PURECLASS CL

EN

INDEX

1. INTRODUCTION

Thank you for purchasing this appliance. It has been manufactured in full compliance with applicable safety regulations and **EU** standards.
Please read this instruction book carefully, as it contains important information for your safety during the installation, use and maintenance of this product.
Keep it at hand for future reference.
Please check that the appliance is in perfect condition when you unpack it, as all factory defects are covered by the **S&P** guarantee.

2. SAFETY REGULATIONS AND "CE" MARKING

S&P technicians are firmly committed to research and development of ever more efficient products and in compliance with current safety regulations.
The instructions and recommendations given below reflect current regulations, principally regarding safety, and therefore are based on compliance with general regulations. Therefore, we recommend all people exposed to hazards to strictly follow the safety regulations in force in your country. **S&P** will not be held liable for any possible harm or damage caused by non-compliance with the safety regulations, as well as caused by modifying the product.
The **CE** mark and the corresponding declaration of conformity are proof of the product's conformity with current EU regulations.

3. GENERAL INSTRUCTIONS

A hazard analysis of the product has been carried out as provided in the Machine Directive. This manual contains information for all personnel exposed to these hazards, with the aim of preventing possible harm or damage due to faulty handling or maintenance.
All maintenance operations (ordinary and extraordinary) must be carried out with the machine switched off and the electrical power supply disconnected.
To avoid a possible accidental start up, place a warning notice on the electrical control panel with the following text:

"Attention: Before accessing the unit, disconnect the power supply"

Before connecting the power supply cable to the terminal strip, make sure the mains voltage corresponds to the voltage indicated on the specifications plate of the unit.
Regularly check the product labels. If, due to the passing of time, they are no longer legible, they must be replaced.

4. UNIT LABELLING

The machine may come with several pictograms that must not be removed. These signs are divided into:

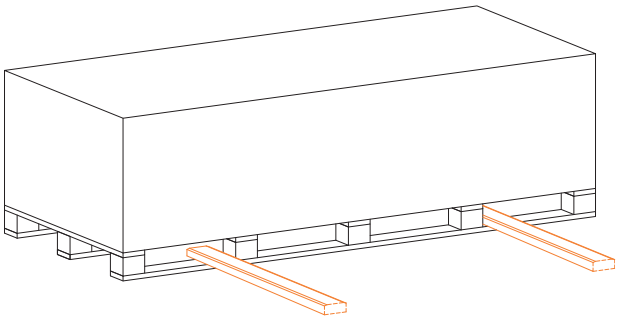
- **Prohibition signs:** Do not repair or adjust when in operation.
- **Danger signs:** Warning of the presence of live elements inside the container bearing the sign.
- **Identification signs:** CE card, indicating product information and manufacturer's address. The **CE** mark indicates the product's conformity with **EEC** standards.

Danger signs

Prohibition signs

5. HANDLING

The PURECLASS CL units are delivered on a pallet and protected by a cardboard box. This packaging is not suitable for being exposed to the elements. Storage of the product must be done indoors.
The handling of the equipment must be carried out using forklifts suitable for the shape and weight of the equipment. In all cases, the lifting must be done from the device's base. The centre of gravity is located at the centre of the unit. The device must be carefully manipulated only in the horizontal position.



Model	Weight with pallet and packaging (Kg)
PURECLASS 800 CL	232
PURECLASS 800 CL DC	237
PURECLASS 800 CL DI	238
PURECLASS 800 CL PH	237
PURECLASS 800 CL PH DC	242
PURECLASS 800 CL PH DI	243

6. RECEPTION

Inside the PURECLASS CL packaging you will find the following material:
- 1 heat recovery unit
- 2 side panels
- 1 Installation manual

7. LOCATION

When choosing the location, take into account the following recommendations:
- Locate the unit as centered as possible in the occupied area (Fig. 1). In the case of more than one unit in a single area, distribute the units so that the area is covered evenly (Fig. 2)
- Do not obstruct the diffusion of supply air, avoiding obstacles in the airflow, ex: beams, luminaires, projectors, etc. (Fig. 3).
- In spaces with heights of less than 4 meters, locate the equipment as close to the ceiling as possible to take advantage of the coanda effect in air diffusion (Fig. 4).
- Facilitate air intake to the unit, leaving a minimum of 50 cm. between the suction grille and any object or wall (Fig. 5).
- To avoid discomfort, do not place work/study places under the unit

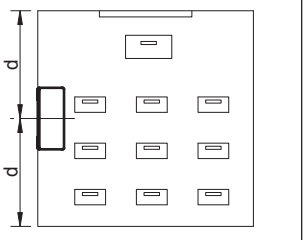


Fig.1

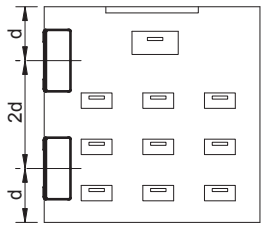


Fig.2

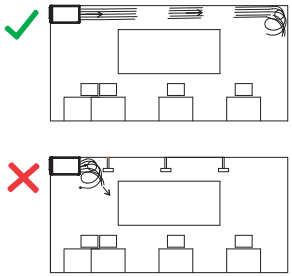


Fig.3

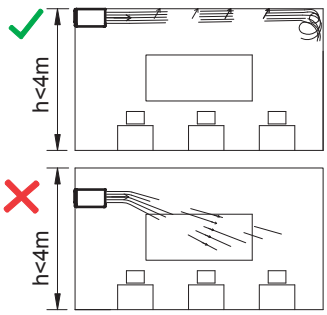


Fig.4

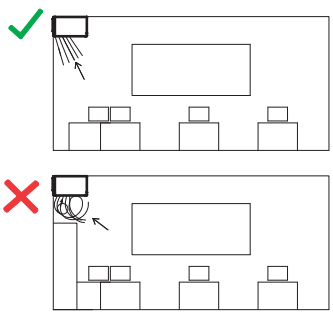
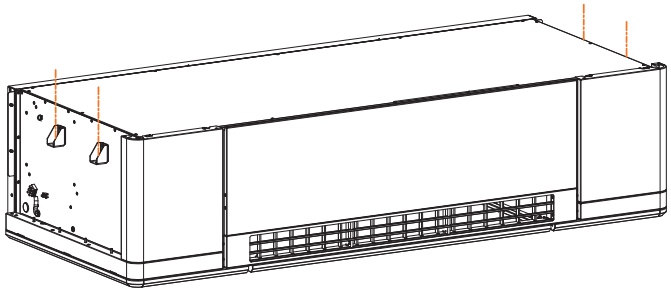


Fig.5

8. INSTALLATION

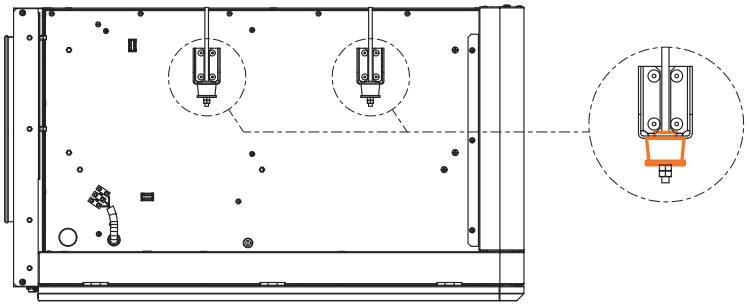
8.1. Introduction

All models are designed to be installed hanging from the ceiling.
When installing the unit, is necessary to distribute the unit weigh between the 4 supports existing in the units.
Using studded rods (Ø 8 mm), it can be secured to the ceiling and levelled:



Check the distances between supports in the diagrams of the section: "Dimensions and free dimensions for maintenance".

