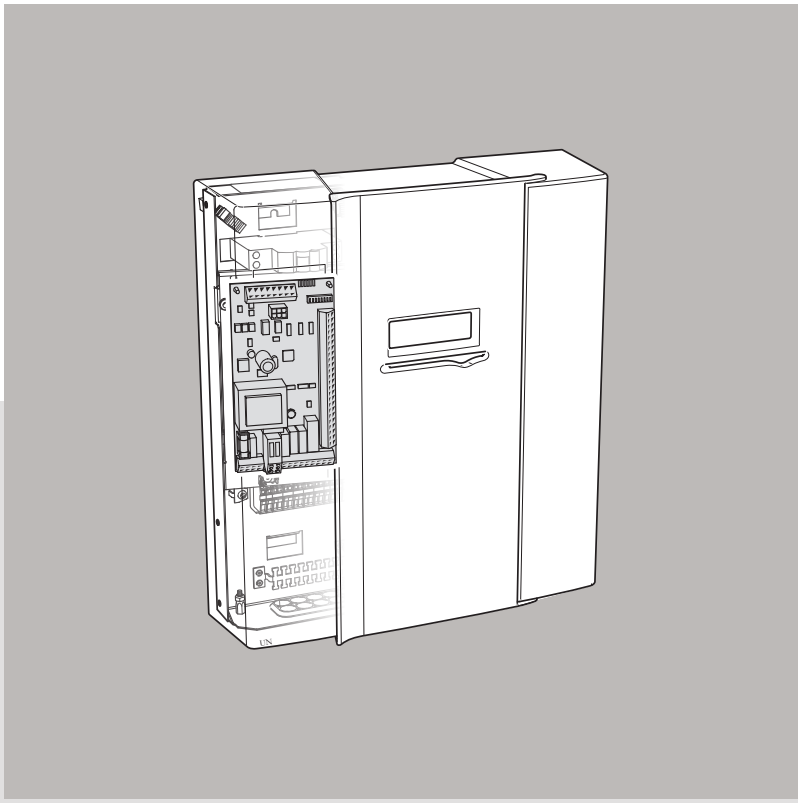
IHB EN 1820-2
331079

INSTALLER MANUAL

SMO 40 *Accessory Card*



NIBE

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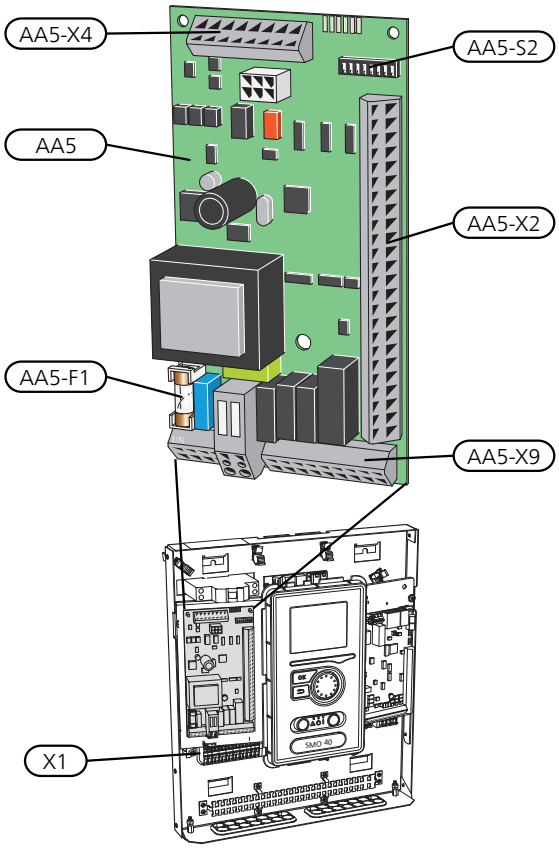
1 General

The accessory board in SMO 40 is used to enable the connection and control of one of the following accessory functions.

- shunt-controlled additional heat
- step-controlled additional heat
- extra climate system
- hot water comfort
- active cooling (4-pipe system)
- connection of several heat pumps.

One or more additional accessory functions require an AXC 30 each.

Component location



ELECTRICAL COMPONENTS

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 in component locations according to standard EN 81346-2.

2 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 indoor module controls a shunt valve (QN11) and a circulation pump (GP10) via the accessory board in SMO 40. If the heat pump cannot manage to maintain the correct supply temperature (BT25), the additional heat starts. When the boiler temperature in (BT52) exceeds the set value, the indoor module transmits a signal to the shunt (QN11) to open from the additional heat. The shunt (QN11) is regulated so the true supply temperature corresponds with the indoor module's theoretical calculated set point value. When the heating demand drops sufficiently, so 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.

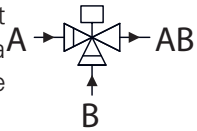
Pipe connections

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.

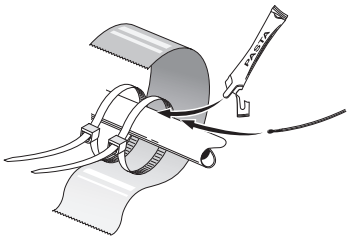
- Connect the supply line from the heat pump to the external heat source via the T-pipe to port B on the shunt valve (closes on reduce signal).



- 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 SMO 40), 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

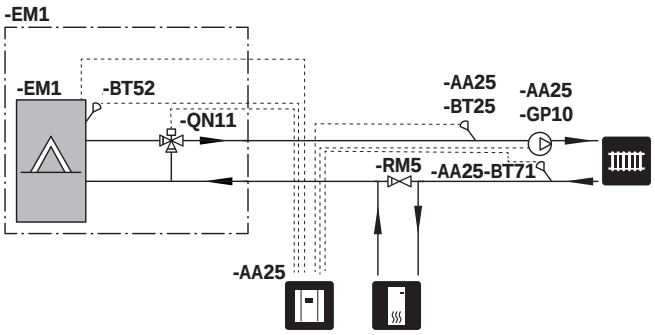
Sensor and communication cables must not be laid near power cables.

Outline diagram

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

EXPLANATION

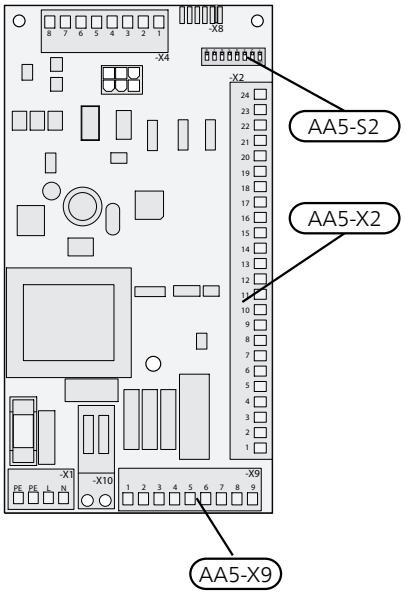
EM1	*Mixing valve controlled additional heat, boiler*
AA25	SMO 40
BT52	Boiler sensor
GP10	External circulation pump
QN11	Mixing valve, addition
BT25	External supply temperature sensor
BT71	External return line sensor
Miscellaneous	
RM5	Non-return valve



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.
>
> SMO 40 must be disconnected from the power when installing accessory functions.

OVERVIEW ACCESSORY BOARD (AA5)



CONNECTION OF SENSORS AND EXTERNAL BLOCKING

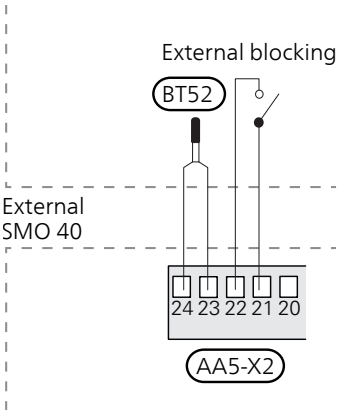
Use cable type LiYY, EKKX or similar.

Boiler sensor (BT52)

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

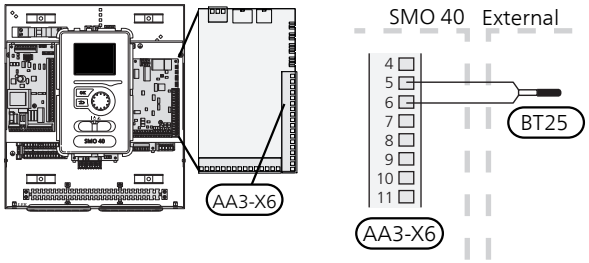
External blocking (optional)

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.



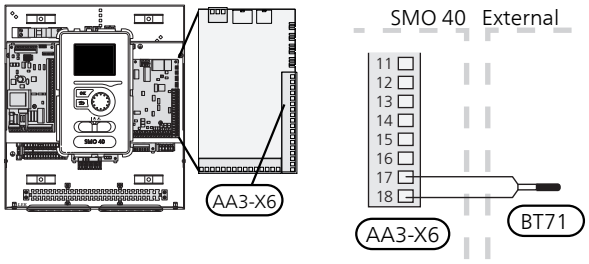
External supply temperature sensor (BT25)

Connect temperature sensor, external supply line (BT25) to terminal block X6:5 and X6:6 on the input board (AA3). Use a twin core cable with a cable area of at least 0.5 mm².



