Installer manual

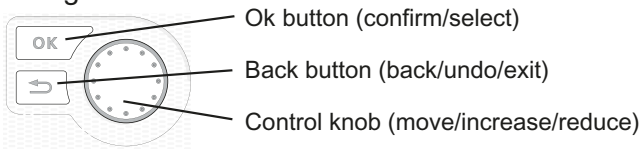
SMO 20

Control module

IHB GB 1344-3
231758

Quick guide

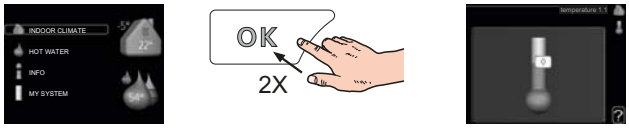
Navigation



A detailed explanation of the button functions can be found on page 23.

How to scroll through menus and make different settings is described on page 25.

Set the indoor climate



The mode for setting the indoor temperature is reached, when in the start mode in the main menu, by pressing the OK button twice. Read more about the settings on page 27.

Increase hot water volume

To temporarily increase the amount of hot water (if a hot water heater is installed to your SMO 20), first turn the control knob to mark menu 2 (water droplet) and then press the OK button twice. Read more about the settings on page 31.

In event of disturbances in comfort

If a disturbance in comfort of any type occurs there are some measures that can be taken before you need to contact your installer. See page 46 for instructions.

Table of Contents

1 Important information

Safety information

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

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

Symbols

NOTE
This symbol indicates danger to machine or person.

Caution
This symbol indicates important information about what you should observe when maintaining your installation.

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

Marking

SMO 20 is CE marked and fulfils IP21.

The CE marking means that NIBE ensures that the product meets all regulations that are placed on it based on relevant EU directives. The CE mark is obligatory for most products sold in the EU, regardless where they are made.

IP21 means that the product can be touched by hand, that objects with a diameter larger than or equivalent to 12.5 mm cannot penetrate and cause damage and that the product is protected against vertically falling drops.

Serial number

The serial number can be found on the upper side of the cover on the control module.

Caution
Always give the product's serial number when reporting a fault.

Country specific information

Installer manual

This installer manual must be left with the customer.

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. Fill in the page for information about installation data in the User manual.

✔	Description	Notes	Signature	Date
Electricity (page 11)				
	Communication, heat pump			
	Supply connected 230 V			
	Outside sensor			
	Room sensor			
	Temperature sensor, hot water charging			
	Temperature sensor, hot water top			
	Temperature sensor, external flow line			
	Temperature sensor, external return line			
	Charge pump			
	Shuttle valve			
	AUX 1			
	AUX 2			
	AUX 3			
	AUX 4			
	AUX 5			
	AUX 6			
	Dipswitch			
Miscellaneous				
	Checking additional heater			
	Checking the function of the reversing valve			
	Checking charge pump function			
	Completed installation check of heat pump and associated equipment			

Contact information

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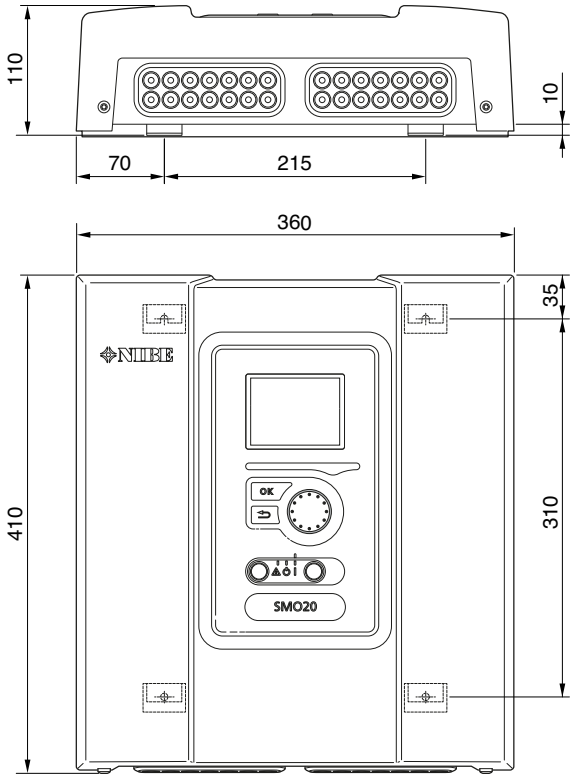
For countries not mention in this list, please contact Nibe Sweden or check www.nibe.eu for more information.

2 Delivery and handling

Mounting

NOTE

For wall mounting, use the mounting adapted for the base.



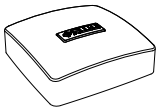
Use all mounting points and install SMO 20 upright flat against the wall without any part of the control module protruding out beyond the edge of the wall.

Leave approximately 100 mm free space around the control module to facilitate access and cable routing on installation and service.

NOTE

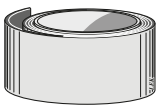
Access the screws for installing the front cover from underneath.

Supplied components

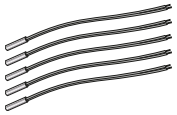


Outside sensor

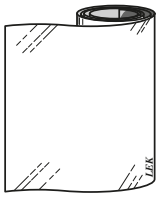
Heating pipe paste



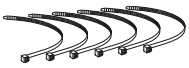
Insulation tape



Temperature sensor

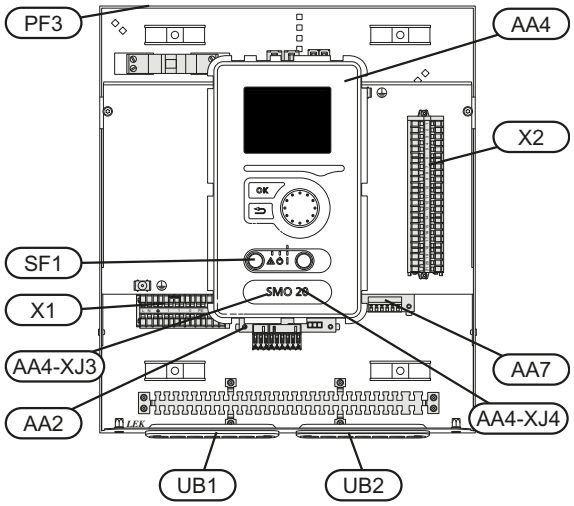


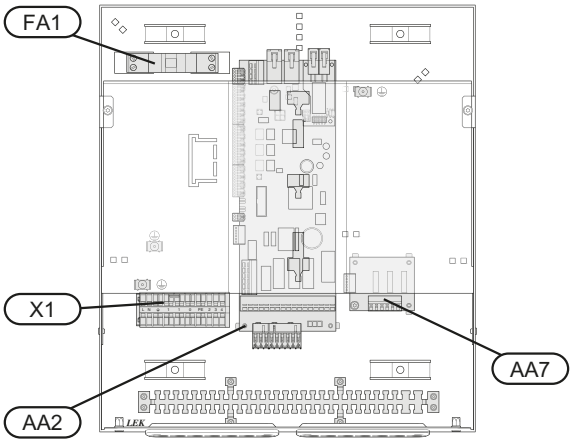
Aluminium tape



Cable ties

3 The Control Module Design





Electrical components

AA 2	Base card
AA 4	Display unit
	AA4-XJ3 USB socket
	AA4-XJ4 Service outlet (No function)
AA 7	Extra relay circuit board
FA 1	Miniature circuit-breaker
X 1	Terminal block, incoming electrical supply
X 2	Terminal block, control signal circulation pump, sensors AUX inputs and heat pump
SF 1	Switch
PF 3	Serial number plate
UB 1	Cable grommet, incoming supply electricity, power for accessories
UB 2	Cable gland, signal

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

4 Pipe connections

General

Pipe installation must be carried out in accordance with current norms and directives. See manual for compatible NIBE air/water heat pump for installation of the heat pump.

Compatible NIBE air/water heat pumps

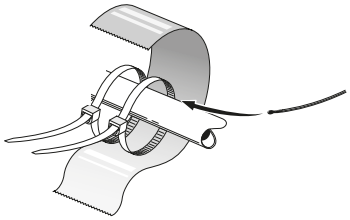
Compatible NIBE air/water heat pumps must be equipped with a control card that has at least the software version given in the following list. The control card version is displayed in the heat pump's display (if applicable) upon start-up.

Product	Software version
F2015	55
F2016	55
F2025	55
F2026	55
F2030	all versions
F2040	all versions
F2300	55

Symbol key

Symbol	Meaning
	Shut-off valve
	Non-return valve
	Shunt / shuttle valve
	Safety valve
	Trim valve
	Temperature sensor
Ⓟ	Pressure gauge
	Circulation pump
	Particle filter

Temperature sensor installation on pipe



The temperature sensors are mounted with 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 beyond the sensor) and aluminium tape. Then insulate with supplied insulation tape.

NOTE

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

Docking alternatives

SMO 20 can be connected with other products from NIBE in several different ways, some of which are shown below (accessories may be required).

Further option information is available at www.nibe.eu and in the respective assembly instructions for the accessories used. See page 48 for a list of the accessories that can be used with SMO 20.

Installations with SMO 20 can produce heating and hot water.

On cold days of the year when the access to energy from the air is reduced 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.

NOTE

The heating medium side and the hot water side must be fitted with the necessary safety equipment in accordance with the applicable regulations.

This is the outline diagram. Actual installations must be planned according to applicable standards.

Explanation

AA25	**SMO 20**
BT1	Outdoor sensor[1)]
BT6	Temperature sensor, hot water charging[1)]
BT7	Temperature sensor, hot water top[1)]
BT25	Temperature sensor, external supply line[1)]
BT50	Room sensor
BT63	Temperature sensor, external supply line after electric heater
BT71	Temperature sensor, external return line[1)]
GP10	Circulation pump, Heating medium
QN10	Reversing valve, Hot water/Heating medium[2)]
EB1	**Additional heat**
EB1	Immersion heater
KA1	Auxiliary relay/Contactor[4)]
EB101	**Heat pump system**
BT3	Temperature sensor, return line[3)]
BT12	Temperature sensor, condenser supply line[3)]
FL10	Safety valve
GP12	Charge pump[5)]
HQ1	Particle filter[3)]
QM1	Drain valve, Heating medium
QM31	Shut-off valve, Heating medium, Flow
QM32	Shut off valve, Heating medium, Return
QM43	Shut-off valve
Miscellaneous	
CM1	Expansion vessel closed, Hot water
CP5	Buffer vessel (UKV)
CP10	Accumulator tank with hot water heating
EB20	Immersion heater
FL2	Safety valve, Heating medium
KA1	Auxiliary relay/Contactor
RN10	Control valve

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

1) Included in and supplied SMO 20

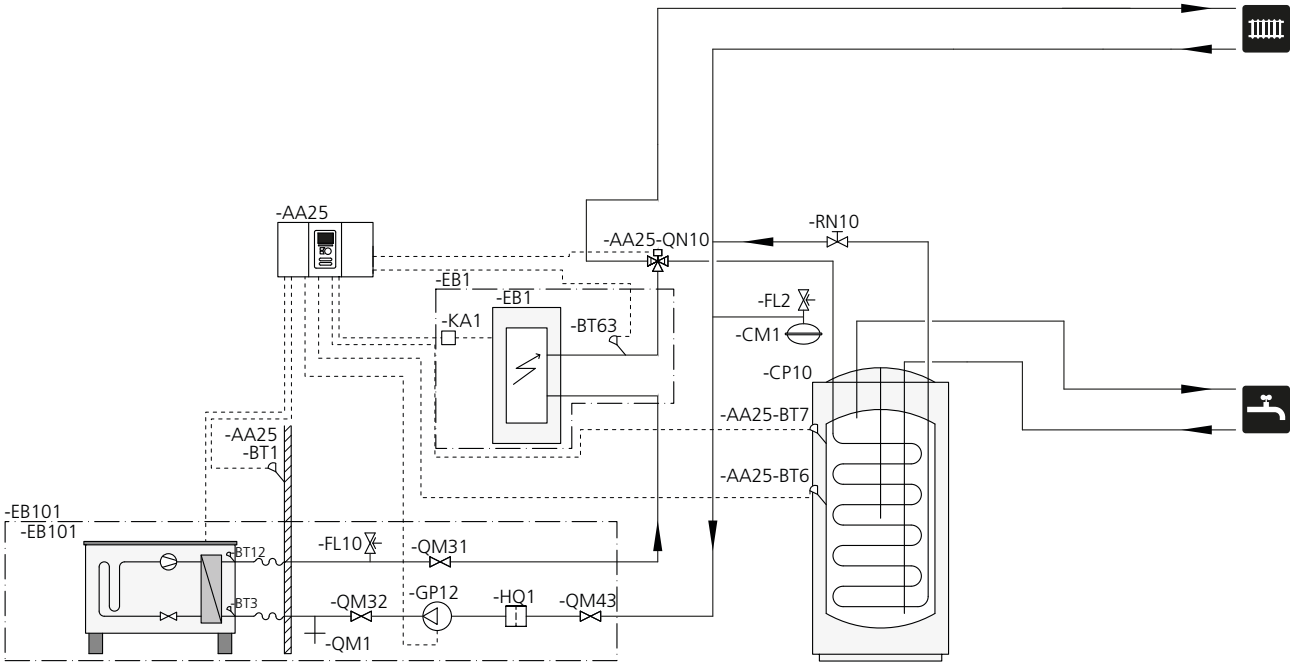
2) Included in and supplied VST 05/VST 11/VST 20

3) Included in and supplied NIBE heat pump (can vary depending on heat pump).

4) Included in and supplied HR 10

5) Included in and supplied CPD 10/CPD 11

Compatible NIBE air/water heat pump together with SMO 20 and electric heater before reversing valve for hot water (floating condensing)



NOTE

NIBE does not supply all components in this outline diagram.

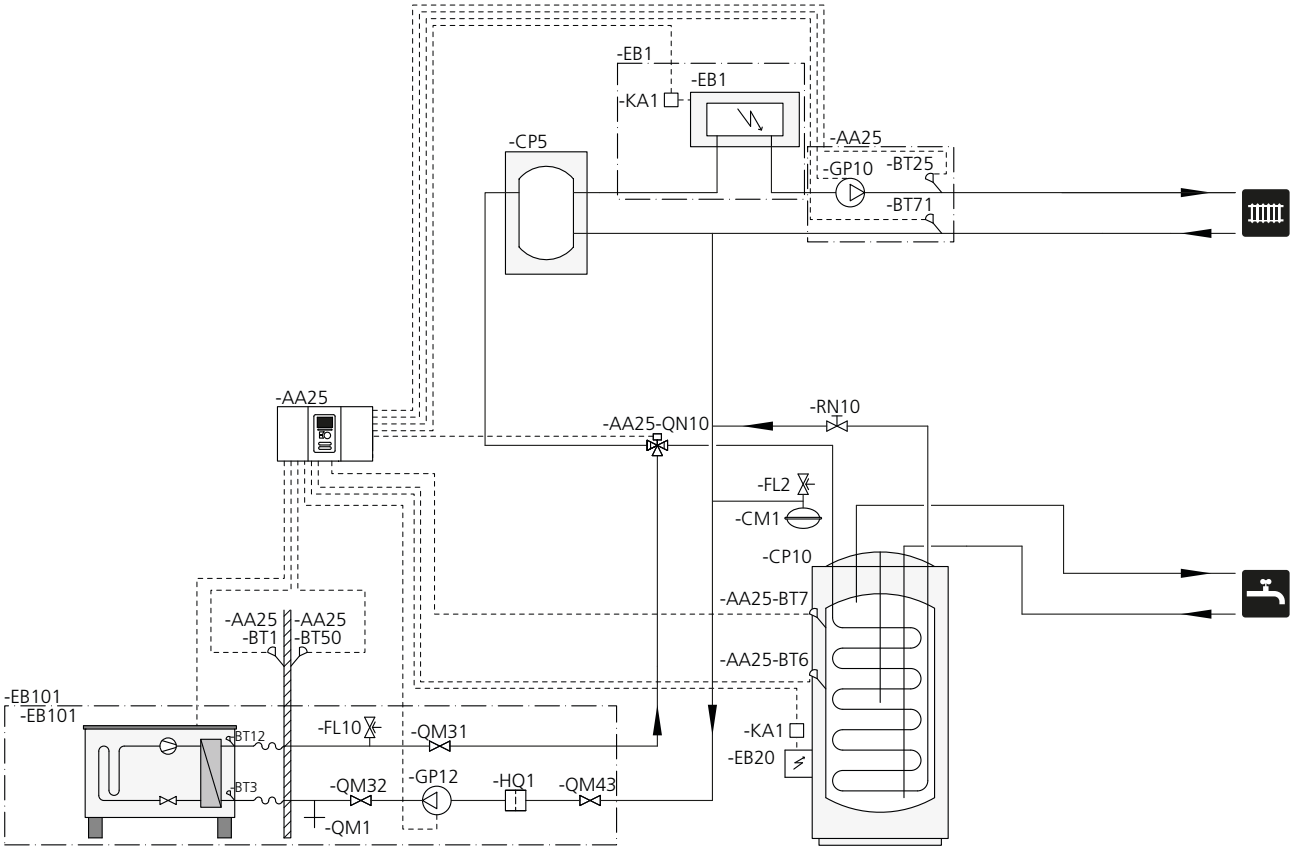
This installation alternative is suitable for simpler installations with a focus on low installation costs.

