

# INSTALLATION USE AND MAINTENANCE MANUAL



## HIGH EFFICIENCY HEAT RECUPERATOR

## INDEX

1	GENERALITY .....	4
1.1.1	INTRODUCTION.....	4
1.1.2	BASIC SAFETY RULES .....	4
1.1.3	SYMBOLOLOGY .....	5
1.1.4	WARNINGS .....	5
1.1.5	COMPLIANCE.....	6
1.1.6	RANGE.....	6
1.1.7	IDENTIFICATION .....	6
1.1.8	CONSTRUCTION FEATURES.....	7
1.1.9	MAIN COMPONENTS OF THE UNIT .....	8
1.1.10	PACKAGING AND TRANSPORT.....	8
1.1.11	RECEIVING, CONTROL AND HANDLING .....	8
1.1.12	DISASSEMBLY AND DISPOSAL .....	8
2	INSTALLATION.....	9
2.1.1	INSTALLATION CONDITIONS .....	9
2.1.2	UNIT POSITIONING .....	9
2.1.3	ANCHORING BRACKETS .....	10
2.1.4	CONDENSATE DRAIN CONNECTION .....	10
3	AEREAULIC CONNECTIONS.....	11
3.1.1	AEREAULIC CONNECTIONS .....	11
3.1.2	CONFIGURATIONS AND MODIFICATION OF THE AEREAULIC ORIENTATIONS.....	11
4	ELECTRICAL CONNECTIONS.....	15
4.1.1	GENERALITY .....	15
4.1.2	ELECTRICAL CONNECTIONS -I- VERSION .....	22
4.1.3	ELECTRICAL CONNECTIONS -S- VERSION .....	25
4.1.4	ELECTRICAL BATTERIES .....	27
4.1.5	HYDRONIC BATTERIES .....	27
5	COMMISSIONING AND MODE OF OPERATION.....	28
5.1.1	GENERALITY .....	28

- 5.1.2 OPERATION -I- VERSION.....28
- 5.1.3 DIPSWITCH SETTINGS .....29
- 5.1.4 OPERATION -I- VERSION.....30
- 5.1.5 ACCESSORIES.....33
- 6 MAINTENANCE .....35
  - 6.1.1 CLEANING OR REPLACING FILTERS.....35
  - 6.1.2 HEAT EXCHANGER CLEANING .....35
  - 6.1.3 GENERAL UNIT CLEANING.....36
- 7 ALARMS .....37
  - 7.1.1 GENERALITY .....37
  - 7.1.2 DISPLAY ALARM TABLE - I VERSION - .....38
- 8 NOTES AND INFORMATION .....39
  - NOTE.....39

## 1 GENERALITY

### 1.1.1 INTRODUCTION

This manual is designed with the aim of making the installation and operation of your system as easy as possible. By reading and applying the suggestions in this manual, you will achieve the best performance of the product you have purchased. We would like to thank you for the choice you have made by purchasing our product.

Read this booklet carefully before doing any work on the unit. You should not install the unit, nor perform any work on it, unless you have first carefully read and understood this manual in its entirety. In particular, all precautions listed in the manual should be taken.

The documentation accompanying the unit should be given to the person in charge of the plant to keep carefully (at least 10 years) for possible future servicing, maintenance and repair.

The installation of the unit must take into account both purely technical requirements for proper operation and any applicable local legislation and specific requirements.

Make sure that upon delivery of the unit, there are no obvious signs of transport damage. If so, indicate this on the delivery note.

This manual reflects the state of the art at the time the machine was marketed and cannot be considered inadequate because it has been subsequently updated based on new experience. The Manufacturer reserves the right to update production and manuals, with no obligation to update previous ones except in exceptional cases.

Contact the Manufacturer's Sales Office for further information or updates to the technical documentation and for any suggestions for improvements to this manual. All reports received will be rigorously screened.

### 1.1.2 BASIC SAFETY RULES








As a reminder, the use of products using electricity and water involves observing some basic safety rules:

- The use of the device by incapacitated and unassisted persons is prohibited.
- It is forbidden to touch the appliance with bare feet and with wet or damp body parts.
- It is prohibited to carry out any cleaning operation, before disconnecting the appliance from the power supply by setting the main switch of the system to off.
- It is prohibited to modify safety or control devices without the authorization and instructions of the appliance manufacturer.
- It is prohibited to pull, unplug, twist the electrical cables coming out of the appliance, even if the appliance is disconnected from the power supply.
- It is prohibited to introduce objects and substances through the air intake and air outlet grilles.
- It is forbidden to open the access doors to the internal parts of the appliance without first setting the main switch of the system to off.
- It is forbidden to disperse and leave the packaging material within reach of children as it can be a potential source of danger.
- Observe safe distances between the machine and other equipment or structures to ensure sufficient access space to the unit for maintenance and servicing as indicated in this booklet.
- Power to the unit must be supplied with electrical cables of adequate cross-section for the unit's output. The voltage and frequency values must correspond to those indicated for the respective machines; all machines must be grounded as per current regulations in the various countries.
- Do not release R134A into the atmosphere: R134A is a fluorinated greenhouse gas, referred to in the Kyoto Protocol, with a global warming potential (GWP)=1975.








### 1.1.3 SYMBOLOGY





The symbols in the following booklet, allow you to quickly provide information necessary for the proper use of the unit.

#### Symbology related to safety

	<b>WARNINGS</b> Authorized personnel only	Warns that the indicated operations are important for the safe operation of the machines.
	<b>DANGER</b> Risk of electric shock	Warns that failure to follow the requirements poses a risk of electric shock.
	<b>DANGER</b>	Warns that failure to follow the requirements poses a risk of harm to exposed persons.
	<b>WARNINGS</b>	Warns that failure to comply poses a risk of damage to the unit or facility.
	<b>DANGER</b>	Warns that there is the presence of moving parts and poses a risk of harm to exposed persons.

### 1.1.4 WARNINGS

	The installation of the unit must be carried out by qualified and licensed personnel according to the regulations in different countries. If the installation is not carried out, it could become a dangerous situation.
	Avoid installing the unit in rooms that are very humid or have large heat sources.
	On the electrical side to prevent any risk of electrocution, it is essential to disconnect the main switch before making electrical connections and any maintenance operation.
	In case of water leakage inside the unit, set the system main switch to "Off", close the water taps and contact the technical service.
	A dedicated power supply circuit is recommended; Never use a power supply shared with other equipment.
	It is recommended that an earth leakage breaker be installed; failure to do so could result in electric shock.
	For connection, use a cable of sufficient length to cover the entire distance, without any connection; do not use extension cords or apply other loads on the power supply but use a dedicated power supply circuit.

	After connecting the electrical cables, make sure that the cables are arranged so as not to exert excessive forces on the covers or electrical panels; incomplete connection of the covers may cause the terminals to overheat.
	Ensure that ground connection is made; do not ground the unit on distribution piping. Momentary high overcurrents could damage the unit.
	Installations made outside the warnings in this manual or use outside the operating limits will instantly void the warranty.
	Ensure that the first start-up is carried out by personnel authorized by the company (see first start-up request form).

### 1.1.5 COMPLIANCE

The CE marking (found on each machine) certifies compliance with the following EU standards:

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2014/35/EC
- Electromagnetic Compatibility Directive 2014/30/EC
- RoHS2 2011/65/UE
- RAEE 2012/19/EC

### 1.1.6 RANGE

	-1-	-2-
HRN+	40	I

**1) Defines the maximum flow rate**  
Models from: 400 m<sup>3</sup>/h to 4500 m<sup>3</sup>/h

**2) Electronic version**  
I : Electronic I  
S : Electronic S

### 1.1.7 IDENTIFICATION

- The unit is identifiable by the nameplate on the lower front panel of the unit.
- On the packaging there will be an additional identification plate with the unit model and shipping references.
- The plate on the 'packaging is not valid for tracking the product in the years following the sale.

The removal, deterioration and illegibility of the nameplate placed on the unit, leads to great problems in the identification of the machine, in the availability of spare parts and therefore in any future maintenance of it.

## 1.1.8 CONSTRUCTION FEATURES

HRN+ is a ventilation unit complete with heat recovery unit dedicated to air exchange without energy waste. The unit is particularly suitable for commercial premises or collective residential buildings and in all cases where the nominal flow rates for air exchange do not exceed 4500 cu m<sup>3</sup>/h.

<b>STRUCTURE:</b>	Self-supporting sheet metal supporting structure, with perimeter sealing gasket. Sandwich panels made of 25 mm thick galvanized sheet metal, insulated with polyurethane foam of density 42 kg/m <sup>3</sup> . Carpentry and interior infills made of thick galvanized sheet metal.
<b>HEAT EXCHANGER:</b>	Aluminum cross-flow heat exchanger (80% Erp 2018). Summer and winter operation.
<b>SUMMER BYPASS:</b>	Summer bypass with motorized damper installed.
<b>FANS:</b>	Brushless fans with electronic motor and modulating control. Very high efficiency and low noise levels ErP2018.
<b>FILTERS:</b>	Filters with low pressure drop of efficiency. ePM 1 - 70 % (F7) on fresh air ePM 10 - 50 % (M5) on extract air. Easy to extract for routine maintenance, extraction side according to configuration and drawings
<b>AVAILABILITY AND VERSIONS:</b>	5 models with horizontal or vertical development For all configurations, the orientation of the outlet ports can be changed on site (more details in the data sheet and technical drawings). Two versions of control S / I  S VERSION Simple electrical setup for quick connection of the unit to the grid.  I VERSION Electrical panel complete with board for management of 3 fan speeds, antifreeze and automatic free-cooling control. Control through digital contacts.  Each version is completed by dedicated control, accessory on request  HRN+ units are suitable for indoor, ceiling or floor installation and outdoor installation with canopy (additional accessory). Electric coils (external to the structure) and modules with heating or cooling coil (fluid supply Water) are available for HRN+ units. Other accessories and possible adjustments according to data sheet and price list.

### 1.1.9 MAIN COMPONENTS OF THE UNIT



1. Fan
2. Heat exchanger
3. Bypass exchanger system
4. Air filters

### 1.1.10 PACKAGING AND TRANSPORT

The units are supplied for transport secured on a wooden pallet and placed in cardboard boxes. For ease of movement, the units are equipped with a wooden pallet and hooks on the base that allow them to be lifted and positioned at the installation site. The unit may be stored in a weather-protected room with temperatures no lower than 0°C, up to a maximum of 40°C.

### 1.1.11 RECEIVING, CONTROL AND HANDLING



The unit is shipped fully precharged with refrigerant gas in the circuits and with brine-free oil in the compressors. Under no circumstances may water be present in the hydraulic circuits, as the unit is thoroughly drained after testing. Upon arrival the customer is required to inspect the unit also in the internal areas to verify that it has not been damaged during transport; the unit has left the factory in perfect condition. If this is not the case, immediate recourse must be taken against the carrier by detailing the extent of the damage on the bill, producing photographic evidence of the apparent damage, and notifying the shipper of any apparent damage by registered mail r.r. The manufacturer assumes no liability for damage due to transportation even if he has provided the shipment himself.

