

POWERCAT LX

Water chillers

Energy excellence !

Eurovent-certified

SEER up to 4,7, SEPR up to 6,2

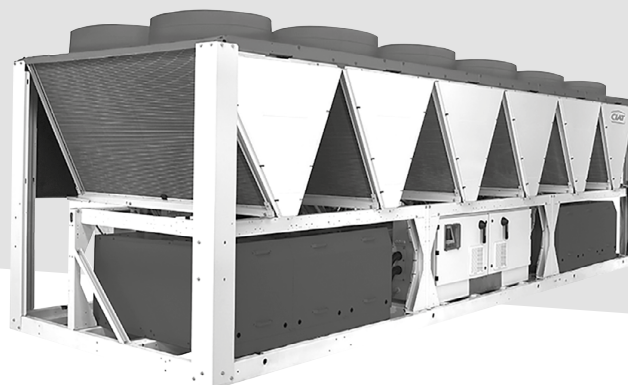
Operating range from -20 °C to +55 °C

Compact and silent

High-efficiency flooded shell and tube evaporator

Aluminium micro-channel condenser

Hydraulic module & heat recovery



Cooling capacity : 277 à 1512 kW



Cooling only



Hydraulic module



Heat recovery



USE

The latest generation of **POWERCAT** high-efficiency air-to-water water chillers are the perfect solution for all cooling applications in the Offices, Healthcare, Industry, Administration, Shopping Centres and Collective Housing markets.

These units are designed for outdoor installation and require no special protection against adverse weather conditions.

POWERCAT is optimised to use ozone-friendly HFC R134a refrigerant.

This range guarantees compliance with the most demanding requirements for increased seasonal energy efficiency (SEER and SEPR) and CO₂ reduction to comply with the various applicable European directives and regulations.

RANGE

■ **POWERCAT series LX XE**



Premium cooling only version.

The product is optimised for part load applications and fulfils the provisions of the new Ecodesign regulation governing comfort and process applications, while also facilitating a return on investment. In this case, the machine is equipped with EC type variable-speed fans as standard, enabling the optimum part load efficiency to be achieved throughout the year.

■ **POWERCAT series LX HE**



Cooling only version High seasonal energy efficiency.

The product is optimised for part load applications and fulfils the provisions of the new Ecodesign regulation governing comfort and process applications. In this case, the machine is equipped as standard with variable-speed fans with AC motor and external speed regulator, allowing for optimisation of the part load efficiency throughout the year.

DESCRIPTION

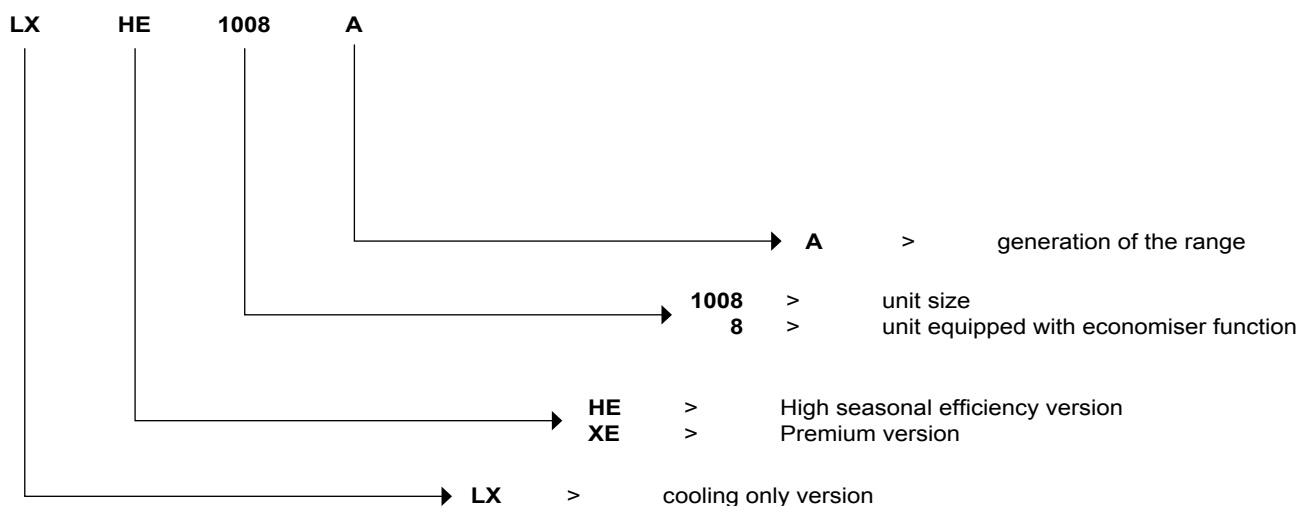
POWERCAT units are packaged machines supplied as standard with the following components:

- Twin-screw semi-hermetic compressors
- Flooded shell and tube type chilled-water evaporator
- Air-cooled exchanger, all-aluminium micro-channel coil with axial fan motor assembly
- Electrical power and remote control cabinet:
 - 400 V-3ph-50 Hz (+/- 10 %) mains power supply + earth
 - transformer fitted as standard on the machine for supplying the remote control circuit with 24 V
- Connect Touch electronic control module
- Casing for outdoor installation

The entire POWERCAT range complies with the following EC directives and standards:

- Machinery directive 2006/42/EC.
- Electromagnetic compatibility directive 2014/30/EU.
- EMC immunity and emissions EN 61800-3 'C3'
- Low voltage directive 2014/35/EU.
- RoHS 2011/65/EU
- Pressure equipment directive (PED) 2014/68/EU
- Machinery directive EN 60-204 - 1
- Refrigeration systems and heat pumps EN 378-2
- Regulation (EU) no. 2016/2281 implementing directive 2009/125/EC with regard to Ecodesign requirements

DESCRIPTION



CONFIGURATION

| | |
|---------------|--|
| HE | High Seasonal Efficiency |
| HE LN option | High Seasonal Efficiency Low Noise |
| HE XLN option | High Seasonal Efficiency Xtra Low Noise |
| HE SLN option | High Seasonal Efficiency Super Low Noise |

| | |
|---------------|------------------------|
| XE | Premium |
| XE Option LN | Premium Low Noise |
| XE Option XLN | Premium Xtra Low Noise |

DESCRIPTION OF THE MAIN COMPONENTS

■ Compressors

- Twin-screw semi-hermetic type
- 2 screws fitted on ball and roller bearings
- Continuous powerCTRL
- Built-in electric motor, cooled by intake gases
- Integral electronic protection of the motor against thermal and electrical overloads
- Monitoring of rotation direction, absence of phase, over and under voltage, and power supply failure
- Monitoring of lubrication under differential pressure
- Built-in oil filter
- Internal pressure surge valve and valve to prevent reverse rotation during shutdown phases
- Monitoring of maximum head pressure
- Oil separator with integrated silencer to reduce pulses from the discharged gas
- Star-delta start limiting the in-rush current

■ Shell and tube evaporator

- High performance glandless technology
- Copper tube bundle with internal and external grooves
- 19-mm thermal insulation
- Victaulic type coupling
- Maximum pressure, water side, of 10 bar **(21 bar as option)**

■ Condenser

- air-cooled exchanger, all-aluminium micro-channel coil
- propeller fans with composite blades offering an optimised profile, variable speed (HE and XE versions)
- motors – IP 54, class F

■ Refrigerating accessories

- Dehumidifier filters with rechargeable cartridges
- hygroscopic sight glasses
- electronic expansion valves
- service valves on the liquid line

■ Control and safety instruments

- low and high pressure sensors
- safety valves on refrigerant circuit
- water temperature control sensors
- evaporator antifreeze protection sensor
- factory-fitted evaporator water flow controller

■ Electrical cabinet

- Electrical cabinet protection rating: IP 44 (IP 54 optional)
- A connection point without neutral for sizes 808 to 3028
- Two connection points without neutral for sizes 3428 to 4608 (one connection point optional)
- front-mounted main safety switch with handle
- control circuit transformer
- 24 V control circuit
- fan and compressor motor circuit breaker
- fan and compressor motor contactors
- Connect Touch microprocessor-controlled electronic control module
- wire numbering
- marking of the main electrical components

■ Chassis

Frame made from RAL 7035 light grey & RAL 7024 graphite grey painted panels

■ Connect Touch control module

- User interface with 4.3-inch touchscreen
- Intuitive, user - friendly navigation using icons
- Clear text display of information available in 9 languages (F-GBD- NL-E-I-P-RU +Chinese)



The electronic control module performs the following main functions:

- regulation of the chilled water temperature (at the return or at the outlet)
- regulation of the water temperature based on the outdoor temperature (water law)
- regulation for low temperature energy storage
- second setpoint management
- complete management of compressors with start-up sequence, timer and operating time balancing
- self-regulating and proactive functions with adjustment of the control to counter parameter drift
- i n-series staged powerCTRL system on the compressors according to the thermal requirements
- management of compressor short-cycle protection
- frost protection (exchanger heater option)
- phase reversal protection
- management of occupied/unoccupied modes (according to the time schedule)
- compressor and pump operating time balancing
- management of the machine operating limit according to outdoor temperature
- sound level reduction device (night mode according to the user programme) with limitation of compressor capacity and fan speed
- diagnosis of fault and operating statuses
- management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
- Blackbox memory
- master/slave management of the two machines in parallel with operating time balancing and automatic changeover if a fault occurs on one machine
- weekly and hourly time schedule for the machine, including 16 periods of absence
- pump standby based on demand (energy saving)
- calculation of the water flow rate and operating pressure (hydraulic module version)
- display of all machine parameters (3 access levels, User/Maintenance/Factory, password-protected): temperature, setpoints, pressures, water flow rate (hydraulic version), runtime.
- display of trend curves for the main values
- storage of maintenance manual, wiring diagram and spare parts list.

DESCRIPTION OF THE MAIN COMPONENTS

■ Remote management

Connect Touch is equipped as standard with an RS485 port and an ETHERNET (IP) connection, offering a range of options for remote management, monitoring and diagnostics.

Using the integrated Webserver, a simple internet connection uses the unit's IP address to access the Connect Touch interface on the PC, facilitating everyday management tasks and maintenance operations.

A range of communication protocols are available: MODBUS/JBUS RTU (RS485) or TC/IP as standard, LONWORKS – BACNET IP as an option, enabling most CMS/BMS to be integrated

Several contacts are available as standard, enabling the machine to be controlled remotely by wired link:

- automatic operation control: when this contact is open, the machine stops
- setpoint 1/setpoint 2 selector: when this contact is closed, a second cooling setpoint is activated (energy storage or unoccupied mode, for example)
- Power limitation: closing the contact concerned allows the power or refrigerating consumption of the machine to be limited by stopping one or more compressors (this limit can be set with a parameter)
- fault reporting: this contact indicates the presence of a major fault which has caused one or both refrigerant circuits to stop
- operational status reporting indicates that the unit is in production mode.
- switch control for the customer pump, external to the machine (on/off).

Contacts available as an option:

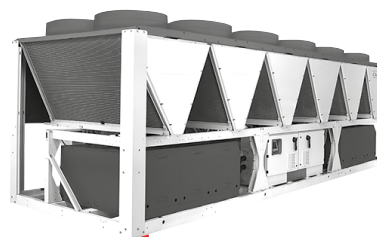
- setpoint adjustable via 4-20 mA signal: this input is used to adjust the setpoint in COOLING mode
- power limitation adjustable by 4-20 mA signal
- Second power limitation level
- Power indication: analogue output (0-10 V) providing an indication of the unit's load rate.
- user fault reporting, enables integration of a fault in the water loop
- general fault reporting: this contact indicates that the unit has stopped completely
- alert reporting: this contact indicates the presence of a minor fault which did not cause the refrigerant circuit in question to stop.
- End of storage signal: enables return to the second setpoint at the end of the storage cycle
- Schedule override: closing this contact cancels the time schedule.

■ Maintenance

Connect Touch has two maintenance reminder functions as standard, making users aware of the need to regularly perform maintenance operations and to guarantee the service life and performance of the unit. These two functions can be activated independently.

A reminder message appears on the unit's HMI screen, and stays there until it is acknowledged by the maintenance operator.

The information and alert relating to these functions are available on the communication bus to be used on the CMS/BMS.



Web server

Adresse IP



Remote management via web server
Connection to RJ port
Connection via IP address
All the HMI functionalities
available on the PC
Simplified remote monitoring



E-mail alerts

- the scheduled maintenance reminder: when activated, this function enables the period between two maintenance inspections to be set. This period may be set by the operator in either days, months or operating hours, depending on the application.
- the compulsory F-GAS sealing test maintenance reminder: when activated, this function, which is the default factory setting, enables the period between two sealing tests to be selected, according to the unit's refrigerant charge, in compliance with the F-GAS regulations.

DESCRIPTION OF THE MAIN COMPONENTS

■ CIATM2M, the CIAT supervision solution

CIATM2M is a remote supervision solution dedicated to monitoring and controlling several CIAT machines in real time.

Advantages

- Access to the operating trend curves for analysis
- Improved energy performance
- Improved availability rate for the machines

Functions

CIATM2M will send data in real time to the supervision website, www.ciatm2m.com.

The machine operating data can be accessed from any PC, smartphone or tablet.

Any event can be configured to trigger a mail alert.

Parameters monitored:

- Overview
- Control panel for the controllers
- Events
- Temperature curves

Monthly and annual reports are available to analyse :

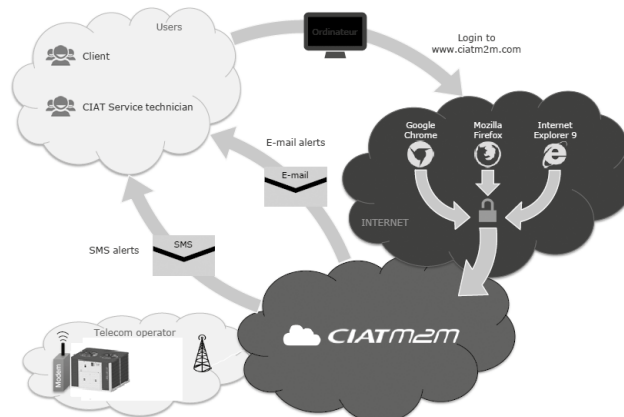
- The performance and operation of the machine Example: operating curves and time, number of compressor start-ups, events, preventive maintenance actions to be performed, etc.

Incidents such as a drift in the measurements on a temperature sensor, incorrectly set control parameters, or even incorrect settings between one compressor stage and the other are immediately detected, and the corrective actions put in place.

Equipment

This kit can be used on both machines which are already in use (existing inventory), and on new machines which do not have sufficient space in their electrical cabinets.

- 1 transportable cabinet
- 1 wall-mounted antenna

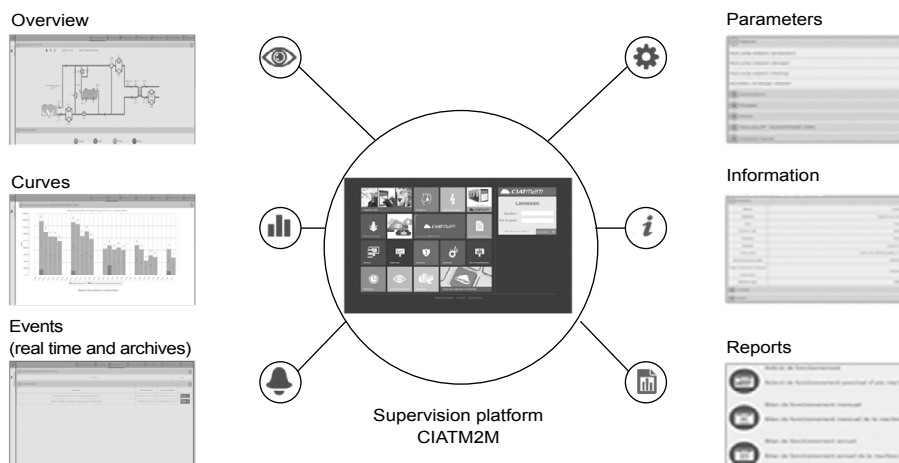


CIATM2M kit contents

- 1 GPRS/3G modem
- 1 SIM card
- 1 power supply (24 VDC)
- 1 power protection device
- 1 GSM antenna
- Rail mounting
- Enclosed casing to protect the equipment during transport
- Packing box for cable routing (bus, power supply, Ethernet)

Compatibility

Up to three machines per CIATM2M kit



AVAILABLE OPTIONS

| Options | Description | Advantages | LX HE/XE |
|--|---|---|--------------------|
| Medium-temperature brine solution | Implementation of new algorithms of control and evaporator redesign to allow chilled brine solution production down to -12°C when ethylene glycol is used (-8°C with propylene glycol) | Covers specific applications such as ice storage and industrial processes | • |
| Low-temperature brine solution | Implementation of new algorithms of control and evaporator redesign to allow chilled brine solution production down to -15°C when ethylene glycol is used (-10°C with propylene glycol) | Covers specific applications such as ice storage and industrial processes | • |
| Light-brine solution, down to -3°C | Implementation of new algorithms of control to allow chilled brine solution production down to -3°C when ethylene glycol is used (0°C with propylene glycol) | Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements | • |
| Unit equipped for air discharge ducting | Fans equipped with discharge connection flanges - maximum available pressure 60 Pa | Facilitates connections to the discharge ducts | • |
| Low Noise | Aesthetic and sound absorbing compressor enclosure | Noise level reduction | • |
| Xtra Low Noise | Acoustic compressor enclosure and low-speed fans | Noise emission reduction at reduced fan speed | • |
| Super Low Noise | Acoustic compressor enclosure, low-speed fans and enhanced sound insulation of main noise sources | Noise level reduction in sensitive environments | 1308-4608 |
| IP54 control box | Increased leak tightness of the unit | Protects the inside of the electrical box from dust, water and sand. As a rule, this option is recommended for installations located in polluted environments | • |
| Tropicalisation of the electrical box | Electrical box equipped with an electrical heater and a fan. Electrical connections on the compressors painted with a special varnish. | Grant safe operation in typical "tropical" climate. This option is recommended for all applications where humidity inside the electrical box can reach 80% at 40°C and unit can remain in stand-by for a long time under this conditions. | • |
| Protection grilles | Metal grilles on the 4 unit sides. | Improves protection against intrusion to the unit interior, and protects the coil and piping against impacts. | • |
| 230 V electrical plug | 230 V AC power supply source provided with plug socket and transformer (180 VA, 0.8 A) | Permits connection of a laptop or an electrical device during unit commissioning or servicing | • |
| Water exchanger frost protection | Electric resistance heater on the water exchanger and discharge valve | Water exchanger frost protection down to -20°C outside temperature | • |
| Evaporator & hydraulic module frost protection | Electric resistance heater on water exchanger, discharge valve and hydraulic module | Water exchanger and hydraulic module frost protection down to -20°C outside temperature | Sizes 808 to 1108 |
| Total heat recovery | Unit equipped with additional heat exchanger in parallel with the condenser coils. | Production of free hot-water simultaneously with chilled water production | Sizes 808 to 3028 |
| Evaporator with one pass less | Evaporator with one pass more on the water | Optimise chiller operation when the chilled water circuit is designed with low waterflows (high delta T evaporator inlet/outlet) | Sizes 808-3028 |
| Master/slave operation | side | Optimised operation of two units connected in parallel operation with operating time equalisation | • |
| 21 bar evaporator | Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar) | Covers applications with a high water column evaporator side (typically high buildings) | • |
| Single power connection point | Unit power connection via one main supply connection | Quick and easy installation | Sizes 3428 to 4608 |
| Evap. and pumps with aluminum jacket | Evaporator and pumps covered with an aluminum sheet for thermal insulation protection | Improved resistance to aggressive climate conditions | Sizes 0808-1108 |
| Reversed evaporator water connections | Evaporator with reversed water inlet/outlet | Easy installation on sites with specific requirements | • |
| Service valve set | Liquid line valve (evaporator inlet), compressor suction and discharge line valves and economiser line valve | Allow isolation of various refrigerant circuit components for simplified service and maintenance | • |
| Evaporator with one pass more | Evaporator with one pass more on the water side | Optimise chiller operation when the chilled water circuit is designed with low waterflows (high delta T evaporator inlet/outlet) | • |
| Set point adjustment by 4-20mA signal | Connections to allow a 4-20mA signal input | Easy energy management, allow to adjust set point by a 4-20mA external signal | • |
| Lon gateway | Two-directional communication board complying with Lon Talk protocol | Connects the unit by communication bus to a building management system | • |
| HP single-pump hydraulic module | Complete hydraulic module equipped with water filter, relief valve, one high pressure pump and drain valve. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in safety hydraulic components available). | Quick and easy installation (plug & play) | Sizes 808 to 1108 |

• ALL MODELS

Refer to the selection tool to find out which options are not compatible.

AVAILABLE OPTIONS

| Options | Description | Advantages | LX HE/XE |
|--|--|---|-------------------|
| HP dual-pump hydraulic module | Dual high pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in safety hydraulic components available) | Quick and easy installation (plug & play) | Sizes 808 to 1108 |
| LP single-pump hydraulic module | Single low pressure water pump, water filter, electronic water flow control, pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in safety hydraulic components available) | Quick and easy installation (plug & play) | Sizes 808 to 1108 |
| LP dual-pump hydraulic module | Dual low pressure water pump, water filter, electronic water flow control, pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in safety hydraulic components available) | Quick and easy installation (plug & play) | Sizes 808 to 1108 |
| Dual relief valves on 3-way valve | Three-way valve upstream of dual relief valves on the shell and tubes evaporator | Valve replacement and inspection facilitated without refrigerant loss. Conforms to European standard EN378/BGVD4 | Sizes 808 to 3028 |
| Compliance with Swiss regulations | Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications | Compliance with Swiss regulations | • |
| Compliance with Russian regulations | EAC certification | Compliance with Russian regulations | • |
| Bacnet over IP | Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP) | Easy, high-speed connection by Ethernet line to a building management system. Allows access to multiple unit parameters | • |
| Energy Management Module | Control board with additional inputs/outputs. See Contacts available in option on control description | Extended remote control capabilities (setpoint reset by 0-20 mA input, ice storage end, demand limits, boiler on/off command...) | • |
| 7" user interface | Control supplied with a 7 inch colour touch screen user interface | Enhanced ease of use | • |
| Input contact for Refrigerant leak detection | 0-10 V signal to report any refrigerant leakage in the unit directly on the controller (the leak detector itself must be supplied by the customer) | Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions | • |
| Compliance with Australian regulations | Unit approved to Australian code | Compliance with Australian regulations | • |
| Insulation of the evap. in/ out ref.lines | Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation | Prevents condensation on the evaporator entering/ leaving refrigerant lines | • |
| MCHE anti-corrosion protection Protect2 | Coating by conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, salt spray resistance test for 4000 hours (ASTM B117) | Protect2 Improved corrosion resistance of the MCHE coils by 2, recommended for use in moderately corrosive environments | • |
| MCHE anti-corrosion protection Protect4 | Extremely durable and flexible epoxy polymer coating applied on micro channel coils by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794 | Protect4 Improved corrosion resistance of the MCHE coils by 4, recommended for use in corrosive environments | • |
| Evaporator with aluminium jacket | Evaporator covered with an aluminium sheet for thermal insulation protection | Improved resistance to aggressive climate conditions | • |
| Expansion tank | 6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option) | Easy and fast installation (plug & play), & protection of closed water systems from excessive pressure | Sizes 808 to 1108 |
| Anti-vibration mounts | Elastomer anti-vibration mounts to be placed under the unit (material classified B2 fire class according to DIN 4102). | Isolate the unit from the building, avoid transmission of vibrations and associated noise to the building. Must be used in conjunction with a flexible connection on the water side | • |
| Free cooling drycooler management | Control & connections to a free cooling drycooler Opera or Vextra fitted with the FC control box option | Easy system management, extended control capabilities to a drycooler used in free cooling mode | • |
| Variable Water Flow control | Hydraulic control function package that permits control of the water flow rate based on different possible logics (at customer choice): constant ΔT , constant outlet pressure and fixed-speed control | When variable-speed pumps on the primary circuit, the VWF control modulates flow rate through the evaporator, minimising pump consumption while ensuring safe/optimised chiller operation | Sizes 808 to 1108 |

• ALL MODELS

Refer to the selection tool to find out which options are not compatible.

