



## 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).



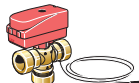



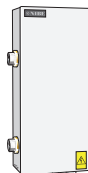

More information about the alternatives is available at [nibe.eu](http://nibe.eu) and in the relevant assembly instructions for the accessories used.

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.

											
<i>Control module</i>	<i>Air/water heat pump</i>	<i>HW control</i>	<i>Accumulator with hot water heater</i>	<i>Circ. pump</i>	<i>Water heater</i>	<i>Addition</i>	<i>Volume vessel</i>				
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	VST 11		CPD 11-25/75							
	AMS 10-12 / HBS 05-12										
	F2040 - 12										
	S2125 - 12										
	F2120 - 16										
	AMS 10-16 / HBS 05-16	VST 20	VPA 300/200 VPA 450/300 VPAS 300/450		VPB 500 VPB 750-2 VPB 1000		UKV 200 UKV 300 UKV 500				
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**  
**3x400V**  
Part no. 064 139

**F2120-20**  
**3x400V**  
Part no. 064 141



#### S2125

**S2125-8**  
**1x230V**  
Part no. 064 220

**S2125-8**  
**3x400V**  
Part no. 064 219

**S2125-12**  
**1x230V**  
Part no. 064 218

**S2125-12**  
**3x400V**  
Part no. 064 217



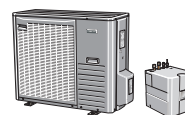
#### NIBE SPLIT HBS 05

**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



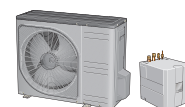
#### NIBE SPLIT HBS 20

**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](http://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.

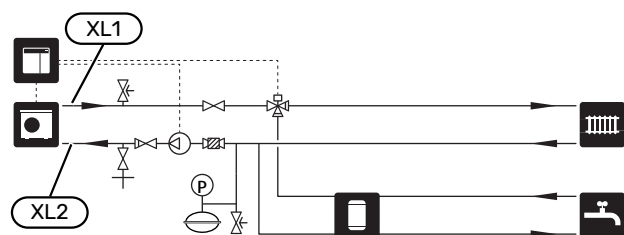
- filterball or particle filter

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

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.

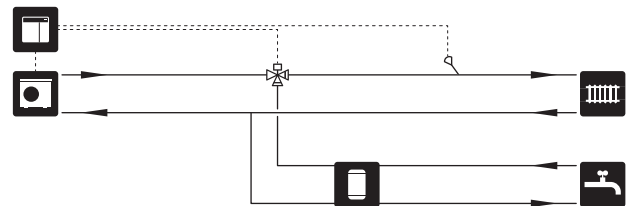
### Connecting the climate system

Install as follows:

- supply temperature sensor

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

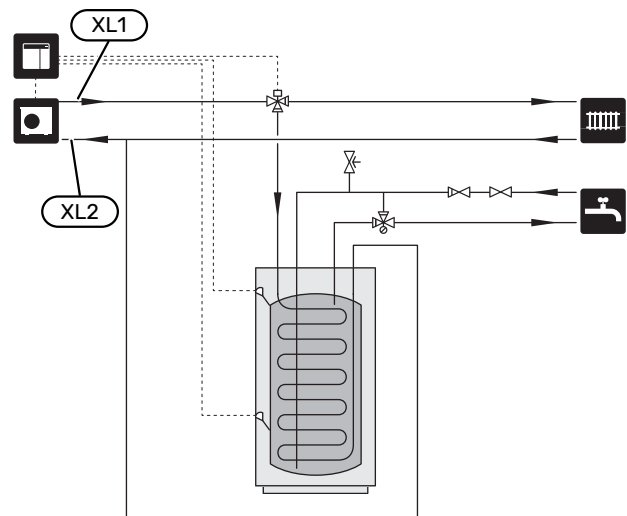
- When connecting to systems with thermostats on all radiators/underfloor heating coils, some of the thermostats must be removed to ensure there is sufficient flow and heat generation.



## 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

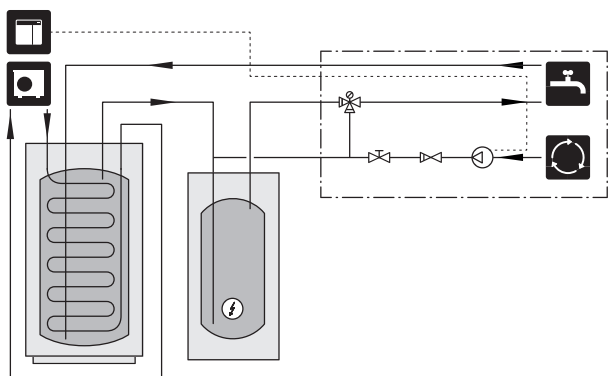
SMO 20 can be installed in several different ways, some of which are shown here.

