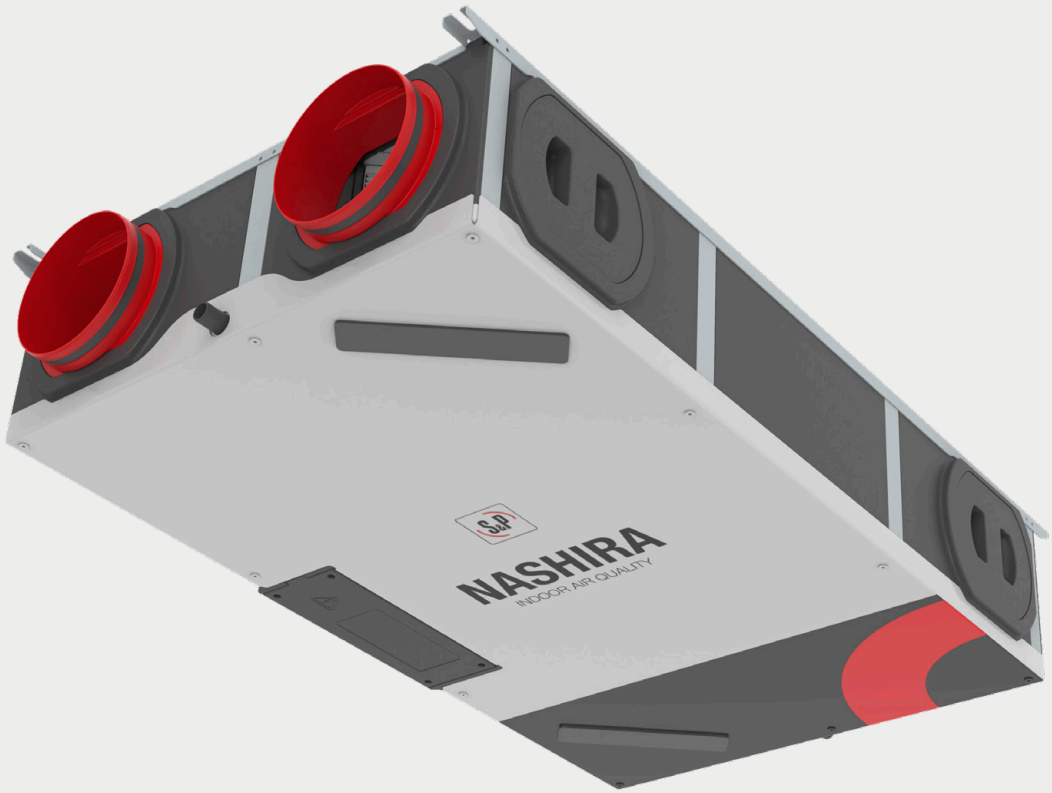
NASHIRA

Technical manual



EN

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FOREWORD

Carefully read this document before using the product.

With this document, you will be able to configure and carry out basic maintenance on the NASHIRA heat recovery unit in a safe and effective way. In this document, the NASHIRA equipment will be referred to as "the unit". The unit is subject to continuous improvement, therefore the unit may be slightly different from the descriptions given.

To consult information on the installation and start-up, see the NASHIRA quick installation and start-up guide supplied with the unit.

PRECAUTION

The unit can be used by children from 8 years old, people with reduced physical, sensory or mental capacities or persons with lack of experience or knowledge provided that they are supervised or are instructed in the safe use of the unit and understand the hazards involved. Children should not play with the unit. Cleaning and maintenance must not be carried out by unsupervised children.

Precautions must be taken to prevent the return to the inside of the room of gas from the exhaust flue of gas or other appliances that burn fuel.

Before starting the installation, use, maintenance or repair of the unit, carefully read the instructions supplied with the product.

- Installation, repair and electrical work must only be carried out by qualified personnel.
- The unit must only be used if it has been correctly installed in accordance with the guidelines given in the installation manual.
- Always comply with current national safety regulations, as well as the instructions supplied in this manual.
- Always comply with applicable general and local regulations on construction and safety.
- Keep the supplied manuals in a safe place, together with the unit.
- Always connect ducts of at least 1 m in length to the unit before starting the electrical connections. This ensures that the motors cannot be touched while the unit is running.
- After the installation, all the parts that can cause injury are safe behind the unit enclosure. Tools are required to access the enclosure.
- While the ventilation unit is in operation, all the covers must remain closed.
- Do not modify the unit or the specifications given in this manual. A modification can cause personal injury or affect the performance of the equipment.
- Always disconnect all the electrical power supply terminals before carrying out any work on the unit. The unit can cause injury if it is open while in operation. Ensure that nobody can accidentally reconnect the power supply.
- Always take safety measures while working with electronic components. Electronic components can be damaged by static charges.
- Do not change the filters when the unit is running. For safety reasons, switch off the unit before carrying out any maintenance.
- Any liability is excluded for damage caused by inadequate storage, improper installation, use or repairs, insufficient maintenance or by use contrary to the standards.
- S&P reserves the right to carry out technical modifications.

The disconnection means must be incorporated into the fixed wiring in accordance with wiring standards. An external disconnection device must be provided that:

1) Must disconnect the live, while disconnection of the neutral is optional;
2) Its OFF position must be clearly indicated;
3) It must not be positioned in such a way that makes it difficult to operate, and;
4) The protection device must be at least 16A, 250V, C type curve.

If the power supply cable is damaged, it must be replaced by the manufacturer, your technical service or persons with similar qualifications to prevent any risks.

INTENDED USE

The unit is designed for controlled mechanical ventilation of single-family dwellings. As standard, the unit is supplied with air supply and extraction filters to ensure that indoor conditions are adequate and healthy. Furthermore, the filters protect the unit as they prevent the accumulation of dirt in the heat exchanger and the air ducting.

- The installation, start-up and maintenance must be carried out by qualified personnel.
- Do not disconnect the unit. This can lead to a significant increase in humidity and problems with mould.
- Replace the filters (at least) every 12 months to ensure a healthy indoor space and good air quality.
- While the unit is in operation, all the covers must remain closed.

IMPROPER USE

Any use other than that described under “intended use” is prohibited.

The unit must not be installed in a room under +12°C. The unit must not operate without filters. The unit must only be switched off for maintenance or repairs.

Centralised ventilation systems are designed for continuous operation. Stopping the ventilation system can cause the appearance of condensate in the ducts. For this reason, in the case of stopping the unit for a long period of time, the outdoor air inlet and air exhaust ducts must be sealed.

The unit is not suitable for drying constructions.

WARRANTY

The unit has a component-only 3 year warranty, from the date of purchase.

S&P agrees to replace the components or the unit whose operation has been acknowledged as defective by our departments. The warranty does not cover damages and penalties such as operational losses, commercial damages and other immaterial or consequential damages.

Not covered by the warranty are: defects resulting from use that is not in compliance with the recommendations of our manuals; faults that arise from envisaged wear; incidents caused by negligence, lack of supervision or maintenance; faults due to incorrect installation or poor storage conditions.

S&P will not accept liability for equipment that has been modified or repaired, even partially.

1. SUPPLIED COMPONENTS

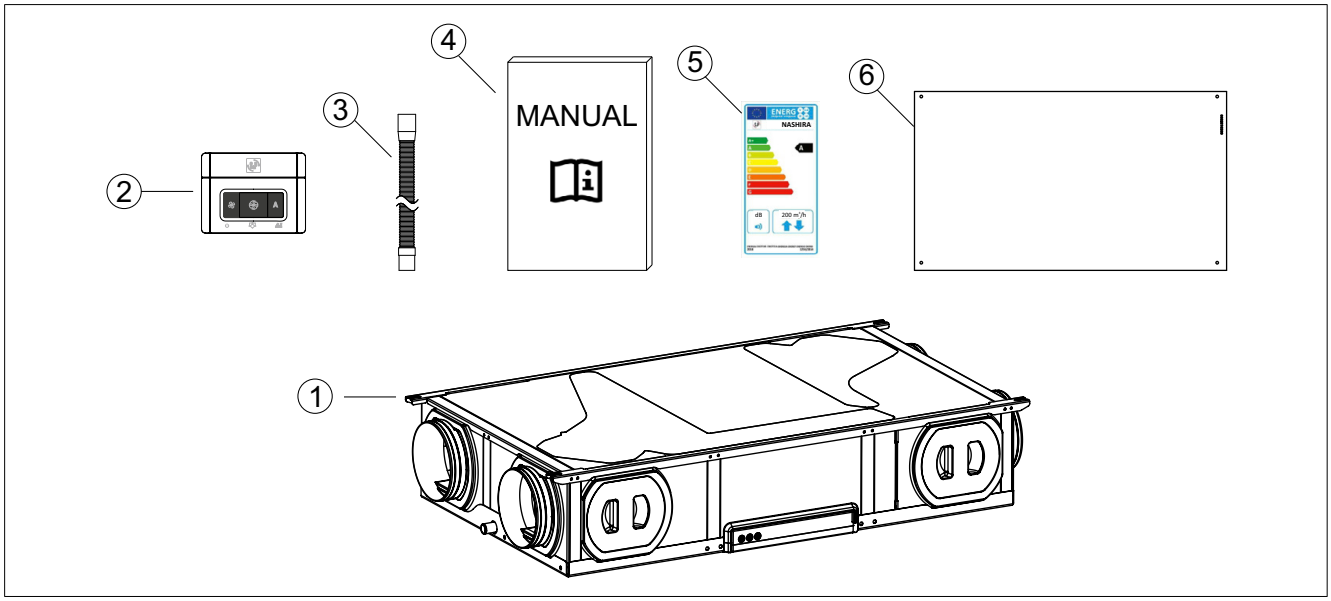


Illustration 1. Supplied components

1. NASHIRA heat recovery unit.
2. Controller
3. Flexible tube, condensate drain connection L = 150 mm. D19-19 mm
4. Manuals: User, Quick start-up guide
5. Energy label.
6. Assembly template.

