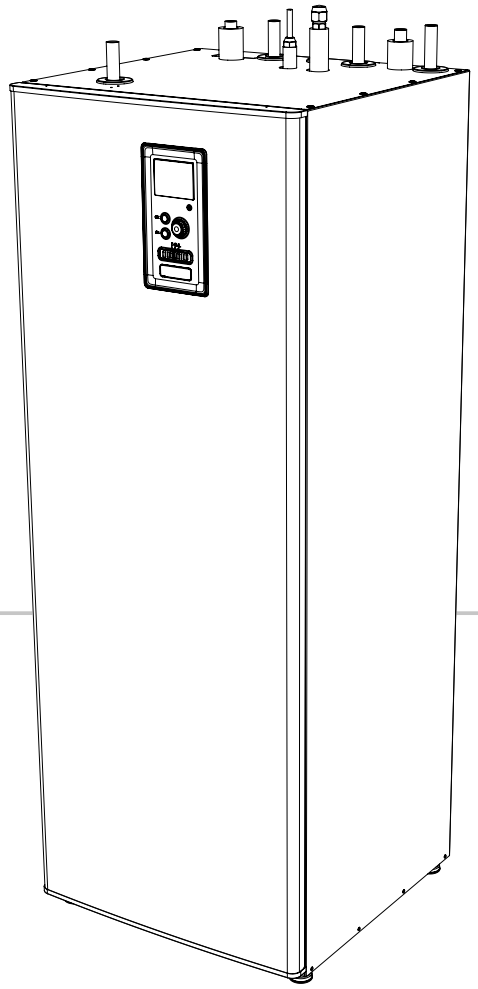


Installation and operating manual

SHK 200S
SHK 200S-6

Indoor unit Cooperating with air heat pumps

EKSPERTER I VARME OG VARMT VAND

METRO THERM

30147

List of contents

1 Important information

Information regarding safety

This manual contains installation and maintenance procedures for specialists.

The device can be operated by childred aged over 8 and persons with physical, sensoric, or mental disabilities, and without any experience or knowledge about its operation, if supervised or trained in safe operation, and if they understand the risks related to its operation. The device must not serve as a toy for children. Activities related to cleaning and basic maintenance must not be performed by unsupervised children.

Rights to implement design changes are reserved.

Symbols

IMPORTANT
This symbol informs about the risk to the device or a person

ADVICE
This symbol shall mean tips to make product operation easier.

CAUTION
This symbol points to important information to be noted when operating the device easier.

Marking

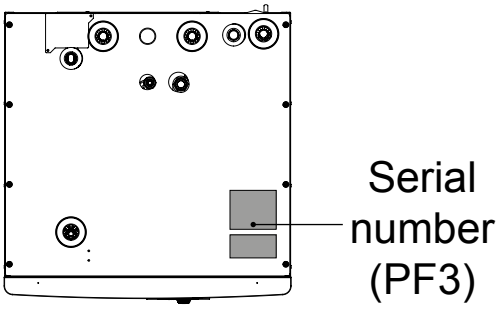
SHK 200S / SHK 200S-6 features the CE mark and water protection IP21.

The CE mark confi rms that METROTHERM has taken care for product conformity with applicable regulations of relevant EU Directives. The CE is required for most products sold in the EU, regardless of their place of manufacture.

IP21 means that items with the diameter greater or equal to 12.5 mm cannot access inside causing damage, and that the product has been secured against vertically falling water drops.

Serial number

The serial number is located at the bottom of the rating plate, on the top cover SHK 200S / SHK 200S-6 and consists of 14 digits.



Waste disposal

Disposal of the packaging shall be the responsibility of the installation technician installing the product, or a special waste management facility.

Do not dispose of decommissioned products together with regular household wastes. Hand them over to a specialist facility dealing with waste disposal or salesperson offering such services.

Incorrect disposal of the product by the user is subject to administrative penalties under applicable regulations.

Installation acceptance

The heating system must be accepted before start-up. Acceptance must be done by a person with appropriate qualifications. Complete the card in the operating manual by entering the installation data.

CHECKLIST

	Description	Notes	Signature	Date
Heating medium				
	Installation rinsing			
	Installation venting			
	Diaphragm expansion vessel			
	Particulate filter			
	Safety valve			
	Cut-off valves			
	Pressure in the heating system			
	Connection according to the drawing			
Hot water				
	Cut-off valves			
	Mixing valve			
	Safety valve			
Power supply				
	Communication connection			
	Circuit fuses			
	Fuses, internal module			
	Building fuses			
	Temperature sensor outdoor			
	Room sensor			
	Energy meter			
	Emergency switch			
	Switch differential			
	Thermostat emergency mode setting			
Miscellaneous				
	Connected to			

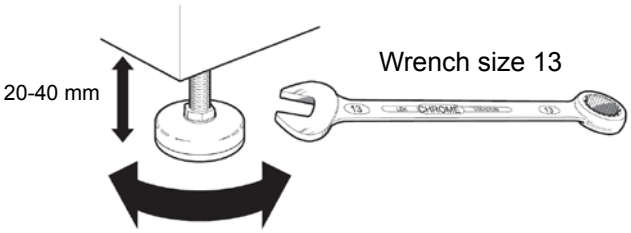
2 Supply and operation

Transport

SHK 200S / SHK 200S-6 heat pump must be transported and stored vertically in a dry place. SHK 200S / SHK 200S-6 can be, however, carefully placed on the rear side of the casing when carrying the device into the building.

Assembly

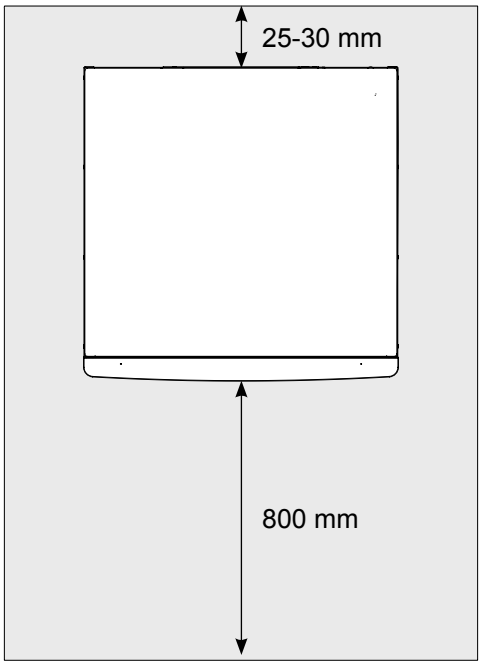
- SHK 200S / SHK 200S-6 must be set on a solid waterproof base that would keep the weight of the indoor unit. The regulated legs of the heat pump allow for levelling and stable setting of the device.



- Because SHK 200S / SHK 200S-6 is equipped with condensate drain, indoor unit installation site must be furnished with a fl oor drain with a discharge to the sewer system.

Installation site

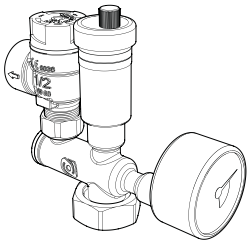
Leave 800 mm free space at the front of the heat pump. All maintenance works on SHK 200S / SHK 200S-6 can be done from the front.



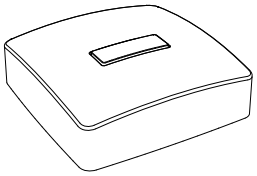
IMPORTANT
When using an additional heat source, leave behind the device the space necessary for non trouble free connections and subsequent maintenance.

Included items

- Safety group (1 pc.)
- Outdoor / indoor temperature sensor (1 pc.)
- Instalation and user manual



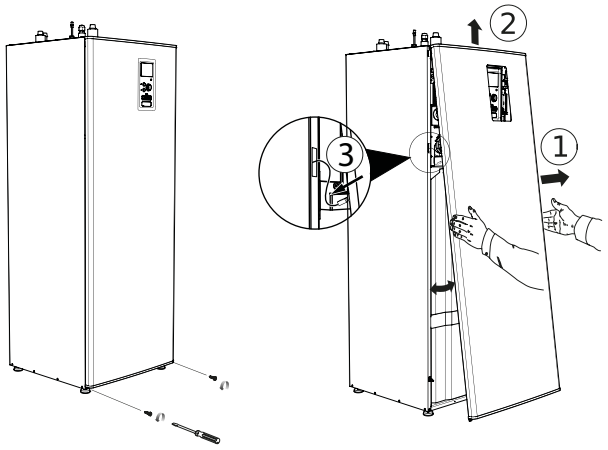
Safety group with safety valve (3 bar), pressure gauge and automatic air vent (1 pc.)



Temperature sensor Outdoor / indoor (2 pcs) Connection p.27

IMPORTANT
The opening pressure of the safety valve is 3 bar.

Removal of the covers

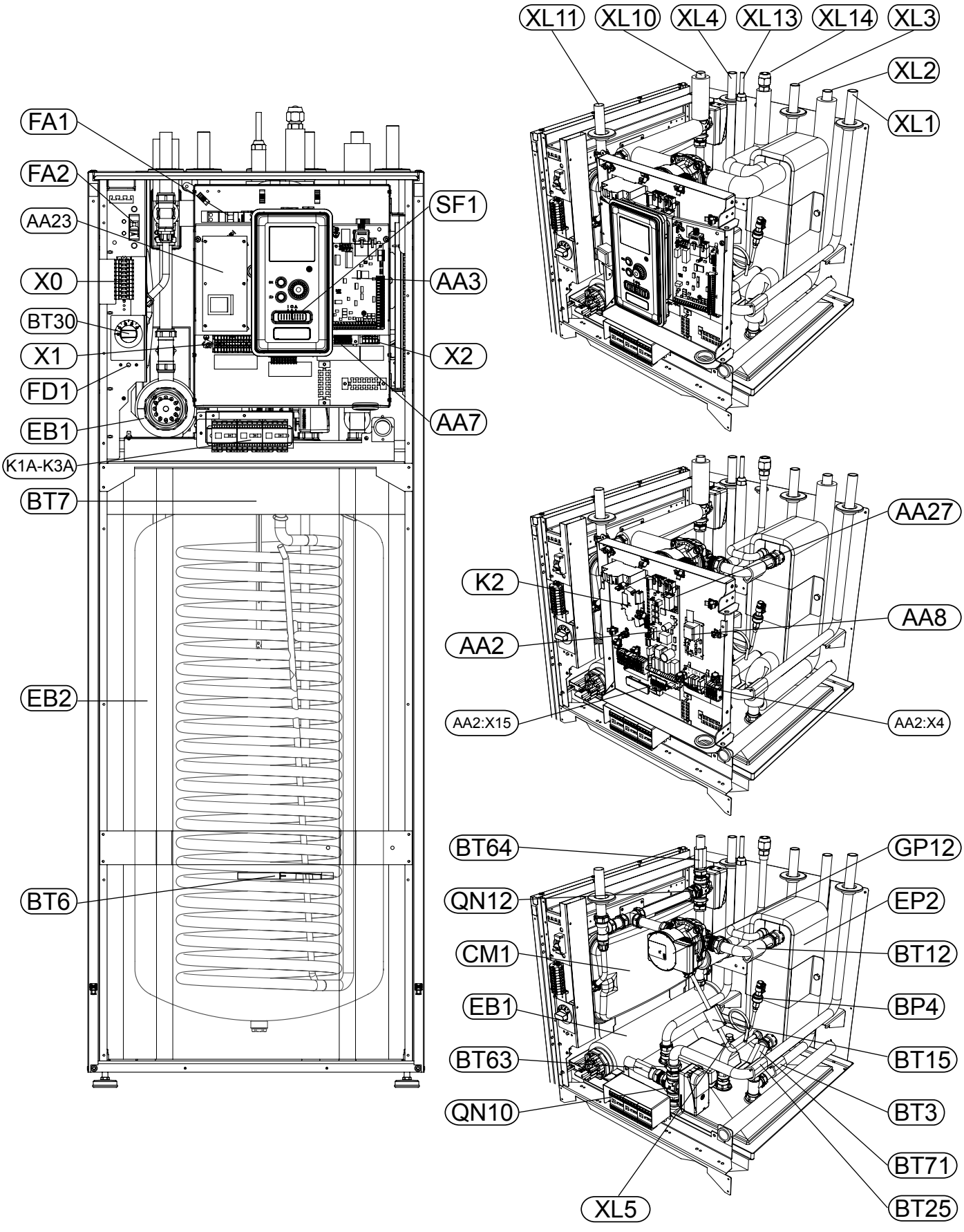


1. Remove screws at the bottom edge of the front cover.
2. Open the cover at the lower edge, taking care to not damage the connecting cables, and then remove the front cover by lifting it up.
3. Disconnect the cable connecting the front cover to the unit.

The side covers and rear wall of the housing are permanently attached, therefore it is not possible to dismantle them.

3 Indoor module structure

SHK 200S / SHK 200S-6



LEGEND

Pipe connections

XL1	Connection, heating medium, supply
XL2	Connection, heating medium, return
XL3	Connection, cold water
XL4	Connection, hot water
XL5	Connection, hot water circulation
XL10	Connection, cooling
XL11	Connection, safety group,manometer
XL13	Connection, liquid cooling medium
XL14	Connection, gas cooling medium

HVAC elements

CM1	Diaphragm expansion vessel, closed
QN10	Isolation valve, domestic hot water / central heating
QN12	Isolation valve, cooling/heating
GP12	Circulation pump
EP2	Heat exchanger

Czujniki

BP4	Pressure sensor, high pressure
BT3	Temperature sensor, heating medium return
BT6	Temperature sensor, hot water loading
BT7	Temperature sensor, top of the hot water heater
BT12	Temperature sensor, condenser outlet
BT15	Temperature sensor, liquid
BT25	Temperature sensor, heating medium supply
BT63	Temperature sensor, heating medium supply downstream the submersible heater
BT64	Temperature sensor, cooling medium supply
BT71	Temperature sensor, heating medium return

Electrical elements

X0	High voltage terminal block 400V~/230V~
X1	Low voltage terminal block 230V~
X2	Low voltage terminal block 230V~
AA2:X4	Low voltage terminal block
AA2:X15	Low voltage terminal block
K1A-K3A	Submersible heater switch
K2	Alarm relay
BT30	Thermostat - emergency mode
AA2	Main card
AA3	Sensor card
AA23	Communication card
AA7	Relay card
AA8	Titanium anode card
AA27	Relay card
FD1	Temperature limiter
FA1	Circuit breaker (to internal module)
FA2	Circuit breaker (AMS outdoor unit)
EB1	Submersible heater

Other

EB15	SHK 200S / SHK 200S-6
SF1	Controller switch
PF3	Serial number
EB2	Domestic hot water tank

4 Pipe connections

General pipe connections

Pipe installation must be carried out in accordance with current norms and directives.

The pipe dimension should not be less than the recommended pipe diameter according to the table below. However, each system must be dimensioned individually to achieve the recommended system flows.

MINIMUM SYSTEM FLOWS

The installation must be dimensioned at least to manage the minimum defrosting flow at 100% pump operation, see table.

Air/water heat pump	Minimum flow during defrosting (100% pump speed (l/s)	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
SHK 200S-6 / L6	0,19	20	22
SHK 200S / L8	0,19	20	22
SHK 200S / L12	0,29	20	22

IMPORTANT
An undersized system can result in damage to the machine and lead to malfunctions.

The system can cooperate with a low- and medium temperature heating system. Recommended temperature of the heating medium at minimum designed outdoor temperature DOT must not exceed 55°C on supply, and 45 °C on return circuit from the heating system, whereas HK 200S / HK 200S-6 can achieve even 65 °C when using a flow-through heating module or another peak heat source.

Excess medium flowing out of the safety valve must be discharged via a pipe to a floor drain. The overflow pipe must be slanted at the entire length from the safety valve, and must be secured against freezing. In order to achieve maximum system efficiency, we recommend the installation of HK 200S / HK 200S-6 as close to the heat pump as possible.
The HK 200S / HK 200S-6 module is not equipped with cut-off valves, which must be installed outside the indoor module to make future maintenance easier.

The HK 200S / HK 200S-6 module can be connected to the central heating, cooling, and domestic hot water installation. Install the supplied safety valve and the manometer.

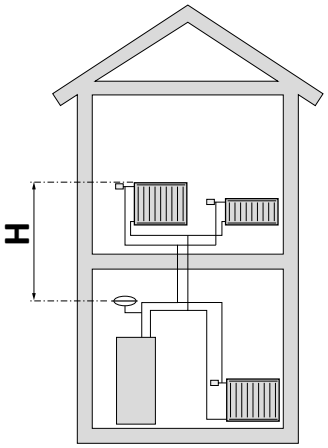
IMPORTANT
All connections require free flow, hence a discharge valve must be installed.

IMPORTANT
Any high points in the climate system, must be equipped with air vents.

IMPORTANT
The pipe systems need to be flushed out before the indoor module is connected so that any debris cannot damage component parts.

IMPORTANT
As long as heating circuits in the system have not been filled with the heating medium, do not set the switch (SF1) in the controller in position “I” or “⚠”. The compressor in the heat pump and the flow-through heating module can be damaged.

Expansion vessel



SHK 200S / SHK 200S-6 is equipped with a pressure expansion vessel of 10 litres. The pre-pressure of the pressure expansion vessel must be dimensioned according to the maximum height (H) between the vessel and the highest positioned radiator, see figure. A pre-pressure of 0.5 bar (5 mvp) means a maximum permitted height difference of 5 m. The maximum system volume excluding the boiler is 220 litres at the above pre-pressure.

Volume expansion

Approx. 10 l/kW is required for connection to the heat pump, and many heating systems do not have this volume. To prevent operational problems, the volume is then expanded using a UKV buffer vessel.

IMPORTANT
In order to achieve undisturbed flow of the heating system, use a hydraulic coupling or open heating loops. Remember to always keep the minimum required flow in the installation - see the section "Minimal flow in the installation".

CAUTION
The diaphragm expansion vessel at the domestic hot water installation is not required. It is, however, required to install a safety valve with opening pressure of 3 bar.

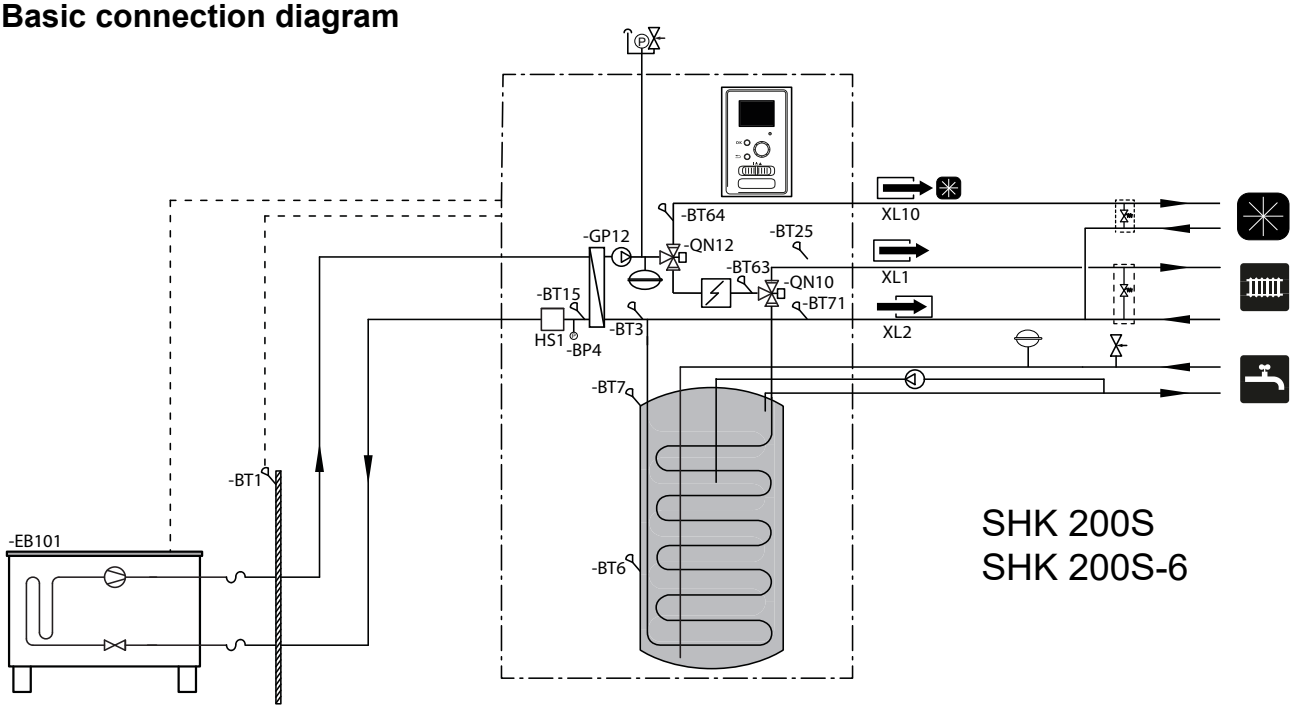
Minimum volume of the heating system

METROAIR L	6	8	12
Minimum volume of the heating system during heating / cooling	50l	80l	100l

Installation diagram

The SHK 200S / SHK 200S-6 indoor unit is equipped with a coil water heater, diaphragm expansion vessel, safety group, electric heating module (heater), isolation valves, plate heat exchanger, metering instruments, and an electronic circulation pump. Together with the outdoor unit of air heat pump METROTHERM L SPLIT), forms a complete heating system.
The METROAIR L outdoor unit provides heat for heating the domestic hot water and supplying the heating system while using free energy in the outdoor air, efficiently operating within the range of low temperatures up to -20°C.
The connection of the outdoor unit and indoor unit SHK 200S / SHK 200S-6, with a system of pipes filled with a cooling medium secures the connection against freezing in the event of any power outages. The control of system operation is the function of controller module.

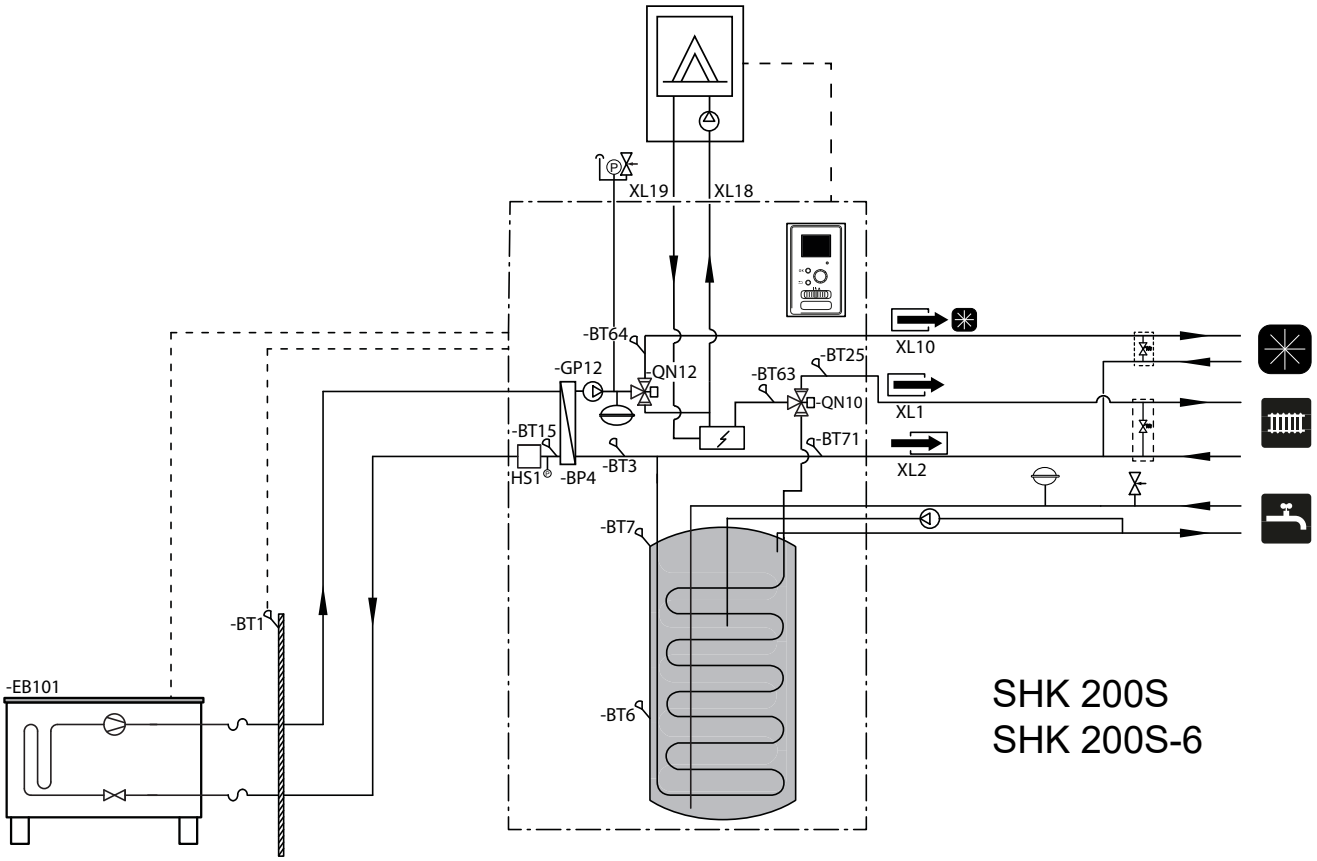
Basic connection diagram



Symbol	Description
	Cut-off valve
	Non-return valve
	Three-way valve
	Safety valve
	Temperature sensor
	Diaphragm expansion vessel
P	Manometer
	Vent
	Circulation pump
	Electric module

Symbol	Description
	Particulate filter
	Compressor
	Heat exchanger
	Cooling
	Central heating systems
	Domestic hot water
	Relief valve
	Additional heat source

Scheme with the connection of an additional heat source



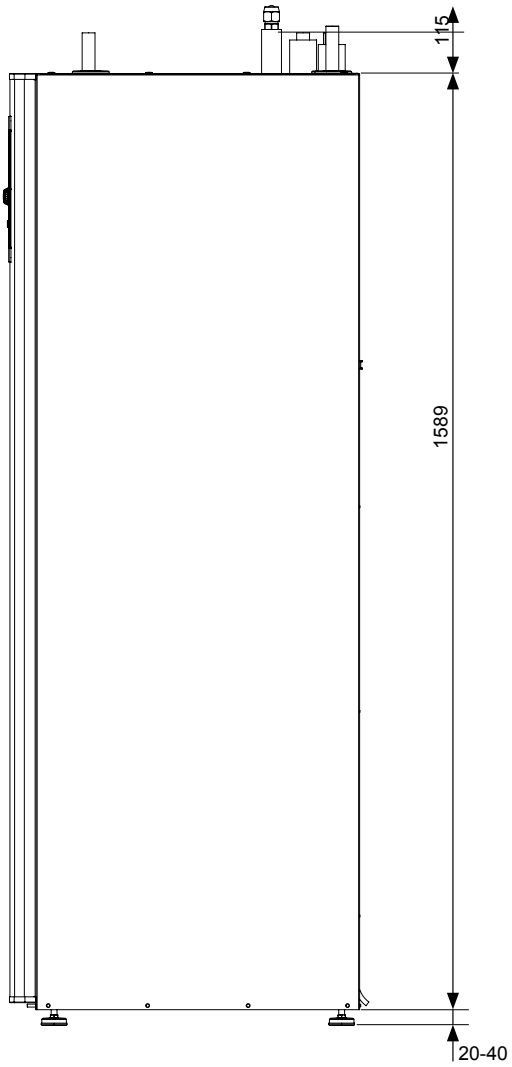
Indoor SHK 200S / SHK 200S-6 module

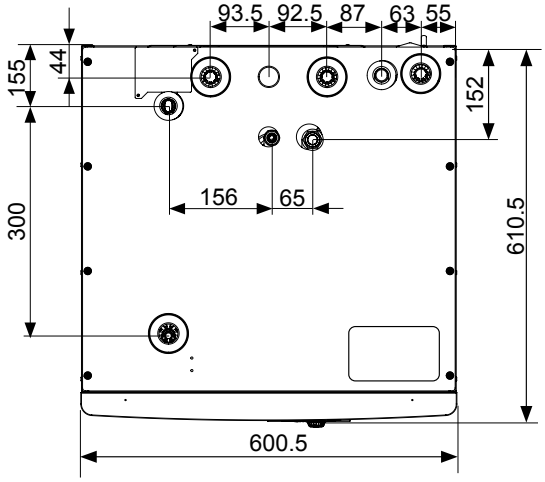
- It is recommended that the SHK 200S / SHK 200S-6 module should be installed in a room with a floor drain, at best in a utility room or a boiler house.
- The floor must be solid, concrete at best.
- The SHK 200S / SHK 200S-6 module must be set with its back to the outer wall, at best in a room where noise is not a problem. If possible, do not place the device near a wall of a bedroom or another room where noise might be a problem.
- The device can be leveled using regulated legs.
- Pipes must be led in such a way that they are not adjacent to the bedroom or living room.
- Remember to leave about 800 mm free space at the front and 220 mm over the device to provide for future maintenance.

