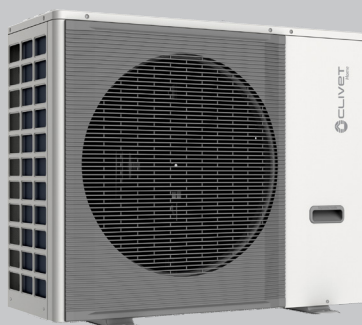


Split air-water heat pump for heating, cooling and DHW production

SPHERA EVO 2.0 - Invisible

SQKN-YEE 1C + MiSAN-YEE 1 S 2.1÷5.1 RANGE



TECHNICAL BULLETIN



SIZE	2.1	3.1	4.1	5.1
HEATING CAPACITY kW	4,32	6,18	8,30	10,9
COOLING CAPACITY kW	4,55	6,44	8,10	10,00

DHW STORAGE

150 L

Page

3	Features and benefits
4	Standard unit technical specifications
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Clivet is taking part in the EUROVENT certification programme up to 1.500 kW. The products concerned appear in the certified products list of the EUROVENT www.eurovent-certification.com site.

Features and benefits

SPHERA EVO is a specialised autonomous heat pump system for single- and multi-family homes with medium/low and high power consumption.

It is an air-water heat pump system for cooling, heating and domestic hot water production/storage.

SPHERA EVO is a split type system, composed of a latest generation high efficiency outdoor unit and wide variety of indoors units. It is the second generation of heat pumps for residential use.

SPHERA EVO 2.0 Invisible

- Version for built-in installation
- 50-litre DHW storage can be expanded up to 300-litres
- Compact dimensions for easy installation in walls
- Also available in the hybrid version with 24 kW gas boiler
- Built-in WiFi for connection to the dedicated APP



SPHERA EVO 2.0 Tower

- Tower Version
- Two volumes of DHW 190 and 250-litres
- Class A++ Average temperature
- Class A+ Domestic hot water production
- Built-in WiFi for connection to the dedicated APP
- Also available in the hybrid version with 24 kW or 34 kW gas boiler



SPHERA EVO 2.0 Box

- Box Version
- Integrated 3-way valve for DHW
- Compact dimensions
- Class A+++ Low temperature
- Built-in WiFi for connection to the dedicated APP
- Also available in the hybrid version with 24 kW or 34 kW gas boiler



SPHERA EVO 2.0 - Invisible - Indoor unit

Structure

Structure made of galvanised sheet metal with brackets for anchoring in the brickwork and frames on the edge of the structure to hide any imperfections.

The frames are attached to the front panels and adjustable for greater flexibility with different installations.

Internal exchanger

Direct expansion heat exchanger in INOX AISI 316 stainless steel braze-welded plates. With low refrigerant content and high exchange surface, complete with external anti-condensation thermal insulation of 10 mm of thickness in sintered expanded polypropylene.

Domestic hot water

- 150-litre domestic hot water storage tank in AISI 316 stainless steel, external insulation in polyurethane (20 mm of thickness) and cover in black PVC.
- Magnesium anode
- 2 kW safety and anti-legionella cycle electric heater
- Internal exchanger in AISI 316 stainless steel with an exchange surface of 1 m²
- Set-up for domestic hot water recirculation circuit
- Probe shaft for thermal solar control
- DHW expansion vessel of 8 liters of capacity
- Domestic hot water safety valve set at 6bar
- Thermostatic valve.

Hydronics module

- DC primary pump with variable flow
- Safety flow switch for water flow
- 3-way switching valve for system water or domestic hot water
- Water side safety valve 3bar
- Magnetic filter
- System air purge valve
- System water expansion vessel of 8 litres
- ABS drain pan

Electrical panel

The capacity section includes:

- main power supply terminals.

The control section includes:

- remote microprocessor control with single-area thermostat function;
- BMS management;
- daily, weekly temperature set point and start-up/shutdown scheduler;
- anti-legionella function scheduling;
- management busters two zones;
- solar thermal management;
- management for auxiliary heaters;
- antifreeze protection water side;
- flow-rate protection with flow switch;
- interface terminal with graphic display.

Inside the electrical panel there are:

- T5 temperature probe for temperature control in DHW storage tanks (length 4.5m and 6mm bulb);

Standard unit kit

- Mesh filter for system water
- Copper gas reduction for 4-6 kW external unit connection
- Unit connection fittings
- Key and torx insert for opening and closing unit panels



Standard unit technical specifications

SPHERA EVO 2.0 - Outdoor unit

Zinc-Magnesium frame

High strength frame for outstanding durability and excellent mechanical characteristics.

Panelling

Outer panelling made of Zinc-Magnesium sheet metal painted with pantone warm gray 2C to ensure superior corrosion resistance. Each panel can be easily removed to allow full access to internal components.

Rotary DC inverter compressor

Inverter controlled rotary hermetic compressor for constant modulation of the power supplied according to actual needs, ensuring high seasonal efficiency. With a motor protection device for overheating, overcurrents and excessive temperatures of the supply gas. It is installed on anti-vibration mounts and it is equipped with oil charge. The compressor is wrapped by a sound-absorbing hood, that reduces its sound emissions. A guard heater with automatic insertion prevents the refrigerant from diluting the oil when the compressor stops.

EC inverter fan

Axial fan with variable speed control and sickle shaped blades in ABS resin. It is directly coupled to the electronically controlled motor (IP23), which, thanks to brushless technology and the particular power supply, increases its lifespan and reduces consumption. The fan is housed in an aerodynamically shaped nozzle to increase efficiency and minimise noise. It is also fitted with anti-intrusion grid.

External exchanger

Direct expansion finned coil exchanger made with copper pipes mechanically expanded to better adhere to the fin collar. It has a large surface area to improve heat exchange and reduce defrosting in the interest of seasonal efficiency. The fins are made of aluminium with hydrophilic treatment which facilitates the elimination of condensate, further improving defrosting.

Refrigerant circuit

The refrigeration circuit includes:

- Electronic expansion valve
- 4-way cycle inversion valve
- Liquid separator in extraction
- Mechanical filters
- Low pressure pressure switch
- High pressure pressure switch



Option compatibility

The following table can be used to check whether more than one accessory can be selected at the same time.

			SYSTEM ACCESSORIES						
			Larger circulator	Two zone kit	Single zone kit	Indoor inertial storage	Outdoor inertial storage	Outdoor inertial storage cabinet	Additional electric heater
			1PUM	KIRE2HX KIRE2HLX	KCSX	AC50X	ACE50X	ADI50X	EH024- EH6-EH9
HYDRONICS MODULE	Larger circulator	1PUM	-	●	●	●	●	●	●
	Two zone kit	KIR2HX KIRHLX	●	-		●	●	●	●
	Single zone kit	KCSX	●			●	●	●	●
	Indoor inertial storage	AC50X	●	●	●	-	-	-	●
	Outdoor inertial storage	ACE50X	●	●	●	-	-	●	●
	Outdoor inertial storage cabinet	ADI50X	●	●	●	-	●	-	●
	Additional electric heater	EH024 EH6-EH9	●	●	●	●	●	●	-
HYBRID VERSION	Gas boiler	CCGIX	●	●	●	-	●	●	-
	Kit to convert boiler from methane to LPG	KTCGPLX	●	●	●	-	●	●	-
	Smoke splitter	KSDFX	●	●	●	-	-	-	-
	Smoke intake and discharge fittings	KAS80X	●	●	●	-	●	●	-
DHW ACCESSORIES	Solar kit	KCVEX	●	●	●	-	●	●	●
	Additional 50L DHW storage	ACSA50X	●	●	●	-	●	●	●
	Additional 150L DHW storage	ACSA150X	●	●	●	●	●	●	●
	Additional DHW storage cabinet	ADIAX	●	●	●	●	●	●	●
	DHW Recirculation	KPRSX	●	●	●	●	●	●	●

Option compatibility

		HYBRID VERSION			
		Gas boiler	Kit to convert boiler from methane to LPG	Smoke splitter	Smoke intake and discharge fittings
		CCGIX	KTCGPLX	KSDFX	KAS80X
HYDRONICS MODULE	Larger circulator	1PUM	●	●	●
	Two zone kit	KIR2HX KIRHLX	●	●	●
	Indoor inertial storage	AC50X	●	●	●
	Single zone kit	KCSX			
	Outdoor inertial storage	ACE50X	●	●	-
	Outdoor inertial storage cabinet	ADI50X	●	●	-
	Additional electric heater	EH024 EH6-EH9	-	-	-
HYBRID VERSION	Gas boiler	CCGIX	-	●	●
	Kit to convert boiler from methane to LPG	KTCGPLX	●	●	●
	Smoke splitter	KSDFX	●	●	-
	Smoke intake and discharge fittings	KAS80X	●	●	-
DHW ACCESSORIES	Solar kit	KCVEX	-	-	-
	Additional 50L DHW storage	ACSA50X	-	-	-
	Additional 150L DHW storage	ACSA150X	●	●	●
	Additional DHW storage cabinet	ADIAX	●	●	●
	DHW Recirculation	KPRSX	●	●	●

Option compatibility

			DHW ACCESSORIES				
			Solar kit	50L DHW storage	150L DHW storage	Additional storage cabinet	DHW Recirculation
			KCVEX	ACSA50X	ACSA150X	ADIAX	KPRSX
HYDRONICS MODULE	Larger circulator	1PUM	●	●	●	●	●
	Two zone kit	KIR2HX KIRHLX	●	●	●	●	●
	Kit monozona	KCSX	●	●	●	●	●
	Indoor inertial storage	AC50X	-	-	●	●	●
	Outdoor inertial storage	ACE50X	●	●	●	●	●
	Outdoor inertial storage cabinet	ADI50X	●	●	●	●	●
	Additional electric heater	EH024 EH6-EH9	●	●	●	●	●
HYBRID VERSION	Gas boiler	CCGIX	-	-	●	●	●
	Kit to convert boiler from methane to LPG	KTCGPLX	-	-	●	●	●
	Smoke splitter	KSDFX	-	-	●	●	●
	Smoke intake and discharge fittings	KAS80X	-	-	●	●	●
DHW ACCESSORIES	Solar kit	KCVEX	-	-	●	●	●
	Additional 50L DHW storage	ACSA50X	-	-	-	-	-
	Additional 150L DHW storage	ACSA150X	-	-	-	●	-
	Additional DHW storage cabinet	ADIAX	-	-	●	-	-
	DHW Recirculation	KPRSX	●	-	-	-	-

Standard indoor unit components

Standard indoor unit components

Standard indoor unit consisting of three systems shipped separately for greater installation flexibility on site:

- 1) Hydraulic, refrigeration and control module
- 2) Uncased cabinet
- 3) Domestic hot water storage tank

ADIX **Uncased cabinet with fittings template**

Uncased cabinet with structure made of galvanised sheet metal with brackets for anchoring in the brickwork and frames on the edge of the structure to hide any imperfections. The frames are attached to the front panels and adjustable for greater flexibility with different installations.

ACS150X **150L domestic hot water storage tank**

150L domestic hot water storage tank in AISI 316 stainless steel, outer insulation in polyurethane (20 mm thick) and cover in black PVC.



SHWT **150L domestic hot water storage tank with solar coil**

150L domestic hot water storage tank in AISI 316 stainless steel, with additional coil for the thermal solar connection, outer insulation in polyurethane (20 mm thick) and cover in black PVC.

Built-in options

EH024 EH6 EH9

Integration electric heater

Integration electric heater in STAINLESS STEEL with 2-4 kW single-phase or 6-9 kW three-phase capacities.

The electric heater can operate both for the system and for the production of domestic hot water in two different modes:

- as an integration, when the heat pump capacity is not enough to fulfil the required set point;
- as a safety element if the heat pump fails;

- ⚠ The additional electric heater is not an accessory supplied separately, but a construction configuration.
- ⚠ The configuration with additional electric heater excludes the gas boiler option (CCGIX)
- ⚠ Selection of the additional three-phase electric heater changes the voltage of the indoor unit only. The power supply of the outdoor unit remains unchanged.



1PUM

Single-pump with larger available head

Configuration involving a pump with a head higher than the standard one.

The circulator, with a head of 10.5 m and a direct current power supply, has a variable flow rate and adapts perfectly to the internal logic of the unit.

- ⚠ Single pump with increased head is not an accessory supplied separately, but a construction configuration.



KIR2HX - KIR2HLX

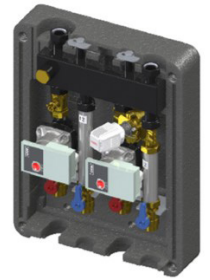
2 zones: both at high temperature

2 zones: high temperature + low temperature (mixed)

Distribution module for 2-zone heating systems with compact design (402 mm x 250 mm x h525 mm) and ample versatility for different types of installation.

Kit composed of:

- 1 collector / Black painted separator;
- 2 circulator;
- 1 sliding temperature mixing valve (only for the kit KIRE2HL);
- 1 EPP insulation (front and rear);
- 1 threaded disc with hermetic sealing cap;
- 1 lower anti-rotation jig;
- 1 support bracket module.



⚠ For the technical data of the hydraulic head of the pumps, please refer to the dedicated section in the HYDRAULIC DATA chapter.

KCVEX

Circulation kit: circulation group, control unit, expansion tank

The circuit has a high efficiency heat exchange. This is because an additional exchanger is fitted inside the DHW tank to allow the hot water from the solar manifolds to exchange its energy directly with that contained in the tank. This prevents double heat exchange and increases efficiency.

The kit is comprised of:

- 1 18-litre expansion tank with fixing bracket;
- 2 PT1000 temperature probes;
- 1 shut-off ball valve with MF 3/4" threaded fittings;
- 1 electronic control unit with fixing bracket;
- 1 forced circulation solar return unit including:
 - WILO PARA ST 15/7 iPWM circulator;
 - 2-12 l/min flow regulator;
 - 1/2" M shut-off valve for system loading/draining/washing;
 - DN 20 VRM3 return ball valve with non-return valve;
 - thermometer;
 - black EPP front and rear insulation shell;
 - safety unit with: 0-10 bar pressure gauge, 6 bar pressure relief valve;
 - coupling for connection to the expansion tank;
- copper pipes for connecting the DHW storage kit;
- screws, gaskets and brackets for fixing;
- kit installation manual.



⚠ For electrical and technical data on the circulator, refer to the "Electrical data" and Circulator head" sections.

⚠ In case of solar kit selection, the unit is delivered with a specific tank with double coil, one for the heat pump and the other for the solar.

⚠ The KCVEX kit excludes the AC50X, CCGIX, ACSA50X kit.

The KCVEX kit can also be installed on the outside of the unit, inside the ADI50X.

With this type of solution, it is also possible to install one of the AC50X, CCGIX and ACSA50X kits inside the unit

Accessories separately supplied

KCSX

Secondary circuit kit (1L circuit breaker + pump)

The single-area kit consists of a DIX hydraulic separator combined with a high efficiency pump, all inside a box for easy installation. Allows interaction between the primary circuit circulator and the secondary circuit circulator. Furthermore, the separator also has the function of a deaerator. With the following benefits and advantages:

- makes the connected hydraulic circuits independent;
- ensures effective operation of the secondary circulator that provides the hydraulic demand of air conditioning systems;
- air extraction system;
- thermally insulated black EPP;
- area manifold connection kit.

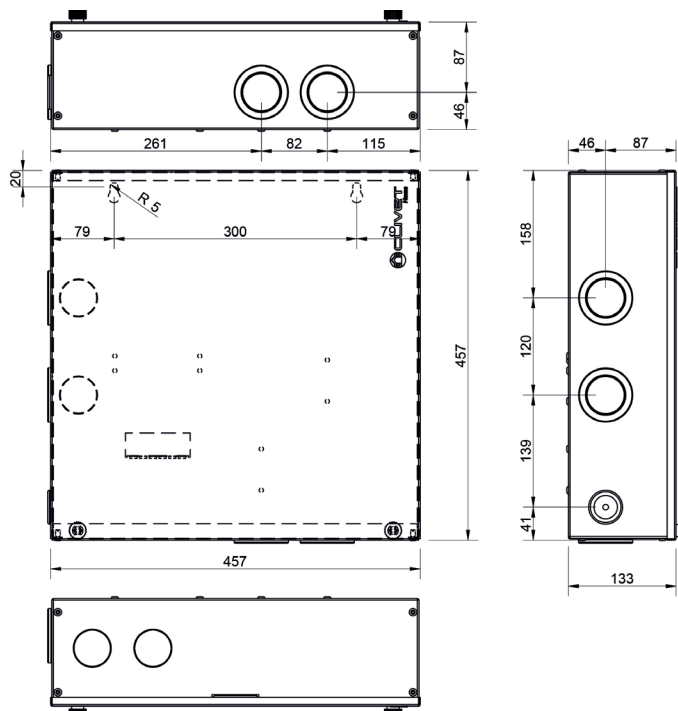
The kit is comprised of:

- 11-litre circuit breaker;
- 2 copper pipes;
- 1 circulator;
- closing plates

Dimensions:
Length 457 mm
Height 457 mm
Depth 133 mm



DIMENSIONAL



KPRSX

DHW recirculation pump kit

Kit offering the option of installing the pump needed for the booster circuit inside the unit.

It can be electrically connected to the SPHERA EVO 2.0 electrical panel, which is used to set the hourly schedule in order to optimise its operation.

The kit includes:

- 1 UPSO 15-55 circulator;
- 1 flexible hose for the connection;
- kit installation manual.

