GF Building Flow Solutions

Uponor Ventilation D Dehumidifier
CEI 600 m³/h

EN Installation and operation manual

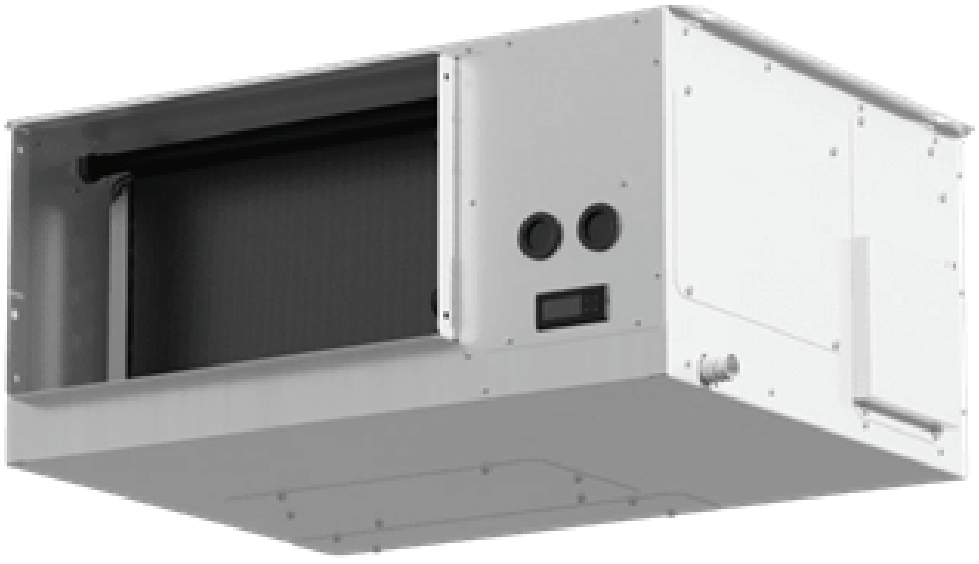

Table of contents

1 Safety instructions and disclaimer

1.1 System overview

Safety messages used in this document

Warning!
Risk of injury and damage. Ignoring warnings can cause personal injury and/or damage to products and other property.

Caution!
Risk of malfunctions. Ignoring cautions can cause the product to not operate as intended.

Note
Important information to the section in the manual.

Uponor uses safety messages in the document to indicate special precautions required for the installation and operation of any Uponor product.

Safety measures

Note
For safe and proper use, obey the instructions given in this document. Keep them for future reference.

The installer and operator agree to comply with following measures regarding Uponor products:

- Read and obey the instructions and processes in the document.
- The installation must be performed by a qualified installer in accordance with local regulations.
- Uponor is not liable for modifications not specified in this document.
- Switch off all connected power supplies before starting any wiring work.
- Do not expose the Uponor components to flammable vapours or gases.
- Do not use water to clean electrical Uponor products/ components.

Uponor is not liable for damage caused by ignoring the instructions in this document or the applicable building code.

Power

Warning!
Uponor system power supply: 230 V AC, 50 Hz. In case of emergency, immediately disconnect the power.

Technical constraints

Caution!
To avoid interference, keep data cables away from components bearing power of more than 50 V.

1.2 Limitations for radio transmission

Wireless Uponor products use radio transmission for communication. The used frequency is reserved for similar applications, and the risk of interference with other radio sources is very low.

However, in some rare cases, radio communication can be faulty. The transmission range is sufficient for most applications, but certain surroundings affect the radio communication and maximum transmission distance.

If communication disturbances occur, uponor recommends to relocate the antenna to a better position. Preferably, install Uponor radio sources **at least 40 cm** apart to prevent exceptional disturbances.

1.3 Correct disposal of this product (Waste Electrical and Electronic Equipment)

Note
Applicable in the European Union and other European countries with waste separation systems.

This icon on the product, or in the related documents indicates that it should not be disposed with household waste. Please, recycle responsibly to support the sustainable use of resources and prevent possible harm to human health and/or the environment.

Household users should contact the retailer where they purchased this product, or their local government office, for details on where and how they can take it for recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. Do not dispose this product with other commercial waste.

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The presumption for the document is that the product related safety instructions are fully obeyed. The following requirements apply to the

Uponor product (including any components) as covered by the document.

- The system (combination of products) is selected and designed by a competent planner. It is installed and put into operation by a licensed and/or competent installer in compliance with the instructions provided by Uponor. Locally applicable building and plumbing codes/regulations have been obeyed.
- Temperatures, pressure and/or voltage limits according to product and design information have not been exceeded.
- The product remains in its originally installed location and is not repaired, replaced, or interfered with, without prior written consent of Uponor.
- The product is connected to potable water supplies or compatible plumbing, heating and/or cooling systems approved or specified by Uponor.
- The product is not connected to or used with third-party products, parts, or components except for those approved or specified by Uponor.
- The product does not show evidence of tampering, mishandling, insufficient maintenance, improper storage, neglect, or accidental damage before installation and being put into operation.

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2 System description

2.1 Series

Pos.	Item
1	CEI 600 m³/h I
2	CEI 600 m³/h N

Uponor CEI dehumidifiers for ducted ceiling mounted installations 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 space cooling is carried out by radiant systems such as floor, wall and ceiling. The low air velocity also will not create the annoying drafts typical of traditional air conditioning systems, thus ensuring maximum environmental comfort. The exclusive use of absolute quality components in the refrigeration, hydraulic, aeraulic and electrical components make CEI units state-of-the-art dehumidifiers in terms of efficiency, reliability and sound power output.

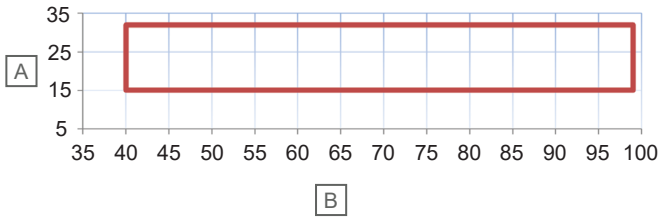
The units when properly supplied with chilled water at 15 °C are able to dehumidify room air without altering its temperature. In summer with demand for cooling or dehumidification or both, and in winter with demand for heating, the water valve will be opened and the supply air will be treated. Models with function "N" (isothermal) are equipped with 2 heat exchangers whose purpose is to pre-cool the incoming air and postcool it after the dehumidification process so as not to alter the air temperature.

Models with the "I" (integrated) function are equipped with a heat exchanger whose purpose is to pre-cool the incoming air and with a room inlet probe and brazed plate condenser that enable the unit to provide cooled air should the room temperature exceed the setpoint set on the dehumidifier. The CEI "I" unit cannot operate without chilled water, and should this occur it will go into lockout. Units "N" and "I" in summer, with water below 8 °C and above 32 °C the unit will go into alarm until the correct water temperature is restored. In winter, the maximum and minimum limits are 7 °C and 60 °C.

2.2 Operating limits

Warning!

