

HRU-SlimAIR

1. About this manual

1.1 Ventilation system description

Complete ventilation system consists of:

- Heat recovery ventilation unit SlimAir
- Ducting with diffusers, plenum boxes, inlet and outlet valves, etc.
- Control button HRQ-SlimAIR-BUT-LM11 (optional)
- Control button HRQ-SlimAIR-BUT-LM04 (optional)
- Control button HRQ-SlimAIR-BUT-LCD (optional)
- CO2 wireless sensor(s) HRQ-SlimAIR-SENS-CO2 or HRQ-SlimAIR-SENS-I-CO2 (optional)
- RH wireless sensor(s) HRQ-SlimAIR-SENS-RH (optional)
- Internet bridge HRQ-SlimAIR-GATE (optional)
- Silencers (optional).

Mechanical ventilation provides the best level of comfort inside the building. With this type of ventilation it is very easy to control amount of air extracted from house or blown to house.

Extract valves are mounted in bathrooms and kitchens. Supply valves are mounted in bedrooms and living rooms. All ducting must be connected to SlimAIR unit.

In normal operation (bypass is closed and frost protection is not active) unit works in two directions: supply and extract. Supply air is taken from outside and goes through plate heat exchanger to supply valves. Extract air is extracted from house and goes through heat exchanger to outside.

In heat exchanger heat energy is transported from extract air to supply air without mixing this two airflows. With standard control devices like HRQ-SlimAIR-BUT-LM11 you can manually set one of three fans speeds (low, medium and high). If you have optional equipment HRQ-SlimAIR-GATE connected to your unit, and an active Internet connection, you can set this three speed via mobile application PremAIR.

With additional CO2 and RH sensors speed can be controlled automatically depending on CO₂ concentration and relative humidity level (auto mode should be active).

1.2 How to use this manual

This manual is intended as a reference book by which qualified installers can install the HRQ-SlimAIR and all optional device as well. This device must be used according to its purpose. Make sure you have read and understood the manual before you install and/or use the device. Please be informed that we are constantly working on development and improvement of our products hence minor differences between this document and your unit are possible.

1.3 Original instructions

The original instructions for this manual have been written in English. Other language versions of this manual are a translation of the original instructions.

1.4 Admonitions



WARNING 'Warning' identifies a hazard that could lead to personal injury, including death.



NOTE 'Note' is used to highlight additional information.

HRU-SlimAIR

2. Safety

2.1 General safety instructions

This product was designed and manufactured to ensure maximum safety during installation, operation and service. Always read these safety instructions before installing, maintaining or servicing the product, and strictly comply with these instructions. Parts of the device carry mains power, which is a potential lethal voltage. Disconnect power at supply line, circuit breaker or fuse before installing, servicing or removing the device. The device is designed for indoor use only. Do not expose the device to rain or moisture, to avoid short circuit. Short circuit may cause fire or electric shock hazard. Operate the device between 0°C and 40°C. For cleaning of the device use a soft damp cloth only. Never use any abrasive or chemical cleaner. Do not paint the device. 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 no be made by children without supervision.

2.2 Directives / Norms

- ERP 2018 - regulation 1253/2014 and 1254/2014
- Low Voltage Directive (LVD) 2014/35/EC i Electromagnetic Compatibility Directive (EMCD) 2014/30/EU
- EN 308 - Heat exchangers - Test procedures for establishing performance of air to air and flue gases heat recovery devices.
- EN 13141-7 Ventilation for buildings – performance testing of components/products for residential ventilation - Part 7.
- EN 3744 - Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure.
- EN ISO 5136 - Acoustics - Determination of sound power radiated into a duct by fans and other airmoving devices - In-duct method.

3. Technical data

1. Dimensions: 242x685x1070 mm (HxWxD) [Fig. 1]
2. Weight: 25.5 kg
3. Heat exchanger: plate counter flow
4. Fans: EC fans
5. By-pass: built-in, automatic
6. Filters: G4, optional F7
7. Pre-heater: built-in
8. Installation: vertical, horizontal, horizontally suspended
9. Air flow:
 - **HRU-SlimAIR-250-H**
250m³/h (at 100 Pa)
[Fig. 2]
 - **HRU-SlimAIR-250E-H**
250m³/h (at 100 Pa)
[Fig. 3]
10. Heat recovery efficiency (acc. to EN 13141-7:20110):
 - **HRU-SlimAIR-250-H**
up to 85%
[Fig. 4]
 - **HRU-SlimAIR-250E-H**
up to 75.4% heat recovery
up to 44.5% moisture recovery
[Fig. 5]
11. Internal tightness:
 - HRU-SlimAIR-250: maximum leakage 2.45% (class A2 acc. to. EN 13141-7)
 - HRU-SlimAIR-250E: maximum leakage 0.79% (class A2 acc. to. EN 13141-7)

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11. External tightness:

- HRU-SlimAIR-250: maximum leakage 1.14% (class A1 acc. to EN 13141-7)
- HRU-SlimAIR-250E: maximum leakage 0.67% (class A1 acc. to EN 13141-7)

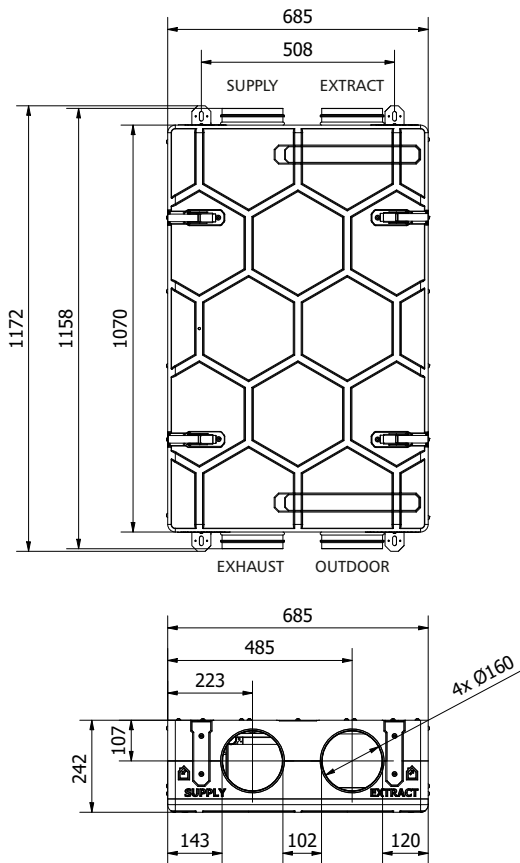


Fig. 1 - Dimensions

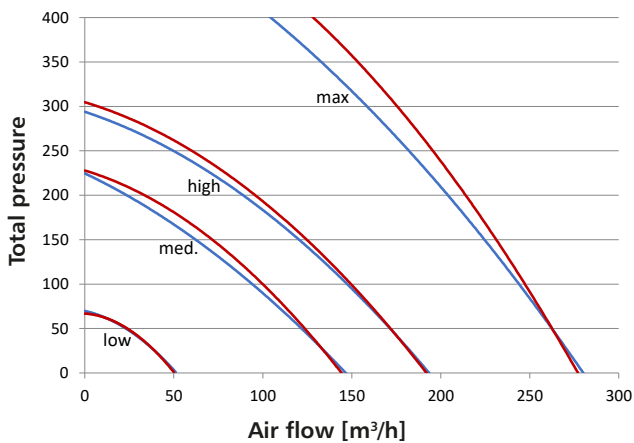


Fig. 2 - Total pressure for HRU-SlimAIR-250-H

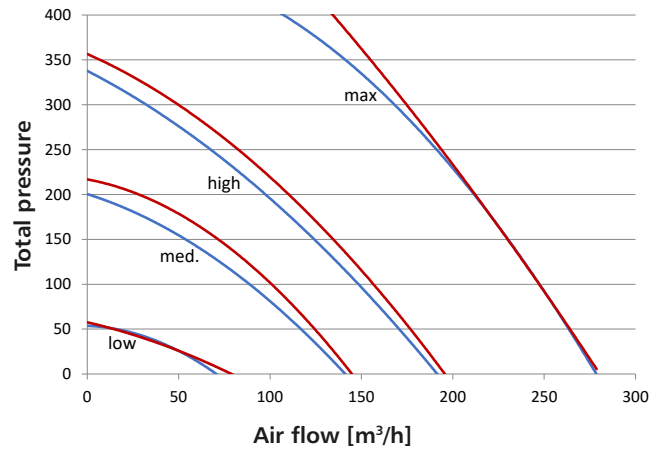


Fig. 3 - Total pressure for HRU-SlimAIR-250E-H

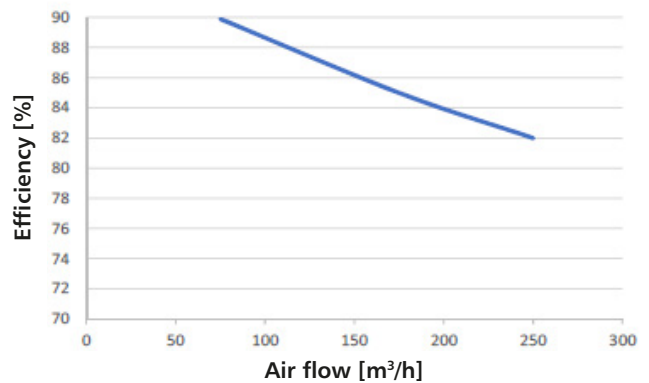


Fig. 4 - Heat recovery efficiency HRU-SlimAIR-250-H

Performance curve - Heat (—) and moisture (—)

