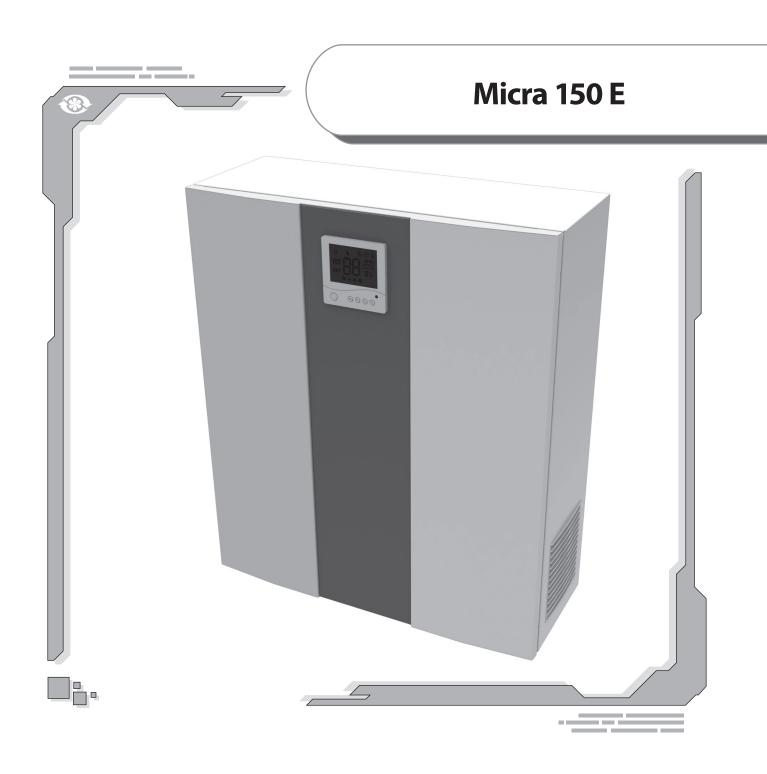
USER'S MANUAL



Air handling unit with heat recovery





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INTRODUCTION

The present user manual consisting of technical details, operating instructions and technical specification covers the installation of the MICRA 150 E air handling unit with heat recovery, VENTS series (hereinafter referred as the unit).

USE

The unit is designed to save thermal energy by means of heat recovery and is one of the energy saving components used in buildings and premises.

The unit is designed to provide permanent controllable air exchange by mechanical ventilation in houses, offices, hotels, cafés, meeting halls and other mechanically ventilated premises as well as utilization of extract air heat energy to warm up supply purified air. The air handling unit is a component unit and is not designed for independent operation.

Transported medium must not contain any flammable or explosive mixtures, evaporation of chemicals, coarse dust, soot and oil particles, sticky substances, fibrous materials, pathogens or any other harmful substances.



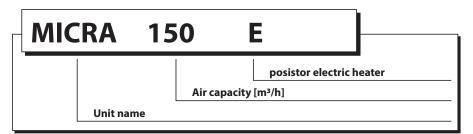
THE UNIT IS NOT DESIGNED TO BE USED BY CHILDREN, PHYSICALLY OR MENTALLY DISABLED PERSONS, PERSONS WITH SENSORY DISORDER OR WITH NO APPROPRIATE EXPERIENCE OR EXPERTISE. THE UNIT MUST BE HANDLED ONLY BY PROPERLY QUALIFIED PERSONNEL AFTER THE APPROPRIATE SAFETY BRIEFING.

INSTALL THE UNIT TO BE OUT OF REACH OF CHILDREN.

DELIVERY SET

- Unit 1 item;
- Remote controller 1 item;
- User manual 1 item;
- Master plate 1 item;
- Fasteners (dowel 8x80 and countersunk-headed screw) 4 items;
- Shipping box 1 item.

STRUCTURAL DESIGNATION KEY



TECHNICAL DATA

The unit is designed for operation in an enclosed area at ambient temperatures from +1 °C to +40 °C at relative humidity of up to 80%. The unit must be grounded!

Hazardous parts access and water ingress protection standard:

- Unit motors IP 44;
- Unit assembly connected to air ducts IP 22.

The unit series designations, the main overall and connecting dimensions, outer view and technical data are given in fig. 1 and in table 1.

The unit design is regularly being improved, so some models can slightly differ from those ones described in this manual.



