	12.50	13.33	13.89	14.72	15.28	16.11	16.67	17.50
12	12.50	13.33	14.44	15.00	15.83	16.67	17.50	18.33	19.17	20.00	20.83
14	14.72	15.56	16.67	17.50	18.61	19.44	20.56	21.39	22.50	23.33	24.44
16	16.67	17.78	18.89	20.00	21.11	22.22	23.33	24.44	25.56	26.67	27.78
18				22.50	23.	2 .00	26.	27.50	28.8	30.00	1.39
20						27.78	29.17	30.56	31.94	33.33	34.72

Preferred range Combination with heat recovery Other sizes

Note: All air flow values are in m3/s. Larger unit sizes are possible.

Module dimension : 160 mm
External width : n x module plus 98 mm
External height : n x module plus 98 mm
Base frame height : 60 mm or 62 mm

Example : type 39HQ12.10
Width : 12 x 160 plus 98 = 2.018 mm
Height : 10 x 160 plus 98 = 1.698 mm
Nominal air flow : 8.33 m³/s

AIR HANDLING UNIT

AHU for all applications

Designed to meet the EN 13053 and EN 1886 standards

The effective solution for service sector, industry and healthcare applications

39CZ

Air flow: 1000 to 610000 m^3/h

The 39CZ range is designed for the service sector, industry and healthcare markets, to meet different requirements in terms of air mixing, filtration, heating, refrigeration, dehumidification, humidification, ventilation, recovery and sound attenuation. It is available as a horizontally-mounted version for installation indoors or outdoors with a roof and protection accessories. The range is available in a single or dual-flow version.

Thanks to the broad spectrum of solutions on offer, and the product's excellent modularity, the specifications for this product will always comply with the EN 13053 and EN 1886 standards, whatever its configuration.

EUROVENT CERTIFIED PERFORMANCE
No. 16.04.011
Range: 39CZ
www.eurovent-certification.com

www.eurovent-certification.com

USE

External wall with RAL 7035 paint
Compliance with the provisions of the EN 13053 standard
Classification in accordance with European standard EN 1886
Casing resistance: class D1
Casing airtightness: class L1
Filter bypass leak: class F9
Thermal transmittance: class T2
Thermal bridge factor: class TB2

RANGE

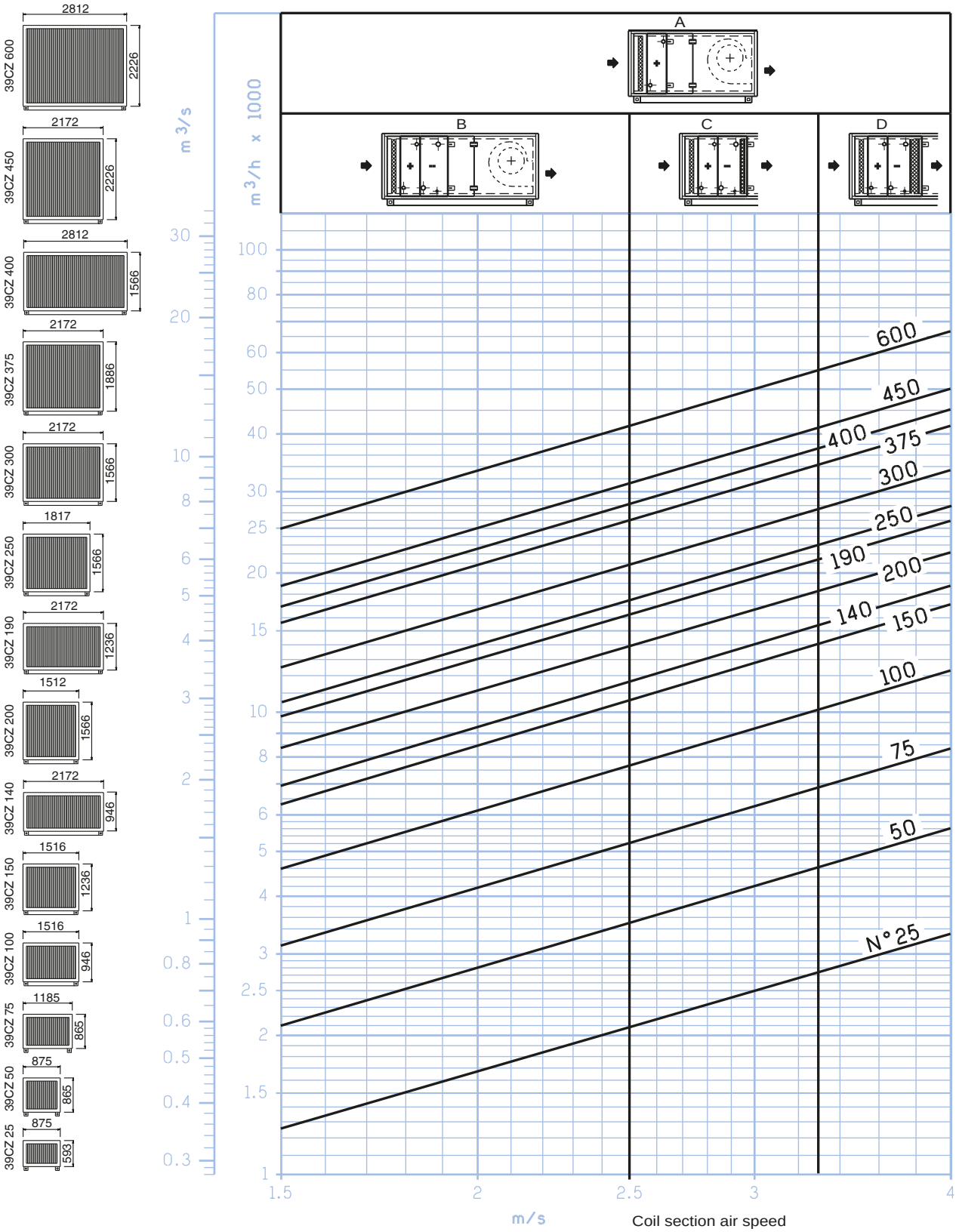
The 39CZ range consists of 14 sizes to handle air flow rates from 1000 to 66,000 m^3/h.

The diagram below shows how to preselect the necessary size based on:
- The flow speed in the active front section of the exchanger coils.
- The air flow rate to be handled.

RANGE

The diagrams show the standard compositions with the usage limit corresponding to the components.

- Air heater (A).
- air conditioning unit without droplet separator (B).
- With drain screen separator (C).
- With blade-type separator (D)



DESCRIPTION

Casing

- Double-skin panel with 50 mm mineral insulation with long fibres reinforced by welded fibreglass material,
- Peripheral frame fitted or mounting brackets in stainless steel,
- Depending on the size, double-skin panels, galvanised, coated, smooth walls with no protruding screws as per EN 13053.

Construction structure depending on AHU sizes.

- Sizes 25 to 75: self-supporting panels with aluminium vertical uprights.
- Sizes 100 to 150: panels screwed onto an aluminium structure sunk into the casing.
- Sizes 200 to 600: panels screwed onto an aluminium double honeycomb structure offering high resistance to flexing.
- Air handling units consist of multi-block components or mono-block components if the composition and size allow.
- All of our blocks can be disassembled on the installation site.

At least one removable panel per function in accordance with EN 13053, access panel as standard on functions requiring maintenance.

Lift-off panels on offset hinges, equipped with slow closing latches in composite material, polyamide handles, large section square porthole in accordance with EN 13053.

OPTIONS AVAILABLE PER RANGE	39CZ ST	39CZ CL & HE
Adjustable support feet + 35/+ 60 mm	X	X
Support feet risers up to 400 mm	X	X
Stainless steel ground insulation casing (h: 100)	X	X
Epoxy or polyurethane paint on int. and ext. panels	X	X
Int. and ext. panels in pre-painted RAL 9010 sheet metal		standard
Int. and ext. panels in 304 L stainless steel or Z3CN 18.10	X	X
Flat stainless steel base	X	X
Inclined stainless steel base (per block)	X	
Reinforced insulation	X	X
Roof for OUTDOOR model	X	X
Screened canopies for OUTDOOR model	X	X

Damper

- Isolation damper
- Safety damper (CH38)
- Control damper

All the dampers consist of airfoil blades, counter rotating with lateral seals and driven by toothed wheels or control rods. Steel frame and aluminium blades on 39CZ ST CL & HE Class 3 in accordance with EN1751. These dampers are installed on the inside or outside of the casing, depending on the solution chosen. Louvre control: manual, motorised or to be motorised.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Servomotor	kit	kit
Mechanism electric heaters <−25°C	X	X
oothed wheels	standard	standard
Control rods	X	X
Class 4 sealing in accordance with EN 1751		X
Polyurethane frame paint	X	standard
Polyurethane or epoxy paint on louvres and frames	X	X
Frame and dampers in stainless steel sheet		X

DESCRIPTION

Boxes

Air intake boxes (AHU intake)

Single air intake, mixing, economiser mixing.

Air discharge box (AHU discharge)

Directional, distribution.

Assembly of combined louvres outside or inside the casing for the task defined by the section chosen. Manual control, motorised or to be motorised.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL&HE
Servomotor	kit	kit
Mechanism electric heaters for fresh air at a temperature < −25°C	X	X
Toothed wheels	standard	standard
Control rods	X	X
Class 4 sealing in accordance with EN 1751		X
Galvanised safety base with drain	X	X
Stainless steel sheet safety base with drain	X	X
Polyurethane or epoxy paint on louvres and frames	X	X
Lighting not connected (if access provided)	kit	kit
Lighting wired to switch (if access provided)		
Double glass porthole	X	X
Lift-off panel (louvre control on opposite side)	X	X
Hinged door (louvre control on opposite side)	X	X

Filters

- G2 & G4 efficiency, M5 to F9, H10 to H14 (with the equivalence of the new ISO 16890 filtration standard) or activated carbon with international dimensions mounted on compressible tracks, on universal frame or large-media frames with pressure tappings on each filtration stage, EN 1886 Filter bypass leakage classification (F9 classification).
- Fitting system equipment for filter cells for all 3 ranges. Filter cells with international dimensions 24'' x 24'' and 12'' x 24''.
- Efficiency classification in accordance with EN 779 from G2 to F9.
- Efficiency classification in accordance with EN 1822 from H10 to H14.

■ 4 Standardised assembly systems

Assembly 0: traditional tracks for full section G4 cells.

Assembly 1: compressible tracks (horizontal extension), G2 and G4 efficiency, 65 to 90 % gravimetric (GRAVI) efficiency with side door.

Assembly 2: compressible tracks (horizontal and vertical extension), M5 to F9 efficiency, 40 to 98 % opacimetric (OPA) efficiency with side door.

Assembly 3: 3U universal frames or 3B large-media frames, M5 to H10 efficiency for universal frames, 40 % OPA to 85 % MPPS efficiency, H10 to H14 efficiency for large-media frames, 85 to 99.995 % MPPS efficiency.

Activated carbon: a model with activated carbon cells for urban pollution can also be installed in assembly 2 or 3 (universal frame); another for specific pollution must be installed in a large-media frame.

ASSEMBLY	0	1	2	3U	3B
F1 efficiency G2		X			
F2 efficiency G4	X	X		X	
F3 efficiency G4			X	X	
HEP efficiency M6/F7			X	X	
HPS efficiency M5/F8			X	X	
FHPS efficiency G4 + F6/F8			X	X	
HPR efficiency M5/F9			X	X	
HPR efficiency H10				X	
1 to H14					
HPR CARB urban pollution				X	
CARBOC specific pollution					X

DESCRIPTION

■ Name of filters selected

Application	CARRIER	Construction material		Classification	Efficiency		Construction
		Frame	Medium				
Prefilter	F1	Galv.	Galv. or stainless steel	G2	Gravimetric	65%	Flat filter
	F2		Synthetic	G4		90%	pleated filter
	F3			G4		90%	short bag
High efficiency filter	HEP1		fibreglass	M6	Opacimetric	65%	pleated filter
	HEP2			F7		85%	
	HEP3			F8		95%	
	M5		Fibreglass or synthetic	M5		< 65%	Short or long bag
	HPS1			M6		65%	
	HPS2			F7		85%	
	HPS3			F8		95%	
	FHPS1		Synthetic	G4+M6		90% Grav + 65% Opa	
	FHPS2			G4+F7		90% Grav + 85% Opa	
	FHPS3			G4+F8		90% Grav + 90% Opa	
	HPR1	Polypropylene +ABS	Fibreglass	M6		65%	Deep smooth dihedral
	HPR2			F7		85%	
	HPR3			F8		95%	
	HPR4			F9		98%	
Absolute filter	HPR H10			E10	EPA	85% MPPS	
	H10	ABS		E10		85% MPPS	
	H12			E12		99.5% MPPS	
	H13			H13		99.95% MPPS	
	H14			H14		99.995% MPPS	
Activated carbon filter	HPR CARB	Polypropylene	Synthetic	Urban pollution			Deep dihedral
	CARBOC	Galv.	Nonwoven + carbon	Specific pollution			Dihedral carbon uares

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Lift-off panel or hinged door	X	X
Galvanised safety container	X	X
Stainless steel safety container		X
Pressure tapping per filter stage	standard	standard
Liquid pressure gauge	kit	kit
Contact pressure gauge	kit	kit
Magnehelic pressure gauge	kit or assembled	kit or assembled
Double glass porthole	X	
Lighting not connected	kit	kit
Lighting wired to switch	X	X
Door contact	kit or assembled	assembled
Polyurethane or epoxy paint on tracks and frames	X	
Paint on frame:	X	standard
polyurethane	X	
Stainless steel tracks	X	standard
Stainless steel universal frame (•F'' fine filters)	X	X
Stainless steel large-media frame (HEPA •H'' filters)	X	X
Pressurised door (assembly 3 downstream of the fan)	standard	standard
Opening for DOP injection/Hatch for DOP measurement		X

DESCRIPTION

Heating coil

■ For hot water
- Construction with copper tubes and aluminium fins.
- Maximum primary fluid temperature = 120 °C.
- Operating pressure for water: 8 bar as standard - Higher pressures on consultation.

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:
- Copper or steel tubes with unions up to 3" diameter.
- Steel tubes with smooth ends for larger diameters.
- Removable sealing flanges between the casing and manifolds (up to 3" diameter prevent damage to the sealing system during connection operations).

■ For superheated water
- Construction with steel tubes and aluminium fins.
- Maximum primary fluid temperature = 200 °C.
- Operating pressure for water: 30 bar max.
- Supply manifolds and tubes made from steel with smooth ends.

■ For refrigerant fluid
- Construction with steel tubes and aluminium fins.
- Supply tubes made from copper with smooth ends.

■ For steam (on consultation)
- Low pressure < 2 bar - copper tubes, aluminium fins.
- High pressure 2 to 8 bar - cupronickel or stainless steel tubes depending on the size of the AHU, the pressure and the steam quality.
- Supply manifolds and tubes made from steel or stainless steel with smooth ends.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Hot water coil in stock	X	X
Standard circuit coil	X	X
Superheated water coil	X	X
Steam coil	X	X
Condensation coil		
Antifreeze probe slide	X	X
Frost protection thermostat supplied in a kit	X	X
Frost protection thermostat supplied mounted	X	X
Pressure tappings, upstream and downstream	X	X
Precoated fins/primary fluid max. T° 110°C	X	X
Coil with ALTENA treatment max. T° 160°C	X	X
Coil with HERESITE treatment max. T° 180°C	X	X
Copper fins	X	X
Galvanised steel safety container		
Stainless steel safety container	X	X
Epoxy paint on tracks	X	standard
Stainless steel tracks	X	X
Stainless steel coil panels		
Screw flanges and counter-flanges	kit	kit
Tubes with quick connections	X	X

Electric heater

- Shielded resistors in scrolled stainless steel finned tubes
- Connection to copper strips.
- Double insulation assembly.
- Safety thermostat with automatic and manual reset as standard.
- To commission the heater: refer to the manual supplied with each unit.
- Take the necessary precautions to prevent abnormal heating when the fan is switched off (ensure post ventilation).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Safety thermostat with automatic reset	standard	standard
Three-phase or single-phase connection	X	X
Painted tracks	X	standard
Stainless steel tracks		
Stainless steel heater panels	X	X

DESCRIPTION

Cooling coil

Inclined condensate drain pan in accordance with EN 13053,

■ Chilled water
- Construction with copper tubes and aluminium fins.
- Operating pressure for water: 8 bar as standard - Higher pressures on consultation.
- Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
- Droplet separator as standard if necessary, as an option on request.

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:
- Copper or steel tubes with unions up to 3" diameter.
- Steel tubes with smooth ends for larger diameters.
- Removable sealing flanges between the casing and manifolds up to 3" diameter prevent damage to the sealing system during connection operations.

■ Direct expansion evaporation
- Construction with copper tubes and aluminium fins.
- Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
- Droplet separator as standard if necessary, as an option on request.
- Standard smooth copper refrigerant supply tubes (supplied capped)
- Manifold on fluid intake as standard.
- Removable panel for accessing the expansion valve and solenoid valve incorporated in the casing (the valve and solenoid valve may be supplied assembled if the coil is connected to a CARRIER condensation unit).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Chilled water coil in stock	X	X
Standard circuit chilled water coil	X	X
Direct expansion evaporation coil	X	
Access panel on droplet separator	as standard if compulsory	
Pressure tappings, upstream and downstream	X	X
Precoated fins	X	X
Coil with ALTENA treatment	X	X
Coil with HERESITE treatment	X	X
Copper fins	X	X
Stainless tube exchanger, aluminium fins	X	X
Stainless steel condensate drain pan	X	standard
Heat insulation of pan, elbows and manifolds	X	
Painted tracks	X	standard
Stainless steel tracks	X	X
Hygiene pan		X standard on HE
Stainless steel heater panels	X	X
Fully galvanised droplet separator	as standard if compulsory	
Droplet separator with galvanised frame, stainless steel medium	X	X
100% stainless steel droplet separator, frame and medium	X	as standard if compulsory
roplet separator with polypropylene blades	as standard if compulsory	
Screw flanges and counter-flanges	kit	kit
Tubes with quick connections	X	X

DESCRIPTION

Adiabatic humidifiers

■ Spray - Efficiency 80 to 90%

- Stainless steel module with sloped bottom, door for inspection, maintenance and replacement of the drain screens and droplet separator.
- 2 or 3 spray ramps (depending on efficiency).
- Drain screens.
- Water tank with its supply equipment.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
400 V three-phase pump and recirculation accessories	X	X
Double glass porthole	X	standard
Lighting not connected	kit	kit
Lighting connected on switch	X	X
Droplet separator with galvanised frame with stainless steel mesh	X	standard
Fully stainless steel droplet separator	X	X
Water tank pan spray washer	X	X
Hydraulic connection for UV treatment of recirculated water	X	X

Steam humidifiers

■ Without steam production

The supply includes:

- Stainless steel steam distributor
- Permissible steam pressure range (0.2 to 3.5 bar)
- Cast iron steam/water separator
- Main steam valve
- 24 V or 240 V on/off or progressive servomotor

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Galvanised steel safety container	X	X
Stainless steel safety container	X	X
Fully galvanised droplet separator	X	X
Droplet separator with galvanised frame, stainless steel mesh	X	X
Fully stainless steel droplet separator	X	X
Double glass porthole	X	X
Lighting not connected	kit	kit
Lighting connected on switch		
Lift-off panel	X	X

■ With steam production (standalone with electrodes)

The supply includes:

- Aluminium steam distributor.
- Steamer with electrical cabinet and controller (IP 20).
- Proportional or on/off control.
- Humidity controller or control sensor.
- Duct/cylinder connection.
- Condensate return tubes and connections.
- 230 V single-phase or 400 V - 415 V three-phase supply voltage.
- Min and max supply water conductivity limits 125 - 1250 microsiemens/cm (8000 - 800 ohm).
- Hardness of supply water 15 - 30 degrees (French).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Galvanised safety container	X	X
Stainless steel safety container	X	X
Fully galvanised droplet separator	X	X
Droplet separator with galvanised frame, stainless steel mesh	X	X
Fully stainless steel droplet separator	X	X
Double glass porthole	X	standard
Lighting not connected	kit	kit
Lighting connected on switch		standard
Lift-off panel	X	X

■ With steam production (standalone with heaters) on consultation

DESCRIPTION

Fans

- Forward-curved dual-inlet fan.
- Backward-curved dual-inlet fan.
- Plug fan.
- EC plug fan.
- Steel scroll and impeller.
- Assembly on anti-vibration frame.
- Connection via internal flexible sleeve.
- Ball bearings mounted in fan inlets.
- Belt and pulley transmission on the dual-inlet fans.
- Standard motor: asynchronous three-phase, 230 / 400 V - 50 Hz up to 4 kW - 400 V - 50 Hz from 5.5 kW, IP 55 protection, class F with PTC.
- Inspection hatch with bolts in compliance with the “MECHANICAL SAFETY” specification in the EN 1886 standard and the machinery directive.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Fan with forward-curved blades and transmission	X	X
Fan with backward-curved blades and transmission	X	X
Plug fan	X	standard
EC plug fan	X	X
Sparkproof fan	X	X
Spring mounts	standard	standard
Lift-off panel	X	X
Hinged door	standard	standard
Pressurised door (plug fan), hinged for sizes > 250	standard	standard
Pressure connections	X	X
Holes with blanking covers	X	X
Door contact	kit or assembled	kit or assembled
Galvanised steel safety container	X	X
Stainless steel safety container	X	X
Double glass porthole	X	X
Smoke detector (NF S61961)	kit	kit
Lighting not connected	kit	kit
Lighting connected on switch	X	X
Paint on casing and bracket	X	standard
Stainless steel casing, bracket	X	X
Inspection hatch and vent on scroll	X	X
Epoxy painted scroll and impeller	X	standard
Screens on inlets	X	X
Door protection	X	X
Belt housing	X	X
2 motors fitted	X	X

Heat recovery unit

■ ■ Plate

- Standard construction or HEE plate heat exchanger.
- The heat exchanger has aluminium plates. This component can be used normally up to an air temperature of 150 °C (if the plate heat exchanger is an AHU component, the standard temperature limit is 80 °C with a differential pressure of 1000 Pa and a leak flow rate between the 2 air streams (EXHAUST/INTAKE) of less than 1 %.
- Condensate drain pan on exhaust air side, made from galvanised steel with condensate drain piping as standard.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
For stacked AHUs	X	X
For adjacent AHUs	X	X
G4 prefilter and M5 filter incorporated depending on size	X	X
Bypass on fresh air	X	X
Coated aluminium plates	X	X
Epoxy paint on internal panels	X	X
Pressure tapping on the 4 air handling orifices	X	X
Stainless steel condensate drain pan	X	X
Damper control, manual, motorised or ready to be motorised	X	X

DESCRIPTION

■ Heat pipe (gravity type)
- Constructed in the same way as a coil with several rows of finned tubes; the assembly is mounted in a casing with an intermediate partition separating the cooling and heating areas.
- Standard construction: copper tubes, aluminium fins, galvanised steel casing.
- Transfer fluid: refrigerant, operation from −25 to +50 °C.
- Assembly in either vertical, fixed horizontal or mobile horizontal position on shaft.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
For stacked or adjacent AHUs	X	X
Bypass on fresh air or exhaust air	X	X
Sensor, controller, servomotor for mobile model	X	X
Precoated fins	X	X
Fins with ALTENA treatment	X	X
Fins with HERESITE treatment	X	X
Stainless steel heater panels	X	X
Stainless steel condensate drain pan	X	X
Pressure tapping on the 4 air handling orifices	X	X

■ Rotating
- Corrugated aluminium exchange medium.
- Adjustable midway and peripheral gasket to guarantee a minimum leak flow rate.
- Lateral inspection panel.
- Constant speed gear motor (230/400 V three-phase power supply).
- Maintenance-free ball bearing.
For sensible power exchange as standard.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Gear motor and variable frequency drive for variable speeds from 0 to 10 rpm − 230 V single-phase	X	X
Coated aluminium rotor	X	X
Hygroscopic rotor for total power exchange	X	X
olyurethane or epoxy painted internal panels		
Stainless steel internal panels	X	X
Pressure tapping on the 4 air handling orifices	X	X

Sound attenuators

- Baffles.
- Mineral wool of different densities, the faces are covered with an anti-erosion shield.
- Galvanised panels.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Baffle length	500 - 900 - 1200 - 1500	
Coating with fray-resistant fabric	X	standard
Painted mounting tracks	X	standard
Painted baffle panels		standard
Stainless steel baffle panels	X	X

Accessories

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Standard flexible sleeves for the outside of the casing	X	X
Insulated flexible sleeves for the outside of the casing	X	X
Rain protection frame with bird screen	X	X
Grille frame for protection of the air handling orifices on AHUs	X	X

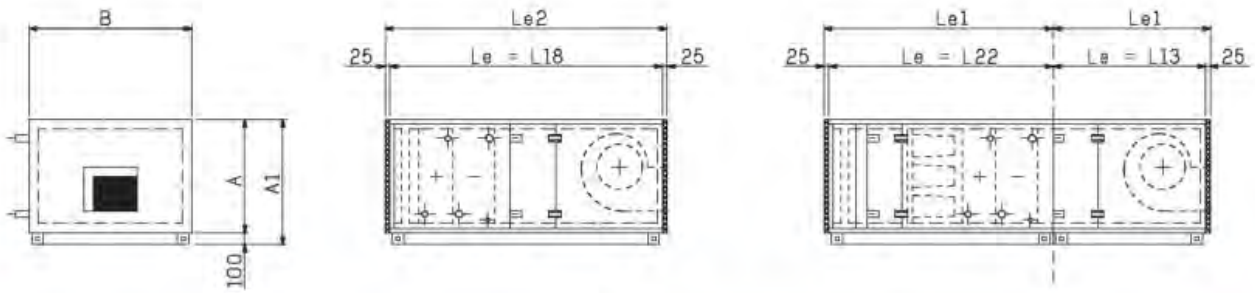
BLOCK AND AHU DIMENSIONS

Table of "L" block lengths available (all integrated elements), the total length of the AHUs is obtained by adding 25 mm to each end.

		Unit No.	25 to 50	75	100 to 450	400 &600
block/AHU maximum length	**length "L"**					
		L2	200			
		L3	300			
		L4	400			
		L5	500			
		L6	600			
		L7	700			
		L8	800			
		L9	900			
		L10	1000			
		L11	1100			
		L12	1200			
		L13	1300			
		L14	1400			
		L15	1500			
		L16	1600			
		L17	1700			
		L18	1800			
		L19	1900			
		L20	2 0			
		L21	2100			
75		L22	2200	2200	2200	2200
400 & 600		L23	2300		2300	2300
25 to 50		L24	2400		2400	
		L25			2500	
		L26			2600	
		L27			2700	
		L28			2800	
		L29			2900	
		L30			3000	
		L31			3100	
100 to 450		L32			3200	

■ AHU dimensions

L length of integrated elements
Le 1 length of integrated elements + 1 end panel
Le 2 length of integrated elements + 2 end panels

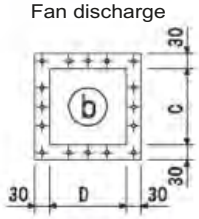


Unit No.	25	50	75	100	150	140	200	190	250	300	375	400	450	600
A	593	865	865	946	1236	946	1566	1236	1566	1566	1886	1566	2226	2226
A1	693	965	965	1046	1336	1046	1666	1336	1666	1668	1986	1666	2326	2326
B	875	875	1185	1516	1516	2172	1516	2172	1817	2172	2172	2812	2172	2812

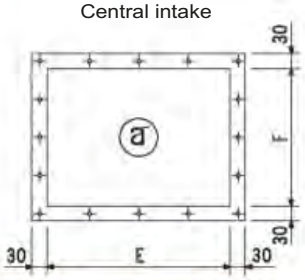
BLOCK AND AHU DIMENSIONS

■ Connection flanges

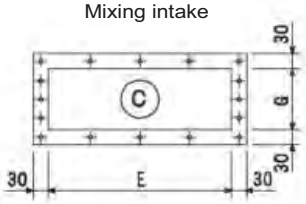
Fan discharge



Central intake



Mixing intake



Unit No.	25	50	75	100	150	140	200	190	250	300	375	400	450	600
C	299	415	464	514	574	514	724	574	814	914	1024	914	1144	1144
D	299	415	464	514	574	514	724	574	814	914	1024	914	1144	1144
E	610	610	910	1260	1260	1860	1260	1860	1560	1860	1860	2510	1860	2510
F	310	610	610	610	1010	610	1310	1010	1310	1310	1510	1310	1810	1810
G	160	310	310	310	410	310	610	410	610	610	760	610	910	910

PRECISION CABINET

For version X

- **Compact footprint**
- **Dual-wall construction**
- **Fan motor assembly with EC motor (electronically commutated)**
- **PLC control**
- **Condenser fan variable speed control**

50CJ

Cooling capacity: 5-55 kW
Heating capacity: 4.5-41 kW

Precision air conditioning cabinet specially designed for the air handling requirements (filtration, temperature and humidity control) of computer rooms, telecommunications rooms and specific purpose rooms (electronics, sensitive storage, medical, controlled atmosphere rooms, etc.).

Dual-wall construction. The choice of technology used (self regulation depending on the room loads, EC motor: electronically commutated) can reduce the energy consumption.

This unit is quick and easy to install, and particularly simple to use.

RANGE

The 50CJ cabinet comes in two versions:

- **50CJ W*: Chilled water model:***
  - Cooling capacity range: 5 to 55 kW
  - Flow rate: 1000 to 12 000 m³/h
  - 7 sizes available
- **50CJ X**: direct expansion model with exterior air condensation unit:
  - Cooling capacity range: 7 to 47 kW
  - Flow rate: 1000 to 12 000 m³/h
  - 11 sizes available

INSTALLATION

UNDER installation: reversed air supply

Installation 1

Air supply via raised floor

Installation 3

Front return

OVER installation: top air supply

Installation 4

Rear return

Assembly 5

Return air below

QUICK SELECTION

50CJ W

Cold water coil

Sizes	W5	W8	W12	W16		W27		W39		W59	
Air flow (m³/h)	1 300	2 000	2 500	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Maximum operating pressure with G4 or F7 filtration* (Pa)	400	400	259	400	85	400	324	273	26	325	18
Total/sensible cooling capacity (kW)	5/4.8	8/7.6	10.5/9.9	14.7/13.2	18/16.7	23.5/21.5	27/25.1	34/30.5	38/34.4	48/43.4	55/50.5
Water flow rate (m³/h)	0,86	1,4	1,8	2,5	3,1	4	4,6	5,8	6,5	8,2	9,4
Pressure drop (mWC) (Coil + valve)	4,3	4,9	5,1	4,7	10	4,1	5,2	7,3	8,9	5,5	6,9

* Maximum operating pressure dependent on air flow rate. Take away approximately 20 Pa if there is a hot water coil on 50CJW
The operation point can be adjusted directly via the controller. Hence all the air flow/operating pressure combinations are possible, with the values in the table above as the maximum values.

Correction factors	7/12 °C	10/15 °C	12/18 °C
22 °C/45%	0,84	0,58	0,44
24 °C/45%	1	0,74	0,5
30 °C/35%	1,48	1,18	0,9

Correction factors to apply to the cooling capacity based on the outdoor temperature and the return air conditions.

QUICK SELECTION

50CJ W

Hot water coil

Sizes	W5	W8	W12	W16		W27		W39		W59	
Air flow rate (m³/h)	1 300	2000	2 500	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Heating capacity (kW)	4,5	6,2	7,5	11,9	13,7	17,8	19,5	25,8	27,6	37,5	40,9
Water flow rate (m³/h)	0,21	0,27	0,33	0,5	0,6	0,8	0,9	1,1	1,2	1,65	1,8
Pressure drop (mWC) (Coil + valve)	1,3	2,6	4,3	2,1	2,8	1	1,2	1,7	1,9	2,8	3,3

Specifications: heating capacity, air 20 °C %, pure water 80 °C/60 °C
Correction factors to apply to the heating capacity for 90 °C/70 °C water temperature range: 1.23 and 45 °C/35 °C: 0.37.

Electric heater

Sizes		W5	W8	W12	W16	W27	W39	W59
Total electrical power (kW)		3		6	9	12	18	24
Electrical power (kW)	Stage 1	3			6	6	12	12
	Stage 2	-	-	3	3	6	6	12
Number of heaters	Stage 1	3 x 1 kW			3 x 2 kW	3 x 2 kW	3 x 4 kW	3 x 4 kW
	Stage 2	-		3 x 1 kW	3 x 1 kW	3 x 2 kW	3 x 2 kW	3 x 4 kW
Total current (A)		4,3		8,7	13	17,3	26	34,6

2 stage or TRIAC electric heater, depending on the option selected

50CJ X

Cooling coil

Sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Air flow rate (m³/h)	1 300	2 000	2 500	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Maximum operating pressure with G4 or F7 filtration* (Pa)	400	400	276	400	89	400	324	273	26	330	21
Total/sensible cooling capacity (kW)	7.2/6	8/7.65	10.6/9.7	11/10.9	15/14.7	19/18.6	23.2/22.4	30.1/27.9	35/32	38/37.4	47/45.4

* Maximum operating pressure dependent on air flow rate. Take away approximately 20 Pa if there is a hot water coil on 50CJ X
The operation point can be adjusted directly via the controller. Hence all the air flow/operating pressure combinations are possible, with the values in the table above as the maximum values.

Correction factors	30 °C	32 °C	35 °C	40 °C
24 °C/50%	1,02	1	0,98	0,93
26 °C/50%	1,06	1,04	1,02	0,98

Correction factors to apply to the cooling capacity based on the outdoor temperature and the return air conditions.

Hot water coil

Sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Air flow rate (m³/h)	1 300	2 000	2 500	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Heating capacity (kW)	4,5	6,2	7,5	11,9	13,7	17,8	19,5	25,8	27,6	37,5	40,9
Water flow rate (m³/h)	0,21	0,27	0,33	0,5	0,6	0,8	0,9	1,1	1,2	1,65	1,8
Pressure drop (mWC) (Coil + valve)	1,3	2,6	4,3	2,1	2,8	1	1,2	1,7	1,9	2,8	3,3

Specifications: heating capacity, air 20 °C, pure water 80 °C/60 °C
Correction factors to apply to the heating capacity for 90 °C/70 °C water temperature range: 1.23 and 45 °C/35 °C: 0.37.

Electric heater

Sizes		X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Total electrical power (kW)		3		6	9		12		18		24	
Electrical power (kW)	Stage 1	3			6		6		12		12	
	Stage 2	-	-	3	3		6		6		12	
Number of heaters	Stage 1	3 x 1 kW			3 x 2 kW		3 x 2 kW		3 x 4 kW		3 x 4 kW	
	Stage 2	-		3 x 1 kW	3 x 1 kW		3 x 2 kW		3 x 2 kW		3 x 4 kW	
Total current (A)		4,3		8,7	13		17,3		26		34,6	

2 stage or TRIAC electric heater, depending on the option selected

INDOOR UNIT TECHNICAL DESCRIPTION

■ ***Casing***

Dual-wall construction.

RAL 7035 grey pre-lacquered panel, removable:
- 1 mm pre-lacquered exterior panels,
- Glass wool, thickness 25 mm, class M0,
- 0.8 mm galvanised interior panels.

■ ***Filtration***

- F2SI type filter cells, efficiency 90% as per ASHRAE gravimetric test (G 4).
- Optional F7 opacimetric filtration.
- Optional dual filtration (G4+F7)*.
- Filter cells tightly compressed against counter-frame by a gasket to ensure a completely leaktight seal.
- Fouling level monitored by an analogue pressure sensor.

* except for models W 5/8/12 and X 5/8/12.

■ ***Cooling coil cross-section***

- Copper tube coil, aluminium fins.
- Condensate drain pan.
- Model W with 2- or 4-way control valve fitted and connected. Optional thermally insulated flexible connections
- Model X with thermostatic expansion valve.

■ ***Ventilation section***

- Direct drive centrifugal fan, associated with an electronically commutated (EC motor).
- EC motor: fan adaptation via manual adjustment or "self-regulating" adjustment by the controller, depending on the room load - system air control.
- EC electric motor 1-Ph/230V/50-60Hz, 4-pole, class F.
- Air flow rate monitored by an analogue pressure sensor.

■ ***Electrics box***

Electrical power and control box consisting of:
- Power supply: 3-Ph/400V/50Hz+T+N.
- Emergency stop type disconnect switch.
- Three-phase 400 / 24 V transformer with protection.
- Protection and control of fan motor, and of humidifier and electric heater depending on options selected.
- Regulated by Carrier CCU Controller.
- Return air dry-bulb temperature control.
- Return humidity control:
- Supply humidity control (optional)
- Dehumidification humidity control (optional)
- Options available: water leak detection, fire thermostat and supply air low-limit monitoring.
- Remote control and fault summary contact.
- Condensate drain pump (optional).

■ ***Accessories***

- Support base for supply air via raised floor:
  - Bottom version 225 to 320 mm,
  - Top version 320 to 525 mm.
- Supply plenum.
- Acoustic plenum with sound trap.
- Motorised damper on intake section.
- Additional water leak sensor.
- Fire thermostat.
- Hydraulic connection kit (chilled water and hot water coils).
- LON gateway.
- Changeover thermostat (only for W).

Indoor unit options

■ ***Electric heater***

- Fan-controlled operation.
- 2-stage control (except 3 kW electric heater).
- 2-stage or TRIAC control.
- Two high-limit safety thermostats with automatic and manual reset.

■ ***Hot water coil***

- 1-row coil made of copper tubes with aluminium fins.
- 2- or 4-way control valve fitted and connected.
- Optional flexible connections.

■ ***Humidifier***

Immersed electrode humidifier with humidifier information available directly on the Carrier CCU Controller:
- Stainless steel large surface area electrodes,
- 3 kg steam per hour, nominal flow rate < 3000 m^3/h,
- 8 kg steam per hour, nominal flow rate > 3000 m^3/h,
- Steam cylinder in a single easy to remove component,
- Filling solenoid valves,
- Drain pump,
- Electronics board for operation management,
- Diffusion jet,
- Water supply connection kit.

Operates on municipal water supply only (water conductivity 350 to 1250 µS and hardness 15 to 30°F). Do not use deionised or softened water.

Indoor unit regulation

■ ***Unit control and monitoring***

Carrier CCU Controller

- 160-character display showing the operating instructions, operating states, faults and solutions. Configurable controller.
- Two fault levels.
- Monitoring of operating times.
- RS 485 output with Jbus/ModBus protocol.
- Can manage rotations, backups and top-ups between units.
- Optional LON gateway.
- Optional changeover thermostat (only on W).

DESCRIPTION OF THE OUTDOOR UNIT (MODEL X)

- ***Scroll Compressor***
  - Crankcase resistance on models 50-65-75
  - Air-cooled condenser, copper tube coil, aluminium fins
  - Propeller fan(s) (1 or 2 depending on models) with EC motor
  - All-season operation
  - Condensation pressure control by fan variable speed control (pressure sensor)
  - Refrigerant connections (FLARE connections)
  - External operating temperature limits: -15°C to +45°C
  - Casing in recyclable synthetic "ABS" material and UV stabilised, light and very solid. It exclusive and valuable design, makes it easier to integrate into the visual space.
- ***Optional equipment***
  - Anti-vibration mount kit
  - Wall support kit (models 28-35)
  - Crankcase resistance on models 28-35
  - Thermostatic expansion valve kit
  - Blygold pump kit

TECHNICAL AND ELECTRICAL CHARACTERISTICS

Indoor unit

			W5	W8	W12	W16	W27	W39	W59
			X5	X8	X10	X12/15	X19/24	X31/36	X38/48
Fan motor	Voltage	V	230 V						
	Power	kW	1,036			1,029	2,072	2,058	3,087
	Current	A	4,51			4,38	9,02	8,76	13,14
Control circuit (transformer)	Voltage	V	24 V						
	Current	A	1						
Humidifier (option)	Voltage	V	400						
	Power	kW	2,25			6			
	Current	A	3,2			8,7			
Electric heater (option)	Voltage	V	400						
	Power	kW	3		6	9	12	18	24
	Current	A	4,3		8,7	13	17,3	26	34,6
Total current without option	Current	A	5,51			5,38	10,02	9,76	14,14
	Rating of main switch	A	16						
Total current with humidifier	Current	A	8,71			14,08	18,72	18,46	22,84
	Rating of main switch	A	16				25		
Total current with electric heater	Current	A	9,81		14,21	18,38	27,32	35,76	48,74
	Rating of main switch	A	16			25	40		63
Total current all options	Current	A	13,01		17,41	27,08	36,02	44,46	57,44
	Rating of main switch	A	16		25	40		63	

Outdoor unit (model X)

Sizes			28	35	50	65	75
Compressor	Quantity		1				
	Type		SCROLL				
	Oil capacity	l	1,25			1,7	
	Oil type		POE				
	Voltage		400 V - 3 Ph - 50 Hz				
	Maximum current	A	6,9	7,6	10,3	11,2	14,3
Refrigerant			R410A				
Refrigerant weight		kg	1,6		2,65	2,75	3
Power and current		W/A	45 W/0.2 A Option(1)		45 W/0.2 A		
Crankcase heater							
Coil type			Grooved copper tubes - aluminium fins				
Fan	Quantity		1		2		
	Type		Propeller				
	Nominal flow rate	m³/h	2350	2770	4700	5540	5000
	Speed	Rpm	700	904	700	904	
	Maximum current	A	0,46	0,97	0,92	1,94	1,94
Rated voltage of unit		V	400 V - 3 Ph+N - 50 Hz				
Total current		A	7,5	8,3	11,3	12,6	15,7
Start-up current		A	36	49	65,5	75,5	102,5
Electrical cables not supplied*		mm²	5G1.5	5G2.5	5G4		5G6
Recommended cables for the proximity switch		Am	10		16		20
Refrigerant connections	ø liquid line	inches	3/8”				1/2”
	ø intake line	inches	5/8”	3/4”		7/8”	

* Cable with 2 or 3 charged conductors in a raceway or duct, exposed mounting, for temperatures below 60°C and a maximum length of 30 m.

Note: for different conditions, refer to the current standard in the country of installation (example for France: NFC 15-100)

SOUND PRESSURE LEVEL

Indoor unit

Sizes												
	Chilled water model	5	8	12	16		27		39		59	
	Direct expansion model	5	8	10	12	15	19	24	31	36	38	48
Air flow rate (m³/h)		1 300	2 000	2 500	3 000	4 000	5 000	6 000	7 000	8 000	10 000	12 000
Sound pressure level (dBA)		49	53	58	57	61	59	63	60	63	60	64

Sound pressure level of indoor unit at 2 m unrestricted space, air supply connected, +/-3dB.

Outdoor unit (model X)

Sizes	5	8	10	12	15	19	24	31	36	38	48
Models	28	28	35	35	50	65	75	2x50	2x65	2x65	2X75
Sound pressure level (dBA)	39	39	45	45	43	47	47	46	50	50	50

Sound pressure level of outdoor unit, at 5 m, 1.5 m from floor, in a free field, directivity 2 and +/-3 dB.

COIL WEIGHT AND CONNECTION

Unit weight

Indoor unit

Chilled water model sizes	W5	W8	W12	W16		W27		W39		W59	
Direct expansion model sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Weight of indoor unit (kg)	115	120	125	280		310		375		480	

Indoor unit

Direct expansion units	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Outdoor units no./type	1x28	1x28	1x35	1x35	1x50	1x65	1x75	2x50	2x65	2x65	2x75
Unit weight of exterior unit (kg)	64	69	69	69	101	112	118	101	112	112	118

Coil connections

Indoor unit

Cold water coil

Sizes	W5	W8	W12	W16	W27	W39	W59
Inlet/outlet connections	G 1/2" M	G 3/4" M	G 3/4" M	G 3/4" M	G 1" M	G 1" M	G 1"1/4 M
Condensate drainage*	Diam 32						

Direct expansion coil

Sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Intake pipe	G 5/8"M	G 5/8"M	G 3/4"M	G 7/8"M	G 7/8"M	G1"1/8 M	G1"1/8 M	G 2 X 7/8" M	G 2 X 7/8" M	G 2 X 1"1/8 M	G 2 X 1"1/8 M
Liquid pipes	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	2 x 1/2"	2 x 1/2"	2 x 1/2"	2 x 1/2"
Condensate drainage*	Ø 32 mm										

Hot water coil

Chilled water model sizes	W5	W8	W12	W16		W27		W39		W59	
Direct expansion model sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Inlet/outlet connections	G 1/2" M	G 1/2" M	G 1/2" M	G 1/2" M		G 3/4" M		G 3/4" M		G 3/4" M	

Outdoor unit

Direct expansion model sizes	X5	X8	X10	X12	X15	X19	X24	X31	X36	X38	X48
Outdoor units no./type	1x28	1x28	1x35	1x35	1x50	1x65	1x75	2x50	2x65	2x65	2x75
Intake pipe	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"	2 x 3/4"	2 x 7/8"	2 x 7/8"	2 x 7/8"
Liquid pipes	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	2 x 3/8"	2 x 3/8"	2 x 3/8"	2 x 1/2"
Condensate drainage*	Diam 32										

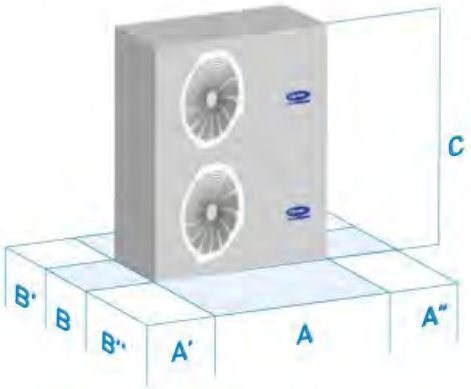
Chilled water coil connections: inlet on threaded coupling and outlet on threaded control valve.
Condensate drain connection on smooth coupling.

* Drain connections if optional pump is fitted: Ø 6

DIMENSIONS AND OPERATING AREA

Indoor unit

Units	Dimensions (mm)				
	A	A'	B	B'	C
W5 or X5	675	500	500	700	1700
W8 or X8	675	500	500	700	1700
W12 or X10	675	500	500	700	1700
W16 or X12/15	8 0	00	780	700	1900
W27 or X19/24	1150	500	780	700	1900
W39 or X31/36	1490	500	780	700	1900
W59 or X38/48	1990	500	780	700	1900



outdoor unit

Models	Dimensions (mm)						
	A	A'	A''	B	B'	B''	C
28	1035	150	1000	450	150	1500	732
35	1035	150	1000	450	150	1500	732
50	1035	150	1000	450	150	1500	1332
65	1035	150	1000	450	150	1500	1332
75	1035	150	1000	450	150	1500	1332

OPERATING LIMITS

Chilled water (W)

Water circuit	Maximum pressure: PN16	Minimum water inlet temperature: 5 °C (Consult us for other values)
		Maximum water inlet temperature: 80 °C (Consult us for other values)
Indoor temperature		Minimum air inlet temperature: 12 °C, and according to return humidity
		Maximum air inlet temperature: 45 °C, and according to return humidity (Weight in water, condensed < 0.8 g of water/kg of dry air)
Power supply		3PH/400V+E+N

Direct expansion (X)

Indoor temperature		Minimum air inlet temperature: 18 °C, and according to return humidity
		Maximum air outlet temperature: 28 °C, and according to return humidity (Weight in water, condensed < 0.8 g of water/kg of dry air)
Outdoor temperature		Minimum air inlet temperature: -15 °C
		Maximum air inlet temperature: 45 °C
Power supply	Indoor unit	3PH/400V+E+N
	Outdoor unit(s)	

PRECISION CABINET

Wide range of single unit water chillers

Compact and attractive design

EC motor saves energy

Auto-adaptive control

Easy installation

50CO

Cooling capacity: 40-130 kW
Heating capacity: 36-73 kW

Close control unit specifically adapted to meet the needs of rooms with a high heat load or sensitive locations (data centers, computer rooms, autocom rooms, etc.).

