



Control module

NIBE SMO 20

The NIBE SMO 20 gives an optimized control of the climate system and is designed to be combined with NIBE air/water heat pumps to provide an integrated climate system for your home.

The control module, NIBE SMO 20, offers a flexible system solution. The NIBE SMO 20 is connected to additional components for efficient heating, cooling and hot water for a customised installation.

Thanks to smart technology, the product gives you control over your energy consumption and will be a key part of your connected home. The efficient control system automatically adjusts the indoor climate for high comfort, and you do nature a favour at the same time.



- **User-friendly and intelligent control system for your climate system.**
- **Flexible, customised system solution.**
- **Part of your smart home – control your comfort online using NIBE Uplink.**

This is how NIBE SMO 20 works

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



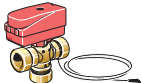



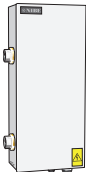

More information about the alternatives is available at nibe.eu and in the relevant assembly instructions for the accessories used.

Installations with SMO 20 can produce heating and hot water.

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

System solutions

The following combinations of products are recommended for control by SMO 20.

							
Control module	Air/water heat pump	HW control	Accumulator with hot water heater	Circ. pump	Water heater	Addition	Volume vessel
SMO 20	AMS 20-6 / HBS 20-6	VST 05	VPA 200/70 VPA 300/200 VPA 450/300 VPAS 300/450	CPD 11-25/65	VPB 200 VPB 300 VPBS 300 VPB 500 VPB 750-2 VPB 1000	ELK 15 ELK 26 ELK 213	UKV 40 UKV 100 UKV 200 UKV 300 UKV 500
	AMS 20-10 / HBS 20-10						
	F2050 - 6						
	F2050 - 10						
	S2125 - 8						
	AMS 10-12 / HBS 05-12	VST 11					
	F2040 - 12						
	S2125 - 12						
	F2120 - 16						
	AMS 10-16 / HBS 05-16	VST 20		VPA 300/200 VPA 450/300 VPAS 300/450	CPD 11-25/75		VPB 500 VPB 750-2 VPB 1000
F2040 - 16							
F2120 - 20							

Outdoor modules

COMPATIBLE AIR/WATER HEAT PUMPS

F2040

F2040-12
Part no. 064 092

F2040-16
Part no. 064 108



F2050

F2050-6
Part no. 064 328

F2050-10
Part no. 064 318



F2120

F2120-16
3x400 V
Part no. 064 139

F2120-20
3x400 V
Part no. 064 141



S2125

S2125-8
1x230 V
Part no. 064 220

S2125-8
3x400 V
Part no. 064 219



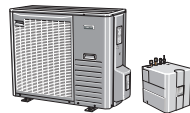
S2125-12
1x230 V
Part no. 064 218

S2125-12
3x400 V
Part no. 064 217

NIBE SPLIT HBS 05

AMS 10-12
Part no. 064 110

HBS 05-12
Part no. 067 480



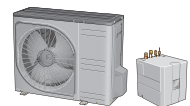
AMS 10-16
Part no. 064 035

HBS 05-16
Part no. 067 536

NIBE SPLIT HBS 20

AMS 20-6
Part no. 064 235

HBS 20-6
Part no. 067 668



AMS 20-10
Part no. 064 319

HBS 20-10
Part no. 067 819

Check the software version on compatible older NIBE air/water heat pumps, see section "Software version".

System principles

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

NIBE does not supply all the components in these outline diagrams.

See nibe.eu/ODM for more detailed installation options.

CONNECTING AIR/WATER HEAT PUMP

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

Also, consult the Installer Manual for your air/water heat pump.

Install as follows:

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

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

- drain valve

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

- non-return valve

A non-return valve is only required in those installations where the placement of the products in relation to each other can cause self-circulation.

