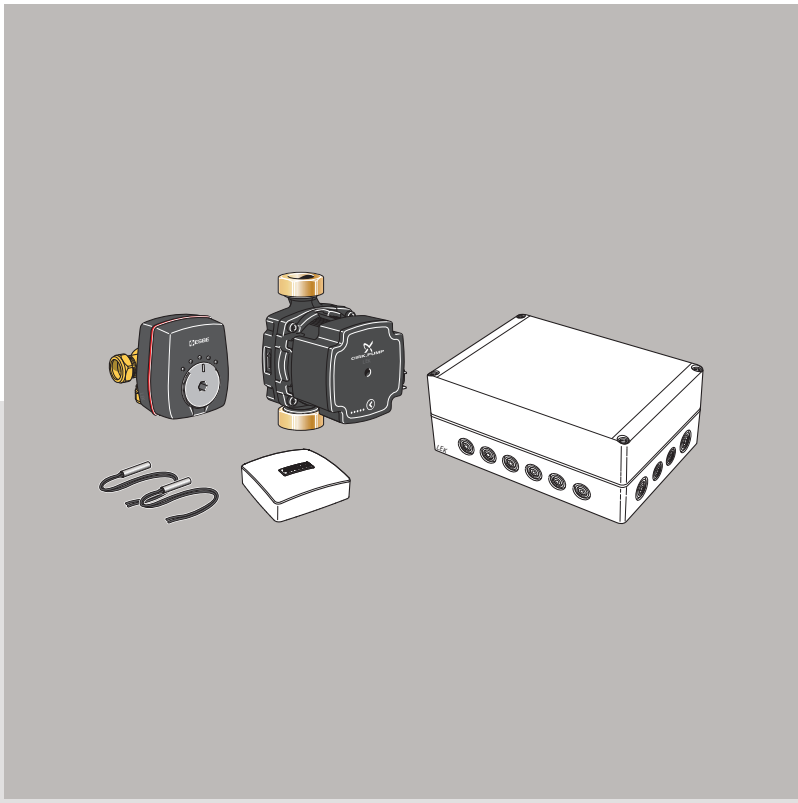
IHB 2109-1
631179

Extra climate system ECS 40/ECS 41



NIBE

S-series

F-series

Table of Contents

S-series

Important information

S

SAFETY INFORMATION

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

The manual must be left with the customer.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

This is an original manual. It may not be translated without the approval of NIBE.

Rights to make any design or technical modifications are reserved.

System pressure		
Max. system pressure, heating medium	MPa	Defined by main product
Max flow	l/s	Defined by main product
Max. permitted ambient temperature	°C	35

ECS 40/ECS 41 must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.

If the supply cable is damaged, only NIBE, its service representative or similar authorised person may replace it to prevent any danger and damage.

SYMBOLS

NOTE

This symbol indicates danger to person or machine .

Caution

This symbol indicates important information about what you should consider when installing or servicing the installation.

TIP

This symbol indicates tips on how to facilitate using the product.

MARKING

CE The CE mark is obligatory for most products sold in the EU, regardless of where they are made.

IP 21 Classification of enclosure of electro-technical equipment.

Danger to person or machine.

Read the Installer Manual.

General

This accessory is used when your climate unit is installed in buildings with several climate systems[1] that require different supply temperatures, for example in cases where the building has both a radiator system and an underfloor heating system. See "Compatible products" below to see which climate units ECS 40/ECS 41 can be connected to.

The total water flow in the climate systems should not exceed 1,700 l/h.

Caution

With underfloor heating systems, maximum supply temperature for heating is normally be set 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.

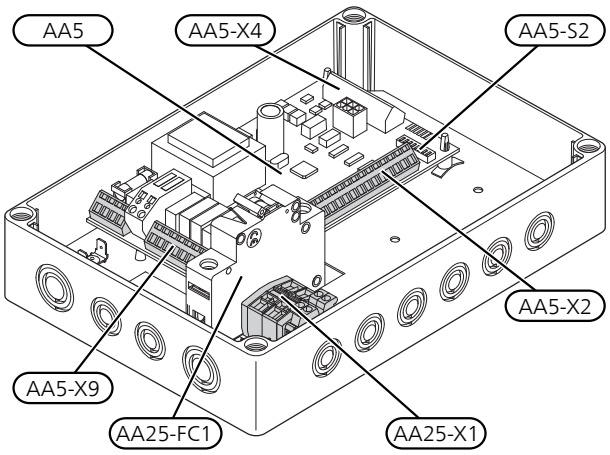
COMPATIBLE PRODUCTS

- S1155
- S1255
- VVM S320
- VVM S325
- SMO S40

CONTENTS

1 x	AXC module
4 x	Cable ties
1 x	Circulation pump
1 x	Contact
1 x	Shunt motor
1 x	Shunt valve
2 x	Heating pipe paste
2 x	Aluminium tape
1 x	Insulation tape
2 x	Replacement gasket
2 x	Temperature sensor
1 x	Room sensor
1 x	Pipe with straight coupling[2]

COMPONENT LOCATION, AXC MODULE (AA25)



ELECTRICAL COMPONENTS

AA5	Accessory card	
	AA5-S2	DIP switch
	AA5-X2	Terminal block, inputs
	AA5-X4	Terminal block, communication
	AA5-X9	Terminal block, outputs
AA25	AXC module	
	AA25-FC1	Miniature circuit-breaker
	AA25-X1	Terminal block, power supply

Designations according to standard EN 81346-2.

S

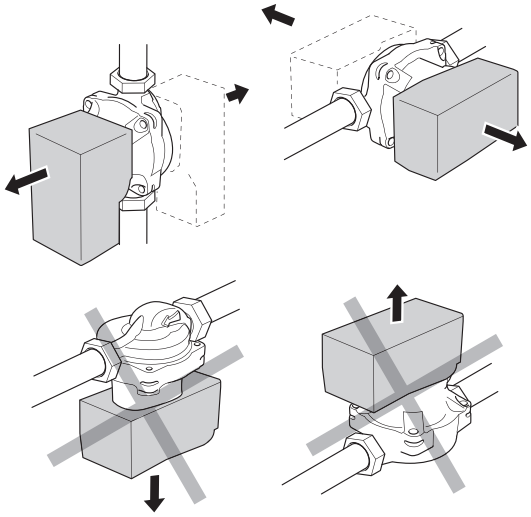
1. The number of climate systems that can be installed varies depending on the product and software version. To check which software version is available for your product, visit nibeuplink.com.

2. This is only used when connecting to NIBE F370 or F470.

Pipe connections

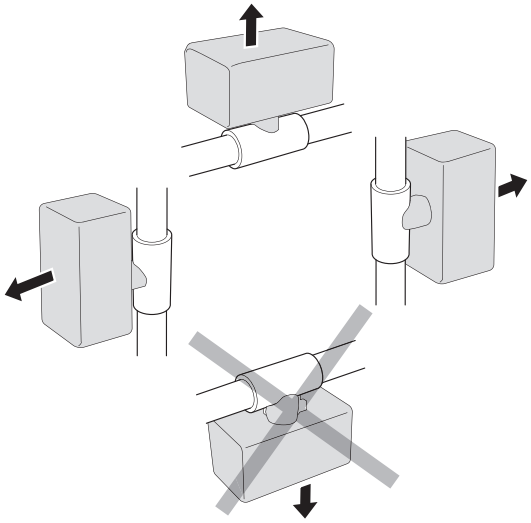
INSTALLATION PRINCIPLE

CIRCULATION PUMP



The circulation pump's permitted positions.

SHUNT



The shunt's permitted positions.

GENERAL

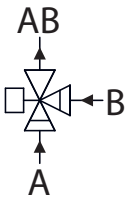
When connecting extra climate systems, they must be connected so that they have a lower working temperature than the climate system 1.

CIRCULATION PUMP

The extra circulation pump (EP21-GP10) is positioned in the extra climate system according to the outline diagram.

SHUNT VALVE

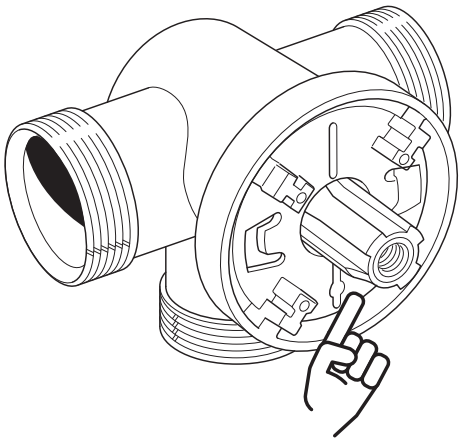
The shunt valve (EP21-QN25) is located on the supply line after the heat pump/indoor module, before the first radiator in the climate system 1. The return line from the extra climate system is connected to the shunt valve and to the return line from the climate system 1, see image and outline diagram.

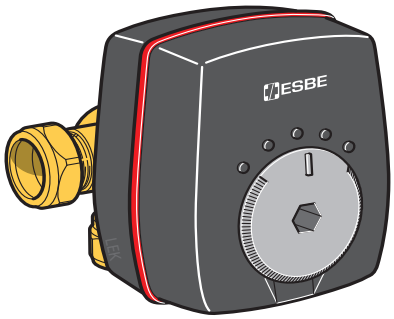


- Connect the supply line to the climate system from the heat pump to port A on the shunt valve (opens on increase signal)
- Connect the return line from the climate system to port B on the shunt valve via the T-pipe (closes on reduce signal).
- Connect the supply line to the climate system to the common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

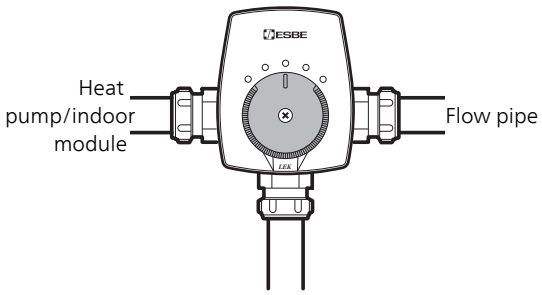
INSTALLING THE SHUNT

When installing the shunt, the flat side of the shaft must be in the southwest position, see image. Then, install the shunt motor with the knob in the middle position.



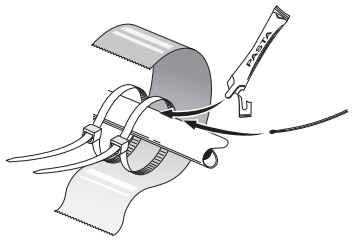


Shunt valve, (QN25)
Connection DN20 1 1/4" (22 mm)



TEMPERATURE SENSOR

- The supply line sensor (EP21-BT2) is installed on the pipe between the circulation pump (EP21-GP10) and shunt valve (EP21-QN25).
- The return line sensor (EP21-BT3) is installed on the pipe from the extra climate system.