SMO 20 (AA25) starts and stops the heat pump (EB101) to meet the heat and hot water demand of the installation. At simultaneous heating and hot water demand the reversing valve switches (AA25-QN10) periodically between the climate system and the water heater/accumulator tank (CP10). When the hot water heater/accumulator tank is fully charged (CP10), the reversing valve switches (AA25-QN10) to the climate system.

Additional heat (EB1) is connected automatically when the energy demand exceeds the heat pump capacity. This is used for both heating and charging hot water.

The additional heat can also be used if a higher temperature in the hot water is required than the heat pump can produce.

Compatible NIBE air/water heat pump together with SMO 20 and electric heater after reversing valve for hot water (floating condensing)



NOTE

NIBE does not supply all components in this outline diagram.

This installations alternative is suitable for more complex installations with a focus on comfort.

SMO 20 (AA25) starts and stops the heat pump (EB101) to meet the heat and hot water demand of the installation. At simultaneous heating and hot water demand the reversing valve switches (AA25-QN10) periodically between the climate system and the water heater/accumulator tank (CP10). When the hot water heater/accumulator tank is fully charged (CP10), the reversing valve switches (AA25-QN10) to the climate system.

Additional heat (EB1) is connected automatically when the energy demand exceeds the heat pump capacity. Immersion heater (EB20) in the water heater/accumulator tank (CP10) is used during the time to produce hot water if the heat pump (EB101) is used for heating the building at the same time.

The additional heat can also be used if a higher temperature in the hot water is required than the heat pump can produce.

5 Electrical connections

General

- Disconnect SMO 20 before insulation testing the house wiring.
- If the building is equipped with an earth-fault breaker, SMO 20 should be equipped with a separate one.
- SMO 20 must be installed via an isolator switch with a minimum breaking gap of 3mm.
- For the electrical wiring diagram for the control module, see page 52.
- Communication and sensor cables to external connections must not be laid close to high current cables.
- The minimum area of communication and sensor cables to external connections must be 0.5 mm² up to 50 m, for example EKKX or LiYY or equivalent.
- Use a screened three core cable for communication with the heat pump.
- When cable routing in SMO 20, cable grommets (UB1 and UB2, marked in image) must be used.

NOTE

The switch (SF1) must not be moved to "I" or "⚠" until the boiler in the system has been filled with water. The compressor in the heat pump and any external addition can be damaged.

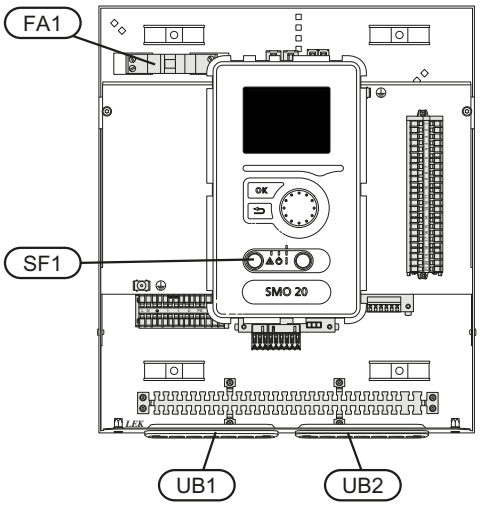
NOTE

Electrical installation and service must be carried out under the supervision of a qualified electrician. Cut the current with the circuit breaker before carrying out any servicing. Electrical installation and wiring must be carried out in accordance with the stipulations in force.

When installing SMO 20, NIBE's air/water heat pump and any addition must be current free.

NOTE

See outline diagram for your system for physical location of the temperature sensor that is to be installed.

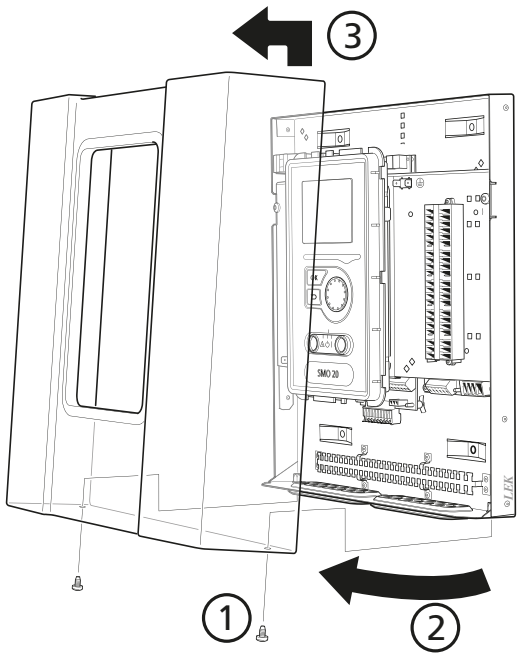


Miniature circuit-breaker

The control module operating circuit and parts of its internal components are internally fused by a miniature circuit-breaker (FA1).

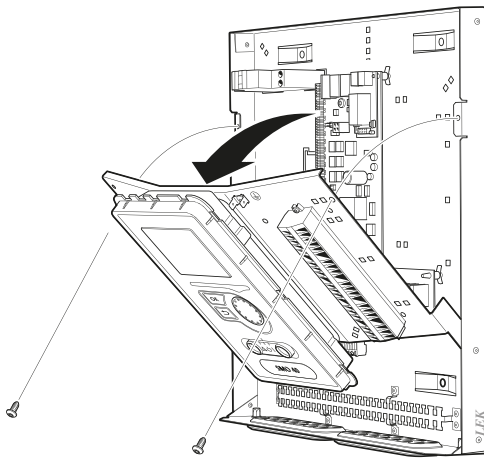
Accessibility, electrical connection

The cover of the control module is opened using a Torx 25 driver. Assembly takes place in the reverse order.

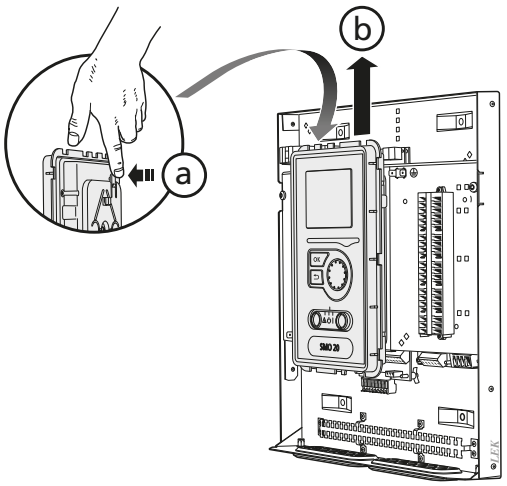


NOTE

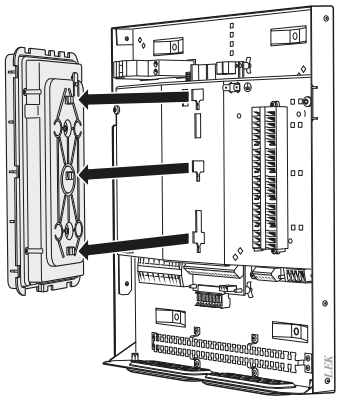
The cover to access the base card is opened using a Torx 25 screwdriver.



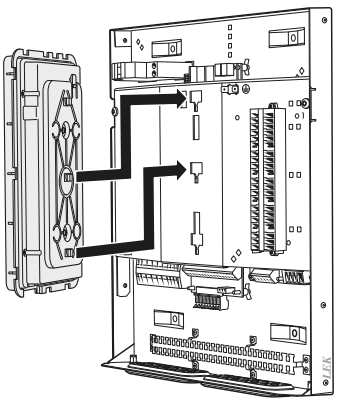
The display may need to be moved for easier access when connecting electrics. Do this easily by following these steps.

1. 

Press in the catch on the upper rear side of the display unit towards you (a) and move the display unit upwards (b) so that the mountings unhook from the panel.

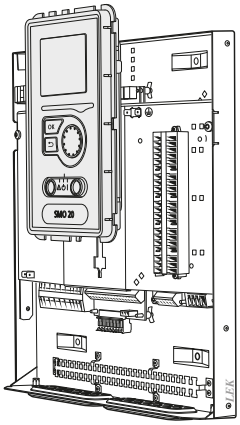
2. 

Lift the display unit from its mountings.

3. 

Align the two lower mountings on the reverse of the display unit with the two upper holes in the panel as illustrated.

4.



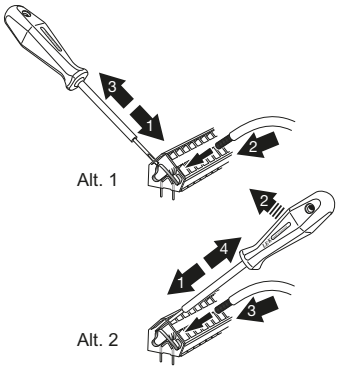
Secure the display on the panel.

5. When the electrical connection is ready the display must be reinstalled with three mounting points again, otherwise the front cover cannot be installed.

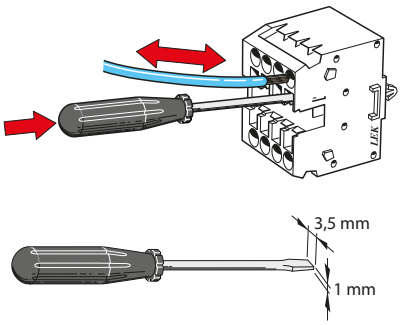
Cable lock

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

Terminal block on the electrical card



Terminal block



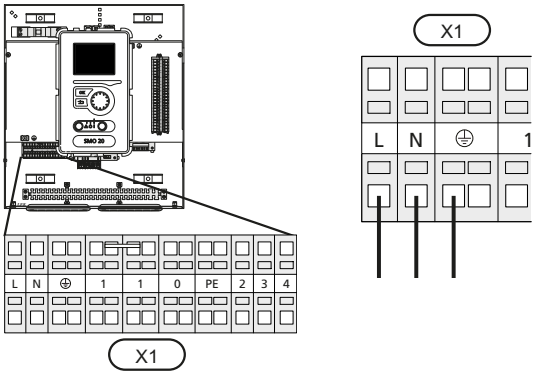
Connections

NOTE

To prevent interference, unscreened communication and/or sensor to external connections cables must not be laid closer than 20 cm to high voltage cable when cable routing.

Power connection

SMO 20 must be installed via an isolator switch with a minimum breaking gap of 3mm. Minimum cable area must be dimensioned according to the fuse rating used. Supplied cable for incoming electricity is connected to terminal block X1.



Tariff control

If the voltage to the compressor in the heat pump disappears for a certain period, simultaneous blocking of these must take place via software controlled input (AUX input) to avoid alarm, see page 19.

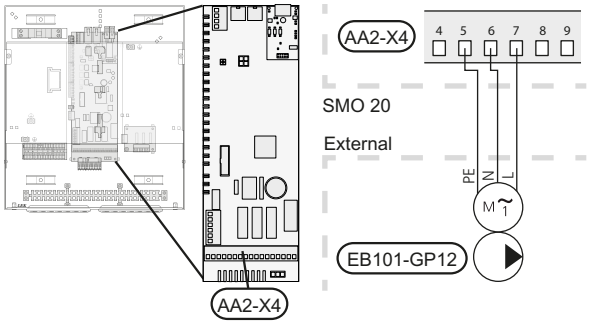
Connecting the charge pump for the heat pump

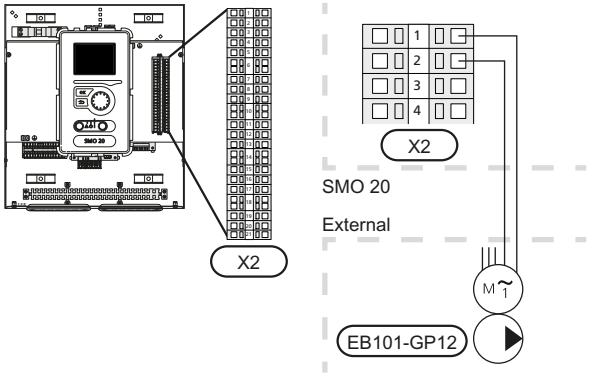
Connect circulation pump (EB101-GP12) as illustrated to terminal block X4:6 (PE), X4:6 (N) and X4:7 (230 V) on the base card (AA2).

Control signal for (EB101-GP12) is connected to terminal block X2:1 (PWM) and X2:2 (GND) as illustrated.

NOTE

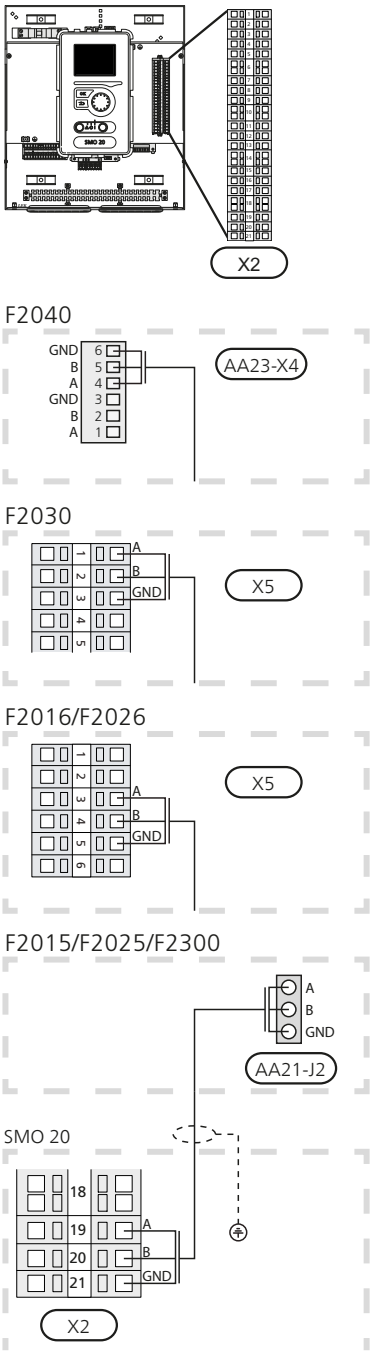
If the charge pumps are not correctly connected at start up the control module receives an alarm.





Communication with heat pump

Connect the heat pump (EB101) with a screened three core cable to terminal block X2:19 (A), X2:20 (B) and X2:21 (GND) as illustrated.

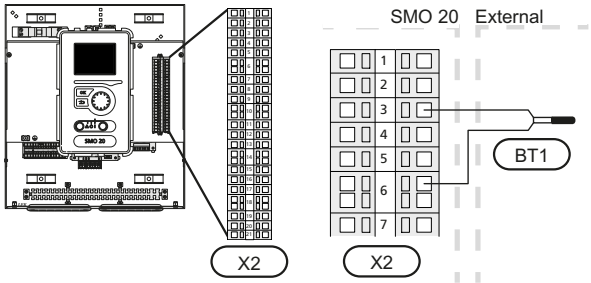


Outside sensor

Install the outside temperature sensor (BT1) in the shade on a wall facing north or north-west, so it is unaffected by the morning sun.

Connect the sensor to terminal block X2:3 and X2:6. Use a twin core cable of at least 0.5 mm^2 cable area.

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

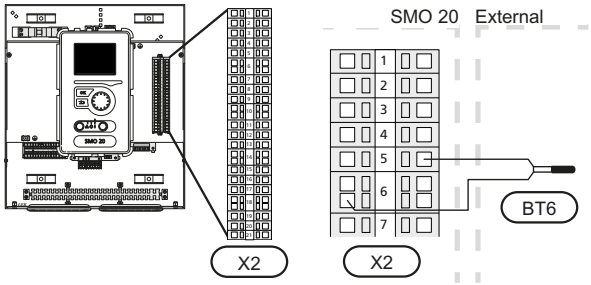


Temperature sensor, hot water charging

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

Connect the sensor to terminal block X2:5 and X2:6. Use a twin core cable of at least 0.5 mm^2 cable area.

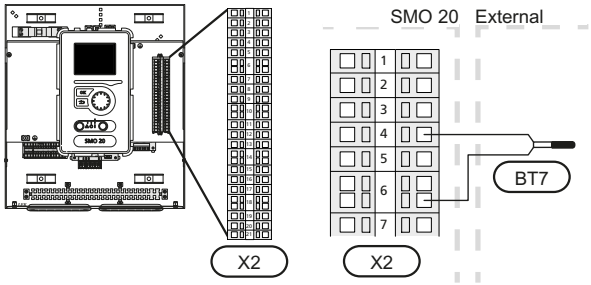
Hot water charging is activated in menu 5.2 or in the start guide.



Temperature sensor, hot water top

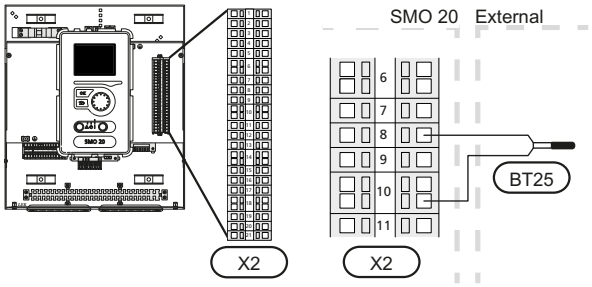
A temperature sensor for hot water top (BT7) can be connected to SMO 20 to show the water temperature at the top of the tank (if it is possible to install a sensor at the top of the tank).