2. TECHNICAL SPECIFICATIONS

	NASHIRA 150	NASHIRA 150 E	NASHIRA 200	NASHIRA 200 E
Performance				
Minimum flow rate	70 m³/h	70 m³/h	70 m³/h	70 m³/h
Maximum flow rate	150 m³/h @ 400 Pa	150 m³/h @ 400 Pa	200 m³/h @ 350 Pa	200 m³/h @ 350 Pa
Sensible efficiency (S/ EN 13141-7)	92%	88%	90%	85%
Latent efficiency (S/ EN 13141-7)	-	72%	-	69%
Sound power level Lw(A) (S/ EN 13141-7)	46 dB(A)	46 dB(A)	48.3 dB(A)	48.3 dB(A)
Electrical data				
Power supply	230 V 50 Hz			
Maximum consumption	112 W (0.8 A)	112 W (0.8 A)	138 W (0.98 A)	138 W (0.98 A)
Connections				
Air connections	Ø125 mm	Ø125 mm	Ø160 mm	Ø160 mm
Drain connection	L = 150 mm Ø19-19 mm			
Materials				
Enclosure	Galvanised steel sheet with epoxy-polyester surface finish Front cover with EPP interior insulation			
Interior	Body manufactured in EPP			
Air connections	High-impact polystyrene			
Fans	ABS volute galvanised steel sheet impeller			
Sensible exchanger	High-impact polystyrene and aluminium	-	High-impact polystyrene and aluminium	-
Enthalpy exchanger	-	ABS, copolymer and galvanised steel	-	ABS, copolymer and galvanised steel

	NASHIRA 150	NASHIRA 150 E	NASHIRA 200	NASHIRA 200 E
General				
Storage temperature	From -20°C to +50°C			
Outdoor air conditions	VERSIONS WITH SENSIBLE EXCHANGER: From -20°C to +45°C (with preheating battery) From -10°C to +45°C (without preheating battery) VERSIONS WITH ENTHALPY EXCHANGER, with no drain connection: From -20°C to +45°C (with preheating battery) From -4°C to +45°C (without preheating battery)			
Indoor air conditions	VERSIONS WITH SENSIBLE EXCHANGER: Up to 30ºC & 90% RH VERSIONS WITH ENTHALPY EXCHANGER, with no drain connection: Up to 22ºC & 60% RH			
Temperature and humidity in the installation area	T: From +12°C to +45°C RH: <90%; without condensation			
Ambient conditions	Non-saline, not chemically aggressive, without explosion risk.			
Weight	24.5 kg	28.5 kg	24.5 kg	28.5 kg
Type of filters	Supply: G4 (options: M5, F7, F9 and activated carbon); Extraction: G4			

Table 1 Technical data

2.1. CHARACTERISTIC CURVES

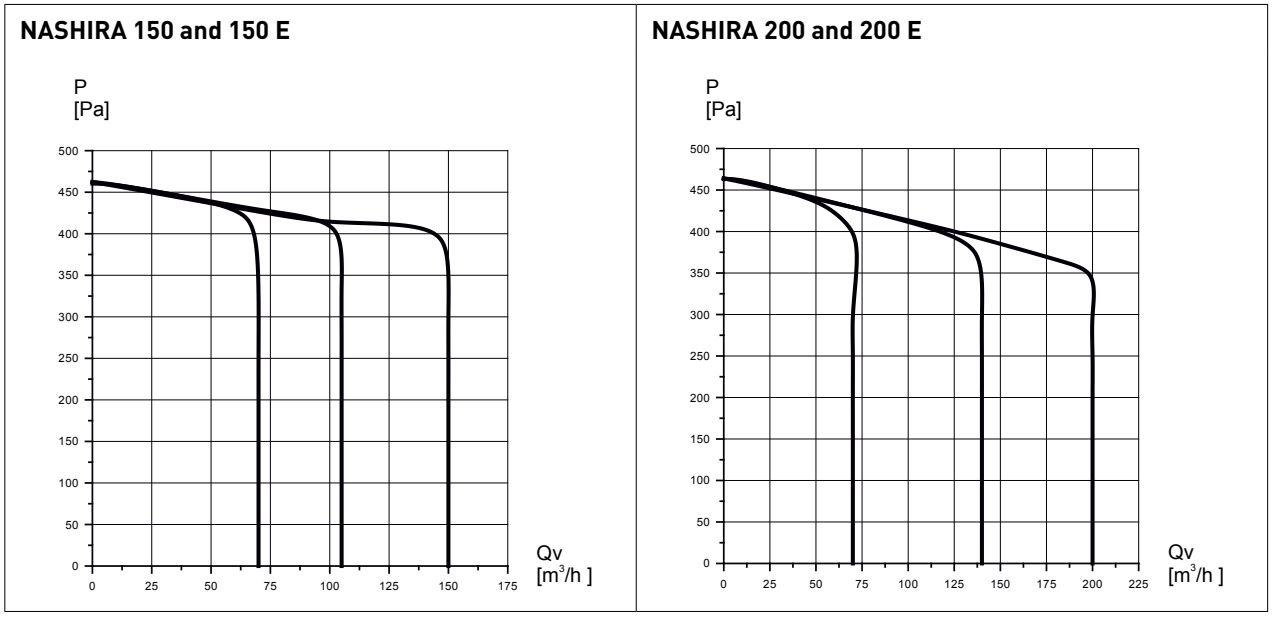


Illustration 2. Flowrate - pressure curves

2.2. DIMENSIONS

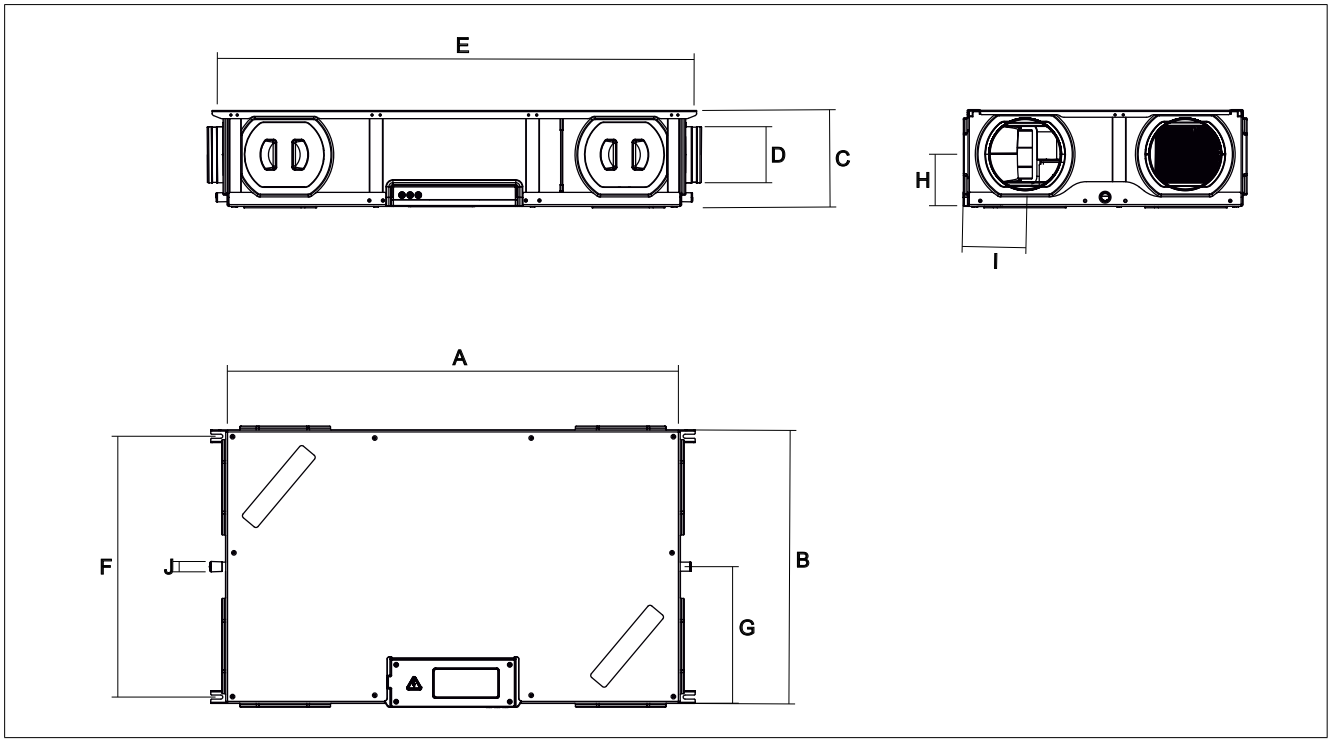


Illustration 3. NASHIRA dimensions diagram

Model	A	B	C	D	E	F	G	H	I	J
NASHIRA 150 (E)	1000	600	210	125	1024	575	300	114	135	22
NASHIRA 200 (E)	1000	600	210	160	1024	575	300	114	135	22

Table 2 NASHIRA unit dimensions in millimetres

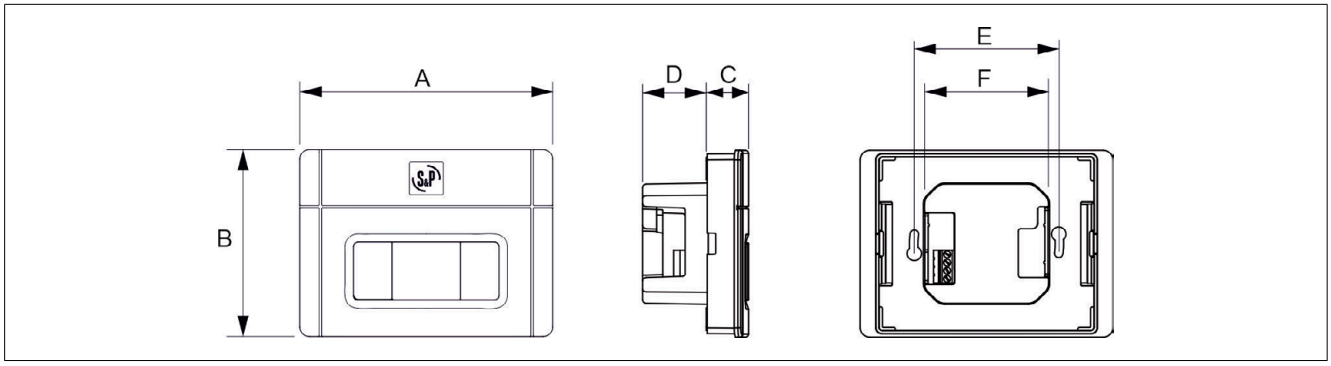


Illustration 4. Controller dimensions diagram

	A	B	C	D	E	F
NASHIRA Controller	104	80	17	26	60	52

Table 3 Controller dimensions in millimetres

2.3. MODEL IDENTIFICATION AND SERIAL NUMBER

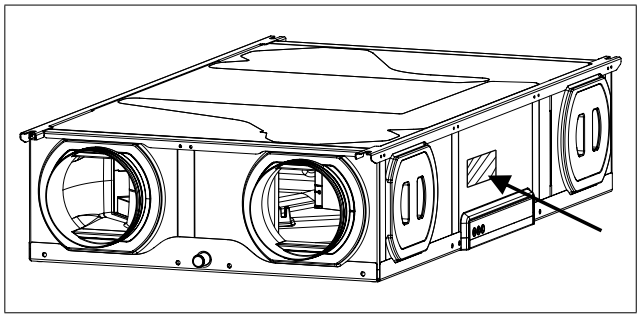


Illustration 5. Nameplate

Parameter	Description	Meaning
Range	NASHIRA	Name of the range
Size	150	Maximum flow rate of 150 m³/h @ 200 Pa
	200	Maximum flow rate of 200 m³/h @ 200 Pa
Type	(-)	Sensible heat exchanger
	E	Enthalpy exchanger

Table 4 Nameplate descriptions

2.4. GENERAL DESCRIPTION OF THE UNIT

The NASHIRA units ensure optimal ventilation of the dwelling with maximum energy recovery. It extracts the stale air from the humid spaces (bathrooms, kitchen, etc.) at the same time as it supplies fresh air in the main rooms (living room, bedrooms, etc.). Both the extracted and the outside air are filtered before entering the recovery unit, in order to ensure good air quality and protect the equipment.

