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## 1 INTRODUCTION

This manual is part of the product and can be consulted by scanning the QR code located inside the side panels. This appliance is not intended for use by people with reduced physical, sensory or mental capabilities, or lack of experience and knowledge (including children).

The manufacturer is not liable for damages resulting from the failure to observe the safety instructions or improper use and or installation.

In the event of failure of the appliance and/or breakage of any of its parts, deactivate it by disconnecting it from the electrical supply, and refrain from any attempt repairing the unit and call for a qualified technician and original spare parts.

It is responsibility of the installer to ensure that all of the equipment is installed in compliance with the manufacturer's recommendations and with current local legislation and codes of practice. If these guidelines are not followed, the unit may experience a shortened life or may present a risk of unsafety.

To guarantee efficiency and long working life, a unit inspection/maintenance should be carried out annually by an expert technician.

⑧

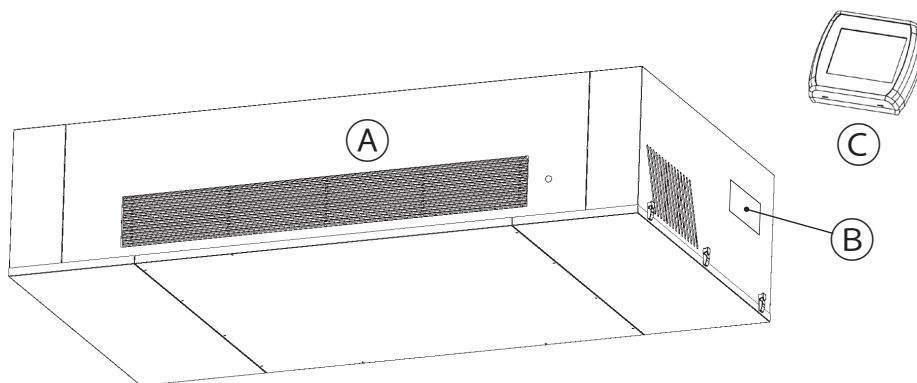
### 1.1 PRODUCT DESCRIPTION

The high efficient heat recovery unit is ideal for all requirements in restaurants, offices meeting rooms, classrooms, shops and warehouses.

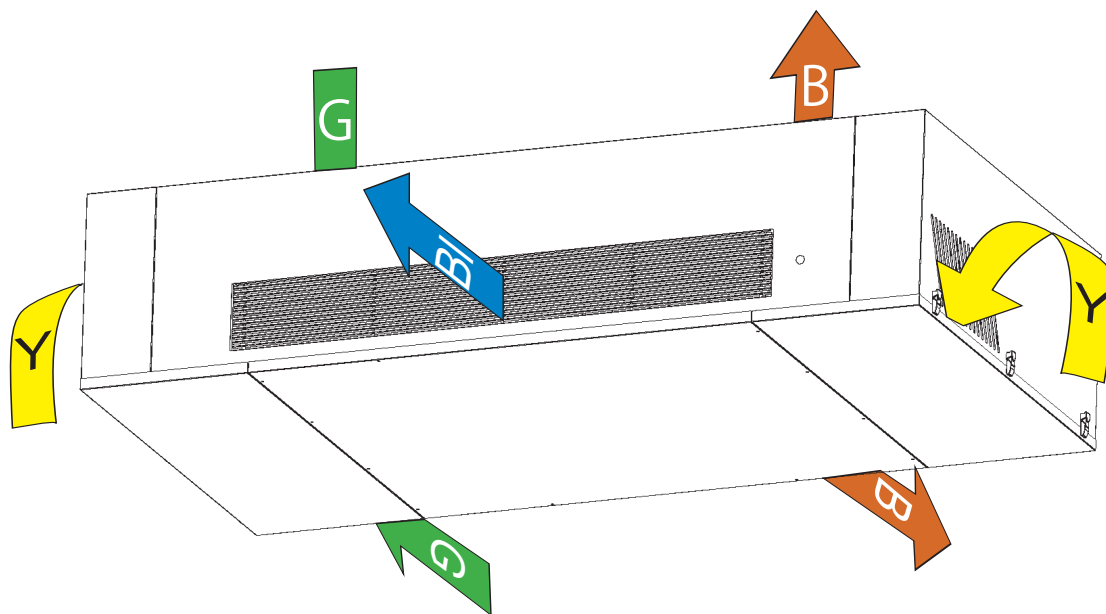
The layout shall take into consideration the space necessary for the installation of the unit, the maintenance/service purposes and possible noise generation too. The energy-recovery technology uses the heat of the stale indoor air to be expelled in order to heat the incoming fresh air to a temperature much closer to the existing indoor air.

