Indoor unit installation
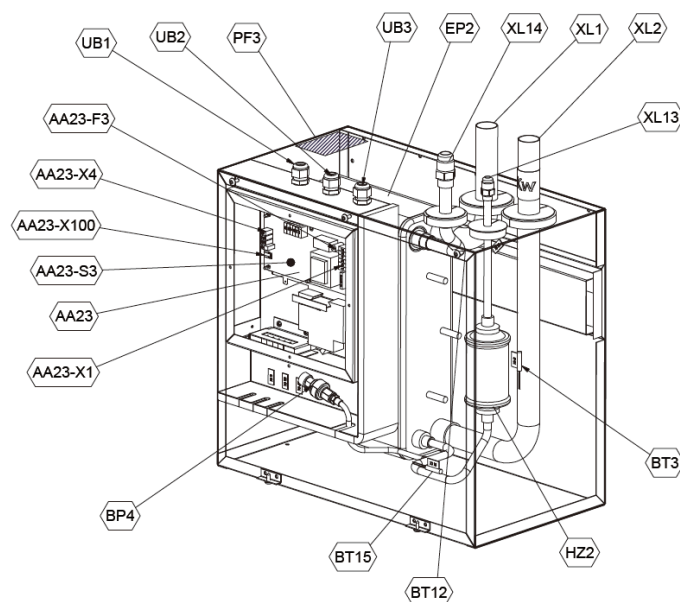
General information for installer
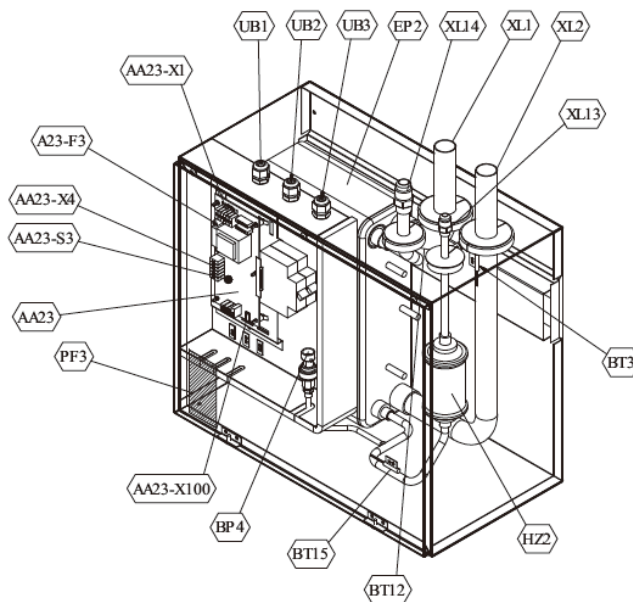
For outdoor unit installation information, see installation manual for outdoor unit.

Over view and design

HSB series

HSB60-W

HSB100/140

Pipe connections

XL1(Red mark)   Climate system supply
XL2 (Blue mark)   Climate system return
XL14   Connection, gas line
XL13   Connection, liquid line

Valves etc.

EP2   Heat exchanger
HQ1   Particle filter (supplied)
HZ2   Drying filter

Electrical components

AA23   Communication board
AA23-F3   Fuse for external heating cable
AA23-S3   DIP switch, addressing of outdoor unit
AA23-X1   Terminal block, incoming supply, connection
             of KVR
AA23-X4   Terminal block, communication with indoor
             module / control module
AA23-X100   Terminal block, communication outdoor
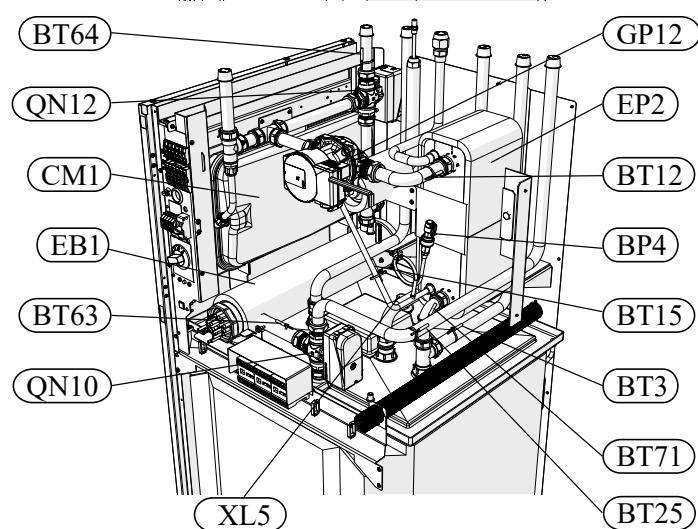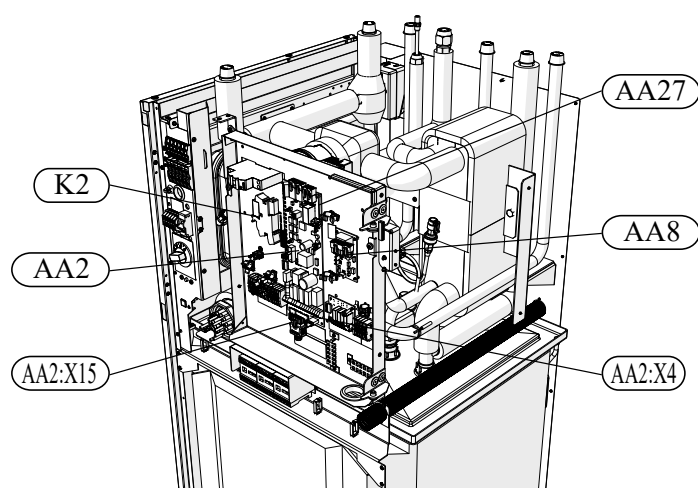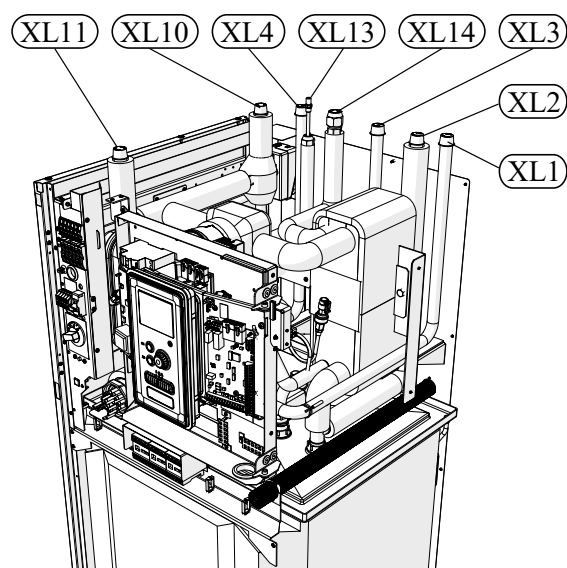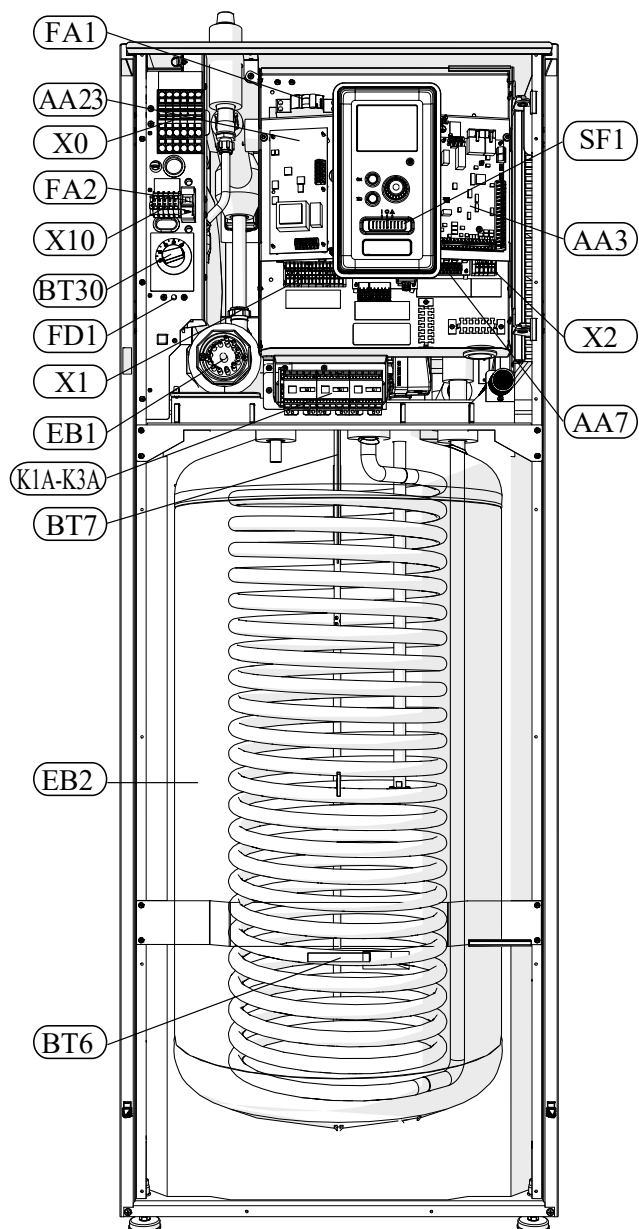   module

Sensor, thermostats

BP4   Pressure sensor, high pressure
BT3   Temperature sensor, heating medium, return
BT12   Temperature sensor, condenser, supply
BT15   Temperature sensor, fluid pipe

Miscellaneous

UB1   Cable gland
UB2   Cable gland
UB3   Cable gland

HMA series

Pipe connections

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

HVAC elements

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

Sensors

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

Electrical elements

|	
X0	High voltage terminal block 400V−/230V−
X1	Low voltage terminal block 230V−
X2	Low voltage terminal block 230V−
X10	Low voltage terminal block 230V−
AA2:X4	Low voltage terminal block
AA2: X15	Low voltage terminal block
K1A-K3A	Submersible heater switch
K2	Alarm relay
BT30	Thermostat - emergency mode
AA2	Main card
AA3	Sensor card
AA23	Communication card
AA7	Relay card
AA8	Titanium anode card
AA27	Relay card
FD1	Temperature limiter
FA1	Circuit breaker (to internal module)
FA2	Circuit breaker (AMS outdoor unit)
EB1	Submersible heater

Other

SF1	Controller switch
EB2	Domestic hot water tank

PT series
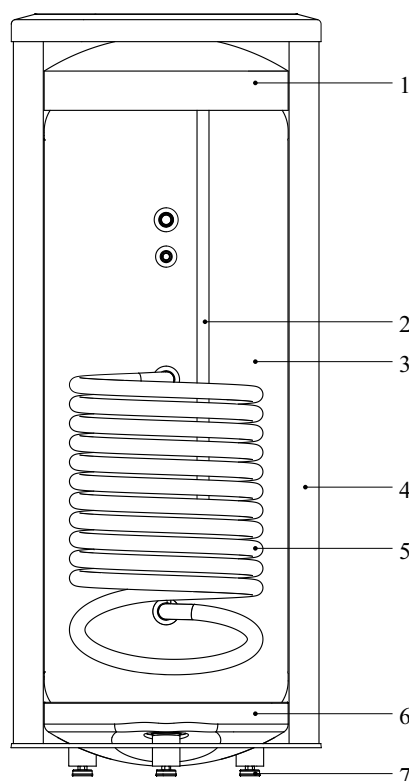
Section of the PT storage tanks

1. Upper insulation of the storage tank
2. Protective magnesium anode
3. Enamelled tank
4. Side insulation of the storage tank
5. Coil
6. Lower insulation of the storage tank
7. Adjustable foot
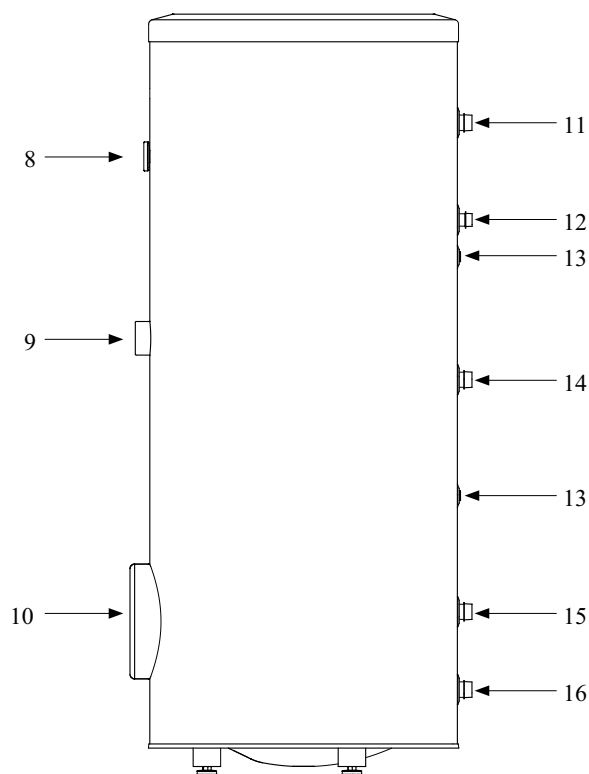
Side view of the PT storage tanks

8. Thermometer
9. Connector pipe for mounting electric heating unit
10. Inspection opening
11. Hot water intake connector pipe
12. Hot water circulation connector pipe
13. Temperature sensor cover
14. Coil supply connector pipe
15. Connection of return line from the coil
16. Cold water supply connector pipe
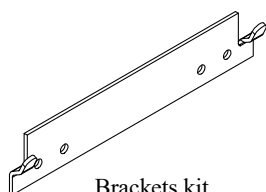
Transport and storage

Indoor unit and tank unit must be transported and stored vertically in dry conditions.
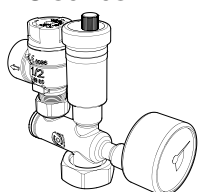
Supplied components

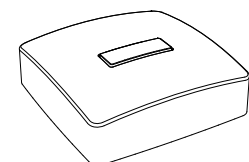**HSB series   Indoor unit**
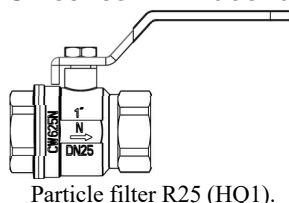
Particle filter R25 (HQ1).   Brackets kit
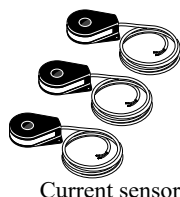
HMA-S series   Indoor unit with tank

Safety valve (3bar)   Temperature sensor (2 items)
with pressure gauge and automatic
air vent (1 piece)
*The opening pressure of the safety
  valve is 3bar.

• Strap for single-phase connection.

• Particle filter R25 (HQ1)

Current sensor

RC-HY20/40   Control unit

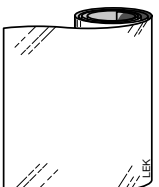Outside sensor   Room sensor (RC-HY40 only)

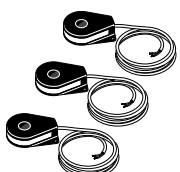Insulation tape   Temperature sensor

Aluminium tape   Cable ties

Heating pipe paste   Current sensor (RC-HY40 only)

Assembly

■ It is recommended that indoor unit is installed in a room with existing floor drainage, most suitably in a utility room or boiler room.

■ For indoor unit and control unit, the mounting surface must be firm, flat and vertical, preferably a concrete wall.

■ Indoor unit with tank and tank unit must be set on a solid waterproof base that would keep the weight of the unit. The height-adjusting legs allow for levelling and stable setting.

HMA series

20-40 mm   Wrench size 13

PT series

0-15 mm
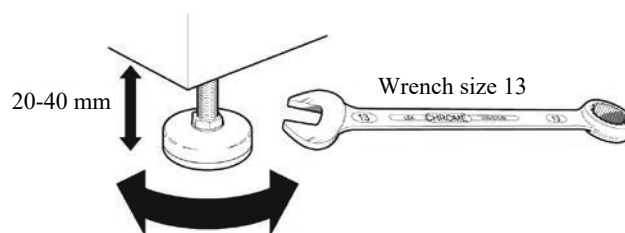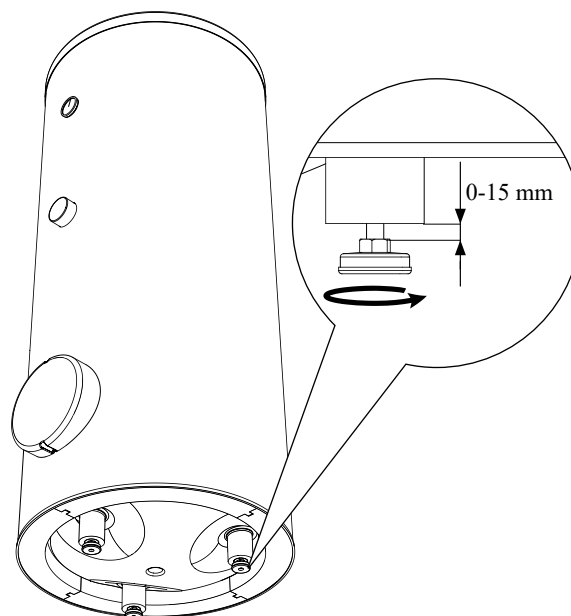
■ For indoor unit with tank, floor drain port is required to connect drain hose in case cooling function is used.

■ Install indoor unit with its back to an outside wall, ideally in a room where noise does not matter. If this is not possible, avoid placing it against a wall behind a bedroom or other room where noise may be a problem.

■ Route pipes so they are not fixed to an internal wall that backs on to a bedroom or living room.

■ Install indoor unit with tank, tank unit and its pipings to indoor unit indoors in order to avoid icing.

■ Ensure free space described in the following figures for future maintenance.

HSB series

Recommendation for positioning on wall
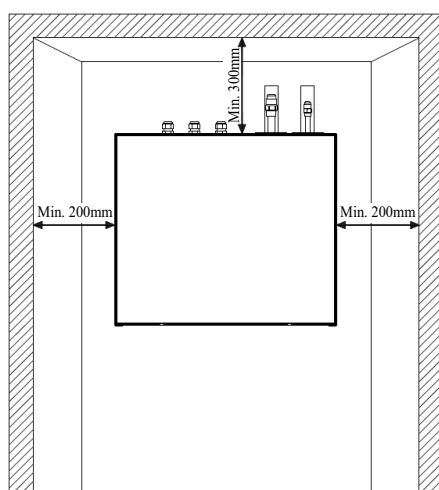
Recommendation for positioning in corner
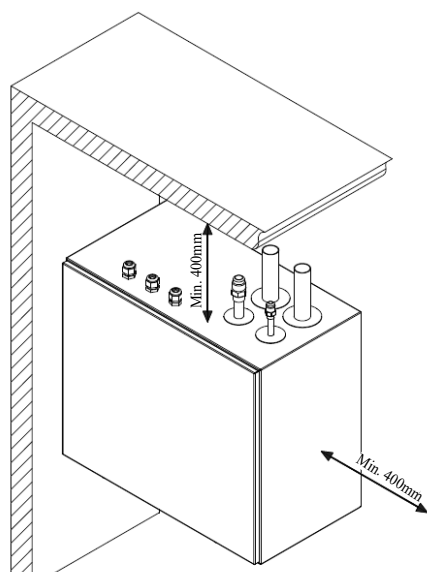
*Min 800mm is required in front

HMA-S series
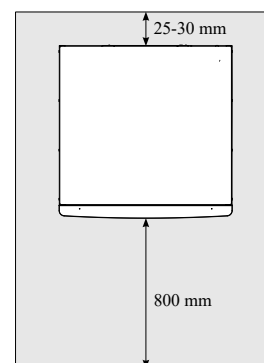
IMPORTANT

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

PT series
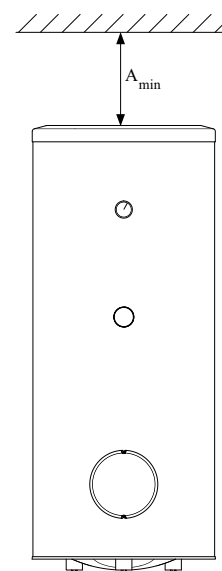
A_{min} is required on top to replace anode bar, and 500mm is required in front to replace immersion heater if equipped.

Application	Connector pipe dia.	Type of anode	A_{min}
PT300	1"	Chain $\phi 26 \times 8$	150mm
	¾"	Titanium anode	200mm
PT500	1¼"	Chain $\phi 33 \times 5$	150mm
	¾"	Titanium anode	400mm

RC-HY20/40-W
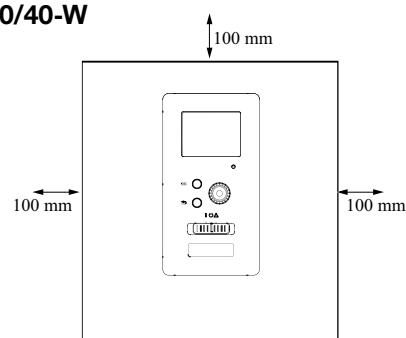
Hanging indoor unit

It is recommended that the split box is installed in a room with existing floor drainage, most suitably in a utility room or boiler room.

1. The bracket for the split box is mounted to the wall by use of appropriate screws.
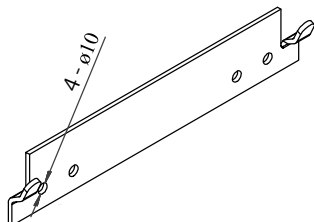
2. Insert the split box in the bracket mounted to the wall.
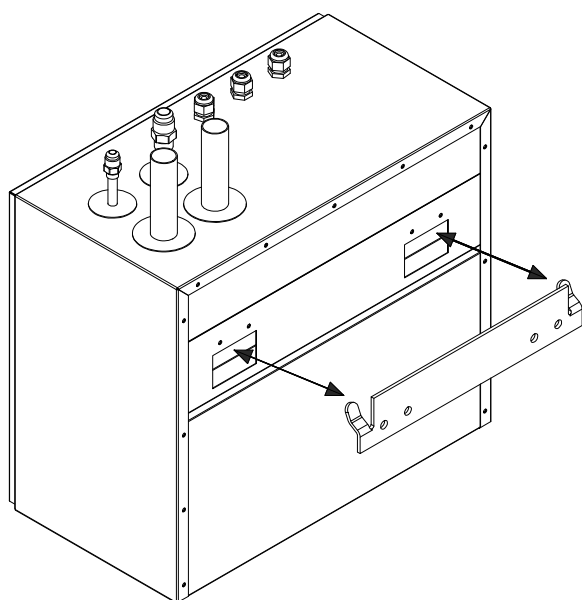
NOTE

Indoor unit weigh A kg excluding water inside.

Indoor unit	A
HSB60-W	16
HSB100	18
HSB140	23

Hanging control unit

Use all mounting points and install control unit upright against a flat wall. Make sure whole back surface faces the wall.
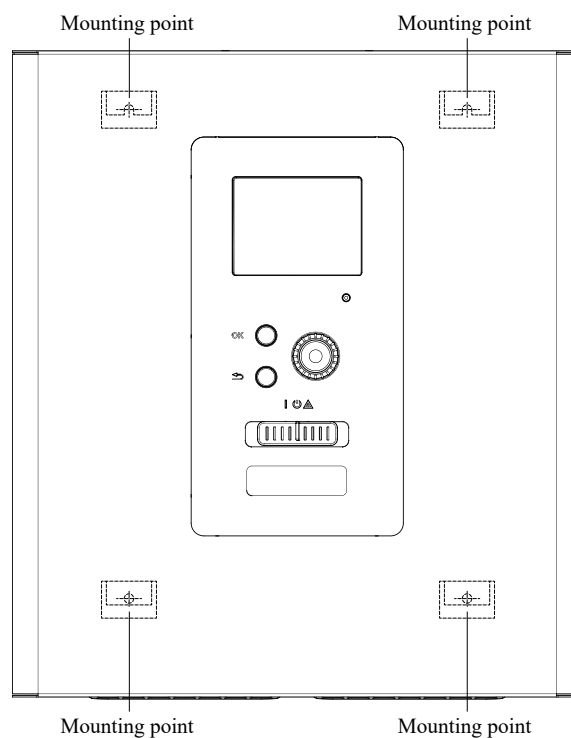
Dimensioning expansion vessel

The expansion vessel volume must be at least 5% of total water volume in the circulation system.

HMA-S series is equipped with an expansion vessel with a volume of 10 liters.

Initial pressure and max height difference

Recommended maximum height difference between expansion vessel and the highest point in the system is 5m.

The initial pressure of the pressure expansion vessel must be dimensioned according to the maximum height (H) between the vessel and the highest positioned radiator, see figure. An initial pressure of 0.5bar (5 mvp) means a maximum permitted height difference of 5m.

If the standard initial pressure in the pressure vessel is not high enough it can be increased by filling via the valve in the expansion vessel. The expansion vessel's standard initial pressure must be entered in the check list on User's manua1.