SEASONAL PERFORMANCE

Most central air conditioning systems installed in the tertiary sector in Europe use water chillers to provide refrigeration.

Analyses of installed systems show that the heat load varies from season to season and that a water chiller operates at reduced capacity for the majority of the time.

The efficiency under partial load is therefore essential when choosing a water chiller. It is with this in mind that the new POWERCIAT range was designed. In particular, the entire range uses R134a refrigerant which, thanks to its thermodynamic performance, makes it possible to obtain much higher seasonal performance ratings.

Thanks to its system continuously regulating the power of each compressor, the POWERCIAT easily and efficiently adjusts the cooling capacity to the system's needs. The self-adjusting Connect Touch control anticipates variations in load and starts only the number of compressors needed. This ensures optimum operation of the compressors and guarantees energy efficiency for the majority of the system's life.

The Premium version of the POWERCIAT XE series has ECtype variable-speed fan motor assemblies as standard. This type of fan motor with electronic switching of poles and rotors with permanent magnets stands out for its excellent mechanical efficiency and its exceptionally low sound level, whatever the load on the shaft. This technology optimises the machine's seasonal performance (SEER and SEPR) through the most effective means all year round.

The **Seasonal Energy Efficiency Ratio (SEER)** measures the seasonal energy efficiency of liquid chillers **for comfort applications** by calculating the ratio between the annual cooling demand of the building and the chiller's annual energy demand. It takes into account the energy efficiency for each outdoor temperature weighted by the number of hours observed for each of these temperatures, using actual climate data. The **SEER** is a new way of measuring the energy efficiency of liquid chillers for **comfort applications** over an entire year. The new indicator provides a more realistic overview of the cooling system's energy efficiency and its actual impact on the environment. (Ecodesign regulation 2016/2281).

The **Seasonal Energy Performance Ratio (SEPR)** measures the seasonal energy efficiency of liquid chillers for **process applications** by calculating the ratio between the annual process cooling demand and the chiller's annual energy demand. It takes into account the energy efficiency at each outdoor temperature for the average European climate weighted by the number of hours observed for each of these temperatures.

The **SEPR** is a new way of measuring the energy efficiency of liquid chillers for **process applications** over an entire year. The new indicator provides a more realistic overview of the cooling system's energy efficiency and its actual impact on the environment (Ecodesign regulation 2015/1095 or 2016/2281).

HYDRAULIC MODULE

■ The “ALL IN ONE” solution

The PLUG & COOL solution offered by POWERCIAT

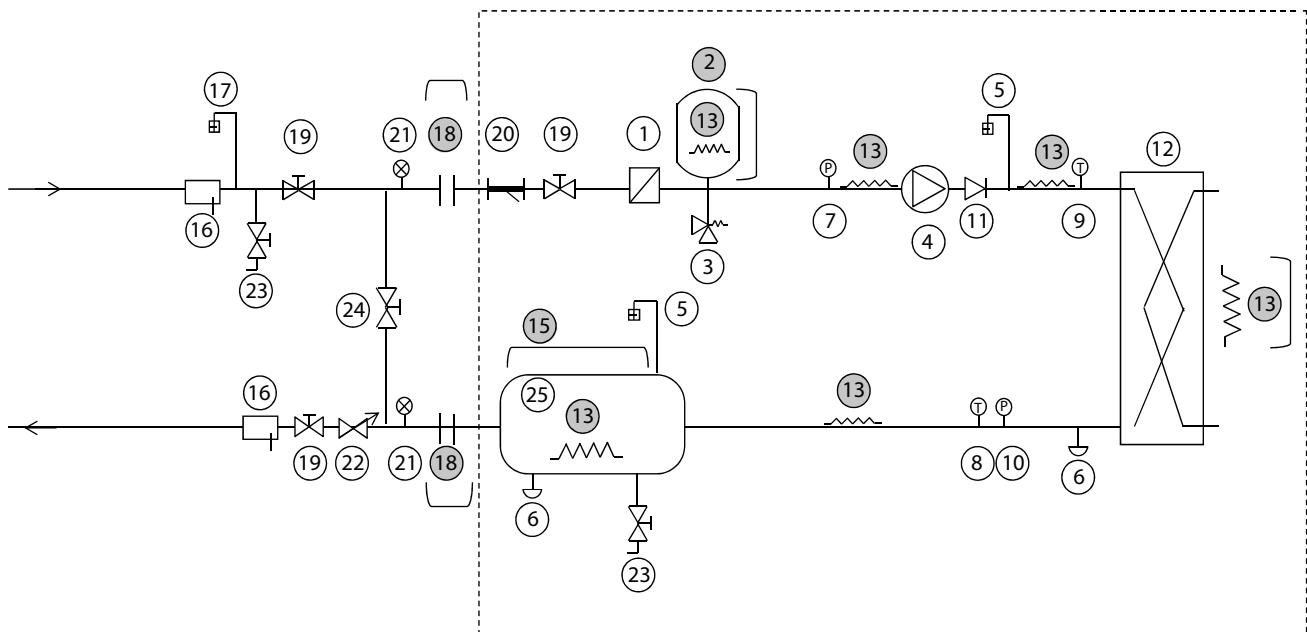
The hydraulic module available for models 808 to 1528 contains all the water circuit components needed for the system to operate correctly:

- Expansion vessel (option) :
 - 50 litres for models 808 to 1358.
 - 80 litres for model 1528.
- Wide choice of pumps :
 - Single or dual pumps with operating time balancing and backup.
 - Fixed-speed high or low pressure pumps.
- Water temperature and pressure sensors.
- Water filter.
- Relief valve.
- Drain circuit.
- Air bleed valve.
- Frost protection (option).

The components in the hydraulic system are carefully selected and factory assembled and tested to make the installation of the units simple and economical.

This ensures conditioning times, implementation times and space requirements are kept to a minimum.

■ POWERCIAT hydraulic module diagram



Key

Components of the unit and hydraulic module

- | | |
|---|---|
| A Pressure sensor (A-B = ΔP evaporator) | 6 Flow control valve |
| B Pressure sensor | 7 EVAPORATOR |
| A Pressure sensor (C-D = ΔP water filter) | 8 Evaporator antifreeze heater (optional) |
| D Pressure sensor | 9 Hydraulic module defrost heater (option) |
| 1 Victaulic screen filter | 10 Air vent (evaporator) |
| 2 Expansion tank (optional) | 11 Water drain (evaporator) |
| 3 Relief valve | 12 Expansion compensator (flexible connections) |
| 4 Available pressure pump | 13 Flow rate sensor |
| 5 Drain valve | 14 Water temperature sensor |

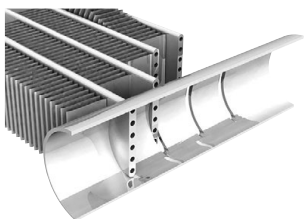
System components

- | |
|--|
| 15 Air vent |
| 16 Flexible |
| 17 Stop valve |
| 18 Charge valve |
| --- Hydraulic module (supplied as an option) |

ENVIRONMENTAL RESPONSIBILITY

The POWERCAT contributes to sustainable development via an environmentally responsible approach, aimed at balancing ecological and economic concerns. This enables it to meet the requirements of future European thermal regulations and to protect our environment for future generations.

The highly efficient performance it offers enables energy consumption to be greatly reduced, thereby reducing the unit's carbon footprint throughout its service life.



Only 20% of a unit's impact on the ozone layer comes from the refrigerant (direct effect), with 80% coming from the CO₂ released into the atmosphere when the electricity required to power the unit is produced (indirect effect). With POWERCAT, it's a win-win situation: its low refrigerant charge minimises the risk of emissions, and its low energy consumption limits its indirect impact.

This performance is the result of the high quality components used, which have all been rigorously selected:

- The latest generation screw compressors
- Highly efficient R134a refrigerant, which has a low environmental impact: zero ODP (Ozone Depletion Potential), low GWP (Global Warming Potential).
- MCHE micro-channel coils
 - Energy efficiency increased by 10% compared to a conventional coil
 - 40 % reduction in the refrigerant charge.
 - reduction in the unit weight, reducing the environmental impact during transportation
 - Simplified end of life recycling thanks to the all-aluminium construction.

The choice of technology used in the POWERCAT range means that the TEWI, which covers the unit's environmental impact (both direct and indirect) throughout its service life, is greatly reduced.

INTEGRATION INTO THE MOST DEMANDING ENVIRONMENTS

The POWERCAT has standard and optional equipment which enables it to be integrated into any one of a diverse range of environments.

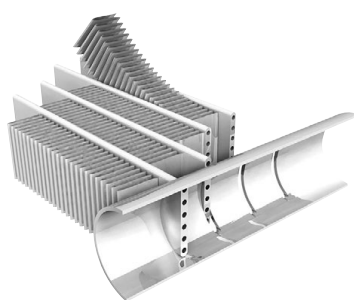
In the micro-channel (MCHE) coil, the rate of corrosion is less than in a conventional coil with copper tube and aluminium fins. Indeed, its all-aluminium design limits the galvanic couples in the coil, thereby providing increased corrosion resistance.

The Protect2 anti-corrosion post-treatment option doubles its resistance to corrosion. This treatment is applied by immersing the coil, ensuring complete protection as the aluminium surface undergoes a chemical change.

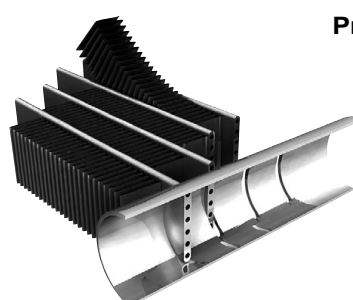
This treatment is recommended for moderately corrosive environments.

The Protect4 anti-corrosion post-treatment option provides a fourfold increase in resistance to corrosion. An e-coating process is used to electro-coat the coil in polymer epoxy, and then a top layer of anti-UV protection is applied.

This treatment is recommended for highly corrosive industrial and marine environments.



Protect2



Protect4

In a polluted atmosphere, the POWERCAT can be equipped with an IP54 protection option that protects the electrical components from the ingress of dust, sand and water.

TECHNICAL SPECIFICATIONS



| POWERCIAT LX HE | | | | 0808 | 0908 | 1008 | 1108 | 1358 | 1528 | 1858 | 2008 | 2158 |
|--|-----|---------------------------------------|---------|------|------|------|------|------|------|------|------|------|
| Cooling | | | | | | | | | | | | |
| LX HE standard Full load performances* | CA1 | Nominal capacity | kW | 277 | 300 | 322 | 392 | 444 | 494 | 623 | 676 | 730 |
| | | EER | kW/kW | 3,15 | 3,12 | 3,08 | 3,18 | 3,11 | 3,08 | 3,22 | 3,28 | 3,10 |
| LX HE with Xtra & Super Low Noise option Full load performances* | CA1 | Nominal capacity | kW | 271 | 293 | 313 | 384 | 432 | 478 | 607 | 659 | 709 |
| | | EER | kW/kW | 3,13 | 3,08 | 3,00 | 3,16 | 3,03 | 2,93 | 3,13 | 3,20 | 2,97 |
| LX HE standard Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | 4,47 | 4,46 | 4,40 | 4,33 | 4,56 | 4,55 | 4,62 | 4,56 | |
| | | ηs cool 12/7 °C | % | 176 | 175 | 173 | 170 | 179 | 179 | 179 | 182 | 179 |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | 5,70 | 5,69 | 5,65 | 5,78 | 5,72 | 5,74 | 5,68 | 5,79 | 5,63 |
| LX HE with medium-temperature brine solution option Seasonal energy efficiency** | | SEPR -2/-8 °C Process medium temp.*** | kWh/kWh | 2,72 | 3,02 | 3,18 | 2,81 | 3,51 | 3,56 | 3,65 | 3,67 | 3,44 |
| | | | | | | | | | | | | |
| LX HE with variable water flow control option Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | 4,47 | 4,47 | 4,43 | 4,49 | - | - | - | - | - |
| | | ηs cool 12/7 °C | % | 176 | 176 | 174 | 177 | - | - | - | - | - |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | 5,72 | 5,71 | 5,68 | 5,83 | - | - | - | - | - |
| LX HE with low-temperature brine solution option Seasonal energy efficiency** | | SEPR -2/-8 °C Process medium temp.*** | kWh/kWh | 3,29 | 3,46 | 3,52 | 3,26 | 3,42 | 3,50 | 3,50 | 3,62 | 3,38 |
| | | | | | | | | | | | | |
| LX HE with Xtra & Super Low Noise option Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | 4,49 | 4,48 | 4,41 | 4,33 | 4,56 | 4,57 | 4,56 | 4,62 | 4,56 |
| | | ηs cool 12/7 °C | % | 176 | 176 | 173 | 170 | 179 | 180 | 179 | 182 | 179 |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | 5,82 | 5,88 | 5,79 | 5,57 | 5,70 | 5,79 | 5,92 | 5,93 | 5,79 |
| LX HE with medium-temperature brine solution, Xtra & super low noise options Seasonal energy efficiency** | | SEPR -2/-8 °C Process medium temp.*** | kWh/kWh | 2,75 | 3,10 | 3,29 | 2,83 | 3,54 | 3,67 | 3,79 | 3,82 | 3,55 |
| | | | | | | | | | | | | |
| LX HE with variable water flow control option & Xtra & super low noise Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | 4,47 | 4,47 | 4,42 | 4,47 | - | - | - | - | - |
| | | ηs cool 12/7 °C | % | 176 | 176 | 174 | 176 | - | - | - | - | - |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | 5,84 | 5,91 | 5,82 | 5,61 | - | - | - | - | - |
| LX HE with low-temperature brine solution, Xtra & super low noise options Seasonal energy efficiency** | | SEPR -2/-8 °C Process medium temp.*** | kWh/kWh | 3,35 | 3,58 | 3,71 | 3,38 | 3,64 | 3,61 | 3,63 | 3,78 | 3,50 |
| | | | | | | | | | | | | |
| Sound levels | | | | | | | | | | | | |
| LX HE | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 99 | 99 | 99 | 99 | 101 | 99 | 101 | 99 | 103 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 67 | 67 | 67 | 67 | 69 | 67 | 68 | 66 | 70 |
| LX HE + Low Noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 93 | 93 | 94 | 95 | 95 | 95 | 97 | 96 | 97 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 61 | 61 | 62 | 63 | 63 | 63 | 64 | 63 | 64 |
| LX HE + Xtra low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 87 | 87 | 87 | 90 | 91 | 91 | 93 | 92 | 94 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 55 | 55 | 55 | 58 | 59 | 59 | 60 | 59 | 61 |
| LX HE + Super low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | - | - | - | - | 89 | 89 | 91 | 90 | 91 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | - | - | - | - | 57 | 57 | 58 | 57 | 58 |

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

*** 30 % brine solution

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². k/W

ηs cool 12/7 °C & SEER 12/7 °C **Bold values compliant to Ecodesign Regulation (EU) No. 2016/2281 for Comfort application**

SEPR 12/7 °C **Bold values compliant to Ecodesign Regulation (EU) No. 2016/2281 for Process application**

SEPR -2/-8 °C **Bold values compliant to Ecodesign Regulation (EU) No. 2015/1095 for Process application**

- Non applicable

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

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



Eurovent certified values

TECHNICAL SPECIFICATIONS



| POWERCAT LX HE | | 0808 | 0908 | 1008 | 1108 | 1358 | 1528 | 1858 | 2008 | 2158 |
|---|--------------------|---|----------------|----------------|----------------|----------------|----------------|-------|-------|-------|
| Dimensions | | | | | | | | | | |
| LX HE | | | | | | | | | | |
| Length | mm | 3604 | 3604 | 3604 | 4798 | 4798 | 4798 | 7186 | 7186 | 7186 |
| Width | mm | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 |
| Height | mm | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 |
| Operating weight⁽³⁾ | | | | | | | | | | |
| LX HE standard | kg | 3081 | 3112 | 3132 | 3729 | 3791 | 3852 | 4878 | 5024 | 5282 |
| LX HE Unit + Low noise option | kg | 3349 | 3380 | 3400 | 4028 | 4090 | 4151 | 5209 | 5355 | 5613 |
| Compressors | | 06T semi-hermetic screw, 50 r/s | | | | | | | | |
| Circuit A | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Circuit B | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Refrigerant⁽³⁾ | | R134a | | | | | | | | |
| Circuit A | kg | 39 | 37 | 37 | 52 | 53 | 55 | 60 | 61 | 69 |
| | tCO ₂ e | 55,8 | 52,9 | 52,9 | 74,4 | 75,8 | 77,9 | 85,8 | 87,2 | 98,0 |
| Circuit B | kg | 40,0 | 38 | 39 | 40,0 | 40 | 37,0 | 61 | 64 | 61 |
| | tCO ₂ e | 57,2 | 54,3 | 55,8 | 57,2 | 57,2 | 52,9 | 87,2 | 91,5 | 86,5 |
| Oil | | | | | | | | | | |
| Circuit A | l | 20,8 | 20,8 | 20,8 | 23,5 | 23,5 | 23,5 | 23,5 | 23,5 | 27,6 |
| Circuit B | l | 20,8 | 20,8 | 20,8 | 20,8 | 20,8 | 20,8 | 23,5 | 23,5 | 23,5 |
| Capacity control | | Connect Touch, electronic expansion valve (EXV) | | | | | | | | |
| Minimum capacity | % | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Air-cooled exchanger | | Aluminium micro-channel coils (MCHE) | | | | | | | | |
| Fans | | | | | | | | | | |
| LX HE | | Axial type, with rotating impeller, FLYING-BIRD 6 | | | | | | | | |
| Quantity | | 6 | 6 | 6 | 8 | 8 | 8 | 11 | 12 | 12 |
| Maximum total air flow | l/s | 28920 | 28920 | 28920 | 38560 | 38560 | 38560 | 53020 | 57840 | 57840 |
| Maximum rotation speed | r/s | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 |
| LX HE Unit + Xtra Low Noise option | | | | | | | | | | |
| Maximum total air flow | l/s | 23580 | 23580 | 23580 | 31440 | 31440 | 31440 | 43230 | 47160 | 47160 |
| Maximum rotation speed | r/s | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 |
| Exchanger | | Flooded multi-pipe type | | | | | | | | |
| Water volume | l | 58 | 61 | 61 | 66 | 70 | 77 | 79 | 94 | 98 |
| Max. water-side operating pressure without hydraulic module | kPa | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Hydraulic module (option) | | Pump, Victaulic screen filter, relief valve, water and air vent valve, pressure sensors | | | | | | | | |
| Pump | | Centrifugal pump, monocell, 48.3 r/s, low- or high-pressure (as required), single or dual (as required) | | | | | | | | |
| Expansion vessel volume | l | 50 | 50 | 50 | 50 | 50 | 80 | | | |
| Max. water-side operating pressure with hydraulic module | kPa | 400 | 400 | 400 | 400 | 400 | 400 | | | |
| Water connections with or without hydraulic module | | Victaulic® type | | | | | | | | |
| Connections | inch | 5 or 4 | 5 or 4 | 5 or 4 | 5 or 4 | 5 or 4 | 5 or 4 | 5 | 6 | 6 |
| External diameter ⁽⁴⁾ | mm | 114,3 or 141,3 | 114,3 or 141,3 | 114,3 or 141,3 | 114,3 or 141,3 | 114,3 or 141,3 | 114,3 or 141,3 | 141,3 | 168,3 | 168,3 |
| Casing paintwork | | Colour code RAL 7035 & RAL 7024 | | | | | | | | |

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

(2) In dB re_f 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power L_w(A).

(3) Values are guidelines only. Refer to the unit name plate.

