EREBA 17-21

Inverter Air-Cooled Liquid chillers
& Reversible Air-to-Water Heat Pumps

Easy and fast installation

Hydraulic module available

Inverter technology

compressor and fans

Nominal cooling capacity : 15-18 kW

Nominal heating capacity: 17-21 kW

60°*

Cooling or heating

inverter

HFC R410A

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*60°C for 17HT / 57°C for 21HT

Use

The **EREBA** air-to-water heat pump is designed for heating and cooling applications in new, existing individual homes and small businesses models.

When installed alone, EREBA is compatible with low to medium temperature emitters (underfloor heating, fan coil units, water cassettes, radiators, mixed installations, etc.). EREBA is also compatible with medium to high temperature emitters for boiler backup operation.

The EREBA heat pump is installed outside in an open area, ideally as close as possible to the boiler room.

Each unit is tested in the factory and delivered ready for operation.

Range

EREBA's range is composed by 2 models in cooling only and 2 models reversible.

Operating range EREBA 17-21HT in cooling mode with an outdoor temperature from 0°C to 46°C and in heating from -20°C to +30°C.

If the heat pump is the only source of heat:

Below this temperature, heating must be provided by a separate heating source or an additional electrical supply

If the heat pump is used for backup operation:

Operates down to the equilibrium point (temperature below which the heat pump can no longer keep up with heating needs). Below this point, the heat pump and boiler run alternately (heat pump OR boiler).

Compliance

Low Voltage Directive 2014/35/EU

EMC : ElectroMagnectic Compatibility 2014/30/EU

PED : Pressure Equipment Directive 2014/6/EU

WEEE : Waste Electrical & Electronic Equipment 2012/19/EU

RoHS : Restriction of Hazardous Substances Directive 2011/65/EU

EREBA 17-21

Inverter Air-Cooled Liquid chillers & Reversible Air-to-Water Heat Pumps

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

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

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

For added flexibility the EREBA units are available with hydraulic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

Features

The EREBA heat pump systems can be used with a wide choice of CIAT terminal fan coil units, and ductable products.

Ecodesign is the European Directive that sets mandatory requirements for Energy related Products (ErP) to improve their energy efficiency.

Quiet operation

Compressors

- Low-noise INVERTER Twin rotary compressor with low vibration levels
- Advanced technology providing maximum energy-efficiency with high capacity available at peak conditions and optimised efficiency at low and mid compressor speeds. The EREBA heat pump DC inverter uses Intelligent Power Drive Unit (IPDU) hybrid inverter technology. An electronic management logic is used to optimised compressor operation in all conditions, minimised temperature fluctuation to give a perfect individual comfort control with significant reduction of energy consumption:

  PWM: pulse width modulation of the direct current controls the compressor at partial load conditions, adjusting the frequency at fixed voltage. The compressor speed is fine-tuned and the system provides high-level comfort (no temperature fluctuations) at exceptionally efficient working conditions.

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

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

Air heat exchanger section

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

Easy and fast installation

Integrated hydraulic module

- Variable speed circulator
- Water filter protecting the water pump against circulating debris
- High-capacity membrane expansion tank ensures pressurisation of the water circuit
- Overpressure valve, set to 3 bar
- Thermal insulation and frost protection down to -20°C, using an electric resistance heater and pump cycling.

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

Physical features

- Advanced circuit design and component selection has resulted in a compact unit with an exceptionally small footprint that is easy to transport even through narrow doors. Reduced operating weight and a handle on the unit panels to facilitate transport.
- The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- A neutral colour (RAL 7035) to facilitate the integration in residential areas

Simplified electrical connections

- Main disconnect switch with high trip capacity
- Transformer for safe 24 V control circuit supply included

Fast commissioning

- Systematic factory operation test before shipment
- Quick-test function for step-by-step verification of the instruments, electrical components and motors.

Economical operation

Increased seasonal efficiency

- In accordance with EN 14825:2013, Average Climate, energy label reach A+ (see Physical data EREBA Reversible units).

Reduced maintenance costs

- Maintenance-free twin rotary compressors
- Fast diagnosis of possible incidents and their history via the user interface WUI
- R410A refrigerant is easier to use than other refrigerant blends

Environmental care

Ozone-friendly R410A refrigerant

- Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
- Very efficient - gives an increased energy efficiency ratio (EER)

Leak-tight refrigerant circuit

- Brazed refrigerant connections for increased leak-tightness
- Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Superior reliability

Auto-adaptive control

- Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydraulic circuit.

Exceptional endurance tests

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

NHC Control

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

Ease-of-use

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

To facilitate the use of this interface, 3 levels of access are available: end user, installer and factory.

Key features

- Heating and cooling mode
- Predefined climatic curves (12) or customised climatic curves (water temperature setpoint control)
- Air temperature set point control
- Scheduling mode
- Low noise level or night mode
- Anti-freeze protection
- Floor heating thermal cutoff
- Slab curing mode
- Backup electric heater controlled in 1 /2 /3 heat stage(s)
- Backup by oil or gas boiler in alternating mode
- Hydraulic module with control of the flow rate
- Managed an additional pump
- Management of swimming pool heating during spring and autumn
- Manage domestic hot water with or without
  - Anti-legionella mode
  - DHW backup
  - DHW backup + Boosted by 1 or 2 or 3 electric heat stage(s)
- Master/slave control of 4 units operating in parallel with operating time equalization and automatic changeover in case of a unit fault (sensor in accessory).
- ModBUS Protocol

Choice of control product

3 options are available to drive the EREBA 17 - 21:

- Dry contact
- User interface WUI
- ModBus protocol

User Interface WUI

This interface can be installed up to 50 m away. It is connected to the NHC board with a 4 wires cable.
2 installation possibilities:

- WUI has an internal sensor to measure the room temperature take with the internal sensor, setpoint selected is air temperature.

Modbus

Direct access with Modbus connection to set, configure and monitor the EREBA.

Input remote contact :

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

Large choice of Input Contacts

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

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

Output remote contact available

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

alert, alarm , standby, running (Cool, Heat, DHW or Defrost Modes), indoor air temperature reached, electrical heat stage 2, electrical heat stage 3.

HYDRAULIC MODULE

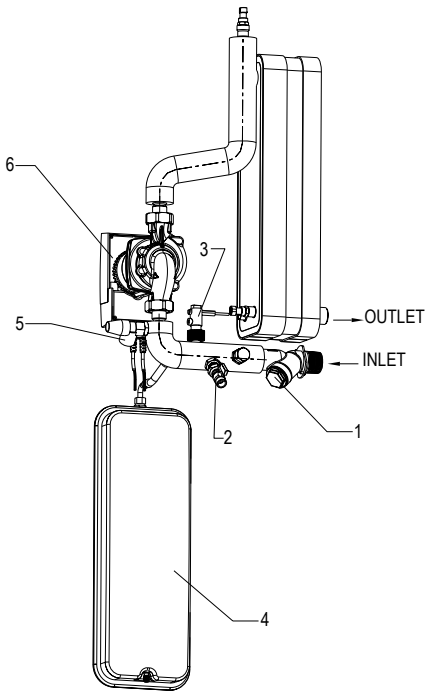
The hydraulic module reduces the installation time. The unit is factory-equipped with the main hydraulic components required for the installation.

The water heat exchanger and the hydraulic module are protected against frost down to -20°C, using an electric resistance heater (standard) and pump cycling. However, the use of MPG (Mono Propylene Glycol) can effectively protect the installation even in case of power failure

Hydraulic module		
Expansion tank volume	l	8
Maximum water-side operating pressure	kPa	300
Water pump		
Power input*	kW	0.31
Nominal operating current draw*	A	1.57

* Nominal conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor = 0 m² K/kW.

