INSTALLER MANUAL

IHB EN 2119-1 631195

Supply air module SAM 42









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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.

This is an original manual. It may not be translated without the approval of NIBE.

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System pres-		
Max. system	MPa	Defined by
pressure, heat-		main
ing medium		product
Max flow	l/s	Defined by
		main
		product
Max. permitted	°C	35
ambient temper-		
ature		

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

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.
- **IP** Classification of enclosure of electrical equipment.



- Danger to person or machine.
- Read the User Manual.

General

SOFTWARE VERSION

The heat pump must have software version 8432R2 (F370) or later. Visit www.nibeuplink.com and click on the "Software" tab to download the latest software for your installation or use the enclosed USB memory.

SERIAL NUMBER

The serial number can be found at the bottom left inside the front cover.



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.

When disposing of the product, its constituent materials and components, e.g. compressors,

fans, circulation pumps and circuit boards, must be disposed of at a special waste station or dealer who provides this type of service.

To access the separate components, refer to the section that shows the construction of the product. No special tools are required for access.

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

INSPECTION OF THE INSTALLATION

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

Current regulations require the supply air module to be inspected before it is put into service. The inspection must be carried out by a suitably qualified person.

~	Description	Notes	Signa- ture	Date
Ver	ntilation (page 13)			
	Setting ventilation flow exhaust air			
	Setting ventilation flow supply air			
Hea	ating medium (page 12)			
	System flushed			
	Accessories bled			
	Check against output and pressure drop diagrams			
	Connected according to outline dia- gram			
Electricity (page 15)				
	Supply connected 230 V			
	Connected communication			

2 Delivery and handling

Transport

The supply air module must be transported and stored dry.

Assembly

SAM 42 is mounted free-standing on brackets, alternatively above a VPB 200 (for VPB 300/VPBS 300 installation is carried out using brackets). Noise from the fan can be transferred to the brackets.

- Install the brackets to an outside wall, ideally in a room where noise does not matter, in order to eliminate noise problems. If this is not possible, avoid placing it against a wall behind a bedroom or other room where noise may be a problem.
- Wherever the unit is located, walls to sound sensitive rooms should be fitted with sound insulation.
- Route pipes so they are not fixed to an internal wall that backs on to a bedroom or living room.

INSTALLATION AREA

Leave a free space of 800 mm in front of the supply air module. All service on SAM 42 can be carried out from the front.



NOTE

Ensure that there is sufficient space (300 mm) above the supply air module for installing ventilation hoses.

Supplied components



Support bushes 4 x

Vent hose 1 x

Compatible products

- F370
- F750

Removing the covers

FRONT COVER

1. Remove the service cover by pulling it straight out.



Mounting

INSTALLING ON BRACKETS

- 1. Install SAM 42 on brackets (accessory BAU 40) as illustrated below.
- 2. Connect heating medium pipes and ventilation ducts.



INSTALLING ON WATER HEATER

VPB 200

- 1. Remove the service cover from VPB 200.
- 2. Remove the top panel from VPB 200 (installed with 6 screws).
- 3. Install DEW 40 according to the instructions in the installation manual. The pipes in VPB 200 can be adjusted/replaced in such a way that SAM 42 can easily be installed above VPB 200.



4. Install SAM 42 from the top and slide into position.



5. Secure SAM 42 with the 2 screws supplied.



- 6. Connect heating medium and ventilation pipes.
- 7. Reinstall the service cover on VPB 200.

3 The design of the supply air module







Pipe connections

XL33	Ventilation	connection	supply air

- XL34 Ventilation connection outdoor air
- XL36 Connection, heating medium in
- XL37 Connection, heating medium out

HVAC components

EP13 Supply air battery	
-------------------------	--

- QM20.1 Venting heating medium
- QM20.2 Venting heating medium
- QN40 Control valve heating medium

Sensors etc.

