

Heat and energy recovery ventilators

HRU-MinistAir-W-450

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Description

Heat and energy recovery ventilators HRU-MinistAir-W-450 is recommended for use in residential houses with max. area of 200m².

The most important key features of HRU-MinistAir-W-450:

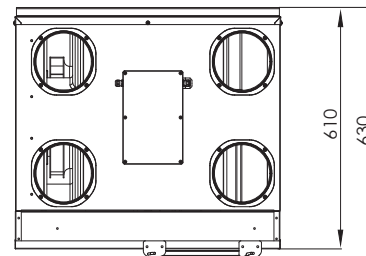
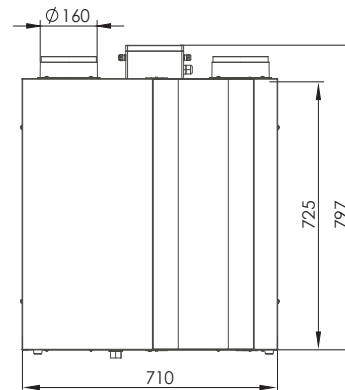
- Heat recovery up to 95% according to EN 308 - TUV SUD
- Plastic counterflow heat exchanger
- Automatic By-pass function
- Frost protection function
- Modbus function
- Heater and Pre-Heater control function
- Controller with weekly timer function
- Filter function
- Filters EU4 as standard (F7 on special order)
- Ability to connect sensors: CO₂, humidity, pressure switch
- Installation on the wall or on the floor
- Various installation versions of EA, SA, OA, RA spigots (top and bottom)
- Spigots with EPDM gasket which guarantee tightness class D
- Saving energy thank to EC fans by EBM PAPST

Example identification

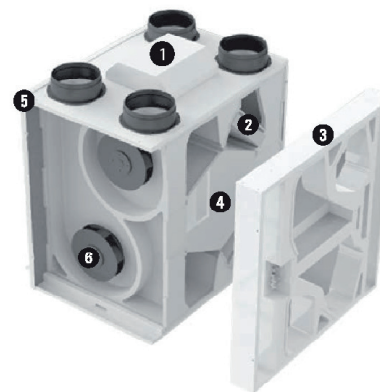
Product code: HRU-MinistAir-W-450

type _____

Dimensions



* All measurement values are mm.



- 1 Control
- 2 Exhaust and Supply Air Filters
- 3 By-Pass
- 4 Heat Recovery Exchanger
- 5 Casing
- 6 Exhaust and Supply Air Fans

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Technical Data

HRU-MinistAir-W-450	
Air Flow (m ³ /h)*	470
Nominal Voltage (V/Hz/Ph)	230 / 50 / 1 ~
Max. Power Input (W)	180
Current Draw (A)	1,54
Max. Sound Pressure (dB (A))**	48
Unit Weight (kg)	41
Filter	G4 Class Synthetic Filter According to EN 779 (F class filter is optional)

* External static pressure is 0Pa.

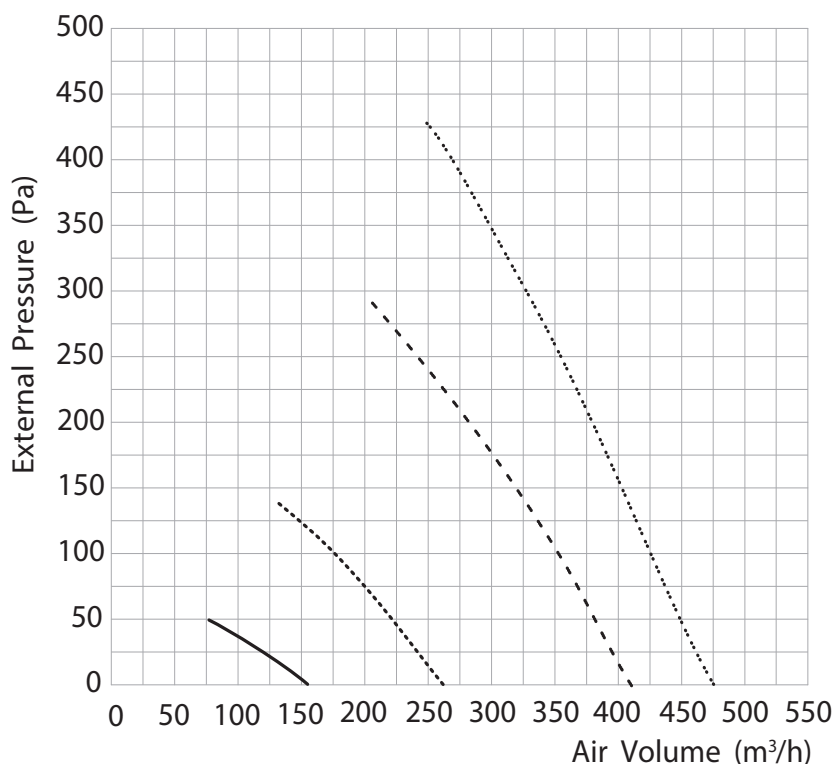
** Measured at 1,5m distance to the unit.

