

Installer manual

**NIBE**

# Control module

## **NIBE SMO S40** UK

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IHB EN 2515-3  
631929

# Quick guide

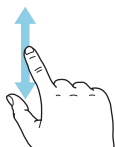
## NAVIGATION

### Select



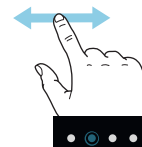
Most options and functions are activated by lightly pressing on the display with your finger.

### Scroll



If the menu has several sub-menus, you can see more information by dragging up or down with your finger.

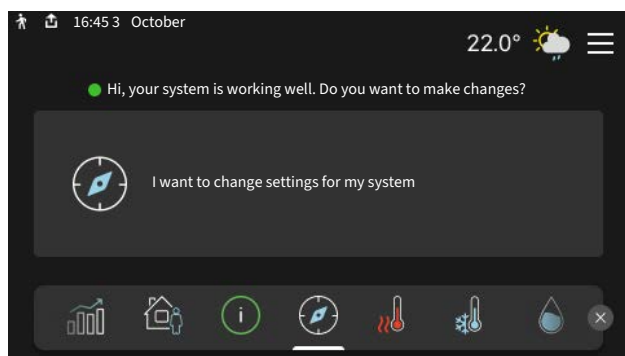
### Browse



The symbols at the bottom edge show if there are more pages.

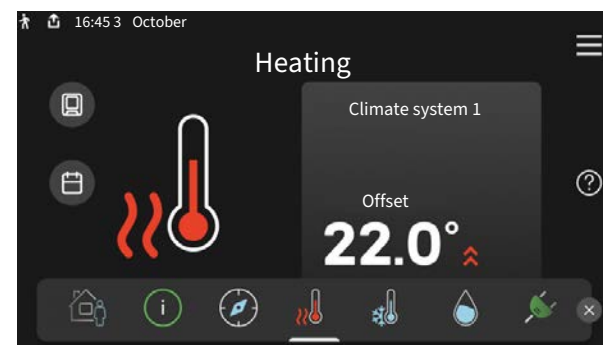
Drag to the right or left with your finger to browse between the pages.

## Smartguide



Smartguide helps you both to view information about the current status and to make the most common settings easily. The information that you see depends on the product you have and the accessories that are connected to the product.

## Setting the indoor temperature.



Here, you can set the temperature in the installation's zones.

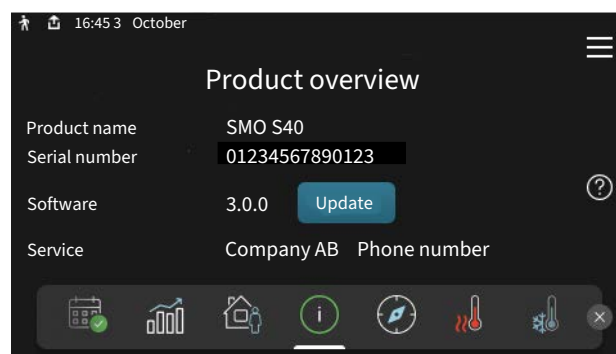
## Increasing hot water temperature



Here, you can start or stop a temporary increase in the hot water temperature.

This function page is only visible in installations with a water heater.

## Product overview



Here, you can find information about product name, the product's serial number, the version of the software and service. When there is new software to download, you can do it here (provided that SMO S40 is connected to myUplink).

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# Important information

## Safety information

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

The manual must be left with the customer.

For the latest version of the product's documentation, see [nibe.co.uk](http://nibe.co.uk).



### CAUTION!

Also read the enclosed Safety Manual before starting the installation.

## Symbols

Explanation of symbols that may be present in this manual.



### CAUTION!

This symbol indicates danger to person or machine.



### NOTE!

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

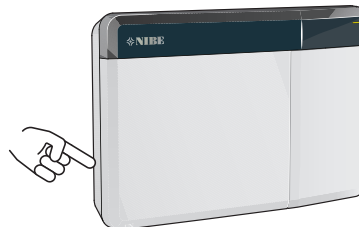


### TIP!

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

## Serial number

The serial number can be found on the left-hand side of the control module and on the home screen "Product overview".



### NOTE!

You need the product's (14 digit) serial number for servicing and support.

## Marking

Explanation of symbols that may be present on the product's label(s).



Danger to person or machine.



Read the Installer Manual.

## Country specific information

### UNITED KINGDOM

This installation is subject to building regulation approval, notify the local Authority of intention to install.

Use only manufacturer's recommended replacement parts.

For more information see [nibe.co.uk](http://nibe.co.uk).



Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturers instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out the installation, commissioning and servicing work in accordance with the Benchmark Code of practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme. Visit [centralheating.co.uk](http://centralheating.co.uk) for information.

### Warranty and insurance information

Thank you for installing a new NIBE heat pump in your home.

NIBE heat pumps are manufactured in Sweden to the very highest standard so we are pleased to offer our customers a comprehensive guarantee.

The product is guaranteed for 24 months for parts and labour from the date of installation or 33 months from the date of manufacture, whichever is the shorter.

The NIBE guarantee is based on the unit being installed and commissioned by a NIBE accredited installer, serviced every year and the Benchmark documents completed. Where this condition is not met, any chargeable spare parts or components issued within the applicable guarantee period still benefit from a 12 month warranty from the date of issue by the manufacturer.

We recommend the installer completes and returns as soon as possible, your guarantee registration card or completes the guarantee form on the NIBE website, [www.nibe.co.uk](http://www.nibe.co.uk)

## Inspection of the installation

Current regulations require the heating installation to be inspected before it is commissioned. The inspection must be carried out by a suitably qualified person.

In addition, fill in the page for the installation data in the User Manual.

✓	Description	Notes	Signature	Date
	Electrical connections			
	Communication, heat pump			
	Connected supply 230 V			
	Outside sensor			
	Room sensor			
	Temperature sensor, hot water charging			
	Temperature sensor, hot water top			
	External supply temperature sensor			
	External return line sensor			
	Charge pump			
	Diverter valve			
	AUX1			
	AUX2			
	AUX3			
	AUX4			
	AUX5			
	AUX6			
	AUX10			
	AUX11			
	Miscellaneous			
	Checking additional heater			
	Checking the function of the diverter valve			
	Checking charge pump function			
	Completed installation check of heat pump and associated equipment			

## System solutions

Go to [CompatibilityAWHP](#) or scan the QR code below.



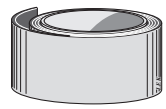
This provides information about possible combinations with SMO S40.

# Delivery and handling

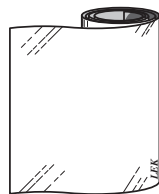
## Supplied components



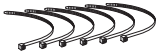
Outdoor temperature sensor (BT1)



Insulation tape



Aluminium tape



Cable ties



Temperature sensor

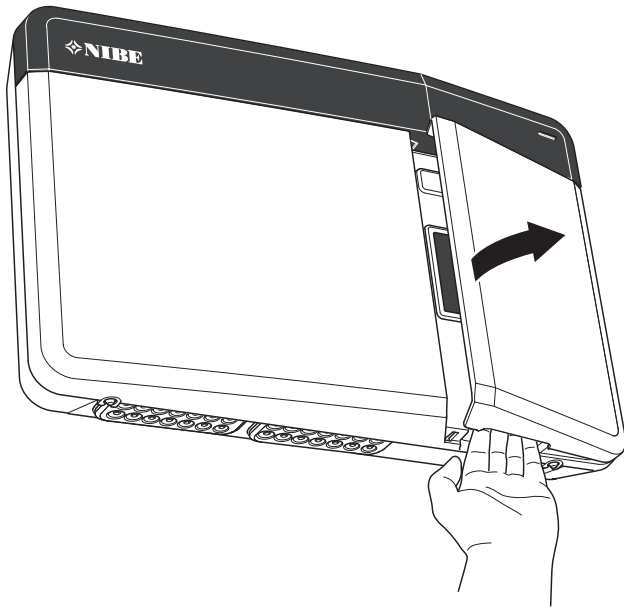


Current sensor

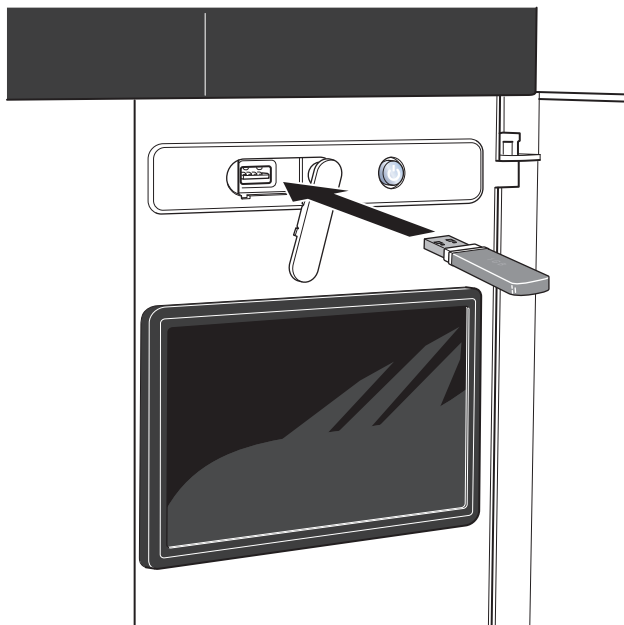


Heating pipe paste

## Open front hatch

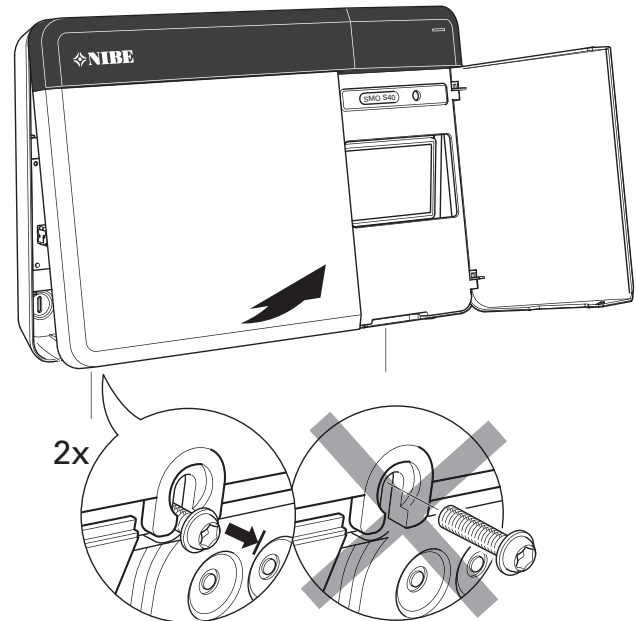


## Open USB cover



## Removing the front panel

1. Loosen the screws slightly using a screwdriver.
2. Lift the bottom edge of the front cover on the control module.
3. Unhook the front cover at the upper edge.





## Mounting

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 screw type and tightening torque must be adapted to the surface on which the installation is done.



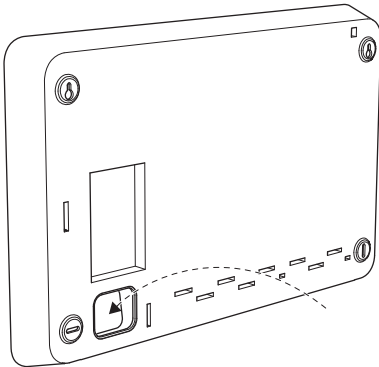
### NOTE!

Screws for removing the front cover are reached from underneath.

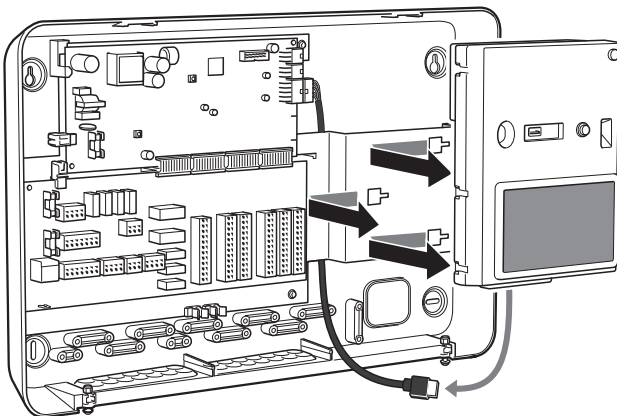
### SMO S40

1. If the hole for cable routing on the rear needs to be used, remove the piece of plastic by pressing it out with a suitable tool.

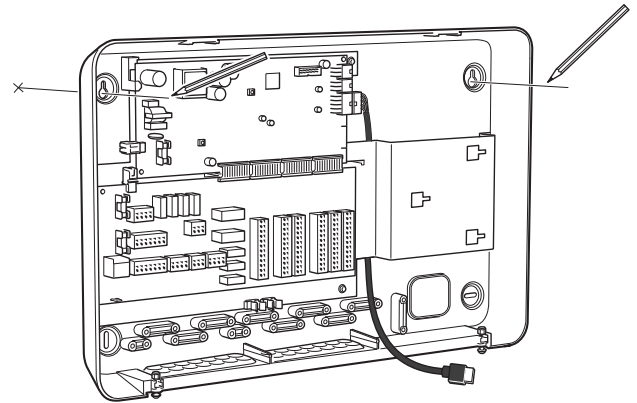
2.



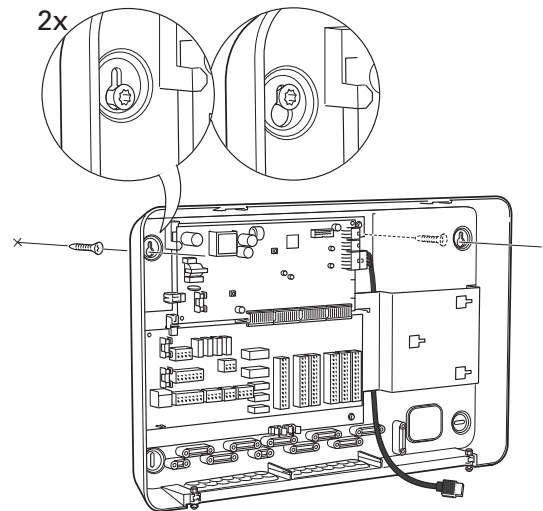
3. Remove the display by moving it to the left. Detach the cable from the lower edge



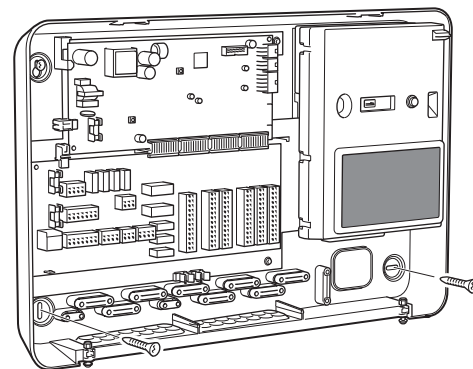
4. Mark the position of the two upper screws using a pen. Screw in the two upper screws.



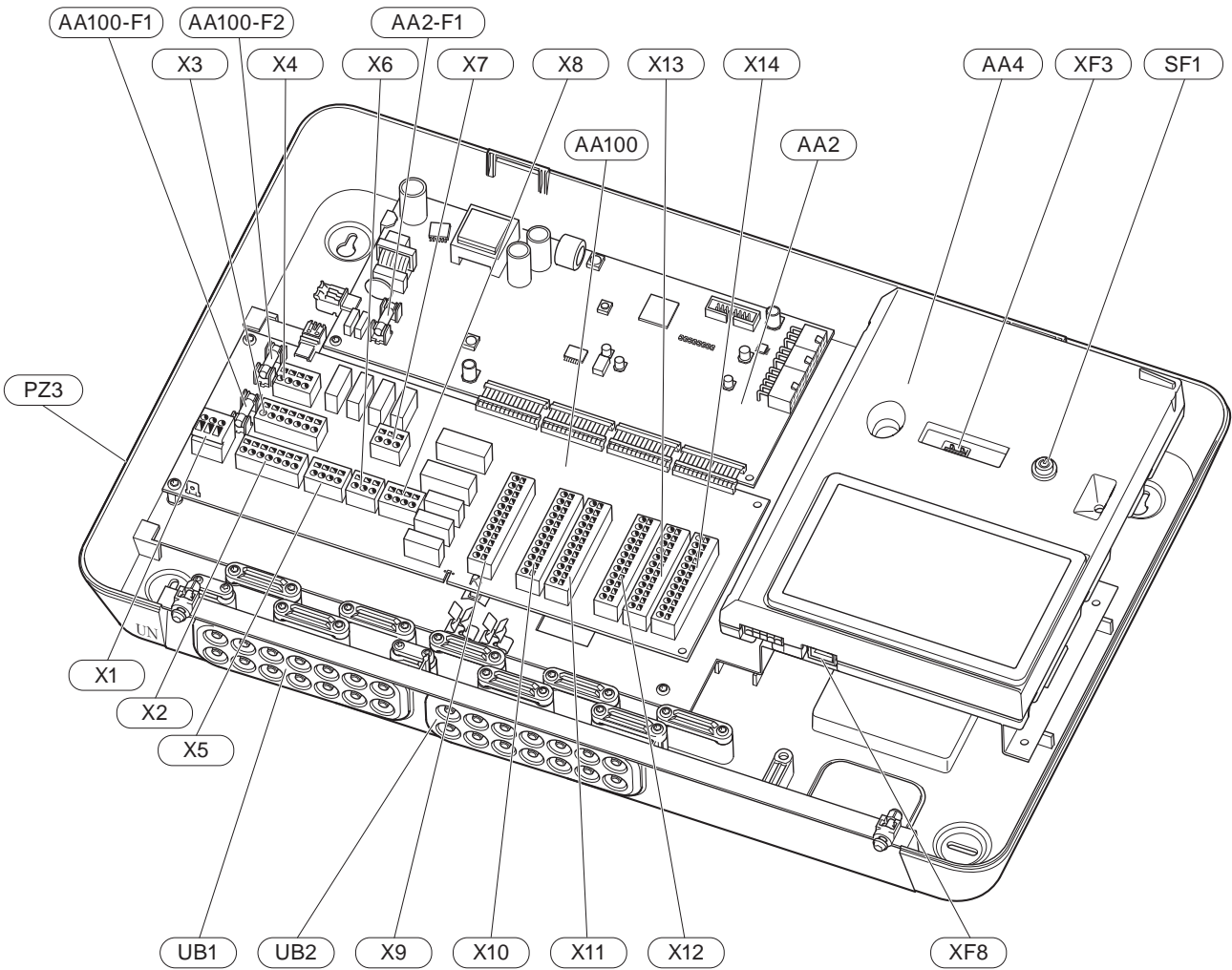
5. Hook SMO S40 onto the screws on the wall.



6. Refit the display. Screw SMO S40 into place at the lower edge with the two remaining screws.



# The Control Module Design



## ELECTRICAL COMPONENTS

AA2	Base card
F1	Fine wire fuse, 4AT
AA4	Display unit
AA100	Joint card
F1	Fine wire fuse, 6.3AT
F2	Fine wire fuse, 6.3AT
X1	Terminal block, power supply
X2	Terminal block, earth
X3	Terminal block (N)
X4	Terminal block (L)
X5	Terminal block (QN10, GP10, GP12.1-EB101, GP12.2-EB102)
X6	Terminal block AUX outputs (AUX10)
X7	Terminal block AUX outputs (AUX11)
X8	Terminal block, additional heat
X9	Terminal block, external connection options
X10	Terminal block AUX inputs, external connection options (selectable AUX 1–6)
X11	Terminal block (GND)
X12	Terminal block, external connections
X13	Terminal block (GND)
X14	Terminal block, external connections
SF1	On/off button
XF3	USB socket
XF8	Network connection for myUplink

## OTHER COMPONENTS

PZ3	Serial number plate
UB1	Cable grommet, incoming supply electricity, power for accessories
UB2	Cable grommet, communication

Designations according to standard EN 81346-2.


























# Installing the installation

## General

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

For more information, see the Installer Manual for the NIBE heat pump.

## Symbol key

Symbol	Meaning
	Unit box
	Shut-off valve
	Tapping valve
	Non-return valve
	Mixing valve
	Circulation pump
	Expansion vessel
	Filterball
	Pressure gauge
	Particle filter
	Safety valve
	Temperature sensor
	Trim valve
	Diverter valve/shunt
	Heat exchanger
	Overflow valve
	Cooling system
	Pool
	Control module
	Domestic hot water
	Addition
	Outdoor module
	Water heater
	Heating system
	Heating system with lower temperature

## Connecting air/water heat pump

Install as follows:

- expansion vessel
- pressure gauge
- safety valve / safety valves

Some heat pump models have a factory-fitted safety valve.

- drain valve

For draining the heat pump during prolonged power failures. Only for heat pumps that do not have a gas separator.

- non-return valve

Installations with only one heat pump: a non-return valve is only required in those cases where the placement of the products in relation to each other can cause self-circulation.

Cascade installations: each heat pump must be fitted with a non-return valve.

If the heat pump is already fitted with a non-return valve, there is no need to install another.

- charge pump
- shut-off valve

To facilitate any future servicing.

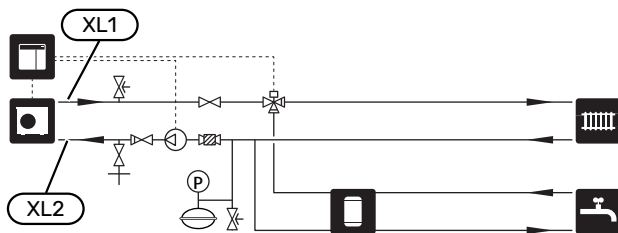
- filterball or particle filter

Installed before connection "heating medium return" (XL2) (the lower connection) on the vacuum pump.

In installations with a particle filter, the filter is combined with an additional shut-off valve.

- diverter valve.

If the system is to work with both a climate system and a water heater.



## Climate system

A climate system is a system that regulates the indoor temperature with the help of the control system in SMO S40 and, for example, radiators, underfloor heating, underfloor cooling, fan coils, etc.

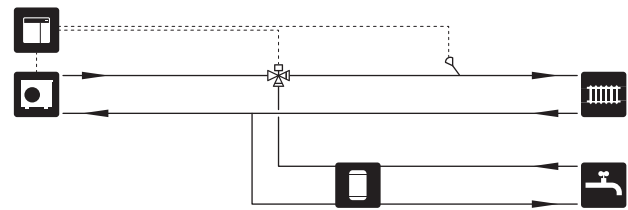
### CONNECTING THE CLIMATE SYSTEM

Install as follows:

- supply temperature sensor (BT25)

The sensor indicates when the heat pump will start to produce heating/cooling for the climate system.

- When connecting to systems with thermostats, some of the thermostats must be removed to ensure there is sufficient flow and heat generation.



## Cold and hot water

Hot water production is activated in the start guide or in menu 7.2 - "Accessory settings".

Stop temperature for hot water must be at least 60°C.

### CONNECTING THE HOT WATER HEATER

Install as follows:

- controlling hot water sensor (BT6)

The sensor is placed in the middle of the water heater.

- displayed hot water sensor (BT7)<sup>1</sup>

The sensor is optional and is placed in the top of the water heater.

