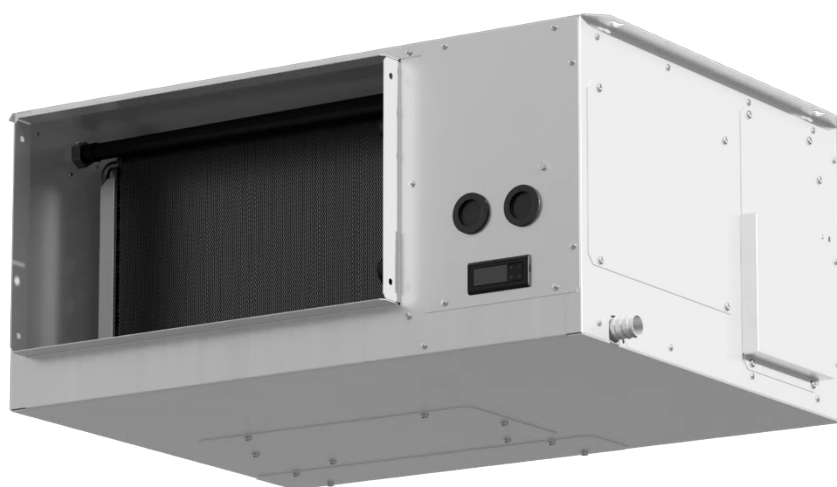




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# RS

**Dehumidifiers for radiant systems**

**USE, MAINTENANCE AND  
INSTALLATION MANUAL**

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# RS

## Dehumidifier for radiant systems



**BEFORE USING THE UNIT, PLEASE READ THIS MANUAL CAREFULLY**

Dear customer,

in thanking you for choosing one of our products, we are pleased to deliver this manual to you in order to enable you to make optimal use of the unit for better comfort and increased safety.

Please read the recommendations on the following pages very carefully and make the manual available to personnel who will be operating and maintaining the unit.

Our company is at your complete disposal for any clarifications you may need both in the start-up phase of the unit and at any time of its use.

At times when routine or extraordinary maintenance operations will be necessary, we place our Technical Service at your disposal from now on to provide you with all assistance and spare parts.

For a faster working relationship, we indicate how to contact us:



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## 1 FOREWORD

This manual indicates the intended use of the unit and provides instructions for transporting, installing, assembling, adjusting, and operating the unit. It also provides information for maintenance work, ordering of spare parts, presence of residual hazards, and instruction of personnel.

The manual should be read and used as follows:

- every operator and personnel assigned to the use and maintenance of the unit shall read this manual entirely and with the utmost attention and comply with what is stated;
- the employer is obliged to ensure that the operator possesses the aptitude requirements for operating the unit and has carefully read the manual; the employer must also thoroughly inform the operator about the risks of injury and especially the risks from noise, the personal protective devices provided, and the general accident prevention rules required by international laws or standards and those of the country of destination of the unit;
- the manual must be available at all times to the user, those responsible, those in charge of transportation, installation, use, maintenance, repair, final dismantling;
- Keep the manual in areas protected from moisture and heat and consider it an integral part of the unit throughout its life, handing it over to any other user or subsequent owner of the unit;
- ensure that any updates received are incorporated into the text;
- do not damage, remove, tear or rewrite the manual or parts of it for any reason whatsoever, in case it is lost or partially ruined in any case and therefore its contents can no longer be read completely it is recommended to request a new manual from the manufacturer by communicating the serial number of the machine on the data plate.

Pay close attention to the following symbols. Their function is to emphasize particular information such as:



***With reference to serious dangerous situations that may occur with the use of the unit to ensure the safety of people.***



***With reference to dangerous situations that may occur with the use of the unit to prevent damage to property and the unit itself.***



***In reference to additions or suggestions for the proper use of the unit.***

The manufacturer has the right to update production and manuals, with no obligation to update earlier versions except in special cases.

This manual reflects the state of the art at the time the unit was marketed and cannot be considered inadequate merely because it has been subsequently updated based on new technology.

To request any updates to the manual or additions, which will be considered an integral part of the manual, please submit your request to the contact information listed in this manual.

Contact the manufacturer for more information and for any suggestions for improving the manual.

The manufacturer invites you, if you transfer the unit, to report the address of the new owner to facilitate the transmission of any additions to the manual to the new sender.

## 1.1 RESPONSIBILITY

The unit is guaranteed according to the contractual agreements made at the sale.

The manufacturer shall be relieved of all liability and obligations, and the form of warranty provided in the sales contract for any accident to persons or property that may occur due to:



**ATTENZIONE  
WARNING**

**failure to follow the instructions in this manual with regard to operation, use, maintenance, and events otherwise unrelated to the normal and proper use of the unit;**

- Changes made to the unit and safety devices without prior written permission from the

manufacturer;

- Attempts at repairs made on their own or by unauthorized technicians;
- Failure to perform regular and consistent maintenance or use of non-original spare parts.

In any case, if you attribute the accident to a defect in the unit, you must prove that the damage that occurred was a main and direct consequence of that "defect."

## 1.2 STANDARDS FOR PROPER OPERATION

Failure to follow the instructions in this manual with regard to operation, use, maintenance, and all occurrences otherwise unrelated to the normal and proper use of the unit will immediately void the warranty. In all lifting operations, be sure to securely anchor the unit in order to prevent accidental tipping or falling. Do not move or lift the unit by the removable panels. Initial start-up should be carried out only by qualified personnel authorized by the manufacturer.

All operators must comply with international accident prevention regulations and those of the unit's country of destination in order to avoid possible accidents.

Place the unit in environments where there is no danger of explosion, corrosion (proximity to the sea), fire or where vibration and electromagnetic fields are present. It is also forbidden to operate other than as indicated or to neglect operations necessary for safety. In some areas of the unit there are residual hazards that could not be eliminated in the design phase or delimited with guards given the particular functionality of the unit. Each operator should be aware of the residual hazards present in this unit in order to prevent possible accidents. Once the unit has been cleaned, the operator should check that there are no worn or damaged parts or parts that are not solidly attached; if not, ask the maintenance technician for assistance.

Maintenance should be carried out in the absence of power and by trained personnel. Ensure that the unit is disconnected from the power supply.

If the unit, or any part of it, has been taken out of service, its parts susceptible to cause any danger should be made harmless.

Disassembly and demolition operations must be carried out by qualified personnel.

## 1.3 STANDARDS OF SERVICE

The service regulations described in this manual are an integral part of the delivery of the unit.

These standards, moreover, are intended for the operator already expressly instructed to conduct this Type of unit and contain all necessary and indispensable information for the safe operation and optimal use of the unit.

Rushed and deficient preparations force improvisation, which causes many accidents.

Carefully read and strictly adhere to the following suggestions:



### ATTENZIONE WARNING

**initial start-up should only be carried out by qualified personnel authorized by the manufacturer;**

- when installing or when any work is to be done on the unit, it is necessary to strictly adhere to the regulations in this manual, observe the directions on board the unit, and otherwise apply all appropriate precautions;
- possible accidents to persons and property can be avoided by following these technical instructions compiled with reference to the Machinery Directive 2006/42/EC and subsequent supplements. In any case always comply with national safety regulations;
- Do not remove or deteriorate protections, labels and markings, especially those required by law, and, if no longer legible, replace them.

Machinery Directive 2006/42/EC gives the following definitions:

**HAZARDOUS AREA:** *Any area in and/or near a machine where the presence of an exposed person poses a risk to the safety and health of that person.*

**EXPOSED PERSON:** *Any person who is wholly or partially in a hazardous area.*

**OPERATOR:** *The person(s) in charge of installing, operating, adjusting, maintaining, cleaning, repairing, and transporting the machine.*



### AVVERTENZA CAUTION

*All operators must comply with international accident prevention regulations and those of the unit's country of destination in order to avoid possible accidents.*

As a reminder, the European community has issued a number of directives concerning the safety and health of workers including 89/391/EEC, 89/686/EEC, 89/654/EEC, 89/655/EEC, 89/656/EEC, 86/188/EEC, 92/58/EEC and 92/57/EEC, which each employer is obliged to comply with and enforce.

The units were designed and built according to the current state of the art and current rules of technology.

Compliance was made with the laws, regulations, prescriptions, ordinances, and directives in force for such machines.

The materials used and equipment parts, as well as the manufacturing, quality assurance and control procedures, meet the highest requirements for safety and reliability.

Using them for the purposes specified in this user's manual, operating them with due diligence, and performing thorough maintenance and overhaul in a workmanlike manner will maintain the units' continuous performance and functionality and longevity.

## 1.4 INTENDED USE.

RS units are dehumidifiers, to be installed in conjunction with radiant systems, to dehumidify, or cool and dehumidify air.

Its use is recommended within the operating limits given in this manual.



**PERICOLO  
DANGER**

***Place the unit in environments where there is no danger of explosion, corrosion (proximity to the sea), fire, and where vibration and electromagnetic fields are present. It is also forbidden to operate other than as indicated or to neglect operations necessary for safety.***

## 1.5 RESIDUAL RISK ZONES



**PERICOLO  
DANGER**

***There are residual hazards present in some areas of the unit that could not be eliminated in the design phase or delimited with guards given the special functionality of the unit. Each operator should be aware of the residual hazards present in this unit and should use caution and appropriate precautions in order to prevent possible accidents.***

- Danger of short circuit and fire caused by short circuit;
- danger of explosion due to the presence of pressure circuits and pollution due to the presence of Refrigerant in the circuit;
- Burn hazard due to the presence of high-temperature piping;
- danger of stab wounds.

## 1.6 INTERVENTIONS AND MAINTENANCE

It should be remembered that the manual is never a substitute for adequate user experience; for some particularly demanding maintenance operations, this manual is a reminder of the main tasks to be performed by operators with specific training acquired, for example, by attending training courses at the manufacturer.

Please read the following suggestions carefully:

- Constant and thorough preventive maintenance always ensures the high operational safety of the unit. Never put off necessary repairs and have them carried out only and exclusively by trained personnel, using only original spare parts;
- Plan each intervention carefully;
- The operators' workplace must be kept clean, tidy and clear of objects that may restrict free movement;
- Operators must avoid clumsy operations, in awkward positions that may affect their balance;
- Operators should pay attention to the risks of trapping clothing and/or hair in moving organs; the use of long hair restraining caps is recommended;
- The use of chains, bracelets and rings can also pose a danger;
- The workplace must be adequately lit for the intended operations. Insufficient or excessive lighting can lead to hazards;
- Wait about 10 minutes after the unit is turned off before doing any maintenance work to avoid burns;



**PERICOLO  
DANGER**

***Do not repair high-pressure piping with welds  
The pressurized fluids in the refrigeration circuit and the presence of electrical components, can  
Create risky situations during installation and maintenance work;***

- Minimize the opening time of the refrigeration circuit. Reduced oil exposure times to air also cause the oil to absorb large amounts of moisture, resulting in the formation of weak acids;
- any work on the unit must be carried out by qualified personnel;
- Before performing any work or maintenance on the unit, be sure to turn off the power supply;
- make sure that the safety devices are working properly and there is no doubt about their operation; otherwise, do not start the unit under any circumstances;
- Use only tools prescribed by the unit manufacturer. In order to avoid personal injury, do not use worn or damaged, low-quality or improvised tools;



**PERICOLO  
DANGER**

***Once the unit has been cleaned, the operator should check for any worn or damaged parts or parts that are not solidly attached; if not, ask the maintenance technician for assistance;***

- Always keep the area where the unit is located clean and tidy. Oil and grease spills, tools or scattered broken parts are harmful to people because they can cause slips or falls;

- The use of flammable fluids in cleaning operations is prohibited.

When cleaning the unit, do not use diesel oil, petroleum or solvents as the former leave an oily coating that promotes dust adhesion, while solvents (even if weak) damage the paint and thus promote rust formation. If a water jet penetrates electrical equipment in addition to inducing oxidation of contacts, it can cause the unit to malfunction. Therefore, do not use water or steam jets on sensors, connectors or any electrical parts.

Special attention should be paid to the state of integrity of pressurized piping or other parts subject to wear. It should also be checked for leaks of fluid, or other hazardous substances.

If such situations occur, it is forbidden for the operator to restart the unit before it is remedied.

## 1.7 GENERAL SAFETY REGULATIONS

### 1.7.1 Bring protective clothing

Each operator must use personal protective devices such as gloves, helmet for head protection, safety glasses, safety shoes, noise protection earphones.



### 1.7.2 Fire extinguisher and first aid

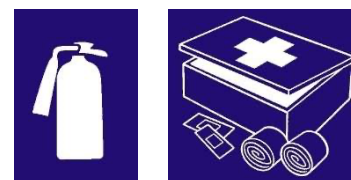
Place a first-aid kit and a fire extinguisher near the unit.

Ensure periodically that fire extinguishers are charged and that it is clear how to use them.

In case of fire, use it according to current regulations and contact the fire department.

Check periodically that the first aid kit is complete.

Make sure to have first aid phone numbers nearby.



**AVVERTENZA**  
**CAUTION**

*The provision of a fire extinguisher and first aid kit is the responsibility of the owner of the property on which the unit is installed.*

### 1.7.3 Warnings for testing and maintenance

Affix a sign reading, "IN MAINTENANCE" on all sides of the unit.

Check the unit carefully by following the list of operations in this manual.



### 1.7.4 Safety plates



Generic hazard



Danger of moving organs



Danger of stab wounds



Presence of hazardous electrical voltage



Burn Hazard

## 2 DESCRIPTION OF THE PRODUCT

### 2.1.1 Series

|            |            |
|------------|------------|
| RS 050 "A" | RS 050 "I" |
| RS 100 "A" | RS 100 "I" |

The ducted horizontal **RS** suspended ceiling dehumidifiers are designed for use in residential, commercial and tertiary environments with high latent load where 24 h/day operation is required.

They are particularly suitable in buildings where room cooling is done by radiant systems such as floor, wall, ceiling or column.

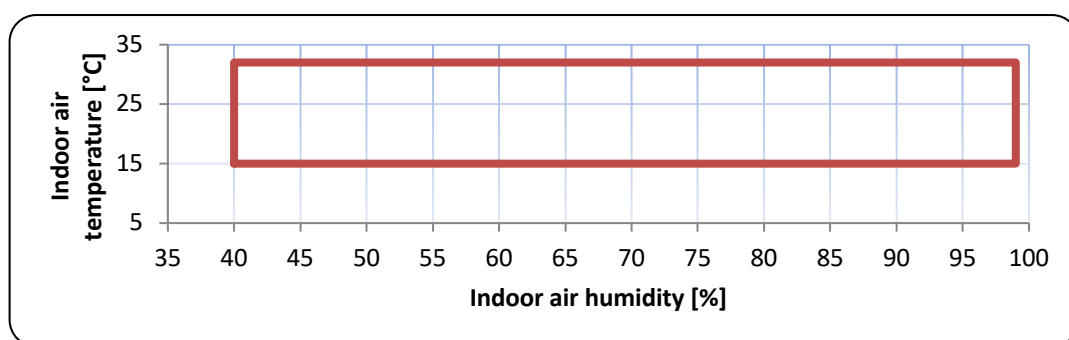
The units if properly supplied with chilled water at 15°C are able to dehumidify the ambient air without altering its temperature.

Models with function "A" (isothermal) are equipped with 2 heat exchangers whose purpose is to pre-cool the incoming air and post-cool it after the dehumidification process so as not to alter the air temperature.

Models with the "I" (hybrid) function are equipped with a heat exchanger whose purpose is to pre-cool the incoming air, and with a suction room probe and brazed plate condenser that enable the unit to provide cooled air should the room temperature exceed the set-point set on the dehumidifier. The RS "I" unit cannot operate without chilled water, and should this occur it will go into lockout.

With water below 8°C and above 32°C the unit will go into alarm until the correct water temperature is restored. The low air velocity will also not create the annoying drafts typical of traditional air conditioning systems, thus ensuring maximum environmental comfort. The exclusive use of absolute quality components in refrigeration, hydraulic, aeratic and electrical components make RS units state-of-the-art dehumidifiers in terms of efficiency, reliability and sound power output.

## 2.2 OPERATIONAL LIMITS



*Temperature and humidity conditions at the installation site must comply with the limits given in this section. These operating limits apply to both the air entering the unit and the environment in which the unit is located. Failure to comply with these limits may result in damage to the unit.*

*RS dehumidifiers cannot operate without chilled water, which must meet the rated flow rate lt/hr in the technical data. In the event that this is not done, a blockage of the unit will occur.*

## 2.3 OPTIONS AND FUNCTIONS

|                            | Basic Control |     | Touch Display |     |
|----------------------------|---------------|-----|---------------|-----|
|                            | 050           | 100 | 050           | 100 |
| RS485 serial card - Modbus | OPTION        |     | OF SERIES     |     |
| Dew point management       | -             |     | OF SERIES     |     |
| Room temperature probe     | OPTION        |     | -             |     |
| Room humidity probe        | OPTION        |     | -             |     |
| Wooden cage                | OPTION        |     |               |     |
| Delivery plenum            | OPTION        |     |               |     |

### 2.3.1 RS485 Modbus serial card - optional with basic control, standard with touch display

RS485 Modbus bus connection is made available for supervising the unit remotely or from home automation system. *The request must be made when ordering.* More information on request.

### 2.3.2 On-board suction T-probe - optional, only with basic control ("I" versions only)

It allows you to control the temperature of the room, without the need for a thermostat. It consists of a probe placed in the intake that activates, in the user menu, the ability to set a temperature setpoint.

### 2.3.3 On-board suction RH probe - optional, only with basic control

It allows room humidity to be controlled without the need for a hygostat. It consists of a probe placed in the intake that makes available, in the user menu, the ability to set a humidity setpoint.