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

- charge pump
- shut-off valve

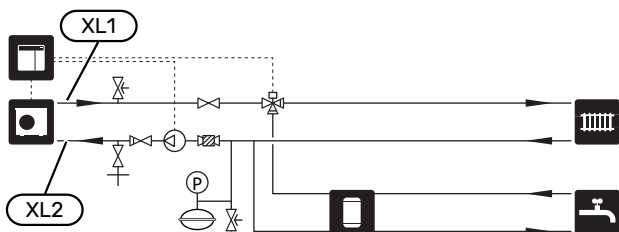
To facilitate any future servicing.

- filterball or particle filter

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

- reversing valve.

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



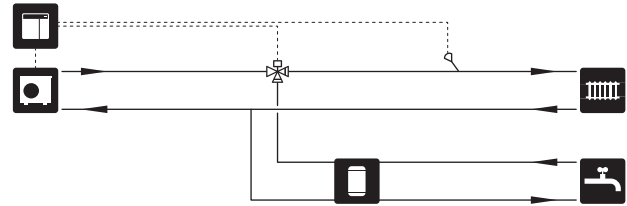
CLIMATE SYSTEM

A climate system is a system that regulates the indoor temperature with the help of the control system in SMO 20 and, for example, radiators, underfloor heating, underfloor cooling, fan coils, etc.

Connecting the climate system

Install as follows:

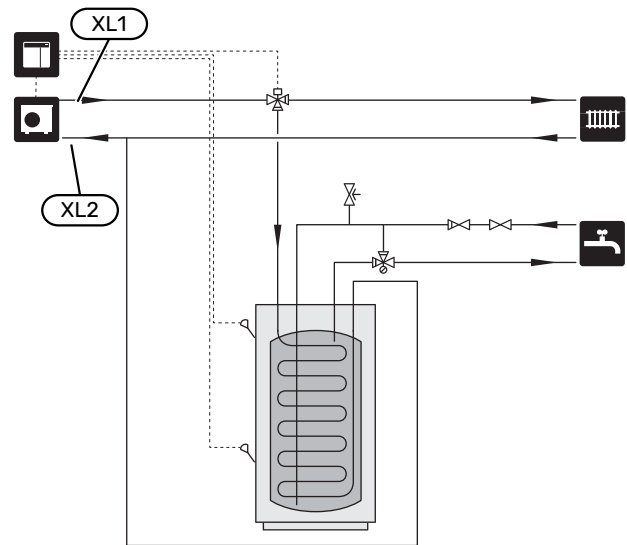
- supply temperature sensor
- When connecting to systems with thermostats, some of the thermostats must be removed to ensure there is sufficient flow and heat generation.



COLD AND HOT WATER

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

The settings for hot water are made in menu 5.1.1.



INSTALLATION ALTERNATIVE

SMO 20 can be installed in several different ways, some of which are shown here.

More information about the alternatives is available at nibe.eu and in the relevant assembly instructions for the accessories used. See section "Accessories" for a list of the accessories that can be used with SMO 20.

Hot water circulation

A circulation pump can be controlled by SMO 20 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.

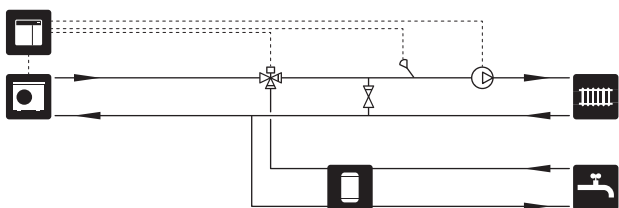
External heating medium pump

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

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

The heating medium pump is supplemented with a non-return valve.

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



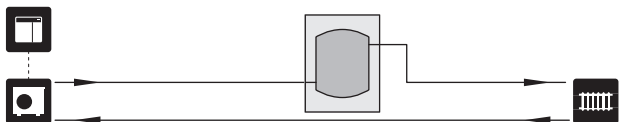
Buffer vessel (UKV)

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

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

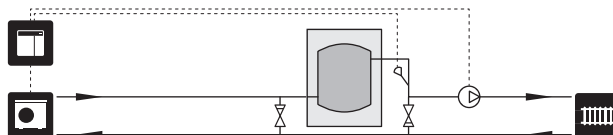
Volume

A 2-pipe-connected buffer vessel is used when the system volume in the climate system is less than the minimum recommended volume for the heat pump.



