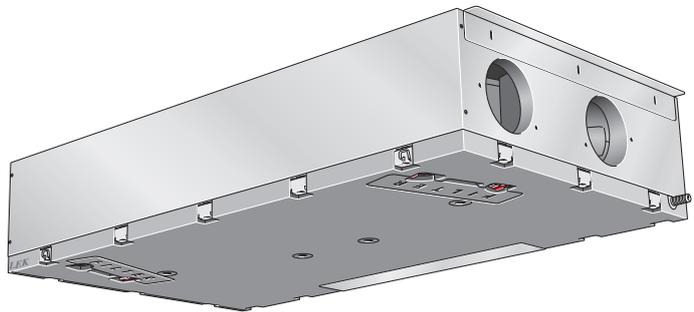


HRV unit

NIBE ERS 20-300



S-series



F-series



S-series Table of Contents

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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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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

Explanation of symbols that may be present in this manual.



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.



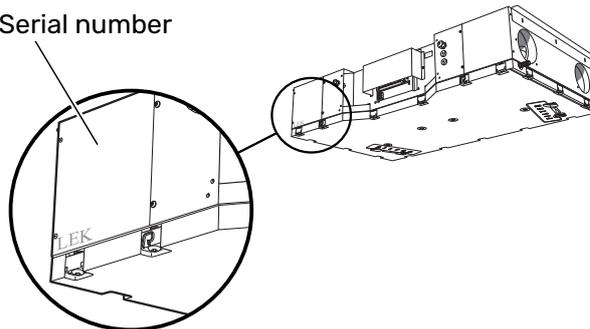
TIP

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

Serial number

The serial number can be found at the top left.

Serial number



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.

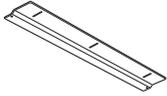
✓	Description	Notes	Signature	Date
	Electricity (page 12)			
	Connections			
	Main voltage			
	Fuses property			
	Earth circuit-breaker			

Delivery and handling

Transport and storage

ERS 20 should be transported and stored in the dry.

Supplied components



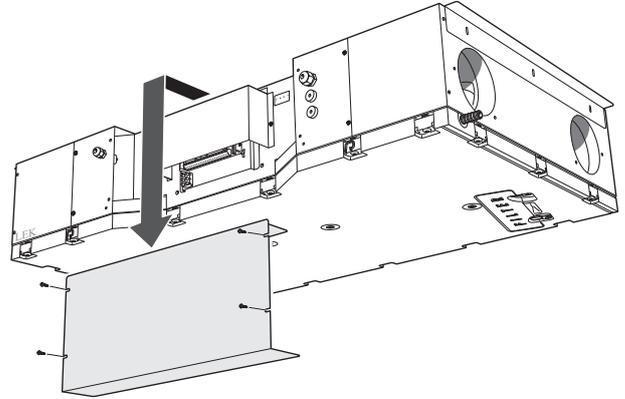
2 x roof brackets

Compatible products

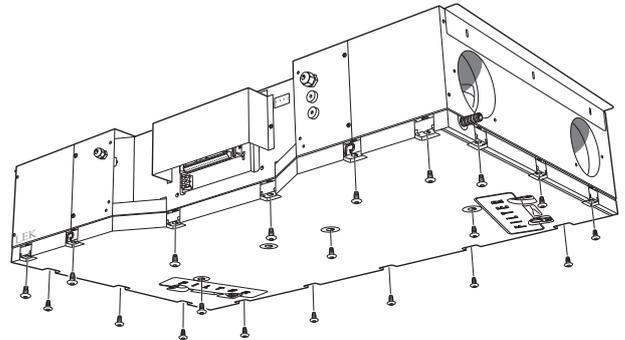
- S1155
- S1255
- VVM S320
- VVM S325
- SMO S40

Removing the covers

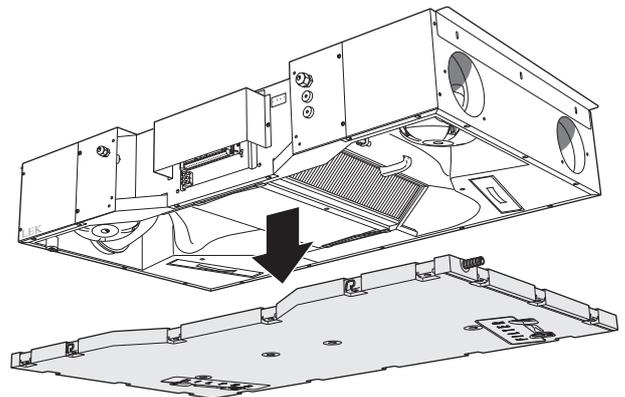
1. Slacken off the four screws holding the side panel. Move the panel out and downwards.



2. Unscrew all the screws holding the bottom panel.



3. Lift the bottom panel down.



Assembly

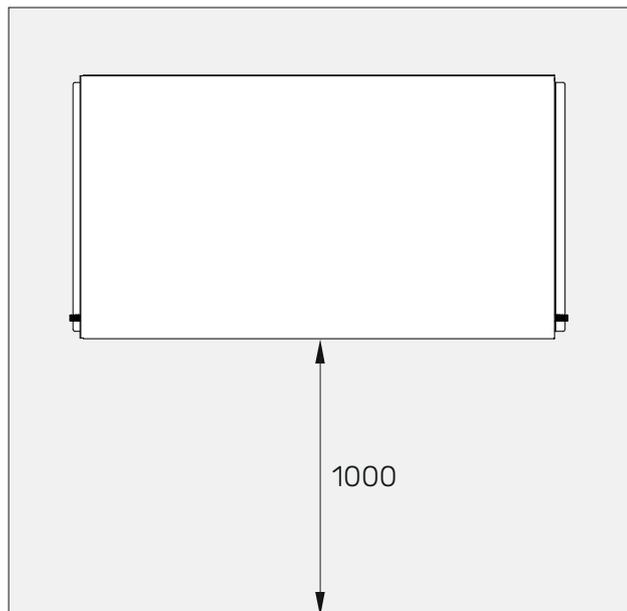
ERS 20 is installed in the roof using the enclosed roof brackets. Noise from the fans can be transmitted to the brackets.

- 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 adjoining 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 water comes from the HRV unit. A condensation outlet with a water seal must be installed and routed to an internal drain.
- The HRV unit's installation area always has to have a temperature of at least 10 °C and max. 35 °C.

INSTALLATION AREA

Leave a free space of 1000 mm in front of the product.

Because servicing is carried out from below, a free space of 1,600 mm is recommended below the unit.



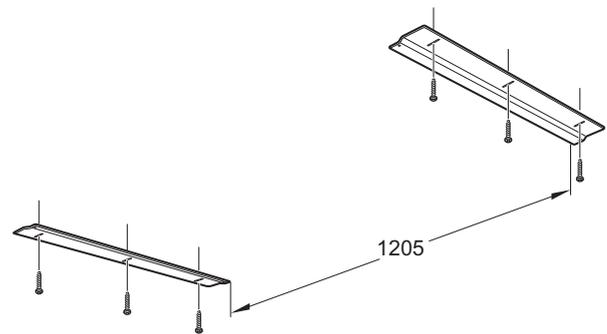
NOTE

Ensure that there is sufficient space (300 mm) for connecting ventilation ducts.

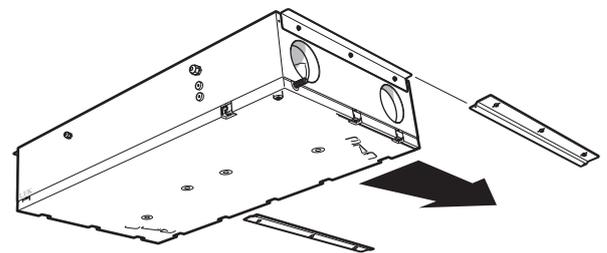
Mounting

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

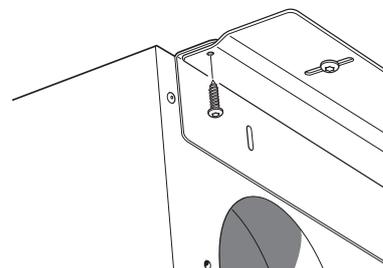
1. Install the two enclosed roof mountings in the roof.



