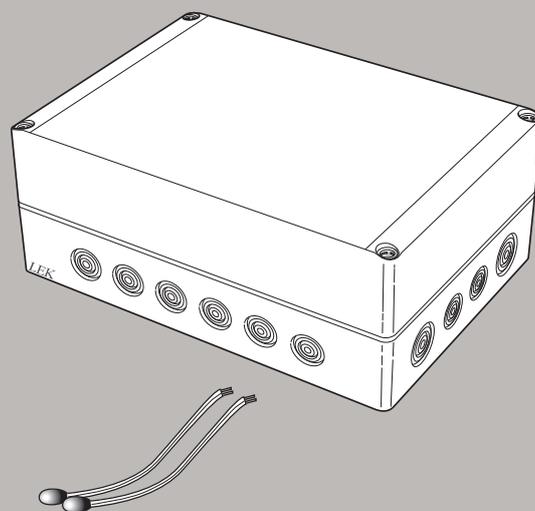


# Accessories

## AXC 50





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# 1 General

This accessory is used to enable connection and control of (a AXC 50 is required for each of the following accessory functions that is used):

- shunt-controlled additional heat
- step-controlled additional heat
- ground water pump
- extra climate system
- hot water comfort
- passive cooling (4-pipe system)
- passive cooling (2-pipe system)
- passive/active cooling (2-pipe system)
- shunt-controlled brine
- pool heating

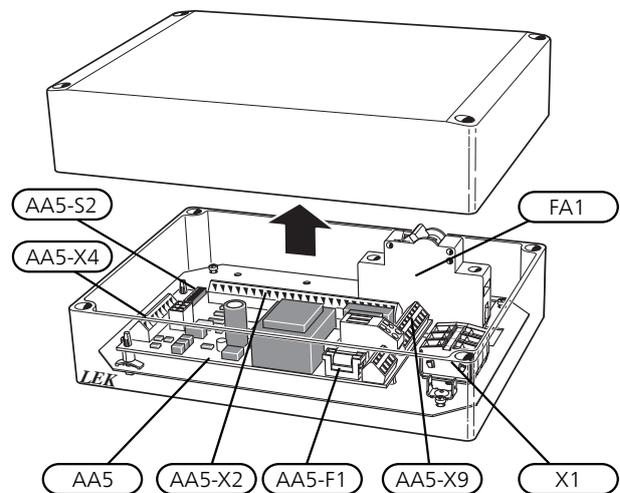
## Contents

4 x	Cable ties
2 x	Heating pipe paste
1 x	Insulation tape
1 x	Unit box with accessory card
2 x	Aluminium tape
2 x	Temperature sensor

## Compatible products

- F1345
- F1355

## Component location unit box (AA25)



### ELECTRICAL COMPONENTS

FA1	Miniature circuit breaker, 10 A
X1	Terminal block, power supply
AA5	Accessory card
AA5-X2	Terminal block, sensors and external blocking
AA5-X4	Terminal block, communication
AA5-X9	Terminal block, circulation pump, mixing valve and auxiliary relay
AA5-S2	DIP switch
AA5-F1	Fine wire fuse, T4AH250V

Designations according to standard EN 81346-2.

# 2 Common electrical connection



## NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXC 50.



## NOTE

AXC 50 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.



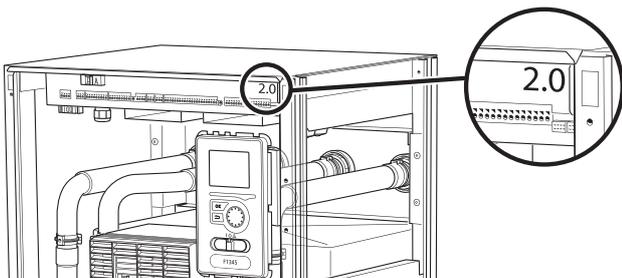
## NOTE

Mark up any junction boxes with warnings for external voltage.

Electrical circuit diagrams are at the end of the chapter for each connection option.

## Connecting communication

F1345 has different electrical connection versions depending on when the heat pump was manufactured. To check which electrical connection applies to your F1345, check the designation "2.0" visible above the right hand side of the terminal block as illustrated.

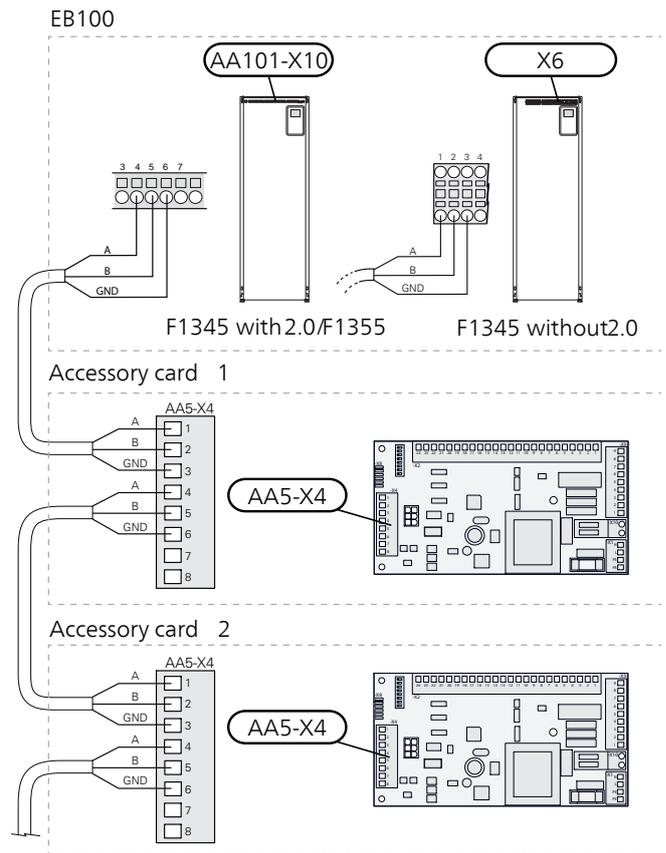


This accessory contains an accessory board (AA5) that must be connected directly to the heat pump on terminal block X6 in F1345 or on terminal block AA101-X10 in F1345 2.0/F1355.

If several accessories are to be connected or are already installed, the following instructions must be followed.

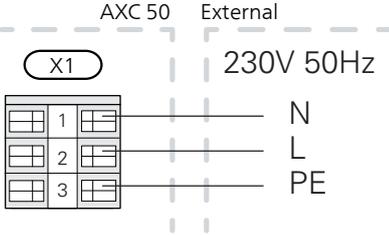
The first accessory board must be connected directly to the terminal block in the compatible product and the following boards must be connected in series with the previous board.

Use cable type LiYY, EKKX or similar.



# Connecting the supply

Connect the power supply to terminal block X1 as illustrated.



# 3 Shunt controlled additional heat

## General

This function enables an external additional heater, e.g. an electric boiler, wood boiler, pellet boiler, oil boiler, gas boiler or district heating, to aid with heating.

The installation controls a shunt valve (QN11) and a circulation pump (GP10) via AXC 50. If the heat pump cannot manage to maintain the correct supply temperature (BT25), the additional heat starts. When the temperature in the boiler sensor (BT52) exceeds the set value, the heat pump transmits a signal to the shunt (QN11) to open from the additional heat. The shunt (QN11) is regulated so that the true supply temperature corresponds with the heat pump's theoretically calculated set point value. When the heating demand drops sufficiently so that the additional heat is no longer required, the shunt (QN11) closes completely.

Factory-set minimum operating time for the boiler is 12 hours (can be adjusted in menu 5.3.2).

From software version 8061R4, the shunt (QN11) can be controlled with an analogue control signal from 0-10 V.

The function, "smart energy source", can be selected if you want to prioritise automatically between heat pump operation and additional heat for the best price or environmental impact.

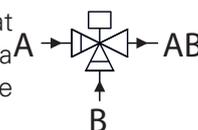
## Pipe connections

The external circulation pump (GP10) is located on the supply line to the climate system after the temperature sensor (BT25).

### SHUNT VALVE

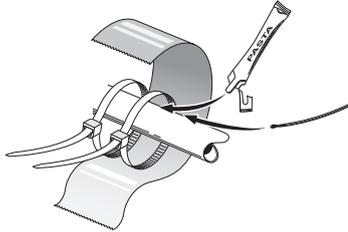
The shunt valve (QN11) must be placed on the supply line to the climate system after the heat pump according to the outline diagram.

- Connect the supply line from the heat pump to the external heat source via the T-pipe to port B on the shunt valve (closes on reduce signal).
- Connect the supply line to the climate system from the shunt valve to the common port AB (always open)
- Connect the supply line from the external additional heat to the shunt valve to port A (opens on increase signal).



## TEMPERATURE SENSOR

- Install the boiler sensor (BT52) in a suitable location in the external additional heat.
- External supply temperature sensor (BT25, connected in F1345/F1355), has to be installed on the supply line to the climate system, after the shunt valve (QN11).



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



### NOTE

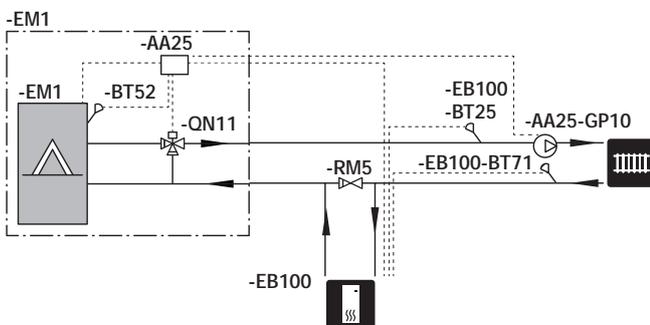
Sensor and communication cables must not be laid near power cables.

## Outline diagram

Real installations must be planned according to applicable standards. More system principles can be found at nibe.eu.

### EXPLANATION

EM1	Mixing valve controlled additional heat, boiler
AA25	AXC 50
BT52	Boiler sensor
GP10	External circulation pump
QN11	Mixing valve, addition
EB100	Heat pump
BT25	External supply temperature sensor
BT71	External return line sensor
Miscellaneous	
RM5	Non-return valve



## Electrical connection



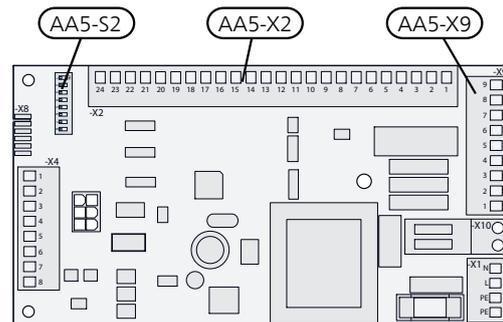
### NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXA 50.

### OVERVIEW ACCESSORY BOARD (AA5)



### CONNECTION OF SENSORS AND EXTERNAL BLOCKING

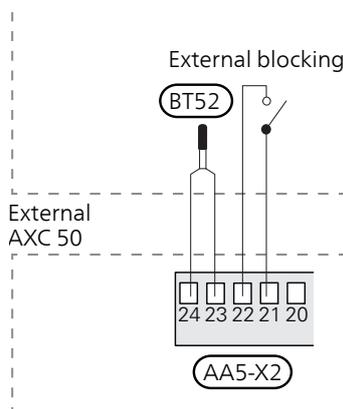
Use cable type LiYY, EKKX or similar.

#### Boiler sensor (BT52)

Connect the boiler sensor to AA5-X2:23-24.

#### External blocking (optional)

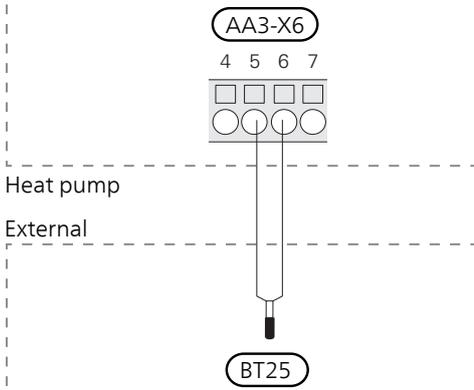
An external switch function (NO) can be connected to AA5-X2:21-22 to block additional heat. The switch must be potential-free and a closed switch results in blocking.



### External supply temperature sensor (BT25)

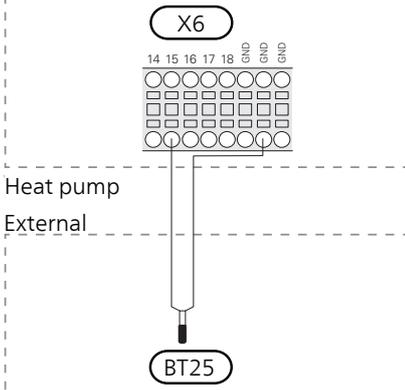
#### F1345 with 2.0/F1355

Connect the temperature sensor, external supply line (BT25) to terminal block AA3-X6:5 and AA3-X6:6. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



#### F1345 without 2.0

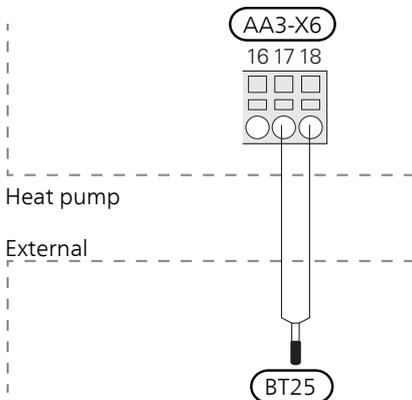
Connect the temperature sensor, external supply line (BT25) to terminal block A6:15 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### External return line sensor (BT71)

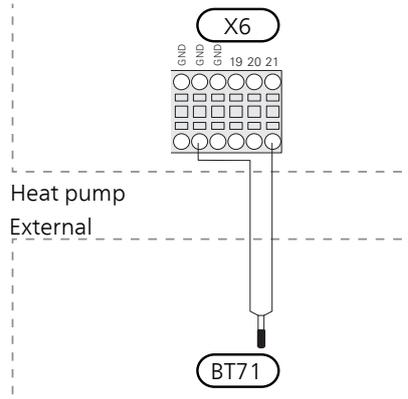
#### F1345 with 2.0/F1355

Connect the temperature sensor, external return line (BT71) to terminal block AA3-X6:17 and AA3-X6:18. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### F1345 without 2.0

Connect temperature sensor, external return line (BT71) to terminal block X6:21 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.

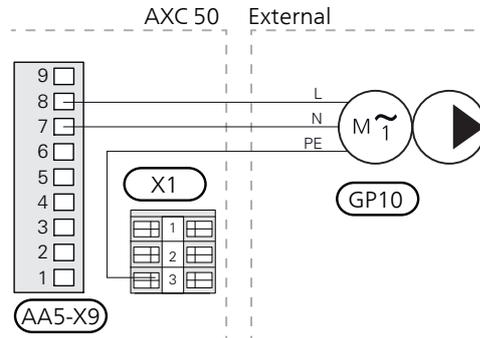


### Caution

The relay outputs on the accessory board can have a max load of 2A (230V) in total.

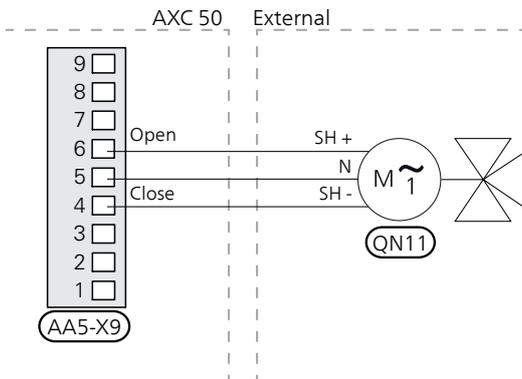
## CONNECTION OF THE CIRCULATION PUMP (GP10)

Connect the circulation pump (GP10) to AA5-X9:8 (230V), AA5-X9:7 (N) and X1:3 (PE)



## CONNECTION OF THE SHUNT VALVE MOTOR (QN11)

Connect the shunt motor (QN11) to AA5-X9:6 (230V, open), AA5-X9:5 (N) and AA5-X9:4 (230V, close).



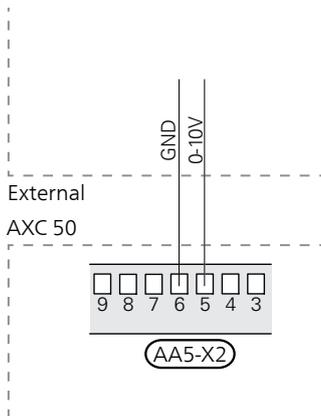
## DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



## Connection of 0-10 V control of shunt motor (QN11)

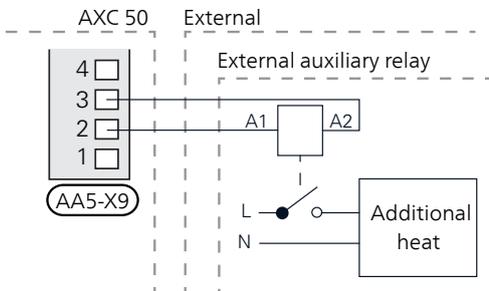
Connect a twin core cable of the type LiKK, EKKX or equivalent to AA5-X2:5 (0-10 V) and AA5-X2:6 (GND).



At 0 V the shunt is closed and at 10 V the shunt is open.

## CONNECTION OF THE AUXILIARY RELAY FOR ADDITIONAL HEATING

Connect the auxiliary relay for switching the additional heat on and off to AA5-X9:2 (230V) and AA5-X9:3 (N).



# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.4 - accessories*

Activating/deactivating of accessories.

Select: "shunt controlled add. heat".

### *Menu 5.3.2 - shunt controlled add. heat*

Here you can perform the following settings:

- select whether prioritised additional heat is to start.
- minimum operating time.
- minimum boiler temperature at which the shunt will start to regulate.
- shunt amplification.
- shunt waiting time.

### *Menu 5.6 - forced control*

Forced control of the various components in the heat pump as well as in the various accessories that may be connected.

EM1-AA5-K1: Activation of relay for extra heating.

EM1-AA5-K2: Signal (close) to mixing valve (QN11).

EM1-AA5-K3: Signal (open) to mixing valve (QN11).

EM1-AA5-K4: Activating the circulation pump (GP10).

### *Menu 4.1.8 - smart energy source™ (option)*

The function prioritises how/to what extent each docked energy source will be used. Here you can select whether the system will use the energy source that is cheapest at the time. You can also select whether the system will use the energy source that is most carbon neutral at the time. If you want to prioritise additional heat, set the values to 0.



#### *Caution*

Also see the Operating Manual for the main product.



# 4 Step controlled additional heat

## General

This function enables an external additional heater, e.g. an electric boiler, to aid with heating.

External step-controlled additional heat can be controlled by up to three potential-free relays in F1345/F1355 (3 step linear or 7 step binary). With the AXC 50 accessory, a further three potential-free relays can be used for additional heat control, which then gives max 3+3 linear or 7+7 binary steps.

The flow through the addition is ensured either by the charge pump (GP12) or the external circulation pump (GP10).

From software version 7952R2, step-controlled additional heat can also be controlled with an analogue control signal from 0-10 V.

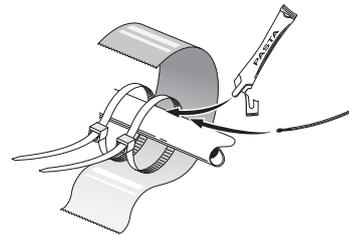
## Pipe connections

The external circulation pump (GP10) is located on the supply line to the climate system after the temperature sensor (BT25).

If the climate system's flow exceeds the maximum recommended flow for the electric boiler, a bypass must be installed so that only a partial flow passes through the electric boiler.

## TEMPERATURE SENSOR

- External supply temperature sensor (BT25, connected in F1345/F1355) must be installed on the supply line to the climate system, after the additional heat.



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



### NOTE

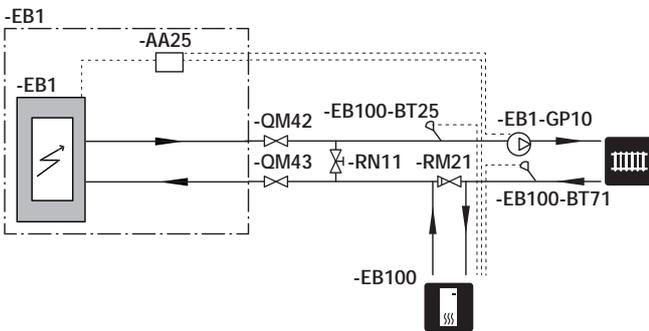
Sensor and communication cables must not be laid near power cables.

# Outline diagram

Real installations must be planned according to applicable standards. More system principles can be found at nibe.eu.

## EXPLANATION

<i>EB1</i>	<i>Step controlled additional heat</i>
AA25	AXC 50
GP10	Circulation pump, heating medium external
<i>EB100</i>	<i>Heat pump</i>
BT25	External supply temperature sensor
BT71	External return line sensor
<i>Miscellaneous</i>	
QM42-43	Shut-off valve
RN11	Trim valve
RM21	Non-return valve



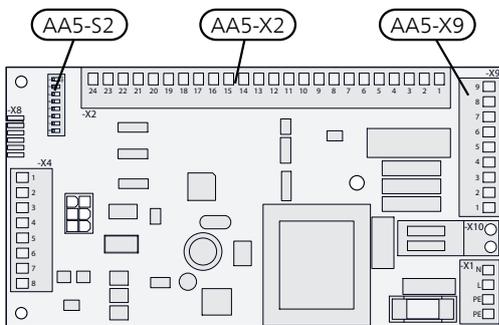
# Electrical connection



### NOTE

All electrical connections must be carried out by an authorised electrician.  
 Electrical installation and wiring must be carried out in accordance with the stipulations in force.  
 The main product must be disconnected from the power supply when installing AXC 50.

## OVERVIEW ACCESSORY BOARD (AA5)

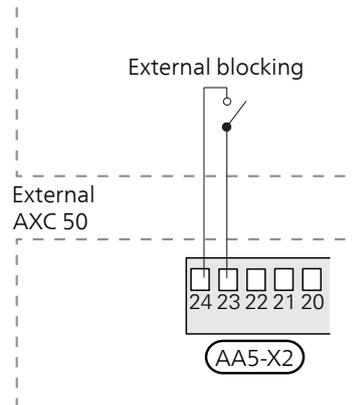


## CONNECTION OF SENSORS AND EXTERNAL BLOCKING

Use cable type LiYY, EKKX or similar.

### External blocking (optional)

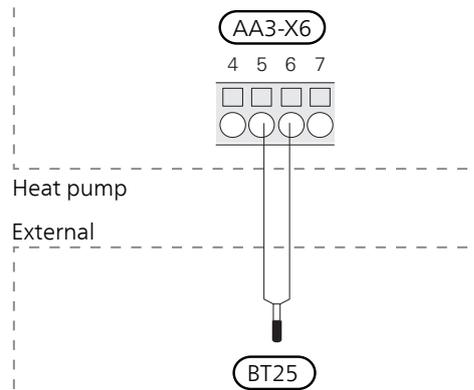
A contact (NO) can be connected to AA5-X2:23-24 to block the additional heat. When the contact closes, the additional heat is blocked.



### External supply temperature sensor (BT25)

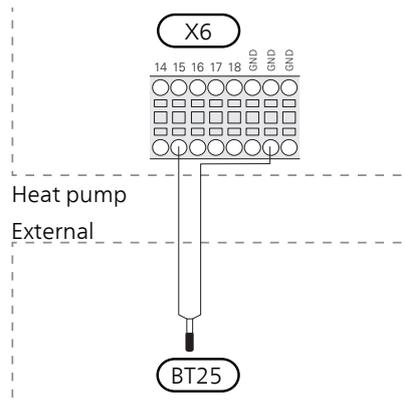
*F1345 with 2.0/F1355*

Connect the temperature sensor, external supply line (BT25) to terminal block AA3-X6:5 and AA3-X6:6. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



*F1345 without 2.0*

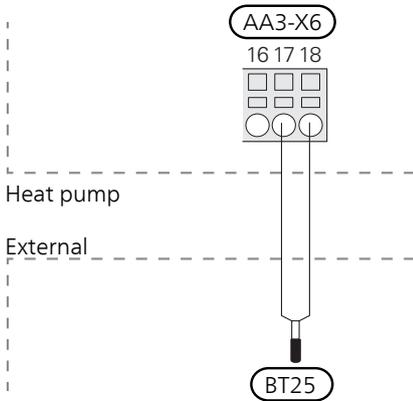
Connect the temperature sensor, external supply line (BT25) to terminal block A6:15 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



## External return line sensor (BT71)

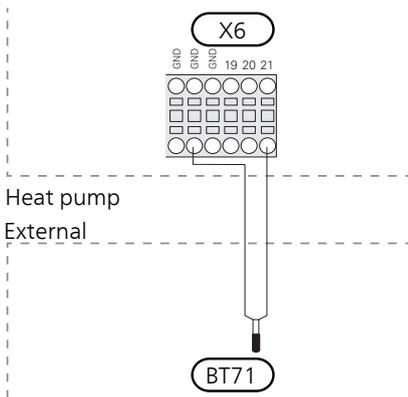
F1345 with 2.0/F1355

Connect the temperature sensor, external return line (BT71) to terminal block AA3-X6:17 and AA3-X6:18. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



F1345 without 2.0

Connect temperature sensor, external return line (BT71) to terminal block X6:21 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.

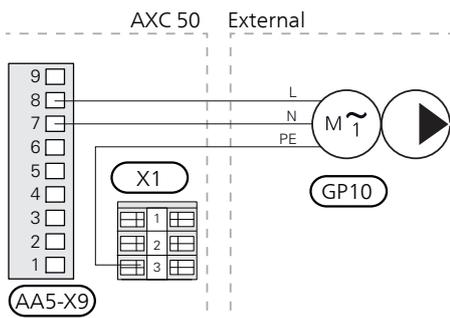


### Caution

The relay outputs on the accessory board can have a max load of 2A (230V) in total.

## CONNECTION OF THE CIRCULATION PUMP (GP10)

Connect the circulation pump (GP10) to AA5-X9:8 (230V), AA5-X9:7 (N) and X1:3 (PE)



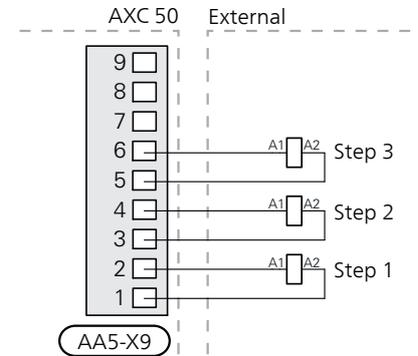
## CONNECTION OF RELAYS

### Connecting additional step

Connect step 1 to AA5-X9:1 and 2.

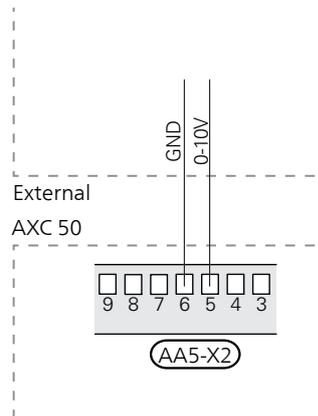
Connect step 2 to AA5-X9:3 and 4.

Connect step 3 to AA5-X9:5 and 6.



### Connection of 0-10 V control

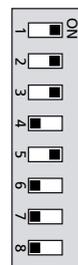
Connect a twin core cable of the type LiKK, EKKX or equivalent to AA5-X2:5 (0-10 V) and AA5-X2:6 (GND).



0 V = 0 steps and 10 V = max. number of set steps.  
10 V takes place at max. number of steps x degree minutes diff.

## DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.4 - accessories*

Activating/deactivating of accessories.

Select: "step controlled add. heat".

### *Menu 5.3.6 - step controlled add. heat AXC 50*

Here you can perform the following settings:

- Select when the addition is to start.
- Set max permitted number of additional steps.
- If binary stepping is to be used.



#### *Caution*

"start addition" in the menus 5.3.6 (connected in AXC 50) and 4.9.3 (connected internally in F1345/F1355) are factory set to 400DM. If both the additional heat options are used and you want to have more steps, the start difference must be changed in one of the menus.

### *Menu 5.6 - forced control*

Forced control of the different components in the heat pump as well as in the different accessories that may be connected.

EB1-AA5-K1: Activating additional step 1.

EB1-AA5-K2: Activating additional step 2.

EB1-AA5-K3: Activating additional step 3.

EB1-AA5-K4: Activating the circulation pump (GP10).



#### *Caution*

Also see the Operating Manual for the main product.



# 5 Extra climate system

## General

This accessory function is used when F1345/F1355 is installed in houses with up to eight different climate systems (heating and/or cooling systems) that require different supply temperatures, for example in cases where the house has both radiator systems and under-floor heating systems.



### Caution

In the case of underfloor heating systems, max flow line temperature should normally be set to between 35 and 45°C.

Check the max temperature for your floor with your floor supplier.



### Caution

If the room sensor is used in a room with underfloor heating, it should only have an indicator function, not control of the room temperature.

## Pipe connections

### GENERAL

When connecting extra climate systems, they must be connected so that they have a lower working temperature than the climate system 1.

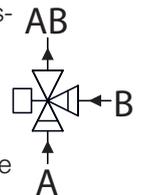
### CIRCULATION PUMP

The extra circulation pump (GP20) is positioned in the extra climate system according to the outline diagram.

### SHUNT VALVE

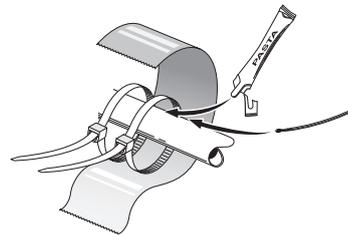
The shunt valve (QN25) is located on the supply line after the heat pump/indoor module, before the first radiator in the climate system 1. The return line from the additional climate system must be connected to the shunt valve and to the return line from the heating system 1, see image and outline diagram.

- Connect the supply line to the climate system from the heat pump to port A on the shunt valve (opens on increase signal)
- Connect the return line from the climate system to port B on the shunt valve via the T-pipe (closes on reduce signal).
- Connect the supply line to the climate system to the common port AB on the shunt valve (always open).



### TEMPERATURE SENSOR

- The supply line sensor (BT2) is installed on the pipe between the circulation pump (GP20) and shunt valve (QN25).
- The return line sensor (BT3) is installed on the pipe from the extra climate system.



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



### NOTE

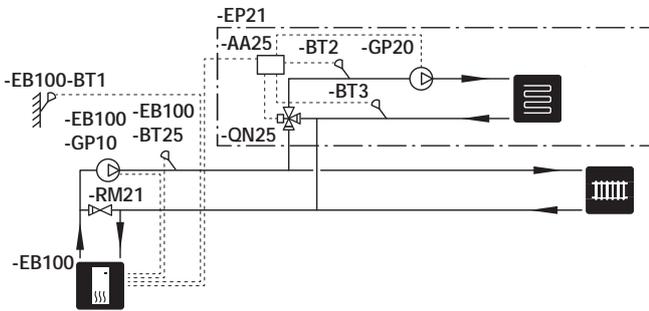
Sensor and communication cables must not be laid near power cables.

# Outline diagram

## EXPLANATION

Real installations must be planned according to applicable standards. More system principles can be found at [nibe.eu](http://nibe.eu).

EP21	Climate system
AA25	AXC 50
BT2	Flow temperature sensor, extra climate system
BT3	Return line sensor, extra climate system
GP20	Circulation pump, extra climate system
QN25	Shunt valve
EB100	Heat pump
GP10	External heating medium pump
RM21	Non-return valve
BT1	Temperature sensor, outdoor (optional)



## CONNECTION OF SENSORS AND EXTERNAL ADJUSTMENT

Use cable type LiYY, EKKX or similar.

*Supply temperature sensor, extra climate system (BT2)*

Connect the supply temperature sensor to AA5-X2:23-24.

*Return line sensor, extra climate system (BT3)*

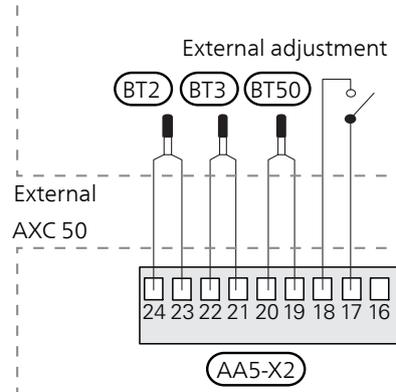
Connect the return line sensor to AA5-X2:21-22.

*Room sensor, extra climate system (BT50) (optional)*

Connect the hot water sensor to AA5-X2:19-20.

*External adjustment (optional)*

A potential-free switch can be connected to AA5-X2:17-18 for external adjustment of the climate system.



# Electrical connection



## NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXC 50.



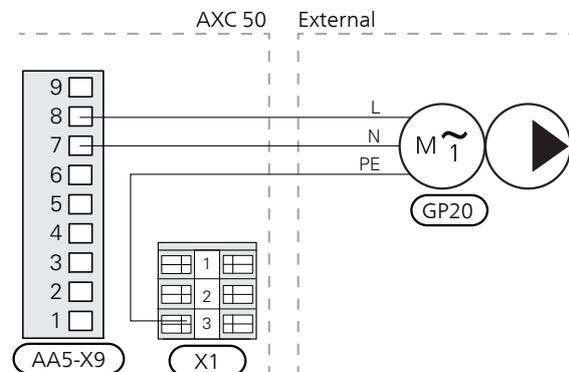
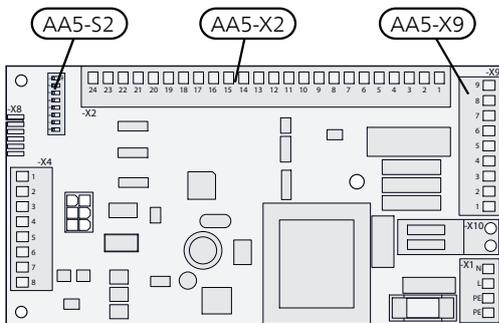
## Caution

The relay outputs on the accessory board can have a max load of 2A (230V) in total.

## CONNECTION OF THE CIRCULATION PUMP (GP20)

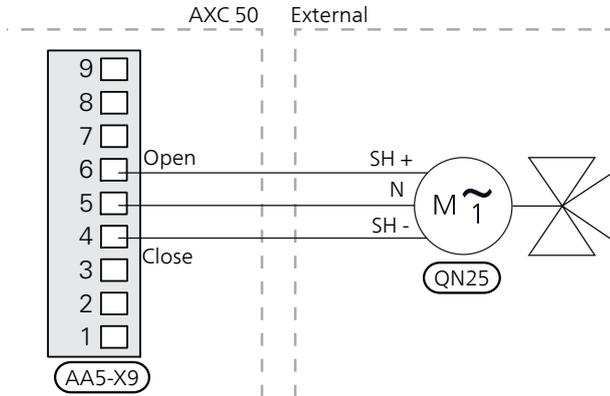
Connect the circulation pump (GP20) to AA5-X9:8 (230V), AA5-X9:7 (N) and X1:3(PE).