### 2.3.4 Dew point management (Dew point) - only with Touch Display

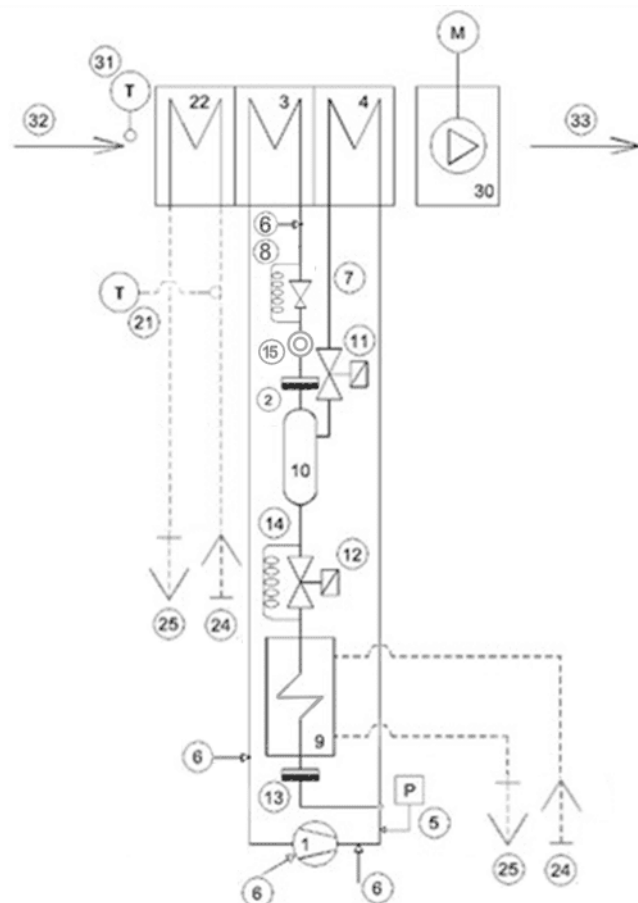
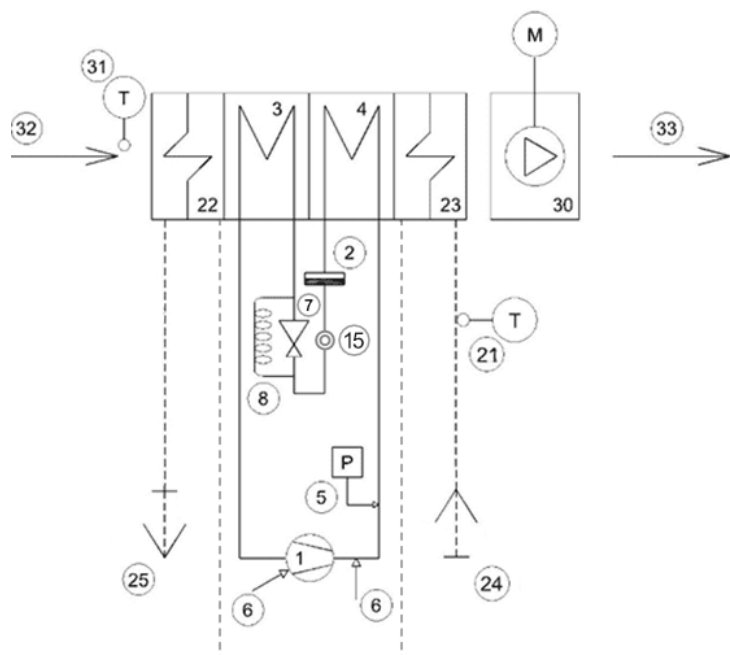
This function is intended to measure the risk of surface condensation and, consequently, to activate protection strategies when necessary. Specifically, it will activate dehumidification and decrease air exchange<sup>1</sup> in order to reduce moisture ingress into the room. The threshold for activating the function is calculated by comparing the surface temperature of the radiant terminals with the dew temperature of the air in the room in real time: should the former be close to the latter, the alarm will be activated. The surface temperature can be defined by the user in two ways: as a "variable dew point," which is the sum of the water temperature measured at the unit inlet (assuming it is the same as the radiant system) and a user-definable differential, or as a user-defined fixed value (fixed dew point). It is also possible, to read via Modbus an active or inactive "Dew point (Dew point)" status and, via the configurable output, to send a "Dew point (Dew point)" alarm from the unit (more information in the installer menu chapter).

<sup>1</sup>Available when connected to an RDE/RCE/RFE heat recovery unit.

### 3 REFRIGERATION CIRCUITS AND PLUMBING

RS 050-100 "A" (isothermal)

RS 050-100 "I" (hybrid)



- 1 compressor
- 2 Filter drier
- 3 Evaporating coil
- 4 Condensing battery
- 5 Pressure safety switch
- 6 Service outlet
- 7 Laminating organ
- 8 Capillary equalizing rolling organ (100 models only)
- 15 Glass indicator light
- 21 Inlet water temperature probe
- 22 Pre-cooling battery
- 23 Post-cooling battery
- 24 Water inlet from radiant system
- 25 Water return to radiant system
- 30 Fan
- 31 Room air temperature probe
- 32 air inlet
- 33 Air outlet

- 1 compressor
- 2 Filter drier
- 3 Evaporating coil
- 4 Condensing battery
- 5 Pressure safety switch
- 6 Service outlet
- 7 Laminating organ
- 8 Capillary equalizing rolling organ (100 models only)
- 9 Plate capacitor
- 10 Liquid receiver
- 11 Room temperature control solenoid valve
- 12 Solenoid valve 2 temperature control (100 models only)
- 13 Mechanical filter (100 models only)
- 14 Capillary equalization room temp. control (100 models only)
- 15 Glass indicator light
- 21 Inlet water temperature probe
- 22 Pre-cooling battery
- 24 Water inlet from radiant system
- 25 Water return to radiant system
- 30 Fan
- 31 Room air temperature probe
- 32 air inlet
- 33 Air outlet

### 3.1.1 DESIGN CRITERIA

All copper pipes are made to our specifications in order to totally control their construction process and implicitly to improve the quality of our products. Each pipe meets the requirements imposed by the directive and is verified by FEM calculation code at the point most stressed by bending at 180° and at the maximum pressure allowed by the safety organs considering appropriate safety coefficients.

All units mount stainless steel condensate drip pans at the base of the exchangers.

- ❑ Compressors:  
Only leading international brand of reciprocating type compressors are used on the units. The motors are thermally protected by an internal protection that monitors the winding temperature and disables the power supply in the event of a trip.
- ❑ Refrigeration components:
  - Molecular sieve filter drier
  - Capillary expansion
  - Schrader valves for control and/or maintenance
- ❑ Heat exchange batteries:
  - Copper pipe and aluminum fin

## 4 ELECTRICAL CIRCUITS

### 4.1 ELECTRICAL EQUIPMENT

The switchboard is made and wired in accordance with the regulations mentioned in the declaration of conformity.

The control circuit is protected by special fuse.

All remote controls are realized with extra-low voltage signals, powered by an isolation transformer.



**ATTENZIONE  
WARNING**

**To shut down the unit, do not disconnect power via the protection upstream of the unit, this body should be used to section off the entire unit for maintenance. To turn off act on the user terminal.**

## 5 USE

Controlling the unit can be done in four different ways, each of which has specific advantages and use cases:

- with **basic control**, you can change humidity and temperature setpoints and control basic settings (more information to follow)
- with **touch display**, to control every function of the unit via the touch devices (see chapter "5.2 Control via touch display" for more information)
- With **switches, thermostats or regulators** (see Chapter 5.3 Control by external devices)
- by control via **Modbus** (more information in chapter "5.4 - Control via Modbus")

### 5.1 CONTROL THROUGH BASIC CONTROL



#### Quick Guide

The main functions of basic control are:

- Display whether the unit is on and the active air handling types
- Access the user menu and change temperature and humidity setpoints and view the unit's probe readings
- Access the installer menu (only for experienced users or installers)
- Signaling (visual and audible) of any alarms

The initial screen of the display is presented with the status display "On" or "OFF" ("On", "OFF"). Using the "▼" key, one can access the user menu and scroll through all its items. Otherwise, still from the initial display ("On" or "OFF"), pressing the "▲" key can turn the unit off or on again: the display will start flashing with the on/off status which, if confirmed with the "✓" key, will be activated. To cancel, press the "X" button.

#### Main keys

The functions of the main keys are as follows:

- Button "▲": increases values or scrolls editable parameters.
- Button "▼": decreases values or scrolls editable parameters.
- Button "✓": Confirm button
- Button "X": Cancel button

Note: Each time a button is pressed, a press confirmation signal is sounded.

Other uses of buttons are:

Button "▼"

- Pressed for more than 3 seconds, activates manual defrost (if there are conditions for activation).
- Pressed for more than 3 seconds. Stops defrosting (if active).

Button "✓": if an alarm is present, it activates its reset (if possible) or turns off its beep.

Button "X": if an alarm is present, it will turn off the alarm sound.

## Flashing icons



The icons on the display (shown opposite), from left to right, indicate the following states:

- **Dehumidification icon**
  - on: dehumidification active
  - off: dehumidification not active
  - flashing: dehumidification in activation
- **cooling icon**
  - on: cooling active
  - off: cooling not active
  - flashing: cooling in activation
- **heating icon**
  - on: heating is on
  - off: heating is off
- **fan icon**
  - on: fan is on
  - off: fan is off
  - Slow blinking: defrosting in progress
  - Fast blinking: dripping in progress
- **Alarm icon**
  - off: alarm absent
  - lit: alarm present (possible coexistence of multiple alarms) .

## User menu

To access this menu, with the unit turned on, from the initial "On" Screen, simply press the "▼" key.

From here he can scroll through the following parameters and possibly change their values with "▲" and "▼":▼

"Ov" or "OΦΦ" (Start).



|                 |                                       |
|-----------------|---------------------------------------|
| ΣET             | Temperature setpoint setting (summer) |
| ΣT <sub>i</sub> | Temperature setpoint setting (winter) |
| ΣTH             | Humidity setpoint setting             |
| YAM             | Room humidity display                 |
| TAM             | Room temperature display              |
| τAX             | Water probe temperature display       |
| TE <sub>ς</sub> | Evaporation probe temperature display |
| ΣT              | Season display                        |
| PEΛ             | Software review                       |



∇ΠΑΣ∇ (end)

The value of "ΣET" and "ΣTH" can be changed (respective default values are 26.0° and 60%) by accessing with the "✓" key. Once changed with "▲" and "▼", it can be confirmed or canceled with the "✓" or "X" buttons. The other parameters in the list are read-only, which can be viewed by pressing the "✓" button ("X" to go back). The last parameter "ΠΑΣ" provides access to the installer menu, where advanced settings of the unit can be configured by entering the password (see chapter "Configuration (basic control)").

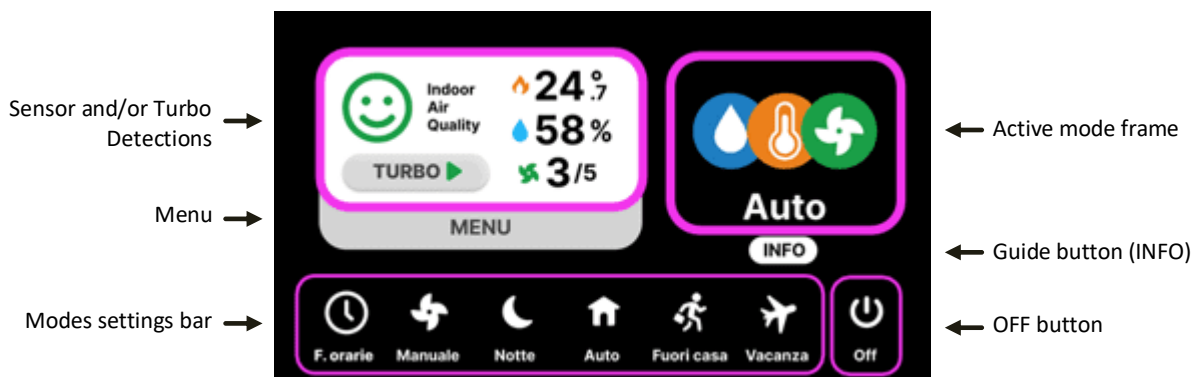


*Some parameters may not appear, depending on the version of the unit and/or the presence of optional accessories. In particular, the following parameters will appear if the conditions in the right column are met*

| Parameter       | Condition                                    |
|-----------------|----------------------------------------------|
| ΣET             | Version "I" and presence of room temp. probe |
| ΣTH             | Presence of humidity probe                   |
| YAM             | Presence of humidity probe                   |
| TAM             | Version "I" and presence of room temp. probe |
| TE <sub>ς</sub> | Version "A"                                  |

## 5.2 CONTROL BY TOUCH DISPLAY

### 5.2.1 Main screen touch display



**ATTENZIONE  
WARNING**

*The picture above and the instructions below may not represent the unit you have, some functions may be missing. This guide is intended to illustrate all possible functions.*

#### Quick Guide



**AVVERTENZA  
CAUTION**

*This is a concise guide that briefly explains the use of the touch display of RS units. For a more in-depth description, refer to subsequent chapters and/or press the "info" button on each Screen.*

The touch display shows temperature, humidity, exchange rate<sup>1</sup> and air quality<sup>1</sup> information in real time on the main screen. There is also a menu button with settings and available functions (season change, setpoint, guide, Lock etc.) and, at the bottom and right, the Modes settings selector.

- "Car" and "Night" are designed for the respective times when you are present in the home;
- "Away" and "Vacation"<sup>1</sup>, for when you are not present instead (the former for short and the latter for long periods);
- "Manual"<sup>1</sup> and "Time slots" are designed for direct control or programming of unit functions.

For more information on Modes settings, especially how they handle air treatment and how they can be customized, please refer to chapter "Modes settings". The other main special functions that can be activated are "Turbo"<sup>1</sup>, "Silent Mode," "Lock," and "Time slots."

<sup>1</sup>Available when connected to an RDE/RCE/RFE heat recovery unit.

#### Main Screen

Temperature, humidity, air quality<sup>1</sup> and ventilation<sup>1</sup> readings appear in this Screen. Referring to the previous image (main display screen), we illustrate each function here:

- **Sensor readings:** these are the current values of temperature, humidity, ventilation<sup>1</sup> and IAQ<sup>1</sup>. Next to each is an icon that, when colored, indicates the Type of treatment active at that time and (if available) the air quality.
- **Turbo<sup>1</sup>:** (available with independent recovery unit) activation of the "Turbo" function sets the air exchange fan at maximum speed for a duration of time customizable in the "general settings" menu. To stop it, press the button again, now with the indication "STOP TURBO".
- **Menu:** this button leads to the main menu screen (more information in the next chapter "General settings menu").
- **Info:** (found on every Screen and alternatively represented with the "i" icon), leads to a concise guide related to the very Screen where this button was pressed.
- **OFF:** This button allows you to suspend operation of the unit. Temperature, humidity and IAQ data (if any) are always displayed in real time, although slightly dimmed. To turn the unit back on, simply select one of the available Modes settings (indicated with a green bar).
- **Mode bar and active mode pane:** the bar at the bottom of the main Screen contains buttons for selecting Modes settings, and the illustration on the right indicates the active mode. You can also navigate between modes by performing a "swipe" on the active mode pane, that is, by dragging the illustration to the right or left.

One of the key aspects to understand for the best use of the unit is the selection of Modes settings: each, due to its own characteristics, is suitable for different home scenarios. In the chapter below, we will look at each mode in detail.

<sup>1</sup>Available when connected to an RDE/RCE/RFE heat recovery unit.

### 5.2.2 Modes settings



The six "Modes settings" are features designed for different living and usage scenarios of the unit. These mainly manage treatment (and air exchange/recirculation<sup>(1)</sup>) in different contexts, such as when rooms are occupied during the day, at night, or even when they are left vacant. "Modes settings" are activated by selecting the relevant buttons at the bottom of the main Screen and can be customized by accessing the "mode settings" menu. The next paragraphs will provide a detailed explanation:

#### "Auto" mode

 In this mode, designed for everyday use, the unit ensures an environment in which temperature, humidity (and air quality)<sup>(1)</sup> are automatically controlled. The reference temperature and humidity values can be customized in the "Setpoint" menu (accessed from the main screen by pressing the "menu" button and selecting "Setpoint").

#### "Time slots" mode

 In this mode, temperature, humidity, ventilation<sup>1</sup> and on/off control can be programmed by the user according to day and time. To change the values of Time slots, please refer to the "Changing Time slots" chapter. The Modes settings box shows the humidity graph for the current day.

#### "Night" mode

 This mode, designed for use during occupants' sleeping hours, is based on the "Auto" modes but with some differences: ventilation and temperature are customizable in the "Mode Settings" menu so as to ensure better comfort during rest. In addition, the start and end times of activation of the mode itself can be set.

#### "Away" Mode.

 Q This mode is designed to be used when the house is unoccupied. It is particularly useful in those homes where it is necessary to constantly control the humidity and temperature level, managed by a deviation from the setpoint, which can be customized in the "Mode Settings" menu (5.1.4.3). It also ensures a constant air exchange<sup>1</sup>, which is also customizable.

THE FOLLOWING MODES ARE AVAILABLE ONLY IF AN RDE/RCE/RFE HEAT RECOVERY UNIT IS CONNECTED TO THE RS UNITS

#### "Manual" mode <sup>1</sup>

 This mode is suitable in situations where the user wants to directly control the degree of ventilation. By pressing the "+" and "-" buttons on the right, the desired ventilation level can be set, which will be displayed in the sensor box. Temperature and humidity control is automatically managed according to setpoint values.

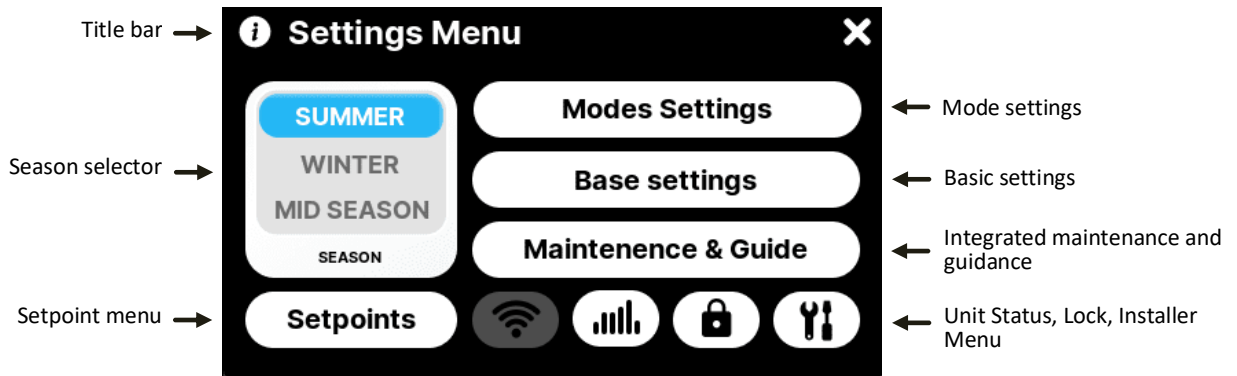
#### "Vacation" mode<sup>1</sup>

 This mode is designed for periods when the house is unoccupied for several days. It guarantees the humidity defined in the setpoint menu and a customizable air exchange (see menu "Mode settings" (5.1.4.3))

<sup>1</sup>Available when connected to an RDE/RCE/RFE heat recovery unit.