More information about the alternatives is available at [nibe.eu](http://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.



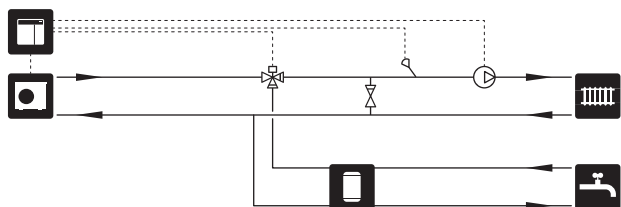
### External heating medium pump

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.

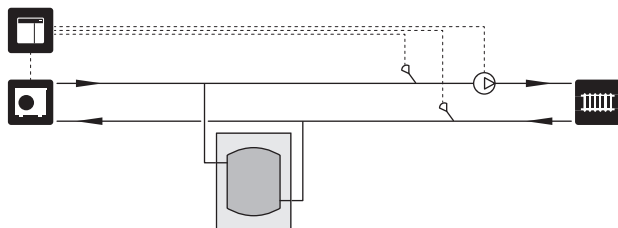
If the installation does not have an external supply temperature sensor, install this as well.



### Buffer vessel UKV

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

The image shows UKV flow equalisation.

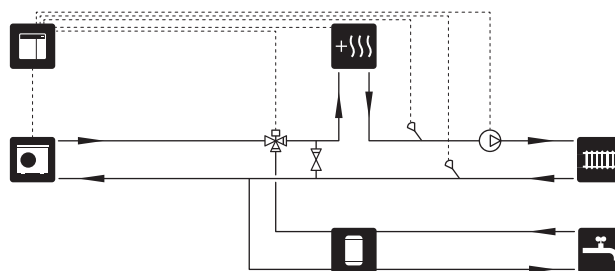


### Addition

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

### Step-controlled/shunt-controlled additional heat

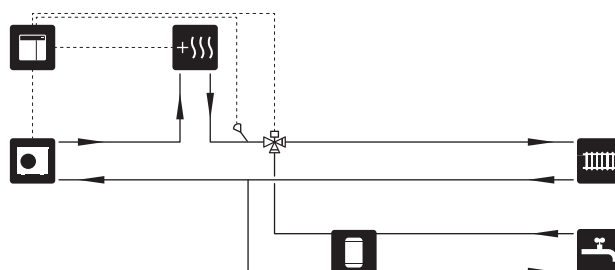
SMO 20 can, via a control signal, control step-controlled or shunt-controlled additional heat, which can also be prioritised. The additional heat is used for heat production.



### Step-controlled additional heat before QN10

The additional heat is connected before the 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.

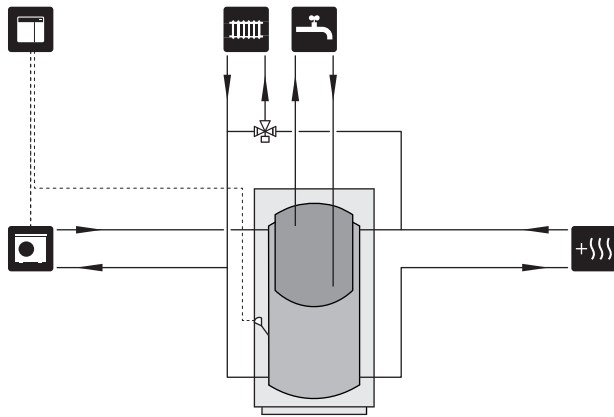


## Fixed condensing

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 - min. flow line temp.	Desired temperature in the tank.
5.1.2 - max flow line temperature	Desired temperature in the tank.
5.1.10 - op. mod heat med pump	intermittent
4.2 - op. mode	manual

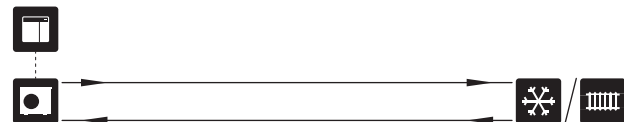


## Cooling

### Cooling in 2-pipe system

Cooling and heating are distributed via the same climate system.