Flow equalisation

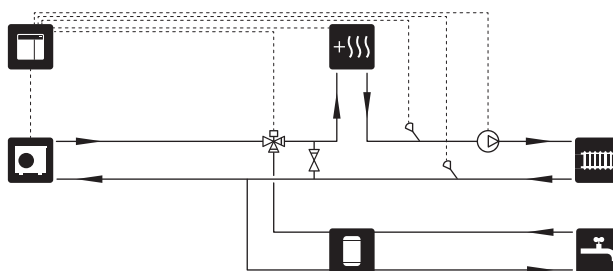
A 2-pipe-connected buffer vessel with non-return valves, external heating medium pump and external supply temperature sensor is used when the system volume in the climate system is less than the minimum recommended volume for the heat pump and it is necessary to create balance between power input and output.



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

Step controlled additional heat

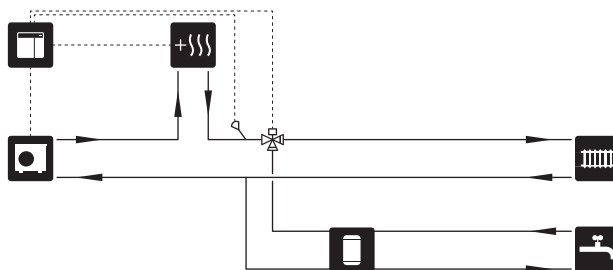
SMO 20 can control step-controlled additional heat via a control signal. The additional heat is used for heat production.



Step-controlled additional heat before QN10

The additional heat is connected before the reversing valve and is controlled via a control signal from SMO 20. The additional heat can be used for producing both hot water and heating.

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

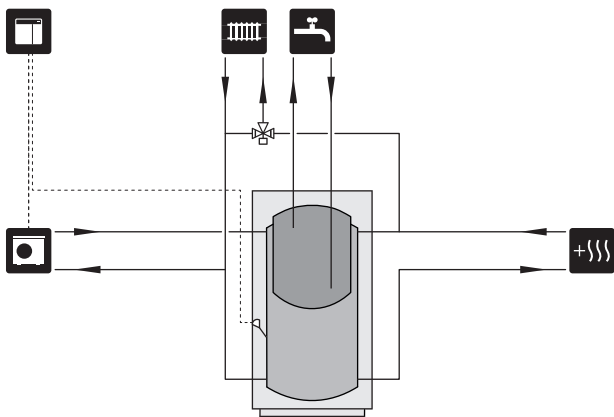


Fixed condensing

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

The following menu settings are made:

Menu	Menu setting (local variations may be required)
1.9.3.1 - min. flow line temp.	Desired temperature in the tank.
5.1.2 - max flow line temperature	Desired temperature in the tank.
5.11.1.2 - Charge pump (GP12)	intermittent
4.2 - op. mode	manual



Delayed supply line for cooling

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

Cooling

Cooling in 2-pipe system

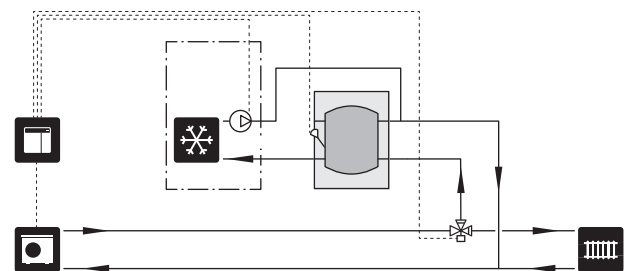
Cooling and heating are distributed via the same climate system.

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



Cooling in 4-pipe system

With the accessory VCC, separate cooling and heating systems can be connected via a reversing valve.



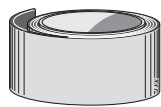
Good to know about SMO 20

Supplied components

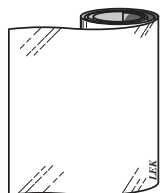
Local differences in the enclosed kit may occur. See relevant installer manual for more information.