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. Uponor CEI dehumidifiers cannot operate without chilled water, which must comply with the rated flow rate l/hr in the technical data. In the event that this is not done, a blockage of the unit will occur.



Pos.	Description
A	Indoor air temperature (°C)
B	Indoor air humidity (%)

2.3 Control and functions

Description	Control
	CEI 600
RS485 Serial board - modbus	Included
Room temperature probe	Optional via Uponor Smatrix
Room humidity probe	Optional via Uponor Smatrix
Delivery plenum	Included
On board temperature probe	Included

RS485 Modbus Serial Board

RS485 Modbus bus connection is included for supervising the unit remotely or from home automation system. RS485 serial adapter to be ordered separately.

On-board suction T-probe ("I" versions only)

Allows you to control the room temperature, without the need for a thermostat. It is a probe placed in the suction that activates, in the user menu, the possibility of setting a temperature setpoint.

3 Installation

3.1 Premise

Inspection

Upon receipt of the unit, check its integrity, the machine left the factory in perfect condition, any damage should 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 customer must complete a written report concerning any significant damage.

Unloading and transporting

Warning!

In all lifting operations ensure that the unit is securely anchored in order to avoid accidental tipping or falling. Do not move or lift the unit by the removable panels. Tilting the unit by ± 30° and/or overturning the unit is prohibited.

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

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.

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 down the model, serial number, final refrigerant charge and reference diagrams of the machine in the table below so that they can be easily found if the nameplate deteriorates.

Item	
Model	
Serial number	
Date of production	
PED/ CE 2014/68/EU Category	
Conformity assessment procedure - Conformity module	
TSe external ambient (max/min) (°C)	
TSi internal ambient (max/min) (°C)	
Maximum storage temperature (°C)	
Maximum operating temperature - Maximum ambient working temperature (°C)	
Minimum ambient working temperature - Minimum ambient working temperature (°C)	
Refrigerant (ASHRAE - 513A)	
Refrigerant charge (kg)	
Equivalent tons CO2	
Empty weight (kg)	
Power supply	
Nominal absorbed power - Nominal power input (kW)	
Nominal current - Nominal absorbed current (A)	
Maximum current - Full load ampere FLA (A)	
Inrush current - Starting current LRA (A)	
Electrical diagram - Wiring diagram	

3.2 Installation options

Some chapters or sections indicate specific instructions for "Basic control" or "Touch display", unless specified, the instructions apply to both.

3.3 Positioning

Warning!

All CEI models are designed and built for indoor installation. Do not install the unit outdoors and make sure that the unit is not exposed to weather such as rain, hail, moisture and frost.

Warning!

It is forbidden to tilt the unit more than ± 30 ° and/or overturn the unit, even temporarily. Danger of compressor rupture. Failure to comply with these requirements will void the warranty.

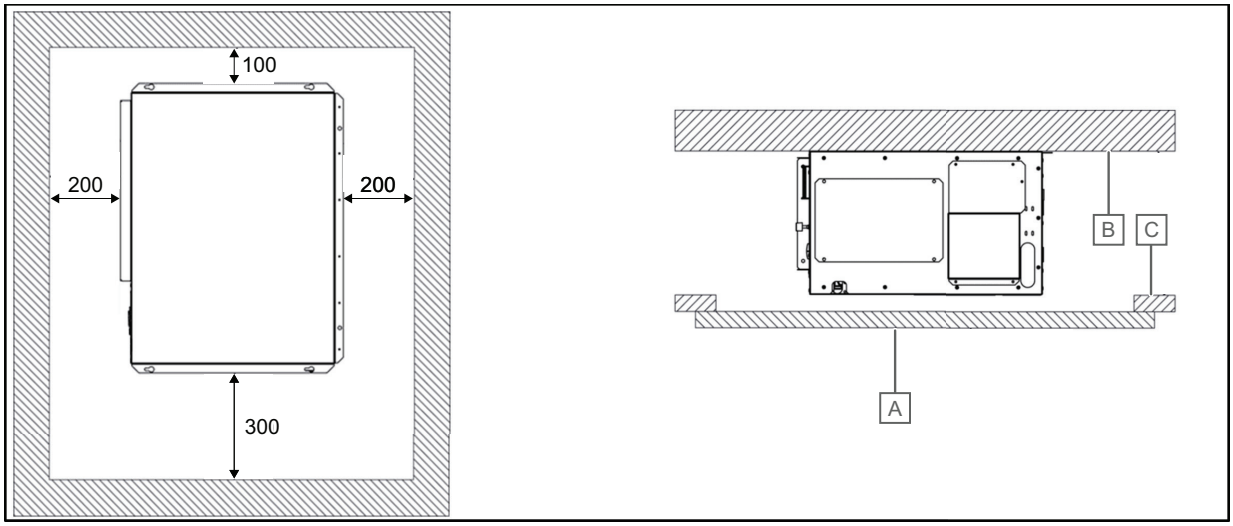
Caution!

The dimensions indicated are to be considered the minimums useful for correct positioning of the unit and for subsequent maintenance.

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

- Size and origin of the plumbing piping.
- Location of the power supply.
- Complete accessibility for maintenance and/or repair operations.
- Soundness of the fixing point.

Boundaries for CEI 600



Pos.	Description
A	Provide a removable grating panel to ensure complete and easy access to the unit
B	Ceiling
C	Plasterboard

3.4 Ducting

Note

Units supplied with suction/discharge nozzles.

Horizontal units

CEI units are designed to be ducted at least partially, which is why the suction flange and supply flange for ducting the unit to rigidducts for air distribution.

3.5 Plumbing connections I

Water circuit connection

Warning!

Do not under any circumstances apply twisting to the unit connections. Use one wrench to lock the connection and another to secure the connection.

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.

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.

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

Connect the piping by flexible couplings in order to avoid transmission of vibrations 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 control 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 pipes this operation should be carried out with the unit de-energized.
- Drain cock and, where necessary, drain tank to allow the system to be drained for maintenance operations or seasonal breaks.

The dimensions and location of the hydraulic connections refer to chapter "Dimensional drawings".

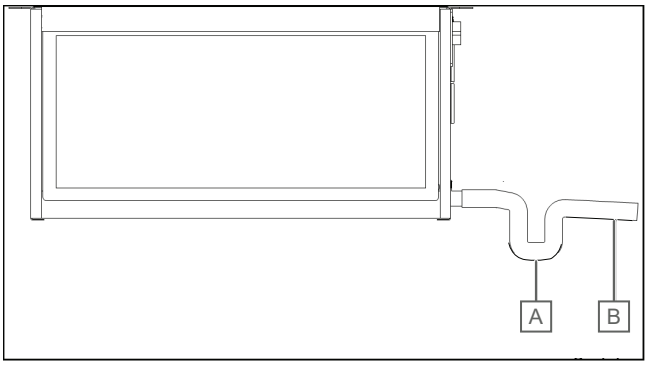
Parameter	Value	Unit
Electrical conductivity	10 - 500	µS/cm (@25 °C)
pH	6,5 / 9	
SO_4	< 100	ppm
HCO_3 / SO_4	> 1	
Total hardness	4,5 / 8,5	dH
Cl-	< 50	ppm
PO_4^{3}	< 2	ppm
NH3	< 0,5	ppm
Free active chlorine (CL2)	0,6 / 1,8	ppm
Combine active chlorine	< 2	ppm
Fe^{3+}	< 0,5	ppm
Mn^{++}	< 0,05	ppm
CO_2	< 50	ppm
H_2S	< 50	ppb
Temperature	< 65	°C
O_2	< 0,1	ppm
$C_3H_3N_3O_3$	< 75	ppm
SiO_2	< 2	ppm

Condensate drain connection

Warning!

