TheClimateFactory

EN

R410A

TECHNICAL MANUAL

WATER CHILLER

CL 025-200

CHILLERS

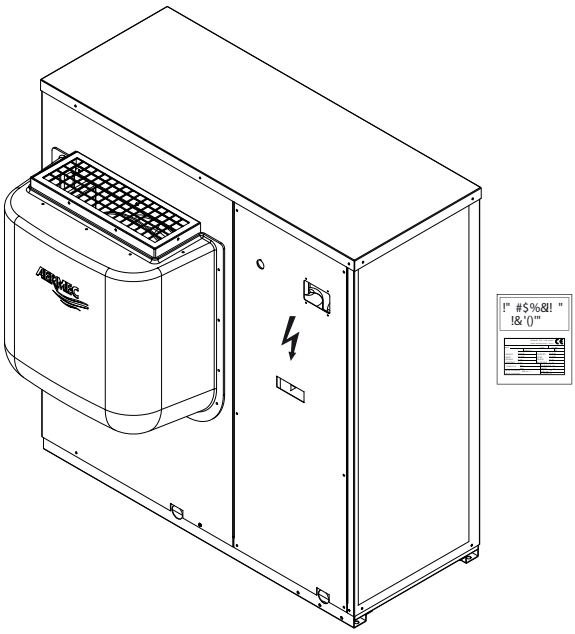
REVERSIBLE HEAT PUMPS

CONDENSING UNITS

- INDOOR/OUTDOOR UNIT
- HIGH EFFICIENCY
- HOT WATER PRODUCTION UP TO 60°C

1. DESCRIPTION AND CHOICE OF THE UNIT

The new 'CL' series of water chillers and heat pumps are air-cooled units, operating on R410A, suitable for both indoor and outdoor installation
They are designed for cooling, heating and hot water (A.C.S. = DHW) production for medium - and small - size applications in commercial and residential areas
Although they can be installed outside, they are mainly designed for specific installations indoors – they can be used as ducted units as they are equipped with radial plug-fans with EC inverter motor
The main features of these units include an extremely low-noise operation, high efficiency, reliability, plus head pressure control that continuously modulates the condenser fan speed



TECHNICAL PLATE

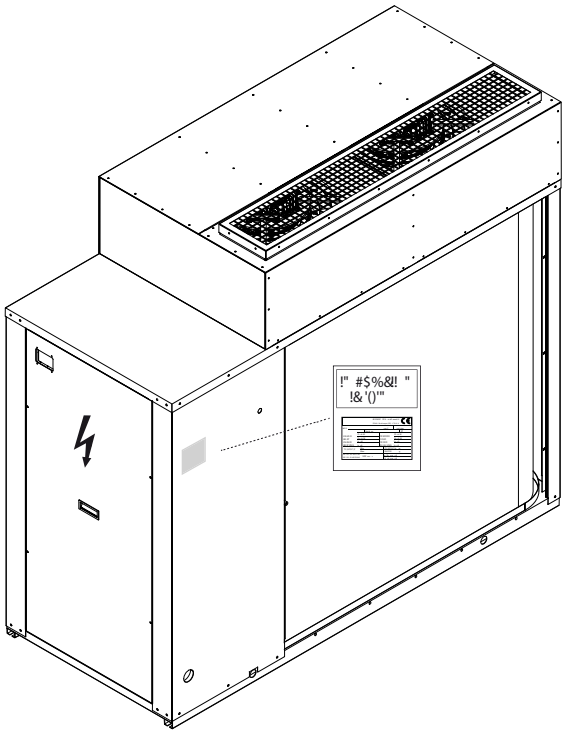
Models available:
"°" COOLING ONLY
"°L" COOLING ONLY EXECUTION LOW NOISE
"H" HEATING PUMP
"D" DESUPERHEATER
"C" CONDENSING UNIT

At the same time, the versions are available with different set-ups in order to satisfy a wide range of system solutions:

1. **"°" STANDARD**
2. **"P" PUMP ONLY**
3. **"A" Buffer TANK AND PUMP**

2. PRODUCT IDENTIFICATION

CL can be identified by:
- PACKING LABEL, that shows the product identification data.
- TECHNICAL PLATE
  Positioned on the right lateral side-member



TECHNICAL PLATE

3. CONFIGURATOR

FIELD		DESCRIPTION
1,2		CL
3,4,5		SIZE 025, 030, 040, 050, 070, 080, 090, 100, 150, 200 (not possible with cooling only sizes 040 and 080)
6		MODEL
	°	Cooling only
	H	Heat Pump
7		EXECUTION
	°	Standard
	L	Standard Low noise (possible only with Condensing Unit C)
8		VERSION
	°	Standard
	P	Pump only
	A	With buffer tank and pump
9		HEAT RECOVERY:
	°	Without heat recovery
	D	With desuperheater (partial heat recovery) (for cooling only sizes 050 to 200)
10		COILS
	°	Aluminium
	R	Copper
	S	Tinned copper
	V	In painted aluminium (epoxy powders)
11		FIELD OF USE
	°	Standard
	Z	Temperature of the water produced from 4 °C to 0 °C
	Y	Temperature of the water produced from 0 °C to -6 °C
12		EVAPORATOR
	°	Standard
	C	Condensing unit
13		POWER SUPPLY
	°	400V/3N/50Hz
	M	230V/1/50Hz (only for size from 025 up to 040)
	3	3~ 230V 50Hz (only for sizes 090 and 200, for other sizes contact the factory)

CONFIGURATOR LIMITATIONS

Heat pump "H" model not possible with:
Thermostatic expansion valve **"Z" - "Y"**
Condensing unit **"C"**
Execution standard low noise **"L"**
Desuperheater option **"D"**

Heat recovery "D" option not possible with
Thermostatic expansion valve **"Z" - "Y"**
Condensing unit **"C"**

NOTE

The units with integrated storage tank are not suitable for the production of DHW.

4. CHECK LIST

COMPONENTS SUPPLIED AS PER STANDARD - COOLING CIRCUIT																		
Version "°" - "P" - "A"	**025**		**030**		**040**	**050**		**070**		**080**	**090**		**100**		**150**		**200**	
Cooling circuit	**°**	**H**	**°**	**H**	**H**	**°**	**H**	**°**	**H**	**H**	**°**	**H**	**°**	**H**	**°**	**H**	**°**	**H**
Compressors guard resistance	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
High pressure transducer	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
High pressure switch	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Low pressure transducer	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Cycle reversing valve	no	✔	no	✔	✔	no	✔	no	✔	✔	no	✔	no	✔	no	✔	no	✔
Calibrated orifice	no	✔	no	✔	✔	no	✔	no	✔	✔	no	✔	no	✔	no	✔	no	✔
Dehydrator fi lter	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Liquid buffer tank	no	✔	no	✔	✔	no	✔	no	✔	✔	no	✔	no	✔	no	✔	no	✔
Liquid separator	no	✔	no	✔	✔	no	✔	no	✔	✔	no	✔	no	✔	no	✔	no	✔
Thermostatic valve	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Liquid indicator	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
One-way valves	no	✔	no	✔	✔	no	✔	no	✔	✔	no	✔	no	✔	no	✔	no	✔

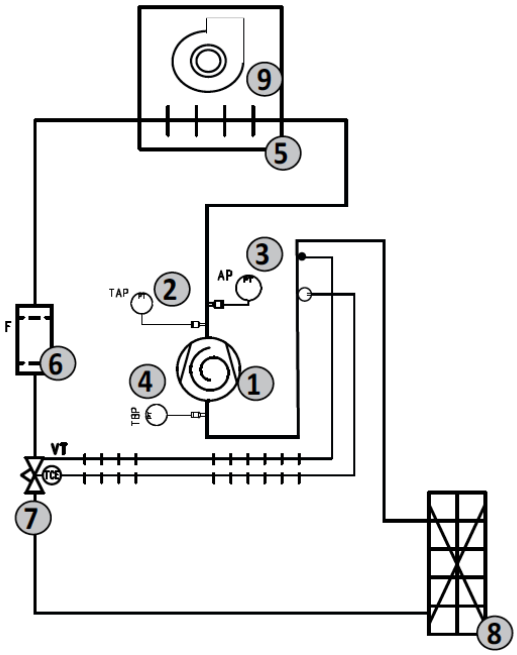
COMPONENTS SUPPLIED AS PER STANDARD - HYDRAULIC CIRCUIT																		
Version Standard "°"	**025**		**030**		**040**	**050**		**070**		**080**	**090**		**100**		**150**		**200**	
Components hydraulic circuit	**°**	**H**	**°**	**H**	**H**	**°**	**H**	**°**	**H**	**H**	**°**	**H**	**°**	**H**	**°**	**H**	**°**	**H**
Flow switch	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Water filter	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Air vent valve	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Safety valve hydraulic circuit	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	no	no	no	no	no	no

Version with pump "P"	**025**		**030**		**040**	**050**		**070**		**080**	**090**		**100**		**150**		**200**	
Components hydraulic circuit	**°**	**H**	**°**	**H**	**H**	**°**	**H**	**°**	**H**	**H**	**°**	**H**	**°**	**H**	**°**	**H**	**°**	**H**
Flow switch	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Water filter	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Safety valve hydraulic circuit	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	no	no	no	no	no	no
Air vent valve	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Pump	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Expansion vessel	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

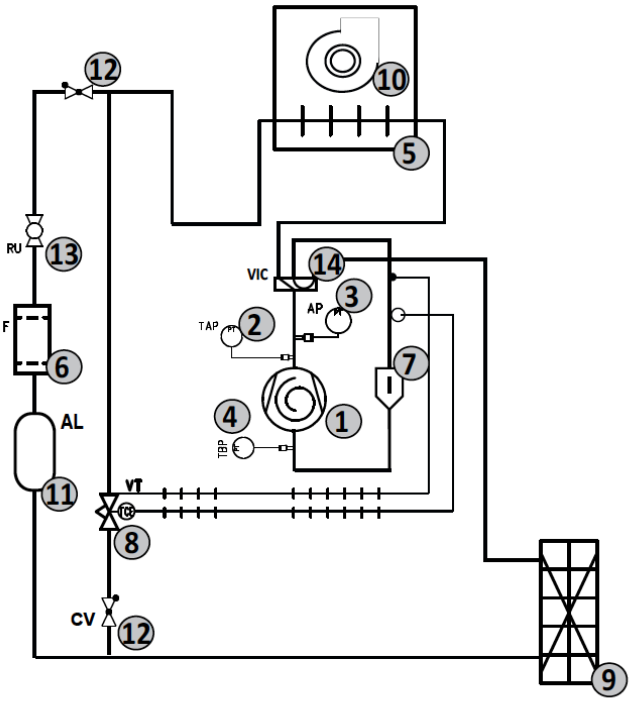
Version with buffer tank and pump "A"	**025**		**030**		**040**	**050**		**070**		**080**	**090**		**100**		**150**		**200**	
Components hydraulic circuit	**°**	**H**	**°**	**H**	**H**	**°**	**H**	**°**	**H**	**H**	**°**	**H**	**°**	**H**	**°**	**H**	**°**	**H**
Flow switch	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Water filter	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Safety valve hydraulic circuit	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Buffer tank	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Pump	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Expansion vessel	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Water drain	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Air vent valve	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

5. MAIN COOLING LAYOUT

CL COOLING ONLY"°"



CL HEAT PUMP "H"



KEY

1	Compressor
2	High pressure transducer
3	High pressure switch
4	Low pressure transducer
5	Source side exchanger
6	Dehydrator filter
7	Thermostatic valve
8	Plate exchanger
9	Pug - fan

KEY

1	Compressor
2	High pressure transducer
3	High pressure switch
4	Low pressure transducer
5	Source side exchanger
6	Dehydrator filter
7	Liquid separator
8	Thermostatic valve
9	Plate exchanger
10	Pug - fan
11	Liquid buffer tank
12	One - way valve
13	Cut - off valve
14	Cycle reversing valve

6. DESCRIPTION OF COMPONENTS

6.1. COOLING CIRCUIT

COMPRESSORS
Rotary scroll hermetic compressors with 2-pole electric motor. All compressors are fitted with guard resistance (supplied as per standard for all models), internal electronic circuit breaker protection with centralised manual rearm.

SYSTEM SIDE HEAT EXCHANGER
Braze welded AISI 316 steel plate exchanger, insulated externally with closed cell neoprene anti-condensation material.

- "H" version: It is fitted with an anti-freeze electric resistance (KR) as per standard.
- "°" / "L" version: anti-freeze electric resistance (KR) as per accessories.

SOURCE SIDE EXCHANGER
Finned pack heat exchanger made with copper pipes and aluminium fins adequately spaced to ensure high efficiency.

CYCLE REVERSING VALVE
(supplied as per standard for "H" version) 4-way cycle reversing valve. Inverts the flow of refrigerant fluid.

LIQUID BUFFER TANK
(supplied as per standard for "H" version) It compensates the difference in volume between finned coil and plate exchanger, retaining excess liquid.

DEHYDRATOR FILTER
Hermetic with ceramic and hygroscopic material cartridge, able to withhold impurities and any traces of humidity present in the cooling circuit.

ONE-WAY VALVE
(supplied as per standard for "H" version) Allow one-way flow of the fluid.

THERMOSTATIC VALVE
Mechanical, with external equaliser positioned at evaporator outlet, modulates the flow of gas to the evaporator, depending on the heat load, in order to ensure a correct heating level of the gas in the intake line.

SOLENOID VALVE
(For version condensing unit"C")
The valve closes when the compressor switches off, blocking the flow of refrigerant gas to the evaporator.

LIQUID INDICATOR LED
Used to check the correct power supply of the laminating element and any presence of humidity in the cooling circuit.

LIQUID SEPARATOR
(supplied as per standard for "H" version) Positioned in the intake line, it protects the compressor from any liquid return.

6.2. STRUCTURE AND FANS STRUCTURE
Support structure made of hot-dipped galvanised steel sheets, painted with polyester powders, built to guarantee easy accessibility for service and maintenance. The perforated bottom of the unit under the coil makes the defrosting water flow easier

FAN UNIT
Plug fans with EC Inverter motors conforming to regulation EU 327/201 and european rules n. 327/2011 dirctive 2009/125/EC
Motor used: Integrated thermal circuit breaker protection IP54

6.3. HYDRAULIC CIRCUIT
WATER FILTER
Fitted with steel filtering mesh that keeps the exchanger from clogging by impurities present in the circuit.

FLOW SWITCH
It has the task of controlling the correct water circulation inside the heat exchanger; if this is not the case, they block the unit.

SAFETY VALVE
(not available for size 100 - 150 - 200)
Calibrated at 6 bar, it has conveyable discharge and intervenes by discharging over-pressure in the event of anomalous pressures.

CONDENSATE TRAY STANDARD
(supplied as per standard for "H" version)

6.3.1. ADDITIONAL COMPONENTS ENVISIONED BY THE CONFIGURATOR

PUMP
Offers a useful head to the system, net of the unit pressure drops.

EXPANSION VESSEL
A membrane with factory-set nitrogen (see technical data for capacity).

SYSTEM BUFFER TANK
Used to decrease the number of compressor peaks and even out the temperature of the water to be sent to the system. Made of steel to reduce heat loss and to eliminate the formation of condensation, insulated by thick polyurethane. It mounts a range of 200 W electric anti-freeze resistances able to ensure a minimum temperature of the stored water of +5°C with minimum outdoor temperature of -20°C. The resistances are activated by the anti-freeze probe inserted in the tank.

AIR VENT VALVE
(supplied as per standard for "A" version, with buffer tank)
Manual, it discharges any air bubbles present in the hydraulic circuit. It is cut-off by a cock in order to facilitate any replacement.

DRAIN COCK
(supplied as per standard for "A" version, with buffer tank)
Allows to drain circuit water.

6.4. SAFETY AND CONTROL COMPONENTS
HIGH PRESSURE SWITCH
With fixed calibration, placed on high pressure side of cooling circuit, inhibits compressor operation if abnormal work pressure occurs.

LOW PRESSURE TRANSDUCER
Positioned on the low pressure side of the cooling circuit, it informs the control board of the work pressure, generating a pre-alarm in the event of anomalous pressure.

HIGH PRESSURE TRANSDUCER
Positioned on the high pressure side of the cooling circuit, it informs the control board of the work pressure, generating a pre-alarm in the event of anomalous pressure.

6.4.1. WATER FEATURES

System: Chiller with plate heat exchanger	
PH	7,5-9
Electric conductivity	100-500µS/cm
Total hardness	4,5-8,5°dH
Temperature	< 65°C
Oxygen content	< 0,1 ppm
Max. glycol amount	50%
Phosphates (PO4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Sulphate ions (SO4)	< 50 ppm
Sulphide ion (S)	none
Ammonium ions (NH4)	none
Silica (SiO2)	< 30ppm

6.5. ELECTRIC CONTROL AND POWER BOARD

ELECTRIC CONTROL BOARD

In compliance with the EN 60204-1/ IEC 204-1
Standards, complete with:
- door lock main isolating switch,
- magnet circuit breakers and contactors for compressors and fans,
- clamps for REMOTE PANEL (accessory),
- spring type control circuit terminal board,
- outdoor electric control board with panel and gaskets,
- electronic controller,
- evaporator pump consent relay,
- all numbered cables.

DOOR-LOCK ISOLATING SWITCH

The electric control board can be accessed by removing the voltage using the door lock isolating switch lever.
The isolating switch is fitted with a safety lock to prevent voltage being applied to the machine accidentally during maintenance operations.

CONTROL KEYBOARD

Allows complete control of the appliance. For a more in-depth description please refer to the user manual.