The choice of technology used (self-adjusting control which adapts to the room loads, electronically commutated EC motor) can reduce the energy consumption.

Thanks to its skilful design, the **50CO** integrates seamlessly into its intended location.

RANGE

50CO W Chilled water model

Cooling capacity range: 40 to 127 kW
Rated air flow range: 10,000 to 27,000 m³/h
5 sizes available

ASSEMBLY

Fitting UNDER

Air supply via raised floor

Fitting OVER

Return air on front panel (except W115)

Return air below (except W115)

QUICK SELECTION

Cold water coil

Sizes	W40		W53		W78		W100		W115	
Air flow rate (m³/h)	Rated(1)	Maximum(2)	Rated(1)	Maximum(2)	Rated(1)	Maximum(2)	Rated(1)	Maximum(2)	Rated(1)	Maximum(2)
	10	13 300	1 300	1 300	18 800	20 5	24 00	27 0	27	27 500
Maximum operating pressure with G4 filter (Pa)	400	171	22	229	400	4	343	157	400	400
aximum operating pressure with F7 filter (Pa)	400	60	140	140	400	400	261	68	400	385
Sensible cooling capacity (kW)	40	45	55	53	78	78	100	100	127	130
Nominal capacity (kW) *	3,7		3,7		7,1		7,1		9,6	
Rated current (A) *	6,4		6,4		11,8		11,8		15,7	

(1) Conditions: Return air 24°C 45% (RH) - Water temperature: 7/12°C
(2) Conditions: Return air 26°C 40% (RH) - Water temperature: 10/15°C
* Excluding electrical heater and humidifier option

Hot Water Coil (option)

Sizes	W40		W53		W78		W100		W115	
Air flow rate (m³/h)	Rated	Maximum	Rated	Maximum	Rated	Maximum	Rated	Maximum	Rated	Maximum
	10 000	13 300	13 300	13 300	18 800	20 500	24 500	27 000	27 000	27 500
Heating capacity (kW)(1)	36	40	44	44	63	66	71	73		
Heating capacity (kW)(2)	18	21	23	23	33	34	37	38		

(1) 17°C - 80/60°C
(2) 17°C - 45/40°C

Electric heater (option)

Sizes	W40	W53	W78	W100	W115	
Power (kW)	12	18	24	33,6	32,4	43,2
Total current (A)	17,3	26	34,7	48,6	46,77	62,35

QUICK SELECTION

Humidifier (Option)

Sizes	W40 to W115
Steam flow rate (kg/h)	8
Electrical power (kW)	6
Current (A)	8,7

DESCRIPTION

■ ***Casing***

Dual-wall construction (with MO / A1 fire rating).
RAL 7035 and 7024 grey precoated removable panel.
- 0.8mm painted precoated exterior panel.
- Mineral wool, 25 mm thick.
- 0.8 mm galvanised interior panel.

■ ***Filtration***

G4 or F7 filter cells.
Filter cells kept compressed against the counter frame with the gasket directly on the filter cells.
Filter fouling value monitored by analogue sensor and displayed by the controller.

■ ***Cooling coil cross-section***

Copper tubes, aluminium fins.
Stainless or aluminium condensate drain pan.
Stainless coil flanges (option).
2-way or 3-way control valve fitted and connected.

■ ***Ventilation section***

Centrifugal plug fan, associated with an electronically commutated (EC motor).
EC motor: fan adaptation via manual adjustment or "self-regulating" adjustment by the controller, depending on the room load - system air control.
The fan also has a ModBus card which allows faults and settings such as the actual power input, current, rotation speed, etc. to be transmitted.

■ ***Electrical box***

Power, command and control electrics box consisting of:
- 3-phase 400 V power supply + Earth.
- Main disconnect switch.
- Three-phase 400 V 50 Hz transformer with protection.
- Protection and control of all electrical components by a circuit breaker and contact switch.
- Automatic CARRIER CCU Controller.
- Return air dry-bulb temperature control.
- Return humidity control, in supply or dehumidification mode.
- Water leak detection as standard.
- Remote control and fault summary contact.

■ ***Accessories (option)***

Free cooling box.
Support subbase for supply air via raised floor.
Cased subbase with grille or damper.
Supply plenum.
Motorised damper on intake section.
Fire thermostat.
Supply air low limit sensor.
LON gateway.
Raised floor pressure management.
Changeover thermostat.

OPTIONS

■ ***Electric heater***

Fan-controlled operation.
Control by 2-stage operation or by progressive action (TRIAC).
High-limit safety thermostat with automatic and manual reset.

■ ***Hot water coil***

1-row coil made of copper tubes with aluminium fins.
2- or 4-way progressive action valve fitted, and connected.

■ ***Humidifier***

Humidifier with immersed electrodes and an electronic board to transmit all information relating to the humidifier directly to the CARRIER CCU Controller.
- Stainless steel large surface area electrodes.
- Flow rate of 8 kg/h, depending on the model.
- Steam cylinder in a single easy to remove component.
- Drain pump and filling solenoid valve.
- Electronics board for operation management.
- Diffusion duct.

Operates using municipal water supply only (water conductivity of between 350 and 1250 µS inclusive and hardness between 15 and 30°F). Do not use deionised or softened water.

CONTROL

Unit control and monitoring:
CARRIER CCU Controller

- 160-character display showing the operating instructions, operating statuses, faults and solutions. Configurable controller.
- Two fault levels.
- Monitoring of operating times.
- RS 485 output with Jbus/ModBus protocol.
- Master/slave type management possible.
- Optional LON gateway
- Optional management of pressure in raised floor
- Optional changeover thermostat
- Bus management between the centrifugal plug fan and the controller.
- Transmits fan faults and settings such as the actual power input, current, rotation speed, etc. to the controller.

ELECTRICAL CHARACTERISTICS

Sizes		W40	W53	W78	W100	W115	
Fan motor assembly	Voltage (V)	400					
	Power (kW)	3,4		6,8		9,3	
	Current (A)	5,4		10,8		14,7	
Control circuit (400V/24V transformer)	Voltage (V)	24					
	Current (A)	1					
Humidifier (option)	Voltage (V)	400					
	Power (kW)	6					
	Current (A)	8,7					
Electric heater (option)	Voltage (V)	400					
	Power (kW)	12	18	24	33,6	32,4	43,2
	Current (A)	17,4	26	34,6	48,4	46,8	62,3
Total current without option	Current (A)	6,4		11,		15,7	
	Rating of main switch (A)	16				32	
Total current with humidifier	Current (A)	15,1		20,5		24,4	
	Rating of main switch (A)	25		40		32	
otal current with electr c eater	Current (A)	23,8	32,4	46,4	60,2	62,5	78
	Rating of main switch (A)	40		63	80		
Total current all options	Current (A)	32,5	41,1	55,1	68,9	71,2	86,7
	Rating of main switch (A)	40	63		80		125

CONNECTIONS

Cold water coil

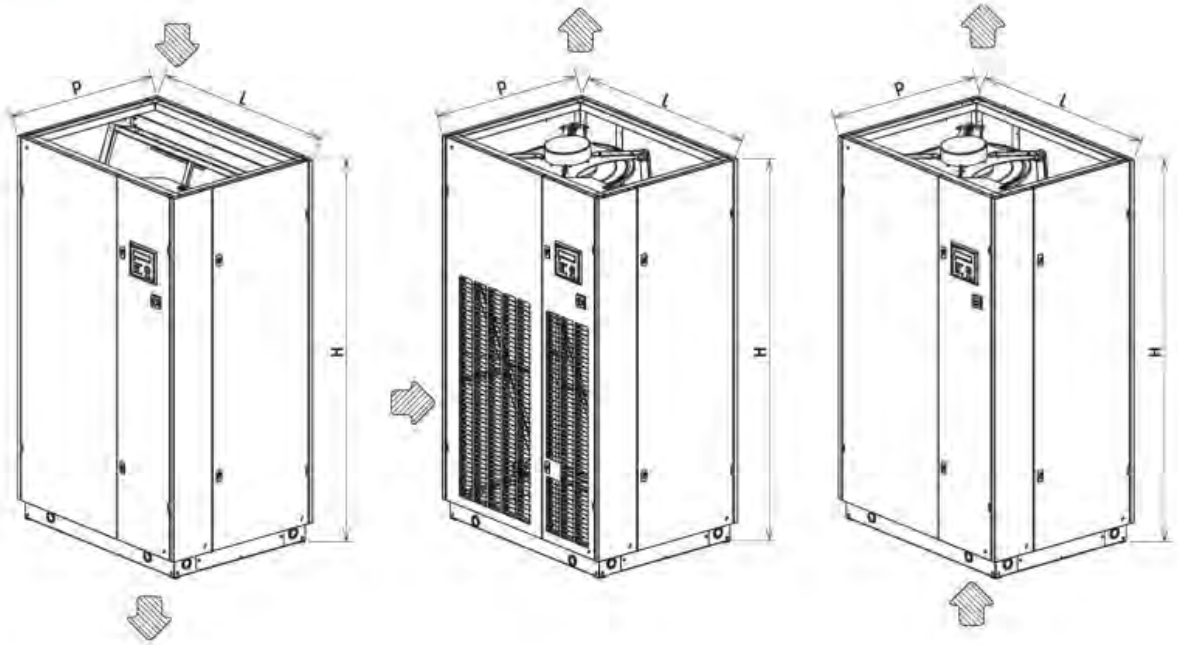
Sizes	W40	W53	W78	W100	W115
Inlet	G1"1/4 (M)	G1"1/4 (M)	G1"1/2 (M)	G1"1/2 (M)	G2" (M)
Outlet	G1"1/4 (F)	G1"1/4 (F)	G1"1/2 (F)	G1"1/2 (F)	G2" (F)

Hot water coil

Sizes	W40	W53	W78	W100	W115
Inlet	G3/4" (M)	G3/4" (M)	G3/4" (M)	G3/4" (M)	G3/4" (M)
Outlet	G3/4" (M)	G3/4" (M)	G3/4" (M)	G3/4" (M)	G3/4" (M)

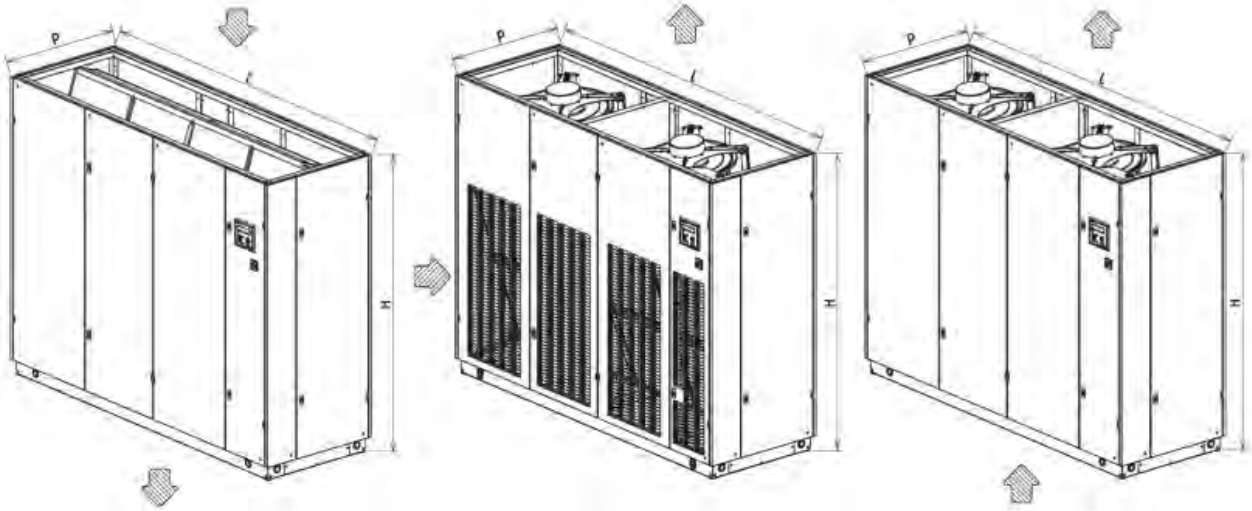
DIMENSIONS

W40 - W53



UNDER 1 OVER 3 OVER 5

W78 - W100



UNDER 1 OVER 3 OVER 5

W115

UNDER 1

Sizes	Dimensions (mm)			Weight (kg)
	H	L	D	
W40	1990	1190	890	350
W53		1520		385
W78		2070		545
W100		2 2		635
W115		3000		730

OPERATING LIMITS

Water circuit	Maximum pressure: PN16	Minimum water inlet temperature: 5 °C (Consult us for other values)
		Maximum water inlet temperature: 80 °C (Consult us for other values)
Indoor temperature		Minimum air inlet temperature: 12 °C, and according to return humidity
		Maximum air inlet temperature: 45 °C and according to return humidity (Weight in water, condensed <0.8 g of water/Kg of dry air)
Power supply		3PH/400V + earth

PACKAGED ROOFTOP COOLINF ONLY / HEAT PUMPS AND SEPARATED GAS MODULE OPTION

Packaged unit all in one

High efficiency

Silent operation

Configuration flexibility

Plug-fans with EC motor

50EN/EH

Cooling capacity 92-283 kW
Heating capacity 98-294 kW

The **50EN/EH** cooling units and heat pumps are compact, horizontal and autonomous air to air units, rooftop-type design.

- **50EN Series:** cooling units.
- **50EH Series:** reversible heat pump.

Packaged unit “all in one” with all components installed inside the unit.The unit is connected directly to an air distribution ductwork without additional elements or equipment, pipes, cables, etc. taking up no floor space at all. This design reduces the cost of installation, facilities connections and ensures reliable operation.

The range of capacities of these units allows for the air conditioning of large surface areas used for business or industry.

A vast number of options meet many operating requirements, such a:

- Free-cooling.
- Air renewal.
- Air quality control (CO_2).
- Different levels of air filtration.
- Passive and active recovery of the extracted air energy.
- Back-up heating by means of electrical heaters, hot water coil and/or gas burner.
- Heat pump adapted to extremely cold weather conditions.

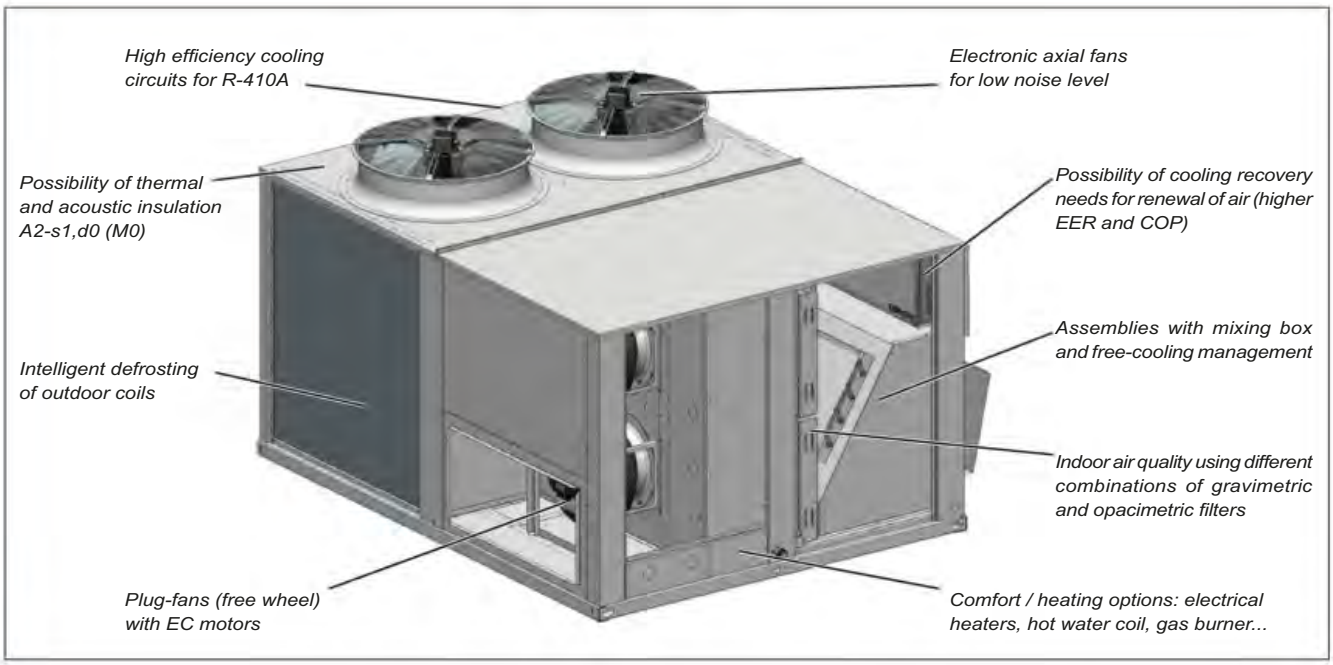
These units are equipped with electronic axial fans in the outdoor circuit, electronic plug-fans in the indoor circuit, air coils, hermetic scroll compressors and electronic control with microprocessor, components optimised for the R-410A refrigerant.

All of the units are tested and checked in the factory.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

CARRIER participates in the ECP programme for RT
Check ongoing validity of certificate:
www.eurovent-certification.com

UNIT COMPONENTS



Casing

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035. Thermal insulation, 9 mm thick, with B-s3,d0 (M1) fire classification.
- Self-supporting frame. Hinges + quarter-turn latches mounted on the access panels to filters, supply fans, compresssors and electrical cabinet.

Outdoor circuit

- EC electronic axial fans which adapt their rotation speed to the installation's requirements, thereby reducing electricity consumption, the sound level at partial charge and improving the unit's average seasonal efficiency.
- Coil with copper pipes and aluminium fins.

Indoor circuit

- EC electronic supply plug-fans directly coupled with variable control speed and flow rate controller. In tertiary sector installation, a high percentage of the annual air conditioning energy consumption comes from the use of fans for transporting air. Using fans which are more efficient has a direct impact on reducing consumption. Plug-fans with direct drive and variable speed offer the following advantages:
  - Elimination of friction losses during transmission thanks to the direct drive.
  - Greater aeraulic efficiency of the rotor (reactive blades with an optimized profile), running at very high operating pressures.
  - Greatly increased motor efficiency. Permanent magnets DC motors activated using electronic switching integrated into the motor itself.
  - Variable speed to ensure a constant supply air flow rate, independent of the filters clogging level.
  - Measuring the flow rate thought a calibrated section at the fan intake and a differential pressure sensor allows the control to handle the flow rate reliably and precisely in both on CAV and VAV systems.
- Reusable air filters, mounted on a frame.
- Coil with copper pipes and aluminium fins.
- Condensates drain pan.

Cooling circuit

- Hermetic scroll-type compressors with sound insulation, assembled over antivibration mounts. Control of phase equilibrium and the direction of rotation.

  Models 415 to 720 in tandem design which improves the management of stages, and therefore the energy efficiency of the unit.

- Crankcase heater.
- Thermostatic expansion valves with external equalisation.
- Four-way cycle reversing valves (heat pump units).
- Acid-resistant filters dryer.
- Cooling design based on 2-air volumes.

Protections

- High and low pressure pressostats.
- Compressor discharge temperature control.
- Main door switch.
- Magnetothermic protection switches for the compressor(s) power line and fan motor.
- Automatic switch in the control circuit.

Electrical cabinet

- Complete and fully wired electrical panel. Insulated panel cover to prevent condensation. Forced ventilation of the electrical cabinet. Protection IP55.
- Numeration of components in the electrical panel.
- Numeration of wired.
- Transformer for power supply without neutral in electrical panel.
- Main ground connection.
- Compressor and fan motor contacts.

CONTROLS

CARRIERrtc electronic control

The **CARRIERrtc** control consist of a µPC MEDIUM control board, sensors, a pGD1 graphic terminal and a TCO user terminal (optional).

This system uses a RS485 field-bus to manage additional components.

A BMS card (optional) allows the control board to be connected to a centralised technical management system.

It also manages a local connection between units through a pLAN network (µPC MEDIUM Local Area Network), allowing data and information to be exchanged between units, for a maximum of 15 units.

■ **Main functions:**

- Selection of the operating mode: HEATING / COOLING / AUTO / VENTILATION.
- Continuous control of the operating parameters.
- Display of the values measured by the sensors.
- Compressors time delays.
- Defrosting management (in heat pump units).
- Control of the supply air temperature.
- All-seasons operation via the condensation and evaporation pressure control.
- Set-point compensation based on the outdoor temperature.
- Hourly and weekly schedule.
- Fire protection.
- Diagnosis of faults and general alarm.

■ **Optional functions:**

This control is used to manage addition components such as:

- External air damper for the renewal of fresh air, depending on the temperature of the mixed air or depending on the air quallity sensor.
- Mixing box for thermal, enthalpic or thermoenthalpic free-cooling.
- Cooling recovery circuit for renewing the air.
- Rotary heat exchanger.
- Auxiliary electrical heaters: two-stage with on/off control or single-stage with proportional control.
- Hot water coil with 3-way valve, with proportional or on/off control.
- Gas burner with proportional control.
- Humidifier with proportional or on/off control.
- Air flow rate controller (with centrifugal fans).
- Clogged filter pressostat.
- Smoke detection station.
- Refrigerant leak detector.
- Air quality sensor for measuring CO_2 and/or volatile compounds.
- Energy meter and and calculation of the cooling and heating capacities.
- Zoning into 2 areas with dampers.

■ **pGD1 terminal:**

This terminal, fitted on the electrical cabinet, is used to:

- Carry out initial programming of the unit.
- Modify operating parameters.
- Switch the unit ON / OFF.
- Select the operating mode.
- Adjust the set-points.
- Display the variables controlled and sensor values measured.
- Display the current alarms and their historical record.

■ **TCO user terminal (optional):**

This terminal can be installed on the electrical cabinet, instead of pGD1 terminal. In this case, the remote connection of the pGD1 terminal is posible. Please consult “Control options”.

TCO terminal is used to:

- Switch the unit ON / OFF.
- Select the operating mode.
- Adjust the set-points.
- Display the installation’s temperatures and humidity, outdoor temperature, supply air temperature, CO_2 sensor and opening of the outdoor damper.
- Display alarms codes.

OPERATING LIMITS

Inlet air conditions		Cooling
Indoor coil	Minimum temperature	13ºC WB
	Maximum temperature	24ºC WB
Outdoor coil	Minimum temperature	12ºC (1)
	Maximum temperature	48ºC

Inlet air conditions		Heating
Indoor coil	Minimum temperature	10ºC
	Maximum temperature	27ºC
Outdoor coil	inimum temperature	-12ºC WB (2)
	aximum temperature	15ºC WB

(1) With a condensation pressure control operating down to -10ºC.
(2) When the outdoor temperature is usually below 5ºC WB, the installation of a support element is recommended.

FACTORY OPTIONS AND ACCESSORIES

Configuration options

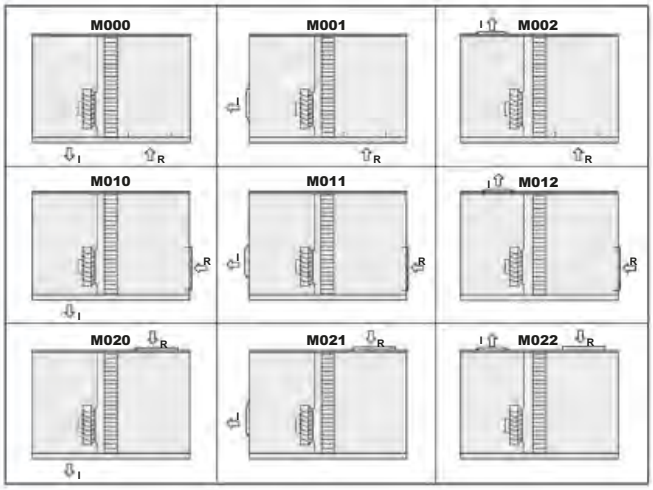
(Depending on the indoor air circulation)

Assembly	Legend
Mwxy w = Air supply (0 : standard, 1 : optional, 2 : optional) x = Air return (0 : standard, 1 : optional, 2 : optional) y = Type of assembly	I = Air supply R = Air return N = Fresh air inlet E = Air extraction

Standard assembly

■ **M0 assemblies**:

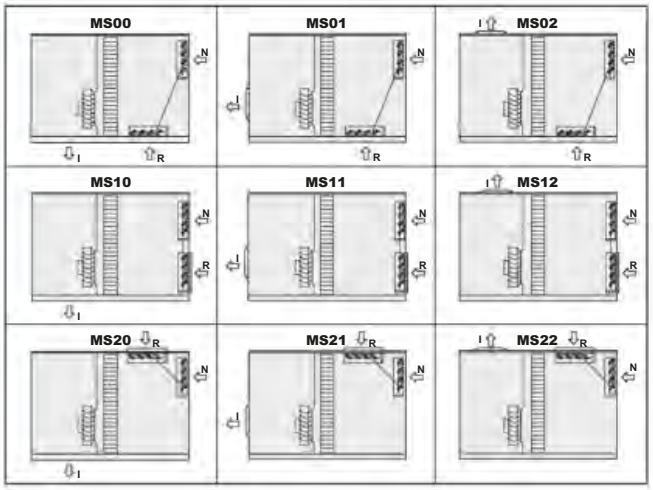
Change of supply and/or return air position in the indoor circuit.



Assemblies with mixing box and free-cooling

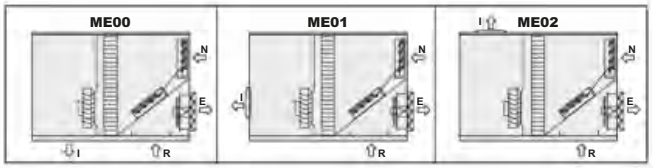
■ **MS assemblies:**

Fresh air intake with damper, interlocked with return damper (mixing box of 2 dampers).



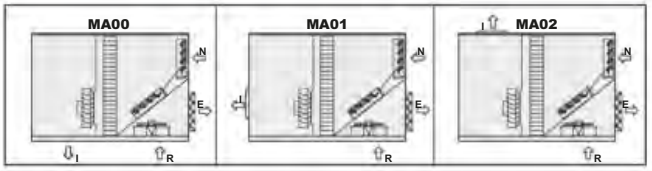
■ **ME assemblies:**

Axial air extraction fan (mixing box of 3 dampers).



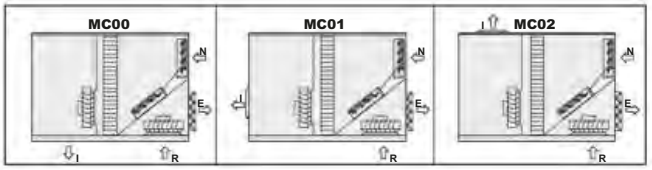
■ **MA assemblies:**

Axial return and air extraction fan (mixing box of 3 dampers).



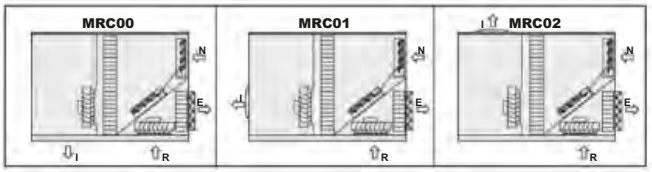
■ **MC0 assemblies:**

Electronic lower EC plug-fan (mixing box of 3 dampers).



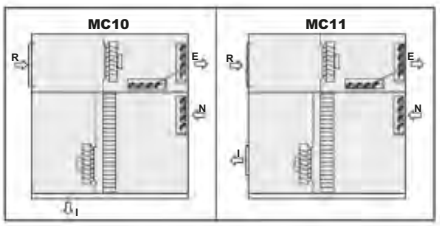
■ **MRC0 assemblies:**

Lower EC plug-fan (mixing box of 3 dampers) + cooling recovery circuit



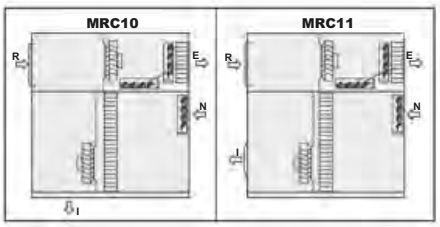
■ **MC1 assemblies:**

EC plug-fan or centrifugal fan in top box (mixing box of 3 dampers).



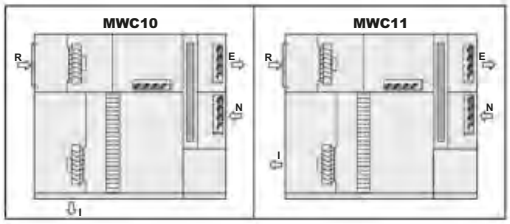
■ **MRC1 assemblies:**

EC plug-fan or centrifugal fan in top box (mixing box of 3 dampers) + cooling recovery circuit.



■ **MWC1 assemblies** (models 415 to 960)**:**

EC plug-fan in top box (mixing box of 3 dampers) + rotary heat exchanger.



FACTORY OPTIONS AND ACCESSORIES (CONT.)

Outdoor ambient temperature options

Temperature

- Thermal and acoustic insulation 50 mm thick, with fire classification Euroclase A2-s1, d0 (M0).

Cover loss:

Conditions	Winter	
Indoor	20ºC	50% RH
Outdoor	-20ºC	94% RH
9mm NBR (std)	1790 W	2.0% HC
50mm rock wool	437 W	0.4% HC

Conditions	Summer	
Indoor	27ºC	50% RH
Outdoor	35ºC	40% RH
9mm NBR (std)	615 W	1.00% TCC
50mm rock wool	151 W	0.24% TCC

- Anti-freeze protection for low outdoor temperatures (GREAT COLD):
  - Electrical heater for protection of the components of the electrical cabinet. This is compulsory if the outdoor temperature is lower than -8ºC WB. With an outdoor temperature lower than -16ºC WB will be compulsory a reinforced resistance.
  - Compressor with protection for low temperature (supplementary crankcase heater). This is compulsory if the outdoor temperature is lower than -8ºC WB.
  - Dampers of the mixing box with spring for automatic closing in case of a tension cut. This is compulsory if the outdoor temperature is lower than -8ºC WB.
  - Electrical heater for antifreeze protection of dampers of the mixing box. This is compulsory if the outdoor temperature is lower than -12ºC WB.
  - Hot water coil circuit with anti-freeze technology based on the water temperature: mandatory for an outdoor temperature lower than -20ºC WB. This protection is made up of a circulation pump, two sensors inserted in the input and the output of the coil, as well as an electrical heating for the piping layout.

    Consult for percentages of glycol water above 20%.

Corrosion

- Coils (outdoor, indoor and/or auxiliary) with copper pipes and copper fins.
- INERA® coils (outdoor, indoor and/or auxiliary) with copper pipes and fins of an aluminium alloy of high performance and great resistance to the corrosion.
- Coils (outdoor, indoor and/or auxiliary) with copper pipes and aluminium fins with polyurethane and blygold coating.
- Condensate drain pan for the indoor circuit in stainless steel.

Humidity

- Stop-drop in the indoor air coil (optional from model 415 to 960 and included in models 1100 and 1200). Recommended in cases where a high moisture content in the air is foreseen or when the air flow is high.
- Stop-drop at the fresh air intake. This stop-drop and the thermoenthalpic free-cooling are necessary in cases where a high moisture content in the air is foreseen.
- Tropicalised components on the electrical cabinet with protective varnish: control board, cards and terminals.
- Tropicalised motors and fans (please consult).

Comfort / heating options

- Hot water auxiliary coil, with three-way valve.
- This optional always incorporates an anti-freeze thermostat as safety system.
- Auxiliary electrical heaters, with two power stages and on/off control, for assembly and connection inside the unit.

  Note: the differential pressure switch for checking the air flow is included with centrifugal fan (optional).
- Natural or propane gas burner with modulating actuator, in accordance with the Gas Directive 2009/142/EC, installed inside a module attached to the supply the assemblies wtih lateral supply. Available for all the models, except 415 and 480.

  Important : with centrifugal fan (optional), it's compulsory the differential pressure switch for checking the air flow.

  Note: with this option, it's recommended to install the differential pressure switch for detecting clogged filters.

  Note: a protection kit of low temperature is available for an outdoor temperature lower than -15ºC.

Comfort / indoor air quality options

- Air quality sensor for installation in the environment or duct-mounted (attached picture) to enable measuring CO_2 and/or volatile compounds.

FACTORY OPTIONS AND ACCESSORIES (CONT.)

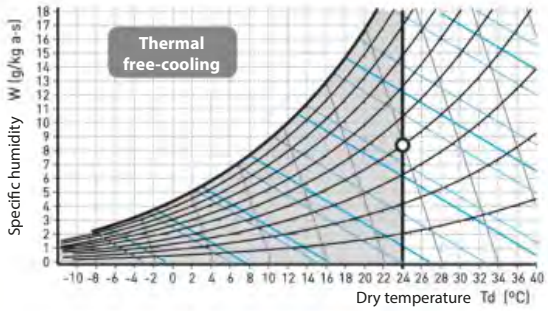
- Gravimetric filters G4.
- Gravimetric filters G4 of low pressure drop.
- Gravimetric filters G4 + opacimetric folded filters F6 to F9.
- Gravimetric filters G4 + opacimetric folded filters F7 and F9 of low pressure drop.
- Dual-stage of opacimetric folded filters (F+F standard or F+F of low pressure drop). With this option, a technical consultation must be made due to changes in unit dimensions (with MS assembly and top or bottom return).

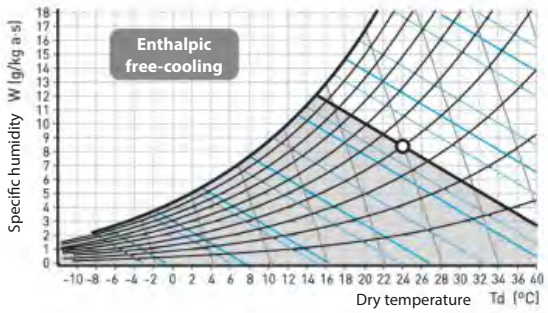
Energy saving / recovery options

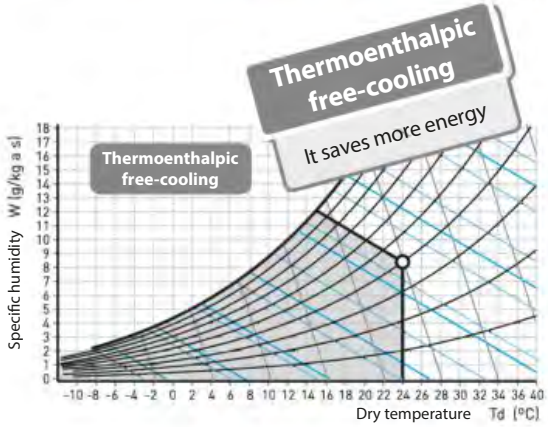
Free-cooling

- Running the unit in free-cooling mode allows it to make best use of outdoor air conditions when these are more favourable than the return air conditions. This allows the cooling capacity to be reduced. The percentage of outdoor air can vary between 0% and 100%.

  There are three options for free-cooling management:
  - Thermal, by comparing the temperatures.
  - Enthalpic, by comparing the enthalpies. Recommended in cases where a high moisture content in the air is foreseen.
  - Thermoenthalpic, by comparing the enthalpies and correcting for temperature. This is the optimum solution as it takes the variability of the climate into account.

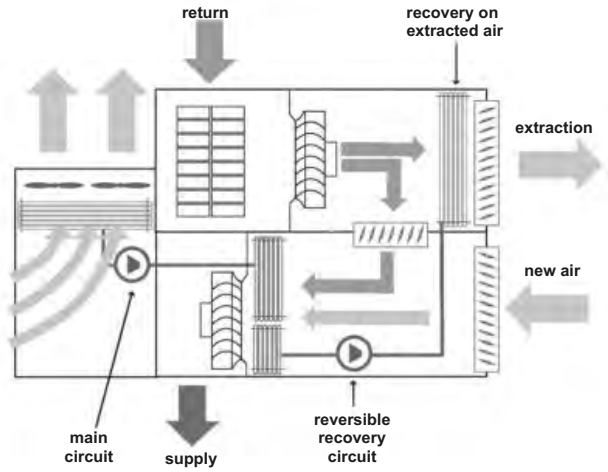






Active recovery

- Thermodynamic circuit dedicated to recovery of the extracted air energy, with independent control, adapted to the air refreshing requirements in order to raise the COP and EER of the unit set.
  - EC plug-fan or centrifugal fan (MRC0 or MRC1 assemblies).
  - Air circuit comprised of coils with copper pipes and aluminium fins.
  - Thermostatic expansion valve with external equalisation.
  - Hermetic scroll-type compressor with sound insulation, assembled over antivibration mounts.
  - Crankcase heater.
  - Four-way cycle reversing valve (heat pump units).
  - Anti-acid dehydrator filter.
  - Condensates drain pan.



Passive recovery

- The rotary heat exchanger is fitted into a module attached to the side of the unit on site (MWC1 assembly). With this option, the supply air fans and the return air fans are electronic plug-fans. Available for models 415 to 960.
- This rotary recovery unit is used to transfer the sensible and latent heat from the air-conditioned room's return air to the fresh air used for ventilation, before it's discharged outdoors. This option reduces the compressors runtime, ensuring energy saving and benefiting the environment.
- The efficiency of energy recovery depend on the wheel selected: material, wheel diameters, channel cross section and type of speed control.

FACTORY OPTIONS AND ACCESSORIES (CONT.)

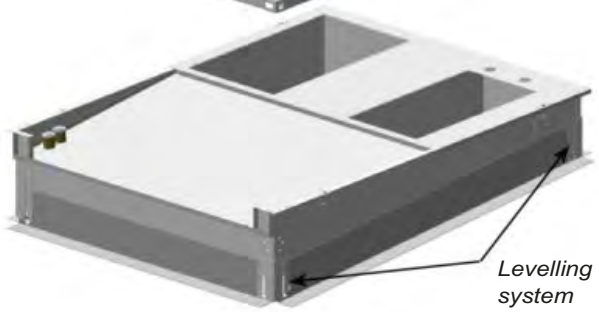
Safety options

- Soft starter of the optional centrifugal supply air and/or return air fans, increasing the warm-up time, mainly intented to installations with testile ducts.

  Compulsory with motors of 15 kW and above.
- Differential pressure switch to detect clogged filters.
- Differential pressure switch for checking the air flow, with centrifugal fan (optional).
- Smoke detecting station in accordance with the NF S 61-961 standard.
- Refrigerant leak detector. This allows prompt identification of gas leaks, guaranteeing the safety of any people in the vicinity. Installation of the device ensures compliance with European standards F-GAS and EN378 as well as ASHRAE 15.

Installation options

- Axial 2-speed outdoor fan(s) directly coupled to the motor. Watertight motor class F, IP54 and internal thermal protection. Dynamically balanced propellers and outdoor protective grille.
- Centrifugal supply air and/or return air fans, coupled by pulleys and belts. Electric motor(s) with tensioner, class F, IP55 and internal thermal protection. Turbines with an impeller of front-curved blades. Greased spherical bearings, with no maintenance required. Optionally, high available pressure.
- Control of the overpressure with the MC0, MRC0, MC1 and MRC1 assemblies.
- A single compressor on each circuit to replace the tandem (models 415 to 600).
- Standardised pre-assembly roofcurbs made of galvanised steel panelling with polyester paint, thermally insulated. Adjustable hei ht.



- Antivibration mounts made of rubber.
- Adaptation roofcurbs for the replacement of existing units on site.

- Condensates drain pan for the outdoor circuit in galvanised steel (consult the dimensional drawings). This option is not available when transport by sea in a shipping container is required.

- Protective grille for the outdoor coil.
- Hail guard protective grille for the outdoor coil.

Packing options

- Maritime packing SEI4C (with or without gas burner).
- Skis for transporting in closed container (except with assemblies MC1, MWC1 and MRC1).

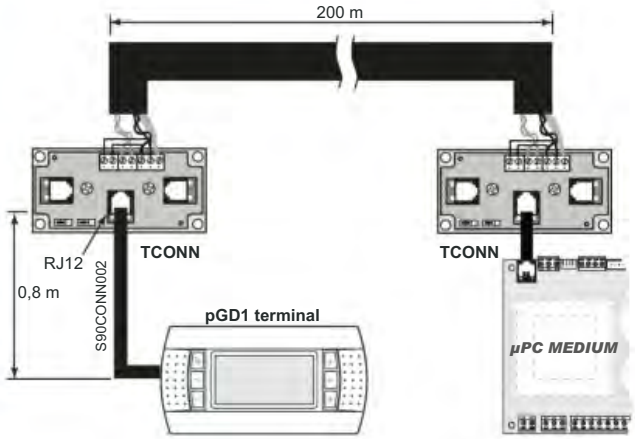
FACTORY OPTIONS AND ACCESSORIES (CONT.)

Electrical cabinet options

- Electrical power supply with neutral.
- High performance phase monitoring relay, which allows to adjust the protection settings (highly recommended for installations with power system voltage instability, lag between current and voltage, high level of electromagnetic disturbances EMC, etc
- Energy meter for monitoring of the power consumption of the installation.
- Energy meter and cooling and heating capacities measurement. The unit incorporates, in addition to the energy meter, mixing and supply enthalpic sensors with RS485 communication that enable the calculation of cooling and heating capacities.

Control / communication options

- TCO user terminal, for installation on the electrical cabinet, instead of pGD1 terminal.
- Control without pGD1 terminal (for units with shared terminal).
- Kit remote control to 200 meters with pGD1 terminal (pGD1 terminal + 2 TCONN bypass cards). In this case it´s possible to install the TCO terminal on the electrical cabinet.



- Ambient temperature sensor with RS485 communication. By default the control incorporates a NTC sensor.

  Note: An ambient sensor with RS485 communication is required for installation at more than 30 m.
- Two to four ambient temperature sensor with RS485 communication.
- Ambient T+RH sensor with RS485 (compulsory in units with enthalpic or thermoenthalpic free-cooling as optional). In this case also added outdoor air humidity sensor.
- Air quality sensor for installation in the environment or in duct to enable measuring CO_2 and/or volatile compounds.
- Change to **CARRIERrtc medium** electronic control with TCO terminal as standard and pGD1 terminal as optional (available for models 415 to 720): this control does not manage cooling recovery circuit, passive recovery or gas burner.

Communication

CARRIERrtc and **CARRIERrtc medium** controls allow the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols:

- RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex.
- Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.

Supervision solutions

Different solutions of supervision are available bases on the dimensions of the installation for unit fitted with Ethernet pCO Web and RS485 Carel / Modbus cards.

- **pCO Web**

  It is the solution for the management and supervision of a single unit if this incorporates the Ethernet pCO Web card.

- **PlantWatchPRO3**

  This is a solution designed for the monitoring of small and medium-size installations, capable of manage up to 30 units. Suitable for technical environments, no parts are in movement. It's available in two versions: panel and wall.

  Includes: 7 " touch display, buzzer for notifications, 1 USB port and 1 SD card slot for downloading reports, charge devices models and applying service packs.

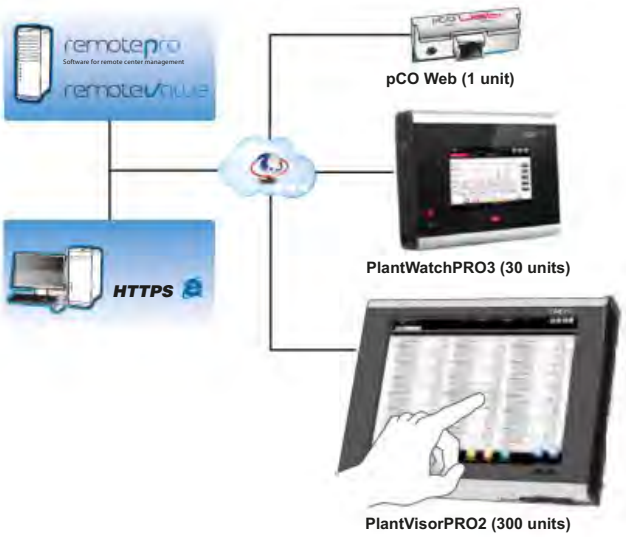
  For this option, each unit needs one RS485 Carel / Modbus board.

- **PlantVisorPRO2**

  This is the solution for the management and supervision of air-conditioning installations with up to 300 units. It offers advanced monitoring and maintenance functions and allows zones and groups to be created to simplify the management of the installation. It also allows energy meters to be integrated to monitor the installation electricity consumption.

  PlantVisorPRO2 is available in two versions:
  - **Box:** comprised of CPU and, optionally, by monitor and keyboard.
  - **Touch:** this includes CPU and touchscreen in the one device.

  In this case, each unit needs one RS485 Carel / Modbus board.



These systems are used to manage the installation remotely. All the information on the system can be accessed via a simple Internet connection. The online interface, the same one used by the local user, enables monitoring and complete configuration of the installation: from the office or anywhere else the user happens to be.

To control multiple sites remotely, there are special tools dedicated to centralized management, such as **RemotePRO** and **RemoteValue**.