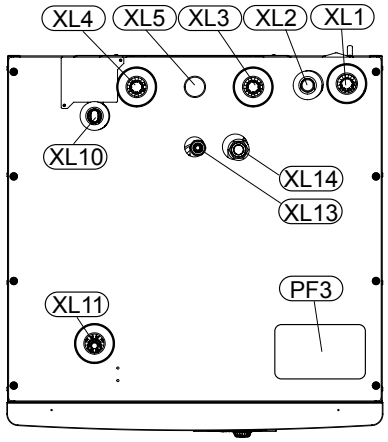
Recommended order of assembly

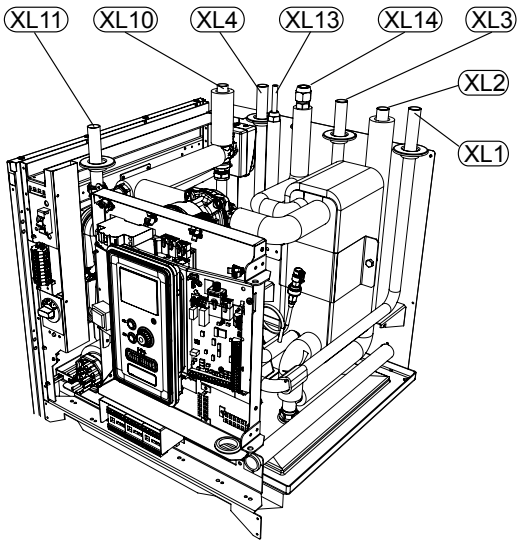
1. Connect SHK 200S / SHK 200S-6 module to the heating system, cold, and hot water pipelines.
2. Install the cooling medium pipes.
3. Connect the outdoor temperature sensor, and cables between SHK 200S / SHK 200S-6 and METROAIR L.
4. Connect power supply to module SHK 200S / SHK 200S-6.
5. Proceed according to start-up instructions in chapter Start-up and regulation.

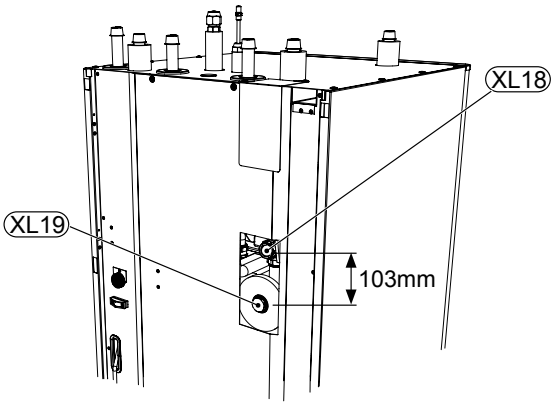
Pipe connections











Pipe connections

XL1	Connection, Heating medium supply Ø22 mm
XL2	Connection, Heating medium return Ø22 mm
XL3	Connection, cold water Ø22 mm
XL4	Connection, hot water Ø22 mm
XL5	Connection, circulation Ø15 mm
XL10	Connection, cooling Ø22 mm
XL11	Connection, safety group Ø22 mm, manometer
XL13	Liquid cooling medium Connection ¼" (SHK 200S-6) Connection ⅜" (SHK 200S)
XL14	Gas cooling medium Connection ½" (SHK 200S-6) Connection ⅝" (SHK 200S)
XL 18	Connection, return to an additional heat source Ø22 mm
XL 19	Connection, supply from additional heat source Ø22 mm

Other information

PF3	Serial number plate

Connection options

Compatible heat pumps air/water by METROTHERM with unit SHK 200S / SHK 200S-6

Indoor SHK 200S units can cooperate with external units of Split type. Compatible heat pumps METROTHERM SPLIT include:

Symbol	Application
L6	SHK 200S-6
L8	SHK 200S
L12	

More information about METROTHERM SPLIT to be found at
www.METROTHERM.dk and in relevant installation manuals for accessories used.

Chapter Accessories can serve to check the list of accessories to be used with SHK 200S / SHK 200S-6.

Connecting the heating system

Pipe connections of the heating system are to be made at the top.

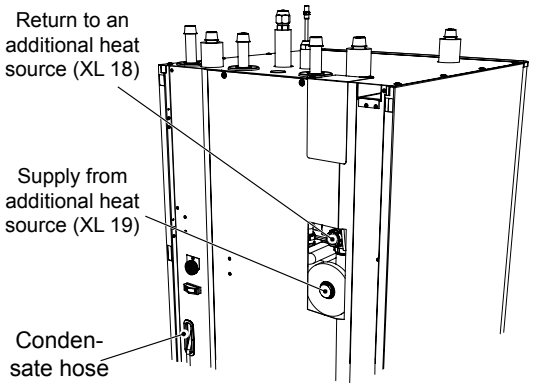
- All the required protections and cut-off valves must be installed as close to the SHK 200S / SHK 200S-6 module as possible.
- Where necessary, install the vents.
- Safety valve with a nanometer at the central heating circuit and the safety valve at the hot water system must be installed on relevant conductors XL 11 and XL 4. In order to prevent air sockets, the overflow pipe must be slanted at the entire length from the safety valve, and must be secured against freezing.
- When connecting to the installation where all heaters have been equipped with thermostat valves, install a discharge valve or remove several thermostats to assure appropriate flow.

IMPORTANT
The term “heating system”, as used in this installation and operation manual, shall mean the heating or cooling system supplied with a hot or cold medium from the SHK 200S / SHK 200S-6 module for heating or cooling purposes.

CAUTION
Suitable safety valve must be installed directly on the cold water supply line to the hot water tank. Safety valve will protect against excessive increase of pressure.

Connection of the external heat source

An external heat source, eg a gas or oil boiler, can be connected to the back of the SHK 200S / SHK 200S-6, removing the access block to the connection sockets (picture below). Scheme on page 11.



Condensate elimination

The SHK 200S / SHK 200S-6 pmodule is equipped with a condensate hose in the heat exchanger section. The hose drains all condensate away from the device to minimize the risk of damage. If necessary, the hose can be extended.

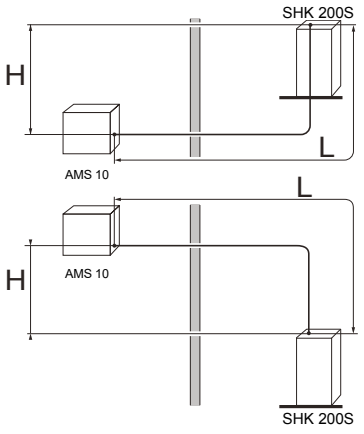
Connecting refrigerant pipes (not supplied)

Refrigerant pipes must be installed between the external module METROAIR L and SHK 200S / SHK 200S-6 . The installation must be executed according to the applicable standards and directives.

CAUTION
The outdoor unit, factory-filled with refrigerant, enables the use of refrigerant pipes (dimension L) between the outdoor unit and the indoor unit measured with a length of L = 15m. The maximum permissible length of the refrigerant pipes can be 30m, but this requires topping up the installation with a refrigerant.

Limitations

- Maximum pipe length, L6, L8, L12 is L=30 m.
- Maximum height difference (H): ±7 m.



Pipe dimensions and materials

SHK 200S

SHK 200S	Gas pipe	Liquid pipe
Pipe replacement	Ø15,88 mm (5/8”)	Ø9,52 mm (3/8”)
Connection	Connection – (5/8")	Connection – (3/8”)
Material	Quality of copper SS-EN 12735-1 or C1220T, JIS H3300	
Minimum material thickness	1,0 mm	0,8 mm

SHK 200S-6

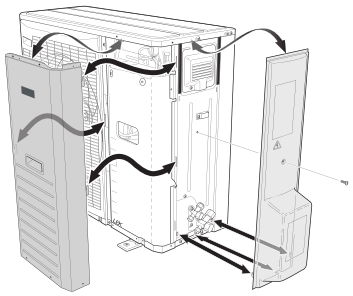
SHK 200S-6	Gas pipe	Liquid pipe
Pipe replacement	Ø12,7 mm (1/2”)	Ø6,35 mm (1/4”)
Connection	Connection – (1/2")	Connection – (1/4”)
Material	Quality of copper SS-EN 12735-1 or C1220T, JIS H3300	
Minimum material thickness	1,0 mm	0,8 mm

Pipe connection

- Execute the pipe installation with the maintenance valves (QM35, QM36) closed.

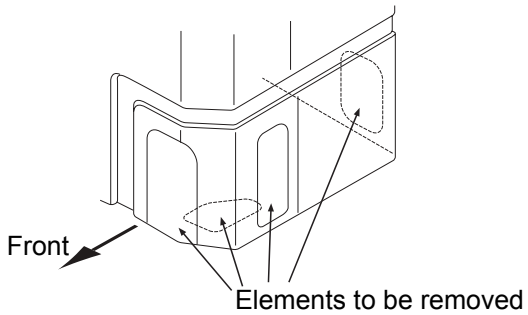
METROAIR L6 / METROAIR L8

- Remove the side panel on METROAIR L during the installation to make access easier.



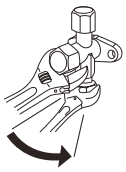
METROAIR L12

- Remove the “to be removed” part from the external panel at the METROAIR L mode where pipes are to be led. The drawing below presents exemplary pipe outlets.



- Make sure that no water or dirt can permeate to the pipes. **Contamination of the pipes may damage the heat pump.**
- Bend pipes with maximum bending radius (at least R100~R150). Do not bend pipes many times. Use a bending machine.
- Connect the socket connection and tighten with appropriate torque. Apply the appropriate tightening angle if the torque wrench is not available.

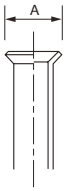
External diameter, copper pipe (mm)	Torque (Nm)	Tightening angle (°)	Recommended tool length (mm)
Ø6,35	14~18	45~60	100
Ø 9,52	34~42	30~45	200
Ø12,7	49~61	30~45	250
Ø 15,88	68~82	15~20	300



IMPORTANT
When soldering, apply the shielding gas.

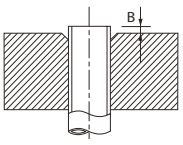
Socket connections

Extension:



External diameter, copper pipe	A (mm)
Ø 6,35	9,1
Ø 9,52	13,2
Ø 12,7	16,6
Ø 15,88	19,7

Shift:



External diameter, copper pipe (mm)	B, using R410A (mm)	B, using a conventional tool (mm)
Ø 9,52	0,0~0,5	0,7~1,3
Ø 15,88		
Ø 6,35		1,0~1,5
Ø 12,7		

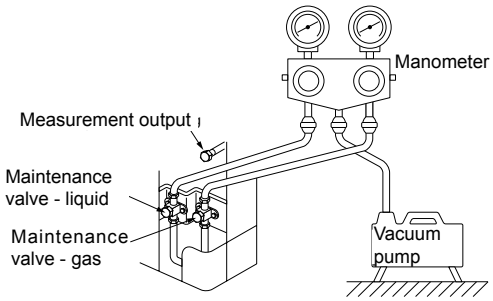
Pressure test and leakage test

Both SHK 200S / SHK 200S-6 and METROAIR L are factory-tested for pressure and leakage, but pipe connections between the devices must be checked when the installation has been completed.

IMPORTANT
Pipe connections between devices must undergo a pressure test and leakage test after completing the installation process, according to applicable regulations. Use nitrogen only for system compression and rinsing.

Vacuum pump

Use a vacuum pump to remove all air. Turn on extraction for at least one hour. Final pressure, after emptying, must total 1 mbar (100 Pa, 0.75 Tr or 750 microns) of absolute pressure. If the system is still moist or is leaking, negative pressure will grow after the end of emptying.



ADVICE
In order to achieve a better final effect and to accelerate emptying, follow the following sections.
- Pipelines should have the largest diameter possible, and be as short as possible.
- Empty the system to 4 mbar and fill it with dry nitrogen to atmospheric pressure to end emptying.

Filling the system with a cooling medium

METROAIR L is supplied together with a cooling medium for cooling medium of max. length of 15 m. If the length of the cooling medium pipes exceeds 15 m, supplement the cooling medium in the volume of 0.06 kg/m for SHK 200S and 0,02 kg/m for SHK 200S-6.

CAUTION
The maximum permissible length of the refrigerant pipes can be 30m, but this requires topping up the installation with a refrigerant after exceeding 15m.

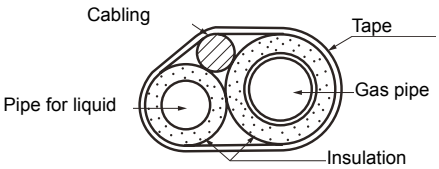
IMPORTANT
In the case of systems with cooling medium pipes with the length of up to 15 m, the supplied volume of the cooling medium is sufficient.

When executing pipe connections, pressure tests, leakage tests and vacuum tests, maintenance valves (QM35, QM36) must be closed. To fill the pipes and SHK 200S-6 / SHK 200S with a refrigerant medium maintenance valves should be opened again.

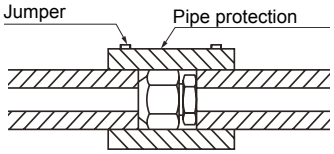
Insulation of cooling medium pipes

- Cooling medium (both gas and liquid) pipes must be insulated to provide thermal insulation and prevent condensation.
- Apply insulation that can sustain at least 120°C.

Principle:



Connections:



CAUTION
All connections and work related to the refrigeration system must be made by a person with appropriate authorizations and certificates.

Connections

METROTHERM SPLIT can be connected in many various ways.
More information on connections to be found at web-site www.METROTHERM.dk.

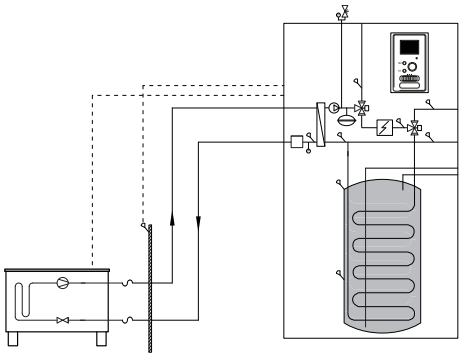
	L6	L8	L12
Max pressure, climate system	0,3 MPa (3 Bar)		
Highest recommended supply/return temperature at dimensioned outdoor temperature	55/45 °C		
Max temperature in SHK 200S / SHK 200S-6	+65 °C		
Max flow line temperature with compressor	+58 °C		
Min supply temperature cooling	+7 °C		
Max supply temp. cooling	+25 °C		
Min volume, climate system during heating, cooling*	50 l	80 l	100 l
Min volume, climate system during under floor cooling*	80 l		100 l
Max flow, climate system	0,38 l/s		0,57 l/s
Min flow, climate system, 100% circulation pump speed (defrosting flow)	0,19 l/s		0,29 l/s
Min flow, heating system	0,12 l/s		0,15 l/s
Min flow, cooling system	0,16 l/s		0,20 l/s

*-Regards circulating volume

Connection options

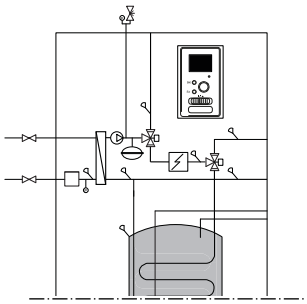
Connection to the heat pump

SHK 200S / SHK 200S-6 is not equipped with cut-off valves, which must be installed outside the indoor module to make future maintenance easier.



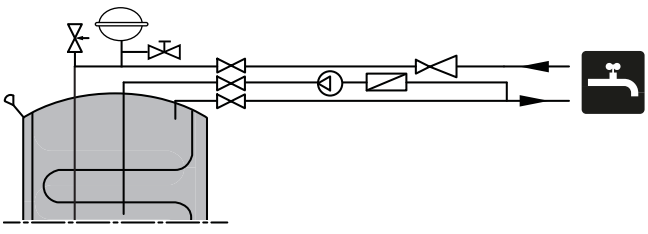
Connection when operating without a heat pump

No change is required to the hydraulic connections configuration for the internal unit to operate individually, without an external unit.



Connection of hot and cold water

The installation of the mixing valve is necessary if factory settings are changed in a way where the temperature can exceed 60 °C. When changing the factory settings, follow the national regulations in this respect. The setting is entered in menu 5.1.1.



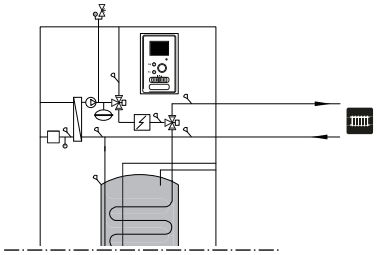
IMPORTANT
Water supply uti lity must have necessarily installed safety valve which will protect against excessive increase of pressure.

IMPORTANT
Do not use the heater if there is a blockage of the safety valve.

IMPORTANT
Installation of any narrowing (e.g. reducers, filters etc.) and shut-off valves between the heater and the safety valve is not allowed. It is only permitted mounting three-way adapter with drain valve that allows to empty the tank and three-way adapter with expansion vessel.

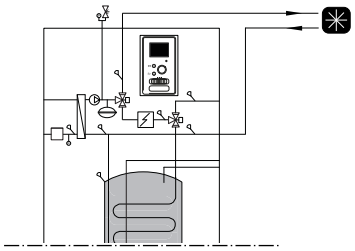
Heating system connection

When connecting to the installation where all heaters/ floor heating pipes have been equipped with thermostat valves, in order to assure appropriate flow, install a discharge valve or a buffer in the parallel layout, or remove several thermostats.



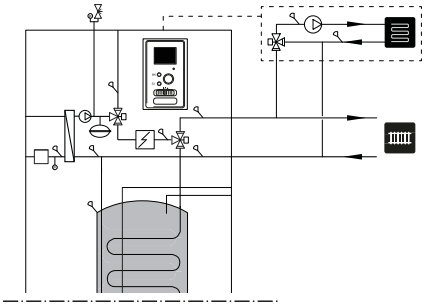
Cooling system connection

Cooling is controlled by sensor BT64 and isolation valve QN12. If cooling is needed, the isolation valve changes the direction, and opens from the cooling circuit side.



Connecting an additional heating circuit

The system can be extended with additional heating circuits only when provided an additional expansion card After using an AXC30 card or a ECS 41 kit, an additional heating circuit can be activated in the controller.

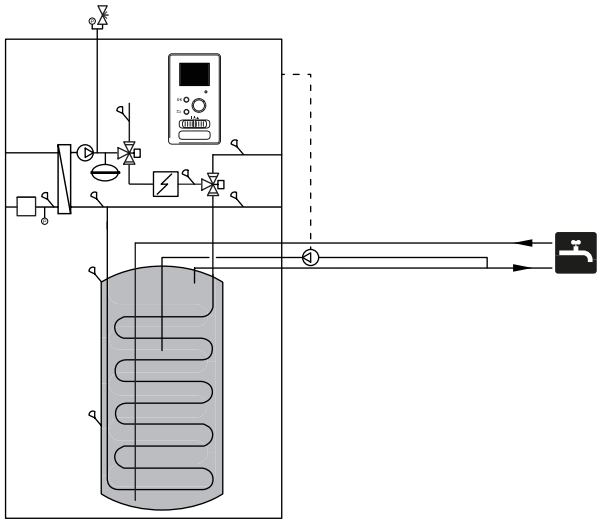


Additional accessories and options and how to connect them are described in the AXC30 or ECS41 manual.

DHW circulation

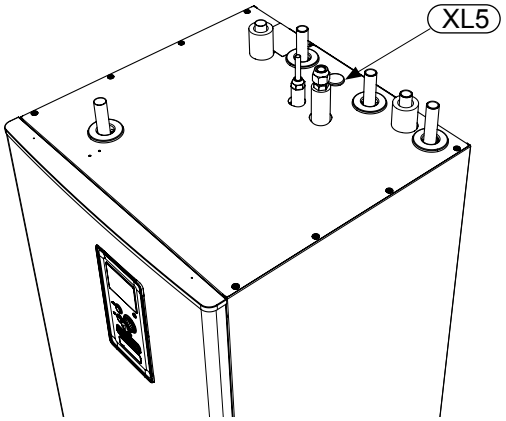
IMPORTANT
In order to connect the DHW circulation pump control, an additional accessory AXC 30 is required.

The SHK 200S / SHK 200S-6 have possibility to connect DHW circulation. The circulation connection (XL5) is located at the top of the tank.

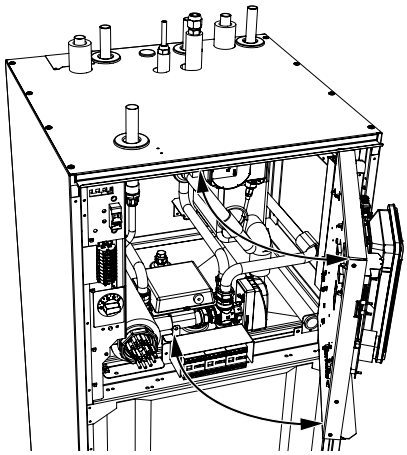


To connect the circulation:

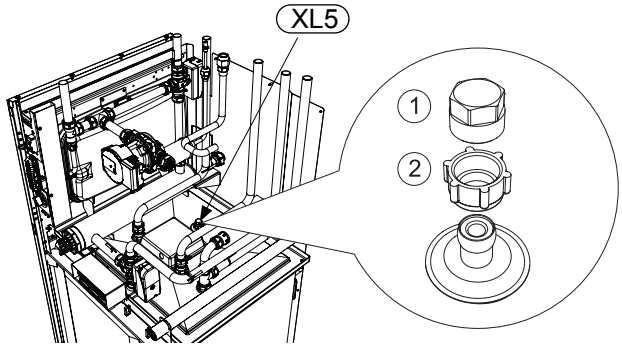
1. Remove the XL5 plug from the top of the housing.



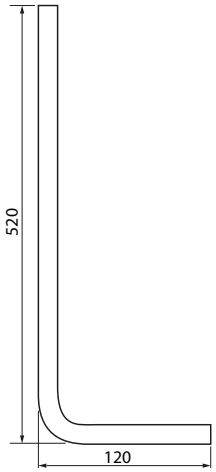
2. Remove the front panel, then move the control box to the right to gain access, to the hydraulic connections.



3. Remove the plug from the circulation pipe (XL5).



4. Install the elbow, facing the rear housing, on the circulation pipe.
5. Connect the pipe to the elbow, with the dimensions shown in the figure below, leading pipe in the top of the housing, in place of the XL5 plug.
6. At the output of the pipe from the SHK 200S / SHK 200S-6 unit, install the circulating pump, and then connect its control to the expansion card.
7. Install the control box and the front panel.

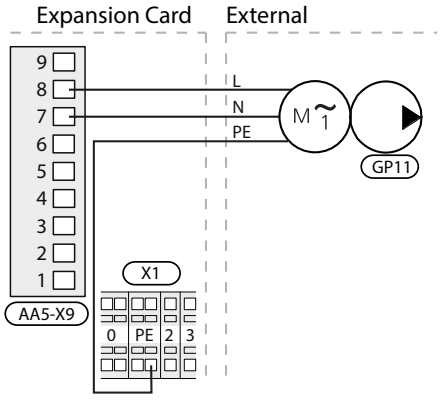


Dimensions of the pipe for circulation

Elbow 15x15

Connection of the DHW circulation pump control

The DHW circulation pump should be connected to the AA5 **(NOT INCLUDED IN SHK 200S / SHK 200S-6)** expansion card on the AA5-X9:8 (230V), AA5-X9:7 (N) and X1: PE



5 Outdoor unit METROAIR L

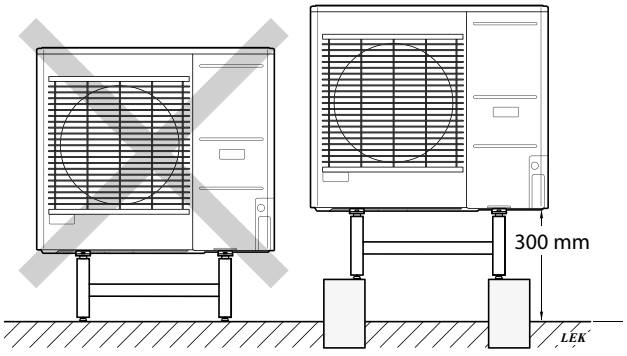
Transport and storage

METROAIR L must be transported and stored vertically.

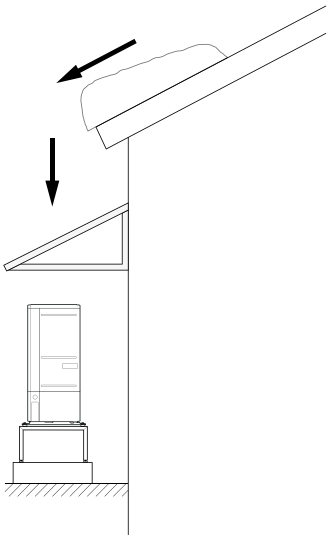
> **IMPORTANT**
> Ensure that the heat pump cannot fall overduring transport.

Assembly

- Place METROAIR L outdoors on a solid level base that can take the weight, preferably a concrete foundation. If concrete slabs are used they must rest on asphalt or shingle.
- The concrete foundation or slabs must be positioned so that the lower edge of the evaporator is at the level of the average local snow depth; however, a minimum of 300 mm. Stands and attachments on the page are available in the METROAIR L instruction in the "Accessories" chapter.
- METROAIR L should not be positioned next to noise sensitive walls, for example, next to a bedroom.
- Also ensure that the placement does not inconvenience the neighbours.
- METROAIR L must not be placed so that recirculation of the outdoor air can occur. This causes lower output and impaired efficiency.
- The evaporator should be sheltered from direct wind, which negatively affects the defrosting function. Place METROAIR L protected from wind against the evaporator
- Large amounts of condensation water, as well as melt water from defrosting, can be produced. Condensation water must be led off to a drain or similar (see page13).
- Care must be exercised so that the heat pump is not scratched during installation.



Do not place METROAIR L directly on the lawn or other non solid surface.

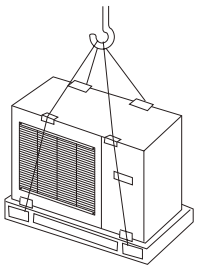


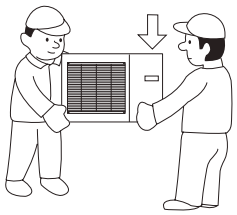
If there is a risk of snow slip from roof, a protective roof or cover must be erected to protect the heat pump,pipes and wiring.

Lift from the street to the set up location

If the base allows, the simplest thing is to use a pallet truck to move the METROAIR L to the set up location.

> **IMPORTANT**
> The centre of gravity is offset to one side (seep print on the packaging).





If METROAIR L needs to be transported across soft ground,such as a lawn, we recommend that a crane truck is used that can lift the unit to the installation location. When METROAIR L is lifted with a crane, the packaging must be undamaged and the load distributed with a boom,see the illustration above.

If a crane cannot be used METROAIR L can be transported using an extended sack truck. METROAIR L must be used on the side marked "heavy side" and two people are required to get the METROAIR L up.

Lift from the pallet to final positioning

Before lifting remove the packaging and the securing strap to the pallet.

Place lifting straps around each machine foot. Lifting from the pallet to the base requires four persons, one for each lifting strap.

It is not permitted to lift anything other than the machine feet.

Scrapping

When scrapping, the product is removed in reverse order. Lift by the bottom panel instead of a pallet!

Condensation run off

Condensation runs out on to the ground below METROAIR L. To avoid damage to the house and heat pump, the condensation must be gathered and drained away.

IMPORTANT
It is important to the heat pump function that condensation water is led away and that the drain for the condensation water run off is not positioned so that it can cause damage to the house.

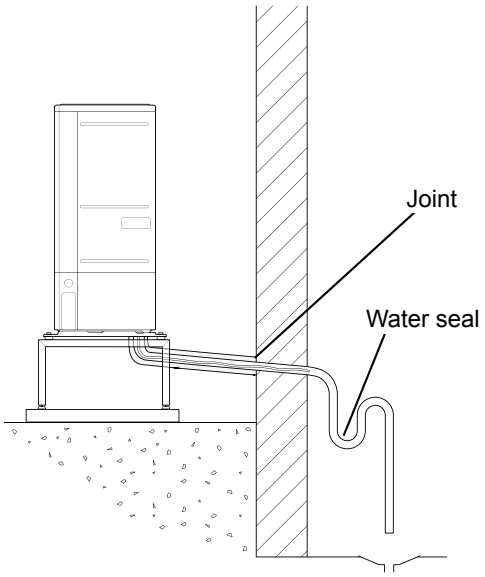
IMPORTANT
The electrical installation and wiring must be carried out under the supervision of an authorised electrician.

IMPORTANT
Self regulating heating cables must not b econnected.

- The condensation water (up to 50 litres / 24 hrs) must be routed away by a pipe to an appropriate drain, it is recommended that the shortest outdoor length possible is used.
- The section of the pipe that can be affected by frost must be heated by the heating cable to prevent freezing.
- Route the pipe downward from METROAIR L.
- The outlet of the condensation water pipe must be at a depth that is frost free or alternatively indoors (with reservation for local ordinances and regulations).
- Use a water trap for installations where air circulation may occur in the condensation water pipe.
- The insulation must be tight against the bottom of the condensation water trough.

Recommended alternative for leading off condensation water

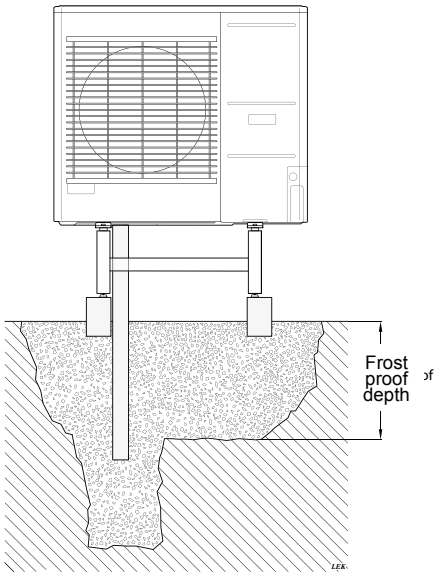
Drain doors



The condensation water is lead to an indoor drain (subject to local rules and regulations).

Route the pipe downward from the air/water heat pump.

The condensation water pipe must have a water seal to prevent air circulation in the pipe.