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

Consult local distributor in case height difference exceeds 5m.
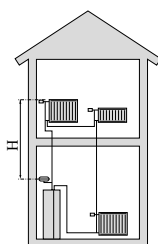
Recommended installation order

1. Hang indoor unit and control unit to appropriate position and connect indoor unit and tank unit.

2. Connect indoor unit to climate system, cold and hot water lines as well as any external heat sources. See pages 77, 78.

3. Install refrigerant pipes according to the description on the Installation manual for outdoor unit.

4. Connect current limiter, any centralised load control and external contacts as well as the cable between indoor unit and outdoor unit.

5. Connect incoming electricity to indoor unit and/or outdoor unit. See pages 94-96, 108-109.

6. Follow the commissioning instructions on pages 97-108.

Pipe installation

General

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

A following table shows plumbing necessary for each product.

	Refrigerant	Plumbing
HSB	Necessary	Necessary
HMA-S	Necessary	Necessary
PT	—	Necessary
PC-HY	—	—

This heat pump system is designed for low or medium temperature heating system. It is recommended water temperature must not exceed 55°C on supply and 45°C on return at lowest design outdoor temperature (DOT) though indoor unit can operate with a return temperature of up to 65°C and an outgoing temperature from the unit of 65°C.

Indoor unit is not equipped with shut off valves; these must be installed outside the heat pump to facilitate any future servicing.

Indoor unit can be connected to the radiator system, floor heating system and/or fan convectors.

Safety valve is not equipped with in indoor unit. Make sure to install safety valve in the circuit.

Installation diagram

FDCW series outdoor unit provides heat for space heating and domestic hot water using free energy in the outdoor air within the range of low temperature up to -20°C. Connection is different according to the type of indoor unit (see below figures). The system is controlled by RC-HY20-W or RC-HY40-W control unit.

HSB series

HSB series indoor unit is equipped with plate heat exchanger. It needs to install expansion vessel, shut-off valves, safety valve, electric heater and circulation pump to make a complete heating system. In case domestic hot water is required, 3-way valve and tank is also necessary.
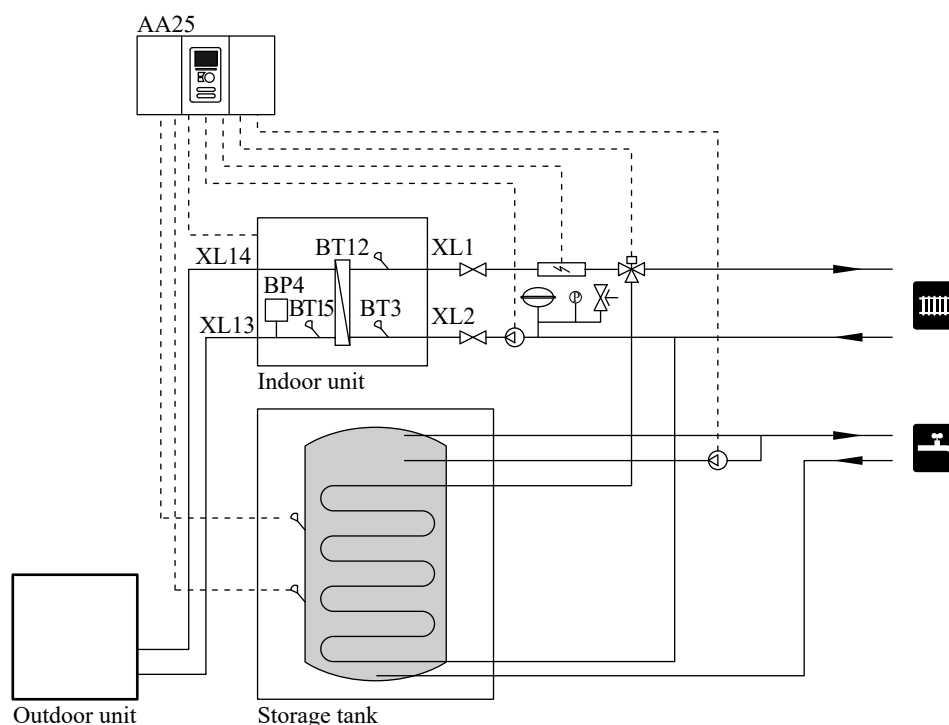
HMA-S series

HMA-S indoor unit is equipped with coil water heater, expansion vessel, safety valve, electric heater, plate heat exchanger, sensors and gauge, circulation pump, and controller.

Basic connection diagram
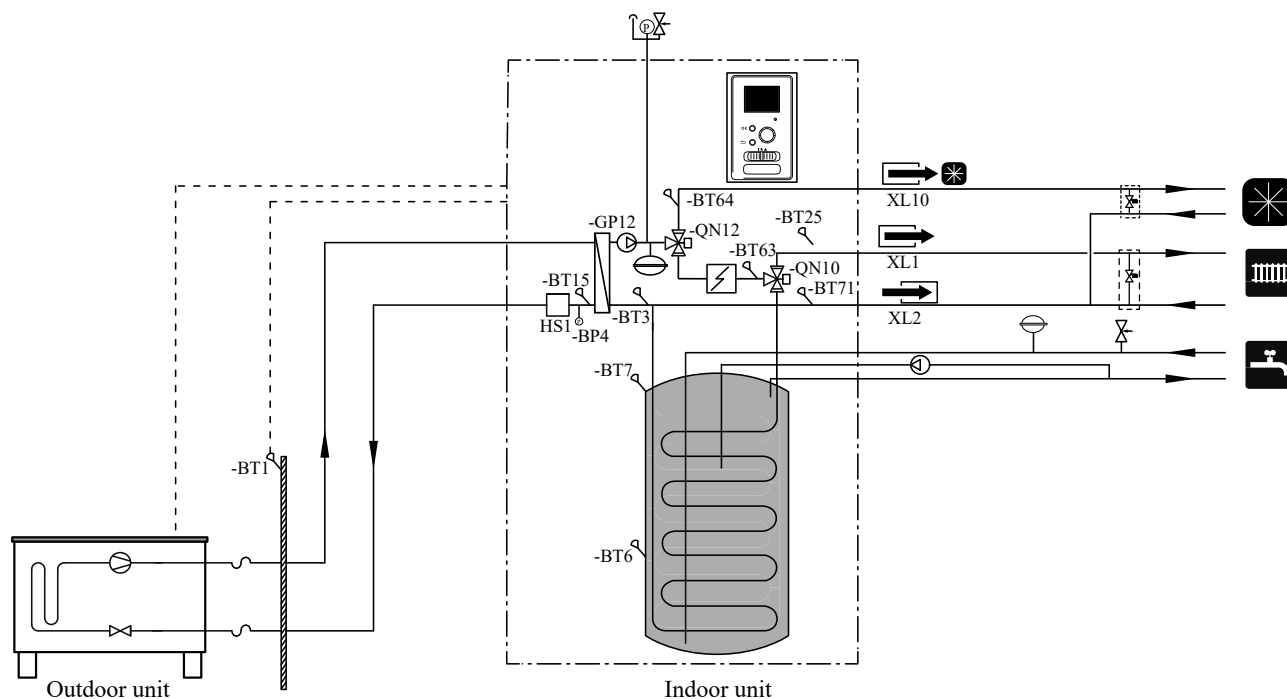
Symbol	Description
⋈	Cut-off valve
⋈	Non-return valve
⋈	Three-way valve
⋈	Safety valve
⋏	Temperature sensor
⬭	Diaphragm expansion vessel
Ⓟ	Manometer
↑	Vent
⊙	Circulation pump
⚡	Electric module

Symbol	Description
☐	Particulate filter
⊖	Compressor
▱	Heat exchanger
✳	Cooling
▦	Central heating systems
🚰	Domestic hot water
⋈	Relief valve
△	Additional heat source

Scheme with the connection of an additional heat source

Outdoor unit   Indoor unit
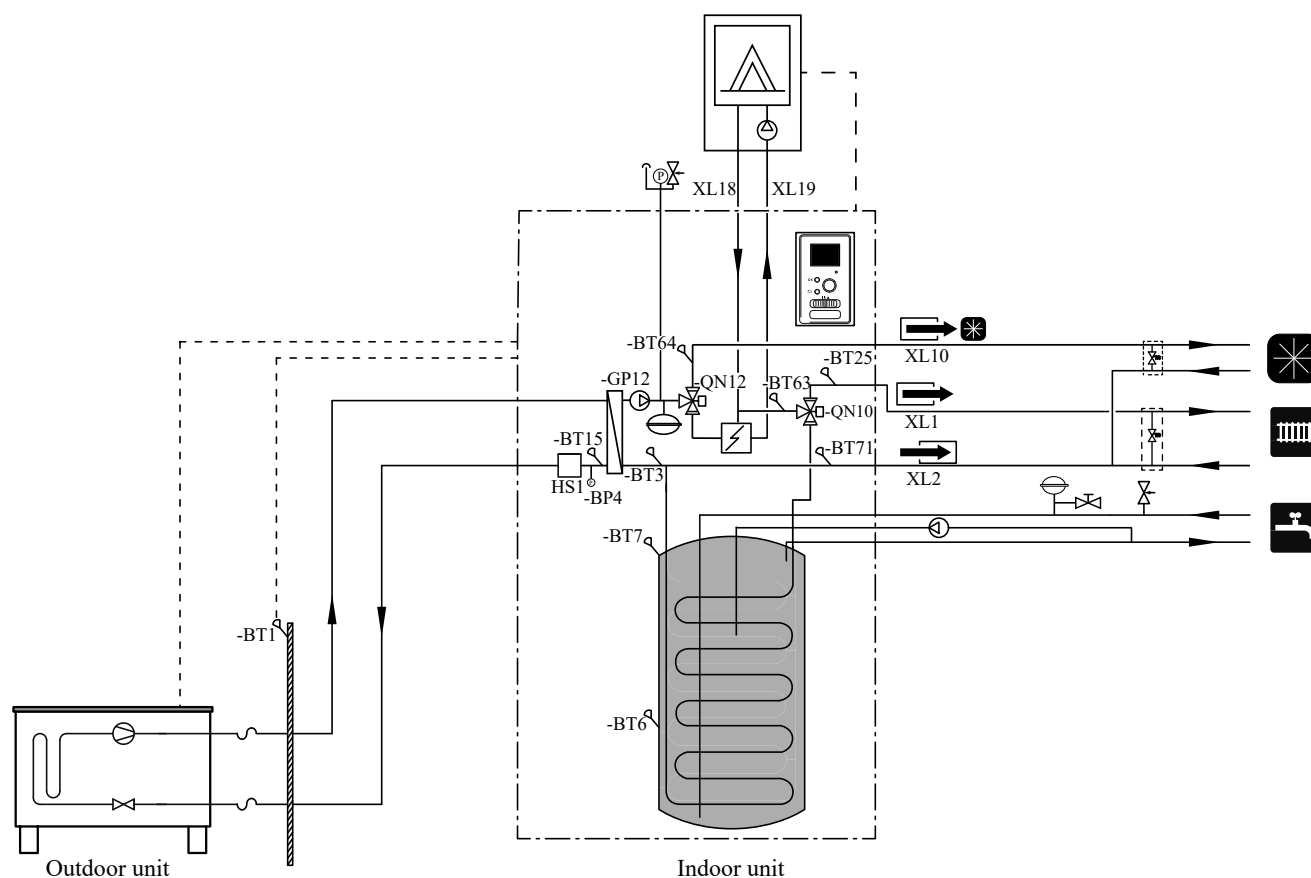
Indoor HMA-S module

- It is recommended that the HMA-S module should be installed in a room with a floor drain, at best in a utility room or a boiler house.

- The floor must be solid, concrete at best.

- The HMA-S module must be set with its back to the outer wall, at best in a room where noise is not a problem. If possible, do not place the device near a wall of a bedroom or another room where noise might be a problem.

- The device can be leveled using regulated legs.

- Pipes must be led in such a way that they are not adjacent to the bedroom or living room.

- Remember to leave about 800mm free space at the front and 220mm over the device to provide for future maintenance.

Recommended order of assembly

1. Connect HMA-S module to the heating system, cold, and hot water pipelines.

2. Install the cooling medium pipes.

3. Connect the outdoor temperature sensor, and cables between HMA-S and outdoor unit.

4. Connect power supply to module HMA-S .

5. Proceed according to start-up instructions in chapter Start-up and regulation.

System requirements

The minimum water volume in the climate system is subject to the values in the table below. If it is not fulfilled, volume vessel must be installed.

(liter)

	With underfloor cooling application	Without underfloor cooling application
HSB60-W, HMA60-S FDCW60VNX-A	80	50
HSB100, HMA100-S FDCW71VNX-A	80	50
HSB100, HMA100-S FDCW100VNX-A	100	80
HSB140 FDCW140VNX-A	150	150

Overflow valve

NOTE

A free flow is required for all docking options, which means that an overflow valve must be installed.
The circulation pump may become damaged.

Pump capacity diagram

HSB series

HSB series is not equipped with circulation pump.

This graph shows the characteristic of CPD11-25 M65 and 75.
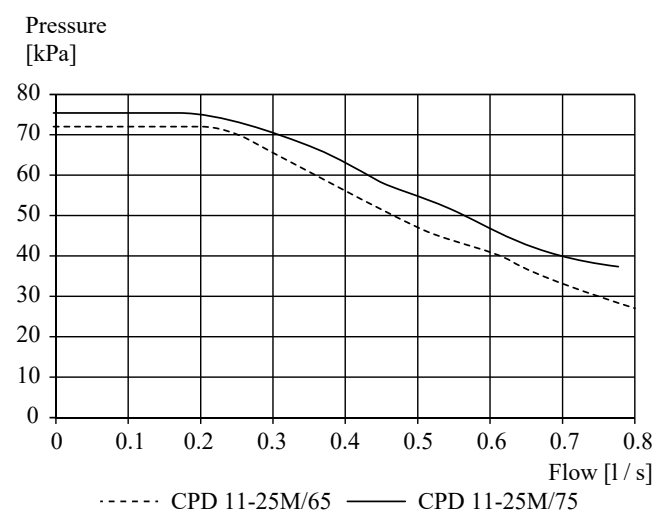
HMA-S series
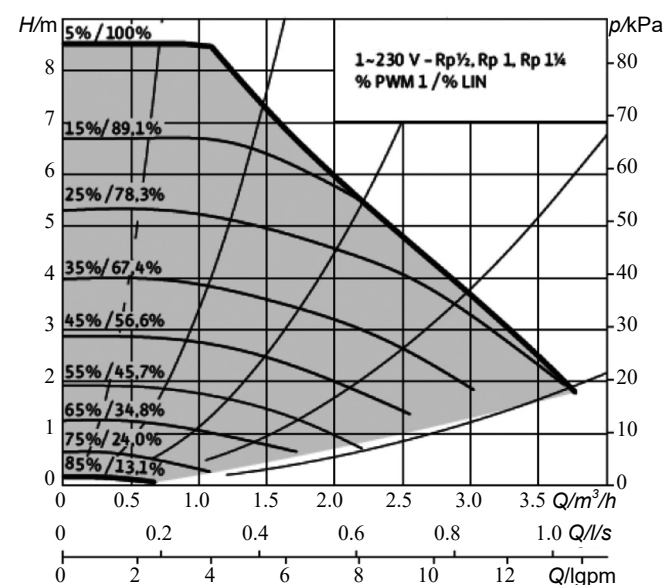
Pressure drop in indoor unit

HSB series

[kPa]

--- HSB100   — HSB60, 140   Flow [l / s]

HMA-S series

[kPa]
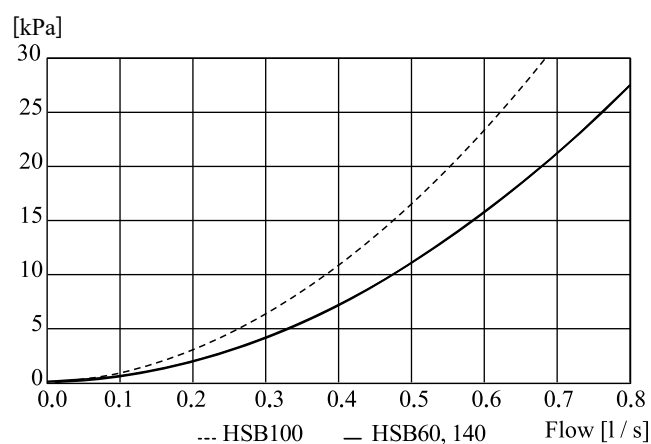
--- HMA60   — HMA100   Flow [l / s]
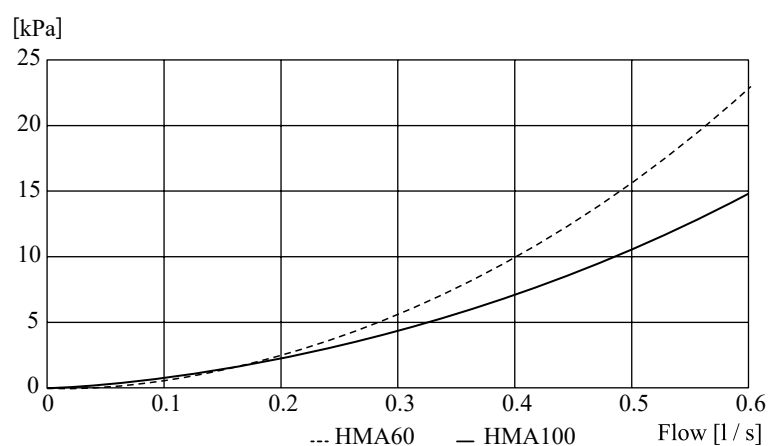
Connection of extra circulation pump

When connecting extra circulation pumps, requirements for pressure, maximum flow etc. must be met.

NOTE

Non-return valve must be installed in case extra circulation pump is used.

The circlulation pump may become damaged.

PT300/500
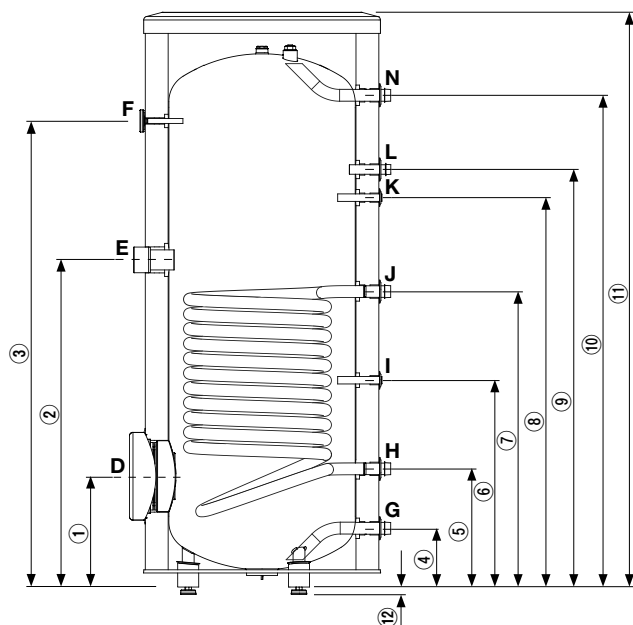
Meaning of symbol

	Connection	U/m	PT300/500
D	Inspection opening	mm	ϕ120
E	Heating unit connection	inch	1½″Female
F	Thermometer enclosure	mm	ϕ10 Female
N	Hot water outlet	inch	1″Male
L	Hot water circulation	inch	¾″Male
K	Temperature sensor enclosure (BT7)	mm	ϕ16 Female
J	Coil supply	inch	1″Male
I	Temperature sensor enclosure (BT6)	mm	ϕ16 Female
H	Return from coil	inch	1″Male
G	Cold water input	inch	1″Male

Dimensions		
	PT300	PT500
① mm	315	337
② mm	930	967
③ mm	1325	1477
④ mm	167	188
⑤ mm	336	288
⑥ mm	588	387
⑦ mm	840	805
⑧ mm	1107	1234
⑨ mm	1187	1302
⑩ mm	1398	1545
⑪ mm	1634	1835
⑫ mm	21-0/+15	

# Water circuit

Connection to heating system

**Connect XL1 to supply line and XL2 to return line from heating system.**

■ All required safety devices and shut-off valves must be installed as close to the indoor unit as possible.

■ Install bleed valves where necessary, highest point of the water system in usual case.

■ When connecting to a system with thermostats on all radiators, install an overflow valve or remove some of the thermostats to ensure sufficient flow.

■ Install a safety valve with manometer on heating circuit and hot water circuit. (FL2)
For HSB series install a safety valve for heating circuit on the water pipe returning to indoor unit since it doesn't have port for FL2.
The entire length of the overflow water pipe from the safety valves must be inclined to prevent water pockets and must also be frost proof.

■ The end of overflow water pipe from the safety valves must left open to the atmosphere. The water may drip from the pipe.

HSB series
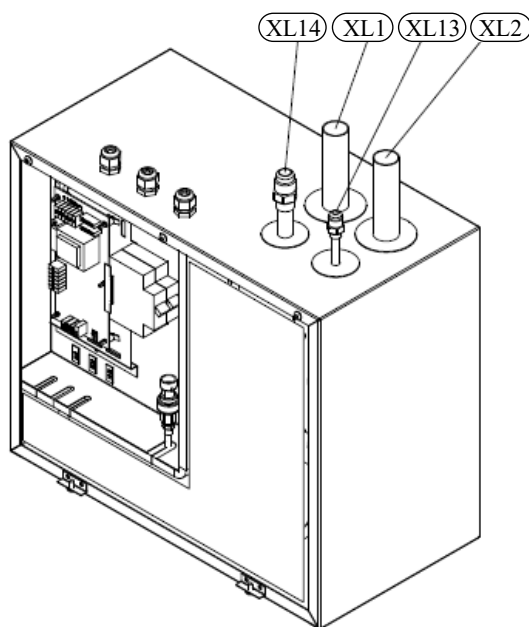
Install safety valve as close to XL2 as possible.

HMA-S series
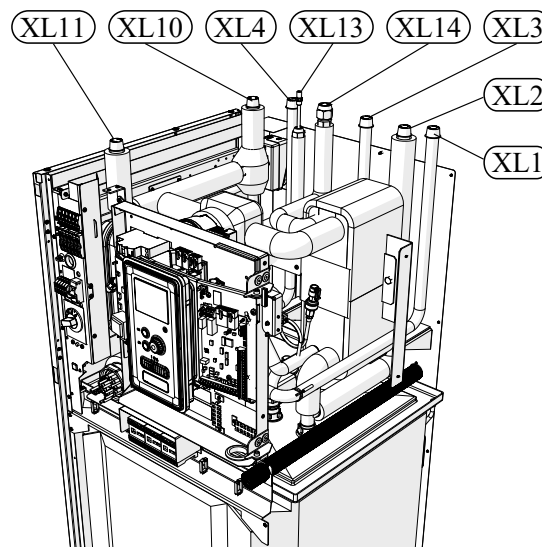
Install safety valve FL2 on XL11.

Connection to hot water heater

For HSB series indoor unit, it is necessary to connect PT storage tank unit applying 3-way valve in order to use domestic hot water function.

For HMA-S series indoor unit, 180L tank unit is integrated in indoor unit.

Housing disassembly of tank unit

Removable housing with thermal insulation facilitates transport and installation of the storage tank. Disassembly the housing in the following order (see next page figure):

1. Remove the temperature gauge, plug of the heating element connector pipe and blanking plate of the inspection opening.

2 Remove the upper cover of the housing together with thermal insulation.

3. Remove the plugs from the connector pipes and black bushings.

4. Remove the fixing screws and the strip connecting the housing jacket.

5. Remove the jacket surrounding the tank (housing jacket).

6. Remove the four-piece thermal insulation.

After the installation of the storage tank in its final location, reinstall the removed components in the reverse order.

Housing and thermal insulation disassembly
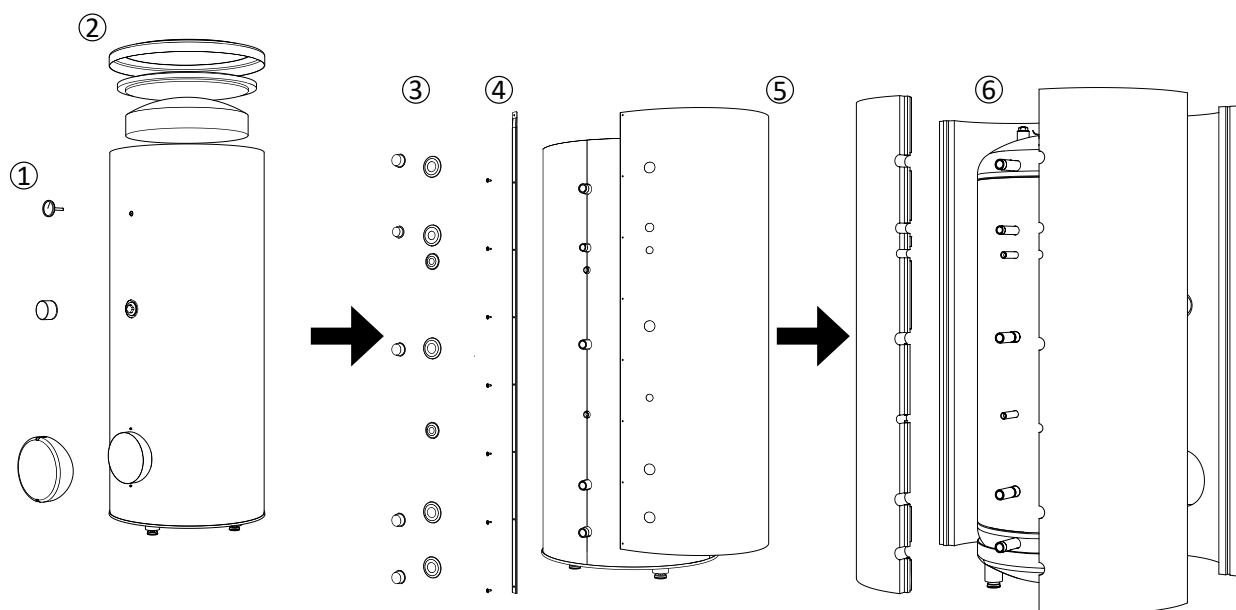
Connecting hot water tank to indoor unit

> # CAUTION
>
> *Installation and commissioning of the storage tank shall only be done by appropriately qualified installer.*
> *The installer should inform the user of the functions of the product and provide the necessary information on its safe use.*

> # Information
>
> *We recommend installing a strainer in order to protect the pumps, check valve and the components of the heating system.*

■ Tank and its pipings to indoor unit must be installed indoors where the temperature wouldn't drop below 15°C in order to prevent pipings from icing.