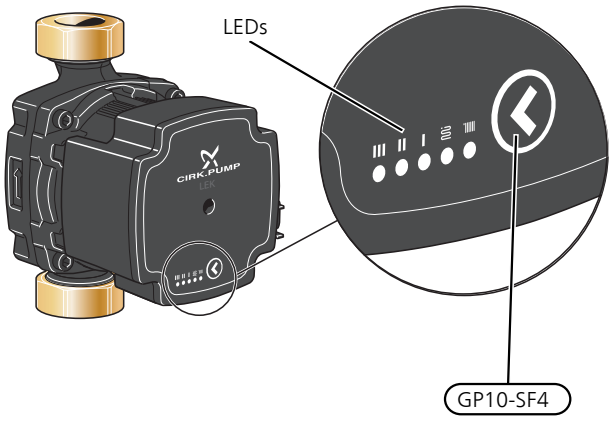
Install the temperature sensors using cable ties, together with the heat conducting paste and aluminium tape. Then insulate with the enclosed insulation tape.

NOTE

To prevent interference, sensor cables to external connections must not be laid close to high voltage cables.

S

SETTING THE CIRCULATION PUMP



S

The circulation pump (GP10) is equipped with five LEDs. In normal mode, the LEDs show the pump's setting by lighting up in green and/or yellow. The LEDs can also indicate an alarm, in which case they light up in red and yellow.

The circulation pump's (GP10) various settings are selected by pressing the switch (GP10-SF4).

Choose between 5 different settings on the circulation pump.

- proportional pressure auto adapt (PPAA)
- constant pressure auto adapt (CPAA)
- proportional pressure (PP)
- constant pressure (CP)
- constant curve (CC).

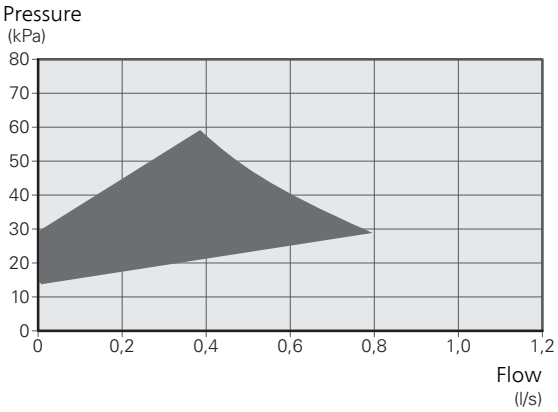
The circulation pump's factory setting is PP, speed 2.

PROPORTIONAL PRESSURE AUTO ADAPT (PPAA)

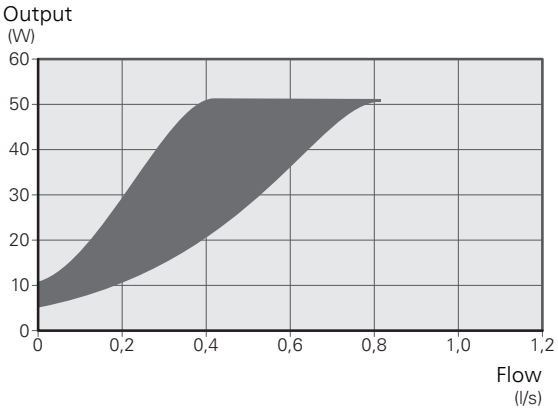
The circulation pump continually regulates the flow through the system with a great deal of freedom, to ensure minimum pump power consumption.

The setting is intended for radiator systems. Due to optimisation to low pumping capacity, the flow may be insufficient in certain systems.

Capacity, circulation pump (PPAA)



Power, circulation pump (PPAA)



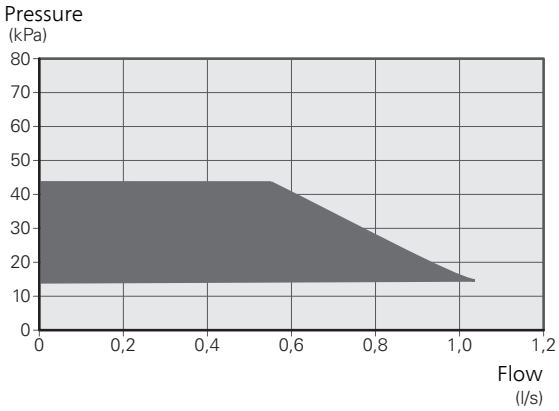
Setting	*LED indication*
PPAA	

CONSTANT PRESSURE AUTO ADAPT (CPAA)

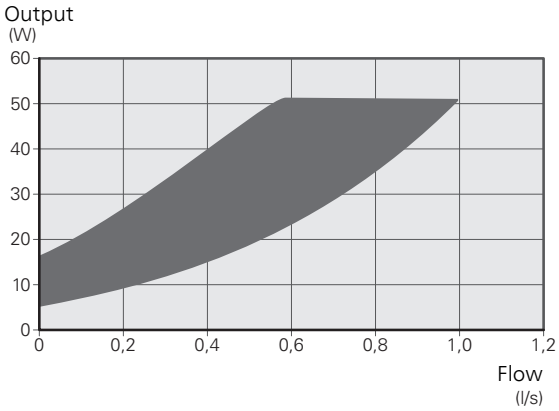
The circulation pump continually regulates the flow through the system with a great deal of freedom, to ensure minimum pump power consumption.

The setting is intended for underfloor heating systems. Due to optimisation to low pumping capacity, the flow may be insufficient in certain systems.

Capacity, circulation pump (CPAA)



Power, circulation pump (CPAA)



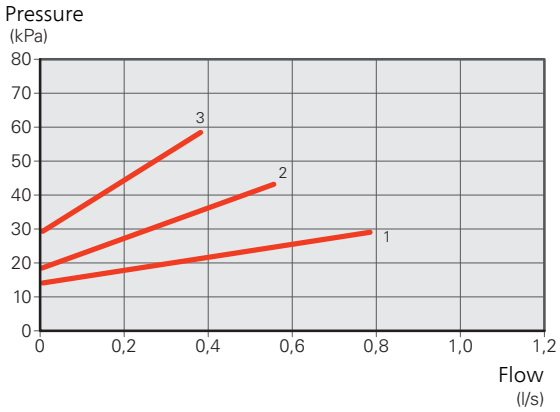
Setting	*LED indication*
CPAA	

PROPORTIONAL PRESSURE (PP)

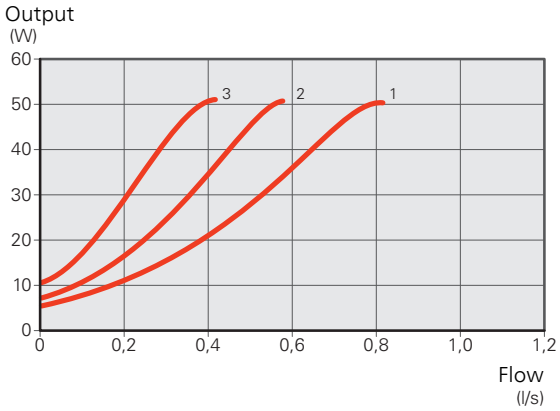
Within a limited range, the circulation pump is permitted to regulate its speed to an optimum system pressure. Speed 1, 2 or 3 is selected based on maximum flow requirement.

The setting is intended for radiator systems.

Capacity, circulation pump (PP)



Output, circulation pump (PP)



Pump speed PP	*LED indication*
1	
2	
3	

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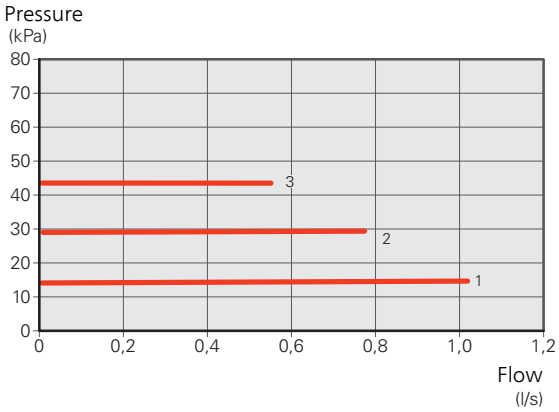
CONSTANT PRESSURE (CP)

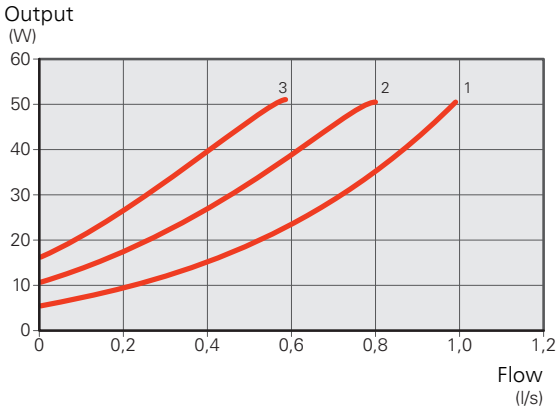
Within a limited range, the circulation pump is permitted to regulate its speed to a constant system pressure. Speed 1, 2 or 3 is selected based on maximum flow requirement.

The setting is intended for underfloor heating systems.

Capacity, circulation pump (CP)



Output, circulation pump (CP)



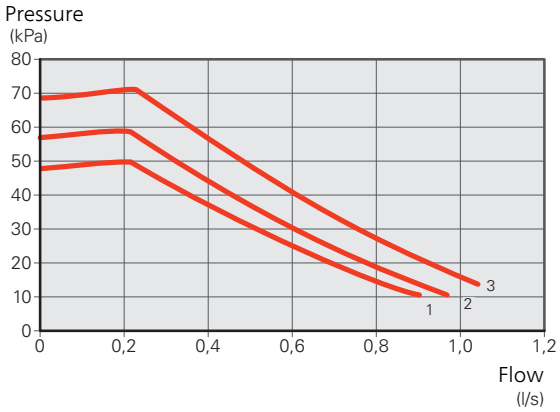
Pump speed CP	*LED indication*
1	
2	
3	

CONSTANT CURVE (CC)

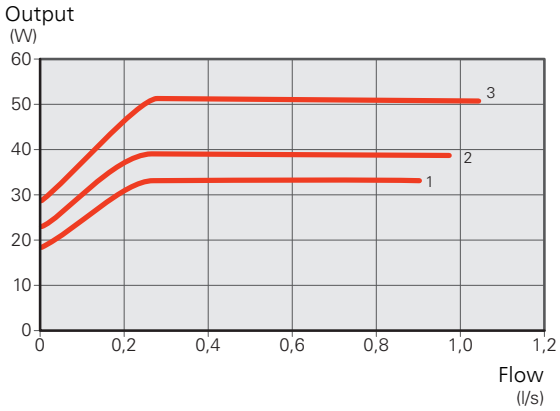
The circulation pump's speed is fixed and no regulation takes place. Speed is selected based on maximum flow requirement.

The setting can be used when very high flows are required.

Capacity, circulation pump (CC)



Output, circulation pump (CC)



Pump speed CC	*LED indication*
1	
2	
3	

ALARM

If an alarm occurs, LED shines red.

When one or more alarms are active, this is indicated according to the following table. If more than one alarm is active, the one with the highest priority is displayed.

Cause / Action	*LED indication*
The rotor is blocked. Wait or release the rotor shaft.	
Supply voltage too low. Check the supply voltage.	
Electrical fault. Check the supply voltage or replace the circulation pump.	

S

Outline diagrams

Caution

These are outline diagrams.

