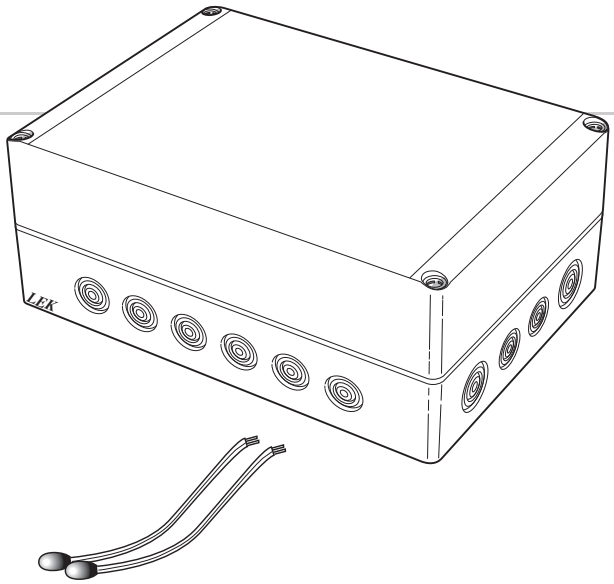

Installer manual

AXC 40

Accessories

IHB GB 1452-6
031444

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1 General

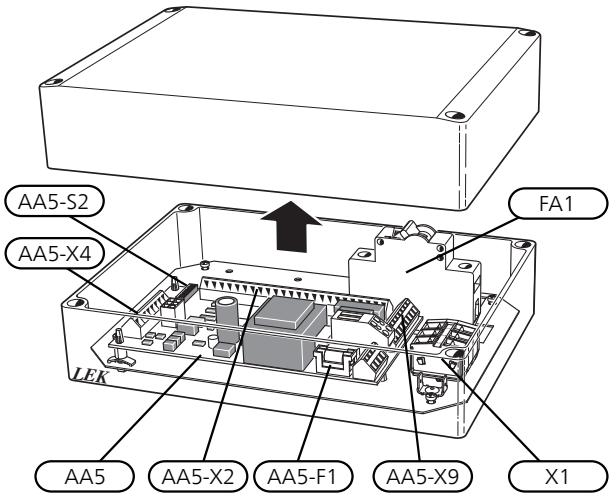
This accessory is used to enable connection and control of (a AXC 40 is required for each of the following accessory functions that is used):

- Shunt controlled additional heat
- Step controlled additional heat
- Pump for hot water circulation
- Groundwater pump

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

Component locations unit box (AA25)



Electrical components

FA1	Miniature circuit-breaker. 10A
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 IEC 81346.

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 indoor module must not be powered when installing AXC 40.

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

Connecting communication

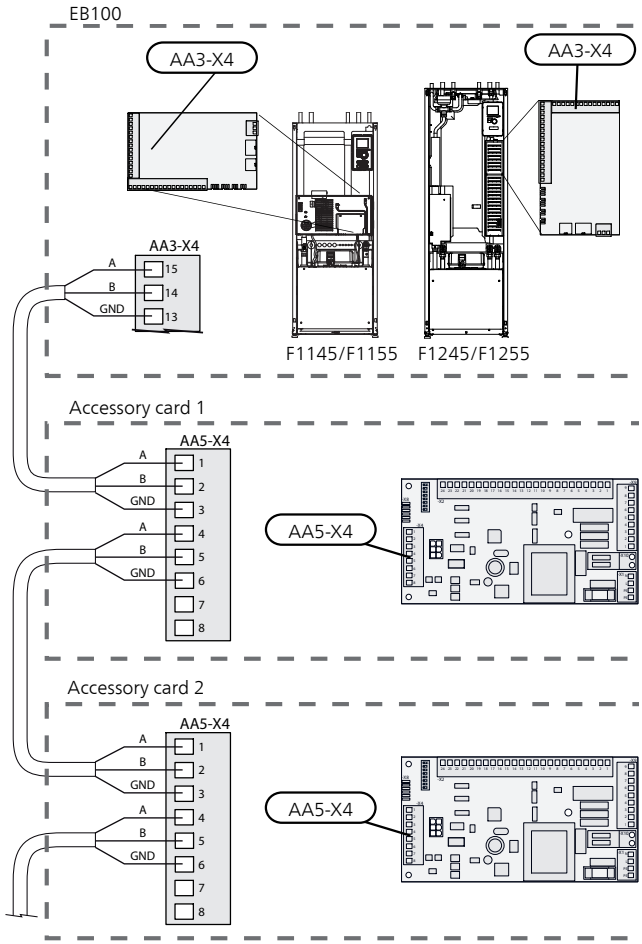
Ground-source heat pumps

This accessory contains an accessory card (AA5) that must be connected directly to the heat pump on the input card (terminal block AA3-X4).

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 input board's terminal block (AA3-X4) in the heat pump. The following boards must be connected in series with the previous board.

Use cable type LiYY, EKKX or similar.



Air/water heat pumps

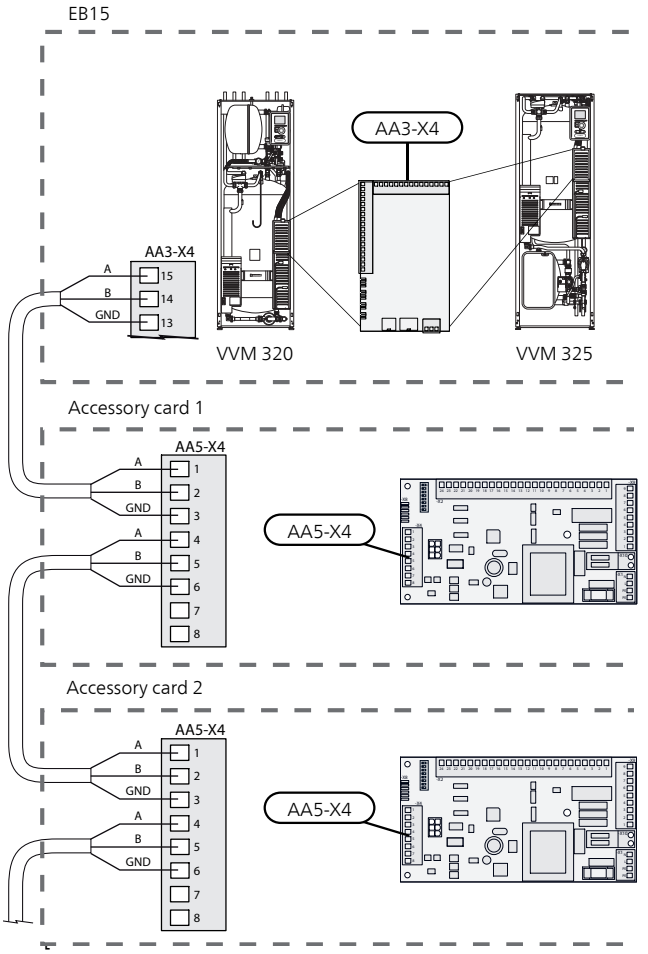
Indoor modules

This accessory contains an accessory card (AA5) that must be connected directly to the indoor module on the input card (terminal block AA3-X4).

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

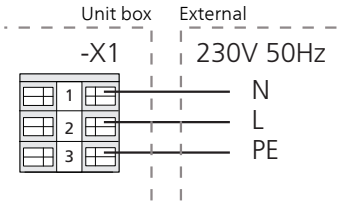
The first accessory card must be connected directly to the indoor module's terminal block AA3-X4. The following cards must be connected in series with the previous card.

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 oil boiler, gas boiler or district heating exchanger to aid with heating.

The heat pump controls a shunt valve (QN11) and a circulation pump (GP10) via AXC 40. If the heat pump does not manage to keep the correct supply temperature, the additional heat starts. When the boiler temperature has been increased to about 55° C, the heat pump sends a signal to the shunt to open from the additional heat. The shunt is adjusted so the true supply temperature corresponds with the control system's theoretical calculated set point value. When the heating requirement drops sufficiently that the additional heat is no longer required the shunt closes completely. Factory set minimum run time for the boiler is 12 hours (can be set in menu 5.3.2).

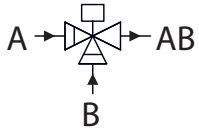
Pipe connections

The external circulation pump (GP10) is positioned according to the outline diagram.

Shunt valve

The shunt valve (QN11) is located on the flow line to the climate system after the heat pump according to the outline diagram.

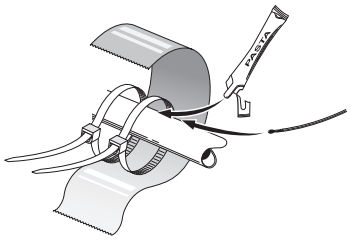
- Connect the supply line from the heat pump to the external heat source via the T-pipe to port B on the shunt valve (closes at reduced signal).



- Connect the flow 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 at increased signal).

Temperature sensor

- Install the boiler sensor (BT52) in a suitable location in the external addition.
- External supply temperature sensor (BT25, connected in the heat pump/indoor module) must be installed on the supply line to the radiators, after the shunt valve (QN11).



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.