Gross performances, not in accordance with EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.



Legend:

1 Mesh filter
2 Water drain valve
3 Paddle flow switch
4 Expansion tank
5 Safety valve
6 Circulator

PHYSICAL DATA, EREBA COOLING 17T - 21T

EREBA Cooling only				17T	21T
Cooling					
Standard unit Full load performances*	CA1	Nominal capacity	kW	16,0	19,2
		EER	kW/kW	3,46	3,30
		Eurovent class		A	A
	CA2	Nominal capacity	kW	22,2	25,9
		EER	kW/kW	4,29	4,10
		Eurovent class		A	A
Standard unit Seasonal energy efficiency**		**SEER $_{12/7\ °C}$ Comfort low temp.**	**kWh/kWh**	**5,56**	**5,48**
		ηs cool $_{12/7\ °C}$	**%**	**219**	**216**
Sound power level (1)			dB(A)	71	74
Sound pressure level at 10 m(2)			dB(A)	40	43
Length			mm	1140	
Width			mm	585	
Height			mm	1580	
Operating Weight (3)			kg	169	177
Compressors				Rotary compressor	
R410A refrigerant charge (3)			kg	6,25	
Minimum capacity control (4)			%	33%	41%
Condenser				Grooved copper tubes, aluminium fins	
Quantity axial fan				2	
Maximum total air flow			l/s	2000	2400
Maximum rotational speed			rps	14	16
Evaporator				Brazed plate heat exchanger	
Water volume			L	1,52	1,9
Expansion tank volume			l	8	
Max. water-side operating pressure with hydraulic module (5)			kPa	300	300
Outlet diameter / with adaptor				1"G male / 1"1/4 G male	
Chassis paint colour				RAL 7035	

* In accordance with standard EN 14511-3:2013

** In accordance with standard EN 14825:2016, average climate

CA1 Cooling mode conditions: Temperature of the entering/leaving water to/from the evaporator 12 °C/7 °C, outdoor air temperature at 35 °C. Evaporator fouling factor 0 m² k/W.

CA2 Cooling mode conditions: Temperature of the entering/leaving water to/from the evaporator 23 °C/18 °C, outdoor air temperature at 35 °C. Evaporator fouling factor 0 m² k/W.

ηs cool$_{12/7\ °C}$ & SEER $_{12/7\ °C}$ Values in bold comply with Ecodesign Regulation (EU) No. 2016/2281 for Comfort application

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

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

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

(4) Cooling Eurovent condition

(5) Min. water-side operating pressure with variable speed hydraulic module is 40 kPa.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, EREBA 17HT - 21HT

Reversible EREBA				17HT	21HT
Heating					
Standard unit Full load performances*	HA1	Nominal capacity	kW	16,9	20,7
		COP	kW/kW	4,23	4,15
	HA2	Nominal capacity	kW	15,8	19,5
		COP	kW/kW	3,44	3,32
	HA3	Nominal capacity	kW	15,0	18,8
		COP	kW/kW	2,68	2,50
Standard unit Seasonal energy efficiency**	HA3	**$SCOP_{47/55\ °C}$**	**kW/kW**	**3,03**	**2,85**
		$\eta s\ heat_{47/55\ °C}$	**%**	**118**	**111**
		P_{rated}	kW	9	15
Cooling					
Standard unit Full load performances*	CA1	Nominal capacity	kW	15,2	19,1
		EER	kW/kW	3,14	3,18
		Eurovent class	kW	B	A
	CA2	Nominal capacity	kW/kW	21,4	26,4
		EER	kW	3,99	3,98
		Eurovent class	kW/kW	A	A
Standard unit Seasonal energy efficiency**		SEER $_{12/7\ °C}$ Comfort low temp.	**kW/kW**	4,60	4,50
		$\eta s\ cool_{12/7\ °C}$	kW	181	177
Sound power level (1)			dB(A)	71	74
Sound pressure level at 10 m (2)			dB(A)	40	43
Length			mm	1140	
Width			mm	585	
Height			mm	1580	
Operating Weight (3)			kg	191	199
Compressors				Rotary compressor	
R410A refrigerant charge (3)			kg	8	
Minimum capacity control (4)			%	33%	41%
Air heat exchanger				Grooved copper tubes, aluminium fins	
Quantity axial fan				2	
Maximum total air flow			l/s	2000	2400
Maximum rotational speed			rps	14	16
Water heat exchanger				Brazed plate heat exchanger	
Water volume			L	1,52	1,9
Expansion tank volume				8	
Max. water-side operating pressure with hydraulic module (5)				300	
Outlet diameter / with adaptor				1"G male / 1"1/4 G male	
Chassis paint colour				RAL 7035	

* In accordance with standard EN 14511-3:2013

** In accordance with standard EN 14825:2016, average climate

HA1 Heating mode conditions: Temperature of the entering/leaving water to/from the exchanger 30 °C/35 °C, outdoor air temperature tdb/twb at 7 °C/6 °C wb, evaporator fouling factor 0 m² k/W

HA2 Heating mode conditions: Temperature of the entering/leaving water to/from the exchanger 40 °C/45 °C, outdoor air temperature tdb/twb at 7 °C/6 °C wb, evaporator fouling factor 0 m² k/W

HA3 Heating mode conditions: Temperature of the entering/leaving water to/from the exchanger 47 °C/55 °C, outdoor air temperature tdb/twb at 7 °C/6 °C wb, evaporator fouling factor 0 m² k/W

CA1 Cooling mode conditions: Temperature of the entering/leaving water to/from the evaporator 12 °C/7 °C, outdoor air temperature at 35 °C. Evaporator fouling factor 0 m² k/W.

CA2 Cooling mode conditions: Temperature of the entering/leaving water to/from the evaporator 23 °C/18 °C, outdoor air temperature at 35 °C. Evaporator fouling factor 0 m² k/W.

$\eta s\ heat_{47/55\ °C}$ & $SCOP_{47/55\ °C}$ **Values in bold comply with Ecodesign Regulation (EU) No. 813/2013 for heating application**

$\eta s\ cool_{12/7\ °C}$ & SEER $_{12/7\ °C}$ Values calculated in accordance with EN 14825:2016

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

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

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

(4) Cooling Eurovent condition

(5) Min. water-side operating pressure with variable speed hydraulic module is 40 kPa.

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

ELECTRICAL DATA, EREBA 17T-21T/17HT-21HT

EREBA		17	21
Nominal power supply	V-ph-Hz	400-3+N-50	400-3+N-50
Voltage range	V	360-440	360-440
Control circuit supply		24V AC via internal transformer	
Nominal unit current drawn (Un) *	A	12,5	14,3
Maximum unit power input (Un) **	kW	10,8	12,4
Cos Phi unit at maximum power **		0,93	0,93
Maximum unit current drawn (Un-10%)***	A	18,5	21,2
Maximum unit current drawn (Un) ****	A	16,7	19,2

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

NEW ENERGY EFFICIENCY METRIC: SCOP

Because buildings have a thermal load depending on outdoor air temperature

The Seasonal Coefficient of Performance (SCOP) is a new European parameter to evaluate the energy efficiency of heat pumps. It replaces the Coefficient of Performance (COP), which measured the ratio of power consumed to power produced in the heating mode on a single operating point.

Unlike its predecessor, the SCOP is representative of operation during the heating season as it includes seasonal variations by defining several realistic measurement points. Together, these contribute to classification in the correct energy efficiency class.