TECHNICAL CHARACTERISTICS (EN-14511-2013)

50EN/EH		415	420	480	485	540	600	650	720	840	960	1100	1200
Cooling capacities	Cooling capacity (1) (kW)	92,0	103,5	107,9	112,0	125,4	136,7	151,2	167,6	199,0	218,4	258,9	283,6
	Power input (3) (kW)	34,1	33,3	38,5	37,2	42,9	48,7	50,2	58,8	70,3	79,7	91,7	102,3
	EER performance	2,70	3,11	2,81	3,01	2,92	2,81	3,01	2,85	2,83	2,74	2,82	2,77
Heating capacities	Heating capacity (2) (kW)	98,9	107,4	109,2	116,6	131,2	142,8	161,7	180,4	211,1	233,5	269,7	294,1
	Power input (3) (kW)	28,3	32,4	33,2	36,4	39,9	43,2	47,4	54,2	65,8	72,8	88,0	96,1
	COP performance	3,49	3,31	3,29	3,21	3,29	3,31	3,41	3,33	3,21	3,21	3,06	3,06
Outdoor circuit fan	Nominal air flow (m³/h)	30.000	42.000	30.000	42.000	42.000	42.000	55.000	56.000	75.000	75.000	112.500	112.500
	Available static pressure (mm.w.c)	4											
	Type	Electronic axial fan											
	Number x Diameter (mm)	2 x 800						2 x (630 + 800)		4 x 800		6 x 800	
	Motor output (kW)	2 x 2,2						2 x (0,9 + 2,2)		4 x 2,2		6 x 2,2	
	Power input in COOLING (kW)	2,18	4,11	2,18	4,11	4,11	4,11	3,56	4,30	7,56	7,56	11,68	11,68
	Power input in HEATING (kW)	3,00	5,44	3,00	5,44	5,44	5,44	5,34	5,49	9,48	9,48	14,67	14,67
	Speed (r.p.m.)	980						1000 / 980		980		980	
Indoor circuit supply fan	Nominal air flow (m³/h)	18.000	18.000	18.200	18.200	20.400	24.000	27.500	30.000	33.000	37.000	42.000	46.000
	Available static pressure (mm.w.c)	25	25	25	25	30	30	35	35	35	35	35	35
	Type	Electronic plug-fan											
	Number x Diameter (mm)	3 x 500					4 x 500			5 x 500		4 x 500	
	Motor output (kW)	3 x 2,68					4 x 2,68			5 x 2,68		4 x 5,5	
	Power input (kW)	3,12	3,21	3,18	3,34	4,12	5,05	6,37	7,10	8,33	9,58	13,15	14,27
	Speed (r.p.m.)	3 x 1.700					4 x 1.700			5 x 1.700		4 x 2.200	
Compressor	Type	Scroll											
	No. compressors / stages / circuits	4 / 4 / 2								4 / 4 / 4			
	Oil type	Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC											
	Volume of oil (l)	4 x 3,3	4 x 3,3	4 x 3,3	4 x 3,3	4 x 3,3	4 x 3,3	4 x 3,3	4 x 6,2	4 x 6,2	4 x 6,2	4 x 6,2	4 x 6,2
Electrical character.	Electrical power supply	400 V / III ph / 50 Hz (±10%)											
	Power supply	3 Wires + Ground											
Maximum absorbed current	Compressor(s) (A)	74,0	74,0	80,4	80,4	92,0	96,2	100,4	122,0	140,6	159,2	182,2	205,2
	Outdoor fan(s) (A)	6,8	6,8	6,8	6,8	6,8	6,8	10,8	10,8	13,6	13,6	20,4	20,4
	Indoor fan (A)	12,5	12,5	12,5	12,5	12,5	16,7	16,7	16,7	20,9	20,9	33,6	33,6
	Control (A)	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
	Total (A)	95,1	95,1	101,5	101,5	113,1	121,5	129,7	151,3	176,9	195,5	238,0	261,0
Refrigerant	Type	R-410A											
	Global warming potential (GWP) (4)	2.088											
	Charge (kg)	30,0	30,0	30,0	30,0	34,0	35,0	35,0	41,0	44,0	46,0	57,0	58,0
	Environment impact (tCO2eq)	62,6	62,6	62,6	62,6	71,0	73,1	73,1	85,6	91,9	96,0	119,0	121,1
Dimensions	Length (mm)	3.326	4.816	3.326	4.816			4.816				6.316	
	Width (mm)	2.205	2.205	2.205	2.205			2.205				2.205	
	Height (mm)	2.095	1.795	2.095	1.795			2.095				2.095	
Weight	(kg)	1.703	1.926	1.726	1.951	1.950	1.999	2.213	2.264	2.390	2.487	2.998	3.111
Condensate outlet Ø		1 1/4" adaptor											

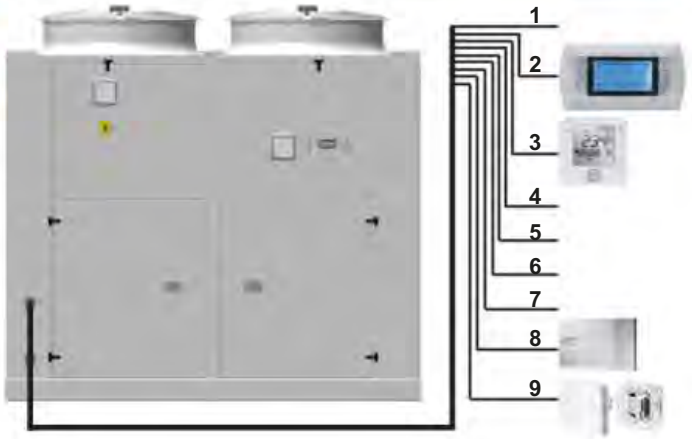
(1) Cooling capacity calculated in accordance with the EN-14511-2013 standard given for indoor temperature conditions 27ºC, (19ºC WB) and 35ºC outdoor temperature.
(2) Heating capacity calculated in accordance with the EN-14511-2013 standard given for indoor temperature conditions 20ºC and 6ºC WB outdoor temperature.
(3) Total power input by compressors and motorised fans under nominal conditions, calculated in accordance with the EN-14511-2013 standard.
(4) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

COMPLIANCE

- Machinery Directive 2006/42/EC (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Eco-design Directive 2009/125/EC (ECO-DESIGN)
- Energy Labelling Directive 2017/1369/EU (ECO-LABELLING)
- Harmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).

ELECTRICAL CONNECTIONS

No.	50EN/EH		415 to 1200
1	Main power supply	400 III (±10%)	3 wires + ground
2	Remote connection of pGD1 terminal (by default installed on the electrical cabinet) (1)		telephone cable 6 wires standard (RJ12 connector)
3	Connection of TCO user terminal on the electrical cabinet (optional) (2)		2 wires for power supply 230V + 1 shielded cable for communication type AGW20 / 22 (1 braided pair + drainwire + shielding)
4	Remote off/on (optional)		2 wires
5	Main failure signal (optional)		2 wires
6	Circulation pump signal for HWC (antifreeze sec.) (opt.)		1 wire
7	NTC ambient sensor (std)		2 wires
8	RS485 ambient sensor (opt.)		5 wires (3)
9	Air quality sensor (opt.)		3 wires



(1) In this case, it´s posible to install the TCO terminal on the electrical cabinet.
(2) It's necessary that the terminal uses the same power supply that the control board.
(3) Up to four RS485 ambient sensors can be connected in series on the field-bus of the control board.

SINGLE COMPRESSOR CHARACTERISTICS (OPTIONAL)

A single compressor on each circuit to replace the tandem.

50EN/EH		415	420	480	485	540	600
Number of compressors / stages / circuits		2 / 2 / 2					
Volume of oil	(l)	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2
Maximum absorbed current	(A)	70,3	70,3	79,6	79,6	91,1	102,6
Weight supplement	(kg)	-57	-57	-40	-40	-3	34

OPTIONS FOR THE OUTDOOR CIRCUIT

Outdoor condensates pan

50EN/EH			415	480	420	485	540	600	650	720	840	960	1100	1200
Overall dimensions	Length	(mm)	3.326		4.816								6.316	
	Width (1)	(mm)	2.329		2.329									
	Height	(mm)	2.095		1.795				2.095					

(1) The unit includes two condensates pans, one on each side.

Axial 2-speed outdoor fan

50EN/EH		415	420	480	485	540	600	650	720	840	960	1100	1200
Nominal air flow	(m^3/h)	3 .000	42.000	30.	42.0	42.000	42.000	55. 0	6.	7 .000	7 .000	112.500	112.
Available static pressure	(mm.w.c.)	4											
Number / Diameter	(mm)	2 x 800						2 x 630 + 2 x 800		4 x 800		6 x 800	
Output	(kW)	2 x 2,0 / 1,3						2 x 0,7 / 0,4 + 2 x 2,0 / 1,3		4 x 2,0 / 1,3		6 x 2,0 / 1,3	
aximum speed	(r.p.m.)	895 / 685						875 / 650 895 / 685		895 / 685		895 / 685	
Maximum absorbed current	(A)	8,6						11,2		17,2		25,8	

OPTIONS FOR THE INDOOR CIRCUIT

Supply EC plug-fan with high available pressure

50EN/EH		540	600	650	720	840	960	1100	1200
Nominal air flow	(m^3/h)	20.400	24.000	27.500	30.000	33.000	37.000	42.000	46.000
Max. available static pressure	(mm.w.c.)	139,9	127,9	118,7	107,2	123,2	108,3	116,0	102,4
Number x Diameter	(mm)	3 x 500		3 x 560		4 x 560		5 x 500	
Output	(kW)	3 x 5,5		3 x 4,7		4 x 4,7		5 x 5,5	
Speed	(r.p.m.)	3 x 2.200		3 x 1.750		4 x 1.750		5 x 2.200	
Maximum absorbed current	(A)	25,2		21,9		29,2		42,0	
Weight supplement	(kg)	132	104	41	41	65	65	40	40

Centrifugal supply fan

50EN/EH		415	420	480	485	540	600	650	720	840	960	1100	1200
Nominal air flow	(m^3/h)	18.000	18.000	18.200	18.200	20.400	24.000	27.500	30.000	33.000	37.000	42.000	46.000
Available static pressure	(mm.w.c.)	12,5	12,5	15,0	15,0	15,0	15,0	17,5	17,5	17,5	17,5	17,5	17,5
Number / No. turbines		2 / 2								3 / 3		1 / 3	
Output	(kW)	2 x 2,2	2 x 1,5	2 x 2,2	2 x 1,5	2 x 2,2	2 x 3	2 x 4	2 x 4	3 x 3	3 x 3	18,5	22
Nominal absorbed output	(kW)	2,72	2,04	2,94	2,18	2,88	4,06	5,15	6,21	5,87	7,49	13,47	16,62
Speed	(r.p.m.)	688	535	717	554	597	639	654	677	677	714	873	916
Maximum absorbed current	(A)	10,0	7,1	10,0	7,1	10,0	13,8	18,0	18,0	20,7	20,7	37,0	42,0
Weight supplement	(kg)	-105	-81	-105	-81	-68	-96	-120	-112	-113	-113	24	24

Note: Consult the selection tables for these fans on pages 61 to 67 of this brochure.

Axial return fan (MA assembly)

50EN/EH		415	420	480	485	540	600	650	720	840	960	1100	1200
Maximum air flow	(m^3/h)	18.000	18.000	18.200	18.200	20.400	24.000	27.500	30.000	30.000	30.000	37.500	37.500
Number x Diameter	(mm)	3 x 500	4 x 500	3 x 500	4 x 500							5 x 500	
Power supply voltage		230 V / I ph / 50 Hz											
Output	(kW)	3 x 0,64	4 x 0,64	3 x 0,64	4 x 0,64							5 x 0,64	
Speed	(r.p.m.)	1.270											
Maximum absorbed current	(A)	9,0	12,0	9,0	12,0							15,0	

Return EC plug-fan (MC0 / MC1 / MWC1 assemblies)

50EN/EH			415	420	480	485	540	600	650	720	840	960	1100	1200
Nominal air flow		(m^3/h)	18.000	18.000	18.200	18.200	20.400	24.000	27.500	30.000	33.000	37.000	42.000	46.000
Nominal available static pressure		(mm.w.c.)	12,5	12,5	15,0	15,0	15,0	15,0	17,5	17,5	17,5	17,5	17,5	17,5
Standard pressure	Nominal absorbed output	(kW)	2,64	2,64	2,86	2,86	2,43	3,29	4,59	4,15	4,96	6,23	7,60	9,28
	Max. available static pressure	(mm.w.c.)	52,1	52,1	50,1	50,1	83,0	68,3	48,8	74,8	64,5	47,3	109,3	93,2
	Number x Diameter	(mm)	2 x 500				3 x 500			4 x 500			4 x 500	
	Output	(kW)	2 x 2,68				3 x 2,68			4 x 2,68			4 x 5,5	
	Speed	(r.p.m.)	2 x 1.700				3 x 1.700			4 x 1.700			4 x 2.200	
	Maximum absorbed current	(A)	8,4				12,5			16,7			42,0	
High pressure (optional) (1)	Max. available static pressure (2)	(mm.w.c.)	132,0	91,5	131,0	90,5	--	143,0	130,0	147,0	140,0	130,0	--	--
	Number x Diameter	(mm)	2 x 500	3 x 500			--	3 x 500		4 x 500			--	--
	Output	(kW)	2 x 5,5	3 x 2,68			--	3 x 5,5		4 x 5,5			--	--
	Speed	(r.p.m.)	2 x 2.200	3 x 1.700			--	3 x 2.200		4 x 2.200			--	--
	Maximum absorbed current	(A)	16,8	12,6	12,6	12,6	--	25,2		33,6			--	--
	Extra weight (MWC1)	(kg)	21,9	21,6	22	21,6	--	32,8	33,2	43,8	43,7	43,7	--	--

(1) Only available with MWC1 assembly.

(2) Pressure drops in the recuperator module are not taken into account, because these depend on the chosen wheel configuration. These data are available in our selection software.

OPTIONS FOR THE INDOOR UNIT (CONT.)

Centrifugal return fan (MC1 assembly)

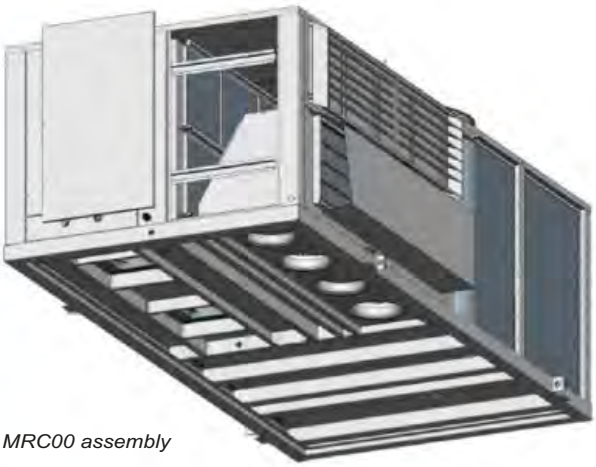
50EN/EH		415	420	480	485	540	600	650	720	840	960	1100	1200
Nominal air flow	(m^3/h)	18.000	18.000	18.200	18.200	20.400	24.000	27.500	30.000	33.000	37.000	42.000	46.000
Available static pressure	(mm.w.c.)	12,5	12,5	15,0	15,0	15,0	15,0	17,5	17,5	17,5	17,5	17,5	17,5
Nominal power input	(kW)	2,50	1,76	2,56	1,80	2,28	3,22	4,32	5,25	4,10	5,14	10,05	13,05
Number / No. turbines		2 / 2								3 / 3		1 / 3	
Output	(kW)	2 x 1,5	2 x 1,1	2 x 2,2	2 x 1,1	2 x 1,5	2 x 2,2	2 x 3	2 x 4	3 x 2,2	3 x 2,2	15	18,5
Speed	(r.p.m.)	634	488	673	489	509	546	577	600	536	554	709	770
Maximum absorbed current	(A)	7,2	5,4	10,0	5,4	7,2	10,0	13,8	18,0	15,0	15,0	29,0	37,0
Weight supplement	(kg)	-17	-16	-17	-16	-34	-27	-15	-44	2	2	96	96

Note: Consult the selection tables for these fans on pages 74 to 77 of this brochure.

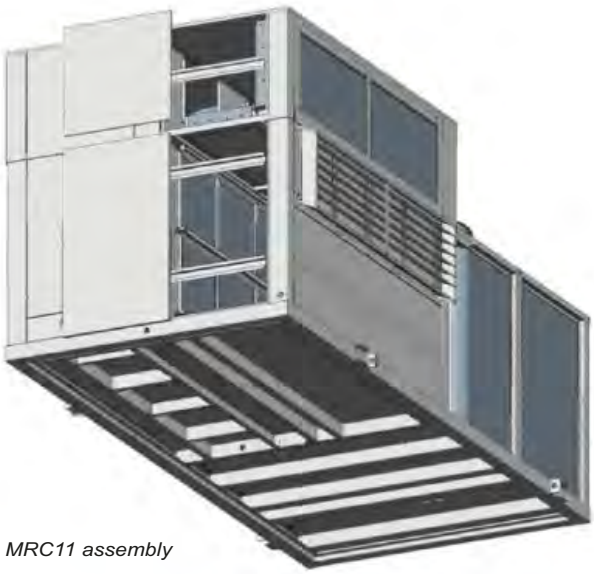
MRC cooling recovery circuit

50EN/EH			415	420	480	485	540	600	650	720	840	960	1100	1200
Nominal flow		(m^3/h)	18.000	18.000	18.200	18.200	20.400	24.000	27.500	30.000	33.000	37.000	42.000	46.000
EC plug-fan (MRC0 / MRC1)	Available static pressure in return	(mm.w.c)	45,3	49,1	43,1	47,0	77,8	63,6	40,7	68,2	56,8	38,3	94,1	77,8
Centrifugal fan (MRC1)	Maximum available static pressure in return	(mm.w.c)	12,5	12,5	15,0	15,0	15,0	15,0	17,5	17,5	17,5	17,5	17,5	17,5
	Extra weight	(kg)	-17	-16	-17	-16	-34	-27	-15	-44	2	2	96	96
Recovery scroll compressor characteristics	No. of compressors / circuits		1 / 1											
	Oil type		Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC											
	Volume of oil	(l)	3,0				3,3		4		6,2		6,2	
	Max. absorbed current	(A)	15,3				20,1		25,1		30,5		39,8	
Refrigerant charge R-410A		(kg)	8,0	,0	8,	8,0	8,1	8,2	7,6	7,7	7,1	7,1	8,2	8,2

Important : With this option, CARRIERrtc electronic control is mandatory, the change of control isn't allowed.



MRC00 assembly



MRC11 assembly

Axial extraction fan (ME assembly)

50EN/EH		415	420	480	485	540	600	650	720	840	960	1100	1200
Nominal air flow	(m^3/h)	9.000	9.000	9.100	9.100	10.200	12.000	13.750	15.000	16.500	18.500	21.000	23.000
Number / Diameter	(mm)	2 x 450						3 x 450				4 x 450	
Power supply voltage		230 V / I ph / 50 Hz											
Output	(kW)	2 x ,48						3 x 0,48				4 x 0,48	
Speed	(r.p.m.)	1.350											
Maximum absorbed current	(A)	4,2						6,3				8,4	

OPTIONS FOR THE INDOOR UNIT (CONT.)

MWC1 rotary heat exchanger

MWC1 assembly, available for models 415 to 960.

This rotary recovery unit is used to transfer the sensible and latent heat from the air-conditioned room's return air to the fresh air used for ventilation, before it's discharged outdoors.

The return air circulates in half of the heat recovery unit and the ventilation air circulates in the other half, in the opposite direction. As the rotor rotates, very fine channels of air which form the matrix come into contact with the frsh air and the return air in turn, thereby transferring heat and humidity from one to the other.

The efficiency of the recovery depends on the following factors:

- **Wheel diameters:**
  - 1500 mm: all models
  - 1800 mm: all models except 415 and 480
  - 2000 mm: all models except 415 and 480
- **Matrix materials:**
  - Aluminum: sensible heat recovery.
  - Epoxy coated aluminium: sensible heat recovery in aggressive environments.
  - Hybrid wheel: enthalpic recovery.
  - Silicagel coated aluminium: enthalpic recovery with high efficiency in the recovery of latent heat.
- **Channel cross section:**

  The wheel is formed of two panels of aluminum, one smooth and one fluted.

  The fluted panel can be provided in four different configurations:
  - 1.5 mm cross section: very high efficiency for its great number of surface. It presents a greater pressure drop due to its smaller channels.
  - 1.7 mm cross section: high efficiency.
  - 2.0 mm cross section: the commonly-used cross section due to its high efficiency and moderate pressure drops.
  - 2.5 mm cross section: low pressure drop. Designed for high frontal speeds with low pressure drops.

The rotary heat exchanger is fitted into a module attached to the side of the unit on site.

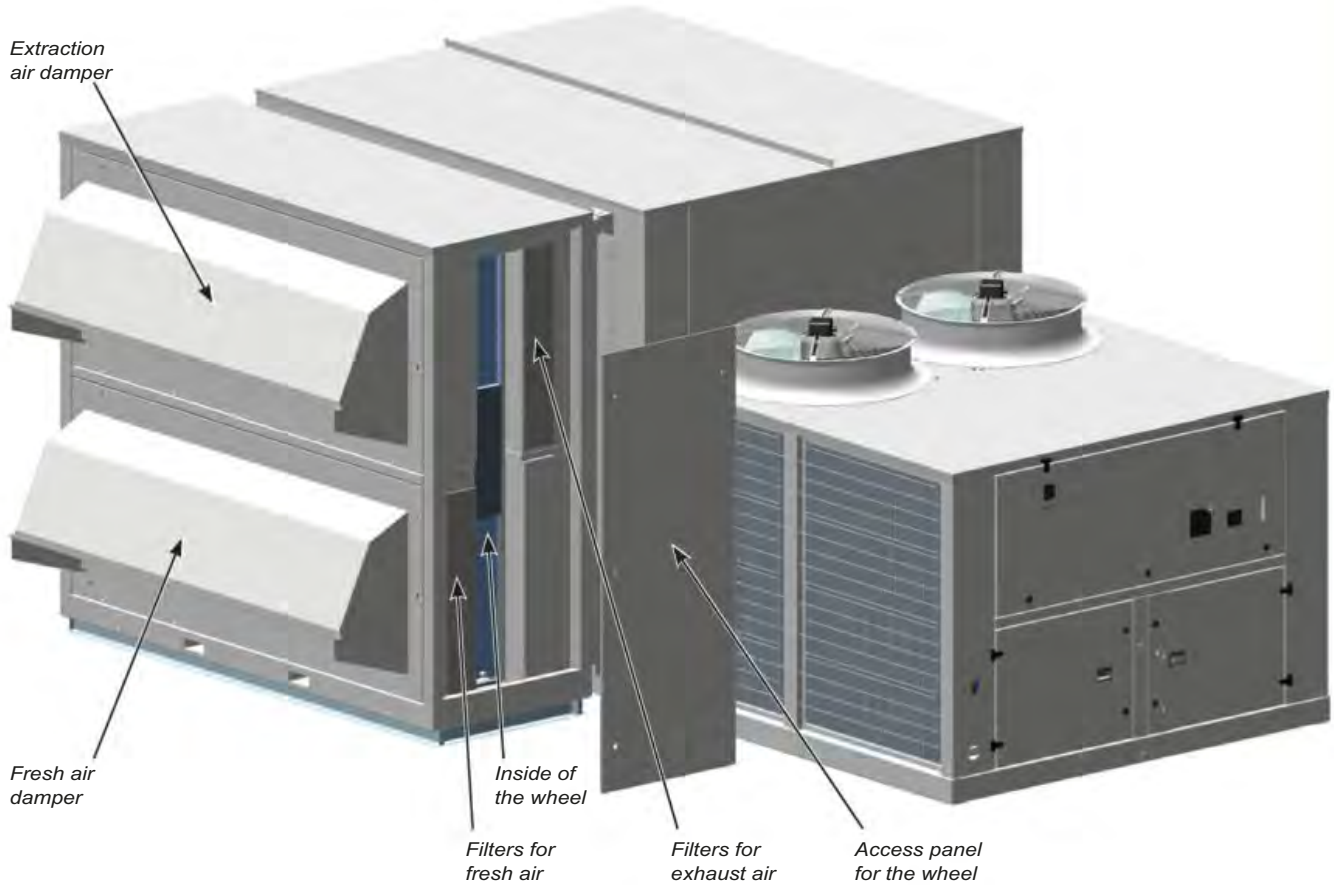
This module is equipped with filters on the fresh air intake and on the exhaust air outlet: washable (default option), G4 or G4 with low pressure drop (optional).

With the MWC1 assembly, the supply air fans and the return air fans are electronic plug-fans. There are two fans depending on the available pressure. Consult the selection tables for these fans.

This assembly can be supplied, in option, with a speed drive for the wheel which avoids the risk of ice forming on the wheel during the defrost operation. The speed drive is compulsory with output temperatures on both sides of the wheel lower than 1°C or an average temperature on the wheel lower than 3ºC.

Important: the calculations for the selection of a rotary heat exchanger according to the parameters described above should be done using our selection software.

Important: With this option, CARRIERrtc electronic control is mandatory, the change of control isn't allowed.

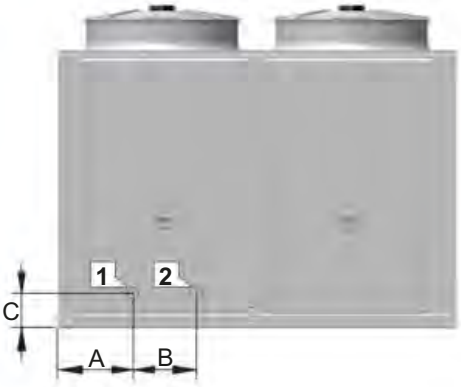


OPTIONS FOR THE INDOOR UNIT (CONT.)

Hot water auxiliary coil

50EN/EH			415	420	480	485	540	600	650	720	840	960	1100	1200
Air pressure drop		(mm.w.c.)	2,7	2,1	2,7	2,1	2,5	3,3	2,9	3,4	4,0	4,8	4,5	5,3
Water 80/60ºC and inlet air 20ºC	Heating capacity	(kW)	146,3	181,2	147,3	182,5	196,0	216,3	255,0	268,7	284,3	303,8	326,7	352,4
	Water flow	(m^3/h)	6,5	8,0	6,5	8,1	8,7	9,2	11,3	11,9	12,6	13,5	14,4	15,6
	Water pressure drop	(m.w.c)	1,7	2,0	1,8	2,0	1,9	2,3	3,1	3,4	3,8	4,4	2,1	2,4
Water 90/70ºC and inlet air 20ºC	Heating capacity	(kW)	179,8	223,1	181,1	224,7	241,5	266,9	314,5	331,6	351,0	375,3	403,3	436,6
	Water flow	(m^3/h)	8,0	9,9	8,0	10,0	10,7	11,9	14,0	14,7	15,6	16,7	17,9	19,3
	Water pressure drop	(m.w.c)	2,6	2,4	2,6	2,5	2,8	3,5	3,9	4,3	4,8	5,5	3,2	3,7
Weight (empty)		(kg)	43,0	66,9	43,0	66,9	66,9	66,9	82,3	82,3	82,3	82,3	82,3	82,3

Note: With stop-drop in the indoor air coil it is not possible to assemble the hot water coil.
Note: This option always incorporates an antigel thermostat as safety system.



Position of the hydraulic connections of the hot water coil (optional)

50EN/EH	A (mm)	B (mm)	C (mm)	Ø hydraulic connections: I/O
415 / 420 / 480 / 485 / 540 / 600	2	250	22	2”
650 / 720 / 840 / 960	302	250	222	2”
1100 / 1200	302	250	222	2 1/2”

LEGEND	
1	Water outlet
2	Water inlet

Note: The I / O connections of the coil are located inside the unit.
The connection can be established via the unit base using flexible tubing or via the side panel. In the above diagram, the position of the sheet metal precuts is shown on the side panel.
To connections for the base to consult pre-assembly roofcurbs schemes.

Electrical heaters

Auxiliary 2-stage electrical heaters for assembly and connection inside the unit.

Note: the differential pressostat for control of air flow is included with centrifugal fan (optional).

50EN/EH			Total output (kW)	27	36	45	54	72	90
			Stage power (kW)	9 + 18	18 + 18	18 + 27	27 + 27	36 + 36	45 + 45
			Weight of the module (kg)	19	24	29	34	48	58
415 / 480	Supply plug-fan	Current (A) (400V / IIIph / 50Hz)		39,0	52,0	65,0	unavailable		
420 / 485 / 540				39,0	unavailable				
600				unavailable	52,0	65,0	unavailable		
650 / 720				unavailable		65,0	78,0	unavailable	
840 / 960 / 1100 / 1200				unavailable		65,0	78,0	unavailable	
415 / 420 / 480 / 485	Supply centrifugal fan	Current (A) (400V / IIIph / 50Hz)		39,0	52,0	65,0	78,0	unavailable	
540				39,0	52,0	65,0	78,0	104,0	unavailable
600				unavailable	52,0	65,0	78,0	104,0	unavailable
650 / 720				unavailable		65,0	78,0	104,0	unavailable
840 / 960 / 1100 / 1200				unavailable		65,0	78,0	104,0	130,0

Note: With this option, the air flow controller is compulsory, if the unit does not incorporate supply plug-fan. Nevertheless, if the unit incorporates supply plug-fan, it is not possible to select the optional the air flow controller, since the proper fan realizes this function.

Stop-drop in the indoor air coil

Air flow at which it is recommended to install a stop-drop in the indoor coil (included in models 1100 and 1200).

50EN/EH		415	420	480	485	540	600	650	720	840	960	1100	1200
Air flow	(m^3/h)	27.700	30.090	27.700	30.090	30.090	30.090	37.030	37.030	37.030	37.030	standard	

Note: For operating conditions with high dehumidification in the indoor coil (e.g. in installations close to the coast) it may be necessary to install a separator even if the flow is less than the previous one.
Note: With hot water coil it is not possible to assemble the stop-drop.

OPTIONS FOR THE INDOOR UNIT (CONT.)

Gas burner

Natural or propane gas burner with modulating actuator, in accordance with the Gas Directive 2009/142/EC, installed inside a module attached to the supply the assemblies wtih lateral supply. Available for all the models, except 415 and 480.

Important: With this option, CARRIERrtc electronic control is mandatory, the change of control isn't allowed.

■ The key features of the boiler are:

- Condensation boiler with premixing and modulation technology that allows outputs close to 109% (Hi performance).
- The premixed burner, in combination with the air/gas valve, ensures a "clean" combustion. Low NOx emissions (class 5, according to standard EN 297).
- The combustion chamber and the burner are entirely made of stainless steel.
- Electronic controller with microprocessor and multifunction LCD display, located inside the burner, for burner's control, configuration and diagnostics.
- The power control will be carried out by the burner's own control in accordance with the signal received from the CARRIERrtc control (0-10V).
- The electronic control shall manage the connection of the burner, in heating mode, via an ON/OFF signal.

Note: a protection kit of low temperature is available for an outdoor temperature lower than -15ºC.

Important: with centrifugal fan (optional), it's compulsory the differential pressure switch for checking the air flow.

Model			PCH065		PCH080		PCH105		PCH130 (2 x PCH65)		PCH160 (2 x PCH80)		PCH210 (2 x PCH105)	
Type of equipment														
EC certification		PIN.	0694CP1457											
NOx Class		Val	5											
eater Performance	Range		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
	Thermal output (Hi)	kW	12,40	65,00	16,40	82,00	21,00	100,00	12,40	130,00	16,40	164,00	21,00	200,00
	Useful thermal output	kW	13,40	62,93	17,77	80,03	22,77	97,15	13,40	125,86	17,77	160,06	22,77	194,30
	High efficiency perform. (L.C.V.)	%	1 8,06	96,8	108,35	97,60	10 ,40	97,15	108,06	96, 2	108,35	97,60	10 ,40	97,15
	Hs Performance (H.C.V.)	%	97,36	87,22	97,62	87,93	97,68	87,52	97,36	87,22	97,62	87,93	97,68	87,52
	Flue losses with burner off (Hi)	%	0,2	3,2	0,3	2,4	0,2	2,8	0,2	3,2	0,3	2,4	0,2	2,8
	Flue losses with burner off (Hi)	%	<0,1											
	Losses in enclosure (1)		0%											
	Max. condensation (2)	l/h	2,1		3,3		2,7		4,2		6,6		5,4	
Exhaust g - Polluting emissions	Carbon monoxide - C0 - (0% of O2) (3)		< 5											
	Nitrogen oxides - NOx - (0% of O2) (4)		40 mg/kWh - 22,68 ppm		34 mg/kWh - 19,27 ppm		45 mg/kWh - 25,51 ppm		40 mg/kWh - 22,68 ppm		34 mg/kWh - 19,27 ppm		45 mg/kWh - 25,51 ppm	
	Available pressure at flue	Pa	120											
Electrical Data	ower supply		230 Vac - 50 Hz single-phase											
	Power input		15	97	40	123	20	130	30	194	80	246	40	260
	Power input in stand-by		<5											
	Ingress protection rating		IP X5D											
	Operating Temperatures (5)		from -15°C to +40°C											
Connections	Ø gas connection	GAS	UNI/ISO 7/1- G 3/4"						UNI/ISO 7/1- G 1 1/2"					
	Ø intake/exhaust pipes		80/80						2 x 80/80					

(1) Enclosure losses match those of the machine housing the PCH.
(2) Max. condensation produced acquired from testing 30%Qn.
(3) Value referenced to cat. H (G20)
(4) Weighted value to EN1020 ref. to class H (G20), referred to Hi (L.C.V.).

OPTIONS FOR THE INDOOR UNIT (CONT.)

The following table indicates the gas setting:

Gas type	Gas settings		PCH065		PCH080		PCH105		PCH130 (2 x PCH65)		PCH160 (2 x PCH80)		PCH210 (2 x PCH105)	
			min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
G20	Air supply pressure	mbar	20 [min 17-max 25]											
	Ø pilot nozzle	mm	0,7											
	Gas consumption (15°C-1013mbar)	m3/h	1,31	6,88	1,74	8,68	1,90	10,58	2 x 1,31	2 x 6,88	2 x 1,74	2 x 8,68	2 x 1,90	2 x 10,58
	Carbon dioxide - CO_2 content	%	8,7	9,1	8,7	9,1	8,5	9,1	8,7	9,1	8,7	9,1	8,5	9,1
	Fumes temperature	°C	31	86	26,5	70	28	80	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	107		135		165		2 x 107		2 x 135		2 x 165	
	Gas butterly valve	mm	11		12,2		15,8		11		12,2		15,8	
G25	Air supply pressure	mbar	25 [min 17-max 30] (20 for Germany)											
	Ø pilot nozzle	mm	0,7 (0,75 for Germany)											
	Gas consumption (15°C-1013mbar)	m3/h	1,05	5,17	2,02	10,1	2,21	12,30	2 x 1,05	2 x 5,17	2 x 2,02	2 x 10,1	2 x 2,21	2 x 12,30
	Carbon dioxide - CO_2 content	%	8,8	9,2	8,6	9,1	8,8	9,0	8,8	9,2	8,6	9,1	8,8	9,0
	Fumes temperature	°C	31	86	26,5	70	28	80	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	--											
	Gas butterly valve	mm	Not necessary											
G30	Air supply pressure	mbar	30 [min 25-max 35] - 50 [min 42,5-max 57,5]											
	Ø pilot nozzle	mm	0,51											
	Gas consumption (15°C-1013mbar)	m3/h	1,03	5,39	1,49	6,80	1,70	8,30	2 x 1,03	2 x 5,39	2 x 1,49	2 x 6,80	2 x 1,70	2 x 8,30
	Carbon dioxide - CO_2 content	%	10,7	11,3	10,1	10,3	10,4	10,6	10,7	11,3	10,1	10,3	10,4	10,6
	Fumes temperature	°C	31	86	26,5	70	28	80	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	--											
	Gas butterly valve	mm	6,5		7,0		9,3		6,5		7,0		9,3	
G31	Air supply pressure	mbar	30 [min 25-max 35] - 37 [min 25-max 45] - 50 [min 42,5-max 57,5]											
	Ø pilot nozzle	mm	0,51											
	Gas consumption (15°C-1013mbar)	m3/h	1,01	5,31	1,34	6,70	1,47	8,18	2 x 1,01	2 x 5,31	2 x 1,34	2 x 6,70	2 x 1,47	2 x 8,18
	Carbon dioxide - CO_2 content	%	9,4	9,6	9,3	9,6	9,5	9,8	9,4	9,6	9,3	9,6	9,5	9,8
	Fumes temperature	°C	31	86	36,5	70	28	80	31	86	36,5	70	28	80
	Fume mass flow rate (max.)	kg/h	84		107		130		2 x 84		2 x 107		2 x 130	
	Gas butterly valve	mm	6,5		7,0		9,3		6,5		7,0		9,3	

The following table indicates the type of gas used by the gas burner as a function of the destination country:

Country	Category	Gas	Pressure (mbar)	Gas	Pressure (mbar)
Austria, Switzerland	II2H3B/P	G20	20	G30/G31	50
Belgium < 70kW	I2E(S)B,I3P	G20/G25	20/25	G31	37
Belgium > 70kW	I2E(R)B,I3P	G20/G25	20/25	G31	37
Germany	II2ELL3B/P	G20	20	G30/G31	50
Denmark, Finland, Greece, Sweden, Norway, Italy, Czech Republic, Estonia, Lithuania, Slovenia, Albania, Macedonia, Bulgaria, Romania, Croatia, Turkey	II2H3B/P	G20	20	G30/G31	30
Spain, United Kingdom, Ireland, Portugal, Slovakia	II2H3P	G20	20	G31	37
France	II2Esi3P	G20/G25	20/25	G31	37
Luxembourg	II2E3P	G20/G25	20	G31	37/50
Netherlands	II2L3B/P	G25	25	G30/G31	50
Hungary	II2HS3B/P	G20/G25.1	25	G30/G31	30
Cyprus, Malta	I3B/P	--	--	G30/G31	30
Latvia	I2H	G20	20		
Iceland	I3P	--	--	G31	37
Poland	II2E3B/P	G20/G2.350	20/13	G30/G31	37
Russia	II2H3B/P	G20	20	G30/G31	30

OPTIONS FOR THE INDOOR UNIT (CONT.)

The following table features the pressure drops (mm.w.c) in the burners available for each model:

50EN/EH	Nominal air flow (m³/h)	Pressure drop (mm.w.c)					
		PCH065	PCH080	PCH105	PCH130	PCH160	PCH210
420	18.000	13,8	10,8	10,0	8,8	6,0	5,6
485	18.200	14,0	11,0	10,2	9,0	6,2	5,7
540	20.400	16,9	13,4	12,4	11,6	7,9	7,3
600	24.000	--	13,5	13,0	16,6	11,3	10,3
650	27.500	--	17,1	12,6	10,7	10,9	10,3
720	30.000	--	19,8	14,6	13,0	13,1	12,4
840	33.000	--	17,1	12,6	9,8	10,9	15,2
960	37.000	--	20,8	15,3	12,6	13,9	19,4
1100	42.000	--	--	--	8,8	11,3	12,4
1200	46.000	--	--	--	10,8	13,7	15,1

WEIGHT OVERVIEW

Weight of the various assemblies (kg)

50EN/EH	415	420	480	485	540	600	650	720	840	960	1100	1200
Assembly M0 (standard)	1.703	1.926	1.726	1.951	1.950	1.999	2.213	2.264	2.390	2.487	2.998	3.111
Assembly MS	1.779	2.019	1.802	2.043	2.042	2.091	2.325	2.377	2.503	2.600	3.131	3.244
Assembly MA / ME	1.856	2.247	1.879	2.230	2.222	2.319	2.617	2.667	2.790	2.885	3.368	3.481
Assembly MC0	1.954	2.273	1.977	2.298	2.297	2.345	2.621	2.671	2.794	2.889	3.378	3.491
Assembly MRC0	2.051	2.383	2.074	2.406	2.404	2.450	2.772	2.828	2.965	3.071	3.587	3.700
Assembly MC1 / MWC1	2.105	2.459	2.128	2.483	2.500	2.542	2.723	2.823	2.946	3.076	3.532	3.645
Assembly MRC1	2.173	2.560	2.196	2.586	2.605	2.649	2.842	2.949	3.088	3.231	3.711	3.824

Weight supplement from the main options (kg)

50EN/EH		415	420	480	485	540	600	650	720	840	960	1100	1200
Pre-assembly roofcurb		290	385	290	385	385	385	385	385	385	385	475	475
Gas burner module	PCH065	--	414	--	414	414	--	--	--	--	--	--	--
	PCH080	--	440	--	440	440	--	--	--	--	--	--	--
	PCH105	--	468	--	468	468	468	468	468	468	468	--	--
	PCH130	--	504	--	504	504	504	--	--	--	--	--	--
	PCH160	--	555	--	555	555	555	555	555	555	--	--	--
	PCH210	--	600	--	600	600	600	600	600	600	600	616	616
Wheel recovery module	Wheel 1500	715	880	715	880	880	880	896	896	896	896	--	--
	Wheel 1800	--	901	--	901	901	901	917	917	917	917	--	--
	Wheel 2000	--	928	--	928	928	928	945	945	945	945	--	--
Water coil (empty)		43	67	43	67	67	67	82	82	82	82	82	82
Supply plug-fan of high pressure		--		--		132	104	41	41	65	65	40	40
Supply centrifugal fan		-105	-81	-105	-81	-68	-96	-120	-112	-113	-113	24	24
Return plug-fan of high pressure (MWC1)		21,9	21,6	22	21,6	--	32,8	33,2	43,8	43,7	43,7	--	--
Return centrifugal fan (MC1 / MRC1)		-17	-16	-17	-16	-34	-27	-15	-44	2	2	96	96
Insulation M0 50mm	M0	297	319	297	319	319	319	361	361	361	361	404	404
	MC0 / MRC0 /MA / ME	228	245	228	245	245	245	272	272	272	272	302	302
	MC1 / MRC1 /MWC1	311	325	311	325	325	325	368	368	368	368	406	406
	MS	262	282	262	282	282	282	316	316	316	316	353	353
	Burner module	--	81	--	81	81	81	108	108	108	108	124	124
	Wheel recovery module	14	17	14	17	17	17	17	17	17	17	--	--
Opacimetric filters		87	84	87	84	84	84	116	116	116	116	137	137
Single compressor (not in tandem)		-57	-57	-40	-40	-3	34	--	--	--	--	--	--

Electrical heaters (kW)	12	18	27	36	45	54	72	90
Weight of module (kg)	11	15	19	24	29	34	48	58

Centrifugal fans (kW)	0,75	1,1	1,5	2,2	3	4	5,5	7,5	11	15	18,5	22
Weight of motor (kg)	10	13	16	21	24	27	40	48	75	94	124	141

SOUND LEVELS dB(A)

Standard unit

Sound power level (LW)

50EN/EH	415	420	480	485	540	600	650	720	840	960	1100	1200
20 Hz	32,3	32,6	33,3	34,0	34,1	34,6	37,2	37,7	36,5	38,2	39,0	39,6
25 Hz	35,5	36,7	36,4	37,8	37,0	37,7	39,8	39,8	41,0	41,5	41,7	42,3
31,5 Hz	39,2	40,5	39,3	41,0	40,8	41,6	44,0	43,5	44,4	44,8	45,0	46,7
40 Hz	44,0	47,1	44,2	47,9	47,5	47,7	48,6	49,6	50,9	51,9	51,6	52,7
50 Hz	61,0	66,6	59,6	67,9	66,5	67,3	64,8	65,5	70,4	72,2	70,4	71,7
63 Hz	57,0	59,3	57,7	59,8	59,7	60,7	62,0	62,2	63,2	64,0	64,4	66,2
80 Hz	70,0	69,6	69,9	70,1	70,4	70,9	76,2	76,3	73,9	73,9	77,7	78,8
100 Hz	64,8	65,6	63,9	66,7	66,5	66,5	69,9	70,5	69,7	70,7	70,6	72,0
125 Hz	61,0	70,1	64,2	69,9	70,4	71,6	66,7	67,1	73,8	73,8	74,5	76,2
160 Hz	73,1	80,0	77,5	81,4	81,4	81,7	77,6	77,1	83,7	85,2	86,0	87,0
200 Hz	73,3	79,7	76,4	80,2	80,6	81,2	77,7	78,6	83,7	83,9	84,9	85,1
250 Hz	74,7	81,2	76,2	81,4	81,6	81,6	80,1	79,9	84,9	85,1	86,0	86,4
315 Hz	77,1	81,2	78,7	81,8	82,1	83,2	80,6	81,0	85,2	85,8	86,6	86,9
400 Hz	80,3	82,5	80,7	83,9	83,7	84,1	84,7	84,7	86,1	88,0	88,4	88,7
500 Hz	81,2	83,6	81,4	84,5	83,4	84,9	85,4	85,5	87,4	88,6	88,0	89,5
630 Hz	81,0	83,4	81,6	83,6	84,5	85,2	84,6	84,5	87,6	87,7	89,4	90,5
800 Hz	81,2	84,1	82,3	84,1	84,7	85,4	85,8	86,1	88,2	88,0	89,5	90,7
1.000 Hz	82,2	85,0	84,0	85,9	85,9	86,7	86,0	86,4	88,7	89,6	90,7	91,1
1.250 Hz	81,9	83,0	82,6	83,0	83,2	84,3	85,7	85,7	86,7	87,3	88,1	89,1
1.600 Hz	77,8	80,7	78,5	81,1	80,8	81,8	82,3	82,0	84,7	84,8	85,2	85,9
2.000 Hz	77,4	78,6	78,6	79,7	79,1	80,3	81,5	81,8	82,9	83,7	84,2	85,4
2.500 Hz	74,4	76,9	76,0	77,9	77,0	78,6	79,4	79,4	81,2	81,7	81,9	82,9
3.150 Hz	72,7	74,7	73,3	75,3	75,1	76,5	77,9	78,0	79,0	79,3	79,7	81,3
4.000 Hz	71,3	71,8	72,8	72,7	72,2	72,5	75,6	75,8	75,6	76,4	77,4	78,0
5.000 Hz	68,9	68,7	69,1	69,3	69,6	69,9	73,7	74,0	73,0	73,0	75,0	75,2
6.300 Hz	66,5	67,5	66,9	68,9	68,0	68,3	71,9	71,3	71,7	72,9	72,6	74,1
8.000 Hz	63,0	64,1	64,0	64,9	64,7	64,8	68,2	68,9	68,1	68,6	69,2	70,8
10.000 Hz	60,8	59,2	60,0	59,8	60,1	60,7	66,2	65,8	62,9	63,9	65,4	65,6
12.500 Hz	58,6	53,2	54,6	54,5	53,9	54,1	64,2	64,0	57,2	58,8	59,5	60,9
16.000 Hz	56,4	47,2	54,4	47,9	48,2	48,8	61,6	61,7	51,4	51,9	53,6	55,0
20.000 Hz	51,0	40,2	49,8	40,7	41,2	41,9	56,0	56,0	44,4	44,9	46,1	46,9
Total dB(A)	91	93	92	94	94	95	95	95	97	98	99	100

Sound pressure level (LP)

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

50EN/EH	415	420	480	485	540	600	650	720	840	960	1100	1200
Total dB(A)	64	66	65	67	67	67	67	67	70	70	71	72

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

SOUND LEVELS dB(A)

Unit with centrifugal return fan in top box MC1 (optional)

Sound power level (LW)