The basic unit includes the following separate parts:

- Ⓐ 1x Unit complete with filter set
- Ⓑ 1x Manual (QR code)
- Ⓒ 1x Touch screen controller



### 3 AIRFLOW LAYOUT



■ Supply (blue)



■ (G) Fresh (green)



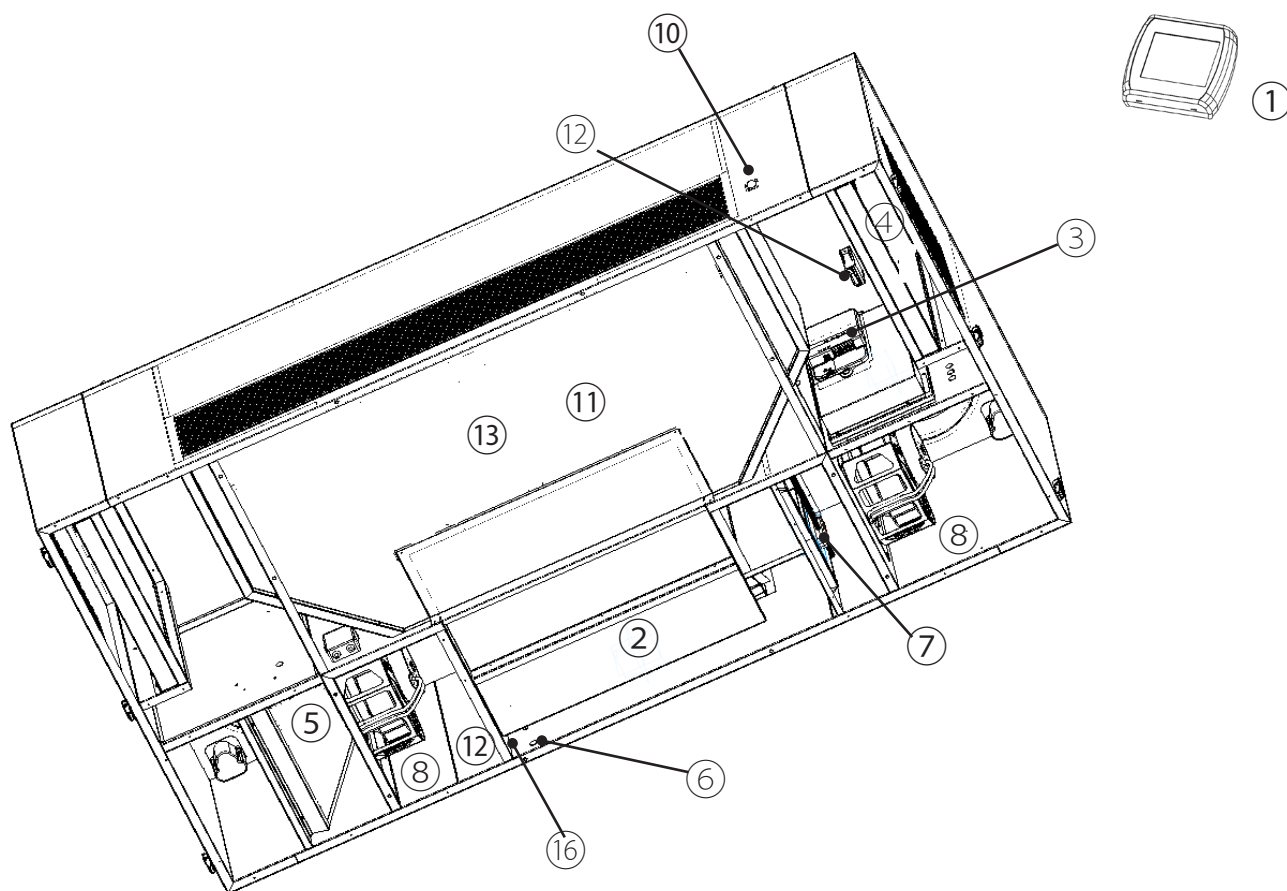
■ Return (yellow)



■ Exhaust (brown)



**4 MAIN COMPONENTS**



- ① Touch screen remote controller
- ② High efficiency counterflow heat exchanger
- ③ Electronic box with connections
- ④ Air filter (return)
- ⑤ Air filter (fresh)
- ⑥ Condensate discharge
- ⑦ Bypass valve for free cooling
- ⑧ Extract and supply fans
- ⑨ Side panels
- ⑩ Infrared sensor (PIR)
- ⑪ Accessory compartment (HWD - CWD)
- ⑫ Sensor compartment
- ⑬ Postheater compartment (electric) (IEHD)
- ⑭ Preheater compartment (electric)(IPEHD)
- ⑮ Condensate drain pipe outlet (
- ⑯ Water pump

## 5 SAFETY

Installation has to be carried out by a qualified technician. Unit and accessories must be supplied by a dedicated power line and duly sized differential safety and thermal protection. Before proceeding with maintenance please unplug the system.

Unit and accessories must not be used as security ventilation systems. Do not install in potentially explosive atmosphere.

All control wires need be at least 50 mm away from the power cable (due to magnetic fields).

Use original spare parts only to be sure not to void warranty. Follow the local fire regulations, as well as environmental law requirements. The manufacturer does not accept liability for this. Observe as well the safety regulations and wear protective gloves.

### 5.1 POST-DELIVERY AND STORAGE PROCEDURES

Before starting the installation, please check if the device was delivered complete and undamaged. Losses or damage recognizable upon delivery must be noted and noted in detail on the delivery receipt. When recording loss or damage, please be specific and avoid general terms such as 'box damaged' or 'torn'. Please check size, model and accessories too.

The unit must be stored in a dry and clean place protected from frosting and magnetic fields, in its original packaging until installation. In case of long-term storage or inactivity, the unit must be protected from dust and moisture, and the test described in part 1 1995-11 DIN VDE 0702-1 run. Don't run the unit prior to complete installation.

## 6 INSTALLATION

During installation leave a free space to maintenance and service. The access panels have to be opened for that purpose (see free space recommendation for servicing) and to allow internal components to be removed for cleaning or service (for ex. heat exchangers, fans, filters).

