

*Air-cooled polyvalent heat pump
with simultaneous hot/cold pro-
duction for outdoor
installation*

LARGE EVO PL

WiSAN-YEE1 PL 20.2 - 85.4 RANGE



TECHNICAL BULLETIN



SIZE	20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
COOLING CAPACITY [KW]	51,7	61,7	71,1	81,5	91,4	111	124	136	149	162	181	200	219	238
HEATING CAPACITY [KW]	64,5	72,8	80,5	92,3	104	120	137	154	173	192	211	231	253	280

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Clivet participates in the ECP Programme for "Liquid Chillers and Hydronic Heat Pumps".
Check ongoing validity of certificate on www.eurovent-certification.com"

Features and benefits

LARGE EVO is the new generation of air-cooled liquid chillers, reversible heat pumps and polyvalent units, equipped with Full DC Inverter technology and R-32 refrigerant with low environmental impact, designed for outdoor installation.

WiSAN-YEE1 PL

Air-cooled polyvalent heat pump with Full DC Inverter technology and R-32 refrigerant

- Range 52 - 238 kW
- Operation for 4-pipe system
- Seasonal efficiency cooling (SEER) 4,49 / heating (SCOP) 4,11
- Operating with 48°C of outdoor air temperature in cooling
- Operating with -20°C of outdoor air temperature in heating
- Hot water production up to 60 °C
- Copper/aluminum condensing coil
- Plate exchanger
- 2 refrigeration circuits



WiSAT-YEE1 FC

Air-cooled liquid chiller with Free-cooling with Full DC Inverter technology and refrigerant R-32

- Range 104 - 232 kW
- Excellence / Premium Version
- Seasonal efficiency (SEER) 4,84
- Operating with 48°C of outdoor air temperature
- Operating with -25°C of outdoor air temperature
- Full aluminium microchannel coils
- Copper aluminium free-cooling coil
- Partial recovery of the condensing heat
- Plate exchanger
- 2 refrigeration circuits



WiSAT-YEE1

Air-cooled liquid chiller with Full DC Inverter technology and R-32 refrigerant

- Range 110 - 252 kW
- Excellence / Premium Version
- Seasonal efficiency (SEER) 5.16/4.90
- Operating with 48°C of outdoor air temperature
- Operating with -20°C of outdoor air temperature
- Full aluminium microchannel coils
- Partial recovery of the condensing heat
- Plate exchanger
- 2 refrigeration circuits



WiSAN-YEE1

Air-cooled reversible heat pump with Full DC Inverter technology and R-32 refrigerant

- Range 115;- 233 kW
- Seasonal efficiency (SCOP) up to 4,22
- Seasonal efficiency (SEER) up to 4.51
- Operating with 48°C of outdoor air temperature in cooling
- Operating with -20°C of outdoor air temperature in heating
- Hot water production up to 60°C
- Copper/aluminum condensing coil
- Partial recovery of the condensing heat
- Plate exchanger
- 2 refrigeration circuits



Unit capable of simultaneously supplying hot and chilled water regardless of the season, according to the following functions:

- simultaneous production of chilled water and hot water;
- production of hot water only with disposal of the cooling capacity on the external source;
- production of chilled water only with disposal of the thermal energy on the external source.

The control logic ensures that the unit operates under intermediate load conditions.

Built to ISO 9001 quality standards, it consists of:

Compressor

SIZE 20.2 - 25.2

Inverter-controlled rotary hermetic compressor fitted with a motor protection device for overheating, overcurrents and excessive temperatures of the supply gas. It is installed on rubber antivibration mounts and comes with a full oil charge. The compressor is wrapped in a sound-absorbing hood that reduces its sound emissions. A crankcase heater with automatic activation prevents the refrigerant from diluting the oil when the compressor stops.

SIZE 30.2 - 85.4

Inverter-controlled hermetic Scroll compressor with steam injection fitted with a motor protection device for overheating, overcurrents and excessive temperatures of the supply gas. It is installed on rubber antivibration mounts and comes with a full oil charge. The compressor has a sound blanket that reduces its sound emissions and thermally insulates it.

Structure

Supporting structure and base made entirely of sturdy sheet steel, thickness with hot-dip galvanised surface treatment and parts in full view painted with polyester powder RAL 9001, which guarantees excellent mechanical characteristics and high corrosion resistance over time.

Panelling

External panelling made of sheet steel, 12/10 thick, with hot-dip galvanised surface treatment and painted with polyester powder RAL9001 that guarantees greater corrosion resistance in outdoor installations and eliminates the need for periodic painting. The panels can be easily removed to fully access internal components.

Cooling side exchanger

Direct expansion heat exchanger, braze-welded AISI 316 stainless steel plates, in pack without seals using copper as the brazing material, with low refrigerant charge and large exchange surface, complete with:

- 17 mm thick external anti-condensation thermal insulation in closed-cell extruded elastomer foam.
- antifreeze heater to protect the water side exchanger, preventing the formation of frost if the water temperature falls below a set value.

Maximum operating pressure exchanger: 10 bar on the water side

Heating side exchanger

Direct expansion heat exchanger, braze-welded AISI 316 stainless steel plates, in pack without seals using copper as the brazing material, with low refrigerant charge and large exchange surface, complete with:

- 17 mm thick external anti-condensation thermal insulation in closed-cell extruded elastomer foam.
- antifreeze heater to protect the water side exchanger, preventing the formation of frost if the water temperature falls below a set value.

Maximum operating pressure exchanger: 10 bar on the water side

External air exchanger

Finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. Hydrophilic exchangers designed, engineered and manufactured directly by CLIVET. The fins are made from aluminium with a corrugated surface and are properly spaced to ensure maximum heat exchange efficiency. A particular refrigerant circuit prevents ice from forming on the base of the exchanger during winter operation.

Fan

Axial fans with high performance and low-noise, balanced statically and dynamically, with blades in aluminum sheet coated in PP and sickle profile terminating with "Winglets", Wall ring in sheet steel pre-galvanised, directly coupled to the three-phase electric motor with external rotor and IP54 protection and class F insulation. Fans are located in aerodynamically shaped structures, equipped with accident prevention steel guards. Supplied with variable speed control (ECOBREEZE).

Refrigeration circuit

Two independent refrigeration circuits made of copper, brazed and factory-assembled, complete with:

- electronic expansion valve
- non return valve
- 4-way reverse cycle valve
- high pressure safety pressure switch
- low pressure transducer
- refrigerant temperature probe
- solenoid valve
- low pressure safety valve
- liquid receiver
- intake suction separator
- safety thermostat against compressor drain overheating
- oil separator

Size 30.2 - 85.4:

- economizer exchanger

Standard unit technical specifications

Electrical panel

Control box Completely made and wired in accordance with EN 60204.

The power section includes:

- main disconnecting switch with door lock
- general protection fuses
- isolation transformer to power the auxiliary circuit
- auxiliary component protection fuses
- fan protection circuit breakers
- Control Box ventilation
- AC filter on the power supply
- power supply phase sequence protection
- compressor overcurrent protection
- compressor overload protection
- malfunction protection sensor

The control section includes:

- interface terminal with graphic display
- display function of values set, failure codes and parameters index
- proportional-integral-derivative water temperature control
- water side antifreeze protection
- local or remote (serial) unit switch-on management
- compressor timing and protection
- dry contacts for compressor status and enabling
- self-diagnosis system with immediate display of the failure code
- display of compressor hours of operation
- multifunction phase monitor
- remote ON/OFF control
- input for remote HEAT/COOL control
- digital input for enabling double set point
- automatic rotation control of compressor start-ups to balance wear (start-ups + operating hours)
- relay for remote cumulative alarm
- pre-alarm function for water antifreeze and for high refrigerant gas pressure
- set point compensation with outdoor air probe
- service socket (max 400W)

Water circuit

- temperature sensors
- drain valve
- antifreeze heater to protect the water side exchanger to prevent ice from forming if the water temperature drops below the pre-set value
- water side differential pressure switch
- relief valve

Test

Unit subjected to factory-tested in specific steps and test pressure of the piping of the refrigerant circuit (with nitrogen and hydrogen), before shipping them.

Unit equipment with outdoor air low temperatures

MINIMUM OUTDOOR AIR TEMPERATURE		OPERATING UNIT		UNIT IN STAND-BY ⁽⁵⁾ (fed unit)	UNIT IN STORAGE (unit not fed)
		COOLING*	HEATING**		
+11°C	1	✓ STANDARD UNIT	✓ STANDARD UNIT	✓ STANDARD UNIT	✓ STANDARD UNIT ⁽⁶⁾
+2°C	2				
-5°C	4				
-7°C	3				
-10°C	4	✓ STANDARD UNIT	✓ STANDARD UNIT	✓ STANDARD UNIT	✓ STANDARD UNIT ⁽⁶⁾
Between -10°C and -15°C					
From -15°C to -20°C		NOT POSSIBLE	NOT POSSIBLE	✓ UNIT DRAINED OF WATER OR CONTAINING AN APPROPRIATE PERCENTAGE OF GLYCOL	NOT POSSIBLE
From -20°C to -30°C				✓ WATER EMPTY UNIT OR WITH AN APPROPRIATE GLYCOL PERCENTAGE ✗ NOT SUITABLE: BUILT-IN PUMPS	

Data referred to the following conditions:

*chilled water production:

cold side exchanger water = 12/7°C

**hot water production:

internal exchanger water = 30/35 °C

1. Part load unit and air speed equal to 1 m/s.
2. Part load unit and air speed equal to 0.5 m/s.
3. Part load unit and outdoor air temperature at rest.
4. Full load unit and outdoor air temperature at rest.

⁽⁵⁾ The water pumping unit must be fed and connected to the unit according to the manual.

⁽⁶⁾ Unit without water or containing water with an appropriate quantity of glycol.

At the unit start-up the water temperature or water with glycol must be inside the operating range indicated in the "Operating range" graph.

To know the water freezing temperature on varying the glycol percentage refer to the specific 'Correction factors for glycol use' table.

⚠ Air conditions which are at rest are defined as the absence of air flowing towards the unit. Weak winds can induce air to flow through the exchanger and air-levels which can cause a reduction in the operating range.

In the presence of predominant winds it is necessary to use suitable windbreak barriers.

⚠ The unit, with an outdoor air temperature on average lower than -10°C, can remain stored for a maximum of 1 month.

Unit configuration

<u>WiSAN-YEE1 PL</u>	<u>85</u>	<u>.2/.4</u>	<u>4T</u>	<u>SC</u>	<u>CCHY</u>	<u>CREFB</u>	<u>=</u>	<u>=</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

(1) Range

WiSAN = Air-cooled heat pump

YEE1 = LARGE EVO series with inverter compressors and R-32 refrigerant

PL = Polyvalent unit

(2) Size

85 = Compressor nominal capacity in HP

(3) Compressors

.2 / .4 = Amount of compressors

(4) System configuration

4T = configuration for 4-pipe system

(5) Acoustic configuration

SC = Acoustic configuration with compressor soundproofing (standard)

LN = Silenced acoustic configuration

EN = Super-silenced acoustic configuration

(6) Condensing coil

CCHY = Copper / aluminium condenser coil with hydrophilic treatment (standard)

CCCA = Copper / aluminium condenser coil with acrylic lining

CCCA1 = Copper / aluminium condensing coils with Aluminium Energy Guard DCC treatment

(7) Fan

CREFB = Device for fan consumption reduction of the external section, ecobreeze type (standard)

(8) Heating side pumping group

(-) Not required (standard)

1+1PMHS = Hydronic heating side with 1+1 on-off pump

1+1PMHSV = Hydronic heating side with 1+1 inverter pump

1PMHS = Hydronic heating side with 1 on-off pump

1PMHSV = Hydronic heating side with 1 inverter pump

(9) Cool side pumping group

(-) Not required (standard)

1+1PMCS = Hydronic cooling side with 1+1 on-off pump

1+1PMCSV = Hydronic cooling side with 1+1 inverter pump

1PMCS = Hydronic cooling side with 1 on-off pump

1PMCSV = Hydronic cooling side with 1 inverter pump

PGFC

Finned coil protection grilles

Grilles made in drawn of electro-welded steel and coated to protect the external coil from accidental contact with people and things.

The protection grill has a height equal to the whole unit. Therefore, all areas under the coils are protected.

This accessory also protects the rear area of the unit opposite to the electric panel.

Ideal for installation in places where persons can pass from, such as car parks, terraces, etc.

The accessory is provided and installed built-in the unit. Grille slot 25 mm

⚠ This option is not suitable for application in sulphuric environments.

PGCCH

Anti-hail protection grilles

Grilles made in drawn of electro-welded steel and coated suitable to protect the external coil from hail damage.

Accessories supplied and installed on the unit.

⚠ This option is not suitable for application in sulphuric environments.

CCCA

Copper / aluminium condenser coil with acrylic lining

Condensing coils with copper pipes and aluminum fins with acrylic lacquering. Can be used in settings with moderately aggressive low saline concentrations and other chemical agents. The acrylic coating is used as the most economical and effective method particularly in protecting aluminum surfaces exposed to the corrosive influence of the humid and salty air in regions with marine climates.

Attention!

- Cooling capacity variation -2.7%
- Variation in compressor power input +4.2%
- Operating range reduction -2.1°C

CCCA1

Condenser coil with aluminium energy guard dcc treatment

Condensing coils with copper pipes and aluminum fins with Aluminium Energy Guard DCC treatment. Complete treatment which offers an optimal thermal exchange and guarantees and protects the finned coil exchangers from corrosion over time and UV rays. Can be used in settings with very aggressive saline concentrations and other chemical agents in the air thus maintaining the performance of the coils over time and with negligible pressure drop.

CMSC9

Serial communication module for Modbus supervisor

This enables the serial connection of the supervision system, using Modbus as the communication protocol. It enables access to the complete list of operational variables, commands and alarms. Using this accessory every unit can dialogue with the main supervision systems.

The device is installed and wired on the unit.

⚠ The total length of each serial line do not exceed 1200 meters and the line must be connected in bus typology (in/out)

CMSC10

Serial communication module for LonWorks supervisor

This enables the serial connection of the supervision system which uses the LonWorks communication protocol. It enables access to a list of operating variables, commands and alarms which comply with the Echelon® standard

The device is installed and wired on the unit

⚠ The configuration and management activities for the LonWorks networks are the responsibility of the client.

⚠ LonWorks technology uses the LonTalk® protocol for communicating between the network nodes. Contact the service supplier for further information.

⚠ The total length of each serial line do not exceed 900 meters and the line must be connected in bus typology (in/out)

CMSC11

Serial communication module for BACnet/IP supervisor

This enables the serial connection of the supervision system, using BACnet/IP as the communication protocol. It enables access to the complete list of operational variables, commands and alarms. Using this accessory every unit can dialogue with the main supervision systems.

The device is installed and wired on the unit.

⚠ The configuration and management activities for the BACnet networks are the responsibility of the client.

Built-in options

SPC1	Set-point compensation with 4-20 mA signal This device enables the set-point to be varied which is pre-set using an external 4÷20 mA signal. The device is installed and wired on the unit.
SCP4	Set-point compensation with 0-10 V signal This device enables the set-point to be varied which is pre-set using an external 0÷10 V signal. The device is installed and wired on the unit.
TCDC	Drain pan with electric heater The drain pan made of steel AISI 316 allows the collection and discharge of the condensate The two trays, located under the coils, are equipped with Mylar antifreeze electric heaters applied to the bottom and a drain located on the rear part, on the water connection side. The electric heaters are thermostatically controlled and are activated according to the external air temperature ($T_a < +5^{\circ}\text{C}$).
ABU	Water connections flush with the unit are required The water connections of the unit in standard configuration (without hydronic groups installed on board, or accumulation tank or DHW switching valve), end at the plate heat exchanger. It is necessary to select this option if water connections flush with the unit are required If hydronic groups or buffer tank or DHW switching valve are selected, the ABU option is automatically selected.
RPR	Refrigerant leak detector Leak detector device installed on the unit.
ECS	ECOSHARE function for the automatic management of a group of units The device allows automatic management of units that operate on the same hydraulic circuit, by creating a local communication network. The device allows for rotation based on the criterion of minimum wear and management of units in stand-by. The Ecoshare network coordinates the thermoregulation of the system in such a way that all the Slaves receive from the Master, the on/off status command, and the offset for scaling the SetPoints of the individual Slaves (which will work with their own thermoregulator) , according to wear, state of sleep in progress, and presence of alarms which would prevent the activation of the single Slave. There are various unit sizes. Every unit must have ECOSHARE mode. The group control is by a Master unit. The local network can be extended up to 7 units (1 Master and 6 Slave). For units in ECOSHARE, the minimum water content of the system is equal to that of the largest unit increased by +25% for each additional unit connected.  The unit supplied with this device can also be equipped at the same time with the RCMRX option and one of the CMSC9 / CMSC10 / CMSC11 options.  A non return valve must be provided for every unit installed in hydraulic parallel and fitted with an on-board pumping group (2PMHS, 2PMCS, 2PMHS2V, 2PMCS2V) (Installation by the Customer).
IVFCDT	Variable flow rate control cooling side by inverter according to the temperature differential Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the cool side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit. Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the following operating modes can be selected for the pumps: • keep the pumping unit running at minimum flow-rate to allow continuous monitoring of load variations on the secondary circuit; • switch off the pumping unit completely and start it periodically (with settable time) to bring the temperatures of the secondary circuit back to the primary one; • switch off the pumping unit completely and wait for the customer's consent to restart (potential-free contact). Device available with cool side inverter pumps.
IVFHDT	Variable flow rate control heating side by inverter according to the temperature differential Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the heat side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit. Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps. Device available with hot side inverter pumps.

IVFCDTS

Variable flow control cooling side by inverter according to the temperature differential with pressure drop sensor

Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the cool side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit and the differential pressure transducer that monitors the flow-rate of the cool side exchanger.

Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps.

Device available with cool side inverter pumps.

IVFHDTs

Variable flow control heating side by inverter according to the temperature differential with pressure drop sensor

Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the heat side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit and the differential pressure transducer that monitors the flow-rate of the heat side exchanger.

Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps.

Device available with hot side inverter pumps.

IVFCDTF

Variable flow rate control cooling side by inverter according to the temperature differential with a flow meter

Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the cool side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit and the differential pressure transducer that monitors the flow-rate of the cool side exchanger.

Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps.

Device available with cool side inverter pumps.

⚠ Option available only in conjunction with FMCHX option

IVFHDTF

Variable flow rate control heating side by inverter according to the temperature differential with a flow meter

Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the heat side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit and the differential pressure transducer that monitors the flow-rate of the heat side exchanger.

Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps.

Device available with hot side inverter pumps.

⚠ Option available only in conjunction with FMCHX option

CONTA3

M-bus total electricity meter

It allows to view and keep a record of the unit's main electrical parameters. The data can be displayed with the user interface on the unit or via the supervisor through the variable protocol specifications. The following can be monitored: supply voltage (V), current input (A), frequency (Hz), cosfi, power input (kW), energy input (kWh), electrical parameters of the built-in pumping units. The device is installed and wired on the unit.

CONTA4

Total electricity meters and m-bus pump group

It allows to view and keep a record of the unit's main electrical parameters. The data can be displayed with the user interface on the unit or via the supervisor through the variable protocol specifications. The following can be monitored: supply voltage (V), current input (A), frequency (Hz), cosfi, power input (kW), energy input (kWh), electrical parameters of the built-in pumping units. The device is installed and wired on the unit.

Built-in options

DLM0-10 Demand limit with signal 0-10V

The device allows to limit the absorption unit through an external signal type 0-10V.

DLM4-20 Demand limit with signal 4-20mA

The device allows to limit the absorption unit through an external signal type 4-20mA.

PFGP Soundproofing paneling of the pumping unit

Configuration used to increase the hydronic assembly's silent operation.

It is made up of steel casings lined internally with high-density material with a soundproofing function. The casings are pre-painted with RAL 9001 color.

Option available for all pumping groups installed on the unit, in combination with the standard acoustic configuration (ST) and with compressor soundproofing (SC).

MISTER1 Indirect energy meter through pressure drops and unit probes temperature differential

The temperature probes measure the instantaneous capacity of the unit through indirect reading of the flow-rates and temperature differential.

 Option only available in combination with the IVFCDTS and IVFHDTS options.

MISTER2 Direct energy meter by flow rate and temperature differential with unit probes

The temperature probes measure the instantaneous capacity of the unit through direct reading of the flow-rates and temperature differential.

 Option available only in conjunction with FMCHX option

PGFCX

Finned coil protection grilles

Grilles made in drawn of electro-welded steel and coated to protect the external coil from accidental contact with people and things.

The protection grill has a height equal to the whole unit. Therefore, all areas under the coils are protected.

This accessory also protects the rear area of the unit opposite to the electric panel.

Ideal for installation in places where persons can pass from, such as car parks, terraces, etc.

Grille slot 25 mm.

⚠ This option is not suitable for application in sulphuric environments.

PGCCHX

Anti-hail protection grilles

Grille made of electro-welded and painted drawn steel suitable for protecting the external coil from hail damage.

⚠ This option is not suitable for application in sulphuric environments.

RCMRX

Remote control via microprocessor control

This option allows to have full control over all the unit functions from a remote position.

It can be easily installed on the wall and has the same aspect and functions of the user interface on the unit.

⚠ All device functions can be repeated with a normal portable PC connected to the unit with an Ethernet cable and equipped with an internet navigation browser.

⚠ The device must be installed on the wall with suitable plugs and connected to the unit (installation and wiring to be conducted by the Customer). Maximum remote control distance 350 m without auxiliary power supply.

⚠ For distances greater than 350 m and in any case less than 700 m it is necessary to install the 'PSX - Mains power unit' accessory.

⚠ Data and power supply serial connection cable n.1 twisted and shielded pair. Diameter of the individual conductor 0.8 mm.

⚠ Installation is a responsibility of the Customer.

AVIBX

Spring antivibration mounts

The spring antivibration mounts are attached in special housing on the support frame and serve to smooth the vibrations produced by the unit thus reducing the noise transmitted to the support structure.

⚠ Installation is a responsibility of the Customer.

AMMSX

Anti-seismic spring antivibration mounts

The anti-seismic spring antivibration mounts must be fastened in special housings on the supporting metal struts.

The containment structure is designed to ensure high resistance multidirectional forces acting on the surface of the unit in the presence of wind and / or telluric movements.

The antivibration mounts have been tested according to ANSI/ASHRAE 171-2008 standard (Method of Testing Seismic Restraint devices for HVAC&R Equipment). The performance levels and the test methodology have been validated and certified by Lloyd's Register.

⚠ Installation is a responsibility of the Customer.

IFWX

Steel mesh strainer on the water side

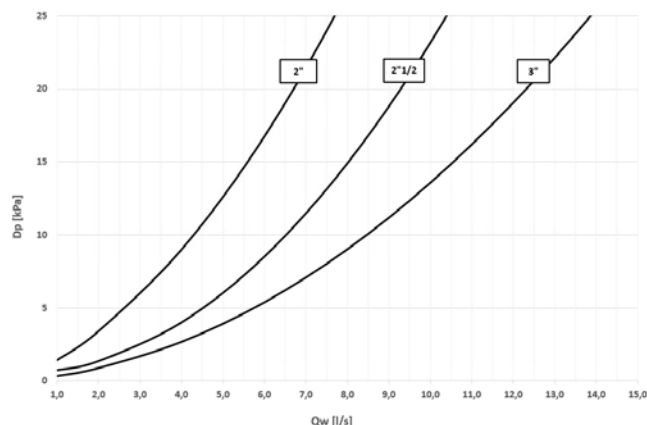
The device stops the exchanger from being clogged by any impurities which are in the hydraulic circuit. The mechanical steel mesh strainer must be placed on the water input line. It can be easily dismantled for periodical maintenance and cleaning. It also includes:

- cast-iron shut-off butterfly valve with quick connections and activation lever with a mechanical calibration lock;
- quick connections with insulated casing.

⚠ Steel mesh strainer pressure drops

⚠ Installation is a responsibility of the Customer, outside the unit.

⚠ Check for the presence of the required hydraulic shut-off valves in the system, in order to undertake periodical maintenance.



Accessories separately supplied

PSX

Mains power supply

The device allows the unit and the remote control to communicate with the user interface even when the serial line is longer than 350 m. It must be connected to the serial line at a distance of 350 m from the unit and allows to extend the length to 700 m maximum in total. The device requires an external power supply at 230V AC.

- ⚠ Power supply at 230V AC provided by Customer.
- ⚠ Installation is a responsibility of the Customer.

FMCHX

Cooling and heating side flow meters

Measures the water flow-rate in the cool side and heat side exchangers.

- ⚠ The pipe section before the meter must respect a length from the center of the measuring pipe equal to 3 times the nominal diameter of the sensor and that the pipe after the meter has a straight section equal to 3 times the nominal diameter.
- ⚠ Installation is a responsibility of the Customer, outside the unit.

IOTX

IoT industrial module for cloud based interoperability & services

This device allows the monitoring and the remote control the unit via Clivet Eye, the supervision cloud system for Clivet units.

With IoT module (i-LINK) it will be possible to monitor and manage the unit through the mobile app Clivet Eye and the dedicated web page.

Among the main functions, for all monitored units they allow to:

- display the main working parameters;
- display the alarms;
- switch on/off the unit;
- change the setpoint;
- change the operating mode;
- set the daily/weekly start-up or power-off programming of the unit;
- create charts of main system parameters trend (via web interface);
- display in a map the units monitored by Clivet Eye (via web interface).

Web interface at www.cliveteye.com.

Clivet Eye app available in Google Play and Apple Store

- ⚠ IoT module to be provided for each unit to be remotely monitored.
- ⚠ Internet ethernet connection in charge of customer.
- ⚠ Clivet Eye management is alternative to an external BMS supervision system.
- ⚠ Installation is a responsibility of the Customer.



Performances

Compressor soundproofing acoustic configuration (SC)

SIZE			20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Cooling 100% - Heating 0%																
Cooling capacity	1	kW	51,8	61,8	71,2	81,7	91,6	111	124	136	149	163	181	200	219	238
Compressor power input	1	kW	14,1	19,4	18,6	23,5	29,0	30,9	37,1	43,1	50,2	47,0	57,0	58,2	68,0	79,8
Total power input	2	kW	16,7	22,0	22,5	27,4	32,9	36,1	42,3	47,3	54,4	52,6	62,6	65,2	75,0	86,8
EER	1	-	3,10	2,81	3,16	2,98	2,78	3,07	2,93	2,89	2,74	3,09	2,89	3,06	2,92	2,74
Water flow-rate cold side	1	l/s	2,48	2,95	3,40	3,90	4,38	5,30	5,93	6,52	7,11	7,78	8,66	9,55	10,5	11,4
Cold side pressure drops	1	kPa	26,9	38,3	25,5	33,6	42,3	40,8	51,0	36,5	43,4	33,7	41,8	33,6	40,3	47,5
Cooling capacity (EN14511:2022)	3	kW	51,7	61,7	71,1	81,5	91,4	111	124	136	149	162	181	200	219	238
Total power input (EN14511:2022)	3	kW	16,8	22,2	22,7	27,7	33,3	36,6	43,0	47,8	55,1	53,2	63,4	66,0	75,9	87,8
EER (EN14511:2022)	3	-	3,07	2,77	3,13	2,94	2,74	3,03	2,88	2,85	2,70	3,05	2,85	3,03	2,88	2,70
SEER	6	-	4,25	4,23	4,48	4,45	4,44	4,62	4,60	4,38	4,35	4,65	4,64	4,62	4,61	4,59
SEPR	6	-	5,32	5,29	5,60	5,56	5,55	5,77	5,74	5,47	5,43	5,81	5,80	5,78	5,77	5,74
Cooling capacity (AHRI 550/590)	4	kW	51,2	61,2	70,5	80,8	90,6	110	123	135	147	161	180	198	217	235
Total power input (AHRI 550/590)	4	kW	16,6	21,9	22,5	27,5	32,9	36,1	42,4	47,0	54,1	52,5	62,4	65,2	75,0	86,8
COP _R	4	-	3,08	2,79	3,13	2,94	2,75	3,05	2,89	2,87	2,72	3,07	2,88	3,04	2,89	2,71
IPLV	4	-	4,04	3,98	4,25	4,20	4,19	4,36	4,35	4,14	4,13	4,42	4,40	4,39	4,34	4,34
Cooling 0% - Heating 100%																
Heating capacity	7	kW	64,4	72,6	80,3	92,1	104	120	136	154	173	191	211	231	253	280
Compressor power input	7	kW	17,8	21,2	19,8	24,2	28,7	31,2	36,3	43,1	50,7	52,1	59,8	61,3	70,3	81,9
Total power input	2	kW	20,4	23,8	23,7	28,1	32,6	36,4	41,5	47,3	54,9	57,7	65,4	68,3	77,3	88,9
COP	7	-	3,16	3,05	3,39	3,28	3,20	3,30	3,28	3,26	3,14	3,32	3,22	3,38	3,27	3,15
Hot side water flow rate	7	l/s	3,08	3,47	3,84	4,40	4,97	5,74	6,51	7,36	8,24	9,14	10,1	11,0	12,1	13,4
Hot side pressure drop	7	kPa	41,5	52,8	32,5	42,7	54,5	47,8	61,5	46,6	58,4	46,7	56,8	44,8	53,7	65,6
Heating capacity (EN14511:2022)	8	kW	64,5	72,8	80,5	92,3	104	120	137	154	173	192	211	231	253	280
Total power input (EN14511:2022)	8	kW	20,7	24,2	24,0	28,5	33,2	37,0	42,4	48,0	55,8	58,5	66,5	69,3	78,5	90,4
COP (EN14511:2022)	8	-	3,12	3,00	3,36	3,24	3,15	3,25	3,22	3,22	3,10	3,27	3,18	3,34	3,23	3,10
SCOP - AVERAGE Climate - W35	5	-	4,16	4,15	4,17	4,12	4,10	4,16	4,14	4,08	4,06	4,13	4,12	4,08	4,06	4,04
SCOP - AVERAGE Climate - W55	5	-	2,95	3,06	3,04	3,08	3,17	3,07	3,18	3,07	3,12	3,17	3,19	3,01	3,11	3,27
Cooling 100% - Heating 100%																
Cooling capacity	9	kW	53,2	62,3	69,9	80,4	88,2	108	116	134	149	166	176	189	208	226
Heating capacity	9	kW	70,4	83,8	91,8	107	119	144	156	178	199	218	232	246	274	302
Total power input	9	kW	17,7	21,9	22,3	27,4	31,4	36,2	40,5	44,2	50,6	52,0	56,1	57,2	66,5	76,5
TER	10	-	6,96	6,66	7,24	6,84	6,61	6,95	6,72	7,06	6,89	7,39	7,28	7,60	7,25	6,92

The Product is compliant with the Erp (Energy Related Products) European Directive, It includes the Commission delegated Regulation (UE) N. 813/2013 Commission (nominal heating capacity ≤400 kW at specified reference conditions) and the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21 Contains fluorinated greenhouse gases (GWP 675)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.44×10^{-4} m² K/W.
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.
3. Data calculated in accordance with EN 14511:2022 under the following conditions: Cold side exchanger water temperature = 12/7 °C. Temperature of air entering the external exchanger = 35°C
4. Data compliant to Standard AHRI 550/590 referred to the following conditions: Cold side exchanger water temperature = 6,7°C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.18×10^{-4} m² K/W
5. Data compliant according to EU regulation 813/2013
6. Data compliant according to EU regulation 2016/2281
7. Data referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B. Evaporator fouling factor = 0.44×10^{-4} m² K/W
8. Data calculated in accordance with EN 14511:2022 under the following conditions: Hot side exchanger water temperature = 40/45 °C. Temperature of air entering the external exchanger = 7°C D.B./6°C W.B.
9. Data referring to the following conditions: Cold side exchanger water temperature = *7 °C. Hot side exchanger water temperature = */45 °C Exchanger fouling factor = 0.44×10^{-4} m² K/W
10. TER = (Cooling capacity + Heating capacity) / Total power input

General technical data

Performances

Silenced acoustic configuration (LN)

SIZE			20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Cooling 100% - Heating 0%																
Cooling capacity	1	kW	48,2	57,5	66,2	75,9	85,2	103	115	127	138	151	168	186	204	221
Compressor power input	1	kW	13,6	18,5	18,0	22,6	27,7	29,7	35,5	41,3	47,9	45,4	54,6	56,2	65,3	76,3
Total power input	2	kW	15,5	20,4	20,9	25,5	30,6	33,5	39,4	44,0	50,6	49,0	58,2	60,7	69,8	80,8
EER	1	-	3,10	2,81	3,16	2,98	2,78	3,07	2,93	2,89	2,74	3,09	2,89	3,06	2,92	2,74
Water flow-rate cold side	1	l/s	2,30	2,75	3,16	3,63	4,07	4,93	5,51	6,06	6,61	7,23	8,05	8,88	9,7	10,6
Cold side pressure drops	1	kPa	23,3	33,1	22,1	29,1	36,6	35,2	44,1	31,5	37,5	29,1	36,1	29,1	34,9	41,1
Cooling capacity (EN14511:2022)	3	kW	48,1	57,4	66,1	75,8	85,0	103	115	127	138	151	168	186	203	221
Total power input (EN14511:2022)	3	kW	15,6	20,6	21,1	25,7	31,0	33,9	39,9	44,4	51,1	49,4	58,9	61,3	70,5	81,6
EER (EN14511:2022)	3	-	3,08	2,78	3,14	2,95	2,75	3,03	2,88	2,85	2,70	3,06	2,85	3,03	2,88	2,71
SEER	6	-	4,17	4,17	4,43	4,41	4,39	4,53	4,50	4,30	4,29	4,64	4,59	4,62	4,57	4,55
SEPR	6	-	5,22	5,22	5,53	5,51	5,49	5,66	5,63	5,37	5,36	5,80	5,73	5,77	5,71	5,69
Cooling capacity (AHRI 550/590)	4	kW	47,6	56,9	65,5	75,2	84,2	102	114	126	137	150	167	184	201	219
Total power input (AHRI 550/590)	4	kW	15,5	20,4	20,9	25,6	30,6	33,6	39,5	43,7	50,3	48,8	58,0	60,6	69,8	80,7
COP _R	4	-	3,08	2,79	3,13	2,94	2,75	3,05	2,89	2,87	2,72	3,07	2,88	3,04	2,89	2,71
IPLV	4	-	3,95	3,94	4,18	4,18	4,15	4,26	4,24	4,05	4,05	4,37	4,32	4,35	4,30	4,28
Cooling 0% - Heating 100%																
Heating capacity	7	kW	59,9	67,5	74,7	85,6	96,8	112	127	143	160	178	196	215	235	260
Compressor power input	7	kW	17,0	20,3	19,1	23,2	27,4	30,0	34,8	41,2	48,3	50,0	57,3	59,0	67,4	78,2
Total power input	2	kW	18,9	22,2	22,0	26,1	30,3	33,8	38,6	43,9	51,0	53,6	60,9	63,5	71,9	82,7
COP	7	-	3,16	3,05	3,39	3,28	3,20	3,30	3,28	3,26	3,14	3,32	3,22	3,38	3,27	3,15
Hot side water flow rate	7	l/s	2,86	3,23	3,57	4,09	4,62	5,33	6,05	6,85	7,67	8,50	9,38	10,3	11,2	12,4
Hot side pressure drop	7	kPa	35,9	45,7	28,1	36,9	47,1	41,3	53,2	40,3	50,5	40,3	49,1	38,8	46,5	56,8
Heating capacity (EN14511:2022)	8	kW	60,0	67,7	74,8	85,8	97,1	112	127	144	161	178	197	215	236	261
Total power input (EN14511:2022)	8	kW	19,2	22,5	22,2	26,5	30,8	34,3	39,3	44,6	51,8	54,4	61,8	64,4	72,9	84,0
COP (EN14511:2022)	8	-	3,13	3,01	3,36	3,24	3,15	3,26	3,23	3,22	3,10	3,28	3,18	3,34	3,23	3,11
SCOP - AVERAGE Climate - W35	5	-	4,08	4,09	4,12	4,08	4,05	4,08	4,06	4,00	4,00	4,12	4,07	4,08	4,02	4,01
SCOP - AVERAGE Climate - W55	5	-	2,89	3,02	3,00	3,05	3,14	3,01	3,12	3,01	3,08	3,16	3,15	3,00	3,08	3,24
Cooling 100% - Heating 100%																
Cooling capacity	9	kW	49,4	58,0	65,0	74,7	82,1	100	108	125	139	155	164	176	193	211
Heating capacity	9	kW	65,4	77,9	85,3	100	111	134	145	165	185	203	216	228	255	281
Total power input	9	kW	16,5	20,4	20,8	25,5	29,2	33,7	37,7	41,1	47,1	48,4	52,1	53,2	61,8	71,1
TER	10	-	6,96	6,66	7,24	6,84	6,61	6,95	6,72	7,06	6,89	7,39	7,28	7,60	7,25	6,92

The Product is compliant with the Erp (Energy Related Products) European Directive, It includes the Commission delegated Regulation (UE) N. 813/2013 Commission (nominal heating capacity ≤400 kW at specified reference conditions) and the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21

Contains fluorinated greenhouse gases (GWP 675)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.44 x 10⁻⁴ m² K/W.
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.
3. Data calculated in accordance with EN 14511:2022 under the following conditions: Cold side exchanger water temperature = 12/7 °C. Temperature of air entering the external exchanger = 35°C
4. Data compliant to Standard AHRI 550/590 referred to the following conditions: Cold side exchanger water temperature = 6,7°C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.18 x 10⁻⁴ m² K/W
5. Data compliant according to EU regulation 813/2013
6. Data compliant according to EU regulation 2016/2281
7. Data referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B. Evaporator fouling factor = 0.44 x 10⁻⁴ m² K/W
8. Data calculated in accordance with EN 14511:2022 under the following conditions: Hot side exchanger water temperature = 40/45 °C. Temperature of air entering the external exchanger = 7°C D.B./6°C W.B.
9. Data referring to the following conditions: Cold side exchanger water temperature = 7/7 °C. Hot side exchanger water temperature = 45 °C Exchanger fouling factor = 0.44 x 10⁻⁴ m² K/W
10. TER = (Cooling capacity + Heating capacity) / Total power input

Performances

Super-silenced acoustic configuration (EN)

SIZE			20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Cooling 100% - Heating 0%																
Cooling capacity	1	kW	44,6	53,2	61,2	70,2	78,8	95,4	107	117	128	140	156	172	188	205
Compressor power input	1	kW	13,0	17,6	17,4	21,6	26,3	28,4	33,8	39,2	45,3	43,3	51,9	53,6	62,0	72,2
Total power input	2	kW	14,4	18,9	19,4	23,5	28,3	31,0	36,4	40,7	46,8	45,3	53,9	56,1	64,5	74,7
EER	1	-	3,10	2,81	3,16	2,98	2,78	3,07	2,93	2,89	2,74	3,09	2,89	3,06	2,92	2,74
Water flow-rate cold side	1	l/s	2,13	2,54	2,93	3,36	3,77	4,56	5,10	5,60	6,11	6,69	7,44	8,21	8,99	9,78
Cold side pressure drops	1	kPa	19,9	28,3	18,9	24,9	31,3	30,1	37,7	26,9	32,1	24,8	30,8	24,9	29,9	35,2
Cooling capacity (EN14511:2022)	3	kW	44,5	53,1	61,2	70,1	78,7	95,2	106	117	128	140	156	172	188	204
Total power input (EN14511:2022)	3	kW	14,4	19,1	19,5	23,7	28,6	31,3	36,8	41,0	47,2	45,7	54,4	56,6	65,1	75,4
EER (EN14511:2022)	3	-	3,08	2,78	3,14	2,95	2,75	3,04	2,89	2,86	2,70	3,06	2,86	3,03	2,88	2,71
SEER	6	-	4,14	4,13	4,40	4,38	4,35	4,52	4,50	4,29	4,26	4,62	4,58	4,60	4,54	4,54
SEPR	6	-	5,18	5,16	5,49	5,47	5,44	5,65	5,62	5,36	5,33	5,78	5,72	5,75	5,68	5,67
Cooling capacity (AHRI 550/590)	4	kW	44,1	52,6	60,6	69,5	77,9	95	106	116	127	139	154	170	186	202
Total power input (AHRI 550/590)	4	kW	14,3	18,9	19,3	23,7	28,3	31,0	36,5	40,4	46,5	45,2	53,6	56,1	64,5	74,6
COP _R	4	-	3,08	2,79	3,13	2,94	2,75	3,05	2,89	2,87	2,72	3,07	2,88	3,04	2,89	2,71
IPLV	4	-	3,93	3,91	4,17	4,14	4,09	4,25	4,27	4,04	4,04	4,35	4,33	4,35	4,27	4,27
Cooling 0% - Heating 100%																
Heating capacity	7	kW	55,4	62,4	69,1	79,2	89,5	103	117	133	148	165	181	199	218	241
Compressor power input	7	kW	16,2	19,2	18,4	22,2	26,0	28,7	33,1	39,1	45,7	47,6	54,3	56,3	64,0	74,0
Total power input	2	kW	17,5	20,5	20,4	24,2	28,0	31,3	35,7	40,6	47,2	49,6	56,3	58,8	66,5	76,5
COP	7	-	3,16	3,05	3,39	3,28	3,20	3,30	3,28	3,26	3,14	3,32	3,22	3,38	3,27	3,15
Hot side water flow rate	7	l/s	2,64	2,98	3,30	3,78	4,28	4,93	5,60	6,33	7,09	7,86	8,67	9,49	10,4	11,5
Hot side pressure drop	7	kPa	30,7	39,1	24,1	31,6	40,3	35,3	45,5	34,4	43,2	34,4	41,9	33,2	39,8	48,7
Heating capacity (EN14511:2022)	8	kW	55,5	62,6	69,2	79,4	89,7	103	117	133	149	165	182	199	218	241
Total power input (EN14511:2022)	8	kW	17,7	20,8	20,5	24,4	28,4	31,7	36,3	41,1	47,9	50,2	57,0	59,5	67,3	77,5
COP (EN14511:2022)	8	-	3,13	3,01	3,37	3,25	3,16	3,26	3,24	3,23	3,11	3,28	3,19	3,35	3,24	3,11
SCOP - AVERAGE Climate - W35	5	-	4,05	4,05	4,09	4,05	4,02	4,07	4,05	3,99	3,98	4,11	4,06	4,07	4,00	4,00
SCOP - AVERAGE Climate - W55	5	-	2,87	2,99	2,98	3,03	3,11	3,01	3,12	3,00	3,06	3,15	3,15	3,00	3,06	3,23
Cooling 100% - Heating 100%																
Cooling capacity	9	kW	45,7	53,6	60,2	69,1	75,9	92,9	100	115	128	143	152	162	179	195
Heating capacity	9	kW	60,5	72,0	78,9	92,2	102	124	134	153	171	187	199	211	236	260
Total power input	9	kW	15,2	18,9	19,2	23,6	27,0	31,2	34,8	38,0	43,5	44,7	48,2	49,2	57,1	65,7
TER	10	-	6,96	6,66	7,24	6,84	6,61	6,95	6,72	7,06	6,89	7,39	7,28	7,60	7,25	6,92