- BT22 Temperature sensor, supply air
- BT23 Temperature sensor, outdoor air
- BT68 Temperature sensor, flow
- BT69 Temperature sensor, return

Electrical components

AA5	Accessory card
AA5-S2	Dip switch
AA100	Joint board ¹
SF1	Switch, position 0 - 1, main switch
W101	Cord with connection plug
W102	Communication cable

Ventilation

GQ3	Supply air fan
HQ11	Air filter supply air

Miscellaneous

PF1 Rating plate

Designations according to standard EN 81346-2.

4 Pipe and ventilation connections

General pipe connections

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

Dimensions and setting-out coordinates can be found at the end of the manual.

SYMBOL KEY

Symbol	Meaning
\bigcirc	Expansion vessel
Ø	Fan
0	Compressor
¥	Control valve
٩	Temperature sensor
函	Reversing valve/shunt
	Heat exchanger

STETEM DIAGRAM

Caution

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

NOTE

External frost protection (outdoor air damper) should be installed in the outdoor air duct, if SAM 42 is installed in a cold climate.



Heating medium side

DIMENSIONING THE SYSTEM

- Check the water flow that is required for the SAM 42 using one of the diagrams for supply temperature (35°C, 45°C or 55°C).
- Check that the climate system's pressure drop is within the recommended range in the diagram for "Working range SAM 42"
- Check that the pump capacity from the heat pump is sufficient for both the heating system and SAM
 A¹².

NOTE

For supply air flows that are not in the diagrams, an estimate (linear interpolation) can be made.

OUTPUT TRANSFER TO THE SUPPLY AIR

The diagrams show the required water flow through the supply air coil for an 18°C supply air temperature at various supply air flows.

Supply temperature 35°C



Supply temperature 45°C



Supply temperature 55°C



WORKING RANGE SAM 42

Recommended pressure drop in the system



The diagram shows the climate system's required pressure drop. The pressure drop across SAM 42 is the same as that across the climate system that is parallel with SAM 42.

Check that the working point is inside the grey area. If the working point is inside the dark grey area, to the left in the diagram, it can give rise to an oscillating supply air temperature. If there is too low a pressure drop across the climate system that is parallel with SAM 42, there is a risk of ending up in the white area. In this area, there is a risk of too low a water flow through the supply air module and there is then a risk of freezing.

Installation alternative General ventilation

SAM 42 can be installed in several different ways, some of which are shown here.

Further option information is available at nibe.eu/ODM and in the respective assembly instructions for the accessories used. See page 21 for a list of the accessories that can be used with SAM 42.

VOLUME VESSEL

During hot water production, and when F750 is defrosting, no energy is supplied to the climate system. For this reason, to achieve satisfactory function of the supply air module, stored energy must be available in the climate system during these operating cases. If there are thermostat valves that can block the flow through the radiators/underfloor heating coils, the volume in these cannot be included in the system volume.

If the total volume in the climate system (excluding the heat pump volume) is less than 40 litres, extra system volume, e.g. volume vessel UKV, has to be connected to the supply line after the heat pump.



EXTRA CLIMATE SYSTEM

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

SAM 42 is connected to the climate system that has the lowest supply temperature.



connection

- Ventilation installation must be carried out in accordance with current norms and directives.
- Connections must be made via flexible hoses, which should be installed so that they are easy to replace.
- Provision must be made for inspection and cleaning of the duct.
- Make sure that there are no reductions of cross-sectional area in the form of creases, tight bends, etc., since this will reduce the ventilation capacity.
- The air duct system must be a minimum of air tightness class B.
- To prevent fan noise being transferred to the ventilation devices, install silencers in the ducts.
- The outdoor air duct is insulated using diffusion-proof material (at least PE30 or equivalent) along its entire length.
- Ensure that the condensation insulation is fully sealed at any joints and/or at lead-in nipples, silencers, roof cowls or similar.
- The air must be routed to the outdoor air duct through an outer wall grille in the facade. The outer wall grille must be installed so that it is protected from the weather and must be designed so that no rainwater and/or snow can penetrate the facade or follow the air into the duct.
- When positioning the outdoor air and extract air hood/grille, bear in mind that the two air flows must not short circuit to prevent the extract air from being drawn into SAM 42 again.
- When external devices that affect the ventilation are used, for example kitchen fans and stoves, the heat pump must be in operation. There is a risk of freezing at low outdoor temperatures.
- It is not permitted to use a duct in a masonry chimney stack for outdoor air.