The unit is designed to provide mechanical ventilation with heat recovery. The unit can operate with constant speed, constant air flow or constant pressure, with the related accessories. The unit is equipped with high efficiency heat exchanger (up to 95% heat can be recovered) and with low consumption EC motors fans.

The unit is for indoor installation. Operation temperature is 0-40°C (without ambient frosting). For external temperature lower than -10°C the preheater is recommended. Do not continuously use the unit in the presence of water vapor (both internal and external to the unit). For high humidity atmosphere inquiry the manufacturer. The automatic frost protection is provided by flow imbalancing. Electronic controlled bypass damper is provided to supply filtered outside fresh air. Bypass opens and closes according to the setting available on touch screen (KTS) or can be driven by an external input. Min external temperature to close bypass and threshold internal temperature to open bypass can be set. High surface area washable G4 filter (coarse) (on return side) and F7 ePM1 55%(fresh side) are standard. Clogged filter alarm is by pressure sensors as standard.

Installing conditions and aeraulic system if not adequate or properly planned can affect the nominal performances of the unit.

## 6.1 UNIT HANDLING AND INSTALLATION

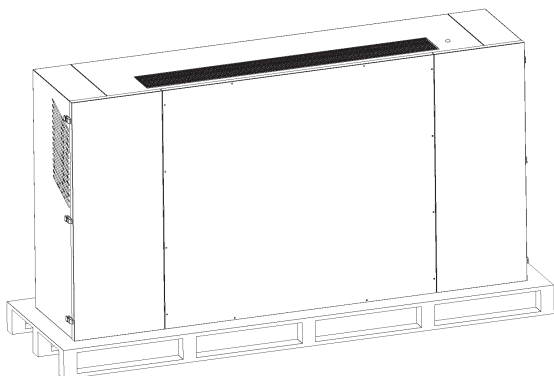
The unit is factory delivered on a pallet to ensure an easy and safe transport. We recommend to follow the instruction step by step. For crane handling all applicable crane safety regulations must be respected.

- The delivered pallet is not suitable for crane handling.
- The pallet and the unit must be placed on a specific crane platform duly designed and sized.
- Access panels and electronics controls must always be closed and protected during handling.

The unit and the pallet has been sized to pass through most of the standard doors. In order to avoid damage we suggest to bring it as close as possible to the installation place.