50EN/EH	415	420	480	485	540	600	650	720	840	960	1100	1200
20 Hz	33,3	33,2	34,5	34,6	34,7	35,2	37,6	38,5	37,1	38,9	39,6	40,2
25 Hz	36,4	37,2	37,8	38,3	37,6	38,3	40,7	42,1	41,5	42,1	42,3	42,9
31,5 Hz	39,8	41,3	40,4	41,7	41,5	42,3	45,2	45,7	45,1	45,5	45,8	47,4
40 Hz	44,9	47,9	45,3	48,7	48,4	48,5	50,7	50,2	51,7	52,7	52,4	53,6
50 Hz	61,7	67,5	61,6	68,8	67,4	68,2	66,8	66,7	71,2	73,0	71,2	72,6
63 Hz	57,8	60,0	59,3	60,5	60,4	61,4	62,5	63,4	63,9	64,7	65,1	66,9
80 Hz	70,8	70,5	70,9	71,0	71,3	71,7	76,5	76,8	74,8	74,8	78,6	79,7
100 Hz	65,5	66,2	65,0	67,2	67,0	67,0	71,0	71,0	70,2	71,3	71,1	72,5
125 Hz	61,9	70,8	65,3	70,6	71,1	72,3	67,8	69,6	74,5	74,5	75,2	76,9
160 Hz	74,1	80,8	78,6	82,3	82,2	82,6	78,6	80,0	84,6	86,1	86,9	87,9
200 Hz	74,2	80,4	77,5	80,9	81,3	81,9	78,7	80,0	84,4	84,6	85,6	85,8
250 Hz	75,8	81,8	77,9	82,0	82,2	82,3	80,8	81,0	85,6	85,7	86,7	87,1
315 Hz	78,0	82,0	79,8	82,6	82,9	84,0	82,0	82,9	86,0	86,6	87,4	87,7
400 Hz	81,6	83,2	81,4	84,7	84,4	84,9	85,6	85,9	86,9	88,7	89,1	89,5
500 Hz	82,1	84,4	82,0	85,4	84,3	85,8	85,9	87,3	88,3	89,5	88,9	90,4
630 Hz	81,7	83,9	82,4	84,2	85,0	85,8	85,4	87,1	88,2	88,3	89,9	91,0
800 Hz	82,3	85,0	83,2	85,0	85,6	86,3	87,3	87,1	89,1	88,9	90,3	91,6
1.000 Hz	83,4	85,9	85,1	86,8	86,8	87,6	87,0	88,2	89,6	90,5	91,6	92,0
1.250 Hz	82,8	83,9	83,7	83,9	84,0	85,2	86,9	88,1	87,6	88,2	89,0	90,0
1.600 Hz	78,6	81,2	79,9	81,5	81,2	82,3	83,6	83,7	85,2	85,3	85,6	86,4
2.000 Hz	78,3	79,5	79,4	80,6	80,0	81,2	83,3	84,5	83,8	84,6	85,1	86,3
2.500 Hz	75,5	77,8	76,8	78,7	77,9	79,5	79,9	81,4	82,0	82,6	82,7	83,8
3.150 Hz	73,4	75,4	74,9	76,0	75,8	77,1	78,0	79,4	79,7	80,0	80,4	82,0
4.000 Hz	72,1	72,3	73,8	73,2	72,7	73,0	76,4	77,3	76,1	76,9	77,9	78,5
5.000 Hz	68,7	69,3	70,9	69,8	70,1	70,5	74,5	75,5	73,5	73,5	75,5	75,7
6.300 Hz	70,3	68,0	68,0	69,3	68,4	68,8	72,3	73,4	72,1	73,4	73,1	74,6
8.000 Hz	63,8	64,8	65,5	65,6	65,4	65,5	69,4	70,1	68,8	69,3	69,9	71,5
10.000 Hz	61,7	59,7	62,2	60,3	60,6	61,2	66,3	66,8	63,4	64,4	65,9	66,1
12.500 Hz	59,6	53,8	56,0	55,1	54,5	54,7	64,3	65,3	57,8	59,4	60,1	61,5
16.000 Hz	60,3	48,0	55,9	48,6	48,9	49,5	62,3	62,7	52,1	52,6	54,4	55,7
20.000 Hz	51,8	40,8	51,5	41,3	41,8	42,6	56,9	58,3	45,1	45,6	46,7	47,5
Total dB(A)	92	94	93	95	95	96	96	97	98	99	100	100

Sound pressure level (LP)

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

50EN/EH	415	420	480	485	540	600	650	720	840	960	1100	1200
Total dB(A)	64	67	66	67	67	68	68	69	71	71	72	73

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

SOUND LEVELS dB(A)

Unit with centrifugal return fan in top box and MRC1 cooling recovery circuit (optional)

Sound power level (LW)

50EN/EH	415	420	480	485	540	600	650	720	840	960	1100	1200
20 Hz	34,3	34,3	35,6	35,7	35,8	36,3	38,9	39,8	38,2	39,9	40,6	41,3
25 Hz	37,2	38,4	38,6	39,5	38,8	39,5	41,4	43,4	42,7	43,3	43,5	44,0
31,5 Hz	40,5	42,4	41,3	42,8	42,6	43,5	45,4	47,0	46,2	46,6	46,9	48,5
40 Hz	45,7	49,3	46,3	50,1	49,7	49,9	51,5	51,8	53,1	54,1	53,8	54,9
50 Hz	62,4	68,1	62,5	69,4	68,1	68,9	66,9	67,5	71,9	73,7	71,9	73,3
63 Hz	58,6	61,0	60,4	61,5	61,4	62,5	63,4	65,1	64,9	65,8	66,2	67,9
80 Hz	71,6	71,1	71,7	71,7	72,0	72,4	77,4	77,4	75,4	75,4	79,2	80,3
100 Hz	66,3	66,8	66,2	67,9	67,7	67,7	71,3	72,5	70,9	72,0	71,8	73,2
125 Hz	62,6	72,2	66,4	72,0	72,5	73,7	69,0	70,1	76,0	75,9	76,6	78,4
160 Hz	75,8	81,6	79,5	83,1	83,0	83,3	79,2	80,5	85,4	86,9	87,7	88,7
200 Hz	75,5	81,2	78,3	81,6	82,0	82,6	79,5	80,2	85,1	85,3	86,3	86,5
250 Hz	77,0	82,5	78,9	82,7	82,9	83,0	81,5	82,0	86,2	86,4	87,3	87,7
315 Hz	78,9	83,5	81,0	84,1	84,4	85,5	84,1	84,3	87,6	88,1	88,9	89,3
400 Hz	82,6	84,7	83,2	86,2	85,9	86,4	86,8	86,4	88,4	90,2	90,6	91,0
500 Hz	83,4	85,5	83,5	86,5	85,4	86,9	87,2	88,4	89,4	90,6	90,0	91,5
630 Hz	82,7	84,9	83,5	85,2	86,0	86,8	86,9	87,9	89,2	89,3	90,9	92,0
800 Hz	83,1	86,0	84,4	86,1	86,6	87,3	87,4	87,5	90,1	90,0	91,4	92,6
1.000 Hz	84,2	86,7	86,0	87,6	87,6	88,4	87,8	89,4	90,4	91,3	92,4	92,7
1.250 Hz	83,9	85,1	84,6	85,1	85,2	86,4	88,5	89,3	88,8	89,4	90,2	91,2
1.600 Hz	79,6	82,1	80,7	82,4	82,1	83,2	83,3	84,2	86,1	86,2	86,5	87,3
2.000 Hz	79,2	80,1	80,6	81,2	80,6	81,8	83,3	84,3	84,4	85,2	85,7	86,9
2.500 Hz	76,5	78,2	77,5	79,1	78,3	79,9	80,7	82,0	82,4	82,9	83,1	84,2
3.150 Hz	74,6	77,0	76,0	77,6	77,4	78,8	80,2	80,0	81,3	81,7	82,0	83,6
4.000 Hz	73,4	74,1	74,6	75,0	74,5	74,8	78,1	78,2	77,9	78,7	79,7	80,3
5.000 Hz	69,7	70,0	71,8	70,5	70,8	71,2	74,9	75,5	74,2	74,2	76,2	76,4
6.300 Hz	71,3	69,0	69,0	70,4	69,5	69,8	73,1	74,0	73,2	74,4	74,1	75,6
8.000 Hz	64,6	65,9	66,7	66,7	66,5	66,6	70,6	70,9	69,9	70,4	71,1	72,6
10.000 Hz	62,8	61,1	63,3	61,8	62,0	62,6	68,4	68,5	64,8	65,8	67,3	67,5
12.500 Hz	61,0	55,1	56,8	56,4	55,8	56,0	66,2	65,8	59,1	60,7	61,4	62,8
16.000 Hz	61,1	49,3	57,4	49,9	50,2	50,8	63,5	64,3	53,4	53,9	55,7	57,0
20.000 Hz	53,1	42,0	53,0	42,6	43,0	43,8	57,9	58,8	46,3	46,8	48,0	48,8
Total dB(A)	93	95	94	96	96	97	97	98	99	100	101	101

Sound pressure level (LP)

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

50EN/EH	415	420	480	485	540	600	650	720	840	960	1100	1200
Total dB(A)	66	68	67	68	68	69	69	70	72	72	73	74

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

NEW

PACKAGED ROOFTOP HEAT PUMPS AND SEPARATED GAS MODULE OPTION

High efficiency

Superior reliability

Compact system

Energy recovery

Variable speed EC fans

50FF/FC

Cooling capacity 22-90 kW
Heating capacity 21-89 kW

The new 50FC packaged rooftop range consists of autonomous compact air-air units of horizontal design, rooftop type, for **reversible heat pump** operation.

The range of available capacities in the series allows for the air conditioning of medium and large surface areas which are common in shopping malls, food retail, logistics and many other commercial and industrial applications.

50FC units are designed for optimized part-load management in achieving the highest levels of seasonal efficiency, exceeding the limits set by regulation.

With its mono-block lightweight construction, the units feature a self-supporting frame, designed to ease the installation and maintenance works.

The units integrate the latest technological innovations:

- Multi-scroll compressors.
- Electronic expansion valves.
- Variable speed EC fans.
- Auto-adaptative microprocessor control.

For maximum adaptability, a number of options is available to meet any operating requirement:

- Exhaust air energy recovery.
- Economizer.
- Indoor air quality management.
- Installation roofcurbs.
- Auxiliary heating modules.
- Extended operation limits.

EUROVENT CERTIFIED PERFORMANCE
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FEATURES AND ADVANTAGES

Carrier's new range of packaged rooftop air conditioning units 50FC has been designed to set high standards in performance. The series offers design flexibility, ease of installation, quality and superior reliability thanks to the number of technological improvements and the available options that allow for seamless integration in the building.

Designed to withstand outdoors installation, it can operate all-year-round performing at the highest levels of seasonal efficiency thanks to the management of the new control inside.

The high efficiency cooling circuits have been developed as to eliminate any leaks caused by any vibration modes and designed with state-of-the-art components including electronic expansion valves in all the circuits. The refrigerant circuits come fitted with pressure transducers and temperature sensors which allow for accurate control on the operation conditions together with the management of the fans speed.

The cabinet has been designed and tested for the most demanding conditions. With double skin insulated side panels as standard, all the sheet metal work comes in powder-coated finishes outdoors and indoors. The self-supporting structure has been conceived also to reduce weight and to optimize transportation capabilities. Thorough transportation tests have been also conducted as to validate the two-height stackable feature.

Ease of maintenance is also granted thanks to the great accessibility to components through removable side panels, access doors fitted with dual hinges with locking functions or removable outdoor fans covers. The condensates drain pan is now removable for easy cleansing.

Additional energy savings are possible thanks to multiple options such as economizers, exhaust air energy recovery or indoor air quality sensors. This can also be combined with scheduling functions or BMS integration through many standardized protocols.

Design flexibility

All 50FC units are field-convertible to horizontal air flow. Being able to convert a unit from vertical airflow to horizontal makes it easy to overcome job site complications.

- Vertical supply/return units are ideal for new construction or retrofit to existing installations. The low unit profile is maintained when the unit is installed on the accessory roofcurb.

  The ducts can be attached directly to the roofcurb to allow all ductwork to be completed before the unit is positioned.
- Horizontal units are ideal for replacement or applications such as through-the-wall where sound must be attenuated before the duct penetrates the roof. Ducts connect directly to the unit. Horizontal units may be curb or slab mounted.

Easy and fast installation

The unit is connected directly to an air distribution ductwork without additional elements or equipment, pipes, cables, etc. taking no floor space at all. This design reduces the cost of installation, facilitates a quick connection and ensures reliable operation.

A vast number of options integrated in the unit meet many operating requirements.

Superior reliability

- Excellent full and part load efficiencies are achieved by using tandem scroll compressors. The compressors are equipped with crankcase heaters and protected by electronic sensors and logic to control minimum on and off times and reverse rotation.
- All units are tested at various stages on the production line for circuit leakage, electrical compliance and refrigerant pressures.

Advanced technology and performance

In tertiary sector installation, a high percentage of the annual air conditioning energy consumption comes from the use of fans for transporting air. Using fans which are more efficient has a direct impact on reducing consumption.

- Electronic plug-fans in the indoor circuit with direct drive and variable speed offer the following advantages:
  - Elimination of friction losses during transmission thanks to the direct drive.
  - Greater aerodynamic efficiency of the rotor (reactive blades with an optimized profile), running at very high operating pressures.
  - Greatly increased motor efficiency. Permanent magnets DC motors activated using electronic switching integrated into the motor itself.
  - Variable speed to ensure a constant supply air flow rate, independent of the filters clogging level.
  - Measuring the flow rate thought a calibrated section at the fan intake and a differential pressure sensor allows the control to handle the flow rate reliably and precisely in both on CAV and VAV systems.
- Electronic axial fans in the outdoor circuit which adapt the rotation speed to the installation's requirements, reducing electricity consumption, the sound level at part load and improving the unit's average seasonal efficiency.

Environmental care

- Making an environmentally responsible decision is possible when using R-410A refrigerant.

  This refrigerant is an HFC refrigerant that does not contain chlorine that is damaging to the ozone layer, and unaffected by the Montreal Protocol. R-410A refrigerant is a safe, non-toxic, efficient and environmentally balanced for the future.
- Also, to reduce the environmental impact, this new series is not requiring any wooden pallets for handling, thus eliminating not only the waste disposal but avoiding the cut of trees.

KEY FOR CONFIGURATION

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
50FC	020	A	4	A	B1	LL	000	S	N	A	H	S	000	0000	0000	0	0	AA00	00	A00	000	AA00

A: Unit type

50FC: air/air heat pump

B: Unit model

1 circuit: 020 / 028 / 037 / 040 / 045 / 047
2 circuits: 052 / 058 / 062 / 070 / 074 / 086 / 093

C: Version of the series

A: Current version

D: Electrical power

4: 400V / 3ph + N / 50Hz
5: 400V / 3ph / 50Hz

E: Type of refrigerant

A: R410A

F: Flow + Assembly

B1: Standard.
B2: Standard. Economizer, 2 dampers
B3: Standard. Economizer, 3 dampers
BX: Standard. Axial fan in return section
BP: Standard. EC plug-fan in return section
BA: Standard. Cooling recovery circuit with EC plug-fan in return section
BT: Standard. Return top box with EC plug-fan
BB: Standard. Cooling recovery circuit with EC plug-fan in return top box
BW: Standard. Heat recovery wheel module
R1: In-line.
R2: In-line. Economizer, 2 dampers
RP: In-line. EC plug-fan in return section
RW: In-line. Heat recovery wheel module

G: Coil coating : Outdoor - Indoor

LL – Outdoor coil - Indoor coil
L: Aluminium L: Aluminium
P: Polyurethane P: Polyurethane
N: Inera® N: Inera®
C: Copper C: Copper
Y: Blygold® Y: Blygold®

H: Heating

000: Without auxiliary heating
BAx: Gas burner, 3 power outputs:
x = F (Low) / M (Nominal) / S (High)
BBx: Boiler with hot water coil, 3 power outputs:
x = F (Low) / M (Nominal) / S (High)
RAx: Electrical heaters, 3 power outputs:
x = F (Low) / M (Nominal) / S (High)
HAx: Hot water coil , 2 options:
x = S(Standard) / F(Very low outdoor T)

I: Protection for low outdoor temperature

S: Without protection
A: Freeze protection OAT lower than -10°C
B: Freeze protection OAT lower than -14°C
C: Freeze protection OAT lower than -10°C + spring shut-off dampers
D: Freeze protection OAT lower than -14°C + spring shut-off dampers

J: Supply fan

N: 3 available pressures
F (Low) / N (Nominal) / S (High)

K: Air filtration + droplet eliminator

A: G4
B: G4+ droplet eliminator
C: G4 low pressure drop
D: G4 low pressure drop + droplet eliminator
E: G4 + M6
F: G4 + M6 + droplet eliminator
G: G4 + F7
H: G4 + F7 + droplet eliminator
I: G4 + F9
J: G4 + F9 + droplet eliminator
K: G4 l.p.d. + F7
L: G4 l.p.d. + F7 + droplet eliminator
M: G4 l.p.d. + F9
N: G4 l.p.d. + F9 + droplet eliminator
O: M6 + F7
P: M6 + F7 + droplet eliminator
Q: M6 + F9
R: M6 + F9 + droplet eliminator
S: F7 + F9
T: F7 + F9 + droplet eliminator
U: F9 + F9
V: F9 + F9 + droplet eliminator

L: Outdoor fan

L: AC (2-speed)
H: EC (electronic)

M: Insulation

S: Standard insulation
M: Euroclass A2-s1, d0 (M0) insulation

N: Indoor unit

000 – Without optional accessories
- A: Condensate drain pan in stainless steel
- A: Room overpressure management
- A: Filter fouling detector

O: Outdoor unit

0000 - Without optional accessories
- A: Unused
- A: Outdoor coil protection grid
- A: Antivibration mounts
- A: Droplet eliminator at the fresh air intake

P: Heat recovery wheel

0000 - Without optional accessories
- A: Filters G4
- B: Filters G4 low pressure drop
- C: Filters G4 + M6
- A: Wheel speed with on/off control
- B: Wheel speed with variable control
- A: Channel spacing of 2,0 mm
- B: Channel spacing of 2,5 mm
- A: Material: Aluminium
- B: Material: Aluminium with epoxy
- C: Material: Hybrid wheel
- D: Material: aluminium with silicagel

Q: Unused

R: Unused

S: Sensors

0000 - Without options
- A: Smoke detection control unit
- A: CO_2 sensor environment installation
- B: CO_2 sensor ducted installation
- C: CO_2 sensor on the pLAN network
- A: 1 sensor RS485
- B: 2 sensors RS485
- C: 3 sensors RS485
- D: 4 sensors RS485
- E: 1 sensor NTC
- A: Ambient temperature sensor
- B: Dual ambient temp.+humidity sensor
- C: Ambient sensor on the pLAN network

T: Economizer management + Outdoor hum.

00 – Without economizer + without sensor
- A: Outdoor humidity sensor on the unit
- B: Outdoor humidity sensor on pLAN network
- A: Thermal management
- B: Thermoenthalpic management
- C: Enthalpic management

U: Terminal + Unit communication

000 – Without terminal + stand-alone unit + without card
- A: Communication card RS485 Modbus/ Carel
- B: Communication card Ethernet PCoWeb
- C: Communication card RS485 LonWorks®
- D: Communication card Ethernet BACnet™
- E: Communication card RS485 BACnet™
- F: Communication card RS485 Konnex
- 0: Stand-alone unit
- A: Master unit
- B: Slave unit
- A: Graphic terminal in the electrical cabinet
- B: User terminal in the electrical cabinet
- C: Graphic terminal in the cabinet + user terminal remote up to 100 m
- D: User terminal in the cabinet + Graphic terminal remote up to 200 m
- E: Graphic terminal in the cabinet + Graphic terminal remote up to 200 m

V: Miscellaneous item 1

000 – Without options
- A: Management of an humidifier with on-off control
- B: Management of an humidifier with proportional control
- A: Electrical energy meter
- B: Cooling capacity and electrical energy meter
- A: Unused

W: Miscellaneous item 2

AA00 - Switching devices + std phase relay
- A: Compressor soft starter
- A: Varnish protection
- B: High performance phase sequence relay
- B: High grade switching devices

UNIT COMPONENTS

Casing

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035.
- New self-supporting frame that allow the transport of two stacked units and without the need for a wooden pallet.
- Removable panels for easy access to all components: electrical cabinet, compressors, fans, filters, etc.

Indoor unit

- Two configurations are available, depending on the indoor air flow direction: “Standard” (all models) and “In-line” (models 052 to 093).

“Standard”

“In-line”

- Thermal and acoustic insulation, in double wall panels and registers, with Euroclass A2-s1, d0 (M0) fire classification.
- Coil with copper pipes and aluminium fins.
- EC electronic supply plug-fans directly coupled with variable control speed and flow rate controller.
- Reusable gravimetric air filters G4, mounted on a frame. Dual locking system mounted on the access panel to filters.
- Removable and isolated condensates drain pan for easy cleaning.

Outdoor unit

- Coil with copper pipes and aluminium fins.
- EC electronic axial fan(s) which adapt the rotation speed to the installation’s requirements, thereby reducing electricity consumption, the sound level at partial charge and improving the unit’s average seasonal efficiency.
- The cover with the motor fan(s) may be lifted to access the inside of the outdoor unit.

Cooling circuit

- Hermetic scroll-type compressors in tandem design that improves the management of stages and the part load efficiencies. Sound insulation, assembled over antivibration mounts. Control of phase equilibrium and the direction of rotation.
- Crankcase heater.
- Electronic expansion valve(s).
- Four-way cycle reversing valve(s) (heat pump units).
- Acid-resistant filter(s) dryer.
- Cooling design with 1-air volume (models 020 to 047) or 2-air volumes (models 052 to 093).

Protections

- High pressure pressostat(s).
- High and low pressure transducers.
- Compressor discharge temperature control.
- Main door switch.
- Magnetothermic protection switches for the power line of compressors and fan motors.
- Automatic switch in the control circuit.

Electrical cabinet

- Complete and fully wired electrical cabinet. Insulated access door to prevent condensation. Forced ventilation of the electrical cabinet. Protection IP54.
- Numeration of wired and identification of components in the electrical cabinet. It permits easy tracing and diagnostics.
- Hinges + quarter-turn latches on the removable access door.
- Electrical power supply with neutral.
- Main ground connection.
- Compressor and fan motor contacts.

OPERATING LIMITS

Inlet air conditions		Cooling
Indoor coil	Minimum temperature	13ºC WB
	Maximum temperature	24ºC WB
Outdoor coil	Minimum temperature	12ºC (1)
	Maximum temperature	48ºC

Inlet air conditions		Heating
Indoor coil	Minimum temperature	10ºC
	Maximum temperature	27ºC
Outdoor coil	inimum temperature	-15ºC WB (2)
	Maximum temperature	15ºC WB

(1) With a condensation pressure control operating down to -10ºC.
(2) When the outdoor temperature is usually below 5ºC WB, the installation of a support element is recommended.

CONTROLS

"50FC" control

Factory-installed "50FC" control provide the capability for free standing operation or may be linked with a more extensive system. Factory-installed and programmed Modbus communication capability provides simple integration with the building BMS system.

The 50FC series may also be configured to communicate via LonWorks®, BACnet™ and Konnex protocols, if required by the application.

The "50FC" control also have the capability to communicate with our supervision solutions: **pCO Web, PlantWatchPRO3 and PlantVisorPRO2**.

This communication flexibility allows simple system integration, as well as data collection, trending, monitoring and alarm displays. The control provides unparalleled service diagnostic information.

This control also manages a local connection between units through a pLAN network (Local Area Network), allowing data and information to be exchanged between units, for a maximum of 15 units.

The "50FC" control are your link to a world of simple and easy-to-use rooftop units that offer outstanding performance and value. With the sensors, it maintains control over all the components of the unit and helps optimise the performance of the refrigeration circuits as conditions change, resulting in the following features:

- Higher part load efficiency.
- Better control of temperature.
- Superior reliability.
- High ambient cooling operation at 48ºC.
- Low ambient cooling operation at -15ºC WB.

The main functions of this control are:

- Selection of set-point and operating mode: HEATING / COOLING / AUTO / VENTILATION.
- Continuous control of the operating parameters.
- Display of the values measured by the sensors.
- Compressors cycles.
- Defrosting management.
- Control of the supply air temperature.
- All-seasons operation via the condensation and evaporation pressure control.
- Set-point compensation based on the outdoor temperature.
- Hourly and weekly schedule.
- Fire protection.
- Diagnosis of faults and general alarm.
- Management of all the optional components available for the unit: economizer, back-up heating, CO2 air quality sensor, energy recovery,...

User interfaces

Graphic terminal

This terminal, fitted as standard on the electrical cabinet, is very easy to use. It provides detailed explanations of control in easy to understand English. No decoding is required.

Only 6, large, easy-to-use buttons are required to maneuver through the entire menus.

■ This terminal is used to:
- Carry out initial programming of the unit.
- Modify operating parameters.
- Switch the unit ON / OFF.
- Select the operating mode and adjust the set-points.
- Display the variables controlled and sensor values measured.
- Display the current alarms and their historical record.

User terminal (optional)

This terminal can be installed on the electrical cabinet, instead of the graphic terminal. In this case, the remote connection of the graphic terminal is possible. Please consult the chapter "Factory options and accessories".

■ This terminal is used to:
- Switch the unit ON / OFF.
- Select the operating mode and adjust the set-points.
- Display the installation's temperatures and humidity, outdoor temperature, supply air temperature, CO_2 sensor and opening of the outdoor damper.
- Display alarms codes.

Supervision solutions

Different solutions of supervision are available bases on the dimensions of the installation for unit fitted with A BMS card (Ethernet pCO Web or RS485 Carel / Modbus).

pCO Web

■ It is the solution for the management and supervision of a single unit if this incorporates the Ethernet pCO Web card.

PlantWatchPRO3

■ This is a solution designed for the monitoring of small and medium-size installations, capable of manage up to 30 units. Suitable for technical environments, no parts are in movement. It's available in two versions: panel and wall.

Includes: 7 " touch display, buzzer for notifications, 1 USB port and 1 SD card slot for downloading reports, charge devices models and applying service packs.

For this option, each unit needs one RS485 Carel / Modbus board.

PlantVisorPRO2

■ This is the solution for the management and supervision of air-conditioning installations with up to 300 units. It offers advanced monitoring and maintenance functions and allows zones and groups to be created to simplify the management of the installation. It also allows energy meters to be integrated to monitor the installation electricity consumption.

PlantVisorPRO2 is available in two versions:
- **Box:** comprised of CPU and, optionally, by monitor and keyboard.
- **Touch:** this includes CPU and touchscreen in a single device.

For this option, each unit needs one RS485 Carel / Modbus board.

These systems are used to manage the installation remotely. All the information on the system can be accessed via a simple Internet connection. The online interface, the same one used by the local user, enables monitoring and complete configuration of the installation: from the office or anywhere else the user happens to be.

To control multiple sites remotely, there are special tools dedicated to centralized management, such as **RemotePRO** and **RemoteValue**.

PHYSICAL DATA (EN-14511-2018)

50FC		020	028	037	040	045	047	052	058	062	070	074	086	093
Cooling capacities														
Cooling capacity (1)	kW	22,31	27,78	33,44	36,90	41,50	43,92	53,22	57,80	60,39	68,26	72,22	80,66	90,18
Power input (3)	kW	7,00	8,98	10,25	11,79	13,40	14,26	16,53	18,38	19,38	21,27	22,89	25,77	28,94
EER performance		3,19	3,09	3,26	3,13	3,10	3,08	3,22	3,14	3,12	3,21	3,15	3,13	3,12
SEER		4,03	4,04	4,07	4,06	4,05	4,03	4,12	4,17	4,17	4,11	4,06	4,07	4,07
ηs		158%	159%	160%	159%	159%	158%	162%	164%	164%	161%	160%	160%	160%
Heating capacities														
Heating capacity (2)	kW	21,88	27,72	33,05	36,61	41,82	44,56	50,71	55,79	58,57	67,68	71,77	80,38	89,66
Power input (3)	kW	5,82	7,99	9,09	10,21	12,00	12,95	14,43	16,01	16,89	18,97	20,27	22,91	25,90
COP performance		3,76	3,47	3,64	3,59	3,49	3,44	3,51	3,48	3,47	3,57	3,54	3,51	3,46
SCOP		3,47	3,46	3,45	3,45	3,46	3,46	3,57	3,59	3,52	3,52	3,55	3,59	3,58
ηs		136%	136%	135%	135%	135%	135%	140%	141%	138%	138%	139%	141%	140%
Outdoor circuit fan		Electronic axial fan												
Nominal air flow	m³/h	9.000	14.500	17.000	17.000	17.000	17.750	31.000	31.000	31.000	33.000	33.000	34.500	35.000
Available static pressure	mm.w.c	5												
Number / Diameter	mm	1 / 630	1 / 800					2 / 800						
Motor output	kW	0,9	2,6					2 x 2,6						
Maximum speed	r.p.m.	1.140	1.020					1.020						
Maximum absorbed current	A	1,6	3,9					7,8						
Indoor circuit supply fan		Electronic plug-fan												
Nominal air flow	m³/h	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Available static pressure	mm.w.c	12	12	12	15	15	15	20	20	20	20	20	20	25
Number / Diameter	mm	1 / 500		1 / 500				2 / 500					2 / 500	
Motor output	kW	1 x 2,65		1 x 2,83				2 x 2,65					2 x 2,83	
Power input	kW	0,62	1,01	1,79	1,90	2,00	2,04	2,04	2,20	2,20	3,53	3,53	3,42	3,75
Speed	r.p.m.	1.700												
Maximum absorbed current	A	4,2		4,3				8,4					8,6	
Compressor		Scroll												
No. compressors / stages / circuits		2 / 2 / 1						4 / 4 / 2						
Oil type		Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC												
Volume of oil	l	2,5	2,5	3,3	3,5	3,5	3,5	5,0	5,0	5,8	6,6	6,9	7,1	7,1
Electrical characteristics														
Mains voltage		400 V / III ph / 50 Hz (±10%)												
Power supply		3 Wires + Ground + Neutral												
Maximum absorbed current	A	18,9	26,5	26,4	29,9	33,6	34,0	48,1	53,5	53,2	56,3	60,2	68,8	73,8
Refrigerant		R-410A												
Global warming potential (4)	GWP	2.088												
Charge	kg	8,0	8,3	11,0	11,0	11,3	11,6	12,5	12,8	13,0	20,0	20,3	20,3	20,5
Environment impact	tCO2eq	16,7	17,3	23,0	23,0	23,6	24,2	26,1	26,7	27,1	41,8	42,4	42,4	42,8
Weight														
B1 assembly	kg	585	610	675	680	685	690	990	995	1.040	1.155	1.160	1.165	1.170

(1) Cooling capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 27ºC, 19ºC WB and 35ºC outdoor temperature.
(2) Heating capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 20ºC and 6ºC WB outdoor temperature.
(3) Total power input by compressors and motorised fans under nominal conditions, calculated in accordance with the EN-14511-2018 standard.
(4) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

COMPLIANCE

- Machinery Directive 2006/42/EC (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Eco-design Directive 2009/125/EC (ECO-DESIGN)
- Energy Labelling Directive 2017/1369/EU (ECO-LABELLING)
- Harmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).

FACTORY OPTIONS AND ACCESSORIES

Summary table

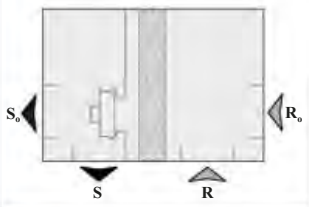
Category	Description	Factory installed option	Field installed accessory	Models
Electrical power	400 V / 3 ph / 50 (without neutral)	✗		All
Flow + Assembly	B2: Standard. Economizer, 2 dampers	✗		All
	B3: Standard. Economizer, 3 dampers	✗		All
	BX: Standard. Axial fan in return section	✗		All
	BP: Standard. EC plug-fan in return section	✗		All
	BA: Standard. Cooling recovery circuit with EC plug-fan in return section	✗		All
	BT: Standard. Return top box with EC plug-fan	✗		All
	BB: Standard. Cooling recovery circuit with EC plug-fan in return top box	✗		All
	BW: Standard. Heat recovery wheel module	✗		All
	R2: In-line. Economizer, 2 dampers	✗		052 to 093
	RP: In-line. EC plug-fan in return section	✗		052 to 093
	RW: In-line. Heat recovery wheel module	✗		052 to 093
Coil coating	Coils with copper-made pipes and fins	✗		All
	INERA® coils with aluminium alloy fins and copper pipes	✗		All
	Coils with polyurethane precoated aluminium fins and copper pipes	✗		All
	Blygold® coating	✗		All
Heating	Auxiliary hot water coil : Standard or Very low outdoor temperature	✗		All
	Auxiliary electrical heaters	✗		All
	Warm air heater module with gas burner (supplied installed inside a pre-assembly roofcurb)		✗	All
	Gas-fired condensing boiler with hot water coil	✗ (*)		All
Protection low temperature	Freeze protection OAT lower than -10ºC	✗		All
	Freeze protection OAT lower than -14ºC	✗		All
	Freeze protection OAT lower than -10ºC + spring shut-off dampers	✗		All
	Freeze protection OAT lower than -14ºC + spring shut-off dampers	✗		All
Supply fan	High available pressure of the supply fan	✗		All
	Low available pressure of the supply fan	✗		All
Air filtration + droplet eliminator	Droplet eliminator after the indoor air coil	✗	✗	All
	Low pressure drop G4 filters	✗	✗	All
	G4 filters + M6, F7 or F9 folded filters	✗	✗	All
	Low pressure drop G4 filters + F7 or F9 folded filters	✗	✗	All
	Double stage of folded filters: M6+F7, M6+F9, F7+F9 or F9+F9	✗	✗	All
Outdoor fan	Two-speeed direct-driven axial fans	✗		All
Insulation	Thermal and acoustic insulation, Euroclass A2-s1, d0 (M0), in ceramic fibre	✗		All
Indoor unit	Condensates drain pan in stainless steel	✗	✗	All
	Room overpressure management	✗		All
	Filter fouling detection with differential pressure switch	✗		All
Outdoor unit	Outdoor coil protection grid	✗	✗	All
	Droplet eliminator at the fresh air intake	✗	✗	All
	Antivibration mounts made of rubber	✗	✗	All
Heat recovery wheel	Selection of the heat recovery wheel (BW assembly): wheel materials, channel cross section, air filtration and type of speed control	✗		All
	Selection of the heat recovery wheel (RW assembly): wheel materials, channel cross section, air filtration and type of speed control	✗		All
Sensors	NTC ambient temperature sensor connected to the control board or up to four sensors with RS485 communication	✗	✗	All
	Dual ambient temperature-humidity sensor with RS485 communication. Up to four sensors	✗	✗	All
	CO2 sensor: environment or ducted installation or installed on a pLAN network	✗	✗	All
	Smoke detection control unit in accordance with the NF S 61-961 standard	✗	✗	All
Economizer management + Outd. humidity	Economizer management: thermal, enthalpic or thermoenthalpic	✗	✗	All
	Outdoor air humidity sensor: supplied with the unit or installed on a pLAN network	✗	✗	All
Terminal + Unit communication	User terminal installed in the electrical cabinet	✗	✗	All
	Graphic terminal installed in the electrical cabinet + user terminal remote up to 100 m	✗	✗	All
	User terminal installed in the electrical cabinet + graphic terminal remote up to 200 m	✗	✗	All
	Graphic terminal installed in the electrical cabinet + Graphic terminal remote up to 200 m	✗	✗	All
	Unit configuration: stand-alone, master or slave	✗	✗	All
	Communication cards: RS485 Modbus/Carel; Ethernet PCoWeb; RS485 LonWorks®; Ethernet BACnet™; RS485 BACnet™; RS485 Konnex	✗	✗	All
Miscellaneous item 1	Management of an humidifier with on-off or proportional control	✗		All
	Electrical energy meter	✗		All
	Cooling capacity and electrical energy meter	✗		All
Miscellaneous item 2	Compressor soft-starter	✗		All
	Varnish protection for components on the electrical cabinet: control board, cards and terminals	✗		All
	High performance phase sequence relay	✗		All
	High grade switching devices	✗		All
Roofcurb	Pre-assembly roofcurbs with adjustable height		✗	“Standard”
	Adaptation roofcurbs for replacing units on renovation		✗	“In-line”

(*) Part of this option must be installed on-site.

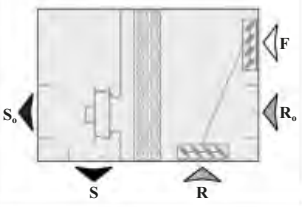
FACTORY OPTIONS AND ACCESSORIES (CONT.)

Assembly + indoor air flow direction (B: "Standard" & R: "In-line")

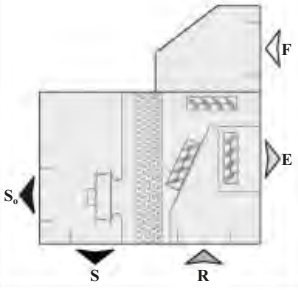
B1 assembly (all models):
Standard.



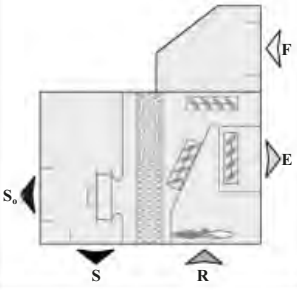
B2 assembly (all models):
Standard. Economizer, 2 dampers



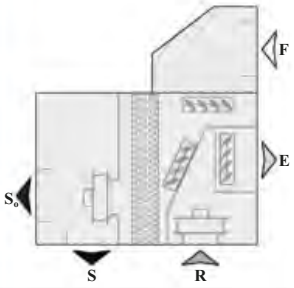
B3 assembly (all models):
Standard. Economizer, 3 dampers



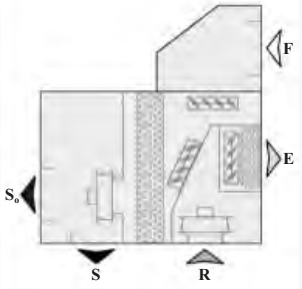
BX assembly (all models):
Standard. Axial fan in return section



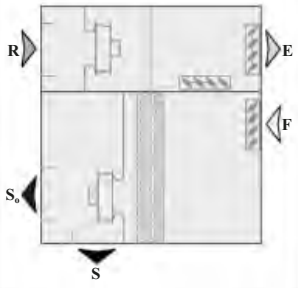
BP assembly (all models):
Standard. EC plug-fan in return section



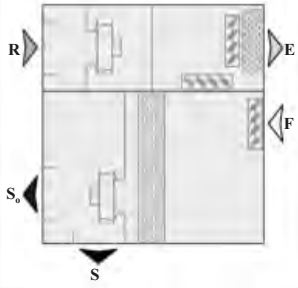
BA assembly (all models):
Standard. Cooling recovery circuit with EC plug-fan in return section



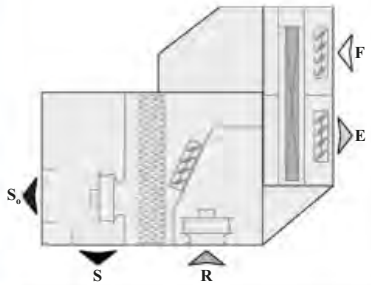
BT assembly (all models):
Standard. Return top box with EC plug-fan



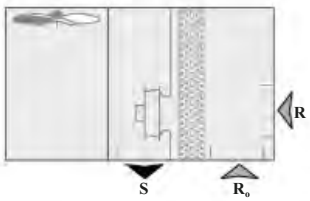
BB assembly (all models):
Standard. Cooling recovery circuit with EC plug-fan in return top box



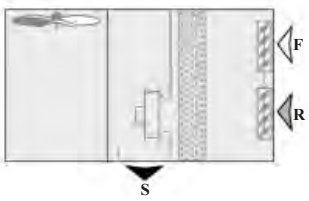
BW assembly (all models):
Standard. Heat recovery wheel module



R1 assembly (models 052 to 093):
In-line

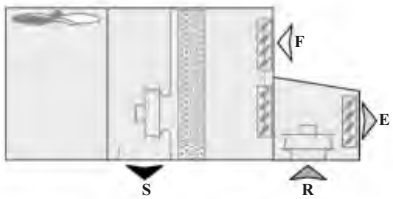


R2 assembly (models 052 to 093):
In-line. Economizer, 2 dampers

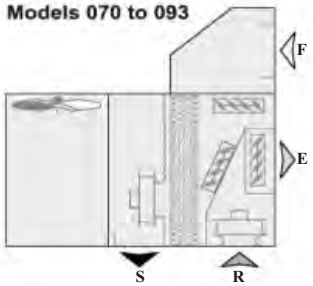


RP assembly (models 052 to 093):
In-line. EC plug-fan in return section

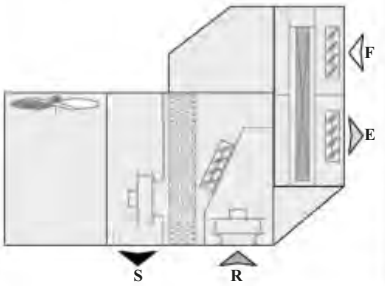
Models 052 to 062



Models 070 to 093



RW assembly (models 052 to 093):
In-line. Heat recovery wheel module



S: standard supply **S_o:** on-site supply configuration **R:** standard return **R_o:** on-site return configuration **F:** fresh air intake **E:** air exhaust

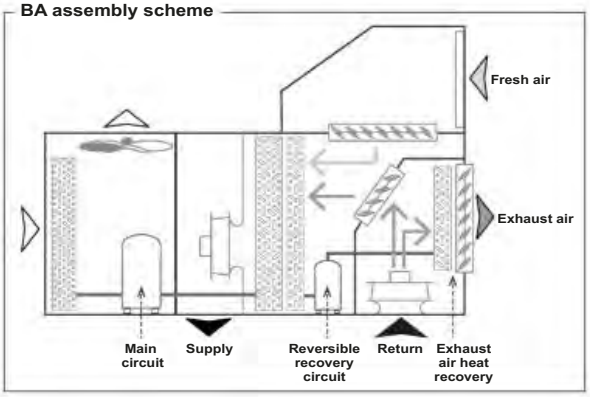
AIR TREATMENT

FACTORY OPTIONS AND ACCESSORIES (CONT.)

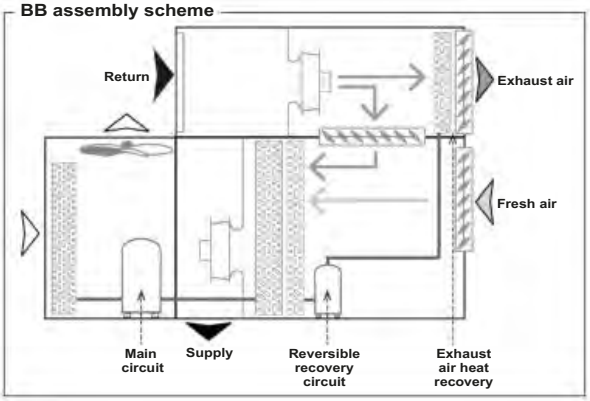
Active recovery (BA and BB assemblies)

The unit is fitted with a thermodynamic circuit dedicated to the recovery of the extracted air energy, with independent and proportional control, adapted to the air renewal requirements in order to raise the COP, EER and seasonal efficiency.

BA assembly scheme



BB assembly scheme



Passive recovery (BW and RW assemblies)

The heat recovery wheel is used to transfer the sensible and latent heat from the air-conditioned room's return air to the fresh air used for ventilation, before it's discharged outdoors.

The return air circulates in half of the heat recovery unit and the ventilation air circulates in the other half, in the opposite direction. As the rotor rotates, very fine channels of air which form the matrix come into contact with the fresh air and the return air in turn, thereby transferring heat and humidity from one to the other.

The efficiency of energy recovery depend on the wheel selected: wheel material, channel cross section, air filtration and type of speed control.

The heat recovery wheel is fitted into a module placed on one side of the unit (assemblies BW and RW). This module is supplied disassembled with the unit, for installation on site.

Electrical power

- These units can be supplied for the following power supply voltages:
  - 400 V / 3 ph + N / 50 Hz (standard)
  - 400 V / 3 ph / 50 Hz (optional)

Coils coating

- Coil with copper-made pipes and fins. Upon request.
- INERA® coils with aluminium alloy fins of high performance and great resistance to the corrosion, and copper pipes.
- Coils with polyurethane precoated aluminium fins and copper pipes.
- Blygold® coating.

Note: These coating can be applied to various coils (outdoor, indoor and hot water coil) according to the combinations available in our "Selection Software".

Heating

The unit only can incorporate one of these heating elements:

- **Auxiliary electrical heaters**, with two power stages and on/off control, for assembly and connection inside the unit.
  - Up to 3 values of total power available for each model:

50FC	020 to 047	052 to 062	070 to 093
RAF (Low)	12 kW	12 kW	18 kW
RAM (Nominal)	18 kW	18 kW	27 kW
RAS (High)	unavailable	27 kW	36 kW

- **Auxiliary hot water coil**, with three-way valve and proportional control, for assembly inside the unit.
  - The unit incorporates a freeze protection thermostat.
  - There are two configuration types available:
    - Standard (HAS), the only safety system is the freeze protection thermostat.
    - Very low outdoor temperature (HAF), with freeze protection technology based on the water temperature. This protection is made up of a circulation pump, two sensors inserted in the input and the output of the coil, as well as an electrical heating for the piping layout. Important: this option is mandatory for an outdoor temperature lower than -20°C WB. Consult for percentages of glycol water above 20%. Note: on units with this option, air supply only may be lateral (factory-configured).
- **Gas-fired condensing boiler with hot water coil**. Natural or propane gas boiler with modulating actuator, in accordance with the Gas Directive 2009/142/EC, mounted on the side of the unit.
  - The boiler is connected to the water circuit of the auxiliary coil.
  - Up to 3 values of total power available for each model:

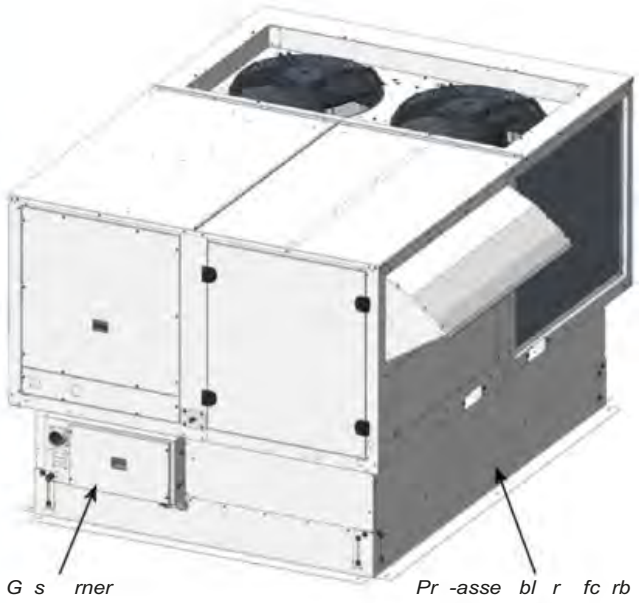
50FC	020 to 047	052 to 062	070 to 093
BBF (Low)	unavailable	Condexa PRO 50 (coming soon)	Condexa PRO 50 (coming soon)
BBM (Nominal)	Condexa PRO 40 (coming soon)	Condexa PRO 70	Condexa PRO 70
BBS (High)	Condexa PRO 70	Condexa PRO 100	Condexa PRO 100

FACTORY OPTIONS AND ACCESSORIES (CONT.)

