

# SHB10 TIKI

Installation and User manual

Indoor module for  
air to water split systems



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# 1 Important information

## Safety information

This manual contains installation and service procedures for implementation by specialists.

This appliance can be used by children aged 8 years and above and persons with reduced physical, sensory or mental capacity or lack of experience and knowledge, if they will be supervised or have received instruction concerning safe use of the appliance, and if they understand the danger involved in its use. Children must not play with the appliance. Cleaning and basic maintenance of the appliance must not be carried out by children unsupervised.

The rights to make structural changes are reserved.

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## Symbols



### CAUTION

This symbol indicates danger to the appliance or person.



### TIP

This symbol indicates tips that will make it easier to operate the product.



### NOTE

This symbol indicates important information to note while operating or maintaining the appliance.

## Marking

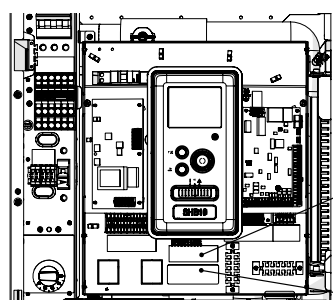
SHB10 is CE marked and has an IP21 protection rating.

The CE mark confirms that TIKI has ensured that the product conforms to all applicable regulations specified by the relevant EU directives. The CE mark is mandatory for most products sold in the EU, regardless of where they are made.

IP21 means that objects with a diameter greater than or equal to 12.5 mm cannot penetrate and cause damage and that the product is protected against vertically falling drops of water.

## Serial number

The serial number is located inside the SHB 10, under the control panel and consists of 14 digits.



Software  
serial number  
(PF4)

Serial number  
SHB10  
(PF3)

SHB10 TIKI



## Waste disposal



Leave the disposal of the packaging to the installer who installed the product or to a special waste disposal facility.

Do not dispose of used products with normal household waste. It must be transported to a special

waste disposal facility or to a vendor who provides this type of service.

Improper disposal of the product by the user may result in administrative penalties in accordance with the applicable legislation.

## Inspection of the installation

The climate system must be inspected before commissioning. The inspection must be carried out by a suitably qualified person. In addition, fill in the page for the installation data in the User Manual.

### Checklist

	Description	Notes	Signature	Date
	Heating medium			
	Flushing the system			
	System vented			
	Expansion vessel			
	Particulate filter			
	Safety valve			
	Shut-off valves			
	Pressure in the climate system			
	Connected according to outline diagram			
	Hot water			
	Shut-off valves			
	Mixing valve			
	Safety valve			
	Electric power supply			
	Connecting communication			
	Perimeter protection			
	Protection, indoor unit			
	Building protection			
	Outdoor temperature sensor			
	Room sensor			
	Current sensor			
	Safety circuit breaker			
	Residual-current device			
	Setting the thermostat to emergency mode			
	Miscellaneous			
	Docked to			

## 2 Delivery and handling

### Available models

SHB10 units include the following separate models:

- SHB10-6- unit dedicated for use with AMS 10-6.
- SHB10-12- unit dedicated for use with AMS 10-8 and AMS 10-12.
- SHB10-16- unit dedicated for use with AMS 10-16.

### Compatibility

The SHB10 unit can be used with Split type outdoor units. The compatible SPLIT heat pumps are:

Outdoor unit	Compatibility
AMS 10-6	SHB10-6
AMS 10-8	SHB10-12
AMS 10-12	
AMS 10-16	SHB10-16

More information on SPLIT heat pumps available at [www.tiki.si](http://www.tiki.si) and in dedicated installation and user manuals.

See section "Accessories" for the list of accessories to be used with SHB10.

### Transport

The SHB 10 indoor unit should be transported and stored vertically or horizontally on the rear wall with the display facing up. Storage location must be dry. SHB 10 can be transported into the building vertically or carefully placed on the rear wall with the display facing up.



#### CAUTION

When the SHB 10 is stored or transported horizontally with the display facing up, no devices / components may be stored on top of the unit. It may damage the device.

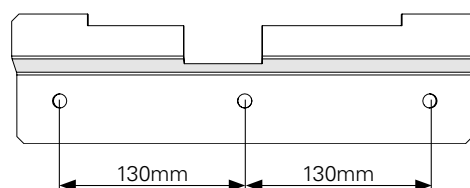
### Assembly



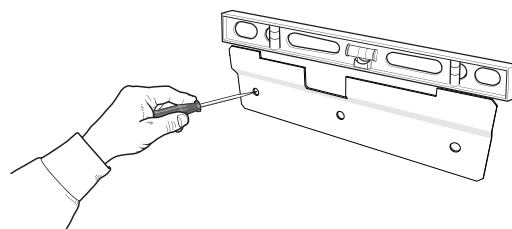
#### CAUTION

The SHB10 unit must be hanged on the wall using the included hanger. The device can be installed in vertical position only.

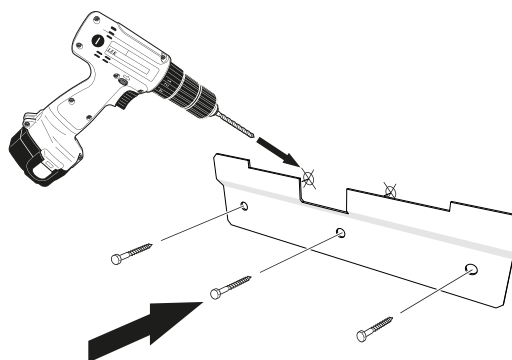
- SHB10 is equipped with wall-mounted hanger. For mounting hole spacing, see drawing below.
- SHB10 must be hanged on walls of sufficient load-bearing capacity able to take the weight of a filled indoor unit.



- Since SHB10 is equipped with condensate drain-off system, the indoor unit must be installed at the site with sewage system drain.



1. Place the included mounting hanger horizontally against the wall. Level the hanger using the spirit level. Mark the points for the mounting holes to be drilled.



2. Drill the holes in marked points.
3. Screw the attachments to the wall using the provided rawplugs and bolts.
4. Install SHB10 on the mounted hanger.
5. Level the device using the bottom adjustment screws.

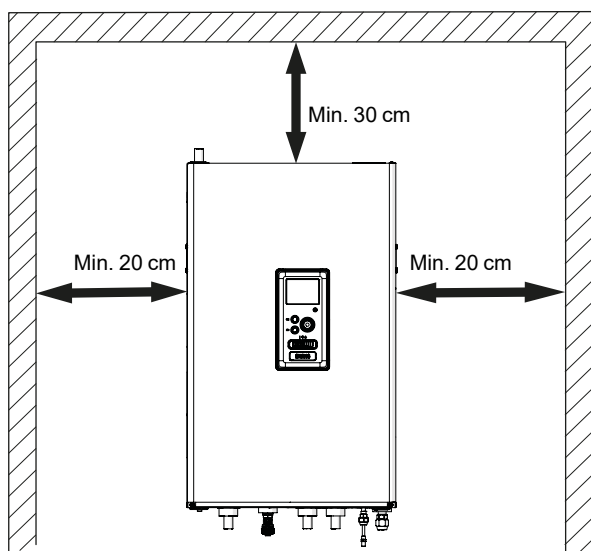


#### CAUTION

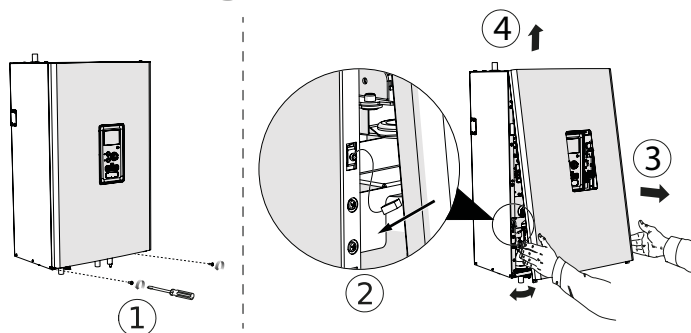
Included rawplugs should be assessed in terms of load-bearing capacity and material of the wall on which the device is to be hanged. Replace with the other rawplugs meeting the requirements, if necessary.

## Installation location

SHB10 can be installed in any room protected against temperature drop below 0°C to avoid freezing of the heating medium. 800 mm of free space should be ensured in the front of the indoor unit. All servicing of SHB10 can be performed from the front.



## Removing the cover



1. Unscrew the bolts from the lower edge of the front cover ①.
2. Tilt the cover at the edge, making sure that the connection cables are not damaged and disconnect the cable grounding the front cover ②.
3. Disassemble the front cover by tilting its lower edge toward you ③ and lifting it up ④.

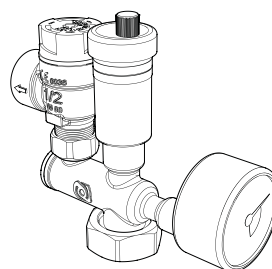


### CAUTION

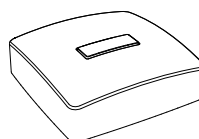
After reassembling the cover, the earthing wire must be connected.

## Supplied components

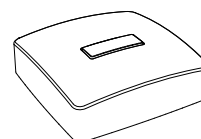
- Hanger (1 pc.)
- Rawplugs and bolts (3 pcs)
- Safety group (1 pc.)
- Outdoor temperature sensor (1 pcs)
- Indoor temperature sensor (1 pcs)
- 230V connection jumper (1 pc.)
- Temperature sensor BT (3 pc.)
- Instalation and user manual



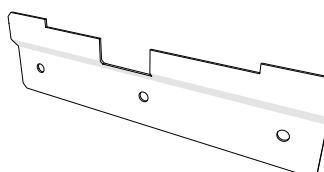
Safety group with safety valve (3 bar), pressure gauge and automatic air vent (1 pc.)



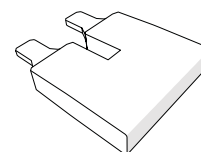
Outdoor temperature sensor (1 pcs)



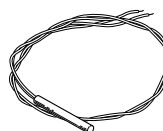
Indoor temperature sensor (1 pcs)



Hanger (1 pc.)



230V connection jumper (1 pc.)



Temperature sensor BT (3 pc.)

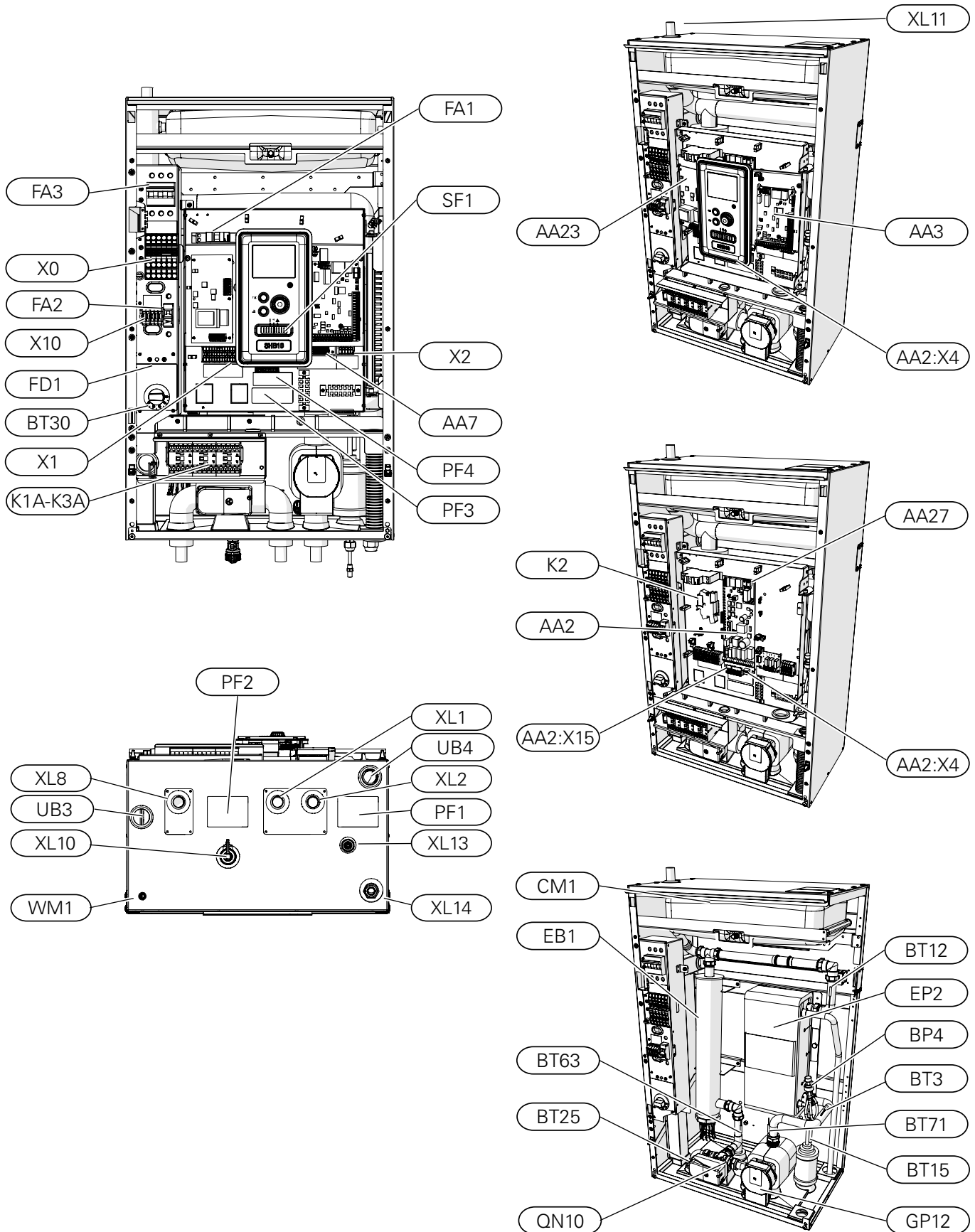


### CAUTION

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

# 3 Design of the indoor unit

## SHB10



#### Pipe connections

XL1	Connection, heating medium, supply
XL2	Connection, heating medium, return
XL8	Connection, heating medium hot water, supply
XL10	Connection, drain valve
XL11	Connection, safety assembly, pressure gauge
XL13	Connection, liquid refrigerant
XL14	Connection, gas refrigerant
WM1	Condensate drip tray drain

#### HVAC components

CM1	Expansion vessel, closed
QN10	Reversing valve, hot water/climate system
GP12	Circulation pump
EP2	Heat exchanger

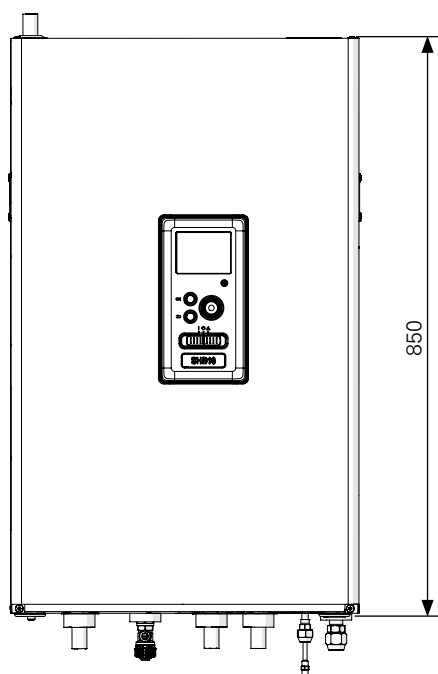
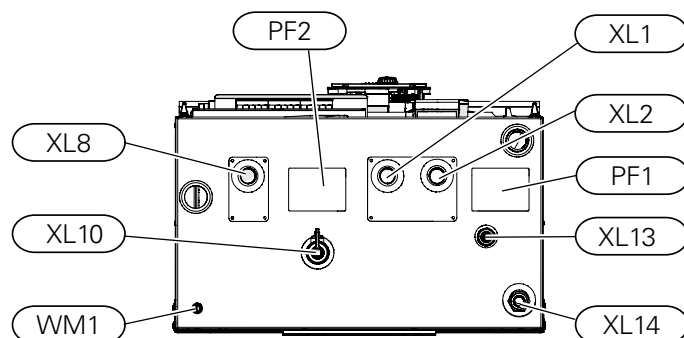
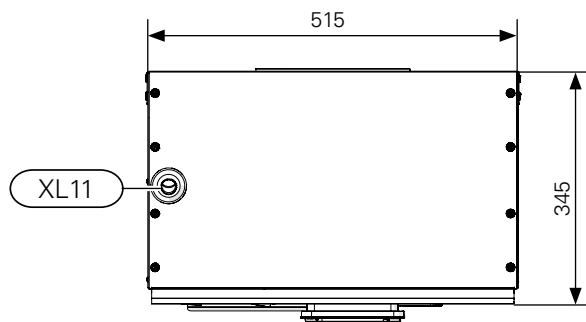
#### Sensors

BP4	Pressure sensor, high pressure
BT3	Temp. sensor, condenser return
BT12	Temp. sensor, condenser out
BT15	Temp. sensor, liquid refrigerant
BT25	Temp. sensor, heating medium supply
BT63	Temp. sensor, supply heating medium behind immersion heater
BT71	Temp. sensor, heating medium return

#### Elementy elektryczne

X0	Terminal block- 230V~ / 400V~
X1	Terminal block- 230V~
X2	Terminal block- 230V~
X10	SPLIT Terminal
AA2:X4	Terminal block- low voltage
AA2:X15	Terminal block- low voltage
K1A-K3A	Contactor for electric additional heat
K2	Alarm relay
BT30	Standby mode thermostat
AA2	Main board
AA3	Input board
AA23	Communication board
AA7	Extension card
AA27	Relay board
FD1	Thermal circuit breaker
FA1	Miniature circuit breaker (protecting the indoor unit)
FA2	Miniature circuit breaker (protecting the outdoor unit)
FA3	Miniature circuit breaker (protecting the STB and power)
EB1	Electric additional heat
Various	
SF1	Controller switch
UB1	Rear left cable grommet
UB2	Rear right cable grommet
UB3	Lower left cable grommet
UB4	Lower right cable grommet
PF1	Nameplate
PF2	Plate with the designation of the hydraulic connections
PF3	Serial number SHB10
PF4	Software serial number

## Dimensions and pipe connections

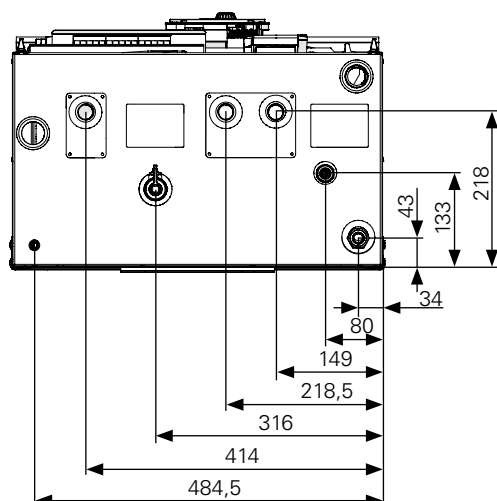


### Pipe connections

- XL1 Connection, heating medium, supply  
Ø22 mm for SHB10-6 and SHB10-12,  
Ø28 mm for SHB10-16
- XL2 Connection, heating medium, return  
Ø22 mm for SHB10-6 and SHB10-12,  
Ø28 mm for SHB10-16
- XL8 Connection, HW heating medium, supply  
Ø22 mm for SHB10-6 and SHB10-12,  
Ø28 mm for SHB10-16
- XL10 Connection, GW1/2" drain valve
- XL11 Connection, safety assembly  
Ø22 mm, pressure gauge
- XL13 Liquid refrigerant  
Connection 1/4" (SHB10-6)  
Connection 3/8" (SHB10-12 / SHB10-16)
- XL14 Gas refrigerant  
Connection 1/2" (SHB10-6)  
Connection 5/8" (SHB10-12 / SHB10-16)
- WM1 Condensate drain from the drip tray

### Other information

- PF1 Nameplate
- PF2 Plate with the designation of the hydraulic connections



# 4 Pipe connections

## General information

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

The pipe dimensions should not be less than the recommended pipe diameter according to the table below. However, in order to achieve the recommended flow, each installation must be dimensioned individually.

## Minimum system flow

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

Air/water heat pump	Minimum flow during defrosting (100% pump capacity [l/s])	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
SHB10-6 + AMS 10-6	0,19	20	22
SHB10-12 + AMS 10-8	0,19	20	22
SHB10-12 + AMS 10-12	0,29	20	22
SHB10-16 + AMS 10-16	0,39	25	28

**CAUTION**  
An incorrectly dimensioned climate system can result in damage to the appliance and lead to malfunctions.

The system can be used with a low- and medium-temperature climate system. The recommended temperature of the heating medium at the dimensioned outdoor temperature DOT must not exceed 55°C on the supply and 45°C on the return circulation from the climate system. SHB 10 can reach up to 70°C when using the electric additional heat or another peak heat source.

An overflow pipe must be routed from the safety valve to a suitable drain. The entire length of the overflow pipe must be inclined towards the floor drain to prevent water pockets and must also be frost-proof. In order to reach maximum system efficiency, we recommend installing SHB 10 as close as possible to the outdoor heat pump.

The SHB 10 unit is not equipped with a shut-off valve for the climate system. In order to facilitate future servicing, the shut-off valves should be installed on the outside of the indoor unit.

The SHB 10 unit can be docked to the central heating, cooling operation and hot water systems. It is absolutely necessary to install the safety assembly on connection XL11.

**CAUTION**  
Ensure that incoming heating medium is without pollution. When using a private well, it may be necessary to supplement with an extra water filter.

**CAUTION**  
In the installation before the SHB 10, a particulate filter should be used, dedicated for heating installations. The filter will protect the unit against pollution.

**CAUTION**  
All high points in the climate system must be equipped with air vents.

**CAUTION**  
The pipelines need to be flushed out before the indoor unit is connected so that any debris cannot damage component parts.

**CAUTION**  
Until the system's heating/cooling circuit has been filled with heating medium, the switch (SF1) in the controller must not be set to "I" or „Δ". If you do not comply with the above instructions, many components of the SHB 10 unit may be damaged.

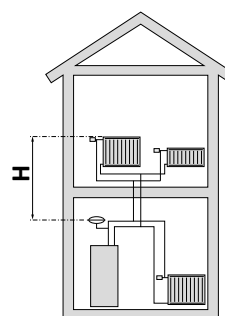
## Expansion vessel

The expansion vessel's volume must be at least 5% of the system's total volume. SHB 10 appliances have been equipped with an expansion vessel with a 12l volume. If the capacity of the built-in expansion vessel is insufficient, an additional expansion vessel meeting the above requirements should be added to the installation.

Table with examples:


Total volume [l] (indoor unit and climate system)	Volume [l], expansion vessel
500	12+13
750	12+23
1000	12+38

SHB 10 is equipped with an expansion vessel with a 12 capacity. The pressure setting in the level vessel should be set according to the maximum height (H) between the vessel and the highest-positioned radiator, see drawing. An initial pressure of 0.5 bar (5 mvp) means a maximum permissible height difference of 5 m.



If the standard initial pressure in the expansion vessel is too low, this can be increased by filling it via the installed valve. The expansion vessel's standard initial pressure must be entered in the checklist on page 5.

Any change in the initial pressure affects the ability of the expansion vessel to handle the expansion of the heating medium.



**CAUTION**


The term “climate system” which is used in this installation and user manual signifies heating and cooling operation systems that are supplied with heat or cold using heating or cooling medium from the SHB 10 unit, for heating or cooling purposes.

**Zbiornik buforowy**

The heat pump installation requires an appropriate volume of heating medium (approx. 10l/kW heat pump power) and a minimum, undisturbed flow.

In case of an insufficient amount of heating medium in the installation, an additional buffer vessel must be used, which will ensure adequate system volume, see subsection “Minimum climate system volumes”.

An insufficient flow in the central heating system will cause malfunction of the heat pump installation and could lead to serious damage of the product.



**CAUTION**

In order to obtain the minimum undisturbed flow in the climate system, use the appropriate hydraulic solutions (e.g. relief valve, low loss header, parallel buffer and/or open heating loops). Remember to always maintain the minimum required flow in the system - see the subsection “Minimum system flow”.

