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1. Safety

Read the safety guidelines before installing the unit, make sure it was installed correctly. Please follow the manual instructions in order to avoid injury and damages.

Pay special attention to paragraphs with the following symbols:

NOTE! Take special care, failure to comply with the recommendations may cause injury, damage or death!

STOP! Action prohibitted!

IMPORTANT! Important information!

General safety rules

- Installation must only be carried out by qualified installers.
- Follow the manual instructions to install the unit. Improper installation may contribute to injury or health problems, malfunction of the device.
- Disconnect the power supply when performing repair or maintenance work, to avoid electric shock.
- Birdscreens or similar solutions must be installed on the exhaust duct outlets.
- Before the assembly make sure there are no loose items inside ducts or other blockage.
- The supply duct should be at a sufficient distance from the place discharge of exhaust gases or places where dangerous fumes are present.
- All electrical work must be comply with the applicable regulations and the manual guidelines.
- Incorrectly selected electrical wires with poor performance may cause electric shock and fire.
- Perform the correct grounding. Bad grounding may cause electric shock.
- The power cord and other cables must be properly and securely connected by a qualified person. Incorrect connection may cause overheating, fire or loss of performance.
- Insulation between the metal duct and the wall is necessary if the duct passes by any metal, plate or grid in wooden buildings to avoid electric shock or leak..
- Secure mounting accessories properly so that the device does not fall, and to prevent fire and electric shocks.

General safety rules

- Install the outdoor duct with down slope to prevent rainwater from entering the unit.
- Do not install the device in damp places, such as baths. It could cause an electric shock and fire.
- Do not install the device where there is a risk of flammable gas leaks. It could cause a fire hazard.
- Use in acidic or alkaline environments can cause poisoning or fire.
- In order to avoid condensation, outside ducts must be insulated, in some cases, this also applies to ducts inside the building.
- The cover of the electrical box must be closed and tightened to prevent from dust and dirt exposure. Dust and dirt accumulations can cause overheating of the contacts, fire or shock.
- Do not use the device as a cooker hood. It can cause blocking of heat exchanger, filters and consequently lead to fire.
- Do not install the unit in direct proximity to fire, this may result in overheating and fire.
- Use the specified power supply and voltage, use of incorrect power supply could cause fire.

2. Installation

2.1 Installation guidelines and limitations

- Leave the unit inside its packaging while storing until reaching the installation site.
- Select an installation site where sufficient clearance for maintenance and service can be ensured:

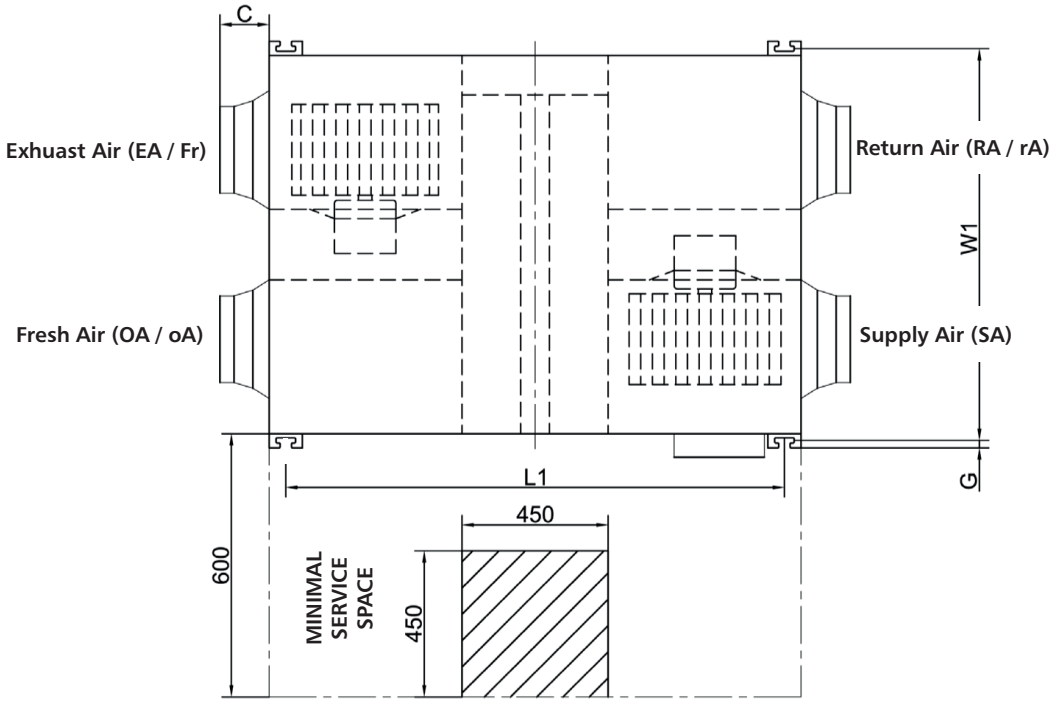


Fig.1. Maintenance space.

- During installation keep a minimum space between the ceiling and the suspended ceiling:

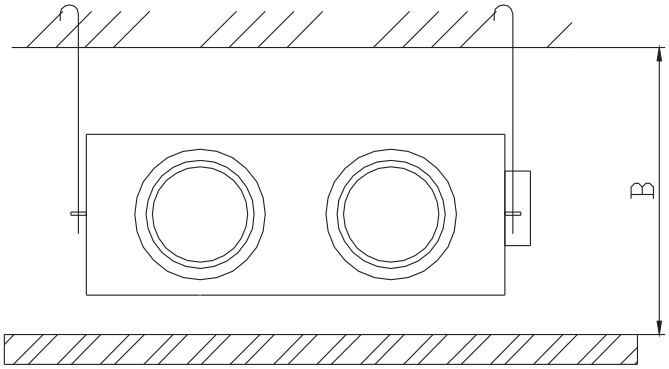


Fig. 2. Minimum distance between the ceiling and the suspended ceiling.

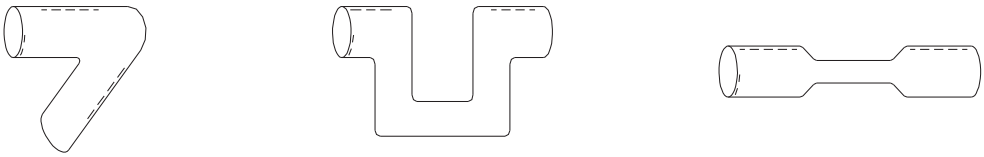
Model	*Minimum distance between the ceiling and the suspended ceiling B [mm]*
HRU-ERGO-250	320
HRU-ERGO-350	320
HRU-ERGO-500	320
HRU-ERGO-650	390
HRU-ERGO-800	440
HRU-ERGO-1000	440

Table 1. Minimum distance between the ceiling

- If required by fire regulations, install fire dampers in the fire partition.
- The ambient temperature must not exceed 40 ° C, and the device can not be exposed to direct impact of fire.
- Keep a distance of at least 1 m between the inlet and the air outlet from the unit.
- If you equip the system with an external heater, make sure it starts together with the control panel – connect to the corresponding control contacts according to the further instructions of the manual.

It is prohibited to:

1. Install the device near boilers or flues
2. Mount the ventilation ducts avoid bends at an acute angle, it my disturb the airflow, the efficiency of the unit and can cause loud operation..



overbending | multiple bends | diameter narrowing

Fig.3. Practices to avoid.

2.2 The example of an installation diagram

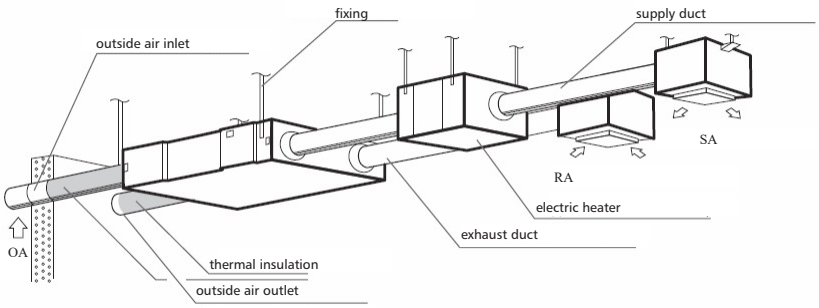
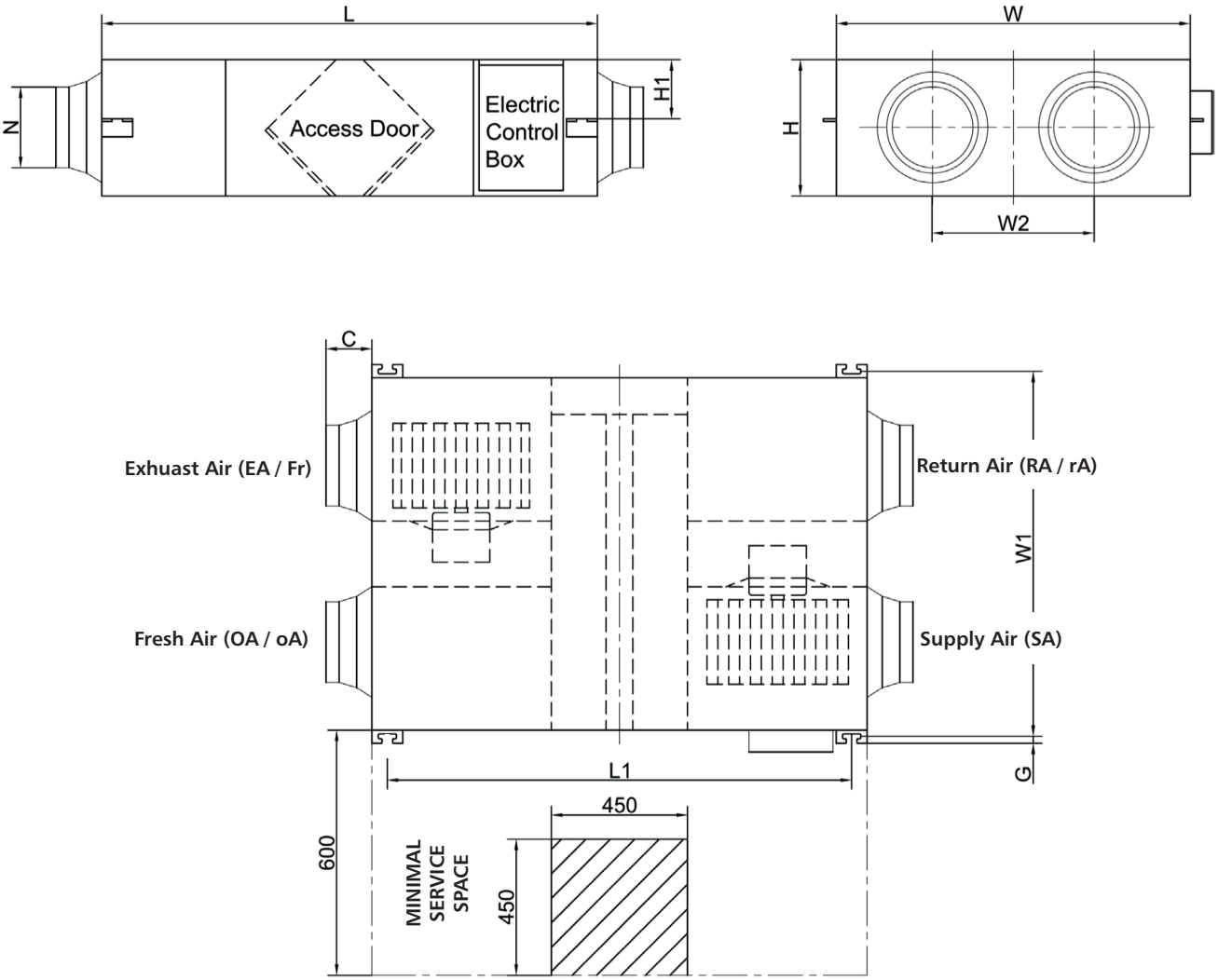


Fig. 4. An example of ventilation system with heat recovery unit.

2.3 Dimensions



Model	*L [mm]*	*W [mm]*	*H [mm]*	*C [mm]*	*L1 [mm]*	*W1 [mm]*	*W2 [mm]*	*H1 [mm]*	*G [mm]*	*N [mm]*	*Minimal service space [mm]*
HRU-ERGO-250	882	599	270	100	810	657	315	111	19	144	600
HRU-ERGO-350	882	804	270	100	810	860	480	111	19	144	700
HRU-ERGO-500	962	904	270	107	890	960	500	111	19	194	800
HRU-ERGO-650	1222	884	340	107	1150	940	480	146	19	194	800
HRU-ERGO-800	1322	884	388	85	1250	940	428	170	19	242	800
HRU-ERGO-1000	1322	1134	388	85	1250	1190	678	170	19	242	1100

Table 2. Unit dimensions.