Electronic modu control
ADJUSTMENT

Temperature control of the outlet water with proportional-integral algorithm: maintains average output temperature at value set

- Self-adapting differential switch: guarantees minimum operating times of the compressor in systems with low water content.
- Intelligent defrosting for pressure reduction: optimisation of the defrosting cycles in order to prevent useless defrosting and to increase the efficiency in heating mode.
- Set-point compensation with external temperature (with external air probe accessory): reduces energy consumption.
- Condensation check based on the pressure rather than on temperature for absolute stability (with DCPX fan revs. adjuster accessory).
- Inverse condensation check for the heat pump operating mode also in summer, production of DHW (with DCPX fans revs. adjuster accessory).
- Pre-alarms with automatic reset: in the case of alarm, a certain number of re-starts are allowed before the definitive block.
- Alarm on the ΔT: to identify wiring errors (reverse rotation) or blocked cycle reversing valve.
- Compressor operating hours count.
- Compressor peak count.
- Historical alarms.
- Autostart after voltage drop.
- Local or remote control.
- Setting the fan speed from the unit mounted panel on the basis of the pressure drop of the ducting.

Display of the start of the unit:

1. Voltage presence
2. Compressor ON/OFF
3. Operating mode (hot/cold)
4. Active alarm

Probes, transducers and parameters display

1. Water outlet
2. Water inlet
3. Coil temperature (heat pumps)
4. Pressing line gas temperature
5. External air temperature (heat pumps, cooling only with DCPX and probe)
6. Flow pressure (heat pumps)
7. Intake pressure (heat pumps)
8. Set-point temperature error (sum of the proportional and integral error)
9. Stand-by times for start-up/switch-off of the compressor
10. Alarms/pre-alarms management
11. Low pressure
12. High pressure (primary alarm: the pressure switch directly blocks supply to compressor)
13. High discharge temperature
14. Anti-freeze
15. Flow switch
16. Alarm on the ΔT:
17. Compressor magnet circuit breaker
18. Probes fault alarm
19. Instantaneous speed of the fans (expressed through 0-10V signal)"

- Pre-alarms with automatic reset with limited number of re-start attempts before blocking.
- ON/OFF from external contact.
- Season change from external contact.

For further information, refer to the user manual.

7. ACCESSORIES

COOLING ONLY

MODU-485BL
RS-485 interface for supervision systems with MODBUS protocol.
MULTICONTROL
Allows the simultaneous control of several chillers or heat pumps (up to 4) fitted with our MODUCONTROL controller and installed in the same hydraulic system.
For complete control the following accessories are available:
SPLW
System water temperature sensor. In most cases the loose supplied sensors for each chiller/heat pump are sufficient. In cases of a common flow/return header this sensor can be used to control the common system supply water temperature for the chillers connected to the header, or it can be used for temperature monitoring.
PR3
Simplified remote panel. Permits control of the basic unit functions (on/off and change of operating mode, diagnostics and alarm reset). Maximum distance permitted is 150 m with screened cable.
AERSET
The AERSET accessory allows the automatic compensation of the operating setpoint of the unit to which it is connected, based on a 0-10V MODBUSinput signal.
Mandatory accessory: AER485 or MODU-485A
CLPA
Galvanised steel plenum to be installed on the condenser coil. **Facilitates duct installations. Not available with accessoires GPCL for size from 025 to 090**
GPCL
Protective grille. Protects the external condenser coil from damage.
VT
Anti-vibration mounts.

Accessories factory fitted only
DRE
Electronic soft starter device reducing starting current by about 30%.
Only for unit 400V/3/50Hz
KR
Anti-freeze electric heater for the plate heat exchanger.

COMPATIBILITY with VMF SYSTEM
For more information on the system refer to the manual.

ACCESSORIES COMPATIBILITY

CL		vers	25	30	50	70	90	100	150	200
MODU-485BL		All	•	•	•	•	•	•	•	•
MULTICONTROL		All	•	•	•	•	•	•	•	•
SPLW		All	•	•	•	•	•	•	•	•
SDHW		All	•	•	•	•	•	•	•	•
PR3		All	•	•	•	•	•	•	•	•
AERSET		All	•	•	•	•	•	•	•	•
CLPA	(1)	All	1	2	2	2	2	3	3	3
GPCL		All	1	2	2	2	2	3	3	3
BDX		P	5	5	5	5	5	-	-	-
		A	5	5	6	6	6	-	-	-
VT		° / P	9	9	9	9	9	15	15	15
		A	15A	15A	15A	15A	15A	15	15	15
Accessories factory fitted only										
DRE	(2)		5	5	5	5	5	5 (x2)	5 (x2)	5 (x2)
KR			2	2	2	2	2	2	2	2

(1) Not available with accessoires GPCL for size from 025 to 090
(2) Only for unit 400V/3/50Hz

8. TECHNICAL DATA

Model "°" Cooling only (12°C-7°C)	U.M.	Version	Power supply	025	030	040	050	070	080	090	100	150	200
Cooling capacity	kW	°	400V/3N/50Hz	5,82	7,11	8,80	12,65	16,28	18,30	20,14	26,16	32,86	40,34
		P/A		5,87	7,18	8,89	12,80	16,47	18,51	20,37	24,34	31,94	38,31
Total input power	kW	°		2,23	2,70	3,62	4,37	5,58	6,78	6,93	8,99	11,51	14,57
		P/A		2,27	2,72	3,61	4,35	5,52	6,71	6,84	9,03	11,69	14,67
Water flow rate	l/h	All		1007	1232	1522	2187	2815	3164	3482	4530	5692	6997
Pressure drops	kPa	°		19,0	26,0	25,0	27,0	29,0	30,0	29,0	45,0	53,0	72,0
Useful head pressure	kPa	P/A		71	62	61	73	66	61	59	83	132	122
ENERGY INDEX													
EER	W/W	°	400V/3N/50Hz	2,61	2,63	2,43	2,89	2,92	2,70	2,91	2,91	2,85	2,77
		P/A		2,59	2,64	2,46	2,94	2,98	2,76	2,98	2,96	2,88	2,82
ESEER	W/W	°		2,87	2,90	2,67	3,18	3,21	2,97	3,20	4,21	4,13	4,01
		P/A		2,85	2,91	2,70	3,23	3,28	3,04	3,28	4,28	4,17	4,08
ELECTRICAL DATA													
Total input current	A	°	230V/1/50Hz	10,14	12,99	16,91	-	-	-	-	-	-	-
			400V/3N/50Hz	4,80	5,10	7,50	8,53	10,23	12,03	12,89	16,72	19,76	25,36
		P/A	230V/1/50Hz	10,91	13,77	17,71	-	-	-	-	-	-	-
			400V/3N/50Hz	5,57	5,88	8,30	9,88	11,64	13,47	14,36	17,85	21,55	27,33
Maximum current (FLA)	A	°	230V/1/50Hz	21,6	24,6	24,7	-	-	-	-	-	-	
			400V/3N/50Hz	11,1	11,6	12,6	13,68	15,38	16,98	20,38	27,36	30,76	40,76
		P/A	230V/1/50Hz	22,57	25,57	25,67	-	-	-	-	-	-	-
			400V/3N/50Hz	12,07	12,57	13,57	15,63	17,33	18,93	22,33	29,32	33,84	43,84
Initial starting current (LRA)	A	°	230V/1/50Hz	66,6	87,6	117,6	-	-	-	-	-	-	-
			400V/3N/50Hz	37,6	40,6	71,6	77,18	77,18	77,18	105,18	90,86	92,56	125,56
		P/A	230V/1/50Hz	67,57	88,57	118,57	-	-	-	-	-	-	-
			400V/3N/50Hz	38,57	41,57	72,57	79,13	79,13	79,13	107,13	92,82	95,64	128,64
FAN STATIC PRESSURE													
Available nominal static pressure	Pa	All	All	50	50	50	80	80	80	80	80	100	100
Available max static pressure	Pa	All	All	300	300	300	400	400	400	400	400	400	400

Data in compliance with the EN 14511-2013

COOLING

Evaporator outlet water temperature ..... 7 °C
Evaporator inlet water temperature..... 12 °C
External air temperature ..... 35 °C

Available fan head (see nominal available fan static pressure)

CL - HEATING PUMP "H"	U.M.	Version	Power supply	025	030	040	050	070	080	090	100	150	200
Cooling capacity	kW	H	400V/3N/50Hz	6,39	8,35	10,34	11,90	13,96	15,49	18,92	23,82	31,21	37,43
		HP/HA	400V/3N/50Hz	6,44	8,42	10,44	12,03	14,12	15,67	19,14	24,34	31,94	38,31
Total Input power	kW	H	400V/3N/50Hz	2,69	3,13	3,89	4,27	4,93	5,73	6,91	8,36	11,17	14,67
		HP/HA	400V/3N/50Hz	2,72	3,14	3,88	4,27	4,91	5,68	6,84	8,43	11,43	14,93
Water flow rate	l/h	H	All	1103	1440	1784	2052	2409	2675	3270	4119	5385	6474
Total pressure drops	kPa	H	All	13	12	13	11	15	17	26	34	22	43
Useful head pressure	kPa	HP/HA	All	76	75	69	92	86	80	64	100	158	145
Heating capacity	kW	H	All	7,92	9,79	12,52	14,47	15,95	18,61	21,06	27,98	34,92	44,00
		HP/HA	All	7,85	9,70	12,39	14,30	15,76	18,39	20,81	27,41	34,14	43,84
Total Input power	kW	H	All	2,39	3,01	3,79	4,22	4,85	5,60	6,71	8,30	10,86	14,75
		HP/HA	All	2,40	3,01	3,76	4,20	4,81	5,52	6,62	8,35	11,11	14,98
Water flow rate	l/h	HP/HA	All	1368	1693	2164	2502	2756	3214	3634	4823	6034	7582
Total pressure drops	kPa	H	All	20	17	19	16	20	24	32	46	28	59
Useful head pressure	kPa	HP/HA	All	68	67	56	84	78	66	53	72	133	103
ENERGY INDEX													
EER	W/W	H	All	2,38	2,67	2,66	2,79	2,83	2,70	2,74	2,85	2,79	2,55
		HP/HA	All	2,37	2,68	2,69	2,82	2,88	2,76	2,80	2,89	2,79	2,57
COP	W/W	H	All	3,31	3,25	3,30	3,43	3,29	3,32	3,14	3,37	3,22	2,98
		HP/HA	All	3,27	3,22	3,30	3,40	3,28	3,33	3,14	3,28	3,07	2,93
ESEER	W/W	H	All	2,61	2,93	2,92	3,07	3,11	2,97	3,01	4,12	4,04	3,70
		HP/HA	All	2,61	2,95	2,96	3,10	3,16	3,03	3,08	4,18	4,04	3,71
PERFORMANCE UNDER AVERAGE CLIMATIC CONDITIONS (AVERAGE)													
Pdesignh	(3)	H		7	8	10	11	13	15	18	22	27	39
SCOP	(3)			3,35	2,60	2,60	2,70	2,60	2,65	3,30	2,68	2,60	3,23
ηs	(3)			131	101	101	105	101	103	129	104	101	126
Efficiency Energy Class	(4)			A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
PERFORMANCE UNDER AVERAGE CLIMATIC CONDITIONS (AVERAGE)													
Pdesignh	(3)	HP/HA		6	8	10	11	12	14	18	21	27	37
SCOP	(3)			2,63	2,60	2,60	2,68	2,58	2,65	3,35	2,60	2,58	3,20
ηs	(3)			102	101	101	104	100	103	131	101	100	125
Efficiency Energy Class	(4)			A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
ELECTRICAL DATA													
Total input current (Cooling mode)	A	H	230V/1/50Hz	12,7	15,4	16	-	-	-	-	-	-	-
			400V/3N/50Hz	5,50	6,30	6,70	7,68	8,38	9,77	13,42	14,34	21,25	26,61
		HP/HA	230V/1/50Hz	13,48	16,20	16,81	-	-	-	-	-	-	-
			400V/3N/50Hz	6,28	7,10	7,51	9,02	9,75	11,16	14,87	15,43	23,00	28,51
Total input current (Heating mode)	A	H	230V/1/50Hz	11,8	14,3	15,66	-	-	-	-	-	-	-
			400V/3N/50Hz	5,50	6,20	6,50	7,64	8,18	9,34	12,71	14,34	19,45	26,49
		HP/HA	230V/1/50Hz	12,59	15,11	16,49	-	-	-	-	-	-	-
			400V/3N/50Hz	6,29	7,01	7,33	9,02	9,58	10,78	14,19	15,50	21,29	28,53
Maximum current (FLA)	A	H	230V/1/50Hz	18,80	23,70	24,00	-	-	-	-	-	-	-
			400V/3N/50Hz	11,01	11,96	11,92	13,50	14,68	15,15	20,38	27,00	30,30	40,76
		HP/HA	230V/1/50Hz	19,77	24,67	24,97	-	-	-	-	-	-	-
			400V/3N/50Hz	11,98	12,93	12,89	15,45	16,63	17,10	22,33	28,96	33,38	43,84
Initial starting current (LRA)	A	H	230V/1/50Hz	86,10	95,51	96,14	-	-	-	-	-	-	-
			400V/3N/50Hz	44,60	44,60	57,18	64,18	74,18	94,18	105,18	77,68	109,33	125,56
		HP/HA	230V/1/50Hz	87,07	96,48	97,11	-	-	-	-	-	-	-
			400V/3N/50Hz	45,57	45,57	58,15	66,13	76,13	96,13	107,13	79,64	112,41	128,64
FAN STATIC PRESSURE													
Available nominal static pressure	Pa	All	All	50	50	50	80	80	80	80	80	100	100
Available max static pressure	Pa	All	All	300	300	300	400	400	400	400	400	400	400

Data in compliance with the EN 14511-2013

COOLING
Evaporator outlet water temperature ..... 7 °C
Evaporator inlet water temperature..... 12 °C
External air temperature ..... 35 °C

HEATING
Condenser inlet water temperature..... 40 °C
Condenser outlet water temperatur ..... 45 °C
External air temperature .....7°C bs / 6°C bu

Available fan head (see nominal available fan static pressure)

CL vers. Condensing Unit											
Cooling Only - without pump											
Size		**CL 025**	**CL 030**	**CL 040**	**CL 050**	**CL 070**	**CL 080**	**CL 090**	**CL 100**	**CL 150**	**CL 200**
Cooling capacity	kW	5,5	6,8	8,4	12,3	15,7	17,6	19,3	25,2	31,7	39,1
Total Input power	kW	2,2	2,7	3,6	4,5	5,7	6,9	7,1	9,8	11,7	15,5
Power Supply 230V/1/50Hz	A	10,05	13,10	17,00	-	-	-	-	-	-	-
Power Supply 400V/3N/50Hz	A	4,77	5,14	7,55	8,59	10,42	12,24	13,09	18,27	20,00	26,99
Cooling Only Low Noise - without pump											
Size		**CL 050 L**	**CL 070 L**	**CL 080 L**	**CL 090 L**	**CL 100 L**	**CL 150 L**	**CL 200 L**	**CL 100 L**	**CL 150 L**	**CL 200 L**
Cooling capacity	kW	5,4	6,6	8,1	11,8	15,1	16,9	17,8	23,2	30,4	36,1
Total Input power	kW	2,2	2,7	3,6	4,5	5,7	6,9	7,6	10,6	11,7	15,5
Power Supply 230V/1/50Hz	A	9,85	12,90	16,90	-	-	-	-	-	-	-
Power Supply 400V/3N/50Hz	A	4,28	4,74	6,94	9,04	11,48	12,86	13,86	20,26	20,44	27,77

DATA REFERENCED TO
Air External Temperature 35°C - Evaporator Temperature 5°c

CL vers. Desuperheater											
Cooling Only - without pump											
Size		**CL 025**	**CL 030**	**CL 040**	**CL 050**	**CL 070**	**CL 080**	**CL 090**	**CL 100**	**CL 150**	**CL 200**
Cooling capacity	kW	-	-	-	12,7	16,4	-	20,3	26,4	33,1	40,7
Total Input power	kW	-	-	-	4,4	5,6	-	7,0	9,0	11,6	14,5
Pcond	kW	-	-	-	16,9	21,7	-	26,9	34,9	44,2	54,6
Potenza desurr	kW	-	-	-	5,2	6,7	-	8,3	13,9	17,4	18,2
% recuperata	%	-	-	-	31%	31%	-	31%	40%	39%	33%
Water Flow Rate		-	-	-	890	1139	-	1409	2371	2957	3102
Δp desurr	kPa	-	-	-	6,5	10,7	-	10,6	14,7	22,8	25,1

DATA REFERENCED TO:
External Air Temperature 35°C - Evaporator Water Temperature In/Out 12/7 °C - Desuperheater Water Temperature 45/50 °C
Desuperheater not available in Heating Pump