**Minimum climate system volumes**

AMS 10	6	8	12	16
Minimum climate system volume during heating/cooling	50l	80l	100l	150



## Docking the indoor unit

### Docking the climate system

The pipe connections of the climate system are made from the top of the appliance except safety assembly.

- All required safety devices and shut-off valves must be fitted as close to the SHB 10 unit as possible.
- Vent valves must be installed where necessary.
- The safety valve with the pressure gauge and air vent on the central heating circuit, must be fitted to the appropriate connection XL 11. To prevent air pockets from forming, the overflow pipe must be inclined in its entire length from the safety valve and must also be frost proof.
- When connecting to a system (where all radiators / underfloor heating circuits are equipped with thermostatic valves or solenoid valves), appropriate hydraulic solutions (e.g. excess-relief valve, low loss header, buffer in parallel or open heating loops). Remember to always keep the minimum required flow and volume of the system- see the sections "Minimum system flow" and "Buffer vessel".



#### NOTE

It is absolutely necessary for the appropriate safety valve to be fitted directly on the cold water supply pipe to the HW tank, to protect the tank against an excessive pressure increase.

### Removing condensate

The SHB10 is equipped with condensate hose draining it off the drip tray placed in the lower part of SHB10. Hose should be connected to the WM1 stud. This enables draining off all condensate away from the device, minimising the risk of damage. The hose can be extended or replaced, if needed.

### Connecting the refrigerant pipe (not included)

The refrigerant pipes must be installed between the AMS 10 outdoor unit and the SHB 10 indoor unit. Installation must be carried out in accordance with the current standards and directives.

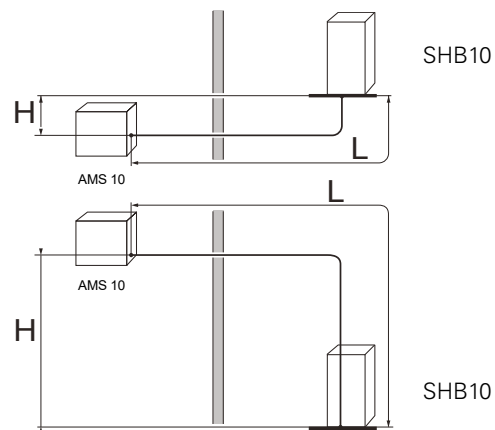
#### Limitations

- Maximum pipe length on either side, AMS 10-6, AMS 10-8, AMS 10-12, AMS 10-16 (L): 30 m.
- Maximum height difference (H):  $\pm 7$  m.
- The connection of the outdoor unit to the indoor unit must ensure the free flow of the refrigerant.



#### NOTE

The outdoor unit, filled with refrigerant at the factory, allows for the use of refrigerant pipes (size L) between the outdoor unit and the indoor unit measured with a pipe length of  $L = 15$  m. The maximum permissible length of the refrigerant pipes can be 30m, however this requires topping up the system with refrigerant.



To properly top up the heating medium, see the section "Filling the system with refrigerant."

## Refrigerant connection pipeline specification

### SHB10-6

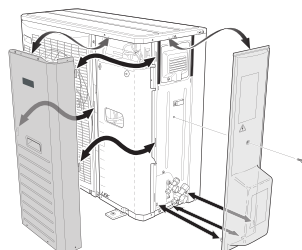
SHB10-6	Gas pipe (Ø ext.)	Liquid line (Ø ext.)
Pipe dimensions	Ø12,7 mm (1/2")	Ø6,35 mm (1/4")
Connection	Connection – (1/2")	Connection – (1/4")
Material	Copper quality SS-EN 12735-1 or C1220T, JIS H3300	
Minimum wall thickness	1,0 mm	0,8 mm

### SHB10-12, SHB10-16

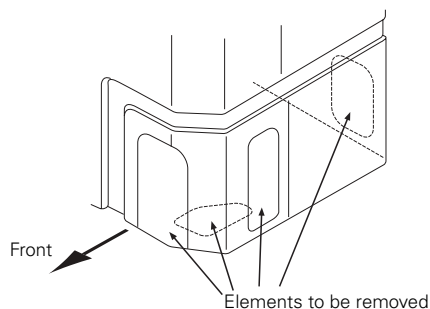
SHB10-12 / SHB10-16	Gas pipe (Ø ext.)	Liquid line (Ø ext.)
Pipe dimensions	Ø15,88 mm (5/8")	Ø9,52 mm (3/8")
Connection	Connection – (5/8")	Connection – (3/8")
Material	Copper quality SS-EN 12735-1 or C1220T, JIS H3300	
Minimum wall thickness	1,0 mm	0,8 mm

#### Pipe connection

- Carry out the pipe installation when the service valves (QM35, QM36) are closed.
- AMS 10-6 / AMS 10-8 Remove the side panel from AMS 10 during installation to facilitate access.



- AMS 10-12 / AMS 10-16 Remove the "punch-out" part from the external panel on the AMS 10 unit, where the pipes are to be routed. The drawing below shows the pipe outlets to choose from.

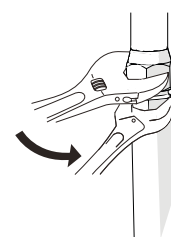


- Take care to ensure no water or pollutants enter the refrigerant connection pipe. Pollutants in the pipes risks damage to the heat pump.
- Bend the pipes with the maximum bending radius (at least R100~R150). Do not bend the pipes

repeatedly. Use a bending machine.

- The connection of refrigerant pipes to the outdoor unit and the indoor unit should be made with flared connections after removing the production ends.
- Make and connect the flare-connection and tighten with the appropriate torque using a torque wrench. Use the appropriate tightening angle, if a torque wrench is not available.

External diameter, copper pipe (mm)	Tightening 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



#### CAUTION

Gas shielding must be used when soldering.

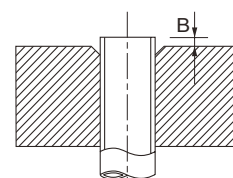
### Flare connections

#### Expansion:



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

#### Ejection:



External diameter, copper pipe (mm)	B, using the tool R410A (mm)	B, using the 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 leak test

Both SHB 10 and AMS 10 are factory tested for pressure and leakage, but the refrigeration pipe connections between appliances should be checked for leakage after installation.

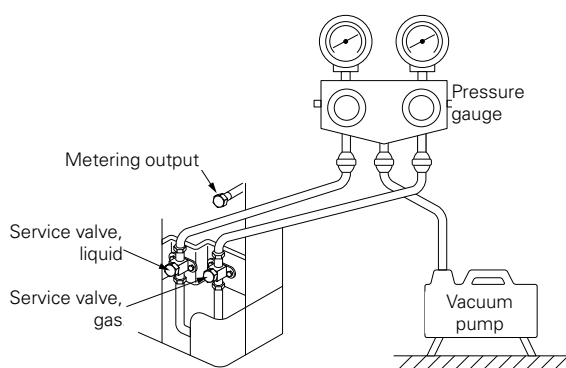


### CAUTION

The pipe connection between the indoor unit and the outdoor unit must be leak tested. Then create a vacuum for the completed pipeline after finishing installation, in accordance with the applicable regulations. Only nitrogen must be used for compression and drying of the completed pipeline.

## Vacuum pump

Use a vacuum pump to remove all air. Apply suction for at least one hour and end pressure after evacuation must be 1mbar (100 Pa, 0.75 Torr or 750 micron) absolute pressure. If the system is still damp or leaking, the vacuum will decrease after the draining has finished.



### TIP

To achieve a better end result and speed up creation of the vacuum, please follow the below points:

- The pipelines should have the correct diameter and length.
- Drain the system to 4 mbar and fill it with dry nitrogen to atmospheric pressure.

## Filling the system with refrigerant

AMS 10 is delivered complete with the refrigerant required for the installation of refrigerant pipes with lengths of up to 15 m on either side.

If the length of the refrigerant pipes exceeds 15 m, extra refrigerant must be added in the amount of 0.02kg/m for SHB 10-6 or 0.06 kg/m for SHB 10-12 and SHB 10-16.



### NOTE

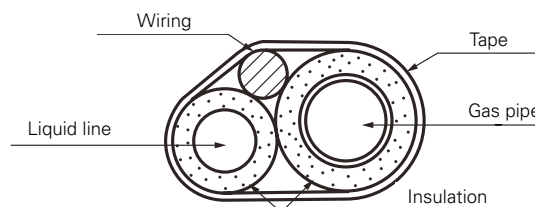
The maximum permissible length of the refrigerant pipes can be 30m, however this requires topping up the system with refrigerant after a length of 15m is exceeded.

When connecting the pipes, carrying out pressure tests and leak tests, and creating the vacuum, remember to keep the service valves (QM35, QM36) closed. In order to fill the pipes of SHB 10 with refrigerant, they must be reopened.

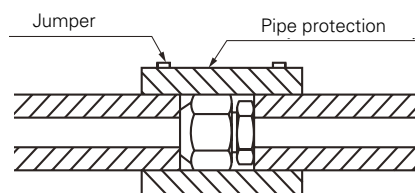
## Insulating refrigerant pipes

- Refrigerant pipes (both liquid and gas) must be insulated for the purpose of thermal insulation and in order to avoid condensation.
- Use insulation that can withstand at least 120°C.

Principle:



Connections:



### NOTE

All connections and work related to the refrigeration system must be carried out by a person with the proper authorisations and certificates.

## Connections

### General information

SPLIT can be connected in several different ways. For more information about connections, go to the website [www.tiki.si](http://www.tiki.si).

SHB 10 indoor unit	SHB10-6	SHB10-12	SHB10-12	SHB10-16
Compatible outdoor module	AMS 10-6	AMS 10-8	AMS 10-12	AMS 10-16
Maximum pressure, climate system	0,3 MPa (3 Bar)			
Highest recommended flow/return temperature at dimensioned outdoor temperature.	55/45°C			
Max. temperature in the unit SHB 10	+70°C			
Maximum hot water temperature	+60°C			
Minimum temperature ext. operation of the unit	-20°C			
Minimum temperature ext. cooling operation	+15°C			
Max. supply temperature, compressor	+58°C			
Min. cooling supply temperature	+7°C			
Max. cooling supply temperature	+25°C			
Minimum volume, climate system during heating/cooling*	50 l	80 l	100 l	150 l
Max. flow, climate system	0,29 l/s	0,38 l/s	0,57 l/s	0,79l/s
Min. flow, climate system	0,09 l/s	0,12 l/s	0,15 l/s	0,24l/s
Min. flow, cooling system	0,11 l/s	0,16 l/s	0,20 l/s	0,32l/s

\* Refers to volume associated with undisturbed flow

## Installation alternative

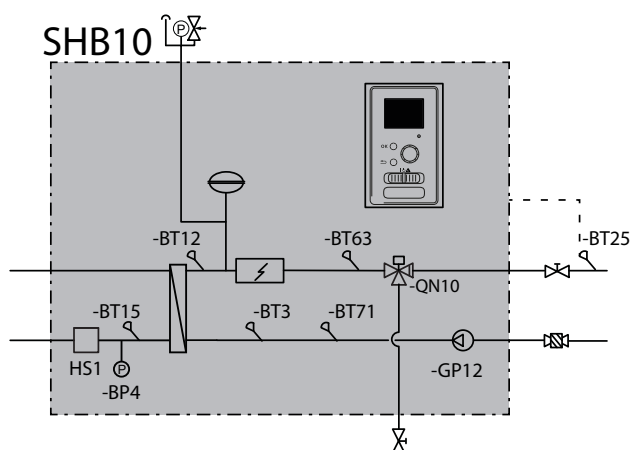


### CAUTION

Temperature sensor BT25 is included with the device. It should be installed on the installation in accordance with the guidelines in the following section.

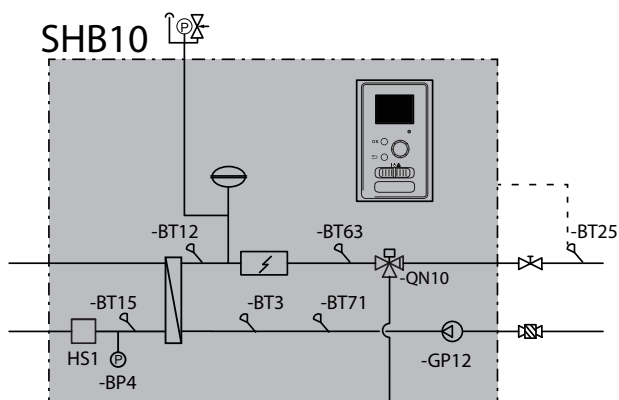
## Podłączanie do jednostki wewnętrznej

The SHB 10 unit is not equipped with a shut-off valve for the central heating system, it must be installed on the outside of the indoor unit to facilitate any future servicing.



## Docking during use without heat pump

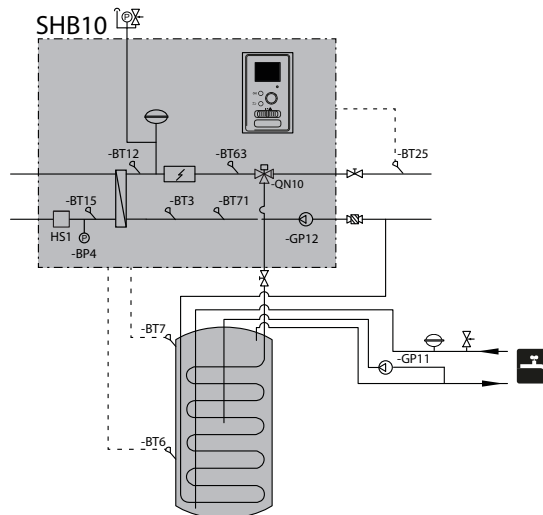
No change of hydraulic connection configuration is necessary to ensure operation of the indoor unit independently from the outdoor unit. The device is equipped with auxiliary heater that may be used as the main heat source in the case of absence of outdoor unit.



## Connecting cold and hot water

The SHB 10 unit should be connected to the exchanger in the external hot water tank for domestic hot water. The exchange area of the exchanger is very important when selecting it. We recommend using the

selection tables available on the website. [www.tiki.si](http://www.tiki.si) The sensors BT6 and BT7 should be placed in the appropriate places. BT7 sensor in the place that will show the highest temperature in the tank. Whereas the BT6 sensor in 1/3÷1/2 of the coil height measured from the lower extreme point. The location of the sensors is shown in the domestic hot water connection diagram. DHW tank should be connected to a water system with a water pressure recommended by the tank manufacturer. If the pressure at the inlet of cold water to the tank is higher than allowed, use a pressure reducer. When heating the water in the tank, the pressure increases, therefore each tank must be equipped with a suitable safety valve, installed on the cold water inlet, which will protect the DHW tank against excessive pressure build-up. In the case of using DHW circulation see section "Hot water circulation".



### CAUTION

The location of the BT6 sensor should be selected based on the design of the domestic hot water tank used.



### CAUTION

It is absolutely necessary to install a properly selected safety valve on the cold water supply pipe.



### NOTE

Safety valve for the HW storage tank must be fitted as recommended by the storage tank manufacturer and applicable regulations.



### CAUTION

Do not use the appliance if the safety valve is blocked.



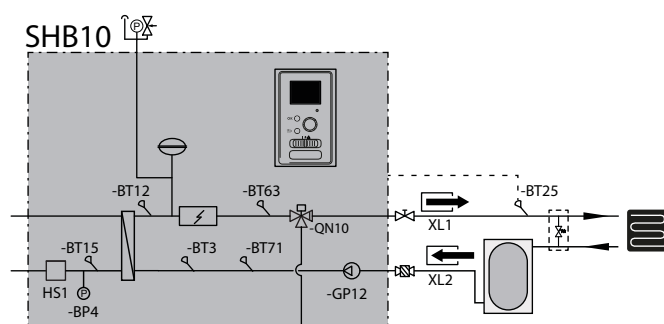
### CAUTION

It is forbidden to install any constrictors (e.g. reducers, particle filter, etc.) and shut-off valves between the storage tank and the safety valve. Only fitting a tee with a draining valve and a tee with an expansion vessel is permitted.

## Docking the climate system

When connecting to a system with thermostatic valves on all radiators/underfloor heating pipes, use the appropriate hydraulic solutions which ensure the proper heating medium volume and minimum, undisturbed flow. See the subsection “Buffer vessel” and “Minimum system flow”.

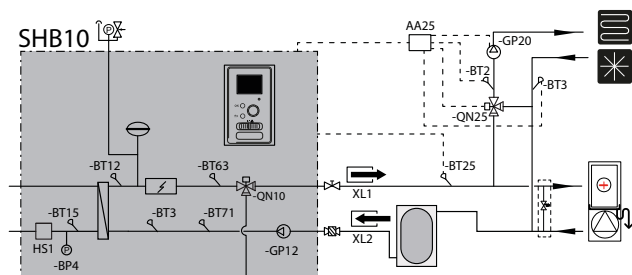
The unit comes with a BT25 sensor that must be installed on an external supply pipeline at a distance of min. 1 m from SHB 10 along the pipeline. However, in the case of a system equipped with a buffer, the BT25 sensor should be installed in the buffer or in a place ensuring the correct reading of the supply temperature to the heating system. In the case of installation with a buffer in a parallel system, it is recommended to move the BT71 sensor to the bottom of the buffer.



## Connecting the 2-pipe cooling operation system

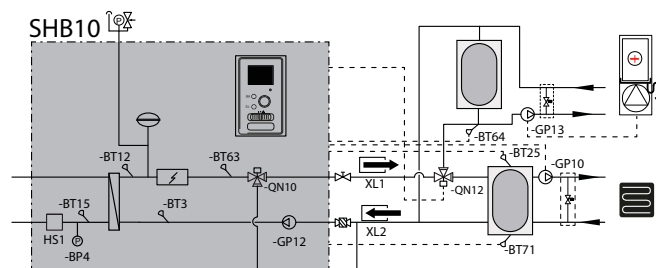
In the 2-pipe cooling degree minutes are counted according to BT25.

The principle of a 2-pipe system is to use the same circuit for cooling and/or heating (2-pipe cooling diagram). When cooling is activated, cooling works by default in the system 2-pipe.



## Connecting the 4-pipe cooling operation system

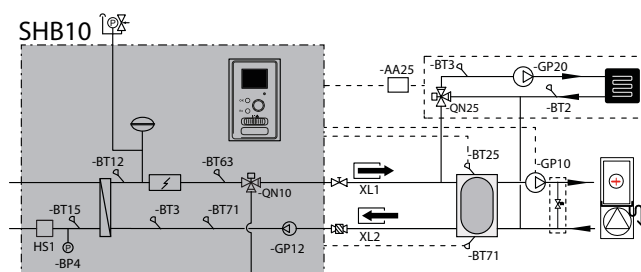
The operating principle of the 4-pipe system is to use separate heating and cooling circuits. In the 4-pipe system, a cooling tank is required. The BT64 sensor should be placed in the buffer vessel or on the cooling flow pipeline. BT64 is connected at the AUX inputs. Selection of the 4-pipe system can be found in the SERVICE section, menu 5.2.4.



**NOTE**  
In the 4-pipe cooling system, the GP12 charge pump is equipped with cooling insulation and operates intermittently.

## Docking an additional climate system

The system can be expanded to include additional heating/cooling circuits, provided an additional accessory board AA5 is used. Once the AXC 30 card or ready-to-use ECS 40 / ECS 41 kit has been put into use, an additional heating/cooling circuit can be activated using the controller.



Additional accessories and the connection options and methods for these are described in the instructions for AXC 30 and ECS 40 / ECS 41.

## Hot water circulation



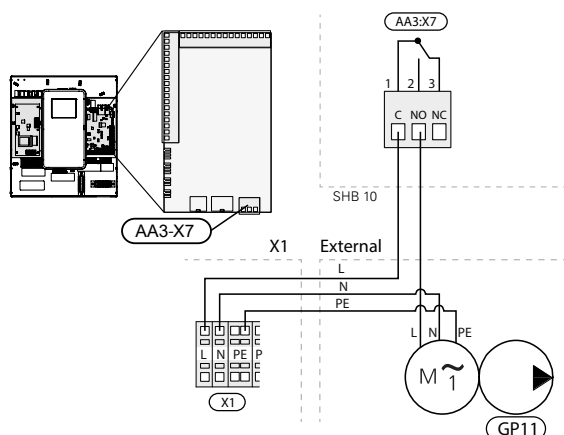
### CAUTION

If connection AA3: X7 is used for another purpose, an additional AA5 accessory card is required to connect the hot water circulation pump control.

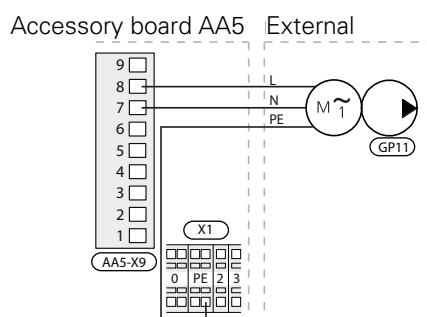
Connecting the control of the hot water circulation pump

The hot water circulation pump can be connected in two configurations:

- AA3:X7: NO (L), X1:0 (N), X:PE (PE)

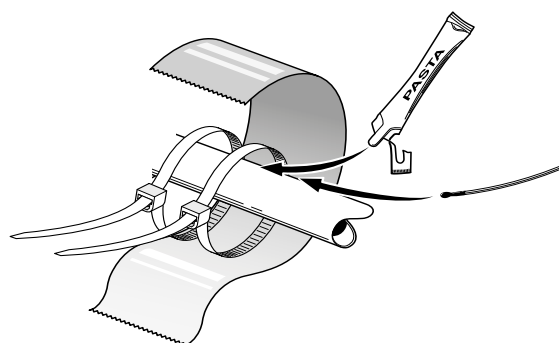


- in case AA3:X7 output is already in use, GP11 connect to accessory board AA5 (not included in SHB 10) on block AA5-X9:8 (230V), AA5-X9:7 (N) and X1:PE



More information in the AA5 expansion card manual.

## Temperature sensor installation on pipe



The temperature sensors are fitted using heat conducting paste, cable ties (the first cable tie is secured to the pipe in the middle of the sensor and the other cable tie is mounted approx. 5 cm after the sensor) and aluminium tape. Then insulate them using the insulation tape.

## System diagram

The SHB 10 indoor unit together with the L Split air source heat pump outdoor unit provides a complete climate system. The L Split outdoor unit provides thermal energy for heating domestic water, powering the heating system, heating swimming pools and cooling using free energy contained in the outside air, working efficiently in the range of low temperatures down to -20 °C.

The connection of the outdoor unit, hot water tank and the indoor unit SHB 10, with a system of pipes filled with refrigerant, protects the connection against freezing in the event of interruptions in the electric power supply to appliances. The system's operations are controlled using an advanced controller.



### NOTE

SHB 10 is equipped with all temperature sensors as standard. The BT25 sensor must be installed on its own in the external pipeline, and in some systems the sensors must be moved to other parts of the system. For location of the sensors, see the relevant point on docking the system.



