

Heat recovery ventilation unit with counterflow exchanger

HRU-MinistAIR



Description

HRU-MinistAIR residential heat recovery units are a new version of a well recognized model, based on a completely new design. Airflows of 250 or 325 m³/h and self-supporting casing made of EPP, acting as thermal and acoustic insulation at the same time. Counter-flow heat exchangers, made of PET, are responsible for heat recovery and **enthalpic exchangers (E)** recover moisture. In addition, the built-in **RH sensor** will take care of moisture level in the building. **Left and Right version**, together with horizontal installation, will allow you to adapt the unit to almost each project. Moreover, **56 cm** width will allow installation in narrow spaces or wardrobes.

HRU-MinistAIR units can be equipped with a **Constant Flow (CF)** module. Wireless communication is used, likewise other series, both for controllers and **IAQ sensors**. Control is possible also via a **mobile application**.

The electric pre-heater will provide an additional frost protection for the heat exchanger.

Available versions:

- HRU-MinistAIR-250 - counter-flow heat exchanger
- HRU-MinistAIR-250E - enthalpy exchanger (heat and moisture recovery)
- HRU-MinistAIR-325 - counter-flow heat exchanger
- HRU-MinistAIR-325E - enthalpy exchanger (heat and moisture recovery)

HRU-MinistAIR-...-CF - all model MinistAIR can be equipped with the Constant Flow system (on request).

HRU-MinistAIR-...-H - all model MinistAIR can be equipped with the electric pre-heater (on request).

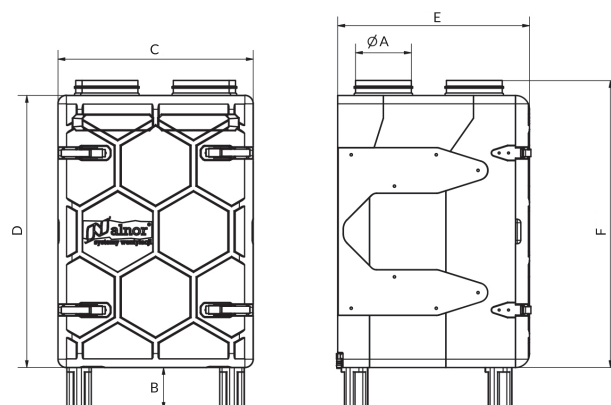
Connections:

- L - left side
- R - right side
- LS - left side horizontal
- RS - right side horizontal

Example:

HRU-MinistAIR-L-250E-H-CF - floor standing model, with an enthalpy heat exchanger, heater and CF system.

Dimensions



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
MinistAIR-250	160	120	560	780	550	822,5
MinistAIR-325	160	120	560	780	550	822,5

Product code example

Product code: **HRU-MinistAIR - L - 250E - H - CF**

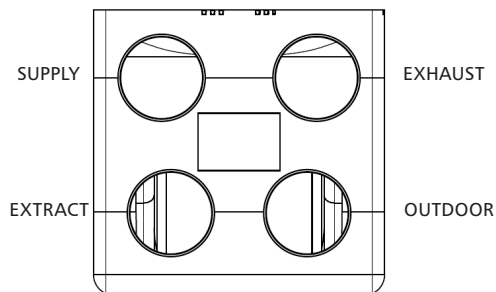
type _____
 version _____
 air flow _____
 heat exchanger _____
 pre-heater _____
 constant flow _____

Heat recovery ventilation unit with counterflow exchanger

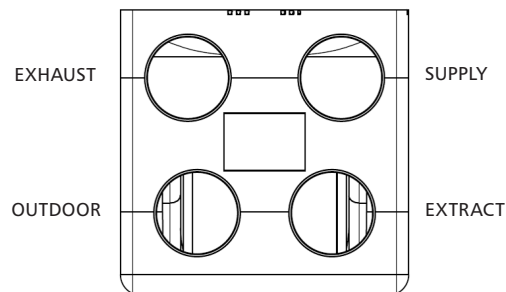
HRU-MinistAIR

Versions

HRU-MinistAIR-...-L (standard)