2.4 Assembly

- Prepare the mounting elements - flush achors, threaded rods, nuts and washers (all elements you can find on our website www.alnor.com.pl).
- The heat recovery unit is designed for horizontal installation, it is possible to rotate the unit by 180˚ horizontally.
- Make sure that all suspension elements are properly anchored, tightened and secured parallel to avoid damage to the device or excessive vibrations.

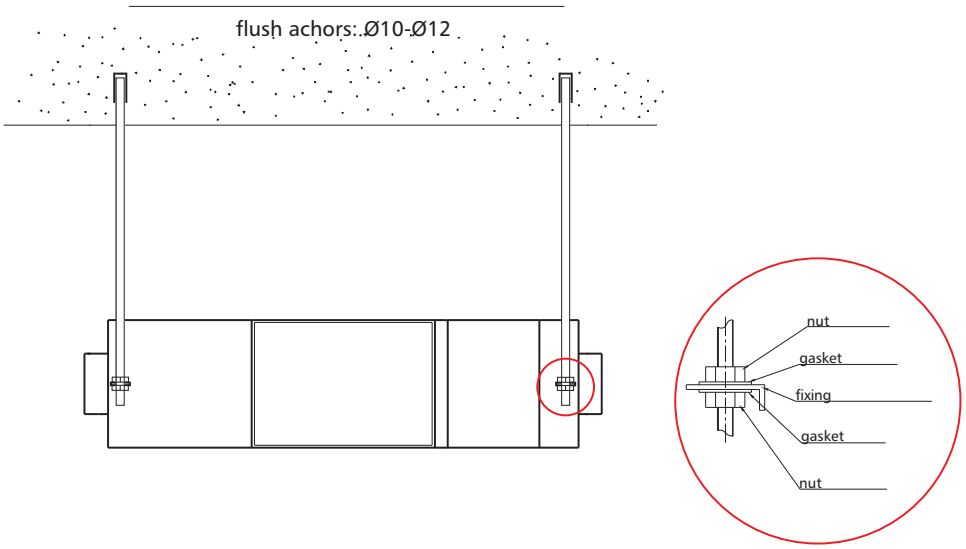


Fig. 5. Mounting diagram.

2.5 Electrical installation

Cut off the power supply before starting any installation or maintenance work to avoid injury by electric shock. The specifications of cables must strictly match the requirements, otherwise it may cause performance failure and danger of electric shock or fire.

This appliance is suitable for 230V ~ 50Hz single phase.

Open the cover of electrical box, connect the 2 wires (L/N) to the terminals and connect the cable of the control panel to the board according to the wiring diagram (see diagram no. 2 in section 14. Diagrams).

Model	*Power supply*	*Power supply cable*	*Power supply cable for control panel*	*Control panel model*
HRU-ERGO-250	230V/1phase/50Hz	3x1.5mm^2	2x0.5mm^2	HRU-CONTR
HRU-ERGO-350	230V/1phase/50Hz	3x1.5mm^2	2x0.5mm^2	HRU-CONTR
HRU-ERGO-500	230V/1phase/50Hz	3x1.5mm^2	2x0.5mm^2	HRU-CONTR
HRU-ERGO-650	230V/1phase/50Hz	3x1.5mm^2	2x0.5mm^2	HRU-CONTR
HRU-ERGO-800	230V/1phase/50Hz	3x1.5mm^2	2x0.5mm^2	HRU-CONTR
HRU-ERGO-1000	230V/1phase/50Hz	3x1.5mm^2	2x0.5mm^2	HRU-CONTR

Table 3. Cable thickness.

2.6 Ducting assembly

1. Joint of unit connectors and ducts should be sealed with tape or seal to prevent from air leakage.
2. Supply and exhaust ducts should be installed with a slope of 1-2% to the outside to avoid inflow of water or other pollutants (Fig. 6).
3. Supply and exhaust ducts should be insulated to avoid condensation.

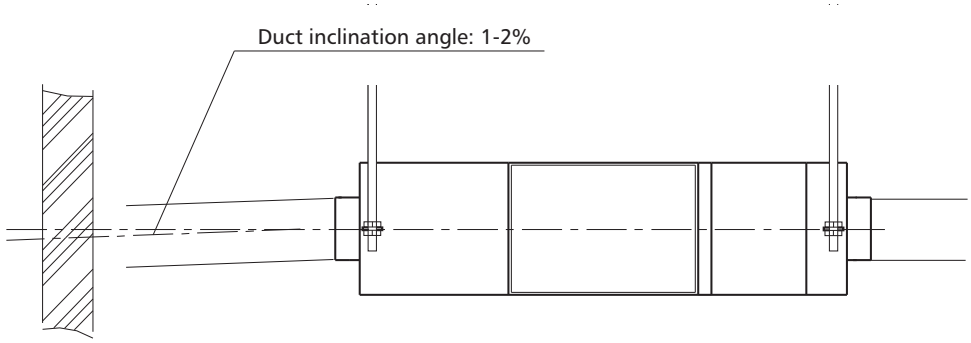


Fig. 6. Installation of ducts and a heat recovery unit.

3. Control panel

The HRU-CONTR control panel is delivered with the unit (standard option), it can be used to control unit operation. It can be used to set and control weekly time. The control panel is connected to the unit with a 5m connection cable. It can be mounted on the wall. Use longer cable, if necessary.

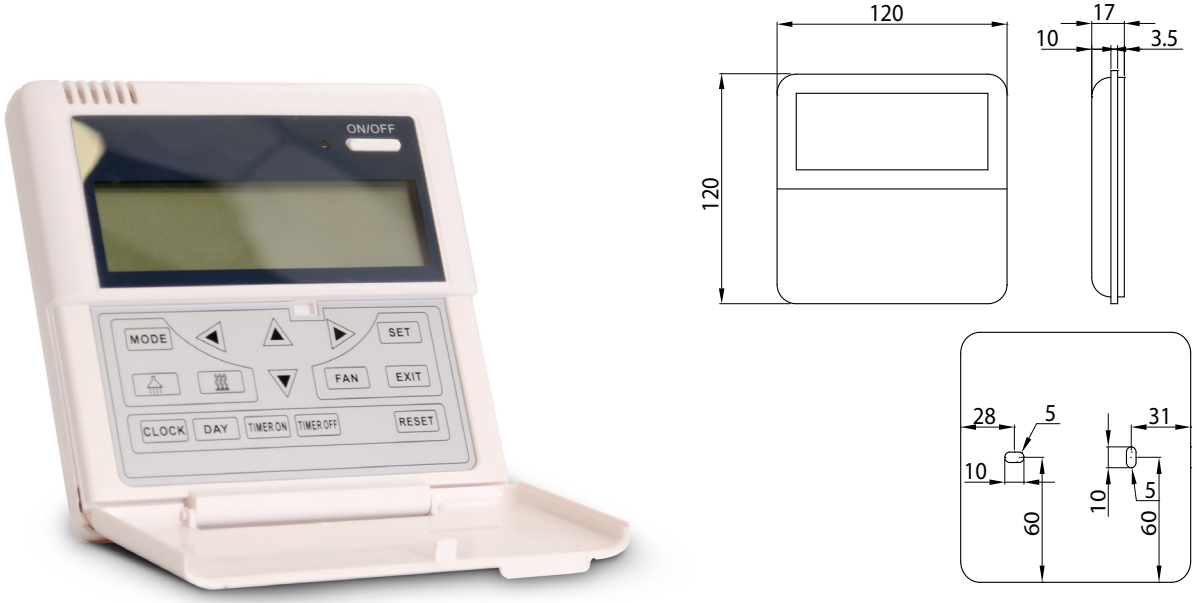


Fig. 6. Photo and dimensions example HRU-CONTR control panel.

3.1 LCD display panel

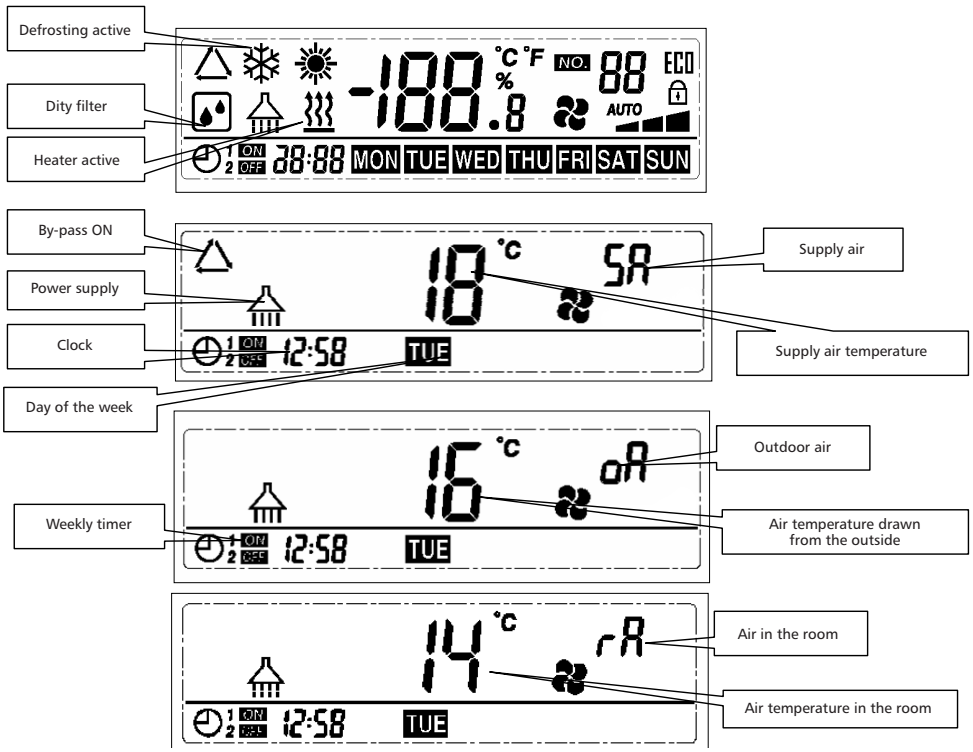


Fig. 7. LCD display panel disctription.

3.2 Buttons

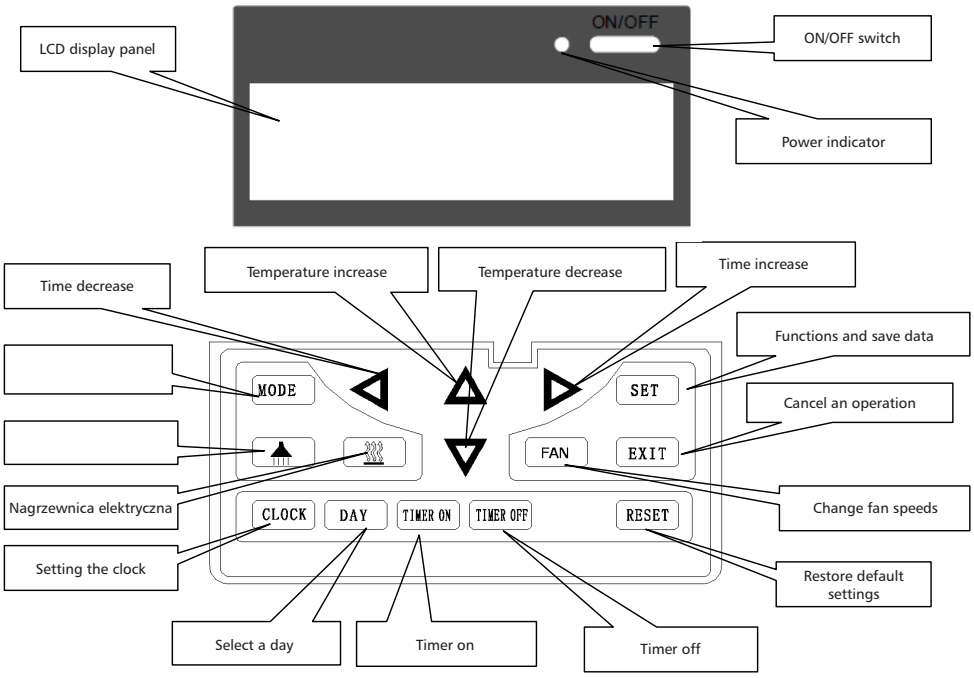


Fig. 8. Description of the function buttons.

3.3 First start-up

Check the electrical wiring connections before starting any works!

1. To start, press the **ON / OFF** button, the green control lamp indicates that the device is fully operable..
2. Check the factory default settings of the device. Press and hold **MODE** button for 6 seconds to enterthe mode parameters menu, the parameter number will be displayed. Press **SET** button go to the parameter no. 21 21 (device model selection - full list of parameters is on page 11), then press **MODE** button to change the parameter value. The default code value will blink in the right corner, use the **UP** and **DOWN** buttons to set the correct device code according to the table presented below and confirm with the **SET** button. Then, press the **EXIT** button.