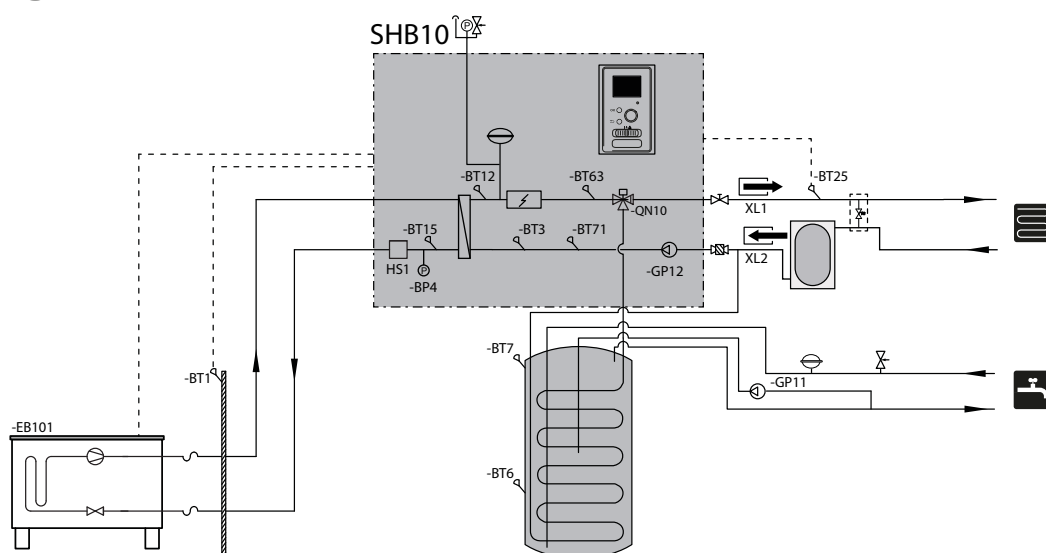
### NOTE

In the event that the water volume of the central heating system is increased using a buffer vessel, you will need to check the system volume and possibly increase the volume of the existing expansion vessel.

	Shut-off valve		Circulation pump		Domestic hot water
	Non-return valve		Electric heating		Relief valve
	Shunt valve		Cooling system filter		Additional heat source
	Safety valve		Compressor		Buffer vessel
	Temperature sensor		Plate heat exchanger		Fan coil
	Expansion vessel		Cooling operation		Optional
	Pressure gauge		Central heating system (under floor heating systems)		
	Automatic air vent				
	Filterball				

**NOTE**  
The installation diagrams presented in the manual are examples and do not include all system components. They do not replace the design of the building's central heating system.

### Basic diagram with serial connection of a buffer tank



### Basic diagram with parallel connection of a buffer tank

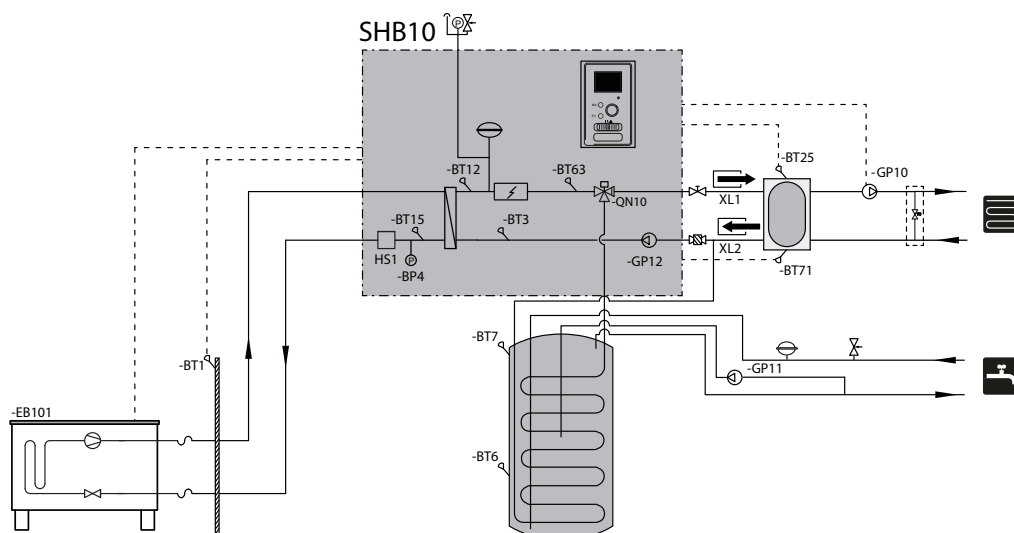




Diagram of heating and 2-pipe cooling with serial connection of a buffer tank

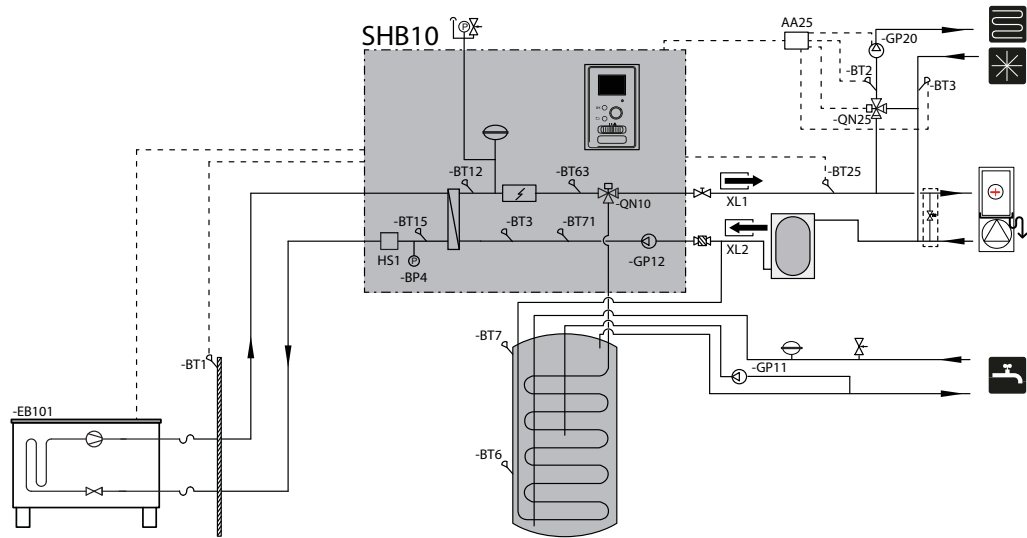


Diagram of heating and 2-pipe cooling with parallel connection of a buffer tank

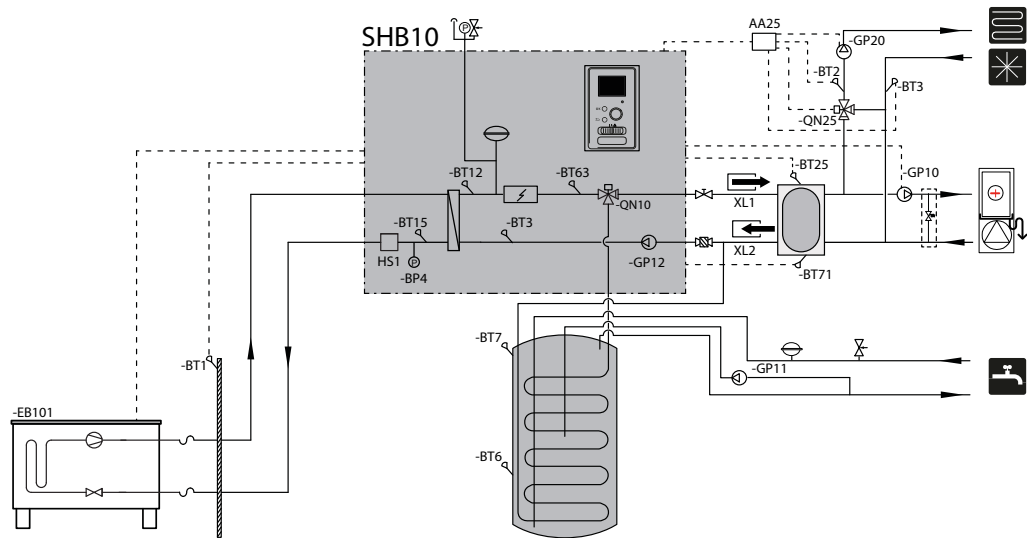
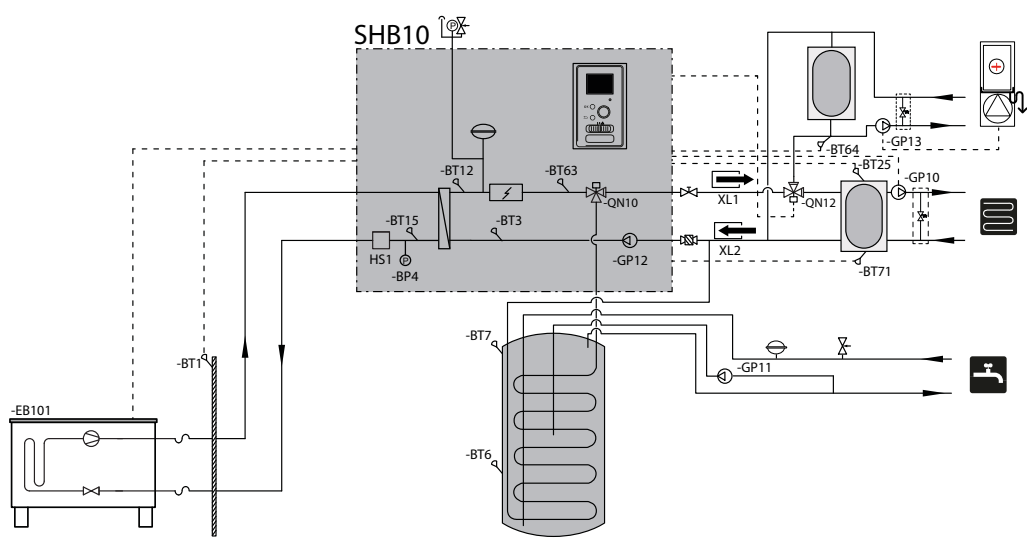


Diagram of heating and 4-pipe cooling



# 5 AMS 10 outdoor unit

## Delivery and handling

The AMS 10 heat pump must be transported and stored vertically.

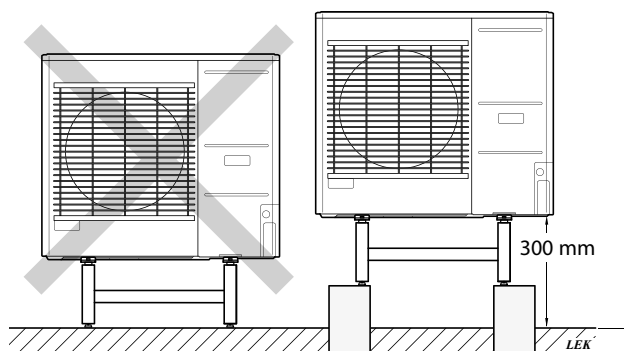


### CAUTION

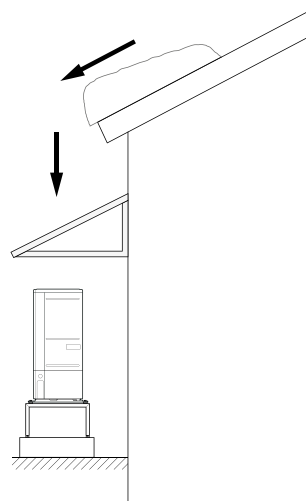
Ensure that the heat pump cannot fall over during transport.

## Installation

- Place the AMS 10 heat pump 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, no lower than 300 mm. Supports and fastenings on the page are available in the AMS 10 manual in the "Accessories" section.
- The AMS 10 heat pump should not be positioned next to the walls of rooms where noise could be a problem, for example, next to a bedroom.
- Also ensure that the placement does not disturb the neighbours.
- The AMS 10 heat pump must not be placed such that recirculation of the outdoor air can occur. This causes lower power and impaired efficiency.
- The evaporator should be sheltered from direct wind, which negatively affects the defrosting function. The AMS 10 heat pump must be placed such that the evaporator is protected from the wind.
- Large amounts of condensate, as well as melt water from defrosting, may be produced. Condensate must be drained off to a drain (see subsection "Condensation water drain").
- Care must be exercised so that the heat pump is not scratched during installation.



Do not place the AMS 10 heat pump directly on the lawn or other unstable surface.



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

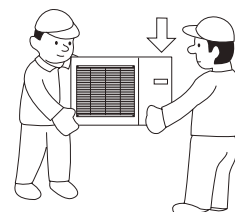
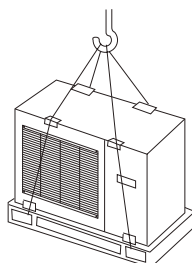
## Lift from the street to the set-up location

If the base allows, the simplest thing is to use a pallet truck to move the AMS 10 heat pump to the set-up location.



### CAUTION

The centre of gravity is offset to one side (see inscription on packaging).



If the AMS 10 heat pump needs to be transported across soft ground, such as a lawn, we recommend that a crane truck is used which can lift the unit to the set-up location. When the AMS 10 heat pump is lifted with a crane, the packaging must be undamaged and the load evenly distributed on the boom, see the drawing above.

If a crane cannot be used, the AMS 10 heat pump can be transported using an extended hand truck. The AMS 10 heat pump must be secured on the side marked "heavy side" and two people are required to set the AMS 10 in position.

## Lift from the pallet to final positioning

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

Place lifting straps around each foot of the appliance.

Lifting from the pallet to the base requires four persons, one for each lifting strap.

It is not permitted to lift the appliance by anything other than the feet

## Scrapping

In case of scrapping, the product is dismantled by performing the above actions in reverse order. Lift by the bottom panel instead of a pallet!

## Condensation water drain

Condensation drains out on to the ground below AMS 10. To avoid damage to the house and heat pump, the condensation must be gathered and drained away.



### CAUTION

Condensation drainage is important for the operation of the heat pump. The condensation drain must be routed such that it cannot damage the building.



### CAUTION

Do not connect heating cables with automatic adjustment.



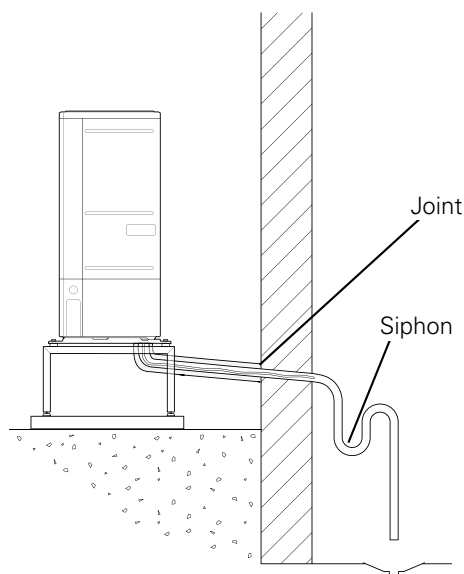
### CAUTION

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

- Condensate (50 l / 24 hours) is drained off via the hose to the appropriate drain. It is recommended that the route outside for the condensate is as short as possible.
- The section of the pipe that may be affected by frost must be heated by the heating cable to prevent freezing.
- Route the pipe downward from the AMS 10 heat pump.
- The outlet of the condensation pipe must be at a depth that is frost-free or, alternatively, indoors (subject to local rules and regulations).
- Use a siphon for installations where air circulation may occur in the condensation water drainage pipe.
- The insulation must be tightly fitted to the bottom of the condensation water trough.

## Recommended alternative for leading off condensation water

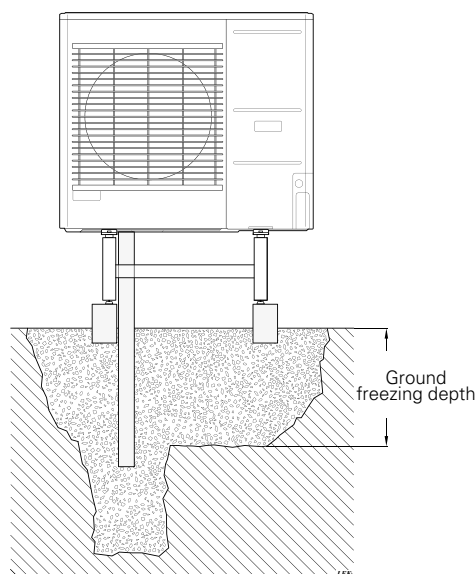
### Indoor drain



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

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

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



If the building has a basement, use a stone caisson to prevent condensation from damaging the building. Otherwise, the stone caisson can be positioned directly under the heat pump.

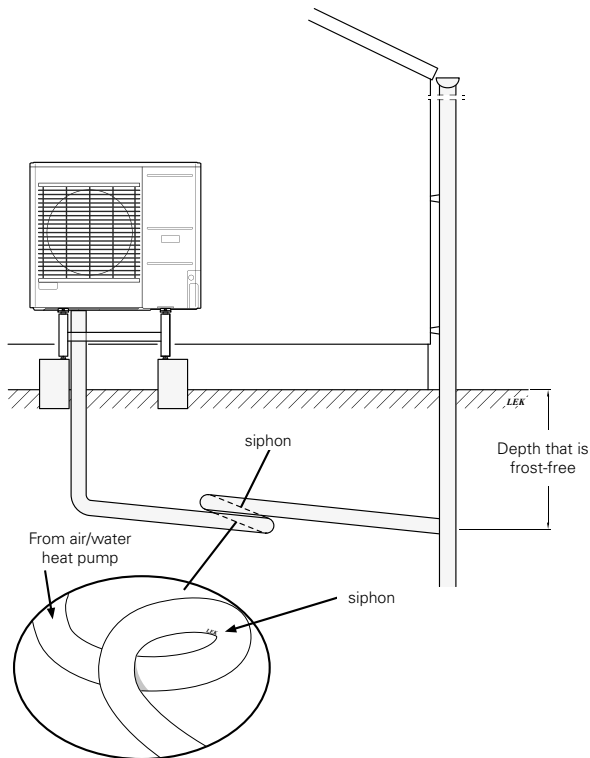
The outlet of the condensation water drainage pipe must be at a depth that is frost-free.

### Drain into the gutter



#### CAUTION

Bend the hose to create a siphon, see illustration.



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

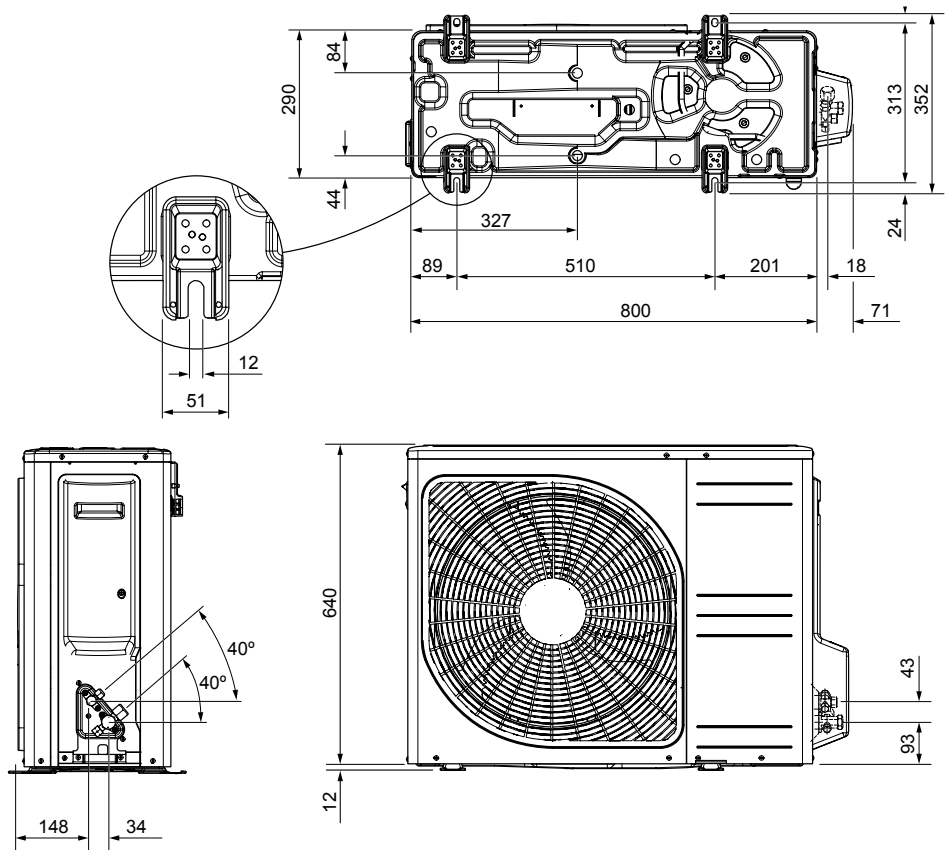


#### NOTE

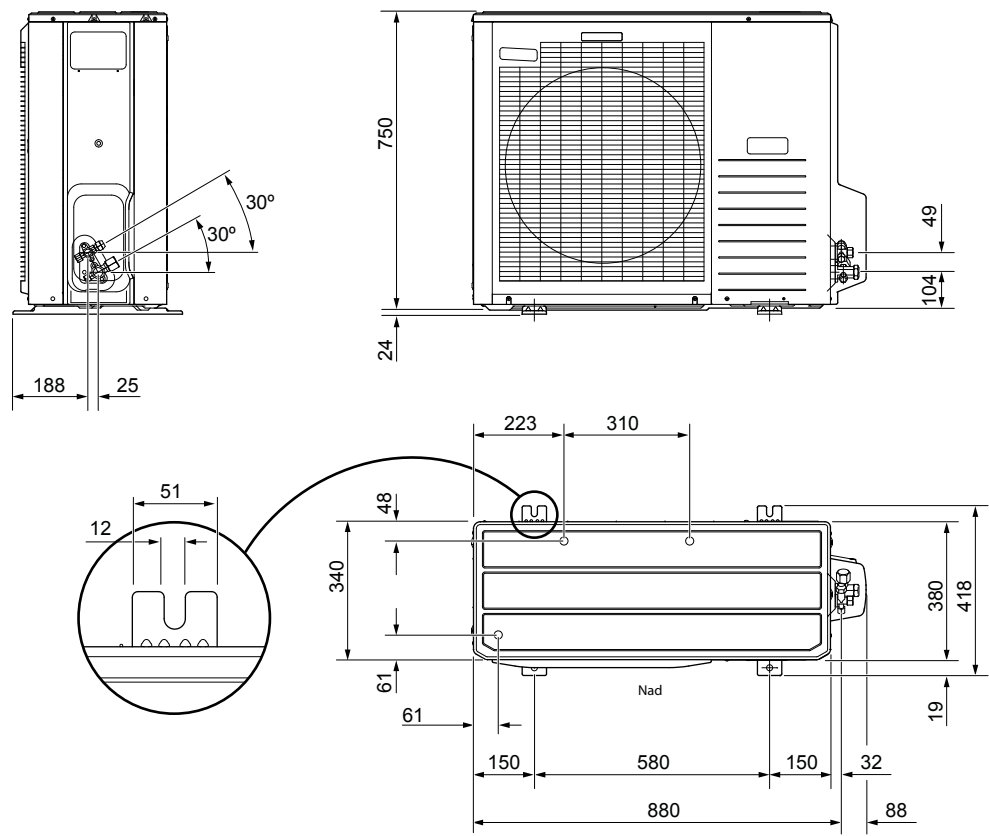
If none of the recommended options will be used, proper drainage of condensate must be ensured.