### 5.2.3 General settings menu

#### General Settings Screen



Screen provides access to all settings and functions of the unit, divided into submenus:

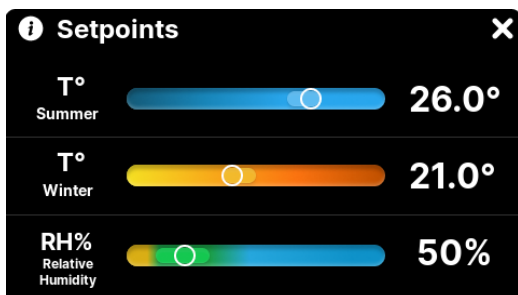
#### Season selector

Here you can change the operating season of the unit, in accordance with the season of the heat pump. "Mid-season" means the actual shutdown of the heat pump, thus the suspension of temperature control.



*Changing the season on the display does not mean changing the season on the heat pump as well. It is recommended to be very careful before making changes and to make sure that the same season has been selected on both devices.*

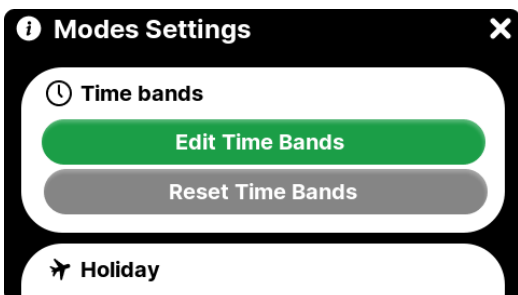
#### Temperature and humidity setpoints



Here you can change the reference values for humidity and temperature management (depending on the season).

*If the unit is Type "A" only the setpoint selector "summer" will appear.*

#### Mode settings



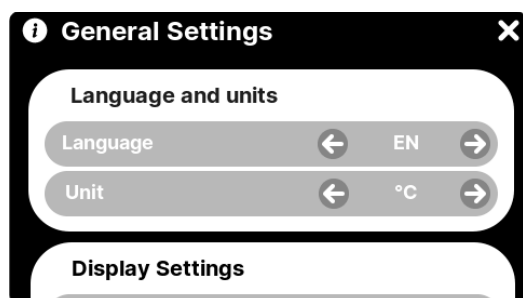
Here you can change and customize the configurations of individual Modes settings according to the available options. The values that can be changed are as follows:

- **"Time slots" mode**
  - Edit Time slots: provides access to the configuration screen, see "Change Time slots".
  - Reset Time slots: allows the default values of time slots to be reset.
- **"Night" mode**
  - T° difference: indicates the temperature deviation from the setpoint (default =  $\pm 2^\circ$ ).
    - If the season is set to "summer," the setpoint will be increased by the differential.
    - If the season is set to "winter," the setpoint will be reduced by the differential (if any).
  - Ventilation speed<sup>1</sup>: indicates the ventilation level of the exchange while using the mode (default = 2/5)
  - Scheduling, Start scheduling, End scheduling: If enabled, allows scheduling the times of activation and deactivation of the mode itself (default = Off, 23:00, 06:00).

- **"Away" mode**
  - T° difference: indicates the temperature deviation from the setpoint (default =  $\pm 2^\circ$ )
    - If the season is set to "summer," the setpoint will be increased by the differential.
    - If the season is set to "winter," the setpoint will be reduced by the differential (if any).
  - Ventilation speed<sup>1</sup>: indicates the ventilation level of the exchange while using the mode (default = 2/5)
- **"Vacation" mode**<sup>1</sup>
  - Ventilation level: indicates the ventilation level of the exchange while using the mode (default = 2/5)
- **"Auto" mode**
  - Ventilation level: indicates the ventilation level of the exchange while using the mode (default = 2/5)

<sup>1</sup>Available with a heat recovery unit RDE/RCE/RFE

### Basic settings



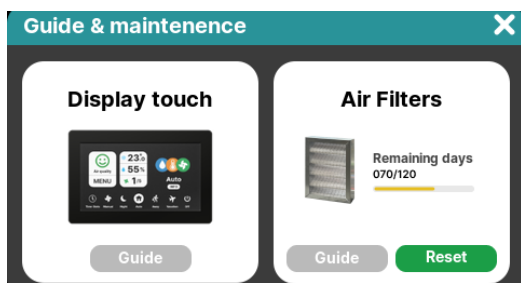
This is the menu containing the list of generic settings for the unit. You can set:

- "Silent mode" activation/deactivation
- "Turbo" duration timer<sup>1</sup>
- system language
- display brightness
- display off timer
- Change date and time

### Maintenance and guidance, Unit Status, Lock

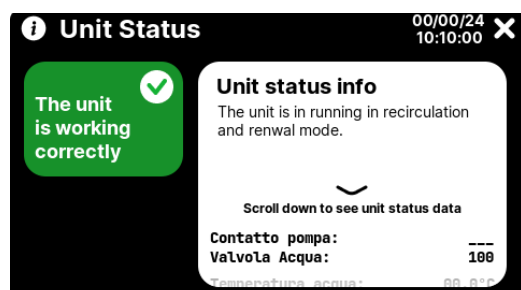
In the lower right part of the menu, below the "Maintenance and Help" button from left to right, there are quick buttons for the submenus: "Unit Status," "Lock," and "Installer Menu," the individual properties of which we will describe in the next paragraphs.

### Integrated maintenance and guidance



The guide summary and unit maintenance instructions can be found here.

### Unit Status



Screen is divided into two panes. On the left is a simplified display, aimed at any user, giving information regarding the correct operation of the unit. On the right, on the other hand, is advanced status information: this provides a detailed view of individual components and is particularly useful for diagnostics (advanced users or trained personnel are recommended to consult it).

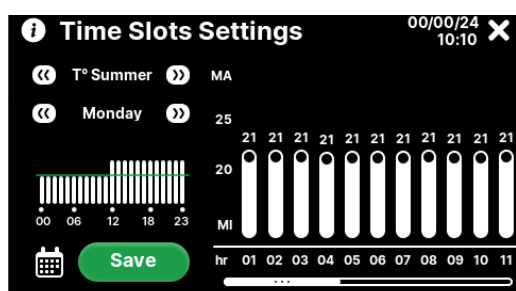
## Lock



In this Screen, you can activate the unit control lock, a function that is particularly useful in those situations where you want to limit the use of the display to prevent unwanted changes by outside users. To activate it, simply slide your finger on the slider all the way down. Once activated, the moment the screen is touched, an unlock password entry screen will appear-any other touching and operation will be prevented.

*Only by entering code 0499 will it be possible to unlock the unit and check it again.*

## Change Time slots



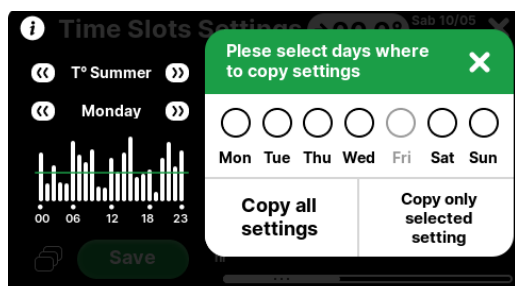
In this Screen, the following Time slots parameters can be programmed based on the time and day of the week:

- Temperature setpoint (winter and/or summer)
- Humidity setpoint
- Ventilation level<sup>1</sup>
- Turning On or Off

On the left side of the Screen, from top to bottom, are the following controls:

- Parameter selector:** allows you to choose the specific parameter to be programmed (see previous list)
- Day selector:** allows you to select the specific day on which to make changes;
- Mini-graph:** graph representing, in real time, the values of the previously selected setting and day;
- Copier button (left) and confirmation button (right):** the former allows you to use the functions the "copier," a useful tool for quick copying of values to days of the week (more on this later), and the latter allows you to save changes made to Time slots.

In the left part of the Screen you can scroll through the 24 vertical control bars (related to the values of the parameter selected in the "Parameter Selector"), corresponding to the hours of the chosen day. To scroll through them all, use the horizontal bar in the lower right part of the Screen.



The "copier" tool copies the settings (all or individual) of a given day to others, thus allowing for faster programming than editing each individual e-day parameter. By pressing the copier button, a window will appear on the right where you can add a check mark to the days on which you wish to copy the settings. With the "copy all settings" and "copy selected setting" buttons, you can decide which settings to copy, whether all or the selected active one.

<sup>1</sup>Available with a heat recovery unit RDE/RCE/RFE

## 5.3 CONTROL BY EXTERNAL DEVICES



Through the configurable I/O or preconfigured inputs, it is possible to control the unit with switches, thermostats, switching actuators or controllers for, for example:

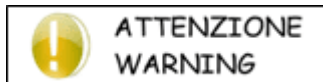
- Adjust the temperature using an electronic or mechanical hygrostat
- turn off or on the unit or specific functions from one or more wall switches or control boxes.

For more information on installation, configuration and usability, see the "Unit Control Wiring" chapter.

## 5.4 CONTROL BY MODBUS



Through the Modbus connection, control of the unit can be delegated to a system based on the same communication protocol.



The use of the Modbus connection is designed for experienced users: contact specialized personnel. After finishing the relevant installation procedure, the installer, by means of modscan and BMS manual (within which there are instructions and a list of available controls - to be obtained from his supplier separately) can proceed to configure the controls that can be used via Modbus.

## 6 TECHNICAL DATA I

### 6.1 TECHNICAL DATA TABLE

#### 6.1.1 Sizes 050 and 100

|                                          |         | Horizontal     |           |                |           |
|------------------------------------------|---------|----------------|-----------|----------------|-----------|
|                                          |         | RS 050         |           | RS 100         |           |
|                                          |         | "A"            | "I"       | "A"            | "I"       |
| Dehumidification capacity                | L/day   | 48             | 48        | 100            | 100       |
| Refrigerant                              | Type    | R513A          | R513A     | R410A          | R410A     |
| Refrigerant charge                       | kg      | 0,45           | 1,65      | 0,95           | 1,85      |
| Global Warming Potential (GWP)           | -       | 631            | 631       | 2088           | 2088      |
| CO2 equivalent charge                    | t       | 0,28           | 1,04      | 1,98           | 3,86      |
| Cooling Power                            | W       | /              | 3360      | /              | 6800      |
| Cooling capacity provided by the chiller | W       | 2800           | 4000      | 5713           | 8161      |
| Compressor power                         | W       | 770            | 770       | 1361           | 1361      |
| Power consumption                        | W       | 800            | 800       | 1460           | 1460      |
| Maximum power consumption                | W       | 1000           | 1000      | 1860           | 1860      |
| Absorbed current                         | A       | 5              | 5         | 7              | 7         |
| Maximum absorbed current                 | A       | 7              | 7         | 9,7            | 9,7       |
| Inrush current                           | A       | 27             | 27        | 40             | 40        |
| Power supply                             | V/ph/Hz | 230 / 1+N / 50 |           | 230 / 1+N / 50 |           |
| Air flow rate                            | m³/h    | 600            | 600       | 1000           | 1000      |
| Static pressure                          | Pa      | 150            | 150       | 150            | 150       |
| Nominal water flow rate                  | L/hour  | 500            | 500       | 950            | 950       |
| Water pressure drop                      | Kpa     | 30             | 29        | 28             | 28        |
| Storage temperature limit                | °C      | -10 / +43      | -10 / +43 | -10 / +43      | -10 / +43 |
| Storage moisture limit                   | %ur     | 90             | 90        | 90             | 90        |
| Sound pressure level <sup>1</sup>        | dB(A)   | 43             | 43        | 46             | 46        |
| Dimensions                               | mm      | 760x650x350    |           | 1000x600x450   |           |
| Weight                                   | Kg      | 52             | 55        | 80             | 82        |



**ATTENZIONE  
WARNING**

"I" units need to be supplied with water from chiller at all times to operate, otherwise they cannot operate and will stall. Operation without water will cause damage to the machine and will result in forfeiture of the warranty.

"A" units can also operate without chilled water. In this case, however, the air leaving the unit will be warmer than the incoming air and at the same time decrease the output of the dehumidifier. This possibility is particularly useful in mid-season periods, during which a heat supply to the environment is welcome.

The dehumidification performance is stated at the nominal point +26°C, 65% RH and with inlet water at +15°C.

<sup>1</sup>Sound pressure level measured in free field at 1 meter with ducted unit.

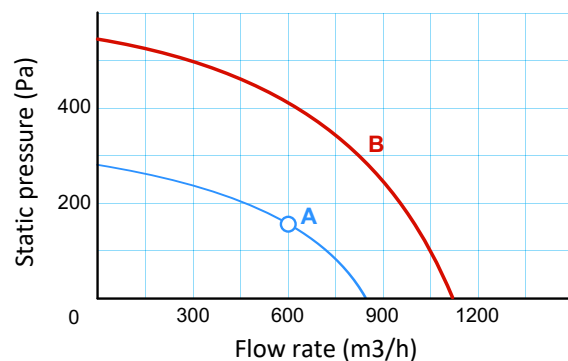
Under other conditions, the values will vary, which can be significant the further away from nominal conditions one moves.

## 6.2 FLOW RATE AND STATIC PRESSURE AT RIA

### 6.2.1 RS 050

RS units are equipped with modulating EC fan, they are factory set to the average speed, which can be changed in the installer menu). The following graphs show the curves by size:

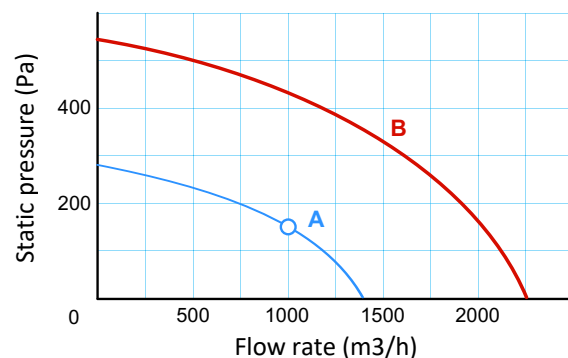
CURVE A = recommended limit  
CURVE B = maximum limit



### 6.2.2 RS 100

RS units are equipped with modulating EC fan, they are factory set to the average speed, which can be changed in the installer menu). The following graphs show the curves by size:

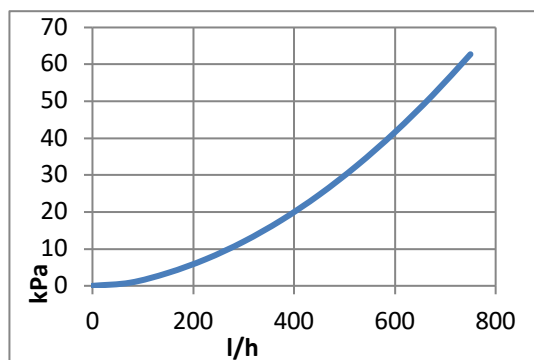
CURVE A = recommended limit  
CURVE B = maximum limit



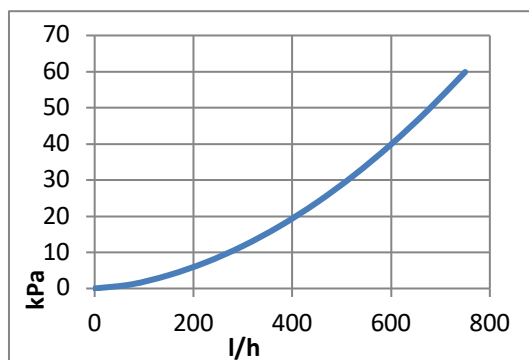
## 6.3 HYDRAULIC CIRCUIT PRESSURE DROP

On the abscissae is the water flow rate, on the ordinates the pressure drops of the hydraulic circuit.

