

Data Book

ERACS2-Q-G05 1062 - 3222_201812_EN HFC R513A



ERACS2-Q-G05 1062 - 3222

200-826 kW

INTEGRA unit for 4-pipe systems, air source for outdoor installation



(The photo of the unit is indicative and may vary depending on the model)

- ✓ **UNIQUE PROPOSAL**
- ✓ **ENERGY SAVING**
- ✓ **WIDE OPERATING RANGE**

- ✓ **VERSION 'XL-CA-E' AVAILABLE**
- ✓ **HOT WATER SUPPLY**



CERTIFICATIONS

Product certifications



Voluntary product certifications

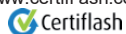


Check ongoing validity of certificate:

www.eurovent-certification.com

or

www.certiflash.com



System certifications



MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

Quality System complying with the requirements of UNI EN ISO 9001:2008 regulation
Environmental Management System complying with the requirements of UNI EN ISO 14001:2004 regulation
Occupational Health and Safety Management System complying with the requirements of BS OHSAS 18001:2007

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The units highlighted in this publication contain R513A [GWP₁₀₀ 631] fluorinated greenhouse gases.

LEGEND

ERACS2-Q-G05 1062 - 3222

Functions



Combined production of heating and cooling

Refrigerant



R513A

Compressors



Screw compressor

Fan



Axial fan

Exchangers



Shell & Tubes

Other features



VPF

1.1 PRODUCT PRESENTATION

GREEN CERTIFICATION RELEVANT

Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A., as a major player in the world HVAC market and a leading manufacturer of energy efficient, sustainable HVAC solutions, recognizes and supports the diffusion of green certification systems, as an effective way to deliver high performance buildings and improve the quality and the sustainability of the built environment.

Since the first certification system was introduced at the beginning of the 1990s, the demand for certified buildings has grown considerably, as well as the number of standards, rating and certification programs. Operating worldwide Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A., has extensive experience with many of them and is active member of Green Building Council Italy.

Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A., commitment to develop responsible and sustainable HVAC solutions, is reflected by a full range of premium efficiency products and systems, designed with special care to improve building energy performance ratings, according to major certification protocols, including LEED, BREAM, GREENSTAR, BCA, NABERS, DNGB, HQE and BEAM.

To find out more about how our products contribute to enhanced green certification rating and energy performance of a building, please refer to:

<https://www.melcohit.com/GLOBAL/Company/Green-Certifications/QR%20code/>



PRODUCT PRESENTATION

Multi-purpose outdoor unit for use in 4-pipe systems for the simultaneous production of chilled and hot water by means of two independent hydronic circuits.

These units are able to satisfy the demand for hot and cold water simultaneously through a system that does not require seasonal switching and is therefore a valid alternative to traditional plants with chiller and boiler. Each circuit works with a semi-hermetic screw compressor using R513A, two shell and tubes heat exchangers shared by both circuits, a cold heat exchanger on plant's side that acts as an evaporator in the production of cold water, a heat exchanger on plant's side that works as a condenser in the production of hot water, and a source side coil heat exchanger that works as either condenser or evaporator as required by the loads.

1.3 UNIQUE PROPOSAL

Unit designed to satisfy the cold and the hot side requirements simultaneously, for 4-pipe systems without any particular operation mode setting

1.4 ENERGY SAVING

Energy saving guaranteed by the advanced operation's logic. The best operation mode is set completely automatically and independently by the unit's controller, in order to minimize the absorbed energy whatever the cooling and/or heating demand might be

1.5 WIDE OPERATING RANGE

Unit's operation guaranteed with external air temperature down to -10 °C during winter and up to 46 °C during summer.

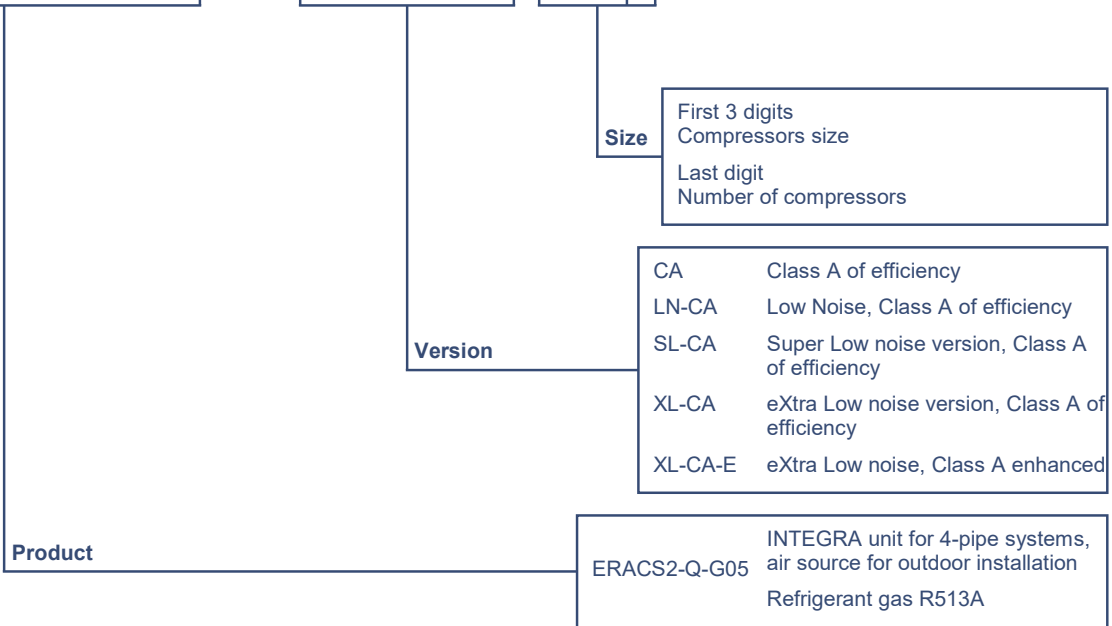
1.6 VERSION 'XL-CA-E' AVAILABLE

Exclusive Premium version. Together for the first time, the lowest noise level on the market and the maximum efficiency in each operating mode.

1.7 HOT WATER SUPPLY

Supply of hot water in use up to 55°C, offering maximum versatility with respect to different plant engineering solutions

ERACS2-Q-G05 / XL-CA-E 2622



3.1 UNIT STANDARD COMPOSITION

Operating principle

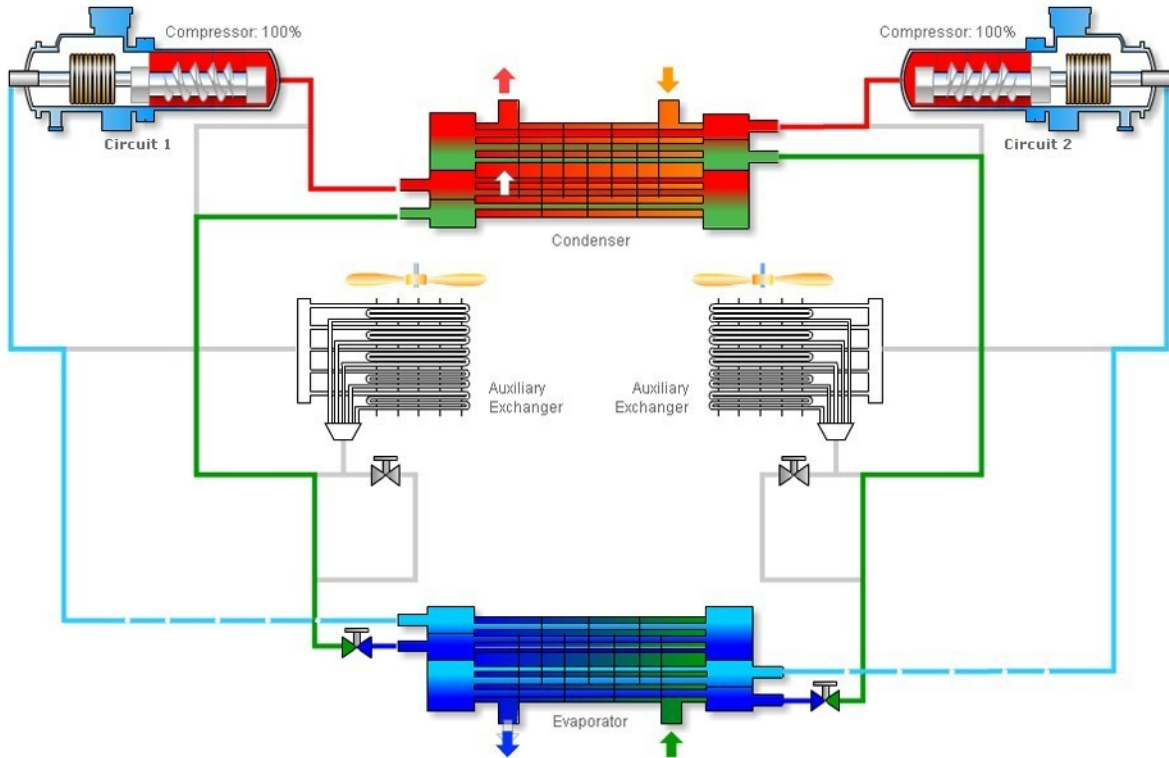
The units are especially designed for 4 pipes systems. Their hydraulic circuits are therefore divided into two separated sections: one hot (condenser side) and one cold (evaporator side). [See picture below].

These units can produce hot and chilled water at the same time and totally independently, adapting to the variable requests inside the building.

There are three basic operating configurations which are totally independent from external temperature conditions:

- only chilled water production (the unit works as a simple chiller);
- only hot water production (the unit works as an heat pump);
- combined production of hot and chilled water (the unit produces simultaneously and autonomously cold and hot water for the two plant's sections).

The above working configurations are selected automatically (on-board microprocessor) in order to minimize the absorbed energy and satisfy each thermal building's requests.



PRODUCTION OF ONLY CHILLED WATER

The unit works like a simple chiller and therefore rejects the condensation heat to the atmosphere through an air-refrigerant finned tube heat exchanger (condensation coil). The water is cooled in a refrigerant-water exchanger (evaporator).

PRODUCTION OF ONLY HOT WATER

In this case, the unit works exactly like a heat pump which channels the heat of the external atmosphere through an air-refrigerant finned coil (evaporator) in order to heat the water sent inside the building through a refrigerant-water exchanger (condenser). The main difference compared with traditional reverse cycle heat pumps is that the hot water is produced in a different heat exchanger from the one previously used to produce chilled water, featuring a dedicated evaporator. This is necessary in order to keep the hot and cold sections separate, as required by four-tube systems.

COMBINED PRODUCTION OF HOT AND CHILLED WATER

If users required hot and chilled water at the same time, the unit behaves like a water-water unit, managing condensation and evaporation on two separate heat exchangers connected with the two separate circuits (hot and cold) of the 4-pipes plant. The cooling and heating energy are provided respectively to evaporator and condenser. These heat exchangers are then hydraulically coupled to the two circuits (cold and heat) of the 4-pipes plant.

The multi-purpose units are designed with two separate refrigerant circuits. Thanks to the advanced control logic specifically developed for these units, this solution ensures the units are always able to respond to building loads. The two refrigerant circuits are intelligently managed by the unit's controller and are able to adopt independently one from the other the most convenient operation mode to satisfy the building's requirements with the highest efficiency.

The use of suitable thermal storage tanks, both on the cold and hot sides, offers effective system operating modularity and optimises running costs.

UNIT STANDARD COMPOSITION

TER - Total Efficiency Ratio

Completely integrated functions and maximum performance synergy require an advanced measurement rating for the total efficiency of the unit:

TER - TOTAL EFFICIENCY RATIO

If you have a unit that can provide for heating and cooling simultaneously, then measuring efficiency with the traditional ratings such as EER and COP would be limiting.

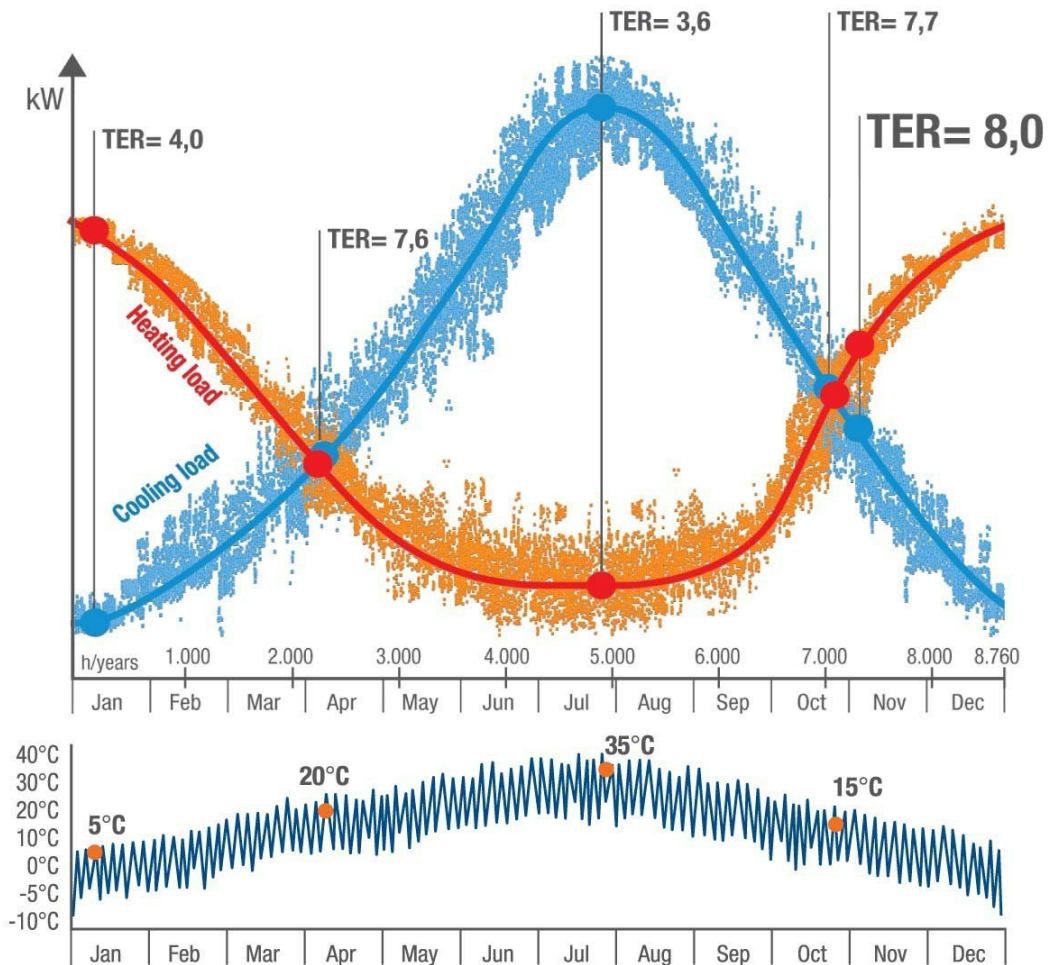
In all the cases in which INTEGRA produces hot and cold water simultaneously, the real efficiency of the unit is the sum of its performance in the hot and cold modes.

To objectively measure performance under simultaneous load conditions, Climaveneta, a pioneer in the development of this technology, has conceived **TER** – total efficiency ratio.

The **TER** is calculated as the ratio between the sum of the delivered heating and cooling power and electrical power input.

The **TER** reaches its maximum value when the loads are completely balanced and is the most effective way of representing the real efficiency of the unit.

$$TER = (COOLING POWER + HEATING POWER) / TOTAL ABSORBED POWER$$



Reference conditions:
 Plant (side) cooling exchanger water (in/out) 12/7 °C
 Plant (side) heat exchanger water (in/out) 40/45 °C

UNIT STANDARD COMPOSITION

3.2 INTEGRA unit for 4-pipe systems, air source for outdoor installation

Multi-purpose outdoor unit for use in 4-pipe systems for the simultaneous production of chilled and hot water by means of two independent hydronic circuits.

These units are able to satisfy the demand for hot and cold water simultaneously through a system that does not require seasonal switching and is therefore a valid alternative to traditional plants with chiller and boiler. Each circuit works with a semi-hermetic screw compressor using R513A, two shell and tubes heat exchangers shared by both circuits, a cold heat exchanger on plant's side that acts as an evaporator in the production of cold water, a heat exchanger on plant's side that works as a condenser in the production of hot water, and a source side coil heat exchanger that works as either condenser or evaporator as required by the loads.

3.3 Structure

Base and frame in galvanized steel. The supporting frame are polyester-painted for the highest resistance to external factors: surfaces' hue and brightness are preserved. Sizes from 1062 to 1962 characterized by external panel made from aluminium alloy for total corrosion resistance. In silenced versions, pipes and compressors' box are covered with an acoustic layer to reduce global noise emissions.

3.4 Refrigerant circuit

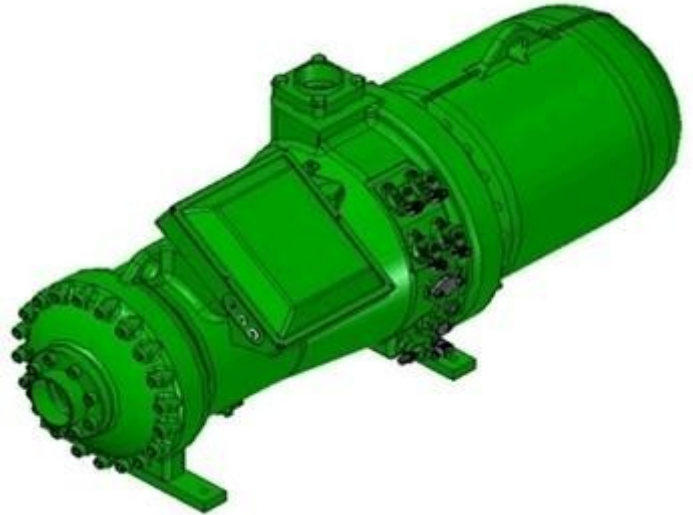
Unit designed with separate and independent refrigerant circuits in order to ensure continuous operation and easy maintenance. In addition to the main components described in the following sections, each refrigerant circuit is fitted as standard with:

- economizers
- electronic expansion valve
- Inlet valve
- high and low pressure transducers
- non -return valve in compressor's discharge line integrated in the compressor
- liquid line shut-off valve
- on-off cock on the compressor's suction and delivery line and on the refrigerant line
- liquid line solenoid valve
- drier filter with replaceable cartridge
- refrigerant line sight glass with humidity indicator
- safety switching device for limiting the pressure
- liquid receivers
- liquid separators

3.5 Compressor

New semi-hermetic screw compressors designed for high efficiency both at full and partial load.

Semi-hermetic screw compressors with 2 five- and six-lobe rotors: the five-lobe rotor is splined directly onto the motor (nominal speed 2950 rpm) without the use of interposed gears. The bearings provided along the rotor axis in a separate chamber isolated from the compression chamber are made in carbon steel. Each compressor is provided with an inlet for refrigerant injection (for the extension of operating limits) and the use of the economizer (for the output capacity and efficiency's increase). Optimized lubrication guarantees oil's distribution between mechanical parts, without using an oil pump; the built-in oil separator has 3 stages of separation, and a 10 mm stainless steel mesh filter ensures the constant presence of oil inside. Cooling power is partialized by a slide valve, which depending on the position assumed, permits a stepless compression chamber reduction; each compressor can therefore smoothly partialize from 25% to 100% of its capacity. The two pole motors are fitted as standard with electric devices to limit the absorbed current during compressor start-up, and with empty start-up. Each compressor is fitted with manual-reset motor thermal protection, delivery gas temperature and oil level controls and an electric resistance for the carter's heating while the compressor is stopped. A check valve fitted on the refrigerant delivery line prevents the rotors from reversing after stopping. On-off cocks on the delivery line of each compressor to isolate the refrigerant charge in the heat exchanger when required.



3.6 Plant side cold heat exchanger

Direct expansion type shell and tube heat exchanger; it acts as an evaporator with refrigerant flow inside the pipes and water flow on the shell side. The heat exchanger is a single-step type to provide almost perfect countercurrent heat exchange. The water flow on the shell side is fitted with baffles to increase turbulence and therefore the efficiency of exchange. The steel shell has external foamed closed-cell elastomer insulating lining 10 mm thick and thermal conductivity of 0.033 W/mK at 0°C. The tube nest is manufactured using copper tubes with internal grooves to improve heat exchange and each pipe is mechanically expanded onto the tube plates. The heat exchanger is fitted with a differential pressure switch which controls the flow of water when the unit is working, in this way preventing the formation of ice inside; when pumps stop, the antifreeze control is up to an electrical resistance. The heat exchanger is made in compliance with PED standard work pressure requisites.

3.7 Plant side hot heat exchanger

Direct expansion shell and tube heat exchanger; it acts as a condenser with refrigerant flow inside the pipes and water flow on the shell side. The tubes have asymmetrical flows that maintain the correct speed of the refrigerant in the tubes during phase transition. The water flows on the shell side is fitted with baffles to increase turbulence and therefore the efficiency of exchange. The tube nest is manufactured using copper tubes with internal grooves for favouring heat exchange and mechanically expanded onto the tube plates. The heat exchanger is fitted with a differential pressure switch which controls the flow of water when the unit is working, in this way preventing anomalies and overheating. The heat exchanger is made in compliance with PED standard work pressure requisites.

3.8 Source side heat exchanger

Air-refrigerant heat exchanger, working as a condenser or an evaporator depending to the specific operating mode. Made with copper tubes and aluminium fins. The aluminium fins are spaced to guarantee the best heat exchange efficiency. The lower part of the exchanger works as a subcooling circuit increasing the cooling capacity, when it is working as a condenser.

3.9 Fan section source side

Axial electric fans, system of protection IP54 and "F" insulation class, with external rotor, profiled die-cast aluminium blades, housed in aerodynamic hoods complete with guard grille. 6-poles electric motor with built-in thermal protection.

Variable Speed low-temperature Device (DVV) to control condensation adjusting the rotational speed with voltage steps (auto-transformer) is standard on LN-CA and SL-CA versions.

Sizes of the versions XL-CA and XL-CA-E adopt electronically commutated fans (EC fans). The brushless motor, governed by a special controller, continuously adjust fans' speed to minimize energy consumption, electromagnetic noises and current's absorption even during start-up phase.

3.10 Electrical and control panel

Electrical and control panel built to EN60204-1 and EC204-1 standards,

UNIT STANDARD COMPOSITION

complete with:

- electronic controller
- control circuit transformer
- general door lock isolator
- power circuit with electric bus bar distribution system
- fuses and contactors for compressors
- terminals for cumulative alarm block
- remote ON/OFF terminals
- spring-type control circuit terminal board
- phases sequence control
- Power supply 400V/3ph/50Hz with part winding start for sizes 1062-1962 and star/delta for sizes 2022-3222.

3.11 Certification and applicable directives

The unit complies with the following directives and relative amendments:

- EUROVENT Certification program
- CE Declaration of conformity certificate for the European Union
- EAC Product quality certificate for Russian Federation
- SAFETY QUALITY LICENCE Product quality certificate for Popular Republic of China
- M&I Product quality certificate for Australia and New Zealand
- Machine directive 2006/42/EC
- PED directive 2014/68/EU
- Low Voltage directive 2006/95/EC
- ElectroMagnetic compatibility directive 2004/108/EC
- ISO 9001 Company's Quality Management System certification
- ISO 14001 Company's Environmental Management System certification

3.12 Tests

Tests performed throughout the production process, as indicated in ISO9001.

Performance or noise tests can be performed by highly qualified staff in the presence of customers.

Performance tests comprise the measurement of:

- electrical data
- water flow rates
- working temperatures
- power input
- power output
- pressure drops on the water-side exchanger both at full load (at the conditions of selection and at the most critical conditions for the condenser) and at part load conditions.

During performance testing it is also possible to simulate the main alarm states.

Noise tests are performed to check noise emissions according to ISO9614.

4.1 OPTIONS

OPTIONS	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
3300 COMPRESSOR REPHASING			
3301 COMPR.POWER FACTOR CORR.	Capacitors on the compressors' power inlet line.	The unit's average cos(phi) increases.	ALL
3410 AUTOMATIC CIRCUIT BREAKERS			
3411 AUTOM.CIRC.BREAKERS FOR COMPR.	Over-current switch on the compressors	In case of overcurrent allows resetting of the switch without the replacement of relative fuses.	ALL
3412 AUTOM. CIRCUIT BREAK. ON LOADS	Over-current switch on the major electrical loads.	In case of overcurrent allows resetting of the switch without the replacement of relative fuses.	ALL
3413 AUTOM.CIRC.BREAKERS FOR FANS	Over-current switch on the fans	In case of overcurrent allows resetting of the switch without the replacement of relative fuses.	ALL
3600 ON/OFF COMPRESSOR SIGNAL			
3601 COMPRESSOR OPERATION SIGNAL	Auxiliary contacts providing a voltage-free signal.	Allows remote signalling of compressor's activation or remote control of any auxiliary loads.	ALL
4180 REMOTE CONNECTION ARRANGEMENT			
4181 SERIAL CARD MODBUS	Interface module for ModBUS protocols.	Allows integration with BMS operating with ModBUS protocol.	ALL
4182 SERIAL CARD FOR LONWORKS	Interface module for Echelon systems.	Allows integration with BMS operating with LonWorks protocols	ALL
4183			ALL
4184 SERIAL CARD BACNET MS/TP RS485	Interface module for BACnet protocols.	Allows integration with BMS operating with BACnet protocol.	ALL
4185 SERIAL CARD FOR BACNET OVER IP	Interface module for BACnet OVER-IP protocols.	Allows to interconnect BACnet devices over Internet Protocol within wide-area networks.	ALL
6160 AUXILIARY INPUT			
6161 AUXILIARY SIGNAL 4-20mA	4-20 mA analog input	Allows to change the operating set-point according to the value of current applied to the analogue input.	ALL
6162 REMOTE SIGNAL DOUBLE SP	Allows to activate the Energy Saving set-point.	Allows to change the operating set-point according to a remote switch	ALL
6170 DEMAND LIMIT			
6171 INPUT REMOTE DEMAND LIMIT	Digital input (voltage free)	It permits to limit the unit's power absorption for safety reasons or in temporary situation.	ALL
1510 SOFT-STARTER			
1511 UNIT WITH SOFT-START	Electronic device adopted to manage the inrush current.	Break down of the inrush current compared to the direct motor start, lower motor windings' mechanical wear, avoidance of mains voltage fluctuations during starting, favourable sizing for the electrical system.	ALL
3360 PUMPS COMAND RELAYS			
3365 1 EVAP. + 1 REC. RELAY PUMPS	Relay for the pump(s) on/off.	It controls the operation of 1 evaporator and 1 recovery external pumps with 2 devoted on/off signals.	ALL

OPTIONS

OPTIONS	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
5920 MANAGEMENT & CONTROL SYSTEMS			
5921 NETWORK ANALYZER FOR DEMETRA	This option includes all following devices on-board the unit panel: - network analyzer operating on ModBUS protocol over RS-485 (without certification MID) - current transformers.	This accessory allows to acquire the electrical data and the power absorbed by the unit and send them via RS-485 bus to an external device for energy metering (DEMETRA - see dedicated manual).	ALL
5922 ClimaPRO ModBUS RS485 - MID	This option includes all following devices on-board the unit panel: - MID certified network analyzer operating on ModBUS over RS-485 - Current transformers - W3000TE controller - Software release LA09 or later version.	This accessory allows to acquire the electrical data and the power absorbed by the unit and communicate with ClimaPRO via high level communication interface based on ModBUS over EIA RS-485. More specifically, the data collected are: power supply, current, frequency, power factor ($\cos\phi$), electrical power consumption, energy consumption. This specific energy meter model is MID certified and can therefore be used for billing applications. This option also ensures the compatibility between the units and ClimaPRO, thus allowing ClimaPRO to acquire all the main unit's operating variables and status by means of a high level communication interface to the controller installed onboard the unit panel.	ALL
5923 ClimaPRO BacNET over IP	This option includes all following devices on-board the unit panel: - network analyzer operating on BACnet over IP - Current transformers - W3000TE controller - Software release LA09 or later version.	This accessory allows to acquire the electrical data and the power absorbed by the unit and communicate with ClimaPRO via high level communication interface based on BACnet over IP. More specifically, the data collected are: power supply, current, frequency, power factor ($\cos\phi$), electrical power consumption, energy consumption. This network analyzer is not MID certified and cannot therefore be used for billing applications. This option also ensures the compatibility between the units and ClimaPRO, thus allowing ClimaPRO to acquire all the main unit's operating variables and status by means of a high level communication interface to the controller installed onboard the unit panel.	ALL
1950 HIGH TEMPERATURE DEVICE			
1953 KIT HWT	Kit for increased condenser leaving water temperature up to 60°C. To ensure control of the condenser leaving water temperature, this option must be fitted for /H function. NOTE: the adoption of "kit HWT" modifies the unit's performance in all the operating range; refer to the selection software to have the correct technical data.	The accessory is required for applications with high condensing temperature (heat pump, high level heat reclaim or dry cooler applications).	ALL
890 CONDENSING COIL			
881 Cu/Cu EXTERNAL COIL	Finned coil heat exchanger made from suitably-spaced copper tubes and fins designed to ensure maximum heat exchange efficiency.	This type of coil is not subject to galvanic corrosion, being made from just one material. For further information please refer to the Guidelines "Finned coil heat exchangers and protection against corrosion", available in the download section of the website www.climaveneta.com , or contact our sales department.	ALL

OPTIONS

OPTIONS	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
894 Cu PIPES/PREPAINTED ALL. FINS	Finned coil heat exchanger made from copper tubes and aluminum fins with chemical cleaning treatment to remove impurities, and then coated with protective paint with the following characteristics: - fins treated with protective polyester resin paint; - over 1000 hours of salt spray protection as per ASTM B117 (fins without cross and protected edges); - excellent resistance to UV rays.	Provide a good resistance against corrosion. For further information please refer to the Guidelines "Finned coil heat exchangers and protection against corrosion", available in the download section of the website www.climaveneta.com , or contact our sales department.	ALL
895 FIN GUARD SILVER TREATM	Copper-aluminum heat exchanger coils with polyurethane paint Fin Guard Silver SB. Coil completely coated by a protective layer of polyurethane paint with the following characteristics: - polyurethane paint with metallic emulsion; - over 3000 hours of salt spray protection as per ASTM B117; - excellent resistance to UV rays; - high-pressure spray painting system.	Provide a very high resistance against corrosion, also in very aggressive environment. For further information please refer to the Guidelines "Finned coil heat exchangers and protection against corrosion", available in the download section of the website www.climaveneta.com , or contact our sales department.	ALL
2000 COIL PROTECTION			
2001 COIL PROT.GRILLS IN PERALUMAN	Coil protecting grilles	Protects against the intrusion of solid bodies with medium large dimensions.	ALL
820 FAN CONTROL			
801 PRESSOST. LOW AMBIENT CONTROL	Pressostatic control of the fans	Extension of the unit operating range (see the section dedicated to the operating limits). The device allows the unit to operate in the most extreme conditions avoiding any risk of low pressure alarm intervention. The enhanced air flow management delivers also benefits in terms of both efficiency and quietness.	ALL
802 VAR.FAN SPEED LOW AMB.CONTROL	Fan speed control according to the condensing pressure; the use of this device is mandatory in case the unit operates with low evaporator leaving water temperature combined with low outdoor air temperatures	Extension of the unit operating range (see the section dedicated to the operating limits). The device allows the unit to operate in the most extreme conditions avoiding any risk of low pressure alarm intervention. The enhanced air flow management delivers also benefits in terms of both efficiency and quietness.	ALL
808 EC FANS	Electronically commutated fans (EC fans). The brushless motor, governed by a special controller, continuously adjust fans' speed.	Reduced energy consumption and minimized current's absorption during start-up phase. The efficiency is increased by approximately: +1% of EER and +4/5% of ESEER. The noise reduces proportionally to the unit's partialization.	ALL
1800 EVAPORATOR WATER FLOW SWITCH			
1801 EVAPORATOR WATER FLOW SWITCH	Flow switch with stainless scoop AISI 316L and IP65 protection suitable for installation in industrial plant pipes. It should be installed in a straight pipe without filters, valves, etc., long at least 5 times its diameter, both upstream and downstream.	Signaling of lack of or excessive reduction of flow, it generates an alarm that is in automatic or manual reset depending on n ° alarms per hour and the maximum time of operation of the pump under conditions of low flow rate.	ALL
1802 EVAP.DIFFERENTIAL PRESS.SWITCH	Differential pressure switch in silicone membrane, compatible for water and glycolated solutions, suitable to the horizontal and vertical mounting, with an operating range between -20 ° C and + 85 ° C.		ALL
2400 EXCHANGERS ANTIFREEZE HEATER			
2402 DOUBLE ANTIFREEZE HEATER			ALL

OPTIONS

OPTIONS	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
2630 INSULATION ON EXCHANGERS			
2631 DOUBLE INSULATION ON EXCHANGERS	Thermal insulation in closed-cell flexible elastomeric foam (FEF) of 16 mm coupled with a 3 mm layer of reticulated foam in PE and an exterior embossed finishing PE film. This option is mandatory if the unit is supposed to work with outdoor temperature below -10°C.	Reduces heat losses and prevent from condensate problems.	ALL
2900 WATER CONNECTIONS			
2901			ALL
2903 EVAP.FLANGES + COUNTERFLANGES			ALL
2020 ANTI-INTRUSION GRILLS			
2021 ANTI-INTRUSION GRILLS	Anti-intrusions grills	Avoid the intrusion of solid bodies into the unit's structure.	ALL

Additional information - IMPORTANT -

1511 - Unit with soft-start

The accessory requires the use of automatic circuit breakers on the compressors.

Please select one of the following accessories:

3411 - Automatic circuit breakers for compressors

3412 - Automatic circuit breakers on loads.

The device has an effect on 2 phases.

OPTIONS

Chiller Plant Control with Active Optimization System

ClimaPRO System Manager

ClimaPRO System Manager represents the state-of-the-art platform for chiller plant management and control. ClimaPRO ensures to actively optimize the entire chiller plant by managing and adjusting each component directly involved in the production and the distribution of the heating and the cooling energies, therefore involving chillers and heat pumps, pumping groups as well as the source-side devices like, for example, the cooling towers.

In particular, ClimaPRO measures in real-time all the operating variables from the field, for each individual device and each of the main system branches, by using serial communication lines as well as dedicated analogue signals.

The acquired data are then compared with the design data of each single unit at any different working conditions, thus allowing to implement control strategies based on dynamic algorithms which take into account the real operating conditions.

On the basis of these values, an advanced diagnostic module also allows to assess the level of efficiency for each individual unit, translating data into easy-to-read information in order to simplify and optimize the maintenance activities.

The "Chart Builder" software module allows to display the trends of the main operating variables. The "Reporting" module allows to send reports to selected users, including data and system's status of the main devices as well as to perform calculation of the energy indexes for each single unit and for the entire chiller plant.

The accessibility to ClimaPRO System Manager is ensured by an integrated web server that makes it visible from any computer equipped with a web browser, either locally or remotely.