- shut-off valve
- non-return valve
- expansion relief valve

The expansion relief valve has to have an opening pressure of max. 0.6 MPa (6.0 bar).

- mixing valve

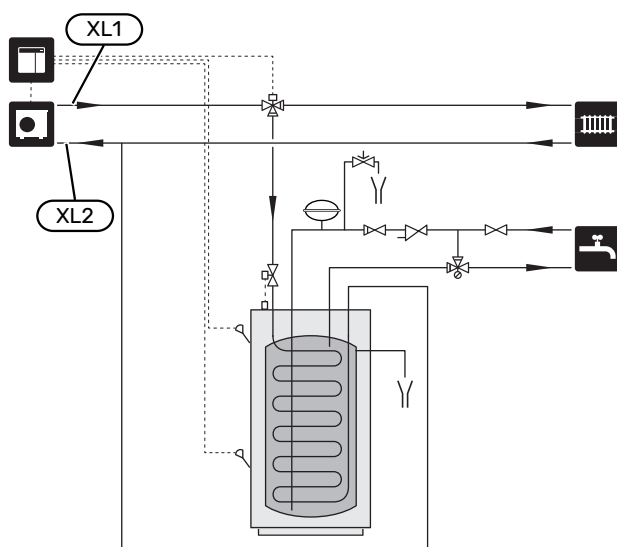
A mixing valve must be installed when the factory setting for hot water is changed. National regulations must be observed.

- pressure relief valve
- expansion vessel

The expansion vessel (CM4) accommodates expansion that results from heating the water inside the unit. The expansion vessel must be connected between the expansion relief valve (FL1) and the water heater. The location of the expansion vessel should allow access to recharge the pressure when necessary.

- tundish

<sup>1</sup> The sensor is factory fitted on some water heater/accumulator tank models from NIBE.



## Installation alternative

SMO S40 can be installed in several different ways, some of which are shown here.

More information about the alternatives is available at [nibe.co.uk](http://nibe.co.uk) and in the relevant assembly instructions for the accessories used. See section "Accessories" for a list of the accessories that can be used with SMO S40.

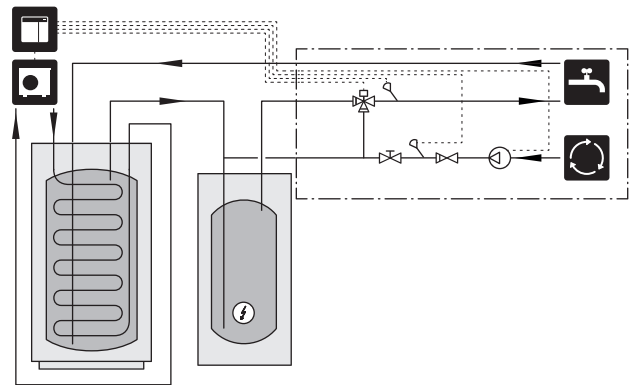
### HOT WATER CIRCULATION

A circulation pump can be controlled by SMO S40 to circulate the hot water. The circulating water must have a temperature that prevents bacterial growth and scalding, and national standards must be satisfied.

The HWC return is connected to a freestanding water heater.

The circulation pump is activated via the AUX output in menu 7.4 - "Selectable in/outputs".

HWC can be supplemented with a hot water sensor for HWC (BT70) and (BT82), which is connected via the AUX input and activated in menu 7.4 - "Selectable in/outputs".



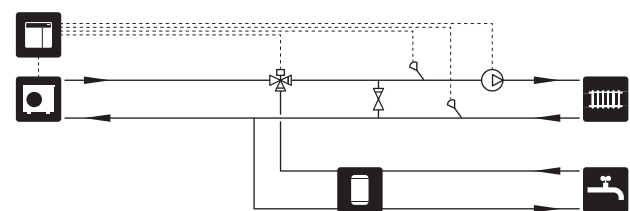
### EXTERNAL HEATING MEDIUM PUMP

In installations where there is a large pressure drop in the system, an external heating medium pump (GP10) can be used as a supplement.

The installation can also be supplied with an external heating medium pump, if you want a constant flow in the climate system.

The heating medium pump is supplemented with an external return line sensor (BT71) and a non-return valve (RM1).

If the installation does not have an external supply temperature sensor (BT25), install this as well.



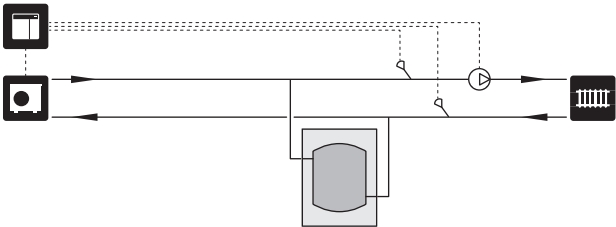
### BUFFER VESSEL (UKV)

UKV is an accumulator tank that is suitable for connection to a heat pump or another external heat source, and can have several different applications.

For further information, see the Installer Manual for the accessory.

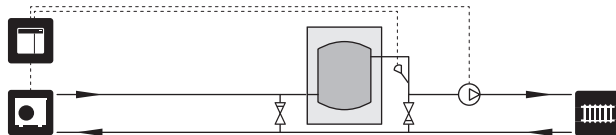
**Flow equalisation**

A 2-pipe, parallel-connected buffer vessel is used for high-temperature and/or low-flow systems. This connection principle requires a continuous flow over the external supply temperature sensor (BT25) and it is used as a buffer for the heat pump (volume expansion) and as a buffer for the climate system (for large, temporary power outputs such as defrosting and fan coil, etc.).



**Flow equalisation**

A 2-pipe connected buffer vessel with non-return valves, external heating medium pump and external supply temperature sensor is used to increase the system volume in the climate system for the heat pump, and there is a need to balance the power input and output.

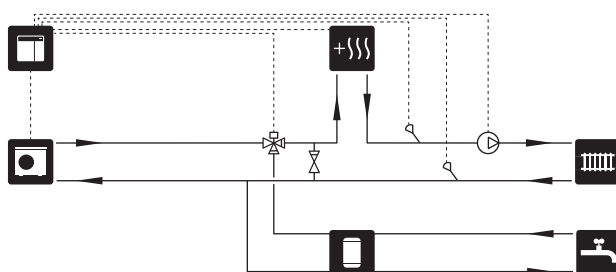


**ADDITION**

On cold days of the year, when the availability of energy from the air is lower, the additional heating can compensate and help to produce heat. The additional heating is also good to have as assistance, if the heat pump ends up outside its working range or if it has been blocked for any reason.

**Step-controlled/shunt-controlled additional heat**

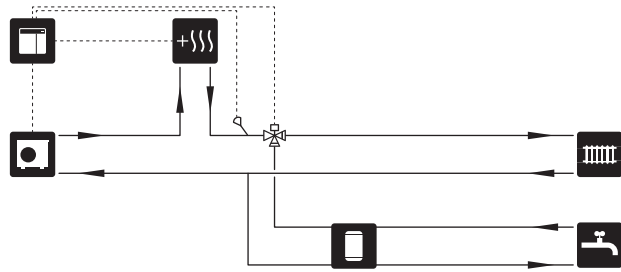
SMO S40 can, via a control signal, control step-controlled or shunt-controlled additional heat, which can also be prioritised. The additional heat is used for heat production.



**Step-controlled additional heat before QN10**

The additional heat is connected before the diverter valve (QN10) and is controlled via a control signal from SMO S40. The additional heat can be used for producing both hot water and heating.

The installation is supplemented with a supply temperature sensor after additional heat (BT63).

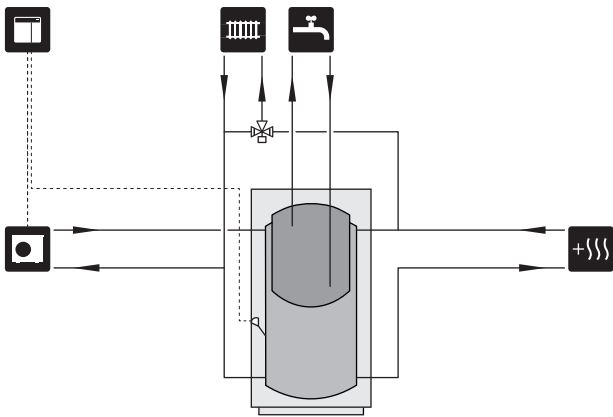


**FIXED CONDENSING**

If the heat pump is to work towards an accumulator tank with fixed condensing, you must connect an external supply temperature sensor (BT25). The sensor is placed in the tank.

The following menu settings are made:

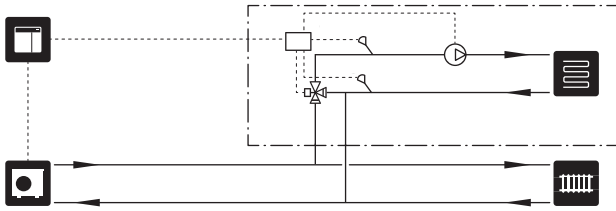
Menu	Menu setting (local variations may be required)
1.30.4 - min. flow line temp. heating	Desired temperature in the tank.
1.30.6 - max flow line temperature	Desired temperature in the tank.
7.1.2.1 - op. mod heat med pump	intermittent
4.1 - op. mode	manual



## EXTRA CLIMATE SYSTEM

In buildings with several climate systems that require different supply temperatures, the accessory ECS 40/ECS 41 can be connected.

A shunt valve then lowers the temperature to the underfloor heating system, for example.

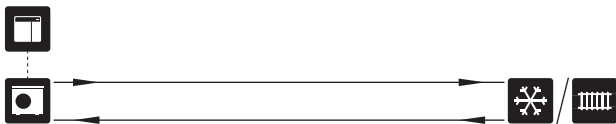


## COOLING

### Cooling in 2-pipe system

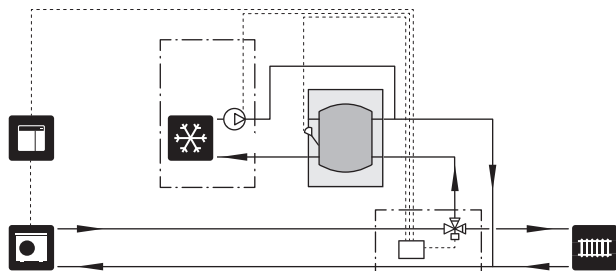
Cooling and heating are distributed via the same climate system.

When there is a risk of condensation, components and climate systems must be insulated against condensation in accordance with current standards and provisions, or the min. supply temperature must be limited.



### Cooling in 4-pipe system

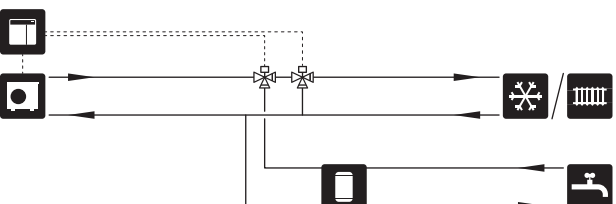
With the accessory AXC 30, separate cooling and heating systems can be connected via a diverter valve.



### Delayed supply line for cooling

When the installation switches to cooling production e.g. from hot water production, a certain amount of heat escapes into the cooling system. To avoid this, a diverter valve is installed (QN44) in the system.

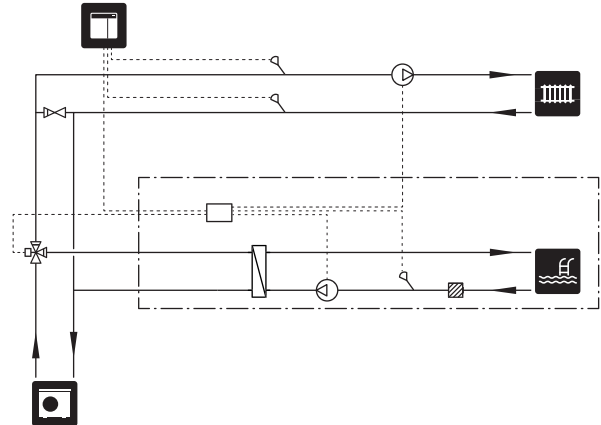
The diverter valve is activated via the AUX output in menu 7.4 - "Selectable in/outputs", "Cool. mode ind. w delay".



## POOL

With the POOL 40 accessory, you can heat the pool with your system.

During pool heating, the heating medium circulates between the heat pump and the pool exchanger using the heat pump's charge pump.

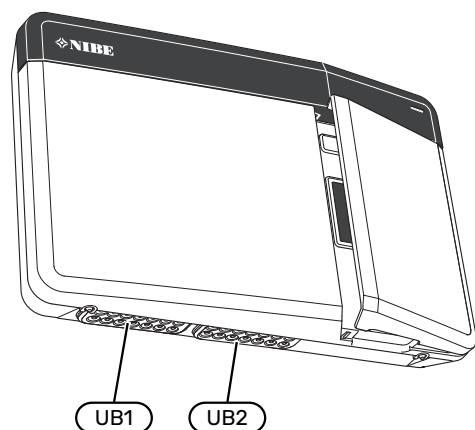




# Electrical connections

## General

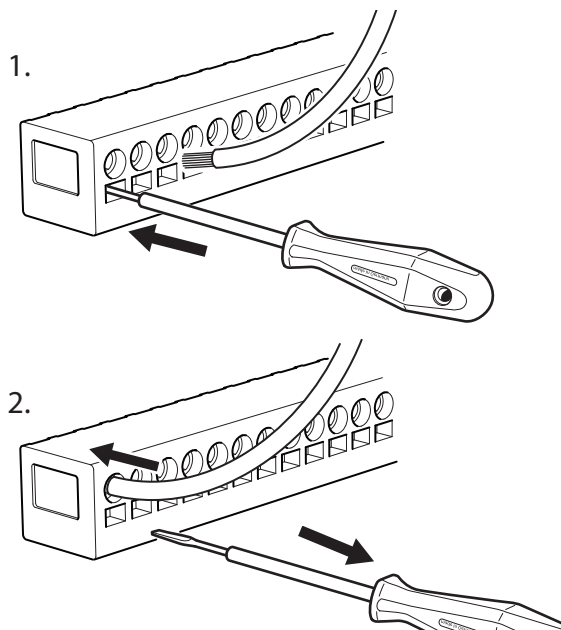
- Electrical installation and wiring must be carried out in accordance with national provisions.
- Disconnect SMO S40 before insulation testing the house wiring.
- SMO S40 must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.
- Use a screened cable for communication with the heat pump.
- To prevent interference, communication cables to external connections must not be laid in the vicinity of high voltage cables.
- The minimum area of communication and sensor cables to external connections must be 0.5 mm<sup>2</sup> up to 50 m, for example EKKX, LiYY or equivalent.
- When routing a cable into SMO S40, the cable grommets (UB1) and (UB2) must be used.
- Max load relay outputs on the joint board AA100, see section "Technical specifications".
- For an electrical wiring diagram for SMO S40, see the "Technical specifications" section.



## CABLE LOCK

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

## Terminal block



### CAUTION!

Do not start the system before filling up with water. Components in the system could be damaged.



### CAUTION!

Electrical installation and any servicing must be carried out under the supervision of a qualified electrician. Turn off the power with the circuit breaker before servicing.

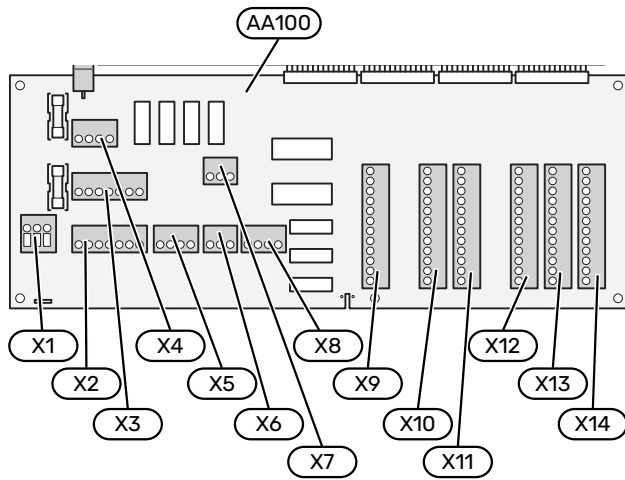
## ACCESSIBILITY, ELECTRICAL CONNECTION

See section "Removing the front panel".

## Connections

### TERMINAL BLOCKS

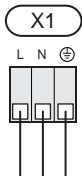
The following terminal blocks are used on the joint board (AA100).



### POWER CONNECTION

#### Supply voltage

The incoming cable must be connected to terminal block AA100-X1. Tightening torque: 0.5 – 0.6 Nm.



### EXTERNAL CONNECTIONS

#### Charge pump for heat pump 1 and 2

Connect circulation pump (AA35-GP12.1-EB101) to the terminal block AA100-X2 (PE), AA100-X3 (N) and AA100-X5:3 (230 V).

See section "Max load relay outputs on AA100".

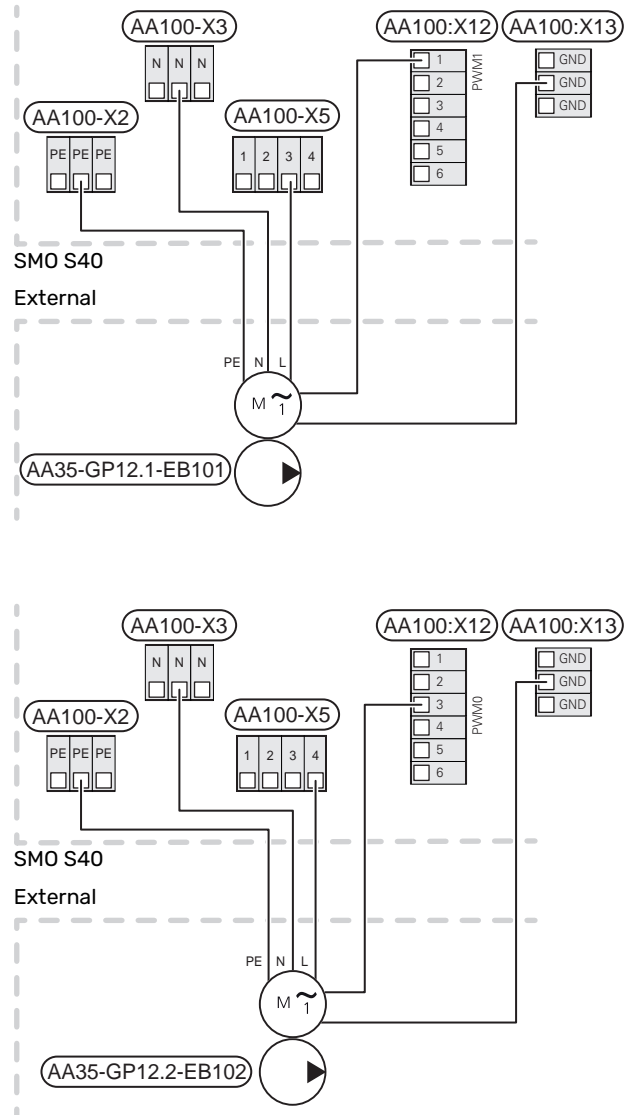
Control signal for AA35-GP12.1-EB101 is connected to terminal block AA100-X12:1 (Pulse/0–10V) (PWM1) and GND on any block X13.

If two heat pumps are connected to SMO S40 the circulation pump (AA35-GP12.2-EB102) must be connected to the terminal block AA100-X2 (PE), AA100-X3 (N) and AA100-X5:4 (230 V). Control signal for (AA35-GP12.2-EB102) is connected to terminal block AA100-X12:3 (Pulse/0–10V) (PWM0) and GND on any block X13.



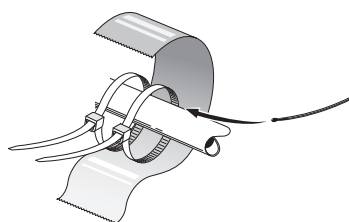
#### TIP!

Two charge pumps can be connected to and controlled by SMO S40. Several charge pumps can be connected, if accessory boards (AXC) are used, two pumps per board.



## Sensors

### Temperature sensor installation on pipe



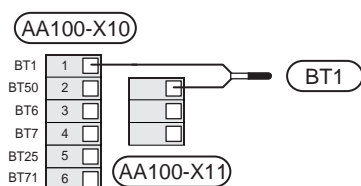
The temperature sensors are fitted using heat conducting paste, cable ties (the first cable tie is secured to the pipe in the middle of the sensor and the other cable tie is mounted approx. 5 cm after the sensor) and aluminium tape. Then insulate them using the enclosed insulation tape.

### Outside sensor

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

Connect the outdoor temperature sensor to terminal block AA100-X10:1 and AA100-X11:GND.

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

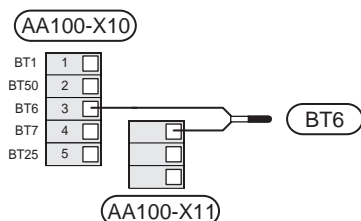


### Temperature sensor, hot water charging

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

Connect the sensor to terminal block AA100-X10:3 and AA100-X11:GND.

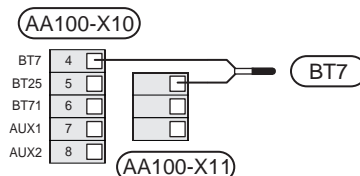
Settings for hot water are made in menu 2 "Hot water".



### Temperature sensor, hot water top

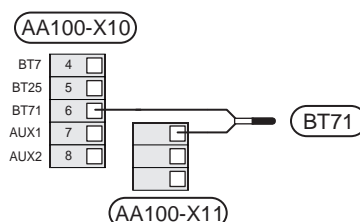
A temperature sensor for hot water top (BT7) can be connected to SMO S40 to show the water temperature at the top of the tank (if it is possible to install a sensor at the top of the tank).

Connect the sensor to terminal block AA100-X10:4 and AA100-X11:GND.



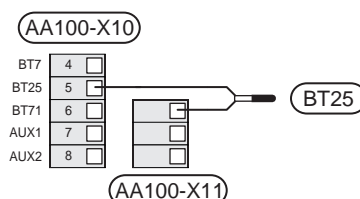
### External return line sensor

Connect an external return line sensor (BT71) to terminal block AA100-X10:6 and AA100-X11:GND.



### External supply temperature sensor

Connect an external supply temperature sensor (BT25) to terminal block AA100-X10:5 and AA100-X11:GND.



### Room sensor

SMO S40 is supplied with an enclosed room sensor (BT50) that makes it possible to display and control the room temperature in the display on SMO S40.

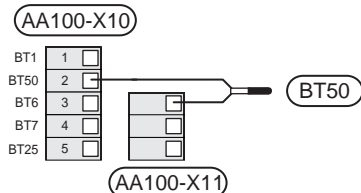
SMO S40 operates without the room sensor, but if you want to read the home's indoor temperature from the display on SMO S40, the room temperature sensor must be fitted.

The room temperature sensor is installed in a neutral location where the set temperature is required. A suitable location might be, for example, on a free inner wall in a hall approx. 1.5 m above the floor. It is important that the room temperature sensor is not prevented from measuring the correct room temperature, for example by being located in a recess, between shelves, behind a curtain, above or close to a heat source, in a draught from an external door or in direct sunlight. Closed radiator thermostats can also cause problems.