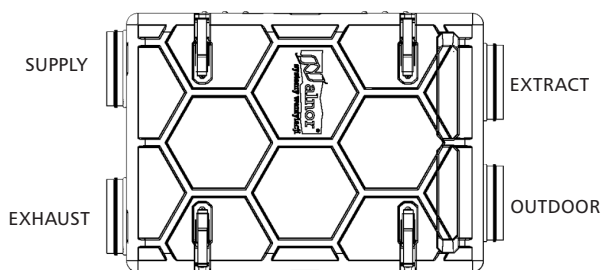


HRU-MinistAIR-...-R

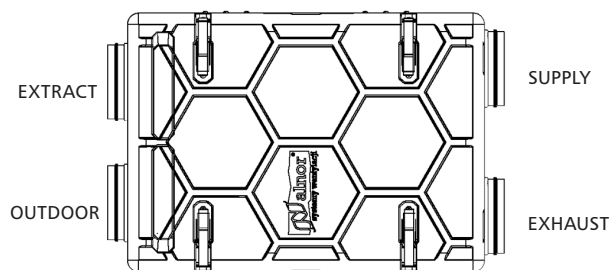


The position of the SUPPLY and EXHAUST can be altered, enabling horizontal position:

HRU-MinistAIR-...-LS



HRU-MinistAIR-...-RS



Installation / Model	HRU-MinistAIR-L-250 / HRU-MinistAIR-R-250	HRU-MinistAIR-LS-250 / HRU-MinistAIR-RS-250	HRU-MinistAIR-L-250 / HRU-MinistAIR-R-325	HRU-MinistAIR-LS-250 / HRU-MinistAIR-RS-325
Vertical	✓	✗	✓	✗
Horizontal	✗	✓	✗	✓

Heat recovery ventilation unit with counterflow exchanger

HRU-MinistAIR

Technical data

	HRU-MinistAIR -250	HRU-MinistAR- -250-CF	HRU-MinistAIR- -250E	HRU-MinistAR- -250E-CF	HRU-MinistAIR-325 / HRU-MinistAR- -325-CF	HRU-MinistAIR- -325E / HRU-Mini- stAR-325E-CF
Air flow [m³/h] @ 100 Pa	250	250	250	250	325	325
Maximal efficiency % ¹	96,0	96,0	92,0	92,0	95,5	88,0
Efficiency % (acc. 1254/2014) ² Efficiency % (acc. 1254/2014) ²	90,2	90,2	82,4	82,4	88,1	78,5
Maximal moisture efficiency %	-	-	77,8	77,8	-	74,8
Heat exchanger	counterflow PET	counterflow PET	counterflow enthalpy	counterflow enthalpy	counterflow PET	counterflow enthalpy
Voltage [V/Hz]	230 / 50	230 / 50	230 / 50	230 / 50	230 / 50	230 / 50
Maximum power con- sumption [W]	106,0	133,0	94,0	125,5	145,0	135,0
Sound power level L_{WA} [dB (A)]	48	48	48	48	49	49
Weight [kg]	25	25	25	25	25	25
Filters	ISO Coarse 70% / ISO Coarse 70%					
Built-in pre-heater	X	X	X	X	X	X
Pre-heater	✓ (optional)	✓ (optional)	✓ (optional)	✓ (optional)	✓ (optional)	✓ (optional)
Built-in RH sensor	✓	✓	✓	✓	✓	✓

¹ Maximal thermal efficiency acc. to EN13141-7 at minimum air flow

² Recovery efficiency at the reference point, that is, about 70% of the maximum flow according to EN 13141-7, according to EU 1253/2014 and EU 1254/2014

Heat Recovery Unit PremAIR, SlimAIR and MinistAIR

Controllers and sensors

Control

Ventilation units can be controlled in several ways:

Application for Android, iOS and via a browser (via the HRQ-GATE internet gateway)



Application



HRQ-GATE

The gateway is connected to the local network via the Ethernet port. Communication with the device is wireless. On-line control is possible after installing the application on Android and iOS or via a browser on a computer. The application graphically illustrates the operation of the device, allows you to change modes and read basic parameters.

Controller LCD, flush-mounted (HRQ-BUT-LCD)



This version has an LCD display, allows you to select 1 of 7 operating modes, program the calendar and read additional operating parameters such as temperatures, current fan speeds or the by-pass status. It also allows you to configure ventilation speeds (according to user preferences).

4-button controller



HRQ-BUT-LM11



HRQ-BUT-LM04

This controller allows you to choose between 4 modes. The LM04 model has an AUTO button (instead of PARTY), recommended when there is at least 1 CO₂ or RH sensor in the system. Signalling of operation and errors by means of a LED diode.



The **HRQ-SW3-I** rotary switch is an option for wired control of the ventilation unit and allows you to choose between 3 speeds (AWAY, HOME, HOME +)

Control via CO₂ and RH sensors (we recommend as additional control).