Connect the sensor to terminal block X2:4 and X2:6. Use a twin core cable of at least 0.5 mm^2 cable area.



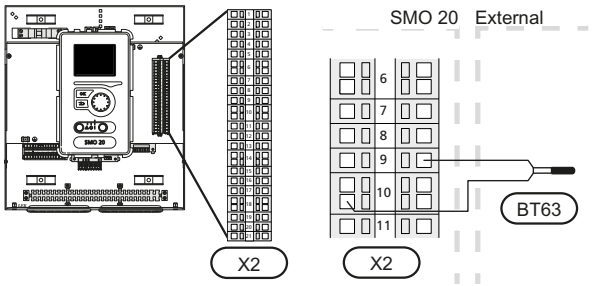
Temperature sensor, external flow line

Connect temperature sensor, external supply line (BT25) to terminal block X2:8 and X2:10. Use a twin core cable of at least 0.5 mm^2 cable area.



Temperature sensor, external supply line after electric heater

Connect temperature sensor, external supply line after electric heater (BT63) to terminal block X2:9 and X2:10. Use a twin core cable of at least 0.5 mm^2 cable area.



Optional connections

Room sensor

SMO 20 can be supplemented with a room sensor (BT50). The room temperature sensor has up to three functions:

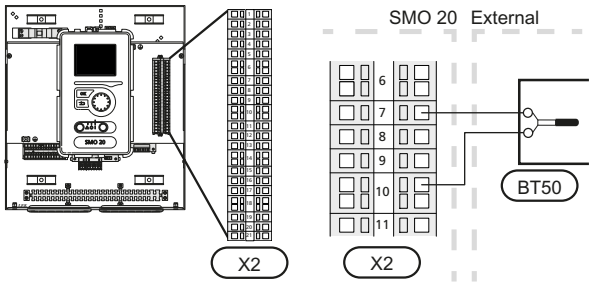
1. Show current room temperature in the control module display.
2. Option of changing the room temperature in °C.
3. Makes it possible to change/stabilise the room temperature.

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

The control module operates without the sensor, but if one wishes to read off the accommodation's indoor temperature in SMO 20 display the sensor must be installed. Connect the room sensor to terminal block X2:7 and X2:10.

If the sensor is to be used to change the room temperature in °C and/or to change/stabilise the room temperature, the sensor must be activated in menu 1.9.4.

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



Caution

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.

Step controlled additional heat

NOTE

Mark up any junction boxes with warnings for external voltage.

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

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

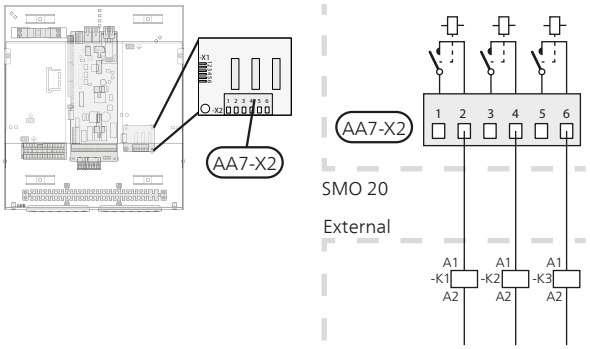
Step 1 is connected to terminal block X2:1 and 2 on the additional relay card (AA7).

Step 2 is connected to terminal block X2:3 and 4 on the additional relay card (AA7).

Step 3 or immersion heater in the water heater/accumulator tank is connected to terminal block X2:5 and 6 on the additional relay card (AA7).

The settings for step controlled additional heat are made in menu 4.9.3 and menu 5.1.12.

All additional heat can be blocked by connecting a potential free switch function to the software controlled input on terminal block X2 (see page 19) which is selected in menu 5.4.



If the relays are to be used for control voltage, bridge the supply from terminal block X1:1 toX2:2, X2:4 and X2:6 on additional relay card (AA7). Connect the neutral from the external addition to terminal block X1:0.

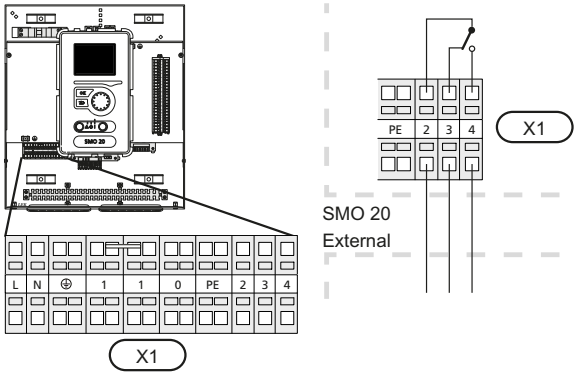
Relay output for emergency mode

NOTE

Mark up any junction boxes with warnings for external voltage.

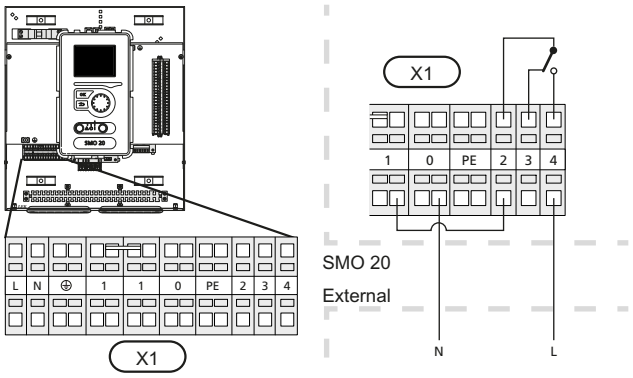
When the switch (SF1) is in "⚠" mode (emergency mode) the circulation pump is activated (EB101-GP12). External accessories are disconnected.

The emergency mode relay can be used to activate external additional heat, an external thermostat must then be connected to the control circuit to control the temperature. Ensure that the heating medium circulates through the external additional heating.



Caution

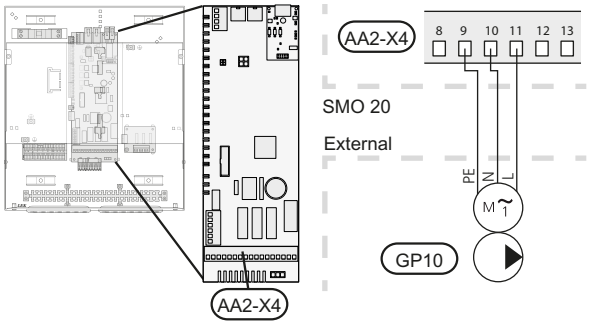
No hot water is produced when emergency mode is activated.



If the relay is to be used for control voltage, bridge the supply from terminal block X1:1 to X1:2 and connect neutral and control voltage from the external additional heat to X1:0 (N) and X1:4 (L).

External circulation pump

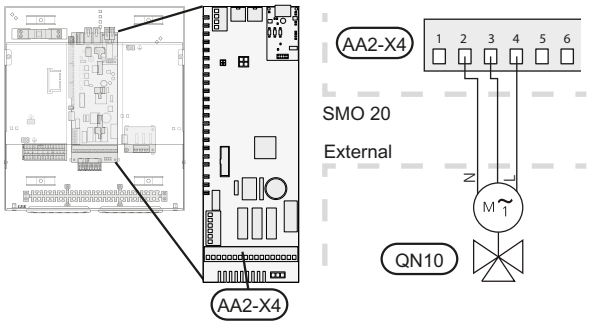
Connect the external circulation pump (GP10) according to image for terminal block X4:9 (PE), X4:10 (N) and X4:11 (230 V) on the base card (AA2).



Shuttle valve

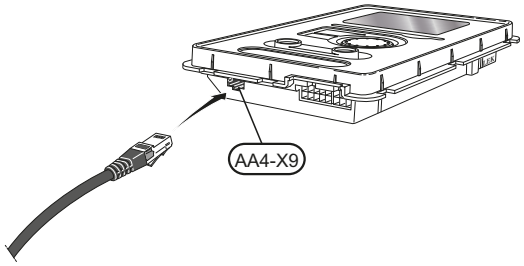
SMO 20 can be supplemented with an external reversing valve (QN10) for hot water control (see page 48 for accessory).

Connect the external reversing valve (QN10) as illustrated to the terminal block X4:2 (N), X4:3 (control) and X4:4 (L) on the base card (AA2).



NIBE Uplink™

Connect the network connected cable (straight, Cat.5e UTP) with RJ45-contact (male) to contact AA4-X9 on the display unit (as illustrated). Use the cable grommet (UB2) in the control module for cable routing.



External connection options

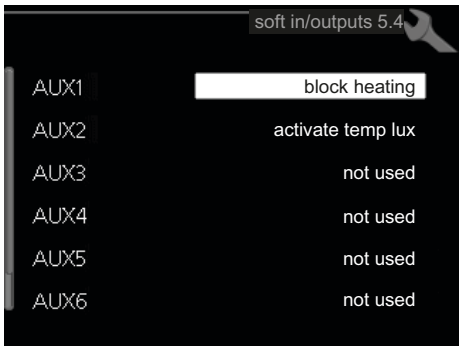
On terminal block X2, SMO 20 has software controlled inputs and outputs for connection of sensors and external switch function. This means that a sensor or an external switch function can be connected to one of six special connections where the function for connection is decided in the control module software.

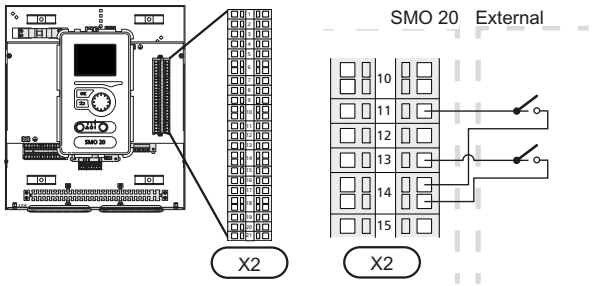
Caution

If an external contact function is connected to SMO 20, the function for use input or output must be selected in menu 5.4.

Selectable inputs terminal block X2 for these functions are AUX1 (X2:11), AUX2 (X2:12), AUX3 (X2:13), AUX4 (X2:15), AUX5 (X2:16) andAUX6 (X2:17). Earth is connected to terminal block X2:14 respectively X2:18 (see electrical wiring diagram for more information).

Selectable output is terminal block X4:15-17 on base card (AA2.





The example above uses the inputs AUX1 (X2:11) and AUX3 (X2:13) on terminal block (X2).

Caution

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

Possible selection for AUX inputs

Following functions can be connected to the AUX inputs on terminal block X2.

- ***Temperature sensor, external return line***

  If temperature sensor, external return line (BT71) needs to be used, connect it to selected input (menu 5.4, see page 41) on terminal block X2. Use a 2 core cable of at least 0.5 mm2 cable area.

- ***Temperature sensor, supply line after additional heating***

  If temperature sensor, supply line after additional heating (BT63) needs to be used, connect it to selected input (menu 5.4, see page 41) on terminal block X2. Use a 2 core cable of at least 0.5 mm2 cable area.

- ***Switch for external blocking of additional heat***

  In those cases where external blocking of additional heat is desired, this can be connected to terminal block X2.

  The additional heat is disconnected by connecting a potential free switch function to the input selected in menu 5.4.

  A closed contact results in the electrical output being disconnected.

- ***Contact for external blocking of compressor in the heat pump***

  In those cases external blocking of compressor in the heat pump is desired, this can be connected to terminal block X2.

  The compressor in the heat pump is disconnected by connecting a potential free switch function to the input selected in menu 5.4.

  A closed contact results in the electrical output being disconnected.

- ***Contact for external tariff blocking***

  In cases where external tariff blocking is required it must be connected to terminal block X2.

  Tariff blocking means that the additional heat, the compressor and heating are disconnected by connecting a potential free switch function to the input selected in menu 5.4.

  A closed contact results in the electrical output being disconnected.

- ***Switch for "SG ready"***

  NOTE

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

  "SG Ready" requires two AUX inputs.

  In cases where this function is required it must be connected to terminal block X2.

  "SG Ready" is a smart form of tariff control where your electricity supplier can affect the indoor, hot water and/or pool temperatures (if applicable) or simply block the additional heat and/or compressor in the heat pump at certain times of the day (can be selected in menu 4.1.5 after the function is activated). Activate the function by connecting potential free switch functions to two inputs selected in menu 5.4 (SG Ready A and SG Ready B), see page41.

  Closed or open switch means one of the following (A = SG Ready A and B = SG Ready B):

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

    "SG Ready" is active. The compressor in the heat pump and additional heat is blocked like the day's tariff blocking.

- **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 4.1.5).
- **Overcapacity mode (A: Closed, B: Closed)**

  "SG Ready" is active. The system is permitted to run at full capacity at over capacity with the electricity supplier (effect on the system is settable in menu 4.1.5).

- ***Switch for external blocking of heating***

  In those cases where external blocking of heat is desired, this can be connected to terminal block X2.

  Heating is disconnected by connecting a potential free switch function to the input selected in menu 5.4.

  A closed switch results in blocked heating operation.
- ***Contact for activation of "temporary lux"***

  An external switch function can be connected to SMO 20 for activation of the hot water function "temporary lux". The switch must be potential free and connected to the selected input (menu 5.4) on terminal block X2.

  "temporary lux" is activated for the time that the contact is connected.
- ***Contact for activation of "external adjustment"***

  An external contact function can be connected to SMO 20 to change the supply temperature and the room temperature.

  When the switch is closed the temperature changes in °C (if the room sensor is connected and activated). If a room sensor is not connected or not activated, the desired offset of "temperature" (heating curve offset) is set with the number of steps selected. The value is adjustable between -10 and +10.
  - *climate system 1*

    The switch must be potential free and connected to the selected input (menu 5.4) on terminal block X2.

    The value for the change is set in menu 1.9.2, "external adjustment".

Possible selection for AUX output (potential free variable relay)

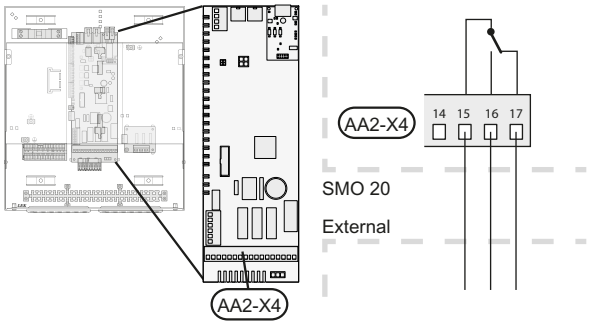
It is possible to have an external connection through the relay function via a potential free variable relay (max 2 A) on terminal block X4:15-17 on the base card (AA2).

Optional functions for external connection:

- Indication of buzzer alarm.
- Control of circulation pump for hot water circulation.

If any of the above is installed to terminal block X4:15-17 on base card (AA2) the function must be selected in menu 5.4

The common alarm is preselected at the factory.



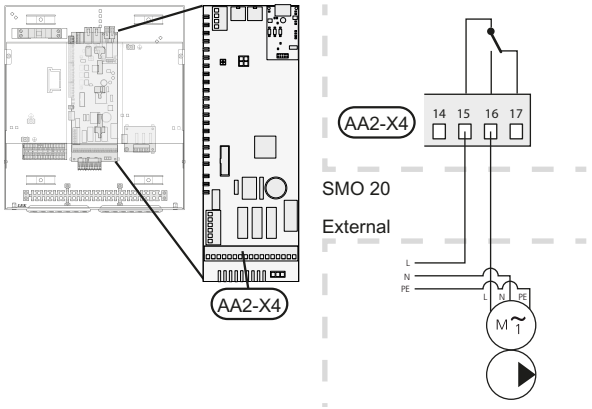
The picture shows the relay in the alarm position.

When switch (SF1) is in the "⏻" or "⚠" position the relay is in the alarm position.

Hot water circulation pump connected to the buzzer alarm relay as illustrated below.

NOTE

Mark up any junction boxes with warnings for external voltage.



Caution

The relay outputs can have a max load of 2 A (230 V AC) in total.

Connecting accessories

Instructions for connecting other accessories are in the installation instructions provided. See page 48 for the list of the accessories that can be used with SMO 20.

6 Commissioning and adjusting

Preparations

- Compatible NIBE air/water heat pump must be equipped with a control card that has at least the software version as listed on page 7. The control card version is displayed in the heat pump's display (if applicable) upon start-up.
- SMO 20 must be ready-connected.

Commissioning with NIBE air/water heat pump

NIBE F2015/F2025

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

NIBE F2016/F2026/F2030/F2040/F2300

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

SMO 20

1. Power the heat pump.
2. Power SMO 20.
3. Follow the start guide in the display on SMO 20 alternatively start the start guide in menu 5.7.

Commissioning with additional heating only

At first start follow the start guide, otherwise follow the list below.

1. Go to menu 4.2 op. mode.
2. Mark "add. heat only" using the control knob and then press the OK button.
3. Return to the main menus by pressing the Back button.