Condensation will be generated under certain temperature and humidity conditions (except in the enthalpy models). For this reason, the unit is equipped with a condensate outlet that must be connected to the drain through a siphon (except in the enthalpy models).

The enthalpy models do not generate condensate provided that the relative humidity inside the dwelling does not exceed 60%. If high humidity levels are expected inside the dwelling, connect the drain.

Description of the unit – View from below

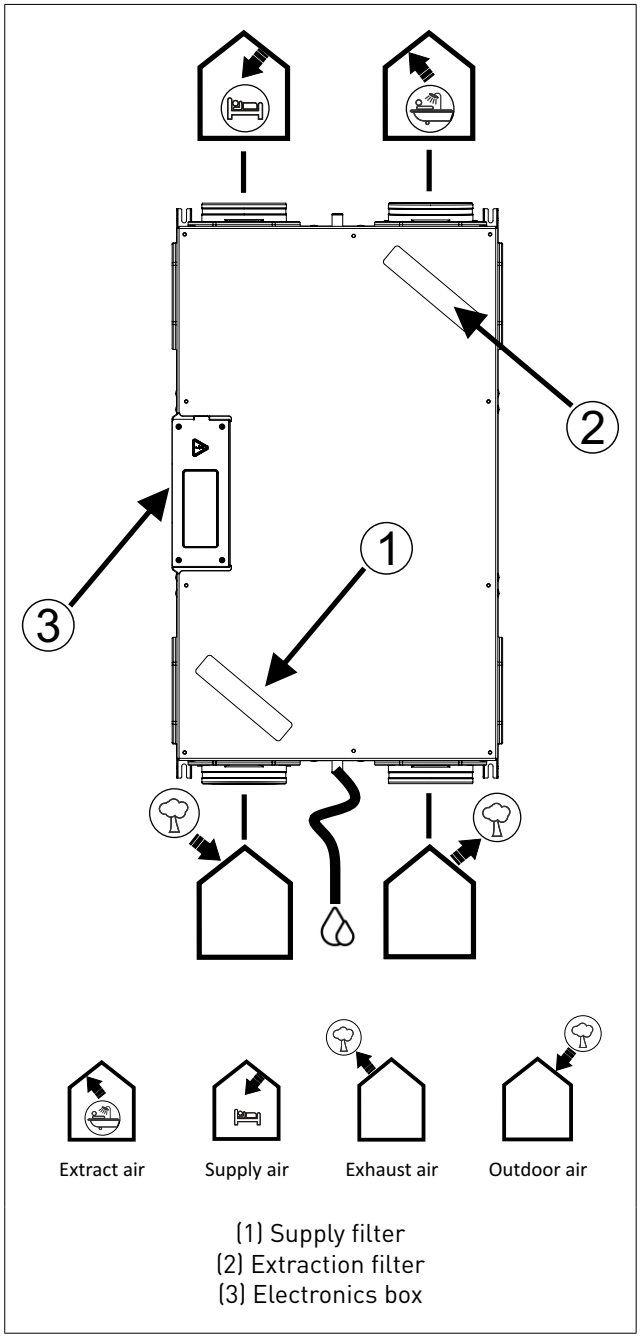


Table 5 Description of the unit

Exploded diagram of the product

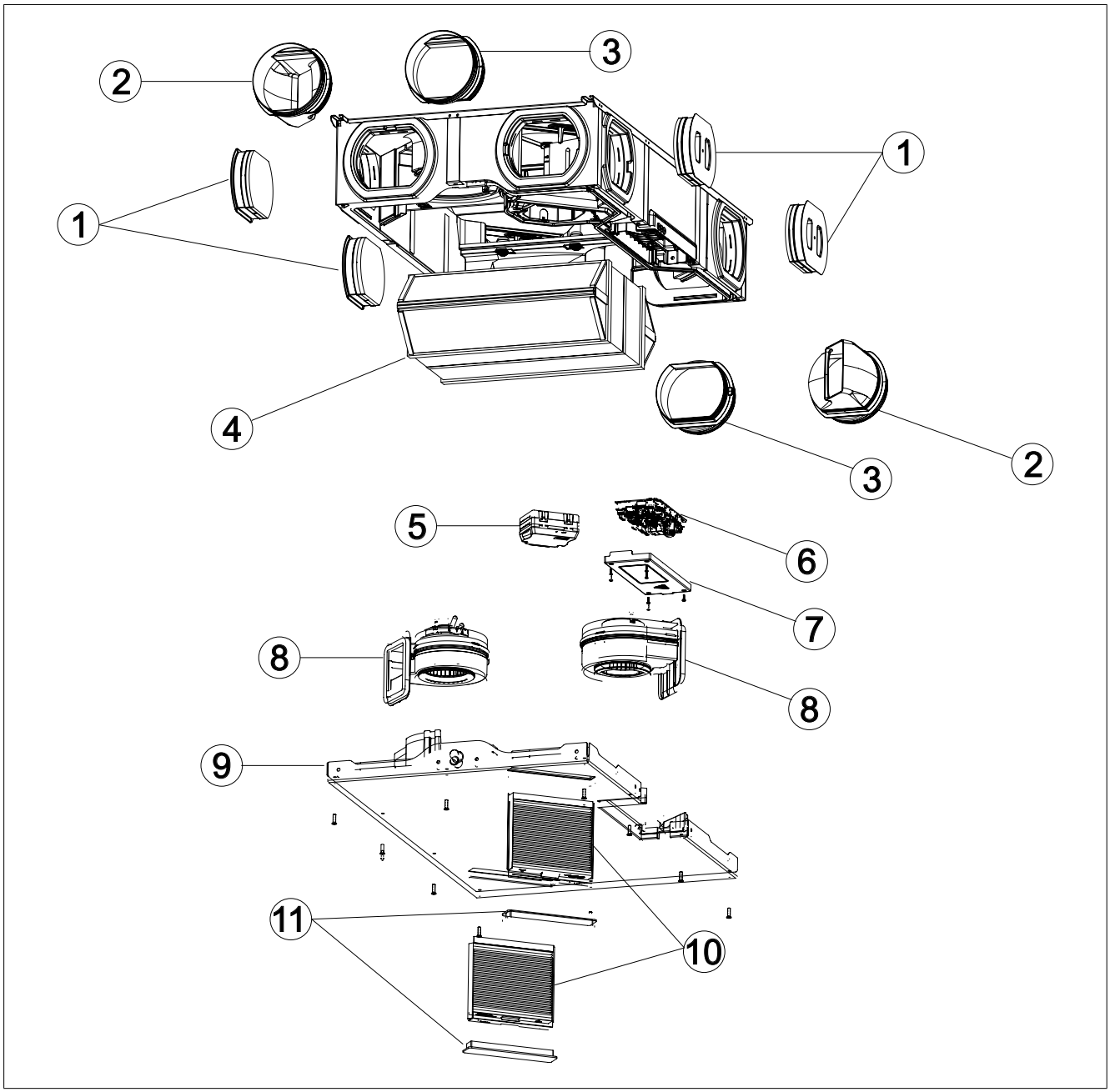
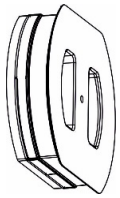
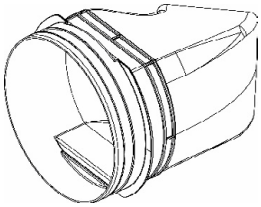


Illustration 6. NASHIRA exploded diagram.

Item	Image	Description
1		Nozzle plug (4 units)
2		Fan nozzle (2 units)

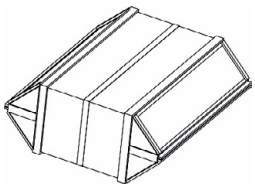
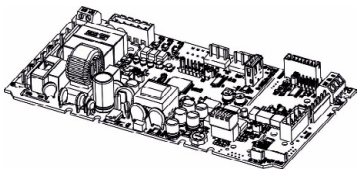
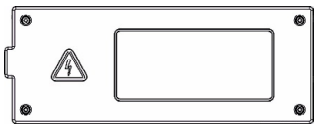
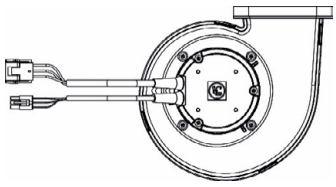
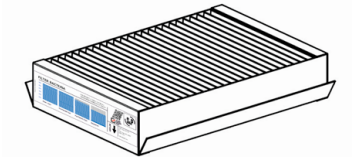
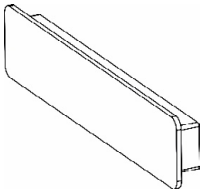
Item	Image	Description
3		Filter nozzle (2 units)
4		Sensible exchanger (1 unit)
4'		Enthalpy exchanger (1 unit)
5		Bypass motor (1 unit)
6		Electronic circuit board (1 unit)
7		Electronic box cover (1 unit)
8		Motor (2 units)
9		Front cover (1 unit)
10		FILTER (2 units)
11		FILTER COVER (2 units)

Table 6 NASHIRA components exploded view

2.4.1. Spare parts

Item	Description	Spart part reference
1	Nozzle plug 150 & 200	R153193799 NASHIRA-TT (1 ud)
2	Fan nozzle 150	R153193899 NASHIRA-TV 150 (1 ud)
	Fan nozzle 200	R153193132 NASHIRA-TV 200 (1 ud)
3	Filter nozzle 150	R153193999 NASHIRA-TFL 150 (1 ud)
	Filter nozzle 200	R153193332 NASHIRA-TFL 200 (1 ud)
4	Sensible exchanger 150 & 200	R153193102 NASHIRA-SHE (1 ud)
4'	Enthalpy exchanger 150 & 200	R153193002 NASHIRA-LHE (1ud)
5	Bypass motor 150 & 200	R153193049 NASHIRA-BP
6	Electronic circuit board 150	R153193301 NASHIRA-PCB 150
	Electronic circuit board 150 E	R153193201 NASHIRA-PCB 150 E
	Electronic circuit board 200	R153193101 NASHIRA-PCB 200
	Electronic circuit board 200 E	R153193001 NASHIRA-PCB 200 E
8	Fan-motor 150 & 200	R153193006 NASHIRA-FAN MOTOR (150 & 200)
	Temperature sensors kit	R153193090 NASHIRA-TEMP SENSORS KIT
	Humidity sensor	R153193017 NASHIRA-RH SENSOR
11	Filter cover	R153193004 NASHIRA-TAP

Table 7 Spare parts

The purchase reference for the filter KITS can be found in section “2.5.2. Accessories”.