Model	*Code*
HRU-ERGO-250	5
HRU-ERGO-350	4
HRU-ERGO-500	3
HRU-ERGO-650	0
HRU-ERGO-800	1
HRU-ERGO-1000	2

Table 4. Product codes indicating the unit model.

3. Then check the operating modes and speed of the fans. Press the **MODE** button to switch between **rA** (return Air - room air, exhaust air), **oA** (outdoor Air - outside air), **SA** (Supply Air - supply air delivered into the room) modes and verify if the corresponding temperatures are correct. Press the **FAN** button to change the fan speed in **rA** and **SA** mode by selecting between the 10 available speeds. Return to the main menu by pressing the **EXIT** button.
4. Check the bypass operation mode. The default working temperature of the bypass is 19-21 ° C (it can be modified by the user). If the outside temperature indicator **oA** is within this range, the by-pass will switch on and the corresponding icon will appear on the display (see Fig.7).

3.4 User manual for control panel

1. ON/OFF: press to turn on the device. A green control lamp indicates that the device is fully operable.
2. MODE: press to switch between oA (outdoor Air) / rA (return Air)/ SA (supply Air) modes.
3. FAN: press repeatedly in mode oA and rA to change the fan speed on a 10-degree scale.
4. CLOCK: The clock has a hold function in the event of a power failure. Set the time by pressing CLOCK button, the colon stops flashing, press CLOCK again. Set the hour with <>, then confirm with CLOCK, set the value of the minutes in the same way, confirm with SET or press EXIT to cancel the operation.
5. DAY: select the day, press DAY and use the <> keys to select the day, confirm with SET or press EXIT to cancel the operation.
6. TIMER: weekly timer
    - 6.1. Set the switch-on time: press TIMER ON several times to select the hour> minute> clock off („-: -"). Use the <> arrows to set the desired time. Every day can have 2 times programmed, select between „1" and „2" by pressing MODE. Press DAY to set another day. Save the data by pressing SET or select EXIT to cancel the operation. Next to the clock icon the ON symbol will appear.
    - 6.2. Set the switch-off time: press TIMER OFF and proceed in the same way as in section 6.1. Then next to the clock icon the OFF symbol will appear.
7. Check the time clock settings by pressing DAY and switch <> consecutive days. By pressing TIMER ON or TIMER OFF you can view the exact time.

8. The weekly timer mode will read the current time and turn the device on / off automatically according to programmed values. The user can turn the control panel on or off at any time by pressing ON / OFF manually.
9. Parameter setting table

Nr	*Function explanation*	*Range*	*Default*	*Unit*	*Record position*
00	Power supply	0 - lack 1 - present	1		main control unit
01	Electric heater	0 - lack 1 - present	0		main control unit
02	Bypass opening temperature X	5-30	19	°C	main control unit
03	Bypass opening temperature range Y	2-15	3	°C	main control unit
04	Defrost interval	15-99	30	Minute	main control unit
05	Defrost inlet temperature	-9-5	- 1	°C	main control unit
06	Defrosting time	2-20	10	Minute	main control unit
07	CO2 sensor	28-C8 (392-1960PPM)	66 (1000PPM)	PPM	main control unit
08	ModBus adress	1-16	1		main control unit
21	Unit model	0-7			main control unit
23	Fan speed control	0: 2 speeds 1: 3 speeds 2: 10 speeds (DC)	2		
24	Multifunctional setting	0: Reserved 1: Filter alarm 2: Weekly timer	0		
25	Setting filter alarm	0: 45 days 1: 60 days 2: 90 days 3: 180 days	0		main control unit

Table 5. Default settings codes

10. Temperature control is possible after connecting an external electric heater (LD3 connectors and LD4). Set the desired temperature with +/- in the SA (supply air) display mode. If the actual temperature of the supplied air is lower than the set value, the heat will turn on according to the following algorithm:
    10.1 If the difference between the set temperature and SA = 0˚C -5˚C, 1 heating stage is activated.
    10.2 If the difference between the set temperature and SA >5˚C, 1 and 2 heating stages are activated
    A detailed algorithm for heater operation is described in section 7.2 Heaters.
11. Parameter setting manual:
    11.1 Enter the parameter setting mode of the unit, press and hold MODE for 6 seconds
    11.2 The current value of the parameter in the range 00-25 will be displayed in the center of the screen, press SET to switch the parameter number. Edit by pressing MODE, use up / down buttons to set desired value and confirm with SET.
12. Bypass operation:
    By-pass activates if the outside temperature is equal to or higher than the X setting and less than X + Y. A detailed algorithm of a by-pass operation is explained in the section **5.1. By-pass operation**.
13. Defrosting mode:
    When the temperature on the exchanger is lower than -1 ˚C (defrost threshold, can be modified) for 1 minute and the interval from the last defrost is longer than 30 min (can be modified), exhaust fan starts working at the highest gear and the supply fan stops. The process continues until the temperature on the exchanger (EA) will not increase by 15 ˚C above the defrosting threshold or until 10 minutes passes (can be modified). A detailed defrosting algorithm is explained in section **5.3 Defrosting mode operation**.

14. Filter replacement alarm:
    Configure the filter replacement alarm by modifying parameter 25 (alarm every 45-180 days). Filter replacement alarm is signalled by the icon appearing on the display. To reset the alarm set parameter 24 to the value 1.
15. Error table. Press SET briefly to check the error code and compare it with the table shown below

Error codes	*Error*
E1	Fresh air temperature sensor error
E2	EEPROM error
E3	Return air temperature sensor error
E4	Exhaust air temperature sensor error
E5	Communication error
E6	Supply air temperature sensor error
E7	Exhaust fan error
E8	Supply fan error

Table 6. List of error codes.

4. Optional accessories

4.1 Duct heaters

An external air heater can be connected to the HRU-ERGO unit. The heaters, due to their functions in the ventilation system, are divided into: preliminary and secondary heaters.
The pre heater is mounted on the unit's intake ducts (fresh air supply from the outdoor) and is responsible for preheating the air supplied to the device. The heater protects the exchanger against freezing should the outside air temperature drop to a very low level and it does not affect the room temperature. As a standard, the HRU-ERGO unit is equipped automatic protection against freezing by changing fan speeds.
The after heater is mounted on the supply duct (fresh supply air into the room) for additional heating of the supply air temperature. After connecting the heater to the HRU-ERGO unit we have the ability to set the room temperature when we think that heat recovery alone is not enough for our comfort.

The automation of the HRU-ERGO control panel allows you to control one heater - prelimary or secondary heater.

To connect a **pre-heater** with the unit, move switch 1 on SW4 switch block to the ON position.

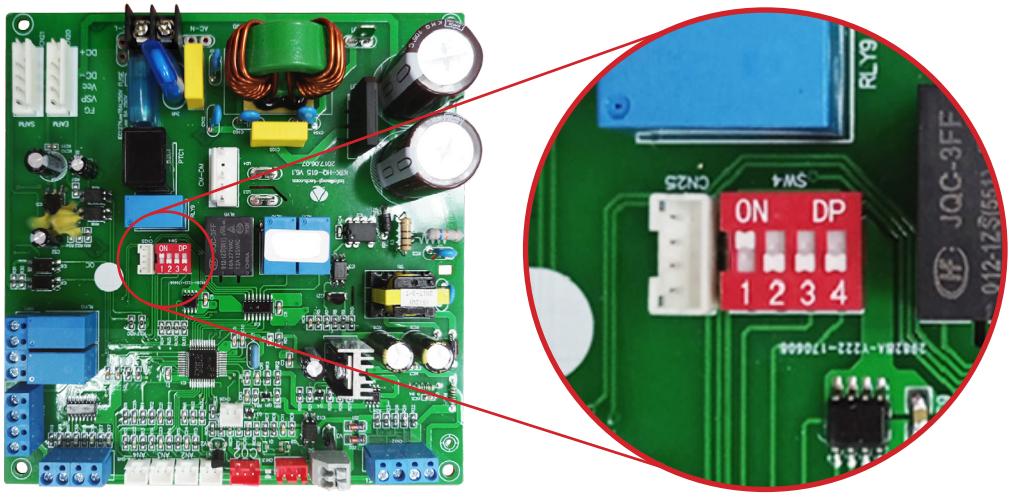


Fig. 9. SW4 switch block on the board.

Then, connect the LD4 contact to the heater relay (see diagram no. 2 in chapter 12. Diagrams).
230V control signal.

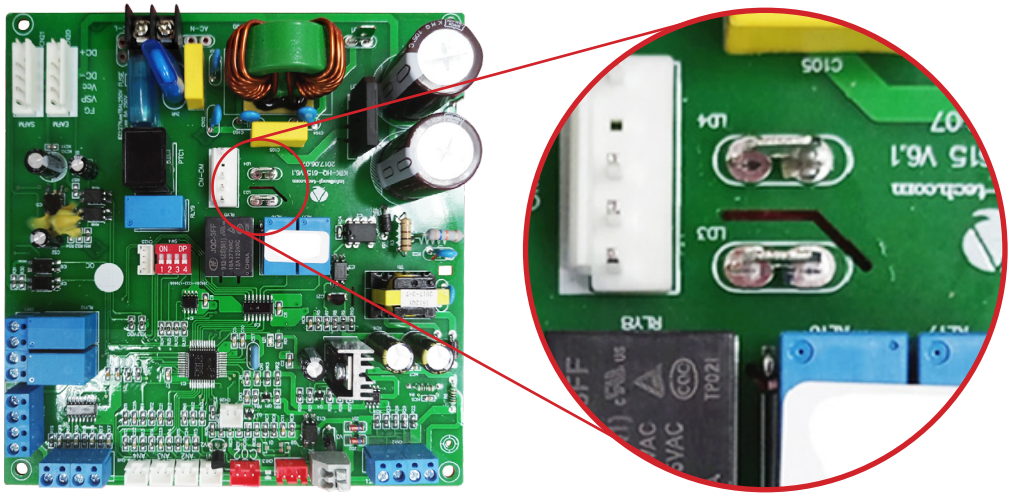


Fig. 10. LD3 and LD4 contacts on the board.

To connect an **after-heater** with the unit, move switch 1 on the SW4 switch block to the OFF position.
Connect 2-connector heater to LD3 and LD4 contacts (see diagram no. 3 in the chapter 12. Diagrams).
230V control signal.

The HRU-ERGO unit can be also connected to water heater. In this case, the signal from LD3 and LD4 connectors controls the operation of the actuator on the shut-off valve installed next to the water heater.

A detailed algorithm for heater operation is described in section **5.2 Heater**
For more information about heaters' technical specifications go to www.alnor.com.pl

You can connect and control only **one** heater, either pre-heater or after-heater.

4.2 CO_2 and humidity sensors

The HRU-ERGO unit can be controlled via external CO2 or humidity sensors.
To activate the CO_2 sensor, set the switch 3 on the SW4 switch block at the OFF (default setting) and connect the sensor to the „CO2" connector on the main control board (see diagram No. 4 in the section 12. Diagrams).

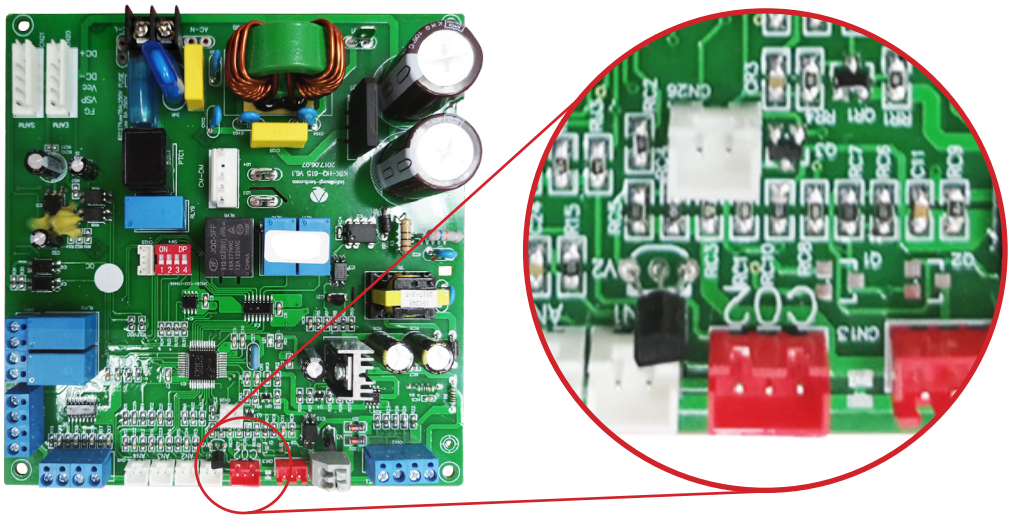


Fig. 11. CO2 connector on the motherboard.

To activate the humidity sensor, set the switch 3 on the SW4 switch block to the ON position and connect the sensor to the „CN25" connector on the main control board (see diagram No. 5 in the section 12. Diagrams).