Great care should be taken when handling the units during unloading and positioning in place to avoid damage to the casing and more delicate internal components such as compressors, exchangers, etc. By all means, keep the unit in a horizontal position without tilting it. All indications about the precautions necessary to ensure that no damage is done to the unit, and an indication of the weight of the unit, are given on the packaging. The materials that make up the packaging may be of various kinds such as wood, cardboard or polyethylene (plastic). It is good practice to send them for disposal or recycling through specialized companies to reduce their environmental impact.

### 1.1.12 DISASSEMBLY AND DISPOSAL



Do not disassemble or dispose of the product yourself. Disassembly, demolition, disposal of the product shall be carried out by authorized personnel in accordance with local regulations.





## 2 INSTALLATION

### 2.1.1 INSTALLATION CONDITIONS

The unit should be installed in accordance with national and local regulations governing the use of electrical devices and according to the following guidelines:

- install the unit inside residential buildings with an ambient temperature between 0°C and 45°C;
- avoid areas near sources of heat, steam, flammable and/or explosive gases, and particularly dusty areas;
- Install the unit in a frost-free location (condensation water should be drained unfrozen, at a certain angle, using a siphon);
- do not install the unit in areas with high relative humidity (such as bathroom or toilet) to avoid condensation on the outside surface;
- choose an installation location where there is sufficient space around the unit for air duct connections and to be able to perform maintenance work;
- the texture of the ceiling/wall/floor where the unit will be installed must be adequate for the weight of the unit and not cause vibration.

The room chosen for installation must have:

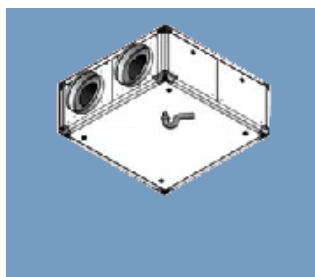
- air duct connections;
- single-phase 230V electrical connection.
- condensate drainage connection
- plumbing connection

### 2.1.2 UNIT POSITIONING

#### Ceiling Mounting - Unit H

Mounting the unit to the ceiling requires

- Install the condensate drain kit on the front wall of the unit (cover): remove the plugs, insert the threaded pipe from the inside, and screw the siphon on the outside;
- attach the unit to the ceiling, using the brackets already installed on the unit and using suitable anchoring systems (dowels, threaded rods, chains...) and check its levelness by helping with a level;
- Ensure sufficient space for carrying out maintenance activities: opening the unit cover (from below) must be guaranteed.

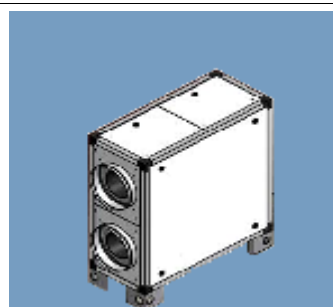


Do not mount the unit with the sides in direct contact with the walls to avoid possible contact noise, insert rubber or neoprene strips in that case.

#### Wall Mounting - V Unit

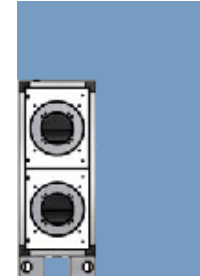
Mounting the unit on the wall requires:

- Install the condensate drain kit on the bottom panel: remove the plugs, insert the inner connecting pipe, and screw the siphon on the outside;
- Laying the unit on the floor;
- Place the 4 mounting brackets on the back side of the unit only if there is a need for wall anchorage, and secure them with the screws provided after drilling holes with a drill (holes must be drilled on the aluminum frame).



Ensure sufficient space for carrying out maintenance activities: opening the front panel of the unit must be guaranteed.

Do not mount the unit with the sides in direct contact with the walls to avoid possible contact noise, insert rubber or neoprene strips in that case.



### 2.1.3 ANCHORING BRACKETS

The brackets are already mounted on the unit on the four bottom corners.

They are prepared for fastening through dowels and threaded rods



### 2.1.4 CONDENSATE DRAIN CONNECTION

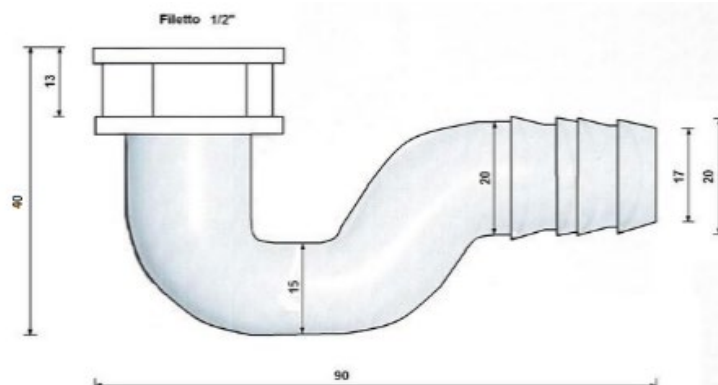
Because of the heat recovery system (the warm exhaust air is cooled by the supply air inside the heat exchanger), the moisture in the indoor air condenses inside the unit.

Therefore, for proper operation of the heat recuperator, it is necessary to connect a condensate drain to the plumbing (drain) of the house. In addition, to allow the condensate water to drain properly and to prevent air suction, the condensate drain must always be fitted with the siphon provided.

Observe the following standards when installing the condensate drain:

- give a slope of at least 2% to the drain pipe;
- provide the possibility to disconnect the drain pipe for any maintenance (especially in case of ceiling installation);
- ensure that the discharge end of the pipe is at least below the water level of the siphon;
- make sure the siphon is always full of water.

Install the provided condensate drain siphon to avoid unpleasant odors in the room air



### 3 AERAULIC CONNECTIONS

#### 3.1.1 AERAULIC CONNECTIONS



The unit is provided with 4 male circular connections of different  $\varnothing$  according to size: for optimal operation.

Refer to the following diagram and stickers on the unit for proper air duct connections.

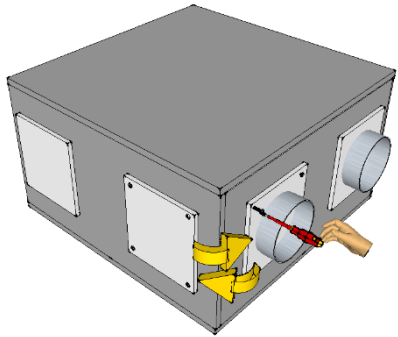
**Table Aeraulic connections diameters unit**

MODEL	HRN+	40	70	100	150	200	250	350	450
Diameter DN	$\varnothing$	200	315	315	355	400	400	500	500

#### 3.1.2 CONFIGURATIONS AND MODIFICATION OF THE AERAULIC ORIENTATIONS

Depending on the system in which the unit is to be installed, it will be possible to orient the four aeraulic connections appropriately.

Below are the possible configurations:

<p>The air connections are configurable during installation through the removable panels.</p> <p>However, it is possible to have the unit already with the desired configuration.</p> <p>When ordering, in addition to the unit code, the desired connection configuration should also be specified (Ex. URHRN000 - H4)</p>	
---	---

**The units are shown viewed from above (H version) and from the front (V version).**

Without the indication of a configuration, the standard position of the four aeraulic connections in the horizontal version is marked H5 while for the vertical version the standard position is marked V1.

It is possible to have an additional choice of configuration, depending on the placement of the condensate drain trap that will determine the ejection side of the unit. This is done during installation and will then determine the final configuration of the unit.