(4) Depends on the number of passes on the evaporator



Eurovent certified values

TECHNICAL SPECIFICATIONS



| POWERCIAT LX HE | | | | 2308 | 2528 | 2628 | 3028 | 3428 | 3828 | 4008 | 4408 | 4608 |
|--|-----|---------------------------------------|---------|------|------|------|------|------|------|------|------|------|
| Cooling | | | | | | | | | | | | |
| LX HE standard Full load performances* | CA1 | Nominal capacity | kW | 782 | 825 | 899 | 983 | 1143 | 1262 | 1330 | 1441 | 1512 |
| | | EER | kW/kW | 3,10 | 3,08 | 3,12 | 3,17 | 3,22 | 3,19 | 3,16 | 3,05 | 3,07 |
| LX HE with Xtra & Super Low Noise option Full load performances* | CA1 | Nominal capacity | kW | 757 | 795 | 878 | 969 | 1113 | 1226 | 1290 | 1392 | 1464 |
| | | EER | kW/kW | 2,93 | 2,89 | 2,99 | 3,03 | 3,11 | 3,05 | 2,98 | 2,82 | 2,89 |
| LX HE standard Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | 4,55 | 4,56 | 4,56 | 4,60 | 4,58 | 4,61 | 4,55 | 4,55 | 4,55 |
| | | ηs cool 12/7 °C | % | 179 | 179 | 179 | 181 | 180 | 181 | 179 | 179 | 179 |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | NA | 5,55 | 5,54 | 5,83 | 5,76 | 5,71 | 5,68 | 5,56 | NA |
| LX HE with medium-temperature brine solution option Seasonal energy efficiency** | | SEPR -2/-8°C Process medium temp.*** | kWh/kWh | 3,35 | 3,53 | 3,44 | 3,55 | 3,52 | 3,47 | 3,60 | 3,63 | NA |
| LX HE with variable water flow control option Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | - | - | - | - | - | - | - | - | - |
| | | ηs cool 12/7 °C | % | - | - | - | - | - | - | - | - | - |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | - | - | - | - | - | - | - | - | - |
| LX HE with low-temperature brine solution option Seasonal energy efficiency** | | SEPR -2/-8 °C Process medium temp.*** | kWh/kWh | 3,34 | 3,47 | 3,39 | 3,47 | 3,29 | 2,63 | 3,45 | 3,53 | NA |
| LX HE with Xtra & Super Low Noise option Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | 4,58 | 4,56 | 4,57 | 4,56 | 4,60 | 4,62 | 4,59 | 4,56 | 4,55 |
| | | ηs cool 12/7 °C | % | 180 | 179 | 180 | 179 | 181 | 182 | 181 | 179 | 179 |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | 5,72 | 5,80 | 5,76 | 5,88 | 5,90 | 5,81 | 5,71 | 5,68 | 5,52 |
| LX HE with medium-temperature brine solution, Xtra & super low noise options Seasonal energy efficiency** | | SEPR -2/-8°C Process medium temp.*** | kWh/kWh | 3,57 | 3,66 | 3,55 | 3,78 | 3,61 | 3,31 | 3,22 | 3,27 | 3,28 |
| LX HE with variable water flow control option & Xtra & super low noise Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | - | - | - | - | - | - | - | - | - |
| | | ηs cool 12/7 °C | % | - | - | - | - | - | - | - | - | - |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | - | - | - | - | - | - | - | - | - |
| LX HE with low-temperature brine solution, Xtra & super low noise options Seasonal energy efficiency** | | SEPR -2/-8 °C Process medium temp.*** | kWh/kWh | 3,55 | 3,59 | 3,47 | 3,70 | 3,58 | 3,44 | 3,67 | 3,67 | 3,45 |
| Sound levels | | | | | | | | | | | | |
| LX HE | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 103 | 101 | 104 | 102 | 103 | 102 | 104 | 104 | 104 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 70 | 68 | 71 | 69 | 70 | 69 | 71 | 71 | 71 |
| LX HE + Low Noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 98 | 97 | 99 | 98 | 98 | 98 | 100 | 99 | 99 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 65 | 64 | 66 | 65 | 65 | 65 | 67 | 66 | 66 |
| LX HE + Xtra low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 94 | 94 | 95 | 94 | 94 | 94 | 99 | 95 | 96 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 61 | 61 | 62 | 61 | 61 | 61 | 66 | 62 | 63 |
| LX HE + Super low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 92 | 91 | 93 | 92 | 93 | 93 | 97 | 94 | 95 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 59 | 58 | 60 | 59 | 60 | 60 | 64 | 61 | 62 |

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

*** 30 % brine solution

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². k/W

ηs cool 12/7 °C & SEER 12/7 °C **Bold values compliant to Ecodesign Regulation (EU) No. 2016/2281 for Comfort application**

SEPR 12/7 °C **Bold values compliant to Ecodesign Regulation (EU) No. 2016/2281 for Process application**

SEPR -2/-8 °C **Bold values compliant to Ecodesign Regulation (EU) No. 2015/1095 for Process application**

NA Not authorised for the specific application for the CEE market

- Non applicable

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

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



Eurovent certified values

TECHNICAL SPECIFICATIONS



| POWERCAT LX HE | | 2308 | 2528 | 2628 | 3028 | 3428 | 3828 | 4008 | 4408 | 4608 |
|---|-------------------|---|-------|-------|-------|-------|-------|-------|-------|--------|
| Dimensions | | | | | | | | | | |
| LX HE | | | | | | | | | | |
| Length | mm | 7186 | 7186 | 8380 | 9574 | 11962 | 11962 | 11962 | 11962 | 13157 |
| Width | mm | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 |
| Height | mm | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 |
| Operating weight⁽³⁾ | | | | | | | | | | |
| LX HE standard | kg | 5594 | 5643 | 6262 | 6772 | 8061 | 8202 | 8793 | 8868 | 9218 |
| LX HE Unit + Low noise option | kg | 5925 | 5974 | 6593 | 7103 | 8435 | 8576 | 9167 | 9242 | 9592 |
| Compressors | | 06T semi-hermetic screw, 50 r/s | | | | | | | | |
| Circuit A | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Circuit B | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Refrigerant⁽³⁾ | | R134a | | | | | | | | |
| Circuit A | kg | 69 | 69 | 72 | 79 | 82 | 84 | 115 | 121 | 124 |
| | tCO _{2e} | 98,7 | 98,7 | 103,0 | 113,0 | 117,3 | 120,1 | 164,5 | 173,0 | 177,3 |
| Circuit B | kg | 67 | 67 | 74 | 83 | 118 | 130 | 121 | 127 | 130 |
| | tCO _{2e} | 95,8 | 95,8 | 105,8 | 118,7 | 168,7 | 185,9 | 173,0 | 181,6 | 185,9 |
| Oil | | | | | | | | | | |
| Circuit A | l | 27,6 | 27,6 | 27,6 | 27,6 | 27,6 | 27,6 | 36,0 | 36,0 | 36,0 |
| Circuit B | l | 23,5 | 23,5 | 27,6 | 27,6 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 |
| Capacity control | | Connect Touch, electronic expansion valve (EXV) | | | | | | | | |
| Minimum capacity | % | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Air-cooled exchanger | | Aluminium micro-channel coils (MCHE) | | | | | | | | |
| Fans | | Axial type, with rotating impeller, FLYING-BIRD 6 | | | | | | | | |
| LX HE | | | | | | | | | | |
| Quantity | | 12 | 12 | 14 | 16 | 20 | 20 | 20 | 20 | 22 |
| Maximum total air flow | l/s | 57840 | 57840 | 67480 | 77120 | 96400 | 96400 | 96400 | 96400 | 106040 |
| Maximum rotation speed | r/s | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 |
| LX HE Unit + Xtra Low Noise option | | | | | | | | | | |
| Maximum total air flow | l/s | 47160 | 47160 | 55020 | 62880 | 78600 | 78600 | 78600 | 78600 | 86460 |
| Maximum rotation speed | r/s | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 |
| Exchanger | | Flooded multi-pipe type | | | | | | | | |
| Water volume | l | 119 | 119 | 130 | 140 | 164 | 174 | 180 | 189 | 189 |
| Max. water-side operating pressure without hydraulic module | kPa | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Water connections with or without hydraulic module | | Victaulic® type | | | | | | | | |
| Connections | inch | 6 | 6 | 6 | 8 | 6 | 6 | 6 | 6 | 6 |
| External diameter | mm | 168,3 | 168,3 | 168,3 | 219,1 | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 |
| Casing paintwork | | Colour code RAL 7035 & RAL 7024 | | | | | | | | |

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

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

(3) Values are guidelines only. Refer to the unit name plate.

(4) Depends on the number of passes on the evaporator



Eurovent certified values

TECHNICAL SPECIFICATIONS



| POWERCIAT LX XE | | | | 0808 | 0908 | 1008 | 1108 | 1358 | 1528 | 1858 | 2008 | 2158 |
|--|-----|--|---------|------|------|------|------|------|------|------|------|------|
| Cooling | | | | | | | | | | | | |
| LX XE standard Full load performances* | CA1 | Nominal capacity | kW | 277 | 301 | 323 | 392 | 445 | 500 | 623 | 677 | 730 |
| | | EER | kW/kW | 3,21 | 3,18 | 3,14 | 3,23 | 3,16 | 3,23 | 3,27 | 3,34 | 3,14 |
| LX XE with Xtra Low Noise option Full load performances* | CA1 | Nominal capacity | kW | 271 | 293 | 313 | 384 | 432 | 486 | 607 | 659 | 709 |
| | | EER | kW/kW | 3,17 | 3,11 | 3,03 | 3,20 | 3,05 | 3,13 | 3,16 | 3,23 | 2,99 |
| LX XE standard Seasonal energy efficiency** | | SEER _{12/7 °C} Comfort low temp. | kWh/kWh | 4,66 | 4,64 | 4,55 | 4,50 | 4,62 | 4,67 | 4,66 | 4,77 | 4,61 |
| | | ηs cool _{12/7 °C} | % | 183 | 183 | 179 | 177 | 182 | 184 | 183 | 188 | 181 |
| | | SEPR _{12/7 °C} Process high temp. | kWh/kWh | 6,12 | 6,16 | 6,11 | 6,06 | 6,01 | 6,13 | NA | 6,18 | 5,81 |
| LX XE with medium-temperature brine solution option Seasonal energy efficiency** | | SEPR _{-2/-8 °C} Process medium temp.*** | kWh/kWh | 2,86 | 3,26 | 3,39 | 2,97 | 3,67 | 3,80 | 3,84 | 4,02 | 3,61 |
| LX XE with variable water flow control option Seasonal energy efficiency** | | SEER _{12/7 °C} Comfort low temp. | kWh/kWh | 4,59 | 4,57 | 4,52 | 4,61 | - | - | - | - | - |
| | | ηs cool _{12/7 °C} | % | 180 | 180 | 178 | 181 | - | - | - | - | - |
| | | SEPR _{12/7 °C} Process high temp. | kWh/kWh | 6,13 | 6,18 | 6,15 | 6,10 | - | - | - | - | - |
| LX XE with low-temperature brine solution option Seasonal energy efficiency** | | SEPR _{-2/-8 °C} Process medium temp.*** | kWh/kWh | 3,51 | 3,72 | 3,78 | 3,64 | 3,62 | 3,72 | 3,68 | 3,96 | 3,55 |
| LX XE with Xtra Low Noise option Seasonal energy efficiency** | | SEER _{12/7 °C} Comfort low temp. | kWh/kWh | 4,67 | 4,67 | 4,56 | 4,49 | 4,59 | 4,64 | 4,65 | 4,78 | 4,60 |
| | | ηs cool _{12/7 °C} | % | 184 | 184 | 179 | 176 | 181 | 183 | 183 | 188 | 181 |
| | | SEPR _{12/7 °C} Process high temp. | kWh/kWh | 6,09 | 6,18 | 6,08 | 5,88 | 5,90 | 6,11 | 6,07 | 6,23 | 5,85 |
| LX XE with medium-temperature brine solution, Xtra low noise options Seasonal energy efficiency** | | SEPR _{-2/-8 °C} Process medium temp.*** | kWh/kWh | 2,85 | 3,25 | 3,42 | 2,94 | 3,64 | 3,70 | 3,93 | 3,97 | 3,64 |
| LX XE with variable water flow control option & Xtra low noise Seasonal energy efficiency** | | SEER _{12/7 °C} Comfort low temp. | kWh/kWh | 4,59 | 4,59 | 4,51 | 4,58 | - | - | - | - | - |
| | | ηs cool _{12/7 °C} | % | 181 | 181 | 177 | 180 | - | - | - | - | - |
| | | SEPR _{12/7 °C} Process high temp. | kWh/kWh | 6,11 | 6,20 | 6,11 | 5,91 | - | - | - | - | - |
| LX XE with low-temperature brine solution, Xtra low noise options Seasonal energy efficiency** | | SEPR _{-2/-8 °C} Process medium temp.*** | kWh/kWh | 3,47 | 3,74 | 3,89 | 3,52 | 3,75 | 3,79 | 3,77 | 3,93 | 3,59 |
| Sound levels | | | | | | | | | | | | |
| LX XE | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 99 | 99 | 99 | 99 | 101 | 99 | 101 | 99 | 103 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 67 | 67 | 67 | 67 | 69 | 67 | 68 | 67 | 70 |
| LX XE + low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 93 | 93 | 94 | 95 | 95 | 95 | 97 | 96 | 97 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 61 | 61 | 62 | 63 | 63 | 63 | 65 | 63 | 64 |
| LX XE + Xtra low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 87 | 87 | 87 | 90 | 91 | 91 | 93 | 92 | 94 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 55 | 55 | 55 | 58 | 59 | 59 | 60 | 59 | 61 |
| LX HE + Super low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | - | - | - | - | 89 | 89 | 91 | 90 | 91 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | - | - | - | - | 56 | 56 | 57 | 56 | 58 |

| | |
|---|--|
| * | In accordance with standard EN14511-3:2018. |
| ** | In accordance with standard EN14825:2016, average climate |
| *** | 30 % brine solution |
| CA1 | Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m ² . k/W |
| $\eta_{\text{S cool}}$ $_{12/7}^{\circ\text{C}}$ & SEER $_{12/7}^{\circ\text{C}}$ | Bold values compliant to Ecodesign Regulation (EU) No. 2016/2281 for Comfort application |
| SEPR $_{12/7}^{\circ\text{C}}$ | Bold values compliant to Ecodesign Regulation (EU) No. 2016/2281 for Process application |
| SEPR $_{-2/-8}^{\circ\text{C}}$ | Bold values compliant to Ecodesign Regulation (EU) No. 2015/1095 for Process application |
| NA | Not authorised for the specific application for the CEE market |
| - | Non applicable |
| (1) | In dB ref=10 ⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent. |
| (2) | In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power L _w (A). |



Eurovent certified values

TECHNICAL SPECIFICATIONS



| POWERCAT LX XE | | 0808 | 0908 | 1008 | 1108 | 1358 | 1528 | 1858 | 2008 | 2158 |
|---|-------------------|---|----------------|----------------|----------------|----------------|----------------|-------|-------|-------|
| Dimensions | | | | | | | | | | |
| Standard unit | | | | | | | | | | |
| Length | mm | 3604 | 3604 | 3604 | 4798 | 4798 | 5992 | 7186 | 7186 | 7186 |
| Width | mm | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 |
| Height | mm | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 |
| Operating weight⁽³⁾ | | | | | | | | | | |
| LX XE standard | kg | 3040 | 3071 | 3090 | 3683 | 3746 | 4091 | 4807 | 4941 | 5208 |
| LX XE + low noise option | kg | 3308 | 3339 | 3358 | 3982 | 4045 | 4390 | 5138 | 5272 | 5539 |
| Compressors | | 06T semi-hermetic screw, 50 r/s | | | | | | | | |
| Circuit A | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Circuit B | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Refrigerant⁽³⁾ | | R134a | | | | | | | | |
| Circuit A | kg | 39 | 37 | 37 | 52 | 53 | 59 | 60 | 61 | 69 |
| | tCO _{2e} | 55,8 | 52,9 | 52,9 | 74,4 | 75,8 | 83,7 | 85,8 | 87,2 | 98,0 |
| Circuit B | kg | 40 | 38 | 39 | 40 | 40 | 36 | 61 | 64 | 61 |
| | tCO _{2e} | 57,2 | 54,3 | 55,8 | 57,2 | 57,2 | 51,5 | 87,2 | 91,5 | 86,5 |
| Oil | | | | | | | | | | |
| Circuit A | l | 20,8 | 20,8 | 20,8 | 23,5 | 23,5 | 23,5 | 23,5 | 23,5 | 27,6 |
| Circuit B | l | 20,8 | 20,8 | 20,8 | 20,8 | 20,8 | 20,8 | 23,5 | 23,5 | 23,5 |
| Capacity control | | Connect Touch, electronic expansion valve (EXV) | | | | | | | | |
| Minimum capacity | % | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Air-cooled exchanger | | Aluminium micro-channel coils (MCHE) | | | | | | | | |
| Fans | | | | | | | | | | |
| LX XE | | Axial type, with rotating impeller | | | | | | | | |
| Quantity | | 6 | 6 | 6 | 8 | 8 | 9 | 11 | 12 | 12 |
| Maximum total air flow | l/s | 28920 | 28920 | 28920 | 38560 | 38560 | 43380 | 53020 | 57840 | 57840 |
| Maximum rotation speed | r/s | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 |
| LX XE + Xtra low noise option | | | | | | | | | | |
| Maximum total air flow | l/s | 23580 | 23580 | 23580 | 31440 | 31440 | 35370 | 43230 | 47160 | 47160 |
| Maximum rotation speed | r/s | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 |
| Exchanger | | Flooded multi-pipe type | | | | | | | | |
| Water volume | l | 58 | 61 | 61 | 66 | 70 | 77 | 79 | 94 | 98 |
| Max. water-side operating pressure without hydraulic module | kPa | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Hydraulic module (option) | | Pump, Victaulic screen filter, relief valve, water and air vent valve, pressure sensors | | | | | | | | |
| Pump | | Centrifugal pump, monocell, 48.3 r/s, low- or high-pressure (as required), single or dual (as required) | | | | | | | | |
| Expansion vessel volume | l | 50 | 50 | 50 | 50 | 50 | 80 | | | |
| Max. water-side operating pressure with hydraulic module | kPa | 400 | 400 | 400 | 400 | 400 | 400 | | | |
| Water connections with or without hydraulic module | | Victaulic® type | | | | | | | | |
| Connections | inch | 5 or 4 | 5 or 4 | 5 or 4 | 5 or 4 | 5 or 4 | 5 or 4 | 5 | 6 | 6 |
| External diameter | mm | 114,3 or 141,3 | 114,3 or 141,3 | 114,3 or 141,3 | 114,3 or 141,3 | 114,3 or 141,3 | 114,3 or 141,3 | 141,3 | 168,3 | 168,3 |
| Casing paintwork | | Colour code RAL 7035 & RAL 7024 | | | | | | | | |

(3) Values are guidelines only. Refer to the unit name plate.

TECHNICAL SPECIFICATIONS



| POWERCIAT LX XE | | | | 2308 | 2528 | 2628 | 3028 | 3428 | 3828 | 4008 | 4408 | 4608 |
|--|-----|--------------------------------------|---------|------|------|------|------|------|------|------|------|------|
| Cooling | | | | | | | | | | | | |
| LX XE standard Full load performances* | CA1 | Nominal capacity | kW | 782 | 837 | 899 | 982 | 1143 | 1262 | 1330 | 1441 | 1512 |
| | | EER | kW/kW | 3,13 | 3,27 | 3,15 | 3,21 | 3,28 | 3,24 | 3,20 | 3,08 | 3,11 |
| LX XE with Xtra Low Noise option Full load performances* | CA1 | Nominal capacity | kW | 757 | 813 | 872 | 969 | 1113 | 1227 | 1290 | 1391 | 1466 |
| | | EER | kW/kW | 2,95 | 3,13 | 2,98 | 3,06 | 3,16 | 3,06 | 3,01 | 2,84 | 2,91 |
| LX XE standard Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | 4,58 | 4,68 | 4,61 | 4,69 | 4,70 | 4,72 | 4,62 | 4,63 | 4,62 |
| | | ηs cool 12/7 °C | % | 180 | 184 | 181 | 185 | 185 | 186 | 182 | 182 | 182 |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | 5,69 | 5,96 | 5,84 | 5,83 | 5,90 | 5,87 | 5,99 | 5,65 | 6,16 |
| LX XE with medium-temperature brine solution option Seasonal energy efficiency** | | SEPR-2/-8 °C Process medium temp.*** | kWh/kWh | 3,63 | 3,83 | 3,67 | 3,66 | 3,77 | 3,66 | 3,70 | 3,72 | 3,24 |
| LX XE with variable water flow control option Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | - | - | - | - | - | - | - | - | - |
| | | ηs cool 12/7 °C | % | - | - | - | - | - | - | - | - | - |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | - | - | - | - | - | - | - | - | - |
| LX XE with low-temperature brine solution option Seasonal energy efficiency** | | SEPR -2/-8°C Process medium temp.*** | kWh/kWh | 3,61 | 3,75 | 3,64 | 3,58 | 3,45 | 3,73 | 3,59 | 3,69 | 3,42 |
| LX XE with Xtra Low Noise option Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | 4,57 | 4,66 | 4,58 | 4,67 | 4,68 | 4,70 | 4,57 | 4,56 | 4,56 |
| | | ηs cool 12/7 °C | % | 180 | 183 | 180 | 184 | 184 | 185 | 180 | 179 | 179 |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | 5,85 | 5,97 | 5,87 | 5,91 | 6,17 | 6,12 | 5,98 | 5,77 | 5,98 |
| LX XE with medium-temperature brine solution, Xtra low noise options Seasonal energy efficiency** | | SEPR-2/-8 °C Process medium temp.*** | kWh/kWh | 3,68 | 3,75 | 3,65 | 3,72 | 3,55 | 3,49 | 3,41 | 3,45 | 3,46 |
| LX XE with variable water flow control option & Xtra low noise Seasonal energy efficiency** | | SEER 12/7 °C Comfort low temp. | kWh/kWh | - | - | - | - | - | - | - | - | - |
| | | ηs cool 12/7 °C | % | - | - | - | - | - | - | - | - | - |
| | | SEPR 12/7 °C Process high temp. | kWh/kWh | - | - | - | - | - | - | - | - | - |
| LX XE with low-temperature brine solution, Xtra low noise options Seasonal energy efficiency** | | SEPR-2/-8 °C Process medium temp.*** | kWh/kWh | 3,67 | 3,69 | 3,64 | 3,65 | 3,69 | 3,70 | 3,93 | 3,87 | 3,50 |
| Sound levels | | | | | | | | | | | | |
| LX XE | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 103 | 101 | 104 | 102 | 103 | 102 | 104 | 104 | 104 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 70 | 68 | 71 | 69 | 70 | 69 | 71 | 71 | 71 |
| LX XE + low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 98 | 97 | 99 | 98 | 98 | 98 | 100 | 99 | 99 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 65 | 64 | 66 | 65 | 65 | 65 | 67 | 66 | 66 |
| LX XE + Xtra low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 94 | 94 | 95 | 94 | 94 | 94 | 99 | 95 | 96 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 61 | 61 | 62 | 61 | 61 | 61 | 66 | 62 | 63 |
| LX HE + Super low noise option | | | | | | | | | | | | |
| Sound power ⁽¹⁾ | | | dB(A) | 92 | 91 | 93 | 92 | 93 | 93 | 97 | 94 | 95 |
| Sound pressure at 10 m ⁽²⁾ | | | dB(A) | 59 | 58 | 60 | 59 | 60 | 60 | 64 | 61 | 62 |

* In accordance with standard EN14511-3:2018.