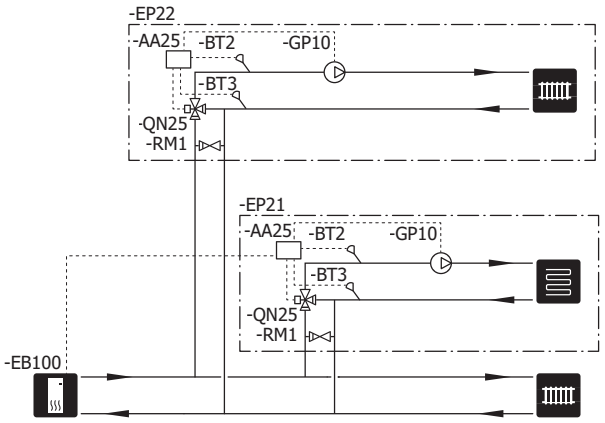
Real installations must be planned according to applicable standards.

EXPLANATION

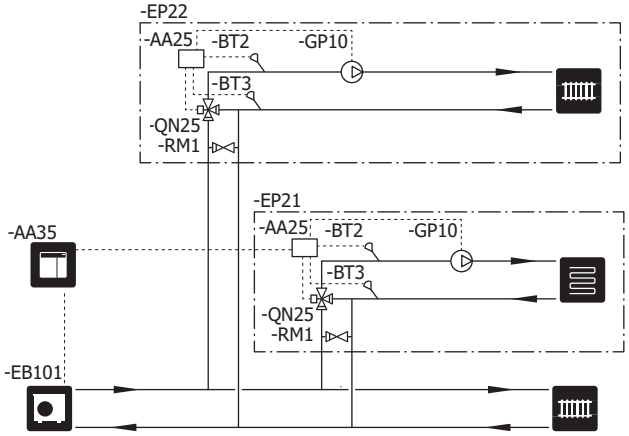
EB100	**Heat pump**
AA35	**SMO S40**
EB101	**Heat pump**
EP21	**Climate system 2 (ECS 40/ECS 41)**
EP22	**Climate system 3 (ECS 40/ECS 41)**
AA25	AXC module
BT2	Flow temperature sensor, extra climate system
BT3	Return line sensor, extra climate system
GP10	Circulation pump, extra climate system
QN25	Shunt valve
RM1	Non-return valve

Designations according to standard EN 81346-2.

Outline diagram S1155 / S1255 / VVM S320 / VVM S325 with ECS 40/ECS 41



Outline diagram SMO S40 with ECS 40/ECS 41



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.

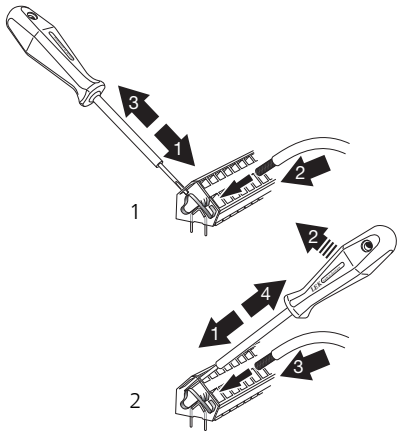
The climate unit must not be powered when installing ECS 40/ECS 41.

- To prevent interference, sensor cables to external connections must not be laid close to high voltage cables.
- The minimum area of communication and sensor cables to external connections must be 0.5 mm² up to 50 m, for example EKKX, LiYY or equivalent.
- ECS 40/ECS 41 must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.
- Mark the relevant electrical cabinet with a warning about external voltage, in those cases where a component in the cabinet has a separate supply.
- ECS 40/ECS 41 restarts after a power failure.

The electrical circuit diagram is at the end of this Installer handbook.

CABLE LOCK

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



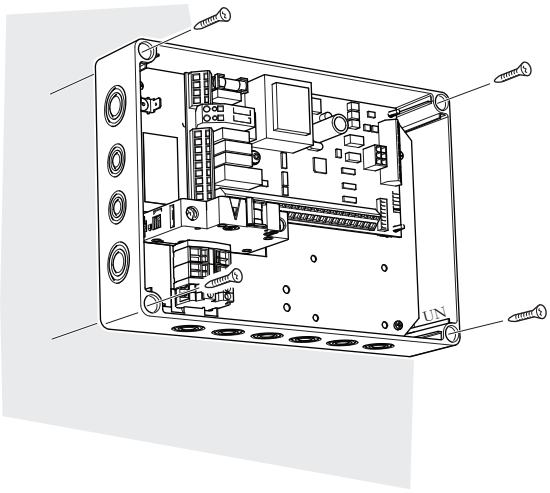
MOUNTING

The AXC module (AA25) is a separate, electric control module and must be mounted on a wall.

Caution

The screw type must be adapted to the surface on which installation is taking place.

Installation is not permitted using glue or tape.



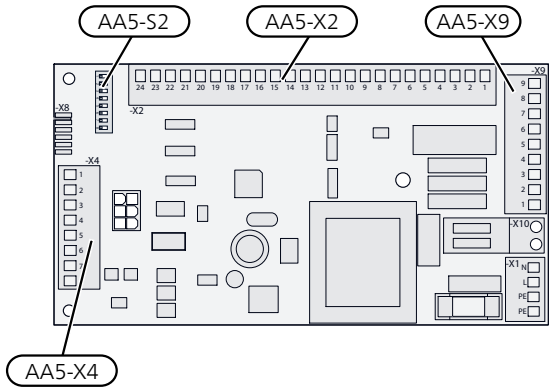
Use all mounting points and mount the module upright, flat against the wall.

Leave at least 100 mm of free space around the module to allow access and make cable routing easier during installation and servicing.

NOTE

The installation must be carried out in such a way that IP21 is satisfied.

OVERVIEW ACCESSORY BOARD (AA5)



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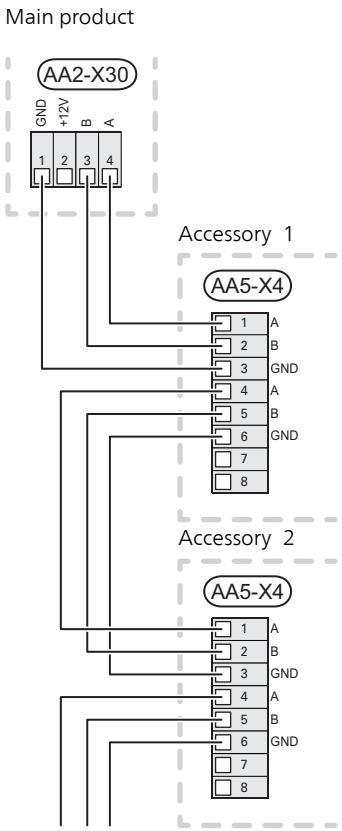
CONNECTING COMMUNICATION

CONNECTING TO HEAT PUMP OR INDOOR MODULE

ECS 40/ECS 41 contains an accessory board (AA5) that connects directly to the main product's PCB (terminal block AA2-X30).

If more accessories are to be connected, or are already installed, the boards are connected in series.

Because there can be different connections for accessories with accessory board (AA5), you should always read the instructions in the manual for the accessory that is to be installed.

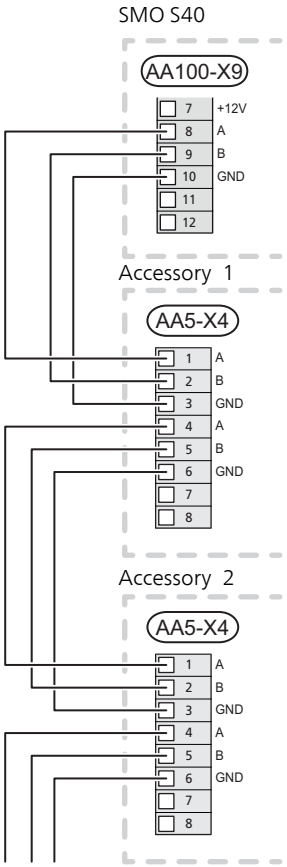


CONNECTING TO CONTROL MODULE

ECS 40/ECS 41 contains an accessory board (AA5) that connects directly to the control module on its joint board (terminal block AA100-X9).

If more accessories are to be connected, or are already installed, the boards are connected in series.

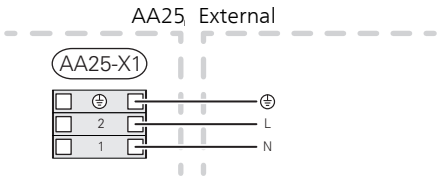
Because there can be different connections for accessories with accessory board (AA5), you should always read the instructions in the manual for the accessory that is to be installed.



POWER CONNECTION

Connect the power supply cable to terminal block AA25-X1 as illustrated.

Tightening torque for earth cable: 0.5–0.6 Nm.

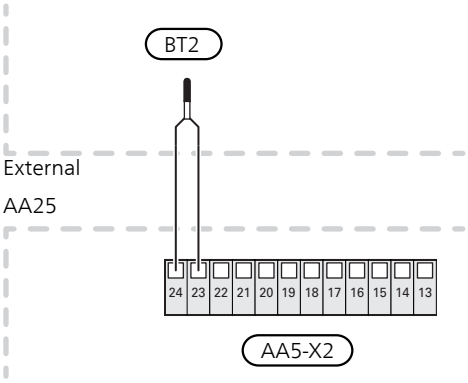


CONNECTION OF SENSORS AND EXTERNAL ADJUSTMENT

For the location of the terminal blocks, see Component location, AXC module (AA25) page 5.

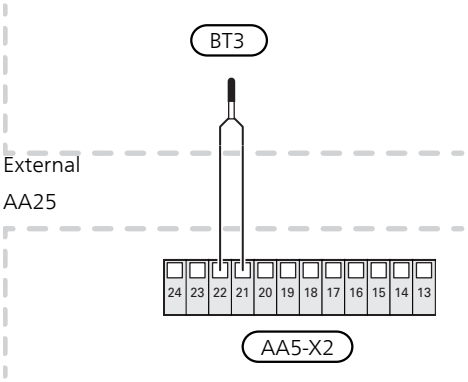
SUPPLY TEMPERATURE SENSOR, EXTRA CLIMATE SYSTEM (BT2)

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



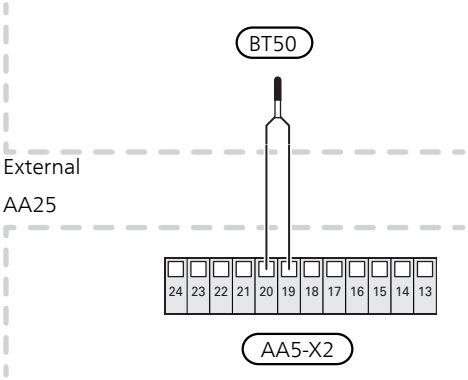
RETURN LINE SENSOR, EXTRA CLIMATE SYSTEM (BT3)

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



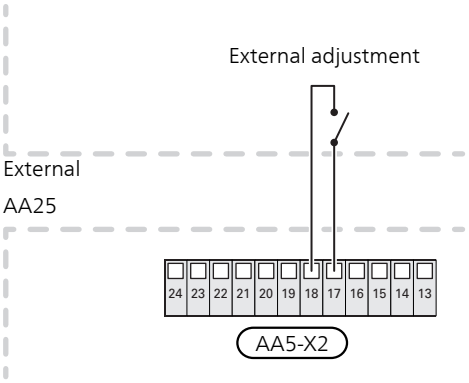
ROOM SENSOR, EXTRA CLIMATE SYSTEM (BT50) (OPTIONAL)

Connect the room 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.