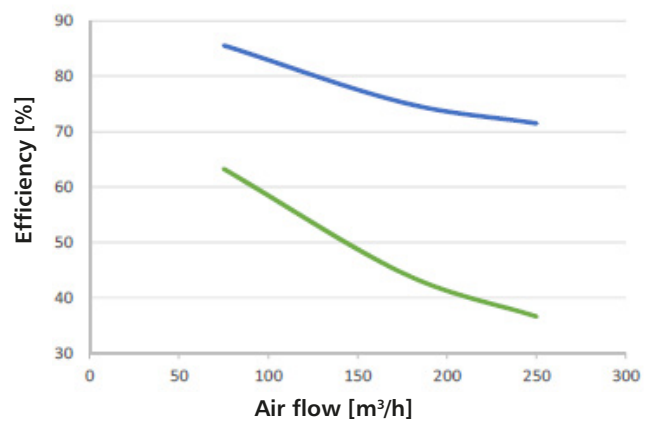
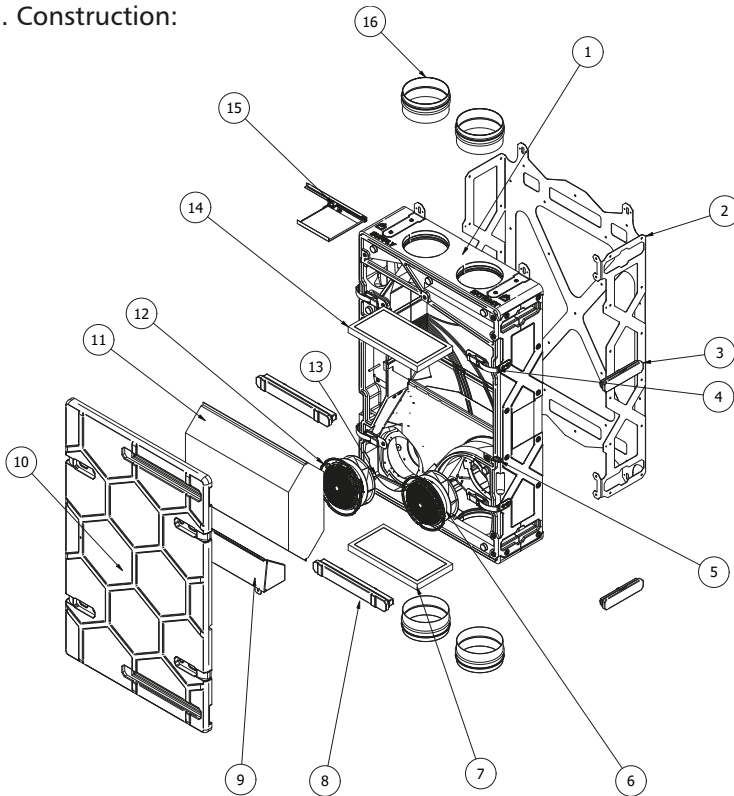


Fig. 5 - Performance curve heat and moisture HRU-SlimAIR-250E-H

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12. Construction:



1. HRU casing
2. Mounting frame
3. Side filter cover (2 pcs)
4. Clamp
5. Condensate tube plug (suspended, side)
6. Supply fan
7. Supply filter
8. Front filter cover (2 pcs)
9. Condensation drip tray
10. Front cover
11. Heat exchanger
12. Extract fan
13. Condensate tube plug (bottom)
14. Extract filter
15. Bypass damper
16. NSL connector NSL-160 (4 pcs)

Fig. 6 - Construction diagram

13. Diagram of the main board (PCB):

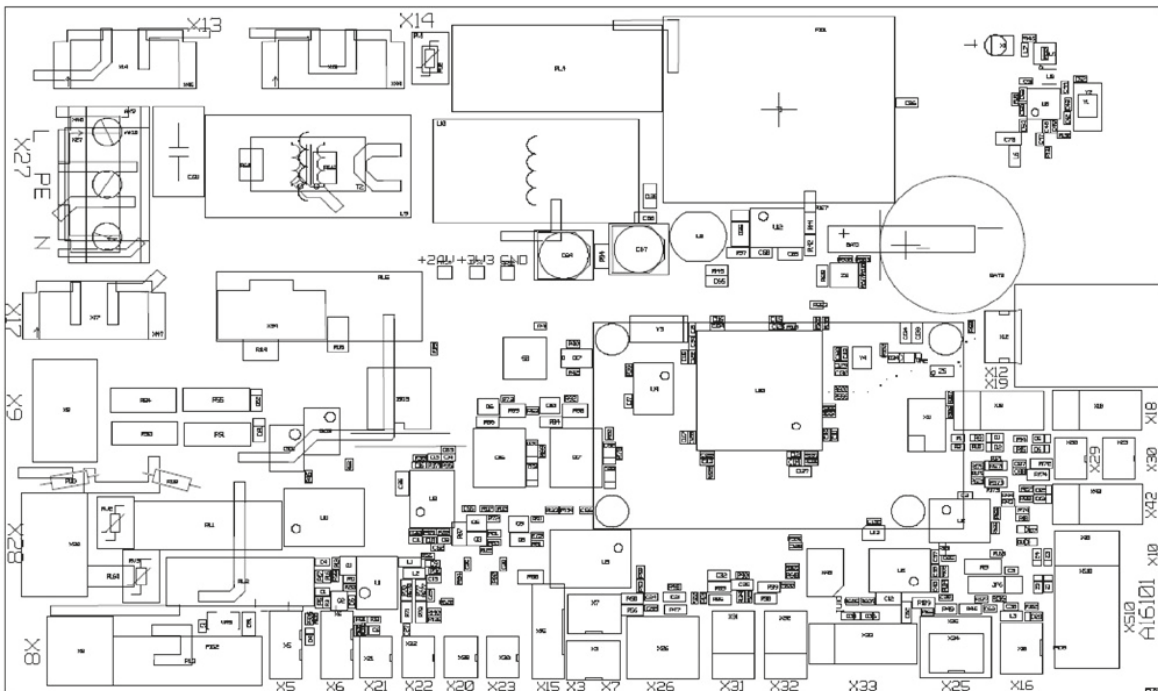


Fig. 7 - diagram of the main board (PCB)

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Description	Socket number	
Fan 1 (supply) - signal	X6	
Fan 2 (extract) - signal	X5	
Fan 1 (supply) - line	X13	
Fan 2 (extract) - line	X14	
Temperature 1 supply	X23	
Temperature 2 extract	X21	
Temperature 3 exhaust	X20	
Temperature 4 outdoor	X22	
Stepper motor	X15	
Power supply	X27	
Preheater	X17	
3-speed switch input	X9	1 - open (low speed) 1-2 closed (medium speed) 1-3 closed (high speed)
Fireplace/hood input	X25	1-2 closed (extract fan off)
Pressure transmitter (supply) optional	X18	
Pressure transmitter (exhaust) optional	X42	

4. Installation

4.1 Unboxing

Complete set includes:

- Heat recovery unit (with all components from fig. 6) - 1 pcs
- User's manual
- Condensation elastic pipe 2m - 1 pcs
- Basic installation kit: 4x double threaded screw, 4x wall plug, 4x washer, 4x nut
- Cardboard box with the frame diagram printed on one of the box flaps.

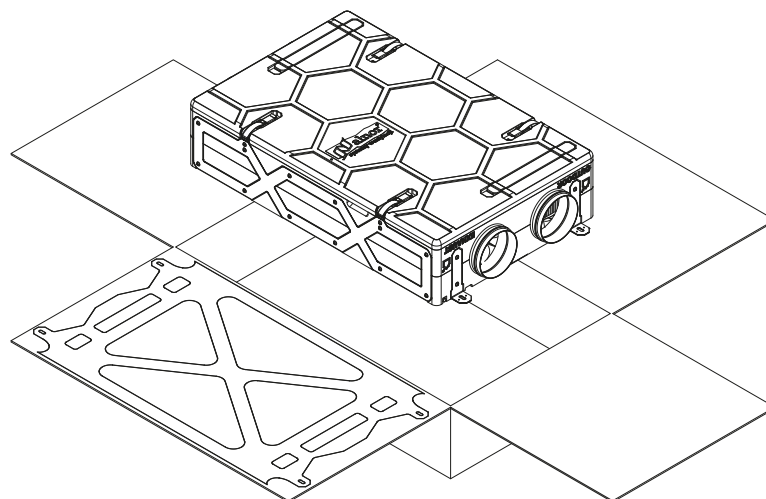


Fig. 8 - Heat recovery unit unboxing

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4.2 Vertical unit installation

The unit is suitable for vertical wall installation. The installation kit supplied with the unit can be used for this purpose. It is also possible to buy a frame (optional) for easier installation, especially for one person, in vertical or horizontally suspended position. Mounting elements are included with the frame.

