EDGE PRO

WiSAN-PMP 1 S 2.1-8.1T RANGE

Air-to-water monobloc unit heat pump for heating, cooling and domestic hot water production

TECHNICAL BULLETIN

R-290

DESIGN AWARD 2025

SIZE	2.1	3.1	4.1 / 4.1T	5.1 /5.1T	6.1 / 6.1T	7.1 / 7.1T	8.1 / 8.1T
Nominal heating capacity [kW]	4.10	6.10	8.00	9.50	12.1	14.0	15.5
Nominal cooling capacity [kW]	4.50	6.50	8.30	10.0	12.0	14.0	15.0

Contents

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

General features

EDGE PRO:

Edge PRO is a packaged reversible air/water heat pump for heating, cooling and domestic hot water production. The unit is designed and built to be installed outdoors, with only the power supply and water pipes needing to be connected.

WiSAN-PMP 1 S 2.1-8.1T

Packaged reversible air/water heat pump

- Heating capacity 4.10 ÷ 15.5 kW
- Cooling capacity 4.50 ÷ 15.0 kW
- Seasonal efficiency class in heating mode (according to EU 811/2013):
  A+++ (water supply at 55 °C)
  A+++ (water supply at 35 °C)
- Produced water temperature above 80°C
- Heating and DHW operation down to -25 °C outside air
- Low-GWP refrigerant

General features

Refrigeration circuit

The unit is equipped with a steam compression refrigeration circuit, which comprises:
- brushless DC inverter hermetic rotary compressor with intake and supply gas temperature probes and heater for preheating the oil
- source side finned coil heat exchanger with “Blue fin” treatment
- user side plate heat exchanger with antifreeze heater
- electronic expansion valve with self-regulating PWM logic
- 4-way valve for reversing the refrigeration cycle
- liquid separator and receiver
- filter
- high and low pressure sensors
- high pressure switch
- safety valve

Compressor

Twin Rotary DC hermetic type compressor with soft start and controlled by an inverter that allows the power delivered to be constantly modulated according to actual demand, ensuring the best in terms of reliability, low consumption and high seasonal efficiency. It is equipped with a motor protection device for overheating, overcurrent and excessive temperature of the supply gas, and comes with oil charge. A guard heater with automatic insertion prevents the refrigerant from diluting the oil when the compressor stops. It is mounted on vibration-absorbing rubber mounts to ensure vibration-free operation under all operating conditions and has a soundproofed casing which minimises noise emissions.

Refrigerant

Eco-friendly refrigerant gas R-290

Fan

Single fan with sickle-shaped blades made of ABS resin, housed in an aerodynamically shaped nozzle to increase efficiency and lower the noise level. Condensation is controlled by means of a directly coupled high-efficiency variable speed brushless DC motor, which regulates its speed continuously.

User side exchanger

AISI 316 stainless steel brazed plate heat exchanger with low refrigerant content and high exchange surface, complete with external anti-condensation thermal insulation 10 mm thick in sintered expanded polypropylene. There are water temperature probes at the inlet and outlet of the heat exchanger for constant monitoring and protection: they activate the antifreeze function when the room temperature and/or the water supply temperature fall below the limit values. The antifreeze function is also active when the unit is in stand-by mode.

Source side exchanger

Direct expansion finned block heat exchanger with aluminium fins and copper pipes mechanically expanded for better adherence to the fin collar. The distance between the fins has been carefully designed to maximise heat exchange efficiency and reduce defrosting in the interest of seasonal efficiency. The fins are aluminium with “Blue fin” hydrophilic treatment which facilitates the elimination of condensate, further improving defrosting. The unit is designed in such a way that, when in heating mode, the refrigerant circulates efficiently within the heat exchanger during evaporation to avoid ice formation at the bottom. There are also two probes that detect the outside air temperature and the temperature of the heat exchanger, to monitor and optimise defrosting.

Structure

Structure designed for outdoor installation, base and supporting structure in sheet steel with 12/10 thick hot-dip galvanising surface treatment, and insulation in thermoformed material. Full polyester powder coating in metallic grey colour for exposed parts, which guarantees complete resistance to corrosion and weathering over time.

Panelling

Metallic grey painted zinc-magnesium sheet metal panelling for outdoor installation that ensures superior resistance to corrosion and eliminates the need for periodic painting. Each panel can be easily removed to allow full access to internal components for the purpose of inspection and maintenance.

Grille

The grille is made of recycled ABS certified ISO 14001 / ISO 9001 / ISO 50001, which is weather-resistant. The grille can slide on two rails if you simply unscrew four clamping screws in the corners, so that maintenance is easy and less tiring even when the fancoil is running.

Water circuit

The unit can be connected to a water circuit and is equipped with:
- high-efficiency primary circulator
- 3 bar pressure relief valve
- automatic air-gas separator
- flow meter
- system pressure sensor

Pump

Modulating primary circulator equipped with brushless DC motor, with IP44 protection rating.
The regulation is with a self-regulating inverter: it adjusts its speed depending on how much the water supply temperature (T1) follows the required set-point.

Electrical panel (power supply and control)

Electrical panel inside the unit with door for ease of access and a power section and control section.
The power section includes:
- inverter board for management of the compressor
- main power terminals

The control section includes:
- board for management of the refrigeration circuit, connected to all the sensors that detect the temperature of the outdoor air, evaporation, condensation and compressor. Optimised algorithm for efficient management of defrosting
- board for hydronic management of the system, connected to the flow switch that protects against water shortage and to the temperature probes of the return and supply water
- inverter board for management of the compressor
- connection terminals for controlling the functions of the unit
- terminals for connecting the user interface
- inputs for connecting 1 or 2 zone thermostats
- remote ON/OFF input
- inputs for connection of optional probes (auxiliary heat source, DHW storage, secondary circuit)
- defrosting alarm and status outputs
- outputs for management of secondary pumps, recirculation of domestic hot water, and solar thermal power
- output for management of an auxiliary heat source
- output for electrical management of the heater of the domestic hot water storage tank (max. 4kW)
- RS485 communication port with Modbus output (in the user interface)

User interface

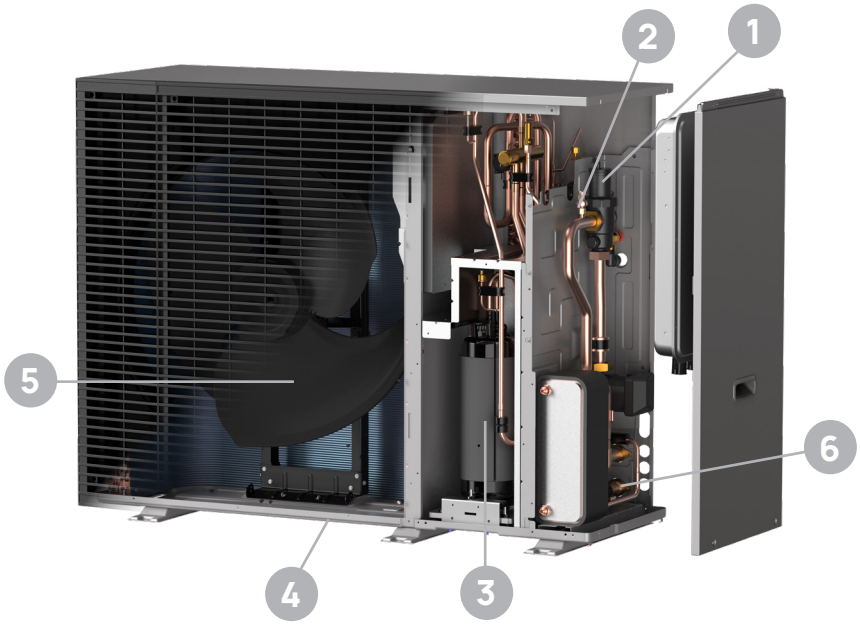
The user interface is used to control the operating parameters of the unit and to manage certain components of the system. It has an integrated temperature sensor and can also be used as a zone thermostat. It also has a Wi-Fi module for management via an App.
The main functions on the user interface are:
- basic settings (ON/OFF, change of operating mode, room/water/DHW temperature settings)
- daily and weekly programming (ON/OFF, set-point and mode settings)
- automatic management of the set-point according to outdoor temperature (in Heating and Cooling mode)
- management of a second zone of the system
- priority management of auxiliary heat sources
- management and programming of ECO, SILENT and anti-legionella modes
- control of all functions of the unit
- displaying of alarms

Accessories supplied with the unit

Some accessories are supplied with the unit that require installation on site:
- 10-metre long water temperature probe, with various uses: for regulating domestic hot water storage tanks, an auxiliary heat source, a mixed zone and the solar circuit, or to detect the temperature of a hydraulic separator
- steel mesh Y filter
- condensate drain connection

General features

View and functional diagram

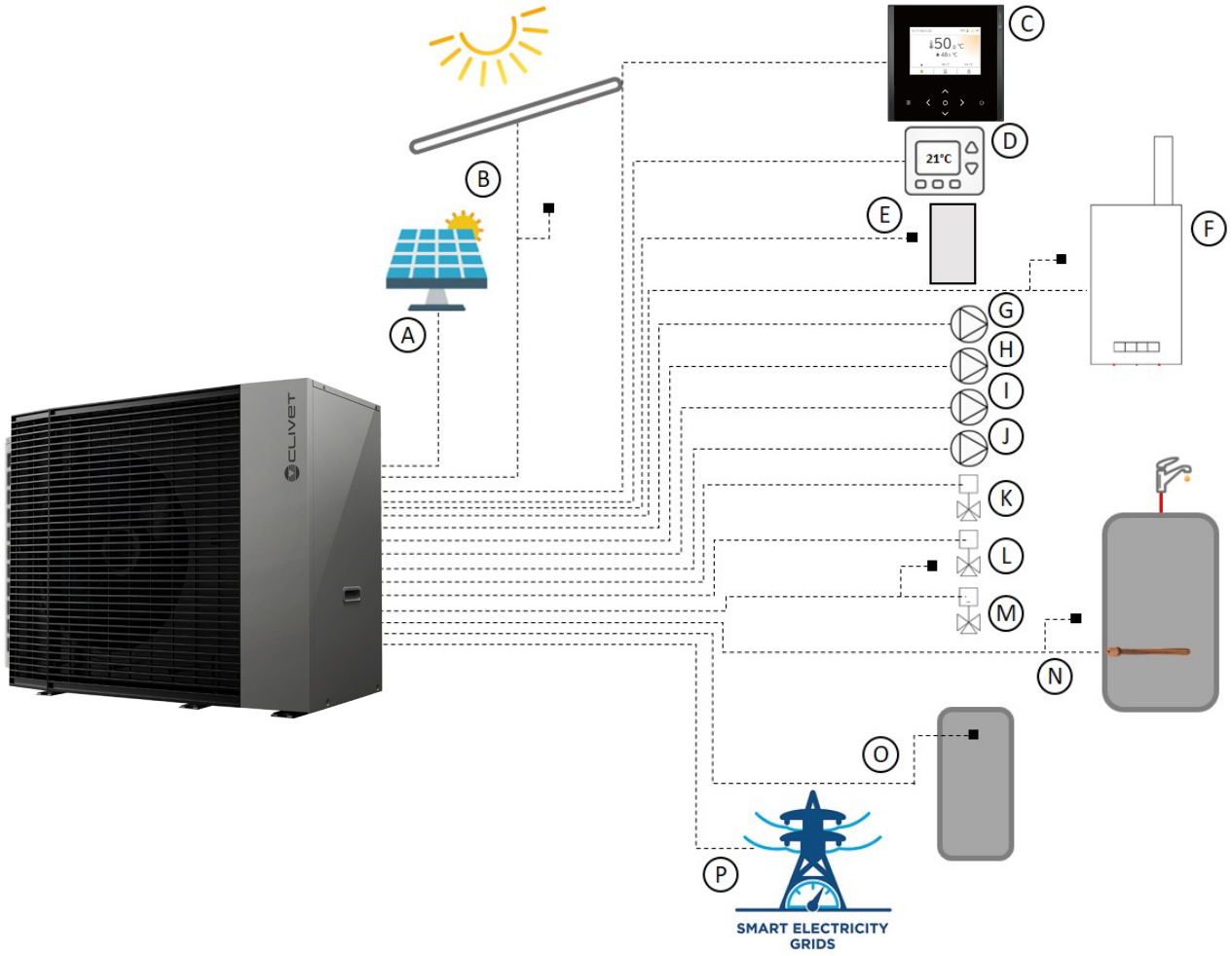


New components ensure a maximum silence level and reliability:

1. **Gas separator**, component that intercepts any gas infiltration in the hydraulic circuit
2. **Hydraulic circuit pressure sensor**, simplifies maintenance and start-up
3. **Silent box,** structure housing the compressor, consisting of several layers of sound-absorbing material, capable of lowering the sound level of the compressor by up to -25 dB(A)
4. **Electric base frame heater**, ensures complete defrosting of the coil even under the most extreme conditions
5. **Fan design**, specifically engineered to further increase the silence level
6. **Flow meter**, for accurate water flow rate measurement and improved reliability

Components that can be managed by the unit

The unit can communicate, receive information and manage a number of system and control components:



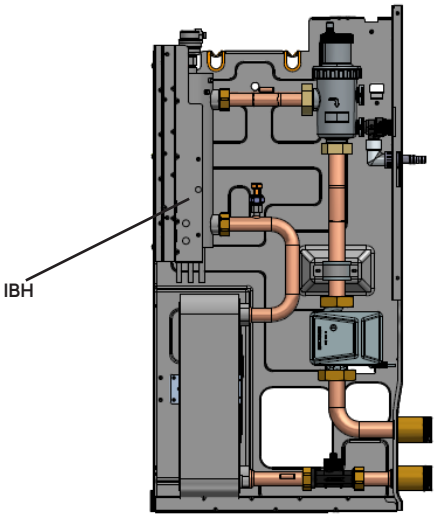
A. Solar photovoltaic
B. Pump and probe for solar thermal management
C. HMI user interface
D. Zone thermostat (up to 2)
E. probe and control signal for additional electric heater
F. AHS boiler: control signal and probe
G. secondary / zone 1 circuit pump
H. zone pump 2
I. DHW recirculation pump
J. Solar circuit pump
K. circuit / DHW switching 3-way valve
L. 2-way diverter valve for direct 2-zone systems
M. Zone 2 mixed management: SV3 3-way switching valve for mixed circuit and probe
N. DHW boiler: TBH heater and probe management signal
O. Hydraulic separator: probe
P. Smart Grid

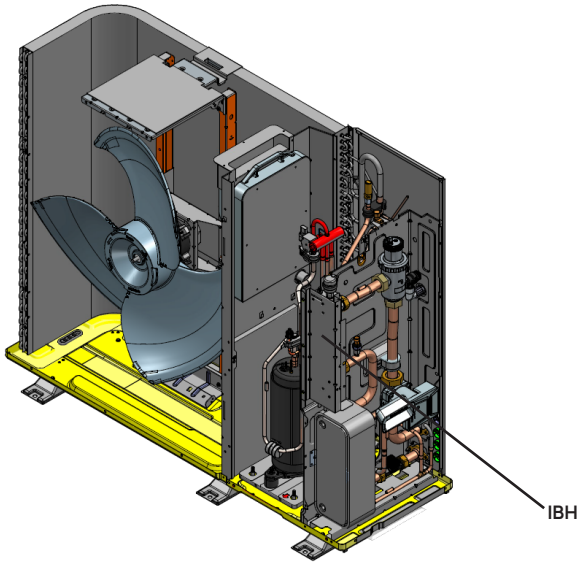
Unit configuration

Configuration with factory-mounted integrated electric heater (IBH)

Electric heater kit integrated in the body of the unit, **factory-wired** and already equipped with management probe T1. In this configuration, the **IBH is powered by the unit** (the unit's F.L.A. must be taken as the sum of the refrigerant circuit's F.L.A. plus that of the IBH heater).

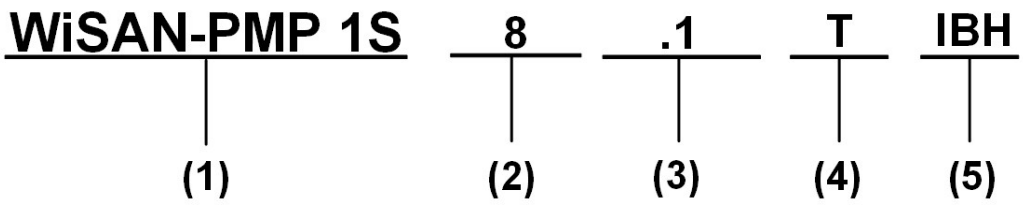
The capacity of the heater varies according to the size of the unit:
- units 2.1 to 8.1: 3 kW heater (single-phase)
- units 6.1T to 8.1T: 3/6/9 kW heater with three selections (three-phase





The 9 kW heater version for three-phase units is equipped with one 3 kW and one 6 kW heater
One of three situations can be set during installation at the board of the unit:
- 3 kW in Heating and DHW mode
- 6 kW for heating and DHW
- 9 kW in Heating mode and 6 kW in DHW mode

In the latter case, only the 3 kW heater is switched on when heating is requested.
If the temperature does not rise sufficiently within a certain time, it is switched off and replaced by the 6 kW heater.
If again the temperature does not rise sufficiently within a certain time, the 3kW heater is also activated at the same time, so that a total of 9kW is provided for heating.



(1) Range

WiSAN = Reversible air/water heat pump with rotary inverter compressor
PMP = Premium packaged version with R-290 refrigerant

(2) Size

8 = Size of the unit

(3) Compressors

.1 / = Quantity of compressors

(4) Power supply

(-) = Single-phase
T = Three-phase

(5) Electrical back-up heater

(-) not required (standard)
IBH = Electrical back-up heater

General technical data

Heating

Size			2.1	3.1	4.1 / 4.1T	5.1 /5.1T	6.1 / 6.1T	7.1 / 7.1T	8.1 / 8.1T
Air 7°C - Water 35°C									
Rated heating capacity	1	kW	4.1	6.1	8.0	9.5	12.1	14.0	15.5
Total power input	1	kW	0.77	1.21	1.52	1.92	2.44	2.98	3.44
COP	1	-	5.30	5.03	5.25	4.95	4.95	4.70	4.50
Water flow rate	1	l/s	0.2	0.3	0.4	0.5	0.6	0.7	0.7
Nominal available pressure	1	kPa	56	56	51	51	45	42	38
Maximum available pressure	1	kPa	86	86	85	79	64	53	45
Air 2°C - Water 35°C									
Rated heating capacity	2	kW	4.0	5.6	7.1	8.2	9.2	11.0	13.0
Total power input	2	kW	0.95	1.40	1.73	2.10	2.30	2.89	3.60
COP	2	-	4.23	4.00	4.10	3.90	4.00	3.80	3.61
Water flow rate	2	l/s	0.2	0.3	0.3	0.4	0.4	0.5	0.6
Nominal available pressure	2	kPa	56	56	51	51	45	42	38
Maximum available pressure	2	kPa	86	86	87	85	80	70	58
Air -7°C - Water 35°C									
Rated heating capacity	3	kW	4.1	6.0	7.0	8.0	10.0	12.0	13.1
Total power input	3	kW	1.26	1.98	2.15	2.54	3.17	4.29	4.85
COP	3	-	3.25	3.03	3.25	3.15	3.15	2.80	2.70
Water flow rate	3	l/s	0.2	0.3	0.3	0.4	0.5	0.6	0.6
Nominal available pressure	3	kPa	56	56	51	51	45	42	38
Maximum available pressure	3	kPa	86	86	87	85	76	64	58
Air 7°C - Water 45°C									
Rated heating capacity	4	kW	4.5	6.4	8.1	9.5	12.3	14.1	15.5
Total power input	4	kW	1.08	1.64	2.03	2.44	3.15	3.76	4.25
COP	4	-	4.17	3.91	4.00	3.90	3.90	3.75	3.65
Water flow rate	4	l/s	0.2	0.3	0.4	0.5	0.6	0.7	0.7
Nominal available pressure	4	kPa	56	56	51	51	45	42	38
Maximum available pressure	4	kPa	86	86	85	79	62	52	45
Air 7°C - Water 55°C									
Rated heating capacity	5	kW	4.6	6.2	8.0	9.5	11.9	13.8	16.0
Total power input	5	kW	1.38	1.92	2.39	2.97	3.66	4.38	5.25
COP	5	-	3.33	3.23	3.35	3.20	3.25	3.15	3.05
Water flow rate	5	l/s	0.1	0.2	0.2	0.3	0.4	0.4	0.5
Nominal available pressure	5	kPa	56	56	51	51	45	42	38
Maximum available pressure	5	kPa	88	86	87	87	87	83	76

Data according to EN 14511:2022.