** In accordance with standard EN14825:2016, average climate

*** 30 % brine solution

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m². kW/W

η_s cool_{12/7 °C} & SEER_{12/7 °C} **Bold values compliant to Ecodesign Regulation (EU) No. 2016/2281 for Comfort application**

SEPR_{12/7 °C} **Bold values compliant to Ecodesign Regulation (EU) No. 2016/2281 for Process application**

SEPR_{-2/-8 °C} **Bold values compliant to Ecodesign Regulation (EU) No. 2015/1095 for Process application**

- Non applicable

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

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

NA Not authorised for the specific application for the CEE market

TECHNICAL SPECIFICATIONS



| POWERCAT LX XE | | 2308 | 2528 | 2628 | 3028 | 3428 | 3828 | 4008 | 4408 | 4608 |
|---|-------------------|---|-------|-------|-------|-------|-------|-------|-------|--------|
| Dimensions | | | | | | | | | | |
| Standard unit | | | | | | | | | | |
| Length | mm | 7186 | 8380 | 8380 | 9574 | 11962 | 11962 | 11962 | 11962 | 13157 |
| Width | mm | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 |
| Height | mm | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 | 2322 |
| Operating weight⁽³⁾ | | | | | | | | | | |
| LX XE standard | kg | 5520 | 5889 | 6172 | 6668 | 7945 | 8082 | 8698 | 8773 | 9087 |
| LX XE + low noise option | kg | 5851 | 6220 | 6503 | 6999 | 8319 | 8456 | 9072 | 9147 | 9461 |
| Compressors | | 06T semi-hermetic screw, 50 r/s | | | | | | | | |
| Circuit A | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Circuit B | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Refrigerant⁽³⁾ | | R134a | | | | | | | | |
| Circuit A | kg | 69 | 75 | 72 | 79 | 82 | 84 | 115 | 121 | 124 |
| | tCO _{2e} | 98,7 | 107,3 | 103,0 | 113,0 | 117,3 | 120,1 | 164,5 | 173,0 | 177,3 |
| Circuit B | kg | 67 | 67 | 74 | 83 | 118 | 130 | 121 | 127 | 130 |
| | tCO _{2e} | 95,8 | 95,8 | 105,8 | 118,7 | 168,7 | 185,9 | 173,0 | 181,6 | 185,9 |
| Oil | | | | | | | | | | |
| Circuit A | l | 27,6 | 27,6 | 27,6 | 27,6 | 27,6 | 27,6 | 36,0 | 36,0 | 36,0 |
| Circuit B | l | 23,5 | 23,5 | 27,6 | 27,6 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 |
| Capacity control | | Connect Touch, electronic expansion valve (EXV) | | | | | | | | |
| Minimum capacity | % | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Air-cooled exchanger | | Aluminium micro-channel coils (MCHE) | | | | | | | | |
| Fans | | Axial type, with rotating impeller, FLYING-BIRD 6 | | | | | | | | |
| LX XE | | | | | | | | | | |
| Quantity | | 12 | 14 | 14 | 16 | 20 | 20 | 20 | 20 | 22 |
| Maximum total air flow | l/s | 57840 | 67480 | 67480 | 77120 | 96400 | 96400 | 96400 | 96400 | 106040 |
| Maximum rotation speed | r/s | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 | 15,7 |
| LX XE + Xtra low noise option | | | | | | | | | | |
| Maximum total air flow | l/s | 47160 | 55020 | 55020 | 62880 | 78600 | 78600 | 78600 | 78600 | 86460 |
| Maximum rotation speed | r/s | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 | 11,7 |
| Exchanger | | Flooded multi-pipe type | | | | | | | | |
| Water volume | l | 119 | 119 | 130 | 140 | 164 | 174 | 180 | 189 | 189 |
| Max. water-side operating pressure without hydraulic module | kPa | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Water connections with or without hydraulic module | | Victaulic® type | | | | | | | | |
| Connections | inch | 6 | 6 | 6 | 8 | 6 | 6 | 6 | 6 | 6 |
| External diameter | mm | 168,3 | 168,3 | 168,3 | 219,1 | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 |
| Casing paintwork | | Colour code RAL 7035 & RAL 7024 | | | | | | | | |

(3) Values are guidelines only. Refer to the unit name plate.

TECHNICAL SPECIFICATIONS

Basic unit (excluding pump)

| POWERCIAT LX HE | | 0808 | 0908 | 1008 | 1108 | 1358 | 1528 | 1858 | 2008 | 2158 | 2308 | 2528 | 2628 | 3028 |
|--|---------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Power circuit supply | | | | | | | | | | | | | | |
| Nominal voltage | V-ph-Hz | 400-3-50 | | | | | | | | | | | | |
| Voltage range | V | 360-440 | | | | | | | | | | | | |
| Control circuit supply | | 24 V via internal transformer | | | | | | | | | | | | |
| Maximum operating input power⁽¹⁾ - LX HE | | | | | | | | | | | | | | |
| Standard unit | kW | 127 | 138 | 148 | 174 | 194 | 212 | 260 | 280 | 310 | 329 | 359 | 381 | 446 |
| Unit + Xtra / Super Low Noise option | kW | 122 | 132 | 143 | 166 | 186 | 205 | 250 | 269 | 300 | 318 | 349 | 369 | 432 |
| Power factor at maximum power⁽²⁾ - LX HE | | | | | | | | | | | | | | |
| Displacement Power Factor (Cos Phi) | | 0,90 | 0,90 | 0,89 | 0,90 | 0,90 | 0,90 | 0,90 | 0,90 | 0,89 | 0,89 | 0,89 | 0,88 | 0,89 |
| Displacement Power Factor (Cos Phi) unit + Xtra / Super Low noise option | | 0,90 | 0,90 | 0,89 | 0,90 | 0,90 | 0,90 | 0,90 | 0,90 | 0,89 | 0,89 | 0,89 | 0,88 | 0,89 |
| Nominal unit current draw⁽³⁾ - LX HE | | | | | | | | | | | | | | |
| Standard unit | A | 148 | 164 | 180 | 207 | 238 | 259 | 320 | 345 | 396 | 417 | 433 | 495 | 533 |
| Unit + Xtra / Super Low Noise option | A | 138 | 154 | 170 | 195 | 226 | 247 | 304 | 326 | 377 | 398 | 414 | 473 | 509 |
| Maximum operating current draw (Un)⁽¹⁾ - LX HE | | | | | | | | | | | | | | |
| Standard unit | A | 204 | 222 | 240 | 279 | 312 | 342 | 417 | 449 | 504 | 534 | 580 | 625 | 723 |
| Unit + Xtra / Super Low Noise option | A | 195 | 213 | 231 | 267 | 300 | 330 | 401 | 432 | 487 | 517 | 563 | 605 | 700 |
| Maximum current (Un-10 %)⁽²⁾ - LX HE | | | | | | | | | | | | | | |
| Standard unit | A | 216 | 235 | 254 | 295 | 330 | 362 | 441 | 475 | 534 | 566 | 615 | 663 | 767 |
| Unit + Xtra / Super Low Noise option | A | 207 | 226 | 245 | 283 | 318 | 350 | 425 | 458 | 517 | 549 | 598 | 643 | 744 |
| Start-up current⁽³⁾ + (4) - LX HE | | | | | | | | | | | | | | |
| Standard unit | A | 246 | 246 | 262 | 379 | 480 | 480 | 539 | 564 | 738 | 759 | 759 | 839 | 858 |
| Unit + Xtra / Super Low Noise option | A | 241 | 241 | 257 | 374 | 475 | 475 | 531 | 555 | 730 | 751 | 751 | 828 | 846 |
| Maximum start-up current (Un)⁽²⁾ + (4) - LX HE | | | | | | | | | | | | | | |
| Standard unit | A | 275 | 293 | 293 | 408 | 511 | 511 | 618 | 618 | 783 | 813 | 813 | 906 | 955 |
| Unit + Xtra / Super Low Noise option | A | 270 | 288 | 288 | 403 | 506 | 506 | 610 | 609 | 775 | 805 | 805 | 895 | 943 |

(1) Values at the unit's permanent maximum operating condition (as shown on the unit's nameplate).

(2) Values at the unit's maximum operating condition (as shown on the unit's nameplate).

(3) Maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor.

(4) Standardised EUROVENT conditions, water-cooled exchanger inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

(a) When the machines are equipped with two power supplies, circuit 1 is intended to supply refrigerant circuit A and circuit 2 supplies refrigerant circuit B.
For units LX 3428 to 4608: circuit 1 supplies circuit A, circuit 2 supplies circuit B

TECHNICAL SPECIFICATIONS

| POWERCAT LX HE | | 3428 | 3828 | 4008 | 4408 | 4608 |
|--|---------|-------------------------------|------|------|------|------|
| Power circuit supply | | | | | | |
| Nominal voltage | V-ph-Hz | 400-3-50 | | | | |
| Voltage range | V | 360-440 | | | | |
| Control circuit supply | | 24 V via internal transformer | | | | |
| Maximum operating input power⁽¹⁾ - LX HE | | | | | | |
| Standard unit | kW | | | | | |
| Circuit 1 ^(a) | kW | 194 | 223 | 264 | 284 | 307 |
| Circuit 2 ^(a) | kW | 284 | 308 | 282 | 305 | 307 |
| Single power connection point option | kW | 478 | 532 | 546 | 588 | 614 |
| Unit with Xtra & Super Low Noise option | | | | | | |
| Circuit 1 ^(a) | kW | 187 | 216 | 255 | 274 | 297 |
| Circuit 2 ^(a) | kW | 275 | 298 | 273 | 296 | 297 |
| Single power connection point option | kW | 461 | 514 | 528 | 570 | 594 |
| Power factor at maximum power⁽¹⁾ - LX HE | | | | | | |
| Standard unit | | | | | | |
| Displacement Power Factor (Cos Phi) | | 0,89 | 0,89 | 0,89 | 0,89 | 0,89 |
| Unit + Xtra & Super low noise option | | | | | | |
| Displacement Power Factor (Cos Phi) | | 0,89 | 0,89 | 0,89 | 0,89 | 0,89 |
| Nominal unit current draw⁽²⁾ - LX HE | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 251 | 267 | 334 | 347 | 382 |
| Circuit 2 ^(a) | A | 350 | 386 | 347 | 379 | 382 |
| Single power connection point option | A | 601 | 652 | 681 | 726 | 764 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | A | 239 | 255 | 319 | 332 | 366 |
| Circuit 2 ^(a) | A | 334 | 367 | 332 | 364 | 366 |
| Single power connection point option | A | 572 | 621 | 650 | 695 | 731 |
| Maximum operating current draw (Un)⁽¹⁾ - LX HE | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 316 | 362 | 430 | 460 | 498 |
| Circuit 2 ^(a) | A | 463 | 500 | 460 | 495 | 498 |
| Single power connection point option | A | 778 | 862 | 889 | 954 | 995 |
| Unit with Xtra & Super Low Noise option | | | | | | |
| Circuit 1 ^(a) | A | 304 | 350 | 415 | 445 | 482 |
| Circuit 2 ^(a) | A | 447 | 483 | 445 | 480 | 482 |
| Single power connection point option | A | 751 | 833 | 860 | 925 | 963 |
| Maximum current (Un-10 %)⁽¹⁾ - LX HE | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 335 | 384 | 466 | 498 | 529 |
| Circuit 2 ^(a) | A | 501 | 531 | 498 | 526 | 529 |
| Single power connection point option | A | 835 | 915 | 963 | 1023 | 1057 |
| Unit with Xtra & Super Low Noise option | | | | | | |
| Circuit 1 ^(a) | A | 323 | 372 | 451 | 483 | 513 |
| Circuit 2 ^(a) | A | 485 | 514 | 483 | 511 | 513 |
| Single power connection point option | A | 808 | 886 | 934 | 994 | 1025 |

(1) Values at the unit's permanent maximum operating condition (as shown on the unit's nameplate).

(2) Values at the unit's maximum operating condition (as shown on the unit's nameplate).

(a) When the machines are equipped with two power supplies, circuit 1 is intended to supply refrigerant circuit A and circuit 2 supplies refrigerant circuit B.

For units LX 3428 to 4608: circuit 1 supplies circuit A, circuit 2 supplies circuit B.

TECHNICAL SPECIFICATIONS

| POWERCAT LX HE | | 3428 | 3828 | 4008 | 4408 | 4608 |
|--|---|------|------|------|------|------|
| Start-up current⁽³⁾ - LX HE | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 587 | 587 | 629 | 629 | 629 |
| Circuit 2 ^(a) | A | 629 | 629 | 629 | 629 | 629 |
| Single power connection point option | A | 687 | 702 | 729 | 744 | 744 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | A | 587 | 587 | 629 | 629 | 629 |
| Circuit 2 ^(a) | A | 629 | 629 | 629 | 629 | 629 |
| Single power connection point option | A | 671 | 684 | 714 | 729 | 727 |
| Maximum start-up current (Un)⁽²⁾ - LX HE | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 587 | 587 | 629 | 629 | 629 |
| Circuit 2 ^(a) | A | 629 | 629 | 629 | 629 | 629 |
| Single power connection point option | A | 802 | 820 | 844 | 862 | 862 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | A | 587 | 587 | 629 | 629 | 629 |
| Circuit 2 ^(a) | A | 629 | 629 | 629 | 629 | 629 |
| Single power connection point option | A | 786 | 802 | 829 | 847 | 845 |

(2) Values at the unit's maximum operating condition (as shown on the unit's nameplate).

(3) Maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor.

(a) When the machines are equipped with two power supplies, circuit 1 is intended to supply refrigerant circuit A and circuit 2 supplies refrigerant circuit B.

For units LX 3428 to 4608: circuit 1 supplies circuit A, circuit 2 supplies circuit B.

TECHNICAL SPECIFICATIONS

| POWERCAT LX XE | | 0808 | 0908 | 1008 | 1108 | 1358 | 1528 | 1858 | 2008 | 2158 | 2308 | 2528 | 2628 | 3028 |
|--|---------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Power circuit supply | | | | | | | | | | | | | | |
| Nominal voltage | V-ph-Hz | 400-3-50 | | | | | | | | | | | | |
| Voltage range | V | 360-440 | | | | | | | | | | | | |
| Control circuit supply | | 24 V via internal transformer | | | | | | | | | | | | |
| Maximum operating input power⁽¹⁾ | | | | | | | | | | | | | | |
| Standard unit | kW | 126 | 137 | 147 | 172 | 192 | 210 | 257 | 278 | 308 | 327 | 357 | 375 | 440 |
| Unit + Xtra / Super Low Noise option | kW | 124 | 135 | 145 | 170 | 189 | 208 | 254 | 274 | 304 | 323 | 353 | 371 | 434 |
| Power factor at maximum power⁽²⁾ | | | | | | | | | | | | | | |
| Displacement Power Factor (Cos Phi)+ | | 0,90 | 0,89 | 0,89 | 0,90 | 0,89 | 0,89 | 0,90 | 0,90 | 0,89 | 0,89 | 0,89 | 0,88 | 0,89 |
| Displacement Power Factor (Cos Phi) unit + Xtra / Super Low noise option | | 0,90 | 0,89 | 0,89 | 0,90 | 0,89 | 0,89 | 0,90 | 0,90 | 0,89 | 0,89 | 0,89 | 0,88 | 0,89 |
| Nominal operating current draw⁽³⁾ | | | | | | | | | | | | | | |
| Circuit 1 ^(a) | A | 145 | 161 | 177 | 203 | 234 | 255 | 315 | 339 | 390 | 411 | 427 | 483 | 521 |
| Unit + Xtra / Super Low Noise option | A | 142 | 158 | 174 | 199 | 230 | 251 | 310 | 333 | 384 | 405 | 420 | 476 | 512 |
| Maximum operating current draw (Un)⁽¹⁾ | | | | | | | | | | | | | | |
| Circuit 1 ^(a) | A | 203 | 221 | 239 | 277 | 310 | 340 | 414 | 447 | 502 | 532 | 578 | 617 | 715 |
| Unit + Xtra / Super Low Noise option | A | 200 | 218 | 236 | 273 | 306 | 336 | 409 | 441 | 496 | 526 | 571 | 610 | 706 |
| Maximum current (Un-10 %)⁽²⁾ | | | | | | | | | | | | | | |
| Circuit 1 ^(a) | A | 215 | 234 | 253 | 293 | 328 | 360 | 438 | 473 | 532 | 564 | 613 | 655 | 759 |
| Unit + Xtra / Super Low Noise option | A | 212 | 231 | 250 | 289 | 324 | 356 | 433 | 467 | 526 | 558 | 606 | 648 | 750 |
| Start-up current⁽³⁾ + ⁽⁴⁾ | | | | | | | | | | | | | | |
| Circuit 1 ^(a) | A | 181 | 174 | 190 | 314 | 408 | 408 | 408 | 432 | 626 | 632 | 632 | 660 | 652 |
| Unit + Xtra / Super Low Noise option | A | 179 | 172 | 188 | 312 | 405 | 406 | 405 | 428 | 622 | 628 | 628 | 656 | 646 |
| Maximum start-up current (Un)⁽²⁾ + ⁽³⁾ | | | | | | | | | | | | | | |
| Circuit 1 ^(a) | A | 210 | 221 | 221 | 343 | 439 | 439 | 487 | 486 | 671 | 686 | 686 | 727 | 749 |
| Unit + Xtra / Super Low Noise option | A | 208 | 219 | 219 | 341 | 436 | 437 | 484 | 482 | 667 | 682 | 682 | 723 | 743 |

(1) Values at the unit's permanent maximum operating condition (as shown on the unit's nameplate).

(2) Values at the unit's maximum operating condition (as shown on the unit's nameplate).

(3) Maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor.

(4) Standardised EUROVENT conditions, water-cooled exchanger inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

(a) When the machines are equipped with two power supplies, circuit 1 is intended to supply refrigerant circuit A and circuit 2 supplies refrigerant circuit B.
For units LX 3428 to 4608: circuit 1 supplies circuit A, circuit 2 supplies circuit B.

TECHNICAL SPECIFICATIONS

| POWERCAT LX XE | | 3428 | 3828 | 4008 | 4408 | 4608 |
|--|---------|-------------------------------|------|------|------|------|
| Power circuit supply | | | | | | |
| Nominal voltage | V-ph-Hz | 400-3-50 | | | | |
| Voltage range | V | 360-440 | | | | |
| Control circuit supply | | 24 V via internal transformer | | | | |
| Maximum operating input power^{(1) or (2)} | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | kW | 191 | 220 | 262 | 282 | 304 |
| Circuit 2 ^(a) | kW | 279 | 304 | 280 | 303 | 304 |
| Single power connection point option | kW | 469 | 525 | 542 | 584 | 609 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | kW | 188 | 217 | 258 | 278 | 301 |
| Circuit 2 ^(a) | kW | 276 | 301 | 277 | 300 | 301 |
| Single power connection point option | kW | 463 | 518 | 535 | 578 | 602 |
| Power factor at maximum power^{(1) or (2)} | | | | | | |
| Standard unit | | | | | | |
| Displacement Power Factor (Cos Phi) | | 0,88 | 0,89 | 0,88 | 0,89 | 0,89 |
| Unit + Xtra & Super low noise option | | | | | | |
| Displacement Power Factor (Cos Phi) unit + Xtra & Super Low noise option | | 0,88 | 0,89 | 0,88 | 0,89 | 0,89 |
| Nominal operating current draw⁽³⁾ | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 245 | 261 | 330 | 343 | 377 |
| Circuit 2 ^(a) | A | 340 | 377 | 343 | 375 | 377 |
| Single power connection point option | A | 584 | 638 | 672 | 717 | 754 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | A | 240 | 256 | 324 | 337 | 372 |
| Circuit 2 ^(a) | A | 334 | 371 | 337 | 369 | 372 |
| Single power connection point option | A | 574 | 627 | 661 | 706 | 743 |
| Maximum operating current draw (Un)^{(1) or (2)} | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 312 | 358 | 428 | 458 | 495 |
| Circuit 2 ^(a) | A | 455 | 495 | 458 | 493 | 495 |
| Single power connection point option | A | 766 | 853 | 885 | 950 | 990 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | A | 307 | 353 | 422 | 452 | 490 |
| Circuit 2 ^(a) | A | 450 | 490 | 452 | 487 | 490 |
| Single power connection point option | A | 756 | 842 | 874 | 939 | 979 |
| Maximum current (Un-10 %)^{(1) or (2)} | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 331 | 380 | 464 | 496 | 526 |
| Circuit 2 ^(a) | A | 493 | 526 | 496 | 524 | 526 |
| Single power connection point option | A | 823 | 906 | 959 | 1019 | 1052 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | A | 326 | 375 | 458 | 490 | 521 |
| Circuit 2 ^(a) | A | 488 | 521 | 490 | 518 | 521 |
| Single power connection point option | A | 813 | 895 | 948 | 1008 | 1041 |

(1) Values at the unit's permanent maximum operating condition (as shown on the unit's nameplate).

(2) Values at the unit's maximum operating condition (as shown on the unit's nameplate).

(3) Maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor.

(a) When the machines are equipped with two power supplies, circuit 1 is intended to supply refrigerant circuit A and circuit 2 supplies the refrigerant circuit B

TECHNICAL SPECIFICATIONS

| POWERCAT LX XE | | 3428 | 3828 | 4008 | 4408 | 4608 |
|---|---|------|------|------|------|------|
| Start-up current⁽³⁾ + ⁽⁴⁾ | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 587 | 587 | 629 | 629 | 629 |
| Circuit 2 ^(a) | A | 629 | 629 | 629 | 629 | 629 |
| Single power connection point option | A | 678 | 691 | 719 | 734 | 733 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | A | 587 | 587 | 629 | 629 | 629 |
| Circuit 2 ^(a) | A | 629 | 629 | 629 | 629 | 629 |
| Single power connection point option | A | 674 | 685 | 714 | 729 | 727 |
| Maximum start-up current (Un)⁽²⁾ + ⁽⁴⁾ | | | | | | |
| Standard unit | | | | | | |
| Circuit 1 ^(a) | A | 587 | 587 | 629 | 629 | 629 |
| Circuit 2 ^(a) | A | 629 | 629 | 629 | 629 | 629 |
| Single power connection point option | A | 793 | 809 | 834 | 852 | 851 |
| Unit + Xtra & Super low noise option | | | | | | |
| Circuit 1 ^(a) | A | 587 | 587 | 629 | 629 | 629 |
| Circuit 2 ^(a) | A | 629 | 629 | 629 | 629 | 629 |
| Single power connection point option | A | 789 | 803 | 829 | 847 | 845 |

(2) Values at the unit's maximum operating condition (as shown on the unit's nameplate).

(3) Maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor.