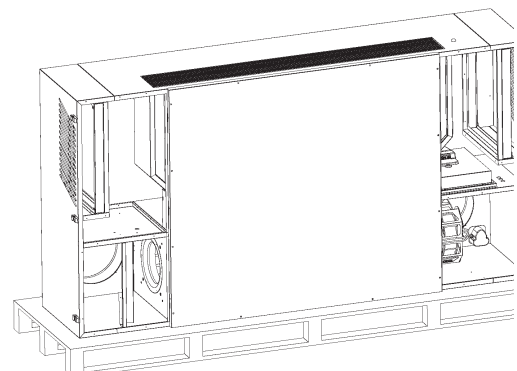
## 6.2 HANDLING PROCEDURE

Step 1



2. Remove the packaging

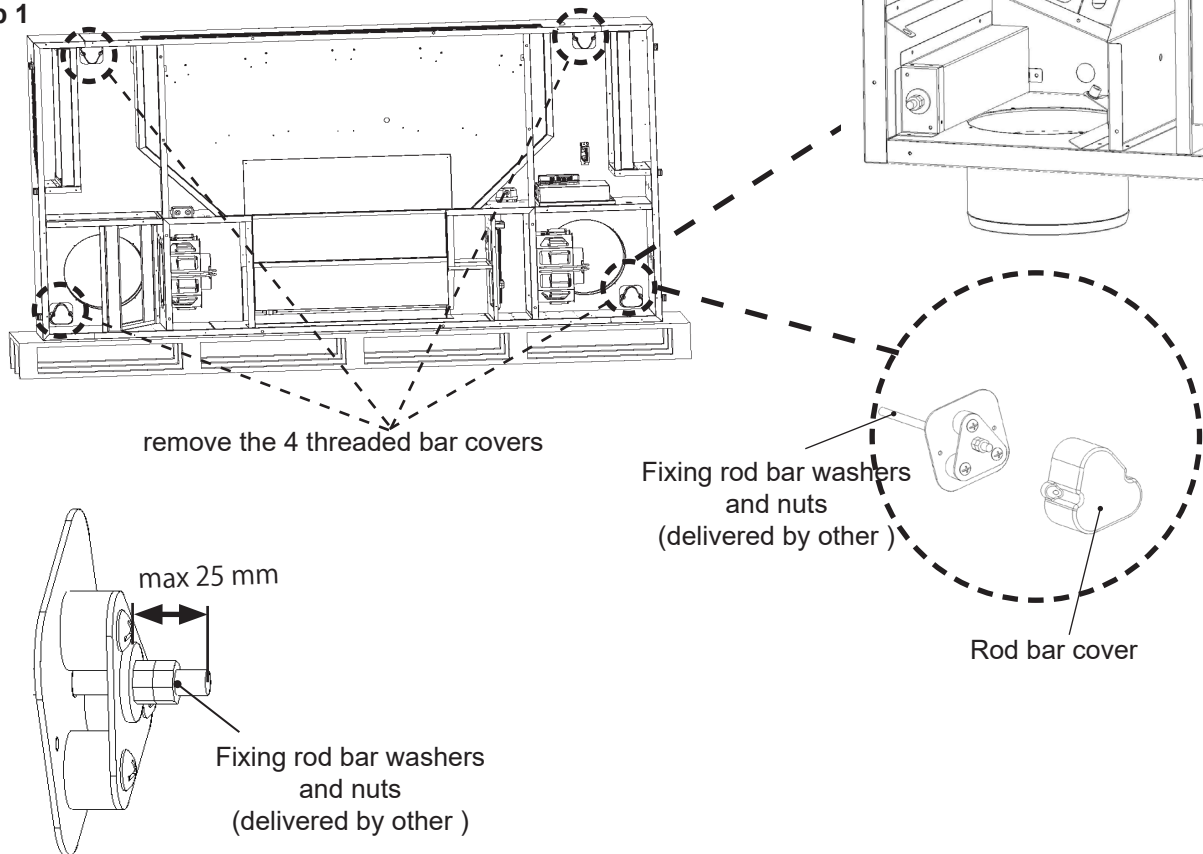
Step 2



2. Remove the access panels

### 6.2.1 INSTALLATION PROCEDURE

#### Step 1



#### Step 2

Fix the unit to the ceiling.

Insert 1 rod bar through the 2 holes of each bracket (4 in total) and fix them with 1 washer and 1 lock nut (+1 nut to prevent unscrewing), for each rod.

Check the level at least in two directions .

#### Step 3

connect the unit to ducts .

#### Step 4

paas the pump pipe from inside to outside .

#### WARNING! :

To avoid damage, the condensate pipe must be refitted through the panel.

Remove the black plugs installed on the wall and insert the condensate drain pipe.

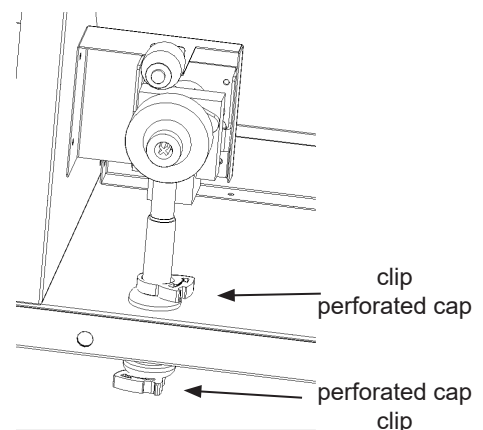
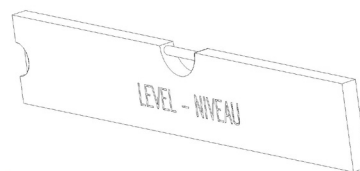
Keep the sequence as already mounted on the tube.

From inside to outside: clip, perforated cap, wall, perforated cap, clip.

#### ENTHALPIC VERSIONS:

The unit, like any other enthalpy unit, can condense.

If you decide not to use the condensate pipe (not recommended), we recommend plugging the drain as close as possible to the condensate tray. This will limit the amount of any stagnant condensation.



**6.2.3 BASIC SITE REQUIREMENTS**

Ceiling, wall, floor or surface must be hard, flat and level. Please also check the local atmosphere: the humidity in the room should not exceed 65% rel. Particularly, the structure in new attic buildings should be checked prior to installation with the installer.

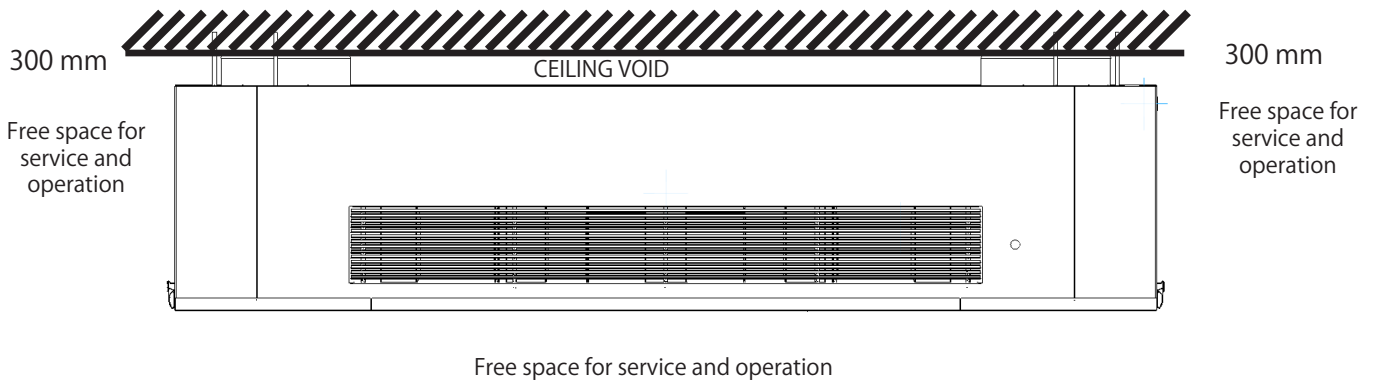
The ambient temperature and the operating temperature must not exceed 40°C. The air temperatures inside and in the production plants must be respected and cannot exceed 45°C. The ventilation unit is not suitable for use in technological processes where explosive or aggressive substances are contained in the air flow. Failure to follow the instructions will void any warranty for the correct operation of the equipment, as well as the manufacturer's liability.

The unit must be positioned leveled: this is important to drain the condensate. Remember the condensate ducting with the siphon.

Check the unit air flow layout and installation: it is not possible to change the ordered layout in site and specific user requirements are to be factory fitted with dedicated customization.