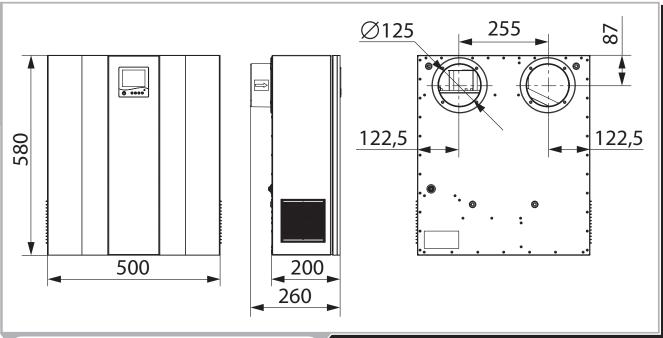


Fig. 1. Unit overall and connecting dimensions

Table. 1. Technical parameters of the unit

Туре		Micra 150 E				
Unit voltage 50 Hz [V]		1 ~ 230				
Max. fan power [W]		9	16	40		
Electric heater power [W]		350			
Electric heater current [A	\]		1,6			
Total unit power [W]			390			
Total unit current [A]			1,68			
Max. air capacity [m³/h]		60	105	150		
Rotation speed [min ⁻¹]		450	780	2000		
Sound pressure level, 3 r	m [dB(A)]	30	35	38		
Transported air tempera	ture [°C]	from -25 °C up to +50 °C				
Casing material		polymer coated steel				
Insulation		10 mm foam rubber				
Heat recovery efficiency	[%]	60 - 80				
Heat exchanger type		Counterflow				
Heat exchanger materia	I	Polysterene				
Filter	Supply	G4				
riiter	Extract	G4				
Connected duct diameter	er [mm]	Ø 125				
Weight [kg]		20				

SAFETY REQUIREMENTS

While operating and mounting the unit consider the requirements of the present operation manual as well as general requirements of all applicable local and national building and electrical codes and standards.

The unit must be grounded!

Before connecting the unit to power mains make sure that the unit is free of any visible damages or any other foreign objects inside the casing that can damage the impeller blades.



WARNING!

DISCONNECT THE UNIT FROM POWER SUPPLY PRIOR TO ANY MOUNTING, SERVICING, CONNECTION OR REPAIR OPERATIONS WITH THE UNIT.





RESTRICTIONS!

- DO NOT OPERATE THE UNIT BEYOND THE SPECIFIED TEMPERATURE RANGE OR IN AN AGGRESSIVE AND EXPLOSIVE MEDIUM!
- DO NOT CONNECT CLOTHES DRYERS OR SIMILAR EQUIPMENT TO THE VENTILATION SYSTEM!
- DO NOT OPERATE THE UNIT IN THE AIR AND DUST MIXTURE MEDIUM!

STRUCTURE AND OPERATING LOGIC

The unit operating principle is as follows (fig. 2). Warm stale air from the premises extracted by the unit is purified in the extract filter, then it passes through the heat exchanger and then is exhausted outside through the ducts by the exhaust fan.

Clean cold intake air supplied to the unit is purified in the supply filter. The air passes through the heat exchanger and then fed into the premises by the supply fan. Thermal energy of warm extract air is transferred to clean intake fresh air from outside and warms it up. The air flows are fully separated. Heat recovery minimizes thermal energy losses, energy demand and operating costs for heating during winter time.

The unit is equipped with a posistor 350 W electric heater to enable supply air warming up. The heater has overheating protection.

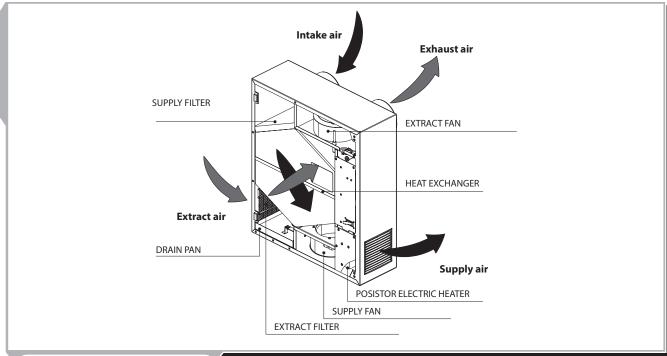


Fig. 2. Design and operating logic

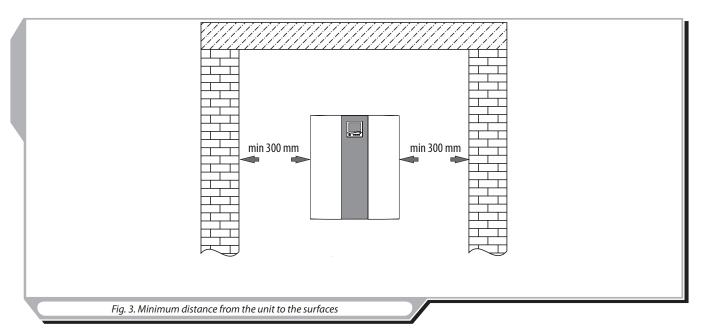




MOUNTING AND SET-UP

Mount the unit to provide enough access for maintenance or repair operations.

The wall for mounting must have even surface. Any surface irregularities will lead to unit casing skew and may prevent the unit from operating properly. The minimum distances from the unit to the mounting surfaces are shown in fig. 3.



The unit is designed for installation directly in the premise to be ventilated. Prior to starting mounting operations mark and bore holes in the wall with the master plate, fig. 4.