SCOP versus COP efficiency (for heat pumps)

TEMPERATURE		OUTPUT (kW)		AUXILIARY MODES (kWh)		HOURS	
COP	**SCOP**	**COP**	**SCOP**	**COP**	**SCOP**	**COP**	**SCOP**
1 temperature condition: 7°C	Several rating temperatures: -10°C to 16°C (average climate)	Full load	Partial load + Full load	No auxiliary power modes taken into consideration	Includes consumption auxiliary modes: - Standby mode - Off mode - Thermostat off…	N/A	Number of hours occurring at each air temperature (bin hours)

SCOP Calculation

SCOP is the ratio between annual heating demand and annual energy input over an entire heating season.

$$SCOP = \frac{\text{ANNUAL HEATING DEMAND}}{\text{ANNUAL ENERGY INPUT*}}$$

* Annual energy input:
- Compressor running (SCOPon)
- Compressor not running: thermostat OFF, standby, OFF mode & crankcase heater
- Backup heater to supplement heat pump capacity

ηs: seasonal primary energy efficiency metrics:

In order to compare the energy efficiency of products using different sources of energy, such as boilers (gas, fuel) and electric heat pumps, the Ecodesign regulation introduces a new measurement expressed in primary energy: ηs (eta s).

$$\eta s = SCOP/2.5 \times 100 - i^{**}$$

** Air source heat pump i = 3

Average climate

Medium temp (47/55)

EREBA	ηs (%)	SCOP	Pdesign (kW)	Annual power input with backup heater (kWh)	Sound power level (dB(A)	Energy Class
17HT	118	3,03	9,11	6189	71	A+
21HT	111	2,85	15,07	10889	74	A+

Low temp (30/35)

EREBA	ηs (%)	SCOP	Pdesign (kW)	Annual power input with backup heater (kWh)	Sound power level (dB(A)	Energy Class
17HT	144	3,68	9,25	5169	71	A+
21HT	139	3,56	16,64	9625	74	A+

Colder climate

Medium temp (47/55)

EREBA	ηs (%)	SCOP	Pdesign (kW)	Annual power input with backup heater (kWh)
17HT	108	2,78	16,41	13894
21HT	92	2,37	22,77	22602

Low temp (30/35)

EREBA	ηs (%)	SCOP	Pdesign (kW)	Annual power input with backup heater (kWh)
17HT	121	3,09	13,65	10390
21HT	117	3,01	24,47	19152

Warmer climate

Medium temp (47/55)

EREBA	ηs (%)	SCOP	Pdesign (kW)	Annual power input with backup heater (kWh)
17HT	149	3,8	12,5	4383
21HT	143	3,65	16,37	5983

Low temp (30/35)

EREBA	ηs (%)	SCOP	Pdesign (kW)	Annual power input with backup heater (kWh)
17HT	225	5,71	14,67	3425
21HT	192	4,87	21,06	5764

SOUND SPECTRUM, EREBA 17T-21T / 17HT-21HT

Sound power level (dB(A)

Load*	EREBA 17T	EREBA 17HT	EREBA 21T	EREBA 21HT
100%	71	71	74	74
74%	71	68	69	73
48%	64	65	66	67
21%	60	61	63	65

* SEER Conditions

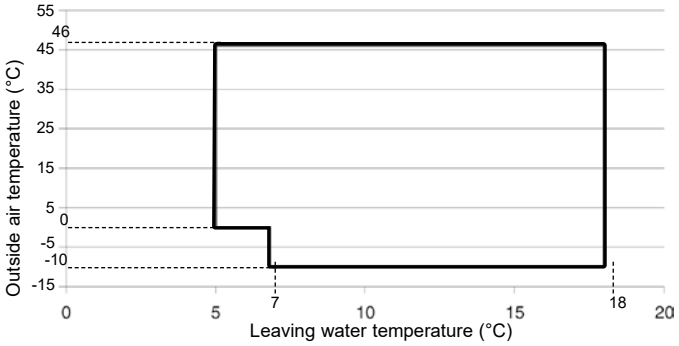
OPERATING LIMITS

Operating range for EREBA 17T-21T

Evaporator Water Temperature	°C	Minimum	Maximum
Entering water temperature at start-up		6 ***	30
Leaving water temperature during operation		5 ***	18
Condenser Air Temperature	**°C**	**Minimum**	**Maximum**
Standard unit		-10 **	46

** For operation at an outdoor ambient temperature below 0°C (cooling mode and heating mode), the water freeze protection should be available and / or the water loop can be protected against frost by the installer, using an anti-freeze solution.
*** Minimum leaving water temperature of 7°C and minimum entering water temperature of 7.5°C for air temperature of -10°C to 0°C.

Operating range EREBA 17T-21T

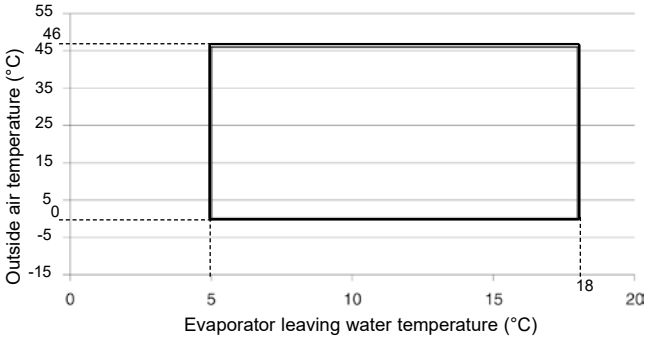


Operating range for EREBA 17HT-21HT

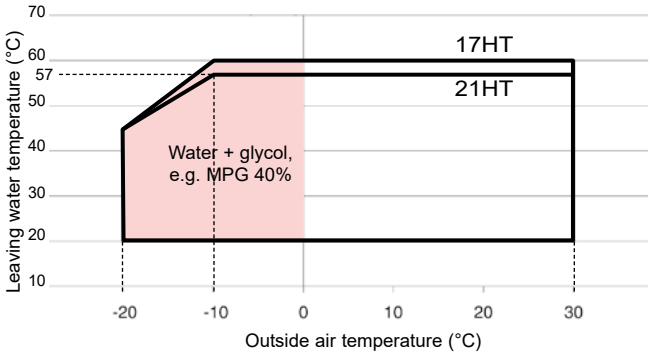
Cooling Cycle			
Evaporator Water Temperature	**°C**	**Minimum**	**Maximum**
Entering water temperature at start-up		6	30
Leaving water temperature during operation		5	18
Condenser Air Temperature	**°C**	**Minimum**	**Maximum**
Standard unit		0	46
Heating Cycle			
Condenser Water Temperature	**°C**	**Minimum**	**Maximum**
Entering water temperature at start-up		10	45
Leaving water temperature during operation		20	60/57*
Evaporator Air Temperature	**°C**	**Minimum**	**Maximum**
Standard unit		-20**	30

* 60°C for EREBA 17HT and 57°C for EREBA 21HT
** For operation at an outdoor ambient temperature below 0°C (cooling mode and heating mode), the water freeze protection should be available and / or the water loop can be protected against frost by the installer, using an anti-freeze solution.