The Product is compliant with the Erp (Energy Related Products) European Directive, It includes the Commission delegated Regulation (UE) N. 813/2013 Commission (nominal heating capacity ≤400 kW at specified reference conditions) and the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21 Contains fluorinated greenhouse gases (GWP 675)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.44×10^{-4} m² K/W.
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.
3. Data calculated in accordance with EN 14511:2022 under the following conditions: Cold side exchanger water temperature = 12/7 °C. Temperature of air entering the external exchanger = 35°C
4. Data compliant to Standard AHRI 550/590 referred to the following conditions: Cold side exchanger water temperature = 6,7°C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.18×10^{-4} m² K/W
5. Data compliant according to EU regulation 813/2013
6. Data compliant according to EU regulation 2016/2281
7. Data referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B. Evaporator fouling factor = 0.44×10^{-4} m² K/W
8. Data calculated in accordance with EN 14511:2022 under the following conditions: Hot side exchanger water temperature = 40/45 °C. Temperature of air entering the external exchanger = 7°C D.B./6°C W.B.
9. Data referring to the following conditions: Cold side exchanger water temperature = *7 °C. Hot side exchanger water temperature = */45 °C Exchanger fouling factor = 0.44×10^{-4} m² K/W
10. TER = (Cooling capacity + Heating capacity) / Total power input

General technical data

Construction

SIZE		20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Compressor															
Type of compressors	1	ROTARY INVERTER				SCROLL INVERTER									
Refrigerant		R-32													
N° compressors	Nr	2	2	2	2	2	2	2	4	4	4	4	4	4	4
Rated power (C1)	HP	25	25	35	35	35	45	45	35	35	45	45	45	45	45
Rated power (C2)	HP	25	25	35	35	35	45	45	35	35	45	45	45	45	45
Std Capacity control steps		STEPLESS													
Oil charge (C1)	l	2,3	2,3	3,1	3,1	3,1	3,8	3,8	6,2	6,2	7,6	7,6	7,6	7,6	7,6
Oil charge (C2)	l	2,3	2,3	3,1	3,1	3,1	3,8	3,8	6,2	6,2	7,6	7,6	7,6	7,6	7,6
Refrigerant charge (C1)	kg	12,0	12,0	15,0	15,0	15,0	18,0	18,0	19,0	19,0	21,0	21,0	27,0	27,0	27,0
Refrigerant charge (C2)	kg	12,0	12,0	15,0	15,0	15,0	18,0	18,0	19,0	19,0	21,0	21,0	27,0	27,0	27,0
Refrigeration circuits	Nr	2													
Cold side exchanger															
Type of internal exchanger	2	PHE													
N. of internal exchanger	Nr	1													
Water content	l	10,7	10,7	13,0	13,0	13,0	18,2	18,2	21,5	21,5	28,5	28,5	34,1	34,1	34,1
Minimum system water content	l	300	350	450	500	550	600	700	750	800	900	1000	1100	1200	1300
Hot side exchanger															
Type of internal exchanger	2	PHE													
N. of internal exchanger	Nr	1													
Water content	l	10,7	10,7	13,0	13,0	13,0	18,2	18,2	21,5	21,5	28,5	28,5	34,1	34,1	34,1
Minimum system water content	l	450	500	550	650	750	800	900	1000	1100	1250	1350	1500	1650	1800
External exchanger															
Type of external exchanger	3	CCHY													
Number of coils	Nr	2													
External Section Fans															
Type of fans	4	AX													
Number of fans	Nr	4	4	6	6	6	8	8	6	6	8	8	10	10	10
Type of motor	5	EC													
Standard airflow (SC)	l/s	36000	36000	36000	54000	54000	72000	72000	62400	62400	83200	83200	104000	104000	104000
Standard airflow (LN)	l/s	28800	28800	43200	43200	43200	57600	57600	49920	49920	66560	66560	83200	83200	83200
Standard airflow (EN)	l/s	25200	25200	37800	37800	37800	50400	50400	43680	43680	58240	58240	72800	72800	72800
Connections															
Water fittings		2"	2"	2"	2"	2"	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2	3"	3"	3"
Power supply															
Standard power supply		400/3/50													
Electrical data															
F.L.A. - Total	[A]	64,9	67,8	74,9	77,9	79,0	96,6	98,9	140	147	171	176	179	184	188
F.L.I. - Total	[kW]	37,2	38,9	42,9	44,7	45,3	55,4	56,7	80,6	84,1	98,2	101	103	105	108
M.I.C. - Value	6 [A]	30,9	30,9	34,4	34,4	34,4	47,3	47,3	63,9	63,9	90,2	90,2	90,2	90,2	90,2

1. ROTARY / SCROLL = ROTARY Compressor / SCROLL Compressor
2. PHE = Plate exchanger
3. CCHY = Copper / aluminium condenser coil with hydrophilic treatment
4. AX = Axial fan
5. EC = Asynchronous motor with permanent magnet commuted electronically.
6. M.I.C. = Maximum unit starting current. The M.I.C. value is obtained adding the max. compressor starting current of the highest size to the power input at max. admissible conditions (F.L.A.) of the remaining electric components.

Unbalance between phase max 2%.
Voltage variation: max +/- 10%.
Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations.

Sound level

Compressor soundproofing acoustic configuration (SC)

SIZE	Sound power level (dB) - Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
20.2	93	85	83	80	79	73	66	60	65	83
25.2	93	85	83	80	79	73	66	60	65	83
30.2	95	87	85	82	81	75	68	62	67	85
35.2	95	87	85	82	81	75	68	62	67	85
40.2	95	87	85	82	81	75	68	62	67	85
45.2	97	89	87	84	83	77	70	64	68	87
50.2	97	89	87	84	83	77	70	64	68	87
55.4	98	90	88	85	84	78	71	65	69	88
60.4	98	90	88	85	84	78	71	65	69	88
65.4	99	91	89	86	85	79	72	66	70	89
70.4	99	91	89	86	85	79	72	66	70	89
75.4	101	93	91	88	87	81	74	68	72	91
80.4	101	93	91	88	87	81	74	68	72	91
85.4	101	93	91	88	87	81	74	68	72	91

Silenced acoustic configuration (LN)

SIZE	Sound power level (dB) - Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
20.2	89	81	79	76	75	69	62	56	61	79
25.2	89	81	79	76	75	69	62	56	61	79
30.2	91	83	81	78	77	71	64	58	63	81
35.2	91	83	81	78	77	71	64	58	63	81
40.2	91	83	81	78	77	71	64	58	63	81
45.2	93	85	83	80	79	73	66	60	64	83
50.2	93	85	83	80	79	73	66	60	64	83
55.4	94	86	84	81	80	74	67	61	65	84
60.4	94	86	84	81	80	74	67	61	65	84
65.4	95	87	85	82	81	75	68	62	66	85
70.4	95	87	85	82	81	75	68	62	66	85
75.4	97	89	87	84	83	77	70	64	68	87
80.4	97	89	87	84	83	77	70	64	68	87
85.4	97	89	87	84	83	77	70	64	68	87

General technical data

Sound level

Super-silenced acoustic configuration (EN)

SIZE	Sound power level (dB) - Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
20.2	85	77	75	72	71	65	58	52	57	75
25.2	85	77	75	72	71	65	58	52	57	75
30.2	87	79	77	74	73	67	60	54	59	77
35.2	87	79	77	74	73	67	60	54	59	77
40.2	87	79	77	74	73	67	60	54	59	77
45.2	89	81	79	76	75	69	62	56	60	79
50.2	89	81	79	76	75	69	62	56	60	79
55.4	90	82	80	77	76	70	63	57	61	80
60.4	90	82	80	77	76	70	63	57	61	80
65.4	91	83	81	78	77	71	64	58	62	81
70.4	91	83	81	78	77	71	64	58	62	81
75.4	93	85	83	80	79	73	66	60	64	83
80.4	93	85	83	80	79	73	66	60	64	83
85.4	93	85	83	80	79	73	66	60	64	83

The sound levels refer to a unit at full load, under nominal test conditions. The sound pressure level refers to 1 m from a standard unit's outer surface operating in open field. Data referred to the following conditions:

COOLING

Internal exchanger water temperature = 12/7 °C

Temperature of air entering the external exchanger = 35°C.

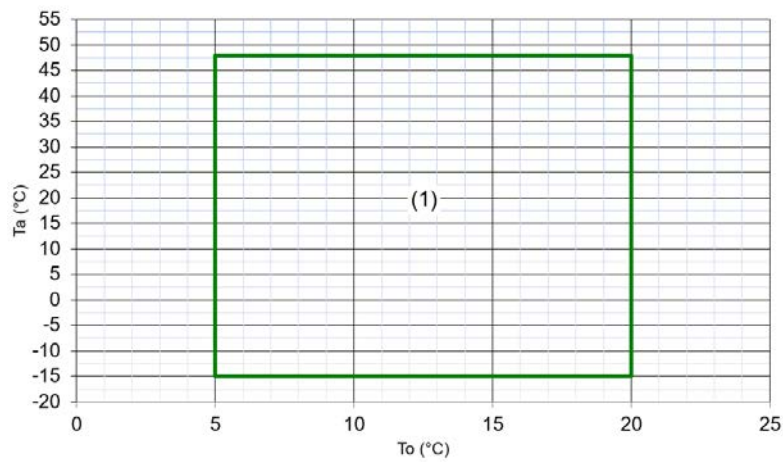
HEATING

Internal exchanger water temperature = 40/45 °C

Temperature of air entering the external exchanger = 7°C.

Operating range

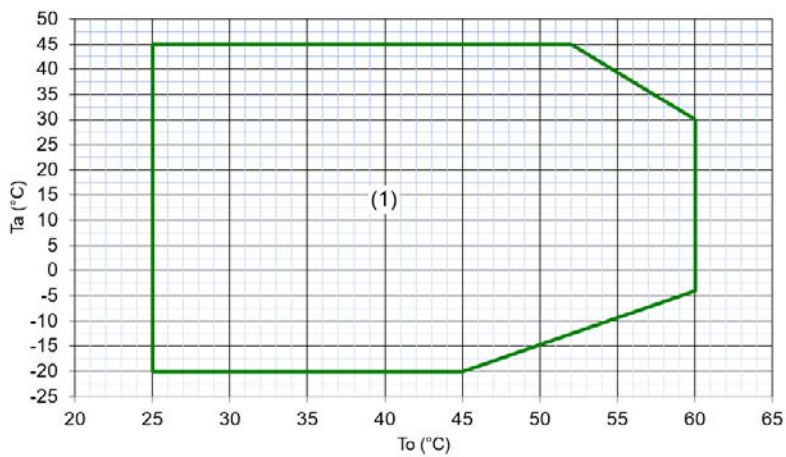
Cooling



T_a (°C) = external exchanger inlet air temperature (D.B.)
 T_o (°C) = Cold side exchanger outlet water temperature

1. Standard unit operating range

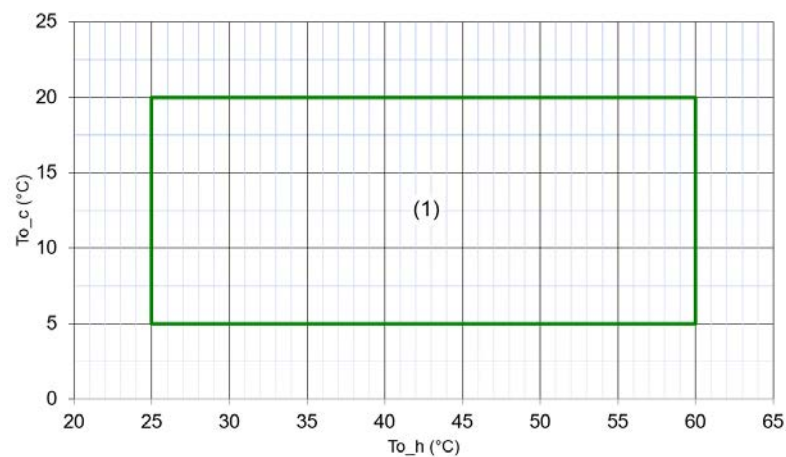
Heating



T_a (°C) = External exchanger inlet air temperature (D.B.)
 T_o (°C) = Hot side exchanger outlet water temperature

1. Standard unit operating range

Cooling 100% - Heating 100%



T_{o_h} = Hot side exchanger outlet water temperature
 T_{o_c} = Cold side exchanger outlet water temperature

1. Standard unit operating range

General technical data

Correction factors for ethylene glycol use

% ETHYLENE GLYCOL BY WEIGHT		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19	-23,4	-27,8	-32,7
Safety temperature	°C	3	1	-1	-4	-6	-10	-14	-19	-23,8	-29,4
Cold side exchanger cooling capacity Factor	-	0,995	0,989	0,983	0,977	0,971	0,964	0,956	0,949	0,941	0,933
Compressor power input Factor (cold side)	-	0,998	0,997	0,995	0,994	0,992	0,990	0,989	0,987	0,986	0,984
Cold side exchanger pressure drop factor	-	1,041	1,085	1,131	1,180	1,231	1,285	1,341	1,400	1,461	1,525
Cooling capacity Factor (hot side)	-	0,998	0,996	0,994	0,992	0,990	0,988	0,986	0,984	0,982	0,980
Compressor power input Factor (hot side)	-	1,003	1,006	1,009	1,012	1,015	1,018	1,021	1,024	1,027	1,030
Hot side exchanger heating capacity Factor	-	0,999	0,998	0,997	0,996	0,995	0,994	0,993	0,992	0,991	0,990
Hot side exchanger pressure drop factor	-	1,037	1,077	1,118	1,162	1,208	1,257	1,307	1,360	1,415	1,473

Correction factors for propylene glycol use

% PROPYLENE GLYCOL BY WEIGHT		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19	-23,4	-27,8	-32,7
Safety temperature	°C	3	1	-1	-4	-6	-10	-14	-19	-23,8	-29,4
Cold side exchanger cooling capacity Factor	-	0,993	0,985	0,977	0,968	0,958	0,947	0,936	0,925	0,912	0,899
Compressor power input Factor (cold side)	-	0,998	0,995	0,993	0,990	0,987	0,983	0,980	0,976	0,972	0,968
Cold side exchanger pressure drop factor	-	1,052	1,108	1,170	1,237	1,309	1,386	1,467	1,554	1,646	1,743
Cooling capacity Factor (hot side)	-	0,996	0,992	0,987	0,982	0,977	0,971	0,965	0,959	0,952	0,945
Compressor power input Factor (hot side)	-	1,004	1,007	1,011	1,014	1,018	1,021	1,025	1,028	1,032	1,035
Hot side exchanger heating capacity Factor	-	0,998	0,996	0,994	0,991	0,988	0,984	0,980	0,976	0,971	0,966
Hot side exchanger pressure drop factor	-	1,047	1,098	1,153	1,213	1,278	1,347	1,421	1,499	1,581	1,669

Fouling Correction Factors

M2 °C/W	Scambiatore lato freddo		Scambiatore lato caldo	
	F1	FK1	F2	FK2
0,44 x 10 (-4)	1,0	1,0	1,0	1,0
0,88 x 10 (-4)	0,97	0,99	0,97	1,08
1,76 x 10 (-4)	0,94	0,98	0,92	1,05

F1 = Cooling capacity correction factors

FK1 = Compressor power input correction factor

F2 = Cooling capacity correction factors

FK2 = Compressor power input correction factor

Exchanger operating range

	Scambiatore lato freddo		Scambiatore lato caldo	
	DPR	DPW	DPR	DPW
PED (CE)	3000	1000	4500	1000

DPr = Maximum operating pressure on refrigerant side in kPa

DPw = Maximum operating pressure on water side in kPa

Overload and control device calibrations

		OPEN	CLOSE	VALUE
Refrigerant side				
High pressure safety pressure switch	kPa	4200	3200	-
Gas-liquid separator safety valve	kPa	-	-	3000
Safety thermostat against compressor drain overheating	°C	75	115	-
Water side				
Antifreeze protection	°C	8	4	-
High pressure safety valve	kPa	-	-	1000

Cooling - SC

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		48	
		kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot
20.2	5	52,6	16,7	49,9	16,2	47,1	16,3	39,9	19,0	28,9	16,8	20,2	13,8
	7	56,4	16,8	53,5	17,2	51,8	16,7	42,9	19,2	31,0	17,0	21,5	13,9
	10	62,2	16,9	59,1	17,4	56,0	17,8	47,5	19,5	34,2	17,3	23,7	14,1
	15	72,8	17,0	69,3	17,6	65,7	18,1	55,8	19,9	40,1	17,7	27,6	14,4
	18	78,9	17,1	75,1	17,7	71,7	18,3	60,5	20,0	43,2	17,8	29,7	14,4
	20	81,6	17,1	77,7	17,7	73,6	18,3	62,4	20,1	44,4	17,8	30,3	14,5
25.2	5	63,3	20,5	60,0	21,1	56,5	21,7	47,7	23,6	36,8	21,9	24,1	16,2
	7	67,6	20,7	64,1	21,4	61,8	22,0	51,2	24,0	39,5	22,2	25,8	16,4
	10	74,5	20,9	70,7	21,7	66,8	22,3	56,5	24,4	43,7	22,6	28,5	16,6
	15	87,0	21,3	82,6	22,2	78,2	22,9	66,3	25,1	51,4	23,2	33,3	16,9
	18	94,4	21,5	89,6	22,4	81,3	22,2	71,9	25,4	55,6	23,5	35,9	17,0
	20	97,9	21,6	93,0	22,6	87,9	23,3	74,4	25,6	57,2	23,6	36,8	17,1
30.2	5	70,9	22,7	68,0	21,9	65,2	22,4	56,0	26,1	46,5	25,6	28,6	19,3
	7	75,0	22,8	72,1	22,0	71,2	22,5	59,5	26,2	49,6	25,7	30,5	19,4
	10	82,0	23,0	78,9	22,2	75,7	22,6	65,3	26,3	54,4	25,8	33,5	19,5
	15	95,3	23,2	91,9	22,3	88,5	22,7	76,6	26,4	64,2	25,8	39,8	19,4
	18	103	23,2	98,9	22,3	90,4	22,3	82,5	26,4	69,3	25,7	42,9	19,3
	20	106	23,2	103	22,3	98,9	22,7	85,7	26,3	72,0	25,6	44,7	19,2
35.2	5	81,3	26,7	78,1	27,4	75,0	28,1	64,5	31,0	50,3	27,9	31,9	21,1
	7	86,3	26,9	83,0	27,5	81,7	27,4	68,5	31,1	53,6	28,0	34,0	21,1
	10	94,3	27,1	90,7	27,8	87,1	28,6	75,2	31,4	58,8	28,2	37,3	21,2
	15	110	27,6	106	28,2	102	28,9	88,0	31,7	69,4	28,3	44,3	21,2
	18	118	27,7	114	28,3	105	28,5	95,0	31,7	74,9	28,2	47,8	21,1
	20	122	27,8	118	28,3	114	29,0	98,7	31,7	77,8	28,1	49,7	21,0
40.2	5	90,1	30,7	86,6	31,7	82,9	32,6	71,4	35,9	55,8	31,3	36,1	23,4
	7	95,7	31,0	91,9	31,9	91,6	32,9	75,8	36,2	59,4	31,5	38,5	23,4
	10	104	31,3	100	32,3	96,4	33,3	83,1	36,5	65,2	31,7	42,3	23,5
	15	122	32,0	117	32,9	113	33,8	97,2	37,0	76,9	31,8	50,2	23,5
	18	131	32,3	126	33,2	119	34,3	105	37,1	83,0	31,7	54,2	23,4
	20	136	32,4	131	33,3	126	34,0	109	37,1	86,2	31,7	56,4	23,3
45.2	5	113	37,1	108	35,6	104	36,1	89,6	41,5	70,4	36,7	45,1	27,3
	7	120	37,3	116	35,9	111	36,1	95,6	41,8	74,9	36,9	47,9	27,4
	10	131	37,6	126	36,2	121	36,7	105	42,3	82,0	37,3	52,3	27,5
	15	147	38,0	142	34,7	131	35,1	118	43,0	93,2	37,9	59,7	27,8
	18	158	38,3	147	33,0	132	34,0	131	43,7	102	38,4	64,5	28,0
	20	164	38,7	157	33,3	135	33,7	138	44,2	107	38,8	67,1	28,1
50.2	5	123	41,6	118	40,9	113	42,9	97,5	46,6	76,4	40,5	49,2	29,5
	7	131	41,9	126	41,3	124	42,3	104	47,0	81,4	40,8	52,4	29,6
	10	144	42,4	138	41,8	132	43,9	114	47,6	89,1	41,3	57,2	29,8
	15	161	43,1	155	42,6	149	42,3	128	48,6	101	42,1	65,3	30,2
	18	164	43,2	161	42,8	148	41,3	133	49,4	106	42,8	67,1	30,5
	20	167	44,1	160	43,8	154	43,6	136	50,2	117	43,3	73,6	30,7

kWf = cooling capacity in kW

kWe_tot = Unit total power input in kW

To (°C) = Cold side exchanger outlet water temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

Performances

Cooling - SC

		Entering external exchanger air temperature (°C)											
SIZE	To (°C)	25		30		35		40		45		48	
		kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot
55.4	5	136	42,2	131	43,8	125	45,5	107	50,3	81,7	48,1	50,9	35,1
	7	144	42,7	139	44,2	136	47,3	114	50,8	86,7	48,6	54,2	35,3
	10	157	43,2	151	44,9	145	46,6	125	51,5	95,1	49,3	59,6	35,6
	15	173	39,9	166	43,5	160	44,9	138	47,2	112	45,3	70,6	35,9
	18	174	40,2	168	43,8	161	42,9	140	47,4	121	45,5	76,4	35,9
	20	184	40,3	178	43,9	171	42,6	148	47,5	127	45,5	81,0	35,8
60.4	5	148	48,3	142	50,2	136	52,1	117	57,6	88,4	53,8	57,0	38,9
	7	157	48,8	151	50,8	149	54,4	124	58,2	93,9	54,4	60,7	39,2
	10	171	49,7	164	51,6	158	53,6	136	59,1	103	55,3	66,7	39,7
	15	188	40,9	181	44,7	170	47,6	158	54,3	121	50,9	79,0	40,2
	18	202	41,4	195	45,1	174	47,8	171	54,7	131	51,2	85,5	40,2
	20	211	41,6	204	45,3	186	46,3	179	54,8	138	51,3	90,5	40,2
65.4	5	161	48,9	155	50,2	148	51,7	128	56,8	98,0	54,0	62,2	40,0
	7	171	49,2	164	50,6	163	52,6	136	57,2	104	54,6	66,0	40,2
	10	185	49,6	179	51,1	172	52,7	148	58,0	113	55,5	71,8	40,6
	15	214	50,3	206	49,4	198	51,0	171	59,5	130	57,5	82,3	41,4
	18	228	50,7	220	49,9	193	49,9	183	60,4	138	58,6	87,4	41,9
	20	230	50,8	222	50,0	192	48,7	184	60,5	144	59,5	91,2	42,3
70.4	5	181	57,8	174	59,3	167	60,8	144	66,5	115	61,4	72,4	45,8
	7	193	58,2	185	59,9	181	62,6	153	67,2	122	62,0	76,9	46,1
	10	209	59,0	202	60,8	193	62,5	167	68,3	133	63,0	83,6	46,7
	15	218	54,5	209	59,3	201	60,9	173	63,6	138	58,5	86,3	43,2
	18	233	52,2	224	56,9	211	58,0	186	61,2	147	56,2	91,8	41,4
	20	235	52,4	226	57,1	205	58,5	187	61,3	153	56,9	95,7	41,9
75.4	5	199	61,9	191	63,3	184	64,6	158	70,5	124	60,9	80,3	47,1
	7	211	62,4	203	63,8	200	65,2	168	71,2	132	61,5	85,3	47,5
	10	230	63,1	222	64,7	213	66,2	183	72,2	144	62,5	92,8	48,1
	15	238	58,0	230	62,7	233	64,2	190	66,8	149	58,0	95,8	44,4
	18	256	55,4	247	60,1	231	60,1	205	64,2	159	55,8	102	42,6
	20	257	52,2	247	56,6	224	57,5	205	60,4	166	53,1	107	40,5
80.4	5	217	63,4	208	68,7	200	74,6	172	73,5	135	69,4	88	52,4
	7	230	64,1	221	69,5	219	75,0	182	74,4	144	70,2	94	52,8
	10	251	65,2	241	70,8	231	76,9	199	75,8	157	71,5	102	53,6
	15	260	63,8	250	69,5	240	71,6	207	74,6	163	70,3	105	52,4
	18	280	61,6	269	67,2	251	67,5	223	72,2	175	68,0	112	50,6
	20	281	61,7	270	67,2	245	69,1	223	72,3	182	68,9	117	51,2
85.4	5	236	73,3	226	79,5	217	86,2	186	84,6	149	75,9	96	54,3
	7	250	74,3	240	80,6	238	86,8	198	85,8	158	76,7	102	54,7
	10	274	76,0	262	82,4	251	89,2	216	87,6	172	78,1	111	55,5
	15	284	75,0	272	81,4	261	79,0	225	86,7	179	76,8	115	54,1
	18	306	72,7	294	79,0	271	76,0	242	84,1	193	74,3	122	52,1
	20	308	72,9	295	79,1	267	76,3	243	84,2	192	74,1	128	52,7

kWf = cooling capacity in kW

kWe_tot = Unit total power input in kW

To (°C) = Cold side exchanger outlet water temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

Cooling - LN

SIZE		Entering external exchanger air temperature (°C)											
		25		30		35		40		45		48	
		kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot
20.2	5	48,9	15,5	46,4	15,1	43,8	15,2	37,1	17,7	26,9	15,7	18,7	12,8
	7	52,4	15,6	49,8	16,0	48,2	15,5	39,9	17,9	28,8	15,8	20,0	12,9
	10	57,8	15,7	55,0	16,2	52,1	16,6	44,2	18,1	31,8	16,1	22,1	13,1
	15	67,7	15,8	64,4	16,4	61,1	16,9	51,9	18,5	37,2	16,4	25,7	13,4
	18	73,3	15,9	69,9	16,5	66,7	17,0	56,3	18,6	40,2	16,6	27,6	13,4
	20	75,9	15,9	72,2	16,5	68,4	17,0	58,1	18,7	41,3	16,6	28,1	13,4
25.2	5	58,9	19,1	55,8	19,7	52,5	20,2	44,4	22,0	34,2	20,3	22,4	15,0
	7	62,8	19,2	59,6	19,9	57,5	20,4	47,6	22,3	36,8	20,6	24,0	15,2
	10	69,3	19,5	65,8	20,2	62,1	20,8	52,6	22,7	40,7	21,0	26,5	15,4
	15	80,9	19,8	76,8	20,6	72,7	21,3	61,6	23,4	47,8	21,6	31,0	15,7
	18	87,7	20,0	83,4	20,9	75,6	20,6	66,9	23,7	51,7	21,8	33,3	15,8
	20	91,1	20,1	86,4	21,0	81,7	21,7	69,2	23,8	53,1	21,9	34,2	15,9
30.2	5	65,9	21,1	63,3	20,4	60,6	20,8	52,1	24,2	43,2	23,8	26,6	18,0
	7	69,8	21,2	67,0	20,5	66,2	20,9	55,4	24,3	46,1	23,9	28,3	18,0
	10	76,3	21,4	73,3	20,6	70,4	21,0	60,7	24,5	50,6	24,0	31,1	18,1
	15	88,7	21,5	85,5	20,8	82,3	21,1	71,2	24,6	59,7	24,0	37,0	18,0
	18	95,3	21,6	92,0	20,8	84,1	20,7	76,8	24,6	64,4	23,9	39,9	17,9
	20	98,8	21,5	95,4	20,7	92,0	21,1	79,7	24,5	67,0	23,8	41,5	17,8
35.2	5	75,6	24,8	72,7	25,5	69,7	26,2	60,0	28,8	46,8	26,0	29,6	19,6
	7	80,2	25,0	77,2	25,6	75,9	25,5	63,7	28,9	49,9	26,1	31,6	19,7
	10	87,7	25,2	84,4	25,9	81,0	26,6	69,9	29,2	54,7	26,2	34,7	19,7
	15	102	25,6	98,4	26,2	94,6	26,9	81,8	29,5	64,6	26,3	41,2	19,7
	18	110	25,8	106	26,3	98,1	26,5	88,3	29,5	69,7	26,2	44,5	19,6
	20	114	25,8	110	26,4	106	26,9	91,8	29,5	72,4	26,2	46,2	19,5
40.2	5	83,8	28,5	80,5	29,4	77,1	30,4	66,4	33,4	51,9	29,1	33,6	21,7
	7	89,0	28,8	85,5	29,7	85,2	30,6	70,5	33,6	55,3	29,3	35,8	21,8
	10	97,2	29,1	93,4	30,0	89,7	30,9	77,3	34,0	60,7	29,4	39,3	21,9
	15	113	29,8	109	30,6	105	31,4	90,4	34,4	71,5	29,6	46,7	21,9
	18	122	30,0	117	30,8	111	31,9	97,5	34,5	77,1	29,5	50,4	21,8
	20	126	30,2	122	30,9	117	31,6	101	34,5	80,2	29,4	52,4	21,7
45.2	5	105	34,5	101	33,1	96,7	33,5	83,3	38,6	65,4	34,1	41,9	25,4
	7	112	34,7	108	33,4	103	33,5	88,9	38,9	69,7	34,3	44,6	25,4
	10	122	35,0	117	33,7	113	34,1	97,3	39,3	76,2	34,7	48,6	25,6
	15	137	35,4	132	32,3	122	32,6	110	40,0	86,7	35,2	55,5	25,8
	18	147	35,6	136	30,7	123	31,6	122	40,7	95,0	35,7	60,0	26,0
	20	153	36,0	146	31,0	125	31,4	129	41,1	99,6	36,0	62,4	26,1
50.2	5	114	38,6	110	38,0	105	39,9	90,7	43,3	71,0	37,7	45,8	27,4
	7	122	39,0	117	38,4	115	39,4	96,8	43,7	75,7	38,0	48,7	27,5
	10	134	39,4	128	38,9	123	40,8	106	44,3	82,8	38,4	53,2	27,7
	15	150	40,1	144	39,6	139	39,3	119	45,2	94,0	39,2	60,7	28,1
	18	152	40,1	150	39,8	138	38,4	124	45,9	98,2	39,8	62,4	28,3
	20	155	41,0	149	40,7	143	40,5	127	46,7	109	40,3	68,5	28,5

kWf = cooling capacity in kW

kWe_tot = Unit total power input in kW

To (°C) = Cold side exchanger outlet water temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

Performances

Cooling - LN

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		48	
		kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot
55.4	5	127	39,3	122	40,7	116	42,3	99,8	46,8	75,9	44,8	47,3	32,6
	7	134	39,7	129	41,1	127	44,0	106	47,3	80,7	45,2	50,4	32,8
	10	146	40,2	140	41,7	135	43,3	116	47,9	88,5	45,9	55,4	33,1
	15	161	37,1	155	40,4	149	41,7	129	43,9	104	42,1	65,7	33,4
	18	162	37,4	156	40,7	150	39,9	130	44,1	112	42,3	71,0	33,4
	20	171	37,5	165	40,8	159	39,6	138	44,2	119	42,3	75,3	33,3
60.4	5	138	44,9	132	46,7	127	48,5	109	53,6	82,2	50,1	53,0	36,2
	7	146	45,4	140	47,2	138	50,6	116	54,1	87,3	50,6	56,4	36,5
	10	159	46,2	153	48,0	147	49,8	126	54,9	95,7	51,4	62,1	36,9
	15	175	38,1	168	41,5	159	44,2	147	50,5	112	47,3	73,5	37,3
	18	188	38,5	181	42,0	162	44,5	159	50,9	122	47,6	79,5	37,4
	20	196	38,7	190	42,1	173	43,0	167	51,0	128	47,7	84,2	37,3
65.4	5	150	45,5	144	46,7	138	48,0	119	52,8	91,1	50,2	57,8	37,2
	7	159	45,8	153	47,0	151	49,0	126	53,2	96,7	50,8	61,4	37,4
	10	172	46,1	166	47,5	160	49,0	138	53,9	105	51,6	66,7	37,7
	15	199	46,8	191	45,9	184	47,4	159	55,4	121	53,5	76,5	38,5
	18	212	47,2	205	46,4	180	46,5	170	56,2	128	54,5	81,3	39,0
	20	214	47,2	206	46,5	178	45,3	171	56,3	134	55,3	84,8	39,4
70.4	5	169	53,7	162	55,1	156	56,6	134	61,9	107	57,1	67,4	42,6
	7	179	54,1	172	55,7	168	58,2	142	62,5	114	57,7	71,5	42,9
	10	195	54,9	187	56,5	180	58,1	155	63,6	124	58,6	77,7	43,4
	15	202	50,7	195	55,1	187	56,6	161	59,1	128	54,4	80,3	40,1
	18	217	48,6	208	52,9	197	53,9	173	56,9	137	52,3	85,3	38,5
	20	219	48,7	210	53,1	191	54,4	174	57,0	142	52,9	89,0	38,9
75.4	5	185	57,6	178	58,8	171	60,1	147	65,6	115	56,7	74,7	43,8
	7	196	58,0	189	59,3	186	60,7	156	66,2	123	57,2	79,3	44,2
	10	214	58,7	206	60,1	198	61,5	171	67,2	134	58,1	86,3	44,7
	15	222	53,9	213	58,3	216	59,7	177	62,2	138	53,9	89,1	41,3
	18	238	51,5	229	55,9	215	55,9	190	59,7	148	51,8	94,8	39,6
	20	239	48,5	230	52,6	208	53,5	190	56,2	155	49,4	99,1	37,7
80.4	5	201	59,0	194	63,9	186	69,4	160	68,4	126	64,6	82,0	48,7
	7	214	59,6	206	64,7	204	69,8	170	69,2	134	65,3	87,1	49,1
	10	233	60,6	224	65,8	215	71,5	185	70,5	146	66,5	94,8	49,8
	15	242	59,4	233	64,7	223	66,6	192	69,4	151	65,4	97,8	48,8
	18	260	57,3	250	62,5	233	62,8	207	67,1	162	63,2	104	47,0
	20	262	57,4	251	62,5	228	64,3	207	67,2	169	64,1	109	47,7
85.4	5	219	68,2	210	73,9	201	80,1	173	78,7	138	70,6	89,0	50,5
	7	233	69,1	223	74,9	221	80,8	184	79,8	147	71,3	94,5	50,9
	10	254	70,6	244	76,6	234	83,0	201	81,5	160	72,6	103	51,6
	15	264	69,7	253	75,7	243	73,5	209	80,6	167	71,4	107	50,3
	18	284	67,6	273	73,5	252	70,7	225	78,2	179	69,1	114	48,5
	20	286	67,8	275	73,6	248	70,9	226	78,3	178	68,9	119	49,0

kWf = cooling capacity in kW

kWe_tot = Unit total power input in kW

To (°C) = Cold side exchanger outlet water temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

Cooling - EN

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		48	
		kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot
20.2	5	45,2	14,4	42,9	14,0	40,5	14,0	34,3	16,3	24,8	14,5	17,3	11,8
	7	48,5	14,4	46,0	14,8	44,6	14,4	36,9	16,5	26,6	14,7	18,5	12,0
	10	53,5	14,5	50,9	15,0	48,1	15,3	40,8	16,8	29,4	14,9	20,4	12,1
	15	62,6	14,7	59,6	15,2	56,5	15,6	48,0	17,1	34,4	15,2	23,8	12,3
	18	67,8	14,7	64,6	15,2	61,7	15,7	52,1	17,2	37,2	15,3	25,5	12,4
	20	70,2	14,7	66,8	15,3	63,3	15,7	53,7	17,3	38,1	15,3	26,0	12,4
25.2	5	54,4	17,6	51,6	18,2	48,6	18,7	41,0	20,3	31,6	18,8	20,7	13,9
	7	58,1	17,8	55,1	18,4	53,2	18,9	44,0	20,6	34,0	19,1	22,2	14,1
	10	64,1	18,0	60,8	18,7	57,4	19,2	48,6	21,0	37,6	19,4	24,5	14,3
	15	74,8	18,3	71,0	19,1	67,2	19,7	57,0	21,6	44,2	20,0	28,6	14,6
	18	81,1	18,5	77,1	19,3	69,9	19,1	61,8	21,9	47,8	20,2	30,8	14,7
	20	84,2	18,6	79,9	19,4	75,6	20,1	64,0	22,0	49,1	20,3	31,6	14,7
30.2	5	60,9	19,5	58,5	18,9	56,0	19,2	48,2	22,4	40,0	22,0	24,6	16,6
	7	64,5	19,6	62,0	19,0	61,2	19,4	51,2	22,5	42,6	22,1	26,2	16,7
	10	70,5	19,8	67,8	19,1	65,1	19,4	56,2	22,6	46,7	22,2	28,8	16,7
	15	82,0	19,9	79,1	19,2	76,1	19,6	65,9	22,7	55,2	22,2	34,2	16,7
	18	88,2	19,9	85,0	19,2	77,8	19,2	71,0	22,7	59,6	22,1	36,9	16,6
	20	91,4	19,9	88,2	19,2	85,0	19,5	73,7	22,7	61,9	22,0	38,4	16,5
35.2	5	69,9	23,0	67,2	23,6	64,5	24,2	55,5	26,6	43,3	24,0	27,4	18,1
	7	74,2	23,1	71,4	23,7	70,2	23,5	58,9	26,8	46,1	24,1	29,2	18,2
	10	81,1	23,3	78,0	23,9	74,9	24,6	64,7	27,0	50,6	24,3	32,0	18,2
	15	94,4	23,7	91,0	24,3	87,5	24,8	75,7	27,2	59,7	24,3	38,1	18,2
	18	101	23,8	97,9	24,4	90,7	24,5	81,7	27,3	64,4	24,3	41,1	18,1
	20	105	23,9	102	24,4	97,9	24,9	84,9	27,3	66,9	24,2	42,8	18,1
40.2	5	77,5	26,4	74,4	27,2	71,3	28,1	61,4	30,9	48,0	26,9	31,1	20,1
	7	82,3	26,6	79,1	27,4	78,8	28,3	65,2	31,1	51,1	27,1	33,1	20,2
	10	89,8	27,0	86,4	27,8	82,9	28,6	71,5	31,4	56,1	27,2	36,3	20,2
	15	105	27,6	101	28,3	96,8	29,1	83,6	31,8	66,1	27,3	43,2	20,2
	18	113	27,7	108	28,5	102	29,5	90,2	31,9	71,3	27,3	46,6	20,1
	20	117	27,9	112	28,6	108	29,3	93,7	31,9	74,1	27,2	48,5	20,0
45.2	5	96,8	31,9	93,2	30,7	89,4	31,0	77,1	35,7	60,5	31,5	38,8	23,5
	7	103	32,1	99,4	30,9	95,4	31,0	82,2	35,9	64,4	31,7	41,2	23,5
	10	113	32,3	109	31,2	104	31,6	89,9	36,3	70,5	32,1	45,0	23,6
	15	127	32,7	122	29,8	113	30,2	102	37,0	80,2	32,6	51,4	23,9
	18	136	32,9	126	28,4	114	29,3	113	37,6	87,8	33,1	55,5	24,1
	20	141	33,3	135	28,7	116	29,0	119	38,0	92,1	33,3	57,7	24,2
50.2	5	106	35,7	102	35,2	97,5	36,9	83,8	40,0	65,7	34,8	42,3	25,3
	7	113	36,0	109	35,5	107	36,4	89,5	40,4	70,0	35,1	45,0	25,4
	10	124	36,5	119	35,9	114	37,7	97,9	41,0	76,6	35,5	49,2	25,6
	15	139	37,0	134	36,6	128	36,3	110	41,8	87,0	36,2	56,2	25,9
	18	141	37,1	139	36,8	127	35,5	114	42,5	90,9	36,8	57,7	26,2
	20	143	38,0	138	37,7	133	37,5	117	43,2	100	37,2	63,3	26,4

kWf = cooling capacity in kW

kWe_tot = Unit total power input in kW

To (°C) = Cold side exchanger outlet water temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

