IHB EN 2051-13
231175

INSTALLER MANUAL

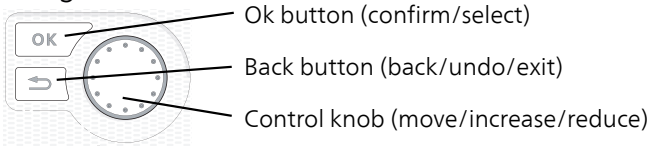
Indoor module
NIBE VVM 310 *EMK*



NIBE

Quick guide

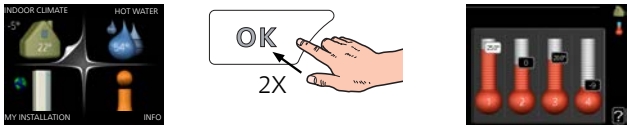
Navigation



A detailed explanation of the button functions can be found on page 39.

How to scroll through menus and make different settings is described on page 41.

Set the indoor climate



The mode for setting the indoor temperature is accessed by pressing the OK button twice, when in the start mode in the main menu.

Increase hot water volume



To temporarily increase the amount of hot water, first turn the control knob to mark menu 2 (water droplet) and then press the OK button twice.

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1 Important information

Safety information

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

The manual must be left with the customer.

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

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System pressure	*Max*	*Min*
Heating medium	0.3 MPa (3 bar)	0.05 MPa (0.5 bar)
Domestic water	1.0 MPa (10 bar)	0.01 MPa (0.1 bar)

Water may drip from the safety valve's overflow pipe. The entire length of the overflow water pipe must be routed to a suitable drain and be inclined to prevent water pockets, and must also be frost-proof. The overflow pipe must be at least the same size as the safety valve. The overflow pipe must be visible and its mouth must be open and not located close to electrical components.

VVM 310 must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.

Symbols

NOTE

This symbol indicates danger to person or machine .

Caution

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

TIP

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

Marking

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

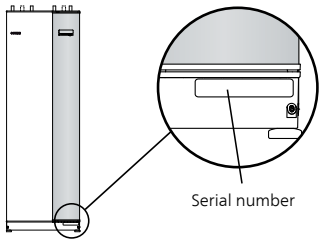
IP21 Classification of enclosure of electro-technical equipment.

Danger to person or machine.

Read the User Manual.

Serial number

The serial number can be found at the bottom right of the front cover, in the info menu (menu 3.1) and on the type plate (PZ1).



Caution

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

Recovery

Leave the disposal of the packaging to the installer who installed the product or to special waste stations.

Do not dispose of used products with normal household waste. It must be disposed of at a special waste station or dealer who provides this type of service.

Improper disposal of the product by the user results in administrative penalties in accordance with current legislation.

Inspection of the installation

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

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

✔	*Description*	*Notes*	*Signature*	*Date*
Heating medium, see section "System diagram"				
	System flushed			
	System vented			
	Expansion vessel			
	Particle filter			
	Safety valve			
	Shut off valves			
	Boiler pressure			
	Connected according to outline diagram			
Hot water, see section "Cold and hot water"				
	Shut off valves			
	Mixing valve			
	Safety valve			
Electricity, see section "Electrical connections"				
	Connected communication			
	Circuit fuses			
	Fuses, indoor module			
	Fuses property			
	Outside sensor			
	Room sensor			
	Current sensor			
	Safety breaker			
	Earth circuit-breaker			
	Setting of emergency mode thermostat			
Miscellaneous				
	Docked to			

Outdoor modules

COMPATIBLE AIR/WATER HEAT PUMPS

NIBE SPLIT HBS 05

AMS 10-6
Part no. 064 205

HBS 05-6
Part no. 067 578

AMS 10-8
Part no. 064 033

HBS 05-12
Part no. 067 480

AMS 10-12
Part no. 064 110

HBS 05-12
Part no. 067 480

AMS 10-16
Part no. 064 035

HBS 05-16
Part no. 067 536

F2040

F2040-6
Part no. 064 206

F2040-8
Part no. 064 109

F2040-12
Part no. 064 092

F2040-16
Part no. 064 108

F2120

F2120-8 1x230V
Part no. 064 134

F2120-8 3x400V
Part no. 064 135

F2120-12 1x230V
Part no. 064 136

F2120-12 3x400V
Part no. 064 137

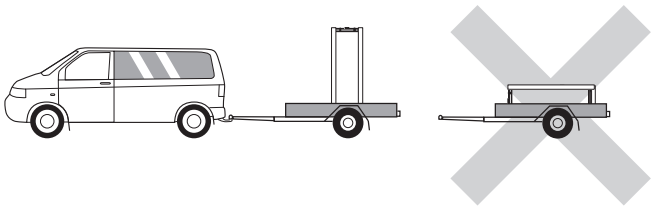
F2120-16 3x400V
Part no. 064 139

Check the software version of compatible older NIBE air/water heat pumps, see page 18.

2 Delivery and handling

Transport

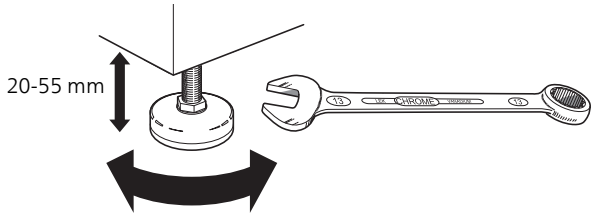
VVM 310 should be transported and stored vertically in a dry place. However, the VVM 310 may be carefully laid on its back when being moved into a building.



Assembly

- Place VVM 310 on a solid foundation indoors that can take its weight. Use the product's adjustable feet to obtain a horizontal and stable set-up.

  The space where VVM 310 is located must be frost-free.

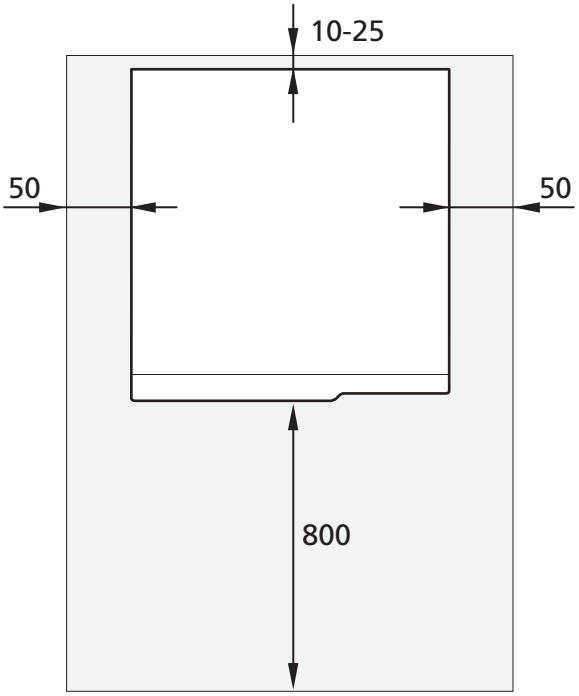


- Because water can exit the safety valve [1] for hot water, when connected to VVM 310, the space where VVM 310 is placed must be provided with a floor drain.

[1] Not enclosed.

INSTALLATION AREA

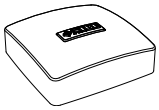
Leave a free space of 800 mm in front of the product. All service on VVM 310 can be carried out from the front.



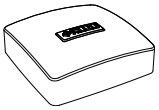
NOTE

Leave 10 – 25 mm free space between VVM 310 and the wall behind for routing cables and pipes.

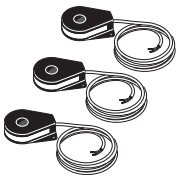
Supplied components



Outside sensor



Room sensor



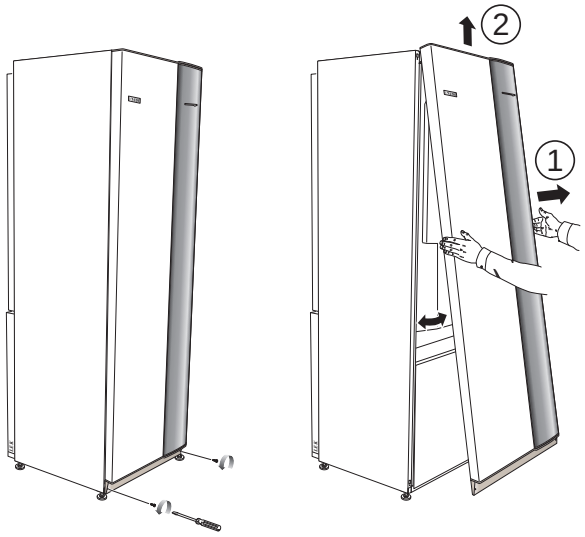
Current sensor

LOCATION

The kit of supplied items is placed on top of the product.

Removing the covers

Front cover



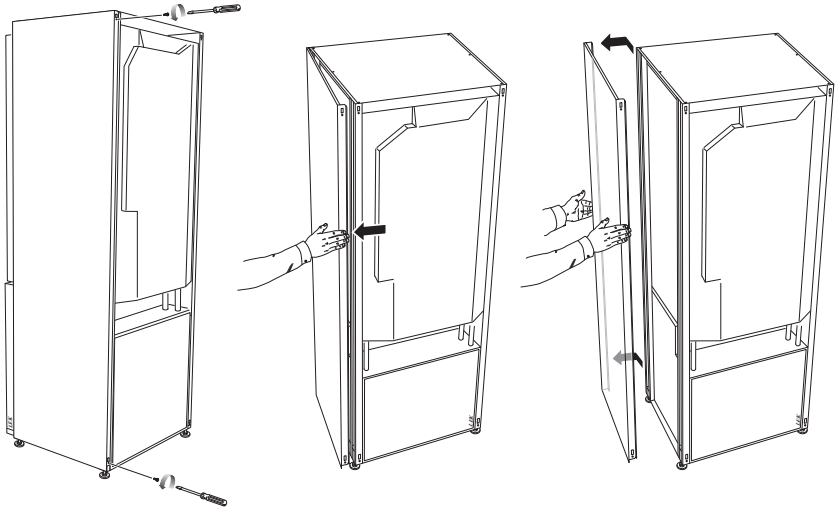
1. Remove the screws from the lower edge of the front panel.
2. Lift the panel out at the bottom edge and up.

Side covers

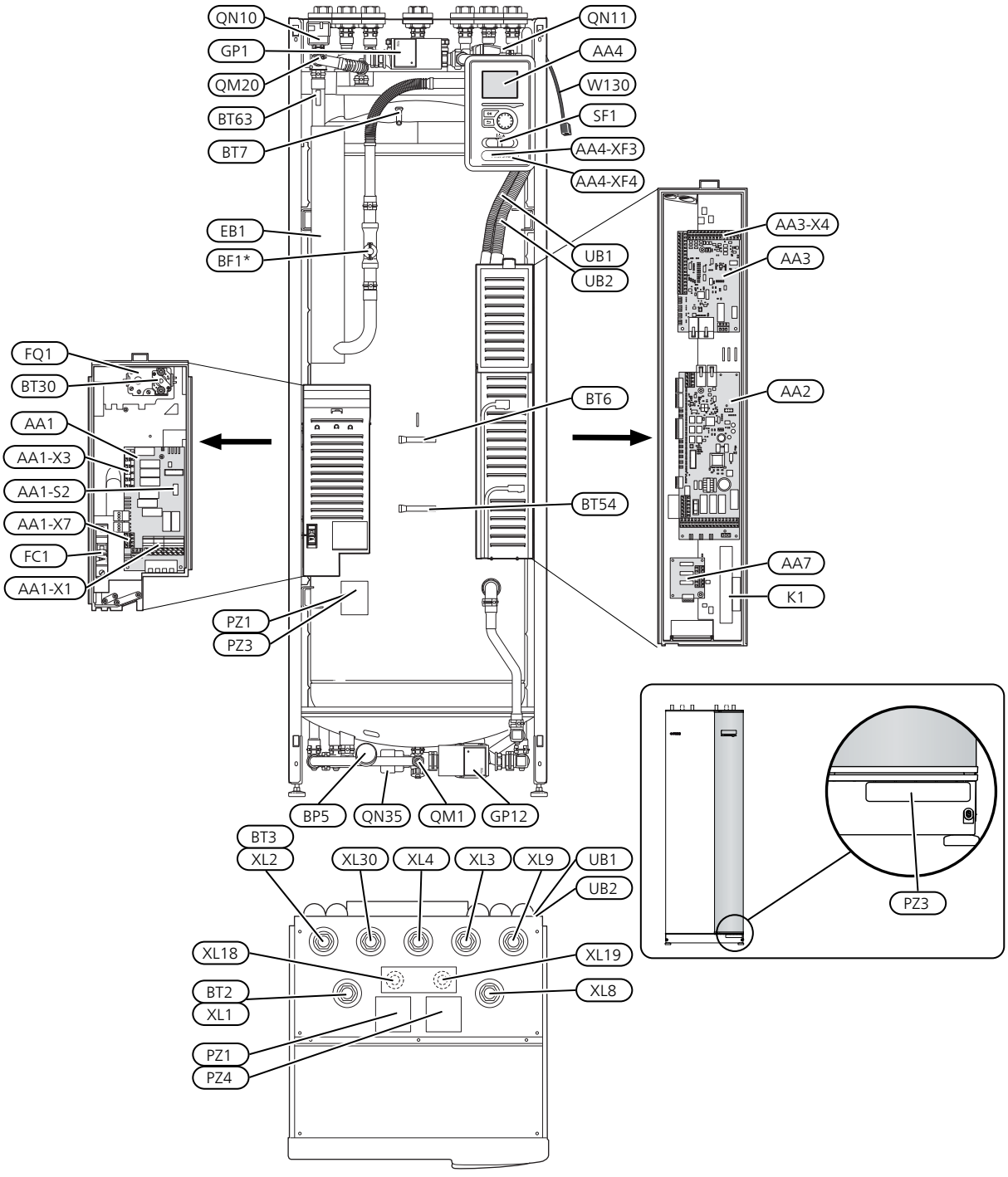
The side covers can be removed to facilitate the installation.

> *Caution*
>
> 50 mm space required to remove the side panels.

1. Remove the screws from the upper and lower edges.
2. Twist the cover slightly outward.
3. Move the hatch backwards and slightly to the side.
4. Pull the cover to one side.
5. Pull the hatch forwards.



3 Indoor module's design



*Applies to VVM 310 EMK. Available as accessory EMK 310 for other markets.

List of components

PIPE CONNECTIONS

XL1 Connection, heating medium supply line G20 int.
XL2 Connection, heating medium return line G20 int.
XL3 Connection, cold water G20 int.
XL4 Connection, hot water G20 int.
XL8 Connection, docking from heat pump G20 int.
XL9 Connection, docking to heat pump G20 int.
XL18 Connection, docking in high temp Ø22 mm
XL19 Connection, docking out high temp Ø22 mm
XL30 Connection, expansion tank G20 int.

HVAC COMPONENTS

GP1 Circulation pump
GP12 Charge pump
QM1 Drain valve, climate system
QM20 Venting, climate system
QN10 Reversing valve, climate system/water heating, flow line
QN11 Mixing valve, addition
QN35 Reversing valve, climate system/water heating, return line

SENSORS ETC.

BP5 Manometer, heating system
BT2 Temperature sensor, heating medium flow (not visible in image)
BT3 Temperature sensor, heating medium return (not visible in image)
BT6 Temperature sensor, hot water, charging
BT7 Temperature sensor, hot water, top
BT30 Thermostat, standby mode
BT54 Temperature sensor, external docking
BT63 Temperature sensor, heating medium supply after immersion heater

ELECTRICAL COMPONENTS

AA1 Immersion heater card
AA1-S2 Switch (DIP switch) on circuit board
AA1-X1 Terminal block incoming
AA1-X3 Terminal block, immersion heater
AA1-X7 Terminal block, immersion heater
AA2 Base card
AA3 Input circuit board
AA3-X4 Terminal block, current sensors
AA4 Display unit
AA4-XF3 USB socket
AA4-XF4 Service socket
AA7 Extra relay circuit board
BF1* Energy meter
EB1 Immersion heater
FC1 Miniature circuit-breaker
FQ10 Temperature limiter
K1 Auxiliary relay, emergency mode.
SF1 Switch
W130 Network cable for NIBE Uplink™

MISCELLANEOUS

PZ1 Rating plate
PZ3 Serial number plate
PZ4 Sign, pipe connections
UB1 Cable gland
UB2 Cable gland

Designations according to standard EN 81346-2.

*Applies to VVM 310 EMK. Available as accessory EMK 310 for other markets.

4 Pipe connections

General pipe connections

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

The pipe dimension should not be less than the recommended pipe diameter according to the table. However, each system must be dimensioned individually to manage the recommended system flows.

MINIMUM SYSTEM FLOWS

The installation must be dimensioned at least to manage the minimum defrosting flow at 100% pump operation, see table.

Air/water heat pump	*Minimum flow during defrosting (100% pump speed (l/s)*	*Minimum recommended pipe dimension (DN)*	*Minimum recommended pipe dimension (mm)*
F2120-8 (1x230V)	0.27	20	22
F2120-8	0.27	20	22
F2120-12 (1x230V)	0.35	25	28
F2120-12	0.35	25	28
F2120-16	0.38	25	28

Air/water heat pump	*Minimum flow during defrosting (100% pump speed (l/s)*	*Minimum recommended pipe dimension (DN)*	*Minimum recommended pipe dimension (mm)*
F2040-6	0.19	20	22
F2040-8	0.19	20	22
F2040-12	0.29	20	22
F2040-16	0.39	25	28

Air/water heat pump	*Minimum flow during defrosting (100% pump speed (l/s)*	*Minimum recommended pipe dimension (DN)*	*Minimum recommended pipe dimension (mm)*
HBS 05-6/ AMS 10-6	0.19	20	22
HBS 05-12/ AMS 10-8	0.19	20	22
HBS 05-12/ AMS 10-12	0.29	20	22
HBS 05-16/ AMS 10-16	0.39	25	28

NOTE

An undersized system can result in damage to the machine and lead to malfunctions.

VVM 310 together with a compatible air/water heat pump (See chapter "Outdoor modules") constitutes a complete installation for heating and hot water.

The system requires the size of the radiator circuit to be designed for a low temperature heating medium. At the lowest dimensioned outdoor temperature, the highest recommended temperatures are 55 °C on the supply line and 45 °C on the return line, but VVM 310 can handle up to 70 °C on the supply line.

NOTE

Equip the product with a safety valve on both the boiler side and hot water coil.

Overflow water from the safety valve goes via an overflow cup to a drain so that hot water splashes cannot cause injury. The entire length of the overflow water pipe must be inclined to prevent water pockets, and must also be frost-proof. The mouth of the overflow water pipe must be visible and not located close to electrical components.

NIBE recommends installing VVM 310 as close to the heat pump as possible for optimum comfort. For further information about the location of different components, see section "Installation alternatives" in this manual.

Caution

Ensure that incoming water is clean. When using a private well, it may be necessary to supplement with an extra water filter.

NOTE

Any high points in the climate system, must be equipped with air vents.