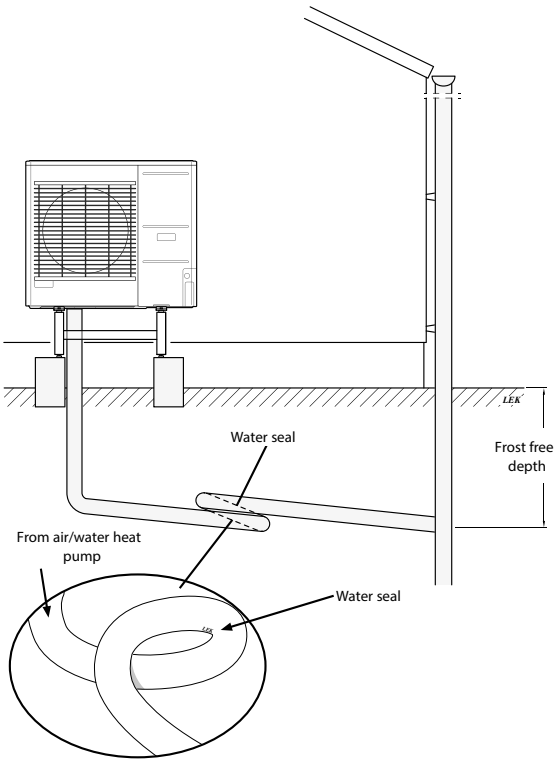


If the house has a cellar the stone caisson must be positioned so that condensation water does not affect the house. Otherwise the stone caisson can be positioned directly under the heat pump.

The outlet of the condensation water pipe must be at frost free depth.

Gutter drainage

IMPORTANT
Bend the hose to create a water seal, see illustration bellow.

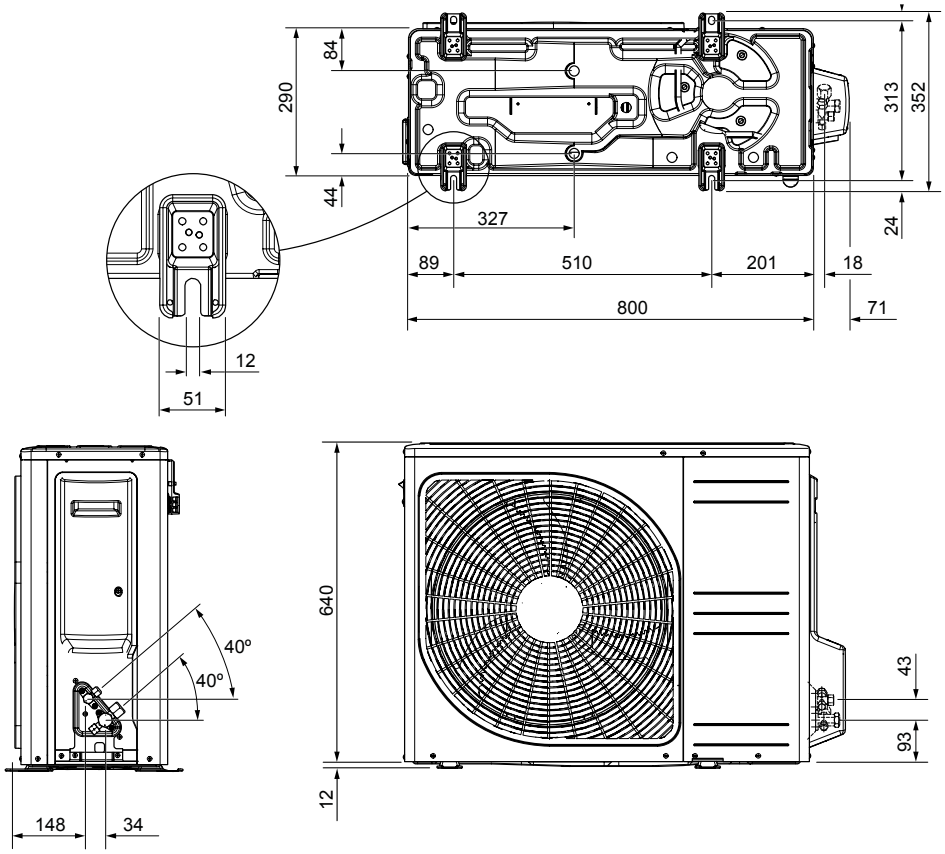


- The outlet of the condensation water pipe must be at frost free depth.
- Route the pipe downward from the air/water heat pump.
- The condensation water pipe must have a water seal to prevent air circulation in the pipe.
- The installation length can be adjusted by the size of the water seal.

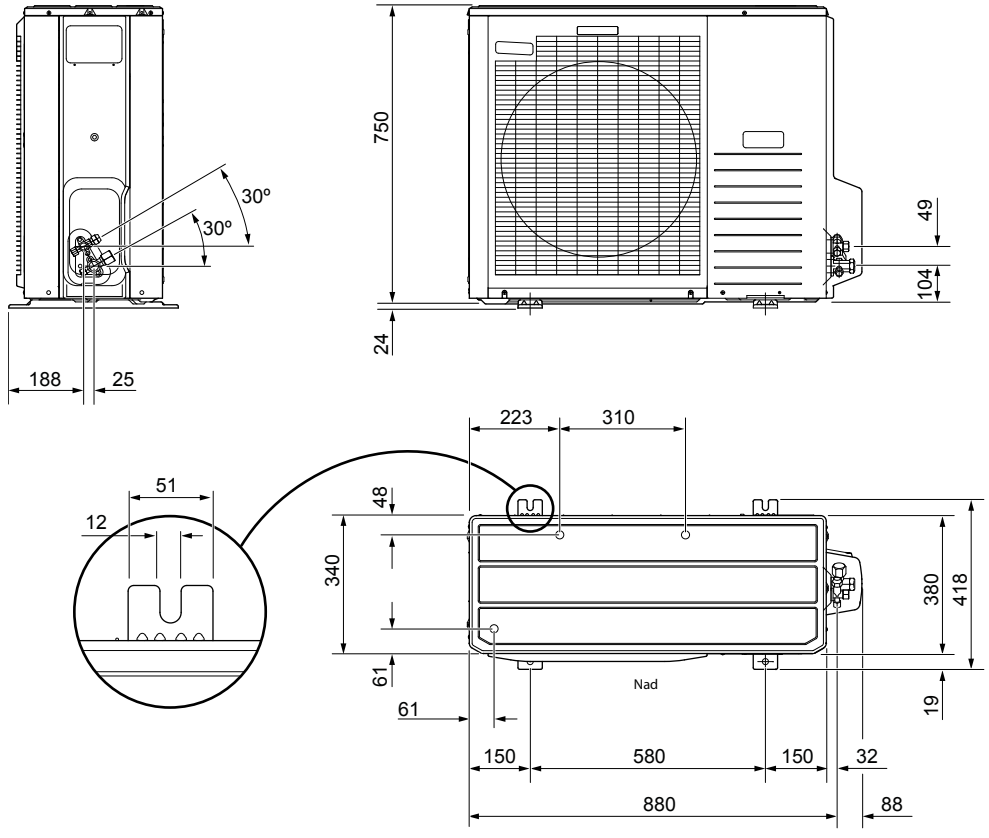
CAUTION
If none of the recommended alternatives isused good lead off of condensation water must be assured.

Dimensions

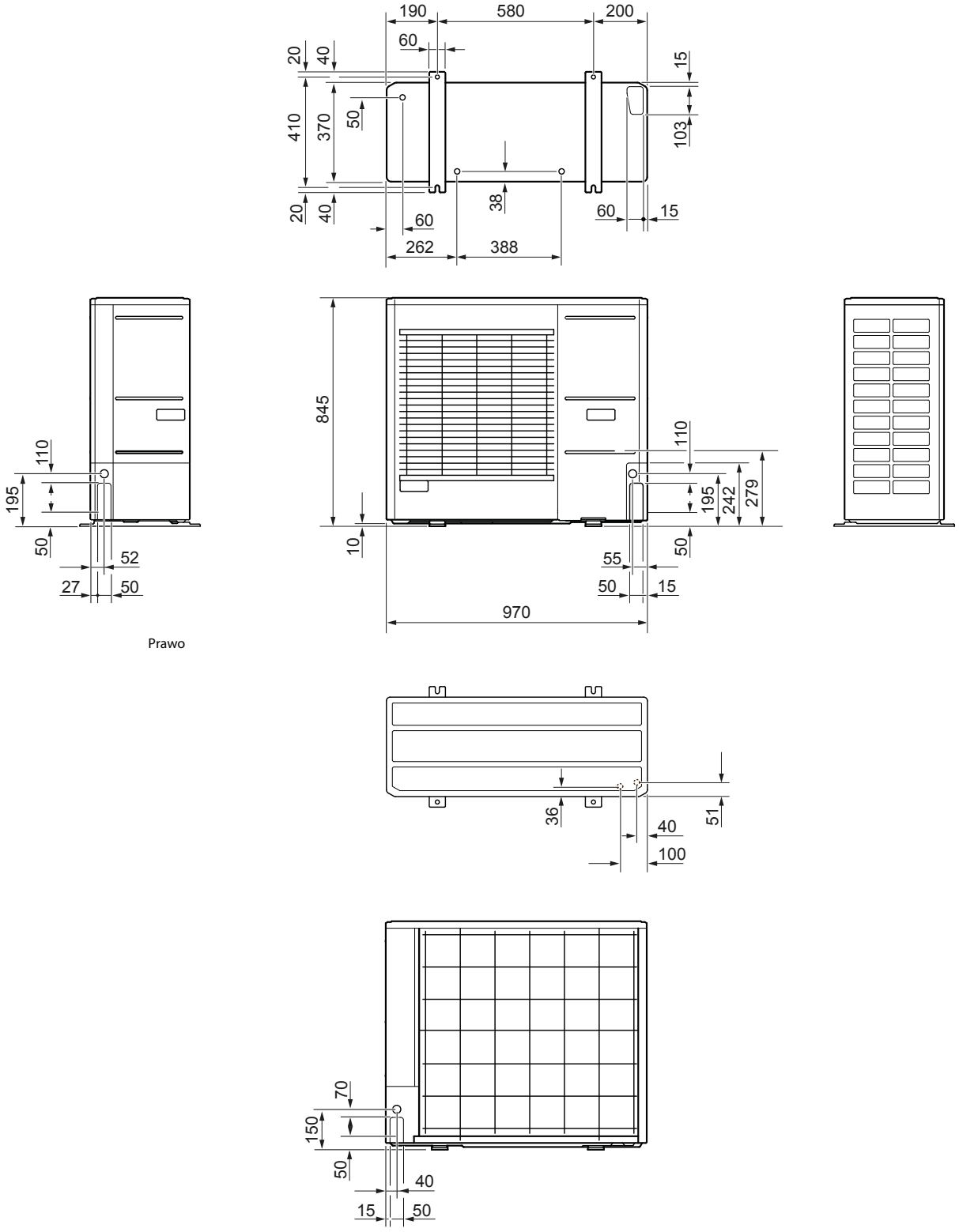
METROAIR L6



METROAIR L8

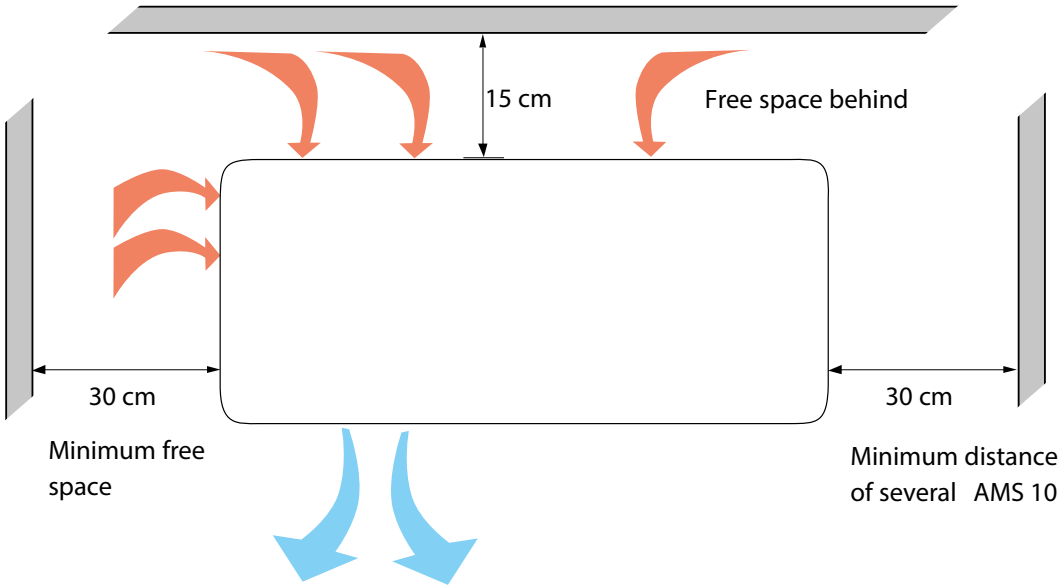


METROAIR L12



Installation area

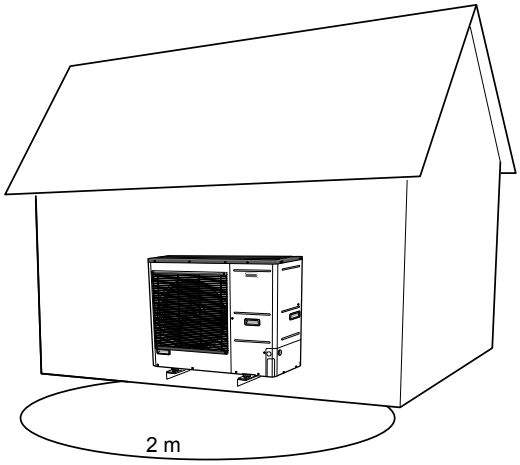
The recommended distance between METROAIR L and the house wall must be at least 15 cm. Clearance above METROAIR L should be at least 100 cm. However, free space in front must be 100 cm for future servicing



However, the free space in front must be 100 cm for future servicing

Sound pressure levels

The METROAIR L is usually placed next to a house wall, which gives a directed sound distribution that should be considered. Accordingly, you should always attempt to find a placement on the side that faces the least sound sensitive neighbouring area. The sound pressure levels are further affected by walls, bricks, differences in ground level, etc and should therefore only be seen as guide values.



In order to reduce the noise level, avoid direct directing of the air outlet to places particularly sensitive to excessive sound emission. The action that can be taken is, for example, making acoustic screens so that the noise is less onerous. The propagation of sound is influenced by, among others, such as: source directionality, absorption by atmosphere, ground effect, reflection from the surface, shielding through obstacles.

Noise		L6	L8	L12
Sound power level, according to EN12102 at 7/35 °C (nominal)*	L_W(A)	51	55	58
Sound pressure level at 2 m free standing (nominal)*	dB(A)	32	41	44

* Free space

6 Electrical connections

General information

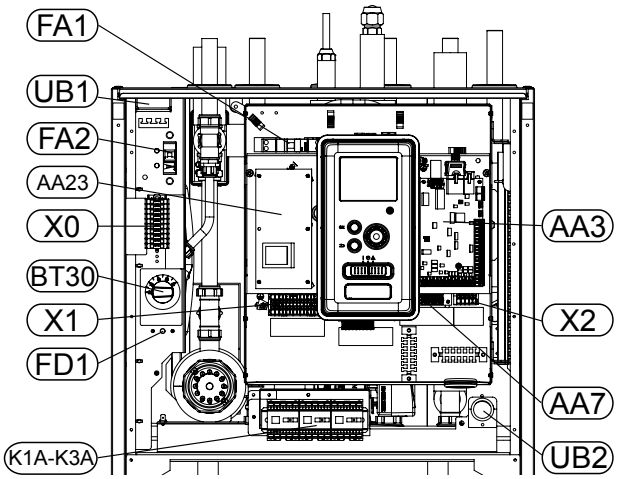
The entire electrical equipment, apart from outdoor temperature sensors, room sensors, and current intensity meters, has been connected according to factory settings.

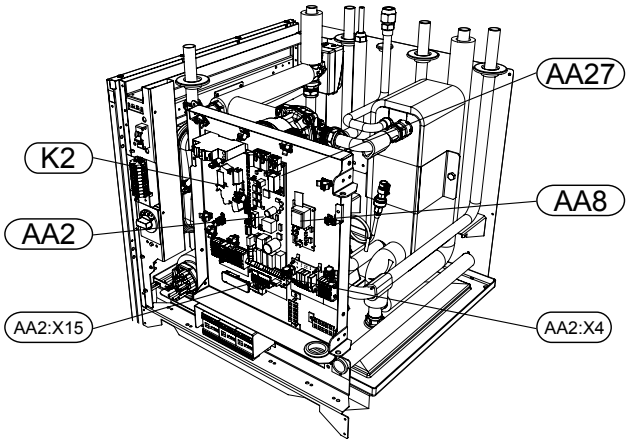
- Disconnect the indoor module before performing tests of electrical system insulation in the building.
- If the building is not equipped with a differential switch, SHK 200S / SHK 200S-6 must be equipped with a separate switch.
- The diagram of indoor module connections can be found in section „Diagram of electrical connections".
- Do not lay communication and signal cables to external contacts near high-voltage cables.
- Minimum cross-section of communication and signal cables to external contacts must total 0.5mm² with the length of up to 50 m, for example EKKX or LiYY, or similar.
- The minimum cross-section of the power cables must be between 2.5 mm² and 4 mm².
- When laying cables in SHK 200S / SHK 200S-6, apply cable passes UB1 and UB2 (as marked in the illustration). In UB1 and UB2, cables are input through the entire indoor module from the back wall towards the front wall.

IMPORTANT
As long as the heating circuits have not been filled with the heating medium, and if the central heating system has not been vented, the switch (SF1) in controller cannot be set in positions „I" or „⚠". Otherwise, the temperature limiter, thermostat and flow-through heater can be damaged.

IMPORTANT
The electrical installation and maintenance service must be performed under the supervision of a qualified power technician with relevant qualifications. Before starting any maintenance works, power supply must be cut off using an automatic switch. The electrical installation and cabling must be executed according to applicable regulations.

IMPORTANT
When setting SF1 to „⚠" - the SHK 200S / SHK 200S-6 unit switches the QN10 valve to C.H. and heating takes place according to BT30 thermostat. Hot water it is not heated during „⚠".





LEGEND

X0	Voltage terminal block 400V~/230V~
X1	Voltage terminal block 230V~
X2	Voltage terminal block 230V~
FA1	Circuit breaker (to internal module)
K1A-K3A	Submersible heater contact
BT30	Thermostat, standby mode
AA3	Sensor card
AA23	Communication card
AA7	Relay card
FA2	Circuit breaker (AMS outdoor unit)
FD1	Temperature limiter
UB1	Cable pass
UB2	Cable pass
K2	Alarm relay
AA2	Main card
AA2:X15	Low voltage terminal block
AA2:X4	Low voltage terminal block
AA8	Titanium anode card
AA27	Relay card

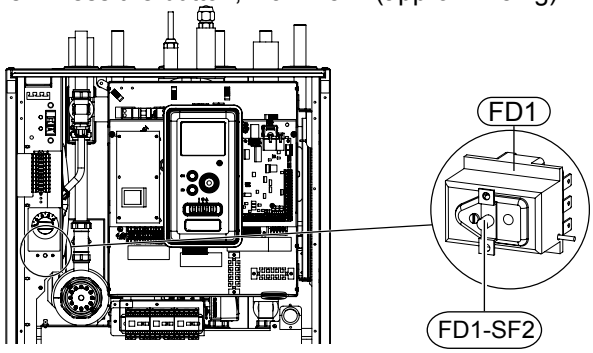
Temperature limiter

Temperature limiter (FD1) cuts off the power supply of the electrical heating module if the temperature increases to the range of approximately 98°C or decreases below -8°C, and can be reset manually.

IMPORTANT
In the case of the thermal fuse, please report it to an authorized service facility to eliminate the possible cause.

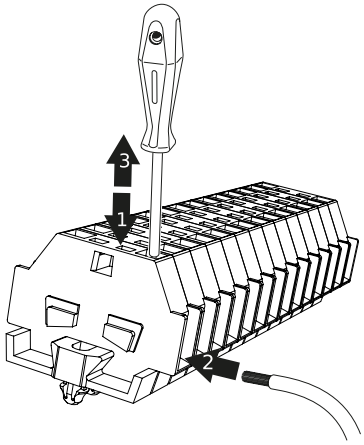
Resetting

Temperature limiter (FD1) is accessible behind the front cover. Temperature limiter is reset by strong pressing of the button (FD1-SF2) using a small screwdriver. Press the button, max. 15 N (approx. 1.5 kg).



Cable blockade

Use an appropriate tool to release/block cables in the internal module clamps.



Connections

IMPORTANT
In order to prevent interferences, do not lay unshielded communication and/or signal cables to external contacts at the distances lower than 20 cm from high voltage cables.

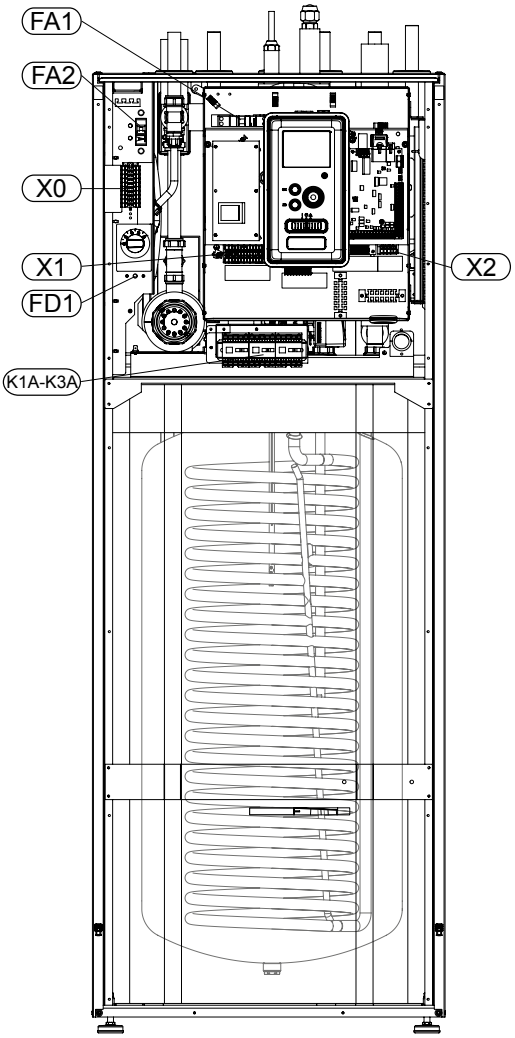
Power supply connection

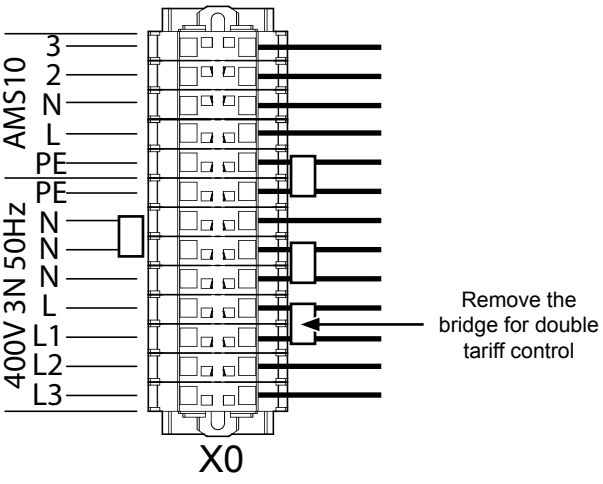
The power supply is to be connected to clamp (X0) via the input at the back of the unit. The cable must be dimensioned according to the applicable standards.SHK 200S / SHK 200S-6 must be connected to the power supply 400 V as specified on the clamp (X0).

Circuit breaker

The automatic heating control system, circulation pump and their wiring in the SHK 200S / SHK 200S-6 are internally protected by an overcurrent switch (FA1). The METROAIR L outdoor module and accessories are internally protected in the SHK 200S / SHK 200S-6 by an overcurrent breaker (FA2).

Connection





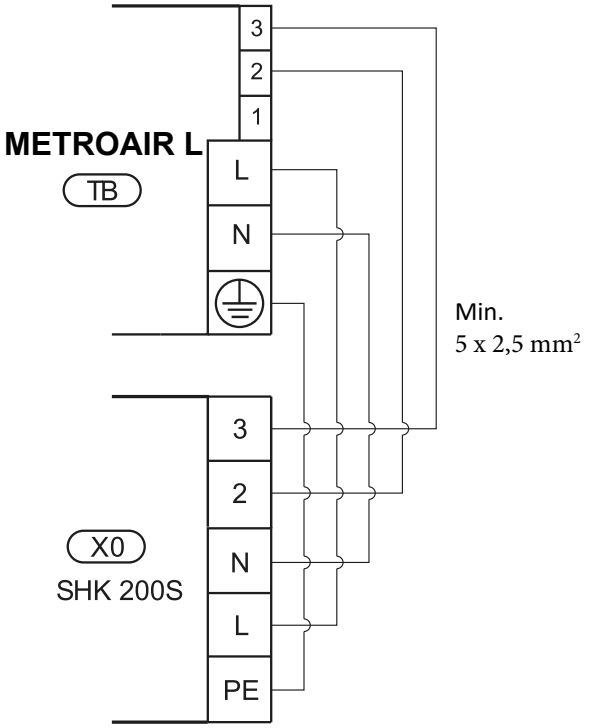
Connection between SHK 200S / SHK 200S-6 i METROAIR L

The conductor connecting the devices must be connected to the power supply clamp (TB) at METROAIR L and to clamp (X0) at SHK 200S / SHK 200S-6 .

IMPORTANT
The METROAIR L module is to be grounded before connecting the devices with a cable. The cabling must be fixed in such a way so that the terminal block is not under tension. The terminal without insulation is 8 mm long.

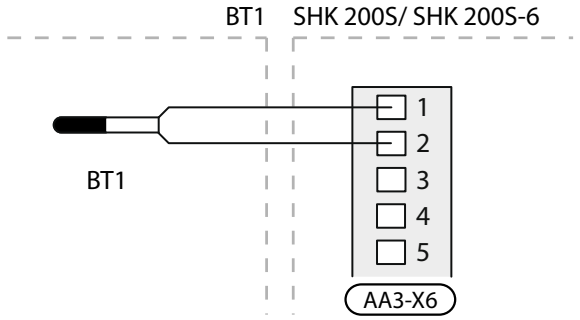
METROAIR L

Connect the phase (brown), neutral conductor (blue), communication (black and grey) i protective (yellow-green) according to the drawing:



Connection of the external temperature sensor

The outdoor temperature sensor (included in the kit) should be connected to the SHK 200S / SHK 200S-6 unit on the AA3-X6:1 and AA3-X6:2.



Settings

Auxiliary preheater - max power

Flow-through heater has maximum capacity of 9 kW (3 phases). The capacity of the flow-through heater is divided into 3 gears. Possible operating capacities are as follows: 3, 6, and 9 kW. Maximum capacity of the flow-through heater is set in menu 5.1.12.

Emergency mode

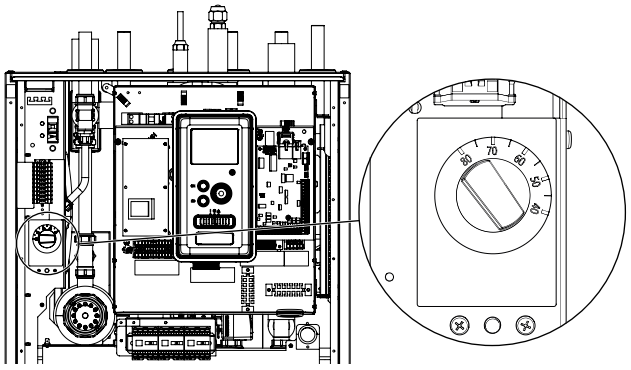
Emergency Mode Thermostat
When the controller automation is in the emergency mode (SF1 is set as ⚠), only the most necessary functions are active.

- Domestic hot water is not heated.
- Constant temperature in the supply pipeline; more information to be found in the Chapter Emergency Mode Thermostat.

IMPORTANT
During emergency operation, DHW heating is not possible.

Emergency Mode Thermostat

In the emergency mode, the supply temperature is set using a thermostat (BT30). It must be set according to the demand of the circuits in operation. The available regulation range is between 6 and 67°C. Remember that for floor heating, the settings must be min. 20°C, max. 35-45°C in order to preserve heat comfort in the room and assure effective system operation.



IMPORTANT
The maximum available heater power in emergency mode is 3kW.

IMPORTANT
The temperature on the thermostat must be set according to the installation requirements. Too high a temperature can damage the insulation.

7 Start-up and regulation

Preparations

1. Check whether the switch in the controller is in the position „ ⏻ ”.
2. Check whether the drain valve has been completely closed, and whether the temperature limiter has not been activated (FD1).
3. Compatible METROTHERM air/water heat pumps have been listed in the Connection Options section.