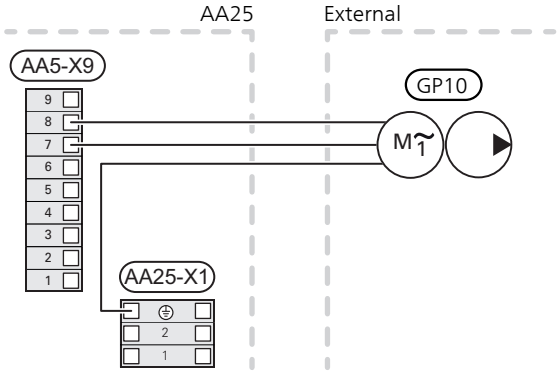


Caution

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

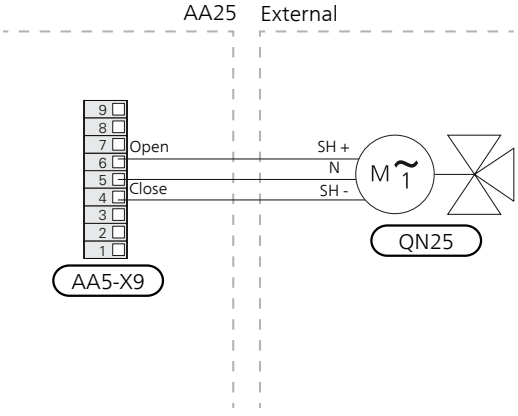
CONNECTION OF THE CIRCULATION PUMP (GP10)

Connect the external heating medium pump (GP10) to AA5-X9:7 (N), AA5-X9:8 (230 V) 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).

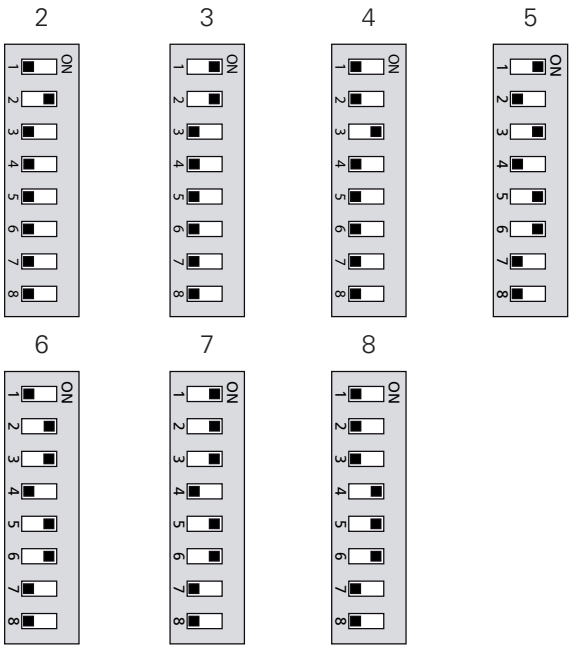


S

DIP SWITCH

The DIP switch (S2) on the accessory board (AA5) is set as follows, with each climate system having a unique setting.

Climate system



S

Program settings

Program setting of ECS 40/ECS 41 can be performed via the start guide or directly in the menu system.

START GUIDE

The start guide appears at first start-up after installation of the heat pump/indoor module, but is also found in menu .7.7.

MENU SYSTEM

MENU 7.2.1 - ADD/REMOVE ACCESSORIES

Add or remove accessories here.

Select: "Climate system 2-8".

MENU 1.1 - TEMPERATURE

You make temperature settings for your installation here.

MENU 1.3 - ROOM SENSOR SETTINGS

Here, you make your settings for room sensors and zones. The room sensors are grouped by zone.

Here, you select the zone to which a sensor will belong. It is possible to connect multiple room sensors to each zone. Each room sensor can be given a unique name.

The control of heating, cooling, humidity and ventilation are activated by ticking each option. Which options are shown depends on which type of sensor is installed. If control is not activated, the sensor will be the displaying sensor.

Caution

A slow heating system such as underfloor heating may be inappropriate for controlling with room sensors.

MENU 1.30.1 - CURVE, HEATING

Curve, heating

Setting range: 0 – 15,0

In menu "Curve, heating" you can view the heating curve for your house. The task of the heating curve is to provide an even indoor temperature, regardless of the outdoor temperature. It is from this heating curve that ECS 40/ECS 41 determines the temperature of the water to the climate system, the supply temperature, and therefore the indoor temperature. Here, you can select heating curve and read off how the supply temperature changes at different outdoor temperatures.

TIP

It is also possible to create your own curve. This is done in menu 1.30.7.

Caution

With underfloor heating systems, the maximum supply temperature is normally set between 35 and 45 °C.

Check the max floor temperature with your floor supplier.

TIP

Wait 24 hours before making a new setting, so that the room temperature has time to stabilise.

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

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

If it is warm outdoors and the room temperature is too low, increase the curve offset by one increment.

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

MENU 1.30.3 - EXTERNAL ADJUSTMENT

Climate system

Setting range: -10 – 10

Setting range (if room sensor is installed): 5 – 30 °C

Connecting an external contact, for example, a room thermostat or a timer allows you to temporarily or periodically raise or lower the room temperature. When the contact is on, the heat curve offset is changed by the number of steps selected in the menu. If a room sensor is installed and activated the desired room temperature (°C) is set.

MENU 1.30.4 - LOWEST SUPPLY HEATING

heating

Setting range: 5 – 80 °C

Set the minimum temperature on the supply temperature to the climate system. This means that ECS 40/ECS 41 never calculates a temperature lower than that set here.

MENU 1.30.5 - LOWEST SUPPLY COOLING

cooling

Depending on which cooling accessory is used, the setting range can vary.

Setting range 7 – 30 °C

Alarm, room sensor during cooling operation

Setting range: on/off

Set the minimum temperature on the supply temperature to the climate system. This means that ECS 40/ECS 41 never calculates a temperature lower than that set here.

Here, you can receive alarms during cooling operation, for example if a room sensor malfunctions.

> ⚠ *NOTE*
>
> Cooling flow line must be set with regard to which climate system is connected. For example, floor cooling with too low cooling flow line can cause condensation precipitation, which in the worst instance could lead to moisture damage.

MENU 1.30.6 - HIGHEST SUPPLY HEAT

climate system

Setting range: 5 – 80 °C

Here, you set the highest supply temperature for the climate system. This means that ECS 40/ECS 41 never calculates a temperature higher than the one set here.

> ☞ *Caution*
>
> With underfloor heating systems, "Maximum supply temperature for heating" should normally be set between 35 and 45°C.
>
> Check the max floor temperature with your floor supplier.

MENU 1.30.7 - OWN CURVE

Own curve, heat

> ☞ *Caution*
>
> Curve 0 must be selected for own curve to apply.

You can create your own heating curve here, if there are special requirements, by setting the desired supply temperatures for different outdoor temperatures.

Supply temp

Setting range: 5 – 80 °C

Own curve, cooling

> ☞ *Caution*
>
> Curve 0 must be selected for own curve to apply.

You can create your own cooling curve here, if there are special requirements, by setting the desired supply temperatures for different outdoor temperatures.

Supply temp

Setting range: -5 – 40 °C

MENU 7.2.4 - EXTRA CLIMATE SYSTEM (ECS)

Use in cooling mode

Setting range: on/off

Shunt amplification

Setting range: 0.1 – 10.0

Shunt waiting time

Setting range: 10 – 300 s

Contr. pump GP10

Setting range: on/off

Control signal

Setting range: PWM / 0-10V*

Manual speed

Setting range: 0 – 100%

Factory setting: 70%

*Factory setting

The shunt amplification and shunt waiting time for the different extra climate systems that are installed are also set here.

MENU 7.5.3 - FORCED CONTROL

Here you can force control the various components in the installation. The most important safety functions remain active however.

> ⚠ *NOTE*
>
> Forced control is only intended to be used for troubleshooting purposes. Using the function in any other way may cause damage to the components in your climate system.

> ☞ *Caution*
>
> Also see the Installer Manual for the relevant heat pump.

Technical data

TECHNICAL SPECIFICATIONS

AXC module		
Electrical data		
Rated voltage		230 V ~ 50 Hz
Enclosure class		IP 21
Rated value for impulse voltage	kV	4
Pollution degree		2
Min fuse rating	A	10
Miscellaneous		
Operation mode according to EN 60 730-1		Type 1
Area of operation	°C	-25 – 70
Ambient temperature	°C	5 – 35
Program cycles, hours		1, 24
Program cycles, days		1, 2, 5, 7
Resolution, program	min.	1
Temperature, ball pressure test	°C	75
Dimensions LxWxH	mm	175x250x100
Weight	kg	1.47
Substances according to Directive (EG) no. 1907/2006, article 33 (Reach)		Lead in brass components

		ECS 40	*ESC 41*
cw_s value		4.0	6.3
Connection valve Ø	mm	22	
Rated voltage		230V~ 50Hz	
Part No.		067 287	067 288