1. inlet/outlet water temperature 30/35 °C, outdoor air temperature 7 °C dry bulb / 6 °C wet bulb
2. inlet/outlet water temperature 30/35 °C, outdoor air temperature 2 °C dry bulb / 1 °C wet bulb
3. water inlet/outlet temperature 30/35°C, outdoor air temperature -7°C dry bulb / -8°C wet bulb
4. inlet/outlet water temperature 40/45 °C, outdoor air temperature 7 °C dry bulb / 6 °C wet bulb
5. inlet/outlet water temperature 47/55 °C, outdoor air temperature 7 °C dry bulb / 6 °C wet bulb

Cooling

Size			2.1	3.1	4.1 / 4.1T	5.1 /5.1T	6.1 / 6.1T	7.1 / 7.1T	8.1 / 8.1T
Air 35 °C - Water 18 °C									
Nominal cooling capacity	1	kW	4.5	6.5	8.3	10.0	12.0	14.0	15.0
Total power input	1	kW	0.80	1.18	1.58	2.17	2.61	3.18	3.53
EER	1	-	5.65	5.51	5.25	4.60	4.60	4.40	4.25
Water flow rate	1	l/s	0.2	0.3	0.4	0.5	0.6	0.7	0.7
Nominal available pressure	1	kPa	56	56	51	51	45	42	38
Maximum available pressure	1	kPa	86	85	84	76	64	53	48
Air 35 °C - Water 7 °C									
Nominal cooling capacity	2	kW	4.70	6.80	7.45	8.10	11.5	12.4	14
Total power input	2	kW	1.29	2.19	2.22	2.61	3.77	4.13	5.19
EER	2	-	3.65	3.10	3.35	3.10	3.05	3	2.7
Water flow rate	2	l/s	0.2	0.3	0.4	0.4	0.5	0.6	0.7
Nominal available pressure	2	kPa	86	85	87	85	67	62	53
Maximum available pressure	2	kPa	86	85	84	76	64	53	48

Data according to EN 14511:2022
1. inlet/outlet water temperature 23/18 °C, outdoor air temperature 35 °C dry bulb / 27 °C wet bulb
2. inlet/outlet water temperature 12/7 °C, outdoor air temperature 35 °C dry bulb / 27 °C wet bulb

ErP

Size			2.1	3.1	4.1 / 4.1T	5.1 /5.1T	6.1 / 6.1T	7.1 / 7.1T	8.1 / 8.1T
Nominal capacity			**4**	**6**	**8**	**10**	**12**	**14**	**16**
Average climatic conditions - Heat pump for Average temperature application									
Nominal capacity	1	kW	5	6	8	10	12	14	15
SCOP	1	-	3.91	3.98	4.08	4.02	3.96	3.87	3.87
Generator energy class	1	-	A+++	A+++	A+++	A+++	A+++	A+++	A+++
ns	1	%	153	156	160	158	155	152	152
Average climatic conditions - Heat pump for Low temperature application									
Nominal capacity	2	kW	5	6	8	10	12	14	16
SCOP	2	-	5.10	5.00	5.35	5.33	4.94	4.76	4.72
Generator energy class	2	-	A+++	A+++	A+++	A+++	A+++	A+++	A+++
ns	2	%	206	199	211	210	195	188	186
Average climatic conditions - Heat pump for application with Fan coil									
Nominal capacity	3	kW	5	7	8	10	12	14	16
SEER	3	-	5.23	5.32	5.61	5.53	4.99	4.97	4.98
ns	3	%	206	210	221	218	197	196	196

The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) no. 811/2018 and Commission Delegated Regulation no. 813/2018 of the Commission
Data according to EN 14825
1. Average climate, Medium temperature 47/55 °C
2. Average climate, Low temperature 30/35 °C
3. Average climate, Low temperature 12/7 °C

General technical data

Technical specifications

Size				2.1	3.1	4.1 / 4.1T	5.1 /5.1T	6.1 / 6.1T	7.1 / 7.1T	8.1 / 8.1T
Nominal capacity				**4**	**6**	**8**	**10**	**12**	**14**	**16**
Refrigeration circuit										
Compressor	n°/type	-	-	1	1	1	1	1	1	1
	type	-	-				Twin Rotary			
Oil	charge	-	ml	600	600	830	830	1100	1100	1100
Refrigerant	type/GWP	-	-				R290 / 0.02			
	charge	-	kg	1.05	1.05	1.1	1.1	1.5	1.5	1.5
	CO_2 equiv.	-	tCO_2	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Fan	number			1	1	1	1	1	1	1
	load	-	m3/h	4350	4350	4700	4700	4800	4800	4800
Water circuit										
Minimum system water content		-	l				70			
Admissible water flow rate	minimum	1	l/s				0.11			
	maximum	-	l/s	0,42	0,42	0,64	0,69	0,89	1,00	1,08
Maximum system pressure		-	bar	3	3	3	3	3	3	3
Hydraulic connections		-	inch				1'' 1/4			
Dimensions and weights										
Dimensions (Length x Height x Depth)	unit	-	mm				1330x1051x528			
	packaging	-	mm				1390x1220x610			
Weight	unit	-	kg	150	150	155/160	155/160	175/180	175/180	175/180
	packaging	-	kg	170	170	175/195	175/195	195/180	195/200	195/200

1. Consider the water content of the area with less volume

Electrical data

Single-phase version

Size		2.1	3.1	4.1	5.1	6.1	7.1	8.1
Nominal capacity		**4**	**6**	**8**	**10**	**12**	**14**	**16**
Power supply	V/Hz/p				220-240V±10%/50/1			
Standard unit								
F.L.I. - Power input at max admissible conditions	kW	2.70	3.00	3.90	4.20	5.9	6.3	6.7
F.L.A. - Absorbed current at maximum admissable conditions	A	12.0	13.5	18.0	19.5	26	27.5	29.5
IBH configuration: built-in additional electric heater								
F.L.I. - Power input at max admissible conditions	kW	6.00	6.30	7.20	7.50	9.2	9.6	10
F.L.A. - Absorbed current at maximum admissable conditions	A	25.5	27.0	31.5	33.0	39.5	41	43

Electrical data

Three-phase version

Size		4.1T	5.1T	6.1T	7.1T	8.1T
Nominal capacity		**4**	**6**	**8**	**10**	**12**
Power supply	V/Hz/p	380-415V±6%+N				
Standard unit						
F.L.I. - Power input at max admissible conditions	kW	3.9	4.2	5.9	6.3	6.7
F.L.A. - Absorbed current at maximum admissable conditions	A	6	6.5	9	9.5	10
IBH configuration: built-in additional electric heater						
F.L.I. - Power input at max admissible conditions	kW	13.8	14.1	15.8	16.2	16.6
F.L.A. - Absorbed current at maximum admissable conditions	A	19.5	20	22.5	23	23.5

Sound level

SIZE			2.1	3.1	4.1 / 4.1T	5.1 /5.1T	6.1 / 6.1T	7.1 / 7.1T	8.1 / 8.1T
Sound power	Heating ErP (partial load C)	dB(A)	46	46	47	47	48	48	48
	Nominal Heating capacity	dB(A)	48	49	50	52	52	55	56
	Max heating	dB(A)	53	54	55	56	59	60	61
	Silent mode heating	dB(A)	47	48	49	51	54	55	57
	Super silent mode heating	dB(A)	46	47	48	50	53	53	54
	Heating A2W55 (partial load B)	dB(A)	50	51	52	54	55	56	57
	Nominal cooling capacity	dB(A)	49	50	51	52	54	55	57
	Cooling max	dB(A)	52	53	54	55	58	59	60
	Silent mode cooling	dB(A)	49	50	51	52	52	53	54
	Super silent mode cooling	dB(A)	48	49	50	51	51	52	53
Sound pressure @1m	Nominal Heating capacity	dB(A)	33	34	35	37	37	40	41
	Max heating	dB(A)	38	39	40	41	44	45	46
	Silent mode heating	dB(A)	32	33	34	36	39	40	42
	Super silent mode heating	dB(A)	31	32	33	35	38	38	39
	Nominal cooling capacity	dB(A)	34	35	36	37	39	40	42
	Cooling max	dB(A)	37	38	39	40	43	44	45
	Silent mode cooling	dB(A)	34	35	36	37	37	38	39
	Super silent mode cooling	dB(A)	33	34	35	36	36	37	38

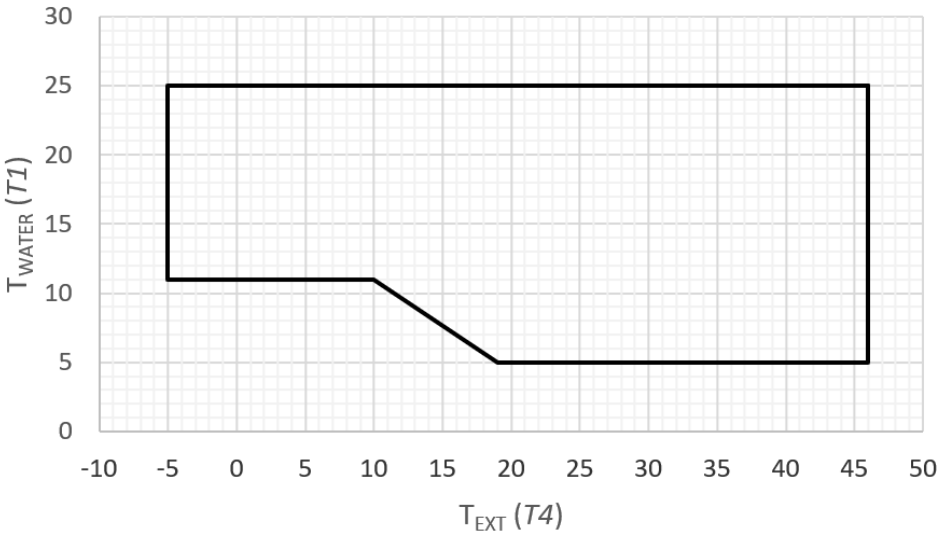
Reference legislation: EN12102-1
Reference conditions:
Heating: inlet/outlet water temperature 30/35 °C, outlet air temperature 7 °C dry bulb / 6 °C wet bulb
Cooling: inlet/outlet water temperature 23/18 °C, outlet air temperature 35 °C dry bulb / 27 °C wet bulb

General technical data

Field of operation

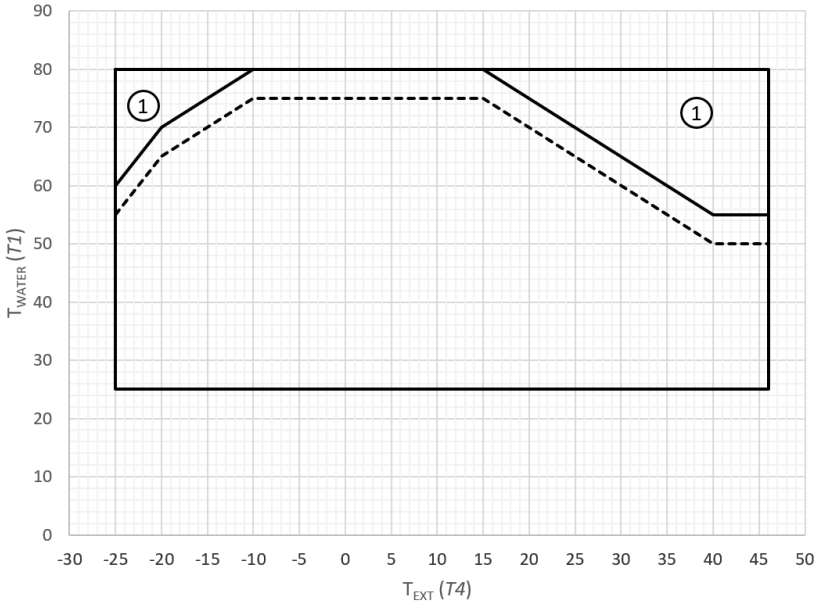
Cooling

2.1 ÷ 8.1



Heating

2.1 ÷ 8.1



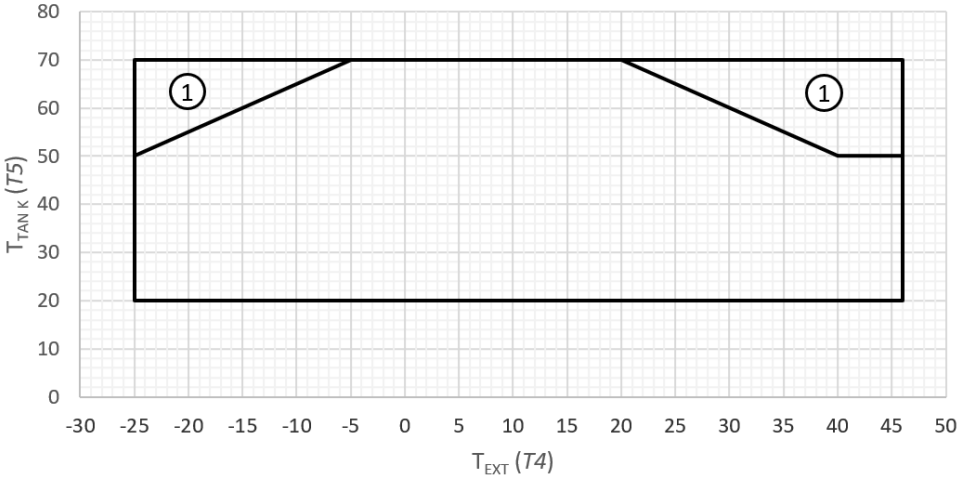
1. the heat pump switches off and only IBH/AHS works

----- maximum water inlet temperature for heat pump operation

Field of operation

ACS

2.1 ÷ 8.1



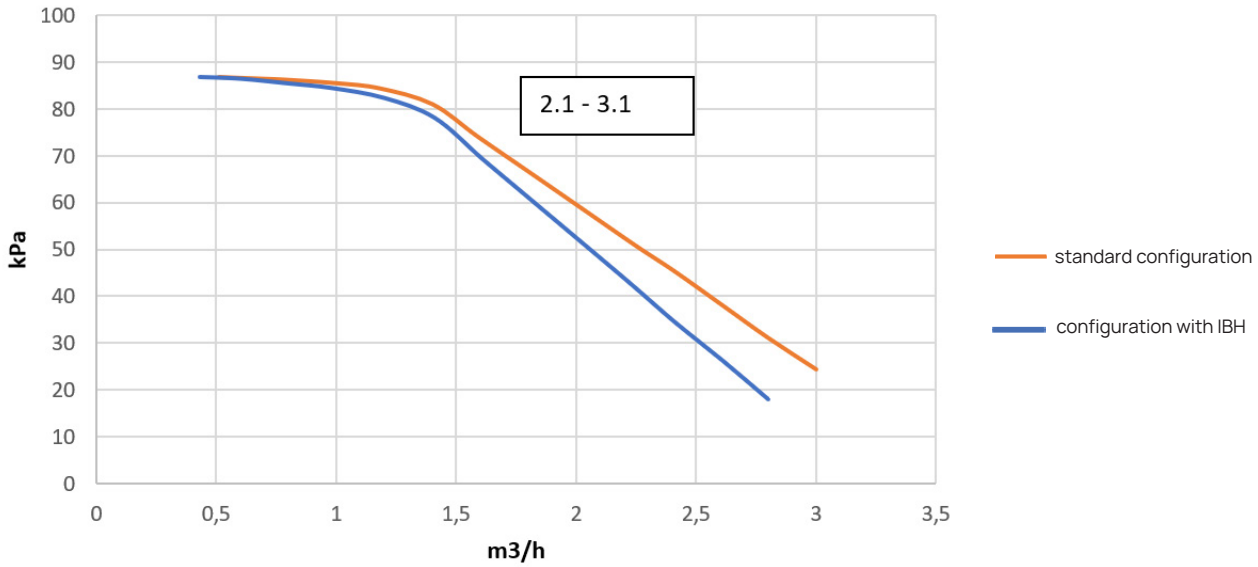
1. The heat pump switches off and only IBH/AHS works

General technical data

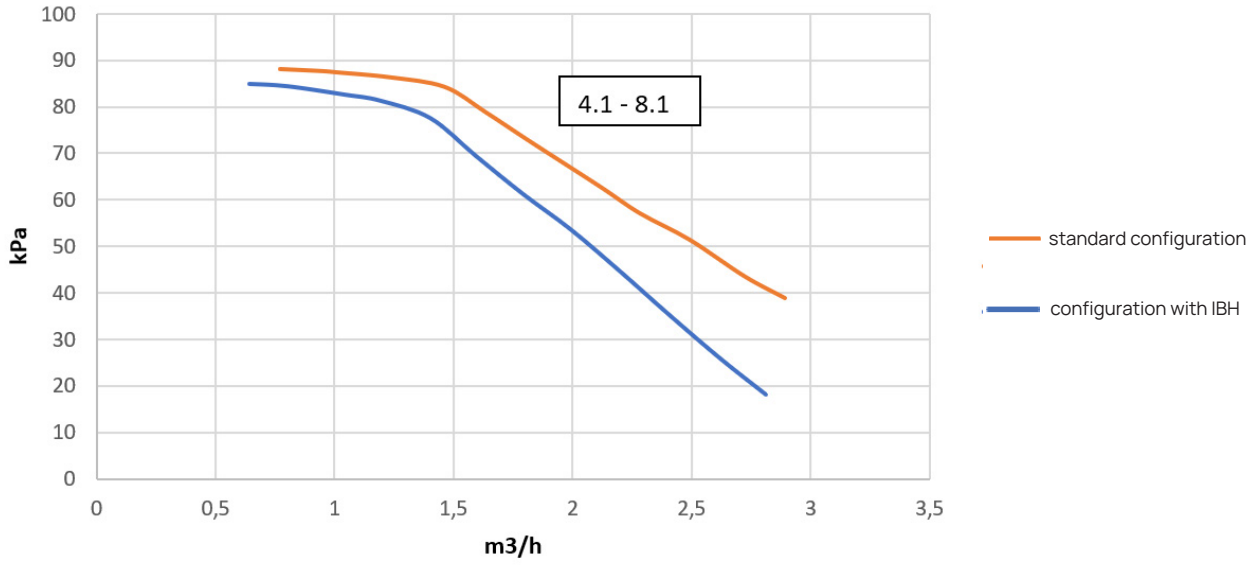
Hydraulic data

Available unit pressure (net of pressure drops of all components inside the unit)