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

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



Pos.	Description
A	Siphon
B	Condensate discharge pipe

3.6 Eletrical connections I

Warning!

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

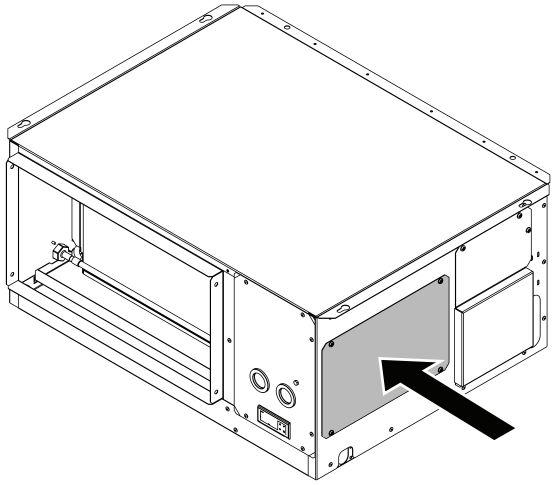
The electrical connection, power cables and protections must be made according to the enclosed wiring diagram and in adherence to local and international regulations.

Recommended protection to be inserted upstream of the line: models CEI 600 = MGT - C16 breaker

Recommended power line: models CEI 600 = FROR cable - 3G2.5

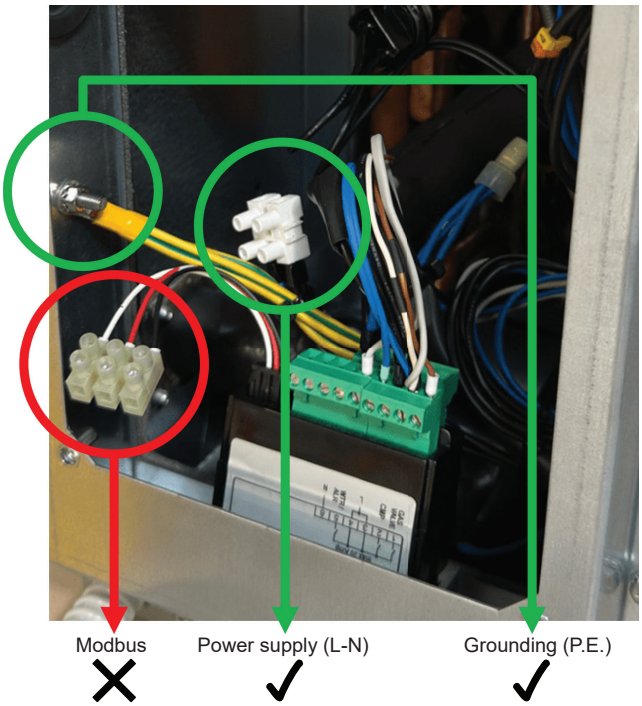
Terminal board access and wiring (basic control)

Instructions for accessing the switchboard 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 below 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.



CEI 600

Power connection



Inside each panel of the electrical cabinet, there is a screw terminal with the two power cables (refer to above 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 image.

3.7 RS485-Mobus serial connection

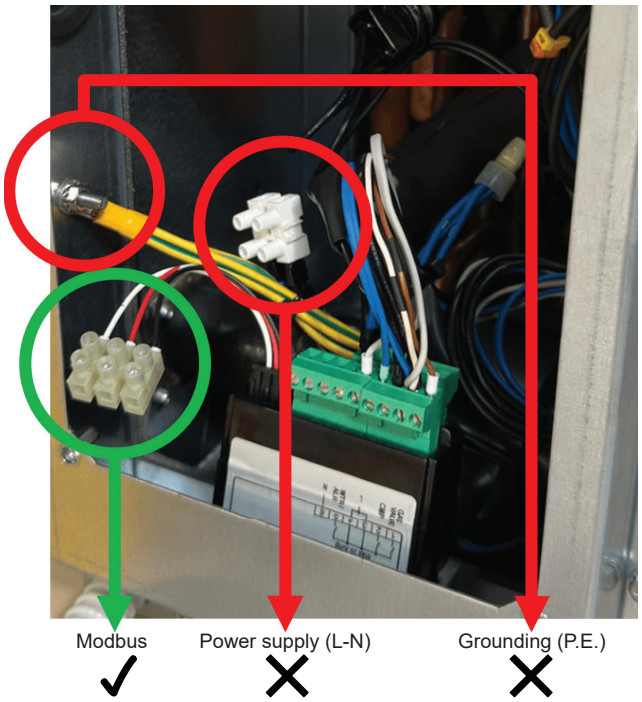
Caution!

Instructions for Modbus connections of units vary depending on the type of control:

- If the unit has touch display, (refer to chapter "Touch Display)".
- If the unit has "Basic control", (refer to chapter "Basic control"), to use the RS485.

Modbus serial connection, the "RS485-Modbus serial control" option is required.

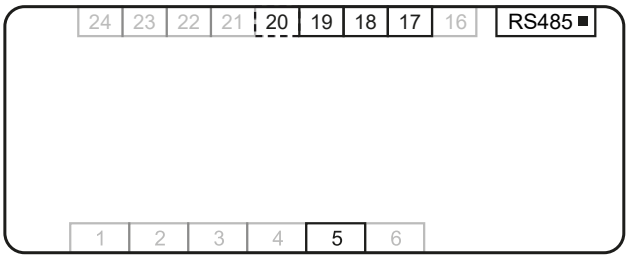
Terminal board access and wiring (basic control)



1. Follow the instructions in the previous chapter to access the electrical panel.
2. Insert and screw, into the "Modbus" terminal shown above 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 switchboard panel again.
4. The procedure is complete.