2.4.2. Accessories

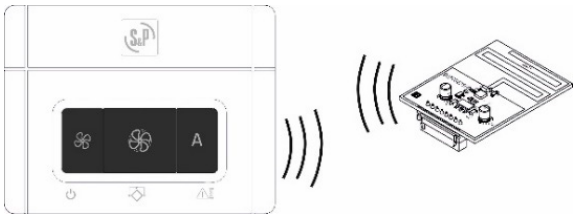
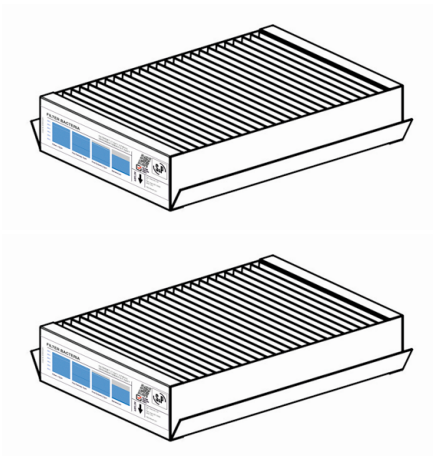
Image	Reference	Description
	NASHIRA-RF-KIT	Radio frequency kit. Ideal for wireless installations. Includes a new remote control.
	SPCM Lite	WiFi communication module. Controls the ventilation unit via Internet, from any part of the world.
	NASHIRA-F-G4G4	Filter KIT: 2 x G4 filters Recommended for pollen filtration.
	NASHIRA-F-G4M5	Filter kit: 1 x G4 filter and 1 x M5 filter. Recommended for filtering fine particles.
	NASHIRA-F-G4F7	Filter kit: 1 x G4 filter and 1 x F7 filter. Recommended for filtering bacteria.
	NASHIRA-F-G4F9	Filter kit: 1 x G4 filter and 1 x F9 filter. Recommended for filtering viruses.
	NASHIRA-F-G4CA	Filter kit: 1 x G4 filter and 1 x CA filter. Recommended for removing odours.

Table 8 Accessories

3. ASSEMBLY

3.1. ADJUSTABLE NOZZLES

The unit's air nozzles or connections can be rotated 90° in order to facilitate the connection to the ducts:

A) Locate the nozzle that you wish to rotate 90° with respect to the original position. Locate the nozzle and the nozzle plug.

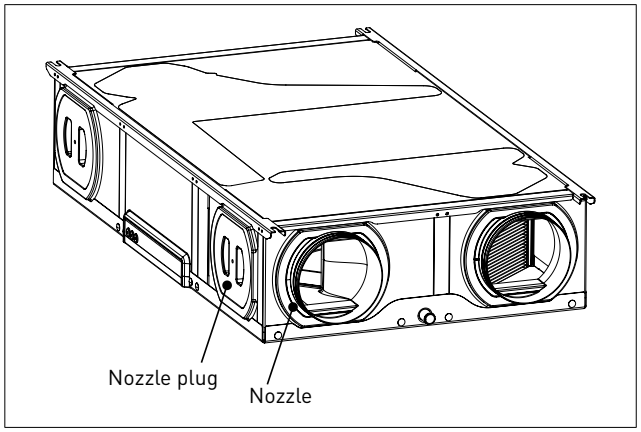


Illustration 7. Original nozzle position

B) Extract the nozzle by pulling it directly.
C) Insert your hand into the nozzle opening and push the nozzle plug from inside the unit. This allows the nozzle plug to be removed easily.

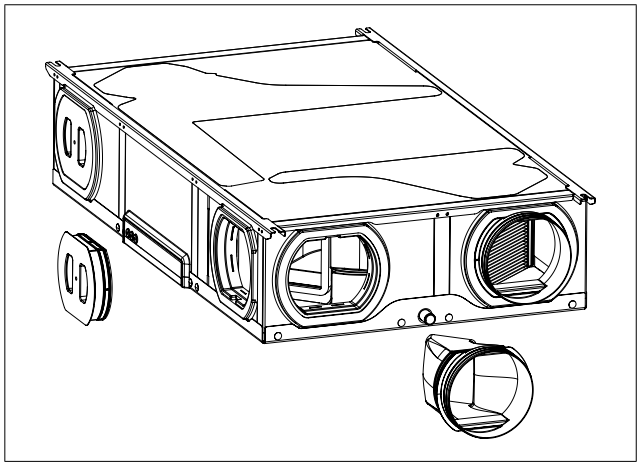


Illustration 8. Remove nozzle and plug

D) Exchange the position of both components. Pay special attention to the poka-yoke, as the nozzle can only be fitted in one way.

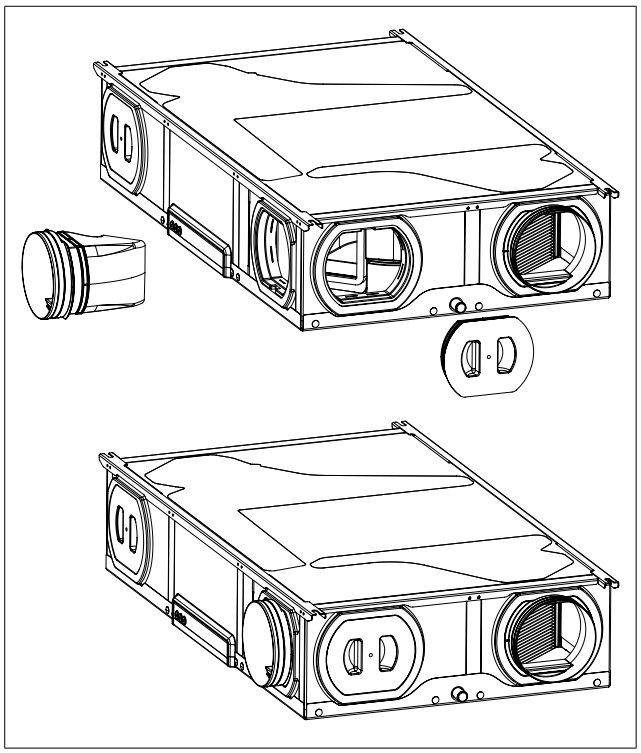
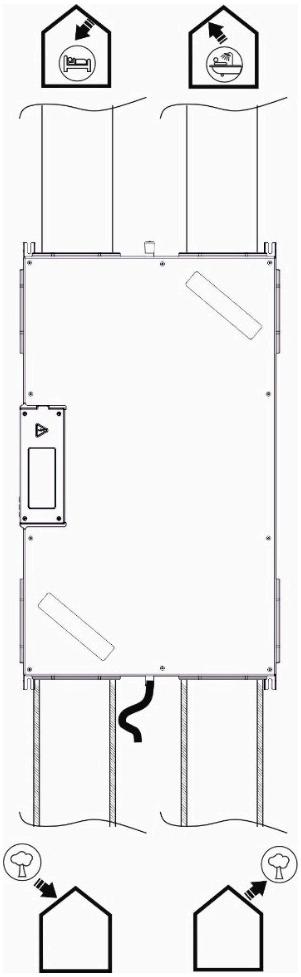


Illustration 9. Switch plug and nozzle

3.2. AIR DUCT CONNECTION



Note: If there are ducts that pass through non-climate controlled spaces (for example, a garage), it is essential to use insulated ducts in these sections to prevent the appearance of condensation.



Air extraction from the dwelling:
The dwelling's air extraction duct is connected to this nozzle. To prevent heat losses and with the aim of optimising the performance of the installation, it is advised to use insulated ducts or locate them within the heated space.



Fresh air supply to the dwelling:
The dwelling's preheated air supply duct is connected to this nozzle. To prevent heat losses and with the aim of optimising the performance of the installation, it is advised to use insulated ducts or locate them within the heated space.



Exhaust to the outside:
The exhaust duct to the outdoors for the air extracted from the inside of the home is connected to this nozzle.

This duct must be heat insulated to prevent the appearance of condensate.



Fresh air intake:
The duct from the outside is connected on this nozzle. The fresh air inlet must be placed at a sufficient distance from any area with high pollution (trees, combustion equipment fumes, roads, etc.).

This duct must be heat insulated to prevent the appearance of condensate.

Table 9 Air duct connection

3.3. CONDENSATE CONNECTION

To facilitate the drain connection, a flexible tube is supplied together with the unit which can be connected directly to the unit's condensate outlet.

Connect the condensate outlet to a siphon with a minimum level of 100 mm of water.

Soler&Palau offers a dry siphon in its catalogue. These types of siphons do not need water: 5800015700 DSI.

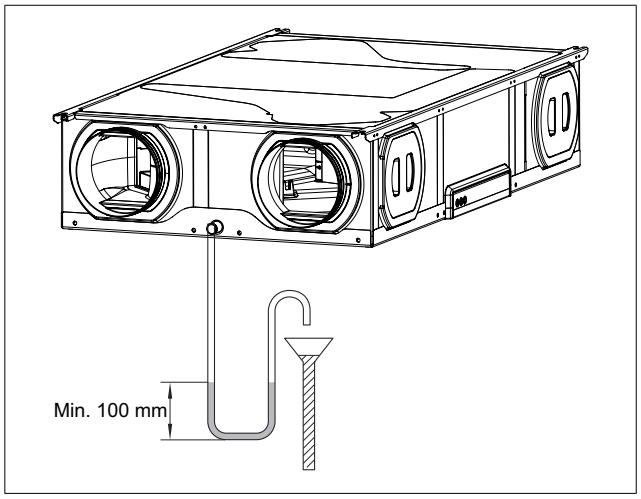


Illustration 10. Condensate trap connection

Connect the condensate trap as described below.

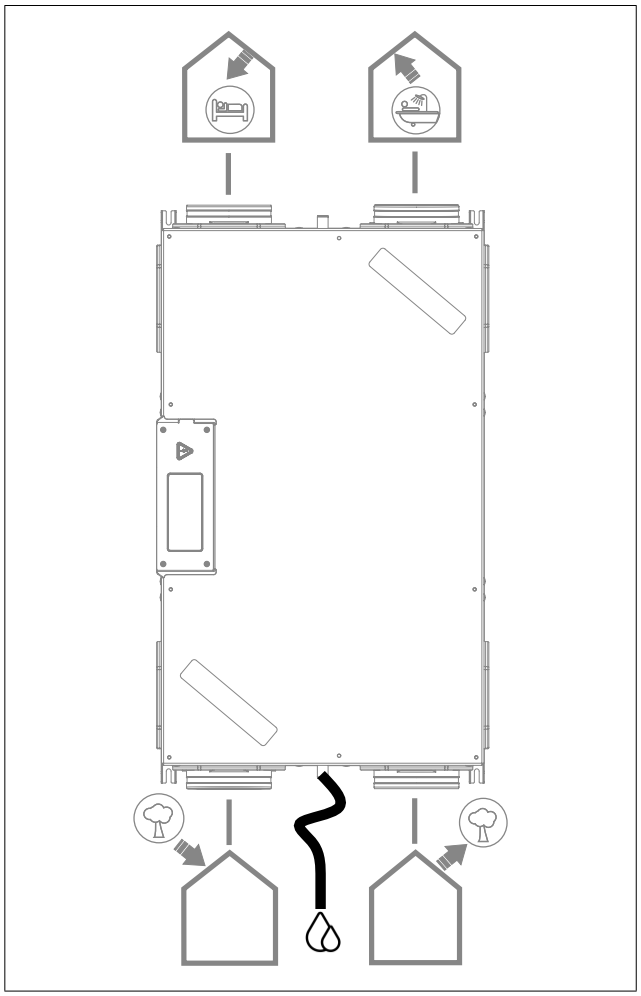


Illustration 11. Drain connection

The drainage pipe must be installed with a minimum slope of 1% to ensure good drainage.