PAE – Outdoor air intake

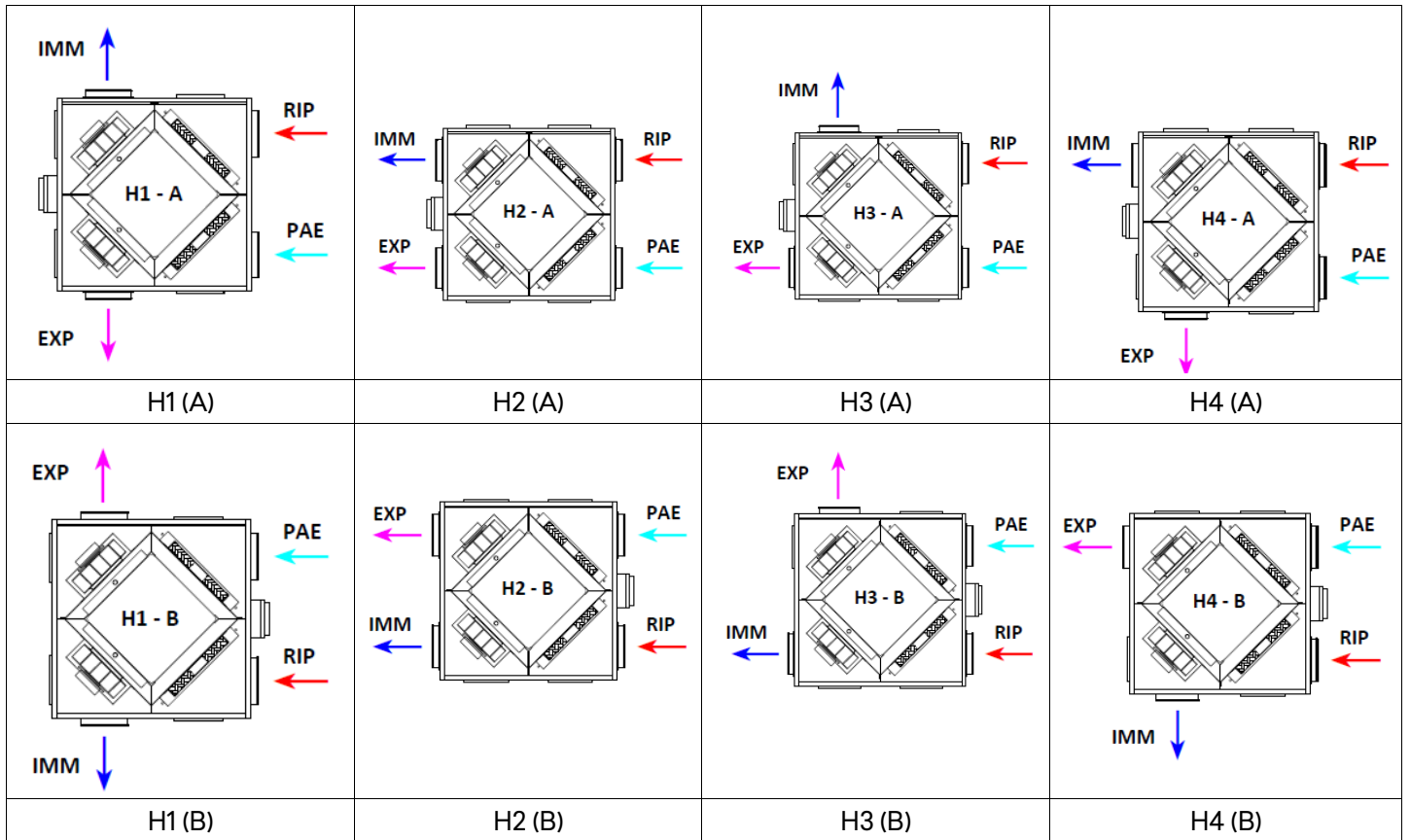
IMM – Fresh air intake

RIP – Stale air intake

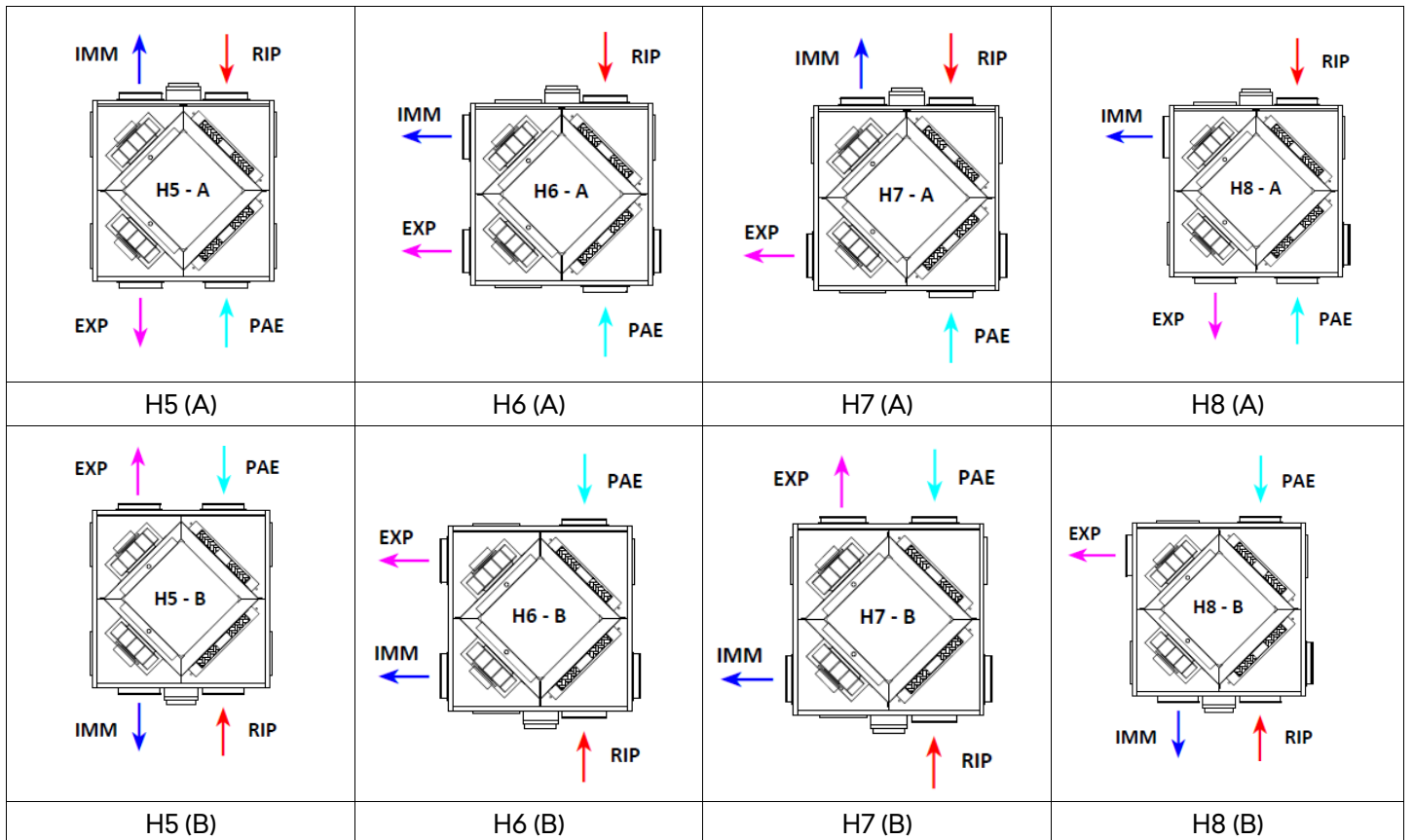
EXP – Exhaust air exhaust

NB. The siphon must always be installed on the exhaust side

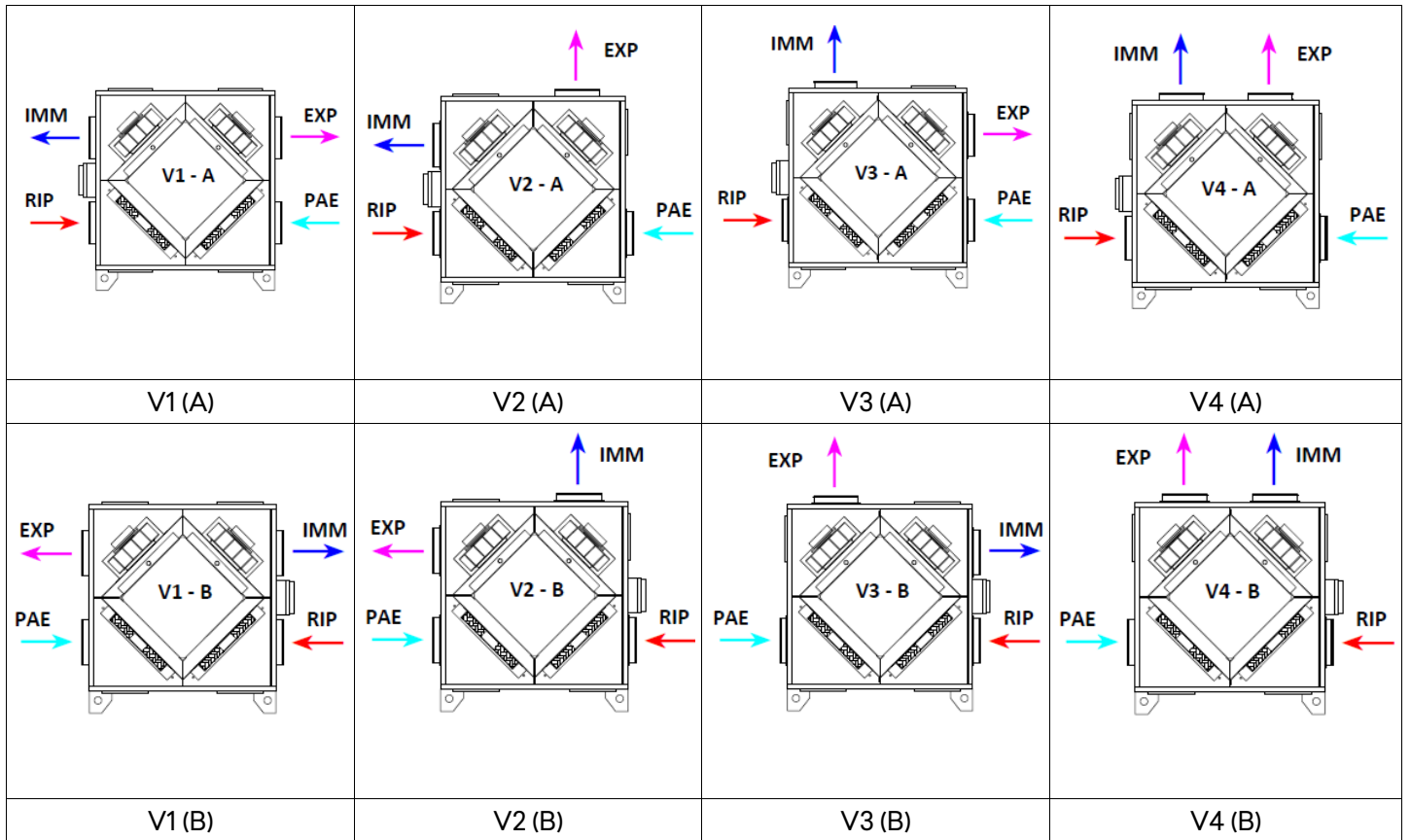
### 3.1.3 HORIZONTAL VERSION FROM H1 TO H4 (A/B)