2.1 ÷ 3.1

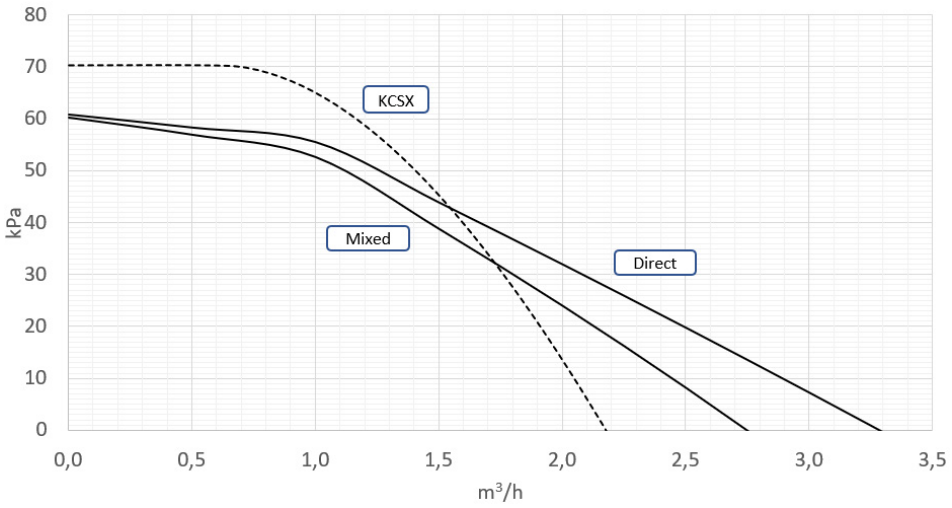


4.1 ÷ 8.1



Available pressure of the accessories

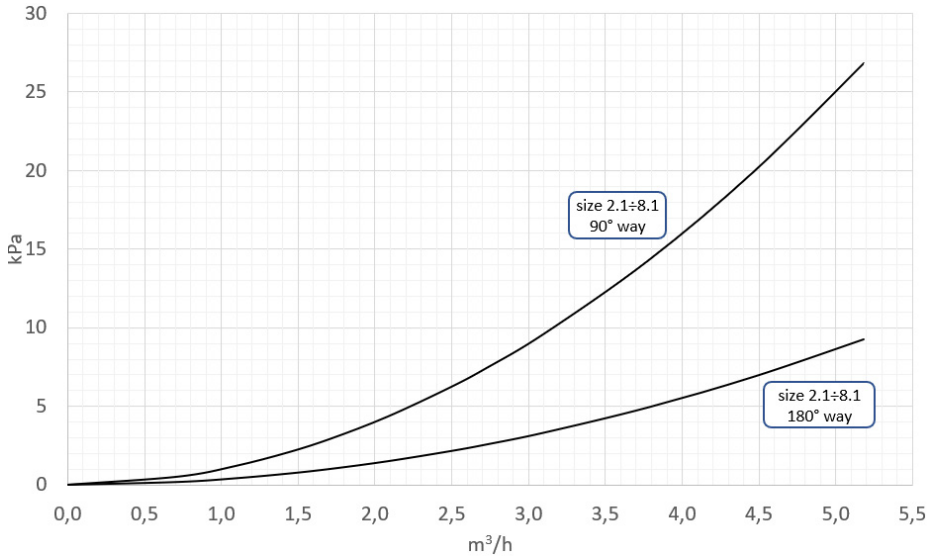
KIRE2HX / KIRE2HLX - two zone kit and KCSX - kit for secondary circuit



Note: the circulators in the two-zone kit can be adjusted with either 3 constant speed curves or 3 proportional pressure drop curves.
The curve shown represents operation with the limit curve at constant speed

Available pressure of the accessories

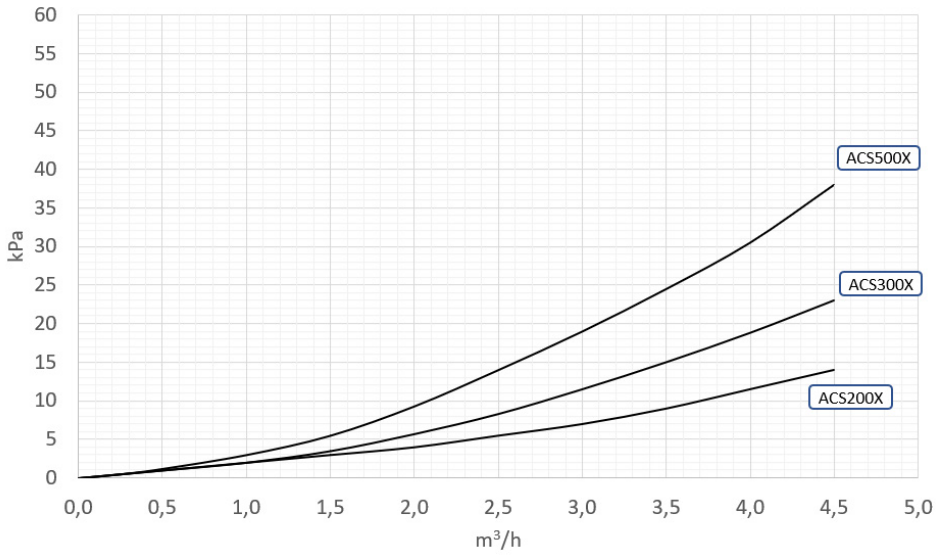
3DHWX - 3-way switching valve



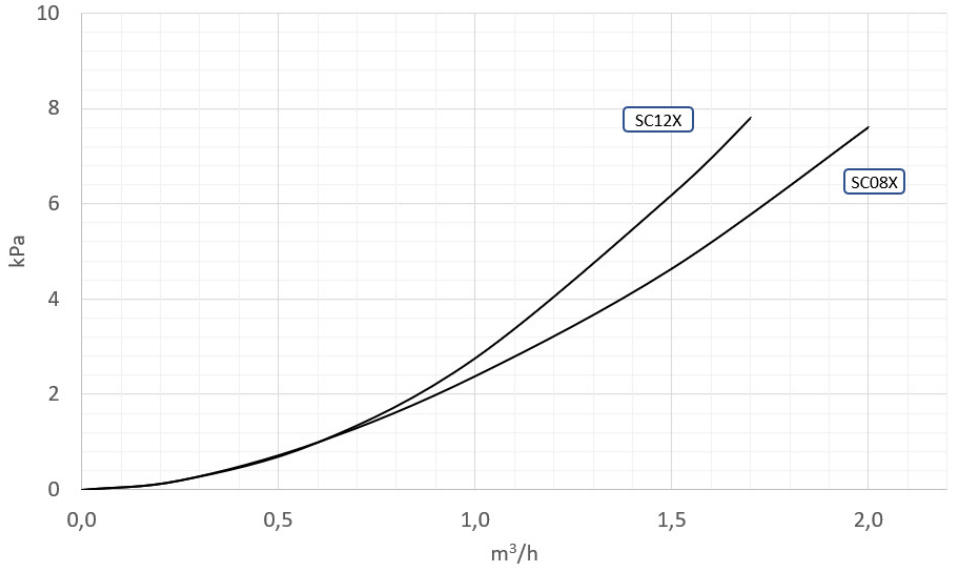
Note: pressure drops refer to the valve body only, without any fittings
The valve provides 90° way for DHW and 180° way for system

General technical data

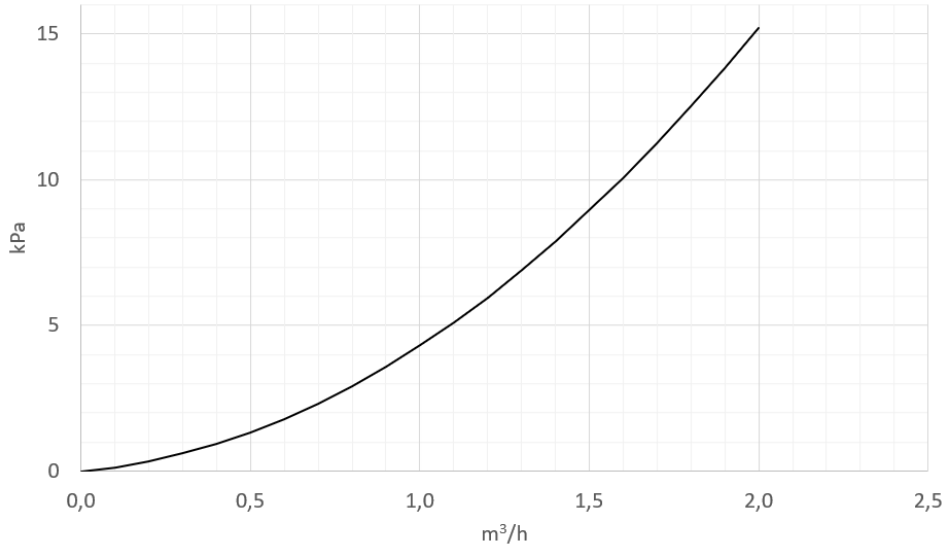
Boilers - standard



Boilers - with solar coil

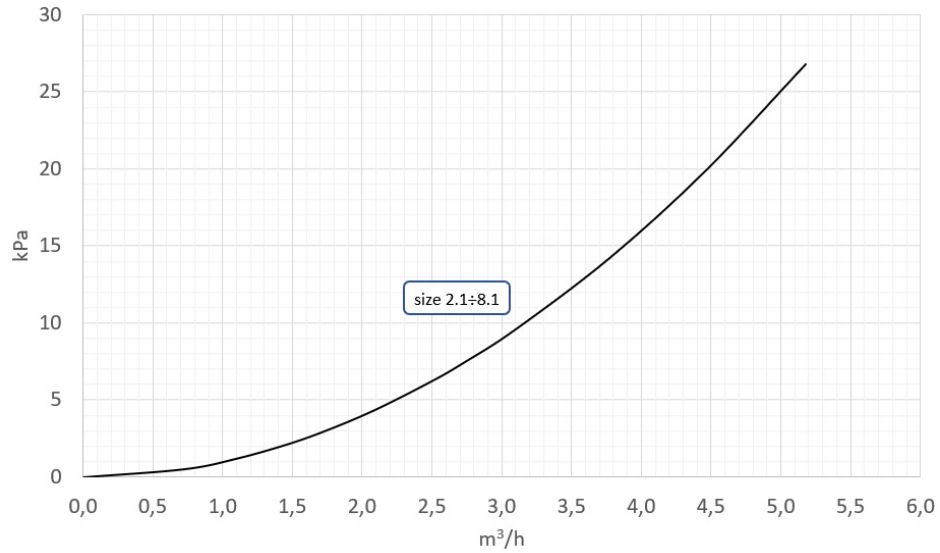


VDACSX



Note: pressure drops refer to the valve body only, without any fittings

FDMX



Note: pressure drops refer to the valve body only, without any fittings

Option compatibility

size	2.1	3.1	4.1	5.1	6.1	7.1	8.1	4.1T	5.1T	6.1T	7.1T	8.1T
3DHWX	o											
QERAX	o (ACS200X / ACS300X / ACS500X)											
ACS200X	o											
ACS300X	o											
ACS500X	o											
SCS08X	o (ACS200X / ACS300X)											
SCS12X	o (ACS500X)											
IBHX	o											
IBHTX	o											
TANKSX	o											
TANKMX	o											
TANKLX	o											
KTCAX	o											
DI50-2X	o											
DI100-2X	o											
KCSX	o											
KIRE2HX	o											
KIRE2HLX	o											
VAGX	o											
VDACSX	o											
DTX	o											
KSIPX	o											
AMRX	o											
ASTFX	o											
FDMX	o											
T1BX	o											
T1B30X	o											
HTC2WX	o											
SWCX	o											

Rules of compatibility between accessories

Auxiliary heat sources	IBH - IBHX - IBHTX	ELFOSun	SCS08X - SCS12X	GAS BOILER
IBH / IBHX / IBHTX	-	o	o	NO
ELFOSun	o	-	o	o
GAS BOILER	NO	o	o	-

Accessories for installation	DTX	KSIPX	TANKX	VAGX	ASTFX	AMRX
DTX	-	o	o	o	o	NO
KSIPX	o	-	NO	o	o	NO
TANKX	o	NO	-	NO	o	NO
VAGX	o	o	NO	-	o	o
ASTFX	o	o	o	o	-	NO
AMRX	NO	NO	NO	o	NO	-

ACS	T1BX / T1B30X	SCS08X	SCS12X	QERAX
ACS200X	o	o	NO	o
ACS300X	o	o	NO	o
ACS500X	o	NO	o	o

Note: the accessories that are not mentioned can be freely selected without issues of compatibility

Mandatory accessories

Mandatiry accessories

HMINX	**KJRH-120L control black**
HMIX	**KJRH-120L control withe**

The user interface (HMI) is supplied separately as an accessory.
In order to configure the unit correctly, it will be necessary when ordering to select the unit of the desired size and, among the accessories, the user interface in the desired colour.
The user interface is available in 2 colours:

- HMINX – KJRH-120L control black
- HMIX – KJRH-120L control withe

Alternatively, the EDGE heat pump can be combined with one of the hydraulic modules offered by CLIVET.
Each hydraulic module has a standard user interface (HMI)
Hydraulic modules are available in 4 versions:

MINI

- Mini Version
- 50-litre domestic water tank
- Single-area water booster kit already included in standard unit
- Integrated inertial storage tank
- Built-in WiFi for connection to the dedicated APP
- Compact dimensions, suitable for replacing a boiler

TANK

- Tower Version
- Two domestic water volumes 190 and 250 litres
- Integrated inertial storage tank
- Built-in WiFi for connection to the dedicated APP

Box

- Box Version
- Integrated three-way valve for domestic hot water
- Compact dimensions
- Integrated inertial storage tank
- Built-in WiFi for connection to the dedicated APP

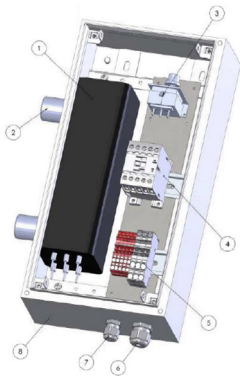
INVISIBLE

- Uncased version
- 150-litre domestic water tank can be expanded to 300 litres
- Compact dimensions for easy installation in walls
- Also available in the hybrid version with 24 kW or 34 kW boiler
- Integrated inertial storage tank
- Built-in WiFi for connection to the dedicated APP

Optional accessories

IBHX **Electric back-up heater (single phase)**

IBHTX **Electric back-up heater (three-phase)**



During installation, it is possible to select a power by appropriately modifying the internal wiring and correctly selecting the protection fuses to be applied.
Note: the kit requires field connection of the T1 control probe supplied as standard with the accessory

The kit includes:
- TBH backup
- 1" 1/4 connections
- 85° C automatic reset safety thermostat
- 95° C non-automatic reset safety thermostat
- Safety contactor
- Painted steel casing
- water temperature NTC probe with 10 m cable, to be connected to the board of the unit in the field
- fuses (various power ratings to protect all available configurations)
- control contactor
- connection and control cable between unit and resistor

3DHWX **System/DHW 3-way switching valve (SV1)**

Motorised 3-way switching valve with actuator and 1"1/4 M connections, for diverting the flow of water from the system to the domestic hot water storage tank.
Kits available:
- valve, reduction 1"1/4 F - 1" F

Model		2.1÷8.1
Power supply	V/Hz/p	230 / 50 / 1
Power input	W	5
Control	-	3-wire SPST
ΔP max	bar	2
Ps	bar	10
Temperature limits - water	°C	-10÷110
Temperature limits - air	°C	-5÷55
Hydraulic connection	-	1" 1/4 M
Cable length	mm	1.500
Switching time	s	30

* with reductions
n.s.: not provided

Optional accessories

ACS200X **200-litre DHW boiler**

ACS300X **300-litre DHW boiler**

ACS500X **500-litre DHW boiler**

"Factory made" DHW boilers are optimised for domestic hot water production.
All boilers are made of carbon steel with internal vitrification treatment according to DIN 4753-3 and UNI 10025.
They are equipped with a water/water exchange coil with a surface area compatible with the power ratings of the heat pumps, an inspection flange in the lower part (ACS200/300/500X), a magnesium anode for corrosion protection, and an electric heater.
The boilers have an integrated electric heater and are equipped with removable 70 mm polyurethane (ACS200/300/500X) external insulation to minimise heat loss and ensure high efficiency

For connection to solar thermal circuit:
- the 200, 300 and 500-litre versions can be connected to a solar thermal circuit with a specific optional kit

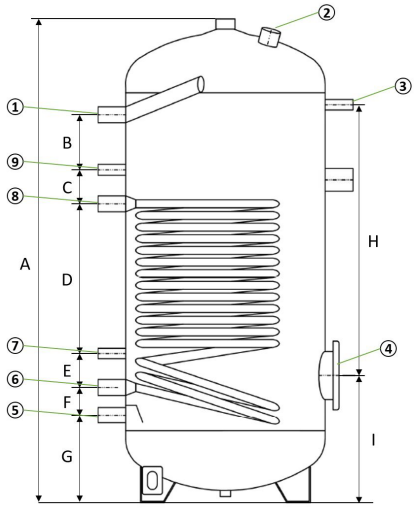
⚠ DHW boilers from other suppliers

Clivet DHW boilers technical data

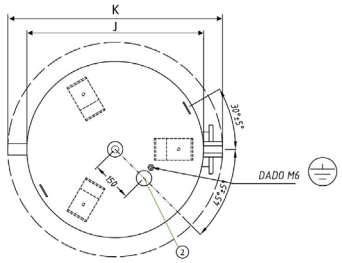
			ACS200X	ACS300X	ACS500X
Performance	Net water volume	l	196	273	475
	Energy efficiency class	-		B	
	Maximum water temperature	°C		95	
	Insulation: material / average thickness	-/mm		PU / 70	
	Heat loss	W/K	1,13	1,40	1,78
	TBH backup	kW		2 / 1-phase	
Coil	Surface	m^2	1,5	1,8	2,2
	Internal volume	l	8,6	10,4	12,7
Maximum operating pressure		bar		10	

Data according to DIN 4708 / EN 12897 / EN 15332
PU = polyurethane / PE = polyester fibre
The power transmitted from the coil to the boiler can be calculated using the formula:
PA = (TI - TA) x KS [W] where:

TI: heat exchanger inlet temperature
TA: average temperature of the boiler
KS: specific yield coefficient as a function of TI, obtainable from the diagrams:

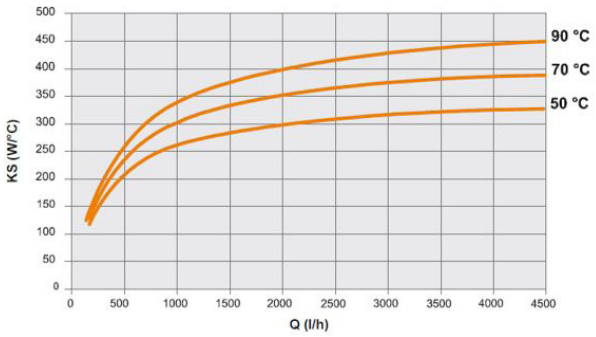


[MM]	ACS200X	ACS300X	ACS500X
A	1.215	1.615	1.705
B	140	225	245
C	85	275	290
C1		-	
C2		-	
D	375	515	440
E		85	95
F		70	80
G		220	265
H	680	1.070	1.060
I		320	365
J		500	650
K		640	790
Peso	77kg	98kg	128kg

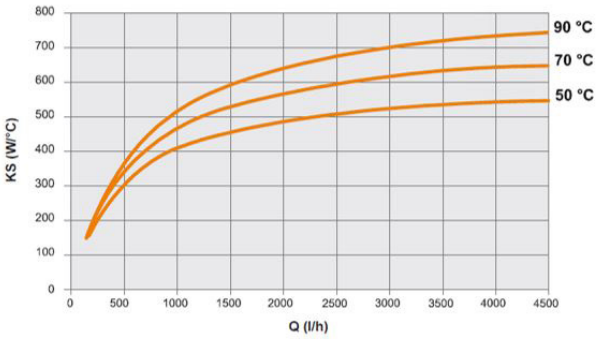


ACS200X/ACS300X/ACS500X

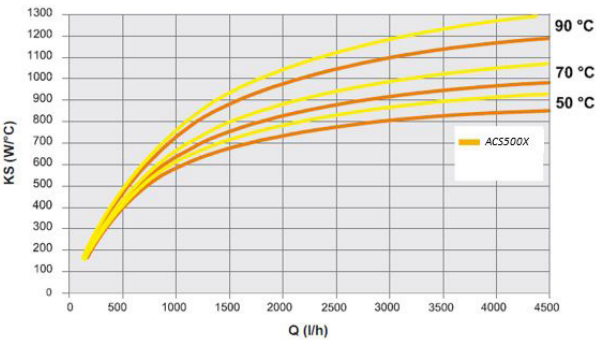
ACS200X



ACS300X



ACS500X



Optional accessories

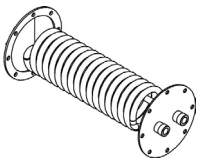
QERAX **Connection kit for single-phase heater on DHW storage tank (for ACS200/300/500X)**

Kit for managing the electric heater of a DHW storage tank, consisting of:
- Gewiss box to contain and protect the components
- back-up relay to transfer the incoming ON/OFF signal from the unit to the heater of the storage tank (230V voltage signal for QERAX, 400V for QERATX)
- protection fuse

⚠ The cable of the heater is 1.5m long, so the accessory must be installed close to the storage tank. For installations involving greater distances, replace the cable with one of suitable length

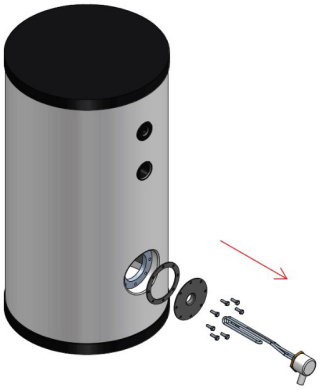
SCS08X **Solar coil for ACS200X/ACS300X DHW boilers**

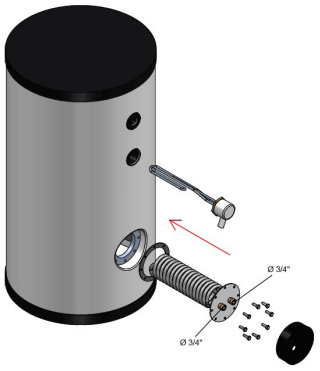
SCS12X **Solar coil for ACS ACS500X DHW boilers**



The boilers can be combined with solar thermal panels via an additional heat exchanger.
An additional exchanger is provided for 200, 300 or 500 litre models:
- accessory SCS08X for the exchanger to be combined with ACS200X or ACS300X
- accessory SCS12X for the exchanger to be combined with ACS500X.