⚠ If any options are chosen: For ACSA50X and ACSA150X, the customer is responsible for managing the pump.



AC50X

50-liter inertial storage tank for indoor installation

Inertial storage to be installed inside the unit. In AISI 316 stainless steel with outer insulation in rigid polyurethane (20 mm thick) and black PVC cover. With a volume of 50 litres, it is suitable for all SPHERA EVO sizes, it facilitates operation and helps to fulfill the heat requirement, guaranteeing optimal modulation.

The kit is comprised of:

- 1 50-litre stainless steel inertial tank;
- 2 copper pipes for connecting the storage;
- screws, gaskets and brackets for fixing;
- kit installation manual.

⚠ The AC50X kit excludes the KCVEX, ACSA50X and CCGIX kit.



ACE50X + ADI50X

50-liter inertial storage tank for outdoor installation

Recessed storage unit for external inertial accumulation

Inertial storage to be installed inside the unit. In AISI 316 stainless steel with outer insulation in rigid polyurethane (20 mm thick) and black PVC cover. With a volume of 50 litres, it is suitable for all SPHERA EVO sizes, it facilitates operation and helps to fulfill the heat requirement, guaranteeing optimal modulation.

Two kits are required for connecting the external inertial storage tank:

- ADI50X - Uncased cabinet for external inertial storage
- ACE50X - 50-litre inertial storage tank for external installation

With these two kits the tank can be installed on top of the standard unit. The ADI50X kit consists of the additional cabinet needed for installation, while the ACE50X kit consists of the following:

- 1 50-litre stainless steel inertial tank;
- 2 flexible hoses for connecting the tank;
- screws, gaskets and brackets for fixing;
- kit installation manual

⚠ The ACE50X kit selection includes the ADI50X kit.

⚠ See dimensional page 40.

ACSA50X

Additional 50-liter domestic hot water storage

Additional domestic hot water storage to be installed inside the standard unit. In AISI 316 stainless steel with outer insulation in rigid polyurethane (20 mm thick) and black PVC cover.

With a volume of 50 litres, you can actually have a total of 200 litres.

The kit is comprised of:

- 1 50-litre stainless steel inertial tank;
- 1 temperature probe L= 4.5 m;
- 2 copper pipes for connecting the tank;
- 1 GRUNDFOS UPSO 15-55 circulator;
- screws, gaskets and brackets for fixing;
- kit installation manual.

⚠ The AC50X kit excludes the KCVEX, ACSA50X and CCGIX kit..



ACSA150X + ADIAX

Additional 150-liter domestic hot water storage

Recessed storage unit for additional DHW accumulation

Additional domestic hot water storage to be installed inside the standard unit. In AISI 316 stainless steel with outer insulation in rigid polyurethane (20 mm thick) and black PVC cover. With a volume of 150 litres, you can actually have a total of 300 litres of domestic hot water.

Two kits are required for connecting the 150-litre additional external storage:

ADIAX - Uncased cabinet for additional DHW storage

ACSA150X - 150-litre additional domestic hot water storage

The ACSA150X kit is comprised of:

- 1 150-litre stainless steel DHW storage;
- 1 8-litre expansion tank;
- 1 temperature probe L= 4.5 m;
- 2 flexible hoses for connecting the storage;
- 1 GRUNDFOS UPSO 15-55 circulator;
- screws, gaskets and brackets for fixing;
- kit installation manual.

The additional storage can be installed on the left or right side of the standard unit, or it can be controlled remotely; in the latter case additional connection pipes must be provided.

⚠ The ACSA150X excludes the ACSA50X kit.

⚠ See dimensional page 35.



Accessories separately supplied

HID-TCXB
HID-TCXN

Black soft touch chronothermostat, with temperature control and management via App / Voice control
White soft touch chronothermostat, with temperature control and management via App / Voice control

For semi-uncased installation

Main functions available from the thermostat:

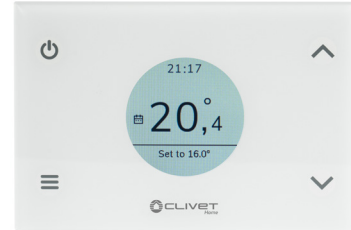
- ON/OFF
- keypad lock
- set-point control and limitation
- room temperature display
- setting change (manual / scheduled)
- antifreeze function (prevents temperatures that are too low)

Additional functions available on the Clivet Home Connect App

- weekly schedule
- boost (forced system switch-on)
- temperature and consumptions log

Technical specifications:

- display: colour soft-touch
- combinable SwitchConnect receivers: max 2
- installation: semi-uncased
- power supply: 100÷253V / 50÷60Hz
- settable temperature: 5÷40°C
- antifreeze temperature: 2÷25°C
- temperature offset: ±5°C (std 0°C)
- protection rating: IP30
- Wi-Fi: 802.11 b/g/n
- self-adjusting clock via web with back-up battery
- dimensions: 122x82x15mm



SWCX

SwitchConnect radio receiver

Radio receiver for HID-TConnect, for managing the request of terminal units or radiant systems, the heat pump mode change or the double set-point.

Technical specifications:

- functions: radio receiver for use with HID-TConnect
- combinable thermostats: max 6
- frequency: 2.4GHz
- transmission distance: max 30m (in buildings) / max 100m (in open range)
- contacts: 2 relays (voltage-free)
- power supply: 95÷290V / 47÷440Hz
- operation temperature: 0÷40°C
- operation humidity: 20÷80% RH
- dimensions: 125x78x30.5mm

Accessories separately supplied

DTX **Auxiliary condensate collection tray**

Outdoor unit

The outdoors unit's base is equipped with a discharge for the condensate produced in the winter during defrost cycles, which helps (but does not guarantee) proper discharge of the condensate into the drain.

To guarantee proper condensate flow off, in all conditions, use the condensate tray with discharge for connection to the drain sump, following established regulations.

The tray also includes an antifreeze heater which prevents freezing of the condensate produced when the outside temperature drops below zero.



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

The antivibration mounts for floor installation reduce the vibrations of the compressor during its operation. They are secured to the feet of the base plate.



ASTFX **Kit of antivibration mounts for wall bracket installation**

The antivibration mounts reduce the vibrations of the compressor during its operation. They are secured to the wall support brackets.



KSIPX **Kit with wall fixing brackets**

Wall fixing bracket for outdoor unit, adjustable, in galvanised steel painted with polyester powders for outdoor use.



Accessories separately supplied

CCGIX

Integration condensing boiler

24kW condensing boiler which, thanks to the internal logics of SPHERA EVO is managed both together with or instead of the heat pump for greater comfort even at the coldest temperatures.

The kit is comprised of:

- 1 24kW condensing gas boiler;
- 1 Gas ball shut-off valve;
- 1 3-way valve with microswitch for activation of the boiler;
- flexible copper hoses for connecting;
- screws, gaskets and brackets for fixing;
- kit installation manual.

⚠ The CCGIX kit excludes the KCVEX, AC50X and ACSA50X kit.



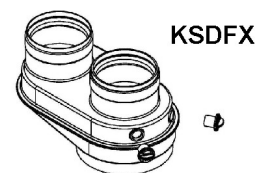
KSDFX

Sdoppiatore per scarico fumi caldaia

The boiler is supplied with flanged connections for STD coaxial discharge/intake (Ø 60/100). The KSDFX kit consists of a splitter (Ø 80/80) that can be connected to a boiler for air intake and smoke exhaust.

Connection to the flue must be made in compliance with the current technical regulations.

The unit is provided with a dedicated drain for the condensate coming from the boiler; this condensate with high acidity in residential use can be introduced in the waste water drain of the home (UNI 11071)



Split drain Ø 80/80
Accessory supplied separately

STD



KAS80X

Suction and exhaust fittings 80mm diameter

The boiler is supplied with flanged connections for discharge/intake (Ø 80).

The KAS80X kit consists of 2 fittings (Ø 80) for splitting the air intake and smoke exhaust directly from the boiler body.

KAS80X



KTCGPLX

Conversion kit boiler from methane to LPG

The boiler is supplied as STANDARD with methane gas operation.

To convert from methane gas to LPG, the accessory is supplied separately; its use will require recalibration following the instructions given in the documentation provided with the unit.

Performance

SIZE			2.1	3.1	4.1	5.1
STORAGE TANK CAPACITY			150L	150L	150L	150L
Heating						
Air 7°C - Water 35°C						
Nominal Heating capacity / Max	1	kW	4,32 / 6,26	6,18 / 7,41	8,30 / 9,11	10,09 / 10,3
Total power input	1	kW	0,80	1,19	1,56	2,01
COP	1	-	5,42	5,21	5,31	5,01
Water flow-rate	1	l/s	0,21	0,30	0,41	0,49
Nominal available pressure	1	kPa	31,2	36,5	33,1	31,0
Maximum available pressure	1	kPa	69	62	47	31
Air -7°C - Water 35°C						
Nominal Heating capacity / Max	2	kW	4,17 / 6,25	6,05 / 6,97	7,33 / 8,35	8,20 / 9,30
Total power input	2	kW	1,32	2,01	2,27	2,67
COP	2	-	3,16	3,00	3,23	3,07
Water flow-rate	2	l/s	0,22	0,29	0,34	0,40
Nominal available pressure	2	kPa	35,0	39,8	34,0	31,7
Maximum available pressure	2	kPa	69	64	58	49
Air 7°C - Water 45°C						
Nominal Heating capacity / Max	3	kW	4,16 / 5,96	6,03 / 7,13	8,22 / 8,98	10,01 / 10,30
Total power input	3	kW	1,06	1,57	2,08	2,59
COP	3	-	3,93	3,83	3,95	3,86
Water flow-rate	3	l/s	0,19	0,30	0,39	0,49
Nominal available pressure	3	kPa	32,3	36,4	34,9	31,0
Maximum available pressure	3	kPa	70	63	51	31
Air 7°C - Water 55°C						
Nominal Heating capacity / Max	4	kW	4,08 / 5,74	5,94 / 6,90	7,50 / 7,80	9,60 / 9,72
Total power input	4	kW	1,36	1,93	2,35	3,10
COP	4	-	3,00	3,07	3,19	3,10
Water flow-rate	4	l/s	0,12	0,18	0,23	0,29
Nominal available pressure	4	kPa	35,6	33,4	31,2	33,6
Maximum available pressure	4	kPa	70	70	69	63
Cooling						
Air 35°C - Water 18°C						
Nominal Cooling capacity / Max	5	kW	4,55 / 6,88	6,44 / 7,65	8,10 / 11,13	10,00 / 12,03
Total power input	5	kW	0,75	1,23	1,58	2,10
EER	5	-	6,08	5,24	5,12	4,77
Water flow-rate	5	l/s	0,22	0,32	0,38	0,48
Nominal available pressure	5	kPa	34,9	34,8	34,6	10,6
Maximum available pressure	5	kPa	69	61	51	32
Air 35°C - Water 7°C						
Nominal Cooling capacity / Max	6	kW	4,26 / 6,14	6,25 / 6,39	7,46 / 7,94	8,67 / 9,10
Total power input	6	kW	1,22	2,02	2,24	2,94
EER	6	-	3,50	3,09	3,33	3,09
Water flow-rate	6	l/s	0,20	0,29	0,36	0,43
Nominal available pressure	6	kPa	35,8	36,1	34,3	36,8
Maximum available pressure	6	kPa	70	64	56	43

1. User side entering/leaving water temperature 30/35°C, source side air 7°C (U.R. = 85% Heat power data, Total power input and COP in accordance with EN 14511:2018
2. User side entering/leaving water temperature 30/35°C, source side air -7°C Heat power data, Total power input and COP in accordance with EN 14511:2018.
3. User side entering/leaving water temperature 40/45°C, source side air 7°C (U.R. = 85% Heat power data, Total power input and COP in accordance with EN 14511:2018..
4. User side entering/leaving water temperature 18/23°C, source side air 35°C Heat power data, Total power input and COP in accordance with EN 14511:2018.
5. User side entering/leaving water temperature 7/12°C, source side air 35°C Heat power data, Total power input and COP in accordance with EN 14511:2018.
6. The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2013, Clima Average, High Temperature 47/55°C.

* All data calculated with zero elevation gain and equivalent length of 7m.

General technical data

SIZE			2.1	3.1	4.1	5.1
STORAGE TANK CAPACITY			150L	150L	150L	150L
ERP						
Average climatic conditions - Heat pump for Average temperature application						
Nominal power	7	kW	4	6	7	9
SCOP	7	-	3.32	3.54	3.72	3.73
Generator energy class	7	-	A++	A++	A++	A++
η_s	7	%	130	138	146	146
System energy class	7	-	A++	A++	A++	A++
η_s	7	%	135	143	151	151
Average climatic conditions - Heat pump for Low temperature application						
Nominal power	8	kW	5	6	8	10
SCOP	8	-	5.13	5.15	5.32	5.27
Generator energy class	8	-	A+++	A+++	A+++	A+++
η_s	8	%	202	203	210	208
System energy class	8	-	A+++	A+++	A+++	A+++
η_s	8	%	207	208	215	213
Average climatic conditions - Heat pump for application with Fan coil						
Nominal power	9	kW	4	6	7	9
SEER	9	-	5.09	5.42	5.95	6.01
Generator energy class	9	-	A+++	A+++	A+++	A+++
η_s	9	%	201	214	235	238
Heat pump for Domestic Hot Water application						
Load profile declared	10	-	L	L	L	L
η_{wh}	10	%	115	115	115	115
Sanitary water energy class	10	-	A+	A+	A+	A+

7. The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2013. Clima Average, Medium temperature 47/55°C
8. The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2013. Clima Average, Low temperature 30/35°C
9. The product is conforming with the European ErP Directives, which includes Commission Delegated Regulation (EU) N. 811/2018 and Commission Delegated Regulation N. 813/2013. Clima Average, Low temperature 12/7°C
10. Dati secondo EN 16147:2017

* All data calculated with zero elevation gain and equivalent length of 7 m.

Construction - Outdoor unit

SIZE		2.1	3.1	4.1	5.1
Characteristics					
Compressor		Twin Rotary			
Refrigerant		R32			
Refrigerant charge	kg	1.50	1.50	1.65	1.65
GWP	t _{CO2}	675	675	675	675
Equivalent tons of CO ₂ (*)	t _t	1.02	1.02	1.11	1,11
Oil charge	l	0,46	0,46	0,46	0,46
Type of fan		Assiale			
Standard air flow rate	m ³ /h	2770	2770	4030	4030
Outdoors unit sound pressure at 1 metre	1 dB(A)	42	44	45	47
Sound power	1 dB(A)	55	57	58	60
Dimensions					
Operating (L x P x A)	mm	986x426x712	986x426x712	1104x523x866	1104x523x866
Packaging (L x P x A)	mm	1065x485x800	1065x485x800	1180x560x890	1180x560x890
Operating weight	kg	58	58	77	77
Shipping weight	kg	64	64	88	88

1. Sound pressure level determined using the intense metric method (UNI EN ISO 9614-2). Data referred to the following full load conditions: Heating - utility side water inlet/outlet 47/55°C, air source side 7°C. Cooling - utility side water inlet/outlet 12/7°C, air source side 35°C.

(*) It contains fluorinated greenhouse gases

Construction - Indoor unit

SIZE		A
System Characteristics		
Maximum circuit pressure	bar	3,0
System expansion tank	1 l	8,0
Preload expansion tank	bar	1,0
System water connections	inch	1"
DHW Characteristics		
Type of Tank		Acciaio INOX AISI 316 L
Domestic hot water Tank Volume	l	150
Internal coil exchange surface	m ²	1,0
Storage dispersion	W/K (kWh/24h)	1.69 (1.82)
DHW safety electric heater	kW	2,0
Maximum DHW circuit pressure	bar	6,0
DHW side expansion tank	l	8,0
DHW water connections	inch	3/4"
Dimensions		
Operating (L x P x A)	mm	950 x 360 x 2200
Packaging (L x P x A)	mm	2300 x 430 x 1225
Operating weight	kg	317
Shipping weight	kg	180

1. Sufficient volume up to a maximum of 70 liters of system water content.

Hydronic data - Indoor unit + outdoor unit

SIZE		2.1	3.1	4.1	5.1
Characteristics					
		A	A	A	A
Minimum system water content	1 l	40	40	40	40
Minimum admitted water flow rate	l/s	0,16	0,16	0,16	0,16
Maximum admitted water flow rate	l/s	0,61	0,61	0,61	0,61
Net boiler capacity	l	143	143	143	143
DHW tank setpoint	°C	50	50	50	50
Water mixed at 40°C (V40)	l	188	188	188	188
THeating time	2 h:min	02:11	02:11	01:47	01:47
Energy consumption during heating	3 kWh	1,90	1,90	2,00	2,00

1. The minimum water content of the area with the smallest volume of water is considered.

General technical data

Condensing boiler general technical data

Indoor unit (SQKN-YEE 1 IC + accessory CCGIX)

Integration boiler heating

Boiler model		R1K 24
Max. nominal heat capacity for heating	kW	23,50
Max. nominal heat capacity for domestic hot water	kW	-
Minimum nominal heat capacity	kW	2,90
Available nominal heating capacity 60/80°C	kW	22,94
Available minimum nominal heating capacity 60/80°C	kW	2,75
Available nominal heating capacity 30/50°C	kW	24,79
Available nominal heat yield 60/80°C	%	97,60
Available nominal heat yield 30/50°C	%	105,50
Partial load heat yield 30%	%	107,00
Seasonal environment heating energy efficiency η_s	%	94,00
Domestic hot water energy class	%	-
Declared load profile	°C	-
Specific capacity in continuous service Δt 30°C	%	-
Water heating energy efficiency wh	class	-
Operating weight	kg	2,60
Chimney losses with burner ON at nom Pow	%	2,20
Chimney losses with burner ON at min Pow	%	0,02
Chimney losses with burner OFF	%	-0,20
Casing losses with burner ON at nom Pow	%	-
Casing losses with burner ON at min Pow	%	-
Casing losses with burner OFF	%	80,26
Smoke temperature at nominal heat capacity	°C	VI
NOx Class	class	0,04
Auxiliary electricity consumption at full load	kW	0,02
Auxiliary electricity consumption at partial load	kW	0,02
Sound power level	dB	52
Width	mm	345
Depth	mm	270
Height	mm	690
Shipping weight	kg	35

Electrical data

Indoor unit

SIZE	A	
Power supply 220-240V ~ 50Hz		
F.L.A. - Full load current without DHW Electric heater	A	0,50
F.L.A. - Full load current of the Electric heater	A	8,70
F.L.A. - Full load current at the TOTAL maximum admissible conditions	A	9,20
F.L.I. - Full load power input without DHW Electric heater	kW	0,10
F.L.I. - Full load power input of the Electric heater	kW	2,00
F.L.I. - Full load power input with TOTAL full load	kW	2,10
M.I.C. - Maximum inrush current	A	9,20

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

(*) The electrical consumptions relating to the electric heater refer to that in the DHW storage tank.