Performances

Cooling - EN

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		48	
		kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot	kWf	kWe_tot
55.4	5	117	36,3	112	37,7	108	39,1	92,3	43,3	70,2	41,4	43,8	30,1
	7	124	36,7	119	38,0	117	40,7	98,1	43,7	74,6	41,8	46,6	30,3
	10	135	37,2	130	38,6	124	40,0	107	44,3	81,8	42,4	51,2	30,6
	15	149	34,3	143	37,4	138	38,6	119	40,6	96,2	38,9	60,7	30,9
	18	149	34,6	144	37,6	139	36,9	120	40,8	104	39,1	65,7	30,9
	20	158	34,7	153	37,7	147	36,6	128	40,8	110	39,1	69,7	30,8
60.4	5	128	41,5	122	43,2	117	44,8	101	49,5	76,0	46,3	49,0	33,5
	7	135	42,0	130	43,7	128	46,8	107	50,0	80,8	46,8	52,2	33,7
	10	147	42,8	141	44,4	136	46,1	117	50,8	88,5	47,5	57,4	34,1
	15	162	35,2	156	38,4	147	40,9	136	46,7	104	43,8	68,0	34,5
	18	174	35,6	168	38,8	149	41,2	147	47,1	112	44,0	73,6	34,6
	20	182	35,8	175	39,0	160	39,8	154	47,2	118	44,1	77,9	34,5
65.4	5	138	42,1	133	43,2	128	44,4	110	48,8	84,3	46,4	53,5	34,4
	7	147	42,3	141	43,5	140	45,3	117	49,2	89,4	46,9	56,8	34,6
	10	160	42,7	154	44,0	148	45,3	127	49,9	97,2	47,7	61,7	34,9
	15	184	43,2	177	42,5	170	43,8	147	51,2	112	49,4	70,8	35,6
	18	196	43,6	189	42,9	166	43,0	157	52,0	119	50,4	75,1	36,0
	20	198	43,6	191	43,0	165	41,9	158	52,1	123	51,1	78,4	36,4
70.4	5	156	49,7	150	51,0	144	52,3	124	57,2	98,8	52,8	62,3	39,4
	7	166	50,0	159	51,5	156	53,9	132	57,8	105	53,4	66,1	39,7
	10	180	50,8	173	52,3	166	53,7	143	58,8	114	54,2	71,9	40,2
	15	187	46,9	180	51,0	173	52,4	149	54,7	119	50,3	74,2	37,1
	18	200	44,9	193	49,0	182	49,8	160	52,6	127	48,4	78,9	35,6
	20	202	45,0	195	49,1	176	50,3	161	52,8	131	48,9	82,3	36,0
75.4	5	171	53,3	165	54,4	158	55,6	136	60,6	107	52,4	69,0	40,5
	7	181	53,7	175	54,9	172	56,1	145	61,2	113	52,9	73,3	40,8
	10	198	54,3	191	55,6	183	56,9	158	62,1	123	53,7	79,8	41,3
	15	205	49,8	197	54,0	200	55,2	164	57,5	128	49,9	82,4	38,2
	18	220	47,7	212	51,7	199	51,7	176	55,2	137	47,9	87,7	36,6
	20	221	44,9	213	48,7	193	49,5	176	52,0	143	45,7	91,6	34,9
80.4	5	186	54,5	179	59,1	172	64,1	148	63,2	116	59,7	75,8	45,0
	7	198	55,1	190	59,8	188	64,5	157	64,0	124	60,4	80,5	45,4
	10	216	56,0	207	60,9	199	66,1	171	65,2	135	61,5	87,6	46,1
	15	224	54,9	215	59,8	207	61,6	178	64,2	140	60,4	90,5	45,1
	18	241	53,0	232	57,8	216	58,1	192	62,1	150	58,5	96,5	43,5
	20	242	53,0	232	57,8	211	59,5	192	62,1	156	59,2	101	44,1
85.4	5	203	63,1	195	68,4	186	74,1	160	72,8	128	65,3	82,3	46,7
	7	215	63,9	207	69,3	205	74,7	170	73,8	136	66,0	87,4	47,1
	10	235	65,3	226	70,8	216	76,7	186	75,3	148	67,1	95,2	47,7
	15	244	64,5	234	70,0	225	67,9	193	74,5	154	66,1	98,6	46,6
	18	263	62,5	252	67,9	233	65,4	208	72,3	166	63,9	105	44,8
	20	265	62,7	254	68,1	230	65,6	209	72,4	165	63,7	110	45,4

kWf = cooling capacity in kW

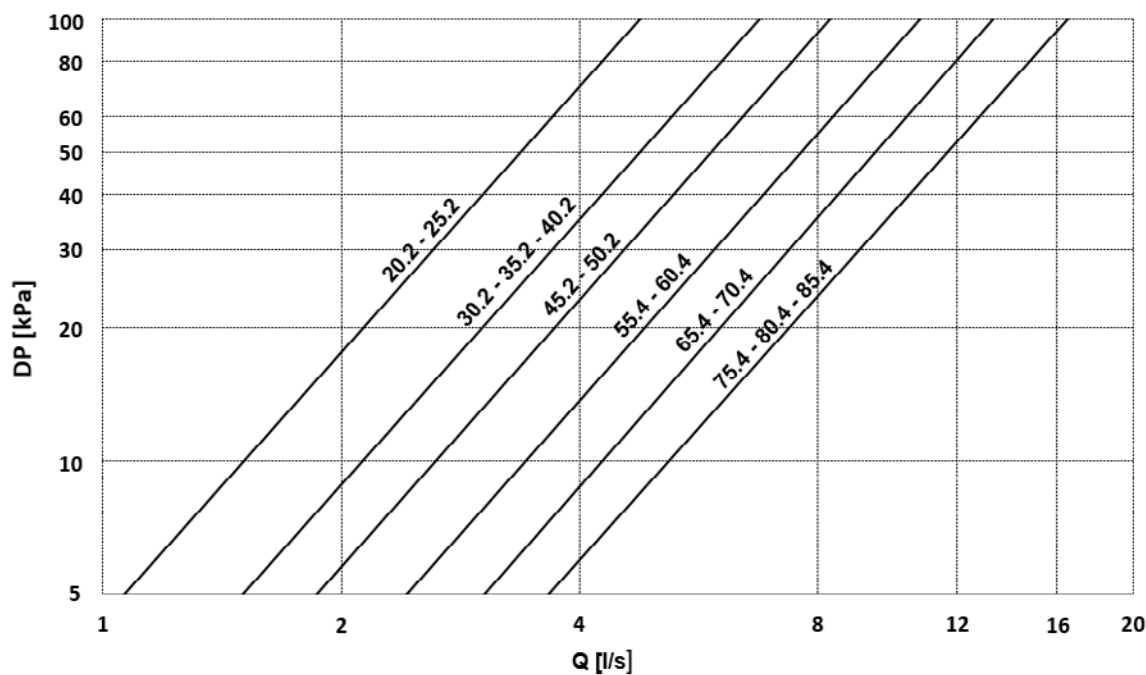
kWe_tot = Unit total power input in kW

To (°C) = Cold side exchanger outlet water temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

Cold side exchanger pressure drop

Size



The pressure drops are calculated considering a water temperature of 7°C

Q = Water flow-rate[l/s]

DP = Water side pressure drops (kPa)

The water flow-rate must be calculated with the following formula

$$Q [l/s] = kWf / (4,186 \times DT)$$

kWf = cooling capacity in kW

DT = Temperature difference between inlet / outlet water

Admissible water flow-rates

Minimum (Qmin) and maximum (Qmax) admissible water flow for the unit to operate correctly.

SIZE		20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Qmin	[l/s]	1,1	1,1	1,5	1,5	1,5	1,9	1,9	2,4	2,4	3,0	3,0	3,7	3,7	3,7
Qmax	[l/s]	5,2	5,2	7,4	7,4	7,4	9,1	9,1	11,8	11,8	14,6	14,6	18,1	18,1	18,1

Performances

Cooling at part load - SC

SIZE	Load %	Entering external exchanger air temperature (°C)											
		35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
20.2	100	51,8	16,7	3,10	53,5	17,2	3,11	56,4	16,8	3,36	59,2	15,5	3,83
	75	35,2	13,0	2,71	37,3	11,9	3,14	39,3	10,9	3,61	41,3	9,90	4,17
	50	25,9	9,46	2,74	27,5	8,63	3,19	29,1	7,85	3,70	30,6	7,12	4,30
	Minimum	13,0	4,73	2,74	13,8	4,32	3,19	14,5	3,93	3,70	15,3	3,56	4,30
25.2	100	61,8	22,0	2,81	64,1	21,4	3,00	67,6	20,7	3,27	71,1	18,9	3,76
	75	44,9	17,8	2,52	47,5	16,3	2,91	50,0	14,9	3,36	52,6	13,5	3,89
	50	30,7	11,8	2,59	32,5	10,9	2,99	34,3	9,91	3,46	36,0	9,03	3,99
	Minimum	15,3	5,92	2,59	16,2	5,43	2,99	17,1	4,96	3,46	18,0	4,52	3,99
30.2	100	71,2	22,5	3,16	72,1	22,0	3,27	75,0	22,8	3,29	78,0	21,4	3,64
	75	54,4	19,6	2,77	56,8	18,0	3,16	59,2	16,6	3,57	61,6	15,4	3,99
	50	35,3	12,1	2,93	37,2	10,9	3,42	39,1	9,94	3,93	41,0	9,26	4,42
	Minimum	17,7	6,03	2,93	18,6	5,44	3,42	19,5	4,97	3,93	20,5	4,63	4,42
35.2	100	81,7	27,4	2,98	83,0	27,5	3,01	86,3	26,9	3,21	89,6	25,0	3,59
	75	58,7	21,7	2,71	61,3	19,8	3,09	63,8	18,2	3,50	66,3	16,9	3,93
	50	39,0	13,5	2,90	41,0	12,2	3,37	42,9	11,1	3,86	44,9	10,3	4,36
	Minimum	19,5	6,74	2,90	20,5	6,09	3,37	21,5	5,56	3,86	22,4	5,15	4,36
40.2	100	91,6	32,9	2,78	91,9	31,9	2,88	95,7	31,0	3,09	99,4	28,5	3,48
	75	65,0	25,5	2,55	67,7	23,4	2,90	70,5	21,5	3,27	73,2	20,0	3,67
	50	43,9	16,0	2,75	46,0	14,5	3,16	48,0	13,4	3,60	50,1	12,4	4,03
	Minimum	22,0	7,98	2,75	23,0	7,27	3,16	24,0	6,68	3,60	25,0	6,22	4,03
45.2	100	111	36,1	3,07	116	35,9	3,22	120	37,3	3,22	125	35,0	3,56
	75	81,8	29,1	2,81	85,2	26,9	3,17	88,5	24,9	3,55	91,8	23,2	3,96
	50	54,0	18,5	2,92	56,3	16,9	3,33	58,5	15,5	3,77	60,7	14,4	4,22
	Minimum	27,0	9,25	2,92	28,1	8,44	3,33	29,2	7,75	3,77	30,3	7,19	4,22
50.2	100	124	42,3	2,93	126	41,3	3,06	131	41,9	3,14	136	39,2	3,48
	75	89,0	32,6	2,73	92,8	30,1	3,08	96,4	27,9	3,46	100	25,9	3,87
	50	58,9	20,4	2,89	61,3	18,7	3,29	63,7	17,2	3,71	66,0	15,9	4,15
	Minimum	29,5	10,2	2,89	30,7	9,33	3,29	31,8	8,58	3,71	33,0	7,96	4,15
55.4	100	136	47,3	2,89	139	44,2	3,13	144	42,7	3,38	150	39,3	3,82
	75	95,9	36,5	2,62	100	32,8	3,06	105	29,6	3,55	109	26,9	4,07
	50	63,5	22,8	2,79	67,1	20,2	3,32	70,6	18,1	3,90	74,1	16,5	4,50
	Minimum	31,7	11,4	2,79	33,5	10,1	3,32	35,3	9,05	3,90	37,1	8,24	4,50
60.4	100	149	54,4	2,74	151	50,8	2,97	157	48,8	3,22	163	44,8	3,64
	75	104	41,5	2,50	108	37,4	2,90	113	33,7	3,35	118	30,6	3,85
	50	70,4	26,0	2,71	74,1	23,1	3,20	77,7	20,8	3,75	81,4	18,9	4,32
	Minimum	35,2	13,0	2,71	37,0	11,6	3,20	38,9	10,4	3,75	40,7	9,43	4,32
65.4	100	163	52,6	3,09	164	50,6	3,25	171	49,2	3,47	177	45,7	3,88
	75	114	40,5	2,83	119	36,4	3,28	124	32,8	3,80	129	29,7	4,35
	50	76,1	25,2	3,02	79,9	22,1	3,61	83,4	19,5	4,27	87,0	17,4	4,99
	Minimum	38,1	12,6	3,02	39,9	11,1	3,61	41,7	9,77	4,27	43,5	8,72	4,99
70.4	100	181	62,6	2,89	185	59,9	3,09	193	58,2	3,31	200	54,1	3,69
	75	134	47,7	2,80	139	43,4	3,21	145	39,6	3,66	150	36,2	4,15
	50	87,9	30,3	2,90	91,9	26,9	3,42	95,8	24,0	3,99	99,7	21,6	4,63
	Minimum	43,9	15,2	2,90	45,9	13,4	3,42	47,9	12,0	3,99	49,8	10,8	4,63
75.4	100	200	65,2	3,06	203	63,8	3,18	211	62,4	3,38	219	58,1	3,76
	75	144	46,2	3,12	150	41,9	3,58	156	38,1	4,09	162	34,8	4,66
	50	97,0	30,7	3,16	101	27,2	3,72	105	24,3	4,34	110	21,9	5,01
	Minimum	48,5	15,3	3,16	50,6	13,6	3,72	52,7	12,2	4,34	54,8	10,9	5,01
80.4	100	219	75,0	2,92	221	69,5	3,18	230	64,1	3,58	239	59,2	4,03
	75	158	55,5	2,84	164	50,7	3,24	171	46,4	3,68	177	42,6	4,17
	50	106	35,2	3,02	111	31,5	3,52	115	28,3	4,08	120	25,5	4,69
	Minimum	53,1	17,6	3,02	55,4	15,7	3,52	57,7	14,1	4,08	59,9	12,8	4,69
85.4	100	238	86,8	2,74	240	80,6	2,98	250	74,3	3,37	260	68,7	3,79
	75	173	61,9	2,80	181	56,8	3,18	188	52,1	3,61	195	47,9	4,08
	50	115	37,4	3,07	120	33,6	3,56	124	30,4	4,10	129	27,6	4,69
	Minimum	57,4	18,7	3,07	59,9	16,8	3,56	62,2	15,2	4,10	64,6	13,8	4,69

Load = % of cooling capacity compared to the value at full load

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

Cold side exchanger water temperature = leaving 7°C / entering 12°C / variable flow-rate with external exchanger air temperature

Cooling at partial load- LN

SIZE	Load %	Entering external exchanger air temperature (°C)											
		35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
20.2	100	48,2	15,5	3,10	49,8	16,0	3,11	52,4	15,6	3,36	55,0	14,4	3,83
	75	32,7	12,1	2,71	34,7	11,0	3,14	36,5	10,1	3,61	38,4	9,21	4,17
	50	24,1	8,80	2,74	25,6	8,03	3,19	27,0	7,30	3,70	28,5	6,62	4,30
	Minimum	12,0	4,40	2,74	12,8	4,01	3,19	13,5	3,65	3,70	14,2	3,31	4,30
25.2	100	57,5	20,4	2,81	59,6	19,9	3,00	62,8	19,2	3,27	66,1	17,6	3,76
	75	41,7	16,5	2,52	44,2	15,2	2,91	46,5	13,8	3,36	48,9	12,6	3,89
	50	28,5	11,0	2,59	30,2	10,1	2,99	31,9	9,22	3,46	33,5	8,40	3,99
	Minimum	14,3	5,50	2,59	15,1	5,05	2,99	15,9	4,61	3,46	16,7	4,20	3,99
30.2	100	66,2	20,9	3,16	67,0	20,5	3,27	69,8	21,2	3,29	72,5	19,9	3,64
	75	50,6	18,3	2,77	52,8	16,7	3,16	55,0	15,4	3,57	57,2	14,3	3,99
	50	32,9	11,2	2,93	34,6	10,1	3,42	36,3	9,24	3,93	38,1	8,6	4,42
	Minimum	16,4	5,60	2,93	17,3	5,06	3,42	18,2	4,62	3,93	19,0	4,3	4,42
35.2	100	75,9	25,5	2,98	77,2	25,6	3,01	80,2	25,0	3,21	83,3	23,2	3,59
	75	54,6	20,1	2,71	57,0	18,4	3,09	59,3	16,9	3,50	61,7	15,7	3,93
	50	36,3	12,5	2,90	38,1	11,3	3,37	39,9	10,3	3,86	41,7	9,58	4,36
	Minimum	18,1	6,26	2,90	19,0	5,66	3,37	20,0	5,17	3,86	20,9	4,79	4,36
40.2	100	85,2	30,6	2,78	85,5	29,7	2,88	89,0	28,8	3,09	92,4	26,5	3,48
	75	60,5	23,7	2,55	63,0	21,8	2,90	65,5	20,0	3,27	68,1	18,6	3,67
	50	40,8	14,8	2,75	42,7	13,5	3,16	44,6	12,4	3,60	46,6	11,6	4,03
	Minimum	20,4	7,42	2,75	21,4	6,76	3,16	22,3	6,21	3,60	23,3	5,78	4,03
45.2	100	103	33,5	3,07	108	33,4	3,22	112	34,7	3,22	116	32,5	3,56
	75	76,1	27,1	2,81	79,2	25,0	3,17	82,3	23,2	3,55	85,3	21,5	3,96
	50	50,2	17,2	2,92	52,3	15,7	3,33	54,4	14,4	3,77	56,4	13,4	4,22
	Minimum	25,1	8,60	2,92	26,2	7,84	3,33	27,2	7,20	3,77	28,2	6,68	4,22
50.2	100	115	39,4	2,93	117	38,4	3,06	122	39,0	3,14	127	36,4	3,48
	75	82,8	30,3	2,73	86,3	28,0	3,08	89,6	25,9	3,46	93,0	24,1	3,87
	50	54,8	19,0	2,89	57,0	17,4	3,29	59,2	16,0	3,71	61,4	14,8	4,15
	Minimum	27,4	9,49	2,89	28,5	8,68	3,29	29,6	7,98	3,71	30,7	7,40	4,15
55.4	100	127	44,0	2,89	129	41,1	3,13	134	39,7	3,38	140	36,5	3,82
	75	89,2	34,0	2,62	93,4	30,5	3,06	97,5	27,5	3,55	102	25,0	4,07
	50	59,0	21,2	2,79	62,4	18,8	3,32	65,6	16,8	3,90	68,9	15,3	4,50
	Minimum	29,5	10,6	2,79	31,2	9,38	3,32	32,8	8,4	3,90	34,5	7,66	4,50
60.4	100	138	50,6	2,74	140	47,2	2,97	146	45,4	3,22	152	41,7	3,64
	75	96,4	38,6	2,50	101	34,8	2,90	105	31,4	3,35	110	28,5	3,85
	50	65,5	24,2	2,71	68,9	21,5	3,20	72,3	19,3	3,75	75,7	17,5	4,32
	Minimum	32,7	12,1	2,71	34,5	10,8	3,20	36,1	9,65	3,75	37,9	8,77	4,32
65.4	100	151	49,0	3,09	153	47,0	3,25	159	45,8	3,47	165	42,5	3,88
	75	106	37,6	2,83	111	33,8	3,28	116	30,5	3,80	120	27,6	4,35
	50	70,8	23,5	3,02	74,3	20,6	3,61	77,6	18,2	4,27	80,9	16,2	4,99
	Minimum	35,4	11,7	3,02	37,1	10,3	3,61	38,8	9,09	4,27	40,5	8,10	4,99
70.4	100	168	58,2	2,89	172	55,7	3,09	179	54,1	3,31	186	50,3	3,69
	75	124	44,4	2,80	130	40,4	3,21	135	36,8	3,66	140	33,7	4,15
	50	81,7	28,2	2,90	85,5	25,0	3,42	89,1	22,3	3,99	92,7	20,0	4,63
	Minimum	40,9	14,1	2,90	42,7	12,5	3,42	44,5	11,2	3,99	46,3	10,0	4,63
75.4	100	186	60,7	3,06	189	59,3	3,18	196	58,0	3,38	203	54,1	3,76
	75	134	43,0	3,12	140	39,0	3,58	145	35,5	4,09	151	32,3	4,66
	50	90,2	28,5	3,16	94,2	25,3	3,72	98,1	22,6	4,34	102	20,3	5,01
	Minimum	45,1	14,3	3,16	47,1	12,7	3,72	49,0	11,3	4,34	51,0	10,2	5,01
80.4	100	204	69,8	2,92	206	64,7	3,18	214	59,6	3,58	222	55,0	4,03
	75	147	51,6	2,84	153	47,2	3,24	159	43,2	3,68	165	39,6	4,17
	50	98,8	32,8	3,02	103	29,3	3,52	107	26,3	4,08	111	23,7	4,69
	Minimum	49,4	16,4	3,02	51,5	14,6	3,52	53,6	13,2	4,08	55,7	11,9	4,69
85.4	100	221	80,8	2,74	223	74,9	2,98	233	69,1	3,37	242	63,9	3,79
	75	161	57,6	2,80	168	52,8	3,18	175	48,5	3,61	182	44,5	4,08
	50	107	34,8	3,07	111	31,3	3,56	116	28,2	4,10	120	25,6	4,69
	Minimum	53,4	17,4	3,07	55,7	15,6	3,56	57,9	14,1	4,10	60,0	12,8	4,69

Load = % of cooling capacity compared to the value at full load

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

Cold side exchanger water temperature = leaving 7°C / entering 12°C / variable flow-rate with external exchanger air temperature

Performances

Cooling at part load - EN

SIZE	Load %	Entering external exchanger air temperature (°C)											
		35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
20.2	100	44,6	14,4	3,10	46,0	14,8	3,11	48,5	14,4	3,36	50,9	13,3	3,83
	75	30,3	11,2	2,71	32,1	10,2	3,14	33,8	9,36	3,61	35,5	8,51	4,17
	50	22,3	8,14	2,74	23,7	7,42	3,19	25,0	6,75	3,70	26,4	6,12	4,30
	Minimum	11,1	4,07	2,74	11,8	3,71	3,19	12,5	3,38	3,70	13,2	3,06	4,30
25.2	100	53,2	18,9	2,81	55,1	18,4	3,00	58,1	17,8	3,27	61,1	16,2	3,76
	75	38,6	15,3	2,52	40,9	14,0	2,91	43,0	12,8	3,36	45,2	11,6	3,89
	50	26,4	10,2	2,59	27,9	9,33	2,99	29,5	8,52	3,46	31,0	7,77	3,99
	Minimum	13,2	5,09	2,59	14,0	4,67	2,99	14,7	4,26	3,46	15,5	3,88	3,99
30.2	100	61,2	19,4	3,16	62,0	19,0	3,27	64,5	19,6	3,29	67,1	18,4	3,64
	75	46,8	16,9	2,77	48,8	15,5	3,16	50,9	14,3	3,57	52,9	13,3	3,99
	50	30,4	10,4	2,93	32,0	9,36	3,42	33,6	8,55	3,93	35,2	7,96	4,42
	Minimum	15,2	5,18	2,93	16,0	4,68	3,42	16,8	4,27	3,93	17,6	3,98	4,42
35.2	100	70,2	23,5	2,98	71,4	23,7	3,01	74,2	23,1	3,21	77,1	21,5	3,59
	75	50,5	18,6	2,71	52,7	17,0	3,09	54,9	15,7	3,50	57,0	14,5	3,93
	50	33,6	11,6	2,90	35,2	10,5	3,37	36,9	9,55	3,86	38,6	8,86	4,36
	Minimum	16,8	5,79	2,90	17,6	5,23	3,37	18,5	4,78	3,86	19,3	4,43	4,36
40.2	100	78,8	28,3	2,78	79,1	27,4	2,88	82,3	26,6	3,09	85,5	24,5	3,48
	75	55,9	21,9	2,55	58,2	20,1	2,90	60,6	18,5	3,27	63,0	17,2	3,67
	50	37,8	13,7	2,75	39,5	12,5	3,16	41,3	11,5	3,60	43,1	10,7	4,03
	Minimum	18,9	6,86	2,75	19,8	6,25	3,16	20,6	5,74	3,60	21,5	5,34	4,03
45.2	100	95,4	31,0	3,07	99,4	30,9	3,22	103	32,1	3,22	107	30,1	3,56
	75	70,4	25,0	2,81	73,3	23,1	3,17	76,1	21,4	3,55	78,9	19,9	3,96
	50	46,4	15,9	2,92	48,4	14,5	3,33	50,3	13,3	3,77	52,2	12,4	4,22
	Minimum	23,2	7,95	2,92	24,2	7,25	3,33	25,1	6,66	3,77	26,1	6,18	4,22
50.2	100	107	36,4	2,93	109	35,5	3,06	113	36,0	3,14	117	33,7	3,48
	75	76,6	28,0	2,73	79,8	25,9	3,08	82,9	24,0	3,46	86,0	22,2	3,87
	50	50,7	17,6	2,89	52,7	16,0	3,29	54,8	14,8	3,71	56,8	13,7	4,15
	Minimum	25,3	8,78	2,89	26,4	8,02	3,29	27,4	7,38	3,71	28,4	6,84	4,15
55.4	100	117	40,7	2,89	119	38,0	3,13	124	36,7	3,38	129	33,8	3,82
	75	82,5	31,4	2,62	86,3	28,2	3,06	90,2	25,4	3,55	94,0	23,1	4,07
	50	54,6	19,6	2,79	57,7	17,3	3,32	60,7	15,6	3,90	63,7	14,2	4,50
	Minimum	27,3	9,79	2,79	28,8	8,67	3,32	30,3	7,78	3,90	31,9	7,08	4,50
60.4	100	128	46,8	2,74	130	43,7	2,97	135	42,0	3,22	140	38,5	3,64
	75	89,1	35,7	2,50	93,2	32,2	2,90	97,3	29,0	3,35	101	26,3	3,85
	50	60,5	22,4	2,71	63,7	19,9	3,20	66,9	17,8	3,75	70,0	16,2	4,32
	Minimum	30,3	11,2	2,71	31,9	9,94	3,20	33,4	8,92	3,75	35,0	8,11	4,32
65.4	100	140	45,3	3,09	141	43,5	3,25	147	42,3	3,47	152	39,3	3,88
	75	98,4	34,8	2,83	103	31,3	3,28	107	28,2	3,80	111	25,6	4,35
	50	65,5	21,7	3,02	68,7	19,0	3,61	71,8	16,8	4,27	74,8	15,0	4,99
	Minimum	32,7	10,8	3,02	34,3	9,50	3,61	35,9	8,40	4,27	37,4	7,49	4,99
70.4	100	156	53,9	2,89	159	51,5	3,09	166	50,0	3,31	172	46,5	3,69
	75	115	41,0	2,80	120	37,3	3,21	125	34,0	3,66	129	31,2	4,15
	50	75,6	26,1	2,90	79,0	23,1	3,42	82,4	20,6	3,99	85,7	18,5	4,63
	Minimum	37,8	13,0	2,90	39,5	11,6	3,42	41,2	10,3	3,99	42,9	9,27	4,63
75.4	100	172	56,1	3,06	175	54,9	3,18	181	53,7	3,38	188	50,0	3,76
	75	124	39,8	3,12	129	36,1	3,58	134	32,8	4,09	139	29,9	4,66
	50	83,4	26,4	3,16	87,1	23,4	3,72	90,7	20,9	4,34	94,3	18,8	5,01
	Minimum	41,7	13,2	3,16	43,5	11,7	3,72	45,3	10,5	4,34	47,1	9,40	5,01
80.4	100	188	64,5	2,92	190	59,8	3,18	198	55,1	3,58	205	50,9	4,03
	75	136	47,8	2,84	141	43,6	3,24	147	39,9	3,68	153	36,6	4,17
	50	91,3	30,3	3,02	95,3	27,1	3,52	99,2	24,3	4,08	103	21,9	4,69
	Minimum	45,7	15,1	3,02	47,7	13,5	3,52	49,6	12,2	4,08	51,5	11,0	4,69
85.4	100	205	74,7	2,74	207	69,3	2,98	215	63,9	3,37	224	59,1	3,79
	75	149	53,3	2,80	155	48,8	3,18	162	44,8	3,61	168	41,2	4,08
	50	98,8	32,2	3,07	103	28,9	3,56	107	26,1	4,10	111	23,7	4,69
	Minimum	49,4	16,1	3,07	51,5	14,5	3,56	53,5	13,1	4,10	55,5	11,9	4,69

Load = % of cooling capacity compared to the value at full load

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

Cold side exchanger water temperature = leaving 7°C / entering 12°C / variable flow-rate with external exchanger air temperature

Heating SC

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot
20.2	-20 / -21	25,3	12,5	24,2	13,0	23,2	13,6	-	-	-	-	-	-
	-15 / -16	28,3	13,0	27,4	13,7	26,7	14,4	26,1	15,2	-	-	-	-
	-7 / -8	37,3	13,7	36,6	14,6	35,9	15,5	35,4	16,5	35,0	17,6	-	-
	-4 / -5	42,3	15,3	41,7	16,3	41,0	17,4	40,5	18,6	40,1	19,9	23,3	14,5
	2 / 1	52	15,6	52	16,8	51,1	18,1	50,6	19,5	50,0	20,9	27,3	15,1
	7 / 6	66	17,0	66	18,3	64	20,4	61	22,1	58,8	23,5	31,0	15,5
	12 / 11	76	18,0	75	19,6	74	21,3	73	23,1	72	24,9	35	15,8
	18 / 14	85	19,1	83	20,9	82	22,8	81	24,7	80	26,8	39	16,1
25.2	-20 / -21	30,6	14,2	29,0	14,8	27,5	15,5	-	-	-	-	-	-
	-15 / -16	33,1	14,9	31,8	15,7	30,7	16,6	29,8	17,6	-	-	-	-
	-7 / -8	42,8	15,8	41,9	16,9	41,1	18,0	40,3	19,2	39,7	20,5	-	-
	-4 / -5	51,4	17,2	50,5	18,4	49,7	19,8	48,9	21,2	48,3	22,6	25,9	15,9
	2 / 1	63	18,8	62	20,3	61	21,9	60	23,6	56,5	25,4	30,6	16,6
	7 / 6	74	19,7	73	21,4	73	23,8	69	25,8	64	26,6	35	17,1
	12 / 11	85	20,4	84	22,4	83	24,4	82	26,5	81	28,7	39	17,5
	18 / 14	94	21,7	93	23,9	92	26,1	91	28,5	90	30,9	43	17,7
30.2	-20 / -21	35,4	18,6	36,8	20,3	38,2	22,1	-	-	-	-	-	-
	-15 / -16	42,9	18,2	43,9	19,9	45,0	21,6	43,7	23,7	-	-	-	-
	-7 / -8	50	17,9	50,6	19,5	51,1	21,0	53,4	23,0	45,1	26,6	-	-
	-4 / -5	56	17,7	56	18,9	57	20,8	57	22,8	48,3	26,4	33,5	22,6
	2 / 1	69	18,9	69	20,1	69	22,2	66	23,7	55	26,3	37	22,5
	7 / 6	83	20,2	82	21,5	80	23,7	77	25,2	70	27,1	41	22,5
	12 / 11	92	21,3	91	22,7	91	25,0	91	26,7	81	29,7	45	22,4
	18 / 14	101	22,5	100	24,0	100	26,4	100	28,2	95	31,2	51	22,1
35.2	-20 / -21	35,7	20,9	37,6	23,1	39,4	25,4	-	-	-	-	-	-
	-15 / -16	43,6	20,7	45,0	22,8	46,4	24,9	45,2	27,4	-	-	-	-
	-7 / -8	57	20,3	57	21,8	58	24,1	54,8	26,1	56,1	29,1	-	-
	-4 / -5	65	21,8	65	23,4	66	25,9	63	27,7	64	30,9	38	24,8
	2 / 1	79	21,8	79	23,4	80	27,5	72	27,7	72	30,8	43	24,7
	7 / 6	93	23,0	93	24,7	92	28,1	83	28,8	78	30,6	47	24,7
	12 / 11	106	24,7	105	26,5	105	29,3	105	31,4	105	34,8	52	24,6
	18 / 14	117	26,2	116	28,0	115	30,9	115	33,1	114	36,6	58	24,4
40.2	-20 / -21	39,7	21,8	39,3	21,9	43,9	29,1	-	-	-	-	-	-
	-15 / -16	47,8	23,5	47,3	23,5	52	28,6	53,7	31,6	-	-	-	-
	-7 / -8	64	23,5	65	25,3	66	28,2	67	30,2	63	33,8	-	-
	-4 / -5	71	24,3	72	26,2	73	29,2	74	31,3	67	34,8	43	27,5
	2 / 1	87	24,4	88	26,3	88	31,0	89	33,2	80	36,9	49	27,5
	7 / 6	103	26,0	103	28,0	104	32,6	99	34,9	92	37,6	54	27,5
	12 / 11	116	27,7	116	29,8	116	33,0	116	35,5	104	39,3	59	27,5
	18 / 14	129	29,4	128	31,6	127	34,9	127	37,5	120	41,5	66	27,2
45.2	-20 / -21	53,5	26,3	55,0	28,3	67,3	34,6	-	-	-	-	-	-
	-15 / -16	61	26,9	62	28,7	75	34,9	63,6	33,4	-	-	-	-
	-7 / -8	76	27,5	77	29,3	88	35,4	82	36,1	76	38,0	-	-
	-4 / -5	84	28,0	85	29,8	95	35,6	87	36,3	81	38,1	48	28,6
	2 / 1	103	30,1	103	32,0	108	35,9	100	36,8	91	38,4	54	28,5
	7 / 6	120	30,2	119	32,2	120	36,4	112	37,1	102	38,7	60	28,4
	12 / 11	138	32,3	137	34,3	136	37,3	135	39,7	121	41,0	65	28,5
	18 / 14	153	34,1	152	36,4	150	39,7	148	42,3	140	43,8	72	28,6
50.2	-20 / -21	63	30,6	65	32,9	68	36,1	-	-	-	-	-	-
	-15 / -16	71	31,2	72	33,4	74	36,5	75,6	38,7	-	-	-	-
	-7 / -8	87	31,9	88	34,0	89	37,0	89	39,2	88	42,7	-	-
	-4 / -5	96	33,9	96	36,1	97	39,2	97	41,6	93	42,9	56	32,2
	2 / 1	117	34,4	116	36,6	116	39,7	117	42,2	105	43,4	63	32,2
	7 / 6	138	35,2	137	37,5	136	41,5	134	42,7	115	44,0	69	32,3
	12 / 11	156	37,1	155	39,5	154	43,0	153	45,8	137	47,1	76	32,4
	18 / 14	173	39,4	172	42,1	170	45,8	169	48,9	159	50,4	85	32,6

kWt = Heating capacity kW

kWe_tot = Unit total power input in kW

Ta (°C) = Entering external exchanger air temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

D.B. = Dry bulb

W.B. = Wet bulb

Performances

Heating SC

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot
55.4	-20 / -21	59,4	35,8	65,9	39,9	72,6	51,8	-	-	-	-	-	-
	-15 / -16	71,7	35,0	78,2	38,9	84,9	50,3	83,6	52,0	-	-	-	-
	-7 / -8	93,2	33,9	97,5	37,1	104,6	48,7	101,4	50,3	92,5	50,6	-	-
	-4 / -5	108,6	36,0	111,7	39,0	113,2	48,4	108,7	48,6	99,3	50,2	59,1	37,2
	2 / 1	133	37,9	129	41,0	130,1	48,2	124,4	48,4	112,8	49,9	66,3	37,0
	7 / 6	157	40,5	150	43,3	154	47,3	143	48,5	122,1	49,3	73,1	37,0
	12 / 11	172	40,2	163	43,4	163	48,4	163	52,4	147	53,0	81	36,9
	18 / 14	187	40,3	180	43,5	179	48,4	179	52,4	171	58,9	88	36,5
60.4	-20 / -21	63,6	37,9	67,4	42,5	71,2	47,2	-	-	-	-	-	-
	-15 / -16	77,0	37,4	79,5	40,8	83,1	46,0	87,5	56,1	-	-	-	-
	-7 / -8	101,3	36,8	103,0	40,0	105,4	44,8	111,2	53,0	102,5	54,6	-	-
	-4 / -5	114,7	40,2	116,0	43,7	118,1	48,9	119,7	52,7	109,7	54,2	69,6	42,1
	2 / 1	144	42,4	144	46,0	146	51,3	144	52,5	124,4	53,9	78,3	41,9
	7 / 6	172	45,2	173	48,0	173	54,9	145	53,9	133	53,8	86	41,8
	12 / 11	186	45,0	185	48,8	185	54,3	170	55,9	153	56,1	96	41,8
	18 / 14	200	45,1	199	48,9	199	54,5	197	59,0	178	59,5	104	41,7
65.4	-20 / -21	73,5	34,2	76,1	37,2	80,1	41,9	-	-	-	-	-	-
	-15 / -16	83,9	35,0	85,9	37,9	89,1	42,3	93,0	51,1	-	-	-	-
	-7 / -8	103	36,0	104,0	38,7	106,0	42,8	109,1	51,7	104,6	51,3	-	-
	-4 / -5	120	40,7	121	43,7	123	48,3	117	51,9	111,3	51,5	82,8	49,2
	2 / 1	157	44,0	157	47,2	158	52,0	142	52,3	125	51,8	92	48,8
	7 / 6	191	48,5	191	51,9	191	57,7	168	52,7	142	52,3	101	48,6
	12 / 11	220	50,2	220	53,7	219	59,3	186	56,7	165	54,8	111	48,6
	18 / 14	244	53,0	243	56,9	242	62,9	205	60,6	193	59,2	120	48,7
70.4	-20 / -21	78,8	36,5	81,7	39,7	86,1	44,5	-	-	-	-	-	-
	-15 / -16	88,8	37,4	91,1	40,4	94,6	45,0	118,3	49,3	-	-	-	-
	-7 / -8	109	38,3	110	41,2	112	45,6	137,3	50,0	117,3	51,2	-	-
	-4 / -5	133	45,6	134	48,9	136	54,0	146	50,3	124	51,3	89	49,2
	2 / 1	172	49,4	173	52,9	174	58,3	166	54,7	140	51,7	100	48,8
	7 / 6	210	55,3	210	59,1	211	65,4	185	59,1	154	56,8	111	48,6
	12 / 11	242	59,7	241	63,9	241	66,7	217	59,7	171	61,4	122	48,5
	18 / 14	268	63,1	267	67,7	266	70,9	252	64,3	187	62,0	132	48,6
75.4	-20 / -21	86,6	41,4	90,6	46,6	94,0	50,8	-	-	-	-	-	-
	-15 / -16	98,7	42,4	101,8	47,4	104	51,5	96,1	61,9	-	-	-	-
	-7 / -8	125	43,8	126	48,6	128	52,4	128	62,6	123	62,9	-	-
	-4 / -5	158	47,5	159	52,7	161	56,7	155	66,6	139	63,0	85	48,2
	2 / 1	200	53,9	200	59,7	200	64,0	176	67,3	158	63,6	103	51,8
	7 / 6	232	58,1	231	64,3	231	68,3	197	67,7	177	64,0	113	51,6
	12 / 11	247	57,6	246	64,0	245	68,6	232	76,4	207	69,8	124	51,6
	18 / 14	275	57,9	273	64,6	271	69,3	270	77,3	242	74,8	135	51,7
80.4	-20 / -21	96,9	46,2	101,7	52,0	105,5	56,6	-	-	-	-	-	-
	-15 / -16	109	47,4	112	53,0	115	57,4	126,3	65,7	-	-	-	-
	-7 / -8	138	49,0	140	54,5	142	58,6	146	66,7	148	71,8	-	-
	-4 / -5	169	50,7	170	56,3	172	60,5	155	67,1	157	72,2	103	57,5
	2 / 1	218	58,1	218	64,4	219	68,9	187	72,2	177	73,0	116	57,2
	7 / 6	254	64,9	253	72,0	253	77,3	221	77,4	202	74,1	128	57,2
	12 / 11	277	66,1	276	73,4	275	78,5	247	82,9	246	84,1	141	57,2
	18 / 14	309	66,7	307	74,3	305	79,5	273	88,6	272	90,1	153	57,4
85.4	-20 / -21	119	53,5	125	60,3	130	65,5	-	-	-	-	-	-
	-15 / -16	130	54,8	135	61,5	139	66,4	148,3	75,1	-	-	-	-
	-7 / -8	157	57,0	160	63,5	162	68,3	167	76,5	170	82,2	-	-
	-4 / -5	190	65,5	193	72,8	195	78,1	176	81,9	179	82,7	90	50,4
	2 / 1	231	70,6	232	78,4	233	84,0	211	88,1	199	83,9	101	50,3
	7 / 6	281	76,2	281	84,7	280	88,9	248	94,5	228	86,3	112	50,4
	12 / 11	308	76,8	307	85,4	306	91,3	290	101,2	259	91,9	134	53,6
	18 / 14	345	77,9	342	87,0	340	95,1	322	103,2	304	99,1	154	57,2

Integrated heating capacities

External exchanger inlet air temperature °C (D.B./W.B.)	-7/-8	-5/-6	0/-1	2/1	Other
Heating capacity multiplication coefficient	0,90	0,89	0,88	0,90	1,00

The integrated heating capacity is the actual heating capacity, including the impact of any defrosting cycles.