Mounting sequence with the master plate, fig. 5:

1. Fix the master plate on the wall with a self-adhesive tape at required level.

2. Indicate two marks for two holes Ø130 mm for air ducts and four holes Ø 8 mm for the unit fasteners.

3. Take off the master plate and drill through holes for the air ducts and holes, 90 mm deep for the unit fasteners. Insert the dowels, remove the perforated fillers for the air ducts from the master plate and re-install the master plate back using a self-adhesive tape.

4. Insert the air ducts into the respective openings in the master plate.

5. Fill the spaces between the air ducts and the wall with a mounting foam through the specially designed holes in the master plate. Wait till a mounting foam hardens (solidification time depends on the foam mark), take off the master plate and remove the foam excess. Cut off the protruding air duct parts to be flush with the wall surface.

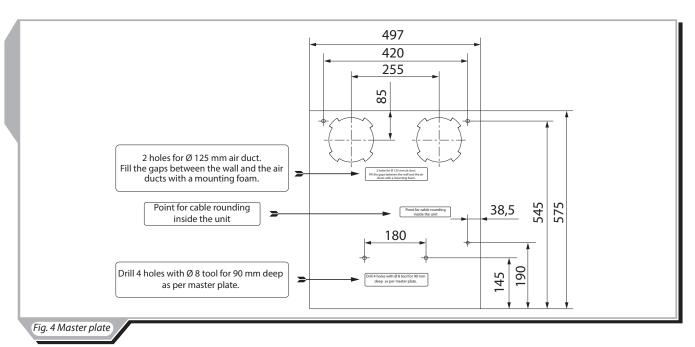
6. Insert the unit spigots to the air ducts.

7. Open the access door in the unit and remove the heat exchanger.

8. Mount the unit to the wall with the countersunk head screws and 8x80 dowels (included into delivery set) into two Ø 8 mm holes.

9. Install the heat exchanger and close the access door.

10. Fix the outer ventilation box (not included into delivery set) or Ø 125 mm ventilation grille on the outer wall of the building.



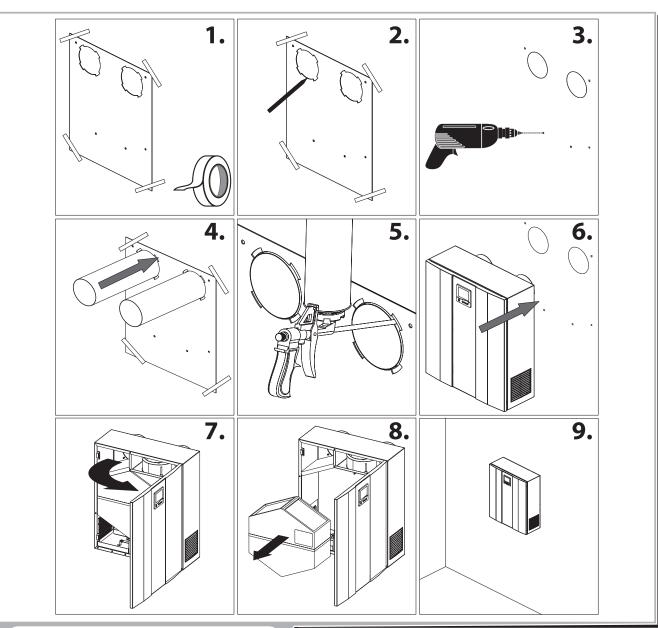
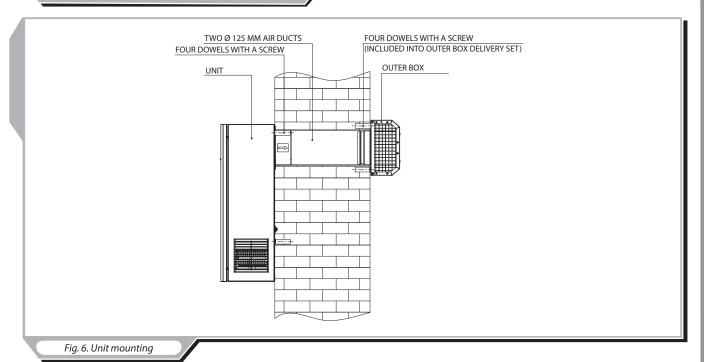


Fig. 5. Unit mounting with the master plate





CONNECTION TO POWER MAINS



DISCONNECT THE UNIT FROM THE POWER MAINS PRIOR TO ANY OPERATIONS. THE UNIT MUST BE PLUGGED INTO A PROPERLY INSTALLED POWER SOCKET WITH AN EARTHED TERMINAL.

THE RATED ELECTRICAL PARAMETERS OF THE UNIT ARE SHOWN ON THE RATING PLATE.

ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED AND WILL VOID THE WARRANTY.

The unit is designed for connection to 230 V / 50 Hz single-phase AC mains.