It is recommended to check that there is water in the drain trap at least once every six months. If there is no water, fill the trap up to the minimum level (100 mm). Otherwise, it is possible that bad smells from the drain will come back up into the dwelling.

Note: Enthalpy models do not need a condensate drain provided that the following limits apply:
- Outdoor temperature > -4°C (without preheating battery)
- Indoor temperature < 22°C
- Indoor humidity < 60%

4. SETTINGS

WARNING
All the openings of the unit must remain sealed, for example, with a protector, until start-up in order to prevent the ingress of dust or moisture into the system.
The unit must only be started once all the installation work has been completed.

4.1. SETTINGS USING THE CONTROLLER

In addition to controlling the unit, controller can be used to make some settings to adjust the operation of the unit.

4.1.1. Ventilation flow rate setting

The unit has 4 speed levels:
- Low speed: Defined as 50% of the medium speed (adjustable via Modbus).
- Medium speed: Adjustable using the controller
- High speed: Adjustable using the controller
- Free cooling speed (bypass) Setpoint that the unit will follow when the bypass is active. Adjustable using the controller.

It is possible to change the "medium", "high" and "free cooling" speeds by following the procedure below.

It is also possible to set an over-pressure or under-pressure in the dwelling by unbalancing the flow rates ("flow rate balancing" table).

A) Disconnect the unit from the electrical supply.

B) Access the controller and remove the front cover by pressing the side tabs.

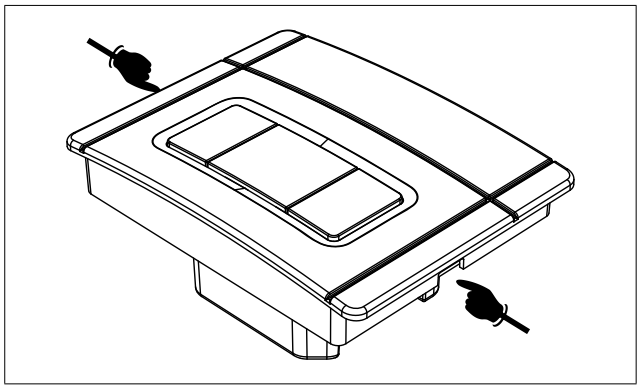


Illustration 12. Removing the controller front cover

C) After removing the front cover, you will have access to the flow rate setting potentiometers.

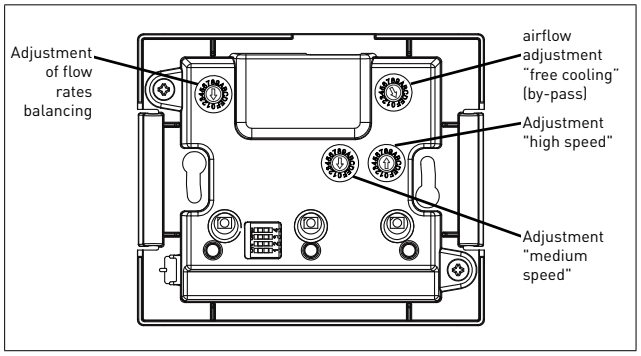


Illustration 13. Flow rate setting potentiometers

D) Set the speeds based on the project requirements. You can adjust the flow rates by rotating the corresponding potentiometer with a small flat screwdriver.
The unit works at a **constant flow rate**, therefore the set flow rate is adjusted automatically.

MEDIUM SPEED																
Potentiometer position	0	1	2	3	**4**	5	6	7	8	9	A	B	C	D	E	F
NASHIRA 150 / NASHIRA 150 E	75	80	85	90	**95**	100	105	110	115	120	125	130	135	140	145	150
NASHIRA 200 / NASHIRA 200 E	80	90	100	110	**120**	125	130	135	140	145	150	160	170	180	190	200

Factory position = 4.

Table 10 Medium speed setting

HIGH SPEED																
Potentiometer position	0	1	2	3	4	5	6	7	8	9	A	B	**C**	D	E	F
NASHIRA 150 / NASHIRA 150 E	80	90	100	110	120	130	140	150	150	150	150	150	**150**	150	150	150
NASHIRA 200 / NASHIRA 200 E	80	90	100	110	120	130	140	150	160	170	180	190	**200**	200	200	200

Factory position = C.

Table 11 High speed setting

FLOW RATE BALANCING																
Potentiometer position	**0**	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
% Qsupply / Qextraction	**0%**	2%	4%	6%	8%	10%	12%	14%	16%	-14%	-12%	-10%	-8%	-6%	-4%	-2%

Factory position = 0.

Table 12 Flowrate balancing setting

FREE COOLING SPEED (bypass)																
Potentiometer position	**0***	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
NASHIRA 150 / NASHIRA 150 E	**-**	90	100	110	120	130	140	150	150	150	150	150	150	150	150	150
NASHIRA 200 / NASHIRA 200 E	**-**	90	100	110	120	130	140	150	160	170	180	190	200	200	200	200

Factory position = 0.

* If the "free cooling speed" potentiometer is set at position 0, the fans will not change speed when the bypass is activated.

Table 13 Free cooling speed setting

4.1.2. Setting of the filter maintenance period

It is possible to set the time to 6, 9, 12 or 15 months (factory setting = 12 months). The filter clogging is linked to the outside environment (pollution, pollen, etc.) and the use of the dwelling (dust, kitchen grease, etc.). Therefore, it is advisable to change this parameter after the second filter replacement. When a unit has just been installed, the extracted air and the fresh air are usually loaded with dust and this is not representative of normal fouling.

During the second change, if it is observed that the filters are clean the time can be increased, or reduced if the filters are found to be very clogged.

The filter maintenance period can be changed by adjusting the micro-switches 1 and 2 according to the number of months appropriate to your installation, as indicated below. The change will be saved after re-starting the unit (disconect and connect back to the main supply):

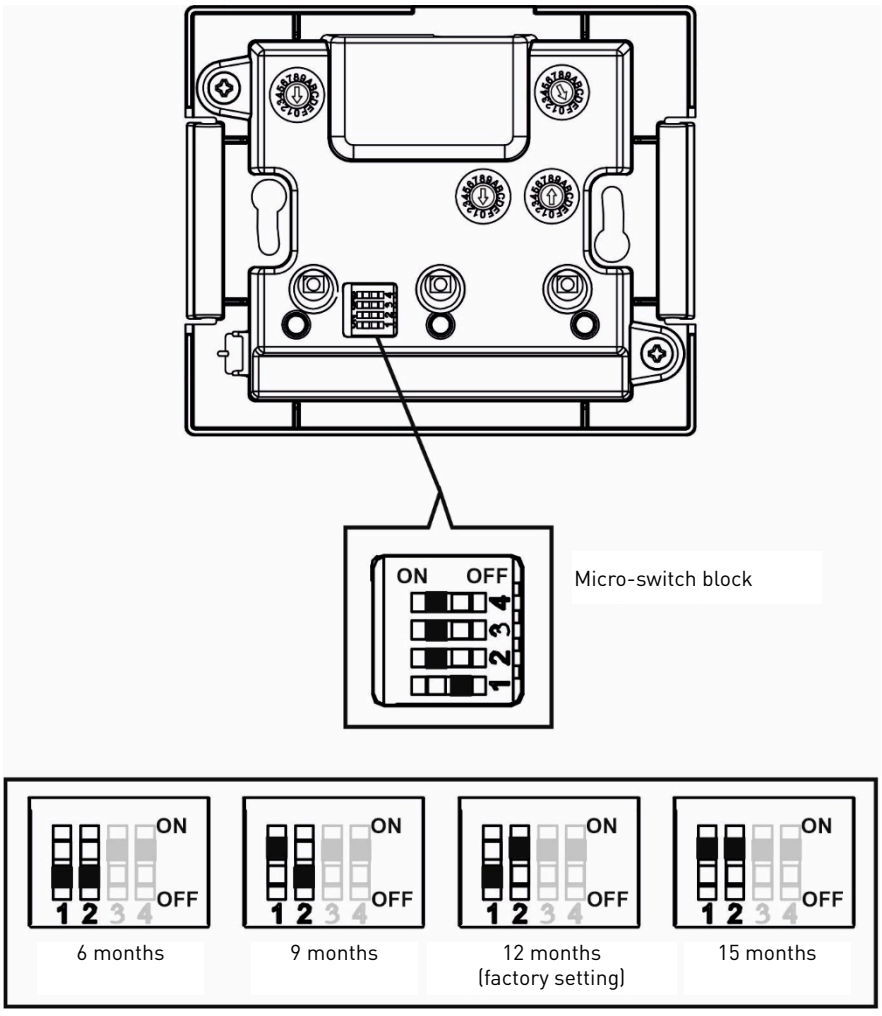


Illustration 14. Filter timer setting

4.1.3. Automatic mode setting

The unit includes a humidity sensor for the automatic control of the ventilation according to the indoor air quality. This ensures a healthy indoor environment.

The unit includes the option of connecting a 0-10V type analogue signal that can come from a home automation system or an air quality sensor. Below is a list of air-quality sensors that can be connected to the unit.

- AIRSENS CO2
- AIRSENS VOC
- AIRSENS HR
- AIRSENS IAQ

Note: If it is decided to install AIRSENS air-quality sensors (manufactured by S&P), it is possible to connect up to a maximum of 4 AIRSENS in parallel, whether or not they are the same type (CO2/VOC/etc.).