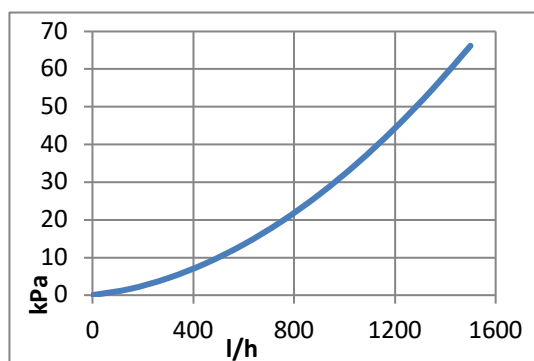
050 "A"



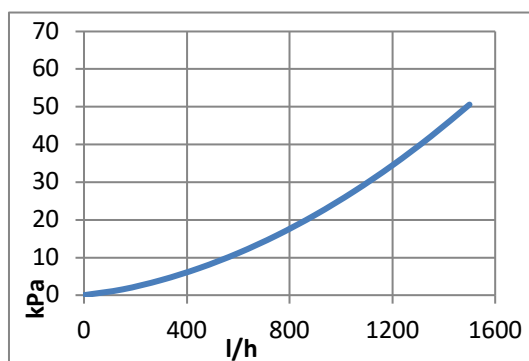
050 "I"



100 "A"



100 "I"



## 7 MAINTENANCE AND TROUBLESHOOTING

### 7.1 COMMON PROBLEMS

The following table lists the most common causes that can cause the unit to malfunction and their solutions



**ATTENZIONE  
WARNING**

It is recommended that once the anomaly is identified, the manufacturer or a qualified technician be contacted. If alarms occur related to the water probe, the unit must be compulsorily turned off and a qualified technician contacted. If the unit is left on, there is a risk of serious damage and the

warranty provided will be voided. Take great care in performing the steps suggested to solve the various problems: excessive carelessness may cause injury or damage, including serious damage.

| Anomaly/Alarm                                                                                                                                                                                                                                  | Possible causes                                                                                  | Corrective actions                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The unit will not start.                                                                                                                                                                                                                       | No power supply to the unit                                                                      | Verify the connections on the power terminals                                                                                                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                                                | The user terminal is "OFF "                                                                      | Press the "▲ " button (on the base control) or one of the modes (on the touch display) to turn on the unit                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                | There are alarms present                                                                         | Check on the display, and eliminate the cause by following the instructions on the screen or in this manual                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                | The unit was recently started and the compressor starts late                                     | Wait a few minutes                                                                                                                                                                                                                                                                                                                                   |
| Compressor will not start                                                                                                                                                                                                                      | Intervention of the internal thermal protector                                                   | Turn off power to the unit, wait for the compressor to cool down, and verify by reconnecting power that it restarts. Identify the cause of the intervention and eliminate it.                                                                                                                                                                        |
|                                                                                                                                                                                                                                                | Triggering of high pressure protection on the refrigeration circuit                              | Refer to the "High Pressure Alarm" anomaly.                                                                                                                                                                                                                                                                                                          |
| High pressure alarm<br><i>The high pressure alarm can be mild (can resolve on its own) or severe (requires manual intervention to reset). After four mild high-pressure alarms, the severe high-pressure alarm is automatically activated.</i> | Presence of high pressure anomaly due to insufficient air flow rate                              | Check for correct air flow rates and cleanliness status of heat exchange coils, filters.                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                | Presence of high pressure abnormality due to insufficient water flow [only "I" (hybrid) version] | Verify: <ul style="list-style-type: none"> <li>• The proper functionality of the hydraulic circuit</li> <li>• The temperature of the water entering the unit.</li> <li>• Static pressure of the pump serving the unit.</li> <li>• the correct water flow rate</li> <li>• The metal mesh filter inserted into the inlet hydraulic pipeline</li> </ul> |
|                                                                                                                                                                                                                                                | Water temp. probe failure (errors may be caused by short circuit or probe interruption)          | Check the status of the water temperature probe. If the problem persists, replace the probe                                                                                                                                                                                                                                                          |
| "Room temperature probe alarm" or "room humidity probe alarm"                                                                                                                                                                                  | Probe failure (errors may be caused by short circuit or probe interruption)                      | Check the status of the probe<br>If the problem persists replace the display or other probes (if present) from the installer menu                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                                                | The probe in use selected is not physically present                                              | Check that the probe set in the installer menu is correct                                                                                                                                                                                                                                                                                            |

| Anomaly/Alarm                              | Possible causes                                                                                                            | Corrective actions                                                                                                |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Water temperature probe alarm              | Probe failure (errors may be caused by short circuit or probe interruption)                                                | Check the status of the water temp. probe. If the problem persists, replace the probe                             |
| Low water temperature abnormality          | Low temperature detected by the probe water                                                                                | Increase the temperature of the water supplied to the unit (Check the inlet water temperature).                   |
| High water temperature abnormality         | High temperature detected by water probe                                                                                   | Decrease the temperature of the water supplied to the unit (check the temperature of the water entering the unit) |
| Filter cleaning warning on the main Screen | Periodic filter maintenance reporting countdown has expired                                                                | Proceed with filter cleaning (see maintenance chapter)                                                            |
| Water battery freezing risk abnormality    | The probe temp. Water or antifreeze detected a temperature below 6°C with risk of freezing and damage to the water battery | Check the correct operation of the extraction fan                                                                 |

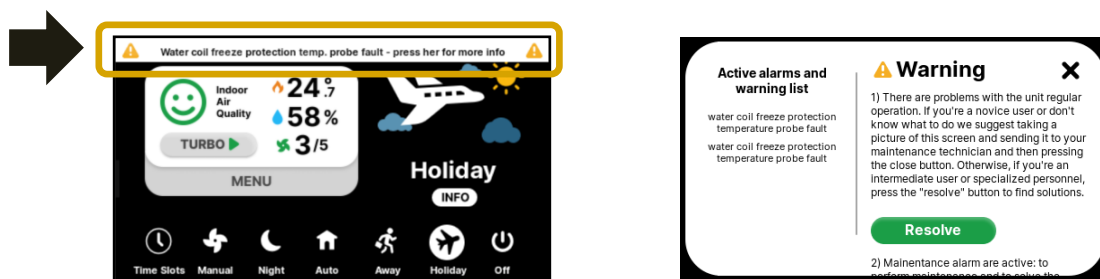
## 7.2 ALARMS

### 7.2.1 Alarms (basic control )

| Alarm code | Alarm name                             | Explanation and corrective action                                                                                                                                                                                                                                      |
|------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EC (EC)    | High pressure mild compressor          | It is caused by high pressure in the refrigeration circuit.<br>It is caused by insufficient airflow, check whether the nominal airflow rate is met.<br>This alarm remains visible for one minute.<br>N.B.: It is common for the code "EMA" to appear for a few moments |
| ECS (ECS)  | High pressure severe compressor        | At the occurrence of 4 EC "Mild compressor high pressure" alarms, the unit stops operation. Check and reset the temperature and water flow to the unit. Then, reset the alarm by pressing " ".✓<br>N.B.: It is common for the code "EMA" to appear for a few moments   |
| EAC (EAC)  | Water probe                            | Probe malfunction, check probe status and wiring                                                                                                                                                                                                                       |
| EVA (EVA)  | Evaporation probe                      | Probe malfunction, check probe status and wiring                                                                                                                                                                                                                       |
| EAM (EAM)  | Room probe                             | Probe malfunction, check probe status and wiring                                                                                                                                                                                                                       |
| ESU (ESU)  | Humidity probe                         | Probe malfunction, check probe status and wiring                                                                                                                                                                                                                       |
| EL(EL)     | Water probe minimum temperature alarm. | If the set season is summer and an incoming water temperature below 7°C is detected, this error is triggered. Bring the water temperature back within the limits of the operating conditions.                                                                          |
| EH (EH)    | Maximum water probe temperature alarm. | If the set season is summer and an incoming water temperature above 35°C is detected, this error is triggered. Bring the water temperature back within the limits of the operating conditions.                                                                         |

### 7.2.2 Alarms - (touch display)

Should an alarm occur, a notification will appear at the top of the main Screen, as shown in the image on the left.



Tapping on the notification will bring up the Screen on the right where, on the left side, active alarms and warnings will be listed. On the right side, on the other hand, will be the (possible) instructions for resolving them, alternatively present in the previous chapter "Common Problems" of this manual.

## 7.3 MAINTENANCE TABLE

The units will function properly if the maintenance operations shown in the table are performed and the specified period is observed.

| Operation                                                                                            | Period                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air filters                                                                                          | <ul style="list-style-type: none"> <li>Visual inspection and cleaning every 6 months (or more frequently in case of dirty environments)</li> <li>Replacement at least every 12 months</li> </ul> |
| Checking proper condensate drainage downstream of the unit.                                          | Every 6 months                                                                                                                                                                                   |
| Checking cleanliness of air vents and grilles, interior and exterior                                 | Every 6 months                                                                                                                                                                                   |
| Visual and acoustic verification (check the noise emitted by the unit and the integrity of the unit) | Every 6 months                                                                                                                                                                                   |
| Visual inspection of the refrigeration and hydraulic circuit (oil, Refrigerant and/or water leaks)   | Every 12 months                                                                                                                                                                                  |
| Visual inspection of electrical panel, wiring and cables                                             | Every 12 months                                                                                                                                                                                  |
| Checking the status and fixing of fans                                                               | Every 4 years                                                                                                                                                                                    |
| Cleaning of condensate drip pans                                                                     | Every 4 years                                                                                                                                                                                    |
| Cleaning of heat exchange coils                                                                      | Every 4 years                                                                                                                                                                                    |

### ROUTINE MAINTENANCE OPERATIONS LOG

Report in the following table the maintenance operations performed.

| Operation                                                                                            | Year _____   |              | Year _____   |              | Year _____   |              |
|------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                                                                                                      | 1st semester | 2nd semester | 1st semester | 2nd semester | 1st semester | 2nd semester |
| Air filters                                                                                          |              |              |              |              |              |              |
| Checking for proper condensate drainage                                                              |              |              |              |              |              |              |
| Checking cleanliness of air vents and grilles, interior and exterior                                 |              |              |              |              |              |              |
| Visual and acoustic verification (check the noise emitted by the unit and the integrity of the unit) |              |              |              |              |              |              |
| Visual inspection of the refrigeration and hydraulic circuit (oil, Refrigerant and/or water leaks)   |              |              |              |              |              |              |
| Visual inspection of electrical panel, wiring and cables                                             |              |              |              |              |              |              |
| Checking the status and fixing of fans                                                               |              |              |              |              |              |              |
| Cleaning of condensate drip pans                                                                     |              |              |              |              |              |              |
| Cleaning of heat exchange coils                                                                      |              |              |              |              |              |              |

### EXTRAORDINARY MAINTENANCE OPERATIONS LOG

Indicate below any extraordinary maintenance operations performed on the unit.

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## 7.4 MAINTENANCE ROUTINE

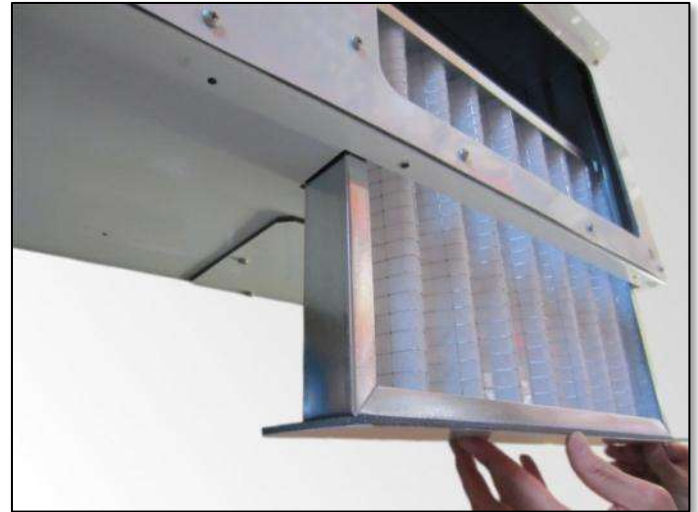
### 7.4.1 Air filter replacement

For proper operation of the unit, it is necessary to periodically clean the air filter in the unit.

Remove the screws or the handwheel as shown in the photo below, take out the filters and vacuum them out by manually removing any impurities that may impede proper air flow, avoiding damage to them in any way.

A ruined, punctured or otherwise damaged filter should definitely be replaced.

RS (horizontal units) 050 - 100



## 7.5 EXTRAORDINARY MAINTENANCE



**ATTENZIONE  
WARNING**

**Extraordinary maintenance should only be carried out by trained personnel.  
DO NOT IMPROVISE, DANGER OF INJURY OR DEATH.**

### 7.5.1 Heat exchange coil cleaning

Remove dust accumulations and any fouling on the finned pack by washing with a jet of compressed air in the opposite direction to the air flow or by washing the finned pack with water and suitable non-corrosive products.

### 7.5.2 Electrical circuit check



**PERICOLO  
DANGER**

**Verification should be carried out in the absence of voltage.**

Check that all clamps are properly attached, if not, tighten screws better or tighten plug-in connectors.

Check that all power contactors or relays, if any, are functional and not blocked or oxidized, otherwise their replacement becomes mandatory.

## 8 DECOMMISSIONING OF THE UNIT

When the unit reaches the end of its expected life and thus needs to be removed and replaced, a series of steps should be followed:

- Refrigerant gas in it should be recovered by trained personnel and sent to collection centers;
- compressor lubrication oil should also be recovered and sent to collection centers;
- the structure and the various components, if unusable, should be demolished and sorted according to their commodity type: this is especially true for the copper and aluminum present in discrete quantities in the machine.

All this is done to facilitate collection, disposal and recycling centers and to minimize the environmental impact that such an operation requires.



**ATTENZIONE  
WARNING**

**If the unit, or any part of it, has been taken out of service, its parts susceptible to cause any danger should be made harmless.**

With each replacement of any part of the unit subject to selective disposal, reference should always be made to the relevant legal provisions in force.

Please note that it is mandatory to record the loading and unloading of special and toxic-harmful wastes.

The pickup of hazardous and toxic-harmful wastes must be carried out by appropriately licensed companies.

Disposal of special wastes and toxic-harmful wastes must be carried out in accordance with the legal requirements of the user's country.

Follow the requirements imposed by the laws in the user's country when dismantling the unit.

Prior to demolition, request the inspection of the relevant agency and the resulting record.

Finally, proceed to scrapping in accordance with the legal requirements of the user's country.



**AVVERTENZA  
CAUTION**

*Disassembly and demolition operations must be carried out by qualified personnel.*

### 8.1 ENVIRONMENTAL PROTECTION

The law on the regulation [reg. EC 2037/00] of the use of stratospheric ozone depleting substances and greenhouse gases establishes a ban on the dispersal of Refrigerant gases in the environment and obliges their holders to recover them and return them, at the end of their operational life, to the retailer or at appropriate collection centers.

Refrigerants R513A and R410A, while not harmful to the ozone layer, are mentioned among the substances responsible for the greenhouse effect and must therefore be subject to the above obligations.



**ATTENZIONE  
WARNING**

**Special care is therefore recommended during maintenance operations in order to reduce Refrigerant leaks as much as possible.**

### 8.2 MANAGEMENT OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

This product falls under the scope of Directive 2012/19/EU on the management of waste electrical and electronic equipment (WEEE). The appliance should not be disposed of with household waste as it is composed of different materials that can be recycled at the appropriate facilities. Inquire through the municipal authority regarding the location of ecological platforms suitable for receiving the product for disposal and its subsequent proper recycling.

It should also be noted that upon purchase of equivalent equipment, the distributor is required to take back the product to be disposed of free of charge.

The product is not potentially hazardous to human health and the environment, containing no harmful substances as per Directive 2011/65/EU (RoHS), but if abandoned in the environment it negatively impacts the 'ecosystem'.

Read the instructions carefully before using the device for the first time. Absolutely do not use the product for any use other than that for which it was intended, as there is a danger of electric shock if used improperly.



*The crossed-out bin symbol on the label on the appliance indicates that it complies with the regulations on waste electrical and electronic equipment.*

*Abandoning the equipment in the environment or disposing of it improperly is punishable by law.*

## 9 INSTALLATION

### 9.1 FOREWORD

#### 9.1.1 Inspection

Upon receipt of the unit, check its integrity: the machine left the factory in perfect condition; any damage must be immediately reported to the carrier and noted on the Delivery Sheet before countersigning it.

The manufacturer or its agent should be made aware of the extent of the damage as soon as possible.

The Client must complete a written report concerning any significant damage.

#### 9.1.2 Lifting and carrying

When unloading and positioning the unit, great care should be taken to avoid abrupt or violent maneuvers. Internal transports should be carried out carefully and gently, avoiding using machine components as strong points.



**In all lifting operations, ensure that you have securely anchored the unit to prevent accidental tipping or falling. Do not move or lift the unit by the removable panels.**

**Tilting the unit by  $\pm 30^\circ$  and/or flipping the unit is prohibited.**

#### 9.1.3 Unpacking

The packaging of the unit must be removed carefully, avoiding possible damage to the machine; the materials that make up the packaging are of different natures, wood, cardboard, nylon, etc. It is good practice to store them separately and deliver them for disposal or eventual recycling, to the companies in charge of this purpose and thus reduce their environmental impact.

#### 9.1.4 Unit identification

Each unit has an identification plate located on the unit's chassis where all the data necessary for installation, maintenance, and traceability of the machine are listed.

Note the model, serial number, final Refrigerant charge and reference diagrams of the machine in the table at the side so that they can be easily found if the nameplate deteriorates.

|                                                                       |  |
|-----------------------------------------------------------------------|--|
| Model - Model                                                         |  |
| Serial number - Serial number                                         |  |
| Date of production - Date of production                               |  |
| PED/ EC 2014/68/EU Category                                           |  |
| Conformity assessment procedure - Conformity module                   |  |
| TSe external ambient (max/min) - Tse external ambient (max/min) [°C]  |  |
| TSi internal ambient (max/min) - Tsi internal ambient (max/min) [°C]. |  |
| Max storage temp - Max storage temperature [°C].                      |  |
| Max temp. operation - Max ambient working temperature [°C]            |  |
| Min.ambient working temp-Min ambient working temp [°C].               |  |
| Refrigerant - Refrigerant [Ashrae 15/1992]                            |  |
| Refrigerant charge - Refrigerant charge [kg]                          |  |
| CO2 equivalent tons - Equivalents tons CO2                            |  |
| Empty weight - Empty weight [kg]                                      |  |
| Power supply - Power supply                                           |  |
| Nominal power input Nominal power input [kW].                         |  |
| Rated current - Nominal absorbed current [A]                          |  |
| Maximum current - Full load amperes FLA [A].                          |  |
| Inrush Current - Starting Current LRA [A].                            |  |
| Electrical diagram - Wiring diagram                                   |  |

### 9.2 INSTALLATION OPTIONS

Some chapters or sections indicate specific instructions for "*basic control*" or "*touch display*." Unless specified, the instructions apply to both.

### 9.3 POSITIONING



**All RS models are designed and built for indoor installation.**

**Do not install the unit outdoors and make sure the unit is not exposed to weather such as: rain, hail, moisture and frost.**

Attention should be paid to the following points to determine the best site where to install the unit and its connections:

- Size and origin of plumbing pipes;
- location of the power supply;

- Full accessibility for maintenance and/or repair operations;
- Soundness of the attachment point.