HRQ-SENS-CO2



HRQ-SENS-RH



HRQ-SENS-I-CO2
(flush-mounted)

Each sensor also functions as a controller - it allows you to select from manual modes and, of course, engage AUTO mode. Indicates errors or dirty filters, but there is no filter status reset option.

Motion sensor **HRQ-SENS-PIR**



The sensor is designed to detect the presence of a person by motion detection and increase the ventilation demand (70% for 15 minutes). In addition, through a relay, the sensor can switch on the light.



Modbus gate (**HRQ-MODBUS**),

HRQ-MODBUS gate, which allows to control the device using the universal modbus protocol and RS485 data transmission.






























NOTE!

Controller is not included in the kit. During purchase, choose the controller that is right for you. Multiple controllers can be connected at once - e.g. 4-button controller and an Internet gateway.

Heat Recovery Unit PremAIR, SlimAIR and MinistAIR

Controllers and sensors

Control options table:

Model	Photo	Communication with unit	Power supply	No of modes	AUTO mode*	Display	Calendar	Dirty filter signalization	Changing speed settings
HRQ-SW3-I		cable 	230V 	3	no	no	no	no	no
HRQ-BUT-LM11		wireless 	battery 	4	no	no	no	yes	no
HRQ-BUT-LM04		wireless 	battery 	4	yes	no	no	yes	no
HRQ-BUT-LCD		wireless 	230 V 	7	yes	yes	yes	yes	yes
HRQ-GATE		wireless 	230 V 	6	yes	yes	no	yes	no
HRQ-SENS-CO2		wireless 	230 V 	5	yes	no	no	yes	no
HRQ-SENS-I-CO2		wireless 							
HRQ-SENS-RH		wireless 	battery 	4	yes	no	no	yes	no
HRQ-MODBUS		wireless 	230 V 	-	-	-	-	-	-
HRQ-MODBUS		wireless 	n/d	7	yes	no	no	yes	no

* requires at least 1 CO₂ or RH sensor

Heat Recovery Unit PremAIR, SlimAIR and MinistAIR

Controllers and sensors

Constant Flow (CF)

SlimAIR air handling units optionally can be equipped with the Constant Flow system, whose task is to maintain a constant air flow in the installation. CF works by reading the difference between the dynamic pressure around the fan and the static pressure in the duct in front of the fan. The CF system constantly monitors the pressure in the ducts and if the resistance increases, it increases the speed of the fans to maintain a constant flow, such as on the first day when the ventilation unit was commissioned. During exploitation, the installation pressure is naturally disrupted (dirty filters, condensation of water in the heat exchanger, temperature difference changing the air mass). CF counteracts to those changes, thanks to which the airflows remain sustainable, and only a sustainable system takes full advantage of the air handling unit's capabilities.

Zoning

HRQ-2ZONE is a device designed for residential ventilation systems, dividing the air supply into two controlled and monitored zones. The air flow is controlled by motorized dampers, which are adjusted according to the demand sent by CO₂ sensors installed in each zone. Such a system allows for the detection of the inhabitant's presence and provides the right amount of fresh air in the right place at the right time.

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).

Cooperation with the kitchen hood

The cooker hood can be connected to the MVHR system via the X25 contact on the main board of the SlimAIR heat recovery units. It is a potential-free contact. Short-circuits of contact inputs will result in an exhaust fan stopping completely during the period the contact is closed.

Demand Control Ventilation, DCV

The AUTO mode is the most energy-efficient and demand driven mode of SlimAIR units. Operation in the AUTO mode is possible when at least one carbon dioxide CO₂ or relative humidity RH sensor operates in the system.

In AUTO mode, the sensor (or several sensors) generates the so-called ventilation demand based on ambient air measurements. This request is sent wirelessly to the control board, which sets the efficiency of the fans in the range defined by AWAY and HOME(+ offset) speeds. It means, that in the case of factory settings, the range will be 15-70%.

The RH sensor will guard against excessive moisture. If there is a sudden increase in relative humidity (more than 3% within 24 seconds) or the reading exceeds 85%, the sensor will send 100% demand to the control panel to effectively and quickly reduce the RH level.

The CO₂ sensor will keep the carbon dioxide concentration below the specified level (the factory default is 800 ppm, you can choose between 700,800,900,1000 and 1100 ppm) thanks to the proportional PID algorithm.