External return line sensor (BT71)

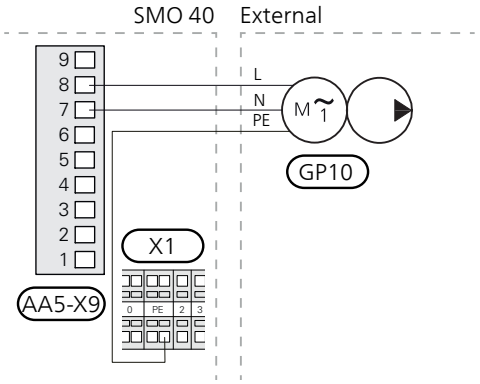
Connect temperature sensor, external return line (BT71) to terminal block X6:17 and X6:18 on the input board (AA3). Use a twin core cable with a cable area of at least 0.5 mm².



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

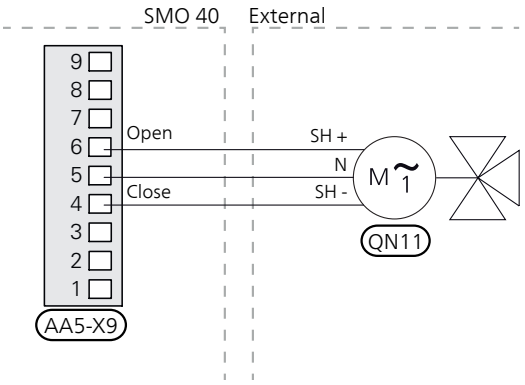
CONNECTION OF THE CIRCULATION PUMP (GP10)

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



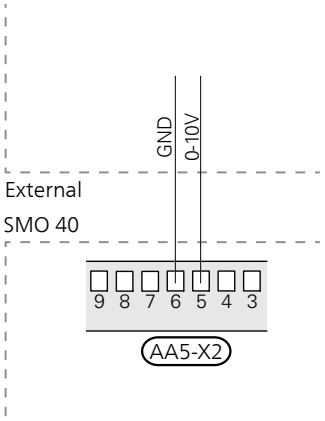
CONNECTION OF THE SHUNT VALVE MOTOR (QN11)

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



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

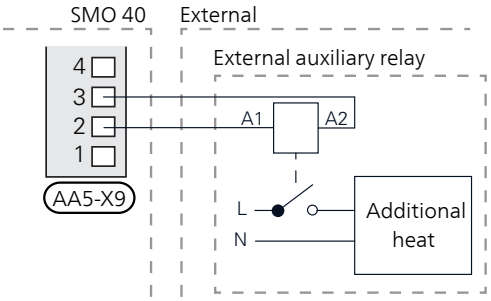
Connect a twin core cable of the type LiKK, EKKX or equivalent to AA5-X2:5 (0-10 V) and AA5-X2:6 (GND).



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

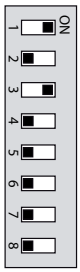
CONNECTION OF THE AUXILIARY RELAY FOR ADDITIONAL HEATING

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



DIP SWITCH

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



Program settings

Program setting of SMO 40 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:

- activation of the prioritised additional heat function.
- 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 indoor module pump as well as in the various accessories that may be connected.

EM1-AA5-K1: Activation of relay for additional heat.

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).

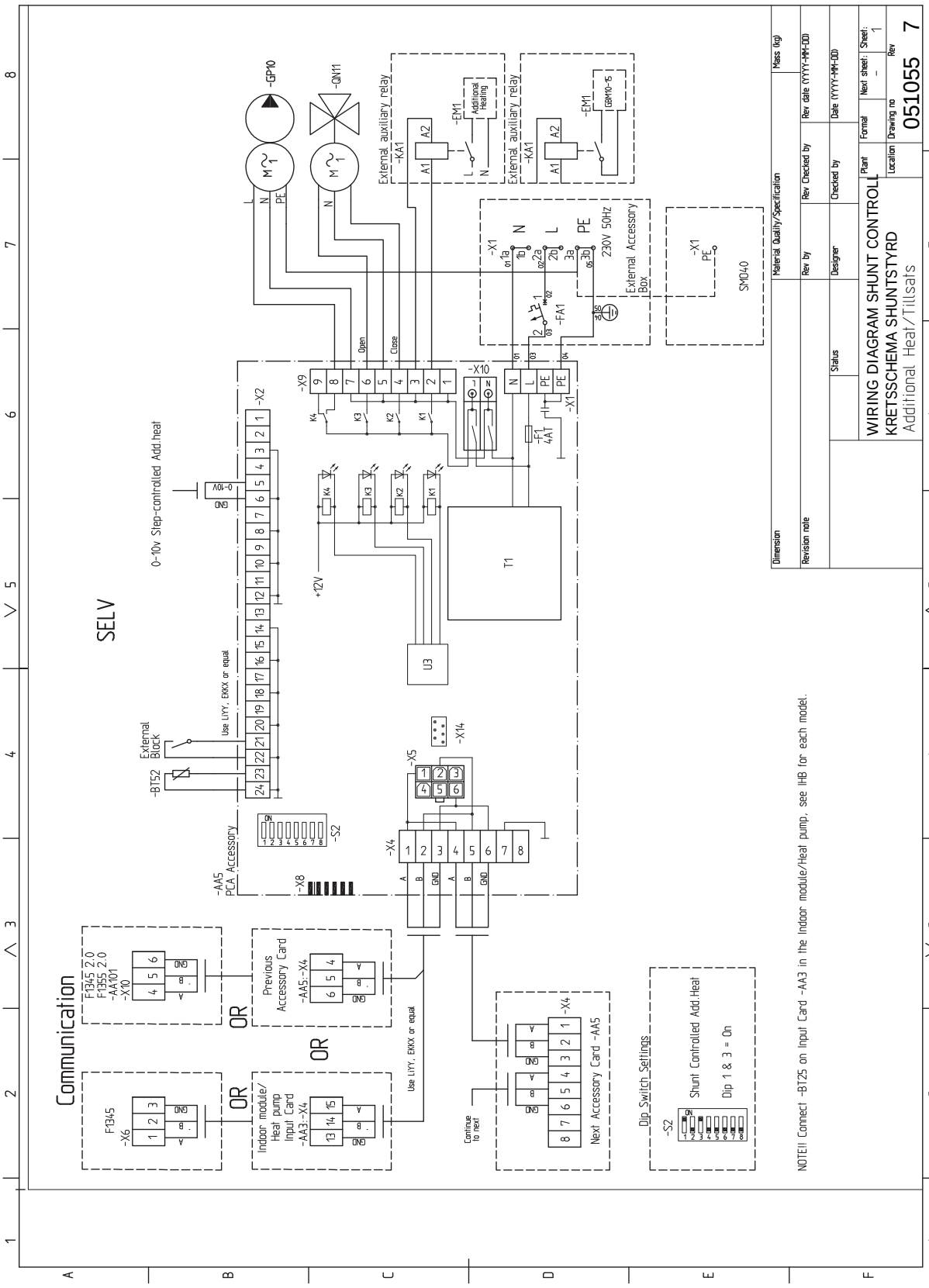
Menu 4.1.8 - smart energy source™ (option)

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 Installer Manual for the main product.

Electrical circuit diagram



3 Step controlled additional heat

General

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

With the accessory board in SMO 40, a further three potential-free relays can be used for additional heat control, which then provides a further 3 linear or 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.

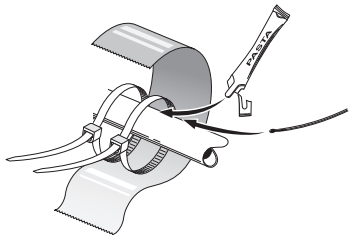
Pipe connections

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 the indoor module's control module) 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

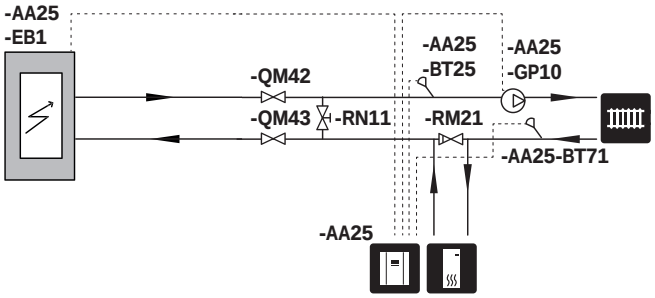
Sensor and communication cables must not be laid near power cables.