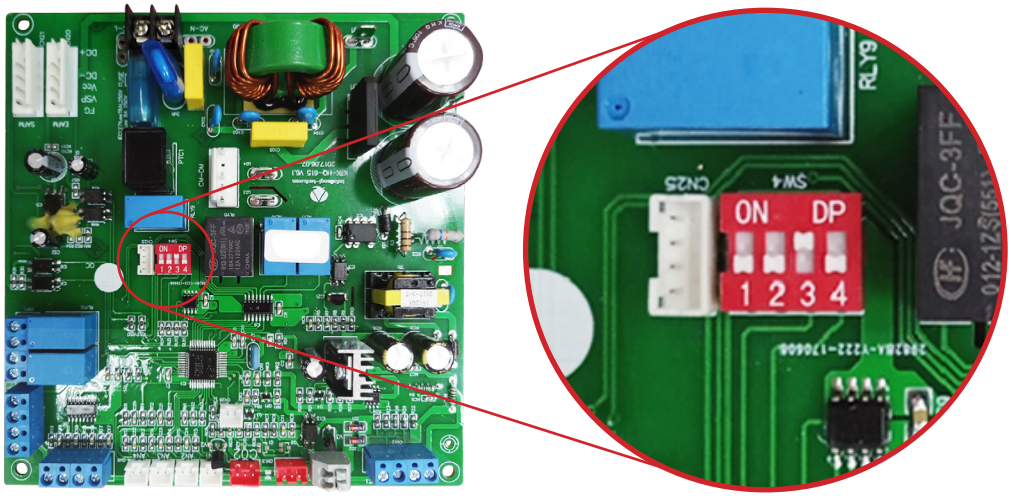
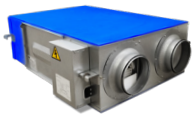


Fig. 12. CN25 connector on the main board for connecting humidity sensor

When connecting both CO2 and RH sensors leave the SW4-3 switch in „ON" position.
The CO_2 and HUM sensors work only if connected with the HRU-CONT-TPAD touch panel.

4.3 Available configurations



HRU-ERGO Heat and energy recovery ventilator

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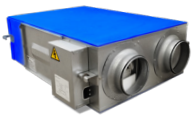
HRU-CONTR-TPAD Controller



HRU-ERGO Heat and energy recovery ventilator

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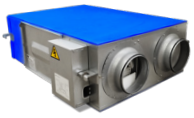
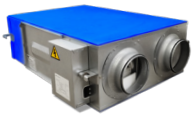
HDE-CO2 heater

HDE-CO1 preliminary heater

+



HRU-ERGO Heat and energy recovery ventilator



HRU-ERGO Heat and energy recovery ventilator

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HDW Water heater

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2d CQ215Q-J Valve

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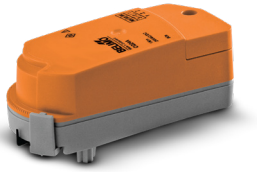
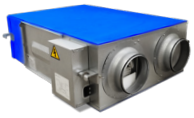


CQ230A Actuator



HRU-ERGO Heat and energy recovery ventilator

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HDW Water heater

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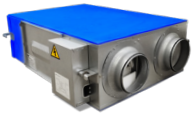
3d R3..xx-B..Valve

+

TRY230 Actuator



HRU-ERGO Heat and energy recovery ventilator

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HRU-CONTR-TPAD Controller

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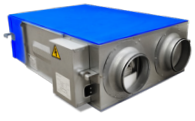
CO_2 sensor



HRU-ERGO Heat and energy recovery ventilator

+

HRU-CONTR-TPAD Controller

+

Humidity sensor

5. Detailed operating algorithms

5.1 By-pass

Fig. 13. Bypass is opened/ closed.

By-pass is a function that enables bypassing the heat exchanger in case of small difference in exhaust and supply air temperature. The default by-pass temperature is 19-21˚C. By-pass will turn on only when:

condition I: supply and exhaust air temperature is in the range of 19-21˚C

condition II: the temperature difference between the exhaust and supply air will not be more than + 3˚C.

Follow the instructions below to change default parameters of bypass operation:

1. Press and hold **MODE** button for more than 6 seconds.
2. Now, You can set parameters:

No.	*Explanation*	*Range*	*Default value*	*Record position*
00	No function			main control unit
01	Electric heater	0 - lack 1 - present	0	main control unit
02	Bypass opening temperature X	5-30	19	main control unit
03	Bypass opening temperature range Y	2-15	3	main control unit
04	Defrost interval	15-99	30	main control unit
05	Defrost inlet temperature	-9-5	- 1	main control unit
06	Defrosting time	2-20	10	main control unit
07	Difference in opening temperature of the second electric heater	2-7	5	main control unit

Table 7. Setting up main parameters

3. Press **SET** button to select parameter 02 then press **MODE** button to set the value.
4. Use **UP / DOWN** arrows to set the bypass temperature (e.g. X = 26˚C).
5. Press **SET** button to accept changes.
6. Press **SET** button again to go to parameter 03.
7. Press **MODE** button to set value (default value: 3). This is the value added to parameter 02 defining a range: e.g. from 19˚C to 19+3˚C.
8. Accept changes with **SET** button.
9. Finally, press **EXIT** button to exit.
10. As a result, the by-pass will open in conditions when the outdoor temperature **oA** is equal or higher than 26˚C and below 29˚C.

If required by User, automatic by-pass can be switched off with SW4-2 dial switch. Put switch 2 to ON position and then open/close by-pass manually with voltage free By-pass switch (look at Diagram 1, PORT 2). Once PORT 2 circuit is closed, by pass will be opened and fans will run at highest speed. Once opened, the unit will return to previous state.

BYPASS ALGORITHM

oA - outdoor temperature
X - by--pass opening temperature
Y - bypass opening temperature range

Condition:
1. oA < X lub oA > X+Y - by-pass is closed
2. X ≤ oA ≤ X+Y - by-pass is opened

Example 1:
oA = 22 ˚C (summer)

Condition:
1. oA < X or oA > X+Y
2. X ≤ oA ≤ X+Y

X = 19 or Y = 3 (X and Y parameters must be set using the controller)

1. 22 < 19 or 22 > 19+3 the condition is not met
2. 19 ≤ 22 ≤ 19+3 the condition is met

Results: by-pass is opened

Example 2:
oA = 10 ˚C (winter)

Conditions:
1. oA < X or oA > X+Y
2. X ≤ oA ≤ X +Y

X = 19 or Y = 3 (X and Y parameters must be set using the controller)

1. 10 < 19 or 10 > 19+3 the condition is met
2. 19 ≤ 10 ≤ 19+3 the condition is not met

Results: by-pass is closed

5.2 Heater

1. In the parameter settings, the electric heater must be activated, i.e. press and hold **MODE** button for 6 seconds and then press the **SET** button to select parameter 01 - electric heater. Press **MODE** button to modify parameter 01. Use **UP- DOWN** button to change value from „0" to„1" then accept changes with **SET** button.
2. Press button on the controller to turn on the electric heater.
3. Use **UP - DOWN** buttons to select the temperature value. If it falls below the set temperature, the electric heater activates.
4. It is possible to connect two electric heaters.
5. Operation diagram:
   If the difference between the temperature set by the user (T_N) and the temperature of the supply air (T_{SA}) is 0-5˚C the first heater / first heating stage is activates (LD3 connector activates). If the mentioned difference is above 5˚C the second heater / second heating stage is activates (LD4 connector activates)

1 heating stage: $0\,^{\circ}C < T_N - T_{SA} < 5\,^{\circ}C$
2 heating stage: $T_N - T_{SA} > 5\,^{\circ}C$
No heating: $T_{SA} \geq T_N$

5.3 Defrosting

To modify the default parameters of the defrost function, press and hold **MODE** button for 6 seconds and then press the **SET** button and select parameters 04 or 05 or 06. Press **MODE** button to modify parameter 04 or 05 or 06. Use **UP- DOWN** button to change value, then accept changes with **SET** button.

No.	*Explanation*	*Range*	*Default value*	*Record position*
04	Defrost interval	15-99	30	main control unit
05	Defrost inlet temperature	-9-5	- 1	main control unit
06	Defrosting time	2-20	10	main control unit

Table 8. Selected main defrost settings

Setting example:

Parameter 4: 25 — The intervals between defrost cycles take 25 minutes.

Parameter 5: -5 — The defrosting system will start running at a temperature oA < -5˚C.

Parameter 6: 10 — The defrosting system will run for 10 minutes or until the heat exchanger reaches the temperature of 10˚C*.

*By default, there is a second condition for heating the exchanger oA+15˚C that is from set temperature (-5˚C), the defrost system will run for 10 minutes or until the heat exchanger reaches the temperature of +10˚C.

6. Remote control - ModBus addressing

No.	*Explanation*	*Range*	*Default value*	*Record position*
00	Useless			Main control unit
01	Useless			Main control unit
02	Bypass opening temperature X	5-30	19	Main control unit
03	Bypass opening temperature range Y	2-15	3	Main control unit
04	Defrost interval	15-99	30	Main control unit
05	Defrost inlet temperature	-9-5	- 1	Main control unit
06	Defrosting time	2-20	10	Main control unit
07	CO_2 sensor	28-C8 (392-1960ppm)	66 (1000ppm)	Main control unit
08	ModBus address	1		Main control unit
09	Unit ON/OFF	0-OFF 1-ON		Main control unit
10	Supply fan	Speeds: 0=stop, 2=speed 1, 3=speed 2, 5=speed 3, 8=speed 4, 9=speed 5, 10=speed 6, 11=speed 7, 12=speed 8, 13=speed 9, 14= speed 10		Main control unit

No.	*Explanation*	*Range*	*Default value*	*Record position*
11	Exhaust fan	Prędkości: 0=stop, 2=speed 1, 3=speed 2, 5=speed 3, 8=speed 4, 9=speed 5, 10=speed 6, 11=speed 7, 12=speed 8, 13=speed 9, 14= speed 10		Main control unit Main control unit
12	Stale air exhausted from rooms RA	Observed value		Main control unit
13	Fresh air supplied from outdoor OA	Observed value		Main control unit
14	Stale air discharged outside EA	Observed value		Main control unit
15	De-icing temperature	Observed value		Main control unit
16	External signal ON/OFF	Inquiry value		Main control unit
17	Signal ON/OFF CO_2 sensor	Inquiry value		Main control unit
18	Fire alarm signal/ bypass signal De-icing signal	Inquiry value: B0-1 - fire alarm ON B1-1 - By-pass ON B2-1 - By-pass OFF B3-1 - de-icing		Main control unit
19	Electric heater			Main control unit
20	Error display	Inquiry value: B2-OA - temp. error OA B5-EEPROM - memory error B4-RA - temp. error RA B3-Fr - de-icing error		Main control unit
21	Unit model			
22	De-icing model			

Table 9. ModBus address

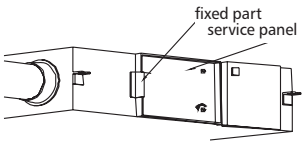
7. Maintenance and service

Cut off the power supply before starting installation or maintenance to avoid electric shock or other injury. The specification of electrical wiring must comply with the applicable regulations, otherwise, there is a risk of failure, fire or electric shock.

Use only original filters. The unit is delivered with the set of filters. Lack of filter or its damage may cause a failure or decrease in work efficiency due to the accumulation of dirt and dust. Replace or clean the filter when the filter replacement alarm appears or if You notice considerable the system performance decrease caused by dirt or dust.
The frequency of maintenance activities depends on many factors, the environment, the working time, etc.

7.1 Filter cleaning

1. Open the service panel.
2. Remove the dirty filter.
3. Clean the filter from dust and dirt. In the case of heavy dirt, clean with water and light detergent.
4. Place the dry filter back into the device and close the service panel.
5. Replace the filter with a new one if it is very dirty or damaged.



7.2 Exchanger maintenance

1. Open the service panel.
2. Remove the filter.
3. Remove the exchanger from the device.
4. Carefully clean the exchanger from dirt and dust.
5. Install the heat exchanger and the filter again.

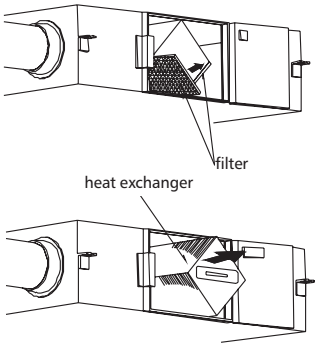


Fig. 14. Filter and heat exchanger

It is recommended to service the exchanger every three years!

8. Resolving problems

We recommend self-identification of the error using the table below, before contacting our service:

Error codes	*Error*
E1	Fresh air temperature sensor error
E2	EEPROM error
E3	Return air temperature sensor error
E4	Exhaust air temperature sensor error
E5	Communication error
E6	Supply air temperature sensor
E7	Exhaust fan error
E8	Supply fan error

Table 10. List of error codes.