2. Move ERS 20 into position.

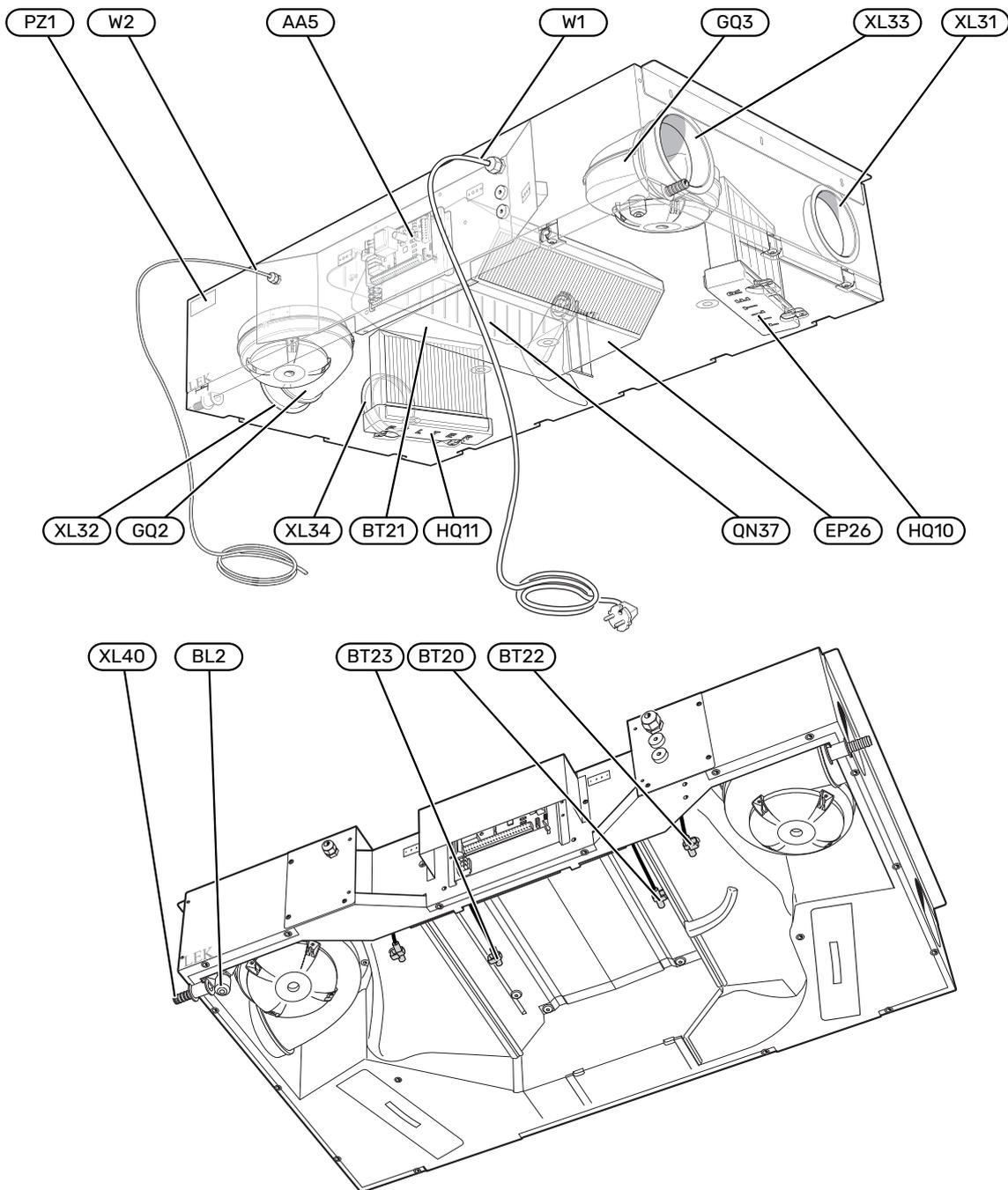


3. Secure ERS 20 with screws.



Design of the HRV unit

S



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
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

PZ1	Type plate
-----	------------

Designations according to standard EN 81346-2.

Ventilation connections

Condensation water drain

ERS 20 can produce several litres of condensation water per day. It is therefore important that the condensation outlet is correctly executed and the HRV unit 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.

The connection for the condensation outlet measures $\varnothing 15$ mm.

CLEANING THE CONDENSATION WATER DRAIN

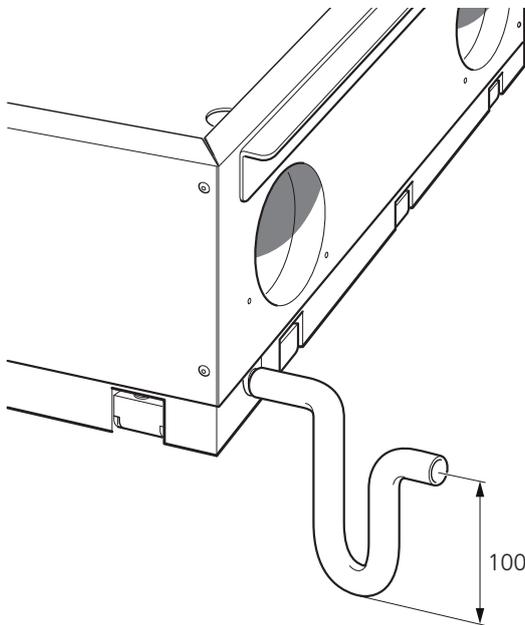
Condensation forms when ERS 20 is working. This condensation is led off and collected in the condensation water drain. Apart from water, a certain amount of dust and particles also collect there.

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 HRV unit, 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, install silencers in suitable locations in the duct system.
- The extract air and outdoor air ducts are insulated using diffusion-proof material 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 cooking odours from being led to the ERS 20, the distance between the kitchen fan and the exhaust air valve must be taken into consideration. The distance must not be less than 1.5 m, but may 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 7.1.4 - "Ventilation").

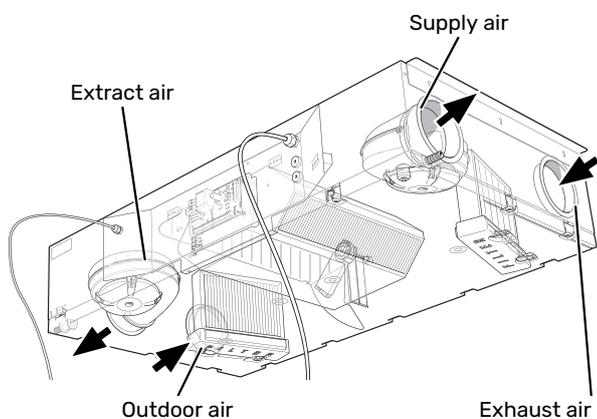
Adjusting ventilation

To obtain the necessary air exchange in every room of the building, the exhaust air valve and the supply air inlet as well as the fans in the HRV unit 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, a poorer indoor climate and moisture damage in the building.

Ventilation connections



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 national provisions.

ERS 20 must not be powered during installation.



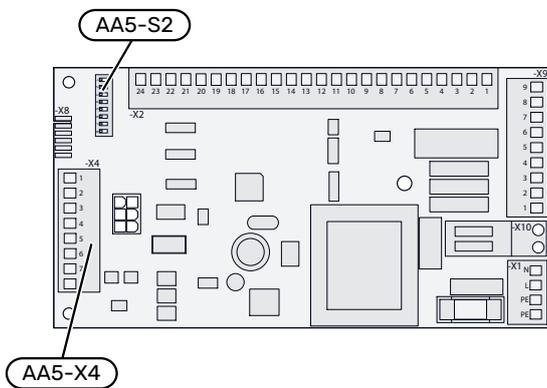
NOTE

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

- 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.

For electrical wiring diagram, see page 22.

Overview accessory board (AA5)



Supply

ERS 20 is connected to a earthed single-phase wall socket or a permanent installation. For permanent installations, ERS 20 must be preceded by a circuit breaker with at least a 3 mm breaking gap.

Connecting to main product

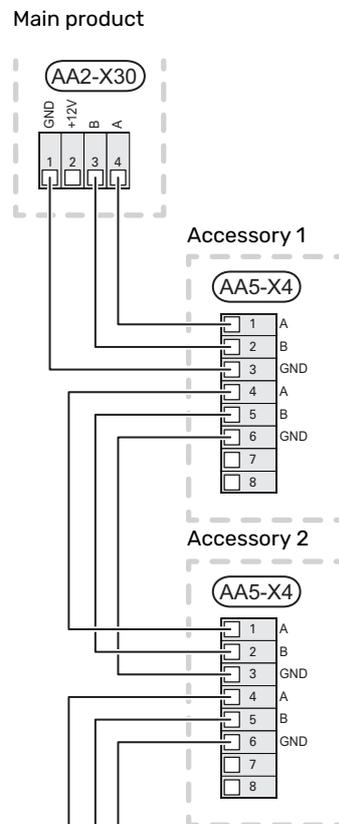
CONNECTING TO THE HEAT PUMP

ERS 20 contains an accessory board (AA5) that connects directly to the main product's PCB (terminal block AA2-X30).

The communication cable (W102) is connected to the accessory board (AA5) from the factory.

If several 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.



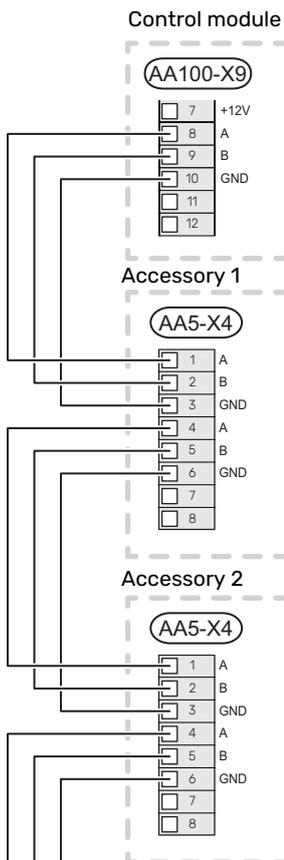
CONNECTING TO CONTROL MODULE

ERS 20 contains an accessory board (AA5) that connects directly to the control module on its joint board (terminal block AA100-X9).

The communication cable (W102) is connected to the accessory board (AA5) from the factory.

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

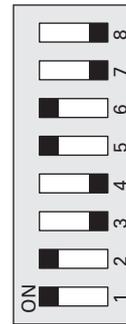
Because there can be different connections for accessories with accessory board (AA5), you should always read the instructions in the manual for the accessory that is to be installed.