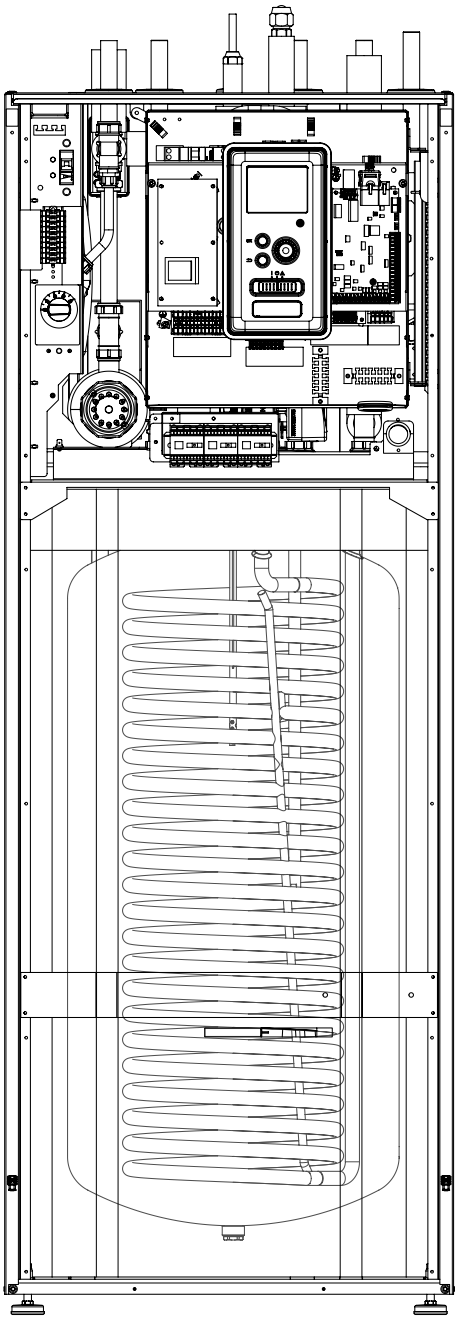
Filling and venting

Filling the DHW heater at SHK 200S / SHK 200S-6

1. Open the hot water tap in the building to the tank.
2. Open the valve cutting off cold water. When doing so, the valve should be completely open.
3. When water starts to flow out of the hot water tap, DHW heater is full and the tap can be closed.

Filling and venting the heating system and SHK 200S / SHK 200S-6

1. Open the vent at the top point of the heating system.
2. Set all the isolation valves in the position allowing for flow in all circuits.
3. Open the valve for filling the heating installation and fill it with the heating medium.
4. Close the vent when the heating medium flows out of it continuously (without air bubbles).
5. Control the manometer showing pressure increase. Fill the system until the pressure of 2 bar, and then close the filling valve.
6. Start the circulation pump of the heating system every now and then, while opening the vents placed on the heating circuit.
7. Open the safety valve until the pressure at the manometer falls down to about 1 bar of the normal operating range.
8. If, while venting, the pressure drops down below 1 bar, supplement the heating medium in the circuit.



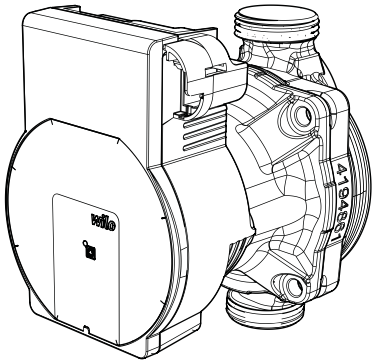
Emptying the heating system

1. Connect the hose to the external drain valve of the system.
2. Then open the drain valve to empty the heating system.

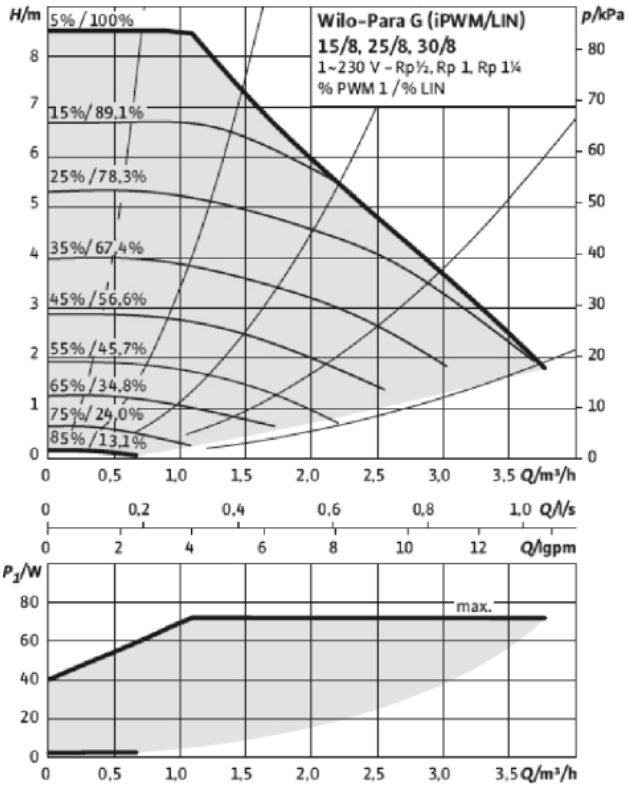
Circulation pump

Pump speed

The circulation pump in SHK 200S / SHK 200S-6 is controlled by frequency, and is automatically regulated via control and based on the heating demand.



Available pressure, circulation pump.



Later regulation, venting

Initially, air is removed from hot water, and venting may be necessary. If gurgling can be heard in the heating system, the entire system needs additional venting. The installation is vented through vents. When venting, SHK 200S / SHK 200S-6 must be switched off.

Start

In order to start the heat pump

1. Turn on the power of the SHK 200S / SHK 200S-6 unit making sure that the METROAIR L unit has been properly connected to the power supply.
2. Follow the instructions displayed in the controller's start-up wizard or start the start-up wizard in menu 5.7.

Start guide

IMPORTANT
There must be water in the climate system be-fore the switch is set to „ **I** ”.

1. Set switch (SF1) on controller to position "**I**".
2. Follow the instructions in the display's start guide. If the start guide does not start when you start the controller , start it manually in menu 5.7.

ADVICE
See page 38 for a more in-depth introduction to the installation’s control system (operation,menus etc.).

Commissioning

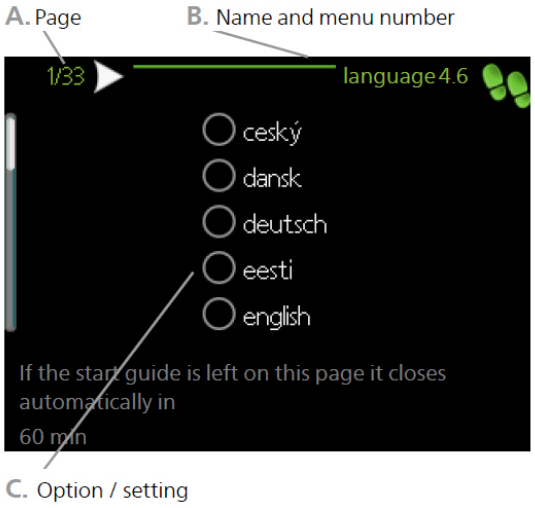
The first time the installation is started a start guide is started. The start guide instructions state what needs to carried out at the first start together with a run through of the installation’s basic settings.

The start guide ensures that start-up is carried out correctly and cannot be bypassed. The start guide can be started later in menu 5.7.

During the start-up guide, the reversing valves and the shunt are run back and forth to help vent the heat pump.

CAUTION
As long as the start guide is active, no function in controller will start automatically. The guide will appear at each restart of controller, until it is deselected on the last page.

Operation in the start guide



A. ***Page***
Here you can see how far you have come in the start guide. Scroll between the pages of the start guide as follows:

1. Turn the control knob until one of the arrows in the top left corner (at the page number) has been marked.
2. Press the OK button to skip between the pages in the start guide.

B. ***Name and menu number***
Read what menu in the control system this page of the start guide is based on. The digits in brackets refer to the menu number in the control system.
If you want to read more about affected menus either consult the help menu or read the user manual.

C. ***Option / setting***
Make settings for the system here.

D. ***Help menu***

In many menus there is a symbol that indicates that extra help is available.

To access the help text:

1. Use the control knob to select the help symbol.
2. Press the OK button..

The help text often consists of several windows that you can scroll between using the control knob.

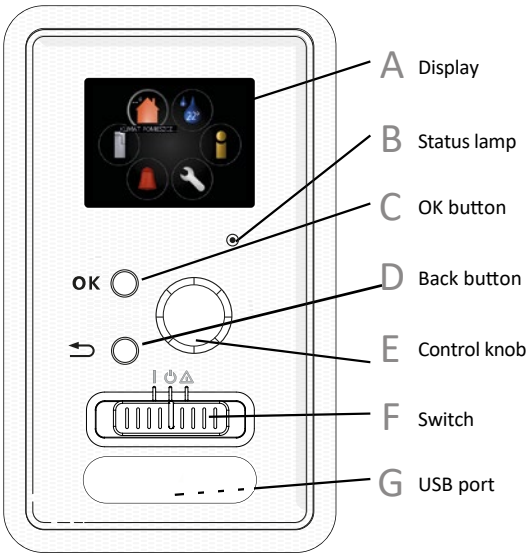
Starting without a heat pump

The indoor unit can work without a heat pump, i.e. only as an electric boiler, preparing heat and hot water, for example before installing a heat pump.
Enter menu 5.2.2 System settings and switch off the heat pump.

IMPORTANT
Select the auto or manual operation mode when the indoor unit is to be used again with the heat pump.

8 Control - Introduction

Display unit



A Display

Instructions, settings and operational information are shown on the display. You can easily navigate between the different menus and options to set the comfort or obtain the information you require.

B Status lamp

The status lamp indicates the status of the control module. It:

- lights green during normal operation.
- lights yellow in emergency mode.
- lights red in the event of a deployed alarm.

C OK button

The OK button is used to:

- confirm selections of sub menus/options/set values/page in the start guide.

D Back button

The back button is used to:

- go back to the previous menu.
- change a setting that has not been confirmed.

E Control knob

The control knob can be turned to the right or left. You can:

- scroll in menus and between options.
- increase and decrease the values.
- change page in multiple page instructions (for example help text and service info).

F Switch (SF1)

The switch assumes three positions:

- On (I)
- Standby (⏻)
- Emergency mode (⚠)

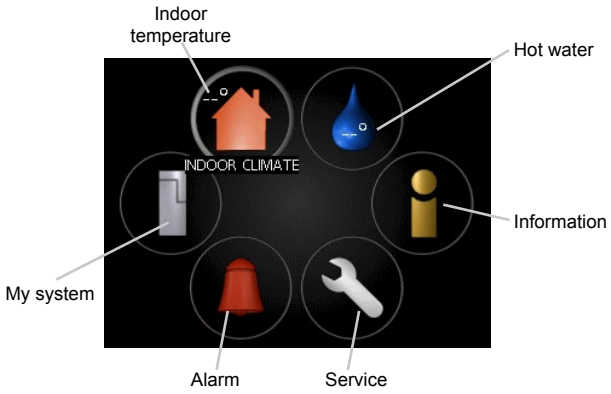
Emergency mode must only be used in the event of a fault on the control module. In this mode, the compressor in the heat pump switches off and the immersion heater engages. The control module display is not illuminated and the status lamp illuminates yellow.

G USB port

The USB port is hidden beneath the plastic badge with the product name on it.

The USB port is used to update the software.

Menu system



Menu 1 - INDOOR CLIMATE

Setting and scheduling the indoor climate. See information in the help menu or user manual on page 40.

Menu 2 - HOT WATER

Setting and scheduling hot water production. See information in the help menu or user manual.

This menu only appears if a water heater is installed in the system on page 43.

Menu 3 - INFO

Display of temperature and other operating information and access to the alarm log. See information in the help menu or user manual on page 45.

Menu 4 - MY SYSTEM

Setting time, date, language, display, operating mode etc. See information in the help menu or user manual on page 46.

Menu 5 - SERVICE

Advanced settings. These settings are not available to the end user. The menu is visible when the Back button is pressed for 7 seconds, when you are in the start menu. See page 49.

Symbols in the display

The following symbols can appear in the display during operation.

Symbol	Description
	This symbol appears by the information sign if there is information in menu 3.1 that you should note.
	These two symbols indicate whether the compressor in the outdoor unit or additional heat in the installation is blocked via controller. These can, for example, be blocked depending on which operating mode is selected in menu 4.2, if blocking is scheduled in menu 4.9.5 or if an alarm has occurred that blocks one of them.  Blocking the compressor  Blocking additional heat
	This symbol appears if periodic increase or lux mode for the hot water is activated.
	This symbol indicates whether "holiday setting" is active in 4.7.
	This symbol indicates whether the controller has contact with MyUpway.
	This symbol indicates the actual fan speed if these revolutions have been changed in relation to the normal setting. Required additional equipment ERS.
	This symbol indicates whether solar heating is active. Required additional equipment ERS.
	This symbol indicates whether pool heating is active. Required additional equipment POOL 40.
	This symbol indicates whether cooling is active.

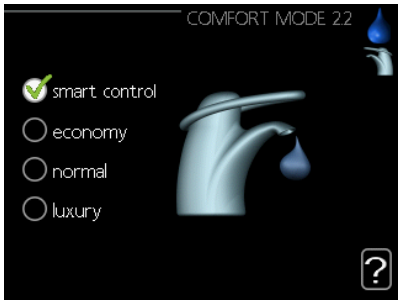
Operation

To move the cursor, turn the control knob to the left or the right. The marked position is white and/or has a turned up tab.

Selecting menu

To advance in the menu system select a main menu by marking it and then pressing the OK button. A new window then opens with sub menus.
Select one of the sub menus by marking it and then pressing the OK button.

Selecting options



In an options menu the current selected option is indicated by a green tick.

To select another option:

1. Mark the applicable option. One of the options is pre-selected (white).

2. Press the OK button to confirm the selected option. The selected option has a green tick.

Setting a value

Values to be changed

To set a value:

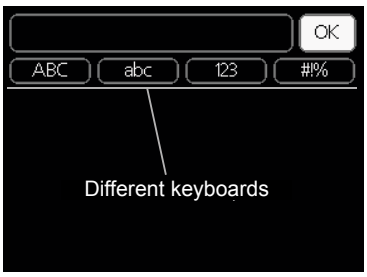
1. Mark the value you want to set using the control knob.

2. Press the OK button. The background of the value becomes green, which means that you have accessed the setting mode.

3. Turn the control knob to the right to increase the value and to the left to reduce the value.

4. Press the OK button to confirm the value you have set. To change and return to the original value, press the Back button.

Use the virtual keyboard

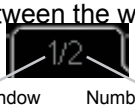


In some menus where text may require entering, a virtual keyboard is available.

Depending on the menu, you can gain access to different character sets which you can select using the control knob. To change character table, press the Back button. If a menu only has one character set the keyboard is displayed directly.
When you have finished writing, mark "OK" and press the OK button.

Scroll through the windows

A menu can consist of several windows. Turn the control knob to scroll between the windows.



Current menu window Number of windows in the menu

Scroll through the windows in the start guide

Arrows to scroll through window in start guide

1. Turn the control knob until one of the arrows in the top left corner (at the page number) has been marked.
2. Press the OK button to skip between the steps in the start guide.

Help menu

In many menus there is a symbol that indicates that extra help is available

To access the help text:

1. Use the control knob to select the help symbol.
2. Press the OK button.

The help text often consists of several windows that you can scroll between using the control knob.

9 Control

Menu 1 - INDOOR CLIMATE

1-INDOOR CLIMATE	1.1 temperature	1.1.1 - heating	
		1.1.2 - cooling	
	1.2 - ventilation [1]		
	1.3 - scheduling	1.3.1 - heating	
		1.3.2 - cooling	
		1.3.3 - ventilation [1]	
	1.9 - advanced	1.9.1 - curve	1.9.1.1 - heating curve
			1.9.1.2 - cooling curve
		1.9.2 - external adjustment	
		1.9.3 - min. flow line temp.	1.9.3.1 - heating
			1.9.3.2 - cooling
		1.9.4 - room sensor settings	
		1.9.5 - cooling settings	
		1.9.6 - fan return time[1]	
		1.9.7 - own curve	1.9.7.1 - heating
			1.9.7.2 - cooling
		1.9.8 - point offset	

[1] The ERS additional equipment is necessary.

Menu 2 - HOT WATER

2 - HOT WATER	2.1 - temporary lux	
	2.2 - comfort mode	
	2.3 - scheduling	
	2.9 - advanced	2.9.1 - periodic increase
		2.9.2 - hot water recirc.[2]

Menu 3 - INFO

3 - INFO	3.1 - service info
	3.2 - compressor info
	3.3 - add. heat info
	3.4 - alarm log
	3.5 - indoor temp. log

[2] The AXC 30 additional equipment is necessary.

Menu 4 - MY SYSTEM

4 - MY SYSTEM	4.1 - plus functions	4.1.1 - pool [3]	
		4.1.2 - pool 2 [3]	
		4.1.3 - internet	4.1.3.1 - Uplink
			4.1.3.8 - tcp/ip settings
			4.1.3.9 - proxy settings
		4.1.4 - sms [4]	
		4.1.5 - SG Ready	
		4.1.6 - smart price adapt.	
		4.1.7 - smart home	
		4.1.8 - smart energy source	4.1.8.1 - settings
			4.1.8.2 - set. price
			4.1.8.3 - CO2 impact
			4.1.8.4 - tariff periods, electricity
			4.1.8.6 - tariff per, ext. shunt add
			4.1.8.7 - tariff per, ext. step add
			4.1.8.8 - tariff periods
		4.1.10 - solar electricity [5]	
	4.2 - op. mode		
	4.3 - my icons		
	4.4 - time & date		
	4.6 - language		
	4.7 - holiday setting		
	4.9 - advanced	4.9.1 - op. prioritisation	
		4.9.2 - auto mode setting	
		4.9.3 - degree minute setting	
		4.9.4 - factory setting user	
		4.9.5 - schedule blocking	
		4.9.6 - schedule silent mode	

[3] The POOL 40 additional equipment is necessary.
[4] The SMS 40 additional equipment is necessary.
[5] The EME 20 additional equipment is necessary.

Menu 5 - SERVICE

5 - SERVICE	5.1 - operating settings	5.1.1 - hot water settings [6]	
		5.1.2 - max flow line temperature	
		5.1.3 - max diff flow line temp.	
		5.1.4 - alarm actions	
		5.1.5 - fan sp. exhaust air [7]	
		5.1.6 - fan sp. supply air [7]	
		5.1.12 - addition	
		5.1.14 - flow set. climate system	
		5.1.22 - heat pump testing	
		5.1.23 - compressor curve	
		5.1.25 - time filter alarm	
	5.2 - system settings	5.2.2 - installed slaves	
		5.2.3 - docking	
		5.2.4 - accessories	
	5.3 - accessory settings	5.3.2 - shunt controlled add. heat	
		5.3.3 - extra climate system [8]	
		5.3.4 - solar heating [9]	
		5.3.6 - step controlled add. heat	
		5.3.8 - hot water comfort [6]	
		5.3.11 - modbus [10]	
		5.3.12 - exhaust/supply air module [7]	
		5.3.14 - F135[11]	
		5.3.15 - GBM communications module[12]	
		5.3.16 - humidity sensor [13]	
		5.3.20 - flow sensor [14]	
	5.4 - soft in/outputs		
	5.5 - factory setting service		
	5.6 - forced control		
	5.7 - start guide		
	5.8 - quick start		
	5.9 - floor drying function		
	5.10 - change log		
	5.11 - slave settings	5.11.1 - EB101	5.11.1.1 - heat pump
			5.11.1.2 - charge pump (GP12)
		5.11.2 - EB102	
		5.11.3 - EB103	
		5.11.4 - EB104	
		5.11.5 - EB105	
		5.11.6 - EB106	
		5.11.7 - EB107	
		5.11.8 - EB108	
	5.12 - country		

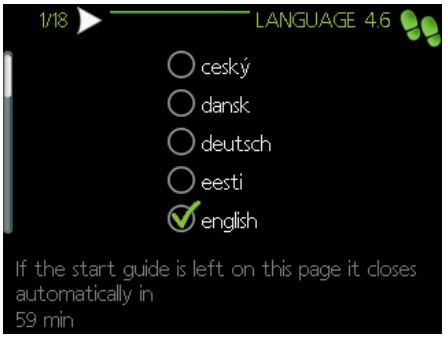
[6] The AXC 30 additional equipment is necessary.
[7] The ERS additional equipment is necessary.
[8] The ECS additional equipment is necessary.
[9] The SOLAR 42 additional equipment is necessary.
[10] The MODBUS additional equipment is necessary.
[11] The F135 additional equipment is necessary.
[12] The OPT additional equipment is necessary.
[13] The HTS 40 additional equipment is necessary.
[14] The EMK 300 additional equipment is necessary.

Start guide

The start guide appears when you first start the SHK 200S / SHK 200S-6. You can also enable the start guide in menu 5.7. The individual settings for the start guide factory settings are described below.

1/18 Language

In this menu, select the language of the controller.
Factory setting: Polish

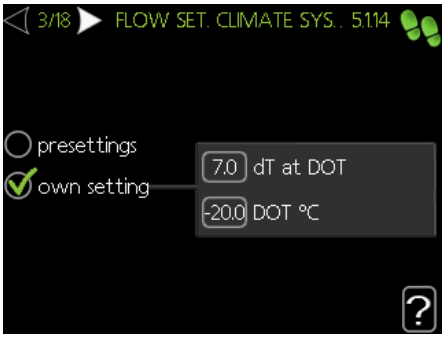


2/18 Information

This menu displays information about the start guide.

3/18 Flow. set. climate sys.

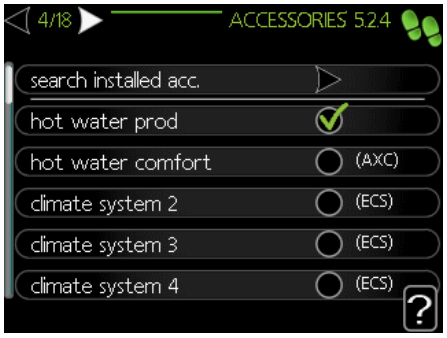
In this menu there is possibility to change settings for the essential settings of the heating system. More information after selecting "?".
Factory setting: *own settings*
Factory setting:*10.0 dT at DOT*
Factory setting:*-20.0 DOT C*



4/18 Accessories

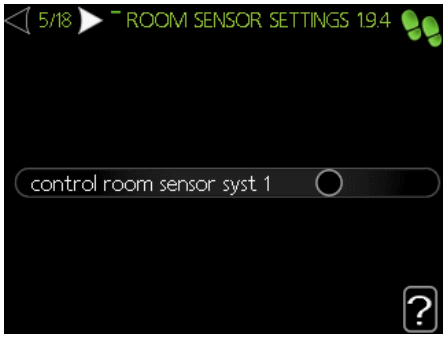
In this menu it is possible to activate additional connected accessories. More information after selecting "?".
Factory setting: hot water prod

> **IMPORTANT**
> Settings of prod. hot tap water cannot be unchecked! Unchecking will disable hot water heating.



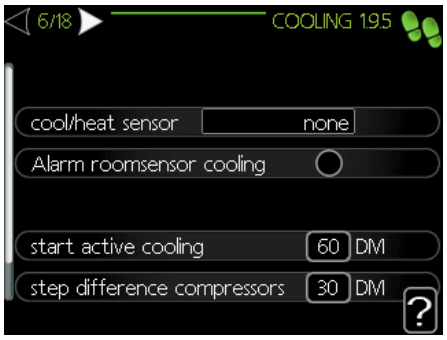
5/18 Room sensor settings

In this menu you can activate and change settings for the room sensor (accessory). More information after selecting "?".
Factory setting: inactive



6/18 Cooling

In this menu we have the possibility to change settings for the cooling system. More information after selecting "?".
Factory setting:
cool/heat sensor: none
Alarm roomsensor cooling: inactive
start active cooling: 60 DM
step difference compressors.: 30 DM
degree minutes cooling: -1 DM



7/18 Control of external sensors

In this menu we have the possibility to check the allowed values for external sensors. More information after selecting "?".

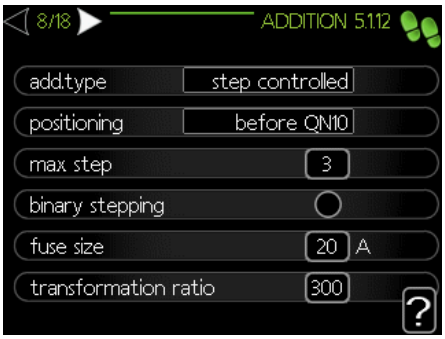
8/18 Addition

In this menu we have the option to change settings for the additional heat (built-in electric module). More information after selecting "?".

Factory setting:
add.type: step controlled
positioning before QN10
max step: 3
binary stepping: inactive
fuse size: 20 A
transformation ratio: 300

IMPORTANT
In the case of a lower security (for the main security in the building), this value can be set lower than 20 A. Caution, this will cause a decrease in the device's power.

You can not set a value higher than 20A.



9/18 Installed slaves

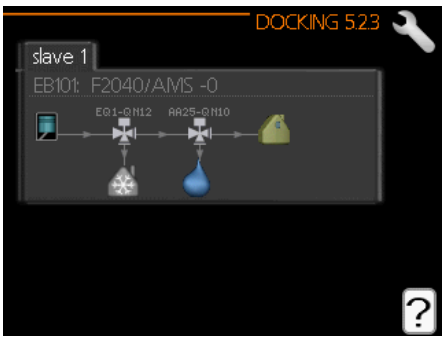
In this menu, it is possible to select slave devices. More information after selecting "?".

Factory setting:
slave 1: active (EB101)

This menu is about creating cascades with heat pumps.

10/18 Docking

In this menu it is possible to edit the device operation scheme. More information after selecting "?".



IMPORTANT
Changing the diagram will cause the device to operate incorrectly.

CAUTION
The above settings regarding the device operating schedule can only be edited by qualified personnel.

11/18 Time & date

In this menu, set the current date and time. In addition, we have the ability to choose the display format and time zone.

12/18 Min. flow line temp.

In this menu it is possible to edit the minimum flow temperature of the heating system. More information after selecting "?".

Factory setting:
climate system 1: 20 C

13/18 Max flow line temp.

In this menu it is possible to edit the maximum flow temperature of the heating system. More information after selecting "?".

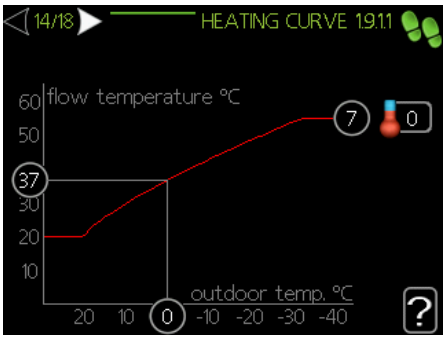
Factory setting:
climate system 1: 55 C

Recommended setting values are:
+ 35 for surface heating,
+ 55 for radiator heating.

14/18 Heating curve

In this menu it is possible to edit the heating curve specified for the SHK 200S / SHK 200S-6 unit. More information after selecting "?".

Factory setting:
Heating curve: 7

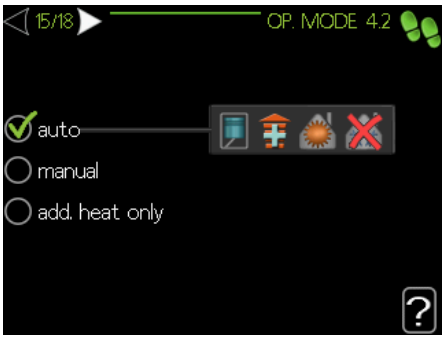


Detailed information on curve settings - see pt. **"User settings".**

15/18 Op mode

In this menu, you can select the operating mode for the SHK 200S / SHK 200S-6 unit. More information after selecting "?".

Factory setting: *auto*



CAUTION
Recommended "auto" operating mode. Editing is only possible by qualified personnel.

16/18 Alarm actions

In this menu it is possible to activate alarm actions. More information after selecting "?".

Factory setting:
decrease room temp: active
deactivate hot water: aktywne

17/18 Reminder

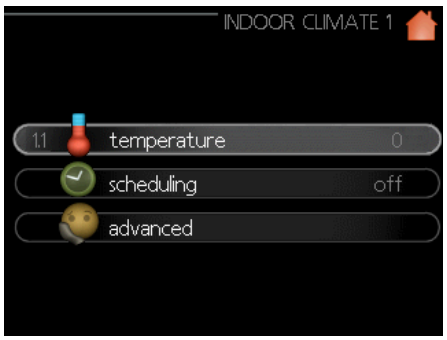
Reminder to complete the checklist in the first chapter of the user manual.

18/18 Start guide

In this menu, we can decide whether the start guide will run again the next time the system is started.

Menu 1 - Indoor climate

The menu CLIMATE OF ROOMS is used to modulate the settings for the heating system. There are several submenus in this. Status information for the relevant menu can be found on the display to the right of the menus.



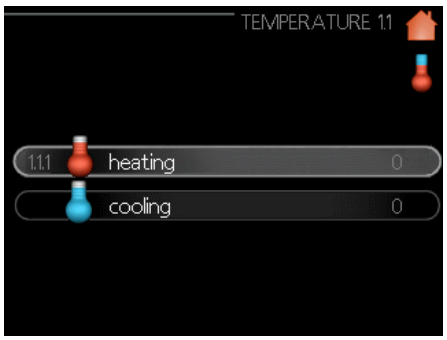
Menu 1.1 - temperature

In this menu you can set the temperature for the heating system. Status information gives setpoints for the heating system.

Choose between heating or cooling and then set the desired temperature in the next menu "temperature heating/ cooling" in menu 1.1. More information after selecting "?".

Set the temperature (without rooms ensors installed and activated):
Setting range: -10 do +10

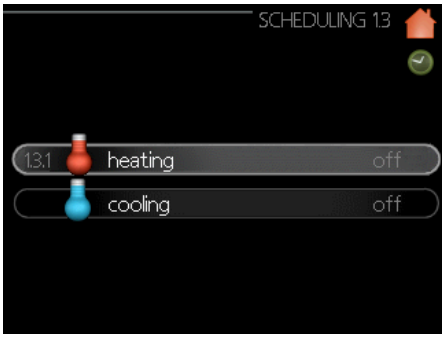
Factory setting: *0*



Menu 1.3 - scheduling

In the menu scheduling indoor climate (heating/cooling/ventilation) is scheduled for each weekday. You can also schedule a longer period during a selected period (vacation) in menu 4.7.