Problem	*Possible reason*	*Solution*
The air flow in the room decreases noticeably after a certain period of time	Dirty or dusty filter	Replace or clean the filter
Noises in the ductwork	Loose duct fixing	Fix connections and fasteners
The device does not work	1. No power 2. Fuse switch disconnected	1. Make sure the device is properly powered 2. Turn on the fuse

Table 11. Examples of solutions to problems.

9. Technical data

Model	*Air flow [m³/h]*	*Enthalpy efficiency [%]*		*Heat recovery efficiency [%]*	*Noise level [dB]*	*Voltage [V]*	*Power [W]*	*Weight [kg]*
		Summer	*Winter*					
HRU-ERGO-250	250	70	63	75	34.5	230	46	29
HRU-ERGO-350	350	69	66	75	37.5	230	60	37
HRU-ERGO-500	500	67	62	75	39	230	51	43
HRU-ERGO-650	650	68	62	75	39.5	230	78	64
HRU-ERGO-800	800	71	65	75	42	230	186	71
HRU-ERGO-1000	1000	71	65	75	43	230	243	83

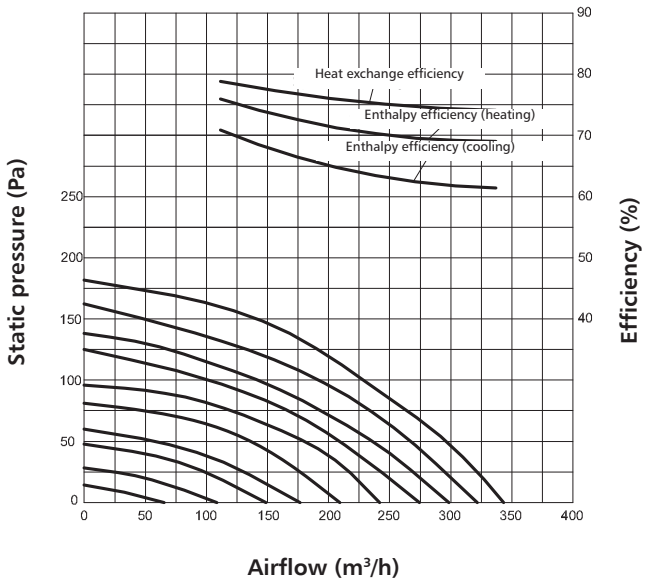
Table 12. HRU-ERGO details/technical specifications.

Model	*Power supply cable*	*Control panel*	*Fan model*	*Fan speeds (supply and exhaust)*	*Summer bypass*	*Defrosting*	*Air quality control (CO_2, RH)*
HRU-ERGO-250	3x 1.5mm²	Yes Weekly timer	DC	10 speeds	Yes possible regulation	Yes possible regulation	Controller available on request
HRU-ERGO-350							
HRU-ERGO-500							
HRU-ERGO-650							
HRU-ERGO-800							
HRU-ERGO-1000							

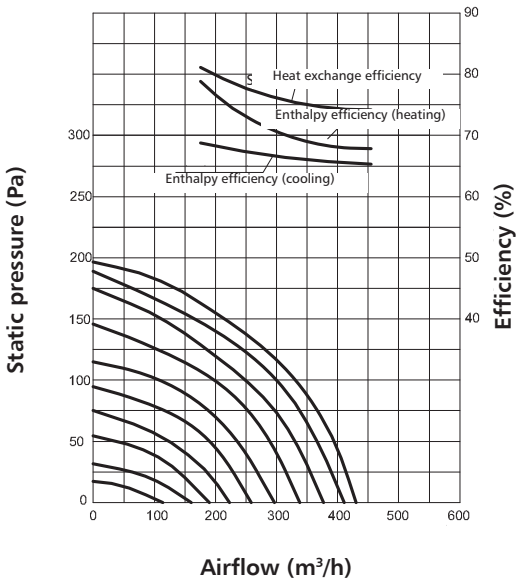
Table 13. HRU-ERGO details/technical specifications.

10. Charts

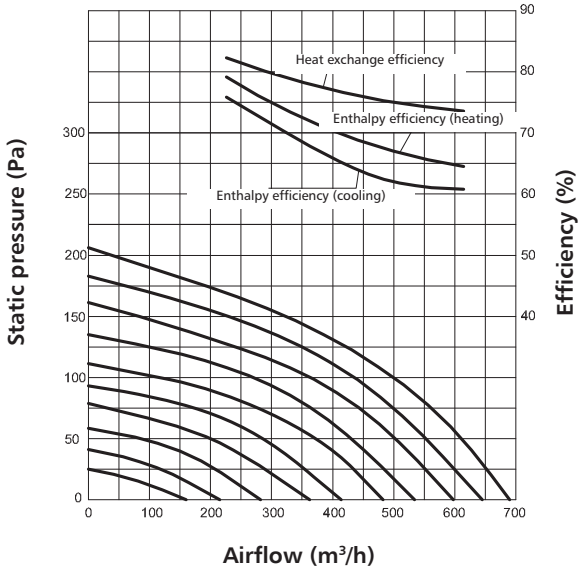
HRU-ERGO-250



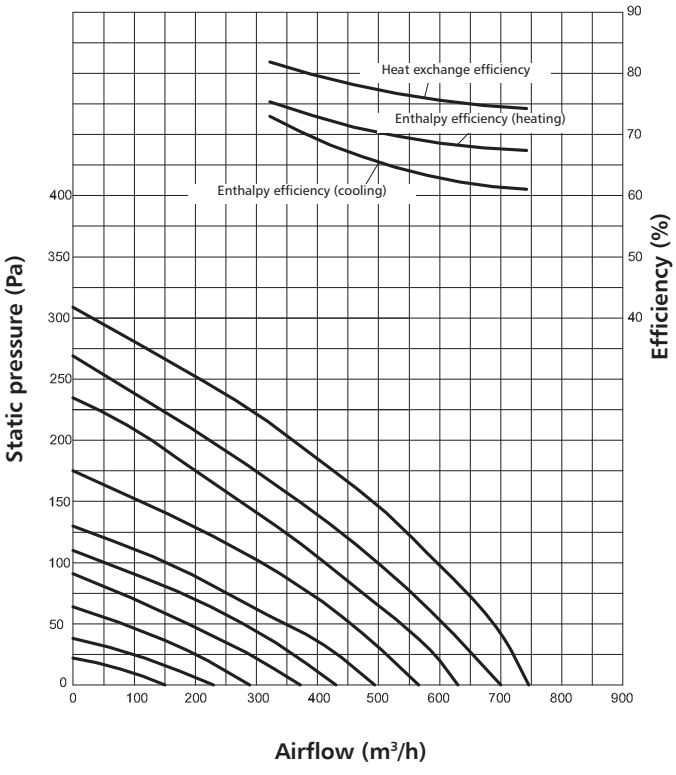
HRU-ERGO-350



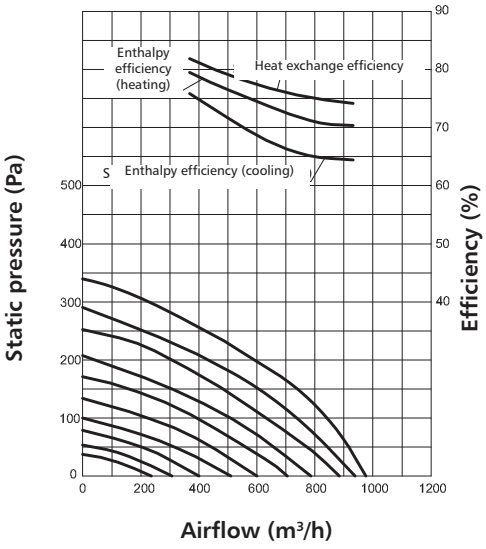
HRU-ERGO-500



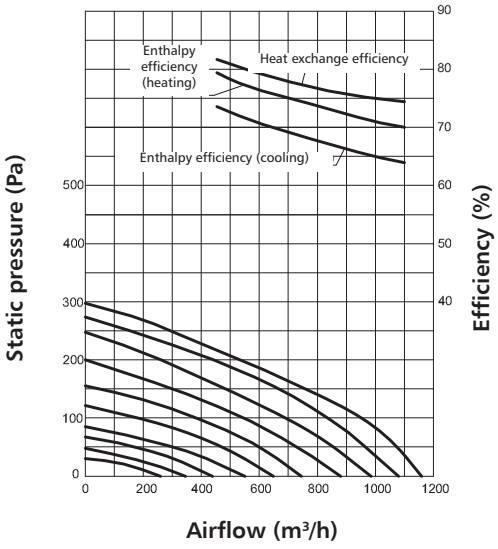
HRU-ERGO-650



HRU-ERGO-800

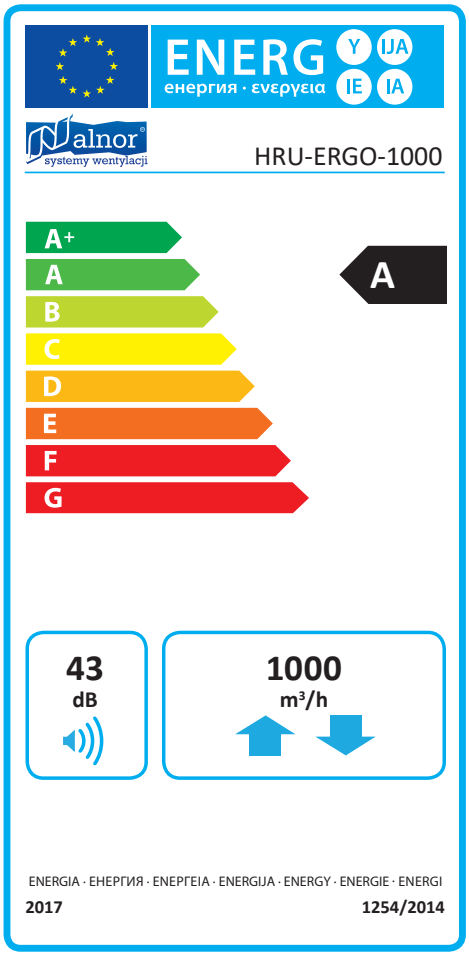


HRU-ERGO-1000



11. Energy class

Model	*Noise level [dB]*	*Air flow [m³/h]*	*Energy class*
HRU-ERGO-250	35	250	A
HRU-ERGO-350	38	350	A
HRU-ERGO-500	39	500	A
HRU-ERGO-650	40	650	A
HRU-ERGO-800	42	800	A
HRU-ERGO-1000	43	1000	A



12. Diagrams

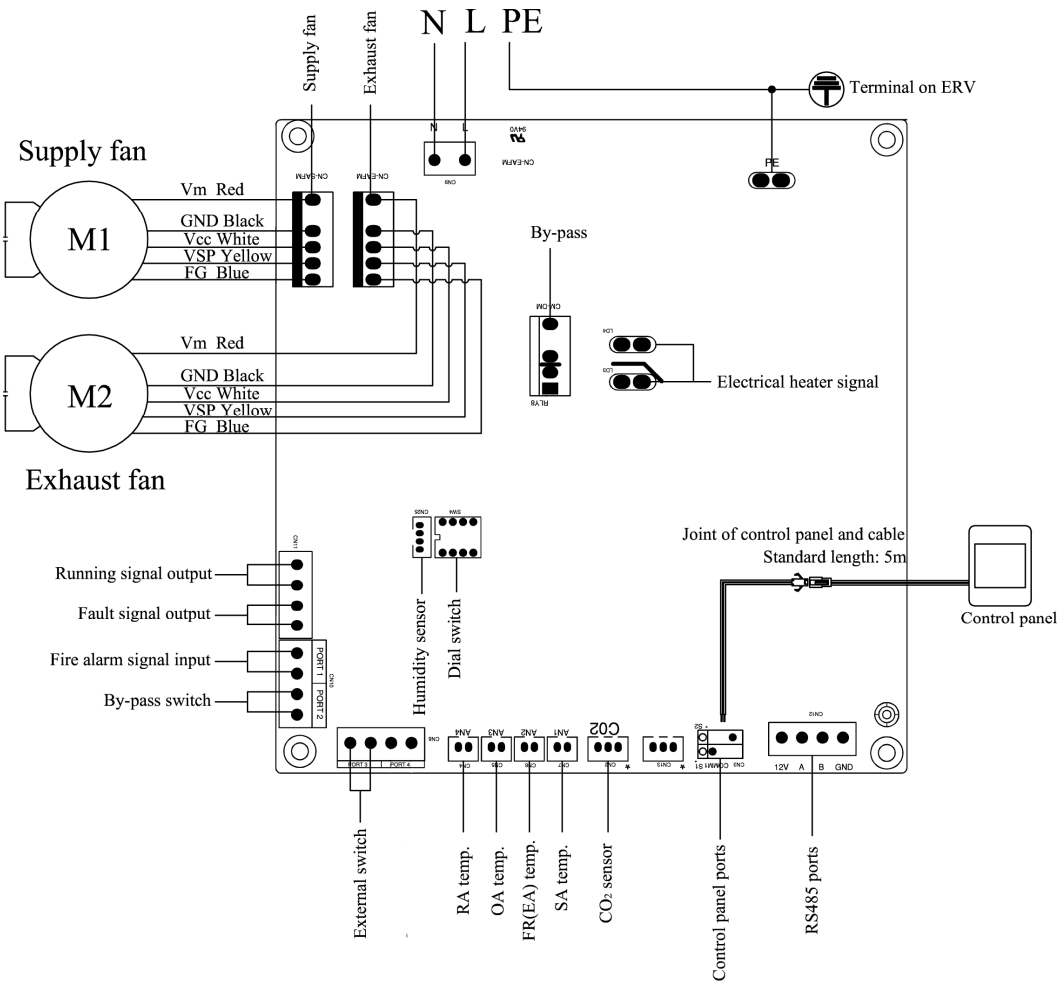


Diagram 1. Diagram of the main rboard.