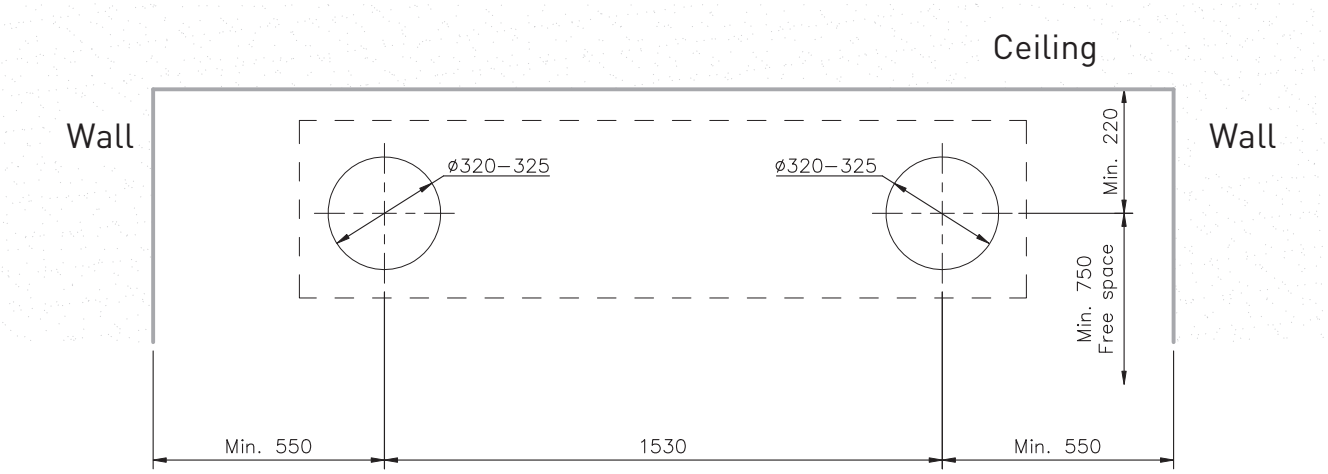
The installer must make sure that the ceiling structure and the securing elements can bear the weight of the device, taking into account that it is a dynamic load.
To prevent the transmission of vibrations from the unit to the wall and ceiling, it is necessary that the installer use specific isolation elements, we recommend to use our accessory 5130064900 KIT AM HRU, which is designed to be fitted inside the unit bracket.



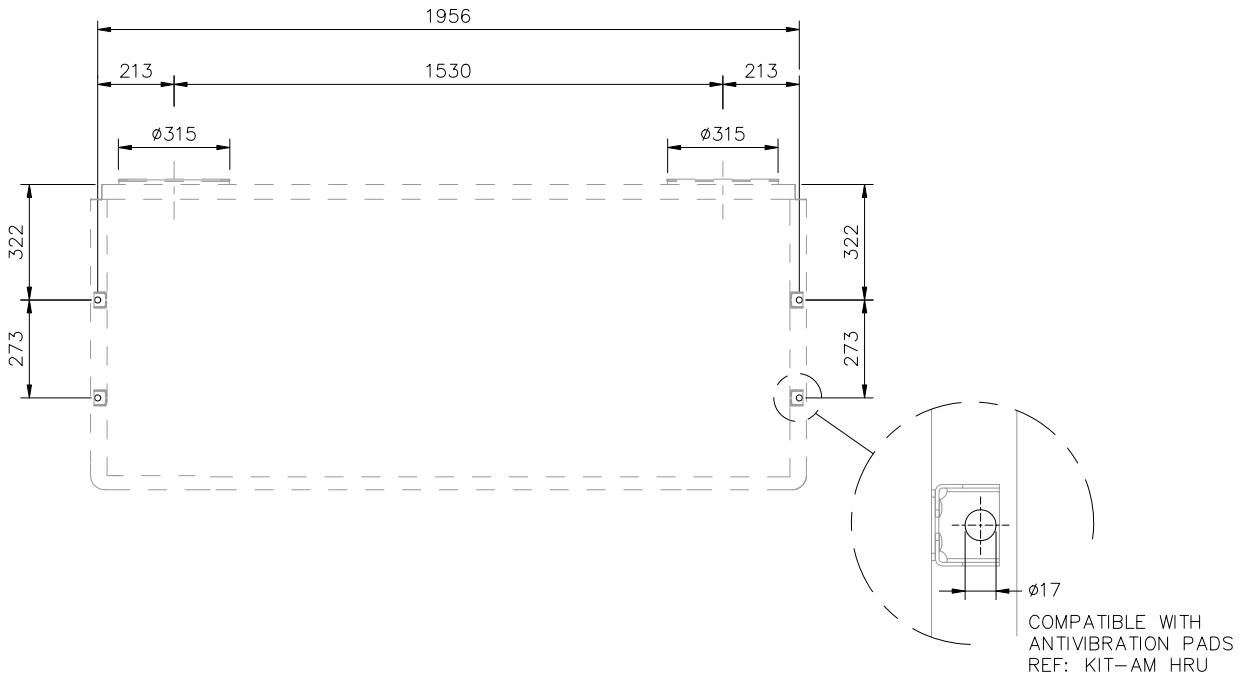
8.2. PLACING THE UNIT TO ITS FINAL LOCATION

Once the location of the equipment has been decided, it is necessary to make 2 holes in the wall providing communication with the outside air. Before making the holes, check the minimum required distances to walls and ceiling:

Wall view



Ceiling view

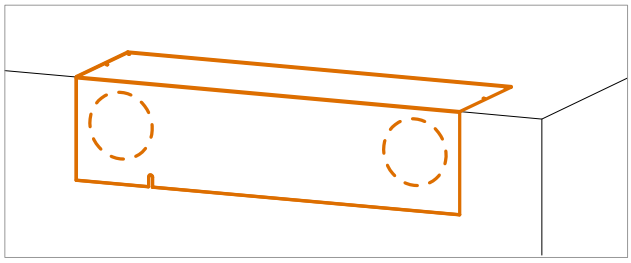


Installation template

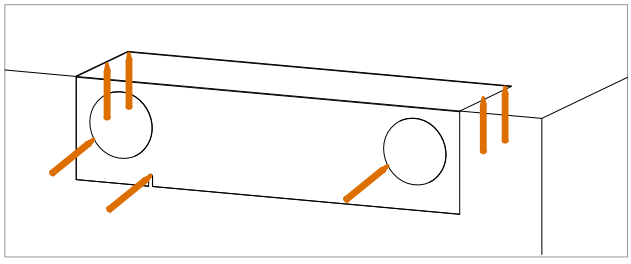
To simplify the process of positioning the recuperator in its final location, a cardboard template is supplied with the equipment that allows:
– Mark the holes in the wall.
– Mark the holes in the ceiling to install the threaded rods.
– Identify the position of the condensate outlet position.

Follow the sequence below:

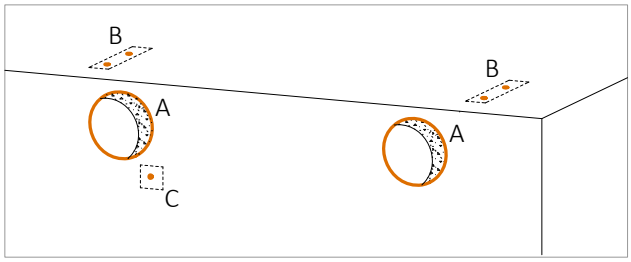
1. Position the template in the installation location. Secure it to the wall and ceiling using adhesive tape, staples or similar.



2. Mark on the wall and ceiling the position of the holes for the air intakes (supply and extraction), the holes for the threaded rods and the location of the condensate outlet.



3. Remove the template and drill the holes in the wall (A) and the holes for fixing the equipment to the ceiling (B). In the case of the condensate outlet (C), drill the wall only if the condensation is to be directed to the outside of the building.