Connect the room temperature sensor to terminal blocks AA100-X10:2 and AA100-X11:GND.

If a room sensor is to be used to change the room temperature in °C and/or to fine-tune the room temperature, the sensor must be activated in menu 1.3 - "Room sensor settings".

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



### NOTE!

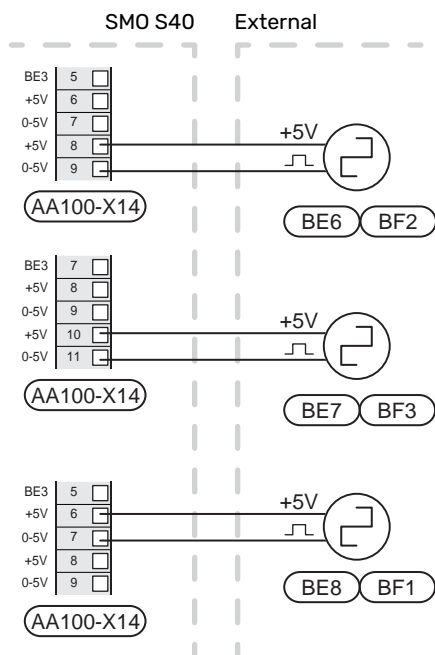
Changes of temperature in accommodation take time. For example, short time periods in combination with underfloor heating will not give a noticeable difference in room temperature.

## Pulse energy meter

Up to three electricity meters (BE6, BE7, BE8) or energy meters for heating (BF2, BF3, BF1) can be connected to SMO S40 via terminal block and AA100-X14:8-9, AA100-X14:10-11 and AA100-X14:6-7.

### NOTE!

The EMK accessory is connected to the same terminal blocks as electricity meters/energy meters.



Activate the meter(s) in menu 7.2 - "Accessory settings" and then set the desired value ("Energy per pulse" or "Pulses per kWh") in menu 7.2.19 - "Pulse energy meter".

## Load monitor

### Load monitor with current sensor

When many power-consuming products are connected in the property at the same time as the compressor and/or the electric additional heat is operating, there is a risk of the property's main fuses tripping.

SMO S40 has a load monitor that, with the aid of a current sensor, controls the power steps for the external electric additional heat by disconnecting from the electric additional heat step-by-step in event of overload in a phase.

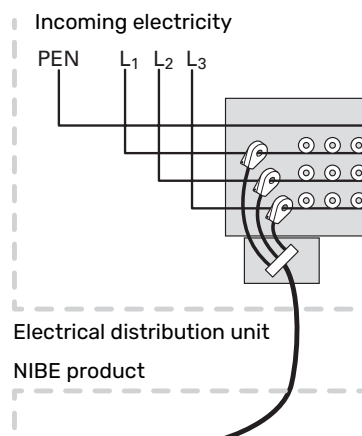
If the overload persists, even though the electric additional heat has been disconnected, the compressor is restricted if it is inverter controlled.

Reconnection occurs when the other current consumption is reduced.

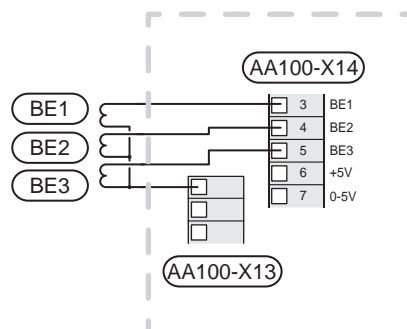
The building's phases can have different loads. If the compressor has been connected to a heavily loaded phase, there is a risk that the compressor output will be limited and any electric additional heat operate longer than expected. This means that savings will not be as expected.

### Connection and activation of current sensors

1. Install a current sensor on each incoming phase conductor or into the electrical distribution unit. This is best done in the electrical distribution unit.
2. Connect the current sensors to a multi-core cable in an enclosure directly adjacent to the electrical distribution unit. The multi-core cable between the enclosure and SMO S40 must have a cable area of at least 0.5 mm².



3. Connect the sensor to terminal block AA100-X14:BE1-BE3 and to any terminal block on AA100-X13:GND.



4. Specify the size of the property's main fuse in menu 7.1.9 - "Load monitor".

## Step controlled additional heat



### CAUTION!

If external voltage is used, mark any junction boxes with warnings for external voltage.

## Step-controlled additional heat before the diverter valve

External step-controlled additional heat can be controlled by up to three potential-free relays in the control module (3 step linear or 7 step binary).

The electric additional heat will charge with the maximum number of steps, together with the compressor, to finish the hot water charging and return to charging the heating as soon as possible. This only occurs when the number of degree minutes is below the start value for the additional heat.

See section "Max load relay outputs on AA100".

## Step-controlled additional heat after the diverter valve

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

With the AXC 30 accessory, a further three potential-free relays can be used for additional heat control, which then gives an additional 3 linear or 7 binary steps.

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

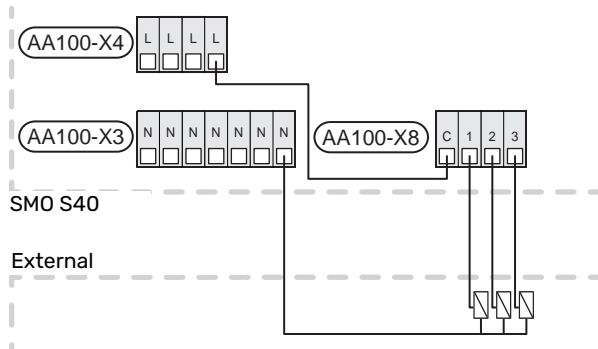
Step 1 is connected to terminal block AA100-X8:1.

Step 2 is connected to terminal block AA100-X8:2.

Step 3 is connected to terminal block AA100-X8:3.

The settings for step controlled additional heat are made in menu 7.1.5.

If the relays are to be used for control voltage, bridge the supply from terminal block AA100-X4:L to terminal block AA100-X8:C. Connect the neutral conductor to AA100-X3:N.



## Shunt controlled additional heat



### CAUTION!

Mark up any junction boxes with warnings for external voltage.

This connection enables an external additional heater, e.g. an oil boiler, gas boiler or district heating exchanger to aid with heating.

SMO S40 controls a shunt valve and start signal for the additional heat using three relays. If the installation cannot manage to maintain the correct supply temperature, the additional heat starts. When the boiler sensor (BT52) shows 55 °C, SMO S40 sends a signal to the shunt (QN11) to open from the additional heat. The shunt (QN11) is controlled to ensure that the true supply temperature corresponds with the control system's theoretically calculated set point value. When the heating demand drops sufficiently, so 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 7.1.5).

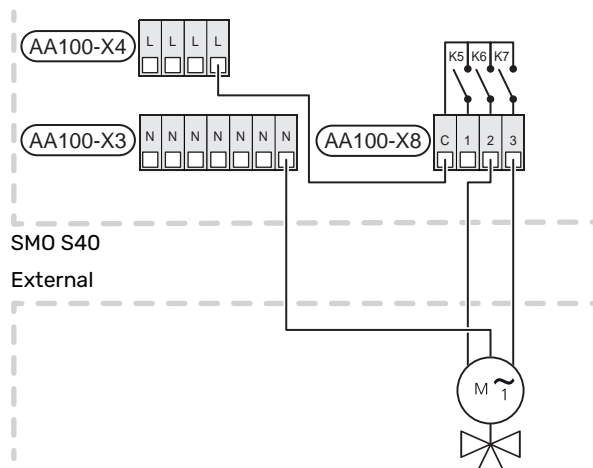
The settings for shunt controlled additional heat are made in menu 7.1.5.

The boiler sensor (BT52) is connected to selectable AUX inputs and selected in menu 7.4.

Connect the shunt motor (QN11) to terminal blocks AA100-X8:2 (230 V, close) and 3 (230 V, open) and terminal block AA100-X3:N.

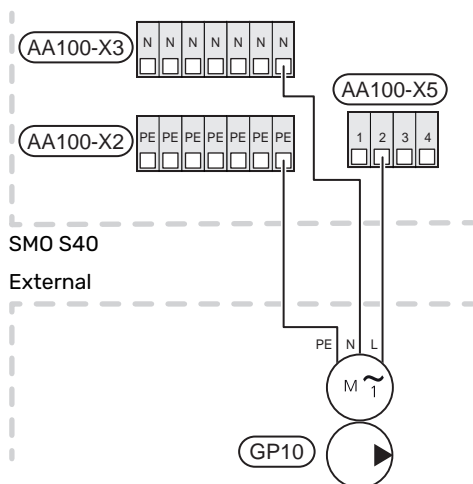
To control switching the additional heat on and off, connect it to terminal block AA100-X8:1.

If the relays are to be used for operating voltage, bridge the supply from terminal block AA100-X4:L to terminal block AA100-X8:C.



## External circulation pump (GP10)

Connect the external circulation pump (GP10) to terminal block AA100-X2:PE, AA100-X3:N and AA100-X5:2 (230 V) as illustrated. See section "Max load relay outputs on AA100".

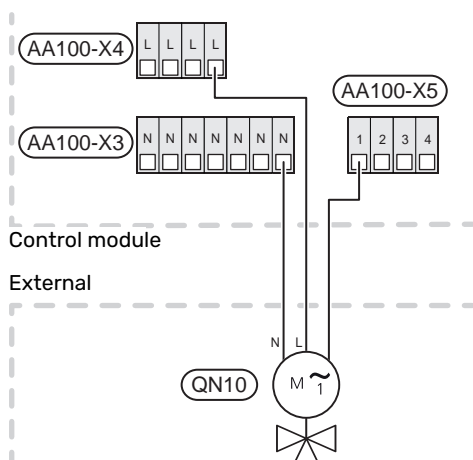


## Diverter valve, heating/hot water

SMO S40 can be supplemented with an external diverter valve (QN10) for hot water control. (See "Accessories" section.)

Hot water production can be selected in menu 7.2.1.

Connect the external diverter valve (QN10) to terminal block AA100-X3:N (AA100-X5:1), (control) and AA100-X4:L, as illustrated. See section "Max load relay outputs on AA100".



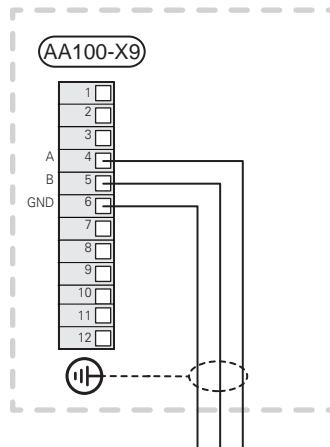
## COMMUNICATION

### Communication with heat pump

When SMO S40 is to be connected to the heat pump, this is connected to terminal block X9:4 (A), X9:5 (B) and X9:6 (GND) on the joint board (AA100). Use a screened cable. The cable's screen is connected to the cable clamp intended for the purpose.

More information about connection can be found in the heat pump's Installer Manual.

SMO S40



### Multi-installation



#### NOTE!

Up to 8 air/water heat pumps can be controlled by SMO S40.



#### NOTE!

It is possible to combine various NIBE air/water heat pumps, of different sizes and models, with each other.

If multiple heat pumps are to be connected to the SMO S40, they must be connected in a cascade.

## Connecting accessories

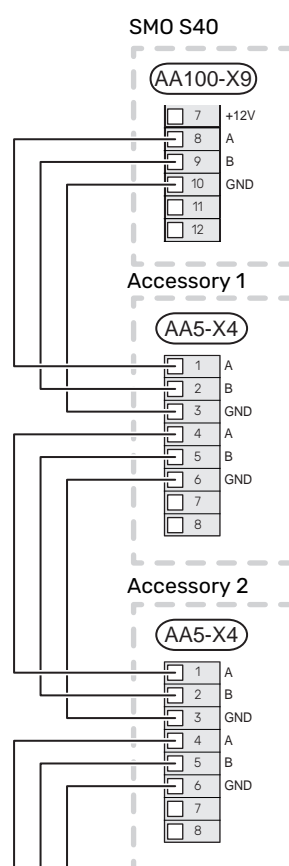
Instructions for connecting accessories are provided in the manual accompanying the accessory. See section "Accessories" for a list of the accessories that can be used with SMO S40. Connection for communication with the most common accessories is shown here.

### Accessories with accessory board (AA5)

Accessories with accessory board (AA5) are connected to the control module's terminal block AA100-X9:8-10.

If several 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.



## SELECTABLE IN/OUTPUTS

SMO S40 has software-controlled AUX inputs and outputs for connecting the external switch function (contact has to be potential-free) or sensor.

In menu 7.4 - "Selectable in/outputs", you select the AUX connection to which each function has been connected.

For certain functions, accessories may be required.

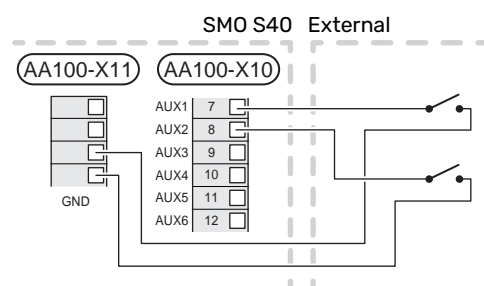


### TIP!

Some of the following functions can also be activated and scheduled via menu settings.

### Selectable inputs

Selectable inputs on the joint board (AA100) for these functions are AA100-X10:7-12. Each function connects to any input and GND (AA100-X11).



The example above uses the inputs AUX1 (AA100-X10:7) and AUX2 (AA100-X10:8).



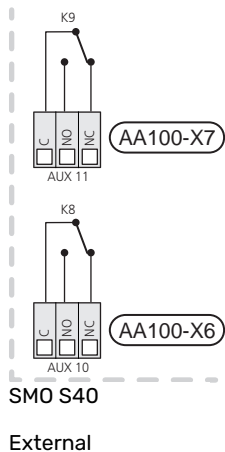
## Selectable outputs

Selectable outputs AA100-X6 and AA100-X7.

The outputs are potential-free switching relays.

Alarm indication is connected to C-NC, other functions are connected to C-NO.

If SMO S40 is switched off or in emergency mode, the relays are in the C-NC position.



### NOTE!

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



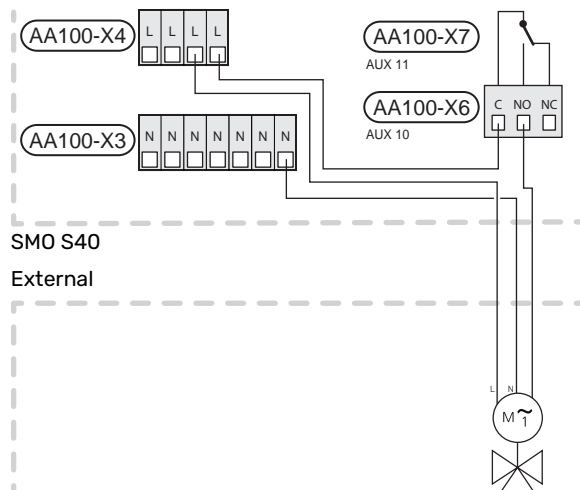
### TIP!

The AXC accessory is required, if more than two functions are to be connected to the AUX outputs.

See section "Max load relay outputs on AA100".

## Connection of diverter valve

A diverter valve is connected to the AUX output, as illustrated below.



## Possible selection for AUX inputs

### Temperature sensor

Available options are:

- hot water start (BT5)
- boiler (BT52) (only shown if shunt-controlled additional heat is selected in menu 7.1.5 - "Add. heat")
- supply temperature sensor for cooling (BT64) (used when "active cooling in 4-pipe installation" has been activated in the output AUX 10 (AA100-X6) or AUX 11 (AA100-X7))
- cooling/heating (BT74), determines when it is time to switch between cooling and heating operation.

When several room sensors have been installed, you can select which one of them will be controlling in menu 1.3.3 - "Room sensor settings".

When the cooling/heating sensor (BT74) has been connected and activated in menu 7.x, no other room sensor can be selected in menu 1.3.3 - "Room sensor settings".

- additional heat (BT63), is used when docking "step-controlled additional heat before diverter valve for hot water" in order to measure the temperature after the additional heat.
- six dedicated sensors (BT37.1 – BT37.6) for placing wherever you want.
- displayed hot water sensor for HWC (BT70). Placed on the supply line.
- displayed hot water sensor for HWC (BT82). Placed on the return line.

### Monitor

Available options are:

- alarm from external units.  
The alarm is connected to the control, which means that the malfunction is shown as an information message in the display. Potential free signal of type NO or NC.



- stove monitor for accessory ERS.  
Stove monitor is a thermostat that is connected to the chimney. When the negative pressure is too low, the fans in ERS (NC) are switched off.
- pressure switch for climate system (NC).

## External activation of functions

An external switch function can be connected to SMO S40 to activate various functions. The function is activated during the time the switch is closed.

Possible functions that can be activated:

- hot water demand mode "Temp. more hot water"
- hot water demand mode "Small"
- activation of one of four fan speeds.

(Can be selected if ventilation accessory is activated.)

The following options are available:

- "Activate fan speed 1 (NO)" - "Activate fan speed 4 (NO)"
- "Activate fan speed 1 (NC)"

The fan speed is activated during the time the switch is closed. Normal speed is resumed when the switch is opened again.

- SG ready



### NOTE!

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

"SG Ready" requires two AUX inputs.

If this function is wanted, it must be connected to terminal block X10 on the joint board (AA100).

"SG Ready" is a smart form of tariff control, through which your electricity supplier can affect the indoor, hot water and/or pool temperatures (if applicable) or simply block the additional heating and/or the compressor in the heat pump at certain times of the day (can be selected in menu 4.2.3 after the function has been activated). Activate the function by connecting potential-free switch functions to two inputs selected in menu 7.4 - "Selectable in/outputs" (SG Ready A and SG Ready B).

Closed or open switch means one of the following:

- *Blocking (A: Closed, B: Open)*

"SG Ready" is active. The compressor in the air/water heat pump and additional heating are blocked.

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

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

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

"SG Ready" is active. The system focuses on costs savings and can for example exploit a low tariff from the electricity supplier or over-capacity from any own power source (effect on the system can be adjusted in the menu 4.2.3).

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

"SG Ready" is active. The system is permitted to run at full capacity at over capacity (very low price) with the electricity supplier (effect on the system is settable in menu 4.2.3).

(A = SG Ready A. B = SG Ready B)

## External blocking of functions

An external switch function can be connected to SMO S40 for blocking various functions. The switch must be potential-free and a closed switch results in blocking.



### CAUTION!

Blocking entails a risk of freezing.

Functions that can be blocked:

- heating (blocking of heating demand)
- cooling (blocking cooling requirement)
- hot water (hot water production). Any hot water circulation (HWC) remains in operation.
- compressor in heat pump (EB101) and/or (EB102)
- internally controlled additional heat
- tariff blocking (additional heat, compressor, heating, cooling and hot water are disconnected)
- "External power limiting"

For markets where the mains network operator requires dynamic control of the mains network's load, the compressor's and the immersion heater's operating power can be limited.

You set the power limit in menu 7.4.2 - "External power limiting".

## Possible selections for AUX outputs

### Indications

- alarm
- Cooling mode indic
- Cool. mode ind. w delay
- Holiday
- Away mode
- SPA (Smart Price Adaption: low electricity price)
- photovoltaic control (Can be selected when the accessory EME 20 is activated.)

## Control

- HW circulation (circulation pump for hot water circulation)
- Ext. HM pump (external heating medium pump)
- active cooling in 4-pipe installation
- additional heat in charge circuit

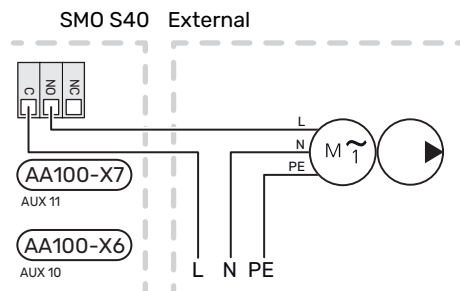


### CAUTION!

The relevant distribution box must be marked with a warning about external voltage.

## Connecting external circulation pump

An external circulation pump is connected to the AUX output, as illustrated below. See section "Max load relay outputs on AA100".



## Settings

### **ELECTRIC ADDITIONAL HEAT – MAXIMUM OUTPUT**

Setting maximum number of steps in the electric additional heat is done in menu 7.1.5.1.

### **EMERGENCY MODE**

Emergency mode is used in event of operational interference and in conjunction with service.

When SMO S40 is put into emergency mode, the system works as follows:

- SMO S40 prioritises heating production.
- Hot water is produced if possible.
- The load monitor is not active.
- Fixed supply temperature if the system has no value from the outdoor temperature sensor (BT1).

When the emergency mode is active, the status lamp is yellow.

You can activate the emergency mode both when SMO S40 is running and when it is switched off.

To activate when SMO S40 is running: press and hold the on/off button (SF1) for 2 seconds and select "Emergency mode" from the shutdown menu.

To activate emergency mode when SMO S40 is switched off: press and hold the on/off button (SF1) for 5 seconds. (Deactivate the emergency mode by pressing once).

# Commissioning and adjusting

## Preparations

- SMO S40 must be ready-connected.
- The climate system must be filled with water and bled.

## Commissioning

### WITH NIBE AIR/WATER HEAT PUMP

Follow the instructions in the heat pump's Installer Manual under section "Commissioning and adjustment" – "Start-up and inspection".

#### SMO S40

1. Power-up the heat pump. The heat pump may need to be preheated, depending on the outdoor temperature.
2. Power SMO S40.
3. Follow the instructions in the display's start guide. If the start guide does not start when you start the SMO S40, start it manually in menu 7.7.

## Commissioning with additional heating only

1. Go to menu 4.1 "Operating mode".
2. Mark "Additional heat only".

## Check the diverter valve

1. Activate "Diverter valve (QN10)" in menu 7.5.3 "Forced control".
2. Check that the diverter valve for heating/hot water (QN10) opens or is open for hot water charging.
3. Deactivate "Diverter valve (QN10)" in menu 7.5.3 "Forced control".

## Check selectable outputs

To check any function connected to selectable outputs (AUX 10 and AUX 11):

1. Activate "AA100-X6" and "AA100-X7" in menu 7.5.3 "Forced control".
2. Check the desired function.
3. Deactivate "AA100-X6" and "AA100-X7" in menu 7.5.3 "Forced control".

## Start-up and inspection

### START GUIDE



#### CAUTION!

There must be water in the climate system before SMO S40 is started.



#### CAUTION!

Do not start SMO S40 if there is a risk that the water in the system has frozen.

1. Power the heat pump.
2. Start SMO S40 by pressing the on/off button (SF1).
3. Follow the instructions in the display's start guide. If the start guide does not start when you start the SMO S40, you can start it manually in menu 7.7.



#### TIP!

See the section "Control – Introduction" for a more detailed introduction to the installation's control system (operation, menus, etc.).

### Commissioning

The first time the installation is started a start guide is started. The start guide instructions state what needs to be carried out at the first start together with a run through of the installation's basic settings.

The start guide ensures that the start-up is carried out correctly and, for this reason, cannot be skipped.