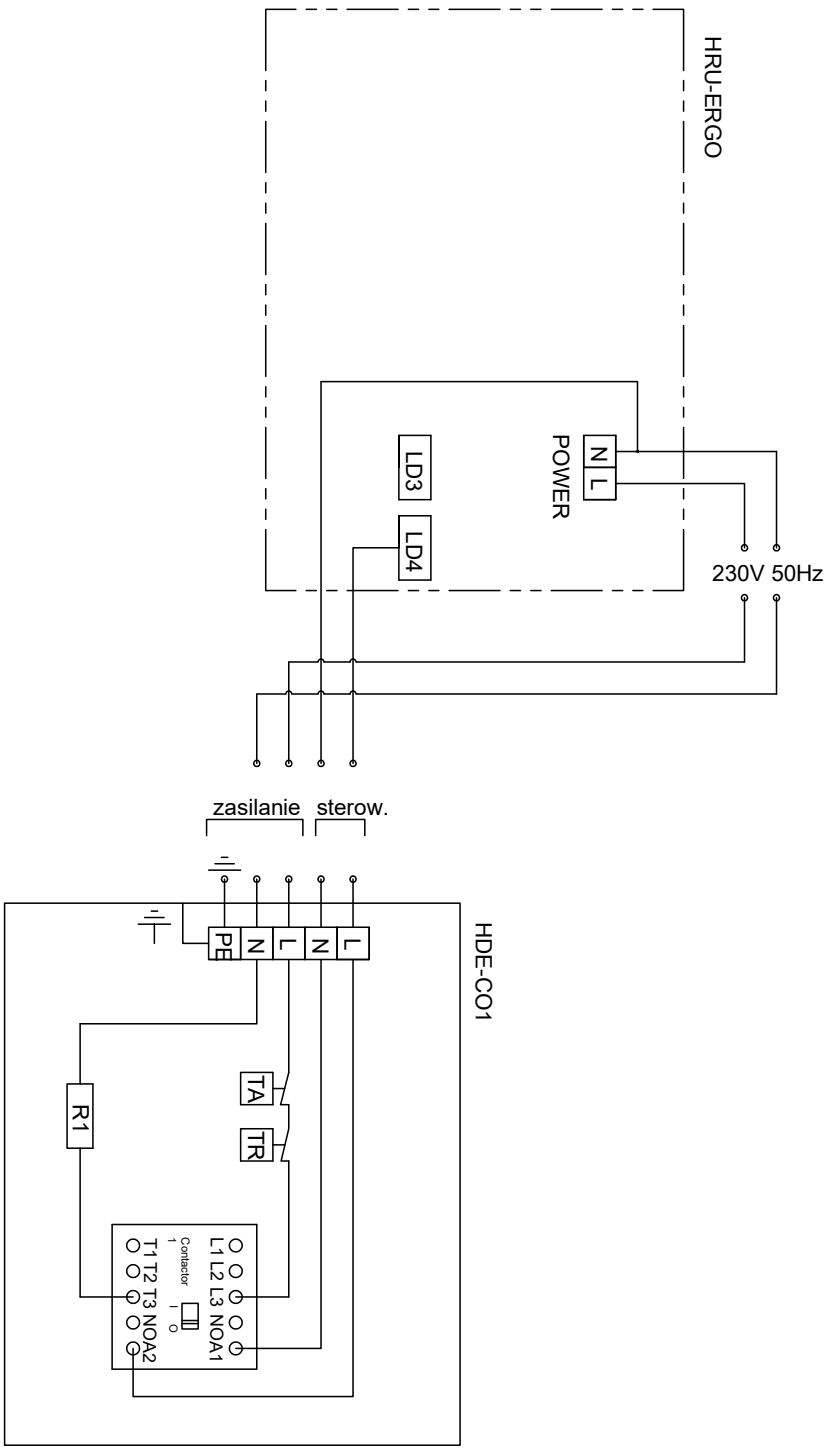


Diagram 2. Wiring diagrams of the preliminary heater.

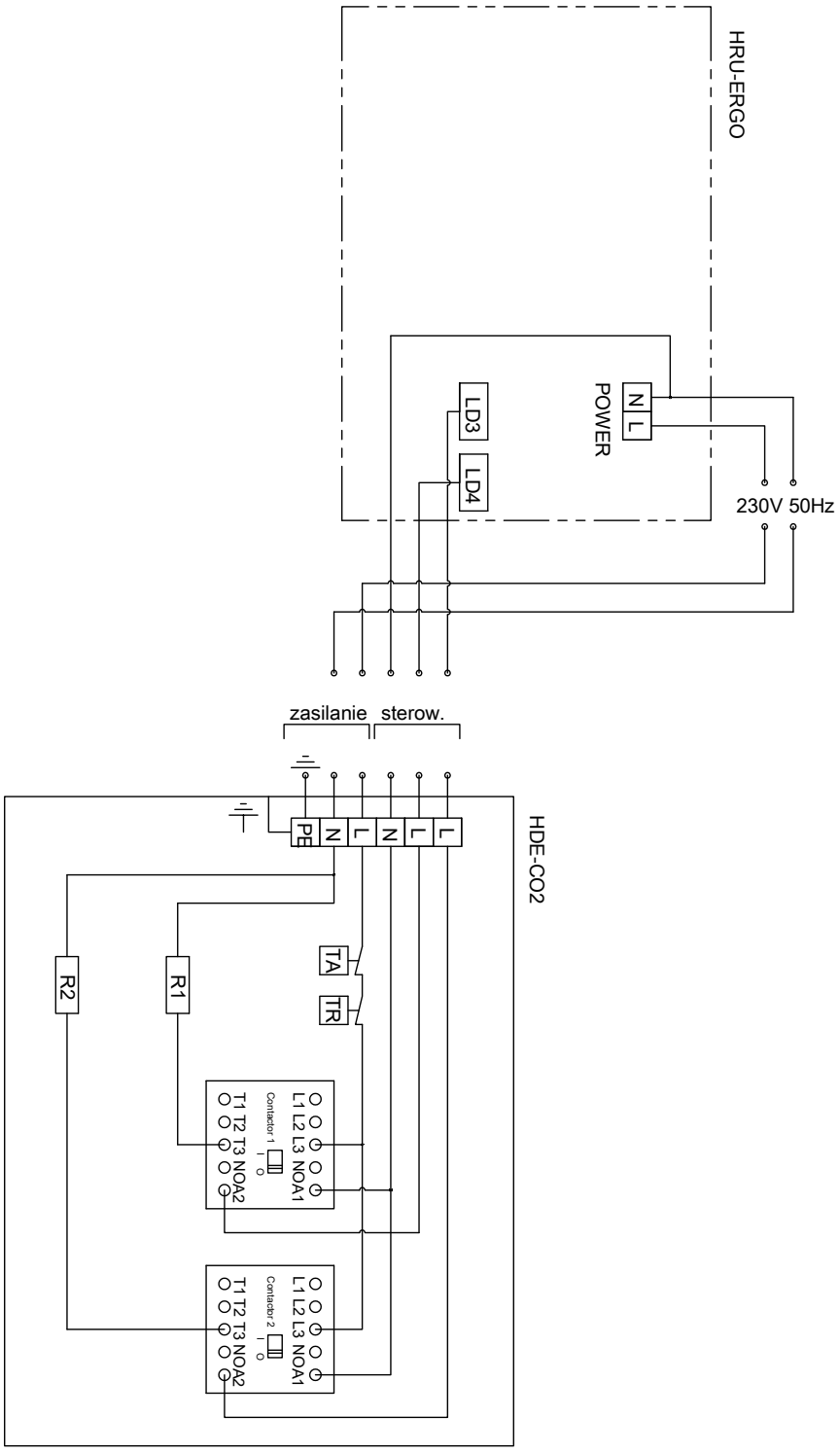


Diagram 3. Wiring diagrams of the secondary heater.

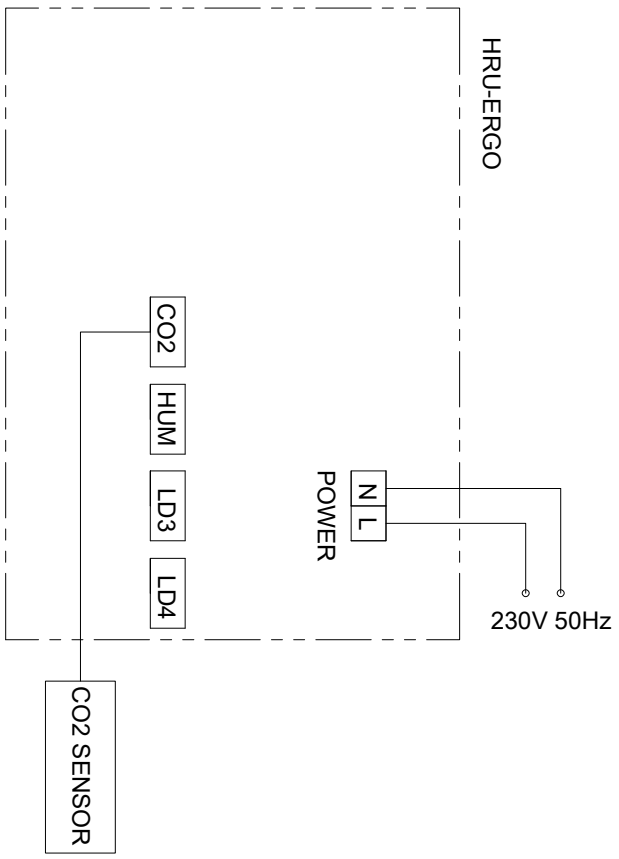


Diagram 4. Wiring diagrams of the CO_2 sensor.

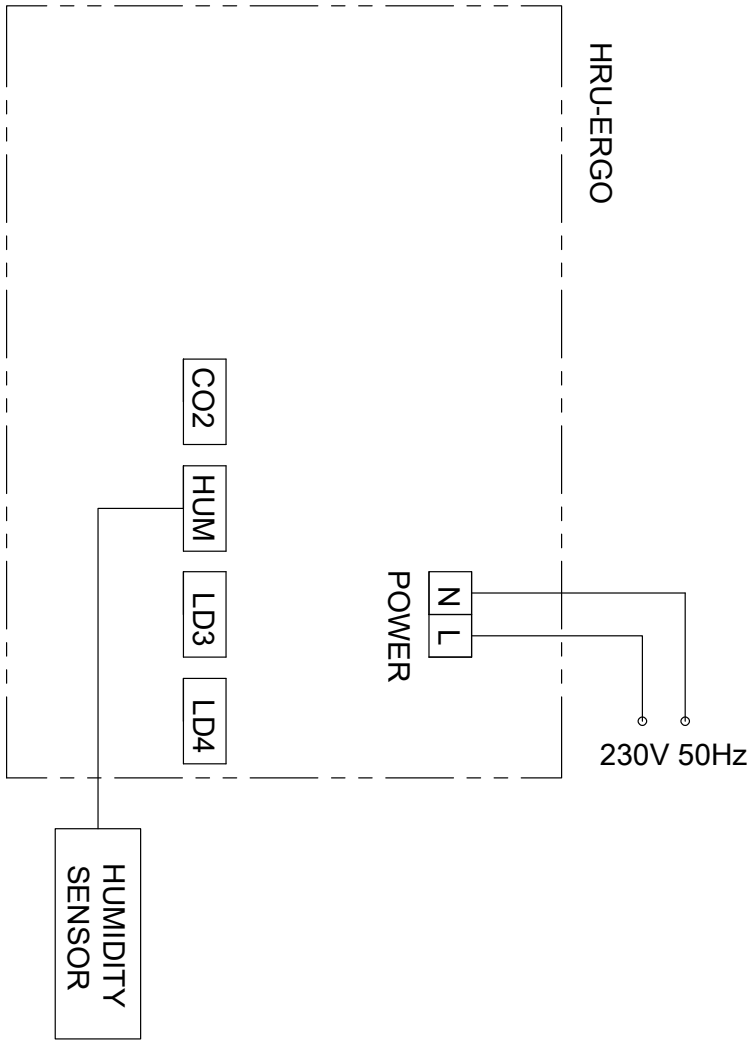


Diagram 5. Wiring diagrams of the humidity sensor.