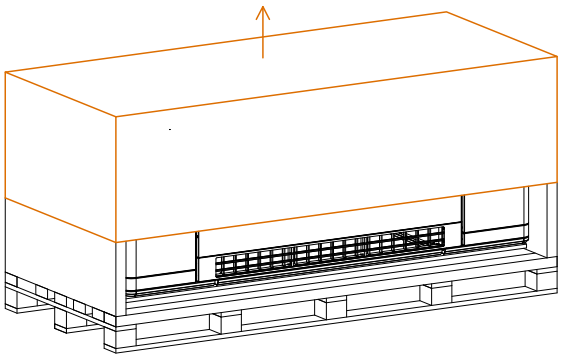


8.2.1. Equipment lift

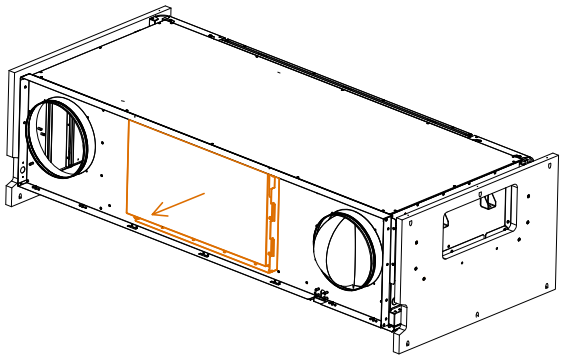
To lift the equipment it will be necessary to use a lifting table or elevator.
To avoid damaging the external parts of the unit, it is necessary to handle the equipment with great care, avoiding not leaning on the outer skin of the equipment.

To lift the unit follow the procedure detailed in the next steps:

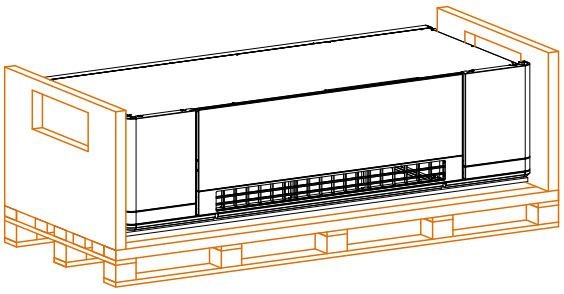
Step 1: Carefully remove the cardboard box that protects the equipment.



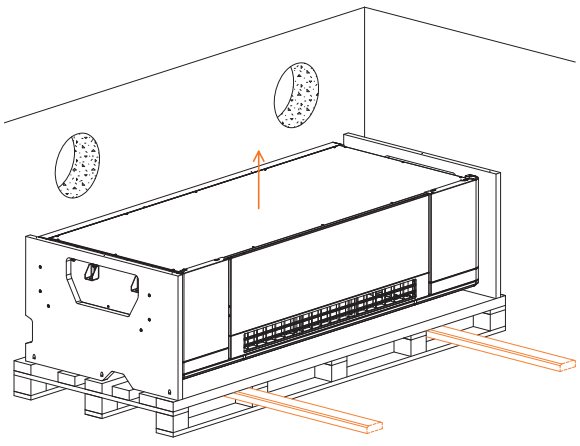
Step 2: Remove the two side panels (trims) at the rear of the unit. These panels are supplied disassembled to allow the equipment to be screwed to the threaded rods. Remove the panels and keep them until the end of the installation process.



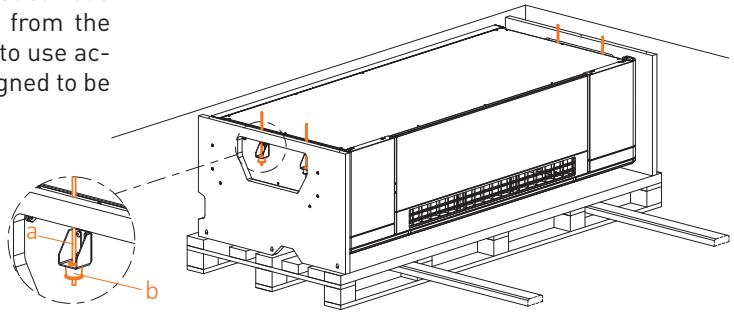
Attention: DO NOT remove the pallet or the two wooden frames on the sides until the unit is fully installed.



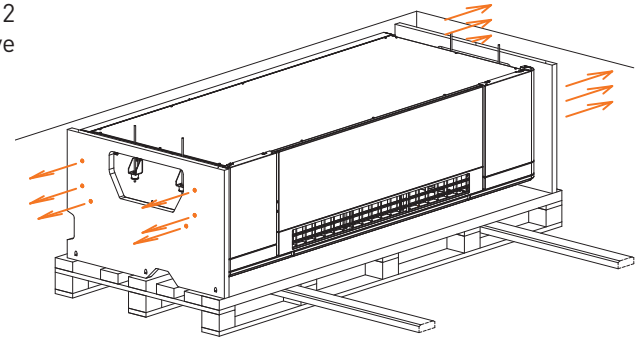
Using a lift, raise the equipment until the outside air couplings are positioned in the holes in the wall.



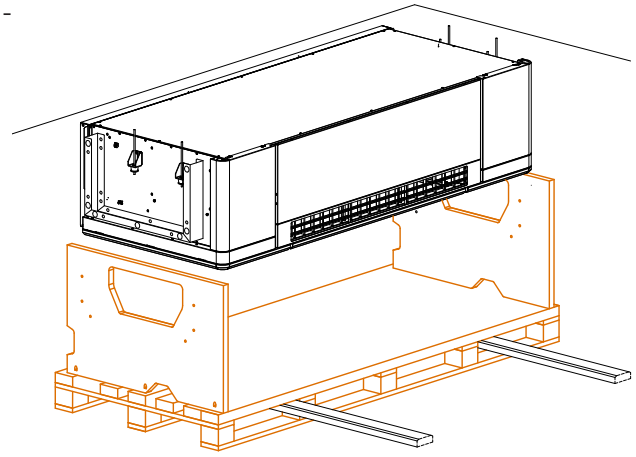
Fix the equipment to the ceiling using the threaded rods (a). To prevent the transmission of vibrations from the unit to the wall and ceiling, it is recommended to use accessory 5130064900 KIT AM HRU, which is designed to be fitted inside the unit bracket (b).



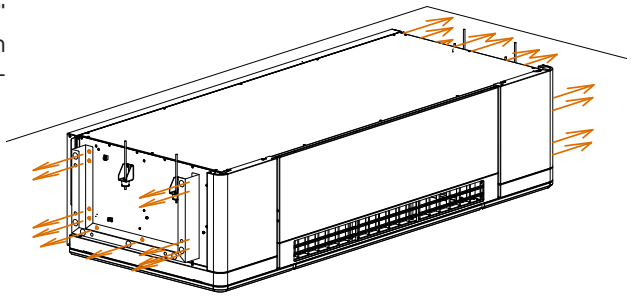
Once the unit is well fixed to the ceiling, loosen the 12 screws that hold the equipment to the wooden protective structure.



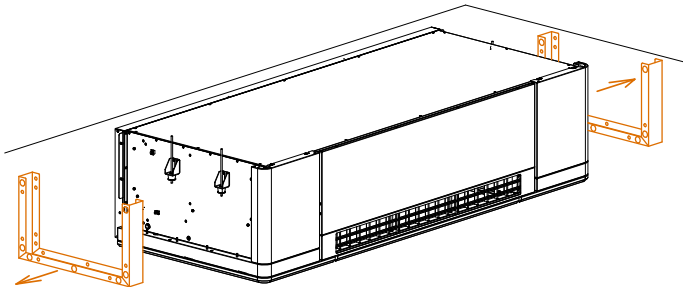
Once the lifting and support structure is released, carefully remove it by moving it downwards using the lift.



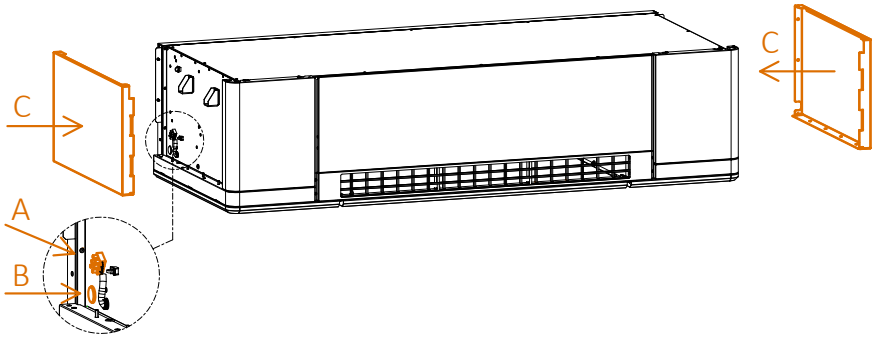
After removing the wooden frame, you will see two "U" shaped metal brackets on both sides of the unit. Loosen and remove the screws that secure them to the PURE-CLASS frame.