(4) Standardised EUROVENT conditions, water-cooled exchanger inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

(a) When the machines are equipped with two power supplies, circuit 1 is intended to supply refrigerant circuit A and circuit 2 supplies the refrigerant circuit B

Short circuit current withstand capability (TN system⁽¹⁾)

| POWERCAT LX HE/XE | | 0808 to 1528 | 1858 to 3028 | 3428 to 4608 |
|--|----|--------------|--------------|--------------|
| Short-circuit withstand current (TN system) | | | | |
| Circuit A+B | kA | 38 | 50 | 50 |
| Circuit C+D | kA | NA | NA | 50 |
| Unit + single power connection point option | A | NA | NA | 50 |

(1) If another current limitation protection device is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended protection.

Note: The short-circuit stability current values above are suitable with the TN system.

TOTAL HEAT RECOVERY



The POWERCAT range can be equipped with a total heat recovery function as an option

Free, additional hot water is produced at a temperature of up to 60 °C by adding a water-cooled condenser to each refrigerant circuit (sizes 1858 to 3028) or by adding a double-circuit condenser (sizes 808 to 1528) to recover all the heat released by the unit.

This optional configuration requires assembly in our factories and is by order only.

This option is available for models 808 to 3028.

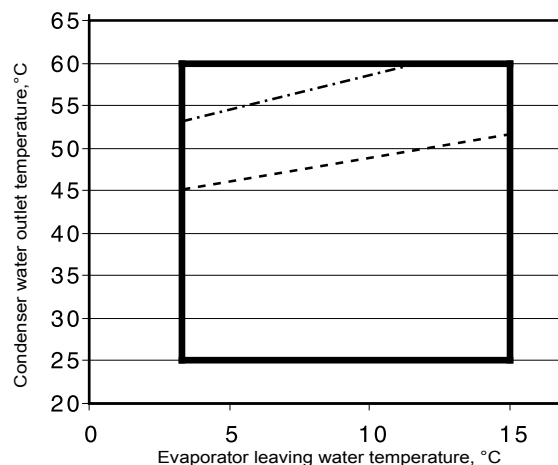
■ Operating principle

If hot water production is required, the compressor discharge gases are directed towards the heat recovery condenser. The refrigerant releases its heat to the hot water that leaves the condenser at a temperature of up to 60 °C. In this way 100% of the heat rejected by the liquid chiller can be used to produce hot water. When the demand for heat is satisfied, the hot gas is again directed towards the air condenser where the heat is rejected to the outside air by the fans.

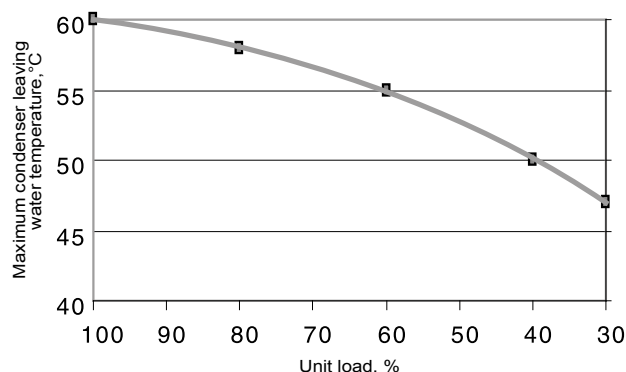
Hot water temperature control is ensured by the machine's Connect Touch control that independently controls the recovery operation of each refrigerant circuit.

Note: Heat recovery is only possible if the machine produces cold water at the same time.

In part load operation, the limitation of the condenser water outlet temperature is due to the operating range of the screw compressor. If the condenser water outlet temperature is above the limit value given in the curves below, the unit will automatically change over to the mode without heat recovery



— Full load
- - - Part load limit, approx. 60%
... Minimum load limit, approx. 30%



■ Operating limits

| Condenser water temperature (°C) | | Minimum | Maximum |
|-------------------------------------|----|---------------------|---------|
| Inlet temperature at start-up | °C | 12,5 ⁽¹⁾ | 55 |
| Inlet temperature during operation | °C | 20 | 55 |
| Outlet temperature during operation | °C | 25 | 60 |
| Evaporator water temperature (°C) | | Minimum | Maximum |
| Inlet temperature at start-up | °C | - | 45 |
| Inlet temperature during operation | °C | 6,8 | 21 |

(1) The water inlet temperature at start-up must not fall below 12.5 °C. For installations with a lower temperature a three-way valve must be used.
Note: If the evaporator water outlet temperature is below 4 °C, a brine solution or the frost protection option must be used..

TOTAL HEAT RECOVERY



■ Technical specifications

| POWERCAT LX HE/XE heat recovery mode | | 0808 | 0908 | 1008 | 1108 | 1358 | 1528 | 1858 | 2008 | 2158 | 2308 | 2528 | 2628 | 3028 |
|--------------------------------------|-------|--------------------------|------|------|-------|-------|-------|-------|-------|---------|---------|---------|-------|-------|
| Operating weight ⁽¹⁾ | kg | 3426 | 3458 | 3478 | 4161 | 4302 | 4644 | 5630 | 5776 | 6137 | 6448 | 6807 | 7224 | 7726 |
| Condenser diameter | in | 10 | 10 | 10 | 12 | 14 | 14 | 12+12 | 12+12 | 14+12 | 14+12 | 14+12 | 14+14 | 14+14 |
| Refrigerant charge | | | | | | | | | | | | | | |
| Circuit A | kg | 37 | 35 | 35 | 51 | 52 | 59 | 58 | 58 | 65 | 69 | 72 | 69 | 91 |
| Circuit B | kg | 39 | 37 | 37 | 37 | 37 | 36 | 59 | 62 | 58 | 65 | 63 | 76 | 89 |
| Heat recovery condenser | | Shell and tube condenser | | | | | | | | | | | | |
| Water volume | l | 38 | 38 | 38 | 55 | 68 | 68 | 55+55 | 55+55 | 68 + 55 | 68 + 55 | 68 + 55 | 68+68 | 68+68 |
| Water connections | | Type Victaulic | | | | | | | | | | | | |
| Nominal diameter | pouce | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Actual outside diameter | mm | 88,9 | 88,9 | 88,9 | 114,3 | 114,3 | 114,3 | 114,3 | 114,3 | 114,3 | 114,3 | 114,3 | 114,3 | 114,3 |

(1) Weights are for guidance only

OPERATING PRESSURE VENTILATION

The POWERCAT range can be equipped as an option with operating pressure ventilation.

■ Functions

This option allows a duct connection at the discharge side of the condenser fan. The unit is equipped with axial flow fans with connection flange. The water chiller can operate with an available static pressure of up to 60 Pa with reduced performance. The performance can be estimated using the coefficients below, which apply within the application limit conditions (see chart showing application limits for correction factors)

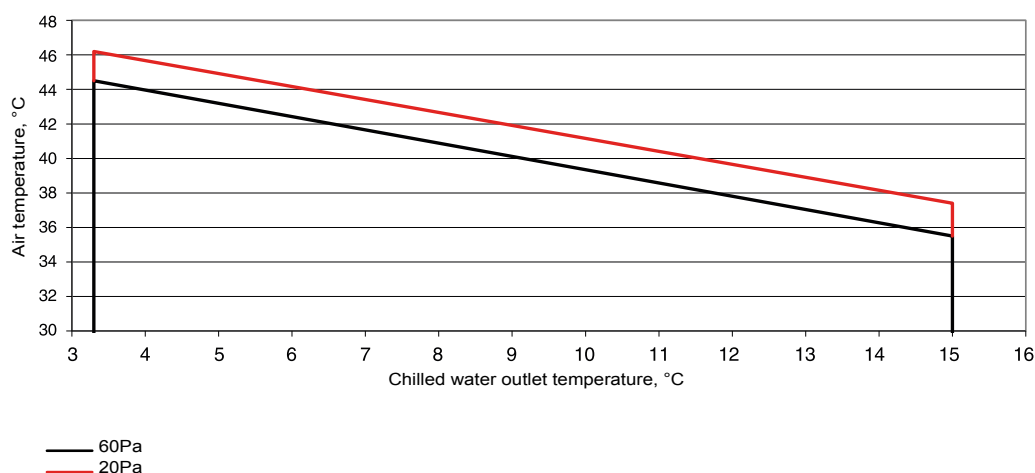
| Operating pressure fan | | Correction factors | | | |
|------------------------|----|--------------------|-------|-------|--------|
| Operating pressure | Pa | 0 | 20 | 40 | 60 |
| Air flow rate | % | 0 | -3,5% | -7,5% | -12,1% |
| Cooling capacity | % | 0 | -0,5% | -1,0% | -1,5% |
| EER | % | 0 | -1,5% | -3,5% | -5,0% |
| Power input | % | 0 | +1,0% | +2,5% | +3,5% |

■ Precautions for installation

If an air discharge duct is installed on site, its weight must not be supported by the roof of the unit. Each fan must be connected independently.

The duct must be connected to the unit using a supply air connection flange, included in the option

Application limit for correction factors for high air temperatures



INTELLIGENTLY DESIGNED ACOUSTICS

To comply with the various integration restrictions, the POWERCIAT has three sound finish levels enabling it to be easily integrated into a number of zones without causing disruption to users or their neighbours.

■ Basic version

The distinguishing feature of the POWERCIAT range is its rigorous design incorporating "noiseless" assembly techniques to reduce vibrations and sources of noise:

- Low-pulse screw compressors with silencer integrated into the oil separator
- Silencer on the economiser return line
- Condenser coils with a V-shaped design featuring an open angle, for quieter air flow across the coil
- Quiet latest generation fans that produce no intrusive noise at low frequencies
- EC fans (XE version) that allow the machine's air flow to be adjusted as necessary and reduce the sound level at part load
- The Connect Touch controller automatically adjusts the fan air flow rate according to the outdoor air temperature and the unit's load rate which enables the sound level to be significantly reduced, particularly at night, mid-season, morning and evening, which totals more than 75 % of the time the unit is used.

■ Low Noise option

In this version, in addition to the basic equipment, the compressors are placed in soundproof boxes equipped with absorbent materials limiting the level of noise radiated by the machine.

■ Xtra Low Noise option

In this version, the compressors are housed in sound boxes identical to those in the Low Noise version and the fan rotation speed is reduced whilst ensuring the output and thermal performance remain optimised.

■ Super Low Noise option

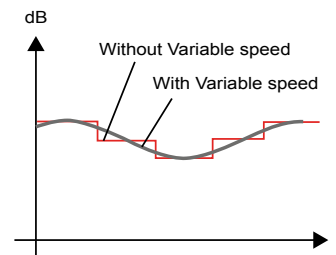
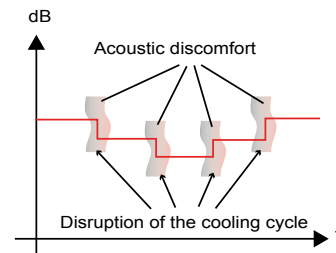
In this version, available for sizes 1358 to 4608, the compressors are housed in soundproof boxes identical to those in the Xtra Low Noise version, and the fan rotation speed is reduced by means of improved sound insulation that targets the machine's main sources of noise

■ Night mode

The POWERCIAT has a Night Mode enabling the sound level to be limited at night or when the building is unoccupied (according to the user programming) by controlling the output and the fan rotation speed.

■ Acoustic signature

As important as the sound power level, the acoustic signature reflects the noise disturbance generated by the unit.



The POWERCIAT XE series has EC-type variable-speed motors on the fan motor assemblies as standard.

In addition to electrical performance, the EC motor also enables soft start for the fans. It avoids the increases in noise linked to the on/off sequences, thereby improving the unit's acoustic signature.

With all these benefits and its four acoustic finish levels (Standard, Low Noise, Xtra Low Noise and Super Low Noise), the POWERCIAT can be integrated into any site, ensuring any constraints in terms of the sound environment can be met.

SOUND LEVELS

HE versions

■ Sound power levels ref 10^{-12} W \pm 3 dB (L_w)

At nominal EN 14511-3: 2013 operating conditions in cooling mode

| POWERCAT LX HE | SOUND POWER LEVEL SPECTRUM (dB) | | | | | | Overall power level dB(A) |
|-------------------|---------------------------------|--------|--------|---------|---------|---------|------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 94 | 94 | 91 | 98 | 86 | 80 | 99 |
| 0908 | 94 | 94 | 91 | 98 | 86 | 80 | 99 |
| 1008 | 95 | 94 | 92 | 98 | 86 | 80 | 99 |
| 1108 | 95 | 94 | 93 | 97 | 87 | 83 | 99 |
| 1358 | 103 | 106 | 94 | 96 | 88 | 83 | 101 |
| 1528 | 94 | 93 | 95 | 96 | 91 | 86 | 99 |
| 1858 | 102 | 105 | 96 | 96 | 91 | 85 | 101 |
| 2008 | 95 | 93 | 95 | 96 | 91 | 85 | 99 |
| 2158 | 103 | 107 | 97 | 99 | 91 | 86 | 103 |
| 2308 | 98 | 101 | 98 | 101 | 93 | 88 | 103 |
| 2528 | 98 | 98 | 98 | 98 | 92 | 89 | 101 |
| 2628 | 99 | 103 | 98 | 102 | 92 | 87 | 104 |
| 3028 | 100 | 101 | 98 | 99 | 91 | 90 | 102 |
| 3428 | 99 | 103 | 100 | 99 | 93 | 88 | 103 |
| 3828 | 99 | 102 | 99 | 98 | 93 | 88 | 102 |
| 4008 | 99 | 102 | 102 | 101 | 93 | 87 | 104 |
| 4408 | 99 | 102 | 102 | 101 | 93 | 87 | 104 |
| 4608 | 99 | 102 | 102 | 101 | 93 | 87 | 104 |

■ Sound pressure level ref 2×10^{-5} Pa \pm 3 dB (L_p)

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

| POWERCAT LX HE | SOUND PRESSURE SPECTRUM (dB) | | | | | | Overall pressure level dB(A) |
|-------------------|------------------------------|--------|--------|---------|---------|---------|------------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 62 | 62 | 59 | 66 | 54 | 48 | 67 |
| 0908 | 62 | 62 | 59 | 66 | 54 | 48 | 67 |
| 1008 | 62 | 62 | 60 | 66 | 54 | 48 | 67 |
| 1108 | 63 | 62 | 61 | 65 | 55 | 50 | 67 |
| 1358 | 71 | 74 | 62 | 64 | 56 | 51 | 69 |
| 1528 | 62 | 61 | 62 | 64 | 59 | 53 | 67 |
| 1858 | 69 | 73 | 63 | 63 | 58 | 53 | 68 |
| 2008 | 62 | 60 | 62 | 63 | 59 | 53 | 66 |
| 2158 | 71 | 74 | 64 | 67 | 58 | 53 | 70 |
| 2308 | 65 | 68 | 65 | 68 | 60 | 55 | 70 |
| 2528 | 65 | 65 | 65 | 65 | 59 | 56 | 68 |
| 2628 | 66 | 70 | 65 | 69 | 59 | 55 | 71 |
| 3028 | 67 | 68 | 65 | 66 | 58 | 57 | 69 |
| 3428 | 66 | 69 | 67 | 66 | 60 | 55 | 70 |
| 3828 | 66 | 69 | 66 | 65 | 60 | 54 | 69 |
| 4008 | 66 | 69 | 69 | 68 | 60 | 54 | 71 |
| 4408 | 65 | 69 | 69 | 68 | 60 | 54 | 71 |
| 4608 | 66 | 69 | 68 | 68 | 60 | 54 | 71 |

SOUND LEVELS

HE versions with LOW NOISE option

■ Sound power levels ref 10^{-12} W \pm 3 dB (L_w)

At nominal EN 14511-3: 2013 operating conditions in cooling mode

| POWERCAT LX HE | SOUND POWER LEVEL SPECTRUM (dB) | | | | | | Overall power level dB(A) |
|-------------------|---------------------------------|--------|--------|---------|---------|---------|------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 92 | 92 | 89 | 90 | 82 | 77 | 93 |
| 0908 | 92 | 92 | 89 | 90 | 82 | 77 | 93 |
| 1008 | 94 | 93 | 91 | 91 | 83 | 78 | 94 |
| 1108 | 94 | 93 | 92 | 92 | 85 | 79 | 95 |
| 1358 | 94 | 92 | 92 | 92 | 87 | 80 | 95 |
| 1528 | 94 | 92 | 93 | 91 | 86 | 80 | 95 |
| 1858 | 94 | 95 | 94 | 93 | 89 | 82 | 97 |
| 2008 | 95 | 93 | 94 | 92 | 87 | 81 | 96 |
| 2158 | 99 | 98 | 93 | 94 | 86 | 80 | 97 |
| 2308 | 97 | 95 | 95 | 95 | 87 | 82 | 98 |
| 2528 | 97 | 94 | 95 | 94 | 87 | 82 | 97 |
| 2628 | 97 | 96 | 95 | 97 | 88 | 82 | 99 |
| 3028 | 98 | 94 | 95 | 95 | 88 | 83 | 98 |
| 3428 | 100 | 97 | 95 | 93 | 90 | 87 | 98 |
| 3828 | 100 | 97 | 95 | 93 | 90 | 87 | 98 |
| 4008 | 100 | 97 | 98 | 95 | 91 | 88 | 100 |
| 4408 | 100 | 98 | 97 | 94 | 90 | 87 | 99 |
| 4608 | 100 | 98 | 96 | 94 | 91 | 87 | 99 |

■ Sound pressure levels ref 2×10^{-5} Pa \pm 3 dB (L_p)

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

| POWERCAT LX HE | SOUND PRESSURE SPECTRUM (dB) | | | | | | Overall pressure level dB(A) |
|-------------------|------------------------------|--------|--------|---------|---------|---------|------------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 60 | 60 | 57 | 58 | 50 | 45 | 61 |
| 0908 | 60 | 60 | 57 | 58 | 50 | 45 | 61 |
| 1008 | 61 | 61 | 58 | 59 | 51 | 46 | 62 |
| 1108 | 61 | 61 | 60 | 59 | 53 | 47 | 63 |
| 1358 | 61 | 60 | 59 | 59 | 54 | 47 | 63 |
| 1528 | 62 | 59 | 61 | 59 | 53 | 48 | 63 |
| 1858 | 61 | 63 | 61 | 61 | 56 | 49 | 64 |
| 2008 | 62 | 60 | 61 | 60 | 54 | 48 | 63 |
| 2158 | 67 | 65 | 61 | 61 | 53 | 48 | 64 |
| 2308 | 64 | 62 | 62 | 63 | 55 | 49 | 65 |
| 2528 | 64 | 61 | 62 | 61 | 54 | 49 | 64 |
| 2628 | 64 | 63 | 63 | 64 | 55 | 49 | 66 |
| 3028 | 65 | 61 | 62 | 62 | 55 | 50 | 65 |
| 3428 | 66 | 64 | 62 | 60 | 57 | 54 | 65 |
| 3828 | 66 | 64 | 62 | 60 | 57 | 54 | 65 |
| 4008 | 66 | 64 | 65 | 62 | 58 | 54 | 67 |
| 4408 | 66 | 65 | 63 | 61 | 57 | 54 | 66 |
| 4608 | 67 | 65 | 63 | 61 | 57 | 54 | 66 |

SOUND LEVELS

HE versions with XTRA LOW NOISE option

■ Sound power levels ref 10^{-12} W \pm 3 dB (L_w)

At nominal EN 14511-3: 2013 operating conditions in cooling mode

| POWERCAT LX HE | SOUND POWER LEVEL SPECTRUM (dB) | | | | | | Overall power level dB(A) |
|-------------------|---------------------------------|--------|--------|---------|---------|---------|------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 85 | 89 | 83 | 84 | 76 | 65 | 87 |
| 0908 | 85 | 89 | 83 | 84 | 76 | 65 | 87 |
| 1008 | 85 | 89 | 83 | 84 | 76 | 65 | 87 |
| 1108 | 86 | 92 | 87 | 86 | 80 | 68 | 90 |
| 1358 | 87 | 96 | 87 | 85 | 80 | 66 | 91 |
| 1528 | 90 | 93 | 88 | 87 | 81 | 69 | 91 |
| 1858 | 87 | 96 | 91 | 88 | 81 | 76 | 93 |
| 2008 | 89 | 94 | 90 | 87 | 82 | 70 | 92 |
| 2158 | 89 | 97 | 92 | 90 | 81 | 68 | 94 |
| 2308 | 90 | 94 | 92 | 91 | 81 | 70 | 94 |
| 2528 | 95 | 96 | 93 | 89 | 81 | 73 | 94 |
| 2628 | 90 | 94 | 94 | 92 | 80 | 69 | 95 |
| 3028 | 96 | 95 | 93 | 89 | 79 | 73 | 94 |
| 3428 | 96 | 94 | 91 | 88 | 86 | 85 | 94 |
| 3828 | 96 | 94 | 91 | 88 | 86 | 85 | 94 |
| 4008 | 96 | 97 | 99 | 92 | 90 | 87 | 99 |
| 4408 | 96 | 94 | 91 | 89 | 88 | 86 | 95 |
| 4608 | 97 | 95 | 93 | 91 | 88 | 86 | 96 |

■ Sound pressure level ref 2×10^{-5} Pa \pm 3 dB (L_p)

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

| POWERCAT LX HE | SOUND PRESSURE SPECTRUM (dB) | | | | | | Overall pressure level dB(A) |
|-------------------|------------------------------|--------|--------|---------|---------|---------|------------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 53 | 56 | 51 | 52 | 44 | 33 | 55 |
| 0908 | 53 | 56 | 51 | 52 | 44 | 33 | 55 |
| 1008 | 53 | 56 | 51 | 52 | 44 | 33 | 55 |
| 1108 | 54 | 60 | 55 | 54 | 47 | 36 | 58 |
| 1358 | 55 | 64 | 55 | 53 | 47 | 34 | 59 |
| 1528 | 57 | 61 | 56 | 54 | 48 | 37 | 59 |
| 1858 | 55 | 63 | 58 | 55 | 48 | 43 | 60 |
| 2008 | 57 | 61 | 57 | 55 | 49 | 38 | 59 |
| 2158 | 56 | 64 | 59 | 57 | 48 | 36 | 61 |
| 2308 | 57 | 61 | 60 | 58 | 49 | 37 | 61 |
| 2528 | 62 | 63 | 60 | 56 | 49 | 40 | 61 |
| 2628 | 57 | 61 | 61 | 59 | 47 | 36 | 62 |
| 3028 | 63 | 63 | 60 | 56 | 46 | 40 | 61 |
| 3428 | 63 | 61 | 58 | 55 | 53 | 52 | 61 |
| 3828 | 63 | 61 | 58 | 55 | 53 | 52 | 61 |
| 4008 | 63 | 64 | 66 | 59 | 56 | 54 | 66 |
| 4408 | 63 | 61 | 58 | 56 | 54 | 52 | 62 |
| 4608 | 64 | 62 | 59 | 57 | 55 | 53 | 63 |

