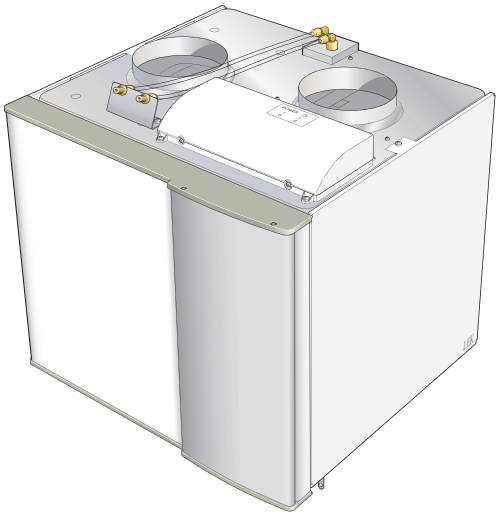


Installer manual

SAM 41

Supply air module

IHB GB 1635-2
331778

Table of Contents

1 Important information

Safety information

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.

Rights to make any design or technical modifications are reserved.

Symbols

NOTE

This symbol indicates danger to machine or person.

Caution

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

TIP

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

Marking

SAM 41 is CE marked and fulfils IP21.

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

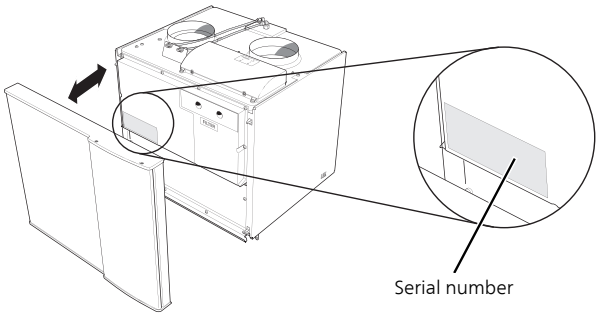
IP21 means that objects with a diameter larger than or equivalent to 12.5 mm cannot penetrate and cause damage and that the product is protected against vertically falling drops of water.

Software version

The heat pump must have software version 2653 or later. Visit www.nibeuplink.com and click on the tab "Software" to download the latest software to 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, the constituent materials and components, such as compressors, fans, circulation pumps and circuit boards, must be disposed of at a special waste station or at a 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.

Country specific information

Installer manual

This installer manual must be left with the customer.

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	Signature	Date
Ventilation (page 14)				
	Setting ventilation flow exhaust air			
	Setting ventilation flow supply air			
Heating medium (page 12)				
	System flushed			
	Accessories bled			
	Check against output and pressure drop diagrams			
	Connected according to outline diagram			
Electricity (page 15)				
	Supply connected 230 V			
	Connected communication			

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RU © **"EVAN"** 17, per. Boynovskiy, Nizhny Novgorod
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For countries not mention in this list, please contact Nibe Sweden or check www.nibe.eu for more information.

2 Delivery and handling

Transport

The supply air module must be transported and stored dry.

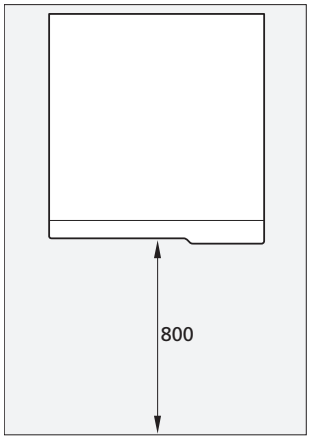
Assembly

SAM 41 is mounted free-standing on 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 41 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
2 x