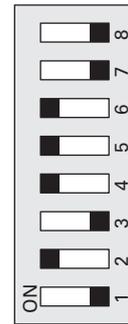
DIP SWITCH

The DIP switch (S2) on the accessory board (AA5) must be set as follows.

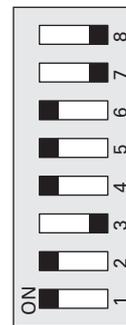
You can have up to 8 ERS 20 in the same installation, each ERS 20 is given a unique setting.



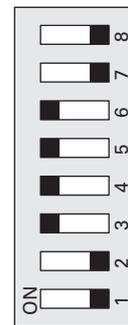
ERS 20 no. 1



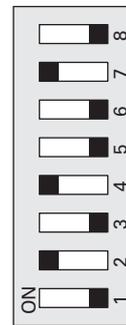
ERS 20 no. 2



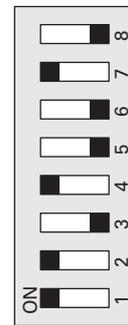
ERS 20 no. 3



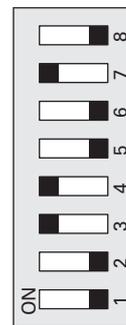
ERS 20 no. 4



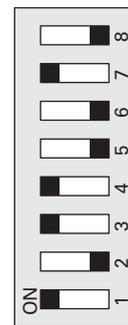
ERS 20 no. 5



ERS 20 no. 6



ERS 20 no. 7



ERS 20 no. 8

Commissioning and adjusting

Preparations

- Check the miniature circuit-breaker (FC1) 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. Adjust the supply air flow to guarantee a negative pressure.

The settings are made in menu 7.1.4.

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



Caution

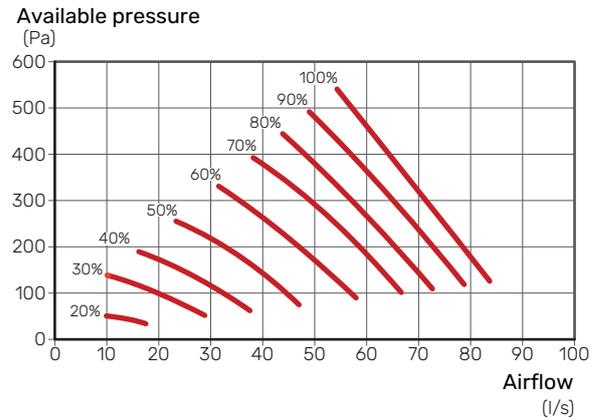
An incorrectly set ventilation flow can damage the house and may also increase energy consumption.



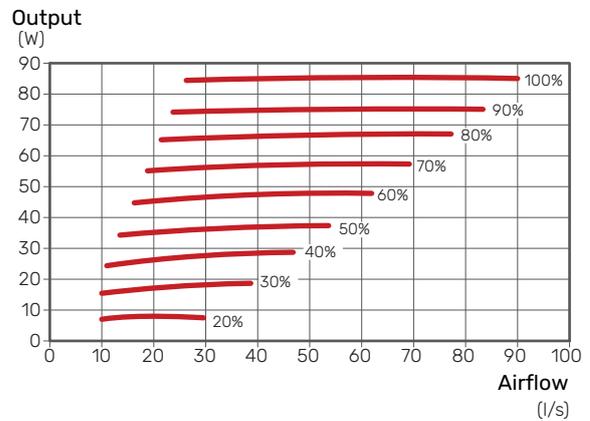
NOTE

Order a ventilation adjustment to complete the setting.

Ventilation capacity



Fan rating¹



¹The diagram shows the power consumption per fan.

Activating ERS 20

Activating ERS 20 can be performed via the start guide or directly in the menu system.

The main product's software must be the latest version.



Caution

Also see the Installer Manual for the main product.

Start guide

The start guide appears upon first start-up after heat pump installation, but is also found in menu 7.7.

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 7.2.1 - ADD/REMOVE ACCESSORIES

Activating/deactivating of accessories.

Select "ERS S10/20/30 1" - "ERS S10/20/30 8".

MENU 7.2.11 - VENT. HEAT EXCHANGER (ERS)

Lowest extract air temp.

Setting range: 0 – 10 °C

Product

Setting range: ERS10, ERS20/ERS30

Action level monitor

Setting range: Level monitor/Blocked/Off

Lowest extract air temp.: Set the lowest extract air temperature to prevent the build-up of ice on the heat exchanger.

Action level monitor: ERS 20 has a built-in level monitor, and the fans stop when the input is interrupted. When "Level monitor" is selected, the product issues an alert when the input is interrupted; when "Blocked" is selected, text is displayed instead in operating info.

MENU 1.2.1 - FAN SPEED

Alternatives: normal and speed 1 – speed 4

The ventilation in the accommodation can be temporarily increased or reduced here.

When you have selected a new speed a clock starts a count down. When the time has counted down the ventilation speed returns to the normal setting.

If necessary, the different return times can be changed in menu 1.2.5.

The fan speed is shown in brackets (in percent) after each speed alternative.

MENU 1.2.2 - NIGHT COOLING

Night cooling

Setting range: on/off

Start temp exhaust air

Setting range: 20 – 30 °C

Min. diff. ind. temp. - outd. temp.

Setting range: 3 – 10 °C

Night cooling during heating

Setting range: on/off

Here, you can activate night cooling. When the temperature in the house is high, and the outdoor temperature is lower, a cooling effect can be obtained by forcing the ventilation. When night cooling is activated, the fans run at the speed 4. For activated night cooling, the bypass damper (QN37) is open.

Start temp exhaust air: Here, you set the exhaust air temperature at which night cooling will start.

Min. diff. ind. temp. - outd. temp.: If the temperature difference is greater than the set value for "Min. diff. ind. temp. - outd. temp.", and the exhaust air temperature is higher than the set value for "Start temp exhaust air", the ventilation operates at speed 4 until one of these conditions is no longer valid.

Night cooling during heating: It is possible to have night cooling during the time heating is permitted.

MENU 1.2.5 - FAN RETURN TIME

speed 1 – speed 4

Setting range: 1 – 24 h

Here, you select the return time for the temporary change of ventilation speed (speed 1 – speed 4), regardless of whether the speed has been changed in menu 1.2.1 - "Fan speed", via the home screen or via myUplink.

Return time is the time it takes before the temporary ventilation speed returns to normal speed.

MENU 1.2.6 - FILTER CLEANING INTERVAL

Months between filter cleaning

Setting range: 1 – 24 months

The filters in ERS 20 are of a type that should not be cleaned; they have to be replaced instead. These must be replaced regularly, although how often depends of factors such as the amount of particles in the ventilation air. Test to find out what is most appropriate for your installation.

Set the interval for the reminder in this menu.

The menu shows the time remaining until the next reminder, and you can also reset active reminders.

MENU 1.2.7 - VENTILATION RECOVERY

Temp stop of heat recovery

Setting range: 5 – 30 °C

Min. diff. ind. temp. - outd. temp.

Setting range: 2 – 10 °C

Recovery stop during heating

Setting range: on/off

Cooling recovery

Setting range: on/off

St temp sup air cooled by exh air

Setting range: -20.0 – 41.0 °C

Min diff outd and exhaust air

Setting range: 3.0 – 10.0 °C

When there is no heating demand, and the outdoor temperature is approaching the indoor temperature, heat recovery is stopped to prevent the house from being heated further.

Caution

Only the heat recovery is stopped, not the ventilation.

Temp stop of heat recovery: Here, you set the outside temperature at which ventilation recovery is to stop.

Min. diff. ind. temp. - outd. temp.: Here, you set the temperature difference between the indoor air and the outdoor air that is required in order for ventilation recovery to start.

Recovery stop during heating: Stopping ventilation recovery during the time heating is permitted is possible.

Cooling recovery: When there is no heating demand, ventilation recovery is stopped to prevent the house from being heated further. When it is warm indoors and even warmer outdoors, ERS 20 can be used to prevent the house from heating up more than necessary. During cooling recovery, the cooler air from the house is used to cool the incoming air.

"Cooling recovery" is started when the exhaust air temperature is a certain number of degrees below the outdoor temperature and it is warm outside.

St temp sup air cooled by exh air: Here, you set the outdoor temperature at which cooling recovery will start.

Caution

"St temp sup air cooled by exh air" cannot be lower than "Stop heating" in menu 7.1.10.2 – "Auto mode setting".

Min diff outd and exhaust air: Here, you set the temperature difference between outdoor air and exhaust air that is required in order for cooling recovery to start.

MENU 7.1.4.1 - FAN SPEED, EXHAUST AIR

Fan speed

"Normal" and "Fan speed 1" – "Fan speed 4"

Setting range: 0 – 100%

Set the speed for the five different selectable speeds for the fan here.

MENU 7.1.4.2 - FAN SPEED, SUPPLY AIR

Fan speed

"Normal" and "Fan speed 1" – "Fan speed 4"

Setting range: 0 – 100%

Set the speed for the five different selectable speeds for the fan here.

MENU 6.2 - SCHEDULING

In this menu, you schedule repeated changes of ventilation.

Caution

A schedule repeats according to the selected setting (e.g. every Monday) until you go into the menu and switch it off.

MENU 7.4 - SELECTABLE IN/OUTPUTS

Select here whether you want to activate fan speed for the relevant AUX input.