■ Maximum piping length between indoor unit and tank is 10 m.

■ Tank unit should be placed on firm, preferably a concrete floor or foundation.

■ Tank unit can be aligned using the adjustable feet.

■ Protection against overpressure shall be made in accordance with the relevant regulations.

■ Connect the heating system according to the installation diagram (see figure).

Installation diagram of the PT storage tank with one coil.

1. PT storage tank
2. Cut-off valve

supply from heat pump

return to heat pump
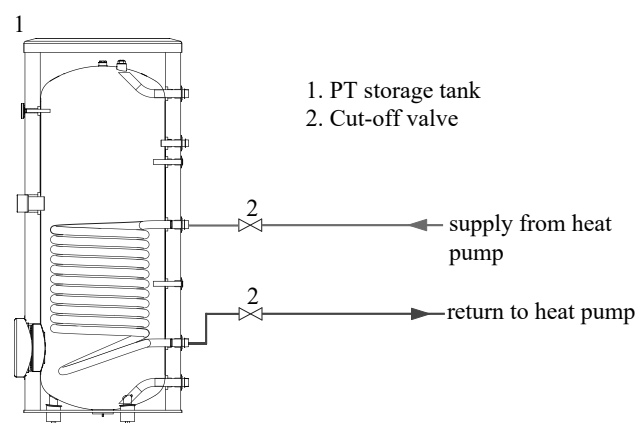
Connecting hot water tank to water main

■ Install a mixing valve if the temperature exceeds 60 °C.

■ It is recommended to install a thermostatic mixing valve for stable temperature hot water supply.

■ Connect the storage tank to the water supply system of water pressure at least 1bar and max 10bar. Install a pressure reducer if the pressure at the cold water inlet to the tank is higher than allowed.

■ Install a safety valve which have a maximum 8.0 bar opening pressure on the incoming domestic water line according to outline diagram in order to protect the storage tank against overpressure. Pressure increases during heating the water.

■ During heating the water, small and temporary water flow from the safety valve can occur, which indicates that the pressure has increased above the rated value, which triggered the valve. This may in no way be prevented.

■ Safety valve drain line should be installed with a decline, in an environment free of freezing and remain open to the atmosphere. The manufacturer is not responsible for flooding the room through the safety valve.

■ Blocked safety valve can cause equipment failure. Drain the outflow from the safety valve to the sewerage or drain grate.

■ Connect the water supply system according to the installation diagram.

Installation diagram of the PT storage tank with one coil.
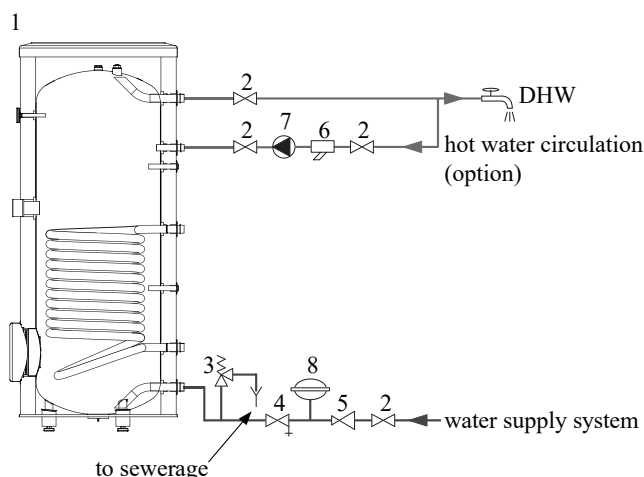
1. PT storage tank
2. Cut-off valve
3. Safety valve
4. Drain valve
5. Pressure reducer (option, if the pressure in the system exceeds the allowable value)
6. Strainer
7. Hot water circulating pump
8. Hot water expansion vessel

Information

In order to minimize the flow of water from the safety valve associated with the thermal expansion of the liquid, it is advisable to install a suitable expansion vessel at the cold water connection (see item 8.)

CAUTION

Installation of the appropriate safety valve in the cold water supply line protecting the unit against overpressure is mandatory!

CAUTION

Installation of necking of any kind (such as reducers, dirt pockets, etc.) and cut-off valves between the storage tank and the safety valve is not allowed. Only a T-pipe with a drain valve and a T-pipe with an expansion vessel may be installed in these line sections.

CAUTION

Never block the safety valve or drain line. This can cause a dangerous overpressure in the storage tank.

CAUTION

When heating water, slight, temporary discharge from the safety valve can occur. This is a correct safety valve function. Any attempt to interfere in its operati on can lead to the danger and destruction of the storage tank.

CAUTION

Never use the equipment with clogged safety valves.

Connection

After the installation and levelling the tank, follow the procedure below (for the connector pipe symbols, refer to page 82):

1. Remove protecting plugs from the connector pipes
2. Connect the hot water intake line (N).
3. Connect the cold water supply line together with the required safety valves (G).
4. If the system has the hot water circulation system, connect it to the connector pipe (L). Otherwise, plug the pipe.
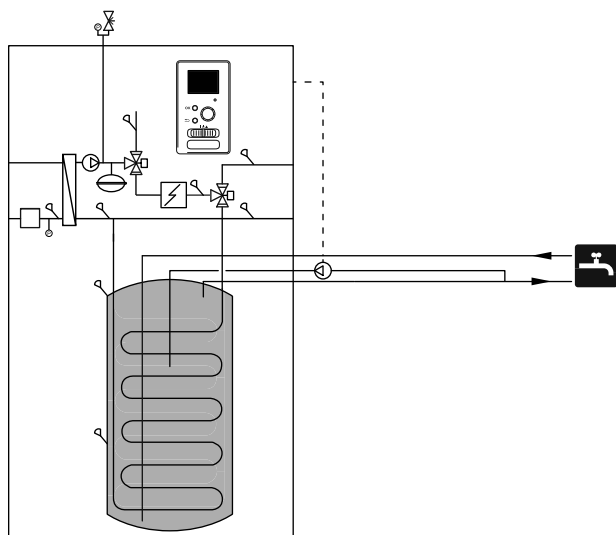5. Connect the supply (J) and return (H) of the heating medium to the coil.

CAUTION

If there is an electric heating module installed in the storage tank, fill the tank with water before connecting it to the electrical installation.
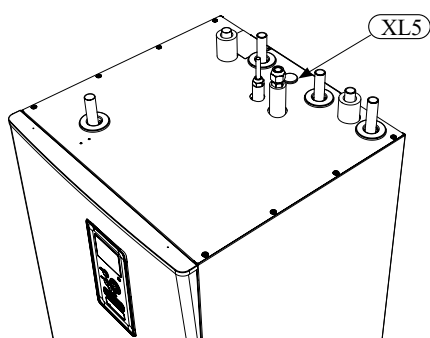
Hot water circulation circuit

Hot water circulation function is available for HMA-S series and PT series.
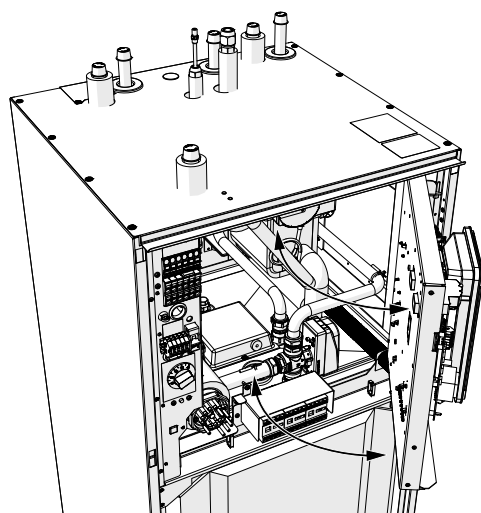
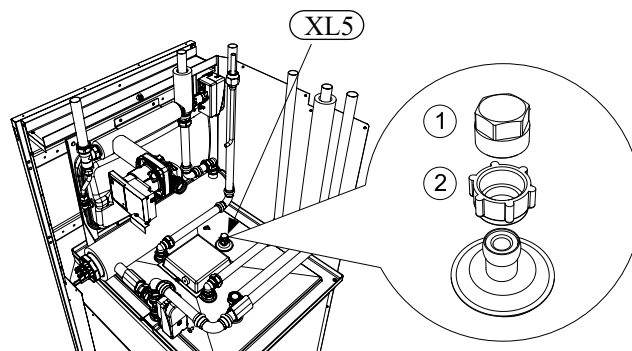### HMA-S series

To connect the circulation:

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

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

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

4. Install the elbow, facing the rear housing, on the circulation pipe.

5. Connect the pipe to the elbow, with the dimensions shown in the figure below, leading pipe in the top of the housing, in place of the XL5 plug.

6. At the output of the pipe from the HMA-S unit, install the circulating pump, and then connect its control to the expansion card.

7. Install the control box and the front panel.
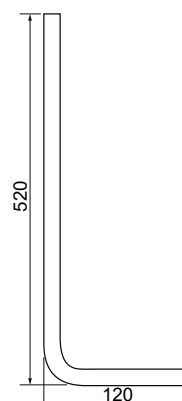
Circulation pipe dimensions (*)   Elbow 15x15 (*)
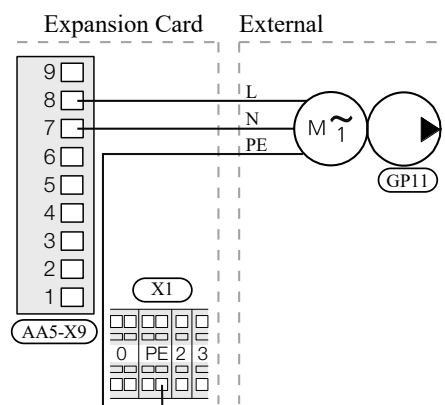
(*) Prepared on site.

Connection of the hot water circulation pump control
The DHW circulation pump should be connected to the AA5 (NOT INCLUDED IN HMA-S) expansion card on the AA5-X9:8 (230V), AA5-X9:7 (N) and X1: PE

PT series

If the system has the hot water circulation system, connect it to the port L (see page 82).

Then install the Cut-off valves, circulation pump and strainer.

Connection of external heat source

HSB series

External heat source, e.g. a gas or oil boiler or electric heater, can be connected on supply line of heating system (XL1).

HMA-S series

An external heat source, eg a gas or oil boiler, can be connected to the back of the HMA-S, removing the access block to the connection sockets (picture below). Scheme on page 79.

Return from an additional heat source (XL 18)

Supply of additional heat source (XL 19)

Conden-sate hose
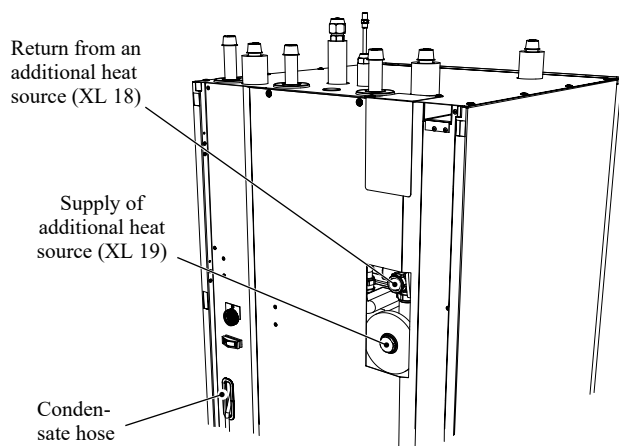
Refrigerant circuit

Connecting refrigerant pipes

See Installation manual for outdoor unit.

Piping insulation

Install insulation on all piping in order to avoid condensation during cooling operation.

It is also strongly recommended to insulate piping for heating only application in order to avoid getting burned or reducing the heating capacity.

The thickness of the insulation should be 20mm where the relative humidity exceeds 70%.

Drain connection

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

Electrical installation

General

Indoor unit must be installed via an isolator switch in accordance with the local codes and regulations.

For HMA-S series, electrical equipments, except outdoor air sensor, room sensor, current transformers and outdoor unit has been connected at the factory.

- Disconnect the indoor unit, outdoor unit and control unit before insulation testing of the house wiring.
- If the building is equipped with an earth-fault breaker, Hydrolution should be equipped with a separate one.
- Do not lay communication, sensor or signal cables for external connection close to high voltage lines.
- Minimum cross section of communication, sensor or signal cables for external connection must be $0.5mm^2$ up to 50 m, for example EKKX, LiYY or equivalent.
- Use screened three core cable for communication between controller (RC-HY20/40) and indoor unit (HSB series / HMA-S series).
- When laying cables into indoor units and controllers, be sure to route the cable grommet (UB1 AND UB2).
- Be careful to route cables not to be damaged by metal edge or trapped by panels.
- Outdoor unit is equipped with a single phase compressor. This means that phase L3 is loaded with up to α A during compressor operation.

NOTE

Electrical installation and service must be carried out under the supervision of a qualified elec trician.

Turn off the circuit breaker before carrying out any servicing.

Electrical installation and wiring must be carried out in accordance with the stipulations in force.

Make sure to turn off the power source during installation.

NOTE

Do not turn on the power on control until the boiler is filled with water.
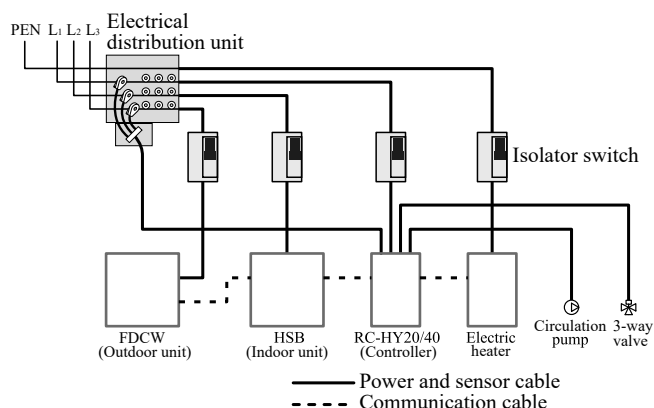
The circulation pump and immersion heater may become damaged.

NOTE

If the power source cable is damaged, only authorised person may replace it to avoid danger or damage.

Outdoor unit	α
FDCW60VNX-A	15
FDCW71VNX-A	16
FDCW100VNX-A	23
FDCW140VNX-A	25

Principle diagram, electrical installation

HSB series

Power and sensor cable
Communication cable

	Cable size
Power - HSB60-W	3 cores, 1.5mm^2 (power cable)
Power - HSB100	
Power - HSB140	
Power - FDCW60	3 cores, 2.0mm^2 (power cable)
Power - FDCW71	3 cores, 2.5mm^2 (power cable)
Power - FDCW100	
Power - FDCW140	3 cores, 6.0mm^2 (power cable)
Power - Controller	3 cores, 1.5mm^2 (power cable)
HSB60-W - FDCW60	2 cores, 1.5mm^2 (communication cable)
HSB100 - FDCW71	
HSB100 - FDCW100	
HSB140 - FDCW140	
Indoor unit - Controller	3 cores, 0.5mm^2, LiYY,EKKX or equivalent (communication cable)

The cable size shown on the above table is reference value. Choose appropriate size according to local laws and regulations.

HMA-S series

Power and sensor cable
Communication cable
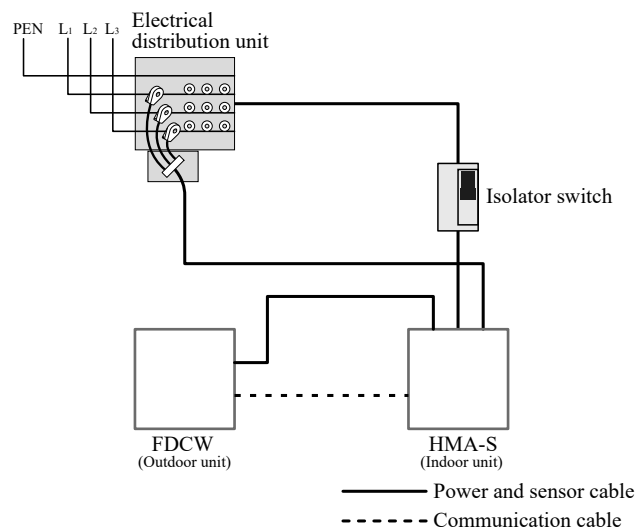
	Cable size
Power - HMA60-S	6 cores, 10.0mm^2
Power - HMA100-S	6 cores, 10.0mm^2
HMA60-S - FDCW60	5 cores, 2.5mm^2 (power/communication cable)
HMA100-S - FDCW71	
HMA100-S - FDCW100	

The cable size shown on the above table is reference value. Choose appropriate size according to local laws and regulations.

Electrical components

HSB series
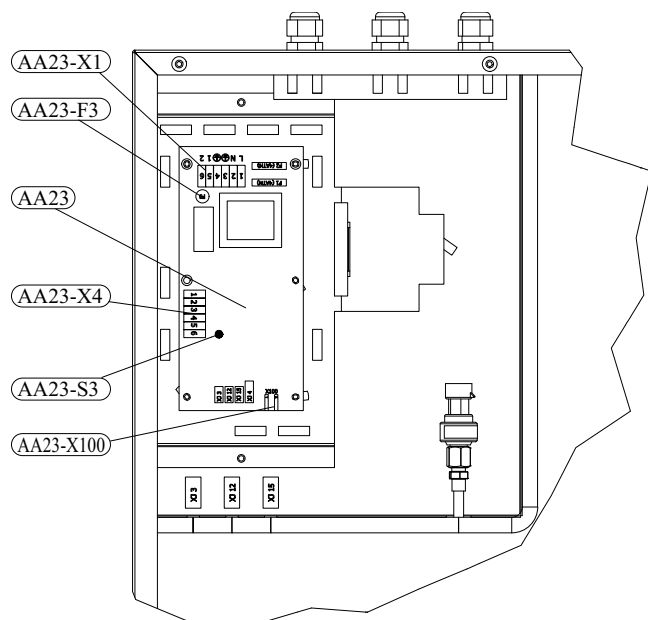
Explanation

AA23	Communication board
AA23-F3	Fuse for external heating cable
AA23-S3	DIP switch, addressing of outdoor unit
AA23-X1	Terminal block, incoming supply, connection of KVR
AA23-X4	Terminal block, communication with indoor module / control module
AA23-X100	Terminal block, communication outdoor module FDCW

HMA-S series
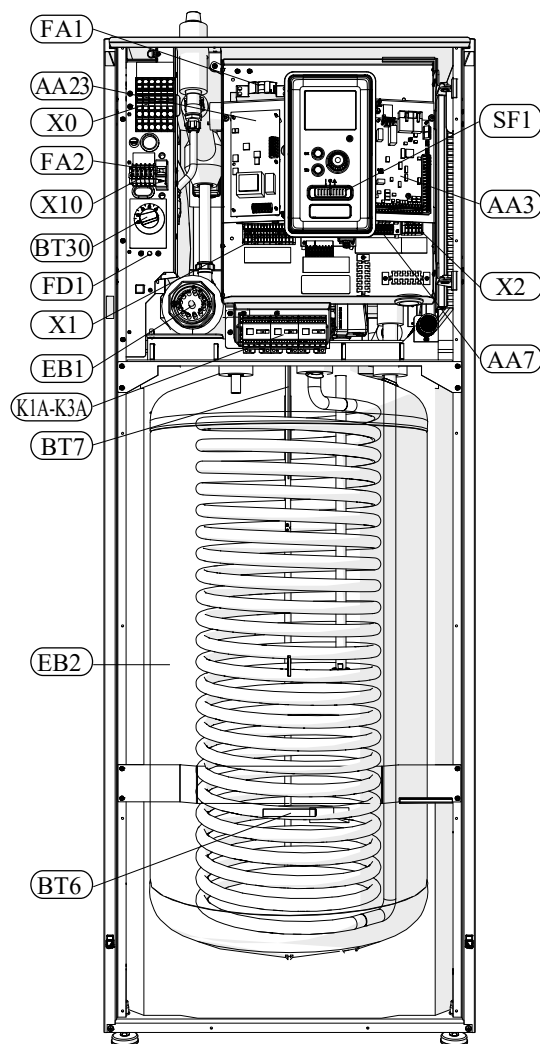
Explanation

|	
X0	Voltage terminal block 400V-
X1	Voltage terminal block 230V-
X2	Voltage terminal block 230V-
X10	Voltage terminal block 230V-
FA1	Circuit breaker (to internal module)
K1A-K3A	Submersible heater contact
BT30	Thermostat, standby mode
AA3	Sensor card
AA23	Communication card
AA7	Relay card
FA2	Circuit breaker (to internal module)
FD1	Temperature limiter

Temperature limiter

Temperature limiter (FD1) cuts off the power supply of the electrical heating module if the temperature increases to the range of approximately 98°C or decreases below −8°C, and can be reset manually.
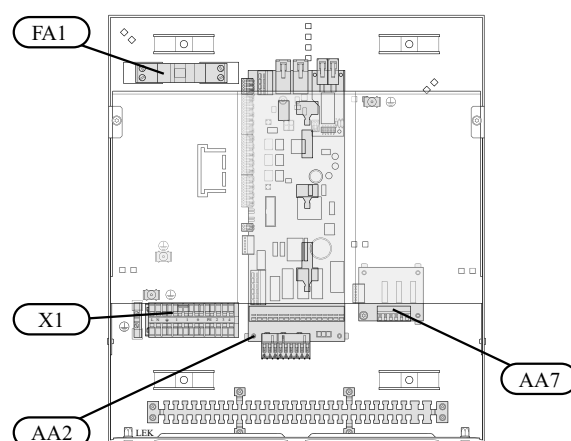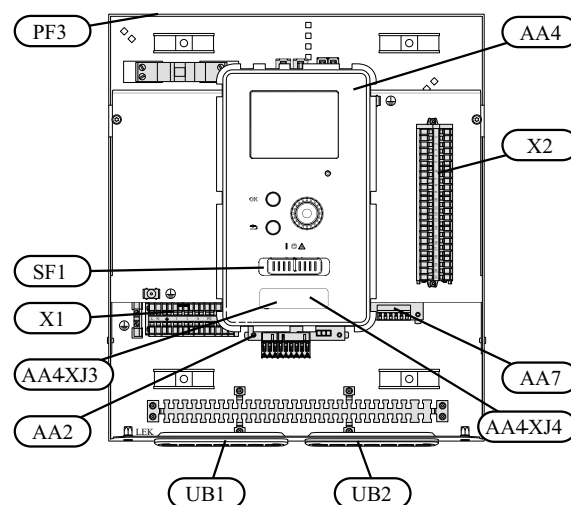
> ## Important
>
> *In the case of the thermal fuse, please report it to an authorized service facility to eliminate the possible cause.*