GENERAL DATA													
	U.M.	Version	Power supply	025	030	040 *	050	070	080 *	090	100	150	200
UNIT PROTECTION RATING													
IP			All				24	24	24	24	24	24	24
CHARGE (The declared data can be amended any time Aermec considers it necessary)													
Refrigerant R410A	Kg	°	All	1,500	2,700	-	4,000	4,000	-	4,400	5,500	7,500	7,500
		H		2,680	2,680	4,270	5,620	5,620	5,620	5,735	8,300	8,000	7,500
Oil	Kg	°	All	n.d	n.d	-	1,7	1,7	-	1,8	1,7	1,7	n.d
		H		n.d	n.d	n.d	0,9	1,2	1,2	1,8	2 x 1,9	2 x 1,7	n.d
COMPRESSOR (SCROLL)													
n° compressor/ circuit	n°/n°	All	All	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	2 / 1	2 / 1	2 / 1
Partalisation	%			0 - 100	0 - 100	0 - 100	0 - 100	0 - 100	0 - 100	0 - 100	0-50-100	0-50-100	0-50-100
SYSTEM SIDE HEAT EXCHANGER (Plates)													
Quantity	n°	All	All	1	1	1	1	1	1	1	1	1	1
Water content	dm3	°	All	0,4	0,4	-	0,7	0,8	-	1,1	1,9	2,5	2,5
		H		n.d	n.d	n.d	1,1	1,1	1,1	1,1	3,8	4,8	4,8
Hydraulic connections (grooved joints)	Ø	All	All	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼	1"¼
PLUG FANS WITH EC INVERTER MOTORS													
Quantity	n°	All	All	1	1	1	1	1	1	1	2	2	2
Fan speed (set default)	V	°	400V/3N/50Hz	6,0	6,0	-	5,0	5,0	-	5,5	4,5	5,4	5,4
		H		6,0	6,0	5,0	5,0	5,0	5,0	5,5	4,5	5,4	6,5
Air flow rate	m3/h	°	400V/3N/50Hz	4000	4000	-	6500	6500	-	7500	10000	12000	12000
		H		4000	4000	6500	6500	6500	6500	7500	10000	12000	16000
Input power	kW	°	400V/3N/50Hz	0,34	0,34	-	0,62	0,62	-	0,83	0,95	1,76	1,76
		H		0,34	0,34	0,62	0,62	0,62	0,62	0,83	0,95	1,76	2,72
Input current	A	°	400V/3N/50Hz	1,5	1,5	-	1,1	1,1	-	1,4	1,3	1,6	1,6
		H		1,5	1,5	1,1	1,1	1,1	1,1	1,4	1,3	1,6	3,0
HYDRONIC KIT													
Buffer tank	l	HA	All	50	100	100	100	100	100	100	100	100	100
Electric heater	n°/W	HA	All	1 / 200	1 / 200	1 / 200	1 / 200	1 / 200	1 / 200	1 / 200	1 / 200	1 / 200	1 / 200
EXPANSION VESSEL													
n°/capacity	n°/l	HP-HA	All	1 / 2	1 / 5	1 / 5	1 / 5	1 / 5	1 / 5	1 / 5	1 / 8	1 / 8	1 / 8
Calibration	bar	HP-HA	All	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Safety valve													
Quantity/Calibration	n°/bar	H-HP	All	1 / 6	1 / 6	1 / 6	1 / 6	1 / 6	1 / 6	1 / 6	1 / 6	1 / 6	1 / 6
SOUND DATA													
Unit radiated sound power level	dB(A)	°	400V/3N/50Hz	n.d.	n.d.	-	73,0	73,0	-	75,7	74,4	78,7	78,7
		H		n.d.	n.d.	73,0	73,0	73,0	73,0	75,7	74,4	78,7	80,4
Discharge sound power level	dB(A)	°	400V/3N/50Hz	n.d.	n.d.	-	77,9	77,9	-	80,9	78,0	83,4	83,4
		H		n.d.	n.d.	77,9	77,9	77,9	77,9	80,9	78,0	83,4	85,1
Unit radiated sound pressure level	dB(A)	°	400V/3N/50Hz	n.d.	n.d.	-	41,0	41,0	-	43,7	42,4	46,7	46,7
		H		n.d.	n.d.	41,0	41,0	41,0	41,0	43,7	42,4	46,7	48,4
DIMENSIONIS (WITHOUT PACKAGING) "°" COOLING ONLY													
High	mm	All	400V/3N/50Hz	1028	1281	1281	1281	1281	1281	1281	1674	1674	1674
Width	mm	° - P		1005	1006	1006	1160	1160	1160	1160	1897	1897	1897
	mm	A		1366	1458	1458	1610	1610	1610	1610	1897	1897	1897
Depth	mm	All		702	754	754	798	798	798	798	801	801	801
Empty weight	kg	°		127	160	-	208	210	-	212	469	471	475
	kg	P		133	166	166	217	225	225	221	482	487	492
	kg	A		157	201	201	252	260	260	256	532	537	542
DIMENSIONS (WITHOUT PACKAGING) "H" HEAT PUMP													
High	mm	All	400V/3N/50Hz	1028	1028	1281	1281	1281	1281	1281	1674	1674	1674
Width	mm	H - HP		1005	1005	1160	1160	1160	1160	1160	1897	1897	1897
	mm	HA		1366	1366	1610	1610	1610	1610	1610	1897	1897	1897
Depth	mm	All		702	702	798	798	798	798	798	801	801	801
Empty weight	kg	H		142	142	229	229	240	240	234	504	527	515
	kg	HP		148	148	239	239	250	250	243	517	543	531
	kg	HA		172	172	274	274	284	284	279	567	593	581

* not possible with cooling only sizes 040 and 080

SOUND POWER

Aermec determines sound power values on the basis of measurements made in compliance with the ISO 9614-2 Standard, in agreement with that requested by Eurovent certification.

SOUND PRESSURE

Sound pressure in free field conditions on reflective surface (directivity factor Q=2) at 10 mt from the external surface of unit, in compliance with ISO 3744 regulations.

Power supply 400V.

9. OPERATIONAL LIMITS

In standard configuration, the appliances are not suitable for installation in salty environments. For operating limits, please refer to the diagram, valid for Δt = 5°C.

Maximum and minimum limits for water flow rates at the exchanger are indicated by the curves in the pressure drop diagrams.

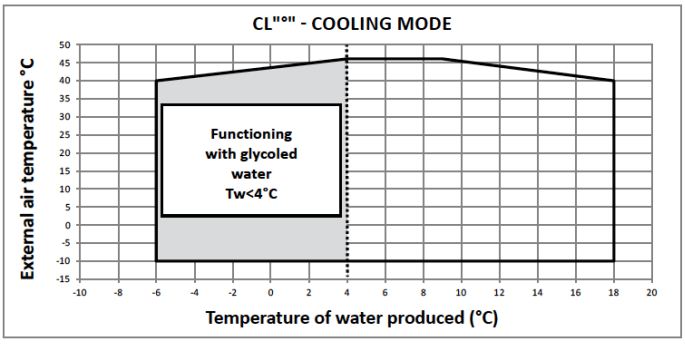
ATTENTION
Whenever the unit is to be operated outside of the operating limits, we recommend you contact our commercial after-sales service

NOTE
In the cooling mode the unit can be started up with ambient air at 46°C and inlet water at 35°C
In the heating mode the unit can be started up with ambient air at -15°C and inlet water at 20°C
The unit can operate at these conditions only for the time which is necessary to achieve the right temperature in the plant. To reduce this time it is recommended to install a 3-way valve that allows to bypass the water flow in the plant until the achievement of the conditions that allow the unit to work within the proper operating limits

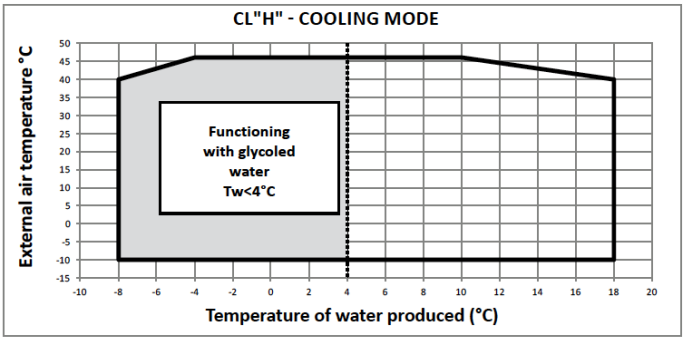
ATTENTION
When the unit is installed in particularly windy areas, we recommend installing wind barriers if wind speed exceeds 2.5 m/s"

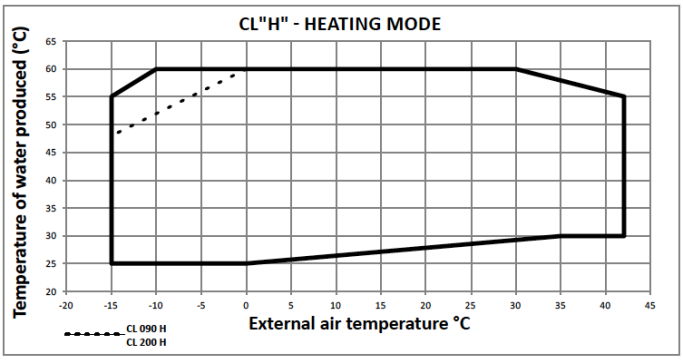
ATTENTION
The units with integrated storage tank are not suitable for the production of DHW.

9.2. OPERATING LIMITS "°" COOLING MODE



9.1. OPERATING LIMITS "°" HEATING PUMP





9.3. DESIGN DATA

REFRIGERANT SIDE	U.M.	High pressure side	Low pressure side
Maximum pressure allowed	bar	22	16,5
Maximum temperature allowed	°C	125	55
Minimum temperature allowed	°C	10	-10

WATER SIDE	U.M.	Condenser	Evaporatorator
Maximum pressure allowed	bar	16	10,5

10. YIELDS AND ABSORPTION DIFFERENT THAN NOMINAL

CL°

025																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	6,15	6,28	5,78	5,45	4,55	6,62	6,66	6,14	5,82	4,88	7,34	7,23	6,68	6,32	-	8,52	8,18	7,57	7,19	0,00	9,23	8,75	8,11	7,72	-
Pe	1,84	1,85	2,02	2,21	2,53	1,86	1,88	2,05	2,23	2,56	1,90	1,92	2,09	2,27	-	1,97	1,99	2,16	2,34	0,00	2,01	2,03	2,20	2,38	-
EER	3,35	3,39	2,86	2,47	1,80	3,56	3,54	3,00	2,61	1,91	3,86	3,77	3,20	2,78	-	4,33	4,12	3,51	3,07	0,00	4,59	4,31	3,69	3,24	-
Qc	1062	1085	998	941	784	1146	1153	1062	1007	843	1273	1254	1157	1095	-	1483	1424	1317	1250	0,00	1610	1526	1412	1343	-
ΔP	21	22	19	17	11	25	25	21	19	13	30	29	25	22	-	41	38	32	29	-	48	44	37	34	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	50	50	-	50	50	50	50	-

030																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	7,51	7,67	7,06	6,66	5,56	8,09	8,14	7,50	7,12	5,97	8,96	8,83	8,16	7,73	-	10,41	9,99	9,25	8,79	-	11,27	10,69	9,90	9,43	-
Pe	2,28	2,26	2,46	2,67	3,07	2,32	2,30	2,49	2,70	3,10	2,37	2,35	2,54	2,75	-	2,46	2,44	2,63	2,84	-	2,51	2,49	2,69	2,89	-
EER	3,29	3,39	2,88	2,50	1,81	3,49	3,54	3,01	2,63	1,92	3,79	3,76	3,21	2,81	-	4,24	4,10	3,52	3,10	-	4,49	4,29	3,69	3,26	-
Qc	1300	1328	1222	1151	960	1403	1411	1300	1232	1032	1557	1535	1416	1340	-	1815	1742	1611	1530	-	1970	1867	1728	1644	-
ΔP	29	30	26	23	16	34	34	29	26	18	41	40	34	31	-	56	52	44	40	-	66	60	51	46	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	50	50	-	50	50	50	50	-

050																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	13,35	13,64	12,55	11,83	9,88	14,38	14,47	13,33	12,65	10,61	15,93	15,71	14,50	13,73	-	18,51	17,77	16,45	15,63	-	20,05	19,01	17,61	16,76	-
Pe	3,71	3,64	3,96	4,31	4,97	3,76	3,70	4,02	4,37	5,02	3,84	3,78	4,10	4,45	-	3,98	3,92	4,24	4,59	-	4,07	4,01	4,33	4,68	-
EER	3,60	3,74	3,17	2,74	1,99	3,82	3,91	3,32	2,89	2,11	4,15	4,16	3,54	3,09	-	4,65	4,53	3,88	3,40	-	4,93	4,74	4,07	3,58	-
Qc	2308	2358	2170	2044	1705	2491	2505	2307	2187	1832	2765	2725	2514	2380	-	3223	3093	2861	2716	-	3498	3314	3069	2919	-
ΔP	30	31	26	24	16	35	35	30	27	19	43	42	36	32	-	58	54	46	41	-	69	62	53	48	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	80	80	-

070																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	17,18	17,55	16,16	15,23	12,72	18,51	18,62	17,16	16,28	13,65	20,51	20,22	18,67	17,68	-	23,82	22,88	21,17	20,12	-	25,80	24,47	22,67	21,58	-
Pe	4,86	4,69	5,09	5,50	6,36	4,92	4,76	5,16	5,58	6,43	5,03	4,87	5,27	5,68	-	5,21	5,05	5,45	5,86	-	5,32	5,17	5,56	5,98	-
EER	3,54	3,74	3,18	2,77	2,00	3,76	3,91	3,33	2,92	2,12	4,08	4,15	3,55	3,11	-	4,58	4,53	3,89	3,43	-	4,85	4,73	4,08	3,61	-
Qc	2970	3035	2792	2630	2194	3205	3223	2969	2815	2357	3558	3507	3236	3062	-	4147	3980	3681	3495	-	4501	4265	3949	3756	-
ΔP	32	34	28	25	18	37	38	32	29	20	46	45	38	34	-	63	58	49	45	-	74	66	57	51	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	80	80	-

090																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	21,26	21,72	19,99	18,85	15,73	22,91	23,04	21,24	20,14	16,89	25,38	25,02	23,10	21,87	-	29,49	28,31	26,21	24,90	-	31,94	30,28	28,06	26,70	-
Pe	5,96	5,80	6,30	6,83	7,89	6,04	5,89	6,39	6,92	7,98	6,17	6,02	6,52	7,05	-	6,39	6,24	6,74	7,27	-	6,52	6,38	6,88	7,41	-
EER	3,57	3,74	3,17	2,76	1,99	3,79	3,91	3,33	2,91	2,12	4,12	4,16	3,55	3,10	-	4,62	4,54	3,89	3,42	-	4,90	4,75	4,08	3,61	-
Qc	3674	3754	3453	3254	2714	3964	3987	3673	3482	2916	4401	4338	4003	3788	-	5130	4923	4553	4324	-	5568	5276	4885	4646	-
ΔP	32	34	28	25	18	37	38	32	29	20	46	45	38	34	-	63	58	49	45	-	74	66	57	51	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	80	80	-

100																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	27,62	28,21	25,97	24,48	20,45	29,76	29,93	27,59	26,17	21,95	32,96	32,49	30,01	28,41	-	38,27	36,76	34,02	32,33	-	41,45	39,31	36,43	34,67	-
Pe	7,87	7,59	8,22	8,87	10,25	7,99	7,71	8,33	8,99	10,37	8,16	7,89	8,51	9,17	-	8,47	8,20	8,82	9,47	-	8,67	8,39	9,01	9,66	-
EER	3,51	3,71	3,16	2,76	1,99	3,73	3,88	3,31	2,91	2,12	4,04	4,12	3,52	3,10	-	4,52	4,48	3,86	3,41	-	4,78	4,68	4,04	3,59	-
Qc	4781	4884	4493	4233	3531	5159	5188	4779	4530	3794	5726	5644	5208	4929	-	6675	6406	5925	5626	-	7245	6865	6356	6045	-
ΔP	50	52	44	39	27	58	59	50	45	31	72	70	59	53	-	97	90	77	69	-	115	103	88	80	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	80	80	-

150																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	34,69	35,43	32,62	30,75	25,68	37,37	37,58	34,65	32,86	27,57	41,39	40,81	37,69	35,68	-	48,06	46,16	42,73	40,60	-	52,05	49,36	45,75	43,54	-
Pe	9,65	9,56	10,41	11,36	13,04	9,79	9,71	10,55	11,51	13,19	10,01	9,93	10,78	11,72	-	10,40	10,32	11,16	12,11	-	10,64	10,56	11,40	12,34	-
EER	3,59	3,71	3,13	2,71	1,97	3,82	3,87	3,28	2,86	2,09	4,13	4,11	3,50	3,04	-	4,62	4,47	3,83	3,35	-	4,89	4,67	4,01	3,53	-
Qc	6007	6137	5646	5319	4436	6481	6518	6005	5692	4767	7195	7092	6544	6193	-	8386	8049	7444	7068	-	9103	8625	7986	7595	-
ΔP	59	61	52	46	32	68	69	59	53	37	84	82	70	63	-	115	106	90	81	-	135	121	104	94	-
Pa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	-	100	100	100	100	-

200																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	42,58	43,50	40,05	37,76	31,54	45,87	46,13	42,54	40,35	33,85	50,80	50,08	46,26	43,80	-	58,97	56,63	52,44	49,83	-	63,85	60,55	56,13	53,43	-
Pe	12,57	12,24	13,26	14,36	16,54	12,76	12,44	13,46	14,56	16,73	13,05	12,74	13,75	14,85	-	13,58	13,26	14,27	15,36	-	13,91	13,58	14,58	15,67	-
EER	3,39	3,55	3,02	2,63	1,91	3,60	3,71	3,16	2,77	2,02	3,89	3,93	3,36	2,95	-	4,34	4,27	3,68	3,24	-	4,59	4,46	3,85	3,41	-
Qc	7384	7544	6941	6539	5454	7968	8013	7382	6997	5861	8845	8718	8044	7613	-	10309	9895	9151	8689	-	11190	10603	9817	9337	-
ΔP	80	83	71	63	44	93	94	80	72	50	115	111	95	85	-	156	144	123	111	-	184	165	141	128	-
Pa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	-	100	100	100	100	-

Data in compliance with the EN 14511-2013

TAe	External air temperature (°C)	Pc	Cooling capacity (kW)	ΔP	Pressure drop to the exchanger (kPa)
TWc	Water temperature at the condenser (°C)	Pe	Input power (kW)	-	Conditions outside the operating range
Glycol	Ethylene glycol percentage (%)	EER	Efficiency	Pa	Fan - Nominal pressure static available
		Qc	Water flow rate (l/h)		