Outline diagram

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

EXPLANATION

EB1	*Step controlled additional heat*
AA25	SMO 40
GP10	Circulation pump, heating medium external
BT25	External supply temperature sensor
BT71	External return line sensor
Miscellaneous	
QM42-43	Shut-off valve
RN11	Trim valve
RM21	Non-return valve



Electrical connection

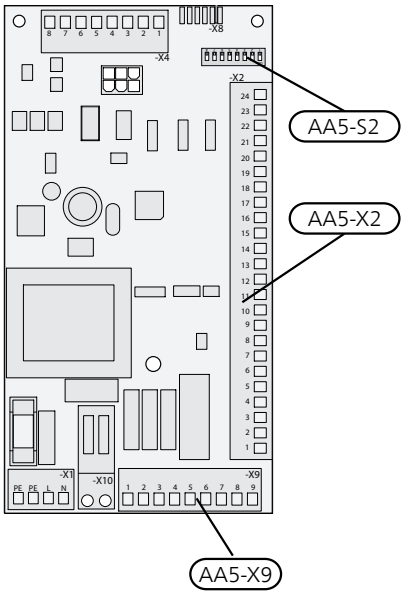
NOTE

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.

SMO 40 must be disconnected from the power when installing accessory functions.

OVERVIEW ACCESSORY BOARD (AA5)

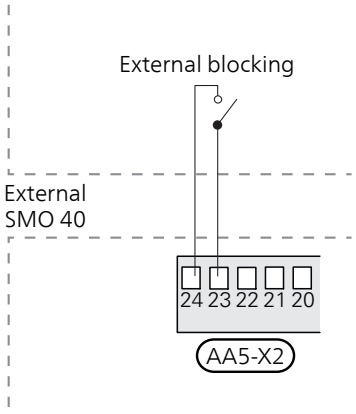


CONNECTION OF SENSORS AND EXTERNAL BLOCKING

Use cable type LiYY, EKKX or similar.

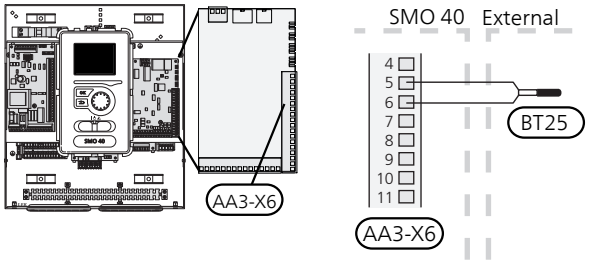
External blocking (optional)

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.



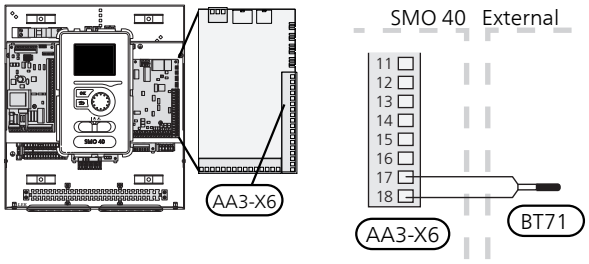
External supply temperature sensor (BT25)

Connect temperature sensor, external supply line (BT25) to terminal block X6:5 and X6:6 on the input board (AA3). Use a twin core cable with a cable area of at least 0.5 mm².



External return line sensor (BT71)

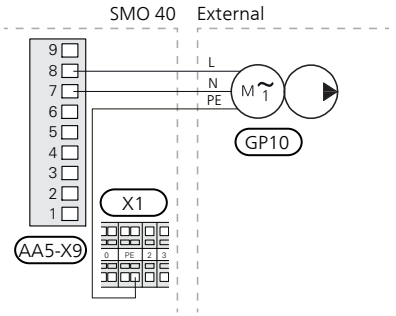
Connect temperature sensor, external return line (BT71) to terminal block X6:17 and X6:18 on the input board (AA3). Use a twin core cable with a cable area of at least 0.5 mm².



> *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:PE.



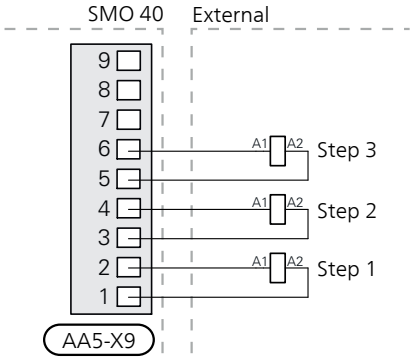
CONNECTION OF RELAYS

Connecting additional step

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

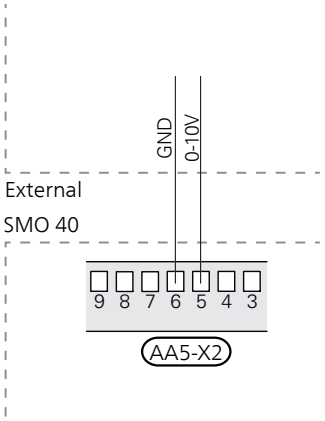
Connect step 2 to AA5-X9:3 and 4.

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



Connection of 0-10 V control

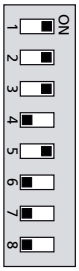
Connect a twin core cable of the type LiKK, EKKX or equivalent to AA5-X2:5 (0-10 V) and AA5-X2:6 (GND).



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 SMO 40 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

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 (external) and 4.9.3 (internal) are factory set at 400GM. If both the additional heat possibilities are used and you wish 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.

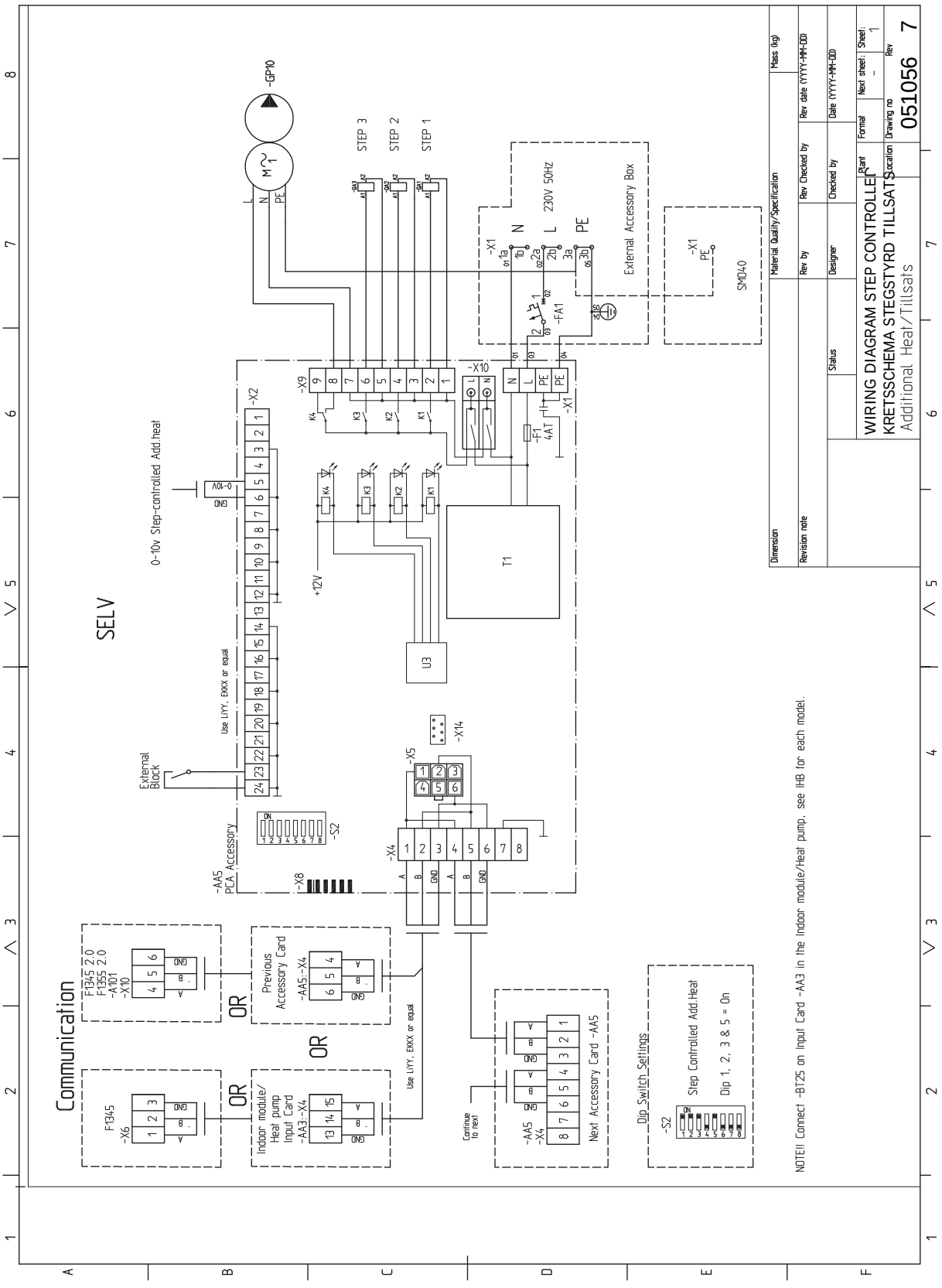
EB1-AA5-K2: Activating additional step 2.

EB1-AA5-K3: Activating additional step 3.

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

> *Caution*
>
> Also see the Installer Manual for the main product.

Electrical circuit diagram



4 Extra climate system

General

This accessory function is used when SMO 40 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 underfloor 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 indicatory 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.

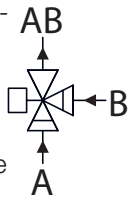
CIRCULATION PUMP

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.