S

ELECTRICAL CIRCUIT DIAGRAM

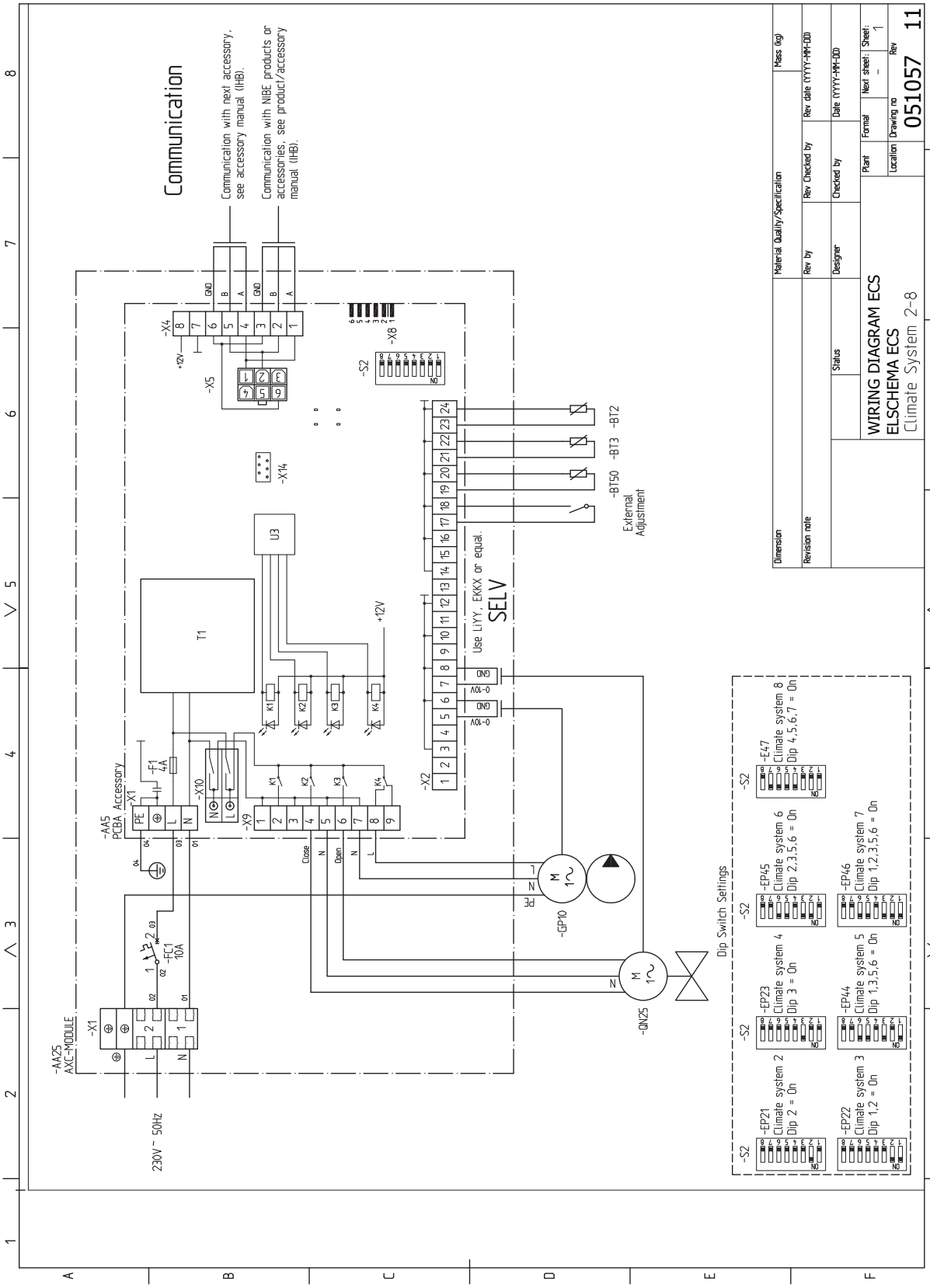


Table of Contents

F-series

F-series

Important information

F

SAFETY INFORMATION

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

The manual must be left with the customer.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

This is an original manual. It may not be translated without the approval of NIBE.

Rights to make any design or technical modifications are reserved.

System pressure		
Max. system pressure, heating medium	MPa	Defined by main product
Max flow	l/s	Defined by main product
Max. permitted ambient temperature	°C	35

ECS 40/ECS 41 must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.

If the supply cable is damaged, only NIBE, its service representative or similar authorised person may replace it to prevent any danger and damage.

SYMBOLS

NOTE

This symbol indicates danger to person or machine .

Caution

This symbol indicates important information about what you should consider when installing or servicing the installation.

TIP

This symbol indicates tips on how to facilitate using the product.

MARKING

CE The CE mark is obligatory for most products sold in the EU, regardless of where they are made.

IP 21 Classification of enclosure of electro-technical equipment.

Danger to person or machine.

Read the Installer Manual.

General

This accessory is used when your climate unit is installed in buildings with several climate systems[1] that require different supply temperatures, for example in cases where the building has both a radiator system and an underfloor heating system. See "Compatible products" below to see which climate units ECS 40/ECS 41 can be connected to.

The total water flow in the climate systems should not exceed 1,700 l/h.

Caution

With underfloor heating systems, maximum supply temperature for heating is normally be set 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.

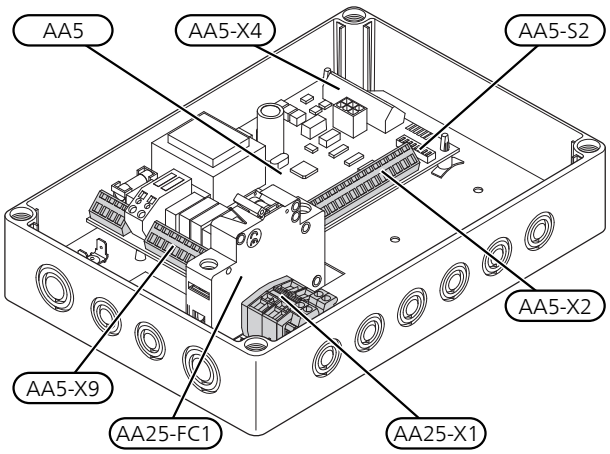
COMPATIBLE PRODUCTS

- F1145
- F1155
- F1245
- F1255
- F1345
- F1355
- F370
- F470
- F730
- F750
- VVM 225
- VVM 310
- VVM 320
- VVM 325
- VVM 500
- SMO 40

CONTENTS

1 x	AXC module
4 x	Cable ties
1 x	Circulation pump
1 x	Contact
1 x	Shunt motor
1 x	Shunt valve
2 x	Heating pipe paste
2 x	Aluminium tape
1 x	Insulation tape
2 x	Replacement gasket
2 x	Temperature sensor
1 x	Room sensor
1 x	Pipe with straight coupling[2]

COMPONENT LOCATION, AXC MODULE (AA25)



ELECTRICAL COMPONENTS

AA5	Accessory card	
	AA5-S2	DIP switch
	AA5-X2	Terminal block, inputs
	AA5-X4	Terminal block, communication
	AA5-X9	Terminal block, outputs
AA25	AXC module	
	AA25-FC1	Miniature circuit-breaker
	AA25-X1	Terminal block, power supply

Designations according to standard EN 81346-2.

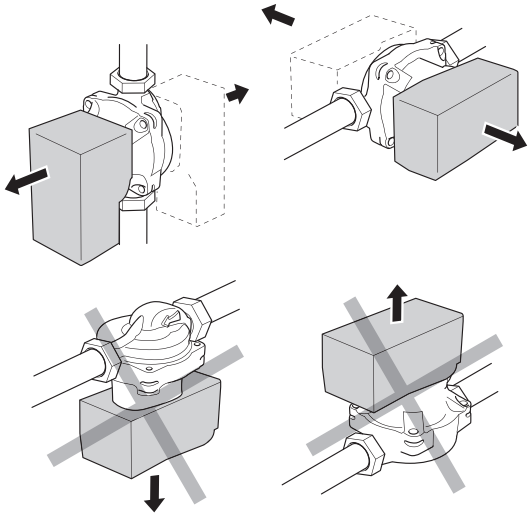
1. The number of climate systems that can be installed varies depending on the product and software version. To check which software version is available for your product, visit nibeuplink.com.

2. This is only used when connecting to NIBE F370 or F470.

Pipe connections

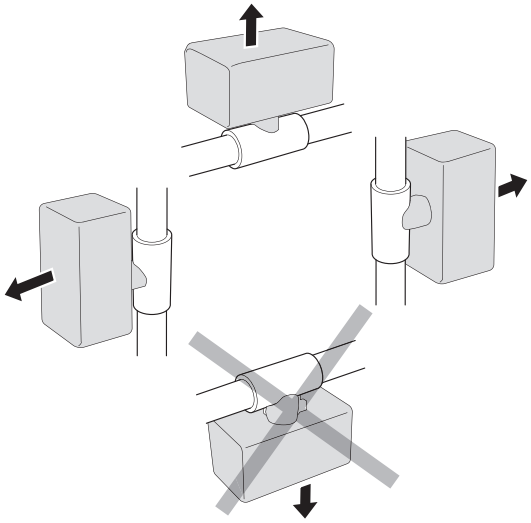
INSTALLATION PRINCIPLE

CIRCULATION PUMP



The circulation pump's permitted positions.

SHUNT



The shunt's permitted positions.

GENERAL

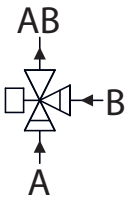
When connecting extra climate systems, they must be connected so that they have a lower working temperature than the climate system 1.

CIRCULATION PUMP

The extra circulation pump (EP21-GP10) is positioned in the extra climate system according to the outline diagram.

SHUNT VALVE

The shunt valve (EP21-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 extra climate system is connected to the shunt valve and to the return line from the climate 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).

ALTERNATIVE CONNECTION F370/F470

At alternative connection of the first extra climate system to F370/F470 the extra climate system may have a higher temperature than the normal climate system.

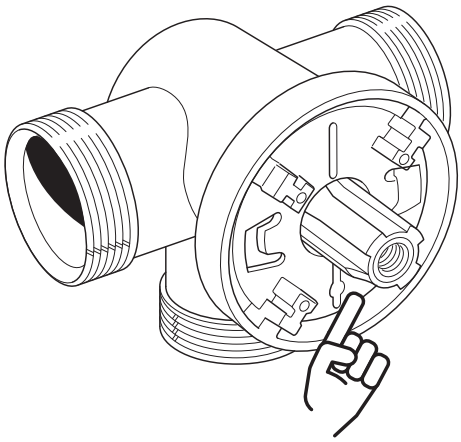
- First drain the boiler water reservoir/heating system if filled with water.
- Unscrew the plugged connection that is located on the docking connection (XL8).
- Install the supplied plastic pipe with coupling in the docking connection (XL8).
- The shunt valve (QN25) is located on the supply line after the heat pump from its docking connection (XL8). The return line from the extra climate system connects to the shunt valve and to the return line from the heating system 1, see outline diagram.

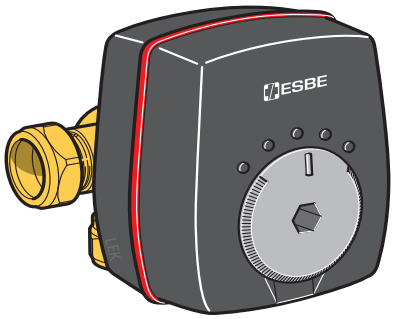
NOTE

Incorrect installation can affect the function.

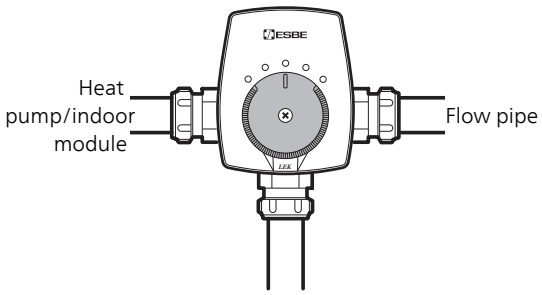
INSTALLING THE SHUNT

When installing the shunt, the flat side of the shaft must be in the southwest position, see image. Then, install the shunt motor with the knob in the middle position.



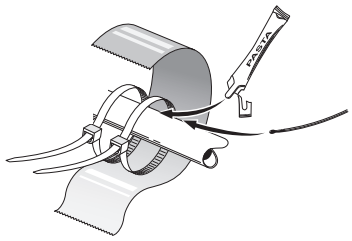


Shunt valve, (QN25)
Connection DN20 1 1/4" (22 mm)



TEMPERATURE SENSOR

- The supply line sensor (EP21-BT2) is installed on the pipe between the circulation pump (EP21-GP10) and shunt valve (EP21-QN25).
- The return line sensor (EP21-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*
>
> To prevent interference, sensor cables to external connections must not be laid close to high voltage cables.