### 3.1.4 HORIZONTAL VERSION FROM H5 TO H8 (A/B)

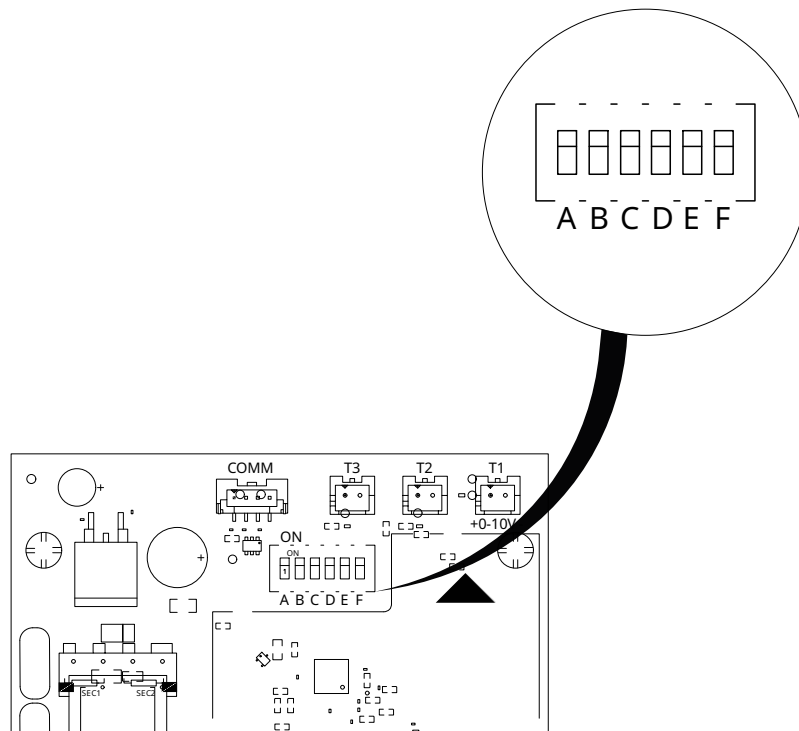


### 3.1.5 VERTICAL VERSION V FROM V1 TO V4 (A/B)

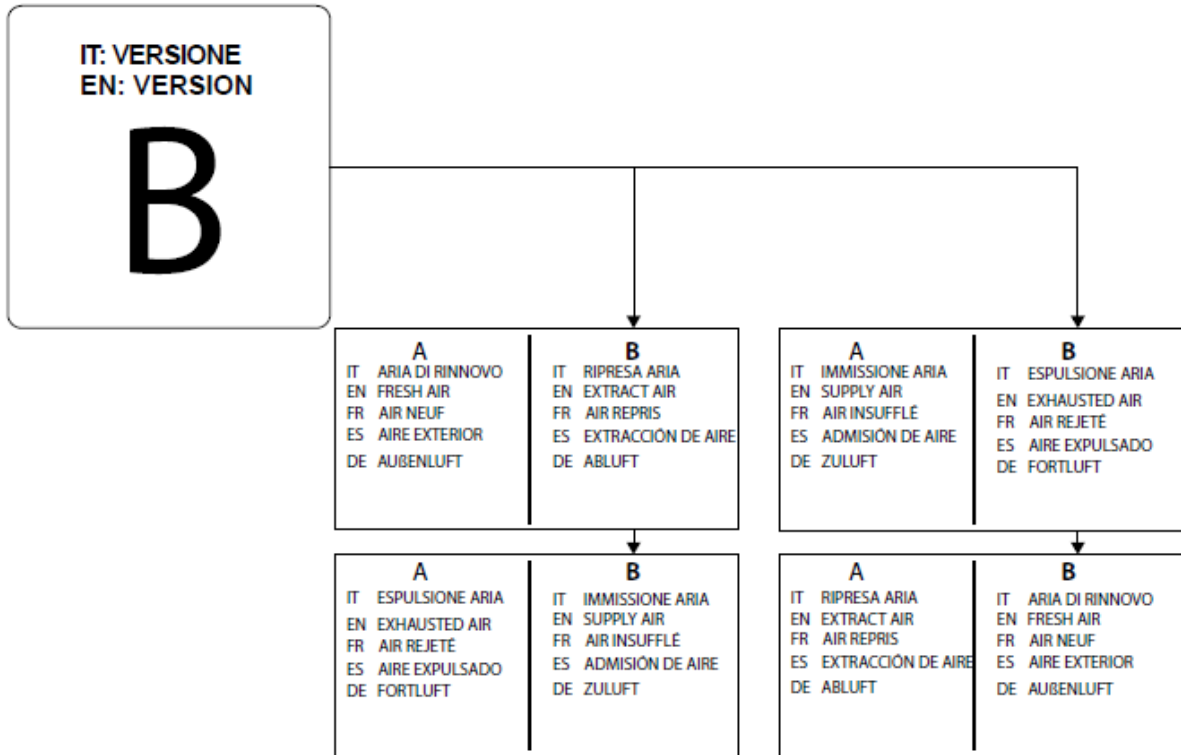


### 3.1.6 MODIFICATION OF AERAULIC CONFIGURATION FROM A TO B

To change the configuration, it is necessary to reverse the setting of microswitch E from Off to On, the unit will automatically reverse the fan outputs, probe properties, and related frost and bypass control logic.



Label to be applied if configuration is changed from A to B



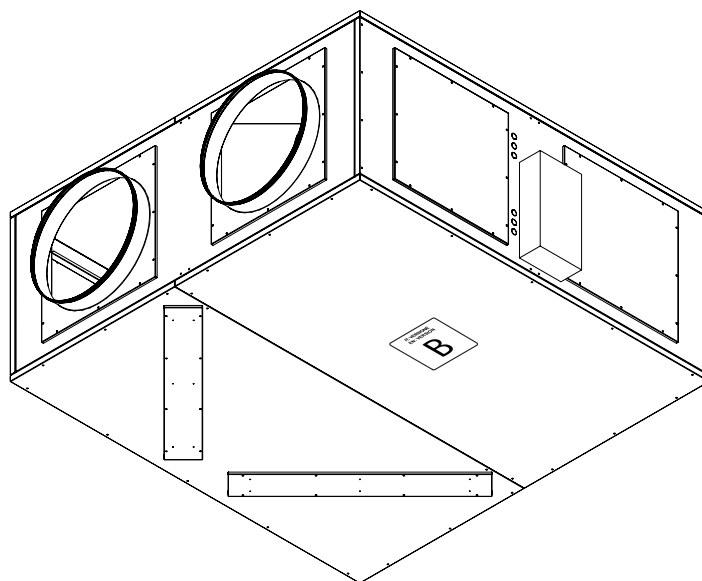
To indicate that the machine configuration has been changed

it is necessary to apply the accompanying label. The presence

of the label indicates that you should refer to column

B in the airflow labels.

**Label application:**



## 4 ELECTRICAL CONNECTIONS

### 4.1.1 GENERALITY



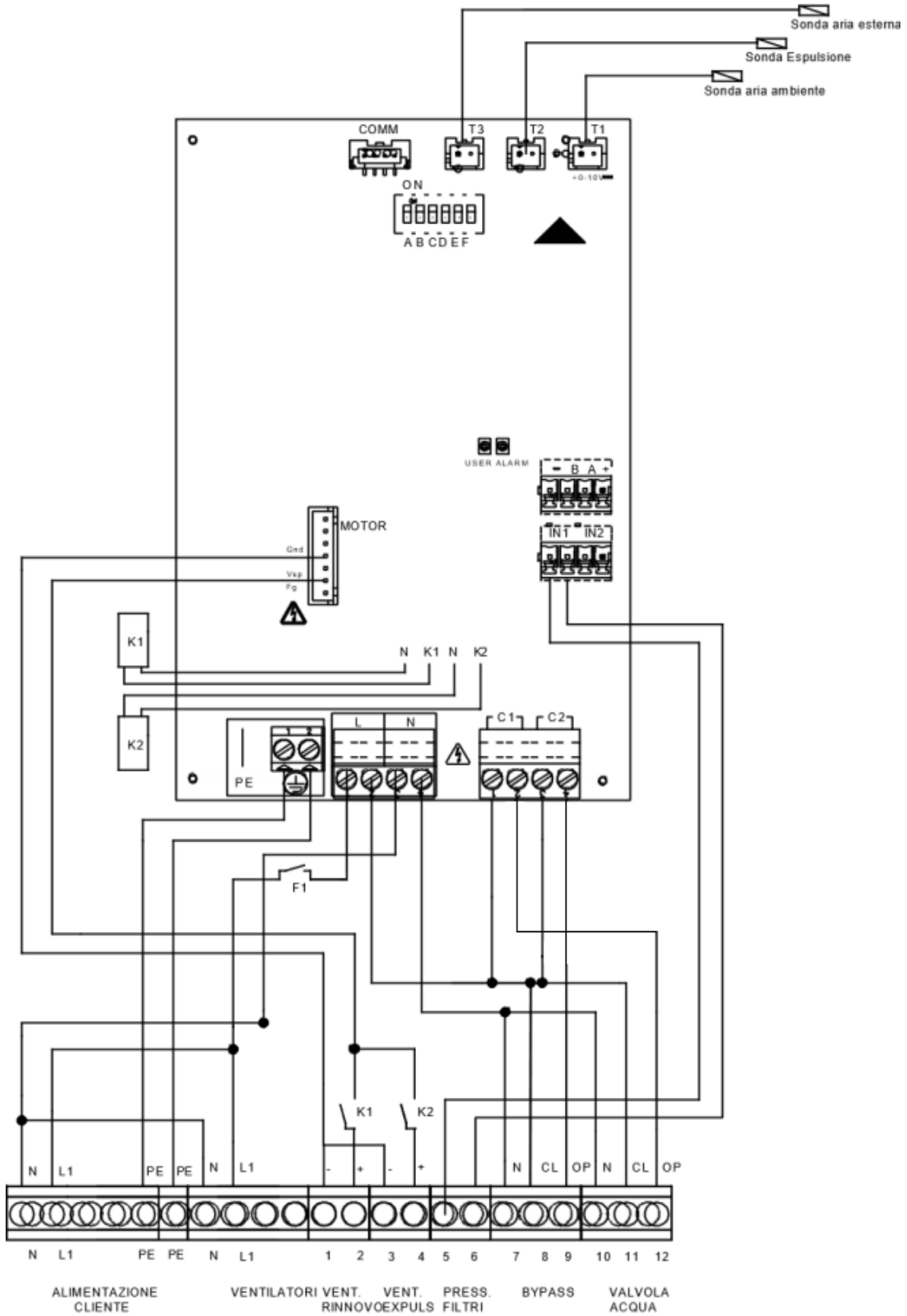
- Before starting any operation to make the electrical connection, make sure that the unit is not electrically powered.
- Make the necessary electrical connections by consulting only the wiring diagram attached to this manual.
- Install a suitable circuit breaker and differential protection device to serve the unit only.
- It is essential that the unit be connected to a grounded outlet.
- Check that the electrical components chosen for installation (main switch, circuit breakers, cable cross-section and terminals) are suitable for the electrical rating of the installed unit and that they take into account the compressor inrush currents as well as the maximum load that can be reached. The relevant data are shown on the attached wiring diagram and on the unit's nameplate.
- It is forbidden to enter the unit with electrical cables except where specified in this booklet.
- Use electrical cables and conductors of suitable cross-sections and complying with the current regulations of the various countries.
- Absolutely avoid running electrical cables in direct contact with piping or components inside the unit.
- Check after the first moments of operation that the screws of the power terminals are tightened.

Table for power line sizing

#### Electrical Data

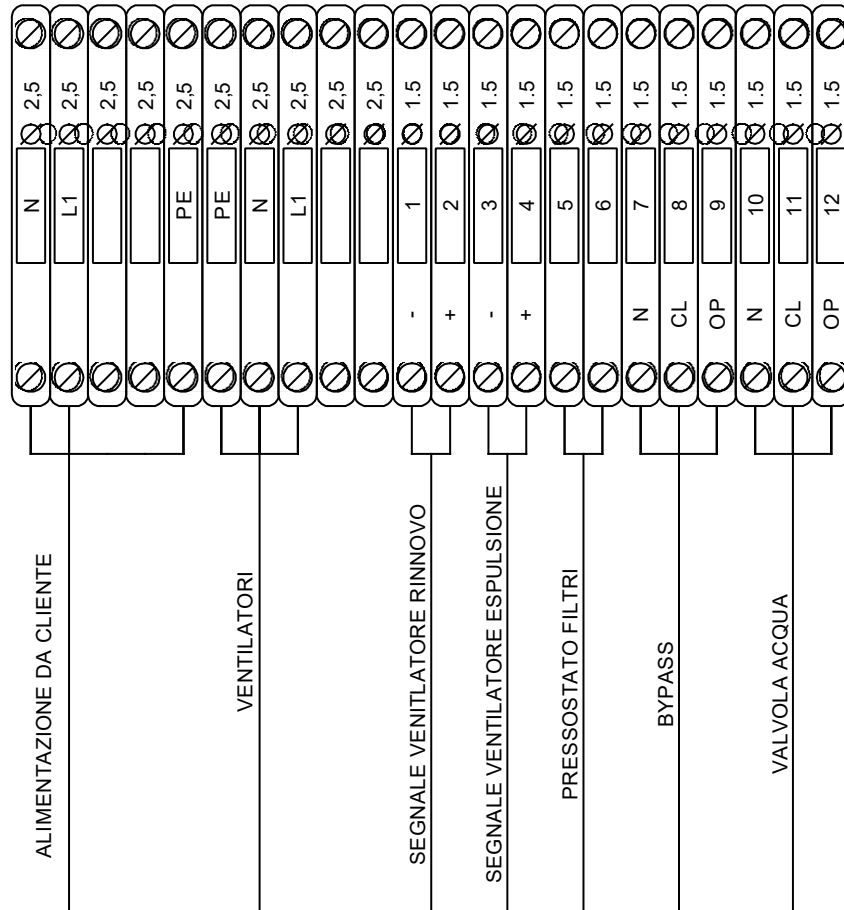
Size	HRN+ 40	HRN+ 70	HRN+ 100	HRN+ 150	HRN+ 200	HRN+ 250	HRN+ 350	HRN+ 450
------	---------	---------	----------	----------	----------	----------	----------	----------