Operating range EREBA 17HT-21HT, Cooling Mode

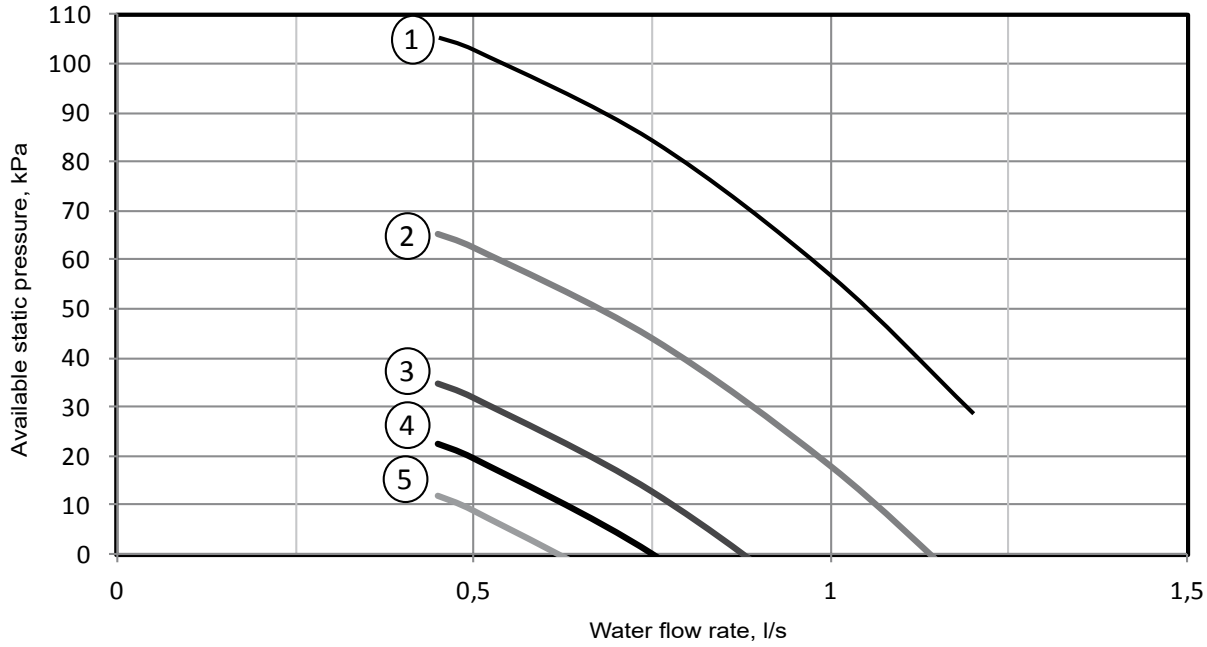


Operating range EREBA 17HT-21HT, Heating Mode



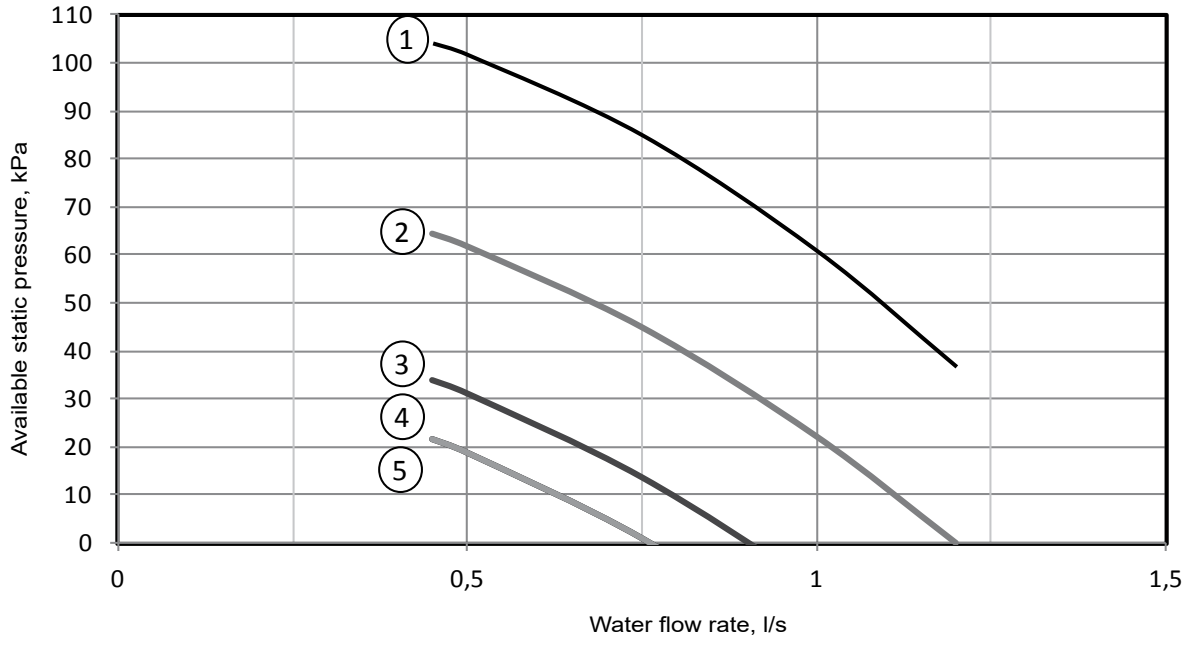
AVAILABLE STATIC SYSTEM PRESSURE

■ Available external static pressure for EREBA 17T-17HT unit



Legend
1. Pump Speed = 100%
2. Pump Speed = 75%
3. Pump Speed = 50%
4. Pump Speed = 38%
5. Pump Speed = 25%

■ Available external static pressure for EREBA 21T-21HT unit



Legend
1. Pump Speed = 100%
2. Pump Speed = 75%
3. Pump Speed = 50%
4. Pump Speed = 38%
5. Pump Speed = 25%

System minimum water volume

The minimum water loop volume, in litres, is given by the following formula:

Volume (l) = CAP (kW) x N

Where CAP is the nominal cooling capacity at nominal operating conditions.

Application	N
Air conditioning	3,5
Heating or domestic hot water application	6
Industrial process cooling	See note

Note : For industrial process cooling applications, where high stability of water temperature levels must be achieved, the values above must be increased. We recommend consulting the factory for these particular applications.

System maximum water volume

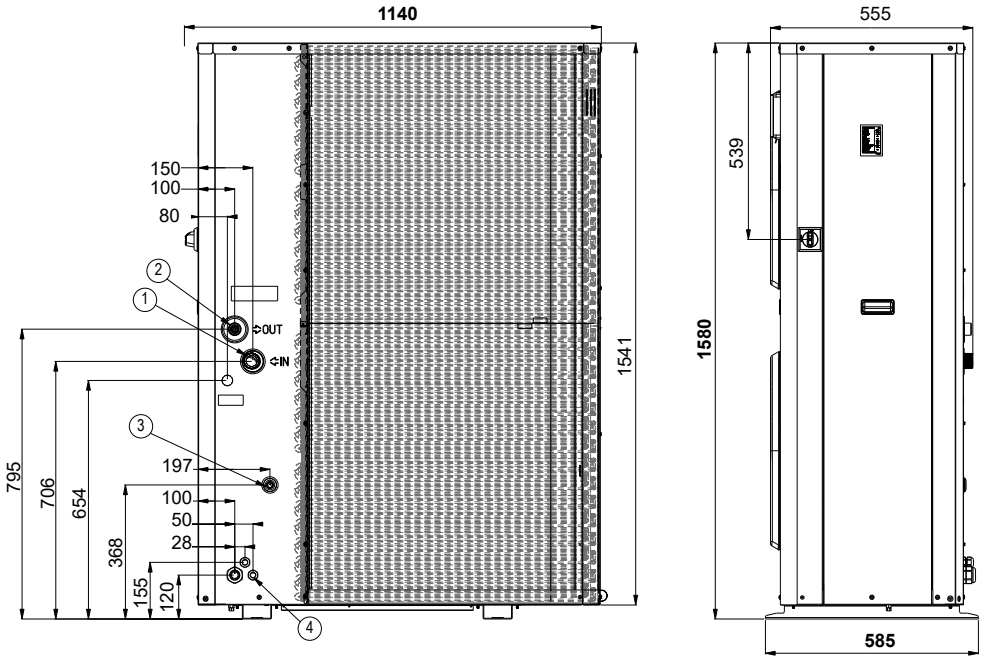
Water maximum volume (L)		
Static pressure (bar)	**1.5**	**3**
Fresh water	200	50
Ethylen glycol 10%	150	28
Ethylen glycol 20%	110	28
Ethylen glycol 30%	90	23
Ethylen glycol 40%	76	19

