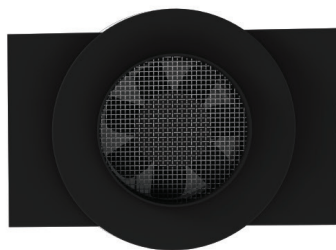
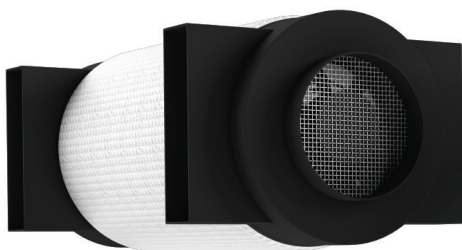




## TECHNICAL DATA SHEET

Inflow and exhaust ventilation system  
with heat recovery



PRANA-250



## SYSTEM DESCRIPTION

PRANA-250 monoblocks of the decentralized anti-current inflow-exhaust ventilation belongs to the category of innovative, safe (DC 24V feed voltage) and reliable products aimed at creating and maintaining a healthy microclimate in premises of various functional purposes.

High efficiency and significant margin of generated pressure make it possible to apply these systems for deploying industrial grade ventilation in the premises of practically any purpose.

Technologically, PRANA-250 system is a monoblock with high-efficiency counter-current heat exchanger ready for use in accordance with the design and assembly tasks and conditions.

The technical solution for ventilation with recuperation features the ability to form simultaneously to counter flows of air that do not overlap within the same monoblock. The warm air that is removed from the premise (extraction), passing through a copper heat exchanger transmits its warmth to the heat exchanger; the warmth is used to heat up the cold supply air.

The system is highly efficient and reliable. Developers of PRANA recuperators were focused mainly on creating the comfortable conditions and giving maximal consideration to specifics of human breathing physiology.

In order to secure safe operational conditions in the premises with excessive humidity level, the system is powered by +24V direct current.

The system is controlled by PVM control unit of sensor type, the remote control device or using the smartphone application.

## PURPOSE

The industrial grade PRANA-250 ventilation system is intended for creation and maintenance of certain microclimate in the premises of any process (particularly ad-hoc) purpose.

The innovative solutions supporting competitiveness, high operation efficiency and reliability of the device are as follows:

- direct flow removal of exhaust air, improving operation efficiency, extending the process maintenance intervals and ensuring removal of moisture in a dispersed state, therefore solving the problem of the heat exchanger freezing at low ambient temperatures;
- the system for inflow air cyclone treatment allows abandoning the coarse filters. This feature facilitates to maintaining high efficiency of air treatment; the air being delivered 85 to 91% dust free;
- the copper heat exchanger, despite its small size provides high recuperation rate, securing sustainable high performance factor of the recuperator;
- disinfection of inflow air. Such solution preserves the energetic component of air (the ion composition, prane) and allows abandoning the fine filters.

## OPERATION PRINCIPLE

The basis of the technical solution for PRANA-250 recuperator is counter-current copper heat exchanger with continuous heat cycle, which makes it possible to form two different-directed air flows (Fig. 1).

High velocity of the flow with sufficient heat transfer efficiency ensures removal of up to 90% of condensed moisture in a dispersed state, preventing freezing of the heat exchanger at low ambient temperatures.

The recuperator's operations cycle is as follows: when operating in extraction mode the warm air that is removed from the premise, passing through a copper heat exchanger transmits its warmth to the heat exchanger and is chilled; simultaneously the counter flow (inflow) is heated up employing such warmth.

The system enables minimization of energy loss concerned with ventilation, supporting the optimal humidity inside the premise.

Taking into account that the streams are separated and regulated at "inflow" – "exhaust" level, there is no mixing of different-directional air flows.