Supply Voltage		230 V / 1 / 50Hz					400 V / 3+N / 50Hz		
Max power consumption	W	2 X 100	2 X 145	2 X 305	2 X 305	2 X 305	2 X 990	2 X 990	2 X 1100
Max current consumption		1,6	2,4	2,8	2,8	2,8	3,4	3,4	3,6
Unit degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20

**Version I - SINGLE-PHASE SCHEME**


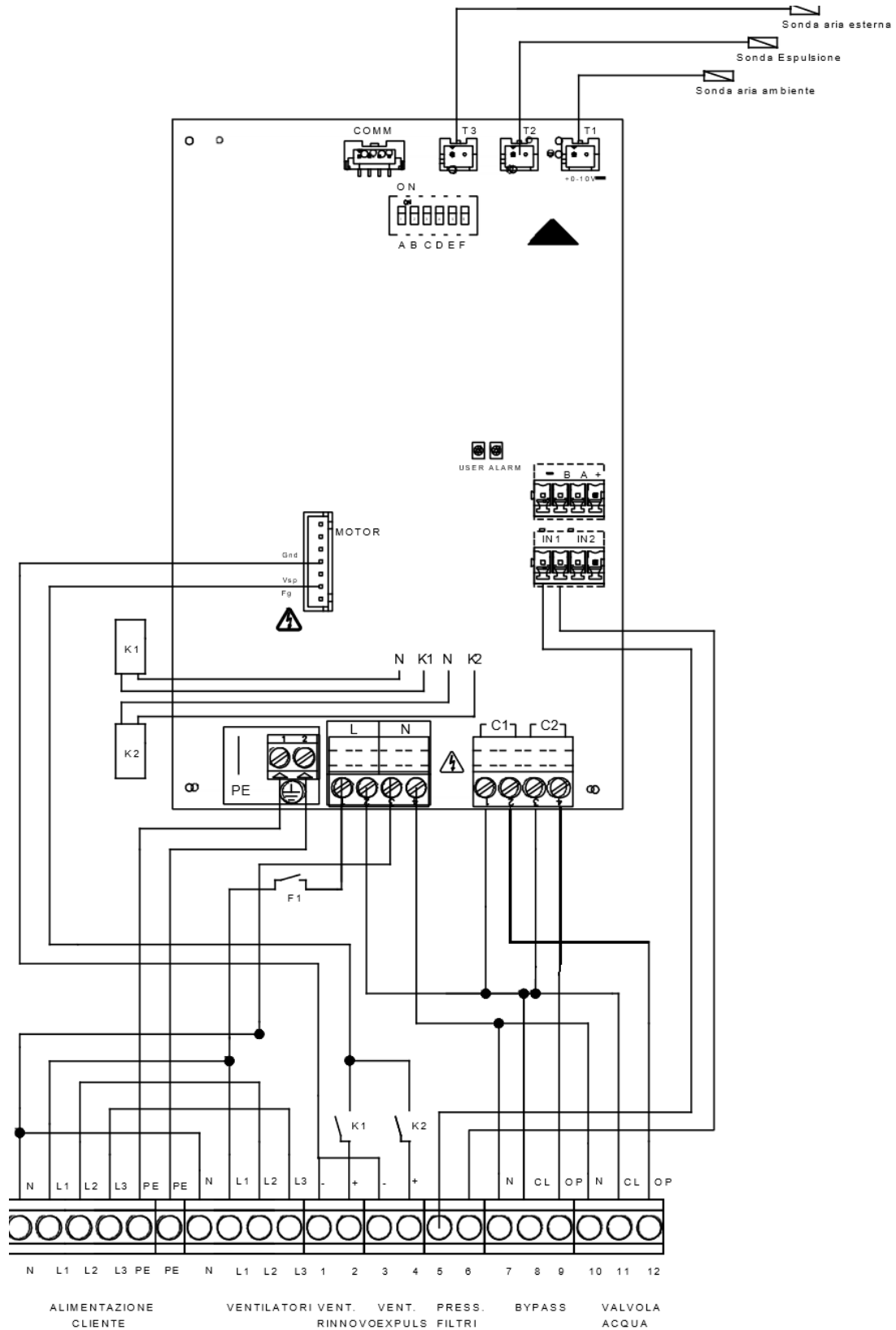


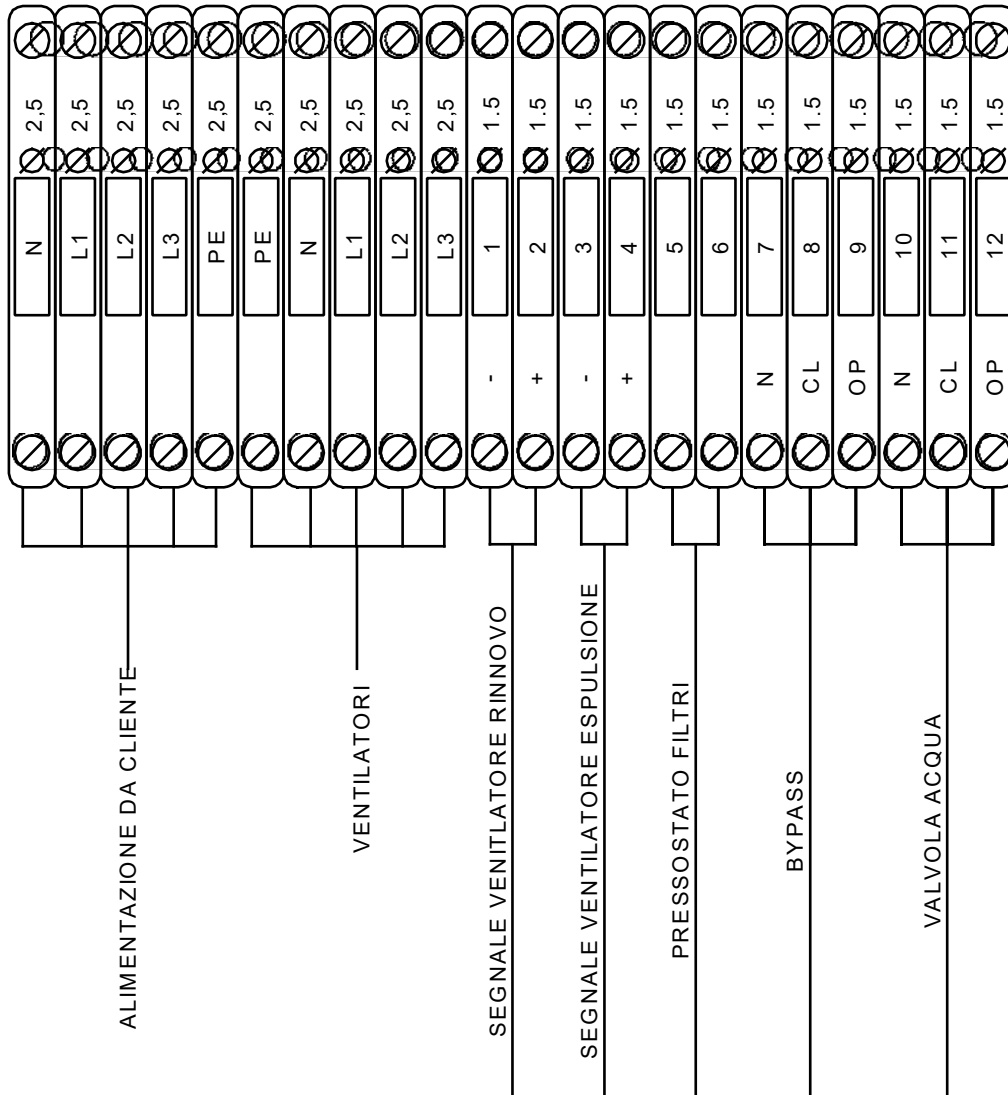
# MORSETTIERA



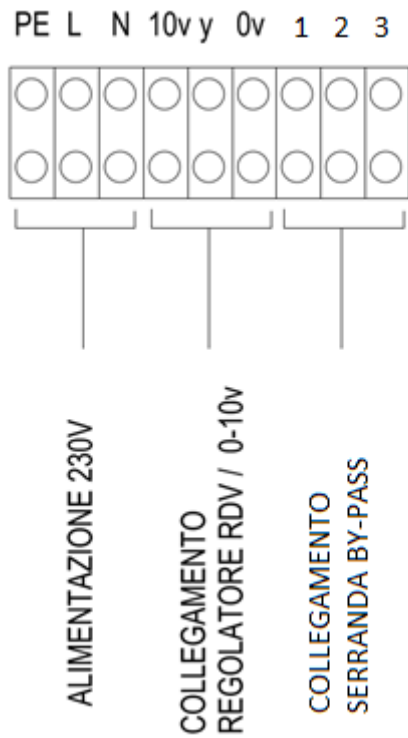
CONNECTIONS BY CUSTOMER		
IN1	Booster speed (standard) / Dirty filter input (configurable)	Closed contact / active function
C1	Generator / water valve / post-heating coil / pre-heating coil	Dry contact
C2	Bypass	Bypass Voltage contact (220v)
REMOTE DISPLAY	Remote control (wired)	
ON OFF REMOTO (ON DISPLAY)	ON OFF remote contact present on remote display	Closed contact / unit OFF