SOUND LEVELS

HE versions with SUPER LOW NOISE option

■ Sound power levels ref 10-12 W \pm 3 dB (L_w)

At nominal EN 14511-3: 2013 operating conditions in cooling mode

| POWERCAT LX HE | SOUND POWER LEVEL SPECTRUM (dB) | | | | | | Overall power level dB(A) |
|-------------------|---------------------------------|--------|--------|---------|---------|---------|------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | - | - | - | - | - | - | - |
| 0908 | - | - | - | - | - | - | - |
| 1008 | - | - | - | - | - | - | - |
| 1108 | - | - | - | - | - | - | - |
| 1358 | 86 | 93 | 84 | 85 | 76 | 66 | 89 |
| 1528 | 87 | 92 | 85 | 85 | 77 | 67 | 89 |
| 1858 | 88 | 93 | 88 | 87 | 79 | 76 | 91 |
| 2008 | 89 | 92 | 87 | 86 | 79 | 70 | 90 |
| 2158 | 89 | 93 | 89 | 87 | 78 | 71 | 91 |
| 2308 | 91 | 92 | 90 | 88 | 80 | 74 | 92 |
| 2528 | 91 | 91 | 90 | 87 | 79 | 72 | 91 |
| 2628 | 92 | 91 | 92 | 90 | 80 | 76 | 93 |
| 3028 | 92 | 90 | 92 | 88 | 79 | 73 | 92 |
| 3428 | 96 | 92 | 89 | 87 | 85 | 84 | 93 |
| 3828 | 96 | 92 | 89 | 87 | 85 | 84 | 93 |
| 4008 | 94 | 95 | 97 | 91 | 88 | 85 | 97 |
| 4408 | 96 | 94 | 91 | 88 | 86 | 85 | 94 |
| 4608 | 97 | 95 | 92 | 89 | 87 | 85 | 95 |

■ Sound pressure level ref 2x10⁻⁵ Pa \pm 3 dB (L_p)

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

| POWERCAT LX HE | SOUND PRESSURE SPECTRUM (dB) | | | | | | Overall pressure level dB(A) |
|-------------------|------------------------------|--------|--------|---------|---------|---------|------------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | - | - | - | - | - | - | - |
| 0908 | - | - | - | - | - | - | - |
| 1008 | - | - | - | - | - | - | - |
| 1108 | - | - | - | - | - | - | - |
| 1358 | 53 | 61 | 52 | 53 | 44 | 34 | 57 |
| 1528 | 55 | 60 | 52 | 53 | 45 | 35 | 57 |
| 1858 | 55 | 60 | 56 | 54 | 46 | 43 | 58 |
| 2008 | 57 | 59 | 55 | 53 | 47 | 37 | 57 |
| 2158 | 57 | 61 | 56 | 54 | 46 | 38 | 58 |
| 2308 | 59 | 59 | 58 | 56 | 47 | 41 | 59 |
| 2528 | 58 | 59 | 57 | 54 | 46 | 39 | 58 |
| 2628 | 60 | 59 | 59 | 57 | 47 | 43 | 60 |
| 3028 | 59 | 58 | 59 | 55 | 46 | 40 | 59 |
| 3428 | 63 | 59 | 56 | 54 | 52 | 51 | 60 |
| 3828 | 63 | 59 | 56 | 54 | 52 | 51 | 60 |
| 4008 | 60 | 62 | 64 | 57 | 54 | 51 | 64 |
| 4408 | 63 | 61 | 58 | 55 | 53 | 52 | 61 |
| 4608 | 64 | 62 | 59 | 56 | 53 | 52 | 62 |

SOUND LEVELS

XE versions

■ Sound power levels ref 10^{-12} W \pm 3 dB (Lw)

At nominal EN 14511-3: 2013 operating conditions in cooling mode

| POWERCAT LX XE | SOUND POWER LEVEL SPECTRUM (dB) | | | | | | Overall power level dB(A) |
|----------------|---------------------------------|--------|--------|---------|---------|---------|---------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 95 | 94 | 91 | 98 | 86 | 80 | 99 |
| 0908 | 95 | 94 | 91 | 98 | 86 | 80 | 99 |
| 1008 | 95 | 94 | 92 | 98 | 86 | 80 | 99 |
| 1108 | 96 | 95 | 94 | 97 | 87 | 83 | 99 |
| 1358 | 103 | 106 | 94 | 96 | 88 | 84 | 101 |
| 1528 | 95 | 93 | 95 | 96 | 91 | 86 | 99 |
| 1858 | 103 | 105 | 96 | 96 | 91 | 86 | 101 |
| 2008 | 96 | 93 | 95 | 96 | 91 | 86 | 99 |
| 2158 | 104 | 107 | 97 | 99 | 91 | 86 | 103 |
| 2308 | 98 | 101 | 98 | 101 | 93 | 88 | 103 |
| 2528 | 98 | 98 | 97 | 98 | 92 | 89 | 101 |
| 2628 | 99 | 103 | 98 | 102 | 91 | 87 | 104 |
| 3028 | 101 | 101 | 98 | 99 | 91 | 90 | 102 |
| 3428 | 100 | 103 | 100 | 99 | 93 | 88 | 103 |
| 3828 | 100 | 103 | 99 | 98 | 93 | 88 | 102 |
| 4008 | 101 | 102 | 102 | 101 | 93 | 88 | 104 |
| 4408 | 100 | 102 | 102 | 101 | 93 | 88 | 104 |
| 4608 | 101 | 102 | 102 | 101 | 93 | 88 | 104 |

■ Sound pressure level ref 2×10^{-5} Pa \pm 3 dB (Lp)

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

| POWERCAT LX XE | SOUND PRESSURE SPECTRUM (dB) | | | | | | Overall pressure level dB(A) |
|----------------|------------------------------|--------|--------|---------|---------|---------|------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 63 | 62 | 59 | 66 | 54 | 48 | 67 |
| 0908 | 63 | 62 | 59 | 66 | 54 | 48 | 67 |
| 1008 | 63 | 62 | 60 | 66 | 54 | 48 | 67 |
| 1108 | 64 | 63 | 62 | 65 | 55 | 51 | 67 |
| 1358 | 71 | 74 | 62 | 64 | 56 | 52 | 69 |
| 1528 | 63 | 61 | 63 | 64 | 59 | 54 | 67 |
| 1858 | 70 | 72 | 63 | 63 | 58 | 53 | 68 |
| 2008 | 63 | 60 | 62 | 63 | 58 | 53 | 66 |
| 2158 | 71 | 74 | 64 | 66 | 58 | 53 | 70 |
| 2308 | 65 | 68 | 65 | 68 | 60 | 55 | 70 |
| 2528 | 65 | 65 | 64 | 65 | 59 | 56 | 68 |
| 2628 | 66 | 70 | 65 | 69 | 58 | 54 | 71 |
| 3028 | 68 | 68 | 65 | 66 | 58 | 57 | 69 |
| 3428 | 67 | 70 | 67 | 66 | 60 | 55 | 70 |
| 3828 | 67 | 70 | 66 | 65 | 60 | 55 | 69 |
| 4008 | 68 | 69 | 69 | 68 | 60 | 55 | 71 |
| 4408 | 67 | 69 | 69 | 68 | 60 | 55 | 71 |
| 4608 | 68 | 69 | 69 | 68 | 60 | 55 | 71 |

SOUND LEVELS

XE versions with Low Noise option

■ Sound power levels ref 10^{-12} W \pm 3 dB (L_w)

At nominal EN 14511-3: 2013 operating conditions in cooling mode

| POWERCAT LX XE | SOUND POWER LEVEL SPECTRUM (dB) | | | | | | Overall power level dB(A) |
|----------------|---------------------------------|--------|--------|---------|---------|---------|---------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 93 | 93 | 90 | 90 | 82 | 78 | 93 |
| 0908 | 93 | 93 | 90 | 90 | 82 | 78 | 93 |
| 1008 | 94 | 94 | 91 | 91 | 83 | 79 | 94 |
| 1108 | 95 | 94 | 92 | 91 | 85 | 80 | 95 |
| 1358 | 95 | 93 | 92 | 91 | 87 | 80 | 95 |
| 1528 | 95 | 93 | 93 | 91 | 86 | 81 | 95 |
| 1858 | 97 | 95 | 94 | 93 | 89 | 82 | 97 |
| 2008 | 96 | 93 | 94 | 92 | 87 | 82 | 96 |
| 2158 | 100 | 98 | 93 | 93 | 86 | 81 | 97 |
| 2308 | 97 | 96 | 95 | 95 | 87 | 82 | 98 |
| 2528 | 97 | 94 | 95 | 93 | 87 | 82 | 97 |
| 2628 | 98 | 96 | 96 | 97 | 88 | 82 | 99 |
| 3028 | 100 | 94 | 95 | 95 | 88 | 84 | 98 |
| 3428 | 101 | 97 | 95 | 92 | 90 | 87 | 98 |
| 3828 | 101 | 97 | 95 | 92 | 90 | 87 | 98 |
| 4008 | 101 | 98 | 98 | 95 | 91 | 88 | 100 |
| 4408 | 101 | 99 | 96 | 94 | 90 | 87 | 99 |
| 4608 | 102 | 98 | 96 | 94 | 91 | 87 | 99 |

■ Sound pressure level ref 2×10^{-5} Pa \pm 3 dB (L_p)

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

| POWERCAT LX XE | SOUND PRESSURE SPECTRUM (dB) | | | | | | Overall pressure level dB(A) |
|----------------|------------------------------|--------|--------|---------|---------|---------|------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 61 | 61 | 58 | 58 | 50 | 45 | 61 |
| 0908 | 61 | 61 | 58 | 58 | 50 | 45 | 61 |
| 1008 | 62 | 61 | 59 | 58 | 51 | 46 | 62 |
| 1108 | 62 | 62 | 60 | 59 | 53 | 48 | 63 |
| 1358 | 62 | 61 | 60 | 59 | 54 | 48 | 63 |
| 1528 | 62 | 60 | 61 | 58 | 53 | 48 | 63 |
| 1858 | 64 | 63 | 61 | 61 | 56 | 50 | 64 |
| 2008 | 64 | 61 | 62 | 59 | 54 | 49 | 63 |
| 2158 | 68 | 65 | 61 | 61 | 53 | 49 | 64 |
| 2308 | 65 | 63 | 63 | 62 | 55 | 50 | 65 |
| 2528 | 65 | 62 | 62 | 61 | 54 | 50 | 64 |
| 2628 | 65 | 64 | 63 | 64 | 55 | 50 | 66 |
| 3028 | 67 | 62 | 62 | 62 | 55 | 51 | 65 |
| 3428 | 68 | 64 | 62 | 59 | 57 | 54 | 65 |
| 3828 | 68 | 64 | 62 | 59 | 57 | 54 | 65 |
| 4008 | 68 | 65 | 65 | 62 | 58 | 55 | 67 |
| 4408 | 68 | 65 | 63 | 61 | 57 | 54 | 66 |
| 4608 | 68 | 65 | 63 | 61 | 58 | 54 | 66 |

SOUND LEVELS

XE versions with XTRA LOW NOISE option

■ Sound power levels ref 10^{-12} W \pm 3 dB (L_w)

At nominal EN 14511-3: 2013 operating conditions in cooling mode

| POWERCAT LX XE | SOUND POWER LEVEL SPECTRUM (dB) | | | | | | Overall power level dB(A) |
|----------------|---------------------------------|--------|--------|---------|---------|---------|---------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 89 | 89 | 83 | 84 | 76 | 64 | 87 |
| 0908 | 89 | 89 | 83 | 84 | 76 | 64 | 87 |
| 1008 | 89 | 89 | 83 | 84 | 76 | 64 | 87 |
| 1108 | 90 | 92 | 87 | 86 | 79 | 67 | 90 |
| 1358 | 90 | 96 | 87 | 85 | 79 | 65 | 91 |
| 1528 | 92 | 93 | 88 | 87 | 81 | 69 | 91 |
| 1858 | 91 | 96 | 91 | 88 | 81 | 75 | 93 |
| 2008 | 92 | 94 | 90 | 87 | 82 | 70 | 92 |
| 2158 | 92 | 97 | 92 | 90 | 81 | 67 | 94 |
| 2308 | 93 | 94 | 92 | 90 | 81 | 69 | 94 |
| 2528 | 96 | 96 | 93 | 89 | 81 | 73 | 94 |
| 2628 | 93 | 94 | 93 | 92 | 80 | 68 | 95 |
| 3028 | 97 | 95 | 93 | 89 | 79 | 73 | 94 |
| 3428 | 97 | 94 | 91 | 88 | 86 | 84 | 94 |
| 3828 | 97 | 94 | 91 | 88 | 86 | 84 | 94 |
| 4008 | 97 | 97 | 99 | 92 | 89 | 87 | 99 |
| 4408 | 97 | 94 | 91 | 90 | 87 | 85 | 95 |
| 4608 | 98 | 95 | 93 | 91 | 88 | 86 | 96 |

■ Sound pressure level ref 2×10^{-5} Pa \pm 3 dB (L_p)

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

| POWERCAT LX XE | SOUND PRESSURE SPECTRUM (dB) | | | | | | Overall pressure level dB(A) |
|----------------|------------------------------|--------|--------|---------|---------|---------|------------------------------|
| | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | |
| 0808 | 56 | 56 | 51 | 52 | 44 | 32 | 55 |
| 0908 | 56 | 56 | 51 | 52 | 44 | 32 | 55 |
| 1008 | 56 | 56 | 51 | 52 | 44 | 32 | 55 |
| 1108 | 58 | 60 | 55 | 54 | 47 | 35 | 58 |
| 1358 | 58 | 63 | 55 | 53 | 47 | 33 | 59 |
| 1528 | 59 | 61 | 56 | 54 | 48 | 36 | 59 |
| 1858 | 59 | 63 | 58 | 55 | 48 | 43 | 60 |
| 2008 | 60 | 61 | 57 | 55 | 49 | 37 | 59 |
| 2158 | 60 | 64 | 59 | 57 | 48 | 35 | 61 |
| 2308 | 60 | 61 | 60 | 58 | 49 | 36 | 61 |
| 2528 | 63 | 63 | 60 | 56 | 49 | 40 | 61 |
| 2628 | 60 | 61 | 61 | 59 | 47 | 35 | 62 |
| 3028 | 64 | 63 | 60 | 56 | 46 | 40 | 61 |
| 3428 | 64 | 61 | 58 | 55 | 52 | 51 | 61 |
| 3828 | 64 | 61 | 58 | 55 | 52 | 51 | 61 |
| 4008 | 64 | 64 | 66 | 59 | 56 | 53 | 66 |
| 4408 | 64 | 61 | 58 | 56 | 54 | 52 | 62 |
| 4608 | 65 | 62 | 59 | 57 | 55 | 53 | 63 |

SYSTEM WATER VOLUME - EVAPORATOR WATER FLOW RATE

The Connect Touch control is equipped with anticipation logic making it highly flexible in adjusting operation to parameter drift, particularly on hydraulic systems with low water volumes. By adjusting compressor running times, it prevents short cycle protection cycles from starting and, in most cases, eliminates the need for a buffer tank.

Note : The minimum volumes of chilled water are calculated for EUROVENT rated conditions:

- chilled water temperature = 12 °C/7 °C
- condenser air inlet temperature = 35 °C

This value is applicable for most air conditioning applications (unit with fan coil units).

Note:

For installations operating on low water volumes (assembly with air handling unit) or for industrial processes, the addition of a buffer tank is essential.

| POWERCAT LX HE/XE | 0808 | 0908 | 1008 | 1108 | 1358 | 1528 | 1858 | 2008 | 2158 | 2308 | 2528 | 2628 | 3028 | 3428 | 3828 | 4008 | 4408 | 4608 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|------|-------|-------|
| Minimum water volume/Comfort application | 887 | 969 | 1056 | 1271 | 1437 | 1622 | 1989 | 2207 | 2350 | 2551 | 2733 | 2880 | 3172 | 3718 | 4053 | 4310 | 4657 | 4826 |
| Minimum water volume/Process application | 1775 | 1937 | 2113 | 2542 | 2873 | 3244 | 3978 | 4414 | 4700 | 5103 | 5467 | 5759 | 6344 | 7436 | 8106 | 8619 | 9315 | 9653 |
| Minimum flow rate ⁽¹⁾ (l/s) | 4,6 | 5,0 | 5,4 | 6,5 | 7,4 | 8,3 | 10,4 | 11,3 | 12,2 | 13,1 | 13,8 | 15,0 | 16,4 | 19,1 | 21,1 | 22,2 | 24,0 | 25,2 |
| Maximum flow rate ⁽²⁾ (l/s) | 37,5 | 40,5 | 40,5 | 34,1 | 36,9 | 42,0 | 45,0 | 56,1 | 59,1 | 67,1 | 67,1 | 73,9 | 83,9 | 87,8 | 126,5 | 92,9 | 132,1 | 107,4 |

(1) Minimum flow rate for optimal efficiency in variable flow configuration

(2) Maximum flow rate for a pressure drop of 100 kPa in the exchanger

OPERATING RANGE

POWERCAT units have a broad field of application, enabling them to meet a range of requirements in the most varied of climates.

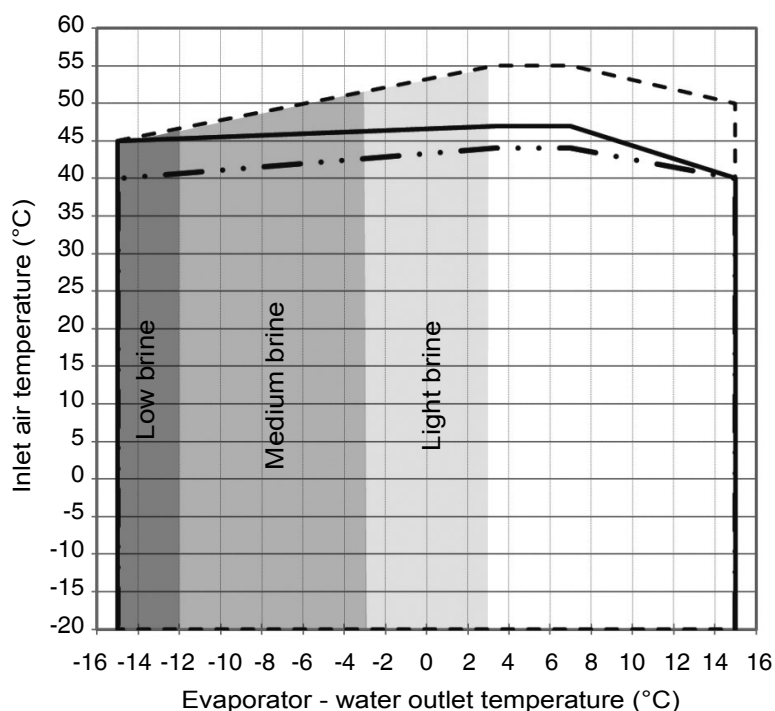
Multi-climate: -20 °C to +55 °C

The POWERCAT HE and XE series are equipped as standard with all the management devices and algorithms to enable allseason operation in all climates. The POWERCAT HE and XE series are therefore able to operate in conditions ranging from the heat of the Mediterranean basin to the chill of Scandinavia, the humid Atlantic coast to the dry climate of Central Europe.

Multi-application: air conditioning, industrial processes

The POWERCAT can be used for all traditional air conditioning applications in sectors as varied as collective housing, hotels, shopping centres and offices.

Operating range LX HE / XE



Ranges given as a guide using ethylene glycol for an evaporator $\Delta T = 3K$. Refer to the electronic catalogue.