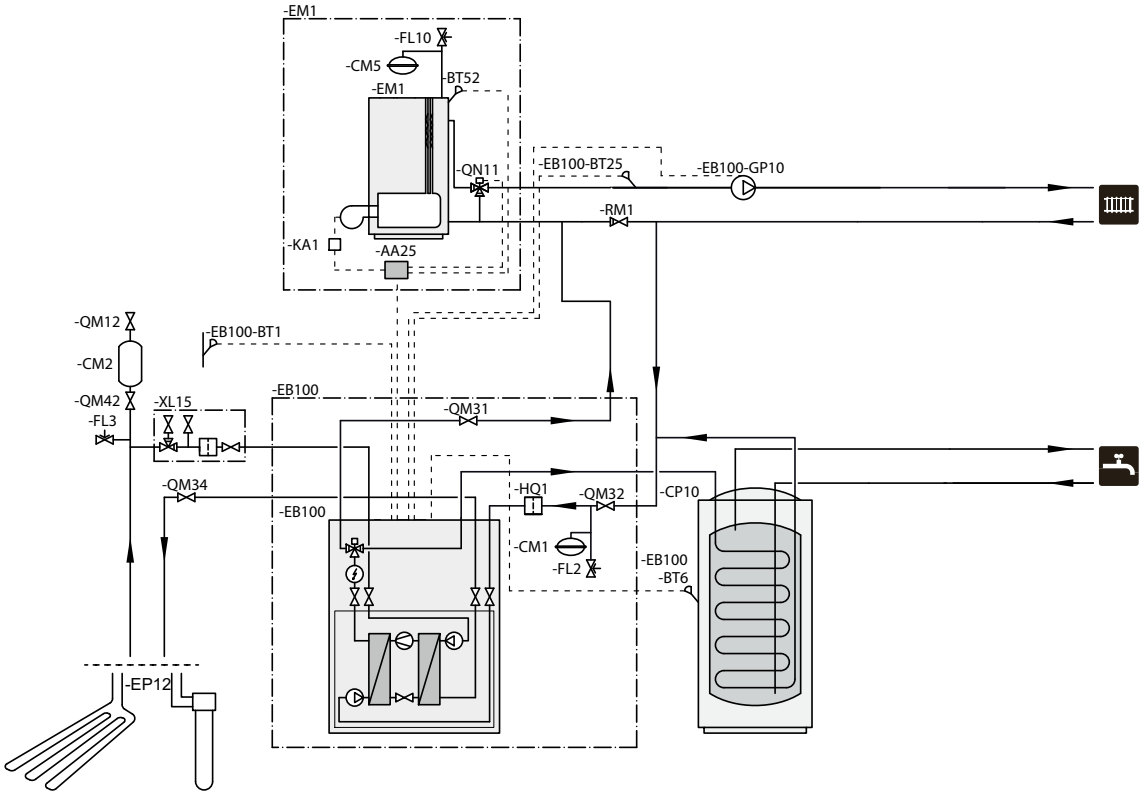
Outline diagram

Explanation

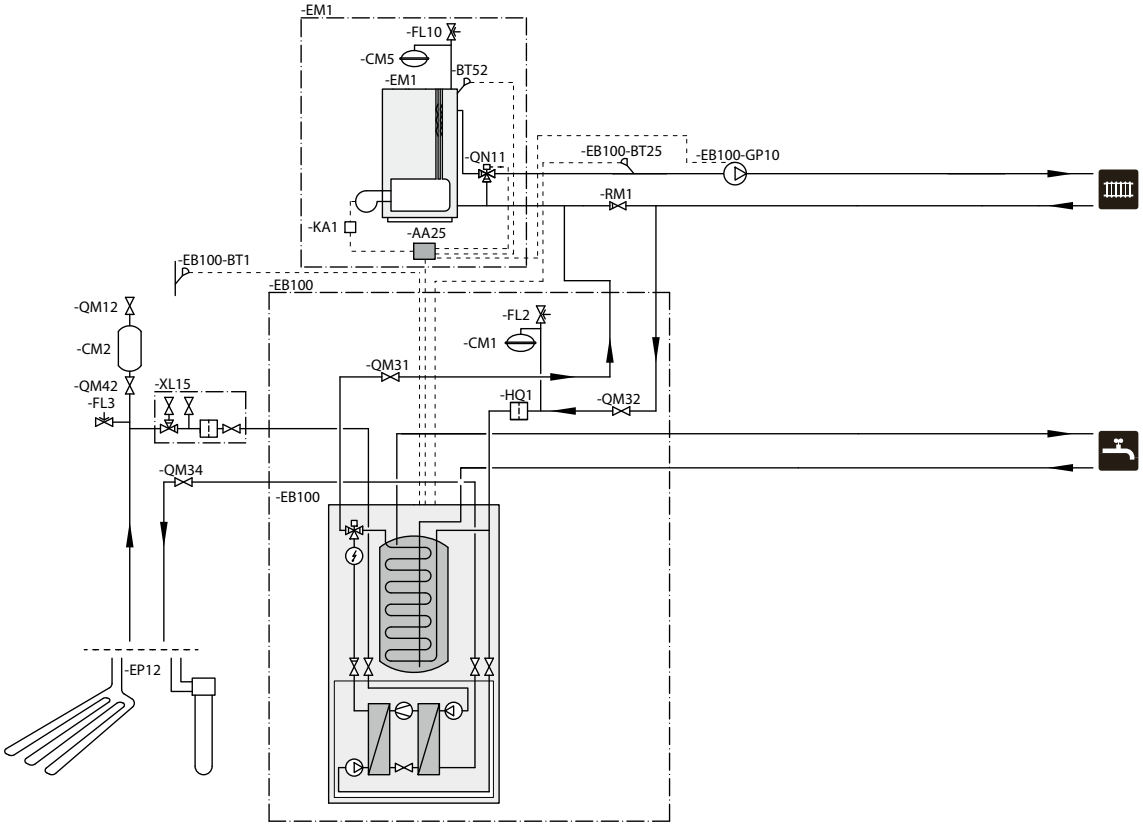
EB100	**Heat pump system**
BT1	Temperature sensor, outdoor
BT6	Temperature sensor, hot water charging
BT25	Temperature sensor, heating medium flow, external
CM1	Expansion vessel, heating medium side
EB100	Heat pump
FL2	Safety valve, heating medium side
GP10	Circulation pump, external
HQ1	Particle filter
QM31 - QM32	Shut-off valve, heating medium side
EM1	**External additional heat**
AA25	Unit box with accessory card (AXC 40)
BT52	Temperature sensor, boiler
CM5	Expansion vessel, closed
EM1	Oil/gas boiler
FL10	Safety valve, heating medium side
KA1	Auxiliary relay, external additional heat
QN11	Mixing valve, addition
Miscel-laneous	
CM2	Level vessel, collector side
CP10	Accumulator tank with hot water coil
EP12	Collector, brine side
FL3	Safety valve, brine
QM12	Filler valve
QM34	Shut off valve, brine return
QM42	Shut-off valve
RM1	Non-return valve
XL15	Connection, filling brine

Designations according to standards 81346-1 and 81346-2.

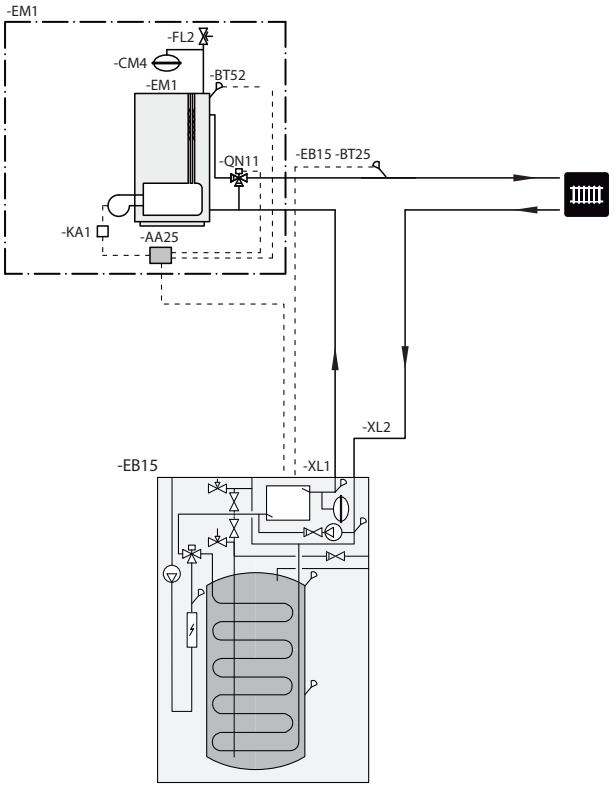
Outline diagram F1145/F1155 with AXC 40 and external addition



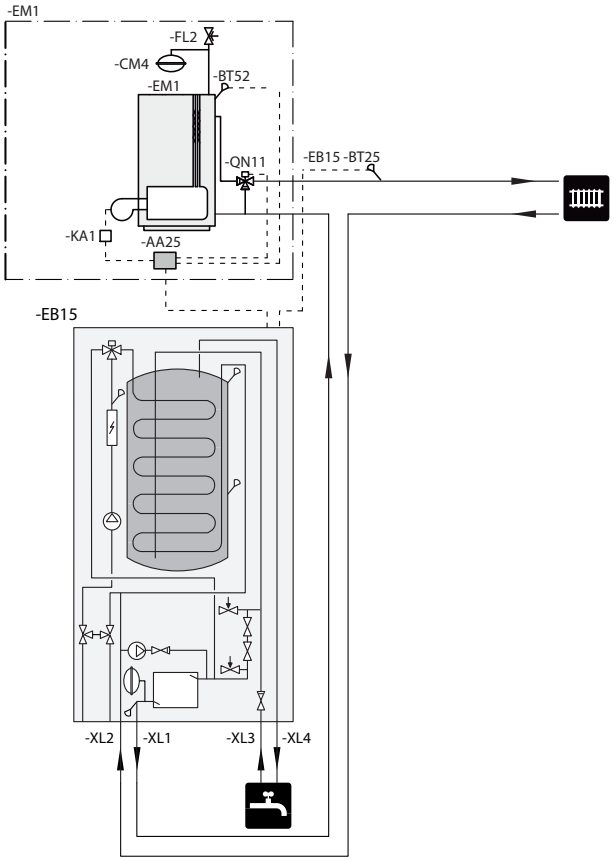
Outline diagram F1245/F1255 with AXC 40 and external addition



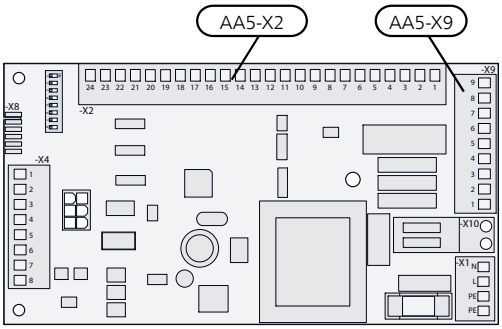
Outline diagram VVM 320 with AXC 40 and external additional heat



Outline diagram VVM 325 with AXC 40 and external additional heat



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 heat pump/indoor module must not be powered when installing AXC 40.