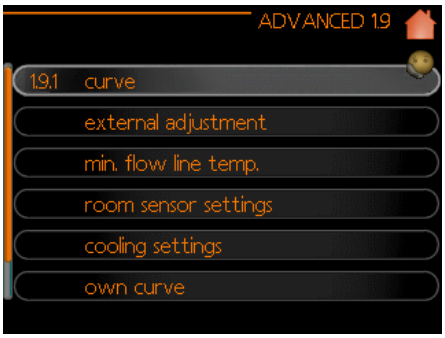
In menu 1.3, select heating or cooling, then program the room temperature increase or decrease for up to three time intervals throughout the day. More information after selecting "?".



Factory setting:
heating: wył.
cooling: wył.

Activated: Scheduling for the selected period is activated here. Set times are not affected at deactivation.
System: Which climate system the schedule is for is selected here. This alternative is only displayed if more than one climate system is present.
Day: Select which day or days of the week the schedule is to apply to here. To remove the scheduling for a particular day, the time for that day must be reset by setting the start time to the same as the stop time. If the line "all" is used, all days in the period are set for these times.
Time period: The start and stop time for the selected day for scheduling are selected here.
Adjustment: See relevant sub menu.
Conflict: If two settings conflict with each other a red exclamation mark is displayed.

Menu 1.9 - Advanced



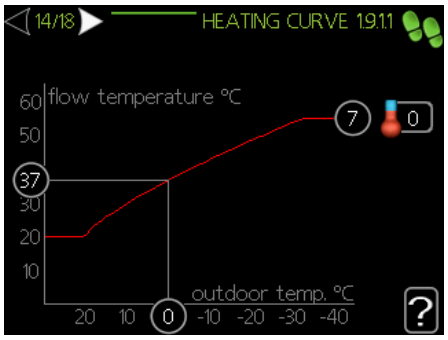
This menu is intended for advanced users. This menu has several sub-menus.

Menu 1.9.1 - curves

You can select heating or cooling in the curve menu. The next menu (heating curve/cooling curve) shows the heating and cooling curves for your house. The task of the curve is to give an even indoor temperature, regardless of the outdoor temperature, and thereby energy efficient operation. It is from these heat curves that the heat pump's control computer determines the temperature of the water to the system, the supply temperature, and therefore the indoor temperature. Select the curve and read off how the supply temperature changes at different outdoor temperatures here. The number to the far right of "system" displays which system you have selected the heating curve/cooling curve for.

The optimum slope depends on the climate conditions in your location, if the house has radiators or under floor heating and how well insulated the house is.

The curve is set when the heating installation is installed, but may need adjusting later. Normally, the curve will not need further adjustment. More information after selecting "?".



Factory setting:
Heating curve: 7

CAUTION
When making fine adjustments of the indoor temperature, the curve must be offset up or down instead, this is done in menu 1.1 temperature.

IMPORTANT
Under floor heating systems are normally max flow line temperature set to between 35 and 45 °C. Must be restricted with underfloor cooling min. flow line temp. to prevent condensation. Check the max temperature for your floor with your installer/floor supplier.

The figure at the end of the curve indicates the curve slope. The figure beside the thermometer gives the curve offset. Use the control knob to set a new value. Confirm the new setting by pressing the OK button. Curve 0 is an own curve created in menu 1.9.7.

ADVICE
Wait 24 hours before making a new setting, so that the room temperature has time to stabilise.

If it is cold outdoors and the room temperature is too low, increase the curve slope by one increment.

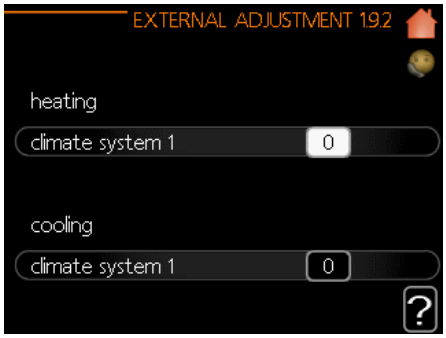
If it is cold outdoors and the room temperature is too high, lower the curve slope by one increment.

If it is warm outdoors and the room temperature is too low, increase the curve offset by one increment.

If it is warm outdoors and the room temperature is too high, lower the curve offset by one increment.

Menu 1.9.2 - external adjustment

Connecting an external contact, for example, a room thermostat or a timer allows you to temporarily or periodically raise or lower the room temperature while heating. When the contact is on, the heating curve offset is changed by the number of steps selected in the menu. If a room sensor is installed and activated the desired room temperature (°C) is set. If there is more than one climate system the setting can be made separately for each system. More information after selecting "?".

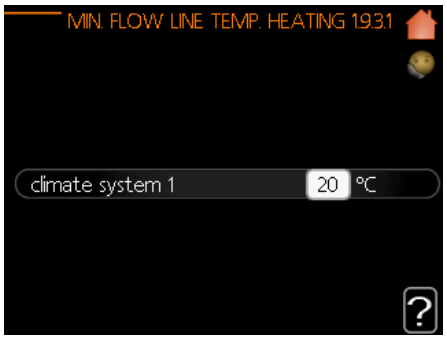


Factory setting:
heating
climate system 1: 0

cooling
climate system 1: 0

Menu 1.9.3 - min. flow line temp.

In menu 1.9.3 you select heating or cooling, in the next menu (min. supply temp.heating/cooling) set the minimum temperature on the supply temperature to the climate system. This means that SHK 200S / SHK 200S-6 never calculates a temperature lower than that set here.
If there is more than one climate system the setting can be made separately for each system.



Factory setting:
heating
climate system 1: 20

cooling
climate system 1: 18

ADVICE
The value can be increased if you have, for example, a cellar that you always want to heat, even in summer. You may also need to increase the value in "stop heating" menu 4.9.2 "auto mode setting".

Menu 1.9.4 - room sensor settings

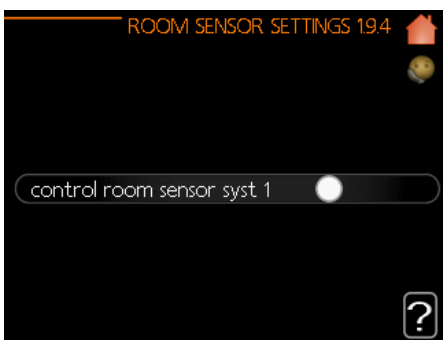
Here you can turn on room sensors that regulate the room temperature.

CAUTION
A slow heat-releasing heating system, such as for example, underfloor heating, may not be suitable for control using the heat pump's room sensor.

Here you can set a factor (a numerical value) that determines how much an over or sub normal temperature (the difference between the desired and actual room temperature) in the room is to affect the supply temperature to the climate system. A higher value gives a greater and faster change of the heating curve's set offset. More information after selecting "?".

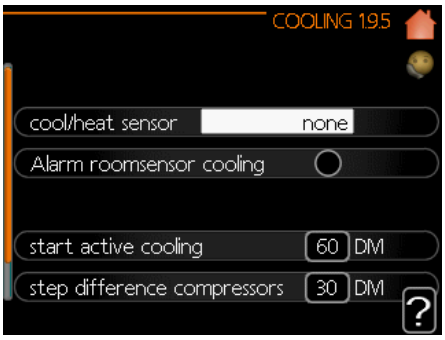
IMPORTANT
Too high a set value for "factor system" can (depending on your climate system) produce an unstable room temperature.

Factory setting: *inactive*



Menu 1.9.5 - cooling settings

You can use SHK 200S / SHK 200S-6 to cool the house during hot periods of the year. More information after selecting "?".



heat/cool sensor
An extra temperature sensor can be connected to F1245 in order to determine when it is time to switch between heating and cooling operation.
When several heating/cooling sensors are installed, you can select which one of them should be in control.

CAUTION
When the heating/cooling sensors BT74 have been connected and activated in menu 5.4, no other sensor can be selected in menu 1.9.5.

start active cooling
Here you can set when active cooling is to start. Degree minutes are a measurement of the current heating demand in the house and determine when the compressor, cooling operation respectively additional heat will start/stop.

degree minutes cooling
This selection is only available when the connected accessory itself counts cooling degree minutes.
After a min or max value has been set, the system will automatically set the real value in relation to the number of compressors that are running cooling.

Menu 1.9.7 - own curve

In this menu user can create own heating or cooling curve, by setting the desired supply temperatures for different outdoor temperatures.

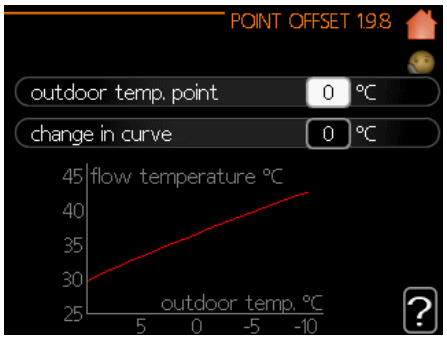
CAUTION
Curve 0 in menu 1.9.1 must be selected for own curve to apply.

CAUTION
The own curve can only be edited by qualified personnel.

Menu 1.9.8 - point offset

Select a change in the heating curve at a certain outdoor temperature here. One step is usually enough to change the room temperature by one degree, but in some cases several steps may be required.

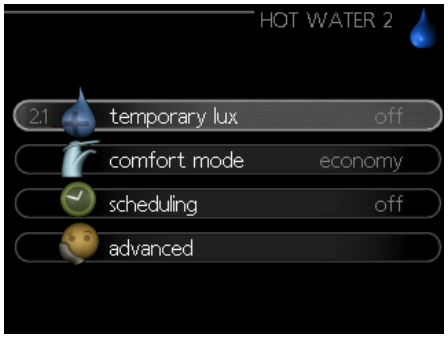
The heat curve is affected at ± 5 °C from set outdoor temp. point.
It is important that the correct heating curve is selected so that the room temperature is experienced as even. More information after selecting "?".



CAUTION
The point offset can only be edited by qualified personnel.

Menu 2 - Hot water

The Hot water menu is used to adjust the settings for domestic hot water. The user has the option of editing temperatures and operating modes for hot water. For the menu HOT WATER there are several sub-menus. Status information for the relevant menu can be found on the display to the right of the menus.

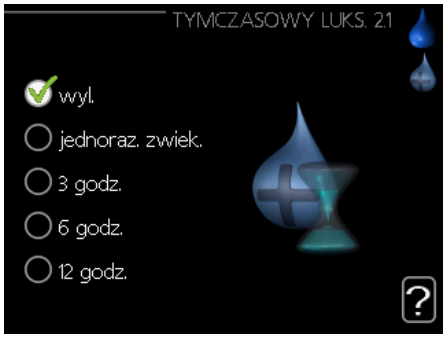


Menu 2.1 - temporary lux

Activation of temporary increase in hot water temperature. Status information gives "off" or duration of temporary increase in temperature increase. More information after selecting "?".
Factory setting: *off*

When hot water requirement has temporarily increased this menu can be used to select an increase in the hot water temperature to lux mode for a selectable time.

CAUTION
If comfort mode "luxury" is selected in menu 2.2 no further increase can be carried out.

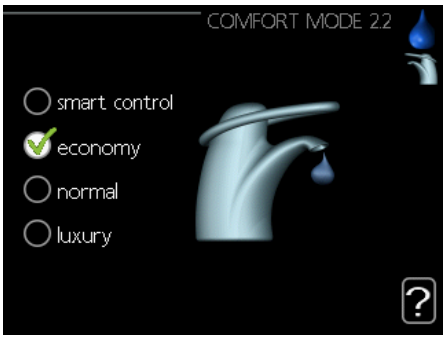


The function is activated immediately when a time period is selected and confirmed using the OK button. The remaining time for the selected setting is shown to the right. When the time has run out controller returns to the mode set in menu 2.2. Select “off" to switch off temporary lux .

Menu 2.2 - comfort mode

In this menu, we have the choice of operating modes for different hot water temperatures. More information after selecting "?".

Factory setting: *economy*



smart control - The Smart control function is activated in this menu. This function remembers the hot water consumption in the previous week and adjusts the temperature in the hot water heater for the upcoming week to ensure minimal energy consumption.

If the demand for hot water is greater, there is some additional hot water available.

After activating the Intelligent Steering function, the heater has a hot water heater offers the performance given on the energy label.

economy - This mode gives less hot water than the others, but is more economical. This mode can be used in smaller households with a small hot water requirement.

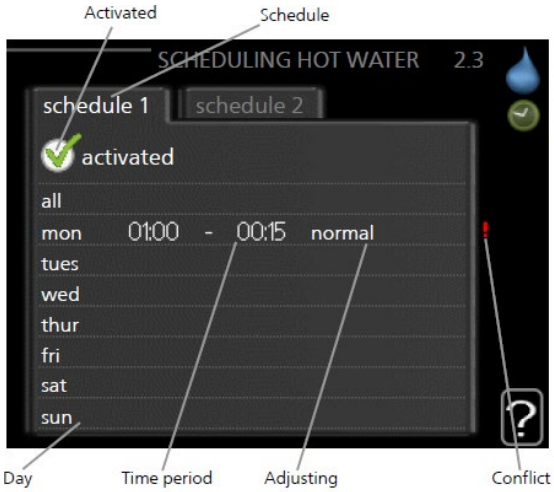
normal - Normal mode gives a larger amount of hot water and is suitable for most households.

luxury - Lux mode gives the greatest possible amount of hot water. In this mode the immersion heater may be partially used to heat hot water, which may increase operating costs.

Menu 2.3 - scheduling

Here you can program the hot water temperature. for two different time intervals throughout the day. Scheduling is activated/deactivated by ticking/unticking"activated". Set times are not affected at deactivation. More information after selecting "?".

Factory setting: *off*



Schedule: The schedule to be changed is selected here.

Activated: Scheduling for the selected period is activated here. Set times are not affected at deactivation.

Day: Select which day or days of the week the schedule is to apply to here. To remove the scheduling for a particular day, the time for that day must be reset by setting the start time to the same as the stop time. If the line "all" is used, all days in the period are set for these times.

Time period: The start and stop time for the selected day for scheduling are selected here.

Adjusting: Set the hot water comfort that is to apply during scheduling here.

Conflict: If two settings conflict with each other a red exclamation mark is displayed.

Factory setting: *off*

ADVICE
If you wish to set similar scheduling for every day of the week start by filling in “all” and then changing the desired days.

Menu 2.9 - Advanced

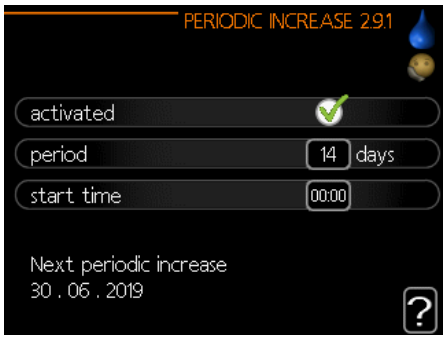
The advanced menu is intended for advanced users only.

Menu 2.9.1 - Periodic increase

To prevent bacterial growth in the water heater, the compressor and the immersion heater can increase the hot water temperature for a short time at regular intervals. More information after selecting "?".

The length of time between increases can be selected here. The time can be set between 1 and 90 days. Factory setting is 14 days. Tick/untick "activated" to start/switch off the function.

Factory setting:
activated: on
period: 14 dni
start time: 00:00

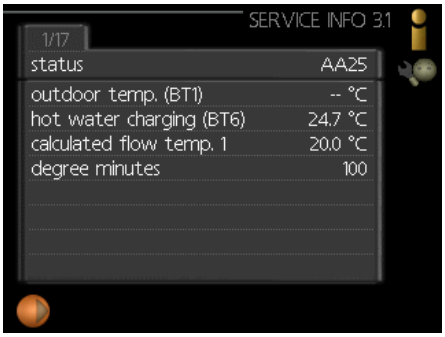


Menu 3 - Info

The information menu is used to read information. The status information of the menu is displayed to the right of the menu.

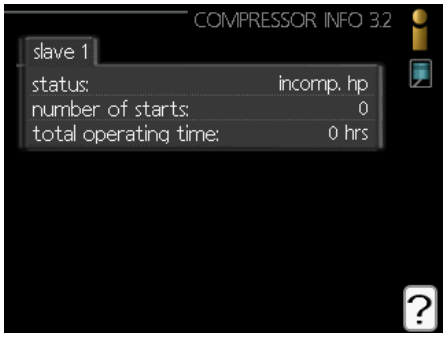
Menu 3.1 - service info

Information about the heat pump's actual operating status (e.g. current temperatures etc.) can be obtained here. No changes can be made. The information is on several pages. Turn the control knob to scroll between the pages. A QR code appears on one side. This QR code indicates serial number, product name and limited operating data.



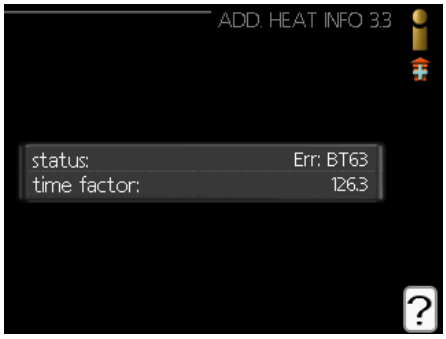
Menu 3.2 - compressor info

Information about the compressor's operating status and statistics can be obtained here. No changes can be made. The information is on several pages. Turn the control knob to scroll between the pages. More information after selecting "?".



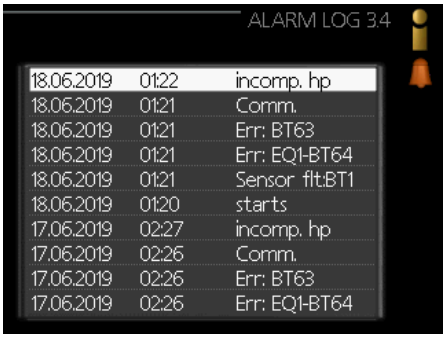
Menu 3.3 - info. o podg. pom.

Information about the additional heat's settings, operating status and statistics can be obtained here. No changes can be made. The information is on several pages. Turn the control knob to scroll between the pages. More information after selecting "?".



Menu 3.4 - alarm log

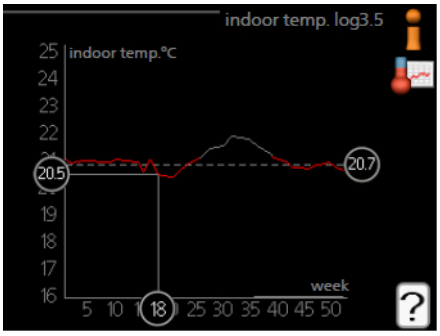
To facilitate fault-finding the heat pump operating status at alarm alerts is stored here. You can see information for the 10 most recent alarms. To view the run status in the event of an alarm, mark the alarm and press the OK button.



Menu 3.5 - indoor temp. log

Here you can see the average temperature indoors week by week during the past year. The dotted line indicates the annual average temperature.

The average outdoor temperature is only shown if a room temperature sensor/room unit is installed.



To read off an average temperature

1. Turn the control knob so that the ring on the shaft with the week number is marked.
2. Press the OK button.
3. Follow the grey line up to the graph and out to the left to read off the average indoor temperature at the selected week.
4. You can now select to take read outs for different weeks by turning the control knob to the right or left and read off the average temperature.
5. Press the OK or Back button to exit read off mode.

Menu 4 - my system

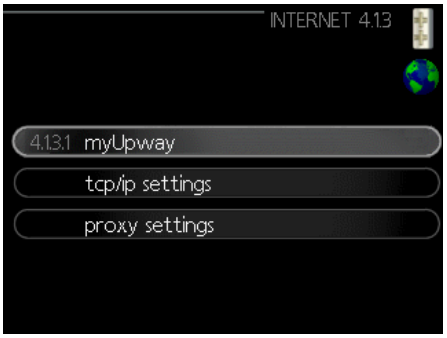
This menu contains information about the work and driver settings. Status information for the relevant menu can be found on the display to the right of the menus.

Menu 4.1 - plus functions

Settings for any additional functions installed in SHK 200S / SHK 200S-6 can be made in the sub menus.

Menu 4.1.3 - internet

Here you make settings for connecting SHK 200S / SHK 200S-6 to the internet. More information after selecting "?".



IMPORTANT
For these functions to work the network cable must be connected.

Menu 4.1.8 - smart energy source™

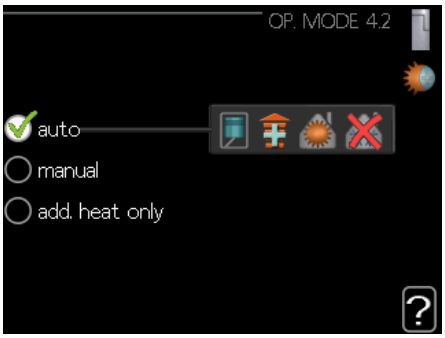
The function prioritises how / to what extent each docked energy source will be used. Here you can choose if the system is to use the energy source that is cheapest at the time. You can also choose if the system is to use the energy source that is most carbon neutral at the time. More information after selecting "?".

Menu 4.2 - op. mode

The heat pump operating mode is usually set to "auto". It is also possible to set the heat pump to "add. heat only", but only when an addition is used, or "manual" and select yourself what functions are to be permitted. Change the operating mode by marking the desired mode and pressing the OK button. When an operating mode is selected, it shows what is permitted in the heat

pump (crossed out = not permitted) and selectable alternatives to the right. To select selectable functions that are permitted or not, mark the function using the control knob and press the OK button. More information after selecting "?".

Factory setting: *auto*



Operating mode auto
In this operating mode the heat pump automatically selects what functions are permitted.

Operating mode manual
In this operating mode you can select what functions are permitted. You cannot deselect "compressor" in manual mode.

Operating mode add. heat only
In this operating mode the compressor is not active, only additional heat is used.

IMPORTANT
If you choose mode "add. heat only" the compressor is deselected and there is a higher operating cost.

Menu 4.4 - time & date

Set time and date, display mode and time zone here.

Menu 4.6 - language

Choose the language that you want language 4.6 the information to be displayed in here.

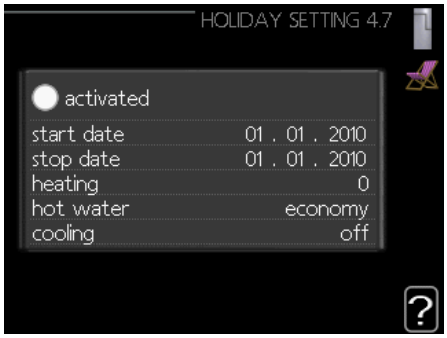
Menu 4.7 - holiday setting

To reduce energy consumption during a holiday you can schedule a reduction in heating and hot water temperature. Cooling, ventilation and pool can also be scheduled if the functions are connected.

If a room sensor is installed and activated, the desired room temperature (°C) is set during the time period. This setting applies to all climate systems with room sensors.

If a room sensor is not activated, the desired offset of the heating curve is set. One step is usually enough to change the room temperature by one degree, but in some cases several steps may be required. This setting applies to all climate systems without room sensors.

Vacation scheduling starts at 00:00 on the start date and stops at 23:59 on the stop date.



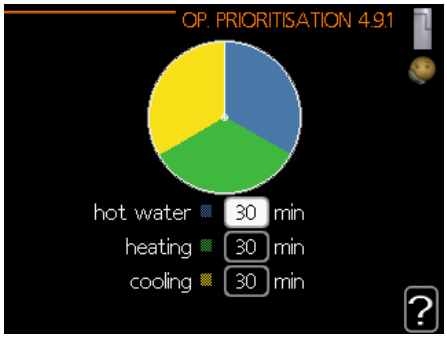
CAUTION
If you choose to switch off hot water production during the vacation “periodic increase" (preventing bacterial growth) are blocked during this time. "periodic increase" started in conjunction with the vacation setting being completed.

Menu 4.9 - advanced

In this menu, we configure advanced functions of the SHK 200S / SHK 200S-6 controller. More information after selecting "?".

Menu 4.9.1 - op. prioritisation

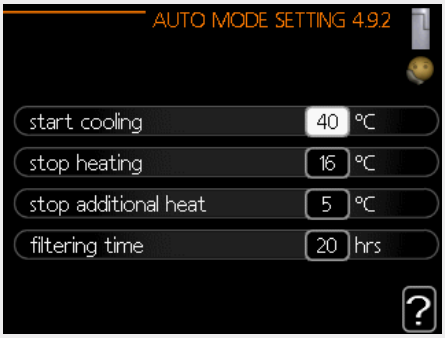
Choose here how long the heat pump should work with each requirement if there are two or more requirements at the same time. If there is only one requirement the heat pump only works with that requirement. The indicator marks where in the cycle the heat pump is. If 0 minutes is selected it means that requirement is not prioritised, but will only be activated when there is no other requirement. More information after selecting "?".



Menu 4.9.2 - auto mode setting

When the operating mode is set to "auto", the heat pump selects when start and stop of additional heat and heat production is permitted, dependent on the average outdoor temperature. Select the average outdoor temperatures in this menu. You can also set the time over which (filtering time) the average temperature is calculated. If you select 0, the present outdoor temperature is used. More information after selecting "?".

Factory setting:

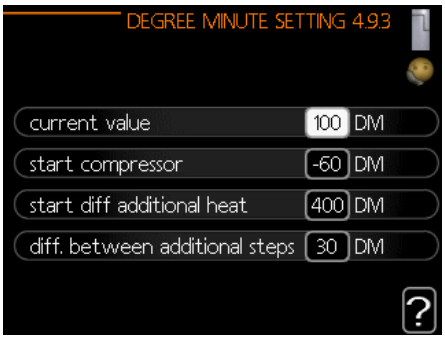


CAUTION
It cannot be set "stop additional heat" higher than "stop heating".

CAUTION
In systems where heating and cooling share the same pipes "stop heating" cannot be set higher than "start cooling" if there is not a cooling/ heating sensor.

Menu 4.9.3 - degree minute setting

Degree minutes are a measurement of the current heating requirement in the house and determine when the compressor respectively additional heat will start/ stop. More information after selecting "?".

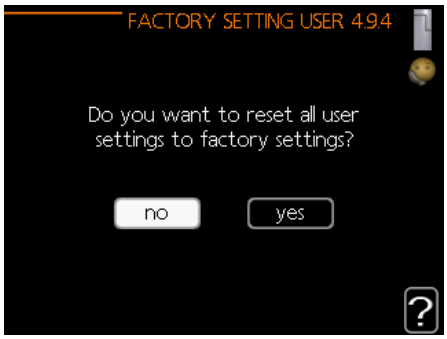


Factory setting:
current value 100 DM
start compressor: -60 DM
start diff additional heat: 400 DM
diff. between additional steps: 30 DM

CAUTION
Higher value on "start compressor" gives more compressor starts, which increase wear on the compressor. Too low value can give uneven indoor temperatures.

Menu 4.9.4 - factory setting user

All settings that are available to the user (including advanced menus) can be reset to default values here. More information after selecting "?".



CAUTION
After factory setting, personal settings such as heating curves must be reset.

Menu 4.9.5 - schedule blocking

The compressor can be scheduled to be blocked for up to two different time periods here. When scheduling is active the actual blocking symbol in the main menu on the heat pump symbol is displayed. More information after selecting "?".

ADVICE
If you wish to set similar scheduling for every day of the week start by filling in “all” and then changing the desired days.

ADVICE
Set the stop time earlier than the start time so that the period extends beyond midnight. Scheduling then stops at the set stop time the day after.

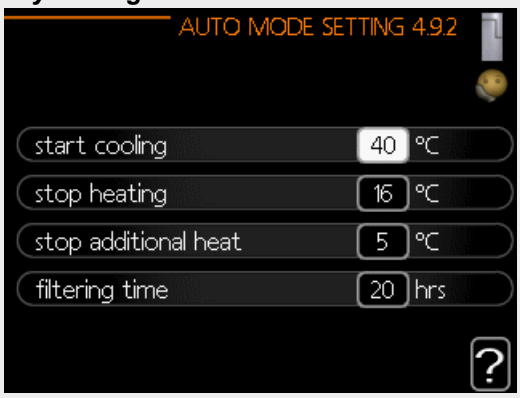
Scheduling always starts on the date that the start time is set for.

CAUTION
Long term blocking can cause reduced comfort and operating economy.

Cooling settings

In the factory settings of the SHK 200S / SHK 200S-6 the cooling is activated, but it requires additional settings to be activated.

Factory setting:



To start the cooling, change the parameter "turn on cooling" to the value above which (regarding outside temperature) the cooling should begin. set in menu 1.9 (settings can be found in menu 1.9.1.2 and 1.9.3.2).

If the average temperature calculated by the "calculation time" is higher than the set temperature, cooling according to set in menu 1.9 (settings can be found in menu 1.9.1.2 and 1.9.3.2).

CAUTION
The settings for cooling should be made based on the existing CH system.
The above cooling settings can only be edited by qualified personnel.

Submenu SERVICE

Go to the main menu and hold the Back button in for 7 seconds to access the Service menu.

Menu **SERVICE** has orange text and is intended for the advanced user. This menu has several sub-menus. Status information for the relevant menu can be found on the display to the right of the menus

- **operating settings** Operating settings for the control module.
- **system settings** System settings for the control module, activating accessories etc
- **accessory settings** Operational settings for different accessories.
- **soft in/outputs** Setting software controlled in and outputs on the input card (AA3) and terminal block (X2).
- **factory setting service** Total reset of all settings (including settings available to the user) to default values.
- **forced control** Forced control of the different components in the indoor module
- **start guide** Manual start of the start guide which is run the first time when the control module is started.
- **quick start** Quick starting the compressor.

IMPORTANT
Incorrect settings in the service menus can damage the installation, heat pump and indoor unit.

Menu 5.1 - operating settings

Operating settings can be made for the control module in the sub menus.