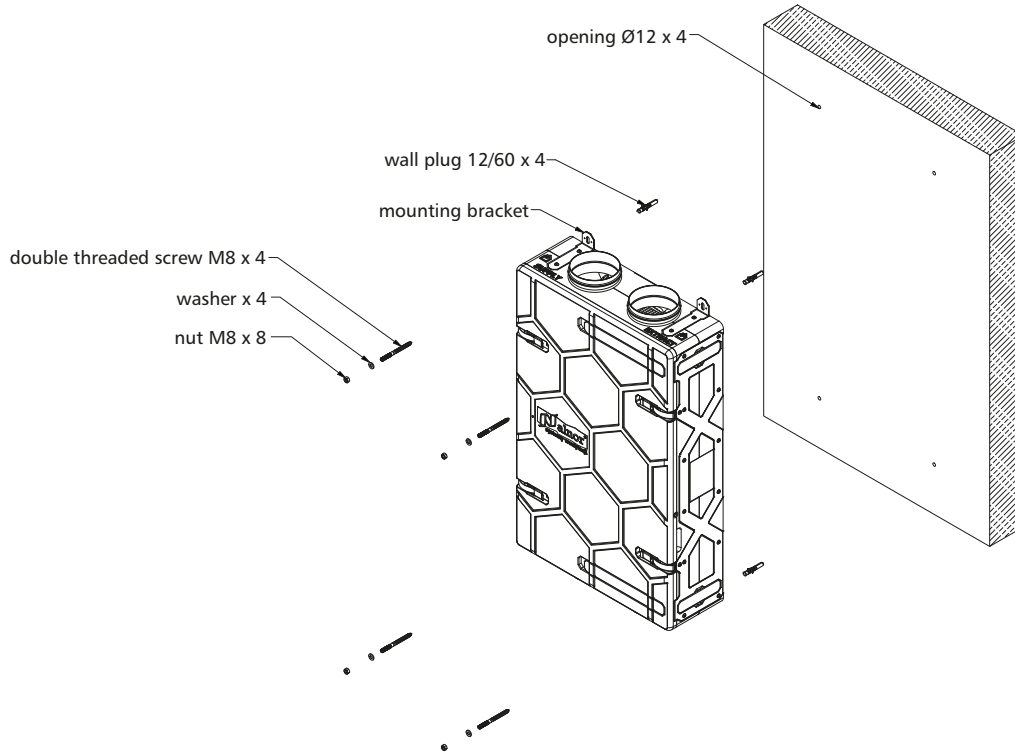


Fig. 9 - Vertical unit installation with standard installation kit

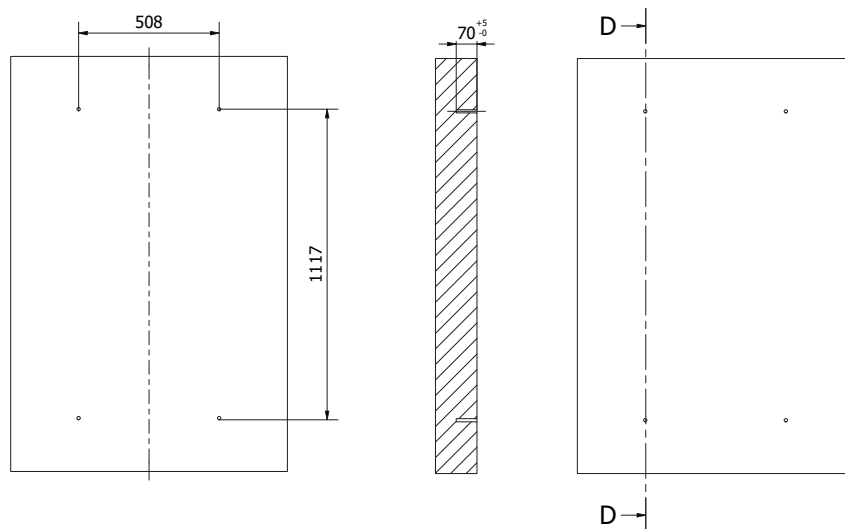


Fig. 10 - Dimensions of openings for standard mounting elements

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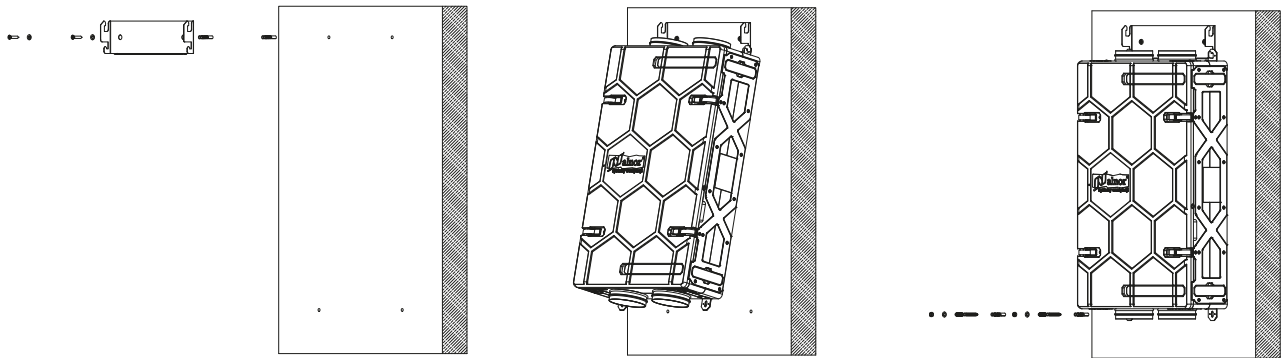


Fig. 11 - Unit installation on the mounting frame

To install the siphon in a given position, carefully place the elastic pipe over the lower condensate connector pipe. Make a siphon using the elastic pipe and the clip (Fig.12). When the siphon is ready and connected to the waste water system, level the unit accordingly. Fill the siphon with water immediately after making it.

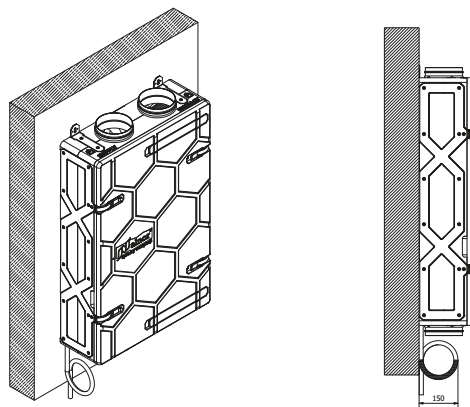


Figure 12 - Siphon installation in vertical position

4.3 Horizontal unit installation

The unit is designed to operate in a horizontal position on the wall. For this purpose, use the installation kit supplied with the unit (Section 4.1)

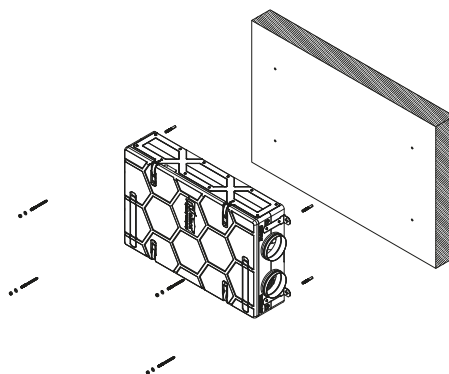


Fig. 13 - Horizontal unit installation

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To install the siphon in position, carefully place the elastic pipe over the side condensate connector pipe. Make a siphon using the elastic pipe and the clip (Fig.14) When the siphon is ready and connected to the waste water system, level the unit accordingly. Fill the siphon with water immediately after making it.

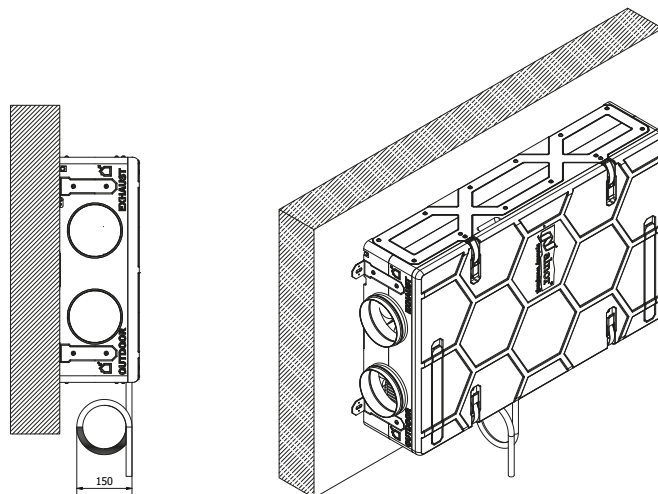


Figure 14 - Siphon installation in horizontal position

4.4 Unit installation - horizontally suspended

The unit is designed to be suspended from the ceiling. The installation kit supplied with the unit can be used for this purpose. It is also possible to buy a frame (optional) for easier installation, especially for one person. Assembly parts are included with the frame.