There are two types of automatic mode:

- Proportional mode: The unit will increase or reduce the ventilation flow rate depending on the air quality level provided by the sensors.
  - Humidity sensors (integrated): The unit will move a flow rate of 90 m³/h when the humidity in the dwelling is equal to or less than 60%. The unit will move a flow rate of 135 m³/h (NASHIRA 150) or 180 m³/h (NASHIRA 200) when the humidity in the dwelling is more than or equal to 90%.
    Flow rate and relative humility values can be altered by means of Modbus.
    See humidity adjustment ramps below:

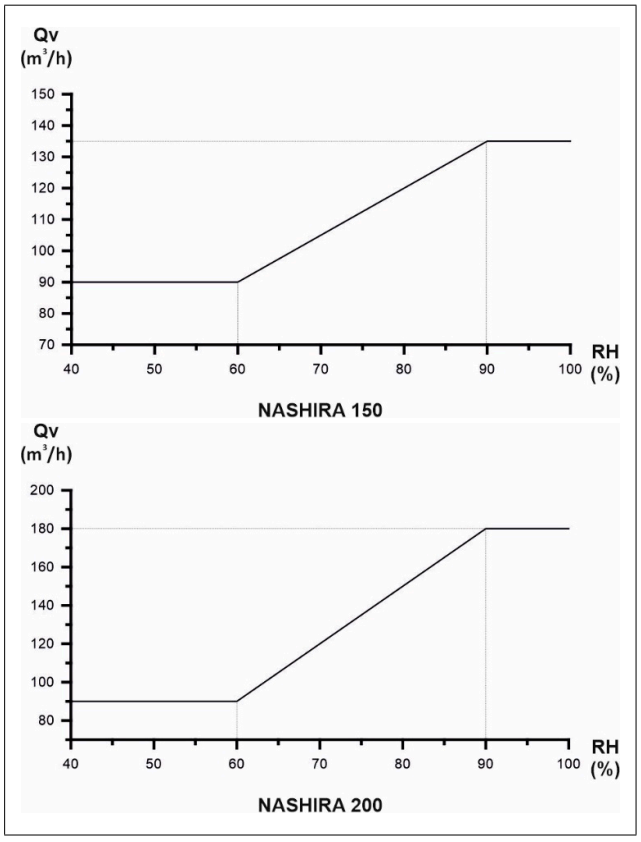


Illustration 15. Proportional mode (HR) NASHIRA 150 and 200

  - Sensors 0-10V (AIRSENS): The unit will move a flow rate of 90 m³/h when the signal sent by the sensor is 0V. The unit will move a flow rate of 135 m³/h (NASHIRA 150) or 180 m³/h (NASHIRA 200) when the signal sent by the sensor is 10 V.
    Flow rate and voltage values can be altered by means of Modbus.

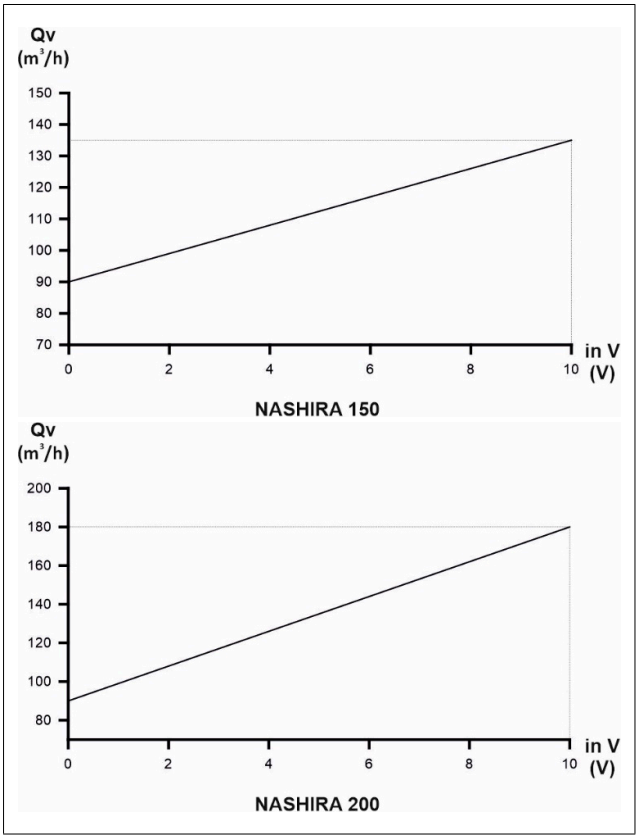


Illustration 16. Proportional mode (V) NASHIRA 150 and 200

- Event-driven proportional mode: In this mode, the NASHIRA becomes a smart unit which learns from the environment where it has been installed. The unit is capable of continuously monitoring the air quality and setting the ventilation flow rate automatically according to needs in order to ensure excellent air quality. This is a self-adapting work mode that does not require setting by the installer.

It is possible to choose between the proportional and events-driven modes by adjusting microswitch 4 as shown below:

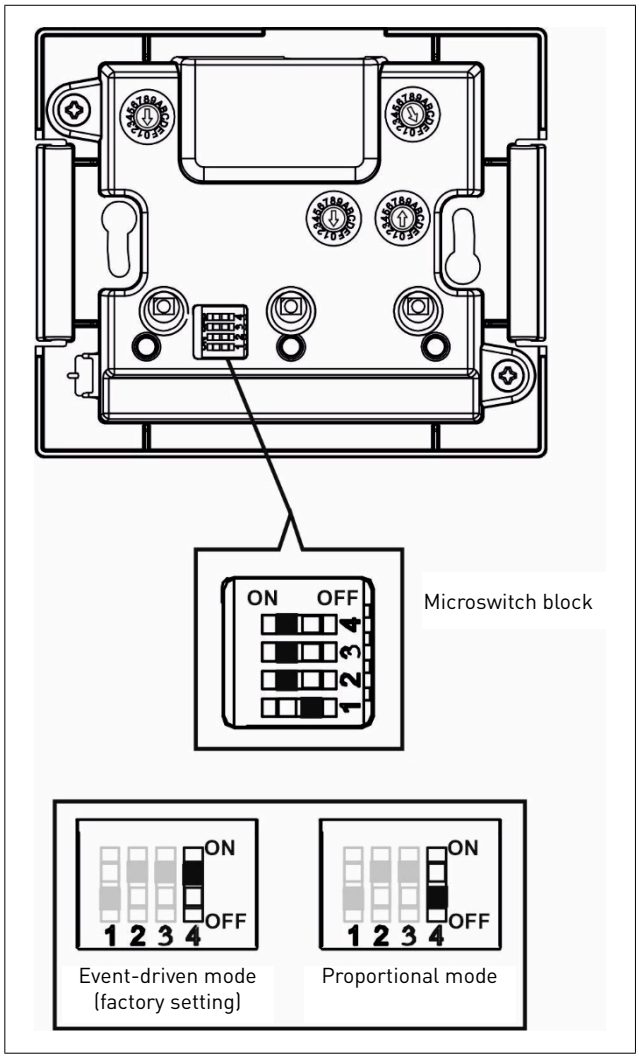


Illustration 17. Automatic mode setting

4.2. DESCRIPTION OF THE ELECTRONIC CIRCUIT BOARD

1	Power supply 230V 50Hz
2	Motor 2 power supply
3	Motor 1 power supply
4	Bypass connector
5	Motor 2 regulating signal
6	Motor 1 regulating signal
7	Input 0-10V: 0 = COM IN = Signal
8	Controller connector
9	Temperature sensor connectors
10	Humidity sensor
11	Modbus RTU Connector / Connector for SPCM Lite connector

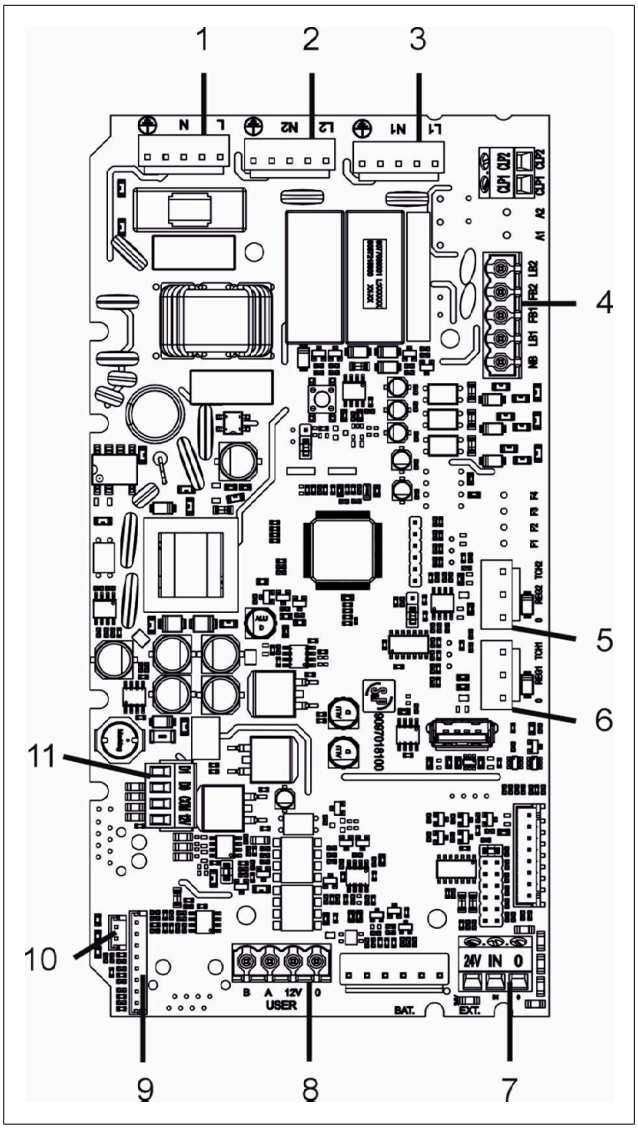


Illustration 18. Image of electronic circuit board

5. ALARM LIST

If there is any type of alarm in the unit, button (A) on the remote control will flash red:

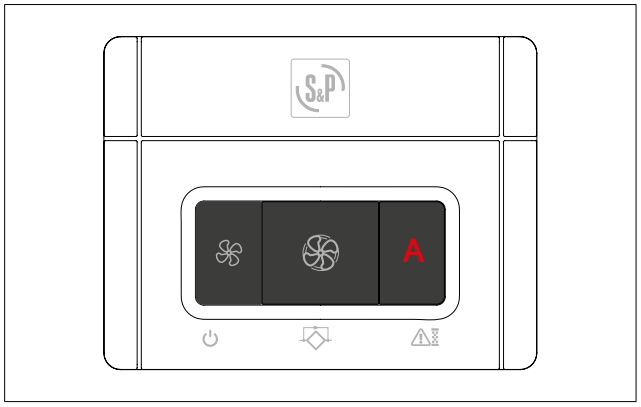


Illustration 19. Alarm signal on NASHIRA controller

Each alarm is indicated with a different flashing code:

Type of alarm	Number of flashes	Action
Motor 1 error	1	Stop unit.
Motor 2 error	2	Stop unit.
Bypass error	3	Stop unit.
Low supply temperature (<5°C)	4	Stop unit. Every 2 hours, the motors will be activated to check that the temperature returns to comfort levels.
Extraction sensor error.	5	The unit continues operating.
Exhaust sensor error.	6	The unit continues operating.
Outdoor air sensor error	7	The unit continues operating.
Supply sensor error.	8	The unit continues operating.
Fouled filter	Red LED steadily on (not flashing)	The unit continues operating.
Automatic mode active	Green LED steadily on (not flashing)	Automatic mode has been activated.
Anti-icing mode active	Intermittent green LED	The unit has activated the anti-icing function as the outdoor temperature is too low.