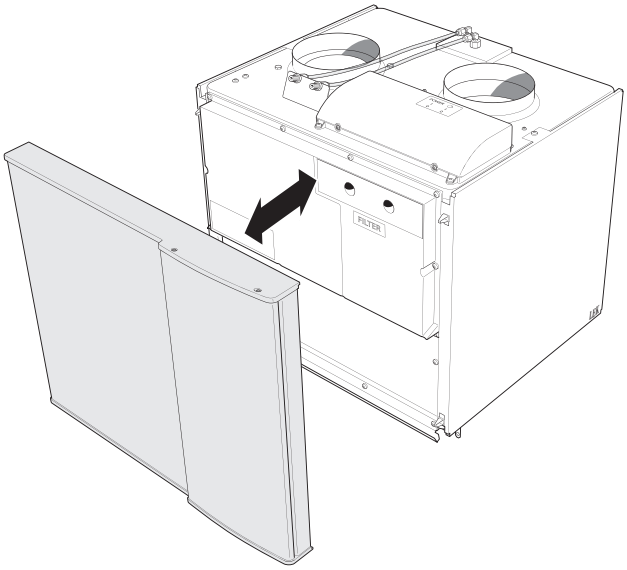
USB memory
1 x

Vent hose
1 x

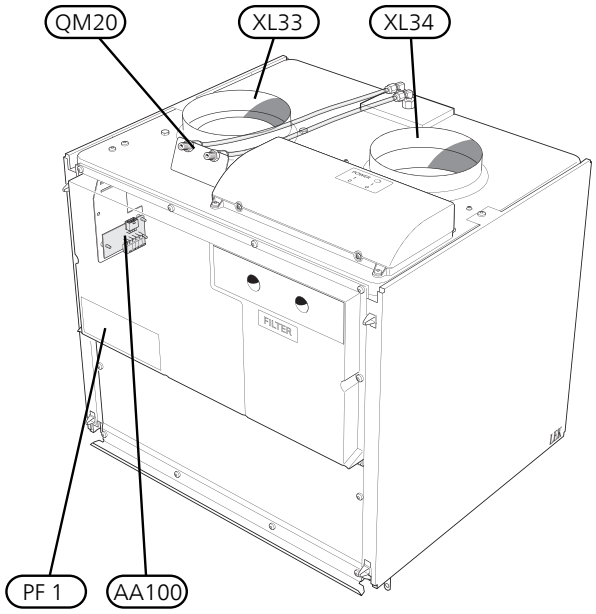
Removing the covers

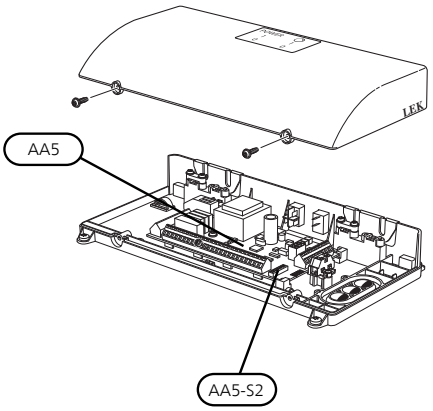
Front cover

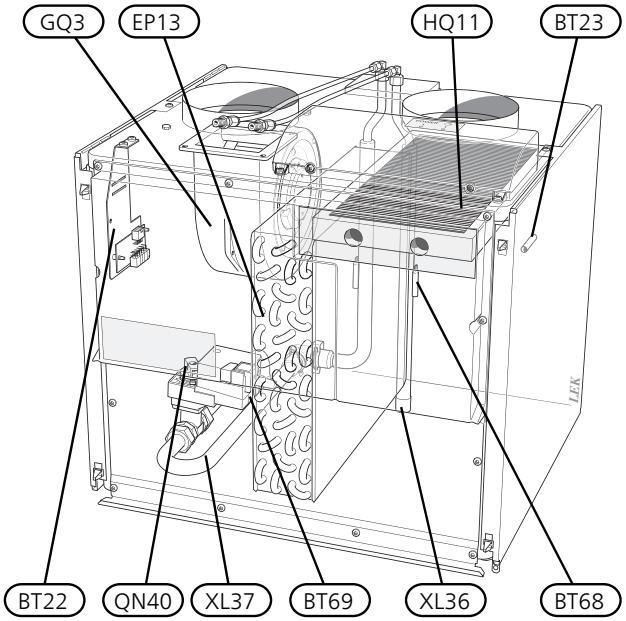
1. Remove the service cover by pulling it straight out.

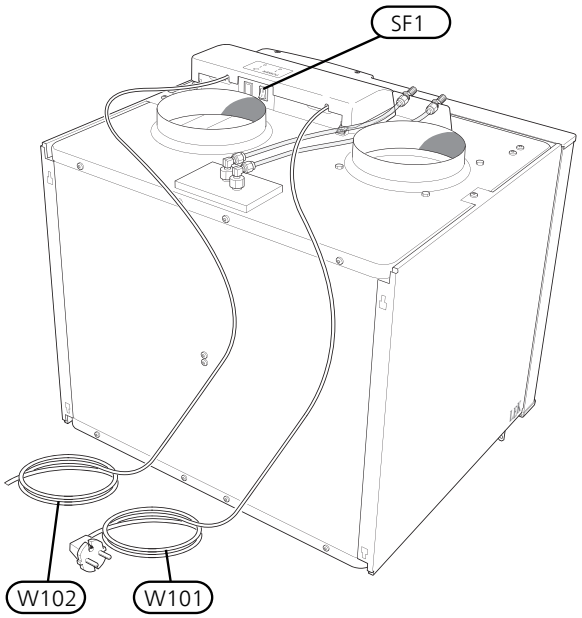


3 The design of the supply air module









Pipe connections

XL33	Ventilation connection supply air
XL34	Ventilation connection outdoor air
XL36	Connection, heating medium in
XL37	Connection, heating medium out [1]

HVAC components

EP13	Supply air battery
QM20	Venting heating medium
QN40	Control valve heating medium

Sensors etc.

BT22	Temperature sensor, supply air[1]
BT23	Temperature sensor, outdoor air
BT68	Temperature sensor, flow[1]
BT69	Temperature sensor, return[1]

Electrical components

AA5	Accessory card
AA5-S2	Dip switch
AA100	Joint card
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

[1] Not visible in the image

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

4 Pipe and ventilation connections

General pipe connections

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

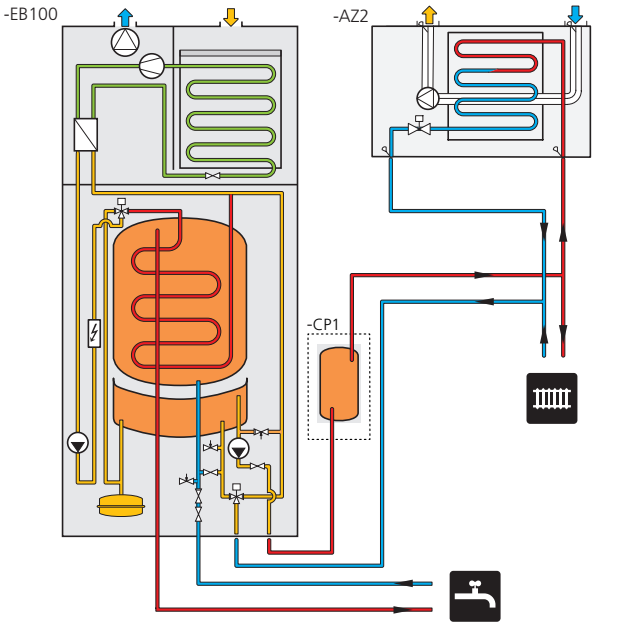
Symbol key

Symbol	Meaning
	Shut-off valve
	Non-return valve
	Level vessel
	Control valve
	Shunt / shuttle valve
	Safety valve
	Temperature sensor
	Expansion vessel
	Circulation pump
	Fan
	Compressor
	Heat exchanger
	Radiator system
	Domestic hot water

Outline diagram

NOTE

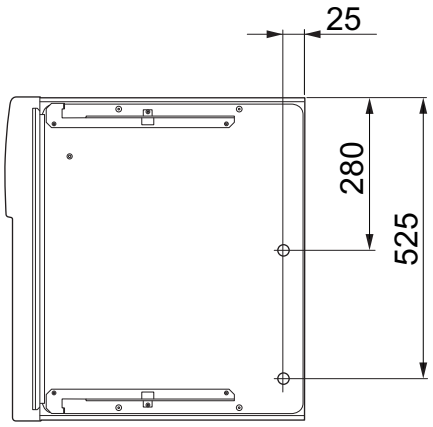
External frost protection must be installed in the outdoor air duct.