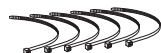
Outdoor temperature sensor



Insulation tape



Aluminium tape



Cable ties



Temperature sensor



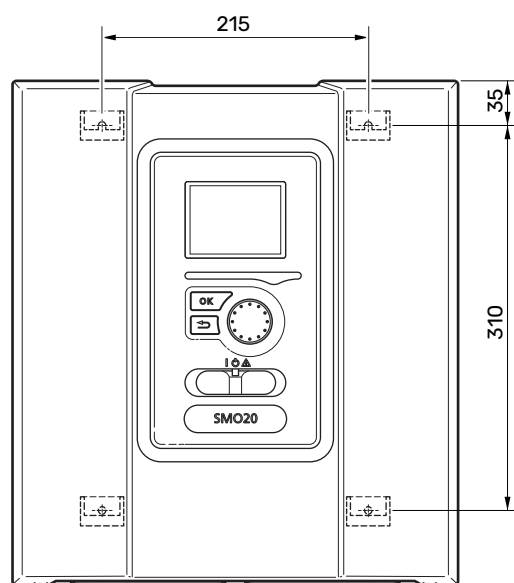
Heating pipe paste

Mounting

SMO 20 is a separate, electric control module and must be mounted on a wall.

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

Screws for removing the front cover are reached from underneath.



Installation

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 and should be documented. The above applies to closed heating systems.

If the heat pump is replaced, the installation must be inspected again.

Pipe installation

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

Minimum system flows

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

Each climate system must be dimensioned individually to provide the recommended system flows.

The installation must be dimensioned to provide at least the minimum defrosting flow at 100 % circulation pump operation.

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

Air/water heat pump	Minimum flow during defrosting 100% circulation pump operation (l/s)	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
AMS 20-6/ HBS 20-6	0.19	20	22
AMS 20-10/ HBS 20-10			

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

Air/water heat pump	Minimum flow during defrosting 100% circulation pump operation (l/s)	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
F2050-6	0.19	20	22
F2050-10			

Air/water heat pump	Minimum flow during defrosting 100% circulation pump operation (l/s)	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
F2120-16 (3x400 V)	0.38	25	28
F2120-20 (3x400 V)	0.48	32	35

Air/water heat pump	Minimum flow during defrosting 100% circulation pump operation (l/s)	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
S2125-8 (1x230 V)	0.32	25	28
S2125-8 (3x400 V)			
S2125-12 (1x230 V)			
S2125-12 (3x400 V)			

SOFTWARE VERSION

Compatible NIBE air/water heat pump has to be equipped with a control board that, as a minimum, has the software version given in the following list. The control board's version is shown in the heat pump's display (if applicable) at start-up.

Product	Software version
F2015	55
F2016	55
F2020	118
F2025	55
F2026	55
F2030	all versions
F2040	all versions
F2050	all versions
F2120	all versions
S2125	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
NIBE SPLIT HBS 20: AMS 20-6 + HBS 20-6 AMS 20-10 + HBS 20-10	all versions

Functions

Control, general

The indoor temperature depends on several different factors. Sunlight and heat emissions from people and household machines are normally sufficient to keep the house warm during the warm seasons. When it gets colder outside, the climate system needs to help heat the house. The colder it is outside, the warmer radiators and underfloor heating systems have to be.

Control of the heat production is performed based on the "floating condensing" principle, which means that the temperature level needed for heating at a specific outdoor temperature is produced based on collected values from the outdoor and supply temperature sensors. The room sensor can also be used to compensate the deviation in room temperature.

Heat production



The supply of heat to the house is regulated in accordance with the heating curve selected setting. After adjustment, the correct amount of heat for the current outdoor temperature is supplied. The

supply temperature will oscillate around the theoretically desired value.

OWN CURVE

SMO 20 has pre-programmed non-linear heating curves. It is also possible to create your own defined curve. This is an individual linear curve with a number of break points. You select break points and the associated temperatures.

Hot water production



Hot water charging starts when the temperature has fallen to the set start temperature. Hot water charging stops when the hot water temperature at the hot water sensor has been reached.