■ **Warm air heater module with gas burner** with modulating actuator, in accordance with the Gas Directive 2009/142/EC, installed inside a pre-assembly roofcurb.
- Condensation boiler with premixing and modulation technology that allows outputs close to 109% with regard to the lower heating value (LCV).
- Up to 3 values of total power available for each model:

50FC	020 to 047	052 to 062	070 to 093
BAF (Low)	PCH020	unavailable	unavailable
BAM (Nominal)	PCH034	PCH065	PCH080
BAS (High)	PCH045	PCH080	PCH105

Note: It's recommended to use the clogged filter pressostat (optional) in units with gas burner.



Protection for low outdoor temperature

■ Freeze protection OAT lower than -10ºC. Mandatory for an outdoor temperature lower than -10ºC WB.
- Electrical heater for protection of the components of the electrical cabinet.
- Compressor with protection for low temperature.

■ Freeze protection OAT lower than -14ºC. Mandatory for an outdoor temperature lower than -14ºC WB.

In addition to the options of -10ºC, this includes:
- Reinforced electrical heater for protection of the components of the electrical cabinet.
- Electrical heater for anti-freeze protection of dampers of the economizer (if applicable).
- Protective kit of the gas burner for low temperature (if applicable).

■ Freeze protection OAT lower than -10ºC + spring shut-off dampers in case of a power failure.

■ Freeze protection OAT lower than -14ºC + spring shut-off dampers in case of a power failure.

Supply fan

■ There are 3 optional fans depending on the available pressure:
- Low pressure (F): all models except for 070 and 074.
- Nominal pressure (N): all models.
- High pressure (S): models 052 to 093.

Important: our "Selection Software" will choose the supply fan with lower consumption for the available pressure required.

Air filtration + Droplet eliminator

Options to improve indoor air quality:

■ G4 gravimetric filters with low pressure drop.

■ G4 gravimetric filters + M6, F7 or F9 folded opacimetric filters.

■ G4 gravimetric filters with low pressure drop + F7 or F9 folded opacimetric filters.

■ Double-stage of folded opacimetric filters (M6+F7, M6+F9, F7+F9 or F9+F9).

■ Droplet eliminator after the indoor air coil. Recommended in cases where a high moisture content in the air is foreseen or when the air flow is high.

Note: with hot water coil it is not possible to assemble the droplet eliminator.

Outdoor fan

■ Two-speeed direct-driven axial fan(s). Watertight motor class F, IP54 and internal thermal protection. Dynamically balanced propellers and outdoor protective grille.

Insulation

■ Thermal and acoustic insulation in ceramic fibre, Euroclass A2-s1, d0 (M0) fire classification.

Note: panels and registers of the indoor unit always include thermal and acoustic insulation, with Euroclass A2-s1, d0 (M0) fire classification.

Indoor unit

■ Condensate drain pan in stainless steel for corrosion protection.

■ Room overpressure management (available in BP, BT, BW, RP and RW assemblies). In installations with different air flow in supply and return, to prevent the entry of outdoor air or to eliminate odours from inside, the fresh air damper and the exhaust damper will be managed independently.

■ Filter fouling detection with differential pressure switch.

Outdoor unit

■ Outdoor coil protection grid.

■ Droplet eliminator at the fresh air intake. This one and the thermoenthalpic free-cooling are necessary in cases where a high moisture content in the air is foreseen.

■ Antivibration mounts made of rubber.

Heat recovery wheel

■ The heat recovery wheel is fitted into a module placed on one side of the unit (BW and RW assemblies).

The efficiency of energy recovery depend on the wheel selected: wheel material, channel cross section, air filtration and type of speed control.

FACTORY OPTIONS AND ACCESSORIES (CONT.)

Sensors

- Ambient temperature sensor(s). There are 3 options:
  - One NTC sensor connected to the control board.
    Note: An ambient sensor with RS485 communication is required for installation at more than 30 meters.
  - Up to four sensors with RS485 communication.
  - Sensor(s) installed on the master unit of the local network (pLAN).
- Dual ambient temperature-humidity sensor(s). Up to four sensors with RS485 communication or installed on the pLAN network. This sensor is compulsory in units with enthalpic or thermoenthalpic free-cooling (optional). In this case, the outdoor air humidity sensor is also added.
- CO_2 sensor for air quality control. There are 3 options:
  - Sensor for installation in the environment.
  - Sensor for ducted installation.
  - Sensor installed on the master unit of the local network (pLAN).
- Smoke detection control unit in accordance with the NF S 61-961 standard.

Economizer management + outdoor humidity

- The economizer allows to make best use of outdoor air conditions when these are more favourable than the return air conditions. This allows the cooling capacity to be reduced. The percentage of outdoor air can vary between 0% and 100%.

  The economizer management can be:
  - Thermal, by comparing the temperatures.
  - Enthalpic, by comparing the enthalpies. Recommended in cases where a high moisture content in the air is foreseen.
  - Thermoenthalpic, by comparing the enthalpies and correcting for temperature. This is the optimum solution as it takes the variability of the climate into account.
- Outdoor air humidity sensor (compulsory in units with optional enthalpic or thermoenthalpic free-cooling). There are 2 options:
  - Sensor supplied with the unit.
  - Sensor installed on another unit of the local network (pLAN).

Terminal + unit communication

- By default, the electronic control is supplied with a graphic terminal installed in the electrical cabinet of the unit, but these other configurations also are available:
  - User terminal installed in the electrical cabinet, instead of the graphic terminal.
  - Graphic terminal installed in the electrical cabinet and user terminal remote up to 100 meters.
  - User terminal installed in the electrical cabinet and graphic terminal remote up to 200 meters (two TCONN bypass cards must be used from 50 to 200 meters).
  - Graphic terminal installed in the electrical cabinet and graphic terminal remote up to 200 meters (two TCONN bypass cards must be used from 50 to 200 meters).
  - Control without terminal (for units with shared terminal in a pLAN network).
- By default, the electronic control is configured for a stand-alone unit, but it is also possible to place it in a pLAN network (Local Area Network) as Master or Slave.
- This control allows the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols:
  - RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex.
  - Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.

Miscellaneous item 1

- Management of an humidifier with on-off or proportional control.
- Electrical energy meter for monitoring of the power consumption of the installation.
- Cooling capacity and electrical energy meter. In addition to the energy meter, the unit incorporates mixing and supply enthalpic sensors with RS485 communication that enable cooling and heating capacities to be calculated.

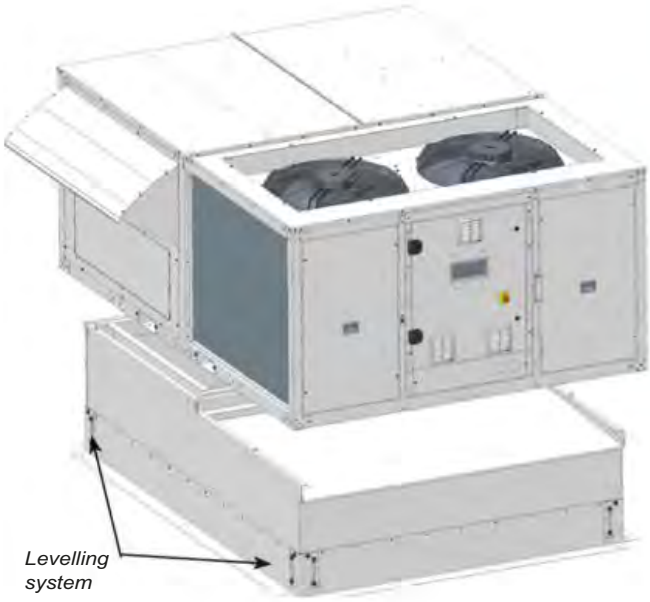
Miscellaneous item 2

- Compressor soft starter.
- High performance phase sequence relay, which allows the protection settings to be adjusted (highly recommended for installations with power system voltage instability, lag between current and voltage, high level of electromagnetic disturbances EMC, etc.
- High grade switching devices.
- Varnish protection for the components on the electrical cabinet: control board, cards and terminals.

Pre-assembly roofcurbs

- “Standard” assemblies can rest on pre-assembly roofcurbs with adjustable height, built in galvanised steel panelling with polyester paint and thermal insulation.

  The levelling system uses angle pieces that allow adjustments in the X and Y axes.



- “In-line” assemblies have a wide range of adaptation roofcurbs which are ready for replacing units on renovation from different manufacturers (upon request).

SOUND LEVELS dB(A)

Sound power level (LW)

50FC	020	028	037	040	045	047	052	058	062	070	074	086	093
63 Hz	55,2	60,8	61,4	60,9	61,3	63,1	64,3	64,5	64,9	64,8	64,6	64,6	65,3
125 Hz	64,2	66,7	68,9	66,1	70,0	71,1	69,6	69,9	71,5	72,4	71,3	71,4	74,0
250 Hz	71,8	74,8	76,1	72,9	76,3	76,4	77,0	77,7	78,9	79,7	78,4	77,9	79,3
500 Hz	70,2	76,7	76,4	76,8	77,1	78,3	79,5	80,1	80,4	79,9	80,1	80,2	80,9
1000 Hz	72,0	76,2	76,3	77,5	77,3	78,2	79,4	79,9	80,2	79,8	80,4	80,6	80,7
2000 Hz	69,7	73,5	74,3	75,3	74,1	75,5	77,0	77,4	77,8	77,7	78,3	78,1	77,7
4000 Hz	62,6	69,2	70,3	70,6	70,4	72,2	73,1	73,4	73,7	73,8	73,9	74,2	74,4
8000 Hz	59,0	63,7	65,5	65,8	65,6	67,5	67,9	68,2	68,6	68,9	69,1	69,4	69,6
Total dB(A)	77,5	82,0	82,5	82,5	83,0	84,0	85,0	85,5	86,0	86,0	86,0	86,0	86,5

Sound pressure level (LP)

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

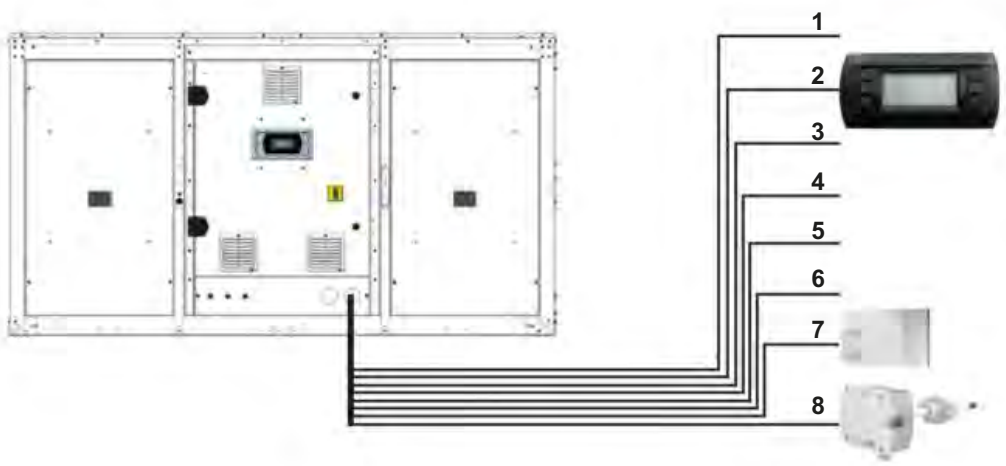
50FC	020	028	037	040	045	047	052	058	062	070	074	086	093
Total dB(A)	51,0	55,5	56,0	56,0	56,5	57,5	58,3	58,8	59,3	59,3	59,1	59,1	59,6

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

ELECTRICAL CONNECTIONS

No.	50FC		020 to 093
1	Main power supply	400 III (±10%)	3 Wires + Ground + Neutral
2	Remote connection of graphic terminal (by default installed on the electrical cabinet) (1)		Telephone cable 6 wires standard (RJ12 connector)
4	Remote off/on (optional)		2 wires
5	General fault signal (optional)		2 wires
6	Circulation pump signal for HWC (antifreeze safety) (optional)		1 wire
7	Ambient sensor	NTC	2 wires
8		RS485	5 wires (2)
9	CO2 sensor (optional)		3 wires

(1) In this case, it´s possible to install the user terminal on the electrical cabinet.
(2) Up to four RS485 ambient sensors can be connected in series on the field-bus of the control board.



OPTIONS FOR THE OUTDOOR UNIT

Axial 2-speed outdoor fan

50FC		020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow	(m^3/h)	9.000	14.500	17.000	17.000	17.000	17.750	31.000	31.000	31.000	33.000	33.000	34.500	35.000
Available static pressure	(mm.w.c.)	4												
Number	(mm)	1	1					2						
Diameter	(mm)	630	800					800						
Output	(kW)	0,4 / 0,6	1,2 / 1,9					2 x (1,2 / 1,9)						
Maximum speed	(r.p.m.)	690 / 840	670 / 880					670 / 880						
Max. absorbed current	(A)	1,2	3,9					2 x 3,9						

OPTIONS FOR THE INDOOR UNIT

Droplet eliminator after the indoor air coil

Air flow at which it is recommended to install a droplet eliminator after the indoor coil.

50FC		020	028	037	040	045	047	052	058	062	070	074	086	093
Air flow	(m^3/h)	7.776	7.776	10.206	10.206	10.206	10.206	14.580	14.580	14.580	14.580	18.468	18.468	18.468

Note: for operating conditions with high dehumidification in the indoor coil (e.g. in installations close to the coast) it may be necessary to install a separator even if the flow is less than the previous one.

Note: with hot water coil it is not possible to assemble the droplet eliminator.

Supply plug-fan EC with high (S) or low (F) available pressure

50FC			020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow		(m^3/h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Nominal available static pressure		(mm.w.c.)	12	12	12	15	15	15	20	20	20	20	20	25	25
Low pressure (F)	Number / Diameter	(mm)	1 / 500			--						--		2 / 500	
	Output	(kW)	1,3			--				5,6		--		2 x 2,6	
	Speed	(r.p.m.)	1.350			--				2.200		--		1.700	
	Max. absorbed current	(A)	2,1			--				8,9		--		2 x 4,0	
High pressure (S)	Number / Diameter	(mm)	--			2 / 500				2 / 500					
	Output	(kW)	--			2 x 2,6				2 x 5,6					
	Speed	(r.p.m.)	--			1.700				2.200					
	Max. absorbed current	(A)	--			2 x 4,2				2 x 8,4					

Note: the value of power input according to the selected flow can be found at our “Selection Software”.

Axial fan in return section (BX assembly)

50FC		020	028	037	040	045	047	052	058	062	070	074	086	093
Maximum air flow	(m^3/h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Available static pressure	(mm.w.c.)	5												
Number / Diameter	(mm)	1 / 500			2 / 450			2 / 500			3 / 500			
Output	(kW)	0,7			2 x 0.5			2 x 0.7			3 x 0.7			
Speed	(r.p.m.)	1.390			1.360			1.390			1.390			
Maximum absorbed current	(A)	1,4			2 x 1,0			2 x 1,4			3 x 1,4			

OPTIONS FOR THE INDOOR UNIT (CONT.)

EC plug-fan in return section (BP / BA / BT / BB / RP assemblies)

50FC		020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow	(m^3/h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Nominal available static pressure	(mm.w.c.)	12	12	12	15	15	15	20	20	20	20	20	25	25
Number / Diameter	(mm)	1 / 500						2 / 500						
Output	(kW)	2,6						2 x 2,6						
Speed	(r.p.m.)	1.700						1.700						
Maximum absorbed current	(A)	4,0						2 x 4,0						

Note: the value of power input according to the selected flow can be found at our “Selection Software”.

EC plug-fan in return section (BW / RW assemblies)

50FC			020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow		(m^3/h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Nominal available static pressure		(mm.w.c.)	12	12	12	15	15	15	20	20	20	20	20	25	25
Nominal essur (N)	Number / Diameter	(mm)	1 / 500						2 / 500						
	Output	(kW)	,6						2 x 2,6						
	Speed	(r.p.m.)	1.700						1.700						
	Max. absorbed current	(A)	4,0						2 x 4,0						
High pressure (H)	Number / Diameter	(mm)	--		1 / 500				--		2 / 500				
	Output	(kW)	--		2,8				--		2 x 2,8				
	Speed	(r.p.m.)	--		1700				--		1.700				
	Max. absorbed current	(A)	--		4,3				--		2 x 4,3				

Note: the value of power input according to the selected flow can be found at our “Selection Software”.

Heat recovery wheel module (BW / RW assemblies)

This heat recovery wheel is used to transfer the sensible and latent heat from the air-conditioned room’s return air to the fresh air used for ventilation, before it’s discharged outdoors.

The return air circulates in half of the heat recovery unit and the ventilation air circulates in the other half, in the opposite direction. As the rotor rotates, very fine channels of air which form the matrix come into contact with the fresh air and the return air in turn, thereby transferring heat and humidity from one to the other.

The efficiency of the recovery depends on the following factors:

■ **Wheel diameters:**
- 800 mm: models 020 to 047
- 1200 mm: models 052 to 062
- 1500 mm: models 070 to 093

■ **Matrix materials:**
- Aluminium: sensible heat recovery.
- Epoxy coated aluminium: sensible heat recovery in aggressive environments.
- Hybrid wheel: enthalpic recovery.
- Silicagel coated aluminium: enthalpic recovery with high efficiency in the recovery of latent heat.

■ **Channel cross section:**

The wheel is formed of two panels of aluminium, one smooth and one fluted. The fluted panel can be provided in two different configurations:
- 2.0 mm cross section: the commonly-used cross section due to its high efficiency and moderate pressure drops.
- 2.5 mm cross section: low pressure drop. Designed for high frontal speeds with low pressure drops.

The heat recovery wheel is fitted into a module placed on one side of the unit.

This module features filters on the fresh air intake and the exhaust air outlet: gravimetric filters G4 (default option), G4 with low pressure drop or G4 + M6 (optional).

This assembly can be supplied, in option, with a speed drive for the wheel which avoids the risk of ice forming on the wheel during the defrost operation. The speed drive is compulsory with output temperatures on both sides of the wheel lower than 1°C or an average temperature on the wheel lower than 3°C.

Important: the calculations for the selection of a heat recovery wheel according to the parameters described above should be done using our “Selection Software”.

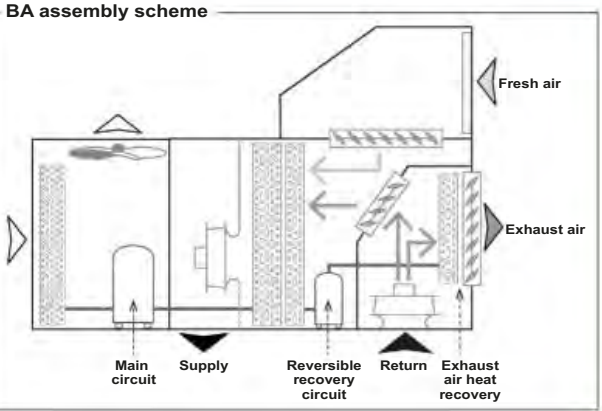
OPTIONS FOR THE INDOOR UNIT (CONT.)

Cooling recovery circuit (BA / BB assemblies)

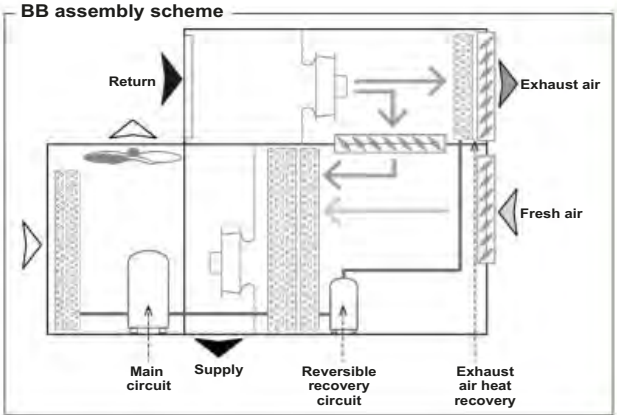
Thermodynamic circuit dedicated to the recovery of the extracted air energy, with independent and proportional control, adapted to the air renewal requirements in order to raise the COP, EER and seasonal efficiency of the unit set.

■ The circuit is composed of:
- EC plug-fan in return section.
- Air circuit comprised of coils with copper pipes and aluminium fins.
- Electronic expansion valve.
- Hermetic scroll-type compressor with sound insulation, assembled over antivibration mounts.
- Crankcase heater.
- Four-way cycle reversing valve.
- Anti-acid dehydrator filter.
- High and low pressure transducers.
- Condensates drain pan.

BA assembly scheme



BB assembly scheme



50FC	020 to 028	037 to 047	052 to 062	070 to 093
Compressor type	Scroll			
No. of compressors / circuits	1 / 1			
ax. absorbed current (A)	5,4	7,2	10,1	12,1
Oil type	Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC			
Volume of oil (l)	0,7	1,2	1,7	1,8
Charge of R-410A (kg)	1,7	2,5	3,0	3,4
Environment impact (tCO2eq)	3,5	5,2	6,3	7,1

Total cooling capacity with recovery circuit

50FC				020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow			(m³/h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Outdoor temperature 35°C / 40% HR Indoor temperature 27°C / 50% HR	20% fresh air	Pft	(kW)	29,6	36,2	45,7	49,4	54,2	56,5	70,4	75,4	77,8	90,6	94,5	103,2	112,4
		Pfs	(kW)	23,7	29,6	38,1	40,2	42,4	43,3	55,9	59,0	59,9	72,1	73,6	78,1	81,6
		Pa	(kW)	8,5	9,6	11,5	12,8	14,0	14,7	17,8	19,5	20,5	21,7	23,3	25,8	29,0
	40% fresh air	Pft	(kW)	31,3	37,9	48,2	52,0	56,8	59,3	73,8	78,8	81,4	95,1	99,2	107,9	117,4
		Pfs	(kW)	25,1	31,2	39,7	41,8	44,2	45,2	58,8	62,0	62,9	76,0	77,4	81,9	85,5
		Pa	(kW)	8,1	9,3	10,9	12,3	13,5	14,2	17,1	18,9	19,9	20,9	22,5	25,1	28,3
	80% fresh air	Pft	(kW)	33,7	40,3	51,9	55,7	60,7	63,2	78,8	84,1	86,8	102,3	106,3	115,0	125,1
		Pfs	(kW)	27,5	33,7	42,4	44,4	47,0	47,8	62,4	65,8	66,9	82,3	84,0	87,9	92,6
		Pa	(kW)	7,9	9,1	10,6	12,1	13,4	14,0	16,8	18,5	19,6	20,6	22,2	24,9	28,2

Pft: Total gross cooling capacity (sum of the power of the main circuit and the recovery circuit)

Total heating capacity with recovery circuit

50FC				020	028	037	040	045	047	052	058	062	070	074	086	093
Nominal air flow			(m³/h)	5.100	6.500	8.500	8.750	9.000	9.000	12.000	12.500	12.500	15.500	15.500	16.000	16.000
Outdoor temperature 6°C BH Indoor temperature 20°C	20% fresh air	Pct	(kW)	29,7	35,8	44,3	47,9	53,0	55,7	68,3	73,5	76,2	87,8	91,9	100,9	110,2
		Pa	(kW)	6,7	7,9	9,3	10,3	11,6	12,4	14,7	16,2	17,1	18,8	20,1	22,6	25,8
	40% fresh air	Pct	(kW)	31,1	37,1	46,2	49,8	55,0	64,4	71,0	76,2	79,0	91,1	95,2	104,2	113,7
		Pa	(kW)	6,4	7,5	8,9	9,9	11,1	11,9	14,1	15,5	16,4	18,0	19,3	21,7	24,7
	80% fresh air	Pct	(kW)	32,8	39,0	47,8	52,3	57,7	60,4	74,8	80,1	83,0	95,6	99,8	108,9	118,7
		Pa	(kW)	5,9	6,8	8,1	9,0	10,1	10,9	12,9	14,1	14,9	16,5	17,6	19,8	22,5

Pct: Total gross heating capacity (sum of the power of the main circuit and the recovery circuit)

OPTIONS FOR THE INDOOR UNIT (CONT.)

Auxiliary electrical heaters

Auxiliary electrical heaters, with two power stages and on/off control, for assembly and connection inside the unit.

■ Up to 3 values of total power available for each model:

50FC	020 to 047	052 to 062	070 to 093
RAF (Low)	12 kW	12 kW	18 kW
RAM (Nominal)	18 kW	18 kW	27 kW
RAS (High)	unavailable	27 kW	36 kW

■ Characteristics:

Total power (kW)	12	18	27	36
Stages power (kW)	6 + 6	9 + 9	9 + 18	18 + 18
Current (400 V / III ph) (A)	17,3	26,0	39,0	52,0
Power supply	400 V / III ph			

Auxiliary hot water coil

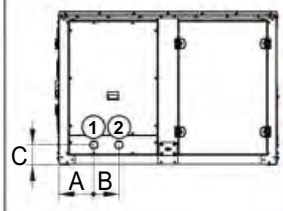
Auxiliary hot water coil, with three-way valve and proportional control, for assembly and connection inside the unit. This option always incorporates a freeze protection thermostat.

50FC			020	028	037	040	045	047	052	058	062	070	074	086	093
Air pressure drop		(mm.w.c.)	2,4	3,5	3,5	3,6	4,3	4,3	3,4	3,6	3,6	3,5	3,7	3,7	3,7
Water 80/60°C and inlet air 20°C	Heating capacity	(kW)	27,6	32,0	47,6	48,4	49,2	49,2	95,8	98,3	98,3	129,0	129,0	131,5	131,5
	Water flow	(m^3/h)	1,4	1,6	2,1	2,1	2,1	2,1	2,7	2,8	2,8	3,6	3,6	3,7	3,7
	Water pressure drop	(m.w.c)	0,2	0,3	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,9	0,9	1,0	0,9
Water 90/70°C and inlet air 20°C	Heating capacity	(kW)	34,2	39,8	58,7	59,8	90,8	90,8	118,5	121,5	121,5	158,7	158,7	161,9	161,9
	Water flow	(m^3/h)	1,7	2,	,6	2,6	2,6	,6	3,4	3,4	,4	4,5	4,5	4,6	4,6
	Water pressure drop	(m.w.c)	0,3	0,4	0,7	0,7	0,8	0,8	0,7	0,7	0,7	1,3	1,4	1,4	1,4

Note: With droplet eliminator after the indoor air coil it is not possible to assemble the hot water coil.

Position of the hydraulic connections of the hot water coil

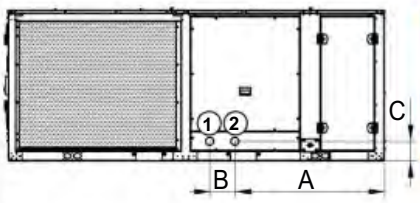
"Standard" assemblies



50FC	Dimensions (mm)			
	A	B	C	Ø
020 to 037	142	160	158	1 ¼"
052 to 093	159	245	158	2"

1 Outlet 2 Inlet

"In-line" assemblies



50FC	Dimensions (mm)			
	A	B	C	Ø
052 to 062	954	200	158	2"
070 to 093	1334	200	158	2"

1 Outlet 2 Inlet

Note: The Input / Output connections of the coil are located inside the unit. The connection can be established via the unit base using flexible tubing or via the side panel. In the above diagrams, the position of the sheet metal precuts is shown on the side panel.

"Very low outdoor temperature" option (HAF)

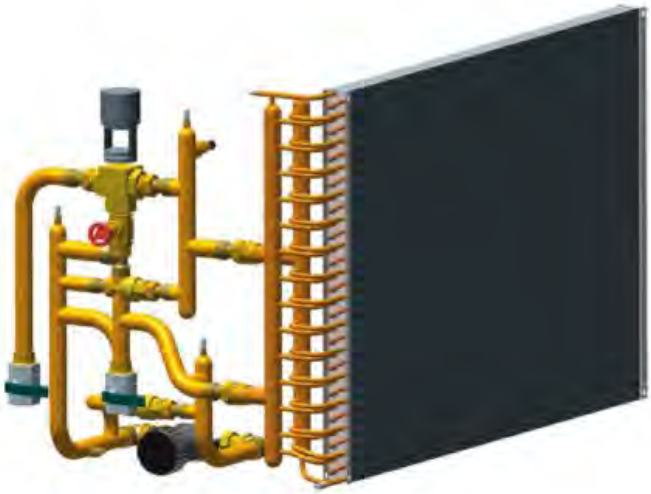
Note: on units with the "Very low outdoor temperature" option, air supply only may be lateral (factory-configured).

■ This anti-freeze safety incorporates:
- Circulation pump.
- Water temperature sensors located in the inlet and the outlet of the coil.
- Electrical heating on the piping layout.

Important: this option is mandatory for an outdoor temperature lower than -20°C WB. Consult for percentages of glycol water above 20%.

■ Characteristics of the water circuit:

50FC		020 to 047	052 to 093
Circulation u p	Motor output (W)	90	14
	Max. absorbed current (A)	0,75	1,15



OPTIONS FOR THE INDOOR UNIT (CONT.)

Gas-fired condensing boiler with hot water coil

Gas-fired condensing boiler with modulating actuator, in accordance with the Gas Directive 2009/142/EC, mounted on the side of the unit.

EC certification: 0085CP0214.

■ Up to 3 values of total power available for each model:

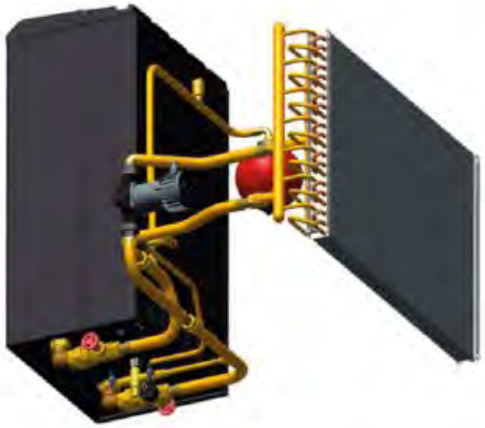
50FC	020 to 047	052 to 062	070 to 093
BBF (Low)	unavailable	Condexa PRO 50 (coming soon)	Condexa PRO 50 (coming soon)
BBM (Nominal)	Condexa PRO 40 (coming soon)	Condexa PRO 70	Condexa PRO 70
BBS (High)	Condexa PRO 70	Condexa PRO 100	Condexa PRO 100

■ The key features of the boiler are:
- Natural or propane gas boiler.
- Burner with premixing and modulation technology that allows outputs close to 109% (Hi performance).
- Heat exchanger made of stainless steel with a low carbon content.
- Proportional air / gas valve. Low NOx emissions (class 5, according to standard EN 297).
- Condensate drain with siphon.
- Forced draught.
- Electronic ignition.
- Safety devices: safety thermostat, low water pressure safety switch, flowmeter, Delta-T control, smoke temperature sensor.
- NTC sensor for boiler water temperature regulation.
- Working temperature of water from -7ºC to 100ºC. Consult for percentages of glycol water above 20%.
- Electronic controller with microprocessor and Multifunction LCD display for boiler's control, configuration and diagnostics. Possibility of ModBus communication.
- The electronic control of the unit will only manage the boiler connection as heating support depending on the ambient conditions.

■ The boiler is connected to the hydraulic circuit of the auxiliary hot water coil. The water circuit, installed inside the unit, is composed of:
- Water coil.
- Circulation pump.
- Expansion vessel.
- Gate valves.
- Safety valve with a tare value of 4 bar.
- Automatic air bleeder valve.

■ Characteristics of the water circuit:

50FC		020 to 047	052 to 093
Expansion vessel	Volume (l)	5	5
	Filling pressure (kg/cm²)	1,5	1,5
Circulation pump	Motor output (W)	90	140
	Max. absorbed current (A)	0,75	1,15



■ Type of gas used depending on the destination country:

Country	Category	Gas	Pressure (mbar)	Gas	Pressure (mbar)
Italy, Ireland, Great Britain, Portugal, Slovenia, Slovakia, Greece	II2H3+	G20	20	G30/G31	28-30/37
Spain	II2H3+	G20	18	G30/G31	28-30/37
Romania, Bulgaria, Turkey, enmark, Estonia, Sweden, Norway, Latvia, Lithuania, Finland, Russia	II2H3B/P	G20	20	G30	30
Hungary	II2H3B/P	G20	25	G30	30
Poland	II2H3B/P	G20	25	G30	37
Croatia	II2H3B/P	G20	20	G30/G31	30
Holland	II2H3B/P	G25	25	G30	30
Czech Rep., Austria, Switzerland	II2H3B/P	G20	20	G30	50
Luxembourg	II2H3B/P	G20	20	G30	50
	II2E3P	G20	20	G31	37
Belgium	I2E(S)	G20/G25	20/25	-	-
	I3+	--	--	G30/G31	28-30/37
France	II2E+3+,	G20/G25	20/25	G30/G31	28-30/37
Malta, Cyprus, Iceland	I3B/P	--	--	G30	30
Germany	II2ELL3B/P	G20/G25	25	G30	50

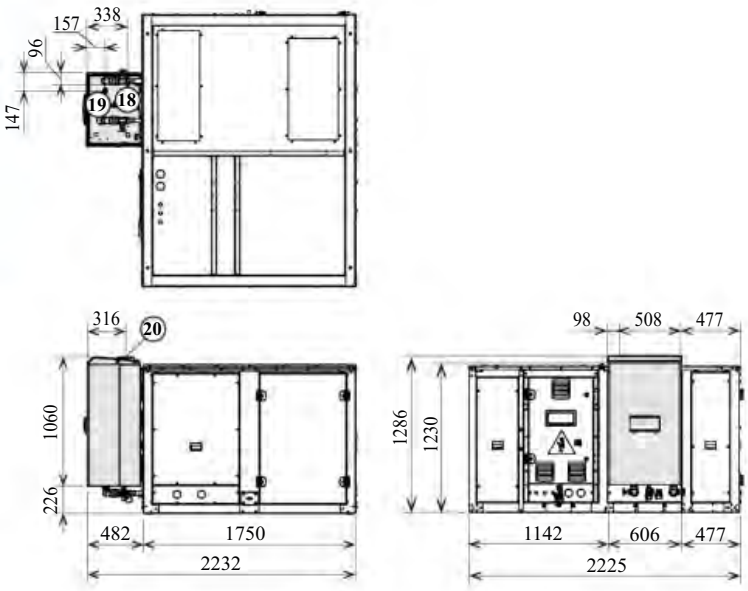
OPTIONS FOR THE INDOOR UNIT (CONT.)

■ Technical characteristics of the boiler:

Model			Condexa PRO 40 (coming soon)	Condexa PRO 50 (coming soon)	Condexa PRO 70	Condexa PRO 100
Type of equipment			B23 - B53 - B53P			
NOx Class (according to standard EN 297)		Val	5			
Boiler performance	Total thermal power (Hs)	kW			76/15	108/21,6
	Total thermal power (Hi)	kW			68/14	97/19,4
	Nominal power supplied to the water 100% (80ºC - 60ºC)	kW			66,7	95,2
	Nominal power supplied to the water 100% (50ºC - 30ºC)	kW			73,5	105
	Nominal power supplied to the water 100% (60ºC - 40ºC)	kW			71	101
	Condensate hourly production 100% (50ºC - 30ºC) with G20	kg/h			8,5	12,3
	Performance with nominal power (80ºC - 60ºC)	%			98,1	98,1
	Performance with nominal power (50ºC - 30ºC)	%			108,1	108,2
	Performance with nominal power Tm = 50°C (60ºC - 40ºC)	%			104,4	104,1
	Performance with reduced load 30% (80ºC - 60ºC)	%			98,5	98,3
	Performance with reduced load 30% (50ºC - 30ºC)	%			109	109
	Performance with reduced load 30% Tm = 50°C (60ºC - 40ºC)	%			105,3	105
	Losses in enclosure (Tm = 70°C)	%	0,1			
	Energy efficiency marking (Directive 92/42 EC)		★★★★			
Energy efficiency	Seasonal energy efficiency class in heating				A	A
	Seasonal energy efficiency in heating	%			92,7	92,7
Gas supply	Gas category		II2H3+			
	Natural Gas consumption (G20) (nominal / minimum)	³/h			7,2/1,4	10,3/2,1
Electrical data	Power supply		230 Vac - 50 Hz			
	Power input at 100%	W			77	203
	Power input at 30%	W			30	31
	Power input in stand-by	W			13	6
	Ingress protection rating		IP X5D			
	Operating temperatures		de -15°C to +70°C			
Connections	Ø Gas supply				G1"	G1"
	Ø Flue outlet	mm			DN80	DN110
	Ø Condensate drain	mm			25	25
Heating circuit	Control of heating temperature (min. / max.)	ºC	20 / 80			
	Working pressure (max. / min.)	bar	6 / 0,7			

Location of the gas burner

50FC 020-028-037-040-045-047



Legend

All dimensions are given in mm.

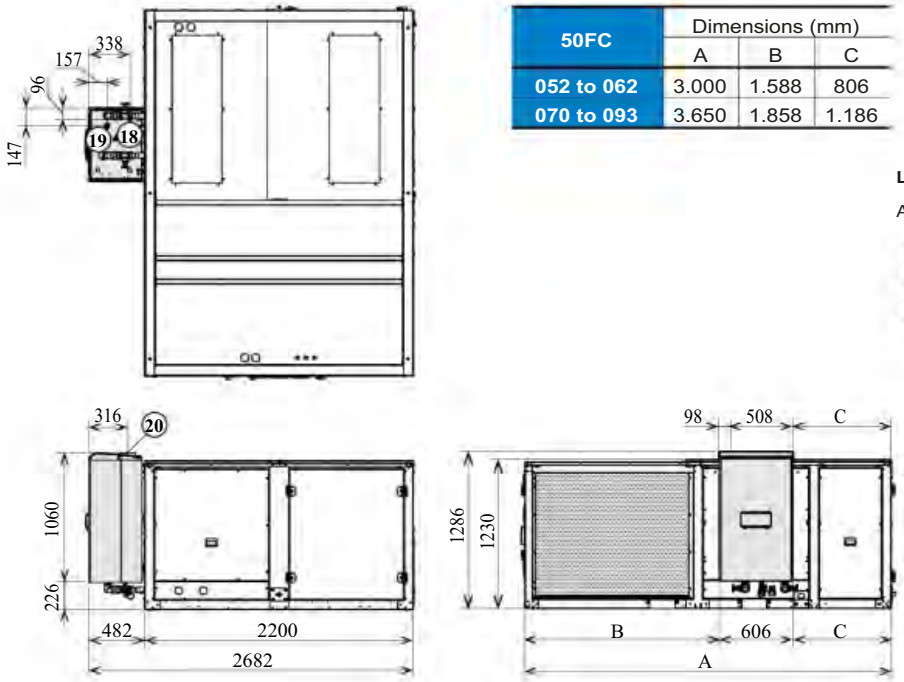
(18) Boiler drainage Ø 25mm
Important: Siphon minimum height 300mm

(19) Gas supply 1"M

(20) Flue outlet (flue connection):
Condexa PRO 40 / 50 / 70: Ø 80mm

OPTIONS FOR THE INDOOR UNIT (CONT.)

50FC 052-058-062-070-074-086-093, “Standard”



50FC	Dimensions (mm)		
	A	B	C
052 to 062	3.000	1.588	806
070 to 093	3.650	1.858	1.186

Legend

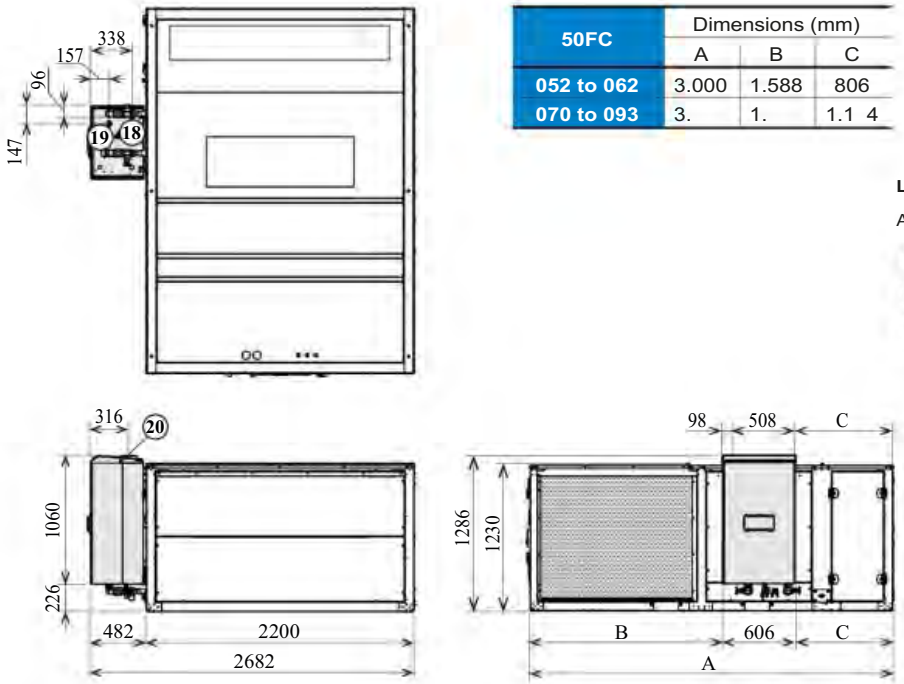
All dimensions are given in mm.

18 Boiler drainage Ø 25mm
Important: Siphon minimum height 300mm

19 Gas supply 1”M

20 Flue outlet (flue connection):
Condexa PRO 50 / 70: Ø 80mm
Condexa PRO 100: Ø 110 mm

50FC 052-058-062-070-074-086-093, “In-line”



50FC	Dimensions (mm)		
	A	B	C
052 to 062	3.000	1.588	806
070 to 093	3.	1.	1.1 4

Legend

All dimensions are given in mm.

18 Boiler drainage Ø 25mm
Important: Siphon minimum height 300mm

19 Gas supply 1”M

20 Flue outlet (flue connection):
Condexa PRO 50 / 70: Ø 80mm
Condexa PRO 100: Ø 110 mm

NOTES:

- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.

IMPORTANT:

- The flue of the gas boiler is not supplied with the unit. Its design and installation is the responsibility of the installer and must comply with all the directives and regulations in force in the installation location.

OPTIONS FOR THE INDOOR UNIT (CONT.)

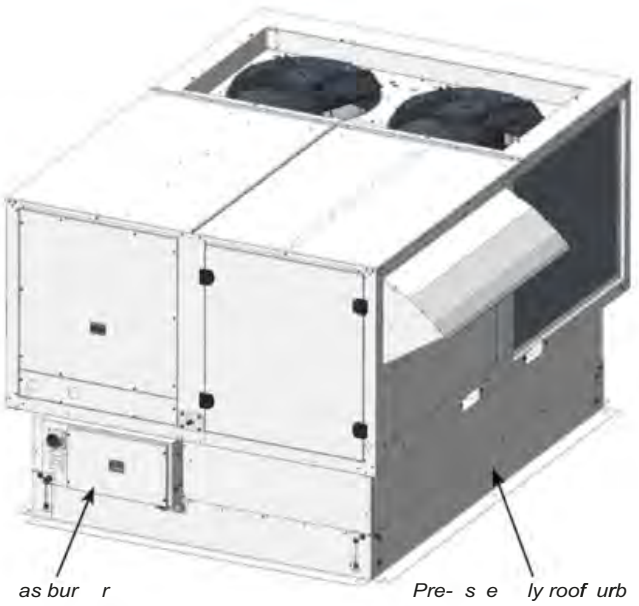
Warm air heater module with gas burner

Warm air heater module with gas burner with modulating actuator, in accordance with the Gas Directive 2009/142/EC, installed inside a pre-assembly roofcurb.

■ Up to 3 values of total power available for each model:

50FC	020 to 047	052 to 062	070 to 093
BAF (Low)	PCH020	unavailable	unavailable
BAM (Nominal)	PCH034	PCH065	PCH080
BAS (High)	PCH045	PCH080	PCH105

■ The key features of the boiler are:
- Natural or propane gas burner.
- Condensation boiler with premixing and modulation technology that allows outputs close to 109% (Hi performance).
- The premixed burner, in combination with the air/gas valve, ensures a “clean” combustion. Low NOx emissions (class 5, according to standard EN 297).
- The combustion chamber and the burner are entirely made of stainless steel.
- Electronic controller with microprocessor and multifunction LCD display, located inside the burner, for burner’s control, configuration and diagnostics.
- The electronic control of the unit will only manage the burner connection as heating support depending on the ambient conditions.



Note: It’s recommended to use the clogged filter pressostat (optional) in units with gas burner.

Note: Drawings of roofcurb with gas burner can be consulted on pages 48 to 50.

Model			PCH020		PCH034		PCH045		PCH065		PCH080		PCH105	
Type of equipment			B23P - B53P - C13 - C43 - C53 - C63 - C83											
EC certification		PIN.	0694CP1457											
NOx Class		Val	5											
Heater performance	Range		Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max	Min.	Max
	Thermal output (Hi)	kW	4,75	19,00	7,60	34,85	8,50	44,00	12,40	65,00	16,40	82,00	18,00	100,00
	Useful thermal output	kW	4,97	18,18	8,13	33,56	9,00	42,40	13,40	62,93	17,77	80,03	19,63	97,15
	Hi performance (L.C.V.)	%	104,63	95,68	106,97	96,30	105,88	96,37	108,06	96,82	108,35	97,60	109,06	97,15
	Hs performance (H.C.V.)	%	94,26	86,20	96,37	86,76	95,39	87,36	97,36	87,22	97,62	87,93	98,25	87,52
	Flue losses with burner off (Hi)	%	0,4	4,3	0,6	3,7	0,5	3,7	0,2	3,2	0,3	2,4	0,2	2,8
	Flue losses with burner off (Hi)	%	<0,1											
	Losses in enclosure (1)		0%											
	Max. condensation (2)	l/h	0,4		0,9		1,1		2,1		3,3		2,7	
Exhaust gas - Polluting emissions	Carbon monoxide - B1 - (0% of O2) (3)		< 5											
	Nitrogen oxides - NOx - (0% of O2) (4)		40 mg/kWh - 22,28 ppm		41 mg/kWh - 23,24 ppm		35 mg/kWh - 19,84 ppm		40 mg/kWh - 22,68 ppm		34 mg/kWh - 19,27 ppm		45 mg/kWh - 25,51 ppm	
	Available pressure at flue	Pa	80		90		100		120					
Electrical data	Power supply		230 Vac - 50 Hz single-phase											
	Power input		12	45	11	74	24	82	15	97	40	123	20	130
	Power input in stand-by		<5											
	Ingress protection rating		IP X5D											
	Operating Temperatures		from -15°C to +40°C											
Connections	Ø gas connection	GAS	UNI/ISO 7/1- 3/4”											
	Ø intake/exhaust pipes		80/80											

(1) Enclosure losses match those of the machine housing the PCH.
(2) Max. condensation produced acquired from testing 30%Qn.
(3) Value referenced to cat. H (G20)
(4) Weighted value to EN1020 ref. to class H (G20), referred to Hi (L.C.V.).