# Dimensions

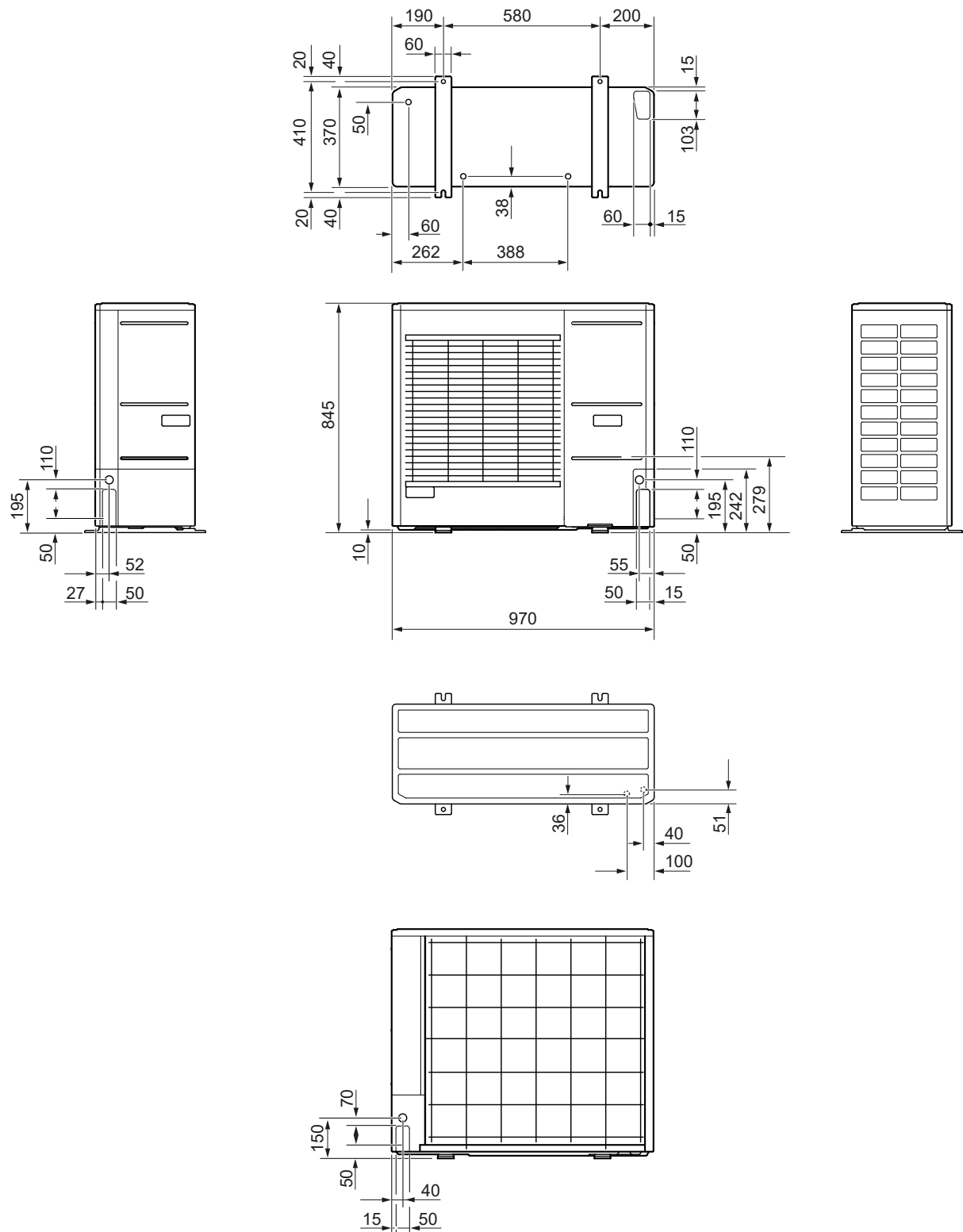
## AMS 10-6



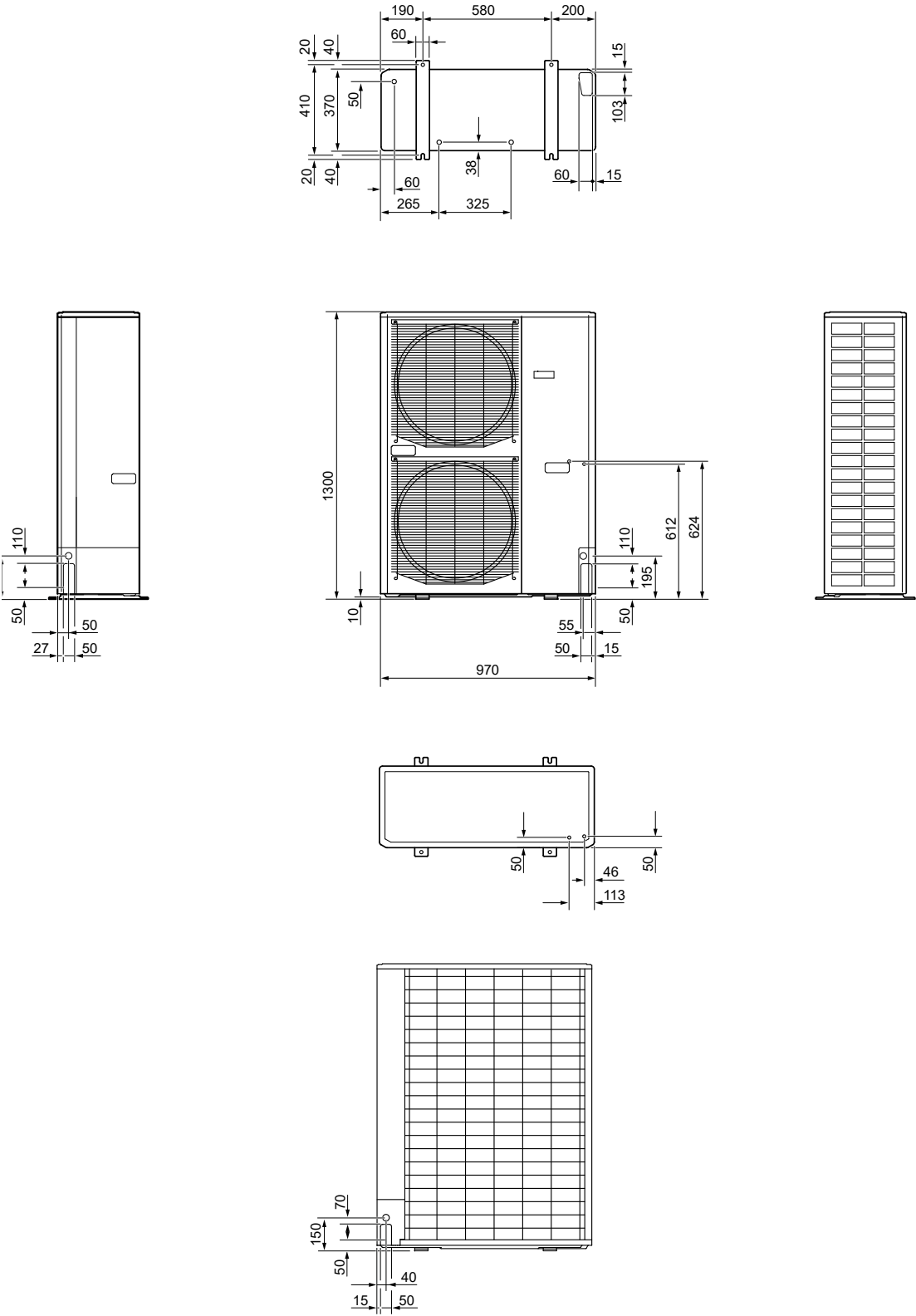
## AMS 10-8



## AMS 10-12

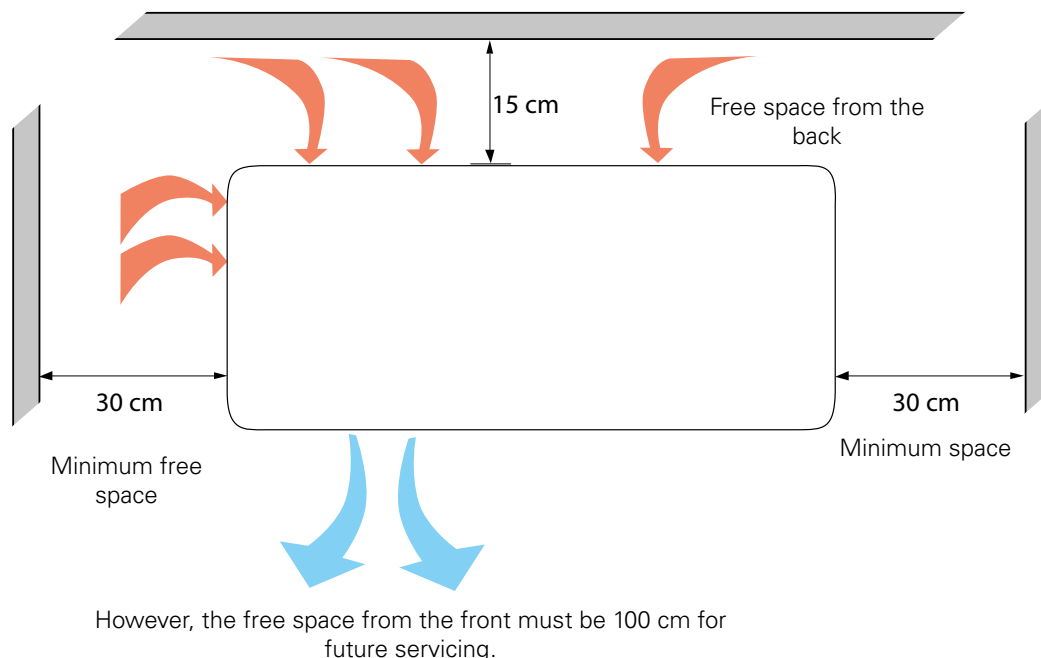


AMS 10-16



## Installation location

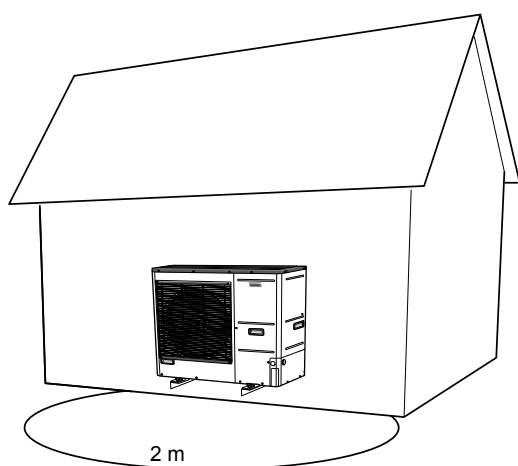
The recommended distance between AMS 10 and the building wall should be at least 15 cm. Free space above AMS 10 should be at least 100 cm. However, the free space from the front must be 100 cm for future servicing.



## Sound power levels

Please bear in mind that the AMS 10 unit is normally placed against a building wall, which causes direct sound propagation. Therefore, always try to find a location that is out of the way, in an area that will cause

the least disturbance for neighbours. The sound level may be affected by walls, bricks, differences in ground level, etc., therefore the values given should only be considered as suggested levels.



In order to reduce the noise level, avoid direct air outlet to places that are particularly sensitive to excessive sound levels. An action that can be taken is, for example, creating acoustic boards so that the noise is less inconvenient. Sound propagation is affected by phenomena such as: source directivity, absorption by the atmosphere, influence of the ground, surface reflection, shielding by obstacles.

Noise		AMS 10-6	AMS 10-8	AMS 10-12	AMS 10-16
Sound power levels, according to EN12102 at 7/35°C (rated value)*	$L_w(A)$	51	55	58	62
Sound power level at a distance of 2m (rated value)*	dB(A)	37	41	44	48

\*Free space



# 6 Electrical connections

## General information

All electrical equipment, except the outdoor temperature sensor, room sensor, temperature sensor BT and current sensors are already connected at the factory.

To ensure proper electrical connection:

- Disconnect the power supply of the indoor unit before insulation testing the building wiring.
- If the house is equipped with a residual-current device, SHB 10 should be equipped with a separate residual current breaker.
- For the indoor unit wiring diagram, see section "Electrical wiring diagram".
- Communication and sensor cables must not be laid close to high-voltage cables.
- The minimum cross section of the communication and sensor cables to external connections must be 0.5 mm<sup>2</sup> with a length of up to 50 m, for example EKKX, LiYY or equivalent.
- The power supply cable should be dimensioned according to the current standards.
- Cable lying in SHB10 should be performed with UB cable grommets (marked on the drawing). In UB1 and UB 2, the cables are laid through the entire indoor unit from the rear wall toward the front wall. UB 3 and UB 4 are the lower cable grommets.



### CAUTION

The switch (SF1) for the controller must not be set to "I" or "Δ" until the climate system has been filled with heating medium and the central heating system vented". Otherwise, the thermal circuit breaker, thermostat and the electric additional heat may be damaged.



### CAUTION

Cut off the power using the circuit breaker before carrying out any servicing. Electrical installation must be carried out in accordance with the current regulations by a person with the proper authorisations and qualifications.



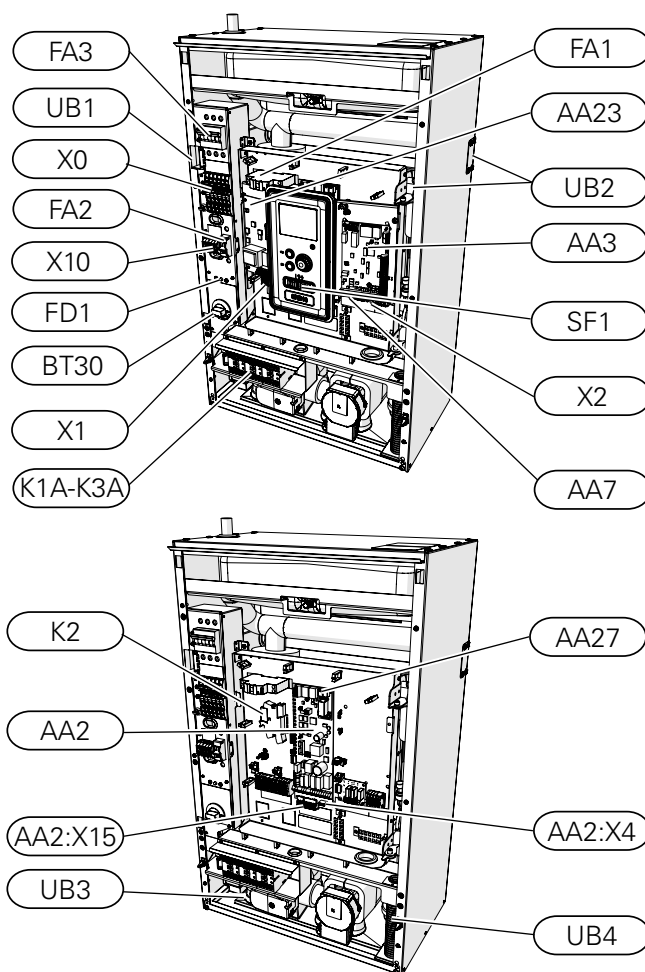
### CAUTION

When SF1 is set to „Δ“ - the SHB 10 unit switches the QN10 valve to the central heating and heating takes place according to thermostat BT30. Hot water is not heated while the switch is set to „Δ“.



### CAUTION

If the system is operating at "Δ" the temperature on BT30 should be aligned with the operating temperature of the central heating system. If the temperature set on the thermostat is too high, it can damage the system.



X0	Terminal block- 230 V~/400 V~
X1	Terminal block- 230V~
X2	Terminal block- 230V~
X10	SPLIT terminal
FA1	Miniature circuit breaker (for the indoor unit)
K1A-K3A	Electric additional heat contactors
BT30	Standby mode thermostat
AA3	Input board
AA23	Communication board
AA7	Extension card
FA2	Miniature circuit breaker (protecting the outdoor unit)
FA3	Miniature circuit breaker (protecting the STB and power)
FD1	Thermal circuit breaker
UB1	Cable grommet
UB2	Cable grommet
UB3	Cable grommet
UB4	Cable grommet
K2	Alarm relay
AA2	Main board
AA2:X15	Terminal block- low voltage
AA2:X4	Terminal block- low voltage
AA27	Relay board

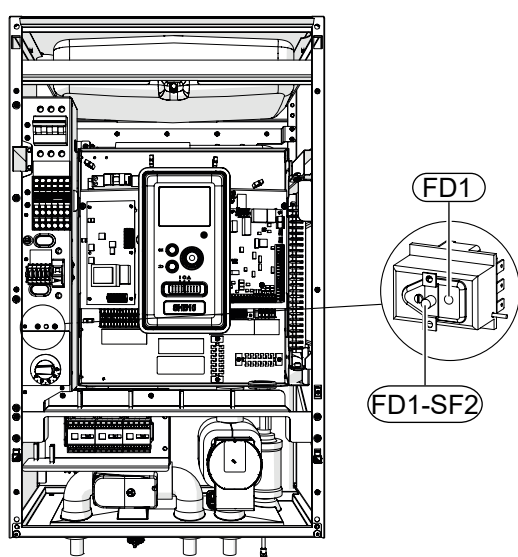
## Thermal circuit breaker

The thermal circuit breaker (FD1) cuts off the power supply to the electric additional heat if the temperature rises to the approx. 98- 8°C.

## Resetting

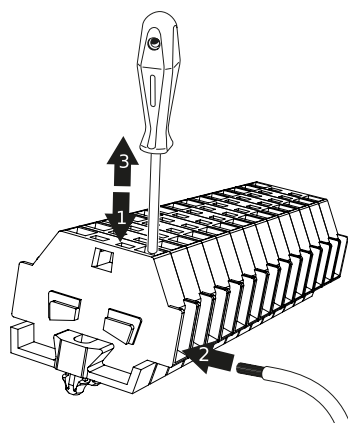
The thermal circuit breaker (FD1) is accessible behind the front cover. It is reset by pressing firmly on the button (FD1-SF2) using a small screwdriver. Press the button using max. force 15 N (approx. 1.5 kg).

**CAUTION**  
In the event of thermal protection activation, report this to an authorised service centre in order to diagnose the possible case.



## Cable key lock

Use a suitable tool to release/lock the cables in the terminal blocks of the indoor unit.



## Connections

**CAUTION**  
External overcurrent protection should be selected by an appropriately qualified installer, based on the technical data contained in the manual, in accordance with the installed equipment system.

**CAUTION**  
The indicated sizes of power cables are recommended for cables laid on the wall, not longer than 40 m. In other cases, the application- types of cables or their arrangement- the cross-section of the supply cables should be selected in consultation with a qualified electrician.

**CAUTION**  
To prevent interference, unscreened communication cables and/or sensor cables to external connections must not be laid at a distance less than 20 cm from high-voltage cables.

**CAUTION**  
The electrical system to which the device will be connected should be built in accordance with current regulations.

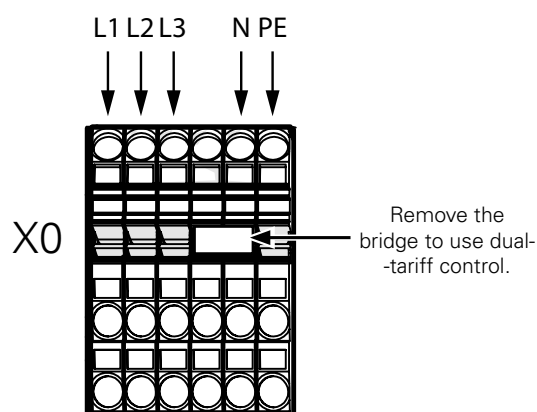
## Power supply connection 400V

The power supply connection is connected to terminal block (X0) through the input on the back of the unit (UB1, UB2) or through the input on the bottom (UB3, UB4). The cable must be dimensioned according to the applicable standards.

The 400V connection allows for a maximum power of 9kW to the electric additional heat. The connection should be made according to the diagram in the user manual.

Detailed electrical diagram- see subsection "Electrical wiring diagrams".

## Diagram - connecting power supply 400V



**CAUTION**  
When a 400V connection is used, the maximum power of the electric module used in the SHB 10 unit is 9kW.

**CAUTION**  
In the case of a dual tariff power supply, it is advisable to connect the neutral wire from the power supply circuit (meter).

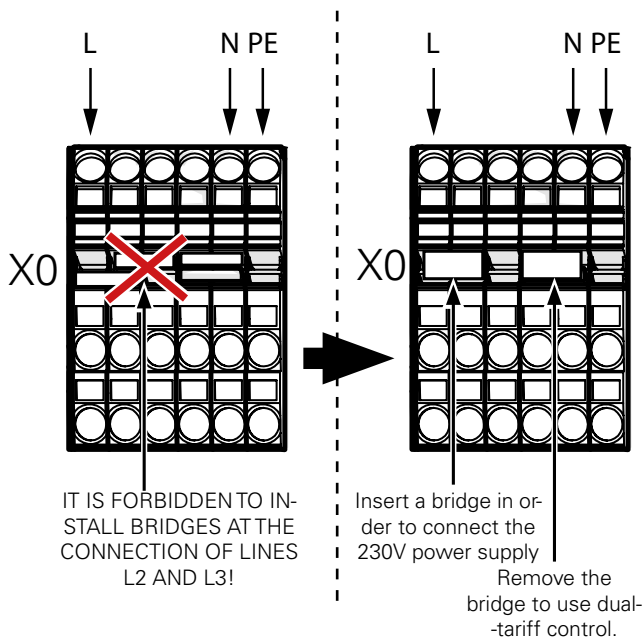
## Power supply connection 230V

The power supply connection is connected to terminal block (X0) through the input on the back of the unit (UB1, UB2) or through the input on the bottom (UB3, UB4). The cable must be dimensioned according to the applicable standards.

The 230V connection allows for a maximum power of 4.5kW to the additional heating. The connection should be made according to the diagram in the user manual.

Detailed electrical diagram - see subsection "Electrical wiring diagrams".

### Diagram - connecting power supply 230V



#### CAUTION

When a 230V connection is used, the maximum power of the additional heat used in the SHB 10 unit is 4.5kW.

#### CAUTION

In the case of a dual tariff power supply, it is advisable to connect the neutral wire from the power supply circuit (meter) - particularly when using a 230V connection.

#### CAUTION

It is forbidden to install bridges at the connection of lines L2 and L3. Otherwise, the appliance and the electrical system may be damaged.

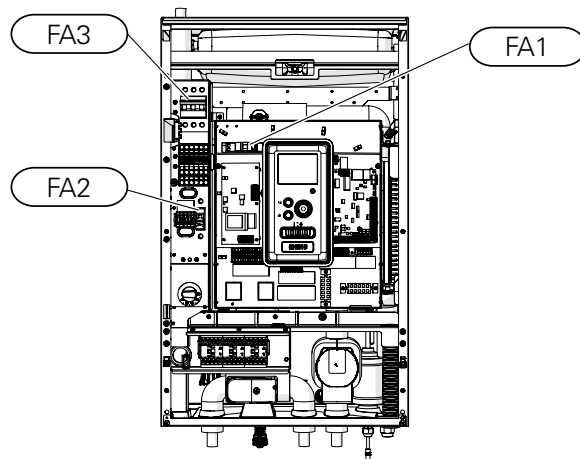
The manufacturer is not liable for any damage caused by failure to comply with the above instructions.

## Miniature circuit breaker

The automatic heating control system, the circulation pump and their wiring in SHB 10 are internally protected by miniature circuit breaker C10 (FA1). The AMS 10 outdoor unit and accessories are internally protected in SHB 10 by miniature circuit breaker B20 (FA2).

In addition, the circuit breaker B20 (FA3) is applied to protect the device power supply system against overload (protection at the neutral power supply circuit of the device).

Protection



## Connecting SHB 10 and AMS 10

The device connecting cable should be connected to the power supply terminal block (TB) in AMS 10 and to the terminal block (X10) in SHB10 .

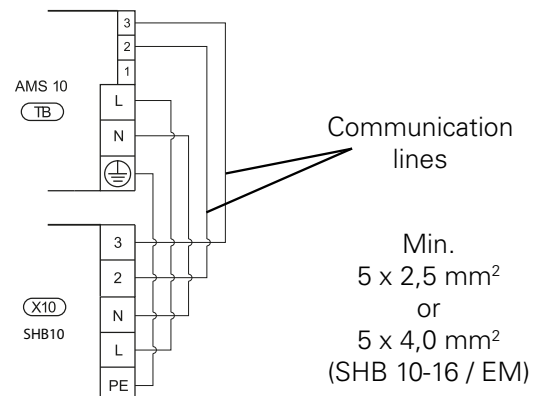


#### CAUTION

The AMS 10 unit must be earthed before connecting the appliance via the cable. Wiring must be secured so that the terminal block is not under tension. The end of the wire should be 8 mm long without insulation

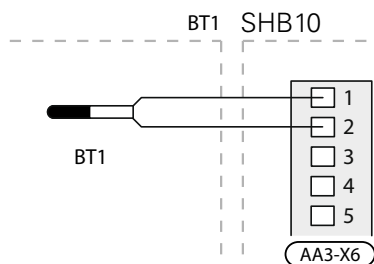
### AMS 10

Connect the phase (brown), neutral (blue), communication (black and grey) and protective (yellow-green) conductors as shown in the drawing:



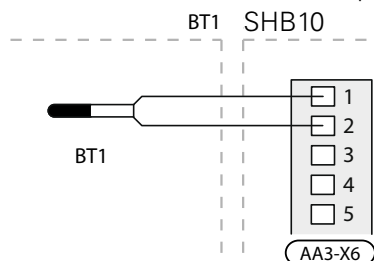
## Connecting the outdoor temperature sensor Settings

The outdoor temperature sensor BT1 (included) should be connected to the SHB 10 unit via terminal block AA3-X6:1 and AA3-X6:2.