For temporary higher hot water demand, there is a function that allows the temperature to be raised temporarily for up to 12 hours or by a one time increase (can be selected in the menu system).

With the Smart Control function activated, SMO 20 learns how much hot water is used and when. The Smart Control function memorises the previous week's hot water consumption and adapts the hot water temperature for the coming week to ensure minimal energy consumption.

It is also possible to set SMO 20 in holiday mode, which means that the lowest possible temperature is achieved without the risk of freezing.

Alarm indications



The status lamp lights red in the event of an alarm and the display shows detailed information depending on the fault. An alarm log is created with each alarm containing a number of temperatures, times and operating status.

Extra functions

ROOM SENSOR

A room sensor can be connected to SMO 20. The room sensor has up to three functions:

Show current room temperature in the control module display.

Provides the option of changing the room temperature in °C.

Makes it possible to change/stabilise the room temperature.

SMO 20 operates without the sensor, but if you want to read off the home's indoor temperature in the control module's display, the sensor must be installed. If the sensor is to be used to change the room temperature in °C and / or to change / stabilise the room temperature, the sensor must be activated in the menu.

RELAY OUTPUT FOR EMERGENCY MODE

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

No hot water is produced when emergency mode is activated.

EXTERNAL CIRCULATION PUMP

Heat production is controlled by the outdoor temperature and a theoretical desired value of the indoor temperature. This occurs in accordance with a chosen setting of the regulating curve (curve slope and offset) in the menu..

To reach a high level of heating comfort during the heating phase, the external circulation pump circulates hot water in the heating system even when the domestic hot water output is high.

The display



SMO 20 is controlled using a clear and easy to use 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.

The display unit is equipped with a USB socket that can be used to update the software and save logged information in SMO 20.

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

myUplink



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

Visit myuplink.com for more information.

SPECIFICATION

You need the following in order for myUplink to be able to communicate with your SMO 20:

- network cable
- Internet connection
- account on myuplink.com

We recommend our mobile apps for myUplink.

RANGE OF SERVICES

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

Service level	Basic	Premium extended history	Premium change settings
Viewer	X	X	X
Alarm	X	X	X
History	X	X	X
Extended history	-	X	-
Manage	-	-	X

MOBILE APPS FOR MYUPLINK

The mobile apps can be downloaded free of charge from where you usually download your mobile apps. Logging into the mobile app is performed using the same account details as on myuplink.com.

SMART HOME

When you have a smart home system that can communicate with myUplink, you can control the installation via an app by activating the "smart home" function.

By allowing connected units to communicate with myUplink, your heating system becomes a natural part of your homesmart home and gives you the opportunity to optimise the operation.

Remember that the "smart home" function requires myUplink in order to work.

NIBE SMART ENERGY SOURCE™



Smart Energy Source™ prioritises how / to what extent each docked energy source will be used. Here you can choose if the system is to use the energy source that is cheapest at the time. You can also choose if the system is to use the energy source that is most carbon neutral at the time.

Technical data

Technical data

SMO 20		
Electrical data		
Rated voltage		230V- 50Hz
Enclosure class		IP21
Rated value for impulse voltage	kV	4
Pollution degree		2
Fuse	A	10
Optional connections		
Max number air/water heat pumps		1
Max number of sensors		8
Max number of charge pumps		1
Max number of outputs for additional heat step		3
Miscellaneous		
Operation mode according to EN 60 730-1		Type 1
Area of operation	°C	-25 - 70
Ambient temperature	°C	5 - 35
Program cycles, hours		1, 24
Program cycles, days		1, 2, 5, 7
Resolution, program	min.	1
Weight	kg	4.3
Part no.		
Part No.		067 224

Energy labelling

Supplier		NIBE
Model		SMO 20 + S2125 / F2120 / NIBE SPLIT HBS / F2040 / F2050
Controller, class		II
Controller, contribution to efficiency	%	2.0

Accessories

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

Not all accessories are available on all markets.