Power consumption is measured due to total power consumption of both exhaust and supply air fans.
 Specific Fan Power value, expressed in kW/m³/s is denoted in European Norm 13779 (EN 13779 Ventilation for non-residential buildings).

SFP: Specific Fan Power

$$SFP = \frac{\text{Total Power Consumption (kW)}}{\text{Air Flow (m}^3\text{/s)}}$$

Performance curve



- Low Speed
- Medium Speed
- - - - High Speed
- Boost

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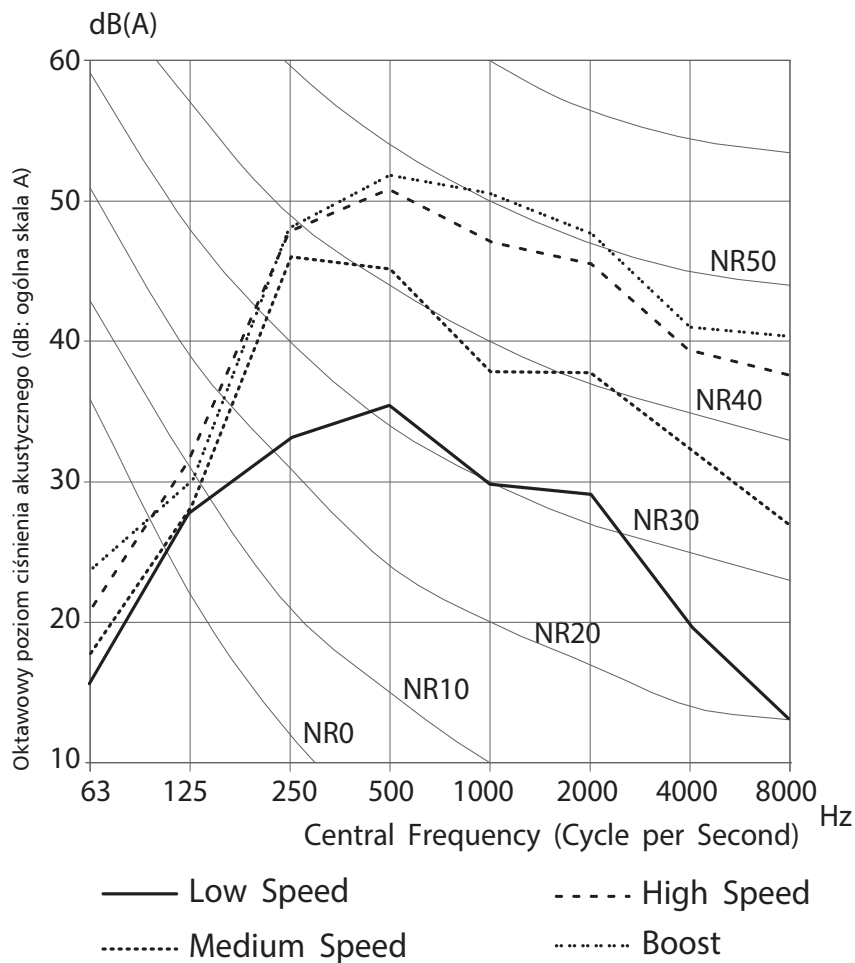
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Sound curve