NOTE

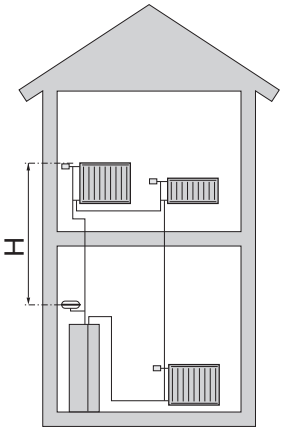
The pipe systems need to be flushed out before the indoor module is connected so that any debris cannot damage component parts.

NOTE

Switch (SF1) must not be moved to "I" or "⚠" until VVM 310 has been filled with water. Otherwise the temperature limiter, thermostat and the immersion heater etc can be damaged.

BOILER AND RADIATOR VOLUMES

Internal volume in VVM 310 for calculating expansion vessel is 250 l. The expansion vessel's volume must be at least 5 % of the system's total volume.



Example table

Total volume (l) (indoor module and climate system)	*Volume (l) expansion vessel*
500	25
700	35
1,000	50

NOTE

Expansion vessel is not supplied with the product. Equip the product with an expansion vessel.

The pre-pressure of the pressure expansion vessel must be dimensioned according to the maximum height (H) between the vessel and the highest positioned radiator, see figure. A pre-pressure of 0.5 bar (5 mvp) means a maximum permitted height difference of 5 m.

If the standard initial pressure in the pressure vessel is not high enough it can be increased by filling via the valve in the expansion vessel. The expansion vessel's standard initial pressure must be entered in the check list on page 6.

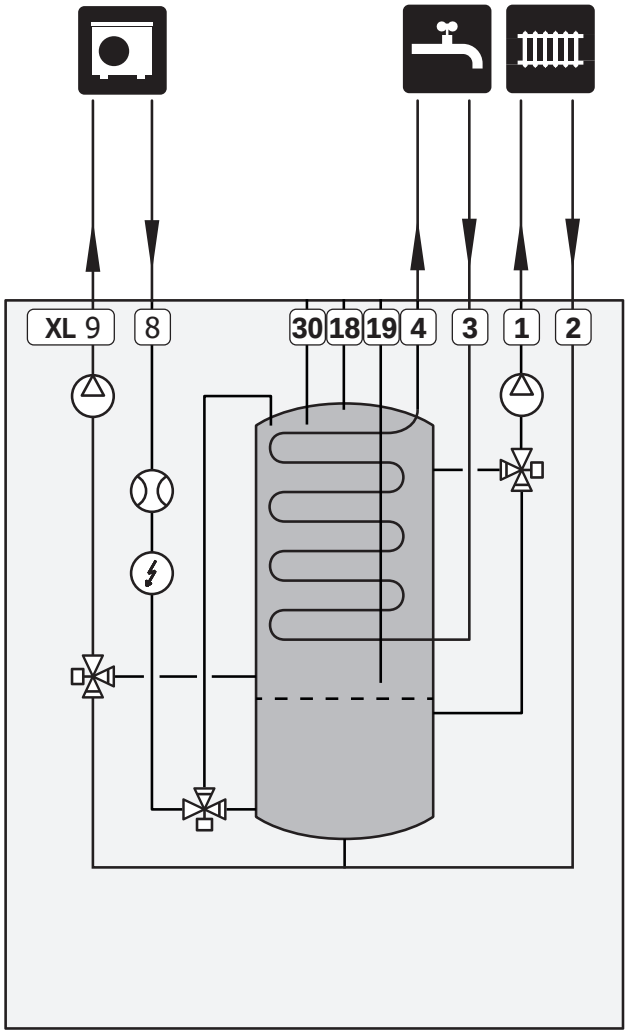
Any change in the initial pressure affects the ability of the expansion vessel to handle the expansion of the water.

SYSTEM DIAGRAM

VVM 310 consists of hot water coil for hot water heating, immersion heater, circulation pumps, buffer vessel and control system. VVM 310 connects to the climate system.

VVM 310 is directly adapted for connection and communication with a compatible NIBE air/water heat pump, see section "Outdoor modules", and together they constitute a complete heating installation.

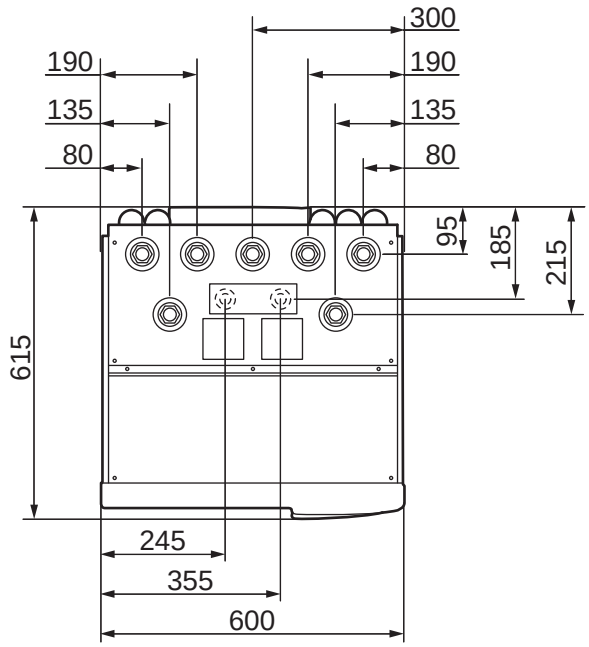
When it is cold outdoors, the air/water heat pump works with VVM 310, and if the outdoor air temperature falls below the heat pump's stop temperature, all heating is carried out by VVM 310.

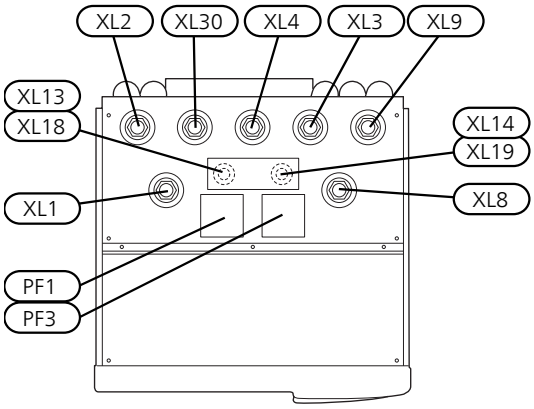


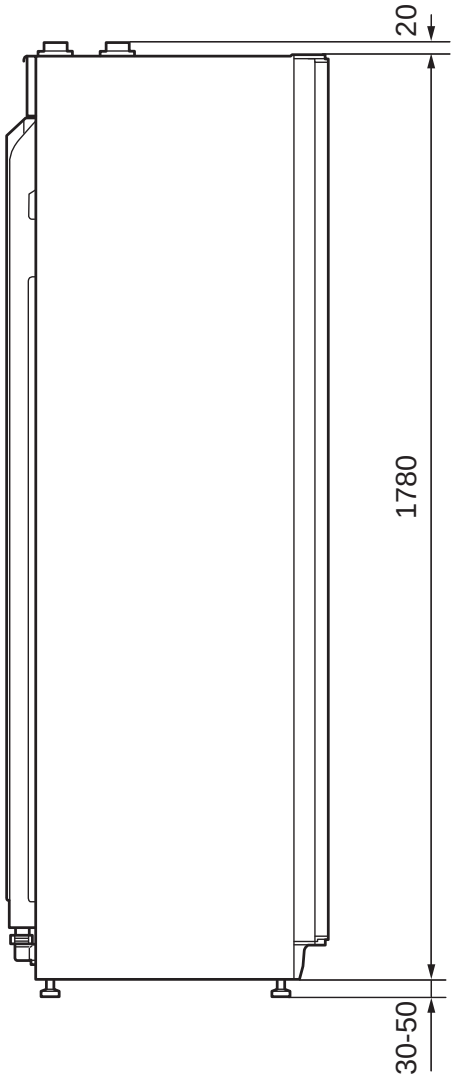
SYMBOL KEY

Symbol	*Meaning*
	Shut-off valve
	Non-return valve
	Mixing valve
	Circulation pump
	Immersion heater
	Expansion vessel
	Filterball
	Flow meter/energy meter
	Shut off valve
	Pressure gauge
	Control valve
	Safety valve
	Reversing valve/shunt
	Manual reversing valve/shunt
	Under floor heating systems
	Indoor module
	Cooling system
	Air/water heat pump
	Radiator system
	Domestic hot water
	Hot water circulation

Dimensions and pipe connections







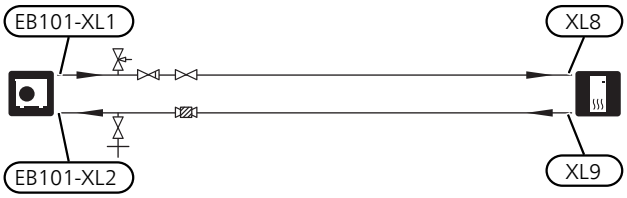
PIPE CONNECTIONS

XL1	Connection, heating medium supply line G20 int.
XL2	Connection, heating medium return line G20 int.
XL3	Connection, cold water G20 int.
XL4	Connection, hot water G20 int.
XL8	Connection, docking from heat pump G20 int.
XL9	Connection, docking to heat pump G20 int.
XL13	Connection, solar heating system supply line Ø22 mm
XL14	Connection, solar heating system return line Ø22 mm
XL18	Connection, docking in high temp Ø22 mm
XL19	Connection, docking out high temp Ø22 mm
XL30	Connection, expansion tank G20 int.

Connecting air/water heat pump

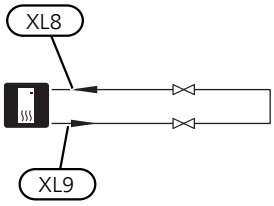
You can find a list of compatible air/water heat pumps in section "Outdoor modules".

VVM 310 is not equipped with shut off valves; these must be installed outside the indoor module to facilitate any future servicing.



Connection during use without heat pump

Connect the pipe for docking in from the heat pump (XL8) with the pipe out to the heat pump XL9.

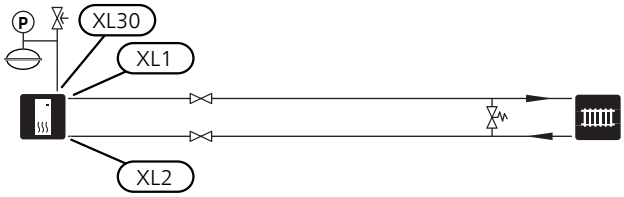


Heating medium side

CONNECTING THE CLIMATE SYSTEM

A climate system is a system that regulates indoor comfort with the help of the control system in VVM 310 and for example radiators, underfloor heating/cooling, fan convectors etc.

- Install expansion vessel (CM1) and pressure gauge (BP5) in connection XL30.
- Install the safety valve as illustrated. Recommended opening pressure is 0.25 MPa (2.5 bar). For information about max opening pressure, see technical specifications.
- Install shut off valves (installed as close to VVM 310 as possible.
- When connecting to a system with thermostats on all radiators (or underfloor heating coils), either a bypass valve must be fitted or some of the thermostats must be removed to ensure there is sufficient flow.



Cold and hot water

The settings for hot water are made in menu 5.1.1.

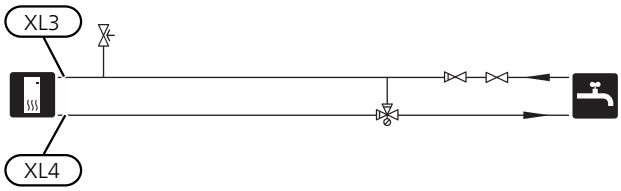
CONNECTING COLD AND HOT WATER

Install as follows:

- shut-off valve
- non-return valve
- pressure relief valve

  The safety valve must have a maximum 1.0 MPa (10.0 bar) opening pressure and be installed on the incoming domestic water line as shown.
- mixing valve

  A mixer valve must also be installed, if the factory setting for hot water is changed. National regulations must be observed.



Installation alternative

VVM 310 can be installed in several different ways, some of which are shown below.

Further option information is available at nibe.eu and in the respective assembly instructions for the accessories used. See page 63 for a list of the accessories that can be used with VVM 310.

COMPATIBLE NIBE AIR/WATER HEAT PUMPS

Compatible NIBE air/water heat pump must be equipped with a control board with a display with the minimum software version indicated in the following list. The version of the control board is displayed in the heat pump's display (if applicable) at start-up.

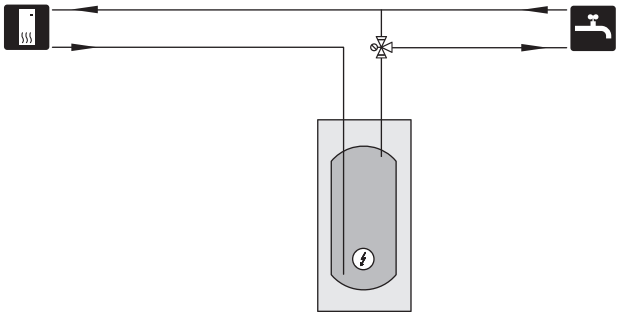
Product	*Software version*
F2020	118
F2025	55
F2026	55
F2030	all versions
F2040	all versions

Product	*Software version*
F2120	all versions
NIBE SPLIT HBS 05: AMS 10-6 + HBS 05-6 AMS 10-8 + HBS 05-12 AMS 10-12 + HBS 05-12 AMS 10-16 + HBS 05-16	all versions

EXTRA HOT WATER HEATERS

Water heater with immersion heater

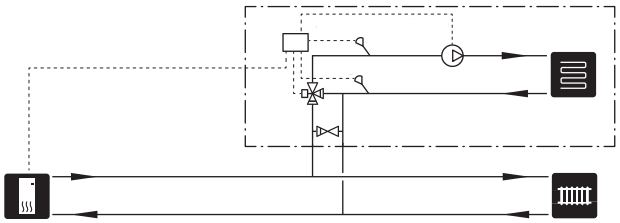
If it is possible to use a water heater with an immersion heater, connect it as illustrated below.



EXTRA CLIMATE SYSTEM

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

A shunt valve then lowers the temperature to the under-floor heating system, for example.

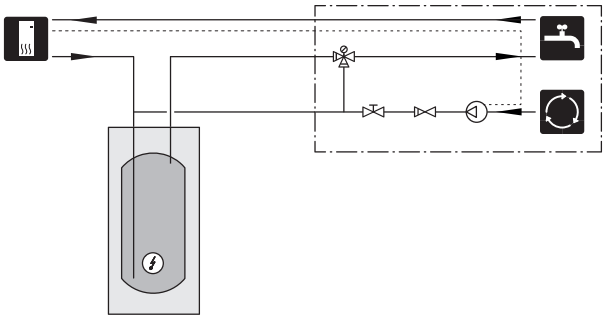


CONNECTING HOT WATER CIRCULATION

A circulation pump can be controlled by VVM 310 to circulate the hot water. The circulating water must have a temperature that prevents bacterial growth and scalding, and national standards must be satisfied.

The HWC return is connected to a freestanding water heater.

The circulation pump is activated via AUX input in menu 5.4.

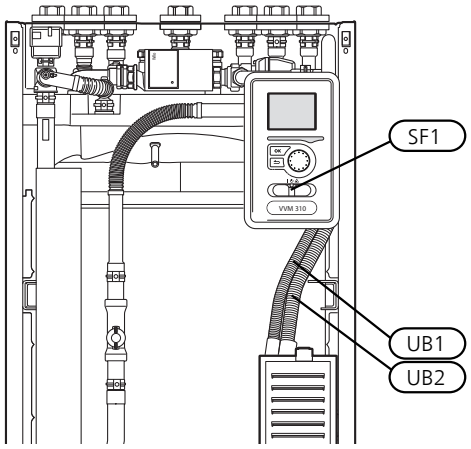


5 Electrical connections

General

All electrical equipment, except the outdoor sensors, room sensors and the current sensors are ready connected at the factory.

- Disconnect the indoor module before insulation testing the house wiring.
- If the building is equipped with an earth-fault breaker, VVM 310 should be equipped with a separate one.
- For the indoor module electrical wiring diagram, see section "Electrical circuit diagram".
- 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, for example EKKX or LiYY or equivalent.
- When cable routing in VVM 310, cable grommets UB1and UB2, (marked in image) must be used. In UB1 and UB2, the cables are inserted through the indoor module from the back to the front.



NOTE

The switch (SF1) must not be set to "I" or "⚠" until the boiler has been filled with water and the radiator system vented. Otherwise the temperature limiter, thermostat and the immersion heater can be damaged.

NOTE

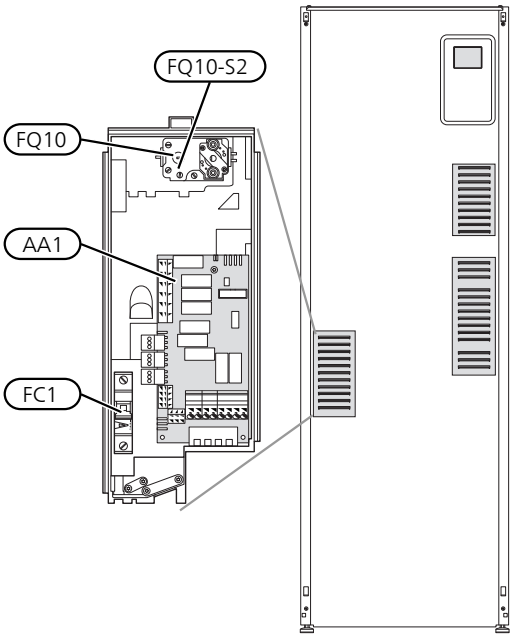
If the supply cable is damaged, only NIBE, its service representative or similar authorised person may replace it to prevent any danger and damage.

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.

Caution

When VVM 310 has to be run with an older outdoor section, the program version in the outdoor section must be 55 or later. See table in section Compatible NIBE air/water heat pumps on page 18.



MINIATURE CIRCUIT-BREAKER

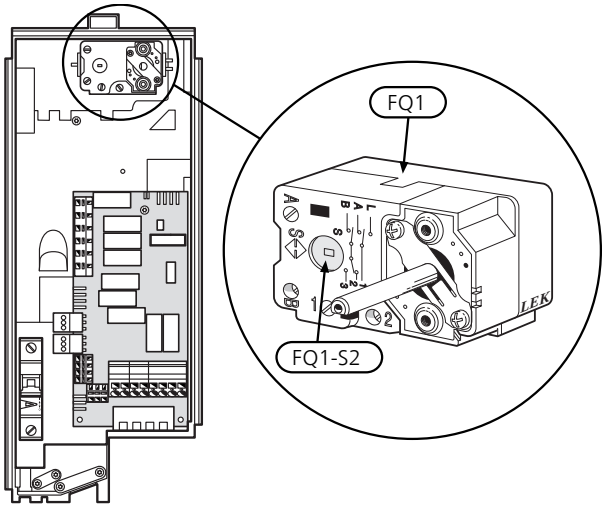
The indoor module and a large proportion of its internal components are internally fused by a miniature circuit breaker (FC1).

TEMPERATURE LIMITER

The temperature limiter (FQ10) cuts the power supply to the electric additional heat, if the temperature rises to between 90 and 100 °C and it is reset manually.

Resetting

The temperature limiter (FQ10) is accessible behind the front cover. Reset the temperature limiter by pressing the button (FQ10-S2) using a small screwdriver. Press the button lightly, max. 15 N (approx. 1.5 kg).