5.1 GENERAL TECHNICAL DATA

ERACS2-Q-G05 /CA

[SI System]

ERACS2-Q-G05 /CA		1062	1162	1362	1562	1762	1962	2022	2222	2422	2622
Power supply		V/ph/Hz 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50									
PERFORMANCE											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)	kW 210,0	248,3	302,3	329,4	380,3	425,2	482,7	525,0	553,8	624,1
Total power input	(1)	kW 74,78	88,09	105,5	113,5	134,1	149,7	161,8	173,6	182,3	209,0
EER	(1)	kW/kW 2,807	2,818	2,865	2,902	2,836	2,840	2,983	3,024	3,038	2,986
ESEER	(1)	kW/kW									
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)	kW 209,3	247,4	301,3	328,2	379,0	424,2	481,6	523,7	552,3	622,9
EER	(1)(2)	kW/kW 2,770	2,780	2,830	2,860	2,800	2,810	2,960	2,990	3,010	2,960
ESEER	(1)(2)	kW/kW -	-	-	-	-	-	-	-	-	-
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)	kW 219,8	261,0	311,6	342,6	399,6	438,3	496,9	546,8	576,4	617,8
Total power input	(3)	kW 69,66	84,00	95,98	105,5	126,7	135,8	154,8	165,5	175,5	185,2
COP	(3)	kW/kW 3,154	3,107	3,246	3,247	3,154	3,228	3,210	3,304	3,284	3,336
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(2)(3)	kW 220,5	262,0	312,7	344,0	401,1	439,5	498,1	548,3	578,1	619,0
COP	(2)(3)	kW/kW 3,130	3,080	3,220	3,220	3,130	3,210	3,190	3,280	3,260	3,320
COOLING WITH TOTAL HEAT RECOVERY											
Cooling capacity	(4)	kW 208,6	248,1	304,6	329,4	381,4	427,5	483,5	521,5	550,3	631,2
Total power input	(4)	kW 63,13	75,25	90,73	96,42	115,9	126,9	139,3	150,9	159,8	177,6
Recovery heat exchanger capacity	(4)	kW 267,9	318,8	389,9	420,0	490,3	546,8	614,5	663,4	700,5	798,1
TER		kW/kW 7,553	7,539	7,657	7,774	7,522	7,678	7,882	7,853	7,829	8,046
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)											
PDesign	(5)	kW 157	213	221	244	285	314	362	391	357	400
SCOP	(5)		3,36	3,20	3,40	3,47	3,35	3,49	3,42	3,54	3,55
Performance ηs	(5)	% 131	125	133	136	131	137	134	139	139	139
Seasonal efficiency class	(5)		-	-	-	-	-	-	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)	l/s 10,04	11,88	14,46	15,75	18,19	20,33	23,09	25,11	26,49	29,84
Pressure drop	(1)	kPa 28,8	40,2	36,6	43,4	40,3	27,9	26,7	29,0	32,3	23,1
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)	l/s 10,61	12,60	15,04	16,54	19,29	21,16	23,99	26,39	27,82	29,82
Pressure drop	(3)	kPa 32,1	45,2	39,6	47,9	45,3	30,2	28,8	32,1	35,6	23,1
REFRIGERANT CIRCUIT											
Compressors nr.		N° 2	2	2	2	2	2	2	2	2	2
Number of capacity steps		N° 6	6	6	6	6	6	6	6	6	6
No. Circuits		N° 2	2	2	2	2	2	2	2	2	2
Regulation		STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS									
Min. capacity step		% 25	25	25	25	25	25	25	25	25	25
Refrigerant		R513A R513A R513A R513A R513A R513A R513A R513A R513A R513A									
Refrigerant charge		kg 108	129	155	184	191	198	219	242	276	291
Oil charge		kg 19,0	20,0	20,0	30,0	30,0	30,0	44,0	44,0	44,0	38,0
Rc (ASHRAE)	(6)	kg/kW 0,52	0,52	0,52	0,56	0,51	0,47	0,46	0,47	0,50	0,47
NOISE LEVEL											
Sound Pressure	(7)	dB(A) 65	65	65	66	66	66	66	68	68	68
Sound power level in cooling	(8)(9)	dB(A) 97	97	97	98	99	99	99	101	101	101
Sound power level in heating	(8)(10)	dB(A) 97	97	97	98	99	99	99	101	101	101
SIZE AND WEIGHT											
A	(11)	mm 4610	4610	5610	5610	6610	6610	6300	7200	7200	7200
B	(11)	mm 2220	2220	2220	2220	2220	2220	2260	2260	2260	2260
H	(11)	mm 2150	2420	2430	2430	2430	2430	2350	2350	2350	2350
Operating weight	(11)	kg 3600	3870	4620	5040	5520	5670	7580	8060	8160	8600

Notes:

- 1 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.
- 2 Values in compliance with EN14511
- 3 Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C; Source (side) heat exchanger air (in) 7,0°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C.
- 5 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- 6 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
- 7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- 8 Sound power on the basis of measurements made in compliance with ISO 9614.
- 9 Sound power level in cooling, outdoors.
- 10 Sound power level in heating, outdoors.
- 11 Unit in standard configuration/execution, without optional accessories.

- Not available

Certified data in EUROVENT

GENERAL TECHNICAL DATA

ERACS2-Q-G05 /CA

[SI System]

ERACS2-Q-G05 /CA		2722	3222
Power supply		V/ph/Hz	400/3/50 400/3/50
PERFORMANCE			
COOLING ONLY (GROSS VALUE)			
Cooling capacity	(1)	kW	701,4 825,6
Total power input	(1)	kW	231,2 274,4
EER	(1)	kW/kW	3,034 3,009
ESEER	(1)	kW/kW	- -
COOLING ONLY (EN14511 VALUE)			
Cooling capacity	(1)(2)	kW	699,7 823,6
EER	(1)(2)	kW/kW	3,000 2,980
ESEER	(1)(2)	kW/kW	- -
HEATING ONLY (GROSS VALUE)			
Total heating capacity	(3)	kW	718,5 833,8
Total power input	(3)	kW	215,7 249,9
COP	(3)	kW/kW	3,331 3,337
HEATING ONLY (EN14511 VALUE)			
Total heating capacity	(2)(3)	kW	720,4 835,9
COP	(2)(3)	kW/kW	3,310 3,320
COOLING WITH TOTAL HEAT RECOVERY			
Cooling capacity	(4)	kW	701,1 826,1
Total power input	(4)	kW	201,5 238,0
Recovery heat exchanger capacity	(4)	kW	890,5 1050
TER		kW/kW	7,901 7,882
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)			
PDesign	(5)	kW	- -
SCOP	(5)		- -
Performance ηs	(5)	%	- -
Seasonal efficiency class	(5)		- -
EXCHANGERS			
HEAT EXCHANGER USER SIDE IN REFRIGERATION			
Water flow	(1)	l/s	33,54 39,48
Pressure drop	(1)	kPa	30,5 30,9
HEAT EXCHANGER USER SIDE IN HEATING			
Water flow	(3)	l/s	34,68 40,25
Pressure drop	(3)	kPa	32,6 32,1
REFRIGERANT CIRCUIT			
Compressors nr.		N°	2 2
Number of capacity steps		N°	6 6
No. Circuits		N°	2 2
Regulation		STEPS	STEPS
Min. capacity step		%	25 25
Refrigerant		R513A	R513A
Refrigerant charge		kg	322 380
Oil charge		kg	38,0 70,0
Rc (ASHRAE)	(6)	kg/kW	0,46 0,46
NOISE LEVEL			
Sound Pressure	(7)	dB(A)	68 69
Sound power level in cooling	(8)(9)	dB(A)	101 102
Sound power level in heating	(8)(10)	dB(A)	101 102
SIZE AND WEIGHT			
A	(11)	mm	8400 9700
B	(11)	mm	2260 2260
H	(11)	mm	2350 2350
Operating weight	(11)	kg	9160 11380

Notes:

- 1 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.
- 2 Values in compliance with EN14511
- 3 Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C; Source (side) heat exchanger air (in) 7,0°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C.
- 5 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- 6 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
- 7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- 8 Sound power on the basis of measurements made in compliance with ISO 9614.
- 9 Sound power level in cooling, outdoors.
- 10 Sound power level in heating, outdoors.
- 11 Unit in standard configuration/execution, without optional accessories.
- Not available

Certified data in EUROVENT



GENERAL TECHNICAL DATA

ERACS2-Q-G05 /LN-CA

[SI System]

ERACS2-Q-G05 /LN-CA		1062	1162	1362	1562	1762	1962	2022	2222	2422	2622	
Power supply		V/ph/Hz 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50										
PERFORMANCE												
COOLING ONLY (GROSS VALUE)												
Cooling capacity	(1)	kW	204,9	241,0	293,8	321,8	369,3	413,6	468,7	513,4	541,3	603,9
Total power input	(1)	kW	73,65	88,06	107,2	113,3	135,7	149,9	169,5	174,5	184,7	214,7
EER	(1)	kW/kW	2,780	2,736	2,741	2,840	2,721	2,759	2,765	2,942	2,931	2,813
ESEER	(1)	kW/kW										
COOLING ONLY (EN14511 VALUE)												
Cooling capacity	(1)(2)	kW	204,3	240,1	292,9	320,6	368,1	412,6	467,7	512,2	539,9	602,8
EER	(1)(2)	kW/kW	2,750	2,700	2,710	2,800	2,690	2,730	2,740	2,910	2,900	2,790
ESEER	(1)(2)	kW/kW	-	-	-	-	-	-	-	-	-	-
HEATING ONLY (GROSS VALUE)												
Total heating capacity	(3)	kW	219,8	261,0	311,6	342,6	399,6	438,3	496,9	546,8	576,4	617,8
Total power input	(3)	kW	69,66	84,00	95,98	105,5	126,7	135,8	154,8	165,5	175,5	185,2
COP	(3)	kW/kW	3,154	3,107	3,246	3,247	3,154	3,228	3,210	3,304	3,284	3,336
HEATING ONLY (EN14511 VALUE)												
Total heating capacity	(2)(3)	kW	220,5	262,0	312,7	344,0	401,1	439,5	498,1	548,3	578,1	619,0
COP	(2)(3)	kW/kW	3,130	3,080	3,220	3,220	3,130	3,210	3,190	3,280	3,260	3,320
COOLING WITH TOTAL HEAT RECOVERY												
Cooling capacity	(4)	kW	208,6	248,1	304,6	329,4	381,4	427,5	483,5	521,5	550,3	631,2
Total power input	(4)	kW	63,13	75,25	90,73	96,42	115,9	126,9	139,3	150,9	159,8	177,6
Recovery heat exchanger capacity	(4)	kW	267,9	318,8	389,9	420,0	490,3	546,8	614,5	663,4	700,5	798,1
TER		kW/kW	7,553	7,539	7,657	7,774	7,522	7,678	7,882	7,853	7,829	8,046
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)												
PDesign	(5)	kW	157	213	221	244	285	314	362	391	357	400
SCOP	(5)		3,36	3,20	3,40	3,47	3,35	3,49	3,42	3,54	3,55	3,55
Performance ηs	(5)	%	131	125	133	136	131	137	134	139	139	139
Seasonal efficiency class	(5)		-	-	-	-	-	-	-	-	-	-
EXCHANGERS												
HEAT EXCHANGER USER SIDE IN REFRIGERATION												
Water flow	(1)	l/s	9,797	11,52	14,05	15,39	17,66	19,78	22,42	24,55	25,89	28,88
Pressure drop	(1)	kPa	27,4	37,9	34,5	41,4	38,0	26,4	25,1	27,7	30,8	21,6
HEAT EXCHANGER USER SIDE IN HEATING												
Water flow	(3)	l/s	10,61	12,60	15,04	16,54	19,29	21,16	23,99	26,39	27,82	29,82
Pressure drop	(3)	kPa	32,1	45,2	39,6	47,9	45,3	30,2	28,8	32,1	35,6	23,1
REFRIGERANT CIRCUIT												
Compressors nr.		N°	2	2	2	2	2	2	2	2	2	2
Number of capacity steps		N°	6	6	6	6	6	6	6	6	6	6
No. Circuits		N°	2	2	2	2	2	2	2	2	2	2
Regulation			STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS									
Min. capacity step		%	25	25	25	25	25	25	25	25	25	25
Refrigerant			R513A R513A R513A R513A R513A R513A R513A R513A R513A R513A R513A									
Refrigerant charge		kg	101	129	156	184	197	221	230	236	276	288
Oil charge		kg	19,0	20,0	20,0	30,0	30,0	30,0	44,0	44,0	44,0	38,0
Rc (ASHRAE)	(6)	kg/kW	0,50	0,54	0,54	0,58	0,54	0,54	0,50	0,46	0,51	0,48
NOISE LEVEL												
Sound Pressure	(7)	dB(A)	58	59	59	60	59	59	60	62	62	62
Sound power level in cooling	(8)(9)	dB(A)	90	91	91	92	92	92	93	95	95	95
Sound power level in heating	(8)(10)	dB(A)	91	92	92	93	93	93	94	96	96	96
SIZE AND WEIGHT												
A	(11)	mm	4610	4610	5610	5610	6610	6610	6300	7200	7200	7200
B	(11)	mm	2220	2220	2220	2220	2220	2220	2260	2260	2260	2260
H	(11)	mm	2150	2420	2430	2430	2430	2430	2350	2350	2350	2350
Operating weight	(11)	kg	3600	3870	4620	5040	5520	5670	7580	8060	8160	8600

- Notes:
- 1 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.
 - 2 Values in compliance with EN14511
 - 3 Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C; Source (side) heat exchanger air (in) 7,0°C - 87% R.H.
 - 4 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C.
 - 5 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
 - 6 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
 - 7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
 - 8 Sound power on the basis of measurements made in compliance with ISO 9614.
 - 9 Sound power level in cooling, outdoors.
 - 10 Sound power level in heating, outdoors.
 - 11 Unit in standard configuration/execution, without optional accessories.
- Not available

Certified data in EUROVENT



GENERAL TECHNICAL DATA

ERACS2-Q-G05 /LN-CA

[SI System]

ERACS2-Q-G05 /LN-CA		2722	3222
Power supply		V/ph/Hz	400/3/50 400/3/50
PERFORMANCE			
COOLING ONLY (GROSS VALUE)			
Cooling capacity	(1)	kW	683,8 799,5
Total power input	(1)	kW	234,7 285,9
EER	(1)	kW/kW	2,914 2,796
ESEER	(1)	kW/kW	
COOLING ONLY (EN14511 VALUE)			
Cooling capacity	(1)(2)	kW	682,2 797,7
EER	(1)(2)	kW/kW	2,890 2,770
ESEER	(1)(2)	kW/kW	- -
HEATING ONLY (GROSS VALUE)			
Total heating capacity	(3)	kW	718,5 833,8
Total power input	(3)	kW	215,7 249,9
COP	(3)	kW/kW	3,331 3,337
HEATING ONLY (EN14511 VALUE)			
Total heating capacity	(2)(3)	kW	720,4 835,9
COP	(2)(3)	kW/kW	3,310 3,320
COOLING WITH TOTAL HEAT RECOVERY			
Cooling capacity	(4)	kW	701,1 826,1
Total power input	(4)	kW	201,5 238,0
Recovery heat exchanger capacity	(4)	kW	890,5 1050
TER		kW/kW	7,901 7,882
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)			
PDesign	(5)	kW	- -
SCOP	(5)		- -
Performance ηs	(5)	%	- -
Seasonal efficiency class	(5)		- -
EXCHANGERS			
HEAT EXCHANGER USER SIDE IN REFRIGERATION			
Water flow	(1)	l/s	32,70 38,23
Pressure drop	(1)	kPa	29,0 29,0
HEAT EXCHANGER USER SIDE IN HEATING			
Water flow	(3)	l/s	34,68 40,25
Pressure drop	(3)	kPa	32,6 32,1
REFRIGERANT CIRCUIT			
Compressors nr.		N°	2 2
Number of capacity steps		N°	6 6
No. Circuits		N°	2 2
Regulation		STEPS	STEPS
Min. capacity step		%	25 25
Refrigerant		R513A	R513A
Refrigerant charge		kg	322 368
Oil charge		kg	38,0 70,0
Rc (ASHRAE)	(6)	kg/kW	0,48 0,46
NOISE LEVEL			
Sound Pressure	(7)	dB(A)	62 63
Sound power level in cooling	(8)(9)	dB(A)	95 96
Sound power level in heating	(8)(10)	dB(A)	96 97
SIZE AND WEIGHT			
A	(11)	mm	8400 9700
B	(11)	mm	2260 2260
H	(11)	mm	2350 2350
Operating weight	(11)	kg	9160 11380

Notes:

- 1 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.
- 2 Values in compliance with EN14511
- 3 Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C; Source (side) heat exchanger air (in) 7,0°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C.
- 5 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- 6 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
- 7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- 8 Sound power on the basis of measurements made in compliance with ISO 9614.
- 9 Sound power level in cooling, outdoors.
- 10 Sound power level in heating, outdoors.
- 11 Unit in standard configuration/execution, without optional accessories.
- Not available

Certified data in EUROVENT

GENERAL TECHNICAL DATA

ERACS2-Q-G05 /SL-CA

[SI System]

ERACS2-Q-G05 /SL-CA		1062	1162	1362	1562	1762	1962	2022	2222	2422	2622	
Power supply		V/ph/Hz 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50										
PERFORMANCE												
COOLING ONLY (GROSS VALUE)												
Cooling capacity	(1)	kW	199,5	233,2	283,4	313,8	356,0	401,4	464,1	509,0	537,1	597,3
Total power input	(1)	kW	75,71	91,26	113,2	117,5	143,1	155,5	172,5	177,2	187,6	218,6
EER	(1)	kW/kW	2,635	2,554	2,504	2,671	2,488	2,581	2,690	2,872	2,863	2,732
ESEER	(1)	kW/kW										
COOLING ONLY (EN14511 VALUE)												
Cooling capacity	(1)(2)	kW	198,9	232,4	282,5	312,7	354,9	400,5	463,1	507,8	535,7	596,2
EER	(1)(2)	kW/kW	2,610	2,520	2,480	2,640	2,460	2,560	2,670	2,850	2,840	2,710
ESEER	(1)(2)	kW/kW	-	-	-	-	-	-	-	-	-	-
HEATING ONLY (GROSS VALUE)												
Total heating capacity	(3)	kW	213,3	253,5	303,9	333,4	389,1	426,1	490,7	541,1	569,7	605,5
Total power input	(3)	kW	67,43	81,70	93,71	102,5	123,5	132,0	153,4	164,0	174,0	183,4
COP	(3)	kW/kW	3,165	3,103	3,243	3,253	3,151	3,228	3,199	3,299	3,274	3,302
HEATING ONLY (EN14511 VALUE)												
Total heating capacity	(2)(3)	kW	214,0	254,5	304,9	334,7	390,5	427,2	491,9	542,5	571,3	606,7
COP	(2)(3)	kW/kW	3,140	3,080	3,220	3,220	3,130	3,210	3,180	3,280	3,250	3,290
COOLING WITH TOTAL HEAT RECOVERY												
Cooling capacity	(4)	kW	208,6	248,1	304,6	329,4	381,4	427,5	483,5	521,5	550,3	631,2
Total power input	(4)	kW	63,13	75,25	90,73	96,42	115,9	126,9	139,3	150,9	159,8	177,6
Recovery heat exchanger capacity	(4)	kW	267,9	318,8	389,9	420,0	490,3	546,8	614,5	663,4	700,5	798,1
TER		kW/kW	7,553	7,539	7,657	7,774	7,522	7,678	7,882	7,853	7,829	8,046
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)												
PDesign	(5)	kW	153	207	217	238	279	307	363	390	359	400
SCOP	(5)		3,36	3,21	3,40	3,48	3,35	3,49	3,44	3,55	3,57	3,56
Performance ηs	(5)	%	131	125	133	136	131	137	135	139	140	139
Seasonal efficiency class	(5)		-	-	-	-	-	-	-	-	-	-
EXCHANGERS												
HEAT EXCHANGER USER SIDE IN REFRIGERATION												
Water flow	(1)	l/s	9,540	11,15	13,55	15,00	17,02	19,20	22,19	24,34	25,68	28,56
Pressure drop	(1)	kPa	26,0	35,4	32,1	39,4	35,3	24,8	24,6	27,3	30,3	21,1
HEAT EXCHANGER USER SIDE IN HEATING												
Water flow	(3)	l/s	10,30	12,24	14,67	16,09	18,78	20,57	23,69	26,12	27,50	29,23
Pressure drop	(3)	kPa	30,2	42,7	37,6	45,3	43,0	28,5	28,1	31,4	34,8	22,1
REFRIGERANT CIRCUIT												
Compressors nr.		N°	2	2	2	2	2	2	2	2	2	2
Number of capacity steps		N°	6	6	6	6	6	6	6	6	6	6
No. Circuits		N°	2	2	2	2	2	2	2	2	2	2
Regulation			STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS									
Min. capacity step		%	25	25	25	25	25	25	25	25	25	25
Refrigerant			R513A R513A R513A R513A R513A R513A R513A R513A R513A R513A R513A									
Refrigerant charge		kg	101	122	148	179	186	198	230	236	265	276
Oil charge		kg	19,0	20,0	20,0	30,0	30,0	30,0	44,0	44,0	44,0	38,0
Rc (ASHRAE)	(6)	kg/kW	0,51	0,53	0,53	0,58	0,53	0,50	0,50	0,47	0,50	0,47
NOISE LEVEL												
Sound Pressure	(7)	dB(A)	54	55	55	56	55	55	56	58	58	58
Sound power level in cooling	(8)(9)	dB(A)	86	87	87	88	88	88	89	91	91	91
Sound power level in heating	(8)(10)	dB(A)	87	88	88	89	89	89	90	92	92	92
SIZE AND WEIGHT												
A	(11)	mm	4610	4610	5610	5610	6610	6610	6300	7200	7200	7200
B	(11)	mm	2220	2220	2220	2220	2220	2220	2260	2260	2260	2260
H	(11)	mm	2150	2420	2430	2430	2430	2430	2350	2350	2350	2350
Operating weight	(11)	kg	3600	3870	4620	5040	5520	5670	7670	8150	8250	8690

Notes:

- 1 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.
- 2 Values in compliance with EN14511
- 3 Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C; Source (side) heat exchanger air (in) 7,0°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C.
- 5 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- 6 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
- 7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- 8 Sound power on the basis of measurements made in compliance with ISO 9614.
- 9 Sound power level in cooling, outdoors.
- 10 Sound power level in heating, outdoors.
- 11 Unit in standard configuration/execution, without optional accessories.

- Not available

Certified data in EUROVENT

GENERAL TECHNICAL DATA

ERACS2-Q-G05 /SL-CA

[SI System]

ERACS2-Q-G05 /SL-CA		2722	3222
Power supply		V/ph/Hz	400/3/50 400/3/50
PERFORMANCE			
COOLING ONLY (GROSS VALUE)			
Cooling capacity	(1)	kW	677,7 790,4
Total power input	(1)	kW	238,5 292,8
EER	(1)	kW/kW	2,842 2,699
ESEER	(1)	kW/kW	
COOLING ONLY (EN14511 VALUE)			
Cooling capacity	(1)(2)	kW	676,1 788,6
EER	(1)(2)	kW/kW	2,820 2,680
ESEER	(1)(2)	kW/kW	- -
HEATING ONLY (GROSS VALUE)			
Total heating capacity	(3)	kW	710,1 823,6
Total power input	(3)	kW	213,8 247,7
COP	(3)	kW/kW	3,321 3,325
HEATING ONLY (EN14511 VALUE)			
Total heating capacity	(2)(3)	kW	711,9 825,6
COP	(2)(3)	kW/kW	3,300 3,310
COOLING WITH TOTAL HEAT RECOVERY			
Cooling capacity	(4)	kW	701,1 826,1
Total power input	(4)	kW	201,5 238,0
Recovery heat exchanger capacity	(4)	kW	890,5 1050
TER		kW/kW	7,901 7,882
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)			
PDesign	(5)	kW	- -
SCOP	(5)		- -
Performance ηs	(5)	%	- -
Seasonal efficiency class	(5)		- -
EXCHANGERS			
HEAT EXCHANGER USER SIDE IN REFRIGERATION			
Water flow	(1)	l/s	32,41 37,80
Pressure drop	(1)	kPa	28,5 28,3
HEAT EXCHANGER USER SIDE IN HEATING			
Water flow	(3)	l/s	34,28 39,76
Pressure drop	(3)	kPa	31,8 31,3
REFRIGERANT CIRCUIT			
Compressors nr.		N°	2 2
Number of capacity steps		N°	6 6
No. Circuits		N°	2 2
Regulation		STEPS	STEPS
Min. capacity step		%	25 25
Refrigerant		R513A	R513A
Refrigerant charge		kg	299 357
Oil charge		kg	38,0 70,0
Rc (ASHRAE)	(6)	kg/kW	0,45 0,46
NOISE LEVEL			
Sound Pressure	(7)	dB(A)	58 59
Sound power level in cooling	(8)(9)	dB(A)	91 92
Sound power level in heating	(8)(10)	dB(A)	92 93
SIZE AND WEIGHT			
A	(11)	mm	8400 9700
B	(11)	mm	2260 2260
H	(11)	mm	2350 2350
Operating weight	(11)	kg	9260 11480

Notes:

- 1 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.
- 2 Values in compliance with EN14511
- 3 Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C; Source (side) heat exchanger air (in) 7,0°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C.
- 5 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- 6 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
- 7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- 8 Sound power on the basis of measurements made in compliance with ISO 9614.
- 9 Sound power level in cooling, outdoors.
- 10 Sound power level in heating, outdoors.
- 11 Unit in standard configuration/execution, without optional accessories.
- Not available

Certified data in EUROVENT

GENERAL TECHNICAL DATA

ERACS2-Q-G05 /XL-CA

[SI System]

ERACS2-Q-G05 /XL-CA		2022	2222	2422	2622	2722	3222	
Power supply		V/ph/Hz 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50						
PERFORMANCE								
COOLING ONLY (GROSS VALUE)								
Cooling capacity	(1)	kW	454,5	500,5	528,4	583,9	665,4	772,4
Total power input	(1)	kW	174,0	176,8	187,8	221,1	239,6	299,1
EER	(1)	kW/kW	2,612	2,831	2,814	2,641	2,777	2,582
ESEER	(1)	kW/kW						
COOLING ONLY (EN14511 VALUE)								
Cooling capacity	(1)(2)	kW	453,5	499,4	527,1	582,9	663,9	770,7
EER	(1)(2)	kW/kW	2,590	2,810	2,790	2,620	2,750	2,560
ESEER	(1)(2)	kW/kW						
HEATING ONLY (GROSS VALUE)								
Total heating capacity	(3)	kW	490,7	541,1	569,7	612,8	710,1	823,6
Total power input	(3)	kW	148,7	158,4	168,4	177,8	207,2	240,2
COP	(3)	kW/kW	3,300	3,416	3,383	3,447	3,427	3,429
HEATING ONLY (EN14511 VALUE)								
Total heating capacity	(2)(3)	kW	491,9	542,5	571,3	614,0	711,9	825,6
COP	(2)(3)	kW/kW	3,280	3,390	3,360	3,430	3,410	3,410
COOLING WITH TOTAL HEAT RECOVERY								
Cooling capacity	(4)	kW	483,5	521,5	550,3	631,2	701,1	826,1
Total power input	(4)	kW	139,3	150,9	159,8	177,6	201,5	238,0
Recovery heat exchanger capacity	(4)	kW	614,5	663,4	700,5	798,1	890,5	1050
TER		kW/kW	7,882	7,853	7,829	8,046	7,901	7,882
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)								
PDesign	(5)	kW	363	390	-	-	-	-
SCOP	(5)		3,66	3,82	-	-	-	-
Performance ηs	(5)	%	144	150	-	-	-	-
Seasonal efficiency class	(5)		-	-	-	-	-	-
EXCHANGERS								
HEAT EXCHANGER USER SIDE IN REFRIGERATION								
Water flow	(1)	l/s	21,73	23,93	25,27	27,92	31,82	36,94
Pressure drop	(1)	kPa	23,6	26,4	29,4	20,2	27,4	27,1
HEAT EXCHANGER USER SIDE IN HEATING								
Water flow	(3)	l/s	23,69	26,12	27,50	29,58	34,28	39,76
Pressure drop	(3)	kPa	28,1	31,4	34,8	22,7	31,8	31,3
REFRIGERANT CIRCUIT								
Compressors nr.		N°	2	2	2	2	2	2
Number of capacity steps		N°	6	6	6	6	6	6
No. Circuits		N°	2	2	2	2	2	2
Regulation		STEPS STEPS STEPS STEPS STEPS STEPS						
Min. capacity step		%	25	25	25	25	25	25
Refrigerant		R513A R513A R513A R513A R513A R513A						
Refrigerant charge		kg	213	236	269	276	313	368
Oil charge		kg	44,0	44,0	44,0	38,0	38,0	70,0
Rc (ASHRAE)	(6)	kg/kW	0,47	0,48	0,51	0,48	0,47	0,48
NOISE LEVEL								
Sound Pressure	(7)	dB(A)	52	54	54	54	54	55
Sound power level in cooling	(8)(9)	dB(A)	85	87	87	87	87	88
Sound power level in heating	(8)(10)	dB(A)	86	88	88	88	88	89
SIZE AND WEIGHT								
A	(11)	mm	6300	7200	7200	7200	8400	9700
B	(11)	mm	2260	2260	2260	2260	2260	2260
H	(11)	mm	2350	2350	2350	2350	2350	2350
Operating weight	(11)	kg	7790	8260	8350	8790	9340	11580

Notes:

- 1 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.
- 2 Values in compliance with EN14511
- 3 Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C; Source (side) heat exchanger air (in) 7,0°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C.
- 5 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- 6 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
- 7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- 8 Sound power on the basis of measurements made in compliance with ISO 9614.
- 9 Sound power level in cooling, outdoors.
- 10 Sound power level in heating, outdoors.
- 11 Unit in standard configuration/execution, without optional accessories.

- Not available

Certified data in EUROVENT

GENERAL TECHNICAL DATA

ERACS2-Q-G05 /XL-CA-E

[SI System]

ERACS2-Q-G05 /XL-CA-E		1062	1162	1362	1562	1762	2022	2222	2422	2622
Power supply		V/ph/Hz 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50 400/3/50								
PERFORMANCE										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)	kW 204,3	247,2	293,3	319,4	366,3	472,5	509,5	541,3	611,3
Total power input	(1)	kW 69,43	80,30	103,8	109,1	132,7	158,5	169,6	176,3	201,4
EER	(1)	kW/kW 2,944	3,078	2,826	2,928	2,760	2,981	3,004	3,070	3,035
ESEER	(1)	kW/kW								
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)	kW 203,7	246,3	292,4	318,3	365,1	471,4	508,3	539,9	610,1
EER	(1)(2)	kW/kW 2,910	3,030	2,790	2,890	2,730	2,950	2,980	3,040	3,010
ESEER	(1)(2)	kW/kW								
HEATING ONLY (GROSS VALUE)										
Total heating capacity	(3)	kW 220,4	269,9	311,2	343,7	396,8	517,8	557,2	593,9	650,2
Total power input	(3)	kW 65,08	80,96	92,20	99,37	121,2	151,7	160,5	170,7	183,0
COP	(3)	kW/kW 3,386	3,332	3,375	3,458	3,274	3,413	3,472	3,479	3,553
HEATING ONLY (EN14511 VALUE)										
Total heating capacity	(2)(3)	kW 221,1	271,0	312,3	345,1	398,3	519,2	558,7	595,7	651,6
COP	(2)(3)	kW/kW 3,360	3,300	3,350	3,420	3,250	3,390	3,450	3,450	3,530
COOLING WITH TOTAL HEAT RECOVERY										
Cooling capacity	(4)	kW 208,6	248,1	304,6	329,4	381,4	483,5	521,5	550,3	631,2
Total power input	(4)	kW 63,13	75,25	90,73	96,42	115,9	139,3	150,9	159,8	177,6
Recovery heat exchanger capacity	(4)	kW 267,9	318,8	389,9	420,0	490,3	614,5	663,4	700,5	798,1
TER		kW/kW 7,553	7,539	7,657	7,774	7,522	7,882	7,853	7,829	8,046
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)										
PDesign	(5)	kW 156	188	221	242	283	367	374	-	-
SCOP	(5)	3,74	3,42	3,60	3,81	3,56	3,75	3,78	-	-
Performance ηs	(5)	% 146	134	141	149	139	147	148	-	-
Seasonal efficiency class	(5)	-	-	-	-	-	-	-	-	-
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)	l/s 9,771	11,82	14,03	15,28	17,52	22,60	24,37	25,89	29,23
Pressure drop	(1)	kPa 27,2	39,8	34,4	40,8	37,4	25,5	27,3	30,8	22,1
HEAT EXCHANGER USER SIDE IN HEATING										
Water flow	(3)	l/s 10,64	13,03	15,02	16,59	19,15	25,00	26,90	28,67	31,38
Pressure drop	(3)	kPa 32,3	48,4	39,5	48,2	44,7	31,3	33,3	37,8	25,5
REFRIGERANT CIRCUIT										
Compressors nr.		N° 2	2	2	2	2	2	2	2	2
Number of capacity steps		N° 6	6	6	6	6	6	6	6	6
No. Circuits		N° 2	2	2	2	2	2	2	2	2
Regulation		STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS STEPS								
Min. capacity step		% 25	25	25	25	25	25	25	25	25
Refrigerant		R513A R513A R513A R513A R513A R513A R513A R513A R513A R513A								
Refrigerant charge		kg 122	158	198	204	232	242	253	269	291
Oil charge		kg 19,0	20,0	20,0	30,0	30,0	44,0	44,0	44,0	38,0
Rc (ASHRAE)	(6)	kg/kW 0,60	0,65	0,68	0,64	0,64	0,52	0,50	0,50	0,48
NOISE LEVEL										
Sound Pressure	(7)	dB(A) 53	54	54	54	54	53	55	55	55
Sound power level in cooling	(8)(9)	dB(A) 85	86	86	87	87	86	88	88	88
Sound power level in heating	(8)(10)	dB(A) 86	87	87	88	88	87	89	89	89
SIZE AND WEIGHT										
A	(11)	mm 4610	5610	5610	6610	6610	8400	9300	9300	9300
B	(11)	mm 2220	2220	2220	2220	2220	2260	2260	2260	2260
H	(11)	mm 2420	2430	2430	2430	2430	2350	2350	2350	2350
Operating weight	(11)	kg 3900	4490	4830	5590	5730	8510	8720	8890	9400

Notes:

- 1 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.
- 2 Values in compliance with EN14511
- 3 Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C; Source (side) heat exchanger air (in) 7,0°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Plant (side) heat exchanger water (in/out) 40,00°C/45,00°C.
- 5 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- 6 Rated in accordance with AHRI Standard 550/590 (2011 with addendum 1).
- 7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- 8 Sound power on the basis of measurements made in compliance with ISO 9614.
- 9 Sound power level in cooling, outdoors.
- 10 Sound power level in heating, outdoors.
- 11 Unit in standard configuration/execution, without optional accessories.