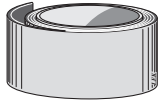
When there is a risk of condensation, components and climate systems must be insulated against condensation in accordance with current standards and provisions.



# Good to know about SMO 20

## Supplied components

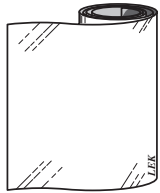
Local differences in the enclosed kit may occur. See relevant installer manual for more information.



Insulation tape



Temperature sensor

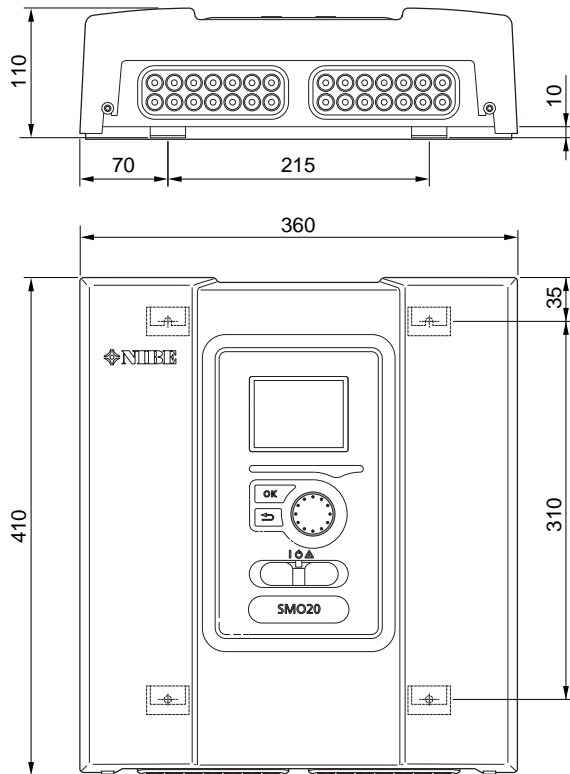


Aluminium tape



Cable ties

## Mounting



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

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

For wall mounting, use screws suitable for the surface.

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 applicable regulations. See manual for compatible NIBE air/water heat pump for installation of the heat pump.

### Minimum system flows

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.

The installation must be dimensioned to manage at least 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)
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% pump speed (l/s))	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
AMS 20-6	0.19	20	22
AMS 20-10			

Air/water heat pump	Minimum flow during defrosting (100% pump speed (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% pump speed (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% pump speed (l/s))	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
F2120-16 (3x400V)	0.38	25	28
F2120-20 (3x400V)	0.48	32	35

Air/water heat pump	Minimum flow during defrosting (100% pump speed (l/s))	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
S2125-8 (1x230V)	0.32	25	28
S2125-8 (3x400V)			
S2125-12 (1x230V)			
S2125-12 (3x400V)			

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

## 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



# Electrical connections

## EXTERNAL CONNECTION OPTIONS

SMO 20 has software-controlled inputs and outputs for connection of sensors and external switch function.

This means that a sensor or an external switch function can be connected to one of six special connections where the function for connection is determined in the control module software.

# 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 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 [nibeuplink.com](http://nibeuplink.com) and click the "Software" tab to download the latest software for your installation.

## NIBE Uplink



Using the Internet and NIBE Uplink, you can obtain a quick overview and the present status of the installation and the heating in your home. You can obtain a good overall view, allowing you to monitor and control the heating and hot water comfort effectively. If the system is affected by a malfunction, you receive an alert via e-mail that allows you to react quickly.

NIBE Uplink also gives you the opportunity to control the comfort in your home easily, no matter where you are.

### RANGE OF SERVICES

You have access to different levels of service via NIBE Uplink. A basic level that is free and a premium level where you can select different extended service functions for a fixed annual subscription fee (the subscription fee varies depending on the selected functions).

NIBE Uplink also available as an app from App Store and Google Play.

### INSTALLATION AND ASSOCIATED EQUIPMENT REQUIREMENTS

NIBE Uplink needs the following in order to communicate with your SMO 20:

- network cable
- Internet connection to which SMO 20 can be connected
- web browser with JavaScript activated
- account on [nibeuplink.com](http://nibeuplink.com)

We recommend our mobile app for NIBE Uplink.

For more information, visit [nibeuplink.com](http://nibeuplink.com).

## SMART HOME

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

By allowing connected units to communicate with NIBE Uplink, 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 NIBE Uplink in order to work.

# Technical data

## Technical data C€

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](http://nibe.eu).

Not all accessories are available on all markets.