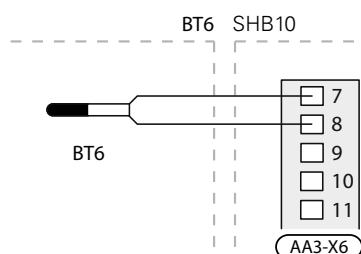
## Connecting the temperature sensor BT25

The temperature sensor BT25 (included) should be connected to the SHB 10 unit via terminal block AA3-X6: 5 and AA3-X6: 6. For the location of the sensor, see the section "Connection options".



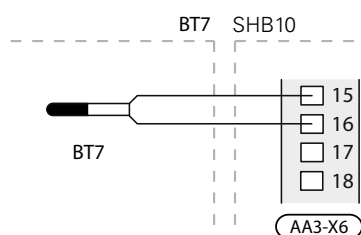
## Connecting the temperature sensor BT6

The temperature sensor BT6 (included) should be connected to the SHB 10 unit via terminal block AA3-X6: 7 and AA3-X6: 8.



## Connecting the temperature sensor BT7

The temperature sensor BT7 (included) should be connected to the SHB 10 unit via terminal block AA3-X6: 15 and AA3-X6: 16.



### NOTE

The location of the other sensors is available on page 82.

## Electric additional heat- maximum power

The electric additional heat has a maximum power of 9 kW (3x400V). The power is split into 3 steps. The possible operational power steps are: 3, 6 and 9 kW. The maximum power step of the immersion heater can be set using menu 5.1.12.

## Emergency mode

When the controller is set to emergency mode (SF1 is set to  $\Delta$ ) only the most necessary functions are activated.

- Hot water is not heated.
- Constant temperature in the supply line, more information in the section Emergency mode thermostat.



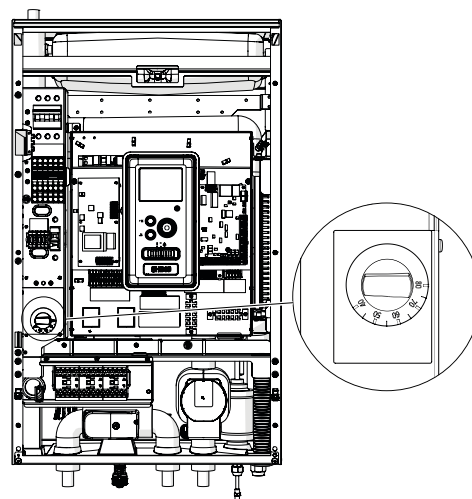
### CAUTION

While on emergency mode, it is not possible to heat hot water.

## Emergency mode thermostat

The supply temperature in emergency mode is set using a thermostat (BT30). It should be set according to the demands of the heating/cooling circuits in operation.

The adjustment range is 5- 65°C. Please note, however, that for underfloor heating the setting should be min. 20°C, max. 35-45°C to maintain comfort in the room and efficient operation of the system.



### CAUTION

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




### CAUTION

The temperature on the thermostat must be set according to the system requirements. If the temperature is too high, it can damage the system.

# 7 Commissioning and adjusting

## Preparations

1. Check that the switch for the control module is in position „“.
2. Check that the draining valve is fully closed and that the thermal circuit breaker (FD1) has not deployed.

## Filling and venting

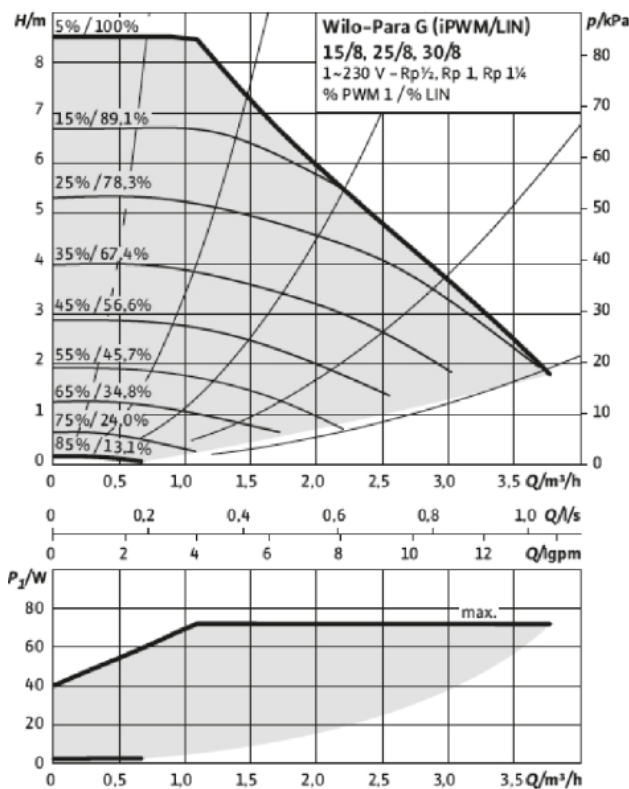
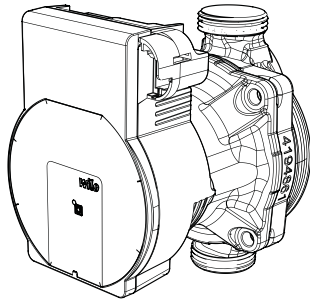
### Filling and venting the climate system and SHB10

1. Open the vent valves at the highest point of the climate system.
2. Set all mixing valves to a position which allows flow in all heating/cooling circuits.
3. Open the valve for filling the climate system and fill it with the heating medium, vent the system.
4. Close the vent valve after the system has been completely filled.
5. Check the pressure gauge, on which an increase in pressure will be visible. Fill the system to the required pressure (1,5- 2,5), then close the filling valve. The maximum operating pressure of the system is 2,5 bar.
6. Start the climate system circulation pump. The automatic vent valves located on the heating/cooling circuit will begin venting the system.
7. If during venting the pressure falls below 1 bar, extra heating medium must be added to the climate system.

## Circulation pump

### Pump speed

The circulation pump in SHB 10 is frequency-controlled and adjusts itself using control and based on heating / hot water demand.



### Post-adjustment, venting

Initially, air is released from the heating medium and venting may be necessary. If gurgling sounds can be heard from the climate system, the entire system will require additional venting. The system is vented via the vent valves. During venting, SHB 10 must be switched off.

## Commissioning



### CAUTION

Commissioning of the system must be carried out by a person with appropriate authorizations and manufacturer's authorization!

For commissioning of the heat pump:

1. Switch on the power supply to SHB 10 making sure that the AMS 10 unit is properly connected to the power supply.
2. Follow the instructions displayed in the controller start guide or alternatively start the start guide in menu 5.7.

## Start Guide



### CAUTION

The climate system must be filled with water and vented before setting the switch to "I".

1. Set the switch (SF1) on the controller to "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.



### TIP

See page 36 for more in-depth information on the installation's control system [1](operation, menus etc.).

## Commissioning

The first time the system is started up, a start guide is launched. The start guide instructions state what needs to be carried out at the first start-up together with a run through of the system's basic settings.

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

During the start guide, the reversing valves are operational in order to help vent the heat pump.



### NOTE

As long as the start guide is active, no function in the controller will start automatically.

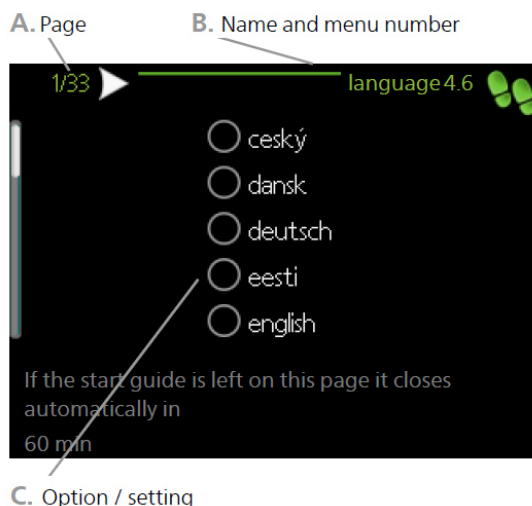
The guide will appear at each controller restart until it is disabled on the last page.



### NOTE

If starting up the system in low outdoor temperatures and a low heating medium temperature in the central heating system, the central heating system should be warmed up first, using the additional heat, to a temperature of about 20-25 °C.

## Operating the start guide



### A. Page

Here you can see the menu level 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 selected.
2. Press the OK button to skip between the pages in the start guide.

### B. Name and menu number

Information about the menu page, to which the start guide refers, can be found in the control system. The digits in brackets refer to the menu number in the control system.

If you want to read more about a particular menu, either consult the help menu or read the user manual.

### C. Option / setting

Enter settings for the system here.

### D. Help Menu



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

To view 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.

## Commissioning without heat pump

The indoor unit can be used without a heat pump only as an electric boiler, to produce heat and hot water before the heat pump is installed, for example. Go to menu 5.2 System settings and turn off the heat pump.



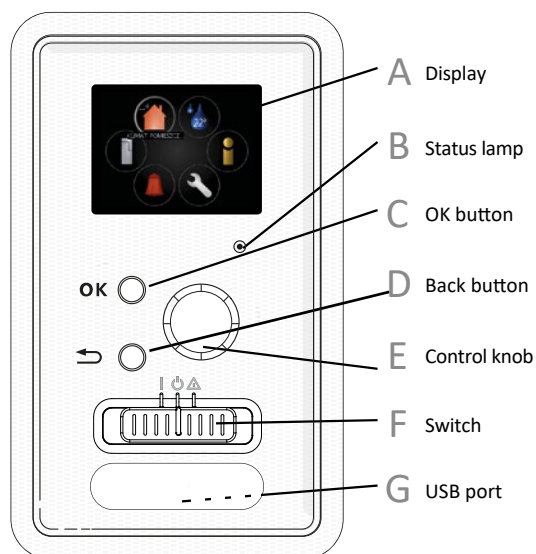
### CAUTION

Select the auto or manual operating 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.

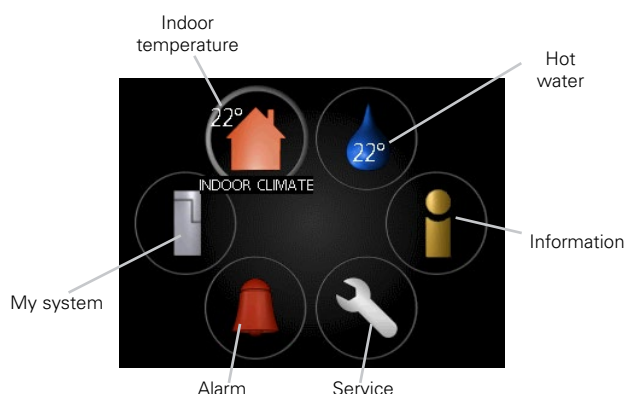
### G USB port

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 in chapter MENU 1.

### 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 in chapter MENU 2.

### 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 in chapter MENU 3.

### Menu 4 - MY SYSTEM

Setting time, date, language, display, operating mode etc. See information in the help menu or user manual in chapter MENU 4.

### 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 in chapter MENU 5.

## Symbols in the display

The following symbols can appear in the display during operation.

Symbol	Opis
	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

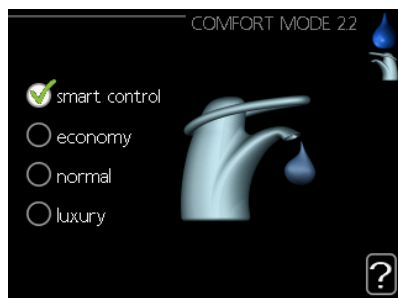
To move the check mark, turn the control knob to the left or the right. The marked position is white and/or has a turned up tab.

## 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



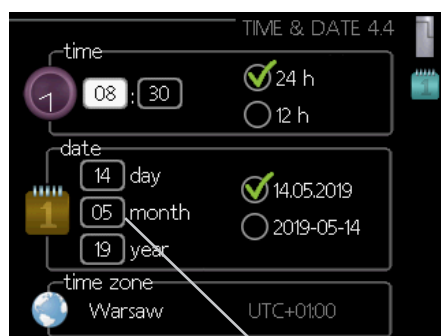
In an options menu the current selected option is indicated by a green tick.

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

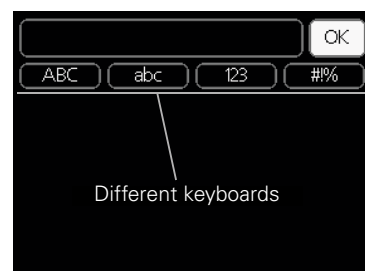


To set a value:

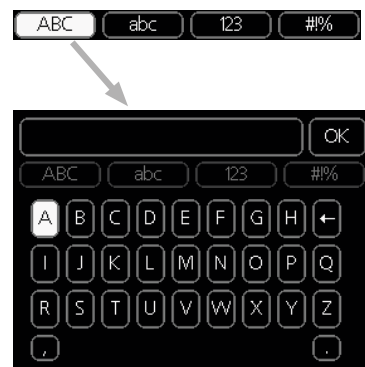
1. Mark the value you want to set using the control knob.
2. Press the OK button. The background of the value becomes green, which means that you have accessed the setting mode.
3. Turn the control knob to the right to increase the value and to the left to reduce the value.
4. Press the OK button to 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.




## Scroll through the windows in the 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 <sup>1</sup>		
	1.3- scheduling	1.3.1- heating	
		1.3.2- cooling	
		1.3.3- ventilation <sup>1</sup>	
	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 <sup>1</sup>	
		1.9.7- own curve	1.9.7.1- heating
			1.9.7.2- cooling
		1.9.8- point offset	

<sup>1</sup> The ERS additional equipment is necessary.

## Menu 2 - HOT WATER

2- HOTWATER	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. <sup>2</sup>

## 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

<sup>2</sup> The accessory AXC 30 is required if the output AA3: X7 is occupied.

## Menu 4 - MY SYSTEM

4- MY SYSTEM	4.1- plus functions	4.1.1- pool <sup>3</sup>		
		4.1.2- pool 2 <sup>3</sup>		
		4.1.3- internet	4.1.3.1- MyUpway	
			4.1.3.8- tcp/ip settings	
			4.1.3.9- proxy settings	
		4.1.4- sms <sup>4</sup>		
		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 <sup>5</sup>		
		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	

<sup>3</sup> The POOL 40 additional equipment is necessary.

<sup>4</sup> The SMS 40 additional equipment is necessary.

<sup>5</sup> The EME 20 additional equipment is necessary.

## Menu 5 - SERVICE

5-SERVICE	5.1- operating settings	5.1.1- hot water settings <sup>6</sup>
		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 <sup>7</sup>
		5.1.6- fan sp. supply air <sup>7</sup>
		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 <sup>8</sup>
		5.3.4- solar heating <sup>9</sup>
		5.3.6- step controlled add. heat
		5.3.8- hot water comfort <sup>6</sup>
		5.3.11- modbus <sup>10</sup>
		5.3.12- exhaust/supply air module <sup>7</sup>
		5.3.14- F135 <sup>11</sup>
		5.3.15- GBM communications module <sup>12</sup>
		5.3.16- humidity sensor <sup>13</sup>
		5.3.21- flow sensor / energy meter <sup>14</sup>
	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	

<sup>6</sup> The AXC 30 additional equipment is necessary.

<sup>7</sup> The ERS additional equipment is necessary.

<sup>8</sup> The ECS additional equipment is necessary.

<sup>9</sup> The SOLAR 42 additional equipment is necessary.

<sup>10</sup> The MODBUS additional equipment is necessary.

<sup>11</sup> The F135 additional equipment is necessary.

<sup>12</sup> The OPT additional equipment is necessary.

<sup>13</sup> The HTS 40 additional equipment is necessary.

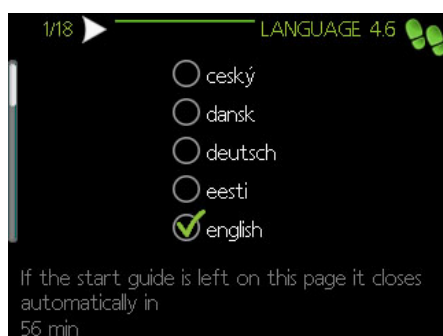
<sup>14</sup> The EMK 300 additional equipment is necessary.

## Start guide

The start guide appears when you first start the SHB 10. 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: english



### 2/18 Information

This menu displays information about the start guide.

### 3/18 Country

Select where the product is to be installed here. Short time after exiting the menu, the selected country will be blocked and you will not be able to re-enter the menu.

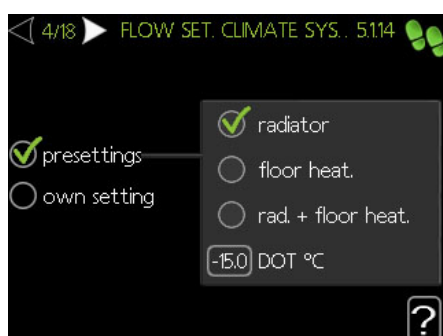
### 4/18 Flow. set. climate sys.

In this menu there is possibility to change settings for the essential settings of the heating system. More information after selecting "?".

Factory setting: presets

Factory setting: radiator

Factory setting: -15.0 DOT C

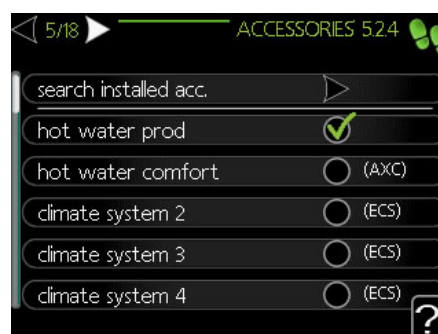


### 5/18 Accessories

In this menu it is possible to activate additional connected accessories. More information after selecting "?".

Factory setting: hot water prod

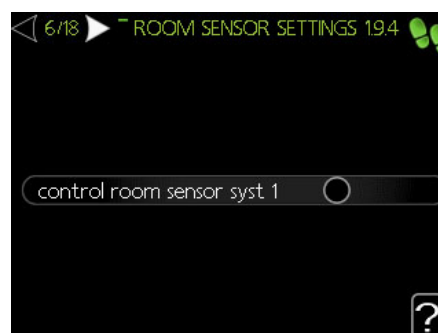
**IMPORTANT**  
Unchecking the prod. hot tap water setting will disable hot water heating.



### 6/18 Room sensor settings

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

Factory setting: inactive



### 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 additional heat). More information after selecting "?".

*Factory setting:*

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

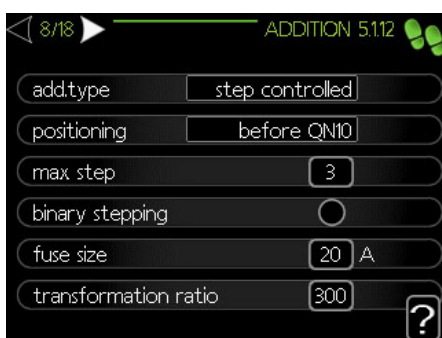


### IMPORTANT

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.

The before QN10 setting cannot be changed.



## 9/18 Installed slaves

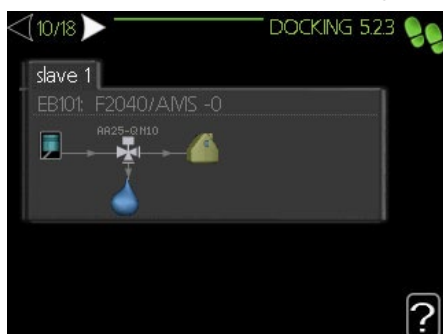
In this menu, it is possible to select slave devices. More information after selecting "?".

*Factory setting:*

slave 1: active (EB101)

## 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:

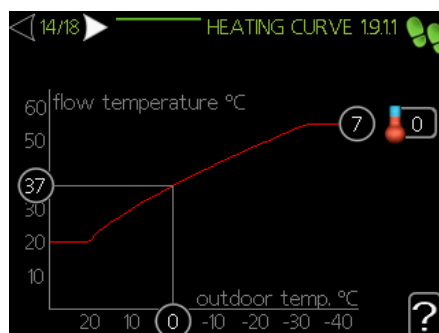
+ 35 for surface heating,  
+ 55 for radiator heating.

## 14/18 Heating curve

In this menu it is possible to edit the heating curve specified for the SHB 10 unit. More information after selecting "?".

*Factory setting:*

Heating curve: 7

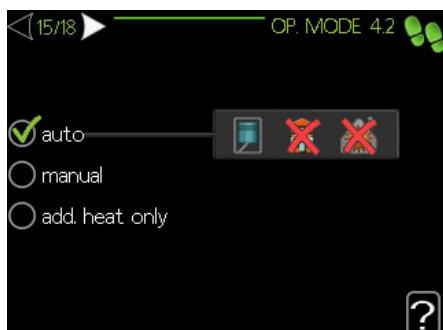


Detailed information on curve settings- see pt. "User settings".



## 15/18 Op mode

In this menu, you can select the operating mode for the SHB 10 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: inactive

deactivate hot water: inactive

## 17/18 Reminder

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

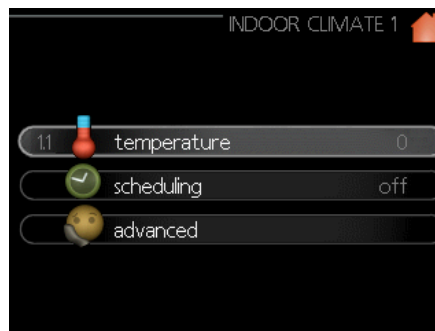
## 18/18 Start guide

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

# Settings for the user

## Menu 1 - Indoor climate

The menu CLIMATE OF ROOMS is used to modulate the settings for the heating system.



## Menu 1.1 - temperature

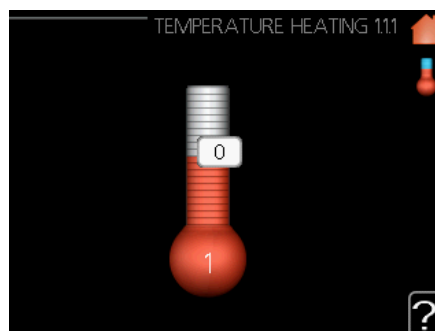
In this menu you can set the temperature for the heating system. Status information gives setpoints for the heating system.

Choose between heating or cooling (if active) 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 sensors installed and activated):

Setting range: -10 do +10

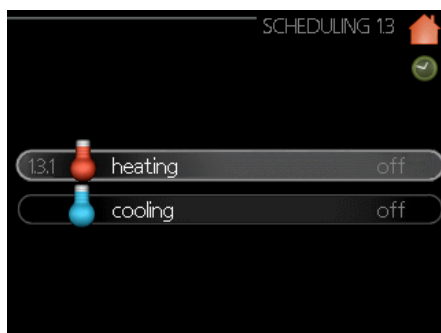
*Factory setting: 0*



## 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 (if active), then program the room temperature increase or decrease for up to three time intervals throughout the day. More information after selecting "?".



Factory setting:

heating: wyl.

cooling (if activated): wyl.

**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.

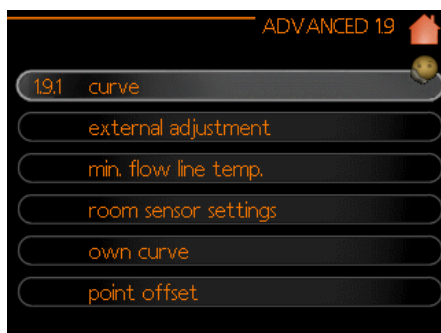
**Day:** Select which day or days of the week the schedule is to apply to here. To remove the scheduling for a particular day, the time for that day must be reset by setting the start time to the same as the stop time. If the line "all" is used, all days in the period are set for these times.