CL° P

025																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	6,26	6,40	5,89	5,55	4,64	6,75	6,79	6,26	5,94	4,98	7,47	7,37	6,81	6,44	-	8,68	8,33	7,72	7,33	-	9,39	8,91	8,26	7,86	-
Pe	1,76	1,77	1,94	2,14	2,47	1,77	1,79	1,96	2,16	2,50	1,80	1,82	2,00	2,19	-	1,86	1,88	2,05	2,24	-	1,89	1,92	2,09	2,28	-
EER	3,57	3,62	3,03	2,60	1,87	3,80	3,79	3,19	2,75	1,99	4,15	4,05	3,41	2,95	-	4,68	4,44	3,76	3,27	-	4,97	4,65	3,95	3,45	-
Qc	1062	1085	998	941	784	1146	1153	1062	1007	843	1273	1254	1157	1095	-	1483	1424	1317	1250	-	1610	1526	1412	1343	-
Pu	69	68	71	73	79	65	64	69	71	77	58	59	64	67	-	45	49	56	59	-	36	42	50	54	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	50	50	-	50	50	50	50	-

030																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	7,65	7,81	7,19	6,78	5,67	8,24	8,28	7,64	7,25	6,08	9,12	8,99	8,31	7,87	-	10,57	10,16	9,41	8,94	-	11,43	10,85	10,07	9,59	-
Pe	2,19	2,16	2,36	2,58	3,00	2,21	2,19	2,39	2,61	3,02	2,25	2,24	2,44	2,65	-	2,33	2,32	2,51	2,73	-	2,40	2,37	2,57	2,78	-
EER	3,50	3,61	3,04	2,63	1,89	3,73	3,78	3,19	2,78	2,01	4,05	4,02	3,41	2,97	-	4,53	4,38	3,74	3,28	-	4,77	4,57	3,93	3,45	-
Qc	1300	1328	1222	1151	960	1403	1411	1300	1232	1340	1557	1535	1416	1340	-	1815	1742	1611	1530	-	1970	1867	1728	1644	-
Pu	58	57	62	66	74	52	52	58	62	71	42	44	51	56	-	23	29	39	44	-	10	19	30	36	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	50	50	-	50	50	50	50	-

050																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	13,55	13,84	12,74	12,01	10,03	14,596	14,679	13,535	12,838	10,768	16,16	15,93	14,72	13,94	-	18,75	18,01	16,68	15,85	-	20,28	19,24	17,85	17,00	-
Pe	3,59	3,53	3,86	4,22	4,89	3,636	3,57	3,9	4,261	4,939	3,70	3,64	3,97	4,33	-	3,84	3,78	4,10	4,46	-	3,93	3,86	4,18	4,53	-
EER	3,77	3,93	3,31	2,85	2,05	4,01	4,11	3,47	3,01	2,18	4,37	4,37	3,71	3,22	-	4,89	4,77	4,07	3,56	-	5,16	4,98	4,27	3,75	-
Qc	2308	2358	2170	2044	1705	2491	2505	2307	2187	2380	2765	2725	2514	2380	-	3223	3093	2861	2716	-	3498	3314	3069	2919	-
Pu	69	67	73	77	86	61,81	61,27	68,59	72,63	82,77	50	52	61	66	-	28	35	46	53	-	13	24	36	43	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	80	80	-

070																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	17,42	17,79	16,39	15,45	12,90	18,76	18,87	17,40	16,51	13,85	20,77	20,48	18,92	17,92	-	24,07	23,13	21,43	20,37	-	-	24,70	22,93	21,84	-
Pe	4,71	4,54	4,95	5,37	6,26	4,77	4,61	5,01	5,44	6,32	4,86	4,71	5,11	5,53	-	5,06	4,89	5,28	5,70	-	-	5,03	5,40	5,81	-
EER	3,70	3,92	3,31	2,88	2,06	3,94	4,10	3,47	3,04	2,19	4,27	4,35	3,70	3,24	-	4,76	4,73	4,06	3,58	-	-	4,91	4,25	3,76	-
Qc	2970	3035	2792	2630	2194	3205	3223	2969	2815	3062	3558	3507	3236	3062	-	4147	3980	3681	3495	-	-	4265	3949	3756	-
Pu	61	59	67	72	83	53	52	61	66	79	39	41	51	58	-	12	20	33	41	-	-	7	22	30	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	-	80	80	80	-

090																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	21,53	21,99	20,25	19,09	15,95	23,18	23,31	21,50	20,40	17,12	25,65	25,29	23,38	22,14	-	-	28,56	26,47	25,17	-	-	-	28,31	26,97	-
Pe	5,79	5,63	6,14	6,68	7,77	5,87	5,71	6,22	6,76	7,84	5,99	5,84	6,34	6,87	-	-	6,09	6,57	7,09	-	-	-	6,72	7,24	-
EER	3,72	3,91	3,30	2,86	2,05	3,95	4,08	3,46	3,02	2,18	4,28	4,33	3,69	3,22	-	-	4,69	4,03	3,55	-	-	-	4,21	3,73	-
Qc	3674	3754	3453	3254	2714	3964	3987	3673	3482	3788	4401	4338	4003	3788	-	-	4923	4553	4324	-	-	-	4885	4646	-
Pu	52	50	59	65	80	43	42	52	59	75	27	29	41	49	-	-	7	21	30	-	-	-	8	18	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	-	80	80	80	-	-	-	80	80	-

100																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	28,17	28,77	26,52	25,02	0,00	30,32	30,48	28,14	26,71	0,00	33,49	33,03	30,56	28,97	-	-	-	34,54	32,87	-	-	-	0,00	35,16	-
Pe	7,94	7,66	8,27	8,93	0,00	8,07	7,79	8,40	9,05	0,00	8,29	8,01	8,60	9,23	-	-	-	8,98	9,59	-	-	-	0,00	9,85	-
EER	3,55	3,75	3,21	2,80	0,00	3,76	3,91	3,35	2,95	0,00	4,04	4,12	3,56	3,14	-	-	-	3,84	3,43	-	-	-	0,00	3,57	-
Qc	4781	4884	4493	4233	0	5159	5188	4779	4530	4929	5726	5644	5208	4929	-	-	-	5925	5626	-	-	-	0	6045	-
Pu	73	68	84	95	0	56	54	73	83	0	28	32	53	66	-	-	-	18	33	-	-	-	0	11	-
Pa	80	80	80	80	0	80	80	80	80	0	80	80	80	80	-	-	-	80	80	-	-	-	0	80	-

150																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	35,51	36,26	33,43	31,54	26,41	38,20	38,41	35,47	33,68	28,32	42,20	41,62	38,52	36,51	-	-	46,82	43,52	41,41	-	-	-	46,43	44,31	-
Pe	9,87	9,79	10,61	11,55	13,23	10,04	9,96	10,77	11,71	13,38	10,34	10,25	11,03	11,95	-	-	10,86	11,53	12,42	-	-	-	11,91	12,74	-
EER	3,60	3,70	3,15	2,73	2,00	3,80	3,86	3,29	2,87	2,12	4,08	4,06	3,49	3,05	-	-	4,31	3,77	3,34	-	-	-	3,90	3,48	-
Qc	6007	6137	5646	5319	4436	6481	6518	6005	5692	6193	7195	7092	6544	6193	-	-	8049	7444	7068	-	-	-	7986	7595	-
Pu	117	111	134	147	180	95	93	117	132	169	57	62	91	109	-	-	6	43	64	-	-	-	10	34	-
Pa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	-	100	100	100	-	-	-	100	100	-

200																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	43,58	44,50	41,03	38,71	32,41	46,88	47,14	43,53	41,33	34,75	51,77	51,06	47,26	44,81	-	-	-	53,38	50,81	-	-	-	-	-	-
Pe	12,72	12,40	13,40	14,49	16,68	12,94	12,63	13,61	14,70	16,86	13,34	13,00	13,95	15,01	-	-	-	14,60	15,62	-	-	-	-	-	-
EER	3,43	3,59	3,06	2,67	1,94	3,62	3,73	3,20	2,81	2,06	3,88	3,93	3,39	2,98	-	-	-	3,65	3,25	-	-	-	-	-	-
Qc	7384	7544	6941	6539	5454	7968	8013	7382	6997	7613	8845	8718	8044	7613	-	-	-	9151	8689	-	-	-	-	-	-
Pu	107	100	124	139	175	82	80	107	122	162	41	48	79	97	-	-	-	26	49	-	-	-	-	-	-
Pa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	-	-	100	100	-	-	-	-	-	-

Data in compliance with the EN 14511-2013

TAe	External air temperature (°C)
TWc	Water temperature at the condenser (°C)
Glycol	Ethylene glycol percentage (%)
Pc	Cooling capacity (kW)
Pe	Input power (kW)
EER	Efficiency
Qc	Water flow rate (l/h)
ΔP	Pressure drop to the exchanger (kPa)
-	Conditions outside the operating range
Pa	Fan - Nominal pressure static available

CL H

025																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	6,74	6,89	6,34	5,98	4,99	7,27	7,31	6,74	6,39	5,36	8,05	7,94	7,33	6,94	5,91	9,36	8,99	8,32	7,90	-	10,14	9,61	8,91	8,47	-
Pe	2,27	2,25	2,45	2,66	3,07	2,30	2,28	2,48	2,69	3,10	2,34	2,32	2,52	2,73	3,15	2,41	2,40	2,60	2,81	-	2,46	2,45	2,65	2,86	-
EER	2,97	3,07	2,59	2,25	1,63	3,17	3,21	2,72	2,37	1,73	3,44	3,42	2,91	2,54	1,88	3,88	3,75	3,20	2,81	-	4,12	3,93	3,36	2,96	-
Qc	1164	1189	1094	1030	859	1256	1263	1163	1103	923	1394	1374	1268	1200	1020,00	1625	1560	1442	1369	-	1764	1671	1547	1472	-
ΔP	14	15	13	11	8	17	17	14	13	9	21	20	17	15	11	28	26	22	20	-	33	30	26	23	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	50	50	-

030																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	8,81	9,00	8,28	7,81	6,52	9,50	9,55	8,80	8,35	7,00	10,52	10,37	9,58	9,07	8	12,23	11,74	10,86	10,32	-	-	12,56	11,64	11,07	-
Pe	2,69	2,63	2,85	3,09	3,58	2,72	2,66	2,89	3,13	3,61	2,77	2,71	2,95	3,18	4	2,85	2,81	3,04	3,27	-	-	2,86	3,09	3,33	-
EER	3,28	3,43	2,90	2,53	1,82	3,49	3,59	3,05	2,67	1,94	3,80	3,82	3,25	2,85	2	4,29	4,18	3,58	3,15	-	-	4,39	3,76	3,32	-
Qc	1519	1552	1428	1345	1122	1639	1649	1519	1440	1206	1820	1794	1655	1566	1332	2121	2036	1883	1788	-	-	2182	2020	1921	-
ΔP	13	14	12	10	7	16	16	13	12	8	19	19	16	14	10	26	24	20	18	-	-	27	24	21	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	-	50	50	50	-

040																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	10,92	11,15	10,26	9,67	8,07	11,77	11,83	10,90	10,34	8,67	13,04	12,85	11,86	11,23	10	15,15	14,55	13,46	12,79	-	-	15,56	14,42	13,72	-
Pe	3,25	3,24	3,54	3,86	4,45	3,29	3,29	3,58	3,90	4,49	3,35	3,35	3,65	3,97	5	3,45	3,46	3,76	4,08	-	-	3,53	3,83	4,15	-
EER	3,36	3,44	2,90	2,51	1,82	3,58	3,60	3,04	2,65	1,93	3,89	3,84	3,25	2,83	2	4,39	4,20	3,58	3,13	-	-	4,41	3,77	3,31	-
Qc	1882	1923	1769	1667	1390	2031	2043	1882	1784	1494	2255	2222	2050	1940	1650	2628	2522	2333	2215	-	-	2703	2503	2380	-
ΔP	14	15	13	11	8	17	17	14	13	9	21	20	17	15	11	28	26	22	20	-	-	30	26	23	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	-	50	50	50	-

050																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	12,57	12,84	11,82	11,14	9,30	13,55	13,63	12,56	11,91	9,98	15,01	14,80	13,66	12,93	11	17,45	16,76	15,50	14,73	-	18,91	17,93	16,61	15,80	-
Pe	3,60	3,54	3,86	4,22	4,87	3,65	3,59	3,91	4,27	4,92	3,71	3,66	3,98	4,34	5	3,82	3,78	4,11	4,46	-	3,89	3,85	4,18	4,54	-
EER	3,49	3,63	3,06	2,64	1,91	3,72	3,80	3,21	2,79	2,03	4,04	4,05	3,43	2,98	2	4,56	4,43	3,78	3,30	-	4,86	4,65	3,97	3,48	-
Qc	2166	2213	2036	1918	1600	2337	2350	2165	2052	1719	2594	2557	2360	2233	1898	3024	2902	2684	2549	-	3282	3110	2880	2739	-
ΔP	12	13	11	10	7	14	14	12	11	8	18	17	14	13	9	24	22	19	17	-	28	25	22	20	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-

070																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	14,74	15,06	13,86	13,06	10,91	15,89	15,98	14,73	13,97	11,71	14,74	15,06	13,86	13,06	11	20,47	19,65	18,18	17,27	-	22,17	21,02	19,47	18,53	-
Pe	4,24	4,12	4,49	4,87	5,64	4,29	4,18	4,54	4,93	5,70	4,24	4,12	4,49	4,87	6	4,51	4,41	4,78	5,17	-	4,59	4,50	4,87	5,26	-
EER	3,48	3,65	3,09	2,68	1,93	3,70	3,82	3,24	2,83	2,05	3,48	3,65	3,09	2,68	2	4,54	4,46	3,81	3,34	-	4,83	4,67	4,00	3,52	-
Qc	2542	2598	2390	2251	1878	2743	2759	2542	2409	2018	2542	2598	2390	2251	1878	3550	3407	3151	2992	-	3853	3651	3380	3215	-
ΔP	17	17	15	13	9	19	20	17	15	10	17	17	15	13	9	32	30	26	23	-	38	34	29	27	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-

080																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	16,36	16,72	15,39	14,50	12,10	17,64	17,74	16,35	15,50	12,99	19,54	19,26	17,78	16,83	14	22,71	21,80	20,18	19,17	-	24,61	23,33	21,61	20,56	-
Pe	4,97	4,79	5,21	5,63	6,53	5,03	4,86	5,27	5,70	6,60	5,13	4,96	5,37	5,80	7	5,29	5,13	5,55	5,98	-	5,39	5,23	5,65	6,08	-
EER	3,29	3,49	2,96	2,57	1,85	3,50	3,65	3,10	2,72	1,97	3,81	3,88	3,31	2,90	2	4,30	4,25	3,64	3,21	-	4,57	4,46	3,82	3,38	-
Qc	2822	2884	2653	2499	2085	3046	3063	2822	2675	2240	3381	3332	3075	2910	2474	3941	3782	3498	3321	-	4277	4053	3753	3569	-
ΔP	19	20	17	15	10	22	22	19	17	12	27	26	22	20	15	37	34	29	26	-	43	39	33	30	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-

090																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	19,98	20,41	18,79	17,71	14,78	21,53	21,65	19,96	18,93	15,87	23,85	23,51	21,71	20,55	17	27,71	26,61	24,63	23,39	-	30,02	28,46	26,37	25,09	-
Pe	5,94	5,78	6,29	6,82	7,88	6,02	5,86	6,37	6,90	7,97	6,14	5,99	6,49	7,03	8	6,35	6,21	6,71	7,24	-	6,48	6,34	6,84	7,38	-
EER	3,36	3,53	2,99	2,60	1,88	3,57	3,69	3,13	2,74	1,99	3,88	3,93	3,34	2,92	2	4,36	4,29	3,67	3,23	-	4,63	4,49	3,85	3,40	-
Qc	3451	3526	3243	3056	2549	3723	3745	3450	3270	2739	4133	4074	3759	3558	3025	4818	4624	4277	4061	-	5229	4955	4588	4364	-
ΔP	29	30	25	23	16	34	34	29	26	18	41	40	34	31	22	56	52	44	40	-	66	60	51	46	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-

100																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	25,15	25,69	23,65	22,29	18,61	27,10	27,25	25,12	23,82	19,98	30,02	29,59	27,32	25,87	22	34,87	33,48	30,99	29,44	-	37,77	35,81	33,18	31,58	-
Pe	7,27	7,03	7,63	8,25	9,54	7,37	7,14	7,73	8,36	9,65	7,52	7,29	7,89	8,51	10	7,78	7,57	8,16	8,79	-	7,95	7,74	8,33	8,96	-
EER	3,46	3,65	3,10	2,70	1,95	3,68	3,82	3,25	2,85	2,07	3,99	4,06	3,46	3,04	2	4,48	4,42	3,80	3,35	-	4,75	4,63	3,98	3,53	-
Qc	4347	4441	4086	3849	3211	4691	4717	4346	4119	3450	5207	5132	4736	4482	3810	6069	5825	5387	5115	-	6588	6242	5779	5497	-
ΔP	38	39	33	30	21	44	44	38	34	24	54	53	45	40	29	74	68	58	52	-	87	78	67	60	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-