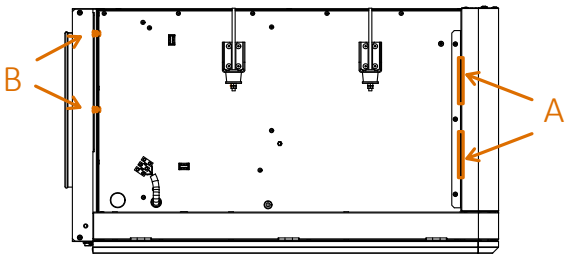
Remove the U-shaped metal brackets.



Make the electrical wiring: (A) Electric power connection to the connector located on the side internal panel. In case of accessories to be wired (External touch display ETD and/or CO_2 sensor), pass the cables through the cable gland (B) to the electrical panel. Finally place the side panels (C).



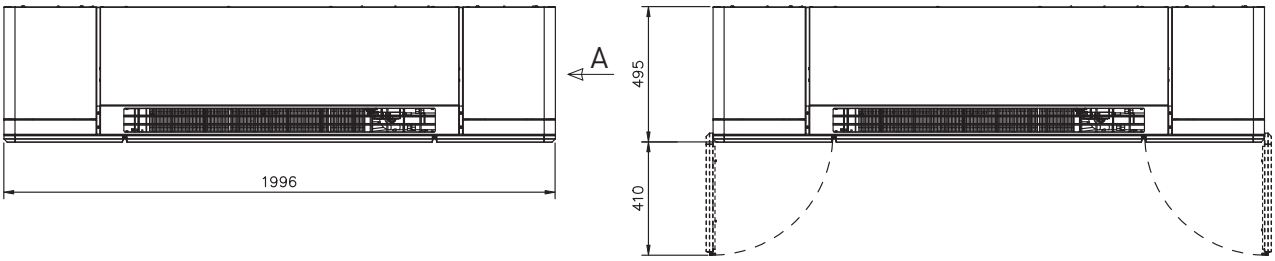
To assembly the side panels insert one end of the panel into the two existing slots in the equipment (A), and once positioned, secure the assembly with 2 or 3 screws (B) depending on the side panel.



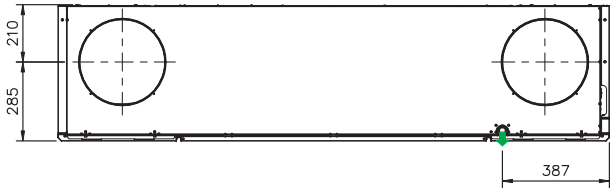
8.3. DIMENSIONS AND FREE SPACE FOR MAINTENANCE

8.3.1. Dimensions

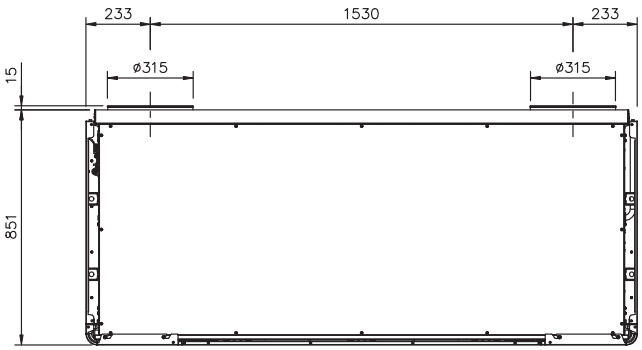
a) PURECLASS 800 CL and PURECLASS 800 CL DI



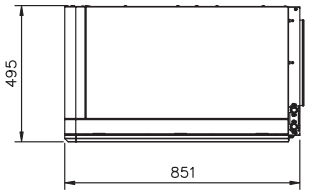
View from the rear

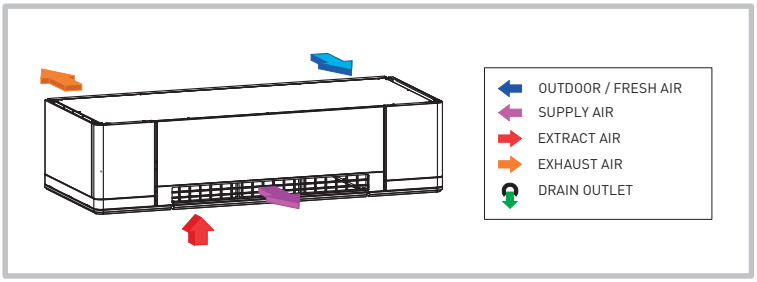


View from the top

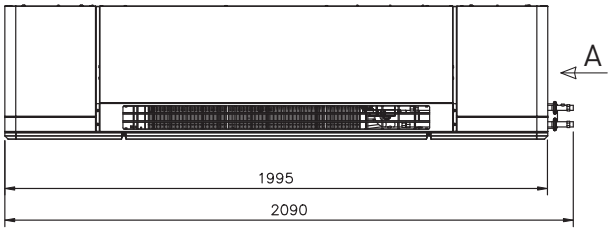


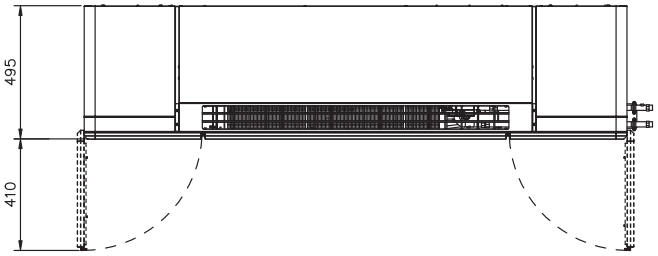
View from the right side (A)



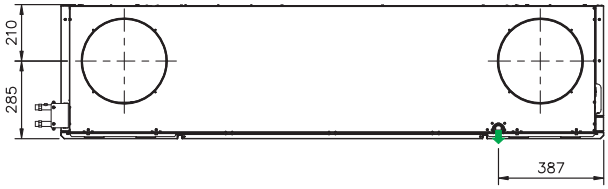


b) PURECLASS 800 CL DC (With integrated water coil)