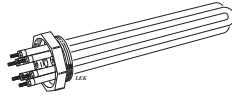
Immersion heater IU

3 kW

Part no. 018 084

6 kW

Part no. 018 088



9 kW

Part no. 018 090

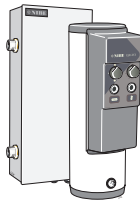
External electric additional heat ELK

ELK 5

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

ELK 8

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



ELK 15

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

ELK 26

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

ELK 213

7–13 kW, 3 x 400 V
Part no. 069 500

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



Communication module for solar electricity EME 20

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

Part no. 057 215

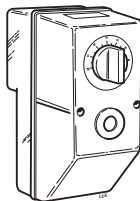


Connection box K11

Connection box with thermostat and overheating protection.

(When connecting Immersion heater IU)

Part no. 018 893



Charge pump CPD 11

Charge pump for heat pump



CPD 11-25/65

Part no. 067 321

CPD 11-25/75

Part no. 067 320

Room sensor RTS 40

This accessory is used to obtain a more even indoor temperature.

Part no. 067 065



Water heater/Accumulator tank

AHPS

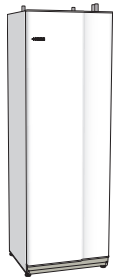
Accumulator tank without an immersion heater with a solar coil (copper corrosion protection) and a hot water

Part no. 256 119

AHPH

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

Part no. 256 120



VPA

Water heater with double-jacketed vessel.

VPA 450/300

Corrosion protection:
Copper Part no. 082 030
Enamel Part no. 082 032



VPAS

Water heater with double-jacketed vessel and solar coil.

VPAS 300/450

Corrosion protection:
Copper Part no. 082 026
Enamel Part no. 082 027

VPB

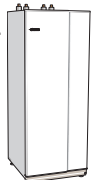
Water heater without immersion heater with charging coil.

VPB 200

Corrosion protection:
Copper Part no. 081 068
Enamel Part no. 081 069
Stainless Part no. 081 070

VPB 300

Corrosion protection:
Copper Part no. 081 071
Enamel Part no. 081 073
Stainless Part no. 081 072

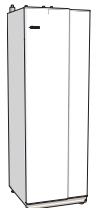


VPB 500

Corrosion protection:
Copper Part no. 081 054

VPB 750

Corrosion protection:
Copper Part no. 081 052



VPB 1000

Corrosion protection:
Copper Part no. 081 053

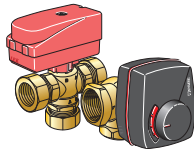
Hot water control

VST 05

Reversing valve, cu-
pipe $\varnothing 22$
(Max recommended
power, 8 kW)
Part no. 089 982

VST 11

Reversing valve, cu-
pipe $\varnothing 28$
(Max recommended
power, 17 kW)
Part no. 089 152

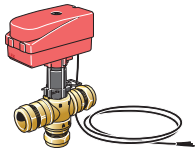


VST 20

Reversing valve, cu-
pipe $\varnothing 35$
(Max recommended
power, 40 kW)
Part no 089 388