Menu 5.1.1 - hot water settings

Operating settings can be made for the control module in the sub menus.

economy
Setting range start temp. economy: 5 – 55°C
Factory setting start temp. economy: 39°C
Setting range stop temp. economy: 5 – 60°C
Factory setting stop temp. economy: 43°C

normal
Setting range start temp. normal: 5 – 60°C
Factory setting start temp. normal: 42°C
Setting range stop temp. normal: 5 – 65°C
Factory setting stop temp. normal: 46°C

luxury
Setting range start temp. lux: 5 – 70°C
Factory setting start temp. lux: 45°C
Setting range stop temp. lux: 5 – 70°C
Factory setting stop temp. lux: 49°C

stop temp. per. increase
Setting range: 55 – 70°C
Factory setting: 55°C

step difference compressors
Setting range: 0,5 – 4,0 °C
Factory setting: 1,0°C

charge method
Setting range: target temp, delta temp
Factory setting:delta temp

Here you set the start and stop temperature of the hot water for the different comfort options in menu 2.2 as well as the stop temperature for periodic increase in menu 2.9.1.

Menu 5.1.2 - max flow line temperature

climate system
Setting range: 5-80°C
Factory setting: 55 °C

Set the maximum supply temperature for the climate system here. If the installation has more than one climate system, individual maximum supply temperatures can be set for each system. Climate systems 2 - 8 cannot be set to a higher max supply temperature than climate system 1.

CAUTION
Underfloor heating systems are normally max flow line temperature set between 35 and 45 °C.

In order to obtain information on the maximum permitted temperature, ask the floor supplier / contractor for floor heating and the heating system.

Menu 5.1.3 - max diff flow line temp.

max diff compressor
Setting range: 1 – 25 °C
Factory setting: 10 °C

max diff addition
Setting range: 1 – 24 °C
Factory setting: 7 °C

Here you set the maximum permitted difference between the calculated and actual supply temperature during compressor respectively add. heat mode. Max diff. additional heat can never exceed max diff. compressor

max diff compressor

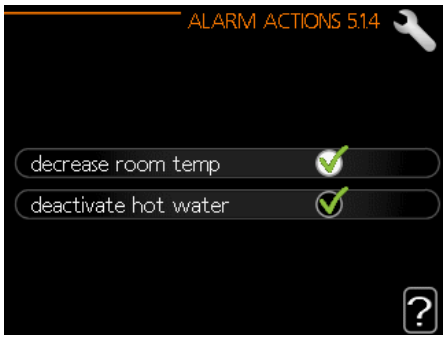
If the current supply temperature exceeds the calculated flow with set value, the degree minute value is set to 0. The compressor in the heat pump stops when there is only a heating demand.

max diff addition

If "addition" is selected and activated in menu 4.2 and the present supply temp exceeds the calculated with set value, the additional heat is forced to stop.

Menu 5.1.4 - alarm actions

Select how you want the control module to alert you that there is an alarm in the display here. The different alternatives are; the heat pump stops producing hot water and/or reduces the room temperature.



CAUTION
If no alarm action is selected, it can result in higher energy consumption in the event of an alarm.

Menu 5.1.5 - fan sp. exhaust air (additional equipment required)

IMPORTANT
Menu 5.1.5 is inactive in the factory settings. For this menu function to be active, the ERS accessory must be installed and activated in the accessories menu. 5.2.4.

For detailed information on the accessory settings, refer to the respective accessory's manual.

normal and speed 1-4
Setting range: 0 – 100 %
Factory setting: normal: 75%
Factory setting: speed 1: 0%
Factory setting: peed 2: 30%
Factory setting: speed 3: 80%
Factory setting: speed 4: 100%

Set the speed for the five different selectable speeds for the fan here.

CAUTION
An incorrectly set ventilation flow can damage the house and may also increase energy consumption.

Menu 5.1.6 - fan sp. supply air

IMPORTANT
Menu 5.1.6 is inactive in the factory settings. For this menu function to be active, the ERS accessory must be installed and activated in the accessories menu. 5.2.4.

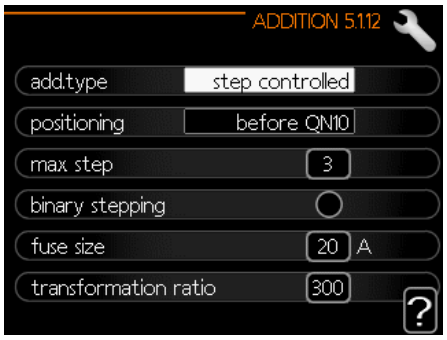
normal and speed 1-4
Setting range: 0 – 100 %
Factory setting: normal: 75%
Factory setting: speed 1: 0%
Factory setting: peed 2: 30%
Factory setting:speed 3: 80%
Factory setting: speed 4: 100%

Set the speed for the five different selectable speeds for the fan here.

CAUTION
An incorrectly set value may damage the house in the long term and possibly increase energy consumption.

Menu 5.1.12 - addition

The settings in this menu apply to the method of controlling the auxiliary heater.



IMPORTANT
The factory settings introduced in menu 5.1.12 are the required settings. Editing these settings is only possible by authorized installers and service technicians!

Factory setting: add. type: step controlled
Factory setting: positioning: before QN10

max step
Setting range (binary stepping deactivated): 0 – 3
Setting range (binary stepping activated): 0 – 7
Factory setting: 3

binary stepping
Setting range: activee / inactive
Factory setting: binary stepping: inactive

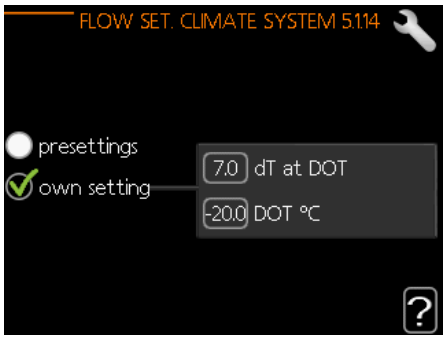
fuse size
Setting range: 1 - 200 A
***Factory setting:** 20 A*

transformation ratio
Setting range: 300 - 3000
***Factory setting:** 300*

Menu 5.1.14 - flow set. climate system

presettings
Setting range: radiator, floor heat., rad. + floor heat., DOT °C
Default value: radiator
Setting range DOT: -40,0 – 20,0°C
The factory setting of DOT value depends on the country that has been given for the product's location. The example below refers to Poland.
Factory setting DOT: -20.0 °C

own setting
Setting range dT at DOT: 0,0 – 25,0
Factory setting dT at DOT: 10,0
Setting range DOT: -40,0 – 20,0°C
Factory setting DOT: -20,0°C



The type of heating distribution system the heating medium pump works towards is set here.

dT at DOT is the difference in degrees between flow and return temperatures at dimensioned outdoor temperature.

Menu 5.1.22 - heat pump testing

NOTE
This menu is intended for testing the controller according to different standards. Use of this menu for other reasons may result in your installation not functioning as intended.

This menu contains several sub-menus, one for each standard.

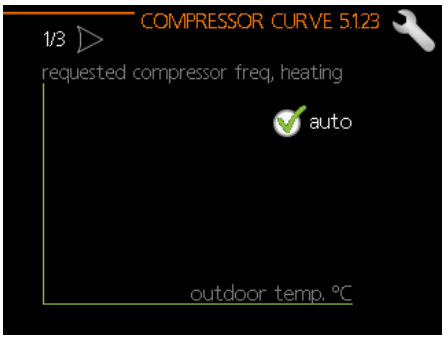
Menu 5.1.23 - compressor curve

NOTE
This menu is only displayed if the controller is connected to a heat pump with inverter controlled compressor.

CAUTION
The compressor curves can only be edited by qualified personnel.

Set whether the compressor in the heat pump should work to a particular curve under specific requirements or if it should work to predefined curves.

You set a curve for a demand (heat, hot water etc.) by unticking "auto", turning the control knob until a temperature is marked and pressing OK. You can now set at what temperatures the max. and min. frequencies, respectively will occur.
This menu can consist of several windows (one for each available demand), use the navigation arrows in the top left corner to change between the windows.



Menu 5.2 - system settings

Make different system settings for your installation here, e.g. activate connected slaves and which accessories are installed.

Menu 5.2.2 - installed slaves

If a slave is connected to the master installation, set it here.
There are two ways of activating connected slaves. You can either mark the alternative in the list or use the automatic function "search installed slaves".

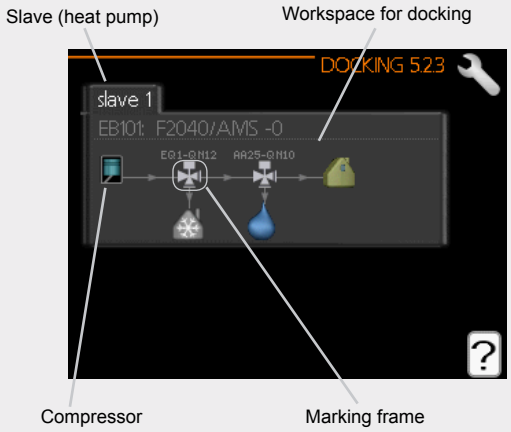
search installed slaves

Mark “search installed slaves" and press the OK button to automatically find connected slaves for the master heat pump.

Menu 5.2.3 - docking

Enter how your system is docked regarding pipes, for example to pool heating, hot water heating and heating the building.
This menu has a docking memory which means that the control system remembers how a particular reversing valve is docked and automatically enters the correct docking the next time you use the same reversing valve.

Factory setting:



Slave: Here you select for which heat pump the docking setting is to be made.

Compressor: Select if the compressor in the heat pump is blocked (factory setting), or standard (docked for example to pool heating, hot water charging and heating the building).

Marking frame: Move around the marking frame using the control knob. Use the OK button to select what you want to change and to confirm setting in the options box that appears to the right.

Workspace for docking: The system docking is drawn here.

CAUTION
Changing the factory range will result in incorrect operation of the device.

Symbol	Description
	Compressor (blocked)
	Compressor (standard)
	Reversing valves for hot water, cooling respectively pool control. The designations above the reversing valve indicate where it is electrically connected (EB101 = Slave 1, CL11 = Pool 1 etc.).
	Hot water charging
	Pool 1
	Pool 2
	Heating (heating the building, includes any extra climate system)
	Cooling

Menu 5.2.4 - accessories

The additional equipment installed in the system is defined here (See chapter "Accessories").
Connected accessories can be started in two ways. You can select the options in the list or use the automatic function "search installed acc".

Factory setting: *hot water prod*

search installed acc.
Select "search installed acc" and press OK to automatically search for connected accessories for the controller.

Menu 5.3 - accessory settings

The working settings of the installed and activated accessories are entered in the submenu.

IMPORTANT
Menu 5.3 is inactive in the factory settings. In order for this menu function to be active, it is necessary to install an additional accessory and activate it in the accessories menu. 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

Menu 5.3.2 - shunt controlled add. heat

IMPORTANT
Menu 5.3.2 is inactive in the factory settings. For this menu function to be active, you must install the AXC 30 accessory and activate it in the accessories menu. 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

Menu 5.3.3 - extra climate system

IMPORTANT
Menu 5.3.3 is inactive in the factory settings. For this menu function to be active, the ECS accessory must be installed and activated in the accessories menu. 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

Menu 5.3.6 - solar heating

IMPORTANT
Menu 5.3.6 is inactive in the factory settings. For this menu function to be active, you must install the AXC 30 accessory and activate it in the accessories menu. 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

Menu 5.3.11 - modbus

IMPORTANT
Menu 5.3.11 is inactive in the factory settings. In order for this menu function to be active, it is necessary to install the MODBUS accessory and activate it in the accessories menu. 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

Menu 5.3.12 - exhaust/supply air module

IMPORTANT
Menu 5.3.12 is inactive in the factory settings. For this menu function to be active, the ERS accessory must be installed and activated in the accessories menu. 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

Menu 5.3.14 - F135

IMPORTANT
Menu 5.3.14 is inactive in the factory settings. For this menu function to be active, the F135 accessory must be installed and activated in the accessories menu 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

Menu 5.3.16 - humidity sensor

IMPORTANT
Menu 5.3.16 is inactive in the factory settings. For this menu function to be active, you must install the HTS 40 accessory and activate it in the accessories menu. 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

Menu 5.3.20 - flow sensor

IMPORTANT
Menu 5.3.20 is inactive in the factory settings. For this menu function to be active, installation of the EMK accessory is required and its activation in the accessories menu 5.2.4.

A detailed description of programming the accessories can be found in the instructions for the individual accessories.

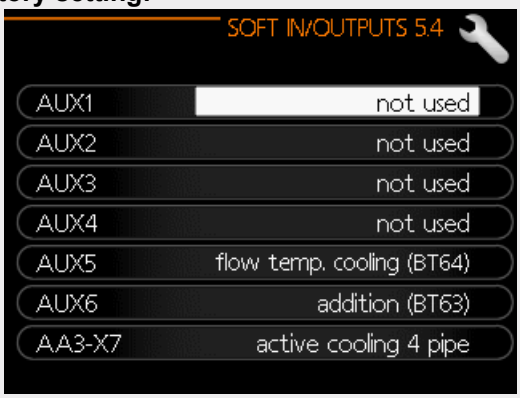
Menu 5.4 - soft in/outputs

In this menu, you can select which input on the input card (AA3) can be connected to an external signal (page 73).
Available entries on terminal strips AUX1-3 (AA3-X6: 9-14). The AUX inputs are freely programmable and allow the introduction of additional functions using external signals.

IMPORTANT
The signal for the AUX inputs must be a zero-voltage signal (make-break contact).

Input AA3-X7 is used for the built-in QN12 (heating / cooling) valve.

Factory setting:



Menu 5.5 - factory setting service

All settings can be reset (including settings available to the user) to default values here.

IMPORTANT
When resetting, the start guide is displayed the next time the control module is restarted with factory settings.

Menu 5.6 - forced control

You can force control the different components in the control module and any connected accessories here.

This menu is used to test individual components of the SHK 200S / SHK 200S-6.

Menu 5.7 - start guide

The first time you start the SHK 200S / SHK 200S-6, the start guide starts automatically. In this menu we have the ability to run it manually. For more information about the start guide, see page 38.

Menu 5.8 - quick start

It is possible to start the compressor from here.

CAUTION
There must be a heating or hot water demand to start the compressor

CAUTION
Do not quick start the compressor too many times over a short period of time as this may damage the compressor and its surrounding equipment.

Menu 5.9 - floor drying function

length of period 1 – 7
Setting range: 0 – 30 days
Factory setting, period 1 – 3, 5 – 7: 2 days
Factory setting, period 4: 3 days

temp. period 1 – 7
Setting range: 15 – 70°C
Default value:
temp. period 1 20 °C
temp. period 2 30 °C
temp. period 3 40 °C
temp. period 4 45°C
temp. period 5 40 °C
temp. period 6 30 °C
temp. period 7 20 °C

Set the function for under floor drying here.
You can set up to seven period times with different calculated flow temperatures. If less than seven periods are to be used, set the remaining period times to 0 days.
Mark the active window to activate the underfloor drying function. A counter at the bottom shows the number of days the function has been active.

ADVICE
If operating mode "add. heat only" is to be used, select it in menu 4.2.

Menu 5.10 - change log

Read off any previous changes to the control system here.
The date, time and ID no. (unique to certain settings) and the new set value is shown for every change.

IMPORTANT
The change log is saved at restart and remains unchanged after factory setting.

Menu 5.11 - slave settings

Settings for installed slaves can be made in the sub menus.

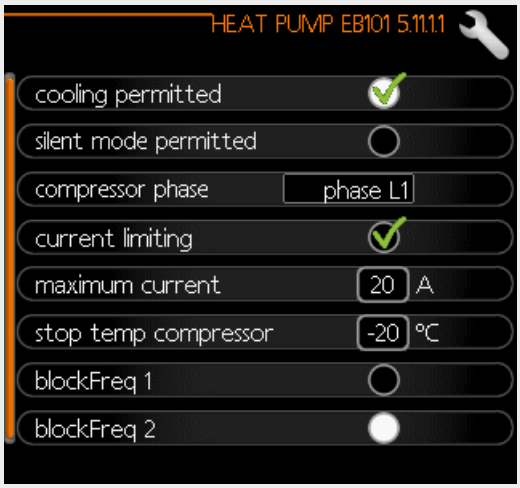
Menu 5.11.1 - EB101 - 5.11.8 - EB108

Make settings for the installed slaves here.

Menu 5.11.1.1 - heat pump

Make settings for the installed slave here. To see what settings you can make, see installation manual for the relevant installed slave.

Factory setting:



Menu 5.11.1.2 - GP12 EB101

op. mode
Heating/cooling
Setting range: auto / intermittent
Factory setting: *intermittent*

Set the operating mode for the charge pump here.
auto: The charge pump runs according to the current operating mode for the controller.
intermittent: The charge pump starts and stops 20 seconds before and after the compressor in the heat pump

speed during operation
heating, hot water, pool, cooling
Setting range: auto / manual
Factory setting: auto

Factory setting:

This menu allows setting the rotations with which the GP10 circulating pump is to run in the current operating mode. In "auto" mode, the speed of the feed pump is adjusted automatically to ensure optimal operation.

If "auto" is activated for heating operation, you can also make the setting "max. allowed speed" which restricts the charge pump and does not allow it to run at a higher speed than the set value.

For manual operation of the charge pump deactivate "auto" for the current operating mode and set the value to between 1 and 100 % (the previously set value for "max. allowed speed" no longer applies).

In this menu, we can set the maximum and minimum speeds of the circulation pump. The settings depend on the central heating system.

CAUTION
Changes to settings in menu 5.11 can only be edited by qualified personnel.

Despite the entered settings for cooling mode, cooling is not active. To activate cooling, see the section "Cooling settings".

5.12 - country

Select here where the product was installed. This allows access to country specific settings in your product.
Language settings can be made regardless of this selection.

IMPORTANT
This option locks after 24 hours, restart of display or program updating.

10 Service

Service actions

IMPORTANT
Servicing should only be carried out by persons with the necessary expertise.
When replacing components in the SHK 200S / SHK 200S-6, only original spare parts should be used.

Emergency mode

IMPORTANT
Switch (SF1) must not be put into mode „⚠" before the installation is filled with water. The compressor in the heat pump can be damaged.

Emergency mode is used in event of operational interference and in conjunction with service. Hot water is not produced in emergency mode.

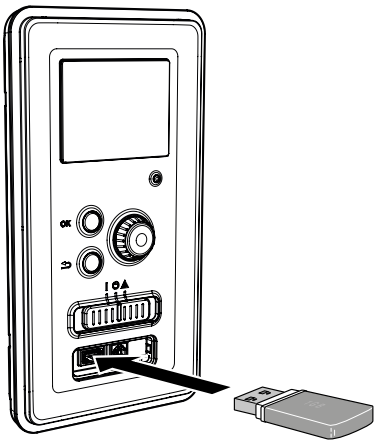
Emergency mode is activated by setting switch (SF1) in mode „ ⚠". This means that:

- The status lamp illuminates yellow
- The display is not lit and the control computer is not connected.
- Hot water is not produced.
- The compressors are switched off. Charge pump (EB101-GP12) and charge pump (EB102-GP12) (if installed) are running.
- Accessories are switched off
- The heating medium pump is active.
- The emergency mode relay (K1) is active.

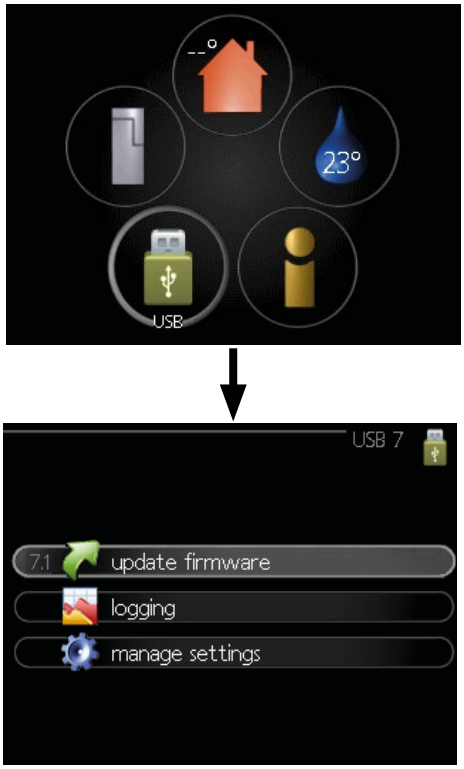
External additional heat is active if it is connected to the emergency mode relay (K1, terminal block X1). Ensure that the heating medium circulates through the external additional heat.

Temperature (ºC)	Resistance (kOm)	Voltage (VDC)
-40	351,0	3,256
-35	251,6	3,240
-30	182,5	3,218
-25	133,8	3,189
-20	99,22	3,150
-15	74,32	3,105
-10	56,20	3,047
-5	42,89	2,976
0	33,02	2,889
5	25,61	2,789
10	20,02	2,673
15	15,77	2,541
20	12,51	2,399
25	10,00	2,245
30	8,045	2,083
35	6,514	1,916
40	5,306	1,752
45	4,348	1,587
50	3,583	1,426
55	2,968	1,278
60	2,467	1,136
65	2,068	1,007
70	1,739	0,891
75	1,469	0,758
80	1,246	0,691
85	1,061	0,607
90	0,908	0,533
95	0,779	0,469
100	0,672	0,414

USB service outlet

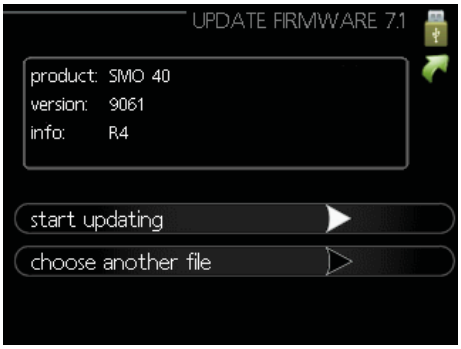


The display unit is equipped with a USB socket that can be used to update the software, save logged information and manage the settings in the controller.



When a USB memory is connected a new menu (menu 7) appears in the display

Menu 7.1 - update firmware



This allows you to update the software in the controller.

IMPORTANT
For the following functions to work the USB memory must contain files with software for the controller.

The fact box at the top of the display shows information (always in English) of the most probable update that the update software has selected form the USB memory.
This information states which product the software is intended for, the software version and general information about them. If you wish to select another file than the one selected, the correct file can be selected by "choose another file".

start updating

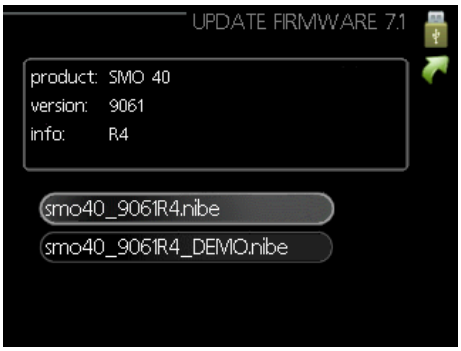
Select “start updating" if you want to start the update. You are asked whether you really want to update the software. Respond "yes" to continue or "no" to undo.

If you responded"yes" to the previous question the update starts and you can now follow the progress of the update on the display. When the update is complete the controller restarts.

IMPORTANT
A software update does not reset the menu settings in the controller.

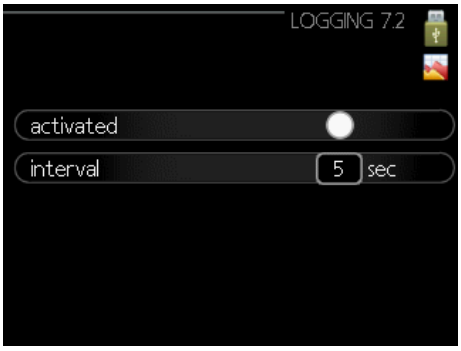
IMPORTANT
If the update is interrupted before it is complete (for example power cut etc.), the software can be reset to the previous version if the OK button is held in during start up until the green lamp starts to illuminate (takes about 10 seconds).

Choose another file



Select “choose another file" if you do not want to use the suggested software. When you scroll through the files, information about the marked software is shown in a fact box just as before. When you have selected a file with the OK button you will return to the previous page (menu 7.1) where you can choose to start the update.

Menu 7.2 - logging



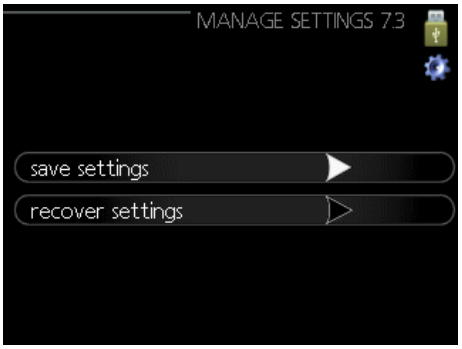
Setting range: 1 s – 60 min
Factory setting range: 5 s

Here you can choose how current measurement values from the controller should be saved onto a log file on the USB memory.

1. Set the desired interval between loggings.
2. Tick “activated".
3. The present values from the controller are saved in a file in the USB memory at the set interval until “activated" is unticked.

IMPORTANT
Untick "activated" before removing the USB memory.

Menu 7.3 - manage settings



Here you can manage (save as or retrieve from) all the menu settings (user and service menus) in the controller with a USB memory.
Via "save settings" you save the menu settings to the USB memory in order to restore them later or to copy the settings to another controller.

IMPORTANT
When you save the menu settings to the USB memory you replace any previously saved settings on the USB memory.

Via "recover settings" you reset all menu settings from the USB memory.

IMPORTANT
Reset of the menu settings from the USB memory cannot be undone.

Emptying the hot water tank

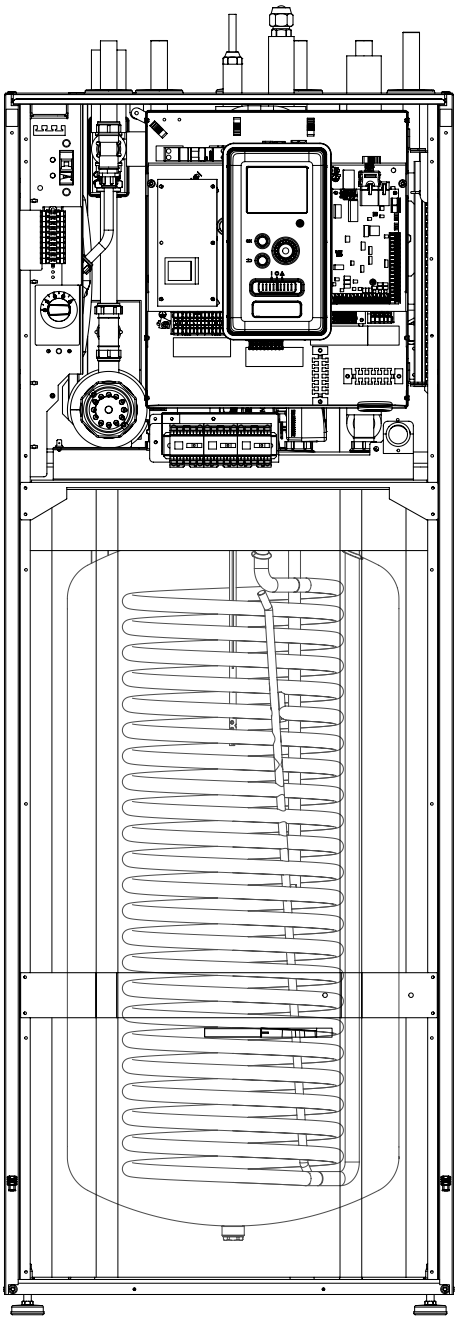
For emptying the hot water tank the siphon principle applies. This can be done via the drain valve on the cold water supply pipe or by placing a hose in the cold water connection.

Emptying the heating system

To facilitate the servicing of the heating system, it must first be emptied using the filling valve.

> **IMPORTANT**
> When emptying the side of the heating medium / heating system, remember that they may contain hot water. There is a risk of burns.

1. Connect the hose to the external drain valve of the system.
2. Then open the drain valve to empty the heating system.



11 Disturbances in comfort

In most cases, the control module notes a malfunction and indicates this with alarms and shows instructions to rectify it in the display. See "Manage alarm" for information about managing alarms. If the malfunction does not appear in the display, or if the display is not lit, the following troubleshooting guide can be used.

In the event of an alarm, some kind of malfunction has occurred, which is indicated by the status lamp changing from green continuously to red continuously. In addition, an alarm bell appears in the information window.

Alarm

In the event of an alarm with a red status lamp a malfunction has occurred that the heat pump and/or control module cannot remedy itself. In the display, by turning the control knob and pressing the OK button, you can see the type of alarm it is and reset it. You can also choose to set the installation to aid mode.

info / action Here you can read what the alarm means and receive tips on what you can do to correct the problem that caused the alarm.

reset alarm In many cases, it is sufficient to select “reset alarm” in order for the product to revert to normal operation. If a green light comes on after selecting “reset alarm”, the alarm has been remedied. If a red light is still visible and a menu called “alarm” is visible in the display, the problem that caused the alarm remains. If the alarm disappears and then returns, contact the installer.

reset alarm ”aid mode” is a type of emergency mode. This means that the installation produces heat and/or hot water despite there being some kind of problem. This can mean that the heat pump's compressor is not running. In this case any electrical addition produces heat and/or hot water

CAUTION
Selecting "aid mode” is not the same as correcting the problem that caused the alarm. The status lamp will therefore continue to be red.

If the alarm has not been reset, contact the installer for proper repair.

IMPORTANT
When reporting a fault, always enter the serial number of the product (14 digits).

Troubleshooting

If the operational interference is not shown in the display the following tips can be used:

Basic actions

Start by checking the following items:
- The switch's position.
- Group and main fuses of the accommodation.
- The control module's miniature circuit breaker.
- Correctly set load monitor (if installed).