3.8 Unit control wiring harnesses

Unit control wiring and pump contact (basic control)

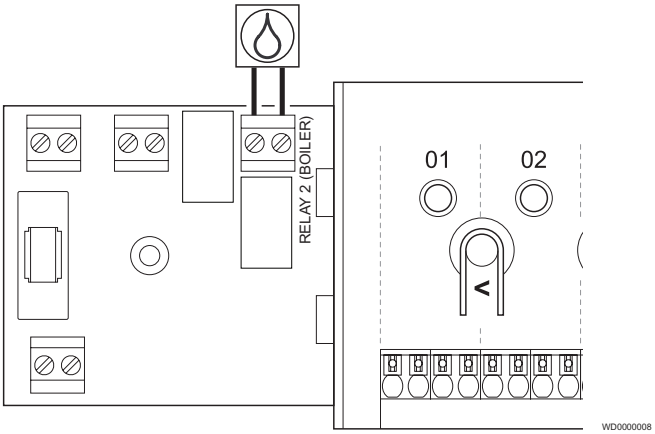


It is possible to use the thermostat digital input (20-18) (usable only if there is no on-board temperature probe and the version is "I", else disconnect it and set PSA value “OFF” in the installer menu). In addition, it is possible to use the hygrostat digital input (17-18) (usable only if there is no humidity probe on board the machine (else disconnect it and set PSU value “OFF” in the installer menu)) and turn ventilation on/off on the 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), whose phase is to be connected on terminal 5 and whose neutral to be used that of the power supply (refer to chapter "Electrical connections").

3.9 Control via Smatrix controller X-265

Dehumidifier (requires communication module)



Warning!

Risk of electrical shock! Electrical installation and service behind secured 230 V AC covers must be carried out under the supervision of a qualified electrician.

Note

This connection requires a dry contact sensing input in the dehumidifier.

Note

This relay function requires a communication module, and must be set in **Installer settings** during initial configuration, or in the **System settings** menu.

Note

In systems with a communication module, make sure that room controller, relay 2 (Boiler), is set to **Dehumidifier** in **Installer settings**.

1. Ensure that the power is disconnected from both the room controller and the dehumidifier.
2. Remove the screw and open the cover for the optional connections compartment.
3. Route the cable from/to the dehumidifier via a cable entry.
4. Connect the dehumidifier to the connection labelled **Relay 2 (BOILER).**
5. Secure the cable to/from the dehumidifier with a cable clamp in the enclosure.
6. Close and secure the lid to the optional connections compartment.

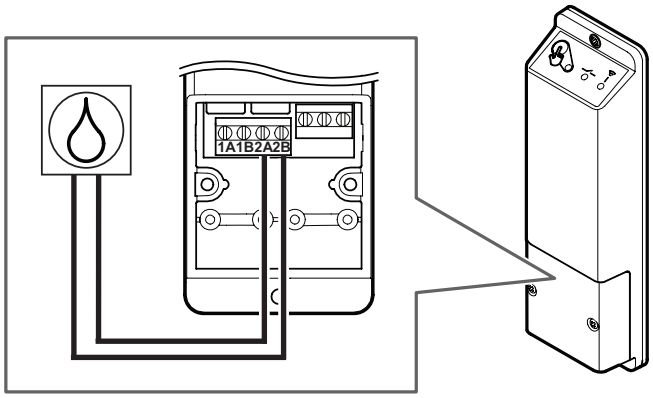
Relay function

The dehumidifier starts (relay closed) when the relative humidity setpoint is reached when in cooling mode. It will stop when the minimum run time of 30 minutes has finalized and when the relative humidity has decreased below the defined RH setpoint - deadzone.

Smatrix M-161 relay module

If boiler/heating & cooling source relay 2 is required on X-265 controller then additional M-161 relay module is required.

Relay 2: Dehumifier



3.10 First startup configuration and calibration

Configuration (basic control)

Warning!

If there is optional accessory humidity or room temperature probes on board, the PV parameter must be equal to 3.

With the unit powered on, scroll with the "▼" button until "PAS" (Password) is displayed. Enter the 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 readonly) that can always be scrolled through using the "▲" and "▼" buttons. We report a table with the list ei parameters and their functions on the next page "Installer menu parameters".

Calibration (basic check)

To calibrate the unit, follow these steps: place the anemometer near the unit's intake nozzle, enter the installer's menu (refer to 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 "✓" button to save the configuration.

Installer menu parameters

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.

PSA	"I" version
L.3	Modifiable only if version "I"
FC	Version "I"
OAM	"I" version and with suction probe T
OUM	With suction probe RH

Display abbreviation		(Code) and Short description	Range of values that can be set	Default
uM	VM	Modulating fan speed	The values that can be changed range from a guaranteed minimum to a maximum of 9,9	
PSA	PSA	Presence of T aspiration probe	NO - YESÌ (no - yes)	(NO)
PSU	PSU	Presence of RH aspiration probe	NO - YESÌ (no - yes)	(NO)
L.3	LI3	Logic input "DI3"	ST - UE (season - ventilation)	(ST)
LO3	LO3	Logic output 3	UA - AL (water valve - alarm)	(UA)
uS	VS	Displays % of fan speed	0 to 100 (Readout only, not editable)	
Fu	PV	Fan activation	0= fan running continuously at rated flow rate 1= fan on at compressor startup in summer and, in winter, immediate startup at heating demand 2= In summer, if: - FC (FC) = 0: fan turn-on occurs at any treatment demand - FC (FC) = 1: fan turn-on occurs at dehumidification request - FC (FC) = 2: fan ignition occurs at the cooling request - FC (FC) = 3: fan turn-on occurs if both cooling and dehumidification demand are present In winter: fan turn-on occurs if heating demand is present 3= same as FC (FC)= 2 but, if there are no demands indicated above, the fan runs at reduced speed (refer to parameter "VVR" in table) Note: If on-board humidity probe is present, the default value is FC (FC) = 3	2 (3^2)
FC	FC	Activation of the compressor and/or pump contact	The compressor and/or pump contact is activated if: 0= dehumidification request present or cooling request present 1= dehumidification request present 2= cooling request present 3= both dehumidification and cooling demand present Note: if there are probes on board the unit and you decide to use either parameter "0" or "2", set the previous parameter PV (PV) = 3	1
nA	MA	Modbus network address	1 to 247	1
nb	MB	Modbus baud rate	0= 1200, 1= 2400, 2= 4800, 3= 9600, 4= 19200, 5= 38400, 6= 56000, 7= 115000	3
YES	YES	Defrost start temperature	- 35 °C to SF	- 5,0
SF	SF	Defrost end temperature	SI to 45 °C	6
Sd	SD	Maximum defrost time	1 to 240 min	4
SCL	SCL	Drip duration	0 to 60 min	2
St	ST	Time between two defrosts	0 to 999 min	150
OAM	OAM	Room probe offset	- 10 to + 10	0,0
OUM	OUM	Offset humidity probe	- 20 to + 20	0,0
uvr	VVR	Reduced fan speed	1,2 to 9,9	1,5

Calibration

To calibrate the unit, enter 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, refer to below image. Here, using the "+" and "-" buttons, you can adjust the fan speed: place the anemometer near the unit's intakevent, 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 refer to chapter "Technical data table", once the desired calibration is obtained, press the "Confirm" button to complete the operation.

4 Operation

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

- With basic control, humidity and temperature setpoints can be changed and basic settings can be controlled (refer to below for more information).
- With switches, thermostats or controllers, more information refer to chapter "Control by external devices".
- With Modbus connection, refer to chapter "Control via Modbus".