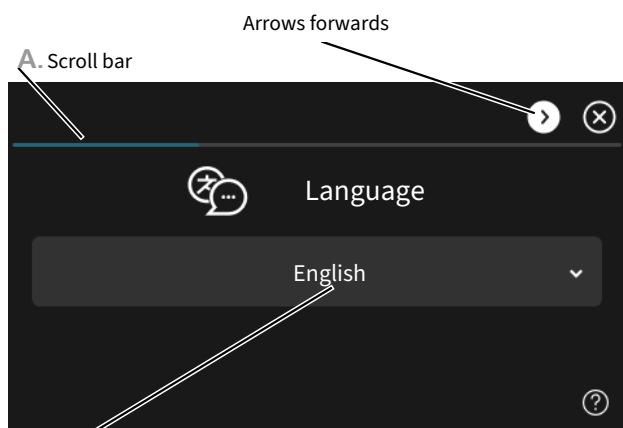
During the start-up guide, the diverter valves and the shunt are run back and forth to help vent the heat pump.



#### NOTE!

As long as the start guide is active, no function in SMO S40 will start automatically.

## Operation in the start guide



### A. Scroll bar

#### A. Scroll bar

Here you can see how far you have come in the start guide.

Drag to the right or left with your finger to browse between the pages.

You can also press the arrows in the top corners to browse.

#### B. Option / setting

Make settings for the system here.

## Setting the cooling/heating curve

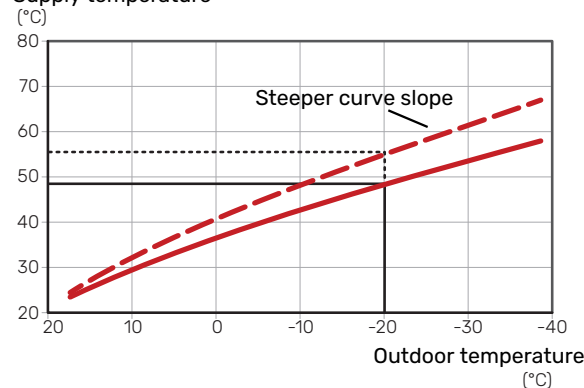
In the menus "Curve, heating" and "Curve, cooling", you can see the heating and cooling curves for your house. The purpose of the curves is to provide an even indoor temperature, regardless of the outdoor temperature, and thereby energy-efficient operation. Based on these curves, SMO S40 determines the temperature of the water to the climate system (the supply temperature) and thus the indoor temperature.

### CURVE COEFFICIENT

The slopes of the heating /cooling curves indicate how many degrees the supply temperature is to be increased/reduced when the outdoor temperature drops/increases. A steeper slope means a higher supply temperature for heating or a lower supply temperature for cooling at a certain outdoor temperature.

The lower the heating curve, the more energy efficient the operation, although an excessively low curve entails reduced comfort.

Supply temperature



The optimum curve slope depends on the climate conditions and the lowest dimensioned outdoor temperature (DOT) in your location, whether the house has radiators, fan coils or underfloor heating and how well insulated the house is.

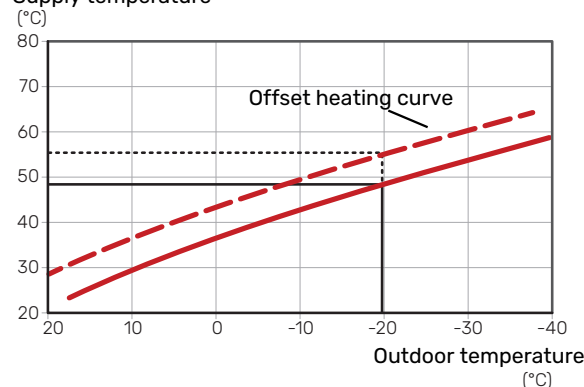
For houses with radiators or fan coils, a higher heating curve (e.g. curve 9) is suitable, for houses with under floor heating, a lower curve (e.g. curve 5) is suitable.

The heating/cooling curves are set when the heating/cooling system is installed, but may need adjusting later. Thereafter, the curves should not need further adjustment.

### CURVE OFFSET

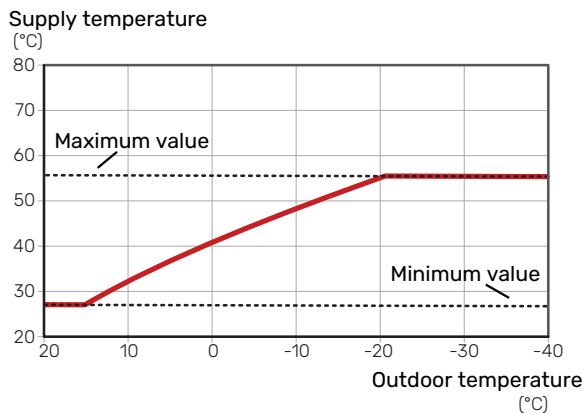
An offset of the heating curve means that the supply temperature changes by the same amount for all outdoor temperatures, e.g. a curve offset of +2 steps increases the supply temperature by 5 °C at all outdoor temperatures. A corresponding change to the cooling curve results in a lowering of the supply temperature.

Supply temperature



### SUPPLY TEMPERATURE – MAXIMUM AND MINIMUM VALUES

Because the supply temperature cannot be calculated higher than the set maximum value or lower than the set minimum value, the curves flatten out at these temperatures.



#### NOTE!

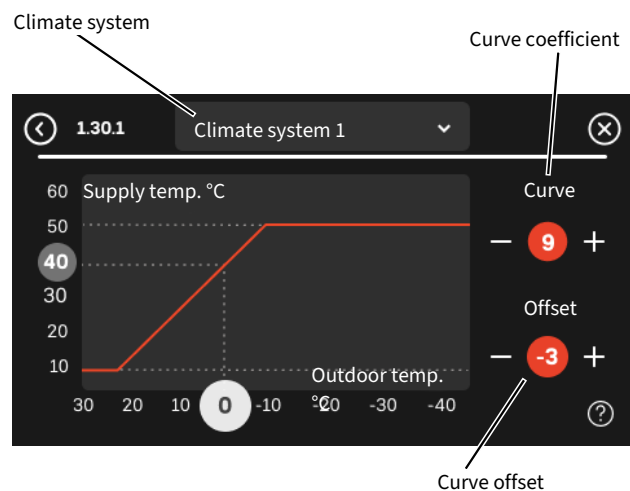
With underfloor heating systems, the maximum supply temperature is normally set between 35 and 45 °C.



#### NOTE!

With underfloor cooling, "Min. supply temp. cooling" must be restricted to prevent condensation.

### ADJUSTMENT OF CURVE



1. Select the climate system (if more than one) for which the curve is to be changed.
2. Select max and min supply temperature.



#### NOTE!

Curve 0 means that "Own curve" is used.  
Settings for "Own curve" are made in menu 1.30.7.

### TO READ OFF A HEATING CURVE

1. Drag in the circle on the axis with outdoor temperature.
2. Read off the value for supply temperature in the circle on the other axis.

## BASIC VALUES FOR THE AUTOMATIC HEATING CONTROL

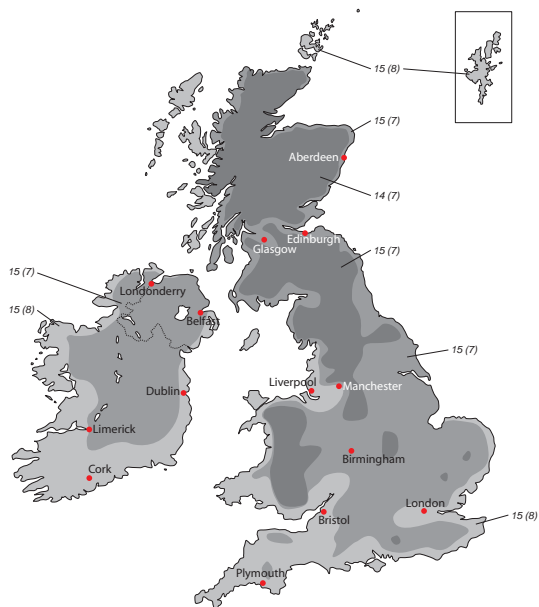
The values stated on the map apply to "Curve, heating" in menu 1.30.1.

- The first value applies to low temperature radiator systems<sup>1</sup>. "Temperature" in menu 1.1 must be set to -2.
- The value in brackets refers to underfloor heating systems<sup>2</sup> installed in concrete floor structures.
- When the system is installed in a timber floor structure, you can use the number before the brackets, although this value must be reduced by two units. "Temperature" in menu 1.1 is set to -1 in these cases.



### NOTE!

The map's values are usually a good starting point and are intended to produce a room temperature of approximately 20 °C. The values can be adjusted later, if necessary.



Examples of basic values selection:

- House with low temperature radiator system  
London = Area 15 (8).  
Set 15 in menu 1.30.1, "Curve, heating" and -2 in menu 1.1 "Temperature".
- House with underfloor heating installed in a concrete floor structure  
London = Area 15 (8).  
Set 8 in menu 1.30.1, "Curve, heating" and -2 in menu 1.1 "Temperature".
- House with underfloor heating installed in a timber floor structure  
London = Area 15 (8).  
Set 13 (see third item in the list above) in menu 1.30.1, "Curve, heating" and -1 in menu 1.1 "Temperature".



### NOTE!

An increase in the room temperature can be slowed by the thermostats for the radiators or under floor heating. Therefore, open the thermostat valves fully, except in those rooms where a cooler temperature is required, e.g. bedrooms.

<sup>1</sup> A low-temperature radiator system refers to a system where the supply temperature needs to be 55 °C on the coldest day.

<sup>2</sup> Underfloor heating may be dimensioned very differently. The above example refers to a system where the supply temperature needs to be approximately 35 – 40 °C or 45 – 50 °C on the coldest day.

# myUplink

With myUplink you can control the installation – where and when you want. In the event of any malfunction, you receive an alarm directly to your e-mail or a push notification to the myUplink app, which allows you to take prompt action.

Visit <https://myuplink.com> for more information.

## Specification

You need the following in order for myUplink to be able to communicate with your SMO S40:

- wireless network or network cable
- Internet connection
- account on <https://myuplink.com>

We recommend our mobile apps for myUplink.

## Connection

To connect your system to myUplink:

1. Select connection type (wifi/Ethernet) in menu 5.2.1 or 5.2.2.
2. In menu 5.1 you select "Request new connection string".
3. When a connection string has been produced, it is shown in this menu and is valid for 60 minutes.
4. If you do not already have an account, register in the mobile app or on [myuplink.com](https://myuplink.com).
5. Use the connection string to connect your installation to your user account on myUplink.

## Range of services

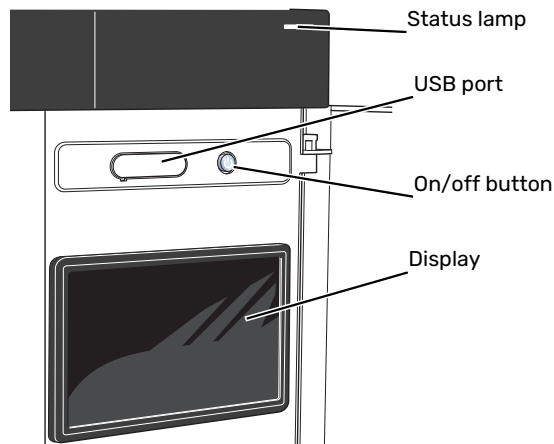
myUplink gives you access to various levels of service. The base level is included and, apart from this, you can choose two premium services for a fixed annual fee (the fee varies depending on the functions selected).

Service level	Basic	Premium service, History	Premium service, Change settings
Viewer	X	X	X
Alarm	X	X	X
History	X	X	X
Extended history	-	X	-
Manage	-	-	X



# Control - Introduction

## Display unit



### THE STATUS LAMP

The status lamp indicates current operating status. It:

- lights up white during normal operation.
- lights yellow in emergency mode.
- lights red in the event of a deployed alarm.
- flashes white during active notice.
- is blue when SMO S40 is switched off.

If the status lamp is red, you receive information and suggestions for suitable actions on the display.



#### TIP!

You also receive this information via myUplink.

### THE USB PORT

Above the display, there is a USB port that can be used e.g. for updating the software. Log into [myuplink.com](https://myuplink.com) and click the "General" and then "Software" tab to download the latest version of the software for your installation.



#### TIP!

If you connect the product to the network, you can update the software without using the USB port. See section "myUplink".

### THE ON/OFF BUTTON

The on/off button (SF1) has three functions:

- start
- switch off
- activate emergency mode

To start: press the on/off button once.

To switch off, restart or activate emergency mode: press and hold the on/off button for 2 seconds. This brings up a menu with various options.

For hard switch off: press and hold the on/off button for 10 seconds.

To activate emergency mode when SMO S40 is switched off: press and hold the on/off button (SF1) for 5 seconds. (Deactivate the emergency mode by pressing once).

### THE DISPLAY

Instructions, settings and operational information are shown on the display.

## Navigation

SMO S40 has a touchscreen where you simply navigate by pressing and dragging with your finger.

### SELECT

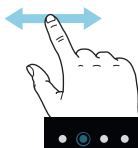
Most options and functions are activated by lightly pressing on the display with your finger.



### BROWSE

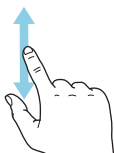
The symbols at the bottom edge show if there are more pages.

Drag to the right or left with your finger to browse between the pages.



### SCROLL

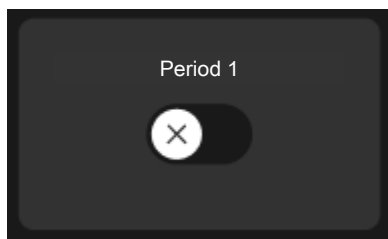
If the menu has several sub-menus, you can see more information by dragging up or down with your finger.



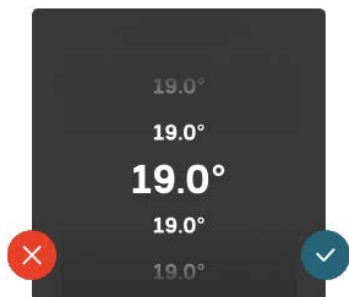
### CHANGE A SETTING



Press the setting you want to change.

If it is an on/off setting, it changes as soon as you press it.



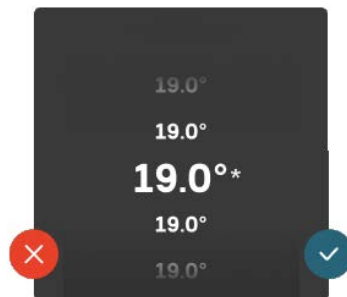
If there are several possible values, a spinning-wheel appears that you drag up or down to find the desired value.



Press  to save your change, or  if you don't want to make a change.

## FACTORY SETTING

Factory set values are marked with \*.



## HELP MENU



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

Press the symbol to open the help text.

You may need to drag with your finger to see all text.

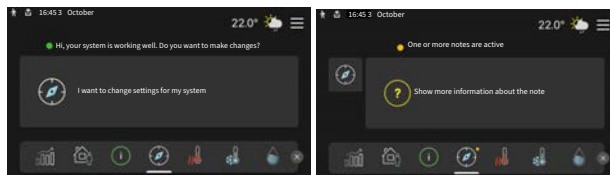
## Menu types

### HOME SCREENS

#### Smartguide

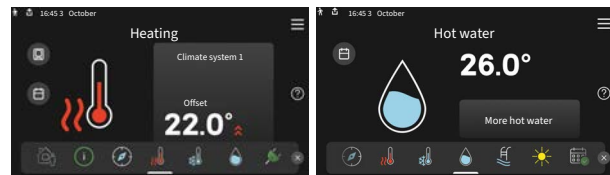
Smartguide helps you both to view information about the current status and to make the most common settings easily. The information that you see depends on the product you have and the accessories that are connected to the product.

Select an option and press it to proceed. The instructions on the screen help you to choose correctly or give you information about what is happening.

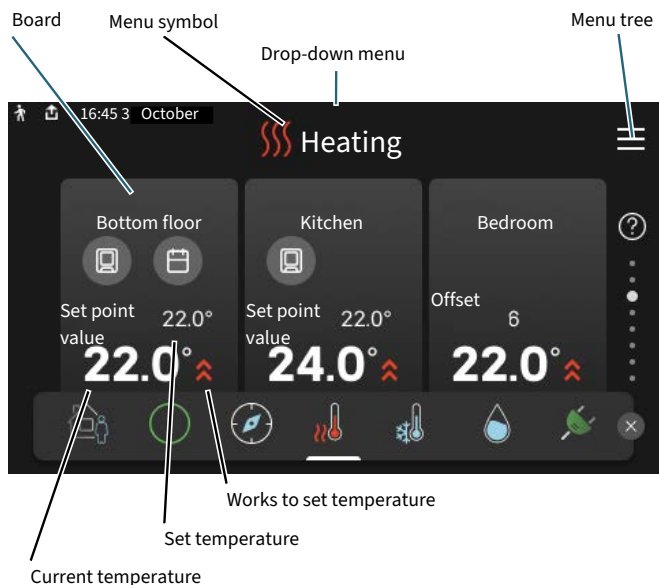


### Function pages

On the function pages, you can both view information about the current status and easily make the most common settings. The function pages that you see depend on the product you have and the accessories that are connected to the product.



Drag to the right or left with your finger to browse between the function pages.



Press the card to adjust the desired value. On certain function pages, drag your finger up or down to obtain more cards.

## Product overview

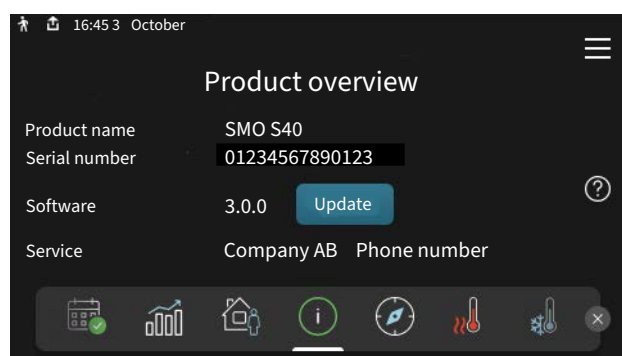
It can be a good idea to have the product overview open during any service cases. You can find it among the function pages.

Here, you can find information about product name, the product's serial number, the version of the software and service. When there is new software to download, you can do it here (provided that SMO S40 is connected to myUplink).



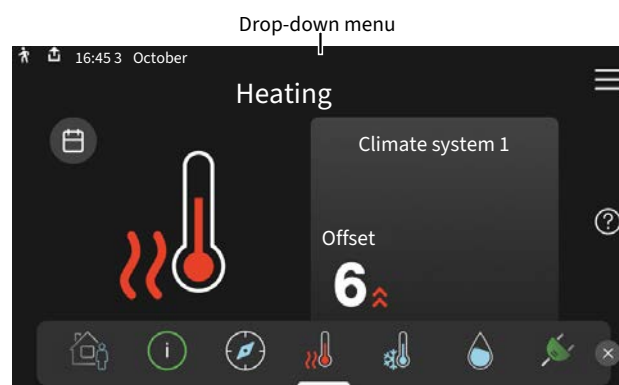
**TIP!**

You enter the service details in menu 4.11.1.

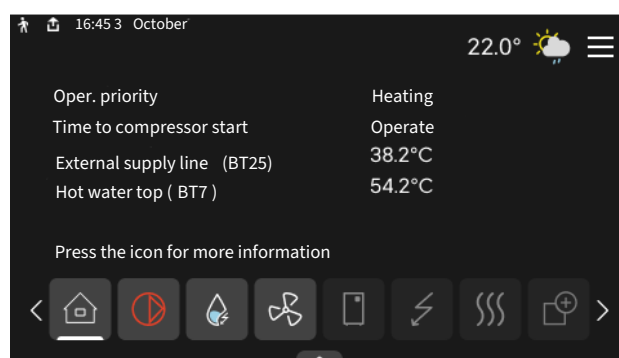


## Drop-down menu

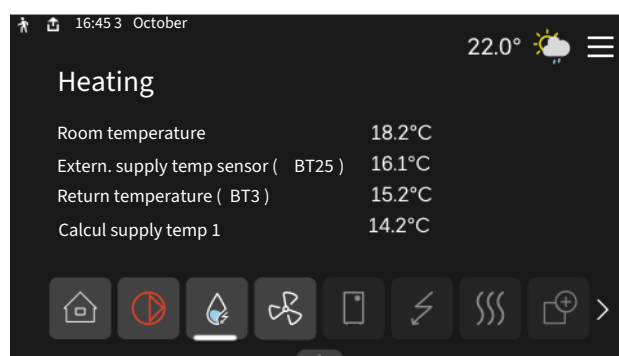
From the home screens, you reach a new window containing further information by dragging down a drop-down menu.



The drop-down menu shows the current status for SMO S40, what is in operation and what SMO S40 is doing at the moment. The functions that are in operation are highlighted with a frame.

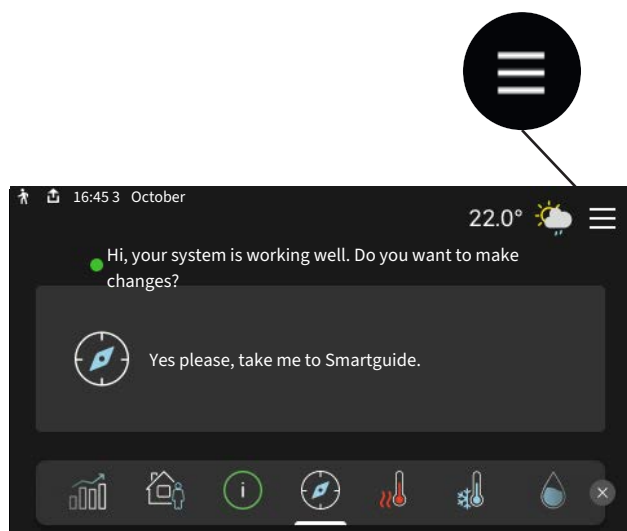


Press the icons on the menu's lower edge for more information about each function. Use the scroll bar to view all information for the selected function.

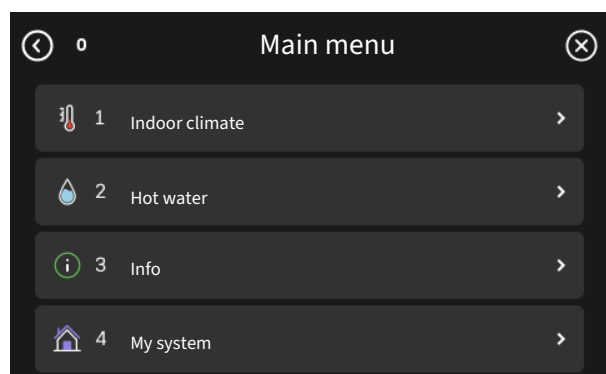


## MENU TREE

In the menu tree, you can find all menus and can make more advanced settings.



You can always press "X" to return to the home screens.