## OVERVIEW ACCESSORY BOARD (AA5)



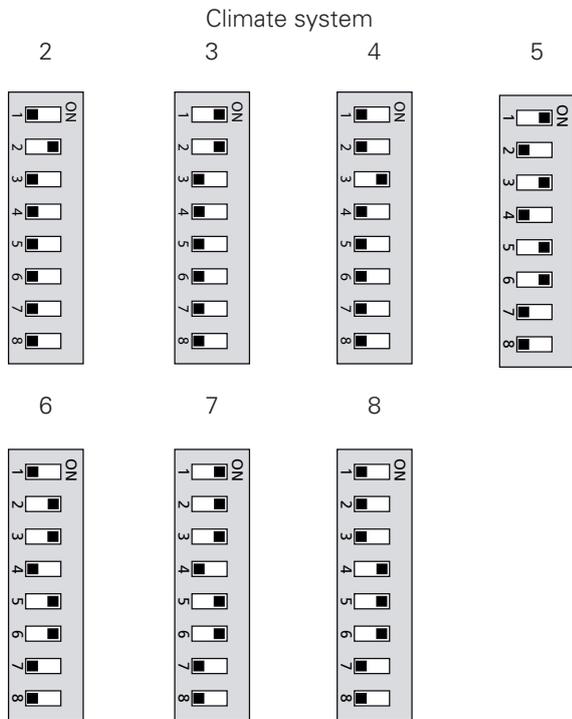
## CONNECTION OF THE SHUNT VALVE MOTOR (QN25)

Connect the shunt motor (QN25) to AA5-X9:6 (230V, open), AA5-X9:5 (N) and AA5-X9:4 (230V, close).



## DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump/indoor module installation, but is also available in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.4 - accessories*

Activating/deactivating of accessories.

Select: "climate system 2", "climate system 3" and/or "climate system 4" depending on how many climate systems are installed.

### *Menu 5.1.2 - max flow line temperature*

Setting the maximum flow temperature for each climate system.

### *Menu 5.3.3 - extra climate system*

Mixing valve settings for extra installed climate system.

#### *use in heating mode*

Setting range: on/off

Factory setting: on

#### *use in cooling mode*

Setting range: on/off

Factory setting: off

### *Menu 1.1 - temperature*

Setting the indoor temperature.

#### *Menu 1.9.1.1 -heating curve*

Setting the heat curve.

#### *Menu 1.9.1.2 -cooling curve*

Setting the cooling curve.

#### *Menu 1.9.2 - external adjustment*

Setting external adjustment.

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

Setting the minimum flow temperature for each climate system.

#### *Menu 1.9.4 - room sensor settings*

Activating and setting the room temperature sensor.

### *Menu 5.6 - forced control*

Forced control of the different components in the heat pump as well as in the different accessories that may be connected. 2 is climate system, EP22, 3 is climate system EP23, 4 is climate system EP21.

EP2#-AA5-K1: No function.

EP2#-AA5-K2: Signal (close) to mixing valve (QN25).

EP2#-AA5-K3: Signal (open) to mixing valve (QN25).

EP2#-AA5-K4: Activating the circulation pump (GP20).



### *Caution*

Also see the Installer Manual for the main product.



# 6 Hot water comfort

## General

This function allows temporary lux, mixing valve and hot water circulation.

### TEMPORARY LUX (EXTRA HOT WATER)

If an immersion heater is installed in the tank, it can be permitted to produce hot water at the same time as the heat pump prioritises heating.

### MIXING VALVE

A temperature sensor reads the temperature of the outgoing hot water to the domestic hot water and adjusts the mixing valve from the water heater until the set temperature has been reached.

### HOT WATER CIRCULATION (WVC)

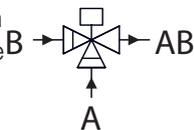
A circulation pump can be controlled so that it circulates the hot water during selectable periods.

## Pipe connections

### MIXING VALVE

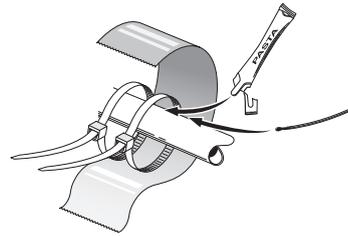
The mixer valve (FO3) must be placed on the outgoing hot water line from the water heater according to the outline diagram.

- Connect the incoming cold water via the T-pipe to port B on the mixer valve (closes at signal).
- Connect the mixed water to the domestic hot water taps from the mixer valve to the common port AB (always open).
- Connect the outgoing hot water from the water heater to the mixer valve to port A (opens on signal)



### TEMPERATURE SENSOR

- Temperature sensor, outgoing hot water, (BT70) is installed as close to the mixing valve (FO3) as possible.



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



#### NOTE

Sensor and communication cables must not be laid near power cables.

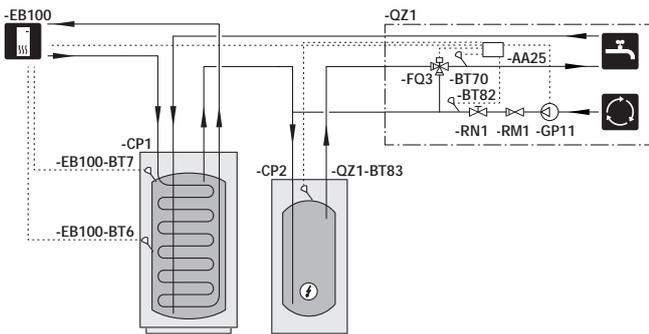
# Outline diagram

## EXPLANATION

Real installations must be planned according to applicable standards. More system principles can be found at [nibe.eu](http://nibe.eu).

QZ1	Hot water comfort
AA25	AXC 50
GP11	Hot water circulation pump
FQ3	Mixer valve, hot water
RN1	Trim valve
RM1	Non-return valve
BT70	Flow line sensor
BT82	Return line sensor, hot water
BT83	Temperature sensor, hot water heater
CP1	Water heater
CP2	Additional water heater
EB100	Heat pump
BT6	Temperature sensor, hot water
BT7	Temperature sensor, hot water top

## OUTLINE DIAGRAM WITH ADDITIONAL WATER HEATER, HWC AND ELECTRONIC MIXING VALVE



# Electrical connection



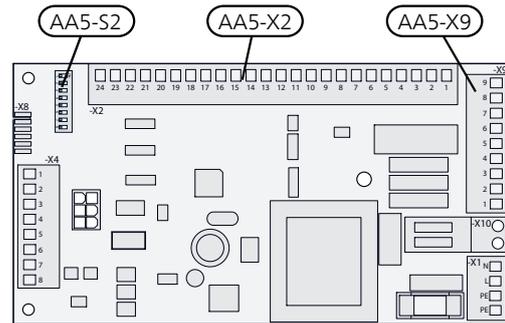
## NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AX50.

## OVERVIEW ACCESSORY BOARD (AA5)



## CONNECTING SENSORS

Use cable type LiYY, EKKX or similar.

*Hot water sensor, supply line (BT70)*

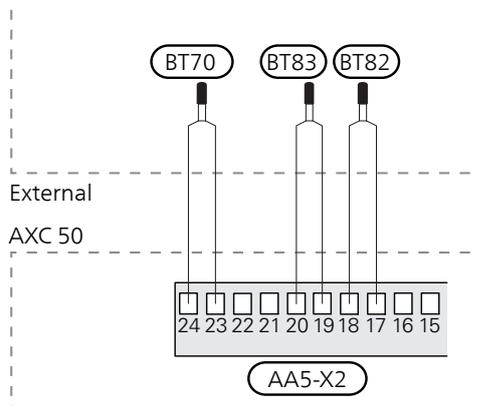
Connect the hot water sensor to AA5-X2:23-24.

*Temperature sensor, hot water comfort, return line (BT82)*

Connect the temperature sensor to AA5-X2:17-18.

*Temperature sensor, hot water heater (BT83)*

Connect the temperature sensor to AA5-X2:19-20.

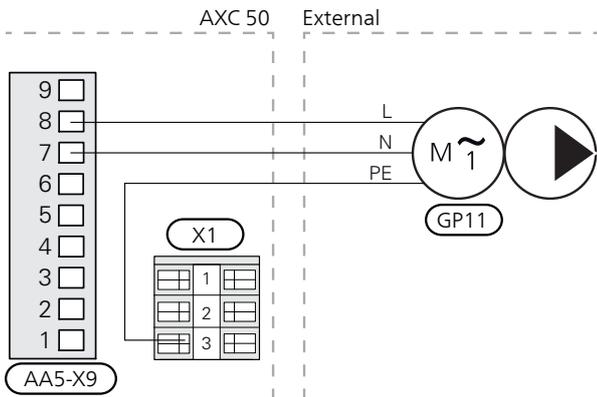


## Caution

The relay outputs on the accessory board can have a max load of 2A (230V) in total.

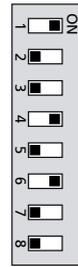
## CONNECTION OF THE HOT WATER CIRCULATION PUMP (GP11)

Connect the circulation pump (GP11) to AA5-X9:8 (230V), AA5-X9:7 (N) and X1:3 (PE)



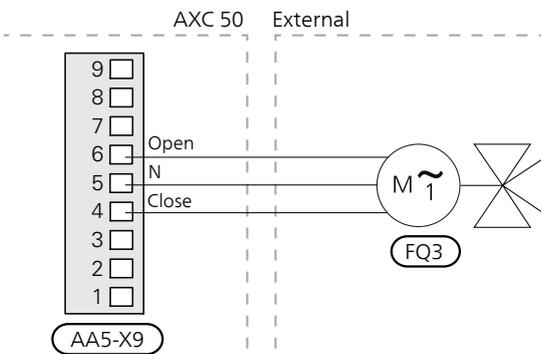
## DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



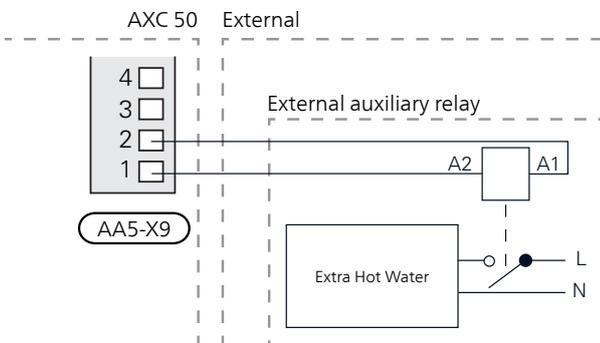
## CONNECTION OF THE MIXER VALVE (FQ3)

Connect the mixing valve motor (FQ3) to AA5-X9:6 (230V, open), AA5-X9:5 (N) and AA5-X9:4 (230V, close).



## CONNECTION TO AUXILIARY RELAY FOR ADDITIONAL HEAT IN HOT WATER OPERATION (TEMPORARY LUX, EXTRA HOT WATER)

Connect the auxiliary relay for switching the additional heat on and off to AA5-X9:1 (N) and AA5-X9:2 (230V).



# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.4 - accessories*

Activating/deactivating of accessories.

Select: "hot water comfort".

### *Menu 2.9.2 - hot water recirc.*

Here you can make the following settings for hot water circulation for up to three periods per day:

- How long the hot water circulation pump must run per operating instance
- How long the hot water circulation pump must be stationary between operating instances.

### *Menu 5.3.8 - hot water comfort*

Here you can perform the following settings:

- *activating imm heater*: The immersion heater is activated here, if installed in the water heater.
- *activ. imm heat in heat mode*: Activate here whether the immersion heater in the tank (requires the above alternative to be activated) is to be permitted to charge hot water, if the compressors in the heat pump are prioritising heating.
- *activating the mixing valve*: Activate if mixing valve is installed and it is to be controlled from the heat pump. When the option is active, you can set the outgoing hot water temperature, shunt amplification and shunt waiting time for the mixing valve.

### *Menu 5.6 - forced control*

Forced control of the different components in the heat pump as well as in the different accessories that may be connected.

QZ1-AA5-K1: Activating the relay for extra hot water.

QZ1-AA5-K2: Signal (close) to the mixing valve (FQ3).

QZ1-AA5-K3: : Signal (open) to the mixing valve (FQ3).

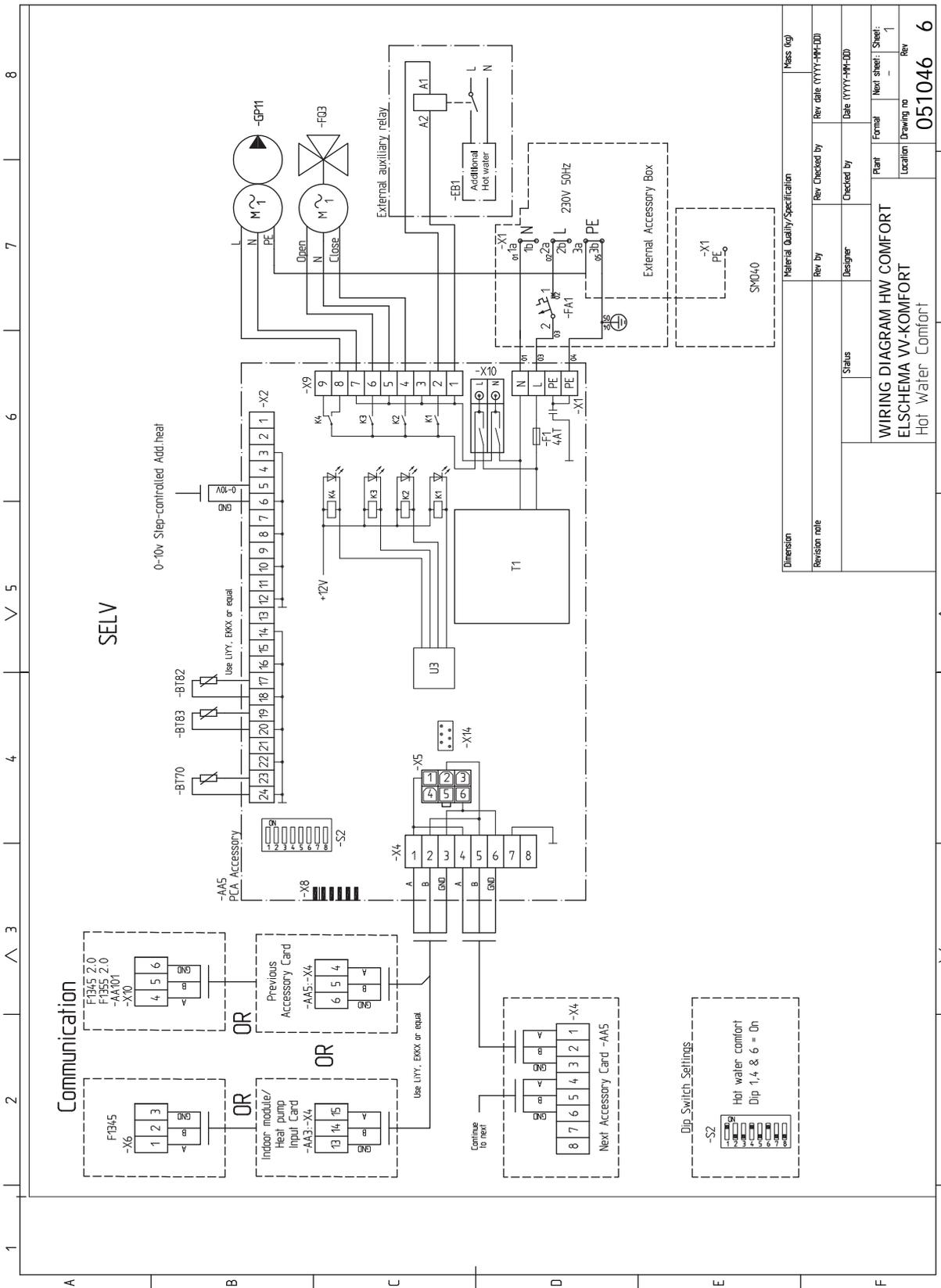
QZ1-AA5-K4: Activating the circulation pump (GP11).



### Caution

Also see the Operating Manual for F1345/F1355.

# Electrical circuit diagram



Material Quality/Specification		Pass log	
Revision note	Rev by	Rev Checked by	Rev date (YYYY-MM-DD)
Status	Designer	Checked by	Date (YYYY-MM-DD)
WIRING DIAGRAM HW COMFORT		Plant	Next sheet: Sheet: 1
ELSHEMA VV-KOMFORT		Location	Rev
Hot water Comfort		Drawing no	051046
Dimension	6	7	8

# 7 Ground water system

## General

With AXC 50 a ground water pump can be connected to the heat pump if the software controlled output (AUX output) is used for something else.

This connection enables the use of ground water as heat source. The ground water is pumped up to an intermediate heat exchanger. An intermediate heat exchanger is used to protect the heat pump's exchanger from dirt and freezing. The water is released into a buried filtration unit or a drilled well.

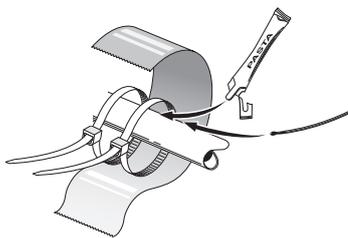
The ground water pump runs at the same time as the brine pump.