- Not available

Certified data in EUROVENT

6.1 TECHNICAL DATA SEASONAL EFFICIENCY IN HEATING (EN14825 VALUE)

ERACS2-Q-G05 /CA

[SI System]

ERACS2-Q-G05 /CA - LOW TEMPERATURE application			1062	1162	1362	1562	1762	1962
Power supply		(V/ph/Hz)	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER								
Rated heat output at Tdesignh	(1)(2)	kW	170	203	240	263	309	338
Bivalent temperature	(1)(2)	°C	2	2	2	2	2	2
SCOP	(1)(2)		4,14	4,00	4,25	4,27	4,19	4,33
Seasonal space heating energy efficiency	(1)(2)	%	163	157	167	168	165	170
Seasonal space heating energy efficiency class	(1)(2)		-	-	-	-	-	-
WEATHER CONDITIONS - AVERAGE								
Rated heat output at Tdesignh	(1)(2)	kW	157	213	221	244	285	314
Bivalent temperature	(1)(2)	°C	-7	-5	-7	-7	-7	-7
SCOP	(1)(2)		3,36	3,20	3,40	3,47	3,35	3,49
Seasonal space heating energy efficiency	(1)(2)	%	131	125	133	136	131	137
Seasonal space heating energy efficiency class	(1)(2)		-	-	-	-	-	-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

ERACS2-Q-G05 /CA - LOW TEMPERATURE application			2022	2222	2422
Power supply		(V/ph/Hz)	400/3/50	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER					
Rated heat output at Tdesignh	(1)(2)	kW	381	420	443
Bivalent temperature	(1)(2)	°C	2	2	2
SCOP	(1)(2)		4,26	4,41	4,45
Seasonal space heating energy efficiency	(1)(2)	%	168	174	175
Seasonal space heating energy efficiency class	(1)(2)		-	-	-
WEATHER CONDITIONS - AVERAGE					
Rated heat output at Tdesignh	(1)(2)	kW	362	391	357
Bivalent temperature	(1)(2)	°C	-7	-7	-10
SCOP	(1)(2)		3,42	3,54	3,55
Seasonal space heating energy efficiency	(1)(2)	%	134	139	139
Seasonal space heating energy efficiency class	(1)(2)		-	-	-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

**TECHNICAL DATA SEASONAL
EFFICIENCY IN HEATING (EN14825
VALUE)**

ERACS2-Q-G05 /LN-CA

[SI System]

ERACS2-Q-G05 /LN-CA - LOW TEMPERATURE application			1062	1162	1362	1562	1762	1962
Power supply		(V/ph/Hz)	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER								
Rated heat output at Tdesignh	(1)(2)	kW	170	203	240	263	309	338
Bivalent temperature	(1)(2)	°C	2	2	2	2	2	2
SCOP	(1)(2)		4,14	4,00	4,25	4,27	4,19	4,33
Seasonal space heating energy efficiency	(1)(2)	%	163	157	167	168	165	170
Seasonal space heating energy efficiency class	(1)(2)		-	-	-	-	-	-
WEATHER CONDITIONS - AVERAGE								
Rated heat output at Tdesignh	(1)(2)	kW	157	213	221	244	285	314
Bivalent temperature	(1)(2)	°C	-7	-5	-7	-7	-7	-7
SCOP	(1)(2)		3,36	3,20	3,40	3,47	3,35	3,49
Seasonal space heating energy efficiency	(1)(2)	%	131	125	133	136	131	137
Seasonal space heating energy efficiency class	(1)(2)		-	-	-	-	-	-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

ERACS2-Q-G05 /LN-CA - LOW TEMPERATURE application			2022	2222	2422
Power supply		(V/ph/Hz)	400/3/50	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER					
Rated heat output at Tdesignh	(1)(2)	kW	381	420	443
Bivalent temperature	(1)(2)	°C	2	2	2
SCOP	(1)(2)		4,26	4,41	4,44
Seasonal space heating energy efficiency	(1)(2)	%	167	173	175
Seasonal space heating energy efficiency class	(1)(2)		-	-	-
WEATHER CONDITIONS - AVERAGE					
Rated heat output at Tdesignh	(1)(2)	kW	362	391	357
Bivalent temperature	(1)(2)	°C	-7	-7	-10
SCOP	(1)(2)		3,42	3,54	3,55
Seasonal space heating energy efficiency	(1)(2)	%	134	139	139
Seasonal space heating energy efficiency class	(1)(2)		-	-	-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

**TECHNICAL DATA SEASONAL
EFFICIENCY IN HEATING (EN14825
VALUE)**

ERACS2-Q-G05 /SL-CA

[SI System]

ERACS2-Q-G05 /SL-CA - LOW TEMPERATURE application			1062	1162	1362	1562	1762	1962
Power supply		(V/ph/Hz)	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER								
Rated heat output at Tdesignh	(1)(2)	kW	165	197	234	256	301	329
Bivalent temperature	(1)(2)	°C	2	2	2	2	2	2
SCOP	(1)(2)		4,13	4,01	4,24	4,28	4,19	4,33
Seasonal space heating energy efficiency	(1)(2)	%	162	157	167	168	165	170
Seasonal space heating energy efficiency class	(1)(2)		-	-	-	-	-	-
WEATHER CONDITIONS - AVERAGE								
Rated heat output at Tdesignh	(1)(2)	kW	153	207	217	238	279	307
Bivalent temperature	(1)(2)	°C	-7	-5	-7	-7	-7	-7
SCOP	(1)(2)		3,36	3,21	3,40	3,48	3,35	3,49
Seasonal space heating energy efficiency	(1)(2)	%	131	125	133	136	131	137
Seasonal space heating energy efficiency class	(1)(2)		-	-	-	-	-	-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

ERACS2-Q-G05 /SL-CA - LOW TEMPERATURE application			2022	2222	2422
Power supply		(V/ph/Hz)	400/3/50	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER					
Rated heat output at Tdesignh	(1)(2)	kW	377	415	438
Bivalent temperature	(1)(2)	°C	2	2	2
SCOP	(1)(2)		4,27	4,41	4,45
Seasonal space heating energy efficiency	(1)(2)	%	168	173	175
Seasonal space heating energy efficiency class	(1)(2)		-	-	-
WEATHER CONDITIONS - AVERAGE					
Rated heat output at Tdesignh	(1)(2)	kW	363	390	359
Bivalent temperature	(1)(2)	°C	-7	-7	-10
SCOP	(1)(2)		3,44	3,55	3,57
Seasonal space heating energy efficiency	(1)(2)	%	135	139	140
Seasonal space heating energy efficiency class	(1)(2)		-	-	-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

**TECHNICAL DATA SEASONAL
EFFICIENCY IN HEATING (EN14825
VALUE)**

ERACS2-Q-G05 /XL-CA

[SI System]

ERACS2-Q-G05 /XL-CA - LOW TEMPERATURE application			2022	2222
Power supply		(V/ph/Hz)	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER				
Rated heat output at Tdesignh	(1)(2)	kW	377	415
Bivalent temperature	(1)(2)	°C	2	2
SCOP	(1)(2)		4,57	4,77
Seasonal space heating energy efficiency	(1)(2)	%	180	188
Seasonal space heating energy efficiency class	(1)(2)		-	-
WEATHER CONDITIONS - AVERAGE				
Rated heat output at Tdesignh	(1)(2)	kW	363	390
Bivalent temperature	(1)(2)	°C	-7	-7
SCOP	(1)(2)		3,66	3,82
Seasonal space heating energy efficiency	(1)(2)	%	144	150
Seasonal space heating energy efficiency class	(1)(2)		-	-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

**TECHNICAL DATA SEASONAL
EFFICIENCY IN HEATING (EN14825
VALUE)**

ERACS2-Q-G05 /XL-CA-E

[SI System]

ERACS2-Q-G05 /XL-CA-E - LOW TEMPERATURE application			1062	1162	1362	1562	1762	2022
Power supply		(V/ph/Hz)	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER								
Rated heat output at Tdesignh	(1)(2)	kW	170	210	240	264	307	397
Bivalent temperature	(1)(2)	°C	2	2	2	2	2	2
SCOP	(1)(2)		4,63	4,33	4,52	4,72	4,45	4,72
Seasonal space heating energy efficiency	(1)(2)	%	182	170	178	186	175	186
Seasonal space heating energy efficiency class	(1)(2)		-	-	-	-	-	-
WEATHER CONDITIONS - AVERAGE								
Rated heat output at Tdesignh	(1)(2)	kW	156	188	221	242	283	367
Bivalent temperature	(1)(2)	°C	-7	-7	-7	-7	-7	-7
SCOP	(1)(2)		3,74	3,42	3,60	3,81	3,56	3,75
Seasonal space heating energy efficiency	(1)(2)	%	146	134	141	149	139	147
Seasonal space heating energy efficiency class	(1)(2)		-	-	-	-	-	-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

ERACS2-Q-G05 /XL-CA-E - LOW TEMPERATURE application			2222
Power supply		(V/ph/Hz)	400/3/50
WEATHER CONDITIONS - WARMER			
Rated heat output at Tdesignh	(1)(2)	kW	425
Bivalent temperature	(1)(2)	°C	2
SCOP	(1)(2)		4,87
Seasonal space heating energy efficiency	(1)(2)	%	192
Seasonal space heating energy efficiency class	(1)(2)		-
WEATHER CONDITIONS - AVERAGE			
Rated heat output at Tdesignh	(1)(2)	kW	374
Bivalent temperature	(1)(2)	°C	-7
SCOP	(1)(2)		3,78
Seasonal space heating energy efficiency	(1)(2)	%	148
Seasonal space heating energy efficiency class	(1)(2)		-

1 Seasonal space heating energy efficiency class LOW TEMPERATURE [REGULATION (EU) N. 813/2013]

2 Type of calculation with fixed flow and variable temperature.

ENERGY EFFICIENCY
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)
Ambient refrigeration

ERACS2-Q-G05 /CA			2722	3222
Prated,c	(1)	kW	699,7	823,6
SEER	(1) (2)	-	4,12	4,11
Performance η_s	(1) (3)	%	162	161

ERACS2-Q-G05 /LN-CA			2722	3222
Prated,c	(1)	kW	682,2	797,7
SEER	(1) (2)	-	4,10	4,10
Performance η_s	(1) (3)	%	161	161

ERACS2-Q-G05 /SL-CA			2722	3222
Prated,c	(1)	kW	676,1	788,6
SEER	(1) (2)	-	4,10	4,11
Performance η_s	(1) (3)	%	161	161

ERACS2-Q-G05 /XL-CA			2422	2622	2722	3222
Prated,c	(1)	kW	527,1	582,9	663,9	770,7
SEER	(1) (2)	-	4,28	4,10	4,26	4,10
Performance η_s	(1) (3)	%	168	161	167	161

ERACS2-Q-G05 /XL-CA-E			2422	2622
Prated,c	(1)	kW	539,9	610,1
SEER	(1) (2)	-	4,36	4,20
Performance η_s	(1) (3)	%	172	165

Notes:

(1) Parameter calculated according to [REGULATION (EU) N. 2016/2281]

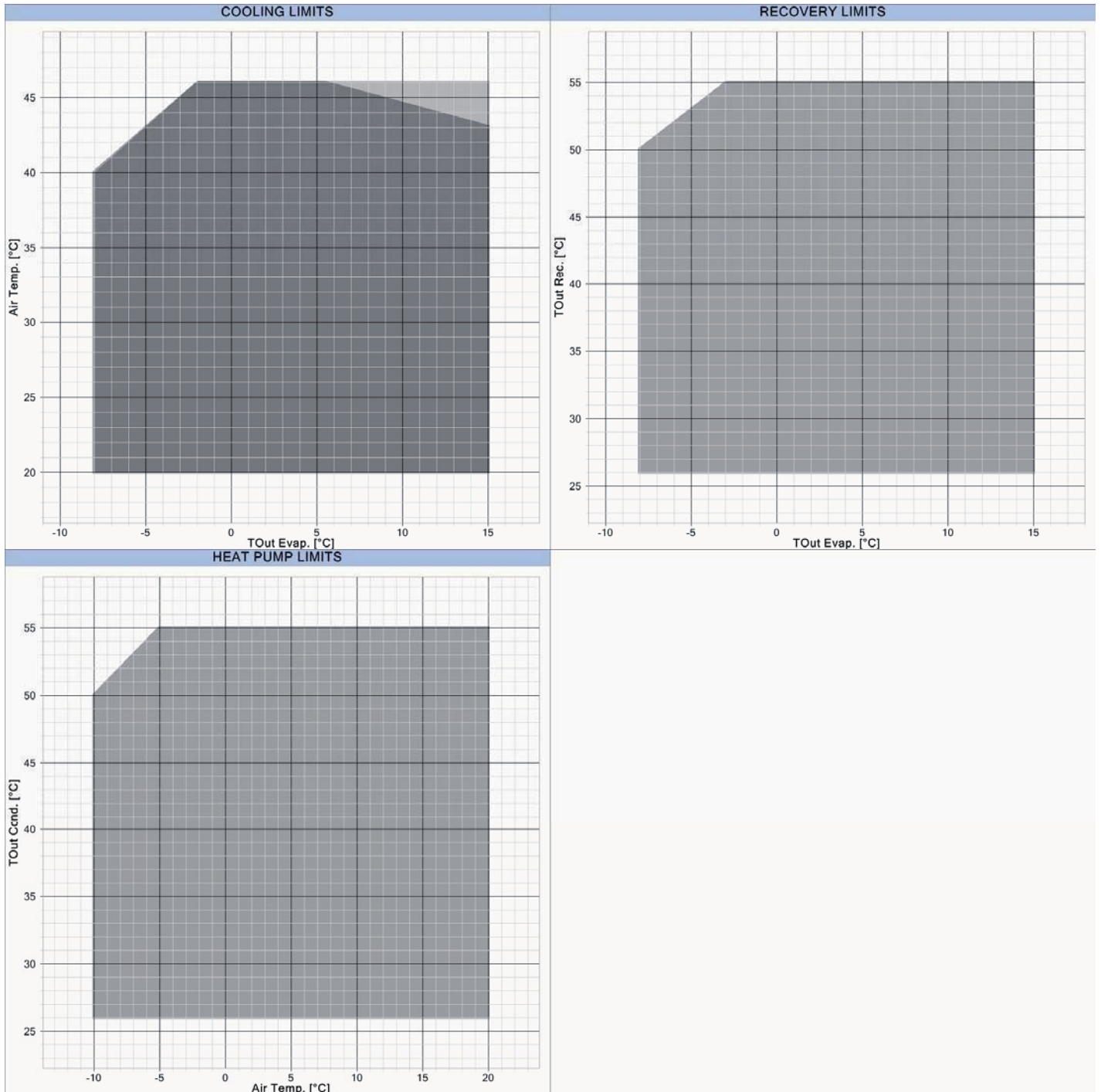
(2) Seasonal energy efficiency ratio




(3) Seasonal Space cooling energy efficiency

The units highlighted in this publication contain R513A [GWP100 631] fluorinated greenhouse gases.

7.1 OPERATING LIMITS

/CA - 1062 ÷ 1962



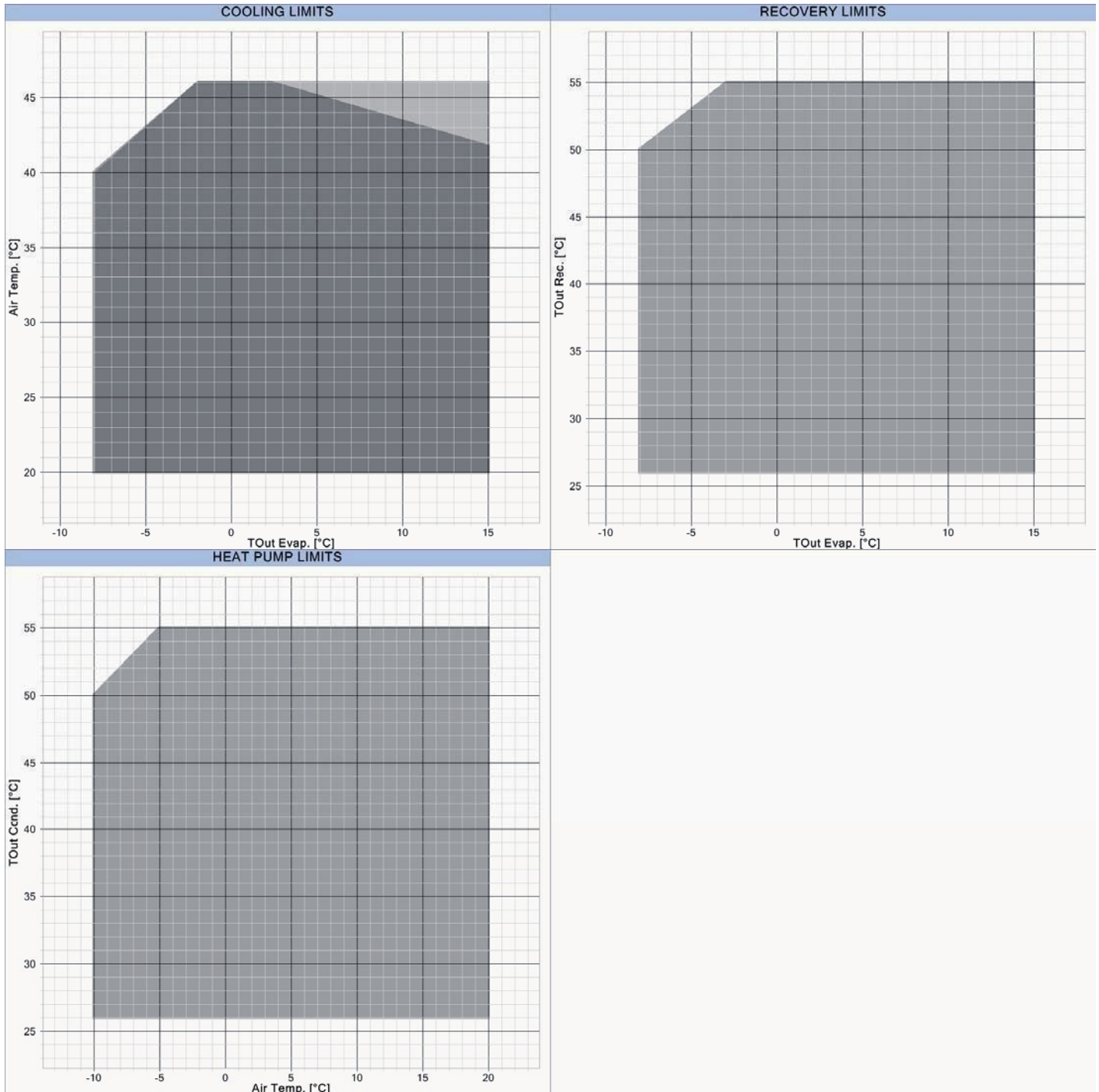
-  Selection limits
-  Selection limits
-  Economizers de-activated and unit in non silenced mode

NOTE:

The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

/CA - 2022 ÷ 3222



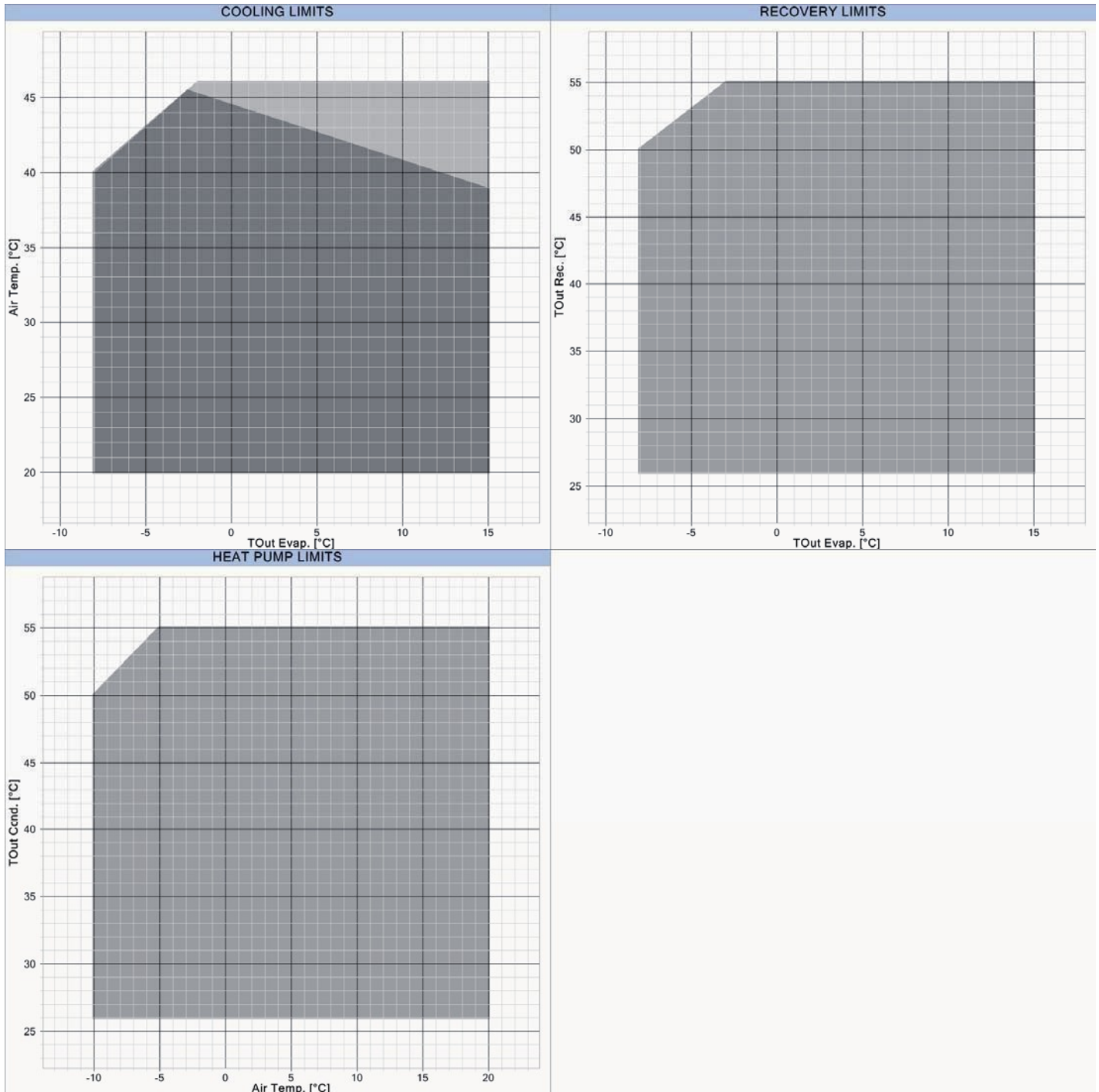
- Selection limits
- Selection limits
- Economizers de-activated and unit in non silenced mode

NOTE:

The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

/LN-CA - 1062 ÷ 1962



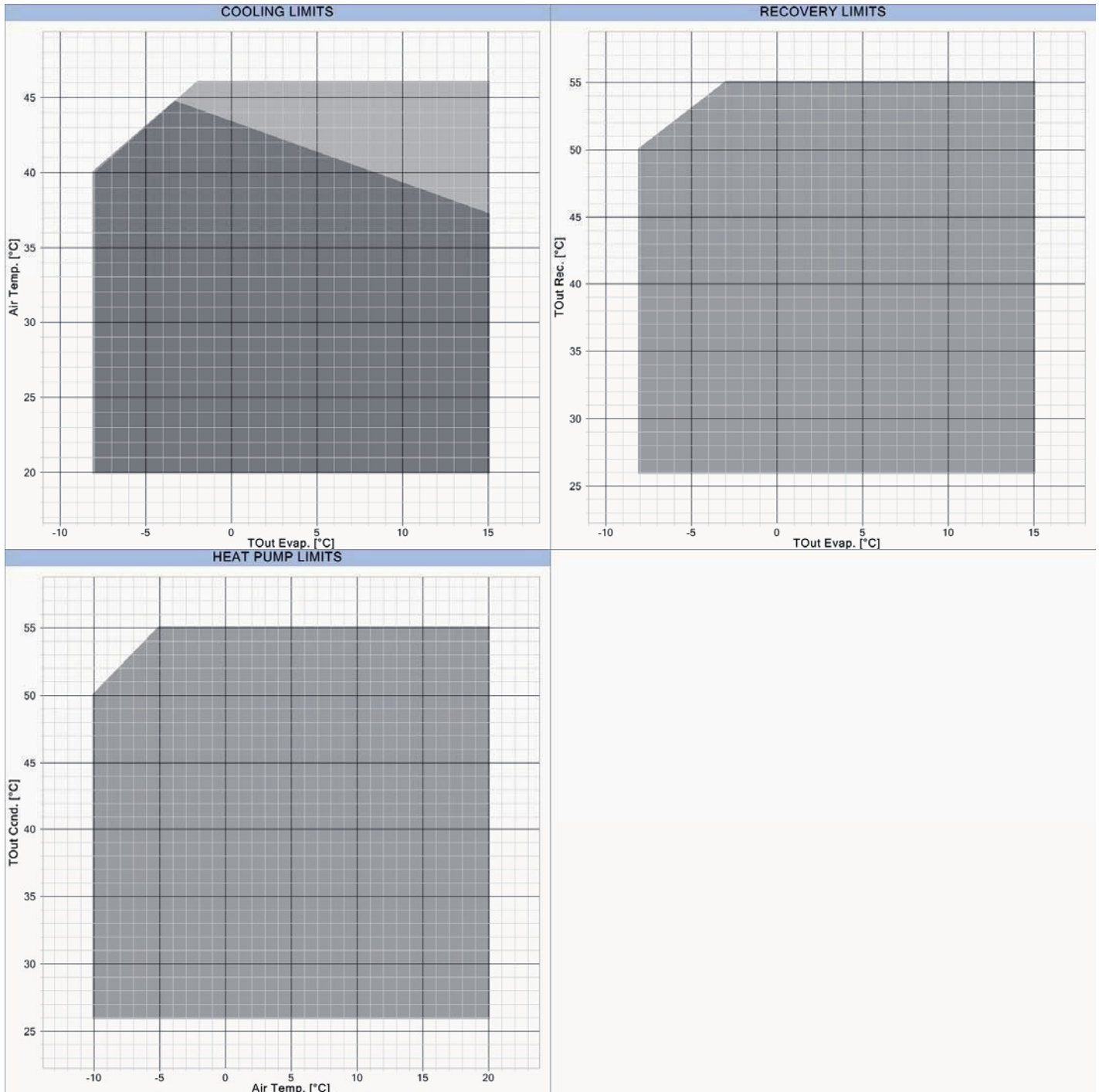
- Selection limits
- Selection limits
- Economizers de-activated and unit in non silenced mode

NOTE:

The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

/LN-CA - 2022 ÷ 3222



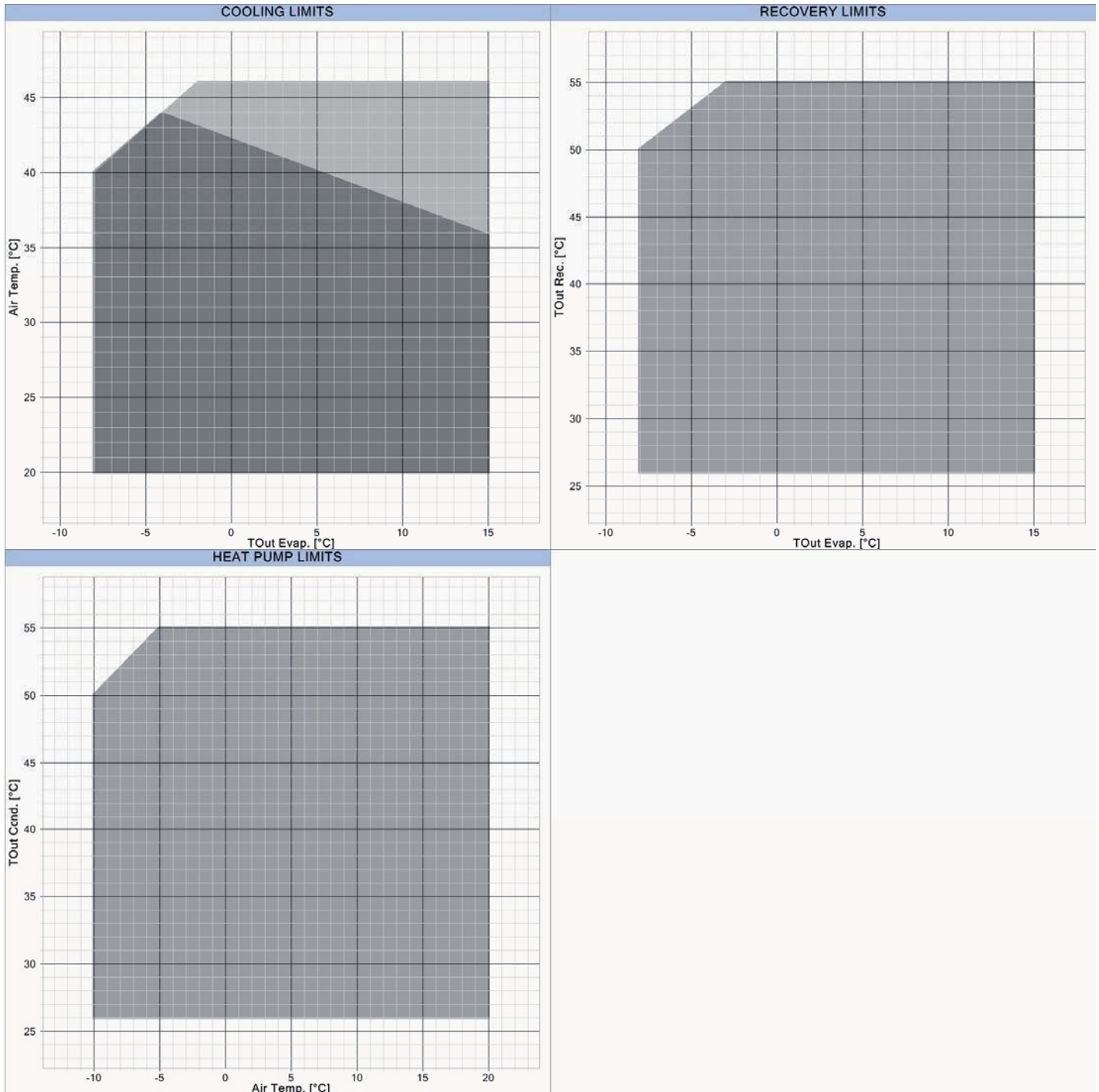
- Selection limits
- Selection limits
- Economizers de-activated and unit in non silenced mode

NOTE:

The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

/SL-CA - 1062 ÷ 1962



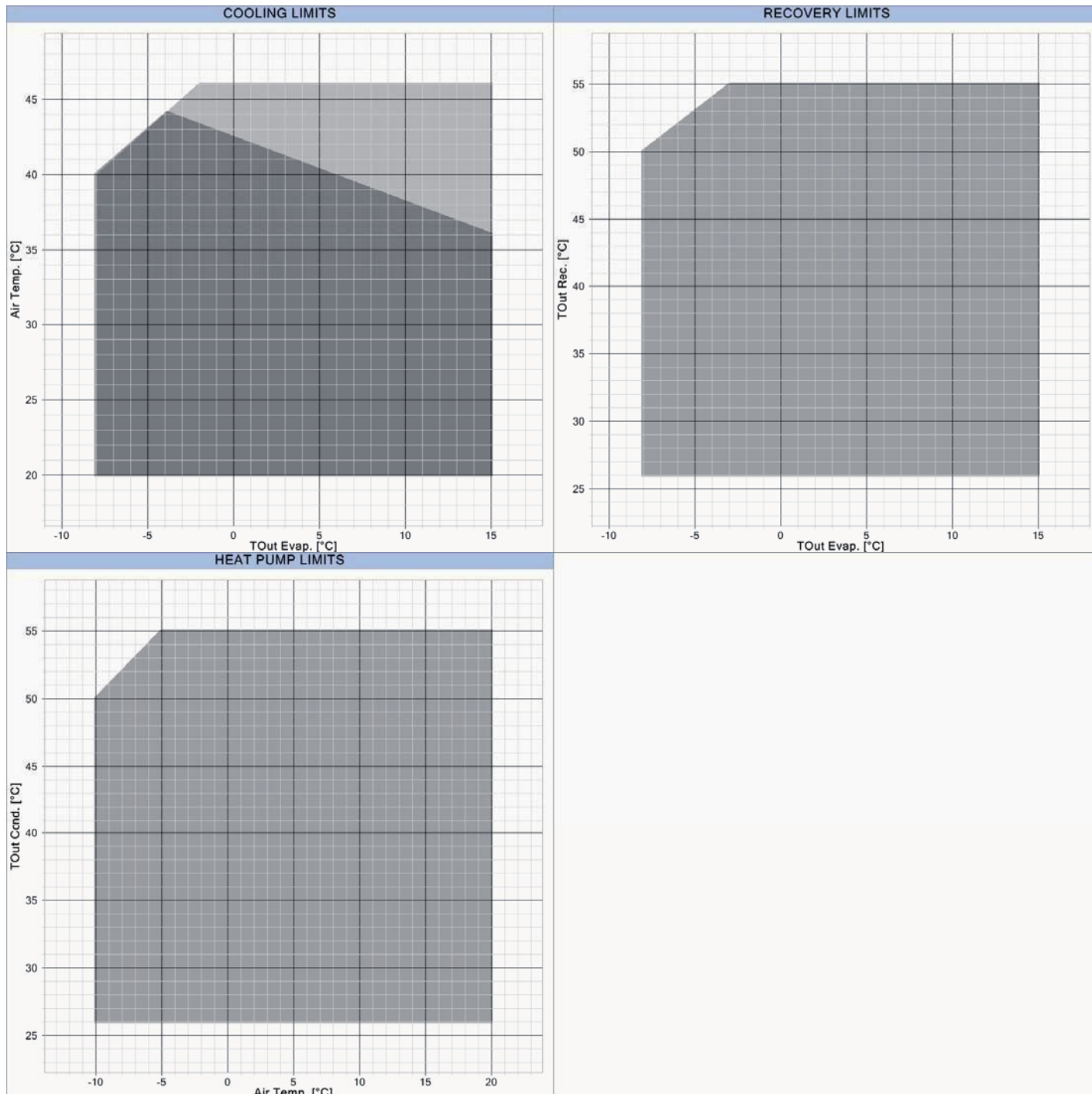
- Selection limits
- Selection limits
- Economizers de-activated and unit in non silenced mode

NOTE:

The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

/SL-CA - 2022 ÷ 3222

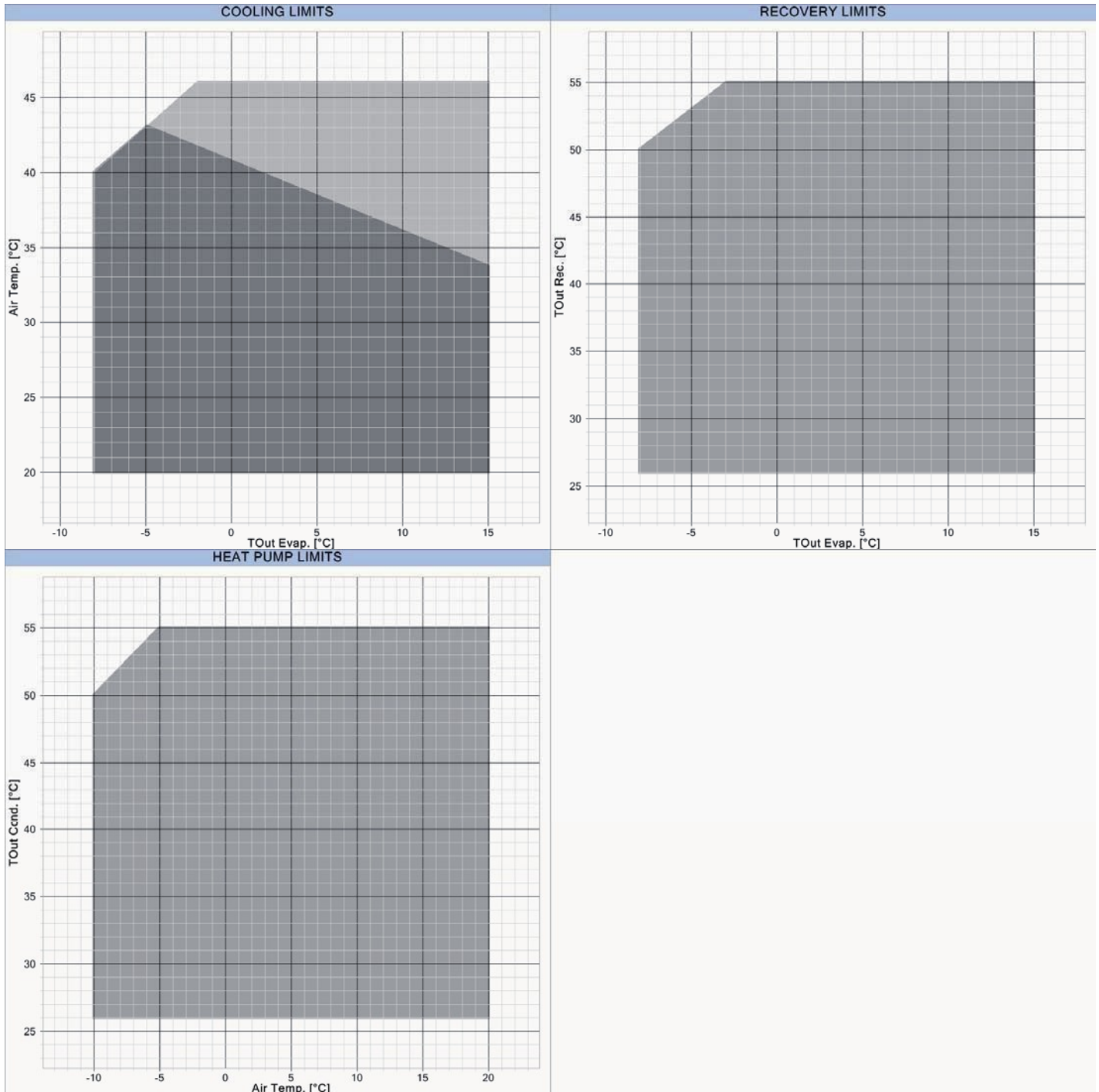


- Selection limits
- Selection limits
- Economizers de-activated and unit in non silenced mode

NOTE:
 The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

/XL-CA - 2022 ÷ 3222



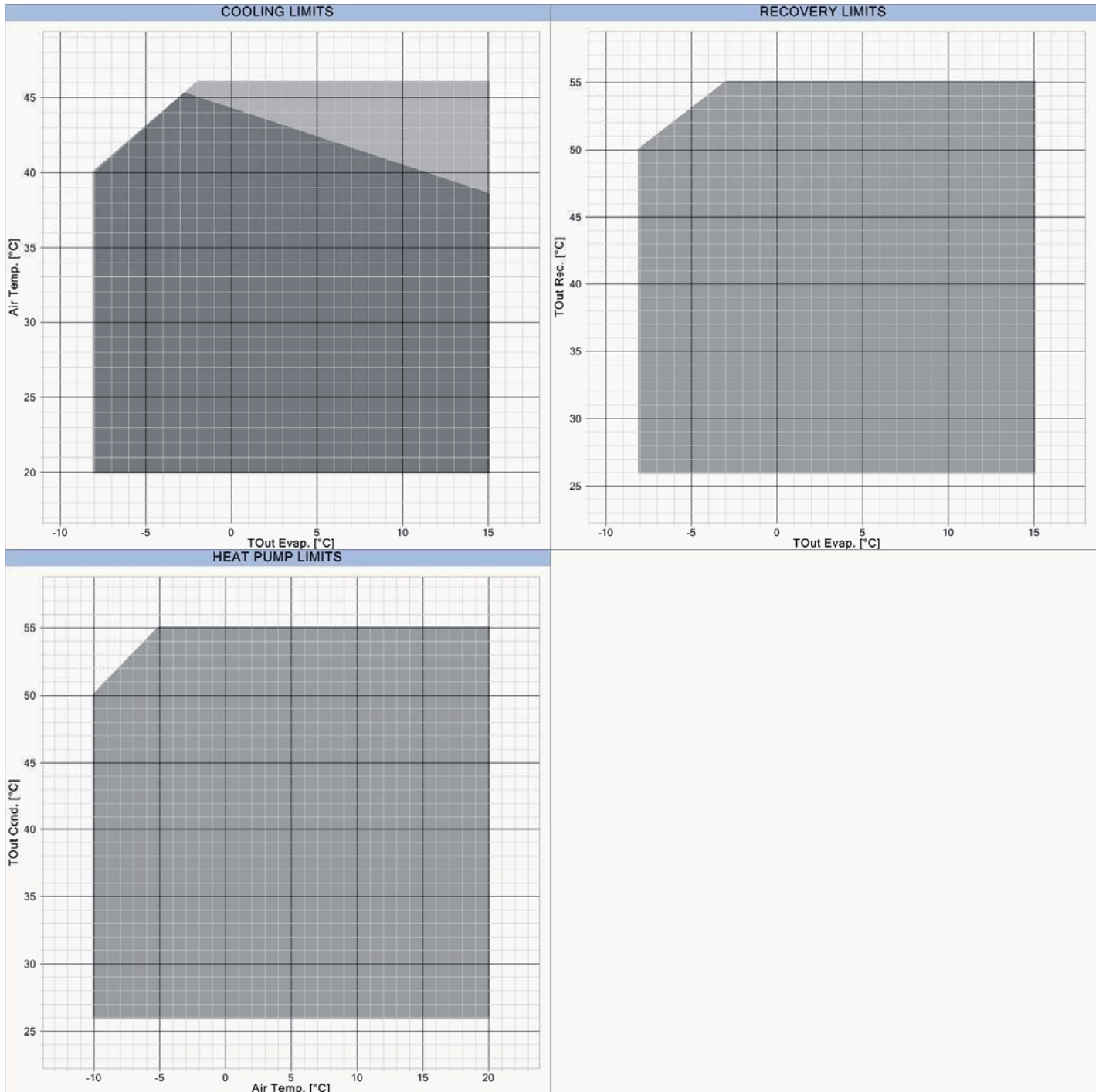
- Selection limits
- Selection limits
- Economizers de-activated and unit in non silenced mode

NOTE:

The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

/XL-CA-E - 1062 ÷ 1762



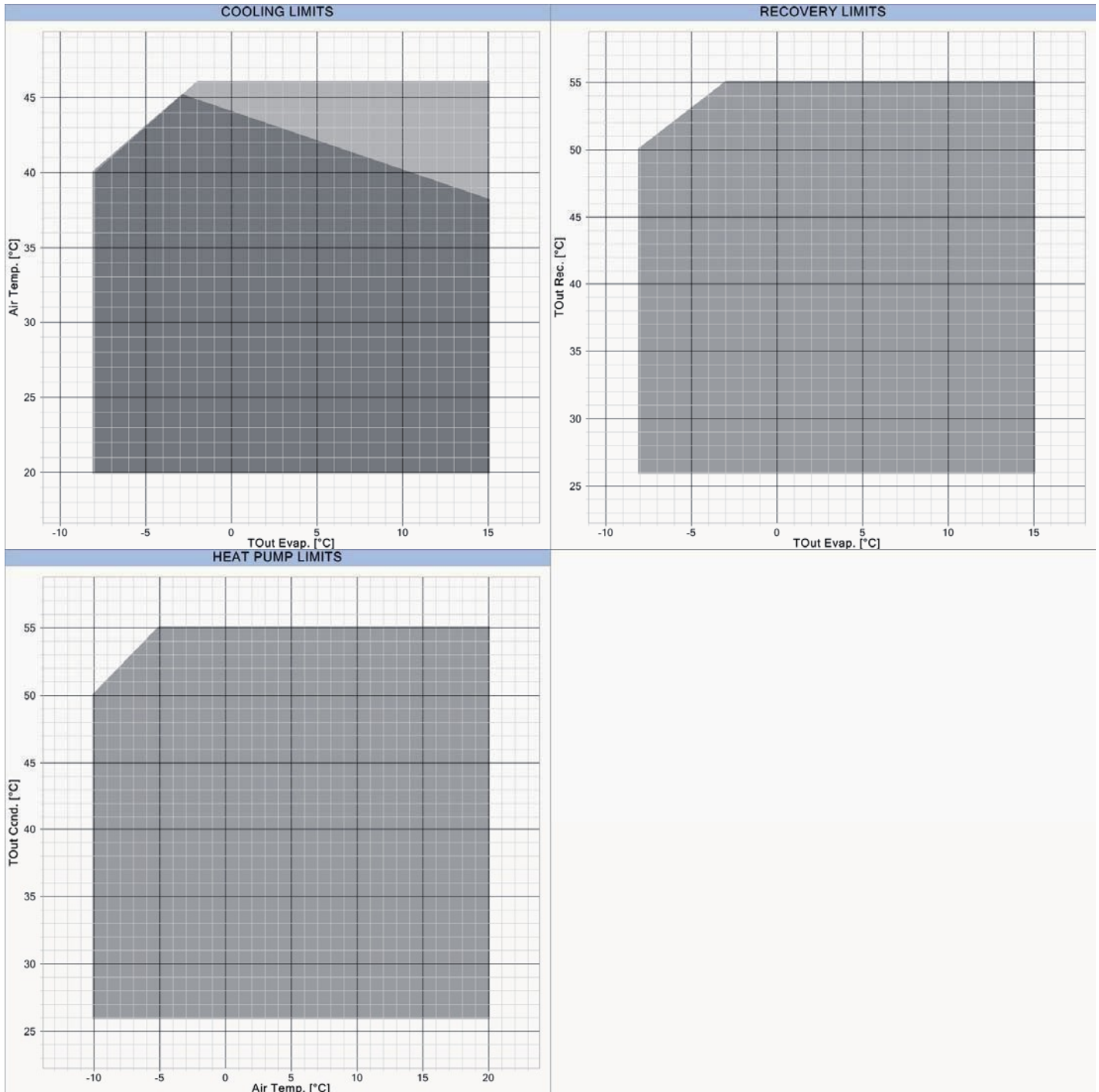
- Selection limits
- Selection limits
- Economizers de-activated and unit in non silenced mode

NOTE:

The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

/XL-CA-E - 2022 ÷ 2622



- Selection limits
- Selection limits
- Economizers de-activated and unit in non silenced mode

NOTE:

The represented operating limit refers to the standard unit's operation. Thanks to the condensation and evaporation control device adopted in line, the units can work in each of the possible operating mode from -10°C up to 46°C outdoor air temperature.

OPERATING LIMITS

ERACS2-Q-G05 1062 - 3222

SIZE
ERACS2-Q-G05 /CA 1062
ERACS2-Q-G05 /CA 1162
ERACS2-Q-G05 /CA 1362
ERACS2-Q-G05 /CA 1562
ERACS2-Q-G05 /CA 1762
ERACS2-Q-G05 /CA 1962
ERACS2-Q-G05 /CA 2022
ERACS2-Q-G05 /CA 2222
ERACS2-Q-G05 /CA 2422
ERACS2-Q-G05 /CA 2622
ERACS2-Q-G05 /CA 2722
ERACS2-Q-G05 /CA 3222
ERACS2-Q-G05 /LN-CA 1062
ERACS2-Q-G05 /LN-CA 1162
ERACS2-Q-G05 /LN-CA 1362
ERACS2-Q-G05 /LN-CA 1562
ERACS2-Q-G05 /LN-CA 1762
ERACS2-Q-G05 /LN-CA 1962
ERACS2-Q-G05 /LN-CA 2022
ERACS2-Q-G05 /LN-CA 2222
ERACS2-Q-G05 /LN-CA 2422
ERACS2-Q-G05 /LN-CA 2622
ERACS2-Q-G05 /LN-CA 2722
ERACS2-Q-G05 /LN-CA 3222
ERACS2-Q-G05 /SL-CA 1062
ERACS2-Q-G05 /SL-CA 1162
ERACS2-Q-G05 /SL-CA 1362
ERACS2-Q-G05 /SL-CA 1562
ERACS2-Q-G05 /SL-CA 1762
ERACS2-Q-G05 /SL-CA 1962
ERACS2-Q-G05 /SL-CA 2022
ERACS2-Q-G05 /SL-CA 2222
ERACS2-Q-G05 /SL-CA 2422
ERACS2-Q-G05 /SL-CA 2622
ERACS2-Q-G05 /SL-CA 2722
ERACS2-Q-G05 /SL-CA 3222
ERACS2-Q-G05 /XL-CA 2022
ERACS2-Q-G05 /XL-CA 2222
ERACS2-Q-G05 /XL-CA 2422
ERACS2-Q-G05 /XL-CA 2622
ERACS2-Q-G05 /XL-CA 2722
ERACS2-Q-G05 /XL-CA 3222
ERACS2-Q-G05 /XL-CA-E 1062
ERACS2-Q-G05 /XL-CA-E 1162
ERACS2-Q-G05 /XL-CA-E 1362
ERACS2-Q-G05 /XL-CA-E 1562
ERACS2-Q-G05 /XL-CA-E 1762
ERACS2-Q-G05 /XL-CA-E 2022
ERACS2-Q-G05 /XL-CA-E 2222
ERACS2-Q-G05 /XL-CA-E 2422
ERACS2-Q-G05 /XL-CA-E 2622

7.2 ETHYLENE GLYCOL MIXTURE

Ethylene glycol and water mixture, used as a heat-conveying fluid, cause a variation in unit performance. For correct data, use the factors indicated in the following tabel.

	Freezing point (°C)							
	0	-5	-10	-15	-20	-25	-30	-35
	Ethylene glycol percentage by weight							
	0%	12%	20%	30%	35%	40%	45%	50%
cPf	1	0,985	0,98	0,974	0,97	0,965	0,964	0,96
cQ	1	1,02	1,04	1,075	1,11	1,14	1,17	1,2
cdp	1	1,07	1,11	1,18	1,22	1,24	1,27	1,3

cPf: cooling power correction factor

cQ: flow correction factor

cdp: pressure drop correction factor

For data concerning other kind of anti-freeze solutions (e.g. propylene glycol) please contact our Sale Department.

7.3 FOULING FACTORS

Performances are based on clean condition of tubes (fouling factor = 1). For different fouling values, performance should be adjusted using the correction factors shown in the following table.

SERIES	FOULING FACTORS	EVAPORATOR			CONDENSER/RECOVERY			DESUPERHEATER
	ff (m ² °CW)	F1	FK1	KE [°C]	F2	FK2	KC [°C]	R3
VARIOUS	0	1,000	1,000	0,0	1,000	1,000	0,0	1,000
VARIOUS	1,80 x 10 ⁻⁵	1,000	1,000	0,0	1,000	1,000	0,0	1,000
VARIOUS	4,40 x 10 ⁻⁵	1,000	1,000	0,0	0,990	1,030	1,0	0,990
VARIOUS	8,80 x 10 ⁻⁵	0,960	0,990	0,7	0,980	1,040	1,5	0,980
VARIOUS	13,20 x 10 ⁻⁵	0,944	0,985	1,0	0,964	1,050	2,3	0,964
VARIOUS	17,20 x 10 ⁻⁵	0,930	0,980	1,5	0,950	1,060	3,0	0,950

ff: fouling factors

F1 - F2: potential correction factors

FK1 - FK2: compressor power input correction factors

R3: capacity correction factors

KE: minimum evaporator outlet temperature increase

KC: maximum condenser outlet temperature decrease

8.1 HYDRAULIC DATA

[SI System]

Water flow and pressure drop

Water flow in the plant (side) exchanger is given by:

$$Q = P / (4,186 \times \Delta t)$$

Q: water flow (l/s)

Δt : difference between inlet and outlet water temp. (°C)

P: heat exchanger capacity (kW)

Pressure drop is given by:

$$\Delta p = K \times (3,6 \times Q)^2 / 1000$$

Q: water flow (l/s)

Δp : pressure drop (kPa)

K: unit size ratio

SIZE	Power supply V/ph/Hz	CHILLED WATER HEAT EX. USER SIDE					WARM WATER HEAT EX. USER SIDE			
		K	Q min l/s	Q max l/s	C.A.S. l	C.a. min l	K [1]	Q min [2] l/s	Q max l/s	C.A.S. l
ERACS2-Q-G05 /CA 1062	400/3/50	22,0	6,250	16,78	-	1500	22,0	6,500	16,11	-
ERACS2-Q-G05 /CA 1162	400/3/50	22,0	7,389	19,81	-	1800	22,0	7,694	19,17	-
ERACS2-Q-G05 /CA 1362	400/3/50	13,5	9,000	24,14	-	2200	13,5	9,222	23,47	-
ERACS2-Q-G05 /CA 1562	400/3/50	13,5	9,806	26,28	-	2400	13,5	10,11	25,28	-
ERACS2-Q-G05 /CA 1762	400/3/50	9,40	11,33	30,36	-	2700	9,40	11,81	29,53	-
ERACS2-Q-G05 /CA 1962	400/3/50	5,20	12,67	33,94	-	3000	5,20	12,94	32,86	-
ERACS2-Q-G05 /CA 2022	400/3/50	3,86	13,56	38,44	-	4400	3,86	14,47	36,58	-
ERACS2-Q-G05 /CA 2222	400/3/50	3,55	14,92	41,83	-	4700	3,55	15,97	39,31	-
ERACS2-Q-G05 /CA 2422	400/3/50	3,55	15,75	44,14	-	5000	3,55	16,81	41,50	-
ERACS2-Q-G05 /CA 2622	400/3/50	2,00	17,42	49,69	-	5700	2,00	18,08	47,25	-
ERACS2-Q-G05 /CA 2722	400/3/50	2,09	19,89	56,06	-	6300	2,09	20,94	52,89	-
ERACS2-Q-G05 /CA 3222	400/3/50	1,53	23,03	65,78	-	7500	1,53	24,33	62,28	-
ERACS2-Q-G05 /LN-CA 1062	400/3/50	22,0	6,250	16,78	-	1500	22,0	6,500	16,11	-
ERACS2-Q-G05 /LN-CA 1162	400/3/50	22,0	7,389	19,81	-	1800	22,0	7,694	19,17	-
ERACS2-Q-G05 /LN-CA 1362	400/3/50	13,5	9,000	24,14	-	2200	13,5	9,222	23,47	-
ERACS2-Q-G05 /LN-CA 1562	400/3/50	13,5	9,806	26,28	-	2400	13,5	10,11	25,28	-
ERACS2-Q-G05 /LN-CA 1762	400/3/50	9,40	11,33	30,36	-	2700	9,40	11,81	29,53	-
ERACS2-Q-G05 /LN-CA 1962	400/3/50	5,20	12,67	33,94	-	3000	5,20	12,94	32,86	-
ERACS2-Q-G05 /LN-CA 2022	400/3/50	3,86	13,56	38,33	-	4400	3,86	14,47	36,58	-
ERACS2-Q-G05 /LN-CA 2222	400/3/50	3,55	14,92	41,94	-	4700	3,55	15,97	39,31	-
ERACS2-Q-G05 /LN-CA 2422	400/3/50	3,55	15,75	44,17	-	5000	3,55	16,81	41,50	-
ERACS2-Q-G05 /LN-CA 2622	400/3/50	2,00	17,42	49,72	-	5700	2,00	18,08	47,25	-
ERACS2-Q-G05 /LN-CA 2722	400/3/50	2,09	19,89	56,11	-	6300	2,09	20,94	52,89	-
ERACS2-Q-G05 /LN-CA 3222	400/3/50	1,53	23,03	65,83	-	7500	1,53	24,33	62,28	-
ERACS2-Q-G05 /SL-CA 1062	400/3/50	22,0	6,250	16,78	-	1500	22,0	6,500	16,11	-
ERACS2-Q-G05 /SL-CA 1162	400/3/50	22,0	7,389	19,81	-	1800	22,0	7,694	19,17	-
ERACS2-Q-G05 /SL-CA 1362	400/3/50	13,5	9,000	24,14	-	2200	13,5	9,222	23,47	-
ERACS2-Q-G05 /SL-CA 1562	400/3/50	13,5	9,806	26,28	-	2400	13,5	10,11	25,28	-
ERACS2-Q-G05 /SL-CA 1762	400/3/50	9,40	11,33	30,36	-	2700	9,40	11,81	29,53	-
ERACS2-Q-G05 /SL-CA 1962	400/3/50	5,20	12,67	33,94	-	3000	5,20	12,94	32,86	-
ERACS2-Q-G05 /SL-CA 2022	400/3/50	3,86	13,56	38,33	-	4400	3,86	14,47	36,58	-
ERACS2-Q-G05 /SL-CA 2222	400/3/50	3,55	14,92	41,94	-	4700	3,55	15,97	39,31	-
ERACS2-Q-G05 /SL-CA 2422	400/3/50	3,55	15,75	44,17	-	5000	3,55	16,81	41,50	-
ERACS2-Q-G05 /SL-CA 2622	400/3/50	2,00	17,42	49,72	-	5700	2,00	18,08	47,25	-
ERACS2-Q-G05 /SL-CA 2722	400/3/50	2,09	19,89	56,11	-	6300	2,09	20,94	52,89	-
ERACS2-Q-G05 /SL-CA 3222	400/3/50	1,53	23,03	65,83	-	7500	1,53	24,33	62,28	-
ERACS2-Q-G05 /XL-CA 2022	400/3/50	3,86	13,56	38,33	-	4400	3,86	14,47	36,58	-
ERACS2-Q-G05 /XL-CA 2222	400/3/50	3,55	14,92	41,94	-	4700	3,55	15,97	39,31	-
ERACS2-Q-G05 /XL-CA 2422	400/3/50	3,55	15,75	44,17	-	5000	3,55	16,81	41,50	-
ERACS2-Q-G05 /XL-CA 2622	400/3/50	2,00	17,42	49,72	-	5700	2,00	18,08	47,25	-
ERACS2-Q-G05 /XL-CA 2722	400/3/50	2,09	19,89	56,11	-	6300	2,09	20,94	52,89	-

Q min: minimum water flow admitted to the heat exchanger
 Q max: maximum water flow admitted to the heat exchanger
 C.a. min: minimum water content admitted in the plant
 C.A.S.: Exchanger water content

HYDRAULIC DATA

[SI System]

SIZE	Power supply V/ph/Hz	CHILLED WATER HEAT EX. USER SIDE					WARM WATER HEAT EX. USER SIDE			
		K	Q min l/s	Q max l/s	C.A.S. l	C.a. min l	K [1]	Q min [2] l/s	Q max l/s	C.A.S. l
ERACS2-Q-G05 /XL-CA 3222	400/3/50	1,53	23,03	65,83	-	7500	1,53	24,33	62,28	-
ERACS2-Q-G05 /XL-CA-E 1062	400/3/50	22,0	6,250	16,78	-	1500	22,0	6,500	16,11	-
ERACS2-Q-G05 /XL-CA-E 1162	400/3/50	22,0	7,389	19,81	-	1800	22,0	7,694	19,17	-
ERACS2-Q-G05 /XL-CA-E 1362	400/3/50	13,5	9,000	24,14	-	2200	13,5	9,222	23,47	-
ERACS2-Q-G05 /XL-CA-E 1562	400/3/50	13,5	9,806	26,28	-	2400	13,5	10,11	25,28	-
ERACS2-Q-G05 /XL-CA-E 1762	400/3/50	9,40	11,33	30,36	-	2700	9,40	11,81	29,53	-
ERACS2-Q-G05 /XL-CA-E 2022	400/3/50	3,86	13,56	38,33	-	4400	3,86	14,47	36,58	-
ERACS2-Q-G05 /XL-CA-E 2222	400/3/50	3,55	14,92	41,94	-	4700	3,55	15,97	39,31	-
ERACS2-Q-G05 /XL-CA-E 2422	400/3/50	3,55	15,75	44,17	-	5000	3,55	16,81	41,50	-
ERACS2-Q-G05 /XL-CA-E 2622	400/3/50	2,00	17,42	49,72	-	5700	2,00	18,08	47,25	-

Q min: minimum water flow admitted to the heat exchanger
 Q max: maximum water flow admitted to the heat exchanger
 C.a. min: minimum water content admitted in the plant
 C.A.S.: Exchanger water content

9.1 ELECTRICAL DATA
[SI System]

ERACS2-Q-G05 /CA

SIZE	Power supply V/ph/Hz	Maximum values								
		Compressor			Fans (1)		Total (1)(2)			
		n	F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
1062	400/3/50	2	2x40,5	2x67,1	2x169	2,000	4	93,00	157	235
1162	400/3/50	2	2x48,7	2x80,4	2x206	2,000	4	109,0	184	289
1362	400/3/50	2	2x51,7	2x91,7	2x267	2,000	4	115,0	206	355
1562	400/3/50	2	2x64,3	2x104,7	2x290	2,000	4	145,0	240	388
1762	400/3/50	2	2x70,2	2x114,9	2x350	2,000	4	156,0	260	461
1962	400/3/50	2	2x82,1	2x131,7	2x423	2,000	4	184,0	301	543
2022	400/3/50	2	2x85,4	2x137	2x246	2,000	4	191,0	312	377
2222	400/3/50	2	1x85,4+1x101	1x137+1x165	1x246+1x300	2,000	4	210,0	348	439
2422	400/3/50	2	2x101	2x165	2x300	2,000	4	226,0	376	449
2622	400/3/50	2	2x112	2x184	2x360	2,000	4	248,0	414	534
2722	400/3/50	2	2x127	2x208	2x404	2,000	4	282,0	469	588
3222	400/3/50	2	2x145	2x235	2x436	2,000	4	318,0	531	658

F.L.I.: Full load power

F.L.A.: Full load current

L.R.A.: Locked rotor amperes for single compressor

S.A.: Inrush current

(1) Values calculated referring to the version with the maximum number of fans working at the max absorbed current

(1)(2) Safety values to be considered when cabling the unit for power supply and line-protections

Data valid for standard units without any additional option.

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Voltage tolerance: 10%

Maximum voltage unbalance: 3%

Give the typical operating conditions of units designed for outdoor installation, which can be associated (according to reference document IEC 60721) to the following classes:

- climatic conditions class 4K4H: air temperature range from -20 up to 55°C (*), relative humidity range from 4 up to 100%, with possible precipitations, at air pressure from 70 and 106 kPa and a maximum solar radiation of 1120 W/m2

- special climatic conditions negligible

- biological conditions class 4B1 and 4C2: locations in a generic urban area

- mechanically active substances class 4S2: locations in areas with sand or dust representative of urban areas

- mechanical conditions class 4M1: locations protected from significant vibrations or shocks

The required protection level for safe operation, according to reference document IEC 60529, is IP43XW (protection against access, to the most critical unit's parts, of external devices with diameter larger than 1 mm and rain).

The unit can be considered IP44XW protected, i.e. protected against access of external devices (with diameter larger than 1 mm) and water in general.

(*) for the unit's operating limits, see "selection limits" section

ELECTRICAL DATA

ERACS2-Q-G05 /LN-CA

[SI System]

SIZE	Power supply V/ph/Hz	Maximum values								
		n	Compressor			Fans (1)		Total (1)(2)		
			F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
1062	400/3/50	2	2x40,5	2x67,1	2x169	2,000	4	93,00	157	235
1162	400/3/50	2	2x48,7	2x80,4	2x206	2,000	4	109,0	184	289
1362	400/3/50	2	2x51,7	2x91,7	2x267	2,000	4	115,0	206	355
1562	400/3/50	2	2x64,3	2x104,7	2x290	2,000	4	145,0	240	388
1762	400/3/50	2	2x70,2	2x114,9	2x350	2,000	4	156,0	260	461
1962	400/3/50	2	2x82,1	2x131,7	2x423	2,000	4	184,0	301	543
2022	400/3/50	2	2x85,4	2x137	2x246	2,000	4	191,0	312	377
2222	400/3/50	2	1x85,4+1x101	1x137+1x165	1x246+1x300	2,000	4	210,0	348	439
2422	400/3/50	2	2x101	2x165	2x300	2,000	4	226,0	376	449
2622	400/3/50	2	2x112	2x184	2x360	2,000	4	248,0	414	534
2722	400/3/50	2	2x127	2x208	2x404	2,000	4	282,0	469	588
3222	400/3/50	2	2x145	2x235	2x436	2,000	4	318,0	531	658

F.L.I.: Full load power

F.L.A.: Full load current

L.R.A.: Locked rotor amperes for single compressor

S.A.: Inrush current

(1) Values calculated referring to the version with the maximum number of fans working at the max absorbed current

(1)(2) Safety values to be considered when cabling the unit for power supply and line-protections

Data valid for standard units without any additional option.

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Voltage tolerance: 10%

Maximum voltage unbalance: 3%

Give the typical operating conditions of units designed for outdoor installation, which can be associated (according to reference document IEC 60721) to the following classes:

- climatic conditions class 4K4H: air temperature range from -20 up to 55°C (*), relative humidity range from 4 up to 100%, with possible precipitations, at air pressure from 70 and 106 kPa and a maximum solar radiation of 1120 W/m2
- special climatic conditions negligible
- biological conditions class 4B1 and 4C2: locations in a generic urban area
- mechanically active substances class 4S2: locations in areas with sand or dust representative of urban areas
- mechanical conditions class 4M1: locations protected from significant vibrations or shocks

The required protection level for safe operation, according to reference document IEC 60529, is IP43XW (protection against access, to the most critical unit's parts, of external devices with diameter larger than 1 mm and rain).

The unit can be considered IP44XW protected, i.e. protected against access of external devices (with diameter larger than 1 mm) and water in general.

(*) for the unit's operating limits, see "selection limits" section

ELECTRICAL DATA

ERACS2-Q-G05 /SL-CA

[SI System]

SIZE	Power supply V/ph/Hz	Maximum values								
		n	Compressor			Fans (1)		Total (1)(2)		
			F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
1062	400/3/50	2	2x40,5	2x67,1	2x169	2,000	4	93,00	157	235
1162	400/3/50	2	2x48,7	2x80,4	2x206	2,000	4	109,0	184	289
1362	400/3/50	2	2x51,7	2x91,7	2x267	2,000	4	115,0	206	355
1562	400/3/50	2	2x64,3	2x104,7	2x290	2,000	4	145,0	240	388
1762	400/3/50	2	2x70,2	2x114,9	2x350	2,000	4	156,0	260	461
1962	400/3/50	2	2x82,1	2x131,7	2x423	2,000	4	184,0	301	543
2022	400/3/50	2	2x85,4	2x137	2x246	2,000	4	191,0	312	377
2222	400/3/50	2	1x85,4+1x101	1x137+1x165	1x246+1x300	2,000	4	210,0	348	439
2422	400/3/50	2	2x101	2x165	2x300	2,000	4	226,0	376	449
2622	400/3/50	2	2x112	2x184	2x360	2,000	4	248,0	414	534
2722	400/3/50	2	2x127	2x208	2x404	2,000	4	282,0	469	588
3222	400/3/50	2	2x145	2x235	2x436	2,000	4	318,0	531	658

F.L.I.: Full load power

F.L.A.: Full load current

L.R.A.: Locked rotor amperes for single compressor

S.A.: Inrush current

(1) Values calculated referring to the version with the maximum number of fans working at the max absorbed current

(1)(2) Safety values to be considered when cabling the unit for power supply and line-protections

Data valid for standard units without any additional option.

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Voltage tolerance: 10%

Maximum voltage unbalance: 3%

Give the typical operating conditions of units designed for outdoor installation, which can be associated (according to reference document IEC 60721) to the following classes:

- climatic conditions class 4K4H: air temperature range from -20 up to 55°C (*), relative humidity range from 4 up to 100%, with possible precipitations, at air pressure from 70 and 106 kPa and a maximum solar radiation of 1120 W/m2

- special climatic conditions negligible

- biological conditions class 4B1 and 4C2: locations in a generic urban area

- mechanically active substances class 4S2: locations in areas with sand or dust representative of urban areas

- mechanical conditions class 4M1: locations protected from significant vibrations or shocks

The required protection level for safe operation, according to reference document IEC 60529, is IP43XW (protection against access, to the most critical unit's parts, of external devices with diameter larger than 1 mm and rain).

The unit can be considered IP44XW protected, i.e. protected against access of external devices (with diameter larger than 1 mm) and water in general.

(*) for the unit's operating limits, see "selection limits" section

ELECTRICAL DATA

ERACS2-Q-G05 /XL-CA

[SI System]

SIZE	Power supply V/ph/Hz	Maximum values								
		n	Compressor			Fans (1)		Total (1)(2)		
			F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
2022	400/3/50	2	2x85,4	2x137	2x246	2,000	3	191,0	305	370
2222	400/3/50	2	1x85,4+1x101	1x137+1x165	1x246+1x300	2,000	3	210,0	339	431
2422	400/3/50	2	2x101	2x165	2x300	2,000	3	226,0	367	440
2622	400/3/50	2	2x112	2x184	2x360	2,000	3	248,0	405	525
2722	400/3/50	2	2x127	2x208	2x404	2,000	3	282,0	459	578
3222	400/3/50	2	2x145	2x235	2x436	2,000	3	318,0	520	647

F.L.I.: Full load power

F.L.A.: Full load current

L.R.A.: Locked rotor amperes for single compressor

S.A.: Inrush current

(1) Values calculated referring to the version with the maximum number of fans working at the max absorbed current

(1)(2) Safety values to be considered when cabling the unit for power supply and line-protections

Data valid for standard units without any additional option.

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Voltage tolerance: 10%

Maximum voltage unbalance: 3%

Give the typical operating conditions of units designed for outdoor installation, which can be associated (according to reference document IEC 60721) to the following classes:

- climatic conditions class 4K4H: air temperature range from -20 up to 55°C (*), relative humidity range from 4 up to 100%, with possible precipitations, at air pressure from 70 and 106 kPa and a maximum solar radiation of 1120 W/m2
- special climatic conditions negligible
- biological conditions class 4B1 and 4C2: locations in a generic urban area
- mechanically active substances class 4S2: locations in areas with sand or dust representative of urban areas
- mechanical conditions class 4M1: locations protected from significant vibrations or shocks

The required protection level for safe operation, according to reference document IEC 60529, is IP43XW (protection against access, to the most critical unit's parts, of external devices with diameter larger than 1 mm and rain).

