

Ventilation heat exchanger NIBE ERS 20-250

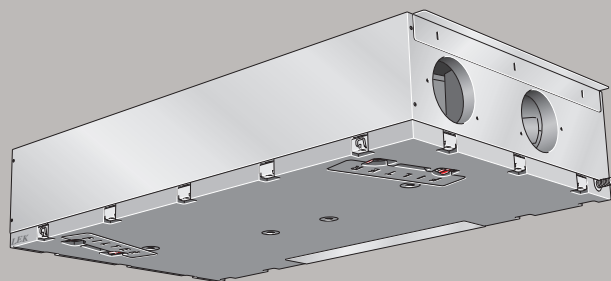


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1 Important information

Safety information

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

The manual must be left with the customer.

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

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SYMBOLS



NOTE

This symbol indicates danger to person or machine.



Caution

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



TIP

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

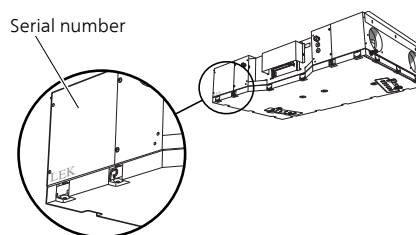
MARKING

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

IP21 Classification of enclosure of electro-technical equipment.

Serial number

The serial number can be found at the top left.



Caution

You need the product's 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

Current regulations require the heating installation to be inspected before it is commissioned. The inspection must be carried out by a suitably qualified person. In addition, fill in the page for the installation data in the User Manual.

✓	Description	Notes	Signature	Date
	Electricity (page 13)			
	Connections			
	Main voltage			
	Fuses property			
	Earth circuit-breaker			

2 Delivery and handling

Transport and storage

ERS 20 should be transported and stored in the dry.

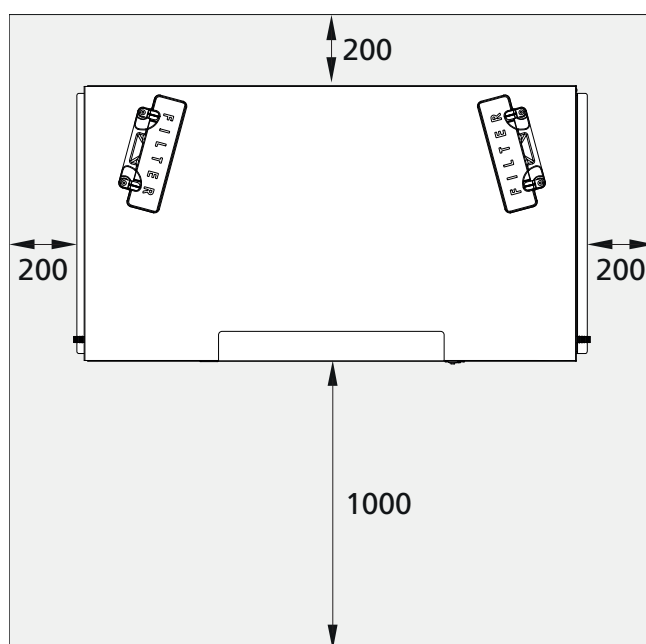
Assembly

ERS 20 is installed in the roof using the enclosed roof brackets. Noise from the fans can be transmitted to the brackets.

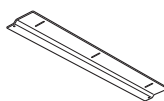
- Install ERS 20 on an outside wall, ideally in a room where noise does not matter, in order to eliminate noise problems. If this is not possible, avoid placing it against a wall behind a bedroom or other room where noise may be a problem.
- Wherever the unit is located, walls to sound sensitive rooms should be fitted with sound insulation.
- Condensation comes from the ventilation heat exchanger. A condensation outlet with a water seal must be installed and routed to an internal drain.
- The ventilation heat exchanger's installation area should always have a temperature of at least 10 °C and max. 35 °C.

INSTALLATION AREA

Leave a free space of 1,000 mm in front of the distribution box and 200 mm in front of the other sides. Because servicing is carried out from underneath, free space of 1,600 mm is recommended below the unit.