This means that the request sent to the control board will change gradually over time until the CO₂ concentration decreases. HRU-PremAIR-SENS-CO₂ sensors have 2 AUTO modes: Comfort and Eco. Comfort is the basic setting (i.e. 800 ppm by default), while Eco increases the limit by 250 (i.e. 1050 by default).

The CO₂ sensor is available in the following versions:

surface

HRQ-SENS-CO

flush-mounted

HRQ-SENS-I-CO₂



In case of having several sensors, the unit control board will operate according to the highest indication (highest request). In the absence of any demand from the sensors, the ventilation unit will run at AWAY speed (lowest setting).

Heat Recovery Unit PremAIR, SlimAIR and MinistAIR

Controllers and sensors

Mobile application PremAIR

Mobile application for controlling a home ventilation unit HRU-SlimAIR, HRU-PremAIR and HRU-MinistAIR by ALNOR. It allows to monitor and control the unit via local network and Internet as well:

- Mode selection (Away, Home, Party, Boost, Auto and Standby)
- Temperature readouts
- Registering and displaying remote CO₂ and RH sensors readouts
- Fans efficiencies
- Defrost mode
- By-pass mode
- Filters conditions

Available for download in Google Play and App Store: PremAIR

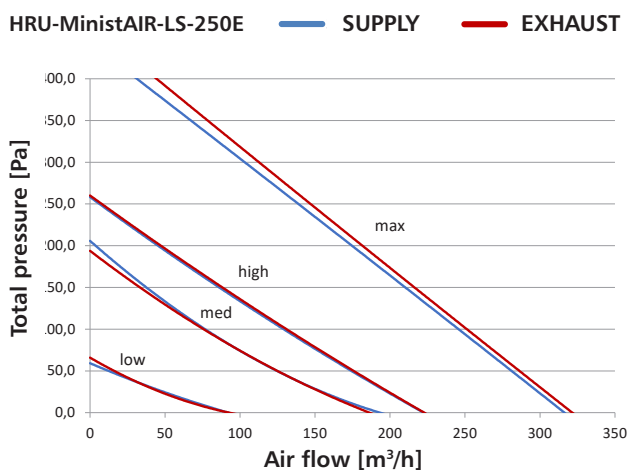
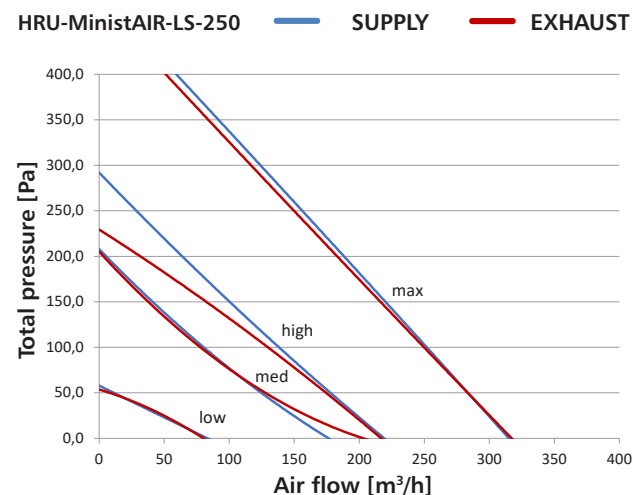
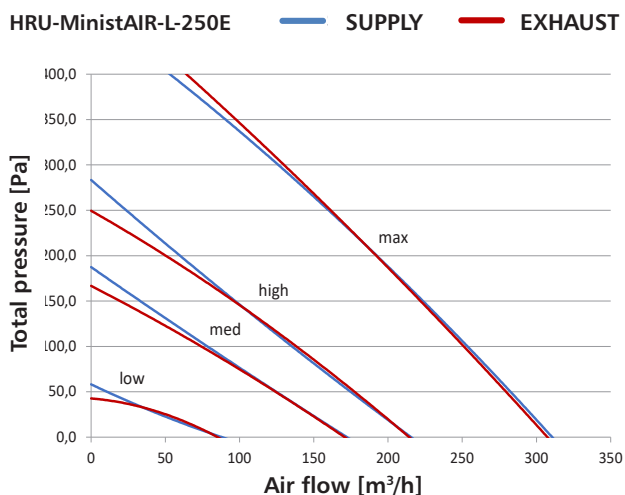
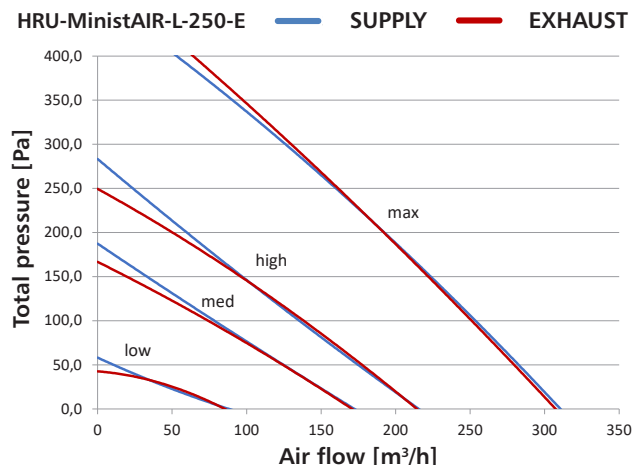
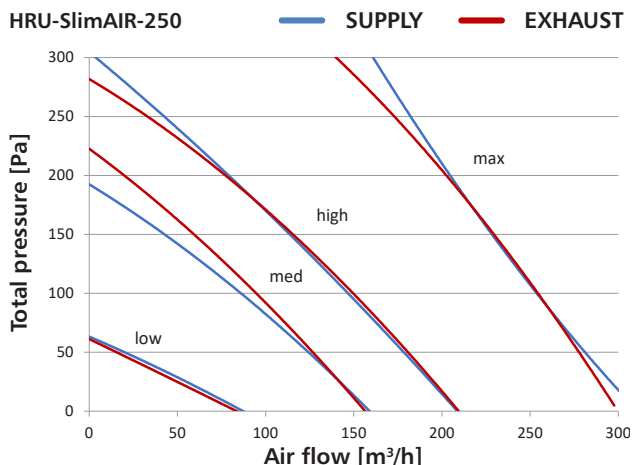
Also via web browser: <https://premair.alnor.pl/>