From software version 8233R2, the groundwater pump can be controlled with an analogue control signal from 0-10 V.

## Pipe connections

### TEMPERATURE SENSOR

- Temperature sensor, brine supply line (BT57) is installed on the supply line to the climate system.
- Temperature sensor, brine return line (BT58) is installed on the return line to the climate system.



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



#### NOTE

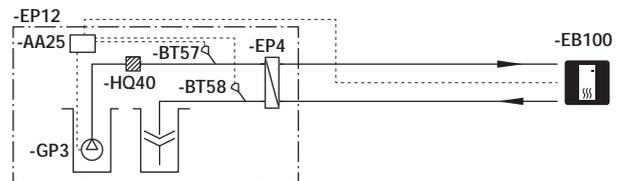
Sensor and communication cables must not be laid near power cables.

## Outline diagram

Real installations must be planned according to applicable standards. More system principles can be found at [nibe.eu](http://nibe.eu).

### EXPLANATION

EP12	Groundwater pump
AA25	AXC 50
EP4	Heat exchanger, groundwater
HQ40	Particle filter
GP3	Groundwater pump
EB100	Heat pump
BT57	Brine sensor, supply line
BT58	Brine sensor, return line



# Electrical connection



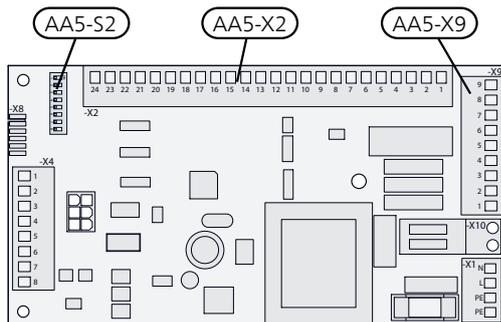
## NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXC 50.

## OVERVIEW ACCESSORY BOARD (AA5)



## Caution

The relay outputs on the accessory board can have a max load of 2A (230V) in total.

The auxiliary relay (HR10) requires a greater load than 2A (230V).

## CONNECTION OF SENSORS AND EXTERNAL BLOCKING

Use cable type LiYY, EKKX or similar.

*Brine sensors (BT57) and (BT58)*



## Caution

For the alarm to be activated, software of at least 7774R2 must be installed on your heat pump.

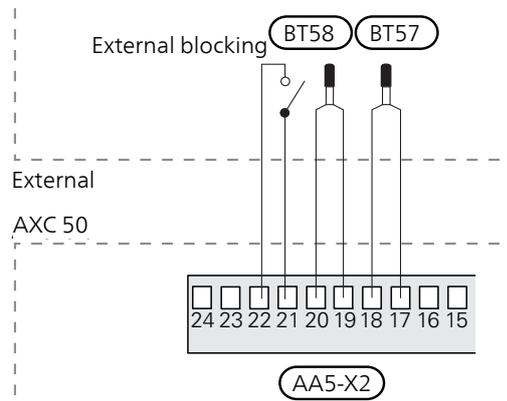
Two sensors (BT57 and BT58) can be connected to display the temperatures on the ground water side. An alarm can be activated in menu 5.3.23 to block the compressor if the ground water out (BT58) from the heat exchanger is below the set temperature. Blocking stops automatically when the temperature of BT58 rises by two degrees above the set temperature. The default setting for the alarm is deactivated.

Connect BT57 to AA5-X2:17-18 on AXC 50 the accessory board.

Connect BT58 to AA5-X2:19-20 on AXC 50 the accessory board.

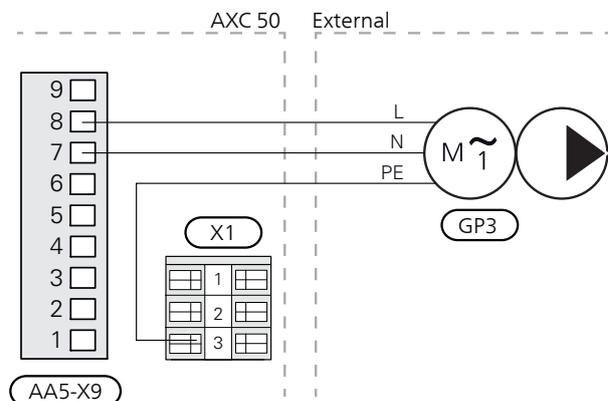
## External blocking

A switch (NO) can be connected to AA5-X2:21-22 to block the groundwater pump. When the switch closes, the groundwater pump is blocked.



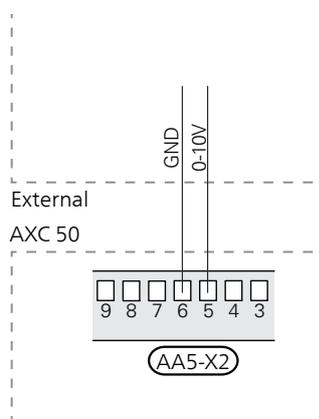
## CONNECTING GROUND WATER PUMP (GP3)

Connect the ground water pump (GP3) to AA5-X9:8 (230V), AA5-X9:7 (N) and X1:3 (PE).



## Connection of 0-10 V control of the ground water pump (GP3)

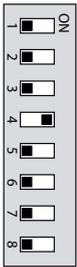
Connect a twin core cable of the type LiKK, EKKX or equivalent to AA5-X2:5 (0-10 V) and AA5-X2:6 (GND).



0V is 0% of the minimum speed of the pump and 10V is 100% of the maximum speed of the pump.

## DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.4 - accessories*

Activating/deactivating of accessories.

Select: "ground water pump".

### *Menu 5.3.23 - ground water pump*

Here you adjust settings such as activation/deactivation of alarm, min. temperature and speeds.

Select: "Alarm at min temp" yes/no.

Select: "Min temp groundwater", factory setting: 3°C

Select: "contr. gr. water pump" yes/no.

"manual speed" yes/no.

"manual speed", factory setting 75%.

"min. speed", factory setting 30%.

### *Menu 5.6 - forced control*

Forced control of the different components in the heat pump as well as in the different accessories that may be connected.

EP12-AA5-K1: No function.

EP12-AA5-K2: No function.

EP12-AA5-K3: No function.

EP12-AA5-K4: Activating the circulation pump (GP3).



### *Caution*

Also see the Operating Manual for F1345/F1355.



# 8 Passive cooling in 4-pipe system

## General

The cooling system is connected to the heat pump collector circuit, through which cooling is supplied from the collector via the circulation pump and the shunt valve.

When cooling is required (activated from the outdoor sensor and any room sensor) the circulation pump is activated. The shunt valve regulates so that the cooling sensor reaches the current set point value that is equal to the outdoor temperature and the set min. value for the cooling temperature (to prevent condensation).



### Caution

This accessory may require a program software update in your F1345/F1355.

2755 or higher is the minimum software version for the heat pump.

## Pipe connections

### GENERAL

Pipes and other cold surfaces must be insulated with diffusion-proof material to prevent condensation. Where the cooling demand is high, fan convectors with drip trays and drain connection are needed.

The brine circuit must be supplied with a pressure expansion vessel. If there is already a level vessel installed this should be replaced.

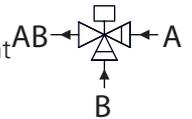
### NON-RETURN VALVE

Install a check valve between two T-pipe connections to passive cooling on brine out (see the outline diagram).

### SHUNT VALVE

The shunt valve (QN18) is located in the brine system on the flow line from the heat pump via the T-pipe connections according to the outline diagram.

- Connect the brine out from the heat pump via T-pipes to port A on the shunt valve (opens at increased signal).
- Connect the flow line to the convector fan from the shunt valve to the common port AB (always open)
- Connect the return line from the fan convector to the shunt valve and brine out to the collector to port B via T-pipe (closes at reduced signal).

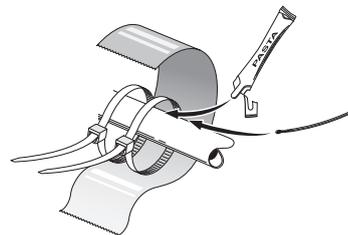


### CIRCULATION PUMP

Install the extra circulation pump (GP13) after the shunt valve (QN18) on the flow line to the fan convector.

### TEMPERATURE SENSOR

- Install the flow temperature sensor for the cooling system (BT64) on the pipe after the circulation pump (GP13) in the direction of flow.
- Install the return line sensor for the cooling system (BT65) on the pipe from the cooling system.



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



### NOTE

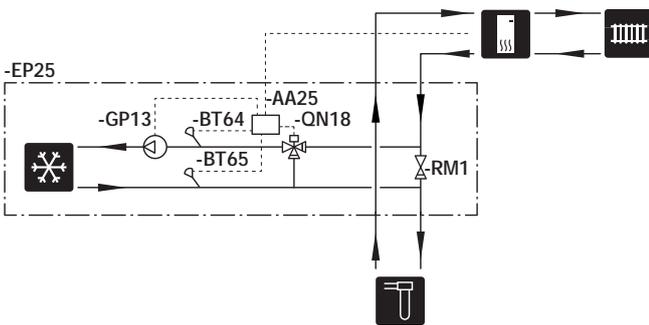
Sensor and communication cables must not be laid near power cables.

# Outline diagram

Real installations must be planned according to applicable standards. More system principles can be found at nibe.eu.

## EXPLANATION

EP25	Passive cooling in 4-pipe system
AA25	AXC 50
GP13	Circulation pump, cooling
QN18	Mixing valve, cooling
RM1	Non-return valve
BT64	Flow temperature sensor, cooling
BT65	Return line sensor, cooling
EB100	Heat pump



# Electrical connection



## NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXC 50.

## CONNECTION OF SENSORS AND EXTERNAL BLOCKING

Use cable type LiYY, EKKX or similar.

*Flow temperature sensor, cooling (BT64)*

Connect the flow temperature sensor to AA5-X2:21-22.

*Return line sensor, cooling (BT65)*

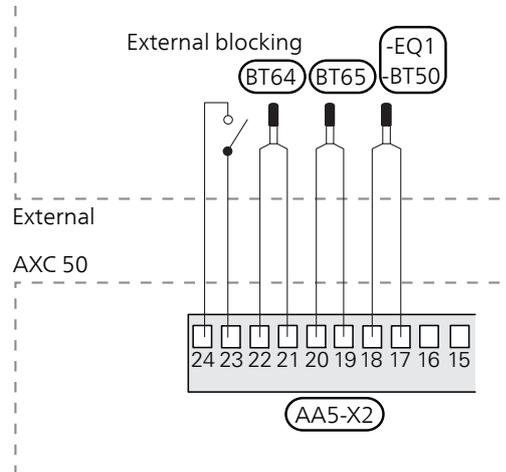
Connect the return line sensor to AA5-X2:19-20.

*External temperature sensor, cooling (-EQ1-BT50)*

Connect the external temperature sensor to AA5-X2:17-18.

*External blocking*

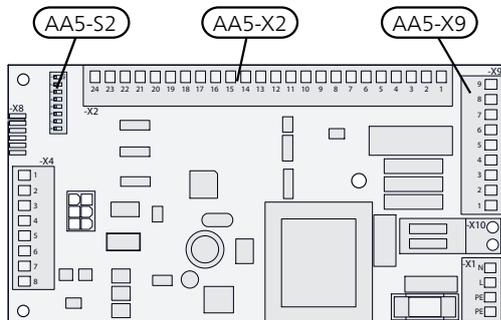
A contact (NO) can be connected to AA5-X2:23-24 to block cooling operation. When the contact closes, cooling operation is blocked.



## Caution

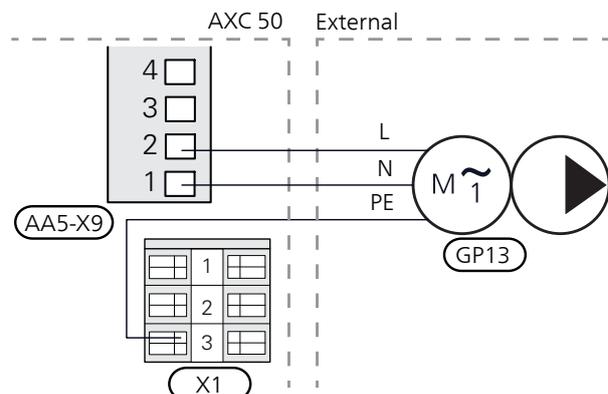
The relay outputs on the accessory card can have a max load of 2 A (230 V) in total.

## OVERVIEW ACCESSORY BOARD (AA5)



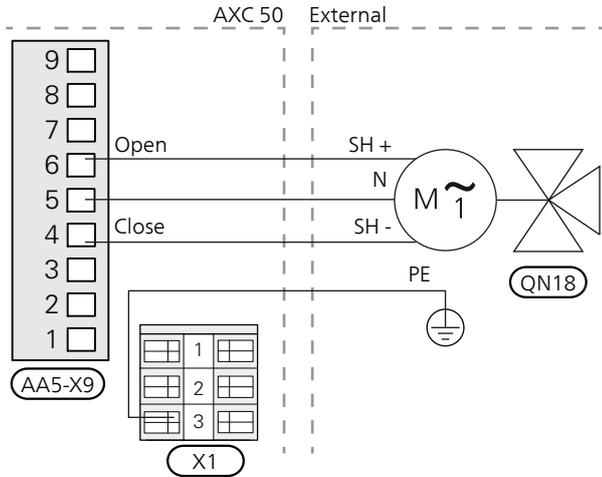
## CONNECTION OF THE CIRCULATION PUMP (GP13)

Connect the circulation pump (GP13) to AA5-X9:2 (230 V), AA5-X9:1 (N) and X1:3 (PE).



## CONNECTION OF THE MIXING VALVE MOTOR (QN18)

Connect the mixing valve motor (QN18) to AA5-X9:6 (230 V, open), AA5-X9:5 (N) and AA5-X9:4 (230 V, close).



## DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



## RELAY OUTPUT FOR COOLING MODE INDICATION

It is possible to have an external indication of cooling mode through the relay function via a potential free variable relay (max 2 A) on terminal block X5.

If cooling mode indication is connected to terminal block X5 it must be selected in menu 5.4.

# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### Menu 5.2.4 - accessories

Activating/deactivating of accessories.

Select: "passive cooling 4-pipe".

### Menu 1.1 - temperature

Setting of indoor temperature (room temperature sensor is required).

### Menu 1.9.5 - cooling settings

Here you can perform the following settings:

- Lowest flow line temperature when cooling.
- Desired flow temperature at an outdoor air temperature of +20 and +40 °C.
- Time between cooling and heating or vice versa.
- Selection of room sensor can control cooling.
- How much the room temperature may decrease or increase compared to the desired temperature before switching to heating respectively cooling (requires room sensor).
- Misc. shunt settings.

### Menu 4.9.2 - auto mode setting

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

Select the average outdoor temperatures in this menu.

You can also set the time over which (filtering time) the average temperature is calculated. If you select 0, the present outdoor temperature is used.

### Menu 5.6 - forced control

Forced control of the different components in the heat pump as well as in the different accessories that may be connected.

EQ1-AA5-K1: Activating the circulation pump (GP13).

EQ1-AA5-K2: Signal (close) to mixing valve (QN18).

EQ1-AA5-K3: Signal (open) to mixing valve (QN18).

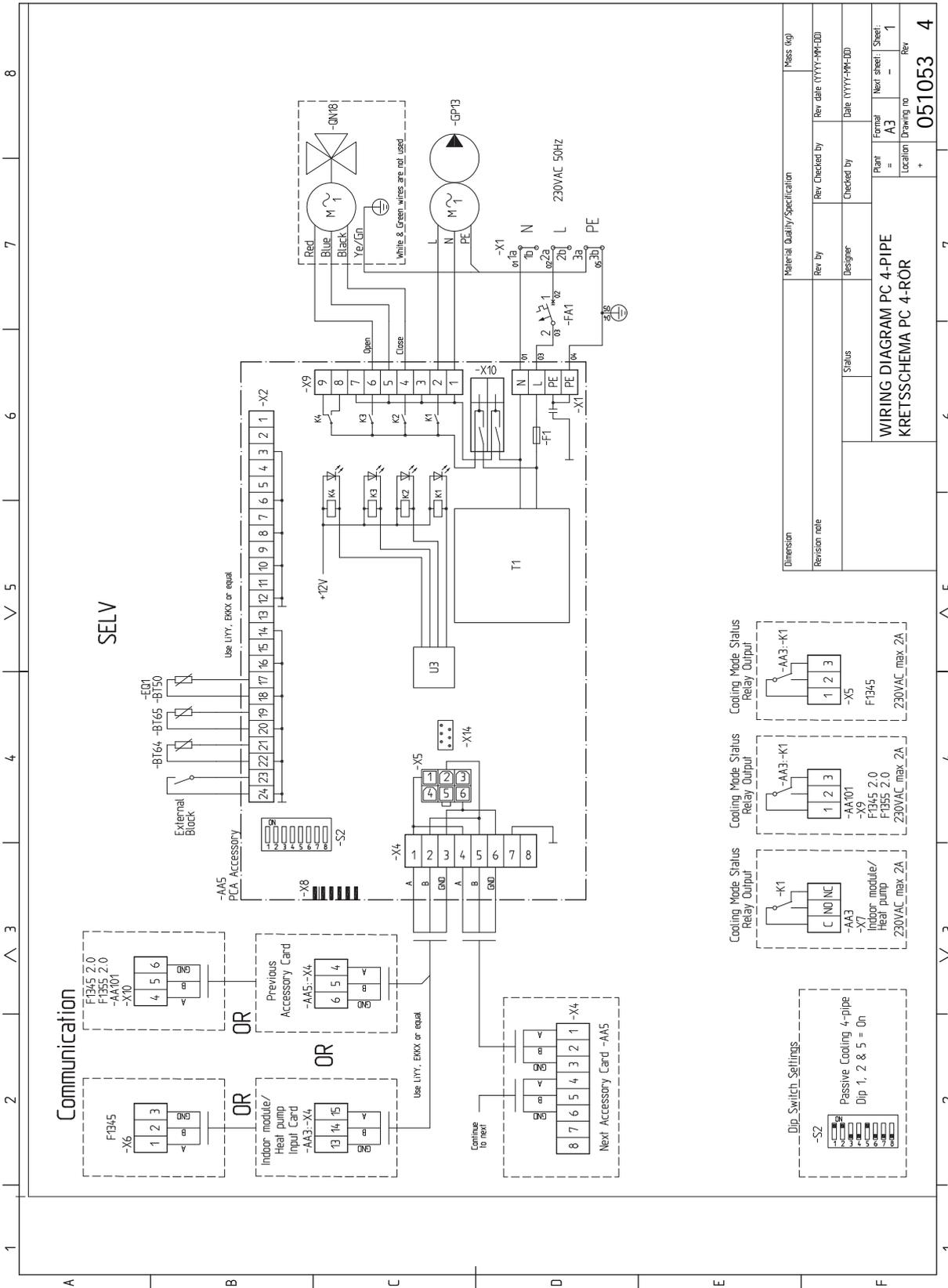
EQ1-AA5-K4: No function.