**AVVERTENZA  
CAUTION**

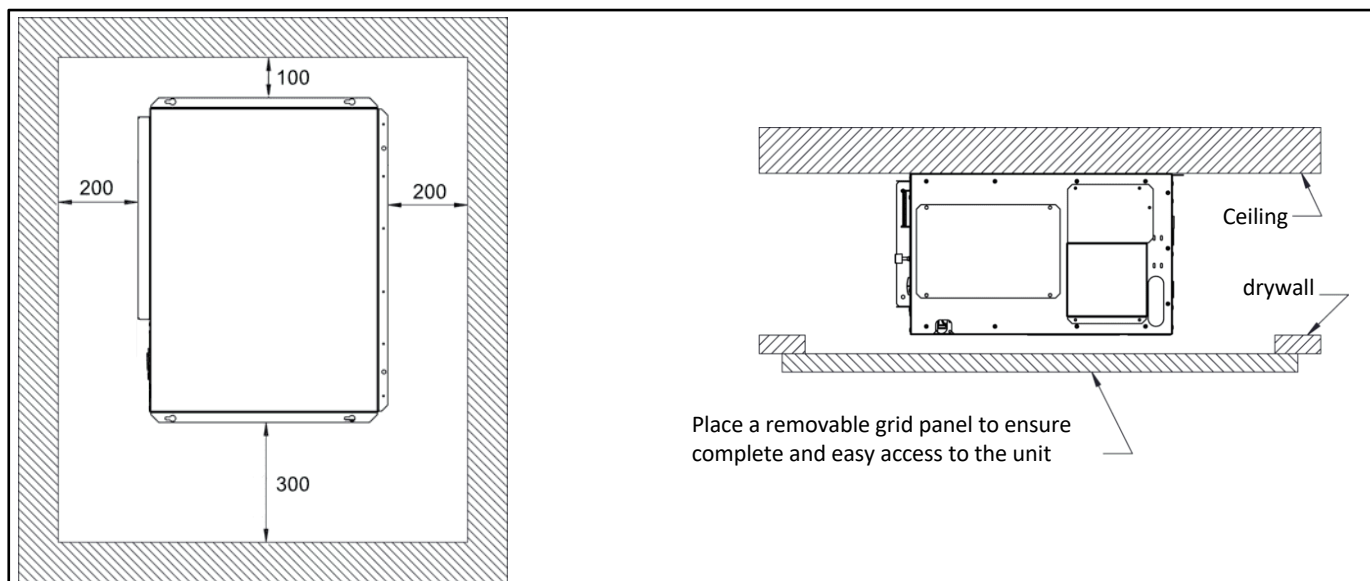
*The dimensions given are to be considered the minimums useful for proper positioning of the unit and for subsequent maintenance.*



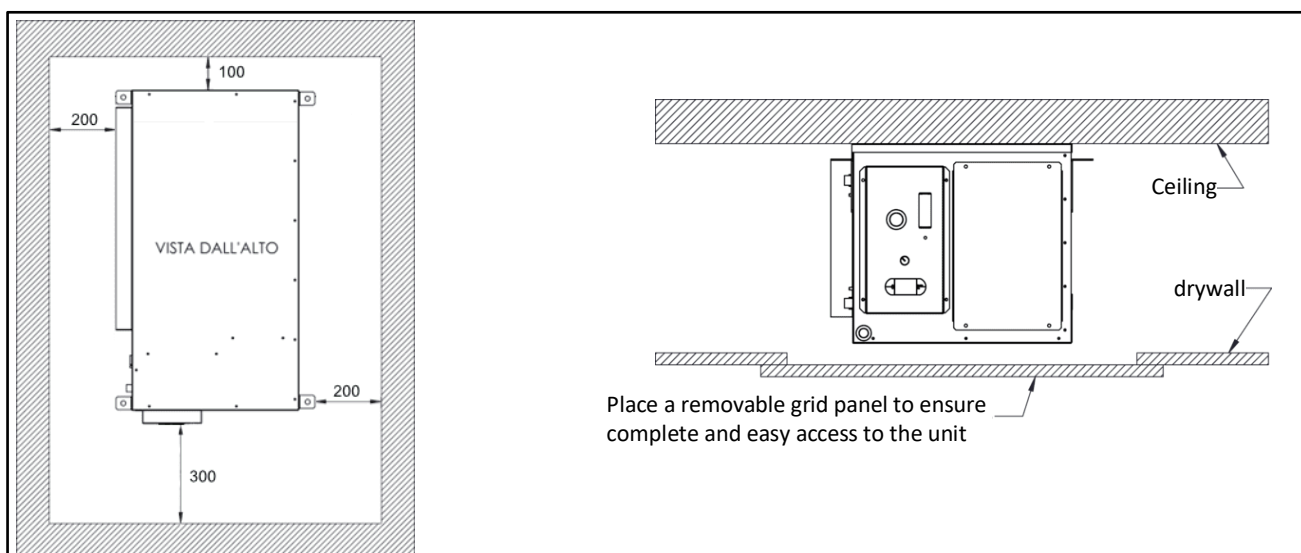
**PERICOLO  
DANGER**

*Tilting the unit more than  $\pm 30^\circ$  and/or flipping the unit, even temporarily, is prohibited.  
Danger of compressor rupture.  
Failure to comply with these requirements will result in forfeiture of the warranty.*

### 9.3.1 RS 050 unit boundaries



### 9.3.2 RS unit 100 boundaries



## 9.4 CHANNELING



**ATTENZIONE  
WARNING**

Attaching a suction duct or a discharge duct to the unit with screws, rivets or other systems, without fitting the optional flanges, may affect the proper operation of the dehumidifier and will void the warranty.

### 9.4.1 Horizontal units

RS units are designed to be ducted at least partially, which is why for all horizontal units the intake flange and supply flange for ducting the unit to rigid ducts for air distribution are optionally available. Also optionally available is the discharge plenum for connecting the unit with spiral hoses.

## 9.5 PLUMBING CONNECTIONS I

### 9.5.1 Water circuit connection

When performing the hydraulic circuit, it is mandatory to follow the following requirements and in any case the national or local regulations.



**ATTENZIONE  
WARNING**

**Do not, under any circumstances, exert torsion on the unit connections. Use one wrench to lock the connection and another to secure the connection**



Connect the piping by flexible couplings in order to avoid vibration transmission and compensate for thermal expansion. In case the machine has 4 water connections, it is necessary to connect the two inlets in parallel with a T and the two outlets in parallel with a T. It is recommended to install the following components on the piping:

- temperature and pressure indicators for maintenance and control of the unit. The pressure check indicates the proper function of the expansion tank and highlights any system water leakage in advance;
  - shut-off valves (gate valves) to isolate the unit from the hydraulic circuit in case of maintenance work;
  - metal filter (inlet piping) mesh with a mesh size not exceeding 1 mm, to protect the exchanger from slag or impurities in the piping. This requirement is especially necessary at first start-up;
  - bleed valves, to be placed in the highest parts of the hydraulic circuit, to allow air to be purged. There are manual bleed valves on the internal machine tubes: this operation should be performed with the unit de-energized;
  - drain cock and, where necessary, drainage tank to allow the system to be drained for maintenance operations or seasonal breaks.
- The dimensions and location of hydraulic connections are shown on the dimensional drawings.



**AVVERTENZA  
CAUTION**

**It is of paramount importance that the water inlet occurs at the connection marked "Water Inlet." Otherwise, the countercurrent circuitry would not be respected with risks of malfunction, blockage or breakage of the unit.**



**ATTENZIONE  
WARNING**

**The hydraulic circuit must be constructed in such a way as to ensure the constancy of the rated water flow rate (+/- 15%) under all operating**

**conditions. It is also mandatory to comply with the limits given in the table opposite must not be exceeded. Exceeding the above values exponentially increases the chances of corrosion of the water system.**

| Parameter                                                     | Value     | Unit           |
|---------------------------------------------------------------|-----------|----------------|
| Electrical conductivity                                       | 10 - 500  | µS/cm (@25 °C) |
| pH                                                            | 6.5 ÷ 9.0 |                |
| SO <sub>4</sub> <sup>2-</sup>                                 | < 100     | ppm            |
| HCO <sub>3</sub> <sup>-</sup> / SO <sub>4</sub> <sup>2-</sup> | > 1.0     |                |
| Total hardness                                                | 4.5 ÷ 8.5 | dH             |
| Cl <sup>-</sup>                                               | < 50      | ppm            |
| PO <sub>4</sub> <sup>3-</sup>                                 | < 2.0     | ppm            |
| NH <sub>3</sub>                                               | < 0.5     | ppm            |
| Free active chlorine (CL <sub>2</sub> )                       | 0.6 ÷ 1.8 | ppm            |
| Combine active chlorine                                       | < 2       | ppm            |
| Fe <sup>3+</sup>                                              | < 0.5     | ppm            |
| Mn <sup>++</sup>                                              | < 0.05    | ppm            |
| CO <sub>2</sub>                                               | < 50      | ppm            |
| H <sub>2</sub> S                                              | < 50      | ppb            |
| Temp.                                                         | < 65      | °C             |
| O <sub>2</sub>                                                | < 0.1     | ppm            |
| C <sub>(3H3)</sub> N <sub>(3)</sub> O <sub>3</sub>            | < 75      | ppm            |
| SiO <sub>2</sub>                                              | ≤ 2       | ppm            |

### 9.5.2 Condensate drain connection

Make the connection with a flexible rubber hose having an internal diameter of 16 mm. A siphon having a head equal to at least the suction head of the fan should be run on the discharge pipe as shown in the following illustrations



**ATTENZIONE  
WARNING**

The slope of the drainage pipe should be such that in all cases water will drain from the unit to the outside. If this does not happen, condensate overflows from the unit may occur.

## 9.6 ELECTRICAL CONNECTION



**AVVERTENZA  
CAUTION**

Unit electrical connection instructions vary by Type of control: if touch display is present follow the following sections ending in "(touch display)", otherwise "(basic control)"



**PERICOLO  
DANGER**

***Grounding is mandatory. The installer must connect the ground wire to the ground terminal located in the electrical panel and marked accordingly.***

Electrical connection, power cables and protections should be made according to the attached wiring diagram and in adherence to local and international regulations.

Recommended protection to be inserted upstream of the line:

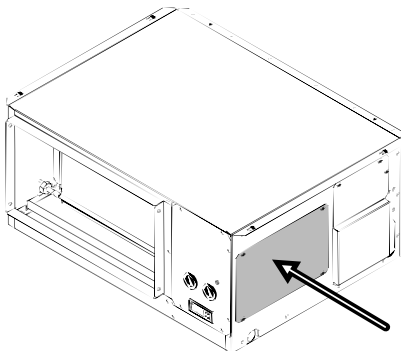
050 models = MGT switch - C16  
100 models = MGT - C20 switch

Recommended power line:

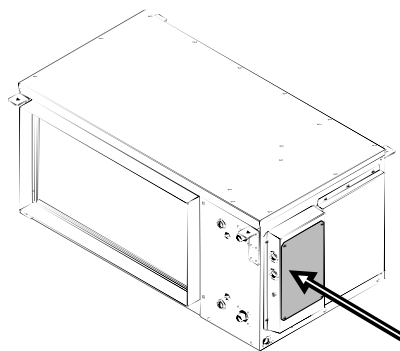
050 models = FROR cable - 3G2.5  
models 100 = FROR cable - 3G2.5

### 9.6.1 Terminal block access and wiring (basic control)

Instructions for accessing the control panel vary depending on the Type of control and size of the unit. In this section we analyze the units with the basic control: as shown in the following image, for each size it is necessary to disassemble the indicated panels by simply unscrewing the corresponding fixing screws. The openings thus created will provide access to the necessary wiring.



RS 050

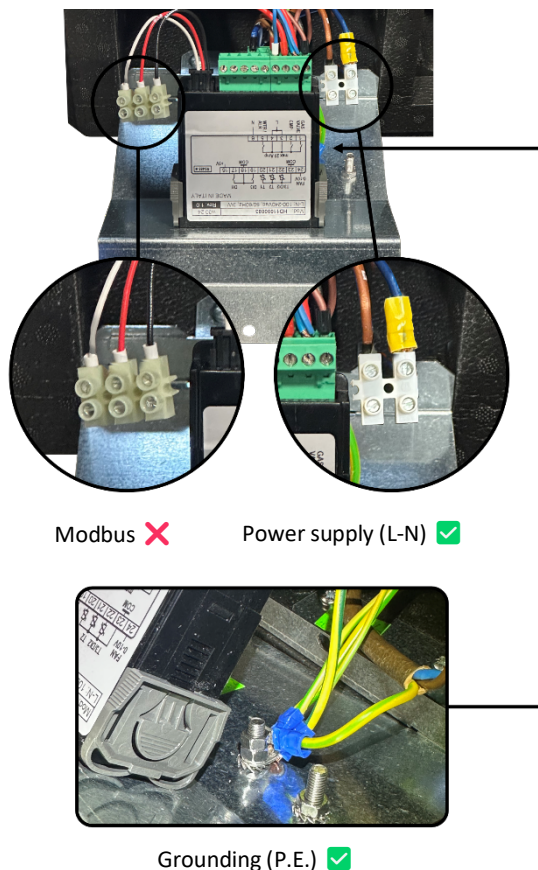


RS 100

## POWER CONNECTION



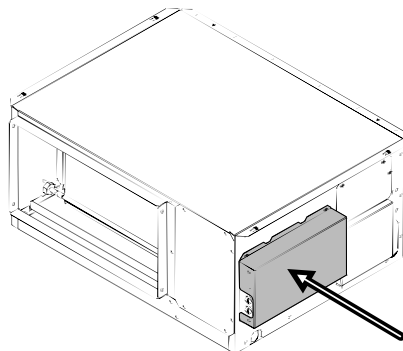
*The image used is for illustration purposes only: to recognize the cables, check the labels on the cables.*



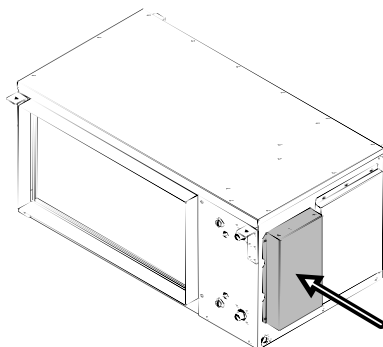
Inside each panel of the electrical cabinet, there is a screw terminal with the two power cables (see side image), indicated with labels and colors corresponding to IEC 60446: L (black/brown, PHASE) and N (blue, NEUTRAL). Connect the power supply to this terminal by inserting and tightening the power cable in the terminal. Also connect the grounding to the points always shown in the above pictures.

### 9.6.2 Terminal block access and wiring (touch display)

Instructions for accessing the control panel vary depending on the Type of control and size of the unit. In this section we analyze the units with the touch display: as shown in the following image, for each size it is necessary to disassemble the indicated panels by simply unscrewing the corresponding fixing screws. The openings thus created will provide access to the necessary wiring.



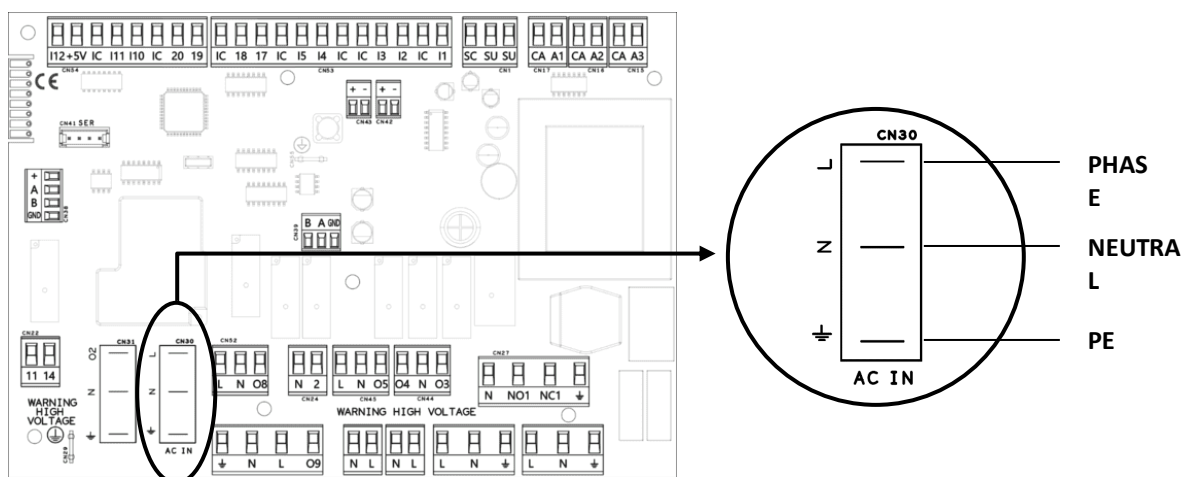
RS 050



RS 100

## POWER CONNECTION

Open the access panel to the electrical panel, bring in the power cable. On the connector shown in the figure should be brought the unit's power supply, for each of the 3 connections to be made there is a male plug-in faston terminal: one for phase L, one for neutral N and one for ground PE. Simply connect to each of the 3 terminals with the respective cable, which has a female plug-in faston terminal lug.



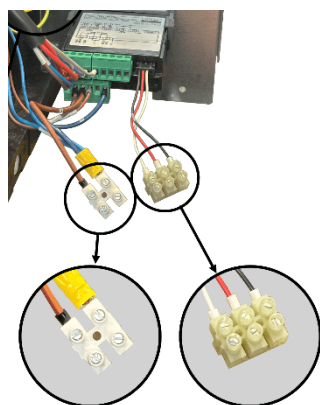
## 9.7 RS485-MODBUS SERIAL CONNECTION



Instructions for Modbus connections of units vary according to the Type of control:

- If touch display is present, follow the sections with "(touch display)".
- If the unit has "basic control", follow the sections with "(basic control)". To use the RS485 Modbus serial connection, the option "RS485-Modbus serial control" is required.

### 9.7.1 Terminal block and wiring (basic control)



Power supply



Modbus



*The image opposite is used for illustration purposes only to recognize the terminals on which to make connections.*

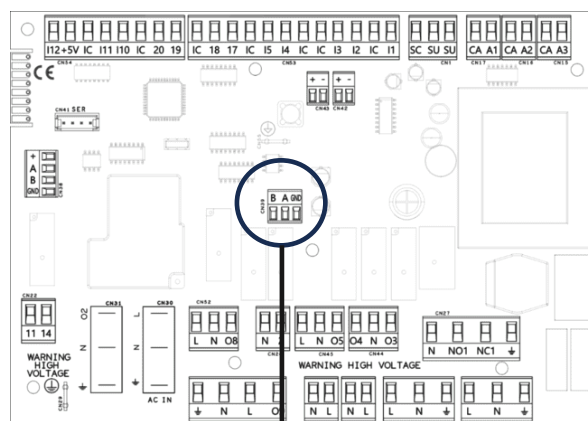
1. Follow the instructions in the previous chapter to access the electrical panel
2. insert and screw, into the "Modbus" terminal shown in the side image, the cables:
  - To cable A the + (positive pole)
  - To cable B the - (negative pole)
  - to the GND wire the network reference common
3. Once the connections have been made, close the panel of the electrical cabinet again.
4. The procedure is complete

### 9.7.2 Terminal block and wiring (touch display)

Use, for the connection of the whole Modbus network, 2 x 2 twisted pair (recommended: Belden 3106A cable) and connect the cable in the port shown in the next picture, considering that:

- At terminal A insert the + (positive pole)
- At terminal B insert the - (negative pole)
- to the GND terminal, insert the shielding braid

Respect on all networked devices the A, B, GND connection. The setting of Modbus parameters will be done later in the configuration phase of the unit, see chapter "Modbus RS485 serial connection."