OPTIONS FOR THE INDOOR UNIT (CONT.)

■ Gas setting:

Gas type	Gas settings		PCH020		PCH034		PCH045		PCH065		PCH080		PCH105	
			min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
G20	Air supply pressure	mbar	20 [min 17-max 25]											
	Ø pilot nozzle	mm	0,7											
	Gas consumption (15°C-1013mbar)	m3/h	0,51	2,01	0,80	3,69	0,90	4,66	1,31	6,88	1,74	8,68	1,90	10,58
	Carbon dioxide - CO_2 content	%	8,8	9,1	8,7	9,1	8,7	9,1	8,7	9,1	8,7	9,1	8,5	9,1
	Fumes temperature	°C	39	113	31	94	30	94	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	31		57		72		107		135		165	
	Gas butterfly valve	mm	5,8		7,4		7,5		11,0		12,2		15,8	
G25	Air supply pressure	mbar	25 [min 17-max 30] (20 for Germany)											
	Ø pilot nozzle	mm	0,7 (0,75 for Germany)											
	Gas consumption (15°C-1013mbar)	m3/h	0,59	2,34	0,93	4,29	1,05	5,41	1,53	8,00	2,02	10,1	2,21	12,30
	Carbon dioxide - CO_2 content	%	8,8	9,0	8,6	9,0	8,8	8,9	8,8	9,2	8,6	8,9	8,8	9,0
	Fumes temperature	°C	39	113	31	94	30	94	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	--											
	Gas butterfly valve	mm	Not necessary											
G30	Air supply pressure	mbar	30 [min 25-max 35] - 50 [min 42,5-max 57,5]											
	Ø pilot nozzle	mm	0,51											
	Gas consumption (15°C-1013mbar)	m3/h	0,40	1,58	0,63	2,90	0,71	3,65	1,03	5,39	1,36	6,80	1,49	8,30
	Carbon dioxide - CO_2 content	%	10,8	11,4	10,8	11,5	10,8	10,9	10,7	11,3	11,2	11,6	10,9	11,2
	Fumes temperature	°C	39	113	31	94	30	94	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	--											
	Gas butterfly valve	mm	3,7		5,0		5,2		6,5		7,0		9,3	
G31	Air supply pressure	mbar	30 [min 25-max 35] - 37 [min 25-max 45] - 50 [min 42,5-max 57,5]											
	Ø pilot nozzle	mm	0,51											
	Gas consumption (15°C-1013mbar)	m3/h	0,39	1,55	0,62	2,85	0,70	3,60	1,01	5,31	1,34	6,70	1,47	8,18
	Carbon dioxide - CO_2 content	%	9,3	9.,8	9,2	9,7	9,3	9,4	9,4	9,6	9,3	9,6	9,1	9,6
	Fumes temperature	°C	39	113	31	94	30	94	31	86	26,5	70	28	80
	Fume mass flow rate (max.)	kg/h	24		45		58		84		107		130	
	Gas butterfly valve	mm	3,7		5,0		5,2		6,5		7,0		9,3	

■ Type of gas used depending on the destination country:

Country	Category	Gas	Pressure (mbar)	Gas	Pressure (mbar)
Austria, Switzerland	II2H3B/P	G20	20	G30/G31	50
Belgium < 70kW	I2E(S)B,I3P	G20/G25	20/25	G31	37
Belgium > 70kW	I2E(R)B,I3P	G20/G25	20/25	G31	37
Germany	II2ELL3B/P	G20	20	G30/G31	50
Denmark, Finland, Greece, Sweden, Norway, Italy, Czech Republic, Estonia, Lithuania, Slovenia, Albania, Macedonia, Bulgaria, Romania, Croatia, Turkey	II2H3B/P	G20	20	G30/G31	30
Spain, United Kingdom, Ireland, Portugal, Slovakia	II2H3P	G20	20	G31	37
France	II2Esi3P	G20/G25	20/25	G31	37
Luxembourg	II2E3P	G20/G25	20	G31	37/50
Netherlands	II2L3B/P	G25	25	G30/G31	50
Hungary	II2HS3B/P	G20/G25.1	25	G30/G31	30
Cyprus, Malta	I3B/P	--	--	G30/G31	30
Latvia	I2H	G20	20		
Iceland	I3P	--	--	G31	37
Poland	II2E3B/P	G20/G2.350	20/13	G30/G31	37
Russia	II2H3B/P	G20	20	G30/G31	30

WEIGHT OVERVIEW

Weight of the various assemblies (kg)

50FC		020	028	037	040	045	047	052	058	062	070	074	086	093
B1 assembly		594	617	699	698	704	701	986	986	1.004	1.146	1.146	1.135	1.160
B2 assembly		609	632	718	718	718	720	1.018	1.024	1.037	1.181	1.181	1.190	1.195
B3 assembly		682	705	796	796	796	798	1.119	1.119	1.138	1.308	1.308	1.308	1.313
BX assembly		713	736	815	815	815	817	1.162	1.168	1.180	1.359	1.359	1.368	1.373
BP assembly		723	746	831	831	828	833	1.192	1.198	1.210	1.387	1.387	1.387	1.392
BA assembly		781	804	900	900	897	902	1283	1289	1301	1490	1490	1490	1495
BT assembly		774	797	882	882	882	884	1.285	1.285	1.304	1.482	1.482	1.491	1.496
BB assembly		832	855	951	951	951	953	1.376	1.376	1.395	1.585	1.585	1.594	1.599
BW assembly	Machine	722	745	834	834	834	837	1.194	1.200	1.213	1.317	1.317	1.326	1.331
	Recovery module	254	254	254	254	254	254	348	348	348	454	454	454	454
	Total weight	976	999	1.088	1.088	1.088	1.091	1.542	1.548	1.561	1.771	1.771	1.780	1.785
R1 assembly		--	--	--	--	--	--	1.044	1.050	1.062	1.179	1.179	1.189	1.193
R2 assembly		--	--	--	--	--	--	1.082	1.088	1.101	1.216	1.216	1.225	1.230
RP assembly		--	--	--	--	--	--	1.252	1.258	1.270	1.405	1.405	1.414	1.419
RW assembly	Machine	--	--	--	--	--	--	1029	1035	1048	1358	1358	1367	1372
	Recovery module	--	--	--	--	--	--	719	719	719	454	454	454	454
	Total weight	--	--	--	--	--	--	1.749	1.755	1.767	1.812	1.812	1.822	1.826

Weight supplement from the main options (kg)

50FC			020	028	037	040	045	047	052	058	062	070	074	086	093
Pre-assembly roofcurb (without gas burner)			145	145	145	145	145	145	205	205	205	237	237	237	237
Pre-assembly roofcurb (with gas burner)	BAF (Low)		265	265	265	265	265	265	--	--	--	--	--	--	--
	BAM (Nominal)		274	274	274	274	274	274	385	385	385	463	463	463	463
	BAS (High)		284	284	284	284	284	284	411	411	411	483	483	483	483
Electrical heaters	RAF (Low)		20	20	20	20	20	20	17	17	17	17	17	17	17
	RAM (Nominal)		17	17	17	17	17	17	21	21	21	21	21	21	21
	RAS (High)		--	--	21	21	21	21	25	25	25	25	25	25	25
Hot water coil	Standard	Empty	33	33	37	37	37	37	51	51	51	58	58	58	58
		Service	40	40	46	46	46	46	67	67	67	78	78	78	78
	Very low outdoor T	Empty	41	41	45	45	45	45	71	71	71	78	78	78	78
		Service	49	49	55	55	55	55	89	89	89	100	100	100	100
Boiler + Hot water coil	Boiler		69	69	69	69	69	69	69	69	69	69	69	69	69
	Water circuit	Empty	47	47	52	52	52	52	79	79	79	87	87	87	87
		Service	55	55	62	62	62	62	98	98	98	109	109	109	109
	Total service weight		124	124	131	131	131	131	167	167	167	178	178	178	178
Supply fan	Low pressure (F)		-7	-7	--	--	--	--	-21	-21	-21	-9	-9	-9	-9
	High pressure (S)		--	--	28	28	28	28	38	38	38	29	29	29	29
Droplet eliminator	Indoor coil		24	24	25	25	25	25	34	34	34	43	43	43	43
	Fresh air intake		8	8	8	8	8	8	11	11	11	14	14	14	14

NEW

AIR-COOLED CONDENSING UNITS WITH AXIAL FAN AND VERTICAL DISCHARGE

Split-system

R-410A refrigerant

Outdoor unit with axial fan

Configuration flexibility

38ZS/ZF

Cooling capacity 21-138 kW
Heating capacity 23-148 kW

The **38ZS/ZF** range are air-cooled condensing units designed for installation outdoors.

They can be connected on-site with one direct expansion exchanger (or two in case of models 200 to 360).

Two options are available:

- **38ZS series: non reversible** units.
- **38ZF series: reversible** units.

They are equipped axial fan(s) with free vertical discharge, hermetic scroll-type compressor(s) and electric panel with electronic control with optimized components for the refrigerant R-410A

A vast number of options meet numerous operating demands.

All of the units are tested and checked in the factory

Range

- 1 cooling circuit, 1 compressor:
  - Models: 90 / 100 / 120 / 160 / 180 / 182
- 2 cooling circuits, 2 compressors:
  - Models: 200 / 240 / 320 / 360 / 420 / 485 / 540 / 600

OPERATING LIMITS

Inlet air conditions		Cooling	Heating
Refrigerant ①	Minimum	-6 ºC	40 ºC
	Maximum	10 ºC	52 ºC
Inlet air	Minimum	12 ºC ②	-10 ºC WB
	Maximum	48 ºC	15 ºC WB

① For connection with a direct expansion exchanger.
② With control of operation condensation pressure activated up to -10ºC.

COMPLIANCE

- Machinery Directive 2006/42/CE (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Narmonised Standard: EN 378-2:2012 (Refrigerating systems and heat pumps - Safety and environmental requirements).

UNIT COMPONENTS

- Casing made of galvanised steel metal with polyester paint, grey graphite colour RAL 7024 and white RAL 7035. Self-supporting frame.

Air circuit

- Axial 2-speed fan(s) directly coupled to the motor (models 90 to 182 wired to high speed). Watertight motor class F, IP54 and internal thermal protection. Dynamically balanced propellers and outdoor protective grille.
- Coil(s) with copper pipes and aluminium fins. Two designs:
  - Models 90 to 320: Coil in U
  - Models 360 to 600: Coils in V
- Condensates drain pan (in models 360 to 600).

Cooling circuit

- Hermetic scroll-type compressor(s) with sound insulation, assembled over shock absorbers. Control of phase equilibrium and the direction of rotation.
- Crankcase heater.
- Thermostatic expansion valve(s) with external equalisation (heat pump units).
- Four-way cycle reversing valve(s) (heat pump units).
- Particle separator(s), anti-acid dehydrating filter(s) and liquid receiver(s).
- Cooling connections for welding.
- Maximum equivalent length of the cooling line 50 metres (for longer distances, it is necessary to use an oil separator).

Protections

- High and low pressure pressostats.
- Compressor discharge temperature control.
- Non-return valve built into the compressor.
- Main door switch.
- Magnetothermic protection switches for the compressor(s) and fan(s) motor power line.
- Automatic switch in the control circuit.

Electric panel

- Complete and fully wired electrical panel. Insulated panel cover to prevent condensation. Protection IP55.
- Transformer for power supply without neutral included in the electrical panel.
- Main ground connection.
- Compressor(s) and fan(s) motor contacts.

Optional

Outdoor environment

Temperature

- Electrical heater for protection of the components of the electric panel. This is compulsory if the outdoor temperature is lower than -8ºC WB. With an outdoor temperature ower than -16ºC WB will be compulsory a reinforced resistance.
- Compressor with protection for low temperature (supplementary crankcase heater). This is compulsory if the outdoor temperature is lower than -8ºC WB.

Corrosion

- Coil with copper pipes and copper fins.
- INERA® coil with copper pipes and fins of an aluminium alloy, of high performance and great resistance to the corrosion.
- Coil with copper pipes and aluminium fins with polyurethane and Blygold® coating.

Humidity

- Tropicalised electric panel.
- Tropicalised motors and fans (please consult).

Installation

- Antivibration mounts made of rubber.
- Service valves and refrigerant load for cooling connections (up to 7,5 meters long).
- Oil separator for cooling connections with maximum equivalent length of the cooling line greater than 50 metres.
- Air coil protection grille (in models 90 to 320).
- Condensates drain pan (in models 90 to 320).

Electric panel

- Electrical power supply with neutral.
- Energy meter for monitoring of the power consumption of the installation (with CIATrtc control).
  - Models 90 to 182: available if the unit does not incorporate electrical heaters.
  - Models 200 to 600: available with all optional.

Energy saving

- Electronic EC axial fans that adjust their rotation speed to the installation requirements, thereby reducing electricity consumption, the sound level at partial charge and improving the average seasonal output of the unit.

ELECTRONIC CONTROLS

CARRIERrtc basic & medium (standard)

Available in two versions:

- **CARRIERrtc basic: models 90 to 182**
- **CARRIERrtc medium: models 200 to 600**

Note: Optionally, the models 90 to 182 can incorporate the CARRIERrtc medium version.

CARRIERrtc basic & medium control is an electronic module with microprocessor comprised of a control board and a TCO user terminal that ensures the following functions:

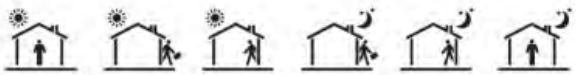
- Selection of the operating mode:
  - HEATING
  - COOLING
  - AUTO Auto
  - DESHUMIDIFICATION
  - FAN (no icon).

- Modification of the set-point.
- Permanent control of the operating parameters.
- View of the values measured by the sensors.
- View of the alarms produced by means of codes.
- Timing of the compressors.
- Control of the compressor discharge temperature by probe.
- Control of the ambient temperature thanks to the probe incorporated into TCO terminal. This probe can be replaced by an return or ambient probe that would be installed in the control board.
- Operation during all seasons via the condensation and evaporation pressure control.
- Control of the outlet temperature to improve thermal **comfort level** of the installation.
  - In cooling mode this control prevents excessively significant drops in the ambient temperature.
  - In heating mode, it prevent the stratification of the hot air masses.
- The following features improve the energy management of the installation:

Defrosting management (in heat pump units). Possibility of **intelligent defrosting** that reduces energy consumption of the heat pump, by adjusting the time between defrosting operations to the actual needs of the unit.

Compensation of the set-point based on the outdoor temperature. This function prevents thermal “shock” between the inside and outside of the premises whilst at the same time provides significant energy savings

Time schedule that reduces energy consumption, adjusting the needs of air conditioning of the building TCO terminal has a schedule programmer with an intuitive graphic interface that allows 6 time slots to be chosen for each day of the week. A change in the set-point temperature or the disconnection of the unit can be scheduled in these time slots (according to the building occupancy).



Optional functions:

If the indoor unit connected to the 38ZS/ZF unit has these options:

- Control of the auxiliary electrical heaters.
- Proportional control of a hot water auxiliary coil.
- Humidity control.
- Anti-fire safety.
- Control of the opening of the outdoor air damper.
- Management of thermal free-cooling.
- Detection of clogged filters and air flow control.
- Connection to a centralised technical management system (BMS) for supervision (please see “Optional” chapter).

pGD1 Terminal (optional):

Optionally, this control can have a terminal for pGD1 maintenance that facilitates the initial scheduling of the unit, the modification of the operating parameters and the description of the alarms produced.

CARRIERrtc electronic control (optional)

Electronic module with microprocessor comprised of a control board and a pGD1 graphic terminal installed over the unit electric panel and accessed using a polycarbonate collapsible window.

Optionally this terminal can be replaced by a TCO user terminal for installation inside of the premises. In this case the TCO terminal are not allowed to access parameters control and time schedule

The management of the ambient temperature is controlled via a NTC ambient probe. This probe can be replaced by 1 or 2 RS485 probes.

In addition to the functions described in CARRIERrtc basic & medium control,depending on the indoor unit connected to the 38ZS/ZF unit, this control allows controlling optional elements such as:

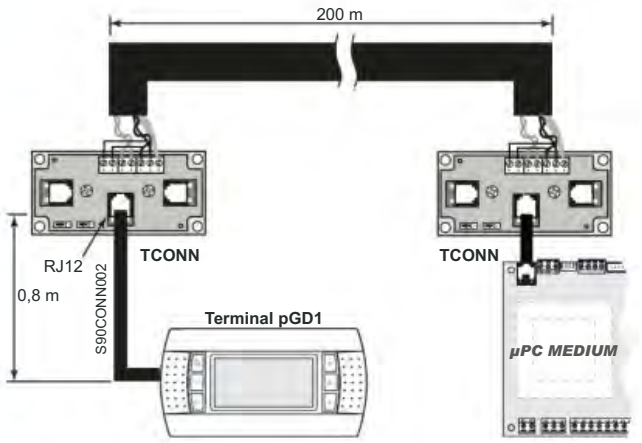
- Electronic plug-fans.
- Enthalpic or thermoenthalpic free-cooling.
- Smoke detecting station.
- Air quality probe for measuring CO_2 and/or volatile compounds..
- Energy meter.
- Refrigerant leak detector.

It also manages a local connection between units through a pLAN network (Local Area Network), thus allowing communication of data and information for a maximum of 15 units. This enables the reduction of the number of pGD1 terminals, since a single shared terminal can monitor all control boards. It also allows to share the reading of some probes.

Optional for electronic controls

CARRIERrtc basic & medium control (standard)

- pGD1 terminal for maintenance of the unit.
- Kit remote control to 200 meters with pGD1 (pGD1 terminal + 2 TCONN bypass cards).



- Return or ambient temperature probe connected to the board that replaces the ambient probe of the thermostat TCO. Return probe is required for anti-fire safety.
- Mixing temperature probe: compulsory to manage the free-cooling.

CARRIERrtc control (optional)

- TCO user terminal, instead of pGD1 terminal.
- Control without pGD1 terminal (for units with shared teminal).
- Kit remote control to 200 meters with pGD1 terminal (pGD1 terminal + 2 TCONN bypass cards).
- Ambient temperature probe with RS485 communication. By default the control incorporates a NTC probe.

  Note: An ambient probe with RS485 communication is required for installation to more than 30 m.
- Double ambient temperature probe with RS485 communication.
- Ambient T+RH probe with RS485 (compulsory in units with enthalpic or thermoenthalpic free-cooling as optional). In this case also added outdoor air humidity probe.
- Air quality probe for installation in the environment or in duct to enable measuring CO_2 and/or volatile compounds.

Communication

CARRIERrtc basic & medium controls allow the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols:

- RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex.
- Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.

Supervision solutions

Different solutions of supervision are available according to the dimensions of the installation.

- **pCO Web**

  It is the solution for the management and supervision of a single unit if it incorporates the Ethernet pCO Web card.

- **PlantWatchPRO3**

  It is a solution designed for the monitoring of installations of medium - small dimensions, with ability to manage up to 30 units. Suitable for technical environments, it has no parts in movement. It's available in two versions: panel and wall.

  Includes: 7 " touch display, buzzer for notifi cations, 1 USB port and 1 SD card slot for downloading reports, charge devices models and applying service packs.

  In this case, each unit needs one RS485 Carel / Modbus board.

- **PlantVisorPRO2**

  This is the solution for the management and supervision of air-conditioning installations with up to 300 units. It performs advanced monitoring and maintenance functions and enables creating areas and groups which simplify the management of the installation. It also allows the integration of energy meters for monitoring the power consumption of the installation.

  PlantVisorPRO2 is available in two versions:
  - **Box:** comprised of the CPU unit and, optionally, by monitor and keyboard.
  - **Touch:** this includes the CPU and the touchscreen in the one device.

  In this case, each unit needs one RS485 Carel / Modbus board

These systems allow the installation in remote management. Through a single connection to the Internet is accessed the information system. The Web interface, which is available for the local user, allows the monitoring and the complete configuration of the installation: from the office or any other user's current location.

For remote control of multiple sites, there are dedicated tools for centralized management as **RemotePRO** and **RemoteValue**.

TECHNICAL CHARACTERISTICS

38ZS/ZF		90	100	120	160	180	182	200
Cooling capacities	Cooling capacity ① (kW)	20,8	24,4	28,5	36,2	39,2	42,5	50,4
	Power input ③ (kW)	6,3	7,7	8,3	11,8	14,2	11,8	14,7
	EER performance	3,31	3,15	3,44	3,06	2,76	3,62	3,42
Heating capacities	Heating capacity ② (kW)	22,6	26,6	31,0	39,2	43,1	46,6	58,1
	Power input ③ (kW)	6,4	7,1	8,4	10,1	12,4	11,6	14,7
	COP performance	3,55	3,76	3,68	3,87	3,48	4,01	3,94
Outdoor circuit axial fan	Nominal air flow (m^3/h)	10.000		14.200			20.000	
	Available static pressure (mm.w.c)	--						
	Number	1						
	Diameter (mm)	630		800				
	Output (kW)	0,7 / 0,4		0,8 / 0,5			2,0 / 1,3	
	Speed (r.p.m.)	875 / 650		680 / 540			895 / 705	
Compressor	Type	Scroll						
	No. compressors / No. circuits / No. stages	1 / 1 / 1						2 / 2 / 2
	Oil type	Copeland 3MAF 32 cST, Danfoss POE 160 SZ, ICI Emkarate RL32 CF, Mobil EAL Artic 22 CC						
	Volume of oil (l)	3,0	3,3	3,3	3,3	6,2	6,2	2 x 3,3
Cooling connections	Circuit 1: Liquid line	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	1/2"
	Circuit 1: Gas line	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
	Circuit 2: Liquid line	--	--	--	--	--	--	1/2"
	Circuit 2: Gas line	--	--	--	--	--	--	1 1/8"
Refrigerant	Type	R-410A						
	Global warming potential (GWP) ④	2.088						
	Load up to 7,5 m (kg)	6,3	6,4	8,6	8,2	9,2	12,8	17,3
	Environment impact (tCO2 e)	13,2	13,4	18,0	17,1	19,2	26,7	36,1
Electrical features	Mains voltage	400 V / III ph / 50 Hz (±10%)						
	Power supply	3 Wires + Ground						
Maximum absorbed current	Compressor(s) (A)	15,3	18,5	20,1	25,1	29,1	29,1	37,0
	Fan (A)	1,3	1,3	2,2	2,2	2,2	4,3	4,3
	Control (A)	0,9	0,9	0,9	0,9	0,9	0,9	1,8
	Total (A)	17,5	20,7	23,2	28,2	32,2	34,3	43,1
Dimensions	Length (mm)	1.511		1.511				1.811
	Width (mm)	1.066		1.066				1.066
	Height (mm)	1.088		1.413				1.763
Weight	(kg)	275	281	317	326	368	388	490

① Rated conditions: evaporation temperature = 5°C, outdoor air temperature = 35°C, overheating = 5°C

② Rated conditions: condensing temperature = 49°C, outdoor air temperature = 7°C, overheating = 0°C

③ Total power input by compressors and motorised fans under those conditions.

④ Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

TECHNICAL CHARACTERISTICS

38ZS/ZF		240	320	360	420	485	540	600
Cooling capacities	Cooling capacity ① (kW)	55,5	70,0	86,4	103,6	115,5	124,6	138,4
	Power input ③ (kW)	16,8	24,8	24,4	28,0	32,9	39,1	44,9
	EER performance	3,31	2,82	3,55	3,70	3,51	3,19	3,08
Heating capacities	Heating capacity ② (kW)	64,9	81,8	94,2	108,9	123,5	134,3	148,2
	Power input ③ (kW)	15,6	20,9	23,0	28,8	30,9	36,8	38,8
	COP performance	4,15	3,91	4,10	3,79	4,00	3,65	3,82
Outdoor circuit axial fan	Nominal air flow (m³/h)	20.000		39.000		37.000		
	Available static pressure (mm.w.c)	--						
	Number	1		2				
	Diameter (mm)	800						
	Output (kW)	2,0 / 1,3						
	Speed (r.p.m.)	895 / 705						
Compressor	Type	Scroll						
	No. compressors / No. circuits / No. stages	2 / 2 / 2						
	Oil type	Copeland 3MAF 32 cST, Danfoss POE 160 SZ, ICI Emkarate RL32 CF, Mobil EAL Artic 22 CC						
	Volume of oil (l)	2 x 3,3	2 x 3,3	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2	2 x 6,2
Cooling connections	Circuit 1: Liquid line	5/8"	5/8"	5/8"	5/8"	5/8"	7/8"	7/8"
	Circuit 1: Gas line	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
	Circuit 2: Liquid line	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	7/8"
	Circuit 2: Gas line	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
Refrigerant	Type	R-410A						
	Global warming potential (GWP) ④	1.720						
	Load up to 7,5 m (kg)	17,4	22,2	22,7	31,4	31,4	33,4	33,6
	Environment impact (tCO2 e)	36,3	46,4	47,4	65,6	65,6	69,7	70,2
Electrical features	Mains voltage	400 V / III ph / 50 Hz (±10%)						
	Power supply	3 Wires + Ground						
Maximum absorbed current	Compressor(s) (A)	40,2	50,2	58,2	68,9	79,6	91,1	102,6
	Fan (A)	4,3	4,3	8,6	8,6	8,6	8,6	8,6
	Control (A)	1,8	1,8	1,8	1,8	1,8	1,8	1,8
	Total (A)	46,3	56,3	68,6	79,3	90,0	101,5	113,0
Dimensions	Length (mm)	1.811	1.811	2.201				
	Width (mm)	1.066	1.066	2.069				
	Height (mm)	1.763	2.063	1.966				
Weight	(kg)	492	544	974	1.024	1.029	1.078	1.127

① Rated conditions: evaporation temperature = 5°C, outdoor air temperature = 35°C, overheating = 5°C

② Rated conditions: condensing temperature = 49°C, outdoor air temperature = 7°C, overheating = 0°C

③ Total power input by compressors and motorised fans under those conditions.

④ Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

SOUND LEVELS dB(A)

Sound power level on the outdoor unit

38ZS/ZF	90	100	120	160	180	182	200	240	320	360	420	485	540	600
20 Hz	19,2	20,5	33,6	30,8	25,9	25,9	29,8	29,9	33,5	33,4	31,9	32,1	32,2	32,0
25 Hz	21,3	22,3	36,5	33,8	30,0	30,0	33,6	33,3	36,8	36,8	35,7	36,3	36,3	35,8
31,5 Hz	24,9	26,2	39,2	36,3	33,5	33,5	37,1	37,1	39,0	40,8	39,3	39,4	39,4	39,4
40 Hz	29,0	30,1	42,6	39,7	38,3	38,3	42,1	42,3	41,3	46,2	46,3	46,3	46,3	46,0
50 Hz	39,9	40,9	51,5	48,5	49,9	49,9	58,1	58,2	50,4	66,1	65,4	65,8	65,8	65,3
63 Hz	36,3	37,5	53,5	50,7	55,2	55,2	55,0	55,4	55,5	55,0	58,1	57,9	57,9	57,7
80 Hz	40,8	42,2	57,4	54,8	70,2	70,2	67,6	68,1	71,2	65,6	68,6	68,8	68,8	68,6
100 Hz	55,0	56,2	58,8	55,8	56,6	56,6	62,3	62,1	55,1	67,7	64,9	64,9	64,9	64,9
125 Hz	47,5	48,9	56,9	54,4	60,8	60,8	60,1	60,3	58,4	59,4	68,8	68,7	68,7	68,5
160 Hz	50,0	51,2	59,9	57,0	74,3	74,3	71,1	71,0	68,5	67,9	79,0	79,5	79,5	79,2
200 Hz	62,6	63,8	62,3	59,7	69,2	69,2	70,5	70,6	66,8	72,2	78,5	78,9	78,9	78,5
250 Hz	56,8	58,2	65,6	63,0	73,3	73,3	73,2	73,0	70,9	73,0	80,2	79,9	79,9	79,8
315 Hz	60,1	61,5	70,3	67,8	73,9	73,9	75,0	74,9	71,5	76,1	80,3	80,6	80,6	80,4
400 Hz	61,2	62,5	70,4	67,5	76,7	76,7	77,4	77,3	73,5	77,8	81,5	82,0	82,0	81,5
500 Hz	62,2	63,4	71,6	69,0	78,3	78,3	78,6	78,5	77,5	79,2	82,4	82,5	82,5	82,2
630 Hz	63,6	64,7	72,5	69,6	77,8	77,8	77,9	78,2	76,8	78,2	82,4	82,2	82,2	82,2
800 Hz	65,2	66,3	72,7	70,0	78,4	78,4	78,5	78,6	77,2	78,3	82,9	83,0	83,0	82,9
1000 Hz	65,6	67,0	73,4	70,8	80,1	80,1	79,7	79,8	80,0	79,6	83,8	83,8	83,8	83,6
1250 Hz	64,8	66,1	75,1	72,5	78,0	78,0	79,2	79,1	78,8	80,5	81,9	81,9	81,9	81,8
1600 Hz	63,1	64,2	71,3	68,6	74,9	74,9	75,4	75,5	75,2	76,5	79,5	79,7	79,7	79,4
2000 Hz	60,8	62,1	69,5	66,9	74,2	74,2	74,6	75,0	75,3	75,2	77,8	78,1	78,1	77,7
2500 Hz	57,5	58,6	70,1	67,5	71,9	71,9	72,9	72,6	71,6	73,6	75,8	76,1	76,1	75,8
3150 Hz	54,7	56,0	67,2	64,6	69,9	69,9	70,7	71,0	69,7	71,6	73,9	73,6	73,6	73,6
4000 Hz	53,3	54,7	63,3	60,5	68,1	68,1	68,9	69,1	66,8	69,9	70,9	70,8	70,8	70,7
5000 Hz	54,0	55,5	62,2	59,4	65,9	65,9	66,9	67,0	64,4	67,6	67,8	67,6	67,6	67,6
6300 Hz	51,9	53,1	58,5	55,8	62,7	62,7	64,9	64,9	61,8	66,8	66,6	66,6	66,6	66,2
8000 Hz	49,6	51,0	55,5	52,6	59,4	59,4	61,2	61,3	58,4	63,5	63,1	63,3	63,3	62,8
10000 Hz	45,4	46,7	51,3	48,6	56,3	56,3	59,1	59,0	54,7	62,0	58,3	58,5	58,5	58,0
12500 Hz	40,8	42,1	47,0	44,0	51,3	51,3	57,1	57,2	49,7	60,0	52,3	52,4	52,4	52,2
16000 Hz	34,9	36,3	41,4	38,5	45,4	45,4	54,9	54,9	44,7	59,0	46,4	46,5	46,5	46,5
20000 Hz	28,1	29,1	34,3	31,7	37,9	37,9	49,5	49,7	38,1	59,0	39,3	39,4	39,4	39,5
Total dB(A)	74	75	83	80	88	88	88	88	87	89	92	92	92	92

Sound pressure level on the outdoor unit

Measurement conditions: in free field, measured at a distance of 5 metres, directivity 2 and at 1.5 metres from the ground.

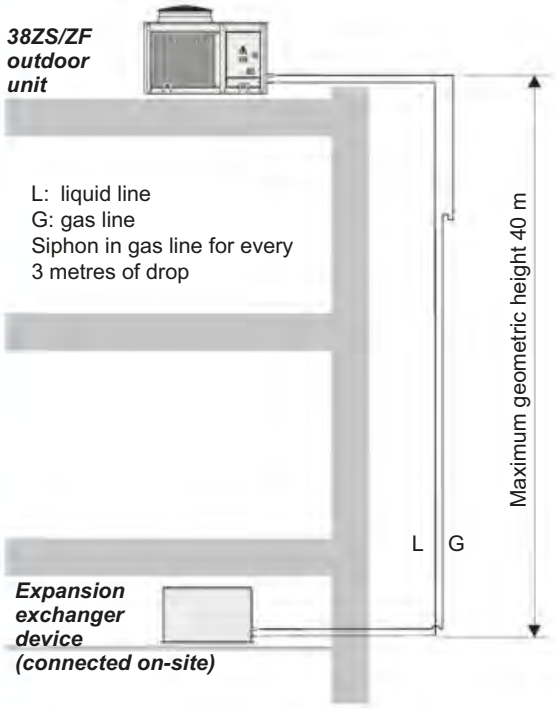
38ZS/ZF	90	100	120	160	180	182	200	240	320	360	420	485	540	600
Total dB(A)	48	49	56	54	62	62	62	62	60	62	65	66	66	65

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to standard ISO 3744.

RECOMMENDATIONS FOR THE COOLING CONNECTION

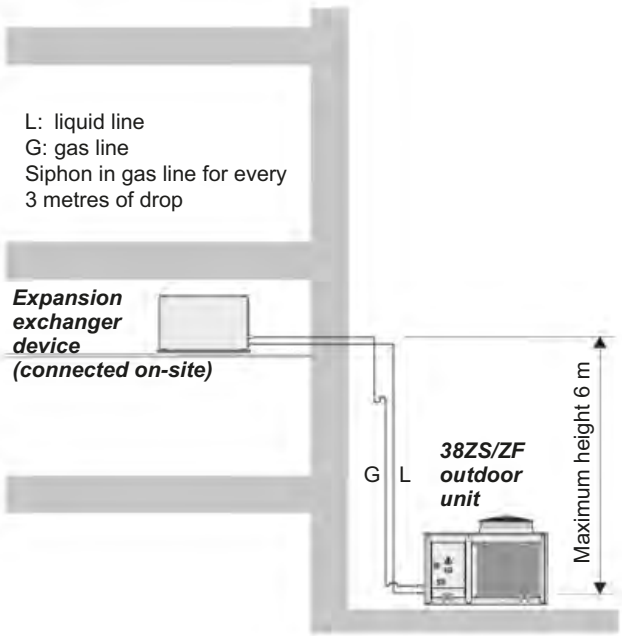
Outdoor unit top

Maximum equivalent length of the cooling line: 50 metres
For longer lenghts an oil separator must be user



Outdoor unit bottom

Maximum equivalent length of the cooling line: 7 metres



ADDITIONAL LOAD OF R-410A REFRIGERANT

Additional load per linear metre of piping for equivalent maximum lengths exceeding 7 metres:

Nominal diameter (inches)	1/4”	3/8”	1/2”	5/8”	3/4”	7/8”	1”	1 1/8”
Interior section (cm²)	0,149	0,444	0,900	1,505	2,282	3,120	4,290	5,346
Liquid line charge (g/m)	19,3	57,0	115,0	193,5	292,3	404,1	550,3	685,7
Gas line charge (g/m)	--	0,2	0,4	0,7	1,0	1,4	2,0	2,5

OPTIONAL

Electronic axial fan

38ZS/ZF		90	100	120	160	180	182	200	240	320	360	420	485	540	600
Max. available static pressure	(mm.c.a.)	15		12,5											
Number / diameter	(mm)	1 / 630		1 / 800							2 / 800				
Motor output	(kW)	1 x 0,9		1 x 2,1							2 x 2,1				
Maximum speed	(r.p.m.)	1.000		1.100											
Maximum absorbed current	(A)	2,0		3,4							6,8				

NEW

INDOOR UNITS

Split-system

R-410A Refrigerant

Indoor unit with centrifugal fan

Configuration flexibility

40ZS/ZF

Cooling capacity 20-135 kW
Heating capacity 20-145 kW
Air flow 4000-24000 m^3/h

The **40ZS/ZF** series are units with horizontal construction designed for installation indoors, connected to a network of ducts.

They are equipped with centrifugal fan (EC plug-fan also available in models 90 to 360), and expansion valve.

A vast number of options meet numerous operating demands.

All of the units are tested and checked in the factory.

Range

- 1 circuit:
  - Models: 90 / 100 / 120 / 160 / 180 / 182
- 2 circuits:
  - Models: 200 / 240 / 320 / 360 / 420 / 485 / 540 / 600

UNIT COMPONENTS

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035. Self-supporting frame.

Air circuit

- Coil(s) with copper pipes and aluminium fins.
- Centrifugal fan(s) coupling by pulleys and belts. Electric motor(s) with tensioner, class F, IP55 and internal thermal protection. Double-intake turbines, with an impeller of front-curved blades. Greased spherical bearings, with no maintenance required.
- Reusable air filters, assembled on a frame.
- Condensate drain pan.

Cooling circuit

- Thermostatic expansion valve(s) with external equalisation (check valve in ICZ series).

Protections

- Main door switch.

Optional

Outdoor environment

Corrosion

- Coil with copper pipes and copper fins.
- INERA® coil with copper pipes and fins of an aluminium alloy, of high performance and great resistance to the corrosion.
- Coil with copper pipes and aluminium fins with polyurethane and Blygold® coating (indoor unit and/or hot water coil).
- Condensates drain pan in stainless steel.

Humidity

- Stop-drop in the indoor air coil. Recommended in cases where a high moisture content in the air is foreseen or when the air flow is high.
- Stop-drop in the outdoor air intake.

Comfort / heating options

- Hot water auxiliary coil, with three-way valve. Two options:
  - Nominal coil for heating in cooling-only units.
  - Auxiliary coil for heating in heat pump units.

  If the unit includes hot water coil and free-cooling, and works with negative temperatures of outdoor air, an anti-freeze thermostat as safety system is mandatory.
- Auxiliary electrical heaters. With this option, the air flow controller is included.

Comfort / indoor air quality options

- Filtration of the supply air:
  - Gravimetric filter G4.
  - Gravimetric filter G4 + creased opacimetric filters F6 to F9.
- Filtration of the return air (with centrifugal return fan):
  - Gravimetric filter G4.
  - Gravimetric filter G4 + creased opacimetric filters F6.

Safety

- Soft starter of the supply and/or return centrifugal fans which prolongs the set time mainly aimed at installations with cloth ducts. Compulsory for motors with an output of 15 kW and above.
- Differential pressostat for the detection of clogged filters.
- Differential pressostat for control of air flow.
- Smoke detecting station in accordance with the NF S 61-961 standard.
- Refrigerant leak detector (with CARRIERrtc control). This allows prompt identification of gas leaks, guaranteeing the safety of any people in the vicinity. Installation of the device ensures compliance with European standards F-GAS and EN378 as well as ASHRAE 15.

Installation

- Antivibration mounts made of rubber.
- Position of supply and/or return of the indoor unit air.
- Supply and/or return fan with high available pressure.
- Electronic plug-fan(s) in air supply (upon request).
- Assemblies with **mixing box** for air renewal and free-cooling:
  - 2 motorised dampers:
    - MS assembly: outdoor air intake.
  - 3 motorised dampers:
    - MC assembly: outdoor air intake, air extraction and centrifugal return (models 90 to 180 and 420 to 600) or plug-fan (models 420 to 600 with MC0 assembly). Note: Plug-fan in models 420 to 600 with MC0 assembly: upon request.

All the possible combinations of “Assemblies with mixing boxes” are represented on the following page.

40ZS/ZF 90 to 360 MS

40ZS/ZF 90 to 1 0

40ZS/ZF 420 to 600

40ZS/ZF 420 to 600 MC0

40ZS/ZF 420 to 600 MC1

Free-cooling

On units with mixing box, the free-cooling can be managed by the electronic control. This function allows the outdoor air conditions to be taken advantage of when these are more favourable than those of the return (or ambient) air. As such, this allows the cooling capacity to be reduced under these circumstances. The percentage of air renewal will range from 0% to 100%.

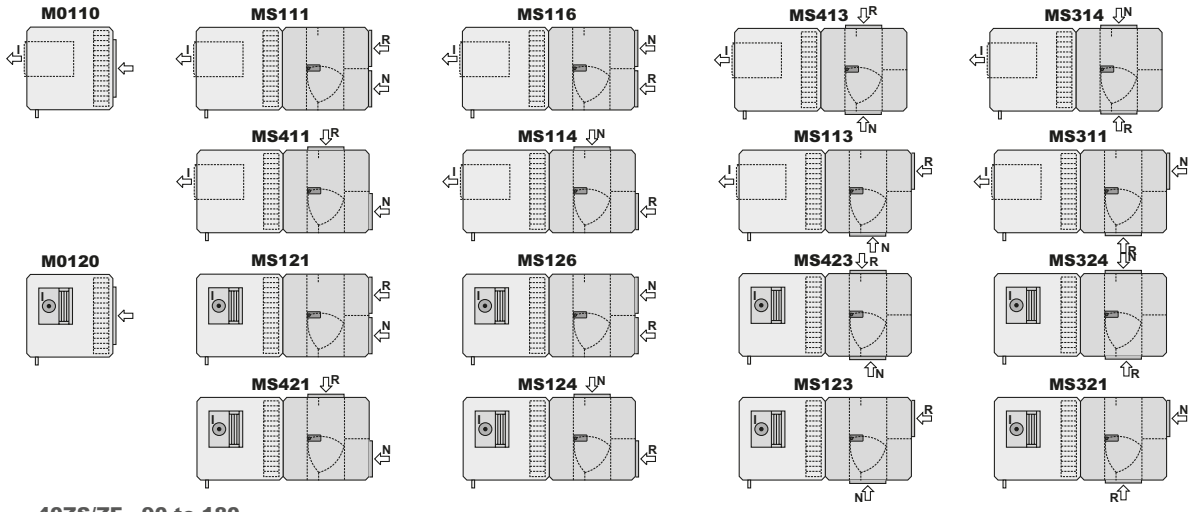
There are three options for the free-cooling management:
- Thermal, with comparison of temperatures.
- Enthalpic, with comparison of enthalpies.
- Thermoenthalpic, with comparison of enthalpies and a correction for temperature.

Note: With enthalpic or thermoenthalpic free-cooling change to the CARRIERrtc electronic control is obligatory

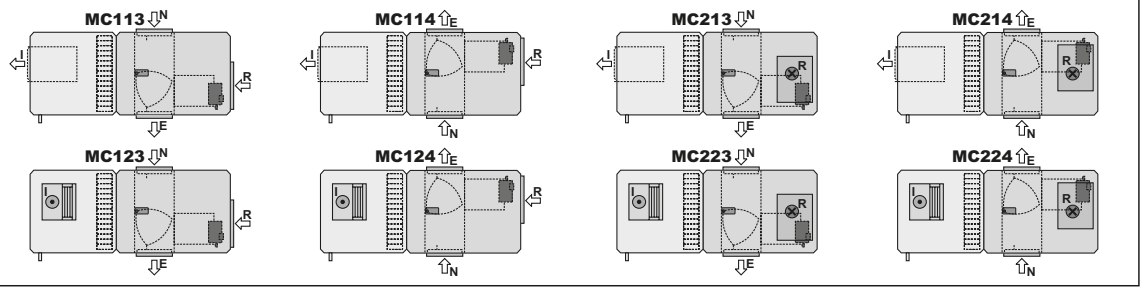
40ZS/ZF - 90 to 360: assemblies with mixing box (plan view)

Air circulation	Designation: Mwxyz			
I = Outlet R = Return N = New air inlet E = Air extraction ⊗ Air inlet ⊙ Air outlet	Assembly: 0 = Standard S = Outdoor air intake with damper C = Centrifugal return fan	Return: 1 = Rear 2 = Top 3 = Right-hand side (*) 4 = Left-hand side (*)	Outlet: 1 = Front 2 = Top	New air: 1,6 = Rear 3 = Right-hand side (*) 4 = Left-hand side (*)

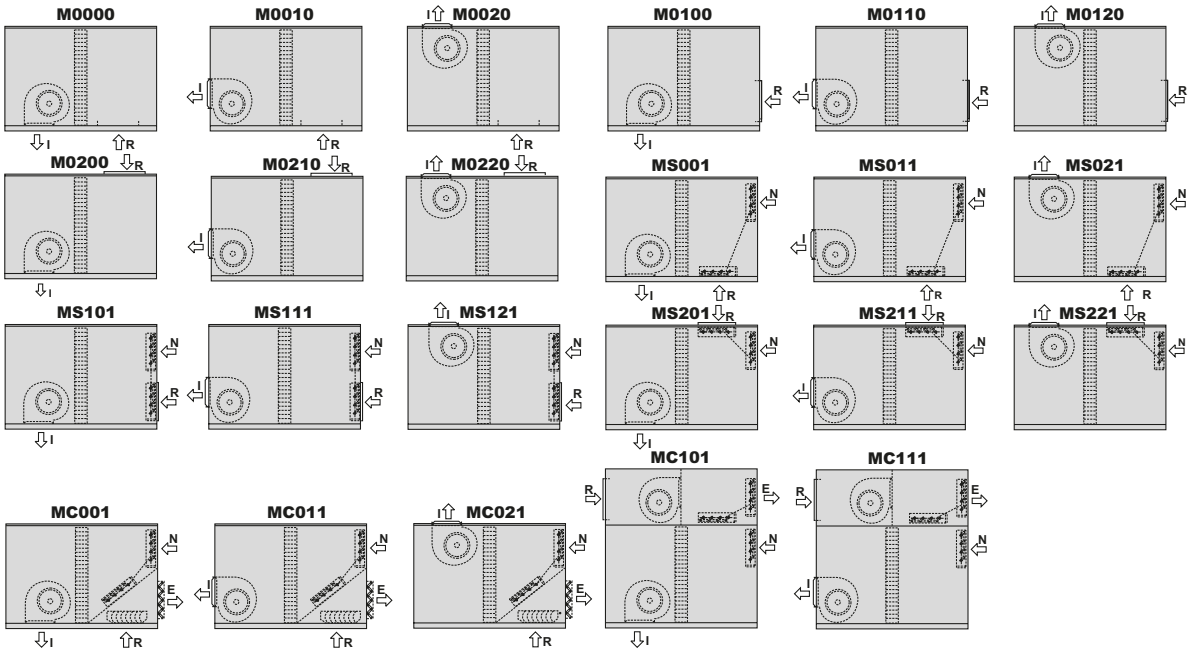
(*) Seen in the direction of airflow



40ZS/ZF - 90 to 180



40ZS/ZF - 420 to 600: assemblies with mixing box (raised view)



Air circulation	Designation: Mwxyz			
I = Outlet R = Return N = New air inlet E = Air extraction	Assembly: 0 = Standard S = Outdoor air intake with damper C0 = Lower return plug-fan C1 = Centrifugal return fan in top box	Return: 0 = Bottom 1 = Side 2 = Top	Supply: 0 = Bottom 1 = Side 2 = Top	New air: 0 = No inlet 1 = Side

TECHNICAL CHARACTERISTICS

40ZS/ZF		90	100	120	160	180	182	200
Centrifugal fan	Nominal air flow (m³/h)	4.000	4.600	5.200	7.000	7.000	8.000	9.200
	Available static pressure (mm.w.c)	15	15	15	15	15	15	20
	Number / turbines	1 / 1					2 / 2	
	Motor output (kW)	1,1	1,1	1,1	1,5	1,5	2 x 0,75	2 x 1,1
	Power input (kW)	0,61	0,83	0,88	1,08	1,08	2 x 0,59	2 x 0,91
	Speed (r.p.m.)	985	1049	916	761	761	963	1126
Max. absorbed current	Fan (A)	2,7	2,7	2,7	3,6	3,6	4,2	5,4
Dimensions	Length (mm)	1.190			1.520		2.144	
	Width (mm)	950			1.028		950	
	Height (mm)	731			731		731	
Weight	(kg)	147	147	190	199	199	262	262

40ZS/ZF		240	320	360	420	485	540	600
Centrifugal fan	Nominal air flow (m³/h)	10.300	14.000	15.500	18.000	18.200	20.400	24.000
	Available static pressure (mm.w.c)	20	20	20	20	20	20	20
	Number / turbines	2 / 2			1 / 3			
	Motor output (kW)	2 x 1,5	2 x 1,5	2 x 2,2	4	4	4	5,5
	Power input (kW)	2 x 0,94	2 x 1,15	2 x 1,39	2,52	2,82	2,96	3,40
	Speed (r.p.m.)	974	789	816	677	677	643	681
Max. absorbed current	Fan (A)	7,2	7,2	10,0	9,0	9,0	9,0	11,6
Dimensions	Length (mm)	2.144	2.804		2.853			
	Width (mm)	950	1.028		2.160			
	Height (mm)	731	800		1.524			
Weight	(kg)	262	365	365	920	920	963	964

SOUND LEVELS dB(A)

Sound power level on the indoor unit

Sound power level in the indoor fan supply to be taken into account for the silencer calculation:

40ZS/ZF	90	100	120	160	180	182	200	240	320	360	420	485	540	600
Total dB(A)	79	82	80	80	80	82	85	82	83	85	86	87	89	92

OPTIONAL

Lower radial centrifugal return fan (MC0 assembly)

40ZS/ZF		420	485	540	600
Nominal air flow	(m³/h)	18.000	18.200	20.400	24.000
Available static pressure	(mm.c.a.)	21	21	19	17
Number / Diameter		4 / 500			
Motor output	(kW)	2 x (2,7 + 1,4)			
Speed	(r.p.m.)	2 x 1.700 / 2 x 1.375			
Maximum absorbed current	(A)	14,6			

OPTIONAL

Centrifugal return fan (MC1 and MC2 assembly)

40ZS/ZF		90	100	120	160	180	420	485	540	600
Nominal air flow	(m^3/h)	4.000	4.600	5.200	7.000	7.000	18.000	18.200	20.400	24.000
Available static pressure	(mm.w.c)	15	15	15	15	15	20	20	20	20
Number / turbines		1 / 1					1 / 2			
Motor output	(kW)	0,75	1,1	0,75	1,1	1,1	4	4	5,5	5,5
Power input	(kW)	0,48	0,65	0,58	0,72	0,72	2,73	2,85	3,57	3,86
Speed	(r.p.m.)	834	882	689	578	578	602	616	644	619
Maximum absorbed current	(A)	2,1	2,7	2,1	2,7	2,7	9,0	9,0	11,6	11,6

Nominal hot water coil

Hot water coil assembled inside the unit with a three-way valve managed by the unit control for heating in cooling-only unit.