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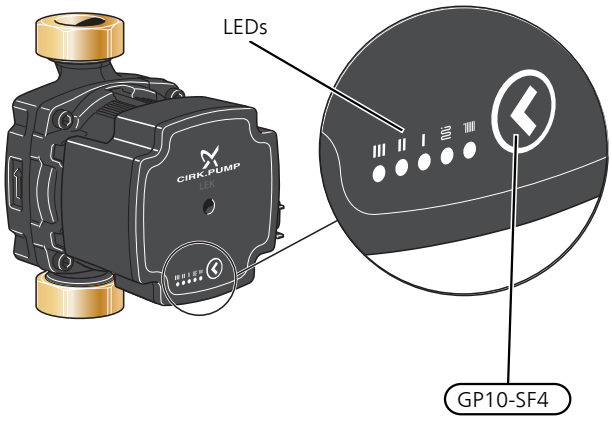
SETTING THE CIRCULATION PUMP



The circulation pump (GP10) is equipped with five LEDs. In normal mode, the LEDs show the pump's setting by lighting up in green and/or yellow. The LEDs can also indicate an alarm, in which case they light up in red and yellow.

The circulation pump's (GP10) various settings are selected by pressing the switch (GP10-SF4).

Choose between 5 different settings on the circulation pump.

- proportional pressure auto adapt (PPAA)
- constant pressure auto adapt (CPAA)
- proportional pressure (PP)
- constant pressure (CP)
- constant curve (CC).

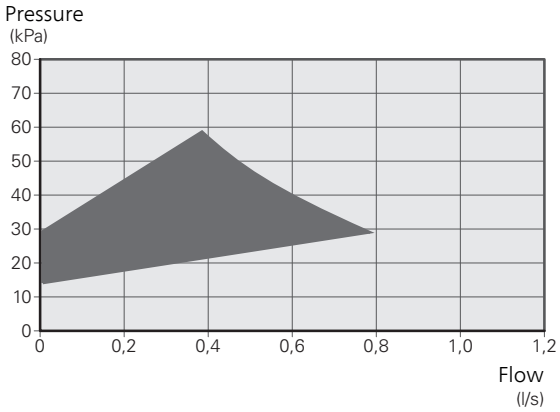
The circulation pump's factory setting is PP, speed 2.

PROPORTIONAL PRESSURE AUTO ADAPT (PPAA)

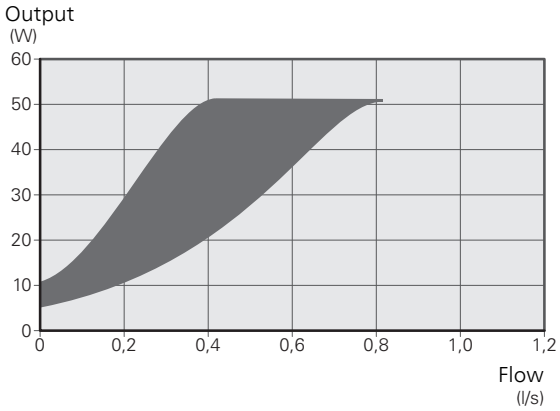
The circulation pump continually regulates the flow through the system with a great deal of freedom, to ensure minimum pump power consumption.

The setting is intended for radiator systems. Due to optimisation to low pumping capacity, the flow may be insufficient in certain systems.

Capacity, circulation pump (PPAA)



Power, circulation pump (PPAA)



Setting	*LED indication*
PPAA	

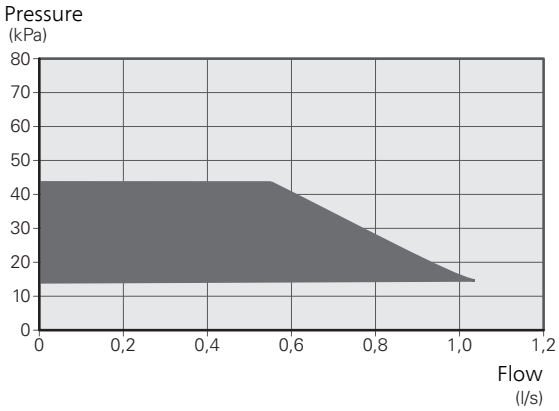
F

CONSTANT PRESSURE AUTO ADAPT (CPAA)

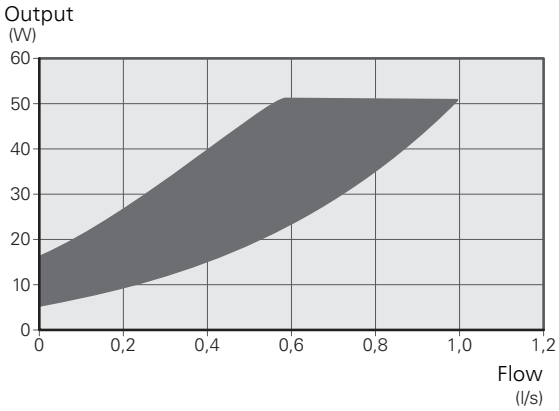
The circulation pump continually regulates the flow through the system with a great deal of freedom, to ensure minimum pump power consumption.

The setting is intended for underfloor heating systems. Due to optimisation to low pumping capacity, the flow may be insufficient in certain systems.

Capacity, circulation pump (CPAA)



Power, circulation pump (CPAA)



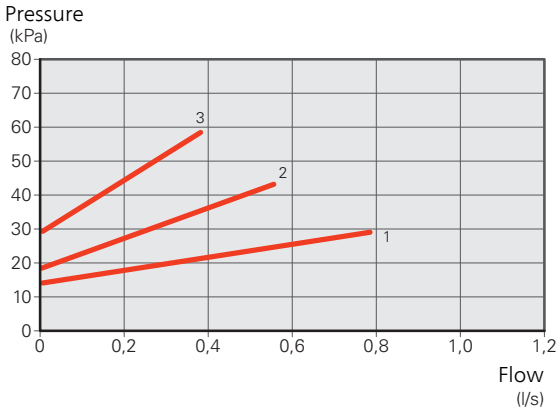
Setting	*LED indication*
CPAA	

PROPORTIONAL PRESSURE (PP)

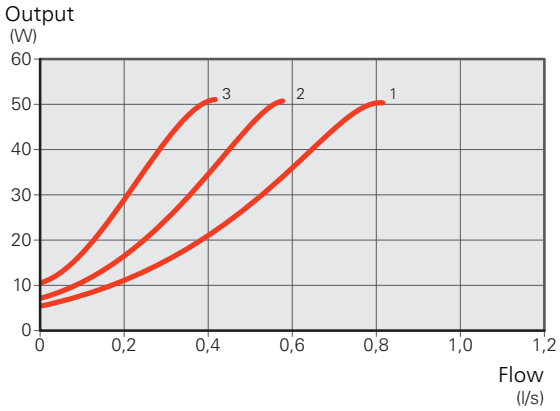
Within a limited range, the circulation pump is permitted to regulate its speed to an optimum system pressure. Speed 1, 2 or 3 is selected based on maximum flow requirement.

The setting is intended for radiator systems.

Capacity, circulation pump (PP)



Output, circulation pump (PP)



Pump speed PP	*LED indication*
1	
2	
3	

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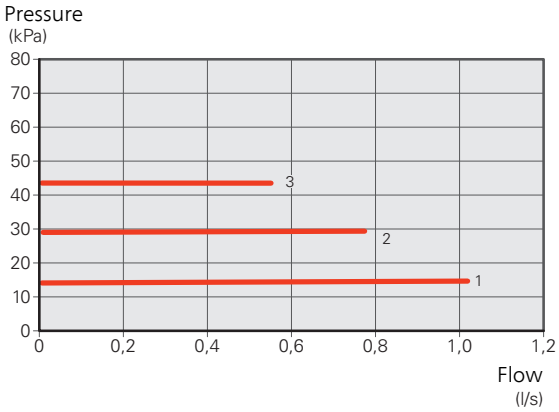
CONSTANT PRESSURE (CP)

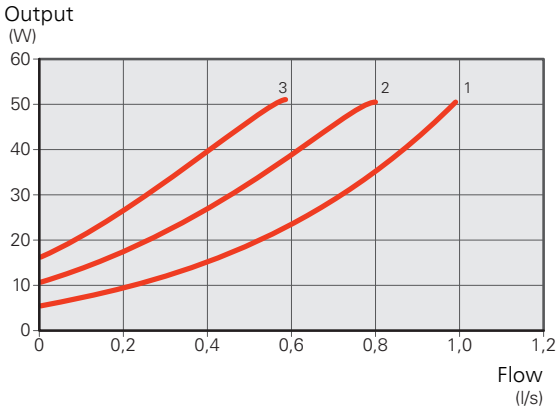
Within a limited range, the circulation pump is permitted to regulate its speed to a constant system pressure. Speed 1, 2 or 3 is selected based on maximum flow requirement.

The setting is intended for underfloor heating systems.

Capacity, circulation pump (CP)



Output, circulation pump (CP)



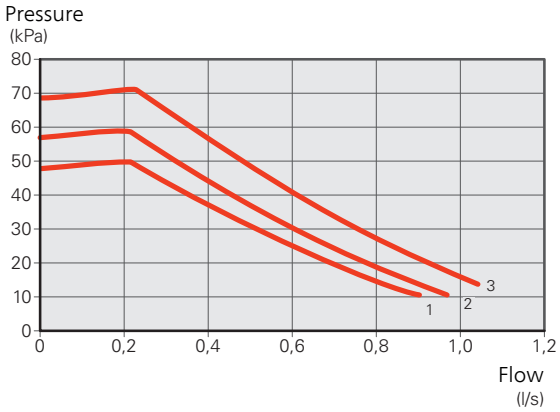
Pump speed CP	*LED indication*
1	
2	
3	

CONSTANT CURVE (CC)

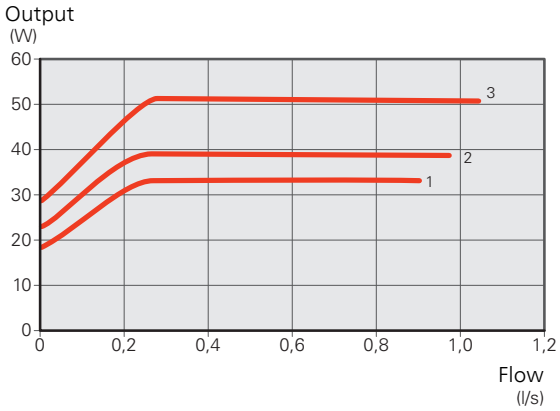
The circulation pump's speed is fixed and no regulation takes place. Speed is selected based on maximum flow requirement.

The setting can be used when very high flows are required.

Capacity, circulation pump (CC)



Output, circulation pump (CC)



Pump speed CC	*LED indication*
1	
2	
3	

ALARM

If an alarm occurs, LED shines red.

When one or more alarms are active, this is indicated according to the following table. If more than one alarm is active, the one with the highest priority is displayed.

Cause / Action	*LED indication*
The rotor is blocked. Wait or release the rotor shaft.	
Supply voltage too low. Check the supply voltage.	
Electrical fault. Check the supply voltage or replace the circulation pump.	

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Outline diagrams

Caution

These are outline diagrams.

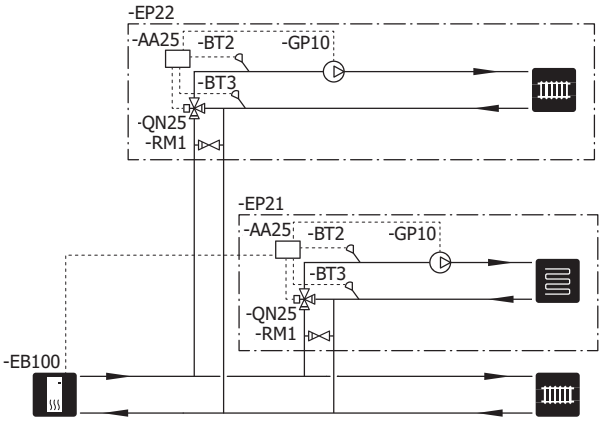
Real installations must be planned according to applicable standards.