The unit is supplied with a power cable and a plug. The unit must be connected to power mains through a grounded power socket compliant with IEC 60884-1. The power cable is pre-wired to the terminal block X1 by the manufacturer, fig. 7.

Connect the unit to power mains through the external automatic circuit breaker integrated into the fixed wiring system. Install the circuit breaker to have a free quick access in case of need to turn the unit off promptly.

The circuit breaker trip current must be in compliance with the current consumption. The recommended circuit breaker rated current is 2.5 A. While selecting the automatic circuit breaker consider the maximum wire temperature that depends on the wire type, insulation, length and layout way (open wire mounting, channel type or wall-mounted).

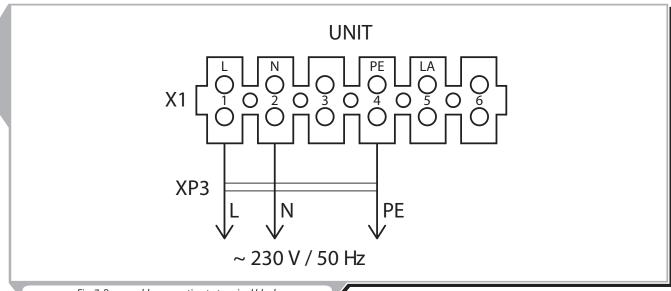


Fig. 7. Power cable connection to terminal block

UNIT CONTROL

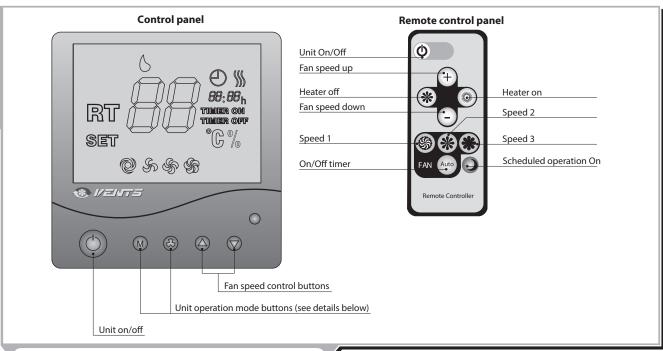


Fig. 8. Control panel and remote controller

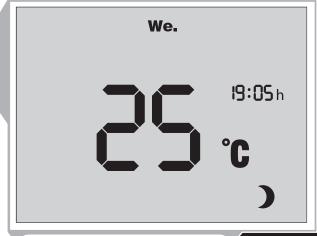


The unit is controlled from the control panel as well as from the remote controller, fig. 8.

Turning unit ON/OFF

To turn the unit ON/OFF:

- from the control panel: press the button Turning unit ON/OFF ;
- from the remote controller: press the button Turning unit ON/OFF.

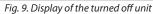


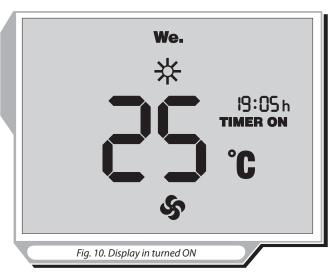
The display shows the following indications as the unit is turned off, fig. 9:

- Indoor temperature;
 - Weekday;
 - Time;
 - OFF indication **J**;

When air supply to the heating elements is activated, the TIMER ON and O indicator glows. Synchronously,

countdown of the air supply to the heater time starts (min:s)





The control panel shows the following indications as the unit is turned on, fig. 10:

- Indoor temperature;
- Weekday;
- Time;
 - Fan speed indicator **\$ \$ \$ \$**:
- Timer status information;
- The indicator TIMER ON is displayed as the timer is turned on.
- The indicator TIMER OFF is displayed as the timer is turned off.
- Heater status. If the heater is turned on, the indicator $\overset{}{\thickapprox}$ is displayed.

Unit ventilation mode control.

The unit fan speed can be set in several ways:

- From the control panel: Press the button to increase the speed or press the button to reduce the speed cyclically (i.e. speed 1 - speed 2 - speed 3);
- From the remote controller: Press the + button to increase the speed or press the button to reduce the speed cyclically (i.e. speed 1 - speed 2 - speed 3);
- From the remote controller: Press the button to select speed 1, press the to select speed 2 or press the button to select speed 3 correspondingly.

The control panel display shows the current fan speed status:

- Indicator «Speed 1» mode;
- Indicator «Speed 2» mode;
- Indicator «Speed 3» mode.

Supply air warming up 3.

The electric posistor heater warms up supply air during cold season. To turn the heater ON/OFF:

- from the control panel: press and hold the button \bigcirc and then press the button \bigcirc .
- from the remote controller: press the button to turn the heater on, press the button to turn the heater off.





WARNING!

IF THE HEATER IS ON, THE UNIT CAN BE TURNED OFF ONLY AFTER 20 SECONDS AFTER TURN-OFF COMMAND TO ENSURE THE HEATER COOLING. IN THIS CASE THE INDICATOR IS DISPLAYED.