NOTE

If several climate systems (ECS 40/ECS 41) are present, SAM 41 must be connected in parallel with climate system 1. A circulation pump must be used to ensure the flow over SAM 41.

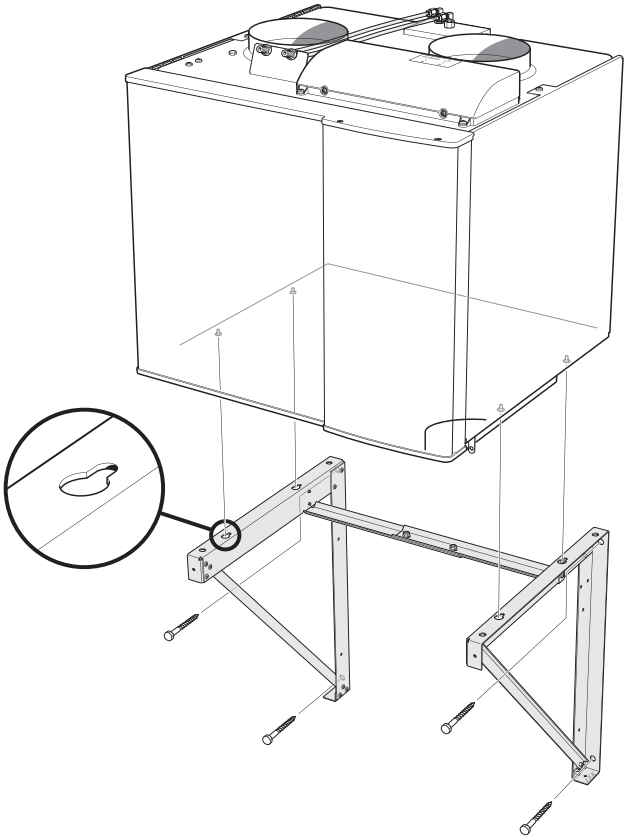
Dimensions and pipe connections

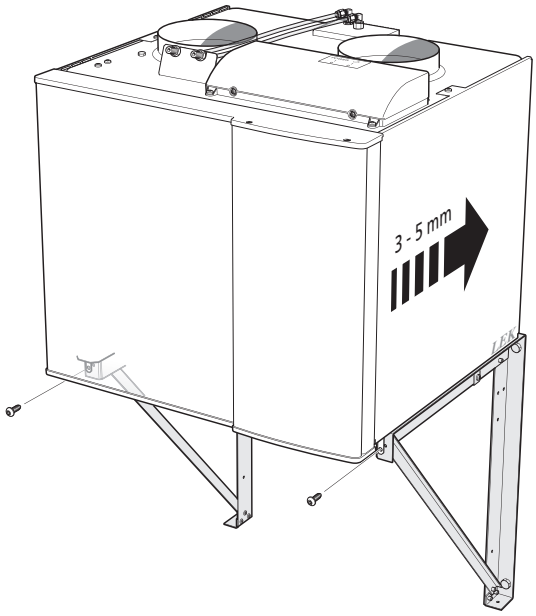


Mounting

Installing on brackets

1. Install SAM 41 on BAU 10 brackets, see images below.
2. Connect heating medium pipes and ventilation ducts. Use the enclosed support bushes.





Heating medium side

During hot water production and when F750 is defrosting, no energy is transferred to the climate system. Therefore, for full function of the supply air module, the stored energy must be available in the climate system during these operating cases. Energy is stored in the climate system's water volume. For full function of SAM 41 the waterborne climate system (including the internal volume in F750) must have a total water volume of at least 95 litres. If this volume requirement is not met, the system volume is increased with volume vessel (NIBE UKV).

Dimensioning the system

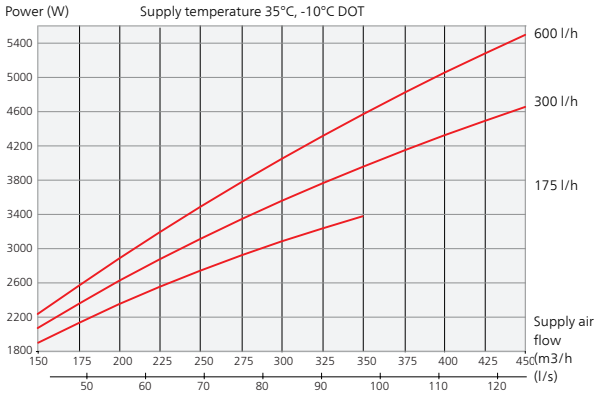
1. Work from the water temperature at DUT (DVUT).
2. Work from the current supply air flow.
3. Work from the desired supply air temperature, then calculate the output that SAM 41 must give at DUT.
4. Determine the water flow across SAM 41 from the correct output diagram. NOTE! For supply temperatures that are not in one of the diagrams, an estimate (linear interpolation) can be carried out.
5. Work from the projected pressure drop (at the projected flow) in the water borne system, climate system 1.
6. Check in the pressure drop diagram that the working point is inside the grey working range.
7. Check that the pump capacity from F750 is sufficient for both the heating system and SAM 41.

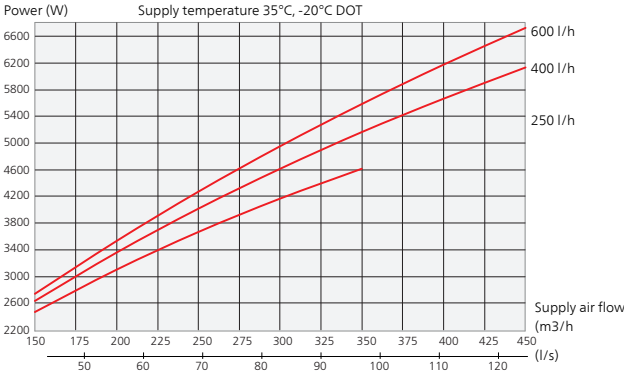
NOTE

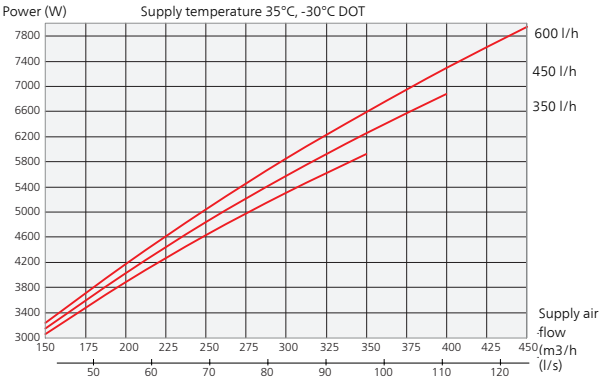
If information regarding the present flow is missing in the diagram there is a risk of frost damage to the supply air coil.