Table 14 NASHIRA Alarms list

5.1. RESETTING ALARMS

5.1.1. Filter alarm

Once the filters have been replaced, delete the error message by pressing the "A" button for at least 3 seconds.

5.1.2. Other alarms

As regards the other alarms, the error message will disappear automatically after switching the device on and off, **provided that the incident that caused the alarm has been resolved** (for example: One of the motors was defective and has now been replaced).

6. FILTER REPLACEMENT

Replacing the filters is essential to ensuring that the unit operates correctly and provides excellent air quality.

The remote control will indicate "filter alarm" every 12 months (factory value which can be changed on the controller) as notification for their replacement.

Note: The following depictions of the NASHIRA unit are schematic diagrams. The unit is permanently mounted on the ceiling. The position shown in the following images is not possible.

6.1. Switch off the unit The electrical power supply can be switched off or stopped by means of the remote control (see Table 2).

6.2. Prepare a sealable plastic bag. Dirty filters will be placed in this bag.

6.3. Remove the filter covers (arrow 1).

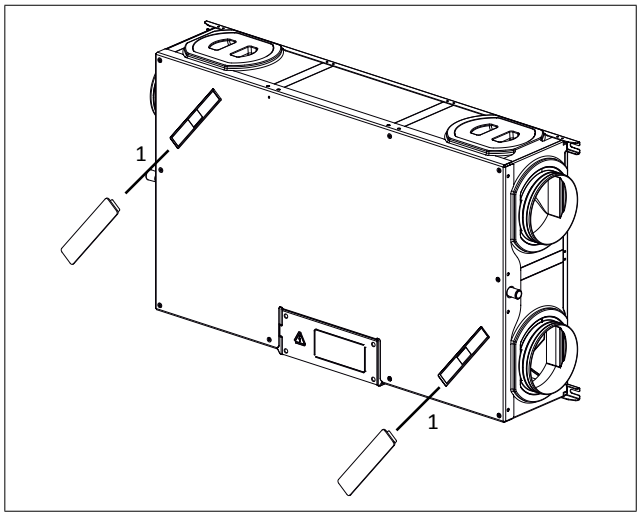


Illustration 1. Remove filter covers

6.4. Remove the filters (arrow 2)

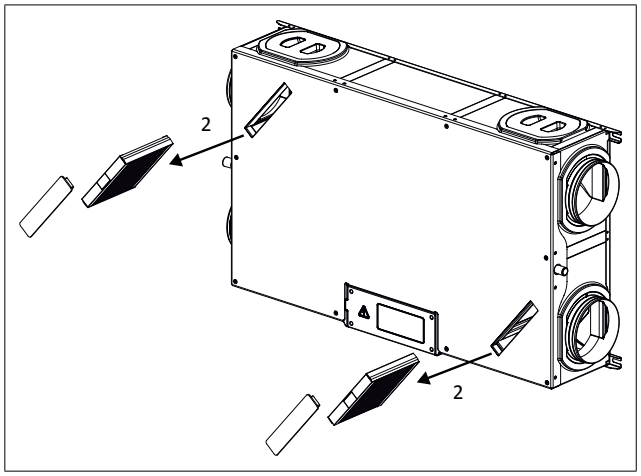


Illustration 2. Removing filters

6.5. Place the dirty filters in the sealed plastic bag. The filters contain dust and fine particles among other contaminants. Do not shake the filters and carefully place them in the plastic bag to prevent the transmission of contaminants to the environment. Throw the filters in the general waste container.

6.6. Fit the new filters inside the unit. On the filter frame, you will find indications on the air direction. Fit the filters as shown below (arrow 3).

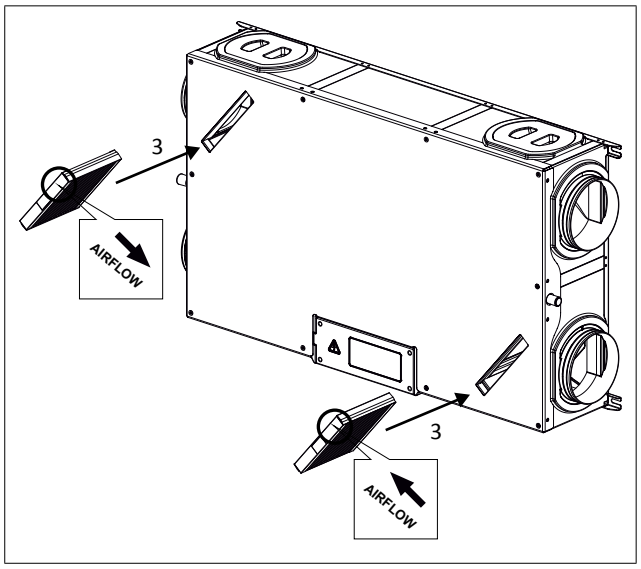


Illustration 22. Fit new filters

Place the filter covers in their original position and switch on the unit.

7. MODBUS MAP

The NASHIRA heat recovery units can be integrated into BMS networks by means of Modbus-RTU (RS-485).

The connection must be made at connector 11 on the electronic circuit board. See section "4.2. Description of the electronic circuit board".

By default, the communication parameters are:
- Modbus Node (slave address): 1
- Baudrate: 19200 bps
- Parity: EVEN

The communication parameters can be modified by acting on the corresponding Holding Registers. In the case of modifying a communication parameter, the change will be effective after switching the unit off and on again.

DISCRETE INPUTS (READ ONLY)					
Modbus address	**Register**	**Values**	**Description**	**Comments:**	**Type of data**
10001	Defrost mode	0 - 1	0: Inactive 1: Active	The unit activates the anti-icing mode when the outdoor temperature is too low.	Single Bit
10002	Motor 1 (extraction) status	0 - 1	0: Correct 1: Error		Single Bit
10003	Motor 2 (supply) status	0 - 1	0: Correct 1: Error		Single Bit
10004	Extraction temperature sensor status	0 - 1	0: Correct 1: Error		Single Bit
10005	Exhaust temperature sensor status	0 - 1	0: Correct 1: Error		Single Bit
10006	Outdoor temperature sensor status	0 - 1	0: Correct 1: Error		Single Bit
10007	Supply temperature sensor status	0 - 1	0: Correct 1: Error		Single Bit
10011	Filter status	0 - 1	0: Correct 1: Fouled filters	Yes = 1, the filters must be replaced	Single Bit

Table 15 Modbus Registers- Discrete Inputs

OUTPUT COILS (READING AND WRITING)						
Modbus address	**Register**	**Values**	**Description**	**Default value**	**Comments:**	**Type of data**
20004	Stop/Start	0 - 1	0: Start 1: Stop	0		Single Bit
20006	Bypass manual activation	0 - 1	0: Close bypass 1: Open bypass	NO	Use this register to activate/ deactivate the bypass manually.	Single Bit
20008	Automatic mode activation	0 - 1	0: AUTO OFF 1: AUTO ON	1	Use this register to activate/ deactivate automatic mode.	Single Bit
20009	Reset the filter alarm	0 - 1	0: - 1: Activate reset	0	Once the filters have been replaced, write "1" in this register. The register will return to "0" and the "fouled filter" alarm will have disappeared.	Single Bit
20011	Factory parameters reset	0 - 1	0: - 1: Return to factory parameters	0	Write "1" in this register. The register will return to "0" once the factory parameters have been reset.	Single Bit

Table 16 Modbus Registers - Output Coils

INPUT REGISTER (READ ONLY)					
Modbus address	**Register**	**Values**	**Description**	**Comments:**	**Type of data**
30004	Current flow rate	0-250	Flow rate in m^3/h		16 bit Word
30005	Indoor humidity	0-100	Relative humidity in %		16 bit Word
30006	Analogue input value	0-100	Value in tenths of volts (dV)	The unit has an analogue input to which a 0-10V signal can be connected. When the automatic mode is active, the ventilation flow rate will vary in proportion to this input. Note: bear in mind that this value is expressed in dV. To switch to Volts, divide by 10	16 bit Word
30007	Extraction motor regulation	0-100	Value in tenths of volts (dV)		16 bit Word

INPUT REGISTER (READ ONLY)					
Modbus address	**Register**	**Values**	**Description**	**Comments:**	**Type of data**
30008	Supply motor regulation	0-100	Value in tenths of volts (dV)		16 bit Word
30009	Extraction motor rpm	0-5000			16 bit Word
30010	Supply motor rpm	0-5000			16 bit Word
30011	Extraction air temperature	-350...520	Tenths of a degree (d°C)	Note: bear in mind that this value is expressed in d°C. To switch to °C, divide by 10	16 bit Word
30012	Exhaust air temperature	-350...520	Tenths of a degree (d°C)	Note: bear in mind that this value is expressed in d°C. To switch to °C, divide by 10	16 bit Word
30013	Outside air temperature	-350...520	Tenths of a degree (d°C)	Note: bear in mind that this value is expressed in d°C. To switch to °C, divide by 10	16 bit Word
30014	Supply air temperature	-350...520	Tenths of a degree (d°C)	Note: bear in mind that this value is expressed in d°C. To switch to °C, divide by 10	16 bit Word
30016	Bypass status	0	Deactivated		16 bit Word
		1	Activated		
		2	Error		
30021	Days remaining until filters clogged	0-720	Days	Replace the filters when this counter reaches 0 (or before) Then, reset the filter alarm (see Input Register 20009)	16 bit Word
30036	Last alarm occurring	0	No alarm		16 bit Word
		1	Motor 1 error	Action: Stop unit	16 bit Word
		2	Motor 2 error	Action: Stop unit	16 bit Word
		3	Bypass error	Action: Stop unit	16 bit Word
		4	Low supply temperature	When the supply temperature drops below 5°C, the unit stops.	16 bit Word
		5	Extraction temperature sensor error		16 bit Word
		6	Exhaust temperature sensor error		16 bit Word
		7	Outdoor temperature sensor error		16 bit Word
		8	Supply temperature sensor error		16 bit Word
		9	Fouled filter		16 bit Word
		11	Anti-icing mode active	The unit activates the anti-icing mode when the outdoor temperature is too low.	16 bit Word
		12	Condensation (only enthalpy models)	If condensation conditions are detected, the unit stops. After 2 hours, the unit restarts in order to verify that the working conditions will not produce condensation.	16 bit Word