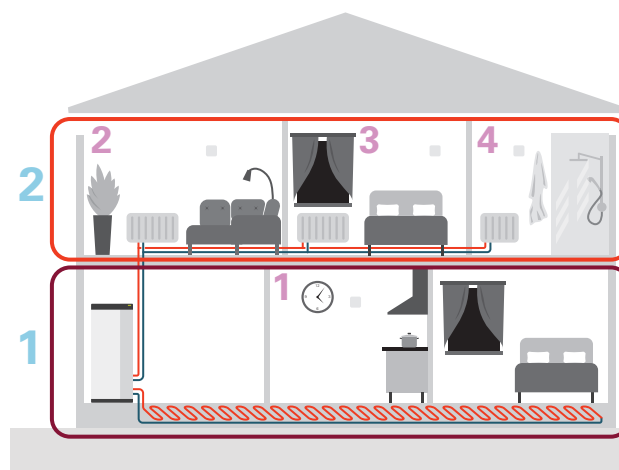
## Climate systems and zones

Climate systems can be divided into multiple zones. A zone can be a specific room, and it is also possible to divide a large room into several zones, with the help of radiator thermostats.

Each zone can contain one or more accessories, e.g. room sensors or thermostats, both wired and wireless.

A zone can be set with or without the influence of the climate system's supply temperature.

### OUTLINE DIAGRAM WITH TWO CLIMATE SYSTEMS AND FOUR ZONES



This example shows a property with two climate systems (1 and 2, two separate floors) divided into four zones (1-4, four different rooms). The temperature can be controlled individually in each zone (accessory required).

# Control – Menus

## Menu 1 – Indoor climate

### OVERVIEW

1.1 – Temperature	1.1.1 – Heating
	1.1.2 – Cooling
	1.1.3 – Humidity <sup>1</sup>
1.2 – Ventilation <sup>1</sup>	1.2.1 – Fan speed <sup>1</sup>
	1.2.2 – Night cooling <sup>1</sup>
	1.2.4 – Demand controlled ventilation <sup>1</sup>
	1.2.5 – Fan return time <sup>1</sup>
	1.2.6 – Filter cleaning interval <sup>1</sup>
	1.2.7 – Ventilation recovery <sup>1</sup>
1.4 – External influence	1.3.4 – Zones
1.5 – Climate system name	
1.30 – Advanced	1.30.1 – Curve, heating
	1.30.2 – Curve, cooling
	1.30.3 – External adjustment
	1.30.4 – Lowest supply heating
	1.30.5 – Lowest supply cooling
	1.30.6 – Highest supply heat
	1.30.7 – Own curve
	1.30.8 – Point offset

<sup>1</sup> Consult the accessory's Installer Manual.

### MENU 1.1 – TEMPERATURE

Here, you make temperature settings for your installation's climate system.

If there is more than one zone and/or climate system, the settings are made for each zone/system.

### MENU 1.1.1, 1.1.2 – HEATING AND COOLING

#### Set the temperature (with room sensor installed and activated):

##### Heating

Setting range: 5 – 35°C

##### Cooling

Setting range: 5 – 35°C

The value in the display appears as a temperature in °C, if the zone is controlled by a room sensor.



#### NOTE!

A slow climate system, such as underfloor heating, may be unsuitable for controlling with room sensors.

### Setting the temperature (without room sensors activated):

Setting range: -10 – 10

The display shows the set value for heating/cooling (curve offset). To increase or reduce the indoor temperature, increase or reduce the value in the display.

The number of steps the value has to be changed in order to achieve a one degree change to the indoor temperature depends on the climate system. One step is usually enough, but in some cases several steps may be required.

If multiple zones in a climate system do not have activated room sensors, these will have the same curve offset.

Set the desired value. The new value is shown on the right-hand side of the symbol on home screen heating/home screen cooling.



#### NOTE!

An increase in the room temperature can be slowed by the thermostats for the radiators or under floor heating. Therefore, open the thermostats fully, except in those rooms where a cooler temperature is required, e.g. bedrooms.



#### TIP!

If the room temperature is constantly too low/high, you increase/decrease the value by one step in menu 1.1.1.

If the room temperature changes when the outdoor temperature changes, you increase/decrease the curve slope by one step in menu 1.30.1.

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

### 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 and cooling is activated by ticking the relevant 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.

Smart Room Comfort is activated, if a room sensor is connected. One zone is regulated by the weather forecast and indoor temperature.



#### NOTE!

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

If there is more than one zone and/or climate system, the settings are made for each zone/system.

### MENU 1.3.4 - ZONES

Here, you add and name zones. You also select the climate system to which a zone is to belong.

### MENU 1.4 - EXTERNAL INFLUENCE

Information for the accessories/functions that can affect the indoor climate and that are active is shown here.

### MENU 1.5 - CLIMATE SYSTEM NAME

You can give the installation's climate system a name here.

### MENU 1.30 - ADVANCED

Menu "Advanced" is intended for the advanced user. This menu has several sub-menus.

"Curve, heating" Setting the heating curve slope.

"Curve, cooling" Setting the cooling curve slope.

"External adjustment" Setting the heating curve offset when the external contact is connected.

"Lowest supply heating" Setting minimum permitted supply temperature during heating operation.

"Lowest supply cooling" Setting minimum permitted supply temperature during cooling operation.

"Highest supply heat" Setting maximum permitted supply temperature for the climate system.

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

"Point offset" Select a change in the heating curve at a certain outdoor temperature here. One step is usually enough to change the room temperature by one degree, but in some cases several steps may be required.

### MENU 1.30.1 - CURVE, HEATING

#### Curve, heating

Setting range: 0 – 15

The heating curve can be found in this menu. The task of the heating curve is to provide a uniform indoor temperature, regardless of the outdoor temperature, and thereby energy efficient operation. It is from the heating curve that SMO S40 determines the temperature of the water to the climate system, the supply temperature, and therefore the indoor temperature.

For houses with radiators or fan coils, a higher heating curve (e.g. curve 9) is suitable, for houses with under floor heating, a lower curve (e.g. curve 5) is suitable.

When you have selected the heating curve, you can read off how the supply temperature will change at different outdoor temperatures.



#### TIP!

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



#### NOTE!

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



#### TIP!

If the room temperature is constantly too low/high, you increase/decrease the curve offset by one step.

If the room temperature changes when the outdoor temperature changes, you increase/decrease the curve slope by one step.

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

### MENU 1.30.2 - CURVE, COOLING

#### Curve, cooling

Setting range: 0 – 9

The cooling curve can be found in this menu. The task of the cooling curve is, together with the heating curve, to provide a uniform indoor temperature, regardless of the outdoor temperature, and thereby energy-efficient operation. Based on these curves, SMO S40 determines the temperature of the water to the climate system, the supply temperature, and thus the indoor temperature.

For houses with fan coils, a higher curve (e.g. curve 9) is appropriate, for houses with under floor cooling, a lower curve (e.g. curve 5) is appropriate.

When you have selected the cooling curve, you can read off how the supply temperature will change at different outdoor temperatures.

#### NOTE!

With underfloor cooling, "Min. supply temp. cooling" must be restricted to prevent condensation.

### Cooling in 2-pipe system

SMO S40 contains a built-in function for operating cooling in a 2-pipe system down to 7 °C. This requires that the outdoor unit can perform cooling. (See the Installer Manual for your air/water heat pump.) If the outdoor unit is permitted to run cooling, the cooling menus are activated in the display on SMO S40.

For operating mode "cooling" to be permitted, the average temperature must be above the set value for "start cooling" in menu 7.1.10.2 "Auto mode setting". There is the option to activate cooling by selecting "manual" operating mode in menu 4.1 "Operating mode".

The cooling settings for the climate system are adjusted in the indoor climate menu, menu 1.

### MENU 1.30.3 - EXTERNAL ADJUSTMENT

#### External adjustment

Setting range: -10 – 10

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

Connecting an external switch, for example a room thermostat or a timer, allows you to raise or lower the room temperature temporarily or periodically. When the switch is on, the heating 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.

If there is more than one zone, the setting can be made separately for each zone.

### 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 SMO S40 never calculates a temperature lower than that set here.

If there is more than one climate system the setting can be made separately for each system.

### MENU 1.30.5 - LOWEST SUPPLY COOLING

#### Cooling (heat pump with cooling function required)

Setting range: 7 – 30 °C

#### Alarm, room sensor during cooling operation

Alternative: on/off

Set the minimum temperature on the supply temperature to the climate system. This means that SMO S40 never calculates a temperature lower than that set here.

If there is more than one climate system the setting can be made separately for each system.

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



#### CAUTION!

The cooling supply line must be set with regard to which climate system is connected. For example, under floor cooling with too low supply temperature can cause condensation to precipitate, 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 SMO S40 never calculates a temperature higher than the one set here.

If there is more than one climate system the setting can be made separately for each system. Climate systems 2 – 8 cannot be set to a higher max supply temperature than climate system 1.



#### NOTE!

With underfloor heating systems, "Maximum supply temperature for heating" should normally be set between 35 and 45°C.

### MENU 1.30.7 - OWN CURVE

#### Own curve, heat

#### Supply temp

Setting range: 5 – 80 °C





#### NOTE!

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.

### Own curve, cooling

#### Supply temp

Setting range: 7 – 40 °C



#### NOTE!

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.

### MENU 1.30.8 - POINT OFFSET

#### Outdoor temp. point

Setting range: -40 – 30 °C

#### Change in curve

Setting range: -10 – 10 °C

Select a change in the heating curve at a certain outdoor temperature here. One step is usually enough to change the room temperature by one degree, but in some cases several steps may be required.

The heating curve is affected at  $\pm 5^\circ\text{C}$  from set outdoor temp. point.

It is important that the correct heating curve is selected so that the room temperature is experienced as even.



#### TIP!

If it feels cold in the house at e.g.  $-2^\circ\text{C}$ , "outdoor temp. point" is set to "-2" and "change in curve" is increased until the desired room temperature is maintained.



#### NOTE!

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



## Menu 2 – Hot water

### OVERVIEW

Hot water settings require SMO S40 to be docked to a water heater.

2.1 - More hot water
2.2 - Hot water demand
2.3 - External influence
2.4 - Periodic increase
2.5 - Hot water circulation

### MENU 2.1 - MORE HOT WATER

#### More hot water

Alternatives: 3, 6, 12, 24 and 48 hours, and modes "Off" and "One-time incr."

#### Quick start with imm. heater

Alternative: on/off

*"More hot water"* When there is a temporary increase in hot water demand, this menu can be used to select an increase in the hot water temperature for a selectable time.

If the hot water temperature is already sufficiently high, "One-time incr." cannot be activated.

The function is activated directly when a time period is selected. The remaining time for the selected setting is shown to the right.

When the time has run out, SMO S40 returns to the set demand mode.

Select "Off" to switch off "More hot water".

"Quick start with imm. heater" gives faster heating, but can lead to increased energy consumption.

### MENU 2.2 - HOT WATER DEMAND

Options: Small, Medium, Large, Smart control

The difference between the selectable modes is the temperature of the hot tap water. Higher temperature means that the hot water lasts longer.

*Small:* This mode produces less hot water at a lower temperature than the other alternatives. This mode can be used in smaller households with a small hot water demand.

*Medium:* Normal mode produces a larger amount of hot water and is suitable for most households.

*Large:* This mode produces the most hot water at a higher temperature than the other alternatives. In this mode, the immersion heater may be used to partially heat the hot water. In this mode, hot water production is prioritised ahead of heating.

Smart control: With Smart control activated, SMO S40 continuously learns the previous hot water consumption and, in this way, adjusts the temperature in the water heater for the minimum energy consumption and maximum comfort.

### MENU 2.3 - EXTERNAL INFLUENCE

Information for the accessories/functions that can affect the hot water operation is shown here.

### MENU 2.4 - PERIODIC INCREASE

#### Period

Setting range: 1 - 90 days

#### Start time

Setting range: 00:00 - 23:59

#### Next increase

The date when the next periodic increase will occur is shown here.

To prevent bacterial growth in the water heater, the heat pump, together with any additional heat, can increase the hot water temperature once at regular intervals.

Here, you can select the length of time between increases in the hot water temperature. The time can be set between 1 and 90 days. Tick/untick "Activated" to start/switch off the function.

### MENU 2.5 - HOT WATER CIRCULATION

#### Operating time

Setting range: 1 - 60 min

#### Downtime

Setting range: 0 - 60 min

#### Period

#### Active days

Alternatives: Monday - Sunday

#### Start time

Setting range: 00:00 - 23:59

#### Stop time

Setting range: 00:00 - 23:59

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

"*Operating time*" determines how long the hot water circulation pump will run per operating instance.

"*Downtime*" determines how long the hot water circulation pump will be stationary between operating instances.

"*Period*" Here, you set the time period during which the hot water circulation pump will run, by selecting "Active days", "Start time" and "Stop time".



#### CAUTION!

Hot water circulation is activated in menu 7.4  
"Selectable in/outputs" or via accessory.

## Menu 3 - Info

### OVERVIEW

3.1 - Operating info
3.2 - Temperature log
3.3 - Energy log
3.4 - Alarm log
3.5 - Product info, summary
3.6 - Licences
3.7 - Version history
3.8 - Data protection information

#### MENU 3.1 - OPERATING INFO

Information about the installation's current operating status (e.g. current temperatures) can be obtained here. In multi-installations, with several interconnected heat pumps, information about these is also shown in this menu. No changes can be made.

You can also read off operating information from all your connected wireless units.

A QR code appears on one side. This QR code indicates serial number, product name and limited operating data.

#### MENU 3.2 - TEMPERATURE LOG

Here you can see the average temperature indoors week by week over the past year.

The average outdoor temperature is only shown if a room temperature sensor/room unit is installed.

In installations with ventilation accessories and no room sensors (BT50), the exhaust air temperature is displayed instead.

#### MENU 3.3 - ENERGY LOG

##### Number of years

Setting range: 1 – 10 years

##### Months

Setting range: 1 – 24 months

Here, you can see a diagram showing how much energy SMO S40 supplies and consumes. You can select which parts of the installation will be included in the log. It is also possible to activate display of indoor and/or outdoor temperature.

*Number of years:* Here, you select how many years will be shown in the diagram.

*Months:* Here, you select how many months will be shown in the diagram.

#### MENU 3.4 - ALARM LOG

To facilitate troubleshooting, the installation's operating status at the time of an alarm is stored here. You can see information for the 10 most recent alarms.

To view operating status in the event of an alarm, select the relevant alarm from the list.

#### MENU 3.5 - PRODUCT INFO, SUMMARY

Here, you can see general information about your system, such as software versions.

#### MENU 3.6 - LICENCES

You can view licences for open source code here.

#### MENU 3.7 - VERSION HISTORY

Here you can see what is new and/or has been changed in different software versions.

#### MENU 3.8 - DATA PROTECTION INFORMATION

Here, you can see the NIBE the data collected by [product] for troubleshooting and optimising the product.

## Menu 4 - My system

### OVERVIEW

4.1 - Operating mode	
4.2 - Plus functions	4.2.2 - Solar electricity <sup>1</sup>
	4.2.3 - SG Ready
	4.2.5 - Smart Price Adaption™
4.3 - Profiles <sup>1</sup>	
4.4 - Weather control	
4.5 - Away mode	
4.6 - Smart Energy Source™	
4.7 - Energy price	4.7.1 - Variable electricity price
	4.7.3 - Shunt-controlled additional heat <sup>1</sup>
	4.7.4 - Step-controlled additional heat <sup>1</sup>
	4.7.6 - External additional heat <sup>1</sup>
4.8 - Time and date	
4.9 - Language	
4.10 - Country	
4.11 - Tools	4.11.1 - Installer details
	4.11.2 - Sound when pressing button
	4.11.3 - Fan de-icing <sup>1</sup>
	4.11.4 - Home screen
4.30 - Advanced	4.30.4 - Fact. settings user

<sup>1</sup> Consult the accessory's Installer Manual.

### MENU 4.1 - OPERATING MODE

#### Operating mode

Alternative: Auto, Manual, Add. heat only

#### Manual

Alternative: Compressor, Add. heat, Heating, Cooling

#### Add. heat only

Alternative: Heating

The operating mode for SMO S40 is normally set to "Auto". It is also possible to select operating mode "Add. heat only". Select "Manual" to choose that functions will be activated.

If "Manual" or "Add. heat only" is selected, selectable options are shown further down. Tick the functions you want to activate.

#### Operating mode "Auto"

In this operating mode, SMO S40 automatically selects which functions are permitted.

#### Operating mode "Manual"

In this operating mode you can select what functions are permitted.

"Compressor" is the unit that produces hot water, heating and cooling for the home. You cannot deselect "compressor" in manual mode.

"Add. heat" is the unit that helps the compressor to heat the home and/or the hot water when it cannot manage the entire requirement alone.

"Heating" means you obtain heating in the home. You can deselect the function when you do not wish to have the heating on.

"Cooling" means that you obtain cooling in the home in hot weather. You can deselect this function when you do not wish to have the cooling running.



#### NOTE!

If you deselect "Add. heat" it may mean that insufficient hot water and/or heating in the accommodation is achieved.

#### Operating mode "Add. heat only"

In this operating mode the compressor is not active, only additional heat is used.



#### NOTE!

If you choose mode "Add. heat only" the compressor is deselected and there is a higher operating cost.

## NOTE!

You should not change from only additional heat, if you do not have a heat pump connected (see menu 7.3.1 - "Configure").

### MENU 4.2 - PLUS FUNCTIONS

Settings for any additional functions installed in SMO S40 can be made in the sub menus.

#### MENU 4.2.3 - SG READY

Here, you set the part of your climate system (e.g. room temperature) that will be affected on activation of "SG Ready". The function can only be used in mains networks that support the "SG Ready" standard.

##### Affect room temp heating

With low price mode on "SG Ready", the parallel offset for the indoor temperature is increased by "+1". If a room sensor is installed and activated, the desired room temperature is increased instead by 1 °C.

With overcapacity mode on "SG Ready", the parallel offset for the indoor temperature is increased by "+2". If a room sensor is installed and activated, the desired room temperature is increased by 2 °C instead.

##### Affect hot water

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

In the case of overcapacity mode on "SG Ready", the hot water is set to large demand mode (immersion heater permitted).

##### Affect room temp cooling

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

With overcapacity mode on "SG Ready" and cooling operation, the parallel offset for the indoor temperature is decreased by "-1". If a room sensor is installed and activated, the desired room temperature is decreased by 1 °C instead.



## CAUTION!

The function must be connected to two AUX inputs and be activated in menu 7.4 "Selectable in/outputs".

### MENU 4.2.5 - SMART PRICE ADAPTION™

#### Activated

Alternative: on/off

#### Affect heating

Options: "Off", "Comfort", "Saving", "Saving PLUS"

#### Affect room temp cooling

Options: "Off", "Comfort", "Saving", "Saving PLUS"

#### Affect hot water

Options: "Off", "Use electricity price only HW"

#### With smart control activated in menu 2.2

Options: "Off", "Comfort", "Saving", "Saving PLUS"

This function can only be used if you have an active myUplink account and your electricity supplier supports hourly tariff electricity contracts in your region.

Smart price adaption™ adjusts some of the installation's consumption during the day to those periods with the cheapest electricity tariff, which can provide savings if you are on an hourly tariff electricity contract. The function is based on hourly rates for the coming day being downloaded via myUplink.

*Degree of effect:* The greater the saving you select, the greater the effect the electricity price has.

Certain wireless units can also be affected by Smart Price Adaption™.



## CAUTION!

Increased savings can lead to a negative impact on the comfort.

### MENU 4.4 - WEATHER CONTROL

#### Activate weath. contr.

Alternative: on/off

#### Factor

Setting range: 0 - 10

You can select whether you want SMO S40 to adjust the indoor temperature based on the weather forecast.

You can set factor for outdoor temperature. The higher the value, the greater the effect from the weather forecast.



## NOTE!

This menu is only visible if the installation is connected to myUplink.

### MENU 4.5 - AWAY MODE

In this menu, you activate/deactivate "Away mode".

When away mode is activated, the following functions are affected:

- the setting for heating is lowered slightly

- the setting for cooling is raised slightly
- the hot water temperature is lowered if demand mode "large" or "medium" is selected
- The AUX function "Away mode" is activated.

If you want, you can select for the following functions to be affected:

- ventilation (accessory is required)
- hot water circulation (accessory or use of AUX is required)

## MENU 4.6 - SMART ENERGY SOURCE™



### CAUTION!

Smart Energy Source™ requires external additional heat.

### Smart Energy Source™

Alternative: on/off

#### Control method

Setting options: Price per kWh / CO2

If Smart Energy Source™ is activated, SMO S40 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 or the one that is currently the most carbon dioxide neutral.



### NOTE!

Your choices in this menu affect menu 4.7 - "Energy price".

## MENU 4.7 - ENERGY PRICE

Here you can use tariff control for your additional heat.

Here you can choose whether the system is to exercise control based on the spot price, tariff control or a set price. The setting is made for each individual energy source. Spot price can only be used if you have an hourly tariff agreement with your electricity supplier.

Set the lower tariff periods. It is possible to set two different date periods per year. Within these periods, it is possible to set up to four different periods on weekdays (Monday to Friday) or four different periods on weekends (Saturdays and Sundays).



### NOTE!

This menu is only visible if Smart Energy Source is activated.

### MENU 4.7.1 - VARIABLE ELECTRICITY PRICE

Here you can use tariff control for the electric additional heat.

Set the lower tariff periods. It is possible to set two different date periods per year. Within these periods, it is possible to set up to four different periods on weekdays (Monday to Friday) or four different periods on weekends (Saturdays and Sundays).

## MENU 4.8 - TIME AND DATE

Set time and date, display mode and time zone here.



### TIP!

Time and date are set automatically if connected to myUplink. To obtain the correct time, the time zone must be set.

## MENU 4.9 - LANGUAGE

Choose the language that you want the information to be displayed in here.

## MENU 4.10 - COUNTRY

Here, you specify the country in which the product has been installed. This allows access to country-specific settings in your product.

Language settings can be made regardless of this selection.



### CAUTION!

This option locks after 24 hours, restart of display or program updating. Afterwards, it is not possible to change the country selected in this menu without first replacing components in the product.

## MENU 4.11 - TOOLS

Here, you can find tools for use.

### MENU 4.11.1 - INSTALLER DETAILS

The installer's name and telephone number are entered in this menu.

Afterwards, the details are visible in the home screen, "Product overview".

### MENU 4.11.2 - SOUND WHEN PRESSING BUTTON

Alternative: on/off

Here you choose if you want to hear a sound when you press buttons on the display.

### MENU 4.11.4 - HOME SCREEN

Alternative: on/off

Here, you choose which home screens you want to be displayed.

The number of options in this menu varies depending on which products and accessories are installed.

## MENU 4.30 - ADVANCED

Menu "Advanced" is intended for advanced users.

#### **MENU 4.30.4 - FACT. SETTINGS USER**

All settings that are available to the user (including advanced menus) can be reset to default values here.



#### **NOTE!**

After the factory setting, personal settings such as the heating curve must be reset.