Terminal for Modbus connection

## 9.8 UNIT CONTROL WIRING



Unit control wiring instructions vary by Type of control: if touch display is present follow the following sections ending in "(touch display)", otherwise "(basic control)"

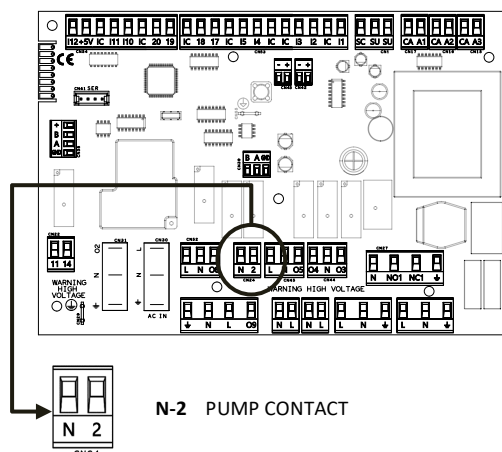
### 9.8.1 Unit control wiring and pump contact (basic control)



It is possible to use the thermostat digital input [20-18] (usable only if there is no on-board temperature probe and the version is "I"). In addition, it is possible to use the hygrostat digital input [17-18] (usable only if there is no humidity probe on board the machine) and turn ventilation on or off at digital input [19-18] or, if the version is "I," switch the season (open = summer | closed = winter) by configuring the parameter "LI3" in the installer menu.

For the pump contact, the unit provides a direct electrical control for the zone valve (or thermal head) at 230 V (MAX 1A), the phase of which is to be connected on terminal 5 (for the neutral there are no special indications).

### 9.8.2 Pump contact (touch display)



Proper installation of the unit requires a direct electrical connection between the 230 V zone valve (or thermal head) and the N-2 terminals. The zone valve must have a limit contact for activating the system pump. Electrical connections other than the one shown in the image above may not guarantee water flow to the unit, and, consequently, create operating problems for the unit.



**ATTENZIONE  
WARNING**

N-2 terminals must be connected to a zone head, water valve or water pump (max 1 A) to control the water supply to the unit. The control is in 230 V. For units with consumption greater than 1 A, interpose a power contactor or relay. In "I" versions if the N-2 contacts are not connected as indicated, the machine may be damaged. In such a case, the warranty will be immediately void.

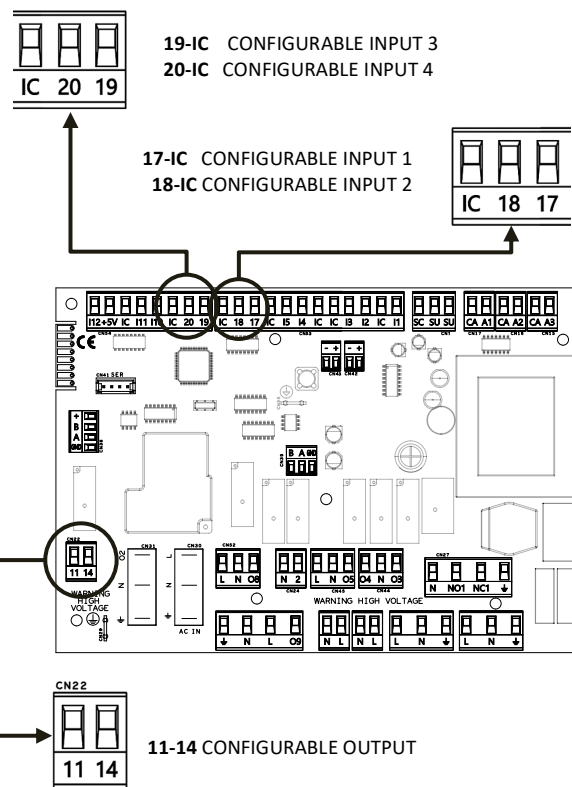
### 9.8.3 Unit control wiring: description and examples of use (touch display)

There are four inputs and one digital output that can be used to perform special communication functions between devices, listed and described in tables "9.9.1.2 CONFIGURABLE INPUT TABLE" and "9.9.1.2 CONFIGURABLE OUTPUT TABLE." Examples of use cases and usage of configurable inputs and outputs are:

- The user requests to be able to turn the unit off and on with a wall switch: it is decided to use the first configurable command, connect the 2 wires of the switch to terminals 17-IC, and when the unit is first started, set the first configurable command as "Remote ON/OFF" in the installer menu (see "9.11.1 Configuration and installer menu").
- Temperature control system control unit with one dry contact for summer/winter season switching and another for air handling enablement: it is decided to use the first of the configurable inputs and outputs for summer/winter season switching and the second for air handling enablement. Therefore, connect the first contact to terminals 17-IC and the second contact to 18-IC. Then, at the first start-up, set both contacts with their functions in the installer menu.
- Integration of generic or Dew point alarm into an external control unit: connect the two wires to terminals 11-14, and then set the configurable output as "Dew point alarm" in the installer menu when the unit is first started.

### 9.8.4 Unit control wiring : installation configurable inputs/outputs (touch display)

To install the configurable commands, it is necessary to connect to the dedicated terminals: (17-IC) - (18-IC) - (19-IC) - (20-IC) for inputs and (11 - 14) for output (as in the picture above). To complete the installation, at first start-up, continue with the configuration via display in the "I/O Configure-bile" tab in the installer menu (see "9.11.1 -Configuration and installer menu")



**AVVERTENZA  
CAUTION**

*It is recommended to set the output as a generic machine alarm or Dew-point alarm*

## Configurable input table (touch display)

| Possible configurations                                                                                                            | Open contact                                                                                 | Closed contact                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Remote ON/OFF</b>                                                                                                               | Unit shutdown command                                                                        | Unit power control                                                                                                                    |
| <b>Summer/winter season switching</b>                                                                                              | "Summer" season activation command                                                           | "Winter" season activation command                                                                                                    |
| <b>Enabling air exchange <sup>(1)</sup></b>                                                                                        | With external dampers: replacement off<br>Without external dampers: replacement at a minimum | replacement set by display                                                                                                            |
| <b>Forced air exchange <sup>(1)</sup></b>                                                                                          | Regular operation of the replacement                                                         | Forcing command setting spare at maximum speed                                                                                        |
| <b>Enabling air treatment</b>                                                                                                      | Heating, air conditioning and dehumidification not active                                    | Active heating, air conditioning and dehumidification based on display setting and environmental conditions                           |
| <b>Turbo <sup>(1)</sup></b>                                                                                                        | Regular operation of the unit                                                                | Turbo function activation command<br>(see chapter "Options and Functions")                                                            |
| <b>Temperature control</b>                                                                                                         | If season "summer"→ air conditioning not active, if "winter"→ heating not active             | If season "summer"→ air conditioning on, if "winter"→ heating on                                                                      |
| <b>Humidity control</b>                                                                                                            | If season "summer"→ dehumidify not active, if "winter"→ dehumidify not active                | If season "summer"→ dehumidify active, if "winter"→ dehumidify not active                                                             |
| <b>Fire Alarm</b> It is only available when connected to terminals 17-IC and thus present as configurable input #1 on the display) | Unit turned off in priority to any other logic                                               | Unit activated and operated from display, after resetting any previous fire alarm exclusively from display, by pressing ON/OFF button |

<sup>1</sup>Available with a heat recovery unit RDE/RCE/RFE

## Configurable output table (touch display)

| Possible configurations   | Open contact                     | Closed contact             |
|---------------------------|----------------------------------|----------------------------|
| <b>Ventilation status</b> | Active ventilation signaling     | Ventilation signal off     |
| <b>Dew Point Alarm</b>    | Active Dew Point Alarm Reporting | Dew Point alarm signal off |
| <b>Generic alarm</b>      | General alarm signaling active   | General alarm signal off   |

## 9.9 DISPLAY INSTALLATION - WIRING (TOUCH DISPLAY ONLY)

### 9.9.1 Cable type



To connect the display, the cable from the unit must es-surely be connected as in the picture above:

- - (negative) first wire
- A
- B
- + (positive) second wire

**AVVERTENZA CAUTION**

*For connection, it is mandatory to use a shielded, twisted pair cable such as the one supplied. Alternatively, especially in the case of installations where electromagnetic interference is possible that could affect communication between the board and the display, we recommend cables (commercially available) B6602CA249842 (Berica cables, 2x2x24AWG) or 50012L - RS485, (Belden cables, 2P 24AWG).*

### 9.9.2 Board-display connection

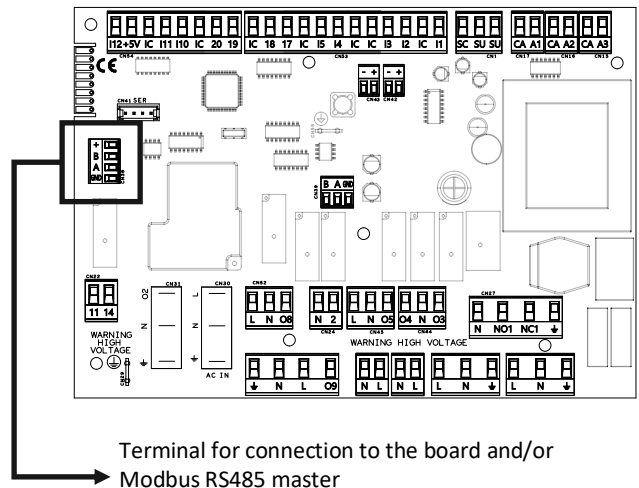


**AVVERTENZA  
CAUTION**

*Some units may have a transformer and an additional terminal. Connect the display cable to the latter. At this stage we will connect the cable to the display but leave it free, without installing it on the wall, so that the next stage of initial start-up, configuration and calibration can be carried out more easily. Once it is connected, it is imperative to store it in a safe location, away from risk of damage. To complete the wiring procedure, retrieve the previously stored cable and proceed with the connection, plugging it into the display and board terminals, as in the following pictures.*



Clamp with inserted cable for connection to the display



## 9.10 FIRST STARTUP CONFIGURATION, AND CALIBRATION



**ATTENZIONE  
WARNING**

*Read the entire chapter in its entirety before performing the procedures. These should be carried out by trained personnel only: do not improvise, danger of unit malfunction. Check that all components are properly installed before proceeding. Verify that all plumbing, electrical and aeraulic connections and all label and manual directions are followed. Check that the hydraulic circuit taps, if any, are open and that the hydraulic system has been vented by removing any residual air, gradually loading it and opening the venting devices. Pressurize the system and check for water leaks before using the machine.*

Now you can turn on the unit and proceed to setup. A few seconds after the unit is turned on, the display will light up and be ready to operate independently. First, let's access the installer menu:

- If the unit is equipped with basic control, proceed to read the chapter "Configuration (basic control) "
- If the unit is equipped with a touch display, proceed to read the chapter "Configuration (basic control) "

Regarding general information about calibration, read the next chapter.

#### 9.10.1 Calibration (premise)



**AVVERTENZA  
CAUTION**

*If the unit is equipped with basic control, follow the instructions in chapter "Calibration (basic check) ", otherwise, if the unit is equipped with a touch display, proceed to read chapter "Calibration (basic check) ".*

Since each installation has its own peculiarities, it is essential to measure and correct air flow rates according to actual operating conditions. Units are factory programmed to offer a "fixed" Static pressure, but, almost certainly, this will not be suitable for the installation. It therefore becomes essential to correct air flow rates according to different operating conditions: The use of an anemometer is necessary, and a flush anemometer is strongly recommended.



**ATTENZIONE  
WARNING**

*If calibration is not performed properly or is omitted, air flow rates may differ from design flow rates, impairing proper operation of the unit and reducing performance and efficiency. A unit not properly calibrated by unqualified personnel is excluded from warranty.*



**AVVERTENZA  
CAUTION**

*In some installations, excessively long, narrow or twisted air ducts may be installed, which could cause high pressure losses and obstruct air flows. When calibrating the unit, the fan speed would*

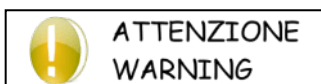
*increase excessively, generating unpleasant noise for the user; remember that a 15% reduction in airflow rate is acceptable.*

If the unit is equipped with basic control, follow the instructions in chapter "Calibration (basic check) ", otherwise, if the unit is equipped with a touch display, proceed to read chapter "Calibration (basic check) ".

### 9.10.2 Configuration (basic control)



With the unit powered on, scroll with the "▼ " button until "PAS" (Password) is displayed. Enter password 010 (using the "▲ " and "▼ " buttons) and confirm to proceed. If the password is correct, a code will then appear: this is the first item in the user menu, which consists of a list of parameters (both editable and read-only) that can always be scrolled through using the "▲ " and "▼ " buttons. We report a table with the list of parameters and their functions on the next page "Installer menu parameters ".



**ATTENZIONE  
WARNING**

*If optional accessory on-board humidity or room temperature probes are present, the PV parameter must be equal to 3.*

### 9.10.3 Calibration (basic check)



**AVVERTENZA  
CAUTION**

*Before reading the calibration instructions, please read the previous chapter "Calibration (premise) "*

To calibrate the unit, follow these steps: place the anemometer near the unit's intake nozzle, enter the installer's menu (see previous chapter) and scroll down to the "VM" parameter, access and adjust this value with the "+" and "-" keys, considering that the anemometer's air flow rate reading (intake) must correspond to the nominal air flow rate given in the technical data table in this manual. Once the desired calibration has been made, press the "✓ " key to save the configuration.

## Installer menu parameters

| Display | Acronym | (Code) and Short Description                   | Range of values that can be set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Default |
|---------|---------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| ζM      | VM      | Modulating fan speed                           | The values that can be changed range from a guaranteed minimum to a maximum of 9.9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |
| ΠΣΑ     | PSA     | Presence of the air probe on board the machine | NO – ΨΕΣC (no - yes)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (NO)    |
| ΠΣΥ     | PSU     | Presence of the on-board humidity probe.       | NO – ΨΕΣC (no - yes)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (NO)    |
| ΛΙ3     | LI3     | Logic input DI3                                | Στ – ζε (season - ventilation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | (ΣT)    |
| ΛΟ3     | LO3     | Logic output 3                                 | ζΑ – ΑΑ (water valve - alarm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | (ζΑ)    |
| ζΣ      | VS      | Displays % fan current                         | 0 ↔ 100 (Read only, not editable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |
| Πζ      | PV      | Fan activation                                 | <p>0 = Fan running continuously at rated flow rate</p> <p>1 = Fan turns on when the compressor is turned on in summer and, in winter, turns on immediately when the heating demand is met</p> <p>2 = In summer, if:</p> <ul style="list-style-type: none"> <li>- FC(FC) = 0: fan turn-on occurs at any treatment request</li> <li>- FC(FC) = 1: the fan is turned on at the demand for dehumidification</li> <li>- FC(FC) = 2: the fan is turned on at the cooling demand</li> <li>- FC(FC) = 3: the fan is turned on if both cooling and dehumidification demand are present</li> </ul> <p>In winter: the fan is turned on if there is a demand for heating.</p> <p>3 = Same as FC(FC) = 2 but, if there are no demands given above, the fan runs at reduced speed (see parameter "VVR" in this table).</p> <p><b>**Note:</b> If on-board humidity probe is present, the default value is FC(FC) = 3</p> | 2 (3**) |
| ΦΧ      | FC      | Activation of compressor and/or pump contact   | <p>The compressor and/or pump contact are activated if:</p> <p>0 = dehumidification demand present or cooling demand present</p> <p>1 = demand for dehumidification present</p> <p>2 = cooling demand present</p> <p>3 = both dehumidification and cooling demand present</p> <p>Note: If there are probes on board the unit and you decide to use either parameter "0" or "2," set the previous parameter FV (PV) = 3.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1       |
| MA      | MA      | Modbus network address                         | 1 ↔ 247                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1       |
| MB      | MB      | Modbus baudrate                                | 0=1200, 1=2400, 2=4800, 3=9600, 4=19200, 5=38400, 6=56000, 7=115000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3       |
| ΨεσC    | YES     | Defrost start temperature                      | -35.0°C ↔ SF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -5,0    |
| ΣΦ      | SF      | Defrost end temperature                        | SI ↔ 45°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 6       |
| ΣΔ      | SD      | Maximum defrost duration time                  | 1 ↔ 240 min                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4       |
| ΣΧΛ     | SCL     | Drip duration                                  | 0 ↔ 60 min                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2       |
| ΣΤ      | ST      | Time between two defrosts.                     | 0 ↔ 999 min                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 150     |
| OAM     | OAM     | Room probe offset                              | -10.0 ↔ +10.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,0     |
| OYM     | OUM     | Humidity probe offset                          | -20.0 ↔ +20.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,0     |
| ωP      | VVR     | Reduced fan speed                              | 1.2 ↔ 9.9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1,5     |



### ATTENZIONE WARNING

Some parameters may not appear, depending on the version of the unit and/or the presence of certain accessories. In particular, the following parameters will appear only if the conditions in the right column of the following table are met:

|     |                                      |
|-----|--------------------------------------|
| ΠΣΑ | Version "I"                          |
| ΛΙ3 | Modifiable only if version "I"       |
| ΦΧ  | Version "I"                          |
| OAM | "I" version and with suction probe T |
| OYM | With suction probe RH                |

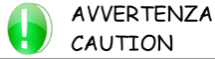
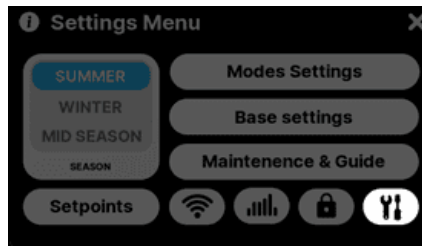
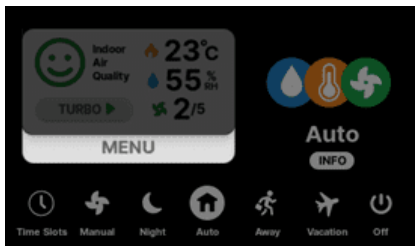
### 9.10.4 Configuration and installer menu (touch display)



### ATTENZIONE WARNING

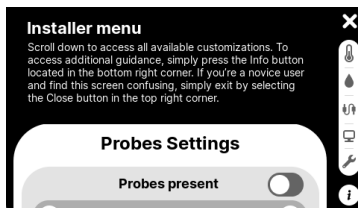
**Use of this menu is intended for installers or experienced users only. Changing the following settings without knowing their effects could affect the operation of the unit.**

To enter the installer menu, press the "menu" button found on the main Screen and then the bottom left button. A password entry screen will appear before entering the dedicated screen (containing the list of settings).



By entering the code "0010" it will be possible to continue.