The heater must be moved to the upper position and the solar exchanger must be installed in its place.





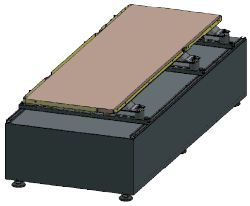
			SCS08X	SCS12X
Solar coil	Surface	m^2	0,8	1,2
	Internal volume	l	0,65	0,95
	Maximum operating pressure	bar	10	

FDMX **Magnetic dirt separator filter for water distribution systems**

The filter supplied as standard with the unit is a mesh filter, but it is advisable to install a dirt separator filter (FDMX accessory) to trap not only general dirt, but also fine ferromagnetic particles dispersed during use that are not trapped by the mesh filter.

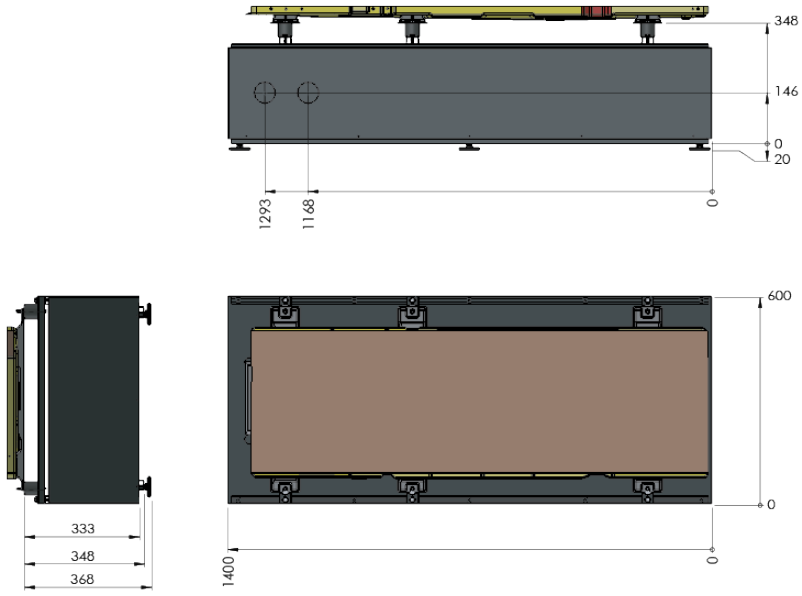
TANKSX **50L inertial storage tank for basement installation**
TANKMX **75L inertial storage tank for basement installation**
TANKLX **100L inertial storage tank for basement installation**

KTCAX **Hose kit for connecting the unit to the inertial storage tank**



The TANKX series is designed to be installed under the unit's base, so as to occupy the least space. It is made of RAL 7046 painted sheet metal, thermally insulated with internal foaming and housed inside an enclosure also made of painted sheet metal.
It can be typically connected on the intake with the dedicated KTCAX hose kit.

Model		TANKSX	TANKMX	TANKLX
Efficiency class	-		C	
Available volume	L	50	75	100
Maximum pressure	bar		3	
Material	-		Steel	
Hydraulic connection	-		1" 1/4 M	

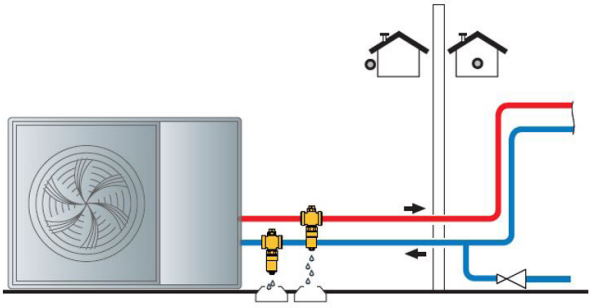


Optional accessories

VAGX

Safety antifreeze valve for system

The kit consists of antifreeze valves that allow the fluid to be discharged from the circuit when its temperature reaches a limit value, preventing the formation of ice in the system and consequent damage to the unit and pipes.

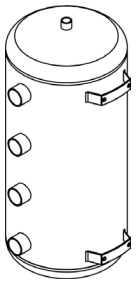


The valves must be installed outdoors, in a vertical position and on both the supply and return branches of the system

Optional accessories

DI50-2X **50-litre hydraulic circuit breaker**

DI100-2X **100 litre hydraulic circuit breaker**



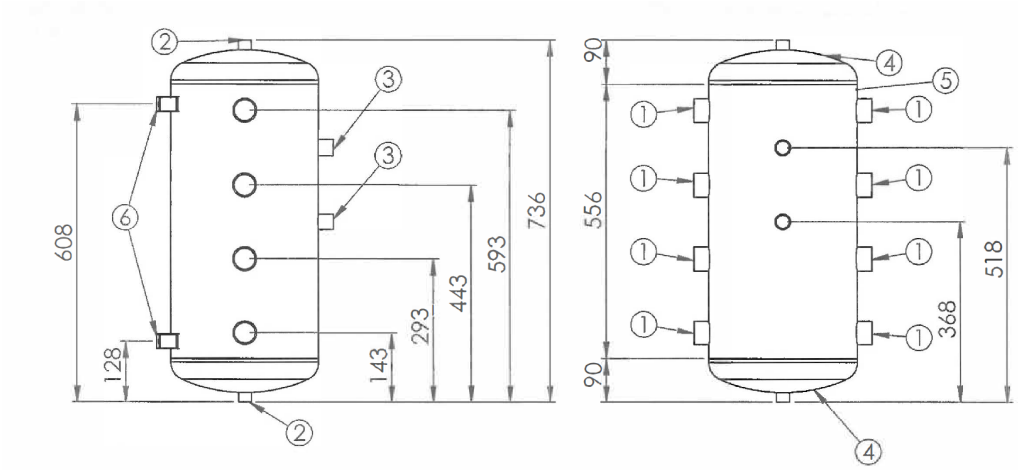
The 50-litre and 100-litre versions have 2 pairs of connections on the supply side and 2 pairs of connections on the return one.
The external insulation is made of polyurethane foam (30 mm for DI50-2X and DI100-2X) to minimise thermal leakage and ensure high efficiency.

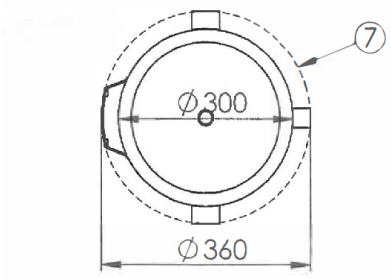
Note: DI50-2X and DI100-2X are supplied with wall mounting kits and four caps with gaskets for any unused connections. DI100-2X is also equipped with feet for floor mounting.

Model		DI50-2X	DI100-2X
Efficiency class	-	B	B
Maximum flow rate	l/s	-	-
Thermal dispersion	W/K	0,75	1,07
Available volume	l	45,3	45,3
Temperature limit	°C	80	80
Maximum pressure	bar	6	6
Material	-	Carbon steel	Carbon steel
Unladen weight	kg	20	24,5

Note: all versions can be wall mounted and DI100-2X can also be floor-standing with special feet

DI50-2X



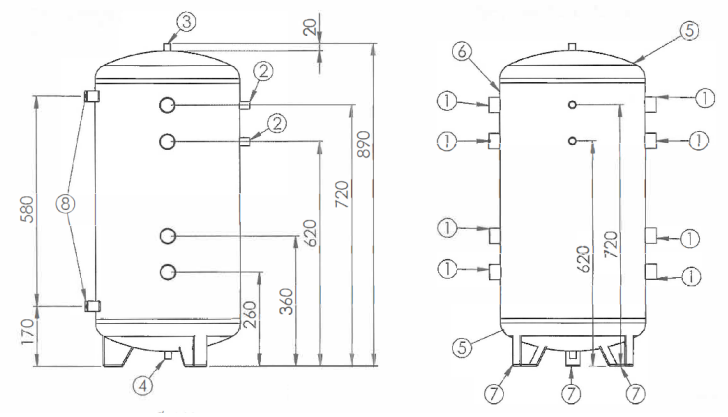


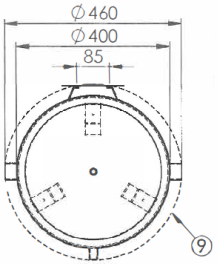
1. 1' 1/4 x 30 mm connection
2. 1/2" x 20 mm connection
3. 3/4" x 30 mm connection
4. Base diameter 300 thickness 20/10
5. Sheet metal 927 x 556 x 20/10
6. Internal shelf
7. Insulation

Note: 4 plugs and 4 gaskets are included for insertion on any unused connections

Optional accessories

DI100-2X



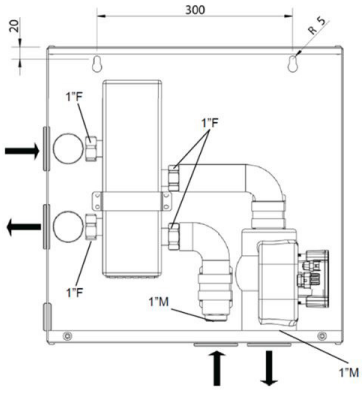


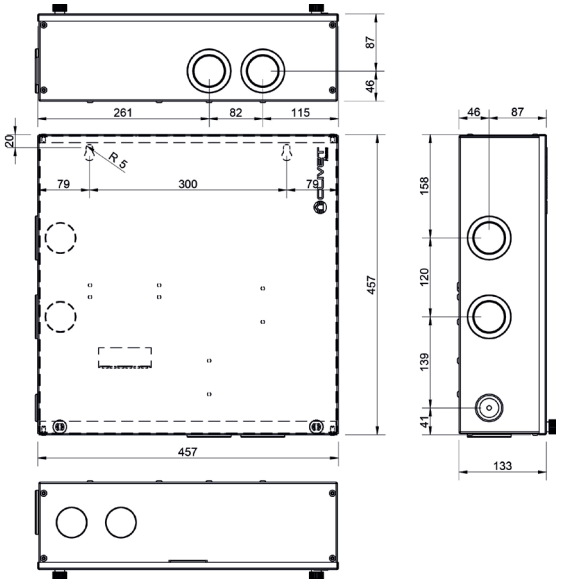
1. 1' 1/4 x 30 mm connection
2. 1/2' x 30 mm connection
3. 1/2' x 30 mm connection
4. 1/2' x 30 mm connection
5. Base diameter 400 thickness 20/10
6. Sheet metal 1245 x 650 x 20/10
7. Bracket 80 x 65 x 55 thickness 4 mm
8. Internal shelf
9. Insulation

KCSX **Secondary circuit kit (1-litre hydraulic circuit breaker + pump)**

Kit for single-zone systems with 1" F primary side and 1" M secondary side connections, with insulated separator and internal hydraulic components. The kit consists of:

- sheet metal case with holes for wall mounting
- 1-litre single-zone hydraulic separator
- variable speed zone circulator
- connecting pipes

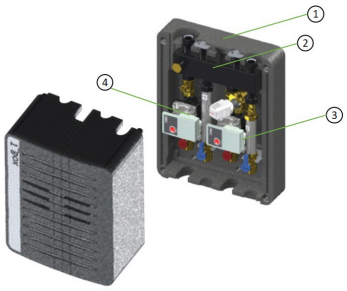




KIRE2HX **Double zone distribution unit: direct + direct**

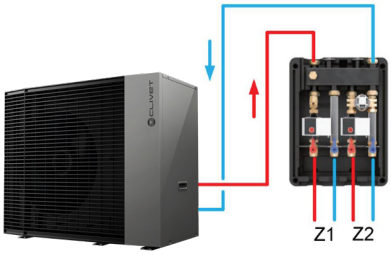
KIRE2HLX **Double zone distribution unit: direct + mixed (with mixing valve)**

Kit for managing two-zone distribution systems with 1" F primary side and 1" 1/2 F secondary side connections.
The kit consists of an insulated box for wall installation including manifold/separator, support bracket, anti-rotation jig, 2 distribution units with circulators, water temperature probe and complete water circuits.
The KIRE2HLX version is also equipped with a mixing valve.



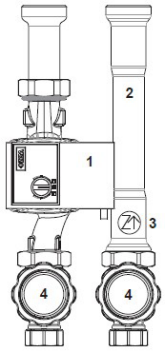
1. EPP insulation
2. Separator with 2 connections on the user side
3. Distribution unit - Zone 2 (direct or mixed)
4. Distribution unit - Zone 1 (direct)

Hydraulic connections



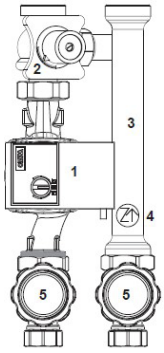
Note: for mixed Zone 2 systems, install the supplied temperature probe on the Zone 2 supply pipe of the KIRE2HLX

Distribution units:



Direct

1. Wilo YONOS PARA RS 25/1-6 180 circulator
2. Pipes kit
3. Check valve
4. Ball valves with handle and thermometer

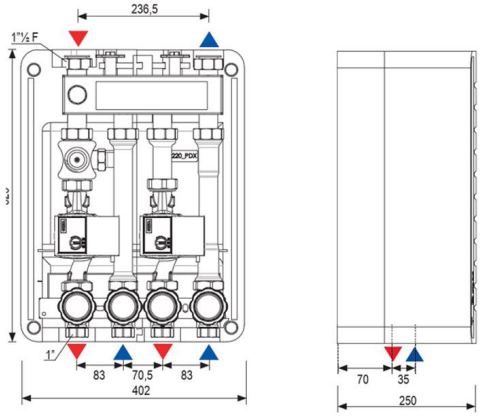


Mixed

1. Wilo YONOS PARA RS 25/1-6 180 circulator
2. DN25 TV3 sliding temperature mixing valve*
3. Pipes kit
4. Check valve
5. Ball valves with handle and thermometer

* opening/closing time: 120s

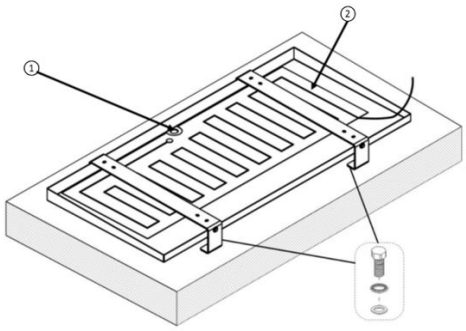
Dimensions and connections:



Optional accessories

DTX **Drain pan with electric heater**

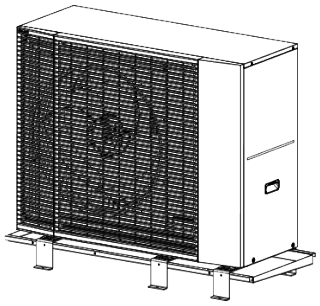
Drain pan to be fitted to the base of the unit for collecting condensate, with fitting for connection to the drain trap.
The drain pan has an automatically activated antifreeze heater that prevents the condensate from freezing.
The kit includes painted support brackets (with holes for installation of anti-vibration mounts and for fixing to base, inertial tank or wall brackets), screws and washers.



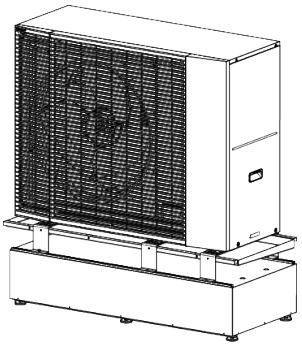
1. 1" drain hole
2. Heater

Note: the installation of vibration dampers is also mandatory with this accessory, to be applied between the unit and drain pan.

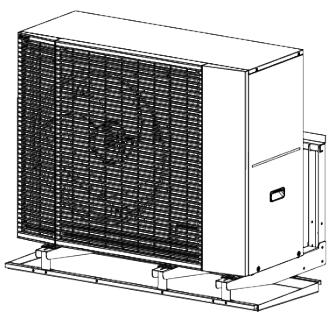
Floor-standing installation (standard)



Installation on inertial storage tank



Wall installation (with KSPIX accessory brackets)



T1BX **DHW temperature probe and additional heating source at 10 m**

T1B30X **DHW temperature probe and additional heating source at 30 m**

NTC water temperature probe with 10 m or 30 m cable.
The probe can be used to detect temperatures:

- Tsolar: solar thermal circuit
- T1: boiler or external electric heater
- T5: DHW tank
- Tw2: mixed zone 2
- Tbt1/Tbt2: hydraulic separator

⚠ The unit is equipped with a T1BX probe as standard.