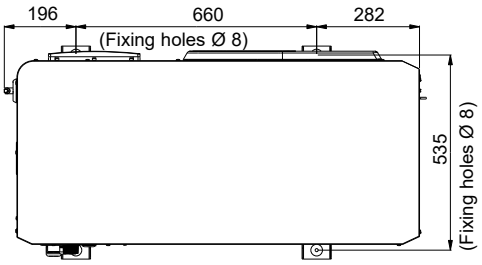
BPHE water flow rate

	Minimum water flow rate, l/s	Maximum water flow rate, l/s
17	0,45	1,2
21	0,57	1,2

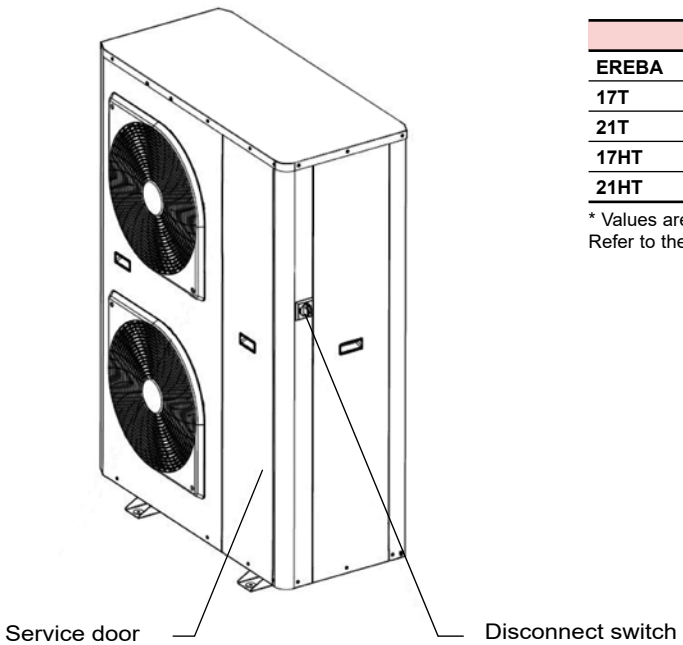
DIMENSIONS (IN MM)

■ EREBA 17T-21T / 17HT-21HT





Legend
All dimensions are given in mm
1. Water inlet
2. Water outlet
3. Fill kit connection
4. Safety valve outlet
5. Electrical connections



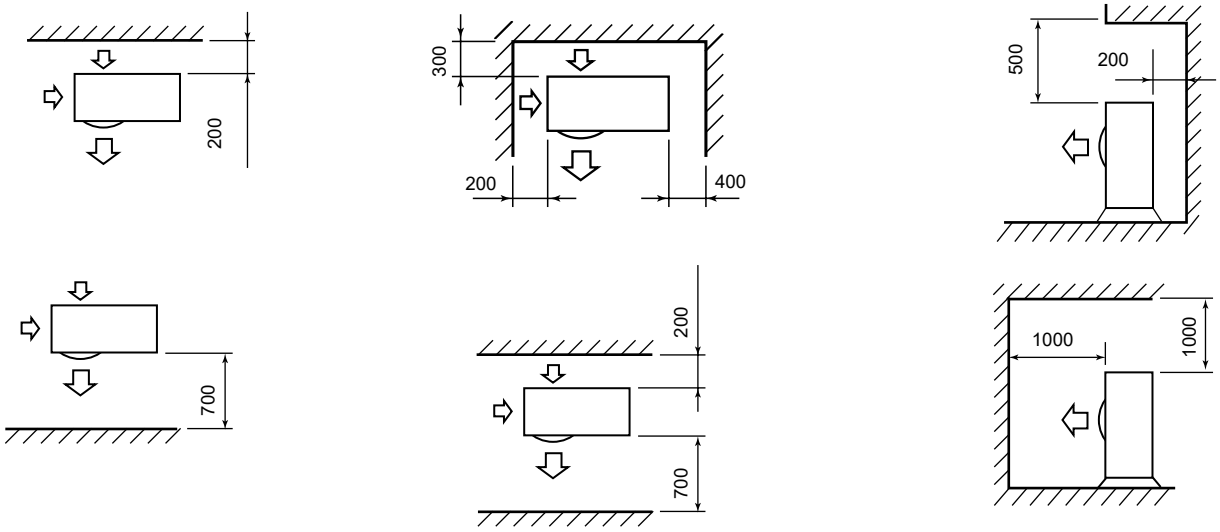
Weight (in kg)	
EREBA	**Operating weight***
17T	169
21T	177
17HT	191
21HT	199

* Values are guidelines only.
Refer to the unit nameplate

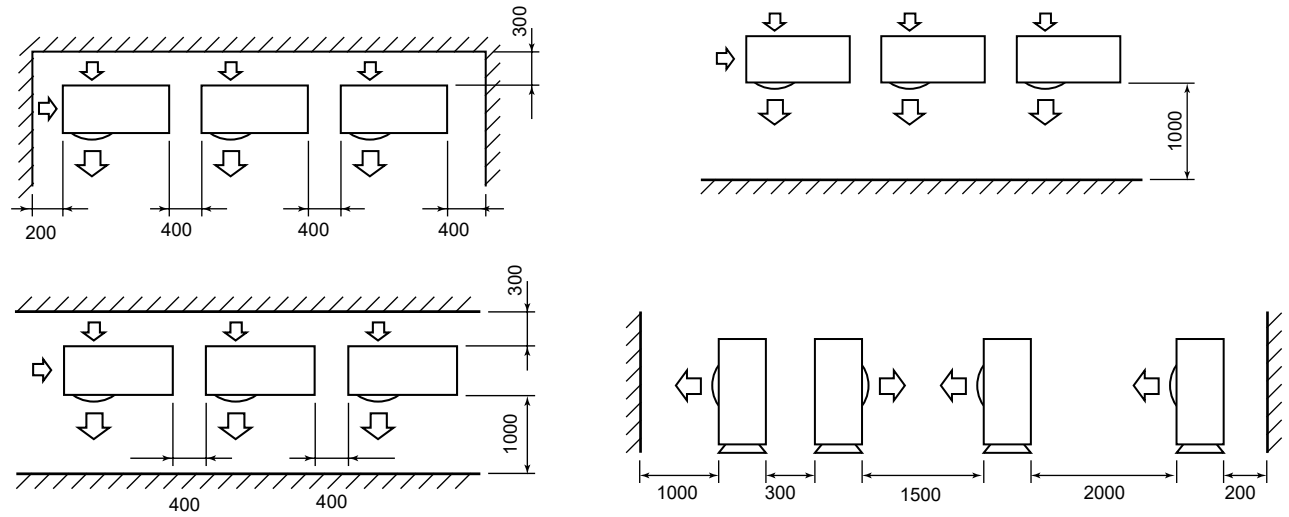
CLEARANCES (IN MM)

▪ EREBA 17T-21T / 17HT-21HT

Single unit installation



Multiple unit installation



Note: The height of any obstacle at both the front and rear should be less than the outdoor unit height.