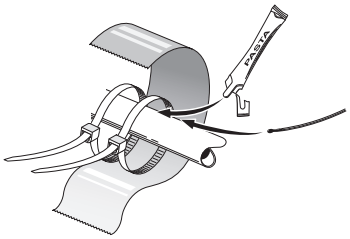
- Connect the supply line to the climate system from the heat pump to port A on the shunt valve (opens on increase signal)
- Connect the return line from the climate system to port B on the shunt valve via the T-pipe (closes on reduce signal).



- 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

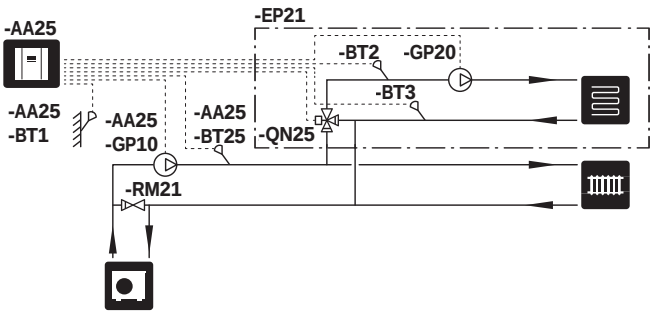
Sensor and communication cables must not be laid near power cables.

Outline diagram

EXPLANATION

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

EP21	*Climate system*
BT2	Flow temperature sensor, extra climate system
BT3	Return line sensor, extra climate system
GP20	Circulation pump, extra climate system
QN25	Shunt valve
BT25	External supply temperature sensor
AA25	*SMO 40*
GP10	External heating medium pump
RM21	Non-return valve
BT1	Temperature sensor, outdoor



Electrical connection

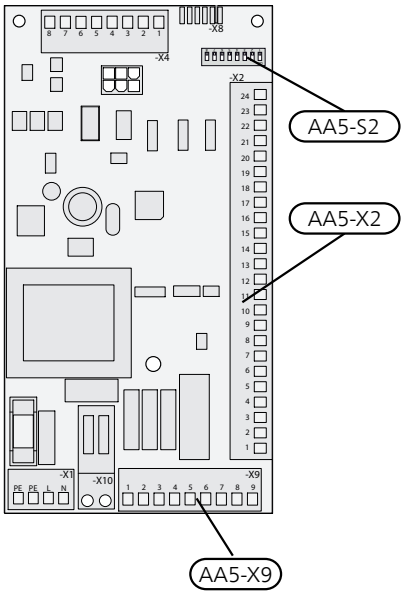
NOTE

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.

SMO 40 must be disconnected from the power when installing accessory functions.

OVERVIEW ACCESSORY BOARD (AA5)



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)

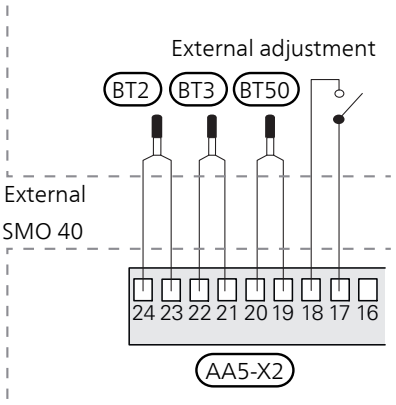
Connect the return line sensor to AA5-X2:21-22.

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.

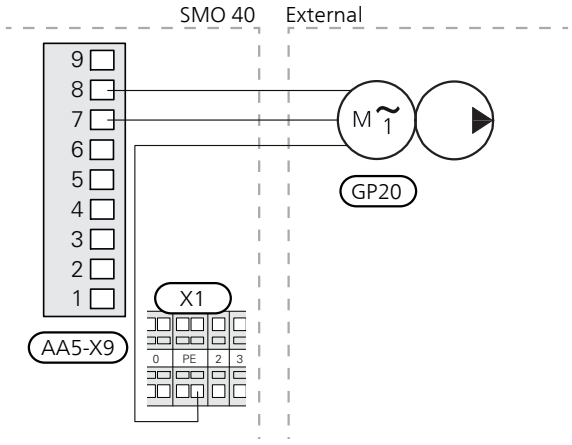


Caution

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

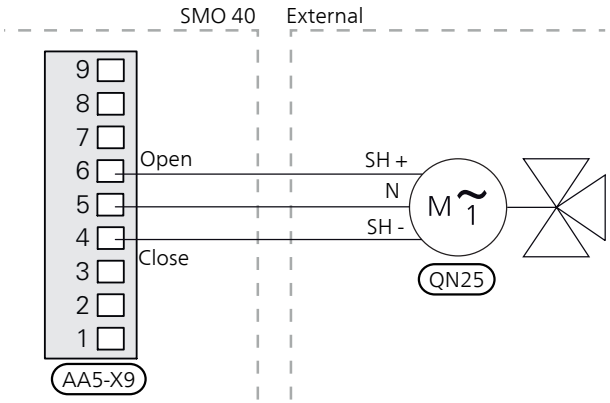
CONNECTION OF THE CIRCULATION PUMP (GP20)

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



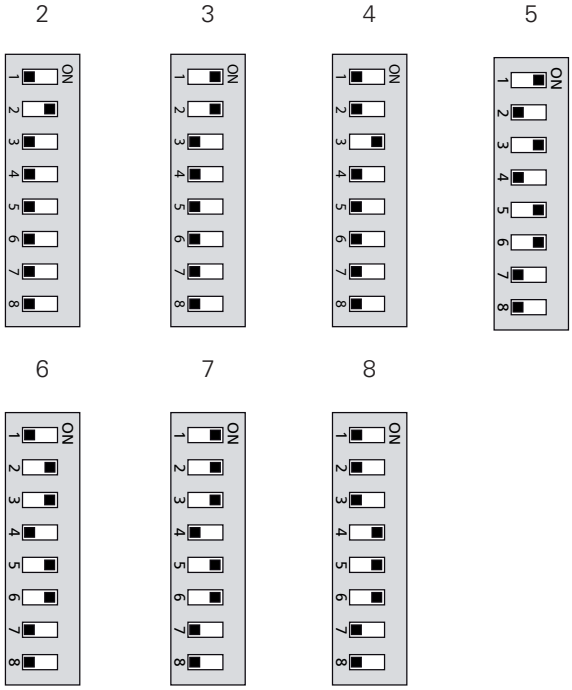
CONNECTION OF THE SHUNT VALVE MOTOR (QN25)

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 SMO 40 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).

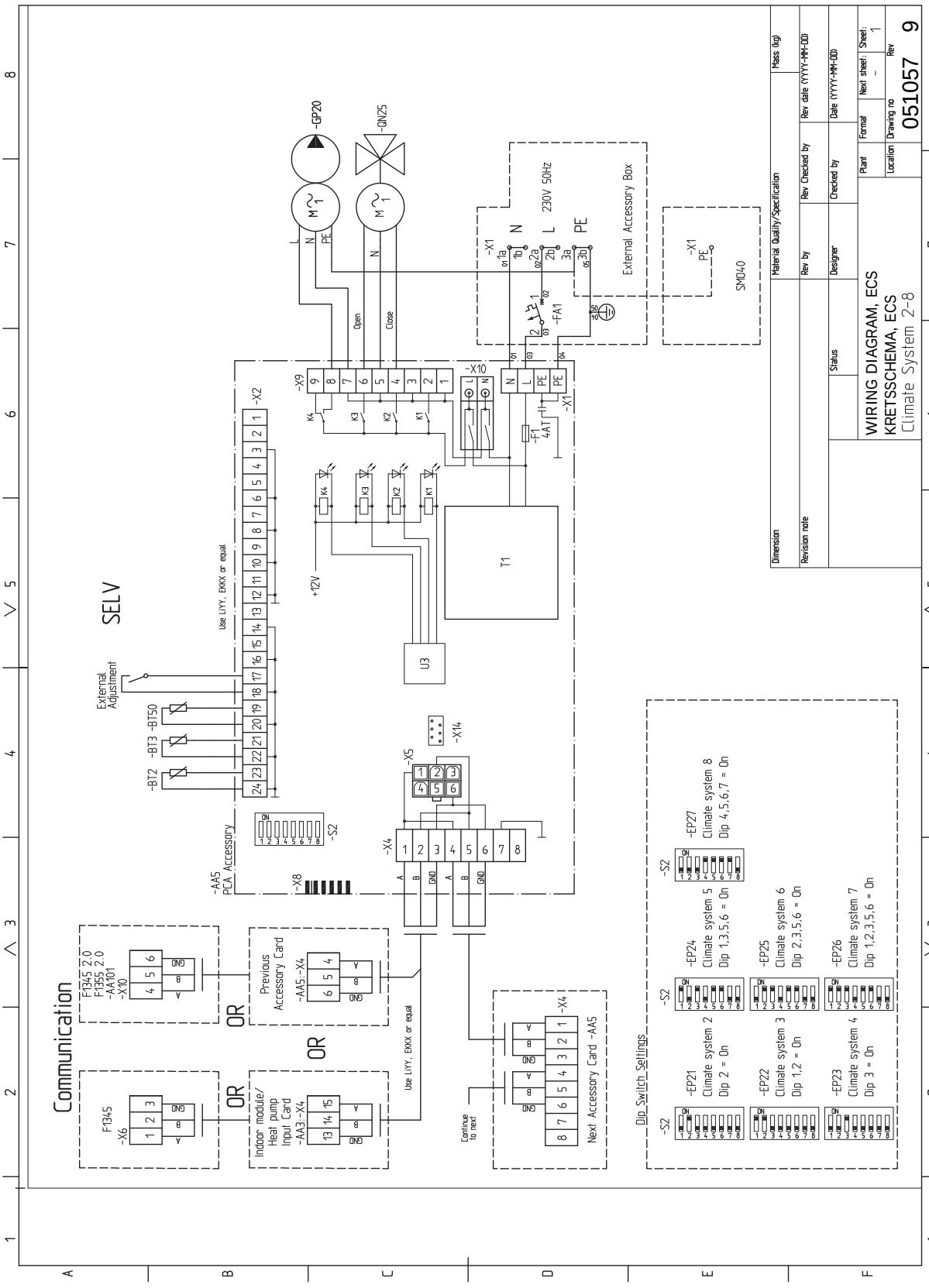
EP2#-AA5-K3: Signal (open) to mixing valve (QN25).