To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.

In prolonged heat pump operating mode with negative ambient temperature, it is important to drain the water produced by the defrosting cycles to prevent the build-up of ice near the base of the unit. Ensure this does not pose a danger to property or persons.

Heating - LN

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot
20.2	-20 / -21	21,8	10,7	20,8	11,2	20,0	11,7	-	-	-	-	-	-
	-15 / -16	24,3	11,2	23,6	11,8	22,9	12,4	22,4	13,1	-	-	-	-
	-7 / -8	32,1	11,8	31,4	12,5	30,9	13,3	30,4	14,2	30,1	15,1	-	-
	-4 / -5	36,4	13,1	35,8	14,0	35,3	15,0	34,8	16,0	34,5	17,1	20,0	12,4
	2 / 1	45	13,5	44	14,5	44,0	15,6	43,5	16,7	43,0	17,9	23,5	13,0
	7 / 6	57	14,6	56	15,7	55	17,5	52	19,0	50,6	20,2	26,6	13,4
	12 / 11	65	15,5	64	16,9	63	18,3	63	19,9	62	21,4	30	13,6
	18 / 14	73	16,4	72	17,9	71	19,6	70	21,3	69	23,0	33	13,8
25.2	-20 / -21	26,3	12,2	24,9	12,7	23,7	13,3	-	-	-	-	-	-
	-15 / -16	28,4	12,8	27,4	13,5	26,4	14,3	25,7	15,1	-	-	-	-
	-7 / -8	36,8	13,6	36,0	14,5	35,3	15,5	34,7	16,5	34,1	17,6	-	-
	-4 / -5	44,2	14,8	43,4	15,9	42,7	17,0	42,1	18,2	41,6	19,5	22,3	13,7
	2 / 1	54	16,2	53	17,5	52	18,8	52	20,3	48,6	21,8	26,3	14,3
	7 / 6	64	16,9	63	18,4	62	20,5	59	22,2	55	22,8	30	14,7
	12 / 11	73	17,6	72	19,2	71	21,0	70	22,8	69	24,7	34	15,0
	18 / 14	81	18,6	80	20,5	79	22,5	78	24,5	77	26,6	37	15,2
30.2	-20 / -21	30,4	16,0	31,7	17,5	32,9	19,0	-	-	-	-	-	-
	-15 / -16	36,9	15,7	37,8	17,1	38,7	18,6	37,6	20,3	-	-	-	-
	-7 / -8	43	15,4	43,5	16,7	43,9	18,1	46,0	19,8	38,8	22,8	-	-
	-4 / -5	48	15,2	49	16,2	49	17,9	49	19,6	41,5	22,7	28,8	19,5
	2 / 1	60	16,2	59	17,3	59	19,1	56	20,4	47	22,7	32	19,4
	7 / 6	71	17,3	71	18,5	69	20,4	66	21,7	61	23,3	35	19,3
	12 / 11	79	18,3	79	19,6	78	21,5	78	23,0	70	25,5	39	19,2
	18 / 14	87	19,4	86	20,6	86	22,7	86	24,2	81	26,8	44	19,0
35.2	-20 / -21	30,7	18,0	32,3	19,9	33,9	21,8	-	-	-	-	-	-
	-15 / -16	37,5	17,8	38,7	19,6	39,9	21,4	38,9	23,5	-	-	-	-
	-7 / -8	49	17,4	49	18,7	50	20,8	47,1	22,4	48,2	25,0	-	-
	-4 / -5	55	18,8	56	20,1	57	22,3	54	23,8	55	26,5	33	21,3
	2 / 1	68	18,8	68	20,1	69	23,6	62	23,8	62	26,5	37	21,2
	7 / 6	80	19,8	80	21,2	79	24,2	71	24,8	67	26,3	41	21,2
	12 / 11	91	21,3	90	22,8	90	25,2	90	27,0	90	29,9	45	21,2
	18 / 14	101	22,5	100	24,1	99	26,6	99	28,5	98	31,5	50	21,0
40.2	-20 / -21	34,1	18,8	33,8	18,8	37,8	25,0	-	-	-	-	-	-
	-15 / -16	41,1	20,2	40,7	20,2	44	24,6	46,2	27,1	-	-	-	-
	-7 / -8	55	20,2	56	21,8	57	24,3	58	26,0	54	29,0	-	-
	-4 / -5	61	20,9	62	22,5	63	25,1	63	26,9	58	30,0	37	23,7
	2 / 1	75	21,0	75	22,6	76	26,6	76	28,6	69	31,8	42	23,6
	7 / 6	88	22,4	88	24,1	90	28,0	85	30,0	79	32,3	46	23,7
	12 / 11	100	23,8	100	25,7	99	28,4	99	30,5	90	33,8	51	23,6
	18 / 14	111	25,3	110	27,2	109	30,0	109	32,3	103	35,7	57	23,4
45.2	-20 / -21	46,0	22,7	47,3	24,3	57,9	29,7	-	-	-	-	-	-
	-15 / -16	52	23,1	53	24,7	64	30,0	54,7	28,7	-	-	-	-
	-7 / -8	66	23,6	66	25,2	76	30,5	70	31,1	65	32,7	-	-
	-4 / -5	73	24,1	73	25,6	81	30,6	75	31,3	70	32,8	41	24,6
	2 / 1	89	25,9	89	27,5	93	30,9	86	31,6	79	33,0	46	24,5
	7 / 6	103	26,0	102	27,7	103	31,3	96	31,9	88	33,3	51	24,5
	12 / 11	119	27,7	118	29,5	117	32,1	116	34,1	104	35,3	56	24,5
	18 / 14	132	29,3	130	31,3	129	34,1	127	36,4	120	37,7	62	24,6
50.2	-20 / -21	54	26,3	56	28,3	59	31,1	-	-	-	-	-	-
	-15 / -16	61	26,8	62	28,7	64	31,4	65,0	33,3	-	-	-	-
	-7 / -8	75	27,4	75	29,3	76	31,8	77	33,7	75	36,7	-	-
	-4 / -5	82	29,1	83	31,1	83	33,8	84	35,8	80	36,9	48	27,7
	2 / 1	100	29,6	100	31,5	100	34,2	100	36,3	90	37,3	54	27,7
	7 / 6	118	30,3	118	32,3	117	35,7	115	36,7	99	37,8	60	27,7
	12 / 11	134	31,9	133	34,0	132	37,0	132	39,4	118	40,5	66	27,8
	18 / 14	149	33,8	148	36,2	146	39,4	145	42,1	136	43,4	73	28,0

kWt = Heating capacity kW

kWe_tot = Unit total power input in kW

Ta (°C) = Entering external exchanger air temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

D.B. = Dry bulb

W.B. = Wet bulb

Performances

Heating - LN

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot
55.4	-20 / -21	51,1	30,8	56,6	34,3	62,5	44,5	-	-	-	-	-	-
	-15 / -16	61,7	30,1	67,2	33,4	73,0	43,2	71,9	44,7	-	-	-	-
	-7 / -8	80,2	29,1	83,9	31,9	89,9	41,9	87,2	43,3	79,6	43,5	-	-
	-4 / -5	93,4	31,0	96,1	33,6	97,3	41,6	93,5	41,8	85,4	43,2	50,8	32,0
	2 / 1	114	32,6	111	35,3	111,9	41,4	107,0	41,6	97,0	42,9	57,0	31,8
	7 / 6	135	34,8	129	37,2	133	40,6	123	41,7	105,0	42,4	62,8	31,8
	12 / 11	148	34,6	140	37,4	140	41,6	140	45,0	127	45,6	69	31,7
	18 / 14	160	34,6	155	37,4	154	41,6	154	45,1	147	50,6	76	31,4
60.4	-20 / -21	54,7	32,6	57,9	36,6	61,2	40,5	-	-	-	-	-	-
	-15 / -16	66,2	32,1	68,4	35,1	71,5	39,5	75,3	48,3	-	-	-	-
	-7 / -8	87,2	31,7	88,5	34,4	90,6	38,6	95,6	45,6	88,1	47,0	-	-
	-4 / -5	98,7	34,6	99,8	37,6	101,6	42,0	103,0	45,3	94,3	46,6	59,8	36,2
	2 / 1	124	36,4	124	39,5	125	44,1	124	45,2	107,0	46,3	67,3	36,0
	7 / 6	148	38,9	148	41,3	148	47,2	124	46,3	114	46,3	74	36,0
	12 / 11	160	38,7	159	41,9	159	46,7	146	48,1	131	48,3	82	36,0
	18 / 14	172	38,8	171	42,1	171	46,9	169	50,7	153	51,1	90	35,8
65.4	-20 / -21	63,2	29,4	65,4	32,0	68,9	36,0	-	-	-	-	-	-
	-15 / -16	72,1	30,1	73,9	32,6	76,7	36,4	80,0	44,0	-	-	-	-
	-7 / -8	88	30,9	89,4	33,3	91,2	36,8	93,8	44,4	89,9	44,1	-	-
	-4 / -5	103	35,0	104	37,6	106	41,5	100	44,6	95,7	44,3	71,2	42,3
	2 / 1	135	37,9	135	40,6	136	44,7	122	45,0	108	44,5	79	42,0
	7 / 6	165	41,7	164	44,6	165	49,6	144	45,3	122	44,9	87	41,8
	12 / 11	189	43,2	189	46,2	188	51,0	160	48,7	142	47,2	95	41,8
	18 / 14	210	45,6	209	48,9	208	54,1	176	52,1	166	50,9	103	41,8
70.4	-20 / -21	67,8	31,4	70,2	34,1	74,1	38,3	-	-	-	-	-	-
	-15 / -16	76,4	32,1	78,3	34,7	81,4	38,7	101,8	42,4	-	-	-	-
	-7 / -8	93	32,9	95	35,4	97	39,2	118,0	43,0	100,9	44,0	-	-
	-4 / -5	114	39,2	115	42,0	117	46,5	126	43,2	107	44,2	76	42,3
	2 / 1	148	42,5	149	45,5	150	50,1	143	47,0	120	44,5	86	42,0
	7 / 6	181	47,5	181	50,8	181	56,3	159	50,9	133	48,9	95	41,8
	12 / 11	208	51,3	208	55,0	207	57,4	187	51,4	147	52,8	105	41,7
	18 / 14	231	54,2	230	58,2	229	61,0	217	55,3	161	53,3	113	41,8
75.4	-20 / -21	74,5	35,6	78,0	40,1	80,8	43,7	-	-	-	-	-	-
	-15 / -16	84,9	36,5	87,5	40,8	90	44,2	82,7	53,2	-	-	-	-
	-7 / -8	107	37,7	109	41,8	110	45,1	110	53,8	105	54,1	-	-
	-4 / -5	136	40,9	137	45,3	138	48,7	133	57,3	120	54,2	73	41,5
	2 / 1	172	46,4	172	51,3	172	55,1	152	57,9	136	54,7	88	44,6
	7 / 6	199	49,9	199	55,3	199	58,8	169	58,2	152	55,0	97	44,4
	12 / 11	213	49,6	211	55,1	211	59,0	199	65,7	178	60,0	107	44,4
	18 / 14	237	49,8	235	55,5	233	59,6	232	66,5	208	64,3	116	44,5
80.4	-20 / -21	83,4	39,7	87,5	44,7	90,7	48,7	-	-	-	-	-	-
	-15 / -16	93	40,8	97	45,6	99	49,4	108,6	56,5	-	-	-	-
	-7 / -8	118	42,1	120	46,8	122	50,4	125	57,3	128	61,7	-	-
	-4 / -5	145	43,6	147	48,4	148	52,0	134	57,7	135	62,1	89	49,4
	2 / 1	187	49,9	188	55,3	188	59,3	161	62,1	153	62,8	100	49,2
	7 / 6	218	55,8	218	61,9	218	66,5	190	66,6	174	63,7	110	49,2
	12 / 11	238	56,8	237	63,1	236	67,5	212	71,3	212	72,3	121	49,2
	18 / 14	266	57,4	264	63,9	263	68,4	235	76,2	234	77,5	131	49,3
85.4	-20 / -21	102	46,0	107	51,8	112	56,3	-	-	-	-	-	-
	-15 / -16	112	47,1	116	52,9	119	57,1	127,5	64,6	-	-	-	-
	-7 / -8	135	49,0	138	54,6	140	58,7	143	65,8	146	70,7	-	-
	-4 / -5	164	56,3	166	62,6	168	67,2	152	70,4	154	71,1	77	43,3
	2 / 1	199	60,7	200	67,4	201	72,2	181	75,8	171	72,2	87	43,3
	7 / 6	241	65,5	241	72,9	241	76,5	213	81,3	196	74,2	96	43,3
	12 / 11	265	66,1	264	73,5	263	78,5	250	87,0	223	79,0	115	46,1
	18 / 14	296	67,0	294	74,8	293	81,8	277	88,7	261	85,2	133	49,1

Integrated heating capacities

External exchanger inlet air temperature °C (D.B/W.B.)	-7/-8	-5/-6	0/-1	2/1	Other
Heating capacity multiplication coefficient	0,90	0,89	0,88	0,90	1,00

The integrated heating capacity is the actual heating capacity, including the impact of any defrosting cycles.

To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.

In prolonged heat pump operating mode with negative ambient temperature, it is important to drain the water produced by the defrosting cycles to prevent the build-up of ice near the base of the unit. Ensure this does not pose a danger to property or persons.

Heating - EN

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot
20.2	-20 / -21	21,8	10,7	20,8	11,2	20,0	11,7	-	-	-	-	-	-
	-15 / -16	24,3	11,2	23,6	11,8	22,9	12,4	22,4	13,1	-	-	-	-
	-7 / -8	32,1	11,8	31,4	12,5	30,9	13,3	30,4	14,2	30,1	15,1	-	-
	-4 / -5	36,4	13,1	35,8	14,0	35,3	15,0	34,8	16,0	34,5	17,1	20,0	12,4
	2 / 1	45	13,5	44	14,5	44,0	15,6	43,5	16,7	43,0	17,9	23,5	13,0
	7 / 6	57	14,6	56	15,7	55	17,5	52	19,0	50,6	20,2	26,6	13,4
	12 / 11	65	15,5	64	16,9	63	18,3	63	19,9	62	21,4	30	13,6
	18 / 14	73	16,4	72	17,9	71	19,6	70	21,3	69	23,0	33	13,8
25.2	-20 / -21	26,3	12,2	24,9	12,7	23,7	13,3	-	-	-	-	-	-
	-15 / -16	28,4	12,8	27,4	13,5	26,4	14,3	25,7	15,1	-	-	-	-
	-7 / -8	36,8	13,6	36,0	14,5	35,3	15,5	34,7	16,5	34,1	17,6	-	-
	-4 / -5	44,2	14,8	43,4	15,9	42,7	17,0	42,1	18,2	41,6	19,5	22,3	13,7
	2 / 1	54	16,2	53	17,5	52	18,8	52	20,3	48,6	21,8	26,3	14,3
	7 / 6	64	16,9	63	18,4	62	20,5	59	22,2	55	22,8	30	14,7
	12 / 11	73	17,6	72	19,2	71	21,0	70	22,8	69	24,7	34	15,0
	18 / 14	81	18,6	80	20,5	79	22,5	78	24,5	77	26,6	37	15,2
30.2	-20 / -21	30,4	16,0	31,7	17,5	32,9	19,0	-	-	-	-	-	-
	-15 / -16	36,9	15,7	37,8	17,1	38,7	18,6	37,6	20,3	-	-	-	-
	-7 / -8	43	15,4	43,5	16,7	43,9	18,1	46,0	19,8	38,8	22,8	-	-
	-4 / -5	48	15,2	49	16,2	49	17,9	49	19,6	41,5	22,7	28,8	19,5
	2 / 1	60	16,2	59	17,3	59	19,1	56	20,4	47	22,7	32	19,4
	7 / 6	71	17,3	71	18,5	69	20,4	66	21,7	61	23,3	35	19,3
	12 / 11	79	18,3	79	19,6	78	21,5	78	23,0	70	25,5	39	19,2
	18 / 14	87	19,4	86	20,6	86	22,7	86	24,2	81	26,8	44	19,0
35.2	-20 / -21	30,7	18,0	32,3	19,9	33,9	21,8	-	-	-	-	-	-
	-15 / -16	37,5	17,8	38,7	19,6	39,9	21,4	38,9	23,5	-	-	-	-
	-7 / -8	49	17,4	49	18,7	50	20,8	47,1	22,4	48,2	25,0	-	-
	-4 / -5	55	18,8	56	20,1	57	22,3	54	23,8	55	26,5	33	21,3
	2 / 1	68	18,8	68	20,1	69	23,6	62	23,8	62	26,5	37	21,2
	7 / 6	80	19,8	80	21,2	79	24,2	71	24,8	67	26,3	41	21,2
	12 / 11	91	21,3	90	22,8	90	25,2	90	27,0	90	29,9	45	21,2
	18 / 14	101	22,5	100	24,1	99	26,6	99	28,5	98	31,5	50	21,0
40.2	-20 / -21	34,1	18,8	33,8	18,8	37,8	25,0	-	-	-	-	-	-
	-15 / -16	41,1	20,2	40,7	20,2	44	24,6	46,2	27,1	-	-	-	-
	-7 / -8	55	20,2	56	21,8	57	24,3	58	26,0	54	29,0	-	-
	-4 / -5	61	20,9	62	22,5	63	25,1	63	26,9	58	30,0	37	23,7
	2 / 1	75	21,0	75	22,6	76	26,6	76	28,6	69	31,8	42	23,6
	7 / 6	88	22,4	88	24,1	90	28,0	85	30,0	79	32,3	46	23,7
	12 / 11	100	23,8	100	25,7	99	28,4	99	30,5	90	33,8	51	23,6
	18 / 14	111	25,3	110	27,2	109	30,0	109	32,3	103	35,7	57	23,4
45.2	-20 / -21	46,0	22,7	47,3	24,3	57,9	29,7	-	-	-	-	-	-
	-15 / -16	52	23,1	53	24,7	64	30,0	54,7	28,7	-	-	-	-
	-7 / -8	66	23,6	66	25,2	76	30,5	70	31,1	65	32,7	-	-
	-4 / -5	73	24,1	73	25,6	81	30,6	75	31,3	70	32,8	41	24,6
	2 / 1	89	25,9	89	27,5	93	30,9	86	31,6	79	33,0	46	24,5
	7 / 6	103	26,0	102	27,7	103	31,3	96	31,9	88	33,3	51	24,5
	12 / 11	119	27,7	118	29,5	117	32,1	116	34,1	104	35,3	56	24,5
	18 / 14	132	29,3	130	31,3	129	34,1	127	36,4	120	37,7	62	24,6
50.2	-20 / -21	54	26,3	56	28,3	59	31,1	-	-	-	-	-	-
	-15 / -16	61	26,8	62	28,7	64	31,4	65,0	33,3	-	-	-	-
	-7 / -8	75	27,4	75	29,3	76	31,8	77	33,7	75	36,7	-	-
	-4 / -5	82	29,1	83	31,1	83	33,8	84	35,8	80	36,9	48	27,7
	2 / 1	100	29,6	100	31,5	100	34,2	100	36,3	90	37,3	54	27,7
	7 / 6	118	30,3	118	32,3	117	35,7	115	36,7	99	37,8	60	27,7
	12 / 11	134	31,9	133	34,0	132	37,0	132	39,4	118	40,5	66	27,8
	18 / 14	149	33,8	148	36,2	146	39,4	145	42,1	136	43,4	73	28,0

kWt = Heating capacity kW

kWe_tot = Unit total power input in kW

Ta (°C) = Entering external exchanger air temperature

Performances in function of the inlet/outlet water temperature differential = 5°C

D.B. = Dry bulb

W.B. = Wet bulb

Performances

Heating - EN

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot	kWt	kWe_tot
55.4	-20 / -21	51,1	30,8	56,6	34,3	62,5	44,5	-	-	-	-	-	-
	-15 / -16	61,7	30,1	67,2	33,4	73,0	43,2	71,9	44,7	-	-	-	-
	-7 / -8	80,2	29,1	83,9	31,9	89,9	41,9	87,2	43,3	79,6	43,5	-	-
	-4 / -5	93,4	31,0	96,1	33,6	97,3	41,6	93,5	41,8	85,4	43,2	50,8	32,0
	2 / 1	114	32,6	111	35,3	111,9	41,4	107,0	41,6	97,0	42,9	57,0	31,8
	7 / 6	135	34,8	129	37,2	133	40,6	123	41,7	105,0	42,4	62,8	31,8
	12 / 11	148	34,6	140	37,4	140	41,6	140	45,0	127	45,6	69	31,7
	18 / 14	160	34,6	155	37,4	154	41,6	154	45,1	147	50,6	76	31,4
60.4	-20 / -21	54,7	32,6	57,9	36,6	61,2	40,5	-	-	-	-	-	-
	-15 / -16	66,2	32,1	68,4	35,1	71,5	39,5	75,3	48,3	-	-	-	-
	-7 / -8	87,2	31,7	88,5	34,4	90,6	38,6	95,6	45,6	88,1	47,0	-	-
	-4 / -5	98,7	34,6	99,8	37,6	101,6	42,0	103,0	45,3	94,3	46,6	59,8	36,2
	2 / 1	124	36,4	124	39,5	125	44,1	124	45,2	107,0	46,3	67,3	36,0
	7 / 6	148	38,9	148	41,3	148	47,2	124	46,3	114	46,3	74	36,0
	12 / 11	160	38,7	159	41,9	159	46,7	146	48,1	131	48,3	82	36,0
	18 / 14	172	38,8	171	42,1	171	46,9	169	50,7	153	51,1	90	35,8
65.4	-20 / -21	63,2	29,4	65,4	32,0	68,9	36,0	-	-	-	-	-	-
	-15 / -16	72,1	30,1	73,9	32,6	76,7	36,4	80,0	44,0	-	-	-	-
	-7 / -8	88	30,9	89,4	33,3	91,2	36,8	93,8	44,4	89,9	44,1	-	-
	-4 / -5	103	35,0	104	37,6	106	41,5	100	44,6	95,7	44,3	71,2	42,3
	2 / 1	135	37,9	135	40,6	136	44,7	122	45,0	108	44,5	79	42,0
	7 / 6	165	41,7	164	44,6	165	49,6	144	45,3	122	44,9	87	41,8
	12 / 11	189	43,2	189	46,2	188	51,0	160	48,7	142	47,2	95	41,8
	18 / 14	210	45,6	209	48,9	208	54,1	176	52,1	166	50,9	103	41,8
70.4	-20 / -21	67,8	31,4	70,2	34,1	74,1	38,3	-	-	-	-	-	-
	-15 / -16	76,4	32,1	78,3	34,7	81,4	38,7	101,8	42,4	-	-	-	-
	-7 / -8	93	32,9	95	35,4	97	39,2	118,0	43,0	100,9	44,0	-	-
	-4 / -5	114	39,2	115	42,0	117	46,5	126	43,2	107	44,2	76	42,3
	2 / 1	148	42,5	149	45,5	150	50,1	143	47,0	120	44,5	86	42,0
	7 / 6	181	47,5	181	50,8	181	56,3	159	50,9	133	48,9	95	41,8
	12 / 11	208	51,3	208	55,0	207	57,4	187	51,4	147	52,8	105	41,7
	18 / 14	231	54,2	230	58,2	229	61,0	217	55,3	161	53,3	113	41,8
75.4	-20 / -21	74,5	35,6	78,0	40,1	80,8	43,7	-	-	-	-	-	-
	-15 / -16	84,9	36,5	87,5	40,8	90	44,2	82,7	53,2	-	-	-	-
	-7 / -8	107	37,7	109	41,8	110	45,1	110	53,8	105	54,1	-	-
	-4 / -5	136	40,9	137	45,3	138	48,7	133	57,3	120	54,2	73	41,5
	2 / 1	172	46,4	172	51,3	172	55,1	152	57,9	136	54,7	88	44,6
	7 / 6	199	49,9	199	55,3	199	58,8	169	58,2	152	55,0	97	44,4
	12 / 11	213	49,6	211	55,1	211	59,0	199	65,7	178	60,0	107	44,4
	18 / 14	237	49,8	235	55,5	233	59,6	232	66,5	208	64,3	116	44,5
80.4	-20 / -21	83,4	39,7	87,5	44,7	90,7	48,7	-	-	-	-	-	-
	-15 / -16	93	40,8	97	45,6	99	49,4	108,6	56,5	-	-	-	-
	-7 / -8	118	42,1	120	46,8	122	50,4	125	57,3	128	61,7	-	-
	-4 / -5	145	43,6	147	48,4	148	52,0	134	57,7	135	62,1	89	49,4
	2 / 1	187	49,9	188	55,3	188	59,3	161	62,1	153	62,8	100	49,2
	7 / 6	218	55,8	218	61,9	218	66,5	190	66,6	174	63,7	110	49,2
	12 / 11	238	56,8	237	63,1	236	67,5	212	71,3	212	72,3	121	49,2
	18 / 14	266	57,4	264	63,9	263	68,4	235	76,2	234	77,5	131	49,3
85.4	-20 / -21	102	46,0	107	51,8	112	56,3	-	-	-	-	-	-
	-15 / -16	112	47,1	116	52,9	119	57,1	127,5	64,6	-	-	-	-
	-7 / -8	135	49,0	138	54,6	140	58,7	143	65,8	146	70,7	-	-
	-4 / -5	164	56,3	166	62,6	168	67,2	152	70,4	154	71,1	77	43,3
	2 / 1	199	60,7	200	67,4	201	72,2	181	75,8	171	72,2	87	43,3
	7 / 6	241	65,5	241	72,9	241	76,5	213	81,3	196	74,2	96	43,3
	12 / 11	265	66,1	264	73,5	263	78,5	250	87,0	223	79,0	115	46,1
	18 / 14	296	67,0	294	74,8	293	81,8	277	88,7	261	85,2	133	49,1

Integrated heating capacities

External exchanger inlet air temperature °C (D.B/W.B.)	-7/-8	-5/-6	0/-1	2/1	Other
Heating capacity multiplication coefficient	0,90	0,89	0,88	0,90	1,00

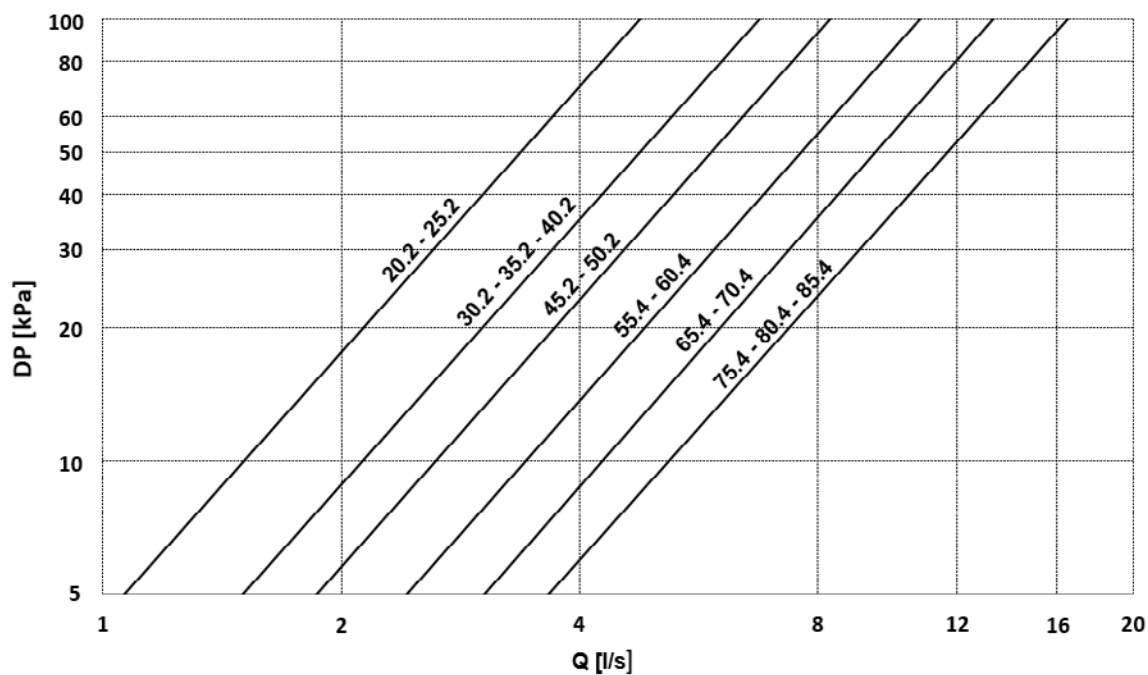
The integrated heating capacity is the actual heating capacity, including the impact of any defrosting cycles.

To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.

In prolonged heat pump operating mode with negative ambient temperature, it is important to drain the water produced by the defrosting cycles to prevent the build-up of ice near the base of the unit. Ensure this does not pose a danger to property or persons.

Hot side exchanger pressure drop

Size



The pressure drops are calculated considering a water temperature of 7°C

Q = Water flow-rate[l/s]

DP = Water side pressure drops (kPa)

The water flow-rate must be calculated with the following formula

$$Q \text{ [l/s]} = \text{kWf} / (4,186 \times \text{DT})$$

kWf = cooling capacity in kW

DT = Temperature difference between inlet / outlet water

Admissible water flow-rates

Minimum (Qmin) and maximum (Qmax) admissible water flow for the unit to operate correctly.

SIZE		20.2	25.2	30.2	35.2	40.2	45.2	50.2	55.4	60.4	65.4	70.4	75.4	80.4	85.4
Qmin	[l/s]	1,1	1,1	1,5	1,5	1,5	1,9	1,9	2,4	2,4	3,0	3,0	3,7	3,7	3,7
Qmax	[l/s]	5,2	5,2	7,4	7,4	7,4	9,1	9,1	11,8	11,8	14,6	14,6	18,1	18,1	18,1

Performances

Heating at part load - SC

GR.	Load %	Entering external exchanger air temperature (°C)																	
		-20 / -21			-15 / -16			-10 / -11			-7/-8			2 / 1			7 / 6		
		kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP
20.2	100	23,2	13,6	1,71	26,7	14,4	1,85	30,4	15,1	2,01	35,9	15,5	2,32	51,1	18,1	2,82	64,4	20,4	3,16
	75	16,2	10,2	1,59	19,8	10,8	1,83	23,6	11,4	2,08	27,6	11,7	2,36	41,0	13,9	2,95	47,3	15,0	3,16
	50	13,2	8,32	1,59	15,8	8,97	1,76	19,1	9,67	1,97	21,2	9,92	2,13	28,1	10,5	2,66	32,3	10,8	3,00
	Minimum	6,62	4,16	1,59	7,91	4,48	1,76	9,5	4,84	1,97	10,6	4,96	2,13	14,0	5,27	2,66	16,2	5,39	3,00
25.2	100	27,5	15,5	1,78	30,7	16,6	1,85	34,6	17,5	1,97	41,1	18,0	2,28	61,0	21,9	2,78	72,6	23,8	3,05
	75	19,1	12,0	1,60	22,8	12,7	1,80	26,8	13,3	2,02	31,1	13,6	2,28	45,8	16,2	2,82	52,8	17,5	3,01
	50	14,9	9,49	1,57	17,7	10,2	1,73	21,4	10,8	1,98	23,6	11,1	2,14	31,4	11,8	2,66	36,1	12,0	3,00
	Minimum	7,44	4,75	1,57	8,86	5,12	1,73	10,7	5,39	1,98	11,8	5,53	2,14	15,7	5,89	2,66	18,0	6,02	3,00
30.2	100	38,2	22,1	1,73	45,0	21,6	2,08	51,4	21,2	2,42	51,1	21,0	2,43	69,0	22,2	3,11	80,3	23,7	3,39
	75	23,9	14,0	1,71	28,8	15,1	1,90	33,0	14,7	2,25	37,6	14,5	2,59	52,1	16,0	3,26	58,5	16,8	3,48
	50	22,2	14,6	1,52	25,1	13,9	1,80	28,1	13,5	2,08	29,9	13,3	2,24	36,0	13,2	2,73	40,0	13,2	3,04
	Minimum	11,1	7,30	1,52	12,6	6,96	1,80	14,0	6,75	2,08	14,9	6,67	2,24	18,0	6,58	2,73	20,0	6,58	3,04
35.2	100	39,4	25,4	1,55	46,4	24,9	1,87	54,2	24,5	2,21	58,2	24,1	2,41	79,7	27,5	2,90	92,1	28,1	3,28
	75	28,1	18,7	1,50	33,1	18,1	1,83	38,1	17,6	2,16	43,5	17,5	2,49	60,4	19,3	3,13	67,9	20,4	3,33
	50	24,7	16,4	1,51	28,2	15,7	1,79	31,7	15,3	2,08	33,9	15,1	2,24	41,2	14,9	2,76	45,8	14,9	3,07
	Minimum	12,4	8,22	1,51	14,1	7,86	1,79	15,8	7,63	2,08	16,9	7,55	2,24	20,6	7,46	2,76	22,9	7,47	3,07
40.2	100	43,9	29,1	1,51	51,7	28,6	1,81	59,1	28,3	2,09	66,2	28,2	2,35	88,3	31,0	2,85	104	32,6	3,20
	75	31,2	21,0	1,49	36,9	20,3	1,81	42,5	19,9	2,13	48,6	19,7	2,46	67,7	21,9	3,09	76,0	23,1	3,29
	50	26,9	17,1	1,57	32,0	18,5	1,73	36,1	18,0	2,00	38,6	17,9	2,16	47,1	17,7	2,65	52,4	17,8	2,95
	Minimum	13,4	8,56	1,57	16,0	9,25	1,73	18,0	9,02	2,00	19,3	8,94	2,16	23,5	8,87	2,65	26,2	8,89	2,95
45.2	100	67,3	34,6	1,95	74,5	34,9	2,13	82,8	35,3	2,35	88,1	35,4	2,49	108	35,9	3,01	120	36,4	3,30
	75	39,4	22,0	1,79	44,8	22,2	2,02	50,7	22,3	2,27	57,7	22,4	2,57	80,0	25,3	3,17	90,1	26,7	3,37
	50	29,9	17,3	1,73	34,4	17,4	1,98	39,2	17,5	2,24	42,1	17,5	2,41	52,2	17,4	3,00	58,5	17,3	3,38
	Minimum	15,0	8,63	1,73	17,2	8,69	1,98	19,6	8,7	2,24	21,1	8,74	2,41	26,1	8,71	3,00	29,2	8,66	3,38
50.2	100	68,0	36,1	1,88	74,1	36,5	2,03	81,0	36,9	2,19	88,6	37,0	2,39	116,4	39,7	2,93	136	41,5	3,28
	75	45,3	24,7	1,83	51,0	25,0	2,04	57,4	25,2	2,28	65,1	25,3	2,57	90,1	28,7	3,14	101	30,3	3,34
	50	35,6	20,9	1,70	40,7	21,1	1,93	46,1	21,2	2,17	49,5	21,3	2,33	61,2	21,3	2,87	68,5	21,3	3,22
	Minimum	17,8	10,5	1,70	20,3	10,6	1,93	23,0	10,6	2,17	24,7	10,6	2,33	30,6	10,7	2,87	34,3	10,7	3,22
55.4	100	72,6	51,8	1,40	84,9	50,3	1,69	96,9	49,2	1,97	104,6	48,7	2,15	130	48,2	2,70	154	47,3	3,26
	75	44,6	28,7	1,55	51,8	27,5	1,88	59,0	26,6	2,22	67,6	26,2	2,58	93,5	28,6	3,27	105	30,0	3,49
	50	39,2	24,8	1,58	44,3	23,6	1,88	49,5	22,7	2,18	52,7	22,4	2,36	64,0	21,9	2,92	71,1	21,9	3,24
	Minimum	19,6	12,4	1,58	22,2	11,8	1,88	24,8	11,3	2,18	26,3	11,2	2,36	32,0	11,0	2,92	35,5	11,0	3,24
60.4	100	71,2	47,2	1,51	83,1	46,0	1,81	94,4	45,1	2,09	105,4	44,8	2,35	146	51,3	2,84	173	54,9	3,14
	75	42,4	26,0	1,63	48,8	26,2	1,86	55,4	26,3	2,10	62,9	26,3	2,39	86,8	29,2	2,97	96,8	30,5	3,17
	50	44,6	29,0	1,54	50,9	27,6	1,84	57,3	26,7	2,15	61,3	26,3	2,33	75,2	25,9	2,91	83,8	25,9	3,24
	Minimum	22,3	14,5	1,54	25,5	13,8	1,84	28,7	13,3	2,15	30,7	13,2	2,33	37,6	12,9	2,91	41,9	12,9	3,24
65.4	100	80,1	41,9	1,91	89,1	42,3	2,11	99,3	40,8	2,44	106	42,8	2,48	158	52,0	3,04	191	57,7	3,32
	75	61,2	33,6	1,82	69,8	33,9	2,06	78,9	34,2	2,31	90,2	34,3	2,63	125	38,5	3,25	141	40,6	3,46
	50	49,9	29,7	1,68	57,4	29,9	1,92	65,1	30,0	2,17	69,9	30,0	2,33	86,8	29,8	2,91	96,8	29,6	3,27
	Minimum	24,9	14,8	1,68	28,7	15,0	1,92	32,6	15,0	2,17	35,0	15,0	2,33	43,4	14,9	2,91	48,4	14,8	3,27
70.4	100	86,1	44,5	1,94	94,6	45,0	2,10	104	45,5	2,28	112	45,6	2,47	174	58,3	2,99	211	65,4	3,22
	75	71,7	38,9	1,84	80,8	39,3	2,06	90,9	39,7	2,29	104	39,8	2,60	143	45,0	3,17	160	47,7	3,36
	50	53,2	29,7	1,79	61,6	30,0	2,06	70,4	30,1	2,34	75,9	30,1	2,52	95,8	30,0	3,19	107	29,8	3,61
	Minimum	26,6	14,9	1,79	30,8	15,0	2,06	35,2	15,1	2,34	38,0	15,1	2,52	47,9	15,0	3,19	53,7	14,9	3,61
75.4	100	94,0	50,8	1,85	104,4	51,5	2,03	115,6	52,0	2,22	128	52,4	2,44	200	64,0	3,13	231	68,3	3,38
	75	72,3	38,0	1,90	82,0	38,4	2,14	91,9	37,8	2,43	105	38,0	2,77	146	42,9	3,41	165	45,2	3,64
	50	56,2	32,2	1,74	64,6	32,5	1,99	73,5	32,6	2,26	79,0	32,6	2,42	97,8	31,5	3,10	109	31,3	3,50
	Minimum	28,1	16,1	1,74	32,3	16,2	1,99	36,8	16,3	2,26	39,5	16,3	2,42	48,9	15,8	3,10	54,7	15,6	3,50
80.4	100	106	56,6	1,86	115	57,4	2,01	128	58,1	2,20	142	58,6	2,42	219	68,9	3,17	253	77,3	3,27
	75	83,0	42,7	1,94	92,5	42,2	2,19	104	42,6	2,44	119	42,9	2,76	164	48,6	3,37	185	51,4	3,59
	50	64,4	36,5	1,76	73,6	36,8	2,00	83,3	37,0	2,25	89,5	37,1	2,41	111	36,1	3,07	124	36,0	3,44
	Minimum	32,2	18,2	1,76	36,8	18,4	2,00	41,7	18,5	2,25	44,7	18,5	2,41	55,4	18,1	3,06	62,0	18,0	3,44
85.4	100	130	65,5	1,99	139	66,4	2,09	149	67,4	2,21	162	68,3	2,38	233	84,0	2,78	280	88,9	3,15
	75	93,8	47,2	1,99	105	47,8	2,19	117	48,3	2,42	133	48,6	2,73	183	55,2	3,31	206	58,6	3,51
	50	55,2	27,8	1,99	61,5	28,1	2,19	68,7	28,5	2,41	100	41,1	2,43	124	41,4	3,00	139	41,3	3,37
	Minimum	36,6	20,7	1,77	41,6	20,9	1,99	46,9	21,0	2,23	50,0	20,6	2,43	62,1	20,7	3,00	69,6	20,7	3,37