150																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	32,95	33,66	30,98	29,20	24,37	35,51	35,72	32,92	31,21	26,16	39,35	38,79	35,81	33,90	29	45,74	43,91	40,63	38,60	-	49,56	46,98	43,52	41,41	-
Pe	9,30	9,22	10,08	11,03	12,71	9,41	9,34	10,20	11,16	12,84	9,59	9,53	10,39	11,35	13	9,89	9,85	10,72	11,68	-	10,08	10,05	10,92	11,88	-
EER	3,54	3,65	3,07	2,65	1,92	3,77	3,82	3,23	2,80	2,04	4,10	4,07	3,45	2,99	2	4,62	4,46	3,79	3,31	-	4,92	4,67	3,99	3,49	-
Qc	5683	5806	5342	5033	4197	6132	6167	5681	5385	4511	6807	6709	6191	5859	4981	7934	7615	7043	6687	-	8612	8160	7555	7186	-
ΔP	24	25	22	19	13	28	29	24	22	15	35	34	29	26	19	48	44	38	34	-	56	50	43	39	-
Pa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	-

200																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	39,51	40,36	37,16	35,02	29,24	42,58	42,82	39,47	37,43	31,39	47,16	46,49	42,93	40,65	35	54,78	52,61	48,69	46,26	-	59,34	56,26	52,14	49,61	-
Pe	11,90	12,04	13,20	14,53	16,65	12,06	12,21	13,36	14,71	16,82	12,31	12,47	13,62	14,96	17	12,74	12,91	14,07	15,40	-	13,02	13,19	14,34	15,68	-
EER	3,32	3,35	2,82	2,41	1,76	3,53	3,51	2,95	2,55	1,87	3,83	3,73	3,15	2,72	2	4,30	4,07	3,46	3,00	-	4,56	4,27	3,64	3,16	-
Qc	6831	6979	6421	6050	5046	7371	7413	6829	6474	5422	8183	8065	7442	7043	5988	9538	9154	8466	8039	-	10353	9809	9082	8638	-
ΔP	48	50	42	37	26	56	56	48	43	30	68	67	57	51	37	93	86	73	66	-	110	98	84	76	-
Pa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	-

Data in compliance with the EN 14511-2013

TAe	External air temperature (°C)	Pc	Cooling capacity (kW)	ΔP	Pressure drop to the exchanger (kPa)
TWc	Water temperature at the condenser (°C)	Pe	Input power (kW)	-	Conditions outside the operating range
Glycol	Ethylene glycol percentage (%)	EER	Efficiency	Pa	Fan - Nominal pressure static available
		Qc	Water flow rate (l/h)		

CL H P

025																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	6,87	7,01	6,46	6,09	5,08	7,40	7,44	6,86	6,51	5,46	8,20	8,08	7,46	7,07	6,01	9,52	9,14	8,46	8,04	-	10,31	9,78	9,06	8,62	-
Pe	2,18	2,16	2,37	2,58	3,01	2,21	2,18	2,39	2,61	3,04	2,24	2,22	2,43	2,65	3,08	2,30	2,29	2,50	2,71	-	2,33	2,33	2,54	2,76	-
EER	3,14	3,25	2,73	2,36	1,69	3,36	3,41	2,87	2,49	1,80	3,66	3,64	3,07	2,67	1,96	4,15	4,00	3,39	2,96	-	4,42	4,20	3,57	3,13	-
Qc	1164	1189	1094	1030	859	1256	1263	1163	1103	923	1394	1374	1268	1200	1020	1625	1560	1442	1369	-	1764	1671	1547	1472	-
Pu	75	74	77	78	82	72	71	75	76	81	67	67	71	74	79	56	59	65	68	-	49	54	60	63	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	50	50	-

030																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	8,96	9,15	8,42	7,94	6,63	9,65	9,71	8,95	8,49	7,12	10,69	10,54	9,73	9,21	7,84	12,41	11,92	11,04	10,48	-	13,44	12,75	11,82	11,24	-
Pe	2,58	2,52	2,76	3,00	3,50	2,61	2,55	2,79	3,03	3,53	2,65	2,59	2,83	3,08	3,58	2,72	2,67	2,91	3,15	-	2,76	2,72	2,96	3,20	-
EER	3,47	3,63	3,06	2,65	1,89	3,70	3,81	3,21	2,80	2,01	4,04	4,06	3,43	3,00	2,19	4,57	4,46	3,79	3,32	-	4,86	4,68	3,99	3,51	-
Qc	1519	1552	1428	1345	1122	1639	1649	1519	1440	1206	1820	1794	1655	1566	1332	2121	2036	1883	1788	-	2303	2182	2020	1921	-
Pu	73	72	75	77	82	69	69	73	75	80	63	63	68	71	78	50	54	60	64	-	42	48	55	59	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	50	50	-

040																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	11,08	11,32	10,42	9,82	8,21	11,94	12,01	11,07	10,50	8,81	13,22	13,03	12,04	11,40	9,71	15,35	14,74	13,65	12,97	-	16,61	15,76	14,61	13,91	-
Pe	3,13	3,12	3,42	3,75	4,36	3,16	3,16	3,46	3,79	4,39	3,21	3,21	3,52	3,84	4,45	3,31	3,32	3,62	3,94	-	3,37	3,38	3,68	4,01	-
EER	3,54	3,63	3,05	2,62	1,88	3,78	3,80	3,20	2,77	2,00	4,12	4,06	3,42	2,97	2,18	4,64	4,45	3,77	3,29	-	4,93	4,66	3,97	3,47	-
Qc	1882	1923	1769	1667	1390	2031	2043	1882	1784	1494	2255	2222	2050	1940	1650	2628	2522	2333	2215	-	2853	2703	2503	2380	-
Pu	66	65	70	73	79	61	61	66	69	77	53	54	61	64	73	37	42	50	55	-	27	34	43	48	-
Pa	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	50	50	-

050																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	12,75	13,03	11,99	11,30	9,43	13,74	13,82	12,74	12,08	10,12	15,23	15,01	13,86	13,12	11,16	17,69	16,99	15,72	14,93	-	19,17	18,17	16,84	16,02	-
Pe	3,51	3,44	3,78	4,14	4,82	3,54	3,48	3,81	4,18	4,86	3,59	3,54	3,87	4,24	4,92	3,68	3,64	3,98	4,34	-	3,73	3,70	4,04	4,40	-
EER	3,63	3,79	3,17	2,73	1,96	3,88	3,97	3,34	2,89	2,08	4,24	4,24	3,58	3,10	2,27	4,81	4,67	3,96	3,44	-	5,14	4,92	4,17	3,64	-
Qc	2166	2213	2036	1918	1600	2337	2350	2165	2052	1719	2594	2557	2360	2233	1898	3024	2902	2684	2549	-	3282	3110	2880	2739	-
Pu	90	89	92	94	97	87	87	90	92	96	82	83	87	89	94	71	75	80	83	-	64	69	75	79	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-

070																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	14,95	15,27	14,06	13,25	11,06	16,11	16,20	14,94	14,16	11,88	17,85	17,60	16,25	15,38	13,09	20,73	19,91	18,43	17,51	-	22,45	21,29	19,73	18,78	-
Pe	4,12	4,00	4,38	4,77	5,56	4,16	4,05	4,42	4,82	5,61	4,22	4,12	4,50	4,89	5,69	4,34	4,24	4,62	5,02	-	4,41	4,32	4,70	5,10	-
EER	3,63	3,82	3,21	2,78	1,99	3,88	4,01	3,38	2,94	2,12	4,23	4,28	3,61	3,15	2,30	4,78	4,69	3,99	3,49	-	5,09	4,92	4,20	3,68	-
Qc	2542	2598	2390	2251	1878	2743	2759	2542	2409	2018	3045	3002	2770	2621	2228	3550	3407	3151	2992	-	3853	3651	3380	3215	-
Pu	83	82	86	89	94	78	78	83	86	92	71	72	78	81	89	56	60	68	72	-	46	52	61	66	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-

080																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	16,59	16,94	15,60	14,70	12,27	17,87	17,97	16,57	15,71	13,18	19,79	19,51	18,02	17,06	14,53	22,98	22,07	20,43	19,41	-	24,87	23,59	21,87	20,82	-
Pe	4,84	4,66	5,08	5,52	6,45	4,89	4,72	5,14	5,58	6,51	4,97	4,80	5,23	5,67	6,59	5,11	4,96	5,38	5,82	-	5,21	5,06	5,48	5,92	-
EER	3,43	3,64	3,07	2,66	1,90	3,66	3,81	3,22	2,82	2,03	3,98	4,06	3,45	3,01	2,20	4,49	4,45	3,79	3,33	-	4,77	4,66	3,99	3,52	-
Qc	2822	2884	2653	2499	2085	3046	3063	2822	2675	2240	3381	3332	3075	2910	2474	3941	3782	3498	3321	-	4277	4053	3753	3569	-
Pu	77	75	81	84	91	71	70	77	80	89	61	63	70	74	84	43	48	57	63	-	31	39	49	55	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-

090																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	20,23	20,67	19,03	17,94	14,99	21,79	21,92	20,21	19,17	16,09	24,12	23,78	21,98	20,81	17,73	27,96	26,87	24,90	23,66	-	-	28,69	26,64	25,36	-
Pe	5,78	5,62	6,13	6,67	7,76	5,85	5,69	6,21	6,75	7,84	5,96	5,81	6,32	6,86	7,95	6,19	6,04	6,53	7,07	-	-	6,20	6,67	7,20	-
EER	3,50	3,68	3,10	2,69	1,93	3,73	3,85	3,26	2,84	2,05	4,05	4,09	3,48	3,03	2,23	4,51	4,45	3,81	3,35	-	-	4,63	3,99	3,52	-
Qc	3451	3526	3243	3056	2549	3723	3745	3450	3270	2739	4133	4074	3759	3558	3025	4818	4624	4277	4061	-	-	4955	4588	4364	-
Pu	59	57	65	70	83	50	49	59	64	79	36	38	49	56	71	10	17	31	38	-	-	5	19	27	-
Pa	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	-	80	80	80	-

100																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	25,68	26,22	24,16	0,00	0,00	27,64	27,79	25,65	24,34	0,00	30,56	30,14	27,87	26,40	0,00	35,34	33,99	31,53	29,99	-	-	36,24	33,70	32,11	-
Pe	7,33	7,10	7,69	0,00	0,00	7,44	7,21	7,79	8,42	0,00	7,61	7,39	7,96	8,58	0,00	7,99	7,73	8,27	8,88	-	-	8,00	8,48	9,07	-
EER	3,50	3,69	3,14	0,00	0,00	3,72	3,86	3,29	2,89	0,00	4,01	4,08	3,50	3,08	0,00	4,42	4,40	3,81	3,38	-	-	4,53	3,97	3,54	-
Qc	4347	4441	4086	0	0	4691	4717	4346	4119	0	5207	5132	4736	4482	0	6069	5825	5387	5115	-	-	6242	5779	5497	-
Pu	91	87	101	0	0	77	76	91	100	0	55	58	75	86	0	12	25	46	59	-	-	2	27	41	-
Pa	80	80	80	80	80	80	80	80	80	0	80	80	80	80	80	80	80	80	80	-	-	80	80	80	-

150																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	33,69	34,40	31,71	29,91	25,02	36,26	36,46	33,65	31,94	26,84	40,09	39,53	36,56	34,64	29,55	46,37	44,59	41,36	39,33	-	50,01	47,57	44,20	42,12	-
Pe	9,58	9,51	10,34	11,29	12,95	9,72	9,66	10,48	11,43	13,09	9,96	9,90	10,71	11,64	13,29	10,45	10,34	11,12	12,04	-	10,87	10,66	11,40	12,30	-
EER	3,52	3,62	3,07	2,65	1,93	3,73	3,77	3,21	2,79	2,05	4,02	3,99	3,41	2,98	2,22	4,44	4,31	3,72	3,27	-	4,60	4,46	3,88	3,43	-
Qc	5683	5806	5342	5033	4197	6132	6167	5681	5385	4511	6807	6709	6191	5859	4981	7934	7615	7043	6687	-	8612	8160	7555	7186	-
Pu	147	142	159	170	196	129	127	147	158	187	99	103	126	140	172	42	59	88	104	-	4	30	62	81	-
Pa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	-

200																									
TAe	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46	-10	20	30	35	46
TWc			5					7					10					15					18		
Glycol			0%					0%					0%					0%					0%		
Pc	40,41	41,26	38,04	35,88	30,03	43,49	43,73	40,37	38,31	32,20	48,07	47,40	43,85	41,55	35,46	55,53	53,43	49,58	47,17	-	-	-	52,97	50,50	-
Pe	12,11	12,26	13,39	14,72	16,83	12,30	12,45	13,57	14,90	17,00	12,62	12,76	13,86	15,18	17,27	13,30	13,36	14,41	15,69	-	-	-	14,78	16,04	-
EER	3,34	3,37	2,84	2,44	1,78	3,54	3,51	2,97	2,57	1,89	3,81	3,72	3,16	2,74	2,05	4,18	4,00	3,44	3,01	-	-	-	3,58	3,15	-
Qc	6831	6979	6421	6050	5046	7371	7413	6829	6474	5422	8183	8065	7442	7043	5988	9538	9154	8466	8039	-	-	-	9082	8638	-
Pu	132	127	147	159	189	111	110	132	145	178	78	83	109	124	161	13	32	65	84	-	-	-	36	57	-
Pa	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	-	-	100	100	-

Data in compliance with the EN 14511-2013

TAe	External air temperature (°C)
TWc	Water temperature at the condenser (°C)
Glycol	Ethylene glycol percentage (%)
Pc	Cooling capacity (kW)
Pe	Input power (kW)
EER	Efficiency
Qc	Water flow rate (l/h)
ΔP	Pressure drop to the exchanger (kPa)
-	Conditions outside the operating range
Pa	Fan - Nominal pressure static available

CL H

025																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	3,79	-	-	-	-	3,85	8,30	10,11	10,23	10,23	3,80	8,22	10,03	10,15	10,16	3,42	7,93	9,68	9,81	9,82	-	7,10	8,90	-	-
Pe	1,50	-	-	-	-	1,70	1,88	2,17	2,28	2,31	1,88	2,05	2,33	2,45	2,47	2,22	2,39	2,62	2,68	2,70	-	2,94	2,92	-	-
COP	2,53	-	-	-	-	2,27	4,41	4,66	4,49	4,44	2,02	4,02	4,30	4,15	4,11	1,54	3,31	3,70	3,66	3,64	-	2,41	3,05	-	-
Qc	651	-	-	-	-	662	1423	1732	1752	1753	656	1413	1721	1742	1743	591	1368	1668	1690	1691	-	1232	1542	-	-
Pu	5	-	-	-	-	5	22	32	33	33	5	21	32	32	32	4	20	30	30	31	-	16	25	-	-
Pa	50	-	-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	-	-

030																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	4,69	-	-	-	-	4,76	10,25	12,49	12,64	12,64	4,70	10,16	12,39	12,54	12,55	4,22	9,80	11,96	12,12	12,13	-	8,77	11,00	-	-
Pe	1,86	-	-	-	-	2,12	2,35	2,71	2,86	2,89	2,36	2,56	2,93	3,07	3,11	2,81	3,01	3,32	3,41	3,44	-	3,73	3,79	-	-
COP	2,52	-	-	-	-	2,25	4,37	4,61	4,43	4,37	1,99	3,97	4,23	4,09	4,04	1,50	3,25	3,61	3,55	3,53	-	2,35	2,90	-	-
Qc	806	-	-	-	-	820	1761	2143	2168	2169	811	1748	2130	2156	2158	732	1693	2064	2091	2093	-	1524	1909	-	-
Pu	4	-	-	-	-	4	18	27	27	27	4	18	26	27	27	3	17	25	25	25	-	13	21	-	-
Pa	50	-	-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	-	-

040																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	5,99	-	-	-	-	6,08	13,11	15,97	16,15	16,16	6,01	12,98	15,84	16,03	16,05	5,40	12,52	15,29	15,49	15,51	-	11,21	14,06	-	-
Pe	2,39	-	-	-	-	2,70	2,99	3,44	3,61	3,66	3,00	3,25	3,70	3,87	3,92	3,55	3,80	4,15	4,25	4,28	-	4,67	4,64	-	-
COP	2,51	-	-	-	-	2,25	4,39	4,65	4,47	4,42	2,00	4,00	4,28	4,14	4,10	1,52	3,29	3,68	3,64	3,62	-	2,40	3,03	-	-
Qc	1030	-	-	-	-	1048	2251	2739	2771	2773	1037	2235	2723	2756	2758	936	2164	2638	2673	2675	-	1948	2440	-	-
Pu	4	-	-	-	-	4	21	31	31	31	4	20	30	31	31	4	19	28	29	29	-	15	24	-	-
Pa	50	-	-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	-	-

050																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	6,92	-	-	-	-	7,03	15,14	18,45	18,66	18,67	6,95	15,00	18,30	18,52	18,54	6,24	14,47	17,66	17,90	17,91	-	12,95	16,24	-	-
Pe	2,62	-	-	-	-	2,98	3,30	3,80	4,00	4,05	3,32	3,59	4,10	4,29	4,34	3,94	4,22	4,62	4,74	4,78	-	5,21	5,24	-	-
COP	2,64	-	-	-	-	2,36	4,60	4,86	4,67	4,62	2,09	4,18	4,47	4,31	4,27	1,59	3,43	3,82	3,77	3,75	-	2,49	3,10	-	-
Qc	1191	-	-	-	-	1212	2604	3168	3204	3206	1200	2585	3149	3187	3189	1082	2502	3051	3091	3094	-	2253	2821	-	-
Pu	4	-	-	-	-	4	18	26	27	27	4	17	26	26	26	3	16	24	25	25	-	13	21	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	-	-