		T1BX	T1B30X
Length	m	10	30
Bulb dimensions (ϕxL)	mm	6x24	6x24
NTC sensor (50°C)	kΩ	17,6	17,6
Field of operation	°C	-3÷105	-3÷105
Insulation to resistance	MΩ	100	100
Voltage isolation	V	1.800	1.800
Protection rating	IP	67	67

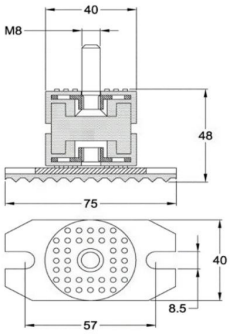
AMRX **Kit of antivibration mounts for floor installation**

ASTFX **Kit of antivibration mounts for installation on wall brackets, inertial storage tank or tray**

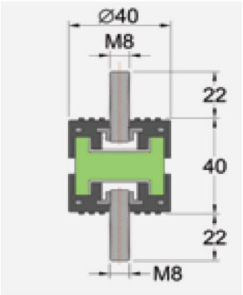
Anti-vibration mounts are an essential element for the correct installation of the unit as they are used to dampen noise and vibrations produced by components such as the compressor, circulators and pipes. Their installation is compulsory and their selection depends on the characteristics of the site: in the case of Edge F units, one element is required for each supporting point, for a total of 6 anti-vibration mounts.

Anti-vibration mount kits for installation on the floor (AMRX) or on brackets, inertial tank or drain pan (ASTFX): 6 rubber anti-vibration mounts with screws for attachment to the unit.
They consist of two plates made of galvanised steel discs, coated with recyclable thermoplastic elastomer material suitable for temperatures of -45 to 110 °C, with high resistance to ageing, pollutants, hydrocarbons, salt spray, UV radiation and detergents.
AMRX is also equipped with a steel base plate with holes for anchoring to the base.

AMRX



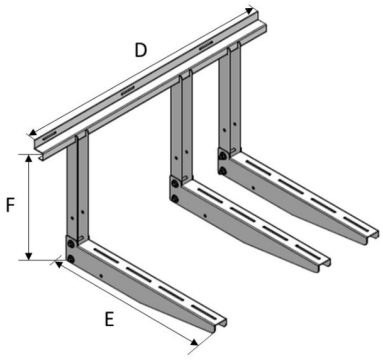
ASTFX

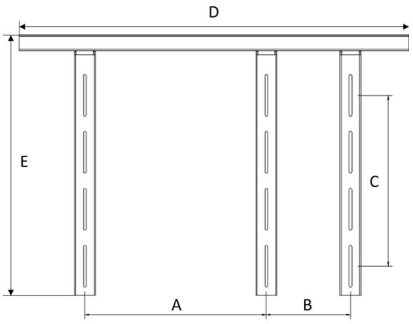


Product accessories

KSIPX **Wall fixing bracket kit**

Wall fixing bracket for outdoor unit, adjustable, in galvanised steel painted with polyester powders for outdoor use, weather-resistant.
The brackets are painted RAL 7046.



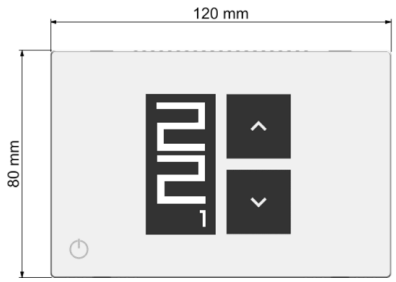


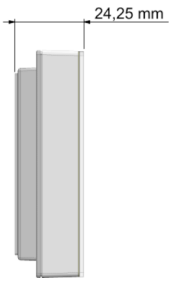
[mm]	2.1-8.1
A	679
B	370
C	513
D	1.200
E	860
F	600

HTC2WX **HID-TConnect 2 white chronothermostat for temperature control**

SWCX **IoT SwitchConnect receiver / switch**

Chronothermostat for semi-recessed installation with temperature probe. The thermostat is able to manage the request for the heat pump and allows control of the system with the App (Clivet Home Connect) or voice assistant (Amazon Alexa or Google Home).
The thermostat can be combined with a radio receiver for managing the request of terminal units or radiant systems, the mode change of the heat pump, or the systems with double set-point.





See the specific documentation at Clivet.World for more details

CONTROL4 NRG

Clivet Smart Living comfort and energy assistant

CONTROL4 NRG is a centralized control system for residential and commercial applications. Through an intuitive and easy to use interface panel, it effectively and efficiently manages all system elements to always achieve the best energy efficiency based on the required comfort.

CONTROL4 NRG acquires the data of the electric energy consumed by the air conditioning system and the electric energy produced by the photovoltaic system and displays charts of their trends both locally and remotely. The entire system optimised by Control4 NRG can be managed remotely with Clivet Eye, Clivet's Cloud solution, available as an App for smartphones and tablets and on your PC from any browser.

CONTROL4 NRG is at the heart of Clivet Smart Living, the complete proposal to fulfil the following requirements:

- the PRODUCTION of water for heating, cooling and domestic use
- the VENTILATION and purification of room air through the management of Elfo Fresh EVO units
- the DISTRIBUTION of thermal/cooling energy in all the rooms of the building
- energy MANAGEMENT with power consumption and self-consumption data display
- the INTEGRATION with Clivet SINERGY storage system and photovoltaic system
- remote MONITORING and control of systems with Clivet Eye from the APP or PC
- optimisation of the hydronic system with produced water temperature compensation systems
- optimisation of the thermal energy distribution system thanks to climatic curves applied to indoor environment comfort management

CONTROL4 NRG can be classed as a class A device in accordance with the requirements of European Standard UNI-EN15232 on "Energy performance of buildings" and in accordance with the requirements of Italian Decree of 6 August 2020 as indicated in Annex A, article 11.1 on the "Installation of building-automation systems" for the 110% Superbonus.

See the specific documentation at Clivet.World for more details

ELFOSUN3

Flat-plate solar thermal collector for combination with heating and domestic hot water production systems

Flat-plate solar thermal manifold for empty or pressurised systems for connection to domestic hot water production system
with optional circulation kit consisting of pump unit, control unit and expansion tank. The panels can be combined in series (up to 5) and are suitable for horizontal or inclined installation with specific kits.

See the specific documentation for more details.

See the specific documentation at Clivet.World for more details

Product accessories

FE 24.4-33.4

4-pipe condensing boilers for stand-alone systems

Instantaneous gas boiler with condensation exchanger offering high efficiency in both heating and DHW production, with larger stainless steel single-pipe coils, to substantially reduce the possibility of clogging and facilitate maintenance.
Modulation ratio, for optimal performance in new, efficient systems at low temperatures, avoiding continuous switch-on and -off for higher energy saving and less consumption.

See the specific documentation at Clivet.World for more details

UC 70.2

Condensing boiler UC 70.2

Wall-mounted condensing boiler, natural gas / LPG / H2 20% (approved to operate with 20% hydrogen in methane), for heating. Energy efficiency class A, Low NOx class 6

See the specific documentation at Clivet.World for more details

UC 115.2

Condensing boiler UC 115.2

Modulating condensing floor-standing thermal generator, natural gas or LPG, with Low NOx premix burner, for indoor and outdoor (IPX5D), ErP A, Low NOx class

See the specific documentation at Clivet.World for more details

UC 200F.2

Condensing boiler UC 200F.2

Floor standing, condensing gas boiler, , Low NOx class 5, for Nat. Gas or LPG, for indoor /outdoor installation, isolation protection IPX5D

See the specific documentation at Clivet.World for more details

Performances

Performances in heating

The data in the following tables are considered under the unit's maximum operating conditions, i.e. at maximum frequency.
The figures in the "General technical data" are considered under the nominal operating conditions of the unit, i.e. at a partial frequency below the maximum frequency.
For this reason, nominal figures typically have lower powers but optimised efficiencies, unlike maximum figures where power is maximised.

Size	Tae (°C) DB/WB	Water supply temperature (°C)																		
		25			35			45			55			65			80		
		kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe
2.1	-25/-	3.93	2.32	1.69	3.78	2.00	1.89	3.62	1.75	2.07	3.36	1.50	2.24	-	-	-	-	-	-
	-15/-15,3	5.71	3.04	1.88	5.46	2.62	2.09	5.17	2.24	2.31	4.79	1.89	2.53	4.41	1.64	2.68	-	-	-
	-10/-11	6.78	3.42	1.98	6.44	2.94	2.19	6.11	2.51	2.43	5.63	2.09	2.69	4.78	1.74	2.74	3.7	1.33	2.78
	-7/-8	7.04	3.75	1.88	6.70	3.18	2.11	6.25	2.64	2.36	5.86	2.13	2.76	5.13	1.85	2.76	3.9	1.42	2.75
	-5/-6	7.26	4.00	1.81	6.87	3.35	2.05	6.50	2.80	2.32	6.02	2.19	2.75	5.43	1.98	2.74	4.13	1.52	2.73
	-2/-3	7.58	4.39	1.73	7.17	3.65	1.96	6.76	3.03	2.23	6.39	2.54	2.51	5.80	2.11	2.75	4.39	1.59	2.77
	0/-1	7.74	4.69	1.65	7.31	3.87	1.89	6.90	3.20	2.15	6.51	2.67	2.44	6.08	2.20	2.77	4.51	1.63	2.76
	2/1	7.86	5.01	1.57	7.41	4.12	1.80	6.99	3.39	2.06	6.60	2.82	2.34	6.16	2.31	2.67	4.62	1.68	2.75
	5/4	7.90	5.62	1.41	7.47	4.56	1.64	7.05	3.71	1.90	6.65	3.05	2.18	6.18	2.48	2.50	4.96	1.78	2.78
	7/6	7.95	5.79	1.37	7.72	4.85	1.59	7.27	3.90	1.86	6.91	3.21	2.15	6.37	2.58	2.47	5.1	1.85	2.75
	12/9	8.01	7.20	1.11	7.99	5.80	1.38	7.51	4.55	1.65	7.04	3.63	1.94	6.52	2.88	2.26	5.02	1.99	2.52
	20/15	7.04	8.51	0.83	6.66	6.32	1.05	6.53	5.04	1.30	6.12	3.96	1.55	5.59	3.06	1.82	-	-	-
	35/24	7.17	10.38	0.69	7.54	9.87	0.76	7.11	7.04	1.01	6.92	5.47	1.27	-	-	-	-	-	-
3.1	-25/-	4.57	2.18	2.10	4.40	1.80	2.45	4.21	1.66	2.53	3.93	1.43	2.76	-	-	-	-	-	-
	-15/-15,3	6.57	2.83	2.33	6.29	2.47	2.54	5.97	2.12	2.82	5.54	1.75	3.17	5.05	1.40	3.60	-	-	-
	-10/-11	7.60	3.26	2.33	7.21	2.94	2.45	6.83	2.51	2.72	6.34	2.22	2.86	5.48	1.73	3.16	3.97	1.16	3.42
	-7/-8	7.65	3.55	2.15	7.63	3.11	2.45	7.16	2.63	2.72	6.70	2.40	2.80	5.71	1.81	3.15	4.33	1.14	3.78
	-5/-6	7.80	3.77	2.07	7.45	3.28	2.27	7.45	2.80	2.66	6.89	2.50	2.75	5.91	1.87	3.17	4.46	1.37	3.25
	-2/-3	8.06	4.14	1.95	7.69	3.56	2.16	7.31	3.00	2.44	7.35	2.64	2.79	6.24	1.99	3.13	4.76	1.40	3.40
	0/-1	8.26	4.42	1.87	7.87	3.76	2.09	7.47	3.15	2.37	7.56	2.79	2.71	6.55	2.18	3.01	4.90	1.45	3.39
	2/1	9.02	4.71	1.92	8.57	4.11	2.08	8.10	3.47	2.34	7.74	2.96	2.62	6.75	2.30	2.94	5.10	1.55	3.28
	5/4	9.37	5.20	1.80	8.85	4.39	2.02	8.35	3.65	2.29	7.88	3.06	2.58	7.26	2.49	2.91	5.32	1.70	3.14
	7/6	9.12	5.60	1.63	8.99	4.81	1.87	8.51	3.90	2.18	8.07	3.27	2.47	7.48	2.78	2.69	5.56	1.73	3.20
	12/9	9.26	6.52	1.42	9.26	5.54	1.67	8.74	4.39	1.99	8.21	3.59	2.29	7.60	2.97	2.56	5.58	1.86	3.01
	20/15	8.30	8.04	1.03	7.85	6.32	1.24	7.67	4.94	1.55	7.23	4.03	1.79	6.70	3.26	2.05	-	-	-
	35/24	8.04	9.39	0.86	7.81	9.26	0.84	7.56	6.88	1.10	7.36	5.05	1.46	-	-	-	-	-	-
4.1 4.1T	-25/-	5.66	2.20	2.57	5.55	1.96	2.83	5.48	1.77	3.10	5.14	1.55	3.32	-	-	-	-	-	-
	-15/-15,3	8.08	2.78	2.91	7.85	2.49	3.15	7.72	2.22	3.48	7.05	1.96	3.60	6.16	1.63	3.78	-	-	-
	-10/-11	9.24	3.14	2.94	8.96	2.72	3.29	8.60	2.42	3.55	8.01	2.11	3.80	7.30	1.89	3.86	5.52	1.52	3.63
	-7/-8	9.79	3.53	2.77	9.12	2.75	3.32	9.29	2.46	3.78	8.45	2.23	3.79	7.83	2.04	3.84	5.84	1.55	3.77
	-5/-6	10.26	3.65	2.81	9.96	3.16	3.15	9.80	2.55	3.84	8.71	2.26	3.85	8.15	2.12	3.84	5.97	1.62	3.69
	-2/-3	10.93	3.98	2.75	10.70	3.50	3.06	10.50	2.69	3.90	8.97	2.30	3.90	8.28	2.18	3.80	6.04	1.68	3.60
	0/-1	11.16	4.13	2.70	10.83	3.60	3.01	10.61	2.76	3.84	9.10	2.44	3.73	8.31	2.25	3.69	6.17	1.74	3.55
	2/1	11.52	4.50	2.56	11.20	3.78	2.96	10.97	2.86	3.84	9.27	2.52	3.68	8.42	2.29	3.68	6.38	1.78	3.58
	5/4	11.75	5.60	2.10	11.37	4.12	2.76	10.81	3.19	3.39	10.04	2.91	3.45	9.02	2.50	3.61	6.58	1.85	3.56
	7/6	12.03	6.05	1.99	11.61	4.53	2.56	11.03	3.50	3.15	10.49	3.04	3.45	9.85	2.70	3.65	6.81	1.91	3.57
	12/9	12.57	7.61	1.65	12.12	5.70	2.13	11.58	4.31	2.69	10.84	3.54	3.06	9.88	2.92	3.38	7.03	2.06	3.41
	20/15	10.47	9.36	1.12	10.14	7.04	1.44	9.70	5.41	1.79	9.29	4.23	2.20	8.79	3.42	2.57	-	-	-
	35/24	10.88	10.10	1.08	11.25	10.10	1.11	10.69	7.24	1.48	10.25	5.54	1.85	-	-	-	-	-	-

Performances

Performances in heating

Size	Tae (°C) DB/WB	Water supply temperature (°C)																		
		25			35			45			55			65			80		
		kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe
5.1 5.1T	-25/-	6.47	2.09	3.10	6.28	1.89	3.32	6.21	1.72	3.61	5.76	1.51	3.81	-	-	-	-	-	-
	-15/-15,3	8.66	2.73	3.17	8.45	2.22	3.81	8.44	2.11	4.00	7.94	1.93	4.11	6.51	1.58	4.12	-	-	-
	-10/-11	9.83	3.00	3.28	9.75	2.67	3.65	9.45	2.30	4.11	8.65	2.08	4.16	7.52	1.89	3.98	5.95	1.47	4.05
	-7/-8	10.32	3.36	3.07	9.64	2.70	3.57	9.55	2.42	3.95	9.35	2.14	4.37	8.14	1.98	4.11	6.12	1.53	4.00
	-5/-6	10.60	3.54	2.99	10.28	3.03	3.39	10.01	2.54	3.94	9.13	2.21	4.13	8.32	2.11	3.94	6.21	1.61	3.86
	-2/-3	11.32	3.86	2.93	11.00	3.35	3.28	10.73	2.65	4.05	9.46	2.28	4.15	8.46	2.16	3.92	6.34	1.65	3.84
	0/-1	11.59	4.00	2.90	11.20	3.47	3.23	10.81	2.70	4.00	9.60	2.30	4.17	8.49	2.20	3.86	6.52	1.69	3.86
	2/1	12.06	4.23	2.85	11.68	3.70	3.16	11.37	2.84	4.00	9.81	2.41	4.07	8.53	2.26	3.77	6.61	1.73	3.82
	5/4	12.57	5.40	2.33	12.22	3.82	3.20	11.90	3.10	3.84	10.73	2.67	4.02	9.72	2.40	4.05	6.82	1.80	3.79
	7/6	12.92	5.86	2.20	12.57	4.33	2.90	12.18	3.42	3.56	11.54	2.96	3.90	9.95	2.67	3.73	7.09	1.84	3.85
	12/9	13.61	7.40	1.84	13.18	5.48	2.41	12.76	4.28	2.98	12.08	3.32	3.64	10.40	2.89	3.60	7.30	2.03	3.60
	20/15	11.40	9.12	1.25	11.02	6.91	1.59	10.58	5.26	2.01	10.35	4.00	2.59	9.59	3.35	2.86	-	-	-
	35/24	11.66	10.02	1.16	11.54	9.96	1.16	11.01	7.18	1.53	10.63	5.12	2.08	-	-	-	-	-	-
6.1 6.1T	-25/-	8.60	2.20	3.91	8.26	1.90	4.35	7.94	1.77	4.49	7.75	1.65	4.70	-	-	-	-	-	-
	-15/-15,3	11.65	2.83	4.12	11.33	2.32	4.88	10.99	2.20	5.00	10.77	2.07	5.20	10.31	1.82	5.66	-	-	-
	-10/-11	13.04	3.10	4.21	11.85	2.66	4.45	11.10	2.36	4.70	11.20	2.15	5.21	11.17	2.01	5.56	7.78	1.32	5.89
	-7/-8	13.77	3.31	4.16	12.36	2.83	4.37	11.58	2.50	4.63	11.78	2.33	5.06	11.41	2.11	5.41	8.45	1.50	5.63
	-5/-6	14.21	3.58	3.97	12.76	3.06	4.17	12.33	2.70	4.57	11.97	2.43	4.93	11.35	2.18	5.21	8.66	1.78	4.87
	-2/-3	14.92	3.89	3.84	13.41	3.32	4.04	13.04	2.85	4.58	12.62	2.51	5.03	11.78	2.25	5.24	9.16	1.81	5.06
	0/-1	15.33	4.13	3.71	13.78	3.61	3.82	13.43	2.98	4.51	12.95	2.63	4.92	12.08	2.33	5.18	9.69	1.88	5.15
	2/1	15.82	4.39	3.60	14.30	3.84	3.72	13.92	3.25	4.28	13.38	2.82	4.74	12.42	2.38	5.22	10.00	1.92	5.21
	5/4	16.24	5.12	3.17	14.60	4.13	3.54	14.38	3.43	4.19	13.78	2.92	4.72	13.15	2.61	5.04	10.23	1.99	5.14
	7/6	16.67	5.41	3.08	14.97	4.48	3.34	14.51	3.72	3.90	14.08	3.13	4.50	13.86	2.82	4.91	10.75	2.10	5.12
	12/9	17.57	7.44	2.36	16.99	5.24	3.24	16.34	4.27	3.83	15.83	3.58	4.42	14.87	2.90	5.13	11.47	2.25	5.10
	20/15	15.77	8.72	1.81	15.25	6.38	2.39	14.67	4.70	3.12	14.19	3.86	3.68	13.30	3.38	3.93	-	-	-
	35/24	15.72	9.51	1.65	15.01	10.15	1.48	14.34	7.28	1.97	13.79	5.68	2.43	-	-	-	-	-	-