The unit can be considered IP44XW protected, i.e. protected against access of external devices (with diameter larger than 1 mm) and water in general.

(*) for the unit's operating limits, see "selection limits" section

ELECTRICAL DATA
[SI System]

ERACS2-Q-G05 /XL-CA-E

SIZE	Power supply V/ph/Hz	Maximum values								
		Compressor			Fans (1)		Total (1)(2)			
		n	F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
1062	400/3/50	2	2x40,5	2x67,1	2x169	2,000	3	93,00	153	231
1162	400/3/50	2	2x48,7	2x80,4	2x206	2,000	3	113,0	186	291
1362	400/3/50	2	2x51,7	2x91,7	2x267	2,000	3	119,0	208	357
1562	400/3/50	2	2x64,3	2x104,7	2x290	2,000	3	145,0	234	382
1762	400/3/50	2	2x70,2	2x114,9	2x350	2,000	3	160,0	261	462
2022	400/3/50	2	2x85,4	2x137	2x246	2,000	3	195,0	311	376
2222	400/3/50	2	1x85,4+1x101	1x137+1x165	1x246+1x300	2,000	3	214,0	345	437
2422	400/3/50	2	2x101	2x165	2x300	2,000	3	230,0	373	447
2622	400/3/50	2	2x112	2x184	2x360	2,000	3	256,0	418	538

F.L.I.: Full load power

F.L.A.: Full load current

L.R.A.: Locked rotor amperes for single compressor

S.A.: Inrush current

(1) Values calculated referring to the version with the maximum number of fans working at the max absorbed current

(1)(2) Safety values to be considered when cabling the unit for power supply and line-protections

Data valid for standard units without any additional option.

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Voltage tolerance: 10%

Maximum voltage unbalance: 3%

Give the typical operating conditions of units designed for outdoor installation, which can be associated (according to reference document IEC 60721) to the following classes:

- climatic conditions class 4K4H: air temperature range from -20 up to 55°C (*), relative humidity range from 4 up to 100%, with possible precipitations, at air pressure from 70 and 106 kPa and a maximum solar radiation of 1120 W/m2

- special climatic conditions negligible

- biological conditions class 4B1 and 4C2: locations in a generic urban area

- mechanically active substances class 4S2: locations in areas with sand or dust representative of urban areas

- mechanical conditions class 4M1: locations protected from significant vibrations or shocks

The required protection level for safe operation, according to reference document IEC 60529, is IP43XW (protection against access, to the most critical unit's parts, of external devices with diameter larger than 1 mm and rain).

The unit can be considered IP44XW protected, i.e. protected against access of external devices (with diameter larger than 1 mm) and water in general.

(*) for the unit's operating limits, see "selection limits" section

10.1 FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /CA

SOUND POWER LEVEL IN COOLING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
1062	93	96	97	94	94	86	83	74	97
1162	93	96	97	94	94	86	83	74	97
1362	93	96	97	94	94	86	83	74	97
1562	94	98	97	95	95	88	84	74	98
1762	95	99	98	96	96	89	85	75	99
1962	95	99	98	96	96	89	85	75	99
2022	90	96	99	95	95	90	82	74	99
2222	91	99	102	98	97	91	83	75	101
2422	91	99	102	98	97	91	83	75	101
2622	91	99	102	98	97	91	83	75	101
2722	91	99	102	98	97	91	83	75	101
3222	92	100	103	99	98	92	84	76	102

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in cooling, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1062	61	64	65	62	62	54	51	42	65
1162	61	64	65	62	62	54	51	42	65
1362	61	64	65	62	62	54	51	42	65
1562	62	66	65	63	63	56	52	42	66
1762	62	66	65	63	63	56	52	42	66
1962	62	66	65	63	63	56	52	42	66
2022	57	63	66	62	62	57	49	41	66
2222	58	66	69	65	64	58	50	42	68
2422	58	66	69	65	64	58	50	42	68
2622	58	66	69	65	64	58	50	42	68
2722	58	66	69	65	64	58	50	42	68
3222	59	67	70	66	65	59	51	43	69

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /CA

SOUND POWER LEVEL IN HEATING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
1062	0	0	0	0	0	0	0	0	97
1162	0	0					0	0	97
1362	0	0					0	0	97
1562	0	0					0	0	98
1762	0	0					0	0	99
1962	0	0					0	0	99
2022	0	0					0	0	99
2222	0	0					0	0	101
2422	0	0					0	0	101
2622	0	0					0	0	101
2722	0	0					0	0	101
3222	0	0	0	0	0	0	0	0	102

Working conditions

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in heating, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1062	0	0	0	0	0	0	0	0	65
1162	0	0					0	0	65
1362	0	0					0	0	65
1562	0	0					0	0	66
1762	0	0					0	0	66
1962	0	0					0	0	66
2022	0	0					0	0	66
2222	0	0					0	0	68
2422	0	0					0	0	68
2622	0	0					0	0	68
2722	0	0					0	0	68
3222	0	0	0	0	0	0	0	0	69

Working conditions

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /LN-CA

SOUND POWER LEVEL IN COOLING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
1062	90	87	86	88	87	80	75	65	90
1162	90	88	88	90	88	80	75	65	91
1362	90	87	88	90	88	80	75	65	91
1562	91	88	89	91	89	81	76	66	92
1762	91	88	89	91	89	81	76	66	92
1962	91	88	89	91	89	81	76	66	92
2022	90	92	95	92	88	83	77	68	93
2222	92	94	97	94	90	85	79	70	95
2422	92	94	97	94	90	85	79	70	95
2622	92	94	97	94	90	85	79	70	95
2722	92	94	97	94	90	85	79	70	95
3222	93	95	98	95	91	86	80	71	96

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in cooling, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1062	58	55	54	56	55	48	43	33	58
1162	58	56	56	58	56	48	43	33	59
1362	58	55	56	58	56	48	43	33	59
1562	59	56	57	59	57	49	44	34	60
1762	58	55	56	58	56	48	43	33	59
1962	58	55	56	58	56	48	43	33	59
2022	57	59	62	59	55	50	44	35	60
2222	59	61	64	61	57	52	46	37	62
2422	59	61	64	61	57	52	46	37	62
2622	59	61	64	61	57	52	46	37	62
2722	59	61	64	61	57	52	46	37	62
3222	60	62	65	62	58	53	47	38	63

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /LN-CA

SOUND POWER LEVEL IN HEATING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
1062	0	0	0	0	0	0	0	0	91
1162	0	0					0	0	92
1362	0	0					0	0	92
1562	0	0					0	0	93
1762	0	0					0	0	93
1962	0	0					0	0	93
2022	0	0					0	0	94
2222	0	0					0	0	96
2422	0	0					0	0	96
2622	0	0					0	0	96
2722	0	0					0	0	96
3222	0	0	0	0	0	0	0	0	97

Working conditions

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in heating, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1062	0	0	0	0	0	0	0	0	59
1162	0	0					0	0	60
1362	0	0					0	0	60
1562	0	0					0	0	61
1762	0	0					0	0	60
1962	0	0					0	0	60
2022	0	0					0	0	61
2222	0	0					0	0	63
2422	0	0					0	0	63
2622	0	0					0	0	63
2722	0	0					0	0	63
3222	0	0	0	0	0	0	0	0	64

Working conditions

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /SL-CA

SOUND POWER LEVEL IN COOLING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
1062	89	80	83	85	83	75	69	64	86
1162	89	83	86	85	84	76	69	64	87
1362	89	83	86	85	84	76	69	64	87
1562	90	84	87	86	85	77	70	65	88
1762	90	84	87	86	85	77	70	65	88
1962	90	84	87	86	85	77	70	65	88
2022	92	90	92	88	84	78	71	63	89
2222	94	92	94	90	86	80	72	64	91
2422	94	92	94	90	86	80	72	64	91
2622	94	92	94	90	86	80	72	64	91
2722	94	92	94	90	86	80	72	64	91
3222	95	93	95	91	87	81	73	65	92

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in cooling, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1062	57	48	51	53	51	43	37	32	54
1162	57	51	54	53	52	44	37	32	55
1362	57	51	54	53	52	44	37	32	55
1562	58	52	55	54	53	45	38	33	56
1762	57	51	54	53	52	44	37	32	55
1962	57	51	54	53	52	44	37	32	55
2022	59	57	59	55	51	45	38	30	56
2222	61	59	61	57	53	47	39	31	58
2422	61	59	61	57	53	47	39	31	58
2622	61	59	61	57	53	47	39	31	58
2722	61	59	61	57	53	47	39	31	58
3222	62	60	62	58	54	48	40	32	59

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /SL-CA

SOUND POWER LEVEL IN HEATING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
1062	0	0	0	0	0	0	0	0	87
1162	0	0					0	0	88
1362	0	0					0	0	88
1562	0	0					0	0	89
1762	0	0					0	0	89
1962	0	0					0	0	89
2022	0	0					0	0	90
2222	0	0					0	0	92
2422	0	0					0	0	92
2622	0	0					0	0	92
2722	0	0					0	0	92
3222	0	0	0	0	0	0	0	0	93

Working conditions

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in heating, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1062	0	0	0	0	0	0	0	0	55
1162	0	0					0	0	56
1362	0	0					0	0	56
1562	0	0					0	0	57
1762	0	0					0	0	56
1962	0	0					0	0	56
2022	0	0					0	0	57
2222	0	0					0	0	59
2422	0	0					0	0	59
2622	0	0					0	0	59
2722	0	0					0	0	59
3222	0	0	0	0	0	0	0	0	60

Working conditions

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /XL-CA

SOUND POWER LEVEL IN COOLING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
2022	88	86	88	83	80	74	67	59	85
2222	90	88	90	85	82	76	69	61	87
2422	90	88	90	85	82	76	69	61	87
2622	90	88	90	85	82	76	69	61	87
2722	90	88	90	85	82	76	69	61	87
3222	91	89	91	86	83	77	70	62	88

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in cooling, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
2022	55	53	55	50	47	41	34	26	52
2222	57	55	57	52	49	43	36	28	54
2422	57	55	57	52	49	43	36	28	54
2622	57	55	57	52	49	43	36	28	54
2722	57	55	57	52	49	43	36	28	54
3222	58	56	58	53	50	44	37	29	55

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /XL-CA

SOUND POWER LEVEL IN HEATING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
2022	0	0	NOT AVAILABLE	NOT AVAILABLE	0	0	0	0	86
2222	0	0			0	0	0	0	88
2422	0	0			0	0	0	0	88
2622	0	0			0	0	0	0	88
2722	0	0			0	0	0	0	88
3222	0	0			0	0	0	0	89

Working conditions

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in heating, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
2022	0	0	NOT AVAILABLE	NOT AVAILABLE	0	0	0	0	53
2222	0	0			0	0	0	0	55
2422	0	0			0	0	0	0	55
2622	0	0			0	0	0	0	55
2722	0	0			0	0	0	0	55
3222	0	0			0	0	0	0	56

Working conditions

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /XL-CA-E

SOUND POWER LEVEL IN COOLING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
1062	88	79	82	84	82	74	68	63	85
1162	88	80	84	85	83	75	68	63	86
1362	88	82	85	84	83	75	68	63	86
1562	89	83	86	85	84	76	69	64	87
1762	89	83	86	85	84	76	69	64	87
2022	89	87	89	84	81	75	68	60	86
2222	91	89	91	86	83	77	70	62	88
2422	91	89	91	86	83	77	70	62	88
2622	91	89	91	86	83	77	70	62	88

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in cooling, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1062	56	47	50	52	50	42	36	31	53
1162	56	48	52	53	51	43	36	31	54
1362	56	50	53	52	51	43	36	31	54
1562	56	50	53	52	51	43	36	31	54
1762	56	50	53	52	51	43	36	31	54
2022	56	54	56	51	48	42	35	27	53
2222	58	56	58	53	50	44	37	29	55
2422	58	56	58	53	50	44	37	29	55
2622	58	56	58	53	50	44	37	29	55

Working conditions

Plant (side) cooling exchanger water (in/out) 12,00°C/7,00°C; Source (side) heat exchanger air (in) 35,0°C.

Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

FULL LOAD SOUND LEVEL

ERACS2-Q-G05 /XL-CA-E

SOUND POWER LEVEL IN HEATING									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
1062	0	0	n	n	n	0	0	0	86
1162	0	0	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE	0	0	0	87
1362	0	0				0	0	0	87
1562	0	0				0	0	0	88
1762	0	0				0	0	0	88
2022	0	0				0	0	0	87
2222	0	0				0	0	0	89
2422	0	0				0	0	0	89
2622	0	0				u	u	u	0

Working conditions

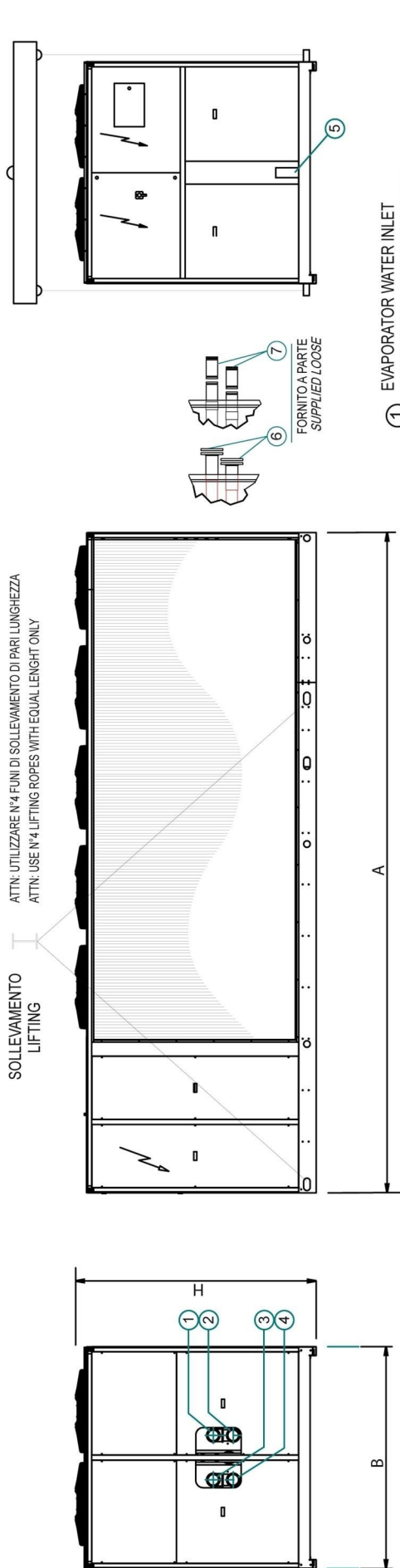
Sound power on the basis of measurements made in compliance with ISO 9614.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

Sound power level in heating, outdoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
1062	0	0	0	0	0	0	0	0	54
1162	0	0	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE	0	0	0	55
1362	0	0				0	0	0	55
1562	0	0				0	0	0	55
1762	0	0				0	0	0	55
2022	0	0				0	0	0	54
2222	0	0				0	0	0	56
2422	0	0				0	0	0	56
2622	0	0				v	v	v	0

Working conditions



① EVAPORATOR WATER INLET
ENTRATA ACQUA EVAPORATORE

② EVAPORATOR WATER OUTLET
USCITA ACQUA EVAPORATORE

③ RECUPERATOR WATER INLET
ENTRATA ACQUA RECUPERATORE

④ RECUPERATOR WATER OUTLET
USCITA ACQUA RECUPERATORE

⑤ POWER INLET (HOLE PRE-CUT)
INGRESSO LINEA ELETTRICA (FORO PREFRANCIATO)

OPTIONAL EXTERNAL WATER CONNECTION
CONNESSIONI ESTERNE OPZIONALI

⑥ OPTIONAL FLANGED CONNECTIONS
CONNESSIONI FLANGIATE OPZIONALI

⑦ OPTIONAL GROOVELOCK CONNECTIONS
CONNESSIONI GROOVELOCK OPZIONALI

SUPPORTING BASEMENT

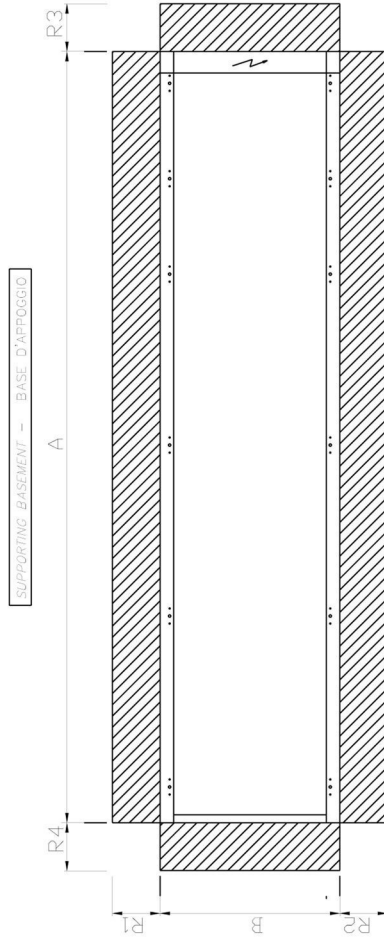
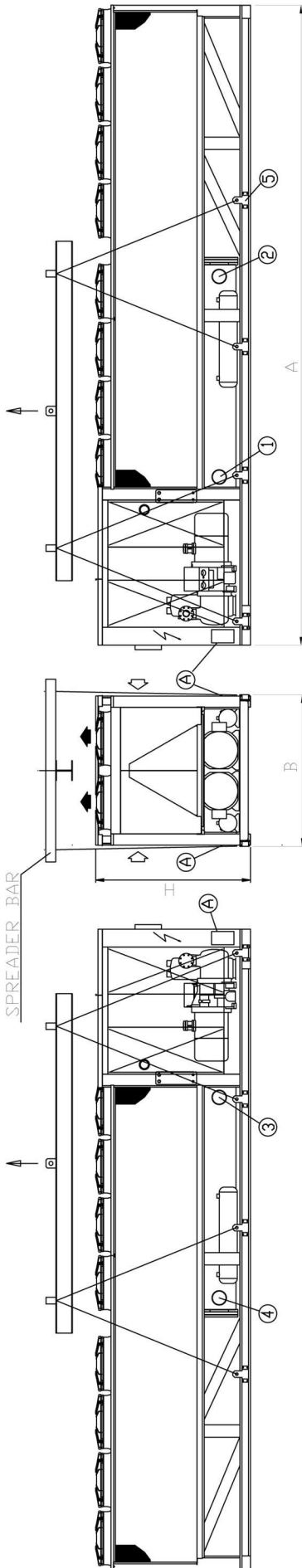


REMARKS: For installation purposes, please refer to the documentation sent after the purchase-contract. This technical data should be considered as indicative. Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A. may modify them at any moment. Data valid for standard units without any additional option.

DIMENSIONAL DRAWINGS
[SI System]

ERACS2-Q-G05 1062 - 3222

SIZE	DIMENSIONS AND WEIGHTS				CLEARANCE				CHILLED WATER HEAT EX. USER SIDE		WARM WATER HEAT EX. USER SIDE	
	A	B	H	WEIGHT	R1	R2	R3	R4	IN/OUT		IN/OUT	
	[mm]	[mm]	[mm]	[kg]	[mm]	[mm]	[mm]	[mm]	TYPE	Ø	TYPE	Ø
ERACS2-Q-G05 /CA 1062	4610	2220	2150	3600	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /CA 1162	4610	2220	2420	3870	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /CA 1362	5610	2220	2430	4620	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /CA 1562	5610	2220	2430	5040	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /CA 1762	6610	2220	2430	5520	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /CA 1962	6610	2220	2430	5670	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /LN-CA 1062	4610	2220	2150	3600	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /LN-CA 1162	4610	2220	2420	3870	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /LN-CA 1362	5610	2220	2430	4620	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /LN-CA 1562	5610	2220	2430	5040	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /LN-CA 1762	6610	2220	2430	5520	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /LN-CA 1962	6610	2220	2430	5670	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /SL-CA 1062	4610	2220	2150	3600	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /SL-CA 1162	4610	2220	2420	3870	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /SL-CA 1362	5610	2220	2430	4620	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /SL-CA 1562	5610	2220	2430	5040	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /SL-CA 1762	6610	2220	2430	5520	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /SL-CA 1962	6610	2220	2430	5670	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /XL-CA-E 1062	4610	2220	2420	3900	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /XL-CA-E 1162	5610	2220	2430	4490	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /XL-CA-E 1362	5610	2220	2430	4830	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /XL-CA-E 1562	6610	2220	2430	5590	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"
ERACS2-Q-G05 /XL-CA-E 1762	6610	2220	2430	5730	2000	2000	1100	1100	UNI ISO 7/1-R4	4"	UNI ISO 7/1-R4	4"



MINIMUM CLEARANCE
 SPAZIO DI RISPETTO

- ① EVAPORATOR WATER INLET
 ENTRATA ACQUA EVAPORATORE
- ② EVAPORATOR WATER OUTLET
 USCITA ACQUA EVAPORATORE
- ③ RECUPERATOR WATER INLET
 ENTRATA ACQUA RECUPERATORE
- ④ RECUPERATOR WATER OUTLET
 USCITA ACQUA RECUPERATORE
- ⑤ LIFTING POINTS
 PUNTI DI SOLLEVAMENTO

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DIMENSIONAL DRAWINGS
[SI System]

ERACS2-Q-G05 1062 - 3222

SIZE	DIMENSIONS AND WEIGHTS				CLEARANCE				CHILLED WATER HEAT EX. USER SIDE		WARM WATER HEAT EX. USER SIDE	
	A	B	H WEIGHT		R1	R2	R3	R4	IN/OUT		IN/OUT	
	[mm]	[mm]	[mm]	[kg]	[mm]	[mm]	[mm]	[mm]	TYPE	Ø	TYPE	Ø
ERACS2-Q-G05 /CA 2022	6300	2260	2350	7580	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /CA 2222	7200	2260	2350	8060	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /CA 2422	7200	2260	2350	8160	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /CA 2622	7200	2260	2350	8600	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /CA 2722	8400	2260	2350	9160	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /CA 3222	9700	2260	2350	11380	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /LN-CA 2022	6300	2260	2350	7580	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /LN-CA 2222	7200	2260	2350	8060	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /LN-CA 2422	7200	2260	2350	8160	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /LN-CA 2622	7200	2260	2350	8600	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /LN-CA 2722	8400	2260	2350	9160	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /LN-CA 3222	9700	2260	2350	11380	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /SL-CA 2022	6300	2260	2350	7670	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /SL-CA 2222	7200	2260	2350	8150	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /SL-CA 2422	7200	2260	2350	8250	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /SL-CA 2622	7200	2260	2350	8690	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /SL-CA 2722	8400	2260	2350	9260	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /SL-CA 3222	9700	2260	2350	11480	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /XL-CA 2022	6300	2260	2350	7790	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /XL-CA 2222	7200	2260	2350	8260	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /XL-CA 2422	7200	2260	2350	8350	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /XL-CA 2622	7200	2260	2350	8790	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /XL-CA 2722	8400	2260	2350	9340	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /XL-CA 3222	9700	2260	2350	11580	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"
ERACS2-Q-G05 /XL-CA-E 2022	8400	2260	2350	8510	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /XL-CA-E 2222	9300	2260	2350	8720	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /XL-CA-E 2422	9300	2260	2350	8890	2000	2000	1800	1500	FLEXIBLE JOINT	6"	FLEXIBLE JOINT	6"
ERACS2-Q-G05 /XL-CA-E 2622	9300	2260	2350	9400	2000	2000	1800	1500	FLEXIBLE JOINT	8"	FLEXIBLE JOINT	8"

12.1 HYDRONIC GROUP

12.1 HYDRONIC GROUP

The hydronic group consisting of:

- 2 pumps, 2 or 4 pole, low or high head
- differential pressure switch
- discharge valves on exchanger
- pump inlet / outlet valves
- check valve
- purge valve
- drain plug

Each of the components of the hydraulic group has been designed to optimise hydraulic and electrical installation space, time and costs.

The hydronic group is protected by a special casing ventilating.

The second pump operates in stand-by to the first. The relative operating hours of the two pumps are balanced. In case the operating pump breaks down, the reserve pump is automatically enabled.

The electrical panel of the unit is protected with fuses and contactors with thermals cut-out.

12.1 IN-LINE PUMPS

Low or high head pumps

Centrifugal pumps with in-line suction and delivery flanges, in single or twin versions. Pump body in cast iron and impeller in AISI 316L stainless steel or cast-iron, entirely laser technology welded. Mechanical seal with components in ceramics, carbon and EPDM elastomers. Three-phase electric motor protected to IP55, insulation class F, suitable for continuous service.

12.1 OTHER COMPONENTS

The following components are excluded from the hydronic kit supply, but their use is mandatory for the correct unit and system operation.

These components are available as accessories and supplied loose, it shall be the customer responsibility to install them.

- Unit inlet water filter
- Unit outlet flow-switch

It is also recommended the use of the following components:

- Unit inlet and outlet pressure gauges
- Shut-off valves
- Flexible joints on piping

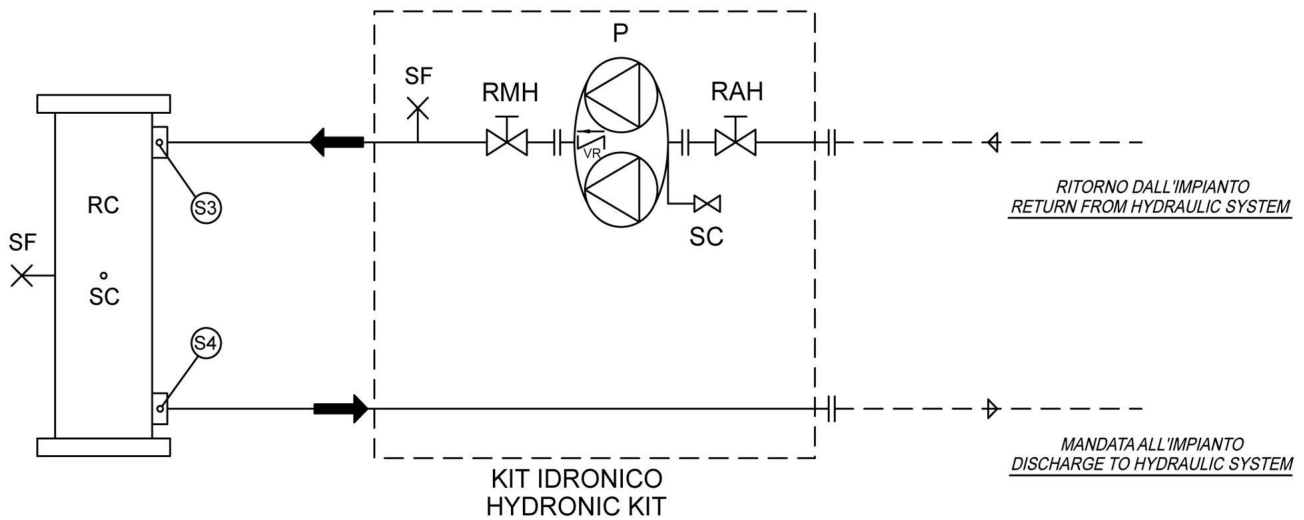
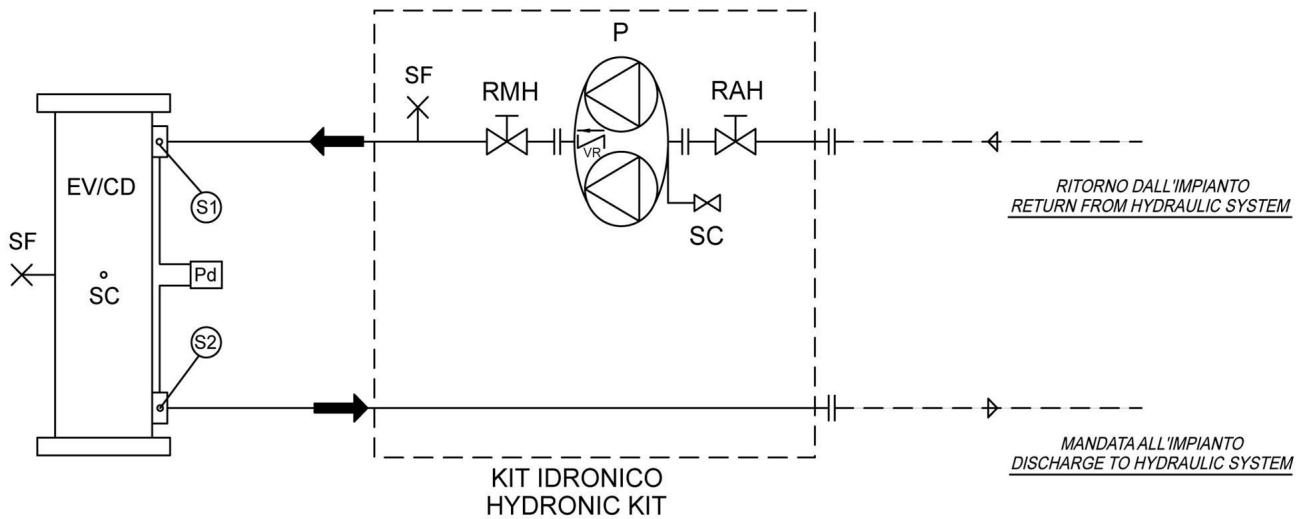
12.1 SPECIAL PUMPS

For pumps with different configurations, please contact our sales department.

Possible configurations

PUMP GROUP	Versions				
	CA	LN-CA	SL-CA	XL-CA	XL-CA-E
4 POMPE 4P BP + VPF(3066)	n.a.	n.a.	X	n.a.	X
4 POMPE 2P BP + VPF(3066)	n.a.	n.a.	n.a.	X	n.a.
4 POMPE 2P BP + VPF(3067)	X	X	n.a.	n.a.	n.a.
4 POMPE 2P AP + VPF(3071)	X	X	X	X	X
4 PUMPS 4 POLES (2EV LH + 2RC LH)(3316)	n.a.	n.a.	X	X	X
4 PUMPS 2 POLES (2EV LH + 2RC LH)(3317)	X	X	n.a.	n.a.	n.a.
4 PUMPS 2 POLES (2EV HH + 2RC HH)(3321)	X	X	X	X	X

HYDRONIC GROUP

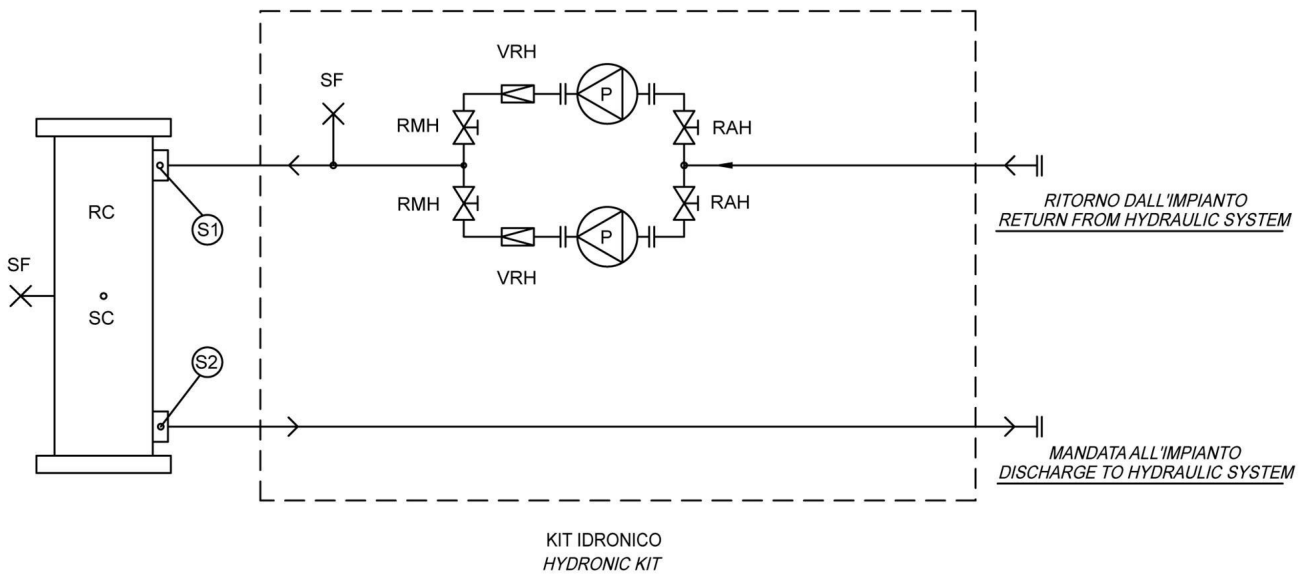
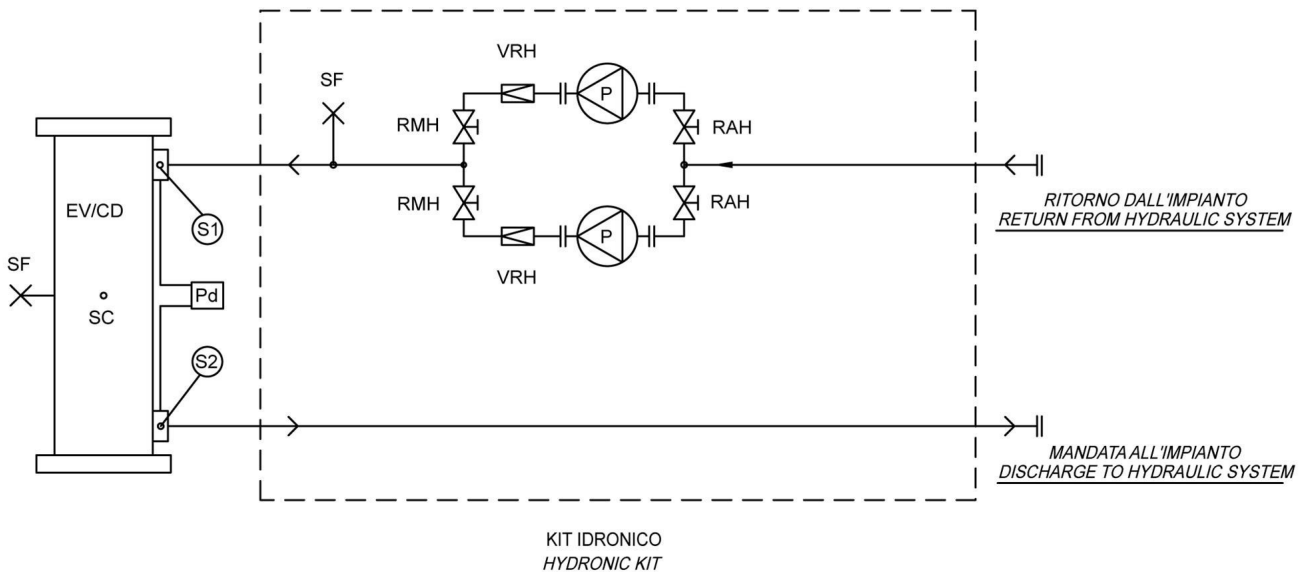