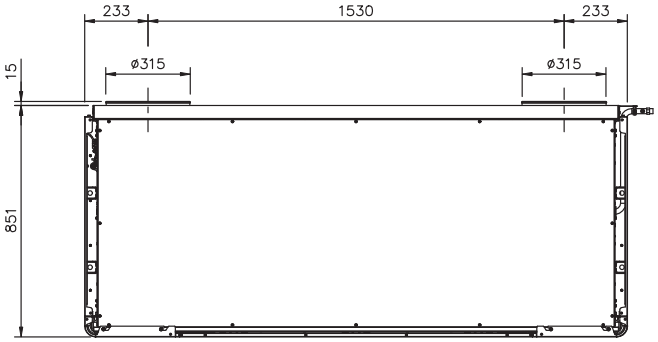




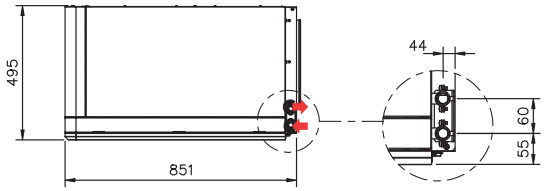
View from the rear

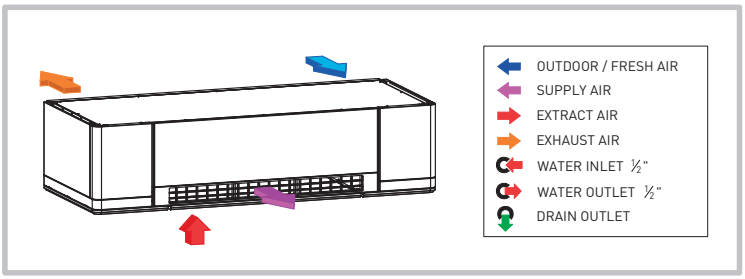


View from the top



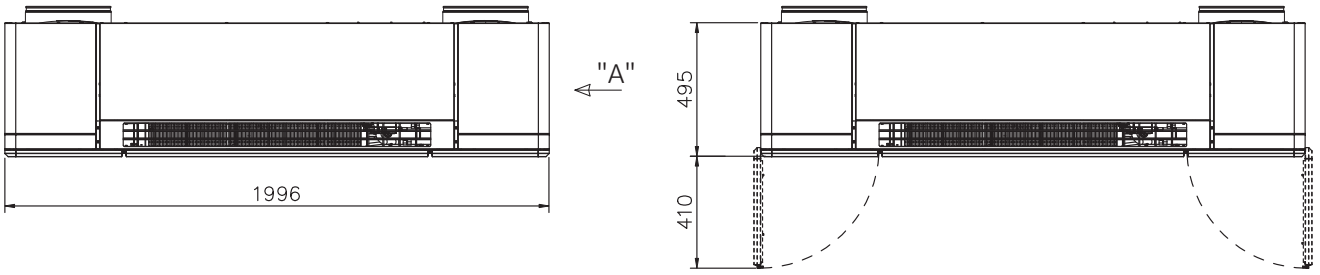
View from the right side (A)



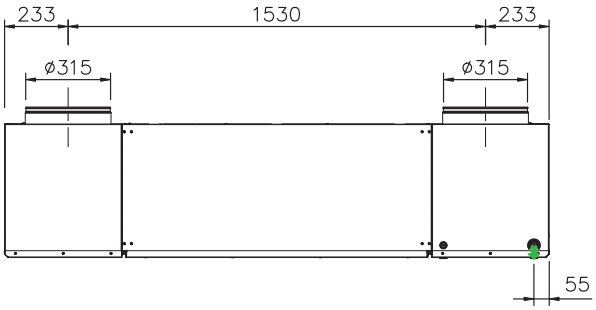


c) PURECLASS 800 CL and PURECLASS 800 CL DI

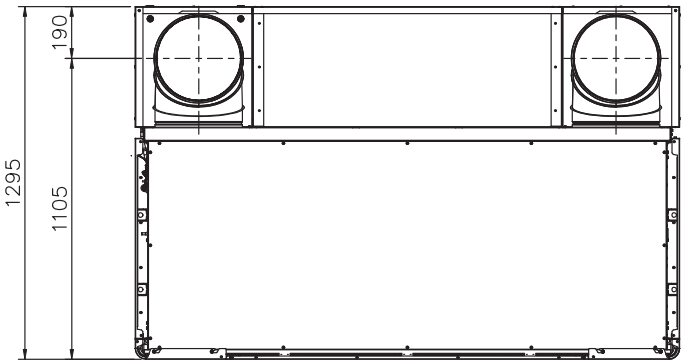
Combined with accessory PB-V1 PURECLASS 800 CL (For outdoor connections on top)



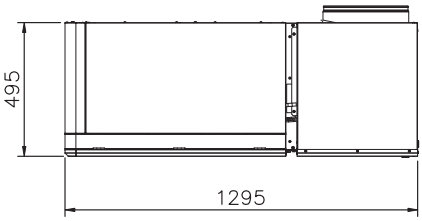
View from the rear

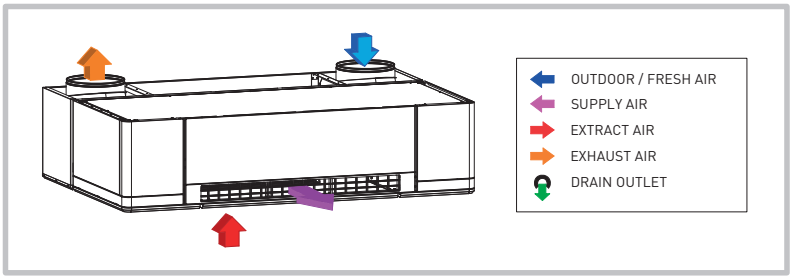


View from the top



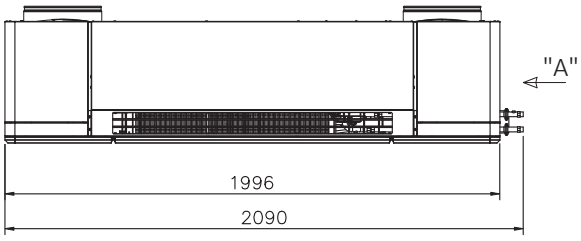
View from the right side (A)

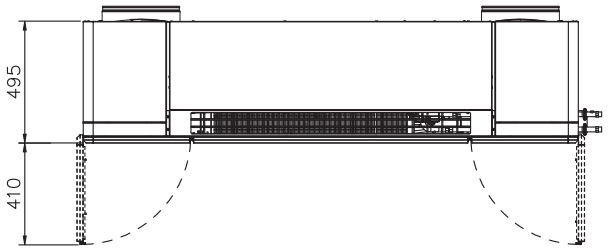




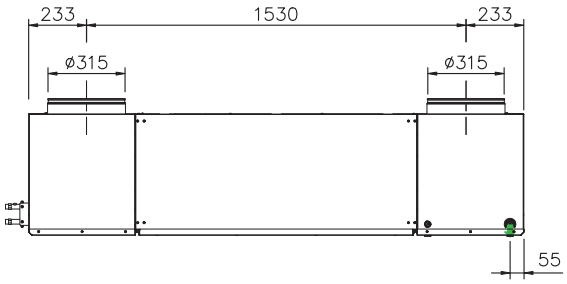
d) PURECLASS 800 CL DC

Combined with accessory PB-V1 PURECLASS 800 CL (For outdoor connections on top)

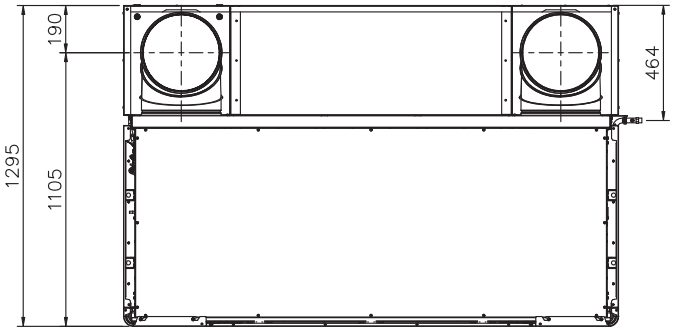




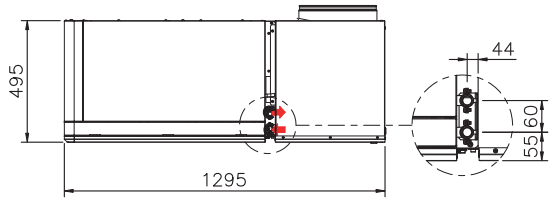
View from the rear

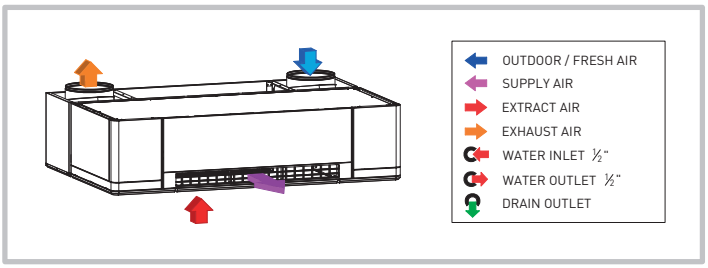


View from the top



View from the right side ("A")





8.4. MOUNTING PROCESS OF AN ADDITIONAL SUPPLY FILTER

The heat recovery unit is supplied with the filters mounted inside. ISO Coarse +ISO ePM1 50% (G4+F7) in the supply air and ISO ePM10 50% (M5) in the extract air (for more information see section “Replacing filters”).