Version I - THREE-PHASE SCHEME

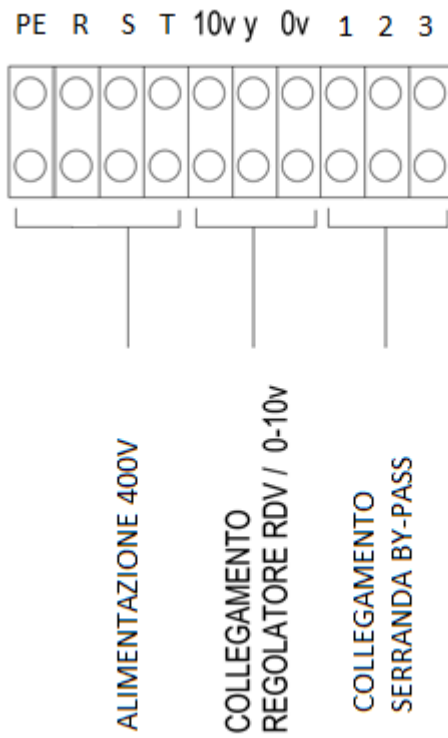


**Version I - THREE-PHASE MORTGAGE**


CONNECTIONS BY CUSTOMER		
IN1	Booster speed (standard) / Dirty filter input (configurable)	Closed contact / active function
C1	Generator control / water valve / post-heat coil / pre-heat coil	Dry contact
C2	Bypass	Voltage contact (220v)
REMOTE DISPLAY	Remote control (wired)	
ON OFF REMOTO (ON DISPLAY)	ON OFF remote contact present on remote display	Closed contact / unit OFF

**S VERSION - 230V SINGLE-PHASE TERMINAL BLOCK**

**CONNECTIONS**

N / L / PE	<i>Power supply 230V/1/50</i>
10v / y / 0v	<i>regulator contact or 0-10V DC signal</i>
1/2/3	<i>By-Pass Damper Connection</i>

**S VERSION - 400V THREE-PHASE TERMINAL BLOCK**

**CONNECTIONS**

CONNECTIONS	
R / S / T / PE	<i>400V/1/50 power supply</i>
10v / y / 0v	<i>RDV regulator contact or 0-10V DC signal</i>
1 / 2 / 3	<i>By-Pass Damper Connection</i>

## 4.1.2 ELECTRICAL CONNECTIONS -I- VERSION

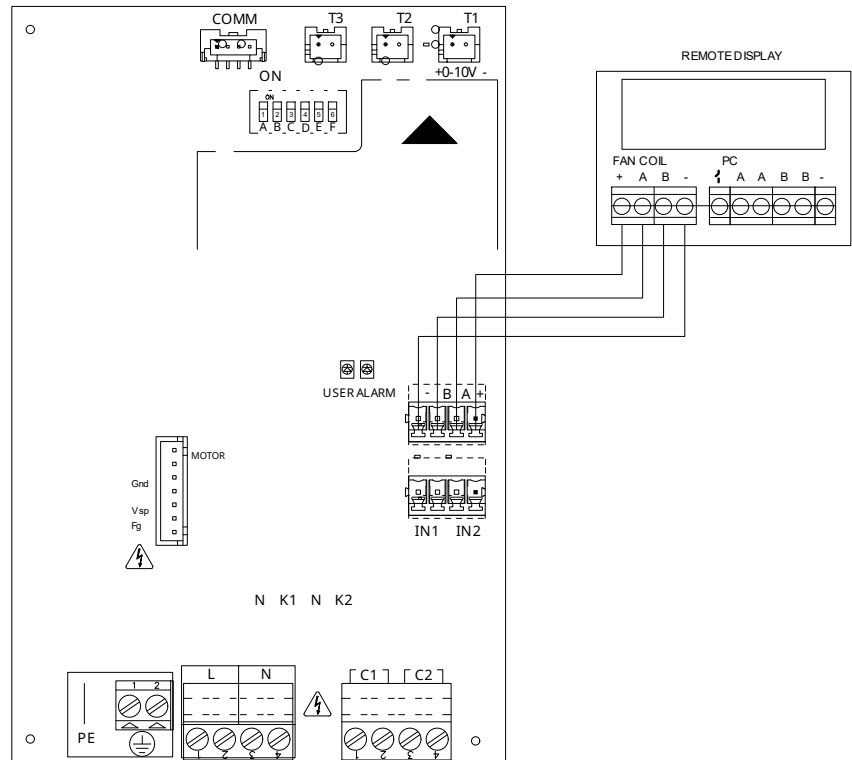
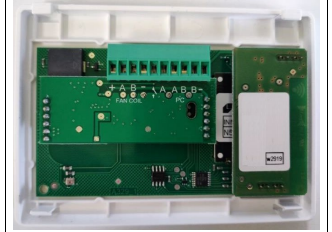
### 4.1.2.1 REMOTO PANEL CONNECTION COMPLETE WITH AIR QUALITY, HUMIDITY AND TEMPERATURE PROBE

The -I- version board provides capacitive touch type remote controls for managing all unit functions and prepared for wall or outdoor installation

The controls can be supplied in either White or Black color.

**The connection of the control to the unit is through 0.75/1mm 4-core shielded/braided cable.**

The remote control provides, through the other available terminals, for connection to an RS485 Modbus RTU serial network as shown below.



Remote panel

### 4.1.2.2 AUXILIARY CONNECTIONS

The board allows operation of the Brushless EC fan through a remote control described above;

Some auxiliary functions have been implemented in the board, such as the connection of regulators and the management of a battery/post valve;

### 4.1.2.3 DISPLAY CONNECTION FOR CONTROL OF MULTIPLE UNITS

The panel provides for the control of multiple units; up to 30 units can be connected and will be managed by the one remote panel;

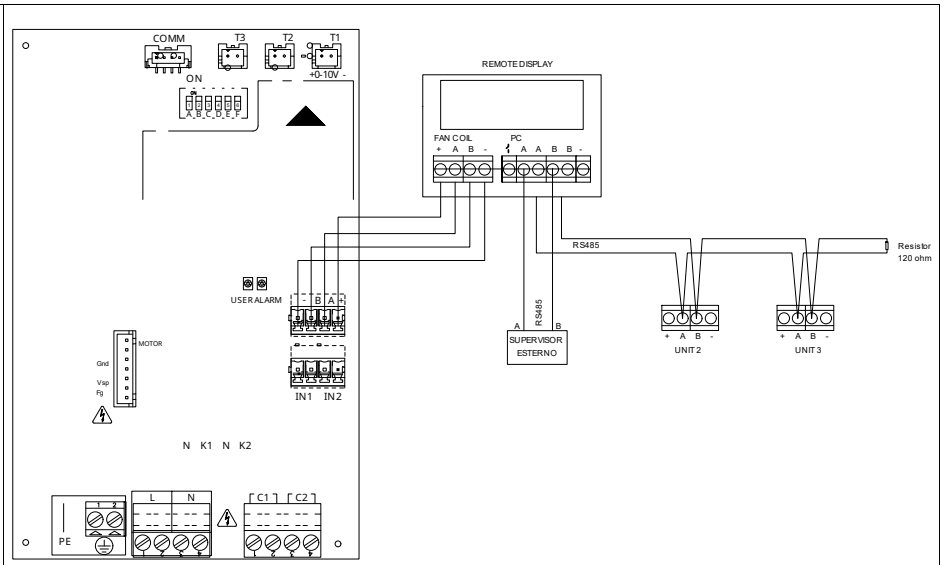
They will have to be connected in series with in and out connection on the individual unit boards;

The network is an RS485 network; Use shielded 2-wire cable with a maximum length of 150m;

- Make a route so as to minimize the length of the branches;

- Terminate the line with the 120  $\Omega$  resistor provided;

- Do not make "star" connections; -The connection with the RS485 cable is polarized,



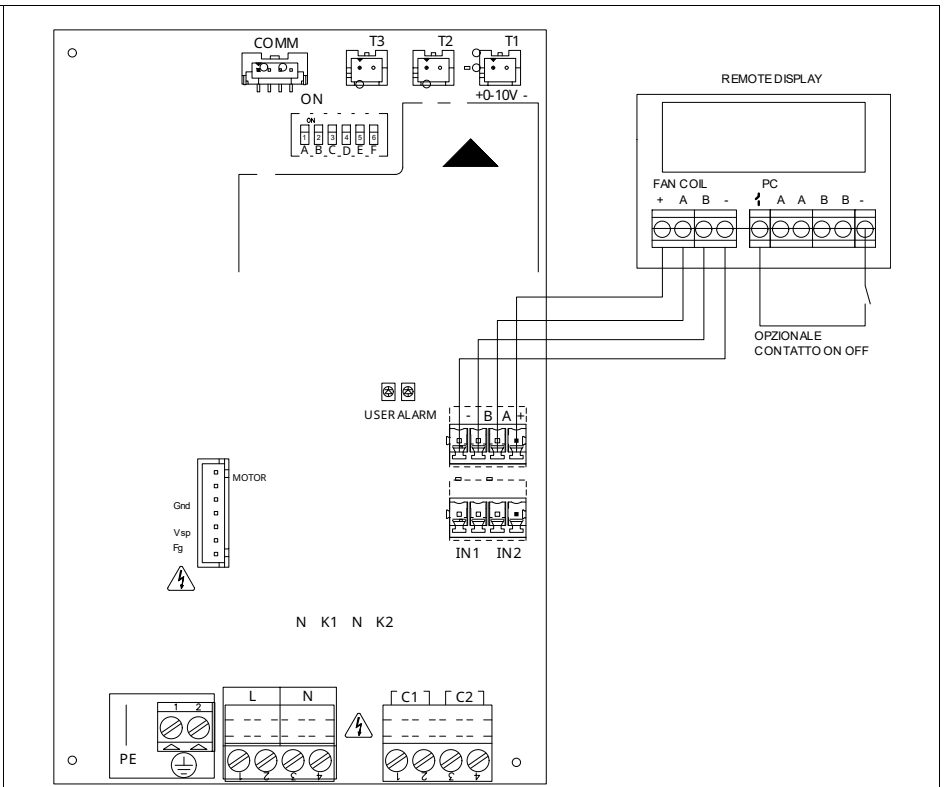
### 4.1.2.4 REMOTE ON-OFF CONNECTION

The remote panel provides an ON OFF control with which the unit can be connected via a dry contact to a device for remotely turning the unit on/off such as a switch or timer

The logic provides:

Closed contact: Unit OFF

Open contact: Unit ON



### 4.1.2.5 BOOSTER CONNECTION

There is provision for connecting a contact that brings the ventilation speed to maximum speed;

Connection is made on terminals IN1 as shown on the wiring diagram

Contact closed - booster speed active



Booster



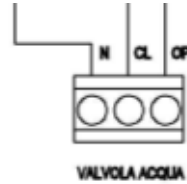
IN1

Booster connection

### 4.1.2.6 VALVE/POST COIL CONNECTION

The unit provides control of an electric post valve/battery, through the 230v control provided on the board;

- N- COMMON
- CL- FIXED VOLTAGE FOR 3-POINT VALVE CONTROL
- CP- VALVE ON-OFF CONTROL 2-3 POINTS



Water Valve / Post Battery Connection



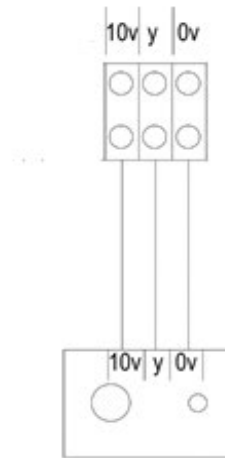
### 4.1.3 ELECTRICAL CONNECTIONS -S- VERSION



#### 4.1.3.1 STANDARD SPEED SWITCH CONNECTION

The unit, provides a controller connected as standard for speed control and on/off switching of the unit.