Table 17 Modbus Registers - Input Registers

HOLDING REGISTERS (READING AND WRITING)						
Modbus address	**Register**	**Values**	**Description**	**Default value**	**Comments:**	**Type of data**
40001	Modbus node	1 – 247		1	If the value is changed, the change will be effective after the unit is switched off and on again.	16 bit Word
40002	Baudrate	5	4800 bps	8	If the value is changed, the change will be effective after the unit is switched off and on again.	16 bit Word
		6	9600 bps			16 bit Word
		8	19200 bps			16 bit Word
		10	38400 bps			16 bit Word
40003	Parity	0	No parity	2	If the value is changed, the change will be effective after the unit is switched off and on again.	16 bit Word
		1	Odd			16 bit Word
		2	Even			16 bit Word
40010	Speed setpoint	0	Low speed		Use this register to change the speed	16 bit Word
		1	Medium speed			16 bit Word
		2	High speed			16 bit Word
40011	Minimum flow rate set point (RH sensor)	70-110 (NASHIRA 150) 70-135 (NASHIRA 200)	m^3/h	90	Ventilation flow rate in periods of low indoor relative humidity	16 bit Word
40017	Maximum flow rate set point (RH sensor)	115-150 (NASHIRA 150) 140-200 (NASHIRA 200)	m^3/h	135 (NASHIRA 150) 180 (NASHIRA 200)	Ventilation flow rate in periods of high indoor relative humidity	16 bit Word
40023	Low humidity	40-89	%	50		16 bit Word
40029	High humidity	60-90	%	90		16 bit Word
40035	Minimum flow rate set point (0-10V input)	70-110 (NASHIRA 150) 70-135 (NASHIRA 200)	m^3/h	90	Ventilation flow rate when input = 0V	16 bit Word
40036	Maximum flow rate set point (0-10V input)	115-150 (NASHIRA 150) 140-200 (NASHIRA 200)	m^3/h	135 (NASHIRA 150) 180 (NASHIRA 200)	Ventilation flow rate when input = 10V	16 bit Word
40039	Minimum outdoor temperature for AUTO bypass	11...20	°C	12		16 bit Word
40040	Minimum indoor temperature for AUTO bypass	21...30	°C	24		16 bit Word
40063	Difference (Textraction) – (Toutdoor) for the AUTO bypass	10...50	d°C	30	There must be a difference of at least 3°C between indoor and outdoor temperatures for bypass activation	16 bit Word
40041	Manual bypass time	1-24	Hours	8	When the bypass is activated manually, it will be active for 8 hours	16 bit Word
40059	Minimum speed setting (with respect to the medium speed)	30-70	%	50	By default, the minimum speed is set at 50% of the medium speed.	16 bit Word

Table 18 Modbus Registers - Holding Registers

8. ErP DATA

Ecodesign
Commission regulation (EU) Nº1253/2014 of July 2014
Information requirements (Annex V)

		NASHIRA 150	NASHIRA 150 + AIRSENS
a	Trade mark	S&P	S&P
b	Identifier	5153193300	5153193300 + 5416845300
c	SEC average climate (kWh/(m².an))	-41.1	-43.8
	SEC class	A	A+
	SEC cold climate (kWh/(m².an))	-80.5	-83.7
	SEC warm climate (kWh/(m².an))	-15.9	-18.3
d	Typology	RVU bidirectional	RVU bidirectional
e	Type of drive	Variable speed drive	Variable speed drive
f	Type of HRC	Recuperative	Recuperative
g	Thermal efficiency (%)	92	92
h	Maximum flow rate (m^3/h)	150	150
i	Electrical power input at maximum flow rate (W)	47	47
j	Sound power level (LWA)	46	46
k	Reference flow rate (m^3/s)	0.029	0.029
l	Reference pressure difference (Pa)	50	50
m	SPI ($W/m^3/h$)	0.235	0.235
n	Control factor	0.85	0.65
	Control typology	Central demand	Local demand
o	Maximum internal leakage for BVU (%)	0.6	0.6
	Maximum external leakage for BVU and UVU (%)	2	2
p	Mixing rate for BVU without duct connection (%)	not applicable	not applicable
q	Position of visual filter warning	Remote control	Remote control
	Description of visual filter warning	Pilot light	Pilot light
r	Instructions to install supply grilles	not applicable	not applicable
	Instructions to install exhaust grilles	not applicable	not applicable
s	Internet address	www.solerpalau.com	www.solerpalau.com
t	Airflow sensitivity to pressure variation	not applicable	not applicable
u	Indoor/outdoor air tightness (m^3/h)	not applicable	not applicable
v	Annual electricity consumption - Average climate (kWh/a)	257	169
	Annual electricity consumption - Warm climate (kWh/a)	212	124
	Annual electricity consumption - Cold climate (kWh/a)	794	706
w	Annual heating saved - Average climate (kWh/a)	4684	4735
	Annual heating saved - Warm climate (kWh/a)	2118	2141
	Annual heating saved - Cold climate (kWh/a)	9163	9263

Ecodesign
Commission regulation (EU) Nº1253/2014 of July 2014
Information requirements (Annex V)

		NASHIRA 150 E	NASHIRA 150 E + AIRSENS
a	Trade mark	S&P	S&P
b	Identifier	5153193500	5153193500 + 5416845300
c	SEC average climate (kWh/(m².an))	-40.1	-43.0
	SEC class	A	A+
	SEC cold climate (kWh/(m².an))	-78.5	-82.1
	SEC warm climate (kWh/(m².an))	-15.5	-18.0
d	Typology	RVU bidirectional	RVU bidirectional
e	Type of drive	Variable speed drive	Variable speed drive
f	Type of HRC	Recuperative	Recuperative
g	Thermal efficiency (%)	88	88
h	Maximum flow rate (m^3/h)	150	150
i	Electrical power input at maximum flow rate (W)	46.1	46.1
j	Sound power level (LWA)	46	46
k	Reference flow rate (m^3/s)	0.029	0.029
l	Reference pressure difference (Pa)	50	50
m	SPI ($W/m^3/h$)	0.230	0.230
n	Control factor	0.85	0.65
	Control typology	Central demand	Local demand
o	Maximum internal leakage for BVU (%)	1.6	1.6
	Maximum external leakage for BVU and UVU (%)	1.6	1.6
p	Mixing rate for BVU without duct connection (%)	not applicable	not applicable
q	Position of visual filter warning	Remote control	Remote control
	Description of visual filter warning	Pilot light	Pilot light
r	Instructions to install supply grilles	not applicable	not applicable
	Instructions to install exhaust grilles	not applicable	not applicable
s	Internet address	www.solerpalau.com	www.solerpalau.com
t	Airflow sensitivity to pressure variation	not applicable	not applicable
u	Indoor/outdoor air tightness (m^3/h)	not applicable	not applicable
v	Annual electricity consumption - Average climate (kWh/a)	253	167
	Annual electricity consumption - Warm climate (kWh/a)	208	122
	Annual electricity consumption - Cold climate (kWh/a)	790	704
w	Annual heating saved - Average climate (kWh/a)	4576	4652
	Annual heating saved - Warm climate (kWh/a)	2069	2104
	Annual heating saved - Cold climate (kWh/a)	8951	9100

Ecodesign
Commission regulation (EU) Nº1253/2014 of July 2014
Information requirements (Annex V)

		NASHIRA 200	NASHIRA 200 + AIRSENS
a	Trade mark	S&P	S&P
b	Identifier	5153193400	5153193400 + 5416845300
c	SEC average climate (kWh/(m².an))	-40.3	-43.3
	SEC class	A	A+
	SEC cold climate (kWh/(m².an))	-79.2	-82.8
	SEC warm climate (kWh/(m².an))	-15.4	-18.0
d	Typology	RVU bidirectional	RVU bidirectional
e	Type of drive	Variable speed drive	Variable speed drive
f	Type of HRC	Recuperative	Recuperative
g	Thermal efficiency (%)	90	90
h	Maximum flow rate (m^3/h)	200	200
i	Electrical power input at maximum flow rate (W)	72	72
j	Sound power level (LWA)	48.3	48.3
k	Reference flow rate (m^3/s)	0.039	0.039
l	Reference pressure difference (Pa)	50	50
m	SPI ($W/m^3/h$)	0.244	0.244
n	Control factor	0.85	0.65
	Control typology	Central demand	Local demand
o	Maximum internal leakage for BVU (%)	0.82	0.82
	Maximum external leakage for BVU and UVU (%)	1	1
p	Mixing rate for BVU without duct connection (%)	not applicable	not applicable
q	Position of visual filter warning	Remote control	Remote control
	Description of visual filter warning	Pilot light	Pilot light
r	Instructions to install supply grilles	not applicable	not applicable
	Instructions to install exhaust grilles	not applicable	not applicable
s	Internet address	www.solerpalau.com	www.solerpalau.com
t	Airflow sensitivity to pressure variation	not applicable	not applicable
u	Indoor/outdoor air tightness (m^3/h)	not applicable	not applicable
v	Annual electricity consumption - Average climate (kWh/a)	266	174
	Annual electricity consumption - Warm climate (kWh/a)	221	129
	Annual electricity consumption - Cold climate (kWh/a)	803	711
w	Annual heating saved - Average climate (kWh/a)	4630	4693
	Annual heating saved - Warm climate (kWh/a)	2093	2122
	Annual heating saved - Cold climate (kWh/a)	9057	9182

Ecodesign
Commission regulation (EU) Nº1253/2014 of July 2014
Information requirements (Annex V)

		NASHIRA 200 E	NASHIRA 200 E + AIRSENS
a	Trade mark	S&P	S&P
b	Identifier	5153193600	5153193600 + 5416845300
c	SEC average climate (kWh/(m².an))	-39.1	-42.3
	SEC class	A	A+
	SEC cold climate (kWh/(m².an))	-76.7	-80.8
	SEC warm climate (kWh/(m².an))	-14.9	-17.6
d	Typology	RVU bidirectional	RVU bidirectional
e	Type of drive	Variable speed drive	Variable speed drive
f	Type of HRC	Recuperative	Recuperative
g	Thermal efficiency (%)	85	85
h	Maximum flow rate (m^3/h)	200	200
i	Electrical power input at maximum flow rate (W)	71.8	71.8
j	Sound power level (LWA)	48.3	48.3
k	Reference flow rate (m^3/s)	0.039	0.039
l	Reference pressure difference (Pa)	50	50
m	SPI ($W/m^3/h$)	0.238	0.238
n	Control factor	0.85	0.65
	Control typology	Central demand	Local demand
o	Maximum internal leakage for BVU (%)	0.83	0.83
	Maximum external leakage for BVU and UVU (%)	2	2
p	Mixing rate for BVU without duct connection (%)	not applicable	not applicable
q	Position of visual filter warning	Remote control	Remote control
	Description of visual filter warning	Pilot light	Pilot light
r	Instructions to install supply grilles	not applicable	not applicable
	Instructions to install exhaust grilles	not applicable	not applicable
s	Internet address	www.solerpalau.com	www.solerpalau.com
t	Airflow sensitivity to pressure variation	not applicable	not applicable
u	Indoor/outdoor air tightness (m^3/h)	not applicable	not applicable
v	Annual electricity consumption - Average climate (kWh/a)	261	171
	Annual electricity consumption - Warm climate (kWh/a)	216	126
	Annual electricity consumption - Cold climate (kWh/a)	798	708
w	Annual heating saved - Average climate (kWh/a)	4494	4590
	Annual heating saved - Warm climate (kWh/a)	2032	2075
	Annual heating saved - Cold climate (kWh/a)	8792	8979

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