### Caution

Also see the Operating Manual for F1345/F1355.

# Electrical circuit diagram



Dimension	Material Quality/Specification	Pass log
Revision note	Rev by	Rev date (YYYY-MM-DD)
Status	Designer	Checked by
<b>WIRING DIAGRAM PC 4-PIPE KRETTSSCHEMA PC 4-RÖR</b>		
Plant	Formal	Next sheet
=	A3	-
Location	Drawing no	Rev
+	051053	4

# 9 Passive cooling in 2 pipe system

## General

The collector circuit is connected to a heat exchanger via a three way valve. The other side of the exchanger is connected to the heating medium circuit via a shunt valve and a circulation pump.

When cooling is required (activated from the outdoor sensor and any room sensor or room unit) the three way valve and the circulation pump are activated. The shunt valve regulates so that the cooling sensor reaches the current set point value that is equal to the outdoor temperature and the set min. value for the cooling temperature (to prevent condensation).

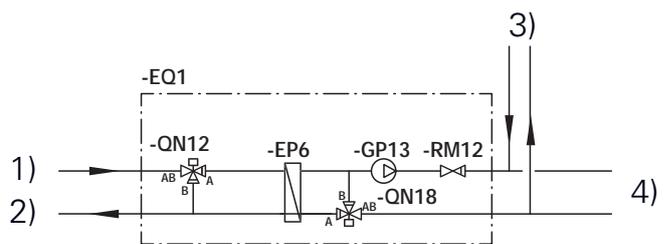


### Caution

This accessory may require a program software update in your F1345/F1355.

2755 or higher is the minimum software version for the heat pump.

## Pipe connections

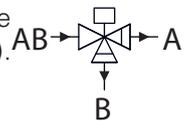


- 1) Brine from heat pump
- 2) Brine to brine system
- 3) Heating medium to and from the heat pump
- 4) Heating medium to and from the climate system

### SHUTTLE VALVE

The three way valve (QN12) is located in the brine system on the flow line from the heat pump according to the outline diagram.

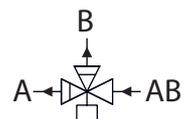
- Connect port A on the three-way valve (open at signal) to the exchanger (EP6).
- Connect the common port AB on the three-way valve (always open) to the flow line (brine) from the heat pump.
- Connect port B on the three-way valve (normally open, motor in stand-by mode) via T-pipe to brine out to the collector from the exchanger (EP6).



### SHUNT VALVE

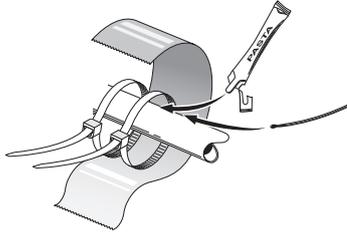
The shunt valve (QN18) is located on the return to the heat pump from the climate system according to the outline diagram.

- Connect port A on the shunt valve (opens at increased signal) to the exchanger (EP6).
- Connect the common port AB on the shunt valve (always open) to the return line from the climate system.
- Connect port B on the shunt valve (closes at reduced signal) via T-pipe to the flow line to the climate system from the exchanger.



## TEMPERATURE SENSOR

- External supply temperature sensor (BT25, connected in F1345/F1355), must be installed on the supply line to the climate system, after the shunt valve (QN18).
- External return line sensor (BT71) is installed on the return line from the climate system



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



### NOTE

Sensor and communication cables must not be laid near power cables.

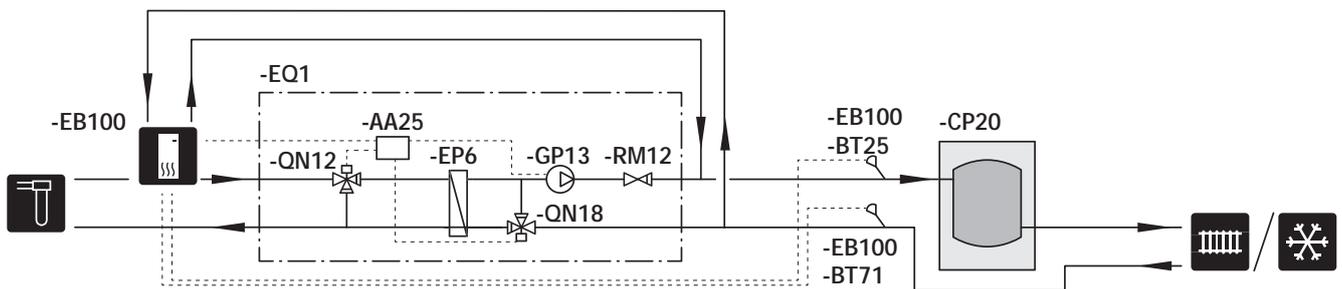
## Outline diagram

Real installations must be planned according to applicable standards. More system principles can be found at [nibe.eu](http://nibe.eu).

### EXPLANATION

EQ1	Passive cooling in 2-pipe system
AA25	AXC 50
EP6	Heat exchanger, cooling
RM12	Non-return valve
GP13	Circulation pump, cooling
QN12	Reversing valve, cooling/heating
QN18	Mixing valve, cooling

EB100	Heat pump
BT25	Supply line sensor, external
BT71	Return line sensor, external
<i>Miscellaneous</i>	
CP20	Buffer vessel (UKV)



# Electrical connection



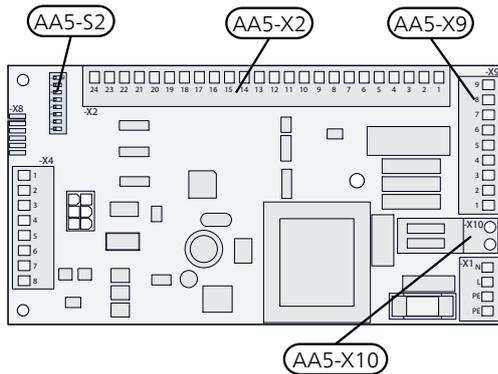
## NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXC 50.

## OVERVIEW ACCESSORY BOARD (AA5)

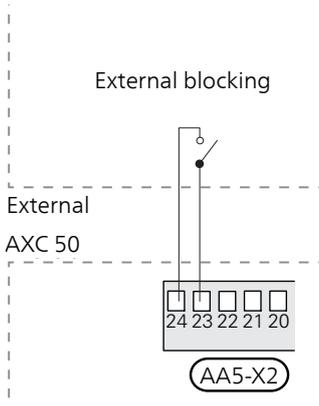


## CONNECTION OF SENSORS AND EXTERNAL BLOCKING

Use cable type LiYY, EKKX or similar.

### External blocking

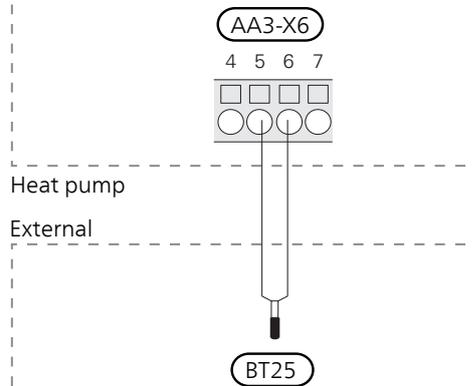
A contact (NO) can be connected to AA5-X2:23-24 to block cooling operation. When the contact closes, cooling operation is blocked.



### External supply temperature sensor (BT25)

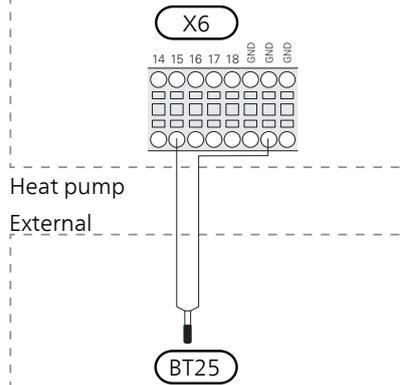
#### F1345 with 2.0/F1355

Connect the temperature sensor, external supply line (BT25) to terminal block AA3-X6:5 and AA3-X6:6. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



#### F1345 without 2.0

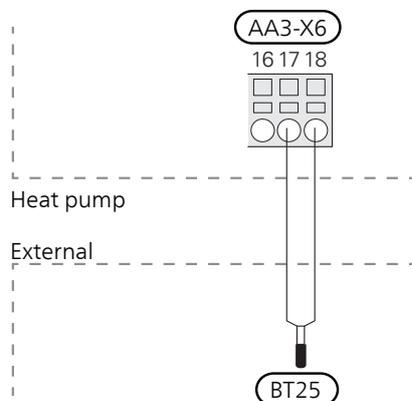
Connect the temperature sensor, external supply line (BT25) to terminal block A6:15 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### External return line sensor (BT71)

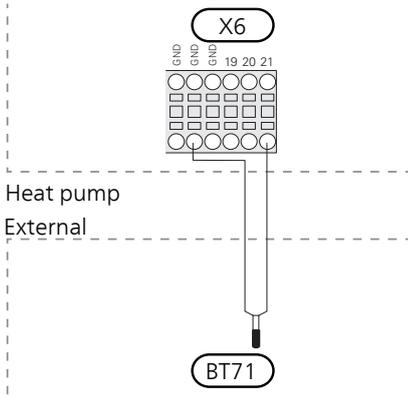
#### F1345 with 2.0/F1355

Connect the temperature sensor, external return line (BT71) to terminal block AA3-X6:17 and AA3-X6:18. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### F1345 without 2.0

Connect temperature sensor, external return line (BT71) to terminal block X6:21 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.

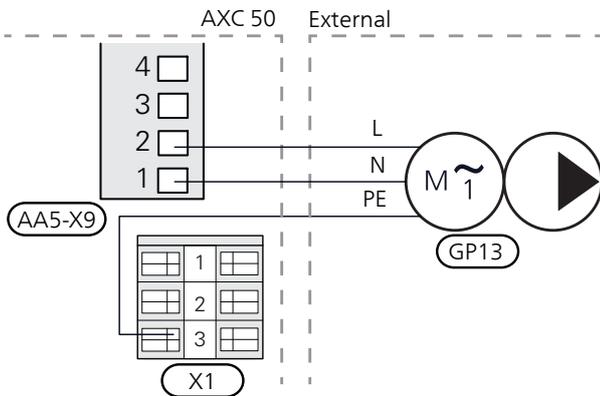


#### Caution

The relay outputs on the accessory card can have a max load of 2 A (230 V) in total.

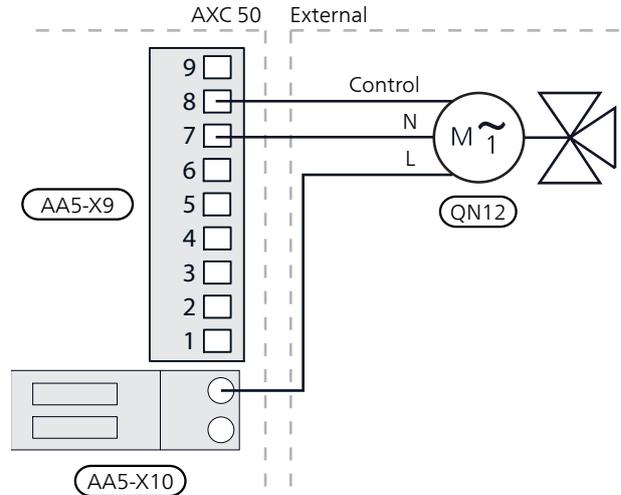
### CONNECTION OF THE CIRCULATION PUMP MOTOR (GP13)

Connect the circulation pump (GP13) to AA5-X9:2 (230 V), AA5-X9:1 (N) and X1:3 (PE).



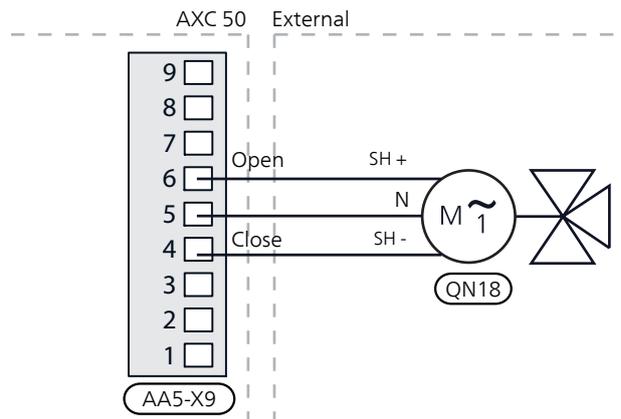
### CONNECTION OF THREE-WAY VALVE MOTOR (QN12)

Connect the three-way valve motor (QN12) to AA5-X9:8 (operating), AA5-X9:7 (N) and AA5-X10:2 (L).



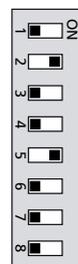
### CONNECTION OF THE MIXING VALVE MOTOR (QN18)

Connect the mixing valve motor (QN18) to AA5-X9:6 (230 V, open), AA5-X9:5 (N) and AA5-X9:4 (230 V, close).



### DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



## RELAY OUTPUT FOR COOLING MODE INDICATION

It is possible to have an external indication of cooling mode through the relay function via a potential free variable relay (max 2 A) on terminal block X5.

If cooling mode indication is connected to terminal block X5 it must be selected in menu 5.4.

# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.4 - accessories*

Activating/deactivating of accessories.

Select: "passive cooling 2-pipe".

### *Menu 1.1 - temperature*

Setting of indoor temperature (room temperature sensor is required).

### *Menu 1.9.5 - cooling settings*

Here you can perform the following settings:

- Lowest flow line temperature when cooling.
- Desired flow temperature at an outdoor air temperature of +20 and +40 °C.
- Time between cooling and heating or vice versa.
- Selection of room sensor can control cooling.
- How much the room temperature may decrease or increase compared to the desired temperature before switching to heating respectively cooling (requires room sensor).
- Misc. shunt settings.

### *Menu 4.9.2 - auto mode setting*

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

Select the average outdoor temperatures in this menu.

You can also set the time over which (filtering time) the average temperature is calculated. If you select 0, the present outdoor temperature is used.

### *Menu 5.6 - forced control*

Forced control of the different components in the heat pump as well as in the different accessories that may be connected.

EQ1-AA5-K1: Activating the circulation pump (GP13).

EQ1-AA5-K2: Signal (close) to mixing valve (QN18).

EQ1-AA5-K3: Signal (open) to mixing valve (QN18).