Screen shot:



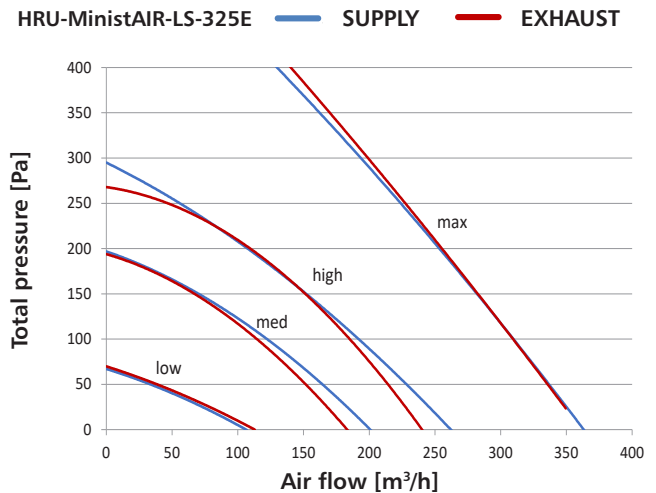
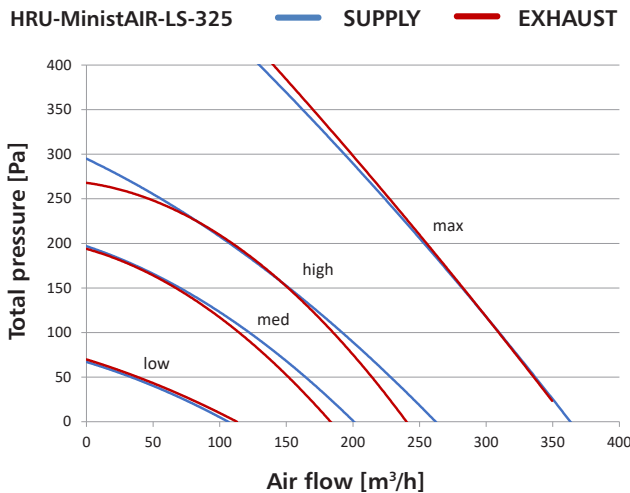
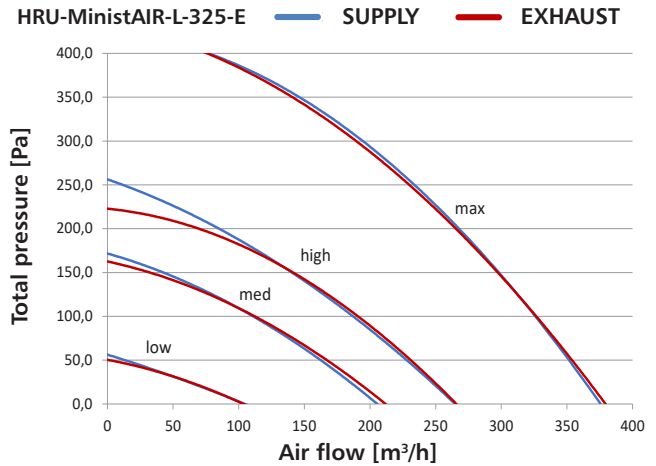
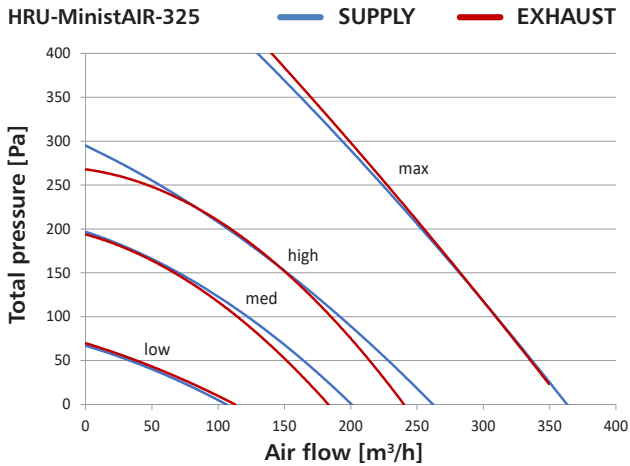
Heat recovery ventilation unit with counterflow exchanger