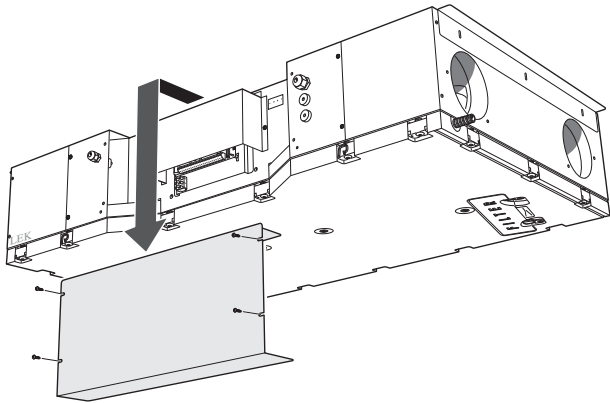
Supplied components



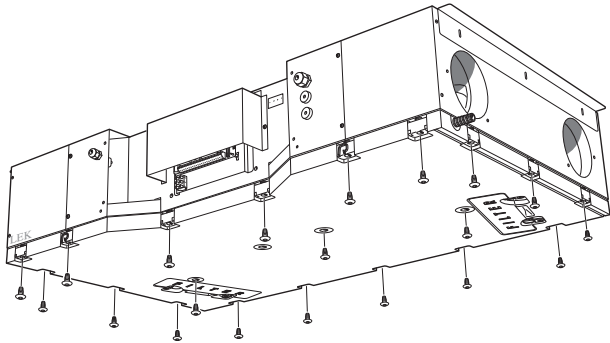
2 x roof brackets

Removing the covers

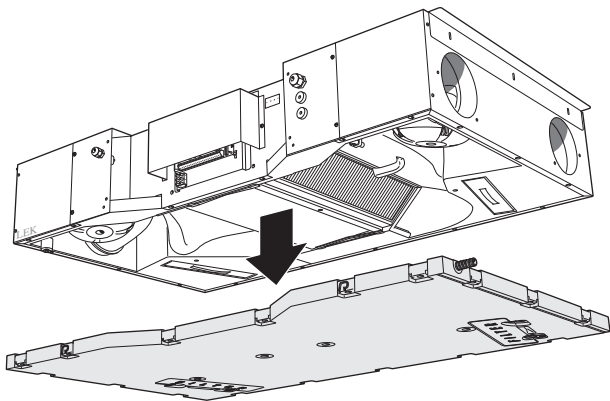
1. Slacken off the four screws holding the side panel. Move the panel out and downwards.



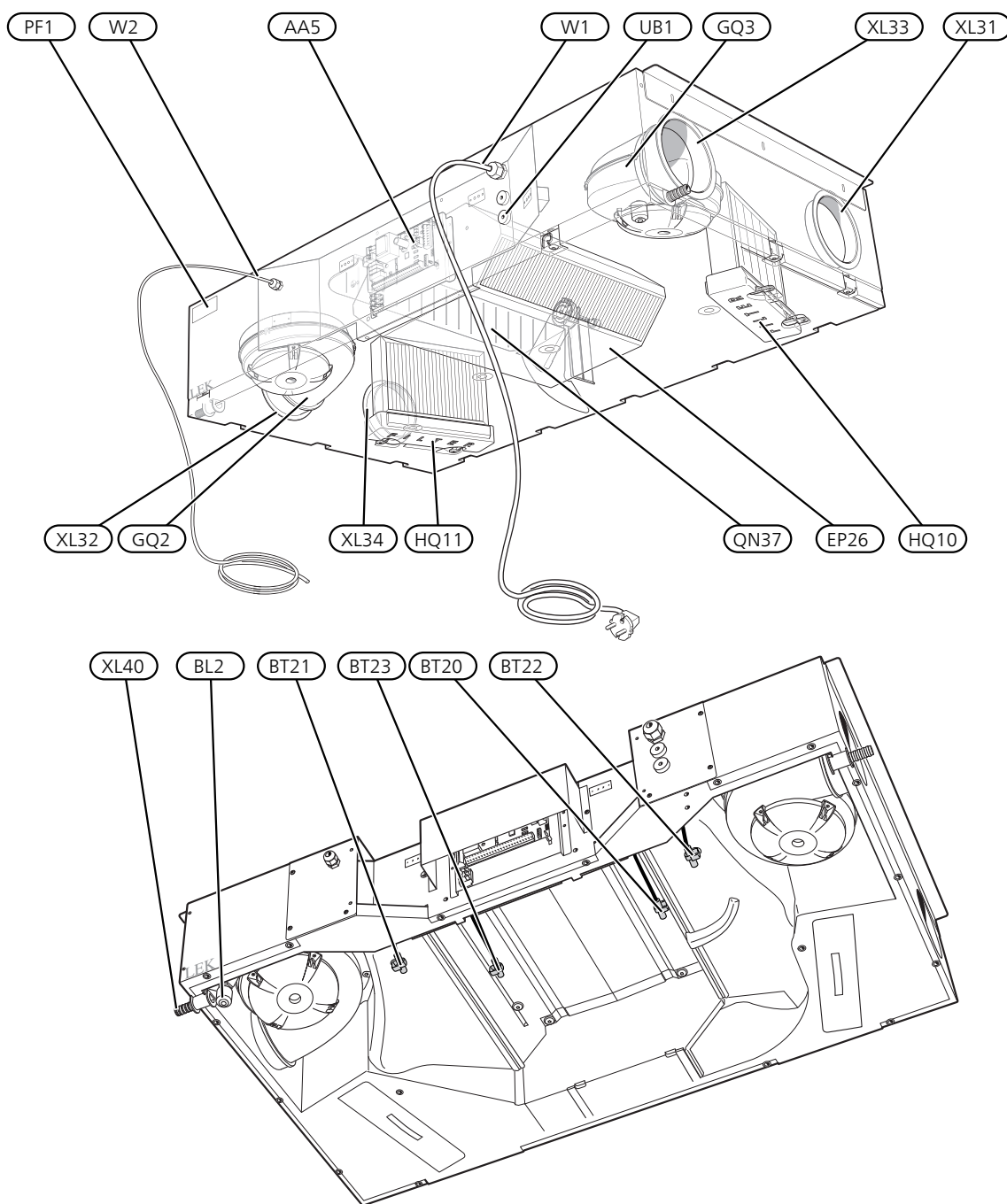
2. Unscrew all the screws holding the bottom panel.