**VERY IMPORTANT:** The unit can be mounted to the ceiling using the two holes in the bracket. Make sure that the backside panel is airtight. See the table with weight and dimensions for each size. The supporting rods must be sized to carry at least 2 times the weight.



## 7 DIMENSIONS

**8 ELECTRICAL INSTALLATION PROCEDURE**



**8.1 ELECTRIC CONNECTIONS**

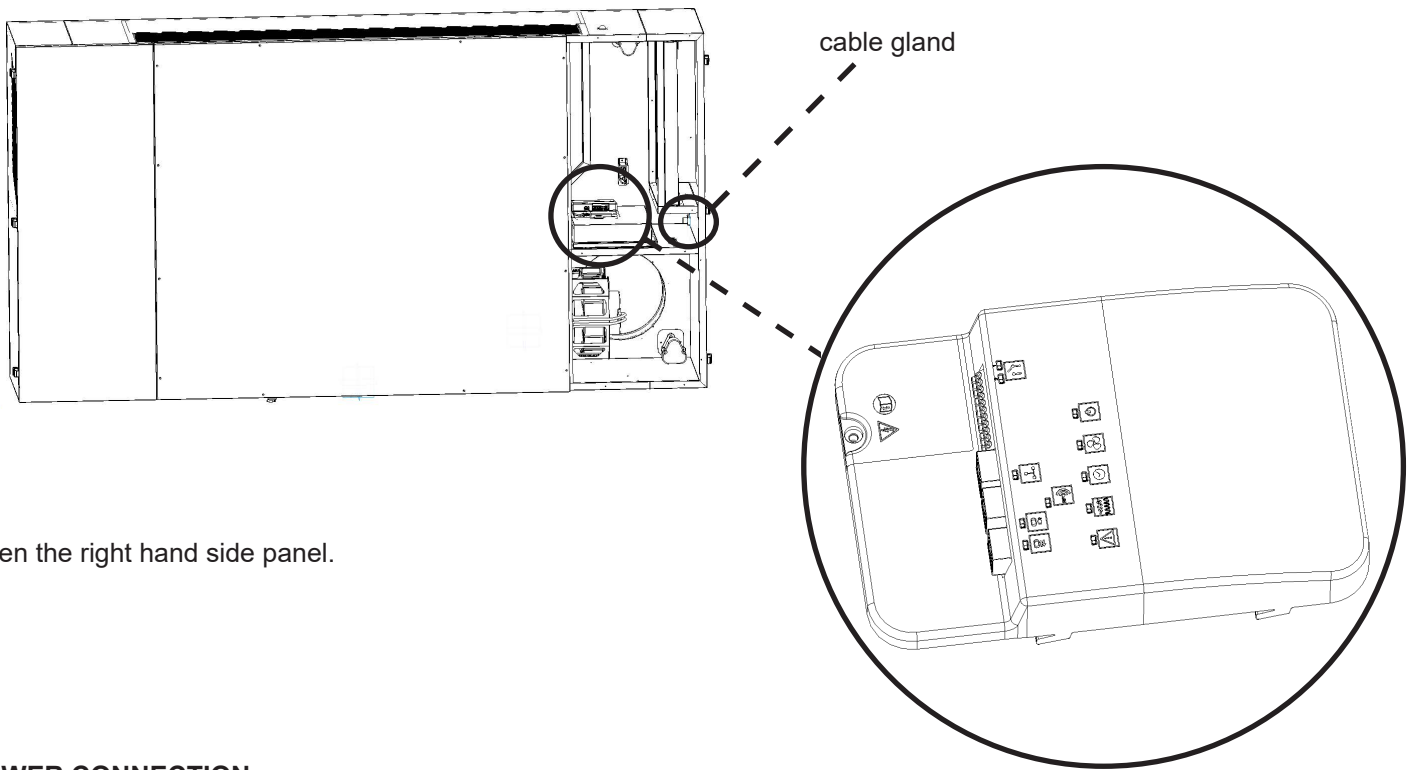
Warning! Always unplug the unit during the installation.

The unit must be earthed, a fuse is available. Protect each unit by residual-current circuit breaker (RCCB) and thermomagnetic cut-out device. It is recommend to check if the supply system is already in accordance to your regional safety regulations. Connect the wiring to the electrical box.

Touch screen control has to be connected to the board with a RJ45 8-pole Ethernet straight cable of Cat.5 (or higher). The unit can receive two external signals (range 0-10 V). Signals can be digital (0/10) or analogic 0V through 10 V. The pre-set input signals switch the unit on-off or bypass on-off or set a proportional air flow control. The unit also gives two pre-set output signals configurable to provide either -running- or -bypass open- or -unit fault- statuses.

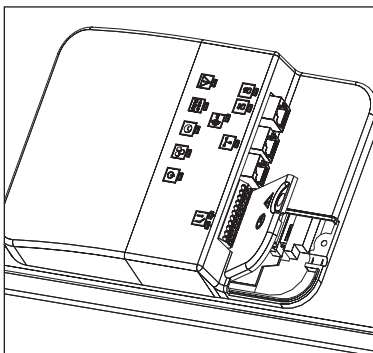
Important: Input and output configuration should be set in the touch screen control, under the service menu.

Priority: when the unit receives an off command, whatever the input has given it, this has always the priority.