Performances in heating

Size	Tae (°C) DB/WB	Water supply temperature (°C)																		
		25			35			45			55			65			80		
		kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe
7.1 7.1T	-25/-	9.34	2.10	4.45	8.99	1.88	4.78	8.62	1.67	5.16	8.42	1.61	5.23	-	-	-	-	-	-
	-15/-15,3	12.58	2.73	4.61	12.22	2.27	5.38	11.84	2.16	5.48	11.59	2.03	5.71	10.97	1.74	6.30	-	-	-
	-10/-11	14.08	3.07	4.59	13.53	2.52	5.37	12.26	2.27	5.40	11.96	2.10	5.70	12.12	1.98	6.12	8.00	1.27	6.30
	-7/-8	15.05	3.16	4.76	14.60	2.71	5.39	12.91	2.43	5.31	13.50	2.28	5.92	12.07	2.08	5.80	9.12	1.45	6.29
	-5/-6	15.50	3.50	4.43	14.97	2.88	5.20	13.16	2.65	4.97	12.89	2.37	5.44	12.05	2.12	5.68	9.25	1.70	5.44
	-2/-3	16.18	3.79	4.27	15.24	3.13	4.87	13.53	2.76	4.90	13.27	2.43	5.46	12.52	2.21	5.67	9.80	1.73	5.66
	0/-1	16.70	4.00	4.18	15.48	3.41	4.54	13.80	2.94	4.69	13.54	2.59	5.23	12.86	2.26	5.69	9.90	1.85	5.35
	2/1	17.17	4.22	4.07	15.60	3.70	4.22	14.89	3.18	4.68	14.20	2.74	5.18	13.08	2.34	5.59	10.30	1.88	5.48
	5/4	17.66	4.94	3.57	15.85	3.97	3.99	14.93	3.32	4.50	15.02	2.86	5.25	13.85	2.50	5.54	11.16	1.98	5.64
	7/6	18.19	5.22	3.48	16.31	4.25	3.84	16.01	3.56	4.50	15.54	3.07	5.06	15.04	2.76	5.45	11.22	2.04	5.50
	12/9	18.95	7.30	2.60	18.35	5.05	3.63	17.66	4.13	4.28	17.13	3.48	4.92	16.14	2.85	5.66	12.05	2.17	5.55
	20/15	16.90	8.28	2.04	16.37	6.07	2.70	15.76	4.55	3.46	15.27	3.77	4.05	14.21	3.24	4.39	-	-	-
	35/24	16.84	9.20	1.83	15.01	10.15	1.48	14.34	7.28	1.97	13.79	5.68	2.43	-	-	-	-	-	-
8.1 8.1T	-25/-	10.15	1.93	5.26	9.73	1.71	5.69	9.32	1.57	5.94	9.01	1.53	5.89	-	-	-	-	-	-
	-15/-15,3	13.38	2.66	5.03	14.10	2.18	6.47	12.70	2.07	6.14	12.60	1.80	7.00	11.18	1.67	6.69	-	-	-
	-10/-11	15.18	2.88	5.27	15.60	2.43	6.42	13.35	2.15	6.21	12.71	2.05	6.20	12.54	1.91	6.57	8.04	1.20	6.70
	-7/-8	16.17	3.07	5.27	15.72	2.62	6.00	13.98	2.40	5.83	15.62	2.18	7.17	12.67	2.02	6.27	9.25	1.38	6.70
	-5/-6	16.54	3.32	4.98	15.85	2.85	5.56	14.70	2.51	5.86	14.01	2.27	6.17	12.65	2.04	6.20	9.89	1.53	6.46
	-2/-3	17.22	3.52	4.89	15.96	3.10	5.15	15.30	2.70	5.67	14.62	2.41	6.07	13.15	2.11	6.23	9.98	1.54	6.48
	0/-1	17.71	3.78	4.69	16.34	3.34	4.89	15.76	2.82	5.59	15.04	2.50	6.02	13.50	2.17	6.22	10.34	1.56	6.63
	2/1	18.24	3.96	4.61	16.61	3.47	4.79	16.45	3.09	5.32	15.41	2.67	5.77	13.73	2.24	6.13	10.37	1.62	6.40
	5/4	18.97	4.84	3.92	17.25	3.85	4.48	16.89	3.20	5.28	16.61	2.80	5.93	15.59	2.40	6.50	12.16	1.84	6.61
	7/6	19.51	5.05	3.86	17.68	4.07	4.34	17.26	3.47	4.97	17.00	3.02	5.63	16.13	2.75	5.87	12.15	1.96	6.20
	12/9	20.35	6.80	2.99	19.93	4.93	4.04	19.20	4.07	4.72	18.65	3.34	5.58	16.69	2.84	5.88	12.68	2.12	5.98
	20/15	17.79	7.70	2.31	17.24	5.58	3.09	16.61	4.45	3.73	16.12	3.71	4.35	14.92	3.15	4.74	-	-	-
	35/24	18.08	8.44	2.14	15.50	10.10	1.53	14.61	7.23	2.02	14.07	5.61	2.51	-	-	-	-	-	-

kWt: delivered heat capacity [kW]
kWe: electrical power input [kW]
Tae: outside air temperature [°C]
Performance in relation to the difference between inlet and outlet water temperature = 5 °C
Note: data are at maximum operation according to EN 14511:2018
Values indicate integrated heat capacity: the current heat capacity considering any defrost cycles

UNI/TS 11300 data – part 4

Data for Energy Certification

Data to be used for the calculation of the energy performance of the building, referring to the energy efficiency of heat pump generation.
The data provided can be used for calculation according to UNI/TS 11300 - part 4 and refer to the conditions defined in UNI EN 14825.
The data may be updated by the manufacturer in the event of updates to the range without obligation of prior notice.

Performance at full load in heating mode

Heating capacity and COP at full load, under the conditions defined in EN 14825.

Size	Heating							ACS		
	Tae	Supply water temperature						Tae	Supply water temperature	
		35 °C		45 °C		55 °C			55 °C	
		Heating capacity ΦH,HP out [kW]	COP	Heating capacity ΦH,HP out [kW]	COP	Heating capacity ΦH,HP out [kW]	COP		Heating capacity ΦH,HP out [kW]	COP
2.1	7- °C	4.10	3.25	4.70	2.70	4.04	2.22	7°C	4.6	3.33
	2 °C	4.00	4.23	4.40	3.39	4.06	2.70	15°C	4.8	3.8
	7 °C	4.10	5.30	4.50	4.17	4.60	3.33	20°C	4.6	4.1
	12 °C	4.10	6.24	4.56	4.66	4.89	3.66	35°C	6	5.7
3.1	-7 °C	6.00	3.03	5.23	2.55	5.98	2.16	7°C	6.2	3.23
	2 °C	5.60	4.00	5.51	3.16	6.09	2.50	15°C	5.89	3.8
	7 °C	6.10	5.03	6.40	3.91	6.20	3.23	20°C	5.89	4.05
	12 °C	5.89	5.87	6.08	4.62	5.89	3.65	35°C	5.89	5.07
4.1	-7 °C	7.00	3.25	8.00	2.60	7.50	2.30	7°C	8	3.35
	2 °C	7.10	4.10	8.00	3.15	8.00	2.70	15°C	8	4.01
	7 °C	8.00	5.25	8.10	4.00	8.00	3.35	20°C	8.06	4.43
	12 °C	8.00	6.32	8.00	4.92	8.17	3.78	35°C	8.03	6.05
5.1	-7 °C	8.00	3.15	9.00	2.50	8.80	2.20	7°C	9.5	3.2
	2 °C	8.20	3.90	9.00	3.05	9.00	2.55	15°C	9.45	3.86
	7 °C	9.50	4.95	9.50	3.90	9.50	3.20	20°C	9.41	4.2
	12 °C	9.67	6.03	9.55	4.69	9.56	3.60	35°C	9.56	5.69
6.1	-7 °C	10.00	3.15	11.00	2.50	11.00	2.25	7°C	11.9	3.25
	2 °C	9.20	4.00	11.50	3.10	11.50	2.65	15°C	11.86	4.15
	7 °C	12.10	4.95	12.30	3.90	11.90	3.25	20°C	11.79	4.36
	12 °C	12.17	5.89	12.37	4.65	11.95	3.93	35°C	11.85	5.78
7.1	-7 °C	12.00	2.80	12.00	2.40	12.00	2.15	7°C	13.8	3.15
	2 °C	11.00	3.80	12.50	3.05	12.50	2.60	15°C	13.78	3.99
	7 °C	14.00	4.70	14.10	3.75	13.80	3.15	20°C	13.77	4.18
	12 °C	13.99	5.70	14.11	4.54	13.81	3.85	35°C	13.79	5.68
8.1	-7 °C	13.10	2.70	13.00	2.30	13.00	2.10	7°C	16	3.05
	2 °C	13.00	3.61	13.80	2.90	13.80	2.50	15°C	16.21	3.6
	7 °C	15.50	4.50	15.50	3.65	16.00	3.05	20°C	16.12	3.71
	12 °C	15.49	5.52	15.55	4.34	15.90	3.53	35°C	14.07	5.61
6.1T	-7 °C	7.00	3.25	8.00	2.60	7.50	2.30	7°C	8	3.35
	2 °C	7.10	4.10	8.00	3.15	8.00	2.70	15°C	8	4.01
	7 °C	8.00	5.25	8.10	4.00	8.00	3.35	20°C	8.06	4.43
	12 °C	8.00	6.32	8.00	4.92	8.17	3.78	35°C	8.03	6.05

Size	Heating							ACS		
	Tae	Supply water temperature						Tae	Supply water temperature	
		35 °C		45 °C		55 °C			55 °C	
		Heating capacity ΦH,HP out [kW]	COP	Heating capacity ΦH,HP out [kW]	COP	Heating capacity ΦH,HP out [kW]	COP		Heating capacity ΦH,HP out [kW]	COP
5.1T	-7 °C	8.00	3.15	9.00	2.50	8.80	2.20	7°C	9.5	3.2
	2 °C	8.20	3.90	9.00	3.05	9.00	2.55	15°C	9.45	3.86
	7 °C	9.50	4.95	9.50	3.90	9.50	3.20	20°C	9.41	4.2
	12 °C	9.67	6.03	9.55	4.69	9.56	3.60	35°C	9.56	5.69
6.1T	-7 °C	10.00	3.15	11.00	2.50	11.00	2.25	7°C	11.9	3.25
	2 °C	9.20	4.00	11.50	3.10	11.50	2.65	15°C	11.86	4.15
	7 °C	12.10	4.95	12.30	3.90	11.90	3.25	20°C	11.79	4.36
	12 °C	12.17	5.89	12.37	4.65	11.95	3.93	35°C	11.85	5.78
7.1T	7- °C	12.00	2.80	12.00	2.40	12.00	2.15	7°C	13.8	3.15
	2 °C	11.00	3.80	12.50	3.05	12.50	2.60	15°C	13.78	3.99
	7 °C	14.00	4.70	14.10	3.75	13.80	3.15	20°C	13.77	4.18
	12 °C	13.99	5.70	14.11	4.54	13.81	3.85	35°C	13.79	5.68
8.1T	-7 °C	13.10	2.70	13.00	2.30	13.00	2.10	7°C	16	3.05
	2 °C	13.00	3.61	13.80	2.90	13.80	2.50	15°C	16.21	3.6
	7 °C	15.50	4.50	15.50	3.65	16.00	3.05	20°C	16.12	3.71
	12 °C	15.49	5.52	15.55	4.34	15.90	3.53	35°C	14.07	5.61

UNI/TS 11300 data – part 4

Performance with partial loads in Heating mode

Standard UNI/TS 11300 - part 4, taking the Average climate according to UNI EN 14825 as reference, defines a design temperature of -10 °C and operating conditions A = -7 °C (bivalent temperature), B = 2°C, C = 7 °C and D = 12 °C.
The Load Factor (CR) is calculated for each condition; this is the ratio between the load required by the system and the maximum power that can be delivered by the unit. CR therefore represents the unit's capacity to partialise.
Similarly, the Correction Factor (fcop), is the ratio between the efficiency of partialisation and the efficiency at full load.

Size 2.1	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		4.10	4.00	4.10	4.10
P - Load of the system	4.66	4.10	2.76	3.04	3.39
CR - Load factor of the heat pump		1.00	0.63	0.40	0.17
COP - Efficiency with partial load		3.25	4.25	4.41	3.93
COP› - Efficiency with full load		3.25	4.21	5.32	6.21
fCOP – Correction factor		1.00	1.01	0.83	0.63

Size 5.1	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		8.00	8.20	9.50	9.67
P - Load of the system	9.09	8.00	4.91	4.65	5.05
CR - Load factor of the heat pump		1.00	0.60	0.33	0.14
COP - Efficiency with partial load		3.15	4.47	4.95	4.29
COP› - Efficiency with full load		3.15	3.90	4.95	6.04
fCOP – Correction factor		1.00	1.14	1.00	0.71

Size 3.1	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		6.00	5.60	6.10	5.89
P - Load of the system	6.82	6.00	3.68	3.05	3.41
CR - Load factor of the heat pump		1.00	0.66	0.39	0.17
COP - Efficiency with partial load		3.03	4.19	4.70	4.29
COP› - Efficiency with full load		3.03	4.00	5.04	5.89
fCOP – Correction factor		1.00	1.05	0.93	0.73

Size 6.1	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		10.00	9.20	12.10	12.17
P - Load of the system	11.36	10.00	6.14	5.34	5.94
CR - Load factor of the heat pump		1.00	0.67	0.33	0.14
COP - Efficiency with partial load		3.15	4.69	4.69	4.15
COP› - Efficiency with full load		3.15	4.00	4.96	5.88
fCOP – Correction factor		1.00	1.17	0.95	0.71

Size 4.1	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		7.00	7.10	8.00	8.00
P - Load of the system	7.95	7.00	4.30	4.65	5.05
CR - Load factor of the heat pump		1.00	0.60	0.35	0.15
COP - Efficiency with partial load		3.26	4.66	4.99	4.39
COP› - Efficiency with full load		3.26	4.10	5.26	6.30
fCOP – Correction factor		1.00	1.14	0.95	0.70

Size 7.1	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		12.00	11.00	14.00	13.99
P - Load of the system	13.64	12.00	7.36	5.34	5.94
CR - Load factor of the heat pump		1.00	0.67	0.34	0.15
COP - Efficiency with partial load		2.80	4.37	4.73	4.22
COP› - Efficiency with full load		2.80	3.81	4.70	5.71
fCOP – Correction factor		1.00	1.15	1.01	0.74

Performance with partial loads in Heating mode

Size 8.1	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		13.10	13.00	15.50	15.49
P - Load of the system	14.89	13.10	8.04	5.34	5.94
CR - Load factor of the heat pump		1.00	0.62	0.34	0.14
COP - Efficiency with partial load		2.70	4.26	5.65	4.20
COP› - Efficiency with full load		2.70	3.61	4.51	5.51
fCOP – Correction factor		1.00	1.18	1.25	0.76

Size 6.1T	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		10.00	9.20	12.10	12.17
P - Load of the system	11.36	10.00	6.14	5.34	5.94
CR - Load factor of the heat pump		1.00	0.67	0.33	0.14
COP - Efficiency with partial load		3.15	4.69	4.69	4.15
COP› - Efficiency with full load		3.15	4.00	4.96	5.88
fCOP – Correction factor		1.00	1.17	0.95	0.71

Size 4.1T	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		7.00	7.10	8.00	8.00
P - Load of the system	7.95	7.00	4.30	4.65	5.05
CR - Load factor of the heat pump		1.00	0.60	0.35	0.15
COP - Efficiency with partial load		3.26	4.66	4.99	4.39
COP› - Efficiency with full load		3.26	4.10	5.26	6.30
fCOP – Correction factor		1.00	1.14	0.95	0.70

Size 7.1T	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		12.00	11.00	14.00	13.99
P - Load of the system	13.64	12.00	7.36	5.34	5.94
CR - Load factor of the heat pump		1.00	0.67	0.34	0.15
COP - Efficiency with partial load		2.80	4.37	4.73	4.22
COP› - Efficiency with full load		2.80	3.81	4.70	5.71
fCOP – Correction factor		1.00	1.15	1.01	0.74

Size 5.1T	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		8.00	8.20	9.50	9.67
P - Load of the system	9.09	8.00	4.91	4.65	5.05
CR - Load factor of the heat pump		1.00	0.60	0.33	0.14
COP - Efficiency with partial load		3.15	4.47	4.95	4.29
COP› - Efficiency with full load		3.15	3.90	4.95	6.04
fCOP – Correction factor		1.00	1.14	1.00	0.71

Size 8.1T	$T_{designh}$	A	B	C	D
Outdoor temperature	-10°C	-7 °C	2 °C	7 °C	12 °C
PLR - Climatic load factor	100%	88%	54%	35%	15%
DC - Power with full load		13.10	13.00	15.50	15.49
P - Load of the system	14.89	13.10	8.04	5.34	5.94
CR - Load factor of the heat pump		1.00	0.62	0.34	0.14
COP - Efficiency with partial load		2.70	4.26	5.65	4.20
COP› - Efficiency with full load		2.70	3.61	4.51	5.51
fCOP – Correction factor		1.00	1.18	1.25	0.76

Performances

Performances in cooling

The data in the following tables are considered under the unit's maximum operating conditions, i.e. at maximum frequency.
The figures in the "General technical data" are considered under the nominal operating conditions of the unit, i.e. at a partial frequency below the maximum frequency.
For this reason, nominal figures typically have lower powers but optimised efficiencies, unlike maximum figures where power is maximised.