HRU-MinistAIR*Air flow and efficiency*

Heat recovery ventilation unit with counterflow exchanger

HRU-MinistAIR

Air flow and efficiency



Heat recovery ventilation unit with counterflow exchanger

HRU-MinistAIR

Filtres

Filtry HRQ-MinistAIR-FILT-C70 (standard)



ISO coarse 70% filters according to ISO 16890 (former G4) standard with pleated design, resulting in greater filtration area and low pressure drops.

Code	Filter class	Dimension [mm]
HRQ-MinistAIR-FILT-C70	ISO Coarse 70%	280x182x23
HRQ-MinistAIR-FILTePM155	ISO ePM1 55%	280x182x23

Suspended heat recovery unit with a plate heat exchanger

HRU-SlimAIR

Smart ventilation system SmartAIR



SmartAIR heat recovery system with zoning is the most intelligent, efficient system on the market. Why is it intelligent?

The ventilation system works independently, based on readings from sensors. Besides knowing how many people are in the house, the system also knows where they are.

Thus, it provides the right amount of air at the right time and place. A situation like this can be achieved by zoning, i.e. by dividing the house into day and night zones in accordance with the natural cycle of the day of the household members.

[Find out more about the HRQ-2ZONE](#)

Complete EPP system



Choose thermally insulated EPP ducting. High mechanical strength, pre-insulated, and quick to assemble. You don't need an additional insulation layer. It comes in 15/43mm thicknesses.

EPP manifolds (distribution boxes)

Manifolds FLX-PLO-EPP-R are designed for use in domestic mechanical ventilation systems. They collect 75mm semi-rigid ducting, which is then distributed to the rooms. Typical installations contain from 1 to 2 such manifolds for the supply air and the extract air. Expanded polypropylene (EPP), the material used for the manifolds, is also an insulating material.

Duct and fittings made of EPP in thickness 15 or 43 mm.

[Check the elements of the EPP System?](#)

Duct-mounted humidifier



The adiabatic humidifier is designed for domestic mechanical ventilation systems with a maximum airflow 600 m³/h. Filtered water naturally evaporates on a special matrix, and then the humidified air is distributed to the ventilation duct system and to the connected rooms.