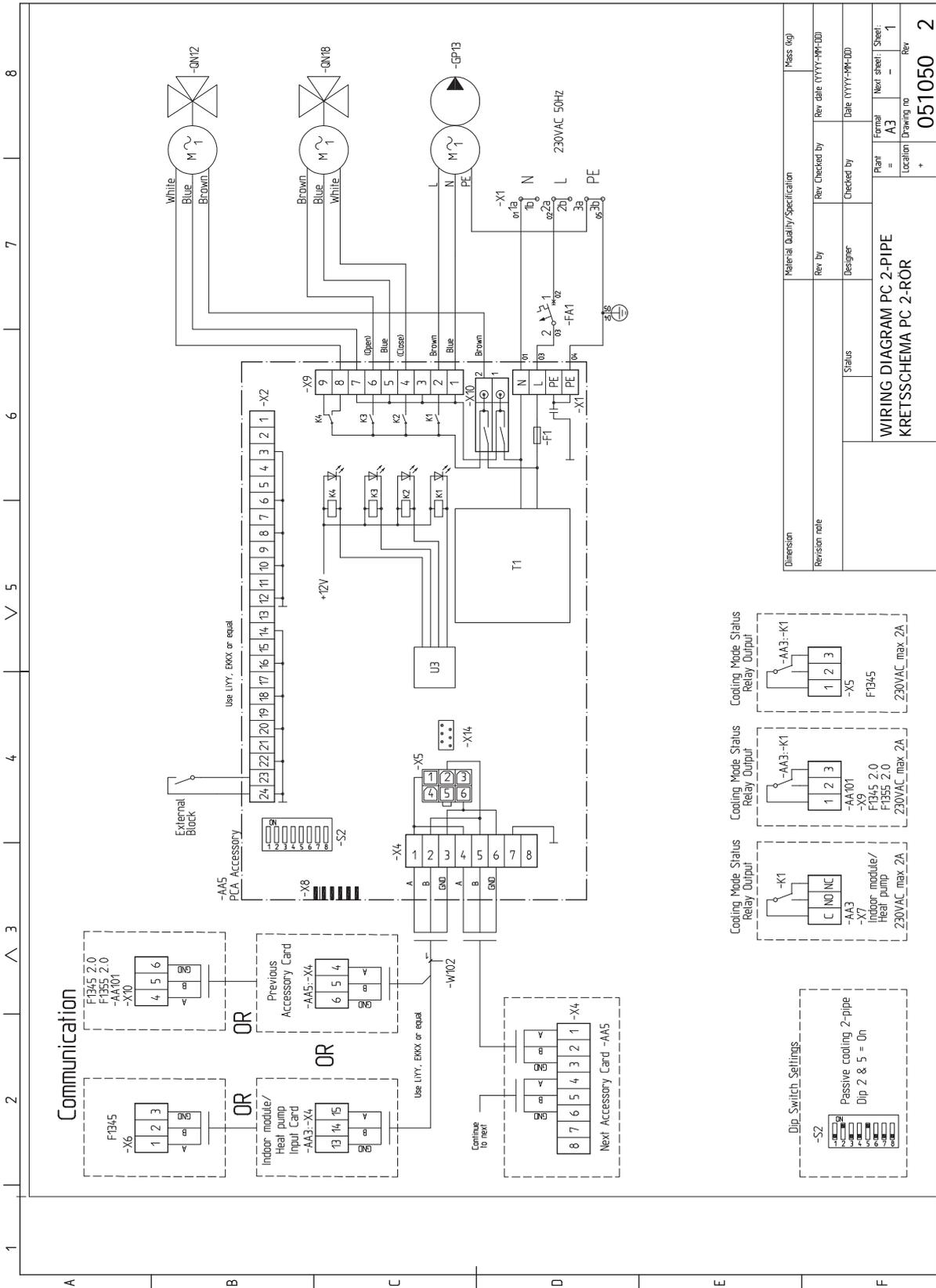
EQ1-AA5-K4: Signal to three way valve (QN12).



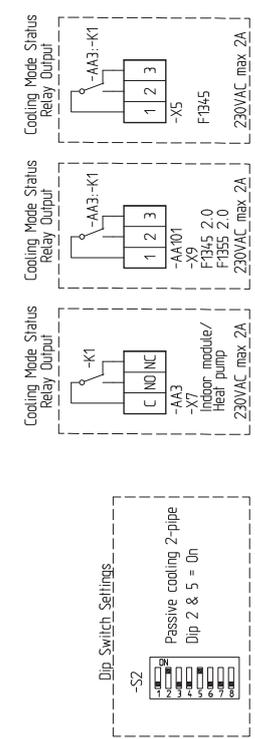
### *Caution*

Also see the Operating Manual for F1345/F1355.

# Electrical circuit diagram



Dimension	Material Quality/Specification	Mass (kg)
Revision note	Rev by	Rev checked by
	Designer	Table (YYYY-MM-DD)
	Status	Table (YYYY-MM-DD)
<b>WIRING DIAGRAM PC 2-PIPE KRETTSCHEMA PC 2-RÖR</b>		
Plant	Formal	Next sheet
=	A3	-
Location	Drawing no	Rev
	051050	2



# 10 Passive/active cooling in 2 pipe system

## General

The heating/cooling modes are controlled by four reversing valves, which, depending on the outdoor temperature and/or room temperature, switch between the different modes.

The cooling supply to the building is controlled by the set curve in the control system. After adjustment the correct amount of cooling for the current outdoor temperature is supplied. The flow temperature from the three-way valves will hover around the theoretical required value (settable in the control system). In the event of excess temperature F1345/F1355 calculates a surplus in the form of degrees-minutes, which means that the greater the excess temperature that temporarily prevails the more the connection of cooling production is accelerated.

F1345/F1355 automatically switches to cooling mode when the outdoor temperature exceeds the set value.

Passive cooling means that F1345/F1355 with the aid of the circulation pumps, circulates fluid from the ground/rock collector through the building's distribution system and cools the building.

When the cooling requirement is large and passive cooling is not sufficient, active cooling is engaged at the preset limit value. A compressor then starts and the resulting cold medium circulates to the building's climate system and the heat circulates out to the ground/rock collector. If several compressors are available these will start with a difference of the set degree minutes.



### NOTE

This system solution means that the brine will also circulate through the heating system.

Check that all component parts are designed for the brine in question.



### Caution

This accessory may require a program software update in your F1345/F1355.

2755 or higher is the minimum software version for the heat pump.

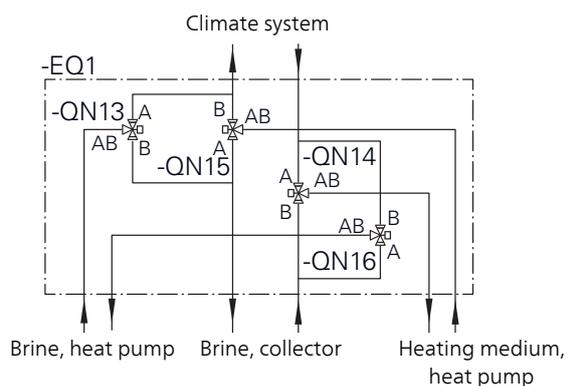
## Pipe connections

### GENERAL

Pipes and other cold surfaces must be insulated with diffusion-proof material to prevent condensation.

Where the system may be operated at low temperatures, any convection fan used must be fitted with a drip tray and drain connection.

### REVERSING VALVES



Install the three-way valves according to the outline diagram above.

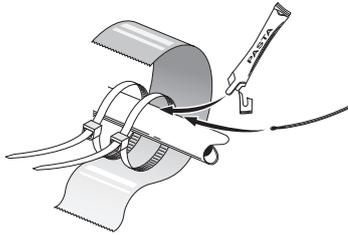
A: Open at signal.

B: Normally open (motor in standby mode).

AB: Always open.

## TEMPERATURE SENSOR

- External flow temperature sensor (BT25, connected in F1345/F1355) must be installed on the flow line to the climate system, after the three way valves (QN13) - (QN16).



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



### NOTE

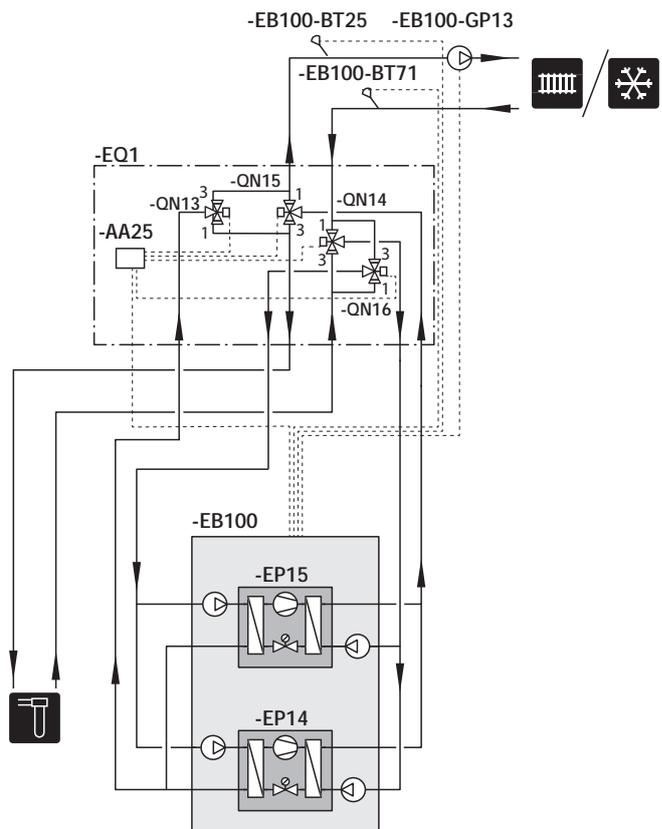
Sensor and communication cables must not be laid near power cables.

## Outline diagram

Real installations must be planned according to applicable standards. More system principles can be found at [nibe.eu](http://nibe.eu).

### EXPLANATION

EQ1	Passive/active cooling in 2-pipe system
AA25	AXC 50
QN13-16	Reversing valve, cooling/heating
EB100	Heat pump
BT25	External supply temperature sensor
BT71	External return line sensor
GP13	Circulation pump, cooling



# Electrical connection



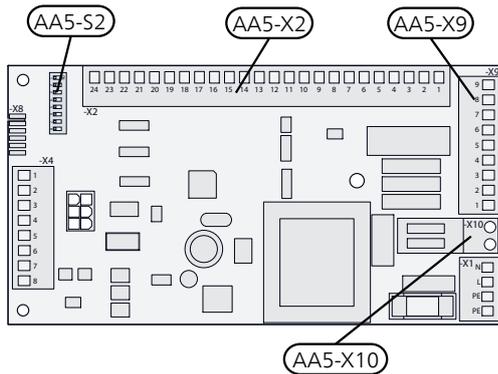
## NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXC 50.

## OVERVIEW ACCESSORY BOARD (AA5)



## CONNECTION OF SENSORS AND EXTERNAL BLOCKING

Use cable type LiYY, EKKX or similar.

### *External blocking, passive cooling (optional)*

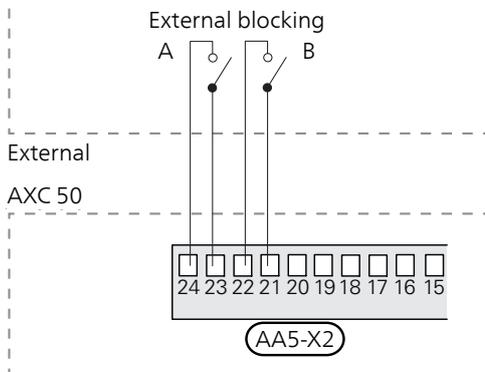
A contact (NO) can be connected to AA5-X2:23-24 to block passive cooling operation. When the contact closes, passive cooling is blocked.

### *External blocking, active cooling (optional)*

A contact (NO) can be connected to AA5-X2:21-22 to block active cooling operation. When the contact closes, active cooling is blocked.

A: Passive cooling

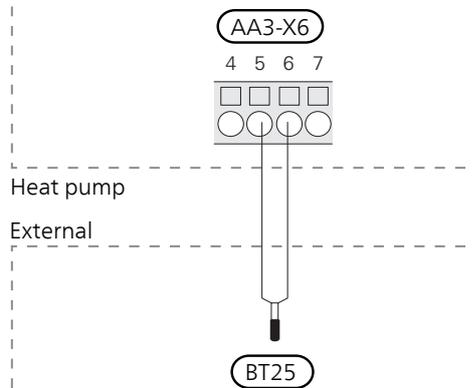
B: Active cooling.



## External supply temperature sensor (BT25)

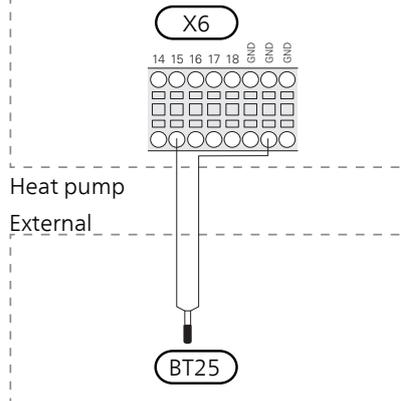
### *F1345 with 2.0/F1355*

Connect the temperature sensor, external supply line (BT25) to terminal block AA3-X6:5 and AA3-X6:6. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### *F1345 without 2.0*

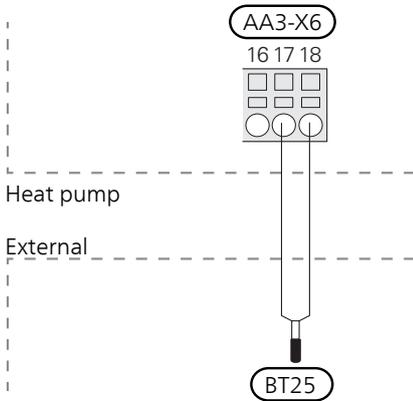
Connect the temperature sensor, external supply line (BT25) to terminal block A6:15 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



## External return line sensor (BT71)

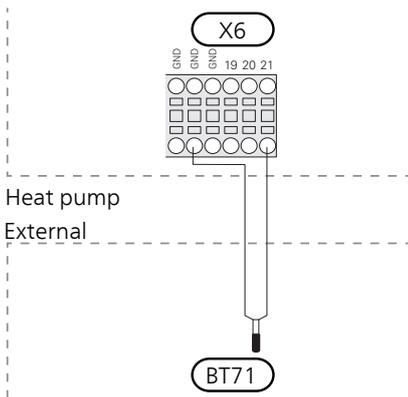
### F1345 with 2.0/F1355

Connect the temperature sensor, external return line (BT71) to terminal block AA3-X6:17 and AA3-X6:18. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### F1345 without 2.0

Connect temperature sensor, external return line (BT71) to terminal block X6:21 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### Caution

The relay outputs on the accessory card can have a max load of 2 A (230 V) in total.

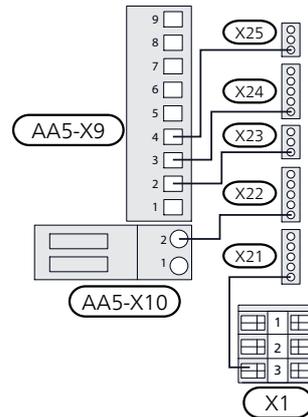
## CONNECTING TOP CLIPS



### NOTE

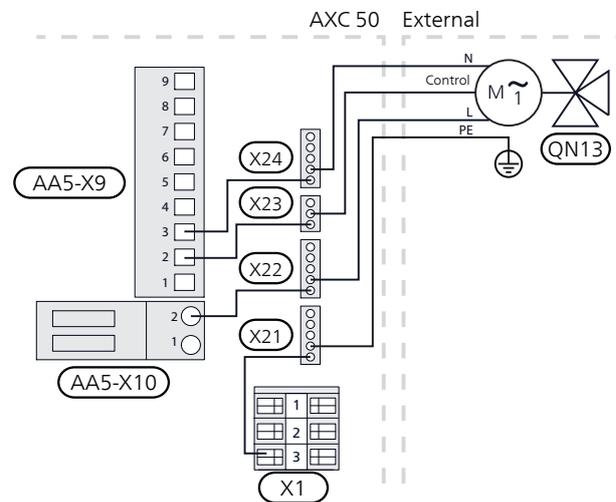
To connect the three-way valves to the accessory card, top clips are required (3x 5-pin and 2x 3-pin).

Connect top clip X21:1 to X1:3 (PE), top clip X22:1 to AA5-X10:2 (L), top clip X23:1 to AA5-X9:2 (operating), top clip X24:1 to AA5-X9:3 (N) and top clip X25:1 to AA5-X9:4 (operation).



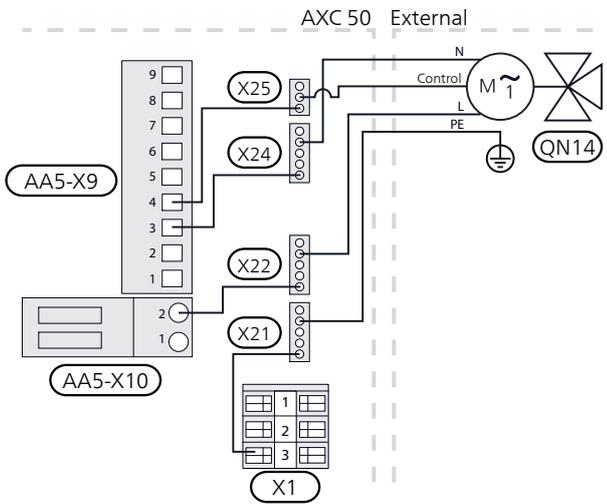
## CONNECTION OF THREE-WAY VALVE MOTOR (QN13)

Connect the three way valve motor (QN13) to top clip X21:2 (PE), top clip X22:2 (L), top clip X23:2 (operation) and top clip X24:2 (N).



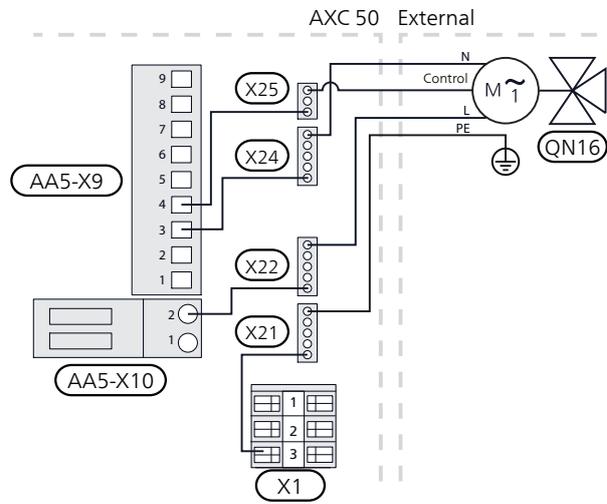
### CONNECTION OF THREE-WAY VALVE MOTOR (QN14)

Connect the three way valve motor (QN14) to top clip X21:4 (PE), top clip X22:4 (L), top clip X25:2 (operation) and top clip X24:4 (N).