**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



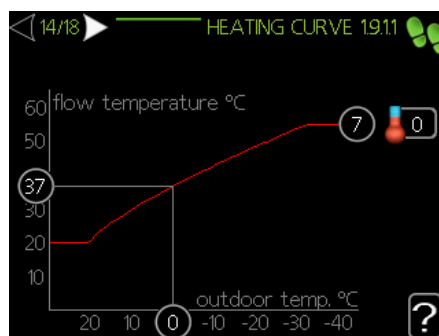
This menu is intended for advanced users. This menu has several sub-menus.

## Menu 1.9.1 - curves

You can select heating or cooling (if active) 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.

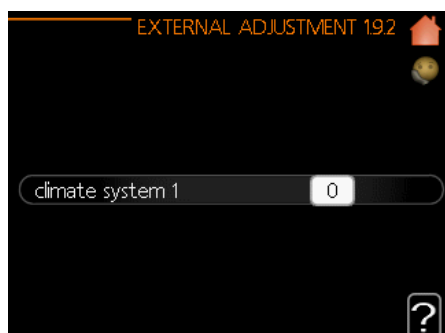
If it is cold outdoors and the room temperature is too high, lower the curve slope by one increment.

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*

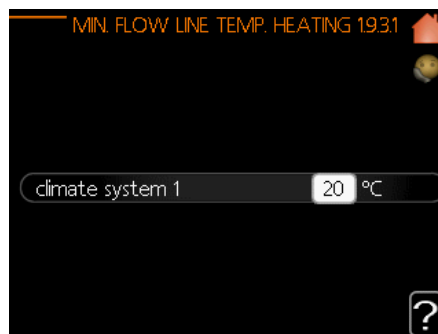
*cooling (if activated)*

*climate system 1: 0*

### Menu 1.9.3 - min. flow line temp.

In menu 1.9.3 you select heating or cooling (if active), in the next menu (min. supply temp.heating/cooling) set the minimum temperature on the supply temperature to the climate system. This means that SHB 10 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 (if activated)*

*climate system 1: 18*



#### IMPORTANT

With active cooling, the minimum temperature should be set based on the temperature of the heating system.



#### 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.

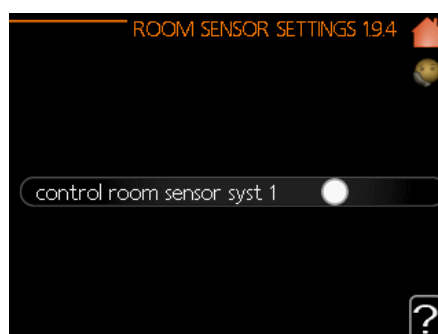
Here you can set a factor (a numerical value) that determines how much an over or sub normal temperature (the difference between the desired and actual room temperature) in the room is to affect the supply temperature to the climate system. A higher value gives a greater and faster change of the heating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



#### IMPORTANT

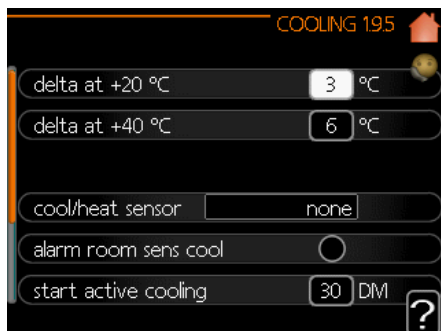
Too high a set value for "factor system" can (depending on your climate system) produce an unstable room temperature.

Factory setting: *inactive*



## Menu 1.9.5 - cooling settings (if active)

You can use SHB 10 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/cooling demand in the house and determine when the compressor, cooling operation respectively additional heat will start/stop.

### degree minutes cooling

This setting is only available when the connected accessory is counting cooling degree minutes.

After setting the min. or max., the system automatically sets the actual degree minutes for cooling.

## Menu 1.9.7 - own curve

In this menu user can create own heating or cooling (if active) 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.

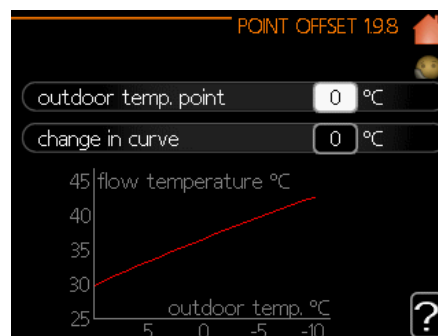
## Menu 1.9.8 - point offset

Make the correction for the heating curve at a certain outdoor temperature here.

One step is usually enough to change the room temperature one degree, but in some cases several steps may be required.

The heating curve changes its slope within  $\pm 5^\circ\text{C}$  from the outdoor temperature point for which the point shift was entered.

It is important to select the correct heating curve to ensure a constant room temperature.

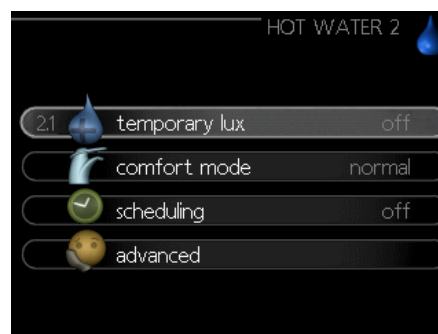


#### CAUTION

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 "?".

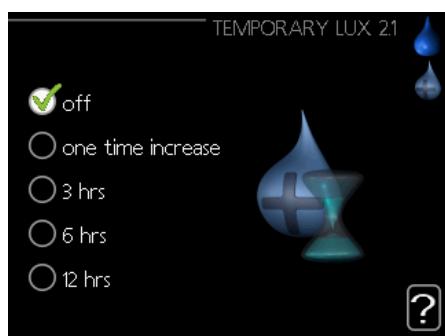
Factory setting: *off*

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.

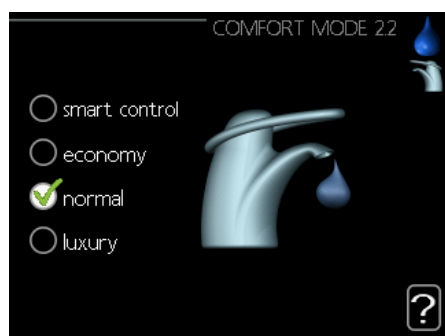


The function is activated immediately when a time period is selected and confirmed using the OK button. The remaining time for the selected setting is shown to the right. When the time has run out controller returns to the mode set in menu 2.2. Select "off" to switch off temporary lux .

### 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: *normal*



*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.

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.

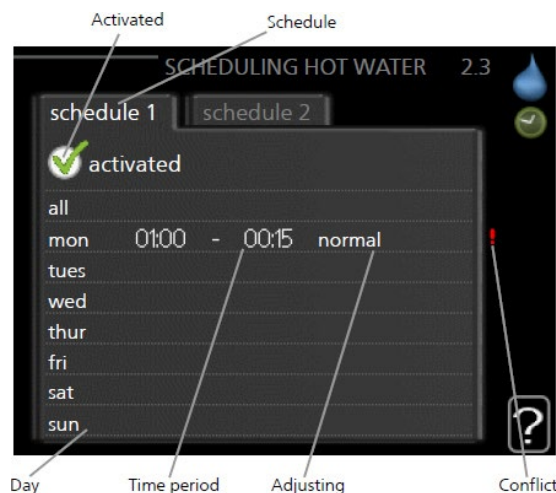
*normal*- Normal mode gives a larger amount of hot water and is suitable for most households.

*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.



#### 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 "?".

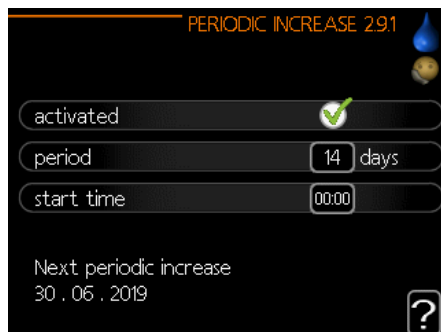
The length of time between increases can be selected here. The time can be set between 1 and 90 days. Factory setting is 14 days. Tick/untick "activated" to start/switch off the function.

Factory setting:

*activated: on*

*period: 14 dni*

*start time: 00:00*

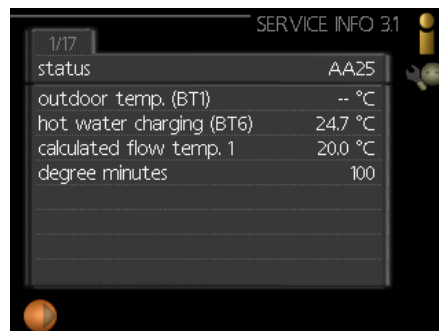


## Menu 3 - INFO

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

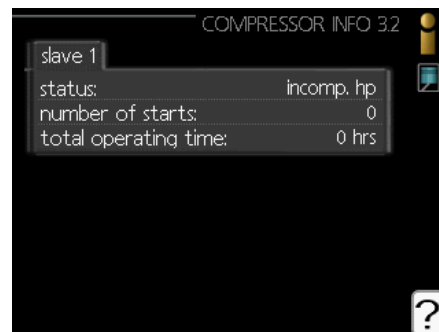
### Menu 3.1 - service info

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.



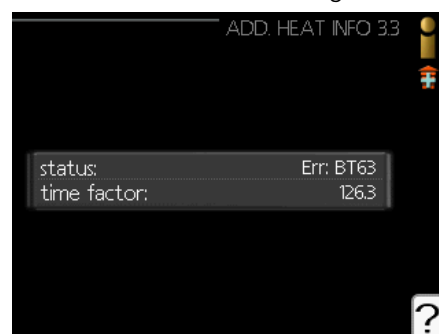
### Menu 3.2 - compressor info

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 "?".



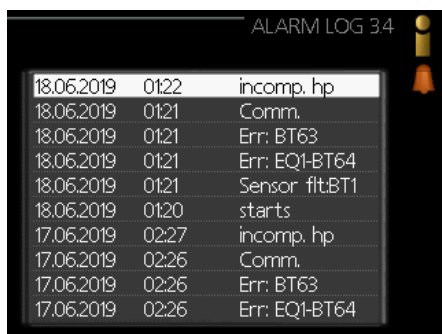
### Menu 3.3 - info. o podg. pom.

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.

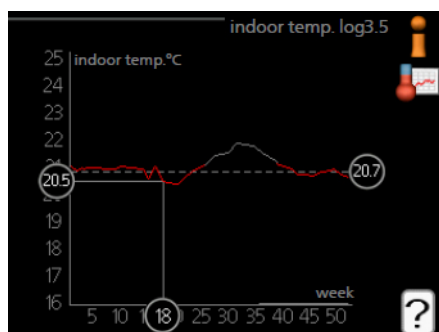


Date	Time	Description
18.06.2019	01:22	incomp. hp
18.06.2019	01:21	Comm.
18.06.2019	01:21	Err: BT63
18.06.2019	01:21	Err: EQ1-BT64
18.06.2019	01:21	Sensor fit:BT1
18.06.2019	01:20	starts
17.06.2019	02:27	incomp. hp
17.06.2019	02:26	Comm.
17.06.2019	02:26	Err: BT63
17.06.2019	02:26	Err: EQ1-BT64

## 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

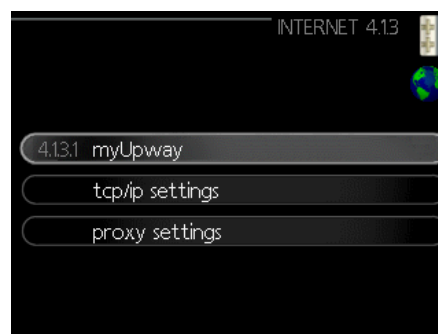
This menu contains information about the work and driver settings. Status information for the relevant menu can be found on the display to the right of the menus.

### Menu 4.1 - plus functions

Settings for any additional functions installed in SHB 10 can be made in the sub menus.

#### Menu 4.1.3 - internet

Here you make settings for connecting SHB 10 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 "?".



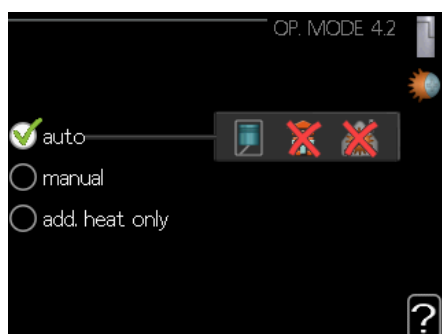
### Menu 4.2 - op. mode

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.

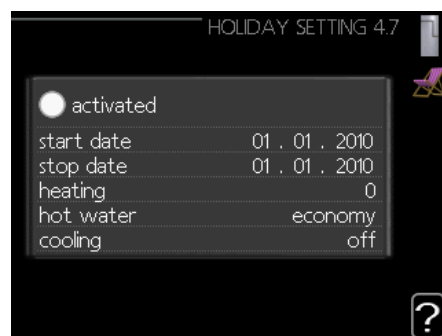
### **Menu 4.7 - holiday setting**

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.

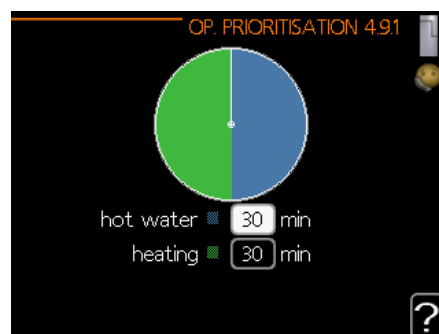
### **Menu 4.9 - advanced**

In this menu, we configure advanced functions of the SHB 10 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**

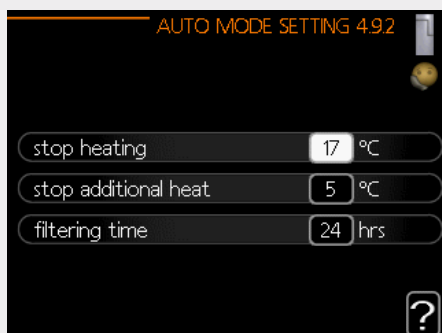
When the operating mode is set to "auto", the heat pump selects when start and stop of additional heat and heat production is permitted, dependent on the average outdoor temperature.

In this menu you set the average outdoor temperatures, the time (filtering time) during which the average temperature is calculated. You can also set the cooling start temperature (if activated).

More information after selecting "?".



Factory setting:



**CAUTION**

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

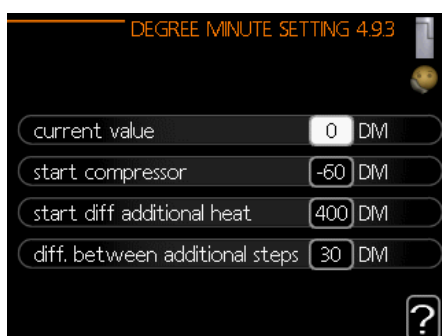


**CAUTION**

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 0 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 applying a factory reset of the appliance, all individual settings (such as heating curve etc.) will be deleted.

### 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.



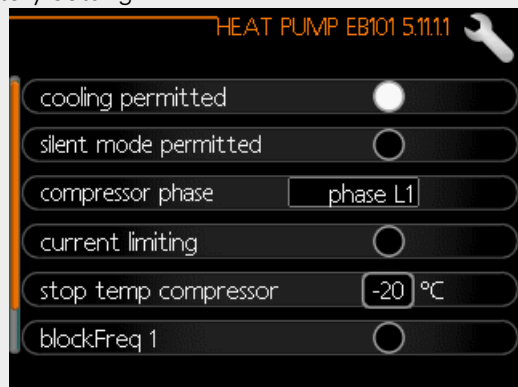
**CAUTION**

Long term blocking can cause reduced comfort and operating economy.

## Cooling settings

In the factory settings of the SHB 10 the cooling is deactivated and requires activation in menu 5.11.1.1 in order to start it up.

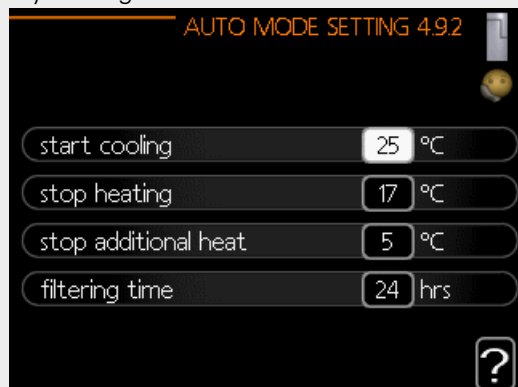
Factory setting:



By default, cooling works in the 2-pipe system. In order to change the cooling mode to 4-pipe, it must be activated in menu 5.2.4.

To start up cooling, change the “start cooling” parameter in menu 4.9.2 to the higher value (applies to the outside temperature) which starts cooling in accordance with the settings in menu 1.9 (settings are in menu 1.9.1.2, 1.9.3.2 and 1.9.5).

Factory setting:



If the average temperature calculated by the “filtering time” is higher than the one set, cooling will start in accordance with the settings in menu 1.9 (settings are in menu 1.9.1.2, 1.9.3.2 and 1.9.5).



### 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 – 50°C

Factory setting start temp. economy: 39°C

Setting range stop temp. economy: 5 – 50°C

Factory setting stop temp. economy: 43°C

#### normal

Setting range start temp. normal: 5 – 55°C

Factory setting start temp. normal: 42°C

Setting range stop temp. normal: 5 – 55°C

Factory setting stop temp. normal: 46°C

#### luxury

Setting range start temp. lux: 5 – 60°C

Factory setting start temp. lux: 45°C

Setting range stop temp. lux: 5 – 60°C

Factory setting stop temp. lux: 49°C

*stop temp. per. increase*  
*Setting range: 55 – 60°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: 5-70°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

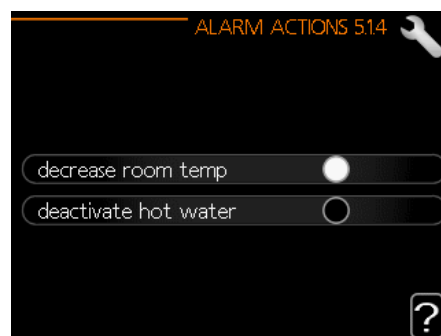
If the current supply temperature exceeds the calculated flow with set value, the degree minute value is set to 0. The compressor in the heat pump stops when there is only a heating demand.

#### 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: speed 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: speed 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.

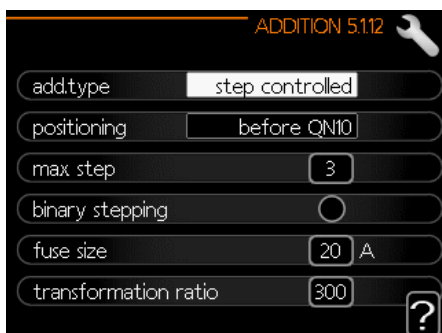


### CAUTION

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 (REQUIRED)

*max step*

*Setting range (binary stepping deactivated): 0 – 3*

*Setting range (binary stepping activated): 0 – 7*

*Factory setting: 3*

*binary stepping*

*Setting range: active / 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

*Factory setting: presets*

*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: -15,0 °C*

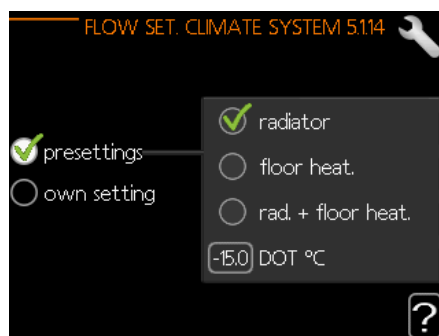
*own setting*

*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: -15,0°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.

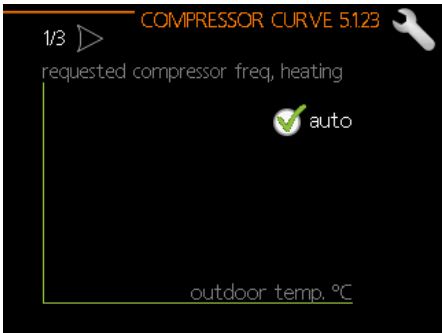
CAUTION

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".

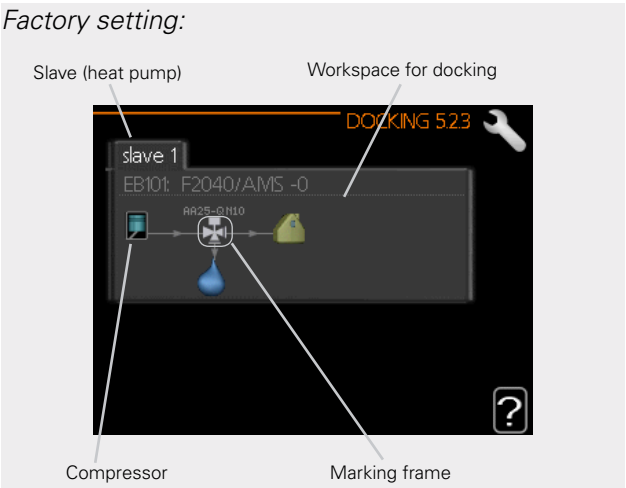
search installed slaves

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.



**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, 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".

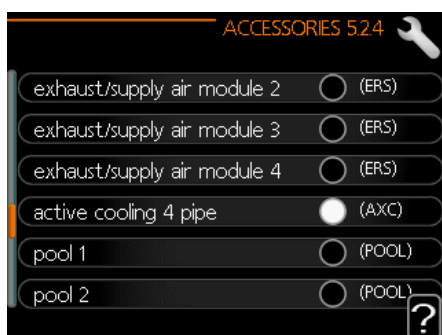
*Factory setting: hot water prod*

*search installed acc.*

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

#### ACTIVATING 4- PIPE COOLING OPERATION

In order to activate 4-pipe cooling, select the function "active cooling 4 pipe".



### 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 5.3.21 - flow sensor / energy meter



### IMPORTANT

Menu 5.3.21 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 81).

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 valve QN12 (heating / cooling), hot water recirc. and alarm output.

Factory setting:

SOFT IN/OUTPUTS 5.4	
AUX1	not used
AUX2	not used
AUX3	not used
AUX4	not used
AUX5	not used
AUX6	addition (BT63)
AA3-X7	alarm output

## 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 SHB 10.

## Menu 5.7 - start guide

The first time you start the SHB 10, 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 43.

## 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.

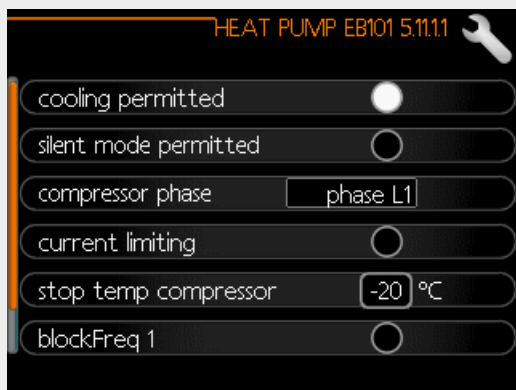
### Menu 5.11.1 - EB101 - 5.11.8 - EB108

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: auto

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

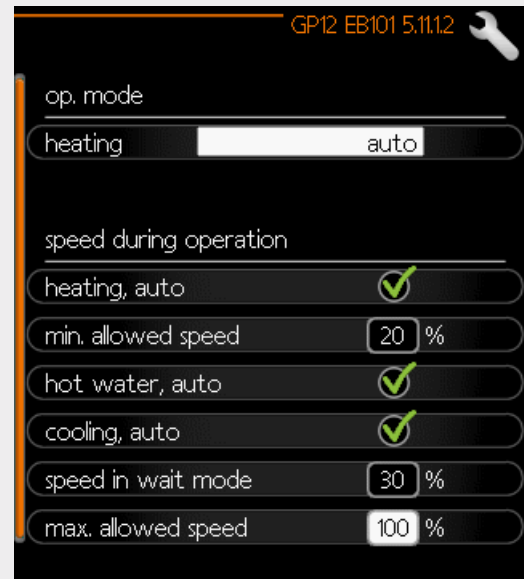
speed during operation

heating, hot water, pool, cooling

Setting range: auto / manual

Factory setting: auto

Factory setting:



This menu allows setting the rotations with which the GP12 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/service.