Low hot water temperature or no hot water

This part of the fault-tracing chapter only applies if the water heater is installed in the system.
- Closed or choked filling valve for the hot water.
  – Open the valve.
- Mixing valve (if there is one installed) set too low.
  – Adjust the mixer valve.
- Control module in incorrect operating mode.
  – If mode "manual" is selected, select "addition".
- Large hot water consumption.
  – Wait until the hot water has heated up. Temporarily increased hot water capacity (temporary lux) can be activated in menu 2.1..
- Too low hot water setting.
  – Enter menu 2.2 and select a higher comfort mode
- Too low or no operating prioritisation of hot water.
  – Enter menu 4.9.1 and increase the time for when hot water is to be prioritised.

Low room temperature

- Closed thermostats in several rooms.
  – Set the thermostats to max, in as many rooms as possible.
- Adjust the room temperature via menu 1.1, instead of choking the thermostats.
- Control module in incorrect operating mode.
  – Enter menu 4.2. If mode "auto" is selected, select a higher value on "stop heating" in menu 4.9.2.
  – If mode "manual" is selected, select "heating". If this is not enough, select "addition".
- Too low set value on the automatic heating control.
  – Enter menu 1.1 "temperature" and adjust the offset heating curve up. If the room temperature is only low in cold weather the curve slope in

menu 1.9.1 "heating curve" needs adjusting up.

- Too low or no operating prioritisation of heat.
  – Enter menu 4.9.1 and increase the time for when heating is to be prioritised.
- "Holiday mode" activated in menu 4.7.
  – Enter menu 4.7 and select "Off".
- External switch for changing the room heating activated.
  – Check any external switches.
- Air in the climate system.
  – Vent the climate system.
  – Open the valves (contact the installer to locate them).

High room temperature

- Too high set value on the automatic heating control.
  – Enter menu 1.1 (temperature) and reduce the offset heating curve. If the room temperature is only high in cold weather the curve slope in menu 1.9.1 "heating curve" needs adjusting down.
- External switch for changing the room heating activated.
  – Check any external switches.

The compressor does not start

- There is no heating requirement.
  – The controller does not call on heating or hot water.
- Compressor blocked due to the temperature conditions.
  – Wait until the temperature is within the product's working range.
- Minimum time between compressor starts has not been reached.
  – Wait 30 minutes and then check if the compressor has started.
- Alarm tripped.
  – Follow the display instructions.

Additional heating only

If you are unsuccessful in rectifying the fault and are unable to heat the house, you can, whilst waiting for assistance, continue running the heat pump in "add. heat only". This means that additional heating only is used to heat the house.

Set the installation to additional heat mode

1. Go to menu 4.2 op. mode.
2. Mark "add. heat only" using the control knob and then press the OK button.
3. Return to the main menus by pressing the Back button.

CAUTION
When commissioning without METROTHERM air/water heat pump, the communication error alarm may appear in the display.
The alarm is reset if the relevant heat pump is deactivated in menu 5.2.2 ("installed slaves").

12 Accessories

Room sensorRTS 40

This accessory is used to obtain a more even indoor temperature.
Part no. 067 065

Extra shunt group ECS 40/ECS 41

This accessory is used when the controller is installed in houses with two or more different heating systems that require different supply temperatures.

ECS 40 (max. 80m²)	ECS 41 (max. 250m²)
Part no. 067 287	Part no. 067 288

Accessory card AXC 30

An accessory board for active cooling (4-pipe system), extra climate system, hot water comfort or if more than four charge pumps are to be connected to the controller. It can also be used for step controlled additional heat (e.g. external electric boiler), shunt controlled additional heat (e.g. wood/oil/gas/pellet boiler).
An accessory board is required if for example an HWC pump is to be connected to the controller at the same time that the common alarm indication is activated.

Part no. 067 304

Communications module MODBUS 40

MODBUS 40 enables controller to be controlled and monitored using a BMS (building management system) in the building. Communication is then performed using MODBUS-RTU.
Part no. 067 144

Room unit RMU 40

RMU 40 means that control and monitoring of the controller can be carried out in a different part of your home to where it is located.
Part no. 067 064

Charge pump CPD 11

Charge pump for heat pump

CPD 11-25/65	CPD 11-25/75
Part no. 067 321	Part no. 067 320

Air/water heat pump

L6	L8	L12
Part no. 064 205	Part no. 064 033	Part no. 064 110

Hot water control

VST 05

Reversing valve, Cu pipe Cu Ø22 mm
Max. heat pump size 8 kW
Part no. 089 982

VST 11

Reversing valve, Cu pipe Cu Ø28 mm
(Max. recommended capacity, 17 kW)
Part no. 089 152

VST 20

Reversing valve, Cu pipe Cu Ø35 mm
(Max. recommended capacity, 40 kW)
Part no. 089 388

Auxiliary relay HR 10

Auxiliary relay HR 10 is used to control external 1 to 3 phase loads such as oil burners, immersion heaters and pumps.
Part no. 067 309

Reversing valve for cooling

VCC 05

Reversing valve, pipe Cu Ø22 mm
Part no. 067 311

VCC 11

Reversing valve, pipe Cu Ø28 mm
Part no. 067 312

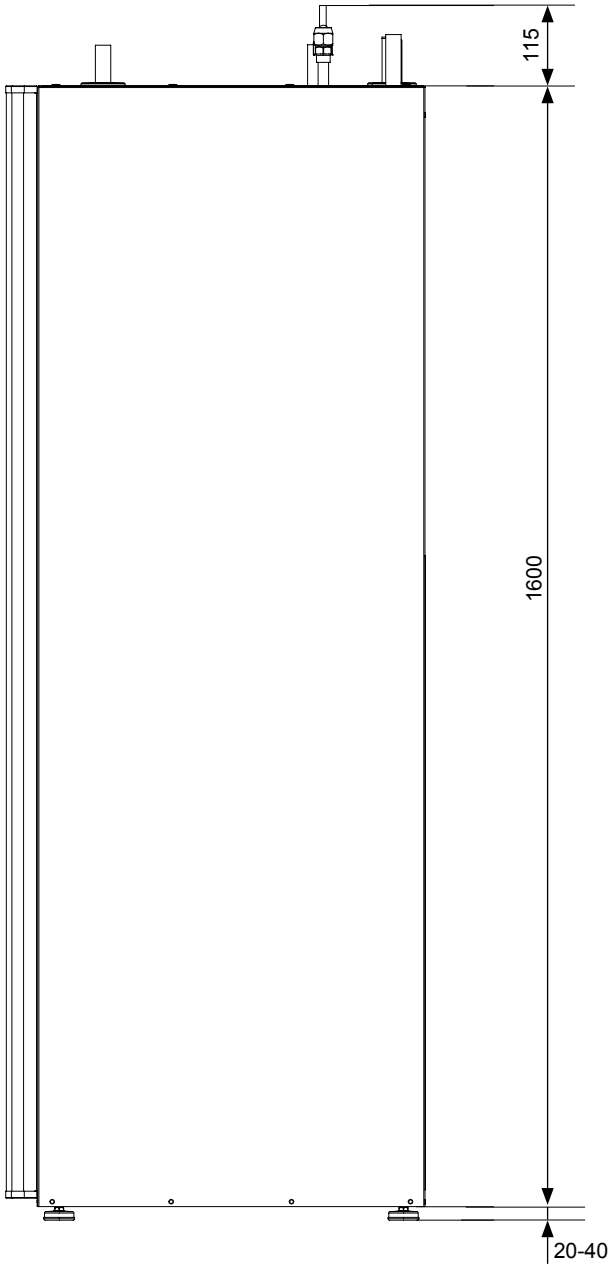
ENERGY MEASUREMENT KIT EMK 300

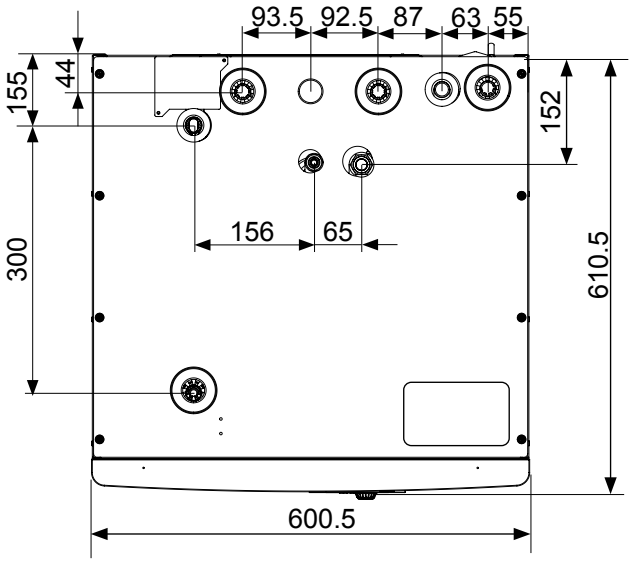
This accessory is installed externally and used to measurethe amount of energy that is supplied for the pool, hotwater, heating and cooling in the building.
Pipe Cu Ø22 mm
Art. 067 314

More accessories available at http: \\ www.METROTHERM.dk

13 Technical data

Dimensions and layout of connections





Technical data

Product type	Unit	SHK 200S	SHK 200S-6
Height	mm	1600	
Required room height	mm	2100	
Width	mm	600	
Depth	mm	610	
Weight	kg	165	161
Maximum working pressure on the coil	bar	16	
Opening pressure of the safety valve	bar	3	
DHW tank capacity	l	180	
Low-energy circulation pump of the heating system	-	yes	
Safety valve, heating system	-	yes	
Diaphragm expansion vessel	l	10	
Auxiliary preheater	kW	9	
Rated voltage	V	3x400	
Anticorrosive protection	-	Enamel + titanium anode	
Mixed water quantity at 40°C	-	230 l, 40°C	
Energy class (acc. to ErP, at supply temp. 55°C) (Applies to METROAIR L + HK 200S-6)	-	A++	
Performance class / Load profile (DHW)	-	A/XL	

Outdoor module	Unit	METROAIR L6	METROAIR L8	METROAIR L12
Starting current	A	5		
Compressor	-	Twin Rotary		
Max fan flow (heating, nominal)	m^3/h	2 530	3 000	4 380
Fan rating	W	86		
Defrosting	-	Reverse cycle		
Drain pan heater	W	Integrated 110	Integrated 100	Integrated 120
Breaking value high pressure	MPa (bar)	4,15 (41,5)		
Cut-out value low pressure (15 s)	MPa (bar)	0,079 MPa (0,79)		
Height	mm	640	750	845
Width	mm	800	780 (+67 valve protection)	970
Depth	mm	290 (+62 base rail)	340 (+80 base rail)	370 (+80 with foot rail)
Weight	kg	46	60	74
Colour (two coats powder coating)	-	Dark gray		
Refrigerant quantity (R410A)	kg	1,5	2,55	2,90
Max. length, refrigerant pipe, one way	m	30*		
Dimensions, refrigerant pipe	-	Gas pipe: from 12,7 (1/2”) Fluid pipe: from 6,35 (1/4”)	Gas pipe: from15,88 (5/8”) Fluid pipe: from 9,53 (3/8”)	
Pipe connection option	-	Right-hand side		Bottom / right-hand side / back
Part no.	-	064 205	064 033	064 110

*If the length of the refrigerant pipes exceeds 15 metres, extra refrigerant must be added at a rate of 0.06 kg/m.

Max. operating current and recommended fuse rating when connected 3x400 V	Unit	SHK 200S-6 + L6	SHK 200S + L8	SHK 200S + L12
Max. operating current compressor	A	16	16	20
Max operating current heat pump including 3 kW immersion heater, compressor working and enabled contactor K1 (Recommended fuse rating)	A	16 (16)	16 (16)	20 (20)
Max operating current heat pump including 6 kW immersion heater, compressor working and enabled contactor K1+K2 (Recommended fuse rating)	A	16 (16)	16 (16)	20 (20)
Max operating current heat pump including 9 kW immersion heater, compressor working and enabled contactor K1+K2 +K3 (Recommended fuse rating)	A	20 (20)	20 (20)	20 (20)
Max operating current 9 kW immersion heater, compressor not working and enabled contactor K1+K2 +K3 (Recommended fuse rating)	A	20 (20)	20 (20)	20 (20)

Performance

Outdoor module / SHK 200S / SHK 200S-6		L6 / SHK 200S-6	L8 / SHK 200S	L12 / SHK 200S
Heating	Outd. temp. / Supply temp.	Nominal	Nominal	Nominal
Output data according to EN14511 ΔT5K Specified/supplied power/COP (kW/kW/-)	7/35°C (floor)	2,67/0,5/5,32	3,86/0,83/4,65	5,21/1,09/4,78
	2/35°C (floor)	2,32/0,55/4,2	5,11/1,36/3,76	6,91/1,79/3,86
	7/45°C	2,28/0,63/3,62	3,70/1,00/3,70	5,00/1,31/3,82
	2/45°C	1,93/0,67/2,88	5,03/1,70/2,96	6,80/2,24/3,04
Cooling	Outd. temp. / Supply temp.	Max.	Max.	Max.
Output data according to EN14511 ΔT5K Specified/supplied power/EER	27/7°C	5,87/1,65/3,56	7,52/2,37/3,17	9,87/3,16/3,13
	27/18°C	7,98/1,77/4,52	11,20/3,20/3,50	11,70/3,32/3,52
	35/7°C	4,86/1,86/2,61	7,10/2,65/2,68	9,45/3,41/2,77
	35/18°C	7,03/2,03/3,45	9,19/2,98/3,08	11,20/3,58/3,12

Energy labelling

Supplier		METROTHERM		
Model		L6 / SHK 200S-6	L8 / SHK 200S	L12 / SHK 200S
Model hot water heater		SHK 200S-6	SHK 200S	SHK 200S
Temperature application	˚C	35 / 55	35 / 55	35 / 55
Declared load profile for water heating		XL	XL	XL
Seasonal space heating energy efficiency class, average climate		A++ / A++	A++ / A++	A++ / A++
Water heating energy efficiency class, average climate		A	A	A
Rated heat output (Pdesignh), average climate	kW	5 / 5	8 / 7	12 / 10
Annual energy consumption space heating, average climate	kWh	2 089 / 3 248	3,882 / 4 447	5 382 / 6 136
Seasonal space heating energy efficiency, average climate	%	188 / 131	172 / 127	174 / 132
Water heating energy efficiency, average climate	%	99	99	98
Sound power level L_{WA} indoors	dB	35	35	35
Rated heat output (Pdesignh), cold climate	kW	4 / 6	9 / 10	12 / 13
Rated heat output (Pdesignh), warm climate	kW	4 / 5	8 / 8	12 / 12
Annual energy consumption space heating, cold	kWh	2 694 / 4 610	6 264 / 8 844	7 798 / 11 197
Annual energy consumption space heating,warm climate	kWh	872 / 1 398	1 879 / 2 333	2 759 / 3 419
Seasonal space heating energy efficiency, cold climate	%	143 / 116	139 / 108	142 / 111
Seasonal space heating energy efficiency, warm climate	%	252 / 179	225 / 180	229 / 185
Sound power level L_{WA} outdoors	dB	51	55	58

Data for energy efficiency of the package

Model		METROAIR L6 / SHK 200S-6	METROAIR L8 / SHK 200S	METROAIR L12 / SHK 200S
Model hot water heater		HK 200S-6	HK 200S	HK 200S
Temperature application	˚C	35 / 55	35 / 55	35 / 55
Controller, class		VI		
Controller, contribution to efficiency	%	4,0		
Seasonal space heating energy efficiency of the package, average climate	%	192 / 135	176 / 131	178 / 136
Seasonal space heating energy efficiency class of the package, average climate		A+++ / A++	A+++ / A++	A+++ / A++
Seasonal space heating energy efficiency of the package, cold climate	%	147 / 120	143 / 112	146 / 115
Seasonal space heating energy efficiency of the package, warm climate	%	256 / 183	229 / 184	233 / 189

The reported efficiency of the package also takes the controller into account. If an external supplementary boiler or solar heating is added to the package, the overall efficiency of the package should be recalculated.

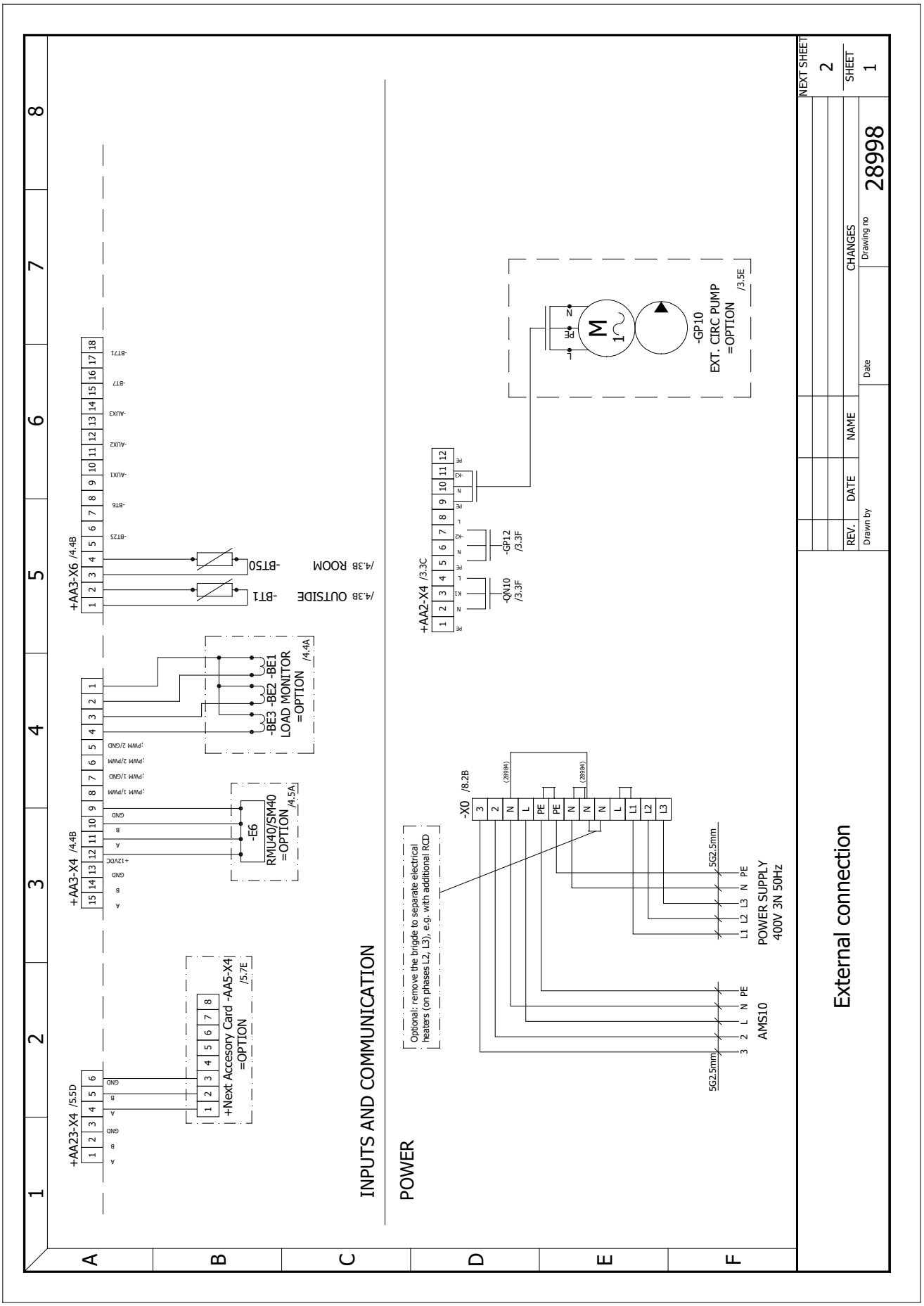
Energy labelling

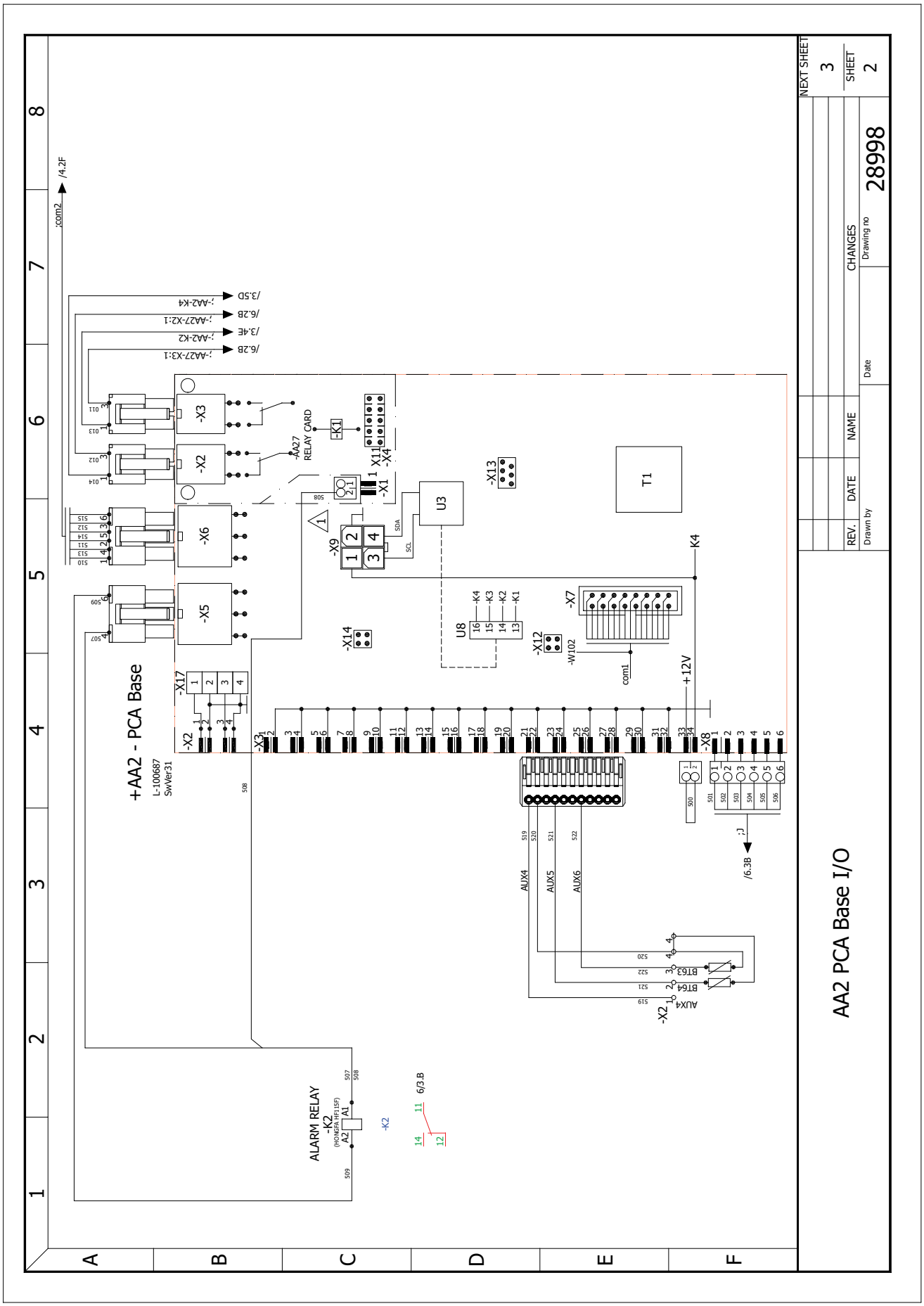
Model		METROAIR L6 / SHK 200S-6					
Model hot water heater		HK 200S-6					
Type of heat pump		☒ Air-water ☐ Exhaust-water ☐ Brine-water ☐ Water-water					
Low-temperature heat pump		☐ Yes ☒ No					
Integrated immersion heater for additional heat		☐ Yes ☒ No					
Heat pump combination heater		☐ Yes ☒ No					
Climate		☒ Average ☐ Cold ☐ Warm					
Temperature application		☒ Average (55 °C) ☐ Low (35 °C)					
Applied standards		EN14825 / EN16147					
Rated heat output	Prated	5,3	kW	Seasonal space heating energy efficiency	☒	131	%
Declared capacity for space heating at part load and at outdoor temperature Tj				Declared coefficient of performance for space heating at part load and at outdoor temperature Tj			
Tj = -7 °C	Pdh	4,7	kW	Tj = -7 °C	COPd	1,88	-
Tj = +2 °C	Pdh	2,8	kW	Tj = +2 °C	COPd	3,26	-
Tj = +7 °C	Pdh	1,8	kW	Tj = +7 °C	COPd	4,72	-
Tj = +12 °C	Pdh	2,7	kW	Tj = +12 °C	COPd	6,47	-
Tj = biv	Pdh	4,7	kW	Tj = biv	COPd	1,88	-
Tj = TOL	Pdh	4,1	kW	Tj = TOL	COPd	1,77	-
Tj = -15 °C (if TOL < -20 °C)	Pdh		kW	Tj = -15 °C (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-7	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation coefficient	Cdh	0,99	-	Max supply temperature	WTOL	58	°C
Power consumption in modes other than active mode				Additional heat			
Off mode	P_{OFF}	0,007	kW	Rated heat output	Psup	1,2	kW
Thermostat-off mode	P_{TO}	0,012	kW				
Standby mode	P_{SB}	0,012	kW	Type of energy input	Electric		
Crankcase heater mode	P_{CK}	0	kW				
Other items							
Capacity control		Variable		Rated airflow (air-water)		2 526	m^3/h
Sound power level, indoors/outdoors	L_{WA}	35 / 51	dB	Nominal heating medium flow			m^3/h
Annual energy consumption	Q_{HE}	3 248	kWh	Brine flow brine-water or water-water heat pumps			m^3/h

Model		METROAIR L8 / SHK 200S					
Model hot water heater		HK 200S					
Type of heat pump		☒ Air-water ☐ Exhaust-water ☐ Brine-water ☐ Water-water					
Low-temperature heat pump		☐ Yes ☒ No					
Integrated immersion heater for additional heat		☒ Yes ☐ No					
Heat pump combination heater		☒ Yes ☐ No					
Climate		☒ Average ☐ Cold ☐ Warm					
Temperature application		☒ Average (55 °C) ☐ Low (35 °C)					
Applied standards		EN14825 / EN16147					
Rated heat output	Prated	7.0	kW	Seasonal space heating energy efficiency	☒	127	%
Declared capacity for space heating at part load and at outdoor temperature Tj				Declared coefficient of performance for space heating at part load and at outdoor temperature Tj			
Tj = -7 °C	Pdh	6.3	kW	Tj = -7 °C	COPd	1.94	-
Tj = +2 °C	Pdh	3.9	kW	Tj = +2 °C	COPd	3.11	-
Tj = +7 °C	Pdh	2.6	kW	Tj = +7 °C	COPd	4.42	-
Tj = +12 °C	Pdh	3.7	kW	Tj = +12 °C	COPd	5.93	-
Tj = biv	Pdh	6.6	kW	Tj = biv	COPd	1.83	-
Tj = TOL	Pdh	5.9	kW	Tj = TOL	COPd	1.86	-
Tj = -15 °C (if TOL < -20 °C)	Pdh		kW	Tj = -15 °C (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-8.6	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation coefficient	Cdh	0.97	-	Max supply temperature	WTOL	58.0	°C
Power consumption in modes other than active mode				Additional heat			
Off mode	P_{OFF}	0.002	kW	Rated heat output	Psup	1.1	kW
Thermostat-off mode	P_{TO}	0.010	kW				
Standby mode	P_{SB}	0.015	kW	Type of energy input	Electric		
Crankcase heater mode	P_{CK}	0.030	kW				
Other items							
Capacity control	Variable			Rated airflow (air-water)		3,000	m^3/h
Sound power level, indoors/outdoors	L_{WA}	35 / 54	dB	Nominal heating medium flow		0.60	m^3/h
Annual energy consumption	Q_{HE}	4,447	kWh	Brine flow brine-water or water-water heat pumps			m^3/h

Model		METROAIR L12 / SHK 200S					
Model hot water heater		HK 200S					
Type of heat pump		☒ Air-water ☐ Exhaust-water ☐ Brine-water ☐ Water-water					
Low-temperature heat pump		☐ Yes ☒ No					
Integrated immersion heater for additional heat		☒ Yes ☐ No					
Heat pump combination heater		☒ Yes ☐ No					
Climate		☒ Average ☐ Cold ☐ Warm					
Temperature application		☒ Average (55 °C) ☐ Low (35 °C)					
Applied standards		EN14825 / EN16147					
Rated heat output	Prated	10.0	kW	Seasonal space heating energy efficiency	☒	132	%
Declared capacity for space heating at part load and at outdoor temperature Tj				Declared coefficient of performance for space heating at part load and at outdoor temperature Tj			
Tj = -7 °C	Pdh	8.9	kW	Tj = -7 °C	COPd	1.99	-
Tj = +2 °C	Pdh	5.5	kW	Tj = +2 °C	COPd	3.22	-
Tj = +7 °C	Pdh	3.5	kW	Tj = +7 °C	COPd	4.61	-
Tj = +12 °C	Pdh	5.0	kW	Tj = +12 °C	COPd	6.25	-
Tj = biv	Pdh	9.2	kW	Tj = biv	COPd	1.90	-
Tj = TOL	Pdh	8.1	kW	Tj = TOL	COPd	1.92	-
Tj = -15 °C (if TOL < -20 °C)	Pdh		kW	Tj = -15 °C (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-7.9	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation coefficient	Cdh	0.98	-	Max supply temperature	WTOL	58.0	°C
Power consumption in modes other than active mode				Additional heat			
Off mode	P_{OFF}	0.002	kW	Rated heat output	Psup	1.9	kW
Thermostat-off mode	P_{TO}	0.014	kW				
Standby mode	P_{SB}	0.015	kW	Type of energy input	Electric		
Crankcase heater mode	P_{CK}	0.035	kW				
Other items							
Capacity control		Variable		Rated airflow (air-water)		4,380	m^3/h
Sound power level, indoors/outdoors	L_{WA}	35 / 57	dB	Nominal heating medium flow		0.86	m^3/h
Annual energy consumption	Q_{HE}	6,136	kWh	Brine flow brine-water or water-water heat pumps			m^3/h