Load = % of heating capacity compared to the value at full load
kWt = Heating capacity kW
kWe_tot = unit total power input in kW

Internal exchanger water temperature = leaving 45°C / entering 40°C / variable flow-rate with
external exchanger air temperature

Heating at partial load - LN

GR.	Load %	Entering external exchanger air temperature (°C)																	
		-20 / -21			-15 / -16			-10 / -11			-7/-8			2 / 1			7 / 6		
		kWt	kWe _{tot}	COP	kWt	kWe _{tot}	COP	kWt	kWe _{tot}	COP	kWt	kWe _{tot}	COP	kWt	kWe _{tot}	COP	kWt	kWe _{tot}	COP
20.2	100	21,6	12,7	1,71	24,8	13,4	1,85	28,3	14,1	2,01	33,4	14,4	2,32	47,5	16,9	2,82	59,9	18,9	3,16
	75	15,1	9,52	1,59	18,4	10,1	1,83	22,0	10,6	2,08	25,6	10,8	2,36	38,1	12,9	2,95	44,0	13,9	3,16
	50	12,3	7,74	1,59	14,7	8,34	1,76	17,8	8,99	1,97	19,7	9,23	2,13	26,1	9,80	2,66	30,0	10,0	3,00
	Minimum	6,15	3,87	1,59	7,35	4,17	1,76	8,88	4,50	1,97	9,84	4,61	2,13	13,1	4,90	2,66	15,0	5,01	3,00
25.2	100	25,6	14,4	1,78	28,6	15,4	1,85	32,1	16,3	1,97	38,2	16,7	2,28	56,7	20,4	2,78	67,5	22,2	3,05
	75	17,7	11,1	1,60	21,2	11,8	1,80	24,9	12,4	2,02	28,9	12,7	2,28	42,6	15,1	2,82	49,1	16,3	3,01
	50	13,8	8,83	1,57	16,5	9,52	1,73	19,9	10,0	1,98	22,0	10,3	2,14	29,2	10,9	2,66	33,5	11,2	3,00
	Minimum	6,92	4,41	1,57	8,24	4,76	1,73	9,9	5,01	1,98	11,0	5,14	2,14	14,6	5,47	2,66	16,8	5,59	3,00
30.2	100	35,5	20,6	1,73	41,8	20,1	2,08	47,8	19,7	2,42	47,5	19,6	2,43	64,2	20,6	3,11	74,7	22,0	3,39
	75	22,3	13,0	1,71	26,7	14,0	1,90	30,7	13,7	2,25	35,0	13,5	2,59	48,5	14,9	3,26	54,4	15,6	3,48
	50	20,7	13,6	1,52	23,4	12,9	1,80	26,1	12,6	2,08	27,8	12,4	2,24	33,5	12,2	2,73	37,2	12,2	3,04
	Minimum	10,3	6,78	1,52	11,7	6,47	1,80	13,1	6,28	2,08	13,9	6,20	2,24	16,7	6,12	2,73	18,6	6,11	3,04
35.2	100	36,7	23,6	1,55	43,2	23,1	1,87	50,4	22,8	2,21	54,1	22,4	2,41	74,1	25,6	2,90	85,6	26,1	3,28
	75	26,1	17,4	1,50	30,8	16,8	1,83	35,4	16,4	2,16	40,4	16,3	2,49	56,2	18,0	3,13	63,1	18,9	3,33
	50	23,0	15,3	1,51	26,2	14,6	1,79	29,5	14,2	2,08	31,5	14,0	2,24	38,3	13,9	2,76	42,6	13,9	3,07
	Minimum	11,5	7,64	1,51	13,1	7,31	1,79	14,7	7,10	2,08	15,7	7,02	2,24	19,1	6,94	2,76	21,3	6,95	3,07
40.2	100	40,8	27,0	1,51	48,0	26,6	1,81	54,9	26,3	2,09	61,5	26,2	2,35	82,1	28,8	2,85	96,8	30,3	3,20
	75	29,0	19,5	1,49	34,3	18,9	1,81	39,5	18,5	2,13	45,2	18,4	2,46	62,9	20,3	3,09	70,7	21,4	3,29
	50	25,0	15,9	1,57	29,7	17,2	1,73	33,6	16,8	2,00	35,9	16,6	2,16	43,8	16,5	2,65	48,7	16,5	2,95
	Minimum	12,5	7,96	1,57	14,9	8,60	1,73	16,8	8,39	2,00	17,9	8,31	2,16	21,9	8,25	2,65	24,4	8,27	2,95
45.2	100	62,6	32,1	1,95	69,3	32,5	2,13	77,0	32,8	2,35	82,0	32,9	2,49	101	33,4	3,01	112	33,8	3,30
	75	36,6	20,5	1,79	41,7	20,6	2,02	47,2	20,8	2,27	53,7	20,8	2,57	74,4	23,5	3,17	83,7	24,8	3,37
	50	27,8	16,0	1,73	32,0	16,2	1,98	36,4	16,2	2,24	39,2	16,2	2,41	48,6	16,2	3,00	54,4	16,1	3,38
	Minimum	13,9	8,02	1,73	16,0	8,08	1,98	18,2	8,12	2,24	19,6	8,12	2,41	24,3	8,10	3,00	27,2	8,05	3,38
50.2	100	63,3	33,6	1,88	68,9	34,0	2,03	75,3	34,3	2,19	82,4	34,4	2,39	108	37,0	2,93	127	38,6	3,28
	75	42,1	23,0	1,83	47,5	23,2	2,04	53,4	23,4	2,28	60,5	23,5	2,57	83,8	26,7	3,14	94,2	28,2	3,34
	50	33,1	19,5	1,70	37,8	19,6	1,93	42,8	19,7	2,17	46,0	19,8	2,33	56,9	19,8	2,87	63,7	19,8	3,22
	Minimum	16,6	9,73	1,70	18,9	9,81	1,93	21,4	9,86	2,17	23,0	9,89	2,33	28,5	9,92	2,87	31,9	9,90	3,22
55.4	100	67,6	48,1	1,40	79,0	46,8	1,69	90,1	45,8	1,97	97,3	45,3	2,15	121	44,8	2,70	143	43,9	3,26
	75	41,5	26,7	1,55	48,2	25,6	1,88	54,9	24,7	2,22	62,8	24,3	2,58	86,9	26,6	3,27	97,4	27,9	3,49
	50	36,5	23,1	1,58	41,2	21,9	1,88	46,0	21,1	2,18	49,0	20,8	2,36	59,5	20,4	2,92	66,1	20,4	3,24
	Minimum	18,2	11,5	1,58	20,6	11,0	1,88	23,0	10,6	2,18	24,5	10,4	2,36	29,8	10,2	2,92	33,0	10,2	3,24
60.4	100	66,2	43,8	1,51	77,3	42,7	1,81	87,8	42,0	2,09	98,0	41,7	2,35	136	47,7	2,84	160	51,0	3,14
	75	39,4	24,2	1,63	45,4	24,4	1,86	51,5	24,5	2,10	58,5	24,5	2,39	80,7	27,2	2,97	90,0	28,4	3,17
	50	41,5	27,0	1,54	47,4	25,7	1,84	53,3	24,8	2,15	57,0	24,5	2,33	69,9	24,1	2,91	77,9	24,1	3,24
	Minimum	20,7	13,5	1,54	23,7	12,8	1,84	26,6	12,4	2,15	28,5	12,2	2,33	35,0	12,0	2,91	39,0	12,0	3,24
65.4	100	74,5	38,9	1,91	82,9	39,3	2,11	92,3	37,9	2,44	98,6	39,8	2,48	147	48,4	3,04	178	53,6	3,32
	75	56,9	31,2	1,82	64,9	31,6	2,06	73,4	31,8	2,31	83,9	31,9	2,63	117	35,8	3,25	131	37,8	3,46
	50	46,4	27,6	1,68	53,4	27,8	1,92	60,6	27,9	2,17	65,0	27,9	2,33	80,7	27,8	2,91	90,0	27,5	3,27
	Minimum	23,2	13,8	1,68	26,7	13,9	1,92	30,3	14,0	2,17	32,5	14,0	2,33	40,4	13,9	2,91	45,0	13,8	3,27
70.4	100	80,1	41,4	1,94	88,0	41,9	2,10	96,3	42,3	2,28	104,6	42,4	2,47	162	54,2	2,99	196	60,9	3,22
	75	66,7	36,2	1,84	75,2	36,6	2,06	84,5	36,9	2,29	96,3	37,1	2,60	133	41,9	3,17	149	44,3	3,36
	50	49,5	27,6	1,79	57,3	27,9	2,06	65,5	28,0	2,34	70,6	28,0	2,52	89,0	27,9	3,19	99,9	27,7	3,61
	Minimum	24,7	13,8	1,79	28,7	13,9	2,06	32,7	14,0	2,34	35,3	14,0	2,52	44,5	14,0	3,19	50,0	13,9	3,61
75.4	100	87,4	47,3	1,85	97,1	47,9	2,03	108	48,4	2,22	119,1	48,7	2,44	186	59,5	3,13	215	63,5	3,38
	75	67,3	35,3	1,90	76,3	35,7	2,14	85,5	35,2	2,43	97,8	35,3	2,77	136	39,9	3,41	153	42,1	3,64
	50	52,3	30,0	1,74	60,1	30,2	1,99	68,4	30,3	2,26	73,5	30,3	2,42	90,9	29,3	3,10	102	29,1	3,50
	Minimum	26,1	15,0	1,74	30,1	15,1	1,99	34,2	15,2	2,26	36,7	15,2	2,42	45,5	14,7	3,10	50,9	14,5	3,50
80.4	100	98,1	52,7	1,86	107	53,4	2,01	119	54,0	2,20	132	54,5	2,42	204	64,1	3,17	235	71,9	3,27
	75	77,2	39,7	1,94	86,0	39,3	2,19	96,7	39,7	2,44	110	39,9	2,76	153	45,2	3,37	172	47,8	3,59
	50	59,9	33,9	1,76	68,4	34,2	2,00	77,5	34,4	2,25	83,2	34,5	2,41	103	33,6	3,07	115	33,5	3,44
	Minimum	29,9	17,0	1,76	34,2	17,1	2,00	38,7	17,2	2,25	41,6	17,2	2,41	51,5	16,8	3,06	57,7	16,7	3,44
85.4	100	121	60,9	1,99	129	61,8	2,09	139	62,7	2,21	151	63,5	2,38	217	78,1	2,78	260	82,7	3,15
	75	87,3	43,9	1,99	97,2	44,4	2,19	109	45,0	2,42	123	45,2	2,73	170	51,4	3,31	191	54,5	3,51
	50	51,3	25,8	1,99	57,2	26,2	2,19	63,9	26,5	2,41	93,0	38,3	2,43	116	38,5	3,00	129	38,4	3,37
	Minimum	34,0	19,2	1,77	38,6	19,4	1,99	43,6	19,5	2,23	46,5	19,1	2,43	57,8	19,2	3,00	64,7	19,2	3,37

Load = % of heating capacity compared to the value at full load
 kWt = Heating capacity kW
 kWe_tot = unit total power input in kW

Internal exchanger water temperature = leaving 45°C / entering 40°C / variable flow-rate with external exchanger air temperature

Performances

Heating at part load - EN

		Entering external exchanger air temperature (°C)																	
GR.	Load %	-20 / -21			-15 / -16			-10 / -11			-7/-8			2 / 1			7 / 6		
		kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP
20.2	100	20,0	11,7	1,71	22,9	12,4	1,85	26,1	13,0	2,01	30,9	13,3	2,32	44,0	15,6	2,82	55,4	17,5	3,16
	75	14,0	8,80	1,59	17,0	9,33	1,83	20,3	9,78	2,08	23,7	10,0	2,36	35,2	11,9	2,95	40,7	12,9	3,16
	50	11,4	7,16	1,59	13,6	7,71	1,76	16,4	8,32	1,97	18,2	8,53	2,13	24,1	9,06	2,66	27,8	9,26	3,00
	Minimum	5,69	3,58	1,59	6,80	3,86	1,76	8,21	4,16	1,97	9,10	4,27	2,13	12,1	4,53	2,66	13,9	4,63	3,00
25.2	100	23,7	13,3	1,78	26,4	14,3	1,85	29,7	15,1	1,97	35,3	15,5	2,28	52,5	18,8	2,78	62,4	20,5	3,05
	75	16,4	10,3	1,60	19,6	10,9	1,80	23,1	11,4	2,02	26,8	11,7	2,28	39,4	14,0	2,82	45,4	15,1	3,01
	50	12,8	8,16	1,57	15,2	8,81	1,73	18,4	9,27	1,98	20,3	9,51	2,14	27,0	10,1	2,66	31,0	10,3	3,00
	Minimum	6,40	4,08	1,57	7,62	4,40	1,73	9,18	4,64	1,98	10,2	4,76	2,14	13,5	5,06	2,66	15,5	5,17	3,00
30.2	100	32,9	19,0	1,73	38,7	18,6	2,08	44,2	18,2	2,42	43,9	18,1	2,43	59,4	19,1	3,11	69,1	20,4	3,39
	75	20,6	12,0	1,71	24,7	13,0	1,90	28,3	12,6	2,25	32,3	12,5	2,59	44,8	13,7	3,26	50,3	14,4	3,48
	50	19,1	12,5	1,52	21,6	12,0	1,80	24,1	11,6	2,08	25,7	11,5	2,24	31,0	11,3	2,73	34,4	11,3	3,04
	Minimum	9,55	6,27	1,52	10,8	5,99	1,80	12,1	5,81	2,08	12,9	5,74	2,24	15,5	5,66	2,73	17,2	5,65	3,04
35.2	100	33,9	21,8	1,55	39,9	21,4	1,87	46,6	21,1	2,21	50,1	20,8	2,41	68,5	23,6	2,90	79,2	24,2	3,28
	75	24,1	16,1	1,50	28,5	15,5	1,83	32,7	15,2	2,16	37,4	15,0	2,49	52,0	16,6	3,13	58,4	17,5	3,33
	50	21,3	14,1	1,51	24,2	13,5	1,79	27,3	13,1	2,08	29,1	13,0	2,24	35,4	12,8	2,76	39,4	12,8	3,07
	Minimum	10,6	7,06	1,51	12,1	6,76	1,79	13,6	6,56	2,08	14,6	6,5	2,24	17,7	6,42	2,76	19,7	6,42	3,07
40.2	100	37,8	25,0	1,51	44,4	24,6	1,81	50,8	24,3	2,09	56,9	24,3	2,35	75,9	26,6	2,85	89,5	28,0	3,20
	75	26,8	18,0	1,49	31,7	17,5	1,81	36,5	17,1	2,13	41,8	17,0	2,46	58,2	18,8	3,09	65,3	19,8	3,29
	50	23,1	14,7	1,57	27,5	15,9	1,73	31,0	15,5	2,00	33,2	15,4	2,16	40,5	15,3	2,65	45,0	15,3	2,95
	Minimum	11,6	7,36	1,57	13,7	7,96	1,73	15,5	7,76	2,00	16,6	7,68	2,16	20,2	7,63	2,65	22,5	7,65	2,95
45.2	100	57,9	29,7	1,95	64,1	30,0	2,13	71,2	30,3	2,35	75,8	30,5	2,49	93,2	30,9	3,01	103	31,3	3,30
	75	33,8	18,9	1,79	38,5	19,1	2,02	43,6	19,2	2,27	49,6	19,3	2,57	68,8	21,7	3,17	77,4	23,0	3,37
	50	25,7	14,8	1,73	29,6	14,9	1,98	33,7	15,0	2,24	36,2	15,0	2,41	44,9	15,0	3,00	50,3	14,9	3,38
	Minimum	12,9	7,42	1,73	14,8	7,47	1,98	16,8	7,51	2,24	18,1	7,51	2,41	22,5	7,49	3,00	25,1	7,45	3,38
50.2	100	58,5	31,1	1,88	63,7	31,4	2,03	69,7	31,8	2,19	76,2	31,8	2,39	100	34,2	2,93	117,1	35,7	3,28
	75	39,0	21,3	1,83	43,9	21,5	2,04	49,3	21,7	2,28	56,0	21,8	2,57	77,5	24,6	3,14	87,1	26,1	3,34
	50	30,6	18,0	1,70	35,0	18,1	1,93	39,6	18,2	2,17	42,5	18,3	2,33	52,7	18,3	2,87	58,9	18,3	3,22
	Minimum	15,3	9,00	1,70	17,5	9,07	1,93	19,8	9,12	2,17	21,3	9,14	2,33	26,3	9,17	2,87	29,5	9,16	3,22
55.4	100	62,5	44,5	1,40	73,0	43,2	1,69	83,3	42,3	1,97	89,9	41,9	2,15	112	41,4	2,70	133	40,6	3,26
	75	38,4	24,7	1,55	44,5	23,6	1,88	50,7	22,9	2,22	58,1	22,5	2,58	80,4	24,6	3,27	90,1	25,8	3,49
	50	33,7	21,3	1,58	38,1	20,3	1,88	42,6	19,5	2,18	45,3	19,2	2,36	55,0	18,8	2,92	61,1	18,9	3,24
	Minimum	16,9	10,7	1,58	19,1	10,1	1,88	21,3	9,76	2,18	22,7	9,61	2,36	27,5	9,42	2,92	30,6	9,43	3,24
60.4	100	61,2	40,5	1,51	71,5	39,5	1,81	81,2	38,8	2,09	90,6	38,6	2,35	125	44,1	2,84	148	47,2	3,14
	75	36,5	22,4	1,63	41,9	22,5	1,86	47,6	22,6	2,10	54,1	22,6	2,39	74,7	25,1	2,97	83,2	26,2	3,17
	50	38,4	24,9	1,54	43,8	23,8	1,84	49,3	23,0	2,15	52,8	22,6	2,33	64,7	22,2	2,91	72,1	22,3	3,24
	Minimum	19,2	12,5	1,54	21,9	11,9	1,84	24,6	11,5	2,15	26,4	11,3	2,33	32,3	11,1	2,91	36,0	11,1	3,24
65.4	100	68,9	36,0	1,91	76,7	36,4	2,11	85,4	35,1	2,44	91,2	36,8	2,48	136	44,7	3,04	165	49,6	3,32
	75	52,6	28,9	1,82	60,0	29,2	2,06	67,8	29,4	2,31	77,6	29,5	2,63	108	33,1	3,25	121	34,9	3,46
	50	42,9	25,5	1,68	49,3	25,7	1,92	56,0	25,8	2,17	60,1	25,8	2,33	74,7	25,7	2,91	83,2	25,4	3,27
	Minimum	21,5	12,8	1,68	24,7	12,9	1,92	28,0	12,9	2,17	30,1	12,9	2,33	37,3	12,8	2,91	41,6	12,7	3,27
70.4	100	74,1	38,3	1,94	81,4	38,7	2,10	89,0	39,1	2,28	96,7	39,2	2,47	150	50,1	2,99	181	56,3	3,22
	75	61,7	33,5	1,84	69,5	33,8	2,06	78,1	34,1	2,29	89,1	34,3	2,60	123	38,7	3,17	138	41,0	3,36
	50	45,8	25,6	1,79	53,0	25,8	2,06	60,6	25,9	2,34	65,3	25,9	2,52	82,3	25,8	3,19	92,4	25,6	3,61
	Minimum	22,9	12,8	1,79	26,5	12,9	2,06	30,3	12,9	2,34	32,6	13,0	2,52	41,2	12,9	3,19	46,2	12,8	3,61
75.4	100	80,8	43,7	1,85	89,8	44,2	2,03	99,4	44,8	2,22	110	45,1	2,44	172	55,1	3,13	199	58,8	3,38
	75	62,2	32,7	1,90	70,6	33,0	2,14	79,1	32,5	2,43	90,4	32,7	2,77	126	36,9	3,41	142	38,9	3,64
	50	48,3	27,7	1,74	55,6	27,9	1,99	63,2	28,0	2,26	68,0	28,0	2,42	84,1	27,1	3,10	94,1	26,9	3,50
	Minimum	24,2	13,9	1,74	27,8	14,0	1,99	31,6	14,0	2,26	34,0	14,0	2,42	42,0	13,6	3,10	47,1	13,5	3,50
80.4	100	90,7	48,7	1,86	99,2	49,4	2,01	110	50,0	2,20	122	50,4	2,42	188	59,3	3,17	218	66,5	3,27
	75	71,4	36,7	1,94	79,6	36,3	2,19	89,5	36,7	2,44	102	36,9	2,76	141	41,8	3,37	159	44,2	3,59
	50	55,3	31,4	1,76	63,3	31,6	2,00	71,7	31,8	2,25	76,9	31,9	2,41	95,2	31,1	3,07	107	31,0	3,44
	Minimum	27,7	15,7	1,76	31,6	15,8	2,00	35,8	15,9	2,25	38,5	15,9	2,41	47,6	15,5	3,06	53,3	15,5	3,44
85.4	100	112	56,3	1,99	119	57,1	2,09	128	58,0	2,21	140	58,7	2,38	201	72,2	2,78	241	76,5	3,15
	75	80,7	40,6	1,99	89,9	41,1	2,19	100	41,6	2,42	114	41,8	2,73	157	47,5	3,31	177	50,4	3,51
	50	47,5	23,9	1,99	52,9	24,2	2,19	59,1	24,5	2,41	66,0	24,5	2,43	107	35,6	3,00	120	35,5	3,37
	Minimum	31,5	17,8	1,77	35,7	17,9	1,99	40,3	18,1	2,23	43,0	17,7	2,43	53,4	17,8	3,00	59,9	17,8	3,37

Load = % of heating capacity compared to the value at full load
kWt = Heating capacity kW
kWe_tot = unit total power input in kW

Internal exchanger water temperature = leaving 45°C / entering 40°C / variable flow-rate with external exchanger air temperature

Cooling 100% - Heating 100% - SC

		Hot side exchanger outlet water temperature (°C)																			
Gr.	To_c (°C)	35				45				50				55				60			
		kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER
20.2	5	54,4	14,3	68,2	8,58	48,1	17,6	65,2	6,44	44,9	19,4	63,7	5,61	31,4	14,9	45,8	5,17	18,5	10,7	28,7	4,39
	7	58,5	14,3	72,4	9,14	53,2	17,7	70,4	6,96	48,4	19,6	67,5	5,93	33,8	15,1	48,4	5,46	19,7	10,8	30,1	4,60
	10	65,0	14,3	78,8	10,0	57,7	17,9	75,1	7,42	53,9	19,8	73,2	6,43	37,6	15,3	52,4	5,90	21,8	11,0	32,2	4,92
	15	76,8	14,2	90,5	11,8	68,5	18,0	86,0	8,57	64,2	20,0	83,7	7,38	44,6	15,5	59,5	6,74	25,5	11,1	36,1	5,54
	18	83,8	14,1	97,3	12,9	74,8	18,0	92,3	9,27	70,0	20,1	89,6	7,95	48,5	15,5	63,4	7,23	27,4	11,1	38,0	5,89
	20	86,9	14,0	100	13,4	77,4	18,0	94,9	9,56	72,4	20,1	92,0	8,18	49,9	15,5	64,9	7,41	29,1	11,1	39,7	6,20
25.2	5	64,1	17,6	81,2	8,27	56,4	21,8	77,7	6,16	52,4	24,0	75,9	5,36	36,3	17,7	53,5	5,07	23,5	13,2	36,2	4,52
	7	68,8	17,6	85,9	8,78	62,3	21,9	83,8	6,66	56,6	24,2	80,3	5,65	39,2	17,9	56,6	5,35	25,2	13,3	38,0	4,74
	10	76,3	17,6	93,5	9,63	67,6	22,2	89,3	7,06	63,0	24,6	87,1	6,11	43,7	18,1	61,3	5,79	28,0	13,5	41,0	5,11
	15	90,2	17,6	107	11,2	80,1	22,5	102	8,12	75,0	25,0	99,4	6,98	51,9	18,4	69,8	6,61	33,0	13,7	46,2	5,78
	18	98,5	17,5	115	12,2	87,6	22,5	110	8,77	81,9	25,1	107	7,51	56,5	18,5	74,5	7,09	35,7	13,7	48,9	6,16
	20	102	17,4	119	12,7	91,0	22,5	113	9,07	85,1	25,1	110	7,75	58,3	18,5	76,3	7,28	36,6	13,7	49,9	6,30
30.2	5	69,8	17,9	87,2	8,77	63,9	22,4	85,7	6,69	61,5	24,5	85,4	6,01	43,3	20,3	63,1	5,24	25,4	16,6	41,5	4,03
	7	74,2	17,9	91,6	9,25	69,9	22,3	91,8	7,24	65,4	24,5	89,4	6,32	46,3	20,3	66,1	5,55	27,3	16,6	43,4	4,27
	10	81,4	18,0	98,8	10,0	74,7	22,4	96,6	7,65	72,1	24,5	96,1	6,86	51,2	20,2	70,9	6,04	30,3	16,5	46,3	4,65
	15	95,4	17,9	113	11,6	88,0	22,2	110	8,89	85,0	24,4	109	7,96	60,9	19,9	80,3	7,10	36,8	16,1	52,4	5,53
	18	103	17,8	120	12,6	95,2	22,0	117	9,61	92,0	24,1	116	8,61	66,0	19,6	85,2	7,71	40,0	15,9	55,4	6,01
	20	107	17,7	124	13,1	99,0	21,9	120	10,0	95,8	24,0	119	8,97	68,8	19,4	87,7	8,05	41,8	15,7	57,0	6,29
35.2	5	80,0	22,0	101	8,26	73,2	27,4	100	6,32	70,5	30,0	99,9	5,69	49,8	23,5	72,8	5,22	28,6	17,8	45,9	4,18
	7	85,2	22,0	107	8,71	80,4	27,4	107	6,84	75,1	30,0	105	5,98	53,3	23,5	76,3	5,52	30,7	17,8	48,0	4,43
	10	93,4	22,1	115	9,44	85,8	27,5	113	7,22	82,7	30,1	112	6,48	58,9	23,5	81,9	6,00	34,1	17,7	51,3	4,82
	15	110	22,1	131	10,9	101	27,5	128	8,34	97,6	30,0	127	7,49	70,0	23,2	92,7	7,02	41,2	17,4	58,1	5,72
	18	118	22,1	140	11,7	109	27,3	136	8,99	106	29,8	135	8,07	75,9	22,9	98,2	7,61	44,9	17,1	61,5	6,22
	20	123	22,0	145	12,1	114	27,2	141	9,35	110	29,7	139	8,40	79,0	22,7	101	7,95	46,8	16,9	63,2	6,51
40.2	5	86,5	25,5	112	7,77	79,0	31,9	110	5,94	75,9	34,9	110	5,34	55,2	26,4	81,1	5,15	31,7	19,1	50,3	4,30
	7	92,1	25,6	117	8,18	88,2	31,4	119	6,61	80,9	35,0	115	5,61	58,9	26,5	84,9	5,43	34,1	19,1	52,6	4,55
	10	101	25,7	126	8,83	92,5	32,1	124	6,75	89,0	35,1	124	6,06	65,1	26,4	91,0	5,91	37,8	19,0	56,2	4,95
	15	119	25,9	144	10,1	109	32,2	141	7,77	105	35,1	140	6,97	77,3	26,2	103	6,89	45,6	18,6	63,7	5,87
	18	128	25,9	154	10,9	118	32,0	149	8,35	114	35,0	148	7,49	83,8	25,9	109	7,47	49,6	18,4	67,4	6,38
	20	133	25,9	159	11,3	123	31,9	154	8,68	118	34,8	153	7,79	87,3	25,7	112	7,79	51,7	18,2	69,4	6,66
45.2	5	107	29,6	136	8,20	97,6	35,7	133	6,46	93,8	38,5	132	5,86	66,4	29,0	94,9	5,56	42,2	21,8	63,5	4,85
	7	114	29,7	144	8,67	108	36,2	144	6,95	100	38,7	139	6,17	70,9	29,1	99,5	5,85	45,0	21,8	66,3	5,11
	10	126	29,9	155	9,38	115	36,2	150	7,33	110	39,1	149	6,62	77,8	29,3	107	6,30	49,3	21,9	70,7	5,49
	15	142	30,1	172	10,4	130	36,6	166	8,09	125	39,7	164	7,28	88,5	29,5	118	6,98	56,6	22,0	78,0	6,12
	18	149	30,2	179	10,9	144	37,0	181	8,78	140	40,3	180	7,92	97,8	29,8	127	7,55	61,4	22,1	83,0	6,53
	20	161	30,4	191	11,6	154	37,3	191	9,27	148	40,7	188	8,27	103	29,9	132	7,87	64,0	22,2	85,7	6,75
50.2	5	116	33,8	149	7,87	106	40,6	146	6,20	101	43,7	145	5,62	70,6	31,3	101	5,50	45,7	23,3	68,5	4,90
	7	124	33,9	158	8,32	116	40,5	156	6,72	108	44,1	152	5,91	75,4	31,4	106	5,78	48,7	23,3	71,5	5,16
	10	137	34,2	171	8,99	125	41,3	165	7,02	119	44,6	163	6,33	82,8	31,6	114	6,22	53,4	23,4	76,2	5,54
	15	155	34,6	189	9,94	141	41,9	183	7,74	135	45,4	180	6,96	94,2	32,0	126	6,88	61,1	23,6	84,2	6,17
	18	153	34,5	188	9,87	149	42,1	190	8,04	146	45,9	191	7,35	104	32,3	136	7,46	66,5	23,7	89,7	6,59
	20	169	35,1	204	10,6	168	42,8	211	8,85	161	46,6	207	7,91	110	32,5	142	7,78	69,5	23,8	92,8	6,82

kWf = Cold user side exchanger heating capacity (kW)

kWt = Hot user side exchanger heating capacity (kW)

kWe_tot = unit total power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

Data does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.

Performances

Cooling 100% - Heating 100% - SC

		Hot side exchanger outlet water temperature (°C)																			
Gr.	To_c (°C)	35				45				50				55				60			
		kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER
55.4	5	133	34,3	167	8,76	122	42,9	164	6,67	117	47,2	163,7	5,95	81,5	38,7	120	5,20	48,1	32,2	79,8	3,97
	7	142	34,3	175	9,24	134	44,2	178	7,06	125	47,3	172	6,27	87,2	38,7	125	5,49	51,6	32,1	83,3	4,20
	10	155	34,4	189	10,0	142	43,1	185	7,59	137	47,4	184	6,78	96,2	38,6	134	5,97	57,4	32,0	88,9	4,58
	15	181	34,3	215	11,6	167	42,9	210	8,79	162	47,1	208	7,84	114	38,1	152	6,99	69,3	31,4	100	5,40
	18	196	34,1	230	12,5	181	42,5	223	9,51	175	46,8	221	8,48	124	37,6	161	7,60	75,7	30,9	106	5,89
	20	206	33,9	239	13,1	191	42,2	232	10,0	184	46,4	230	8,93	131	37,1	168	8,05	80,6	30,4	111	6,28
60.4	5	148	40,1	188	8,36	135	50,2	185	6,38	130	55,1	185	5,72	90,9	43,2	134	5,20	56,5	35,5	91,5	4,17
	7	157	40,2	197	8,81	149	50,6	199	6,89	139	55,2	194	6,02	97,3	43,2	140	5,49	60,6	35,5	95,6	4,40
	10	172	40,3	212	9,54	158	50,5	208	7,26	153	55,4	207	6,50	107	43,2	150	5,96	67,3	35,3	102	4,80
	15	202	40,4	242	11,0	186	50,4	236	8,38	180	55,3	234	7,49	127	42,7	169	6,95	81,1	34,7	115	5,66
	18	218	40,3	258	11,8	202	50,0	251	9,06	195	54,9	249	8,09	138	42,2	180	7,55	88,5	34,2	122	6,16
	20	229	40,2	269	12,4	212	49,7	261	9,52	205	54,6	259	8,50	146	41,7	187	7,98	93,9	33,7	127	6,56
65.4	5	167	42,1	208	8,93	153	51,3	204	6,96	147	55,8	203	6,28	103	44,0	146	5,67	62,5	34,9	96,9	4,57
	7	178	42,1	219	9,43	166	52,0	218	7,39	157	56,0	213	6,61	110	44,1	153	5,97	66,6	34,9	101	4,81
	10	195	42,1	236	10,2	179	51,7	230	7,91	172	56,4	228	7,11	120	44,2	164	6,41	72,9	34,8	107	5,17
	15	227	42,0	269	11,8	209	52,1	261	9,03	201	57,0	258	8,05	140	44,5	183	7,26	84,5	34,9	119	5,82
	18	245	41,9	286	12,7	225	52,3	277	9,61	217	57,4	274	8,55	149	44,7	194	7,68	90,2	35,1	125	6,13
	20	247	41,8	289	12,8	228	52,4	279	9,69	219	57,5	276	8,61	150	44,7	194	7,69	94,4	35,2	129	6,36
70.4	5	177	45,7	222	8,72	162	55,6	217	6,83	156	60,3	216	6,17	110	47,1	156	5,65	67,3	36,7	104	4,65
	7	188	45,8	234	9,21	176	56,1	232	7,28	166	60,6	226	6,48	117	47,2	163	5,94	71,8	36,7	108	4,90
	10	206	45,9	252	10,0	190	56,0	245	7,76	182	61,0	243	6,97	128	47,3	175	6,39	78,5	36,7	115	5,27
	15	241	45,9	287	11,5	222	56,6	278	8,83	213	61,9	275	7,89	149	47,7	196	7,23	91,1	36,8	127	5,93
	18	260	45,9	305	12,3	239	57,0	296	9,39	230	62,4	292	8,38	160	48,0	207	7,66	97,4	37,0	134	6,25
	20	263	45,9	309	12,5	242	57,0	299	9,48	233	62,4	295	8,45	160	48,0	208	7,67	102	37,1	138	6,48
75.4	5	187	47,4	234	8,88	172	57,5	229	6,98	164	63,4	227	6,16	118	48,9	166	5,82	73,4	37,1	110	4,94
	7	199	47,5	246	9,37	189	57,2	246	7,60	175	63,8	238	6,47	126	49,0	174	6,12	78,2	37,1	115	5,20
	10	218	47,8	266	10,1	201	58,2	259	7,91	192	64,3	256	6,96	138	49,2	186	6,58	85,6	37,1	122	5,60
	15	252	48,0	300	11,5	233	59,0	291	8,88	222	65,4	287	7,79	160	49,7	209	7,41	98,3	37,4	135	6,24
	18	274	48,1	322	12,4	253	59,5	312	9,49	241	66,1	307	8,30	172	50,0	222	7,88	106	37,5	143	6,63
	20	284	48,1	332	12,8	262	59,8	321	9,77	251	66,4	317	8,54	179	50,2	229	8,12	110	37,6	147	6,83
80.4	5	206	55,1	261	8,48	189	66,5	255	6,68	180	73,2	253	5,91	129	54,3	183	5,74	80,5	40,0	120	5,02
	7	220	55,4	275	8,92	208	66,5	274	7,25	192	73,7	265	6,20	137	54,5	191	6,04	85,9	40,0	125	5,28
	10	241	55,9	297	9,64	221	67,7	289	7,53	211	74,5	285	6,66	151	54,8	205	6,49	93,9	40,0	133	5,68
	15	279	56,5	335	10,9	257	68,9	325	8,44	245	76,0	320	7,44	175	55,5	230	7,29	108	40,3	148	6,35
	18	304	56,8	360	11,7	279	69,8	348	8,99	266	76,9	343	7,92	189	55,9	245	7,76	117	40,5	157	6,75
	20	315	57,0	372	12,0	290	70,2	360	9,25	277	77,4	354	8,15	196	56,2	252	7,99	121	40,6	161	6,95
85.4	5	225	63,4	288	8,08	205	76,3	281	6,38	195	83,7	278	5,66	139	60,0	199	5,64	87,5	42,9	130	5,07
	7	240	63,8	303	8,51	226	76,5	302	6,92	208	84,3	292	5,93	149	60,3	209	5,93	93,2	43,1	136	5,31
	10	263	64,4	327	9,17	241	77,9	318	7,18	229	85,4	314	6,36	163	60,7	223	6,37	102	43,1	145	5,72
	15	306	65,6	371	10,3	279	79,7	359	8,01	266	87,4	353	7,09	189	61,6	250	7,14	118	43,3	161	6,42
	18	332	66,4	398	11,0	304	80,9	385	8,52	290	88,8	378	7,53	205	62,2	267	7,60	127	43,6	170	6,82
		345	66,6	412	11,4	316	81,5	397	8,75	302	89,4	391	7,75	213	62,5	275	7,81	132	43,7	175	7,02

kWf = Cold user side exchanger heating capacity (kW)

kWt = Hot user side exchanger heating capacity (kW)

kWe_tot = unit total power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

Data does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.

Cooling 100% - Heating 100% - LN

		Hot side exchanger outlet water temperature (°C)																			
Gr.	To_c (°C)	35				45				50				55				60			
		kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER
20.2	5	63,4	13,3	76,2	10,5	44,7	16,4	60,6	6,44	41,7	18,0	59,2	5,61	29,2	13,9	42,5	5,17	17,2	10,0	26,6	4,39
	7	67,3	13,3	80,1	11,1	49,4	16,5	65,4	6,96	45,0	18,2	62,7	5,93	31,5	14,0	45,0	5,46	18,4	10,1	27,9	4,60
	10	73,2	13,3	86,0	12,0	53,7	16,6	69,8	7,42	50,2	18,4	68,1	6,43	35,0	14,2	48,7	5,90	20,2	10,2	29,9	4,92
	15	84,1	13,2	96,8	13,7	63,7	16,8	80,0	8,57	59,7	18,6	77,8	7,38	41,5	14,4	55,3	6,74	23,7	10,3	33,5	5,54
	18	90,5	13,1	103	14,8	69,5	16,8	85,8	9,27	65,1	18,7	83,3	7,95	45,1	14,4	59,0	7,23	25,5	10,3	35,3	5,89
	20	93,3	13,0	106	15,3	72,0	16,7	88,2	9,56	67,3	18,7	85,5	8,18	46,4	14,4	60,3	7,41	27,1	10,3	36,9	6,20
25.2	5	75,4	16,3	91,3	10,2	52,5	20,2	72,2	6,16	48,8	22,3	70,5	5,36	33,7	16,5	49,7	5,07	21,8	12,3	33,6	4,52
	7	79,8	16,4	95,7	10,7	58,0	20,4	77,9	6,66	52,6	22,5	74,7	5,65	36,4	16,6	52,6	5,35	23,4	12,4	35,3	4,74
	10	86,9	16,4	103	11,6	62,8	20,6	83,0	7,06	58,6	22,8	81,0	6,11	40,6	16,9	57,0	5,79	26,0	12,6	38,1	5,11
	15	99,7	16,3	116	13,2	74,5	20,9	94,9	8,12	69,7	23,2	92,4	6,98	48,3	17,1	64,9	6,61	30,7	12,7	42,9	5,78
	18	107	16,2	123	14,2	81,5	20,9	102	8,77	76,2	23,3	99,0	7,51	52,6	17,2	69,3	7,09	33,2	12,8	45,5	6,16
	20	111	16,2	127	14,7	84,7	20,9	105	9,07	79,1	23,4	102	7,75	54,2	17,2	70,9	7,28	34,1	12,8	46,3	6,30
30.2	5	81,0	16,6	97,2	10,7	59,4	20,8	79,7	6,69	57,1	22,7	79,4	6,01	40,3	18,9	58,6	5,24	23,6	15,4	38,6	4,03
	7	85,1	16,7	101	11,2	65,0	20,8	85,3	7,24	60,8	22,8	83,1	6,32	43,1	18,8	61,4	5,55	25,4	15,4	40,3	4,27
	10	91,9	16,7	108	12,0	69,5	20,8	89,8	7,65	67,0	22,8	89,3	6,86	47,6	18,8	65,9	6,04	28,2	15,3	43,0	4,65
	15	105	16,6	121	13,6	81,8	20,7	102	8,89	79,1	22,6	101	7,96	56,7	18,5	74,7	7,10	34,2	15,0	48,7	5,53
	18	112	16,5	128	14,5	88,5	20,5	109	9,61	85,6	22,4	108	8,61	61,4	18,2	79,2	7,71	37,2	14,8	51,5	6,01
	20	115	16,4	131	15,0	92,1	20,4	112	10,0	89,1	22,3	111	8,97	64,0	18,1	81,5	8,05	38,9	14,6	53,0	6,29
35.2	5	94,3	20,4	114	10,2	68,1	25,5	93,1	6,32	65,5	27,9	92,9	5,69	46,4	21,8	67,7	5,22	26,6	16,6	42,7	4,18
	7	99,2	20,5	119	10,7	74,7	25,5	99,7	6,84	69,8	27,9	97,3	5,98	49,6	21,8	70,9	5,52	28,6	16,5	44,6	4,43
	10	107	20,5	127	11,4	79,8	25,6	105	7,22	76,9	28,0	104	6,48	54,8	21,8	76,1	6,00	31,7	16,5	47,6	4,82
	15	122	20,6	142	12,8	94,0	25,5	119	8,34	90,7	27,9	118	7,49	65,1	21,5	86,1	7,02	38,3	16,1	54,0	5,72
	18	130	20,5	150	13,7	102	25,4	127	8,99	98,2	27,7	125	8,07	70,5	21,3	91,3	7,61	41,7	15,9	57,1	6,22
	20	134	20,5	154	14,1	106	25,3	131	9,35	102	27,6	129	8,40	73,5	21,1	94,1	7,95	43,6	15,7	58,8	6,51
40.2	5	104	23,7	127	9,7	73,5	29,6	103	5,94	70,6	32,4	102	5,34	51,3	24,6	75,4	5,15	29,5	17,7	46,7	4,30
	7	109	23,8	132	10,1	82,1	29,2	111	6,61	75,2	32,5	107	5,61	54,8	24,6	78,9	5,43	31,7	17,7	48,9	4,55
	10	117	23,9	141	10,8	86,1	29,9	115	6,75	82,8	32,6	115	6,06	60,5	24,6	84,6	5,91	35,1	17,6	52,3	4,95
	15	134	24,1	157	12,1	101	29,9	131	7,77	97,7	32,6	130	6,97	71,9	24,3	95,7	6,89	42,4	17,3	59,2	5,87
	18	143	24,1	166	12,8	110	29,8	139	8,35	106	32,5	138	7,49	78,0	24,0	101	7,47	46,1	17,1	62,7	6,38
	20	147	24,1	171	13,2	114	29,7	143	8,68	110	32,4	142	7,79	81,2	23,8	105	7,79	48,1	16,9	64,5	6,66
45.2	5	126	27,5	153	10,2	90,8	33,1	123	6,46	87,2	35,8	122	5,86	61,8	27,0	88,2	5,56	39,3	20,3	59,0	4,85
	7	133	27,7	161	10,6	100	33,7	134	6,95	93,3	36,0	129	6,17	65,9	27,1	92,5	5,85	41,9	20,3	61,7	5,11
	10	144	27,8	171	11,3	107	33,6	140	7,33	102	36,4	138	6,62	72,3	27,2	99,0	6,30	45,9	20,3	65,7	5,49
	15	160	28,0	187	12,4	121	34,1	155	8,09	116	37,0	153	7,28	82,3	27,5	109	6,98	52,6	20,4	72,5	6,12
	18	166	28,1	194	12,8	134	34,4	168	8,78	130	37,5	167	7,92	91,0	27,7	118	7,55	57,1	20,6	77,1	6,53
	20	178	28,2	206	13,6	144	34,7	178	9,27	138	37,8	175	8,27	95,8	27,8	123	7,87	59,5	20,6	79,7	6,75
50.2	5	139	31,4	170	9,8	98,4	37,7	136	6,20	94,2	40,7	134	5,62	65,7	29,1	94,3	5,50	42,5	21,7	63,6	4,90
	7	147	31,6	178	10,3	108	37,7	145	6,72	101	41,0	141	5,91	70,1	29,2	98,9	5,78	45,3	21,7	66,5	5,16
	10	159	31,8	190	11,0	116	38,4	154	7,02	111	41,5	152	6,33	77,0	29,4	106	6,22	49,6	21,7	70,9	5,54
	15	176	32,1	207	11,9	132	38,9	170	7,74	126	42,2	168	6,96	87,6	29,7	117	6,88	56,8	21,9	78,2	6,17
	18	174	32,1	206	11,8	138	39,2	177	8,04	136	42,7	178	7,35	97,1	30,0	127	7,46	61,8	22,1	83,4	6,59
	20	190	32,6	222	12,6	157	39,8	196	8,85	150	43,3	193	7,91	103	30,2	132	7,78	64,6	22,1	86,3	6,82

kWf = Cold user side exchanger heating capacity (kW)

kWt = Hot user side exchanger heating capacity (kW)

kWe_tot = unit total power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

Data does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.