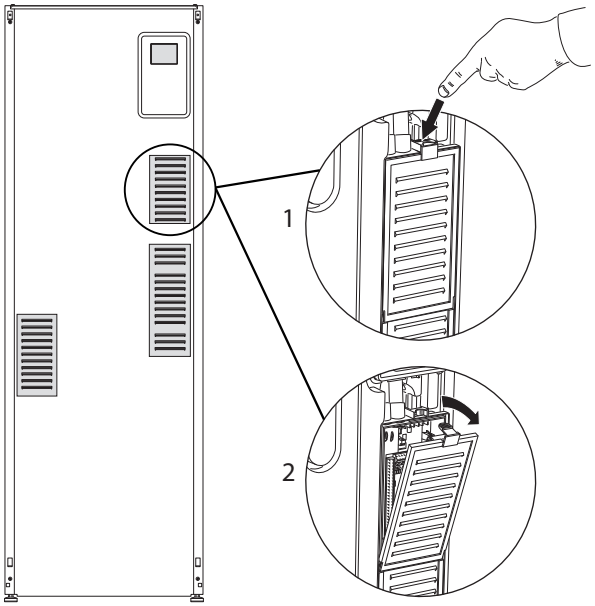


ACCESSIBILITY, ELECTRICAL CONNECTION

The plastic cap of the electrical boxes is opened using a screwdriver.

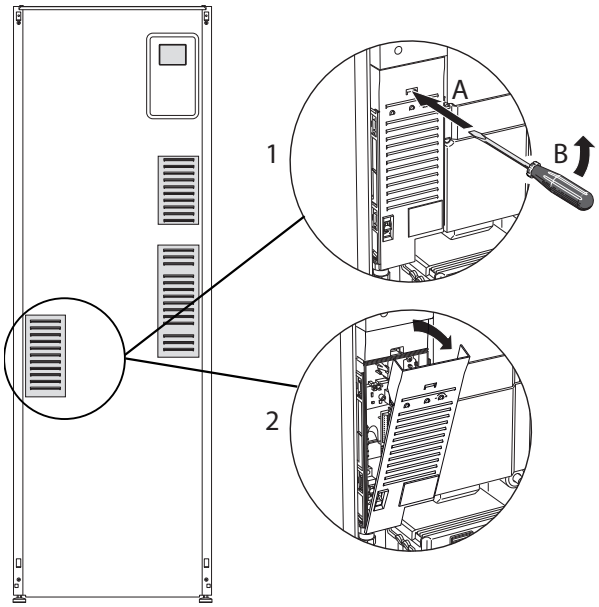
> ⚠ *NOTE*
>
> The cover for the input card is opened without a tool.

Removing the cover, input circuit board



1. Push the catch down.
2. Angle out the cover and remove it.

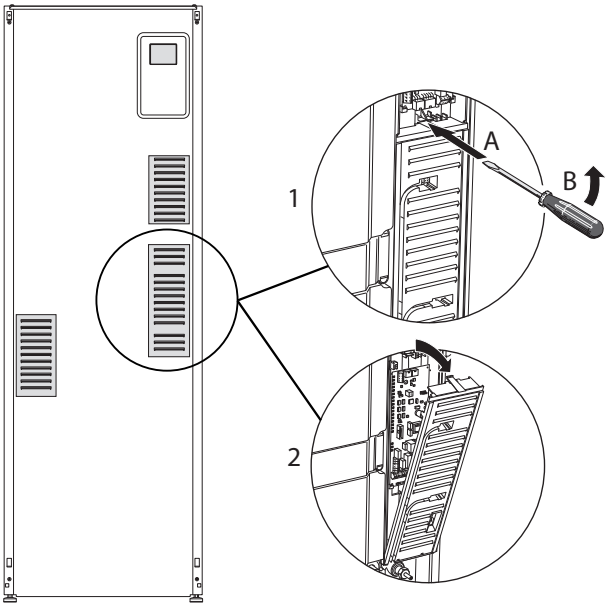
Removing the cover, immersion heater circuit board



1. Insert the screwdriver (A) and pry the catch carefully downwards (B).
2. Angle out the cover and remove it.

Removing the cover, base board

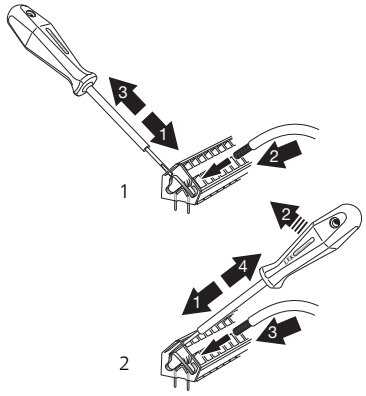
> *Caution*
>
> To remove the cover for the base board, the cover for the input circuit board must first be removed.



1. Insert the screwdriver (A) and pry the catch carefully downwards (B).
2. Angle out the cover and remove it.

CABLE LOCK

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



Connections

NOTE

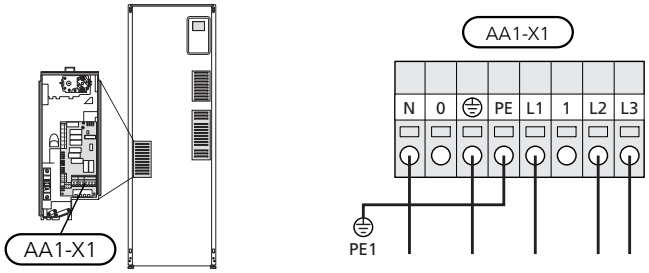
To prevent interference, unscreened communication and/or sensor cables to external connections must not be laid closer than 20 cm from high voltage cables.

POWER CONNECTION

VVM 310 must be installed with a disconnection option on the supply cable. Minimum cable area must be sized according to the fuse rating used. The enclosed cable (length approx. 2 m) for incoming electricity is connected to terminal block X1 on the immersion heater board (AA1). All installations must be carried out in accordance with current norms and directives. The connection cable can be found on the reverse of VVM 310.

Connection

3x400V

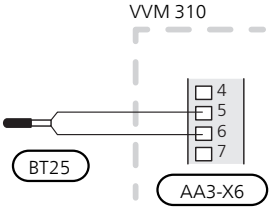


TARIFF CONTROL

If the voltage to the immersion heater disappears during a certain period, there must also be blocking via the AU-input, see "Connection options- Possible selection for AU inputs".

TEMPERATURE SENSOR, EXTERNAL FLOW LINE

If temperature sensor, external flow line (BT25) needs to be used, connect it to terminal block X6:5 and X6:6 on the input card (AA3). Use a 2 core cable of at least 0.5 mm² cable area.



CONNECTING EXTERNAL OPERATING VOLTAGE FOR THE CONTROL SYSTEM

NOTE

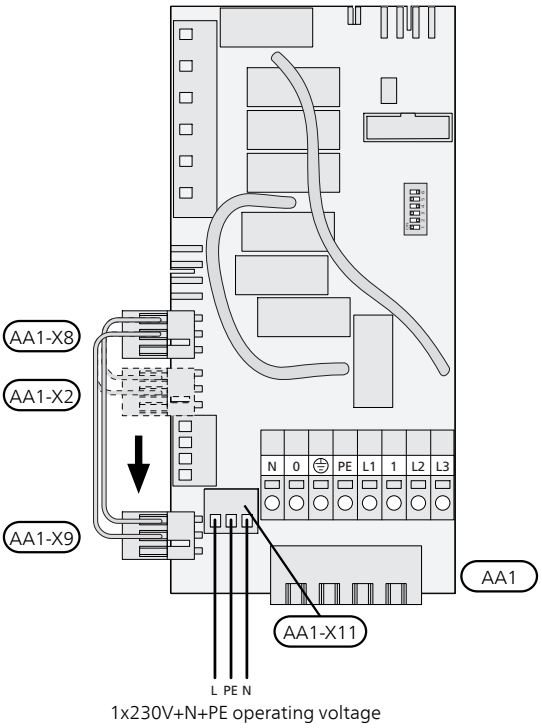
Only applies to power connection of 3x400V.

NOTE

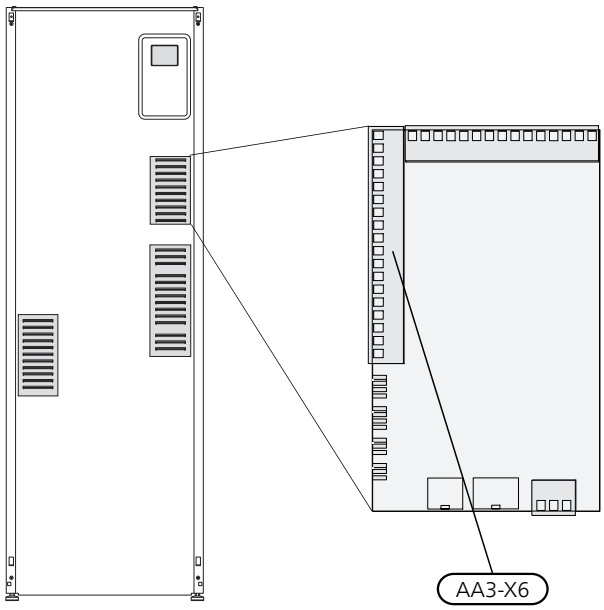
Mark up any junction boxes with warnings for external voltage.

If you wish to connect external operating voltage for the control system to VVM 310 on the immersion heater circuit board (AA1) the edge connector at AA1:X2 must be moved toAA1:X9 (as illustrated).

Operating voltage (1x230V ~ 50Hz) is connected to AA1:X11 (as illustrated).



CONNECTING SENSOR

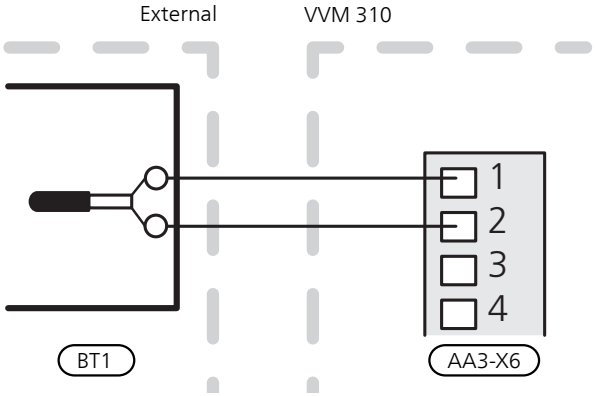


Outside sensor

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

Connect the sensor to terminal block X6:1 and X6:2 on the input board (AA3).

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



Room sensor

VVM 310 is supplied with a room sensor enclosed (BT50). The room sensor has a number of functions:

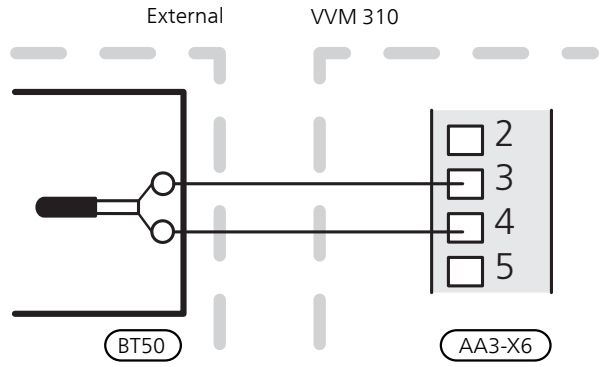
1. Shows current room temperature in the display on VVM 310.
2. Option of changing the room temperature in °C.
3. Provides the option of fine-tuning the room temperature.

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 indoor module operates without the sensor, but if one wishes to read off the accommodation's indoor temperature in VVM 310's display, the sensor must be installed. Connect the room sensor to X6:3 and X6:4 on the input board (AA3).

If the sensor is to have a controlling function, it is 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.

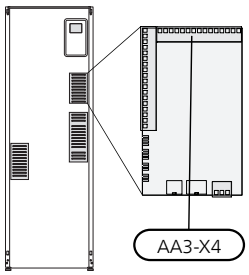


Caution

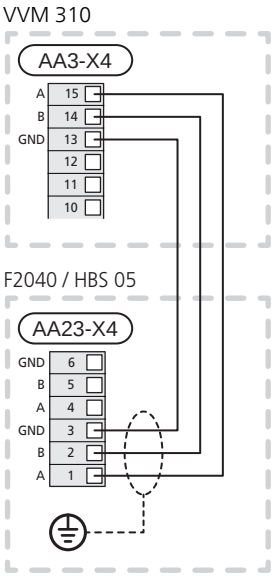
Changes of temperature in accommodation take time. For example, short time periods in combination with underfloor heating will not give a noticeable difference in room temperature.

COMMUNICATION

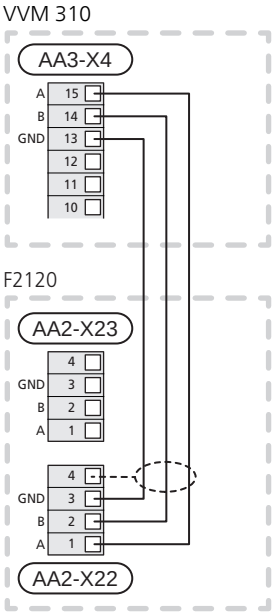
If VVM 310 is to be connected to the heat pump, it is connected to terminal blocks X4:13, X4:14 and X4:15 on the input board (AA3).



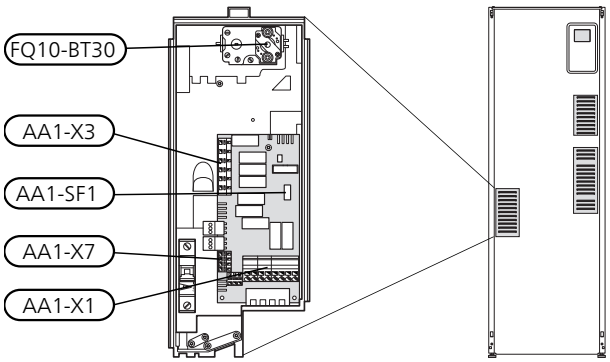
VVM 310 and F2040 / NIBE SPLIT HBS 05



VVM 310 and F2120



Settings



ELECTRICAL ADDITION - MAXIMUM OUTPUT

The immersion heater output is divided into 9 steps, according to the table.

The immersion heater can be set to a maximum of 12 kW. The delivery setting is 8 kW.

Setting maximum output in the electric additional heat is done in menu 5.1.12.

Power steps of the immersion heater

Electrical addition (kW)	*Max (A) L1*	*Max (A) L2*	*Max (A) L3*
0	0.0	0.0	0.0
1.33	5.8	0.0	0.0
2.67	11.16	0.0	0.0
4	5.8	11.6	0.0
5.33	11.6	11.6	0.0
6.66	11.6	11.6	5.8
8	11.6	11.6	11.6
9.33	11.6	17.4	11.6
10.66	11.6	17.4	17.4
12	17.4	17.4	17.4

The table displays the maximum phase current for the relevant electrical step for the indoor module.

If the current sensors are connected, the indoor module monitors the phase currents.

> ⚠ *NOTE*
>
> If the current sensors are not connected, the indoor module performs a calculation of how high the currents will be if the relevant power steps are added. If the currents are higher than the set fuse size, the power step is not allowed to cut in. See chapter Load monitor on page 27.

EMERGENCY MODE

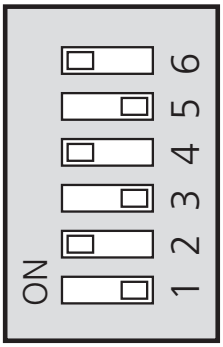
When the indoor module is set to emergency mode (SF1 is set to ⚠) only the most necessary functions are activated.

- No hot water is produced.
- The load monitor is not connected.
- Fixed temperature in the supply line, see section Emergency mode thermostat.

Power in emergency mode

The immersion heater's output in emergency mode is set with the DIP switch (SF1) on the immersion heater board (AA1), according to the table below. The factory setting is 8 kW.

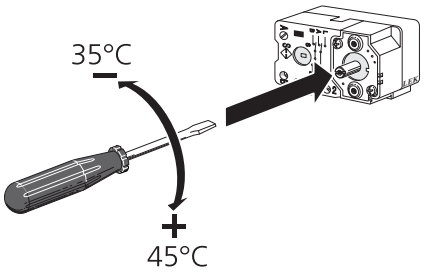
kW	*1*	*2*	*3*	*4*	*5*	*6*
1.33	**on**	off	off	off	off	off
2.67	off	**on**	off	off	off	off
4	**on**	off	off	**on**	off	off
5.33	off	**on**	off	**on**	off	off
6.66	**on**	off	off	**on**	off	**on**
8	off	**on**	off	**on**	off	**on**
9.33	**on**	**on**	off	**on**	off	**on**
10.66	**on**	**on**	**on**	**on**	off	**on**
12	**on**	**on**	**on**	**on**	**on**	**on**



The image shows the dip-switch (AA1-SF1) in the factory setting, that is 8 kW.

Emergency mode thermostat

The supply temperature in emergency mode is set using a thermostat (FQ10-BT30). It can be set to 35 (preset, e.g. underfloor heating) or 45 °C (e.g. radiators).



Optional connections

LOAD MONITOR

Integrated load monitor

VVM 310 is equipped with a simple form of integrated load monitor, which limits the power steps for the electric additional heat by calculating whether future power steps can be connected to the relevant phase without exceeding the specified main fuse. If the current would exceed the specified main fuse, the power step is not permitted. The size of the property's main fuse is specified in menu 5.1.12.

Load monitor with current sensor

When many power-consuming products are connected in the property at the same time as the electric additional heat is operating, there is a risk that the property's main fuse will trip. VVM 310 is equipped with a load monitor that, with the help of a current sensor, controls the power steps for the electric additional heat by redistributing the power between the different phases or disengages the electric additional heat if there is an overload in a phase. Reconnection occurs when the other current consumption drops.

Caution

Activate phase detection in menu 5.1.12 for full functionality, if current sensors are installed.

Connecting current sensors

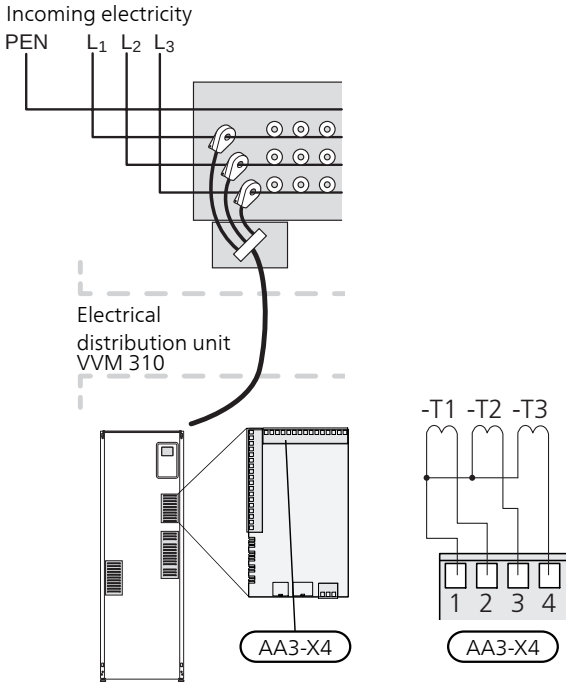
NOTE

If the installed air/water heat pump is frequency controlled, it will be limited when all power stages are disconnected.