Diagram of electrical connections




AA2 PCA Base I/O
+AA2 - PCA Base
L-100687
SwVer31
NEXT SHEET 3
SHEET 2
CHANGES
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/3.5D
/6.2B
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-X3
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-X5
-X1
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-X17
-X8
-K1
-K2
-K3
-K4
U3
U8
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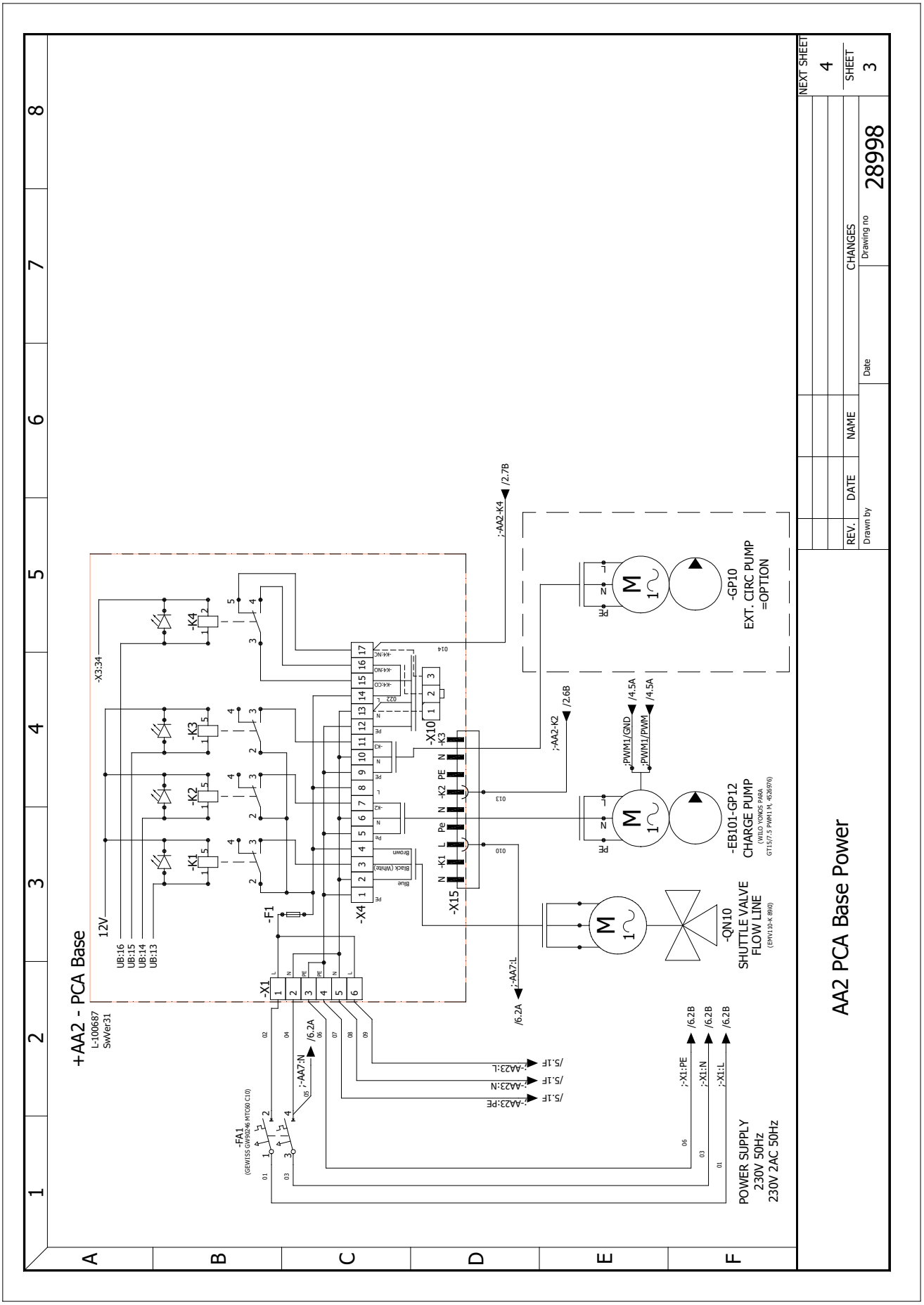
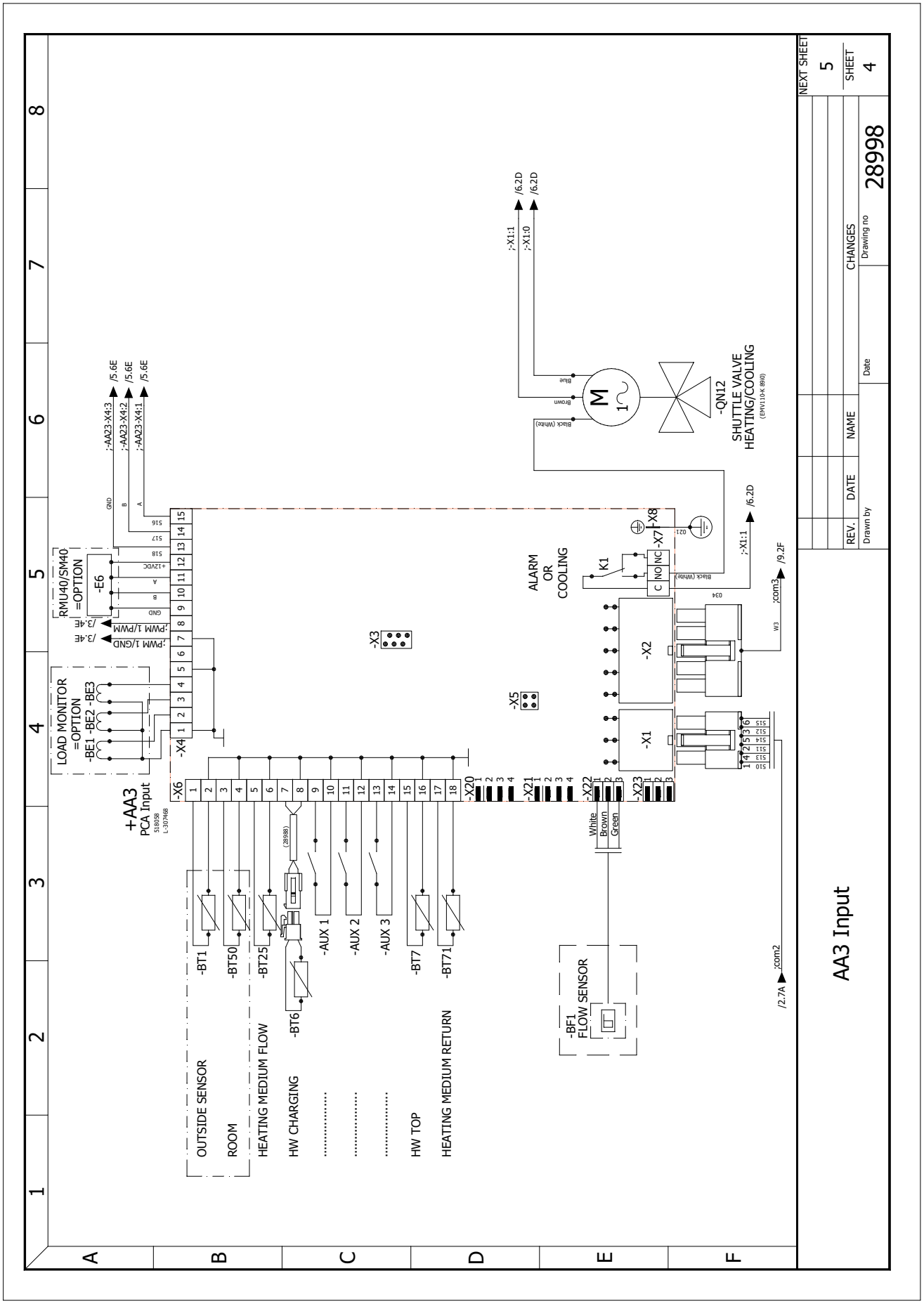
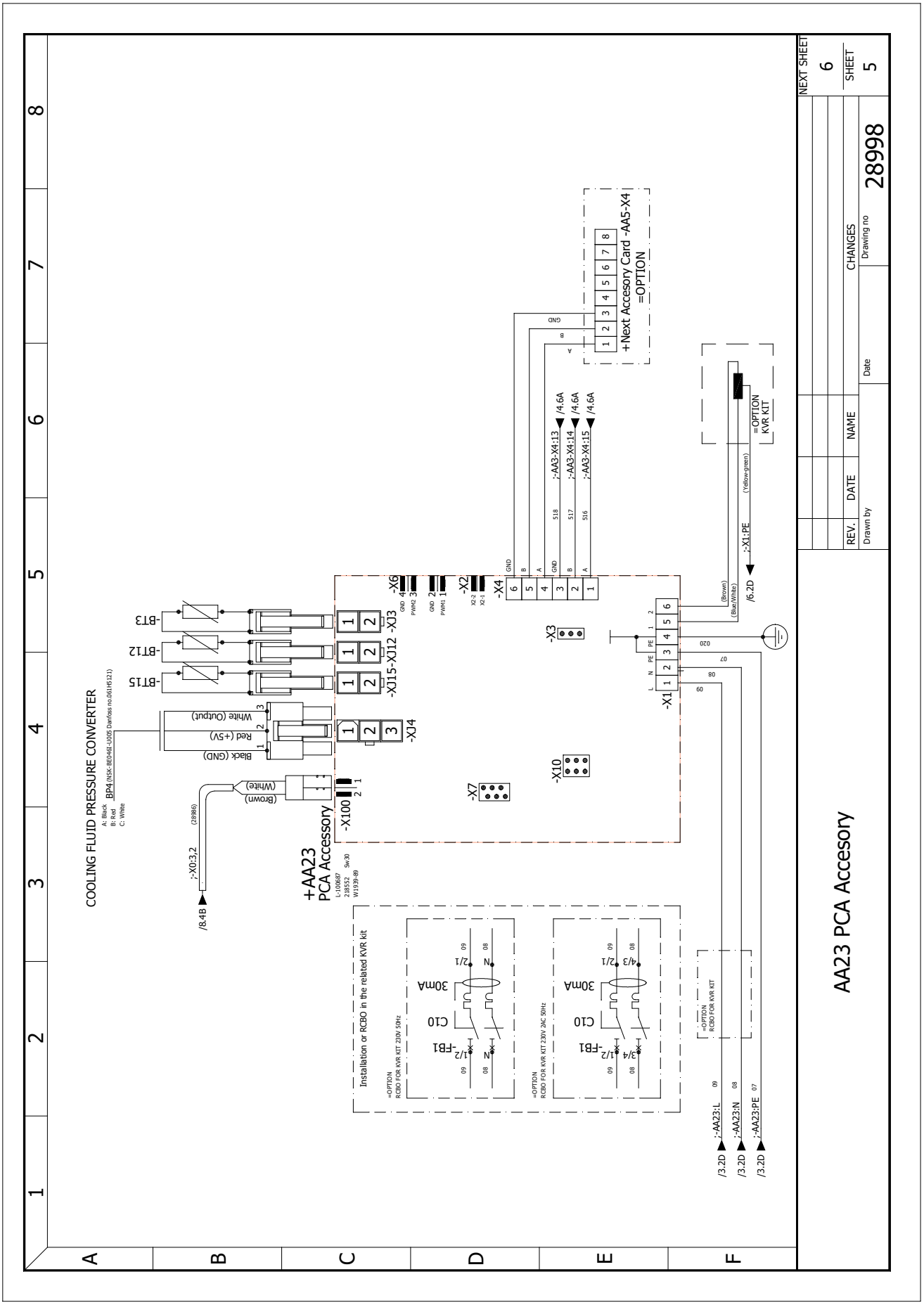
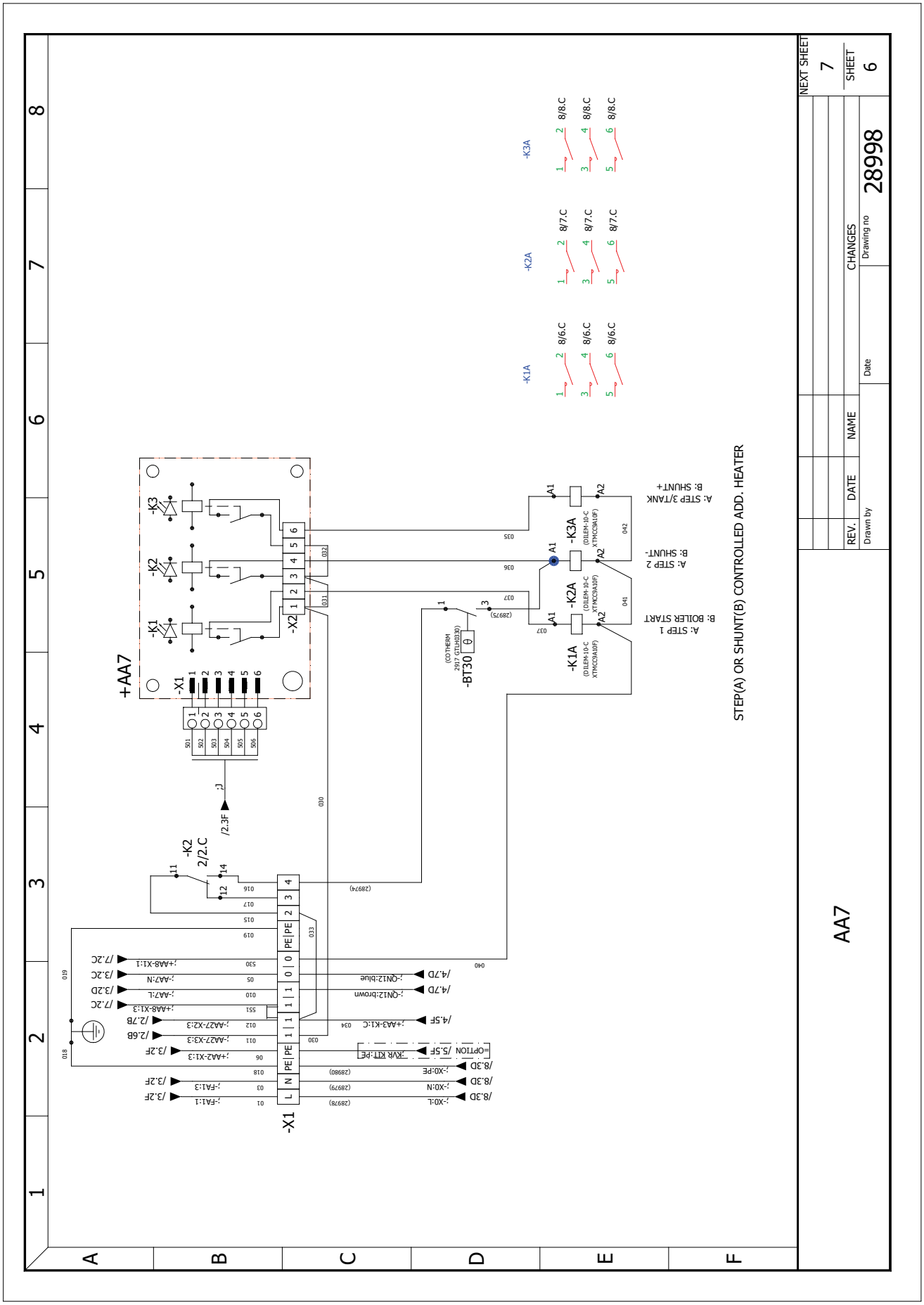
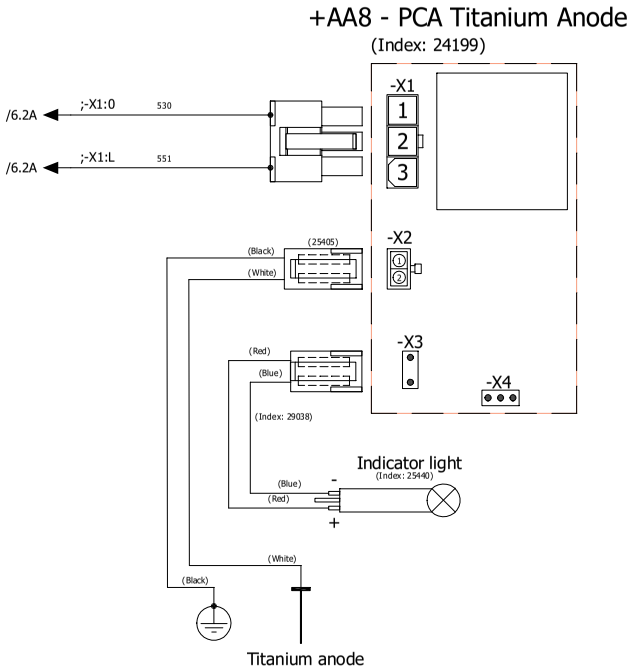
-W102
com1
+12V
AUX4
AUX5
AUX6
BT63
BT64
ALARM RELAY
/6.3B
6/3.B


AA2 PCA Base Power
+AA2 - PCA Base
L-100687
SwVer31
POWER SUPPLY
230V 50Hz
230V 2AC 50Hz
SHUTTLE VALVE
FLOW LINE
-QN10
-EB101-GP12
CHARGE PUMP
-GP10
EXT. CIRC PUMP
=OPTION
-X1
-X4
-X10
-X15
-F1
-FA1
-K1
-K2
-K3
-K4
12V
UB:16
UB:15
UB:14
UB:13
;-AA2-K4
;-AA2-K2
;-AA7:L
;-AA7:N
;-AA23:L
;-AA23:N
;-AA23:PE
;-X1:PE
;-X1:N
;-X1:L
;PWM1/GND
;PWM1/PWM
NEXT SHEET
SHEET
REV.
DATE
NAME
CHANGES
Drawn by
Date
Drawing no
28998


AA3 Input
+AA3
PCA Input
518059
L-307468
LOAD MONITOR
=OPTION
-BE1 -BE2 -BE3
RMU40/SM40
=OPTION
-E6
-X4
-X6
-X20
-X21
-X22
-X23
-X1
-X2
-X3
-X5
-X7
-X8
K1
ALARM
OR
COOLING
-QN12
SHUTTLE VALVE
HEATING/COOLING
(ESHV110-K 8R/0)
M
1~
Blue
Brown
Black (White)
OUTSIDE SENSOR
-BT1
ROOM
-BT50
HEATING MEDIUM FLOW
-BT25
HW CHARGING
-BT6
(28988)
.....
-AUX 1
.....
-AUX 2
.....
-AUX 3
HW TOP
-BT7
HEATING MEDIUM RETURN
-BT71
-BF1
FLOW SENSOR
White
Brown
Green
;com2
/2.7A
;com3
/9.2F
;-X1:1
;-X1:0
/6.2D
;-AA23-X4:3
;-AA23-X4:2
;-AA23-X4:1
/5.6E
;PWM 1/PWM
;PWM 1/GND
/3.4E
GND
B
A
+12VDC
NEXT SHEET
5
SHEET
4
REV.
DATE
NAME
Date
CHANGES
Drawn by
Drawing no
28998


AA23 PCA Accesory
NEXT SHEET 6
SHEET 5
REV. DATE NAME CHANGES
Drawn by Date Drawing no 28998
+AA23
PCA Accessory
-X100
-X3
-X10
-X7
-X4
-X2
-X6
-X1
-X3
-X4
-X15-X12
-X3
-X4
-BT1
-BT2
-BT3
COOLING FLUID PRESSURE CONVERTER
BP4 (NSK-BE046-U005 Danfoss no:061H5121)
A: Black
B: Red
C: White
Black (GND)
Red (+5V)
White (Output)
(Brown)
(White)
(28986)
;-X0:3,2
/8.4B
+Next Accesory Card -AA5-X4
=OPTION
;-AA3-X4:13
;-AA3-X4:14
;-AA3-X4:15
/4.6A
/4.6A
/4.6A
=OPTION
KVR KIT
;-X1:PE
(Yellow-green)
(Brown)
(Blue/White)
/6.2D
Installation or RCBO in the related KVR kit
=OPTION
RCBO FOR KVR KIT 230V 50Hz
-FB1
C10
30mA
=OPTION
RCBO FOR KVR KIT 230V 2AC 50Hz
-FB1
C10
30mA
=OPTION
RCBO FOR KVR KIT
;-AA23:L
;-AA23:N
;-AA23:PE
/3.2D
/3.2D
/3.2D


STEP(A) OR SHUNT(B) CONTROLLED ADD. HEATER
AA7
NEXT SHEET 7
SHEET 6
Drawing no 28998
CHANGES
REV. DATE NAME Date
Drawn by
+AA7
-X1
-X2
-K1
-K2
-K3
-K1A
-K2A
-K3A
-BT30
-K2 2/2.C
A: STEP 1
B: BOILER START
A: STEP 2
B: SHUNT-
A: STEP 3/TANK
B: SHUNT+
=OPTION



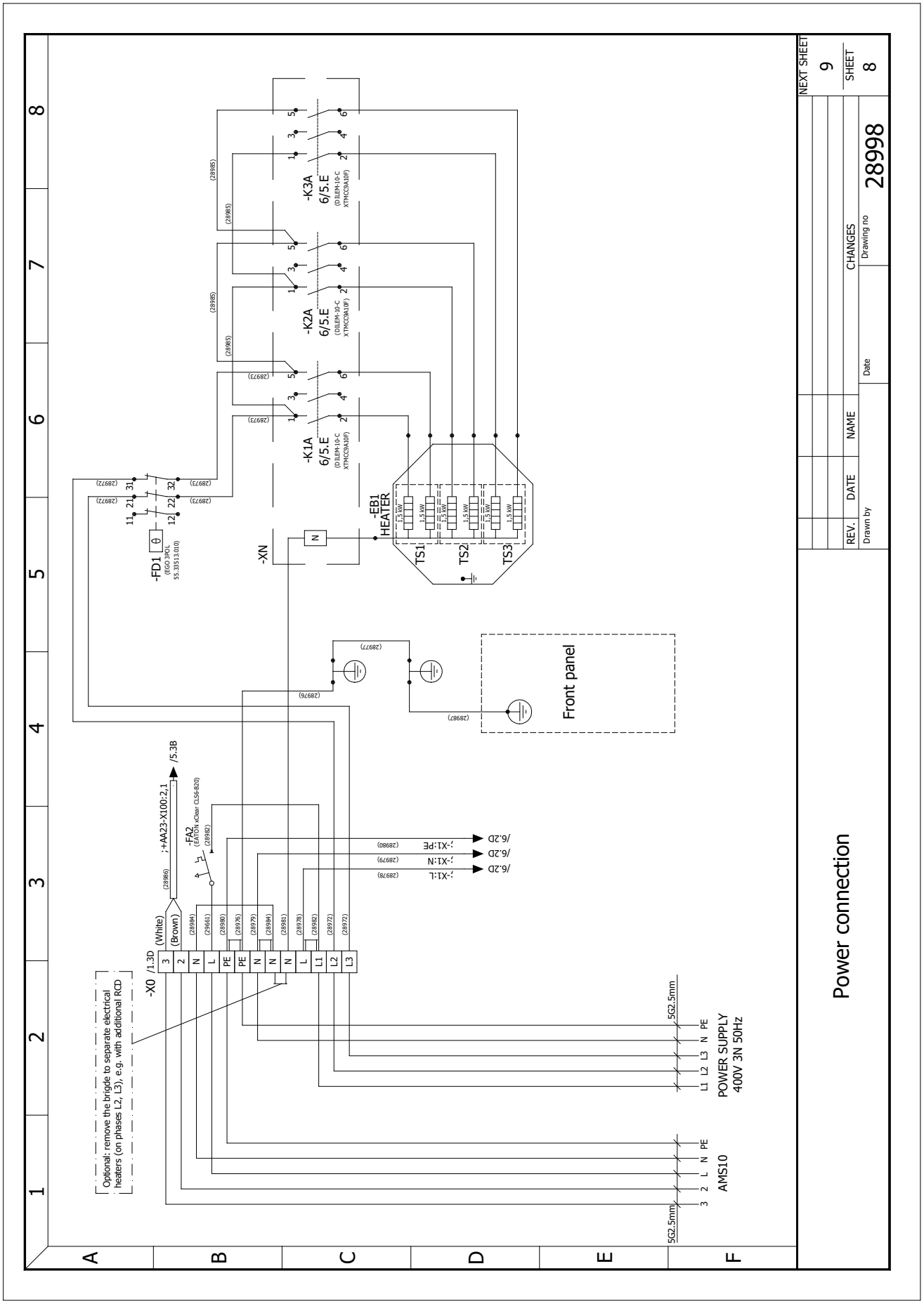
AA8 PCA Titanium Anode

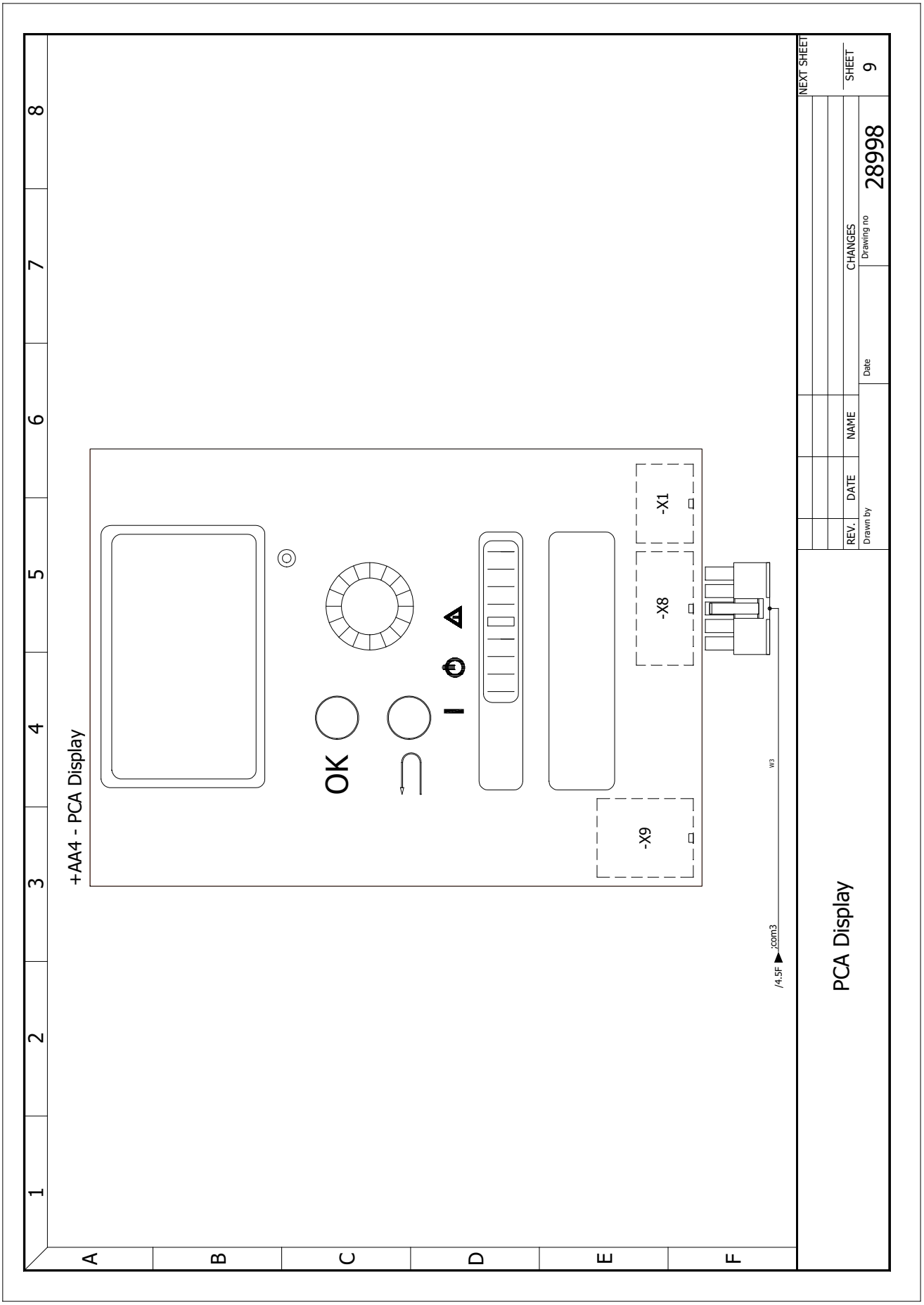
REV.	DATE	NAME	CHANGES

Drawn by | Date | Drawing no 28998

NEXT SHEET 8

SHEET 7


Power connection
Front panel
-K1A 6/5.E
-K2A 6/5.E
-K3A 6/5.E
-EB1 HEATER
-FD1
-XN
-X0 /1.3D
-FA2
-+AA23-X100:2,1
/5.3B
/6.2D
-:X1:L
-:X1:N
-:X1:PE
Optional: remove the brigde to separate electrical heaters (on phases L2, L3), e.g. with additional RCD
POWER SUPPLY 400V 3N 50Hz
AMS10
5G2.5mm
TS1
TS2
TS3
1,5 kW
NEXT SHEET 9
SHEET 8
REV.
DATE
NAME
Date
CHANGES
Drawn by
Drawing no 28998


+AA4 - PCA Display
OK
-X1
-X8
-X9
/4.5F .com3
w3
PCA Display
NEXT SHEET
REV.
DATE
NAME
CHANGES
Drawn by
Date
Drawing no
28998
SHEET
9

METRO THERM

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