GR	Tae (°C) DB/WB	Water supply temperature (°C)																	
		5			7			10			12			15			18		
		kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe
2.1	20	4.45	5.16	0.86	4.74	5.53	0.86	5.23	6.13	0.85	5.55	6.51	0.85	6.11	5.89	1.04	6.69	6.55	1.02
	25	5.11	4.37	1.17	5.46	4.65	1.18	5.76	5.08	1.13	6.12	5.42	1.13	6.70	5.16	1.30	7.35	5.81	1.26
	30	5.47	3.61	1.51	5.84	4.05	1.44	6.44	4.23	1.52	6.84	4.46	1.53	7.20	4.45	1.62	7.87	5.19	1.52
	35	5.56	3.08	1.80	5.94	3.39	1.75	6.56	3.52	1.86	6.96	3.83	1.82	7.64	3.83	2.00	8.36	4.66	1.79
	40	5.24	2.75	1.91	5.61	2.84	1.98	6.19	3.06	2.02	6.58	3.25	2.03	7.27	3.23	2.25	7.95	3.70	2.15
	43	5.05	2.51	2.02	5.41	2.66	2.04	5.97	2.85	2.10	6.35	2.99	2.12	6.89	2.97	2.32	7.54	3.25	2.32
	46	4.61	2.23	2.07	4.65	2.56	1.81	5.13	2.66	1.93	5.52	2.94	1.88	5.93	2.94	2.02	6.50	3.22	2.02
3.1	20	5.60	5.13	1.09	5.97	5.50	1.09	6.58	6.09	1.08	7.00	6.46	1.08	7.68	5.83	1.32	8.39	6.45	1.30
	25	6.51	4.31	1.51	6.94	4.59	1.51	7.65	5.01	1.53	8.11	5.29	1.53	8.51	5.08	1.68	9.33	5.76	1.62
	30	7.25	3.53	2.06	7.72	3.96	1.95	8.45	4.11	2.06	8.98	4.32	2.08	9.82	4.25	2.31	10.31	5.08	2.03
	35	7.30	3.01	2.42	7.77	3.19	2.43	8.51	3.38	2.52	9.03	3.72	2.43	9.91	3.77	2.63	10.82	4.52	2.39
	40	6.88	2.66	2.58	7.34	2.69	2.73	7.89	2.98	2.65	8.36	3.13	2.67	8.84	3.07	2.88	10.10	3.61	2.80
	43	6.31	2.45	2.57	6.66	2.61	2.56	7.12	2.80	2.54	7.40	2.97	2.49	8.04	2.97	2.71	8.59	3.20	2.69
	46	5.76	2.18	2.64	5.72	2.51	2.28	6.12	2.62	2.34	6.50	2.91	2.23	6.93	2.94	2.36	7.39	3.16	2.34
4.1 4.1T	20	6.71	5.01	1.34	7.17	5.35	1.34	7.90	5.91	1.34	8.37	6.29	1.33	9.22	5.68	1.62	9.99	6.30	1.59
	25	6.88	4.24	1.62	7.36	4.49	1.64	8.10	4.89	1.66	8.61	5.24	1.64	9.47	4.97	1.91	10.35	5.64	1.84
	30	7.30	3.50	2.09	7.80	3.91	1.99	8.58	4.09	2.10	8.90	4.31	2.06	10.00	4.32	2.31	10.93	5.01	2.18
	35	7.40	2.98	2.48	7.88	3.26	2.42	8.56	3.40	2.52	9.19	3.72	2.47	10.08	3.70	2.72	11.01	4.48	2.46
	40	6.99	2.65	2.64	7.45	2.75	2.71	8.19	2.97	2.76	8.68	3.13	2.77	9.42	3.12	3.02	10.43	3.59	2.91
	43	6.78	2.43	2.79	7.23	2.57	2.81	7.94	2.76	2.88	8.43	2.90	2.91	9.36	2.86	3.27	9.72	3.14	3.10
	46	6.18	2.16	2.86	6.52	2.43	2.68	7.08	2.54	2.79	7.52	2.82	2.66	8.06	2.83	2.85	8.69	3.06	2.84
5.1 5.1T	20	6.96	4.98	1.40	7.44	5.32	1.40	8.19	5.87	1.40	8.69	6.25	1.39	9.55	5.62	1.70	10.49	6.21	1.69
	25	7.36	4.18	1.76	7.85	4.43	1.77	8.63	4.82	1.79	9.15	5.13	1.78	10.06	4.89	2.06	10.99	5.59	1.97
	30	7.90	3.42	2.31	8.41	3.82	2.20	9.24	3.97	2.33	9.79	4.17	2.35	10.74	4.13	2.60	11.73	4.90	2.39
	35	7.98	2.91	2.74	8.49	3.07	2.77	9.32	3.27	2.85	9.90	3.61	2.74	10.83	3.64	2.98	11.86	4.35	2.73
	40	7.59	2.57	2.95	8.08	2.60	3.11	8.87	2.89	3.07	9.41	3.01	3.13	10.29	2.97	3.46	11.23	3.50	3.21
	43	7.21	2.38	3.03	7.59	2.52	3.01	8.24	2.72	3.03	8.56	2.88	2.97	9.36	2.86	3.27	10.09	3.09	3.27
	46	6.18	2.16	2.86	6.52	2.43	2.68	7.08	2.54	2.79	7.52	2.82	2.66	8.06	2.83	2.85	8.69	3.06	2.84
6.1 6.1T	20	9.74	4.73	2.06	10.38	4.95	2.10	11.41	5.33	2.14	12.11	5.41	2.24	13.34	5.91	2.26	14.57	6.09	2.39
	25	10.55	3.87	2.73	11.24	4.10	2.74	12.38	4.50	2.75	13.12	4.56	2.88	14.36	4.98	2.88	15.72	5.38	2.92
	30	11.19	3.25	3.44	11.92	3.41	3.50	13.09	3.69	3.55	13.87	3.96	3.50	15.08	4.03	3.74	16.45	4.31	3.82
	35	11.31	2.80	4.04	11.80	3.03	3.89	13.14	3.20	4.11	13.92	3.26	4.27	15.16	3.50	4.33	17.08	3.96	4.31
	40	10.66	2.53	4.21	11.41	2.87	3.98	12.48	3.01	4.15	13.22	3.05	4.33	14.45	3.24	4.46	15.68	3.40	4.61
	43	10.31	2.35	4.39	11.00	2.50	4.40	12.00	2.70	4.44	11.96	2.84	4.21	13.46	3.13	4.30	13.74	3.36	4.09
	46	5.57	2.37	2.35	6.01	2.46	2.44	8.52	2.61	3.26	9.04	2.75	3.29	9.93	3.09	3.21	10.89	3.25	3.35

GR	Tae (°C) DB/WB	Water supply temperature (°C)																	
		5			7			10			12			15			18		
		kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe	kWt	COP	kWe
7.1 7.1T	20	10.18	4.69	2.17	10.86	4.88	2.23	11.94	5.29	2.26	12.67	5.37	2.36	13.97	5.73	2.44	15.26	6.01	2.54
	25	11.23	3.80	2.96	11.95	4.00	2.99	13.10	4.41	2.97	13.88	4.47	3.10	15.15	4.88	3.10	16.56	5.30	3.12
	30	12.10	3.16	3.83	12.86	3.29	3.91	14.06	3.58	3.93	14.88	3.82	3.90	16.21	3.90	4.16	17.58	4.20	4.19
	35	12.18	2.72	4.48	13.16	2.93	4.49	14.11	3.08	4.58	14.94	3.14	4.76	16.28	3.37	4.83	18.17	3.73	4.87
	40	11.59	2.44	4.75	12.31	2.76	4.46	13.49	2.91	4.64	13.11	2.97	4.41	14.95	3.15	4.75	15.92	3.36	4.74
	43	10.58	2.33	4.54	11.13	2.47	4.51	12.00	2.70	4.44	12.14	2.78	4.37	13.46	3.13	4.30	13.74	3.36	4.09
	46	5.57	2.37	2.35	6.01	2.46	2.44	8.52	2.61	3.26	9.04	2.75	3.29	9.93	3.09	3.21	10.89	3.25	3.35
8.1 8.1T	20	11.08	4.58	2.42	11.75	4.78	2.46	12.89	5.08	2.54	13.67	5.28	2.59	15.02	5.65	2.66	16.45	6.00	2.74
	25	12.15	3.69	3.29	12.92	3.89	3.32	14.13	4.19	3.37	14.97	4.39	3.41	16.37	4.74	3.45	17.77	5.09	3.49
	30	13.34	3.01	4.43	14.16	3.14	4.51	15.45	3.42	4.52	16.35	3.44	4.75	17.77	3.72	4.78	19.30	3.83	5.04
	35	13.70	2.54	5.39	14.84	2.68	5.54	15.80	2.89	5.47	16.69	2.91	5.74	18.30	3.15	5.81	18.93	3.58	5.29
	40	12.15	2.36	5.15	12.93	2.66	4.86	13.80	2.86	4.83	13.27	2.88	4.61	15.26	3.12	4.89	16.00	3.33	4.80
	43	11.00	2.26	4.87	11.61	2.40	4.84	12.53	2.58	4.86	12.95	2.72	4.76	13.50	3.11	4.34	14.60	3.25	4.49
	46	6.00	2.31	2.60	6.47	2.39	2.71	9.08	2.53	3.59	9.64	2.67	3.61	10.16	3.05	3.33	11.15	3.20	3.48

According to EN14511:2018
kWt: delivered cooling power [kW]
kWe: electrical power input [kW]
Tae: outside air temperature [°C]
Performance in relation to the difference between inlet and outlet water temperature = 5°C

Data for calculation UNI/TS 11300-3

Performance with partial loads in Cooling mode

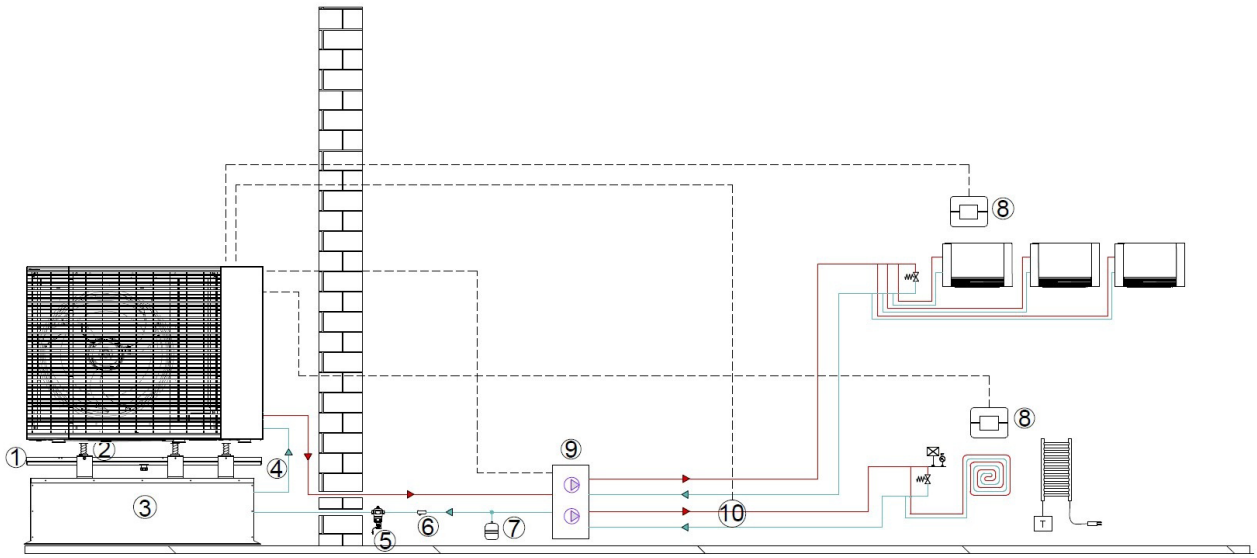
UNI/TS 11300 – part 3 is the reference standard to be considered for the evaluation of operation of the unit at partial loads in Cooling mode.
It indicates the operating temperatures and load factors (100 per cent, 75 per cent, 50 per cent and 25 per cent) to be used, based on the conditions of standard UNI EN 14825.
EER efficiency indices are calculated for each condition for assessing the actual performance of the unit.

	Cooling capacity [kW]				EER			
Condition	1	2	3	4	1	2	3	4
Load factor	100%	75%	50%	25%	100%	75%	50%	25%
2.1	4,70	3,53	2,53	2,66	3,65	4,57	5,28	6,18
3.1	6,80	5,10	3,40	2,66	3,10	4,38	5,24	6,18
4.1	7,45	5,62	3,74	3,36	3,35	4,39	5,09	5,99
5.1	8,10	6,09	4,02	3,36	3,10	4,21	5,05	5,99
6.1	11,50	8,55	5,78	4,05	3,05	3,75	4,64	5,58
7.1	12,40	9,22	6,25	4,05	3,00	3,68	4,59	5,58
8.1	14,00	10,45	6,95	4,05	2,70	3,52	4,48	5,58
4.1T	7,45	5,62	3,74	3,36	3,35	4,39	5,09	5,99
5.1T	8,10	6,09	4,02	3,36	3,10	4,21	5,05	5,99
6.1T	11,50	8,55	5,78	4,05	3,05	3,75	4,64	5,58
7.1T	12,40	9,22	6,25	4,05	3,00	3,68	4,59	5,58
8.1T	14,00	10,45	6,95	4,05	2,70	3,52	4,48	5,58

Points calculated for fixed capacity systems according to prEN 14825:2018 referred to in UNI TS 11300-3
Reference conditions:
1. inlet/outlet water temperature 12/7 °C, outdoor air temperature 35 °C dry bulb
2. outlet water temperature 7 °C, outdoor air temperature 30 °C dry bulb
3. outlet water temperature 7 °C, outdoor air temperature 25 °C dry bulb
4. outlet water temperature 7 °C, outdoor air temperature 20 °C dry bulb

System diagrams

Heating/cooling with primary and secondary



1. DTX: Drain pan with electric heater
2. ASTFX: Antivibration mounts kit for installation on the brackets for wall installation, inertial storage tank or drain pan
3. TANKMX: 75 L inertial storage tank
4. KTCAX: Hose kit for connecting the unit to the inertial storage tank
5. FDMX: Magnetic dirt separator filter for water distribution system
6. Mesh filter (supplied as standard with the unit)
7. Additional expansion tank (externally supplied)
8. HTC2WX: white HID-TConnect 2 chronothermostat for temperature control
9. KIRE2HLX: Bi-zone distribution unit: direct + mixed (with mixing valve)
10. Tw2 - Water flow temperature sensor for mixed zone

In order to optimise operation and avoid continuous ON/OFF cycles of the unit, it is advisable to create a primary circuit and a secondary circuit by installing a hydraulic separator and possibly an inertial storage tank. In this case, a circulator must be installed for the secondary circuit (P_O), which can be managed by the unit.
In the diagram, the kit **KCSX** including 1 L hydraulic separator and secondary circuit pump (P_O) is shown. Due to the small volume of the separator, the inertia storage tank for base installation is added to the system, available in sizes 50 L, 75 L and 100 L **(TANKSX, TANKMX and TANKLX)**, which guarantees the correct volume of water in the primary circuit.

Management and activation of thermal zone

In case of a single-zone system, the **HTC2WX** thermostat can be used in two different modes:
1. Zone thermostat that manages the unit's ON/OFF function and the change of operating mode (Heating / Cooling), in this case the **HTC2WX** thermostat must be combined with the **SWCX**receiver.
2. Zone thermostat that only manages the unit's ON/OFF function (in this case the change of mode is managed by the user interface).

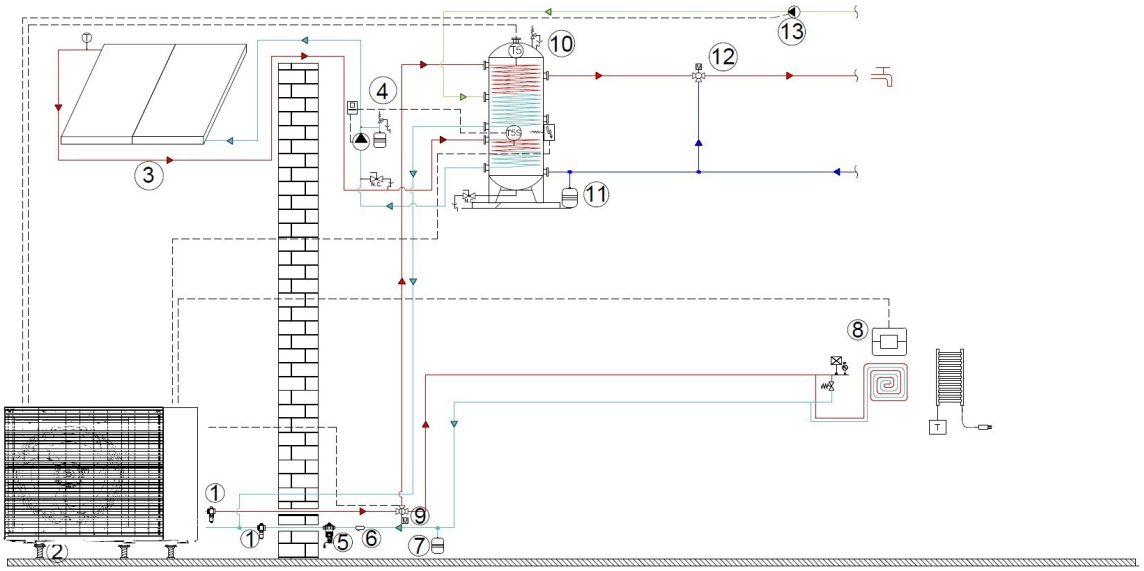
In both cases, the water temperature set-point adjustment is managed via the user interface.
Alternatively, the user interface can be used directly as a zone thermostat, in which case the flow water temperature will be set automatically according to the temperature curve.

Operation of the circulation pumps

The basic logic entails the simultaneous start-up/stopping of the primary circuit circulator (P_I) and the secondary circuit circulator (P_O). As an option, the start-up/stopping of the primary circuit circulator (P_I) and the secondary circuit circulator (P_O) can be managed independently. For this type of management, a temperature probe must be inserted at the inertial tank water outlet. The presence of the probe must be set on the HMI by enabling the specific Tbt1 parameter. This way, the primary circuit pump (P_I) will start when the compressor activation conditions are met. When the compressor stop conditions are met, the primary circuit pump will stop.
The secondary circuit pump (P_O) will start or stop following the request of the thermal zone.

System diagrams

Heating / cooling / DHW with solar thermal circuit



1. VAGX: Antifreeze safety shut-off valve for water distribution system
2. AMRX: Antivibration mounts kit for floor installation
3. ELFOSUN solar thermal
4. Solar control box
5. FDMX: Magnetic dirt separator filter for water distribution system
6. Mesh filter (supplied as standard with the unit)
7. Additional expansion tank (externally supplied)
8. HTC2WX: white HID-TConnect 2 chronothermostat for temperature control
9. 3DHWX: Three-way deviating valve for system/DHW
10. ACS300X: DHW cylinder / T5: DHW temperature probe / QERAX: Connection kit for heating element on DHW cylinder + SC08X Solar Serpentine for DHW cylinder
11. DHW expansion tank (externally supplied)
12. Anti-scald valve (externally supplied)
13. DHW recirculation pump (externally supplied)

There is an option for the unit to be connected to a DHW cylinder of suitable volume by equipping the system with a three-way diverter valve controlled by the unit itself (SV1, available as a 3DHWX accessory) and a dedicated temperature probe for measuring the temperature in the boiler (T5).
Three sizes of cylinders are available: 200, 300 and 500 L (ACS200X, ACS300X and ACS500X respectively). Each boiler is supplied with an auxiliary electrical heating element, which must be connected to the dedicated accessory (QERAX) to be powered.

Management and activation of DHW mode

Logic dictates that there is a demand for DHW when the difference between the DHW set-point T5S and the temperature of the storage tank T5 is greater than or equal to the value dT5_ON. Operation of the unit in DHW ends when T5 ≥ T5S.
You can also adjust the outside air temperature range T4 within which the heat pump can operate in DHW mode (by adjusting the range between parameters T4DHWMIN and T4DHWMAX).
If there is simultaneous demand from DHW and the system, the former has priority as standard, but this can be changed at the HMI. However, the unit's logic controls several parameters and alternates between DHW and system operation in order to preserve comfort.

Management and functions of the TBH electric heater

The electrical resistance on the TBH boiler is switched on below a certain outside air temperature level (settable via parameter T4_TBH_ON) or if it takes too long to reach the DHW set-point with heat pump operation only (parameter t_TBH_DELAY). Furthermore, outside the outdoor air operating range of the heat pump operation in DHW mode (defined by parameters T4DHWMIN and T4DHWMAX), but within the generic range of the heat pump, the unit can produce DHW by activating TBH.
The electric heater switches off when the water temperature in the tank reaches the maximum value above the set-point at which the heater can drive the boiler (can be set via parameter dT5_TBH_OFF).
Other functions related to the TBH heater are:

- RAPID DHW: forces DHW production with heat pump and TBH heater up to set-point
- TANK HEATING: the unit produces DHW with the TBH heater in the event of simultaneous demand for DHW and system (continuing to work as a heat pump in the system) and in the event of a failure.