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 items:

- 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.
- The main product's temperature limiter.

LOW OR A LACK OF VENTILATION

- Level monitor (BL2) tripped.
 - Checking the condensation water drain and water seal.
- The exhaust air filter (HQ10) and/or the supply air filter (HQ11) is clogged.
 - Replace the filters.
- The ventilation is not adjusted.
 - Order/implement ventilation adjustment.
- Closed, too much choke or blocked ventilation device.
 - Check and clean the ventilation devices.
- Fan speed in reduced mode.
 - Enter the main product's menu 1.2.1 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 20) if installed.

HIGH OR DISTRACTING VENTILATION

- The exhaust air filter (HQ10) and/or the supply air filter (HQ11) is clogged.
 - Replace the filters.
- 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.
 - Enter the main product's menu 1.2.1 and select "Normal".
- External switch for changing the fan speed activated.
 - Check any external switches.
- Silencers not correctly installed.
 - Check the silencers.

Accessories

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

Not all accessories are available on all markets.

ELECTRICAL AIR HEATER EAH 20

In cold weather, EAH heats the incoming outdoor air slightly to prevent the condensation in ERS 20 from freezing to form ice. EAH should be used in houses where the outdoor temperature can be continuously lower than -5°C .

EAH 20-900

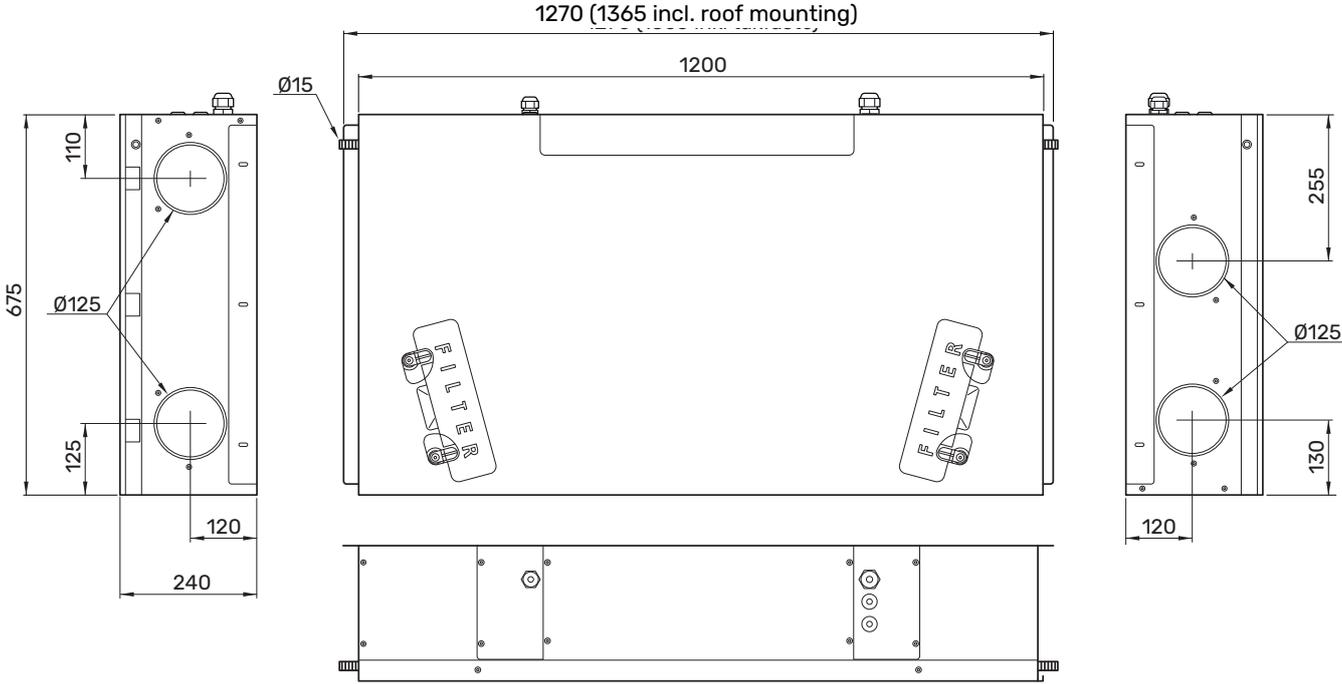
(300-900 W)

Part no. 067 604

S

Technical data

Dimensions



S

Technical specifications

Type		ERS 20
Electrical data		
Supply voltage	V	230 V ~ 50Hz
Fuse	A	10
Driving power fan	W	2 x 85
Enclosure class		IP X1B
Ventilation		
Filter type, exhaust air filter		Coarse 65%
Filter type, supply air filter		ePM1 55%
Noise		
Sound power level ($L_{W(A)}$) ¹	dB(A)	59
Sound pressure level ($L_{P(A)}$) at 1 m ²	dB(A)	41.1
Sound pressure level ($L_{P(A)}$) at 1 m ³	dB(A)	52.2
Pipe connections		
Ventilation \emptyset	mm	125
Condensation water drain \emptyset	mm	15
Dimensions and weight		
Efficiency class ⁴		A
Length, supply cable	m	2.4
Length, communication cable	m	2.0
Width	mm	1,200
Height	mm	240
Depth	mm	675
Weight	kg	25
Part No.		066 220

¹ 60 l/s (216 m³/h) at 50 Pa

² 35 l/s (126 m³/h) at 70 Pa

³ 69 l/s (250 m³/h) at 150 Pa

⁴ Scale for efficiency class: A+ to G.

Dry temperature efficiency according to EN 308



Outdoor air: 5 °C Exhaust air 25 °C RH exhaust air: <27.7 %

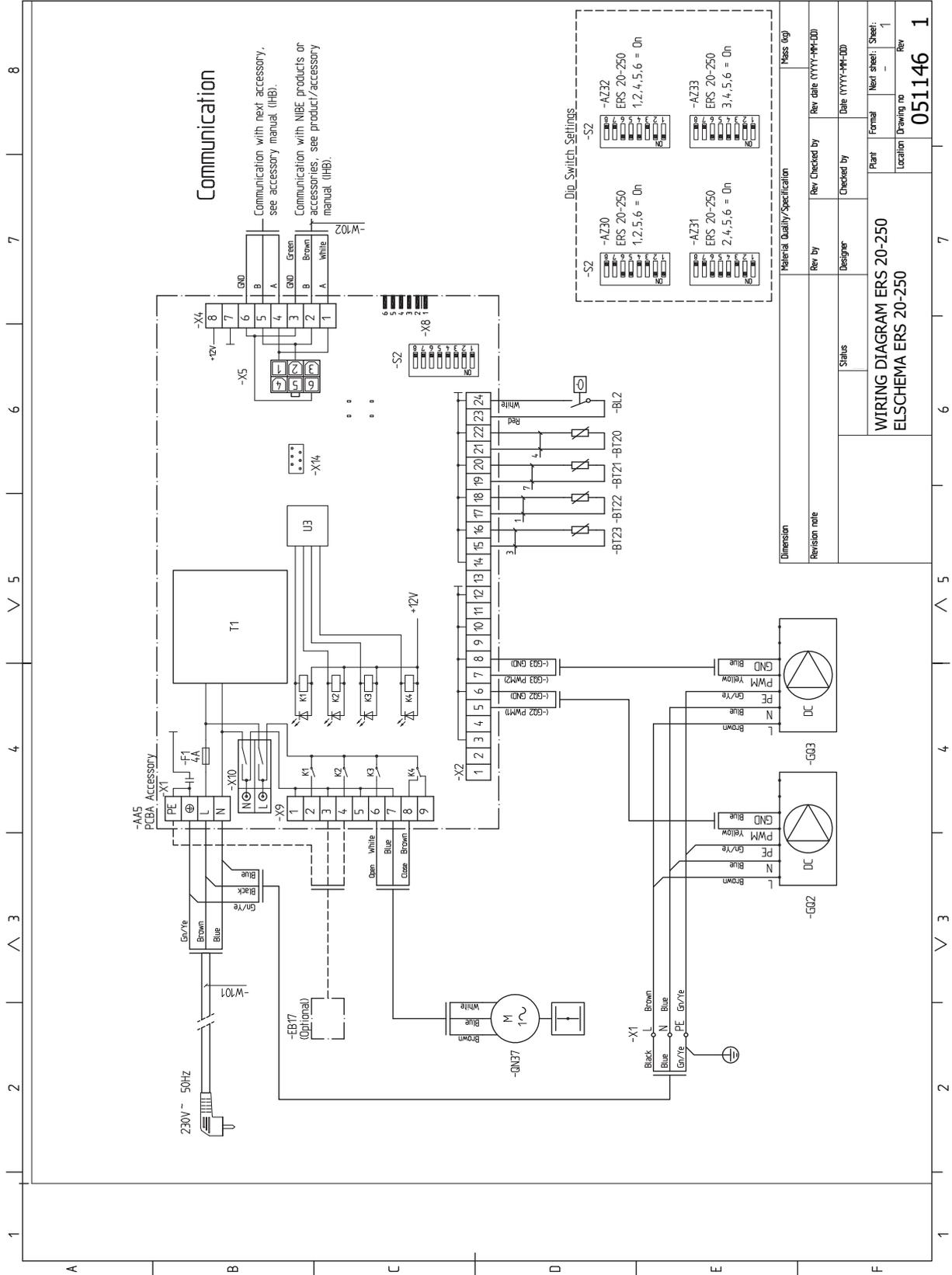
Energy labelling

Supplier		NIBE
Model		ERS 20-300
Specific energy consumption (SEC)	kWh/(m ² year)	Average: -35.5 Cold: -71.5 Warm: -12.3
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		81
Maximum air flow rate	m ³ /h	310
Electric power input of the fan drive at maximum flow rate	W	97
Sound power level (LWA)	dB	59
Reference flow rate	m ³ /s	0.06
Reference pressure difference	Pa	50
Specific power input (SPI)	W/m ³ /h	0.26
Control factor and control typology		Clock control (0.85)
External leakage rates	%	Internal: 1.4 External: 0.44
Information about filter warning		See user manual.
Information about supply/exhaust grilles in the facade		See the "Ventilation connections" section.
Information about pre-/disassembly		See the "Recovery" section. This installer manual can also be accessed at nibe.eu .
The annual electricity consumption	kWh/year	336
Annual heating saved, kWh primary energy per year	kWh prim/year	Average: 4,325 Cold: 8,462 Warm: 1,956

S

Electrical circuit diagram

S



F-series Table of Contents

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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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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

Explanation of symbols that may be present in this manual.