A current sensor should be installed on each incoming phase conductor in to the distribution box to measure the current. The distribution box is an appropriate installation point.

Connect the current sensors to a multi-core cable in an enclosure directly adjacent to the electrical distribution unit. The multi-core cable between the enclosure and VVM 310 must have a cable area of at least 0.5 mm².

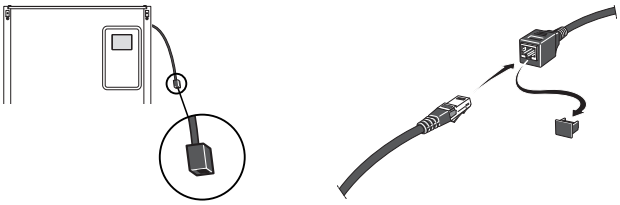
Connect the cable to the input board (AA3) on terminal block X4:1-4 where X4:1 is the common terminal block for the three current sensors.



If the installed heat pump is frequency controlled, it will be limited when all power stages are disengaged.

NIBE UPLINK

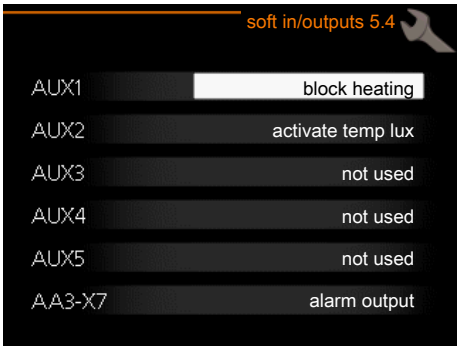
Connect the network connected cable (straight, Cat.5e UTP) with RJ45-contact (male) to RJ45 contact (female) on the rear of the indoor unit.



EXTERNAL CONNECTION OPTIONS (AUX)

VVM 310 has software-controlled AUX inputs and outputs for connecting the external switch function (contact has to be potential-free) or sensor.

Go into menu 5.4 "soft in/outputs" on the display to select to which AUX connection each function connects.



For certain functions, accessories may be required.

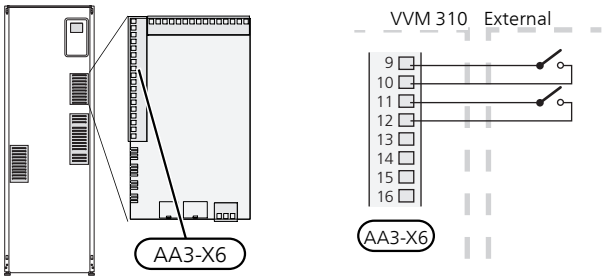
TIP

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

Selectable inputs

Selectable inputs on the input board (AA3) for these functions are:

AUX1	AA3-X6:9-10
AUX2	AA3-X6:11-12
AUX3	AA3-X6:13-14
AUX4	AA3-X6:15-16
AUX5	AA3-X6:17-18

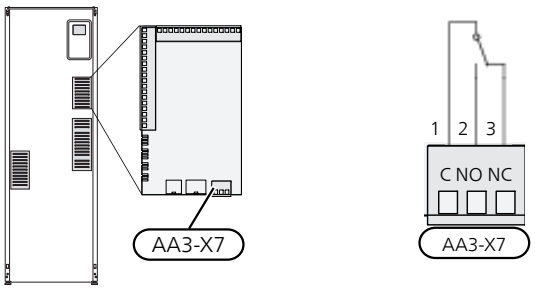


The example above uses the inputs AUX1 (X6:9-10) and AUX2 (X6:11-12) on the input board (AA3).

Selectable output

A selectable output is AA3-X7.

The output is a potential-free switching relay.



The picture shows the relay in the alarm position.

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

Caution

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

TIP

The AXC accessory is required if more than one function is to be connected to the AUX output.

Possible selection for AUX inputs

Temperature sensor

Temperature sensor can be connected to VVM 310.

Available options are:

- cooling/heating/hot water, determines when it is time to switch between cooling, heating and hot water mode (selectable when the air/water heat pump is permitted to produce cooling).
- supply temperature sensor for cooling (BT64) (used when "active cooling in 4-pipe system" has been activated in the output AA3-X7)

Monitor

Available options are:

- alarm from external units. The alarm is connected to the control, which means that the malfunction is presented as an information message in the display. Potential-free signal of type NO or NC.
- stove monitor. (A thermostat that is connected to the chimney. When the negative pressure is too low and the thermostat is connected, the fans in ERS (NC) are switched off.
- pressure switch for climate system (NC).

External activation of functions

An external switch function can be connected to VVM 310 to activate various functions. The function is activated during the time the switch is closed.

Possible functions that can be activated:

- hot water comfort mode "temporary lux"
- hot water comfort mode "economy"
- "external adjustment"

  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 change of "temperature" (heating curve offset) is set with the number of steps selected. The value is adjustable between -10 and +10. External adjustment of climate systems 2 to 8 requires accessories.

  – *climate system 1 to 8*

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

- SG ready

Caution

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

"SG Ready" requires two AUX inputs.

"SG Ready" is a smart form of tariff control, through which your electricity supplier can affect the indoor, hot water and/or pool temperatures (if applicable) or simply block the additional heat and/or compressor in the heat pump at certain times of the day (can be se-

lected 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).

Closed or open switch means one of the following:

– *Blocking (A: Closed, B: Open)*

"SG Ready" is active. The compressor in the heat pump and additional heat is blocked.

– *Normal mode (A: Open, B: Open)*

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

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

"SG Ready" is active. The system focuses on costs savings and can for example exploit a low tariff from the electricity supplier or over-capacity from any own power source (effect on the system can be adjusted in the menu 4.1.5).

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

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

(A = SG Ready A and B = SG Ready B)

- +Adjust

  Using +Adjust, the installation communicates with the underfloor heating's control centre* and adjusts the heating curve and calculated supply temperature according to the underfloor heating system's reconnection.

  Activate the climate system you want +Adjust to affect by highlighting the function and pressing the OK button.

  *Support for +Adjust required

> *Caution*
>
> This accessory may require a software update in your VVM 310. The version can be checked in the "Service info" menu 3.1. Visit nibeuplink.com and click on the "Software" tab to download the latest software to your installation.

> *Caution*
>
> In systems with both underfloor heating and radiators, NIBE ECS 40/41 should be used for optimum operation.

External blocking of functions

An external switch function can be connected to VVM 310 for blocking various functions. The switch must be potential-free and a closed switch results in blocking.

> *NOTE*
>
> Blocking entails a risk of freezing.

Functions that can be blocked:

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

Possible selections for AUX output

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

> *TIP*
>
> The AXC accessory is required if more than one function is to be connected to the AUX output.

Indications

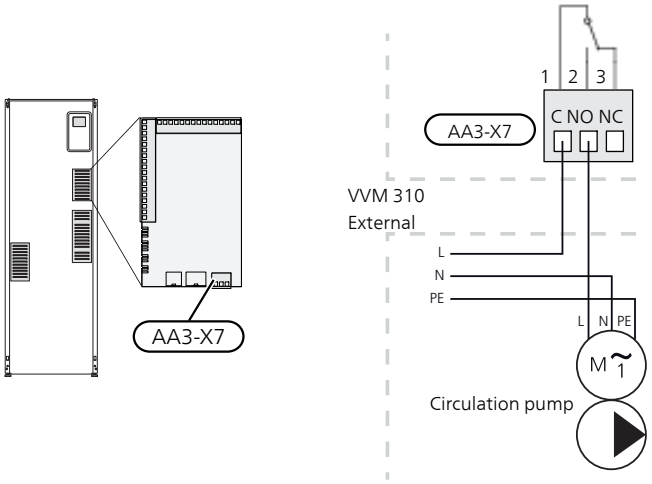
- alarm
- common alarm
- cooling mode indication (only applies if there are cooling accessories)
- holiday
- away mode for "smart home" (complement to the functions in menu 4.1.7)

Control

- circulation pump for hot water circulation
- active cooling in a 4-pipe system
- external heating medium pump
- additional heat in charge circuit

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

An external circulation pump is connected to the AUX output, as illustrated below.



Integrated active cooling in 4-pipe system

Integrated active cooling in 4-pipe system with air/water heat pump is activated via soft output.

Active cooling is produced by the air/water heat pump's compressor.

When cooling in a 4-pipe system has been selected as soft output, menu group 1.9.5 is displayed and "cooling" must be activated for the air/water heat pump in menu 5.11.X.1, or with a DIP switch on the air/water heat pump in order to determine that it is to perform cooling.

Operating mode cooling is activated by the temperature of the outdoor temperature sensor (BT1) and any room sensor (BT50), room unit or separate room sensor for cooling (BT74) (if two different rooms are to be heated or cooled at the same time, for example.) When cooling is required, the cooling reversing valve (EQ1-QN12) and the cooling circulation pump (EQ1-GP12) in the indoor module (VVM) are activated.

Cooling production is regulated according to the cooling sensor (BT64) and a cooling set point value that is determined by the selected cooling curve. Cooling degree minutes are calculated based on the value on the external temperature sensor (BT64) for cooling out and the cooling set point value.

If the "active cooling 4-pipes" accessory has been activated, the function is switched off. Cooling is then operated from the accessory instead.

Connecting accessories

Instructions for connecting accessories are provided in the manual accompanying the accessory. See page 63 for the list of the accessories that can be used with VVM 310.

Connection for communication with the most common accessories is shown here.

ACCESSORIES WITH ACCESSORY BOARD AA5

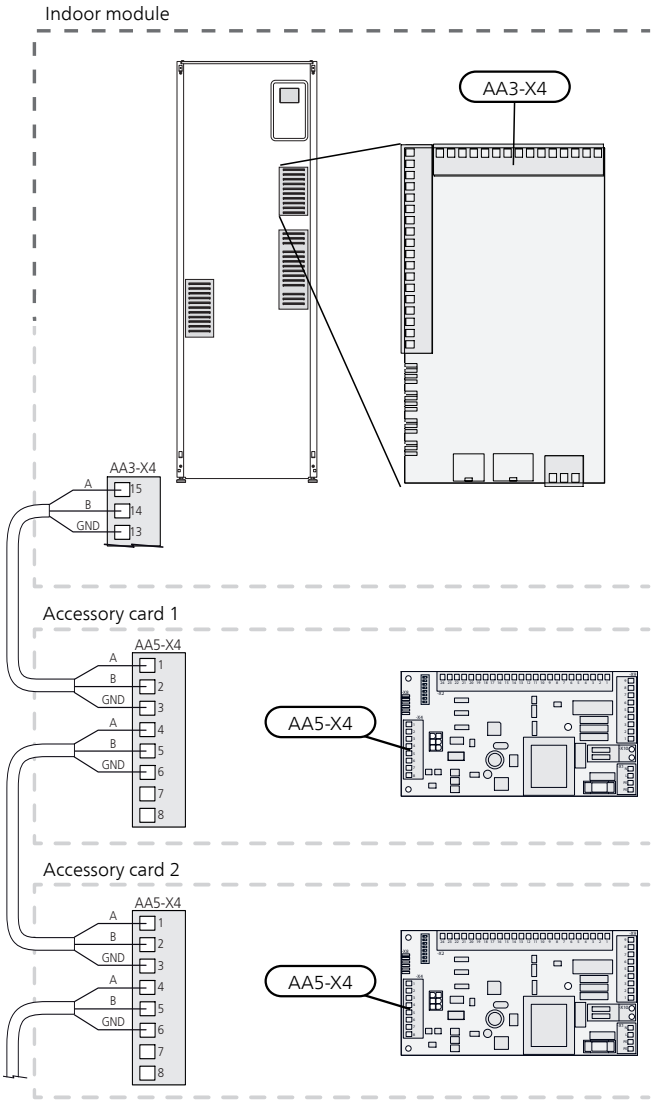
Accessories with accessory board AA5 connect to the indoor module terminal block X4:13-15 on the input board AA3.

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

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

Use cable type LiYY, EKKX or similar.

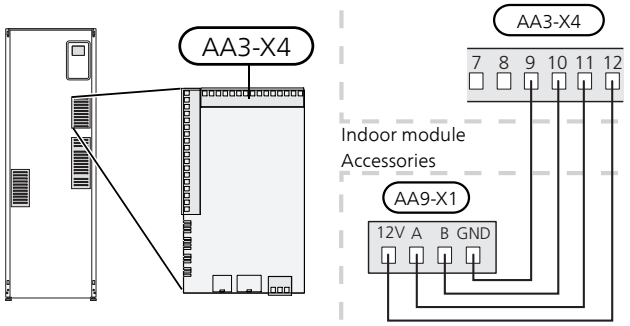
Refer to the accessory manual for further instructions.



ACCESSORIES WITH ACCESSORY BOARD AA9

Connect accessory board AA9 in Modbus 40/ SMS 40/ RMU 40 to the indoor module's terminal block X4:9-12 on the input board AA3. Use cable type LiYY, EKKX or equivalent.

Refer to the accessory manual for further instructions.



6 Commissioning and adjusting

Preparations

1. Check that the switch (SF1) is in position " ⏻".
2. Check that the drain valve is fully closed and that the temperature limiter (FQ10) has not deployed.
3. Compatible NIBE air/water heat pump must be equipped with a control board that, as a minimum, has the software version as listed on page 18. The control board version is shown in the heat pump's display at start-up.

Filling and venting

FILLING THE HOT WATER COIL

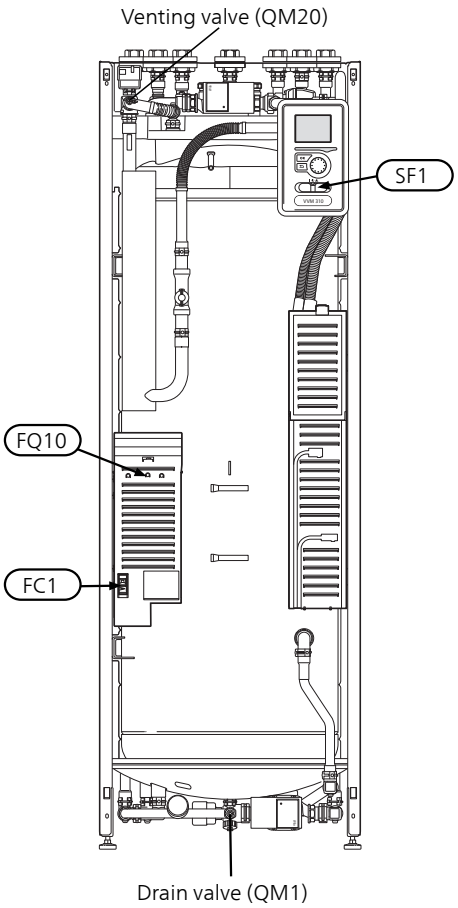
1. Open a hot water tap in the house.
2. Open the externally mounted shut-off valve. This valve should then be fully open during operations.
3. When water comes out of the hot water tap, the hot water coil is full and the tap can be closed.

FILLING THE CLIMATE SYSTEM

1. Open the vent valve (QM20).
2. Open the externally mounted filler valve. The boiler section and the rest of the climate system are filled with water.
3. When the water exiting the vent valve (QM20) is not mixed with air, close the vent valves. After a while the pressure rises on the externally mounted pressure gauge. When the opening pressure for the externally mounted safety valve has been reached, it starts to release water. Close the filler valve.
4. Open the externally mounted safety valve until the pressure in VVM 310 falls to the normal working range (approx. 1 bar) and check that there is no air in the system by turning the vent valves (QM20).

VENTING THE CLIMATE SYSTEM

1. Turn off the power supply to VVM 310.
2. Vent VVM 310 through the vent valve (QM20) and other climate systems through their relevant vent valves.
3. Keep topping up and venting until all air has been removed and the pressure is correct.



DRAINING THE CLIMATE SYSTEM

Also see section "Draining the climate system".

Start-up and inspection

START GUIDE

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

1. Set switch (SF1) on VVM 310 to position "I".
2. Follow the instructions in the display's start guide. If the start guide does not start when you start the VVM 310, start it manually in menu 5.7.

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

Commissioning

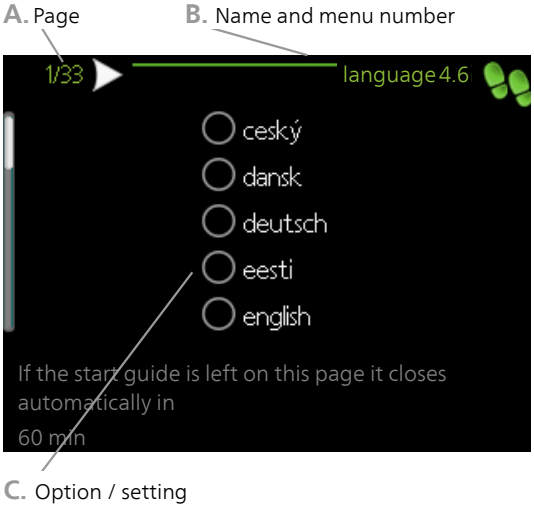
The first time the installation is started a start guide is started. The start guide instructions state what needs to carried out at the first start together with a run through of the installation's basic settings.

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

During the start up guide the reversing valves and the shunt valve are run backward and forwards to help vent VVM 310.

> *Caution*
>
> As long as the start guide is active, no function in VVM 310 will start automatically.
>
> The start guide will appear at each restart of VVM 310, 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

Here, you can see which 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 consult the help menu or read the user manual.

C. Option / setting

Make settings for the system here.

COMMISSIONING WITHOUT HEAT PUMP

The indoor module can be used without a heat pump, i.e only as an electric boiler, to produce heat and hot water before the heat pump is installed, for example.

Connect the pipe for docking in from the heat pump (XL8) with the pipe out to the heat pump (XL9).

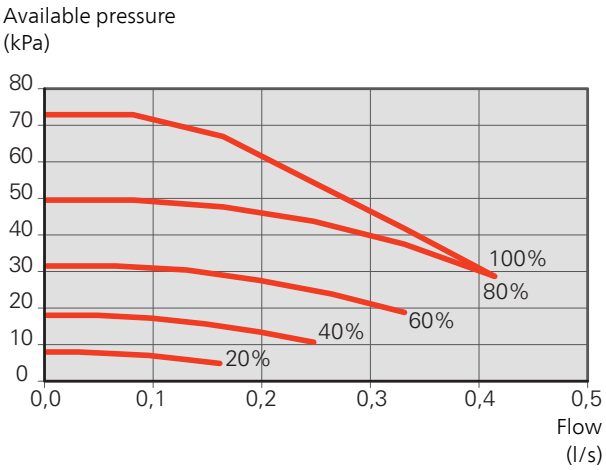
Enter menu 5.2.2 System settings and deactivate the heat pump.

> *NOTE*
>
> Select operating mode auto or manual when the indoor module is to be used with the heat pump again.