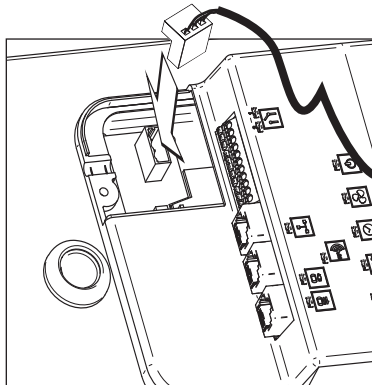


Open the right hand side panel.

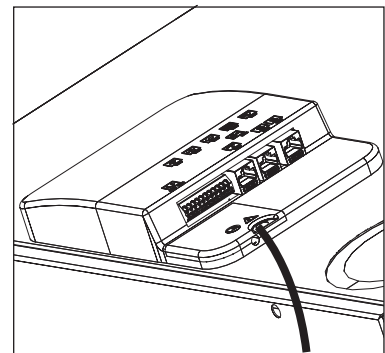
**POWER CONNECTION:**



1. Unscrew the electric box small lid



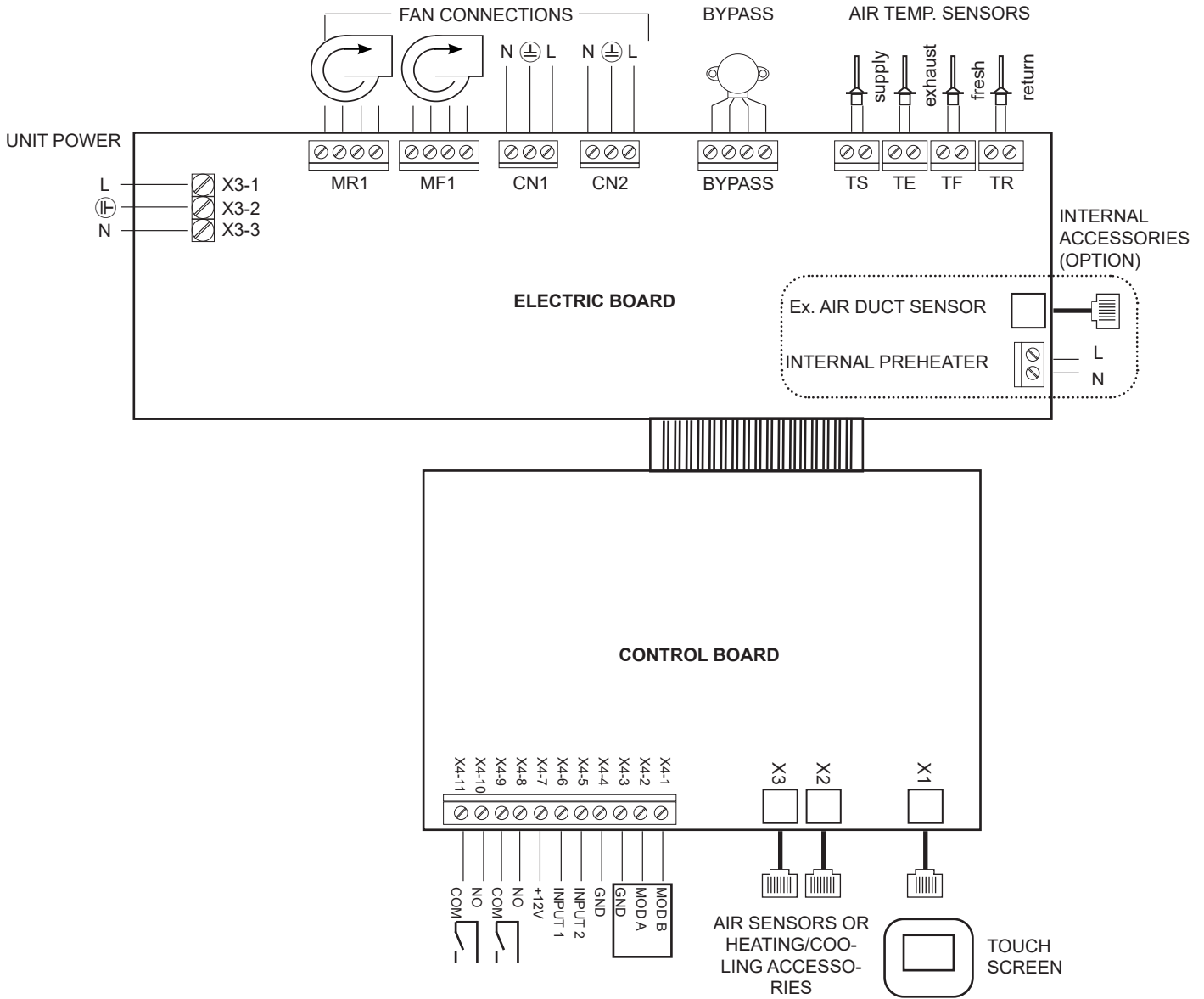
2. Remove the cover to reach the power plug and pull it out. Connect the power cable in conformity with the labels located on the board



3. Close the box and lay the cable under the cover recess













**8.2 BASIC WIRING DIAGRAM**



### 8.3 UNIT OPERATION SIGNALS

On the electric box lights are positioned to signal operation mode or communication status between unit and touch screen or unit and accessories.