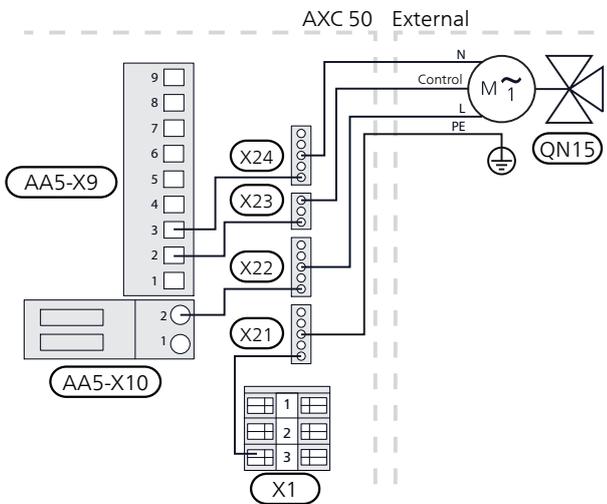
### CONNECTION OF THREE-WAY VALVE MOTOR (QN16)

Connect the three way valve motor (QN16) to top clip X21:5 (PE), top clip X22:5 (L), top clip X25:3 (operation) and top clip X24:5 (N).



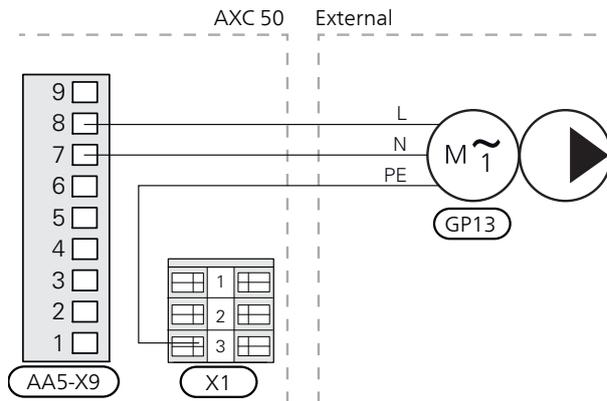
### CONNECTION OF THREE-WAY VALVE MOTOR (QN15)

Connect the three way valve motor (QN15) to top clip X21:3 (PE), top clip X22:3 (L), top clip X23:3 (operation) and top clip X24:3 (N).



### CONNECTION OF THE CIRCULATION PUMP (GP13) (OPTIONAL)

Connect the circulation pump (GP13) to AA5-X9:8 (230 V), AA5-X9:7 (N) and X1:3 (PE).



### DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



## RELAY OUTPUT FOR COOLING MODE INDICATION

It is possible to have an external indication of cooling mode through the relay function via a potential free variable relay (max 2 A) on terminal block X5.

If cooling mode indication is connected to terminal block X5 it must be selected in menu 5.4.

# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.4 - accessories*

Activating/deactivating of accessories.

Select: "passive/active cooling 2-pipe".

### *Menu 1.1 - temperature*

Setting of indoor temperature (room temperature sensor is required).

### *Menu 1.9.5 - cooling settings*

Here you can perform the following settings:

- Lowest flow line temperature when cooling.
- Desired flow temperature at an outdoor air temperature of +20 and +40 °C.
- Time between cooling and heating or vice versa.
- Selection of room sensor can control cooling.
- How much the room temperature may decrease or increase compared to the desired temperature before switching to heating respectively cooling (requires room sensor).
- Degree minute levels for cooling.
- Misc. shunt settings.

### *Menu 4.9.2 - auto mode setting*

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

Select the average outdoor temperatures in this menu.

You can also set the time over which (filtering time) the average temperature is calculated. If you select 0, the present outdoor temperature is used.

### *Menu 5.6 - forced control*

Forced control of the different components in the heat pump as well as in the different accessories that may be connected.

EQ1-AA5-K1: Signal to reversing valves (QN13) and (QN15).

EQ1-AA5-K2: Signal to reversing valves (QN14) and (QN16).

EQ1-AA5-K3: No function.

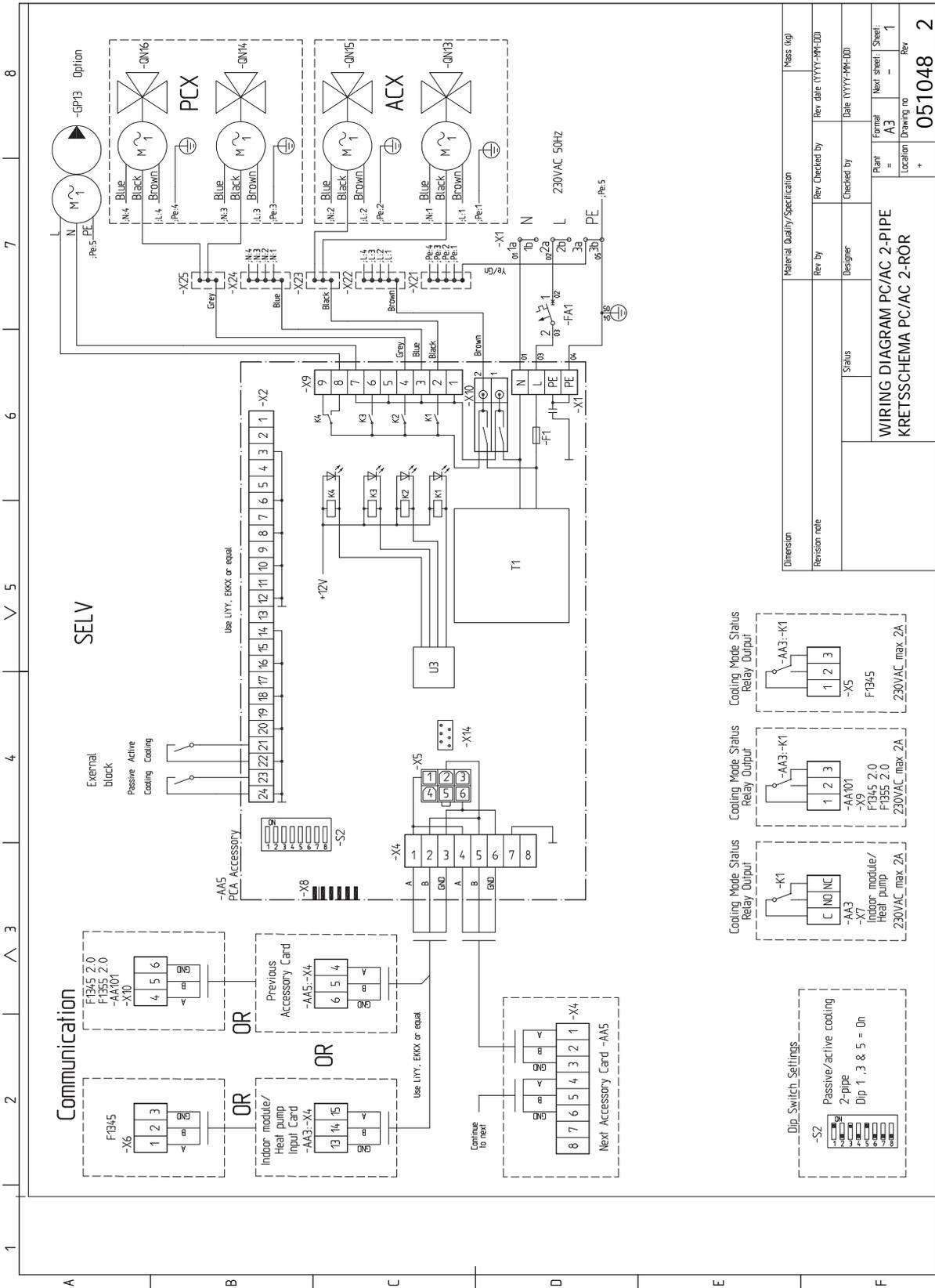
EQ1-AA5-K4: Activating the circulation pump (GP13).



### *Caution*

Also see the Operating Manual for F1345/F1355.

# Electrical circuit diagram



Dimension	Material Quality/Specification		Pass top
Revision note	Rev by	Rev Checked by	Rev date (YYYY-MM-DD)
	Designer	Checked by	Date (YYYY-MM-DD)
<b>WIRING DIAGRAM PC/AC 2-PIPE KRETTSCHEMA PC/AC 2-ROR</b>			
Plant	Formal	Next sheet	Sheet
=	A3	-	1
Location	Drawing no	Rev	
	051048	2	

# 11 Shunt controlled brine

## General

This connection makes it possible to control a shunt valve that regulates the incoming brine temperature.

The heat pump controls a shunt valve (QN41) to limit the maximum incoming brine temperature via temperature sensor (BT26). If the sensor registers a value above the maximum set temperature, the shunt valve closes to reduce the mix of incoming brine.

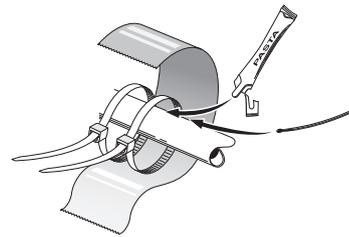


### Caution

The function is only active when a compressor in the system is running.

## TEMPERATURE SENSOR

Install the temperature sensor (BT26) after shunt valve (QN41) and T-pipe.



Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.



### NOTE

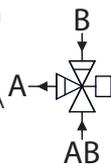
Sensor and communication cables must not be laid near power cables.

## Pipe connections

### SHUNT VALVE

The shunt valve (QN41) must be placed in the brine system on the supply line from the heat pump via the T-pipe connections according to the outline diagram.

- Connect the brine out to the shunt valve on common port AB (always open).
- Connect the brine to the collector via port A (closes at reduce signal).
- Connect the brine in from the collector via T-pipe to port B on the shunt valve (opens at increase signal).

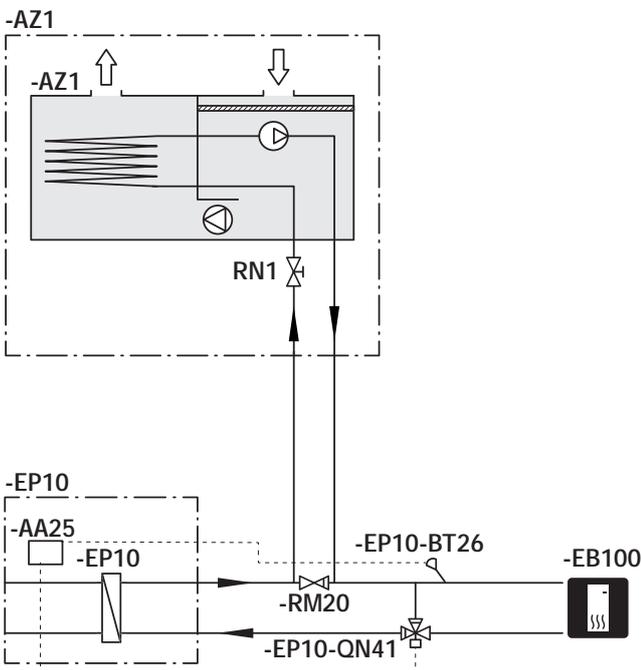


# Outline diagram

Real installations must be planned according to applicable standards. More system principles can be found at nibe.eu.

## EXPLANATION

AZ1	Exhaust air system
AA25	AXC 50
RN1	Trim valve
EP10	Other collector
BT26	Temperature sensor, brine in
EB100	Heat pump
QN41	Shunt valve, brine temperature
Miscellaneous	
RM20	Non-return valve



# Electrical connection



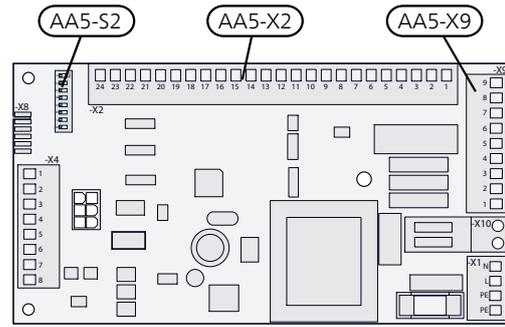
## NOTE

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXC 50.

## OVERVIEW ACCESSORY BOARD (AA5)



## CONNECTION OF SENSORS AND EXTERNAL BLOCKING

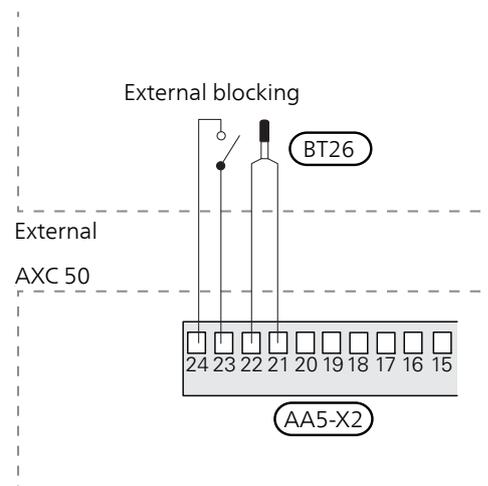
Use cable type LiYY, EKKX or similar.

### Temperature sensor, brine (BT26)

Connect sensor for incoming collector to AA5-X2:21-22.

### External blocking (optional)

A contact (NO) can be connected to AA5-X2:23-24 to block the accessory. When the contact closes, the accessory is blocked.

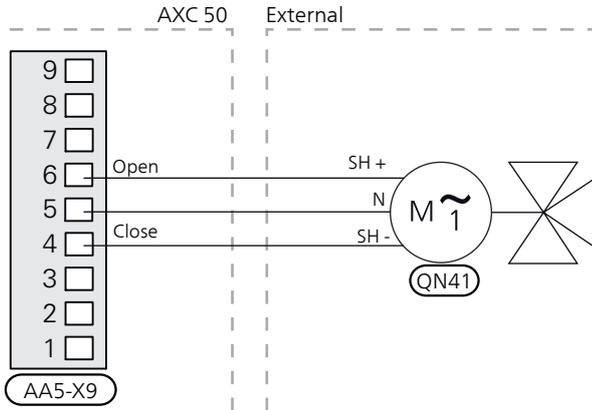


## Caution

The relay outputs on the accessory board can have a max load of 2A (230V) in total.

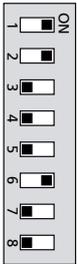
## CONNECTION OF THE SHUNT VALVE MOTOR (QN41)

Connect the shunt motor (QN41) to AA5-X9:6 (230V, open), AA5-X9:5 (N) and AA5-X9:4 (230V, close).



## DIP SWITCH

The DIP switch (S2) on the accessory card (AA5) must be set as follows.



# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.4 -accessories*

Activating/deactivating of accessories.

Select: "shunt controlled brine".

### *Menu 5.3.10 - shunt controlled brine*

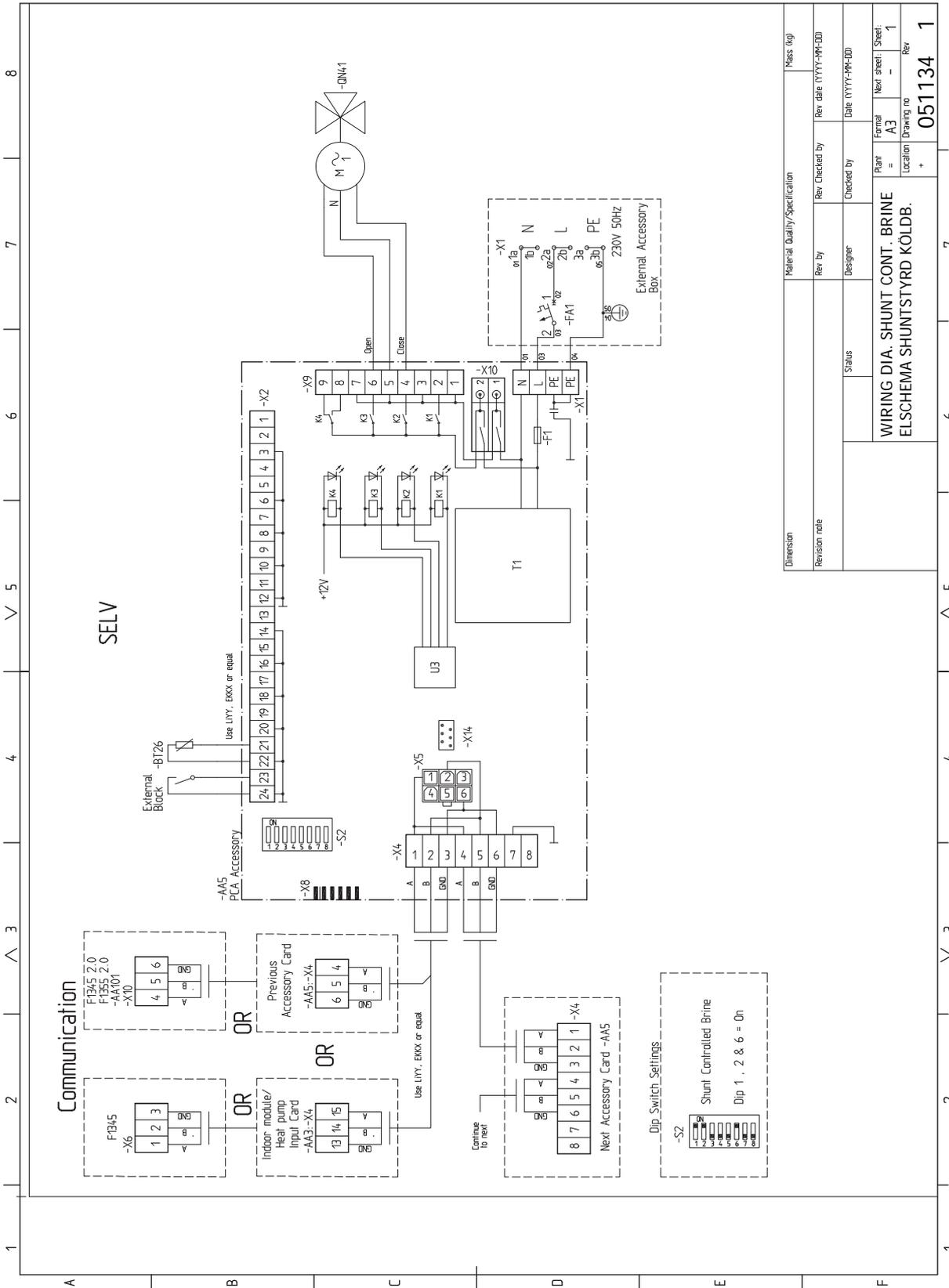
Here you can perform various shunt settings:



### *Caution*

Also see the Operating Manual for F1345/F1355.