070																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	7,63	-	-	-	-	7,75	16,69	20,33	20,56	20,58	7,65	16,53	20,16	20,41	20,43	-	15,94	19,46	19,72	19,74	-	14,27	17,89	-	-
Pe	2,99	-	-	-	-	3,40	3,77	4,36	4,59	4,65	3,79	4,12	4,71	4,94	5,00	-	4,85	5,34	5,49	5,54	-	6,00	6,12	-	-
COP	2,55	-	-	-	-	2,28	4,42	4,66	4,48	4,43	2,02	4,02	4,28	4,13	4,09	-	3,29	3,65	3,59	3,57	-	2,38	2,92	-	-
Qc	1312	-	-	-	-	1335	2868	3489	3529	3531	1321	2846	3468	3510	3512	-	2756	3360	3404	3407	-	2482	3107	-	-
Pu	4	-	-	-	-	5	21	31	32	32	5	21	31	32	32	-	20	29	30	30	-	16	25	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	-	-

080																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	8,90	-	-	-	-	9,04	19,47	23,73	24,00	24,02	8,93	19,29	23,54	23,83	23,84	8,02	18,61	22,72	23,02	23,04	-	16,66	20,88	-	-
Pe	3,40	-	-	-	-	3,88	4,32	5,02	5,28	5,35	4,34	4,72	5,42	5,69	5,75	5,18	5,58	6,17	6,36	6,41	-	6,92	7,13	-	-
COP	2,62	-	-	-	-	2,33	4,50	4,73	4,54	4,49	2,06	4,08	4,34	4,19	4,14	1,55	3,34	3,68	3,62	3,59	-	2,41	2,93	-	-
Qc	1531	-	-	-	-	1557	3345	4070	4116	4119	1541	3320	4045	4094	4097	1390	3214	3919	3971	3974	-	2895	3624	-	-
Pu	6	-	-	-	-	6	27	39	40	40	6	26	39	40	40	5	24	36	37	37	-	20	31	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	-	-

090																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	10,07	-	-	-	-	10,22	22,04	26,86	27,17	27,19	10,10	21,84	26,65	26,97	26,99	-	21,06	25,72	26,06	26,08	-	18,85	23,64	-	-
Pe	4,11	-	-	-	-	4,69	5,22	6,04	6,36	6,44	5,22	5,69	6,52	6,84	6,92	-	6,70	7,38	7,59	7,65	-	8,28	8,44	-	-
COP	2,45	-	-	-	-	2,18	4,22	4,45	4,27	4,22	1,93	3,84	4,09	3,95	3,90	-	3,15	3,49	3,43	3,41	-	2,28	2,80	-	-
Qc	1731	-	-	-	-	1761	3782	4602	4654	4657	1743	3754	4573	4629	4632	-	3634	4432	4490	4494	-	3273	4098	-	-
Pu	7	-	-	-	-	8	35	51	53	53	7	34	51	52	52	-	32	48	49	49	-	26	41	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	-	-

100																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	13,36	-	-	-	-	13,57	29,28	35,70	36,11	36,14	13,41	29,01	35,41	35,85	35,88	12,05	27,98	34,18	34,64	34,66	-	25,04	31,41	-	-
Pe	5,04	-	-	-	-	5,76	6,46	7,51	7,91	8,01	6,43	7,05	8,10	8,50	8,60	7,66	8,30	9,19	9,47	9,55	-	10,26	10,58	-	-
COP	2,65	-	-	-	-	2,36	4,53	4,75	4,57	4,51	2,09	4,12	4,37	4,22	4,17	1,57	3,37	3,72	3,66	3,63	-	2,44	2,97	-	-
Qc	2297	-	-	-	-	2337	5019	6106	6176	6180	2313	4982	6069	6143	6147	2086	4823	5880	5958	5963	-	4343	5438	-	-
Pu	11	-	-	-	-	11	50	74	76	76	11	50	74	75	75	9	46	69	71	71	-	38	59	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	-	-

150																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	16,70	-	-	-	-	16,96	36,53	44,50	45,02	45,05	16,75	36,19	44,15	44,69	44,72	-	34,91	42,61	43,18	43,22	-	31,25	39,18	-	-
Pe	6,82	-	-	-	-	7,72	8,52	9,79	10,29	10,42	8,57	9,26	10,54	11,04	11,17	-	10,85	11,82	12,11	12,19	-	13,35	13,24	-	-
COP	2,45	-	-	-	-	2,20	4,29	4,54	4,37	4,33	1,96	3,91	4,19	4,05	4,01	-	3,22	3,60	3,57	3,55	-	2,34	2,96	-	-
Qc	2874	-	-	-	-	2924	6279	7640	7728	7733	2893	6233	7593	7686	7691	-	6034	7358	7455	7461	-	5434	6804	-	-
Pu	6	-	-	-	-	6	30	44	45	45	6	29	44	45	45	-	28	41	42	42	-	22	35	-	-
Pa	100	-	-	-	-	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	-	100	100	-	-

200																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	21,01	-	-	-	-	21,34	46,05	56,13	56,78	56,82	21,08	45,62	55,68	56,37	56,41	18,94	43,99	53,74	54,46	54,51	-	39,37	49,39	-	-
Pe	9,40	-	-	-	-	10,59	11,75	13,49	14,15	14,32	11,70	12,73	14,48	15,14	15,31	13,76	14,81	16,07	16,40	16,49	-	18,08	17,62	-	-
COP	2,24	-	-	-	-	2,02	3,92	4,16	4,01	3,97	1,80	3,58	3,85	3,72	3,69	1,38	2,97	3,34	3,32	3,30	-	2,18	2,80	-	-
Qc	3611	-	-	-	-	3674	7890	9600	9710	9716	3636	7832	9541	9657	9664	3280	7582	9245	9367	9375	-	6829	8550	-	-
Pu	13	-	-	-	-	14	64	94	96	97	14	63	93	95	96	11	59	87	90	90	-	48	75	-	-
Pa	100	-	-	-	-	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	100	100	-	-

Data in compliance with the EN 14511-2013

TAe External air temperature (°C)
TWc Water temperature at the condenser (°C)
Glycol Ethylene glycol percentage (%)
Ph Heating capacity (kW)
Pe Input power (kW)
COP Efficiency
Qc Water flow rate (l/h)
Pu Useful heads (kPa)
\- Conditions outside the operating range
Pa Fan - Nominal pressure static available

CL H P

025																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	3,72	-	-	-	-	3,78	8,15	9,94	10,06	10,06	3,73	8,07	9,86	9,98	9,99	3,35	7,79	9,52	9,64	9,65	-	6,97	8,74	-	-
Pe	1,46	-	-	-	-	1,66	1,78	2,05	2,15	2,18	1,84	1,94	2,21	2,32	2,35	2,19	2,29	2,50	2,56	2,58	-	2,85	2,81	-	-
COP	2,55	-	-	-	-	2,28	4,58	4,86	4,67	4,61	2,03	4,16	4,46	4,30	4,26	1,53	3,40	3,81	3,77	3,75	-	2,45	3,11	-	-
Qc	651	-	-	-	-	662	1423	1732	1752	1753	656	1413	1721	1742	1743	591	1368	1668	1690	1691	-	1232	1542	-	-
Pu	85	-	-	-	-	85	65	51	50	50	85	66	52	51	50	86	68	54	53	53	-	72	60	-	-
Pa	50	-	-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	-	-

030																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	4,60	-	-	-	-	4,67	10,09	12,31	12,45	12,46	4,62	10,00	12,21	12,36	12,37	4,15	9,64	11,78	11,94	11,95	-	8,62	10,82	-	-
Pe	1,81	-	-	-	-	2,07	2,23	2,57	2,72	2,75	2,31	2,44	2,79	2,93	2,97	2,76	2,90	3,18	3,28	3,30	-	3,62	3,66	-	-
COP	2,55	-	-	-	-	2,26	4,53	4,78	4,58	4,53	2,00	4,09	4,38	4,22	4,17	1,50	3,33	3,70	3,65	3,62	-	2,38	2,95	-	-
Qc	806	-	-	-	-	820	1761	2143	2168	2169	811	1748	2130	2156	2158	732	1693	2064	2091	2093	-	1524	1909	-	-
Pu	86,32	-	-	-	-	86,2	64,67	49,41	48,3	48,25	86,28	65,14	49,98	48,83	48,74	86,86	67,04	52,83	51,68	51,59	-	72,41	59,15	-	-
Pa	50	-	-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	-	-

040																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	5,89	-	-	-	-	5,98	12,92	15,77	15,96	15,97	5,91	12,80	15,64	15,84	15,85	5,31	12,34	15,09	15,30	15,31	-	11,04	13,86	-	-
Pe	2,32	-	-	-	-	2,64	2,85	3,29	3,46	3,51	2,93	3,11	3,55	3,73	3,77	3,49	3,67	4,00	4,10	4,13	-	4,55	4,50	-	-
COP	2,54	-	-	-	-	2,27	4,54	4,80	4,61	4,55	2,01	4,12	4,41	4,25	4,21	1,52	3,37	3,77	3,73	3,71	-	2,43	3,08	-	-
Qc	1030	-	-	-	-	1048	2251	2739	2771	2773	1037	2235	2723	2756	2758	936	2164	2638	2673	2675	-	1948	2440	-	-
Pu	85,44	-	-	-	-	85,22	53,13	32,46	30,99	30,9	85,35	53,74	33,19	31,68	31,58	86,44	56,44	37,01	35,44	35,36	-	64,06	45,53	-	-
Pa	50	-	-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	-	50	50	-	-

050																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	6,83	-	-	-	-	6,93	14,93	18,20	18,41	18,42	6,85	14,79	18,05	18,27	18,29	6,16	14,26	17,42	17,65	17,67	-	12,77	16,01	-	-
Pe	2,60	-	-	-	-	2,95	3,17	3,64	3,84	3,89	3,29	3,47	3,94	4,14	4,19	3,92	4,10	4,47	4,59	4,62	-	5,11	5,10	-	-
COP	2,63	-	-	-	-	2,35	4,71	5,00	4,80	4,74	2,08	4,27	4,58	4,42	4,37	1,57	3,48	3,90	3,85	3,82	-	2,50	3,14	-	-
Qc	1191	-	-	-	-	1212	2604	3168	3204	3206	1200	2585	3149	3187	3189	1082	2502	3051	3091	3094	-	2253	2821	-	-
Pu	98,84	-	-	-	-	98,82	81,67	67,31	66,28	66,22	98,83	82,08	67,86	66,77	66,71	98,82	83,87	70,57	69,47	69,39	-	88,67	76,56	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	-	-

070																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	7,52	-	-	-	-	7,64	16,46	20,06	20,30	20,31	7,54	16,30	19,90	20,15	20,16	-	15,72	19,21	19,46	19,48	-	14,07	17,65	-	-
Pe	2,95	-	-	-	-	3,37	3,63	4,19	4,42	4,48	3,76	3,98	4,54	4,77	4,83	-	4,72	5,17	5,33	5,37	-	5,89	5,97	-	-
COP	2,55	-	-	-	-	2,27	4,53	4,79	4,59	4,54	2,01	4,10	4,38	4,22	4,18	-	3,33	3,71	3,65	3,63	-	2,39	2,96	-	-
Qc	1312	-	-	-	-	1335	2868	3489	3529	3531	1321	2846	3468	3510	3512	-	2756	3360	3404	3407	-	2482	3107	-	-
Pu	98,62	-	-	-	-	98,55	75,39	57,69	56,43	56,36	98,6	75,95	58,35	57,03	56,96	-	78,15	61,68	60,33	60,24	-	84,28	69,04	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	-	-

080																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	8,77	-	-	-	-	8,91	19,22	23,46	23,73	23,75	8,80	19,05	23,27	23,56	23,57	7,91	18,36	22,45	22,75	22,77	-	16,43	20,62	-	-
Pe	3,35	-	-	-	-	3,83	4,17	4,84	5,11	5,18	4,29	4,57	5,24	5,51	5,58	5,14	5,42	5,99	6,19	6,24	-	6,78	6,97	-	-
COP	2,62	-	-	-	-	2,32	4,61	4,85	4,65	4,59	2,05	4,17	4,44	4,27	4,23	1,54	3,39	3,75	3,68	3,65	-	2,42	2,96	-	-
Qc	1531	-	-	-	-	1557	3345	4070	4116	4119	1541	3320	4045	4094	4097	1390	3214	3919	3971	3974	-	2895	3624	-	-
Pu	97,56	-	-	-	-	97,38	62,12	38,08	36,43	36,32	97,5	62,86	38,98	37,23	37,11	98,34	65,99	43,41	41,6	41,49	-	74,7	53,36	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	-	-

090																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	9,92	-	-	-	-	10,08	21,77	26,60	26,91	26,93	9,95	21,57	26,38	26,71	26,73	-	20,80	25,45	25,79	25,81	-	18,60	23,37	-	-
Pe	4,05	-	-	-	-	4,62	5,05	5,87	6,19	6,27	5,16	5,52	6,35	6,67	6,75	-	6,53	7,20	7,42	7,48	-	8,12	8,27	-	-
COP	2,45	-	-	-	-	2,18	4,32	4,53	4,35	4,29	1,93	3,91	4,16	4,01	3,96	-	3,19	3,53	3,48	3,45	-	2,29	2,83	-	-
Qc	1731	-	-	-	-	1761	3782	4602	4654	4657	1743	3754	4573	4629	4632	-	3634	4432	4490	4494	-	3273	4098	-	-
Pu	95,92	-	-	-	-	95,6	48,14	18,32	16,3	16,19	95,8	49,08	19,43	17,27	17,15	-	53,06	24,79	22,59	22,45	-	64,28	37,11	-	-
Pa	80	-	-	-	-	80	80	80	80	80	80	80	80	80	80	-	80	80	80	80	-	80	80	-	-

100																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	-	-	-	-	-	-	28,74	35,23	35,66	35,69	-	28,47	34,94	35,39	35,42	-	27,43	33,67	34,14	34,17	-	24,51	30,87	-	-
Pe	-	-	-	-	-	-	6,54	7,73	8,15	8,25	-	7,13	8,31	8,73	8,83	-	8,37	9,36	9,66	9,73	-	10,32	10,69	-	-
COP	-	-	-	-	-	-	4,39	4,56	4,38	4,33	-	3,99	4,20	4,05	4,01	-	3,28	3,60	3,54	3,51	-	2,37	2,89	-	-
Qc	-	-	-	-	-	-	5019	6106	6176	6180	-	4982	6069	6143	6147	-	4823	5880	5958	5963	-	4343	5438	-	-
Pu	-	-	-	-	-	-	63,23	9,7	5,88	5,66	-	64,87	11,69	7,69	7,47	-	71,76	21,69	17,61	17,35	-	91,19	43,85	-	-
Pa	-	-	-	-	-	-	80	80	80	80	-	80	80	80	80	-	80	80	80	80	-	80	80	-	-

150																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	-	-	-	-	-	-	35,79	43,83	44,35	44,38	-	35,45	43,47	44,02	44,05	-	34,16	41,91	42,49	42,52	-	30,52	38,44	-	-
Pe	-	-	-	-	-	-	8,84	10,29	10,80	10,93	-	9,58	11,03	11,54	11,67	-	11,15	12,27	12,57	12,65	-	13,62	13,61	-	-
COP	-	-	-	-	-	-	4,05	4,26	4,11	4,06	-	3,70	3,94	3,81	3,78	-	3,06	3,42	3,38	3,36	-	2,24	2,82	-	-
Qc	-	-	-	-	-	-	6279	7640	7728	7733	-	6233	7593	7686	7691	-	6034	7358	7455	7461	-	5434	6804	-	-
Pu	-	-	-	-	-	-	122,43	57,85	53,23	52,96	-	124,39	60,29	55,44	55,18	-	132,7	72,29	67,38	67,07	-	156,07	99,04	-	-
Pa	-	-	-	-	-	-	100	100	100	100	-	100	100	100	100	-	100	100	100	100	-	100	100	-	-

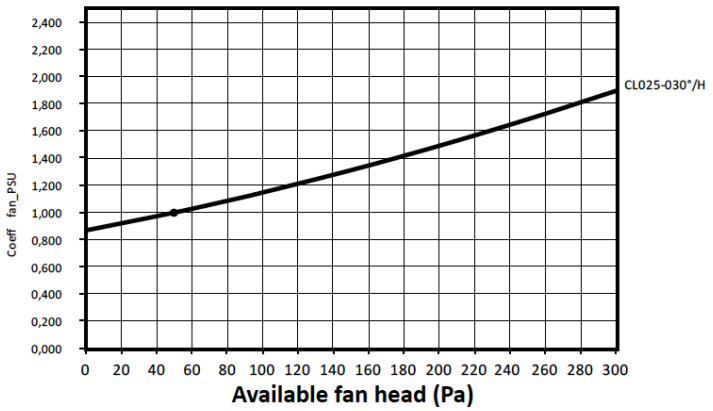
200																									
TAe	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42	-15	7	30	40	42
TWc			25					30					35					45					60		
Glycol			0%					0%					0%					0%					0%		
Ph	-	-	-	-	-	-	45,13	55,41	56,10	56,14	-	44,71	54,94	55,66	55,71	-	43,08	52,93	53,67	53,72	-	38,47	48,51	-	-
Pe	-	-	-	-	-	-	12,02	14,07	14,78	14,95	-	13,00	15,04	15,75	15,91	-	15,06	16,55	16,90	17,00	-	18,29	17,97	-	-
COP	-	-	-	-	-	-	3,75	3,94	3,79	3,75	-	3,44	3,65	3,54	3,50	-	2,86	3,20	3,18	3,16	-	2,10	2,70	-	-
Qc	-	-	-	-	-	-	7890	9600	9710	9716	-	7832	9541	9657	9664	-	7582	9245	9367	9375	-	6829	8550	-	-
Pu	-	-	-	-	-	-	90,24	9,84	4,12	3,81	-	92,68	12,88	6,88	6,51	-	103,02	27,84	21,73	21,33	-	132,08	61,1	-	-
Pa	-	-	-	-	-	-	100	100	100	100	-	100	100	100	100	-	100	100	100	100	-	100	100	-	-