4. Timer.

The timer enables automatic switching of the fans to the maximum speed with automatic reset after a set period of time in the range from 20 to 60 minutes.

The timer can be activated / deactivated:

- From the control panel: to activate the timer press and hold the button and then press the button. A single press of the button sets the timer to 20 minutes while each subsequent press increases the timer setting in 10 minute increments. The maximum timer value is 60 minutes. To deactivate the timer press and hold the button for 3 seconds;
- From the remote controller: to activate the timer for 20 minutes press the button. To deactivate the timer switch the unit off by means of the button or .

5. Heat Exchanger Freezing Protection.

If the exhaust air temperature downstream of the heat exchanger falls below +3 °C the supply fan shuts down. When the air temperature rises above the +3 °C threshold, the unit reverts to rated operation.

6. Unit setup modes

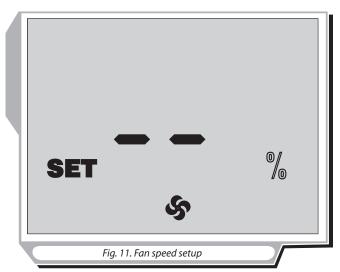


RE-ADJUSTMENT OF THE UNIT SETTINGS RESULTS IN LOSS OF THE FACTORY SETTINGS!

FAN SPEED AND TEMPERATURE SENSOR SETUP IS POSSIBLE ONLY FROM THE CONTROL PANEL!

Fan Speed Setup Mode.

At the setup stage each of the speed settings (Speed 1, Speed 2 and Speed 3) can be attributed a specific supply and exhaust fan performance. To enter the fan speed setup mode switch off the unit, then press and hold the button on the control panel and hold button for 3 seconds.



Upon entering the setup mode the panel display screen will show the SET and % indicators (Fig. 11).

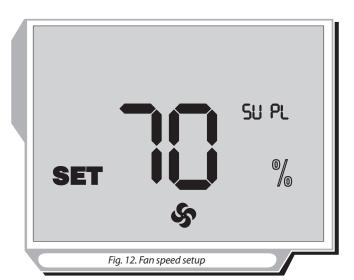
Set the fan speed as necessary using the and buttons.

While the speed is being set the display screen will show the currently selected speed f, or f.

To change the supply fan power press and hold the button, then press the button to increase the speed or press the button to decrease it. Each press of the and buttons increases or reduces the supply fan power in 1 % increments. While the button is pressed the display screen will indicate the current supply fan power (Fig. 12).

To change the exhaust fan power press the button and while holding it use the button to increase the power or the button to decrease the power. Each press of the and buttons increases or reduces the exhaust fan power in 1 % increments. With the button pressed the display screen will indicate the current exhaust fan power.

To exit the fan speed setup mode and save the changes press and hold the button. The remote controller cannot be used to adjust the fan speed.



To revert to the factory settings enter the fan speed setup mode, press the \bigcirc and \bigcirc buttons simultaneously and hold them for 3 seconds.

Factory Fan Speed Settings:

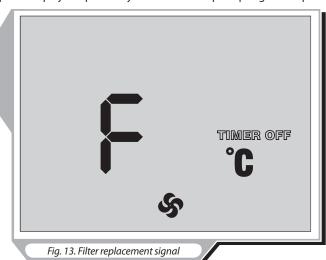
Speed 1 — 40 %

Speed 2 — 70 %

Speed 3 — 100 %

7. Filter replacement signal

When the filters have reached the end of their service life (3,000 hours) the operating mode temperature normally shown on the control panel display is replaced by the indicator prompting filter replacement or cleaning (Fig. 13).



- In case of filter replacement alert switch off the unit by pressing the button and disconnect it from the power mains. Replace the filters (see the sequence given in the "Technical Maintenance" section, page 14).
- Connect the unit to the power mains and switch it on by means of the button on the control panel or the button on the remote control. Then press the and buttons simultaneously to reset the motor meter.

8. Date and Time Setup.

- Switch the unit off.
- To enter the date and time setup mode press and hold the , button, then press the button on the control panel.
- While holding the button select the parameter for adjustment by using the and buttons. The parameter being adjusted is blinking.

The date and time parameters are ordered as follows:

- 1. Minutes;
- 2. Hours;
- 3. Day;
- 4. Date;
- 5. Month;
- 6. Year
- Set the necessary parameter value on the control panel using the and buttons.
- To exit the date and time setup mode press the button.

9. Scheduled Operation Mode.

To activate the scheduled operation mode press and hold the button, and then press the button on the control panel.

The scheduled operation mode is confirmed by the Θ indicator glowing on the display screen.