⚠ When defining the size, make sure all absorption values are compliant with current power supply contracts in the country of installation.

Electrical data

Outdoor unit - Standard

SIZE		2.1	3.1	4.1	5.1
Power supply 220-240V ~ 50Hz					
F.L.A. - Full load current at max admissible conditions	A	10.0	11.8	15.0	16.4
F.L.I. - Full load power input at max admissible conditions	kW	2.20	2.60	3.30	3.60
M.I.C. - Maximum inrush current	A	10.0	11.8	16,7	16.4

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

(*) The electrical consumptions relating to the electric heater refer to that in the DHW storage tank.

⚠ Important: when rating the unit, check that the absorptions are conforming to the utility contract in the country of installation.

Unit configured with oversized pump

SIZE		1PUM
Power supply 220-240V ~ 50Hz		
F.L.A. - Current absorbed by the unit with increased head circulator	A	0,90
F.L.I. - Power input of the unit with increased head circulator	kW	0,20
M.I.C. - Unit maximum starting current of the unit with increased head circulator	A	0,90

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

Unit configured with single-phase integration electric heaters

SIZE		EH024	
		2 KW	4 KW
Power supply 220-240V ~ 50Hz			
F.L.A. - Current absorbed by the unit with increased head circulator	A	8,70	17,4
F.L.I. - Power input of the unit with increased head circulator	kW	2,00	4,00
M.I.C. - Unit maximum starting current of the unit with increased head circulator	A	8,70	17,4

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

Unit configured with three-phase integration heaters

SIZE		EH6	EH9
		6 KW	9 KW
Power supply 380-415V ~ 50Hz			
F.L.A. - Current absorbed by the unit with increased head circulator	A	8,60	13,0
F.L.I. - Power input of the unit with increased head circulator	kW	6,00	9,00
M.I.C. - Unit maximum starting current of the unit with increased head circulator	A	8,60	13,0

Power supply 380-415V ~ 50Hz +/-6%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

2 zones: both at high temperature - 2 zones: high temperature + low temperature (mixed)

SIZE		KIR2HX - KIR2HLX
Power supply 220-240V ~50Hz		
F.L.A. - Full load current at max admissible conditions	A	0,45
F.L.I. - Full load power input at max admissible conditions	kW	0,10

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

General technical data

Circulation kit: circulation group, control unit, expansion tank

SIZE	KCVEX	
Power supply 220-240V ~50Hz		
F.L.A. - Full load current at max admissible conditions	A	0,25
F.L.I. - Full load power input at max admissible conditions	W	55,0

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

Additional 50-liter and 150-liter domestic hot water storage

SIZE	ACSA50X - ACSA150X	
Power supply 220-240V ~50Hz		
F.L.A. - Full load current at max admissible conditions	A	0,35
F.L.I. - Full load power input at max admissible conditions	W	75,0

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

Integration condensing boiler

SIZE	CCGIX	
Power supply 220-240V ~50Hz		
F.L.A. - Full load current at max admissible conditions	A	0,2
F.L.I. - Full load power input at max admissible conditions	W	45,0

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

DHW recirculation pump kit

SIZE	KPRSX	
Power supply 220-240V ~50Hz		
F.L.A. - Full load current at max admissible conditions	A	0,35
F.L.I. - Full load power input at max admissible conditions	W	75,0

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

Auxiliary condensate collection tray

SIZE	DTX	
Power supply 220-240V ~50Hz		
F.L.A. - Full load current at max admissible conditions	A	0,40
F.L.I. - Full load power input at max admissible conditions	W	80,0

Power supply 220-240V ~ 50Hz +/-10%.

The units are conforming with the prescriptions of European Standards CEI EN 60335 and EN 60335-2-40.

Data to be added to the values of the standard indoor unit.

Sound levels outdoor unit

Standard mode

SIZE	Sound power level								Sound pressure level	Sound power level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
2.1	46	49	49	52	52	46	37	27	42	55
3.1	49	48	50	55	53	48	39	30	44	57
4.1	36	51	53	56	55	49	44	30	45	58
5.1	37	56	53	57	57	51	47	36	47	60

Sound levels refer to units with full load under nominal test conditions. Data referred to the following conditions: entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.
The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.
Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).

Silenced mode

SIZE	Sound pressure level	Sound power level
	dB(A)	dB(A)
2.1	40	53
3.1	40	53
4.1	42	55
5.1	42	55

Sound levels refer to units with full load under nominal test conditions.
For maximum capacity delivered in silent mode use a correction factor of 0.8.
Data referred to the following conditions: entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.
The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.
Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).

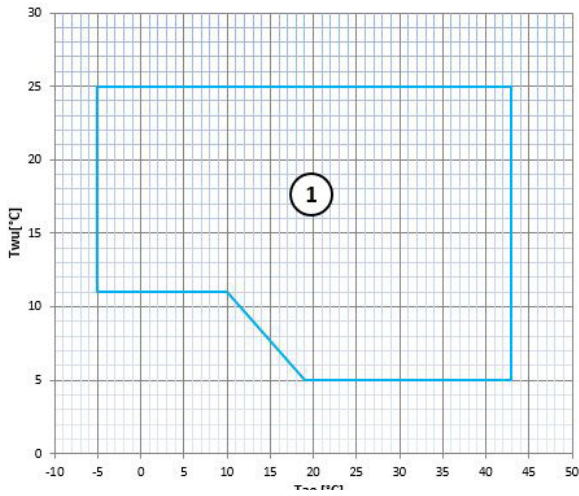
Super-silenced mode

SIZE	Sound pressure level	Sound power level
	dB(A)	dB(A)
2.1	37	50
3.1	38	51
4.1	39	52
5.1	39	52

Sound levels refer to units with full load under nominal test conditions.
For maximum capacity delivered in silent mode use a correction factor of 0,6
Data referred to the following conditions: entering / leaving exchanger water temperature user side 47/55°C source side exchanger air inlet 7°C.
The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.
Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2).

Operating limits

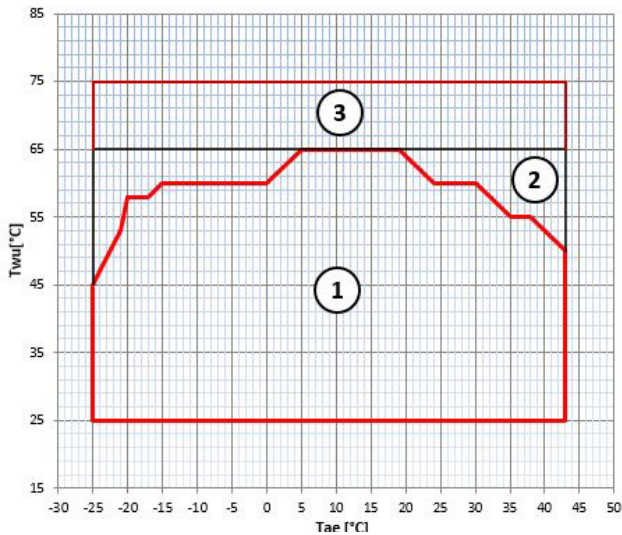
Cooling



T_{wu} [°C] = Exchanger water outlet temperature
 T_{ae} [°C] = Outdoor exchanger air inlet temperature

1. Normal operating range

Heating



T_{wu} [°C] = Exchanger water outlet temperature
 T_{ae} [°C] = Outdoor exchanger air inlet temperature

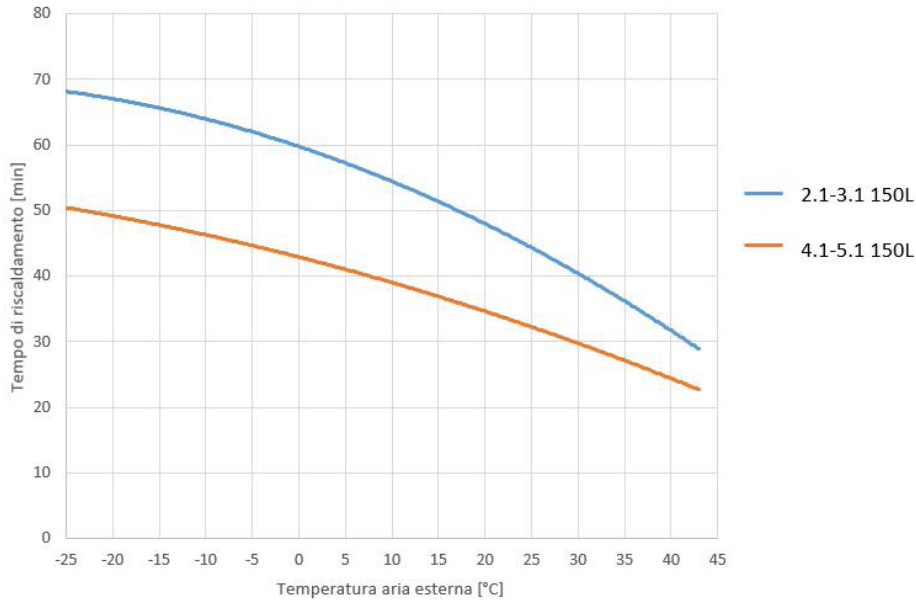
1. Normal operating range
2. Operating range with additional electric heater option
3. Hybrid system operating range

In the configuration with the integration electric heater, the extension of the limits varies according to the electrical capacity of the electric heater chosen.

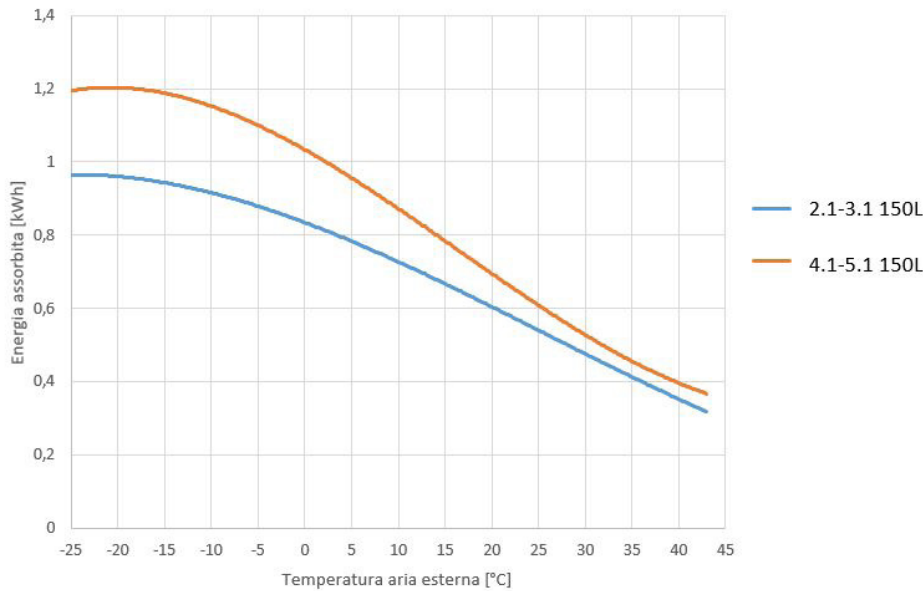
Domestic hot water production performance curves

Curves referring to the switch-on of the unit from which 90 litres of water were taken out of a total of about 190 available (at an equivalent temperature of 40°C).

Heating time



Energy absorbed

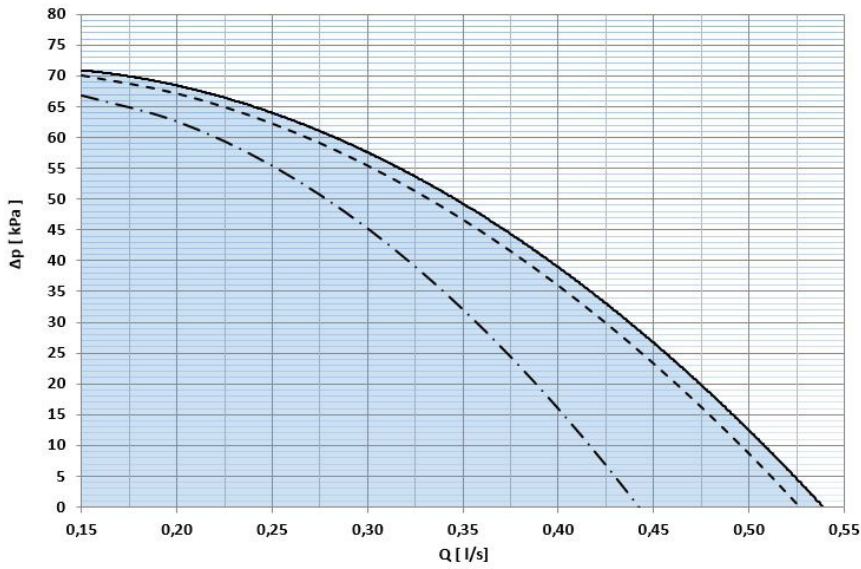


Nominal test conditions:

- Storage temperature (T5) at power-off = 50°C
- Storage temperature (T5) at switch-on = 40°C
- Amount drawn = 3 l/min

General technical data

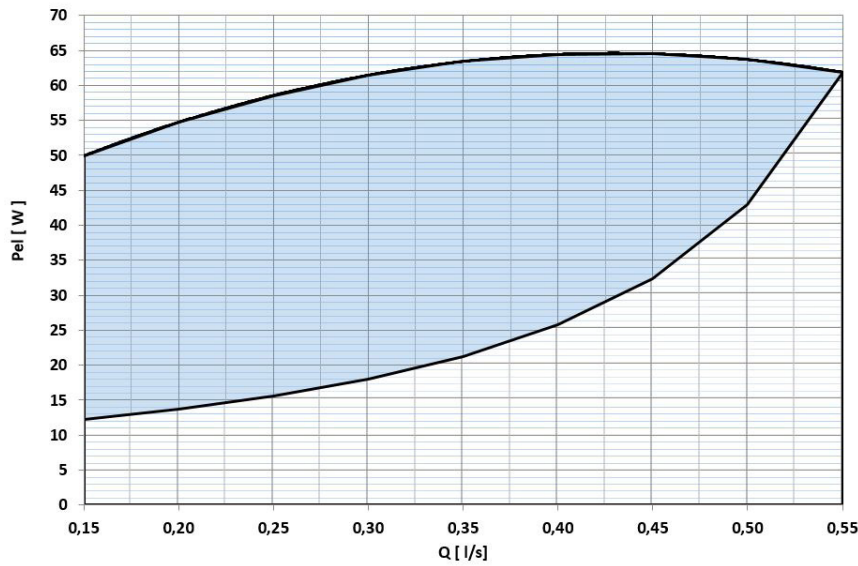
Available pressure of the standard circulator at the unit connections



ΔP [kPa] = Available pressure
 Q [l/s] = Water flow-rate

- Maximum head of the circulator with configuration of integration electric heater
- Maximum head of the circulator with CCGIX option
- Circulator operating field