3. Lift the bottom panel down.



3 The ventilation heat exchanger design



Pipe connections

XL31	Ventilation connection, exhaust air
XL32	Ventilation connection, extract air
XL33	Ventilation connection, supply air
XL34	Ventilation connection, outdoor air
XL40	Condensation water drain

Sensors etc.

BL2	Level monitor
BT20	Temperature sensor, exhaust air
BT21	Temperature sensor, extract air
BT22	Temperature sensor, supply air
BT23	Temperature sensor, outdoor air

Electrical components

AA5	Accessory card
UB1	Cable gland
W101	Cord with connection plug
W102	Communication cable

Ventilation

EP26	Heat exchanger
GQ2	Exhaust air fan
GQ3	Supply air fan
HQ10	Exhaust air filter
HQ11	Supply air filter
QN37	Bypass damper

Miscellaneous

PF1	Type plate
WM5	Condensation water trough

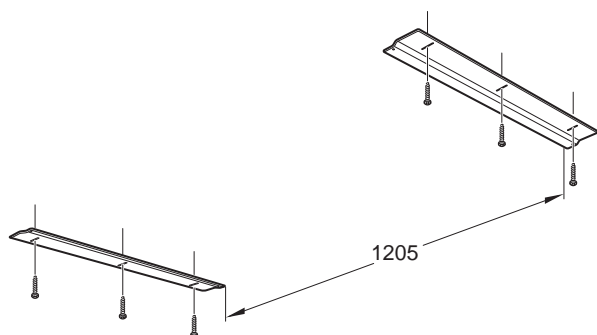
Designations according to standard EN 81346-2.

4 Pipe and ventilation connections

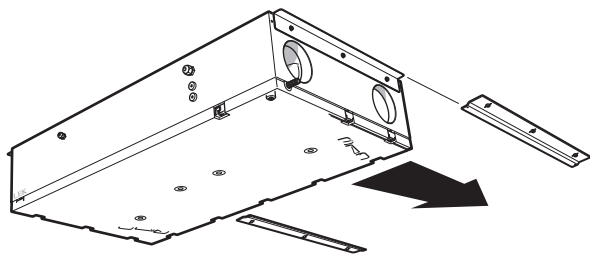
Mounting

When installing on a wooden roof, a vibration damper is recommended to prevent vibration being transferred.

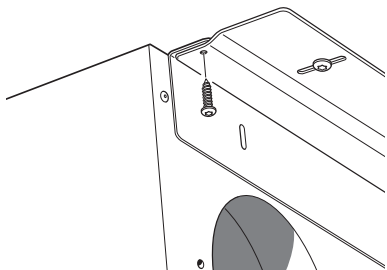
1. Install the two enclosed roof mountings in the roof.



2. Move ERS 20 into position.



3. Secure ERS 20 with screws.



Condensation water drain

ERS 20 can produce several litres of condensation water per day. It is therefore important for the condensation outlet to be correctly executed and for the ventilation heat exchanger to be installed horizontally.

Check that the water seal is airtight and firmly in position. The connection must be made so that the user can check and top up the water seal, without opening ERS 20.

CLEANING THE CONDENSATION WATER DRAIN

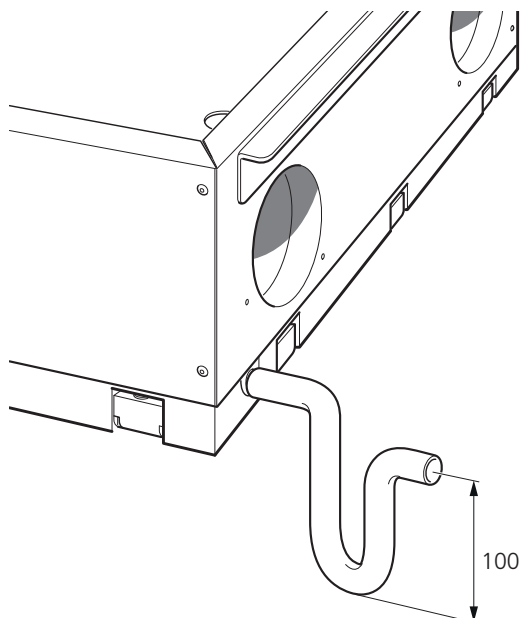
Condensation forms when ERS 20 is working. This condensation is led off and collected in the condensation water drain. Apart from water, a certain amount of dust and particles also collect there.

Check regularly that the condensation water drain and any floor drains are not blocked; water must be able to run through freely. Clean, if necessary.



NOTE

During operation, negative pressure arises in the ventilation heat exchanger, which means that a water column of at least 100 mm must be guaranteed in the water seal.



General ventilation connections

- Ventilation installation must be carried out in accordance with current norms and directives.
- Provision must be made for inspection and cleaning of the duct.
- The air duct system must be a minimum of air tightness class B.
- To prevent fan noise being transferred to the ventilation devices, silencers should be installed in the duct system. In the event of ventilation devices in noise-sensitive rooms, silencers must be installed.
- The extract air and outdoor air ducts are insulated using diffusion-proof material (at least PE30 or equivalent) along their entire lengths.
- 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 ERS 20 again.
- A duct in a masonry chimney stack must not be used for extract air or outdoor air.