NOTE

If a heat pump is not connected by pipes to the system the flow must be shut off (the pipe ends connected to each other) where the heat pump should have been installed.

Caution

When commissioning without NIBE air/water heat pump an alarm communication error may appear in the display.

The alarm is reset if the relevant heat pump is deactivated in menu 5.2.2 ("installed slaves").

Check the reversing valve

1. Activate "AA2-K1 (QN10)" in menu 5.6.
2. Check that the reversing valve opens or is open for hot water charging.
3. Deactivate "AA2-K1 (QN10)" in menu 5.6.

Start guide

NOTE

There must be water in the climate system before the switch is set to "I".

1. Turn the control module switch (SF1) to "I".
2. Follow the instructions in the start guide in the control module display. If the start guide does not start when you start the control module, start it manually in menu 5.7.

TIP

See page 23 for a more in-depth 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 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 cannot be bypassed. The start guide can be started later in menu 5.7.

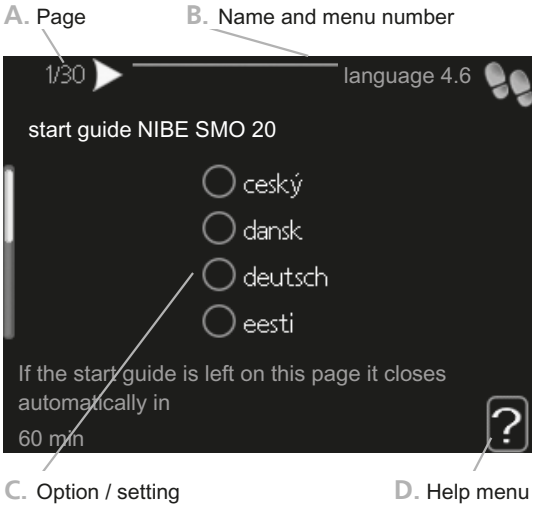
During the start up guide the reversing valves and the shunt valve are run backward and forwards to help vent SMO 20.

Caution

As long as the start guide is active, no function in the heat pump will start automatically.

The guide will appear at each heat pump re-start until it is deselected on the last page.

Operation in the start guide



A. Page

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

Scroll between the pages of the start guide as follows:

1. Turn the control knob until one of the arrows in the top left corner (at the page number) has been marked.
2. Press the OK button to skip between the pages in the start guide.

B. Name and menu number

Read what menu in the control system this page of the start guide is based on. The digits in brackets refer to the menu number in the control system.

If you want to read more about affected menus either read off in the sub-menu or in the installation manual from page 27.

C. Option / setting

Make settings for the system here.

D. Help menu

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

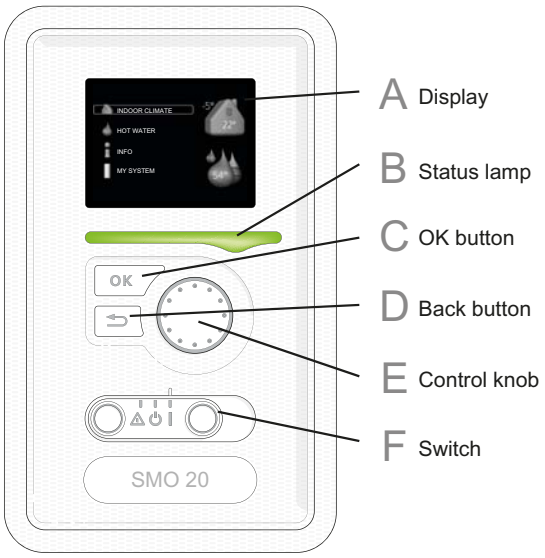
To access the help text:

1. Use the control knob to select the help symbol.
2. Press the OK button.

The help text often consists of several windows that you can scroll between using the control knob.

7 Control - Introduction

Display unit



A Display

Instructions, settings and operational information are shown on the display. The easy-to-read display and menu system, facilitates navigation between the different menus and options to set the comfort or obtain the information you require.

B Status lamp

The status lamp indicates the status of the control module. It:

- lights green during normal operation.
- lights yellow in emergency mode.
- lights red in the event of a deployed alarm.

C OK button

The OK button is used to:

- confirm selections of sub menus/options/set values/page in the start guide.

D Back button

The back button is used to:

- go back to the previous menu.
- change a setting that has not been confirmed.

E Control knob

The control knob can be turned to the right or left. You can:

- scroll in menus and between options.
- increase and decrease the values.
- change page in multiple page instructions (for example help text and service info).

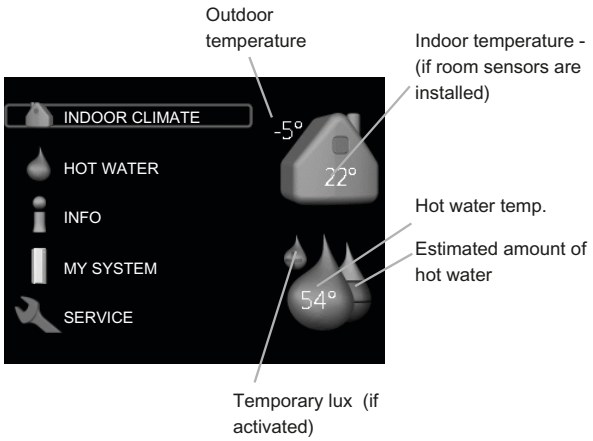
F Switch (SF1)

The switch assumes three positions:

- On (I)
- Standby (⏻)
- Emergency mode (⚠)

Emergency mode must only be used in the event of a fault on the control module. In this mode, the compressor in the heat pump switches off and the immersion heater engages. The control module display is not illuminated and the status lamp illuminates yellow.

Menu system



Menu 1 - INDOOR CLIMATE

Setting the indoor climate. See page 27.

Menu 2 - HOT WATER

Setting the hot water production. See page 31.

This menu only appears if a water heater is installed in the system.

Menu 3 - INFO

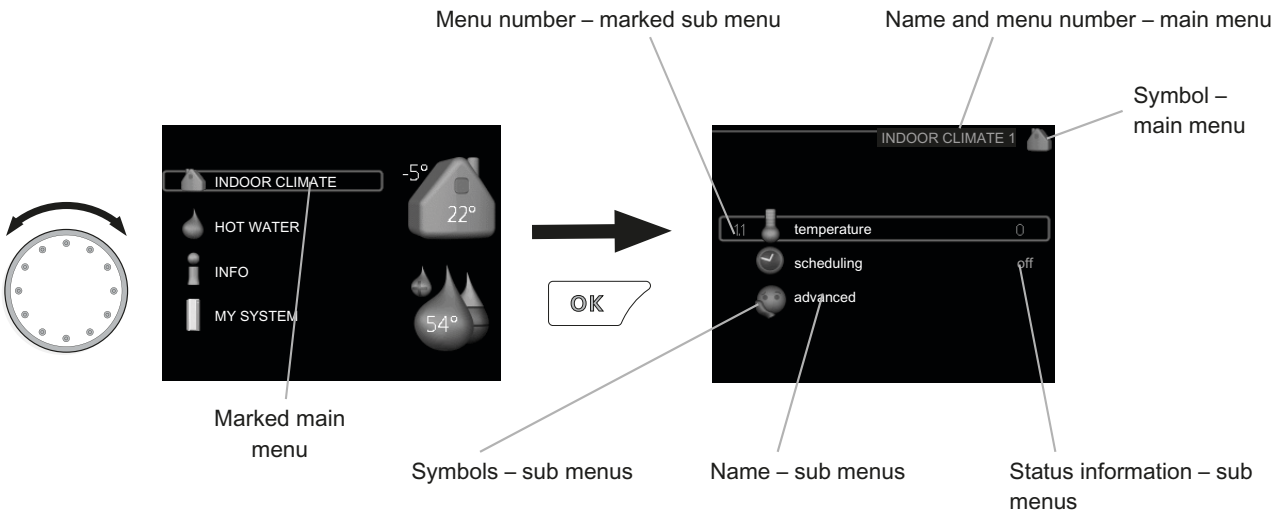
Display of temperature and other operating information and access to the alarm log. See page 33.

Menu 4 - MY SYSTEM

Setting time, date, language, display, operating mode etc. See page 34.

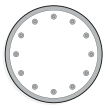
Menu 5 - SERVICE

Advanced settings. These settings are not available to the end user. The menu is visible by pressing the Back button for 7 seconds. See page 39.



Operation

To move the cursor, turn the control knob to the left or the right. The marked position is brighter and/or has a light frame.

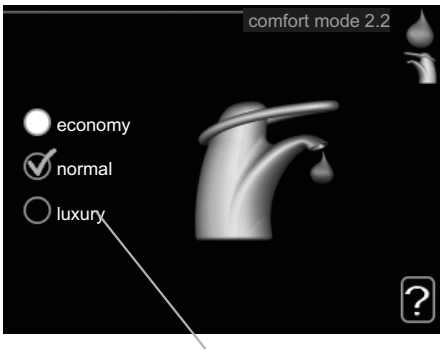


Selecting menu

To advance in the menu system select a main menu by marking it and then pressing the OK button. A new window then opens with sub menus.

Select one of the sub menus by marking it and then pressing the OK button.

Selecting options

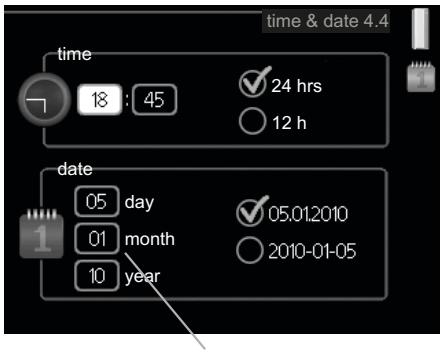


In an options menu the current selected option is indicated by a green tick.

To select another option:

1. Mark the applicable option. One of the options is pre-selected (white).
2. Press the OK button to confirm the selected option. The selected option has a green tick.

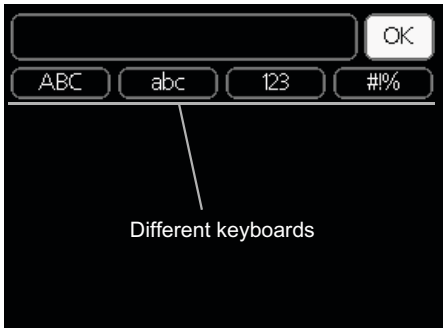
Setting a value



To set a value:

1. Mark the value you want to set using the control knob. 
2. Press the OK button. The background of the value becomes green, which means that you have accessed the setting mode. 
3. Turn the control knob to the right to increase the value and to the left to reduce the value. 
4. Press the OK button to confirm the value you have set. To change and return to the original value, press the Back button. 

Use the virtual keyboard



In some menus where text may require entering, a virtual keyboard is available.

Depending on the menu, you can gain access to different character sets which you can select using the control knob. To change character table, press the Back button. If a menu only has one character set the keyboard is displayed directly.

When you have finished writing, mark "OK" and press the OK button.

Scroll through the windows

A menu can consist of several windows. Turn the control knob to scroll between the windows.

Current menu window

Number of windows in the menu

Scroll through the windows in the start guide

Arrows to scroll through window in start guide

1. Turn the control knob until one of the arrows in the top left corner (at the page number) has been marked.
2. Press the OK button to skip between the steps in the start guide.

Help menu

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

To access the help text:

1. Use the control knob to select the help symbol.
2. Press the OK button.

The help text often consists of several windows that you can scroll between using the control knob.

8 Control - Menus

Menu 1 - INDOOR CLIMATE

Overview

1 - INDOOR CLIMATE	1.1 - temperature	
	1.3 - scheduling	1.3.1 - heating
	1.9 - advanced	1.9.1 - heating curve
		1.9.2 - external adjustment
		1.9.3 - min. flow line temp.
		1.9.4 - room sensor settings
		1.9.7 - own curve
		1.9.8 - point offset

Sub-menus

For the menu INDOOR CLIMATE there are several sub-menus. Status information for the relevant menu can be found on the display to the right of the menus.

temperature Setting the temperature for the climate system. The status information shows the set values for the climate system.

scheduling Scheduling heating. Status information "set" is displayed if you set a schedule but it is not active at the moment, "holiday setting" is displayed if the vacation schedule is active at the same time as the schedule (the vacation function is prioritised), "active" displays if any part of the schedule is active, otherwise it displays "off".

advanced Setting of heat curve, adjusting with external contact, minimum value for supply temperature, own curve and point offset.

Menu 1.1 - temperature

If the house has several climate systems, this is indicated on the display by a thermometer for each system.

Set the temperature (with room sensors installed and activated):

Setting range: 5 - 30 °C

Default value: 20

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

To change the room temperature, use the control knob to set the desired temperature in the display. Confirm the new setting by pressing the OK button. The new temperature is shown on the right-hand side of the symbol in the display.

Setting the temperature (without room sensors activated):

Setting range: -10 to +10

Default value: 0

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

Use the control knob to set a new value. Confirm the new setting by pressing the OK button.

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

Setting the desired value. The new value is shown on the right-hand side of the symbol in the display.

Caution

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

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

If it is cold outdoors and the room temperature is too low, increase the curve slope in menu 1.9.1 by one increment.

If it is cold outdoors and the room temperature is too high, lower the curve slope menu 1.9.1 by one increment.

If it is warm outdoors and the room temperature is too low, increase the value in menu 1.1 by one increment.

If it is warm outdoors and the room temperature is too high, reduce the value in menu 1.1 by one increment.

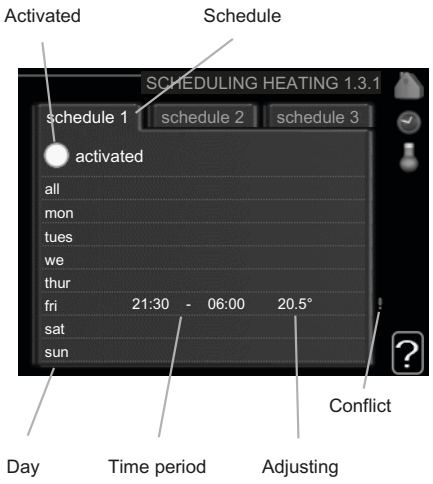
Menu 1.3 - scheduling

In the menu scheduling indoor climate (heating) is scheduled for each weekday.

You can also schedule a longer period during a selected period (vacation) in menu 4.7.

Menu 1.3.1 - heating

Increases or decreases in the accommodation temperature can be scheduled here for up to three time periods per day. If a room sensor is installed and activated the desired room temperature (°C) is set during the time period. Without an activated room sensor the desired change is set (of setting in menu 1.1). One step is usually enough to change the room temperature by one degree, but in some cases several steps may be required.



Schedule: The schedule to be changed is selected here.

Activated: Scheduling for the selected period is activated here. Set times are not affected at deactivation.

Day: Select which day or days of the week the schedule is to apply to here. To remove the scheduling for a particular day, the time for that day must be reset by setting the start time to the same as the stop time. If the line "all" is used, all days in the period are set for these times.

Time period: The start and stop time for the selected day for scheduling are selected here.

Adjusting: How much the heating curve is to be offset in relation to menu 1.1 during scheduling is set here. If the rooms sensor is installed the desired room temperature is set in °C.

Conflict: If two settings conflict with each other a red exclamation mark is displayed.

TIP

If you wish to set similar scheduling for every day of the week start by filling in “all” and then changing the desired days.

TIP

Set the stop time earlier than the start time so that the period extends beyond midnight. Scheduling then stops at the set stop time the day after.

Scheduling always starts on the date that the start time is set for.

Caution

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.

Menu 1.9 - advanced

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

heating curve Setting the heating curve slope.

external adjustment Setting the heat curve offset when the external contact is connected.

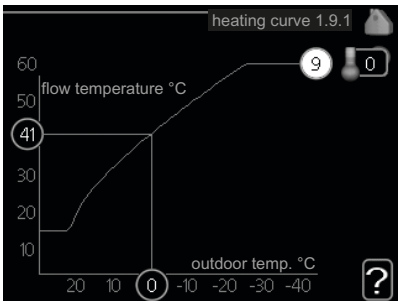
min. flow line temp. Setting minimum permitted flow line temperature.

room sensor settings Settings regarding the room sensor.

own curve Setting own heat curve.

point offset Setting the offset of the heating curve at a specific outdoor temperature.

Menu 1.9.1 - heating curve



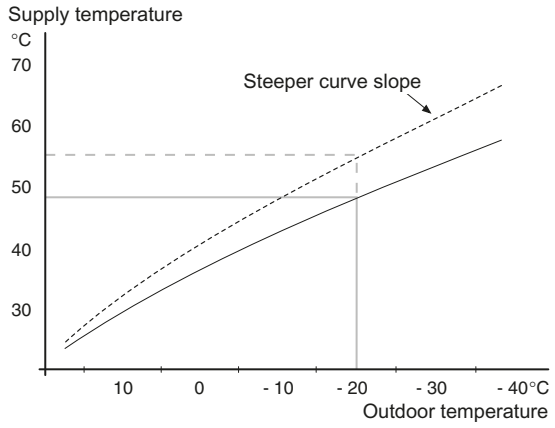
heating curve

Setting range: 0 - 15

Default value: 9

In the menu heating curve the presecribed heating curve for your house can be viewed. The task of the heating curve is to give an even indoor temperature, regardless of the outdoor temperature, and thereby energy efficient operation. It is from this heating curve that the control module’s control computer determines the temperature of the water to the heating system, supply temperature, and therefore the indoor temperature. You can select heating curve and read off how the supply temperature changes at different outdoor temperatures here.