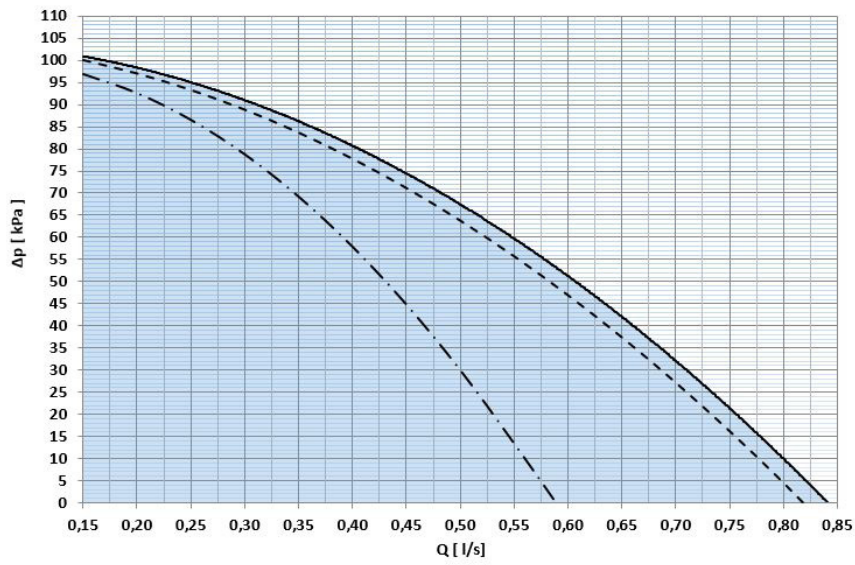
Absorption of the standard circulator



P_{el} [W] = Electrical power input
 Q [l/s] = Water flow-rate

- Circulator operating field

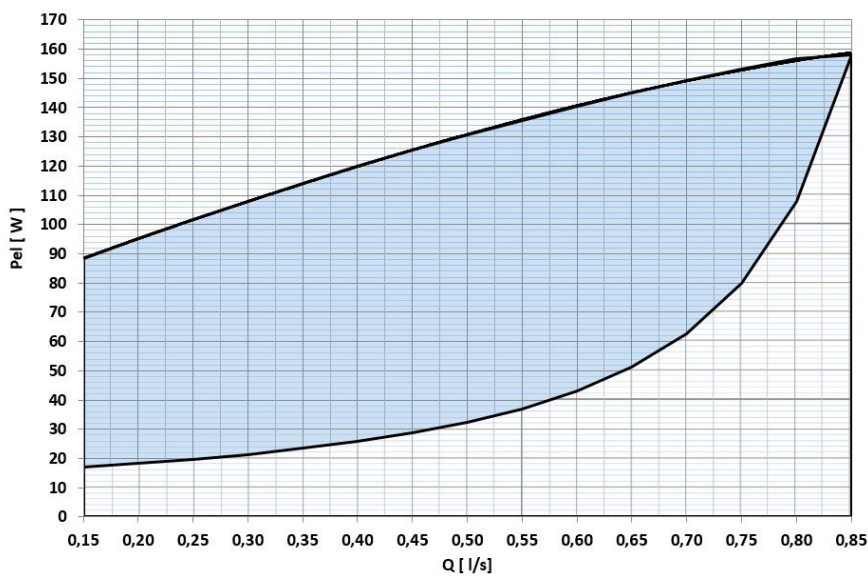
Head of increased circulator at the unit connections



ΔP [kPa] = Available pressure
Q [l/s] = Water flow-rate

- Maximum head of the circulator with configuration of integration electric heater
- Maximum head of the circulator with CCGIX option
- Circulator operating field

Absorption of increased circulator

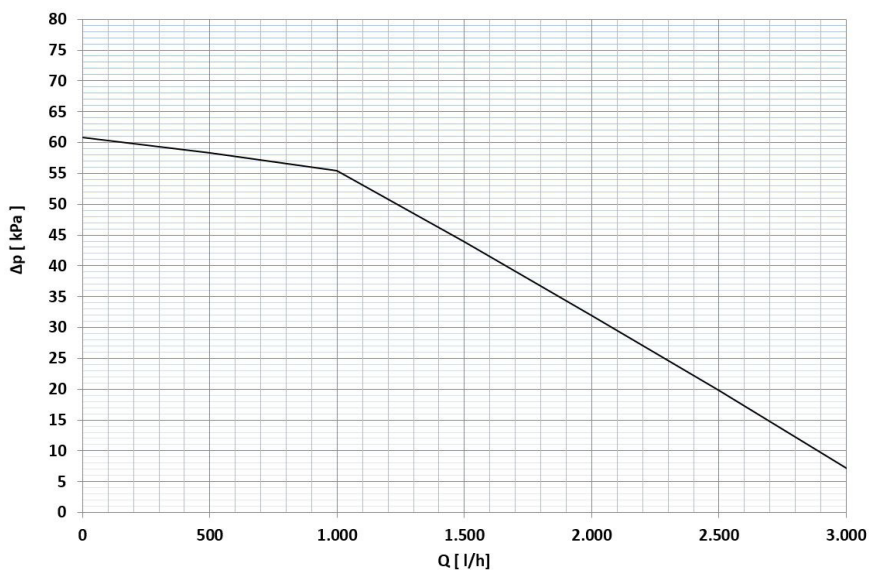


Pe [W] = Electrical power input
Q [l/s] = Water flow-rate

- Circulator operating field

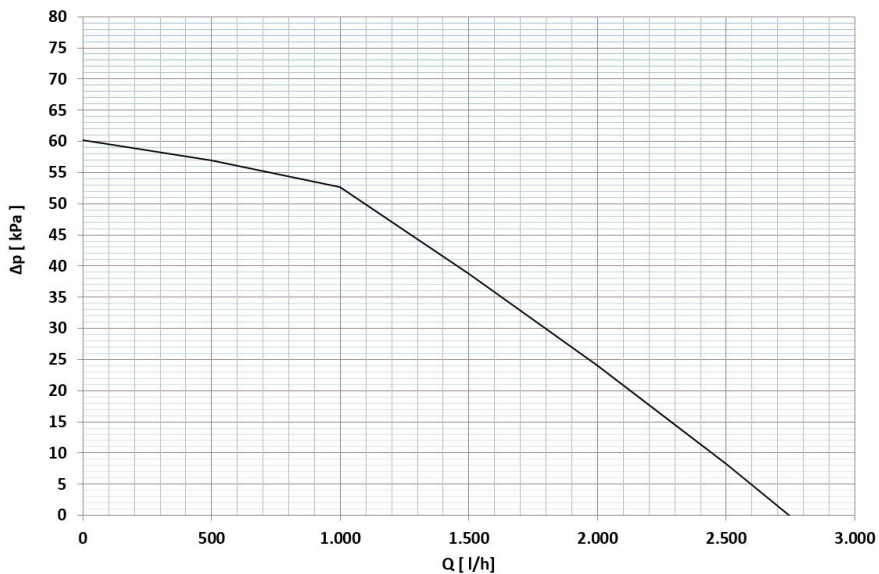
General technical data

Available head for direct booster system circulator



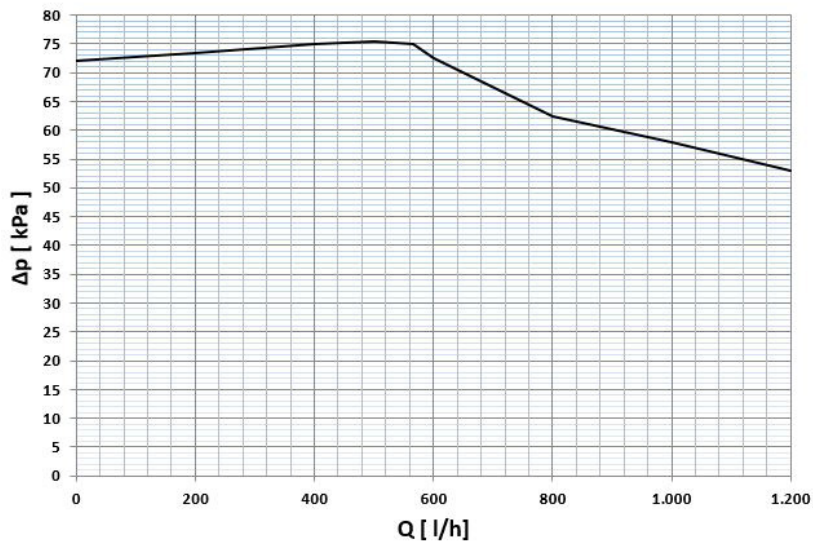
ΔP [kPa] = Available head
Q [l/h] = Water flow-rate

Available head for mixed booster system circulator



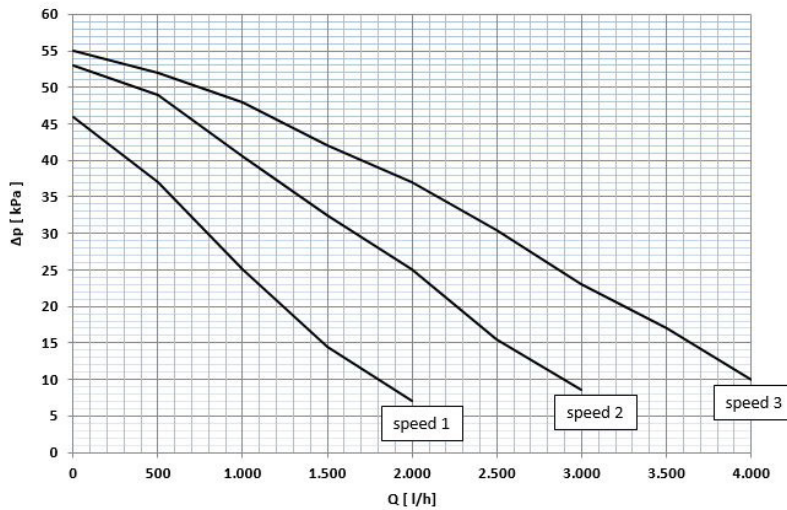
ΔP [kPa] = Available head
Q [l/h] = Water flow-rate

Available head of the circulator present in the KCVEX solar kit



ΔP [kPa] = Available head
Q [l/h] = Water flow-rate

Available head of the circulator present in the KPRSX recirculation kit



ΔP [kPa] = Available head
Q [l/h] = Water flow-rate

Refrigerant pipe connection

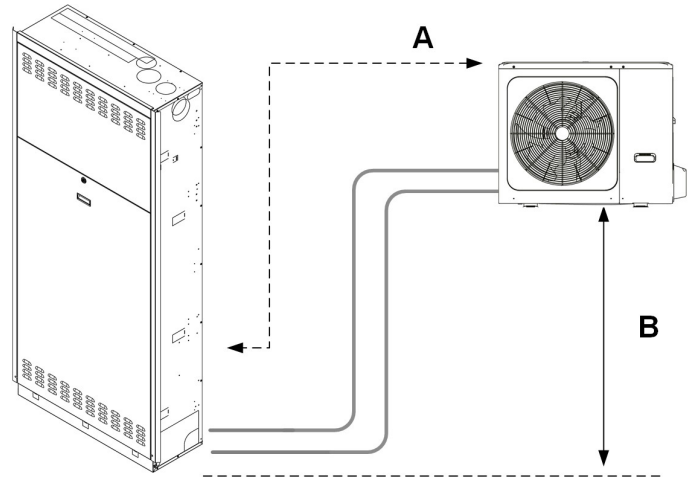
Sizing the refrigerant pipes

Equivalent length of pipes (metres) = Effective length (metres) + Number of bends x K

Consider K= 0.3 m per wide radius elbow bend.

Consider K= 0.5 m per standard 90° elbow bend.

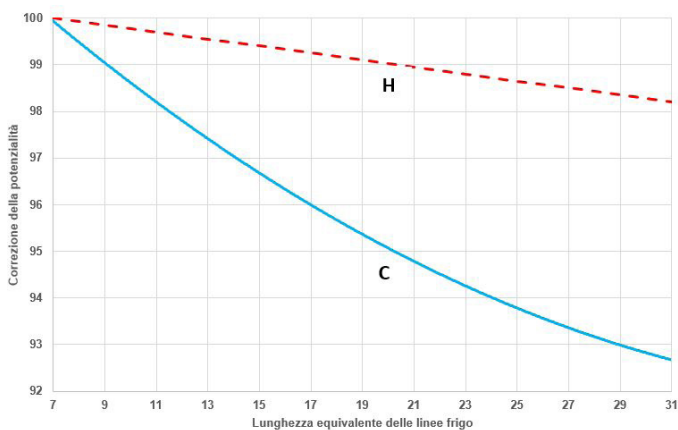
⚠ To correctly install the refrigerant pipes and charge the refrigerant gas, refer to the SPHERA EVO 2.0 MANUAL.



SIZE		2.1	3.1	4.1	5.1
Length and height difference of refrigerant pipes					
A - Refrigerant pipe min/max equivalent length	m	2 - 30	2 - 30	2 - 30	2 - 30
C - Maximum refrigerant pipe height difference with outdoor unit higher than indoor unit	m	25	25	25	25
C - Maximum refrigerant pipe height difference with outdoor unit higher than indoor unit	m	25	25	25	25
Diameters of refrigerant pipes					
Gas pipe diameter	inch	5/8"	5/8"	5/8"	5/8"
Liquid line diameter	inch	1/4"	1/4"	3/8"	3/8"
Additional charge per metre	kg/m	0,020	0,020	0,038	0,038

Determination of cooling and heating power loss

The equivalent length of the cooling lines results in a loss of cooling and heating power supplied to the circuit and DHW system. The graph shows the amount of this loss of power.



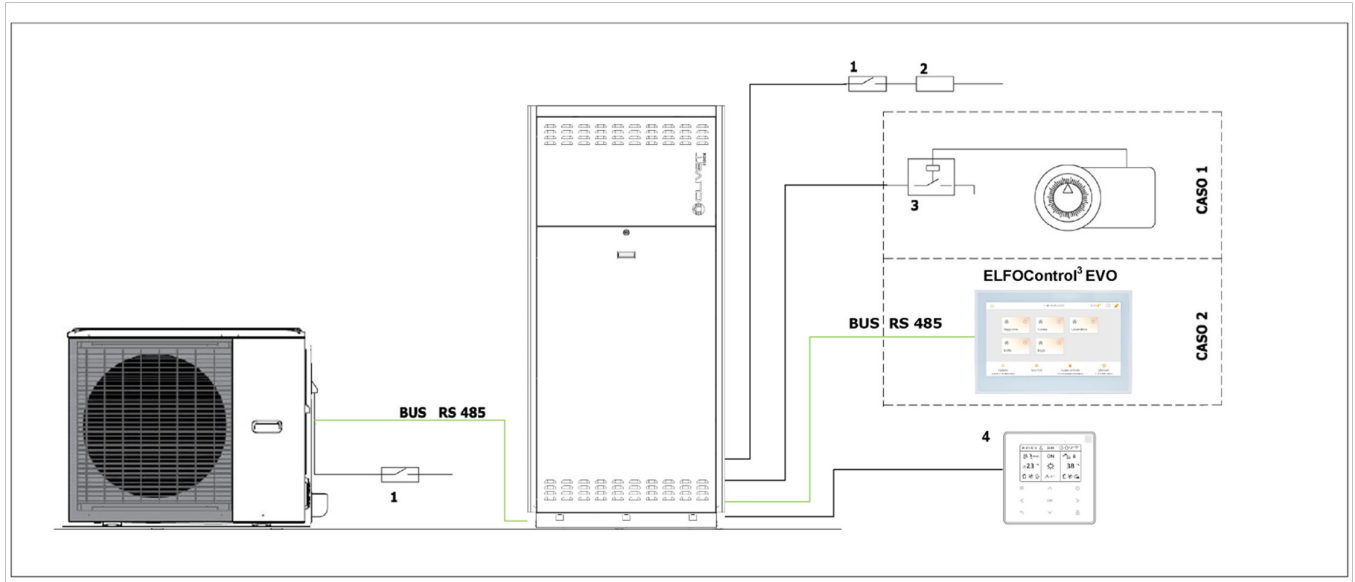
C = Cooling power efficiency curve
H = Heating power efficiency curve

Electrical connections

The electrical hookup must be conforming with the local regulations. The hookup must be done by a specialised technician, qualified to work on live equipment.

SPHERA EVO 2.0 can be controlled with the on-board controller. To operate the unit, you may use: the ELFOControl³ EVOsupervision system or normal electromechanical thermostats.

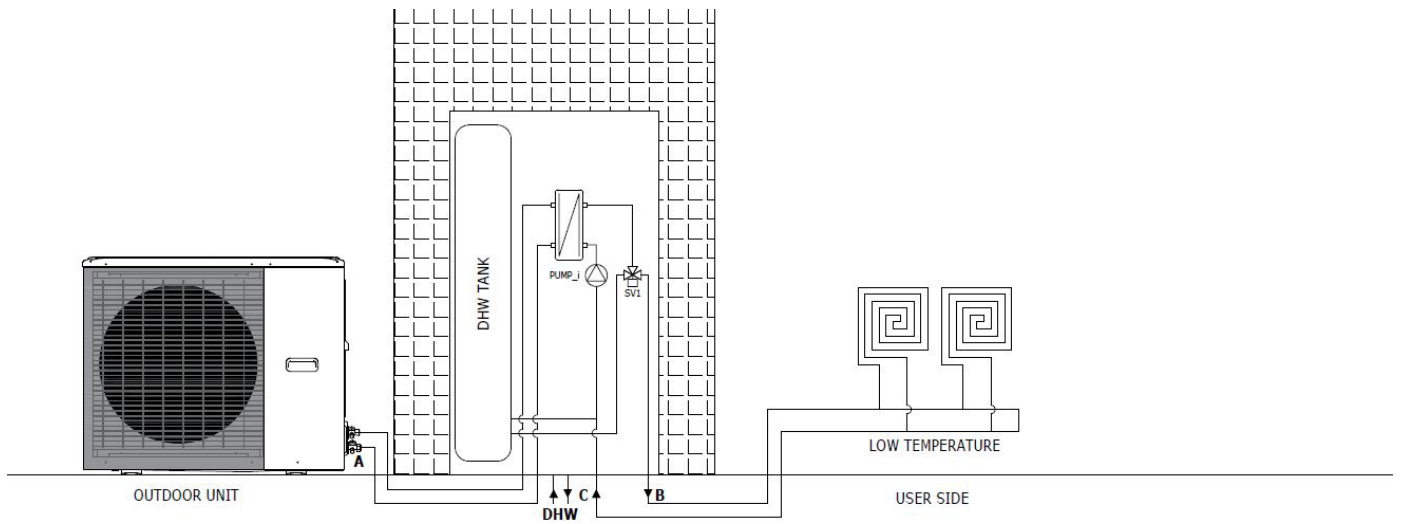
For more information on connections, consult the installation manual.