8.5. RANGE SPECIFICATIONS

8.5.1. Versions and general characteristics

Model	Coils configuration		Airflow rate (m³/h)		Heat exchanger efficiency[1] (%)	Sound level dB(A)[2]		Weight (kg)
	Preheater	Postheater	Nominal	Maximum (Boost)		Nominal airflow[3]	Maximum (Boost)[4]	
PURECLASS 800 CL	No	No	800	1000	84,5	35 dB(A)	42 dB(A)	152
PURECLASS 800 CL DC	No	Water						157
PURECLASS 800 CL DI	No	Electric 3kW						158
PURECLASS 800 CL PH	Electric 2kW	No						157
PURECLASS 800 CL PH DC	Electric 2kW	Water						162
PURECLASS 800 CL PH DI	Electric 2kW	Electric 1,5kW						163

[1] Wet efficiency referred to nominal airflow. Outdoor -5ºC 80% Rel.Hum. Indoor 20ºC 50%.
[2] Sound pressure level, measured in a free field, at a distance of 3 m.
[3] 800 m³/h with clean filters.
[4] 1000 m³/h with clogged filters (maximum fan speed).

8.5.2. Electric data

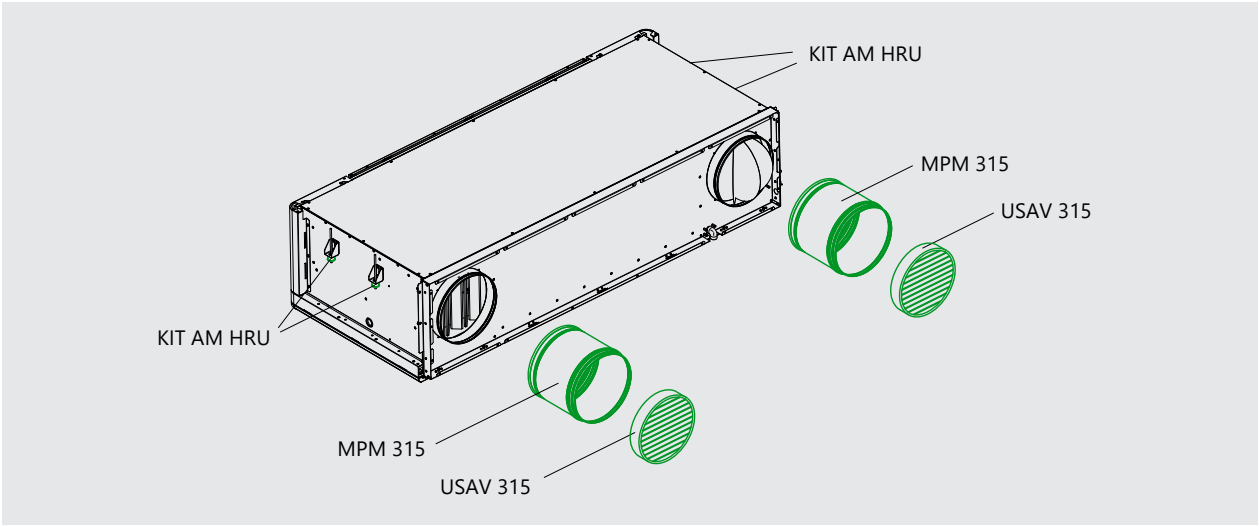
Model	Voltage	Fans absorbed power		Electric heaters power		Maximum absorbed current (A)
		Nominal[1] (W)	Maximum[2] (W)	Preheater (kW)	Post heater (kW)	
PURECLASS 800 CL	230V 50Hz	246	518	-	-	2,2
PURECLASS 800 CL PH				2	-	10,9
PURECLASS 800 CL DI				-	3	15,2
PURECLASS 800 CL DC				-	-	2,2
PURECLASS 800 CL PH DI				2	1,5	17,4
PURECLASS 800 CL PH DC				2	-	10,9

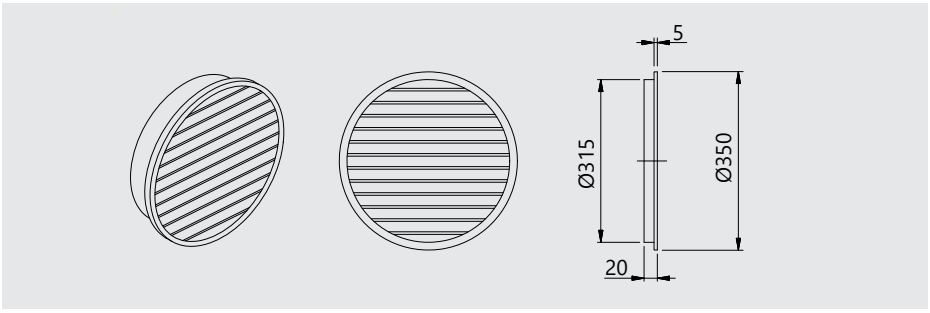
[1] 800 m³/h with clean filters. Both fans included.
[2] 1000 m³/h with clogged filters (clean filters + 200Pa). Both fans included.

8.6. CONNECTIONS

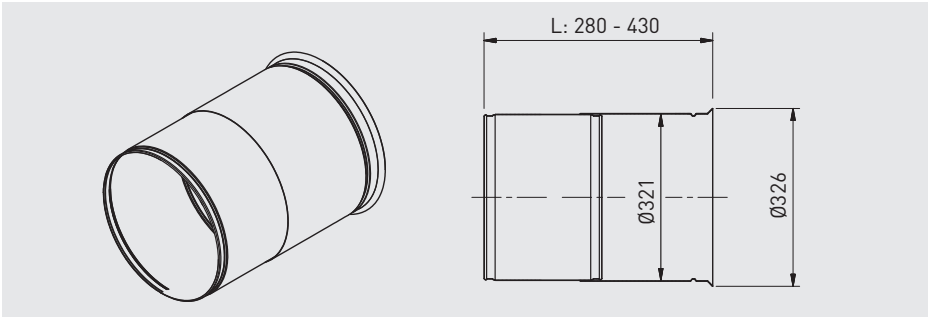
8.6.1. Connection with air duct on the back

PURECLASS CL units are decentralized HRU that do not require air ducting inside the building. However, it is necessary to exhaust and take air outside the building.
There are accessories to facilitate installation in case of air intake/exhaust directly through the façade:





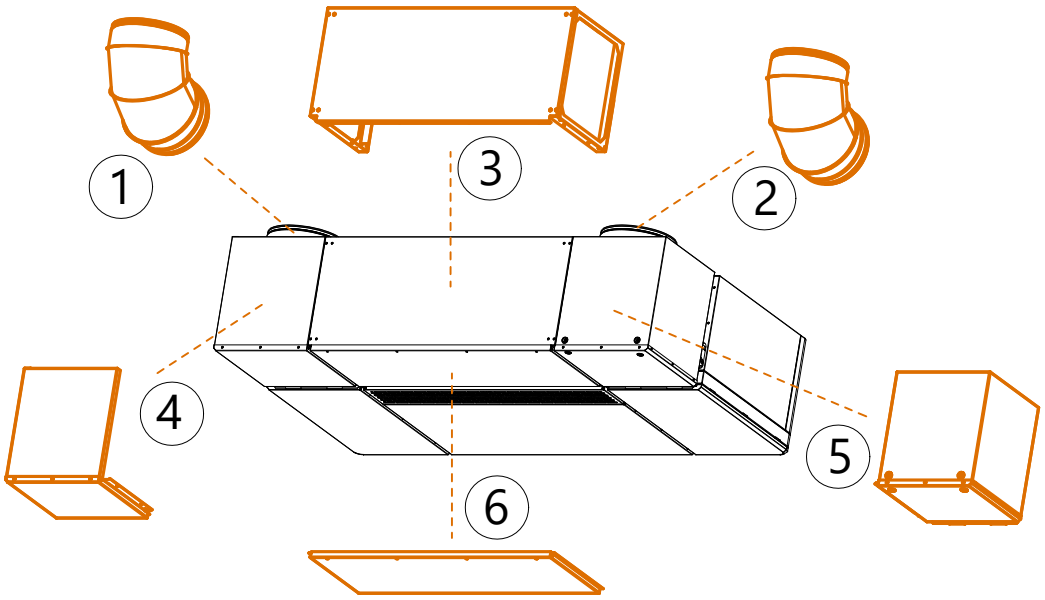
USAV
Protection guard.