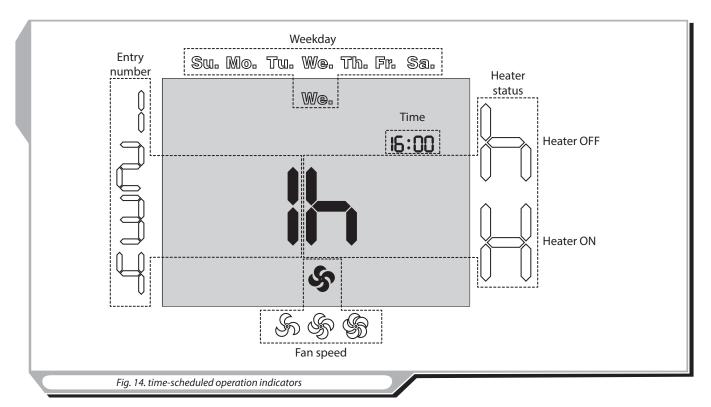
- To deactivate the scheduled operation mode press and hold the button, and then press the button on the control panel.
 - The scheduled operation mode can be activated or deactivated using the button on the remote controller.
 - The timer settings will always prevail over the scheduled operation parameters.



10. Scheduled Operation Setup.

Each weekday has four entries that determine the fan switching to the set fan speed, turning the heater on or off.

- To access the scheduled operation settings switch off the unit using the button on the control panel or the button on the remote controller.
 - Press and hold the button on the control panel, then press the button.



- To select the scheduled operation setup mode parameters hold the button and use the and buttons to make the selection as necessary.
 - Use the and buttons to set the parameter values. Scheduled operation setup mode parameters (Fig. 14):
 - Entry number there are four entries for each day.
 - Weekday day setting.
 - Heater status setup of the heater status for the current entry. H heater ON, h heater off.
 - Fan speed fan speed setting for the current entry.
 - Time time setting for the current entry.
- To copy the entries to the following day press and hold the button, then press . Please note that copying entries from Sunday onto Monday is not possible.
- To exit the scheduled operation setup mode press the button on the control panel or the button on the remote control.

A programming example for setup of the time-scheduled operation is stated in the table 2. The time-scheduled operation mode is adjusted for warm season by default. While adjusting the time-scheduled operation mode set the heater status .

	Table 2. Programming example											
						Entry r	number					
Weekday	day 1 2 3				4	4						
Weekday	Start time	Mode	Heater status	Start time	Mode	Heater status	Start time	Mode	Heater status	Start time	Mode	Heater status
Mo.	07:00	medium speed	Off	08:00	low speed	Off	17:00	medium speed	Off	22:00	low speed	Off
Tu.	07:00	medium speed	Off	08:00	low speed	Off	17:00	medium speed	Off	22:00	low speed	Off
We.	07:00	medium speed	Off	08:00	low speed	Off	17:00	medium speed	Off	22:00	low speed	Off
Th.	07:00	medium speed	Off	08:00	low speed	Off	17:00	medium speed	Off	22:00	low speed	Off
Fr.	07:00	medium speed	Off	08:00	low speed	Off	17:00	medium speed	Off	22:00	low speed	Off
Sa.	10:00	medium speed	Off	12:00	medium speed	Off	17:00	medium speed	Off	23:00	low speed	Off
Su.	10:00	medium speed	Off	12:00	2 скор.	Off	17:00	medium speed	Off	23:00	low speed	Off



11. Alarms.

In case of alarm the unit is turned off and the control panel display the alarm indicators, fig. 15. The possible alarms are listed in the table 3.

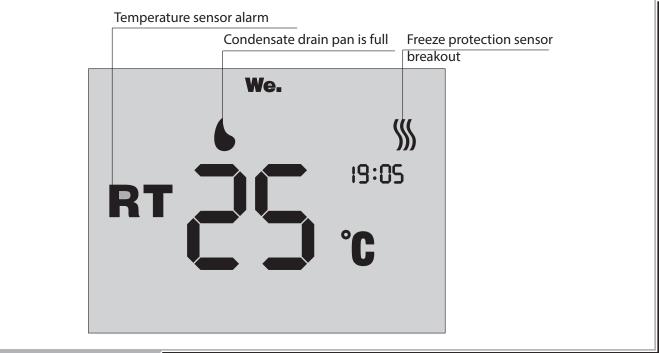


Fig. 15. Alarm indication

Table 3. Unit alarms

ALARM	INDICATION	FAULT HANDLING
Temperature sensor alarm	RT	Contact your Seller for servicing.
Duct temperature sensor breakout	RT	Contact your Seller to remove the freeze protection temperature sensor.
Freeze protection sensor breakout	6	Follow the drain pan servicing sequence, "Maintenance section", page 14.