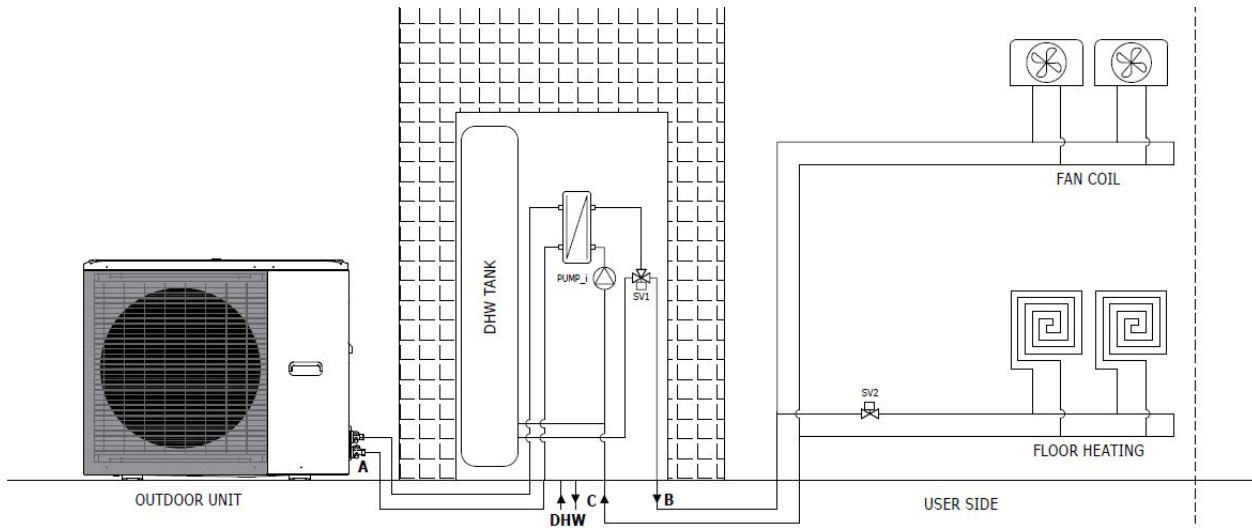
1. Contactor or automatic switch
2. Differential circuit breaker
3. Relè
4. Control keyboard to be remote controlled. Use 5-wire shielded cable with section between 0.75 and 1.25 mm². Maximum permissible distance 50 m. The unit control keypad acts as an ambient thermostat.

System connections

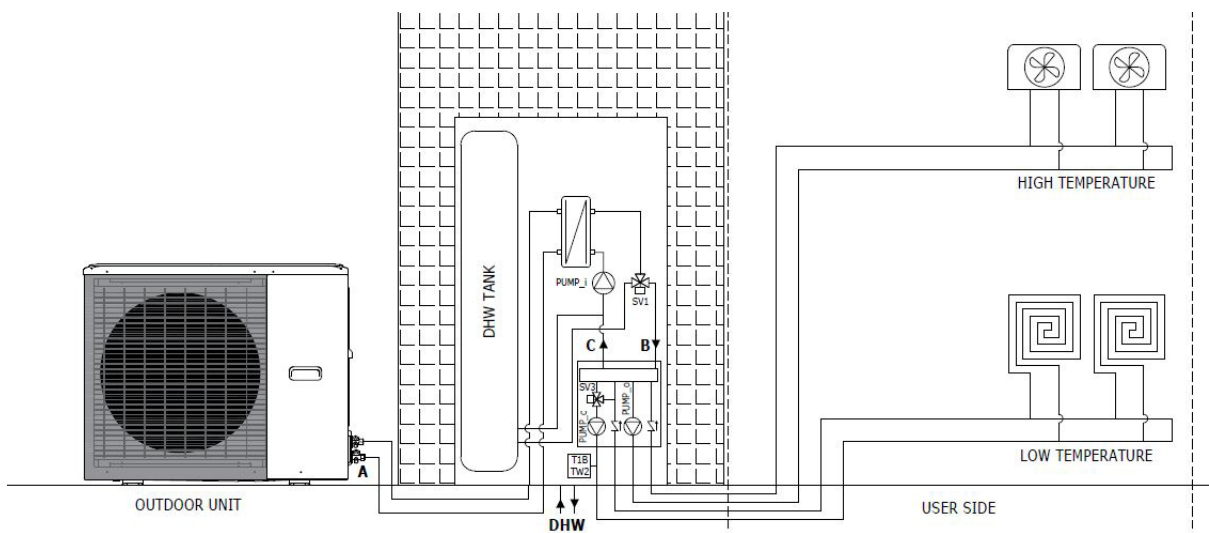
General description of the system and possible connections



Single Zone

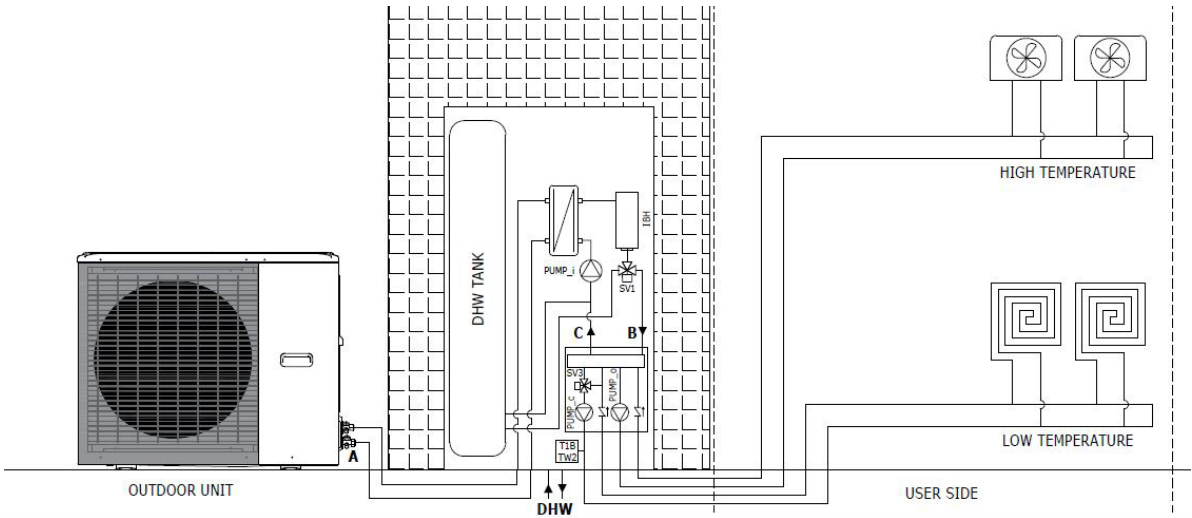


Single Zone SV2

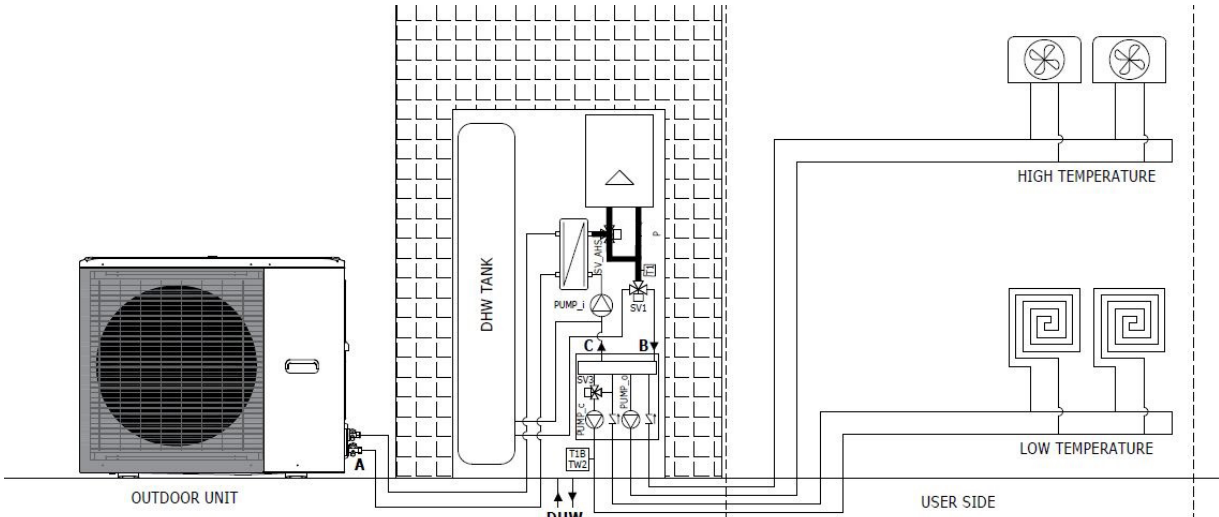


Double zone

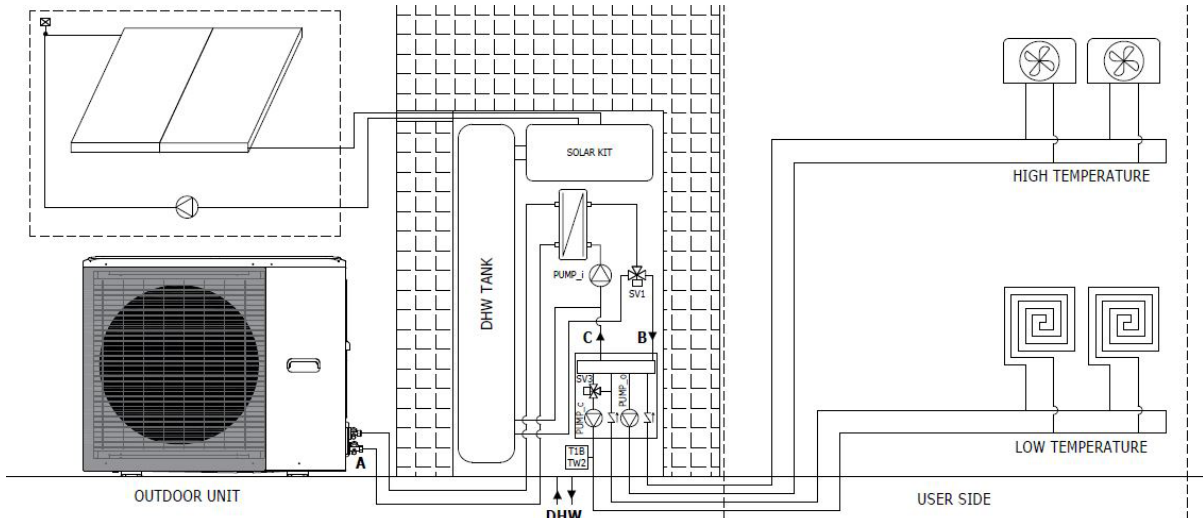
General description of the system and possible connections



Additional electric heater



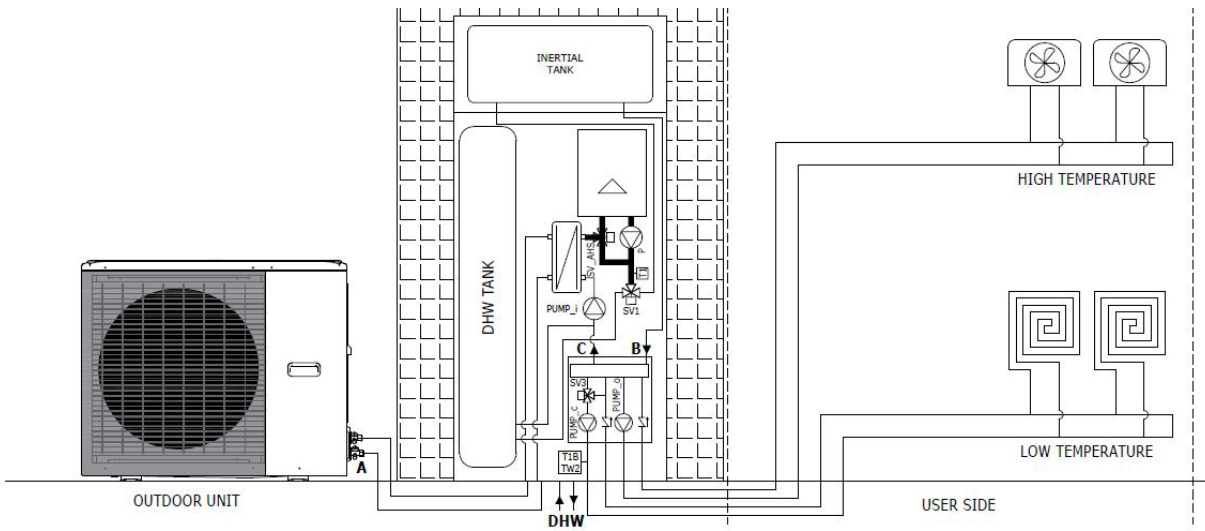
Hybrid system



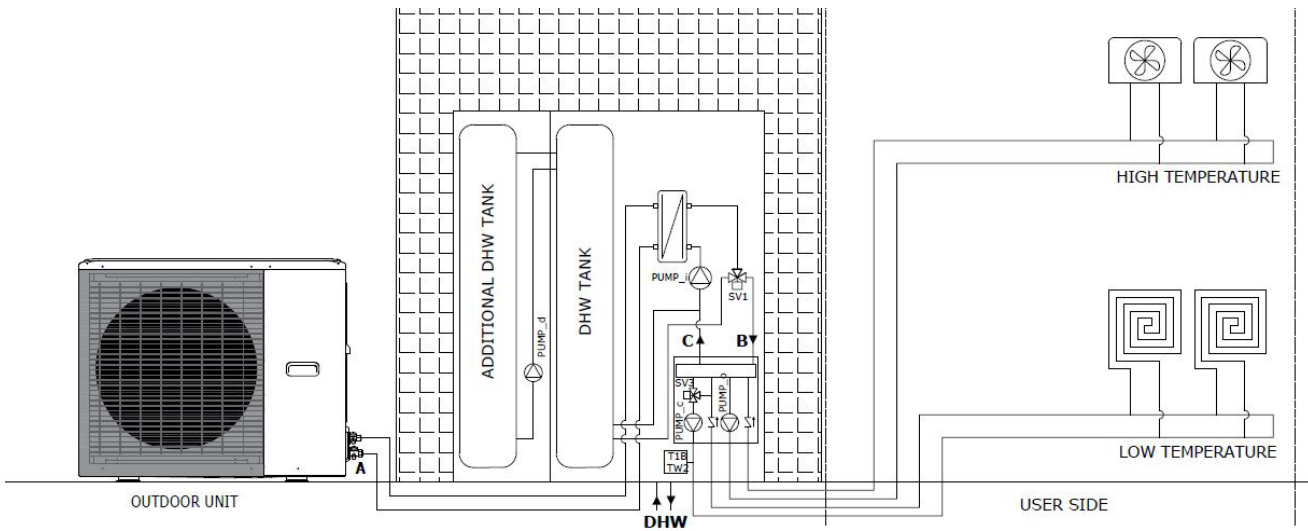
Solar kit

System connections

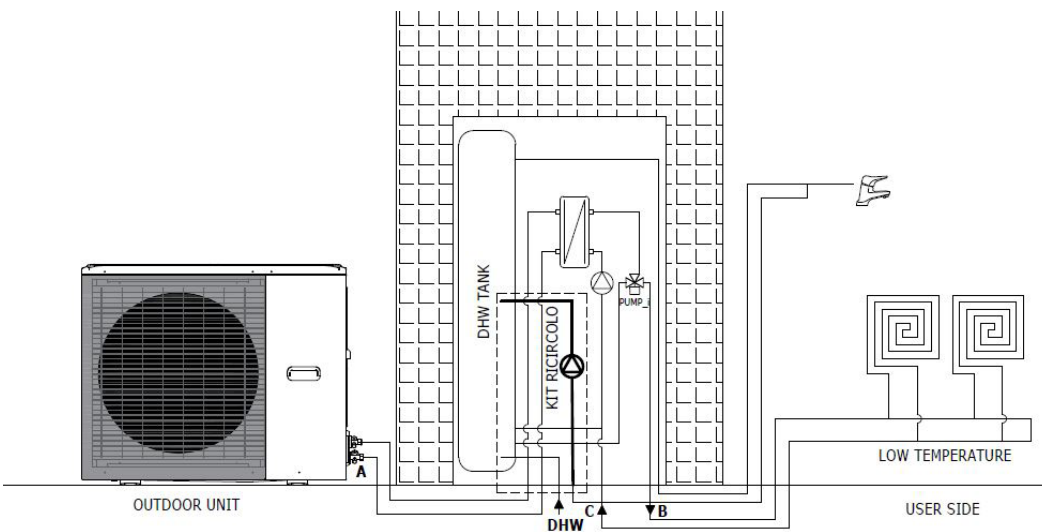
General description of the system and possible connections