LEGENDA - LEGEND

COMPONENTI DEL KIT IDRONICO COMPONENTS OF THE HYDRONIC KIT

EV/CD	Scambiatore freddo lato utenza (scambiatore a fascio tubiero) Plant side cold heat exchanger (tube exchanger)
P	Pompa gemellare Twin rotor pump
Pd	Pressostato differenziale lato acqua Water Differential pressure switch
RC	Scambiatore caldo lato utenza (scambiatore a fascio tubiero) Plant side cold heat exchanger (tube exchanger)
RAH	Rubinetto aspirazione Pump suction valve
RMH	Rubinetto mandata Pump discharge valve
SC	Valvola di scarico Drain valve
SF	Valvola di sfiato Purge valve
S1/S3	Sonda ingresso acqua scambiatore Exchanger water inlet probe
S2/S4	Sonda uscita acqua scambiatore Exchanger water outlet probe
VR	Valvola di ritegno (interna alla pompa) Cheek valve (pump inside)

HYDRONIC GROUP



LEGENDA - LEGEND	
<i>COMPONENTI DEL KIT IDRONICO COMPONENTS OF THE HYDRONIC KIT</i>	
EV/CD	Scambiatore freddo lato utenza (scambiatore a fascio tubiero) Plant side cold heat exchanger (tube exchanger)
P	Pompa Water pump
Pd	Pressostato differenziale lato acqua Water Differential pressure switch
RC	Scambiatore caldo lato utenza (scambiatore a fascio tubiero) Plant side cold heat exchanger (tube exchanger)
RAH	Rubinetto aspirazione Pump suction valve
RMH	Rubinetto mandata Pump discharge valve
SC	Valvola di scarico Drain valve
SF	Valvola di sfiato Purge valve
S1/S3	Sonda ingresso acqua scambiatore Exchanger water inlet probe
S2/S4	Sonda uscita acqua scambiatore Exchanger water outlet probe
VRH	Valvola di non ritorno One way valve

HYDRONIC GROUP

Hydronic kit positioning

	Version	4 POMPE 4P BP + VPF (3066)				4 POMPE 2P BP + VPF (3066)				4 POMPE 2P AP + VPF (3071)				4 PUMPS 4 POLES (2EV LH + 2RC LH) (3316)			
		extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]
1062	SL-CA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	354
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	354
1162	XL-CA-E	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	567
1362	SL-CA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	543
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	543
1562	SL-CA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	567
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	530
1762	SL-CA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	562
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	562
1962	SL-CA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	/	/	/	562
2022	CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1070	/	/	/	1190	n.a.	n.a.	n.a.	n.a.
	LN-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1070	/	/	/	1190	n.a.	n.a.	n.a.	n.a.
	SL-CA	/	/	/	1190	n.a.	n.a.	n.a.	n.a.	/	/	/	1190	/	/	/	1190
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1190	/	/	/	1190	/	/	/	1190
	XL-CA-E	/	/	/	1350	n.a.	n.a.	n.a.	n.a.	/	/	/	1350	/	/	/	1350
2222	CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1170	/	/	/	1290	n.a.	n.a.	n.a.	n.a.
	LN-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1170	/	/	/	1290	n.a.	n.a.	n.a.	n.a.
	SL-CA	/	/	/	1290	n.a.	n.a.	n.a.	n.a.	/	/	/	1290	/	/	/	1290
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1290	/	/	/	1290	/	/	/	1290
	XL-CA-E	/	/	/	1370	n.a.	n.a.	n.a.	n.a.	/	/	/	1370	/	/	/	1370
2422	CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1170	/	/	/	1290	n.a.	n.a.	n.a.	n.a.
	LN-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1170	/	/	/	1290	n.a.	n.a.	n.a.	n.a.
	SL-CA	/	/	/	1330	n.a.	n.a.	n.a.	n.a.	/	/	/	1290	/	/	/	1330
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1330	/	/	/	1290	/	/	/	1330
	XL-CA-E	/	/	/	1410	n.a.	n.a.	n.a.	n.a.	/	/	/	1370	/	/	/	1410
2622	CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1170	/	/	/	1290	n.a.	n.a.	n.a.	n.a.
	LN-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1170	/	/	/	1290	n.a.	n.a.	n.a.	n.a.
	SL-CA	/	/	/	1330	n.a.	n.a.	n.a.	n.a.	/	/	/	1290	/	/	/	1330
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1330	/	/	/	1290	/	/	/	1330
	XL-CA-E	/	/	/	1410	n.a.	n.a.	n.a.	n.a.	/	/	/	1370	/	/	/	1410
2722	CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1150	/	/	/	1090	n.a.	n.a.	n.a.	n.a.
	LN-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1150	/	/	/	1090	n.a.	n.a.	n.a.	n.a.
	SL-CA	/	/	/	1150	n.a.	n.a.	n.a.	n.a.	/	/	/	1090	/	/	/	1150
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1150	/	/	/	1090	/	/	/	1150
3222	CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1100	/	/	/	1600	n.a.	n.a.	n.a.	n.a.
	LN-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1100	/	/	/	1600	n.a.	n.a.	n.a.	n.a.
	SL-CA	/	/	/	1540	n.a.	n.a.	n.a.	n.a.	/	/	/	1600	/	/	/	1540
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1540	/	/	/	1600	/	/	/	1540

extra L	Unit's extra length
extra W	Unit's extra operating width (NOT to be considered for transport)
extra H	Unit's extra height
extra H	Unit's extra weight (pumps and piping)
4 POMPE 4P BP + VPF	4 POMPE 4P BP + VPF
4 POMPE 2P BP + VPF	4 POMPE 2P BP + VPF
4 POMPE 2P AP + VPF	4 POMPE 2P AP + VPF
4 PUMPS 4 POLES (2EV LH + 2RC LH)	4 PUMPS 4 POLES (2EV LH + 2RC LH)
-	Not available

HYDRONIC GROUP

Hydronic kit positioning

	Version	4 PUMPS 2 POLES (2EV LH + 2RC LH) (3317)				4 PUMPS 2 POLES (2EV HH + 2RC HH) (3321)											
		extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]
1062	CA	/	/	/	246	/	/	/	282								
	LN-CA	/	/	/	246	/	/	/	282								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	282								
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	282								
1162	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	419								
1362	CA	/	/	/	279	/	/	/	395								
	LN-CA	/	/	/	279	/	/	/	395								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	395								
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	395								
1562	CA	/	/	/	303	/	/	/	395								
	LN-CA	/	/	/	303	/	/	/	395								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	395								
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	628								
1762	CA	/	/	/	612	/	/	/	756								
	LN-CA	/	/	/	612	/	/	/	756								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	756								
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	756								
1962	CA	/	/	/	628	/	/	/	756								
	LN-CA	/	/	/	628	/	/	/	756								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	756								
2022	CA	/	/	/	1070	/	/	/	1190								
	LN-CA	/	/	/	1070	/	/	/	1190								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1190								
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1190								
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	1350								
2222	CA	/	/	/	1170	/	/	/	1290								
	LN-CA	/	/	/	1170	/	/	/	1290								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1290								
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1290								
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	1370								
2422	CA	/	/	/	1170	/	/	/	1290								
	LN-CA	/	/	/	1170	/	/	/	1290								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1290								
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1290								
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	1370								
2622	CA	/	/	/	1170	/	/	/	1290								
	LN-CA	/	/	/	1170	/	/	/	1290								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1290								
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1290								
	XL-CA-E	n.a.	n.a.	n.a.	n.a.	/	/	/	1370								
2722	CA	/	/	/	1150	/	/	/	1090								
	LN-CA	/	/	/	1150	/	/	/	1090								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1090								

extra L Unit's extra length
extra W Unit's extra operating width (NOT to be considered for transport)
extra H Unit's extra height
extra H Unit's extra weight (pumps and piping)
4 PUMPS 2 POLES (2EV LH + 2RC LH) 4 PUMPS 2 POLES (2EV LH + 2RC LH)
4 PUMPS 2 POLES (2EV HH + 2RC HH) 4 PUMPS 2 POLES (2EV HH + 2RC HH)
 - Not available

HYDRONIC GROUP

Hydronic kit positioning

	Version	4 PUMPS 2 POLES (2EV LH + 2RC LH) (3317)				4 PUMPS 2 POLES (2EV HH + 2RC HH) (3321)											
		extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]	extra L [mm]	extra W [mm]	extra H [mm]	extra WGT [kg]
2722	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1090								
3222	CA	/	/	/	1100	/	/	/	1600								
	LN-CA	/	/	/	1100	/	/	/	1600								
	SL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1600								
	XL-CA	n.a.	n.a.	n.a.	n.a.	/	/	/	1600								

extra L	Unit's extra length
extra W	Unit's extra operating width (NOT to be considered for transport)
extra H	Unit's extra height
extra H	Unit's extra weight (pumps and piping)
4 PUMPS 2 POLES (2EV LH + 2RC LH)	4 PUMPS 2 POLES (2EV LH + 2RC LH)
4 PUMPS 2 POLES (2EV HH + 2RC HH)	4 PUMPS 2 POLES (2EV HH + 2RC HH)
-	Not available

HYDRONIC GROUP

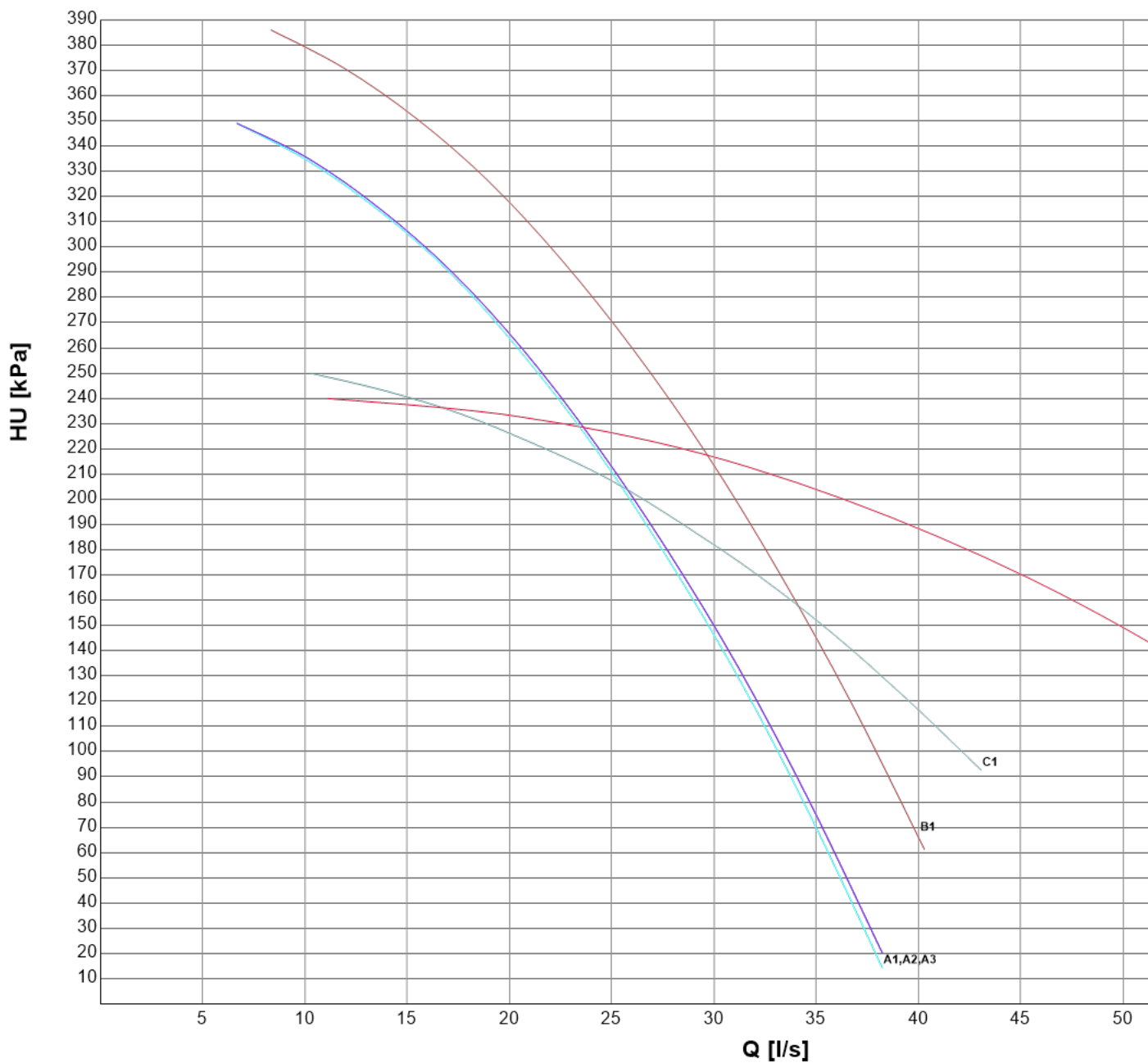
CHILLED WATER HEAT EX. USER SIDE - 4 POMPE 2P AP + VPF

SIZE		CH		HP		PUMP					CH	HP
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]
2022	CA	482,7	23,09	496,9		A1					232	
	LN-CA	468,7	22,42	496,9							240	
	SL-CA	464,1	22,19	490,7							242	
	XL-CA	454,5	21,73	490,7							247	
	XL-CA-E	472,5	22,60	517,8							238	
2222	CA	525,0	25,11	546,8		A2	3D 65-160/9.2	2	34	18,40	212	
	LN-CA	513,4	24,55	546,8							218	
	SL-CA	509,0	24,34	541,1							221	
	XL-CA	500,5	23,93	541,1							225	
	XL-CA-E	509,5	24,37	557,2							221	
2422	CA	553,8	26,49	576,4		A3					196	
	LN-CA	541,3	25,89	576,4							203	
	SL-CA	537,1	25,68	569,7							205	
	XL-CA	528,4	25,27	569,7							210	
	XL-CA-E	541,3	25,89	593,9							203	
2622	CA	624,1	29,84	617,8		B1	3D 65-160/11	2	43	22,00	215	
	LN-CA	603,9	28,88	617,8							227	
	SL-CA	597,3	28,56	605,5							231	
	XL-CA	583,9	27,92	612,8							238	
	XL-CA-E	611,3	29,23	650,2							223	
2722	CA	701,4	33,54	718,5		C1	LNTE 100-160/110/2	2	40	22,00	161	
	LN-CA	683,8	32,70	718,5							167	
	SL-CA	677,7	32,41	710,1							168	
	XL-CA	665,4	31,82	710,1							172	
3222	CA	825,6	39,48	833,8		D1	LNTS 150-315/185/4	4	70	37,00	190	
	LN-CA	799,5	38,23	833,8							194	
	SL-CA	790,4	37,80	823,6							196	
	XL-CA	772,4	36,94	823,6							198	

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)

CHILLED WATER HEAT EX. USER SIDE - 4 POMPE 2P AP + VPF



HYDRONIC GROUP

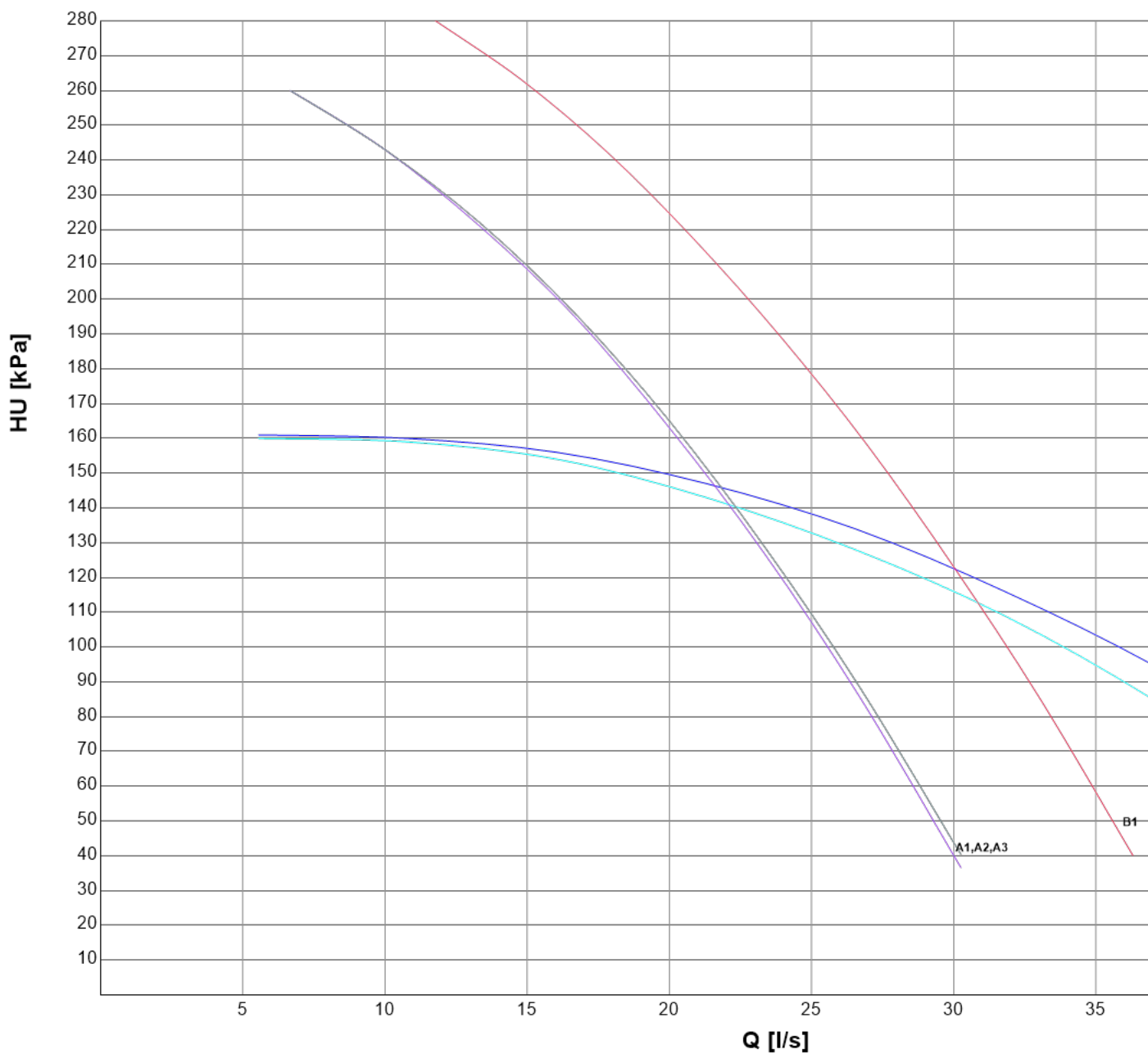
CHILLED WATER HEAT EX. USER SIDE - 4 POMPE 2P BP + VPF

SIZE		CH		HP		PUMP				CH	HP												
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU											
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]											
2022	CA	482,7	23,09	496,9		A1	3D 65-125/5.5	2	21	11,00	130												
	LN-CA	468,7	22,42	496,9							137												
2222	CA	525,0	25,11	546,8		A2					3D 65-125/5.5	2	21	11,00	108								
	LN-CA	513,4	24,55	546,8											115								
2422	CA	553,8	26,49	576,4		A3									3D 65-125/5.5	2	21	11,00	91,1				
	LN-CA	541,3	25,89	576,4															98,6				
2622	CA	624,1	29,84	617,8		B1		3D 65-125/7.5	2	27									15,00	125			
	LN-CA	603,9	28,88	617,8																137			
2722	CA	701,4	33,54	718,5		C1						LNTS 125-200/75/4	4	30						15,00	101		
	LN-CA	683,8	32,70	718,5																	105		
3222	CA	825,6	39,48	833,8		C2										LNTS 125-200/75/4	4	30			15,00	83,2	
	LN-CA	799,5	38,23	833,8																		89,2	

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)

CHILLED WATER HEAT EX. USER SIDE - 4 POMPE 2P BP + VPF



HYDRONIC GROUP

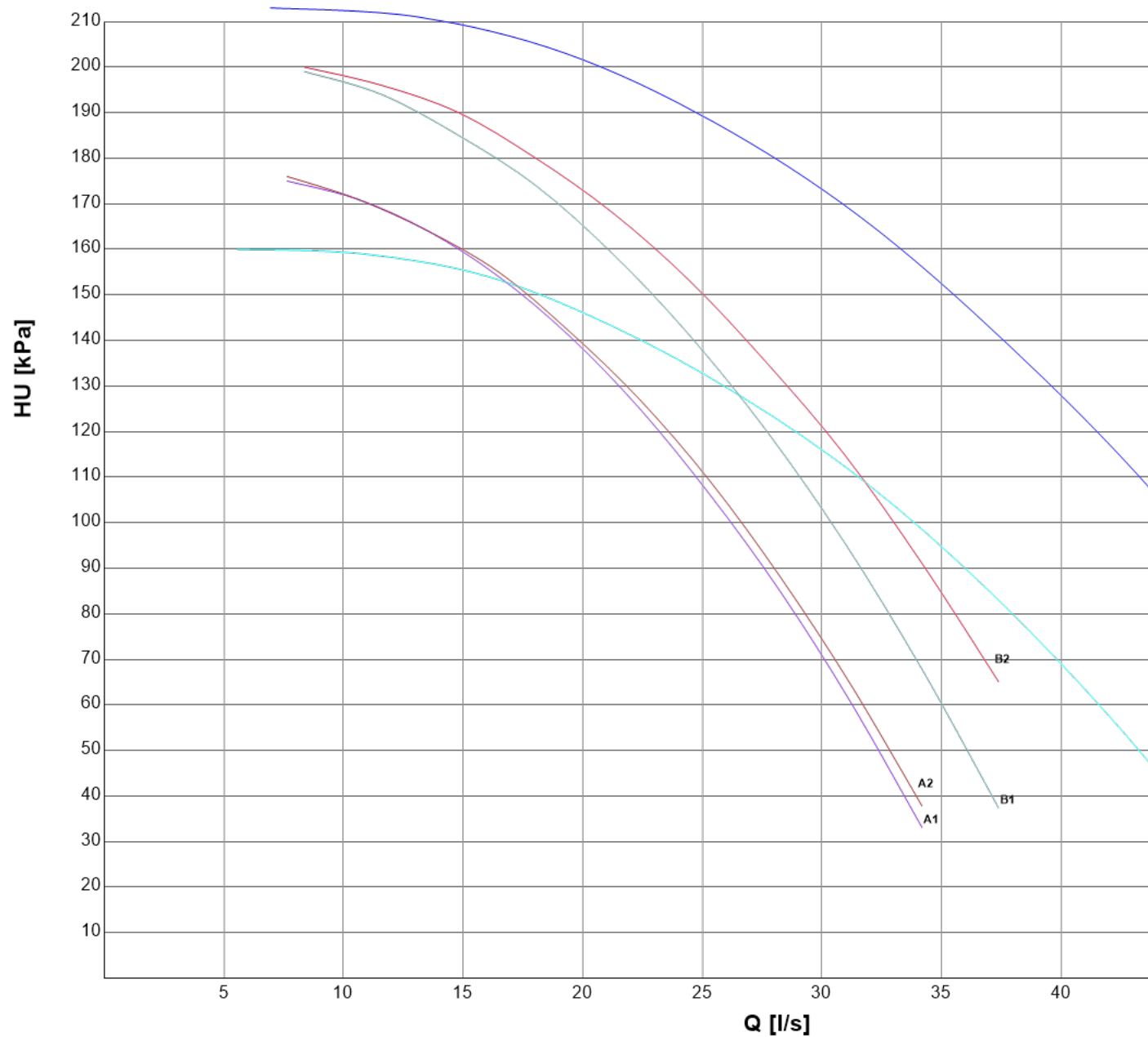
CHILLED WATER HEAT EX. USER SIDE - 4 POMPE 4P BP + VPF

SIZE		CH		HP		PUMP					CH	HP
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]
2022	SL-CA	464,1	22,19	490,7		A1	NSCS 80-250/55/4	4	21	11,00	126	
	XL-CA	454,5	21,73	490,7							129	
	XL-CA-E	472,5	22,60	517,8							124	
2222	SL-CA	509,0	24,34	541,1		A2	NSCS 80-250/55/4	4	21	11,00	115	
	XL-CA	500,5	23,93	541,1							118	
	XL-CA-E	509,5	24,37	557,2							115	
2422	SL-CA	537,1	25,68	569,7		B1	NSCS 80-250/75/4	4	28	15,00	134	
	XL-CA	528,4	25,27	569,7							136	
	XL-CA-E	541,3	25,89	593,9							132	
2622	SL-CA	597,3	28,56	605,5		B2	NSCS 80-250/75/4	4	28	15,00	130	
	XL-CA	583,9	27,92	612,8							134	
	XL-CA-E	611,3	29,23	650,2							126	
2722	SL-CA	677,7	32,41	710,1		C1	LNTS 125-200/75/4	4	30	15,00	106	
	XL-CA	665,4	31,82	710,1							109	
3222	SL-CA	790,4	37,80	823,6		D1	LNTS 125-250/110/4	4	41	22,00	139	
	XL-CA	772,4	36,94	823,6							143	

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)

CHILLED WATER HEAT EX. USER SIDE - 4 POMPE 4P BP + VPF



HYDRONIC GROUP

CHILLED WATER HEAT EX. USER SIDE - 4 PUMPS 2 POLES (2EV HH + 2RC HH)

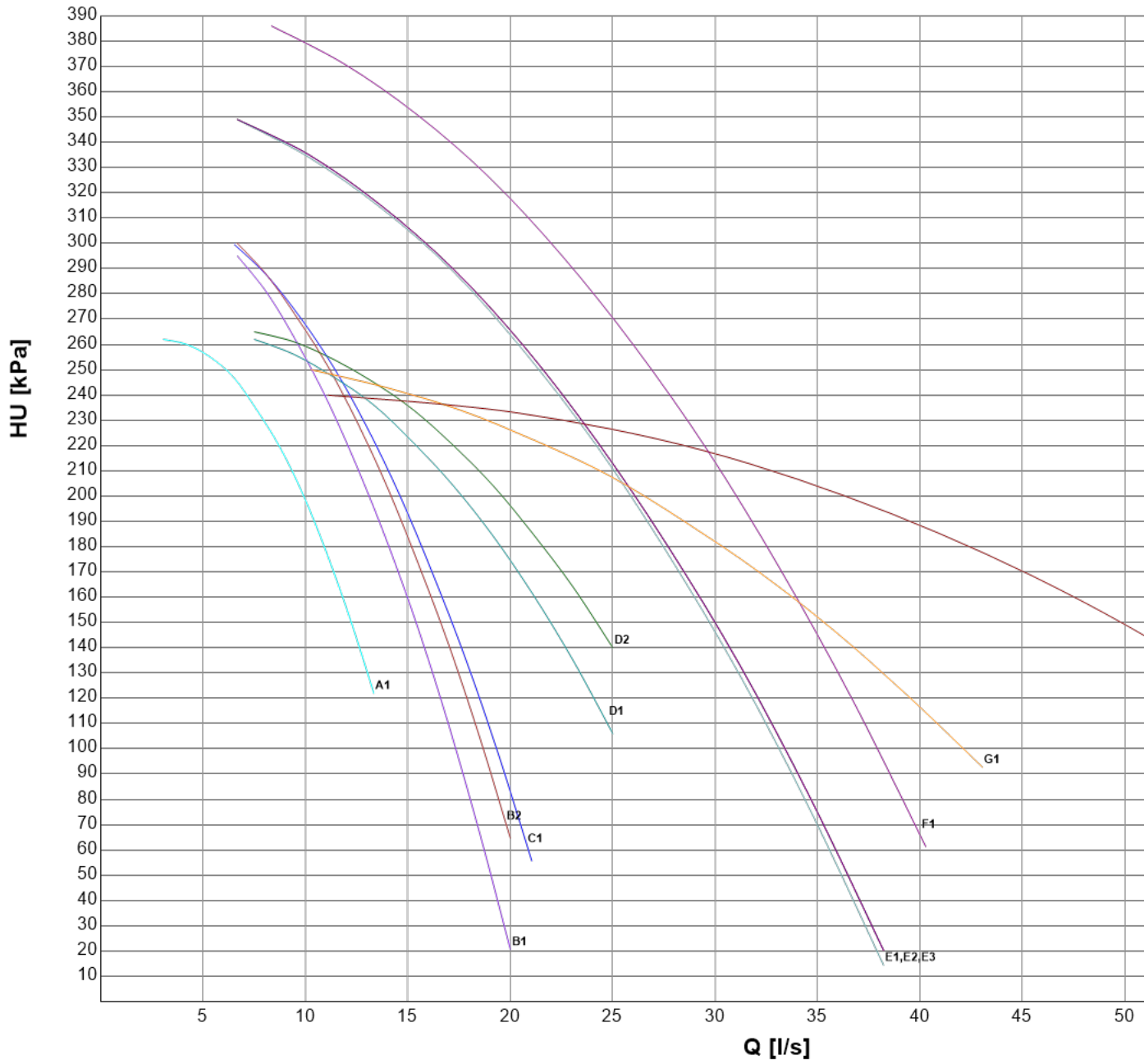
SIZE		CH		HP		PUMP					CH	HP				
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU				
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]				
1062	CA	210,0	10,04	219,8		A1	NSCE 40-160/40/2	2	15	8,000	197					
	LN-CA	204,9	9,797	219,8							202					
	SL-CA	199,5	9,540	213,3							206					
	XL-CA-E	204,3	9,771	220,4							202					
1162	XL-CA-E	247,2	11,82	269,9		B1	3D 50-160/5.5	2	21	11,00	225					
1362	CA	302,3	14,46	311,6		B2					194					
	LN-CA	293,8	14,05	311,6							202					
	SL-CA	283,4	13,55	303,9							211					
	XL-CA-E	293,3	14,03	311,2							203					
1562	CA	329,4	15,75	342,6		C1					168					
	LN-CA	321,8	15,39	342,6							176					
	SL-CA	313,8	15,00	333,4							184					
	XL-CA-E	319,4	15,28	343,7							LNTE 65-160/75/2	2	28	15,00	210	
1762	CA	380,3	18,19	399,6		D1					LNTE 80-160/75/2	2	28	15,00	194	
	LN-CA	369,3	17,66	399,6											200	
	SL-CA	356,0	17,02	389,1											206	
	XL-CA-E	366,3	17,52	396,8											201	
1962	CA	425,2	20,33	438,3		D2	193									
	LN-CA	413,6	19,78	438,3			198									
	SL-CA	401,4	19,20	426,1			203									
2022	CA	482,7	23,09	496,9		E1	3D 65-160/9.2	2	34	18,40					232	
	LN-CA	468,7	22,42	496,9											240	
	SL-CA	464,1	22,19	490,7											242	
	XL-CA	454,5	21,73	490,7											247	
	XL-CA-E	472,5	22,60	517,8											238	
2222	CA	525,0	25,11	546,8		E2									212	
	LN-CA	513,4	24,55	546,8							218					
	SL-CA	509,0	24,34	541,1							221					
	XL-CA	500,5	23,93	541,1							225					
	XL-CA-E	509,5	24,37	557,2							221					
2422	CA	553,8	26,49	576,4		E3					196					
	LN-CA	541,3	25,89	576,4							203					
	SL-CA	537,1	25,68	569,7							205					
	XL-CA	528,4	25,27	569,7			210									
	XL-CA-E	541,3	25,89	593,9			203									
2622	CA	624,1	29,84	617,8		F1	3D 65-160/11	2	43	22,00	215					
	LN-CA	603,9	28,88	617,8							227					
	SL-CA	597,3	28,56	605,5							231					
	XL-CA	583,9	27,92	612,8							238					
	XL-CA-E	611,3	29,23	650,2							223					
2722	CA	701,4	33,54	718,5		G1	LNTE 100-160/110/2	2	40	22,00	161					
	LN-CA	683,8	32,70	718,5							167					
	SL-CA	677,7	32,41	710,1							168					
	XL-CA	665,4	31,82	710,1							172					
3222	CA	825,6	39,48	833,8		H1	LNTS 150-315/185/4	4	70	37,00	190					
	LN-CA	799,5	38,23	833,8							194					
	SL-CA	790,4	37,80	823,6							196					
	XL-CA	772,4	36,94	823,6							198					

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)



CHILLED WATER HEAT EX. USER SIDE - 4 PUMPS 2 POLES (2EV HH + 2RC HH)



HYDRONIC GROUP

CHILLED WATER HEAT EX. USER SIDE - 4 PUMPS 2 POLES (2EV LH + 2RC LH)

SIZE		CH		HP		PUMP				CH	HP									
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU								
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]								
1062	CA	210,0	10,04	219,8		A1	NSCE 40-125/22/2	2	9	4,400	105									
	LN-CA	204,9	9,797	219,8							109									
1362	CA	302,3	14,46	311,6		B1	3D 50-125/3	2	12	6,000	89,0									
	LN-CA	293,8	14,05	311,6							96,6									
1562	CA	329,4	15,75	342,6		C1	3D 50-125/4	2	17	8,000	115									
	LN-CA	321,8	15,39	342,6							122									
1762	CA	380,3	18,19	399,6		D1	LNTE 65-125/55/2	2	21	11,00	130									
	LN-CA	369,3	17,66	399,6							138									
1962	CA	425,2	20,33	438,3		D2					LNTE 65-125/55/2	2	21	11,00	117					
	LN-CA	413,6	19,78	438,3											125					
2022	CA	482,7	23,09	496,9		E1	3D 65-125/5.5	2	21	11,00					130					
	LN-CA	468,7	22,42	496,9											137					
2222	CA	525,0	25,11	546,8		E2					3D 65-125/5.5	2	21	11,00	108					
	LN-CA	513,4	24,55	546,8											115					
2422	CA	553,8	26,49	576,4		E3									3D 65-125/5.5	2	21	11,00	91,1	
	LN-CA	541,3	25,89	576,4															98,6	
2622	CA	624,1	29,84	617,8		F1	3D 65-125/7.5	2	27	15,00									125	
	LN-CA	603,9	28,88	617,8															137	
2722	CA	701,4	33,54	718,5		G1	LNTE 125-200/75/4	4	30	15,00	101									
	LN-CA	683,8	32,70	718,5							105									
3222	CA	825,6	39,48	833,8		G2					LNTE 125-200/75/4	4	30	15,00	83,2					
	LN-CA	799,5	38,23	833,8											89,2					