NOTE

To ensure a sealed connection to ERS 20, nipples must be used when connecting the air ducts.

EXHAUST AIR DUCT /KITCHEN FAN

Exhaust air duct (kitchen fan) must not be connected to ERS 20.

To prevent food vapour being transferred to ERS 20 the distance between the kitchen fan and the exhaust air device must be considered. The distance should not be less than 1.5 m, but this can vary between different installations.

Always use a kitchen fan when cooking.

Ventilation flow

Connect ERS 20 so that all the exhaust air, except kitchen duct air (kitchen fan), passes through the heat exchanger (EP26) in the product.

The ventilation flow must comply with the applicable national standards.

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

Set the ventilation capacity in the main product's menu system (menu 5.1.5).

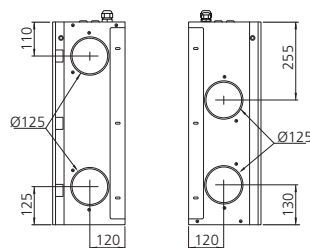
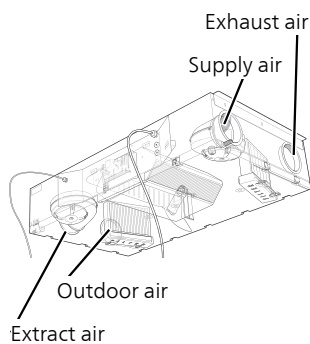
Adjusting ventilation

To obtain the necessary air exchange in every room of the house, the exhaust air valve and the supply air inlet as well as the fans in the ventilation heat exchanger must be correctly positioned and 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, and may cause moisture damage in the building

Dimension and ventilation connections

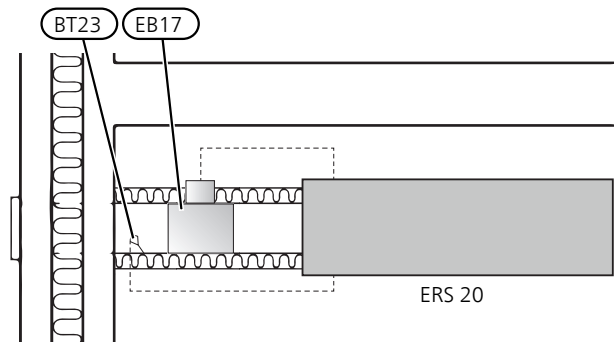


Preheating outdoor air

If the extract air temperature is too low, the supply air fan slows down to prevent the condensation water in the heat exchanger from freezing.

To prevent this from happening too often in areas with colder climates, an electrical air heater EAH (EB17) and an outdoor air sensor (BT23) should be installed in the outdoor air duct as illustrated. EAH heats the incoming outdoor air so that the extract air temperature does not fall to the stated level.

See the Installer Manual for EAH for more information.



5 Electrical connection



NOTE

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

Electrical installation and wiring must be carried out in accordance with the stipulations in force.

ERS 20 must not be powered during installation.



NOTE

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



NOTE

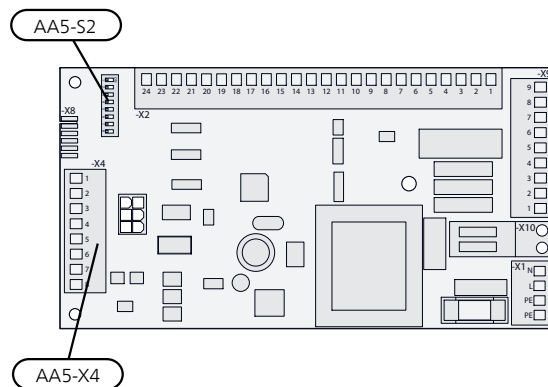
To prevent interference, sensor cables to external connections must not be laid close to high voltage cables.

For electrical wiring diagram, see page 23.

Connecting to main product

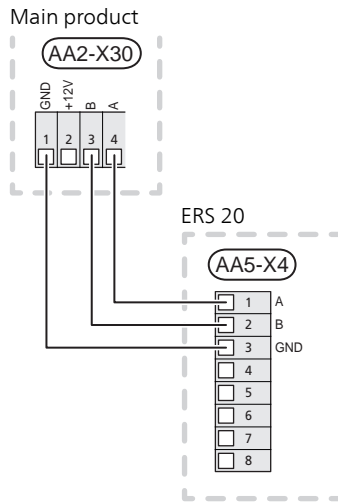
If several accessories are to be connected, or are already connected, the following cards must be connected in series with the previous card.

Use cable type LiYY, EKKX or similar.