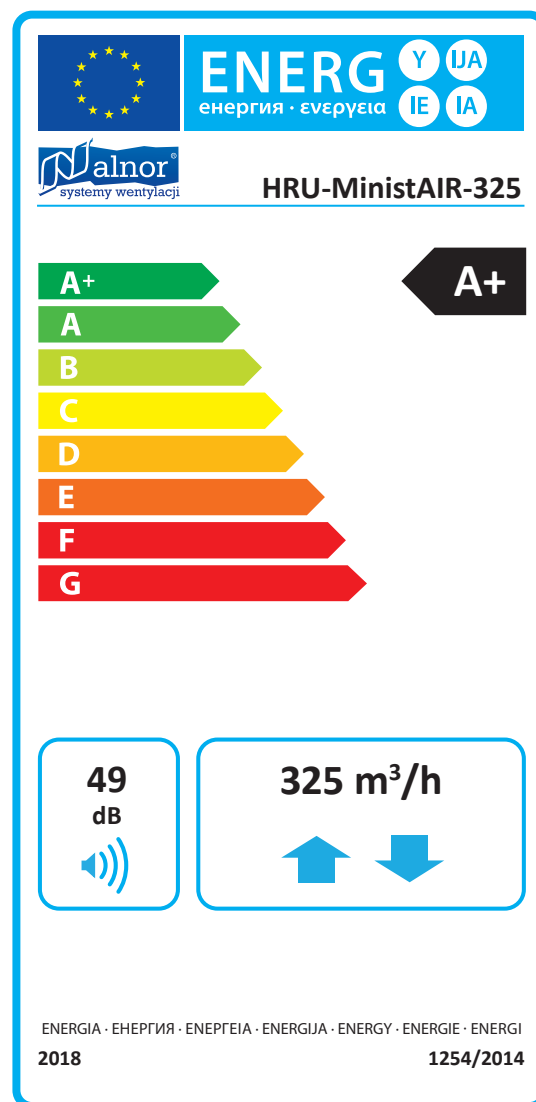
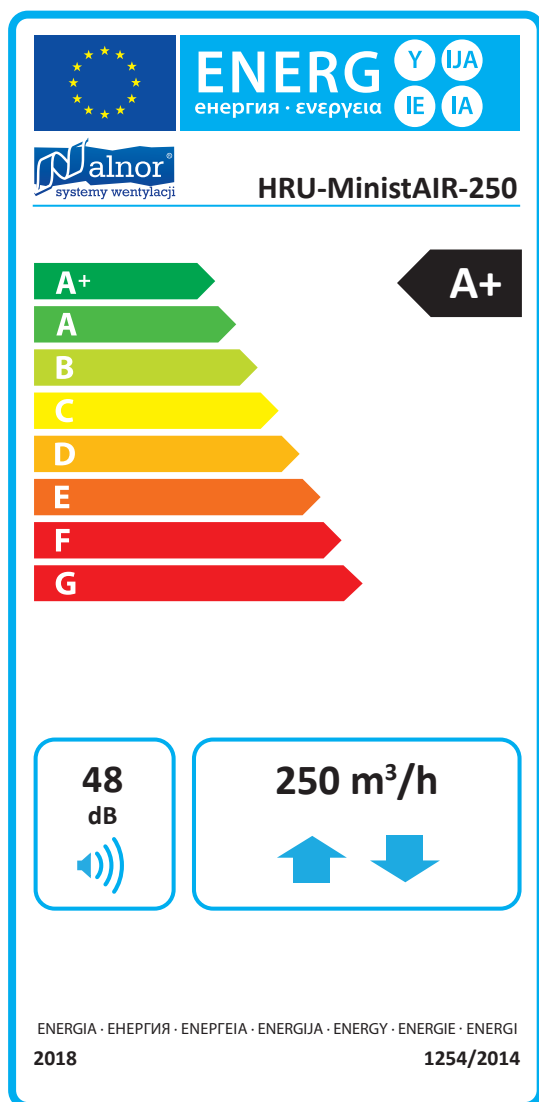
The humidification process is regulated by a wireless room controller and a duct sensor. Built-in PTC heater compensates for temperature losses caused by the evaporation process. The housing is made of EPP, while the matrix is made of fiber glass.

[Find out more about duct humidifier](#)

Heat recovery ventilation unit with counterflow exchanger

HRU-MinistAIR**Energy class**

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 sensors)
HRU-MinistAIR-250	48	250	A	A	A	A+
HRU-MinistAIR-325	49	325	A	A	A	A+