HEATING CAPACITIES IN ACCORDANCE WITH EN14511-3

Outside air temperature in °C	EREBA	LEAVING WATER TEMPERATURE °C																			
		Heating floor										Comfort unit									
		35										45									
		Pc kW			Pa kW			COP			Q l/s	Pc kW			Pa kW			COP			Q l/s
		Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom
-20	17HT	4,3	2,2	**4,4**	2,3	1,0	2,3	1,9	2,1	1,9	0,45	4,1	2,1	**4,2**	2,6	1,2	2,6	1,6	1,7	1,6	0,45
	21HT	6,2	4,0	**6,3**	3,2	2,0	3,2	1,9	2,0	1,9	0,58	5,7	4,7	**5,7**	3,7	3,1	3,7	1,6	1,5	1,6	0,58
-15	17HT	5,1	2,6	**5,0**	2,5	1,1	2,5	2,1	2,3	2,1	0,45	4,8	2,4	**4,8**	2,8	1,3	2,8	1,7	1,9	1,7	0,45
	21HT	7,4	4,8	**7,4**	3,4	2,1	3,4	2,2	2,3	2,2	0,58	6,9	5,7	**6,9**	4,0	3,3	4,0	1,7	1,7	1,7	0,58
-10	17HT	6,6	2,4	**6,7**	2,9	0,9	3,0	2,2	2,6	2,2	0,52	6,3	2,8	**6,5**	3,3	1,3	3,5	1,9	2,1	1,9	0,50
	21HT	9,4	5,7	**10,1**	3,9	2,2	4,3	2,4	2,6	2,4	0,64	8,8	6,7	**9,5**	4,6	3,5	5,0	1,9	1,9	1,9	0,61
-7	17HT	7,1	2,4	**10,3**	3,0	0,9	5,0	2,4	2,7	2,1	0,57	6,8	2,2	**9,9**	3,4	1,0	5,7	2,0	2,2	1,7	0,54
	21HT	10,2	6,4	**15,0**	4,0	2,3	6,7	2,5	2,8	2,2	0,69	9,5	7,4	**14,4**	4,7	3,6	7,9	2,0	2,0	1,8	0,66
2	17HT	12,5	5,4	**18,4**	4,0	1,7	7,4	3,1	3,3	2,5	0,72	11,8	5,1	**17,6**	4,7	1,7	8,5	2,5	3,0	2,1	0,68
	21HT	15,3	7,1	**19,5**	5,2	2,3	7,8	2,9	3,1	2,5	0,90	14,5	5,4	**18,5**	6,1	2,2	9,0	2,4	2,4	2,0	0,86
7	17HT	16,9	3,3	**21,3**	4,0	0,8	6,9	4,2	4,0	3,1	0,83	15,8	4,4	**20,0**	4,6	1,5	7,9	3,4	2,9	2,5	0,78
	21HT	20,7	7,4	**21,7**	5,0	1,7	7,3	4,2	4,4	3,0	1,01	19,5	6,6	**21,1**	5,9	2,0	8,5	3,3	3,4	2,5	0,97
10	17HT	16,9	3,7	**25,3**	4,1	0,7	7,4	4,2	5,6	3,4	0,87	15,9	4,9	**25,0**	4,7	1,2	8,7	3,4	3,9	2,9	0,82
	21HT	22,4	8,6	**32,1**	5,0	2,2	8,8	4,5	3,8	3,7	1,09	21,3	7,6	**30,9**	5,9	2,6	10,2	3,6	2,9	3,0	1,04

Outside air temperature in °C	EREBA	LEAVING WATER TEMPERATURE °C																			
		Radiator																			
		55										60									
		Pc kW			Pa kW			COP			Q l/s	Pc kW			Pa kW			COP			Q l/s
		Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom
-10	17HT	6,5	2,8	**6,7**	3,6	1,6	3,7	1,8	1,7	1,8	0,48	6,3	2,9	**6,4**	3,8	1,7	3,9	1,7	1,6	1,6	0,47
	21HT	8,1	6,2	**8,8**	5,3	4,1	5,7	1,5	1,5	1,5	0,58										
-7	17HT	7,0	2,1	**8,3**	3,7	1,2	4,6	1,9	1,8	1,8	0,52	6,8	2,1	**6,9**	3,9	1,2	4,0	1,7	1,7	1,7	0,50
	21HT	8,9	6,9	**11,1**	5,5	4,3	7,0	1,6	1,6	1,6	0,62										
2	17HT	11,2	4,2	**12,9**	5,3	1,7	6,6	2,1	2,4	2,0	0,65	10,8	4,1	**11,1**	5,6	1,9	5,8	1,9	2,2	1,9	0,63
	21HT	13,4	6,2	**16,7**	7,0	3,2	9,0	1,9	1,9	1,8	0,79										
7	17HT	15,0	4,1	**17,7**	5,5	1,9	6,6	2,7	2,2	2,7	0,74	14,4	3,8	**15,0**	5,5	2,1	5,8	2,6	1,8	2,6	0,72
	21HT	18,7	6,2	**22,8**	6,9	2,3	8,9	2,7	2,7	2,6	0,92										
10	17HT	15,0	4,6	**18,3**	5,4	1,6	6,6	2,8	2,9	2,8	0,78	14,4	4,6	**15,3**	5,7	1,7	6,2	2,5	2,6	2,5	0,74
	21HT	20,1	7,1	**24,4**	6,8	3,2	8,9	3,0	2,2	2,8	0,99										

Entering/leaving water temperature difference : 5K

Fouling factor: 0 m² K/W

Pure water fluid

Performances in accordance with EN14511-3:2011

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COOLING CAPACITIES IN ACCORDANCE WITH EN14511-3

Ereba reversible

Leaving Water Temp. in °C	Reversible EREBA	OUTSIDE AIR TEMPERATURE IN °C																			
		5										15									
		Pf kW			Pa kW			EER			Q l/s	Pf kW			Pa kW			EER			Q l/s
		Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom
5	17HT	15,7	13,3	**15,7**	3,0	2,7	3,0	5,3	5,0	5,3	0,75	15,4	9,9	**15,4**	3,4	1,7	3,4	4,5	5,7	4,5	0,73
	21HT	20,9	14,4	**24,5**	4,2	3,0	6,3	5,0	4,9	3,9	1,00	20,5	12,8	**24,5**	4,4	3,9	6,3	4,6	3,3	3,9	0,98
7	17HT	16,6	14,1	**16,6**	3,0	2,7	3,0	5,5	5,2	5,5	0,79	16,3	10,5	**16,3**	3,5	1,7	3,5	4,6	6,4	4,6	0,78
	21HT	22,0	15,2	**26,4**	4,4	3,0	6,3	5,1	5,1	4,2	1,05	21,6	13,5	**26,3**	4,6	4,0	6,4	4,7	3,4	4,1	1,03
10	17HT	18,0	7,9	**18,0**	3,2	1,1	3,2	5,7	7,6	5,7	0,86	17,8	6,2	**17,8**	3,6	0,7	3,6	4,9	9,4	4,9	0,85
	21HT	23,8	16,5	**29,0**	4,6	3,1	6,4	5,2	5,4	4,6	1,14	23,3	8,1	**28,7**	4,8	1,7	6,5	4,9	4,8	4,4	1,12
15	17HT	20,6	8,5	**20,6**	3,4	1,1	3,4	6,1	7,7	6,1	0,99	20,4	7,0	**20,4**	3,8	0,7	3,8	5,3	9,3	5,3	0,98
	21HT	27,5	18,8	**33,3**	4,7	3,2	6,7	5,8	5,9	5,0	1,32	27,3	9,5	**33,3**	4,8	1,6	6,8	5,7	6,0	4,9	1,31
18	17HT	22,2	9,1	**22,2**	3,5	1,2	3,5	6,3	7,9	6,3	1,06	22,0	7,1	**22,0**	4,0	0,8	4,0	5,5	9,3	5,5	1,06
	21HT	29,5	20,3	**36,3**	5,0	3,3	6,9	6,0	6,2	5,3	1,41	29,8	9,9	**36,3**	4,9	1,8	7,0	6,1	5,6	5,2	1,43