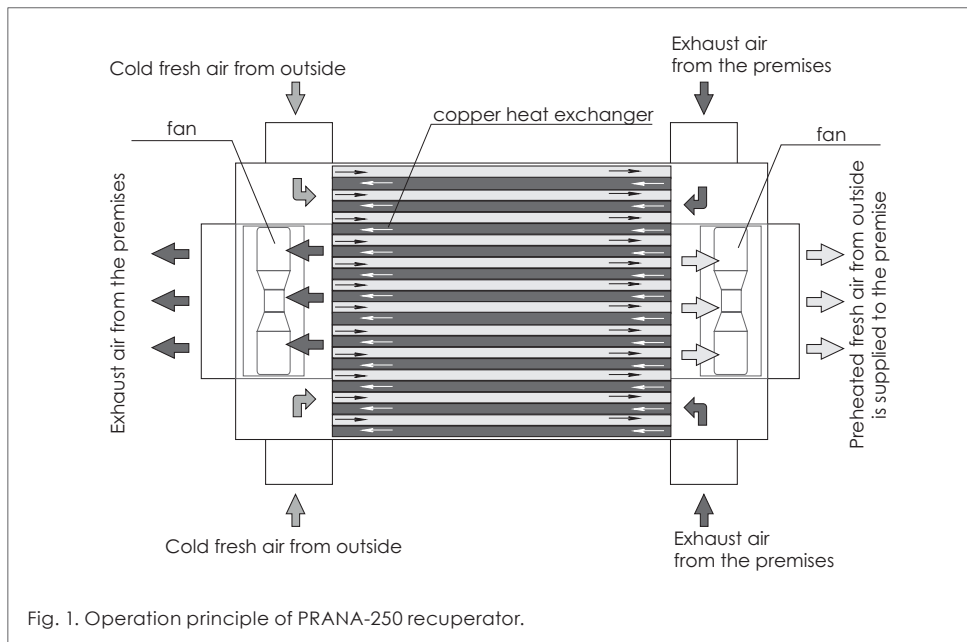


Fig. 1. Operation principle of PRANA-250 recuperator.

## TECHNICAL SPECIFICATIONS

Air exchange ratios (m<sup>3</sup>/hour):

- "off-mode" (passive air exchange) - 12-27 m<sup>3</sup>/hour.
- "ventilation mode" - 80-650 m<sup>3</sup>/hour. Energy demand:
- Ventilation system: 20 - 120 W. Recuperation ratio: 51-74 %.

The noise level 3 meters far from the product, subject to the set productivity would not exceed 19-59 dB (A).

Operation. The system is earmarked for long-term operation at the room air temperature ranging from 0e C to +35e C and ambient air temperature ranging from -20e C to +45e C.

The established service life of the system: 10 years. The warranty period: 2 years.

Power supply: Direct voltage +24V (or alternative current grid: 220±10%V via AC/DC transformer (adapter).

The size of the packing box: 650x320x260 mm. Weight of the system in individual packing ≤ 9 kg.

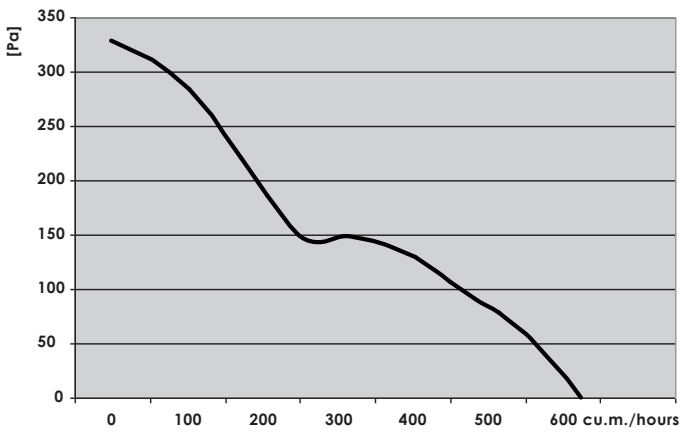


Fig. 2. The system's aerodynamic performance.