Heat recovery ventilation unit with counterflow exchanger

HRU-MinistAIR

Product fiche, Commission Regulation (EU) No 1253/2014, 1254/2014, Annex IV

Supplier's name or trade mark	ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji		
Model identifier	HRU-MinistAIR-250-L HRU-MinistAIR-250-R HRU-MinistAIR-250-LS HRU-MinistAIR-250-RS			HRU-MinistAIR-250-L HRU-MinistAIR-250-R HRU-MinistAIR-250-LS HRU-MinistAIR-250-RS			HRU-MinistAIR-250-L HRU-MinistAIR-250-R HRU-MinistAIR-250-LS HRU-MinistAIR-250-RS			HRU-MinistAIR-250-L HRU-MinistAIR-250-R HRU-MinistAIR-250-LS HRU-MinistAIR-250-RS		
Climate	cold	average	warm	cold	average	warm	cold	average	warm	cold	average	warm
Specific energy consumption (SEC) [kWh/(m ² .a)]	-76.24	-37.74	-13.05	-77.30	-38.64	-13.87	-79.30	-40.34	-15.40	-82.82	-43.27	-17.99
Energy class	A+	A	E	A+	A	E	A+	A	E	A+	A+	E
Declared typology	Bidirectional			Bidirectional			Bidirectional			Bidirectional		
Type of drive	Variable speed			Variable speed			Variable speed			Variable speed		
Type of heat recovery system	Recuperative			Recuperative			Recuperative			Recuperative		
Thermal efficiency of heat recovery ¹	90.2%			90.2%			90.2%			90.2%		
Maximum flow rate [m ³ /h] ²	250			250			250			250		
Electric power input at maximum flow rate [W]	108			108			108			108		
Sound power level LWA [dB(A)]	48			48			48			48		
Reference flow rate [m ³ /h] ³	175			175			175			175		
Reference pressure difference [Pa] ⁴	50			50			50			50		
SPI [W/m ³ /h] ⁵	0.25			0.25			0.25			0.25		
Control factor and typology	1 manual			0.95 clock			0.85 central demand			0.65 local demand		
Declared maximum leakages ⁶	External: 1.17% Internal: 2.56%			External: 1.17% Internal: 2.56%			External: 1.17% Internal: 2.56%			External: 1.17% Internal: 2.56%		
Position and description of visual filter warning	Status LED light on unit			Status LED light on unit			Status LED light on unit			Status LED light on unit		
Internet address for pre-/dis-assembly 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/100m ²]	890	353	308	860	323	278	804	267	222	712	175	130
The annual heating saved (AHS) [kWh/a/100m ²]	8976	4588	2075	9006	4604	2082	9067	4635	2096	9190	4698	2124

¹ According to EN 13141-7:2010

² According to EN 13141-7:2010 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

⁵ According to EN 13141-7:2010 at reference point - 70% of maximum air flow

⁶ According to EN 13141-7:2010

Heat recovery ventilation unit with counterflow exchanger

HRU-MinistAIR**Product fiche, Commission Regulation (EU) No 1253/2014, 1254/2014, Annex IV**

Supplier's name or trade mark	ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji			ALNOR Systemy Wentylacji		
Model identifier	HRU-MinistAIR-325-L	HRU-MinistAIR-325-R	HRU-MinistAIR-325-LS	HRU-MinistAIR-325-RS	HRU-MinistAIR-325-L	HRU-MinistAIR-325-R	HRU-MinistAIR-325-LS	HRU-MinistAIR-325-RS	HRU-MinistAIR-325-L	HRU-MinistAIR-325-R	HRU-MinistAIR-325-LS	HRU-MinistAIR-325-RS
Climate	cold	average	warm	cold	average	warm	cold	average	warm	cold	average	warm
Specific energy consumption (SEC) [kWh/(m ² .a)]	-74.25	-36.39	-12.07	-75.44	-37.39	-12.97	-77.69	-39.28	-14.65	-81.69	-42.55	-17.51
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 of heat recovery ¹	88.1%			88.1%			88.1%			88.1%		
Maximum flow rate [m ³ /h] ²	352			325			325			325		
Electric power input at maximum flow rate [W]	150			150			150			150		
Sound power level LWA [dB(A)]	49			49			49			49		
Reference flow rate [m ³ /h] ³	228			228			228			228		
Reference pressure difference [Pa] ⁴	50			50			50			50		
SPI [W/m ³ /h] ⁵	0.27			0.27			0.27			0.27		
Control factor and typology	1 manual			0.95 clock			0.85 central demand			0.65 local demand		
Declared maximum leakages ⁶	External: 0.9% Internal: 1.96%			External: 0.9% Internal: 1.96%			External: 0.9% Internal: 1.96%			External: 0.9% Internal: 1.96%		
Position and description of visual filter warning	Status LED light on unit			Status LED light on unit			Status LED light on unit			Status LED light on unit		
Internet address for pre-/dis-assembly 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/100m ²]	917	380	335	885	348	303	824	287	242	724	187	142
The annual heating saved (AHS) [kWh/a/100m ²]	8845	4521	2045	8882	4540	2053	8956	4578	2070	9105	4654	2104