Connection of sensors and external blocking

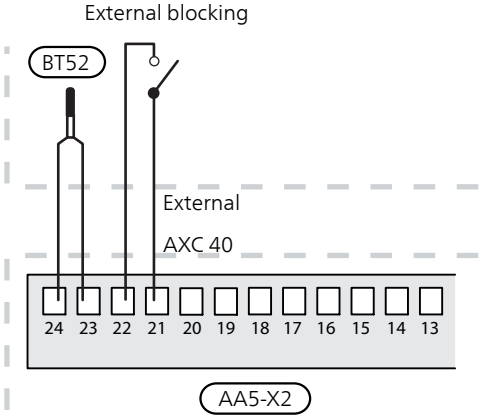
Use cable type LiYY, EKKX or similar.

Boiler sensor (BT52)

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

External blocking (optional)

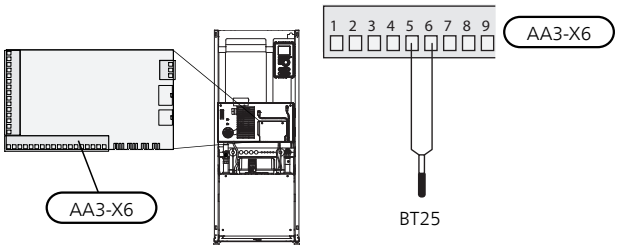
A contact (NO) can be connected to AA5-X2:21-22 to block the addition. When the contact closes, the addition is blocked.



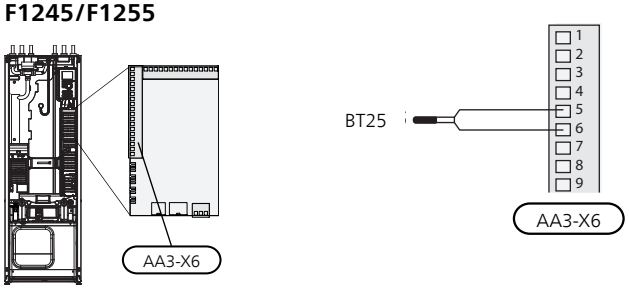
External flow temperature sensor (BT25)

Connect the flow temperature sensor to AA3-X6:5-6 on the input card in the heat pump.

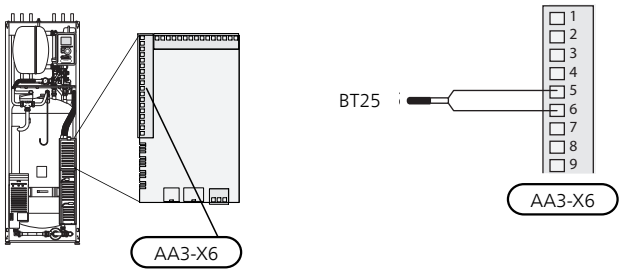
F1145/F1155



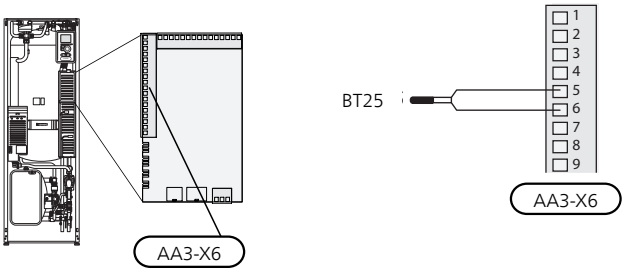
F1245/F1255



VVM 320



VVM 325

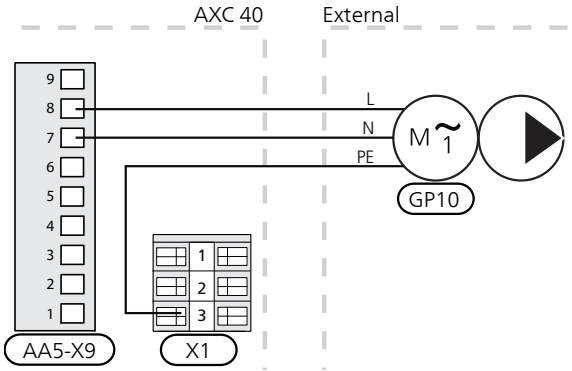


Caution

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

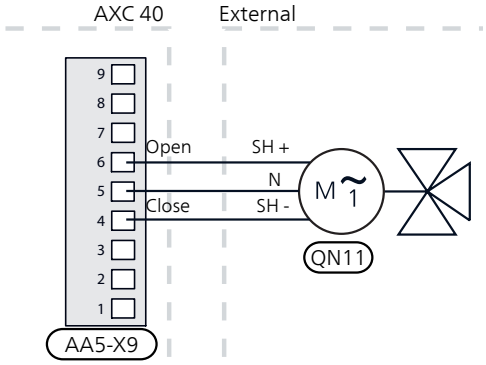
Connection of the circulation pump (GP10)

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



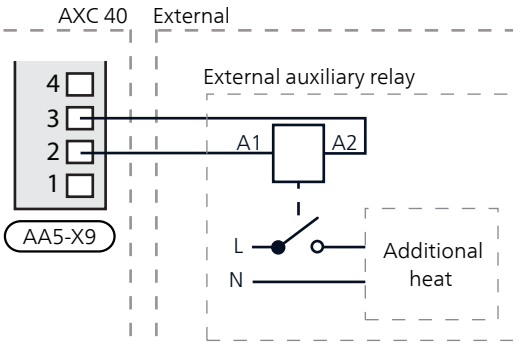
Connection of the mixing valve motor (QN11)

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



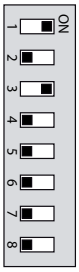
Connection of the auxiliary relay for additional heating

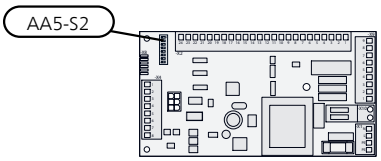
Connect the auxiliary relay for switching the addition on and off to AA5-X9:2 (230 V) and AA5-X9:3 (N).



DIP switch

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





Program settings

Program setting of AXC 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 - system settings

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 when the addition is to start.
- Minimum running time.
- Minimum boiler temperature at which the shunt can start control.
- Misc. shunt settings.

Caution

"start addition" in the menus 5.3.2 (external) and 4.9.3 (internal) are factory set at 400GM. If both additional heat possibilities are used and you wish one to start before the other the start difference must be changed in one of the menus.

Menu 5.6 - forced control

Forced control of the different components in heat pump

EM1-AA5-K1: Activating the relay for extra heating

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

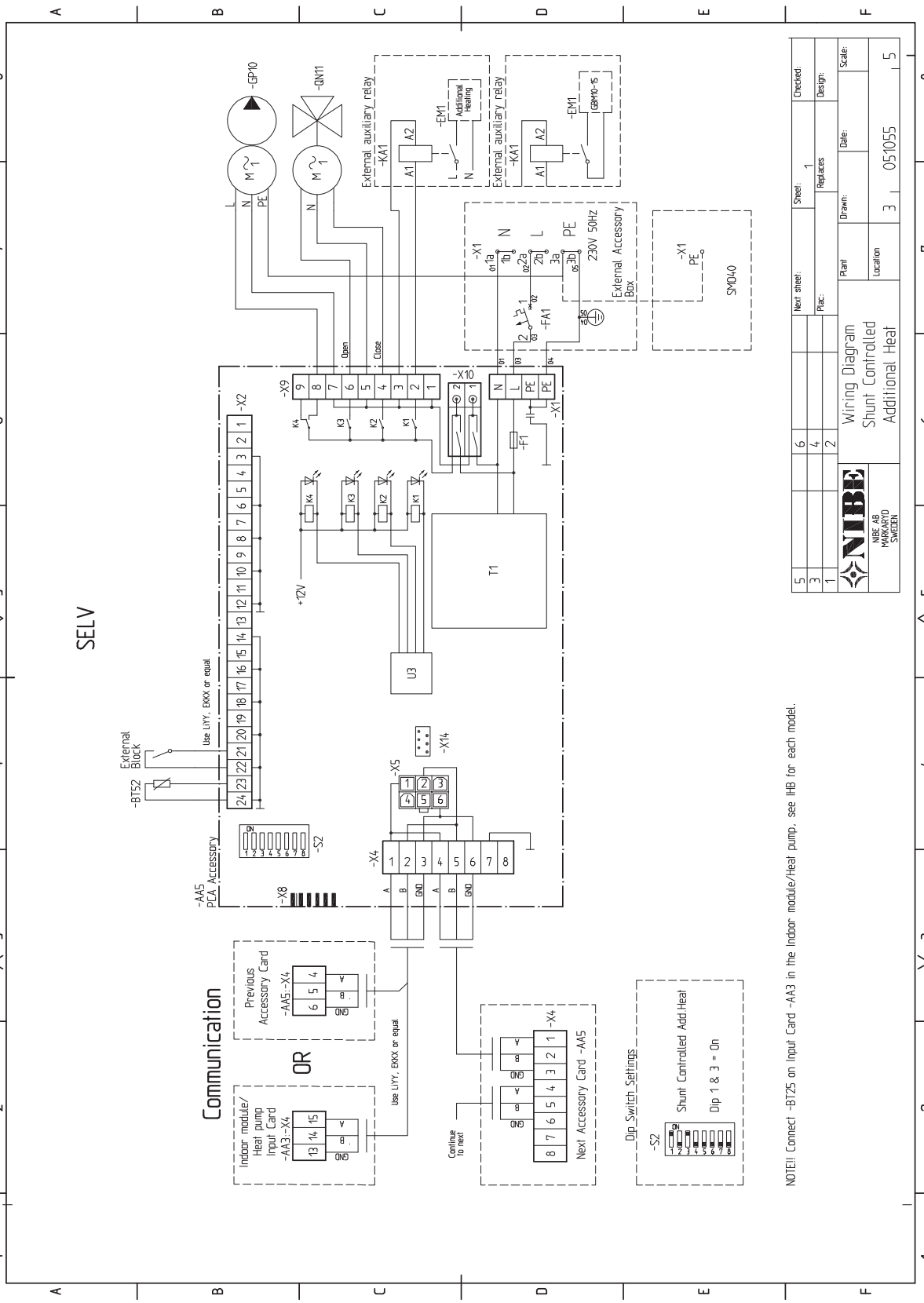
EM1-AA5-K3: Signal (open) to mixing valve (QN11).

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

Caution

Also see the Installer manual for the heat pump/indoor module.