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

Caution

Also see the Installer Manual for the main product.

Electrical circuit diagram



5 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 (VVC)

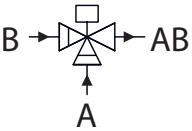
A circulation pump can be controlled so that it circulates the hot water during selectable periods.

Pipe connections

MIXING VALVE

The mixer valve (FQ3) must be placed on the outgoing hot water line from the water heater according to the outline diagram.

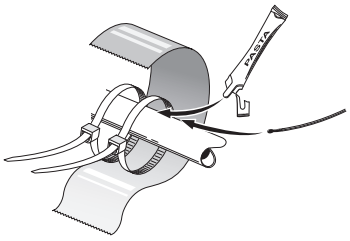
- Connect the incoming cold water via the T-pipe to port B on the mixer valve (closes at signal).



- 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 (FQ3) 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.

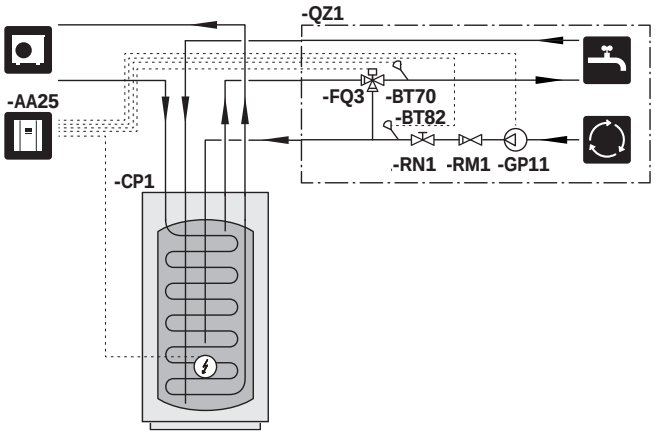
Outline diagram

EXPLANATION

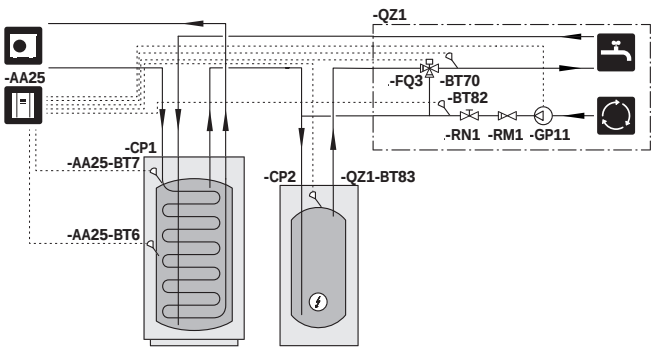
Real installations must be planned according to applicable standards. More system principles can be found at www.nibe.eu.

QZ1	Hot water comfort
AA25	SMO 40
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
BT6	Temperature sensor, hot water
BT7	Temperature sensor, hot water top

OUTLINE DIAGRAM WITH ADDITIONAL HEAT IN THE WATER HEATER, HWC AND ELECTRONIC MIXING VALVE



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



Electrical connection

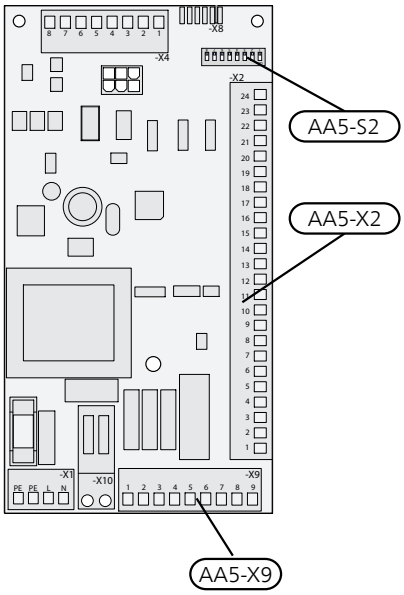
NOTE

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.

SMO 40 must be disconnected from the power when installing accessory functions.

OVERVIEW ACCESSORY BOARD (AA5)



CONNECTING SENSORS

Use cable type LiYY, EKKX or similar.

Hot water sensor, supply line (BT70)

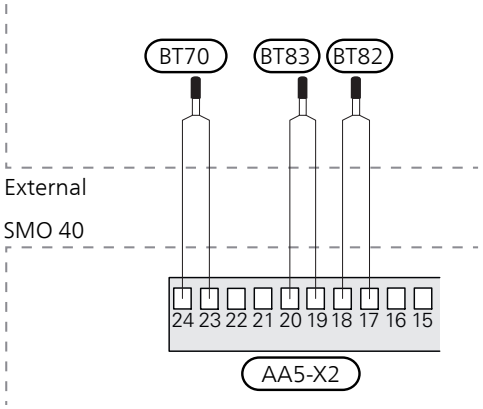
Connect the hot water sensor to AA5-X2:23-24.

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.

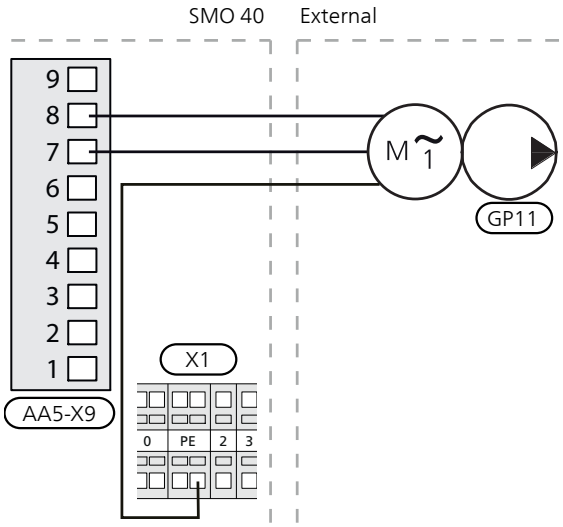


Caution

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

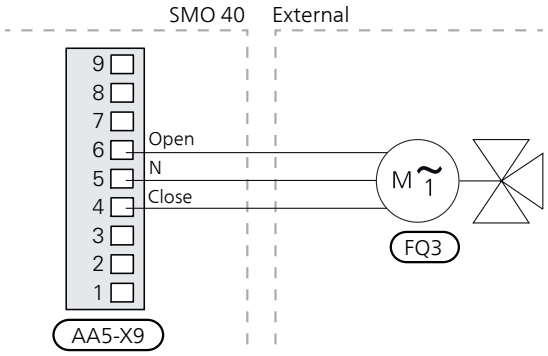
CONNECTION OF THE HOT WATER CIRCULATION PUMP (GP11)

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



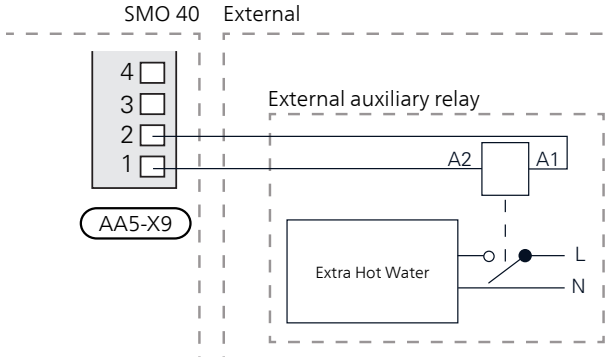
CONNECTION OF THE MIXER VALVE (FQ3)

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



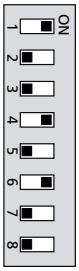
CONNECTION TO AUXILIARY RELAY FOR ADDITIONAL HEAT IN HOT WATER OPERATION (TEMPORARY LUX, EXTRA HOT WATER)

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



DIP SWITCH

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



Program settings

Program setting of SMO 40 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).