- Low-temperature brine solution, (-15°C ethylene glycol / -8°C propylene glycol)
- Medium-temperature brine solution, (-12°C ethylene glycol / -8°C propylene glycol)
- Light-brine solution, down to -3°C, (-3°C ethylene glycol / 0°C propylene glycol)
- Full load operation
- Part load operation
- Operating limit for units equipped with the Xtra and super low noise options

Power factor correction option available for an inlet air temperature up to +40°C

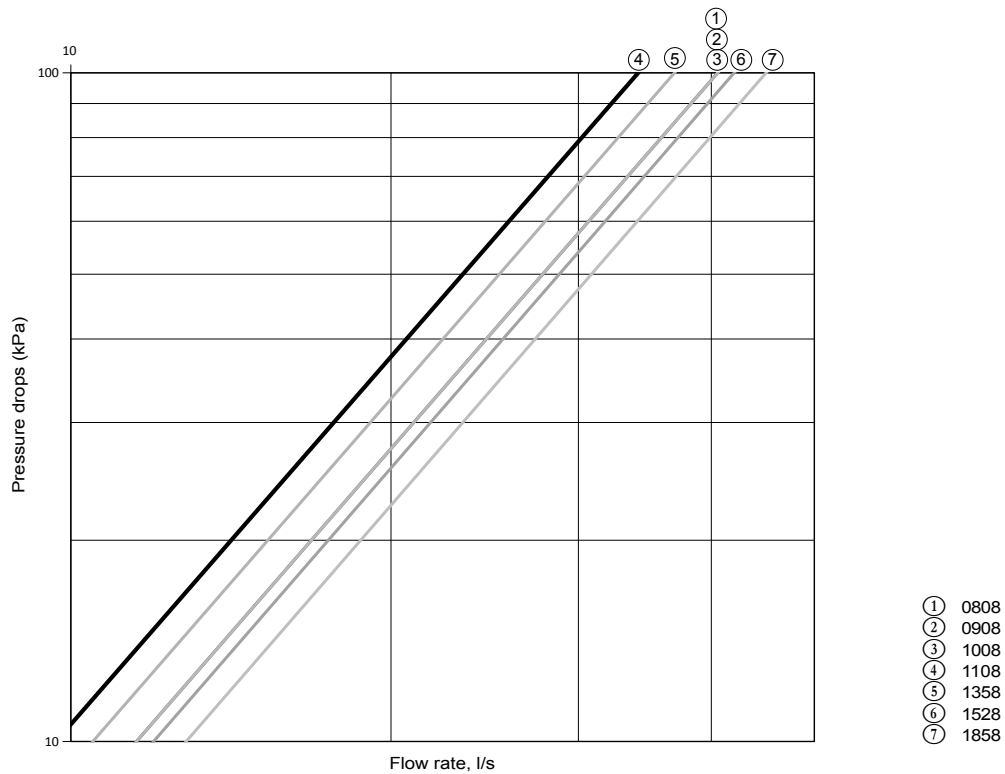
For operation in pure water at an inlet air temperature below 0°C, the frost protection option must be provided

HYDRAULIC SPECIFICATIONS

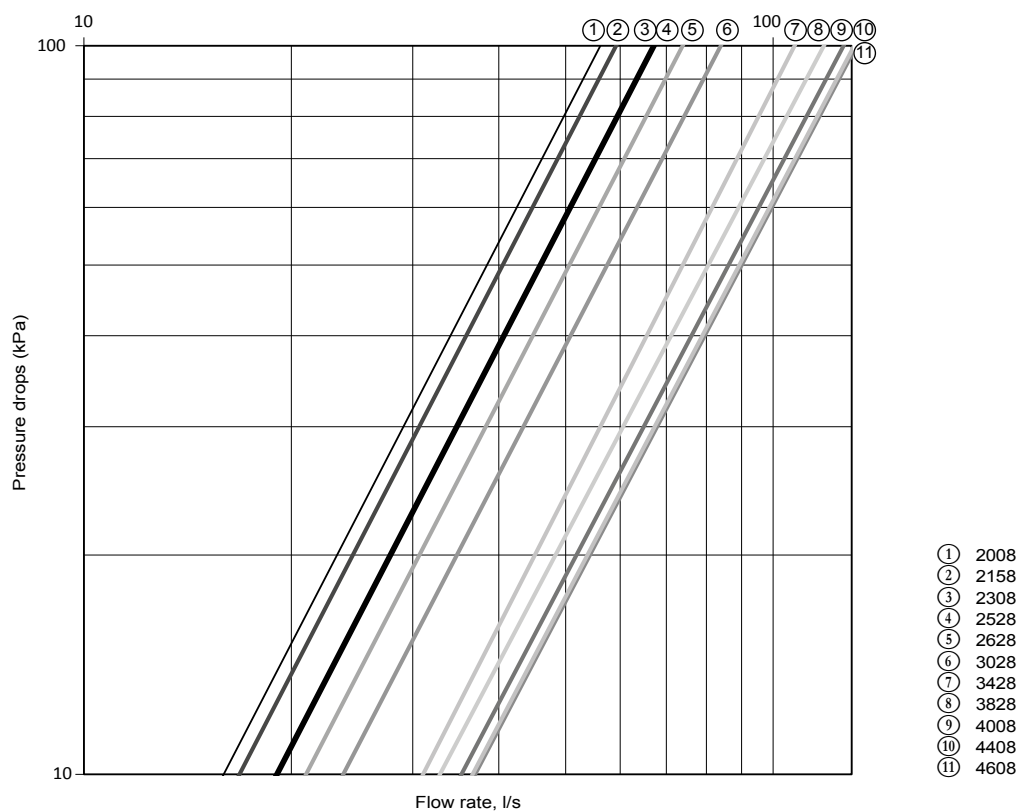
■ Water pressure drop in the evaporator

Data applicable for pure water at 20°C

Tailles 0808 à 1858



Sizes 2008 to 4608



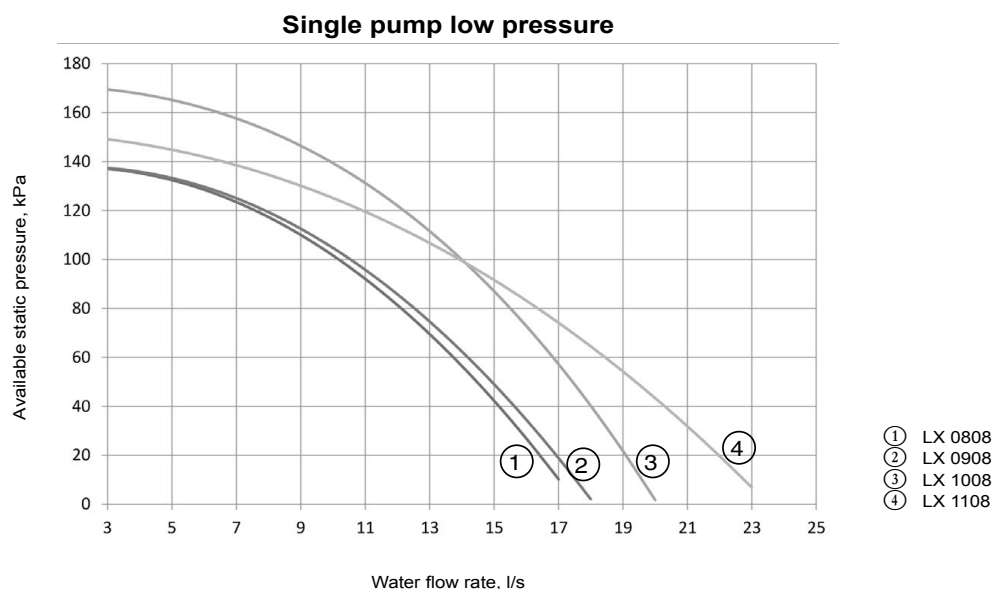
HYDRAULIC SPECIFICATIONS

■ Available static pressure for the installation

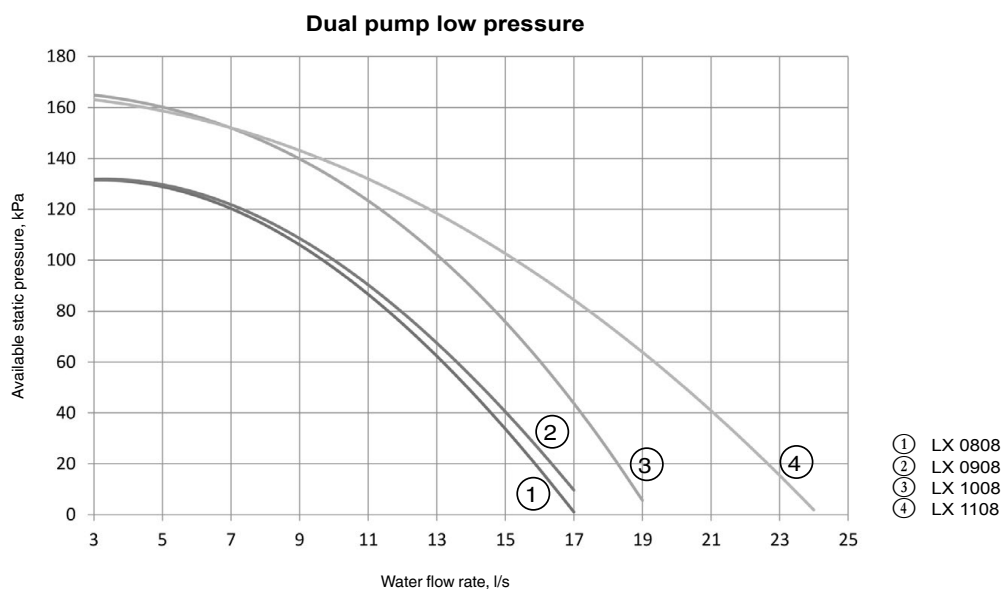
Data applicable for:

- Pure water at 20 °C
- Refer to the section "Evaporator water flow rate" for the minimum and maximum water flow rate values
- If a brine solution is used, the maximum water flow rate is reduced

■ High pressure pumps LX HE/XE (fixed speed)



■ High pressure pumps LX HE/XE (fixed speed)



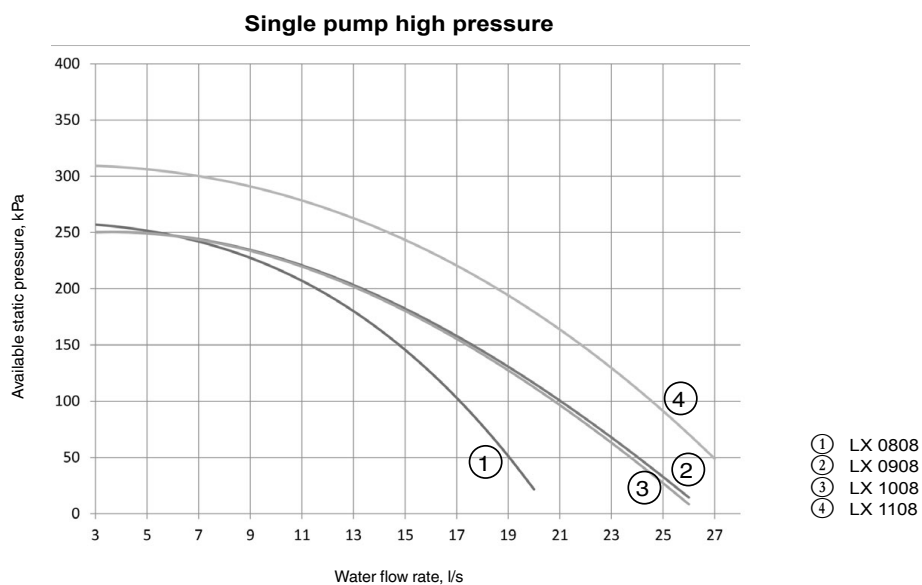
HYDRAULIC SPECIFICATIONS

■ Available static pressure for the installation

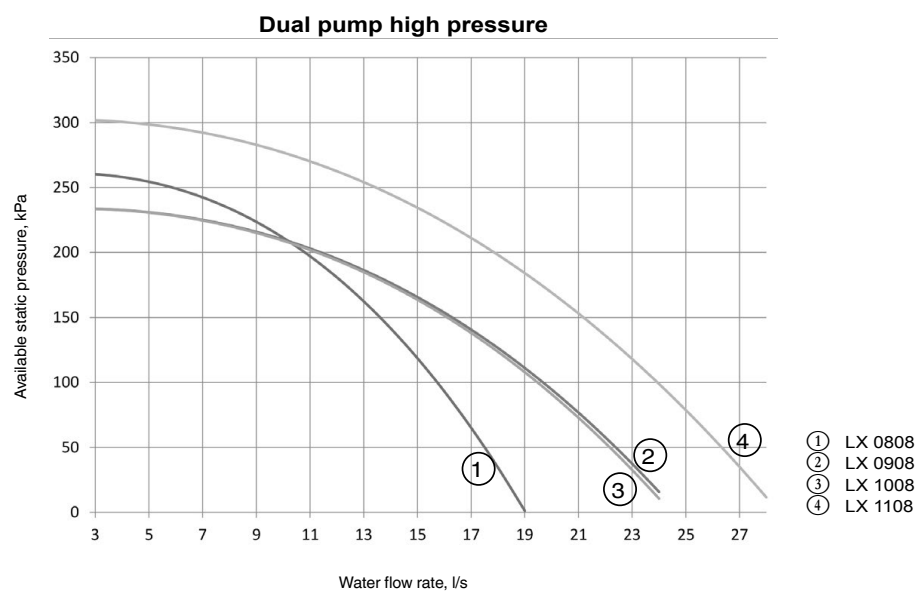
Data applicable for:

- Pure water at 20 °C
- Refer to the section "Evaporator water flow rate" for the minimum and maximum water flow rate values
- If a brine solution is used, the maximum water flow rate is reduced

■ Low pressure pumps LX HE/XE (fixed speed)

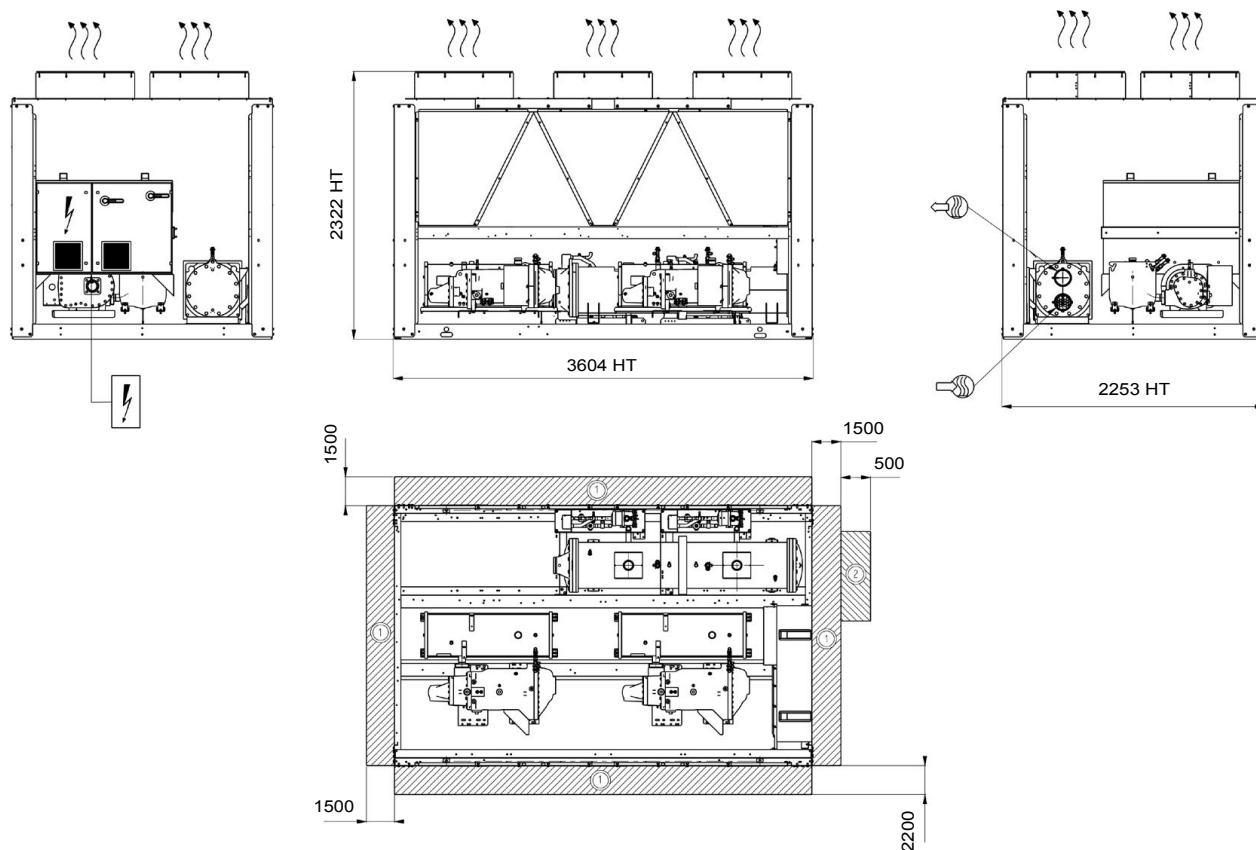


■ Low pressure pumps LX HE/XE (fixed speed)



DIMENSIONS

■ POWERCAT LX HE-XE 0808 to 1008



Key All dimensions in mm

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

Notes:

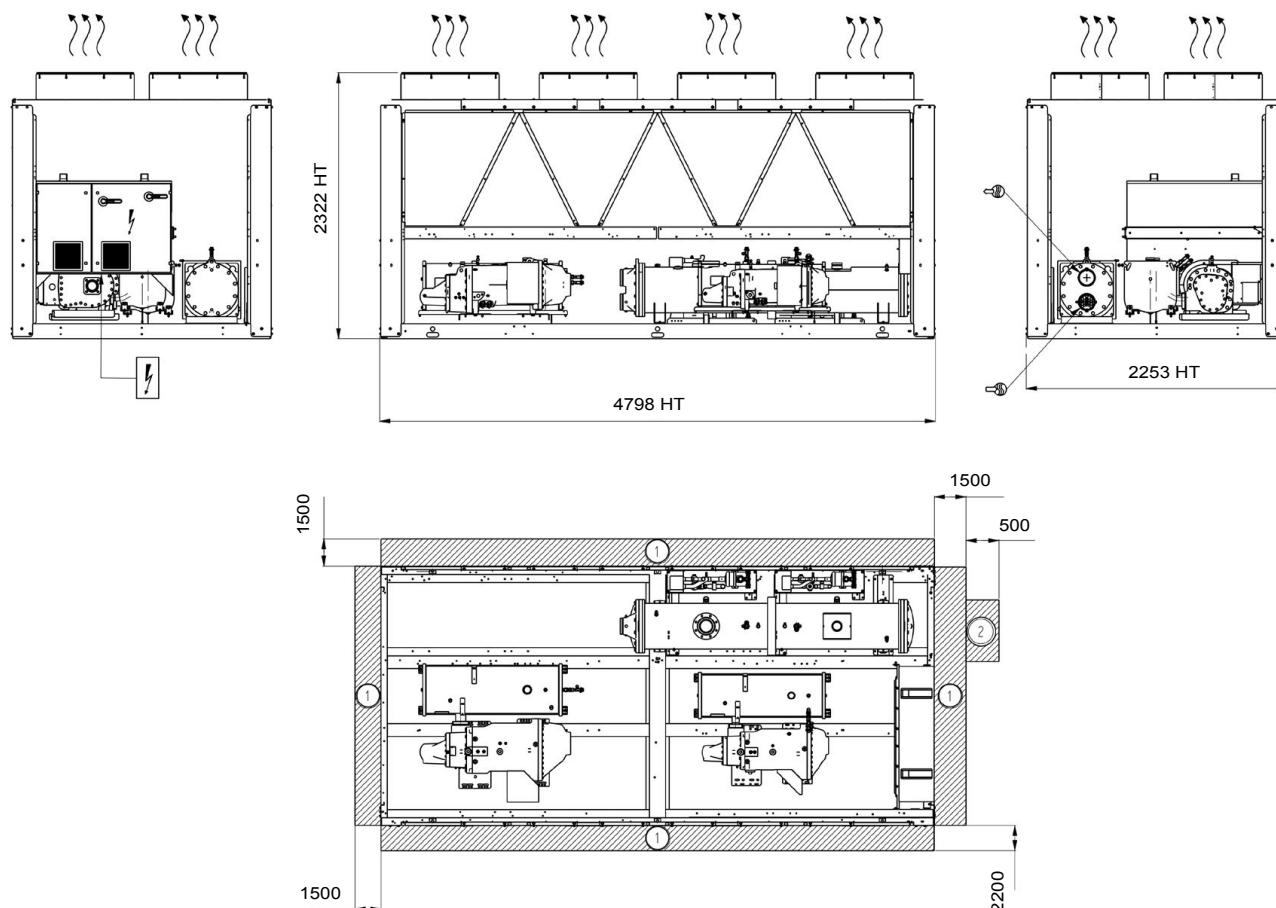
Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Please refer to the certified dimensional drawings for the positioning of the fixing points, weight distribution points and centre of gravity coordinates.

DIMENSIONS

■ POWERCAT LX HE-XE 1108 to 1358 and LX HE 1528



Key All dimensions in mm

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

Notes:

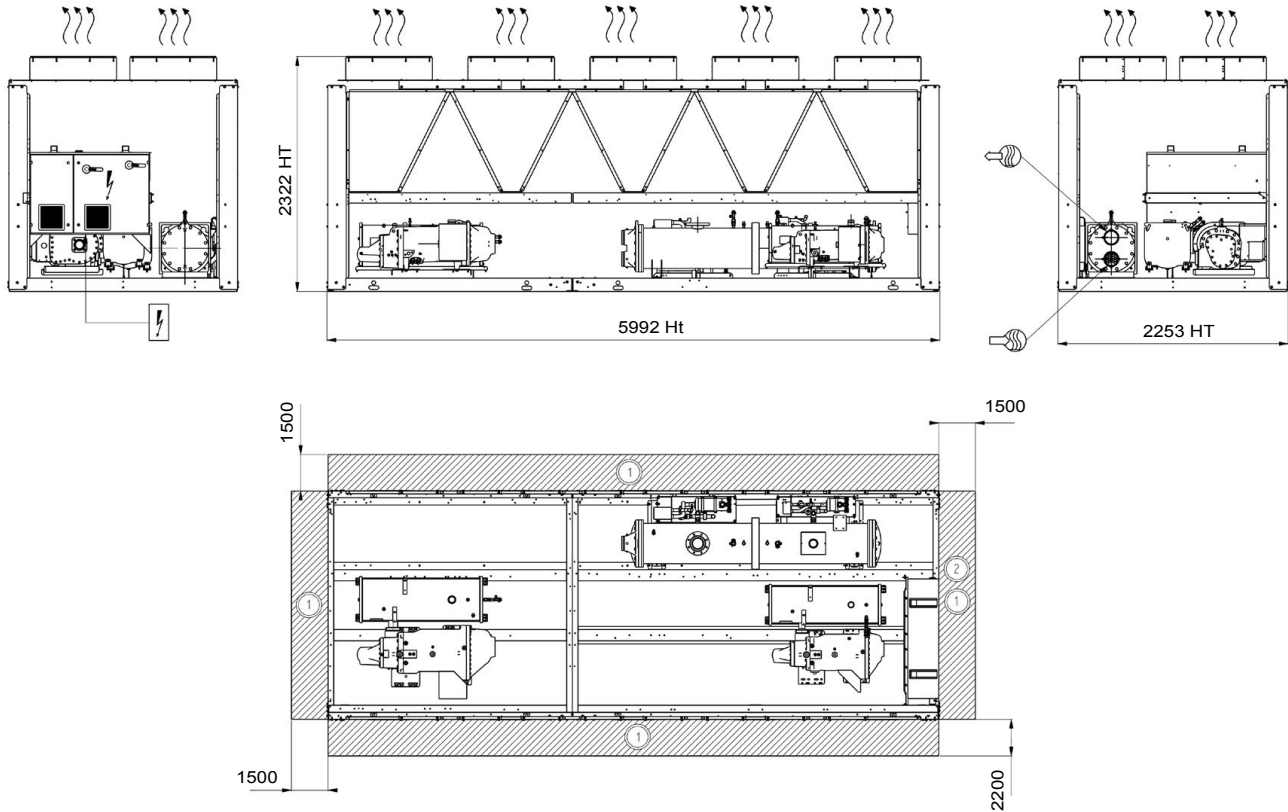
Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Please refer to the certified dimensional drawings for the positioning of the fixing points, weight distribution points and centre of gravity coordinates.