Electrical circuit diagram



4 Step controlled additional heat

General

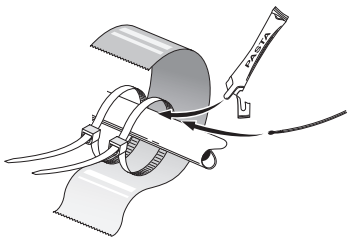
With AXC 40 a further three potential free relays are used for addition control, which then gives max 3 linear or 7 binary steps.

Pipe connections

The extra circulation pump (GP10) is positioned according to the outline diagram.

Temperature sensor

- External supply temperature sensor (BT25, connected in the heat pump/indoor module) must be installed on the supply line to the radiators, after the additional heat.



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.

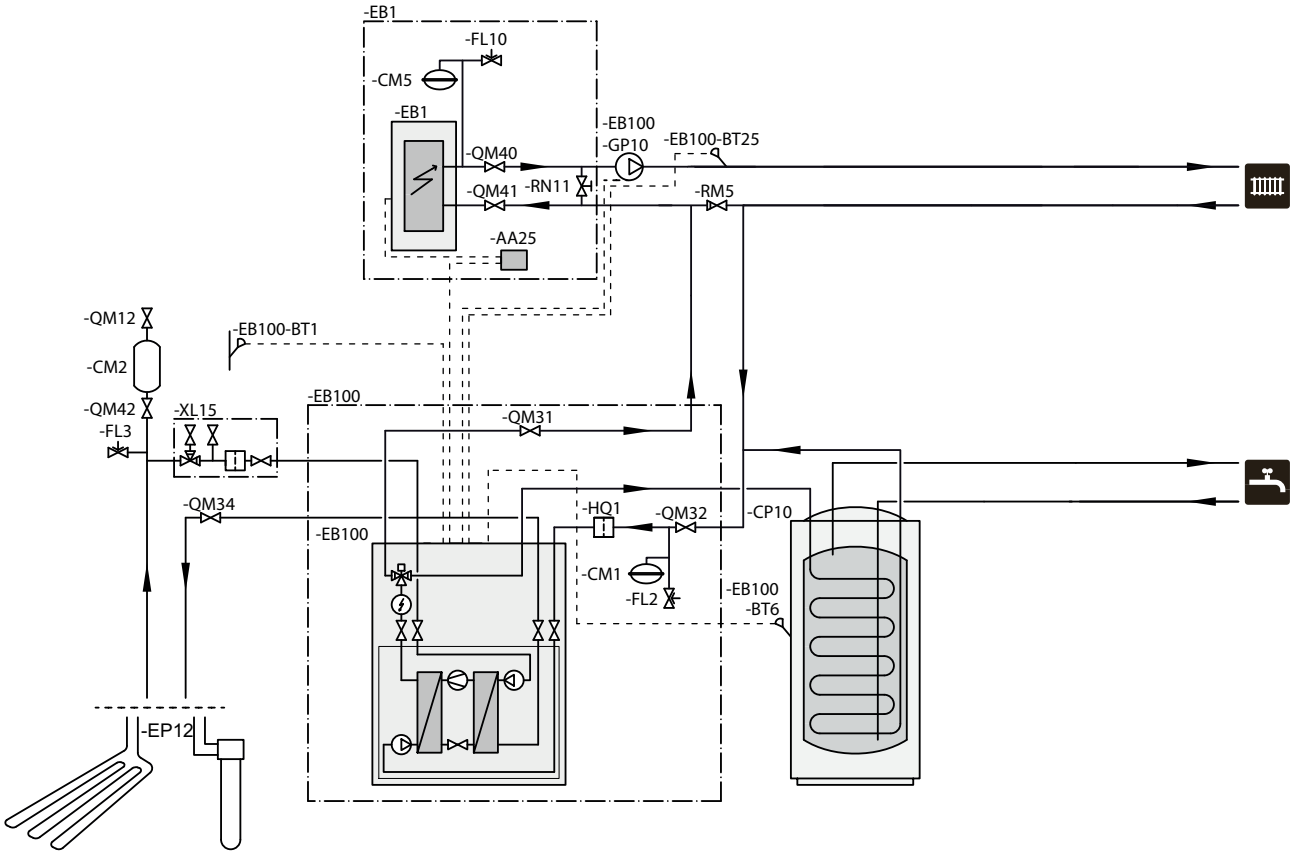
Outline diagram

Explanation

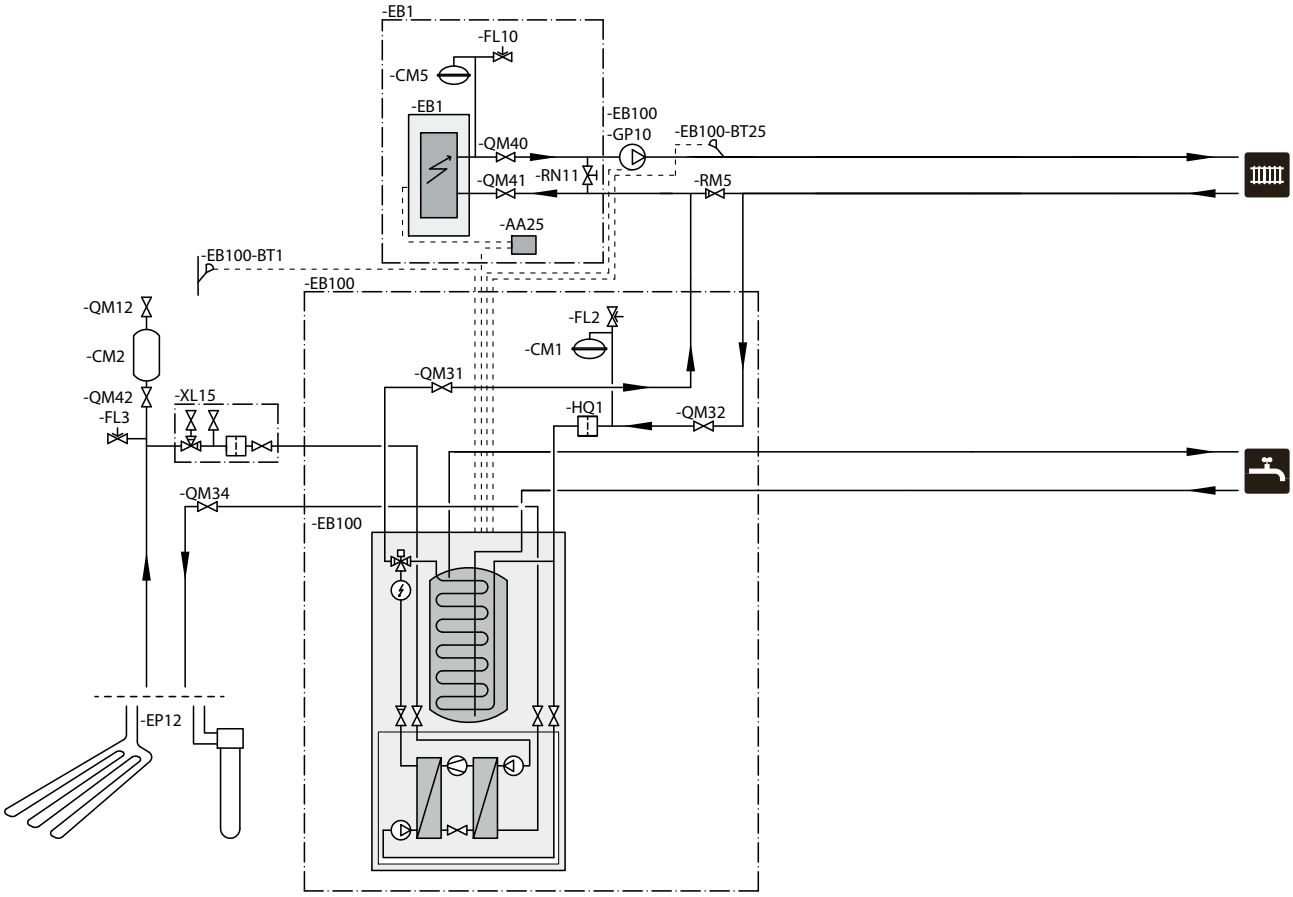
EB1	**External additional heat**
AA25	Unit box with accessory card (AXC 40)
CM5	Expansion vessel, closed
EB1	External electrical additional heat
FL10	Safety valve, heating medium side
QM40 - QM41	Shut-off valve, heating medium side
RN11	Trim valve
EB100	**Heat pump system**
BT1	Temperature sensor, outdoor
BT6	Temperature sensor, hot water charging
BT25	Temperature sensor, heating medium flow, external
CM1	Expansion vessel, heating medium side
EB100	Heat pump
FL2	Safety valve, heating medium side
GP10	Circulation pump, external
HQ1	Particle filter
QM31 - QM32	Shut-off valve, heating medium side
Miscel-laneous	
CM2	Level vessel, collector side
CP10	Accumulator tank with hot water coil
EP12	Collector, brine side
FL3	Safety valve, brine
QM12	Filler valve
QM34	Shut off valve, brine return
QM42	Shut-off valve
RM5	Non-return valve
XL15	Connection, filling brine

Designations according to standards 81346-1 and 81346-2.