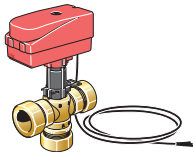
Reversing valve for cooling

VCC 05



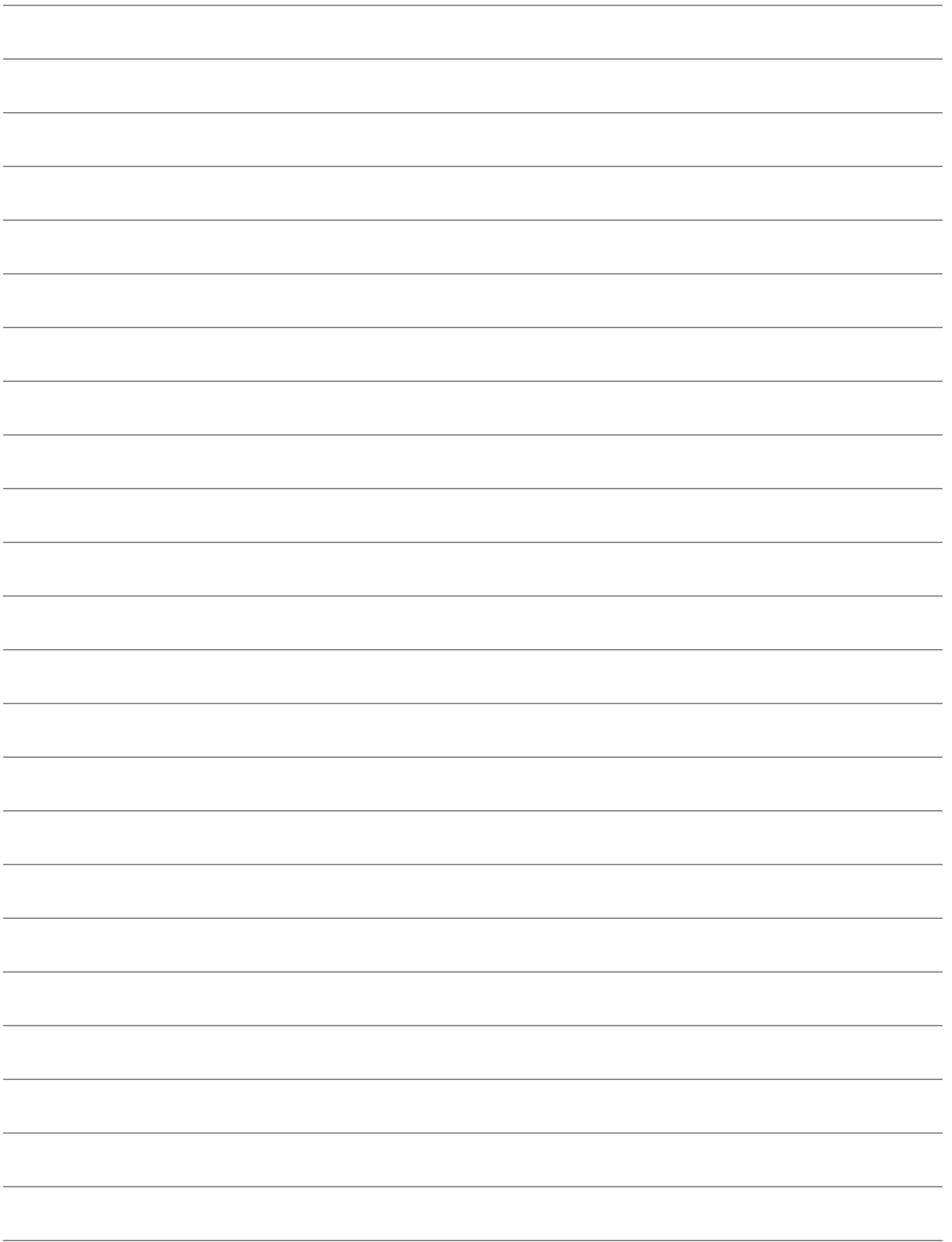
Reversing valve, Cu pipe $\varnothing 22$
mm
Part no. 067 311

VCC 11



Reversing valve, Cu pipe $\varnothing 28$
mm
Part no. 067 312





Sustainable energy solutions since 1952

NIBE has been manufacturing energy-efficient and sustainable climate solutions for your home for 70 years. It all began in Markaryd, in the southern Swedish province of Småland, and we recognise our Nordic heritage by utilising the power of nature. We combine renewable energy with smart technology to offer efficient solutions, allowing us to work together to create a more sustainable future.

Regardless of whether it is a chilly winter's day or a warm afternoon in the summer sun, we need a balanced indoor climate that allows us to enjoy a comfortable life, whatever the weather. Our extensive range of products supply your home with cooling, heating, ventilation and hot water, making it possible for you to create a pleasant indoor climate with little impact on the environment.

NIBE Energy Systems
Box 14, SE-285 21 Markaryd
nibe.eu



This product sheet is a publication from NIBE Energy Systems. All product illustrations, facts and data are based on current information at the time of the publication's approval. NIBE Energy Systems makes reservations for any factual or printing errors in this product sheet.