## Menu 5 - Connection

### OVERVIEW

5.1 - myUplink	
5.2 - Network settings	5.2.1 - wifi
	5.2.2 - Ethernet
5.4 - Wireless units	
5.10 - Tools	
	5.10.1 - Direct connection

#### MENU 5.1 - MYUPLINK

Here, you obtain information about the installation's connection status, serial number and how many users and service partners are connected to the installation. A connected user has a user account in myUplink, which has been given permission to control and/or monitor your installation.

You can also manage the installation's connection to myUplink and request a new connection string.

It is possible to switch off all users and service partners who are connected to the installation via myUplink.



#### CAUTION!

After disconnecting all users none of them can monitor or control your installation via myUplink without requesting a new connection string.

#### MENU 5.2 - NETWORK SETTINGS

Here, you choose whether your system connects to the Internet via wifi (menu 5.2.1) or via a network cable (Ethernet) (menu 5.2.2).

Here, you can set TCP/IP settings for your installation.

To set the TCP/IP settings with the aid of DHCP, activate "Automatic".

During manual setting, select "IP address" and enter the correct address using the keyboard. Repeat this procedure for "Network mask", "Gateway" and "DNS".



#### NOTE!

The installation cannot connect to the Internet without the correct TCP/IP settings. If you are unsure about applicable settings, use the "Automatic" mode or contact your network administrator (or equivalent) for further information.



#### TIP!

All settings made since opening the menu can be reset by selecting "Reset".

#### MENU 5.4 - WIRELESS UNITS

In this menu you connect wireless units, and manage settings for connected units.

Add the wireless unit by pressing "Add unit". For the quickest identification of a wireless unit, it is recommended that you put your master unit in search mode first. Then put the wireless unit in identification mode.

#### MENU 5.10 - TOOLS

As the installer, you can e.g. connect an installation via an app here, by activating an access point for direct connection to a mobile phone.

#### MENU 5.10.1 - DIRECT CONNECTION

You can activate direct connection via Wi-Fi here. This means that the installation will lose communication with the relevant network, and that you instead make settings on your mobile unit that you connect to the installation.



# Menu 6 - Scheduling

## OVERVIEW

6.1 - Holiday

6.2 - Scheduling

### MENU 6.1 - HOLIDAY

In this menu, you schedule longer changes in heating and hot water temperature.

You can also schedule settings for certain installed accessories.

If a room sensor is installed and activated, the desired room temperature (°C) is set during the time period.

If a room sensor is not activated, the desired offset of the heating curve is set. One step is usually enough to change the room temperature by one degree, but in some cases several steps may be required.



#### TIP!

Stop the holiday setting about a day before your return so that room temperature and hot water have time to return to their usual levels.



#### NOTE!

Holiday settings finish on the selected date. If you want to repeat the holiday setting once the end date has passed, go into the menu and change the date.

### MENU 6.2 - SCHEDULING

In this menu, you schedule repeated changes of heating and hot water, for example.

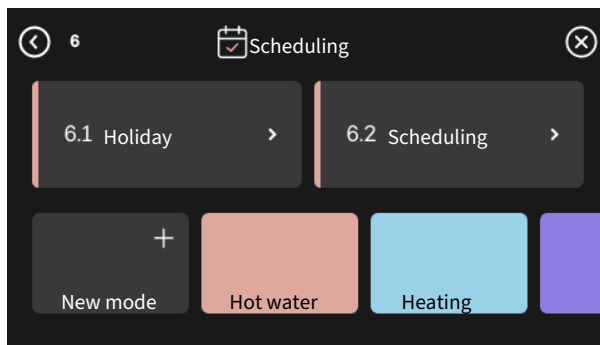
You can also schedule settings for certain installed accessories.



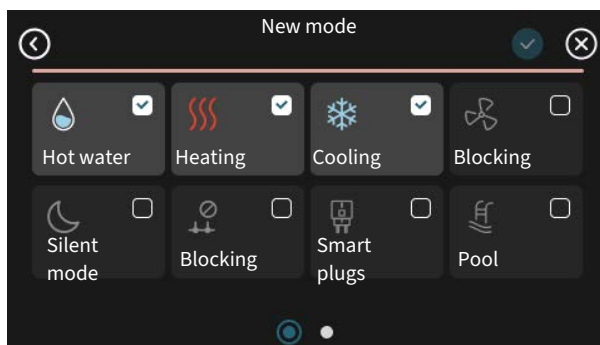
#### NOTE!

A schedule repeats according to the selected setting (e.g. every Monday) until you go into the menu and switch it off.

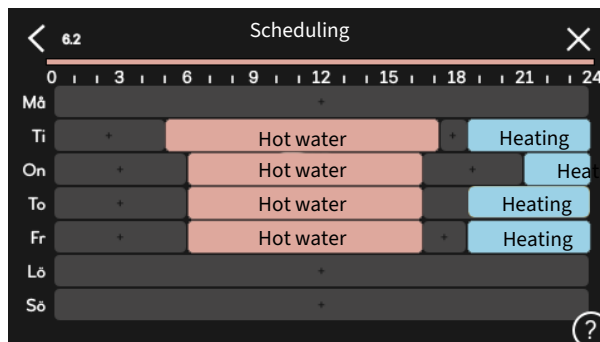
A mode contains settings that will apply to scheduling. Create a mode with one or more settings by pressing "New mode".



Select the settings that the mode will contain. Drag to the left with your finger to select mode name and colour to make it unique and to distinguish it from other modes.



Select an empty row and press it to schedule a mode, and adjust as required. You can enter a tick, if a mode is to be active during the day or overnight.



If a room sensor is installed and activated, the desired room temperature (°C) is set during the time period.

If a room sensor is not activated, the desired offset of the heating curve is set. One step is usually enough to change the room temperature by one degree, but in some cases several steps may be required.

## Menu 7 - Installer settings

### OVERVIEW

7.1 - Operating settings	7.1.1 - Hot water	7.1.1.1 - Temperature setting
		7.1.1.2 - Operating settings
	7.1.2 - Circulation pumps	7.1.2.3 - Operat. mode charge pump
		7.1.2.4 - Pump speed charge pump
		7.1.2.5 - Flow setting charge pump
	7.1.4 - Ventilation <sup>1</sup>	7.1.4.1 - Fan speed, exhaust air <sup>1</sup>
		7.1.4.2 - Fan speed, supply air <sup>1</sup>
		7.1.4.4 - Demand contr. ventilation <sup>1</sup>
	7.1.5 - Add. heat	7.1.5.1 - Add. heat
	7.1.6 - Heating	7.1.6.1 - Max diff supply temp
		7.1.6.2 - Flow settings, climate sys
		7.1.6.3 - Power at DOT
		7.1.6.4 - Limit RH in heat <sup>1</sup>
		7.1.6.6 - Compressors, start sequence
	7.1.7 - Cooling	7.1.7.1 - Cooling settings
		7.1.7.2 - Humidity control <sup>1</sup>
		7.1.7.3 - System settings cooling
	7.1.8 - Alarms	7.1.8.1 - Alarm actions
		7.1.8.2 - Emergency mode
	7.1.9 - Load monitor	
	7.1.10 - System settings	7.1.10.1 - Operating prioritisation
		7.1.10.2 - Auto mode setting
		7.1.10.3 - Degree minute settings
		7.1.10.6 - Limitation room temp.
7.2 - Accessory settings <sup>1</sup>	7.2.1 - Add/remove accessories	
	7.2.19 - External energy meter	
7.3 - Multi-installation	7.3.1 - Configure	
	7.3.2 - Installed heat pumps	
		7.3.2.1 - Heat pump settings
	7.3.3 - Name heat pump	
	7.3.4 - Docking	
	7.3.5 - Serial number	
7.4 - Selectable in/outputs	7.4.1 - Enter a name BT37.x	
	7.4.2 - Power limit. at ext. request	
7.5 - Tools	7.5.1 - Heat pump, test	7.5.1.1 - Test mode
	7.5.2 - Underfloor drying function	
	7.5.3 - Forced control	
	7.5.8 - Screen lock	
	7.5.9 - Modbus TCP/IP	
	7.5.10 - Change pump model	
	7.5.13 - Third-party integration	
7.6 - Factory setting service		
7.7 - Start guide		
7.8 - Quick start		
7.9 - Logs	7.9.1 - Change log	
	7.9.2 - Extended alarm log	
	7.9.3 - Black box	

<sup>1</sup> Consult the accessory's Installer Manual.

## MENU 7.1 - OPERATING SETTINGS

Make operating settings for the system here.

### MENU 7.1.1 - HOT WATER

This menu contains advanced settings for hot water operation.

#### MENU 7.1.1.1 - TEMPERATURE SETTING

##### Start temperature

##### Demand mode, small/medium/large

Setting range: 5 – 70 °C

##### Stop temperature

##### Demand mode, small/medium/large

Setting range: 5 – 70 °C

##### Stop temp. periodic increase

Setting range: 55 – 70 °C

##### Manual power

Alternative: on/off

*Start temp. and stop temp. demand mode, small/medium/large:* Here, you set the start and stop temperature of the hot water for the different demand modes (menu 2.2).

*Stop temp. periodic increase:* Here, you set the stop temperature for periodic increase (menu 2.4).

With "Manual power" activated, you can adjust the charge power depending on the hot water tank that is docked.

#### MENU 7.1.1.2 - OPERATING SETTINGS

##### Step diff. compressor

Setting range: 0.5 – 4.0 °C

##### Charge method

Alternative: Target temp, Delta temp.

##### Charge power

Alternatives: auto, manual

##### Desired output "medium"

Setting range: 1 – 50 kW

##### Desired output "large"

Setting range: 1 – 50 kW

If several compressors are available set the difference between engagement disengagement of them during hot water charging and fixed condensing.

Here, you select the charge method for hot water mode. "Delta temp." is recommended for water heaters with a charge coil, "Target temp." for double-jacketed heaters and heaters with a hot water coil.

### MENU 7.1.2 - CIRCULATION PUMPS

This menu contains sub-menus where you can make advanced circulation pump settings.

## MENU 7.1.2.3 - OPERAT. MODE CHARGE PUMP

### Operating mode charge pump

Alternatives: Auto, Intermittent

### Operating mode charge pump during cooling

Alternatives: Auto, Intermittent

*Auto:* The charge pump runs according to the current operating mode.

*Intermittent:* The charge pump starts 20 seconds before the compressor starts and it is turned off 20 seconds after the compressor stops.

## MENU 7.1.2.4 - PUMP SPEED CHARGE PUMP

### Heating

#### Auto

Alternative: on/off

#### Manual speed

Setting range: 1 – 100 %

#### Minimum permitted speed

Setting range: 1 – 50 %

#### Maximum permitted speed

Setting range: 80 – 100 %

#### Speed in wait mode

Setting range: 1 – 100%

### Hot water

#### Auto

Alternative: on/off

#### Manual speed

Setting range: 1 – 100 %

### Pool

#### Auto

Alternative: on/off

#### Manual speed

Setting range: 1 – 100 %

## Cooling

### Auto

Alternative: on/off

### Manual speed

Setting range: 1 – 100 %

### Active cooling.

Setting range: 1 – 100%

### Minimum permitted speed

Setting range: 1 – 50%

### Maximum permitted speed

Setting range: 80 – 100%

Make settings here for the charge pump's speed in the current operating mode, for example in heating or hot water operation. Which operating modes can be changed depends on which accessories are connected.

*Auto:* Here, you set whether the charge pump will be regulated automatically or manually. Select "Auto" for optimal operation.

*Manual speed:* If you have opted to control the charge pump manually, you set the desired pump speed here.

*Minimum permitted speed:* Here, you can restrict the pump speed, to prevent the charge pump from operating at a lower speed than the set value.

*Maximum permitted speed:* Here, you can restrict the pump speed, to prevent the charge pump from operating at a higher speed than the set value.

*Speed in wait mode:* Here, you set the speed for the charge pump in standby mode. Standby mode occurs, for example, when heating operation is permitted but there is no need for either compressor operation or electric additional heat.

## MENU 7.1.2.5 - FLOW SETTING CHARGE PUMP

### Pump setting

Activate flow test

Here, you activate flow test for charge pump (GP12)

### Flow setting charge pump

Check that the flow for the charge pump through the heat pump is sufficient. Activate the flow test to measure delta (the difference between the flow and return line temperatures from the heat pump). The test is OK if delta lies below the parameter shown in the display.

If the temperature difference is above the limit value, adjust the flow for the charge pump by reducing the pressure drop or in the worst case scenario replacing the charge pump, until the test is OK.

## MENU 7.1.5 - ADD. HEAT

This menu contains sub-menus where you can make advanced additional heat settings.

## MENU 7.1.5.1 - ADD. HEAT

Make settings for connected additional heat (step controlled or shunt controlled additional heat) here.

Select whether step controlled or shunt controlled additional heat is connected. Then you can make settings for the different alternatives.

### Add. heat type: Step-contr

#### Add. heat type

Alternative: step controlled/shunt controlled

#### Location

Alternative: After/Before QN10

#### Additional heat in tank

Alternative: on/off

#### Activating immersion heater in heat.

Alternative: on/off

#### Max step

Setting range (binary stepping deactivated): 0 – 3

Setting range (binary stepping activated): 0 – 7

#### Binary stepping

Alternative: on/off

*Placement:* Here, you choose whether the step-controlled additional heat is placed before or after the diverter valve for hot water charging (QN10). Step-controlled additional heat is, for example, when an external electric boiler is installed.

*Additional heat in tank* 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 or cooling.

*Max step:* Here, you can set the maximum number of permitted additional heat steps, if there is internal additional heat in the tank (only accessible if the additional heat is positioned after QN10), whether binary stepping is to be used, the size of the fuse and transformer ratio.

When *binary stepping* is deactivated (off) the settings refer to linear stepping. If the additional heat is placed after QN10, the number of steps is restricted to two linear or three binary.

## Add. heat type: Shunt-contr

### Add. heat type

Alternative: step controlled/shunt controlled

### Prioritised add. heat

Alternative: on/off

### Minimum operating time

Setting range: 0 – 48 h

### Lowest temperature

Setting range: 5 – 90 °C

### Shunt amplification

Setting range: 0.1 – 10.0

### Shunt waiting time

Setting range: 10 – 300 s

Select this option if shunt controlled additional heat is connected.

Here, you set when the additional heat is to start, the minimum operating time and the minimum temperature for external additional heat with shunt. External additional heat with shunt is, for example, a log or pellet boiler.

You can set shunt valve amplification and shunt valve waiting time.

If you select "Prioritised additional heat", the heat from the external additional heat is used instead of the heat pump. The shunt adjusts for as long as heat is available, otherwise the shunt is closed.

## MENU 7.1.6 - HEATING

This menu contains sub-menus where you can make advanced settings for heating operation.

### MENU 7.1.6.1 - MAX DIFF SUPPLY TEMP

#### Max diff compressor

Setting range: 1 – 25 °C

#### Max diff additional heat

Setting range: 1 – 24 °C

#### BT12 offset heat pump 1 – 8

Setting range: -5 – 5 °C

Here you set the maximum permitted difference between the calculated and actual supply temperature in the event of compressor or additional heat mode respectively. Max difference additional heat can never exceed max difference compressor

*Max diff compressor:* If the current supply temperature exceeds the calculated supply line by the set value, the degree minute value is set to 1. The compressor stops when there is only a heating demand.

*Max diff additional heat:* If "Additional heat" is selected and activated in menu 4.1 and the current supply temperature exceeds the calculated temperature by the set value, the additional heat is forced to stop.

*BT12 offset:* If there is a difference between the external supply temperature sensor (BT25) and condenser sensor, supply line (BT12), you can set a fixed offset here to compensate for the difference.

## MENU 7.1.6.2 - FLOW SETTINGS, CLIMATE SYS

### Setting

Options: Radiator, Underfl heating, Rad + Und. heat., Own setting

### DOT

Setting range DOT: -40.0 – 20.0 °C

### Delta temp at DOT

Setting range dT at DOT: 1.0 – 25.0 °C

The type of heating distribution system the heating medium pump works towards is set here.

dT at DOT is the difference in degrees between supply and return temperatures at design outdoor temperature.

## MENU 7.1.6.3 - POWER AT DOT

### Manually selected power at DOT

Alternative: on/off

### Power at DOT

Setting range: 1 – 1,000 kW

Here, you set the power the property requires at DOT (dimensioned outdoor temperature).

If you choose not to activate "Manually selected power at DOT", the setting is made automatically, i.e. SMO S40 calculates suitable power at DOT.

## MENU 7.1.6.6 - COMPRESSORS, START SEQUENCE

Options: Degree minutes, Cluster

Default value: Degree minutes

Here you set the start sequence for the compressors.

In a multi-installation, you can choose whether the start sequence is to be controlled by the factory setting for degree minutes or controlled as grouped and the heat pumps will control according to demand.

## MENU 7.1.7 - COOLING

This menu contains sub-menus where you can make advanced settings for cooling operation.

### MENU 7.1.7.1 - COOLING SETTINGS

#### Max compressors in active cool.

Setting range: 1 – max number

#### Super cooling

Alternative: on/off

*Max compressors in active cool.:* Here, you set the max number of compressors that are permitted be used for cooling in those cases where several compressors are available.

*Super cooling:* With super cooling activated, the installation prioritises the production of cooling using the compressor, while hot water is produced by additional heating in the tank.

### MENU 7.1.8 - ALARMS

In this menu, you make settings for the safety measures that SMO S40 will implement in the event of any operational disruption.

#### MENU 7.1.8.1 - ALARM ACTIONS

##### Reduce room temperature

Alternative: on/off

##### Stop producing HW

Alternative: on/off

##### Audio signal on alarm

Alternative: on/off

Select how you want the SMO S40 to alert you that there is an alarm in the display here.

The different alternatives are that SMO S40 stops producing hot water and/or reduces the room temperature.

#### NOTE!

If no alarm action is selected, this can result in higher energy consumption in the event of a malfunction.

### MENU 7.1.8.2 - EMERGENCY MODE

##### Add. heat steps

Setting range: 0 – 3

##### Shunt controlled additional heat

Alternative: on/off

Settings are made in this menu for how the additional heat will be controlled in emergency mode.

#### NOTE!

In emergency mode, the display is switched off. If you feel the selected settings are insufficient in emergency mode, you will not be able to change these.

### MENU 7.1.9 - LOAD MONITOR

##### Fuse size

Setting range: 1 – 400 A

##### Transformer ratio

Setting range: 300 – 3,000

Here, you set fuse size and transformer ratio for the system. The transformer ratio is the factor that is used to convert the metered voltage to current.

### MENU 7.1.10 - SYSTEM SETTINGS

You make your various system settings for your installation here.

#### MENU 7.1.10.1 - OPERATING PRIORITISATION

##### Auto mode

Alternative: on/off

##### Min

Setting range: 0 – 180 minutes

Here, you select how long the installation will work with each demand, if there are several simultaneous demands.

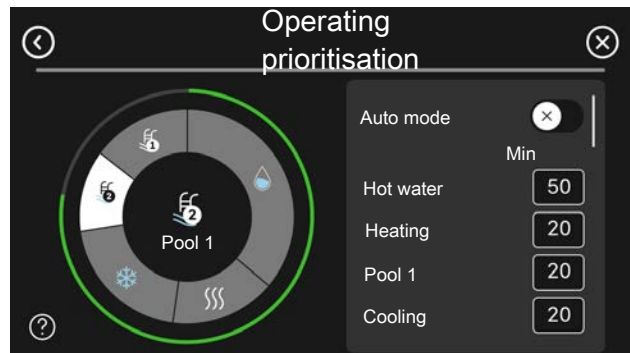
"Operating prioritisation" is normally set in "Auto mode", but it is also possible to set prioritisation manually.

*Auto mode:* In auto mode, SMO S40 optimises operating times between different requirements.

*Manual:* You select how long the installation will work with each demand, if there are several demands at the same time.

If there is only one demand, the installation works with that demand.

If 0 minutes are selected, this means that the demand is not prioritised, but will instead only be activated when there is no other demand.





## MENU 7.1.10.2 - AUTO MODE SETTING

### Start cooling

Setting range: 15 – 40 °C

### Stop heating

Setting range: -20 – 40 °C

### Stop additional heat

Setting range: -25 – 40 °C

### Filtering time, cooling

Setting range: 0 – 48 h

### Time betw. cooling and heating

Setting range: 0 – 48 h

### Cooling/heat sensor

Setting range: None, BT74, Zone 1 - x

### Set point value cool/heat sensor

Setting range: 5 – 40 °C

### Heating at subnormal room temp

Setting range: 0.5 – 10.0 °C

### Cooling at excess room temp

Setting range: 0.5 – 10.0 °C

*Start cooling, Stop heating, Stop additional heat:* In this menu, you set the temperatures that the system will use for control in auto mode.

### NOTE!

It cannot be set "Stop additional heat" higher than "Stop heating".

*Filtering time heating:* You can set the time over which the average outdoor temperature is calculated. If you select 0, the current outdoor temperature is used.

*Time betw. cooling and heating:* Here, you can set how long SMO S40 will wait before it returns to heating mode when the cooling demand has ceased or vice versa.

*Cooling/heat sensor:* Here, you select the sensor that will be used for cooling/heating. If BT74 is installed, it will be preselected and no other option is possible.

*Set point value cool/heat sensor:* Here, you can set the indoor temperature at which SMO S40 will shift between heating and cooling operation.

*Heating at subnormal room temp:* Here, you can set how far the room temperature may drop below the desired temperature before SMO S40 switches to heating operation.

*Cooling at excess room temp:* Here, you can set how high the room temperature may rise above the desired temperature before SMO S40 switches to cooling operation.

## MENU 7.1.10.3 - DEGREE MINUTE SETTINGS

### Current value

Setting range: -3,000 – 100 DM

### Heating, auto

Alternative: on/off

### Start compressor

Setting range: -1,000 – (-30) DM

### Relative DM start additional heat

Setting range: 100 – 2,000 DM

### Diff. between add heat steps

Setting range: 10 – 1,000 DM

### Cooling, auto

Alternative: on/off

### Start active cooling

Alternatives: 10 – 300 DM

### Stepping diff compressors

Setting range: 10 – 2,000 DM

DM = degree minutes

Degree Minutes (DM) are a measurement of the current heating/cooling demand in the house and determine when the compressor or additional heat will start/stop.



### NOTE!

Higher value on "Start compressor" gives more compressor starts, which increase wear on the compressor. Too low value can give uneven indoor temperatures.

*Start active cooling:* Here, you set when active cooling will start.

## MENU 7.1.10.6 - LIMITATION ROOM TEMP.

### Heating

#### Highest adjustable temperature

Setting range: 5 – 35°C

### Cooling

#### Lowest adjustable temperature

Setting range: 5 – 35°C

Here, you set the highest and lowest indoor temperature for heating and cooling demand. It is not possible to drop below or exceed the temperature limitation in other settings, e.g. room sensor settings.

## MENU 7.2 - ACCESSORY SETTINGS

The operating settings for accessories that are installed and activated are made in the sub-menus for this.

### MENU 7.2.1 - ADD/REMOVE ACCESSORIES

Here, you tell SMO S40 which accessories are installed.

To identify connected accessories automatically, select "Search for accessories". It is also possible to select accessories manually from the list.