Leaving Water Temp. in °C	Reversible EREBA	OUTSIDE AIR TEMPERATURE IN °C																			
		25										35									
		Pf kW			Pa kW			EER			Q l/s	Pf kW			Pa kW			EER			Q l/s
		Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom
5	17HT	14,5	9,0	**14,5**	3,8	2,0	3,8	3,9	4,4	3,9	0,69	14,3	3,0	**14,8**	4,7	1,3	5,0	3,0	2,3	3,0	0,68
	21HT	19,9	13,8	**23,8**	4,9	3,2	6,9	4,1	4,3	3,5	0,95	18,1	8,3	**22,3**	5,8	2,5	8,3	3,1	3,3	2,7	0,86
7	17HT	15,6	9,6	**15,6**	3,8	2,0	3,8	4,1	4,7	4,1	0,75	15,2	3,2	**15,8**	4,8	1,3	5,1	3,1	2,5	3,1	0,73
	21HT	21,1	14,7	**25,2**	5,0	3,3	7,1	4,2	4,5	3,6	1,01	19,1	8,9	**23,6**	6,0	2,5	8,5	3,2	3,5	2,8	0,91
10	17HT	17,1	5,2	**17,1**	3,9	1,2	3,9	4,4	4,6	4,4	0,82	16,6	3,6	**17,3**	5,0	1,3	5,3	3,4	2,8	3,3	0,79
	21HT	22,9	8,4	**27,3**	5,2	1,9	7,4	4,4	4,4	3,7	1,10	20,9	9,7	**25,6**	6,4	2,7	8,8	3,2	3,6	2,9	1,00
15	17HT	19,8	6,1	**19,8**	4,0	1,1	4,0	4,9	5,4	4,9	0,95	19,2	4,2	**19,9**	5,2	1,2	5,6	3,7	3,4	3,6	0,92
	21HT	26,2	9,8	**31,0**	5,4	1,9	7,9	4,8	5,2	3,9	1,26	23,9	11,2	**29,1**	6,8	2,7	9,4	3,5	4,1	3,1	1,15
18	17HT	21,5	7,0	**21,9**	4,1	0,9	4,2	5,2	7,8	5,2	1,03	21,4	4,6	**21,6**	5,4	1,2	5,6	4,0	3,9	3,8	1,03
	21HT	28,3	10,8	**33,3**	5,6	1,8	8,2	5,0	5,9	4,0	1,36	26,4	12,2	**31,3**	6,6	2,8	9,8	4,0	4,4	3,2	1,26

Leaving Water Temp. in °C	Reversible EREBA	OUTSIDE AIR TEMPERATURE IN °C									
		45									
		Pf kW			Pa kW			EER			Q l/s
		Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom
5	17HT	12,3	4,0	**12,3**	5,2	2,7	5,2	2,4	1,4	2,4	0,58
	21HT	15,2	6,5	**16,4**	6,4	2,8	7,1	2,4	2,3	2,3	0,72
7	17HT	13,1	4,2	**13,1**	5,3	2,8	5,3	2,5	1,5	2,5	0,62
	21HT	16,1	6,9	**17,4**	6,6	2,8	7,2	2,5	2,4	2,4	0,77
10	17HT	14,3	4,7	**14,4**	5,5	2,8	5,5	2,6	1,7	2,6	0,69
	21HT	17,6	7,6	**19,0**	6,8	2,9	7,5	2,6	2,6	2,6	0,84
15	17HT	16,7	5,4	**16,7**	5,8	2,9	5,8	2,9	1,9	2,9	0,80
	21HT	20,2	8,8	**21,8**	7,1	3,0	7,9	2,8	3,0	2,8	0,97
18	17HT	18,5	5,9	**18,5**	5,9	2,9	5,9	3,1	2,0	3,1	0,89
	21HT	21,9	9,6	**23,6**	7,3	3,0	8,1	3,0	3,2	2,9	1,05

Entering/leaving water temperature difference : 5K

Fouling factor: 0 m² K/W

Pure water fluid

Performances in accordance with EN14511-3:2011

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COOLING CAPACITIES IN ACCORDANCE WITH EN14511-3

Ereba cooling only

Leaving water temp. in °C	EREBA Cooling only	OUTSIDE AIR TEMPERATURE IN °C																			
		5										15									
		Pf kW			Pa kW			EER			Q l/s	Pf kW			Pa kW			EER			Q l/s
		Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom
5	17T	16,3	5,4	**16,3**	3,1	0,5	3,1	5,3	10,8	5,3	0,78	16,1	5,3	**16,1**	3,2	0,6	3,2	5,1	9,2	5,1	0,77
	21T	20,8	9,4	**24,7**	3,9	1,3	5,7	5,3	7,5	4,3	0,99	20,7	9,0	**26,2**	4,2	1,6	6,2	4,9	5,8	4,3	0,99
7	17T	17,3	5,8	**17,3**	3,1	0,4	3,1	5,5	13,5	5,5	0,82	17,0	5,6	**17,0**	3,2	0,6	3,2	5,2	10,1	5,2	0,81
	21T	22,0	10,0	**26,4**	4,0	1,3	5,7	5,4	7,8	4,6	1,05	21,8	9,6	**27,9**	4,3	1,6	6,3	5,1	6,0	4,4	1,04
10	17T	18,7	6,3	**18,7**	3,3	0,4	3,3	5,7	15,1	5,7	0,89	18,5	6,2	**18,5**	3,4	0,5	3,4	5,5	11,9	5,5	0,88
	21T	23,7	10,8	**29,0**	4,3	1,3	5,9	5,6	8,2	4,9	1,13	24,0	10,7	**30,6**	4,4	1,5	6,5	5,5	7,1	4,7	1,15
15	17T	21,2	7,3	**21,2**	3,5	0,4	3,5	6,1	20,5	6,1	1,02	21,4	7,0	**21,4**	3,4	0,5	3,4	6,2	13,7	6,2	1,03
	21T	27,9	12,3	**33,7**	4,2	1,4	6,2	6,6	8,9	5,4	1,34	27,8	12,5	**34,8**	4,5	1,4	7,0	6,2	8,6	4,9	1,33
18	17T	23,7	7,9	**23,7**	3,4	0,3	3,4	7,0	25,5	7,0	1,13	23,6	7,7	**23,6**	3,4	0,4	3,4	6,9	19,4	6,8	1,13
	21T	30,5	13,3	**36,1**	4,3	1,4	6,6	7,1	9,3	5,5	1,46	30,3	13,2	**37,5**	4,6	1,6	7,4	6,5	8,4	5,1	1,45