40ZS/ZF			90	100	120	160	180	182	200	240	320	360	420	485	540	600
Air pressure drop		(mm.w.c)	3,0	3,8	4,7	4,4	4,4	2,8	3,5	4,1	3,6	4,2	2,0	2,1	2,5	3,2
Water 80/60ºC and inlet air 20ºC	Heating capacity	(kW)	29,1	31,7	34,2	57,9	57,9	71,2	77,6	83,0	121,2	128,9	172,3	173,5	186,3	205,5
	Water flow	(m^3/h)	1,3	1,4	1,5	2,6	2,6	3,2	3,4	3,7	5,4	5,7	7,4	7,5	8,0	8,8
	Water pressure drop	(m.w.c)	0,3	0,4	0,4	1,4	1,4	0,7	0,9	1,0	2,1	2,3	0,3	0,3	0,3	0,4
Water 90/70ºC and inlet air 20ºC	Heating capacity	(kW)	36,2	39,5	42,7	71,4	71,4	87,8	95,9	102,6	148,9	158,4	212,9	214,5	230,5	254,7
	Water flow	(m^3/h)	1,6	1,8	1,9	3,2	3,2	3,9	4,3	4,6	6,6	7,0	9,2	9,2	9,9	11,0
	Water pressure drop	(m.w.c)	0,5	0,6	0,6	2,1	2,1	1,1	1,2	1,4	3,0	3,3	0,4	0,4	0,4	0,4
Weight (empty)		(kg)	10,4	10,4	10,4	16,3	16,3	23,4	23,4	34,4	34,4	34,4	62,5	62,5	62,5	62,5
Diameter of hydraulic connections			1”			1 1/4”					1 1/2”		2”			

Note: with stop-drop in the indoor air coil it is not possible to assemble the hot water coil.

Auxiliary hot water coil

Hot water coil assembled inside the unit with a three-way valve managed by the unit control for back-up during heating in heat pump units. In this case the air inlet temperature matches the air supply temperature of the indoor coil.

40ZS/ZF			90	100	120	160	180	182	200	240	320	360	420	485	540	600
Air pressure drop		(mm.w.c)	2,9	3,6	4,5	4,2	4,2	2,7	3,4	4,0	6,6	7,8	1,9	2,0	2,4	3,2
Water 80/60ºC	Heating capacity	(kW)	12,9	13,7	14,9	23,0	23,0	30,2	31,6	33,6	40,9	43,7	66,1	60,8	63,6	76,9
	Water flow	(m^3/h)	0,6	0,6	0,7	1,0	1,0	1,3	1,4	1,5	1,8	1,9	2,9	2,7	2,8	3,4
	Water pressure drop	(m.w.c)	0,1	0,1	0,2	0,5	0,5	0,4	0,5	0,5	0,8	0,9	0,6	0,5	0,6	0,8
Water 90/70ºC	Heating capacity	(kW)	17,9	19,2	20,8	31,5	31,5	41,2	43,5	46,5	56,3	60,1	90,1	85,0	89,8	106,1
	Water flow	(m^3/h)	0,8	0,9	0,9	1,4	1,4	1,8	1,9	2,0	2,5	2,6	4,0	3,8	3,9	4,6
	Water pressure drop	(m.w.c)	0,2	0,3	0,3	0,8	0,8	0,8	0,9	1,0	1,4	1,6	1,1	1,0	1,1	1,5
Weight (empty)		(kg)	7,8	7,8	7,8	11,0	11,0	16,3	16,3	16,3	16,3	16,3	38,4	38,4	38,4	38,4
Diameter of hydraulic connections			3/4”			1”										

Note: with stop-drop in the indoor air coil it is not possible to assemble the hot water coil.

OPTIONAL

Electrical heaters

Important: with this option, the air flow controller is included.

Standard assembly in two stages (optional assembly in one stage with no over price).

In the case of two indoor units with the one outdoor unit the assembly of the support is not possible in two stages (each indoor unit is equivalent to 1 stage).

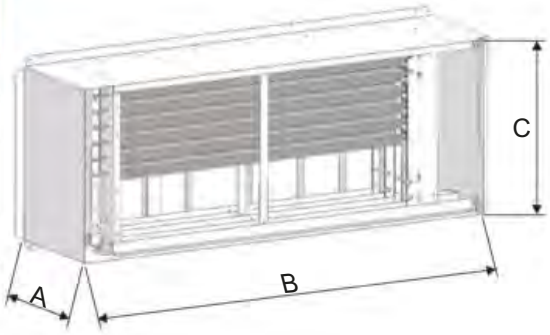
Models 90 to 360 (assembled in the fan outlet): available capacities

40ZS/ZF	Total output (kW)	6	9	12	15	18	24	30	36
	Stage power (kW)	3 + 3	3 + 6	6 + 6	6 + 9	9 + 9	12 + 12	15 + 15	18 + 18
Current (A) (400V / IIIph / 50Hz)	90 / 100 / 120	8,7	13,0	17,3	unavailable				
	160 / 180	unavailable		17,3	21,7	26,0	unavailable		
	182 / 200 / 240 / 320 / 360	unavailable			21,7	26,0	34,6	53,4	52,0

Note: in models with centrifugal return fan it is not possible to assemble electrical heaters with outputs of 30 and 36 kW.

Frame for assembly of the auxiliary heater in the supply fan outlet:

40ZS/ZF	Total output	Dimensions (mm)		
		A	B	C
90 / 100 / 120 (1 supply outlet)	6 / 9 kW (1 row)	150	482	443
	12 kW (2 rows)	262	482	443
160 / 180 (1 supply outlet)	12 / 15 / 18 kW (1 row)	189	1.142	443
182 / 200 / 240 (2 supply outlets)	15 / 18 kW (1 row)	189	1.142	443
	24 / 30 / 36 kW (2 rows)	297	1.142	443
320 / 360 (2 supply outlets)	15 / 18 / 24 / 30 / 36 kW (1 row)	1	1.142	44



This frame is designed with side access for maintenance purposes.

In models 90 to 120 each of the rows of electrical heaters has an output of 1 kW. As from model 160, the output of each row will be 2 or 3 kW according to the total output.

In models with two supply fan outlets (two frames), as well as in the case of 1 supply outlet with 2 rails, the electrical heaters are distributed as symmetrically as possible between both frames.

Models 420 to 600 (assembled inside the unit): available capacities

40ZS/ZF	Total output (kW)	36	45	54	72
	Stage power (kW)	18 + 18	18 + 27	27 + 27	36 + 36
Current (A) (400V / IIIph / 50Hz)	420 / 485	52,0	65,0	78,0	unavailable
	540 / 600	unavailable	65,0	78,0	104,0

Stop-drop in the indoor air coil

Air flow as from which it is recommended to install a stop-drop in the indoor coil.

40ZS/ZF		90	100	120	160	180	182	200	240	320	630	420	485	540	600
Air flow	(m³/h)	5.246			7.283		11.110			16.566		30.089			

Note: for operating conditions with high dehumidification in the indoor coil (e.g. in installations close to the coast) it may be necessary to install a separator even if the flow is less than the previous one.

Note: with hot water coil (nominal or auxiliary) it is not possible to assemble the stop-drop.

NEW

MODULAR COMPACT HEAT PUMPS

R-410A refrigerant

Scroll compressor in tamdem

Flexibility of configuration

Outdoor plug-fan with EC HEE motor

50NI

Cooling Capacity 19-52 kW
Heating capacity 57-118 kW
Air flow 4000-21000 m^3/h

Air to air compact units with vertical construction for indoor use only.

- **50NI series**: Air-air reversible heat pump units. Six different models available: 240, 280, 320, 360, 420 and 485, all of these with 2 frigorific circuits and 4 compressors.

These units are equipped with hermetic scroll compressors and tandem configuration, as well as pluf-fan EC for indoor and outdoor circuits (optionally centrifugal fan with belts and pulleys for indoor module). This allows to get a high seasonal performance.

The units are supplied in 2 modules, **outdoor module** and **indoor module** for building work installation as compact version or split version, according to the choice.

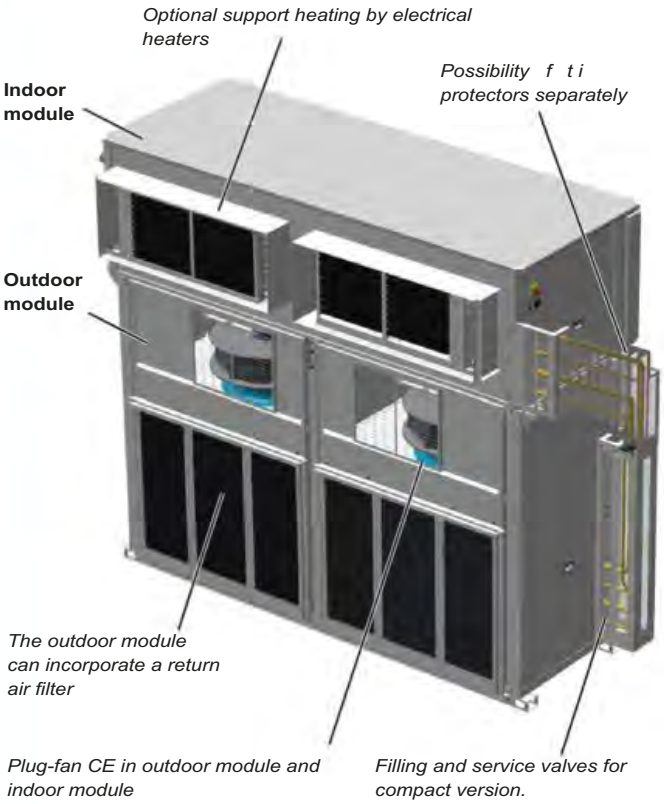
A vast number of options meet numerous operating demands.

All of the units are tested and checked in the factory.

Compliance

- Machinery Directive 2006/42/EC (MD)
- Electromagnetic Compatibility Directive 2014/30/EU (EMC)
- Low Voltage Directive 2014/35/EU (LVD)
- Pressure Equipment Directive 2014/68/EU (Category 2) (PED)
- RoHS Directive 2011/65/EU (RoHS)
- Eco-design Directive 2009/125/EC (ECO-DESIGN)
- Energy Labelling Directive 2010/30/EU (ECO-LABELLING)
- Harmonised Standard: EN 378-2:2012.

UNIT COMPONENTS



Outdoor module

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035. Self-supporting frame.

Outdoor air circuit

- EC electronic supply plug-fans directly coupled with variable control speed and flow rate controller. In tertiary sector installation, a high percentage of the annual air conditioning energy consumption comes from the use of fans for transporting air. Using fans which are more efficient has a direct impact on reducing consumption. Plug-fans with direct drive and variable speed offer the following advantages:
  - Elimination of friction losses during transmission thanks to the direct drive.
  - Greater aeraulic efficiency of the rotor (reactive blades with an optimized profile), running at very high operating pressures.
  - Greatly increased motor efficiency. Permanent magnets DC motors activated using electronic switching integrated into the motor itself.
  - Variable speed to ensure a constant supply air flow rate, independent of the filters clogging level.
  - Measuring the flow rate thought a calibrated section at the fan intake and a differential pressure sensor allows the control to handle the flow rate reliably and precisely in both on CAV and VAV systems.
- Reusable air filters, assembled on a frame.
- Condensate drain pan.

Cooling circuit

- Hermetic scroll-type compressor(s), assembled over anti vibration mounts. Control of phase equilibrium and the direction of rotation.
- Crankcase heater.
- Thermostatic expansion valve with external equalisation (heat pump units).
- Four-way cycle reversing valves (heat pump units).
- Suction accumulator, anti-acid dehydrating filter(s), liquid receiver(s).
- Filling and service valves for compact version.
- Possibility of installation of modules separately, with filling and service valves.
- Cooling connections for welding.

Electric panel

- Complete and fully wired electric panel. Insulated panel cover to prevent condensation. Protection IP55.
- Transformer for power supply without neutral included in the electrical panel.
- Main ground connection.
- Compressor(s) and fan(s) motor contacts.

Protections

- High and low pressure pressostats.
- Compressor discharge temperature control.
- Non-return valve built into the compressor.
- Main door switch.
- Magnetothermic protection switches for the compressor(s) power line and fans motor.
- Automatic switch in the control circuit.

Indoor module

- Casing made of galvanised steel metal with polyester paint, white colour RAL 7035. Self-supporting frame.

Indoor air circuit

- Coil with copper pipes and fins of an aluminium alloy.
- EC electronic supply plug-fans directly coupled with variable control speed and flow rate controller. In tertiary sector installation, a high percentage of the annual air conditioning energy consumption comes from the use of fans for transporting air. Using fans which are more efficient has a direct impact on reducing consumption.
- Reusable air filters, assembled on a frame.
- Condensate drain pan.

Cooling circuit

- Thermostatic expansion valve(s) with external equalisation

Protections

- Main door switch

ELECTRONIC CONTROLS

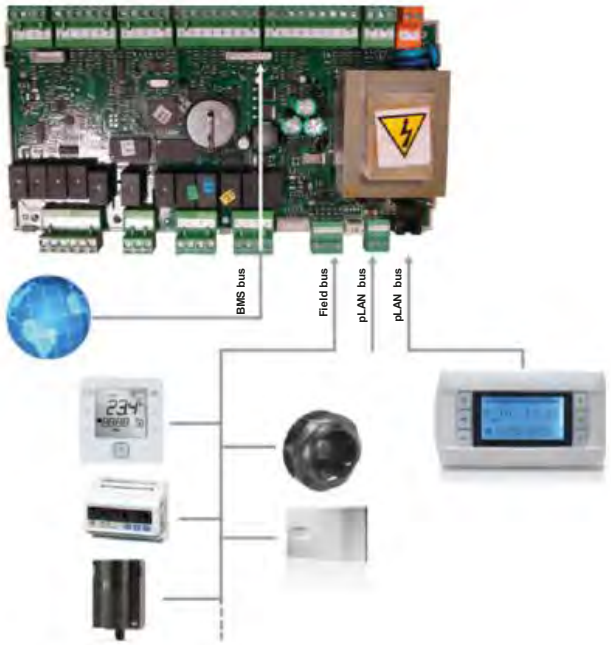
CARRIERrtc control

The **CARRIERrtc** control consist of a µPC MEDIUM control board, sensors, a pGD1 graphic terminal and a TCO user terminal (optional).

This system uses a RS485 field-bus to manage additional components.

A BMS card (optional) allows the control board to be connected to a centralised technical management system.

It also manages a local connection between units through a pLAN network (µPC MEDIUM Local Area Network), allowing data and information to be exchanged between units, for a maximum of 15 units.



Main functions:

- Selection of set-point and operating mode: HEATING / COOLING / AUTO / VENTILATION.
- Continuous control of the operating parameters.
- Display of the values measured by the sensors.
- Compressors time delays.
- Defrosting management (in heat pump units).
- Control of the supply air temperature.
- All-seasons operation via the condensation and evaporation pressure control.
- Set-point compensation based on the outdoor temperature.
- Hourly and weekly schedule.
- Fire protection.
- Diagnosis of faults and general alarm.

Optional function:

This control is used to manage addition components such as:

- External air damper for the renewal of fresh air, depending on the temperature of the mixed air or depending on the air quality sensor.
- Mixing box for thermal, enthalpic or thermoenthalpic free-cooling.
- Cooling recovery circuit for renewing the air.
- Rotary heat exchanger.
- Auxiliary electrical heaters: two-stage with on/off control or single-stage with proportional control.
- Hot water coil with 3-way valve, with proportional or on/off control.
- Gas burner with proportional control.
- Humidifier with proportional or on/off control.
- Air flow rate controller (with centrifugal fans).
- Clogged filter pressostat.
- Smoke detection station.
- Air quality sensor for measuring CO_2 and/or volatile compounds.
- Refrigerant leak detector.
- Energy meter and and calculation of the cooling and heating capacities.

Terminal pGD1:

This terminal, fitted on the electrical cabinet is used to:

- Carry out initial programming of the unit.
- Modify operating parameters.
- Switch the unit ON / OFF.
- Select the operating mode.
- Adjust the set-points.
- Display the variables controlled and sensor values measured.
- Display the current alarms and their historical record.

TCO user terminal (optional):

This terminal can be installed on the electrical cabinet, instead of pGD1 terminal. In this case, the remote connection of the pGD1 terminal is posible. Please consult “Control options”.

TCO terminal is used to:

- Switch the unit ON / OFF.
- Select the operating mode.
- Adjust the set-points.
- Display the installation’s temperatures and humidity, outdoor temperature, supply air temperature, CO_2 sensor and opening of the outdoor damper.
- Display alarms codes.

CARRIERrtc medium control (optional)

CARRIERrtc medium control is an electronic module with microprocessor comprised of a control board and a TCO.

Optionally, this control can have a terminal for pGD1 maintenance that facilitates the initial scheduling of the unit, the modification of the operating parameters and the description of the alarms produced.

Note: This control can not manage plug-fan EC.

FACTORY OPTIONS AND ACCESSORIES

Optional for the outdoor module

Outdoor environment

Corrosion

- Coil with copper pipes and copper fins.
- INERA® coil with copper pipes and fins of an aluminium alloy, of high performance and great resistance to the corrosion.
- Coil with copper pipes and aluminium fins with polyurethane and Blygold® coating.

Humidity

- Tropicalised electric panel.
- Tropicalised motors and fans (please consult).

Installation

- Antivibration mounts made of rubber.
- Service valves for cooling connections.
- Oil separator for cooling connections with maximum equivalent length of the cooling line greater than 50 metres, optional only available when the units are supplied in 2 modules, **outdoor module** and **indoor module** for building work installation as split version.
- Position of air supply of the outdoor unit:
  - Side: supply by default
  - Upper: only available when the units are supplied for building work installation as split version.
- Air coil protection grille (it's not compatible with the air filter).
- Gravimetric filters in the return air. The filters frame is removable, and upon request, it is possible to supply the frame separately with the unit SP, to be joined on site (width = 53 mm)

Acoustic

- Acoustic insulating cover for compressor

Electric panel

- Electrical power supply with neutral.
- Energy meter for monitoring of the power consumption of the installation (with CARRIERrtc control). Available if the unit does not incorporate electrical heaters. (Upon request)

Optional for the indoor module

Outdoor environment

Humidity

- Stop-drop in the indoor air coil. Recommended in cases where a high moisture content in the air is foreseen or when the air flow is high.
- Stop-drop in the outdoor air intake.

Corrosion

- Coil with copper pipes and copper fins.
- INERA® coil with copper pipes and fins of an aluminium alloy, of high performance and great resistance to the corrosion.
- Coil with copper pipes and aluminium fins with polyurethane and Blygold® coating (indoor unit and/or hot water coil).
- Condensates drain pan in stainless steel.

Comfort / heating options

- Hot water auxiliary coil, with three-way valve. Two options:
  - Nominal coil for heating in cooling-only units.
  - Auxiliary coil for heating in heat pump units.

  If the unit includes hot water coil and free-cooling, and works with negative temperatures of outdoor air, an anti-freeze thermostat as safety system is mandatory.
- Auxiliary electrical heaters. The air flow controller is included with optional centrifugal fans.

Comfort / indoor air quality options

- Filtration of the supply air:
  - Gravimetric filter G4.
  - Gravimetric filter G4 + creased opacimetric filters M6 to F9.
- Air quality probe for installation in the environment or in duct to enable measuring CO_2 and/or volatile compounds (with CARRIERrtc control).

Security

- Soft starter of the supply and/or return centrifugal fans which prolongs the set time mainly aimed at installations with cloth ducts. Compulsory for motors with an output of 15 kW and above.
- Differential pressostat for the detection of clogged filters.
- Differential pressostat for control of air flow.
- Smoke detecting station in accordance with the NF S 61-961 standard.
- Refrigerant leak detector (with CARRIERrtc control). This allows prompt identification of gas leaks, guaranteeing the safety of any people in the vicinity. Installation of the device ensures compliance with European standards F-GAS and EN378 as well as ASHRAE 15, EN378 and ASHRAE 15.

Installation

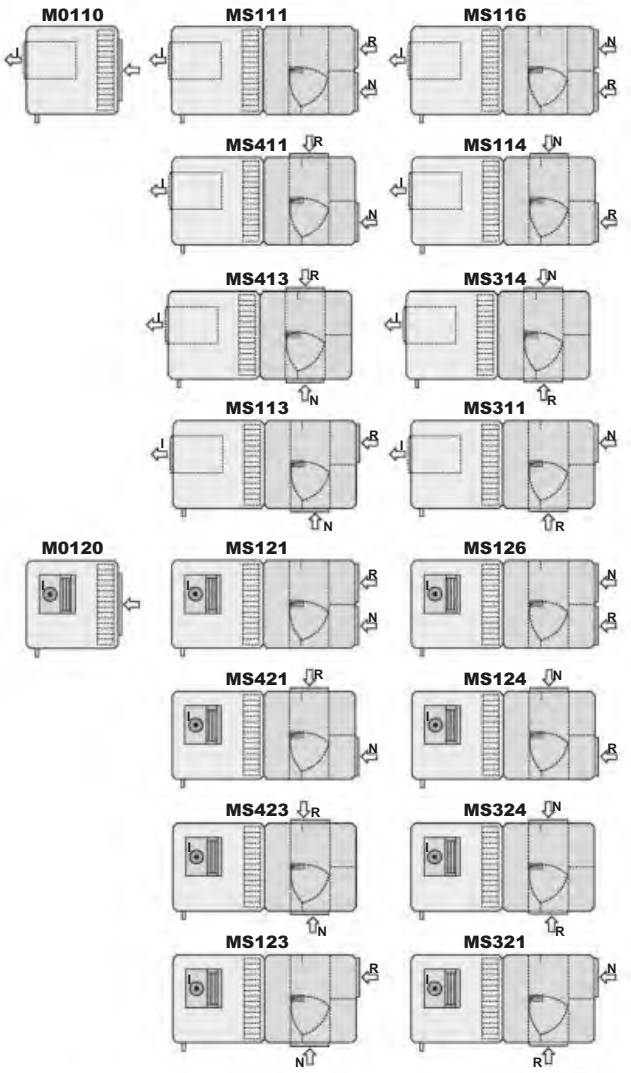
- Antivibration mounts made of rubber
- Centrifugal fan with belts and pulleys for indoor module (only for models 240 to 360).
- Position of supply and/or return of the indoor unit air.

FACTORY OPTIONS AND ACCESSORIES (CONT.)

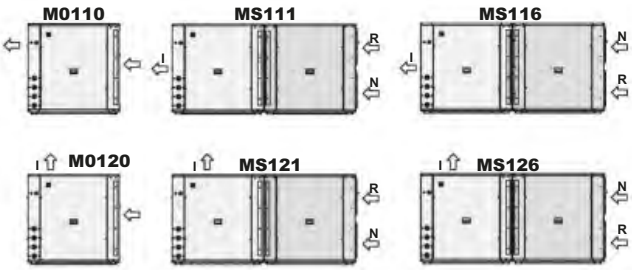
■ Assemblies **with mixing** box with 2 motorised damper for air renewal and free-cooling:

Assemblies with mixing box

Models 240 to 360 (plan view)



Models 420 and 485 (raised view)



Circulación de aire

I = Supply
R = Return
N = Fresh air inlet
E = Air extraction
Air inlet
Air outlet

Designation

Mwxyz

Assembly:	Return:	Supply:	Fresh air:
0 = Standard	1 = Rear	1 = Front	1,6 = Rear
S = Outdoor air intake with damper	2 = Top	2 = Top	3 = Right-hand side (*)
	3 = Right-hand side (*)		4 = Left-hand side (*)
	4 = Left-hand side (*)		

(*) Seen in the direction of airflow

Important: The attachment of mixing box as well as structural support in compact version is under the sole responsibility of installer.

Free-cooling

On units with mixing box, the free-cooling can be managed by the electronic control.

This function allows the outdoor air conditions to be taken advantage of when these are more favourable than those of the return (or ambient) air. As such, this allows the cooling capacity to be reduced under these circumstances.

Note: The free-cooling management is not compatible with activation of recovery circuit

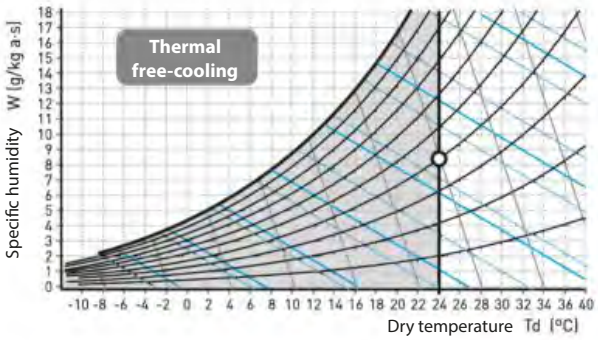
The percentage of air renewal will range from 0% to 100%.

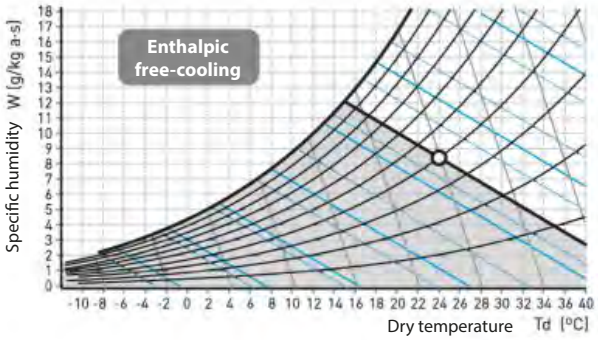
There are three options for the free-cooling management:

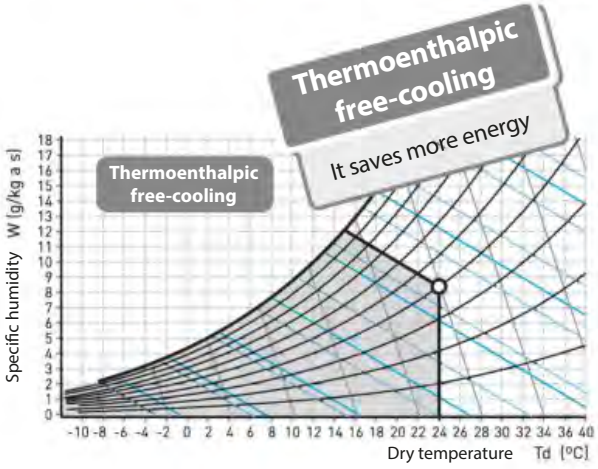
■ Thermal, with comparison of temperatures.

■ Enthalpic, with comparison of enthalpies.

■ Thermoenthalpic, with comparison of enthalpies and a correction for temperature.







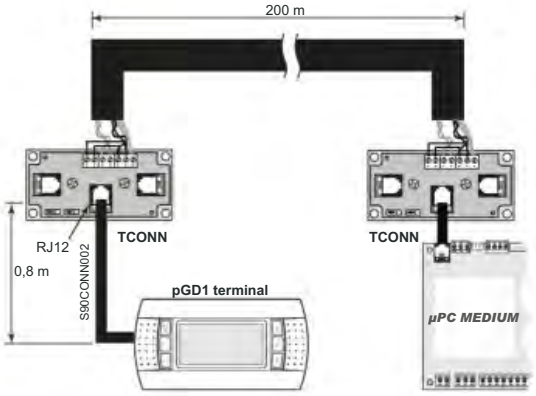
FACTORY OPTIONS AND ACCESSORIES (CONT.)

Optional for electronic controls

Communication options

With control CARRIERrtc (standar)

- TCO user terminal, for installation on the electric panel, instead of pGD1 terminal.
- Control without pGD1 terminal (for units with shared terminal).
- Kit remote control to 200 meters with pGD1 terminal (pGD1 terminal + 2 TCONN bypass cards). In this case it´s possible to install the TCO terminal on the electric panel.



- Ambient temperature probe with RS485 communication. By default the control incorporates a NTC probe.

  Note: An ambient probe with RS485 communication is required for installation to more than 30 m.
- Two to four ambient temperature probe with RS485 communication.
- Ambient T+RH probe with RS485 (compulsory in units with enthalpic or thermoenthalpic free-cooling as optional). In this case also added outdoor air humidity probe.
- Air quality probe for installation in the environment or in duct to enable measuring CO_2 and/or volatile compounds.
- Change to **CARRIERrtc medium** electronic control with TCO terminal as standard and pGD1 terminal as optional.

With control CARRIERrtc medium (optional)

- pGD1 terminal for maintenance of the unit.
- Kit remote control to 200 meters with pGD1 terminal (pGD1 terminal + 2 TCONN bypass cards).
- Return or ambient temperature probe connected to the board that replaces the ambient probe of the thermostat TCO. This probe is required for anti-fire safety.
- Mixing temperature probe: compulsory to manage of the free-cooling.

Communication

CARRIERrtc and **CARRIERrtc medium** controls allow the connection to a centralised technical management system by using a specific BMS card for some of the following communication protocols:

- RS485 serial cards for network communication with protocols: Carel, Modbus, LonWorks®, BACnet™ MSTP, Konnex.
- Ethernet pCO Web card for network communication with protocols: Modbus TCP/IP, BACnet™ Ethernet, TCP/IP, SNMP V1-2-3, FTP and HTTP.

Supervision solutions

Different solutions of supervision are available according to the dimensions of the installation.

- **pCO Web**

  It is the solution for the management and supervision of a single unit if it incorporates the Ethernet pCO Web card.

- **PlantWatchPRO3**

  It is a solution designed for the monitoring of installations of medium - small dimensions, with ability to manage up to 30 units. Suitable for technical environments, it has no parts in movement. It's available in two versions: panel and wall.

  Includes: 7 " touch display, buzzer for notify cations, 1 USB port and 1 SD card slot for downloading reports, charge devices models and applying service packs.

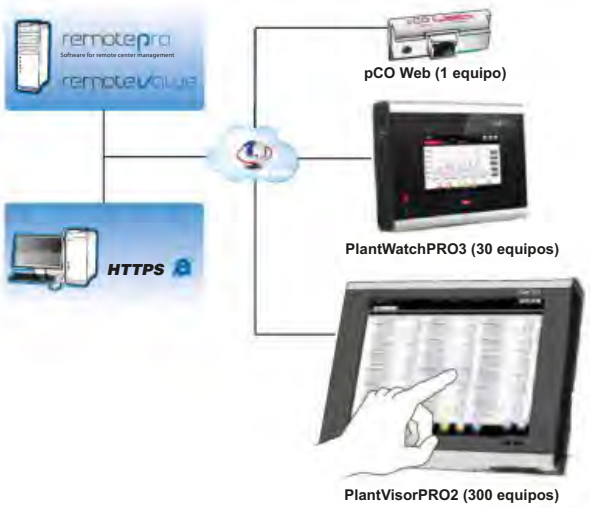
  In this case, each unit needs one RS485 Carel / Modbus board.

- **PlantVisorPRO2**

  This is the solution for the management and supervision of air-conditioning installations with up to 300 units. It performs advanced monitoring and maintenance functions and enables creating areas and groups which simplify the management of the installation. It also allows the integration of energy meters for monitoring the power consumption of the installation.

  PlantVisorPRO2 is available in two versions:
  - **Box:** comprised of CPU and, optionally, by monitor and keyboard.
  - **Touch:** this includes CPU and touchscreen in the one device.

  In this case, each unit needs one RS485 Carel / Modbus board.



These systems allow the installation in remote management. Through a single connection to the Internet is accessed the information system. The Web interface, which is available for the local user, allows the monitoring and the complete configuration of the installation: from the office or any other user's current location.

For remote control of multiple sites, there are dedicated tools for centralized management as **RemotePRO** and **RemoteValue**.

TECHNICAL CHARACTERISTICS (EN-14511-2018)

Outdoor module 50NI		240	280	320	360	420	485
Cooling capacities	Cooling capacity (1) (kW)	52,1	60,6	69,6	81,5	105,5	114,8
	Power input (3) (kW)	18,7	22,0	25,9	32,3	41,4	45,14
	EER performance	2,78	2,75	2,68	2,53	2,55	2,54
	SEER	3,51	3,50	3,51	3,49	3,34	3,34
	ηs	140 %	139 %	139 %	139 %	131 %	131 %
Heating capacities	Heating capacity (2) (kW)	57,5	64,6	74,1	84,7	108,6	119,8
	Power input (3) (kW)	17,8	20,1	23,7	29,4	35,3	40,0
	COP performance	3,23	3,22	3,12	2,88	3,08	3,00
	SCOP	3,10	3,06	3,10	3,07	2,99	3,00
	ηs	127 %	125 %	127 %	126 %	117 %	117 %
Outdoor fan	Nominal air flow (m^3/h)	23.000	23.000	24.400	24.400	30.000	35.000
	Available static pressure (mm.w.c)	20					
	Type	electronic Plug-fan					
	Number / Diameter (mm)	2 / 560	2 / 560	2 / 560	2 / 560	2 / 560	4 / 500
	Motor output (kW)	2 x 3	2 x 4,7	2 x 4,7	2 x 4,7	2 x 4,7	4 x 2,65
	Power input (kW)	2 x 2,06	2 x 2,2	2 x 2,5	2 x 2,5	2 x 3,48	4 x 1,92
	Speed (r.p.m.)	1.500	1.750	1.750	1.750	1.750	1.700
Compressor	Type	Scroll					
	No. compress. / circuits / stages	4 / 2 / 4					
	Oil type	Copeland 3MAF 32cST, Danfoss POE 160SZ, ICI Emkarate RL 32CF, Mobil EAL Artic 22CC					
	Volume of oil (l)	4,8	6,8	7,08	7,2	13,2	13,2
Cooling connections	Circuit 1: Liquid line	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"
	Circuit 1: Gas line	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"
	Circuit 2: Liquid line	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"
	Circuit 2: Gas line	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 3/8"	1 3/8"
Refrigerant	Type	R-410A					
	Global warming potential (GWP) (4)	2.088					
	Load up to 7,5 m (kg)	19,1	24,9	25,9	26,4	38,7	39,3
	Environment impact (tCO2 e)	39,9	52	54,1	55,1	80,8	113,6
Electrical features	Mains voltage	400 V / III ph / 50 Hz (±10%)					
	Power supply	3 wires + GND					
	Maximum absorbed current (A)	58,52	71,16	82,58	92,3	108,44	111,6
Dimensions	Length (mm)	2.746				3.484	
	Width (mm)	860					
	Height (mm)	1.717					
Weight	(kg)	760	775	788	798	992	1002

Indoor module 50NI		240	280	320	360	420	485
Indoor supply circuit fan	Nominal air flow (m^3/h)	10.300	12.500	14.000	15.500	21.000	21.000
	Available static pressure (mm.w.c)	20	20	20	20	20	20
	Type	electronic Plug-fan					
	Number / Diameter (mm)	2 / 500	2 / 500	2 / 500	2 / 500	3 / 500	3 / 500
	Motor output (kW)	2 x 2,65	2 x 2,65	2 x 2,65	2 x 2,65	3 x 2,65	3 x 2,65
	Power input (kW)	2 x 0,95	2 x 1,10	2 x 1,32	2 x 1,57	3 x 1,46	3 x 1,46
	Speed (r.p.m.)	1700	1700	1700	1700	1700	1700
Maximum absorbed current	Fan (A)	2 x 4	2 x 4	2 x 4	2 x 4	3 x 4	3 x 4
Dimensions	Length (mm)	1.820	2.804			2.974	
	Width (mm)	950	1.028			1.209	
	Height (mm)	732	800			1.091	
Weight	(kg)	262	365			646	

(1) Cooling capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 27ºC, (19ºC WB) and 35ºC outdoor temperature.

(2) Heating capacity calculated in accordance with the EN-14511-2018 standard given for indoor temperature conditions 20ºC and 6ºC WB outdoor temperature.

(3) Total power input by compressors and motorised fans under nominal conditions, calculated in accordance with the EN-14511-2013 standard.

(4) Climatic warming potential of a kilogram of fluorinated greenhouse gas in relation to a kilogram of carbon dioxide over a period of 100 years.

SOUND LEVELS dB(A)

Sound power level 50NI compact version

50NI compact	240	280	320	360	420	485
63 Hz	62,1	62,1	58,8	68,5	68,2	68,5
125 Hz	71,6	71,6	73,5	72,2	74,5	74,6
250 Hz	78,5	78,1	75,8	77,4	82,4	85,2
500 Hz	82,8	83,7	82,3	82,4	84,5	87,4
1000 Hz	84,7	84,9	85,8	85,8	86,4	88,5
2000 Hz	82,3	82,5	83,8	83,7	84,2	85,8
4000 Hz	77,5	77,7	76,6	77,7	79,7	80,0
8000 Hz	71,5	71,8	69,0	73,1	72,2	73,0
Total dB(A)	89,1	89,4	89,5	89,8	91,1	93,3

Sound pressure level 50NI compact

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

50NI compact	240	280	320	360	420	485
Total dB(A)	62,2	62,5	62,6	62,8	63,9	66,1

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

Sound power level 50NI outdoor module

Outdoor module	240	280	320	360	420	485
63 Hz	59,1	59,1	55,8	65,5	65,2	65,5
125 Hz	68,6	68,6	70,5	69,2	71,5	71,6
250 Hz	75,5	75,1	72,8	74,4	79,4	82,2
500 Hz	79,8	80,7	79,3	79,4	81,5	84,4
1000 Hz	81,7	81,9	82,8	82,8	83,4	85,5
2000 Hz	79,3	79,5	80,8	80,7	81,2	82,8
4000 Hz	74,5	74,7	73,6	74,7	76,7	77,0
8000 Hz	68,5	68,8	66,0	70,1	69,2	70,0
Total dB(A)	86,1	86,4	86,5	86,8	88,1	90,3

Sound pressure level 50NI outdoor module

Measurement conditions: in a clear field, measured at a distance of 5 metres, directivity 2 and at 1,5 metres from the ground.

Outdoor module	240	280	320	360	420	485
Total dB(A)	59,5	59,8	60,0	60,2	61,4	63,5

Note: The sound pressure level depends on the installation conditions and, as such, it only indicated as a guide. Values obtained according to the ISO 3744 standard.

Sound power level 50NI indoor module

Sound power level in the indoor fan supply to be taken into account for the silencer calculation:

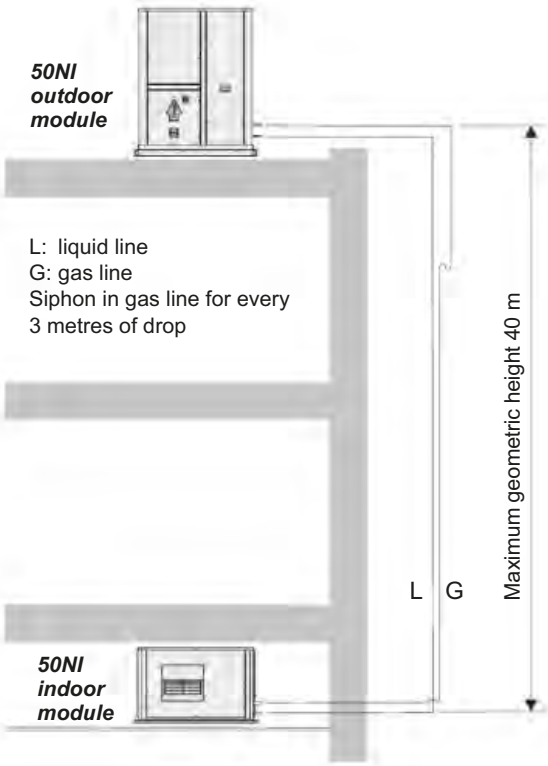
Indoor module	240	280	320	360	420	485
Total dB(A)	78,7	79,2	81,7	84,2	81,8	81,8

RECOMMENDATIONS FOR THE COOLING CONNECTION, FOR SPLIT VERSION

In split version, the outdoor module and indoor module must follow some recommendations:

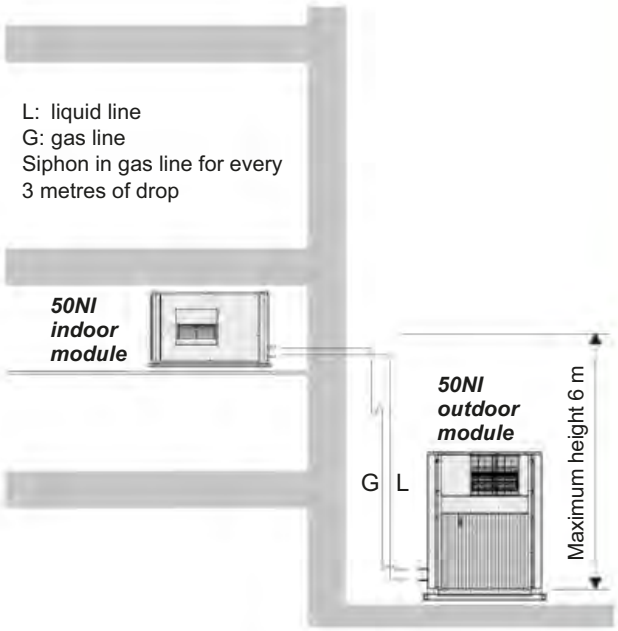
Outdoor unit top

Maximum equivalent length of the cooling line: 50 metres
For longer lenghts an oil separator must be user



Outdoor unit bottom

Maximum equivalent length of the cooling line: 30 metres



Note: when the unit is supplied for split version with the outdoor and indoor modules, can include optionally filling and service valves for the circuit connections and the charge of refrigerant until 7 m of distance.

ADDITIONAL LOAD OF R-410A REFRIGERANT

Additional load per linear metre of piping for equivalent maximum lengths exceeding 7 metres:

Nominal diameter (inches)	1/4”	3/8”	1/2”	5/8”	3/4”	7/8”	1”	1 1/8”
Interior section (cm²)	0,149	0,444	0,900	1,505	2,282	3,120	4,290	5,346
Liquid line charge (g/m)	19,3	57,0	115,0	193,5	292,3	404,1	550,3	685,7
Gas line charge (g/m)	--	0,2	0,4	0,7	1,0	1,4	2,0	,5

OPTIONS FOR THE INDOOR MODULE

Centrifugal fan

Indoor module 50NI		240	280	320	360
Nominal air flow	(m^3/h)	10.300	12.500	14.000	15.500
Available static pressure	(mm.w.c.)	20	20	20	20
Number / turbines		2 / 2			
Motor output	(kW)	2 x 1,5	2 x 1,5	2 x 1,5	2 x 2,2
Power input	(kW)	2 x 0,94	2 x 1,18	2 x 1,15	2 x 1,39
Speed	(r.p.m.)	974	936	789	816
Maximum absorbed current	(A)	7,2	7,2	7,2	10,0

High pressure plug-fan

Indoor 50NI		420	485
Nominal air flow	(m^3/h)	18.000	18.200
Available static pressure	(mm.w.c.)	20	
aximum vailable static pressure	(mm.w.c.)	60	
Number / Diameter	(mm)	2 x 560	
Motor output	(kW)	2 x 4,7	
Power input	(kW)	3,0	
Speed	(r.p.m.)	1.750	
aximum absorbed current	(A)	2 x 7,3	

Electrical heaters

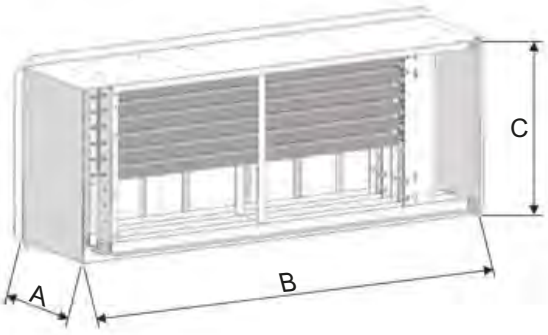
Standard assembly in two stages (optional assembly in one stage with no over price)
Important: the air flow controller is included with the optional centrifugal fans.