MAINTENANCE

The unit requires maintenance works 3-4 times per year. Maintenance includes regular cleaning and the following operations:

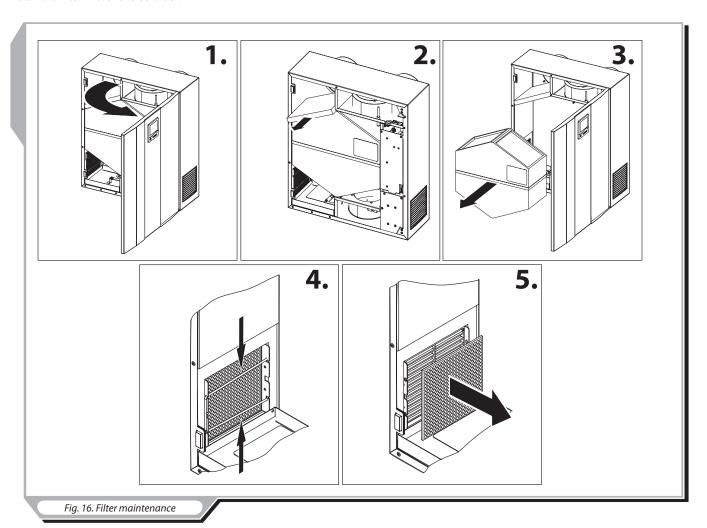
1. Filter maintenance (3-4 timed per year).

Dirty filters increase air resistance in the system and reduce supply air volume. The filters require cleaning as they get clogged, but at least once in 3-4 months. Vacuum cleaning is allowed. Replace the filters as they get clogged following the second cleaning. Contact your seller for new filters.

To remove the filters, follow the procedure in the fig. 16:

- 1. Open the unit access door.
- 2. Remove the supply air filter above the heat exchanger;
- 3. Remove the heat exchanger from the unit by pulling its band;
- 4. Press the clamp and remove it;
- 5. Remove the extract air filter.

Install the filter in the reverse order.



2. Heat exchanger inspection (once per year).

Some dust can get accumulated on the heat exchanger block even in case of regular maintenance of the filters. To maintain the high heat exchange efficiency, regular cleaning is required. To clean the heat exchanger pull it out of the unit and flush it with warm soap or mild detergent water solution. Re-install the dry heat exchanger to the unit.

3. Fan inspection (once per year).

Even in case of regular filter and heat exchanger maintenance, some dust and grease can get accumulated inside the fans and reduce the fan performance and supply air flow.

Clean the fans with a soft cloth or brush. No water and abrasive detergent, sharp objects or solvents are allowed for cleaning to prevent the impeller damage.



4. Condensate removal (as required).

The drain pipes may get filled with condensate during cold season. As the drain pan gets filled with condensate, the unit is turned on and the control panel displays the indicator to remind about the need to remove the condensate.

To remove condensate:

- 1. Disconnect the unit from power mains.
- 2. Open the unit door.
- 3. Lift the condensate level switch.
- 4. Keep the condensate level switch, pull and remove the condensate drain pan carefully (Fig. 17).

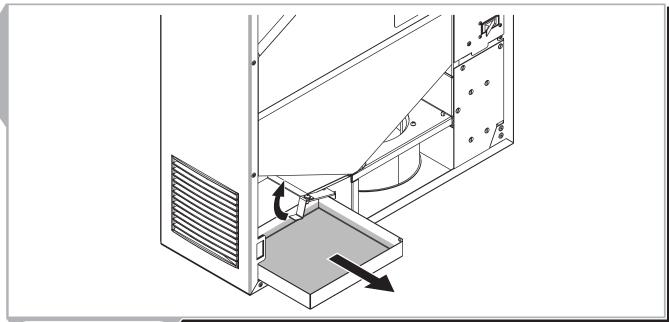


Fig. 17. Drain pan removing

5. Empty the drain pan, lift the condensate level switch and re-install it back (Fig. 18).

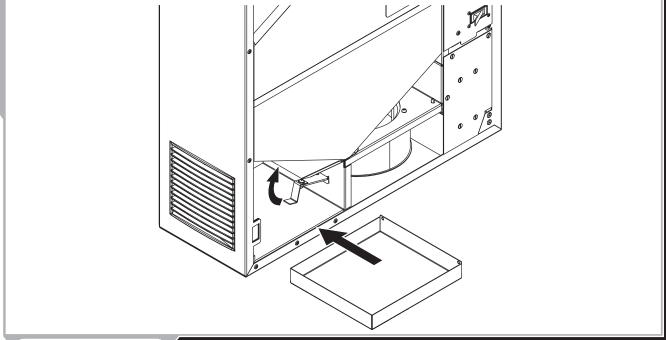


Fig. 18. Drain pan installation

5. Supply air flow control (twice per year).

Leaves and other pollutions can clog the supply air grille and reduce the unit performance and supply air volume. Check the supply grille twice per year and clean it as required.

6. Ductworks inspection (once in 5 years).

Even if you follow all the listed maintenance guidelines, some dust can get accumulated inside the air ducts and reduce the unit performance. Duct maintenance means their regular cleaning or replacements.