Curve coefficient



The slope of the heating curve indicates 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 at a certain outdoor temperature.

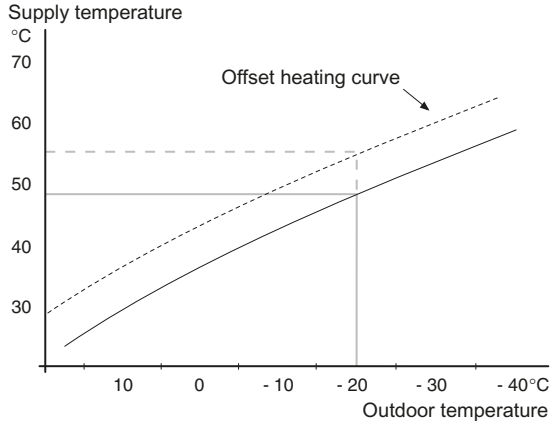
The optimum slope depends on the climate conditions in your location, if the house has radiators or under floor heating and how well insulated the house is.

The heating curve is set when the heating installation is installed, but may need adjusting later. Thereafter the heating curve should not need further adjustment.

Caution

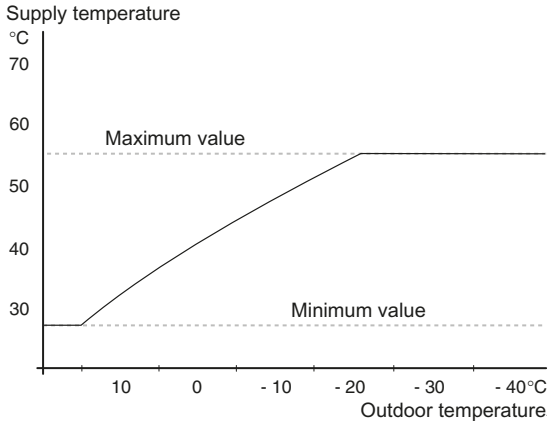
In the event of making fine adjustments for the indoor temperature, the heat curve must be offset up or down instead, this is done in menu 1.1 temperature.

Curve offset



An offset of the heating curve means that the supply temperature changes as much for all the outdoor temperatures, e.g. that a curve offset of +2 steps increases the supply temperature by 5 °C at all outdoor temperatures.

Flow line temperature– maximum and minimum values



Because the flow line temperature cannot be calculated higher than the set maximum value or lower than the set minimum value the heating curve flattens out at these temperatures.

Caution

Underfloor heating systems are normally max flow line temperature set between 35 and 45 °C.

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

The figure at the end of the curve indicates the curve slope. The figure beside the thermometer gives the curve offset. Use the control knob to set a new value. Confirm the new setting by pressing the OK button.

Curve 0 is an own heating curve created in menu 1.9.7.

To select another heat curve (slope):

1. Press the OK button to access the setting mode
2. Select a new heating curve. The heat curves are numbered from 0 to 15, the greater the number, the steeper the slope and the greater the supply temperature. Heating curve 0 means that own curve (menu 1.9.7) is used.
3. Press the OK button to exit the setting.

To read off a heating curve:

1. Turn the control knob so that the ring on the shaft with the outdoor temperature is marked.
2. Press the OK button.
3. Follow the grey line up to the heat curve and out to the left to read off the value for the supply temperature at the selected outdoor temperature.
4. You can now select to take read outs for different outdoor temperatures by turning the control knob to the right or left and read off the corresponding flow temperature.
5. Press the OK or Back button to exit read off mode.

TIP

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

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

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

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

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

Menu 1.9.2 - external adjustment

climate system

Setting range: -10 to +10 or desired room temperature if the room sensor is installed.

Default value: 0

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

Menu 1.9.3 - min. flow line temp.

climate system

Setting range: 5-70 °C

Default value: 20 °C

Set the minimum temperature on the supply temperature to the climate system. This means that SMO 20 never calculates a temperature lower than that set here.

TIP

The value can be increased if you have, for example, a cellar that you always want to heat, even in summer.

You may also need to increase the value in "stop heating" menu 4.9.2 "auto mode setting".

Menu 1.9.4 - room sensor settings

factor system

Setting range: 0.0 - 6.0

Default value: 2.0

Room sensors to control the room temperature can be activated here.

Here you can set a factor (a numerical value) that determines how much an over or sub normal temperature (the difference between the desired and actual room temperature) in the room is to affect the supply temperature to the climate system. A higher value gives a greater and faster change of the heating curve's set offset.

NOTE

Too high a set value for "factor system" can (depending on your climate system) produce an unstable room temperature.

Menu 1.9.7 - own curve

supply temperature

Setting range: 0 – 80 °C

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

Caution

Curve 0 in menu 1.9.1 must be selected for this curve to apply.

Menu 1.9.8 - point offset

outdoor temp. point

Setting range: -40 – 30 °C

Default value: 0 °C

change in curve

Setting range: -10 – 10 °C

Default value: 0 °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 heat curve is affected at ± 5 °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 is cold in the house, at, for example -2 °C, "outdoor temp. point" is set to "-2" and "change in curve" is increased until the desired room temperature is maintained.

Caution

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

Menu 2 - HOT WATER

Overview

2 - HOT WATER *	2.1 - temporary lux	
	2.2 - comfort mode	
	2.3 - scheduling	
	2.9 - advanced	2.9.1 - periodic increases

* Accessory needed.

Sub-menus

This menu only appears if a water heater is docked to the heat pump.

For the menu HOT WATER there are several sub-menus. Status information for the relevant menu can be found on the display to the right of the menus.

temporary lux Activation of temporary increase in the hot water temperature. Status information displays “off" or what length of time of the temporary temperature increase remains.

comfort mode Setting hot water comfort. The status information displays what mode is selected, "economy", "normal" or "luxury".

scheduling Scheduling hot water comfort. The status information "set" appears if you have set scheduling but it is not currently active, "holiday setting" appears if holiday setting is active at the same time as scheduling (when the holiday function is prioritised), "active" appears if any part of scheduling is active, otherwise "off" appears.

advanced Setting periodic increase in the hot water temperature.

Menu 2.1 - temporary lux

Setting range: 3, 6 and 12 hours and mode "off"
Default value: "off"

When hot water requirement has temporarily increased this menu can be used to select an increase in the hot water temperature to lux mode for a selectable time.

Caution
If comfort mode "luxury" is selected in menu 2.2 no further increase can be carried out.

The function is activated immediately when a time period is selected and confirmed using the OK button. The remaining time for the selected setting is shown to the right.

When the time has run out SMO 20 returns to the mode set in menu 2.2.

Select “off" to switch off temporary lux.

Menu 2.2 - comfort mode

Setting range: economy, normal, luxury
Default value: normal

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

economy: This mode gives less hot water than the other, but is more economical. This mode can be used in smaller households with a small hot water requirement.

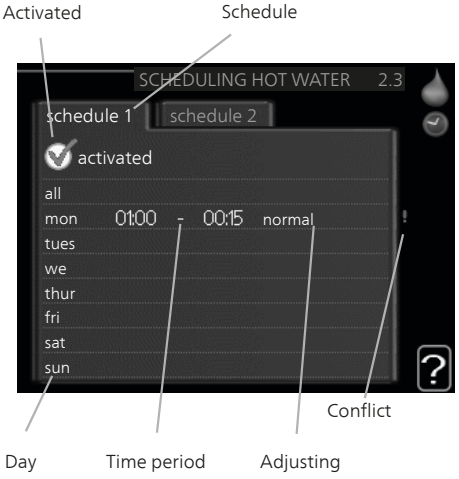
normal: Normal mode gives a larger amount of hot water and is suitable for most households.

luxury: Lux mode gives the greatest possible amount of hot water. In this mode, the immersion heater, as well as the compressor, is used to heat hot water, which may increase operating costs.

Menu 2.3 - scheduling

Two different periods of hot water comfort per day can be scheduled here.

Scheduling is activated/deactivated by ticking/unticking"activated". Set times are not affected at deactivation.



Schedule: The schedule to be changed is selected here.

Activated: Scheduling for the selected period is activated here. Set times are not affected at deactivation.

Day: Select which day or days of the week the schedule is to apply to here. To remove the scheduling for a particular day, the time for that day must be reset by setting the start time to the same as the stop time. If the line "all" is used, all days in the period are set for these times.

Time period: The start and stop time for the selected day for scheduling are selected here.

Adjusting: Set the hot water comfort that is to apply during scheduling here.

Conflict: If two settings conflict with each other a red exclamation mark is displayed.

TIP

If you wish to set similar scheduling for every day of the week start by filling in “all” and then changing the desired days.

TIP

Set the stop time earlier than the start time so that the period extends beyond midnight. Scheduling then stops at the set stop time the day after.

Scheduling always starts on the date that the start time is set for.

Menu 2.9 - advanced

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

Menu 2.9.1 - periodic increases

period

Setting range: 1 - 90 days

Default value: 14 days

start time

Setting range: 00:00 - 23:00

Default value: 00:00

To prevent bacterial growth in the water heater, the heat pump and any additional heat can increase the hot water temperature for a short time at regular intervals.

The length of time between increases can be selected here. The time can be set between 1 and 90 days. Factory setting is 14 days. Untick "activated" to switch off the function.

Menu 3 - INFO

Overview

3 - INFO	3.1 - service info
	3.2 - compressor info
	3.3 - add. heat info
	3.4 - alarm log
	3.5 - indoor temp. log

Sub-menus

For the menu INFO there are several sub-menus. No settings can be made in these menus, they just display information. Status information for the relevant menu can be found on the display to the right of the menus.

service info shows temperature levels and settings in the installation.

compressor info shows operating times, number of starts etc for the compressor in the heat pump.

add. heat info displays information about the additional heat's operating times etc.

alarm log shows the latest alarms.

indoor temp. log the average temperature indoors week by week during the past year.

Menu 3.1 - service info

Information about the actual operating status of the installation (e.g. current temperatures etc.) can be obtained here. No changes can be made.

The information is on several pages. Turn the control knob to scroll between the pages.

Symbols in this menu:

 Compressor

 Heating

 Addition

 Hot water

Menu 3.2 - compressor info

Information about the compressor's operating status and statistics can be obtained here. No changes can be made.

The information is on several pages. Turn the control knob to scroll between the pages.

Menu 3.3 - add. heat info

Information about the additional heat's settings, operating status and statistics can be obtained here. No changes can be made.

The information is on several pages. Turn the control knob to scroll between the pages.

Menu 3.4 - alarm log

To facilitate fault-finding the installation's operating status at alarm alerts is stored here. You can see information for the 10 most recent alarms.

To view the run status in the event of an alarm, mark the alarm and press the OK button.

Menu 3.5 - indoor temp. log

Here you can see the average temperature indoors week by week during the past year. The dotted line indicates the annual average temperature.

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

To read off an average temperature

1. Turn the control knob so that the ring on the shaft with the week number is marked.
2. Press the OK button.
3. Follow the grey line up to the graph and out to the left to read off the average indoor temperature at the selected week.
4. You can now select to take read outs for different weeks by turning the control knob to the right or left and read off the average temperature.
5. Press the OK or Back button to exit read off mode.

Menu 4 - MY SYSTEM

Overview

4 - MY SYSTEM	4.1 - plus functions *	4.1.3 - internet	4.1.3.1 - nibe uplink
			4.1.3.8 - tcp/ip settings
			4.1.3.9 - proxy settings
		4.1.5 - SG Ready	
	4.2 - op. mode		
	4.4 - time & date		
	4.6 - language		
	4.7 - holiday setting		
	4.9 - advanced	4.9.1 - op. prioritisation	
		4.9.2 - auto mode setting	
		4.9.3 - degree minute setting	
		4.9.4 - factory setting user	
		4.9.5 - schedule blocking	
		4.9.6 - schedule silent mode	

Sub-menus

For the menu MY SYSTEM there are several sub-menus. Status information for the relevant menu can be found on the display to the right of the menus.

plus functions Settings applying to any installed extra functions in the heating system.

op. mode Activation of manual or automatic operating mode. The status information shows the selected operating mode.

time & date Setting current time and date.

language Select the language for the display here. The status information shows the selected language.

holiday setting Vacation scheduling heating and hot water comfort. Status information "set" is displayed if you set a vacation schedule but it is not active at the moment, "active" is displayed if any part of the vacation schedule is active, otherwise it displays " off".

advanced Settings of control module work mode.

Menu 4.1 - plus functions

Settings for any additional functions installed in SMO 20 can be made in the sub menus.

Menu 4.1.3 - internet

Here you make settings for connecting SMO 20 to the internet.

NOTE

For these functions to work the network cable must be connected.

Menu 4.1.3.1 - nibe uplink

Here you can manage the installation's connection to NIBE Uplink™ (http://www.nibeuplink.com) and see the number of users connected to the installation via the internet.

A connected user has a user account in NIBE Uplink™ which have been given permission to control and/or monitor your installation.

Request new connection string

To connect a user account on NIBE Uplink™ to your installation, you must request a unique connection string.

1. Mark “request new connection string" and press the OK button.
2. The installation now communicates with NIBE Uplink™ to create a connection string.
3. When a connection string has been received, it is shown in this menu at "connection string" and is valid for 60 minutes.

Disconnect all users

1. Mark “switch off all users" and press the OK button.
2. The installation now communicates with NIBE Uplink™ to release your installation from all connected users via the internet.

NOTE

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

Menu 4.1.3.8 - tcp/ip settings

You can set TCP/IP settings for your installation here.

Automatic setting (DHCP)

1. Tick “automatic". The installation now receives the TCP/IP settings using DHCP.
2. Mark “confirm" and press the OK button.

Manual setting

1. Untick "automatic", you now have access to several setting options.

2. Mark “ip-address" and press the OK button.
3. Enter the correct details via the virtual keypad.
4. Mark “OK" and press the OK button.
5. Repeat 1 - 3 for "net mask", "gateway" and "dns".
6. Mark “confirm" and press the OK button.

Caution

The installation cannot connect to the internet without the correct TCP/IP settings. If unsure about applicable settings use the automatic mode or contact your network administrator (or similar) for further information.

TIP

All settings made since opening the menu can be reset by marking "reset" and pressing the OK button.

Menu 4.1.3.9 - proxy settings

You can set proxy settings for your installation here.

Proxy settings are used to give connection information to a intermediate server (proxy server) between the installation and Internet. These settings are primarily used when the installation connects to the Internet via a company network. The installation supports proxy authentication of the HTTP Basic and HTTP Digest type.

If unsure about applicable settings use the preset settings or contact your network administrator (or similar) for further information.

Setting

1. Tick “use proxy" if you do not want to use a proxy.
2. Mark “server" and press the OK button.
3. Enter the correct details via the virtual keypad.
4. Mark “OK" and press the OK button.
5. Repeat 1 - 3 for "port", "user name" and "password".
6. Mark “confirm" and press the OK button.

TIP

All settings made since opening the menu can be reset by marking "reset" and pressing the OK button.

Menu 4.1.5 - SG Ready

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

Make settings for the function "SG Ready" here.

affect room temperature

Here you set whether room temperature should be affected when activating "SG Ready".

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

With over capacity mode of "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 increases by 2 °C.

affect hot water

Here you set whether the temperature of the hot water should be affected when activating "SG Ready".

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

With over capacity mode of "SG Ready" the hot water is set to "luxury" (immersion heater permitted).

NOTE

The function must be connected to two AUX inputs and activated in menu 5.4.

Menu 4.2 - op. mode

op. mode

Setting range: auto, manual, add. heat only

Default value: auto

functions

Setting range: compressor, addition, heating

The control module operating mode is usually set to "auto". It is also possible to set the control module to "add. heat only", when only additional heat is used, or "manual" and then select what functions are to be permitted.

Change the operating mode by marking the desired mode and pressing the OK button. When an operating mode is selected it shows what in the control module is permitted (crossed out = not permitted) and selectable alternatives to the right. To select selectable functions that are permitted or not you mark the function using the control knob and press the OK button.

Operating mode auto

In this operating mode the control module automatically selects what functions are permitted.

Operating mode manual

In this operating mode you can select what functions are permitted. You cannot deselect "compressor" in manual mode.

Operating mode add. heat only

In this operating mode the compressor is not active and only additional heating is used.

Caution

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

Caution

You cannot change from only additional heat if you do not have a heat pump connected (see menu 5.2.2).

Functions

"**compressor**" is that which produces heating and hot water for the accommodation. If "compressor" is deselected, a symbol is displayed in the main menu on the symbol for the control module. You cannot deselect "compressor" in manual mode.

"**addition**" is what helps the compressor to heat the accommodation and/or the hot water when it cannot manage the whole requirement alone.

"**heating**" means that you get heat in the accommodation. You can deselect the function when you do not wish to have heating running.

Menu 4.4 - time & date

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

TIP

Time and date are set automatically if the heat pump is connected to NIBE Uplink™. To obtain the correct time, the time zone must be set.