Available capacities

Indoor modules 50NI	Total output (kW)	15	18	24	30	36	45	54
	Stage power (kW)	6 + 9	9 + 9	12 + 12	15 + 15	18 + 18	18 + 27	27 + 27
240 / 280 / 320 / 360	Current (A) (400V / IIIph / 50Hz)	21,7	26,0	34,6	53,4	52,0	--	--
420 / 485		--	--	--	--	52,0	65,0	78,0

Frame for assembly of the auxiliary heater in the indoor supply fan:

Indoor module 50NI	Total output	Dimensions (mm)		
		A	B	C
240 (1 supply outlet)	15 / 18 kW (1 row)	189	1.142	443
	24 / 30 / 36 kW (2 row)	297	1.142	443
280 / 320 / 360 (2 supply outlets)	15 / 18 / 24 / 30 / 36 kW (1 row)	1 9	1.142	44
420 / 485 (2 supply outlet)	36 / 45 / 54 kW (1 row)	189	1.142	443



This frame is designed with side access for maintenance purposes.
In models with two supply fan outlets (two frames), the electrical heaters are distributed as symmetrically as possible between both frames.

OPTIONS FOR THE INDOOR MODULE (CONT.)

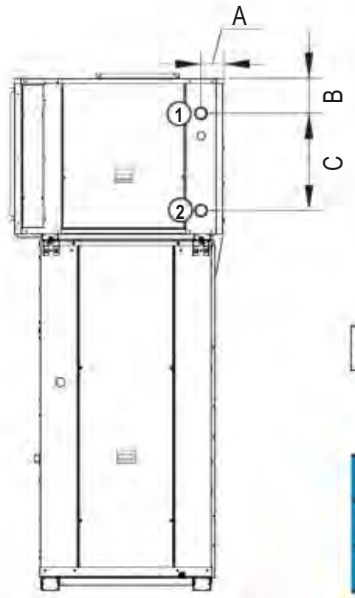
Auxiliary hot water coil

Hot water coil assembled inside the unit with a three-way valve managed by the unit control for back-up during heating in heat pump units. In this case the air inlet temperature matches the air supply temperature of the indoor coil..

Indoor module 50NI			240	280	320	360
Air pressure drop		(mm.w.c.)	4,0	5,5	6,6	7,8
Water 80/60ºC	Heating capacity	(kW)	33,6	38,6	40,9	43,7
	Water flow	(m^3/h)	1,5	1,7	1,8	1,9
	Water pressure drop	(m.w.c.)	0,5	0,7	0,8	0,9
Water 90/70ºC	Heating capacity	(kW)	46,5	53,1	56,3	60,1
	Water flow	(m^3/h)	2,0	2,3	2,5	2,6
	Water pressure drop	(m.w.c.)	1,0	1,2	1,4	1,6
Weight (empty)		(kg)	16,3	16,3	16,3	16,3
Diameter of hydraulic connections			1”			

Note: with stop-drop in the indoor air coil it is not possible to assemble the hot water coil.

Position of hydraulic conections for auxiliary hot water coil



1 Inlet 2 Outlet

Dimensions (mm)	A	B	C
240	112	140	413
280 to 360	112	173	476

Stop-drop in the indoor air coil

Air flow as from which it is recommended to install a stop-drop in the indoor coil.

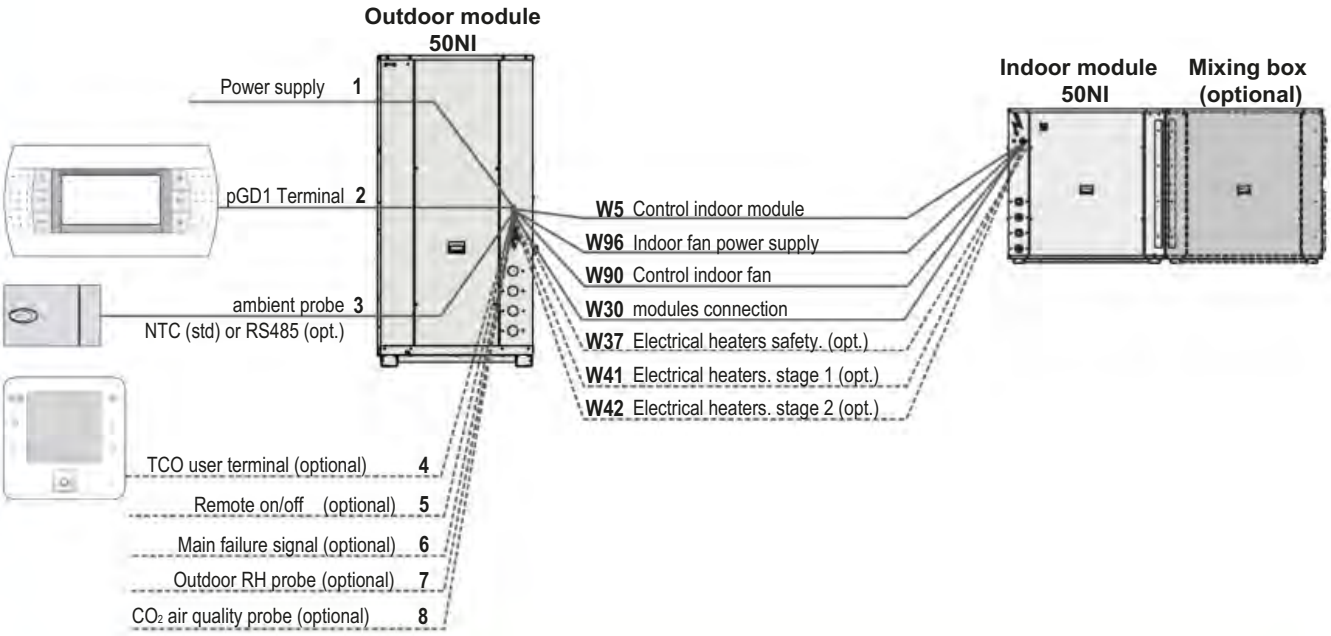
Indoor module 50NI		240	280	320	360	420	485
Air flow	(m^3/h)	11.110	16.566			16.949	

Note: for operating conditions with high dehumidification in the indoor coil (example. in installations close to the coast) it may be necessary to install a separator even if the flow is less than the previous one.

Note: with hot water coil it is not possible to assemble the stop-drop.

ELECTRICAL CONNECTIONS

CARRIERrtc control (standard)



No.	50NI		240	280	320	360	420	485
1	Power supply	400 III (±10%)	3 + GND					
2	pGD1 terminal connection (standard in electrical panel)		Telephone cable 6 wires standard (RJ12 connector) (until 50 m)					
3	Ambient probe ①	NTC	2 wires					
		RS485 ②	5 wires					
4	TCO user terminal connection ③		2 wires for power supply 230V + 1 shielded cable for communication type AGW20 / 22 (1 braided pair + drainwire + shielding)					
5	Remote on/off (optional)		2 wires					
6	Main failure signal (optional)		2 wires					
7	Outdoor RH probe (optional) ①		3 wires					
8	CO_2 air quality probe (optional) ①		3 wires					
W5 ⑤	Control indoor module		5 wires					
W96 ⑤	Indoor fan power supply		4 wires					
W90 ⑤	Control indoor fan		7 wires					
W30 ⑤	Modules connection	Without free-cooling (std)	2 wires					
		Free-cooling (opt.)	7 wires					
W37 ⑤	Safety thermistors of electrical heaters (optional)		2 wires					
W41 ⑤	Electrical heaters. stage 1 (optional) ④		4 wires					
W42 ⑤	Electrical heaters. stage 2 (optional) ④		4 wires					

① Connection of probes by client

② It is possible connect from 1 to 4 ambient probes RS485 in series in the Field-bus of the control board

③ If the unit is going to be installed in an industrial environment with a high level of electromagnetic interference, it is recommended to shield the cables of the thermostat control.

④ The power supply for the electrical heater must be protected by an automatic switch and/or fuses to be foreseen by the installer.

⑤ Connection hose to connect the modules supplied to work in compact version.

Controls

901

Type	Range	Page
Control Solutions		
	Smart Energy Monitoring	903
	PlantCTRL™	905
	Fan coil controls overview	907
	Thermostats	909
	NTC controllers	911
	WTC controllers	915
	Aquasmart Evolution	919
	Thermal Energy Storage	923

FOR CHILLERS & HEAT PUMPS

CONNECTED SERVICES

PERFORMANCE MONITORING

TRACKING ENERGY CONSUMPTION

IMPROVED EQUIPMENT AVAILABILITY

FULLY SECURED ACCESS

Smart Energy Monitoring

Optimize equipment operation & energy

OPTIONS

Electrical metering

Thermal metering

The smart energy monitoring solutions, control and monitor in real time from one to several Carrier chillers and heat pumps. Compatible with all existing and new equipment, you benefit from the analysis of Carrier experts.

These solutions can be combined with both electrical and thermal metering options to track, monitor and optimize equipment performance and energy consumption.

CONTROLS

MAIN FEATURES

- Site remote access (one or several units)
- Service access to pre-diagnose a remote fault
- Operating data storage and events
- Alerts / Alarms by mail
- Curve displays (customizable)
- Raw data extractions (customizable)
- Weekly, monthly, quaterly and yearly statistic reports
- Electrical metering option
- Thermal metering option
- Other options are available. For more information, please ask your Carrier sales representative.

ELECTRICAL METERING / THERMAL METERING

Retrieve electrical & thermal data of the equipment on the smart energy monitoring solution to monitor & optimize electrical and thermal consumption (voltage, current, power, energy, etc.).

The metering hardware will be integrated into the electrical cabinet of the chiller. If the integration is not possible, a separated box is available in several references depending on the current range of the measured equipment.

Both meters comply with MID (Measuring Instruments Directive). Both electrical and thermal meters are also available in stand alone version:

- Collect electrical data (voltages, current, power, energy, etc.) for three phase power supply of one or several equipment
- Collect Thermal data (temperatures, flow, capacity & energy)
- Connect to a local BMS (LON FT-10, BACnet MS/TP, Modbus RTU)

CAPACITY

- For all new and / or legacy chillers & heat pumps (from one to several)
- Communication with chiller or heat pump in CCN or BACnet protocols
- Communication with BMS through BACnet IP or Modbus TCP in option
- Electrical metering for three phase power supply of one or several equipment
- Thermal metering for one or several equipment
- Up to 150 operating data points recorded
- ll customer parameters available

PHYSICAL CHARACTERISTICS

Electrical Metering

- Electrical counter
- 3 phases circuit breaker
- 3 static current transformers (openable in option)

Thermal Metering

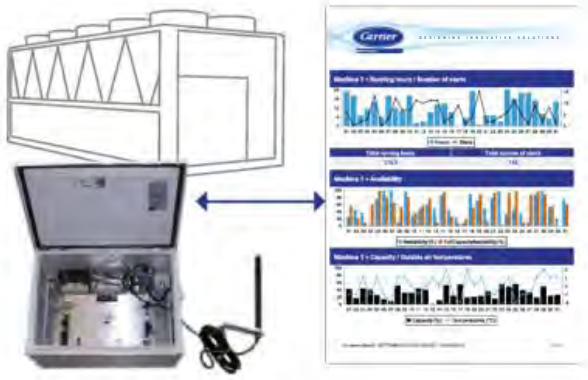
- Thermal counter
- 1 flowmeter
- 2 temperature sensors

Monitoring solutions (box and integrated versions)

- 3G Modem + SIM card
- Metal box (only for box version)
- CCN gateway (only for box version)
- 230VAC -24VDC transformer (only for box version)
- Circuit breaker (only for box version)
- ntenna's power gain (5 m cable, only for box version)
- Terminal block (only for box version)

SOLUTION ADVANTAGES

- Fully secured connection
- Minimizing maintenance and operating costs
- Understanding equipment operation
- Improving HVAC equipment availability
- Optimal control of equipment
- Managing energy expenses and consumptions
- Optimizing energy use & saving costs
- Meeting energy regulation criteria
- Benefit from our Carrier expertise through our service contracts



Reports, real-time data and alerts complemented by expert analysis

FOR COOLING & HEATING PLANTS

ADVANCED PLANT CONTROL

OPERATION AND ENERGY CONSUMPTION OPTIMIZATION

HIGH ADDED VALUE SOLUTION

SECURED HEATING & COOLING PRODUCTION

QUICK RETURN ON INVESTMENT

COMPLYING WITH ENERGY REGULATIONS & BUILDING CERTIFICATIONS

PlantCTRL™

Management & monitoring system

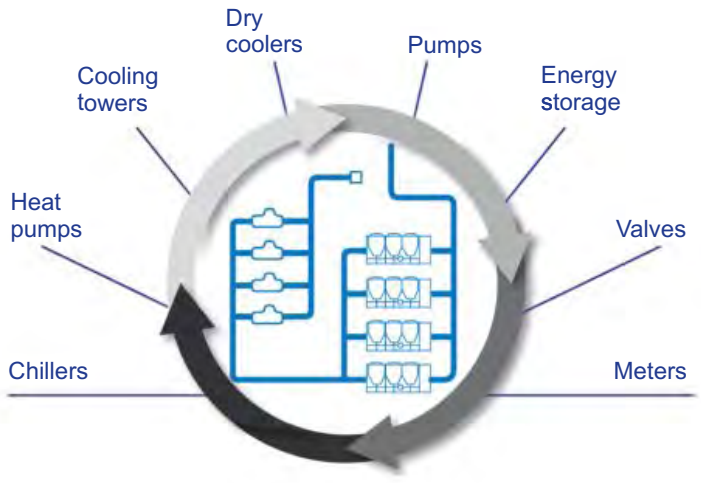
The PlantCTRL™ regulates and controls all Carrier thermal production plants operation. This system is compatible with all existing and new Carrier equipment from two to several chillers and / or heat pumps.

Available for all applications, this system is able to manage all cooling & heating production components and all associated hydraulic devices:
Chillers, heat pumps, cooling towers, dry coolers, energy metering, valves and pumps.

OPTIONS

User interface

Remote monitoring



MAIN FEATURES

Command & control your HVAC plant

- Production and operation strategy management
- Controlling and monitoring of chillers and heat pumps, drycoolers and cooling towers depending on the operation needed
- Controlling and monitoring of all hydraulic components of the installation (valves, pumps, frequency convecters,…)

Secure the operation

- Faults / alarms detection and signaling, corrective management algorithms
- Equipment management alternation / rescue /prioritary network
- Preventive maintenance alerts scheduling
- View of the installation and equipment states

Manage the energy

- Daily and seasonal programming
- Optimization of the chillers, heat pumps and hydraulic components cascading management
- Set-points configuration and optimization
- Energy management of the system (free cooling, energy recovery and other sources)

Monitor the installation

- On site local monitoring and remote monitoring through the dedicated Website
- View in real time of the equipment and installation states, access to installation synoptics, operation curves
- Events notification by mail (faults / alarms)
- Long-term saving of recorded values, events & curves

CAPACITY

- Management of the chillers, heat pumps, drycoolers, cooling towers, pumps and valves
- Energy metering, flowmeters, temperature sensors and pressures
- Energy recovery and free cooling
- Coupling with other energy sources (EnR, boilers, geothermal,…)
- Communication with all BMS
- Other communication by open protocols and non Carrier equipment (BACnet IP, MS/TP, Modbus TCP / IP, Modbus RTU and LonWorks,...)

PHYSICAL CHARACTERISTICS

- Available in box version for both new and existing equipment (an integrated option for electrical cabinet is available)
- Dimensions and weights according to configuration and options
- IP54 steel enclosure
- Enclosure power supply: 100-230 VAC, 50 / 60Hz
- Operating temperature range: -10 °C to +50 °C
- Humidity: 0 to 90% RH, non-condensing
- Storage: -20 °C to +60 ºC, 0 to 90% RH, non-condensing

USER INTERFACE / REMOTE MONITORING

OPTIONS

It is possible to monitor the installation locally from the user interface of the PlantCTRL box or from a PC.

You have also the possibility to monitor the installation remotely from a PC/tablet with internet access.
The PlantCTRL also communicates with the BMS.

The three monitoring options provide access to all equipment operating parameters in real time:

- Installation synoptics
- Operating curves
- Schedule programming
- Event reports
- Components states
- Recorded data

SOLUTION ADVANTAGES

Expert in plant management:

- System and control expertise
- Commissioning and installation support
- One supplier to facilitate the installation
- Ergonomic and easy friendly user interface
- Optimized operation sequencer

Flexible and scalable solution:

- Tailor-made solution for existing and new plants
- Suitable to process & comfort applications
- Compliance with all BMS
- Fully configurable according to building evolutions
- 24/7 plant monitoring

Costs management and profitability:

- Real-time operating and maintenance costs management
- Quick Return On Investment
- Carrier service experts support

Secured installation:

- Maximize equipment lifetime
- Improve equipment efficiency
- Secure the plant operation
- Facilitate better production availability

Energy optimization:

- Manage energy consumption
- Energy optimization during the lifetime of the installation
- Preventive maintenance to ensure the durability of equipment

Comply with energy regulations:

- LEED, BREEAM and HQE credits
- Value of sustainable energy solutions (free cooling, energy recovery,...)
- Contribute to develop energy efficiency of buildings (local and European regulations)

FAN COIL CONTROLS OVERVIEW

	Thermostat	NTC controllers	WTC controllers
Communication Protocols			
Carrier Communication Network (CCN) Aquasmart compatible		x	
BACnet			x
LON			x
Control algorithms			
On-off	x		
Proportional-integral		x	x
Carrier Energy saving algorithm		x	x
Fan control			
AC motors 3 speeds descreet	Type A&B	x	x
Automatic optimum fan speed selection	x	x	x
EC motors 3 speeds descreet	Type C&D	x	x
EC motors Variable speed		x	x
Water Valve management			
Air flow control only (no water valve)	x		
On-off actuators	x	x	x
Modulating actuators (3pts or 0-10V)		x	x
Main functions			
Set-point control	x	x	x
Occupied/unoccupied mode	x	x	x
Frost protection mode	x	x	x
Window / Door contact input	x	x	x
Measurement of water inlet temperature for automatic seasonal changeover (2 pipes)	Type A&C	x	x
Automatic seasonal changeover (4 pipes and 2 pipes + electric heater)	Type D&B	x	x
Manual changeover	x	x	x
Frost protection mode	x	x	x
Continuous ventilation within dead-band	x	x	x
Periodical ventilation within dead-band	x	x	x
On-site configuration	x	x	x
Unit grouping Master/Slave	x	x	x
Cassette Louvers control		x	x
Supply air temperature monitoring limiting		x	x
Electrical heater loadshed		x	x
Dirty filter alarm		x	x
Alarm reporting		x	x
Indoor Air Quality control (CO_2 sensor)		o	o
Demand control ventilation (DCV) (0-10V fresh air valve)		o	o
Free cooling mode			o
Presence detection			o

Legend
x feature available as standard
o optional

FAN COIL CONTROLS OVERVIEW

	Thermostat	NTC controllers	WTC controllers
User interfaces			
Automatic or manual fan speed control	x	x	x
Operating mode selection	x	x	x
Occupancy (eco) button	x	x	x
Digital display		o	o
Remote control (infra-red)		o	o
CO_2 sensor		o	o
Light sensor			o
Presence sensor			o
Easy connection RJ45 jack (on wall mounted UI)			
Light & Blinds management			
Light power modules			o
Blinds power modules			o
Control kit			
On site control kit solution			

Legend
x feature available as standard
o optional

Thermostats

Carrier electronic thermostat range is available for all Carrier hydraulic terminal ranges:

- Type A - Two-pipe application with AC motors
- Type B - Four-pipe or two-pipe applications with electric heaters with AC motors
- Type C - Two-pipe application with EC motors
- Type D - Four-pipe or two-pipe applications with electric heaters with EC motors

The thermostat for fan coil units with EC motor option controls three configurable discrete speeds via an 0-10 V signal.

The electronic thermostat set range is from 10°C to 30°C, with the possibility to limit the temperature in public buildings where low energy consumption is a key requirement. This is done via a dip-switch inside the control (cooling range 23°C/30°C, heating range 10°C/21°C).

FEATURES AND ADVANTAGES

- Auto fan: the control automatically sets the fan speed. If the room temperature is far from the set-point, high fan speed is selected. As the room temperature approaches the desired value, the fan speed decreases to the minimum speed.
- Automatic changeover from cooling to heating mode, based on the water temperature, ensures that the ideal room temperature is maintained.
- Remote changeover - automatic changeover from cooling to heating mode, based on the remote signal from the monitoring system.
- Frost protection keeps the room temperature above a minimum level.
- Booster heating control optimisation (with electric heater option): with the water temperature below 30°C the system will be in heat demand mode and the electric heater is the only available heating source. If the water temperature is above 35°C the system will be in booster heating mode, energising water valve and electric heater together. This function is deactivated if the water temperature is above 45°C (the electric heater will be de-energised).
- Energy saving when the room is unoccupied, without the need to switch off the unit. If the energy-saving button is pressed, the actual set-point will be modified as follows, without changing the position of the set-point selection knob: ± 4 K.
- LED intensity (offices or light commercial applications) - 10 seconds after the last user interface use all LEDs are reduced in intensity. To avoid disturbing hotel guests, the thermostat can be configured from “Night Mode” to “Dark Mode”: 10 seconds after the last user interface use, all LEDs are switched off.
- Air sampling: with no fan request and the air sampling jumper in ON position, the control performs the air sampling function. The air in the room is moved, thermal stratification is reduced for a more reliable ambient temperature reading.
- Continuous fan (no fan request and continuous fan jumper ON): the control selects the fan speed, regardless of thermal station conditions. With fan in auto fan mode and control not in the demand phase, the fan permanently runs at low speed.
- External contact: A high voltage input signal for external contact is present. If the contact is activated, device behaviour depends on its configuration on site:
  - Presence detection energy saving mode is activated, room temperature is raised by 4 K in cooling mode and reduced by 4 K in heating mode.
  - Window contact: in OFF mode (window open), all outputs are disconnected (fan, valves, etc.) and only the frost protection function is active, if enabled.

NTC controllers

Carrier offers one of the market's most sophisticated and complete communicating controllers for hydraulic fan coil ranges, the NTC controller, that is compatible with the full Carrier fan coil range.

For the customer and installer the same controller simplifies and eases installation and service operations whilst covering a wide range of hydraulic system types and applications.

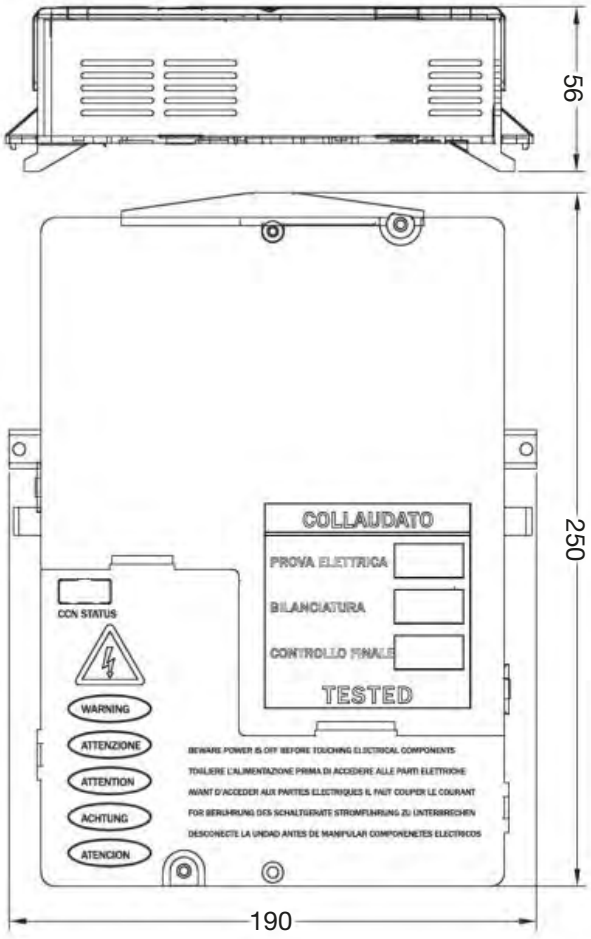
The controller can be applied and function as either a standalone control, as part of a larger CCN system application, or at the heart of a Aquasmart system functioning with the Aquasmart Touch Pilot System Manager.

NETWORK COMMUNICATION

- The NTC communicating controller can be connected on an RS 485 bus, using the Carrier Comfort Network (CCN) protocol.
- Units equipped with the NTC controller can be part of the Aquasmart Evolution system.

ADVANCED FUNCTIONS

- Low Energy Consumption (LEC) variable speed control.
- The NTC controller can drive the fan speed continuously within a configurable range for optimal thermal and acoustic comfort.
- Hydraulic control - The NTC controls both floating and fixed-point value actuator types (230 V on-off and 230 V three point).
- Demand controller ventilation (DCV) - On fan coils equipped with CO_2 sensors and fresh air dampers, the NTC controller can adjust the amount of fresh air admitted to the room, as required by the occupants.
- IAQ management - The NTC controller can control all features related to Indoor Air Quality that are included in Carrier terminal fan coil units.



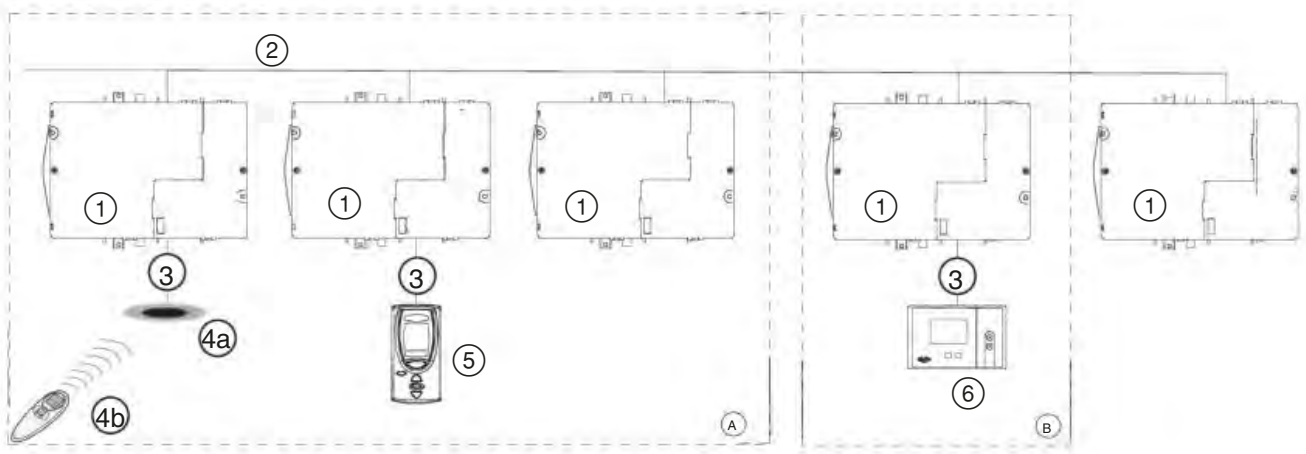
Carrier Room Controller (CRC2)

Simplified User Interface (SUI)

Zone User Interface (ZUI)

Infrared Remote Control (IR2) and receiver

ADVANCED FUNCTIONS



Legend

1 NTC controller
2 Secondary communication bus
3 User interface connection
4 IR2
5 ZUI2
6 CRC2
A Room A
B Room B

FEATURES AND ADVANTAGES

- The NTC controller controls and optimises the operation of hydraulic terminal fan coil units. It is a microprocessor-based CCN (Carrier Comfort Network) compatible communicating controller with energy-saving algorithms.
- Energy-saving algorithms manage water valve operation and fan speed control simultaneously to ensure minimum energy consumption whilst maximising comfort conditions for the occupant.
- Factory-installed on terminal fan coils

  The NTC controller is factory-installed on the terminal fan coil; the assembly is also factory-tested. As a result, field installation is extremely simple.
- A wide range of user interfaces

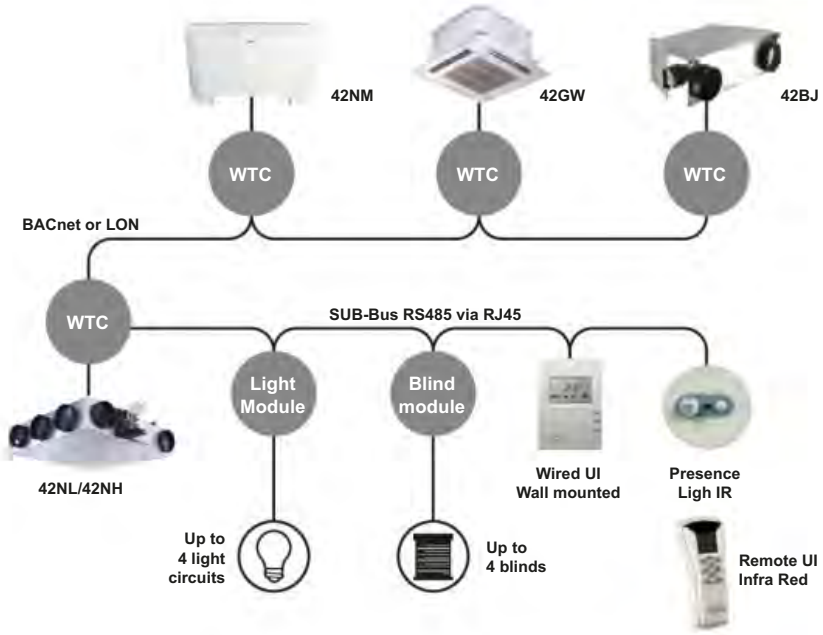
  Depending on the application, two user interface types can be selected:
  - A simplified wired analogue user interface (SUI) that can be wall-mounted
  - A wired communicating user interface (CRC2) that can be wall-mounted or incorporated in compatible terminal fan coils (42N)
  - An infrared user interface (IR2) for use together with a wall-mounted infrared received or a receiver incorporated on compatible terminal fan coils (42GW)
  - A multi-function user interface (ZUI) that can control comfort, lights and blinds within a Carrier system

WTC Controllers

With Carrier's specific control algorithms, the Water Terminal Controller (WTC) combines best-in-class comfort solutions together with high energy efficiency management. Designed for a variety of configurations and offered in a wide range of user interfaces, the WTC can fit every application and every need.

CONTROL ARCHITECTURE

A variety of configurations for every application



FEATURES AND ADVANTAGES

- **High efficiency:** The WTC's energy saving algorithms control fan speed and manage water operation in parallel achieving optimal energy consumption whilst ensuring there is no esulting loss in comfort for occupants.
- **Easy installation:** The WTC is compatible with the full Carrier fan coil range. For customers and installers the same controller simplifies and eases installation and service operations whilst covering a wide range of hydraulic system types and applications. The WTC is factory installed on the terminal fan coil before factory testing of each individual terminal. As result, field installation is extremely simple.
- **Variety of configurations:** The controller can operate as either a standlone control, command and follow function for open spaces, or at the heart of a building management system.
- **User friendly user interface:** The user interface is available in a variety of configurations: no display, LCD display, temprature sensor, lights and blind control, etc.

ADVANCED FUNCTIONS

- Low Energy Consumption (LEC) variable speed control: The WTC can drive the fan speed continuously within a configurable range for optimal thermal and acoustic comfort.
- Modulating hydraulic control: The WTC controls both floating and fixed-point value actuator types (230V on-off and 230V three point).
- Demand controller ventilation (DCV) & IAQ management: on fan coils equipped with CO_2 sensors and fresh air dampers, the WTC can adjust the amout of fresh air admitted to the room, as required by the occupants.
- Lights and blind management modules: The WTC supervises the interconnection of light modules & blinds modules, allowing the user to improve local comfort control with the same user interface as HVAC system.

ROOM CONTROLLER - USER INTERFACE

Large choice of Room Controllers

Infrared Remote Control and receivers

HVAC

HVAC + lights/Blinds

A range of user interfaces to meet all needs

	Room Control Interface			Infrared Remote Interface	
	WTC-RCI-S	**WTC-RCI-SF/SQF**	**WTC-RCI-D/ DC/DM/DCM**	**WTC-IR**	**TC-IR-LB**
Temperature sensor	✓	✓	✓		
Set-point offset		✓	✓	✓	✓
Fan speed	✓	✓	✓	✓	✓
With or without occupancy function		✓	✓	✓	✓
Operating mode		✓	✓	✓	✓
Light & blind control			✓		✓
Power supply from WTC	✓	✓	✓		
Quick connection	RJ45	RJ45	RJ45		
Local service tool			✓		
With or without motion sensor			✓		
LCS display			✓	✓	✓
Infrared receiver with status (LED & BUZZER)				✓	
Infrared receiver					✓

Aquasmart

Aquasmart Evolution is a complete hydraulic heating, ventilating and air conditioning (HVAC) system ideal for residential and light commercial applications from offices, commerce to hotels and hospitals. It offers perfect comfort for building occupants whilst optimising economical operation for applications up to 2500 m². Larger installations with multiple systems can be managed and integrated within a single Building Management solution thanks to the new BACnet option capability.

An Aquasmart system consists of up to 128 terminal fan coil units, served by up to two chillers or heat pumps (master-slave), to supply cooling and/or heating to occupied spaces and fresh air handling units. The system manager can fully integrate and control up to eight Carrier fresh air handling units*. Each fresh air plant can be associated with specific terminal fan coils and/or zones for optimum building use management with occupancy, controlling and minimising energy use.

Individual schedules can be set up and managed for each and all air treatment plants. The Aquasmart System Manager supplies building information enabling dynamic and precise control of the air handling units* night-time free-cooling feature to further reduce building energy consumption.

* If air treatment unit is not supplied by Carrier, integration is limited to control via a digital output for the main fresh-air unit.

FEATURES AND ADVANTAGES

- The Aquasmart Evolution system ensures significant energy savings combined with optimised user comfort by managing building zoning, occupancy and room temperatures in accordance with needs.
- Terminal fan coil units can be organised in up to 32 zones to optimise building management by zone requirement and according to building design conditions.
- The Touch Pilot System Manager – the brain and building user interface was designed to facilitate use and allow rapid access to manage and configure system operation to maximise energy savings at comfort conditions.
- System components are fitted with communicating controls allowing the System Manager to communicate with and obtain feedback on user needs and operation. Based on the system requirements the System Manager coordinates the system heating and cooling modes for maximum comfort and optimal energy consumption, respecting the comfort parameters and occupancy schedules for the building zones.
- The Aquasmart system offers affordable building HVAC system management featuring capabilities usually only available in more expensive solutions and requiring additional building-by-building programming development.

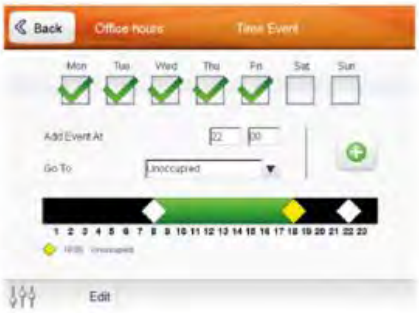
TOUCH Pilot

System design layout and configuration guide

- The System Manager is connected to the system components via a communication bus, and allows control of all system and individual terminal operating parameters.
- System configuration is simple through easily accessible menus. Unit grouping is managed by the network and requires no specific wiring to allow easy reconfiguration to suit later building layout modifications.
- The Aquasmart Evolution components are delivered complete, configured and factory-tested.

Energy savings

- The Aquasmart system controls offer superior comfort levels. By optimising and controlling the system components building owners and occupants can save energy and reduce their energy bill, contributing to a reduction in building carbon emissions.
- System control saving possibilities are further enhanced with a range of significant energy-saving features available at equipment level, such as air handling unit with heat recovery technology, the use of reversible 30RQ air-to-water heat pumps for space heating, 61AF heat pumps for domestic hot water and a range of fan coil units with EC motor technology and variable fan speed control.
- Energy simulations conducted with a recognised software simulation program indicate that Aquasmart can achieve energy savings over a traditional non-communicating and non-optimised system. Case studies indicate that savings of 25% and beyond are possible. Each project merits its own assessment of the opportunities.



FEATURES AND ADVANTAGES

New System Manager

The Touch Pilot system manager is the user interface and allows building managers to control the Aquasmart system and associated components and features.

- Intuitive colour touch screen.
- A system set-up wizard leads installers through a number of easy intuitive steps to identify and configure the system and manage system set-up, operation and maintenance.
- Icon-driven menus easily and rapidly manage and maintain the HVAC system.
- Management of system parameters including cooling and heating set-points (terminals and cooling and/or heating plants) and occupied and non-occupied periods.
- Optimisation of energy consumption, monitoring of component operation and reporting of system faults.
- Management of occupied/unoccupied time schedules and smart start features to ensure that comfort requirements are met from the very beginning of the occupied period.

- The System Manager is compatible with a web browser, allowing user access to the system from a remote location such as a maintenance office within the building or from an off-site location where internet access is available. This facilitates ease-of-access and use and allows service and maintenance companies to offer remote service coverage without visiting the site, thus reducing carbon emissions due to transport.
- The availability of a new Carrier Apple application (HVAC smart browser) extends the accessibility to smart phones and tablets.

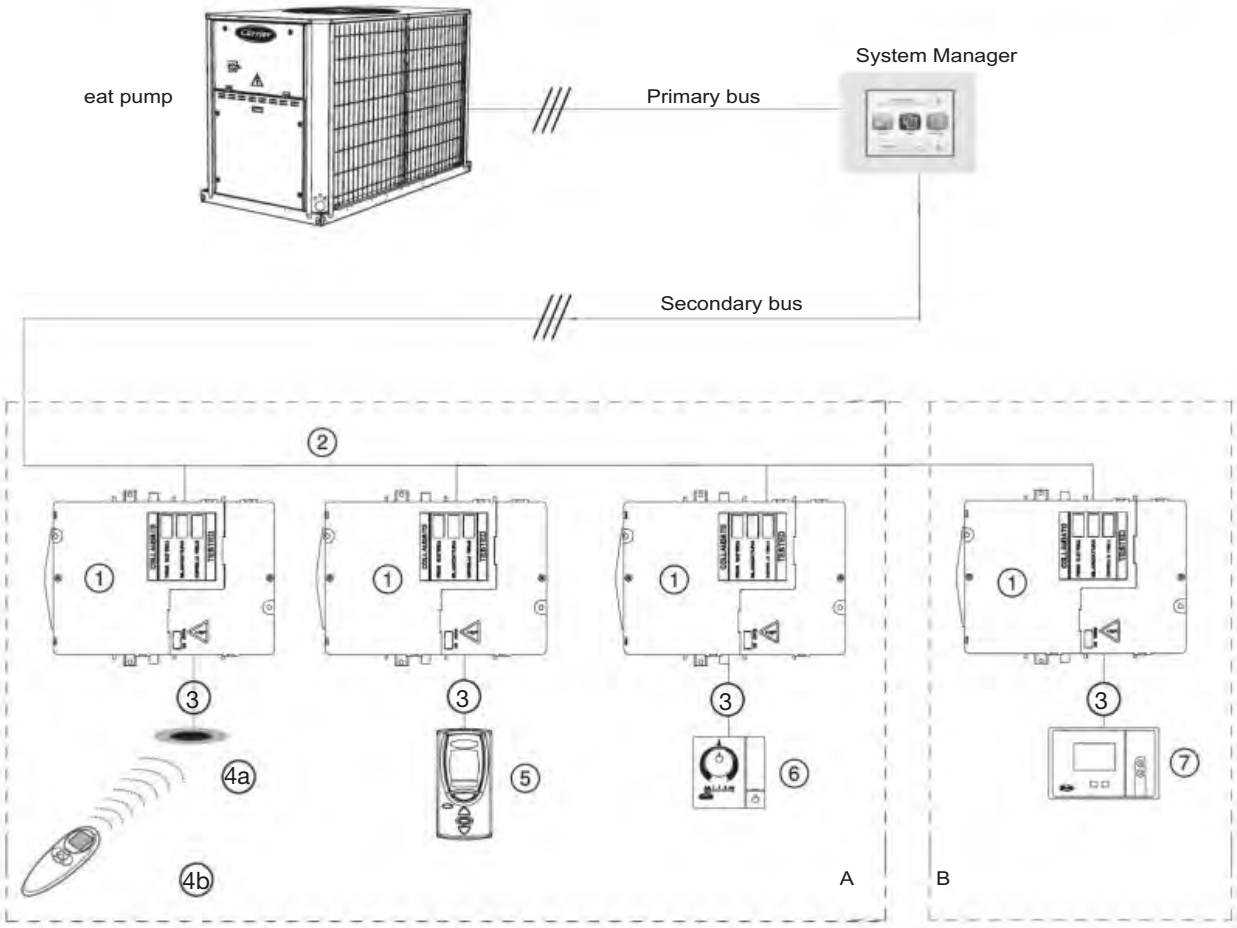
System selection

- The Aquasmart system is easy to select and configure with all units supplied from the factory with pre-installed, pre-configured and pre-tested controls and valves. The installer only needs to adjust the system parameters to the local building or application needs - a task made even easier with the New System Manager.
- Carrier has created a Quick Selection Guide that is available to rapidly identify and select the system components, facilitating the design process and saving time for designers and installers alike.
- Please contact your local sales office for a copy of this guide.

FEATURES AND ADVANTAGES

Building Management System Integration

■ The latest release of the Aquasmart Touch Pilot system manager enhances the capabilities to integrate Aquasmart systems with Carrier or third-party building management system front-end software. The new BACnet option allows access to read and read/write system parameters from the building management system facilitating integration of Aquasmart within the overall building management.



Legend

①	NTC controller	⑥	SUI
②	Secondary communication bus	⑦	CRC2
③	User interface connection	A	Room A
④	Infrared controller IR2	B	Room B
⑤	ZUI2		

FOR HVAC SYSTEMS

TURNKEY SOLUTION

PROVEN TECHNOLOGY

UNIQUE EXPERTISE

SUSTAINABLY DESIGNED

REDUCED OPERATING COSTS

100% SMART -GRID COMPATIBLE

NON-STOP SUPPORT

Thermal Energy Storage

For HVAC systems with peak cooling demand >500 kW

In a global context affected by a continuous increase of electricity prices and the challenge of reducing our environment impact, energy must be saved and controlled. For energy demand management and sustainable approach to intelligent buildings, Carrier proposes the Thermal Energy Storage technology (TES) by latent heat.

Shift your electricity consumption from peak to off peak hour

The TES technology consists of Phase Change Materials (PCM) used to store in nodules the cooling thermal energy produced by chillers.
By storing the thermal energy during the night and releasing it during the day, this solution allows using the electricity at the lowest prices and avoids the peaks. By spreading the thermal energy production over 24 hours, TES can reduce the capacity of the chillers by 30% to 70%*.

*Source: Measured differences between equivalent systems designed with and without TES.

MULTI APPLICATION

- Industry
- Office
- Hospital
- Commercial center
- Data center
- Hotel
- Cultural heritage

CONTROLS

WORLDWIDE PLAYER IN THERMAL ENERGY STORAGE SYSTEMS

+ 3000 CUSTOMERS WORLDWIDE

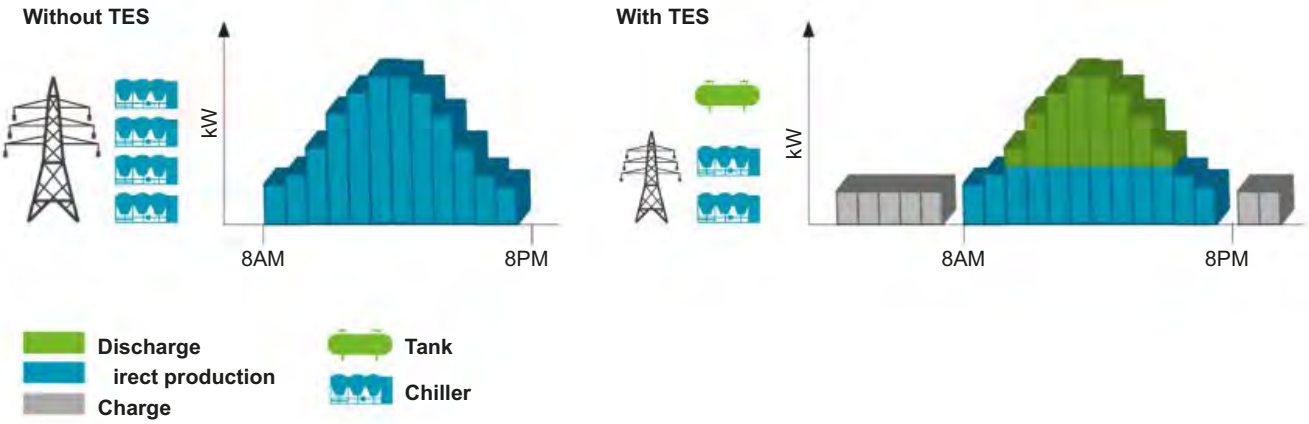
+ 65 COUNTRIES

+ 500 MW ELECTRICITY SAVED

+ 6 000 000 KWH DAILY TRANSFER

Source: Estimates based on existing TES solutions at customer sites.

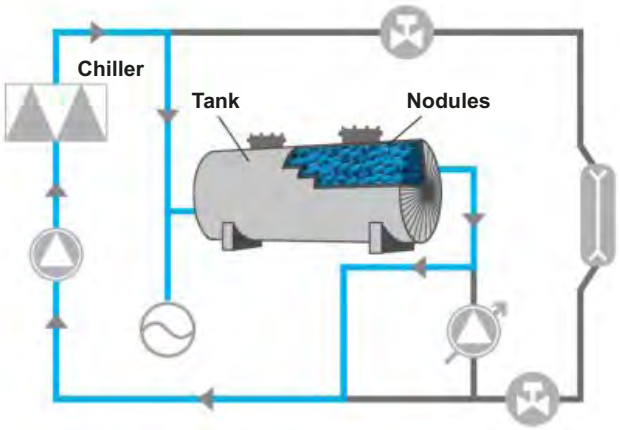
Histogram of a building's daily cooling needs and its electricity consumption profile



A CUTTING-EDGE HVAC SOLUTION

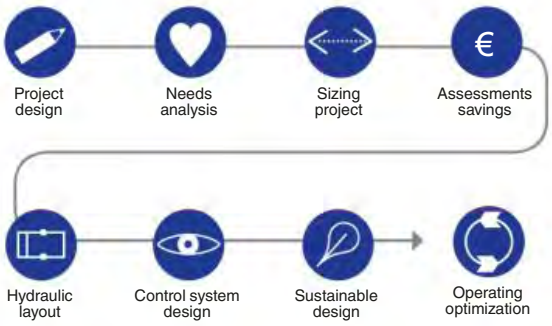
HVAC system designed with storage

The TES system along with your chillers is composed of one or several tanks filled with spherical elements called nodules that contain the Phase Change Materials (PCM). The use of PCM in nodules provides very high energy density and power exchange.



Nodules
- Core TES Technology
- Encapsulation of PCM
- Reliability and competitiveness

A turnkey solution from project design to implementation



Carrier optimizes the design and the operation of your installation for each application as commercial or industrial buildings.

We assist the consulting engineers by adapting the hydraulic layout to each project: application, operating conditions and specific customer needs. Where necessary complementary technologies such as free cooling or energy recovery are integrated.

www.carrier.com

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