Combination with thermal solar panelling

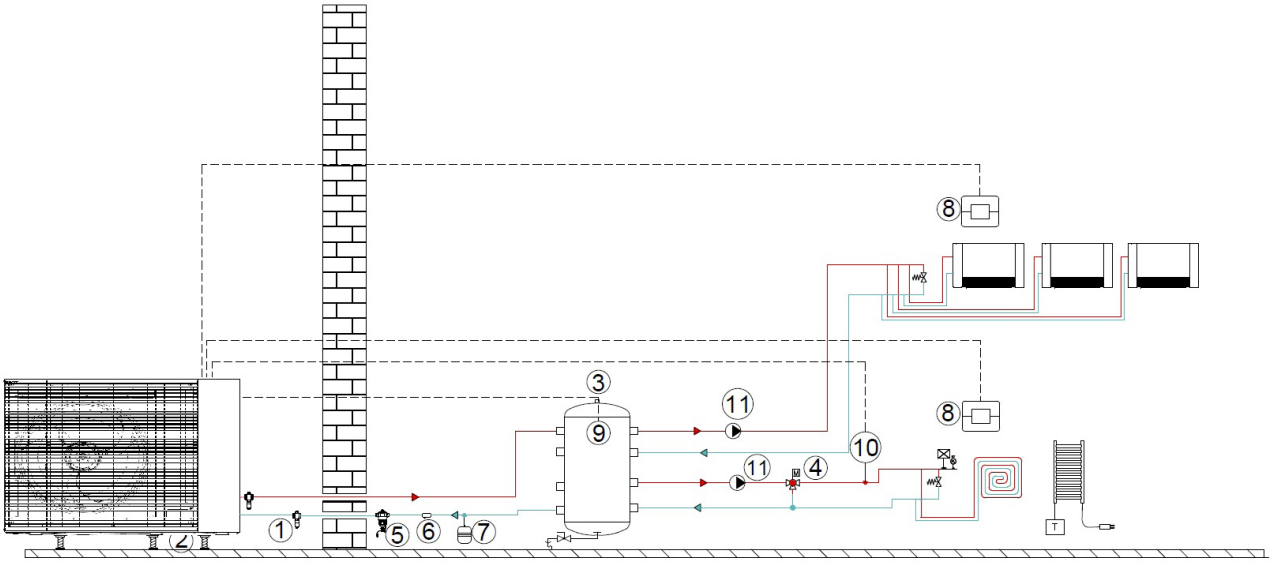
The boilers can be combined with solar thermal panelling via an additional heat exchanger. An additional heat exchanger is provided for the 200, 300 or 500 litre models:
- accessory SCS08X for the exchanger to be combined with ACS200X or ACS300X
- SCS12X accessory for heat exchanger to be combined with ACS500X

The solar thermal panels must be hydraulically connected to appropriate double-coil DHW boilers via a circuit with a dedicated P_s pump (from ELFOSun or other supply, with consent provided by the unit).
The solar system is set at the HMI, where it is possible to select between two types of control:
- DHW from both solar panels and heat pump: when there is a demand for DHW, the heat pump (and any other auxiliary sources) works normally, and the solar system can work alongside it, activating itself according to the unit's logic.
- DHW from solar panels only: heat pump and any other auxiliary sources cannot work in DHW mode, remaining available for the system. DHW is managed with only production from the solar system, which is activated according to the unit's logic.

The unit can control the P_S solar circuit pump in three different ways:
- The unit manages activation of the P_s pump based on the value detected by the Tsolar temperature probe and the setting of the DELTATSOL parameter (default 10°C, adjustable). DELTATSOL is the ΔT between the temperature of the water in the Tsolar solar circuit and the T5 temperature of the DHW boiler above which the P_s pump is activated.
- The unit manages activation of the P_s pump via an external signal from the solar control box (ON/OFF signal). The solar control box detects the conditions for which the solar circuit pump is to be activated.
- The solar circuit is fully managed by the ELFOSun external solar control box (see the specific Technical Bulletin for further details). In this case, it is not necessary to make any settings on the unit, as management is set directly on ELFOSun. Alternatively, a control box from an external supplier can also be used

System diagrams

Heating/cooling with 2-zone system (dual emitter)



1. VAGX: Antifreeze safety shut-off valve for water distribution system
2. AMRX: Antivibration mounts kit for floor installation
3. DI50-2X: 50-litre hydraulic circuit breaker
4. Three-way valve (external supply)
5. FDMX: Magnetic dirt separator filter for water distribution system
6. Mesh filter (supplied as standard with the unit)
7. Additional expansion tank (externally supplied)
8. HTC2WX: white HID-TConnect 2 chronothermostat for temperature control
9. Tbt1 Hydraulic separator temperature sensor
10. Tw2 - Water flow temperature sensor for mixed zone
11. Circulation pumps for secondary circuit (externally supplied)

Up to two thermal zones can be managed, even at different temperatures. In this case, a primary and secondary circuit must be created.
There will be three circulators in the system:

- The primary circuit circulator (P_I), supplied as standard inside the unit
- The high temperature secondary circuit circulator (P_O)
- The high or low temperature secondary circuit circulator (P_C)

A three-way mixing valve (SV3) and downstream of it a mixed water temperature probe (Tw2) whose signal is used by the control logic to control the valve, if any, is required to manage the low temperature zone.
Specific kits, containing hydraulic separator and pumps, are available to manage different types of circulation in case of dual zones:

- **KIRE2HX** kit is designed for systems with two direct zones (two high temperature zones)
- **KIRE2HLX** kit is designed for systems with one direct and one mixed zone (one high temperature zone and one low temperature one).

Alternatively, as in the diagram shown, a hydraulic separator of adequate volume **DI50-2X** or **DI100-2X**, 50 and 100 L respectively, can be provided and the circulation pumps can be selected separately.

Management and activation of thermal zone

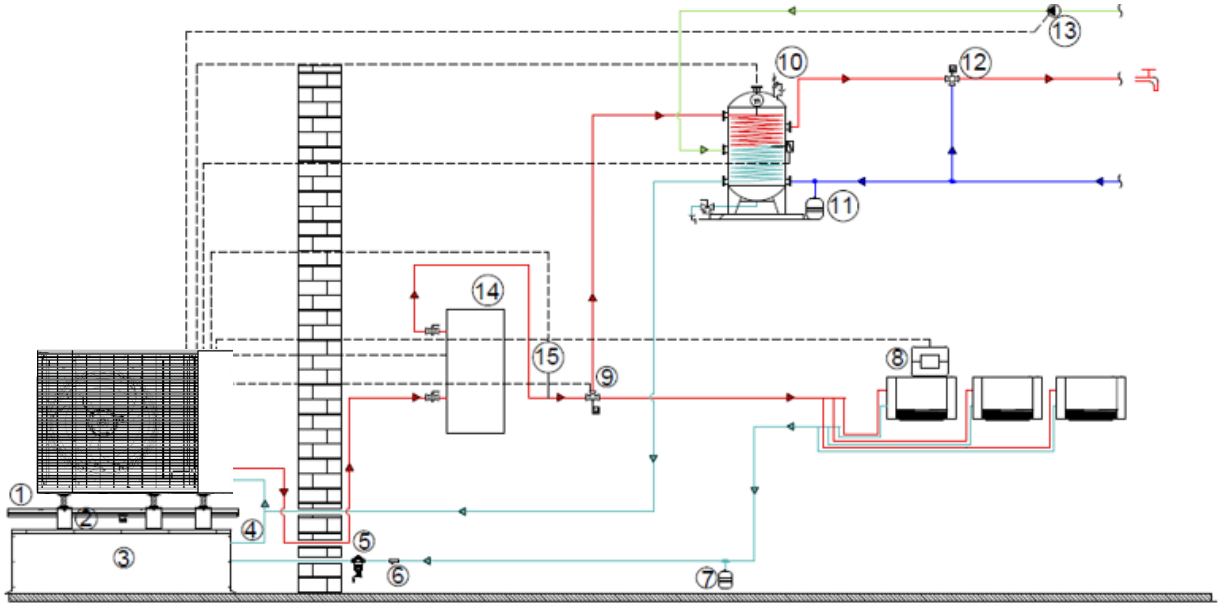
In the case of a two-zone system, two zone thermostats can be connected to manage the unit's ON/OFF function. Changing modes and setting the water set point are managed via the user interface.
Alternatively, it is possible to replace a zone thermostat with the user interface. In this case, the water set-point of zone 1 (where the zone thermostat is present) will always be set by the user interface while the set-point of zone 2 (where the user interface is present) will be adjusted automatically according to the temperature curve.

Operation of the circulation pumps

When zone 1 requires the unit to be switched on, the corresponding secondary circulator (P_O) is activated. When zone 1 no longer requires heat pump to operate, the circulator (P_O) stops.
When zone 2 requires the unit to be switched on, the corresponding secondary circulator (P_C) is activated and, if the zone is at low temperature, the mixing valve (SV3) is opened and adjusted according to the set-point of the mixed water probe (Tw2). When zone 2 no longer requires the heat pump to operate, the circulator (P_C) stops and the mixing valve (SV3), if present, is closed.

⚠ In systems where a mixing valve (SV3) is to be controlled, it is not possible to simultaneously control a diverter valve to manage two zones (SV2).

Heating / cooling / DHW with electric heater



1. DTX: Drain pan with electric heater
2. ASTFX: Antivibration mounts kit for installation on the brackets for wall installation, inertial storage tank or drain pan
3. TANKMX: 75 L inertial storage system
4. KTCAX: Hose kit for connecting the unit to the inertial storage tank
5. FDMX: Magnetic dirt separator filter for water distribution system
6. Mesh filter (supplied as standard with the unit)
7. Additional expansion tank (externally supplied)
8. HTC2WX: white HID-TConnect 2 chronothermostat for temperature control
9. 3DHWX: Three-way deviating valve for system/DHW
10. ACS300X: DHW boiler / T5: DHW temperature probe / QERAX: Connection kit for heater on DHW storage tank
11. DHW expansion tank (externally supplied)
12. Anti-scalding valve
13. DHW recirculation pump (externally supplied)
14. IBHX: electric heater
15. T1 - Supply temperature probe

The heater must be positioned on the unit's water supply line and can be:
- Factory-mounted on the unit (IBH configuration)
- For outdoor installation (IBHX/IBHTX accessory)

In both cases, its operation is linked to a dedicated T1 temperature probe to be positioned downstream of the heater. (Note: the T1 probe is included in the Clivet configuration and accessories and does not need to be selected separately.)
The additional electric heater or the external generator can operate as:
- **Integration:** when it is not convenient/possible to work with the heat pump capacity alone
- **Replacement:** outside the work settings of the heat pump
- **Back-up:** in case of failure in the unit's refrigerant circuit (the unit keeps the pump running at maximum speed)

Activation of auxiliary source

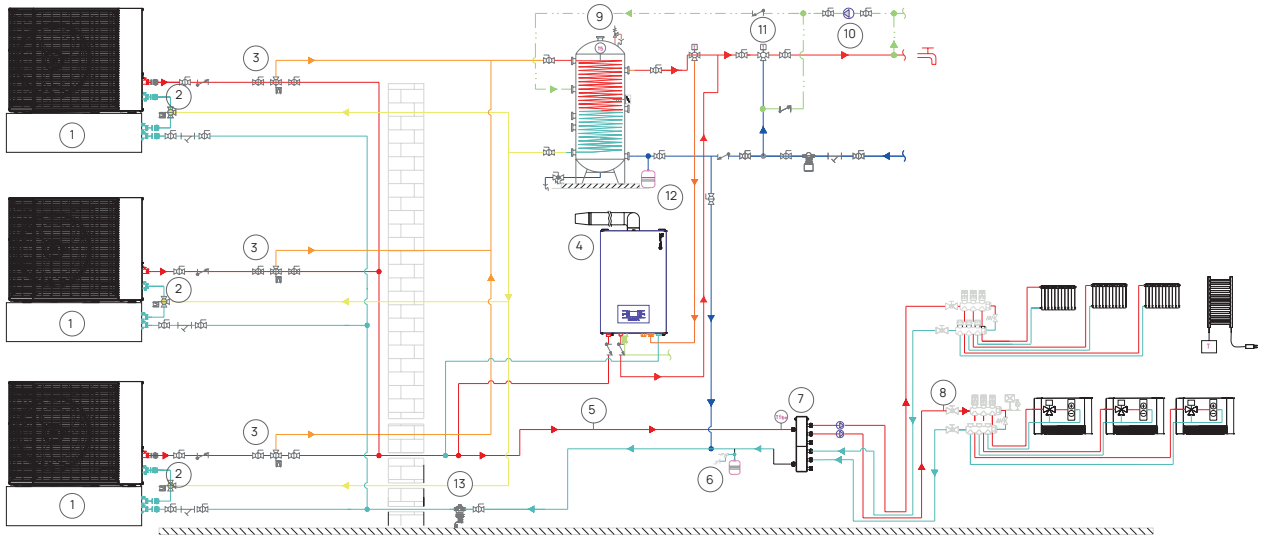
Activation of the auxiliary source is linked to the simultaneous presence of 3 conditions, each of which is associated with a parameter that can be adjusted during initial start-up on the user interface:
- Very low outdoor temperature, parameter (T4_IBH_ON): the minimum outdoor air temperature for heat pump operation only

⚠ to make the auxiliary source work only as a replacement for the unit, set the parameter to the same value as T4HMIN: the minimum outdoor air temperature at which the heat pump can operate.

- Supply temperature too far from the set-point (parameter dT1_IBH_ON): the minimum ΔT between water set-point (TS1) and unit supply (T1).
- Too long to reach the set-point (parameter t_IBH_DELAY): the maximum waiting time between compressor start-up and auxiliary source activation

System diagrams

Cascade x 3 Heating/cooling/DHW units with back-up boiler



1. TANKMX: 75 L inertial storage system
2. KTCAX: Hose kit for connecting the unit to the inertial storage tank
3. 3DHWX: Three-way deviating valve for system/DHW
4. GAS BOILER: boiler for centralised systems
5. T1 - Supply temperature probe
6. Additional expansion tank (externally supplied)
7. Hydraulic separation unit consisting of separator, booster pumps (externally supplied) and temperature sensor Tbt1
8. Tw2 - Water flow temperature sensor for the mixed zone
9. ACS500X: 500 L ACS cylinder / T5: ACS temperature sensor / QERAX: Connection kit for heating element on DHW cylinder
10. DHW recirculation pump (supplied externally)
11. Anti-scalding valve
12. DHW expansion tank (externally supplied)
13. FDMX: Magnetic dirt separator filter for water distribution system

Many applications require drives to be installed as back-up to the main system or have loads that can change significantly during annual operation.
Cascade operation allows connection of up to 6 units in parallel, running a Master unit and activating the Slave units when its own capacity is not sufficient to meet the load of the system, ensuring maximum reliability and efficiency of the system.
The system rotates operation of all of the units by counting the compressor's operating hours, so as to use them evenly. In the event of failure of a unit, including the Master, the system ensures continuity of service.
Cascade management is provided as standard by the logic of the units; it must be set with the dip-switches (Master or Slave unit) on the board and all Slave units must be connected to the cascade H1H2 terminals.
Slave units are addressed via DIP switch S3 at start-up.
The Master unit is the only one that can:

- receive signals from the optionally installed temperature probes: T5 of the DHW tank, Tbt1 of the hydraulic separator, Tsolar of the solar system and Tw2 of the supply of the mixed circuit
- manage the components of the system: heater of the TBH DHW tank, SV2 three-way switching valve for direct two-zone systems or SV3 mixed circuit, P_o secondary circuit pump, P_c mixed circuit pump, P_s solar pump, P_d DHW recirculation pump and AHS auxiliary source
- receive external inputs: external ON/OFF signal via potential-free contact, signal from zone thermostat, Smart Grid signal and solar signal

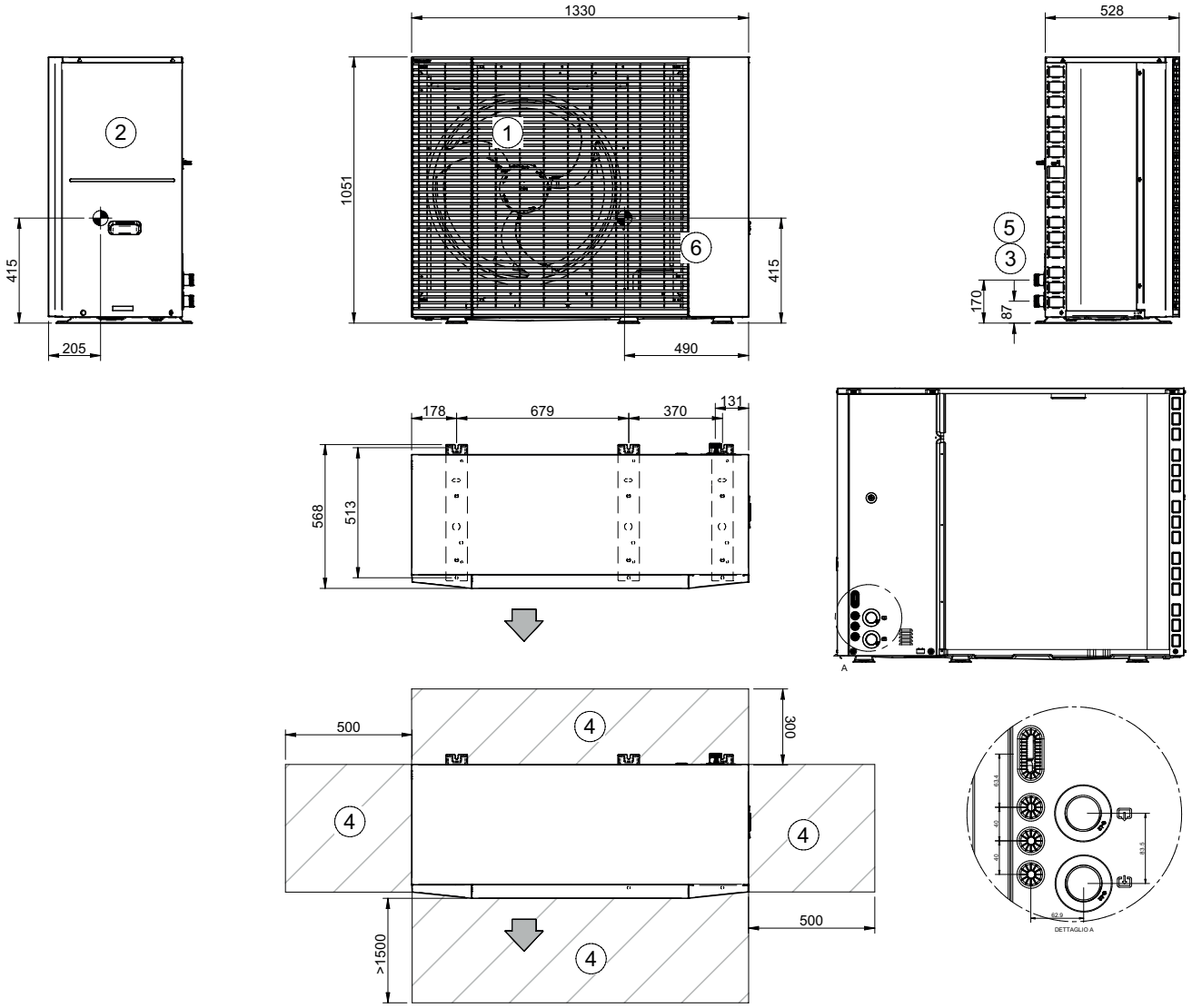
Note: each unit manages its own IBH additional electric heater, if present

When the Master is started up, it calculates the load to be supplied and activates the necessary Slave units when its own capacity is insufficient to meet the load of the system, providing them with mode and set-point settings. Should the Master start several Slaves, these are activated with a 10-second delay between each one.
If a Slave fails to start for 10 minutes, the unit is considered out of service and the Master will try to activate the next Slave. After 20 minutes, the unit considered to have failed is reset in the system management.
Note: In the event of failure of the Master's outdoor air probe, the Master will show the error on the display but will continue to operate using the average of the value detected in the Slave units.

When the system is switched off, the Slaves send the cumulative running time of their compressor to the Master, which prioritises the one with the lower value the next time it starts up.
Each unit normally manages its own defrosting cycles, but if the system is running with two or more units, the Master checks that the units defrosting at the same time are a maximum of 50 per cent (rounded down) of these.

Dimensional drawings

SIZE 2.1 ÷ 8.1



1. Fan
2. Electrical panel
3. Electrical and water connections
4. Functional spaces
5. Power input
6. Compressor enclosure

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Valid from: April 2025
revision 01/2025 BT25E043GB-01