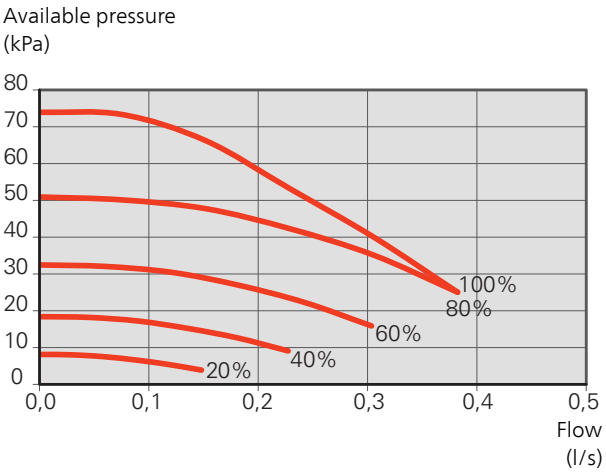
PUMP SPEED

Both the circulation pumps in VVM 310 are frequency controlled and set themselves using control and external heating requirement.

Available pressure circulation pump, GP1



Available pressure, charge pump, GP12



POST-ADJUSTMENT, VENTING

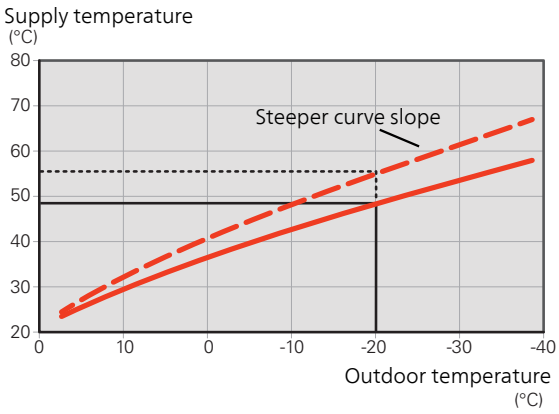
Initially, air is released from the hot water and venting may be necessary. If gurgling sounds can be heard from the climate system, the entire system will require additional venting. Vent the installation through the vent valves (QM20). When venting, VVM 310 must be off.

Setting the heating curve

In menu Curve, heating you can view the heating curve for your house. The task of the curve is to give an even indoor temperature, regardless of the outdoor temperature, and thereby energy-efficient operation. Based on this curve, the VVM 310 determines the temperature of the water to the climate system (the supply temperature) and thus the indoor temperature.

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.

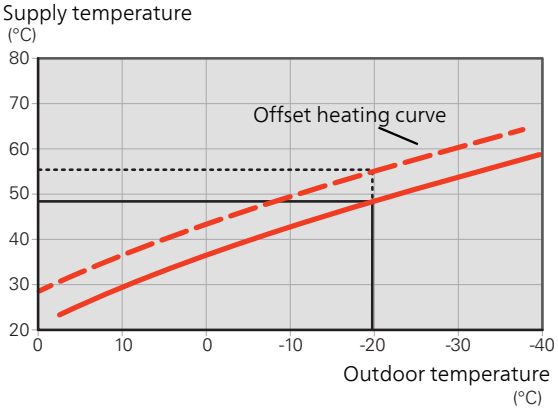


The optimum curve slope depends on the climate conditions in your location, whether the house has radiators, fan coils or underfloor heating and how well insulated the house is.

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

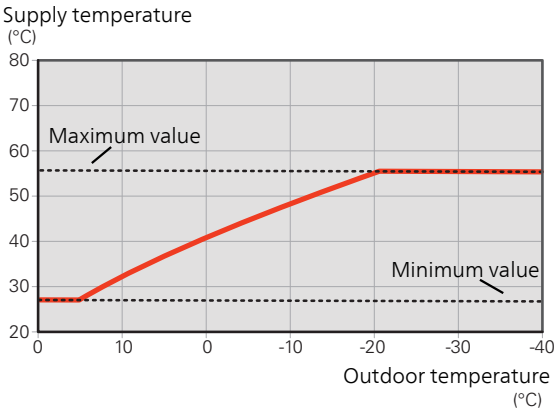
CURVE OFFSET

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



SUPPLY 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.

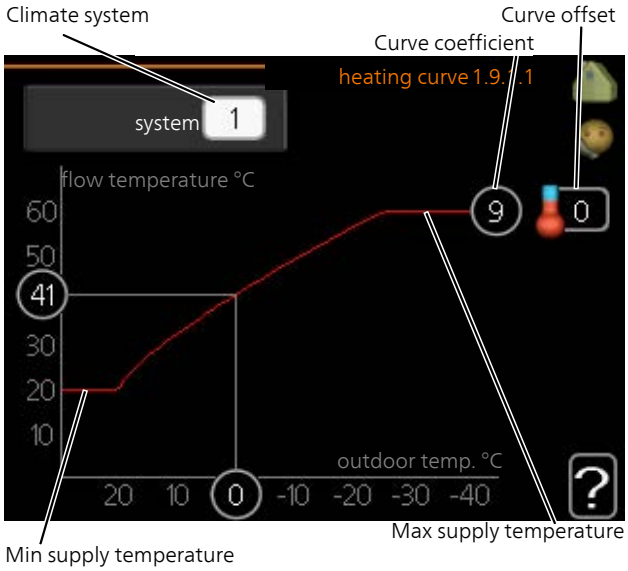


Caution

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

Check the max floor temperature with your floor supplier.

ADJUSTMENT OF CURVE



1. Select the climate system (if more than one) for which the curve is to be changed.
2. Select curve slope and curve offset.

Caution

If you need to adjust "min. flow line temp." and/or "max flow line temperature", you do this in other menus.

Settings for "min. flow line temp." in menu 1.9.3.

Settings for "max flow line temperature" in menu 5.1.2.

Caution

Curve 0 means that own curve is used.

Settings for own curve are made in menu 1.9.7.

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 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.

Cooling in 2-pipe system

VVM 310 contains a built-in function for operating cooling in a 2-pipe system down to 17 °C, factory setting 18 °C. This requires that the outdoor module can perform cooling. (See the Installer Manual for your air/water heat pump.) If the outdoor module can perform cooling, the cooling menus are activated in the display on the indoor module (VVM).

In order for operating mode "cooling" to be permitted, the average temperature must be above the setting value for "start cooling" in menu 4.9.2

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

Setting hot water circulation

operating time

Setting range: 1 – 60 min

Factory setting: 60 min

downtime

Setting range: 0 – 60 min

Factory setting: 0 min

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

"operating time" decide how long the hot water circulation pump must run per operating instance.

"downtime" decide how long the hot water circulation pump must be stationary between operating instances.

NOTE

Hot water circulation is activated in menu 5.4 "soft inputs and outputs".

Pool

POOL (ACCESSORY IS REQUIRED)

start temp

Setting range: 5.0 – 80.0 °C

Factory setting: 22.0 °C

stop temperature

Setting range: 5.0 – 80.0 °C

Factory setting: 24.0 °C

Select whether the pool control is to be activated and within what temperatures (start and stop temperature) pool heating must occur.

When the pool temperature drops below the set start temperature and there is no hot water or heating requirement, VVM 310 starts pool heating.

Untick "activated" to switch off the pool heating.

Caution

The start temperature cannot be set to a value that is higher than the stop temperature.

SG Ready

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

Make settings for the function "SG Ready" here.

Low price mode means that the electricity supplier has a low tariff and the system uses this to reduce costs.

Over capacity mode means that the electricity supplier has set the tariff very low and the system uses this to reduce the costs as much as possible.

affect room temperature

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

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

With overcapacity mode on "SG Ready", the parallel offset for the indoor temperature is increased by "+2". If a room sensor is installed and activated, the desired room temperature is increased instead 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 "activate temp lux" (immersion heater permitted).

affect cooling (accessory required)

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

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

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

affect pool temperature (accessory is required)

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

With low price mode on "SG Ready", the desired pool temperature (start and stop temperature) is increased by 1 °C.

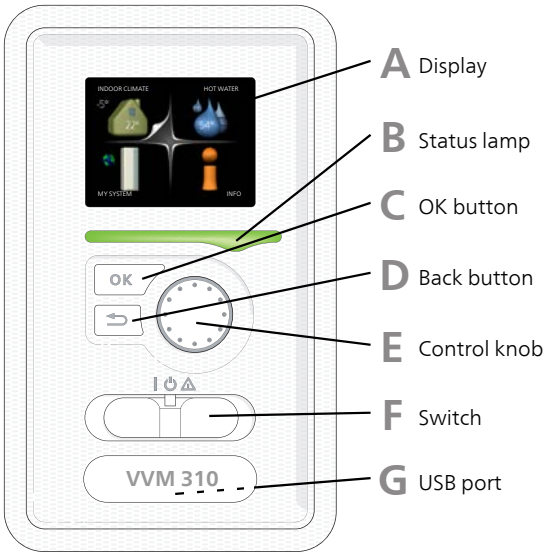
With overcapacity mode on "SG Ready", the desired pool temperature (start and stop temperature) is increased by 2 °C.

NOTE

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

7 Control - Introduction

Display unit



A DISPLAY

Instructions, settings and operational information are shown on the display. You can easily navigate 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 indoor 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 indoor module. In this mode, the compressor switches off and the immersion heater engages. The indoor module display is not illuminated and the status lamp illuminates yellow.

G USB PORT

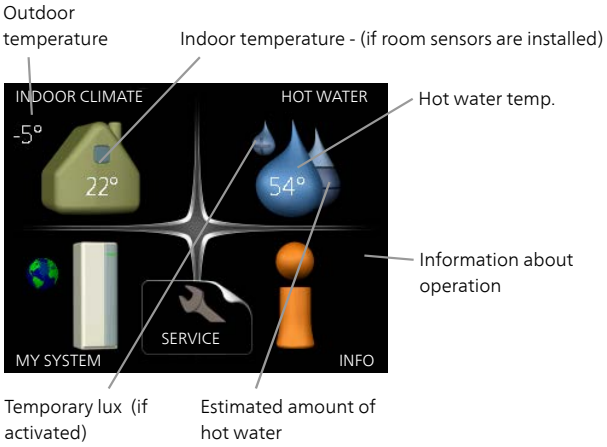
The USB port is hidden beneath the plastic badge with the product name on it.

The USB port is used to update the software.

Visit nibeuplink.com and click the "Software" tab to download the latest software for your installation.

Menu system

When the door to the indoor module is opened, the menu system's four main menus are shown in the display as well as certain basic information.



MENU 1 - INDOOR CLIMATE

Setting and scheduling the indoor climate. See information in the help menu or user manual.

MENU 2 - HOT WATER

Setting and scheduling hot water production. See information in the help menu or user manual.

MENU 3 - INFO

Display of temperature and other operating information and access to the alarm log. See information in the help menu or user manual.

MENU 4 - MY SYSTEM

Setting time, date, language, display, operating mode etc. See information in the help menu or user manual.

MENU 5 - SERVICE

Advanced settings. These settings are not available to the end user. The menu is visible when the Back button is pressed for 7 seconds, when you are in the start menu. See page 46.

SYMBOLS IN THE DISPLAY

The following symbols can appear in the display during operation.

Symbol	*Description*
	This symbol appears by the information sign if there is information in menu 3.1 that you should note.
	These two symbols indicate whether the compressor in the outdoor module or additional heat is blocked in VVM 310. These can, for example, be blocked depending on which operating mode is selected in menu 4.2, if blocking is scheduled in menu 4.9.5 or if an alarm has occurred that blocks one of them.  Blocking the compressor.  Blocking additional heat.
	This symbol appears if periodic increase or lux mode for the hot water is activated.
	This symbol indicates whether "holiday setting" is active in 4.7.
	This symbol indicates whether VVM 310 has contact with NIBE Uplink.
	This symbol indicates the actual speed of the fan if the speed has changed from the normal setting. Accessory needed.
	This symbol is visible in installations with active solar accessories.
	This symbol indicates whether pool heating is active. Accessory needed.
	This symbol indicates whether cooling is active. Heat pump with cooling function required.

OPERATION

To move the cursor, turn the control knob to the left or the right. The marked position is white and/or has a turned up tab.

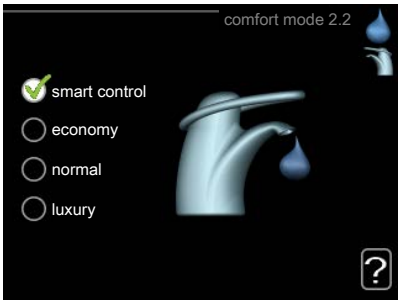


SELECTING MENU

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:

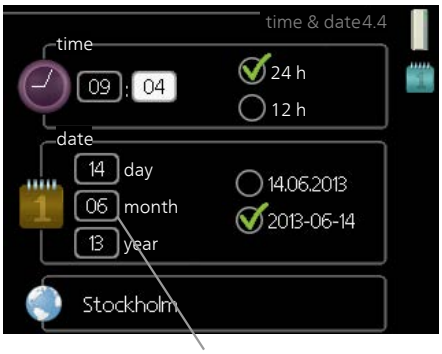
1. Mark the applicable option. One of the options is pre-selected (white).



2. Press the OK button to confirm the selected option. The selected option has a green tick.



SETTING A VALUE



Values to be changed

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.



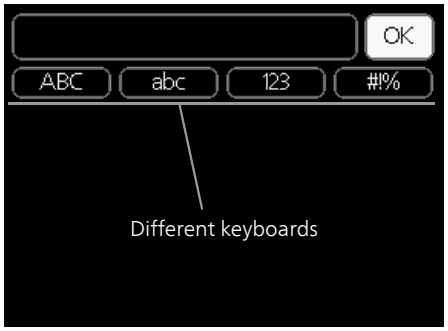
3. Turn the control knob to the right to increase the value and to the left to reduce the value.



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.

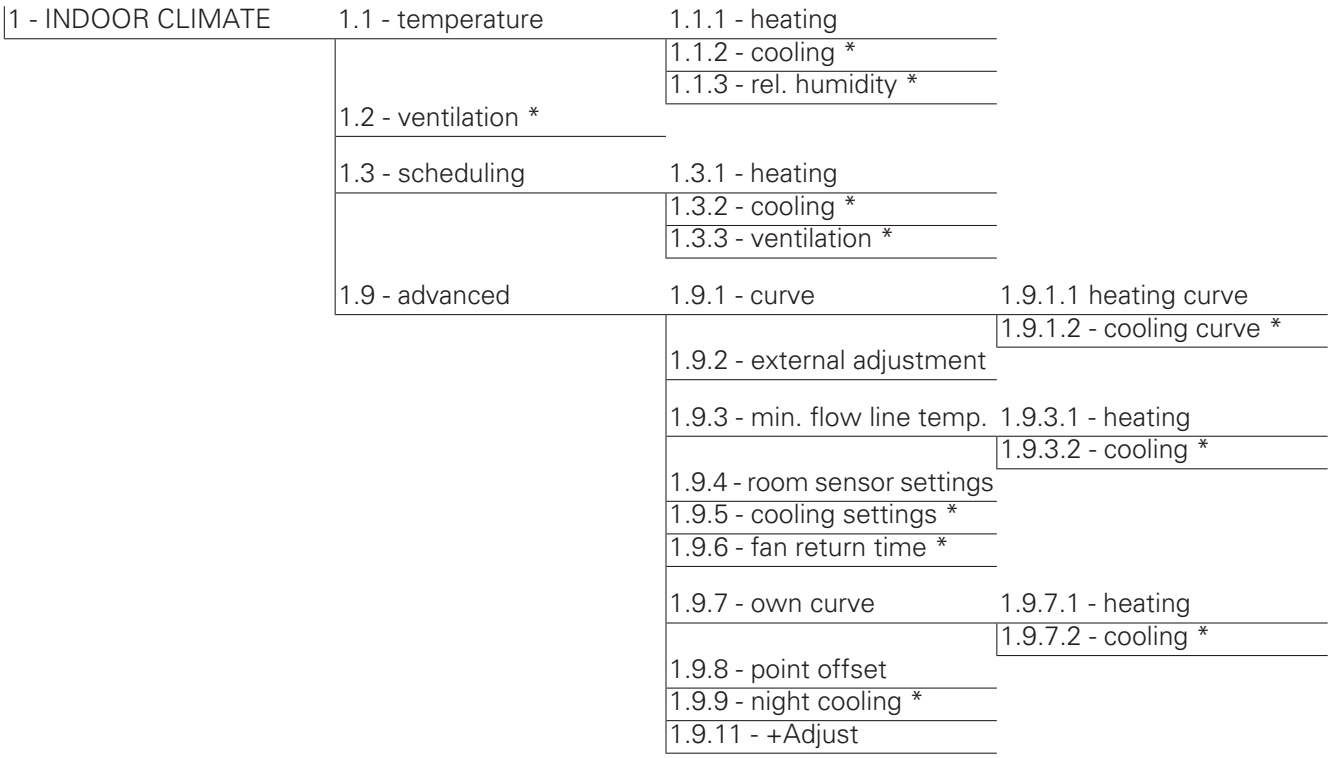
To access the help text:

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



* Accessories are needed.

Menu 2 - HOT WATER

2 - HOT WATER	2.1 - temporary lux	
	2.2 - comfort mode	
	2.3 - scheduling	
	2.9 - advanced	2.9.2 - hot water recirc.

Menu 3 - INFO

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

* Accessories are needed.

Menu 4 - MY SYSTEM

- 4 - MY SYSTEM
  - 4.1 - plus functions
    - 4.1.1 - pool *
    - 4.1.3 - internet
      - 4.1.3.1 - NIBE Uplink
      - 4.1.3.8 - tcp/ip settings
      - 4.1.3.9 - proxy settings
    - 4.1.4 - sms *
    - 4.1.5 - SG Ready
    - 4.1.6 - smart price adaption™
    - 4.1.7 - smart home
    - 4.1.8 - smart energy source™
      - 4.1.8.1 - settings
      - 4.1.8.2 - set. price
      - 4.1.8.3 - CO2 impact
      - 4.1.8.4 - tariff periods, electricity
      - 4.1.8.6 - tariff per, ext. shunt add
      - 4.1.8.7 - tariff per, ext. step add
      - 4.1.8.8 - tariff periods, OPT10
    - Menu 4.1.10 – solar electricity *
  - 4.2 - op. mode
  - 4.3 - my icons
  - 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
    - 4.9.7 – tools

* Accessory needed.

Descriptions of menu 1–4 can be found in the user handbook.

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	
		5.1.5 - fan sp. exhaust air *	
		5.1.10 - op. mod heat med pump	
		5.1.11 - pump speed heating medium	
		5.1.12 - internal electrical addition	
		5.1.13 - max inst. el.pwr (BBR)	
		5.1.14 - flow set. climate system	
		5.1.18 - flow setting charge pump	
		5.1.22 - heat pump testing	
		5.1.23 - compressor curve	
		5.1.25 - time filter alarm*	
	5.2 - system settings	5.2.2 - installed heat pump	
		5.2.4 - accessories	
	5.3 - accessory settings	5.3.2 - shunt controlled add. heat *	
		5.3.3 - extra climate system *	
		5.3.4 - solar heating *	
		5.3.7 - external addition *	
		5.3.11 - modbus *	
		5.3.12 - exhaust/supply air module *	
		5.3.14 - F135 *	
		5.3.15 - GBM communications module *	
		5.3.16 - humidity sensor *	
		5.3.18 - pool*	
		5.3.19 - active cooling 4 pipe*	
		5.3.21 - flow sensor / energy meter*	
	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 -heat pump settings	5.11.1 - EB101	5.11.1.1 - heat pump
			5.11.1.2 - charge pump (GP12)
	5.12 - country		

* Accessory needed.

Go to the main menu and 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 indoor module.