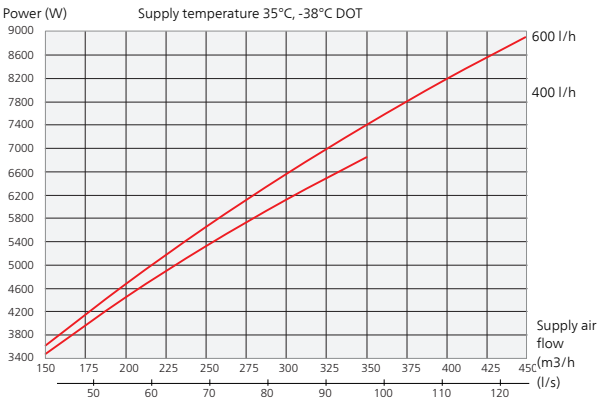
Output transfer to the supply air

Supply temperature 35°C

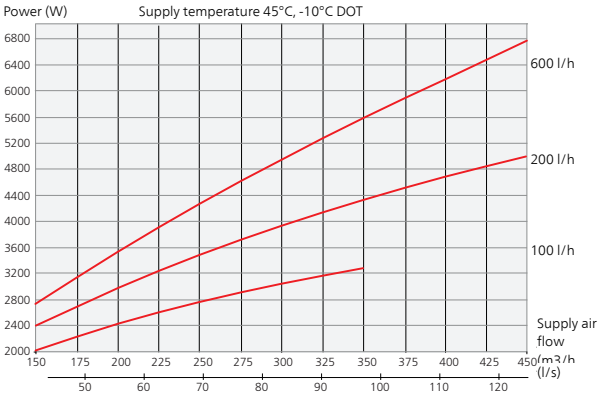


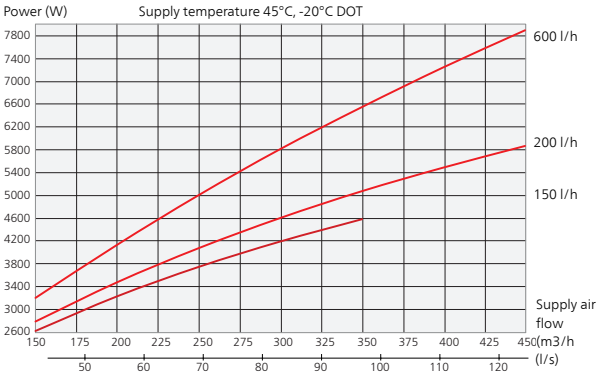


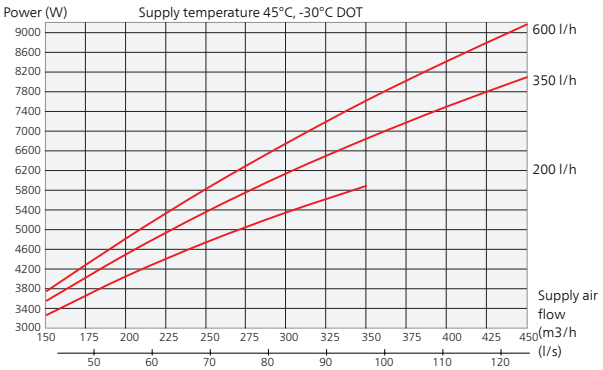


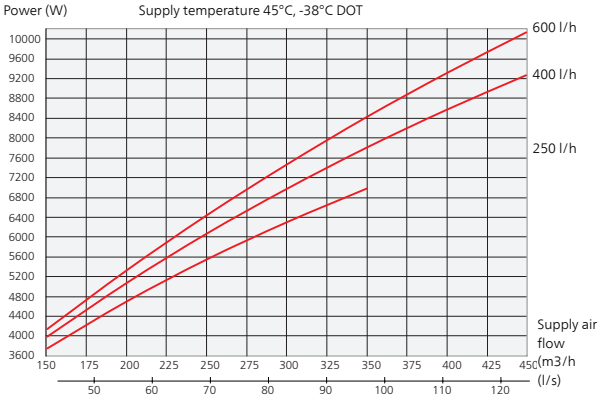


Supply temperature 45°C

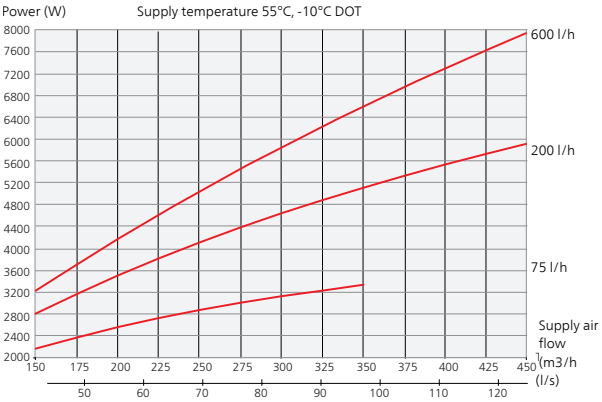


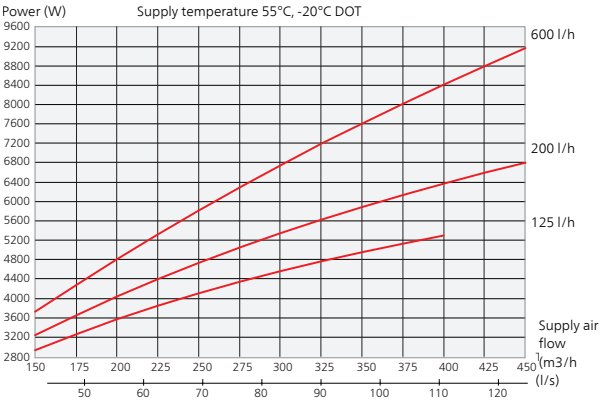


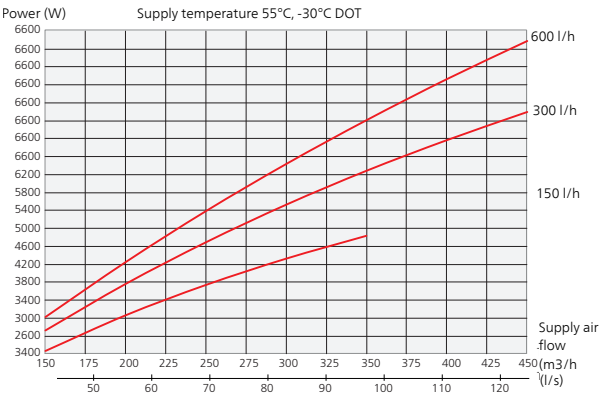


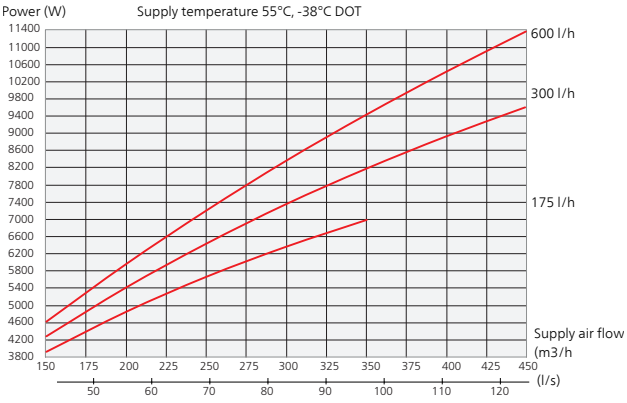


Supply temperature 55°C

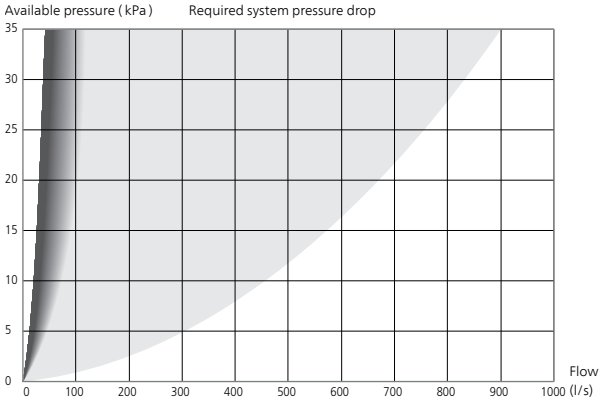








Working range SAM 41



The diagram shows the climate system's required pressure drop. Note that the pressure drop across SAM 41 is the same as that across the climate system 1.

Check that the working point is inside the grey range. If the working point is inside the darker grey range to the left in the diagram, it can give an oscillating supply air temperature. At too low pressure drop across the climate system 1, one risks falling within the white area. In this range, there is a risk of too low water flow through the supply air module and there is a risk of freezing.

NOTE

Venting may be necessary on installation and after a period of use. Vent through vent valve (QM20).

General ventilation connection

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

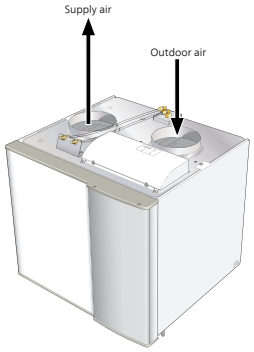
To prevent fan noise being transferred to the supply air devices, install a silencer in the duct. This is especially important if there are supply air inlets in bedrooms.

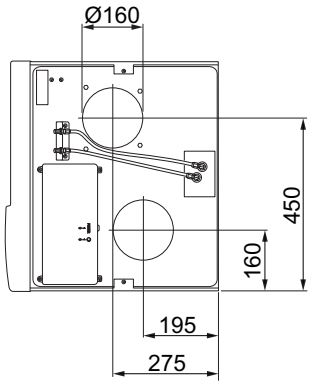
Connections must be made via flexible hoses, which must be installed so that they are easy to replace. The air should be routed to the outdoor air duct through an outside wall grille in the facade. The outer wall grille must be installed protected from the weather and must be designed so that no rain water can penetrate the facade or follow the air into the duct. The outdoor air duct must be provided with diffusion-tight insulation over its entire length. Ensure that the condensation insulation is sealed at any joints and/or at lead-in nipples, silencers, roof cowls or similar.

Provision must be made for inspection and cleaning of the duct. Make sure that there are no reductions in cross-sectional area in the form of creases etc., since this will reduce the ventilation capacity. The air duct system must be a minimum of air tightness class B.

When external devices that affect the ventilation are used, for example kitchen fans and stoves, ensure that the heat pump is operating. A heat pump that is switched off does not heat the supply air module and there is risk of freezing at low outdoor temperatures.

The frost protection must be dimensioned to seal against the underpressure that can be created in the house when a fire is lit in the stove when the supply air fan and heat pump are switched off. An external supply air duct for the stove is recommended.





NOTE

External frost protection must be installed in the outdoor air duct.

Ventilation flow

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

Ensure that the ventilation openings are not blocked. Set the ventilation capacity 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.

A defective ventilation installation may lead to reduced installation efficiency and thus poorer operating economy, and may result in moisture damage to the house.

5 Electrical connections

General

All electrical equipment is connected at the factory.

- Disconnect SAM 41 before insulation testing the house wiring.
- For the supply air module wiring diagram, see page 24.
- Signal cables to external connections must not be laid close to high current cables.
- 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. Electrical installation and wiring must be carried out in accordance with the stipulations in force.