EXPLANATION

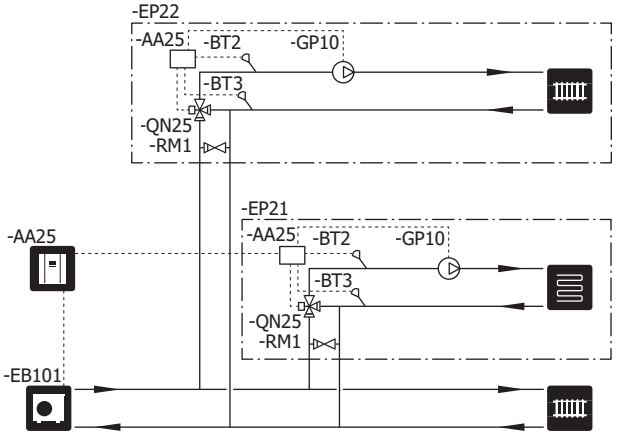
EB100	**Heat pump**
AA25	**SMO 40**
EB101	**Heat pump**
EP21	**Climate system 2 (ECS 40/ECS 41)**
EP22	**Climate system 3 (ECS 40/ECS 41)**
AA25	AXC module
BT2	Flow temperature sensor, extra climate system
BT3	Return line sensor, extra climate system
GP10	Circulation pump, extra climate system
QN25	Shunt valve
RM1	Non-return valve

Designations according to standard EN 81346-2.

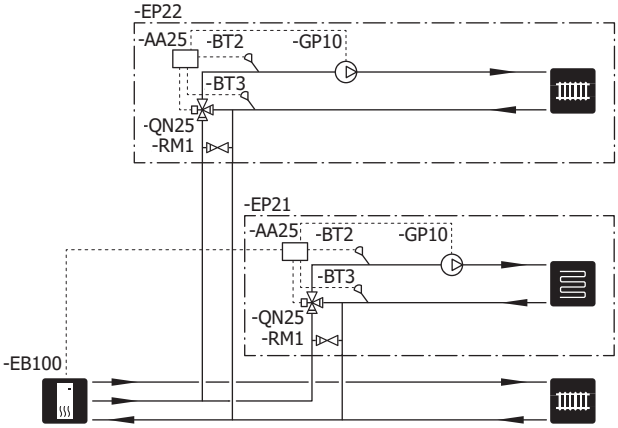
Outline diagram F1145/1155, F1245/1255, F1345, F1355, F370/F470, F730, F750, VVM 225, VVM 310, VVM320, VVM 325, VVM 500 with ECS 40/ECS 41 (extra climate system)



Outline diagram SMO 40 with ECS 40/ECS 41 (extra climate system)



Alternative outline diagram F370/F470 with ECS 40/ECS 41 (extra 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.

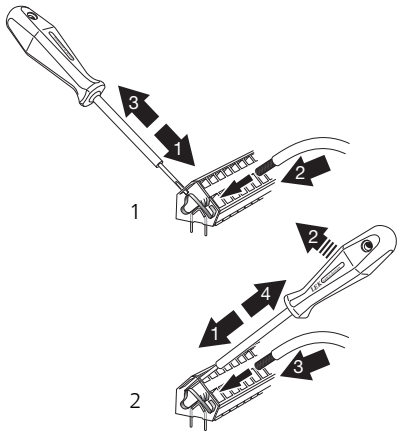
The climate unit must not be powered when installing ECS 40/ECS 41.

- To prevent interference, sensor cables to external connections must not be laid close to high voltage cables.
- The minimum area of communication and sensor cables to external connections must be 0.5 mm² up to 50 m, for example EKKX, LiYY or equivalent.
- ECS 40/ECS 41 must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.
- Mark the relevant electrical cabinet with a warning about external voltage, in those cases where a component in the cabinet has a separate supply.
- ECS 40/ECS 41 restarts after a power failure.

The electrical circuit diagram is at the end of this Installer handbook.

CABLE LOCK

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



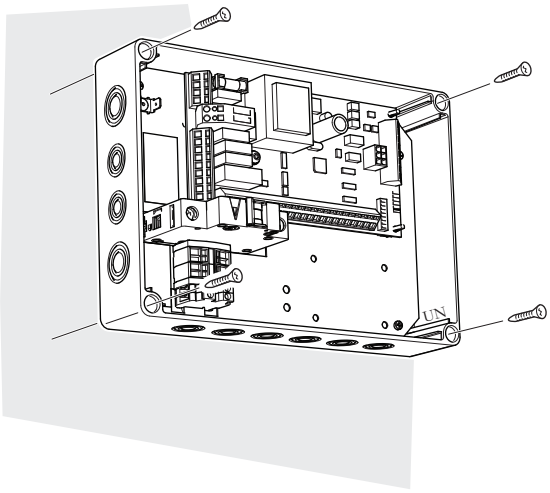
MOUNTING

The AXC module (AA25) is a separate, electric control module and must be mounted on a wall.

Caution

The screw type must be adapted to the surface on which installation is taking place.

Installation is not permitted using glue or tape.



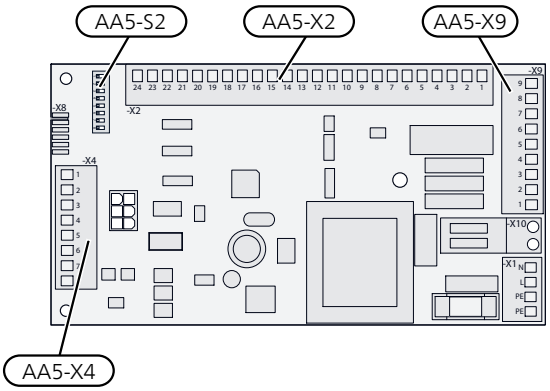
Use all mounting points and mount the module upright, flat against the wall.

Leave at least 100 mm of free space around the module to allow access and make cable routing easier during installation and servicing.

NOTE

The installation must be carried out in such a way that IP21 is satisfied.

OVERVIEW ACCESSORY BOARD (AA5)



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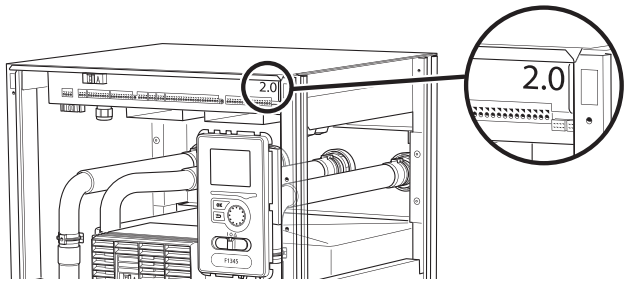
ELECTRICAL CONNECTION VERSIONS F1345

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.



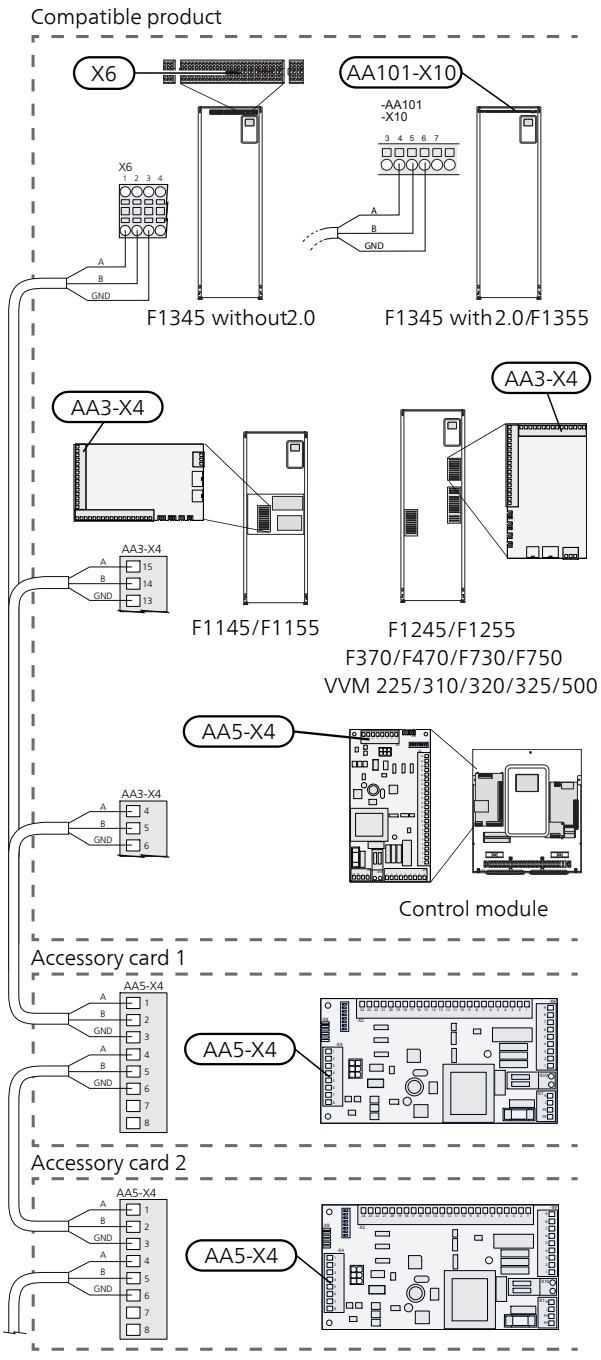
CONNECTING COMMUNICATION

ECS 40/ECS 41 contains an accessory board (AA5) that connects directly to the main product's input board (terminal block AA3-X4).

For F1345 on terminal block X6 or on terminal block AA101-X10 F1345 2.0/F1355.

If more accessories are to be connected, or are already installed, the boards are connected in series.

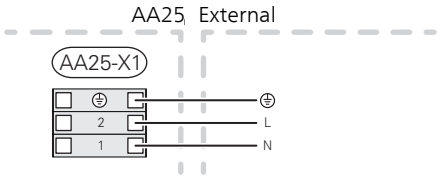
Because there can be different connections for accessories with accessory board (AA5), you should always read the instructions in the manual for the accessory that is to be installed.



POWER CONNECTION

Connect the power supply cable to terminal block AA25-X1 as illustrated.

Tightening torque for earth cable: 0.5–0.6 Nm.

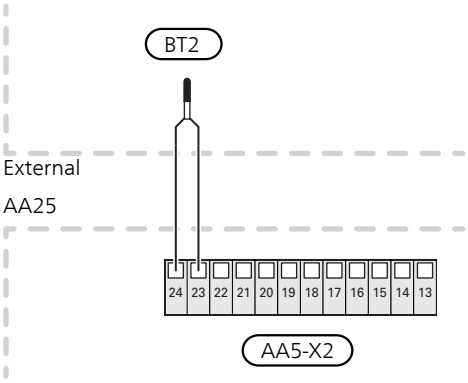


CONNECTION OF SENSORS AND EXTERNAL ADJUSTMENT

For the location of the terminal blocks, see Component location, AXC module (AA25) page 23.