50-liter inertial storage tank for outdoor installation

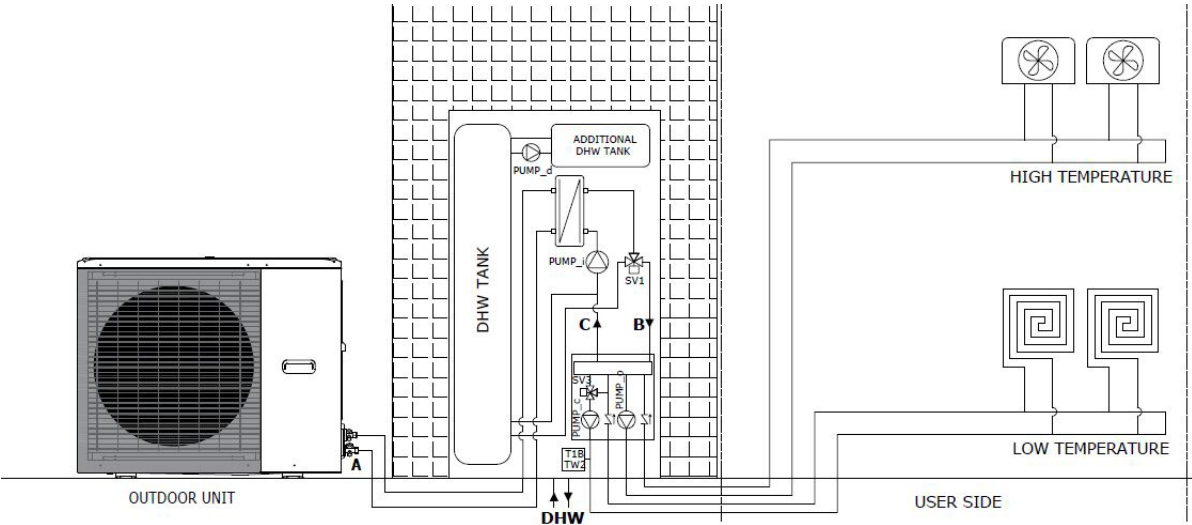


150L DHW additional storage tank for outdoor installation

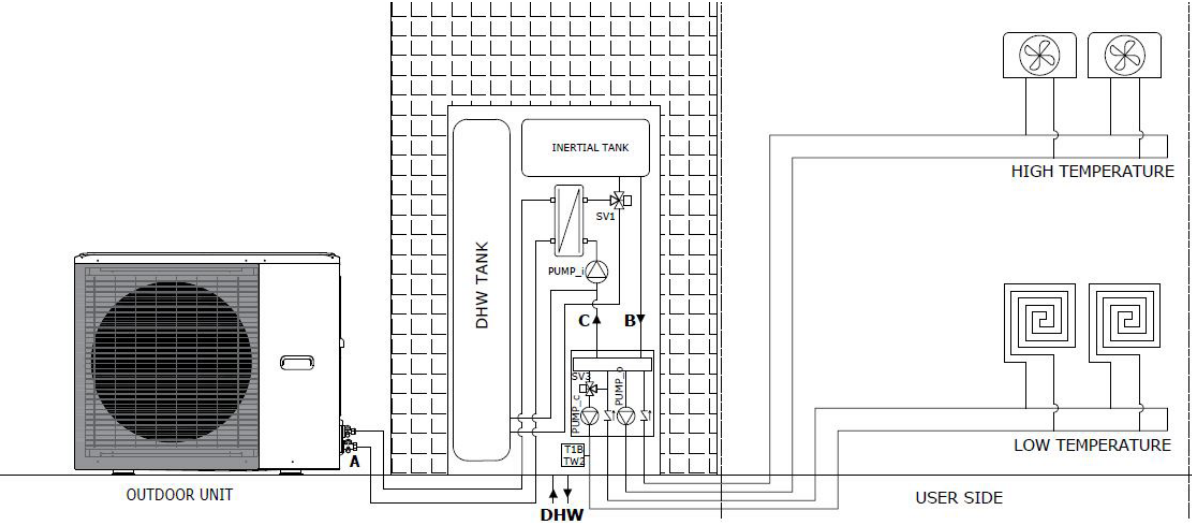


Recirculation

General description of the system and possible connections



50L DHW additional tank for indoor installation



50-liter inertial storage tank for indoor installation

Data for the UNI/TS 11300 calculation

Clivet S.p.A. declares that the data to be used for the calculation pursuant to UNI/TS 11300 part 4 of the efficiency of their heat pump are given in the following tables.

The data given in this document may be updated without advance notice by the manufacturer when upgrading his product range.

UNI/TS 11300 Part 4

SPHERA EVO 2.0 - Size 2.1

Data for determination of COPPL T delivery 20°C		Tdesignh	A	B	C	D
2.1	Te	-10	-7	2	7	12
	PLR	100%	88%	54%	35%	15%
	DC		4,74	4,50	4,32	4,33
	CR		1,00	0,65	0,44	0,19
	P	5,39	4,74	3,05	1,99	1,45
	COP (part load)		3,15	4,96	6,81	6,23
	COP (full load)		3,15	4,46	5,42	6,37
	Fcop		1,00	1,11	1,26	0,98
Data to be provided for power and COP under full load cold source air						
2.1	Te	Tm	-7	2	7	12
	Heating capacity $\Phi_{H,HP out}$ (kW)	35°C	4,74	4,50	4,32	4,33
		45°C	4,31	4,35	4,16	4,16
		55°C	4,40	4,40	4,08	4,50
	COP	35°C	3,15	4,46	5,42	6,37
		45°C	2,51	3,27	3,93	4,52
	55°C	1,99	2,56	3,00	3,44	
DHW Power and COP data under full load			Te			
2.1	Te	Tm	7	15	20	35
	Heating capacity $\Phi_{H,HP out}$ (kW)	55°C	4,08	5,11	5,71	6,85
	COP	55°C	3,00	3,84	4,23	3,90

SPHERA EVO 2.0 - Size 3.1

Data for determination of COPPL T delivery 20°C		Tdesignh	A	B	C	D
3.1	Te	-10	-7	2	7	12
	PLR	100%	88%	54%	35%	15%
	DC		5,51	5,89	6,18	6,28
	CR		1,00	0,57	0,35	0,15
	P	6,26	5,51	3,30	2,24	1,45
	COP (part load)		3,13	4,91	7,11	5,70
	COP (full load)		3,13	4,15	5,21	6,10
	Fcop		1,00	1,18	1,36	0,93
Data to be provided for power and COP under full load cold source air			Te			
3.1	Te	Tm	-7	2	7	12
	Heating capacity $\Phi_{H,HP out}$ (kW)	35°C	5,51	5,89	6,18	6,28
		45°C	5,22	6,42	6,03	6,53
		55°C	5,15	5,46	5,94	6,64
	COP	35°C	3,13	4,15	5,21	6,10
		45°C	2,41	3,07	3,83	4,41
	55°C	2,03	2,56	3,07	3,55	
DHW Power and COP data under full load			Te			
3.1	Te	Tm	7	15	20	35
	Heating capacity $\Phi_{H,HP out}$ (kW)	55°C	5,94	6,99	7,33	8,80
	COP	55°C	3,07	3,97	4,44	4,10

Data for the UNI/TS 11300 calculation

SPHERA EVO 2.0 - Size 4.1

Data for determination of COPPL T delivery 20°C		Tdesignh	A	B	C	D
4.1	Te	-10	-7	2	7	12
	PLR	100%	88%	54%	35%	15%
	DC		7,15	5,64	8,30	8,21
	CR		1,00	0,78	0,34	0,15
	P	8,13	7,15	4,65	2,91	1,85
	COP (part load)		3,30	5,17	7,08	6,01
	COP (full load)		3,30	3,69	5,31	6,41
	Fcop		1,00	1,40	1,33	0,94
Data to be provided for power and COP under full load cold source air		Te				
4.1	Te	Tm	-7	2	7	12
	Heating capacity $\Phi_{H,HP out}$ (kW)	35°C	7,15	5,64	8,30	8,21
		45°C	6,34	6,59	8,22	8,07
		55°C	6,08	6,27	7,50	7,55
	COP	35°C	3,30	3,69	5,31	6,41
		45°C	2,56	3,26	3,95	4,69
55°C		2,17	2,69	3,19	3,72	
DHW Power and COP data under full load		Te				
4.1	Te	Tm	7	15	20	35
	Heating capacity $\Phi_{H,HP out}$ (kW)	55°C	7,50	8,37	9,18	11,02
	COP	55°C	3,19	4,11	4,50	4,15

SPHERA EVO 2.0 - Size 5.1

Data for determination of COPPL T delivery 20°C		Tdesignh	A	B	C	D
5.1	Te	-10	-7	2	7	12
	PLR	100%	88%	54%	35%	15%
	DC		8,45	9,30	10,09	10,26
	CR		1,00	0,56	0,33	0,14
	P	9,60	8,45	5,23	3,47	1,96
	COP (part load)		3,18	5,03	7,33	6,16
	COP (full load)		3,18	4,12	5,01	5,97
	Fcop		1,00	1,22	1,46	1,03
Data to be provided for power and COP under full load cold source air		Te				
5.1	Te	Tm	-7	2	7	12
	Heating capacity $\Phi_{H,HP out}$ (kW)	35°C	8,45	9,30	10,09	10,26
		45°C	7,71	9,16	10,01	10,06
		55°C	7,08	8,49	9,60	9,19
	COP	35°C	3,18	4,12	5,01	5,97
		45°C	2,59	3,11	3,86	4,32
55°C		2,11	2,66	3,10	3,65	
DHW Power and COP data under full load		Te				
5.1	Te	Tm	7	15	20	35
	Heating capacity $\Phi_{H,HP out}$ (kW)	55°C	9,60	8,99	8,78	10,54
	COP	55°C	3,10	4,03	4,53	4,18

Terms and definitions:

Tm = Delivery temperature.

Tdesignh = A - Average design climate temperature (pursuant to UNI EN 14825).

A, B, C, D = Names of the four conditions with which different outdoors air temperatures are associated (Te).

Te = Outdoors air temperature.

PLR = Part load ratio.

DC = Power under full load referred to the specified temperatures.

CR = Heat pump load factor.

P = System power demand.

COP' (full load) = COP under full load referred to the indicated outdoors air temperatures.

COP' (partial load) = COP under partial load referred to the indicated outdoors air temperatures.

fCOP = COP correction factor, as follows: COP' (full load) / COP (partial load)HP= heat pump.

DHW = Domestic hot water.

Data for the UNI/TS 11300 calculation

The specified data refer to the nominal power values under the declared conditions

UNI/TS 11300 Part 3

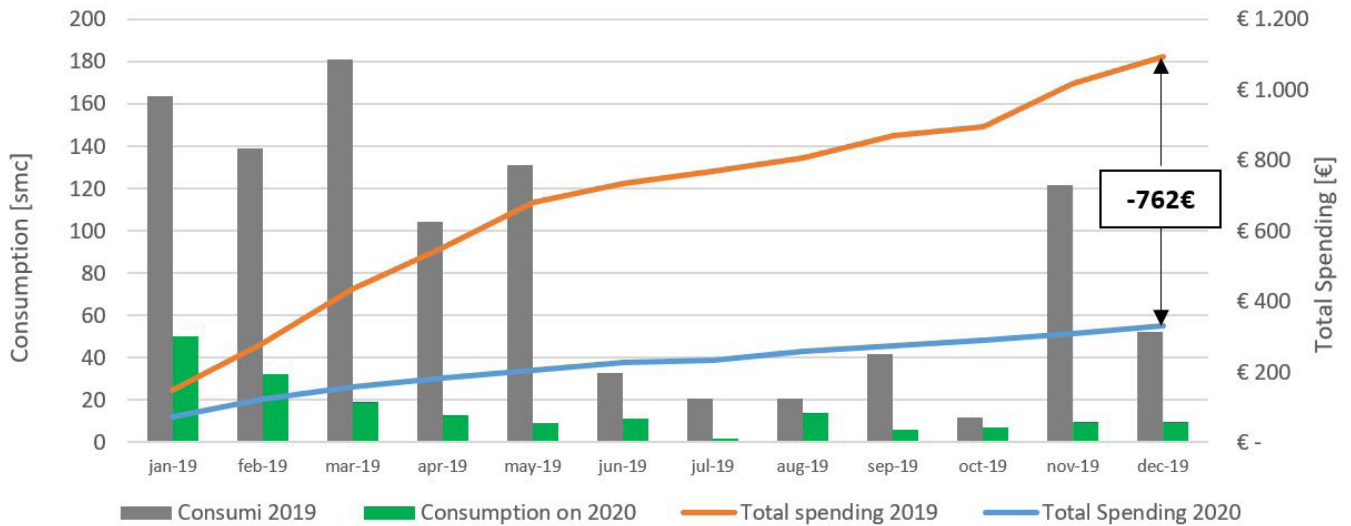
SIZE	Cooling capacity kW				EER			
	1	2	3	4	1	2	3	4
Test	100%	75%	50%	25%	100%	75%	50%	25%
220-240V N 50Hz								
2.1	4,26	3,20	2,05	0,90	3,50	4,71	5,84	5,81
3.1	6,25	4,59	2,96	1,35	3,09	4,43	6,17	7,40
4.1	7,46	5,20	3,51	1,63	3,33	4,48	6,67	9,30
5.1	9,10	6,43	4,25	1,94	3,09	4,26	6,73	10,48

Reference conditions prescribed by UNI/TS 11300-3.

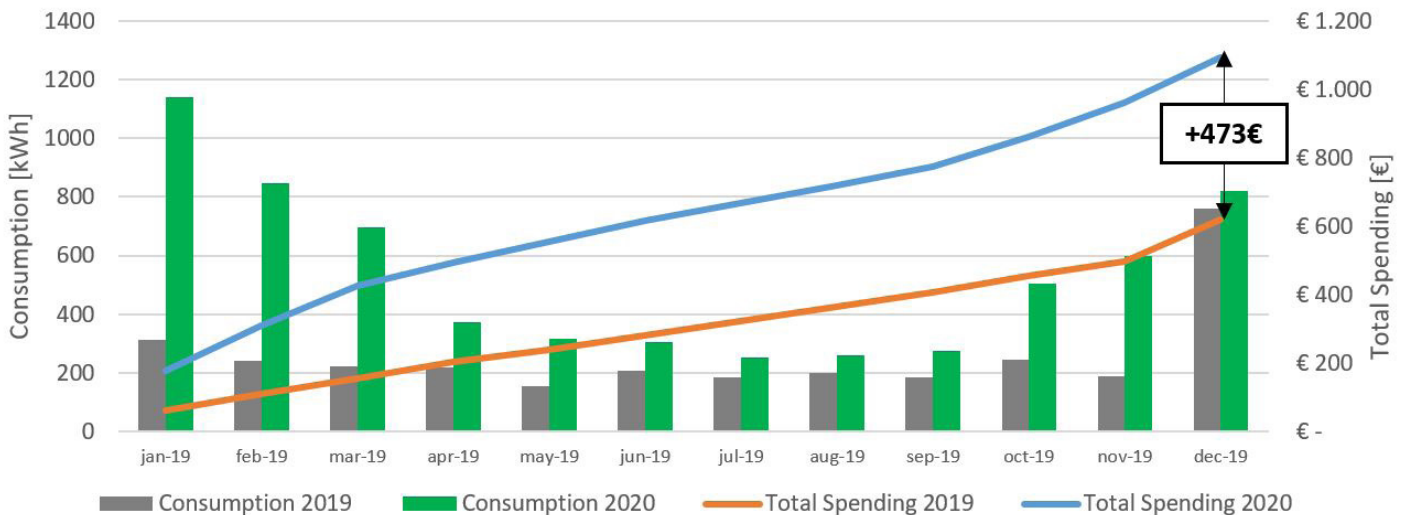
1. External air temperature B.S. 35°C Chilled water temperature at the fancoil inlet/outlet 12/7 °C.
2. External air temperature B.S. 30°C Chilled water temperature at the fancoil outlet /7 °C.
3. External air temperature B.S. 25°C Chilled water temperature at the fancoil outlet /7 °C.
4. External air temperature B.S. 20°C Chilled water temperature at the fancoil outlet /7 °C.

Compared to traditional systems, SPHERA EVO 2.0 provides numerous advantages from an economic point of view and in terms of energy. Below is a real case in a domestic system before and after replacing a gas boiler with a SPHERA EVO 2.0 solution.

Natural gas



Electricity



The graphs show the consumption and cost of natural gas and electricity for 2019 and 2020 (heat pump installed at the end of December 2019).