Performances

Cooling 100% - Heating 100% - LN

		Hot side exchanger outlet water temperature (°C)																			
Gr.	To_c (°C)	35				45				50				55				60			
		kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER
55.4	5	155	31,9	187	10,7	113	39,9	153	6,67	109	43,9	152	5,95	75,8	36,0	111	5,20	44,8	29,9	74,2	3,97
	7	163	31,9	195	11,2	125	41,1	165	7,06	116	44,0	160	6,27	81,1	36,0	117	5,49	48,0	29,9	77,4	4,20
	10	176	32,0	207	12,0	132	40,1	172	7,59	127	44,0	171	6,78	89,5	35,9	125	5,97	53,4	29,7	82,7	4,58
	15	200	31,9	231	13,5	156	39,9	195	8,79	150	43,8	194	7,84	106	35,4	141	6,99	64,5	29,2	93,2	5,40
	18	214	31,7	245	14,5	169	39,5	208	9,51	163	43,5	206	8,48	116	34,9	150	7,60	70,4	28,7	98,6	5,89
	20	222	31,5	253	15,1	177	39,2	216	10,0	171	43,1	214	8,93	122	34,5	156	8,05	75,0	28,3	103	6,28
60.4	5	174	37,3	211	10,3	126	46,7	172	6,38	121	51,2	172	5,72	84,5	40,2	124	5,20	52,6	33,0	85,1	4,17
	7	183	37,4	220	10,8	139	47,1	185	6,89	129	51,4	180	6,02	90,5	40,2	130	5,49	56,4	33,0	88,8	4,40
	10	197	37,5	234	11,5	147	47,0	194	7,26	142	51,5	193	6,50	99,7	40,1	139	5,96	62,6	32,8	94,9	4,80
	15	225	37,6	262	12,9	173	46,8	219	8,38	167	51,4	218	7,49	118	39,7	158	6,95	75,4	32,2	107	5,66
	18	240	37,5	277	13,8	188	46,5	234	9,06	181	51,1	232	8,09	129	39,2	167	7,55	82,3	31,8	114	6,16
	20	250	37,4	287	14,4	197	46,3	243	9,52	190	50,8	241	8,50	136	38,8	174	7,98	87,4	31,4	118	6,56
65.4	5	194	39,1	232	10,9	143	47,7	190	6,96	137	51,9	188	6,28	95,7	40,9	136	5,67	58,1	32,4	90,0	4,57
	7	204	39,2	243	11,4	155	48,4	203	7,39	146	52,1	198	6,61	102	41,0	142	5,97	61,9	32,4	93,8	4,81
	10	220	39,2	258	12,2	166	48,1	214	7,91	160	52,4	212	7,11	111	41,1	152	6,41	67,8	32,4	99,6	5,17
	15	250	39,0	288	13,8	195	48,4	243	9,03	187	53,0	240	8,05	130	41,4	171	7,26	78,6	32,5	111	5,82
	18	266	38,9	304	14,6	210	48,6	258	9,61	202	53,4	255	8,55	139	41,5	180	7,68	83,9	32,6	116	6,13
	20	268	38,9	307	14,8	212	48,7	260	9,69	204	53,5	257	8,61	139	41,5	180	7,69	87,8	32,7	120	6,36
70.4	5	206	42,5	248	10,7	151	51,7	202	6,83	145	56,1	201	6,17	102	43,8	145	5,65	62,6	34,1	96,2	4,65
	7	217	42,6	259	11,2	164	52,1	216	7,28	155	56,3	210	6,48	109	43,9	152	5,94	66,7	34,1	100	4,90
	10	234	42,7	276	12,0	176	52,1	228	7,76	170	56,7	226	6,97	119	44,0	162	6,39	73,0	34,1	107	5,27
	15	266	42,7	309	13,5	206	52,7	259	8,83	199	57,5	256	7,89	138	44,4	182	7,23	84,7	34,3	118	5,93
	18	284	42,6	326	14,3	223	53,0	275	9,39	214	58,0	272	8,38	149	44,6	193	7,66	90,5	34,4	124	6,25
	20	287	42,6	329	14,4	225	53,0	278	9,48	216	58,0	274	8,45	149	44,6	193	7,67	94,6	34,5	129	6,48
75.4	5	218	44,1	261	10,9	160	53,4	213	6,98	152	59,0	211	6,16	110	45,5	155	5,82	68,2	34,5	102	4,94
	7	229	44,2	273	11,4	176	53,2	228	7,60	163	59,3	221	6,47	117	45,6	162	6,12	72,8	34,5	107	5,20
	10	247	44,4	291	12,1	187	54,1	241	7,91	178	59,8	238	6,96	128	45,8	173	6,58	79,6	34,5	114	5,60
	15	279	44,6	323	13,5	216	54,8	271	8,88	207	60,8	267	7,79	148	46,2	194	7,41	91,4	34,8	126	6,24
	18	299	44,7	343	14,4	235	55,3	290	9,49	225	61,4	285	8,30	160	46,5	206	7,88	98,4	34,9	133	6,63
	20	309	44,7	353	14,8	244	55,6	299	9,77	233	61,7	294	8,54	166	46,7	213	8,12	102	35,0	137	6,83
80.4	5	243	51,3	293	10,5	176	61,9	237	6,68	167	68,1	235	5,91	120	50,5	170	5,74	74,9	37,1	112	5,02
	7	255	51,5	306	10,9	193	61,8	255	7,25	179	68,5	247	6,20	128	50,7	178	6,04	79,8	37,2	117	5,28
	10	276	51,9	327	11,6	206	62,9	268	7,53	196	69,3	265	6,66	140	51,0	191	6,49	87,4	37,2	124	5,68
	15	312	52,5	364	12,9	239	64,1	302	8,44	228	70,6	298	7,44	162	51,6	214	7,29	101	37,5	138	6,35
	18	335	52,9	387	13,7	260	64,9	324	8,99	248	71,5	319	7,92	176	52,0	227	7,76	108	37,6	146	6,75
	20	346	53,0	398	14,0	270	65,3	334	9,25	258	72,0	329	8,15	183	52,2	234	7,99	112	37,7	150	6,95
85.4	5	267	58,9	326	10,1	191	70,9	261	6,38	182	77,8	259	5,66	130	55,8	185	5,64	81,4	39,9	121	5,07
	7	282	59,3	341	10,5	211	71,1	281	6,92	194	78,4	271	5,93	138	56,0	194	5,93	86,6	40,1	126	5,31
	10	304	59,9	364	11,2	224	72,4	296	7,18	213	79,4	292	6,36	152	56,4	208	6,37	94,9	40,1	134	5,72
	15	345	61,0	405	12,3	260	74,1	334	8,01	248	81,2	328	7,09	176	57,2	233	7,14	110	40,3	149	6,42
	18	370	61,7	431	13,0	283	75,2	358	8,52	270	82,6	352	7,53	191	57,8	248	7,60	118	40,5	158	6,82
		383	61,9	444	13,4	294	75,3	369	8,81	281	83,1	363	7,75	198	58,1	256	7,81	123	40,6	163	7,02

kWf = Cold user side exchanger heating capacity (kW)

kWt = Hot user side exchanger heating capacity (kW)

kWe_tot = unit total power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

Data does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.

Cooling 100% - Heating 100% - EN

		Hot side exchanger outlet water temperature (°C)																			
Gr.	To_c (°C)	35				45				50				55				60			
		kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER	kWf	kWe_tot	kWt	TER
20.2	5	46,8	12,3	58,6	8,58	41,4	15,1	56,0	6,44	38,6	16,6	54,7	5,61	27,0	12,8	39,3	5,17	15,9	9,21	24,6	4,39
	7	50,3	12,3	62,2	9,14	45,7	15,2	60,5	6,96	41,6	16,8	57,9	5,93	29,1	12,9	41,5	5,46	17,0	9,30	25,8	4,60
	10	55,9	12,3	67,7	10,0	49,6	15,4	64,5	7,42	46,4	17,0	62,9	6,43	32,4	13,1	45,0	5,90	18,7	9,42	27,6	4,92
	15	66,0	12,2	77,8	11,8	58,9	15,5	73,9	8,57	55,2	17,2	71,9	7,38	38,3	13,3	51,1	6,74	21,9	9,53	30,9	5,54
	18	72,0	12,1	83,6	12,9	64,3	15,5	79,3	9,27	60,2	17,3	77,0	7,95	41,7	13,3	54,5	7,23	23,6	9,54	32,6	5,89
	20	74,7	12,0	86,3	13,4	66,5	15,5	81,5	9,56	62,3	17,3	79,0	8,18	42,9	13,3	55,7	7,41	25,0	9,52	34,1	6,20
25.2	5	55,1	15,1	69,7	8,27	48,5	18,7	66,7	6,16	45,1	20,6	65,2	5,36	31,2	15,2	45,9	5,07	20,2	11,3	31,0	4,52
	7	59,1	15,1	73,8	8,78	53,6	18,9	72,0	6,66	48,7	20,8	69,0	5,65	33,7	15,4	48,6	5,35	21,7	11,4	32,6	4,74
	10	65,6	15,2	80,3	9,63	58,1	19,1	76,7	7,06	54,2	21,1	74,8	6,11	37,5	15,6	52,6	5,79	24,1	11,6	35,2	5,11
	15	77,5	15,1	92,1	11,2	68,9	19,3	87,7	8,12	64,5	21,5	85,4	6,98	44,6	15,8	60,0	6,61	28,4	11,8	39,6	5,78
	18	84,7	15,0	99,2	12,2	75,3	19,3	94,2	8,77	70,5	21,6	91,5	7,51	48,6	15,9	64,0	7,09	30,7	11,8	42,0	6,16
	20	88,1	15,0	103	12,7	78,3	19,3	97,1	9,07	73,2	21,6	94,3	7,75	50,1	15,9	65,5	7,28	31,5	11,8	42,8	6,30
30.2	5	60,0	15,4	74,9	8,77	54,9	19,2	73,6	6,69	52,8	21,0	73,4	6,01	37,2	17,4	54,2	5,24	21,9	14,3	35,6	4,03
	7	63,8	15,4	78,7	9,25	60,2	19,2	78,9	7,24	56,2	21,0	76,8	6,32	39,9	17,4	56,8	5,55	23,5	14,2	37,2	4,27
	10	70,0	15,4	84,9	10,0	64,3	19,3	83,0	7,65	62,0	21,1	82,5	6,86	44,0	17,4	60,9	6,04	26,1	14,1	39,7	4,65
	15	82,0	15,4	96,9	11,6	75,6	19,1	94,3	8,89	73,1	20,9	93,5	7,96	52,4	17,1	69,0	7,10	31,6	13,8	45,0	5,53
	18	88,5	15,3	103	12,6	81,9	18,9	100	9,61	79,2	20,7	99,4	8,61	56,8	16,9	73,2	7,71	34,4	13,6	47,5	6,01
	20	92,0	15,2	107	13,1	85,1	18,8	103	10,02	82,4	20,6	102	8,97	59,2	16,7	75,4	8,05	35,9	13,5	48,9	6,29
35.2	5	68,8	18,9	87,2	8,26	63,0	23,6	86,1	6,32	60,6	25,8	85,9	5,69	42,9	20,2	62,5	5,22	24,6	15,3	39,4	4,18
	7	73,2	18,9	91,6	8,71	69,1	23,6	92,2	6,84	64,6	25,8	89,9	5,98	45,9	20,2	65,5	5,52	26,4	15,3	41,2	4,43
	10	80,3	19,0	98,8	9,44	73,8	23,7	97,0	7,22	71,1	25,9	96,5	6,48	50,7	20,2	70,3	6,00	29,3	15,2	44,0	4,82
	15	94,3	19,0	113	10,9	86,9	23,6	110	8,34	83,9	25,8	109	7,49	60,2	19,9	79,6	7,02	35,5	14,9	49,9	5,72
	18	102	19,0	120	11,7	94,0	23,5	117	8,99	90,8	25,6	116	8,07	65,2	19,7	84,4	7,61	38,6	14,7	52,8	6,22
	20	106	18,9	124	12,1	97,9	23,4	121	9,35	94,6	25,5	120	8,40	67,9	19,5	86,9	7,95	40,3	14,5	54,3	6,51
40.2	5	74,4	21,9	95,8	7,77	68,0	27,4	94,9	5,94	65,3	30,0	94,7	5,34	47,4	22,7	69,7	5,15	27,3	16,4	43,1	4,30
	7	79,2	22,0	101	8,18	75,9	27,0	102	6,61	69,6	30,1	99,1	5,61	50,7	22,7	72,9	5,43	29,3	16,4	45,2	4,55
	10	86,8	22,1	108	8,83	79,6	27,6	107	6,75	76,5	30,2	106	6,06	56,0	22,7	78,2	5,91	32,5	16,3	48,3	4,95
	15	102	22,3	124	10,1	93,8	27,6	121	7,77	90,3	30,2	120	6,97	66,5	22,5	88,5	6,89	39,2	16,0	54,7	5,87
	18	110	22,3	132	10,9	101	27,5	128	8,35	97,8	30,0	127	7,49	72,1	22,2	93,8	7,47	42,6	15,8	57,9	6,38
	20	115	22,3	136	11,3	106	27,4	133	8,68	102	29,9	131	7,79	75,1	22,0	96,6	7,79	44,5	15,6	59,6	6,66
45.2	5	91,8	25,4	117	8,20	84,0	30,6	114	6,46	80,6	33,1	113	5,86	57,1	24,9	81,5	5,56	36,3	18,7	54,5	4,85
	7	98,3	25,6	123	8,67	92,9	31,2	124	6,95	86,2	33,3	119	6,17	61,0	25,0	85,5	5,85	38,7	18,7	57,0	5,11
	10	108	25,7	133	9,38	98,7	31,1	129	7,33	94,7	33,6	128	6,62	66,9	25,2	91,5	6,30	42,4	18,8	60,7	5,49
	15	122	25,9	148	10,4	112	31,5	143	8,09	108	34,2	141	7,28	76,1	25,4	101	6,98	48,6	18,9	67,0	6,12
	18	128	25,9	154	10,9	124	31,8	155	8,78	120	34,7	154	7,92	84,1	25,6	109	7,55	52,8	19,0	71,3	6,53
	20	139	26,1	164	11,6	133	32,1	164	9,27	127	35,0	162	8,27	88,6	25,7	114	7,87	55,1	19,1	73,6	6,75
50.2	5	99,9	29,0	128	7,87	91,0	34,9	125	6,20	87,1	37,6	124	5,62	60,8	26,9	87,2	5,50	39,3	20,0	58,8	4,90
	7	107	29,2	136	8,32	99,8	34,8	134	6,72	93,3	37,9	131	5,91	64,9	27,0	91,4	5,78	41,9	20,0	61,4	5,16
	10	118	29,4	147	8,99	107	35,5	142	7,02	103	38,4	140	6,33	71,2	27,2	97,9	6,22	45,9	20,1	65,5	5,54
	15	133	29,7	162	9,94	122	36,0	157	7,74	116	39,0	155	6,96	81,0	27,5	108	6,88	52,6	20,2	72,3	6,17
	18	132	29,7	161	9,87	128	36,2	163	8,04	126	39,5	164	7,35	89,8	27,7	117	7,46	57,2	20,4	77,1	6,59
		146	30,1	175	10,6	145	36,8	181	8,85	139	40,1	178	7,91	94,9	27,9	122	7,78	59,8	20,5	79,8	6,82

kWf = Cold user side exchanger heating capacity (kW)

kWt = Hot user side exchanger heating capacity (kW)

kWe_tot = unit total power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

Data does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.

Performances

Cooling 100% - Heating 100% - EN

		Hot side exchanger outlet water temperature (°C)																			
Gr.	To_c (°C)	35				45				50				55				60			
		kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER	kWf	kWe-tot	kWt	TER
55.4	5	115	29,5	143	8,76	105	36,9	141	6,67	101	40,6	141	5,95	70,1	33,3	103	5,20	41,4	27,7	68,6	3,97
	7	122	29,5	151	9,24	115	38,0	153	7,06	107	40,6	147	6,27	75,0	33,3	108	5,49	44,4	27,6	71,5	4,20
	10	133	29,6	163	10,0	122	37,0	159	7,59	118	40,7	158	6,78	82,7	33,2	115	5,97	49,4	27,5	76,4	4,58
	15	156	29,5	185	11,6	144	36,9	180	8,79	139	40,5	179	7,84	98,3	32,7	131	6,99	59,6	27,0	86,1	5,40
	18	169	29,3	197	12,5	156	36,6	192	9,51	151	40,2	190	8,48	107	32,3	139	7,60	65,1	26,5	91,2	5,89
	20	177	29,1	205	13,1	164	36,3	200	10,0	158	39,9	198	8,93	113	31,9	144	8,05	69,3	26,2	95,0	6,28
60.4	5	127	34,5	161	8,36	116	43,2	159	6,38	112	47,4	159	5,72	78,2	37,1	115	5,20	48,6	30,5	78,6	4,17
	7	135	34,6	169	8,81	128	43,5	171	6,89	119	47,5	166	6,02	83,7	37,1	120	5,49	52,1	30,5	82,1	4,40
	10	148	34,7	182	9,54	136	43,4	179	7,26	131	47,6	178	6,50	92,2	37,1	129	5,96	57,9	30,3	87,8	4,80
	15	174	34,8	208	11,0	160	43,3	203	8,38	154	47,5	201	7,49	109	36,7	146	6,95	69,8	29,8	99,1	5,66
	18	188	34,7	222	11,8	174	43,0	216	9,06	168	47,2	214	8,09	119	36,2	155	7,55	76,1	29,4	105	6,16
	20	197	34,6	231	12,4	182	42,8	225	9,52	176	46,9	223	8,50	125	35,9	161	7,98	80,8	29,0	109	6,56
65.4	5	144	36,2	179	8,93	132	44,1	175	6,96	127	47,9	174	6,28	88,5	37,8	126	5,67	53,7	30,0	83,2	4,57
	7	153	36,2	189	9,43	143	44,7	187	7,39	135	48,1	183	6,61	94,3	37,9	132	5,97	57,3	30,0	86,7	4,81
	10	167	36,2	203	10,2	154	44,5	198	7,91	148	48,4	196	7,11	103	38,0	141	6,41	62,7	29,9	92,1	5,17
	15	195	36,1	231	11,8	180	44,8	224	9,03	173	49,0	222	8,05	120	38,2	158	7,26	72,7	30,0	102	5,82
	18	210	36,0	246	12,7	194	45,0	238	9,61	187	49,4	235	8,55	129	38,4	166	7,68	77,6	30,1	107	6,13
	20	213	36,0	248	12,8	196	45,0	240	9,69	188	49,4	237	8,61	129	38,4	167	7,69	81,2	30,2	111	6,36
70.4	5	152	39,3	191	8,72	139	47,8	187	6,83	134	51,8	185	6,17	94,3	40,5	134	5,65	57,9	31,5	88,9	4,65
	7	162	39,4	201	9,21	152	48,2	199	7,28	143	52,1	195	6,48	100	40,6	140	5,94	61,7	31,5	92,7	4,90
	10	177	39,4	216	10,0	163	48,2	211	7,76	157	52,4	209	6,97	110	40,7	150	6,39	67,5	31,5	98,5	5,27
	15	207	39,5	246	11,5	191	48,7	239	8,83	184	53,2	236	7,89	128	41,0	169	7,23	78,3	31,7	109	5,93
	18	223	39,4	262	12,3	206	49,0	254	9,39	198	53,6	251	8,38	137	41,2	178	7,66	83,7	31,8	115	6,25
	20	226	39,4	265	12,5	208	49,0	257	9,48	200	53,7	253	8,45	138	41,2	178	7,67	87,5	31,9	119	6,48
75.4	5	161	40,8	201	8,88	148	49,4	197	6,98	141	54,5	195	6,16	101	42,0	143	5,82	63,1	31,9	94,5	4,94
	7	171	40,9	212	9,37	162	49,2	211	7,60	150	54,8	205	6,47	108	42,2	150	6,12	67,3	31,9	98,7	5,20
	10	188	41,1	228	10,1	173	50,0	223	7,91	165	55,3	220	6,96	118	42,3	160	6,58	73,6	31,9	105	5,60
	15	217	41,3	258	11,5	200	50,7	250	8,88	191	56,2	247	7,79	137	42,7	179	7,41	84,5	32,2	116	6,24
	18	236	41,3	276	12,4	217	51,2	268	9,49	208	56,8	264	8,30	148	43,0	191	7,88	91,0	32,3	123	6,63
	20	244	41,4	285	12,8	225	51,4	276	9,77	216	57,1	272	8,54	154	43,1	196	8,12	94,4	32,3	126	6,83
80.4	5	177	47,4	224	8,48	163	57,2	219	6,68	155	62,9	217	5,91	111	46,7	157	5,74	69,3	34,3	103	5,02
	7	189	47,7	236	8,92	179	57,1	236	7,25	165	63,4	228	6,20	118	46,9	165	6,04	73,8	34,3	108	5,28
	10	208	48,0	255	9,64	190	58,2	248	7,53	181	64,0	245	6,66	130	47,1	176	6,49	80,8	34,4	115	5,68
	15	240	48,5	288	10,9	221	59,2	280	8,44	211	65,3	275	7,44	150	47,7	197	7,29	92,9	34,7	127	6,35
	18	261	48,9	309	11,7	240	60,0	299	8,99	229	66,1	295	7,92	163	48,1	210	7,76	100	34,8	135	6,75
	20	271	49,0	320	12,0	249	60,4	309	9,25	238	66,6	304	8,15	169	48,3	217	7,99	104	34,9	138	6,95
85.4	5	193	54,5	247	8,08	177	65,6	242	6,38	168	71,9	239	5,66	120	51,6	171	5,64	75,3	36,9	112	5,07
	7	206	54,9	261	8,51	195	65,7	260	6,92	179	72,5	251	5,93	128	51,8	179	5,93	80,1	37,0	117	5,31
	10	227	55,4	281	9,17	207	66,9	274	7,18	197	73,4	270	6,36	140	52,2	192	6,37	87,7	37,1	124	5,72
	15	263	56,4	319	10,3	240	68,5	308	8,01	229	75,1	304	7,09	163	52,9	215	7,14	101	37,3	138	6,42
	18	286	57,1	342	11,0	262	69,6	331	8,52	249	76,4	325	7,53	177	53,5	230	7,60	109	37,5	146	6,82
	20	297	57,2	354	11,4	272	70,1	342	8,75	260	76,9	336	7,75	183	53,7	237	7,81	113	37,6	150	7,02

kWf = Cold user side exchanger heating capacity (kW)

kWt = Hot user side exchanger heating capacity (kW)

kWe_tot = unit total power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

Data does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.

1PMCS - Hydropack cooling side with 1 on-off pump

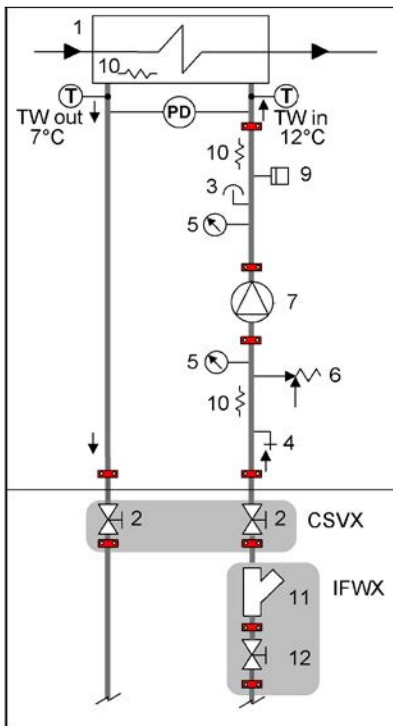
Pumping group consisting of 1 electric pump with cast iron pump body and stainless steel or cast iron impeller (depending on the model).
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP55 protection rating. Complete with thermoformed insulating casing, quick-release couplings with an insulated casing, safety valve, pressure gauges, system load safety pressure switch, stainless steel immersion antifreeze heaters fitted on the suction and supply lines.

All water fittings are Victaulic.

Option supplied on the unit.

CONNECTION DIAGRAM



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX - Couple of manually operated shut-off valves)
- 3 - Vent valve
- 4 - Discharge stop valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Packaged electric pump with high efficiency impeller
- 9 - System load safety pressure switch (it avoids the pump operation if water is not present)
- 10 - Antifreeze heater
- 11 - Steel mesh strainer water side - (IFWX)
- 12 - Cutoff valve with quick joints

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

- ⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.
- ⚠ **It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).**

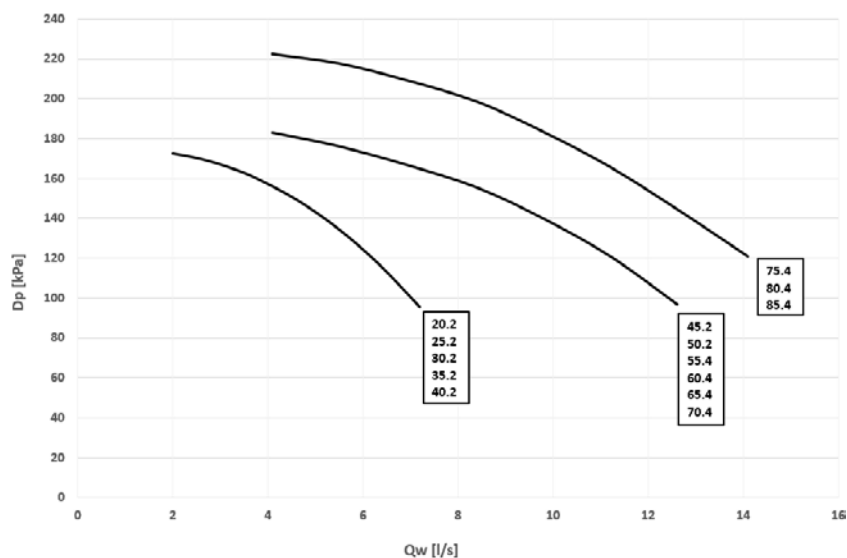
Electrical data

PUMP	Nominal Current [A]	Rated power [kW]
1PMCS 20.2-40.2	1,5	3,17
1PMCS 45.2-70.4	2,2	4,56
1PMCS 75.4-85.4	3,0	6,33

Accessories - Hydronic assembly

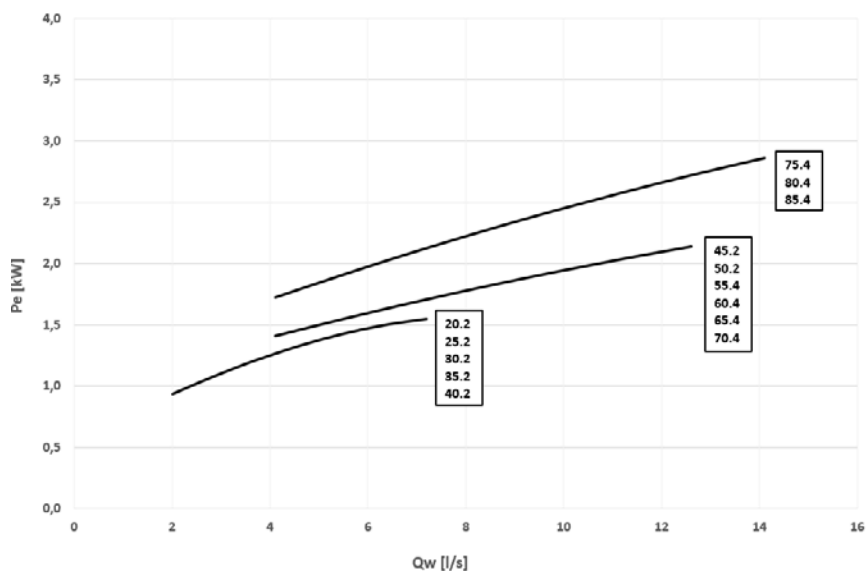
1PMCS - Hydropack cooling side with 1 on-off pump

Head



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input



Pe = Power input [kW]
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:
Internal exchanger pressure drop
IFVX accessory –Steel mesh filter on the water side (where applicable)

1PMHS - Hydropack heating side with 1 on-off pump

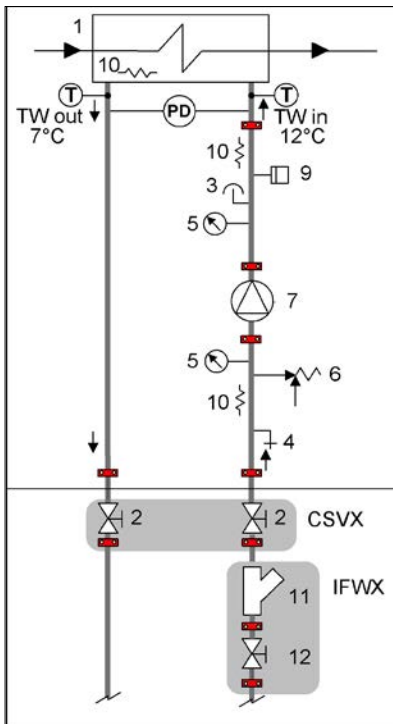
Pumping group consisting of 1 electric pump with cast iron pump body and stainless steel or cast iron impeller (depending on the model).
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP55 protection rating. Complete with thermoformed insulating casing, quick-release couplings with an insulated casing, safety valve, pressure gauges, system load safety pressure switch, stainless steel immersion antifreeze heaters fitted on the suction and supply lines.

All water fittings are Victaulic.

Option supplied on the unit.

CONNECTION DIAGRAM



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX - Couple of manually operated shut-off valves)
- 3 - Vent valve
- 4 - Discharge stop valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Packaged electric pump with high efficiency impeller
- 9 - System load safety pressure switch (it avoids the pump operation if water is not present)
- 10 - Antifreeze heater
- 11 - Steel mesh strainer water side - (IFWX)
- 12 - Cutoff valve with quick joints

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

- ⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.
- ⚠ **It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).**

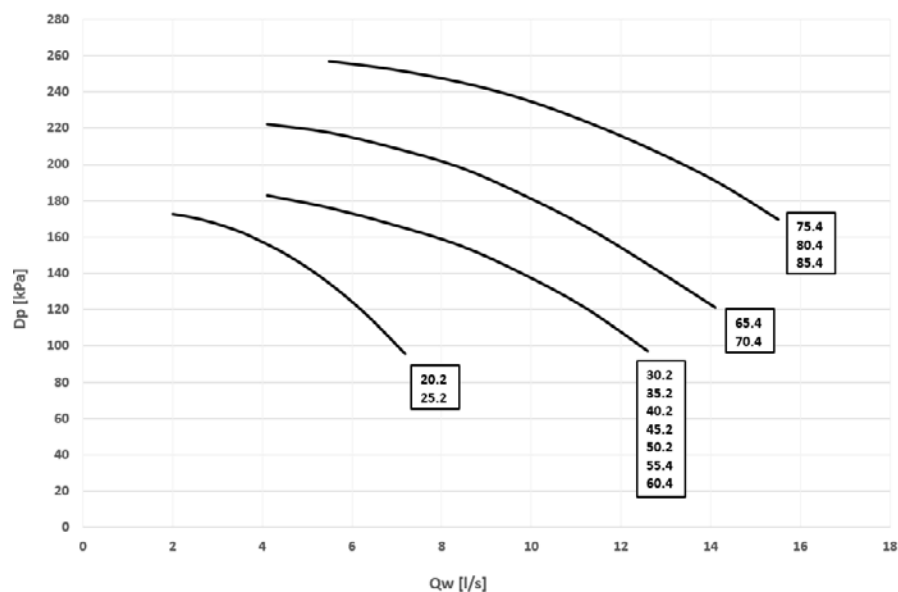
Electrical data

PUMP	Nominal Current [A]	Rated power [kW]
1PMHS 20.2-25.2	1,5	3,17
1PMHS 30.2-60.4	2,2	4,56
1PMHS 65.4-70.4	3,0	6,33
1PMHS 75.4-85.4	4,0	7,62

Accessories - Hydronic assembly

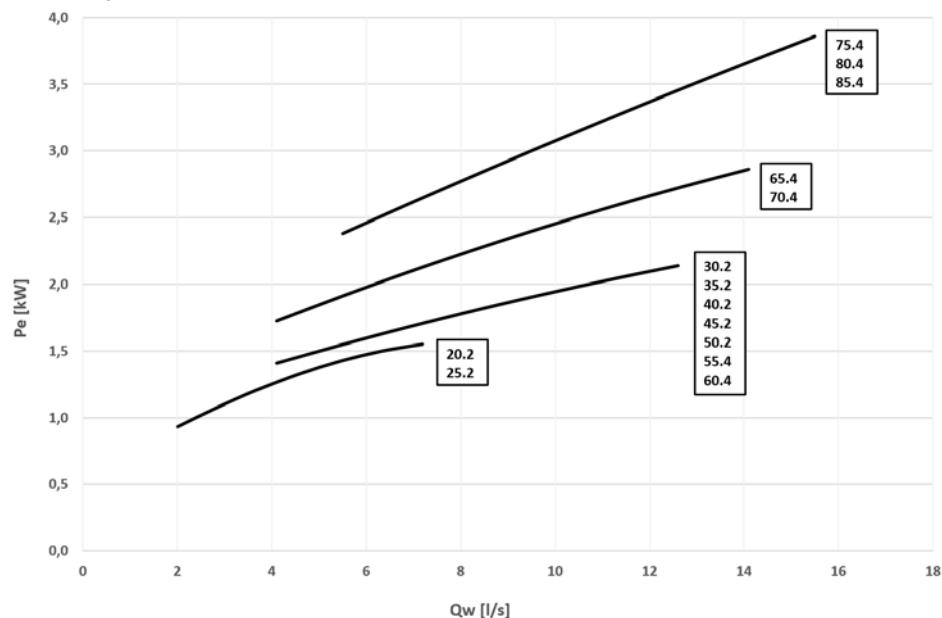
1PMHS - Hydropack heating side with 1 on-off pump

Head



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input



Pe = Power input [kW]
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:
Internal exchanger pressure drop
IFVX accessory –Steel mesh filter on the water side (where applicable)

1+1PMCS - Hydropack cooling side with 1+1 on-off pump

Pumping group consisting of 1+1 electric pump (1 stand-by) with cast iron pump body and stainless steel or cast iron impeller (depending on the model).

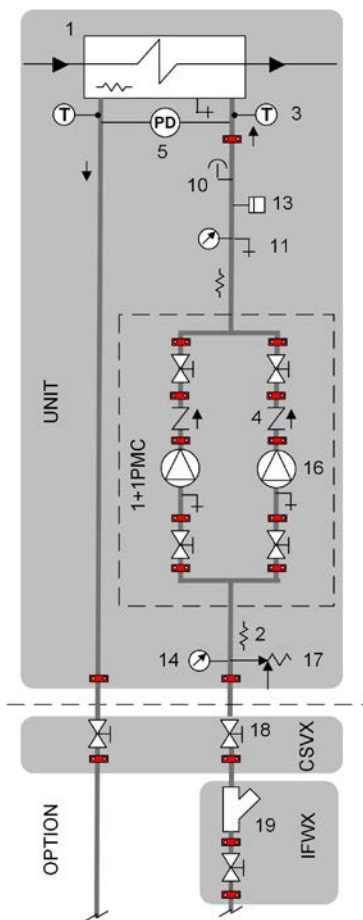
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP55 protection rating. Complete with thermoformed insulating casing, quick-release couplings with an insulated casing, safety valve, pressure gauges, system load safety pressure switch, stainless steel immersion antifreeze heaters fitted on the suction and supply lines.

All water fittings are Victaulic.

Option supplied on the unit.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe

PD - Differential pressure switch

TW in chilled water inlet

TW out chilled water outlet

- ⚠ Provide hydraulic interceptions outside the unit ("CSVX - Couple of manually operated shut-off valves" option) to facilitate any possible extraordinary maintenance interventions.
- ⚠ The head and consumption graphs of the pumping group refer to operation with pure water. If there is a water-glycol mix, please contact Clivet's office to check the correct operating point of the pumping group.