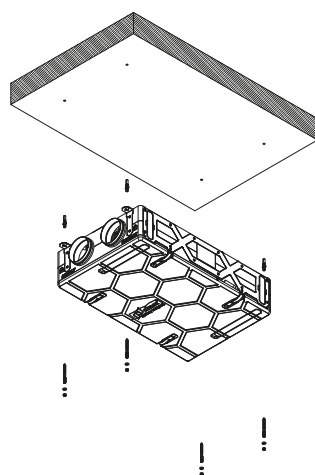


Fig. 15 - Unit installation - horizontally suspended

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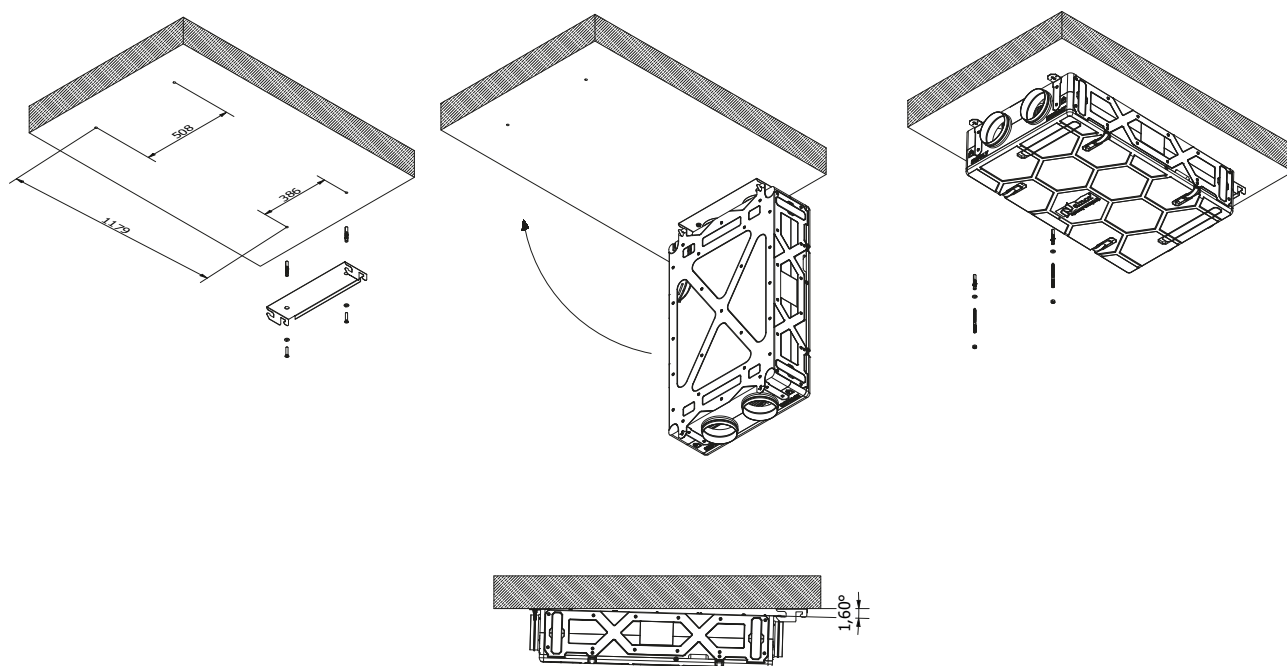


Fig. 16 - Unit horizontally suspended on the installation frame

**NOTE!**

Hang the unit on the frame from the OUTDOOR/EXHAUST side. This results from maintaining the correct slope on the condensate drain side. Incorrect installation can lead to incorrect drainage of condensate.

To install the siphon in position, carefully place the elastic pipe over the side condensate connector pipe. Make a siphon using the elastic pipe and the clip (Fig.17). When the siphon is ready and connected to the waste water system, level the unit accordingly. Fill the siphon with water immediately after making it.

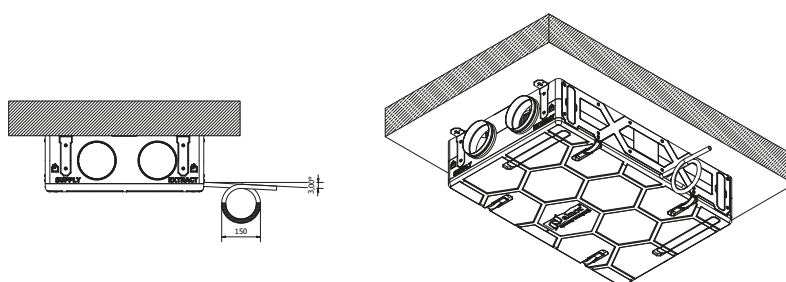


Fig. 17 - Siphon installation in horizontally suspended position and pipe level deviation

**NOTE:**

The wall plugs supplied are designed for concrete walls, solid bricks or cellular concrete. For other materials, use suitable plugs or screws, which can be purchased from a hardware shop.

**NOTE:**

Remember to fill the siphon. If the siphon dries out, the condensate is not drained from the casing (vacuum effect created by the running fans) and the water can leak through the casing or damage the fan. Fill the siphon by pouring water directly into it.

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Do not pour water into the extract duct connection!
Do not fill the siphon while the air handling unit is in operation!

Installation of the heat recovery unit does not require an angle. If there is space for it, an inclination of max. 3° from the bottom edge of the unit (irrespective of the type of installation) will have a positive effect on the condensate removal from the unit.

If there is no space for a condensate drain trap, it is recommended to purchase a condensate pump, which can be purchased from HVAC wholesalers.

4.5 Maintenance space

1. Usually you will connect your ducting directly to HRU Ø160 connectors.

Although HRU-SlimAIR has very low Sound power level in some cases it is recommended to install additional silencers (on supply and extract sides) to provide high level of acoustic comfort.

Description of connections:

SUPPLY – warm fresh air incoming to house

EXHAUST – cool stale air exhausted to outside

EXTRACT – warm stale air extracted from house

OUTDOOR – cool fresh air taken from outdoor

2. If you want use different duct connectors it is possible to unmount NSL male connectors and easily install replacement fittings (for example elbow, offset bend, etc.). NSL connector are snap-on mounted, to unmount them you need to pull them up using a some force.

Optional fittings connected to HRU must be in male-ended according to ALNOR's dimension standards (see our SPIRAL® catalogue with dimension tolerances). To provide the best tightness we suggest to use ALNOR's products with gasket. We are not responsible for tightness if fitting are purchased from other companies.

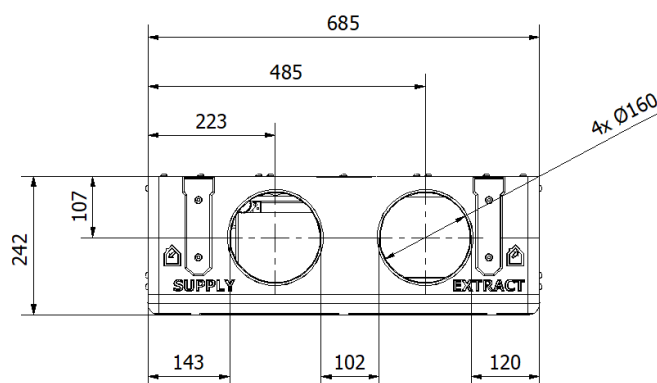


Fig. 18 - Dimensions of nozzles for assembly taking into account the space for insulation

4.5 Maintenance space

The figure shows the minimum maintenance clearances needed to change filters, check the control circuit, remove the heat exchanger. Filters can be changed from two positions, side and front. Caps are made for each position so that the filter can be replaced without opening the front cover.

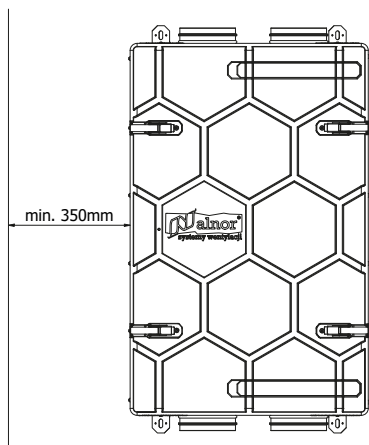


Fig. 16 - Maintenance space for side filter replacement

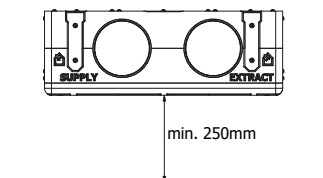


Fig. 17 - Maintenance space for filter replacement from the front side and heat exchanger replacement

5. First Start-up

5.1 Connection to electric power

Heat Recovery Unit has in standard power cable (length 3m) to plug unit in socket. After connection to electric power HRU begin starting procedure. Firstly bypass is closing (bypass will try close even it is physically closed. Do not worry about mechanical strength because it is not unsafe for bypass damper and motor). Closing bypass takes about 2 minutes. After that fans start with default speed.

5.2 LED status

Control circuit cover is equipped with 2-colour LED light (Green & Red) which informs user about actual status or faults of HRU-SlimAir and serves as an feedback for the installer.



NOTE:

When both the green and red LED are ON, this will be referenced as orange but can be seen as an orange/green/yellow color!

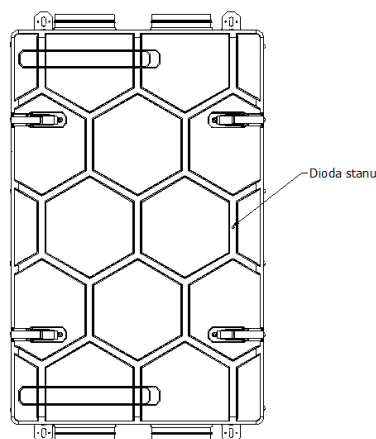


Fig. 21 - LED status light

<i>Function</i>	<i>Indication pattern</i>
Binding mode is active (continuously green) ¹	
Pre-heater active (long flashes of green LED)	
Frost protection active (long flashes of green LED)	
Bypass active	
Timer mode active	
External sensor demand active (it has the highest demand)	
Internal RH mode active (it has the highest demand)	
Normal mode (green LED flashes)	
Exhaust fan error	
Supply fan error	
Both fans error	
Emergency temperature stop	
Exhaust temperature sensor fault	
Inlet temperature sensor fault	
Supply temperature sensor fault	
Outlet temperature sensor fault	
RH sensor fault	
Pressure sensor one	
Pressure sensor two	
Exhaust Modbus error	
Supply Modbus error	
General Modbus error	
NTC Flow Measurement T1 error	
NTC Flow Measurement T2 error	
Communication error with Multizoning Component	
Filter dirty	

Table 1 - LED status light

1) When the button is pressed the binding mode is ended

5.3 Binding mode








Every time you switch electric power off and on again HRU-SlimAIR engages a binding mode (it lasts for 10 minutes, LED light is continuously green). When unit is in binding mode you can pair remote accessories (HRQ-SlimAIR-BUT 4 button control, HRQ-SlimAIR-SENS CO2 sensor, and RH sensor or BRDG Bidge – pairing procedure of all components are described in individual manuals attached to each product). After 10 minutes unit switches to normal operation mode (LED flashes green).