Menu 4.6 - language

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

Menu 4.7 - holiday setting

If a room sensor is installed and activated the desired room temperature (°C) is set during the time period. This setting applies to all climate systems with room sensors.

If a room sensor is not activated, the desired offset of the heating curve is set. This setting applies to all climate systems without room sensors. One step is usually enough to change the room temperature by one degree, but in some cases several steps may be required.

Vacation scheduling starts at 00:00 on the start date and stops at 23:59 on the stop date.

TIP

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

TIP

Set the vacation setting in advance and activate just before departure in order to maintain the comfort.

Caution

If you choose to switch off hot water production during the vacation “periodic increases" (preventing bacterial growth) are blocked during this time. "periodic increases" started in conjunction with the vacation setting being completed.

Menu 4.9 - advanced

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

Menu 4.9.1 - op. prioritisation

op. prioritisation

Setting range: 0 to 180 min

Default value: 30 min

The indicator marks where in the cycle the installation is.

If 0 minutes is selected it means that requirement is not prioritised, but will only be activated when there is no other requirement.

Menu 4.9.2 - auto mode setting

stop heating

Setting range: -20 – 40 °C

Default values: 20

stop additional heat

Setting range: -25 – 40 °C

Default values: 15

filtering time

Setting range: 0 – 48 h

Default value: 24 h

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

Select the average outdoor temperatures in this menu.

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

Caution

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

Menu 4.9.3 - degree minute setting

current value

Setting range: -3000 – 3000

start compressor

Setting range: -1000 – -30

Default value: -60

start diff additional heat

Setting range: 100 – 1000

Default value: 400

diff. between additional steps

Setting range: 0 – 1000

Default value: 30

Degree minutes are a measurement of the current heating requirement in the house and determine when the compressor respectively additional heat will start/stop.

Caution

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

Menu 4.9.4 - factory setting user

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

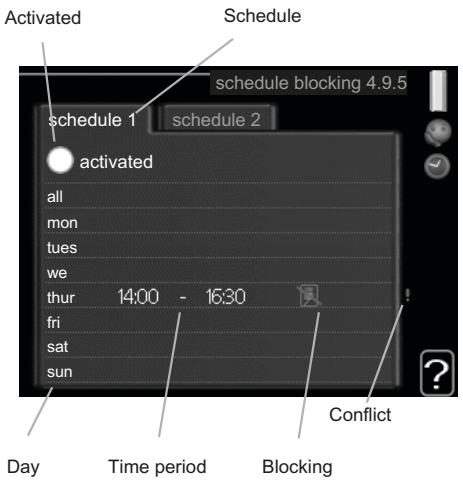
Caution

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

Menu 4.9.5 - schedule blocking

The additional heat can be scheduled to be blocked for up to two different time periods here.

When scheduling is active the relevant blocking symbol is shown in the main menu on the symbol for the control module.



Schedule: The period to be changed is selected here.

Activated: Scheduling for the selected period is activated here. Set times are not affected at deactivation.

Day: Select which day or days of the week the schedule is to apply to here. To remove the scheduling for a particular day, the time for that day must be reset by setting the start time to the same as the stop time. If the line "all" is used, all days in the period are set for these times.

Time period: The start and stop time for the selected day for scheduling are selected here.

Blocking: The desired blocking is selected here.

Conflict: If two settings conflict with each other a red exclamation mark is displayed.

 Blocking the compressor in the outdoor unit.

 Blocking additional heat.

TIP

If you wish to set similar scheduling for every day of the week start by filling in “all” and then changing the desired days.

TIP

Set the stop time earlier than the start time so that the period extends beyond midnight. Scheduling then stops at the set stop time the day after.

Scheduling always starts on the date that the start time is set for.

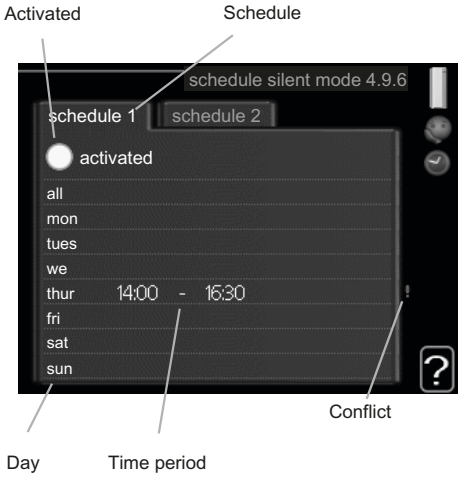
Caution

Long term blocking can cause reduced comfort and operating economy.

Menu 4.9.6 - schedule silent mode

The compressor can be scheduled to be set to "quiet mode" (the heat pump must support this) for up to two different time periods here.

When scheduling is active the "quiet mode" symbol is shown in the main menu on the symbol for the control module.



Schedule: The period to be changed is selected here.

Activated: Scheduling for the selected period is activated here. Set times are not affected at deactivation.

Day: Select which day or days of the week the schedule is to apply to here. To remove the scheduling for a particular day, the time for that day must be reset by setting the start time to the same as the stop time. If the line "all" is used, all days in the period are set for these times.

Time period: The start and stop time for the selected day for scheduling are selected here.

Conflict: If two settings conflict with each other a red exclamation mark is displayed.

TIP

If you wish to set similar scheduling for every day of the week start by filling in “all” and then changing the desired days.

TIP

Set the stop time earlier than the start time so that the period extends beyond midnight. Scheduling then stops at the set stop time the day after.

Scheduling always starts on the date that the start time is set for.

Caution

Long term scheduling of "quiet mode" can cause reduced comfort and operating economy.

Menu 5 - SERVICE

Overview

5 - SERVICE	5.1 - operating settings	5.1.1 - hot water settings *	
		5.1.2 - max flow line temperature	
		5.1.3 - max diff flow line temp.	
		5.1.4 - alarm actions	
		5.1.12 - addition	
		5.1.14 - flow set. climate system	
		5.1.22 - heat pump testing	
		5.1.23 - compressor curve	
	5.2 - system settings	5.2.2 - installed slaves	
		5.2.4 - accessories	
	5.4 - soft in/outputs		
	5.5 - factory setting service		
	5.6 - forced control		
	5.7 - start guide		
	5.8 - quick start		
	5.9 - floor drying function		
	5.10 - change log		
	5.11 - slave settings	5.11.1 - EB101	5.11.X.1 - heat pump
			5.11.X.2 - charge pump

* Accessory needed.

Hold the Back button in for 7 seconds to access the Service menu.

Sub-menus

Menu SERVICE has orange text and is intended for the advanced user. This menu has several sub-menus. Status information for the relevant menu can be found on the display to the right of the menus.

operating settings Operating settings for the control module.

system settings System settings for the control module, activating accessories etc.

soft in/outputs Setting software controlled inputs on the terminal block (X2).

factory setting service Total reset of all settings (including settings available to the user) to default values.

forced control Forced control of the different components in the indoor module.

start guide Manual start of the start guide which is run the first time when the control module is started.

quick start Quick starting the compressor.

NOTE

Incorrect settings in the service menus can damage the installation.

Menu 5.1 - operating settings

Operating settings can be made for the control module in the sub menus.

Menu 5.1.1 - hot water settings

economy

Setting range start temp. economy: 5 – 70 °C

Factory setting start temp. economy: 44 °C

Setting range stop temp. economy: 5 – 70 °C

Factory setting stop temp. economy: 47 °C

normal

Setting range start temp. normal: 5 – 70 °C

Factory setting start temp. normal: 47 °C

Setting range stop temp. normal: 5 – 70 °C

Factory setting stop temp. normal: 50 °C

luxury

Setting range start temp. lux: 5 – 70 °C

Factory setting start temp. lux: 52 °C

Setting range stop temp. lux: 5 – 70 °C

Factory setting stop temp. lux: 55 °C

stop temp. per. increase

Setting range: 55 – 70 °C

Default values: 55 °C

Here you set the start and stop temperature of the hot water for the different comfort options in menu 2.2 as well as the stop temperature for periodic increase in menu 2.9.1.

Menu 5.1.2 - max flow line temperature

climate system

Setting range: 5-70 °C

Default value: 60 °C

Set the maximum supply temperature for the climate system here.

Caution

Underfloor heating systems are normally max flow line temperature set between 35 and 45 °C.

Check the max floor temperature with your floor supplier.

Menu 5.1.3 - max diff flow line temp.

max diff compressor

Setting range: 1 – 25 °C

Default value: 10 °C

max diff addition

Setting range: 1 – 24 °C

Default value: 7 °C

Here you set the maximum permitted difference between the calculated and actual supply temperature during compressor respectively add. heat mode.

max diff compressor

When the current supply temperature **deviates** from the set value compared to that calculated, the heat pump is forced to stop irrespective of the degree-minute value.

If the current supply temperature **exceeds** the calculated flow with set value, the degree minute value is set to 0. The compressor in the heat pump stops when there is only a heating demand.

max diff addition

If "addition" is selected and activated in menu 4.2 and the present supply temp **exceeds** the calculated with set value, the additional heat is forced to stop.

Menu 5.1.4 - alarm actions

Select if you want the control module to alert you that there is an alarm in the display here.

Caution

If no alarm action is selected, it can result in higher energy consumption in the event of an alarm.

Menu 5.1.12 - addition

max step

Setting range (binary stepping deactivated): 0 – 3

Setting range (binary stepping activated): 0 – 7

Default value: 3

fuse size

Setting range: 1 - 200 A

Default values: 16 A

Here you select whether the step controlled additional heat is positioned before or after the reversing valve for hot water charging (QN10). Step controlled additional heat is for example an external electric boiler.

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 and the size of the fuse.

TIP

See the accessory installation instructions for function description.

Menu 5.1.14 - flow set. climate system

presettings

Setting range: radiator, floor heat., rad. + floor heat., DOT °C

Default value: radiator

Setting range DOT: -40,0 - 20,0 °C

Factory setting DOT: -18,0 °C

own setting

Setting range dT at DOT: 0,0-25,0

Factory setting dT at DOT: 10,0

Setting range DOT: -40,0 - 20,0 °C

Factory setting DOT: -18,0 °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 flow and return temperatures at dimensioned outdoor temperature.

Menu 5.1.22 - heat pump testing

NOTE

This menu is intended for testing SMO 20 according to different standards.

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

This menu contains several sub-menus, one for each standard.

Menu 5.1.23 - compressor curve

Set whether the compressor in the heat pump should work to a particular curve or if it should work by degree minutes etc.

You set a curve for a demand (heat, hot water etc.) by unticking "auto", turning the control knob until a temperature is marked and pressing OK. You can now set at what temperature max- respectively min frequencies will occur.

This menu can consist of several windows (one for each available demand), use the navigation arrows in the top left corner to change between the windows.

NOTE

This menu is only displayed if SMO 20 is connected to a heat pump with inverter controlled compressor.

Menu 5.2 - system settings

Make different system settings for your installation here, e.g. activate connected slaves and which accessories are installed.

Menu 5.2.2 - installed slaves

If a slave is connected to the master installation, set it here.

There are two ways of activating connected slaves. You can either mark the alternative in the list or use the automatic function "search installed slaves".

search installed slaves

Mark “search installed slaves" and press the OK button to automatically find connected slaves for the master heat pump.

Menu 5.2.4 - accessories

Set which accessories are installed on the installation here.

If the water heater is connected to SMO 20 hot water charging must be activated here.

Menu 5.4 - soft in/outputs

Here you can select which in/output on the terminal block (X2) the external contact function ((page 19) must be connected to.

Selectable inputs on terminal blocks AUX1-6 (X2:11-18 and output AA2-X4.

Menu 5.5 - factory setting service

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

NOTE

When resetting, the start guide is displayed the next time the control module is restarted.

Menu 5.6 - forced control

You can force control the different components in the control module and any connected accessories here.

Menu 5.7 - start guide

When the control module is started for the first time the start guide starts automatically. Start it manually here.

See page 22 for more information about the start guide.

Menu 5.8 - quick start

It is possible to start the compressor from here.

Caution

There must be a heating or hot water demand to start the compressor.

Caution

Do not quick start the compressor too many times in succession over a short period of time as this may damage the compressor and its ancillary equipment.

Menu 5.9 - floor drying function

length of period 1 - 3, 5-7

Setting range: 0 - 30 days

Default value: 2 days

temp. period 1 - 3, 5-7

Setting range: 15 - 70 °C

Default value:

temp. period 1	20 °C
temp. period 2	30 °C
temp. period 3	40 °C
temp. period 5	40 °C
temp. period 6	30 °C
temp. period 7	20 °C

length of period 4

Setting range: 0 - 30 days

Default value: 3 days

temp. period 4

Setting range: 15 - 70 °C

Default value: 45 °C

Set the function for under floor drying here.

You can set up to seven period times with different calculated flow temperatures. If less than seven periods are to be used, set the remaining period times to 0 days.

Mark the active window to activate the under floor drying function. A counter at the bottom shows the number of days the function has been active.

NOTE

During floor drying the heating medium pump in 100% runs regardless of the setting in menu 5.1.10.

TIP

If operating mode "add. heat only" is to be used, select it in menu 4.2.

Menu 5.10 - change log

Read off any previous changes to the control system here.

The date, time and ID no. (unique to certain settings) and the new set value is shown for every change.

NOTE

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

Menu 5.11 - slave settings

Settings for installed slaves can be made in the sub menus.

Menu 5.11.1 - EB101

Make settings for the installed slaves here.

Menu 5.11.X.1 - heat pump

Make settings for the installed slave here. To see what settings you can make, see installation manual for the relevant installed slave.

Menu 5.11.X.2 - charge pump

speed during operation

Setting range: auto / manual

Default value: auto

Set the operating mode and at what speed the charge pump is to operate in the present operating mode.

op mode auto: The charge pump starts and stops 20 seconds before and after the compressor in the heat pump. The unticked alternative sets the charge pump to continuous operation.

speed during operation: Set what speed the charge pump is to operate at with different demands here.

auto: The charge pump selects optimal speed for the present demand for SMO 20.

manual: The speed of the charge pump is adjustable between 0 and 100%. This alternative is only displayed if "auto" is unticked for the affected demand.

speed in wait mode: Here you set the speed of the charge pump (settable between 0 and 100%) at "op mode auto" when the compressor in the heat pump is stationary at the same time that heat is permitted.

9 Service

Service actions

NOTE

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

When replacing components on SMO 20 only replacement parts from NIBE may be used.

Emergency mode

NOTE

Switch (SF1) must not be put into mode "I" or ⚠ before the installation is filled with water. The compressor in the heat pump can be damaged.

Emergency mode is used in event of operational interference and in conjunction with service. Hot water is not produced in emergency mode.

Emergency mode is activated by setting switch (SF1) to "⚠". This means that:

- The status lamp illuminates yellow.
- The display is not lit and the control computer is not connected.
- Hot water is not produced.
- The compressor in the heat pump and charge pump are switched off.
- The heating medium pump is active.
- The emergency mode relay (K1) is active.

External additional heating is active if it is connected to the emergency mode relay (K1, terminal block X1). Ensure that the heating medium circulates through the external additional heating.

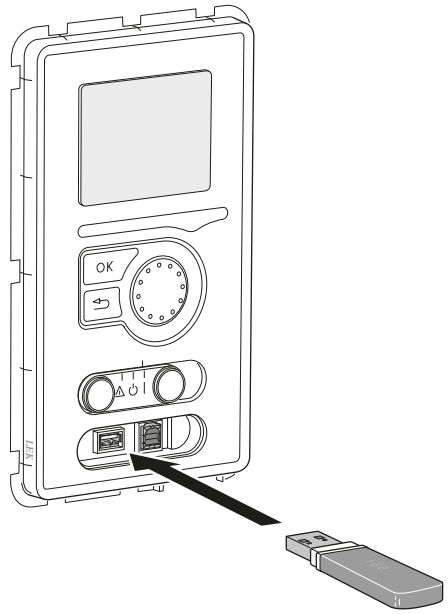
Draining the water heater (if docked)

The siphon principle is used to empty the hot water heater. This can be done either via the drain valve on the incoming cold water pipe or by inserting a hose into the cold water connection.