4.1 Control via the control panel

Pos.	Description
A	Increases values or scrolls editable parameters
B	Decreases values or scrolls editable parameters
C	Confirm selection
D	Cancel selection

Quick Guide

The main functions of the control are:

- Display whether the unit is on and which air handling types.
- Access the user menu, change temperature setpoints, humidity and view the unit's probe readings.
- Access the installer menu (for experienced users or installers only).
- Display (and beep) any alarms (refer to chapter "Alarms - basic control").
- Signaling (visual and audible) of any alarms.

The initial screen of the display is presented with its status "ON or OFF" ("ON", "OFF"). Using the "▼" button, the user menu can be accessed and all its items can be scrolled through. 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 "✗" button.

Main keys

Note

Each time a button is pressed, a press confirm signal is emitted.

The functions of the main keys are as follows:

- "▲" button: increases the values or scrolls the editable parameters.
- "▲" button: decreases values or scrolls editable parameters.
- "✓" button: confirmation button.
- "✗" button: "cancel" button.

Other uses of the buttons are:

- "▼" button: pressed for more than 3 seconds, activates manual defrost (if conditions for activation present).
- "▼" button: pressed for more than 3 seconds. Stops defrosting (if active).
- "✓" button: if an alarm is present, activates its reset (if possible) or deactivates its beep.
- "✗" button: if an alarm is present, deactivates its acoustic signal.

Flashing icons

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

1. Dehumidification icon
   - ON: dehumidification is active.
   - OFF: dehumidification not active.
   - Flashing: dehumidification in activation.
2. Cooling icon
   - ON: cooling is active.
   - OFF: cooling not active.
   - Flashing: cooling is in activation.
3. Heating icon
   - ON: heating is on.
   - OFF: heating is off.
4. Fan icon
   - ON: fan is on.
   - OFF: fan is off.
   - Slow blinking: defrosting in progress.
   - Flashing fast: dripping in progress.
5. Alarm icon
   - OFF: alarm absent.
   - ON: alarm present (multiple alarms may coexist).

User menu

Warning!

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

SEt	Version "I" and T aspiration probe presence
St1	Version "I" and T aspiration probe presence
StH	Humidity probe presence
yAn	Humidity probe presence
tAC	"I" version and presence of the room probe
tEu	"N" version

To access this menu, with the unit on, from the initial "On" Screen simply press the "▼" key. From here you can scroll through the following parameters and possibly change their values with "▲" and "▼"

(Start)

On or OFF

▼

SEt	Temperature set point setting (Summer)
St1	Temperature set point setting (Winter)
StH	Humidity set point setting
UAn	Ambient humidity display
tAn	Ambient temperature display
tAC	Water probe temperature display
tEu	Evaporation probe temperature display
St	Season display
rEL	Software release

▲

PAS

(end)

The value of "SET" and "STH" can be changed (respective default values are 26.0 ° and 60%) by pressing the "✓" key. Once changed with "▲" and "▼", it can be confirmed or canceled with "✓" or "✗" buttons. The other parameters in the list can be displayed by pressing the "✓" button ("✗" to go back). The last parameter "PAS" provides access to the installer menu, where advanced unit settings of the unit by entering the password refer to chapter "Configuration (basic control)".

4.2 Control through external devices

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

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

For more information on installation, configuration, and usability (refer to chapter "Unit control wiring").

4.3 Control via modbus

Warning!

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

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

4.4 Electrical equipment

Warning!

To stop the unit, do not disconnect voltage through the protection upstream of the unit, this body must be used to section the whole unit for maintenance. To turn off act on the user terminal.

The electrical panel 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 made with extra-low voltage signals, powered by an isolation transformer.

5 Maintenance

The units will operate properly if the maintenance operations listed in the table are carried out and the specified period is observed:

Maintenance operation	Period
Air filters	Visual inspection and cleaning every 6 months (or more frequently in case of dirty environments)
	Replacement at least every 12 months
Checking for proper condensate drainage of the unit	Every 6 months
Check the cleanliness of air vents and grilles, internal and external	Every 6 months
Visual and acoustic verification (check the noise emitted by the unit and the integrity of the unit)	Every 6 months
Visual check of refrigerant and hydraulic circuit (Oil,Refrigerant and/or water leaks)	Every 12 months
Visual check of electrical panel, wiring and cables	Every 12 months
Checking the condition and fixing of the fans	Every 4 years
Cleaning of condensate drip pans	Every 4 years
Cleaning of heat exchange coils	Every 4 years

5.1 Record of routine maintenance operations

Record the maintenance operations performed in the following table:

Maintenance operation	Year_____		Year_____		Year_____	
	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester
Air filters						
Verification of proper condensate drainage						
Verification of cleanliness of air vents and grilles, internal and external						
Visual and acoustic verification (check the noise emitted by the unit and the integrity of the unit)						
Visual check of refrigerant and hydraulic circuit (Oil, Refrigerant and/or water leaks)						
Visual check of electrical panel, wiring and cables						
Checking the condition and fixing of the fans						
Cleaning of condensate drip pans						
Cleaning of heat exchange coils						

5.2 Extraoridinary maintenance operations log

Indicate below any extraordinary maintenance operations performed on the unit.

5.3 General maintenance

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 image below, take out the filters and vacuum them by manually removing any impurities that may impede the proper flow of air, avoiding damage in any way. A ruined, punctured or otherwise damaged filter must absolutely be replaced.

CEI 600

5.4 Servicing maintenance

Warning!

Servicing maintenance should only be carried out by trained personnel. do not improvise, danger of injury or death.

Cleaning heat exchange coil

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

Electrical circuit check

Warning!

Verification should be carried out in the absence of voltage.

Verify that all terminals are properly secured, if not, tighten screws better or tighten plug-in connectors. Verify that all power contactors or relays, if any, are working and not blocked or oxidized, if not, their replacement becomes mandatory.

6 Troubleshooting

6.1 Common problems

Warning!

It is recommended that once the abnormality is identified, contact the manufacturer or a qualified technician. If alarms related to the water probe occur, the unit should be compulsorily turned off and a qualified technician should be contacted. If the unit is left on, there is a risk of serious damage and the warranty provided will be voided. Be very careful in performing the steps suggested to solve the various problems excessive carelessness may cause injury or damage, including serious damage.

The following table lists the most common causes that may cause the unit to operate abnormally and their solutions.