Connections

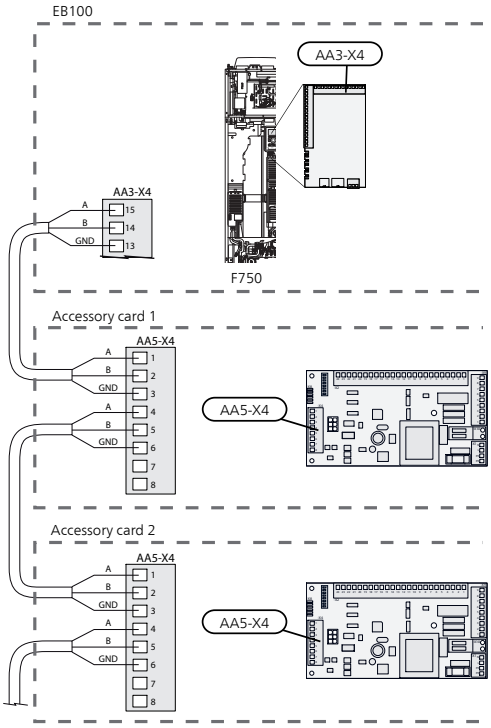
Connecting to F750

This section describes the electrical connection for controlling SAM 41 from NIBE F750.

The heat pump switch must be moved to position "⏻" and the switch (SF1) on SAM 41 to position 0, before any work can be started.

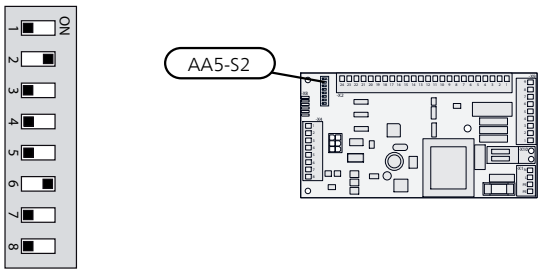
1. Ensure that the products are completely disconnected from the power source. Remove the front hatch and protective cover to the input card on the heat pump according to the instructions in its Installer's manual.
2. Connect cable W102 to position X4 on the input board (AA3) in the heat pump according to the wiring diagram on page 24. Use the cable lead-in in the heat pump when routing cables.

   If several accessories are to be connected or are already installed, the adjacent wiring diagram must be followed.
3. Fix external cable routing.
4. Install the protective cover and the service cover according to the heat pump Installation manual.
5. Connect plug W101.



DIP switch

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



6 Commissioning and adjusting

Preparations

1. Check that the switch (SF1) for F750 is in position "⏻
2. Check that the filling valves (QM10) and (QM11) in the heat pump are fully closed.

Connecting to heating medium system

1. Connect SAM 41 according to the outline diagram on page 10.
2. Fill with water using the filler valve (QM11) in F750.
3. Vent the heating medium system with the vent valves (QM20) above SAM 41, and the vent valves in F750 and fill if necessary using the filler valve (QM11) in F750.

Start-up and inspection

Caution

Check the miniature circuit-breaker (FA1) in the heat pump. It may have tripped during transportation.

Setting the ventilation

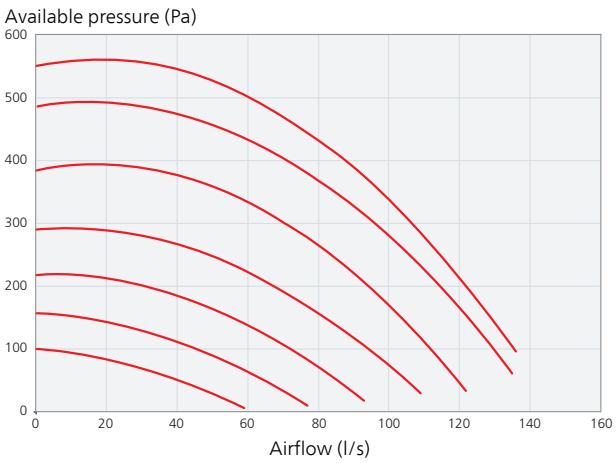
Ventilation must be set according to applicable standards. The supply air flow is adjusted so that it is 80% of the exhaust air flow. The setting is made in menu 5.1.6.

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

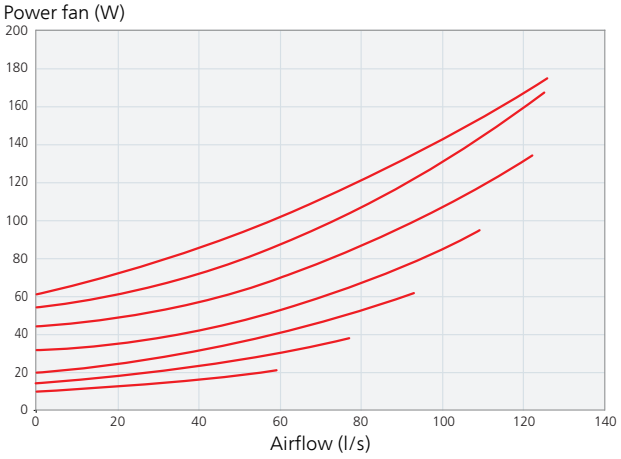
NOTE

Order a ventilation adjustment to complete the setting.

Ventilation capacity



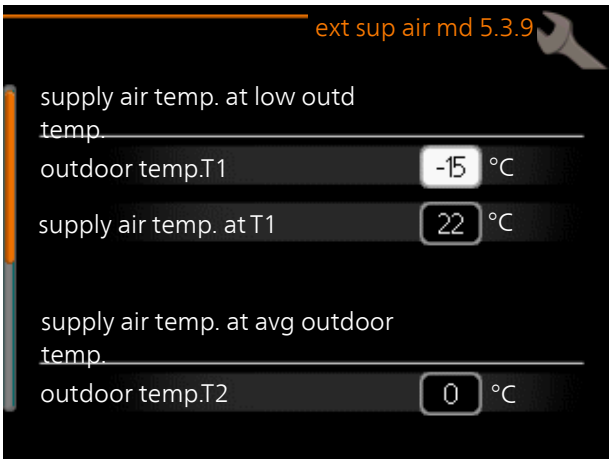
Output



Setting of supply air temperature

Set the supply air temperature in menu 5.3.9 (ext sup air md).

Note that when changing the supply air temperature, the settings for other parts of the climate system need to be adjusted.



7 Program settings

Caution

See the documentation for the main product.

Start guide

NOTE

There must be water in the climate system before the switch in F750 is set to "I".