Leaving water temp. in °C	EREBA Cooling only	OUTSIDE AIR TEMPERATURE IN °C																			
		25										35									
		Pf kW			Pa kW			EER			Q l/s	Pf kW			Pa kW			EER			Q l/s
		Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom	Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom
5	17T	15,4	5,6	**15,4**	3,6	1,1	3,6	4,3	5,1	4,3	0,73	14,7	5,8	**15,8**	4,5	1,6	5,0	3,2	3,6	3,1	0,70
	21T	19,8	8,7	**24,6**	4,8	1,7	7,1	4,2	5,0	3,5	0,95	18,1	9,3	**23,5**	5,6	2,5	8,5	3,2	3,7	2,8	0,86
7	17T	16,3	6,3	**16,3**	3,7	1,0	3,7	4,5	6,6	4,5	0,78	16,0	6,3	**16,7**	4,6	1,6	5,1	3,5	3,9	3,2	0,76
	21T	21,0	9,3	**26,0**	4,9	1,8	7,3	4,3	5,3	3,6	1,00	19,2	9,9	**24,9**	5,8	2,5	8,7	3,3	3,9	2,8	0,91
10	17T	17,8	6,6	**17,8**	3,7	1,1	3,7	4,8	6,0	4,8	0,85	17,1	7,0	**18,2**	4,8	1,6	5,3	3,6	4,3	3,4	0,82
	21T	22,9	10,2	**28,3**	5,0	1,7	7,6	4,6	5,9	3,7	1,09	21,0	10,8	**27,0**	5,9	2,6	9,1	3,5	4,2	3,0	1,00
15	17T	20,5	8,1	**20,5**	3,9	0,9	3,9	5,3	8,7	5,3	0,98	19,6	8,2	**20,9**	5,0	1,6	5,6	3,9	5,2	3,7	0,94
	21T	26,2	11,9	**32,2**	5,3	1,7	8,2	5,0	6,8	3,9	1,26	24,1	12,5	**30,8**	6,2	2,6	9,7	3,9	4,8	3,2	1,15
18	17T	22,2	8,9	**22,2**	4,0	0,9	4,0	5,6	10,1	5,6	1,07	22,2	9,0	**22,6**	5,2	1,5	5,8	4,3	5,9	3,9	1,06
	21T	28,3	13,0	**34,7**	5,5	1,7	8,5	5,2	7,5	4,1	1,36	25,9	13,6	**33,3**	6,3	2,6	10,1	4,1	5,2	3,3	1,24

Leaving water temp. in °C	EREBA Cooling only	OUTSIDE AIR TEMPERATURE IN °C									
		45									
		Pf kW			Pa kW			EER			Q l/s
		Nom	Min	**Max**	Nom	Min	Max	Nom	Min	Max	Nom
5	17T	13,2	7,8	**13,2**	5,2	3,0	5,2	2,5	2,6	2,5	0,63
	21T	16,2	9,0	**17,4**	6,6	3,6	7,3	2,5	2,5	2,4	0,77
7	17T	14,0	8,4	**14,0**	5,3	3,1	5,3	2,6	2,7	2,6	0,67
	21T	17,2	9,6	**18,5**	6,7	3,6	7,4	2,6	2,6	2,5	0,82
10	17T	15,3	9,2	**15,3**	5,5	3,1	5,5	2,8	2,9	2,8	0,73
	21T	18,8	10,5	**20,2**	6,9	3,7	7,7	2,7	2,9	2,6	0,90
15	17T	17,6	10,7	**17,6**	5,7	3,2	5,8	3,1	3,4	3,1	0,84
	21T	21,7	12,2	**23,3**	7,3	3,8	8,1	3,0	3,2	2,9	1,04
18	17T	19,1	11,7	**19,1**	5,9	3,2	5,9	3,2	3,6	3,2	0,92
	21T	23,5	13,3	**25,2**	7,5	3,9	8,4	3,1	3,4	3,0	1,13

Entering/leaving water temperature difference : 5K

Fouling factor: 0 m² K/W

Pure water fluid

Performances in accordance with EN14511-3:2011

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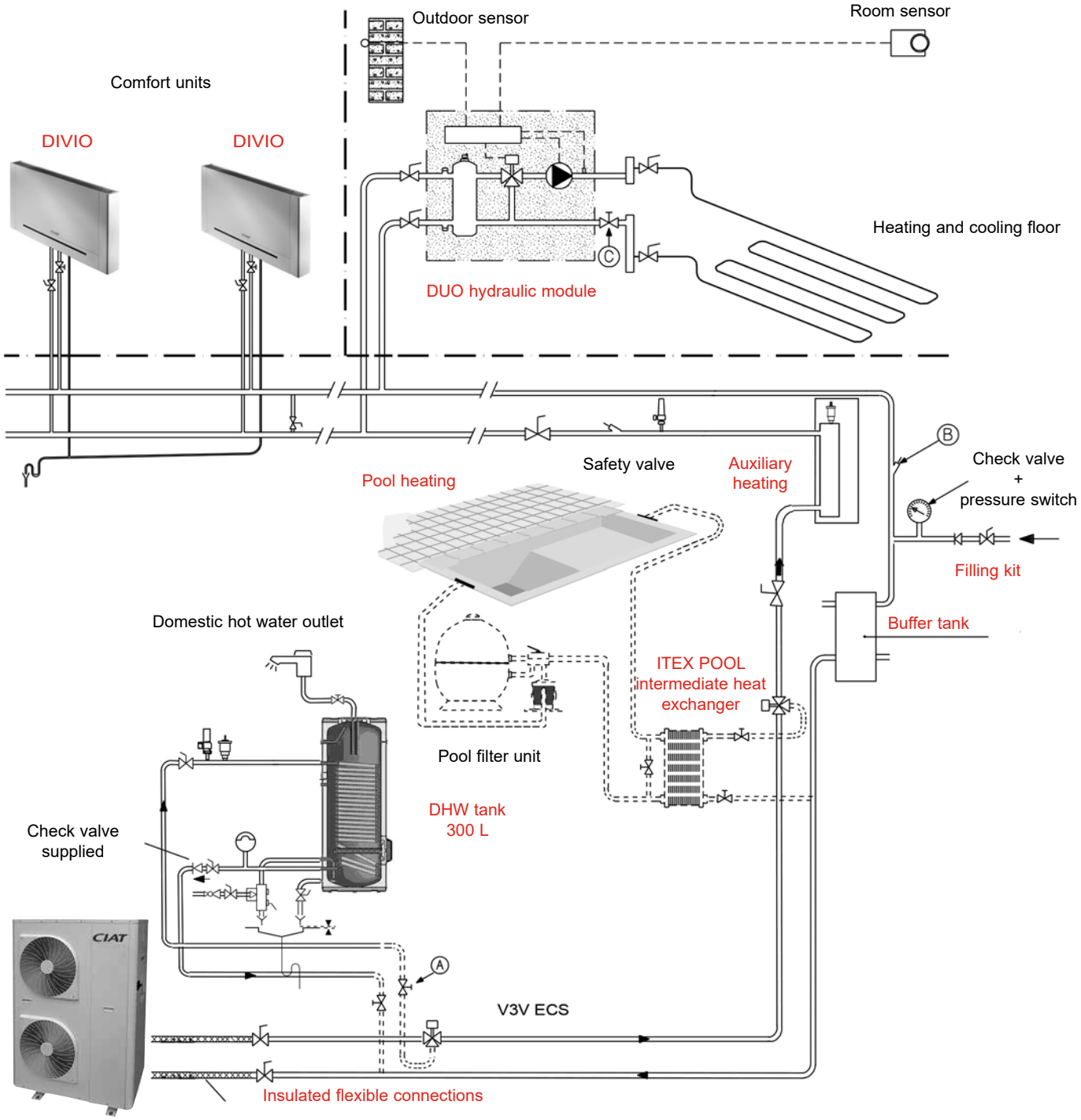
SCHEMATIC INSTALLATION DIAGRAM



Ⓐ Shut-off valves Ⓑ Thermometer pockets Ⓒ Control valves Option

Note: the schematic diagrams herein are provided for information only. Under no circumstances do they constitute actual installation diagrams

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