Resetting

Temperature limiter (FD1) is accessible behind the front cover. Temperature limiter is reset by strong pressing of the button (FD1-SF2) using a small screwdriver. Press the button, max. 15 N (approx. 1.5kg).
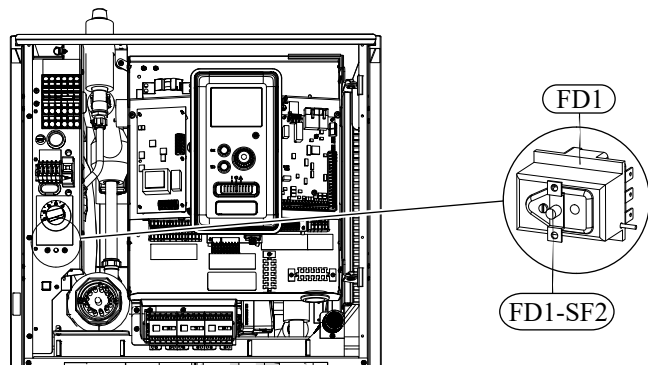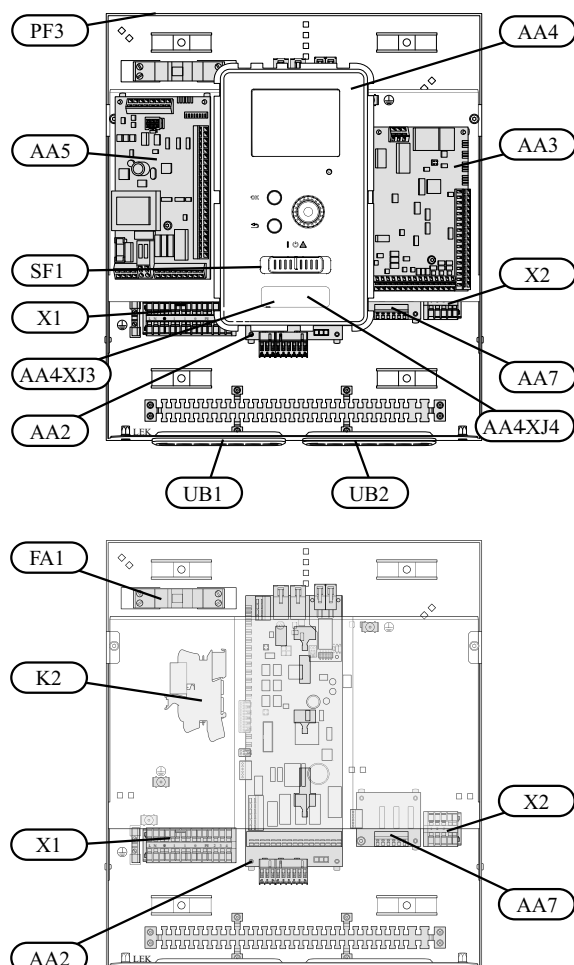
RC-HY20-W

Explanation

AA2	Base card
AA4	Display unit
	AA4-XJ3 USB socket
AA4-XJ4	Service outlet (No function)
AA7	Extra relay circuit board
FA1	Miniature circuit-breaker
X1	Terminal block, incoming electrical supply
X2	Terminal block, control signal circulation pump, sensors AUX inputs and heat pump
SF1	Switch
PF3	Serial number plate
UB1	Cable grommet, incoming supply electricity, power for accessories
UB2	Cable grommet, signal

RC-HY40-W

Explanation

|	
AA2	Base card
AA3	Input circuit board
AA4	Display unit
AA4-XJ3	USB socket
AA4-XJ4	Service outlet (No function)
AA5	Accessory card
AA7	Extra relay circuit board
FA1	Miniature circuit-breaker
K2	Emergency mode relay
X1	Terminal block, incoming electrical supply
X2	Terminal block, AUX4 - AUX6
SF1	Switch
PF3	Serial number plate
UB1	Cable grommet, incoming supply electricity, power for accessories
UB2	Cable grommet, signal

Accessibility, electrical connection for controller

The cover of the control module is opened using a Torx 25 screwdriver. Assembly takes place in the reverse order.
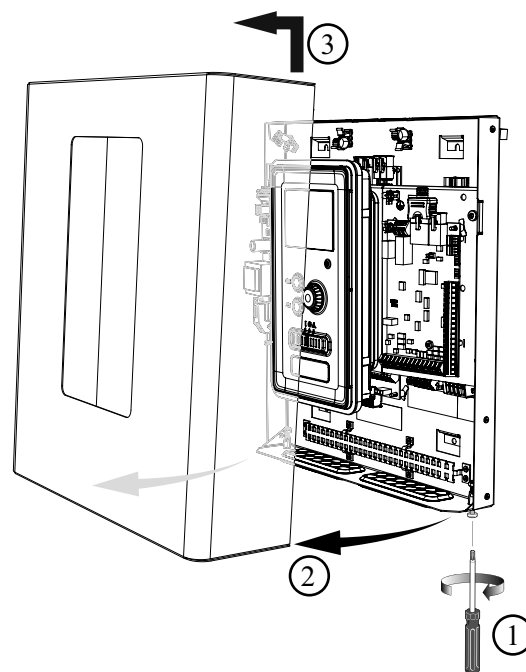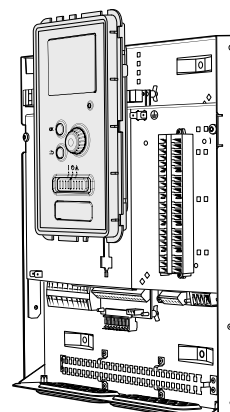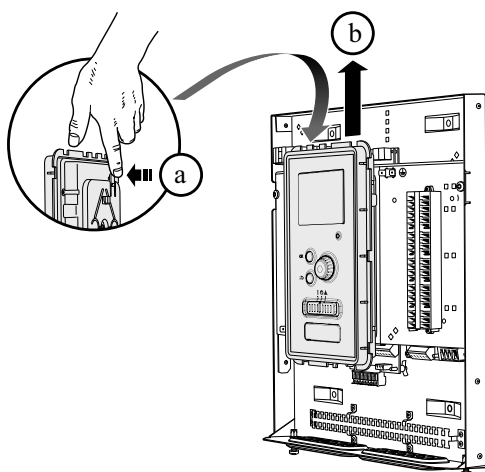

NOTE

The cover to access the base board is opened using a Torx 25 screwdriver.
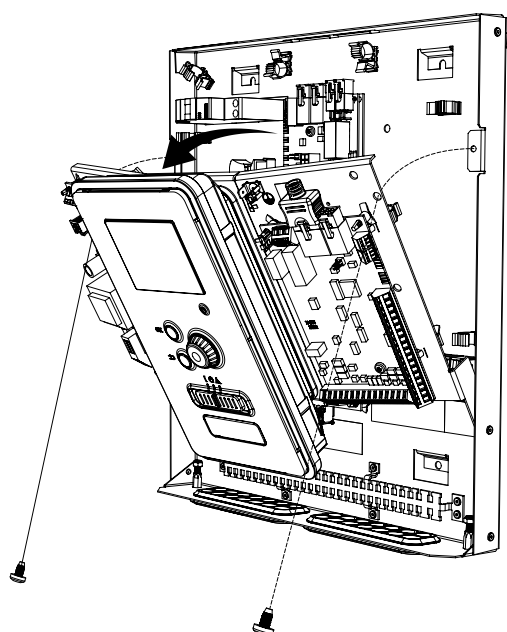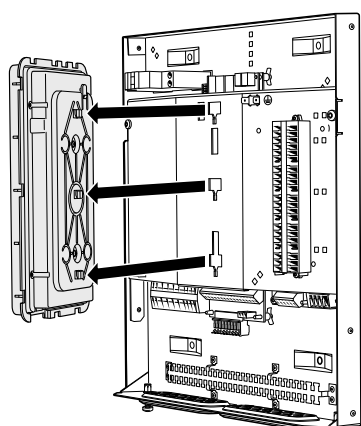

The display may need to be moved for easier access when connecting electrics. This is easily done by following these steps.
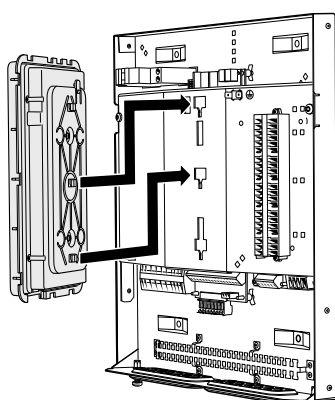
1. Press in the catch on the upper rear side of the display unit towards you (a) and move the display unit upwards (b) so that the mountings unhook from the panel.

2. Lift the display unit from its mountings.

3. Align the two lower mountings on the reverse of the display unit with the two upper holes in the panel as illustrated.

4. Secure the display on the panel.

5. When the electrical connection is ready the display must be reinstalled with three mounting points again, otherwise the front cover cannot be installed.
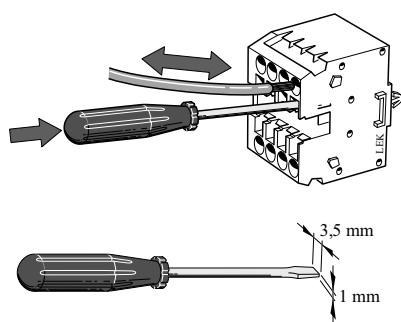
Cable lock

Use a suitable tool to release/lock cables in the terminal block.

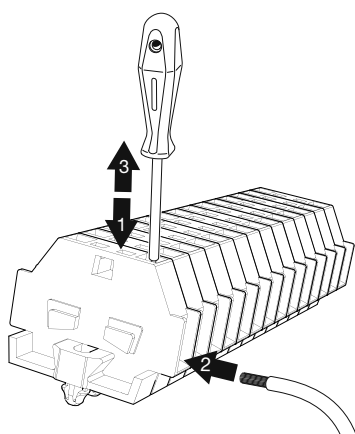## HSB series, RC-HY20/40-W

Terminal block on the electrical card
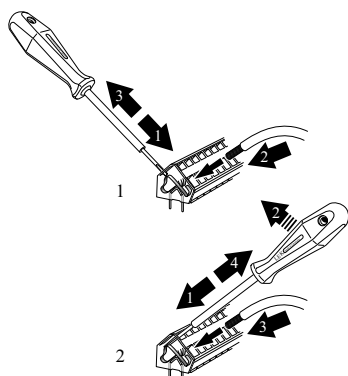
Terminal block

HMA-S series

System connection

NOTE

To prevent interference, unscreened communication and/or sensor cables to external connections must not be laid closer than 20cm from high voltage cables.

HSB series

Recommended fuse size

The recommended fuse size shown in the following table is reference value. Choose appropriate size according to local laws and regulations.

|			Fuse size
Indoor unit	HSB	60-W	6A/230V 1AC 50Hz
		100	
		140	
Outdoor unit	FDCW	60	20A/230V 1AC 50Hz
		71	
		100	30A/230V 1AC 50Hz
		140	
Controller	RC-HY	20-W	10A/230V 1AC 50Hz
		40-W	
Electric heater	ELK	9M	16A/400V 3NAC 50Hz

Recommended cable size

The recommended cable size shown in the following table is reference value. Choose appropriate size according to local laws and regulations.

	Cable size
Power - HSB60-W	3 cores, 1.5mm^2 (power cable)
Power - HSB100	
Power - HSB140	
Power - FDCW60	3 cores, 2.0mm^2 (power cable)
Power - FDCW71	3 cores, 2.5mm^2 (power cable)
Power - FDCW100	
Power - FDCW140	3 cores, 6.0mm^2 (power cable)
Power - Controller	3 cores, 1.5mm^2 (power cable)
HSB60-W - FDCW60	2 cores, 1.5mm^2 (communication cable)
HSB100 - FDCW71	
HSB100 - FDCW100	
HSB140 - FDCW140	
Indoor unit - Controller	3 cores, 0.5mm^2, LiYY,EKKX or equivalent (communication cable)

Power source

In case of HSB series, power source is made to indoor unit, outdoor unit and controller separately. 230V 1AC 50Hz is applied.

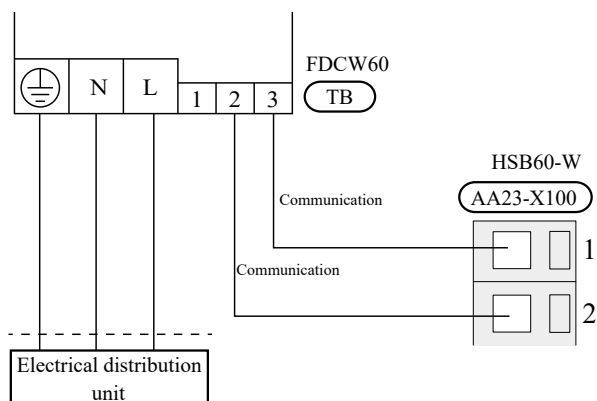For indoor unit, incoming supply is connected on AA23-X1 terminal.
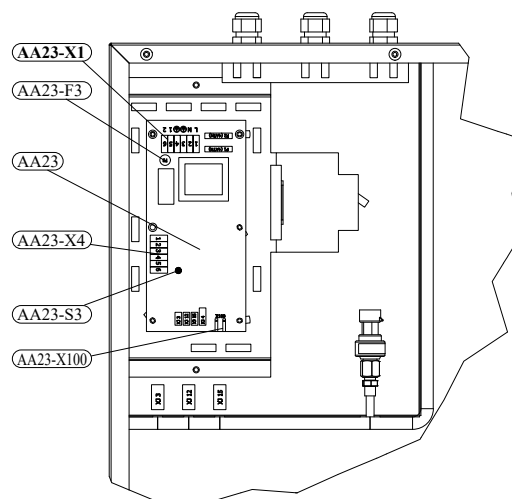
For outdoor unit, incoming supply is connected on TB terminal. See figure on Connection between indoor and outdoor unit.
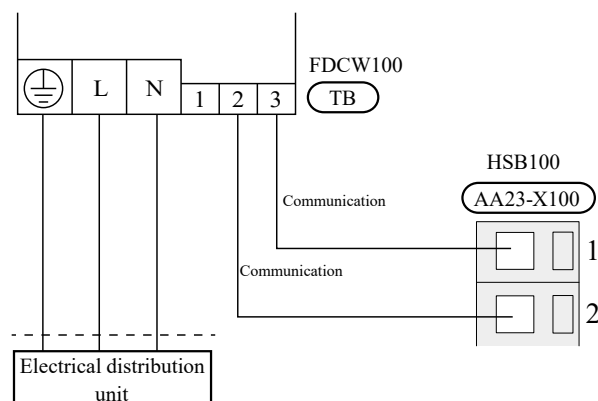
Connection between indoor and outdoor unit

The communication cable between indoor and outdoor unit is connected between terminal AA23-X100 in indoor unit and TB in outdoor unit. Screened 2 cores cable is recommended.

<HSB60-W with FDCW60VNX>

FDCW60
TB

HSB60-W
AA23-X100

Communication

Communication

1

2

Electrical distribution unit

<HSB100 with FDCW100VNX>

FDCW100
TB

HSB100
AA23-X100

Communication

Communication

1

2

Electrical distribution unit

<HSB100 with FDCW71VNX>

FDCW71
TB

HSB100
AA23-X100

Communication

Communication

1

2

Electrical distribution unit

<HSB140 with FDCW140VNX>

FDCW140
TB

HSB140
AA23-X100

Communication

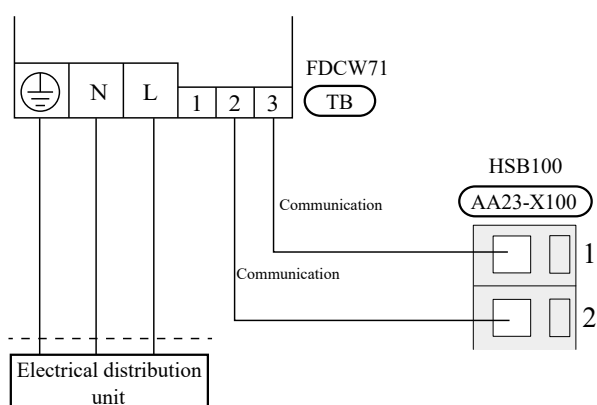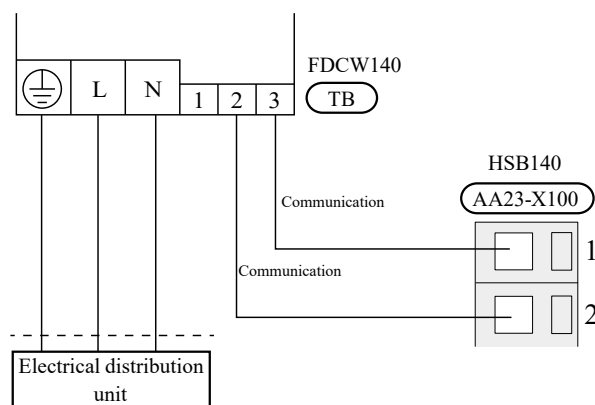Communication

1

2

Electrical distribution unit

Connection between indoor unit and controller

See Connection for RC-HY20/40-W.

Cascade connection setting

In case of cascade connection system, it is necessary to allot unique address to each indoor unit. Set the DIP switch S3-1, -2 and -3 according to the following table.

Address	S3:1	S3:2	S3:3
1	OFF	OFF	OFF
2	On	OFF	OFF
3	OFF	On	OFF
4	On	On	OFF
5	OFF	OFF	On
6	On	OFF	On
7	OFF	On	On
8	On	On	On

RC-HY20-W

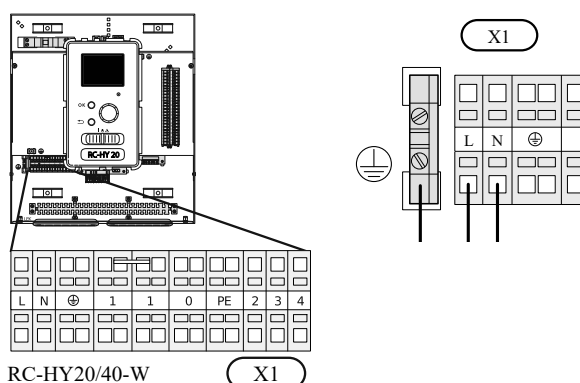### Recommended fuse size

Please refer to page 95.

Recommended cable size

Please refer to page 95.

Power source

Connect power cable on X1 terminal as shown below.

RC-HY20/40-W must be installed via an isolator switch with a minimum breaking gap of 3mm. Minimum cable area must be sized according to the fuse rating used.
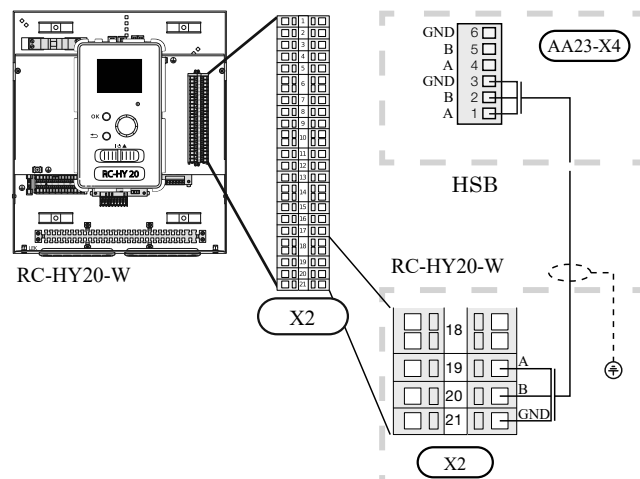

Connection between indoor unit and controller

Signal cable is connected between controller and indoor unit with screened 3 cores cable for HSB series. Choose correct terminal according to the type of controller as shown below.

<HSB series with RC-HY20-W>

Connect the port 19(A), 20(B) and 21(GND) on X2 terminal on RC-HY20-W to the port 1, 2 and 3 on X4 terminal on AA23 board on HSB series respectively.

Circulation pump (GP12)

For HSB series, circulation pump (GP12) is installed outside of indoor unit. Choose correct terminal according to the type of controller.

<HSB series with RC-HY20-W>

Connect the port 5, 6 and 7 on X4 terminal on AA2 board on RC-HY20/40-W to the port PE, N and L on circulation pump respectively. Control signal cable is connected between the port 1 and 2 on X2 terminal on RC-HY20 and PWM and GND on circulation pump respectively as shown below.
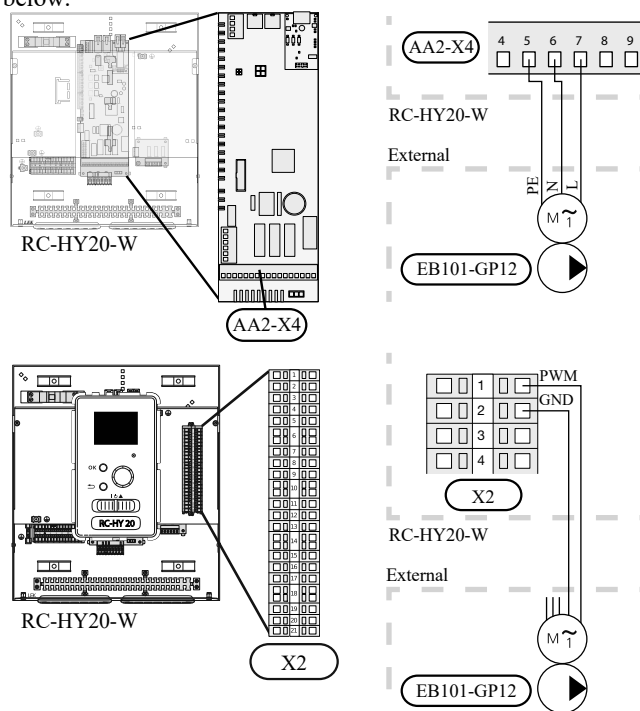
3-way valve (QN10/QN12)

3-way valve is used for switching heating / hot water production (QN10), or switching heating / cooling (QN12). Install appropriate valves according to the system structure on site.

HSB series is not equipped with 3-way valve. Install the valves on right position according to the diagram and connect wires on appropriate port according to the type of controller.

<HSB series with RC-HY20-W>

• 3-way valve for Heating / Hot water (QN10)

Connect the N, Control and L wire on 3-way valve to the port 2, 3 and 4 on X4 terminal on AA2 board on RC-HY20/40-W respectively as shown below.
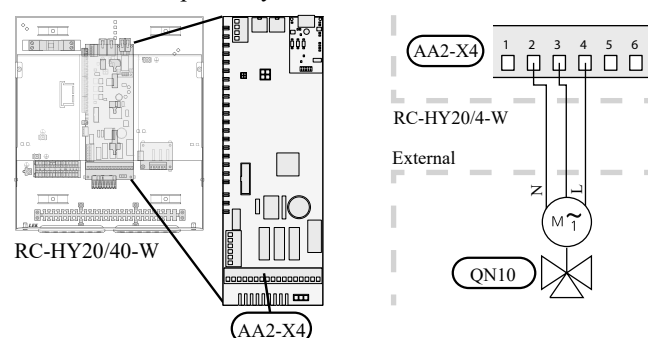
• 3-way valve for Heating / Cooling (QN12)

QN12 can be controlled with potential free variable relay. Connect L and Control wire on 3-way valve to the port 15 and 16 on X4 terminal on AA2 board on RC-HY20-W respectively. Also, connect L and N wire to power supply as shown below.

Additional setting is necessary in menu 5.4. See Menu system for details.
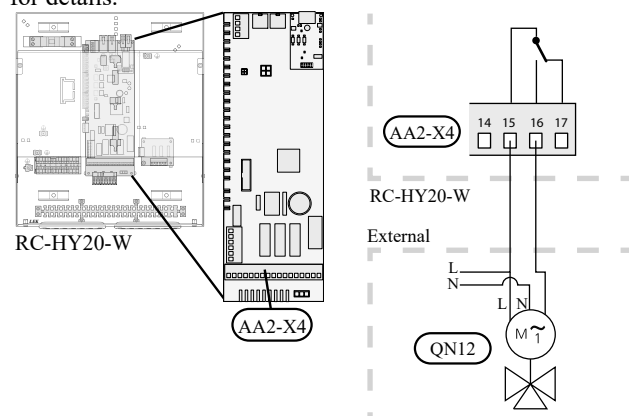
CAUTION

The relay outputs can have a max load of 2 A at resistive load (230V AC).

Sensor

Sensor connection is diffe ent according to the combination of indoor unit and controller. Refer to the appropriate combination mentioned below.

Use two-core cable with a minimum 0.5mm^2 cross section.

Regarding other sensors not mentioned in this chapter, refer to page 101, 102, Optional connections.

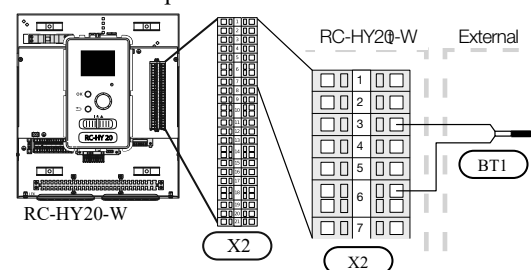### <RC-HY20-W with HSB series>

• Ambient air temperature sensor BT1

Install ambient air temperature sensor (BT1) in the shade on a wall facing north or north-west, so it is unaffected by the morning sun.

Connect the sensor to the port 3 and 6 on X2 terminal.

If a conduit is used it must be sealed to prevent condensation in the sensor capsule.

• Hot water charging sensor BT6 (tank bottom)

The temperature sensor, hot water charging (BT6) is placed in the submerged tube on the water heater.

Connect the sensor to the port 5 and 6 on X2 terminal.

Hot water charging is activated in menu 5.2 or in the start guide.
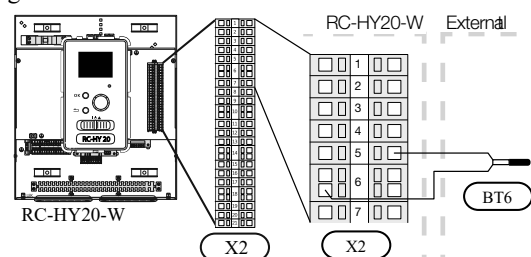
• Hot water sensor BT7 (tank top)

A temperature sensor for hot water top (BT7) can be connected to RC-HY20-W to show the water temperature at the top of the tank (if it is possible to install a sensor at the top of the tank).