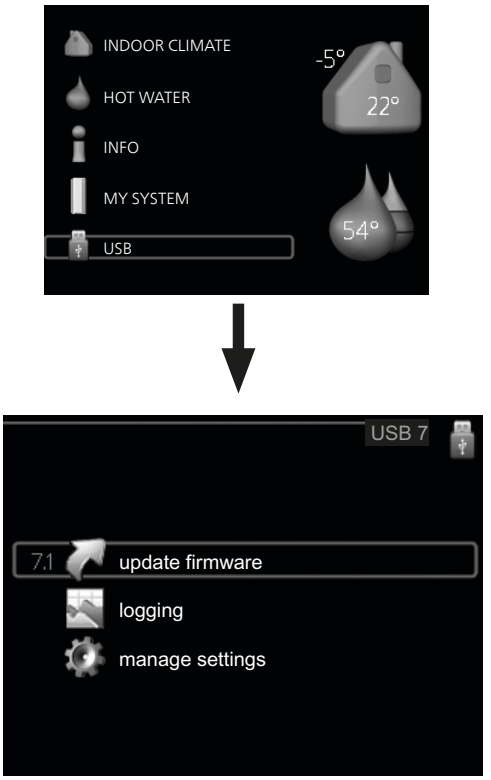
Temperature sensor data

Temperature (°C)	Resistance (kOhm)	Voltage (VDC)
-40	351.0	3.256
-35	251.6	3.240
-30	182.5	3.218
-25	133.8	3.189
-20	99.22	3.150
-15	74.32	3.105
-10	56.20	3.047
-5	42.89	2.976
0	33.02	2.889
5	25.61	2.789
10	20.02	2.673
15	15.77	2.541
20	12.51	2.399
25	10.00	2.245
30	8.045	2.083
35	6.514	1.916
40	5.306	1.752
45	4.348	1.587
50	3.583	1.426
55	2.968	1.278
60	2.467	1.136
65	2.068	1.007
70	1.739	0.891
75	1.469	0.785
80	1.246	0.691
85	1.061	0.607
90	0.908	0.533
95	0.779	0.469
100	0.672	0.414

USB service outlet

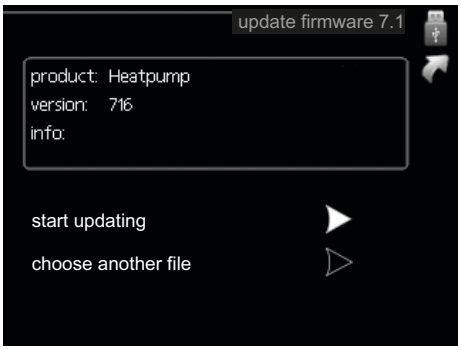


SMO 20 is equipped with a USB socket in the display unit. This USB socket can be used to connect a USB memory to update the software, save logged information and handle the settings in SMO 20.



When a USB memory is connected a new menu (menu 7) appears in the display.

Menu 7.1 - update firmware



This allows you to update the software in SMO 20.

NOTE

For the following functions to work the USB memory must contain files with software for SMO 20 from NIBE.

The fact box at the top of the display shows information (always in English) of the most probable update that the update software has selected form the USB memory.

This information states which product the software is intended for, the software version and general information about them. If you wish to select another file than the one selected, the correct file can be selected by "choose another file".

start updating

Select “start updating" if you want to start the update. You are asked whether you really want to update the software. Respond "yes" to continue or "no" to undo.

If you responded"yes" to the previous question the update starts and you can now follow the progress of the update on the display. When the update is complete SMO 20 restarts.

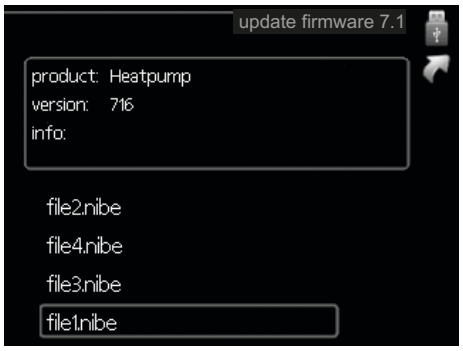
NOTE

A software update does not reset the menu settings in SMO 20.

NOTE

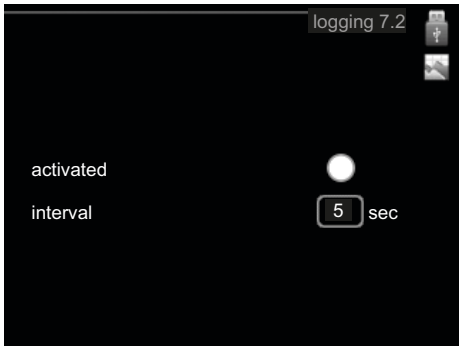
If the update is interrupted before it is complete (for example power cut etc.) the software can be reset to the previous version if the OK button is held in during start up until the green lamp starts to illuminate (takes about 10 seconds).

choose another file



Select “choose another file" if you do not want to use the suggested software. When you scroll through the files, information about the marked software is shown in a fact box just as before. When you have selected a file with the OK button you will return to the previous page (menu 7.1) where you can choose to start the update.

Menu 7.2 - logging



Setting range: 1 s – 60 min

Default setting range: 5 s

Set whether the present measurement values from SMO 20 are to be saved in a log on the USB memory.

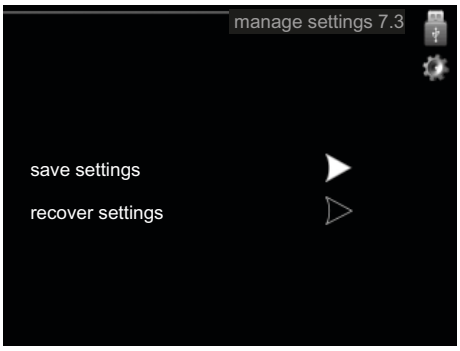
Log for longer periods

1. Set the desired interval between loggings.
2. Tick “activated".
3. The present values from SMO 20 are saved in a file in the USB memory at the set interval until “activated" is unticked.

Caution

Untick "activated" before removing the USB memory.

Menu 7.3 - manage settings



Here you can manage (save as or retrieve from) all the menu settings (user and service menus) in SMO 20 with a USB memory.

Via "save settings" you save the menu settings to the USB memory in order to restore them later or to copy the settings to another SMO 20.

NOTE

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

Via "recover settings" you reset all menu settings from the USB memory.

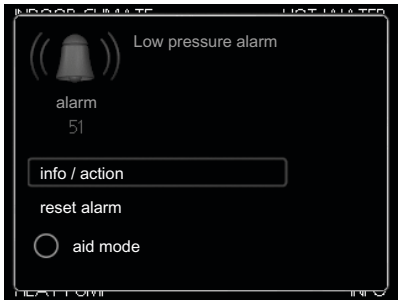
NOTE

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

10 Disturbances in comfort

In most cases, the control module notes a malfunction and indicates this with alarms and shows instructions to rectify it in the display. See "Manage alarm" for information about managing alarms. If the malfunction does not appear in the display, or if the display is not lit, the following troubleshooting guide can be used.

Manage alarm



In the event of an alarm, some kind of malfunction has occurred, which is indicated by the status lamp changing from green continuously to red continuously. In addition, an alarm bell appears in the information window.

Alarm

In the event of an alarm with a red status lamp a malfunction has occurred that the heat pump and/or control module cannot remedy itself. In the display, by turning the control knob and pressing the OK button, you can see the type of alarm it is and reset it. You can also choose to set the installation to aid mode.

info / action Here you can read what the alarm means and receive tips on what you can do to correct the problem that caused the alarm.

reset alarm In most cases it is enough to select "reset alarm" to correct the problem that caused the alarm. If a green light illuminates after selecting "reset alarm" the alarm has been remedied. If a red light is still visible and a menu called ”alarm” is visible in the display, the problem that caused the alarm remains. If the alarm disappears and then returns, see the troubleshooting section (page 46).

aid mode ”aid mode” is a type of emergency mode. This means that the installation produces heat and/or hot water despite there being some kind of problem. This can mean that the heat pump's compressor is not running. In this case any electrical addition produces heat and/or hot water.

Caution

Selecting "aid mode” is not the same as correcting the problem that caused the alarm. The status lamp will therefore continue to be 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 possible fault sources:

- The switch's (SF1) position.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.
- The control module's miniature circuit breaker (FA1).

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 choked filling valve for the hot water heater.
  - Open the valve.
- Mixing valve (if there is one installed) set too low.
  - Adjust the mixer valve.
- Control module in incorrect operating mode.
  - If mode "manual" is selected, select "addition".
- Large hot water consumption.
  - Wait until the hot water has heated up. Temporarily increased hot water capacity (temporary lux) can be activated in menu 2.1.
- Too low hot water setting.
  - Enter menu 2.2 and select a higher comfort mode.
- Too low or no operating prioritisation of hot water.
  - Enter menu 4.9.1 and increase the time for when hot water is to be prioritised.

Low room temperature

- Closed thermostats in several rooms.
  - Set the thermostats to max in as many rooms as possible. Adjust the room temperature via menu 1.1 instead of choking the thermostats.
- Control module in incorrect operating mode.
  - Enter menu 4.2. If mode "auto" is selected, select a higher value on "stop heating” in menu 4.9.2.
  - If mode "manual" is selected, select "heating". If this is not enough, select "addition".
- Too low set value on the automatic heating control.
  - Enter menu 1.1 "temperature" and adjust the offset of the heating curve. If the room temperature is only low in cold weather the curve slope in menu 1.9.1 "heating curve" needs adjusting up.
- Too low or no operating prioritisation of heat.
  - Enter menu 4.9.1 and increase the time for when heating is to be prioritised.
- "Holiday mode" activated in menu 4.7.
  - Enter menu 4.7 and select “Off”.
- External switch for changing the room heating activated.
  - Check any external switches.
- Air in the climate system.
  - Vent the climate system.
- Closed valves (QM20), (QM32)to the climate system.
  - Open the valves.

High room temperature

- Too high set value on the automatic heating control.
  - Enter menu 1.1 (temperature) and adjust the heat curve offset downwards. If the room temperature is only high in cold weather the curve slope in menu 1.9.1 (heating curve) needs to be adjusted down.
- External switch for changing the room heating activated.
  - Check any external switches.

Low system pressure

- Not enough water in the climate system.
  - Top up the water in the climate system.

The compressor does not start

- There is no heating requirement.
  - The heat pump does not call on heating nor hot water.
- Temperature conditions tripped.
  - Wait until the temperature condition has been reset.
- Minimum time between compressor starts has not been reached.
  - Wait 30 minutes and check if the compressor has started.
- Alarm tripped.
  - Follow the display instructions.

Additional heating only

If you are unsuccessful in rectifying the fault and are unable to heat the house, you can, whilst waiting for assistance, continue running the heat pump in "add. heat only". This means that additional heating only is used to heat the house.

Set the installation to additional heat mode

1. Go to menu 4.2 op. mode.
2. Mark "add. heat only" using the control knob and then press the OK button.
3. Return to the main menus by pressing the Back button.

NOTE

If a heat pump is not connected by pipes to the system the flow must be shut off (the pipe ends connected to each other) where the heat pump should have been installed.

Caution

When commissioning without NIBE air/water heat pump an alarm communication error may appear in the display.

The alarm is reset if the relevant heat pump is deactivated in menu 5.2.2 ("installed slaves").

11 Accessories

Auxiliary relay HR 10

Part no. 067 309

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

Connection box K11

Connection box with thermostat and overheating protection.
Part no. 018 893

External electrical addition ELK

ELK 5

Immersion heater
5 kW, 1 x 230 V
Part no. 069 025

ELK 8

Immersion heater
8 kW, 1 x 230 V
Part no. 069 026

ELK 15

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

ELK 26

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

Heat pump

F2030

7 kW Part no. 064 099
9 kW Part no. 064 070

F2040

8 kW Part no. 064 109
12 kW Part no. 064 092
16 kW Part no. 064 108

F2300

14 kW Part no. 064 063
20 kW Part no. 064 064

Hot water control

VST 05

Three way valve, Cu-pipe Ø22
Max heat pump size 8 kW
Part no. 089 882

VST 11

Shuttle valve, Cu-pipe Ø28
(Max recommended power, 17 kW)
Part no. 089 152

VST 20

Reversing valve, Cu-pipe Ø35
(Max recommended power, 40 kW)
Part no. 089 388

Immersion heater IU

3 kW Part no. 018 084
6 kW Part no. 018 088
9 kW Part no. 018 090

Room sensor RTS 40

Part no. 067 065

Water heater/Accumulator tank

VPA 450/300

Water heater with double-jacketed vessel.
Copper Part no. 088 660
Enamel Part no. 088 670

VPB 200

Hot water heater with charge coil
Copper Part no. 088 515
Enamel Part no. 088 517
Stainless steel Part no 088 518

VPB 300

Hot water heater with charge coil
Copper Part no. 083 009
Enamel Part no. 083 011
Stainless steel Part no 083 010

VPB 500

Hot water heater with charge coil
Copper Part no. 083 220

VPB 750-2

Hot water heater with charge coil
Copper Part no. 083 231

VPB 1000

Hot water heater with charge coil
Copper Part no. 083 240

VPAS 300/450

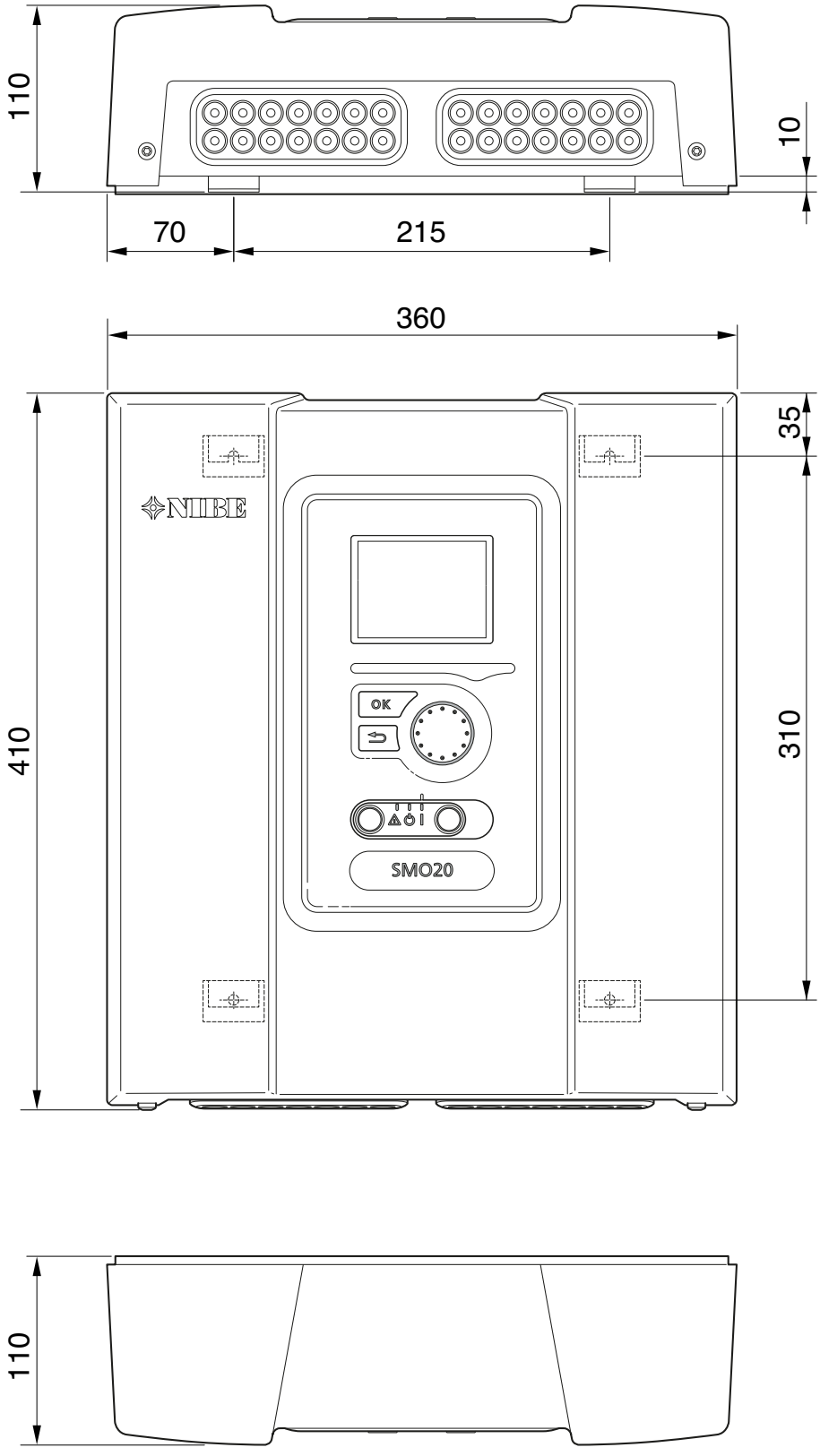
Water heater with double-jacketed vessel and solar coil.