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 SHB 10, 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.

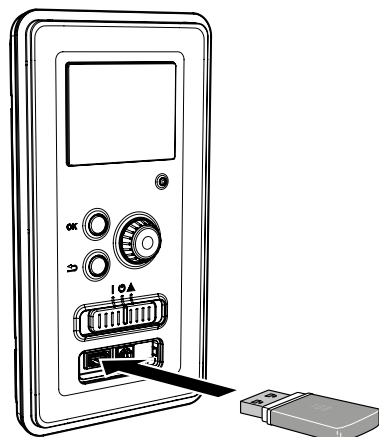
Emergency mode is activated by setting switch (SF1) in mode „“. This means that:

- 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.
- Electric module available power- 3kW.

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 (°C)	Resistance (kΩm)	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

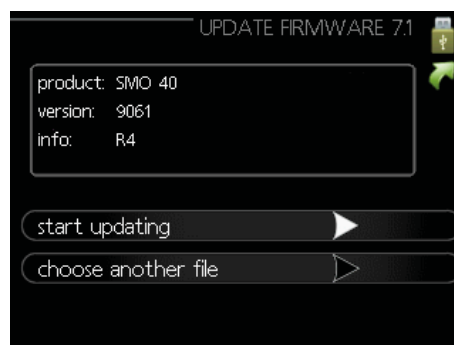


The display unit is equipped with a USB socket that can be used to update the software, save logged information and manage the settings in the controller.



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 from 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

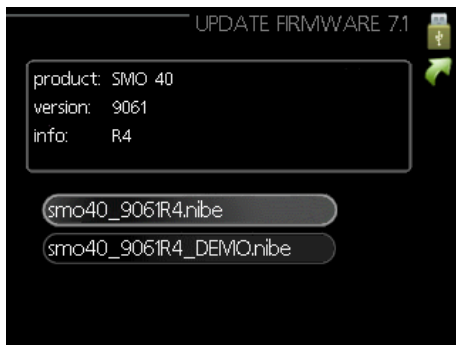
A software update does not reset the menu settings in the controller.



### 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.

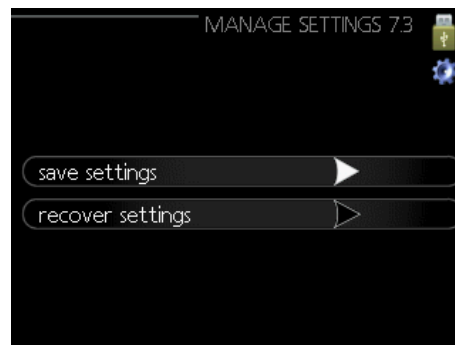
1. Set the desired interval between loggings.
2. Tick "activated".
3. The present values from the controller are saved in a file in the USB memory at the set interval until "activated" is unticked.



### 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 heating system

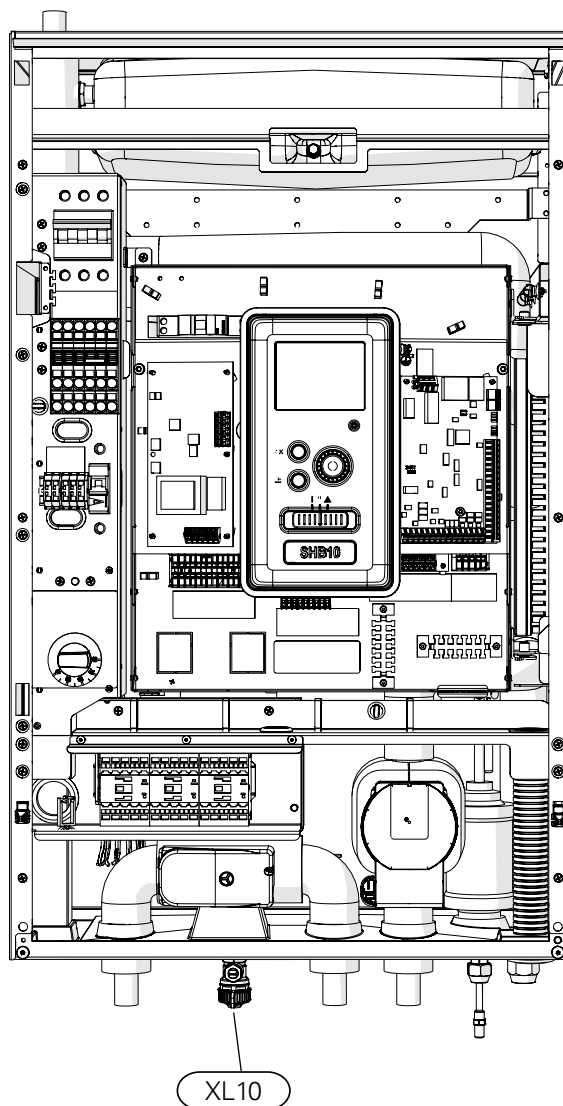
The device is equipped in heating system draining valve XL10. The valve must be fitted with a draining hose connected to a floor drain to prevent room flooding.



### IMPORTANT

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

1. Connect the hose to the XL10 drain valve of the system.
2. Then open the drain valve to empty the heating system.
3. Open the safety valve to remove the created underpressure.



# 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 TIKI 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 sensor RTS 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. 80m<sup>2</sup>)

Part no. 067 287

### ECS 41 (max. 250m<sup>2</sup>)

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

## Air/water heat pump

### AMS 10-6

Nr. 064 205

### AMS 10-8

Nr. 064 033

### AMS 10-12

Nr. 064 110

### AMS 10-16

Nr. 064 035

## 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

## Condensation water drainage pipe

### KVR10-10

Length- 1 metre

Part no. 067 614

### KVR10-30

Length- 3 metres

Part no. 067 616

### KVR10-60

Length- 6 metres

Part no. 067 618

## ERS RECUPERATION SYSTEMS

This accessory is used to supply the building with recovered energy from the ventilation air. The device ventilates the building and heats the supply air if necessary.

### ERS 10-400

Nr. 066 115

### ERS 20-250

Nr. 066 068

**More accessories are available on the website <https://www.tiki.si>**

## Connecting the KVR accessory

The KVR 10 accessory is used to safely drain off most of the condensate from the air/water heat pump to a frost-free collection point.

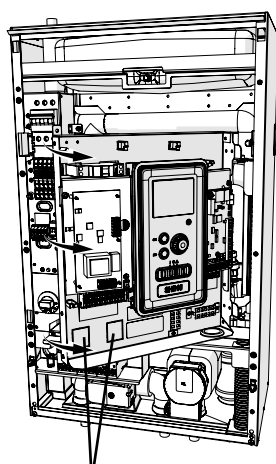
### HYDRAULIC CONNECTION

For information on hydraulic connection of the KVR 10 accessory, see the instructions for the KVR accessory.

### ELECTRICAL CONNECTION

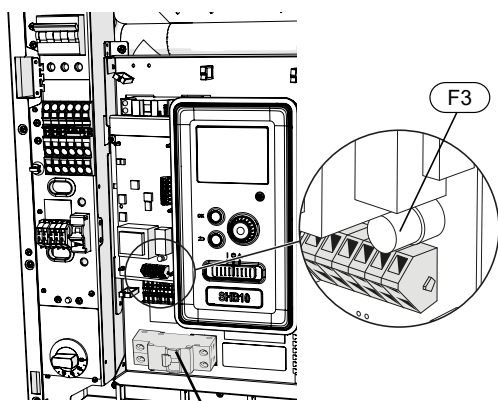
In order to connect the electric KVR accessory:

1. Open the control panel and punch-out the notched plates in the control panel casing under the residual-current device.



Plates to be punched-out

2. Attach the residual-current device RCD.



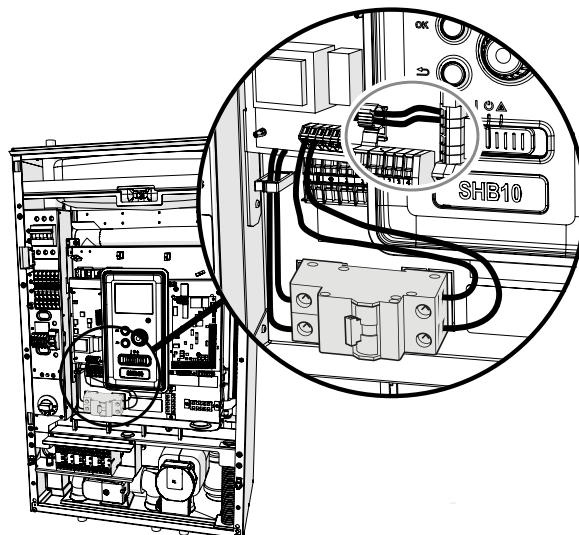
Residual-current device RCD

3. Use fuse (F3) depending on the length of the KVR cable in accordance with the below table.

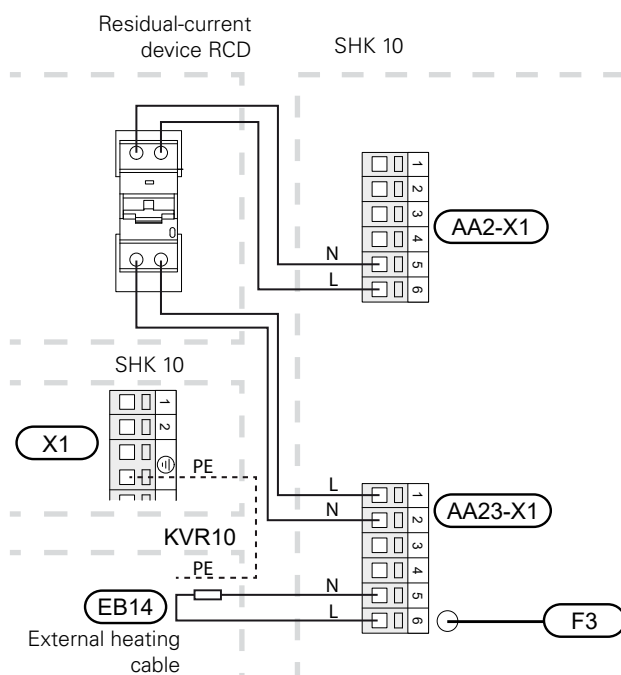
Length (m)	P <sub>tot</sub> (W)	Fuse (F3)	Part no.
1	15	T100mA/250V	718 085
3	45	T250mA/250V	518 900*
6	90	T500mA/250V	718 086

\*Fitted at the factory

4. Connect a residual-current device to terminal AA2-X1 under terminal block 5(N) and 6(L).
5. Connect a residual-current device to terminal AA23-X1 to terminal blocks 1(L) and 2(N).



6. Connect an external heating cable (EB14) to terminal AA23-X1 to terminal blocks: 4 (PE), 5 (N), 6 (L).



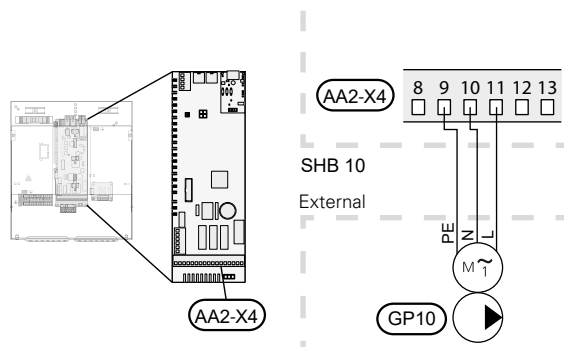


## Connection of an additional GP10 pump

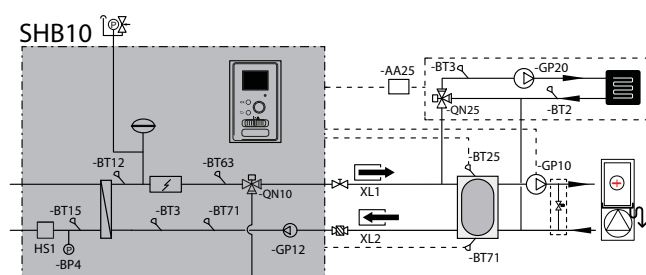
To connect an additional GP10 circulation pump, proceed as follows:

- connect wire L to the terminal block AA2-X4: 11
- connect wire N to the terminal block AA2-X4: 10
- connect wire PE to the terminal AA2-X4: 9

All connections should be made in accordance with the figure below.

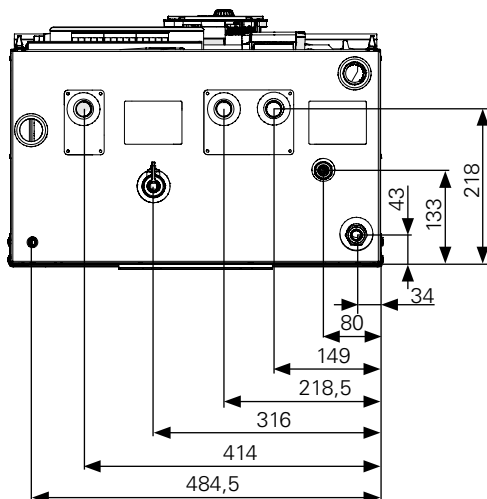
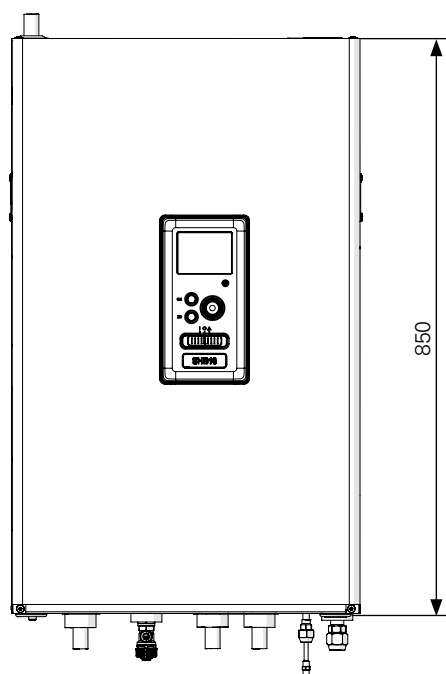
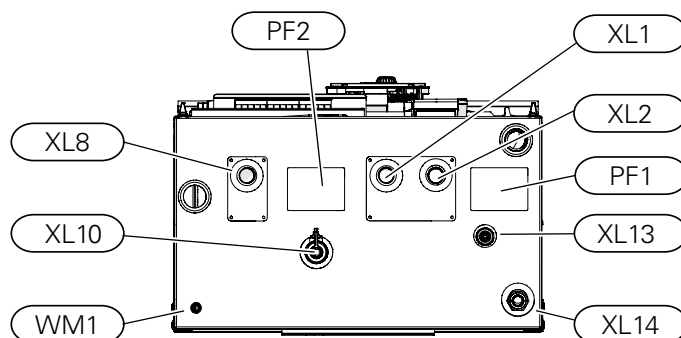
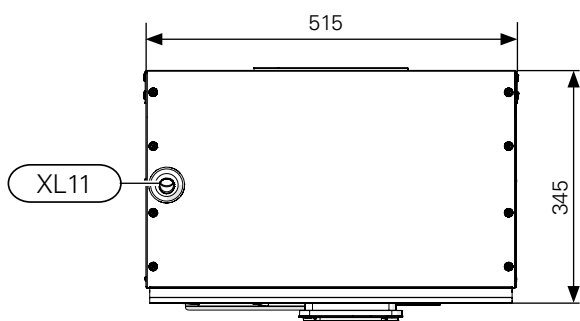


## Diagram with buffer tank connected in parallel and additional circulation pump GP10.



# 13 Technical data

## Dimensions and layout of connections



### Pipe connections

- XL1 Connection, heating medium, supply  
Ø22 mm for SHB10-6 and SHB10-12,  
Ø28 mm for SHB10-16
- XL2 Connection, heating medium, return  
Ø22 mm for SHB10-6 and SHB10-12,  
Ø28 mm for SHB10-16
- XL8 Connection, HW heating medium, supply  
Ø22 mm for SHB10-6 and SHB10-12,  
Ø28 mm for SHB10-16
- XL10 Connection, GW 1/2" drain valve
- XL11 Connection, safety assembly  
Ø22 mm, pressure gauge
- XL13 Liquid refrigerant  
Connection 1/4" (SHB10-6)  
Connection 3/8" (SHB10-12 / SHB10-16)
- XL14 Gas refrigerant  
Connection 1/2" (SHB10-6)  
Connection 5/8" (SHB10-12 / SHB10-16)
- WM1 Condensate drain from the drip tray

### Other information

- PF1 Nameplate
- PF2 Plate with the designation of the hydraulic connections

## Technical data

Product type	Unit	SHB10-6	SHB10-12	SHB10-16
Height	mm	850		
Required room height	mm	1 500		
Width	mm	515		
Depth	mm	345		
Weight	kg	52	56	58
Maximum operating pressure of central heating system.	bar	3		
Maximum operating temperature of central heating	°C	70		
Maximum hot water temperature	°C	60		
Low-energy circulation pump clim. sys.	-	tak		
Safety valve. climate system	-	Yes, in the safety assembly		
Expansion vessel	l	12		
Additional heat	kW	4,5 (230V) / 9 (400V)		
Rated voltage	V	230V 1N AC 50Hz / 400V 3N AC 50Hz		
Energy class (in accordance with ErP. at supply temp. 55°C) applies to package AMS 10-6 + SHB10-6, AMS 10-12 + SHB10-12 OR AMS 10-16 + SHB 10-16	-	A++		

Outdoor unit	Unit	AMS 10-6	AMS 10-8	AMS 10-12	AMS 10-16
Starting current	A	5			
Compressor	-	Twin Rotary			
Max. nominal fan performance (heating)	m³/h	2 530	3 000	4 380	6 000
Fan power	W	50	86		2X86
Defrosting	-	Reverse cycle			
Hot water tank drip tray	W	Integrated 110	Integrated 100	Integrated 120	
High pressure critical value	MPa (bary)	-	4,15 (41,5)		
Low pressure switch-off value (15 s)	MPa (bary)	-	0,079 MPa (0,79)		
Height	mm	640	750	845	1 300
Width	mm	800	780 (+67 valve cover)	970	
Depth	mm	290 (+62 base rail)	340 (+80 base rail)	370 (+80 base rail)	
Weight	kg	46	60	74	105
Colour (two layers of powder coating)	-	Dark grey			
Refrigerant amount	kg	1,5	2,55	2,90	4,0
Max. length of refrigerant pipe one-way	m	30*			
Refrigerant pipe dimensions	-	Gas pipe: ext. diameter 12.7 (1/2") Liquid line: ext. diameter 6.35 (1/4")	Gas pipe: ext. diameter 15.88 (5/8") Liquid line: ext. diameter 9.53 (3/8")		
Optional pipe connections	-	Right-hand side		Bottom / right-hand side/ back	
Part no.	-	064 205	064 033	064 110	064 035

\* If the length of the refrigerant pipes exceeds 15 m, extra refrigerant must be added in the amount of 0.02kg/m for SHB 10-6 or 0.06 kg/m for SHB 10-12 and SHB 10-16.

<i>Max. operating current and recommended fuse rating for 3x400 V connection</i>	<i>Unit</i>	<i>SHB10-6 + AMS 10-6</i>	<i>SHB10-12 + AMS 10-8</i>	<i>SHB10-12 + AMS 10-12</i>	<i>SHB10-16 + AMS 10-16</i>
Max. operating current, compressor	A	16	16	20	25
Max. operating current of heat pump including 3 kW immersion heater, compressor running and contactor K1 connected (recommended fuse rating)	A	16 (16)	16 (16)	20 (20)	25 (25)
Max. operating current of heat pump including 6 kW immersion heater, compressor running and contactor K1+K2 connected (recommended fuse rating)	A	16 (16)	16 (16)	20 (20)	25 (25)
Max. operating current of heat pump including 9 kW immersion heater, compressor running and contactor K1+K2+K3 connected (recommended fuse rating)	A	20 (20)	20 (20)	20 (20)	25 (25)
Max. operating current of 9 kW immersion heater, contactor K1+K2+K3 connected, compressor not running (recommended fuse rating)	A	20 (20)	20 (20)	20 (20)	25 (25)

<i>Max. operating current and recommended fuse rating for 1x230 V connection</i>	<i>Unit</i>	<i>SHB10-6 + AMS 10-6</i>	<i>SHB10-12 + AMS 10-8</i>	<i>SHB10-12 + AMS 10-12</i>	<i>SHB10-16 + AMS 10-16</i>
Max. operating current, compressor	A	16	16	20	25
Max. operating current of heat pump including 1.5 kW immersion heater, compressor running and contactor K1 connected (recommended fuse rating)	A	22,5 (25)	22,5 (25)	26,5 (25)	31,5 (32)
Max. operating current of heat pump including 3 kW immersion heater, compressor running and contactor K1+K2 connected (recommended fuse rating)	A	29 (32)	29 (32)	33 (32)	38 (40)
Max. operating current of heat pump including 4.5 kW immersion heater, compressor running and contactor K1+K2+K3 connected (recommended fuse rating)	A	35,5 (32)	35,5 (32)	39,5 (40)	44 (40)
Max. operating current of 4.5 kW immersion heater, contactor K1+K2+K3 connected, compressor not running (recommended fuse rating)	A	19,5 (20)	19,5 (20)	19,5 (20)	19 (20)

## Energy efficiency label

Manufacturer	TIKI				
Heat pump model		AMS 10-6	AMS 10-8	AMS 10-12	AMS 10-16
Hot water heater model		SHB10-6	SHB10-12	SHB10-12	SHB10-16
Temperature application	°C	35 / 55	35 / 55	35 / 55	35 / 55
Declared load profile for heating hot water		XL	XL	XL	XL
Space heating efficiency class, average climate		A+++ / A++	A++ / A++	A++ / A++	A++ / A++
Hot water heating efficiency class, average climate		A	A	A	A
Nominal heat output (Pdesign), average climate	kW	5 / 5	8 / 7	12 / 10	15 / 14
Annual energy consumption for space heating, average climate	kWh	2 089 / 3 248	3,882 / 4 447	5 382 / 6 136	6 702 / 8 431
Seasonal average space heating efficiency, average climate	%	188 / 131	172 / 127	174 / 132	180 / 138
Water heating energy efficiency, average climate	%	99	99	98	98
Sound power levels $L_{WA}$ indoors	dB	35	35	35	35
Nominal heat output (Pdesign), cold climate	kW	4 / 6	9 / 10	12 / 13	15 / 16
Nominal heat output (Pdesign), warm climate	kW	4 / 5	8 / 8	12 / 12	15 / 15
Annual energy consumption for space heating, cold climate	kWh	2 694 / 4 610	6 264 / 8 844	7 798 / 11 197	10 040 / 13 629
Annual energy consumption for hot water heating, cold climate	kWh	872 / 1 398	1 879 / 2 333	2 759 / 3 419	3 370 / 4 183
Seasonal average space heating efficiency, cold climate	%	143 / 116	139 / 108	142 / 111	144 / 113
Water heating energy efficiency, cold climate	%	252 / 179	225 / 180	229 / 185	235 / 189
Sound power level $L_{WA}$ outdoors	dB	51	55	58	62

## Energy efficiency specifications of the package

<i>Heat pump model</i>		<i>AMS 10-6</i>	<i>AMS 10-8</i>	<i>AMS 10-12</i>	<i>AMS 10-16</i>
<i>Hot water heater model</i>		<i>SHB10-6</i>	<i>SHB10-12</i>	<i>SHB10-12</i>	<i>SHB10-16</i>
<i>Temperature application</i>	<i>°C</i>	<i>35 / 55</i>	<i>35 / 55</i>	<i>35 / 55</i>	<i>35 / 55</i>
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	180 / 138
Seasonal space heating energy efficiency class of the package, average climate		A+++ / A++	A+++ / A++	A+++ / A++	A+++ / A++
Seasonal space heating energy efficiency of the package, cold climate	%	147 / 120	143 / 112	146 / 115	148 / 117
Seasonal space heating energy efficiency of the package, warm climate	%	256 / 183	229 / 184	233 / 189	239 / 193