- **Temperature sensor BT63, outlet at additional heater**

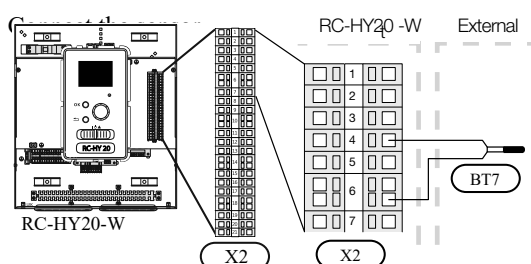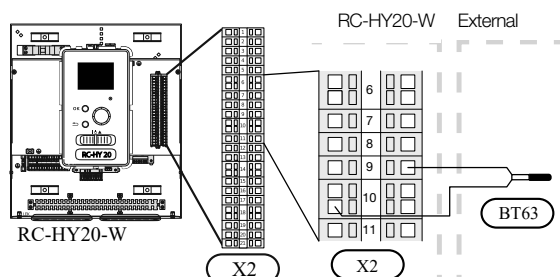This sensor is used in case electric heater is placed before 3-way valve (QN10) for switching heating/hot water (see page 285 for diagram).

Connect temperature sensor, external supply after electric heater (BT63) to the port 9 and 10 on terminal X2.

- **Temperature sensor BT25, outlet for heating**

This sensor is used in case electric heater is placed after 3-way valve (QN10) for switching heating/ hot water (see page 286 for diagram).

Connect temperature sensor, external supply (BT25) to the port 8 and 10 on X2 terminal.
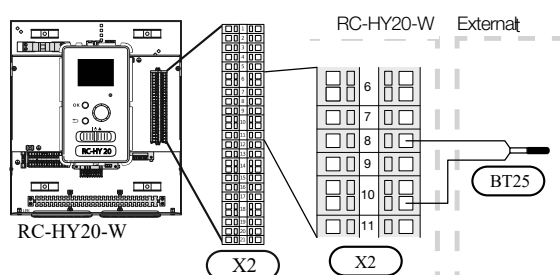
- **Temperature sensor BT71, return line for heating**

This sensor is used in case electric heater is placed after 3-way valve (QN10) for switching heating/ hot water (see page 286 for diagram).

For connection, see page 101, AUX inputs.

- **Temperature sensor BT64, outlet for cooling**

This sensor is used in case cooling application is required.

For connection, see page 101, AUX inputs.

Option connections

- **Room sensor BT50**

Room sensor can be connected to controller.

The room temperature sensor has up to three functions:

1. Show current room temperature in the control module display.

2. Option of changing the room temperature in °C.

3. Makes it possible to change/stabilise the room temperature.

Install the sensor in a neutral position where the set temperature is required. A suitable location is on a free inner wall in a hall approx. 1.5 m above the floor.

Do not install the sensor where correct room temperature cannot be detected such as in a recess, between shelves, behind a curtain, above or close to a heat source, in a draft from an external door or in direct sunlight.

Closed radiator thermostats can also cause problems.

The control module can operate without the sensor, but if user wants to read off the accommodation's indoor temperature in controller display, the sensor must be installed.

Connect the room sensor to the port 7 and 10 on X2 terminal.

If the sensor is to be used to change the room temperature in °C and/or to change/stabilise the room temperature, the sensor must be activated in menu 1.9.4.

If the room sensor is used in a room with underfloor heating, it should only have an indicatory function, not control of the room temperature.
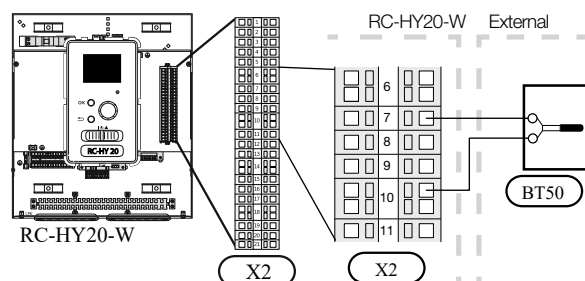
┌─ **CAUTION** ──────────────────
│
│ *Changes of temperature in accommodation*
│ *take time. For example, short time periods in*
│ *combination with underfloor heating will not*
│ *give a noticeable difference in room temperature.*
│
└────────────────────────────────

Use two-core cable with a minimum 0.5mm^2 cross section.

• **Step controlled additional heat**

> **NOTE**
>
> *Mark up any junction boxes with warnings for external voltage.*

External step controlled additional heat can be controlled by up to three potential-free relays in the control module (3-step linear or 7-step binary). Alternatively two relays (2-step linear or 3-step binary) can be used for step controlled additional heat, which means that the third relay can be used to control the immersion heater in the water heater/accumulator tank.

Step in occurs with at least 1 minute intervals and step outs with at least 3 seconds intervals.

Step 1 is connected to terminal block X2:2 on the additional relay board (AA7).

Step 2 is connected to terminal block X2:4 on the additional relay board (AA7).

Step 3 or immersion heater in the water heater/accumulator tank is connected to terminal block X2:6 on the additional relay board (AA7).

The settings for step controlled additional heat are made in menu 4.9.3 and menu 5.1.12.

All additional heat can be blocked by connecting a potential-free switch function to the software controlled input on terminal block X2 which is selected in menu 5.4.
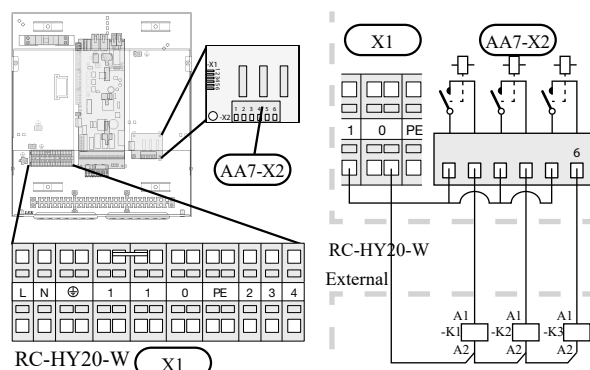
If the relays are to be used for control voltage, bridge the supply from terminal block X1:1 toX2:1, X2:3 and X2:5 on additional relay board (AA7). Connect the neutral from the external additional heat to terminal block X1:0.

Use a cable with appropriate cross section.

For connection, see the installation manual for additional heater.

• **Relay output for emergency mode**

> **NOTE**
>
> *Mark up any junction boxes with warnings for external voltage.*

When the switch (SF1) is in "⚠" mode (emergency mode) the circulation pump is activated (EB101-GP12).

> **CAUTION**
>
> *No hot water is produced when emergency mode is activated.*

The emergency mode relay can be used to activate external additional heat. Between the port 2 and 4 is closed during emergency mode. An external thermostat must be connected to the control circuit (port 4) to control the temperature. Ensure that the heating medium circulates through the external additional heating.
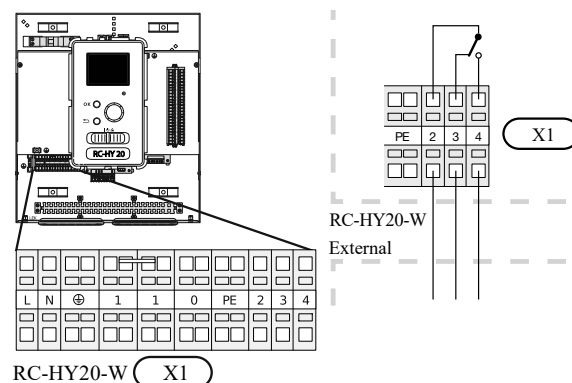

If the relay is to be used for control voltage, bridge the supply from terminal block X1:1 to X1:2 and connect neutral and control voltage from the external additional heat to X1:0 (N) and X1:4 (L).
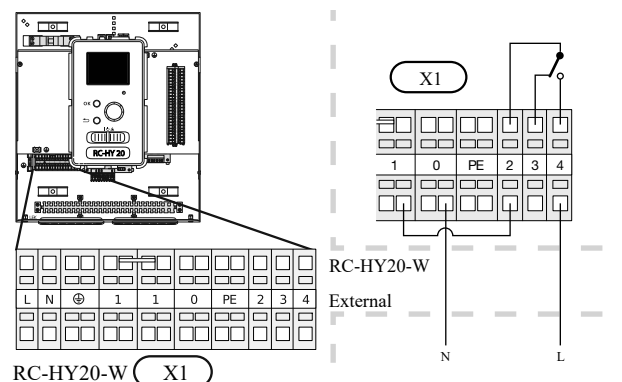
• **Emergency mode thermostat**

In the emergency mode, the supply temperature is set using a thermostat (T1). It must be set according to the demand of the circuits in operation. The available regulation range is between 6 and 67°C. Remember that for floor heating, the settings must be min. 20°C, max. 35−45°C in order to preserve heat comfort in the room and assure effective system operation.
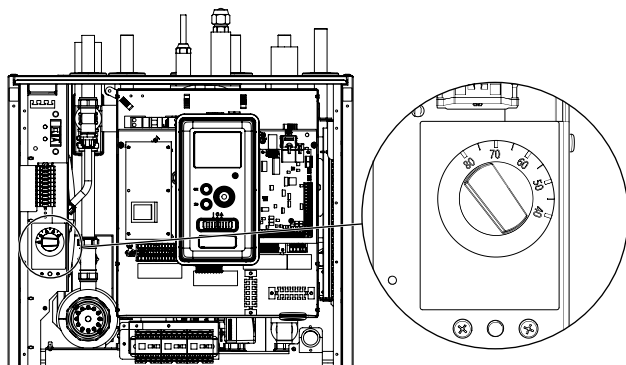

• **External circulation pump**

Connect the external circulation pump (GP10) to terminal block X4:9 (PE), X4:10 (N) and X4:11 (230 V) on the base board (AA2) as illustrated.
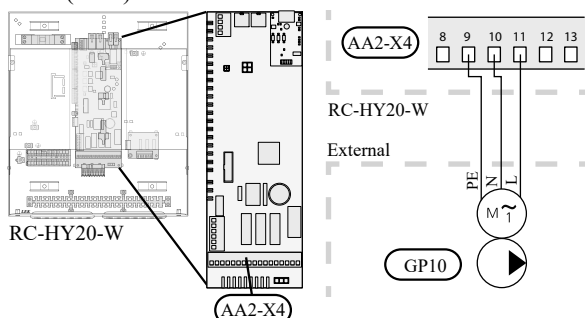

• **AUX inputs**

Other external inputs are available on the port 11 through 18 on X2 terminal on RC-HY20-W.

AUX1, 2, 3, 4, 5, and 6 correspond to the port 11, 12, 13, 15, 16 and 17 respectively. Port 14 and 18 are GND and are common to the all auxiliary circuit. Connect a sensor or switch between AUX and GND with a two-core cable with a minimum cross section of 0.5mm^2.
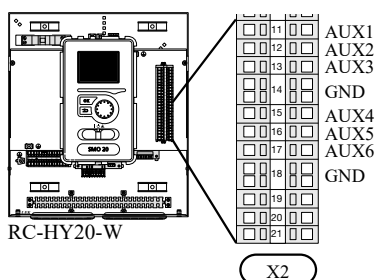
Select the appropriate function in menu 5.4.
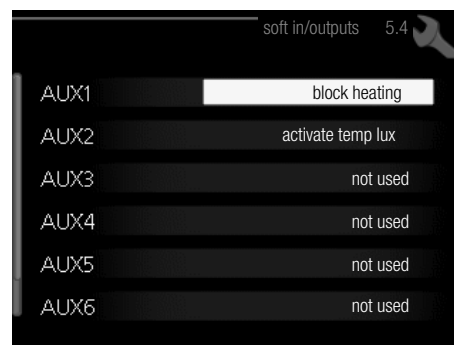
■ Temperature sensor, cooling/heating (BT74)

Additional room sensor (BT74) is applied in case user wants to determine the operation mode (cooling/heating) with a temperature in a particular room.

This option can be chosen only in case cooling function is available.

■ Temperature sensor, external return line (BT71)

Temperature sensor BT71 is applied in case additional heater is placed after 3-way valve (see page 288 for diagram).

■ Temperature sensor, flow line cooling (BT64)

Temperature sensor BT64 is required in case 4-pipe system is used for cooling operation. (see pages 287, 288 for diagram)

This option can be chosen only in case cooling function is activated.

■ Contact for external tariff blocking

In cases where external tariff blocking is required it must be connected to terminal block X2.

Tariff blocking means that the additional heat, the compressor, heating and cooling are disconnected by connecting a potential free switch function to the input selected in menu 5.4.

A closed contact results in the electrical output being disconnected.

■ Switch for "SG ready"

─ NOTE ─

This function can only be used in mains networks that support the "SG Ready"-standard.
"SG Ready" requires two AUX inputs.

This function can only be used in power supply networks that support the "SG Ready" standard. "SG Ready" requires two AUX inputs.

"SG Ready" is a smart tariff management scheme in which electricity supplier can affect indoor and hot water temperature or simply prohibits additional heat and/or the compressor operation in heat pump at certain period of the day. You can choose which operation mode is affected by this function in menu 4.1.5 after the function is activated.

Choose two external input circuits and connect potential-free switches, and set "SG Ready A" and "SG Ready B" in menu 5.4. The system works differently according to the combination of the circuit open/closed.

- Blocking (A: Closed, B: Open)

"SG Ready" is active. Compressor operation and additional heat is prohibited.

- Normal mode (A: Open, B: Open)

"SG Ready" is not active. No effect on the system.

- Low price mode (A: Open, B: Closed)

"SG Ready" is active. The system operates to provide higher capacity than normal mode by using lower tariff electricity. You can select the operation mode (heating/hot water/cooling) affected by this function in menu 4.1.5.

- Overcapacity mode (A: Closed, B: Closed)

"SG Ready" is active. The system supplies higher capacity than Low price mode since the electricity price is supposed to be very low in this mode. You can select the operation mode (heating/hot water/cooling) affected by this function in menu 4.1.5.

■Contact for activation of "temporary lux"

Temporary hot water production function "temporary lux" is activated with this signal. Connect the terminals with a potential-free switch and choose the function in menu 5.4.

"Temporary lux" is activated only when the switch is closed.

■Contact for activation of "external adjustment"

Target temperature offset for supply temperature or room temperature can be done with this signal.

When a room sensor is connected and activated, the target room temperature is offset in ℃ if the switch is closed. When a room sensor is not connected, target supply water temperature (heat curve) is offset instead. The degree of offset can be set in menu 5.4.

■Switch for external alarm

Alarms from external devices can be connected to the control and appear as an info alarm. Potential-free signal of NO or NC type can be connected.

■Switch for external blocking

This function is used in case certain operation mode needs to be prohibited. The operation at selected operation mode is prohibited when the switch is closed. Following functions can be managed.

- Additional heat
- compressor operation
- heating mode
- cooling mode
- hot water mode

- **AUX outputs**

External output is available on the port 15 to 17 on X4 terminal on AA2 board on RC-HY20-W. The relay output can have a max load of 2A at resistive load.
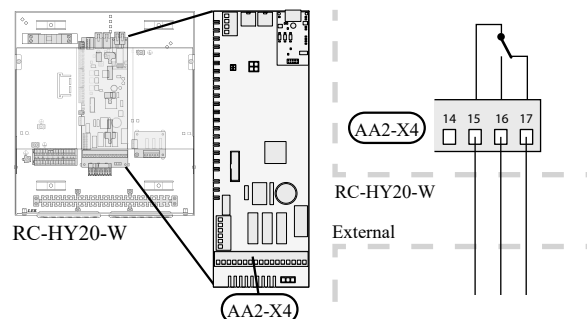
Following functions are available. Select the function in menu 5.4.

- Indication of buzzer alarm

When an alarm occurs, the circuit becomes closed between the port 15 and 16. During normal operation, the port 15 and 17 is closed.

- Cooling mode indication / Active cooling mode (4-pipe cooling)

When the system turns into cooling mode, the circuit becomes closed between the port 15 and 16. By using this signal, it is possible to switch 3-way valve for 4-pipe cooling or to assemble a display circuit indicating cooling mode. For details of connecting the 3-way valve, refer to page 98.

- External pump control (GP10)

External pump (GP10) is used in case additional heater is placed after 3-way valve that switches heating/hot water (refer to page 286 for diagram).

Connect the circulation pump as shown below using the port 15 and 16 on X4 terminal.
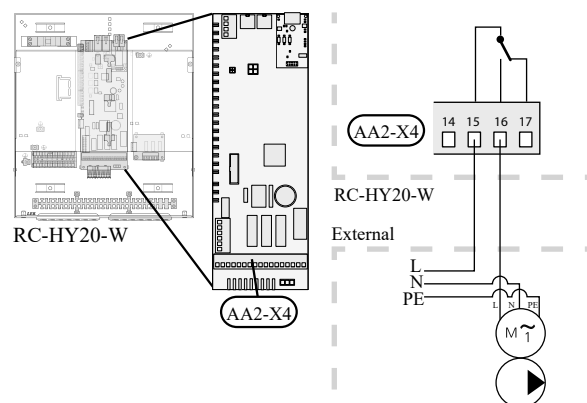
- Hot water circulation pump control (GP11)

In case the distance between hot water tap and hot water storage tank is far, the hot water supply line temperature is likely to drop and it may take time to supply hot water from the tap. In that case, hot water circulation pump (GP11) is applied to maintain hot water supply line temperature warm (refer to page 86 for diagram).
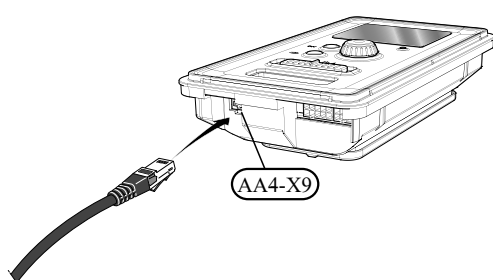
For details of connecting the pump, refer to External pump control (GP10).

> ## NOTE
>
> *Mark up any junction boxes with warnings for external voltage.*

• **myUpway™**

Connect the network connected cable (straight, Cat.5e UTP) with RJ45-contact (male) to contact AA4-X9 on the display unit (as illustrated). Use the cable grommet (UB2) in the control module for cable routing.

RC-HY40-W

Recommended fuse size
Please refer to page 95.

Recommended cable size
Please refer to page 95.

Power source
Please refer to page 95.

Connection between indoor unit and controller

<HSB series with RC-HY40-W>

Connect the port 1(A), 2(B) and 3(GND) on X4 terminal on AA5 board on RC-HY40-W to the port 1, 2 and 3 on X4 terminal on AA23 board on HSB series respectively.

In case several systems are connected to one controller, connect the port 4, 5 and 6 on X4 terminal on AA23 board on HSB series close to the controller to the port 1, 2 and 3 on X4 terminal on AA23 board on another HSB series.
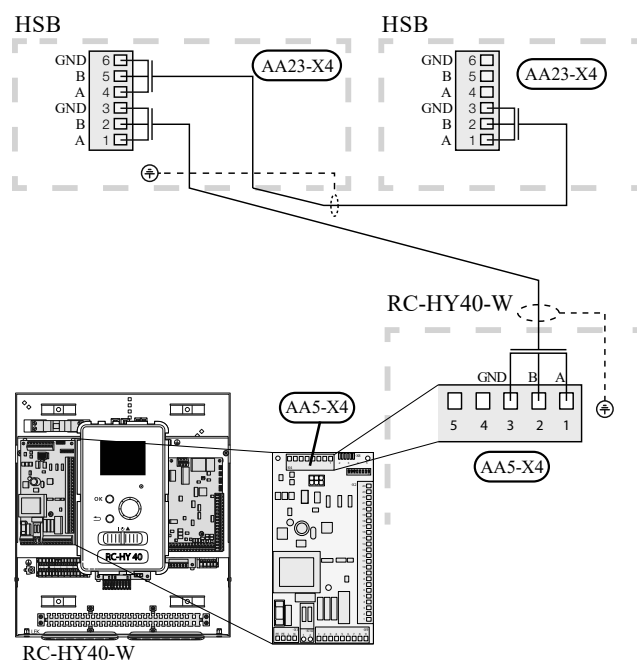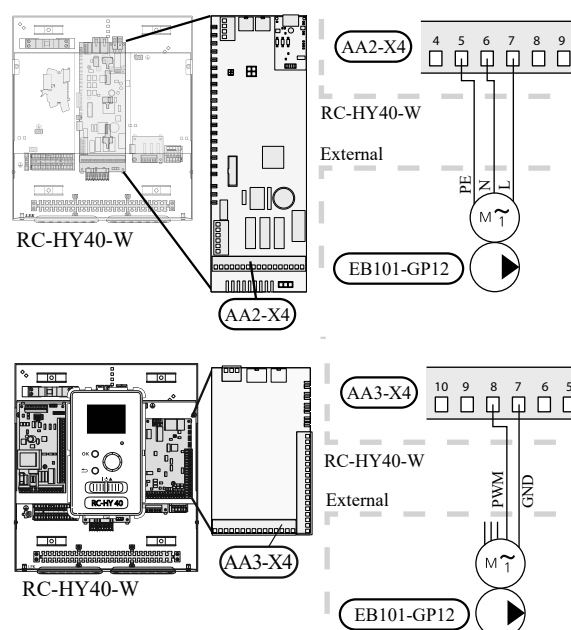

Circulation pump (GP12)

For HSB series, circulation pump (GP12) is installed outside of indoor unit. Choose correct terminal according to the type of controller.

<HSB series with RC-HY40-W>

Connect the port 5, 6 and 7 on X4 terminal on AA2 board on RC-HY40-W to the port PE, N and L on circulation pump (EB101-GP12) respectively. Control signal cable is connected between the port 7 and 8 on X4 terminal on AA3 board on RC-HY40 and GND and PWM on circulation pump respectively as shown below.

RC-HY40-W can connect and control up to two pumps. Connect the port 12, 13 and 15 on X4 terminal on AA2 board on RC-HY40-W to the port PE, N and L on second circulation pump (EB102-GP12) respectively. Control cable is connected between the port 5 and 6 on X4 terminal on AA3 board on RC-HY40-W and GND and PWM on circulation pump respectively as shown below.
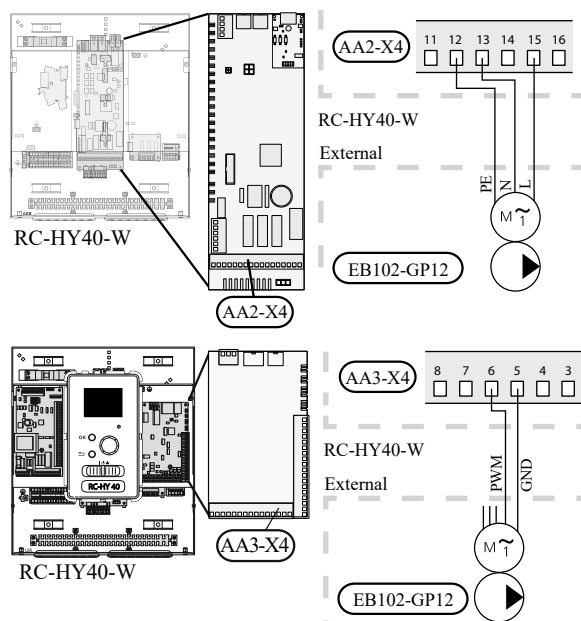
3-way valve (QN10/QN12)

3-way valve is used for switching heating / hot water production (QN10), or switching heating / cooling (QN12). Install appropriate valves according to the system structure on site.

HSB series is not equipped with 3-way valve. Install the valves on right position according to the diagram and connect wires on appropriate port according to the type of controller.
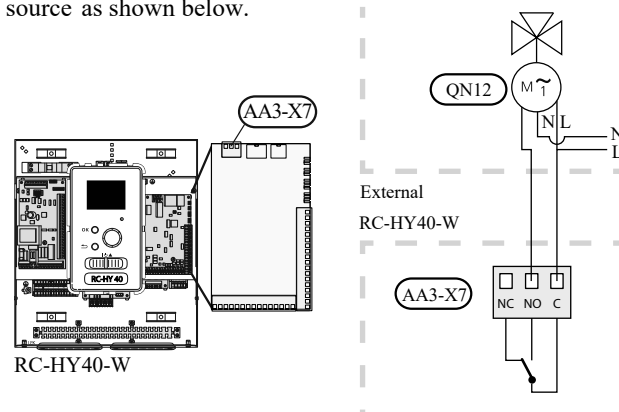
<HSB series with RC-HY40-W>

- **3-way valve for Heating / Hot water (QN10)**

Refer to 3-way valve connection for HSB series with RC-HY20-W.

- **3-way valve for Heating / Cooling (QN12)**

QN12 can be controlled with potential free variable relay. Connect L and control wire on 3-way valve to the port C and NO on X7 terminal on AA3 board on RC-HY40-W respectively. Also, connect L and N wire to power source as shown below.