DIMENSIONS

■ POWERCAT LX XE 1528



Key All dimensions in mm

① Clearance required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

Electrical cabinet

Notes:

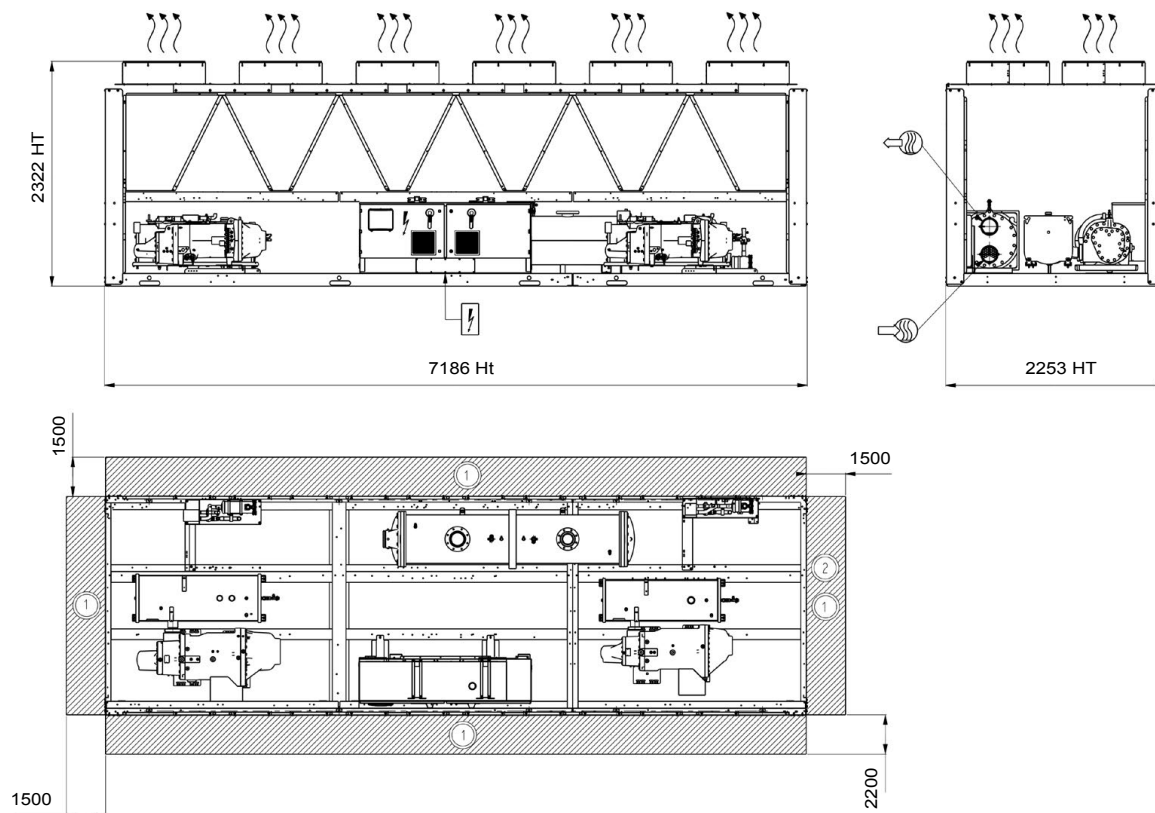
Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.





Please refer to the certified dimensional drawings for the positioning of the fixing points, weight distribution points and centre of gravity coordinates.

DIMENSIONS

■ POWERCAT LX HE-XE 1858 to 2308 and LX HE 2528



Key All dimensions in mm

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

Notes:

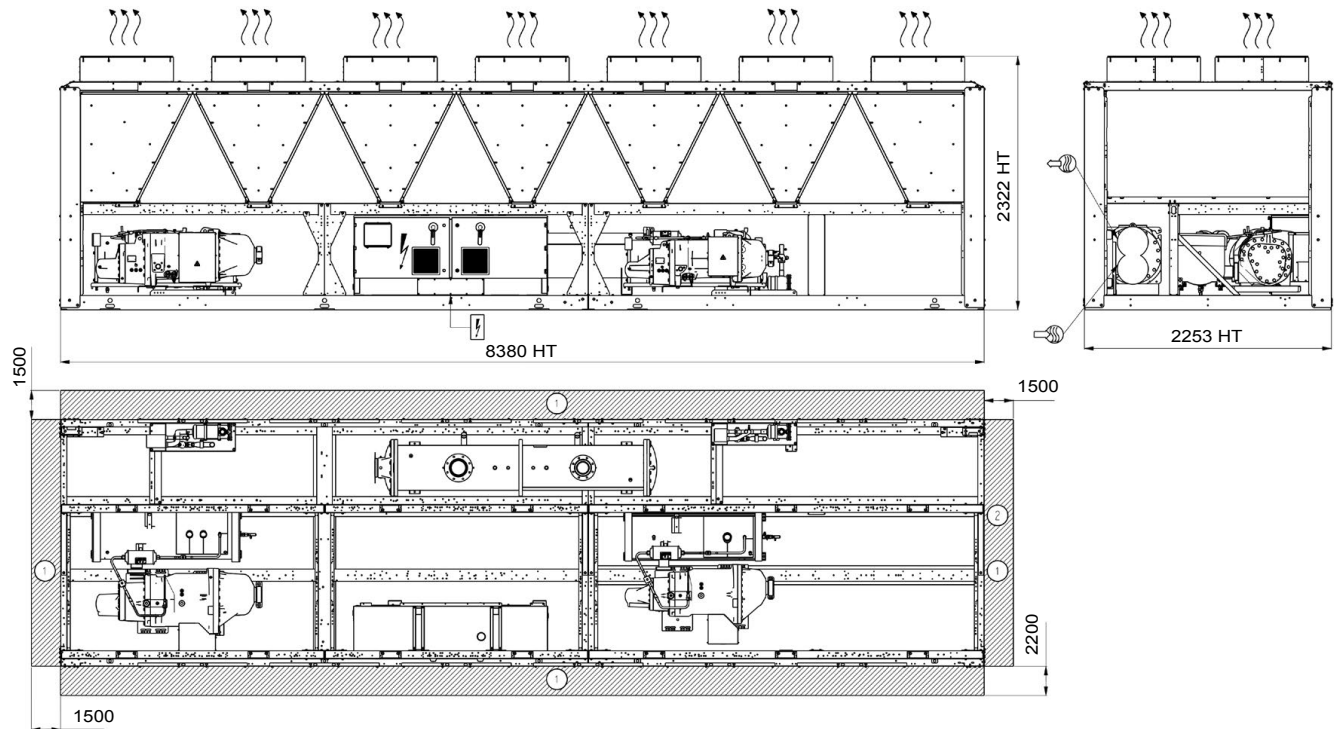
Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Please refer to the certified dimensional drawings for the positioning of the fixing points, weight distribution points and centre of gravity coordinates.

DIMENSIONS

■ POWERCAT LX XE 2528 and LX HE-XE 2628



Key

All dimensions in mm

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

Notes:

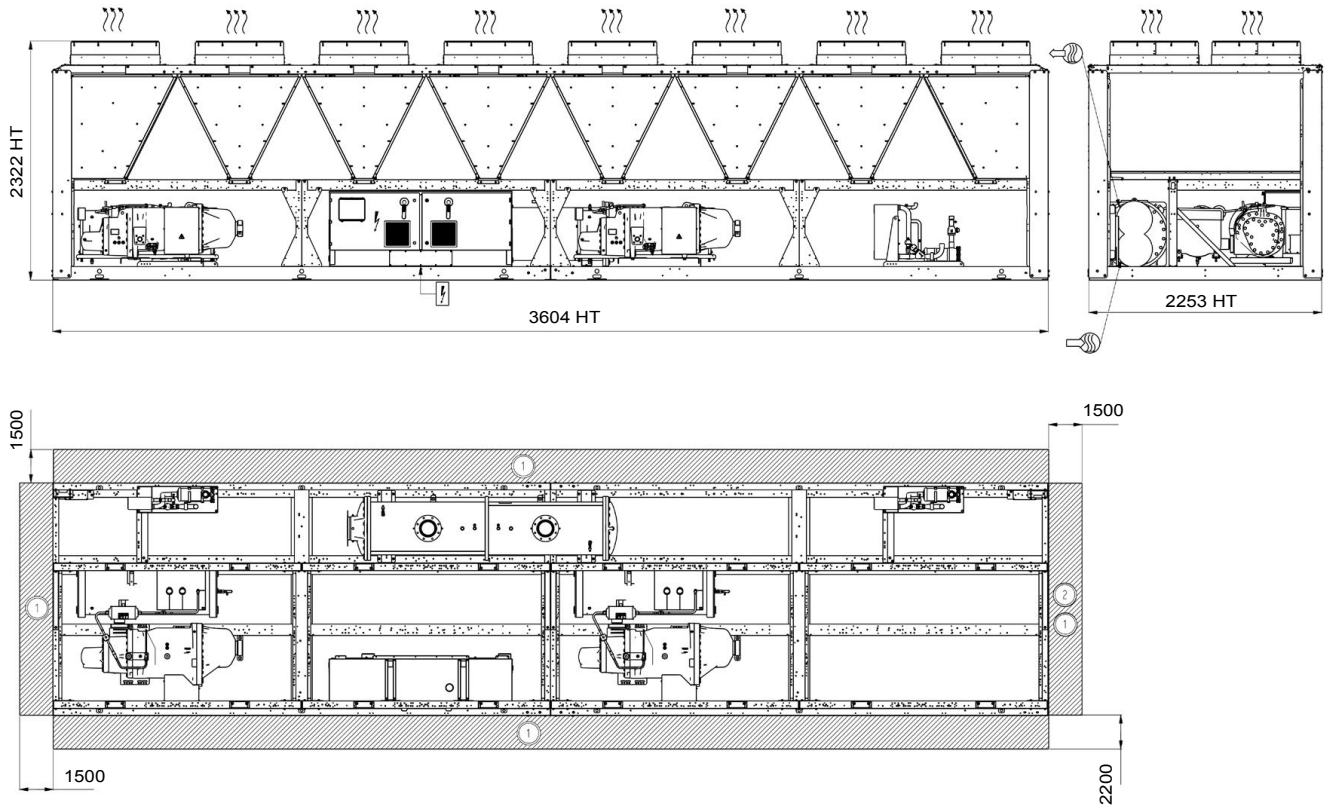
Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Please refer to the certified dimensional drawings for the positioning of the fixing points, weight distribution points and centre of gravity coordinates.

DIMENSIONS

■ POWERCAT LX HE-XE 3028



Key

All dimensions in mm

① Clearance required for maintenance and air flow

② Clearance recommended for coil removal

Water inlet

Water outlet

Air outlet, do not obstruct

Electrical cabinet

Notes:

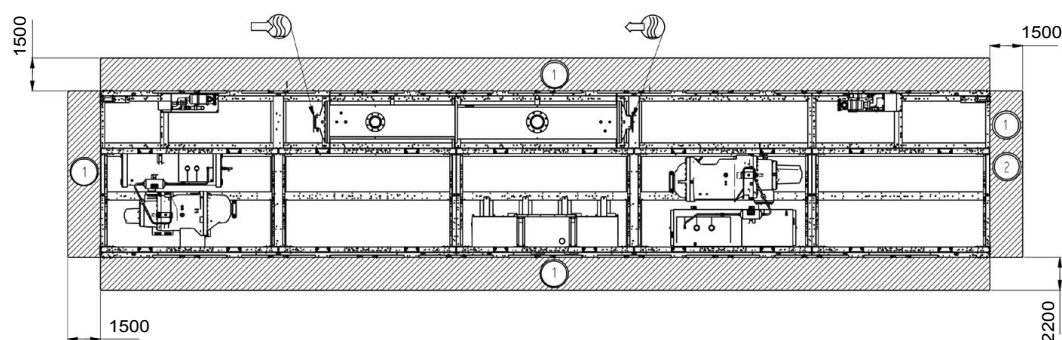
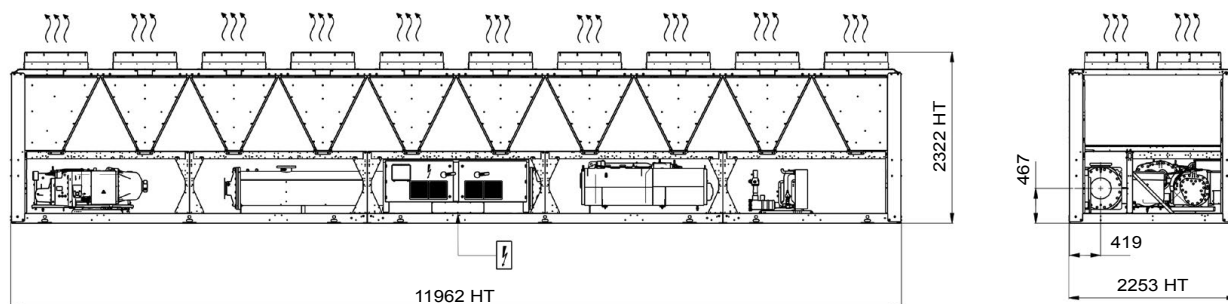
Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Please refer to the certified dimensional drawings for the positioning of the fixing points, weight distribution points and centre of gravity coordinates.

DIMENSIONS

■ POWERCAT LX HE-XE 3428 to 4408



Key All dimensions in mm

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

Notes:

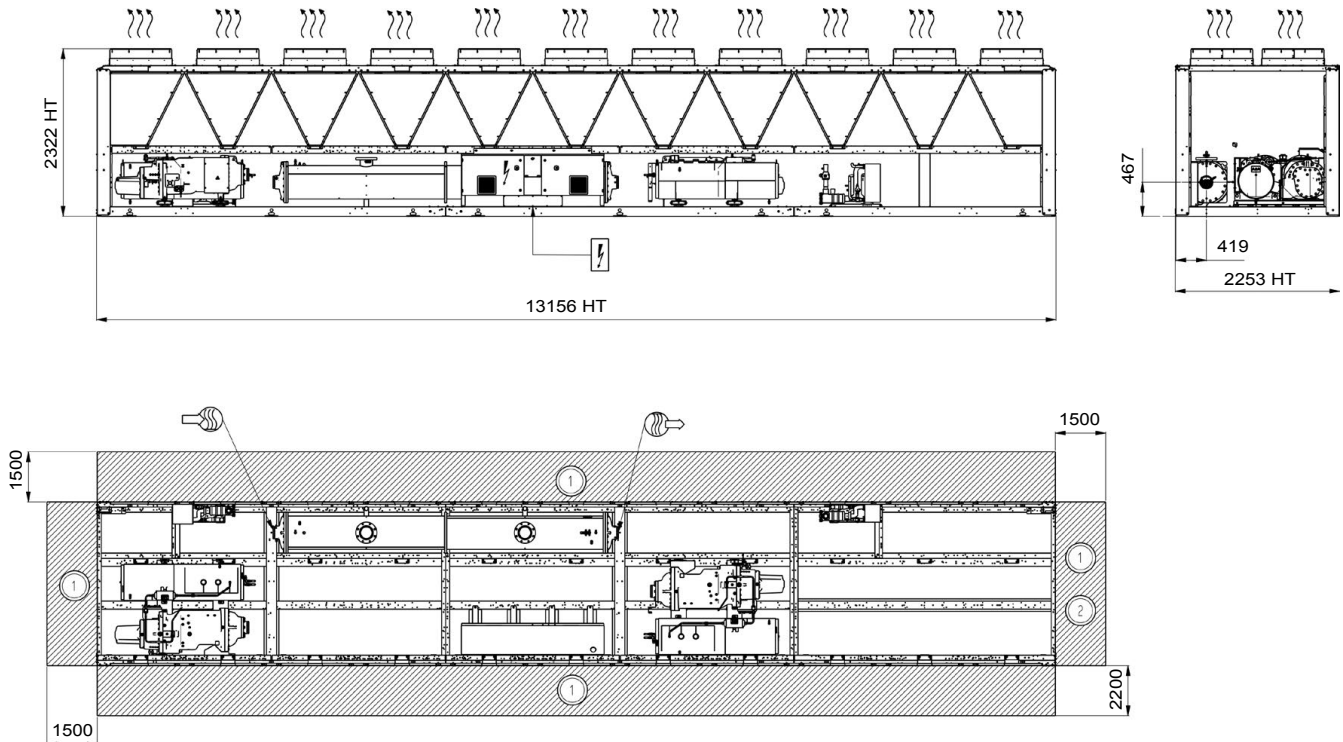
Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Please refer to the certified dimensional drawings for the positioning of the fixing points, weight distribution points and centre of gravity coordinates.

DIMENSIONS

■ POWERCAT LX HE-XE 4608



Key All dimensions in mm

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

Notes:

Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Please refer to the certified dimensional drawings for the positioning of the fixing points, weight distribution points and centre of gravity coordinates.

INSTALLATION RECOMMENDATIONS

■ Water quality criteria to be respected

The quality of the water used has a direct impact on the correct and compliant operation of the machine and its service life. This is particularly true if the water used clogs or corrodes components or promotes the growth of algae or micro-organisms. The water must be tested to determine whether it is suitable for the unit. It is also tested to determine whether chemical treatment is necessary and will suffice to make it of acceptable quality. This analysis should confirm whether or not the various machine components are compatible with the water they come into contact with on-site.

Warning: failure to follow these instructions will result in the immediate voiding of the unit's warranty.

■ Lifting and handling

The utmost safety precautions must be taken when lifting and handling the unit.

Always follow the lifting diagram on the unit and in the instruction manual.

Before attempting to lift the unit, make sure the path leading to its intended location is free from obstacles. Always keep the unit vertical when moving it. Never tip it or lie it on its side.

■ Choosing a location for the unit

POWERCAT units are designed for outdoor installation.

Precautions should be taken to protect the unit from freezing temperatures. Special attention should be paid to ensure sufficient free space (including at the top) to allow maintenance.

The unit must be placed on a perfectly level, fireproof surface strong enough to support it when ready for operation. Noise pollution from auxiliary equipment such as pumps should be studied thoroughly.

Potential noise transmission routes should be studied, with assistance from an acoustical engineer if necessary, before installing the unit. It is strongly recommended that flexible couplings are placed over pipes and anti-vibration mounts are fitted underneath the unit (equipment available as an option) to reduce vibrations, and the noise this causes, as much as possible.

■ Fitting accessories supplied separately

A number of optional accessories may be delivered separately and installed on the unit on site.

You must follow the instructions in the manual.

■ Electrical connections

You must follow the instructions in the manual. All information concerning electrical connections is stated on the wiring diagrams provided with the unit. Always follow this information to the letter.

Electrical connections must be made in accordance with best current practices and applicable standards and regulations.

Electrical cable connections to be made on-site:

- electrical power supply to the unit
- contacts available as standard enabling the machine to be controlled remotely (optional)

It should be noted that the unit's electrical system is not protected against lightning strikes.

Therefore devices to protect against transient voltage surges must be installed on the system and inside the power supply unit.

■ Pipe connections

You must follow the instructions in the manual. All pipes must be correctly aligned and slope towards the system's drain valve. Pipes must be installed to allow sufficient access to the panels for maintenance, and must be fitted with heat insulation.

Pipe fixings and brackets must be separate to avoid vibrations and ensure no pressure is placed on the unit. Water flow shutoff and control valves must be fitted when the unit is installed.

Pipe connections to be made on site:

- water supply with pressure-reducing valve
- evaporator, condenser and drain
- Accessories essential to any hydraulic circuit must also be installed, such as:
 - water expansion vessel
 - drain nozzles at pipe low points
 - exchanger shut-off valves equipped with filters
 - air vents at pipe high points
 - check the system's water capacity (install a buffer tank if necessary)
 - flexible couplings on exchanger inlets and outlets

Warning:

- **pressure in the water circuits below 4 bar for units equipped with the hydraulic module**
- **place the expansion vessel upstream of the pump.**
- **do not place any valves on the expansion vessel.**
- **make sure the water circulation pumps are placed directly at the exchanger inlets.**
- **make sure the pressure of the water drawn in by the circulation pumps is greater than or equal to the required minimum pressure (NPSH), particularly if the water circuits are "open".**
- **test the water quality in accordance with the relevant technical specifications.**
- **take the necessary precautions to protect the unit and hydraulic system from freezing temperatures (e.g. allow for the possibility of draining the unit). If glycol is added to prevent freezing, check its type and concentration before system start-up.**
- **before making any final hydraulic connections, flush the pipes with clean water to remove any debris in the network.**

INSTALLATION RECOMMENDATIONS

■ Start-up

System start-up for these machines must be performed by CIAT or a CIAT-authorised firm.

You must follow the instructions in the manual.

List of system start-up checks (non-exhaustive):

- correct positioning of the unit
- power supply protections
- phases and direction of rotation
- wiring connections on the unit
- direction of water flow in the unit
- cleanliness of the water circuit
- water flow rate at the specified value
- pressure in the refrigerant circuit
- direction of rotation of the compressors
- water pressure drops and flow rates
- operating readings

■ Maintenance operations

Specific preventive maintenance operations are required at regular intervals and should be performed by CIAT-approved contractors.

The operating parameters are read and noted on a "CHECK LIST" form to be returned to CIAT.

To do this, you must refer to and comply with the instruction manual.

You must take out a maintenance contract with a CIAT-approved refrigeration equipment specialist. Such a contract is required even during the warranty period.

CONTROL

USER-FRIENDLY INTERFACE CONSOLE

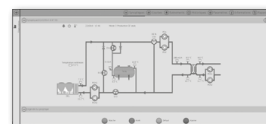
- Ergonomic 5-inch touch screen.
- Information displayed in a choice of languages.
- Temperature and pressure readings.
- Operating and fault status diagnostics.
- Master/slave control of two machines in parallel.
- Fault memory management.
- Pump management.
- Time schedule.
- IP web server
- Programmable maintenance
- Preventive maintenance
- F-GAS maintenance
- E-mail alert



REMOTE M2M MACHINE SUPERVISION

Two years of Full Serenity with:

- Monitoring of machine operation (operation overviews and curves, alarm logs).
- E-mail alerts for alarms (optional SMS alerts).
- Remote update of the M2M.
- Access to a log of machine operation data.
- Remote advice for using M2M.
- System start-up and operating readings.



PRODUCT FUNCTIONALITY

POTENTIAL-FREE (DRY) CONTACTS AVAILABLE AS STANDARD

Inputs:

- Automatic operation control
- Selection of setpoints 1 / 2
- Power limitation.

Outputs:

- General fault reporting
- Operational status reporting.

Additional inputs available as options:

- Setpoint adjustable by 4-20 mA signal
- Power limitation adjustable by 4-20 mA signal
- Second power limitation level
- End of storage signal
- User fault reporting
- Time schedule override

Additional outputs available as options:

- Indication of the power level by 0-10 V signal
- Minor alert reporting
- Unit shut down general fault reporting

CMS CONNECTIONS

- MODBUS-JBUS RTU (RS485) or TC/IP (standard) open protocol
- LONWORKS protocol (option)
- BACNET IP protocol (option)

COMMUNICATION Customer CMS

Via potential-free
(dry) contact

Via BUS
BUS

CIAT SYSTEM FUNCTIONALITY

Communication with CIAT Energy pool controlled by Power'Control.

Built-in Power'Control:

- Energy optimisation of refrigeration and heating using several generators,
- Manages free cooling capacity
- Uses heat recovery to supply domestic hot water.





Order No: NA20.765A. Supersedes order No: NA19.765B.

Manufacturer reserves the right to change any product specifications without notice.

The illustrations in this document are for illustrative purposes only and not part of any offer for sale or contract. The manufacturer reserves the right to change the design at any time without notice.

Manufacturer: Carrier SCS, Montluel, France.