Use 3-wire shielded/braided cable for connection;



*RDV connection*

#### 4.1.3.2 EXTERNAL 0-10V DC SIGNAL CONNECTION

A 0-10V DC signal can be connected, to control the speed of the fans if the RDV controller is not used;

N.B do not reverse the polarity, it will cause breakdown of the fans electronics;

0v - (reference signal -)

Y - (0-10v signal for speed control)



*0-10V DC signal connection*

### 4.1.3.1 BYPASS-FREE COOLING DAMPER CONNECTION

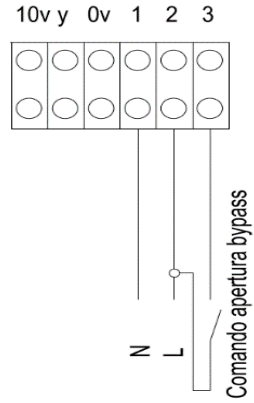
There is a bypass damper at the terminal block for enabling summer free cooling; An external control must be provided to enable this function by detecting the indoor and outdoor temperature;

Follow the connections:

1-Neutral

2-Phase

3-Command/open phase



*Bypass damper opening control*

#### 4.1.4 ELECTRICAL BATTERIES



The unit can be equipped with an electric battery that can be installed in the ways shown below. The battery is operated directly from the unit in version I and has an internal thermostat for further regulation. For details of electrical connections follow the directions in the battery manual itself. Version I directly controls the electric battery through the Chiller contact on the board;

##### Battery with preheating function

Battery has the function of defrosting and frost protection of the unit.

Installation:

- mount the heater on the "fresh air" duct;
- connect the heater to the power supply with a dedicated line;
- set the temperature on the internal thermostat to 2 °C;.

The battery in any case should be installed with the cover upward to avoid malfunction of safety devices.

##### Battery with post-heating function

The battery, in winter, has the function of heating the air entering the home to the required comfort temperature.

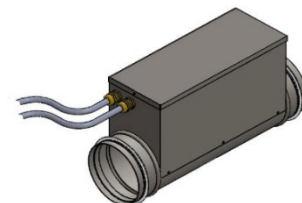
Installation:

- mount the heater on the "supply" duct;
- connect the heater to the power supply with a dedicated line;
- set the temperature on the internal thermostat to the desired temperature (e.g. 18 °C);

The battery in any case should be installed with the cover upward to avoid malfunction of safety devices.

To select the pre or post function follow the dip-switch settings instructions in the commissioning chapter.

When the unit is put into summer mode, it is necessary to disconnect the power supply voltage to the electric battery



Electrical battery

#### 4.1.5 HYDRONIC BATTERIES

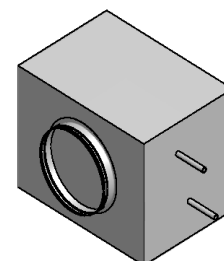


As an alternative to electric coils, the unit can be equipped with a hydronic battery capable of heating/cooling the air entering the building, thus enabling it to be brought to the set temperature. The hydronic battery in cooling mode will be able to provide dehumidification of the incoming air.

Version I, controls the coil through the Valve control (2-point control) and through the Chiller dry contact that can be used to activate the generator.

Installation:

- Mount the battery on the "supply" duct
- Connect the water piping to the coil
- Connect the condensate drain





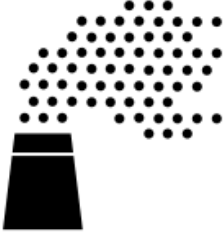

Hydronic battery

## 5 COMMISSIONING AND MODE OF OPERATION

### 5.1.1 GENERALITY

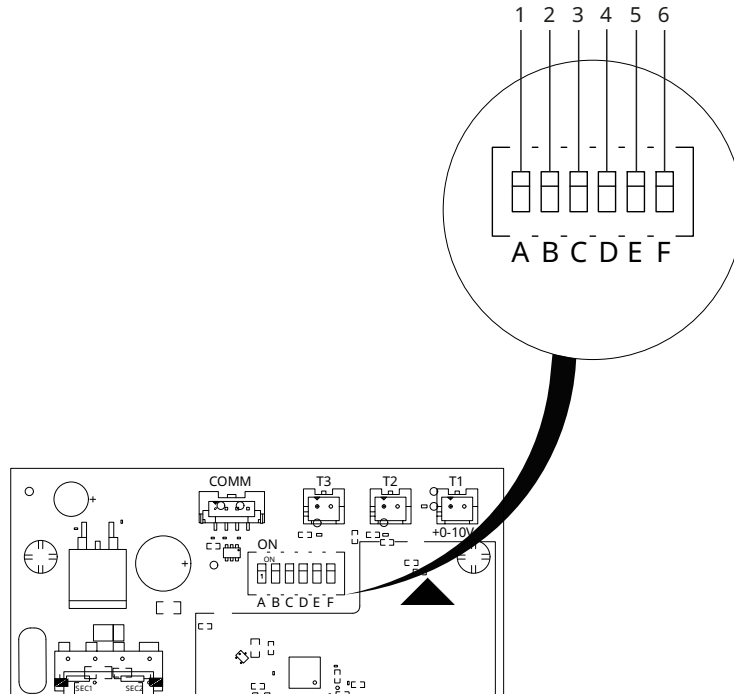
In order to ensure the “drainage” of naturally occurring moisture inside the home, the unit must continuously operate at least at reduced speed (speed 1). Turning off the ventilation unit could result in condensation inside in the unit and inside the building with possible moisture damage. Commissioning of the unit and any changes to the factory settings should only be done by qualified personnel (licensed installer)

### 5.1.2 OPERATION -I- VERSION

<p>The unit is fully manually controlled by the user through the wall-mounted touch control;</p> <p>The remote control includes within it the air quality and humidity sensor for automatic control of air flow rate;</p> <p>The sensor interact to adjust the air flow rate and ensure the comfort of humidity and air quality inside the room</p>			
<p>The control that includes the Wi-Fi module allows the unit to be controlled through a dedicated APP to monitor and set the status of the sensors and the operation of the machine from mobile devices locally and remotely via cloud.</p>			
	Humidity sensor	Air quality sensor	WIFI module (optional)
Remote control			








### 5.1.3 DIPSWITCH SETTINGS

There are 4 dipswitches at the top of the board for the various operating configurations of the unit; It is essential to set the dip-switches correctly; directions for the various operating modes are repeated below;




DIPSWITCH FUNCTIONS		
DIP SWITCH A	ON	OFF
	Pre-heating battery activation CHILLER contact	Activation of post-heating battery CHILLER contact
DIP SWITCH B	ON	OFF
	- Enabling unit with modulating coil control	- Disabling modulating coil control unit
N.B The unit model is factory preset to OFF; do not change the setting to avoid unit malfunction.		
DIP SWITCH C-D	The combination of these Dip Switches decides the operation of the humidity and air quality sensors	
	ON OFF	OFF ON
	Room humidity control	Quality control of the environment
	ON ON	OFF OFF
	Humidity and ambient air quality controls active The maximum value between the two calculated values is used.	Humidity and room air quality controls disabled
DIP SWITCH E	ON	OFF
	Configuration B	Configuration A (standard)
DIP SWITCH F	ON	OFF
	RTU (standard)	ASCII


## 5.1.4 OPERATION -I- VERSION

<p>The unit is fully manually controlled by the user through the wall-mounted touch control.</p> <p>The remote control includes the air quality and humidity sensor inside for automatic air flow control.</p>				
Remote Panel				
<p>Below are the keys found in the main mask</p>	Meaning of the keys in the main display:			
		<p>Allows the unit to be turned on/off from the keyboard</p>		<p>Key for changing the temperature set</p>
		<p>Buttons for selecting ventilation speed: Silent / rated / maximum</p>		<p>Key for summer/winter selection</p>
		<p>Key for rated speed and sensor operation</p>		<p>ALARM Reporting.</p>
	Main mask key display			


### 5.1.4.1 TURNING THE UNIT ON-OFF

<p>The unit can be enabled and disabled through the On / Off button on the display.</p>	
Power on / Power off unit	


### 5.1.4.2 HUMIDITY AND IAQ DISPLAY

<p>A long press (3 sec) of the center fan key will immediately show the humidity reading.</p> <p>Pressing the same key again for 3 seconds will change to the IAQ value.</p> <p>Wait 10 seconds without pressing any key for automatic exit from this menu and return to the main menu.</p>	
Humidity set adjustment	


### 5.1.4.3 CHANGE FAN SPEED AND BOOSTER FUNCTION

<p>There are buttons on the display for selecting the desired speed of the unit;          Each time the speed is selected, after 1 second there is the actual change in fan speed.          Selectable speeds are three:          Night (minimum speed) - nominal (medium speed) - maximum (highest speed).</p>	
<p>Booster control, which becomes priority over any speed, is managed through the digital contact;</p>	<p>Fan speed management</p>

### 5.1.4.4 RATED SPEED FUNCTION

<p>When the auto button is pressed, the unit will operate according to the demand setting of the humidity and air quality sensors according to the dipswitch settings made in unit startup;          If the sensors are set the logics will be as follows:          -Humidity sensor:          -in winter, the flow rate adjustment increases according to the increase in humidity;              In this way the room humidity is controlled to have correct humidity in the room;          -in summer, the adjustment is reversed and the flow rate decreases with increasing indoor humidity;              this is because in summer the absolute outdoor humidity contributes to the increase in indoor relative humidity;          -Air quality sensor IAQ:</p>	
<p>In both seasons the unit detects the air quality index; This numerical value ranges from 0 (very good air quality) to 5 (very bad air quality). The sensor ranges are.</p> <ul style="list-style-type: none"> <li>- 0 to 1.99: Excellent air quality</li> <li>- 2 to 2.99: Good air quality</li> <li>- 3 to 3.99: Average air quality; Exposure to these values for more than 12 months is not recommended</li> <li>- 4 to 4.99: Poor air quality; Exposure to these values for more than 1 month is not recommended</li> <li>- 5: Unacceptable air quality; Exposure to these values is not recommended</li> </ul> <p>The Recommended Setting Value found set by default is 2.5.  <b>Changing this parameter is available only in the installer menu, accessible by authorized personnel.</b></p>	<p>AUTO function</p>