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

accessory settings Operational settings for different accessories.

soft in/outputs Setting software controlled in and outputs on the input circuit board (AA3).

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 indoor 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 indoor module in the sub menus.

MENU 5.1.1 - HOT WATER SETTINGS

economy

Setting range start temp. economy: 5 – 55 °C

Factory setting start temp. economy: 46 °C

Setting range stop temp. economy: 5 – 60 °C

Factory setting stop temp. economy: 49 °C

normal

Setting range start temp. normal: 5 – 55 °C

Factory setting start temp. normal: 49 °C

Setting range stop temp. normal: 5 – 60 °C

Factory setting stop temp. normal: 52 °C

luxury

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

Factory setting start temp. lux: 55 °C

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

Factory setting stop temp. lux: 58 °C

Here you set the start and stop temperature of the hot water for the different comfort options in menu 2.2.

MENU 5.1.2 - MAX FLOW LINE TEMPERATURE

climate system

Setting range: 5-80 °C

Default value: 60 °C

Set the maximum supply temperature for the climate system here. If the installation has more than one climate system, individual maximum supply temperatures can be set for each system. Climate systems 2 - 8 cannot be set to a higher max supply temperature than climate system 1.

Caution

For underfloor heating systems, max flow line temperature should normally be set to 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 in the event of compressor or additional heat mode respectively. Max diff. additional heat can never exceed max diff. compressor

max diff compressor

If the current supply temperature *exceeds* the calculated supply by set value, the degree minute value is set to +2. The compressor in the heat pump stops if there is only a heating demand.

max diff addition

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

MENU 5.1.4 - ALARM ACTIONS

Select if you want the indoor 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 5.1.5 - FAN SP. EXHAUST AIR (ACCESSORY IS REQUIRED)

normal and speed 1-4

Setting range: 0 – 100 %

Factory setting normal: 65 %

Factory setting speed 1: 0 %

Factory setting speed 2: 30 %

Factory setting speed 3: 80 %

Factory setting speed 4: 100 %

Set the speed for the four different selectable modes for the fan here.

Caution

An incorrectly set ventilation flow can damage the house and may also increase energy consumption.

MENU 5.1.10 - OP. MOD HEAT MED PUMP

op. mode

Setting range: auto, ,continuous

Default value: auto

Set the operating mode of the heating medium pump here.

auto: The heating medium pump runs according to the current operating mode for VVM 310.

continuous: Continuous operation.

MENU 5.1.11 - CHARGE PUMP SPEED

speed in wait mode

Setting range: 1 - 100 %

Default values: 30 %

min. allowed speed

Setting range: 1 - 50%

Default values: 1 %

max. allowed speed

Setting range: 50 - 100 %

Default values: 100 %

op. mode

Setting range: auto / manual

Default value: auto

auto: The heating medium pump's speed is regulated for optimum operation.

manual: The speed of the heating medium pump can be set between 0 and 100 %.

MENU 5.1.12 - INTERNAL ELECTRICAL ADDITION

max connected el. add.

Setting range: 0–12 kW

Default values: 8 kW

fuse size

Setting range: 1 - 400 A

Factory setting: 16 A

Here you set the max. electrical output of the internal electrical addition in VVM 310 and the fuse size for the installation.

Here you can also check which current sensor is installed on which incoming phase to the property (this requires current sensors to be installed, see page 27). Check by selecting "detect phase order" and pressing the OK button.

The results of these checks appear just below the menu selection "detect phase order".

MENU 5.1.13 - MAX INST. EL.PWR (BBR)

max installed el.pwr (only this machine)

Setting range: 0.000 - 30.000 kW

Default values: 15.000 kW

If the above building regulations are not applicable, do not use this setting.

In order to meet certain building regulations, it is possible to lock the device's maximum power output. In this menu, you can set the value corresponding to the heat pump's maximum power connection for heating, hot water and cooling, if applicable Note whether there are also external electrical components that are to be included. After the value has been locked, a weeks cooling-off period starts. After this period, parts in the machine must be replaced in order to obtain greater power.

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: 2.0 – 20.0

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 (GP1) works towards is set here.

dT at DOT is the difference in degrees between flow and return temperatures at dimensioned outdoor temperature.

MENU 5.1.18 - FLOW SETTING CHARGE PUMP

Set the flow for the charge pump here. Activate the flow test to measure delta (the difference between the flow and return line temperatures from the heat pump). The test is OK if delta lies between the two parameters shown in the display.

If temperature difference lies outside the parameters, adjust the flow for the charge pump by reducing/increasing the pressure, until the test is OK.

MENU 5.1.22 - HEAT PUMP TESTING

NOTE

This menu is intended for testing VVM 310 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

Caution

This menu is only displayed if VVM 310 is connected to a heat pump with inverter controlled compressor.

Set whether the compressor in the heat pump should work to a particular curve under specific requirements or if it should work to predefined curves.

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 temperatures the max. and min. frequencies, respectively 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.

MENU 5.1.25 - TIME FILTER ALARM

months btwn filter alarms

Setting range: 1 – 24

Factory setting: 3

Here you set the number of months between alarms for a reminder to clean the filter in a connected accessory.

MENU 5.2 - SYSTEM SETTINGS

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

MENU 5.2.2 - INSTALLED HEAT PUMP

If an air/water heat pump is connected to the indoor module, activate it here.

MENU 5.2.4 - ACCESSORIES

Set which accessories are installed on the installation here.

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

search installed acc.

Mark "search installed acc." and press the OK button to automatically find connected accessories for VVM 310.

MENU 5.3 - ACCESSORY SETTINGS

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

MENU 5.3.2 - SHUNT CONTROLLED ADD. HEAT

prioritised additional heat

Setting range: on/off

Factory setting: off

start diff additional heat

Setting range: 0 – 2000 DM

Default values: 400 DM

minimum running time

Setting range: 0 – 48 h

Default value: 12 h

min temp.

Setting range: 5 – 90 °C

Default value: 55 °C

mixing valve amplifier

Setting range: 0.1 –10.0

Default value: 1.0

mixing valve step delay

Setting range: 10 – 300 s

Default values: 30 s

Set when the addition is to start, the minimum run time and the minimum temperature for external addition with shunt here. External addition with shunt is for example a wood/oil/gas/pellet boiler.

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

Selecting "prioritised additional heat" uses the heat from the external additional heat instead of the heat pump. The shunt valve is regulated as long as heat is available, otherwise the shunt valve is closed.

TIP

See the accessory installation instructions for function description.

MENU 5.3.3 - EXTRA CLIMATE SYSTEM

use in heating mode

Setting range: on/off

Factory setting: on

use in cooling mode

Setting range: on/off

Factory setting: off

mixing valve amplifier

Setting range: 0.1 – 10.0

Default value: 1.0

mixing valve step delay

Setting range: 10 – 300 s

Default values: 30 s

Contr. pump GP10

Setting range: on/off

Factory setting: off

Here, you select which climate system (2 - 8) you wish to set.

use in heating mode: If the heat pump is connected to a climate system(s) for cooling, any condensation can take place in this/these. Check that "use in heating mode" has been selected for the climate system(s) that is/are not adapted for cooling. This setting means that the sub-shunt for the extra climate system closes when cooling operation is activated.

use in cooling mode: Select "use in cooling mode" for climate systems that are adapted to handle cooling. For 2-pipe cooling you can select both "use in cooling mode" and "use in heating mode", while for 4-pipe cooling you can only select one option.

Caution

This setting option only appears if the heat pump is activated for cooling operation in menu 5.2.4..

mixing valve amplifier, mixing valve step delay: Here, you set the shunt amplification and shunt waiting time for the various extra climate systems that are installed.

Contr. pump GP10: Here, you can set the speed of the circulation pump manually.

See the accessory installation instructions for function description.

MENU 5.3.4 - SOLAR HEATING

start delta-T

Setting range: 1 – 40 °C

Default value: 8 °C

stop delta-T

Setting range: 0 – 40 °C

Default value: 4 °C

max. tank temperature

Setting range: 70 – 85 °C

Default value: 85 °C

max. solar collector temp.

Setting range: 80 – 200 °C

Default value: 125 °C

max solar pool temperature

Setting range: 10 – 80 °C

Default value: 30 °C

anti-freeze temperature

Setting range: -20 – +20 °C

Default value: 2 °C

start solar collector cooling

Setting range: 80 – 200 °C

Default value: 110 °C

start delta-T, stop delta-T: Here, you can set the temperature difference between solar panel and solar tank at which the circulation pump will start and stop.

max. tank temperature, max. solar collector temp.: Here, you can set the maximum temperatures in the tank and solar panel respectively at which the circulation pump will stop. This is to protect against excess temperatures in the solar tank.

max solar pool temperature: Here, you can set the maximum temperature at which the solar panel stops pool heating (if the installation is structured in this way). Pool heating can only occur if there is a heat surplus once the heating and/or hot water demand is met.

If the unit has an anti-freeze function and/or solar panel cooling you can activate them here. When the function has been activated, you can make settings for them.

freeze protection

anti-freeze temperature: Here, you can set the temperature in the solar panel at which the circulation pump is to start to prevent freezing.

solar panel cooling

start solar collector cooling: If the temperature in the solar panel is higher than this setting, at the same time as the temperature in the solar tank is higher than the set maximum temperature, the external function for cooling is activated.

See the accessory installation instructions for function description.

MENU 5.3.7 - EXTERNAL ADDITION

Make settings for external addition here. External addition is for example external oil, gas or electric boiler.

If the external addition is not step controlled, in addition to selecting when this should start also set the run time for the addition.

If the external addition is step controlled you can select when the addition is to start, set the maximum number of permitted steps and whether binary stepping is to be used.

If you select "prioritised additional heat" the heat is used from the external addition instead of the heat pump.

See the accessory installation instructions for function description.

MENU 5.3.11 - MODBUS

address

Factory setting: address 1

word swap

Factory setting: not activated

As from Modbus 40 version 10, the address can be set between 1 - 247. Earlier versions have a fixed address (address 1).

Here, you can select if you want to have "word swap" instead of the preset standard "big endian".

See the accessory installation instructions for function description.

MENY 5.3.12 - EXHAUST/SUPPLY AIR MODULE

months btwn filter alarms

Setting range: 1 – 24

Default value: 3

lowest extract air temp.

Setting range: 0 – 10 °C

Default value: 5 °C

bypass at excess temperature

Setting range: 2 – 10 °C

Default value: 4 °C

bypass during heating

Setting range: on/off

Factory setting: off

cut-out value, exh. air temp.

Setting range: 5 – 30 °C

Default value: 25 °C

months btwn filter alarms: Set how often the filter alarm is to be displayed.

lowest extract air temp.: Set the minimum extract air temperature to prevent the heat exchanger freezing.

bypass at excess temperature: If a room sensor is installed, set the excess temperature at which the bypass damper is to open here.

TIP

See the installation instructions for ERS and HTS for a function description.

MENU 5.3.14 - F135

charge pump speed

Setting range: 1 – 100 %

Factory setting: 70 %

hot water at cooling

Setting range: on/off

Factory setting: off

Here you can set the charge pump speed for F135. You can also choose whether you want to be able to charge hot water with F135 at the same time as the outdoor module produces cooling.

Caution

It is necessary for "active cooling 4 pipe" to be selected in either "accessories" or "soft in/outputs" to enable activation of "hot water during cooling". The heat pump must also be activated for cooling operation.

MENU 5.3.15 - GBM COMMUNICATION MODULE

start diff additional heat

Setting range: 10 – 2,000 DM

Factory setting: 400 DM

hysteresis

Setting range: 10 – 2,000 DM

Factory setting: 100 DM

Make settings for the gas boiler GBM 10-15 here. For example . you can select when the gas boiler is to start. See the accessory installation instructions for a description of function.

MENU 5.3.16 - HUMIDITY SENSOR

climate system 1 HTS

Setting range: 1–4

Default value: 1

limit RH in the room, syst.

Setting range: on/off

Factory setting: off

prevent condensation, syst.

Setting range: on/off

Factory setting: off

limit RH in the room, syst.

Setting range: on/off

Factory setting: off

Up to four humidity sensors (HTS 40) can be installed.

Here you select whether your system(s) is/are to limit the relative humidity level (RH) during heating or cooling operation.

You can also choose to limit min. cooling supply and calculated cooling supply to prevent condensation on pipes and components in the cooling system.

See the Installer Manual for HTS 40 for function description.

MENU 5.3.18 - POOL

Here you select which pump to use in the system.

MENU 5.3.19 - ACTIVE COOLING 4 PIPE

Here you select which pump to use in the system.

MENU 5.3.21 - FLOW SENSOR / ENERGY METER

Supply temperature sensor

set mode

Setting range: EMK150 / EMK300/310 / EMK500

Factory setting: EMK150

energy per pulse

Setting range: 0 – 10000 Wh

Factory setting: 1000 Wh

pulses per kWh

Setting range: 1 – 10000

Factory setting: 500

Energy meter

set mode

Setting range: energy per pulse / pulses per kWh

Default value: energy per pulse

energy per pulse

Setting range: 0 – 10000 Wh

Factory setting: 1000 Wh

pulses per kWh

Setting range: 1 – 10000

Factory setting: 500

Up to two flow sensors (EMK) / energy meters can be connected on the input board AA3, terminal block X22 and X23. Select these in menu 5.2.4 - accessories.

Flow sensor (Energy measurement kit EMK)

A flow sensor (EMK) is used to measure the amount of energy produced and supplied by the heating installation for hot water and heating in the building.

The function of the flow sensor is to measure flow and temperature differences in the charge circuit. The value is presented in the display on a compatible product.

Starting from software version 9085 , you can select the flow sensor (EMK) you have connected in the system.

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

pulses per kWh: Here you set the number of pulses per kWh that are sent to VVM 310.

Caution

The software in VVM 310 must be software version 9085 or later. Visit nibeuplink.com and click on the "Software" tab to download the latest software to your installation.

Energy meter (Electricity meter)

The energy meter(s) is used to send pulse signals every time a certain amount of energy has been consumed.

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

pulses per kWh: Here you set the number of pulses per kWh that are sent to VVM 310.

MENU 5.4 - SOFT IN/OUTPUTS

Here you can select which input/output on the input board (AA3) the external contact function (page 27) must be connected to.

Selectable inputs on terminal block AUX 1-5 (AA3-X6:9-18) and output AA3-X7 on the input board.

MENU 5.5 - FACTORY SETTING SERVICE

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

Caution

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

MENU 5.6 - FORCED CONTROL

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

NOTE

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

MENU 5.7 - START GUIDE

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

See page 34 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, cooling or hot water demand to start the compressor.

NOTE

Do not quick start the compressor too many times over a short period of time, as this could damage the compressor and its surrounding equipment.

MENU 5.9 - FLOOR DRYING FUNCTION

length of period 1 – 7

Setting range: 0 – 30 days

Factory setting, period 1 – 3, 5 – 7: 2 days

Factory setting, period 4: 3 days

temp. period 1 – 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 4	45 C
temp. period 5	40 °C
temp. period 6	30 °C
temp. period 7	20 °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 underfloor drying function. A counter at the bottom shows the number of days the function has been active.

NOTE

During under 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.

TIP

It is possible to save a floor drying log that shows when the concrete slab has reached the correct temperature. See section "Logging floor drying" on page 58.

MENU 5.10 - CHANGE LOG

Read off any previous changes to the control system here.

The date, time, ID no. (unique to particular setting) and the new set value are shown for every change.

Caution

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

MENU 5.11 - HEAT PUMP SETTINGS

Settings for installed heat pump can be made in the submenus.

MENU 5.11.1 - EB101

Make settings specifically for the installed heat pump and charge pump here.

MENU 5.11.1.1 - HEAT PUMP

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

MENU 5.11.1.2 - CHARGE PUMP (GP12)

op. mode

Setting range: auto / intermittent

Default value: auto

Set the operating mode for the charge pump here.

auto: The charge pump runs according to the current operating mode for VVM 310.

intermittent: The charge pump starts and stops 20 seconds before, and after, the compressor in the heat pump.

speed during operation

heating, hot water, pool, cooling

Setting range: auto / manual

Default value: auto

Manual setting

Setting range: 1–100 %

Default values: 70 %

min. allowed speed

Setting range: 1–100 %

Default values: 1 %

speed in wait mode

Setting range: 1–100 %

Default values: 30 %

max. allowed speed

Setting range: 80–100 %

Default values: 100 %

Set the speed at which the charge pump is to operate in the present operating mode. Select "auto" if the speed of the charge pump is to be regulated automatically (factory setting) for optimal operation.

If "auto" is activated for heating operation, you can also make the setting "min. allowed speed" and "max. allowed speed", which restricts the charge pump and prevents it from running at a lower or higher speed than the set value.

For manual operation of the charge pump, deactivate "auto" for the current operating mode and set the value to between 1 and 100% (the previously set value for "max. allowed speed" and "min. allowed speed" no longer applies).

Speed in wait mode (only used if "auto" has been selected for "Operating mode") means the charge pump operates at the set speed during the time when neither compressor operation nor additional heat are required.

5.12 - COUNTRY

Select here the country in which the product was installed. This allows access to country-specific settings in your product.

Language settings can be made regardless of this selection.



Caution

This option locks after 24 hours, after restarting the display and during program updating.

9 Service

Service actions

NOTE

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

When replacing components on VVM 310 only replacement parts from NIBE may be used.

EMERGENCY MODE

Emergency mode is used in event of operational interference and in conjunction with service. Hot water capacity is reduced in this mode.

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

- The status lamp illuminates yellow.
- The display is not lit and the control computer is not connected.
- The temperature by the immersion heater is controlled by the thermostat (FQ10-BT30). It can be set to 35 or 45 °C.
- Only the circulation pumps and electric additional heat are active. The electrical additional heat power in emergency mode is set in the immersion heater board (AA1). See page 26 for instructions.

EMPTYING THE HOT WATER COIL

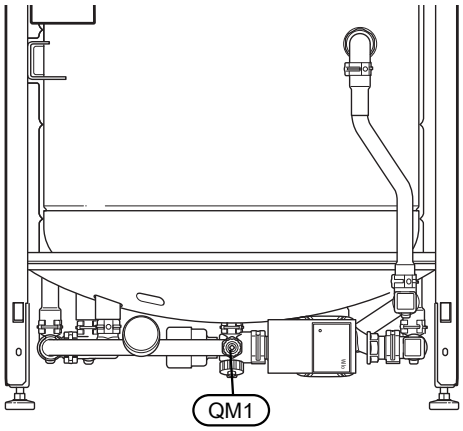
The hot water coil is most easily drained by detaching the cold water pipe at the coils's entry to the reservoir.

DRAINING THE CLIMATE SYSTEM

In order to carry out service on the climate system, it may be easier to drain the system first using drain valve (QM1).

NOTE

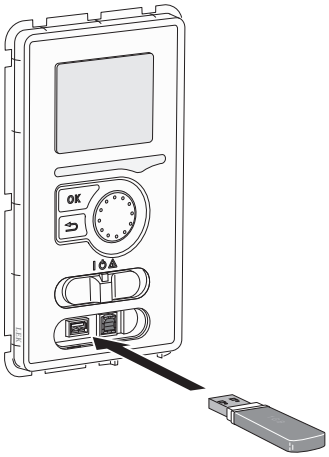
There may be some hot water when draining the heating medium side/climate system. There is a risk of scalding.