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.



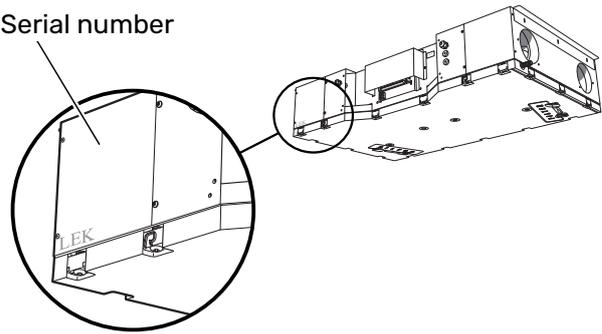
TIP

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

Serial number

The serial number can be found at the top left.

Serial number



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.

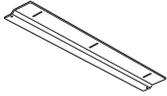
✓	Description	Notes	Signature	Date
	Electricity (page 32)			
	Connections			
	Main voltage			
	Fuses property			
	Earth circuit-breaker			

Delivery and handling

Transport and storage

ERS 20 should be transported and stored in the dry.

Supplied components



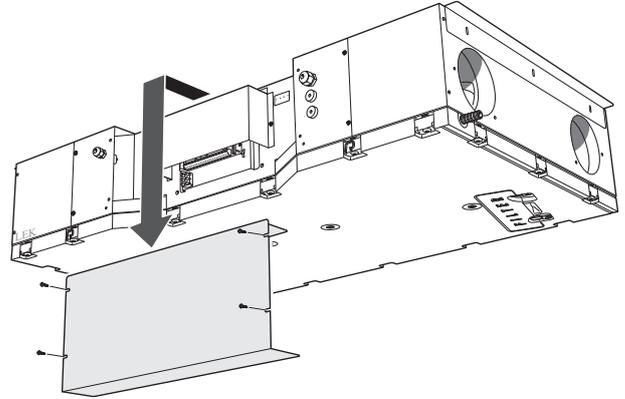
2 x roof brackets

Compatible products

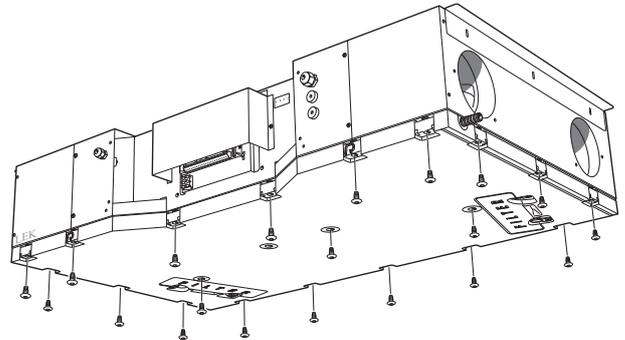
- F1145
- F1155
- F1245
- F1255
- F1345
- F1355
- VVM 310
- VVM 320
- VVM 325
- VVM 500
- SMO 40

Removing the covers

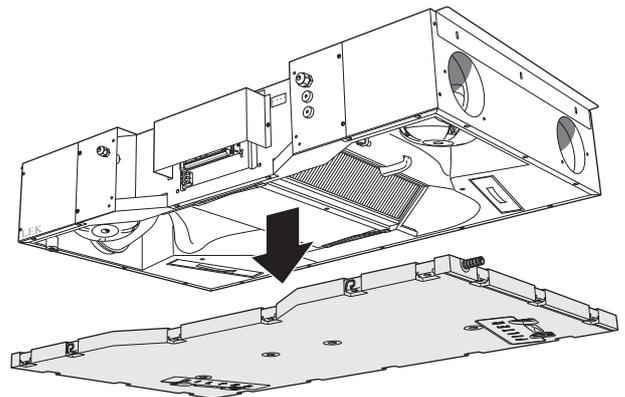
1. Slacken off the four screws holding the side panel. Move the panel out and downwards.



2. Unscrew all the screws holding the bottom panel.



3. Lift the bottom panel down.



F

Assembly

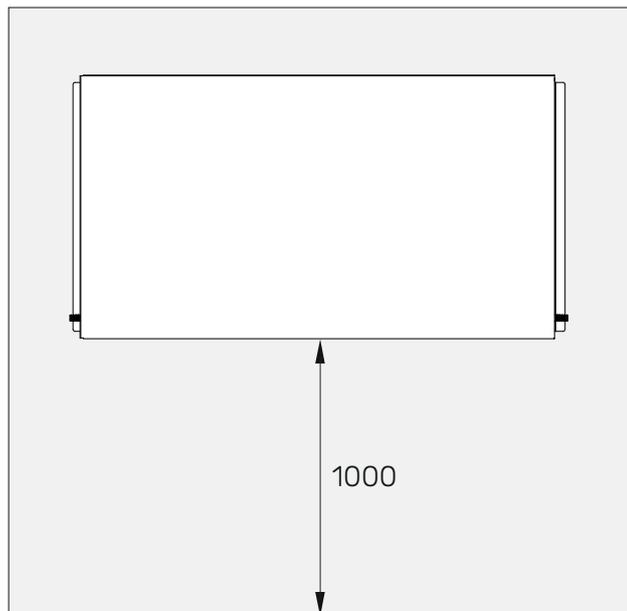
ERS 20 is installed in the roof using the enclosed roof brackets. Noise from the fans can be transmitted to the brackets.

- 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 adjoining 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 water comes from the HRV unit. A condensation outlet with a water seal must be installed and routed to an internal drain.
- The HRV unit's installation area always has to have a temperature of at least 10 °C and max. 35 °C.

INSTALLATION AREA

Leave a free space of 1000 mm in front of the product.

Because servicing is carried out from below, a free space of 1,600 mm is recommended below the unit.



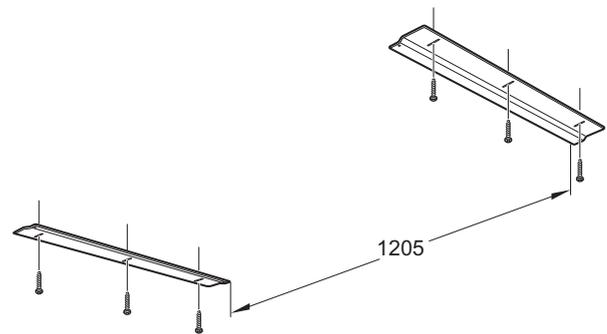
NOTE

Ensure that there is sufficient space (300 mm) for connecting ventilation ducts.

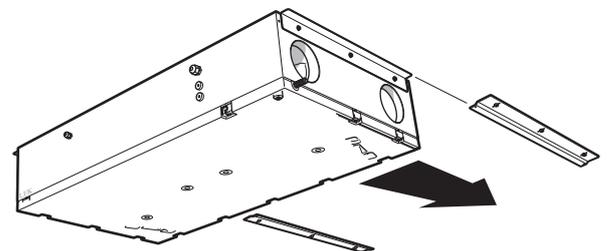
Mounting

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

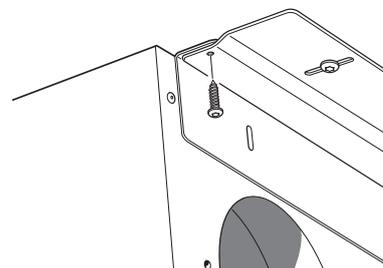
1. Install the two enclosed roof mountings in the roof.