### 5.1.4.5 SEASONAL CHANGE

<p>Season change on version I must be done from the keyboard;          Press and hold the season change key for at least 3 seconds to change the season status;          The operation must be compulsorily performed to activate the correct logics:          In winter the antifreeze function and in summer the bypass function;          Symbol logic: SUN - WINTER SNOWFLOW - SUMMER</p>	
	<p>Season Change</p>


#### 5.1.4.6 KEY LOCK

<p>Pressing the + and - keys simultaneously for 3 seconds activates the local lock of all keys, confirmation is given by the display of bL. All adjustments are inhibited to the user, and bL appears when any key is pressed. Repeating the sequence will unlock the keys.</p>	<h1>bL</h1>
Key lock	


#### 5.1.4.7 PANEL BRIGHTNESS ADJUSTMENT

<p>With panel off, press and hold the + key for 5 seconds until 01 appears. With the - key, bring the value to 00 and wait 20 seconds for verification of the correct setting.</p>	<h1>0/0</h1>
Brightness adjustment	

#### 5.1.4.8 TEMPERATURE SET POINT FOR POST BATTERY CONTROL

<p>The temperature set point is made by pressing the + and - buttons; The panel always shows the detected temperature, upon pressing one of the two buttons next to it, the temperature set point is shown immediately, and it will be possible to change the Set temperature value;</p>	
Temperature set adjustment	

#### 5.1.4.9 HUMIDITY SET POINT AUTO AIR FLOW RATE ADJUSTMENT

<p>Humidity set point is done by prolonged pressure (3sec) of the center fan button; The panel immediately shows the detected humidity, upon pressing either of the + and - buttons, the humidity set point is immediately shown and it will be possible to change the humidity set point value; Wait 10 seconds without pressing any buttons for automatic exit from this menu and return to the main menu.</p>	
Humidity set adjustment	



## 5.1.5 ACCESSORIES

### 5.1.5.1 ELECTRIC BATTERY ACCESSORY CONNECTION COMPLETE WITH ADJUSTMENT -BER-

Electric pre/post heating units with circular cross-section consist of galvanized sheet metal frame with wire heating element.

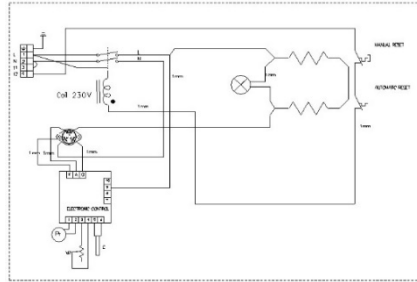
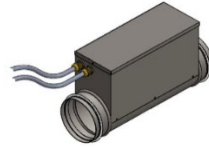
They are fitted with circular flanges that facilitate installation to the duct.

The side electrical box already complete with grommet allows access to the components inside:

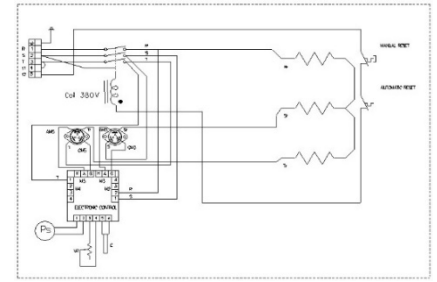
- Automatic reset thermoprotector
- Manual reset thermoprotector
- Remote control switch
- Terminal board
- Adjustable electronic temperature control

The stepped electronic controller complete with temperature probe to be installed at least 1 meter away from the coil that allows control of the supply air temperature after the heater with the highest accuracy. The electric battery is provided for stand-alone installation without any communication with the unit.

**Terminals 3-4 NTC 10K EXTERNAL probe**



*Single-phase version 230/1/50*



*Three-phase version 400/3/50*

*Electrical battery BER connection diagram*

### 5.1.5.2 ACCESSORY CONNECTION BAF WATER COOLING COIL -BAF-

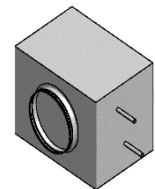
Water coils consist of galvanized sheet metal frame and a heat exchange coil composed of copper pipes and aluminum fins.

They are fitted with circular flanges that facilitate installation to the duct.

They are equipped with threaded connections including valves for air venting and battery discharge.

A condensate drain must be provided for the summer function of the battery.

The water battery is intended for stand-alone installation without any communication with the unit.



*BAF*

### 5.1.5.3 BAF ACCESSORY CONNECTION BATTERY KIT PRESSURE SWITCH FILTERS

Units can be set up with a filter pressure switch for filter status signaling;

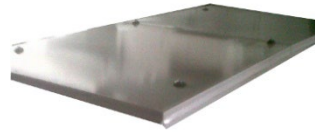
The pressure switch is installed and provides a dry contact for filter cleaning signaling.



#### 5.1.5.4 CONNECTION OF RAIN ROOF ACCESSORY FOR OUTDOOR INSTALLATION

Rain cover roof made of prepainted sheet metal to protect the unit from the weather in case of outdoor installation.

Comes with self-drilling screw complete with suitable gasket for water tightness.



*Image TVE / THE and screws with gasket for fixing to unit*

## 6 MAINTENANCE

To ensure proper and optimal operation of the unit at all times, all maintenance should be performed periodically.

### 6.1.1 CLEANING OR REPLACING FILTERS

To replace the filters, or perform filter cleaning, proceed as follows:

- remove power from the unit;
- open the filter covers through the dedicated screws;
- remove the dirty filters;
- gently insert the new filters;
- close the cover again with the dedicated knobs;

If the condition of the filters permits, they can be cleaned using a vacuum cleaner or low-pressure compressor.



View for filter extraction

### 6.1.2 HEAT EXCHANGER CLEANING



It is recommended that the condition of the heat exchanger be checked at each cleaning/filter change and cleaned if deemed appropriate. This operation should only be carried out by qualified personnel (installer).

To clean the heat exchanger, proceed as follows:

- disconnect power supply to the unit;
- in case of ceiling installation, disconnect the condensate drain pipe;
- open the unit cover by turning the 4 latches on it by 90° with a wide-head screwdriver;
- pull out the heat exchanger;
- clean very gently using a vacuum cleaner or low-pressure compressor (to prevent dirt from entering the heat exchanger, clean in the direction opposite to the direction of air flow);
- insert the exchanger back into place;
- close the cover by locking it in place with the 4 catches.

**Attention!** Never touch the fins of the exchanger, handle the exchanger by holding it only on the closed sides.



Unit view for exchanger removal

### 6.1.3 GENERAL UNIT CLEANING !

It is recommended that the fans, condensate drain and internal walls of the unit be checked and cleaned occasionally. These operations should only be carried out by qualified personnel (installer).

To perform the above operations, proceed as follows:

- disconnect power to the unit;
- in case of ceiling installation, disconnect the condensate drain pipe;
- open the unit cover by turning the 4 latches on it by 90° with a wide-head screwdriver;
- proceed to check and possibly clean the fans, condensate drain and walls;
- close the cover again, locking it in place with the 4 catches;
- connect the power cord and turn on the unit from the switch on the side panel.

A vacuum cleaner, a rag dampened slightly with water, a soft-bristled brush, or a low-pressure compressor can be used for cleaning.

**Attention!** There are small metal clips on the blades for balancing the blades, DO NOT remove them.



*General unit cleaning*

## 7 ALARMS

### 7.1.1 GENERALITY

In case of problems or faults, take note of the model and serial number of the unit you own (found on the identification plate attached to the side of the unit) and contact the installer.

The following is the table of unit malfunctions

FAULT DESCRIPTION	CAUSE	REMEDY
Fans are not active	<ul style="list-style-type: none"> <li>- The power supply is not switched on</li> <li>- The fan speed control device does not work</li> <li>- Incorrect electrical connections</li> <li>- Fans in thermal protection</li> </ul>	<ul style="list-style-type: none"> <li>- Check the power supply on the fan</li> <li>- Check the fan speed control device</li> <li>- Check that the fan is not overheated and in thermal protection</li> </ul>
Insufficient air flow rate or useful pressure	<ul style="list-style-type: none"> <li>- Clogged filters</li> <li>- Insufficient rotational speed</li> <li>- Clogged pipes or exchanger</li> </ul>	<ul style="list-style-type: none"> <li>- Clean the filters</li> <li>- Increase the speed of rotation</li> <li>- Clean piping or exchanger</li> </ul>
Insufficient exchanger efficiency	<ul style="list-style-type: none"> <li>- Clogged exchanger fins</li> </ul>	<ul style="list-style-type: none"> <li>- Clean the surfaces of the exchanger</li> </ul>
Excessive vibration and noise	<ul style="list-style-type: none"> <li>- Improper installation of the unit</li> <li>- Improper installation of piping</li> <li>- Fan impeller imbalance</li> </ul>	<ul style="list-style-type: none"> <li>- Check brackets and fastenings of the unit</li> <li>- Check brackets and pipe fixings</li> <li>- Check state of fan impellers</li> </ul>
Water leaks from the unit	<ul style="list-style-type: none"> <li>- Clogged condensate drain</li> <li>- Siphon not installed properly</li> </ul>	<ul style="list-style-type: none"> <li>- Clean the condensate drain</li> <li>- Verify the correct installation of the siphon</li> </ul>
Difficult startup	<ul style="list-style-type: none"> <li>- Supply voltage too low</li> <li>- Insufficient motor torque</li> </ul>	<ul style="list-style-type: none"> <li>- Check the supply voltage that is not below 10% of the rated nameplate voltage</li> <li>- Power the unit with partially closed dampers so as to reduce the starting torque of the motor. In case of correct starting, replace the motor with an oversized one.</li> </ul>

## 7.1.2 DISPLAY ALARM TABLE - I VERSION -

The following is the table of unit malfunctions reported, in electronic I versions, by the remote display.

CODE	DESCRIPTION	CAUSA	REMEDY	CARD FLASHES
E1	Alarm Shooting probe T1	Breakage or failure to read the probe	Check the probe connection or replace the probe	1 blink - off 3 seconds
	Fan alarm	Fan connector faulty or feedback signal absent	Check the fan connector connection to the board Replace the fan control cable	2 flashes - off 3 seconds
	Alarm Ejection Probe T2	Breakage or failure to read the probe	Check the probe connection or replace the probe	3 flashes - off 3 seconds
	Outdoor Air Probe Alarm T3	Breakage or failure to read the probe	Check the probe connection or replace the probe	5 flashes - off 3 seconds
	Remote display link alarm	Error in connecting the remote display	Verify electrical connections Verify that A and B are not reversed Verify proper insertion of the display connection board on the main board	Led Off
	Remote display communication alarm	Failure of communication between display and board for at least 300 seconds.	Check the status of the filter and press and hold the on off button to reset the signal; Verify that A and B are not reversed Verify correct insertion of the display connection board on the main board	6 flashes - off 3 seconds



**REV.01 - 03-2024**

**N420953A**



The data in this manual may be changed by the manufacturer without notice.