A+++ - D for product space heating  
A+++ - G for package space heating  
A+ - F for product domestic hot water

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

# Energy label

Model		AMS10-6 + SHB10-6					
Type of heat pump	<input checked="" type="checkbox"/> Air-water <input type="checkbox"/> Exhaust-water <input type="checkbox"/> Brine-water <input type="checkbox"/> Water-water						
Low-temperature heat pump	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Integrated immersion heater for additional heat	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
Heat pump combination heater	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
Climate	<input checked="" type="checkbox"/> Average <input type="checkbox"/> Cold <input type="checkbox"/> Warm						
Temperature application	<input checked="" type="checkbox"/> Average (55°C) <input type="checkbox"/> Low (35°C)						
Applied standards	EN14825 / EN16147, EN14511 and EN12102						
Rated heat output	Prated	5.3	kW	Seasonal space heating energy efficiency	$\eta_s$	131	%
Declared capacity for space heating at part load and at outdoor temperature $T_j$				Declared coefficient of performance for space heating at part load and at outdoor temperature $T_j$			
$T_j = -7^\circ\text{C}$	Pdh	4.7	kW	$T_j = -7^\circ\text{C}$	Pdh	1.88	-
$T_j = +2^\circ\text{C}$	Pdh	2.8	kW	$T_j = +2^\circ\text{C}$	Pdh	3.26	-
$T_j = +7^\circ\text{C}$	Pdh	1.8	kW	$T_j = +7^\circ\text{C}$	Pdh	4.72	-
$T_j = +12^\circ\text{C}$	Pdh	2.7	kW	$T_j = +12^\circ\text{C}$	Pdh	6.47	-
$T_j = \text{biv}$	Pdh	4.7	kW	$T_j = \text{biv}$	Pdh	1.88	-
$T_j = \text{TOL}$	Pdh	4.1	kW	$T_j = \text{TOL}$	Pdh	1.77	-
$T_j = -15^\circ\text{C}$ (if TOL < -20°C)	Pdh		kW	$T_j = -15^\circ\text{C}$ (if TOL < -20°C)	Pdh		-
Bivalent temperature	$T_{\text{biv}}$	-7	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	P <sub>psych</sub>		kW	Cycling interval efficiency	COP <sub>cy</sub>		-
Degradation coefficient	Cdh	0.99	-	Max supply temperature	WTOL	58	°C
Power consumption in modes other than active mode				Additional heat			
Off mode	$P_{\text{OFF}}$	0.007	kW	Rated heat output	P <sub>sup</sub>	1.2	kW
Thermostat-off mode	$P_{\text{TO}}$	0.012	kW				
Standby mode	$P_{\text{SB}}$	0.012	kW	Type of energy input	Electric		
Crankcase heater mode	$P_{\text{CK}}$	0	kW				
Other items							
Capacity control	Variable			Rated airflow (air-water)		2 526	m³/h
Sound power level, indoors/outdoors	$L_{\text{WA}}$	35 / 51	dB	Rated heating medium flow			m³/h
Annual energy consumption	$Q_{\text{HE}}$	3 248	kWh	Brine flow rate in brine-water or water-water heat pumps			m³/h

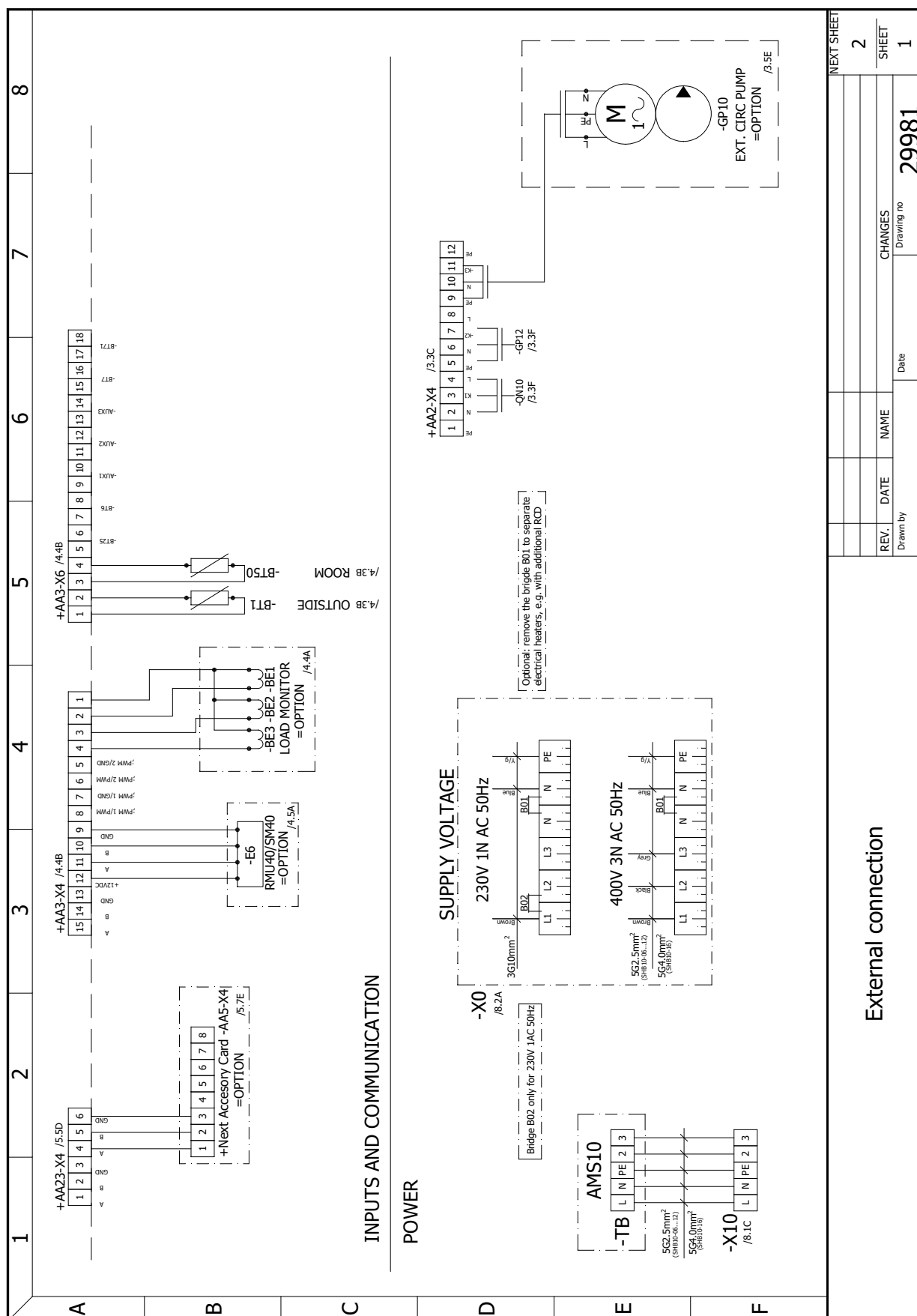
Model		AMS10-8 + SHB10-12					
Type of heat pump	<input checked="" type="checkbox"/> Air-water <input type="checkbox"/> Exhaust-water <input type="checkbox"/> Brine-water <input type="checkbox"/> Water-water						
Low-temperature heat pump	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Integrated immersion heater for additional heat	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
Heat pump combination heater	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
Climate	<input checked="" type="checkbox"/> Average <input type="checkbox"/> Cold <input type="checkbox"/> Warm						
Temperature application	<input checked="" type="checkbox"/> Average (55°C) <input type="checkbox"/> Low (35°C)						
Applied standards	EN14825 / EN16147						
Rated heat output	Prated	7.0	kW	Seasonal space heating energy efficiency	$\eta_s$	127	%
Declared capacity for space heating at part load and at outdoor temperature $T_j$				Declared coefficient of performance for space heating at part load and at outdoor temperature $T_j$			
$T_j = -7^\circ\text{C}$	Pdh	6.3	kW	$T_j = -7^\circ\text{C}$	Pdh	1.94	-
$T_j = +2^\circ\text{C}$	Pdh	3.9	kW	$T_j = +2^\circ\text{C}$	Pdh	3.11	-
$T_j = +7^\circ\text{C}$	Pdh	2.6	kW	$T_j = +7^\circ\text{C}$	Pdh	4.42	-
$T_j = +12^\circ\text{C}$	Pdh	3.7	kW	$T_j = +12^\circ\text{C}$	Pdh	5.93	-
$T_j = \text{biv}$	Pdh	6.6	kW	$T_j = \text{biv}$	Pdh	1.83	-
$T_j = \text{TOL}$	Pdh	5.9	kW	$T_j = \text{TOL}$	Pdh	1.86	-
$T_j = -15^\circ\text{C}$ (if TOL < -20°C)	Pdh		kW	$T_j = -15^\circ\text{C}$ (if TOL < -20°C)	Pdh		-
Bivalent temperature	$T_{\text{biv}}$	-8.6	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	P <sub>cyh</sub>		kW	Cycling interval efficiency	COP <sub>cyh</sub>		-
Degradation coefficient	Cdh	0.97	-	Max supply temperature	WTOL	58	°C
Power consumption in modes other than active mode				Additional heat			
Off mode	P <sub>OFF</sub>	0.002	kW	Rated heat output	P <sub>sup</sub>	1.1	kW
Thermostat-off mode	P <sub>TO</sub>	0.010	kW				
Standby mode	P <sub>SB</sub>	0.015	kW	Type of energy input	Electric		
Crankcase heater mode	P <sub>CK</sub>	0.030	kW				
Other items							
Capacity control	Variable			Rated airflow (air-water)		3 000	m³/h
Sound power level, indoors/outdoors	L <sub>WA</sub>	35 / 55	dB	Rated heating medium flow		0.60	m³/h
Annual energy consumption	Q <sub>HE</sub>	4 447	kWh	Brine flow rate in brine-water or water-water heat pumps			m³/h

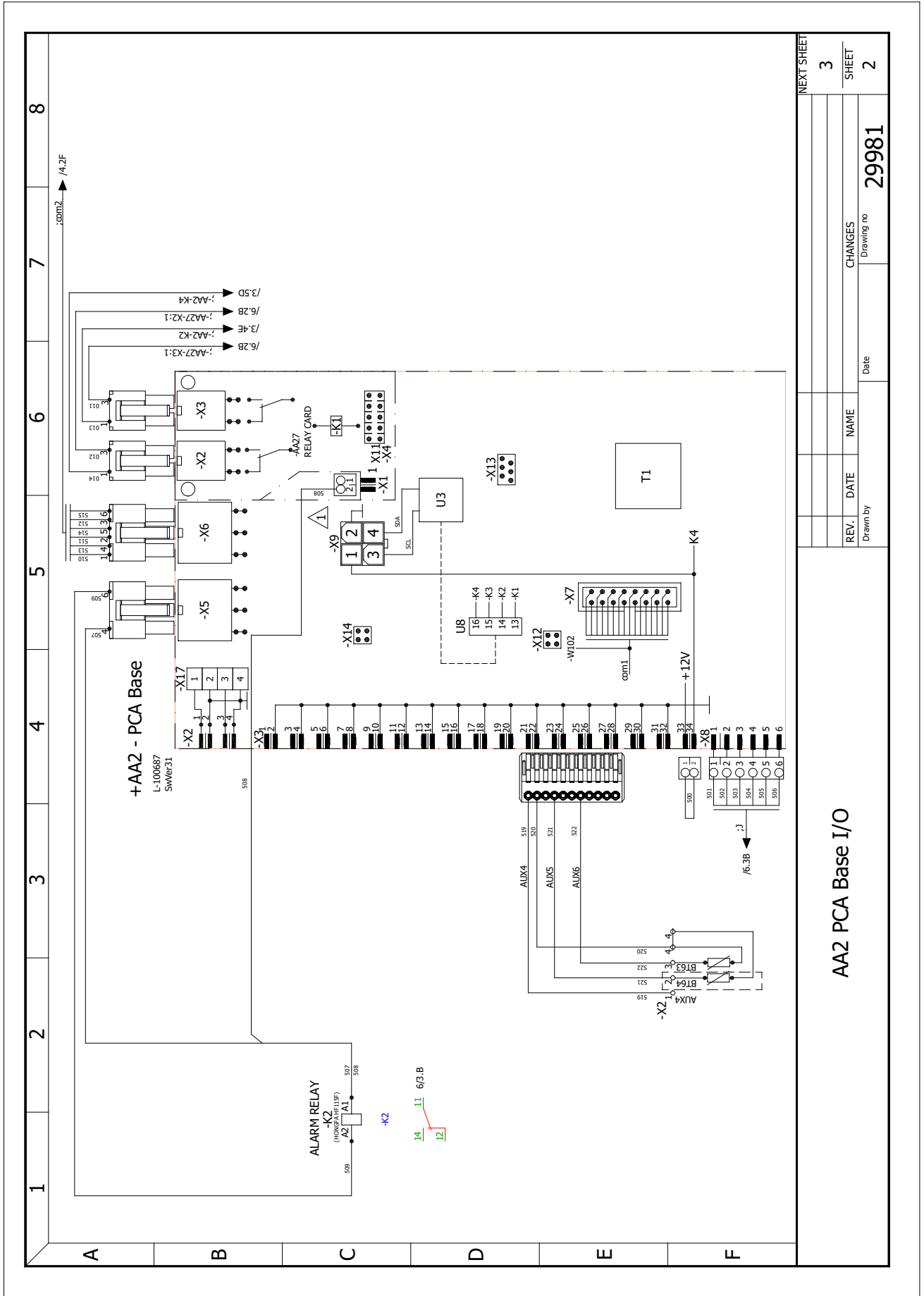


Model		AMS10-12 + SHB10-12					
Type of heat pump		<input checked="" type="checkbox"/> Air-water <input type="checkbox"/> Exhaust-water <input type="checkbox"/> Brine-water <input type="checkbox"/> Water-water					
Low-temperature heat pump		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Integrated immersion heater for additional heat		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Heat pump combination heater		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Climate		<input checked="" type="checkbox"/> Average <input type="checkbox"/> Cold <input type="checkbox"/> Warm					
Temperature application		<input checked="" type="checkbox"/> Average (55°C) <input type="checkbox"/> Low (35°C)					
Applied standards		EN14825 / EN16147					
Rated heat output	Prated	10.0	kW	Seasonal space heating energy efficiency	$\eta_s$	132	%
Declared capacity for space heating at part load and at outdoor temperature $T_j$				Declared coefficient of performance for space heating at part load and at outdoor temperature $T_j$			
$T_j = -7^\circ\text{C}$	Pdh	8.9	kW	$T_j = -7^\circ\text{C}$	Pdh	1.99	-
$T_j = +2^\circ\text{C}$	Pdh	5.5	kW	$T_j = +2^\circ\text{C}$	Pdh	3.22	-
$T_j = +7^\circ\text{C}$	Pdh	3.5	kW	$T_j = +7^\circ\text{C}$	Pdh	4.61	-
$T_j = +12^\circ\text{C}$	Pdh	5.0	kW	$T_j = +12^\circ\text{C}$	Pdh	6.25	-
$T_j = \text{biv}$	Pdh	9.2	kW	$T_j = \text{biv}$	Pdh	1.90	-
$T_j = \text{TOL}$	Pdh	8.1	kW	$T_j = \text{TOL}$	Pdh	1.92	-
$T_j = -15^\circ\text{C}$ (if TOL < $-20^\circ\text{C}$ )	Pdh		kW	$T_j = -15^\circ\text{C}$ (if TOL < $-20^\circ\text{C}$ )	Pdh		-
Bivalent temperature	$T_{\text{biv}}$	-7.9	$^\circ\text{C}$	Min. outdoor air temperature	TOL	-10	$^\circ\text{C}$
Cycling interval capacity	P <sub>cych</sub>		kW	Cycling interval efficiency	COP <sub>cyc</sub>		-
Degradation coefficient	Cdh	0.98	-	Max supply temperature	WTOL	58	$^\circ\text{C}$
Power consumption in modes other than active mode				Additional heat			
Off mode	$P_{\text{OFF}}$	0.002	kW	Rated heat output	P <sub>sup</sub>	1.9	kW
Thermostat-off mode	$P_{\text{TO}}$	0.014	kW				
Standby mode	$P_{\text{SB}}$	0.015	kW	Type of energy input	Electric		
Crankcase heater mode	$P_{\text{CK}}$	0.035	kW				
Other items							
Capacity control	Variable			Rated airflow (air-water)		4 380	m <sup>3</sup> /h
Sound power level, indoors/outdoors	$L_{\text{WA}}$	35 / 58	dB	Rated heating medium flow		0.86	m <sup>3</sup> /h
Annual energy consumption	$Q_{\text{HE}}$	6 136	kWh	Brine flow rate in brine-water or water-water heat pumps			m <sup>3</sup> /h

Model		AMS10-16 + SHB10-16						
Type of heat pump	<input checked="" type="checkbox"/> Air-water <input type="checkbox"/> Exhaust-water <input type="checkbox"/> Brine-water <input type="checkbox"/> Water-water							
Low-temperature heat pump	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No							
Integrated immersion heater for additional heat	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
Heat pump combination heater	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
Climate	<input checked="" type="checkbox"/> Average <input type="checkbox"/> Cold <input type="checkbox"/> Warm							
Temperature application	<input checked="" type="checkbox"/> Average (55°C) <input type="checkbox"/> Low (35°C)							
Applied standards	EN14825 / EN16147							
Rated heat output	Prated	14	kW	Seasonal space heating energy efficiency		$\eta_s$	134	%
Declared capacity for space heating at part load and at outdoor temperature $T_j$				Declared coefficient of performance for space heating at part load and at outdoor temperature $T_j$				
$T_j = -7^\circ\text{C}$	P <sub>d,h</sub>	12.5	kW	$T_j = -7^\circ\text{C}$	P <sub>d,h</sub>	2.01	-	
$T_j = +2^\circ\text{C}$	P <sub>d,h</sub>	7.6	kW	$T_j = +2^\circ\text{C}$	P <sub>d,h</sub>	3.29	-	
$T_j = +7^\circ\text{C}$	P <sub>d,h</sub>	4.9	kW	$T_j = +7^\circ\text{C}$	P <sub>d,h</sub>	4.68	-	
$T_j = +12^\circ\text{C}$	P <sub>d,h</sub>	6.8	kW	$T_j = +12^\circ\text{C}$	P <sub>d,h</sub>	6.51	-	
$T_j = \text{biv}$	P <sub>d,h</sub>	12.7	kW	$T_j = \text{biv}$	P <sub>d,h</sub>	1.95	-	
$T_j = \text{TOL}$	P <sub>d,h</sub>	11.0	kW	$T_j = \text{TOL}$	P <sub>d,h</sub>	1.95	-	
$T_j = -15^\circ\text{C}$ (if TOL < -20°C)	P <sub>d,h</sub>		kW	$T_j = -15^\circ\text{C}$ (if TOL < -20°C)	P <sub>d,h</sub>		-	
Bivalent temperature	T <sub>biv</sub>	-8	°C	Min. outdoor air temperature	TOL	-10	°C	
Cycling interval capacity	P <sub>cyh</sub>		kW	Cycling interval efficiency	COP-cyc		-	
Degradation coefficient	C <sub>d,h</sub>	0.98	-	Max supply temperature	WTOL	58	°C	
Power consumption in modes other than active mode				Additional heat				
Off mode	P <sub>OFF</sub>	0.002	kW	Rated heat output	P <sub>sup</sub>	1.2	kW	
Thermostat-off mode	P <sub>TO</sub>	0.016	kW					
Standby mode	P <sub>SB</sub>	0.015	kW	Type of energy input	Electric			
Crankcase heater mode	P <sub>CK</sub>	0.035	kW					
Other items								
Capacity control	Variable			Rated airflow (air-water)		6000	m³/h	
Sound power level, indoors/outdoors	L <sub>WA</sub>	35 / 62	dB	Rated heating medium flow		1.21	m³/h	
Annual energy consumption	Q <sub>HE</sub>	8 431	kWh	Brine flow rate in brine-water or water-water heat pumps			m³/h	

## Electrical wiring diagrams







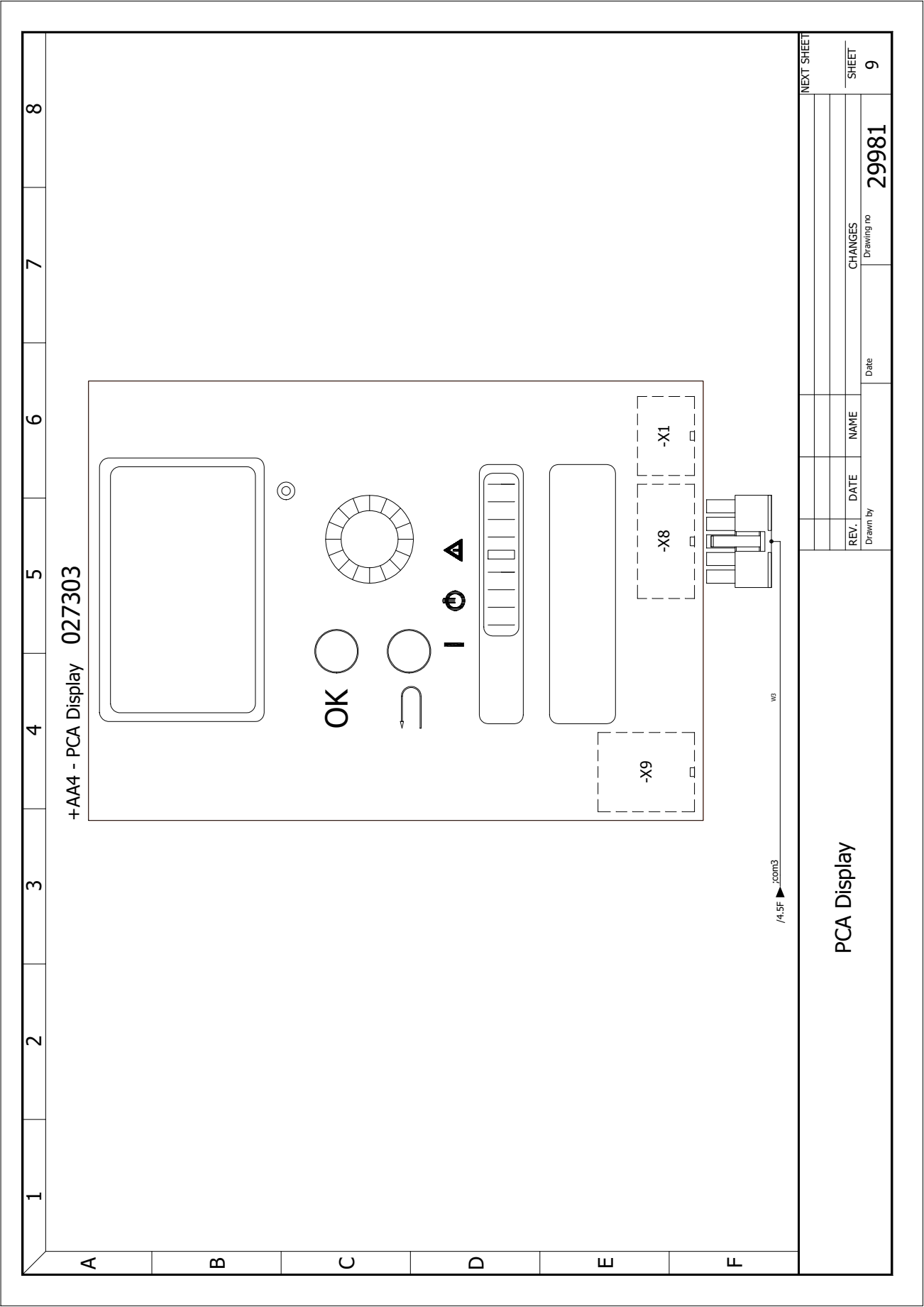














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