6. Normal operation

6.1 Control variants

Depending on chosen controller, various types of control and different modes are available. Detailed information is included in the manuals for controllers.

Following symbols are printed on all control devices and are connected with fans speed:

- **STANDBY** mode  tandby speed – fans are off
- **AWAY** mode  low fan speed
- **HOME** mode  medium fan speed
- **HOME+** mode  high fan speed
- **TIMER** mode  high fan speed, for a limited time
- **PARTY** mode  boost - highest fan speed (default 100%)
- **AUTO** mode  Between Low fan speed and High fan speed + 10%, based on demand sent by external sensors



NOTE:

For auto mode you need to have minimum one VMS sensor paired with HRU.



NOTE:

We advise against switching of both fans for longer periods of time (few days or more). It can cause humidity accumulation and mouldiness and fungus growth. Even when house is empty and there is no CO₂ and humidity production by people, still all building materials emit many different pollutions. We advise to set low speed during your home absence.

In normal operation mode there are several variants for controlling fans speed:

1. HRQ-SlimAIR-BUT-LM04 or HRQ-SlimAIR-BUT-LM11 (4 button controllers) – with this devices you can control fans speed manually by choosing one of three speeds: low (15%), medium (50%), high (70%), boost (100%). Detailed description of all HRQ-SlimAIR-BUT button functions can be found in manuals attached to each box.
2. HRQ-SlimAIR-SENS sensors (RH sensor or CO₂ sensor) – with these sensors you can control speed manually (by choosing low, medium or high speed) or automatically. In **Auto mode** sensors measure RH (relative humidity) and CO₂ concentration and then calculate speed fluently between low and high speed. In Auto mode the highest demand (maximum value of all sensors) is maintained for at least 10 minutes. With HRQ-SlimAIR-SENS sensors you can also choose speed manually by capacitive button. It works the same like in HRQ-SlimAIR-BUT button. Detailed description of all HRQ-SlimAIR-SENS sensor functions can be found in manuals attached to each box.

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3. Mobile application – to use mobile application you need to have BRDG bridge paired with the unit and properly configured Internet access. With PremAir application you can: change fans speed, check HRU status (normal mode, frost protection mode on, etc.) check faults, check temperatures and many more. To check all options of application download it for free from Google Play or App Store by typing in „PremAir“.

Default settings for SlimAIR series:

Tag	Speed	Air flow efficiency [%]	Air flow efficiency [m³/h]	Setting			
				SlimAIR-250	SlimAIR-250E	SlimAIR-250-CF	Slim-AIR-250E-CF
#63	Low Supply	15	37,5	24	22	15	15
#64	Low Exhaust			23	20	15	15
#65	Med. Supply	50	125	45	45	50	50
#66	Med. Exhaust			44	44	50	50
#67	High Supply	70	175	57	56	70	70
#68	High Exhaust			54	56	70	70
#149	Boost Supply	100	250	78	77	100	100
#150	Boost Exhaust			75	77	100	100

6.2 Temperature measurement

The temperature sensors measurement capabilities are from -20°C to 60°C.

Supply sensor

The supply sensor measures the air temperature which is blown into the building after it has passed the heat exchanger.

Extract sensor

The extract sensor measures the temperature of the air which is extracted from the building before it enters the heat exchanger or bypass valve.

Exhaust sensor

The exhaust sensor measures the air which is extracted from the building after it has passed the heat exchanger.

Outdoor sensor

The outdoor sensor measures the temperature of the air which is taken from outside before it enters the heat exchanger.

6.3 Frost protection

Frost protection is achieved by reducing the supply fan’s revolutions to the minimum level of the fan. The whole process goes gradually, depending on the outdoor temperature drop. When the outdoor temperature continues to decrease and the fan has reached the set minimum revolutions, the extract fan will start to gradually increase its revolutions. The advantages of this method are a lower airflow unbalance in the system and the possibility for the unit to work with the pre-heater during the defrosting phase.

The algorithm works when:

The outdoor temperature < (Defrosting set point for frost protection #40[-20]) + (Offset for frost protection defrost #114[22]) where #40 should be as low as possible as it is responsible for the frost temperature. The advantage of this method is lower imbalance of the flow system and the possibility of cooperation with the pre-heater during defrosting operation.

The [X] values are standard values programmed by the manufacturer.



NOTE:

After a power on, the frost protection mode is blocked for 5 minutes.

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6.4 Built-in pre-heater

The preliminary heater is an accessory installed to protect the heat exchanger against freezing. Heater operation principals are presented by following formulas and conditions:

1. The pre-heater is turned on when all of the following conditions are met:
 - $(T_{\text{outdoor}} + T_{\text{exhaust}}) / 2 < (\text{Pre-heater setpoint \#46}[0^{\circ}\text{C}])$.
 - $T_{\text{outdoor}} < (\text{Frost protection Pre-heater setpoint \#39}[-3^{\circ}\text{C}])$.
 - The supply fan is on (necessary for heater cooling).
2. The pre-heater is turned off when at least one of the following conditions is met:
 - $(T_{\text{outdoor}} + T_{\text{exhaust}}) / 2 > (\text{Pre-heater setpoint \#46}[0^{\circ}\text{C}]) + (\text{Pre-heater off temp difference \#47}[+3^{\circ}\text{C}])$
 - The supply air fan is turned off,
 - The temperature sensor on the outdoor air X23 is faulty,
 - Unit is in start-up (5min).

The [X] values are default values programmed by the manufacturer.

6.5 By-pass

6.5.1 Passive Heating

Passive Heating can be used to heat a building with outdoor air when the room temperature is lower than the outside temperature and lower than the temp setpoint.

For example, in the spring, after a cool night, a cooled down building may be heated by outdoor air, which has been heated by the sun throughout the day.

Passive heating may also be referred to as 'Free heating', as no conventional energy consumption needed.

Heating is possible when all of the following conditions are met:

- The outdoor temperature \geq the extract temperature (room temperature) + 5°C (Free ventilation outside offset #118).

Heating is not possible when one of the following conditions is met:

- The outdoor temperature \leq the extract temperature (room temperature) + 5°C (Free ventilation outside offset #118 -0.5°C).

Heating is activated when all of the following conditions are met:

- Heating is possible.
- The extract temperature (room temperature) \leq +20°C (Free ventilation heating setpoint #117).

Heating is deactivated when one of the following conditions is met:

- Heating is not possible.
- The extract temperature (room temperature) \geq +20°C (Free ventilation heating setpoint #117 + 0.5°C).

When heating is activated the bypass is fully (100%) opened.

Then, based on the temperature reading, it closes smoothly if the temperature exceeds the set level.

6.5.2 Passive Cooling

Passive Cooling can be used to cool a building with outdoor air when the room temperature is higher than the outside temperature and higher than the temp setpoint.

For example, in the summer, during a cool night, the a heated up building may be cooled by outdoor air.

Passive cooling may also be referred to as 'Free cooling', as no conventional energy consumptions is needed, or 'Night ventilation' as this type of ventilation mostly happens at night.

Cooling is possible when all of the following conditions are met:

- The outdoor temperature \leq The extract temperature (room temperature) - 5°C (Free ventilation outside offset #118).

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Cooling is not possible when one of the following conditions is met:

- The outdoor temperature \geq The extract temperature (room temperature) - 5°C (Free ventilation outside offset #118) +0.5°C.

Cooling is activated when all of the following conditions are met:

- Cooling is possible.
- The extract temperature (room temperature) \geq +20°C (Free ventilation heating setpoint #117) + 4°C (Free ventilation offset cool setpoint #132).

Cooling is deactivated when one of the following conditions is met:

- Cooling is not possible.
- The extract temperature (room temperature) \leq +20°C (Free ventilation heating setpoint #117) + 4°C (Free ventilation offset cool setpoint #132) -0.5°C.

When cooling is activated the bypass is fully (100%) opened.

Następnie na podstawie odczytu temperatur płynie się zamyka jeśli temperatura przekroczy zadany poziom.

6.6 Emergency stop

The emergency stop becomes active when all following conditions are true:

- The emergency stop is not blocked
- $T_{\text{supply}} < +5^{\circ}\text{C}$ (Emergency stop temperature #20)



NOTE:

The emergency stop can only be cleared by a power down. (power cut off).

6.7 Auto return to auto mode

Parameter Auto return to auto mode (#60) is normally disabled. If you enable this option (only by authorized service personnel), unit returns to auto mode automatically after set value.