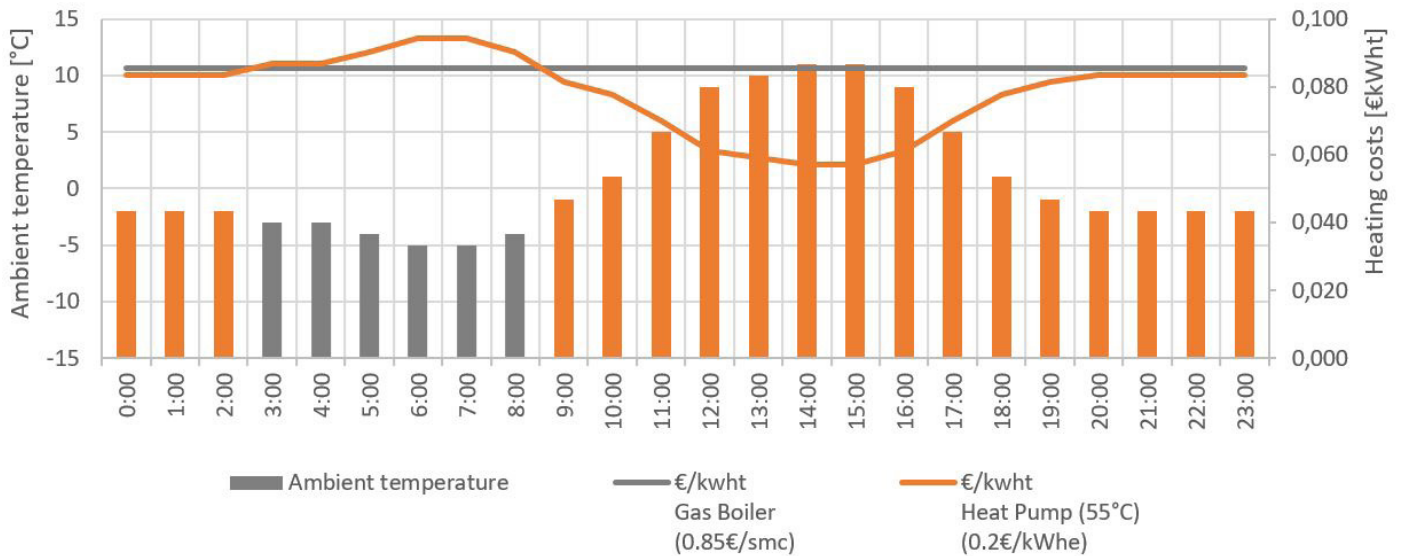
Year	Natural gas cost	Electricity cost	Total cost	Savings
2019	1092 €	620 €	1712 €	
2020	330 €	1093 €	1423 €	289 € -20%

The savings were obtained without changing any aspect of the previous system except for the heat generator. The heating terminals are radiators with an operating temperature of 55°C. The use of low temperature terminals (underfloor heating) would allow for double the amount of savings.

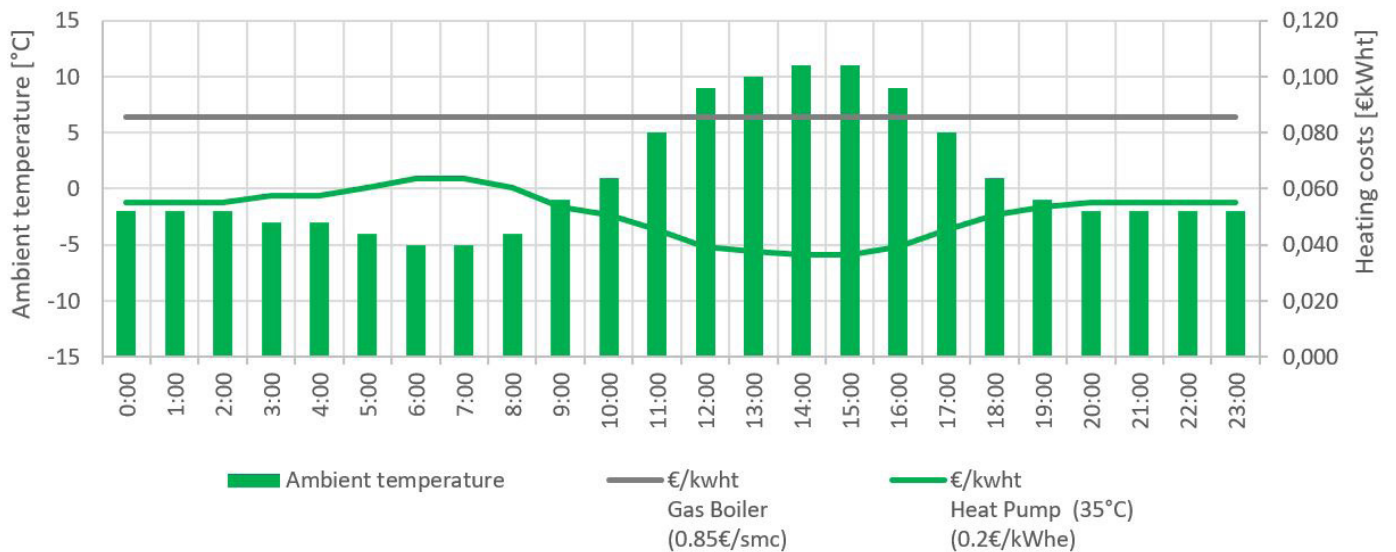
EuroSwitch Function

SPHERA EVO 2.0 provides a useful instrument for maximising savings, for hybrid systems with a gas boiler, through the EuroSwitch function. Based on the set price of natural gas and electricity, the heat pump will assign priority to its own operation rather than that of the boiler depending on its efficiency. The aim is to always use the most cost-effective heat source.

Case 1 - Typical day in January - Radiators (supply temperature = 55°C)



From 03:00am to 08:00am, heat will be produced by the boiler, while during other time slots, it will be produced by the heat pump.

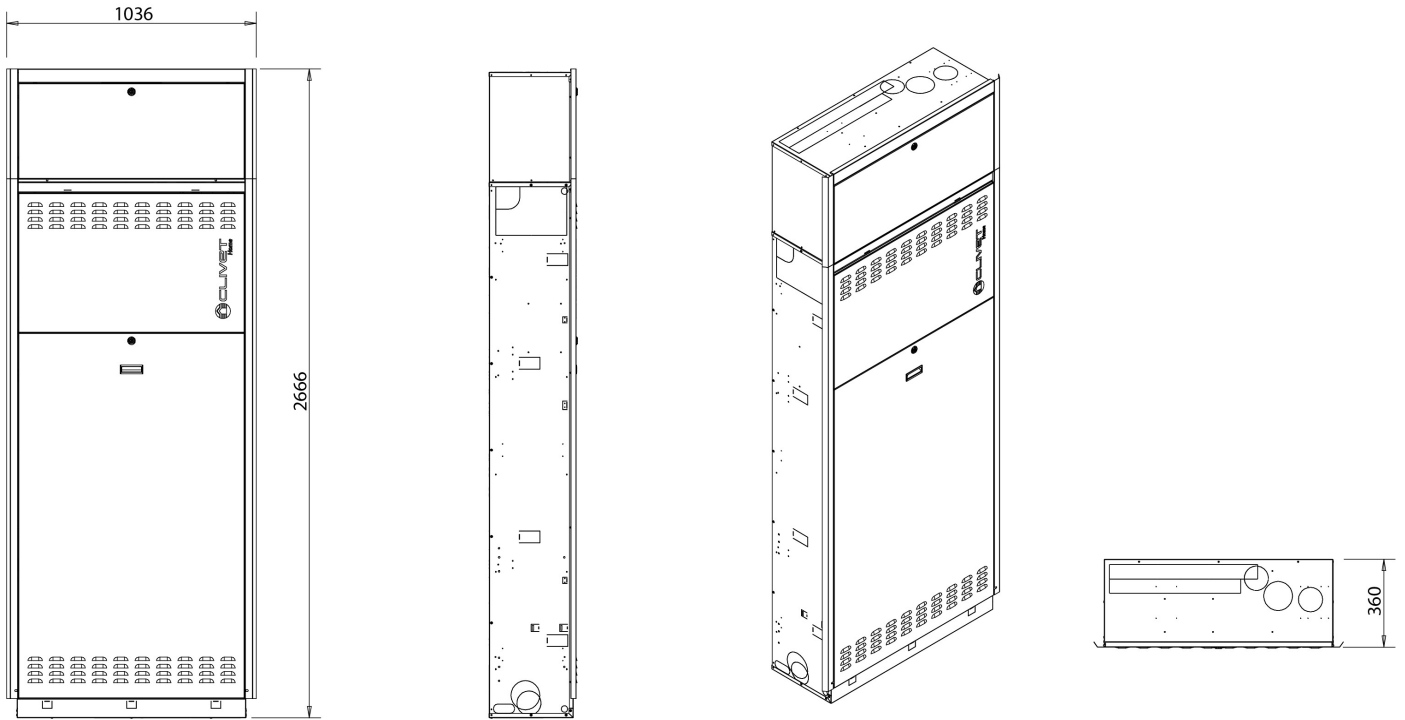


Case 2 - Typical day in January - Radiant floor (supply temperature = 35°C)

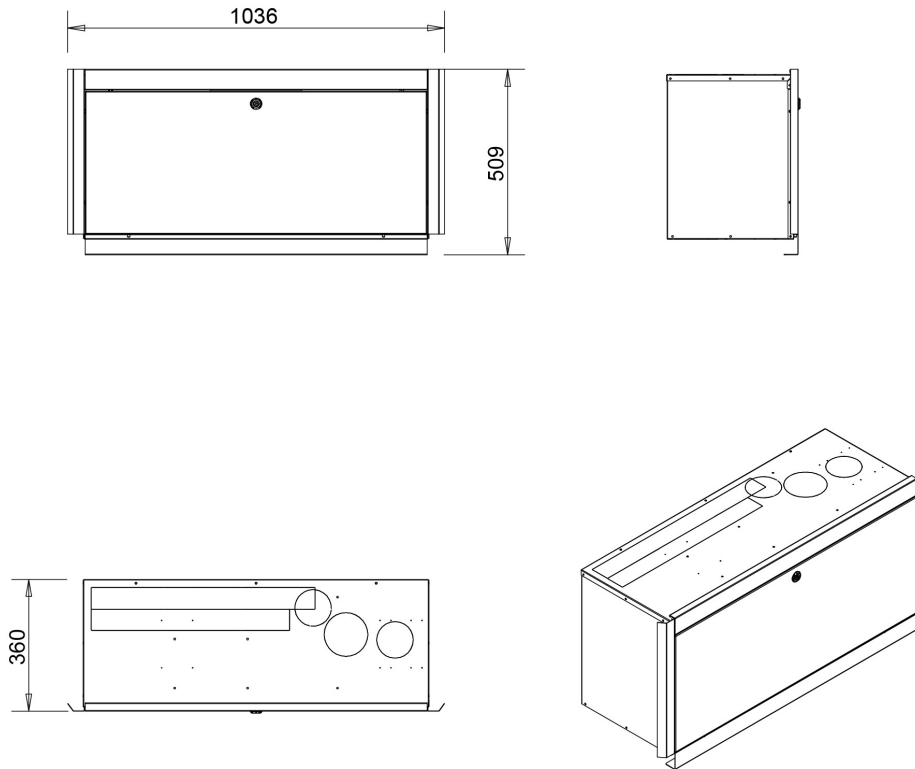
Heat will be produced by the heat pump during the whole day.

The graphs show the trend of the daily temperature and of the cost for thermal energy. The heat pump's efficiency varies according to the outdoor temperature and the water temperature, while the boiler has a fixed efficiency. The calculations consider an average cost of natural gas equal to 0.85 €/SCM and of electricity equal to 0.2 €/SCM.

ACE50X + ADI50X - 50 L external inertial storage

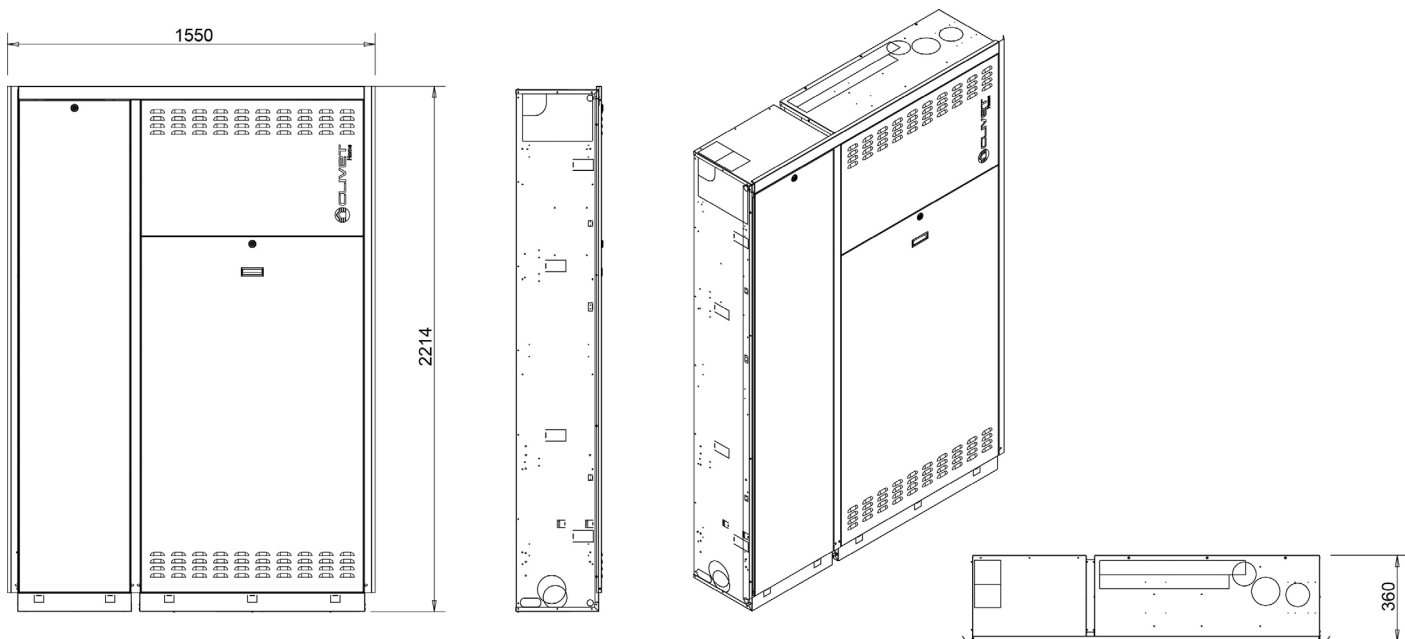


ADI50X - Built-in cabinet for external inertial storage

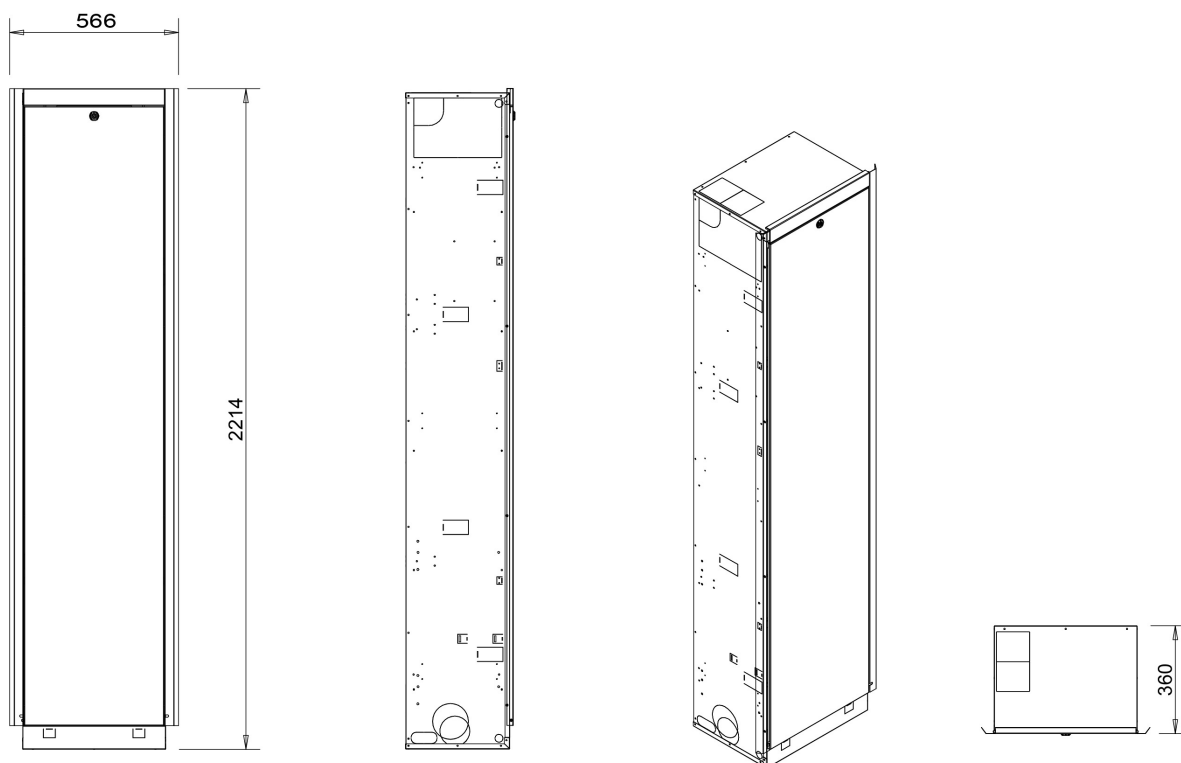


Dimensional drawings

ACSA150X + ADIAX - 150L DHW external additional storage tank

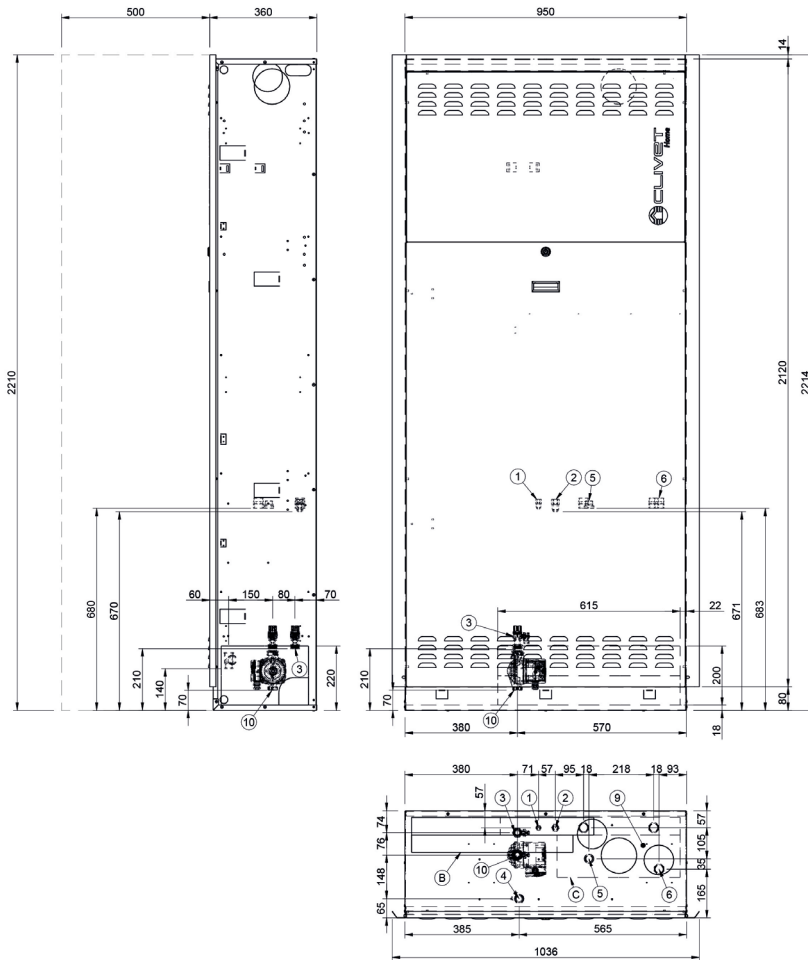


ADIAX - Built-in cabinet for additional DHW storage



SPHERA EVO 2.0 Invisible - STANDARD UNIT

DAAGN0001 REV00
DATA/DATE 13/01/2021



1. Gas connection 5/8" SAE
 2. Liquid connection 3/8" SAE
 3. Domestic hot water supply M G3/4"
 4. Aqueduct inlet M G3/4"
 5. Supply to system M G 1"
 6. Return from system M G 1"
 9. Condensate drain and safety valves
 10. DHV recirculation inlet M G3/4" G (Option)
- A - Flaps for wall fastening
B - Pre-drilled areas for pipe
C - Pre-drilled parts for coaxial exhaust pipe (Only for hybrid version)
- * Funcional espacios