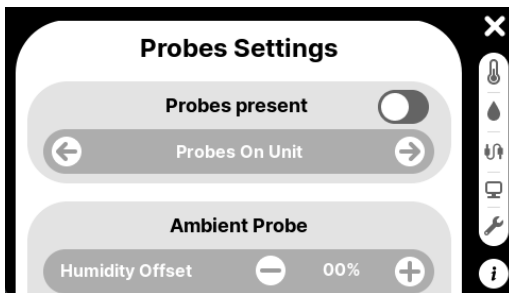
This menu contains all the configuration settings of the unit, grouped into 5 tabs:



- Probes
- Air Treatment
- Configurable inputs and outputs
- Modbus connection
- Utility

In the image above we show the installer menu screen: the vertical bar on the right contains buttons for quick access to the tabs of the above-mentioned groups and the buttons "info" for help and "X" for exit. On the top instead, there is a description, followed by the 5 tabs mentioned above. To configure the unit, we recommend scrolling through all these five tabs and choosing the desired settings, which we will describe in the next paragraphs.

### Probes

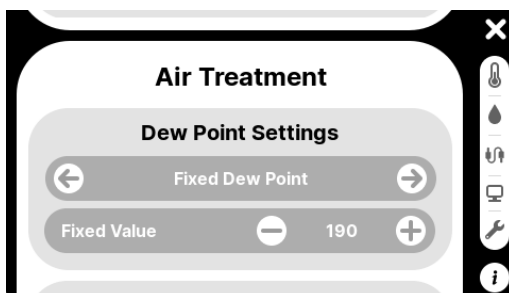


In this tab you can choose probe settings, grouped in the following groups, from top to bottom:

**Probes on board unit:** you can choose whether to enable or disable the use of temperature probes as a reference for air treatment and, if active, select which probes to use from probes on board unit or on display (default: "Active" and "Probe on display").

**Room Probe Offset:** here you can change the deviation value from the detection of the temperature and humidity probes (default 0% and 0.0°)

### Air Treatment



In this tab you can choose settings related to air treatment, grouped in the following panes, from top to bottom:

**Dew-point settings:** here you can choose one of two dew-point management methods (default: "Fixed dew-point" and "19.0 °C"):

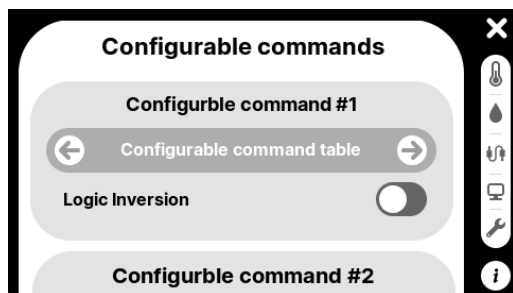
- **Fixed dew-point:** is the surface temperature value, which can be defined, as a fixed value, by the user
- **Variable dew-point:** is the surface temperature value, understood as the sum of the incoming water temperature and a user-definable differential

- **Cooling management:** allows the choice of air cooling mode (default: compressor only):

- *Compressor only:* cooling performed by turning on the compressor
- *Water only:* cooling performed by running water through the coil
- *water + compressor:* cooling performed with water or compressor depending on the distance of the room temperature from the set-point

**Air treatment priority - Summer:** allows you to set, if the season is set to "summer," the type of air treatment between: dehumidification and cooling, dehumidification only, cooling only (default: "dehumidification and cooling").

## Configurable inputs and outputs



Configurable INPUTS AND OUTPUTS are a special function of the unit that allows communication (input or output) with other devices, via digital contacts. There are four inputs and one output on this board: for each one you can set the Type of command to be associated and the possibility of reversing the logic.



*If you do not want to set any command, select the option: "Not active" and that the "fire alarm" command is available only on configurable input #1.*

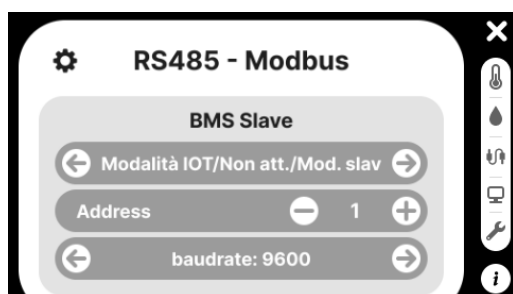
We summarize below the list of selectable options, for more information see the tables under "Configurable Input Table (Touch Display)" and "Configurable Output Table (Touch Display)," which contain descriptions and specific operation of each, in the chapter "Unit Control Wiring."

### Inputs

- Fire Alarm
- Hood function
- Moisture demand: activate dehumidification
- Temperature request
- Turbo
- Enabling treatment
- Replacement forcing
- Spare Enabling
- Remote on/off
- Summer/winter season

### Outputs

- Ventilation status
- Dew Point Alarm
- Generic alarm



In this tab you can set the parameters and connection options. In the first field we will be able to decide the remote management mode:

**IoT:** control of the unit is managed either by serial or directly by touch display, The following two options are deprecated, but remain present for backward compatibility:

- **Slave:** the control of the unit is exclusively and completely managed by serial;
- **Slave SL:** All functions of the unit are controllable from the display, except for the "season" switch, which is operated by serial,

**Not active:** Modbus control disabled.

By default the Modbus connection is not active; to enable it you will have to select IoT (or the deprecated Slave and Slave SL). You can also change the communication address and baud rate, the default values of which are "1" and "9600" respectively.

### Utility

In the latter group there are several settings such as:

**Clock in use:** here you can select the clock in use, whether the one built into the display or from serial (default: serial).

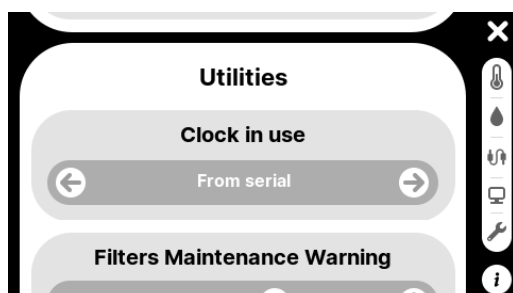
**Filter maintenance warning:** determines how often a filter cleaning warning is shown on the display (default: 2880 hours).

**Recuperator:** here you can enable the connection with the external heat recuperator RDE/RCE/RFE. It is recommended to read the chapter "Installation of independent heat recovery unit (touch display only)" to understand the installation procedure (default: not present).

**Calibration:** provides access to the process aimed at best adjusting the operation of the unit in your home, for experienced users only (more information found in the next chapter "Calibration").

**Alarm History:** provides access to the Screen that presents a list of the most recent alarms recorded by the unit.

**Reset calibration values:** allows the calibration values to be reset.

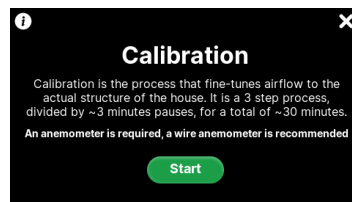


**Reset factory settings:** allows you to reset all values in the basic, mode, general and installer menus to factory settings.



*The use of calibration is intended only for trained personnel who are aware of their actions. In fact, improper use could jeopardize the proper operation of the unit. Using the "Reset calibration*

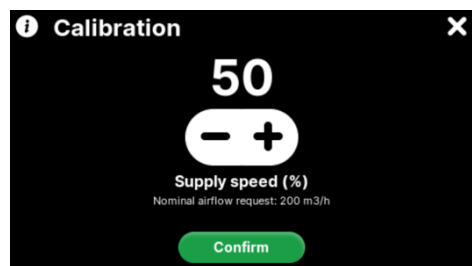
*values" and "Reset factory settings" buttons will result in the permanent deletion of the relevant settings, making it impossible to recover them. Therefore, it is recommended to use these buttons with caution.*



#### ■ Calibration



*Before reading the calibration instructions, please read the chapter "Calibration (premise)"*



To calibrate the unit, go to the installer menu and scroll down to the "Calibration" button (or, alternatively, simply use the code "0099" to access the menu). To start the procedure, press the start button, shown in the image below. Here, using the "+" and "-" buttons, you can adjust the fan speed: place the anemometer near the unit's intake vent, and change the "nominal flow rate" value (in a range of %) so that the anemometer's air flow rate reading (on intake) corresponds to the "Request nominal air flow rate" value also shown in the technical data table. Once the desired calibration is obtained, press the "Confirm" button to complete the operation.

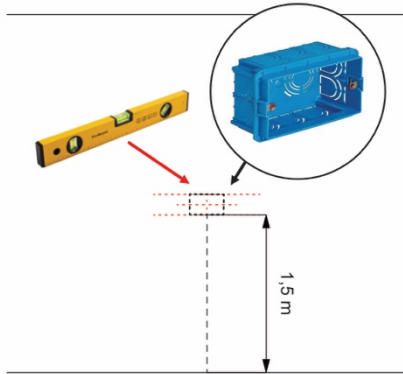
## 9.11 WALL-MOUNTED DISPLAY INSTALLATION (TOUCH DISPLAY ONLY)

The assembly of the display is done in two steps:

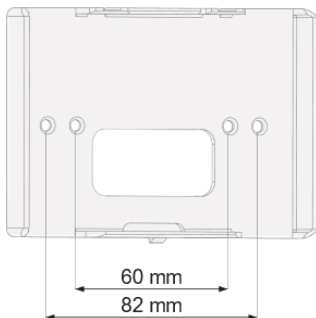
- 1 · Wall box arrangement
- 2 · Display mounting

**Proceed with caution during these operations so as to avoid damaging components on the touch display.**

### 9.11.1 Cassette arrangement



We recommend placing the cassette at a height of 1.5 meters. We also recommend, for a perfectly horizontal installation of the cassette, the use of a spirit level. Use a 503 (Italy) cassette for installation, or round cassette (Austria/Germany) or similar models that are compatible with the positions of the holes on the back of the touch display (shown in the image below).

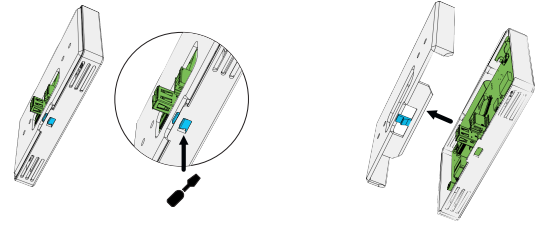


When you have finished installing the cassette, insert and slide the display connection cable from the unit, previously connected to the board.

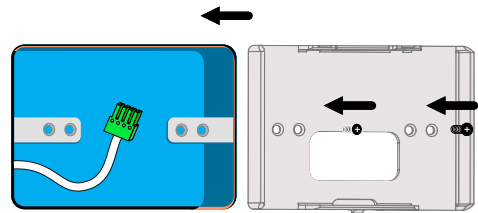
**The display should be placed away from heat sources and drafts, otherwise the internal temperature and humidity probes will read incorrect values, impairing proper operation of the unit.**

### 9.11.2 Wall display mounting

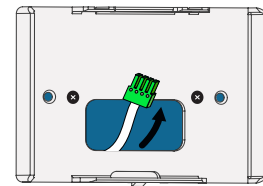
**Step 1:** Using a flathead screwdriver, press down the tab on the bottom edge of the display (shown in the image) so as to separate the back cover, which will be the wall-mounted attachment base for the display.



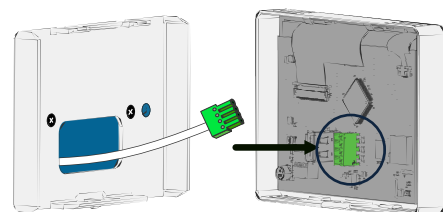
**Step 2:** Proceed by securing the rear cover with screws, inserting them into the available holes of the previously installed cassette tabs.



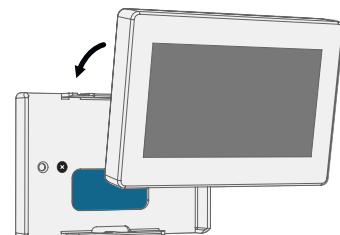
**Step 3:** After tightening the screws, pull the connection cable out of the center opening of the back cover.



**Step 4:** Insert the cable into the terminal on the back of the display.



**Step 5:** To complete the installation, hook the display body to the cover attached to the wall.



The unit is then ready to be used by the user, once power is supplied to the unit, the display will turn on in turn. Refer to the next chapter on how to use the display.

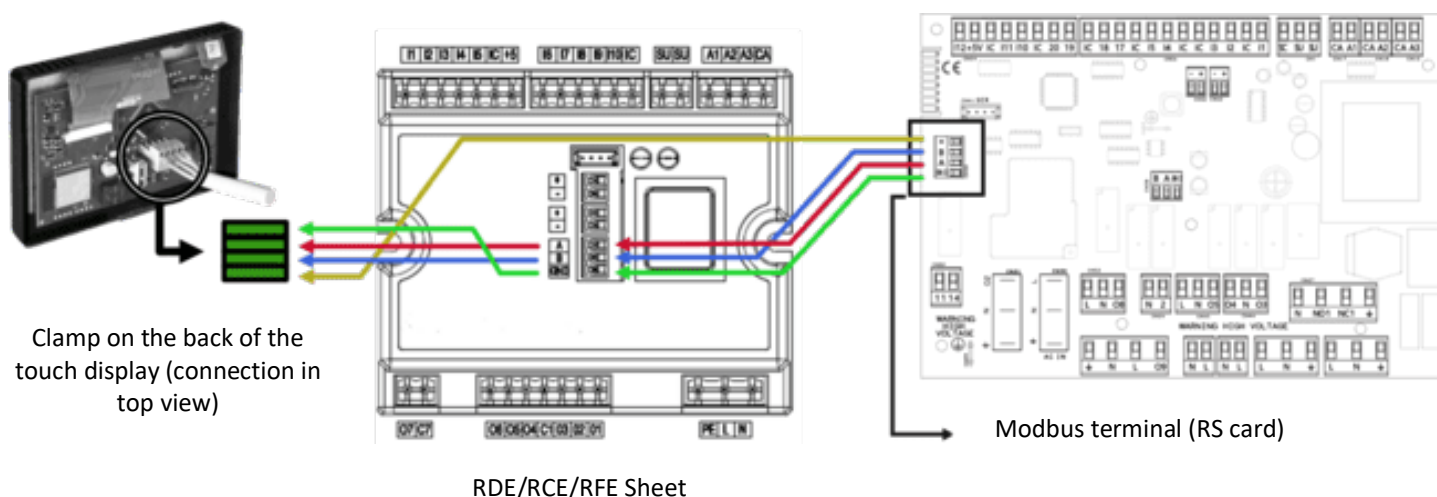
## 9.12 HEAT RECOVERY UNIT INSTALLATION (TOUCH DISPLAY ONLY)

RS units can be connected to heat recovery units, it is either generic or an RDE/RCE/RFE unit.

If you are using a generic heat recovery unit, you will not be able to access the special functions indicated in the different chapters of the manual. The connection method consists of a single dry contact that communicates the presence or absence of the Dew point alarm: refer to the chapter "Unit control wiring" and set the configurable output as "Dew point alarm." To customize the Dew point management strategy, access the installer menu and, under the "Air Treatment" tab, select the most appropriate settings for the type of installation.

Instead, the RS - RDE/RCE/RFE connection instructions are as follows: follow the diagram below, starting from the port indicated on the RS unit board. From this terminal lead to the terminal on the replacement unit board (RDE/RCE/RFE) and to the rear terminal of the touch display these connections:

- "+" from RS directly on the touch
- "A" from RS to RDE/RCE/RFE and then on the touch
- "B" from RS to RDE/RCE/RFE and then on the touch
- "GND" from RS to RDE/RCE/RFE and then on the touch



### ATTENZIONE WARNING

*In order to connect the replacement unit, the replacement unit must not have any display connected to it.*



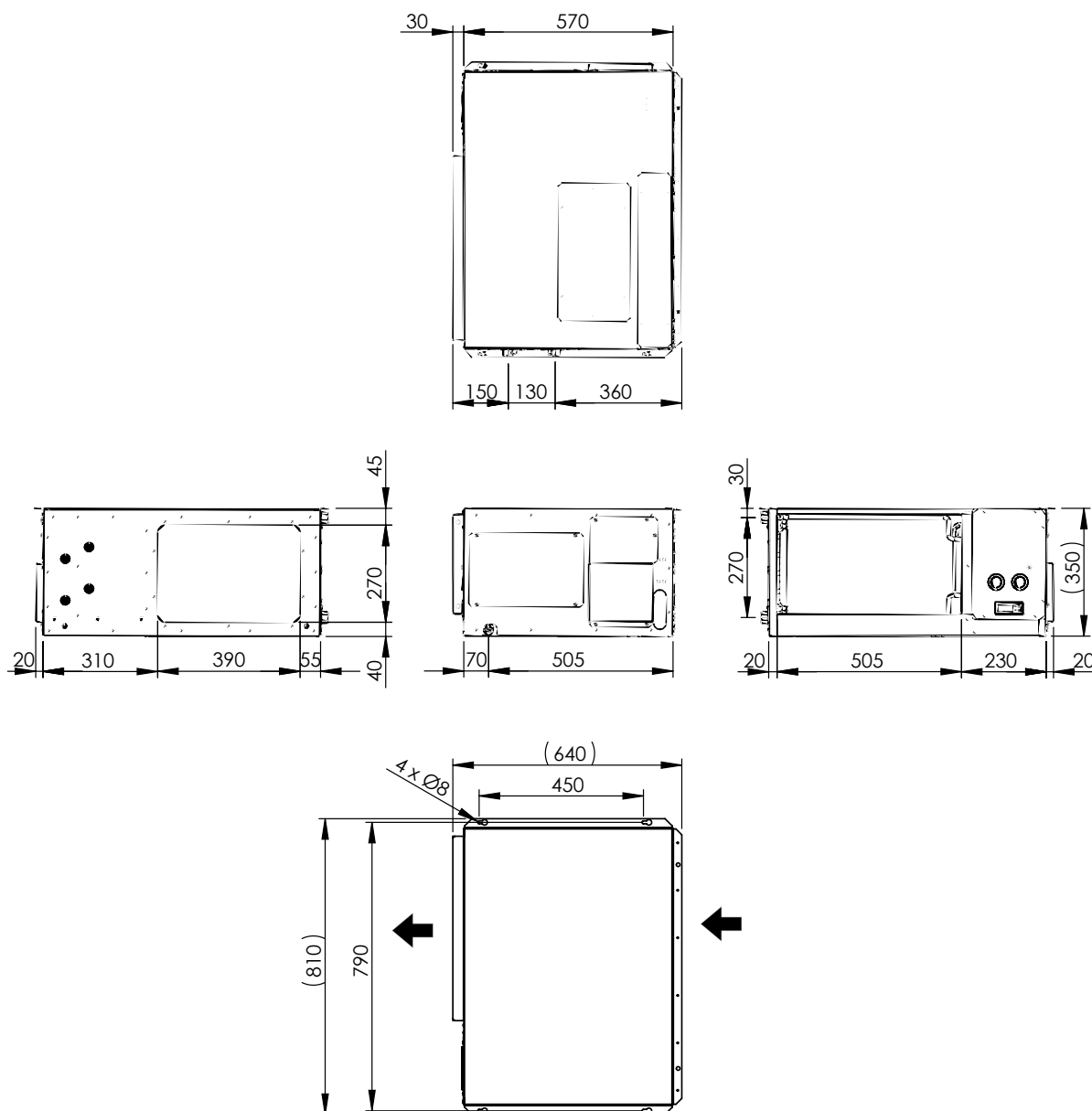
To finish the installation, in the installer menu, set the recuperator as "present" in the "Utilities" tab at the bottom of the Screen" and, to customize the Dew point management strategy, in the "Air Treatment" tab, select the most appropriate settings for the type of installation.