### External electric additional heat ELK

#### ELK 15

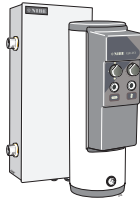
15 kW, 3 x 400 V  
Part no. 069 022

#### ELK 26

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

#### ELK 213

7–13 kW, 3 x 400 V  
Part no. 069 500



### 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

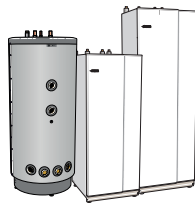
This accessory is used to obtain a more even indoor temperature.

Part no. 067 065



### Water heater/Accumulator tank

For information regarding suitable water heaters, see [nibe.eu](http://nibe.eu).



### Hot water control

#### VST 05

Reversing valve, cu-  
pipe Ø22

(Max recommended  
power, 8 kW)

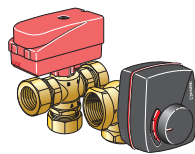
Part no. 089 982

#### VST 11

Reversing valve, cu-  
pipe Ø28

(Max recommended  
power, 17 kW)

Part no. 089 152

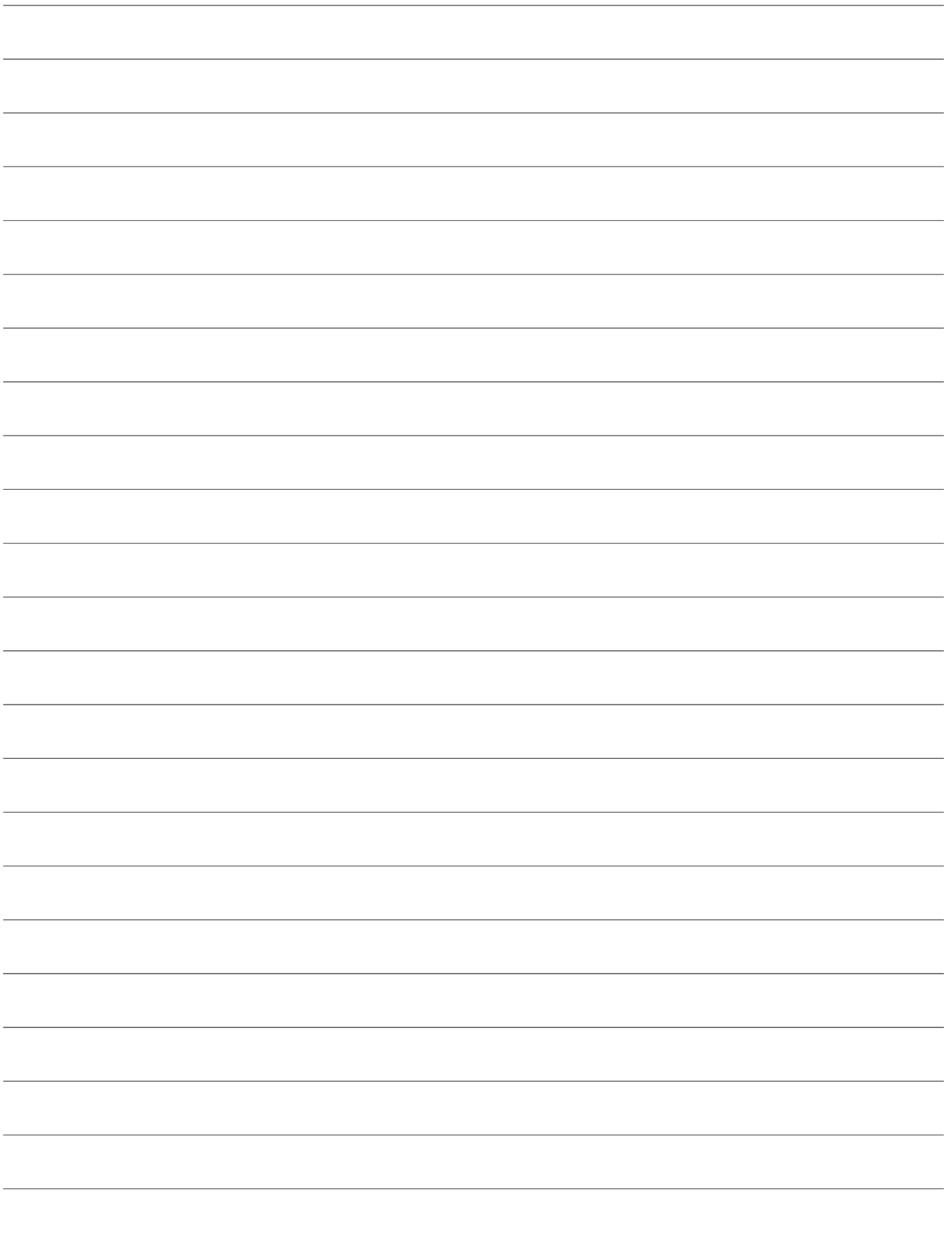


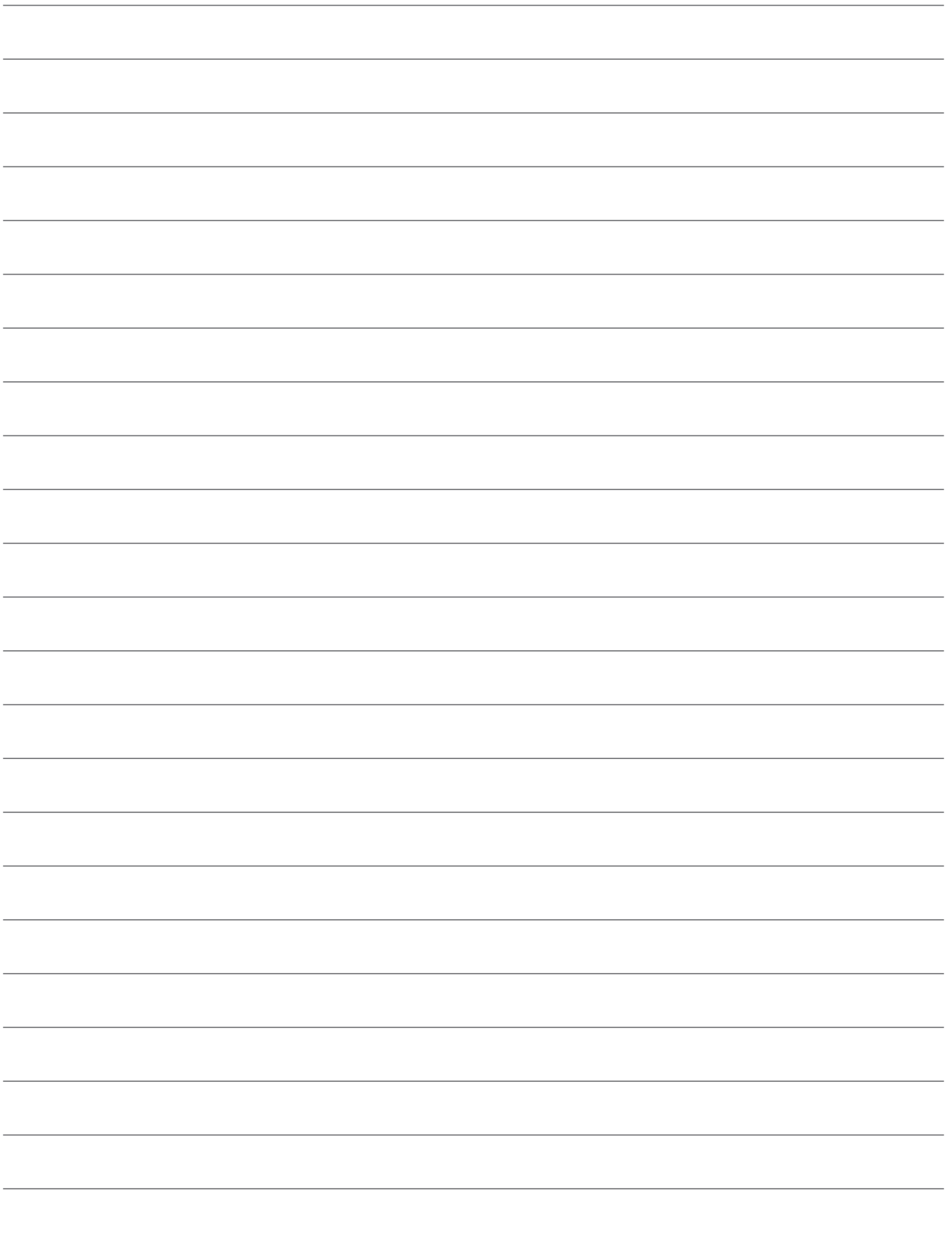
#### VST 20

Reversing valve, cu-  
pipe Ø35

(Max recommended  
power, 40 kW)

Part no 089 388





# Sustainable energy solutions since 1952

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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](https://nibe.eu)



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