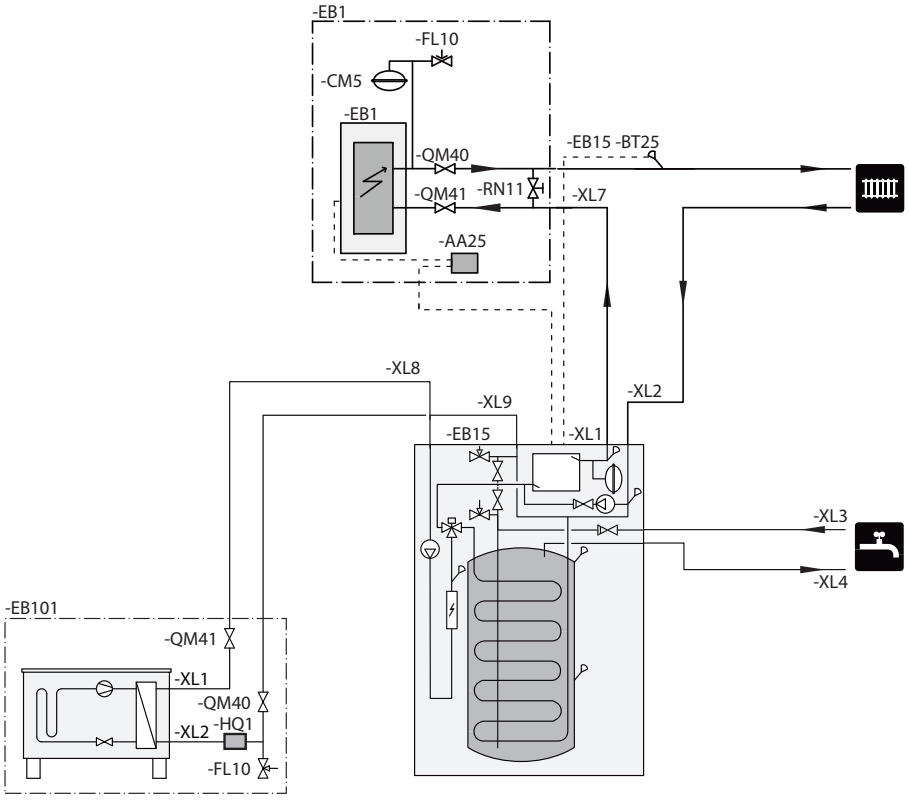
Outline diagram F1145/F1155 with AXC 40 and external addition



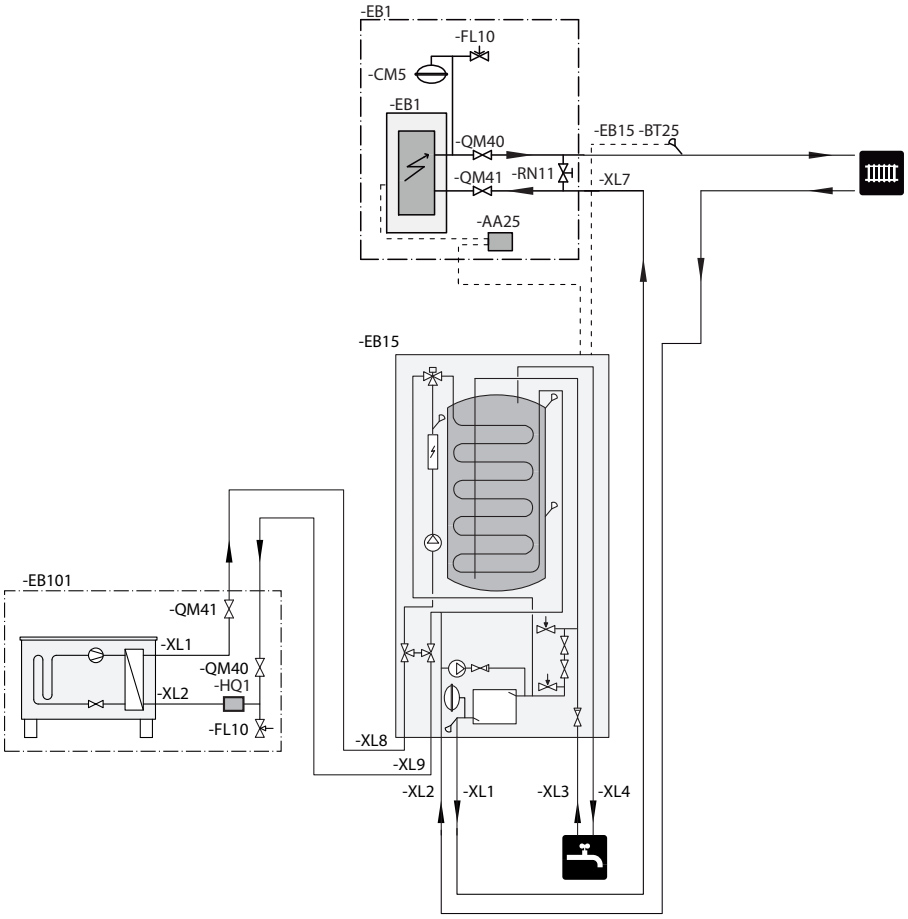
Outline diagram F1245/F1255 with AXC 40 and external addition



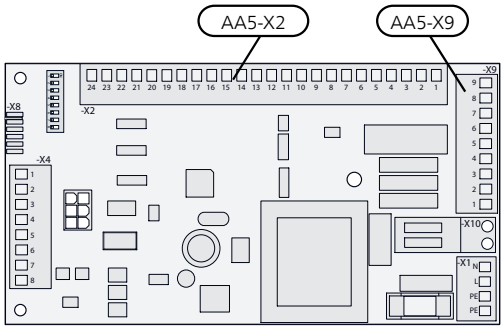
Outline diagram VVM 320 with AXC 40 and external additional heat



Outline diagram VVM 325 with AXC 40 and external additional heat



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.

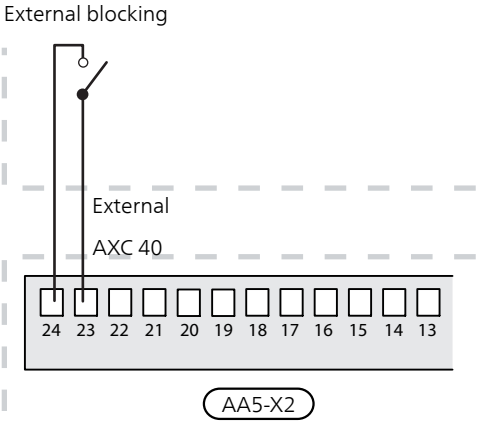
The heat pump/indoor module must not be powered when installing AXC 40.

Connection of sensors and external blocking

Use cable type LiYY, EKKX or similar.

External blocking (optional)

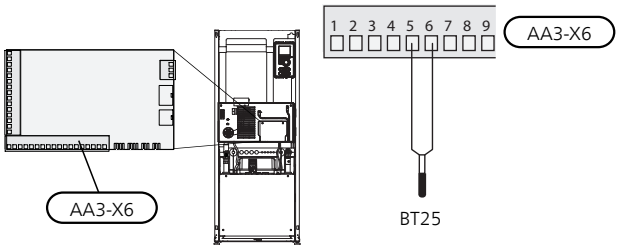
A contact (NO) can be connected to AA5-X2:23-24 to block the addition. When the contact closes, the addition is blocked.



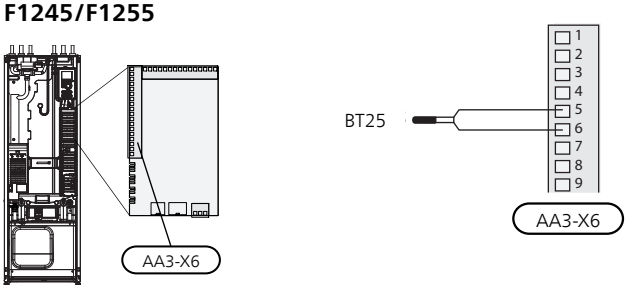
External flow temperature sensor (BT25)

Connect the flow temperature sensor to AA3-X6:5-6 on the input card in the heat pump.

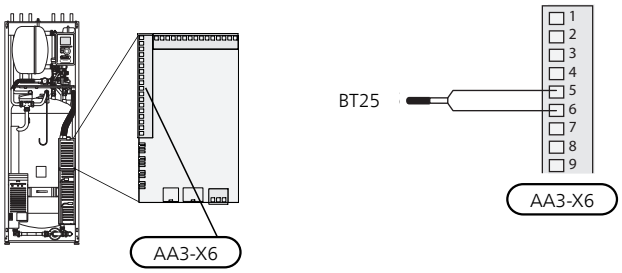
F1145/F1155



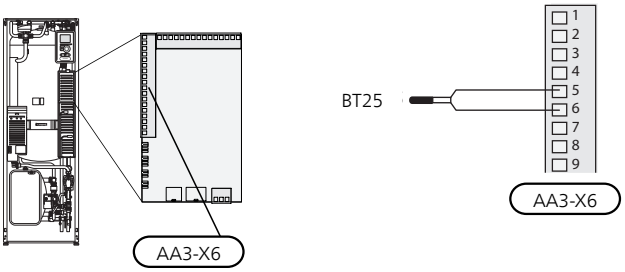
F1245/F1255



VVM 320



VVM 325

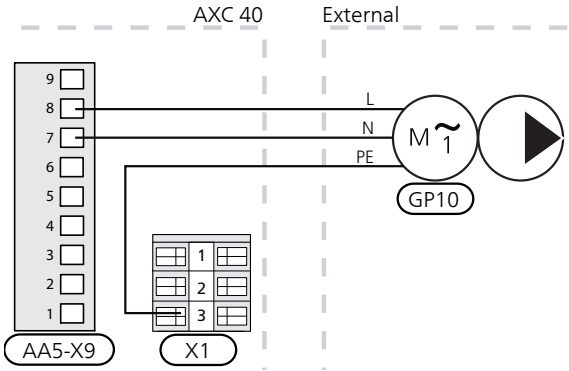


Caution

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

Connection of the circulation pump (GP10)

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

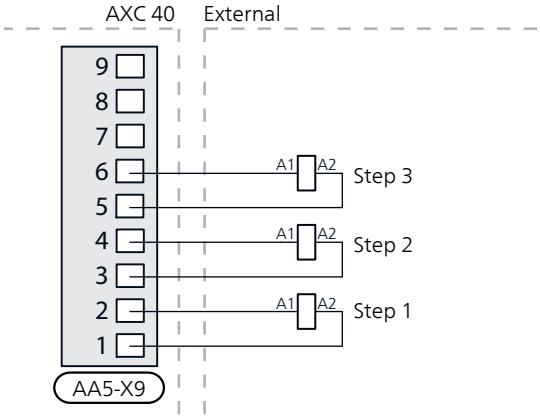


Connecting additional step

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

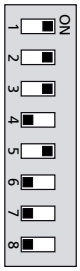
Connect step 2 to AA5-X9:3 and 4.

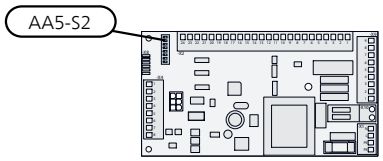
Connect step 3 to AA5-X9:5 and 6.