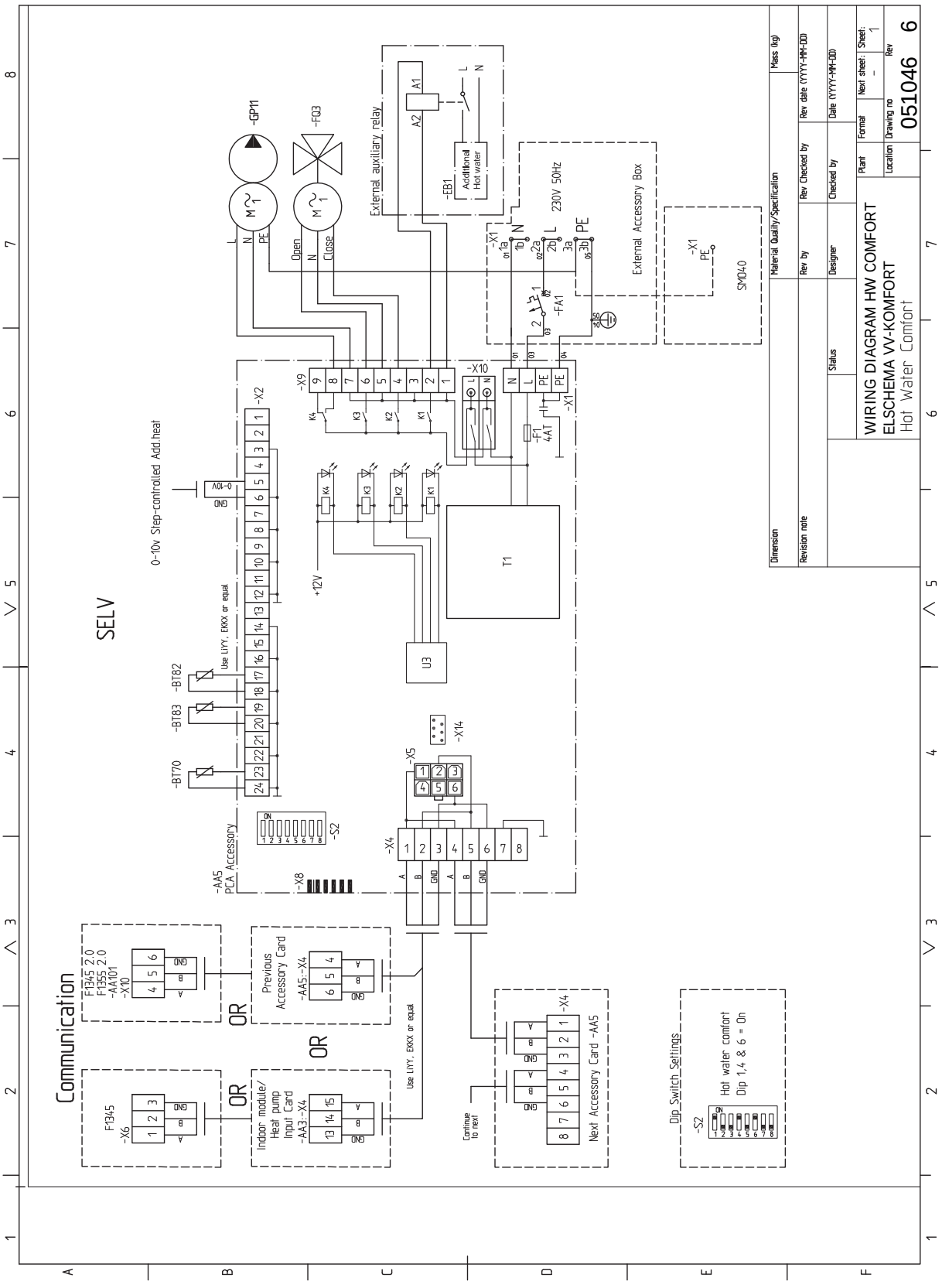
QZ1-AA5-K3: Signal (open) to the mixing valve (FQ3).

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

Caution

Also see the Installer Manual for the main product.

Electrical circuit diagram



6 Active cooling in 4-pipe system

General

Connecting this accessory makes it possible to control production of cooling.

The cooling system supplies cooling from the heat pump using a circulation pump (GP12) via a reversing valve (QN12).

For the installation to work, the cooling system must flow freely at all times, for example using a volume vessel (UKV) for cooling.

Operating mode cooling is activated by the temperature on the outdoor temperature sensor (BT1) and any room sensor (BT50), room unit or separate room sensor for cooling (BT74) (if two different rooms are to be heated or cooled at the same time, for example.)

When cooling is required, the cooling reversing valve (QN12) and the circulation pump (GP13) are activated.

Cooling production is regulated by the cooling sensor (BT64) and a cooling set point value that is determined by the selected cooling curve.

Cooling degree minutes are calculated based on the value on the external temperature sensor (BT64) for cooling out and the cooling set point value.

As an accessory, a cooling reversing valve is required, e.g. VCC 22/VCC 28.

Pipe connections

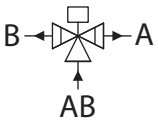
GENERAL

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 VALVE, COOLING/HEATING

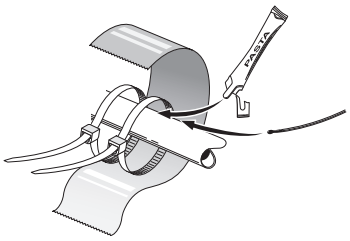
The reversing valve (QN12) is located in the system on the supply line from the heat pump ahead of another reversing valve, according to the outline diagram.



- Connect the supply line to the climate systems from the heat pump to the common port AB on the reversing valve (always open).
- Connect the supply line to the climate system for cooling to port A on the reversing valve.
- Connect the supply line to the climate system for heating to port B on the reversing valve.

TEMPERATURE SENSOR

Temperature sensor (BT64) is mounted on the supply line to the cooling system at the T-pipe connection to the volume vessel (CP6).



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

NOTE

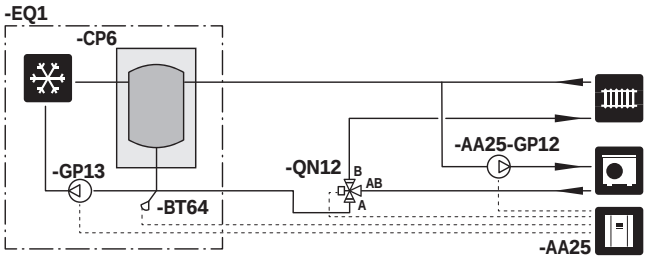
Sensor and communication cables must not be laid near power cables.

Outline diagram

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

EXPLANATION

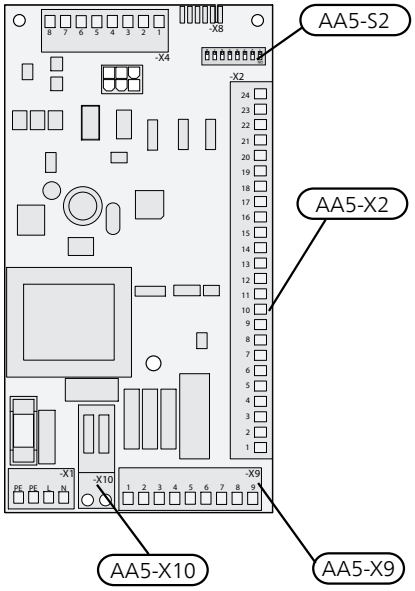
EQ1	*Cooling system*
BT64	Temperature sensor, flow line cooling
GP13	Cooling circulation pump
QN12	Shuttle valve
CP6	Accumulator tank, cooling
AA25	*SMO 40*



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.
>
> SMO 40 must be disconnected from the power when installing accessory functions.

OVERVIEW ACCESSORY BOARD (AA5)



CONNECTION OF SENSORS AND EXTERNAL BLOCKING

Use cable type LiYY, EKKX or similar.

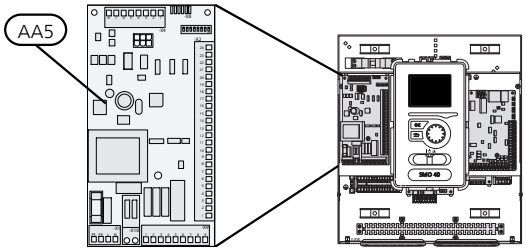
Temperature sensor (BT64)

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

Room sensor for cooling operating mode (BT74)

An extra temperature sensor (room sensor for cooling) can be connected to SMO 40 in order to better determine when it is time to switch between heating and cooling operation.

Connect the temperature sensor to one of the AUX inputs which are behind the front hatch in SMO 40. The actual AUX input is selected in menu 5.4. Use a 2 core cable of at least 0.5 mm2 cable area.



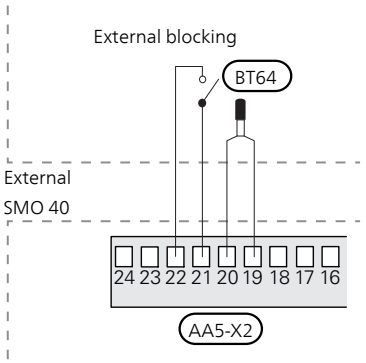
Place the temperature sensor in a neutral position in the room where the set temperature is required. It is important that the sensor is not obstructed from measuring the correct room temperature by being located, for example, in a recess, between shelves, behind a curtain, above or close to a heat source, in a draft from an external door or in direct sunlight. Closed radiator thermostats can also cause problems.