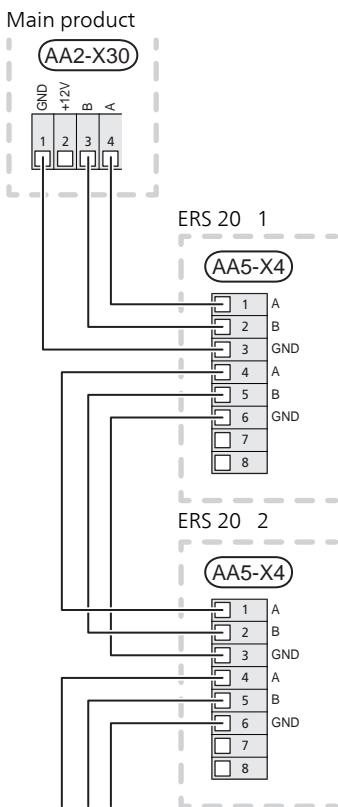


S-SERIES

The communication cable (W102) in ERS 20 must be connected to the main product.

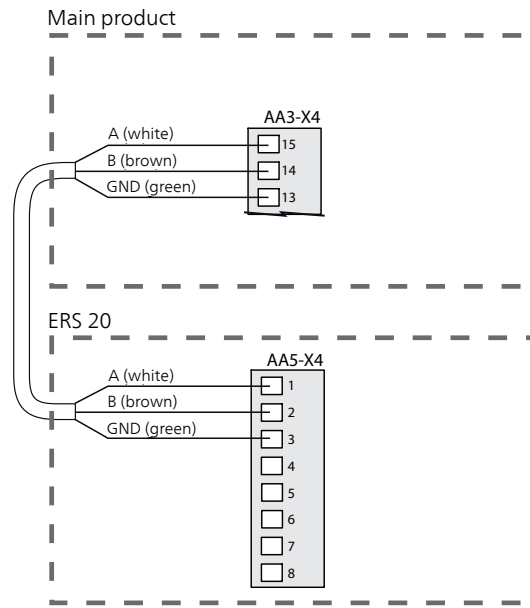


If more ERS 20 are to be installed, they must be connected in series as illustrated:

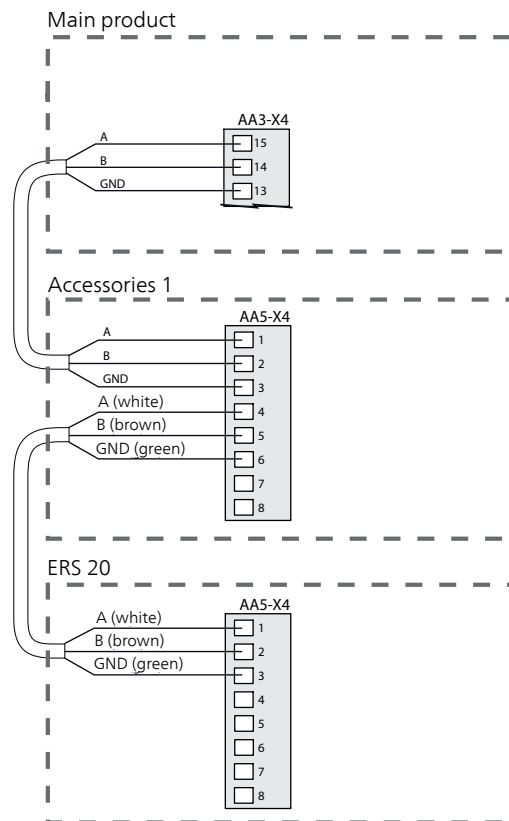


F-SERIES

The communication cable (W102) in ERS 20 must be connected to the main product.



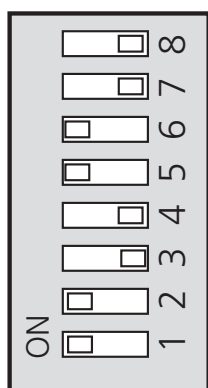
If more accessories are installed, they must be connected in series, as illustrated:



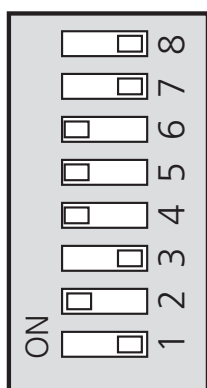
TIP

See the main product's Installer Manual for the placing of the input board.

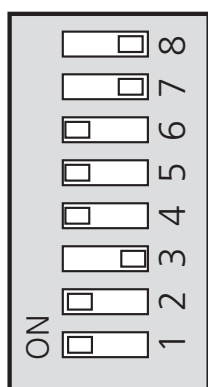
The DIP switch (AA5-S2) must be set as follows.



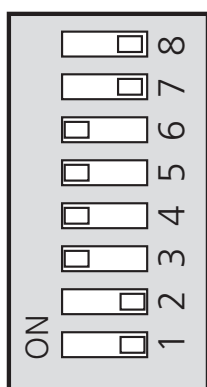
ERS 20 no. 1



ERS 20 no. 2



ERS 20 no. 3



ERS 20 no. 4

Outside air sensor

When installing with an electrical preheater (EAH), disconnect the outdoor air sensor (BT23) in ERS 20.

The enclosed outdoor air sensor EAH is placed in the outdoor air duct and connected to the accessory board (AA5) according to the Installer Manual for EAH.

6 Commissioning and adjusting

Preparations

- Check the miniature circuit-breaker (FA1) in the main product. It may have tripped during transportation.
- Check that the air filters are clean, they can become dirty after installation.