Alarm	Cause	Solution
Unit will not start	No power supply to the unit	Check 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 does not start	Internal thermal protector tripped	Turn off power to the unit, wait for the compressor to cool down, and verify by reconnecting power that it starts again. Identify the cause of the tripping and eliminate it
	Tripping of the high pressure protection on the refrigerant circuit	Refer to anomaly "High pressure alarm"
High pressure alarm High pressure alarm can be mild (can resolve itself) or severe (requires manual intervention to reset). After four mild high pressure alarms, the severe high pressure alarm is automatically activated	Presence of high pressure abnormality due to insufficient air flow rate	Check for correct air flow rates and cleanliness status of heat exchange coils and filters
	Presence of high pressure abnormality for insufficient water flow (only "I" (integrated) version)	Check the correct functionality of the hydraulic circuit
		Check the temperature of the water entering the unit
		Check the static pressure of the pump serving the unit
		Check the correct water flow rate
		Check the mesh filter inserted in the inlet water line
	Water temperature probe abnormality (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 If problem persists replace display or other probes (if present) from installer menu
	The probe in use selected is not physically present	Check that the probe set in the installer menu is correct
Water temperature probe alarm	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
Low water temperature abnormality	Low temperature detected by the probe water	Increase the temperature of the water supplied to the unit (Check incoming 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 (refer to chapter "Maintenance")
Water coil freezing risk abnormality	The temperature water or antifreeze has detected a temperature below 6 °C with risk of freezing and damage to the water coil	Check the correct operation of the extraction fan

6.2 Alarms

Alarms (basic control)

Code	Name	Explanation and solution
EC (EC)	Mild compressor high pressure	It is caused by high pressure in the refrigeration circuit It is caused by insufficient airflow, check whether the rated airflow rate is met This alarm remains visible for one minute Note: It is common for the code "EMA" to appear for a few moments
ECS (ECS)	Severe compressor high pressure	At the occurrence of 4 EC "Compressor high pressure mild", the unit stops operation. Check and reset the temperature and water flow to the unit. Then, reset the alarm by pressing "✓" Note: 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 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 activated. Bring the water temperature back within the limits of operating conditions

7 Remove the unit from service

Warning!

Where the unit, or any part of it, has been taken out of service, its parts susceptible to cause any hazard must be rendered harmless.

Caution!

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

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

- The Refrigerant gas it contains should be recovered by trained personnel and sent to collection centers.
- The 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 particularly 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.

With each replacement of any part of the unit subject to selective disposal, reference must 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 waste. Collection of special and toxic-harmful wastes must be carried out by properly licensed companies. Disposal of special waste and toxic-harmful waste must be carried out in accordance with the legal provisions in the user's country. When dismantling the unit, follow the requirements imposed by the laws in force in the user's country. Prior to dismantling, 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.

7.1 Environmental protection

Warning!

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

The regulation (EC® 2037/00) of the use of stratospheric ozone depleting substances and gases responsible for the greenhouse effect, establishes a ban on the dispersal of refrigerant gases into the environment and obliges their holders to recover them and return them, at the end of their operational life, to the retailer or to 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.

7.2 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 equipment 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 to receive the product for disposal and its subsequent proper recycling.

Also note that upon purchase of equivalent appliance, the distributor is required to take back the product for disposal free of charge.

The product is not potentially hazardous to human health and the environment, as it does not contain harmful substances as per Directive 2011/65/EU (RoHS), but if abandoned in the environment it negatively impacts the ecosystem.

Please read the instructions carefully before using the device for the first time. Absolutely do not use the product for other than its intended use, as there is a danger of electric shock if used improperly.

The crossed-out bin symbol on the label on the appliance indicates that this product complies with the regulations on Waste Electrical and Electronic Equipment (WEEE). Abandoning the equipment in the environment or disposing of it improperly is punishable by law.

8 Technical data

8.1 Technical data table

Caution!

"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 warranty.

Item	Unit	CEI 600	
		N	I
Dehumidification capacity	l/24h	48	48
Dehumidification capacity (without chilled water)[2)]	l/24h	25	-
Refrigerant	Type	R513A	R513A
Refrigerant charge	kg	0,47	1,65
Global Warming Potential (GWP)	-	631	631
CO2 equivalent charge	t	0,30	1,04
Cooling capacity	W	-	3360
Cooling capacity supplied by the chiller	W	2800	4000
Heat output	W	1670	1010
Compressor power	W	770	770
Power consumption	W	800	800
Power consumption (without chilled water)[2)]	W	900	-
Maximum power consumption	W	1000	1000
Current consumption	A	5	5
Current consumption (without chilled water)[2)]	A	6	-
Maximum absorbed current	A	7	7
Inrush current	A	27	27
Power supply	V/ph/Hz	230 / 1+N / 50	230 / 1+N / 50
Air flow rate	m³/h	600	600
Static pressure useful	Pa	150	150
Nominal water flow rate	l/h	500	500
Water pressure drop	kPa	30	29
Storage temperature limit	°C	-10 / +43	-10 / +43
Storage humidity limit	%ur	90	90
Sound pressure level[1)]	dB(A)	43	43
Dimensions	mm	760 x 650 x 350	760 x 650 x 350
Weight	kg	52	55

Dehumidification output is stated at the nominal point + 26 °C, 65% RH and with incoming water at + 15 °C and heating output is stated at the nominal point + 20 °C, 50% RH and with incoming water at + 35 °C.

1) Sound pressure level measured in free field at 2 m from the unit with correction factor Q = 2 according to ISO 9614, ducted unit with useful static pressure 50 Pa.

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

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

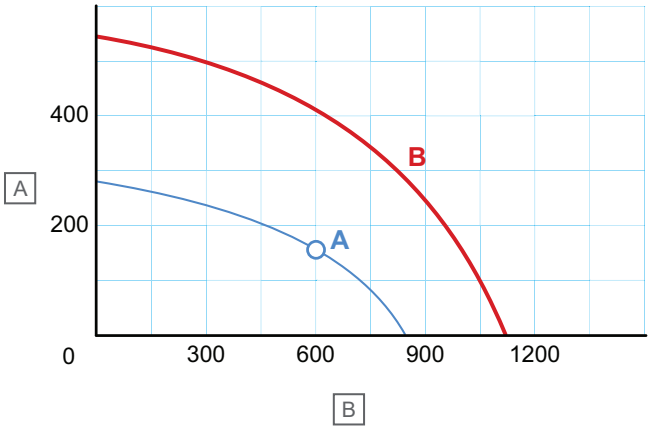
8.2 Flow rate and static pressure at RIA

CEI 600

CEI units are equipped with a 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:

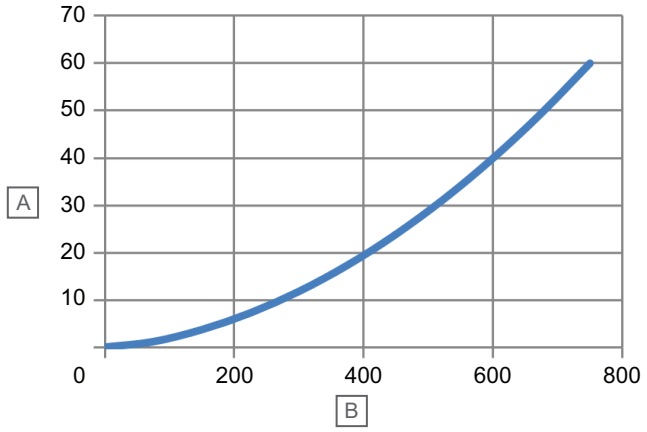
Curve A = recommended limit

Curve B = maximum limit



Pos.	Description
A	Static pressure (Pa)
B	Flow rate (m³/h)