2. Move ERS 20 into position.

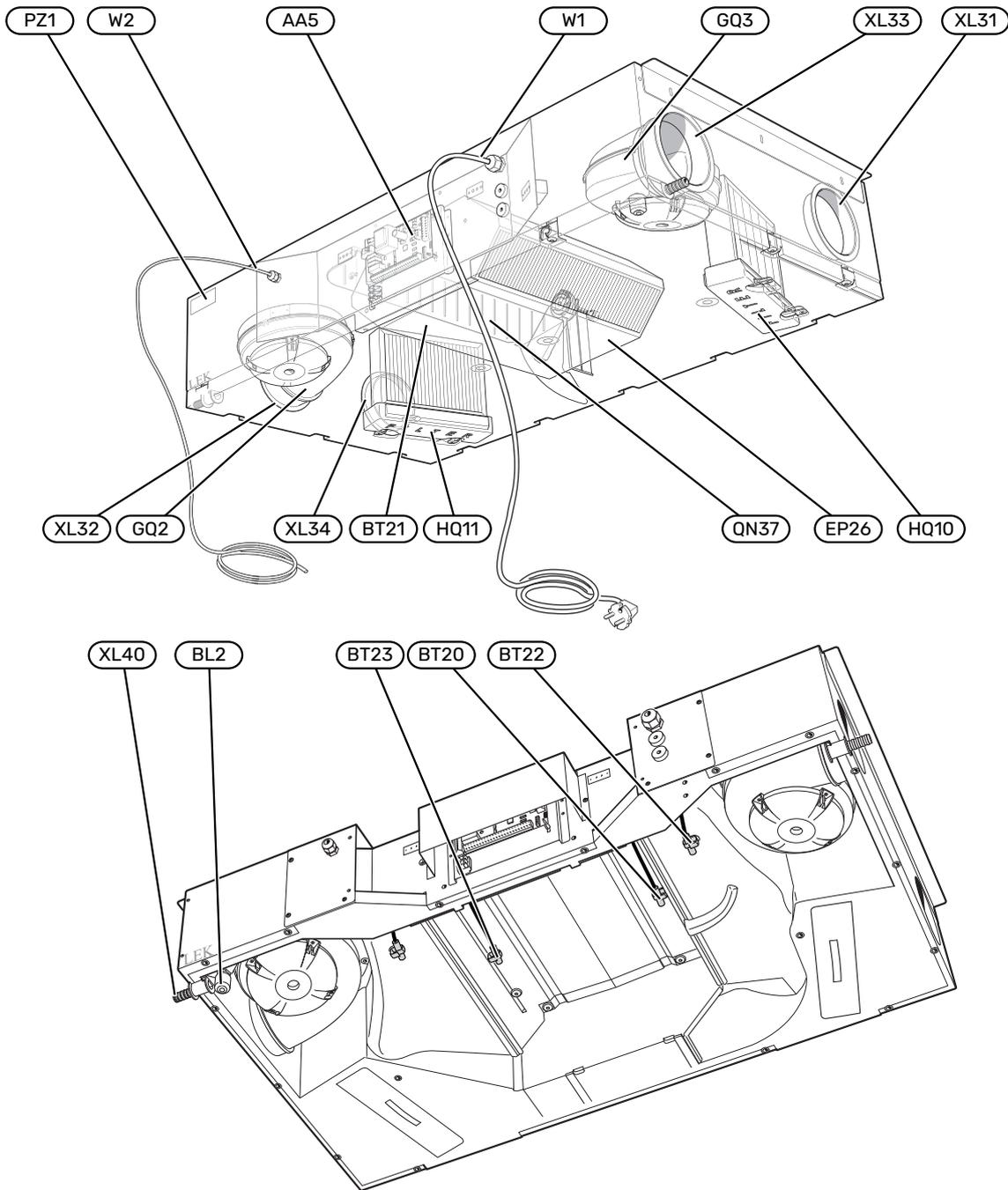


3. Secure ERS 20 with screws.



F

Design of the HRV unit



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
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

PZ1	Type plate
-----	------------

Designations according to standard EN 81346-2.

Ventilation connections

Condensation water drain

ERS 20 can produce several litres of condensation water per day. It is therefore important that the condensation outlet is correctly executed and the HRV unit 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.

The connection for the condensation outlet measures $\varnothing 15$ mm.

CLEANING THE CONDENSATION WATER DRAIN

Condensation forms when ERS 20 is working. This condensation is led off and collected in the condensation water drain.

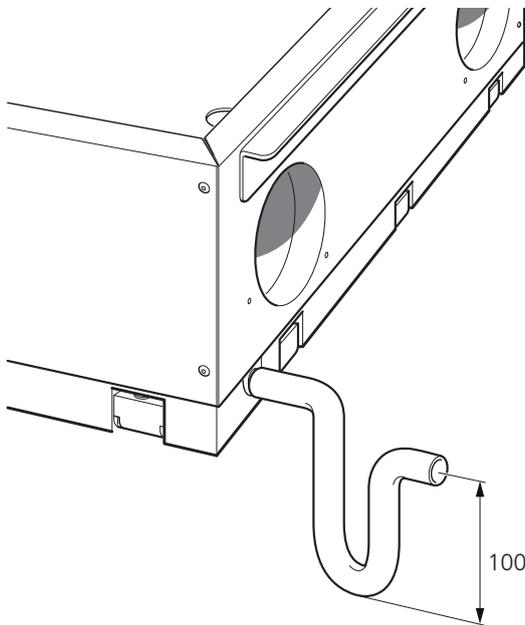
Apart from water, a certain amount of dust and particles also collect there.

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 HRV unit, 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, install silencers in suitable locations in the duct system.
- The extract air and outdoor air ducts are insulated using diffusion-proof material 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 cooking odours from being led to the ERS 20, the distance between the kitchen fan and the exhaust air valve must be taken into consideration. The distance must not be less than 1.5 m, but may 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).

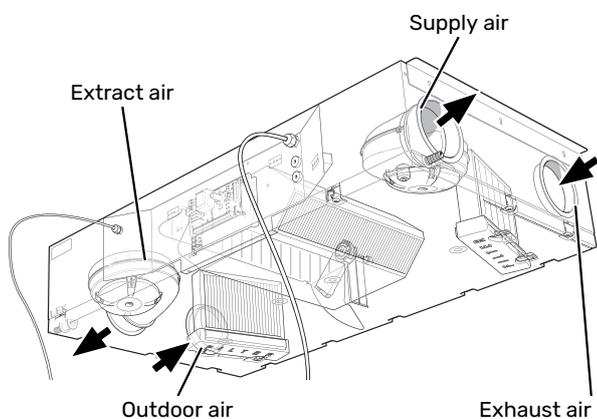
Adjusting ventilation

To obtain the necessary air exchange in every room of the building, the exhaust air valve and the supply air inlet as well as the fans in the HRV unit 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, a poorer indoor climate and moisture damage in the building.

Ventilation connections



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 national provisions.

ERS 20 must not be powered during installation.



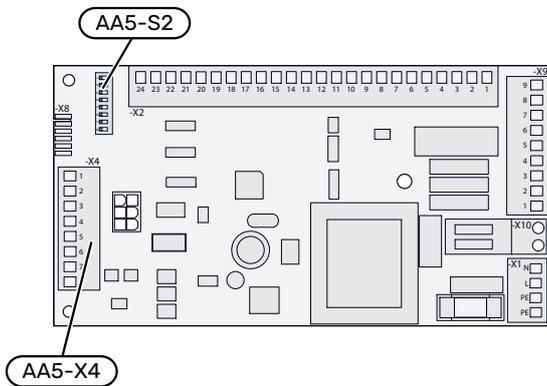
NOTE

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

- 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.

For electrical wiring diagram, see page 41.

Overview accessory board (AA5)



Supply

ERS 20 is connected to a earthed single-phase wall socket or a permanent installation. For permanent installations, ERS 20 must be preceded by a circuit breaker with at least a 3 mm breaking gap.

Connecting to main product

CONNECTING TO THE HEAT PUMP

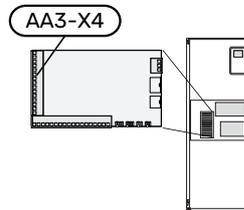
ERS 20 contains an accessory board (AA5) that connects directly to the main product's input board (terminal block AA3-X4).

The communication cable (W102) is connected to the accessory board (AA5) from the factory.

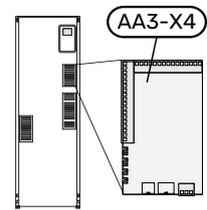
If several accessories are to be connected, or are already installed, the boards are connected in series.

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.