Filling

- Check that there is water in the water seal, fill if necessary.

Start-up and inspection

SETTING THE VENTILATION

The ventilation must be set according to applicable standards. The supply air flow is adjusted to guarantee a negative pressure. The settings are made in menu 7.1.4 for the S-series and in menu 5.1.5 and 5.1.6 for the F-series.

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



Caution

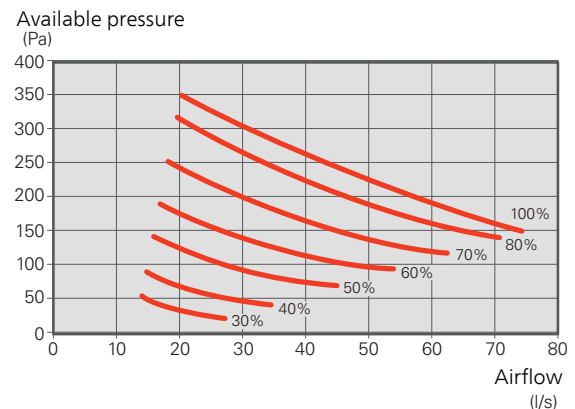
An incorrectly set ventilation flow can damage the house and may also increase energy consumption.



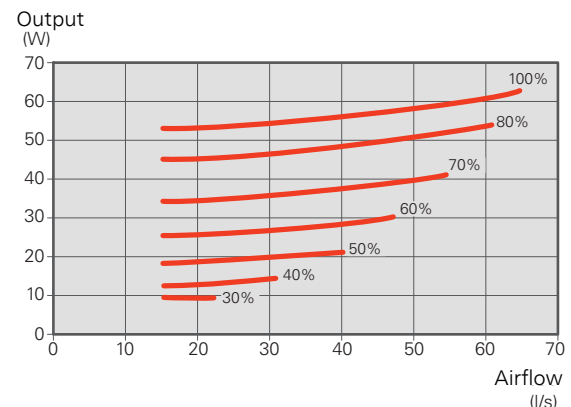
NOTE

Order a ventilation adjustment to complete the setting.

Ventilation capacity

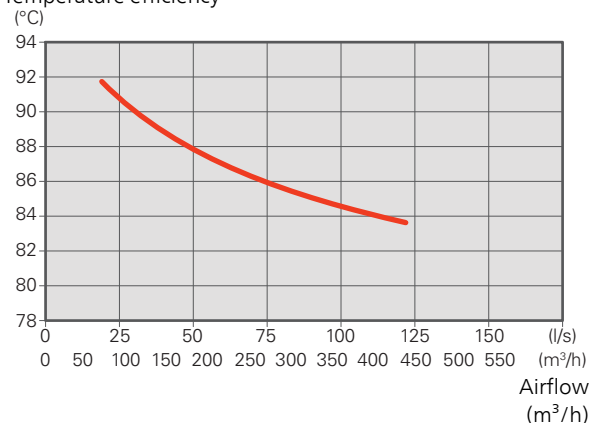


Fan output¹



¹The diagram shows the power consumption per fan.
Dry temperature efficiency according to EN 308

Temperature efficiency



7 Program settings

Program setting of ERS 20 can be performed via the start guide or directly in the menu system in the main product.



Caution

See the documentation for the main product.

Start guide

The start guide appears at the first start-up after the heat pump installation, but can also be found in menu 7.7 in the S-series and menu 5.7 in the F-Series

Menu system

S-SERIES

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 7.2.1. - Add/remove accessories

Activating/deactivating of accessories.

Select "exhaust/supply air module 1-4".

F-SERIES

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 5.2.4 -system settings

Activating/deactivating of accessories.

Activate: "exhaust/supply air module".

Menu 5.3.12 - exhaust/supply air module

Settings specific to ERS 20.

"Lowest extract air temp.": Set the minimum extract air temperature to prevent the heat exchanger freezing. The supply air fan speed reduces if the extract air temperature at (BT21) is lower than the set value.

"Bypass at excess temperature": If a room sensor is installed, set the over-temperature at which the bypass damper (QN37) must open here.

"Bypass during heating": Set here if you want to allow the bypass damper (QN37) to open during heat production as well.

"Months btwn filter alarms": Set how often the filter alarm must be displayed.

"Action level monitor": If level monitor is selected, the product issues an alarm and the fan stops when the input is closed. When blocking is selected, text in operating info shows that the input is closed. The fans stop until the input is open.



TIP

When ERS 20 is activated, the other ventilation menus will also light up.

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.

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 main product is running and that the supply cable to ERS 20 is connected.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.
- The main product's fuses/temperature limiter.

HIGH OR LOW ROOM TEMPERATURE

- See Installer Manual for the main product.

LOW OR A LACK OF VENTILATION

- Level monitor (BL2) tripped.
 - Checking the condensation water drain and water seal.
- Filter blocked.
 - Clean or replace the filter.
- The ventilation is not adjusted.
 - Order/implement ventilation adjustment.
- Closed, too much choke or blocked ventilation device.
 - Check and clean the exhaust air devices.
- Fan speed in reduced mode.
 - Go to the main product's menu 1.2.1 for the S-series and 1.2 for the F-Series and select "normal".
- External switch for changing the fan speed activated.
 - Check any external switches.
- Fan running slow because of low incoming outdoor air temperature.