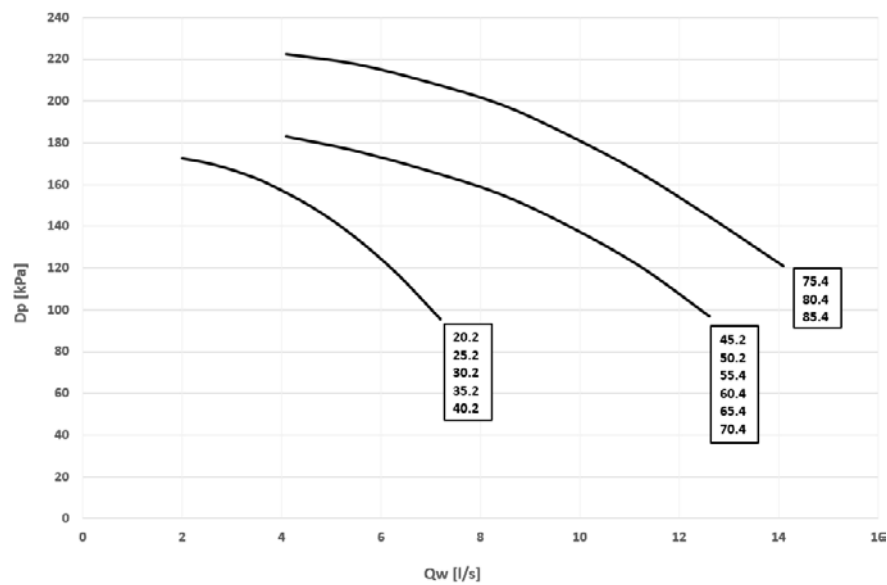
Electrical data

PUMP	Nominal Current [A]	Rated power [kW]
1+1PMCS 20.2-40.2	1,5	3,17
1+1PMCS 45.2-70.4	2,2	4,56
1+1PMCS 75.4-85.4	3,0	6,33

Accessories - Hydronic assembly

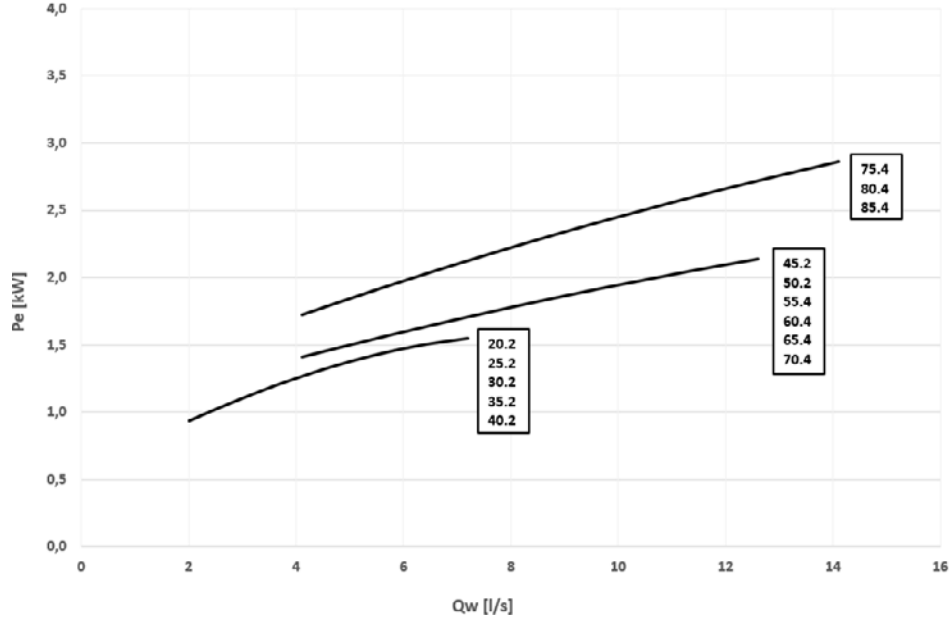
1+1PMCS - Hydropack cooling side with 1+1 on-off pump

Head



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input



Pe = Power input [kW]
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:
Internal exchanger pressure drop
IFVX accessory –Steel mesh filter on the water side (where applicable)

1+1PMHS - Hydropack heating side with 1+1 on-off pump

Pumping group consisting of 1+1 electric pump (1 stand-by) with cast iron pump body and stainless steel or cast iron impeller (depending on the model).

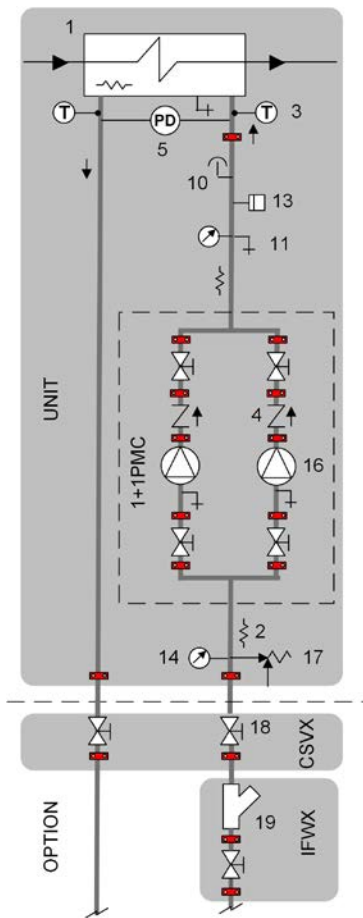
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP55 protection rating. Complete with thermoformed insulating casing, quick-release couplings with an insulated casing, safety valve, pressure gauges, system load safety pressure switch, stainless steel immersion antifreeze heaters fitted on the suction and supply lines.

All water fittings are Victaulic.

Option supplied on the unit.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe

PD - Differential pressure switch

TW in chilled water inlet

TW out chilled water outlet

- ⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.
- ⚠ The head and consumption graphs of the pumping group refer to operation with pure water. If there is a water-glycol mix, please contact Clivet's office to check the correct operating point of the pumping group.

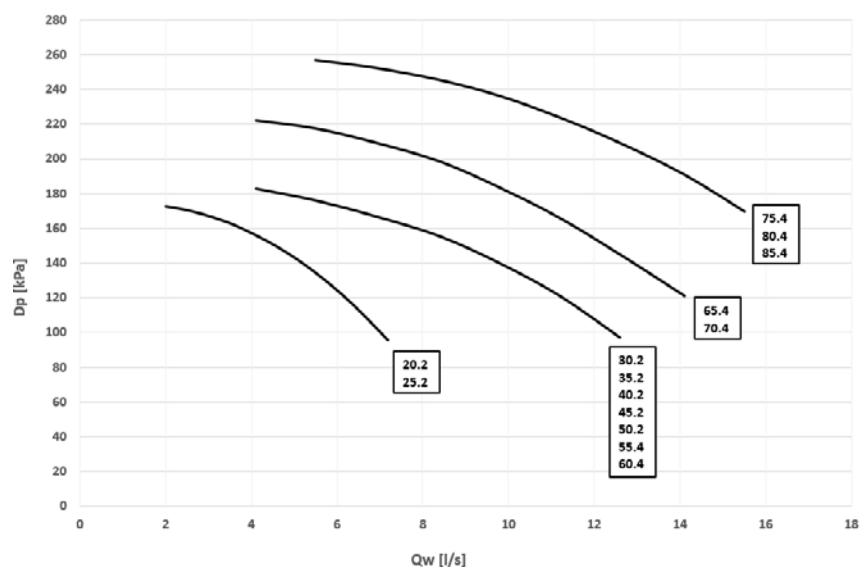
Electrical data

PUMP	Nominal Current [A]	Rated power [kW]
1+1PMHS 20.2-25.2	1,5	3,17
1+1PMHS 30.2-60.4	2,2	4,56
1+1PMHS 65.4-70.4	3,0	6,33
1+1PMHS 75.4-85.4	4,0	7,62

Accessories - Hydronic assembly

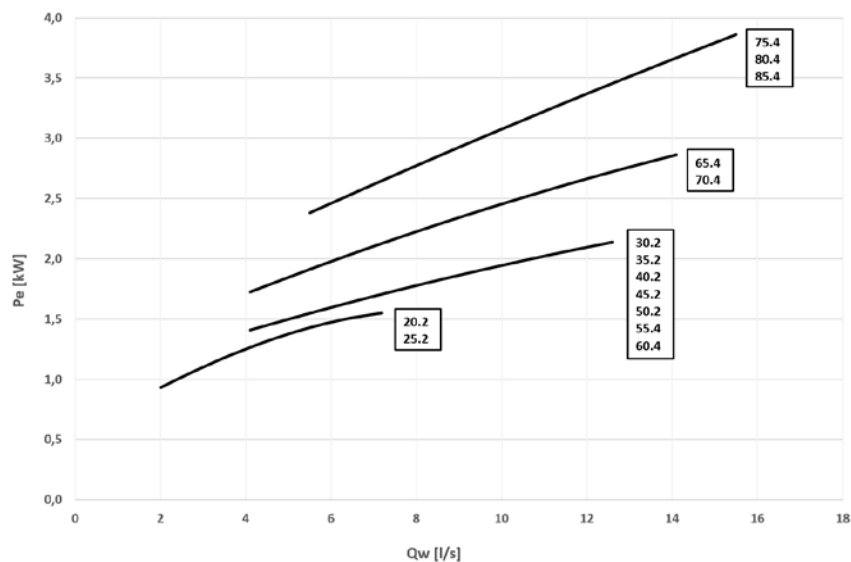
1+1PMHS - Hydropack heating side with 1+1 on-off pump

Head



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input



Pe = Power input [kW]
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:
Internal exchanger pressure drop
IFVX accessory –Steel mesh filter on the water side (where applicable)

1PMCSV - Hydropack cooling side with 1 inverter pump

Pumping group consisting of 1 electric pump controlled by inverter to adapt to different conditions of use.

It enables the automatic reduction of the liquid flow-rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

Through the inverter calibration, standard supplied, it is possible to adapt the pump flow-rate/head to the installation feature.

Centrifugal electric pump with the pump body made of cast iron and the impeller made stainless steel or cast iron (depending on the models)

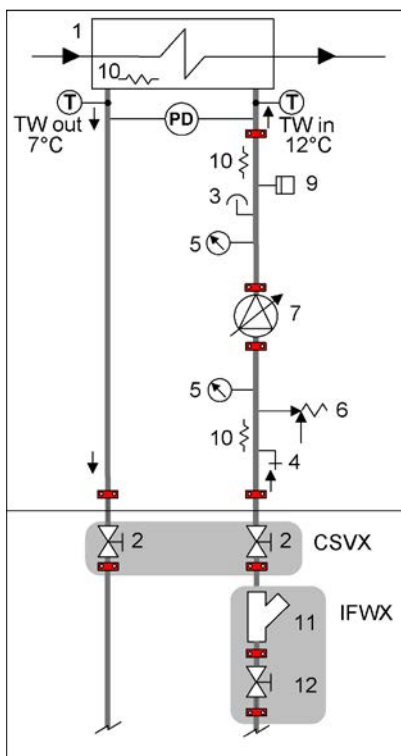
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP44-protection. Complete with thermoformed insulated casing, quick connections with insulated casing, non return valve, safety valve, pressure gauges, system load safety pressure switch, stainless steel antifreeze immersion heaters located at the return and supply point.

All water fittings are Victaulic.

Option supplied on the unit.

CONNECTION DIAGRAM



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX - Couple of manually operated shut-off valves)
- 3 - Vent valve
- 4 - Discharge stop valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Packaged electric pump with high efficiency impeller
- 9 - System load safety pressure switch (it avoids the pump operation if water is not present)
- 10 - Antifreeze heater
- 11 - Steel mesh strainer water side - (IFWX)
- 12 - Cutoff valve with quick joints

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

- ⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.
- ⚠ It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).

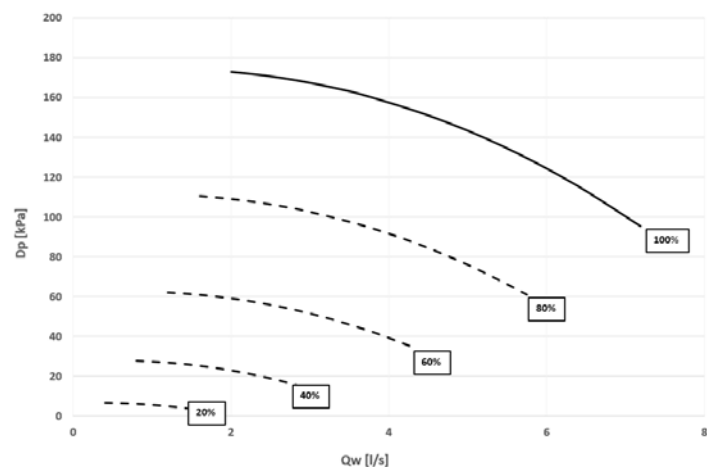
Electrical data

PUMP	Nominal Current [A]	Rated power [kW]
1PMCSV 20.2-40.2	1,5	3,17
1PMCSV 45.2-70.4	2,2	4,56
1PMCSV 75.4-85.4	3,0	6,33

Accessories - Hydronic assembly

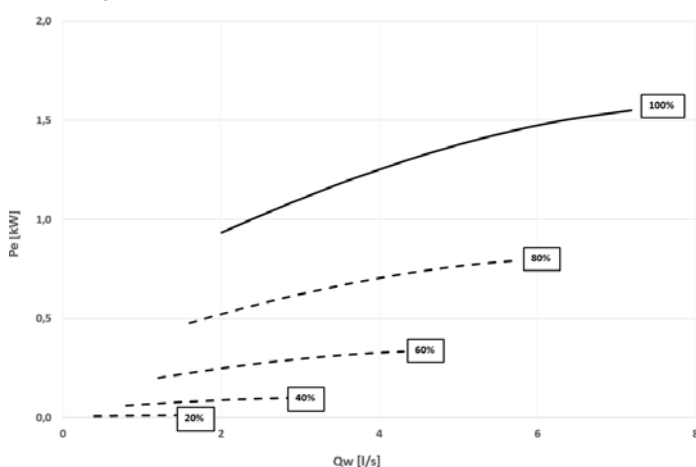
1PMCSV - Hydropack cooling side with 1 inverter pump

Head - Size 20.2 ÷ 40.2



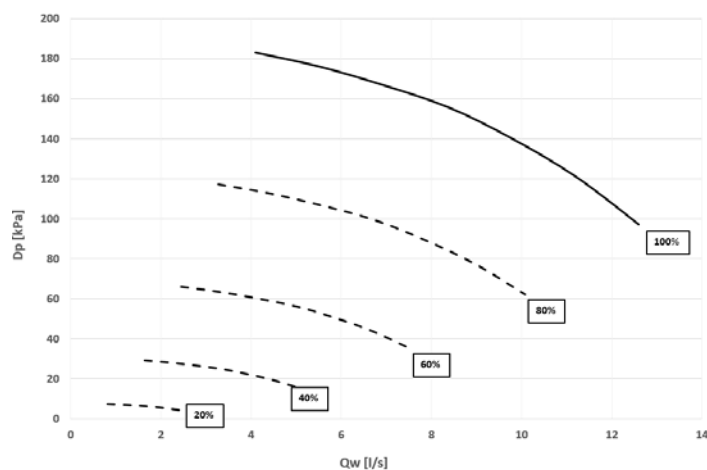
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 20.2 ÷ 40.2



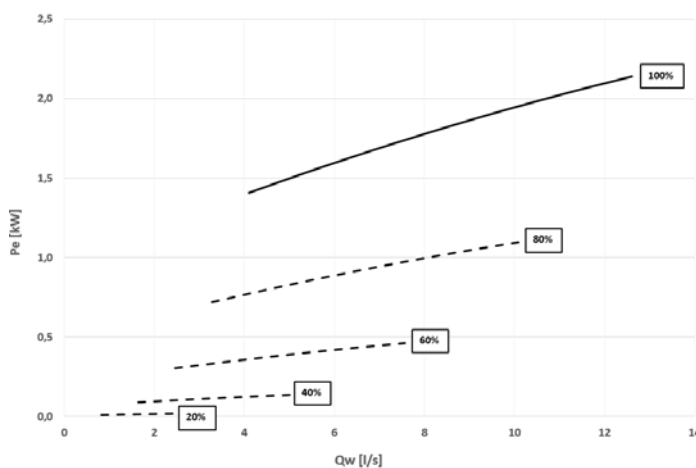
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 45.2 ÷ 70.4



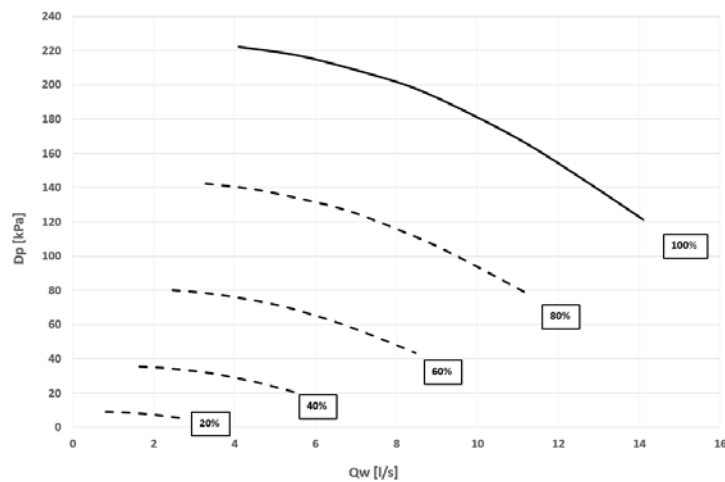
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 45.2 ÷ 70.4



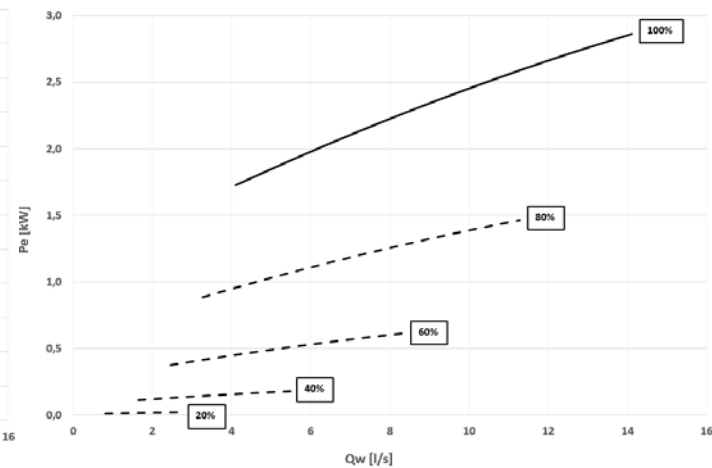
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 75.4 ÷ 85.4



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 75.4 ÷ 85.4



Pe = Power input [kW]
QW = Water flow-rate [l/s]

1PMHSV - Hydropack heating side with 1 inverter pump

Pumping group consisting of 1 electric pump controlled by inverter to adapt to different conditions of use.

It enables the automatic reduction of the liquid flow-rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

Through the inverter calibration, standard supplied, it is possible to adapt the pump flow-rate/head to the installation feature.

Centrifugal electric pump with the pump body made of cast iron and the impeller made stainless steel or cast iron (depending on the models)

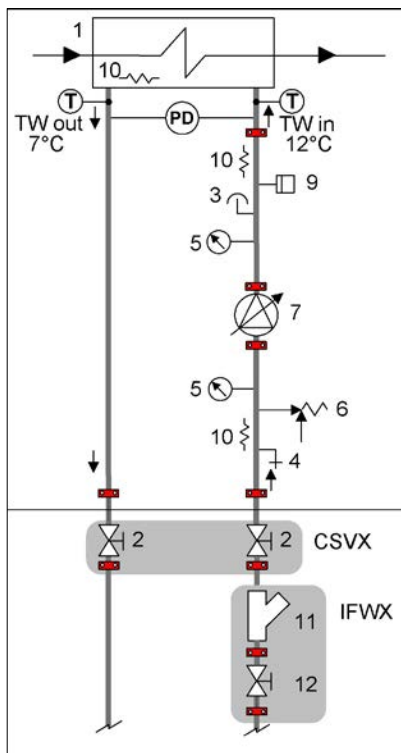
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP44-protection. Complete with thermoformed insulated casing, quick connections with insulated casing, non return valve, safety valve, pressure gauges, system load safety pressure switch, stainless steel antifreeze immersion heaters located at the return and supply point.

All water fittings are Victaulic.

Option supplied on the unit

CONNECTION DIAGRAM



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX - Couple of manually operated shut-off valves)
- 3 - Vent valve
- 4 - Discharge stop valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Packaged electric pump with high efficiency impeller
- 9 - System load safety pressure switch (it avoids the pump operation if water is not present)
- 10 - Antifreeze heater
- 11 - Steel mesh strainer water side - (IFWX)
- 12 - Cutoff valve with quick joints

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

⚠ It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).

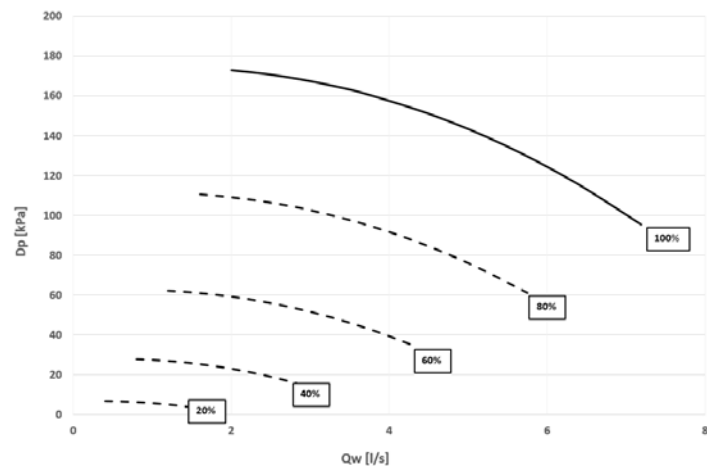
Electrical data

PUMP	Nominal Current [A]	Rated power [kW]
1PMHSV 20.2-25.2	1,5	3,17
1PMHSV 30.2-60.4	2,2	4,56
1PMHSV 65.4-70.4	3,0	6,33
1PMHSV 75.4-85.4	4,0	7,62

Accessories - Hydronic assembly

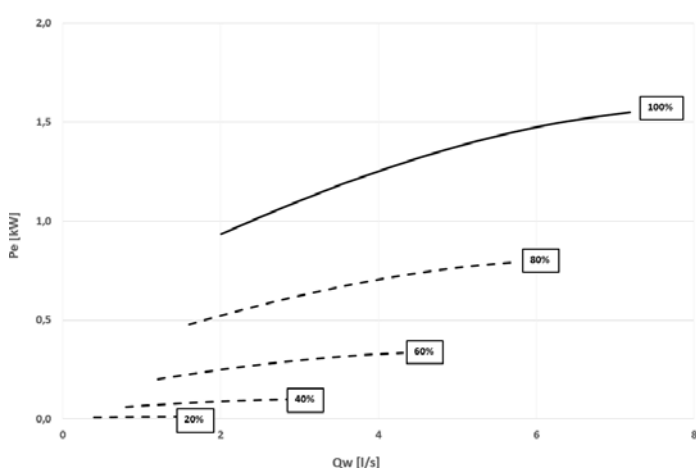
1PMHSV - Hydropack heating side with 1 inverter pump

Head - Size 20.2 ÷ 25.2



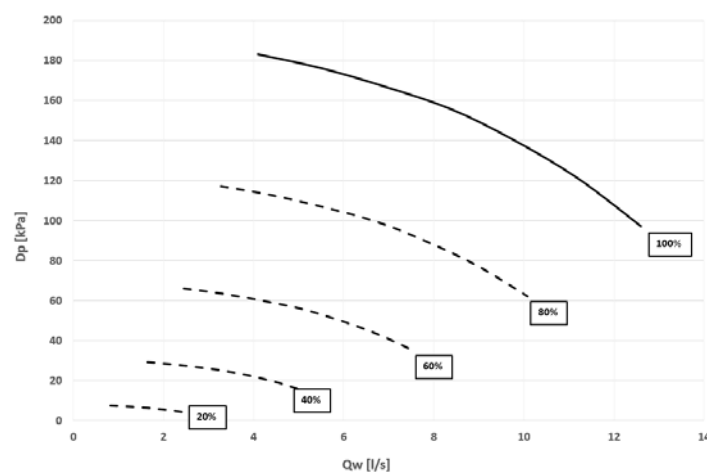
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 20.2 ÷ 25.2



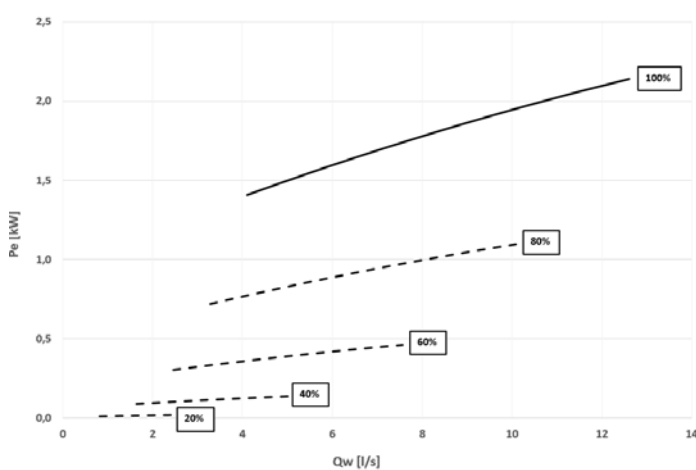
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 30.2 ÷ 60.4



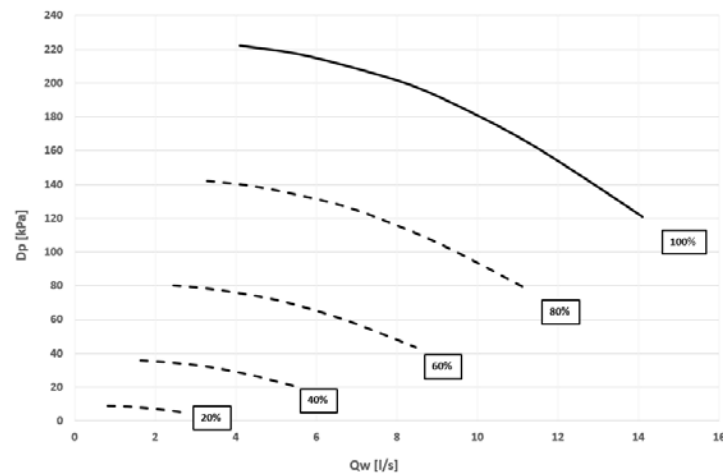
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 30.2 ÷ 60.4



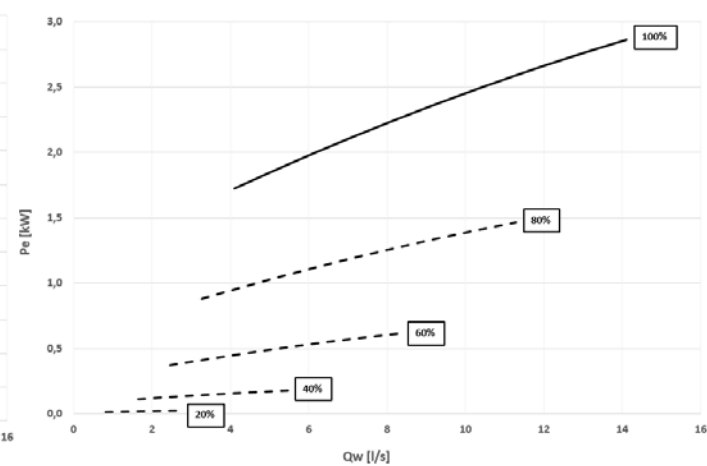
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 65.4 ÷ 70.4



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

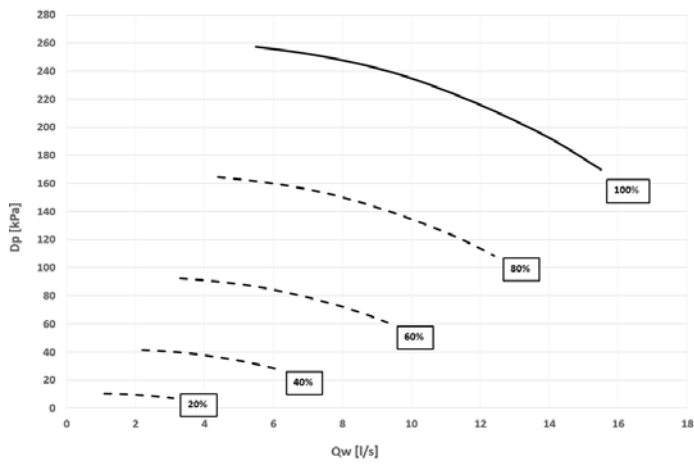
Power input - Size 65.4 ÷ 70.4



Pe = Power input [kW]
QW = Water flow-rate [l/s]

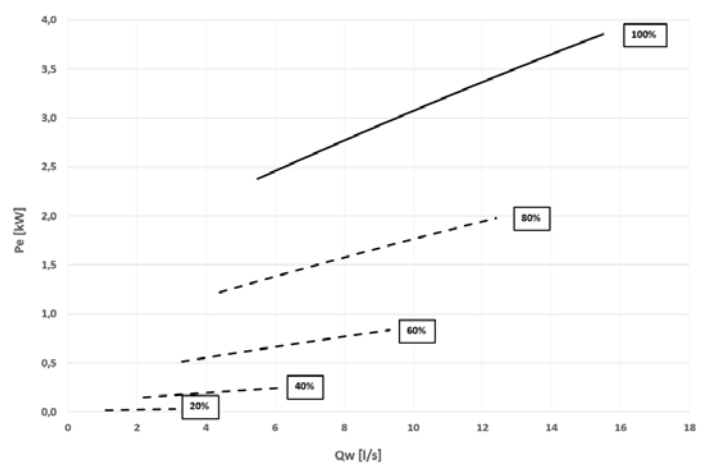
1PMHSV - Hydropack heating side with 1 inverter pump

Head - Size 75.4 ÷ 85.4



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 75.4 ÷ 85.4



Pe = Power input [kW]
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:
Internal exchanger pressure drop
IFVX accessory –Steel mesh filter on the water side (where applicable)

Accessories - Hydronic assembly

1+1PMCSV - Hydropack cooling side with 1+1 inverter pump

Pumping group consisting of 1+1 electric pump (1 stand-by) controlled by inverter to adapt to different conditions of use.

It enables the automatic reduction of the liquid flow-rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

Through the inverter calibration, standard supplied, it is possible to adapt the pump flow-rate/head to the installation feature.

Centrifugal electric pump with the pump body made of cast iron and the impeller made stainless steel or cast iron (depending on the models)

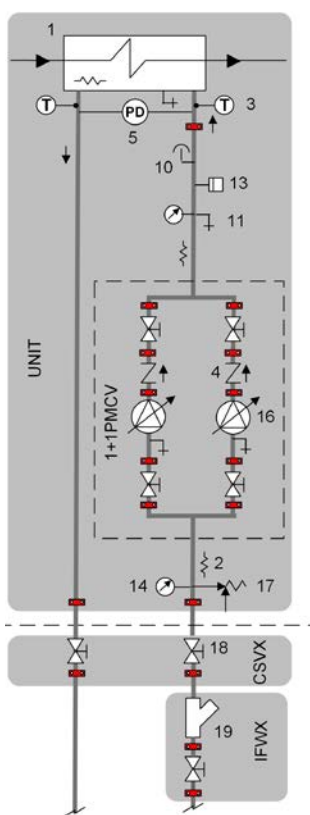
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP44-protection. Complete with thermoformed insulated casing, quick connections with insulated casing, non return valve, safety valve, pressure gauges, system load safety pressure switch, stainless steel antifreeze immersion heaters located at the return and supply point.

All water fittings are Victaulic.

Option supplied on the unit.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

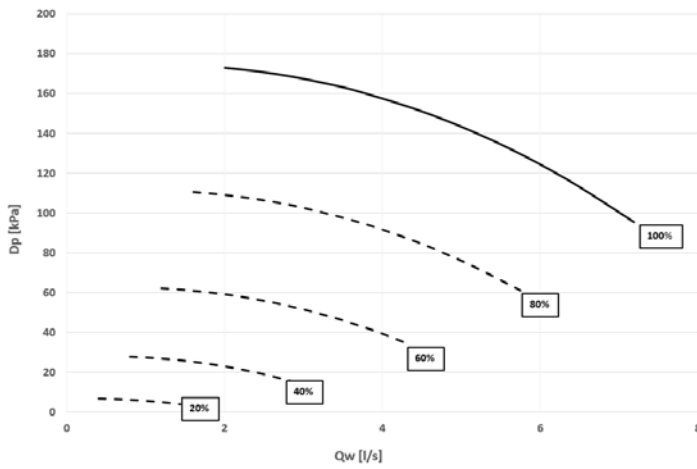
Hydropack electrical data

PUMP	Nominal Current [A]	Rated power [kW]
1+1PMCSV 20.2-40.2	1,5	3,17
1+1PMCSV 45.2-70.4	2,2	4,56
1+1PMCSV 75.4-85.4	3,0	6,33

Accessories - Hydronic assembly

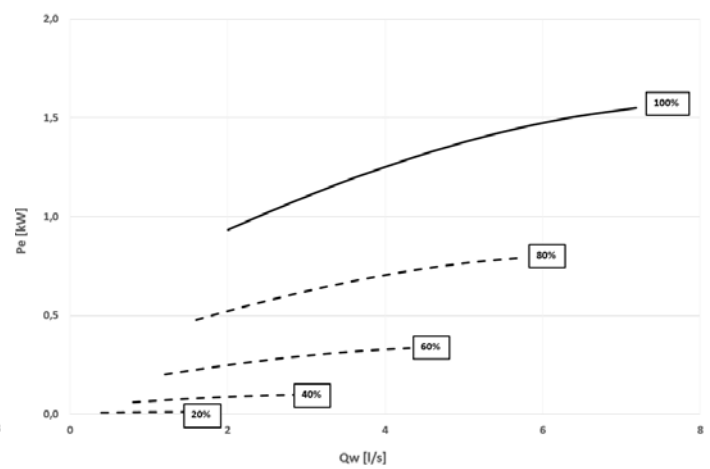
1+1PMCSV - Hydropack cooling side with 1+1 inverter pump

Head - Size 20.2 ÷ 40.2



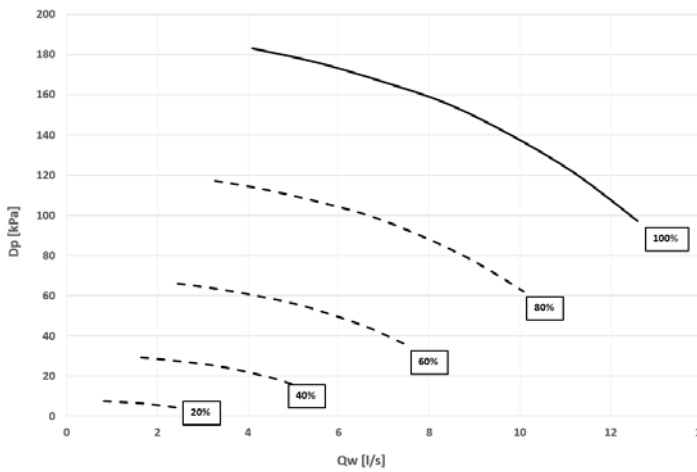
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 20.2 ÷ 40.2



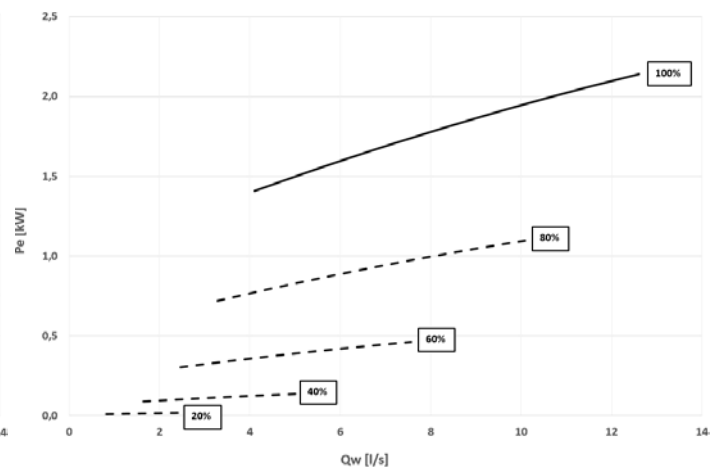
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 45.2 ÷ 70.4



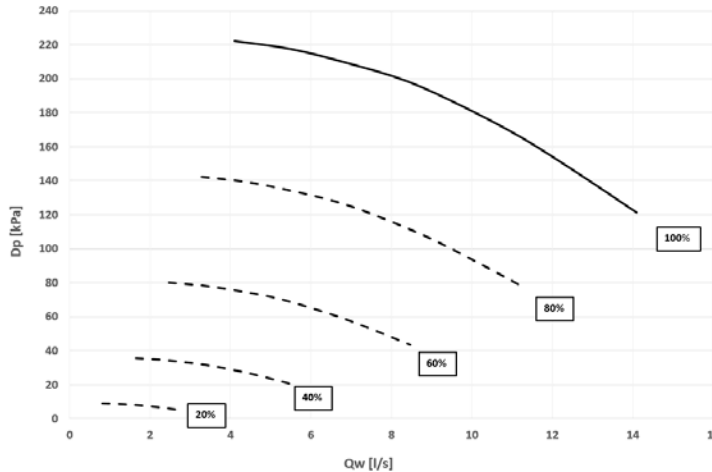
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 45.2 ÷ 70.4



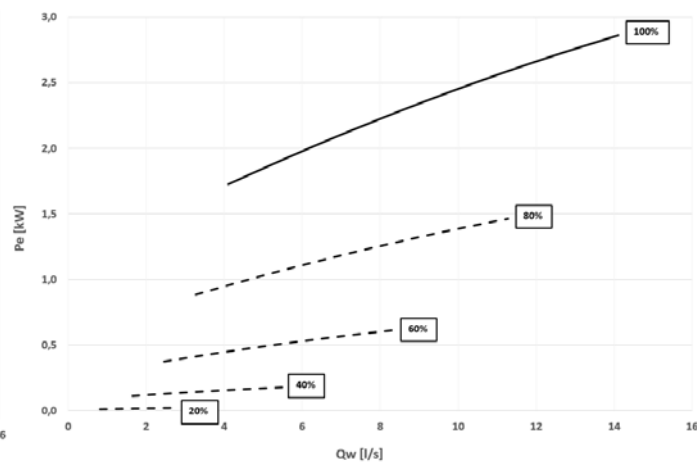
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 75.4 ÷ 85.4



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 75.4 ÷ 85.4



Pe = Power input [kW]
QW = Water flow-rate [l/s]

Accessories - Hydronic assembly

1+1PMHSV - Hydropack heating side with 1+1 inverter pump

Pumping group consisting of 1+1 electric pump (1 stand-by) controlled by inverter to adapt to different conditions of use. It enables the automatic reduction of the liquid flow-rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

Through the inverter calibration, standard supplied, it is possible to adapt the pump flow-rate/head to the installation feature.

Centrifugal electric pump with the pump body made of cast iron and the impeller made stainless steel or cast iron (depending on the models)

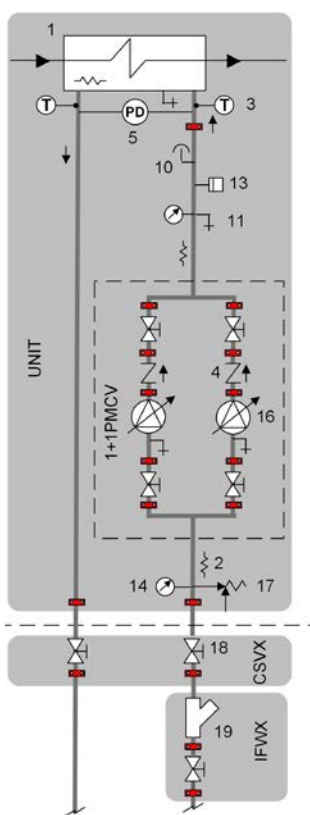
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP44-protection. Complete with thermoformed insulated casing, quick connections with insulated casing, non return valve, safety valve, pressure gauges, system load safety pressure switch, stainless steel antifreeze immersion heaters located at the return and supply point.

All water fittings are Victaulic.