CEI 600 "I"

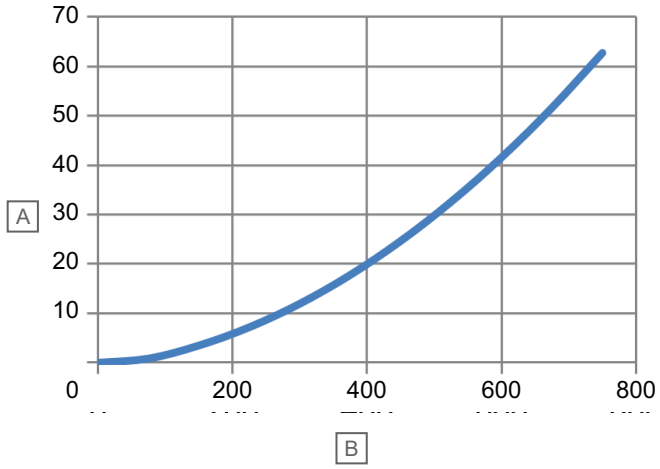


Pos.	Description
A	kPa
B	l/h

8.3 Hydraulic circuit pressure drops

On the abscissas are the water flow rate, on the ordinates are the hydraulic circuit pressure drops.

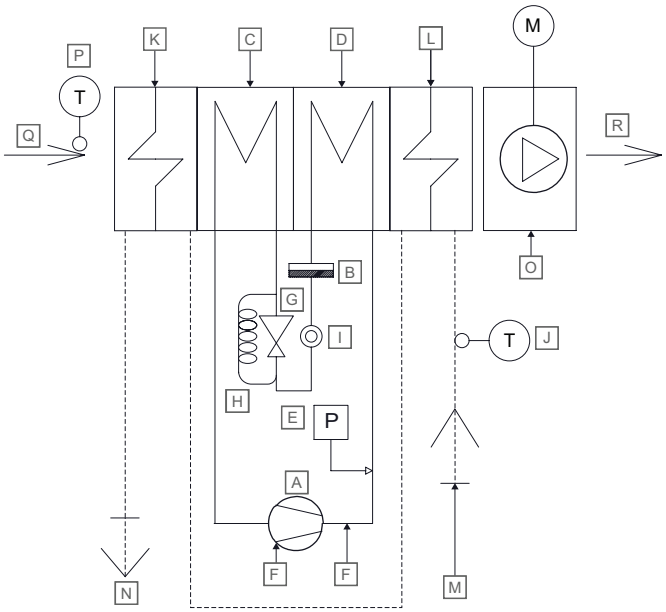
CEI 600 "N"



Pos.	Description
A	kPa
B	l/h

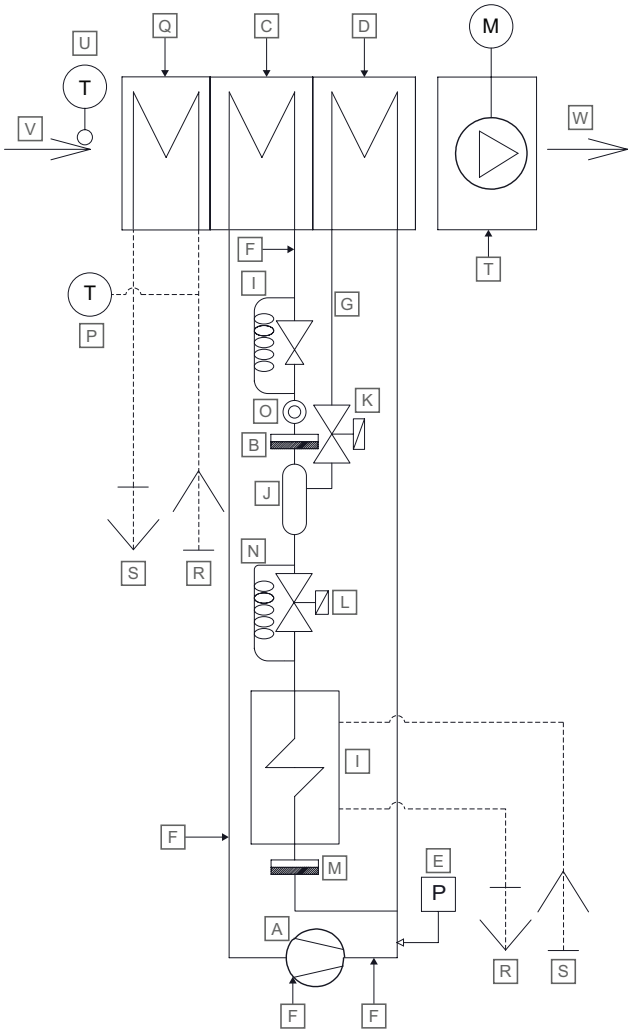
8.4 Refrigeration circuits and plumbing

Uponor dehumidifier CEI 600 "N" (Isothermal)



Pos.	Component
A	Compressor
B	Filter drier
C	Evaporating coil
D	Condensing coil
E	Pressure safety pressure switch
F	Service outlet
G	Laminating organ
H	Capillary equalizing laminating organ (100 models only)
I	Glass indicator light
J	Inlet water temperature probe
K	Pre-cooling battery
L	Post-cooling coil
M	Water inlet from radiant system
N	Water return to radiant system
O	Fan
P	Room air temperature probe
Q	Air inlet
R	Air outlet

Uponor dehumidifier CEI 600 "I" (Integrated)



Pos.	Component
A	Compressor
B	Filter drier
C	Evaporating coil
D	Condensing coil
E	Pressure safety pressure switch
F	Service outlet
G	Laminating organ
H	Capillary equalizing laminating organ (100 models only)
I	Plate condenser
J	Liquid receiver
K	Solenoid valve room temperature control
L	Solenoid valve 2 temperature control (100 models only)
M	Mechanical filter (100 models only)
N	Capillary equalizing room temp. control (100 models only)
O	Glass indicator light
P	Inlet water temperature probe
Q	Precooling battery
R	Water inlet from radiant system
S	Water return to radiant system
T	Fan
U	Room air temperature probe
V	Air inlet
W	Air outlet

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.