- Check the function and settings for the electrical air heater (EAH) if installed.

HIGH OR DISTRACTING VENTILATION

- Filter blocked.
 - Clean or replace the filter.
- The ventilation is not adjusted.
 - Order/implement ventilation adjustment.
- Closed, too much choke or blocked ventilation device.
 - Check and clean the exhaust air devices.
- Fan speed in forced mode.
 - Go to the main product's menu 1.2.1 for the S-series and 1.2 for the F-Series and select "normal".
- External switch for changing the fan speed activated.
 - Check any external switches.
- Silencers not correctly installed.
 - Check the silencers.

9 Accessories

Some accessories manufactured before 2019 may need to have their circuit board updated in order to be compatible with ERS 20. For more information, see the Installer Manual for the relevant accessory.

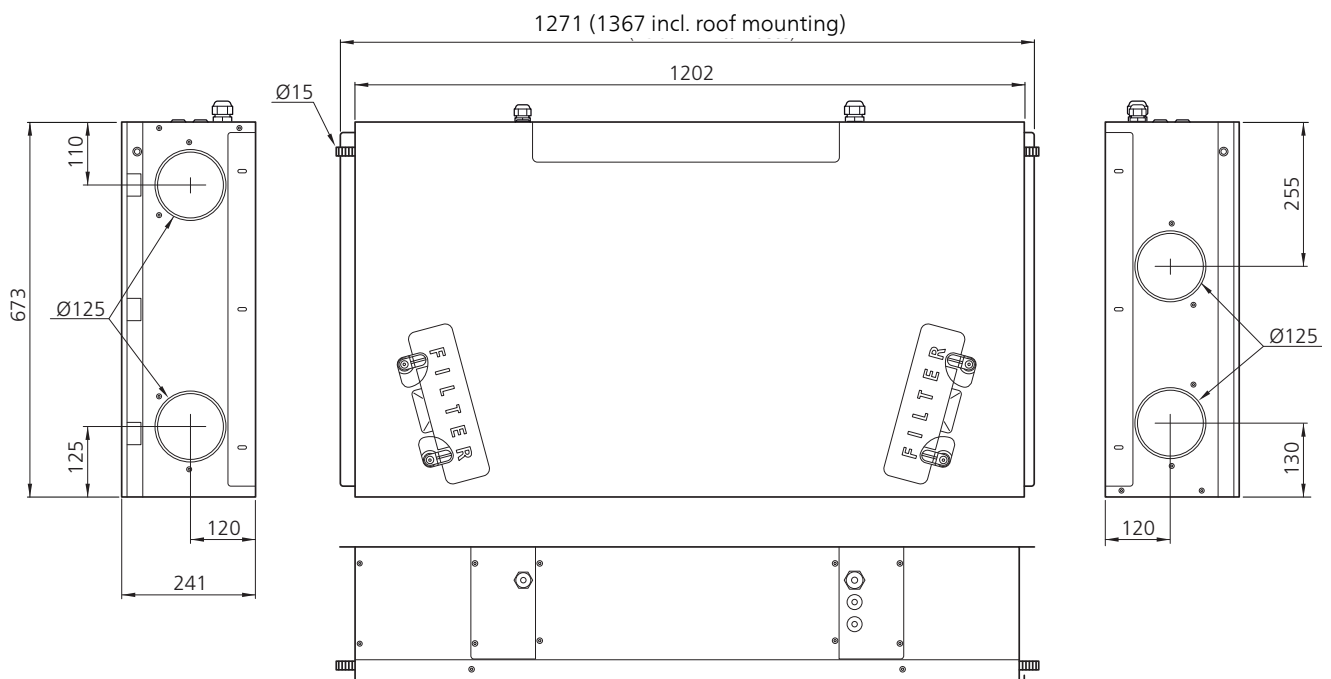
ELECTRICAL AIR HEATER EAH 20

In cold weather, EAH 20-900 heats the incoming outdoor air slightly to prevent the condensation in ERS 20 from freezing. Used mainly in colder climates.

Part no. 067 604

10 Technical data

Dimensions ERS 20



Technical

specifications

Type		ERS 20
<i>Electrical data</i>		
Supply voltage	V	230 V ~ 50Hz
Fuse	A	10
Driving power fan	W	2 x 100
Enclosure class		IP X1
<i>Ventilation</i>		
Filter type, exhaust air filter		Coarse 65%
Filter type, supply air filter		ePM1 55%
Sound pressure level ($L_{P(A)}$) at 1 m ¹	dB(A)	47.4
Sound pressure level ($L_{P(A)}$) at 1 m ²	dB(A)	50.0
<i>Pipe connections</i>		
Ventilation Ø	mm	125
Condensation water drain	mm	15 mm
<i>Dimensions and weight</i>		
Efficiency class ³		A
Length, supply cable	m	2.4
Length, control cable	m	2.0
Width	mm	1,202
Height	mm	241
Depth	mm	673
Weight	kg	25
Part no.		066 167