Copper Part no. 087 720

Enamel Part no. 087 710

12 Technical data

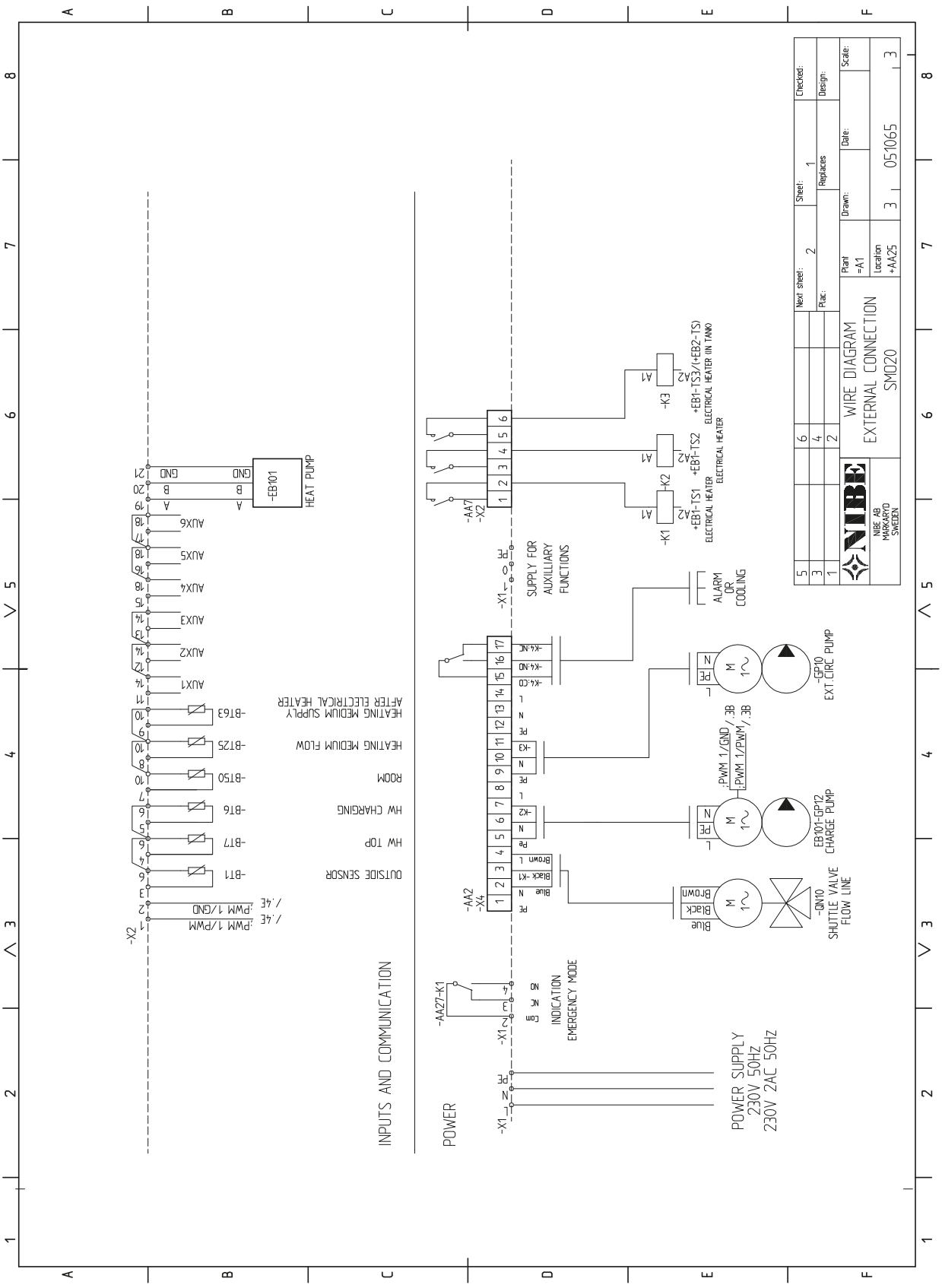
Dimensions and setting-out coordinates

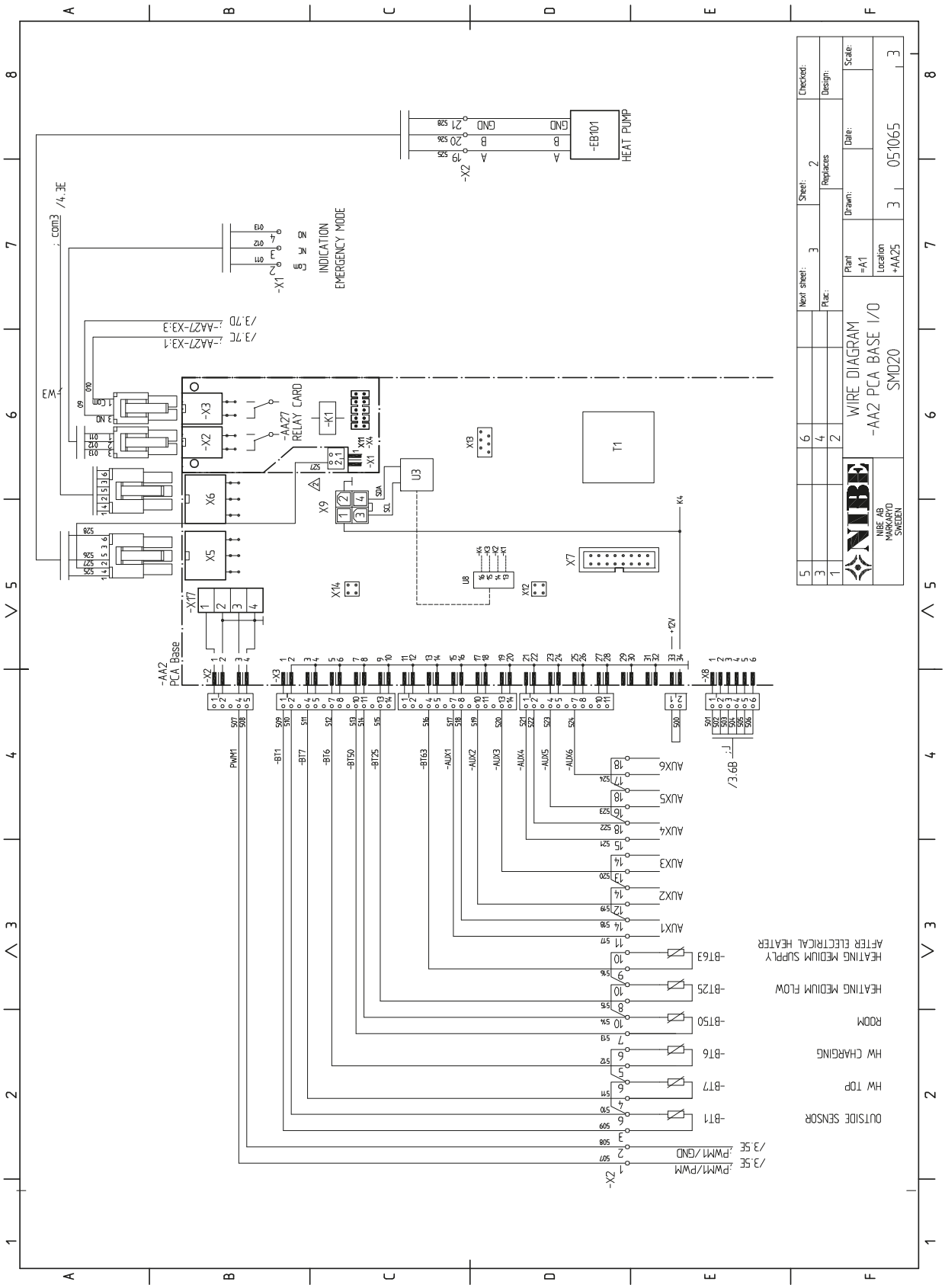


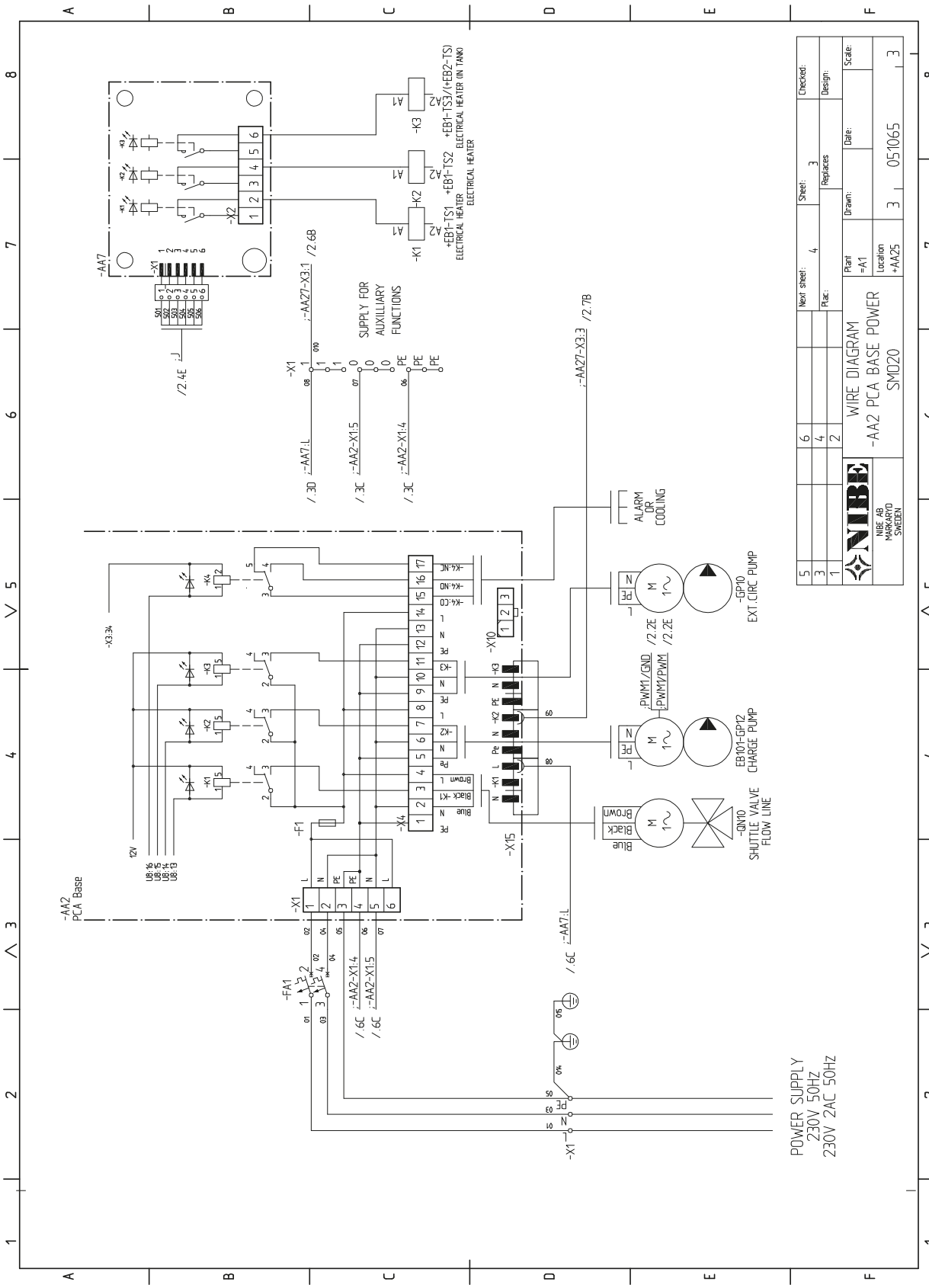
Technical specifications

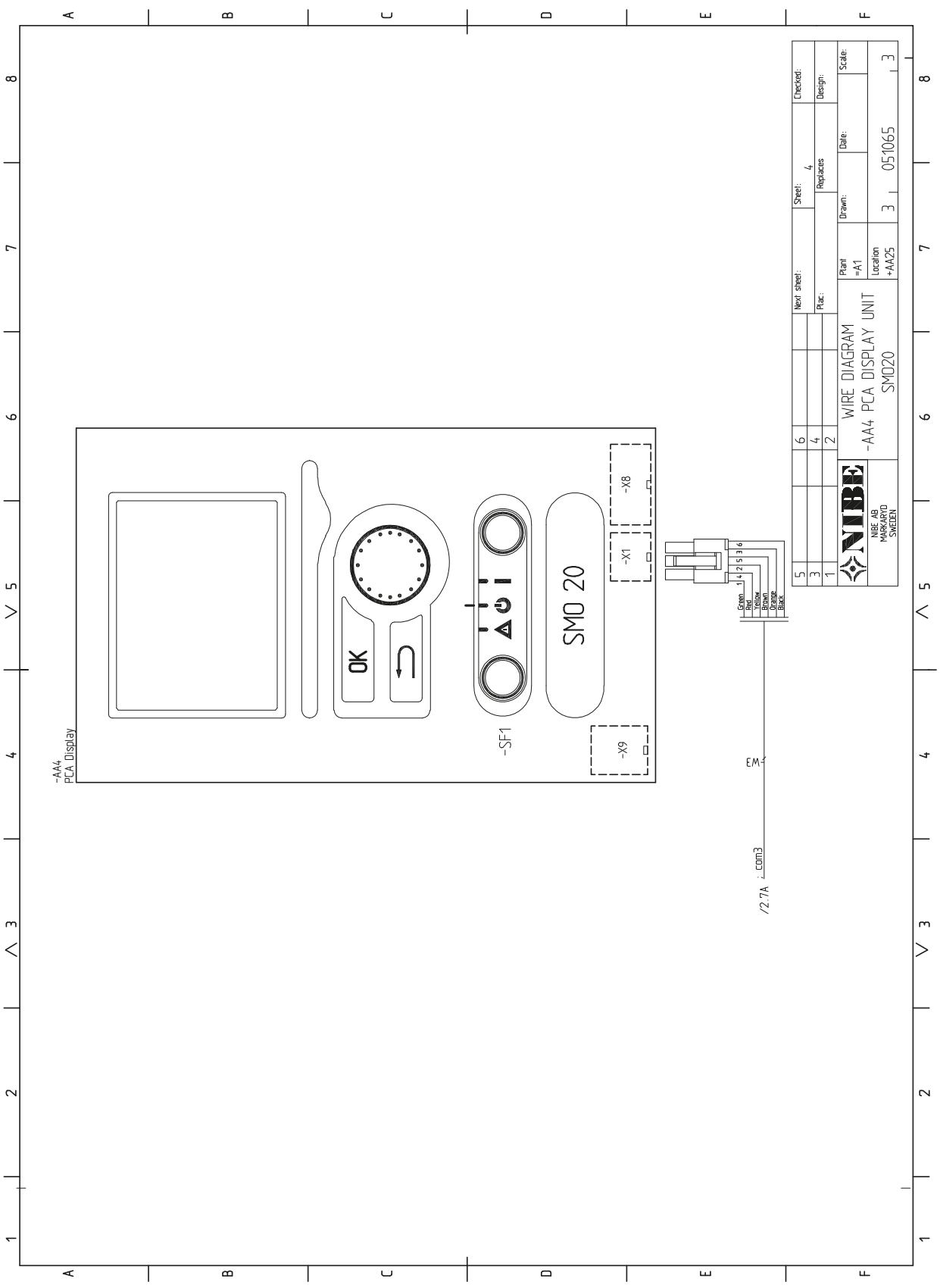
SMO 20		
Width	(mm)	360
Height	(mm)	410
Depth	(mm)	110
Weight, (without packaging and enclosed components)	(kg)	4.3
Enclosure class		IP21
Max number air/water heat pumps		1
Max number of sensors		7
Max number of charge pumps		1
Max number of circulation pumps/climate systems		1
Supply voltage		230 V ~ 50 Hz
Max number of outputs for additional heat step		3
Operation mode (EN60730)		Type 1
Electrical contamination		2
Area of operation	(°C)	-25 – 70
Ambient temperature	(°C)	5 – 35
Program cycles		Hours: 1, 24 Days: 1, 2, 5, 7
Resolution, program	(min)	1
Rated value for impulse voltage	(kV)	4
Part No.		067 224

Electrical circuit diagram




WIRE DIAGRAM
-AA2 PCA BASE I/O
SMO20
NIBE AB
MARKARYD
SWEDEN
Plant =A1
Location +AA25
Drawn:
Date:
Design:
Checked:
Scale:
Sheet: 2
Replaces
Next sheet: 3
Place:
051065
-AA2 PCA Base
-AA27 RELAY CARD
-EB101 HEAT PUMP
INDICATION EMERGENCY MODE
OUTSIDE SENSOR
HW TOP
HW CHARGING
ROOM
HEATING MEDIUM FLOW
HEATING MEDIUM SUPPLY AFTER ELECTRICAL HEATER
AUX1
AUX2
AUX3
AUX4
AUX5
AUX6
PWM1
-BT1
-BT7
-BT6
-BT50
-BT25
-BT63
-AUX1
-AUX2
-AUX3
-AUX4
-AUX5
-AUX6
+12V


WIRE DIAGRAM
-AA2 PCA BASE POWER
SMO20
NIBE AB
MARKARYD
SWEDEN
Next sheet: 4
Plac.:
Plant =A1
Location +AA25
Drawn:
Date:
Sheet: 3
Replaces
Checked:
Design:
Scale:
3 051065 3
-AA2
PCA Base
-AA7
SUPPLY FOR AUXILLIARY FUNCTIONS
ELECTRICAL HEATER
+EB1-TS1 +EB1-TS2 ELECTRICAL HEATER
+EB1-TS3/(+EB2-TS) ELECTRICAL HEATER (IN TANK)
ALARM OR COOLING
-GP10 EXT.CIRC PUMP
EB101-GP12 CHARGE PUMP
-GN10 SHUTTLE VALVE FLOW LINE
POWER SUPPLY
230V 50Hz
230V 2AC 50Hz


-AA4
PCA Display
OK
SMO 20
-SF1
-X1
-X8
-X9
Green
Red
Yellow
Brown
Orange
Black
EM-
/2.7A
com3
WIRE DIAGRAM
-AA4 PCA DISPLAY UNIT
SMO20
NIBE AB
MARKARYD
SWEDEN
Next sheet:
Plac:
Plant
=A1
Location
+AA25
Sheet: 4
Replaces
Drawn:
Date:
Checked:
Design:
Scale:
051065
3

13 Item register

Item register

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231758