> **CAUTION**
>
> *The relay outputs may be subjected to a max load of 2A at resistive load (230V AC).*

Sensor

Sensor connection is different according to the combination of indoor unit and controller. Refer to the appropriate combination mentioned below.

Use two-core cable with a minimum 0.5mm^2 cross section.

Regarding other sensors not mentioned in this chapter, refer to page 107, Option connections.
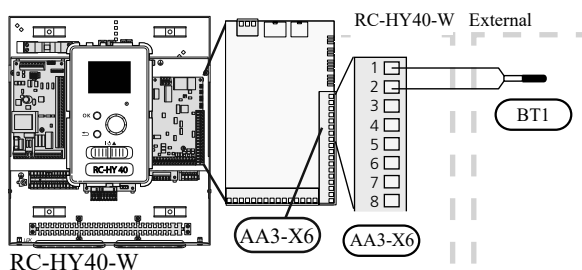
<RC-HY40-W with HSB series>

• **Ambient air temperature sensor BT1**

Install ambient air temperature sensor (BT1) in the shade on a wall facing north or north-west, so it is unaffected by the morning sun for example.

Connect the sensor to the port 1 and 2 on X6 terminal on AA3 board.

If a conduit is used it must be sealed to prevent condensation in the sensor capsule.
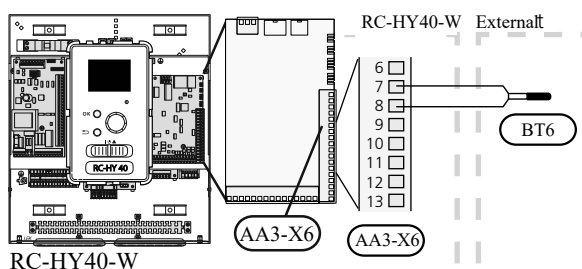

• **Hot water charging sensor BT6 (tank bottom)**

The temperature sensor, hot water charging (BT6) is placed in the submerged tube on the water heater.

Connect the sensor to the port 7 and 8 on X6 terminal on AA3 board.

Hot water charging is activated in menu 5.2 or in the start guide.

• **Hot water sensor BT7 (tank top)**

A temperature sensor for hot water top (BT7) can be connected to RC-HY40-W to show the water temperature at the top of the tank (if it is possible to install a sensor at the top of the tank). Connect the sensor to the port 15 and 16 on X6 terminal on AA3 board.
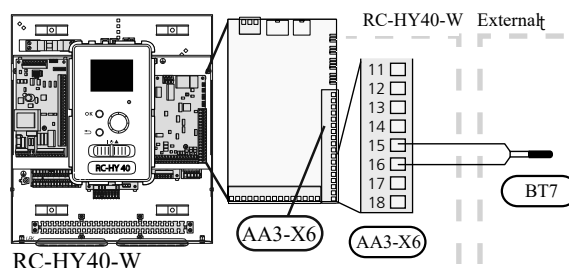
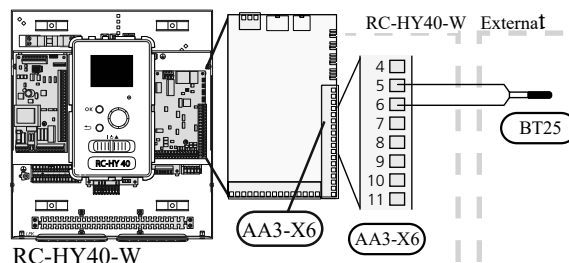• **Temperature sensor BT63, outlet at additional heater**

This sensor is used in case electric heater is placed before 3-way valve (QN10) for switching heating/ hotwater (see page 285 for diagram).

For connection, see page 99, AUX inputs of RC-HY20.

• **Temperature sensor BT25, outlet for heating**

This sensor is used in case electric heater is placed after 3-way valve (QN10) for switching heating/ hot water (see page 286 for diagram).

Connect temperature sensor, external supply line (BT25) to the port 5 and 6 on X6 terminal on AA3 board.

• **Temperature sensor BT71, return line for heating**

This sensor is used in case electric heater is placed after 3-way valve (QN10) for switching heating/ hot water (see page 286 for diagram).

Connect temperature sensor, external return line (BT71) to the port 17 and 18 on X6 terminal on AA3 board.
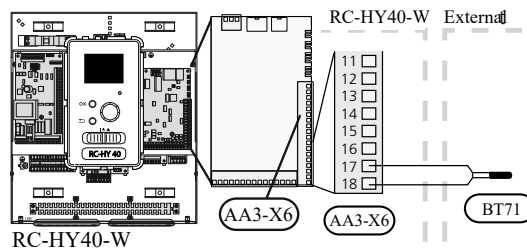
• **Temperature sensor BT64, outlet for cooling**

This sensor is used in case cooling application is required. For connection, see page 101, AUX inputs of RC-HY20-W.

Option connection

• Load monitor

In case many power electrical appliances are connected in the property and the electric heater is energised at the same time, there is a risk of tripping the main fuse of the property.

The control module has an integrated load monitor that controls the power steps of the electric heater by disconnecting step by step in the event of overload in a phase. It will be reconnected if other current consumption is reduced.

Connecting current sensors

A current sensor (BE1 - BE3) should be installed on each incoming phase conductor in to the electrical distribution unit to measure the current. This is best done in the electrical distribution unit.

Connect the current sensors to a multi-core cable in an enclosure next to the electrical distribution unit. Use a multi-core cable of at least 0.5mm² from the enclosure to the heat pump.

Connect the cable to terminal block X4:1 to 4.

X4:1 is the common terminal block for the three current sensors.

Set the size of the property's main fuse in menu 5.1.12.
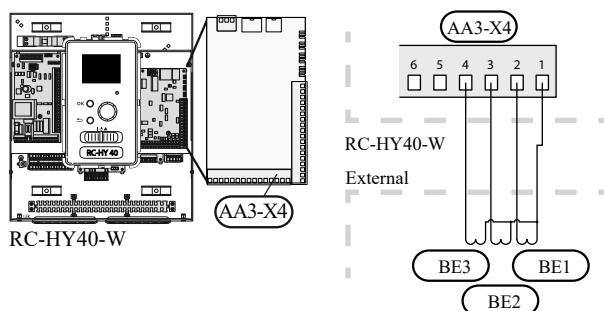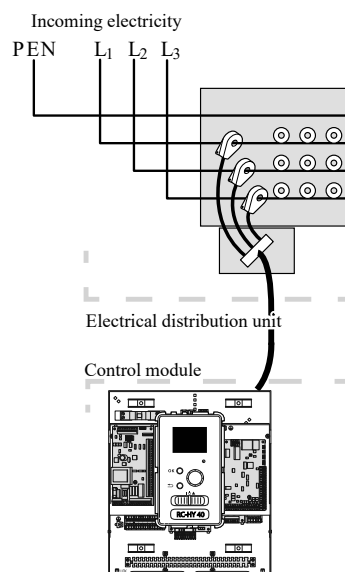
• Room sensor BT50

Refer to Room sensor BT50 for RC-HY20-W for function and installation place.

Connect the room sensor to terminal block X6:3 and X6:4 on the input board (AA3).

If the sensor is to be used to change the room temperature in °C and/or to change/stabilise the room temperature, the sensor must be activated in menu 1.9.4.

If the room sensor is used in a room with underfloor heating, it should only have an indicatory function, not control of the room temperature.
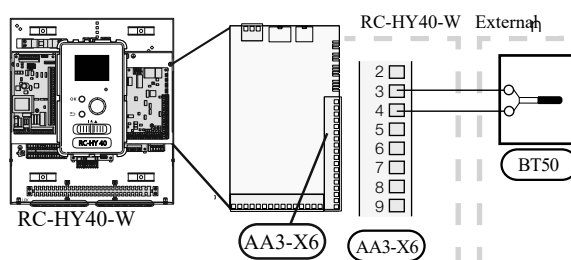
> ## CAUTION
>
> *Changes of temperature in accommodation take time. For example, short time periods in combination with underfloor heating will not give a noticeable difference in room temperature.*

- **Step controlled additional heat**
  Refer to the explanation for RC-HY20-W.

- **Relay output for emergency mode** Refer to the explanation for RC-HY20-W.

- **Emergency mode thermostat**
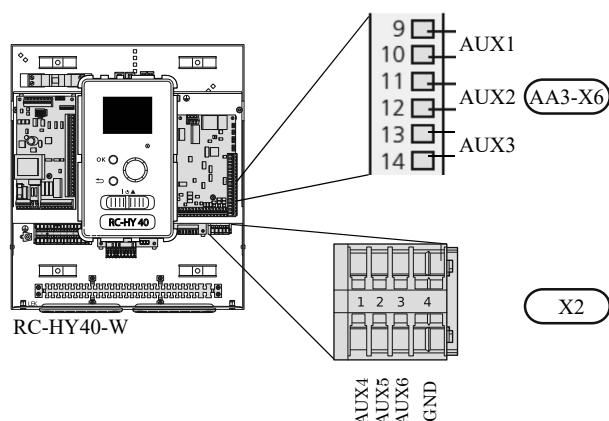 Refer to the explanation for RC-HY20-W.

- **External circulation pump**
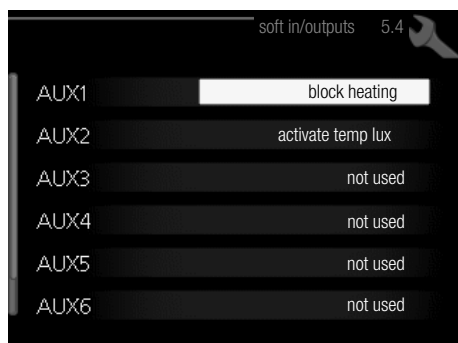 Refer to the explanation for RC-HY20-W.

• **AUX inputs**

Up to 6 other external inputs are available on RC-HY40-W.

AUX1 through 3 correspond to the port 9/10, 11/12, 13/14 respectively on X6 terminal on AA3 board. AUX4 through 6 correspond to the port 1, 2 and 3 on X2 terminal on RC-HY40. Port 4 on X2 terminal is GND and is common to AUX4 through 6. Connect a sensor or switch between AUX and GND with a 2 cores cable with a minimum cross section of 0.5mm^2.

RC-HY40-W

Select the appropriate function in menu 5.4.

soft in/outputs 5.4	
AUX1	block heating
AUX2	activate temp lux
AUX3	not used
AUX4	not used
AUX5	not used
AUX6	not used

■ Temperature sensor, external supply at additional heat before reversing valve (BT63)
Temperature sensor BT63 is applied in case additional heater is placed before 3-way valve (see page 287 for diagram)

The following functions are available. For details, see AUX inputs for RC-HY20-W.

■ Temperature sensor, cooling/heating (BT74)

■ Temperature sensor, external return line (BT71)

■ Temperature sensor, flow line cooling (BT64)

■ Contact for external tariff blocking

■ Switch for "SG ready"

■Contact for activation of "temporary lux"

■Contact for activation of "external adjustment"

■Switch for external alarm

■Switch for external blocking

• **AUX outputs**

External output is available on the port NC, NO and C on X7 terminal on AA3 board on RC-HY40-W. The relay output can have a max load of 2A at resistive load.

Following functions are available. Select the function in menu 5.4.

• Indication of buzzer alarm

When an alarm occurs, the circuit becomes closed between the port NO and C. During normal operation, the port NC and C is closed.

• Cooling mode indication / Active cooling mode (4-pipe cooling)

When the system turns into cooling mode, the circuit becomes closed between the port NO and C. By using this signal, it is possible to switch 3-way valve for 4-pipe cooling or to assemble a display circuit indicating cooling mode. For details of connecting the 3-way valve, refer to pages 98 and 99.

• External pump control (GP10)

External pump (GP10) is used in case additional heater is placed after 3-way valve that switches heating/hot water (refer to page 288 for diagram).

Connect the circulation pump using the port NO and C on X7 terminal on AA3 board as shown below.
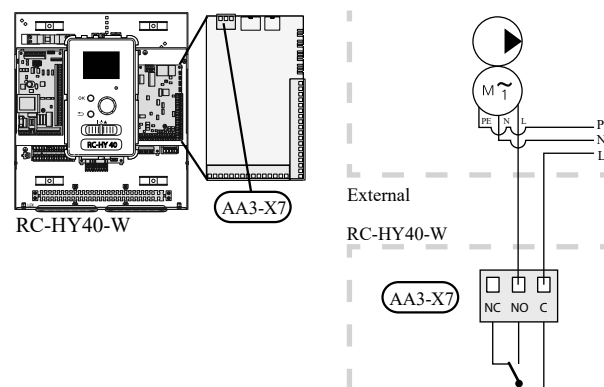
RC-HY40-W

• Hot water circulation pump control (GP11)

In case the distance between hot water tap and hot water storage tank is far, the hot water supply line temperature is likely to drop and it may take time to supply hot water from the tap. In that case, hot water circulation pump (GP11) is applied to maintain hot water supply line temperature warm (refer to pages 86, 87 for diagram).
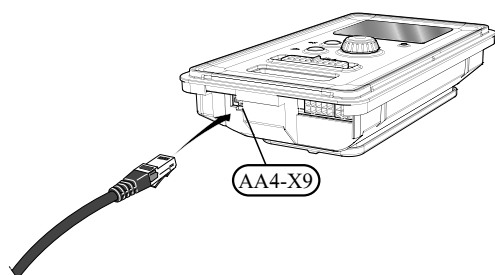
For details of connecting the pump, refer to External pump control (GP10).

NOTE

Mark up any junction boxes with warnings for external voltage.

• **myUpway™**

Connect the network connected cable (straight, Cat.5e UTP) with RJ45-contact (male) to contact AA4-X9 on the display unit (as illustrated). Use the cable grommet (UB2) in the control module for cable routing.

(AA4-X9)

HMA-S series

Circuit breaker

The automatic heating control system, circulation pump and their wiring in the HMA-S series are internally protected by an overcurrent switch (FA1).

The outdoor module and accessories are internally protected in the HMA-S series by an overcurrent breaker (F1).

Recommended fuse size

The recommended fuse size shown in the following table is reference value. Choose appropriate size according to local laws and regulations.

|			Fuse size
Indoor unit	HMA-S	60	50A for single-phase/
		100	25A for three-phase

Recommended cable size

The recommended fuse size shown in the following table is reference value. Choose appropriate size according to local laws and regulations.

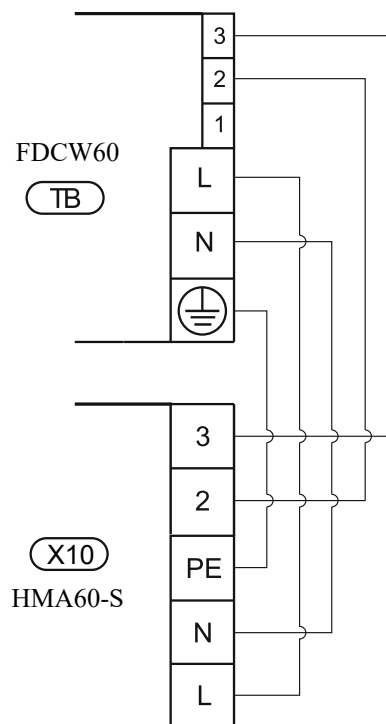|	Cable size
Power - HMA60-S	6 cores, 10mm^2 (power/communication cable)
Power - HMA100-S	6 cores, 10mm^2 (power/communication cable)
HMA60-S - FDCW60	5 cores, 2.5mm^2 (power/communication cable)
HMA100-S - FDCW71	
HMA100-S - FDCW100	

Power source

In case of HMA-S, the power source is to be connected to clamp (X0) via the input at the back of the unit. The cable must be dimensioned according to the applicable standards. HMA-S can be connected to the power source 230V single phase and 400V three phase as specified on the clamp (X0). A removable connection which is included with the unit must be connected between L1 and L2, when power source is 230V single phase.
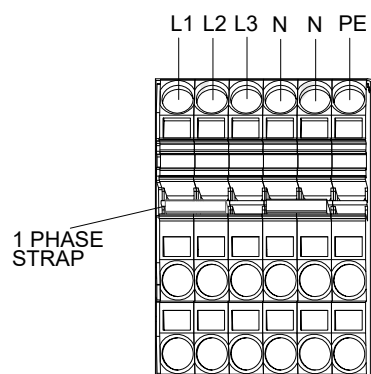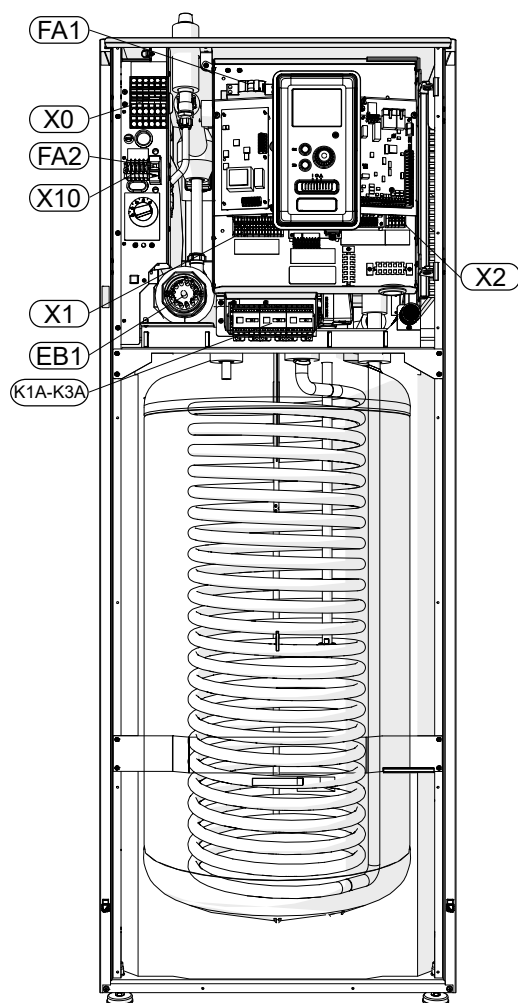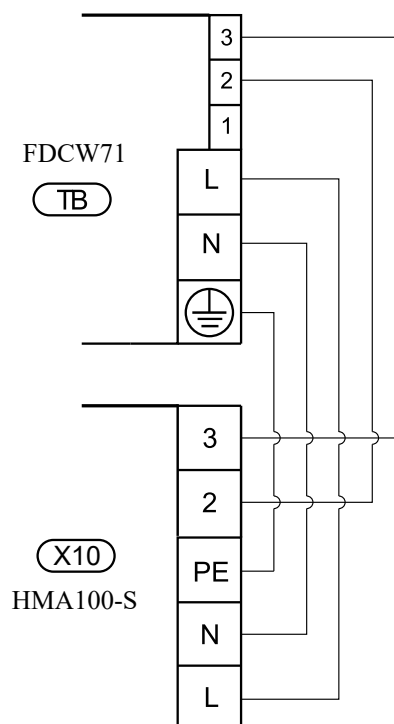

Connection between indoor and outdoor unit

For interconnection cable between indoor unit and outdoor unit, connect 2, 3, L, N and PE port for outdoor unit on X10 terminal on HMA-S to 2, 3, L, N, and ⏚ port on outdoor unit respectively according to the below figure.

<HMA60-S with FDCW60VNX>

<HMA100-S with FDCW71VNX>

<HMA100-S with FDCW100VNX>

FDCW100

TB

| 3 |
| 2 |
| 1 |
| N |
| L |
| ⏚ |

X10

HMA100-S
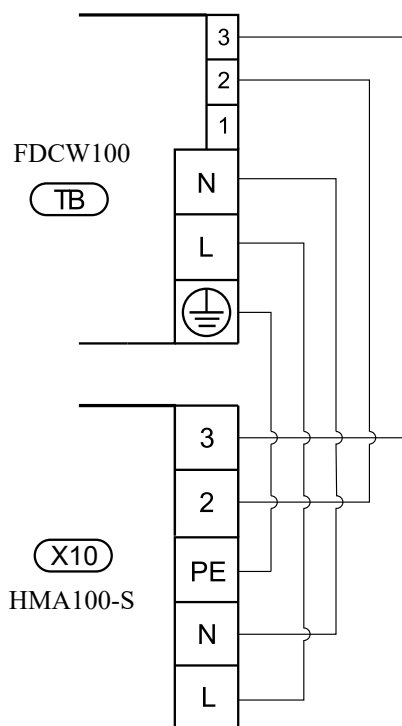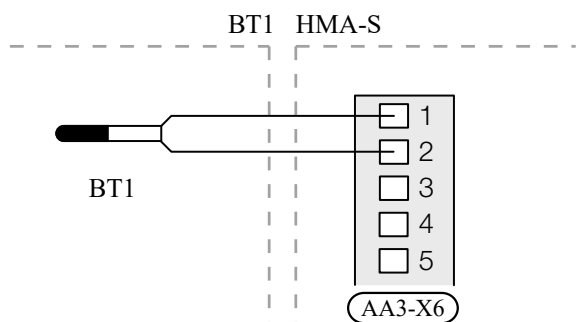
| 3 |
| 2 |
| PE |
| N |
| L |

External temperature sensor

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

BT1   HMA-S

BT1

| 1 |
| 2 |
| 3 |
| 4 |
| 5 |

AA3-X6

Commissioning and adjusting

Preparations

Before starting commissioning, check the followings;

- The signal cable is connected between indoor unit and outdoor unit as well as indoor unit and controller according to the instruction.
- The power cable is connected to indoor unit, outdoor unit and controller according to the instruction.
- Operation switch in controller is in the position ⏻.
- The service valves on outdoor unit (QM35 and QM36) are open.
- Drain valve is closed before filling water in the system.
- Temperature limiter and electrical switch are not tripped.
- The system is filled with water and well vented.
- There are no leaks on the water pipe.

Filling and venting

Hot water tank

1. Open the hot water tap as well as venting valve if applicable, and then open the cold water cut-off valve at the inlet.
2. Fill the storage tank until obtaining uniform water outflow at the hot water tap, and then close the hot water tap and venting valve.
3. Fill the water heater coil in the tank. See Climate system for details.

After the installation and levelling the tank, follow the procedure below (for the connector pipe symbols, refer to page 31):

1. Remove protecting plugs from the connector pipes
2. Connect the hot water intake line (N).
3. Connect the cold water supply line together with the required safety valves (G).
4. If the system has the hot water circulati on system, connect it to the connector pipe (L). Otherwise, plug the pipe.
5. Connect the supply (J) and return (H) of the heating medium to the coil.

> ### CAUTION
> *If there is an electric heating module installed in the storage tank, fill the tank with water before connecting it to the electrical installation.*

> ### CAUTION
> *Open the hot water intake valves before heating the system up for the first time or after a longer break in its operation in order to check whether the storage tank is filled with water and the cut-off valve at the cold water inlet is not closed.*

Climate system

1. Open the vent at the top of the heating system.
2. Open all shut-off valves, where installed, so that water flows into all circuits.
3. Open the valve for filling the heating circuit and fill it with water.
4. Close the vent when water comes out continuously without bubbles.
5. Check the manometer and close the filling valve when the pressure reaches the required value (2bar is recommended).
6. Start the circulation pump of the heating system, and open the vent from time to time and release the all remaining air in the heating system.
7. Open safety valve until the pressure of the heating system drops down to about 1bar. If the pressure drops below 1 bar during venting, add additional water in the circuit.

Inspection of installation

Current regulations require that the climate system is inspected before it is commissioned. The inspection must be carried out by a suitably qualifi ed person and must be documented. Do not replace any part of the system without carrying out new checks.

Start-up and inspection

Before start-up

1. In case of cascade connection, check if each indoor unit has a unique address. See Cascade connection setting on page 97 for details.

2. For an outdoor unit equipped with a crank case heater, it is necessary to supply power 6-8 hours before starting compressor operation to heat the compressor with the heater. To do this, supply power to whole system and disable the compressor operation from menu 5.2.2 on the controller. Disable additional heater as well if necessary.

3. After 6-8 hours, enable the compressor operation in menu 5.2.2 on the controller and enable the additional heater in menu 4.9.2 and 4.9.3 on the controller.

4. Start commissioning by the following steps.

*Step 2 and 3 are not necessary for FDCW60VNX-A.

Commissioning with heat pump

Start guide is shown on the display on the controller when it is turned ON for the first time. Follow the start guide in the display, or choose menu 5.7 to show the start guide. For details, see Start guide on page 113.

Commissioning with additional heater only

Follow the start guide in the display as same as commissioning with heat pump, and then follow the list below.

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 MTH air/water heat pump an alarm communication error may appear in the display.

The alarm is reset if the relevant heat pump is deactivated in menu 5.2.2 ("installed heat pump").