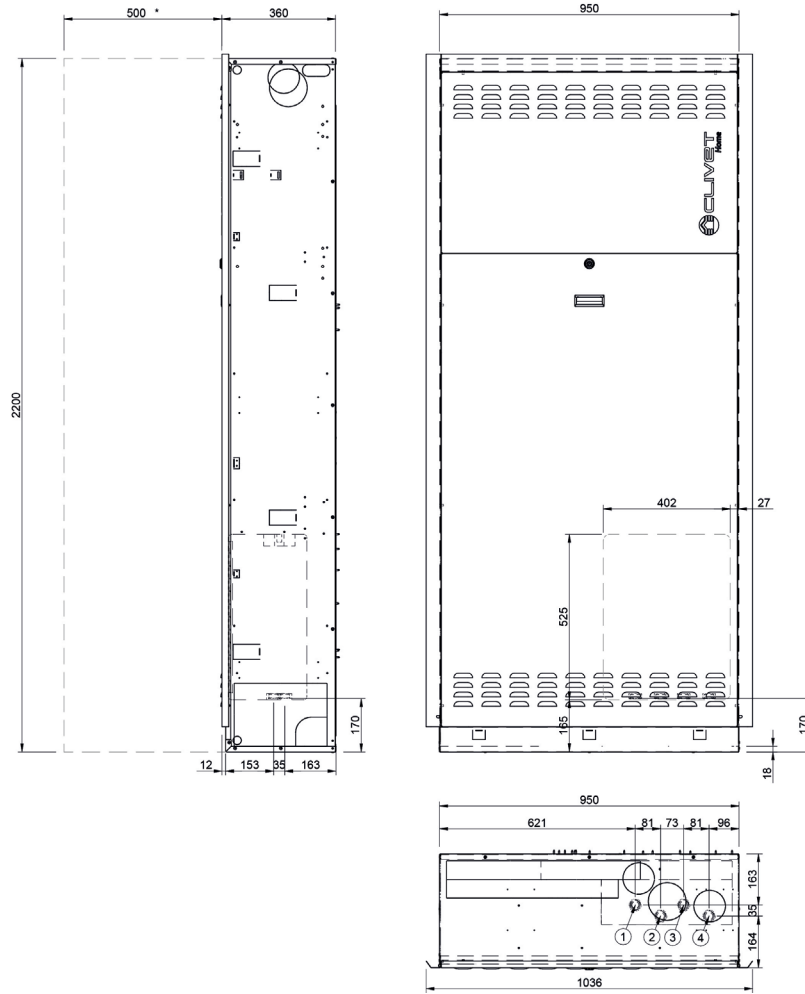
SIZE		Indoor unit STD	STD cabinet	Accumulo 150 L + Kit componenti unità STD
Operating weight	kg	47	70	205
Shipping weight	kg	55	65	55

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional drawings

SPHERA EVO 2.0 Invisible - BOOSTER KIT OPTION 2 ZONE

DAAHN0001 REV01
DATA/DATE 24/06/2020



1. Supply to system F G 1" ZONA 1
2. Return from system F G 1" ZONA 1
3. Supply to system F G 1" ZONA 2
4. Return from system F G 1" ZONA 2

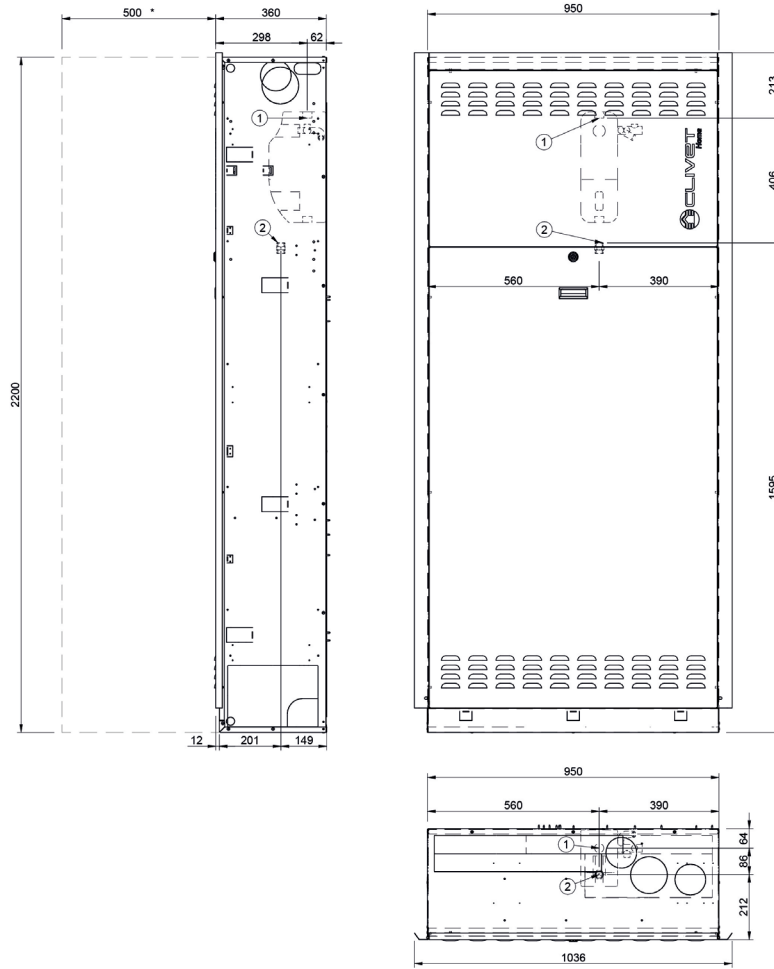
* Functional spaces

SIZE	KIR2HLX-KIR2HX	
Operating weight	kg	10
Shipping weight	kg	10

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

SPHERA EVO 2.0 Invisible - SOLAR KIT OPTION

DAAHN0001 REV01
DATA/DATE 24/06/2020



- 1. Solar plant connection inlet 3/4"
 - 2. Solar plant connection outlet 3/4"
- * Functional espaces

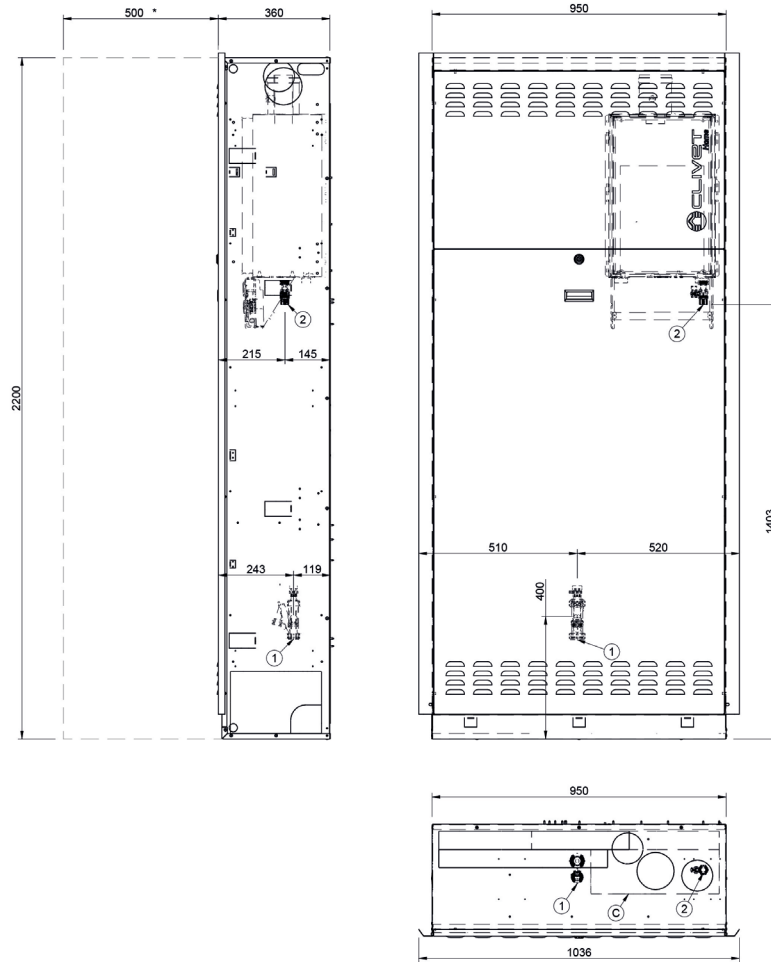
SIZE	KCVEX	
Operating weight	kg	8
Shipping weight	kg	8

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional drawings

SPHERA EVO 2.0 Invisible - BOILER KIT OPTION

DAAHN0001 REV01
DATA/DATE 24/06/2020



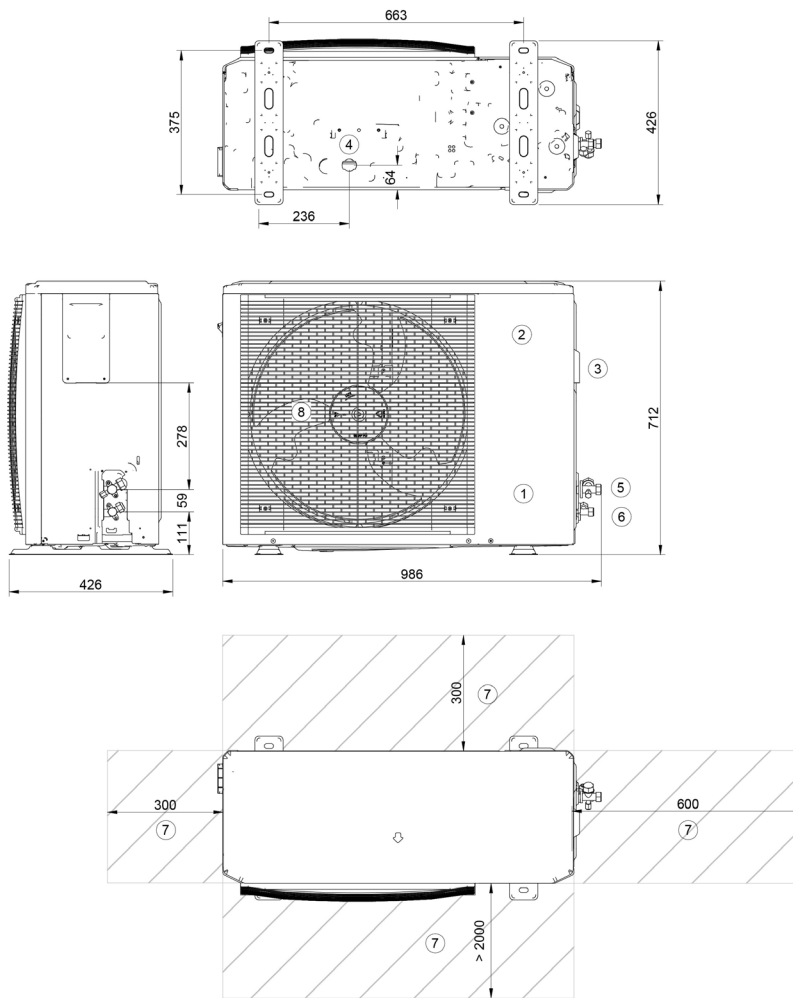
- 1. Gas boiler condensate drain
 - 2. Gas boiler fuel inlet M 3/4"
 - C - Pre-drilled parts for coaxial exhaust pipe \varnothing 100/60mm (Only for Hybrid version)
- * Functional espaces

SIZE		CCGIX
Operating weight	kg	40
Shipping weight	kg	40

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

SPHERA EVO 2.0 Invisible - (outdoor unit) 2.1 - 3.1

DAAQ80002_REV00
DATA/DATE 29/04/2021



1. Compressor enclosure
2. Electrical panel
3. Power input
4. Condensate drain
5. Gas connections (5/8")
6. Gas connections (3/8")
7. Functional spaces
8. Electric fan

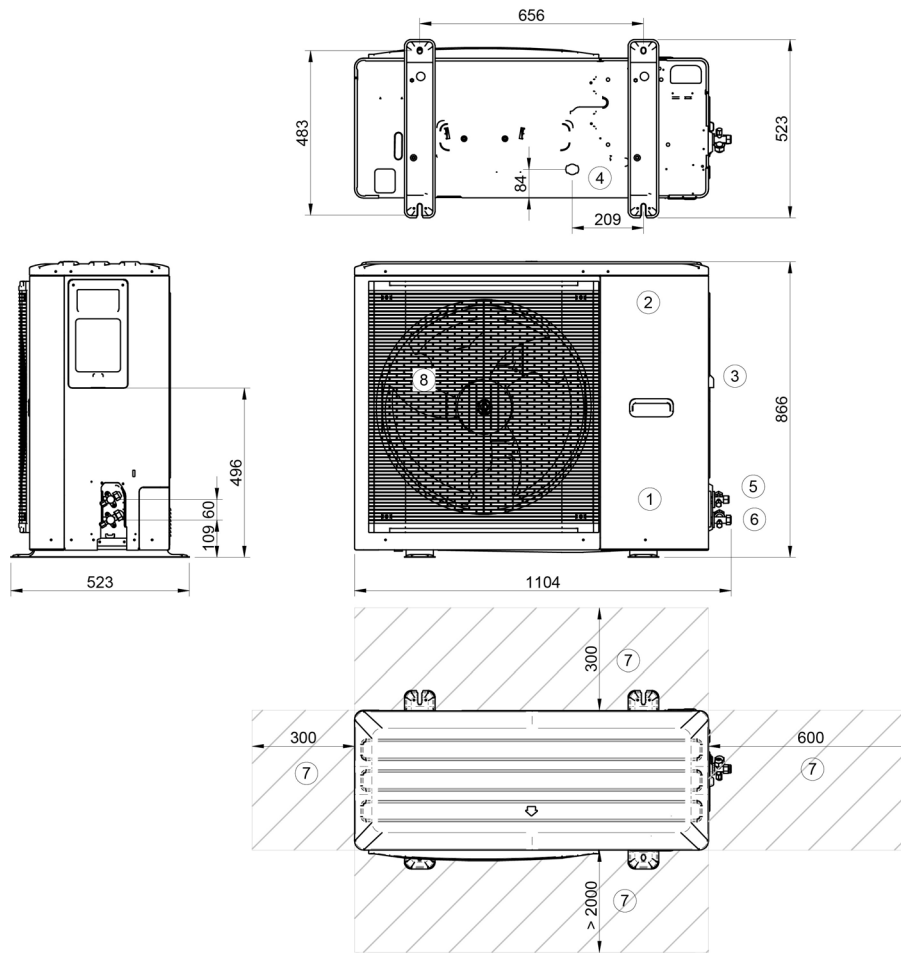
SIZE		2.1	3.1
Operating weight	kg	57	57
Shipping weight	kg	68	68

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional drawings

SPHERA EVO 2.0 Invisible - (outdoor unit) 4.1 - 5.1

DAAQ80001_REV01
DATA/DATE 29/01/2021



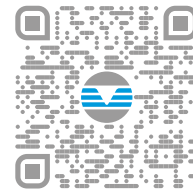
1. Compressor enclosure
2. Electrical panel
3. Power input
4. Condensate drain
5. Gas connections (5/8")
6. Gas connections (3/8")
7. Functional spaces
8. Electric fan

SIZE		4.1	5.1
Operating weight	kg	67	67
Shipping weight	kg	79	79

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

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SPHERA EVO 2.0 Invisible - BT21F060GB-03