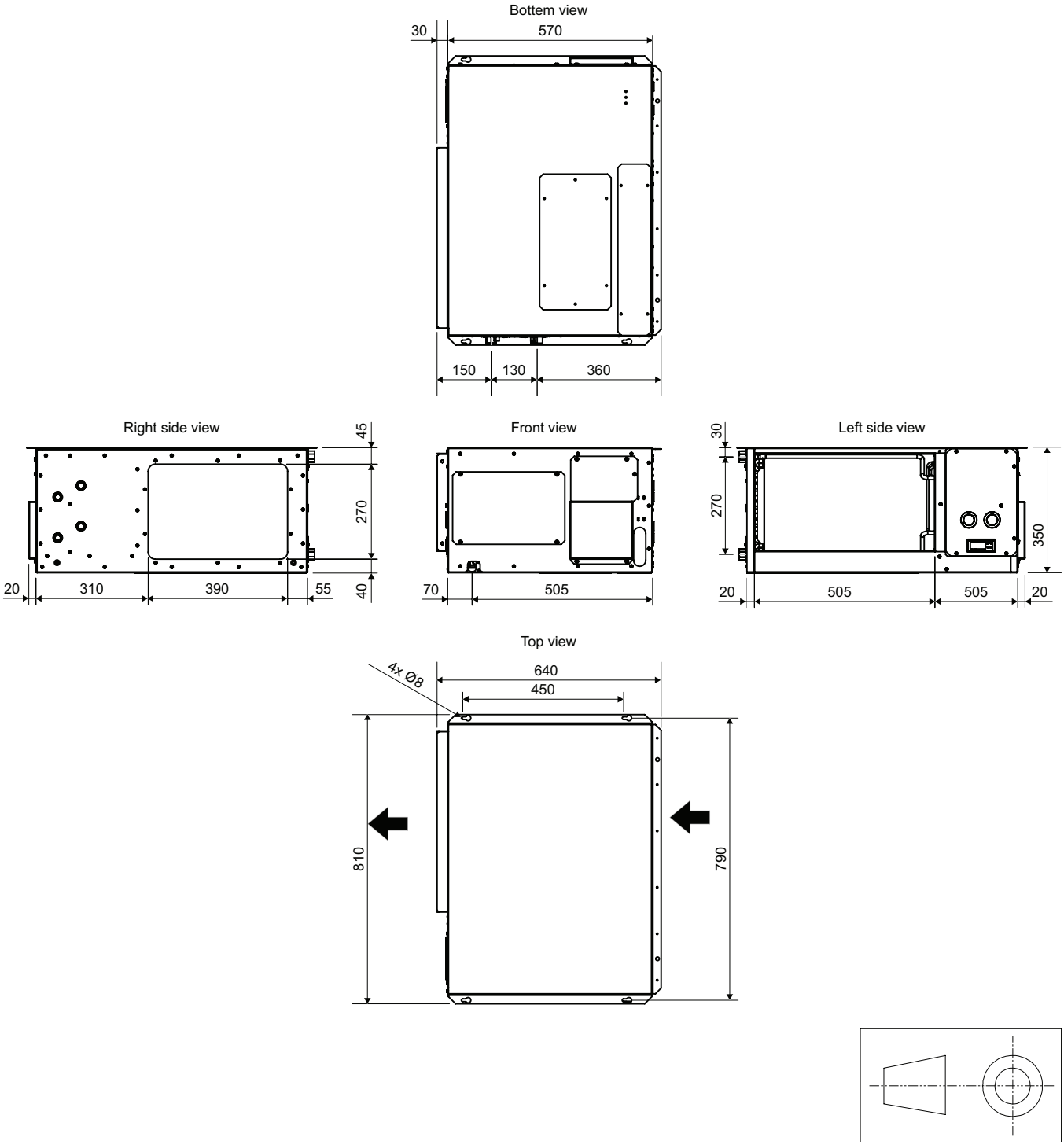
1. Refrigeration components:
    - Molecular sieve filter drier.
    - Expansion capillary tube.
    - Schrader valves for control and/or maintenance.
2. Heat exchange coils:
    - Copper tube and aluminum fin.

8.5 Dimensional drawings

CEI 600

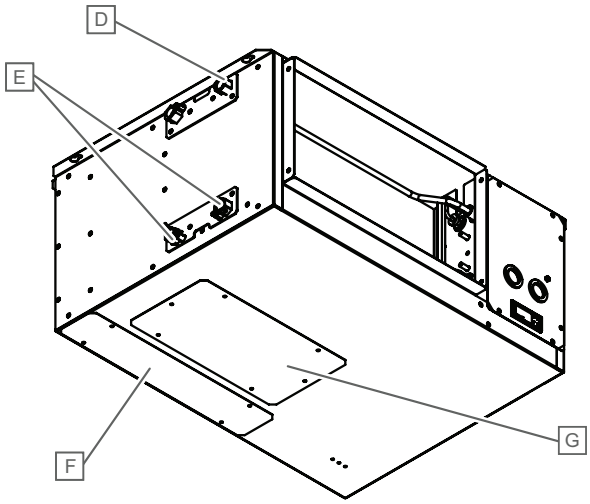
Warning!

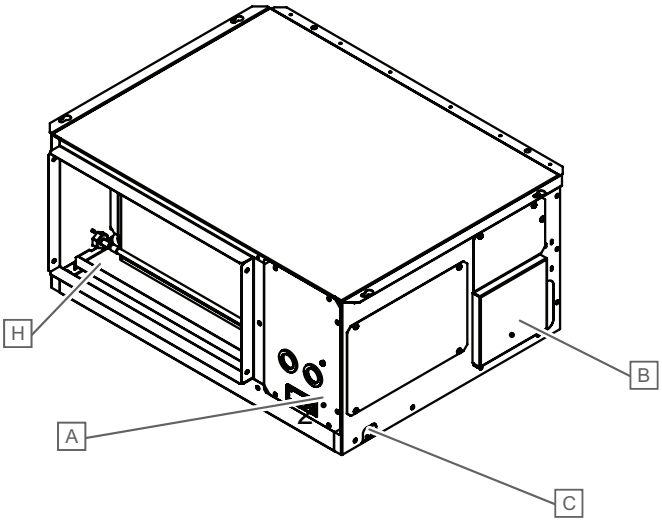
Please note, the version shown in the drawing is the version with the basic control, it differs only in the shape and dimensions of the electrical panel. For more information refer to next page.



Basic control

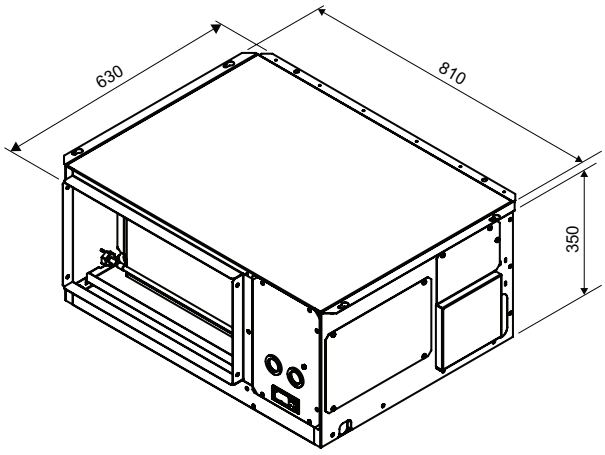
Isometric view





Pos.	Description
A	Electrical panel
B	Compressor inspection/maintenance panel
C	Tray condensation drain
D	Water outlets to radiant system 1/2" female BSP thread (N - I)
E	Water inlets from radiant system 1/2" female BSP thread (N - I)
F	Ambient air inlet filter
G	Fan
H	Condensate drain tray

External dimensions



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