13. Product fiche in accordance with EU regulation no.1254/2014

Supplier's name		ALNOR Systemy Wentylacji Sp. z o.o.	
Supplier's model identifier		HRU-ERGO-250	
Specific energy consumption (SEC) average climate	kWh/m²/year	**-35.79**	**A**
Specific energy consumption (SEC) warm climate	kWh/m²/year	-13.54	E
Specific energy consumption (SEC) cold climate	kWh/m²/year	-70.05	A+
Unit typology		Bidirectional	
Type of drive		Multi-speed	
Type of Heat Recovery System		Recuperative	
Thermal efficiency of heat recovery	%	75	
Maximum flow rate	m³/h	250	
Maximum power input	W	46	
Sound power level Lwa	dB(A)	35	
Reference flow rate	m³/s	0.069	
Reference pressure difference	Pa	85	
SPI	kW/(m³/h)	0.000184	
Control factor and Control typology		0.95 local demand control	
Internal leakage factor	%	6	
External leakage factor	%	2.8	
Mixing rate of non-ducted bidirectional ventilation units		not applicable	
Position and description of visual filter warning		Visual filter warning on display	
Instructions to install regulated supply/exhaust grilles		not applicable	
Internet address for pre-/dis-assembly instruction		www.alnor.com.pl	
Airflow sensitivity to pressure variations at + 20 Pa and – 20 Pa for non-ducted units		not applicable	
Indoor/outdoor air tightness in m3/h for non-ducted units	m³/h	not applicable	
Annual electricity consumption (AEC) average climate	kWh/year	2.53	
Annual electricity consumption (AEC) warm climate	kWh/year	2.08	
Annual electricity consumption (AEC) cold climate	kWh/year	7.90	
Annual heating saved (AHS) average climate	kWh/year	41.44	
Annual heating saved (AHS) warm climate	kWh/year	18.74	
Annual heating saved (AHS) cold climate	kWh/year	81.07	

Supplier's name		ALNOR Systemy Wentylacji Sp. z o.o.	
Supplier's model identifier		HRU-ERGO-350	
Specific energy consumption (SEC) average climate	kWh/m²/year	**-36.14**	**A**
Specific energy consumption (SEC) warm climate	kWh/m²/year	-13.89	E
Specific energy consumption (SEC) cold climate	kWh/m²/year	-70.40	A+
Unit typology		Bidirectional	
Type of drive		Multi-speed	
Type of Heat Recovery System		Recuperative	
Thermal efficiency of heat recovery	%	75	
Maximum flow rate	[m³/h	350	
Maximum power input	W	60	
Sound power level Lwa	dB(A)	38	
Reference flow rate	m³/s	0.097	
Reference pressure difference	Pa	90	
SPI	kW/(m³/h)	0.000171	
Control factor and Control typology		0.95 local demand control	
Internal leakage factor	%	6	
External leakage factor	%	2.8	
Mixing rate of non-ducted bidirectional ventilation units		not applicable	
Position and description of visual filter warning		Visual filter warning on display	
Instructions to install regulated supply/exhaust grilles		not applicable	
Internet address for pre-/dis-assembly instruction		www.alnor.com.pl	
Airflow sensitivity to pressure variations at + 20 Pa and – 20 Pa for non-ducted units		not applicable	
Indoor/outdoor air tightness in m3/h for non-ducted units	m³/h	not applicable	
Annual electricity consumption (AEC) average climate	kWh/year	2.39	
Annual electricity consumption (AEC) warm climate	kWh/year	1.94	
Annual electricity consumption (AEC) cold climate	kWh/year	7.76	
Annual heating saved (AHS) average climate	kWh/year	41.44	
Annual heating saved (AHS) warm climate	kWh/year	18.74	
Annual heating saved (AHS) cold climate	kWh/year	81.07	

HRU-ERGO

Supplier's name		ALNOR Systemy Wentylacji Sp. z o.o.	
Supplier's model identifier		HRU-ERGO-500	
Specific energy consumption (SEC) average climate	kWh/m²/year	**-36.01**	**A**
Specific energy consumption (SEC) warm climate	kWh/m²/year	-13.76	E
Specific energy consumption (SEC) cold climate	kWh/m²/year	-70.27	A+
Unit typology		Bidirectional	
Type of drive		Multi-speed	
Type of Heat Recovery System		Recuperative	
Thermal efficiency of heat recovery	%	75	
Maximum flow rate	m³/h	500	
Maximum power input	W	88	
Sound power level Lwa	dB(A)	39	
Reference flow rate	m³/s	0.138	
Reference pressure difference	Pa	100	
SPI	kW/(m³/h)	0.000176	
Control factor and Control typology		0.95 local demand control	
Internal leakage factor	%	6	
External leakage factor	%	2.8	
Mixing rate of non-ducted bidirectional ventilation units		not applicable	
Position and description of visual filter warning		Visual filter warning on display	
Instructions to install regulated supply/exhaust grilles		not applicable	
Internet address for pre-/dis-assembly instruction		www.alnor.com.pl	
Airflow sensitivity to pressure variations at + 20 Pa and – 20 Pa for non-ducted units		not applicable	
Indoor/outdoor air tightness in m3/h for non-ducted units	m³/h	not applicable	
Annual electricity consumption (AEC) average climate	kWh/year	2.44	
Annual electricity consumption (AEC) warm climate	kWh/year	1.99	
Annual electricity consumption (AEC) cold climate	kWh/year	7.81	
Annual heating saved (AHS) average climate	kWh/year	41.44	
Annual heating saved (AHS) warm climate	kWh/year	18.74	
Annual heating saved (AHS) cold climate	kWh/year	81.07	

Supplier's name		ALNOR Systemy Wentylacji Sp. z o.o.	
Supplier's model identifier		HRU-ERGO-650	
Specific energy consumption (SEC) average climate	kWh/m²/year	**-36.03**	**A**
Specific energy consumption (SEC) warm climate	kWh/m²/year	-13.78	E
Specific energy consumption (SEC) cold climate	kWh/m²/year	-70.29	A+
Unit typology		Bidirectional	
Type of drive		Multi-speed	
Type of Heat Recovery System		Recuperative	
Thermal efficiency of heat recovery	%	75	
Maximum flow rate	m³/h	650	
Maximum power input	W	114	
Sound power level Lwa	dB(A)	40	
Reference flow rate	m³/s	0.180	
Reference pressure difference	Pa	85	
SPI	kW/(m³/h)	0.000175	
Control factor and Control typology		0.95 local demand control	
Internal leakage factor	%	6	
External leakage factor	%	2.8	
Mixing rate of non-ducted bidirectional ventilation units		not applicable	
Position and description of visual filter warning		Visual filter warning on display	
Instructions to install regulated supply/exhaust grilles		not applicable	
Internet address for pre-/dis-assembly instruction		www.alnor.com.pl	
Airflow sensitivity to pressure variations at + 20 Pa and – 20 Pa for non-ducted units		not applicable	
Indoor/outdoor air tightness in m3/h for non-ducted units	m³/h	not applicable	
Annual electricity consumption (AEC) average climate	kWh/year	2.43	
Annual electricity consumption (AEC) warm climate	kWh/year	1.98	
Annual electricity consumption (AEC) cold climate	kWh/year	7.80	
Annual heating saved (AHS) average climate	kWh/year	41.44	
Annual heating saved (AHS) warm climate	kWh/year	18.74	
Annual heating saved (AHS) cold climate	kWh/year	81.07	

Supplier's name		ALNOR Systemy Wentylacji Sp. z o.o.	
Supplier's model identifier		HRU-ERGO-800	
Specific energy consumption (SEC) average climate	kWh/m²/year	**-34.42**	**A**
Specific energy consumption (SEC) warm climate	kWh/m²/year	-12.17	E
Specific energy consumption (SEC) cold climate	kWh/m²/year	-68.67	A+
Unit typology		Bidirectional	
Type of drive		Multi-speed	
Type of Heat Recovery System		Recuperative	
Thermal efficiency of heat recovery	%	75	
Maximum flow rate	m³/h	800	
Maximum power input	W	186	
Sound power level Lwa	dB(A)	42	
Reference flow rate	m³/s	0.222	
Reference pressure difference	Pa	130	
SPI	kW/(m³/h)	0.000233	
Control factor and Control typology		0.95 local demand control	
Internal leakage factor	%	6	
External leakage factor	%	2.8	
Mixing rate of non-ducted bidirectional ventilation units		not applicable	
Position and description of visual filter warning		Visual filter warning on display	
Instructions to install regulated supply/exhaust grilles		not applicable	
Internet address for pre-/dis-assembly instruction		www.alnor.com.pl	
Airflow sensitivity to pressure variations at + 20 Pa and – 20 Pa for non-ducted units		not applicable	
Indoor/outdoor air tightness in m3/h for non-ducted units	m³/h	not applicable	
Annual electricity consumption (AEC) average climate	kWh/year	3.08	
Annual electricity consumption (AEC) warm climate	kWh/year	2.63	
Annual electricity consumption (AEC) cold climate	kWh/year	8.45	
Annual heating saved (AHS) average climate	kWh/year	41.44	
Annual heating saved (AHS) warm climate	kWh/year	18.74	
Annual heating saved (AHS) cold climate	kWh/year	81.07	

Supplier's name		ALNOR Systemy Wentylacji Sp. z o.o.	
Supplier's model identifier		HRU-ERGO-1000	
Specific energy consumption (SEC) average climate	kWh/m²/year	**-34.38**	**A**
Specific energy consumption (SEC) warm climate	kWh/m²/year	-11.87	E
Specific energy consumption (SEC) cold climate	kWh/m²/year	-68.38	A+
Unit typology		Bidirectional	
Type of drive		Multi-speed	
Type of Heat Recovery System		Recuperative	
Thermal efficiency of heat recovery	%	75	
Maximum flow rate	m³/h	1000	
Maximum power input	W	243	
Sound power level Lwa	dB(A)	43	
Reference flow rate	m³/s	0.278	
Reference pressure difference	Pa	110	
SPI	kW/(m³/h)	0.000243	
Control factor and Control typology		0.95 local demand control	
Internal leakage factor	%	6	
External leakage factor	%	2.8	
Mixing rate of non-ducted bidirectional ventilation units		not applicable	
Position and description of visual filter warning		Visual filter warning on display	
Instructions to install regulated supply/exhaust grilles		not applicable	
Internet address for pre-/dis-assembly instruction		www.alnor.com.pl	
Airflow sensitivity to pressure variations at + 20 Pa and – 20 Pa for non-ducted units		not applicable	
Indoor/outdoor air tightness in m3/h for non-ducted units	m³/h	not applicable	
Annual electricity consumption (AEC) average climate	kWh/year	3.20	
Annual electricity consumption (AEC) warm climate	kWh/year	2.75	
Annual electricity consumption (AEC) cold climate	kWh/year	8.57	
Annual heating saved (AHS) average climate	kWh/year	41.44	
Annual heating saved (AHS) warm climate	kWh/year	18.74	
Annual heating saved (AHS) cold climate	kWh/year	81.07	