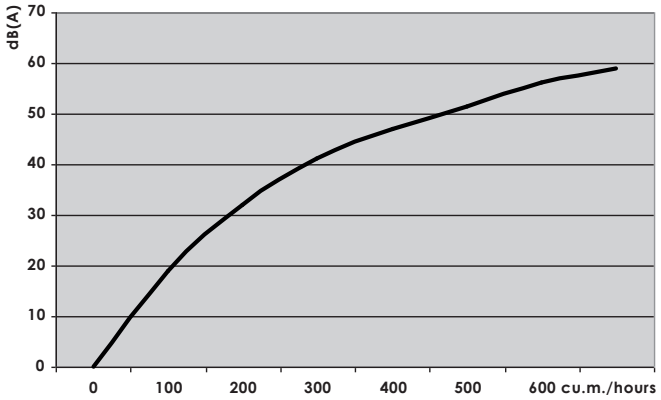


Fig. 3. The system's noise performance.

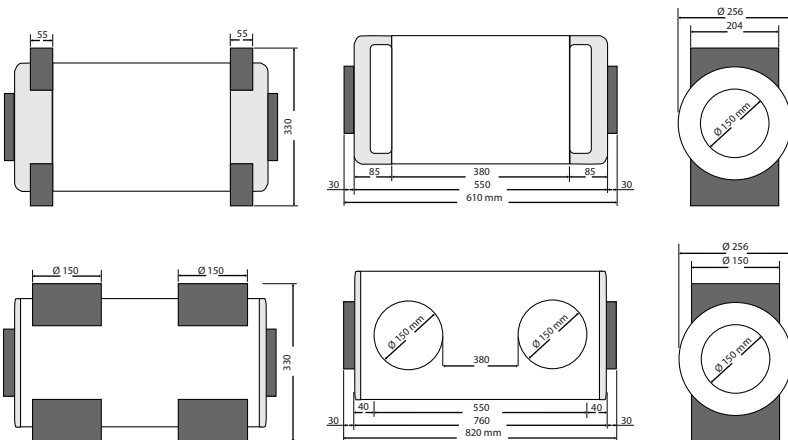


Fig. 4. The overall dimensions and the dimensions of PRANA-250 ventilation system.

## CONTROL UNIT AND INDICATION

The ad-hoc electronic control unit is used for controlling PRANA-250 ventilation system (Fig 5-6). Structurally the systems may be equipped with a set of modules earmarked for mounting on a DIN rail, comprising the control unit and power unit Control block DP PRANA250 (Fig. 5).

Furthermore, the control of the ventilation system may be provided in dust-proof-and-moisture-proof body with mains switch — Control block A PRANA250 (Fig. 6).

the control units feature extensive functionalities: overall switch-off timer and split adjustment of inflow and extraction volume.

The remote control unit is attached to PRANA-250 ventilation system, which control circuit coincides with the sensor control display. The ventilation system may be also controlled using Android and iOS mobile application.

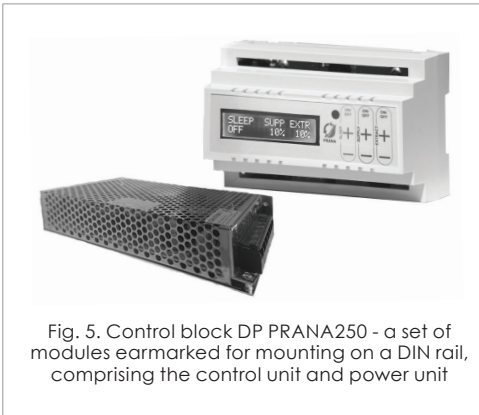


Fig. 5. Control block DP PRANA250 - a set of modules earmarked for mounting on a DIN rail, comprising the control unit and power unit