# Electrical circuit diagram



Material Quality/Specification		Pass log	
Revision note	Rev by	Rev Checked by	Rev date (YYYY-MM-DD)
Status	Designer	Checked by	Date (YYYY-MM-DD)
WIRING DIA. SHUNT CONT. BRINE		Plant	Next sheet
ELSCHEMA SHUNTSTYRD KÖLDB.		Location	Sheet
		Drawing no	Rev
		051134	1

# 12 Pool heating

## General

This function enables pool heating in your climate unit.

The reversing valve (QN19) is connected to control the heating medium supply to a pool exchanger. The reversing valve or, if required, the reversing valves (although with the same control signal), is/are installed on the heating medium circuit that normally goes to a radiator system. In systems with a cascade connection, you determine in the control system how many compressors are permitted to work with pool heating. External circulation pump (GP10) to the climate system must be installed if one or more pools is docked to the system.

During pool heating, the heating medium is circulated between the heat pump and the pool exchanger using the heat pump's internal circulation pump. An external circulation pump (GP9) circulates the pool water between the pool exchanger and the pool.

The external circulation pump (GP10) circulates the heating medium water in the climate system, and the additional heat can be engaged as necessary, at the same time as the external supply temperature sensor (BT25) continually meters the heating demand of the house.

The heat pump controls the reversing valve (QN19), pool circulation pump (GP9) and any heating circuit circulation pumps (GP10) via AXC 50.

Up to two different pool systems can be connected to F1345 and F1355 and be controlled individually, although this requires two AXC 50.

## Pipe connections

### GENERAL

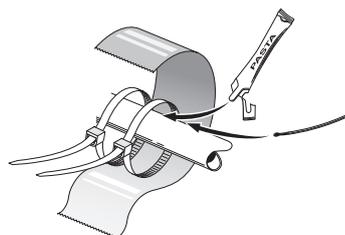
When AXC 50 is connected to the climate unit, the heating circuit must be supplied with an external circulation pump. This is because, during pool charging, the heat pump's internal circulation pump maintains the flow through the pool heat exchanger. The extra/external circulation pump (GP10) maintains the flow in the heating circuit, so the supply temperature sensor (BT25) can measure the temperature correctly.

### SHUTTLE VALVE

Install the reversing valve on the heating medium circuit, which normally runs to a radiator system. One port goes to the pool and one port goes to the heating system.

### TEMPERATURE SENSOR

- The pool sensor (BT51) is placed on the return line from the pool.
- The external supply temperature sensor (BT25) is located on the supply line to the climate system, after the circulation pump (GP10).



Install the temperature sensors with cable ties with the heat conducting paste and aluminium tape. Then insulate with supplied insulation tape.



### NOTE

Sensor and communication cables must not be placed near power cables.

### FUNCTION

Heating of the pool is prioritised according to selected settings in the heat pump.

If the pool sensor (BT51) is not connected, pool charging is not permitted to start.

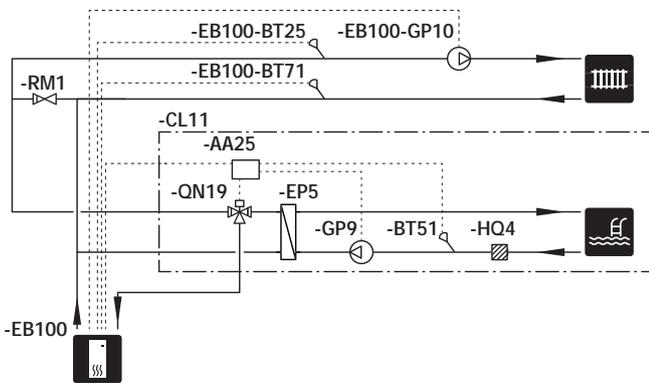
The heating medium flow is adjusted so that the temperature difference over the pool heat exchanger is 10–15 °C. The setting is made in menu 5.1.11.

# Outline diagram

Real installations must be planned according to applicable standards. More system principles can be found at nibe.eu.

## EXPLANATION

CL11	Pool heating
AA25	AXC 50
QN19	Reversing valve motor
EP5	Cooling exchanger
GP9	Circulation pump, pool circuit
BT51	Temperature sensor, pool
HQ4	Particle filter
EB100	Heat pump
BT25	External supply temperature sensor
GP10	External circulation pump
Miscellaneous	
RM1	Non-return valve



# Electrical connection

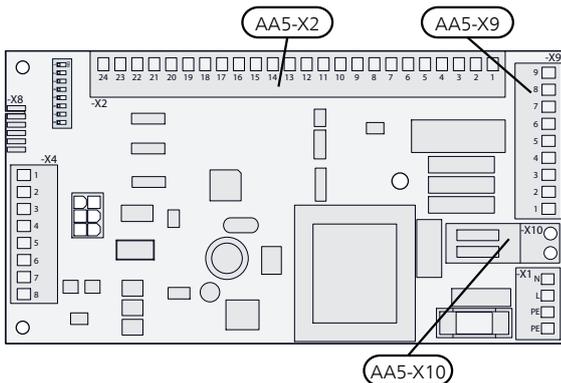
**NOTE**

All electrical connections must be carried out by an authorised electrician.

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

The main product must be disconnected from the power supply when installing AXC 50.

## OVERVIEW ACCESSORY BOARD (AA5)



## CONNECTION OF SENSORS AND EXTERNAL BLOCKING

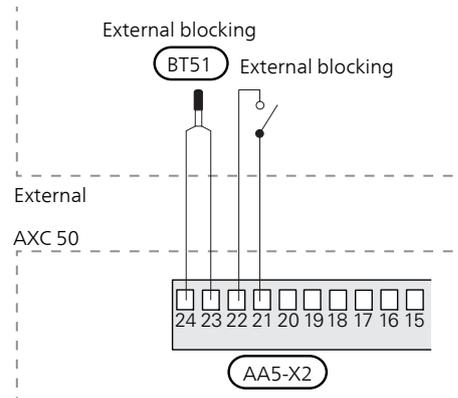
Use cable type LiYY, EKKX or similar.

### Pool sensor (BT51)

Connect pool sensor to AA5-X2:23-24.

### External blocking

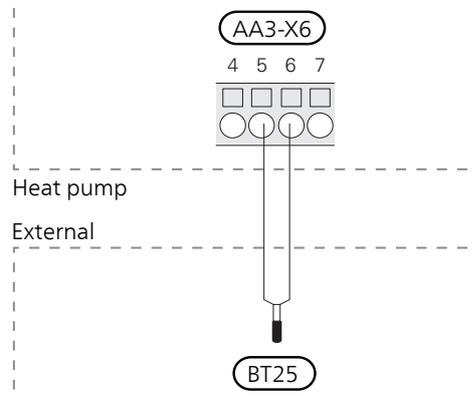
A contact can be connected to AA5-X2:21-22 to allow blocking of pool heating. When the contact closes, pool heating is blocked.



### External supply temperature sensor (BT25)

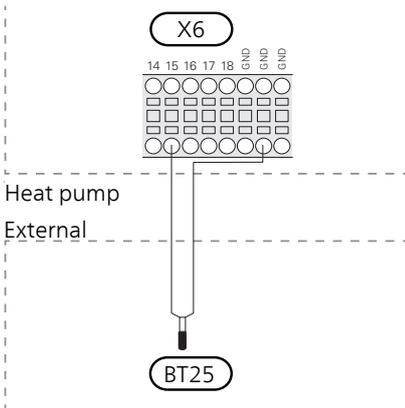
F1345 with 2.0/F1355

Connect the temperature sensor, external supply line (BT25) to terminal block AA3-X6:5 and AA3-X6:6. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### F1345 without 2.0

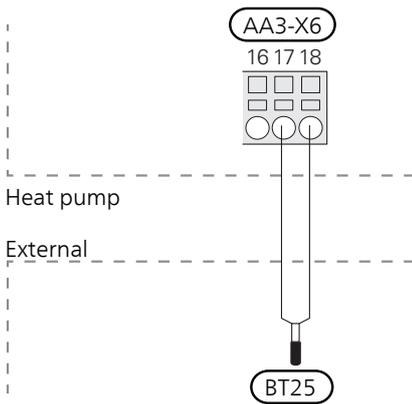
Connect the temperature sensor, external supply line (BT25) to terminal block X6:15 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### External return line sensor (BT71)

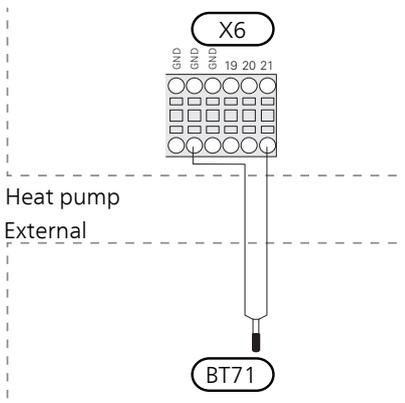
#### F1345 with 2.0/F1355

Connect the temperature sensor, external return line (BT71) to terminal block AA3-X6:17 and AA3-X6:18. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



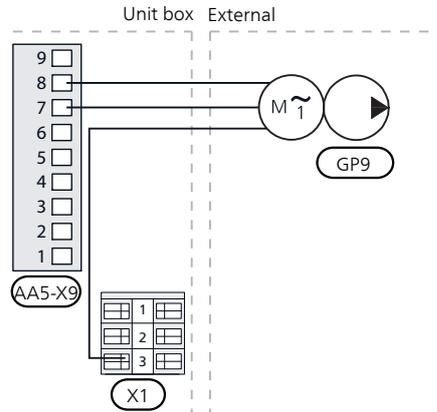
### F1345 without 2.0

Connect temperature sensor, external return line (BT71) to terminal block X6:21 and X6:GND. Use a twin core cable with a cable area of at least 0.5 mm<sup>2</sup>.



### CONNECTION OF THE CIRCULATION PUMP, POOL CIRCUIT (GP9)

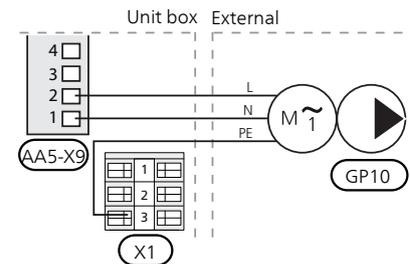
Connect the circulation pump (GP9) to AA5-X9:8 (230 V), AA5-X9:7 (N) and X1:3 (PE).



### CONNECTION OF THE CIRCULATION PUMP, CLIMATE SYSTEM (GP10)

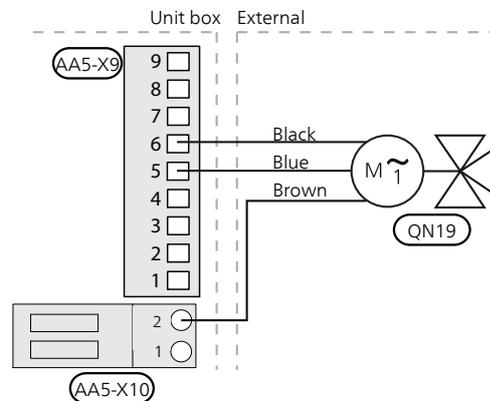
If the climate system does not already have an external pump, one can be connected to the accessory card.

Connect the circulation pump (GP10) to AA5-X9:2 (230 V), AA5-X9:1 (N) and X1:3 (PE).



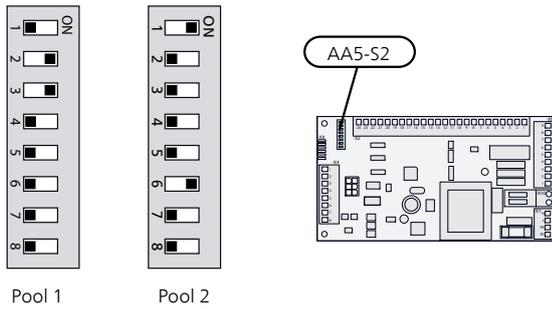
### CONNECTION, REVERSING VALVE MOTOR (QN19)

Connect the motor (QN19) to AA5-X9:6 (signal), AA5-X9:5 (N) and AA5-X10:2 (230 V).



## DIP SWITCH

The DIP switch on the accessory card must be set as follows.



# Program settings

Program setting of AXC 50 can be performed via the start guide or directly in the menu system.

## START GUIDE

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

## MENU SYSTEM

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

### *Menu 5.2.3 docking<sup>2)</sup>*

Setting the system docking.

### *Menu 5.2.4 - accessories<sup>2)</sup>*

Activating/deactivating of accessories.

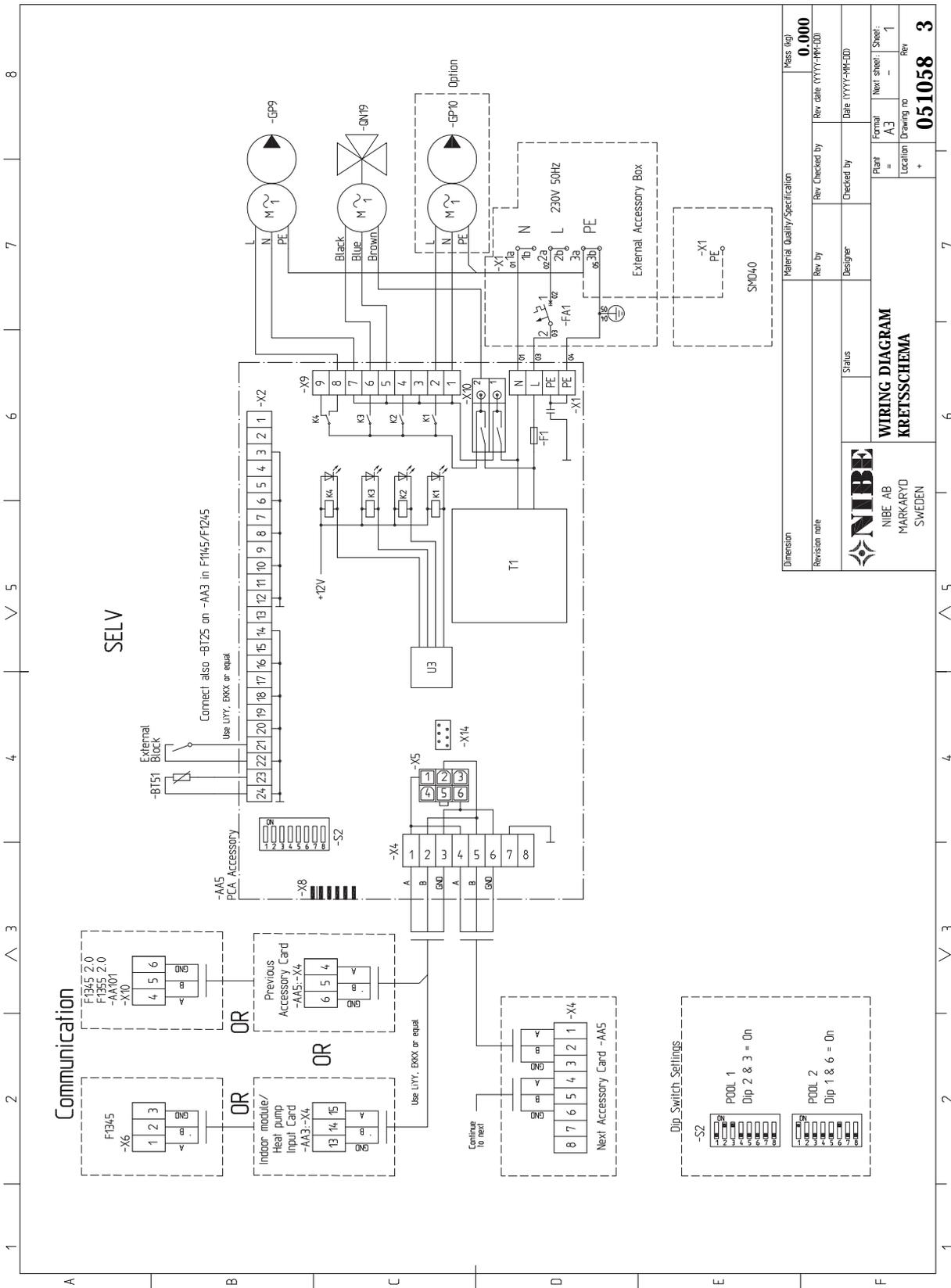
### *Menu 4.1.1 - pool*

Activating pool heating and setting start and stop temperature.

### *Menu 5.1.11 - pump speed heating medium*

Setting heating medium pump's speed.

# Electrical circuit diagram





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