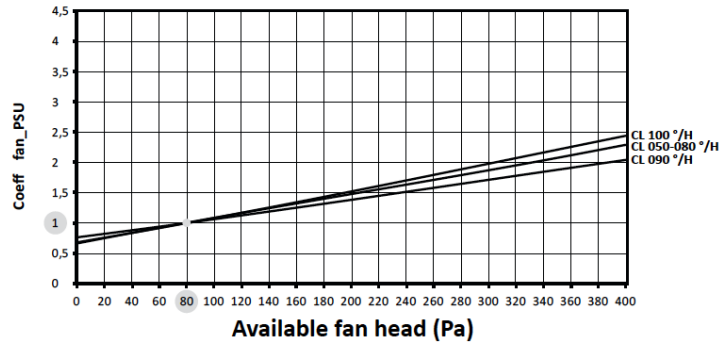
Data in compliance with the EN 14511-2013

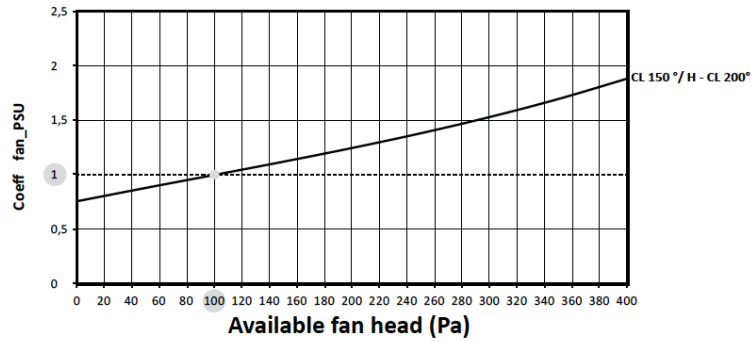
TAe	External air temperature (°C)	Ph	Heating capacity (kW)	Pu	Useful heads (kPa)
TWc	Water temperature at the condenser (°C)	Pe	Input power (kW)	-	Conditions outside the operating range
Glycol	Ethylene glycol percentage (%)	COP	Efficiency	Pa	Fan - Nominal pressure static available
		Qc	Water flow rate (l/h)		

11. CORRECTION FACTOR OF THE FAN INPUT POWER AT AVAILABLE STATIC PRESSURE DIFFERENT FROM THE NOMINAL

Correction factor of the fan input power at available static pressure different from the nominal







COOLING

Evaporator outlet water temperature.....7 °C
Evaporator inlet water temperature.....12 °C
External air temperature.....35 °C

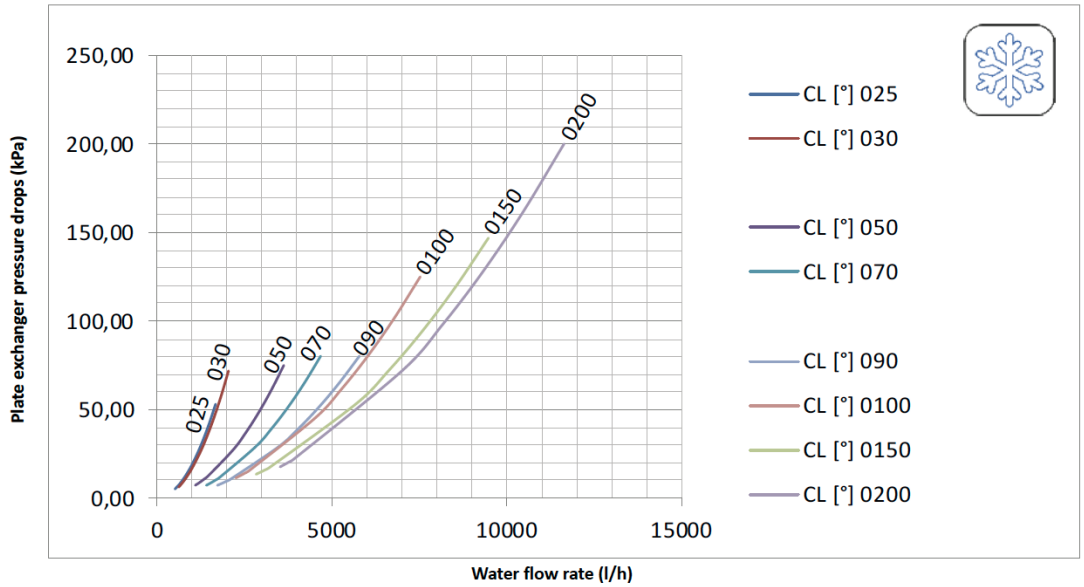
HEATING

Condenser inlet water temperature.....40 °C
Condenser outlet water temperatur.....45 °C
External air temperature.....7°C bs / 6°C bu

FAN STATIC PRESSURE													
Available nominal static pressure	Pa	All	All	50	50	50	80	80	80	80	80	100	100
Available MAX static pressure	Pa	All	All	300	300	300	400	400	400	400	400	400	400

12. PRESSURE DROPS

CL [°]



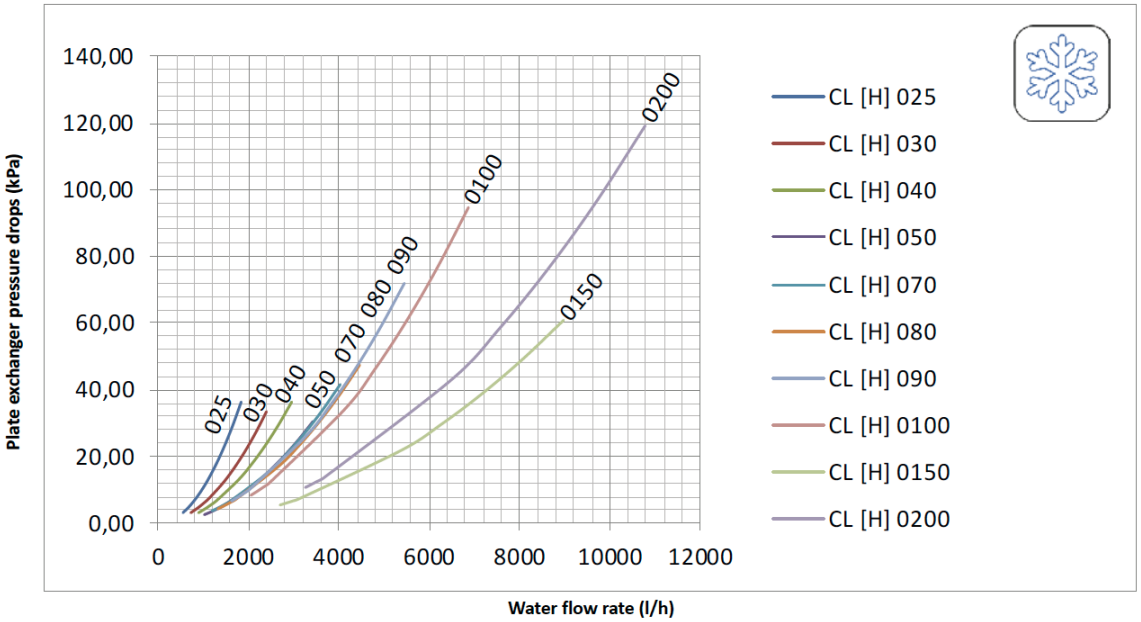
COOLING

Evaporator outlet water temperature .....7 °C
Evaporator inlet water temperature.....12 °C
External air temperature .....35 °C
Average water temperature .....10°C

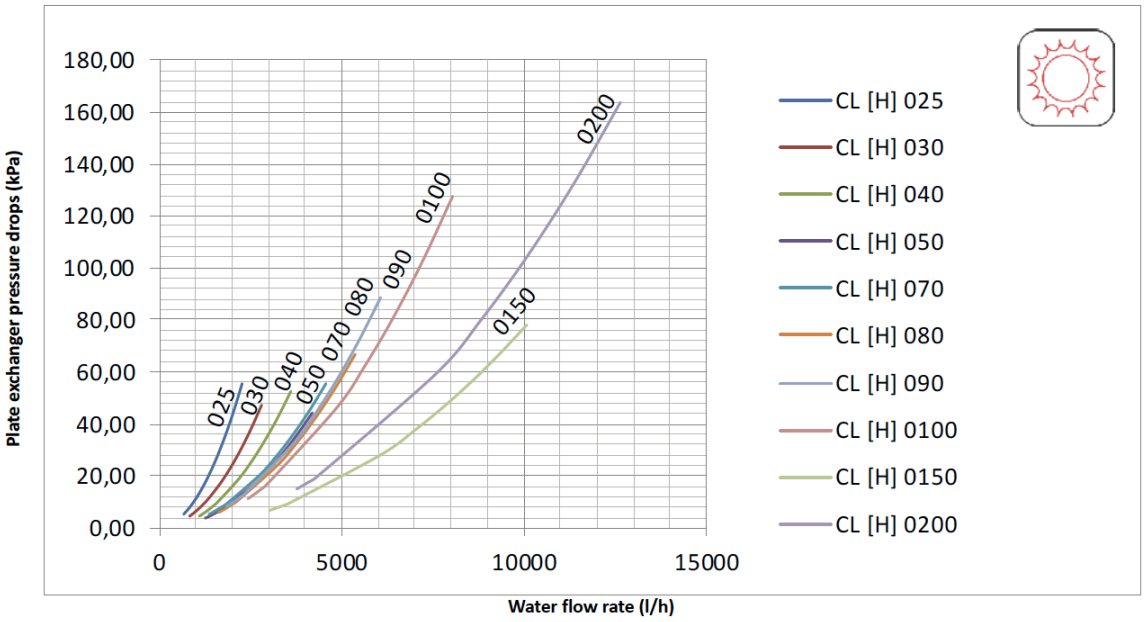
For temperatures other than 10°C, use the correction factors table
- Plate heat exchanger pressure drop
- Factory-fitted water filter pressure drop
- Factory-fitted water pipework pressure drop

CORRECTION FACTORS TABLE							
Average water temperature	5	**10**	15	20	30	40	50
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,95	0,93	0,91

CL [H]



CL [H]



COOLING

Evaporator outlet water temperature.....7 °C
Evaporator inlet water temperature..... 12 °C
External air temperature.....35 °
For temperatures other than 10°C, use the correction factors table

HEATING

Condenser inlet water temperature.....40 °C
Condenser outlet water temperatur.....45 °C
External air temperature.....7°C bs / 6°C bu

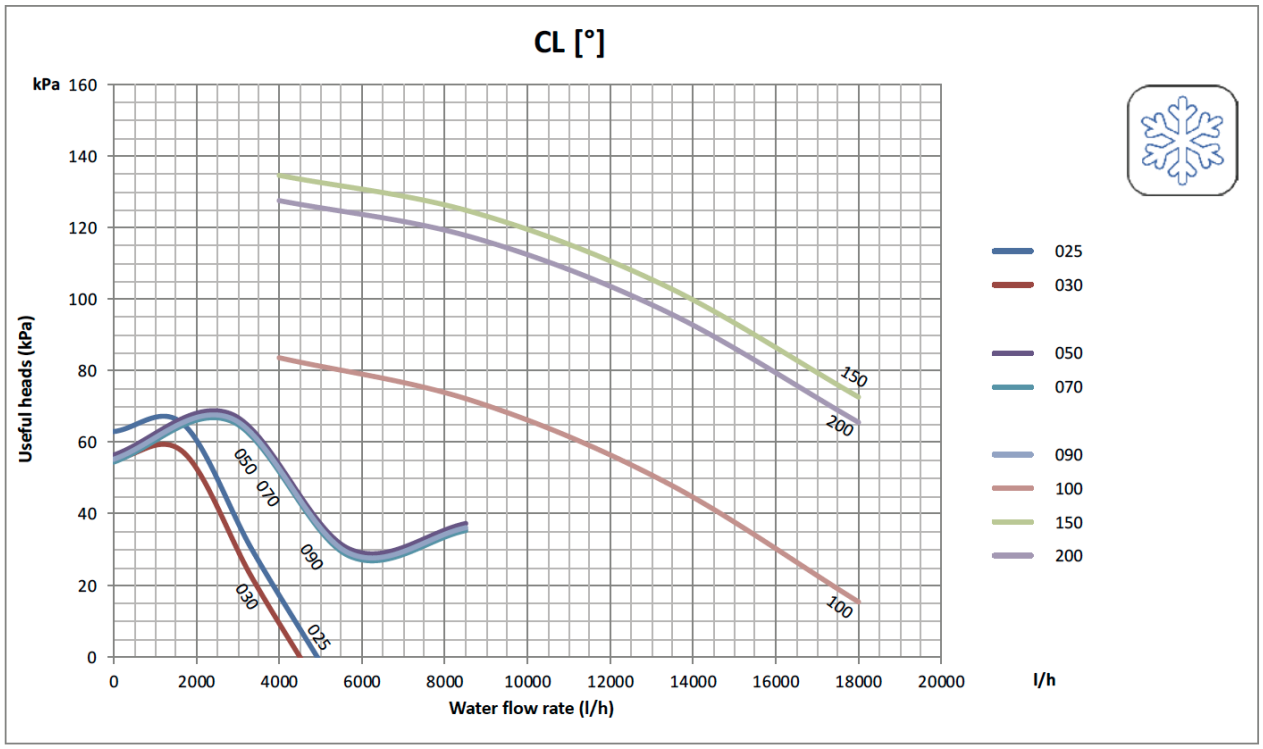
For temperatures other than 10°C, use the correction factors table.

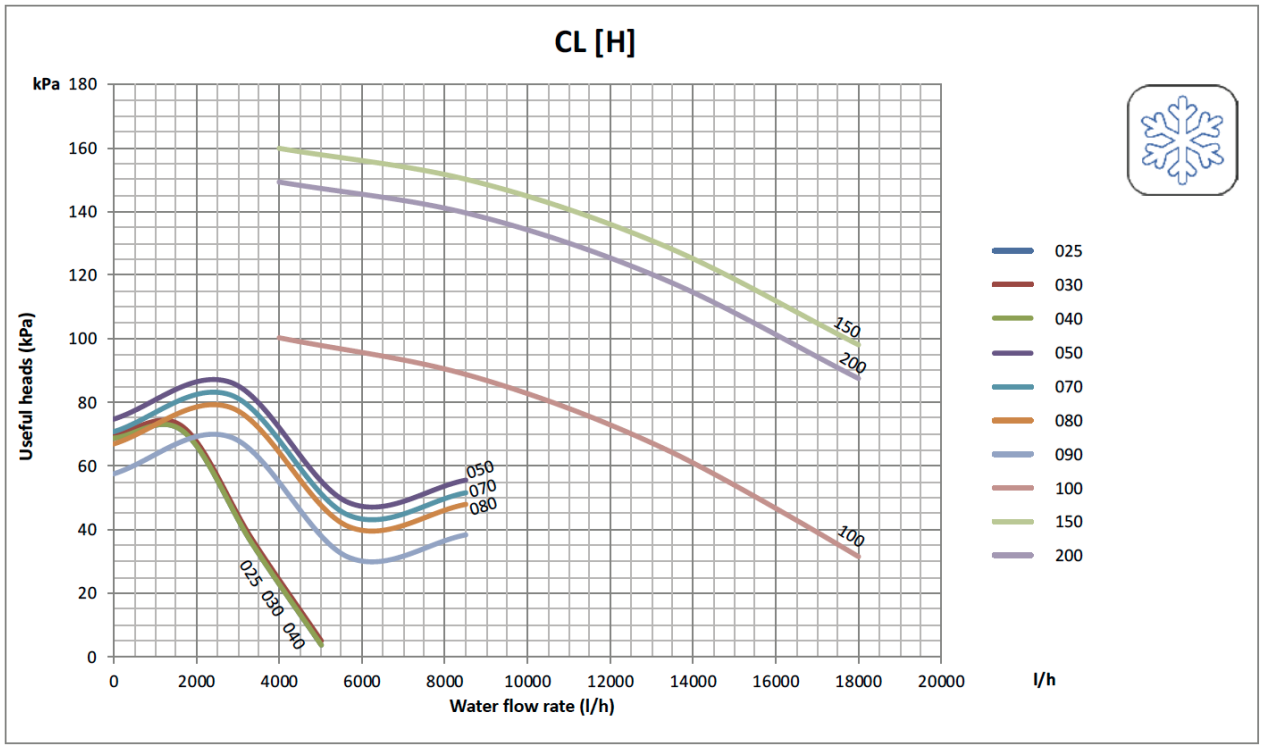
Pressure drops include:

- Plate heat exchanger pressure drop
- Factory-fitted water filter pressure drop
- Factory-fitted water pipework pressure drop

CORRECTION FACTORS TABLE							
Average water temperature	5	**10**	15	20	30	40	50
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,95	0,93	0,91