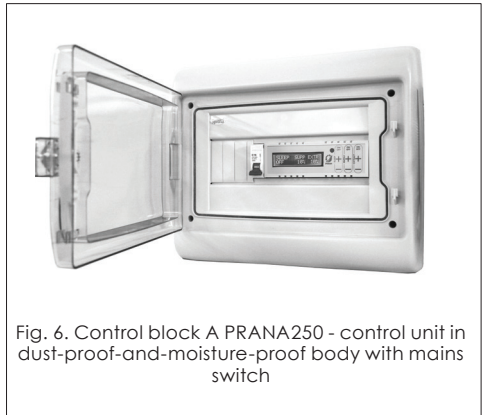


Fig. 6. Control block A PRANA250 - control unit in dust-proof-and-moisture-proof body with mains switch

## INSTALLATION

PRANA-250 inflow and exhaust ventilation system with heat recovery is a monoblock ready for use in accordance with design and assembly tasks and conditions. The system features centralized inflow, 2-channel symmetric extraction, it allows free placement on the supporting surface.

PRANA-250 ventilation module (remunerator) is mounted on the supporting surface using the cross-arms (beyond the scope of delivery) subject to specifics of the mounting site.

To secure the system's interaction with the atmospheric air, the holes of the appropriate diameter (at least 160 mm is recommended) should be provided in the fencing wall of the building adjoining the outside. Distance between the inflow and extraction holes in the fencing wall of the building should be 1500 mm at least. Once the necessary distance may not be provided, the distance between the holes may be reduced to 500 mm (subject to use of the ventilation grids with deflectors and fixing the same in such a way as to ensure different directions of the input and output air flows).

Once the units is installed and fixed on the supporting surface, the extraction and supply air ducts are coupled to the system in line with the ventilation system's design.

The equipment is adapted for using conventional air ducts (rectangular and round).

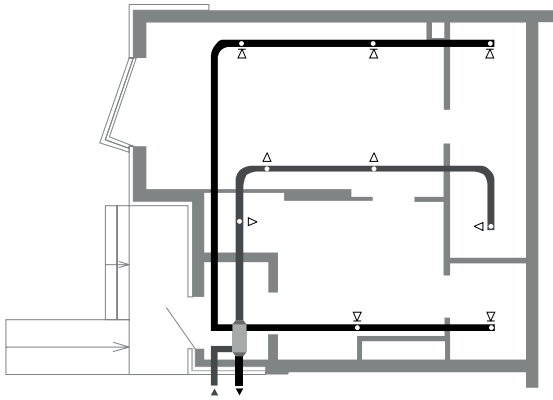


Fig. 7. An example of the installation and arrangement chart for the air ducts of PRANA-250 Inflow and exhaust ventilation system.

Once the operating module is wall mounted, an end-to-end hole should be made in the upper part of the wall adjoining the outside. The hole diameter should be  $\geq 350$  mm. The operating module should be fixed in the hole with gun foam or any other sealant. The through hole should have a slope of 3-50 degrees towards the outside (Fig. 8).

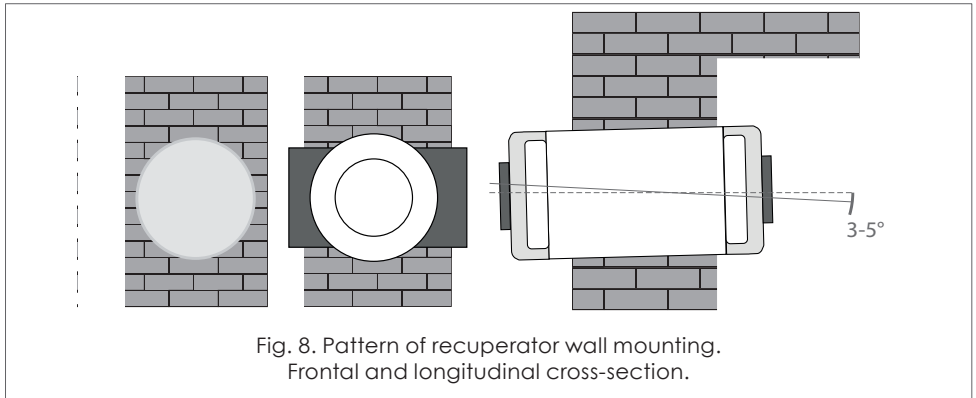


Fig. 8. Pattern of recuperator wall mounting.  
Frontal and longitudinal cross-section.