(1) Values refer to nominal conditions

CH Cooling mode

HP HP mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

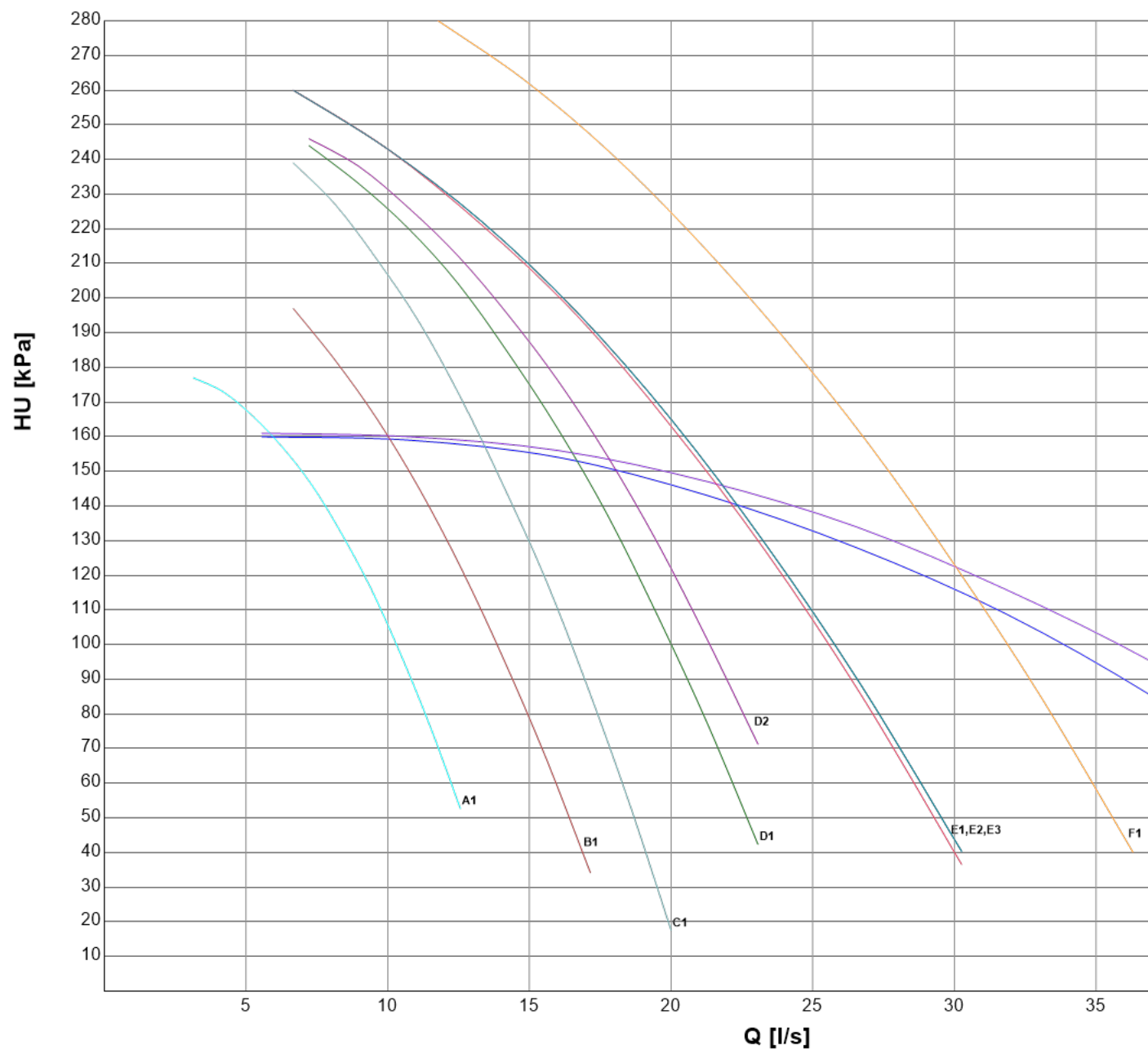
Q Plant (side) exchanger water flow

F.L.I. Pump power input

F.L.A. Pump running current

HU Pump residual pressure head (Units with hydronic group without mains filter)

CHILLED WATER HEAT EX. USER SIDE - 4 PUMPS 2 POLES (2EV LH + 2RC LH)



HYDRONIC GROUP

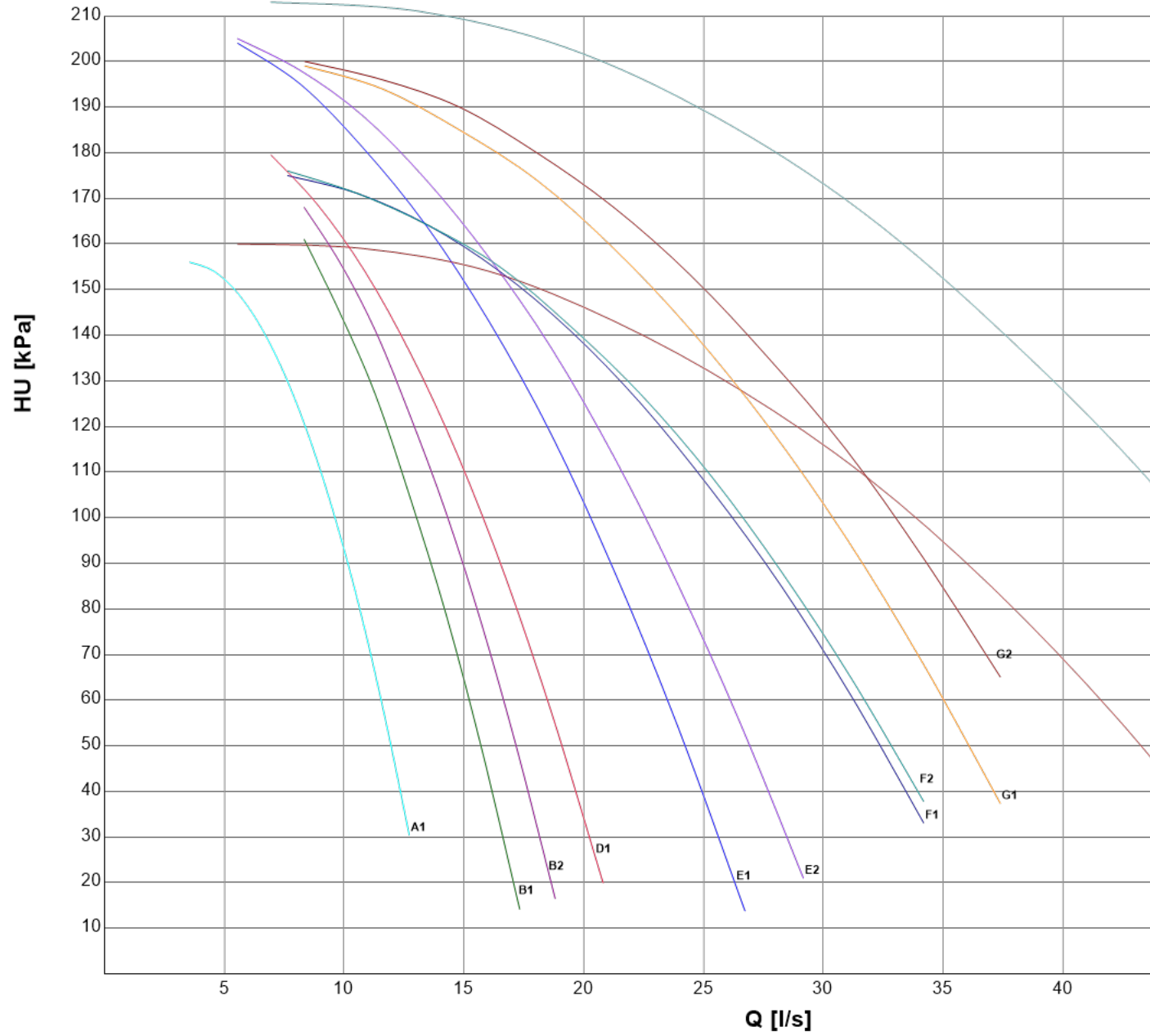
CHILLED WATER HEAT EX. USER SIDE - 4 PUMPS 4 POLES (2EV LH + 2RC LH)

SIZE		CH		HP		PUMP				CH	HP	
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]
1062	SL-CA	199,5	9,540	213,3		A1	NSCE 50-250/22/4	4	9	4,400	101	
	XL-CA-E	204,3	9,771	220,4							97,2	
1162	XL-CA-E	247,2	11,82	269,9		B1	MMD4 65-250/4	4	17	8,000	119	
1362	SL-CA	283,4	13,55	303,9		B2					112	
	XL-CA-E	293,3	14,03	311,2			105					
1562	SL-CA	313,8	15,00	333,4		D1	MMD4 65-250/5.5	4	22	11,00	129	
	XL-CA-E	319,4	15,28	343,7			LNTS 80-200/40/4	4	16	8,000	89,7	
1762	SL-CA	356,0	17,02	389,1		E1	LNTS 80-250/55/4	4	23	11,00	134	
	XL-CA-E	366,3	17,52	396,8							129	
1962	SL-CA	401,4	19,20	426,1		E2					132	
2022	SL-CA	464,1	22,19	490,7		F1	NSCS 80-250/55/4	4	21	11,00	126	
	XL-CA	454,5	21,73	490,7							129	
	XL-CA-E	472,5	22,60	517,8							124	
2222	SL-CA	509,0	24,34	541,1		F2	NSCS 80-250/55/4	4	21	11,00	115	
	XL-CA	500,5	23,93	541,1							118	
	XL-CA-E	509,5	24,37	557,2							115	
2422	SL-CA	537,1	25,68	569,7		G1	NSCS 80-250/75/4	4	28	15,00	134	
	XL-CA	528,4	25,27	569,7							136	
	XL-CA-E	541,3	25,89	593,9							132	
2622	SL-CA	597,3	28,56	605,5		G2	NSCS 80-250/75/4	4	28	15,00	130	
	XL-CA	583,9	27,92	612,8							134	
	XL-CA-E	611,3	29,23	650,2							126	
2722	SL-CA	677,7	32,41	710,1		H1	LNTS 125-200/75/4	4	30	15,00	106	
	XL-CA	665,4	31,82	710,1							109	
3222	SL-CA	790,4	37,80	823,6		I1	LNTS 125-250/110/4	4	41	22,00	139	
	XL-CA	772,4	36,94	823,6							143	

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)

CHILLED WATER HEAT EX. USER SIDE - 4 PUMPS 4 POLES (2EV LH + 2RC LH)



HYDRONIC GROUP

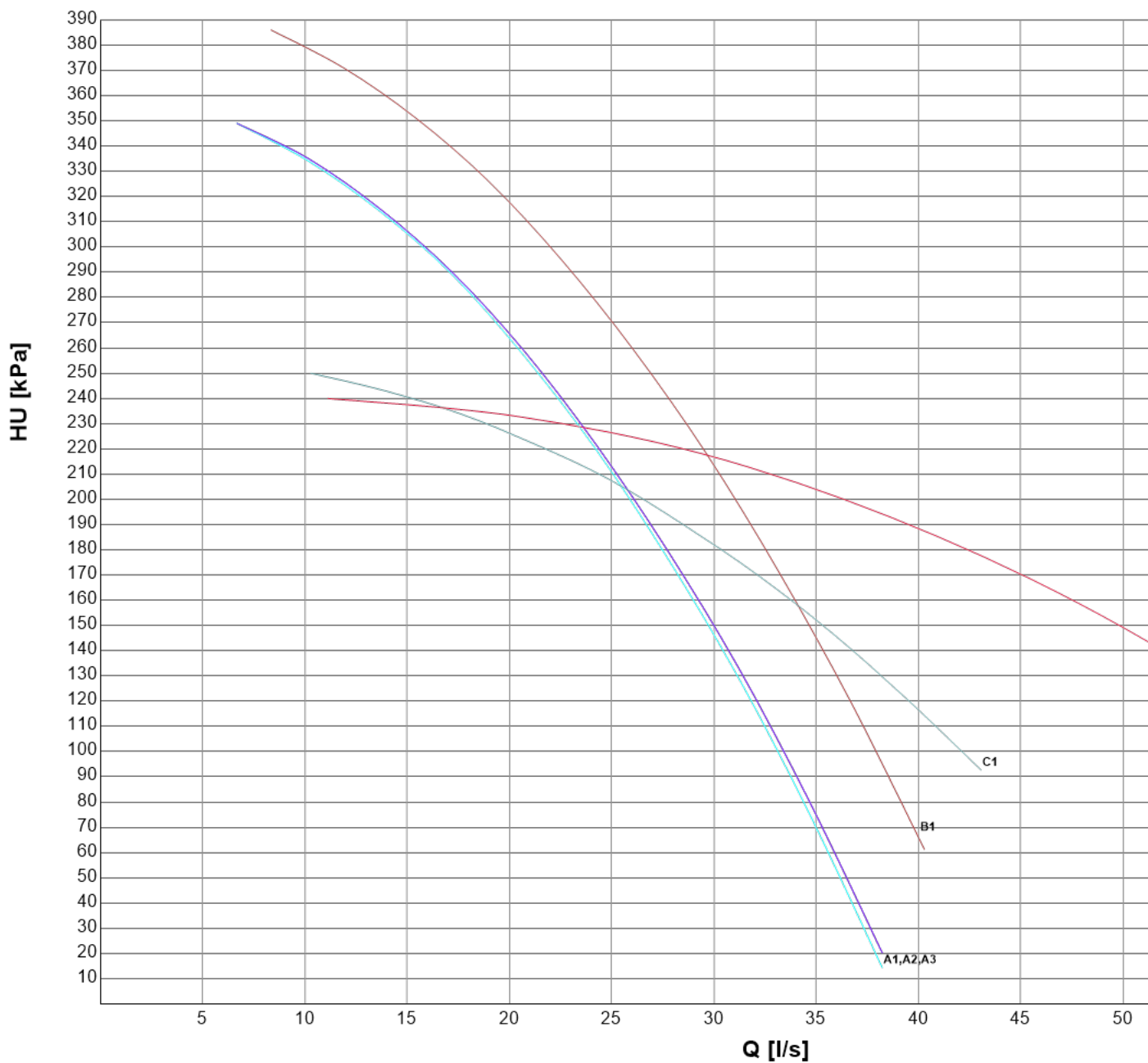
WARM WATER HEAT EX. USER SIDE - 4 POMPE 2P AP + VPF

SIZE		CH		HP		PUMP					CH	HP
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]
2022	CA	482,7		496,9	23,99	A1						222
	LN-CA	468,7		496,9	23,99							222
	SL-CA	464,1		490,7	23,69							226
	XL-CA	454,5		490,7	23,69							226
	XL-CA-E	472,5		517,8	25,00							211
2222	CA	525,0		546,8	26,39	A2	3D 65-160/9.2	2	34	18,40		197
	LN-CA	513,4		546,8	26,39							197
	SL-CA	509,0		541,1	26,12							200
	XL-CA	500,5		541,1	26,12							200
	XL-CA-E	509,5		557,2	26,90							190
2422	CA	553,8		576,4	27,82	A3						179
	LN-CA	541,3		576,4	27,82							179
	SL-CA	537,1		569,7	27,50							183
	XL-CA	528,4		569,7	27,50							183
	XL-CA-E	541,3		593,9	28,67							168
2622	CA	624,1		617,8	29,82	B1	3D 65-160/11	2	43	22,00		215
	LN-CA	603,9		617,8	29,82							215
	SL-CA	597,3		605,5	29,23							223
	XL-CA	583,9		612,8	29,58							218
	XL-CA-E	611,3		650,2	31,38							195
2722	CA	701,4		718,5	34,68	C1	LNTE 100-160/110/2	2	40	22,00		154
	LN-CA	683,8		718,5	34,68							154
	SL-CA	677,7		710,1	34,28							157
	XL-CA	665,4		710,1	34,28							157
3222	CA	825,6		833,8	40,25	D1	LNTS 150-315/185/4	4	70	37,00		188
	LN-CA	799,5		833,8	40,25							188
	SL-CA	790,4		823,6	39,76							189
	XL-CA	772,4		823,6	39,76							189

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)

WARM WATER HEAT EX. USER SIDE - 4 POMPE 2P AP + VPF



HYDRONIC GROUP

WARM WATER HEAT EX. USER SIDE - 4 POMPE 2P BP + VPF

SIZE		CH		HP		PUMP				CH	HP				
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU			
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]			
2022	CA	482,7		496,9	23,99	A1	3D 65-125/5.5	2	21	11,00		119			
	LN-CA	468,7		496,9	23,99							119			
2222	CA	525,0		546,8	26,39	A2									92,2
	LN-CA	513,4		546,8	26,39										92,2
2422	CA	553,8		576,4	27,82	A3									73,6
	LN-CA	541,3		576,4	27,82										73,6
2622	CA	624,1		617,8	29,82	B1		3D 65-125/7.5	2	27	15,00		125		
	LN-CA	603,9		617,8	29,82								125		
2722	CA	701,4		718,5	34,68	C1						LNTS 125-200/75/4	4	30	15,00
	LN-CA	683,8		718,5	34,68					96,2					
3222	CA	825,6		833,8	40,25	C2									
	LN-CA	799,5		833,8	40,25									79,5	

(1) Values refer to nominal conditions

CH Cooling mode

HP HP mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

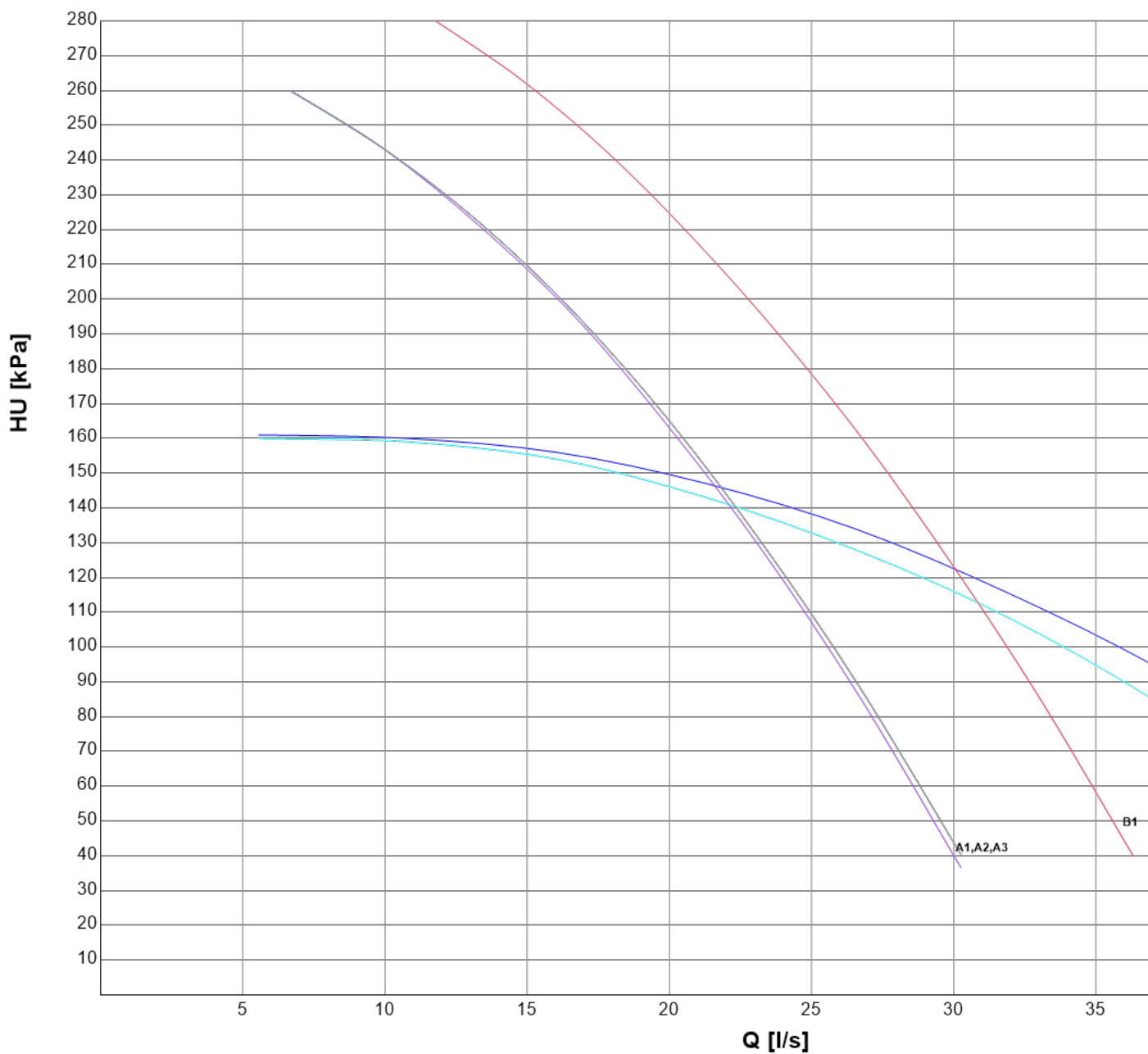
Q Plant (side) exchanger water flow

F.L.I. Pump power input

F.L.A. Pump running current

HU Pump residual pressure head (Units with hydronic group without mains filter)

WARM WATER HEAT EX. USER SIDE - 4 POMPE 2P BP + VPF



HYDRONIC GROUP

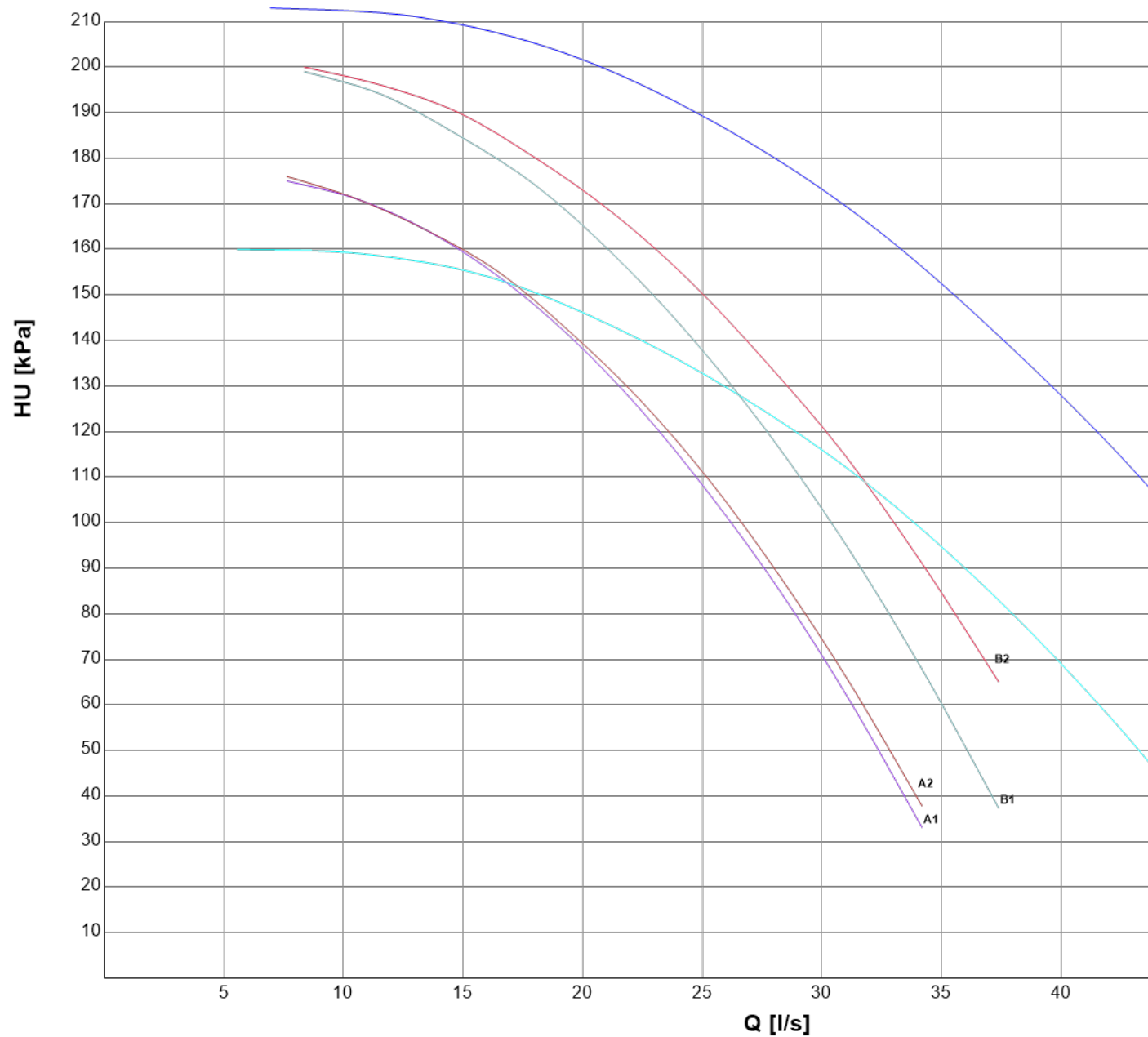
WARM WATER HEAT EX. USER SIDE - 4 POMPE 4P BP + VPF

SIZE		CH		HP		PUMP					CH	HP
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]
2022	SL-CA	464,1		490,7	23,69	A1	NSCS 80-250/55/4	4	21	11,00		117
	XL-CA	454,5		490,7	23,69							117
	XL-CA-E	472,5		517,8	25,00							109
2222	SL-CA	509,0		541,1	26,12	A2	NSCS 80-250/55/4	4	21	11,00		104
	XL-CA	500,5		541,1	26,12							104
	XL-CA-E	509,5		557,2	26,90							98,2
2422	SL-CA	537,1		569,7	27,50	B1	NSCS 80-250/75/4	4	28	15,00		122
	XL-CA	528,4		569,7	27,50							122
	XL-CA-E	541,3		593,9	28,67							113
2622	SL-CA	597,3		605,5	29,23	B2	NSCS 80-250/75/4	4	28	15,00		126
	XL-CA	583,9		612,8	29,58							124
	XL-CA-E	611,3		650,2	31,38							112
2722	SL-CA	677,7		710,1	34,28	C1	LNTS 125-200/75/4	4	30	15,00		98,0
	XL-CA	665,4		710,1	34,28							98,0
3222	SL-CA	790,4		823,6	39,76	D1	LNTS 125-250/110/4	4	41	22,00		129
	XL-CA	772,4		823,6	39,76							129

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)

WARM WATER HEAT EX. USER SIDE - 4 POMPE 4P BP + VPF



HYDRONIC GROUP

WARM WATER HEAT EX. USER SIDE - 4 PUMPS 2 POLES (2EV HH + 2RC HH)

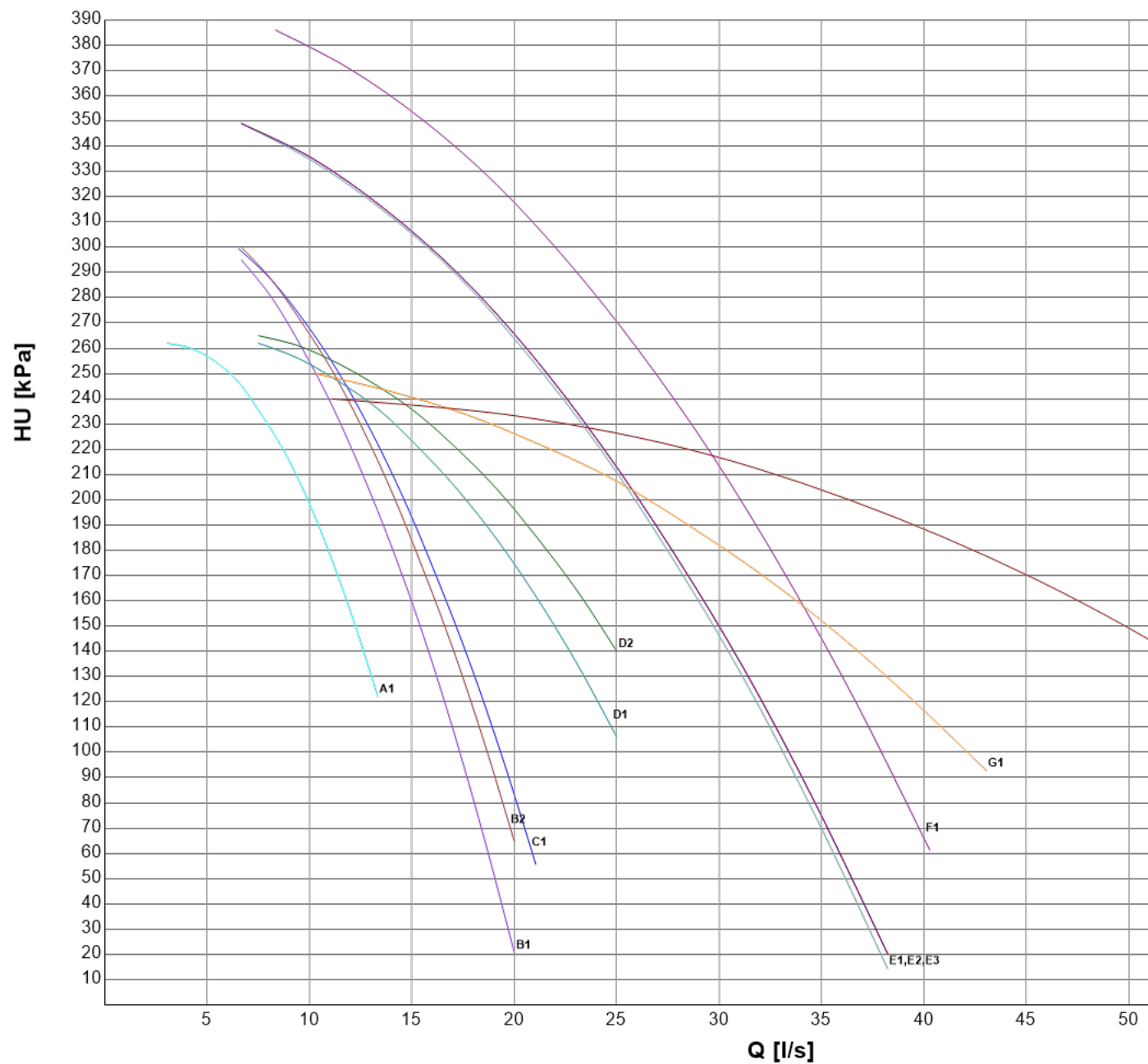
SIZE		CH		HP		PUMP				CH	HP									
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU								
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]								
1062	CA	210,0		219,8	10,61	A1	NSCE 40-160/40/2	2	15	8,000		186								
	LN-CA	204,9		219,8	10,61							186								
	SL-CA	199,5		213,3	10,30							193								
	XL-CA-E	204,3		220,4	10,64							186								
1162	XL-CA-E	247,2		269,9	13,03	B1	3D 50-160/5.5	2	21	11,00		202								
1362	CA	302,3		311,6	15,04	B2										183				
	LN-CA	293,8		311,6	15,04											183				
	SL-CA	283,4		303,9	14,67											190				
	XL-CA-E	293,3		311,2	15,02											183				
1562	CA	329,4		342,6	16,54	C1										151				
	LN-CA	321,8		342,6	16,54											151				
	SL-CA	313,8		333,4	16,09											161				
	XL-CA-E	319,4		343,7	16,59							LNTE 65-160/75/2	2	28	15,00		189			
1762	CA	380,3		399,6	19,29	D1					LNTE 80-160/75/2	2	28	15,00		182				
	LN-CA	369,3		399,6	19,29											182				
	SL-CA	356,0		389,1	18,78											188				
	XL-CA-E	366,3		396,8	19,15											184				
1962	CA	425,2		438,3	21,16	D2														185
	LN-CA	413,6		438,3	21,16															185
	SL-CA	401,4		426,1	20,57															190
2022	CA	482,7		496,9	23,99	E1										222				
	LN-CA	468,7		496,9	23,99											222				
	SL-CA	464,1		490,7	23,69											226				
	XL-CA	454,5		490,7	23,69											226				
	XL-CA-E	472,5		517,8	25,00											211				
2222	CA	525,0		546,8	26,39	E2	3D 65-160/9.2	2	34	18,40						197				
	LN-CA	513,4		546,8	26,39											197				
	SL-CA	509,0		541,1	26,12											200				
	XL-CA	500,5		541,1	26,12											200				
	XL-CA-E	509,5		557,2	26,90							190								
2422	CA	553,8		576,4	27,82	E3										179				
	LN-CA	541,3		576,4	27,82											179				
	SL-CA	537,1		569,7	27,50											183				
	XL-CA	528,4		569,7	27,50											183				
	XL-CA-E	541,3		593,9	28,67											168				
2622	CA	624,1		617,8	29,82	F1					3D 65-160/11	2	43	22,00		215				
	LN-CA	603,9		617,8	29,82											215				
	SL-CA	597,3		605,5	29,23											223				
	XL-CA	583,9		612,8	29,58											218				
	XL-CA-E	611,3		650,2	31,38											195				
2722	CA	701,4		718,5	34,68	G1									LNTE 100-160/110/2	2	40	22,00		154
	LN-CA	683,8		718,5	34,68			154												
	SL-CA	677,7		710,1	34,28			157												
	XL-CA	665,4		710,1	34,28			157												
3222	CA	825,6		833,8	40,25	H1	LNTS 150-315/185/4	4	70	37,00						188				
	LN-CA	799,5		833,8	40,25											188				
	SL-CA	790,4		823,6	39,76											189				
	XL-CA	772,4		823,6	39,76											189				

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)



WARM WATER HEAT EX. USER SIDE - 4 PUMPS 2 POLES (2EV HH + 2RC HH)



HYDRONIC GROUP

WARM WATER HEAT EX. USER SIDE - 4 PUMPS 2 POLES (2EV LH + 2RC LH)

SIZE		CH		HP		PUMP					CH	HP
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]
1062	CA	210,0		219,8	10,61	A1	NSCE 40-125/22/2	2	9	4,400		94,2
	LN-CA	204,9		219,8	10,61							94,2
1362	CA	302,3		311,6	15,04	B1	3D 50-125/3	2	12	6,000		77,9
	LN-CA	293,8		311,6	15,04							77,9
1562	CA	329,4		342,6	16,54	C1	3D 50-125/4	2	17	8,000		98,7
	LN-CA	321,8		342,6	16,54							98,7
1762	CA	380,3		399,6	19,29	D1	LNTE 65-125/55/2	2	21	11,00		112
	LN-CA	369,3		399,6	19,29							112
1962	CA	425,2		438,3	21,16	D2						104
	LN-CA	413,6		438,3	21,16							104
2022	CA	482,7		496,9	23,99	E1						119
	LN-CA	468,7		496,9	23,99							119
2222	CA	525,0		546,8	26,39	E2	3D 65-125/5.5	2	21	11,00		92,2
	LN-CA	513,4		546,8	26,39							92,2
2422	CA	553,8		576,4	27,82	E3						73,6
	LN-CA	541,3		576,4	27,82							73,6
2622	CA	624,1		617,8	29,82	F1	3D 65-125/7.5	2	27	15,00		125
	LN-CA	603,9		617,8	29,82							125
2722	CA	701,4		718,5	34,68	G1	LNTE 125-200/75/4	4	30	15,00		96,2
	LN-CA	683,8		718,5	34,68							96,2
3222	CA	825,6		833,8	40,25	G2						79,5
	LN-CA	799,5		833,8	40,25							79,5

(1) Values refer to nominal conditions

CH Cooling mode

HP HP mode

Pf Cooling capacity unit (Cooling mode)