1. Set switch (SF1) onSAM 41 in position "1".
2. Set the heat pump's switch (SF1) to "I".
3. Follow the instructions in the start guide in the heat pump display. If the start guide does not start when you start the heat pump, start it manually in menu 5.7.

The first time the heat pump 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 heat pump's basic settings.

The start guide ensures that start-up is carried out correctly and cannot be bypassed.The start guide can be started later in menu 5.7.

Caution

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

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

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"

Caution

This accessory may require a program software update in your F750.

The heat pump software must be version 2653 or later.

8 Disturbances in comfort

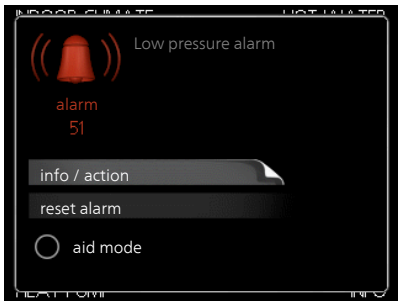
In most cases, the heat pump F750 notes operational interference (operational interference can lead to disturbance in comfort) and indicates this with alarms and shows action instructions in the display.

Info menu

All the heat pump measurement values are gathered under menu 3.1 in the heat pump menu system. Looking through the values in this menu can often simplify finding the source of the fault. See help menu or user manual for more information about menu 3.1.

All the heat pump measurement values are gathered under menu 3.1 in the heat pump menu system. Looking through the values in this menu can often simplify finding 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 heat pump 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 heat pump to aid mode.

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

reset alarm In most cases it is enough to select "reset alarm" to correct the problem that caused the alarm. If a green light illuminates after selecting "reset alarm" the alarm has been remedied. If a red light is still visible and a menu called ”alarm” is visible in the display, the problem that caused the alarm remains. If the alarm disappears and then returns, see the troubleshooting section (page 18).

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

NOTE

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 possible fault sources:

- That the heat pump is running or that the supply cable to SAM 41 is connected.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.
- The heat pump's miniature circuit breaker (FA1).
- The heat pump's temperature limiter (FD1).
- Correctly set load monitor (if installed).

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

- Air in the heating medium system.
  - Vent SAM 41 using vent valve (QM20).
- 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.
  - Clean or replace the filter.
- The ventilation is not adjusted.
  - Order/implement ventilation adjustment.
- Supply air device closed, blocked or throttled down too much.
  - Check and clean the supply air device.
- Check external frost protection.

High or distracting ventilation

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

Low supply air temperature

- Air in the heating medium system.
  - Vent SAM 41 using vent valve (QM20).
- Incorrect value set in supply air automatic control system.
  - Enter menu 5.3.9 (ext sup air md) and reduce 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

Bracket BAU 10

For wall mounting of SAM 41

Part no. 067 526
RSK no. 621 23 22

Buffer vessel UKV

UKV 40

Work tank for connection to heat pump system.

Part no. 088 470

Top cabinet

Top cabinet for concealing the ventilation ducts.