NOTE:

Auto mode works only when you have minimum one VMS sensor (CO2 or RH) paired with HRU.

6.8 Filters

Unit comes from the factory equipped with two filters: ISO COARSE 70% (old version G4). It is possible to have also ISO ePMI 55% (old version F7) as an additional equipment.



NOTE:

Please remember that additional filters increase pressure drop in all ventilation system.

HRU-SlimAIR

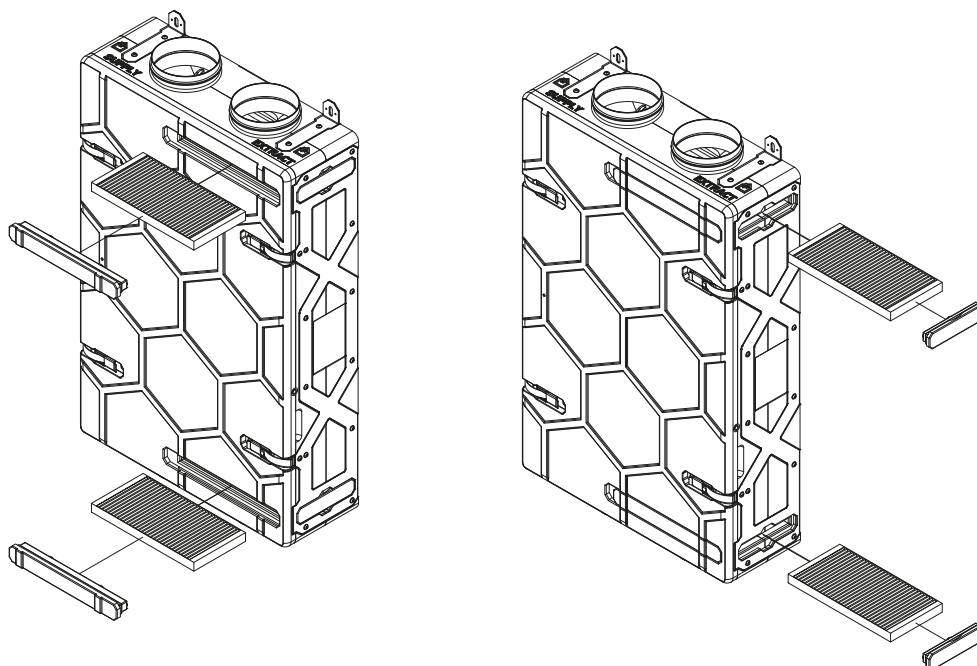


Fig. 22 - Filters

If unit shows alert about filter change it is probably time to change filters. Filters replacement is very easy and you can do it without any additional tools.



NOTE:

Reset the filter counter:

- **HRQ-SlimAIR-BUT-LM04:** Reset the dirty filter message by pressing and holding both the AWAY and AUTO buttons for at least 4 seconds.
- **HRQ-SlimAIR-BUT-LM11:** Reset the dirty filter message by pressing and holding both the AWAY and PARTY buttons for at least 4 seconds.
- **Application (option):** use the "Change filters" button.

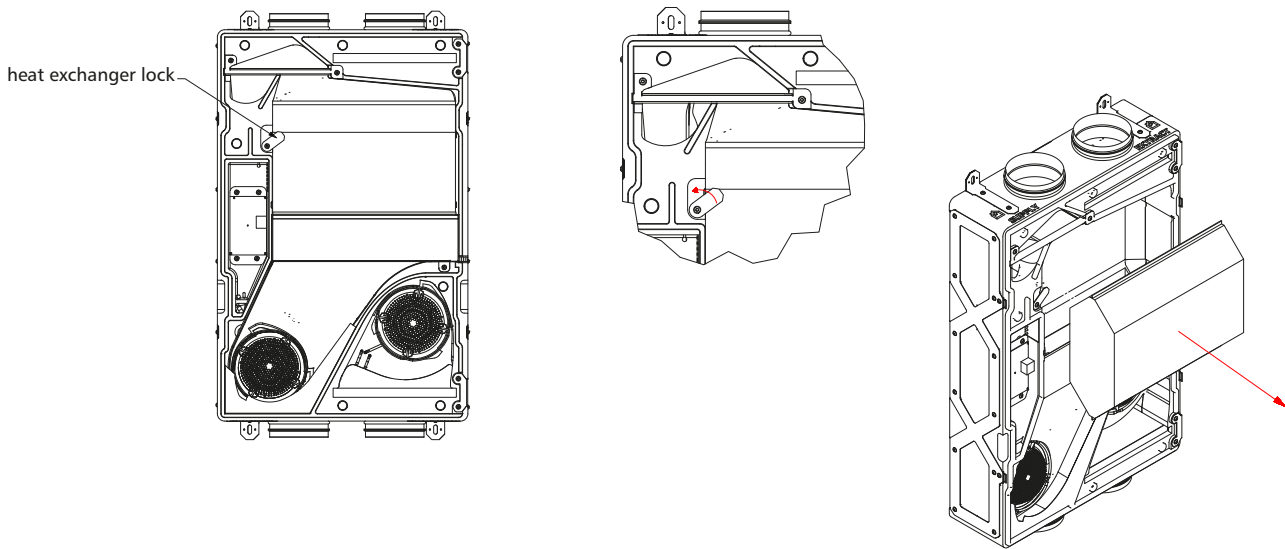
6.9 Heat exchanger cleaning

Heat exchanger ought to be cleansed minimum once a year. The amount of dust layered on the heat exchanger depends on: frequency of filters change and indoor and outdoor air quality. Heat exchanger can be washed with warm water with mild detergent (pH from 6 to 8).

To clean heat exchanger:

1. Switch power off
2. Open four clamps placed on side walls and remove cover
3. Unscrew condensate tray (2 torx M4 screws)
4. Turn over heat exchanger lock
5. Remove heat exchanger by pulling strap
6. Place clean or new heat exchanger
7. Screw on heat exchanger lock
8. Close front cover (check if cover is evenly touching the rest of housing)
9. Close four clamps placed on side walls
10. Switch power on

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Rys. 23- Heat exchanger cleaning

6.10 Connecting the ground heat exchanger

Heat recovery unit has a possibility to connect the ground heat exchanger. This function allows you to control a valve that optionally supply air through the ground-to-air heating system. To do this, install a dedicated damper with the actuator (DATVTML). Damper works by electric actuator DM-ML-06-230. For quick mounting of the actuators we recommend specially designed stands DA-SUP-S and DA-SUP-M.

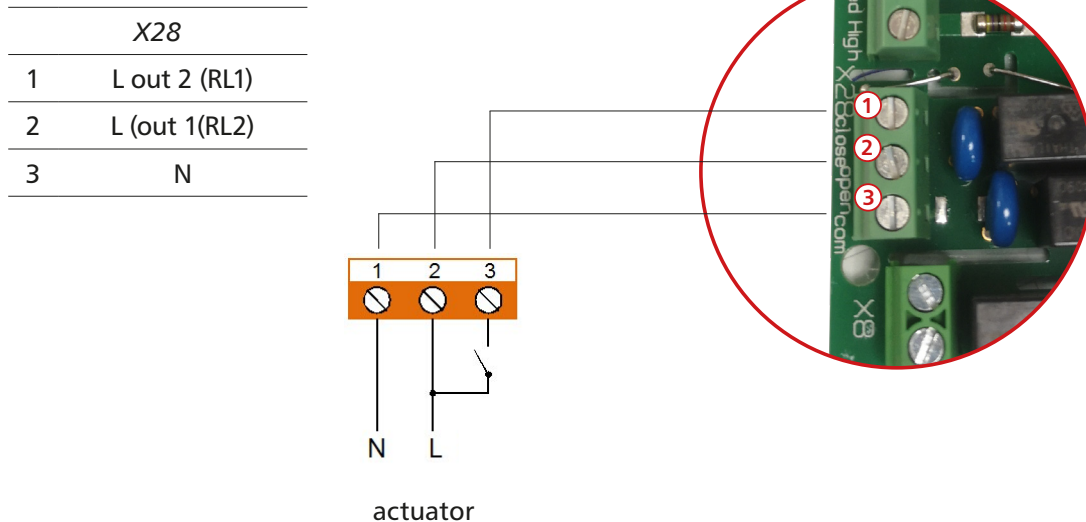
<i>Actuators matching DA-SUP-S mountig plate</i>	<i>Actuators matching DA-SUP-M mountig plate</i>
Alnor DM-ML-06	Alnor DM-ML-06
Belimo CM	Alnor DM-ML-08
Belimo LM	Belimo CM
Belimo TR	Belimo NM

When you mount the actuator to the damper, you should remember to:

- the damper was open in the HRU-OUTDOOR direction (not GHE).
- if the actuator can be mounted in the left-right position, make sure it is mounted correctly as described below.

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In order for the valve to operate correctly, the dumper with a DM-ML-06-230 electric actuator should be connected to X28 in the following order:



The output to control the geothermal heat exchanger valve, can be configured using **Geothermal Heat Exchanger Valve Output (#195)** from 0 to 1.

The automatics controls the valve based on the temperature at the outdoor (Temperature 4 outdoor). If the Temperature 4 outdoor is lower than the **Geothermal Heat Exchanger Outdoor Temperature Below (#193)** or higher than the **Geothermal Heat Exchanger Outdoor Temperature Above (#194)** the valve will be opened and the air going to the unit will be taken from the ground heat exchanger. If the temperature sensor (Temperature 4 outdoor) is broken or if the above condition is not met the valve will remain closed.