MPM 315
Wall telescopic sleeve.

8.6.2. Connection with air duct on the top

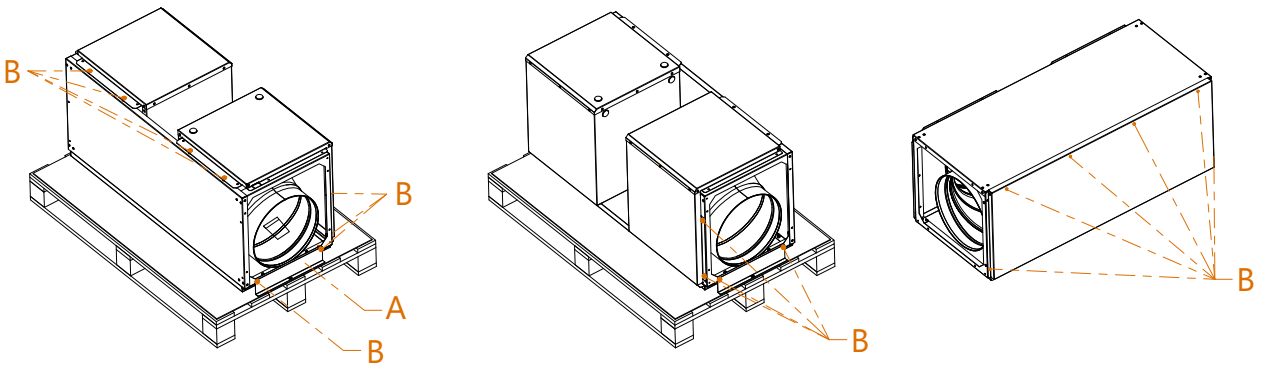
The PB-V1 PURECLASS 800 CL plenum accessory allows directing the outside air intake and the stale air discharge outlet (by default on the back of the equipment) towards the top, allowing the connection to the building's ducts, when these are located on the ceiling.



The accessory is made up of the following elements:
1. Fresh air elbow - Outdoor air
2. Clogged air elbow - Exhaust air
3. Back cover
4. Fresh air side cover
5. Clogged air side cover
6. Bottom cover

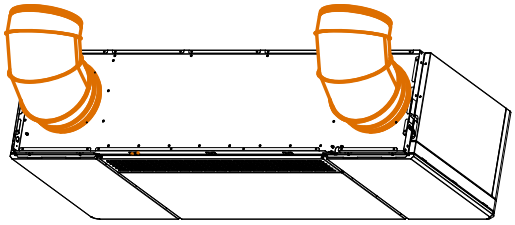
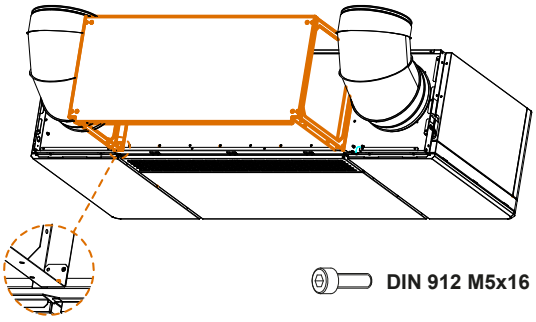
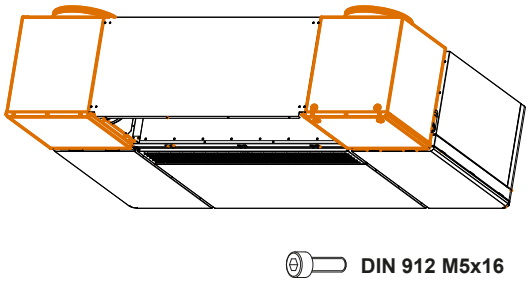
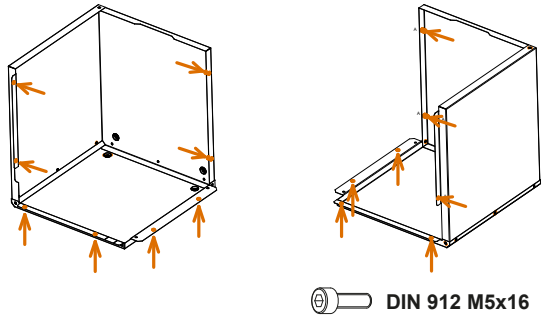
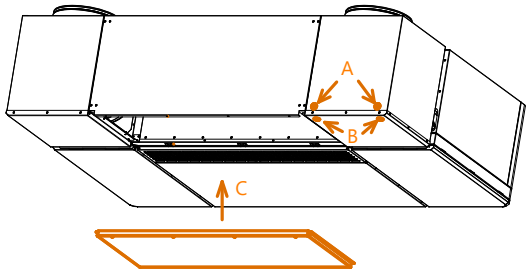
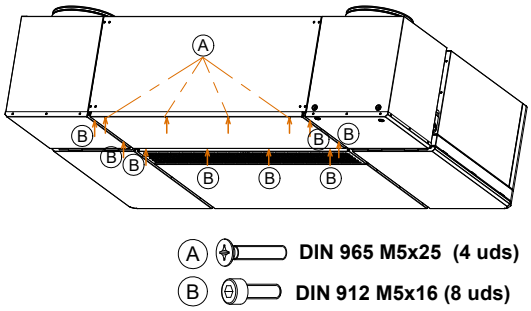
The kit is supplied in a wooden box on a pallet. To give the assembly rigidity, the components are screwed together and to the pallet.
The brackets that hold the equipment to the pallet (A) can be discarded.
Loosen the screws that join the different components of the kit (B).

IMPORTANT: Do not throw away these screws. They are necessary for the final assembly of the kit.



Vertical discharge kit assembly sequence

To assemble the module, a total of 32 screws are required: 18 units from the previous disassembly of the modules and 14 units that are supplied in a plastic bag.

<table>
<tr><td>  </td><td> 
</td></tr>
<tr><td>1. Once the unit is installed, put the 2 elbows on the outside air inlet and outlet connections.</td><td>2. Assemble the rear cover, screwing it onto the 4 nuts inserted in the rear of the PURECLASS recovery unit.</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>3. Assemble the two side covers.</td><td>4. Each side cover is screwed to the structure of the PURECLASS recovery unit and to the rear cover subassembly, using 8 screws (supplied with the kit plenum).</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>5. Only for units equipped with a condensate pump, extend the drain pipe to the back of the plenum. There are 4 plastic gaskets on the side cover: 2 at the back (A) and 2 at the bottom (B). Use the one that best suits to pass the condensate evacuation duct to the outside of the unit, as well as the electric power cable. Once done, place the lower cover (C).</td><td>6. Finally, mount the back cover, fixing it with 12 screws to the structure.</td></tr>
</table>

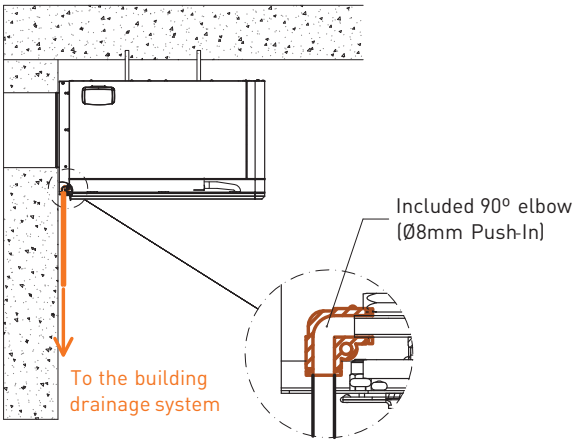
8.6.3. Condensate drainage

Concerning the drainage system, PURECLASS CL units are available in two different versions:
a) With condensate fall by gravity (without condensation pump)
b) Version CP: With condensation drain pump integrated (factory mounted).