Option supplied on the unit.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

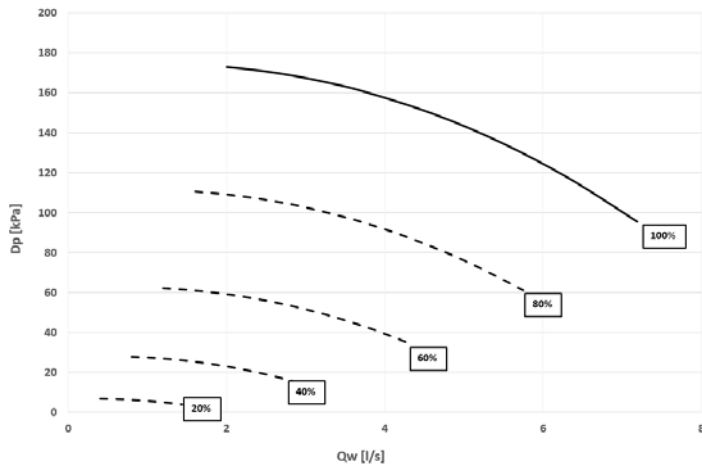
⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

Hydropack electrical data

PUMP	Nominal Current [A]	Rated power [kW]
1+1PMHSV 20.2-25.2	1,5	3,17
1+1PMHSV 30.2-60.4	2,2	4,56
1+1PMHSV 65.4-70.4	3,0	6,33
1+1PMHSV 75.4-85.4	4,0	7,62

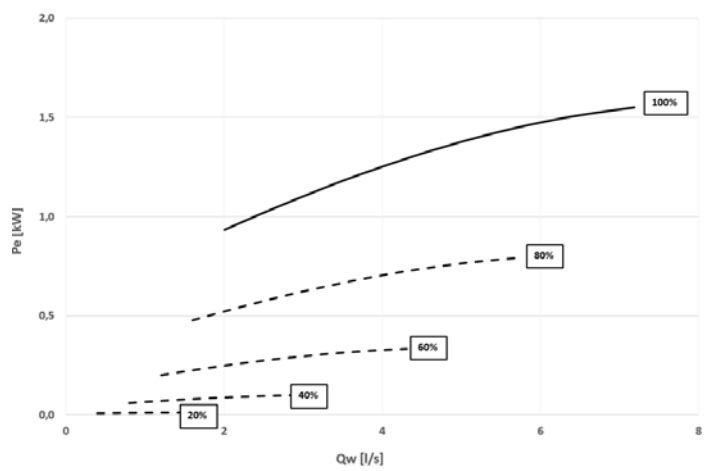
1+1PMHSV - Hydropack heating side with 1+ inverter pump

Head - Size 20.2 ÷ 25.2



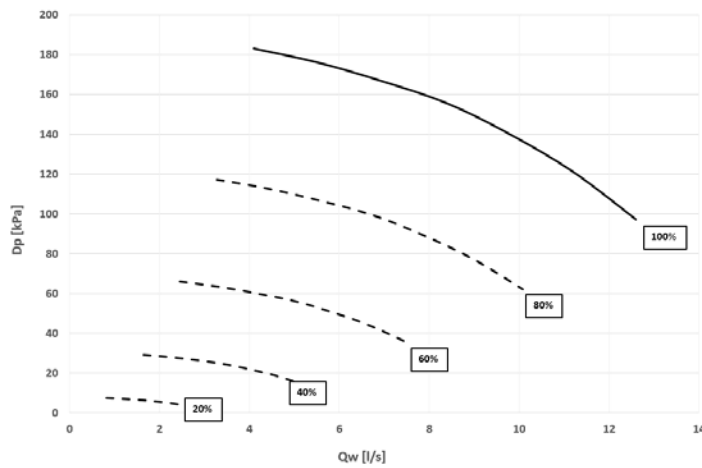
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 20.2 ÷ 25.2



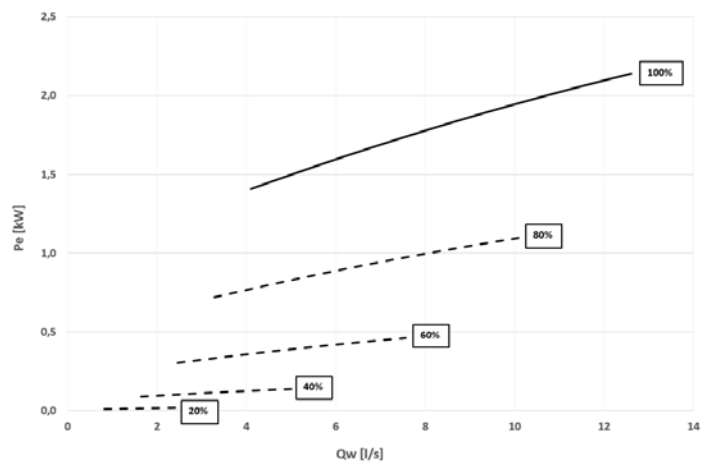
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 30.2 ÷ 60.4



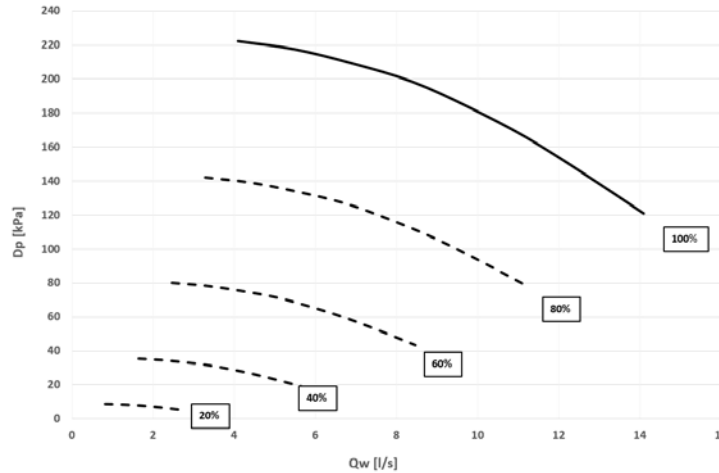
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 30.2 ÷ 60.4



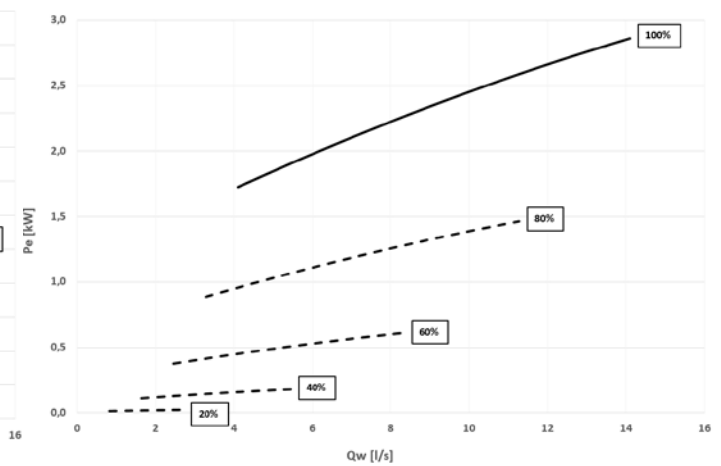
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 65.4 ÷ 70.4



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 65.4 ÷ 70.4

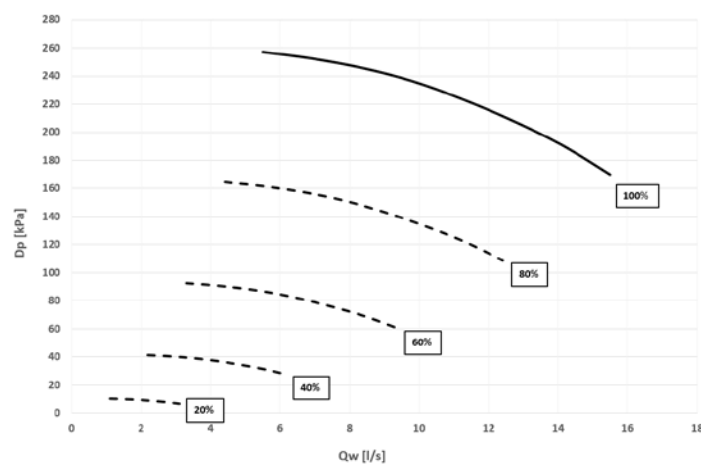


Pe = Power input [kW]
QW = Water flow-rate [l/s]

Accessories - Hydronic assembly

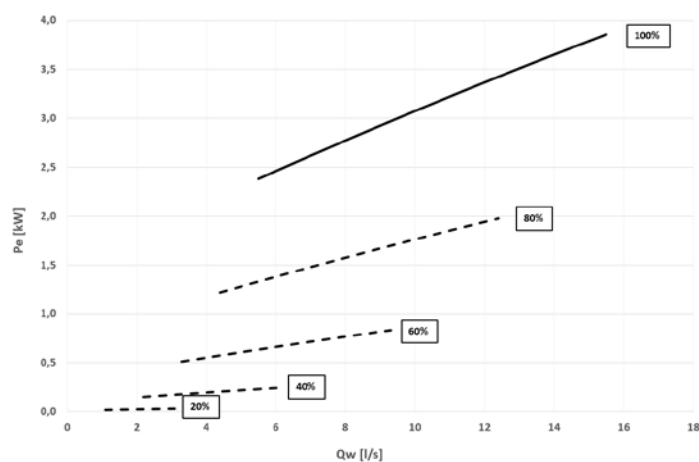
1+1PMHSV - Hydropack heating side with 1+ inverter pump

Head - Size 75.4 ÷ 85.4



Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 75.4 ÷ 85.4



Pe = Power input [kW]
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:
Internal exchanger pressure drop
IFVX accessory –Steel mesh filter on the water side (where applicable)

RIFERIMENTO	DESCRIZIONE	20.2 - 85.4
IVFCDT - Variable flow rate control cooling side by inverter according to the temperature differential		
-	Hydropack cooling side: not required	0
1+1PMCS	Hydropack cooling side with n° 1+1 on-off pump	-
1PMCS	Hydropack cooling side with 1 on-off pump	-
1+1PMCSV	Hydropack cooling side with n° 1+1 inverter pump	0
1PMCSV	Hydropack cooling side with 1 inverter	0
IVFHDT - Variable flow rate control heating side by inverter according to the temperature differential		
-	Hydropack heating side: not required	0
1+1PMHS	Hydropack heating side with n° 1+1 on-off pump	-
1PMHS	Hydropack heating side with 1 on-off pump	-
1+1PMHSV	Hydropack heating side with n° 1+1 inverter pump	0
1PMHSV	Hydropack heating side with 1 inverter pump	0
IVFCDTS - Variable flow rate control cooling side by inverter according to the temperature differential with pressure drop sensor		
-	Hydropack cooling side: not required	0
1+1PMCS	Hydropack cooling side with n° 1+1 on-off pump	-
1PMCS	Hydropack cooling side with 1 on-off pump	-
1+1PMCSV	Hydropack cooling side with n° 1+1 inverter pump	0
1PMCSV	Hydropack cooling side with 1 inverter pump	0
IVFHDTs - Hot user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor		
-	Hydropack heating side: not required	0
1+1PMHS	Hydropack heating side with n° 1+1 on-off pump	-
1PMHS	Hydropack heating side with 1 on-off pump	-
1+1PMHSV	Hydropack heating side with n° 1+1 inverter pump	0
1PMHSV	Hydropack heating side with 1 inverter pump	0
IVFCDTF - Variable flow rate control cooling side by inverter according to the temperature differential a flow meter		
-	Hydropack cooling side: not required	0
1+1PMCS	Hydropack cooling side with n° 1+1 on-off pump	-
1PMCS	Hydropack cooling side side with 1 on-off pump	-
1+1PMCSV	Hydropack cooling side with n° 1+1 inverter pump	0
1PMCSV	Hydropack cooling side with 1 inverter pump	0
IVFHDTF - Variable flow rate control heating side by inverter according to the temperature differential with a flow meter		
-	Hydropack heating side: not required	0
1+1PMHS	Hydropack heating side with n° 1+1 on-off pump	-
1PMHS	Hydropack heating side with 1 on-off pump	-
1+1PMHSV	Hydropack heating side with n° 1+1 inverter pump	0
1PMHSV	Hydropack heating side with 1 inverter pump	0
IVFCDTF - Variable flow rate control cooling side by inverter according to the temperature differential with a flow meter		
-	Flow meters: not required	-
FMCHX	Cooling and heating side flow meters	0
IVFHDTF - Variable flow rate control heating side by inverter according to the temperature differential with a flow meter		
-	Flow meters: not required	-
FMCHX	Cooling and heating side flow meters	0
MISTER1 - Indirect energy meter via pressure drop and temperature differential with unit probes		
-	Integrated variable primary flow, chilled water side: not required	-
IVFCDT	Variable flow rate control cooling side by inverter according to the temperature differential	-
IVFCDTS	Variable flow rate control cooling side by inverter according to the temperature differential with pressure drop sensor	0
IVFCDTF	Variable flow rate control cooling side by inverter according to the temperature differential a flow meter	-
-	Integrated variable primary flow, hot water side: not required	-
IVFHDT	Variable flow rate control heating side by inverter according to the temperature differential	-
IVFHDTs	Hot user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor	0
IVFHDTF	Variable flow rate control heating side by inverter according to the temperature differential with a flow meter	-

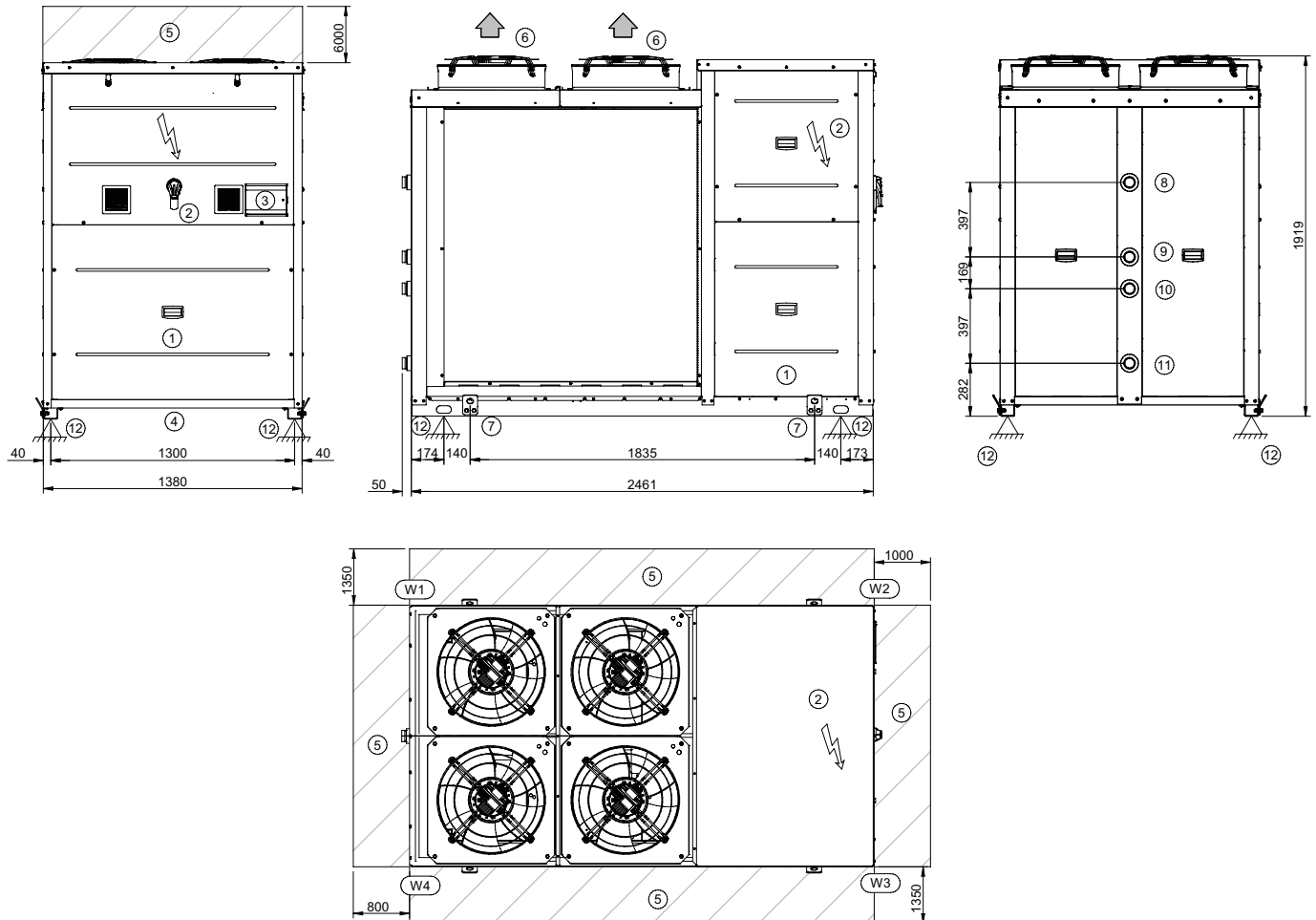
Option compatibility

RIF.	DESCRIZIONE	20.2 - 85.4
MISTER2 - Direct energy meter via flow-rate and temperature differential with unit probes		
-	Integrated variable primary flow, chilled water side: not required	-
IVFCDT	Variable flow rate control cooling side by inverter according to the temperature differential	-
IVFCDTS	Variable flow rate control cooling side by inverter according to the temperature differential with pressure drop sensor	-
IVFCDTF	Variable flow rate control cooling side by inverter according to the temperature differential a flow meter	0
-	Integrated variable primary flow, hot water side: not required	-
IVFHDT	Variable flow rate control heating side by inverter according to the temperature differential	-
IVFHDT S	Hot user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor	-
IVFHDT F	Variable flow rate control heating side by inverter according to the temperature differential with a flow meter	0
Hydropack cooling side: not required		
-	Hydropack heating side: not required	0
1+1PMHS	Hydropack heating side with n° 1+1 on-off pump	-
1PMHS	Hydropack heating side with 1 on-off pump	-
1+1PMHSV	Hydropack heating side with n° 1+1 inverter pump	-
1PMHSV	Hydropack heating side with 1 inverter pump	-
1+1PMCS - Hydropack cooling side with N° 1+1 ON-OFF pump		
-	Hydropack heating side : not required	-
1+1PMHS	Hydropack heating side with n° 1+1 on-off pump	0
1PMHS	Hydropack heating side with 1 on-off pump	-
1+1PMHSV	Hydropack heating side with n° 1+1 inverter pump	-
1PMHSV	Hydropack heating side with 1 inverter pump	-
1PMCS - Hydropack cooling side with N° 1 ON-OFF pump		
-	Hydropack heating side : not required	-
1+1PMHS	Hydropack heating side with n° 1+1 on-off pump	-
1PMHS	Hydropack heating side with 1 on-off pump	0
1+1PMHSV	Hydropack heating side with n° 1+1 inverter pump	-
1PMHSV	Hydropack heating side with 1 inverter pump	-
1+1PMCSV - Hydropack cooling side with N° 1+1 inverter pump		
-	Hydropack heating side : not required	-
1+1PMHS	Hydropack heating side with n° 1+1 on-off pump	-
1PMHS	Hydropack heating side with 1 on-off pump	-
1+1PMHSV	Hydropack heating side with n° 1+1 inverter pump	0
1PMHSV	Hydropack heating side with 1 inverter pump	-
1PMCSV - Hydropack cooling side with N° 1 inverter pump		
-	Hydropack heating side : not required	-
1+1PMHS	Hydropack heating side with n° 1+1 on-off pump	-
1PMHS	Hydropack heating side with 1 on-off pump	-
1+1PMHSV	Hydropack heating side with n° 1+1 inverter pump	-
1PMHSV	Hydropack heating side with 1 inverter pump	0

0 Option
Not available

Size 20.2 ÷ 25.2

DAA40001
DATA/DATE: 06/08/2024



SIZE		20.2	25.2
Length	mm	2461	2461
Depth	mm	1380	1380
Height	mm	1919	1919
W1 Supporting point	kg	173	173
W2 Supporting point	kg	315	315
W3 Supporting point	kg	315	315
W4 Supporting point	kg	173	173
W5 Supporting point	kg	-	-
W6 Supporting point	kg	-	-
Operating weight	kg	975	975
Shipping weight	kg	997	997

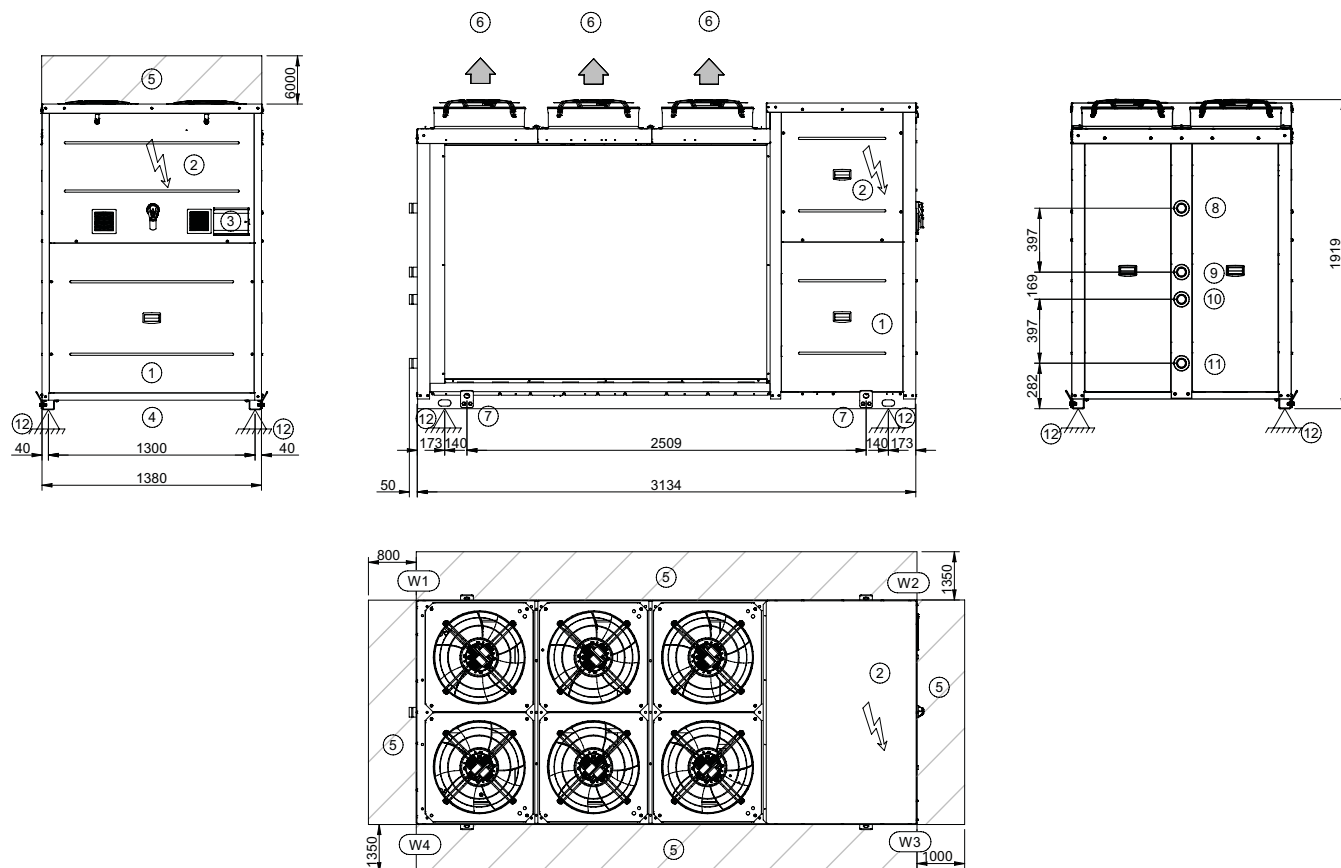
1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Functional spaces
6. Fan
7. Lifting brackets
8. Victaulic 2" hot water outlet connection
9. Victaulic 2" hot water inlet connection
10. Victaulic 2" cold water inlet connection
11. Victaulic 2" cold water outlet connection
12. Supporting point

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional drawings

Size 30.2 ÷ 40.2

DAAV40002
DATA/DATE: 13/12/2024



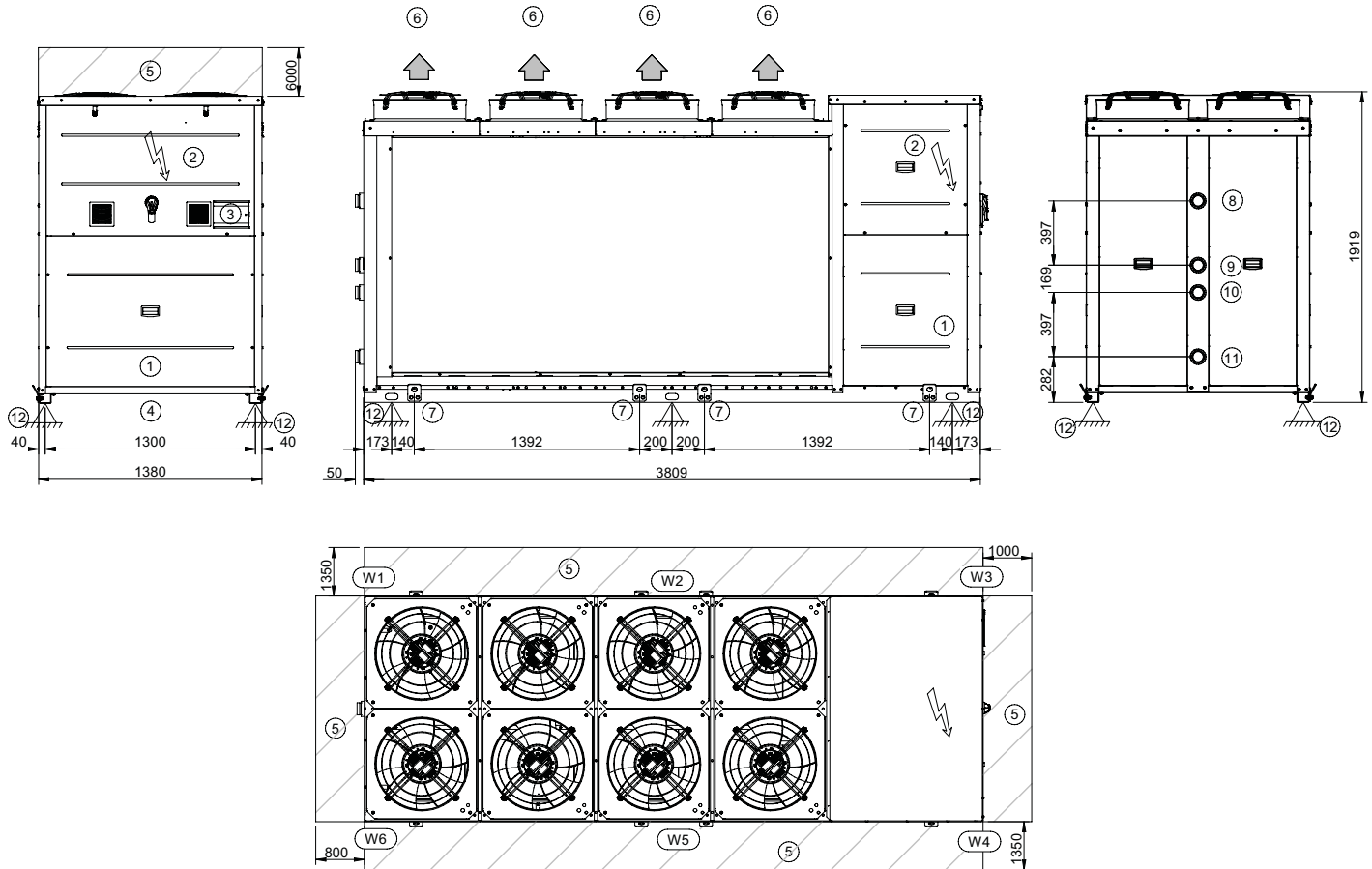
SIZE		30.2	35.2	40.2
Length	mm	3134	3134	3134
Depth	mm	1380	1380	1380
Height	mm	1919	1919	1919
W1 Supporting point	kg	233	233	233
W2 Supporting point	kg	415	415	415
W3 Supporting point	kg	415	415	415
W4 Supporting point	kg	233	233	233
W5 Supporting point	kg	-	-	-
W6 Supporting point	kg	-	-	-
Operating weight	kg	1297	1297	1297
Shipping weight	kg	1329	1329	1329

1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Functional spaces
6. Fan
7. Lifting brackets
8. Victaulic 2" hot water outlet connection
9. Victaulic 2" hot water inlet connection
10. Victaulic 2" cold water inlet connection
11. Victaulic 2" cold water outlet connection
12. Supporting point

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 45.2 ÷ 50.2

DAAV40003
DATA/DATE: 13/12/2024



SIZE		45.2	50.2
Length	mm	3809	3809
Depth	mm	1380	1380
Height	mm	1919	1919
W1 Supporting point	kg	58	58
W2 Supporting point	kg	472	472
W3 Supporting point	kg	220	220
W4 Supporting point	kg	220	220
W5 Supporting point	kg	472	472
W6 Supporting point	kg	58	58
Operating weight	kg	1499	1499
Shipping weight	kg	1526	1526

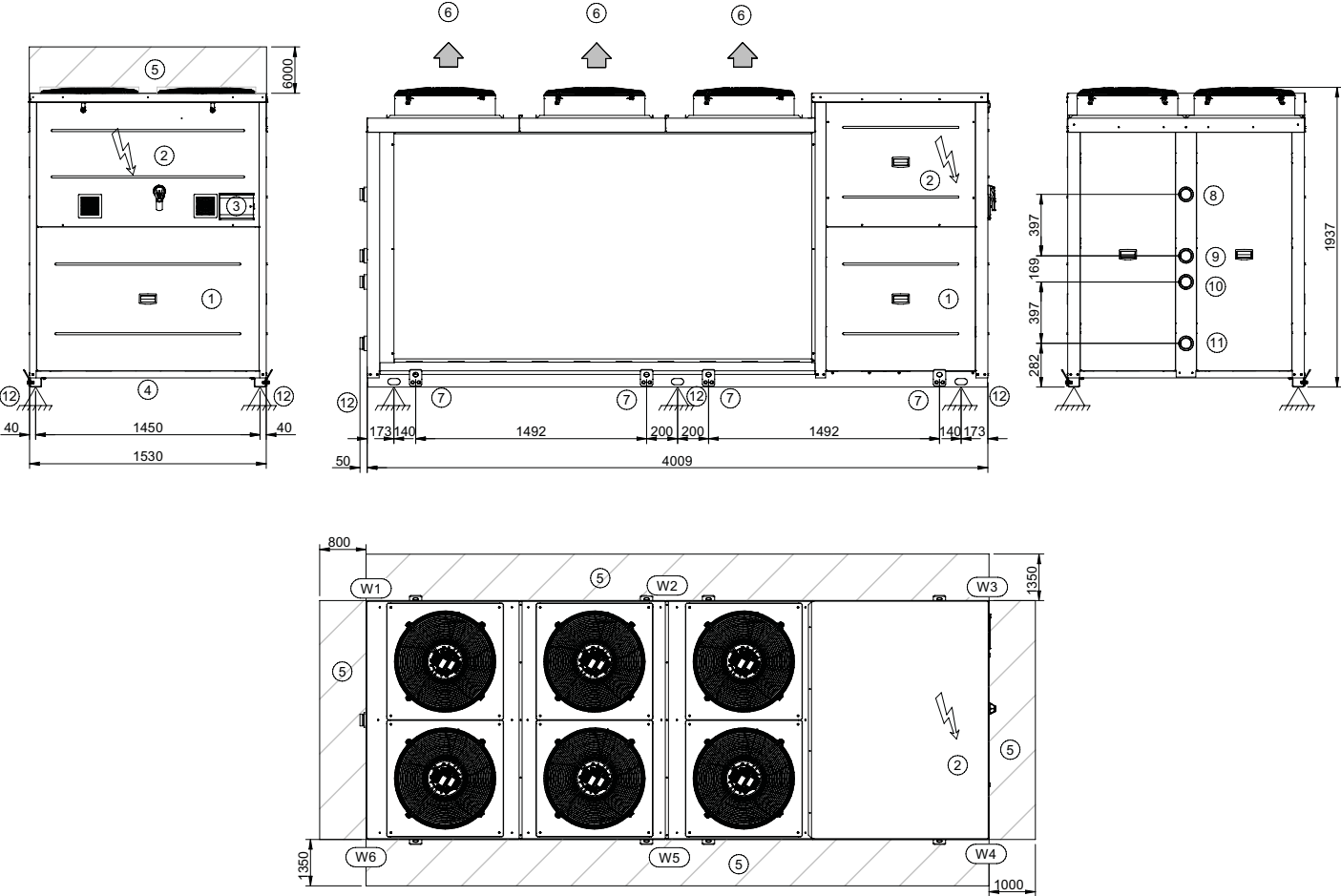
1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Functional spaces
6. Fan
7. Lifting brackets
8. Victaulic 2" 1/2 hot water outlet connection
9. Victaulic 2" 1/2 hot water inlet connection
10. Victaulic 2" 1/2 cold water inlet connection
11. Victaulic 2" 1/2 cold water outlet connection
12. Supporting point

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional drawings

Size 55.4 ÷ 60.4

DAAV40004
DATA/DATE: 16/12/2024



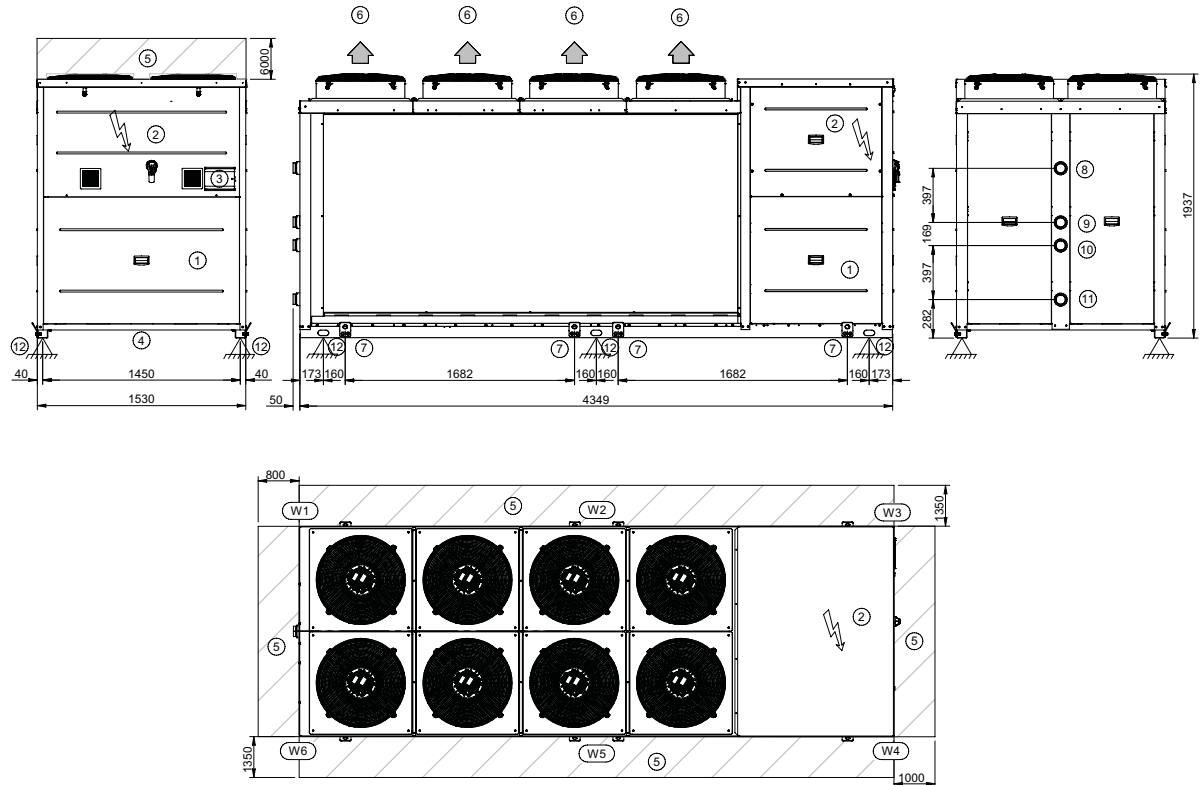
SIZE		55.4	60.4
Length	mm	4009	4009
Depth	mm	1530	1530
Height	mm	1937	1937
W1 Supporting point	kg	48	48
W2 Supporting point	kg	494	494
W3 Supporting point	kg	255	255
W4 Supporting point	kg	255	255
W5 Supporting point	kg	494	494
W6 Supporting point	kg	48	48
Operating weight	kg	1594	1594
Shipping weight	kg	1615	1615

- 1. Compressor enclosure
- 2. Electrical panel
- 3. Control keypad
- 4. Power input
- 5. Functional spaces
- 6. Fan
- 7. Lifting brackets
- 8. Victaulic 2" 1/2 hot water outlet connection
- 9. Victaulic 2" 1/2 hot water inlet connection
- 10. Victaulic 2" 1/2 cold water inlet connection
- 11. Victaulic 2" 1/2 cold water outlet connection
- 12. Supporting point

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 65.4 ÷ 70.4

DAAV40005
DATA/DATE: 16/12/2024



SIZE		65.4	70.4
Length	mm	4349	4349
Depth	mm	1530	1530
Height	mm	1937	1937
W1 Supporting point	kg	61	61
W2 Supporting point	kg	626	626
W3 Supporting point	kg	323	323
W4 Supporting point	kg	323	323
W5 Supporting point	kg	626	626
W6 Supporting point	kg	61	61
Operating weight	kg	2020	2020
Shipping weight	kg	2035	2035

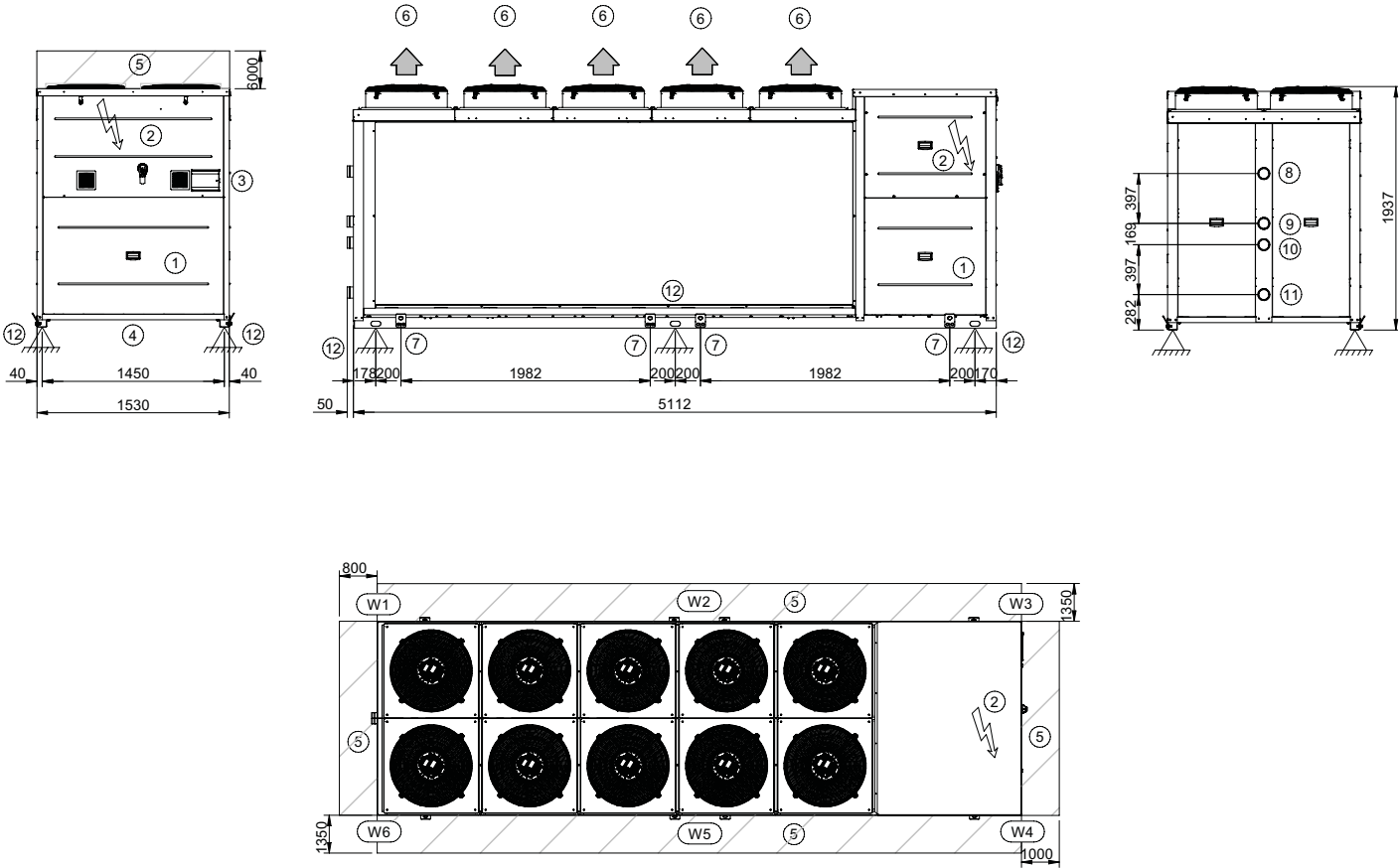
1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Functional spaces
6. Fan
7. Lifting brackets
8. Victaulic 2" 1/2 hot water outlet connection
9. Victaulic 2" 1/2 hot water inlet connection
10. Victaulic 2" 1/2 cold water inlet connection
11. Victaulic 2" 1/2 cold water outlet connection
12. Supporting point

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional drawings

Size 75.4 ÷ 85.4

DAAY40006
DATA/DATE: 16/12/2024



SIZE		75.4	80.4	85.4
Length	mm	5112	5112	5112
Depth	mm	1530	1530	1530
Height	mm	1937	1937	1937
W1 Supporting point	kg	73	73	73
W2 Supporting point	kg	677	677	677
W3 Supporting point	kg	337	337	337
W4 Supporting point	kg	337	337	337
W5 Supporting point	kg	677	677	677
W6 Supporting point	kg	73	73	73
Operating weight	kg	2174	2174	2174
Shipping weight	kg	2180	2180	2180

- 1. Compressor enclosure
- 2. Electrical panel
- 3. Control keypad
- 4. Power input
- 5. Functional spaces
- 6. Fan
- 7. Lifting brackets
- 8. Victaulic 2" 1/2 hot water outlet connection
- 9. Victaulic 2" 1/2 hot water inlet connection
- 10. Victaulic 2" 1/2 cold water inlet connection
- 11. Victaulic 2" 1/2 cold water outlet connection
- 12. Supporting point

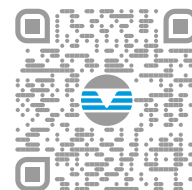
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

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