In order to ensure the normal operation of PRANA-250, the outlet duct (outside) should extend beyond the wall sufficiently cause free air intake via the ventilation channel in the product body (Fig. 4).

## CONNECTION TO THE ELECTRICAL POWER SUPPLY NETWORK

The circuit diagram of the electrical connections of the system, the control unit and connection to the grid is shown on Fig. 9.

All the connecting electrical cables used in the installation should have the cross-section of 0.75 mm at least.

**ATTENTION!** Prior to powering the system, ensure that the electric power supply is really switched off!

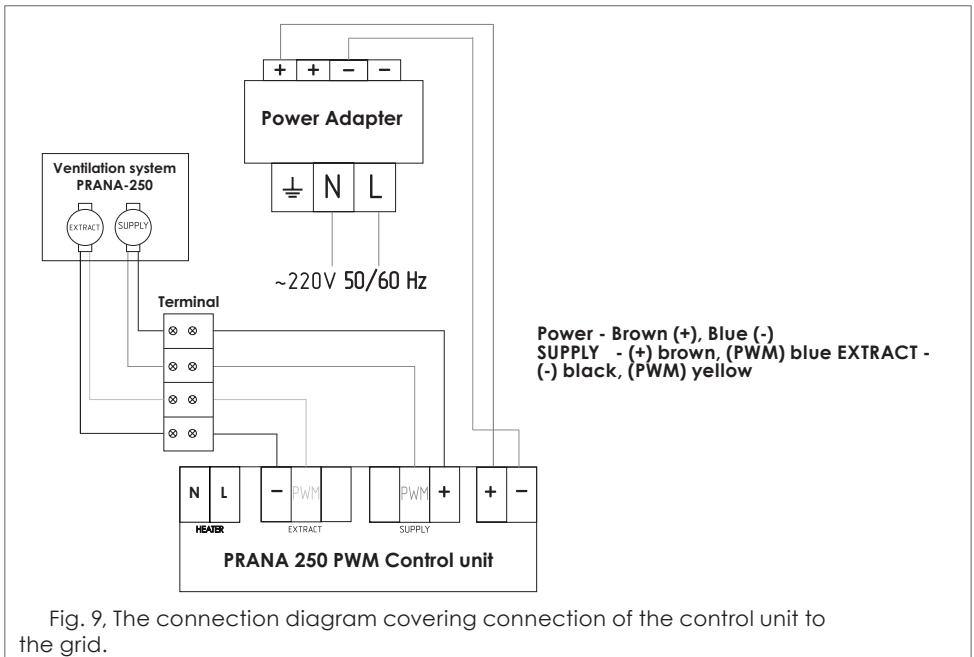


Fig. 9, The connection diagram covering connection of the control unit to the grid.

## SCOPE OF DELIVERY

- Ventilation system.
- Control unit.
- Remote control unit.
- Technical data sheet.
- Manual for the remote control.
- Warranty certificate.
- Packing box

## SECURITY REQUIREMENTS

The electrical installation works must be carried out only by a qualified specialist with a relevant category of admission to such works.

Make sure that the applicable mechanical and electrical installation works are applied with in eth course of installation.

Upon launch the unit should comply with the provisions of such Directives:

- Directive 2014/35 / EU. Low Voltage Directive (LVD);
- Directive 2006/42 / EU. Safety of Machinery mechanisms;
- Directive 2004/108 / EU. Electromagnetic Compatibility (EMC);
- Directive 2009/128 / EU. Ecodesign (ErP);
- Directive 2011/65 / EU. Restriction of Hazardous Substances (RoHS).

## TRANSPORTATION AND STORAGE RULES

Transportation and storage of the packed products is permitted in a horizontal position. The maximal stacking height is 5 packages. Keep the products in enclosed premise (or under the cover) with relative humidity of air of no more than 70% and ambient air temperature from -20°C to + 40°C.