Values **Geothermal Heat Exchanger Outdoor Temperature Below (#193)** and **Geothermal Heat Exchanger Outdoor Temperature Above (#194)** are set in default mode for 5°C and 25°C. They can be edited from the service tool and the LCD Display controller.

Functional check:

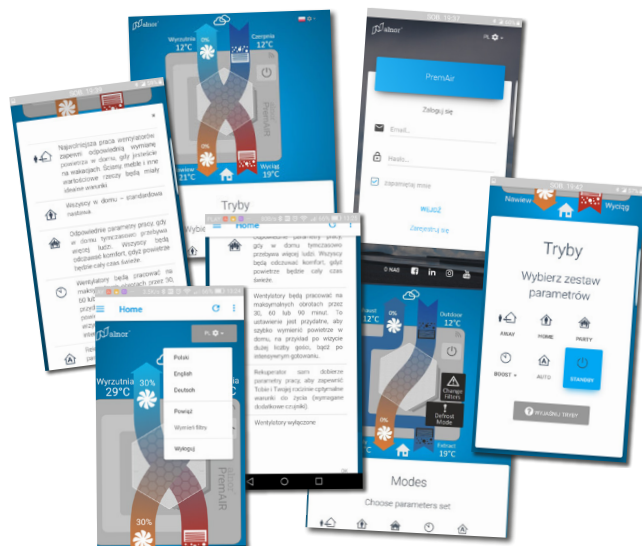
Temperature 4 outdoor >5°C (#193) and <25°C (#194) valve position HRU-OUTDOOR

Temperature 4 outdoor <5°C (#193) and >25°C (#194) valve position HRU-GHE

7. PremAIR application

Available for download in

Google Play and App Store: PremAIR



HRU-SlimAIR

8. Reprocessing

This appliance bears the symbol of the barred waste bin. This indicates that, at the end of its useful life, it must not be disposed of as domestic waste, but must be taken to a collection center for waste electrical and electronic equipment, or returned to a retailer on purchase of a replacement.



It is the user's responsibility to dispose of this appliance through the appropriate channels at the end of its useful life. Failure to do so may incur the penalties established by laws governing waste disposal. Proper differential collection, and the subsequent recycling, processing and environmentally compatible disposal of waste equipment avoids unnecessary damage to the environment and possible related health risks, and also promotes recycling of the materials used in the appliance.

For further information on waste collection and disposal, contact your local waste disposal service, or the shop from which you purchased the appliance.

Manufacturers and importers fulfil their responsibilities for recycling, processing and environmentally compatible disposal either directly or by participating in collective systems.

9. Troubleshooting

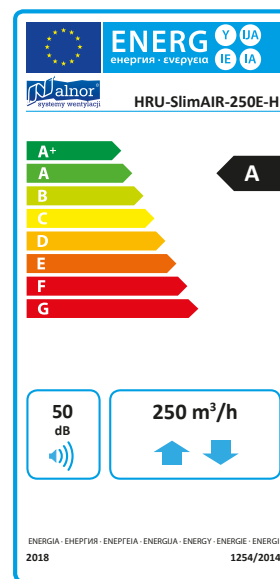
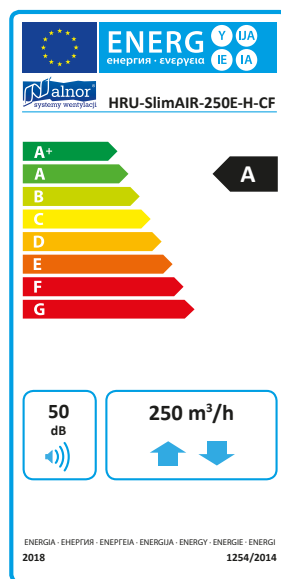
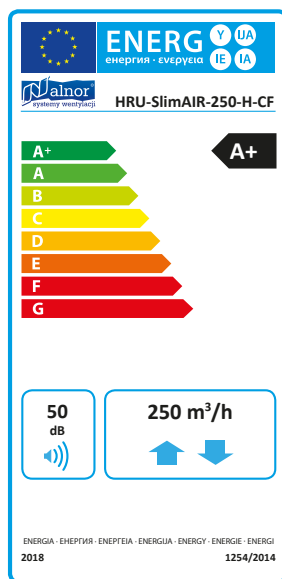
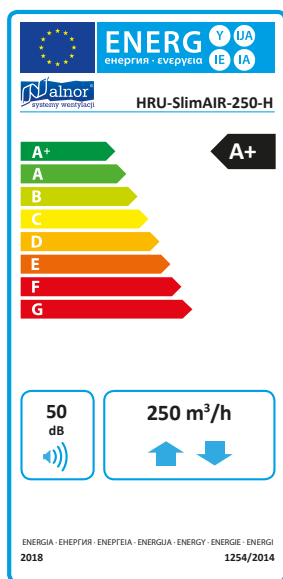
<i>Problem</i>	<i>Reason</i>	<i>Solution</i>
Unit status LED (Figure 21, Table 1) flashes 1x red and 1x orange	Exhaust fan error	Call service
Unit status LED (Figure 21, Table 1) flashes 1x red and 2x orange	Supply fan error	Call service
Unit status LED (Figure 21, Table 1) flashes 2x red and 1x orange	Emergency temperature stop. Supply air temperature below +5°C. Possible reasons:	Reset unit by switch plug off for 10sec and switch it on.
	wrong duct connection	Check duct connection according to chapter 4.4
	temperature inside rooms below +15°C	Check temperature inside house.
Unit status LED (Figure 21, Table 1) flashes 2x red and 2x orange	Exhaust temperature sensor fault	Call service
Unit status LED (Figure 21, Table 1) flashes 2x red and 3x orange	Inlet temperature sensor fault	Call service
Unit status LED (Figure 21, Table 1) flashes 2x red and 4x orange	Supply air temperature sensor fault	Call service
Unit status LED (Figure 21, Table 1) flashes 2x red and 5x orange	Exhaust temperature sensor fault	Call service
Unit status LED (Figure 21, Table 1) flashes 1x green and 1x red	Dirty filters	Replace filters and reset filters (see chapter 6.4)
Unit status LED (Figure 21, Table 1) flashes 3x red and 3x orange	Humidity sensor error	Call service
Unit status LED (Figure 21, Table 1) flashes 4x red and 1x orange	Modbus error on extract	Call service
Unit status LED (Figure 21, Table 1) flashes 4x red and 2x orange	Modbus error on supply air	Call service
Unit status LED (Figure 21, Table 1) flashes 4x red and 3x orange	General Modbus error	Call service
Unit status LED (Figure 21, Table 1) flashes 5x red and 1x orange	NTC T1 sensor error	Call service
Unit status LED (Figure 21, Table 1) flashes 5x red and 2x orange	NTC T2 sensor error	Call service
Unit status LED (Figure 21, Table 1) flashes 6x red and 1x orange	Connection error with the control panel	Call service
Unit status LED (Figure 21, Table 1) flashes 1x red and 3x orange	Both fans failed	Call service

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Supply fan switeches off during temperatures below +1 °C. Extract fan works normally	Defrost procedure is active.	Normal operation mode which protects heat exchanger before freezing.
Bad smell in supply air	Intake valve is too close to exhaust valve.	Change position of intake or exhaust valve.
	Summer siphon dry.	Fill summer siphon.
Water drains from unit	Wrong duct connection	Check duct connection according to chapter 4.4
	Condensate drain elastic pipe wrong connection	Check siphon connection according to chapter 4.2
	Wrong unit leveling	Check unit leveling accrodging to chapter 4.2
Water "grougle" in unit	Siphon is not connected	Connect siphon accodring to chapter 4.2
	Siphon is dry	Fill water to siphon accrodging to chapter 4.2
Passive cooling is not enough	Passive cooling does not mean air conditioning (active cooling). To increase passive cooling change speed fans speed to higher speed.	

10. Energy label

Model	Sound power level L_{WA} dB(A)* [dB]	Air flow rate [m ³ /h]	Energy class			
			Manual control	Clock control	Central demand control (1 sensor)	Local demand control (2 sensor)
HRU-SlimAIR-250-H	50	250	A	A	A	A+
HRU-SlimAIR-250-H-CF	50	250	A	A	A	A+
HRU-SlimAIR-250E-H	50	250	A	A	A	A
HRU-SlimAIR-250E-H-CF	50	250	A	A	A	A



11. Declaration of conformity

DEKLARACJA ZGODNOŚCI CE DECLARATION OF CONFORMITY

My ALNOR Spółka z o.o., Aleja Krakowska 10, 05-552 Wola Mrokowska, niniejszym deklarujemy, że:

Produkt: centrala wentylacyjna z odzyskiem ciepła SlimAIR

typ: HRU-SlimAIR-250

producent: Alnor Systemy Wentylacji Sp.z o.o. POLSKA 05-552 Wola Mrokowska, Aleja Krakowska 10

spełnia wymagania następujących dyrektyw:

LVD 2014/35/EU - dyrektywa niskiego napięcia
EMC 2014/30/EU - kompatybilność elektromagnetyczna

Przy projektowaniu i produkcji w/w urządzeń zastosowano normy:
PN-EN 13141-7:2010

Niniejszą deklarację wystawiono z pełną odpowiedzialnością, w oparciu o przeprowadzone testy i badania. Deklaracja ta jest podstawą oznaczania wyrobu znakiem CE.