	NAME	DESCRIPTION (when light is on)
	FREE CONTACT 1	Free contact 1 is activated
	FREE CONTACT 2	Free contact 2 is activated
	ACCESSORIES COMMUNICATION	The connected accessories are communicating with the unit
	TOUCH SCREEN - PLUG	The touch screen is powered
	TOUCH SCREEN - ARROWS	The touch screen is communicating with the unit
	MAIN POWER	The unit is powered
	FAN	Weekly program is set and fans are operating
	WEEKLY	Weekly program is set
	FILTER	Clogged filter, see Maintenance and Troubleshooting
	ALARM	See Troubleshooting

## 9 ACCESSORIES AND CONTROLS

A wide range of accessories is available. Please ask for single technical sheet for further details.

### ACCESSORIES

#### Control and regulation

• CO2 room sensor (APC)	▲
• CO2 duct sensor (DPC)	●
• VOC - volatile organic compound- ambient probe (APV)	▲◆
• VOC - volatile organic compound- duct probe (DPV)	▲◆
• Humidity room sensor (APH)	▲◆
• Humidity duct probe (DPH)	▲◆
• Defrost system by flow imbalancing (DES)	●
• Bypass 100% (BPD)	●
• Electronically contr. electric pre heater (PEHD)	◆
• Electronically controlled postheating water coil (HWD)	▲
• Electronically contr. chilled water coil (CWD)	▲
• Electronically contr. electric postheating (EHD)	▲
• Occupancy infra red sensor (IRS)	▲●
• Clogged filter alarm (time related) (DPS)	●
• Clogged filter alarm (pressure sensor) (DPP)	◆
• DSC Smart connect (DSC)	◆
• KTS BASIC touch screen remote controller	○
• KTS EXTRA touch screen remote controller	●
• Constant air flow operation (CAF)	◆

#### Communication

• MODBUS module (MOD)	◆
• Network module for TCP/IP (NET)	◆
• Radio frequency module (RFM)	◆

#### Mechanical accessories

• Return plenum (REP)	▲
• Supply plenum (PLE)	▲

▲ external accessory(option) ◆ inside the unit (option) ● factory fitted as standard ○ not available

### 9.1 INTERNAL ACCESSORIES

A special execution is with internal heating/cooling accessories possible on request. Due to the continuous effort to enlarge the accessory range this list might be not complete/updated. For more details see specific IOM of accessories on internet site.

#### Hot water coils with electronic controls - heating mode (SIDE MODULE) 2 pipes

Size		Item ref. number	Supply	Capacity [kW] Air 18°C 20 HR Water 80/70°C	Pressure drop Water [kPa]	Water connection (female)	Electric power intake [W]	Current [A]	Air flow rate [m3/h]
47	IHWD	AHDCOLHWC131	230V - 50Hz	6	14,6	3/4"	50	0.4	350
77		AHDCOLHWC132		8.9	12.4	3/4"	87	0.7	550
127		AHDCOLHWC133		15.4	16.4	3/4"	150	1.2	950

#### Chilled water coils with electronic controls - cooling mode (SIDE MODULE) 2 pipes

Size		Item ref. number	Supply	Capacity [kW] Air 20°C 80 HR Water 7/12°C	Pressure drop Water [kPa]	Water connection (female)	Electric power intake [W]	Current [A]	Air flow rate [m3/h]
47	ICWD	AHDCOLCWC131	230V - 50Hz	3.84 kW	0.4	3/4"	50	0.4	350
77		AHDCOLCWC 132		5.40 kW	0.5	3/4"	87	0.7	550
127		AHDCOLCWC 133		9.21 kW	0.7	3/4"	150	1.2	950

#### Electric post heater with electronic controls (FACTORY FITTED)

Size		Item ref. number	Supply	Capacity [kW]	Current [A]	ΔT [°C]	Air flow rate [m3/h]
47	IEHD	AELEH000808	230V - 50Hz	0.75	6,5	11	400
77						6	700
127		AELEH000809		2	13	7	1200

#### Electric preheater with electronic controls (FACTORY FITTED)

Size		Item ref. number	Supply	Capacity [kW]	Current [A]	Air flow rate [m3/h]
47	IPEHD	AELEH000807	230V - 50Hz	0.9	7.8	400
77						700
127		AELEH000810		1,5	9,7	1200

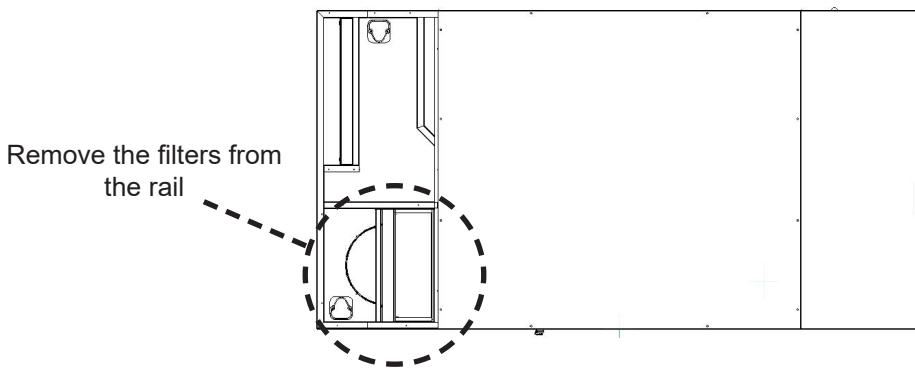
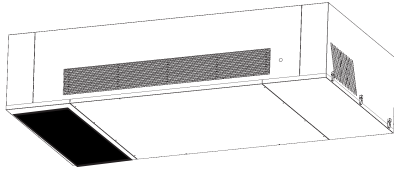
#### Direct expansion coil with electronic controls (SIDE MODULE)