245 mm

Part no. 067 517

345 mm

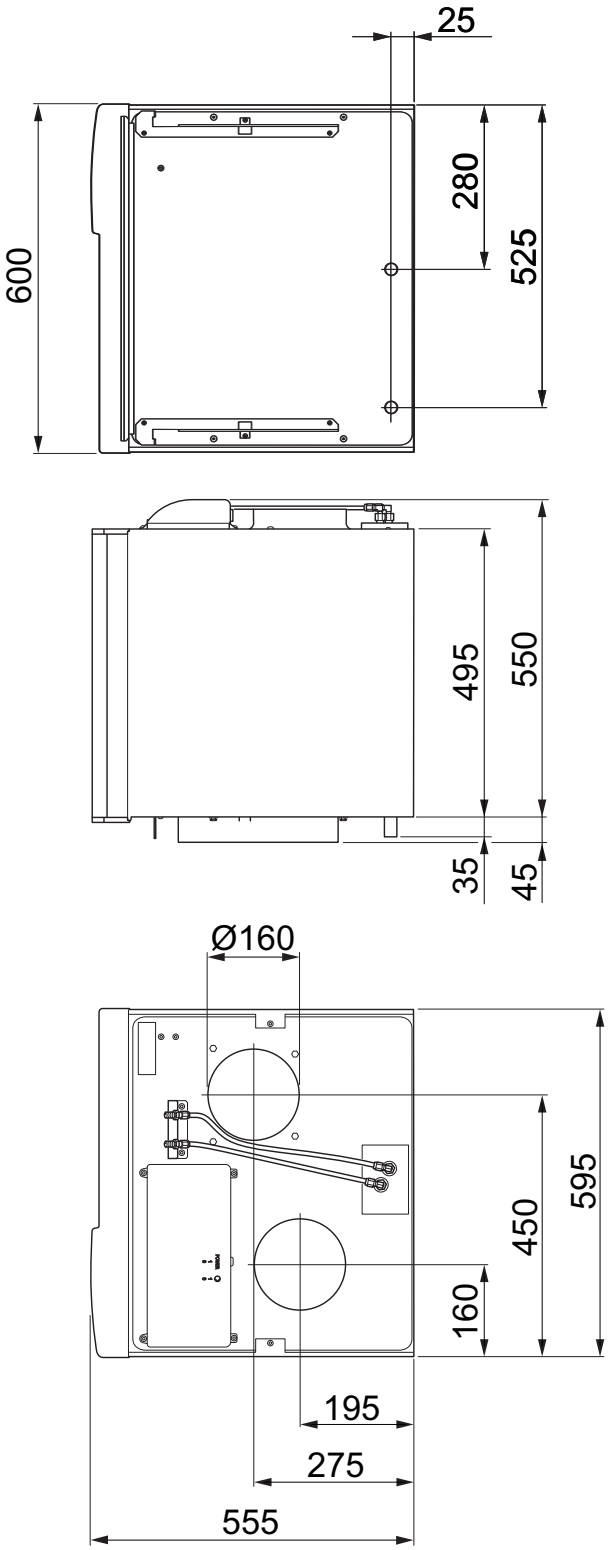
Part no. 067 518

385-635 mm

Part no. 067 519

10 Technical data

Dimensions and setting-out coordinates



Technical specifications

CE IP 21

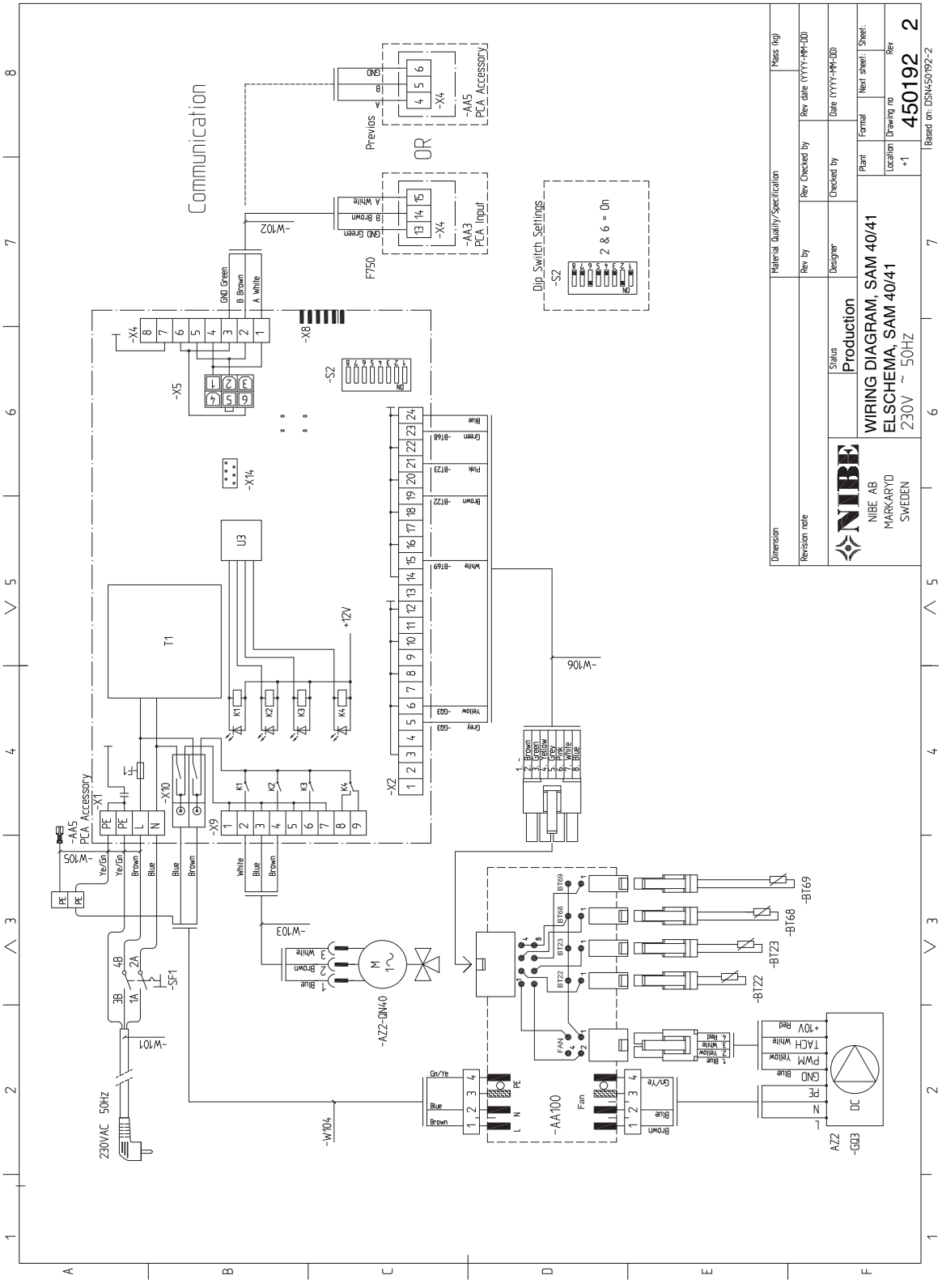
SAM 41		
Electrical data		
Supply voltage	V	230 V 50 Hz
Drive output actuator motor	W	1.5
Driving power fan	W	170
Enclosure class		IP 21
Heating medium circuit		
Min pressure	MPa/bar	0.05/0.5
Max pressure	MPa/bar	0.25/2.5
Ventilation		
Max airflow	l/s	126
Sound power level according to EN 12,102		
Sound power level ($L_{W(A)}$)[1]	dB (A)	37-48
Sound pressure levels		
Sound pressure level in the boiler room ($L_{(PA)}$)[2]	dB (A)	39-44
Pipe connections		
Heating medium ext Ø	mm	22
Hot water ext Ø	mm	22
Ventilation Ø	mm	160
Dimensions and weight		
Width	mm	600
Depth	mm	555
Height	mm	595
Weight	kg	50
Part No.		067 534

[1]The value varies with the selected fan curve. For more detailed sound data including sound to channels visit www.nibe.eu.
[2] The value can vary with the room's damping capacity. These values apply with 4 dB of damping.

Energy labelling

Supplier		NIBE
Model		**SAM 41**
Specific energy consumption (SEC)	kWh/(m^2 year)	Average: -11.6 Cold: -29.5 Warm: -1.3
Energy efficiency class		**E**
Declared typology		RVU, Unidirectional
Type of drive		Variable speed drive
Type of heat recovery system		None
Thermal efficiency of heat recovery		0
Maximum air flow rate	m^3/h	454
Electric power input of the fan drive at maximum flow rate	W	171
Sound power level (LWA)	dB	42
Reference flow rate	m^3/s	0.0090 (324)
Reference pressure difference	Pa	127
Specific power input (SPI)	W/m^3/h	0.241
Control factor and control typology		Clock control (0.95)
External leakage rates	%	< 3
Information about filter warning		See user manual.
Information about supply/exhaust grilles in the facade		See section General ventilation connection on page 14.
Information about pre-/disassembly		See section Recovery on page 4. This installer manual can also be accessed at www.nibe.eu.
The annual electricity consumption	kWh/year	286
Annual heating saved, kWh primary energy per year	kWh prim/year	Average: 1,874 Cold: 3,667 Warm: 848

Electrical circuit diagram



11 Item register

Item register

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