1 105 m³/h at 50 Pa

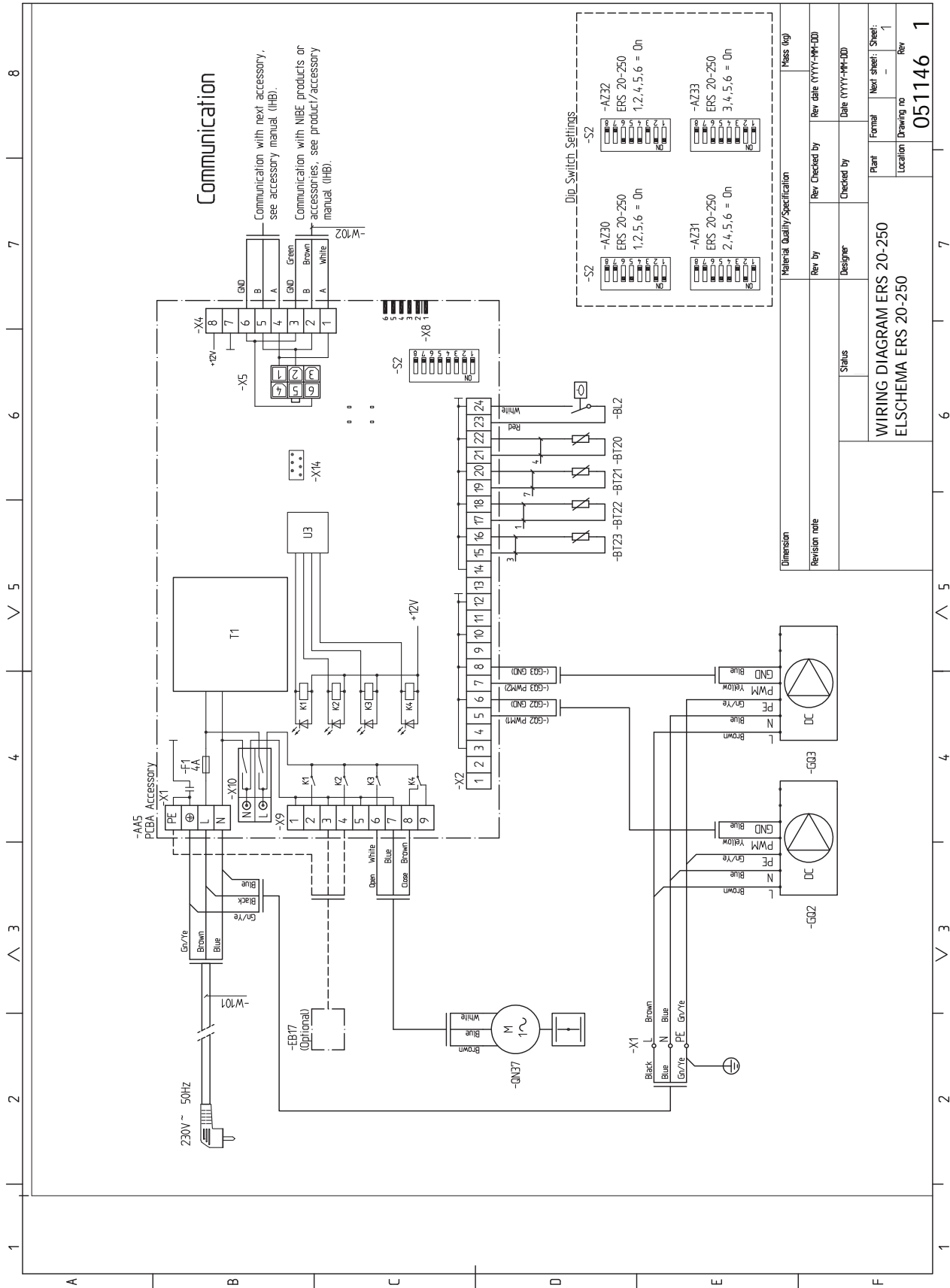
2 250 m³/h at 140 Pa

3 Scale for efficiency class: A+ to G.

Energy labelling

Supplier		NIBE
Model		ERS 20-250
Specific energy consumption (SEC)	kWh/(m ² year)	Average: -34.9 Cold: -71.3 Warm: -11.5
Energy efficiency class		A
Declared typology		RVU, Bidirectional
Type of drive		Variable speed drive
Type of heat recovery system		Recuperative
Thermal efficiency of heat recovery		82
Maximum air flow rate	m ³ /h	258
Electric power input of the fan drive at maximum flow rate	W	116
Sound power level (LWA)	dB	46
Reference flow rate	m ³ /s	0.05
Reference pressure difference	Pa	50
Specific power input (SPI)	W/m ³ /h	0.288
Control factor and control typology		Clock control (0.95)
External leakage rates	%	Internal: 2.5 External: 1.6
Information about filter warning		See user manual.
Information about supply/exhaust grilles in the facade		See section General ventilation connections on page 11.
Information about pre-/disassembly		See section Recovery on page 4. This installer manual can also be accessed at nibe.eu.
The annual electricity consumption	kWh/year	370
Annual heating saved, kWh primary energy per year	kWh prim/year	Average: 4,356 Cold: 8,521 Warm: 1,970

ELECTRICAL CIRCUIT DIAGRAM



Contact information

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