Room sensor (BT50).

For connection of the room sensor (BT50), see the Installer Manual for SMO 40.

External blocking (optional)

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

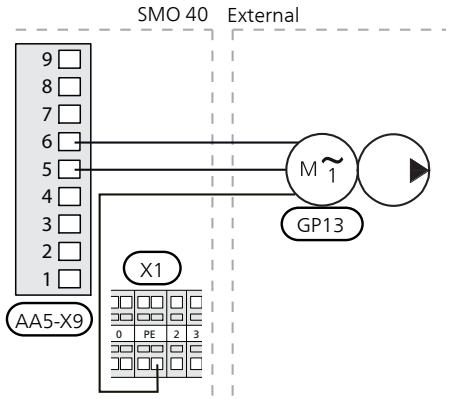


Caution

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

CONNECTION OF THE COOLING CIRCULATION PUMP (GP13)

Connect the circulation pump (GP13) to AA5-X9:6 (230V), AA5-X9:5 (N) and X1:PE.

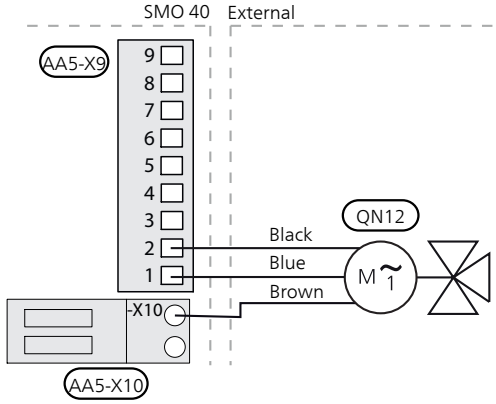


CONNECTING THE CHARGE PUMP (GP12)

Do not connect the charge pump (GP12) to the accessory board. See Installer Manual to connect the charge pump (GP12).

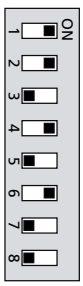
CONNECTION OF THE REVERSING VALVE MOTOR (QN12)

Connect the motor (QN12) to AA5-X9:2 (signal), AA5-X9:1 (N) and AA5-X10:2 (230 V).



DIP SWITCH

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



Program settings

Program setting of SMO 40 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: "active cooling 4 pipe".

Menu 1.1 -temperature

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

Menu 1.9.3.2 - min. flow line temp.

You can set the min supply temperature for cooling here.

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 operation and 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 valve (QN12).

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

EQ1-AA5-K3: Signal (open) to shunt (QN18)

EQ1-AA5-K4: Activating the circulation pump (GP20).

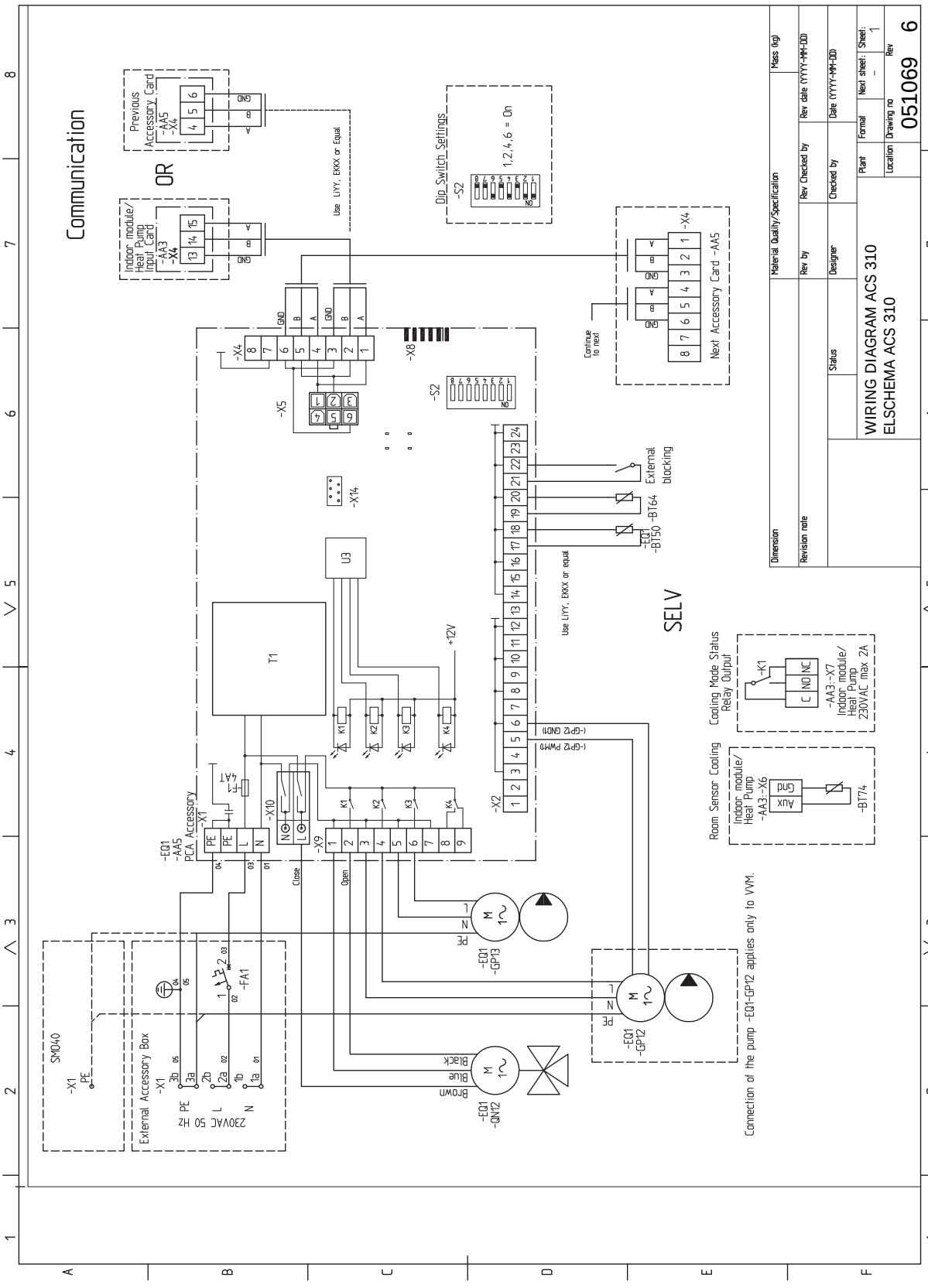
EQ1-AA7-K1: Signal (close) to shunt valve (QN36).

EQ1-AA7-K2: Signal (open) to shunt valve (QN36).

Caution

Also see the Installer Manual for the main product.

Electrical circuit diagram



7 Connection at several heat pumps

General

This function allows control of up to two extra charge pumps GP12. The accessory is required for the charge pump for slave - EB10X with address 3 or greater. Up to eight slaves can be combined in one system.

The control module controls the charge pumps together with the relevant slave during operation. A CPD type charge pump is recommended in order to use speed control, which ensures correct delta-t in the different operating modes during the year. The accessory also enables external blocking of each associated slave.

Pipe connections

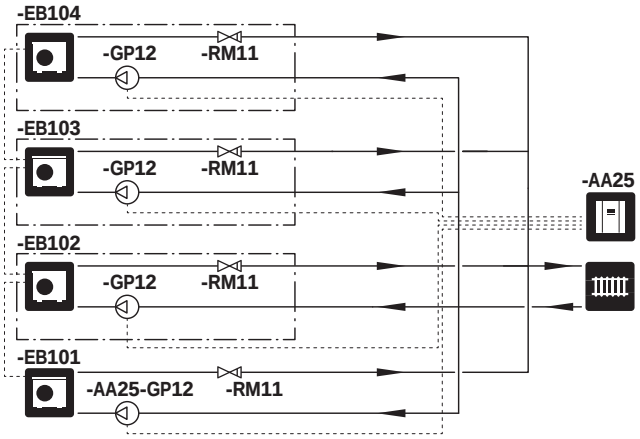
The charge pump (GP12) is positioned in the relevant charge circuit before joining with other charge circuits or branching off different sub-systems via a reversing valve.

Outline diagram

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

EXPLANATION

EB101-EB104	*Heat pump system*
GP12	Charge pump
RM11	Non-return valve
Miscellaneous	
AA25	SMO 40



Electrical connection

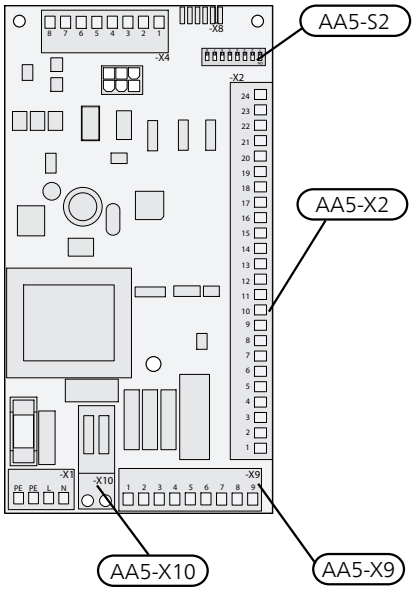
NOTE

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.