DIP switch

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





Program settings

Program setting of AXC 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 - system settings

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.

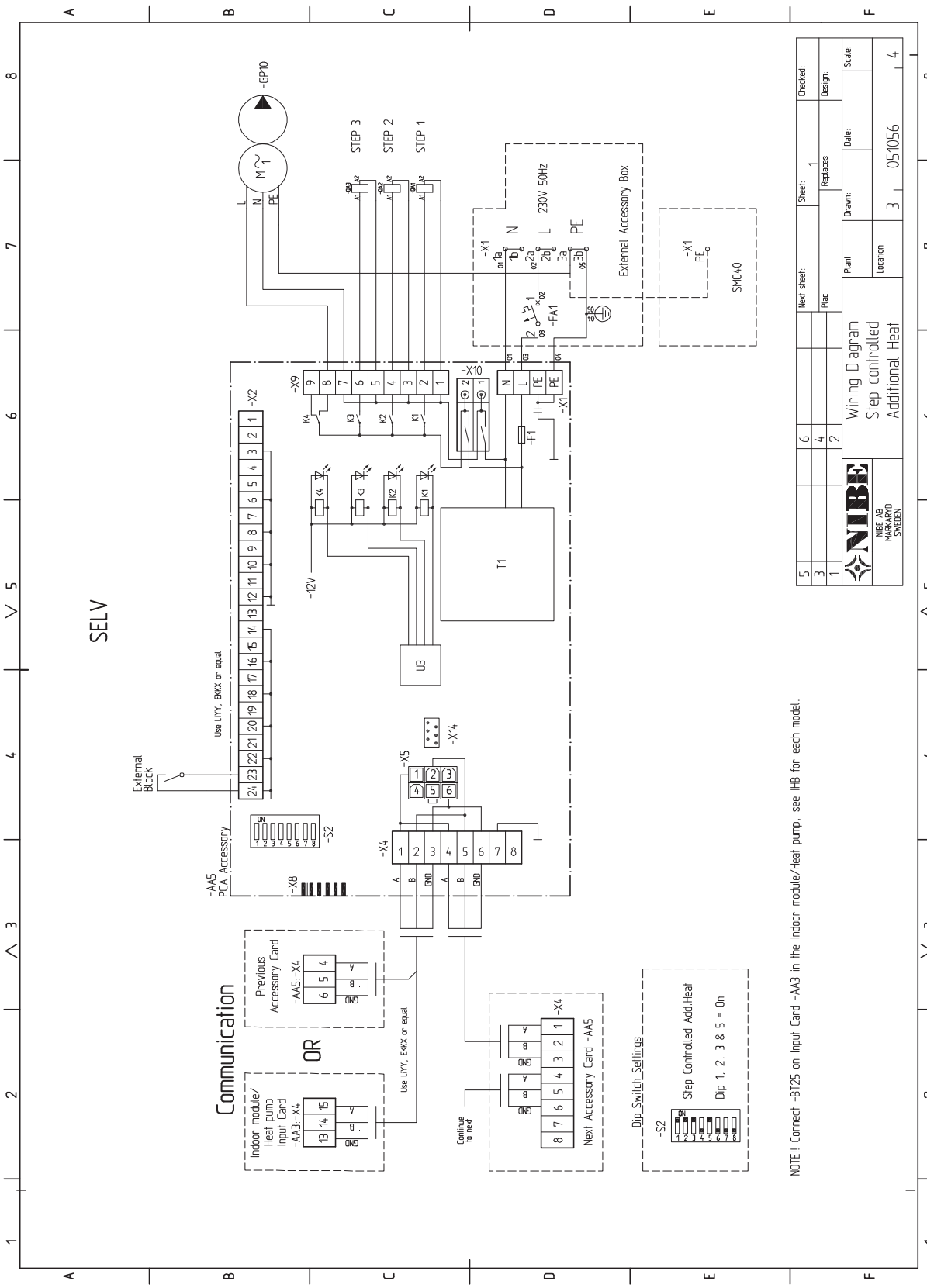
EB1-AA5-K3: Activating additional step 3.

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

Caution

Also see the Installer manual for the heat pump/indoor module.

Electrical circuit diagram



5 Hot water circulation

General

One pump can be controlled for the circulation of the hot water during selectable periods.

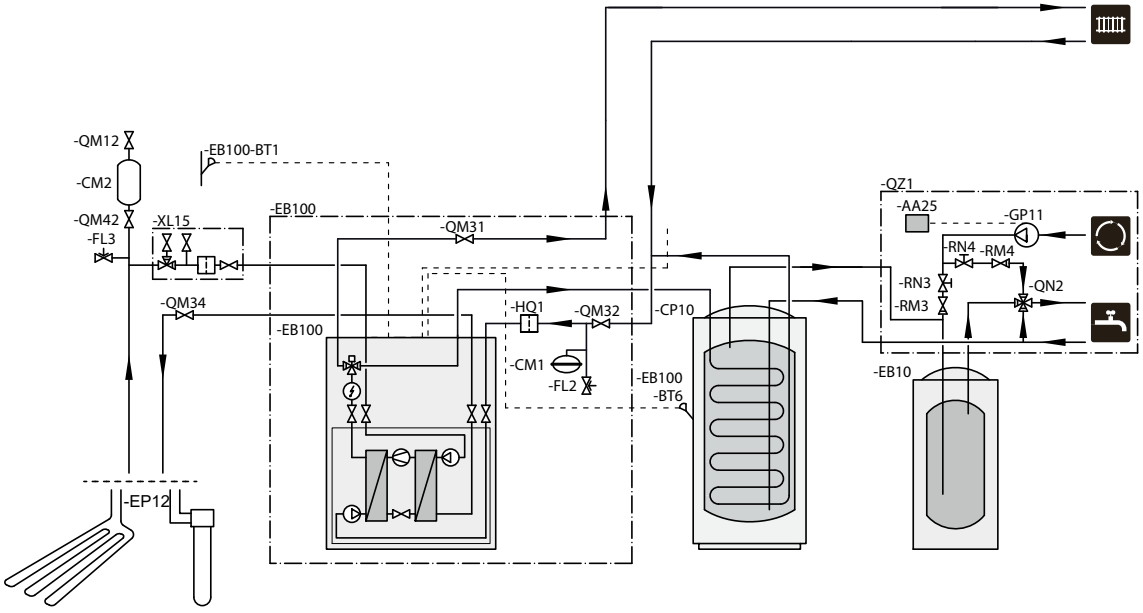
Outline diagram

Explanation

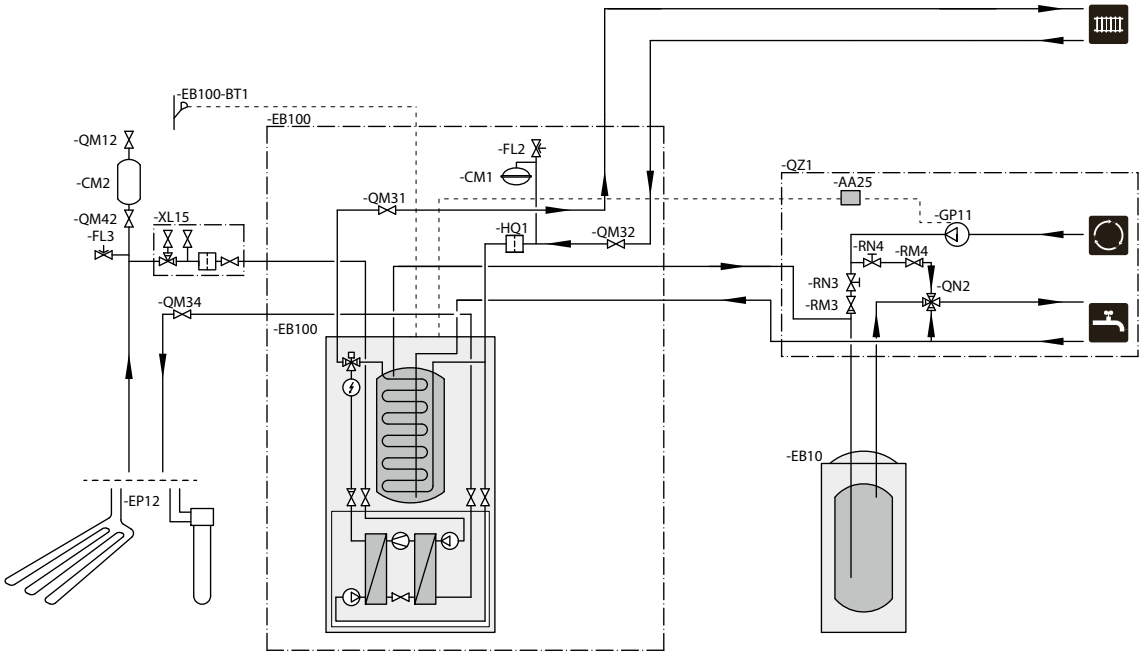
EB100	**Heat pump system**
BT1	Temperature sensor, outdoor
BT6	Temperature sensor, hot water charging
CM1	Expansion vessel, heating medium side
EB100	Heat pump
FL2	Safety valve, heating medium side
HQ1	Particle filter
QM31 - QM32	Shut-off valve, heating medium side
QZ1	**Hot water circulation**
AA25	Unit box with accessory card (AXC 40)
GP11	Circulation pump, domestic hot water circulation
QN2	4-way valve, hot water circulation
RM2 - RM3	Non-return valve
RN3 - RN4	Control valve
Miscel-laneous	
CM2	Level vessel, collector side
CP10	Accumulator tank with hot water coil
EP12	Collector, brine side
FL3	Safety valve, brine
QM12	Filler valve
QM34	Shut off valve, brine return
QM42	Shut-off valve
XL15	Connection, filling brine

Designations according to standard IEC 61346-2.