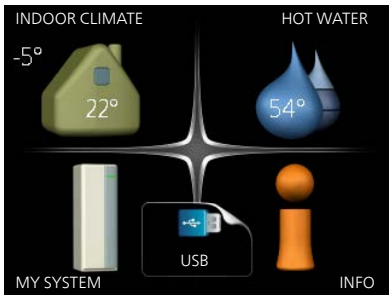
TEMPERATURE SENSOR DATA

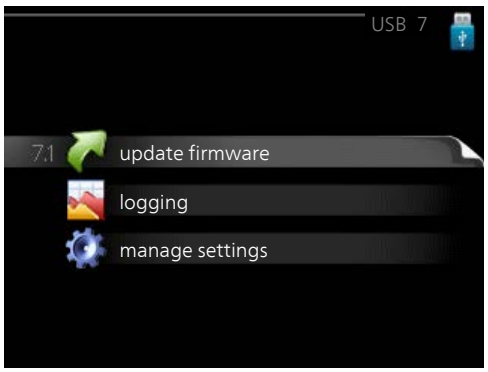
Temperature (°C)	*Resistance (kOhm)*	*Voltage (VDC)*
-40	351.0	3.256
-35	251.6	3.240
-30	182.5	3.218
-25	133.8	3.189
-20	99.22	3.150
-15	74.32	3.105
-10	56.20	3.047
-5	42.89	2.976
0	33.02	2.889
5	25.61	2.789
10	20.02	2.673
15	15.77	2.541
20	12.51	2.399
25	10.00	2.245
30	8.045	2.083
35	6.514	1.916
40	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



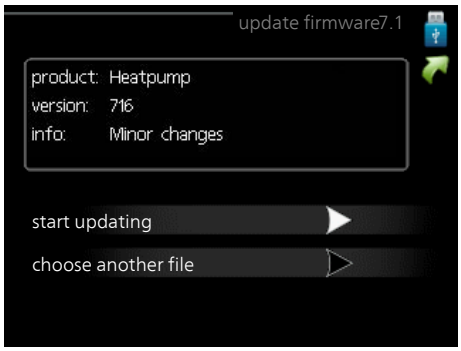
The display unit is equipped with a USB socket that can be used to update the software and save logged information in VVM 310.





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 VVM 310.

NOTE

For the following functions to work the USB memory must contain files with software for VVM 310 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 the product for which the software is intended, the software version and general information about it. If you want a file other than the one selected, the correct file can be selected through "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 VVM 310 restarts.

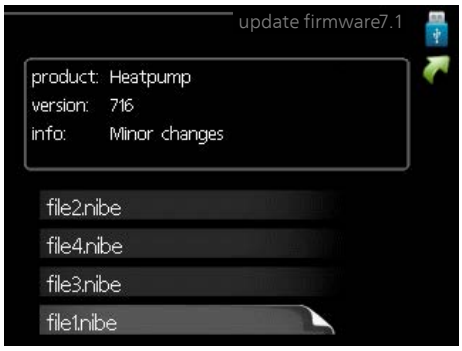
TIP

A software update does not reset the menu settings in VVM 310.

Caution

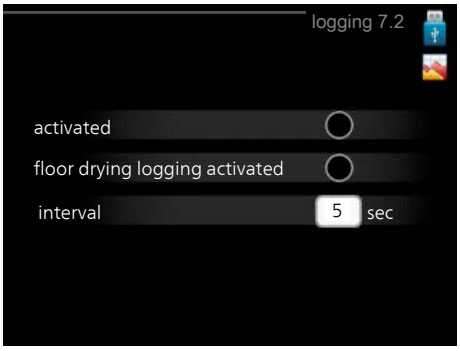
If the update is interrupted before it is complete (for example power cut etc.), the software can be reset to the previous version if the OK button is held in during start up until the green lamp starts to illuminate (takes about 10 seconds).

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

Factory setting range: 5 s

Here you can choose how current measurement values from VVM 310 should be saved onto a log file on the USB memory.

1. Set the desired interval between loggings.
2. Tick “activated".
3. The present values from VVM 310 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.

Logging floor drying

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

- Make sure that "floor drying function" is activated in menu 5.9.
- Select "logging floor drying activated".
- A log file is now created, where the temperature and the immersion heater output can be read off. Logging continues until "logging floor drying activated" is deselected or until "floor drying function" is stopped.

Caution

Deselect "logging floor drying activated" before you remove 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 VVM 310 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 VVM 310.

Caution

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.

Caution

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

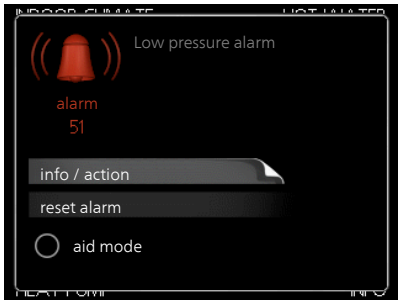
10 Disturbances in comfort

In most cases, VVM 310 notes a malfunction (a malfunction can lead to disruption in comfort) and indicates this with alarms, and instructions for action, in the display.

Info-menu

All the installation's measurement values are gathered under menu 3.1 in the indoor module's menu system. Examining the values in this menu can often make it easier to identify the source of the fault.

Manage alarm



In the event of an alarm, 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 indoor 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 indoor module 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 many cases, it is sufficient to select "reset alarm" for the product to revert to normal operation. If a green light comes on after selecting "reset alarm", the alarm has been remedied. If the red light is still on, and a menu called "alarm" is visible in the display, the problem causing the alarm still remains.

aid mode "aid mode" is a type of emergency mode. This means that the indoor module produces heat and/or hot water, even though there is some kind of problem. This could mean that the heat pump's compressor is not in operation. In this case, the immersion heater produces heat and/or hot water.

Caution

To select aid mode an alarm action must be selected in the menu 5.1.4.

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 items:

- The switch's (SF1) position.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.
- Miniature circuit breaker for VVM 310 (FC1).
- Temperature limiter for VVM 310 (FQ10).
- Correctly set load monitor.

Low hot water temperature or a lack of hot water

- Closed or choked filling valve for the hot water.
  - – Open the valve.
- Mixing valve (if there is one installed) set too low.
  - – Adjust the mixer valve.
- VVM 310 in incorrect operating mode.
  - – Enter menu 4.2. If mode "auto" is selected, select a higher value on "stop additional heat" in menu 4.9.2.
  - – If mode "manual" is selected, select "addition".
  - – Hot water is produced with VVM 310 in "manual" mode. If there is no air/water heat pump, "addition" must be activated.
- 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 high domestic water flow.
  - – Reduce the domestic water flow, see technical specifications for the hot water capacity in the "Technical specifications" section.
- Too low hot water setting.
  - – Enter menu 2.2 and select a higher comfort mode.
- Low hot water access with the "Smart Control" function active.
  - – If the hot water usage has been low, less hot water than normal will be produced. Restart the product.
- 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. Note that, if the time for hot water is increased, the time for heating production is reduced, which can give lower/uneven room temperatures.
- "Holiday mode" activated in menu 4.7.
  - – Enter menu 4.7 and select "Off".

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.

    See the "Saving tips" section in the User manual for more detailed information about how to best set the thermostats.
- VVM 310 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 heating curve up. 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. Note that if the time for heating is increased the time for hot water production is reduced, which can give smaller amounts of hot water.
- "Holiday mode" activated in menu 4.7.
  - – Enter menu 4.7 and select "Off".
- External switch for changing room temperature activated.
  - – Check any external switches.
- Air in the climate system.
  - – Vent the climate system (see page 33).
- Closed valves to the climate system.

  Closed valves to the climate system or heat pump.
  - – Open the valves.

High room temperature

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

Low system pressure

- Not enough water in the climate system.
  - – Fill the climate system with water and check for leaks (see page 33).

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

- There is no heating or cooling demand (accessory is required for cooling).
  - VVM 310 does not call on heating, cooling or hot water.
- Compressor blocked due to the temperature conditions.
  - Wait until the temperature is within the product's working range.
- Minimum time between compressor starts has not been reached.
  - Wait for at least 30 minutes and then check if the compressor has started.
- Alarm tripped.
  - VVM 310 temporarily blocked, see menu 3.2 "Compressor information".

Electrical addition 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.

11 Accessories

Detailed information about the accessories and complete accessories list available at nibe.eu.

Not all accessories are available on all markets.

ACCESSORY CARD AXC 40

An accessory card is required if step controlled addition (e.g. external electric boiler) or if shunt controlled addition (e.g. wood/oil/gas/pellet boiler) is to be connected to VVM 310.

An accessory card is also required if for example an external circulation pump is connected to VVM 310 at the same time that the buzzer alarm is activated.

Part no. 067 060

ACTIVE COOLING ACS 310*

ACS 310 is an accessory that enables VVM 310 to control the production of cooling.

Part no. 067 248

*The accessory requires that NIBE air/water heat pump is installed.

AUXILIARY RELAY HR 10

Auxiliary relay HR 10 is used to control external 1 to 3 phase loads such as oil burners, immersion heaters and pumps.

Part no 067 309

BASE EXTENSION EF 45

This accessory is used to create a larger connection area under VVM 310.

Part no. 067 152

BUFFER VESSEL UKV

A buffer vessel is an accumulator tank that is suitable for connection to a heat pump or another external heat source, and can have several different applications. It can also be used during external control of the heating system.

UKV 40

Part no. 088 470

UKV 100

Part no. 088 207

UKV 200 Cooling

Part no. 080 321

UKV 300 Cooling

Part no. 080 330

COMMUNICATION MODULE FOR SOLAR ELECTRICITY EME 20

EME 20 is used to enable communication and control between inverters for solar cells from NIBE and VVM 310.

Part no. 057 188

COMMUNICATIONS MODULE MODBUS 40

MODBUS 40 enables VVM 310 to be controlled and monitored using a DUC (computer sub-centre) in the building. Communication is then performed using MODBUS-RTU.

Part no 067 144

COMMUNICATIONS MODULE SMS 40

When there is no internet connection, you can use the accessory SMS 40 to control VVM 310 via SMS.

Part no 067 073

CONTROL UNIT FOR EXTERNAL ENERGY SOURCE

DEH 310 (oil/electricity/gas)

Part no. 067 249

DOCKING KIT SCA 35

SCA 35 means that VVM 310 can be connected to thermal solar heating.

Part no. 067 245

ENERGY MEASUREMENT KIT EMK 300

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

Part no. 067 314

ENERGY MEASUREMENT KIT EMK 310*

This accessory is installed internally and used to measure the amount of energy VVM 310 supplies to hot water and heating for the building.

Part no. 067 246

*EMK 310 is included in Germany, Switzerland and Austria..

EXHAUST AIR HEAT PUMP F135*

F135 is an exhaust air heap pump specially designed to combine the recovery of mechanical exhaust air with air/water heat pump. Indoor module/control module controls F135.

Part no. 066 075

*The accessory requires that NIBE air/water heat pump is installed.

EXTERNAL ELECTRIC ADDITIONAL HEAT ELK

This accessory requires accessory DEH 310 (step controlled additional heat).

ELK 15

15 kW, 3x400V
Part no. 069 022

ELK 213

7–13 kW, 3x400V
Part no. 069 500

EXTRA SHUNT GROUP ECS 40/ECS 41

This accessory is used when VVM 310 is installed in houses with two or more different heating systems that require different supply temperatures.

ECS 40 (Max 80 m²)

Part no 067 287

ECS 41 (approx. 80-250 m²)

Part no 067 288

HRV UNIT ERS

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

ERS 10-400

Part no. 066 115

This accessory is used to supply the dwelling with energy that has been recovered from the ventilation air. The unit ventilates the house and heats the supply air as necessary. ERS 30 has been specifically designed for use in attics and other cool spaces.

ERS 30-400

Part no. 066 165

HUMIDITY SENSOR HTS 40

This accessory is used to show and regulate humidity and temperatures during both heating and cooling operation.

Part no. 067 538

MEASUREMENT KIT FOR SOLAR GENERATED ELECTRICITY EME 10

EME 10 is used to optimise the use of solar generated electricity. EME 10 measures the relevant current from the inverter via a current transformer and can work with all inverters.

Part no. 067 541

POOL HEATING POOL 310*

POOL 310 is an accessory that enables pool heating with VVM 310.

Part no. 067 247

*The accessory requires that NIBE air/water heat pump is installed.

ROOM UNIT RMU 40

The room unit is an accessory that allows the control and monitoring of VVM 310 to be carried out in a different part of your home to where it is located.

Part no 067 064

SOLAR PACKAGE NIBE PV

Solar panel package, 3.2 – 22.4 kW (10 – 80 panels), which is used to produce your own electricity.

TOP CABINET TOC 30

Top cabinet, which conceals any pipes/ventilation ducts.

Height 245 mm

Part no. 067 517

Height 345 mm

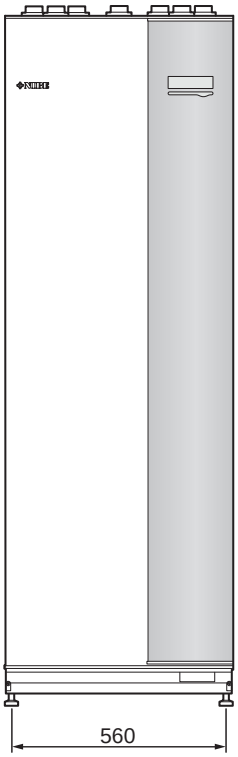
Part no. 067 518

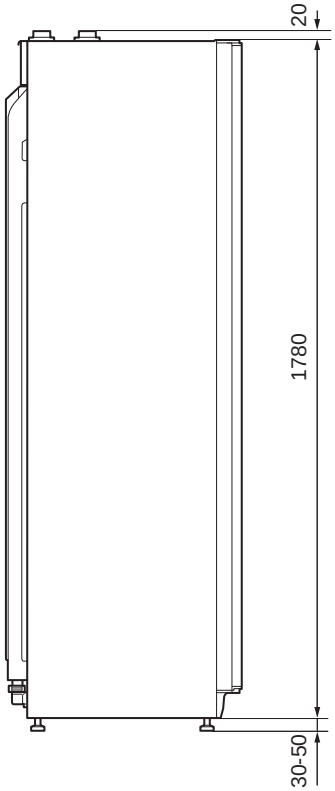
Height 385-635 mm

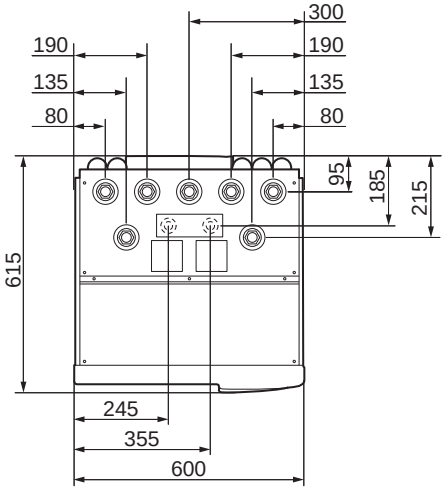
Part no. 067 519

12 Technical data

Dimensions and setting-out coordinates







Technical specifications

3X400V

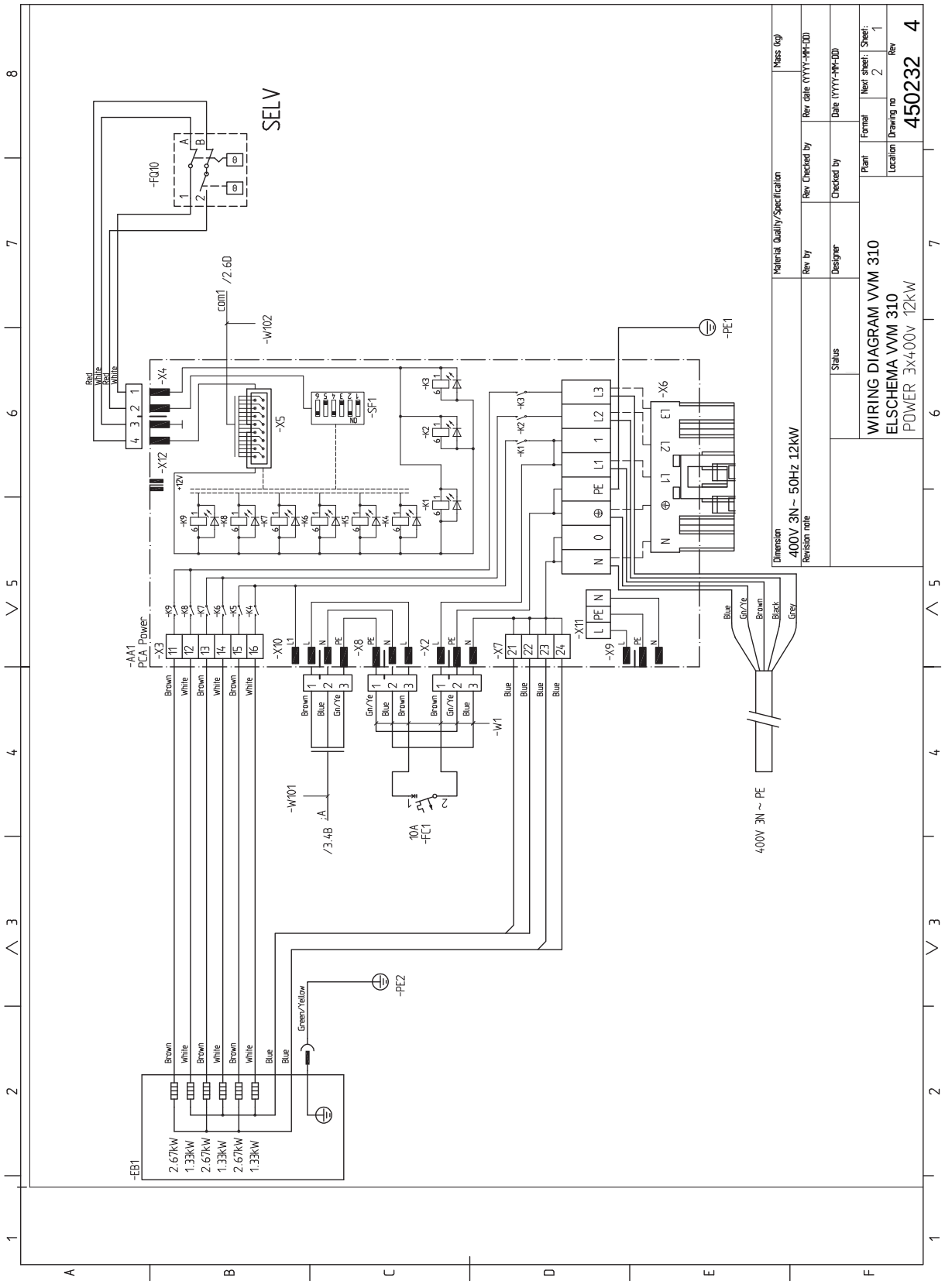
3x400V		
Compatible NIBE air/water heat pumps		
F2040		6 / 8 / 12 / 16
F2120		8 / 12 / 16
NIBE SPLIT HBS 05 (AMS 10 + HBS 05)		6 / 8 / 12 / 16
Electrical data		
Maximum additional power (internal)	kW	12
Max available heating output from VVM 310 with extra additional heat (for example ELK 15)	kW	27
Maximum connectable external additional heat	kW	15
Rated voltage		400V 3N~50Hz
Maximum operating current	A	19.4
Fuse	A	20
Output, Heating medium pump	W	3 – 45
Output, charge pump	W	3 – 45
Enclosure class		IP21
Heating medium circuit		
Energy class circ-pump		low energy
Energy class charge pump		low energy
Maximum system pressure heating medium	MPa	0.3 (3 bar)
Max HM temp	°C	70
Pipe connections		
Heating medium		G20 int.
Hot water connection		G20 int.
Cold water connection		G20 int.
Heat pump connections		G20 int.
Connection for expansion vessel		G20 int.