3-way valve operation check

1. Activate "AA2-K1 (QN10)" in menu 5.6.

2. Check that the reversing valve opens or is open for hot water charging.

3. Deactivate "AA2-K1 (QN10)" in menu 5.6.

AUX function check

To check any function connected to the AUX socket,

1. Activate "AA2-X4 (RC-HY20-W)" or "AA3-X7 (RC-HY40-W/HMA-S)" in menu 5.6.

2. Check the desired function.

3. Deactivate "AA2-X4 (RC-HY20-W)" or "AA3-X7 (RC-HY40-W/HMA-S)" in menu 5.6.

Cooling mode

In case the climate system contains a cooling circuit, activate cooling function in menu 5.11.1.1. After that, you can choose cooling mode indication in menu 5.4 for the AUX output.

Cleaning particle filter

Clean the particle filter (HQ1) after installation.

1. Close valve QM31 and the valve by the particle filter (HQ1).

2. Open the safety valve (QM20) to ensure that the pressure in HSB series drops.

3. Clean the particle filter (HQ1) as illustrated.
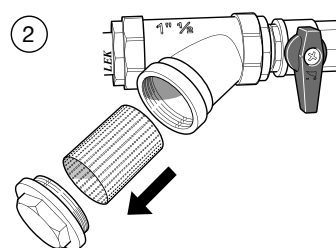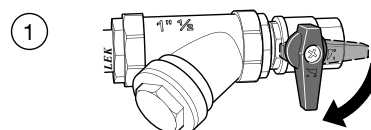
Secondary adjustment

Air is initially released from the hot water and venting may be necessary. If bubbling sounds can be heard from the heat pump, the circulation pump and radiators the entire system will require further venting. When the system is stable (correct pressure and all air eliminated) the automatic heating control system can be set as required.

Start guide

┌─ **NOTE** ─────────────────

Fill in the climate system with water before the switch is set to "❙"

└─────────────────────────

1. Set the control module's switch to "❙".

2. Follow the instructions in the start guide in the control module display. If the start guide does not start when you start the control module, start it manually in menu 5.7.

┌─ **TIP** ──────────────────

See "control" for a more in-depth introduction to the installation's control system (operation, menus etc.).

└─────────────────────────

Commissioning

The start guide is displayed when installation is started, It describes what needs to carry out at the first start together with basic settings during installation.

The start guide is displayed so that it cannot be bypassed in order to carry out the start-up correctly. You can start the start guide later in menu 5.7.
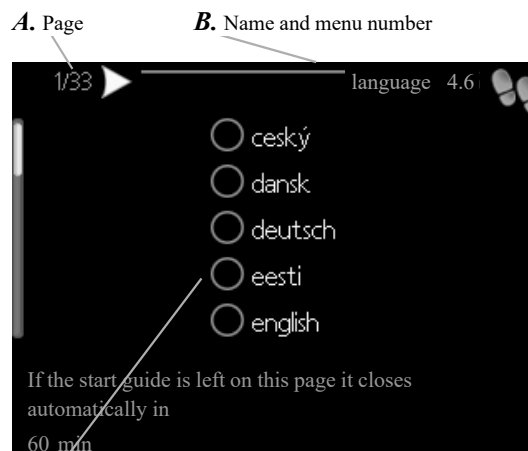
During the start-up guide, reversing valves and the shunt are run back and forth to help vent the heat pump.

┌─ **CAUTION** ──────────────

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

Each time the controller is ON, the guide will appear until it is completed on the last page.

└─────────────────────────

Operation in the start guide

A. Page   *B.* Name and menu number

C. Option / setting

A. Page

You can see the current page of the start guide.

Scroll between the pages of the start guide as follows:

1. Turn the control knob until the arrow is marked in the top left corner (at the page number).

2. Press OK button to proceed to the next page in the start guide.

B. Name and menu number

You can see the menu name of this page. The number refers to the menu number in the control system.

To read more about affected menus, see the help menu or read the user manual.

C. Option / setting

Make settings for the system here.

D. Help menu

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

To access the help text:

1. Use the control knob to select the help symbol.

2. Press OK button.

The help text often consists of several windows that you can scroll between using the control knob.
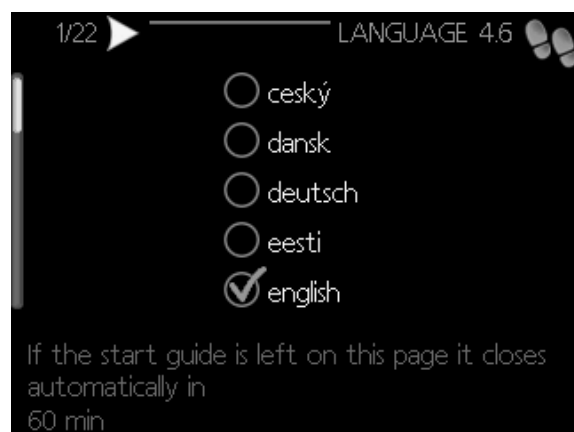
Start guide – RC-HY20-W

This menu is shown at the first time that the heat pump is started.

It ensures that commissioning is carried out correctly and all necessary steps are followed.

It can be started later in service menu 5.7

The following menus are basic settings. If accessories are connected other menus will appear.

1/17 - Language



Select language of the controller.

Factory setting: English

Available languages: Czech, Danish, German, Estonian, English, Spanish, French, Croatian, Icelandic, Italian, Latvian, Lithuanian, Hungarian, Dutch, Norwegian, Polish, Romanian, Russian, Slovenian , Finnish, Swedish, Turkish.

2/17 - Information

This menus displays information about the start guide.

3/17 - Flow set. Climate sys.
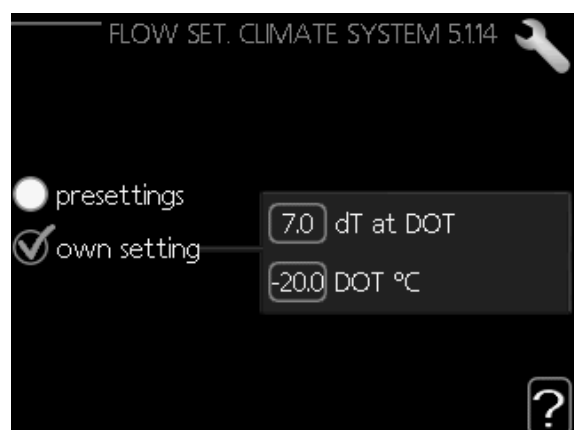
The type of heating distribution system the heating medium pump works towards is set here.

Factory setting: Presettings –

Radiator **Setting range:**

- **Presettings**
  - Radiator
  - Floor heating
  - Rad. + fl oor heat,
  - DOT °C
- **Own setting**
  - Setting range dt at DOT: 0.0 – 25.0
  - Setting range DOT: -40.0 – 20.0°C

Where dT at DOT is the difference in degrees between flow and return temperature at dimensioned outdoor temperature.
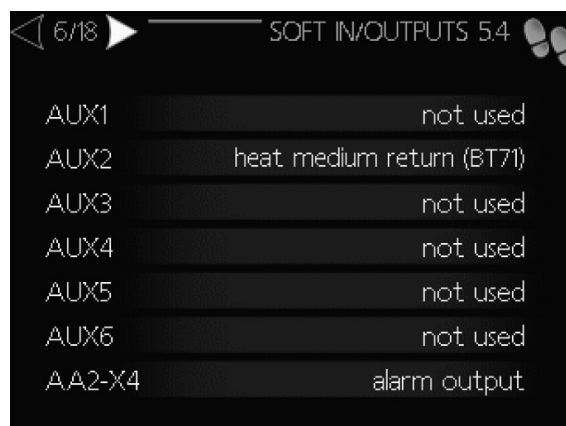
4/17 - Accessories

In this menu it is possible to activate additional connected accessories.

Setting range: hot water prod, photovoltaic control (EME20)

5/17 - Soft in/outputs

Set the function of in/output for each terminal (if in/outputs connected)
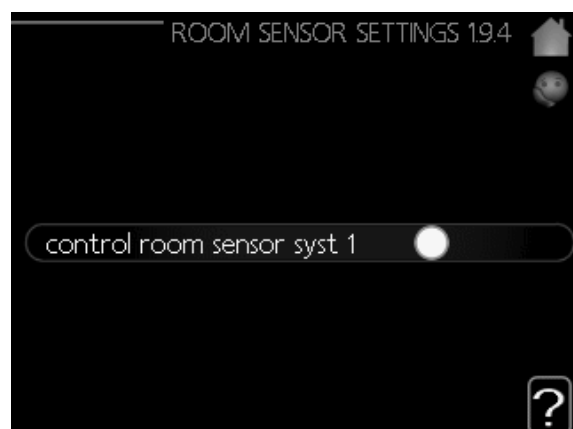
Setting range:

  -Aux 1-6:

    • Temperature sensor, cooling/heating (BT74)

    • Temperature sensor, external return line (BT71)

    • Temperature sensor, flow line cooling (BT64)

    • Contact for external tariff blocking

    • Switch for "SG ready"

    • Contact for activation of "external adjustment"

    • Switch for external alarm

    • Switch for external blocking

  -AA2-X4:

    • Alarm output

    • Cooling mode indication

    • Active cooling (4-pipe)

    • External heating medium pump (GP10)

    • Hot water circulation (GP11)

6/17 - Room sensor settings

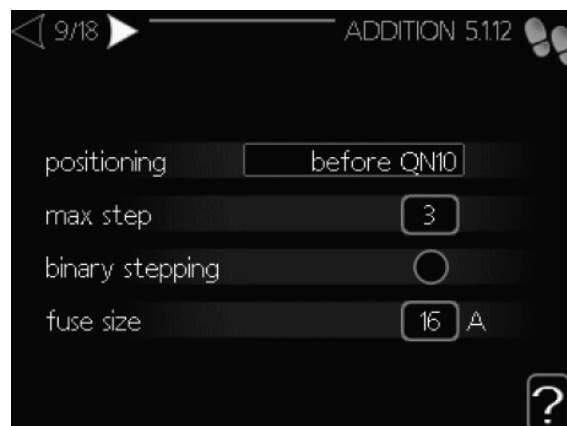Activate and set the room temperature sensor BT50 (if connected)

7/17 - Start guide

Check if values of installed sensors are within their permitted values.

8/17 - Addition

Set addition settings here.

Factory setting:

  -Positioning: Before QN10

  -Max. step: 3

  -Fuse size: 16A

Setting range:

  -Positioning:

    • Before QN10

    • After QN10

Select this position according to the position of addition (if installed)

  -Max step:

    • Binary stepping deactivated: 0-3

    • Binary stepping activated: 0-7

  -Fuse size:

    • 1 – 200 A

9/17 - Installed heat pump

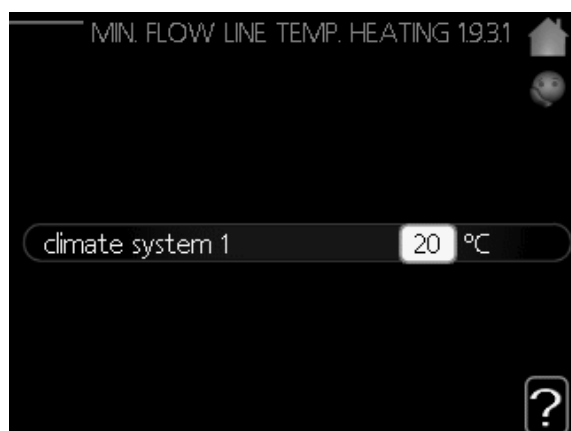Enable heat pump (EB101) here

10/17 - Time & Date

Set time, date and time zone here.

If the system is connected to myUpway time and date are set automatically.

11/17 - Min. flow line temperature

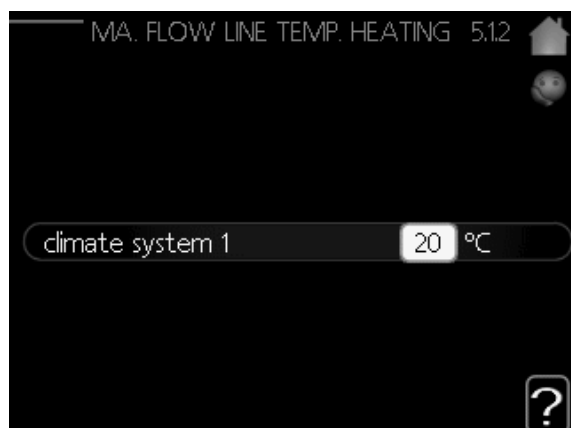Set minimum flow line temperature of climate system.

Factory setting: 20°C

Setting range: 5° − 70°C

12/17 - Max flow line temperature

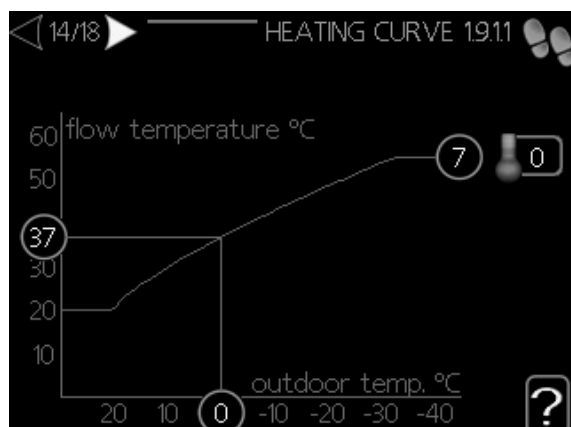Set maximum flow line temperature of climate system.

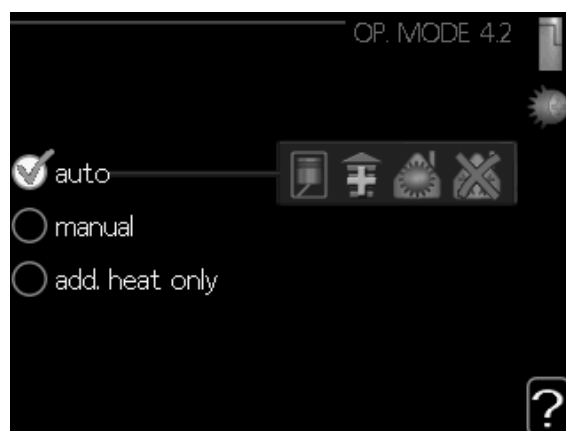**Factory setting:** 60°C

Setting range: 5° − 70°C

13/17 - Heating curve

View and set (if desired) heating curve.

14/17 - Op. mode

Set operating mode of the heat pump.

Factory setting: Auto

Setting range:
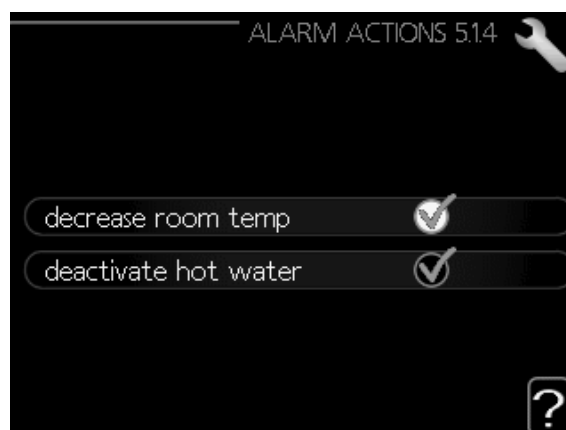
- **Auto**

- **Manual:**

  • Heating

  • Cooling

  • Add. Heat only

- **Add. heat only**

  • Heating

15/17 - Alarm actions

Set how to control the heat pump in an event of an alarm.

16/17 - Start guide

Information message from controller

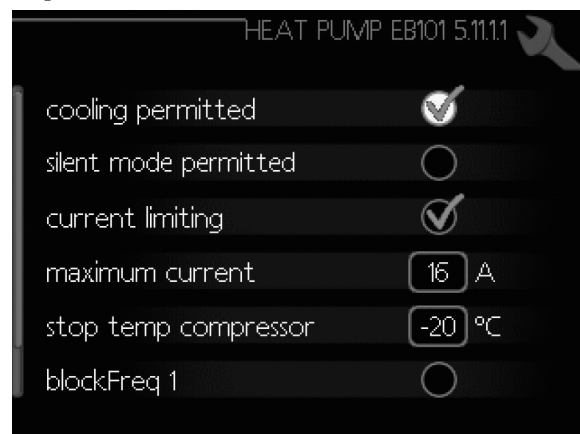### 17/17 - Start guide

Start guides finishes here.

You can select to open it again on the next start up or do not open it anymore.

Additional configuration: cooling function
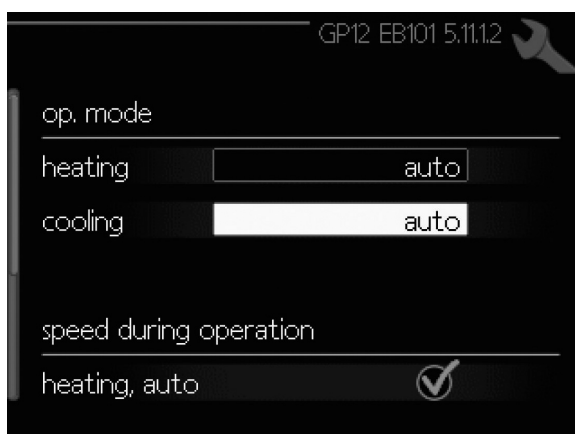
Enable cooling

Set cooling permitted on menu 5.11.1

If you are using a 4-pipe system you have to enable to it on output AA3-X7 and also enable sensor BT64.

Service menu: 5.11.1.1
Cooling permitted: YES

Service menu: 5.11.1.2
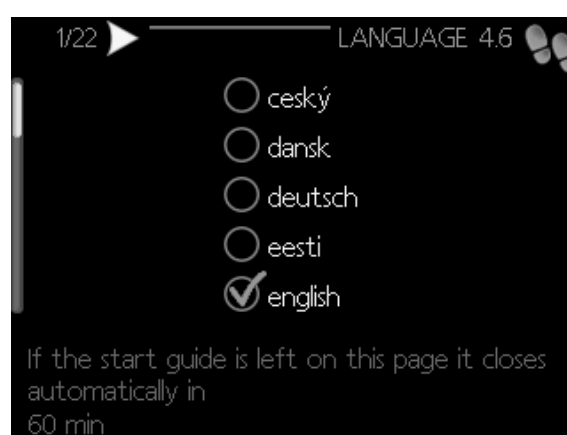Operating mode GP12 cooling: auto

Start guide – RC-HY 40-W

This menu is shown at the first time that the heat pump is started.

It ensures that commissioning is carried out correctly and all necessary steps are followed.

It can be started later in service menu 5.7

The following menus are basic settings. If accessories are connected other menus will appear.

### 1/18 - Language

Select language of the controller.

Factory setting: English

Available languages: Czech, Danish, German, Estonian, English, Spanish, French, Croatian, Icelandic, Italian, Latvian, Lithuanian, Hungarian, Dutch, Norwegian, Polish, Romanian, Russian, Slovenian , Finnish, Swedish, Turkish.

2/18 - Information

This menu displays information about the start guide.

3/18 - Flow set. Climate sys.
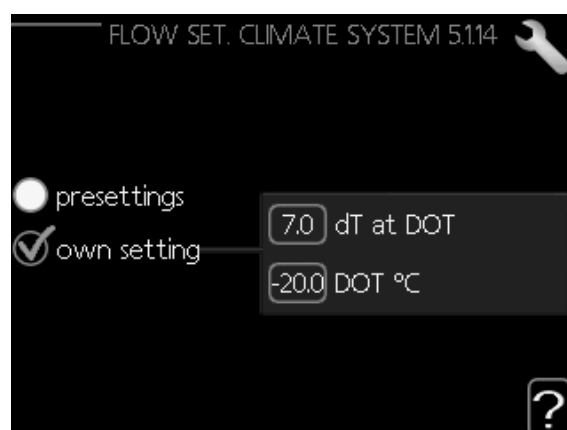
The type of heating distribution system the heating medium pump works towards is set here.

Factory setting: Presettings – Radiator

Setting range:

- **Presettings**
  - Radiator
  - Floor heating
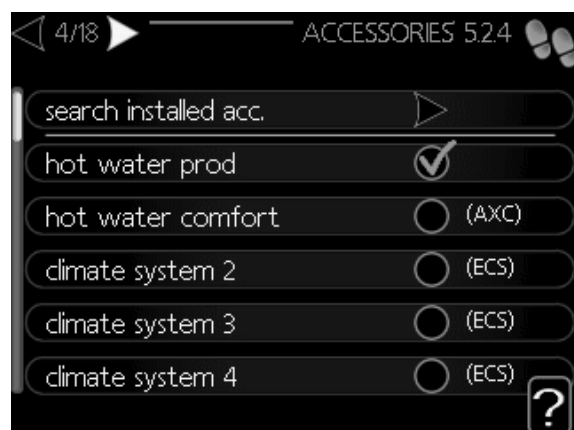 - Rad. + floor heat,
  - DOT °C
- **Own setting**
  - Setting range dt at DOT: 0.0 – 25.0
  - Setting range DOT: -40.0 – 20.0°C

Where dT at DOT is the difference in degrees between flow and return temperature at dimensioned outdoor temperature.
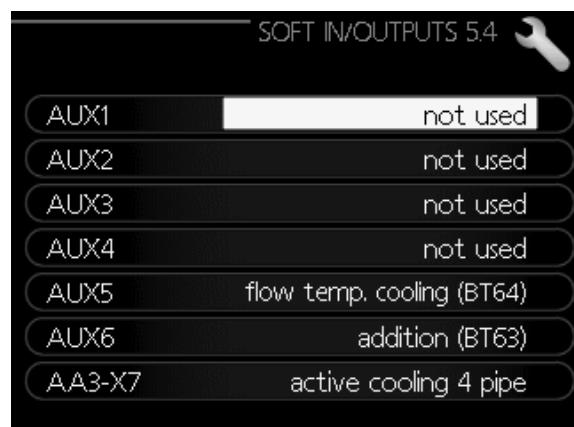
4/18 - Accessories

In this menu it is possible search and activate additional connected accessories.

5/18 - Soft in/outputs

Set the function of in/output for each terminal (if in/outputs connected).

Setting range:

- **Aux 1-6:**
  - Temperature sensor, cooling/heating (BT74)
  - Temperature sensor, external return line (BT71)
  - Temperature sensor, flow line cooling (BT64)
  - Contact for external tariff blocking
  - Switch for "SG ready"
  - Contact for activation of "external adjustment"
  - Switch for external alarm
  - Switch for external blocking
- **AA3-X7:**
  - Alarm output
  - Cooling mode indication
  - Active cooling (4-pipe)
  - External heating medium pump (GP10)
  - Hot water circulation (GP11)

6/18 - Room sensor settings

Activate and set the room temperature sensor BT50 (if connected) for each climate system.
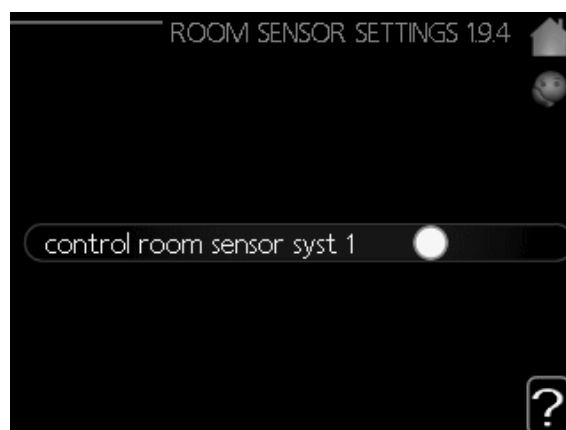
7/18 - Start guide

Check if values of installed sensors are within their permitted values.

8/18 - Addition

Set addition settings here.

Factory setting:

- **Add. type:** Step controlled
- **Positioning:** Before QN10
- **Max. step:** 3
- **Fuse size:** 16A
- **Transformation ratio:** 300

Setting range:

- **Add. type:**
  • Step controlled
  • Shunt controlled

Select this position according to the position of addition (if installed).

If shunt controlled additional heat please refer to menu 5.1.12.

- **Positioning:**
  • Before QN10
  • After QN10

Select this position according to the position of addition (if installed).

- **Max step:**
  • Binary stepping deactivated: 0 – 3
  • Binary stepping activated: 0 – 7
- **Fuse size:**
  • 1 – 200 A
- **Transformation ratio:**
  • 300 – 3000

9/18 - Installed slaves

Search for installed slaves and enabled them (if connected) here.

If everything is correct the units are automatically selected after searching for installed slaves.

10/18 – Docking

Set how each slave will work regarding piping (heating, heating and DHW…).
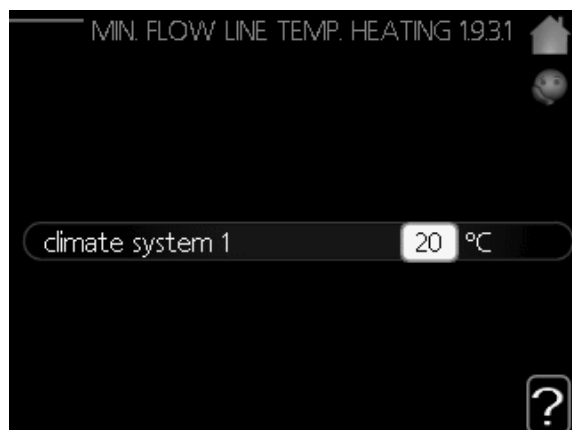

11/18 - Time & Date

Set time, date and time zone here.