Ventilation flow

The supply air flow must be lower than the exhaust air flow to prevent over pressure in the house.

The ventilation capacity is set in the heat pump's menu system (menu 5.1.6).

Adjusting ventilation

To obtain the necessary air exchange in every room of the house, the exhaust air device and the supply air device must be correctly positioned and adjusted and the fans in the heat pump and supply air module adjusted.

Immediately after installation adjust the ventilation so that it is set according to the projected value of the house.

Incorrect adjustment of the ventilation may lead to reduced installation efficiency and thus poorer operating economy, a poorer indoor climate and moisture damage in the building.

Dimension and ventilation connections



5 Electrical connections

NOTE

All electrical connections must be carried out by an authorised electrician.

Electrical installation and wiring must be carried out in accordance with national provisions.

The main product must be disconnected from the power supply when installing SAM 42.

- To prevent interference, sensor cables to external connections must not be laid close to high voltage cables.
- The minimum area of communication and sensor cables to external connections must be 0.5 mm² up to 50 m, for example EKKX, LiYY or equivalent.
- SAM 42 restarts after a power failure.

The electrical circuit diagram is at the end of this Installer handbook.

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



Connecting communication



SAM 42 contains an accessory board (AA5) that connects directly to the main product's input board (terminal block AA3-X4).

If more accessories are to be connected, or are already installed, the boards are connected in series.

Because there can be different connections for accessories with accessory board (AA5), you should always read the instructions in the manual for the accessory that is to be installed.

Supply

SAM 42 is connected to a earthed single-phase wall socket or a permanent installation. For permanent installations, SAM 42 must be preceded by a circuit breaker with at least a 3 mm breaking gap.



CONNECTION OF EXTERNAL FROST PROTECTION (OUTDOOR AIR DAMPER)

For connection of external frost protection (outdoor air damper), see the Installer Manual for the main product.

DIP SWITCH

The DIP-switch (S2) on the accessory board (AA5) is set in the factory as below.

- E 2
2
ω
4
ა 🔳
6
7
∞ 🔳

6 Commissioning and adjusting

Preparations

PREPARATIONS

- 1. Make sure the heat pump is switched off.
- 2. Check that the filling valves are fully closed.

Filling and venting

FILLING THE CLIMATE SYSTEM

Fill with water using the filler valve in the heat pump.

VENTING THE CLIMATE SYSTEM

- Vent SAM 42 through the vent valves (QM20.1), (QM20.2) and the rest of the climate system through its respective vent valves.
- 2. Keep topping up and venting until all air has been moved and the pressure is correct.

Caution

Check that the system has been vented prior to the heating season. Air in the supply air module entails a risk of frost damage in cold weather conditions.



Start-up and inspection

START-UP WITH COMPATIBLE HEAT PUMP

NOTE

- 1. Set switch (SF1) onSAM 42 in position "1".
- 2. Start the heat pump.
- 3. Follow the instructions in the display's start guide. If the start guide does not start when you start the heat pump, you can start it manually in menu 5.7.

Commissioning with a compatible heat pump

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 control of this reason, cannot be skipped.

Caution

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

The start guide will appear at each restart of the installation, until it is deselected on the last page.

SETTING THE VENTILATION

Ventilation must be set according to applicable standards. The supply air flow is adjusted to approx. 80% of the exhaust air flow. The setting is made in menu 5.1.6.

Even if ventilation is roughly set at installation it is important that a ventilation adjustment is ordered and permitted.

NOTE

Order a ventilation adjustment to complete the setting.







7 Program settings

Caution

See also the User and/or Installer Manual for the main product.