Pt Heating capacity unit (Heating mode)

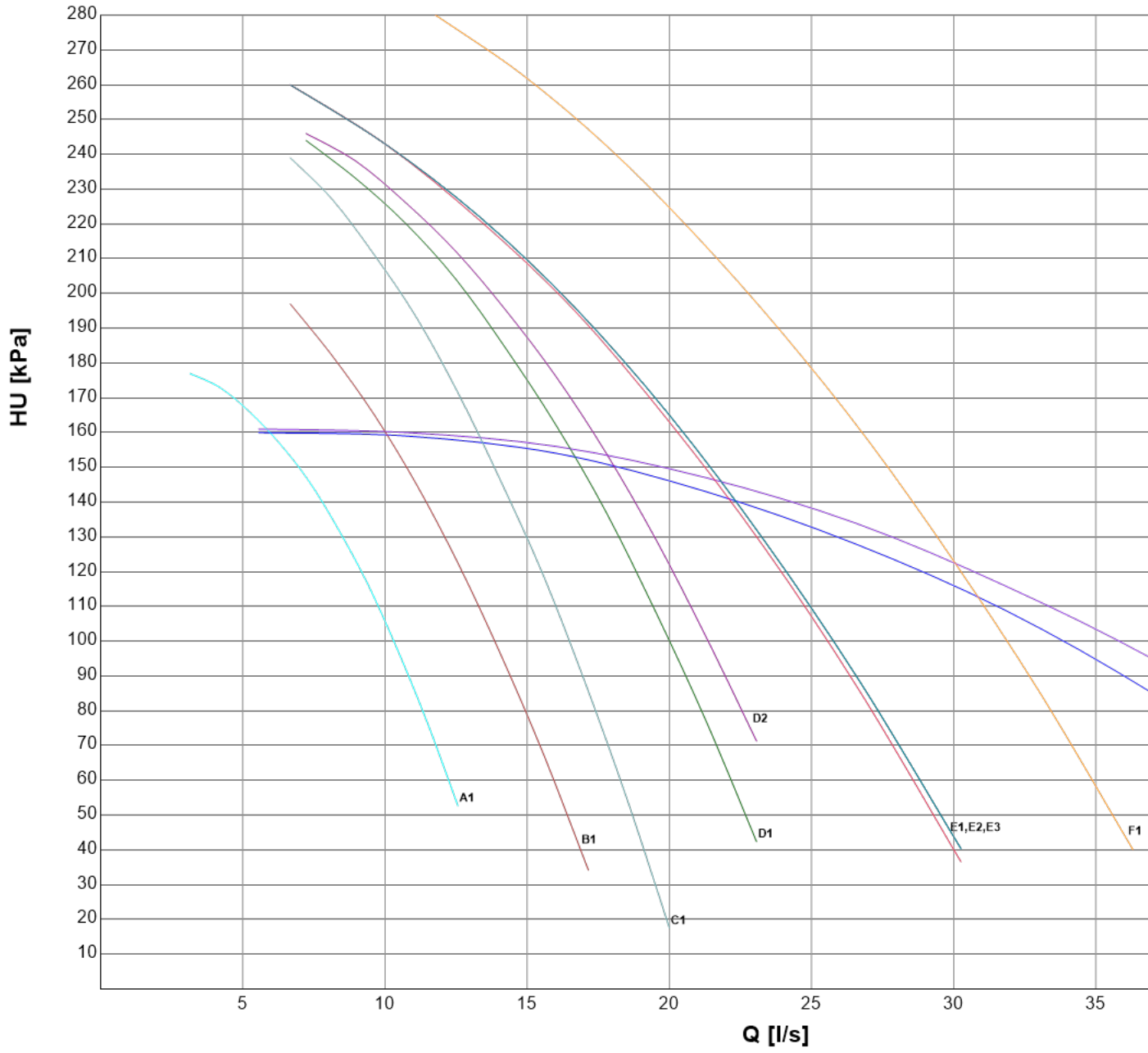
Q Plant (side) exchanger water flow

F.L.I. Pump power input

F.L.A. Pump running current

HU Pump residual pressure head (Units with hydronic group without mains filter)

WARM WATER HEAT EX. USER SIDE - 4 PUMPS 2 POLES (2EV LH + 2RC LH)



HYDRONIC GROUP

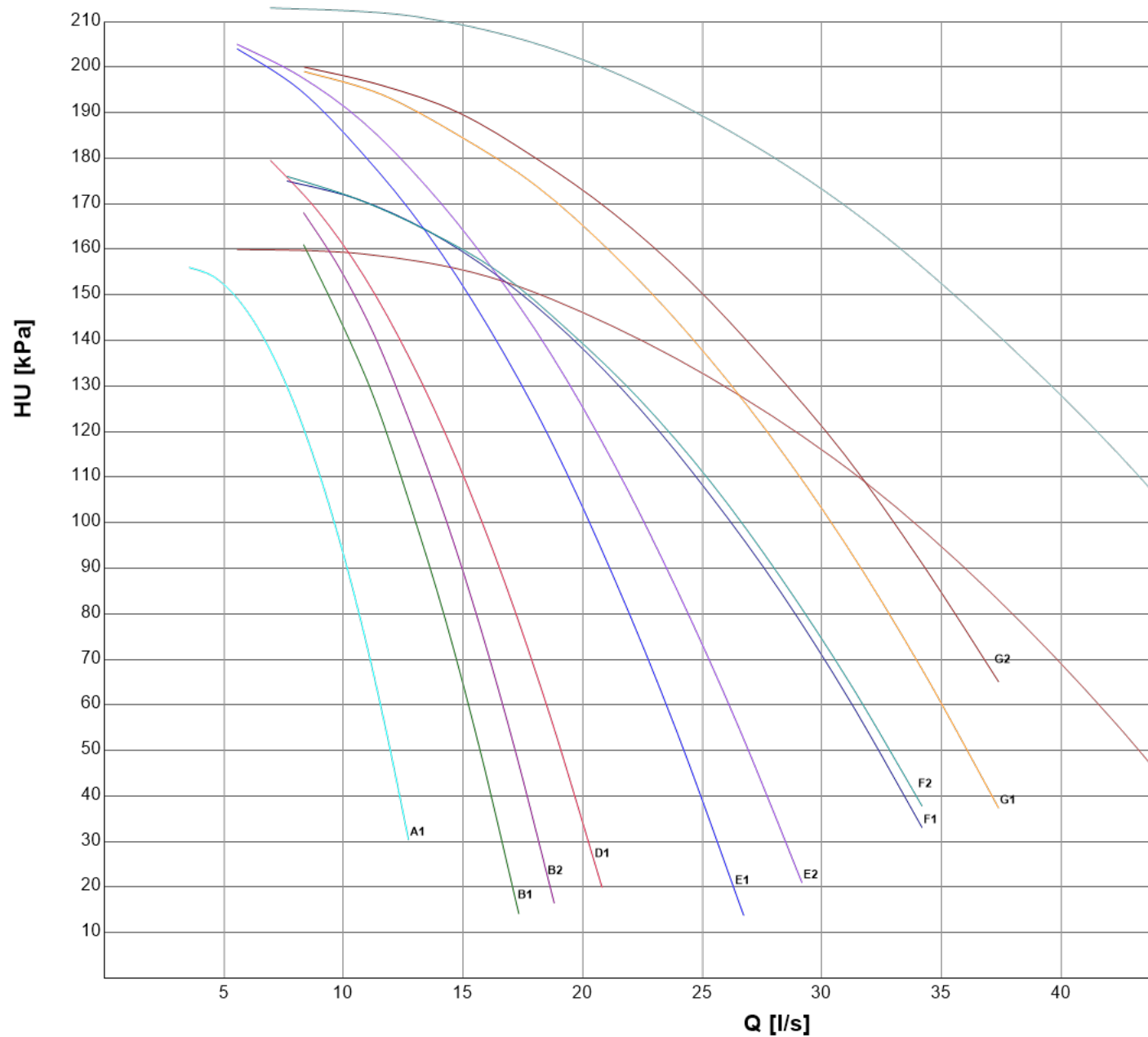
WARM WATER HEAT EX. USER SIDE - 4 PUMPS 4 POLES (2EV LH + 2RC LH)

SIZE		CH		HP		PUMP				CH	HP	
		Pfgross	Qfgross	Ptgross	Qcdgross	Rif.	Model	N.	F.L.A.	F.L.I.	HU	HU
		[kW] (1)	[l/s] (1)	[kW] (1)	[l/s] (1)			Pole	[A]	[kW]	[kPa]	[kPa]
1062	SL-CA	199,5		213,3	10,30	A1	NSCE 50-250/22/4	4	9	4,400		87,2
	XL-CA-E	204,3		220,4	10,64							80,1
1162	XL-CA-E	247,2		269,9	13,03	B1	MMD4 65-250/4	4	17	8,000		100
1362	SL-CA	283,4		303,9	14,67	B2						94,6
	XL-CA-E	293,3		311,2	15,02			88,9				
1562	SL-CA	313,8		333,4	16,09	D1	MMD4 65-250/5.5	4	22	11,00		112
	XL-CA-E	319,4		343,7	16,59		LNTS 80-200/40/4	4	16	8,000		74,5
1762	SL-CA	356,0		389,1	18,78	E1	LNTS 80-250/55/4	4	23	11,00		116
	XL-CA-E	366,3		396,8	19,15							112
1962	SL-CA	401,4		426,1	20,57	E2						120
2022	SL-CA	464,1		490,7	23,69	F1	NSCS 80-250/55/4	4	21	11,00		117
	XL-CA	454,5		490,7	23,69							117
	XL-CA-E	472,5		517,8	25,00							109
2222	SL-CA	509,0		541,1	26,12	F2	NSCS 80-250/55/4	4	21	11,00		104
	XL-CA	500,5		541,1	26,12							104
	XL-CA-E	509,5		557,2	26,90							98,2
2422	SL-CA	537,1		569,7	27,50	G1	NSCS 80-250/75/4	4	28	15,00		122
	XL-CA	528,4		569,7	27,50							122
	XL-CA-E	541,3		593,9	28,67							113
2622	SL-CA	597,3		605,5	29,23	G2	NSCS 80-250/75/4	4	28	15,00		126
	XL-CA	583,9		612,8	29,58							124
	XL-CA-E	611,3		650,2	31,38							112
2722	SL-CA	677,7		710,1	34,28	H1	LNTS 125-200/75/4	4	30	15,00		98,0
	XL-CA	665,4		710,1	34,28							98,0
3222	SL-CA	790,4		823,6	39,76	I1	LNTS 125-250/110/4	4	41	22,00		129
	XL-CA	772,4		823,6	39,76							129

(1) Values refer to nominal conditions
 CH Cooling mode
 HP HP mode
 Pf Cooling capacity unit (Cooling mode)
 Pt Heating capacity unit (Heating mode)

Q Plant (side) exchanger water flow
 F.L.I. Pump power input
 F.L.A. Pump running current
 HU Pump residual pressure head (Units with hydronic group without mains filter)

WARM WATER HEAT EX. USER SIDE - 4 PUMPS 4 POLES (2EV LH + 2RC LH)



VARIABLE FLOW CONTROL

Pump energy consumption significantly impacts plant running costs, but it can be considerably reduced thanks to the use of variable speed pumps (inverter driven pumps), capable of adjusting the water flow rate according to the actual plant thermal load.

Mitsubishi Electric Hydronics & Cooling Systems has developed the VPF control series (Variable Primary Flow), that provides different water flow regulation logics specifically devoted to various hydraulic

plant solutions: only a primary circuit, primary and secondary circuits, single unit or multi-unit systems.

The VPF systems adjust the pump speeds on the basis of the plant's thermal load and optimize the unit's thermoregulation algorithm for variable flow operation, in a dynamic and simultaneous way. This ensures the highest energy savings, stable operation, and complete reliability.

VPF SYSTEM (delta P control)

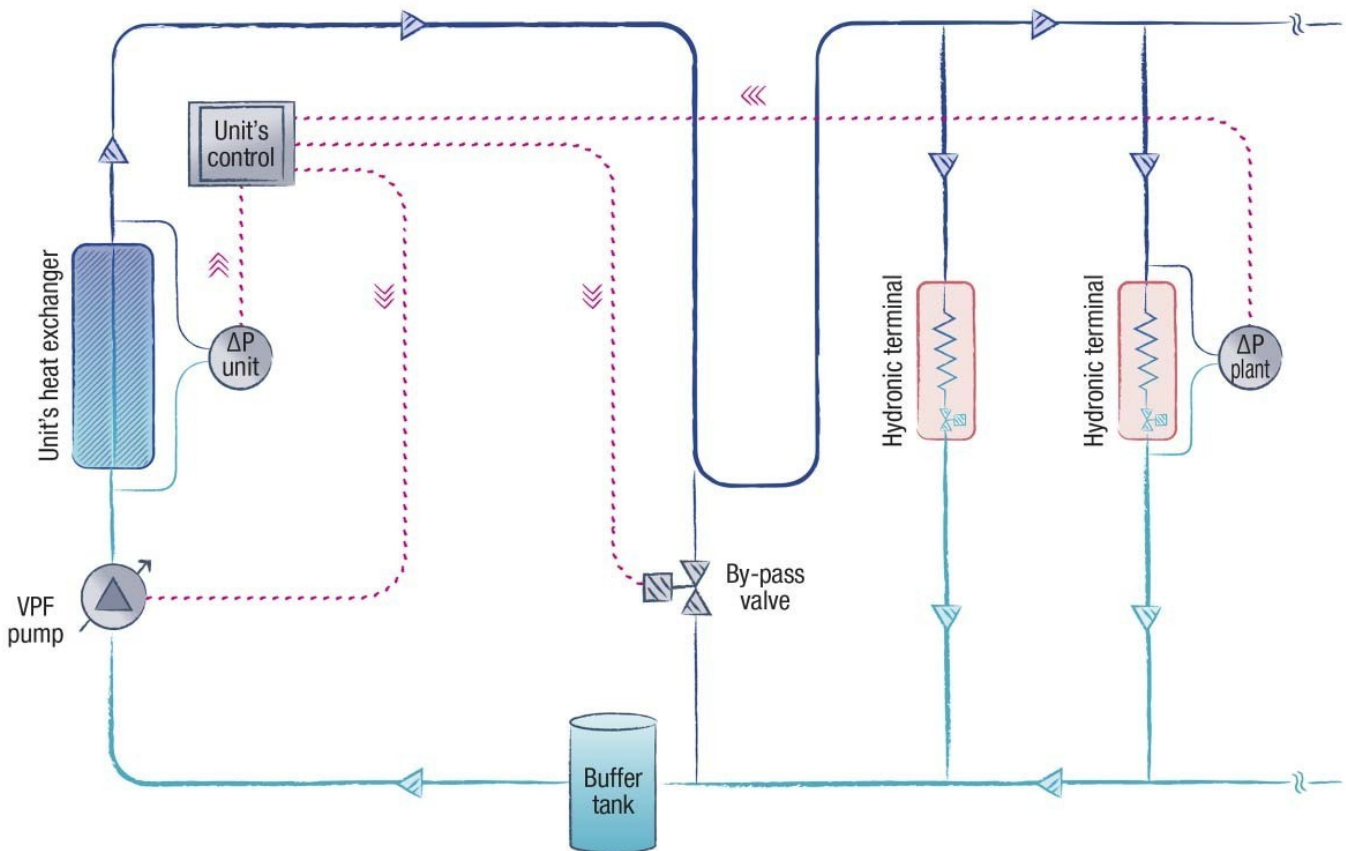
For plants with only a primary circuit

VPF - Plant and unit requirements

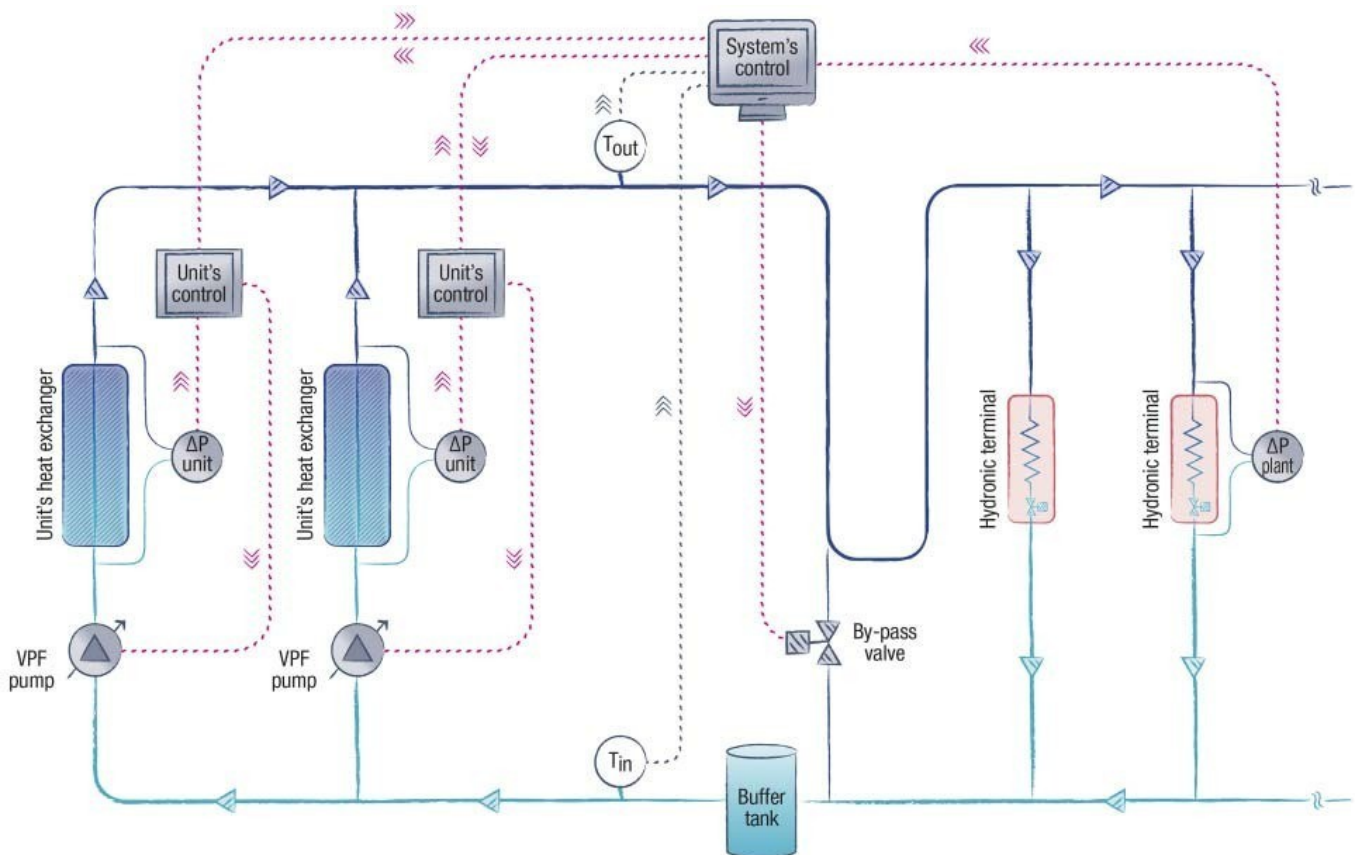
The VPF logic provides the variable flow control for the plant's primary circuit.

- Type of plant: primary circuit only, that feeds hydronic terminals fitted with a 2-way regulating valve
- Hydronic module: modulating regulation devices (0-10V signal) or variable speed pumps
- Unit thermoregulation: control of the leaving water temperature
- Monitored parameter: delta P on relevant users' hydronic terminal

Plant diagram for single unit system



Plant diagram for multi-unit system



VPF - Operating logic

Water flow regulation

The VPF system monitors the differential pressure on the plant side (ΔP) and adjusts the pump speed in order to keep it within a defined range ($\Delta P_{min} \leftrightarrow \Delta P_{max}$).

- If $\Delta P_{min} \leq \Delta P \leq \Delta P_{max}$
The plant water flow is appropriate to the thermal load, the pump speed is kept constant.
- If $\Delta P > \Delta P_{max}$
The plant water flow exceeds what is necessary to properly cover the thermal load, the pump speed is reduced to save pump energy.
- If $\Delta P < \Delta P_{min}$
The plant water flow is too low to ensure the proper feed to the hydronic terminals, the pump speed is increased.

With the VPF system, the water flow can be reduced to 50% of the unit nominal water flow, with regards to the selection conditions, provided that the minimum water flow required by the unit's heat exchanger is respected (the control of the heat exchanger's minimum water flow is described below).

The pump speed regulation is performed with little progressive adjustments while continuously monitoring the values of both the delta P on the plant side and the water temperature on the heat exchanger. The absence of abrupt water flow changes prevents fluctuation due to possible conflicts with the unit's thermoregulation function (compressor regulation).

Control of the unit's minimum water flow

Under no circumstances can the primary circuit water flow be reduced below the minimum water flow required by the unit's heat exchanger. The monitoring of the unit's water flow is performed through a factory installed differential pressure transducer on the unit's heat exchanger. If the differential pressure on the plant side requests a user's water flow lower than the unit's minimum water flow, the VPF system commands the gradual opening of the hydraulic by-pass valve (safety function). This ensures that the minimum water flow required by the unit's heat exchanger is always provided. As soon as the hydronic terminals request an increase of the water flow ($\Delta P < \Delta P_{min}$), the VPF closes the by-pass valve.

Multi-unit systems

The VPF control logic is also the same for multi-unit systems. The plant side differential pressure transducer reading and the by-pass valve opening are managed by the multi-unit control system (Manager3000 or ClimaPRO). Each unit autonomously adjusts its pump speed on the basis of the information provided by the multi-unit control system. When the plant load requests the activation of a stand-by unit, the multi-unit control system calculates the starting speed of its pump in order to avoid excessive water flow variation of the running units.

VPF - Devices and installation

Device	Accessory name		
	VPF (plant DP trans excl)	VPF (plant DP trans incl)	VPF MULTI-UNIT SYSTEM
Differential pressure transducer on the unit's heat exchanger and related controller expansion board	Factory installed	Factory installed	Factory installed
Controller expansion board to read the plant side differential pressure transducer (4-20mA signal) and manage the hydraulic by-pass valve opening (0-10V signal)	Factory installed	Factory installed	Factory installed on the multi-unit control system ⁽²⁾
Plant side differential pressure transducer	Not included (the supply is the customer's responsibility) ⁽¹⁾	Factory supplied, installation is the client's responsibility ⁽¹⁾⁽²⁾	Factory supplied with the multi-unit control system, installation is the client's responsibility ⁽¹⁾⁽³⁾
Plant side hydraulic by-pass valve	Not included (the supply is the customer's responsibility) ⁽⁴⁾	Not included (the supply is the customer's responsibility) ⁽⁴⁾	Not included (the supply is the customer's responsibility) ⁽⁴⁾

- (1) It is recommended to install the differential pressure transducer on the most hydraulically critical hydronic terminal, to ensure it has a proper water flow in any load condition.
- (2) Technical features of the differential pressure transducer supplied:
 Model: Huba Control 692.9 120071C1
 Pressure range: 0 ... + 1 bar
 Output: 4-20mA
 Electrical connection: DIN EN 175301-803-A (IP 65)
 Pressure connection adapters: male threaded G 1/8"
- (3) It is the customer's responsibility to configure the multi-unit control system (Manager3000 or ClimaPRO) with option VPF.
- (4) See attached table for information on the hydraulic by-pass design.

The following table provides the indications for a correct hydraulic by-pass design.

Heat exchanger minimum flow (m ³ /h) ⁽¹⁾	Minimum by-pass diameter	Minimum by-pass valve diameter	Suggested valve model	Kvs	Suggested actuator model
From 19 to 30	DN50 (2")	DN50 (2")	VVG41.50	40	SKB60
Up to 37	DN65 (2" 1/2)	DN65 (2" 1/2)	VVF31.65	49	SKB60
Up to 60	DN80 (3")	DN80 (3")	VVF31.80	78	SKB60
Up to 95	DN100 (4")	DN100 (4")	VVF31.90	124	SKC60
Up to 150	DN125 (5")	DN125 (5")	VVF31.91	200	SKC60
Up to 230	DN150 (6")	DN150 (6")	VVF31.92	300	SKC60

- (1) In case of a multi-unit system, the unit with the highest minimum water flow should be the reference.

VPF.D SYSTEM (delta T control)

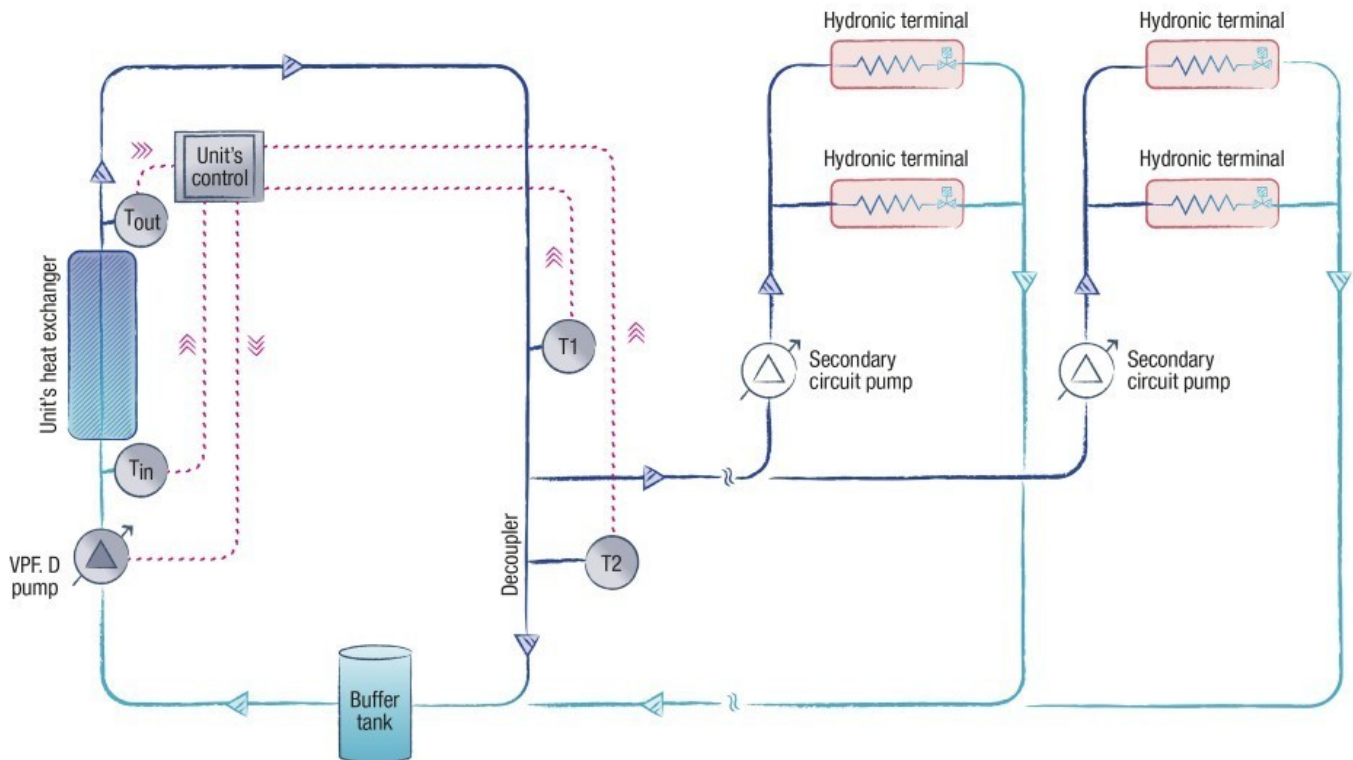
For plants with primary and secondary circuits separated by a hydraulic decoupler.

VPF.D - Plant and unit requirements

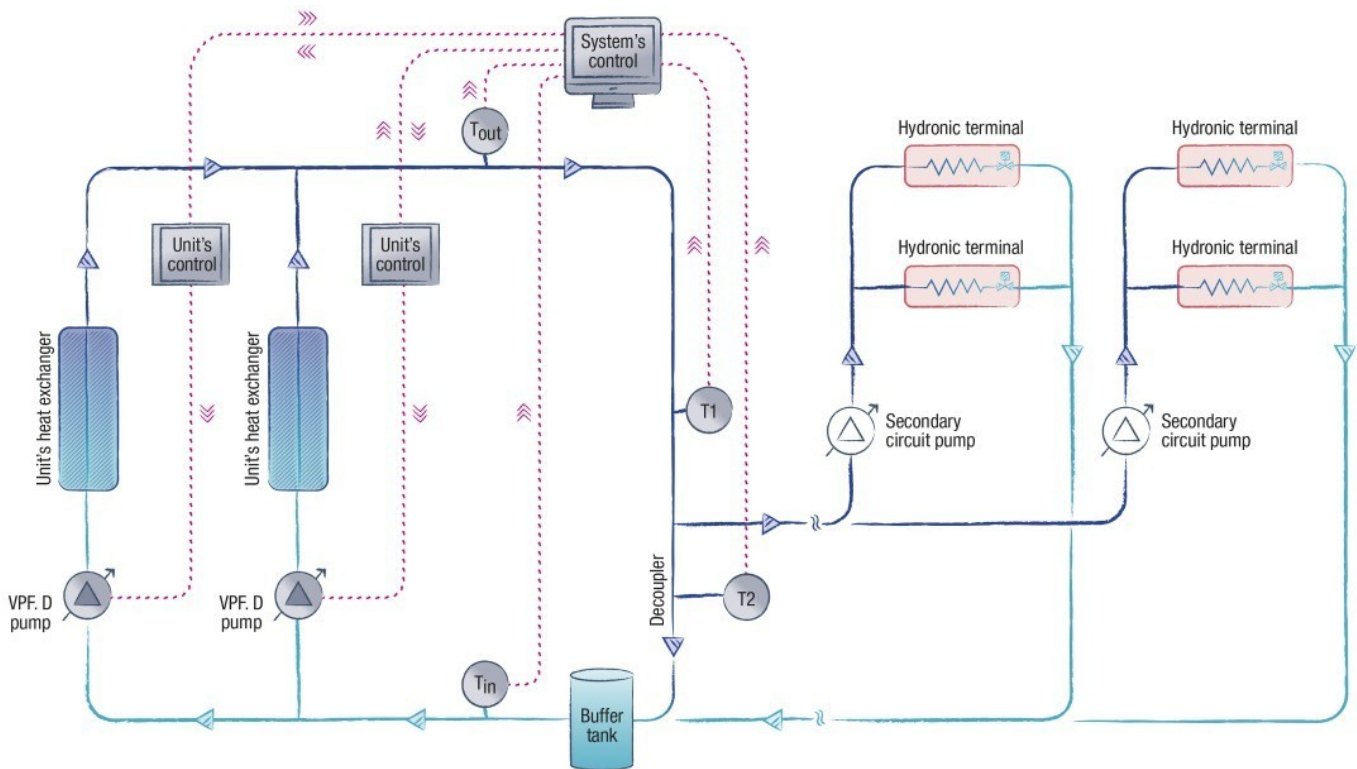
The VPF.D logic provides the variable flow control for the plant's primary circuit.

- Type of plant: primary and secondary circuits separated by a hydraulic decoupler
- Hydronic module: modulating regulation devices (0-10V signal) or variable speed pumps
- Unit thermoregulation: control of the leaving water temperature
- Monitored parameter: delta T on primary circuit

Plant diagram for single unit system



Plant diagram for multi-unit system



VPF.D - Operating logic

Water flow regulation

The VPF.D system monitors the temperature difference of the primary circuit (ΔT) (that corresponds to the temperature difference of the unit's heat exchanger in the case of a single unit system), and adjusts the primary circuit's pump speed in order to keep it within a defined range ($\Delta T_{min} \leftrightarrow \Delta T_{max}$). The secondary circuit water flow is completely independent and is to be managed by the client.

- If $\Delta T_{min} \leq \Delta T \leq \Delta T_{max}$
The plant water flow is appropriate to the thermal load, the pump speed is kept constant.
- If $\Delta T < \Delta T_{min}$
The plant water flow exceeds what is necessary to properly cover the thermal load, the pump speed is reduced to save pump energy.
- If $\Delta T > \Delta T_{max}$
The plant water flow is too low to ensure the proper feed to the users, the pump speed is increased.

To prevent the returning water of the secondary circuit from recirculating through the decoupler and mixing with the delivery water, which would cause serious plant regulation problems, the VPF.D provides a safety function based on the temperatures, which are detected by two probes on the plant side: T1 on the unit delivery line and T2 on the hydraulic decoupler. If during the water flow regulation of the circuits, the flow direction in the decoupler reverses (detected temperatures $T1 < T2$), the system forces a quick increase of the primary water flow until the correct direction of the flow in the decoupler is restored (detected temperatures $T1 = T2$).

With the VPF.D system, the water flow can be reduced to 50% of the unit nominal water flow, with regards to the selection conditions, provided that the minimum water flow required by the unit's heat exchanger is respected (the control of the heat exchanger's minimum water flow is described below).

The pump speed regulation is performed with little progressive adjustments while continuously monitoring the values of both the temperature difference on the primary circuit and the temperatures of the probes T1 and T2. The absence of abrupt water flow changes prevents fluctuation due to possible conflicts with the unit's thermoregulation function (compressor regulation).

Control of the unit's minimum water flow

Under no circumstances can the primary circuit water flow be reduced below the minimum water flow required by the unit's heat exchanger. The unit's minimum water flow is ensured by setting the minimum pump speed (service menu parameter).

Multi-unit systems

The VPF.D control logic is also the same for multi-unit systems. The reading of the temperature difference on the primary circuit and the reading of the temperature probes T1 and T2 is managed by the multi-unit control system (Manager3000 or ClimaPRO). Each unit autonomously adjusts its pump speed on the basis of the information provided by the multi-unit control system. When the plant load requests the activation of a stand-by unit, the multi-unit control system calculates the starting speed of its pump in order to avoid excessive water flow variation of the running units.

VPF.D - Devices and installation

Device	Accessory name	
	VPF.D	VPF.D MULTI-UNIT SYSTEM
2 plant side NTC temperature sensors and related controller expansion board	Factory supplied (probes supplied without wells), installation is the client's responsibility ⁽¹⁾	Factory supplied with the multi-unit control system (probes supplied without wells), installation is the client's responsibility ⁽¹⁾⁽²⁾

(1) It is recommended to install the temperature probes as shown in the enclosed plant diagrams (T1 on the unit delivery line, T2 on the hydraulic decoupler)

(2) It is the customer's responsibility to configure the multi-unit control system (Manager3000 or ClimaPRO) with option VPF.D.

The following table provides the indications for a correct hydraulic decoupler design.

Heat exchanger minimum flow (m ³ /h) ⁽¹⁾	Minimum hydraulic decoupler diameter
From 25 to 40	DN65 (2" ½)
Up to 60	DN80 (3")
Up to 100	DN100 (4")
Up to 150	DN125 (5")
Up to 225	DN150 (6")
Up to 375	DN200 (8")

(2) In case of a multi-unit system, the unit with the highest minimum water flow should be the reference.



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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