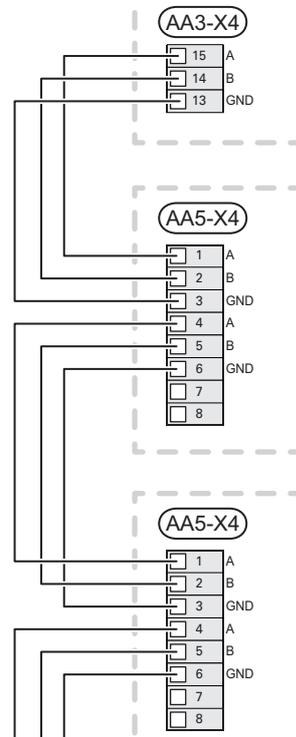
Main product



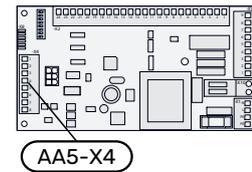
F1145/F1155



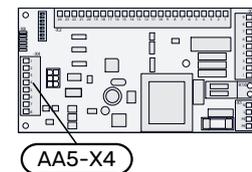
F1245/F1255
VVM
225/310/320/325/500



Accessory card 1



Accessory card 2



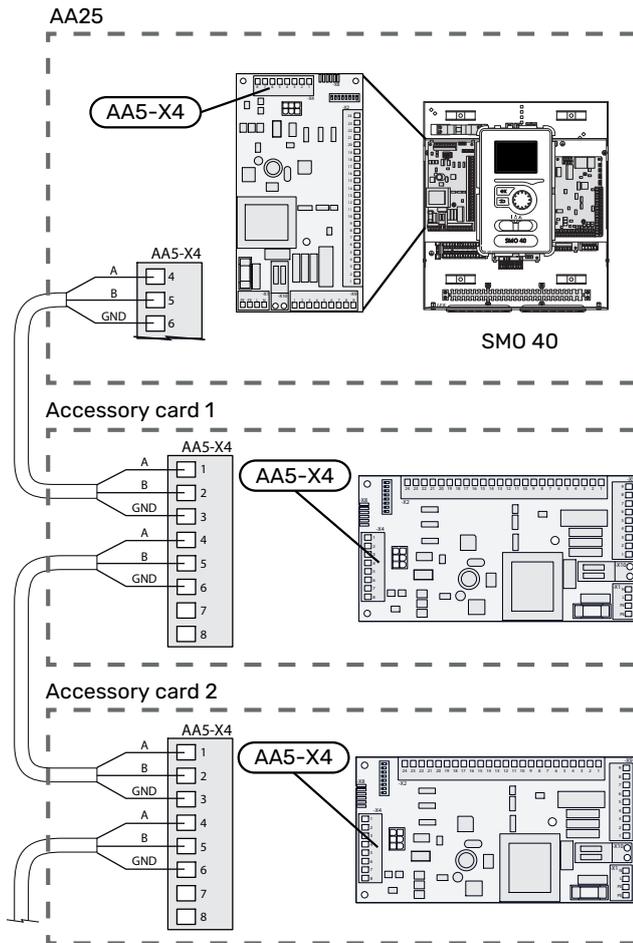
CONNECTING TO CONTROL MODULE

ERS 20 contains an accessory board (AA5) that connects directly to the control module on its accessory board (terminal block AA5-X4).

The communication cable (W102) is connected to the accessory board (AA5) from the factory.

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

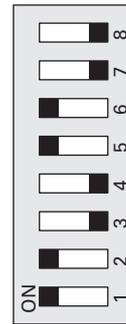
Because there can be different connections for accessories with accessory board (AA5), you should always read the instructions in the manual for the accessory that is to be installed.



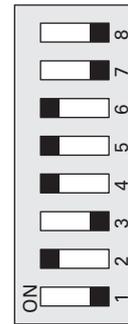
DIP SWITCH

The DIP switch (S2) on the accessory board (AA5) must be set as follows.

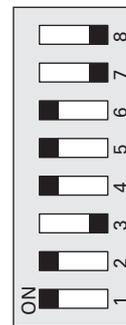
You can have up to 8 ERS 20 in the same installation, each ERS 20 is given a unique setting.



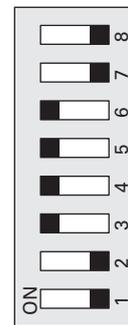
ERS 20 no. 1



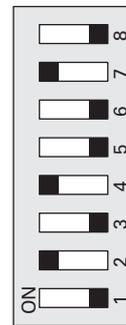
ERS 20 no. 2



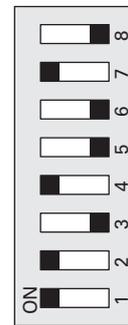
ERS 20 no. 3



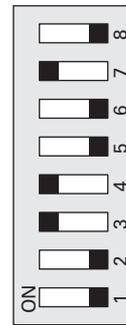
ERS 20 no. 4



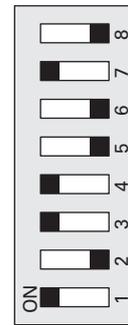
ERS 20 no. 5



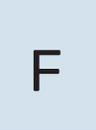
ERS 20 no. 6



ERS 20 no. 7



ERS 20 no. 8



Commissioning and adjusting

Preparations

- Check the miniature circuit-breaker (FC1) 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. Adjust the supply air flow to guarantee a negative pressure.

The settings are made in menus 5.1.5 and 5.1.6.

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



Caution

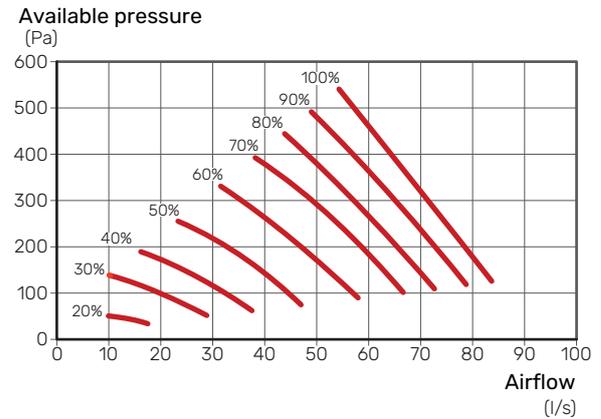
An incorrectly set ventilation flow can damage the house and may also increase energy consumption.



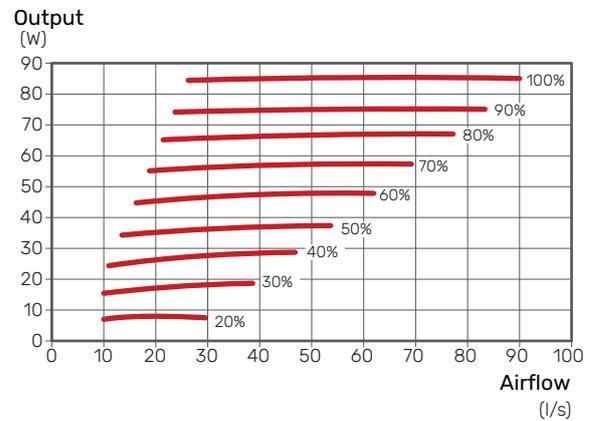
NOTE

Order a ventilation adjustment to complete the setting.

Ventilation capacity



Fan rating¹



¹The diagram shows the power consumption per fan.

Activating ERS 20

Activating ERS 20 can be performed via the start guide or directly in the menu system.



Caution

Also see the Installer Manual for the main product.

Start guide

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

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 5.2.4 -SYSTEM SETTINGS

Activating/deactivating of accessories.

Select: "exhaust/supply air module".

MENY 5.3.12 - EXHAUST/SUPPLY AIR MODULE

months btwn filter alarms

Setting range: 1 - 24

Default value: 3

lowest extract air temp.

Setting range: 0 - 10 °C

Default value: 5 °C

bypass at excess temperature

Setting range: 2 - 10 °C

Default value: 4 °C

bypass during heating

Setting range: on/off

Factory setting: off

cut-out val. exh. air temp.

Setting range: 5 - 30 °C

Default value: 25 °C

product

Setting range: ERS S10, ERS 20/ERS 30

Factory setting: ERS 20 / ERS 30

action level monitor

Setting range: off, blocked, level monitor

Default value: level monitor

months btwn filter alarms: Set how often the filter alarm is to be displayed.

lowest extract air temp.: Set the minimum extract air temperature to prevent the build-up of ice on the heat exchanger. The supply air fan speed reduces, if the extract air temperature (BT21) is lower than the set value.

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

bypass during heating: Activate whether the bypass damper (QN37) will also be allowed to open during heat production.

cut-out val. exh. air temp.: If no room sensor is installed, you set the exhaust air temperature at which the bypass damper (QN37) will open here.

product: Here, you set which ERS model is installed.

action level monitor: ERS 20 has a built-in level monitor; therefore, select "level monitor" in the menu. When the input is interrupted, the installation issues an alert and the fans stop until the input is open.



TIP

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

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 items:

- 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.
- The main product's temperature limiter.

LOW OR A LACK OF VENTILATION

- Level monitor (BL2) tripped.
 - Checking the condensation water drain and water seal.
- The exhaust air filter (HQ10) and/or the supply air filter (HQ11) is clogged.
 - Replace the filters.
- The ventilation is not adjusted.
 - Order/implement ventilation adjustment.
- Closed, too much choke or blocked ventilation device.
 - Check and clean the ventilation devices.
- Fan speed in reduced mode.
 - Enter the main product's menu 1.2 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 20) if installed.

HIGH OR DISTRACTING VENTILATION

- The exhaust air filter (HQ10) and/or the supply air filter (HQ11) is clogged.
 - Replace the filters.
- 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.
 - Enter the main product's menu 1.2 and select "normal".
- External switch for changing the fan speed activated.
 - Check any external switches.
- Silencers not correctly installed.
 - Check the silencers.

Accessories

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

Not all accessories are available on all markets.

ELECTRICAL AIR HEATER EAH 20

In cold weather, EAH heats the incoming outdoor air slightly to prevent the condensation in ERS 20 from freezing to form ice. EAH should be used in houses where the outdoor temperature can be continuously lower than -5°C .