FAULT HANDLING

Possible faults and fault handling

Problem	Possible reasons	Fault handling
The fans do not get started	No power supply.	Make sure the power supply line is connected correctly, otherwise troubleshoot the connection error.
	The extract filter is soiled.	Clean or replace the extract filter.
Cold supply air.	The heat exchanger is frozen.	Check the heat exchanger for icing. Shut the unit off if required and turn it on after the freezing danger is no longer imminent.
	The heater malfunction.	Please contact your Seller for servicing.
	The filters, the fans are soiled, the heat exchanger is soiled.	Clean or replace the filters; clean the fans and the heat exchanger.
Low set air flow.	The ventilation system is soiled or damaged.	Check opening of the diffusers and louvre shutters, check the extract hood and supply grille and clean it of required; make sure the air ducts are not soiled and not damaged.
Noise, vibration	The impeller is clogged.	Clean the fan impeller.
ivoise, vibration	Loose screw tightening.	Tighten the screws to stop.
Water leakage.	The condensate level switch malfunction.	Please contact your Seller for servicing.

STORAGE AND TRANSPORTATION RULES

Store the unit in the manufacturer's original packing box in a closed ventilated premise with temperature range from $+10^{\circ}$ C to $+40^{\circ}$ C and relative humidity less than 80% (at $+20^{\circ}$ C).

Vapours or particles which can cause corrosion or damage the insulation or connection tightness are not allowed in the storage environment. Use hoist machinery for handling and transportation to prevent possible mechanical damages of the unit.

Fulfil the requirements for transportation of the specified cargo type during cargo-handling operations.

Use any vehicle types for the unit transportation provided that it is protected against mechanical or weather damage. Avoid any mechanical shocks and strokes during handling operations.



MANUFACTURER'S WARRANTY

The manufacturer hereby warrants normal operation of the unit over the period of 24 months from the retail sale date provided the user's observance of the transportation, storage, installation and operation regulations.

Should any malfunctions occur during the unit operation through the manufacturer's fault during the warranty period the user is entitled to elimination of faults by means of warranty repair performed by the manufacturer.

The warranty repair includes work specific to elimination of faults in the unit operation to ensure its intended use by the user within the warranty period. The faults are eliminated by means of replacement or repair of the complete unit or the faulty part thereof.

The warranty repair does not include:

- Routine maintenance:
- Unit installation / dismantling;
- · Unit setup.

To benefit from warranty repair the user must provide the unit, the user's manual with stamped sale date and the payment document certifying the purchase.

The unit model must comply with the one stated in the user's manual.

Contact your Seller for warranty service.

The manufacturer's warranty does not apply to the following cases:

- User's failure to provide the unit with the entire delivery package as stated in the user's manual or with missing component parts previously dismounted by the user;
- · Mismatch of the unit model and make with the respective details stated on the unit packing and in the user's manual;
- · User's failure to ensure timely technical maintenance of the unit;
- External damage to the casing (excluding external modifications of the unit as required for its installation) and the internal components of the unit;
- Alteration of the unit design or engineering changes of the unit;
- · Replacement and use of the unit assemblies, parts and components not approved by the manufacturer;
- Unit misuse;
- User's violation of the unit installation regulations;
- User's violation of the unit management regulations;
- · Unit connection to the power pains with a voltage different from the one stated in the user's manual;
- Unit breakdown due to voltage surges in the power mains;
- · User's discretionary repair of the unit;
- Unit repair performed by any persons without the manufacturer's authorization;
- Expiry of the unit warranty period;
- · User's violation of the established regulations specific to the unit transportation;
- · User's violation of the unit storage regulations;
- Wrongful acts against the unit committed by third persons;
- · Unit breakdown due to circumstances of insuperable force (fire, flood, earthquake, war, hostilities of any kind, or blockade);
- Missing seals if provided by the user's manual;
- Failure to provide the user's manual with the sale date stamp;
- Missing payment document certifying the unit purchase.



FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT.



USERS' CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE SALE DATE STAMP.



ACCEPTANCE CERTIFICATE

Product Type	Air handling unit with heat recovery		
Model	VENTS Micra 150 E		
Serial Number			
Manufacturing Date			
	is compliant with the technical specifications and is hereby declared ready for service.		
Quality Inspector's Stamp			

SELLER'S INFORMATION

Shop name	
Address	
Phone number	
E-mail	
Sales date	

This is to certify delivery of the complete unit with the user's manual. The warranty terms are acknowledged and accepted..

Customer's signature

Seller's seal

MOUNTING CERTIFICATE

Air handling unit with heat recovery VENTS Micra 150 E has been connected to power mains pursuant to the requirements stated in the present user's manual.

Company name	
Address	
Phone number	
Installation technician's full name	
Installation date:	Signature:

This is to certify that the work specific to the unit installation has been performed in accordance with all the applicable provisions of local and national construction, electrical and technical codes and standards. The unit operates normally as intended by the manufacturer.

Signature:



Installation technician's company seal



WARRANTY CARD

Air handling unit with heat recovery		
VENTS Micra 150 E		