Menu system

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

MENU 5.2 -SYSTEM SETTINGS

Activating/deactivating of accessories.

Select: "ext sup air md"

MENU 5.3.9 - EXT SUP AIR MD

Setting the supply air temperature.

When changing the supply air temperature, the settings for other parts of the climate system may need to be adjusted.



Caution

This accessory may require a program software update in your heat pump.

The heat pump must have software version 8432R2 (F370) or later.

8 Disturbances in comfort

In most cases, the main product notes a malfunction (a malfunction can lead to disturbance in comfort) and indicates this with alarms and shows action instructions in the display.

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

BASIC ACTIONS

Start by checking the following items:

- That the heat pump is operating and the supply cable to SAM 42 is connected.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.

LOW HOT WATER TEMPERATURE OR A LACK OF HOT WATER

• The heat pump has temporarily prioritised supply air ventilation to prevent too low temperatures in the supply air coil.

LOW ROOM TEMPERATURE

- Incorrect value set in supply air automatic control system.
 - Enter menu 5.3.9 (ext sup air md) and adjust the setting for the supply air temperature.

HIGH ROOM TEMPERATURE

- Incorrect value set in supply air automatic control system.
 - Enter menu 5.3.9 (ext sup air md) and adjust the setting for the supply air temperature.

LOW OR A LACK OF VENTILATION

- Filter (HQ11) blocked.
 - Change the filter.
- The ventilation is not adjusted.
 - Order/implement ventilation adjustment.
- Supply air device closed, blocked or throttled down too much.
 - Check the supply air inlets.

• Check external frost protection (outdoor air damper).

HIGH OR DISTRACTING VENTILATION

- Filter (HQ11) blocked.
 - Change the filter.
- The ventilation is not adjusted.
 - Order/implement ventilation adjustment.

LOW SUPPLY AIR TEMPERATURE

- Air in the heating medium system.
 - Vent SAM 42 using vent valve (QM20.1) and (QM20.2).
- Incorrect value set in supply air automatic control system.
 - Enter menu 5.3.9 (ext sup air md) and adjust the setting for the supply air temperature.

HIGH SUPPLY AIR TEMPERATURE

- Incorrect value set in supply air automatic control system.
 - Enter menu 5.3.9 (ext sup air md) and adjust the setting for the supply air temperature.

9 Accessories

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

Not all accessories are available on all markets.

BRACKET BAU 40

Wall mounting of SAM 42.

Part no. 067 666

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

TOP CABINET TOC 30

Top cabinet, which conceals any pipes/ventilation ducts.Height 245 mmPart no. 067 517Part no. 067 518

Height 385-635 mm

Part no. 067 519

10 Technical data

Dimensions and setting-out coordinates



Technical specifications

SAM 42		
Electrical data		
Rated voltage	V	230 V ~ 50 Hz
Drive output control valve	W	1.5
Driving power fan	W	175
Enclosure class		IP 21
Heating medium circuit		
Min pressure	MPa/bar	0.05 / 0.5
Max pressure	MPa/bar	0.25 / 2.5
Opening pressure, safety valve	MPa/bar	-
Ventilation		
Filter type		ePM1 55%
Sound effect level according to EN 12 102		
Sound power level (L _{W(A)}) ¹	dB(A)	43-50
Sound levels		
Sound pressure level in the installation room $(L_{P(A)})^2$	dB(A)	39-46
Pipe connections		
Heating medium ext Ø	mm	22
Ventilation Ø	mm	160
Miscellaneous		
Width	mm	600
Depth	mm	540
Height	mm	403
Weight	kg	31
Part No.		067 759

¹ The value varies with the selected fan curve. For more detailed sound data, including sound to channels, visit nibe.eu.

² The value can vary with the room's damping capacity. These values apply at a damping of 4 dB.

Electrical circuit diagram



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Publication Warnings

- 1 At translation (TP-3699): Förklaring till symboler som kan förekomma i den...
- 2 At translation (TP-3700): Förklaring till symboler som kan förekomma på pr...