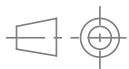
Now the units are ready to be used together, air exchange controls and all the functions described in this manual will appear in the touch display.



## 10 DIMENSIONAL DRAWINGS

### 10.1 RS 050



|   | Descrizione (ITA)                                         | Description (ENG)                                               | QUOTE SENZA<br>INDICAZIONE<br>DI TOLLERANZA<br><br>GRADO DI<br>PRECISIONE<br>MEDIO<br>UNI 5307-63<br><br> |
|---|-----------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Quadro elettrico                                          | Electrical panel                                                |                                                                                                                                                                                                |
| 2 | Pannello di ispezione/ manutenzione compressore           | Compressor inspection / maintenance panel                       |                                                                                                                                                                                                |
| 3 | Scarico condensa vaschetta                                | Tray condensation drain                                         |                                                                                                                                                                                                |
| 4 | Uscita acqua al sistema radiante 1/2" GAS femmina (A-I-W) | Water outlets to radiant system 1/2" female BSP thread (A-I-W)  |                                                                                                                                                                                                |
| 5 | Ingresso dal sistema radiante 1/2" GAS femmina (A-I-W)    | Water inlets from radiant system 1/2" female BSP thread (A-I-W) |                                                                                                                                                                                                |
| 6 | Filtro di ripresa aria ambiente                           | Ambient air inlet filter                                        |                                                                                                                                                                                                |
| 7 | Ventilatore                                               | Fan                                                             |                                                                                                                                                                                                |
| 8 | Vaschetta scarico condensa                                | Condensate drain tray                                           |                                                                                                                                                                                                |

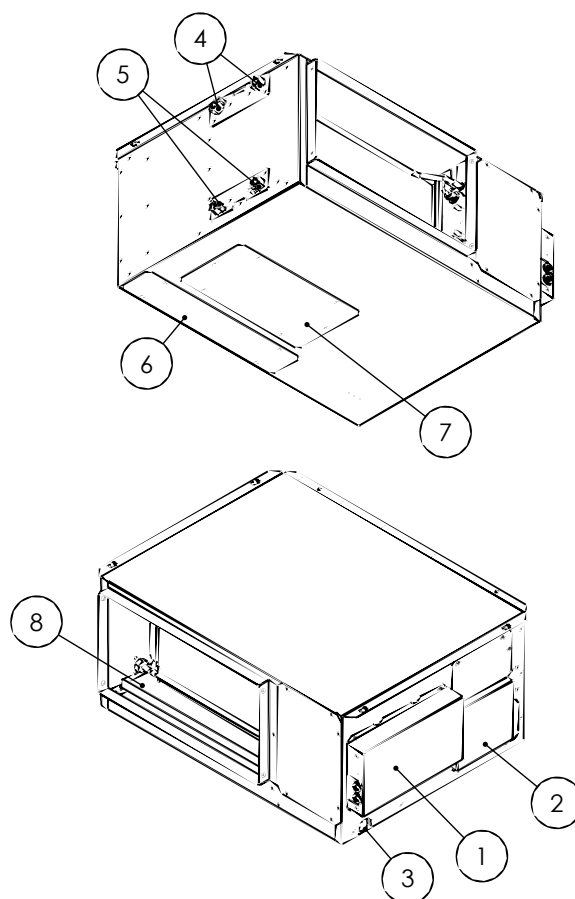
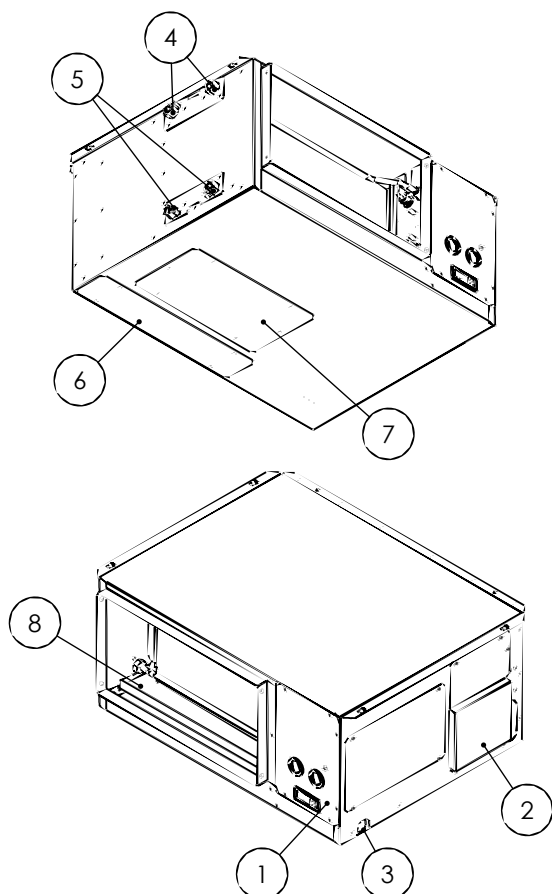


**Please note, the version shown in the drawing is the version with the basic control, it only differs in the shape and size of the control box. More information on the second page.**

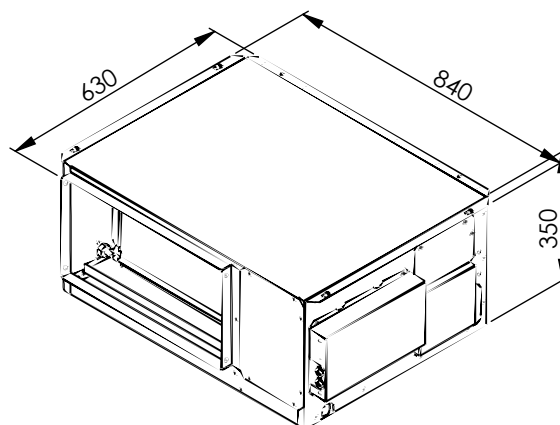
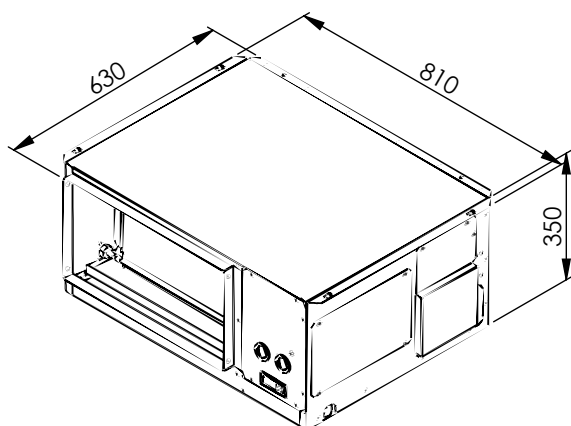
**Controllo base / Basic control**

**Controllo touch / Touch control**

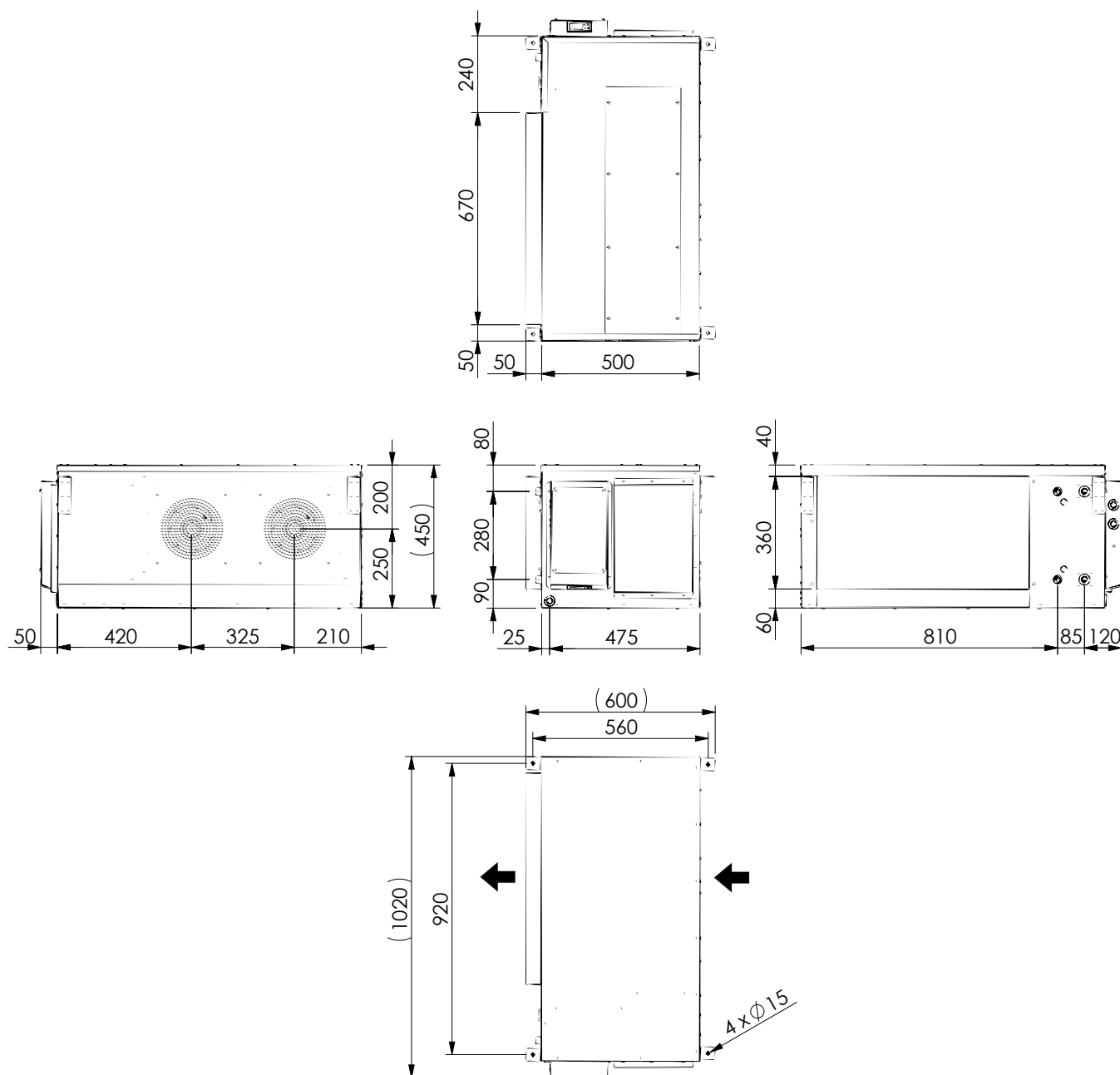
**Vista isometrica / Isometric view**

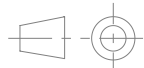


**Dimensioni esterne / External dimensions**



## 10.2 RS 100

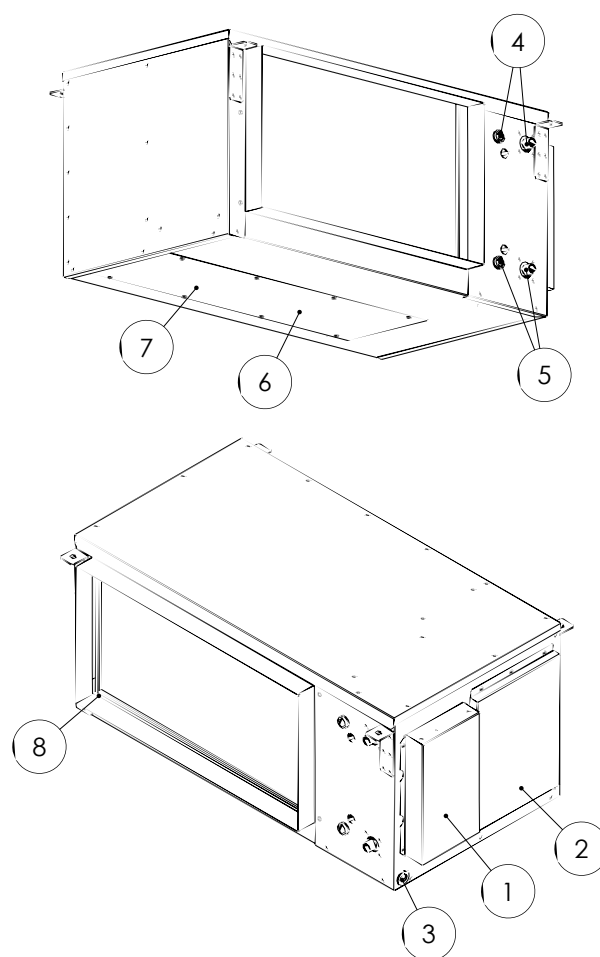
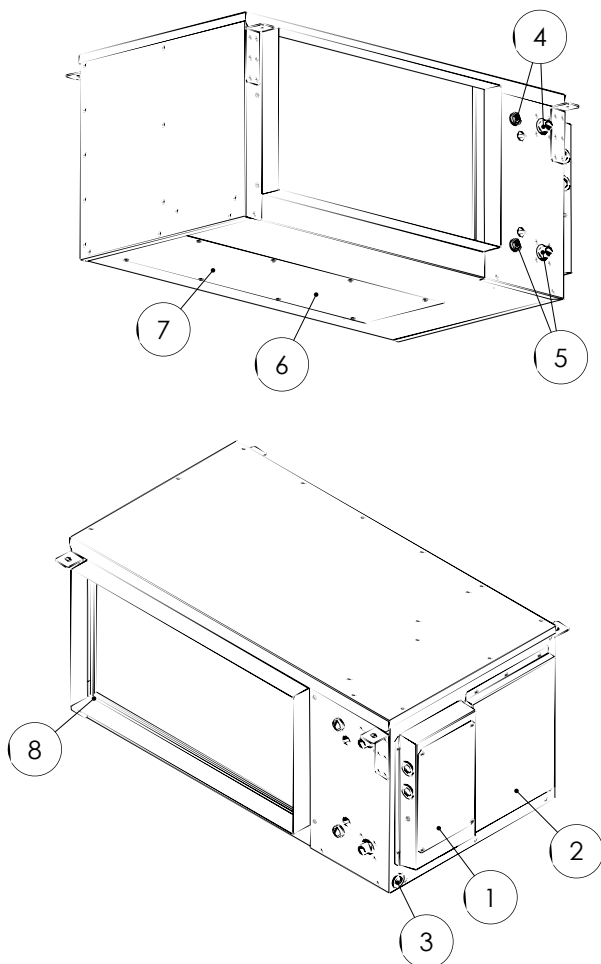


|   | Descrizione (ITA)                                         | Description (ENG)                                               | QUOTE SENZA<br>INDICAZIONE<br>DI TOLLERANZA<br><br>GRADO DI<br>PRECISIONE MEDIO<br>UNI 5307-63<br><br> |
|---|-----------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Quadro elettrico                                          | Electrical panel                                                |                                                                                                                                                                                             |
| 2 | Pannello di ispezione/ manutenzione compressore           | Compressor inspection / maintenance panel                       |                                                                                                                                                                                             |
| 3 | Scarico condensa vaschetta                                | Tray condensation drain                                         |                                                                                                                                                                                             |
| 4 | Uscita acqua al sistema radiante 1/2" GAS femmina (A-I-W) | Water outlets to radiant system 1/2" female BSP thread (A-I-W)  |                                                                                                                                                                                             |
| 5 | Ingresso dal sistema radiante 1/2" GAS femmina (A-I-W)    | Water inlets from radiant system 1/2" female BSP thread (A-I-W) |                                                                                                                                                                                             |
| 6 | Filtro di ripresa aria ambiente                           | Ambient air inlet filter                                        |                                                                                                                                                                                             |
| 7 | Ventilatore                                               | Fan                                                             |                                                                                                                                                                                             |
| 8 | Vaschetta scarico condensa                                | Condensate drain tray                                           |                                                                                                                                                                                             |

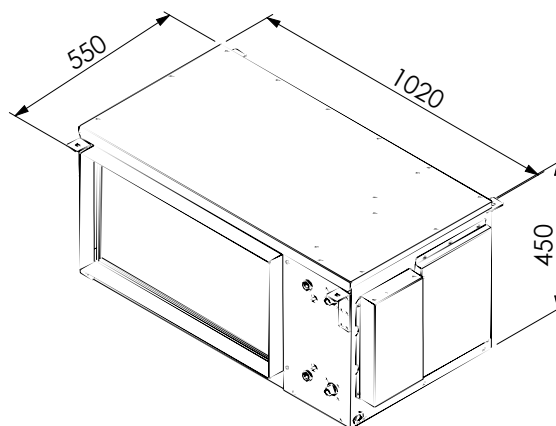
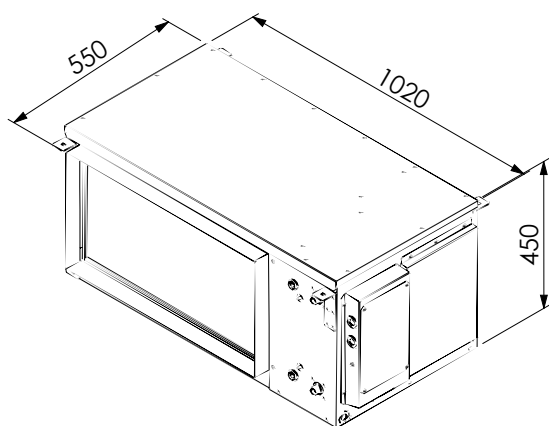
**Controllo base / Basic control**

**Controllo touch / Touch control**

**Vista isometrica / Isometric view**



**Dimensioni esterne / External dimensions**





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