## MENU 7.2.19 - PULSE ENERGY METER

### Activated

Alternative: on/off

### Set mode

Alternatives: Energy per pulse / Pulses per kWh

### Energy per pulse

Setting range: 0 – 10000 Wh

### Pulses per kWh

Setting range: 1 – 10000

Up to three electricity meters (BE6, BE7, BE8) or energy meters for heating (BF2, BF3, BF1) can be connected to SMO S40.

*Energy per pulse:* Here you set the amount of energy to which each pulse will correspond.

*Pulses per kWh:* Here, you set the number of pulses per kWh that are sent to SMO S40.



### TIP!

"Pulses per kWh" is set and presented in whole numbers. If a higher resolution is required, use "Energy per pulse".

## MENU 7.3 - MULTI-INSTALLATION

In the sub-menus here, you make settings for the heat pumps that are connected to SMO S40.

### MENU 7.3.1 - CONFIGURE

*Search installed heat pumps:* Here, you can search for, activate or deactivate connected heat pumps.



### NOTE!

In systems with multiple outdoor units, each outdoor unit must have a unique address. This is set using a DIP switch in the relevant outdoor unit that is connected to SMO S40.

### MENU 7.3.2 - INSTALLED HEAT PUMPS

Here, you select the settings that you want to make for each heat pump.

#### MENU 7.3.2.1 - HEAT PUMP SETTINGS

Here, you make settings that are specific for the installed heat pumps. To see what settings you can make, see Installer Manual for the relevant heat pump.

### MENU 7.3.3 - NAME HEAT PUMPS

Here, you name the heat pumps that are connected to SMO S40.

## MENU 7.3.4 - DOCKING

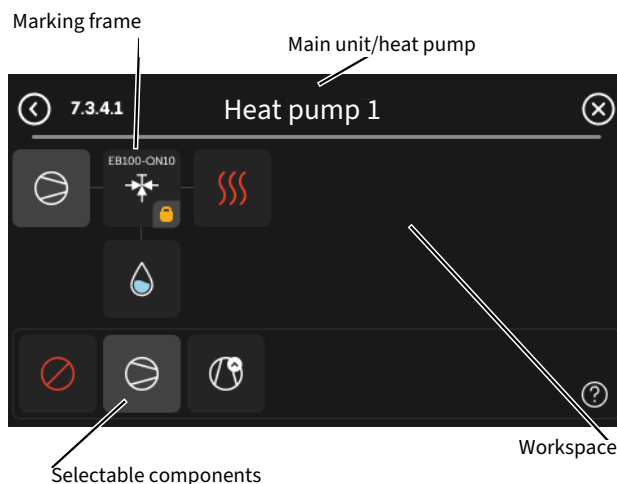
Here you set how your system is docked in respect of pipes, in relation to heating the property and any accessories.



### TIP!

Examples of docking alternatives can be found at [nibe.co.uk](http://nibe.co.uk).

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



*Main unit/heat pump:* Here, you select the heat pump for which the docking setting is to be made (if the heat pump is solitary in the system, only the main unit is shown).







*Workspace for docking:* The system docking is drawn here.

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

*Marking frame:* Press the marking frame you want to change. Select one of the selectable components.

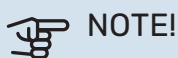
Symbol	Description
	Blocked
	Compressor (standard)
	Compressor (blocked)
	Diverter valve The designations above the diverter valve indicate where it is electrically connected (EB101 = Heat pump 1, EB102 = Heat pump 2, etc).
	Hot water charging. For a multi-installation: hot water with the main unit and/or shared hot water from several different heat pumps.



Symbol	Description
	Hot water charging with subordinate heat pump in multi-installation.
	Hot water charging. Hot water comfort and electric additional heat.
	Pool 1
	Pool 2
	Heating (heating the building, includes any extra climate system)
	Cooling

### MENU 7.3.5 - SERIAL NUMBER

Here, you allocate a serial number for the system's air/water heat pumps. This menu is only shown if at least one connected air/water heat pump does not have a serial number, e.g. after a circuit board has been replaced.



#### NOTE!

This menu is only shown if at least one connected heat pump does not have a serial number. (This can occur during service visits.)

### MENU 7.4 - SELECTABLE IN/OUTPUTS

Here, you state where the external switch function has been connected, either to one of the AUX inputs on terminal block X10 or to the AUX outputs on terminal blocks X6 and X7.

#### MENU 7.4.1 - ENTER A NAME BT37.X

In this menu, you can change the name of your AUX-connected BT37 sensors.

The sensor's designation (BT37.1, BT37.2, BT37.3, BT37.4, BT37.5, BT37.6) will be added to the name you give the sensor.

#### MENU 7.4.2 - EXTERNAL POWER LIMITING

##### Power limiting

Setting range: 0.0 – 100.0 kW

For markets where the mains network operator requires dynamic control of the mains network's load.

In this menu, you set the fixed value to which the compressor's and the immersion heater's operating power will be limited.

### MENU 7.5 - TOOLS

Here, you can find functions for maintenance and service work.

#### MENU 7.5.1 - HEAT PUMP, TEST



#### CAUTION!

This menu and its sub-menus are intended for testing the heat pump.

Use of this menu for other reasons may result in your installation not functioning as intended.

#### MENU 7.5.2 - UNDERFLOOR DRYING FUNCTION

##### Length period 1 – 7

Setting range: 0 – 30 days

##### Temperature period 1 – 7

Setting range: 15 – 70 °C

Set the function for under floor drying here.

You can set up to seven time periods with different calculated supply temperatures. If fewer than seven periods are to be used, set the remaining periods to 0 days.

When the underfloor drying function has been activated, a counter is displayed showing the number of full days the function has been active. The function counts degree minutes in the same way as during normal heating operation, but for the supply temperatures that are set for the respective period.

#### 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.



#### CAUTION!

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 installation.

#### MENU 7.5.8 - SCREEN LOCK

Here, you can choose to activate the screen lock for SMO S40. During activation, you will be asked to enter the required code (four digits). The code is used when:

- deactivating the screen lock.
- changing the code.
- starting up the display when it has been inactive.
- restarting/starting up SMO S40.

#### MENU 7.5.9 - MODBUS TCP/IP

Alternative: on/off

Here, you activate Modbus TCP/IP. Read more on page 61.

### **MENU 7.5.10 - CHANGE PUMP MODEL**

Here, you select the model of circulation pump that is connected to the installation.

### **MENU 7.5.13 - THIRD-PARTY INTEGRATION**

Here, you manage connections to external services.

### **MENU 7.6 - FACTORY SETTING SERVICE**

Here, you can reset all settings (including settings available to the user) to factory values

Here, you can also choose to factory reset the connected heat pumps.



#### **CAUTION!**

When resetting, the start guide is displayed the next time SMO S40 restarts.

### **MENU 7.7 - START GUIDE**

When SMO S40 is started for the first time, the start guide is automatically activated. From this menu, you can start it manually.

### **MENU 7.8 - QUICK START**

Here, you can quick start the compressors.

One of the following demands for the compressor must exist for quick start:

- heating
- hot water
- cooling
- pool (accessory is required)



#### **NOTE!**

Too many quick starts in a short space of time may damage the compressors and their auxiliary equipment.

### **MENU 7.9 - LOGS**

Under this menu, there are logs that collect information about alarms and changes made. The menu is intended to be used for troubleshooting.

#### **MENU 7.9.1 - CHANGE LOG**

Read off any previous changes to the control system here.



#### **CAUTION!**

The change log is saved at restart and remains unchanged after factory setting.

#### **MENU 7.9.2 - EXTENDED ALARM LOG**

This log is intended to be used for troubleshooting.

#### **MENU 7.9.3 - BLACK BOX**

Via this menu, it is possible to export all logs (Change log, Extended alarm log) to USB. Connect a USB memory and select the log(s) you want to export.

# Service

## Service actions



### CAUTION!

Servicing should only be carried out by persons with the necessary expertise.

When replacing components on SMO S40 only replacement parts from NIBE may be used.



### CAUTION!

If an electrical connection has been disconnected and is connected, ground must be checked using a suitable multimeter.

## MAINTENANCE

### General inspection

Check the following:

1. Condition of casing.
2. Electrical connections.
3. Alarm log.

Correct any fault before continuing.

### Climate system

Check the following:

1. Climate system start and stop temperature.
2. Heating curve settings.
3. Function of the room sensor (if installed).
4. System pressure.
5. Supply and return temperature. The difference must be 5 – 10 °C.

Correct any fault before continuing.

## EMERGENCY MODE



### CAUTION!

Do not start the system before filling up with water. Components in the system could be damaged.

Emergency mode is used in event of operational interference and in conjunction with service.

When SMO S40 is put into emergency mode, the system works as follows:

- SMO S40 prioritises heating production.
- Hot water is produced if possible.
- The load monitor is not active.
- Fixed supply temperature if the system has no value from the outdoor temperature sensor (BT1).

When the emergency mode is active, the status lamp is yellow.

You can activate the emergency mode both when SMO S40 is running and when it is switched off.

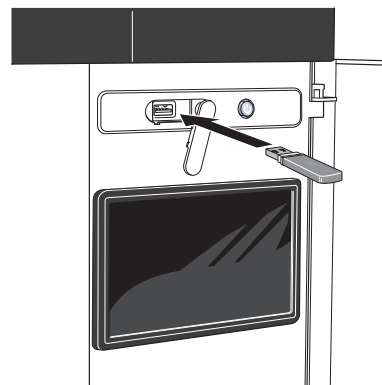
To activate when SMO S40 is running: press and hold the on/off button (SF1) for 2 seconds and select "Emergency mode" from the shutdown menu.

To activate emergency mode when SMO S40 is switched off: press and hold the on/off button (SF1) for 5 seconds. (Deactivate the emergency mode by pressing once).

## TEMPERATURE SENSOR DATA

Temperature (°C)	Resistance (kOhm)	Voltage (VDC)
-10	56.20	3.047
0	33.02	2.889
10	20.02	2.673
20	12.51	2.399
30	8.045	2.083
40	5.306	1.752
50	3.583	1.426
60	2.467	1.136
70	1.739	0.891
80	1.246	0.691

## USB SERVICE OUTLET



When a USB memory is connected, a new menu (menu 8) appears in the display.

### Menu 8.1 - "Update the software"

You can update the software with a USB memory in menu 8.1 - "Update the software".



### CAUTION!

In order to update using a USB memory, the memory must contain a file with software for SMO S40 from NIBE.

Software for SMO S40 can be downloaded from <https://myuplink.com>.

One or more files are shown in the display. Select a file and press "OK".



#### TIP!

A software update does not reset the menu settings in SMO S40.



#### NOTE!

If the update is interrupted before it is complete (e.g. during a power cut), the software is automatically restored to the previous version.

## Menu 8.2 - Logging

### Interval

Setting range: 1 s – 60 min

Here you can choose how current measurement values from SMO S40 should be saved onto a log file on the USB memory.

1. Set the desired interval between loggings.
2. Select "Start logging".
3. The relevant measurement values from SMO S40 are now saved in a file on the USB memory at the set interval until you select "Stop logging".



#### NOTE!

Select "Stop logging" before removing the USB memory.

## Logging floor drying

Here you can save a floor drying log on the USB memory and in this way see when the concrete slab reached the correct temperature.

- Make sure that "Underfloor drying function" is activated in menu 7.5.2.
- A log file is now created, where the temperature and the immersion heater output can be read off. Logging continues until "Underfloor drying function" is stopped.



#### NOTE!

Close "Underfloor drying function" before removing the USB memory.

## Menu 8.3 - Manage settings

### Save settings

Alternative: on/off

### Display backup

Alternative: on/off

### Restore settings

Alternative: on/off

In this menu, you save/upload menu settings to/from a USB memory stick.

*Save settings:* Here, you save menu settings in order to restore them later or to copy the settings to another SMO S40.

*Display backup:* Here, you save both menu settings and measurement values, e.g. energy data.



#### NOTE!

When you save menu settings to the USB memory, you replace any previously saved settings on the USB memory.

*Restore settings:* Here, you upload all menu settings from the USB memory stick.



#### NOTE!

Resetting of menu settings from the USB memory cannot be undone.

## Manual restoring of software

If you want to restore the software to the previous version:

1. Switch off SMO S40 via the shutdown menu. The status lamp goes out, off/on button light up blue.
2. Press the on/off button once.
3. When the on/off button changes colour from blue to white, press and hold the on/off button.
4. When the status lamp changes to green, release the on/off button.



#### NOTE!

If the status lamp should turn yellow at any time, SMO S40 has ended up in emergency mode and the software has not been restored.



#### TIP!

If you have a previous version of the software on your USB memory, you can install that instead of manually restoring the version.

## Menu 8.5 - Export energy logs

From this menu, you can save your energy logs to a USB memory.

## MODBUS TCP/IP

SMO S40 has built-in support for Modbus TCP/IP, which is activated in menu 7.5.9 - "Modbus TCP/IP".

TCP/IP settings are set in menu 5.2 - "Network settings". Only connections from IP addresses within the local address space as specified below:

10.0.0.0 - 10.255.255.25 (10/8 prefix)

176.16.0.0 - 172.31.255.255 (172.16/12 prefix)

192.168.0.0 - 192.168.255.255 (192.168/16 prefix)

Modbus protocol uses port 502 for communication.

Readable	ID	Description
Read	0x04	Input Register
Read writable	0x03	Holding Register
Writable multiple	0x10	Write multiple registers
Writable single	0x06	Write single register

Available registers are shown in the display for the current product and its installed and activated accessories.

## Export register

1. Insert a USB memory.
2. Go to menu 7.5.9 and choose "Export most used registers" or "Export all registers". These will then be stored on the USB memory in CSV format. (These options are only shown when a USB memory is inserted in the display).

## IP address restriction

1. Go to menu 7.5.9 and choose IP address restriction.
2. Enter the IP address that is allowed to communicate with the system.



### CAUTION!

Modbus/TCP communication over the open internet is very risky and is not recommended!

## Reading only

Reading Modbus only means that no values can be sent to the system, only reading of values is possible.

# Disturbances in comfort

In most cases, SMO S40 notes a malfunction (a malfunction can lead to disruption in comfort) and indicates this with alarms, and instructions for action, in the display.

## Info-menu

All the control module's measurement values are gathered under menu 3.1 - "Operating info" in the control module's menu system. Examining the values in this menu can often make it easier to identify the source of the fault.

## Manage alarm

In the event of an alarm, a malfunction has occurred and the status lamp shines with a steady red light. You receive information about the alarm in the smartguide on the display.

### ALARM

In the event of an alarm with a red status lamp, a malfunction has occurred that SMO S40 cannot remedy itself. On the display, you can see what type of alarm it is and reset it.

In many cases, it is sufficient to select "Reset alarm" for the installation to revert to normal operation.

If a white light comes on after selecting "Reset alarm", the alarm has been remedied.

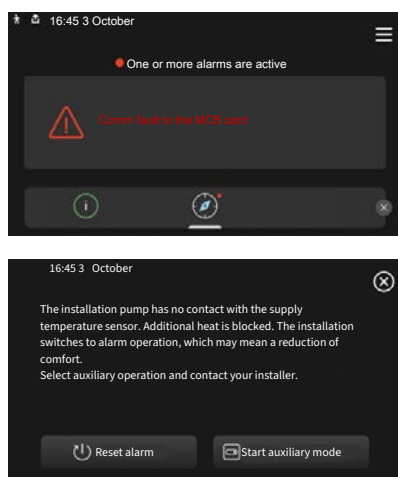
"Auxiliary operation" is a type of emergency mode. This means that the installation tries to produce heat and/or hot water, even though there is some kind of problem. This could mean that the compressor is not in operation. In this case, any electric additional heating produces heat and/or hot water.

### NOTE!

To select "Start auxiliary mode", an alarm action must be selected in the menu 7.1.8.1 - "Alarm actions".

### NOTE!

Selecting "Start auxiliary mode" is not the same as correcting the problem that caused the alarm. Therefore, the status lamp will remain red.



## Troubleshooting

If the operational interference is not shown in the display the following tips can be used:

### Basic actions

Start by checking the following items:

- Group and main fuses of the building.
- The building's earth circuit breaker.
- Correctly set load monitor.

### Low hot water temperature or a lack of hot water

This part of the fault-tracing chapter only applies if the water heater is installed in the system.

- Closed or throttled externally mounted filling valve for the hot water.
  - Open the valve.
- Mixing valve (if there is one installed) set too low.
  - Adjust the mixer valve.
- SMO S40 in incorrect operating mode.
  - Enter menu 4.1 - "Operating mode". If "Auto" mode is selected, select a higher value for "Stop additional heat" in menu 7.1.10.2 - "Auto mode setting".
  - If mode "Manual" is selected, select "Additional heat".
- Large hot water consumption.
  - Wait until the hot water has heated up. Temporarily increased hot water capacity can be activated in the "Hot water" home screen, in menu 2.1 - "More hot water" or via myUplink.
- Too low hot water setting.
  - Enter menu 2.2 - "Hot water demand" and select a higher demand mode.
- Low hot water access with the "Smart Control" function active.
  - If the hot water usage has been low for an extended period of time, less hot water than normal will be produced. Activate "More hot water" via the "Hot water" home screen, in menu 2.1 - "More hot water" or via myUplink.
- Too low or no operating prioritisation of hot water.
  - Enter menu 7.1.10.1 - "Operating prioritisation" and increase the time for when hot water is to be prioritised. Note that, if the time for hot water is increased, the time for heating production is reduced, which can give lower/uneven room temperatures.

- "Holiday" activated in menu 6.
  - Enter menu 6 and deactivate.

### Low room temperature

- Closed thermostats in several rooms.
  - Set the thermostats to max in as many rooms as possible. Adjust the room temperature via the "Heating" home screen, rather than turning down the thermostats.
- SMO S40 in incorrect operating mode.
  - Enter menu 4.1 - "Operating mode". If "Auto" mode is selected, select a higher value for "Stop heating" in menu 7.1.10.2 - "Auto mode setting".
  - If mode "Manual" is selected, select "Heating". If this is not enough, also select "Additional heat".
- Too low set value on the automatic heating control.
  - Adjust via the smart guide or home screen "Heating"
  - If the room temperature is only low in cold weather, the curve slope in menu 1.30.1 - "Curve, heating" may need to be adjusted upwards.
- Too low or no operating prioritisation of heat.
  - Enter menu 7.1.10.1 - "Operating prioritisation" and increase the time for when heating is to be prioritised. Note that if the time for heating is increased, the time for hot water production is reduced, which can give a smaller amount of hot water.
- "Holiday" activated in menu 6 - "Scheduling".
  - Enter menu 6 and deactivate.
- External switch for changing room temperature activated.
  - Check any external switches.
- Air in the climate system.
  - Vent the climate system.
- Closed valves to the climate system.
  - Open the valves.

### High room temperature

- Too high set value on the automatic heating control.
  - Adjust via the smart guide or home screen "Heating"
  - If the room temperature is only high in cold weather, the curve slope in menu 1.30.1 - "Curve, heating" may need to be adjusted downwards.
- External switch for changing room temperature activated.
  - Check any external switches.
- Value set too low on the automatic cooling control.
  - Adjust via the Smartguide or home screen "Cooling".
  - If the room temperature is only high in cold weather, the curve slope in menu 1.30.2 - "Curve, cooling" may need to be adjusted downwards.

### Low system pressure

- Not enough water in the climate system.
  - Fill the climate system with water and check for leaks.

### The air/water heat pump's compressor does not start

- There is no heating or hot water demand, nor cooling demand.
  - SMO S40 does not call on heating, hot water or cooling.
- Compressor blocked due to the temperature conditions.
  - Wait until the temperature is within the product's working range.
- Minimum time between compressor starts has not been reached.
  - Wait for at least 30 minutes and then check if the compressor has started.
- Alarm tripped.
  - Follow the display instructions.
- "Add. heat only" is selected.
  - Switch to "Auto" or "Manual" in menu 4.1 - "Operating mode".
- The heat pump can be missing in the docking.
  - Select the heat pumps that will be included in the installation in menu 7.3.4 - "Docking".



# Accessories

Detailed information about the accessories and complete accessories list available at [nibe.co.uk](http://nibe.co.uk).

Not all accessories are available on all markets.

## IMMERSION HEATER

This accessory is used as a supplement.

### 3 kW

Part no. 018 084

### 6 kW

Part no. 018 088

### 9 kW

Part no. 018 090

## ENERGY MEASUREMENT KIT EMK 500

This accessory is installed externally and used to measure the amount of energy that is supplied for the pool, hot water, heating and cooling in the building.

Cu pipe Ø28.

Part no. 067 178

## EXTERNAL ELECTRIC ADDITIONAL HEAT ELK

### ELK 15

15 kW, 3 x 400 V  
Part no. 069 022

### ELK 26

26 kW, 3 x 400 V  
Part no. 067 074

### ELK 42

42 kW, 3 x 400 V  
Part no. 067 075

### ELK 213

7–13 kW, 3 x 400 V  
Part no. 069 500

## EXTRA SHUNT GROUP ECS

This accessory is used when SMO S40 is installed in houses with two or more different climate systems that require different supply temperatures.

### ECS 40

Max 80 m<sup>2</sup>  
Part no 067 287

### ECS 41

Approx. 80–250 m<sup>2</sup>  
Part no 067 288

## EXHAUST AIR UNIT S135

S135 is an exhaust air module specially designed to combine recovery of mechanical exhaust air with an air/water heat pump. Indoor module/control module controls S135.

Part no. 066 161

## HRV UNIT ERS

This accessory is used to supply the accommodation with energy that has been recovered from the ventilation air. The unit ventilates the house and heats the supply air as necessary.

### ERS S10-400<sup>1</sup>

Part no. 066 163

### ERS 20-250<sup>2</sup>

Part no. 066 068

### ERS 30-400<sup>3</sup>

Part no. 066 165

### ERS S40-400

Part no. 066 242

<sup>1</sup> A preheater may be required.

<sup>2</sup> A preheater may be required.

<sup>3</sup> A preheater may be required.

## AUXILIARY RELAY

Auxiliary relay is used to control external 1 to 3 phase loads, such as, for example, oil burners, immersion heaters and circulation pumps.

### HR 10

Recommended max fuse for control current 10 A.  
Part no 067 309

### HR 20

Recommended max fuse for control current 20 A.  
Part no. 067 972

## COMMUNICATION MODULE FOR SOLAR ELECTRICITY EME 20

EME 20 is used to enable communication and control between inverters for solar cells from NIBE and SMO S40.

Part no. 057 215

## TERMINAL BOX K11

Connection box with thermostat and overheating protection. (When connecting immersion heater IU)

Part no. 018 893

## CHARGE PUMP CPD 11

Charge pump for heat pump

### CPD 11-25/65

Part no. 067 321

### CPD 11-25/75

Part no. 067 320

## POOL HEATING POOL 40

POOL 40 is used to enable pool heating with SMO S40.

Part no 067 062

## ROOM UNIT RMU S40

The room unit is an accessory with a built-in room sensor and humidity sensor, which allows control and monitoring of SMO S40 to be carried out in a different part of your home to where it is located.