13. USEFUL HEADS TO THE SYSTEM





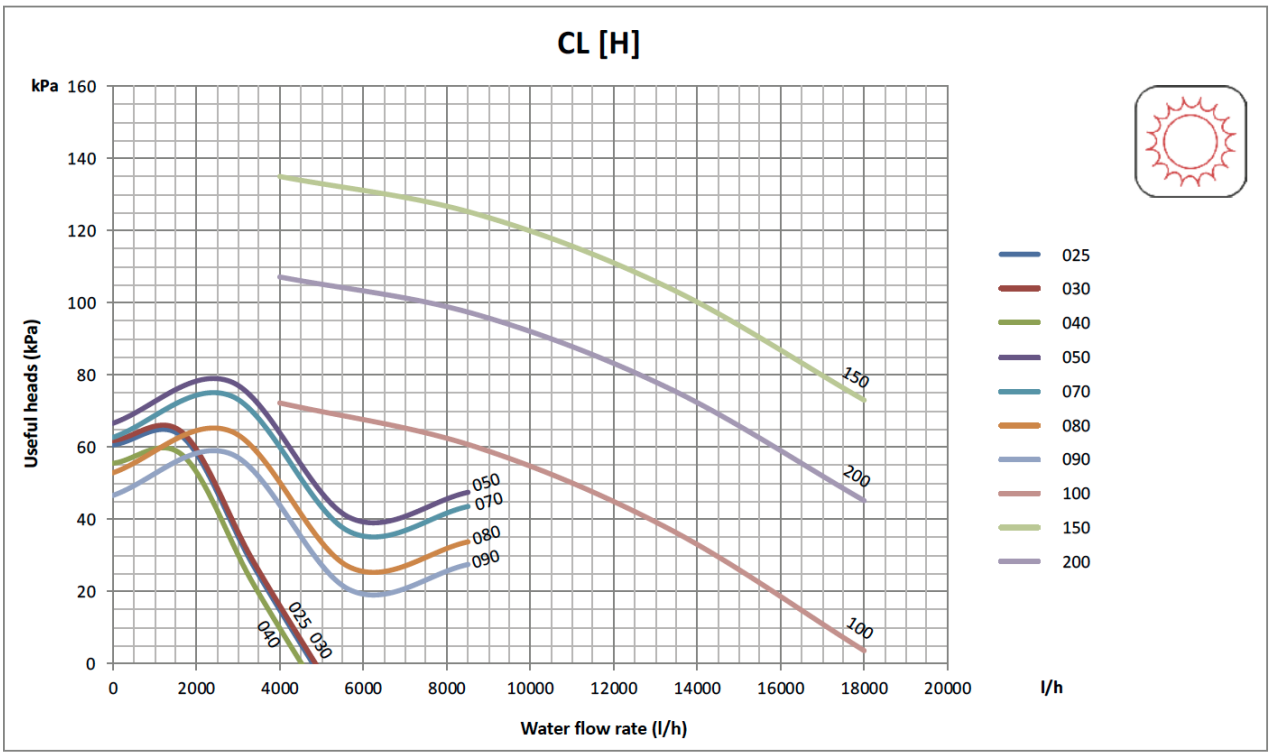
COOLING

Evaporator outlet water temperature ..... 7 °C

Evaporator inlet water temperature..... 12 °C

External air temperature ..... 35 °C

Available fan head (see nominal available fan static pressure)



HEATING
Condenser inlet water temperature..... 40 °C
Condenser outlet water temperatur..... 45 °C
External air temperature.....7°C bs / 6°C bu
Available fan head (see nominal available fan static pressure)

14. CORRECTION FACTORS

CORRECTION FACTORS TABLE							
Average water temperature	5	**10**	15	20	30	40	50
Multiplicative coefficient	1,02	**1,00**	0,98	0,97	0,95	0,93	0,91

FOULING FACTORS				
	[K*m²]/[W]	**0,00005**	**0,0001**	**0,0002**
Cooling capacity correction factor		1	0,98	094
Power input correction factor		1	0,98	0,95

CORRECTION FACTORS FOR ΔT DIFFERENT THAN NOMINAL				
	3	**5**	**8**	**10**
Cooling capacity correction factor	0,99	1	1,02	1,03
Power input correction factor	0,99	1	1,01	1,02

15. ETHYLENE GLYCOL SOLUTION

ETHYLENE GLYCOL

COOLING MODE

CORRECTION FACTOR WITH ETHYLENE GLYCOL - COOLING MODE											
Freezing Point	°C	0	-3,63	-6,10	-8,93	-12,11	-15,74	-19,94	-24,79	-30,44	-37,10
Percent ethylene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwc	-	1,000	1,033	1,040	1,049	1,060	1,072	1,086	1,102	1,120	1,141
Pc	-	1,000	0,990	0,985	0,980	0,975	0,970	0,965	0,960	0,955	0,950
Pa	-	1,000	0,996	0,994	0,992	0,990	0,988	0,986	0,984	0,982	0,980
Dp	-	1,000	1,109	1,157	1,209	1,268	1,336	1,414	1,505	1,609	1,728

Average water temperature = 9,5 °C

HEATING MODE

CORRECTION FACTOR WITH ETHYLENE GLYCOL - HEATING MODE											
Freezing Point	°C	0	-3,63	-6,10	-8,93	-12,11	-15,74	-19,94	-24,79	-30,44	-37,10
Percent ethylene glycol	%	0	10	15	20	25	30	35	40	45	50
Qwh	-	1,000	1,027	1,038	1,050	1,063	1,078	1,095	1,114	1,135	1,158
Ph	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Pa	-	1,000	1,002	1,003	1,004	1,005	1,007	1,008	1,010	1,012	1,015
Dp	-	1,000	1,087	1,128	1,175	1,227	1,286	1,353	1,428	1,514	1,610

Average water temperature = 42,5 °C

Qwc: Corrective factor of flow rates (middle water temperatur 9,5°C)
Qwh: Corrective factor of flow rates (middle water temperatur 42,5°C)
Pc: Corrective factor of cooling capacity
Ph: Corrective factor of heating capacity
Pa: Corrective factor of imput power
Dp: Corrective factor of pressure drop

PROPYLENE GLYCOL

COOLING MODE

CORRECTION FACTOR WITH PROPILENE GLYCOL - COOLING MODE											
Freezing Point	°C	0	-3,43	-5,30	-7,44	-9,98	-13,08	-16,86	-21,47	-27,04	-33,72
Percent PROPILENE glycol	%	0	10	15	20	25	30	35	40	45	50
Qwc	-	1,000	1,007	1,006	1,007	1,010	1,015	1,022	1,032	1,044	1,058
Pc	-	1,000	0,985	0,978	0,970	0,963	0,955	0,947	0,939	0,932	0,924
Pa	-	1,000	0,996	0,994	0,992	0,990	0,988	0,986	0,984	0,982	0,980
Dp	-	1,000	1,082	1,102	1,143	1,201	1,271	1,351	1,435	1,520	1,602

Average water temperature = 9,5 °C

HEATING MODE

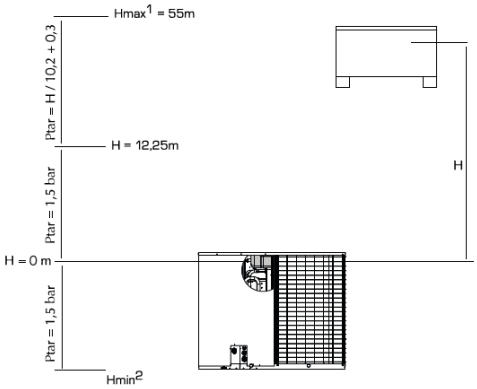
CORRECTION FACTOR WITH PROPILENE GLYCOL - HEATING MODE											
Freezing Point	°C	0	-3,43	-5,30	-7,44	-9,98	-13,08	-16,86	-21,47	-27,04	-33,72
Percent PROPILENE glycol	%	0	10	15	20	25	30	35	40	45	50
Qwh	-	1,000	1,008	1,014	1,021	1,030	1,042	1,055	1,071	1,090	1,112
Ph	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Pa	-	1,000	1,003	1,004	1,005	1,007	1,009	1,011	1,014	1,018	1,023
Dp	-	1,000	1,050	1,077	1,111	1,153	1,202	1,258	1,321	1,390	1,467

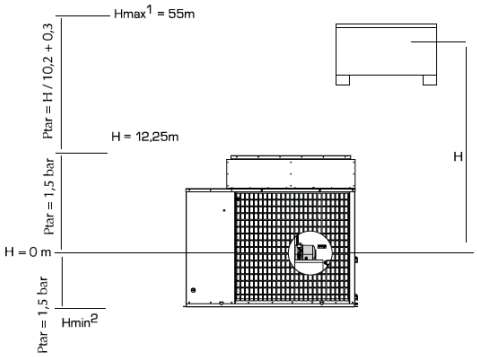
Average water temperature =42,5 °C

Qwc: Corrective factor of flow rates (middle water temperatur 9,5°C)
Qwh: Corrective factor of flow rates (middle water temperatur 42,5°C)
Pc: Corrective factor of cooling capacity
Ph: Corrective factor of heating capacity
Pa: Corrective factor of imput power
Dp: Corrective factor of pressure drop

16. EXPANSION VESSEL CALIBRATION

Standard factory-set pressure value of expansion vessel is 1.5 bar, maximum value is 6 bar.
Vessel calibration must be regulated depending on the maximum level difference (H) of the user (see figure) in agreement with the following formula:
p (calibration) [bar] = **H** [m] / 10.2 + 0.3.
For example: if level difference (H) is equal to 20 m, the calibration value of the vessel will be 2.3 bar.
If the calibration value obtained from formula is less than 1.5 bar (i.e. for H < 12.25), keep standard calibration.





Hydraulic height	H m	30	25	20	15	≥ 12.25
Expansion tank calibration	bar	3.2	2.8	2.3	1.8	1.5
Water content reference value	l (1)	2.174	2.646	3.118	3590	3852
Water content reference value	l (2)	978	1190	1404	1616	1732
Water content reference value	l (3)	510	622	732	844	904

Reference operational conditions:
(1) Cooling: Max water temp. = 40 °C, min water temp. = 4 °C.
(2) Heating (heat pump): Max water temp. = 60 °C, min water temp. = 4 °C.
(3) Heating (boiler): Max water temp. = 85 °C, min water temp. = 4 °C.

KEY
(1) Check that highest installation is not higher than 55 metres.

(2) Ensure that lowest installation can withstand global pressure in that position.

Glycol water	Water temp. °C		Correction coefficient	Reference condition
	max.	min.		
10%	40	-2	0,507	(1)
10%	60	-2	0,686	(2)
10%	85	-2	0,809	(3)
20%	40	-6	0,434	(1)
20%	60	-6	0,604	(2)
20%	85	-6	0,729	(3)
35%	40	-6	0,393	(1)
35%	60	-6	0,555	(2)
35%	85	-6	0,677	(3)

Working reference conditions:
(1) Cooling: Max. water temp. = 40°C, Min. water temp. = 4°C.
(2) Heating (heat pump): Max. water temp. = 60°C, Min. water temp. = 4°C.
(3) Heating (boiler): Max. water temp. = 85°C, Min. water temp. = 4°C.

ATTENTION
It is recommended to design systems with high water content (minimum recommended values shown in table), in order to limit:
1. The hourly number of inversions between operating modes.
2. Drop in water temperature during winter defrost cycles.
3. Use of a value lower than that recommended causes a greater reduction of the water temperature. Without compromising correct operation of the unit I**T IS RECOMMENDED NOT TO DROP BELOW 4l/kW.**

17. MINIMUM WATER CONTENT

CL	U.M.	050	070	080	090	100	150	200
Number of compressors	n°	1	1	1	1	2	2	2
Recommended minimum water content	Model "°" Cooling only							
	l/kW	10	10	10	10	10	10	10
	Model "H" Heating pump							
	l/kW	4	4	4	4	4	4	4

18. SOUND DATA

CL	VERS.	FAN STATIC PRESSURE [Pa]	SEGNALE VEL. VENTIL. [V]	TOTAL SOUND LEVEL			OCTAVE BAND [HZ]						
				POT. [dB(A)]	PRESSURE		125	250	500	1000	2000	4000	8000
					10 M [dB(A)]	1 M [dB(A)]	SOUND POWER FOR CENTRAL FREQUENCY BAND [dB(A)]						
UNIT RADIATED													
CL025	°	50	6,0	78,3	46,3	58,3	62,0	70,1	73,5	71,7	70,9	67,3	58,6
	H			78,3			62,0	70,1	73,5	71,7	70,9	67,3	58,6
CL030	°	50	6,0	78,3	46,3	58,3	62,0	70,1	73,5	71,7	70,9	67,3	58,6
	H			78,3			62,0	70,1	73,5	71,7	70,9	67,3	58,6
CL040	H	80	5,0	73,0	41,0	53,0	64,7	62,3	67,1	66,7	66,1	61,3	51,6
CL050	°	80	5,0	73,0	41,0	53,0	64,7	62,3	67,1	66,7	66,1	61,3	51,6
	H			73,0			64,7	62,3	67,1	66,7	66,1	61,3	51,6
CL070	°	80	5,0	73,0	41,0	53,0	64,7	62,3	67,1	66,7	66,1	61,3	51,6
	H			73,0			64,7	62,3	67,1	66,7	66,1	61,3	51,6
CL080	H	80	5,0	73,0	41,0	53,0	64,7	62,3	67,1	66,7	66,1	61,3	51,6
CL090	°	80	5,5	75,7	43,7	55,7	67,9	65,0	69,3	69,3	68,8	64,5	54,8
	H			75,7			67,9	65,0	69,3	69,3	68,8	64,5	54,8
CL100	°	80	4,5	74,4	42,9	58,2	67,4	64,5	68,7	67,5	66,9	61,5	51,1
	H			74,4			67,4	64,5	68,7	67,5	66,9	61,5	51,1
CL150	°	100	5,4	78,7	47,2	62,5	71,6	68,8	72,7	72,2	71,2	65,6	56,3
	H			78,7			71,6	68,8	72,7	72,2	71,2	65,6	56,3
CL200	°	100	5,4	78,7	47,2	62,5	71,6	68,8	72,7	72,2	71,2	65,6	56,3
	H		6,5	80,4	48,9	64,2	72,9	70,4	73,8	74,3	73,2	67,9	60,2
DISCHARGE													
CL025	°	50	6,0	78,0	46,3	58,3	56,5	69,9	70,1	73,2	71,7	67,3	58,0
	H			78,0			56,5	69,9	70,1	73,2	71,7	67,3	58,0
CL030	°	50	6,0	78,0	46,3	58,3	56,5	69,9	70,1	73,2	71,7	67,3	58,0
	H			78,0			56,5	69,9	70,1	73,2	71,7	67,3	58,0
CL040	H	80	5,0	78,0	45,9	57,9	76,2	69,2	66,6	66,4	64,8	61,0	51,7
CL050	°	80	5,0	78,0	45,9	57,9	76,2	69,2	66,6	66,4	64,8	61,0	51,7
	H			78,0			76,2	69,2	66,6	66,4	64,8	61,0	51,7
CL070	°	80	5,0	78,0	45,9	57,9	76,2	69,2	66,6	66,4	64,8	61,0	51,7
	H			78,0			76,2	69,2	66,6	66,4	64,8	61,0	51,7
CL080	H	80	5,0	78,0	45,9	57,9	76,2	69,2	66,6	66,4	64,8	61,0	51,7
CL090	°	80	5,5	81,0	48,9	60,9	79,3	72,3	69,3	68,9	67,6	64,0	54,7
	H			81,0			79,3	72,3	69,3	68,9	67,6	64,0	54,7
CL100	°	80	4,5	78,0	46,5	61,8	76,9	68,6	64,5	63,9	61,1	57,8	51,3
	H			78,0			76,9	68,6	64,5	63,9	61,1	57,8	51,3
CL150	°	100	5,4	83,0	51,9	67,2	80,5	74,8	73,4	73,2	70,1	64,6	53,2
	H			83,0			80,5	74,8	73,4	73,2	70,1	64,6	53,2
CL200	°	100	5,4	83,0	51,9	67,2	80,5	74,8	73,4	73,2	70,1	64,6	53,2
	H		6,5	85,0	53,6	68,9	81,3	77,7	76,6	76,9	73,7	67,3	54,4

COOLING

Evaporator outlet water temperature ..... 7 °C
Evaporator inlet water temperature..... 12 °C
External air temperature ..... 35 °C

HEATING

Condenser inlet water temperature..... 40 °C
Condenser outlet water temperatur ..... 45 °C
External air temperature .....7°C bs / 6°C bu

Available fan head (see nominal available fan static pressure)

SOUND POWER

Aermec determines sound power values on the basis of measurements made in compliance with the ISO 9614-2 Standard, in agreement with that requested by Eurovent certification.

SOUND PRESSURE

Sound pressure in free field conditions on reflective surface (directivity factor Q=2) at 10 mt from the external surface of unit, in compliance with ISO 3744 regulations.

19. REFRIGERANT PIPING

Refrigerant piping				
Model	Piping length [m]	Gas line Ø [mm]	Liquid line Ø [mm]	R410A [g/m]
CL 025 C	0-10	12,7	9,52	70
	10-20	12,7	9,52	70
	20-30	12,7	9,52	70
CL 030 C	0-10	12,7	12,7	120
	10-20	12,7	12,7	120
	20-30	15,88	12,7	130
CL 040 C	0-10	12,7	12,7	120
	10-20	15,88	12,7	130
	20-30	15,88	12,7	130
CL 050 C	0-10	15,88	15,88	190
	10-20	15,88	15,88	190
	20-30	18	15,88	190
CL 070 C	0-10	15,88	15,88	190
	10-20	18	15,88	190
	20-30	18	15,88	190
CL 080 C	0-10	15,88	15,88	190
	10-20	18	15,88	190
	20-30	22	15,88	210
CL 090 C	0-10	18	15,88	190
	10-20	22	15,88	210
	20-30	22	15,88	210
CL 100 C	0-10	28,00	15,88	230
	10-20	28,00	15,88	230
	20-30	28,00	15,88	230
CL 150 C	0-10	28,00	15,88	230
	10-20	28,00	15,88	230
	20-30	28,00	15,88	230
CL 200 C	0-10	35,00	15,88	260
	10-20	35,00	18,00	310
	20-30	35,00	18,00	310