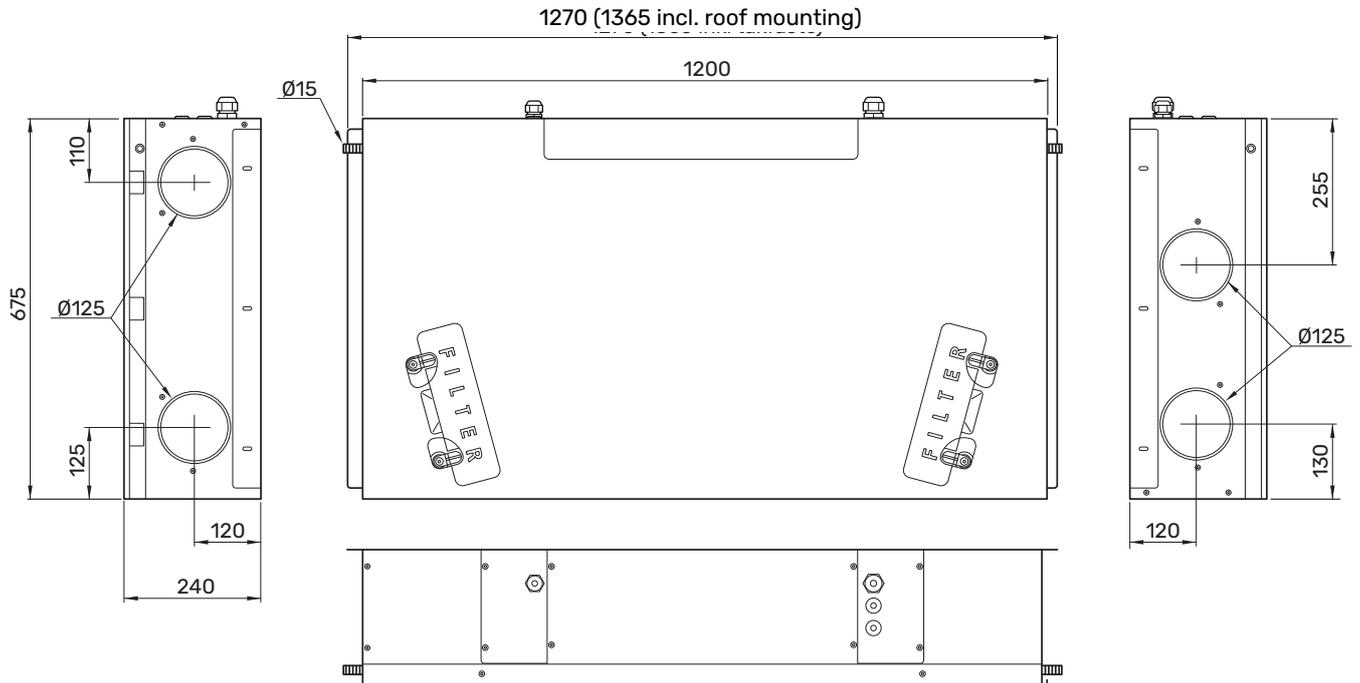
EAH 20-900

(300-900 W)

Part no. 067 604

Technical data

Dimensions



F

Technical specifications

Type		ERS 20
Electrical data		
Supply voltage	V	230 V ~ 50Hz
Fuse	A	10
Driving power fan	W	2 x 85
Enclosure class		IP X1B
Ventilation		
Filter type, exhaust air filter		Coarse 65%
Filter type, supply air filter		ePM1 55%
Noise		
Sound power level ($L_{W(A)}$) ¹	dB(A)	59
Sound pressure level ($L_{P(A)}$) at 1 m ²	dB(A)	41.1
Sound pressure level ($L_{P(A)}$) at 1 m ³	dB(A)	52.2
Pipe connections		
Ventilation \emptyset	mm	125
Condensation water drain \emptyset	mm	15
Dimensions and weight		
Efficiency class ⁴		A
Length, supply cable	m	2.4
Length, communication cable	m	2.0
Width	mm	1,200
Height	mm	240
Depth	mm	675
Weight	kg	25
Part No.		066 220

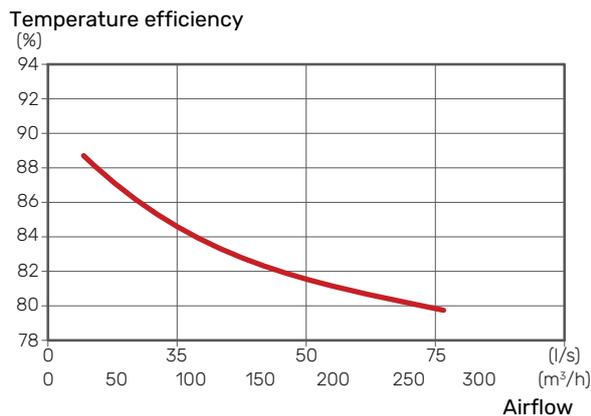
¹ 60 l/s (216 m³/h) at 50 Pa

² 35 l/s (126 m³/h) at 70 Pa

³ 69 l/s (250 m³/h) at 150 Pa

⁴ Scale for efficiency class: A+ to G.

Dry temperature efficiency according to EN 308



Outdoor air: 5 °C Exhaust air 25 °C RH exhaust air: <27.7 %

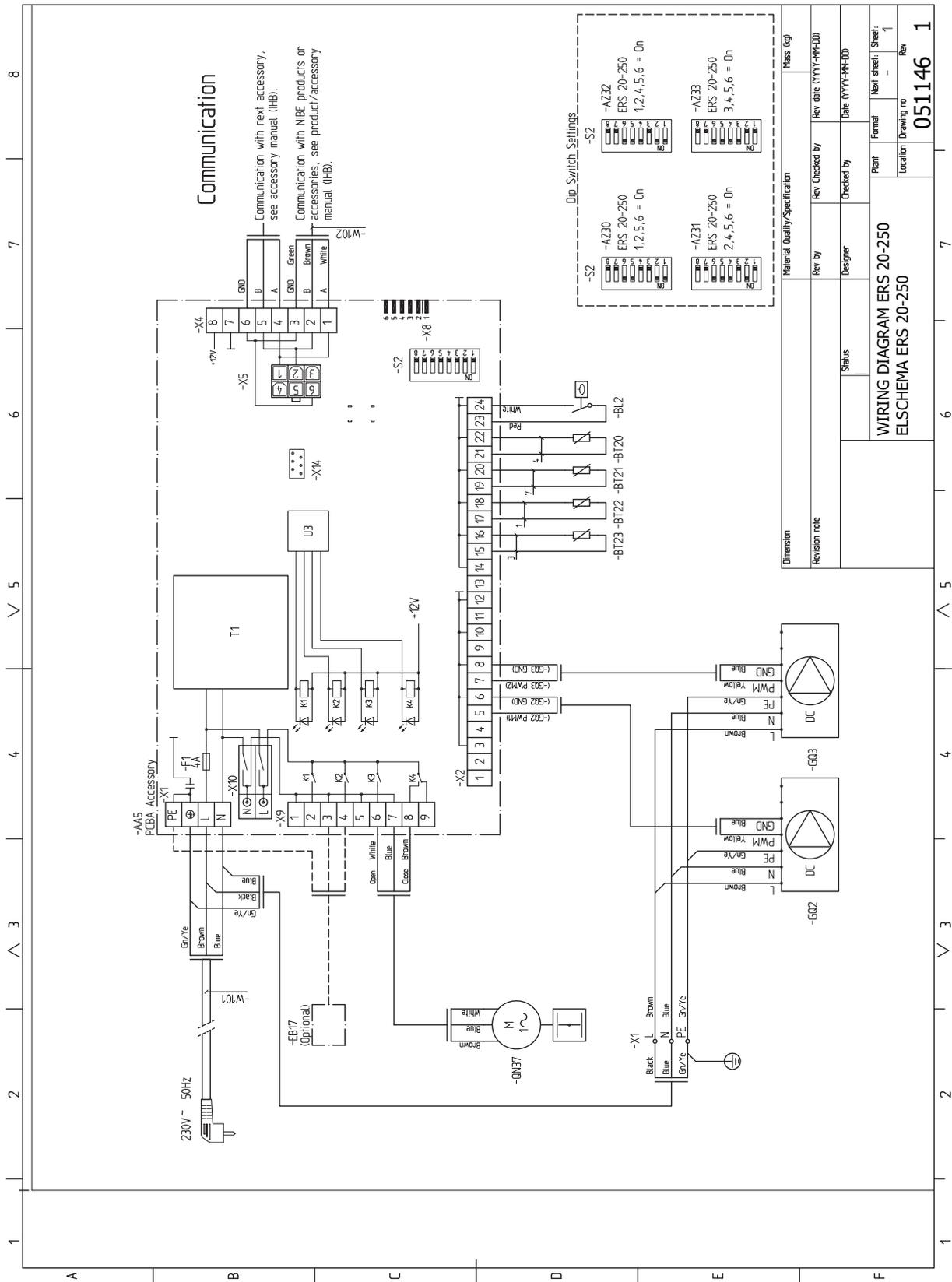
F

Energy labelling

Supplier		NIBE
Model		ERS 20-300
Specific energy consumption (SEC)	kWh/(m ² year)	Average: -35.5 Cold: -71.5 Warm: -12.3
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		81
Maximum air flow rate	m ³ /h	310
Electric power input of the fan drive at maximum flow rate	W	97
Sound power level (LWA)	dB	59
Reference flow rate	m ³ /s	0.06
Reference pressure difference	Pa	50
Specific power input (SPI)	W/m ³ /h	0.26
Control factor and control typology		Clock control (0.85)
External leakage rates	%	Internal: 1.4 External: 0.44
Information about filter warning		See user manual.
Information about supply/exhaust grilles in the facade		See the "Ventilation connections" section.
Information about pre-/disassembly		See the "Recovery" section. This installer manual can also be accessed at nibe.eu .
The annual electricity consumption	kWh/year	336
Annual heating saved, kWh primary energy per year	kWh prim/year	Average: 4,325 Cold: 8,462 Warm: 1,956

F

Electrical circuit diagram



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