Alnor Systemy Wentylacji Sp. z o.o.

POLSKA 05-552 Wola Mrokowska, Aleja Krakowska 10
Tel.: + 48 22 737 40 00
Fax.: + 48 22 737 40 04
e-mail: alnor@alnor.com.pl
e-mail: handlowy@alnor.com.pl

HRU-SlimAIR

12. Product fiche

Supplier's name or trade mark	ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji		
Model identifier	HRU-SlimAIR-250-H			HRU-SlimAIR-250-H			HRU-SlimAIR-250-H			HRU-SlimAIR-250-H		
Specific energy consumption (SEC) [kWh/(m ² .a)] (cold, average, warm climate)	-73.63	-36.71	-12.93	-74.79	-37.64	-13.73	-76.99	-39.39	-15.22	-80.98	-42.46	-17.77
Energy class	A+	A	E	A+	A	E	A+	A	E	A+	A+	E
Declared typology	Bidirectional			Bidirectional			Bidirectional			Bidirectional		
Type of drive	Variable			Variable			Variable			Variable		
Type of heat recovery system	Recuperative			Recuperative			Recuperative			Recuperative		
Thermal efficiency ¹	85%			85%			85%			85%		
Maximum flow rate [m ³ /h] ²	250			250			250			250		
Maximum fans' electric power input	91.5			91.5			91.5			91.5		
Sound power level L _{WA} [dB(A)]	50.5			50.5			50.5			50.5		
Reference flow rate [m ³ /h] ³	175			175			175			175		
Reference pressure difference [Pa] ¹	50			50			50			50		
SPI [W/m ³ /h] ⁴	0.23			0.23			0.23			0.23		
Control factor	1			0,95			0,85			0,65		
Declared maximum leakages ¹	External: 1.14% Internal: 2.45%			External: 1.14% Internal: 2.45%			External: 1.14% Internal: 2.45%			External: 1.14% Internal: 2.45%		
Position and description of visual filter warning	Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller		
Internet address for pre-/disassembly instructions	www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk		
The annual electricity consumption (AEC) [kWh/a] per 100m ² of room area	864.7	327.7	282.7	837.2	300.2	255.2	786.3	249.3	204.3	701.5	164.5	119.5
The annual heating saved (AHS) [kWh/a] per 100m ² of room area	8652	4423	2000	8699	4474	2011	8792	4494	2032	8979	4590	2075

¹ According to EN 13141-7:2010

² According to EN 13141-7:2010 with at pressure difference 100Pa

³ According to EN 13141-7:2010 at 70% of maximum flow at static pressure difference 50Pa

⁴ According to EN 13141-7:2010 at reference point - 70% of maximum air flow

HRU-SlimAIR

Supplier's name or trade mark	ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji		
Model identifier	HRU-SlimAIR-250E-H			HRU-SlimAIR-250E-H			HRU-SlimAIR-250E-H			HRU-SlimAIR-250E-H		
Specific energy consumption (SEC) [kWh/(m ² .a)] (cold, average, warm climate)	-68.01	-34.05	-11.96	-69.43	-35.09	-12.79	-72.17	-37.07	-14.34	-77.24	-40.64	-17.04
Energy class	A+	A	E	A+	A	E	A+	A	E	A+	A	E
Declared typology	Bidirectional			Bidirectional			Bidirectional			Bidirectional		
Type of drive	Variable			Variable			Variable			Variable		
Type of heat recovery system	Recuperative			Recuperative			Recuperative			Recuperative		
Thermal efficiency ¹	75.3%			75.3%			75.3%			75.3%		
Moisture recovery efficiency	44.5%			44.5%			44.5%			44.5%		
Maximum flow rate [m ³ /h] ²	250			250			250			250		
Maximum fans' electric power input	90.3			90.3			90.3			90.3		
Sound power level L _{WA} [dB(A)]	50.5			50.5			50.5			50.5		
Reference flow rate [m ³ /h] ³	175			175			175			175		
Reference pressure difference [Pa] ¹	50			50			50			50		
SPI [W/m ³ /h] ⁴	0.21			0.21			0.21			0.21		
Control factor	1			0.95			0.85			0.65		
Declared maximum leakages ¹	External: 0.67% Internal: 0.79%			External: 0.67% Internal: 0.79%			External: 0.67% Internal: 0.79%			External: 0.67% Internal: 0.79%		
Position and description of visual filter warning	Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller		
Internet address for pre-/disassembly instruction	www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk		
The annual electricity consumption (AEC) [kWh/a] per 100m ² of room area	847.6	310.6	265.6	821.7	284.7	239.7	773.9	236.9	191.9	694.2	157.2	112.2
The annual heating saved (AHS) [kWh/a]	8047	4114	1860	8124	4153	1878	8278	4232	1914	8586	4389	1985

¹ According to EN 13141-7:2010

² According to EN 13141-7:2010 with at pressure difference 100Pa

³ According to EN 13141-7:2010 at 70% of maximum flow at static pressure difference 50Pa

⁴ According to EN 13141-7:2010 at reference point - 70% of maximum air flow

HRU-SlimAIR

Supplier's name or trade mark	ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji		
Model identifier	HRU-SlimAIR-250-H-CF			HRU-SlimAIR-250-H-CF			HRU-SlimAIR-250-H-CF			HRU-SlimAIR-250-H-CF		
Specific energy consumption (SEC) [kWh/(m ² .a)] (cold. average. warm climate)	-73.63	-36.71	-12.93	-74.79	-37.64	-13.73	-76.99	-39.39	-15.22	-80.98	-42.46	-17.77
Energy class	A+	A	E	A+	A	E	A+	A	E	A+	A+	E
Declared typology	Bidirectional			Bidirectional			Bidirectional			Bidirectional		
Type of drive	Variable			Variable			Variable			Variable		
Type of heat recovery system	Recuperative			Recuperative			Recuperative			Recuperative		
Thermal efficiency ¹	85%			85%			85%			85%		
Maximum flow rate [m ³ /h] ²	250			250			250			250		
Maximum fans' electric power input	91.5			91.5			91.5			91.5		
Sound power level L _{WA} [dB(A)]	50.5			50.5			50.5			50.5		
Reference flow rate [m ³ /h] ³	175			175			175			175		
Reference pressure difference [Pa] ¹	50			50			50			50		
SPI [W/m ³ /h] ⁴	0.23			0.23			0.23			0.23		
Control factor	1			0.95			0.85			0.65		
Declared maximum leakages ¹	External: 1.14% Internal: 2.45%			External: 1.14% Internal: 2.45%			External: 1.14% Internal: 2.45%			External: 1.14% Internal: 2.45%		
Position and description of visual filter warning	Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller		
Internet address for pre-/disassembly instructions	www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk		
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The annual heating saved (AHS) [kWh/a] per 100m ² of room area	8652	4423	2000	8699	4474	2011	8792	4494	2032	8979	4590	2075

¹ According to EN 13141-7:2010

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HRU-SlimAIR

Supplier's name or trade mark	ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji		
Model identifier	HRU-SlimAIR-250E-CF			HRU-SlimAIR-250E-CF			HRU-SlimAIR-250E-CF			HRU-SlimAIR-250E-CF		
Specific energy consumption (SEC) [kWh/(m ² .a)] (cold, average, warm climate)	-68.01	-34.05	-11.96	-69.43	-35.09	-12.79	-72.17	-37.07	-14.34	-77.24	-40.64	-17.04
Energy class	A+	A	E	A+	A	E	A+	A	E	A+	A	E
Declared typology	Bidirectional			Bidirectional			Bidirectional			Bidirectional		
Type of drive	Variable			Variable			Variable			Variable		
Type of heat recovery system	Recuperative			Recuperative			Recuperative			Recuperative		
Thermal efficiency ¹	75.3%			75.3%			75.3%			75.3%		
Moisture recovery efficiency	44.5%			44.5%			44.5%			44.5%		
Maximum flow rate [m ³ /h] ²	250			250			250			250		
Maximum fans' electric power input	90.3			90.3			90.3			90.3		
Sound power level L _{WA} [dB(A)]	50.5			50.5			50.5			50.5		
Reference flow rate [m ³ /h] ³	175			175			175			175		
Reference pressure difference [Pa] ¹	50			50			50			50		
SPI [W/m ³ /h] ⁴	0.21			0.21			0.21			0.21		
Control factor	1			0.95			0.85			0.65		
Declared maximum leakages ¹	External: 0.67% Internal: 0.79%			External: 0.67% Internal: 0.79%			External: 0.67% Internal: 0.79%			External: 0.67% Internal: 0.79%		
Position and description of visual filter warning	Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller			Visual on status LED light on unit and on status LED light on controller		
Internet address for pre-/disassembly instruction	www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk			www.ventilation-alnor.co.uk		
The annual electricity consumption (AEC) [kWh/a] per 100m ² of room area	847.6	310.6	265.6	821.7	284.7	239.7	773.9	236.9	191.9	694.2	157.2	112.2
The annual heating saved (AHS) [kWh/a] per 100m ² of room area	8047	4114	1860	8124	4153	1878	8278	4232	1914	8586	4389	1985

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³ According to EN 13141-7:2010 at 70% of maximum flow at static pressure difference 50Pa

⁴ According to EN 13141-7:2010 at reference point - 70% of maximum air flow