Speed	Sound Pressure Suction Side							
	63	125	250	500	1000	2000	4000	8000
Boost	24	30	48	52	50	47	41	40
High	21	32	47	51	47	45	39	37
Medium	18	28	46	45	38	38	32	27
Low	16	28	34	36	30	29	20	14



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Operation	Description	Availability
Fan Speed Control	3 steps fan speed control of supply and exhaust fan is available.	3 steps (each fan) (High/Med/Low)
Boost Function	It is used for increasing fan speed: Alternative-1: Via boost button on the control board Alternative-2: Via dry contact or light power input (230V) (like kitchen light, bathroom light etc.) on PCB board.	Standard Standard
Filter Function	There are 2 alternatives to control filters: Alternative-1: It records run time of the unit and when set time expires, control board gives an alert for filter change. Alternative-2: Filter change time can be controlled with pressure switch mechanically. With this method, when filter needs to be changed control board gives an alert.	Standard Optional
By-Pass Function	Filtered fresh air is supplied indoor without passing in heat exchanger.	Standard
Electrical Heater Control Function	Electrical heater is controlled up to 2 steps automatically according to the set temperature and indoor temperature.	Optional, depends on Return Air or Room or Supply Air
Sensor (VOD)	Fans are running continuously in accordance with CO ₂ or air quality sensors.	Optional
Sensor (Humidity)	Fans are running continuously in accordance with indoor air humidity.	Optional
Frost Protection Function	Where outdoor air is too low, this function is a protection method to prevent heat exchanger from freezing.	Standard
Pre-Heater Function	Where outdoor air is too low, fresh air is heated by a pre-heater before it enters into the unit. This function is a protection method to prevent heat exchanger from freezing.	Standard
External Control (BMS) Function	IN: Unit can be on/off via control board. OUT 1: Information of "unit status". OUT 2: Information of "fault".	Standard
Modbus Function	It controls all functions of unit via PC or central automation board.	Standard
Weekly Timer Function	Unit can be programmed to operate on certain periods of the week.	Standard
Log Function	All possible working options of the unit can be recorded.	Standard
Fire Function	It is used for changing working status of the unit in case of fire.	Standard
Warnings	- Filter change - Fan Fault - Pre-Heater Fault - Heater Fault	Standard (Display error code)
Child-Proof Protection Function	It is used to lock the keypad.	Standard

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Tightness test

The nominal air volume flow of the ventilation unit was 400m³/h.

The leakage volume flow and the leakage in relation to the average air volume flow in the application range are as follows:

Measurement	P _{stst}	External leakage		Internal leakage	
		Leakage volume flow	Leakage	Leakage volume flow	Leakage
Nr	[Pa]	[m ³ /h]	[%]	[m ³ /h]	[%]
1	-300	1,8	0,4	2,1	0,5
2	-250	1,6	0,4	1,9	0,5
3	-200	1,3	0,3	1,7	0,4
4	-100	0,7	0,2	1,1	0,3
5	-50	0,4	0,1	0,8	0,2
6	0	0,0	0,0	0,0	0,0
7	50	0,3	0,1	0,8	0,2
8	100	0,6	0,2	1,1	0,3
9	200	1,2	0,3	1,7	0,4
10	250	1,5	0,4	2,0	0,5
11	300	1,7	0,4	2,2	0,5

Thermodynamic test

For the HRU-MinistAir-W-450 unit, the following unit-specific temperature ratios was measured:

outdoor air volume flow		[m ³ /h]	71,0	197,0	320,0	378,0
extract air volume flow		[m ³ /h]	76,0	217,0	344	426,0
temperature ratio supply side	eta _{tsup}	[%]	94,7	90,3	86,5	86,8
humidity ratio supply side	eta _{tsup}	[%]	-	-	-	-
temperature ratio exhaust side	eta _{tsup}	[%]	80,3	82,1	80,9	77,9
humidity ratio exhaust side	eta _{tsup}	[%]	-	-	-	-
mean temperature ratio	eta _{tsup}	[%]	87,5	86,2	83,7	82,4