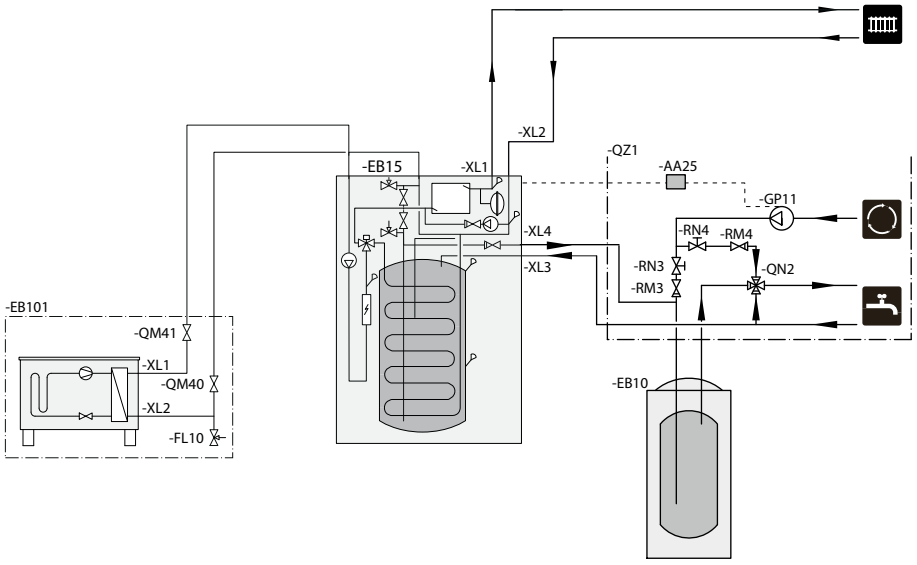
Outline diagram F1145/F1155 with AXC 40 and hot water circulation



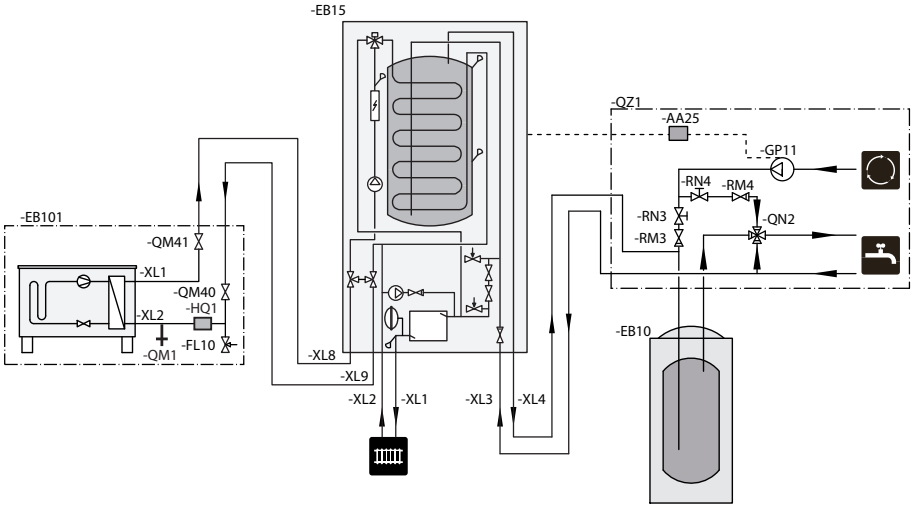
Outline diagram F1245/F1255 with AXC 40 and hot water circulation



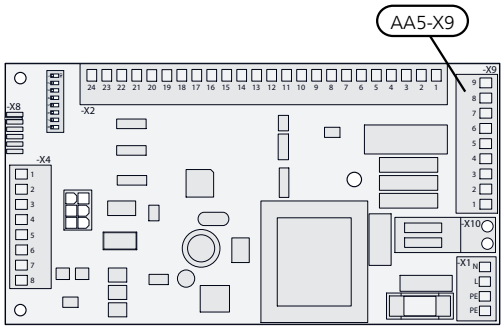
Outline diagram VVM 320 with AXC 40 and hot water circulation



Outline diagram VVM 325 with AXC 40 and hot water circulation



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.

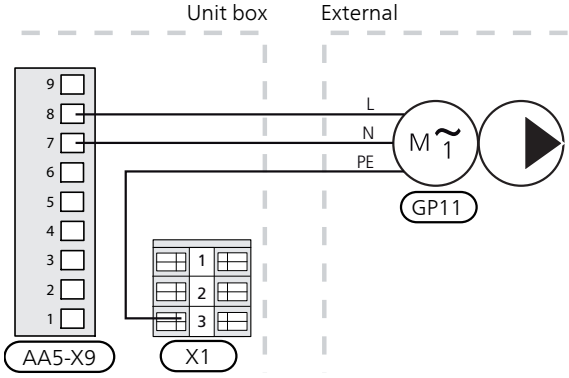
The heat pump/indoor module must not be powered when installing AXC 40.

Caution

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

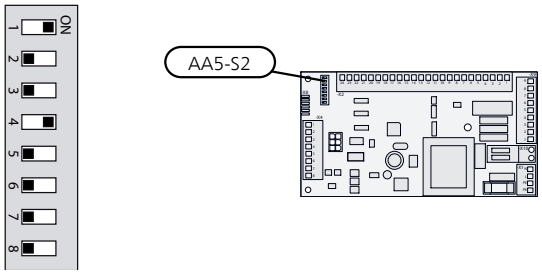
Connection of the circulation pump (GP11)

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



DIP switch

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



Program settings

Program setting of AXC 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 - system settings

Activating/deactivating of accessories.

Select: "hot water recirc.".

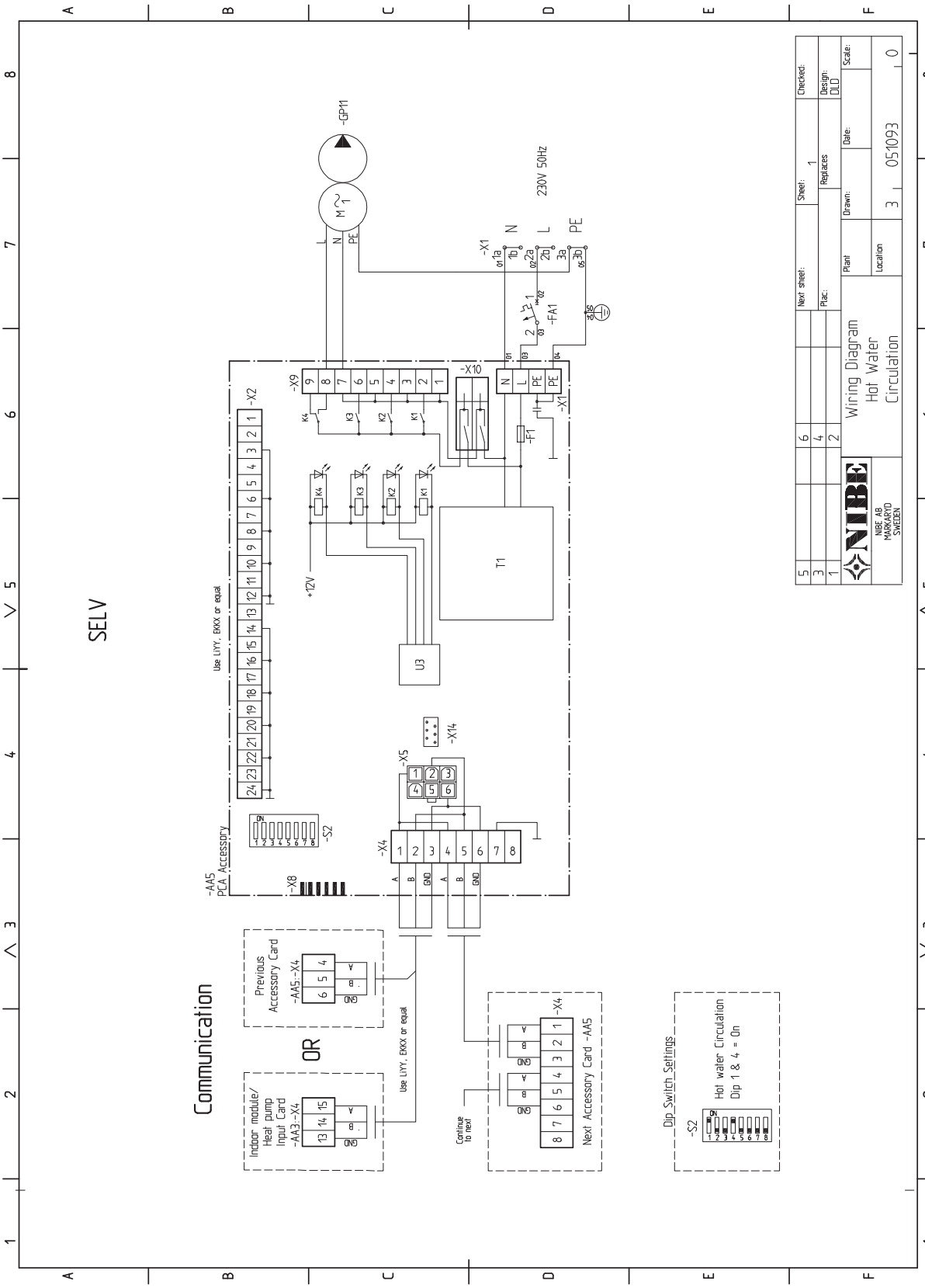
Menu 2.9.2 - hot water recirc.

Setting operating time, downtime and period times.

Caution

Also see the Installer manual for the heat pump/indoor module.

Electrical circuit diagram



6 Groundwater pump

General

With AXC 40 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.

NOTE

This option does not apply to VVM 320/VVM 325.