SMO 40 must be disconnected from the power when installing accessory functions.

OVERVIEW ACCESSORY BOARD (AA5)



CONNECTION OF EXTERNAL BLOCKING

Use cable type LiYY, EKKX or similar.

External blocking (optional)

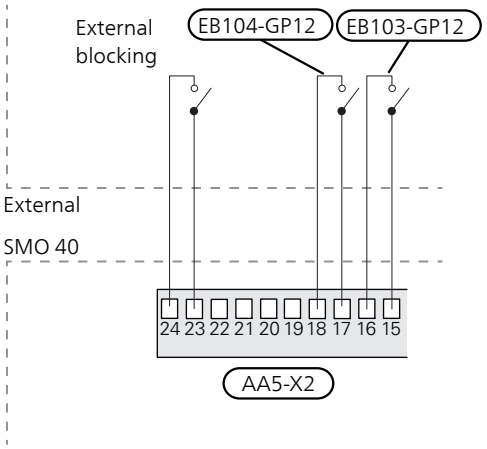
A switch can be connected to AA5-X2:15-16 to allow blocking of the slave EB103. When the switch closes, EB103 is blocked, however, frost protection via GP12 is ensured.

An additional switch can be connected to AA5-X2:17-18 to allow blocking of the slave EB104. When the switch closes, EB104 is blocked, however, frost protection via GP12 is ensured.

A switch can be connected to AA5-X2:23-24 to allow blocking of the accessory function. When the switch closes, the entire accessory function is blocked.

Caution

When the entire accessory function is blocked, there is no anti-freeze for connected slaves!



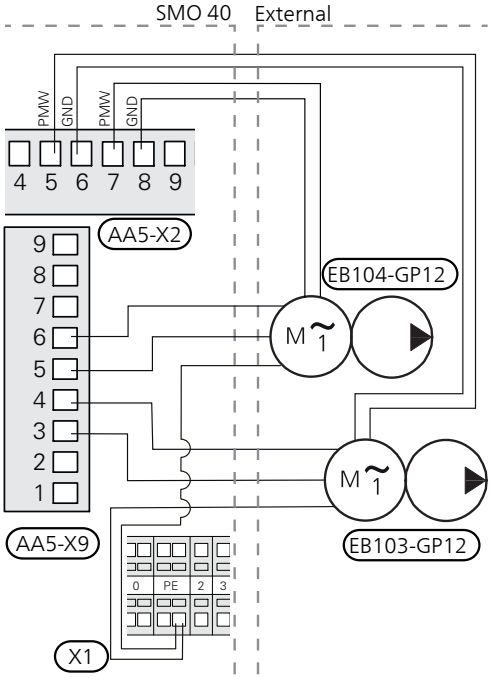
Caution

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

CONNECTION OF THE CIRCULATION PUMP (GP12)

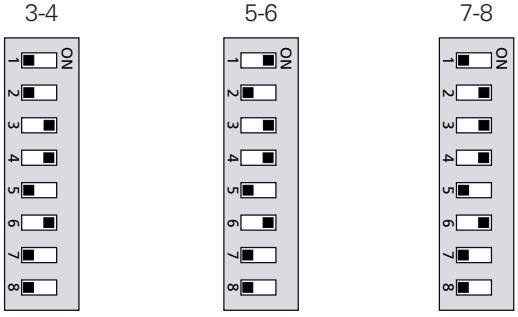
Connect the circulation pump (EB103-GP12) to AA5-X9:4 (230V), AA5-X9:3 (N) and X1:PE.

Connect the circulation pump (EB104-GP12) to AA5-X9:6 (230V), AA5-X9:5 (N) and X1:PE.



DIP SWITCH

The DIP switch (S2) on the accessory board (AA5) must be set as follows for the relevant circulation pump (GP12).



Program settings

Program setting of multi-installation during operation of several heat pumps 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 5.2.2 - INSTALLED SLAVES

Activating/deactivating slaves

MENU 5.2.3 - DOCKING

Enter how your system is docked regarding pipes, for example to pool heating, hot water heating and heating the building.

This menu has a docking memory which means that the control system remembers how a particular reversing valve is docked and automatically enters the correct docking the next time you use the same reversing valve.

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

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

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

Workspace for docking: The system docking is drawn here.

Symbol	*Description*
	Compressor (blocked)
	Compressor (standard)
	Reversing valves for hot water control. The designations above the reversing valve indicate where it is electrically connected (EB101 = Slave 1, CL11 = Pool 1 etc.).
	Own hot water charging, only from selected heat pump compressor. Controlled by relevant heat pump.
	Pool 1
	Pool 2
	Heating (heating the building, includes any extra climate system)

MENU 5.11.1 - EB103

Make settings for the installed slaves here.

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.

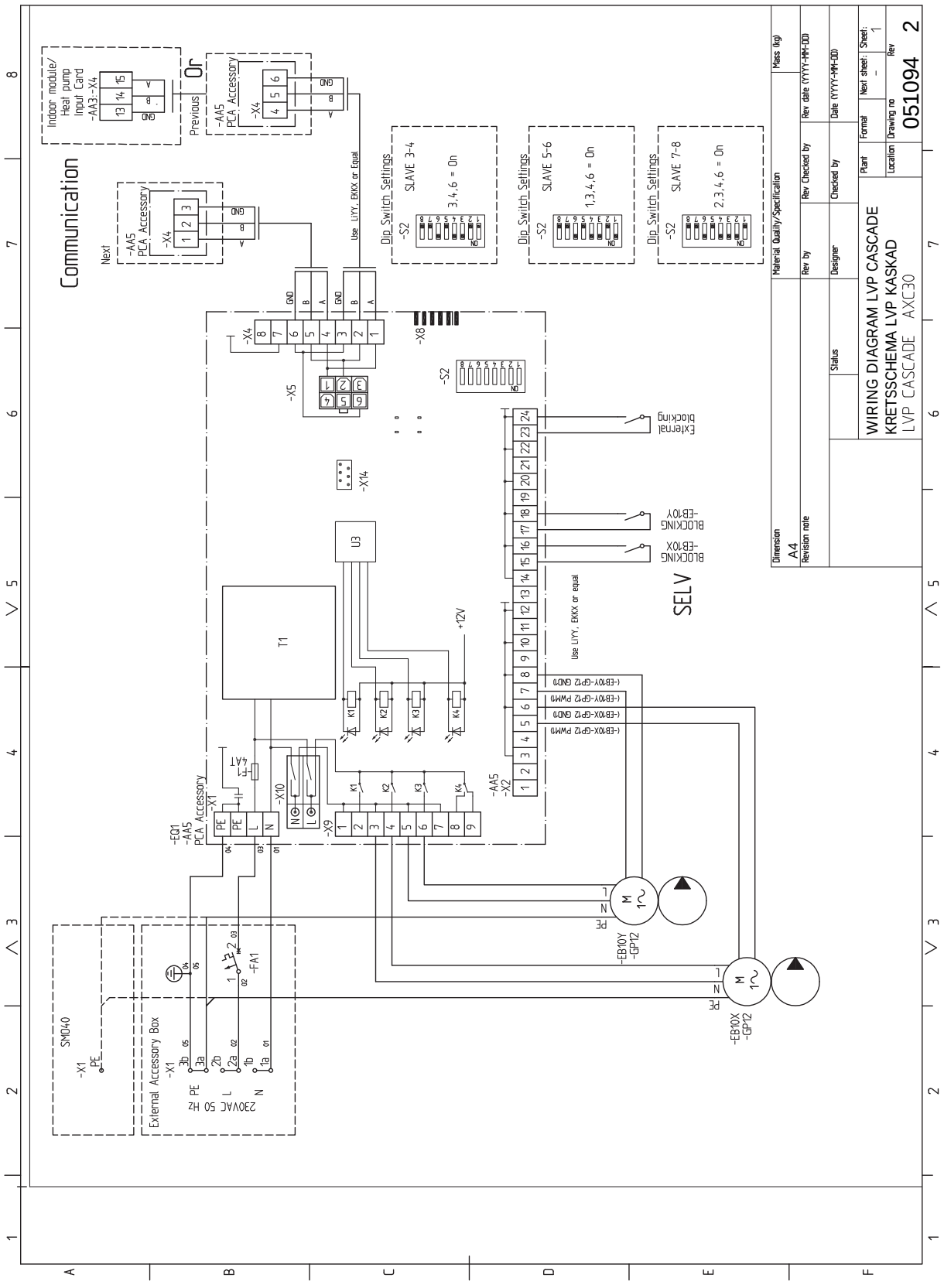
- Compressor speed 3
- EB103 - GP12 - AA5-K2
- Charge pump speed 3

- Compressor speed 4
- EB104 - GP12 - AA5-K3
- Charge pump speed 4

Caution

Also see the Installer Manual for the main product.

Electrical circuit diagram



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