Size		Item ref. number	Supply	Capacity [kW]	Current [A]	Air flow rate [m3/h]
47	IDXD	AHDGASDXD18	230V - 50Hz	2,7	0.4	400
77		AHDGASDXD20		4.5	0.7	700
127		AHDGASDXD22		6,1	1.2	1200

**10 MAINTENANCE**

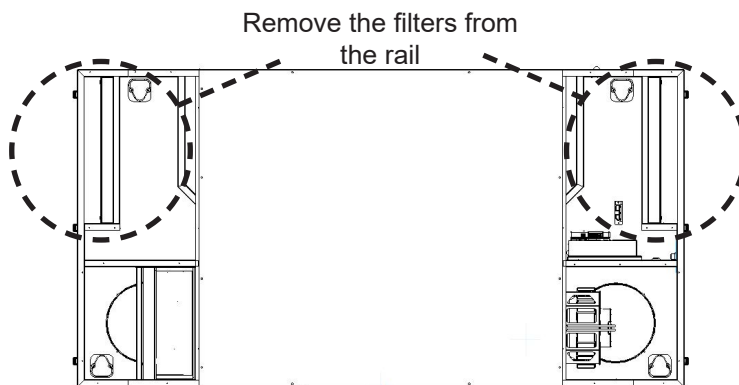
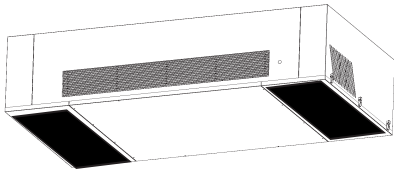
**10.1 FRESH AIR FILTER**

To perform filter maintenance, you need to remove the left hand fan compartment:



**10.2 RETURN AIR FILTER**

To perform filter maintenance, please follow the following steps:



## 11 ANTIFROST

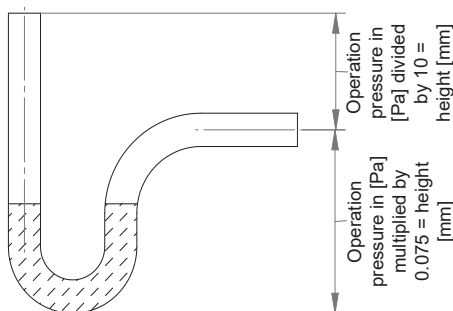
To prevent heat exchanger freezing, in winter, the ventilation unit has an automatic flow unbalancing system. Temperature sensors measure the air temperature before entering the heat exchanger and, if necessary, the air flow coming from outside is temporarily reduced. The flow unbalance activates with downstream temperature  $\leq 3^{\circ}\text{C}$  and the fresh air flow rate is decreased proportionally to reach a safe temperature at the way out the heat exchanger side exhaust air. The maximum flow unbalance permitted is 75%

## 12 CONDENSATE DRAIN

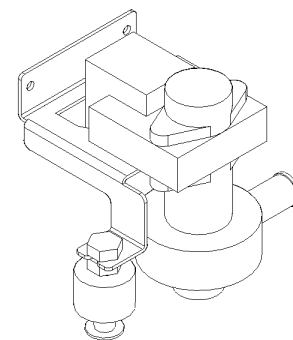
It is important that the air handling unit is installed horizontally. The condensate drain must be connected to a site drain / siphon with water trap or an on-site condensate pump. During operation there may be a negative pressure up to 500 Pa (equivalent to a 50mm water column) enter in the flow. In this case, the difference in height must be 50mm minimum in the siphon. Please follow the indication on illustration to choose the right height in the siphon. The condensate drain must be airtight from the unit.

The unit is equipped with a water pump (internal). The manufacturer can not be held responsible for any damage occurring due to non-compliance with the provisions. The siphon must be installed at the exit of the pipe from the unit. A constant slope of at least 1cm / m, frost-free must be ensured up to the final discharge, to protect against freezing until the end of the air is over. The installer is responsible for ensuring that the condensate drain is free from frost.

Important! Check one day before winter start-up, whether water is in the condensate hose.



Sizing of the siphon



INTERNAL CONDENSATE PUMP

## CE DECLARATION



### DECLARATION OF CONFORMITY

Manufacturer : Avensys Srl  
Legal Address : Via Mondalino 8 , 25070 Preseglie (BS) Italy  
Description of the product : VS size 47, 77, 127 ventilation unit complete with heat recovery

We declare that mentioned product above comply with following EC-directives and EN-standards:

93/37/EC , 2006/42/EC EC  
Machinery Directive

2004/108/EC  
EC EMC Directive , Electro Magnetic Compatibility

2006/95/EC  
EC Low Voltage Directive

EN 60204-1 Safety Of Machinery - Electrical Equipment Of Machines - Part 1: General Requirements

EN 12100:2010 Safety of machinery ; basic concepts; general principles for design

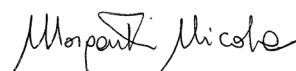
EN 60034-5 Rotating electric machinery ; part 5 : Protection classification for electrical machinery

EN 60335-1 Electric domestic products and similar - safety general requirements

EN 60335-2-80 Electric domestic products and similar - safety general part 2: special requirements for fans

Place and date : Sordio , 29.01.18

Signature :



Nicola Morganti  
(Technical Manager)  
Avensys Srl