Part no. 067 650



## ACCESSORY CARD AXC 30

An accessory board for active cooling (4-pipe system), extra climate system, hot water comfort or if more than two charge pumps are to be connected to SMO S40. It can also be used for step-controlled additional heat (e.g. external electric boiler), shunt-controlled additional heat (e.g. wood/oil/gas/pellet boiler).

An accessory board is required if for example an HWC pump is to be connected to SMO S40 at the same time that the common alarm indication is activated.

Part no. 067 304

## WIRELESS ACCESSORIES

It is possible to connect wireless accessories to SMO S40, e.g. room, humidity, CO<sub>2</sub> sensors.

## WATER HEATER/ACCUMULATOR TANK

### AHPH S

Accumulator tank without an immersion heater with an integrated hot water coil (stainless steel corrosion protection).

Part no. 080 137

### VPA

Water heater with double-jacketed vessel.

### VPA 300/200 Cu UK

Corrosion protection:

Copper Part no. 082 024

### VPB

Water heater without immersion heater with charging coil.

### VPB 300 R UK

Corrosion protection:

Stainless Part no. 081 081

### VPB 500 UK

Corrosion protection:

Copper Part no. 081 056

### VPB S

Water heater without immersion heater with charging coil.

### VPB S300 R UK

Corrosion protection:

Stainless Part no. 081 147

## HA-WH 5016-2 F

Titanium Megacoil, 160 litre

Art. no G1100001

## HA-WH 5020-2 F

Titanium Megacoil, 200 litre

Art. no G1100002

## HA-WH 5030-2 F

Titanium Megacoil, 300 litre

Art. no G1100003

## HA-WH 5020-2 FS

Titanium Megacoil, Solar 200 litre

Art. no G1100004

## HA-WH 5030-2 FS

Titanium Megacoil, Solar 300 litre

Art. no G1100005

## HOT WATER CONTROL

Diverter valve for climate system/hot water.

### VST 05

Copper pipe Ø22

Max. recommended power, 8 kW

Part no. 089 982

### VST 11

Copper pipe Ø28

Max. recommended power, 18 kW

Part no. 089 152

### VST 20

Copper pipe Ø35

Max. recommended power, 40 kW

Part no 089 388

### VST 30

Copper pipe Ø45

Max. recommended power, 60 kW

Part no 067 388

## DIVERTER VALVE FOR COOLING

Diverter valve for cooling, for separate cooling and heating systems.

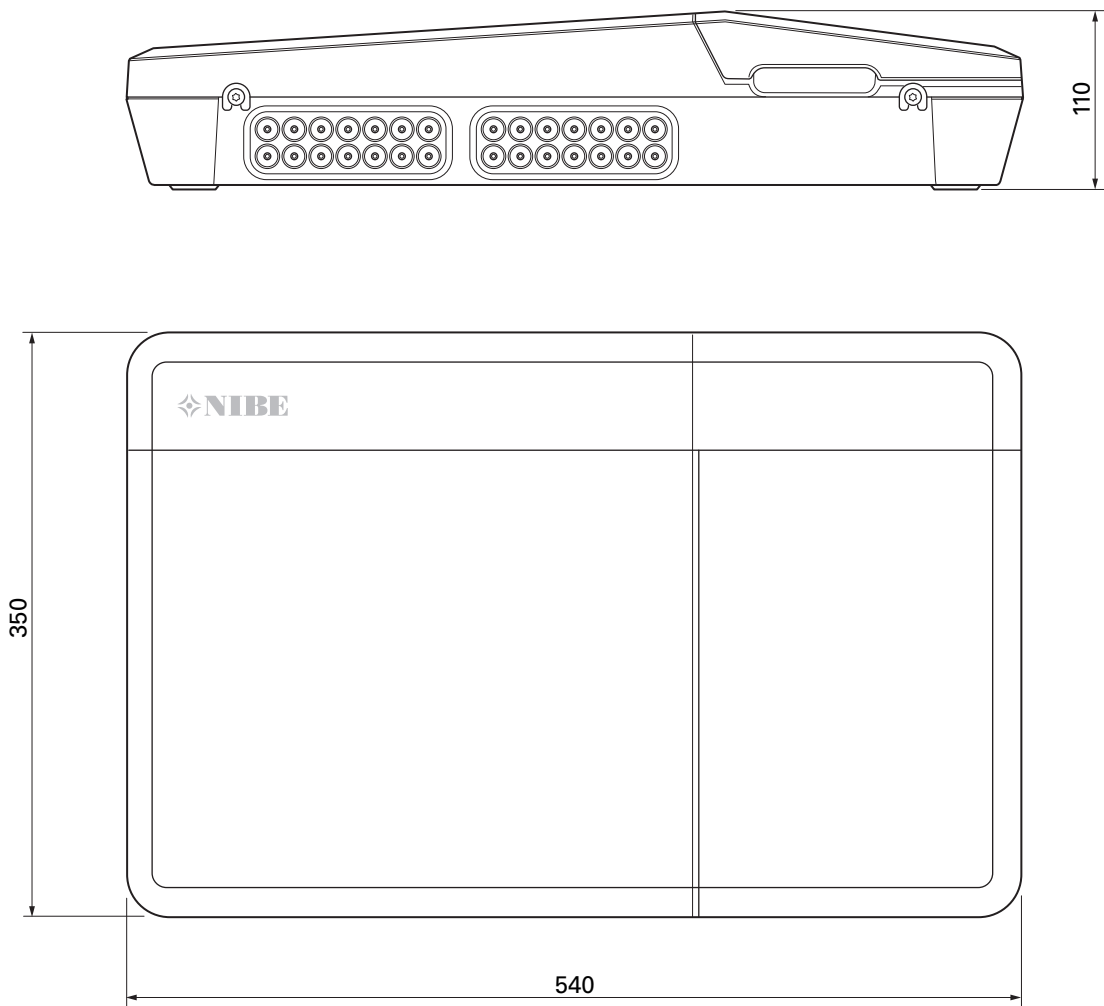
### VCC 11

Copper pipe Ø28 mm

Part no. 067 312

# Technical data

## Dimensions



## Technical specifications

SMO S40		
Electrical data		
Supply voltage		230V~ 50Hz
Enclosure class		IP21
Rated value for impulse voltage	kV	4
Pollution degree		2
Fuse	A	10
WLAN		
402.412 – 2.484 GHz max power	dbm	11
Wireless units		
2.405 – 2.480 GHz max power	dbm	4
Optional connections		
Max number air/water heat pumps		8
Max number of charge pumps		2
Max number of outputs for additional heat step		3
Miscellaneous		
Operation mode (EN60730)		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
Dimensions and weight		
Width	mm	
Width	mm	540
Depth	mm	110
Height	mm	
Height	mm	350
Weight	kg	5
Miscellaneous		
Part No.		067 654
EPREL		194 89 08

## Max load relay outputs on AA100

Relay output	Function	Max load (Inductive load) A
X5:1 (I2)	K1	2 (1)
X5:2 (I3)	K2	2 (1)
X5:3 (I4)	K3	2 (1)
X5:4 (I5)	K4	2 (1)
X6:NO/NC	K8 (AUX10)	2 (0,3)
X7:NO/NC	K9 (AUX11)	2 (0,3)
X8:1 (I6)	K5	2 (1)
X8:2 (I7)	K6	2 (1)
X8:3 (I8)	K7	2 (1)



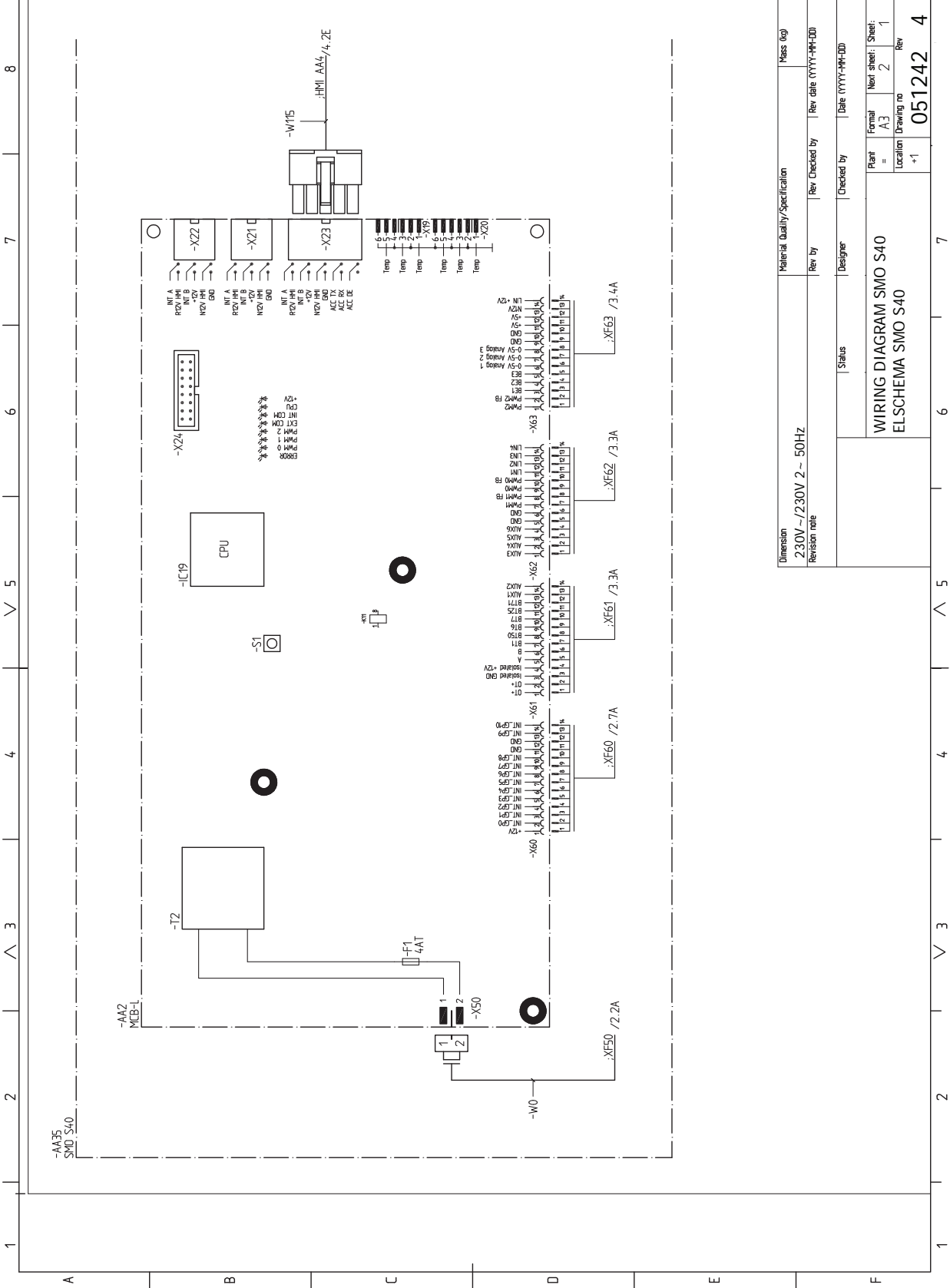
### CAUTION!

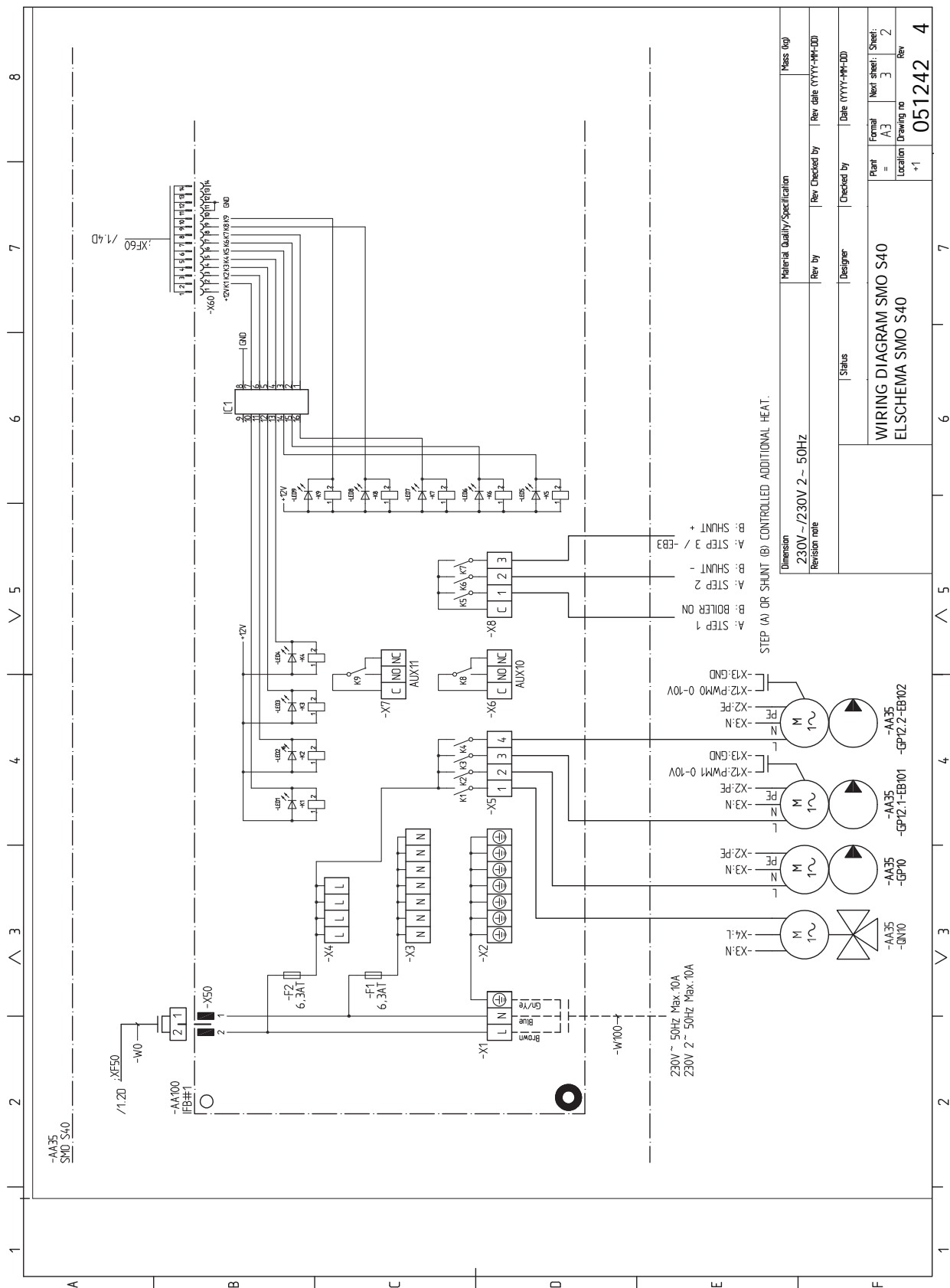
Max load on AA100-X4 (L1) must not exceed 6 (3)A.

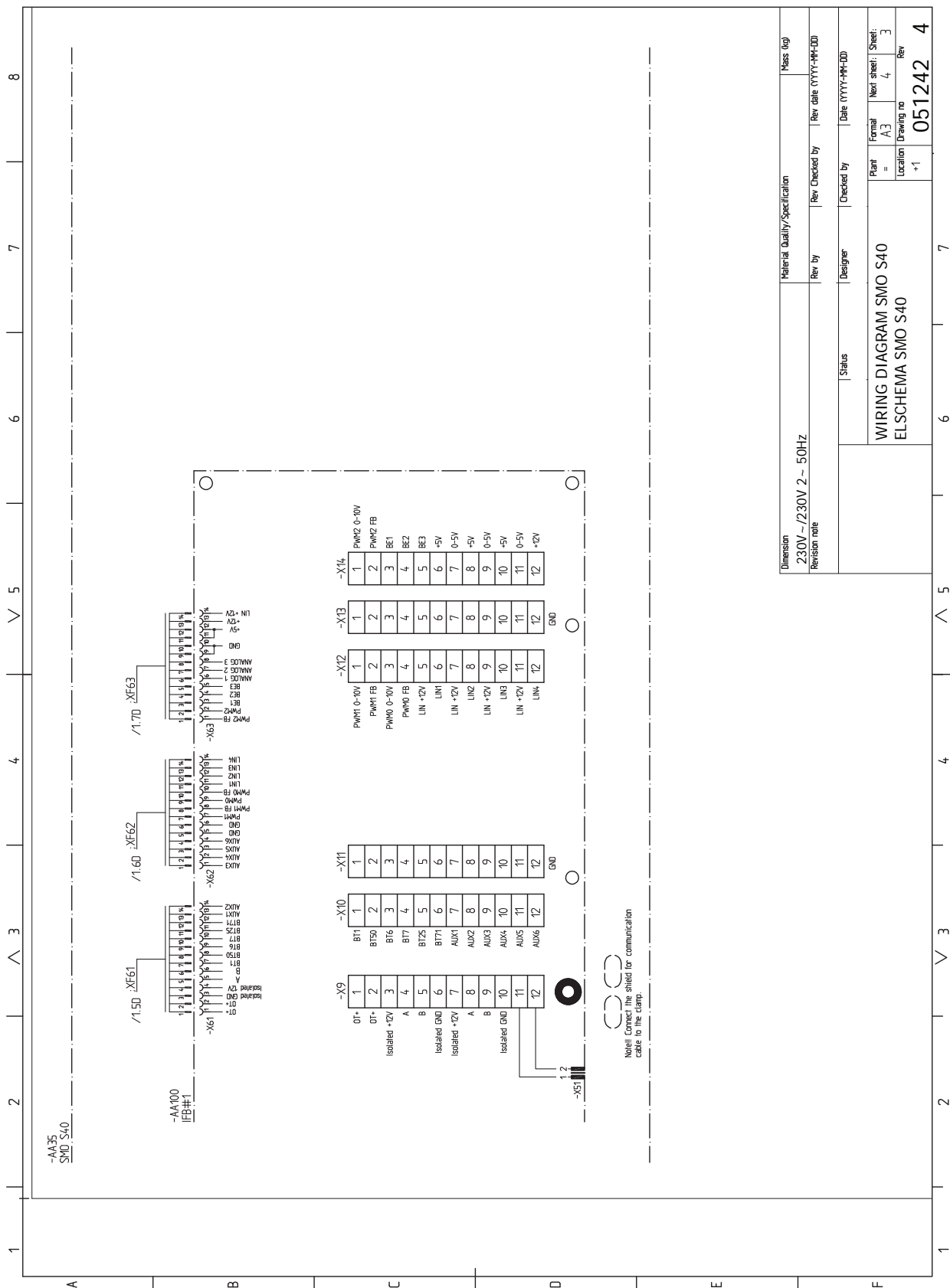
# Energy labelling

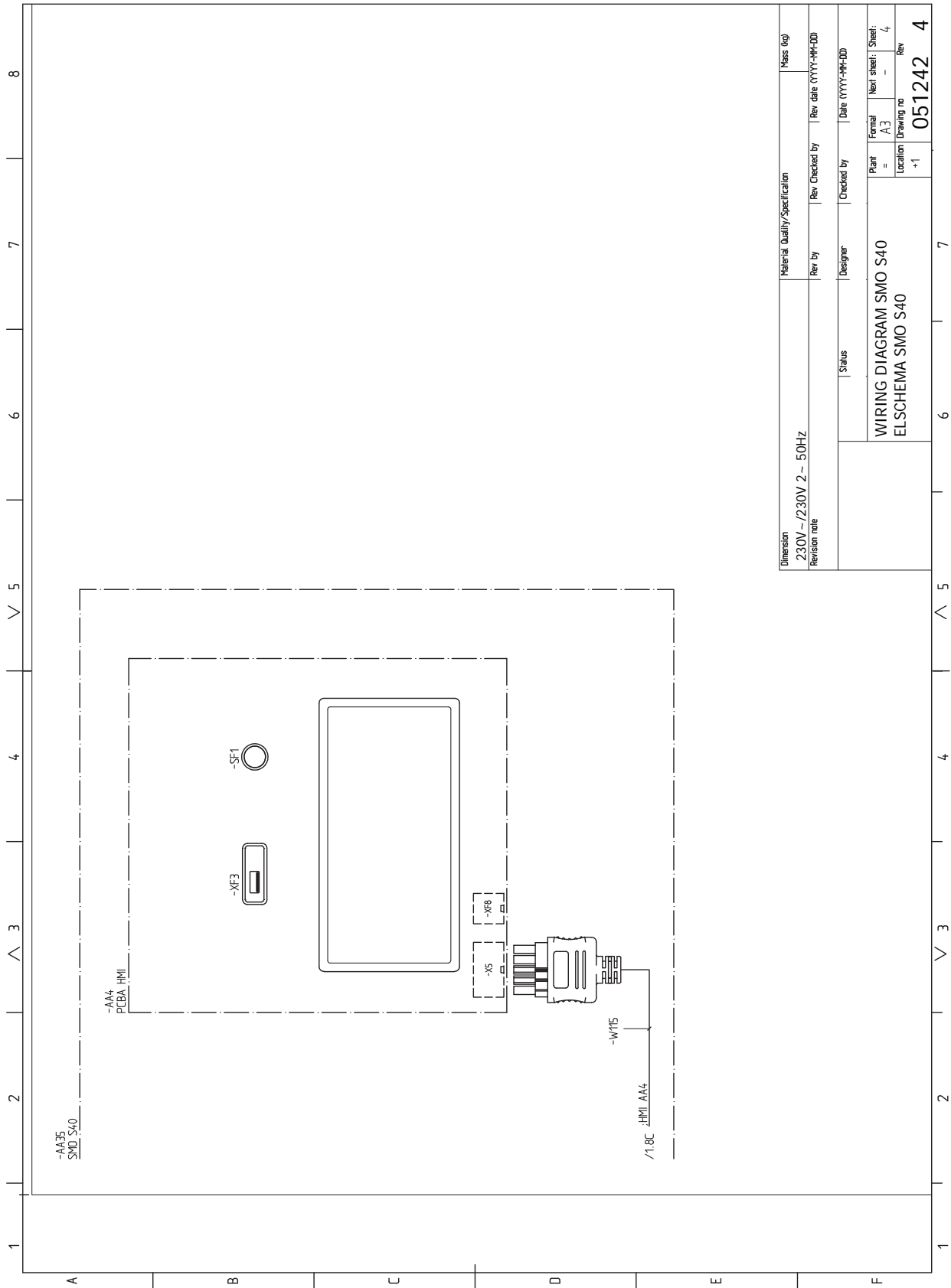
Supplier		NIBE
Model		SMO S40 + F2040 / F2120
Controller, class		VI
Controller, contribution to efficiency	%	4.0

Electrical circuit diagram









Dimension	Material Quality/Specification		Mass (kg)	
230V~/230V 2~ 50Hz	Rev by	Rev Checked by	Rev date (YYYY-MM-DD)	
Revision note	Status	Designer	Checked by	Date (YYYY-MM-DD)
WIRING DIAGRAM SMO S40 ELSCHEMA SMO S40		Plant	Formal	Next sheet: Sheet
		+1	A3	4
		Location Drawing no		Rev
			051242	4



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