Warunki gwarancji rekuperatora

1. Gwarancja udzielana jest na okres 24 miesięcy od daty uruchomienia urządzenia, jednak nie dłużej niż 27 miesięcy od daty sprzedaży.
2. W okresie objętym niniejszą gwarancją Producent zobligowany jest do bezpłatnego usunięcia wszelkich wad i niesprawności urządzenia powstałych z przyczyn tkwiących w wyrobie lub zaistniałych z winy Producenta.
3. Uruchomienie rekuperatora wymaga instalacji przez uprawnionego instalatora z potwierdzeniem montażu na karcie gwarancyjnej lub w odpowiednim protokole odbioru rekuperatora.
4. Gwarancja obowiązuje pod warunkiem dokonywania regularnych przeglądów urządzenia oraz systemu wentylacyjnego w całym okresie gwarancyjnym. Obowiązuje cykl: 1 przegląd na 6 miesięcy pracy systemu. W przypadku niedopełnienia obowiązku wykonania kolejnych przeglądów rekuperatora oraz instalacji przez autoryzowanego serwisanta, potwierdzonych odpowiednim wpisem oraz pieczęcią na karcie gwarancyjnej, gwarancja automatycznie traci ważność.
5. Gwarancja dotyczy ewentualnej wymiany części urządzenia, nie dotyczy ona natomiast świadczenia usług. Gwarancja obowiązuje wyłącznie w przypadku wykonania instalacji elektrycznej i podłączenia przez uprawnionego elektryka, co zostaje każdorazowo potwierdzone odpowiednim protokołem odbioru oraz pieczęcią na karcie gwarancyjnej. Montaż urządzenia przez osoby nieupoważnione powoduje automatyczną utratę gwarancji.
6. Gwarancji nie podlegają rekuperatory zamontowane w systemach wentylacyjnych wykonanych wyłącznie z kanałów elastycznych lub w systemach, w których kanały główne wykonane są z przewodów elastycznych.
7. Gwarancji nie podlegają rekuperatory zainstalowane w systemach wentylacyjnych wykonanych wyłącznie z przewodów nieizolowanych. Nie dotyczy to instalacji wykonanych ze specjalistycznych przewodów wentylacyjnych umieszczonych w betonowych wylewkach podłogowych.
8. Producent nie ponosi odpowiedzialności za wadliwą pracę instalacji lub rekuperatora spowodowaną wadliwym wykonaniem instalacji wentylacyjnej. W szczególności w przypadku, gdy instalacja wentylacyjna nie posiada odpowiedniej dokumentacji projektowej lub powykonawczej zawierającej wszelkie parametry pracy instalacji wentylacyjnej takie jak przepływy powietrza, spręż, wydajność instalacji, potwierdzone odpowiednimi protokołami pomiarowymi oraz protokołem odbioru instalacji wentylacyjnej. Brak dokumentacji technicznej instalacji wentylacyjnej powoduje utratę gwarancji.
9. Gwarancji podlega towar, na który reklamujący przedstawił ważną kartę gwarancyjną i dowód zakupu.
10. Wszelkie nieprawidłowości w pracy urządzenia należy zgłaszać sprzedawcy/serwisantowi.
11. Gwarancją nie są objęte:mechaniczne uszkodzenia sprzętu i wywołane nimi usterki,uszkodzenia i wady wynikłe wskutek:
    a. Niewłaściwego lub niezgodnego z instrukcją transportu,montażu, użytkowania,przechowywania i konsewacji
    b. Samowolnego dokonywania napraw oraz przeróbek
    c. Działania siły wyższej np. uderzenia pioruna, powodzi, przepięć sieci elektrycznej, ekstremalnych warunkach atmomosferycznych, uszkodzeń wynikłych w wyniku działania zwierząt lub owadów
    d. Uszkodzeń wynikłych z niewłaściwego zabezpieczenia instalacji podczas prowadzenia innych prac budowlanych, remontowych lub montażowych, w tym uszkodzenia polegające na zanieczyszczeniu wnętrza rekuperatora
    e. Uszkodzeń wynikłych z niewłaściwego wykonania lub podłączenia sieci elektrycznej
    f. Uszkodzeń wynikłych z zanieczyszczenia urządzenia, uszkodzeń powstałych w wyniku pracy urządzenia z silnie zanieczyszczonymi filtrami lub w wyniku pracy urządzenia bez filtrów oraz w wyniku silnego zanieczyszczenia instalacji wentylacyjnej
    g. Uszkodzeń wynikłych z zainstalowania urządzenia w instalacji wentylacyjnej wykonanej wadliwie lub nie posiadającej odpowiedniej dokumentacji technicznej potwierdzonej odpowiednimi protokołami pomarowymi oraz protokołem odbioru instalacji lub w odpowiednim protokole odbioru rekuperatora.
12. Gwarancją nie są objęte koszty dojazdu serwisanta wyznaczonego przez producenta w przypadku braku możliwości demontażu urządzenia.
13. Obowiązkowy, odpłatny przegląd serwisowy obejmuje następujące czynności:
    - wymianę/czyszczenie filtrów rekuperatora,
    - kontrolę wnętrza rekuperatora,
    - kontrolę stanu kanałów wentylacyjnych,
    - oczyszczenie kratki czerpni i wyrzutni,
    - kontrolę działania systemu.
14. Reklamacje dotyczące ewentualnych braków w dostarczonym towarze lub wad ukrytych muszą być zgłaszane w formie pisemnej. Użytkownik winien w skuteczny sposób niezwłocznie zgłosić każdą niesprawność urządzenia lub ujawnienie się jego wady, aby nie dopuścić do poważniejszych uszkodzeń. Koszty usunięcia uszkodzeń powstałych wskutek dalszej eksploatacji urządzenia nie w pełni sprawnego ponosi Użytkownik.
15. Naprawa gwarancyjna nie obejmuje czynności przewidzianych w instrukcji obsługi do wykonywania których zobowiązany jest użytkownik we własnym zakresie i na koszt własny tj.uruchomienie sprzętu, sprawdzenie działaniaoraz konserwacja, (wymiana filtrów, czyszczenie anemostatów).
16. Gwarancją nie są objęte inne materiały użyte do ewentualnego zakrycia/zabudowania instalacji przez kupującego, w szczególności w przypadku jeśli w procesie zabudowywania instalacji nie został zagwarantowany swobodny dostęp do urządzeń regulacyjnych takich jak podzespoły elektryczne, przepustnice czy inne elementy regulacyjne instalacji.
17. Gwarancja przestaje obowiązywać w momencie dokonania przez użytkownika zmian w przedmiocie gwarancji oraz w przypadku korzystania z innych niż zalecane przez producenta materiałów eksploatacyjnych.
18. Wszelkie sprawy sporne powstałe na tle udzielonej gwarancji rozstrzygać będzie sąd właściwy dla Sprzedającego
19. Dowód zakupu oraz instrukcję obsługi prosimy zachować na okres gwarancji tj. przez 24 miesiące w komplecie i bez zniszczeń.
20. Gwarancja zniszczona lub z widocznymi śladami dokonywania poprawek jest nieważna. Gwarancja bez pieczęci firmy instalującej urządzenie jest nieważna.

Karta gwarancyjna - przeglądy serwisowe

Lp.	*Data zgłoszenia*	*Data wykonania*	*Przebieg przeglądu*	*Podpis i pieczęć serwisanta*
Model rekuperatora: ..... Nr seryjny: ..... Data sprzedaży: .... Podpis i pieczęć Dystrybutora Data uruchomienia: .... Podpis i pieczęć Instalatora				
6 miesięcy			Proszę zakreślić właściwą odpowiedź: Czyszczenie filtrów rekuperatora TAK NIE Czyszczenie kratki wyrzutni/czerpni TAK NIE Kontrola stanu przewodów TAK NIE Dodatkowa regulacja TAK NIE Inne	
12 miesięcy			Proszę zakreślić właściwą odpowiedź: Czyszczenie filtrów rekuperatora TAK NIE Czyszczenie kratki wyrzutni/czerpni TAK NIE Kontrola stanu przewodów TAK NIE Dodatkowa regulacja TAK NIE Inne	
18 miesięcy			Proszę zakreślić właściwą odpowiedź: Czyszczenie filtrów rekuperatora TAK NIE Czyszczenie kratki wyrzutni/czerpni TAK NIE Kontrola stanu przewodów TAK NIE Dodatkowa regulacja TAK NIE Inne	
24 miesiące			Proszę zakreślić właściwą odpowiedź: Czyszczenie filtrów rekuperatora TAK NIE Czyszczenie kratki wyrzutni/czerpni TAK NIE Kontrola stanu przewodów TAK NIE Dodatkowa regulacja TAK NIE Inne	

Warranty conditions - Heat Recovery Unit

1. The warranty is granted for a period of 24 months from the date of commissioning the device, however not longer than 27months from the date of sale.
2. During the warranty peiod, the Manufacturer is obliged to remove any defects and malfunctions of the device free of charge due to causes inherent in the product or caused by the Manufacturer.
3. The commissioning of the heat recovery unit requires installation by an authorized installer with confirmation of assembly on the warranty card or in the appropriate acceptance protocol of the heat recovery unit.
4. The warranty is valid under the condition of regular inspection of the device and ventilation system throughout the warranty period. The cycle is valid: 1 review for 6 months of system operation. In the event of failure to perform subsequent reviews of the heat recovery unit and ductwork by an authorized service technician, confirmed by an appropriate entry and a stamp on the warranty card, the guarantee automatically expires.
5. The warranty applies to the possible replacement of parts of the device, but it does not apply to the provision of services. The warranty is valid only in the case of electrical installation and connection are carried out by a qualified electrician, which is each time confirmed by an appropriate acceptance protocol and a stamp on the warranty card. The warranty becomes void if installation of the device was made by an nauthorized persons.
6. The warranty does not apply to heat recovery units installed in ventilation systems made only from flexible ducts or in systems in which the main ductwork is made of flexible ducts.
7. The warranty does not apply to heat recovery units installed in ventilation ductwork using uninsulated ducts. This does not apply to installations made of plastic ventilation ducts placed in concrete floor screeds.
8. The manufacturer is not liable for faulty operation of the installation or the heat recovery unit caused by a faulty installation of the ventilation system. In particular, if the ventilation system does not have appropriate design documentation or as-built documentation containing all the parameters of the ventilation system operation, such as air flows, compressor, installation performance, confirmed by appropriate measurement protocols and the ventilation system acceptance protocol. Lack of technical documentation of the ventilation system will void the warranty.
9. The warranty covers the goods for which the Complainant presented a valid warranty card and proof of purchase.
10. Any irregularities in the device operation should be reported to the seller / serviceman.
11. The warranty does not cover: mechanical damage to the equipment and defects caused by them, damage and defects resulting from:
    a. Misuse, abuse or improper maintenance, failure to follow operating instructions about assmeby, storage and transportation
    b. Unauthorized repairs and alterations
    c. Force majeure actions, e.g. lightning strikes, floods, electric network overvoltage, extreme weather conditions, damages resulting from the activities of animals or insects
    d. Damage caused by improper protection of installation while carrying out other construction works, repair or assembly, including damage involving contamination of the HRV' s interior
    e. Damage caused by improper workmanship or connecting the electricity network
    f. Damage resulting from the contamination of the device, damages resulting from the operation of the device with extremely contaminated filters or as a result of the device's operation without filters and as a result of highly contaminated ventilation ductwork.
    g. Damage resulting from the installation of the device in a ventilation system made incorrectly or not having the appropriate technical documentation confirmed by appropriate measurement protocols and the acceptance protocol of the installation or in the appropriate HRV receipt report.
12. The warranty does not cover the travel costs of the service technician appointed by the manufacturer if the unit cannot be disassembled.
13. The obligatory paid service inspection includes the following activities:
    - replacement / cleaning of HRV filters
    - control of the HRV operation,
    - control of the condition of ventilation ducts,
    - cleaning the exhaust and supply grille,
    - system operation control.
14. Complaints about any missing items in the delivered goods or hidden defects must be reported in writing. The user should effectively report any equipment malfunction or disclosure of its defect in an efficient manner in order to avoid serious damage. The costs of removing damages caused as a result of further operation of the device which is not fully functional is the responsibility of the User.
15. Warranty repair does not include the activities provided in the user's manual for which the user is obliged to perform on their own and at their own expense, i.e. to start the equipment, check the operation and maintenance (filter replacement, cleaning of diffusers).
16. The warranty does not cover other materials used for possible covering of the ductwork by the buyer, in particular if in the process of installation the free access to regulatory devices such as electrical components, dampers or other regulation elements of the installation was not guaranteed.
17. The warranty becomes void if any modification, or alteration has been made to the product by the user and when using spare parts not recommended by the manufacturer.
18. All disputes arising in relation to the granted warranty shall be settled by the court competent for the Seller.
19. The proof of purchase and the user's manual should be kept for the warranty period, i.e. for 24 months, and without damage.
20. The warranty card damaged or with visible traces of modifications is invalid. The warranty without the seal of the company installing the device is invalid.

Warranty card - maintenance schedule

No.	*Date of notification*	*Date of service*	*Maintenance service*	*Signature & stamp of serviceman*
Unit model: ..... Serial number: ..... Sale date: .... Signature and stamp of the Distributor Start up date: .... Signature and stamp of the Installer				
6 months			Please, circle the correct answer: YES NO Cleaning HRV filters YES NO Cleaning extract louvers and inlet diffusers YES NO Ventilation ductwork checkup YES NO Additional regulation Other	
12 months			Please, circle the correct answer: Cleaning HRV filters YES NO Cleaning extract louvers and inlet diffusers YES NO Ventilation ductwork checkup YES NO Additional regulation YES NO Other	
18 months			Please, circle the correct answer: Cleaning HRV filters YES NO Cleaning extract louvers and inlet diffusers YES NO Ventilation ductwork checkup YES NO Additional regulation YES NO Other	
24 months			Please, circle the correct answer: Cleaning HRV filters YES NO Cleaning extract louvers and inlet diffusers YES NO Ventilation ductwork checkup YES NO Additional regulation YES NO Other	