If the system is connected to myUpway time and date are set automatically.

12/18 - Min. flow line temperature

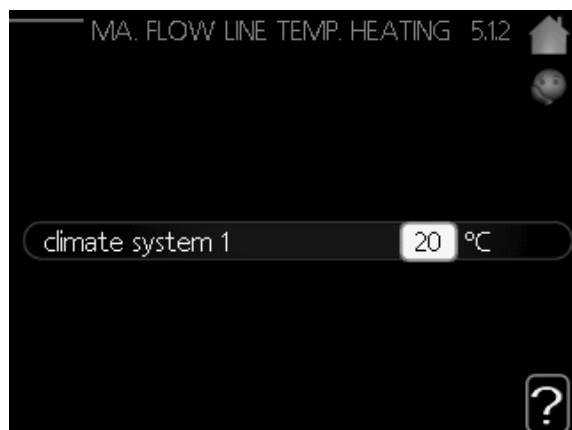Set minimum flow line temperature of each climate system.

Factory setting: 20°C

Setting range: 5° – 70°C

13/18 - Max flow line temperature
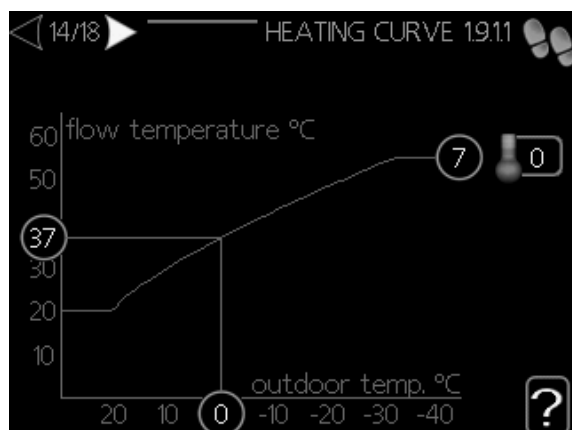
Set maximum flow line temperature of each climate system.

Factory setting: 60°C

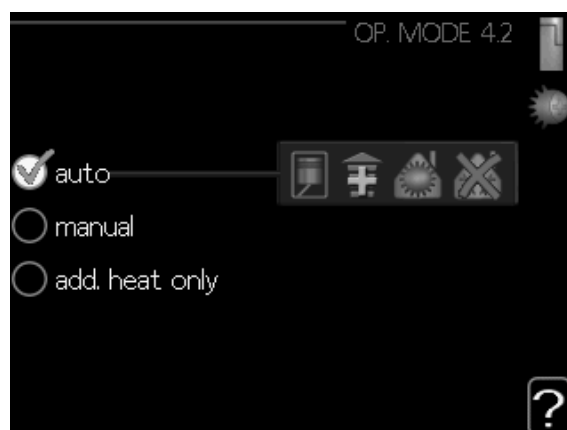**Setting range:** 5° – 70°C

14/18 - Heating curve

View and set (if desired) heating curve of each climate system.

15/18 - Op. mode

Set operating mode of the heat pump.

Factory setting: Auto

Setting range:

  -**Auto**

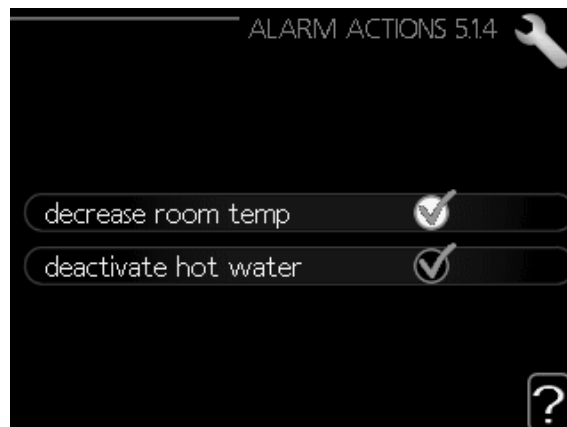 -**Manual:**

  • Heating

  • Cooling

  • Add. Heat only

  -**Add. heat only**

  • Heating

16/18 - Alarm actions

Set how to control the heat pump in an event of an alarm.

17/18 - Start guide

Information message from controller

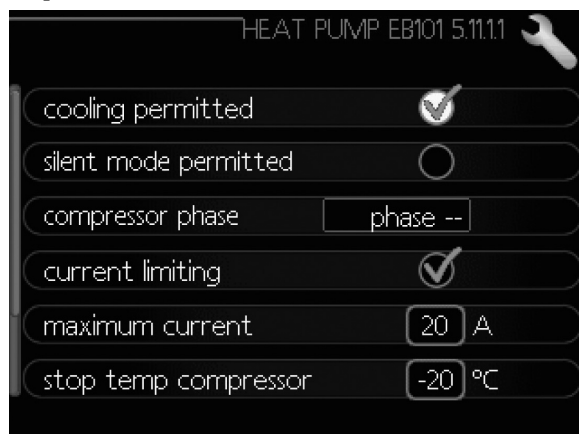### 18/18 - Start guide

Start guides finishes here.

You can select to open it again on the next start up or do not open it anymore.

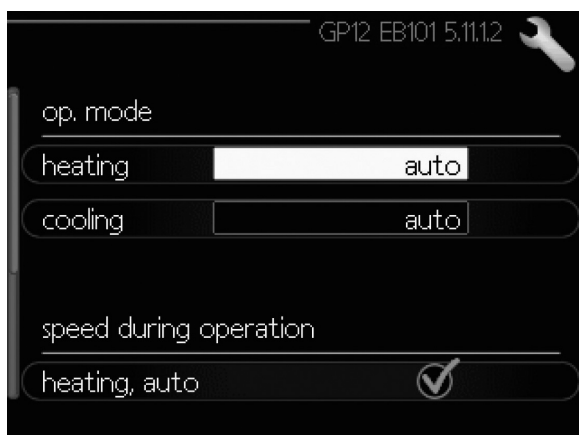## Additional configuration: cooling function

Enable cooling

Set cooling permitted for each slave on menu 5.11.1.x

If you are using a 4-pipe system you have to enable to it on output AA3-X7 and also enable sensor BT64.

Service menu: 5.11.1.1
Cooling permitted: YES

Service menu: 5.11.1.2
Operating mode GP12
Heating, auto: YES
Hot water, auto: YES
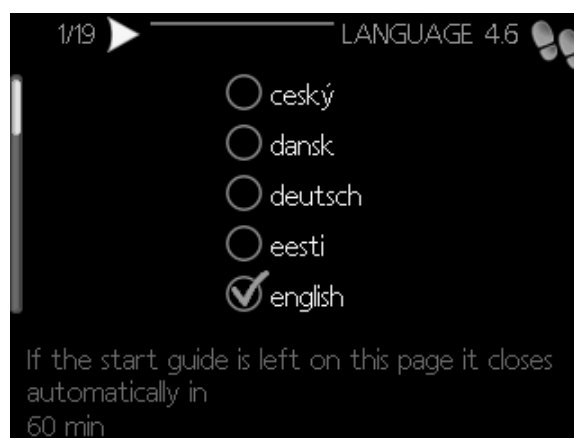
Start guide HMA60/100-S

This menu is shown at the first time that the heat pump is started.

It ensures that commissioning is carried out correctly and all necessary steps are followed.

It can be started later in service menu 5.7

The following menus are basic settings. If accessories are connected other menus will appear.

1/19 - Language

Select language of the controller.

Factory setting: English

Available languages: Czech, Danish, German, Estonian, English, Spanish, French, Croatian, Icelandic, Italian, Latvian, Lithuanian, Hungarian, Dutch, Norwegian, Polish, Romanian, Russian, Slovenian , Finnish, Swedish, Turkish.

2/19 - Information

This menu displays information about the start guide.

3/19 - Flow set. Climate sys.
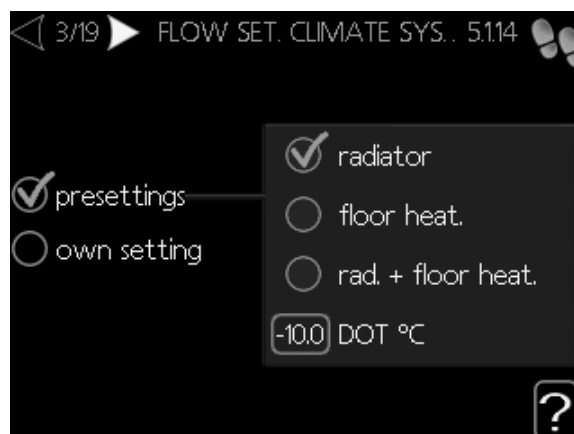
The type of heating distribution system the heating medium pump works towards is set here.

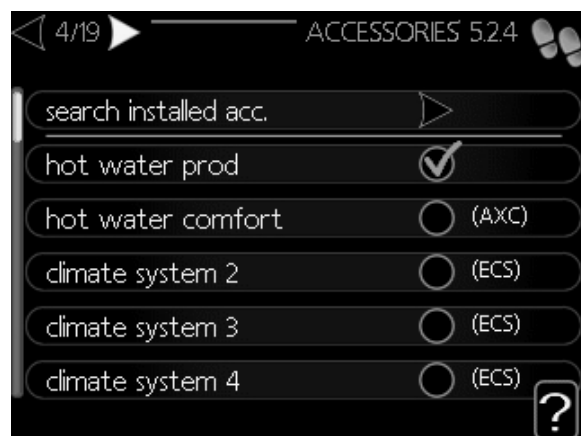**Factory setting:** Presettings – Radiator

Setting range:

   -**Presettings**

       • Radiator

       • Floor heating

       • Rad. + floor heat,

       • DOT °C

Own setting

       • Setting range dt at DOT: 0.0 – 25.0

       • Setting range DOT: -40.0 – 20.0°C

4/19 - Accessories

In this menu it is possible search and activate additional connected accessories.

From factory "hot water prod" is enabled and cannot be disabled

5/19 - Soft in/outputs

Set the function of in/output for each terminal (if in/outputs connected).

Setting range:

   -**Aux 1-6:**

       • Temperature sensor, cooling/heating (BT74)

       • Temperature sensor, external return line (BT71)

       • Temperature sensor, flow line cooling (BT64)

       • Contact for external tariff blocking

       • Switch for "SG ready"

       • Contact for activation of "external adjustment"

       • Switch for external alarm
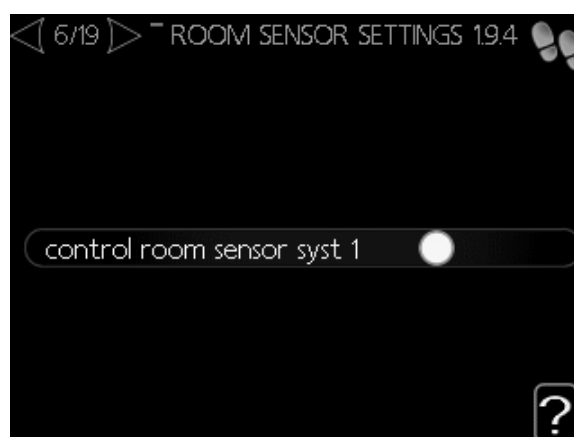
       • Switch for external blocking

   -**AA3-X7:**

       • Alarm output

       • Cooling mode indication

       • Active cooling (4-pipe)

       • External heating medium pump (GP10)

       • Hot water circulation (GP11)

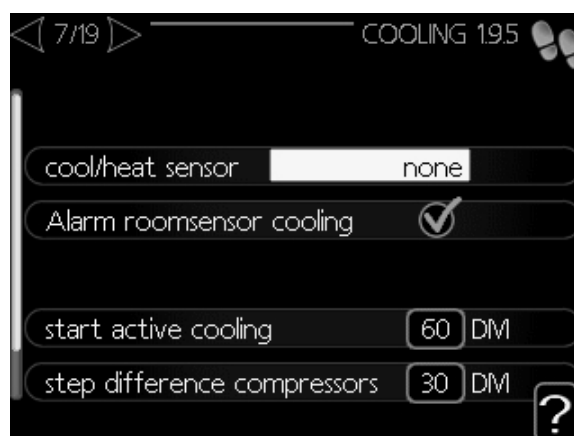**Note:** From factory BT64, BT63 and 4-pipe active cooling come enabled.

6/19 - Room sensor settings

Activate and set the room temperature sensor BT50 (if connected) for each climate system.

7/19 – Cooling settings

In this menu it is possible to change settings for cooling system.

8/19 - Start guide

Check if values of installed sensors are within their permitted values.

9/19 - Addition

Set addition settings here

Factory setting:

  - **Add. type:** Step controlled

  - **Positioning:** Before QN10

  - **Max. step:** 3

  - **Fuse size:** 16A

  - **Transformation ratio:** 300

Setting range:

  - **Add. type:**

    • Step controlled

  - **Positioning:**

    • Before QN10

  - **Max step:**

    • Binary stepping deactivated: 0-3

    • Binary stepping activated: 0-7

  - **Fuse size:**

    • 1 – 200 A

  - **Transformation ratio:**

    • 300-3000

Note: Additional heat type is always locked as "Step controlled" and positioning as "Before QN10".

10/19 - Installed slaves

Search for installed slaves and enabled them (if connected) here.

If everything is correct the units are automatically selected after searching for installed slaves.

11/19 – Docking

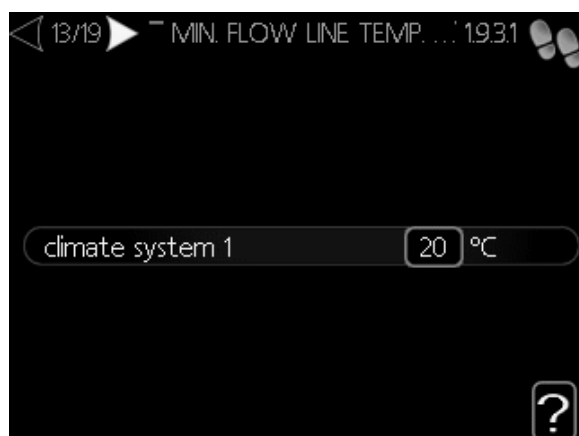Set how each slave will work regarding piping (heating, cooling and DHW…)

12/19 - Time & Date

Set time, date and time zone here.

If the system is connected to myUpway time and date are set automatically.

13/19 - Min. flow line temperature

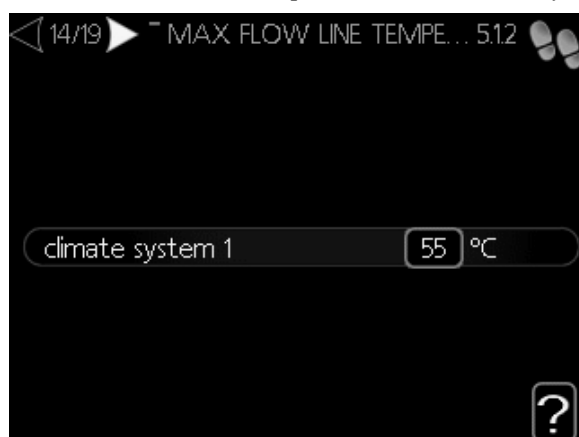Set minimum flow line temperature of each climate system.

Factory setting: 20°C
Setting range: 5°-70°C

14/19 - Max flow line temperature

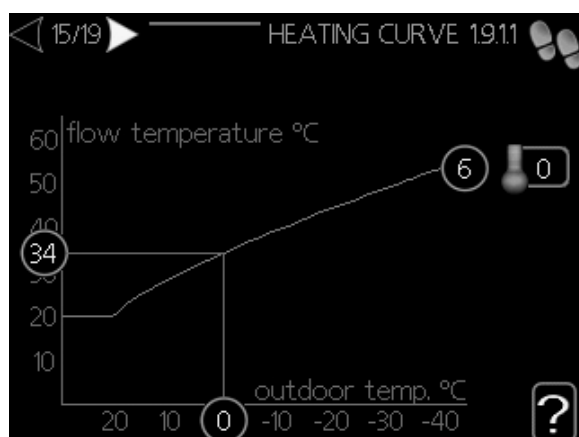Set maximum flow line temperature of each climate system.

Factory setting: 55°C
Setting range: 5°-70°C

15/19 - Heating curve

View and set (if desired) heating curve of each climate system.

16/19 - Op. mode

Set operating mode of the heat pump.
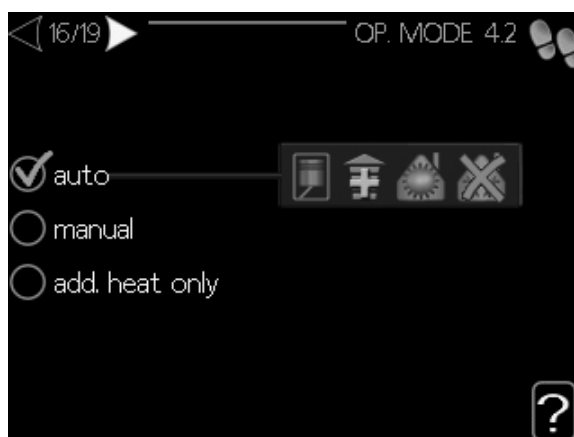
Factory setting: Auto
Setting range:
- **Auto**
- **Manual:**
  - Heating
  - Cooling
  - Add. Heat only
- **Add. heat only**
  - Heating

17/19 - Alarm actions

Set how to control the heat pump in an event of an alarm.

18/19 - Start guide

Information message from controller

19/19 - Start guide

Start guides finishes here.

You can select to open it again on the next start up or do not open it anymore.

Heating/cooling curve setting

heating curve

Setting range: 0 – 15
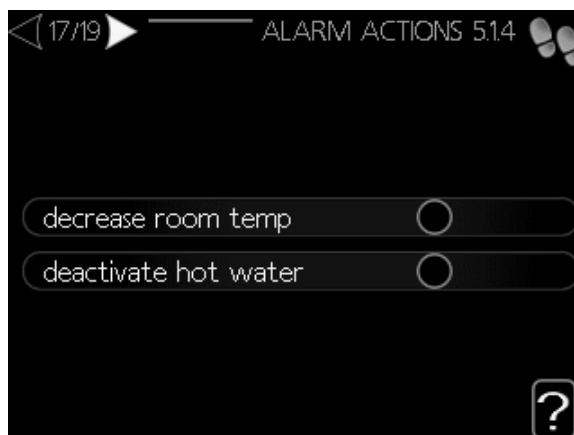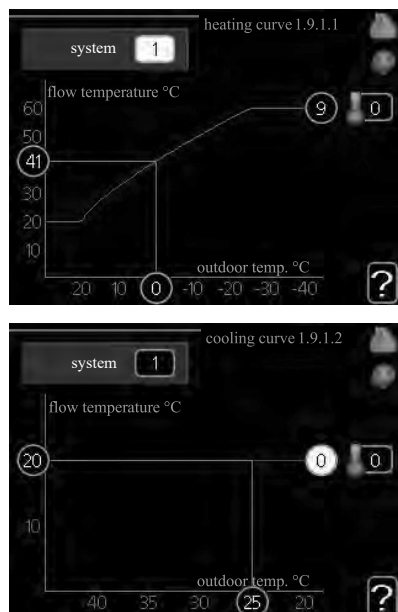
Default value: 9

### *cooling curve (accessory required)*

Setting range: 0 – 9

Default value: 0

The prescribed heating curve for your house can be viewed in the menu heating curve . The task of the heating curve is to give an even indoor temperature, regardless of the outdoor temperature, and thereby energy efficient operation. From this heating curve, the control module determines the temperature of the water to the heating system, supply temperature, and there by the indoor temperature. Select the heating curve and read off how the supply temperature changes at different outdoor temperatures here. If there is cooling function, the same settings can be made for the cooling curve.

Curve coefficient

The heating/cooling curve shows the relation between the target supply temperature and the corresponding outdoor temperature. A steep curve indicates that supply temperature becomes higher at low outdoor air temperature in heating and it becomes lower at high outdoor air temperature in cooling.
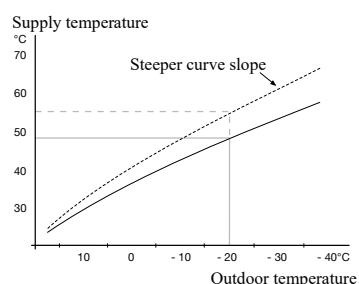
The optimum slope depends on the climate conditions in your location, the type of heating device (radiators or under floor heating) and how well insulated the house is.

The curve is set when the heating installation is installed, but may need adjusting later. Normally, the curve will not need further adjustment.
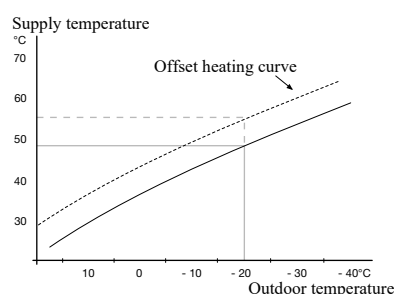
> **CAUTION**
>
> *In the event of making fine adjustments of the indoor temperature, the curve must be offset up or down instead, this is done in menu 1.1 temperature .*

Curve offset

The target temperature can be offset in parallel over the entire outdoor temperature range by this function. This is offset by 5 °C by adjusting 2 steps.

The target temperature can be parallel offset in the entire outdoor temperature range with this function. It is offset by 5 °C by adjusting 2 steps.

Flow line temperature – maximum and minimum values

This function is used in order to limit max-min supply temperature. The heating / cooling curve becomes flat beyond max / min target temperature.

> **CAUTION**
>
> *Underfloor heating systems are normally max flow line temperature set between 35 and 45°C. Take care not to cause low temperature burns in case it is set higher than 35°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.*
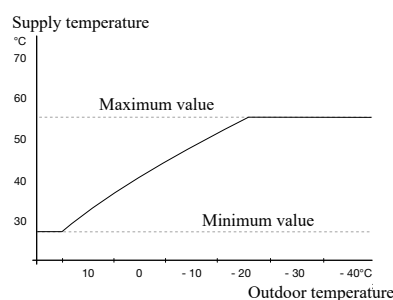
The figure at the end of the curve indicates the curve number. The figure beside the thermometer icon gives the curve offset. Use the control knob to set a new value.

Confirm the new setting by pressing the OK button.

Curve 0 is an own curve created in menu 1.9.7.

To select another curve (slope):

1. Press OK button to access the setting mode
2. Select a new curve. The curves are numbered from 0 to 15, and the bigger number curve has steeper slope.

   Curve 0 means that own curve (menu 1.9.7) is used.
3. Press OK button to exit the setting.

To read off a curve:

1. Turn the control knob so that the ring on the shaft with the outdoor temperature is marked.
2. Press OK button.
3. Follow the grey line up to the curve and out to the left to read off the value for the supply temperature at the selected outdoor temperature.
4. You can now select to take read outs for different outdoor temperatures by turning the control knob to the right or left and read off the corresponding flow temperature.
5. Press OK or Back button to exit read off mode.

> ## TIP
>
> *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.*

Hot water circulation setting

hot water recirc

operating time

Setting range: 1 – 60 min

Default value: 60 min

downtime

Setting range: 0 – 60 min

Default value: 0 min

Set the hot water circulation for up to three periods per day here. During the set periods the hot water circulation pump will run according to the settings above.

"operating time" decide how long the hot water circulation pump must run per operating instance.

"downtime" decide how long the hot water circulation pump must be stationary between operating instances.

Hot water circulation is activated in menu 5.4 "soft inputs and outputs".

SG Ready

This function can only be used in mains networks that support the "SG Ready"-standard .

Make settings for the function "SG Ready" here.

Low price mode means that the electricity supplier has a low tariff and the system uses this to reduce costs.

Over capacity mode means that the electricity supplier has set the tariff very low and the system uses this to reduce the costs as much as possible.

affect room temperature

Here you set whether room temperature should be affected when activating "SG Ready".

With low price mode of "SG Ready" the parallel off set of the indoor temperature is increased by "+1". If a room sensor is installed and activated, the desired room temperature increases by 1 °C.

With over capacity mode of "SG Ready" the parallel offset for the indoor temperature is increased by " +2".

If a room sensor is installed and activated, the desired room temperature increases by 2 °C.

affect hot water

Here you set whether the temperature of the hot water should be affected when activating "SG Ready".

With low price mode on "SG Ready" the stop temperature of the hot water is set as high as possible at only compressor operation (immersion heater not permitted).

With over capacity mode of "SG Ready" the hot water is set to "luxury" (immersion heater permitted).

affect cooling (accessory required)

Here you set whether room temperature during cooling operation should be affected when activating "SG Ready".

With low price mode of "SG Ready" and cooling operation the indoor temperature is not affected.

With over capacity mode of "SG Ready" and cooling operation the parallel off set for the indoor temperature is reduced by"-1". If a room sensor is installed and activated, the desired room temperature decreases by 1 °C.

NOTE

The function must be connected to two AUX inputs and activated in menu 5.4.