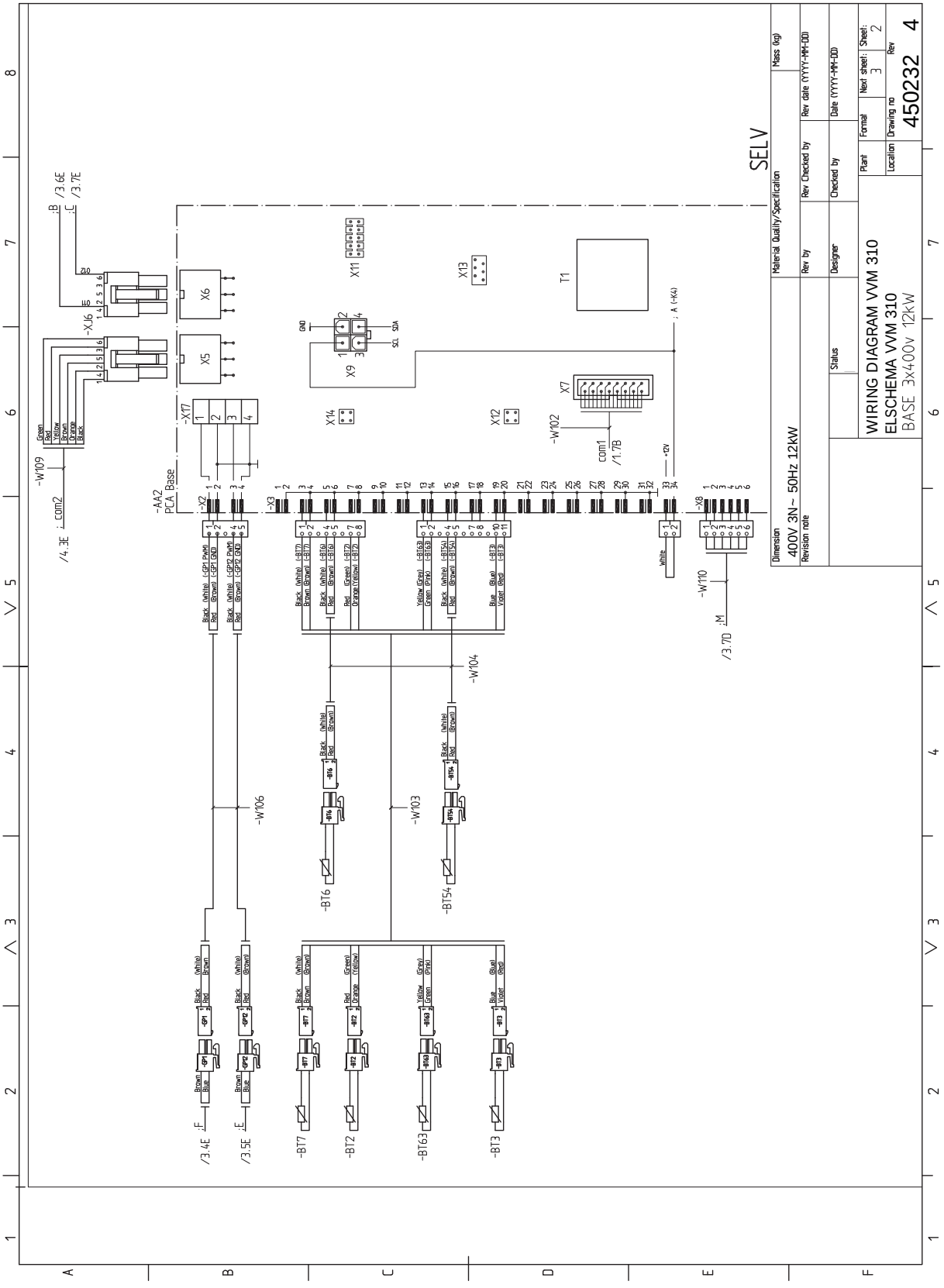
Miscellaneous		
Indoor module		
Volume hot water coil	litre	17
Volume, total indoor module	litre	270
Volume buffer vessel	litre	50
Cut-off pressure, hot water coil	MPa (bar)	1.0 (10 bar)
Max permitted pressure in indoor module	MPa (bar)	0.3 (3 bar)
Capacity hot water heating According to EN 16147		
Amount of hot water (40 °C)*	litre	270
Dimensions and weight		
Width	mm	600
Depth	mm	615
Height (without base)	mm	1,800
Height (with base)	mm	1,830 – 1,850
Required ceiling height	mm	1,910
Weight (excl. packaging and without water)	kg	144
Substances according to Directive (EG) no. 1907/2006, article 33 (Reach)		Lead in brass components
Part number, EMK 310 included (only for Germany, Switzerland and Austria)		069 084
Part no.		069 430

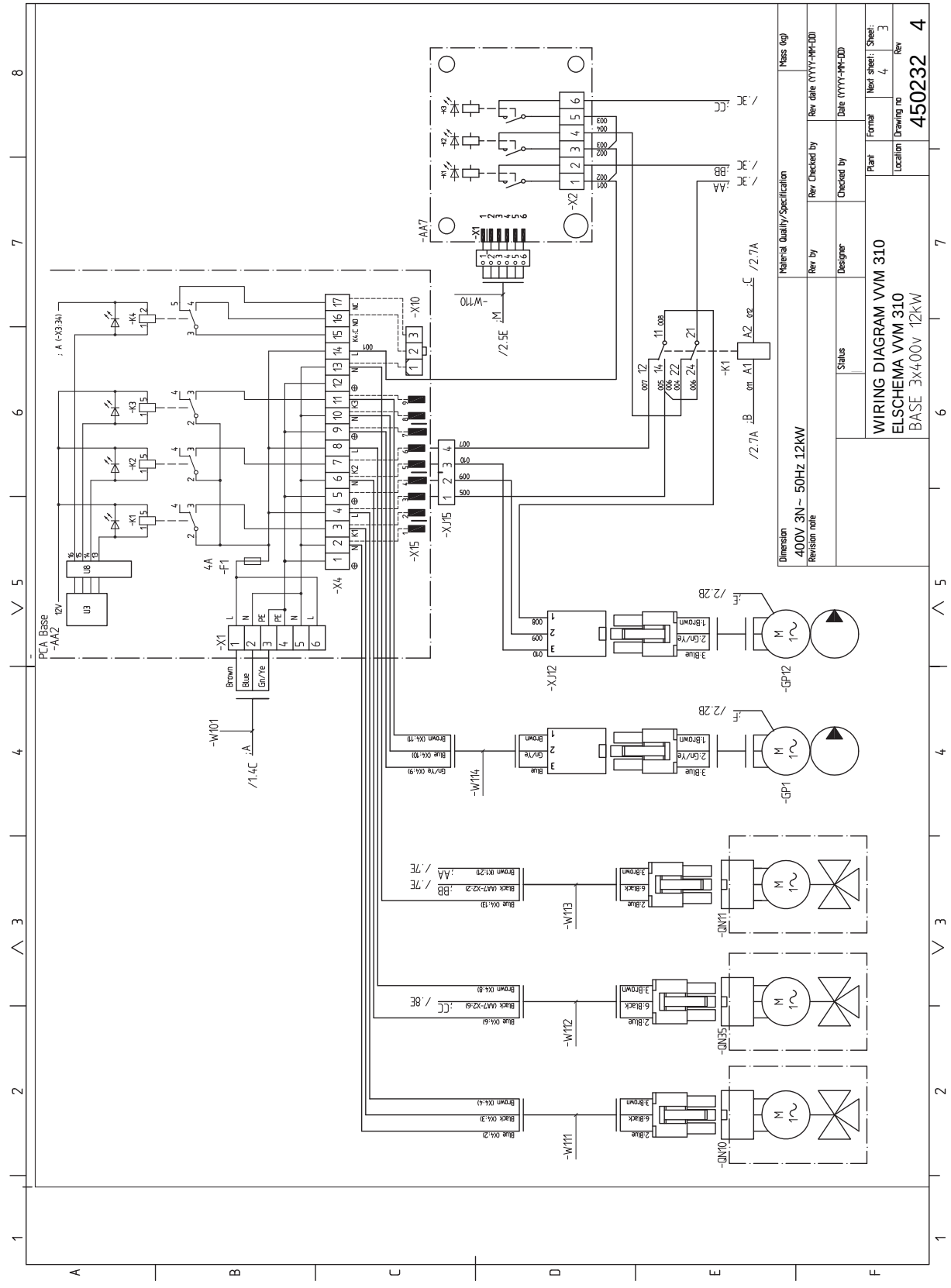
*Applies in the case of Lux comfort mode, tap flow 8 litres/minute and incoming cold water 10° C. Increased hot water comfort can be obtained at lower tap flow.

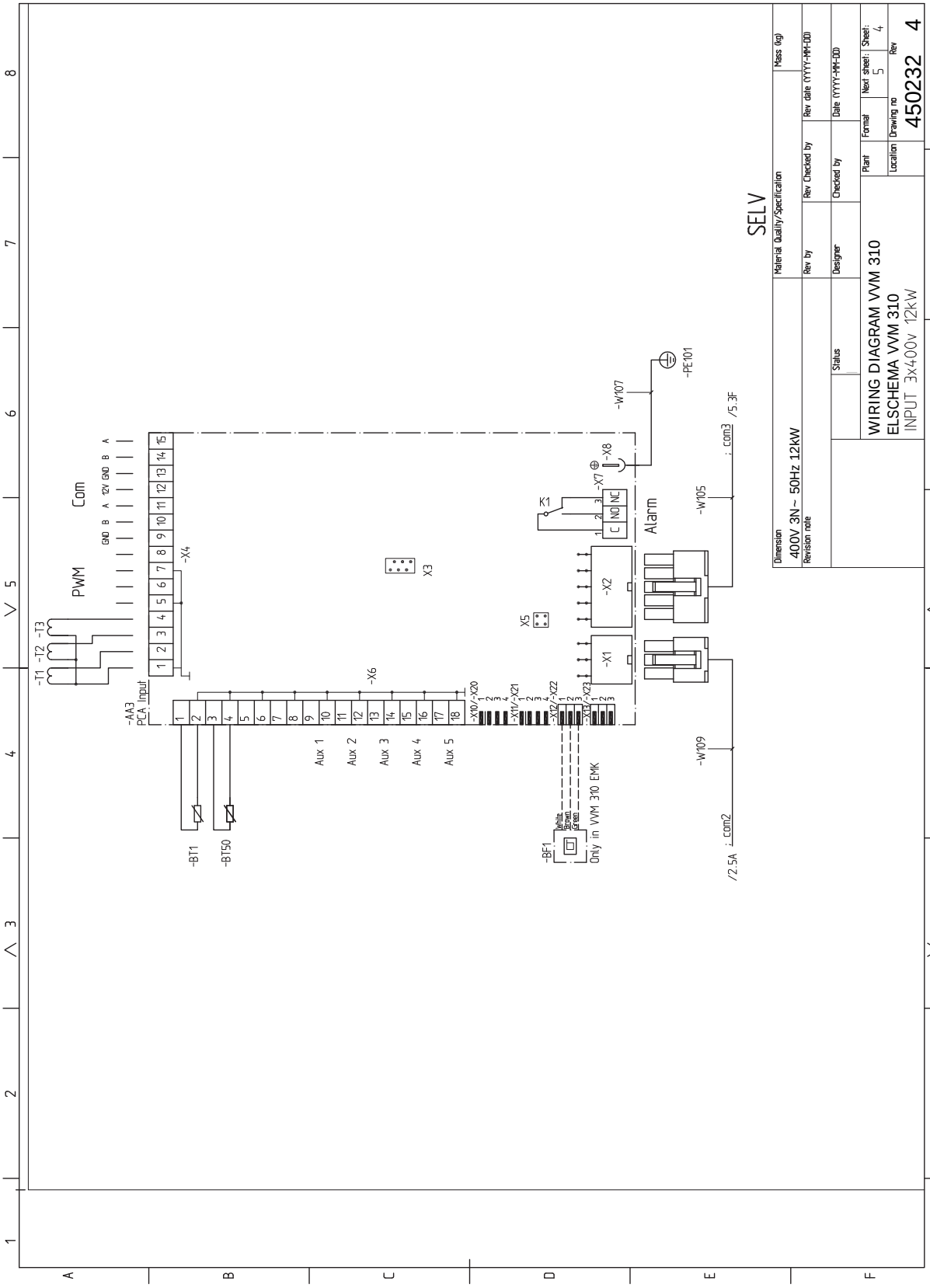
Electrical circuit diagram

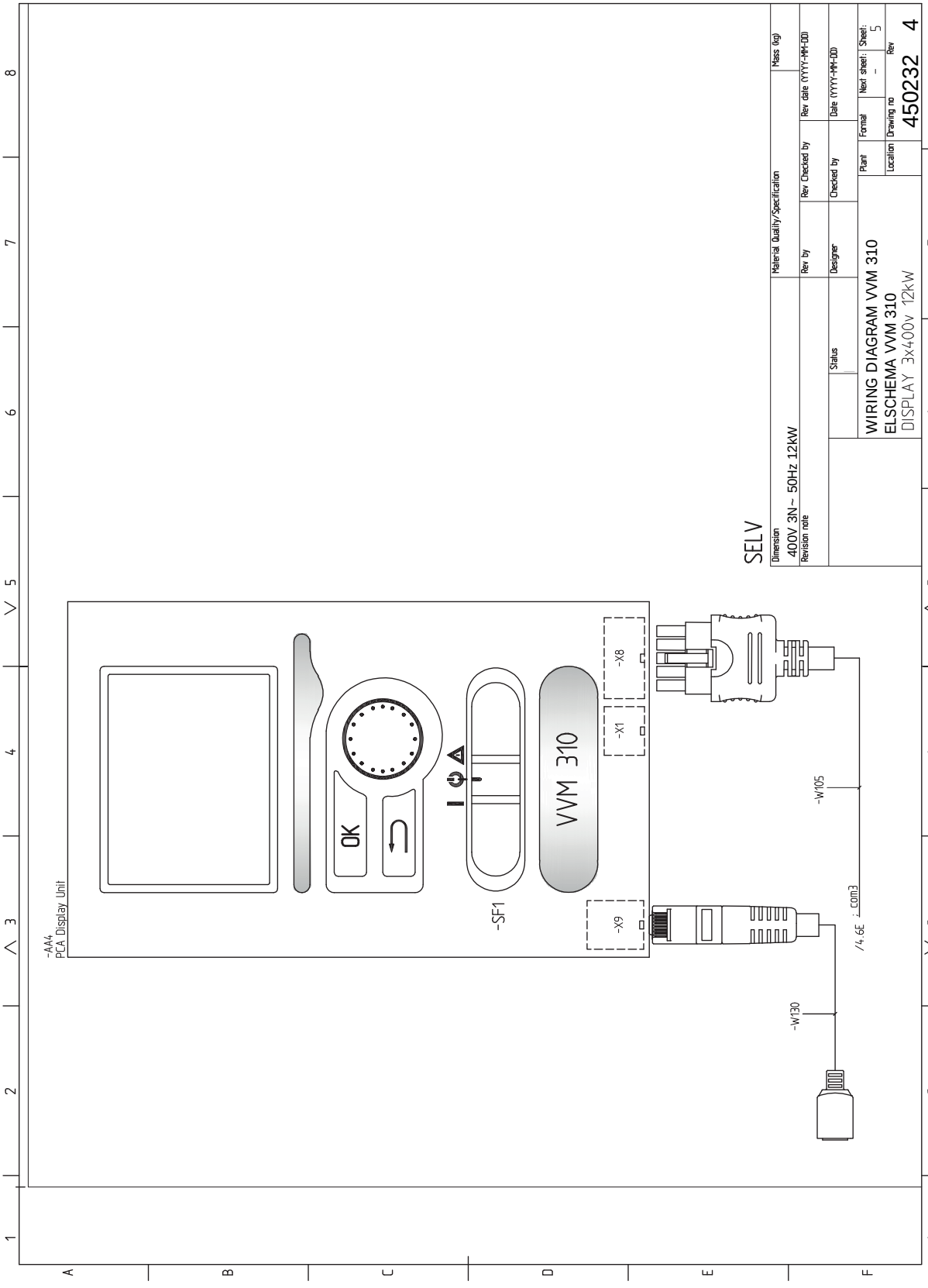
3X400V




SELV
WIRING DIAGRAM VVM 310
ELSCHEMA VVM 310
BASE 3x400v 12kW
450232 4
400V 3N~ 50Hz 12kW
-AA2
PCA Base
-W109
-W110
-W102
-W103
-W104
-W106
-XJ6
-X17
-BT6
-BT154
-BT7
-BT2
-BT163
-BT3
T1
X5
X6
X7
X9
X11
X12
X13
X14


WIRING DIAGRAM VVM 310
ELSCHEMA VVM 310
BASE 3x400v 12kW
450232 4
400V 3N~ 50Hz 12kW
PCA Base
-AA2
-AA7
-X1
-X2
-X4
-X10
-X15
-X105
-X112
-W101
-W110
-W111
-W112
-W113
-W114
-GP1
-GP12
-GN10
-GN35
-GN111
-K1
-K2
-K3
-K4
-F1
4A
U3
U8
Brown
Blue
Gn/Ye
Material Quality/Specification
Mass (kg)
Rev by
Rev Checked by
Rev date (YYYY-MM-DD)
Designer
Checked by
Date (YYYY-MM-DD)
Status
Plant
Format
Next sheet:
Sheet:
Location
Drawing no
Rev


SELV
WIRING DIAGRAM VVM 310
ELSCHEMA VVM 310
INPUT 3x400v 12kW
450232 4
400V 3N~ 50Hz 12kW
PWM
Com
Alarm
Aux 1
Aux 2
Aux 3
Aux 4
Aux 5
-BT1
-BT50
-BF1
Only in VVM 310 EMK
-PE101
-W107
-W105
-W109
/5.3F
/2.5A
-X1
-X2
-X3
-X4
-X5
-X6
-X7
-X8
-AA3
PCA Input


SELV
Dimension
400V 3N~ 50Hz 12kW
Revision note
Material Quality/Specification
Rev by
Designer
Rev Checked by
Checked by
Rev date (YYYY-MM-DD)
Date (YYYY-MM-DD)
Mass (kg)
Status
Plant
Format
Next sheet:
Sheet:
5
Location
Drawing no
450232
Rev
4
WIRING DIAGRAM VVM 310
ELSCHEMA VVM 310
DISPLAY 3x400v 12kW
-AA4
PCA Display Unit
OK
-SF1
VVM 310
-X8
-X1
-X9
-W105
-W130
/4.6E : com3

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