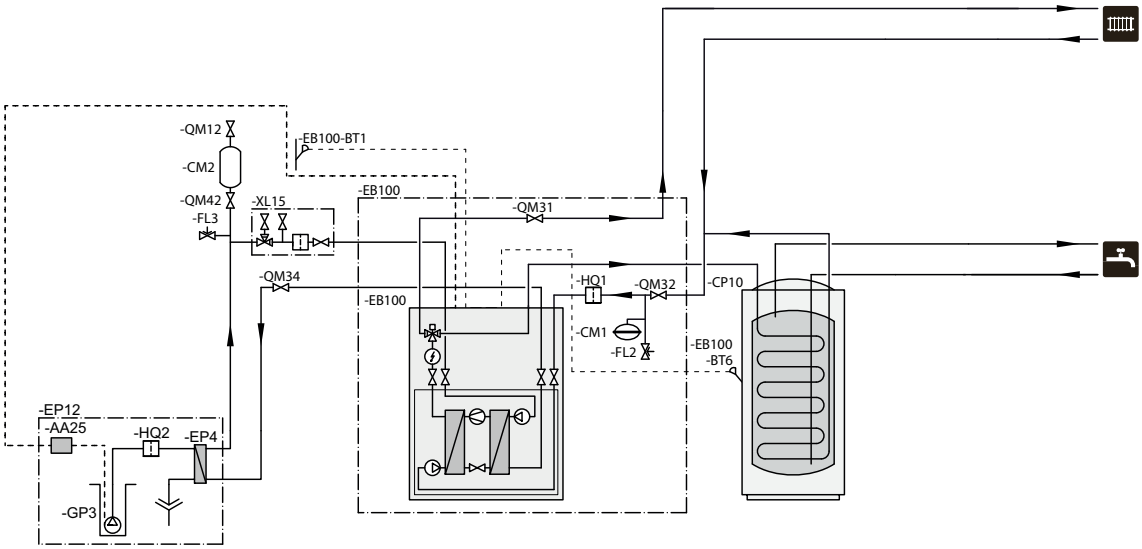
Outline diagram

Explanation

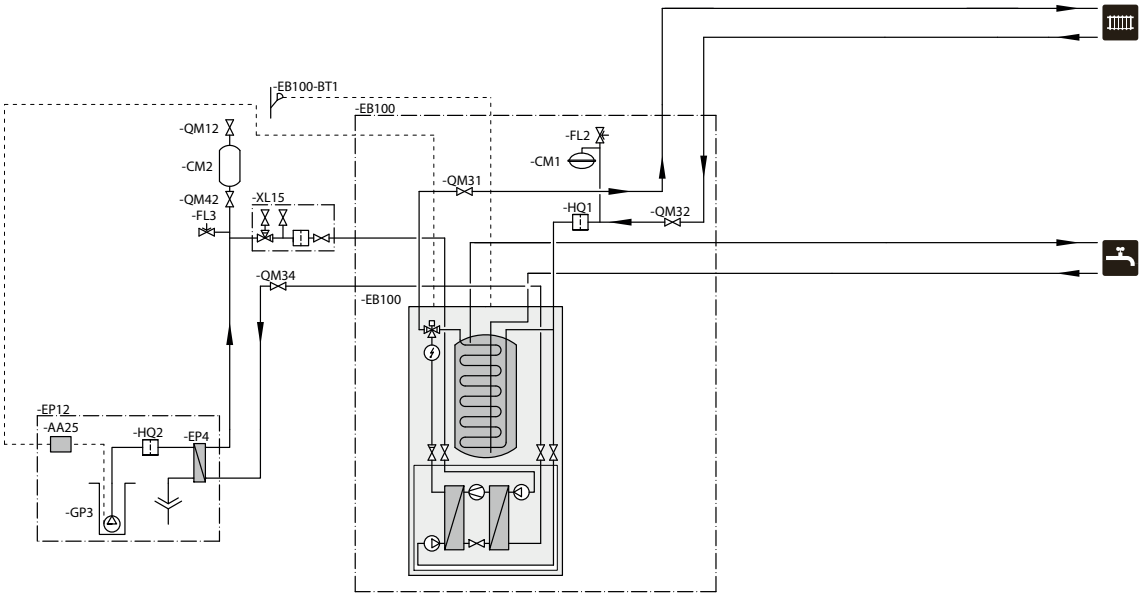
EB100	**Heat pump system**
BT1	Temperature sensor, outdoor
BT6	Temperature sensor, hot water charging
BT25	Temperature sensor, heating medium flow, external
CM1	Expansion vessel, heating medium side
EB100	Heat pump
FL2	Safety valve, heating medium side
GP10	Circulation pump, external
HQ1	Particle filter
QM31 - QM32	Shut-off valve, heating medium side
EP12	**Collector, brine side, ground water**
AA25	Unit box with accessory card (AXC 40)
EP4	Heat exchanger, groundwater
GP3	Circulation pump, groundwater
HQ2	Particle filter
Miscellaneous	
CM2	Level vessel, collector side
CP10	Accumulator tank with hot water coil
FL3	Safety valve, brine
QM12	Filler valve
QM34	Shut off valve, brine return
QM42	Shut-off valve
RM5	Non-return valve
XL15	Connection, filling brine

Designations in component locations according to standard IEC 81346-1 and 81346-2.

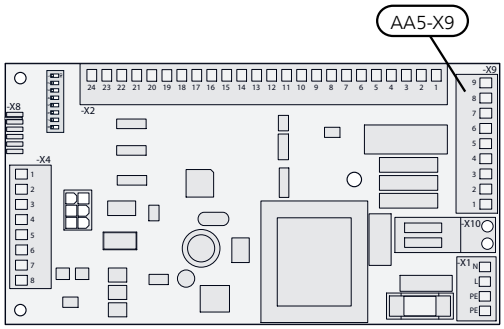
Outline diagram F1145/F1155 with AXC 40 and ground water pump



Outline diagram F1245/F1255 with AXC 40 and ground water 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 heat pump must not be powered when installing AXC 40.

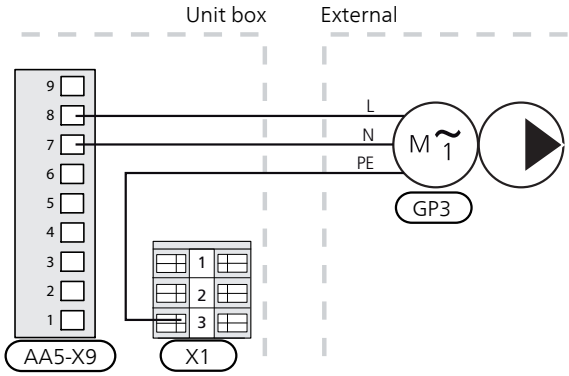
Caution

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

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

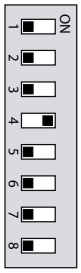
Connecting ground water pump (GP3)

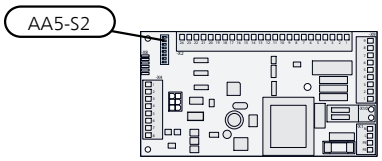
Connect ground water pump (GP3) to AA5-X9:8 (230 V), AA5-X9:7 (N) and X1:3 (PE).



DIP switch

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





Program settings

Program setting of AXC 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 - system settings

Activating/deactivating of accessories.

Select: "ground water pump".

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.

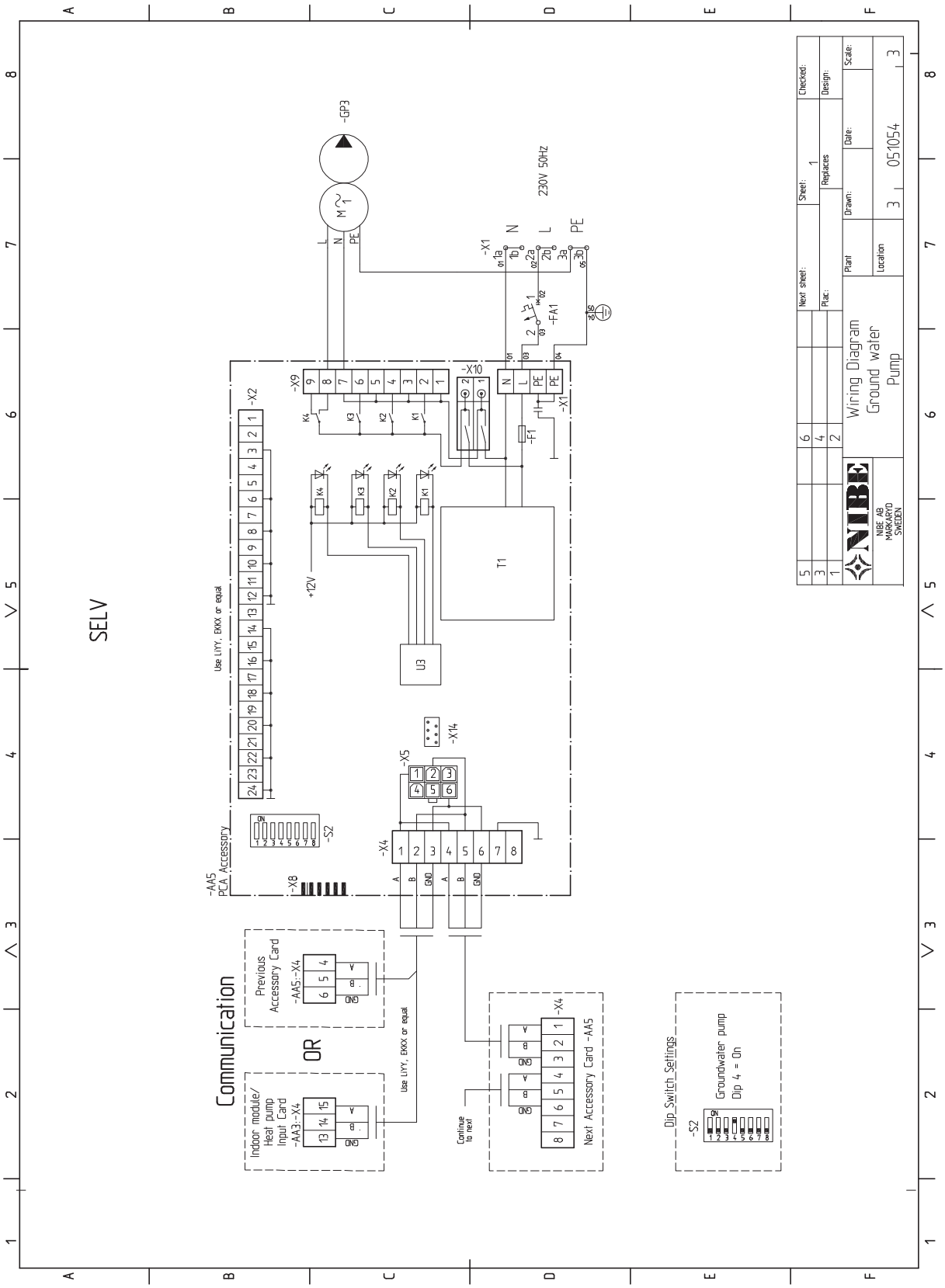
EP12-AA5-K3: No function.

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

Caution

Also see the Installer manual for the heat pump.

Electrical circuit diagram



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