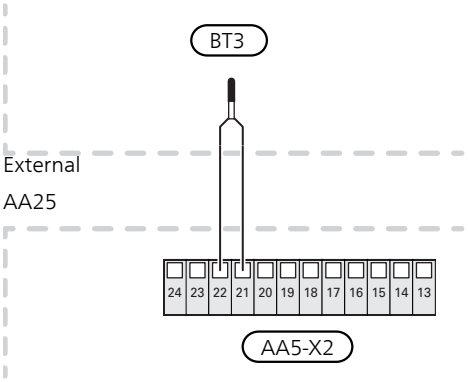
SUPPLY TEMPERATURE SENSOR, EXTRA CLIMATE SYSTEM (BT2)

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



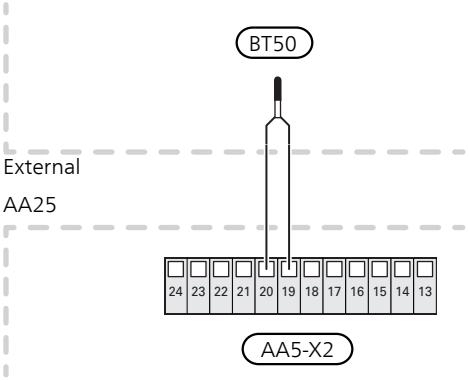
RETURN LINE SENSOR, EXTRA CLIMATE SYSTEM (BT3)

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



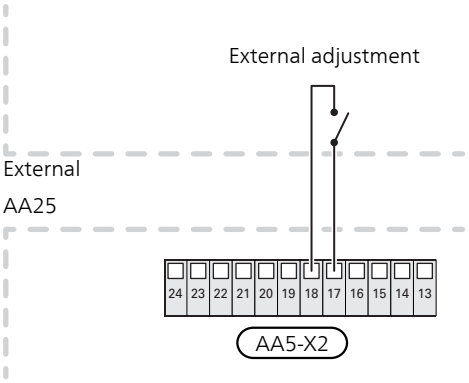
ROOM SENSOR, EXTRA CLIMATE SYSTEM (BT50) (OPTIONAL)

Connect the room 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.

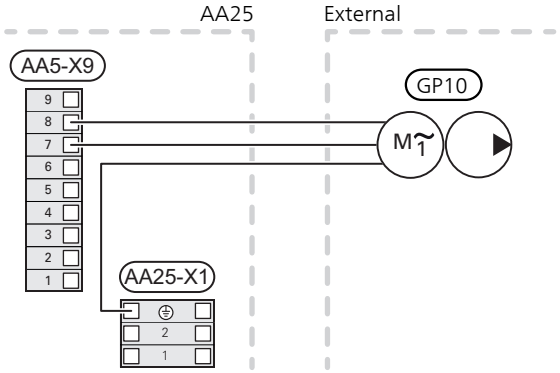


Caution

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

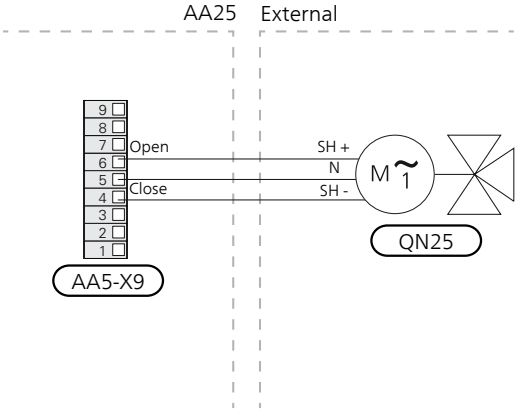
CONNECTION OF THE CIRCULATION PUMP (GP10)

Connect the external heating medium pump (GP10) to AA5-X9:7 (N), AA5-X9:8 (230 V) 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).



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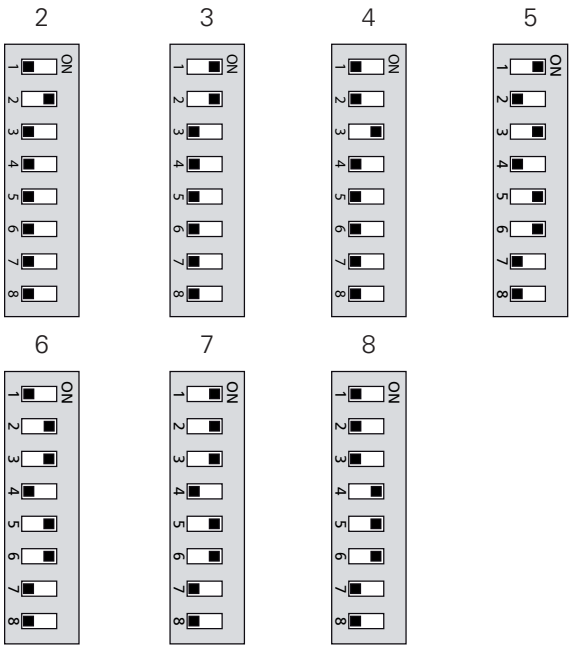
DIP SWITCH

The DIP switch (S2) on the accessory board (AA5) is set as follows, with each climate system having a unique setting.

Climate system



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Program settings

Program setting of ECS 40/ECS 41 can be performed via the start guide or directly in the menu system.

START GUIDE

The start guide appears at first start-up after installation of the heat pump/indoor module, 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[1)]

Activating/deactivating of accessories.

Select: "climate system 2" for climate system 2, "climate system 3" for climate system 3 and "climate system 4" for climate system 4, up to eight climate systems.

1) Applies to NIBE F1145, F1155, F1245, F1255, F370, F470, F730 and F750.

MENU 5.2.4 - ACCESSORIES[2)]

Activating/deactivating of accessories.

Select: "climate system 2" for climate system 2, "climate system 3" for climate system 3 and "climate system 4" for climate system 4, up to eight climate systems.

2) Applies to NIBE F1345, F1355, SMO40, VVM 225, VVM 310, VVM 320, VVM 325 and VVM 500.

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.

MENU 1.1 -TEMPERATURE

Setting the indoor temperature.

MENU 1.9.1 -HEATING CURVE

Setting the heat 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 various components in the heat pump/indoor module as well as in the various accessories that may be connected. EP21 is climate system 2, EP22 is climate system 3, EP23 is climate system 4.

EP2#-AA5-K1: No function.

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

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

EP2#-AA5-K4: Activating the circulation pump (GP10).

Caution

Also see the Installer Manual for the relevant heat pump.

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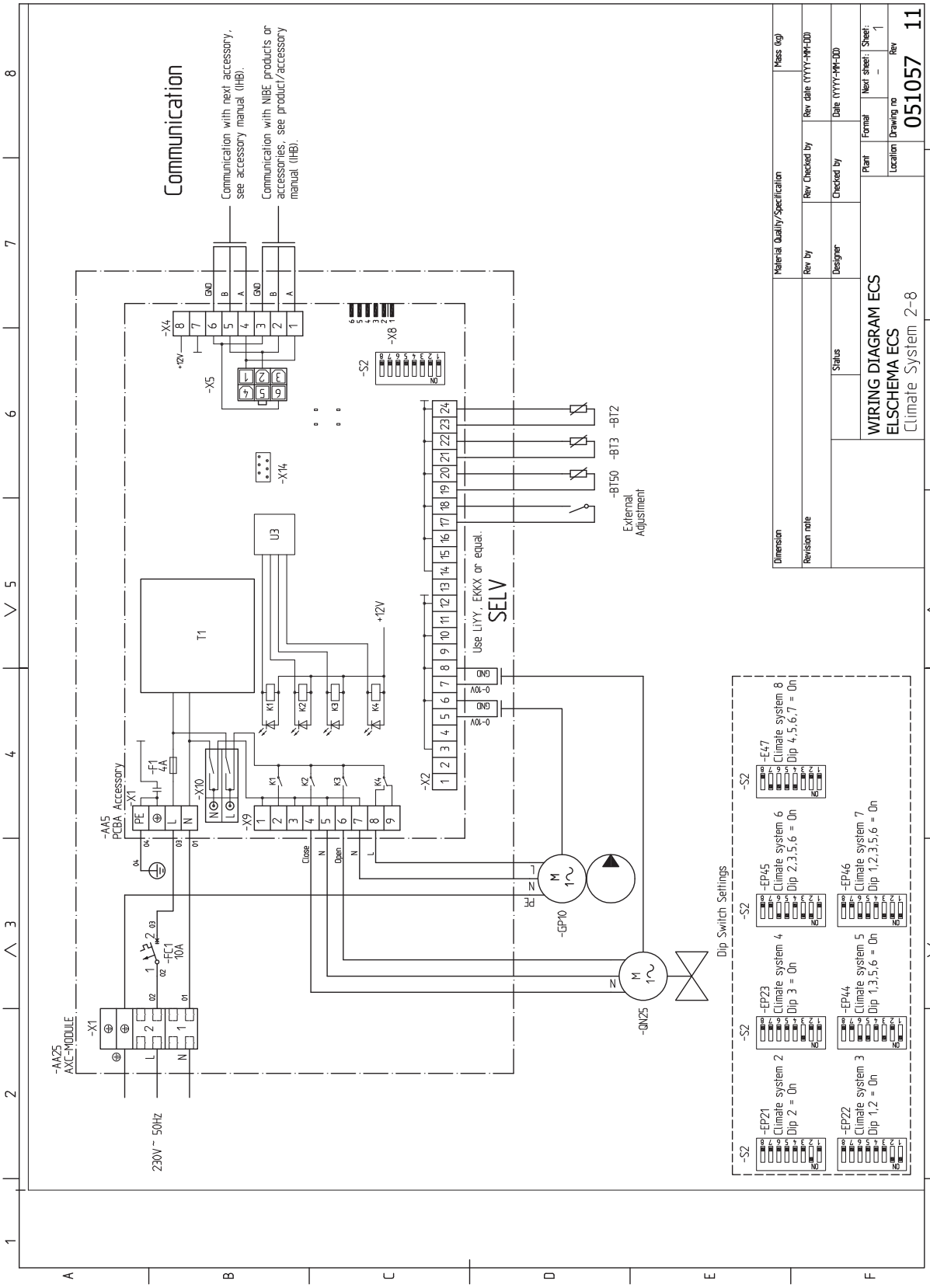
Technical data

TECHNICAL SPECIFICATIONS

AXC module		
Electrical data		
Rated voltage		230 V ~ 50 Hz
Enclosure class		IP 21
Rated value for impulse voltage	kV	4
Pollution degree		2
Min fuse rating	A	10
Miscellaneous		
Operation mode according to EN 60 730-1		Type 1
Area of operation	°C	-25 – 70
Ambient temperature	°C	5 – 35
Program cycles, hours		1, 24
Program cycles, days		1, 2, 5, 7
Resolution, program	min.	1
Temperature, ball pressure test	°C	75
Dimensions LxWxH	mm	175x250x100
Weight	kg	1.47
Substances according to Directive (EG) no. 1907/2006, article 33 (Reach)		Lead in brass components

		ECS 40	*ESC 41*
cw_s value		4.0	6.3
Connection valve Ø	mm	22	
Rated voltage		230V~ 50Hz	
Part No.		067 287	067 288

ELECTRICAL CIRCUIT DIAGRAM



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