Depending on the version, it will be necessary to meet the following requirements:

8.6.3.1. PURECLASS CL with condensation pump (Version CP)

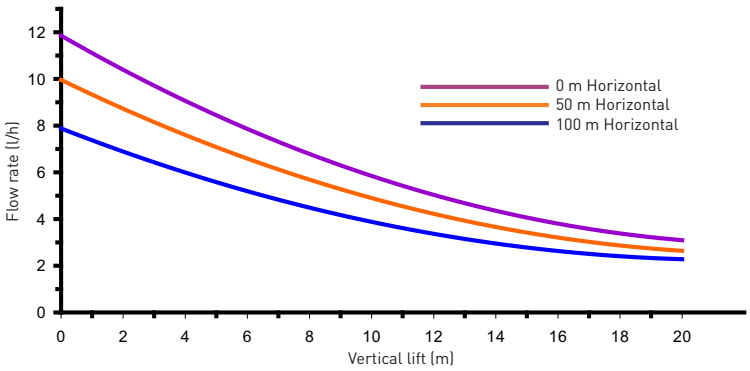
The condensate collection system consists of a tray equipped with a condensate pump that conducts the condensate to the edge of the equipment (bottom part in contact with the wall of the room. The terminal element of the duct is Ø8mm Push-in connector.



Water pump characteristics:

- Electronic Energy Control System (EECS) with alarm circuit. All electronic components are encapsulated to protect them from moisture.
- Max flow capacity: 12 l/h.
- Max suction height: 1 m Max delivery height: 19,8 m.

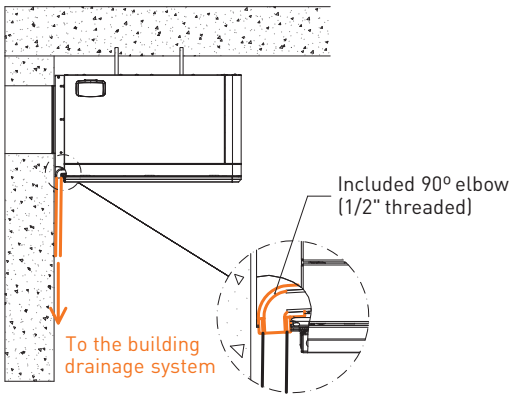
Performance chart – condensate pump



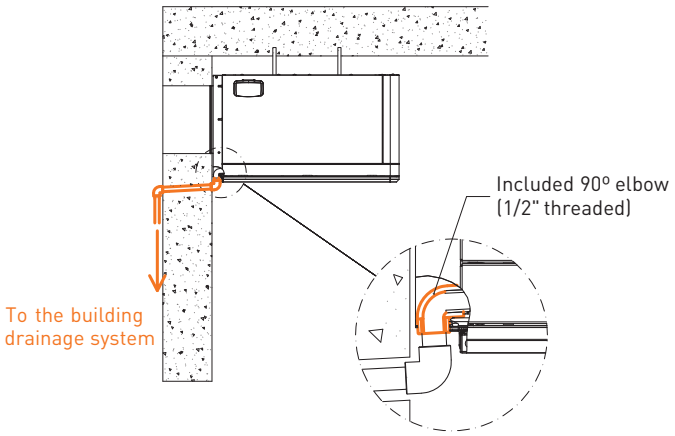
8.6.3.2. PURECLASS CL without condensation pump. Special execution. Produced under request

The condensate collection system is made up of a tray and a conduit that carries the condensate to the edge of the equipment (lower part in contact with the wall of the room. The terminal element of the conduit is a 1/2" threaded connector).

Installation with condensate channeling inside the building

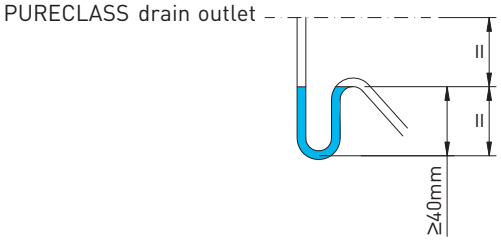


Installation with condensate channeling outside the building



Drainage system

- To ensure the removal of draining condensate from the tray, a siphon must be installed sized in the way that the distance between the water beam inside the siphon and the drain tray, will be higher than the static fan pressure.



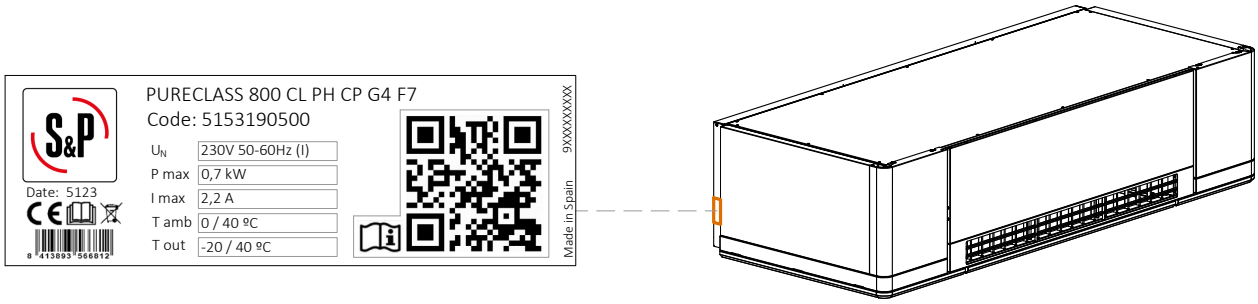
- The horizontal pipe sections should have a minimum slope of 2%.

The siphon should always be full of water. Check its level periodically, refilling it if necessary. An empty siphon can cause the condensate tray to overflow and water leak through the equipment casing.

8.6.4. Electrical connection

Before connecting the power supply, check that the type and size of the cable is appropriate for the characteristics of the equipment (information on the nameplate).

Position of the nameplate:



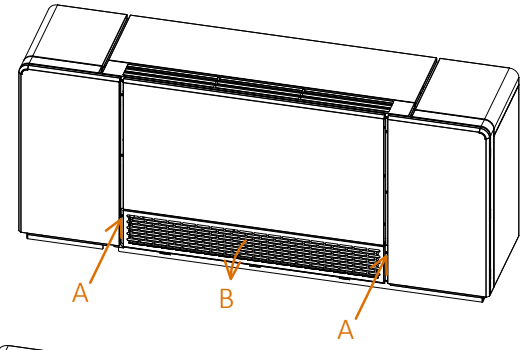
ATTENTION:
The equipment must be protected following the requirements of the local Electrotechnical Regulations, ensuring that the following elements exist:
- Overcurrent protection
- Differential protection with 30mA sensitivity
- Manually operated safety device (main switch or cut-off section)

In the recovery unit PURECLASS CL range, all components integrated in the unit, are supplied wired to the electric board (fans, preheater, postheater, filters pressure switches, temperature probes and by-pass damper).
The electrical connection to be done by the installer is limited to the connection of external accessories such as the control terminal or CO_2 sensor, and finally the connection of the power supply line directly to the main terminals inside the electrical cabinet.
Make electrical connection in accordance to the described in the corresponding wiring diagram, found at the end of this manual.
This equipment complies with electromagnetic compatibility regulations.
The use of shielded cables and a short distance between the unit and the remote control are strongly recommended.
To avoid interference that could affect the operation of the unit, it is recommended that wiring be kept away from other power lines, motors, refrigeration compressors, frequency inverters or similar.

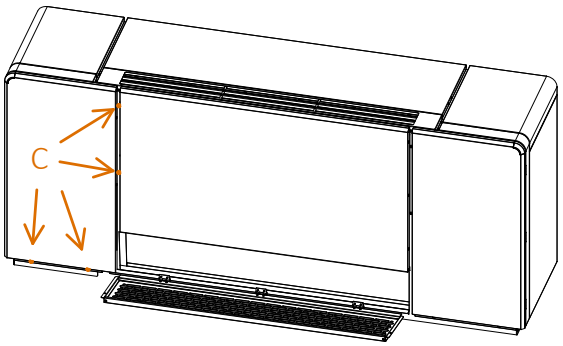
8.6.4.1. Access to the electric board (Just in case of accessories wiring)

Access to the electrical cabinet is through the left door located at the bottom of the equipment. To access, follow the steps below:

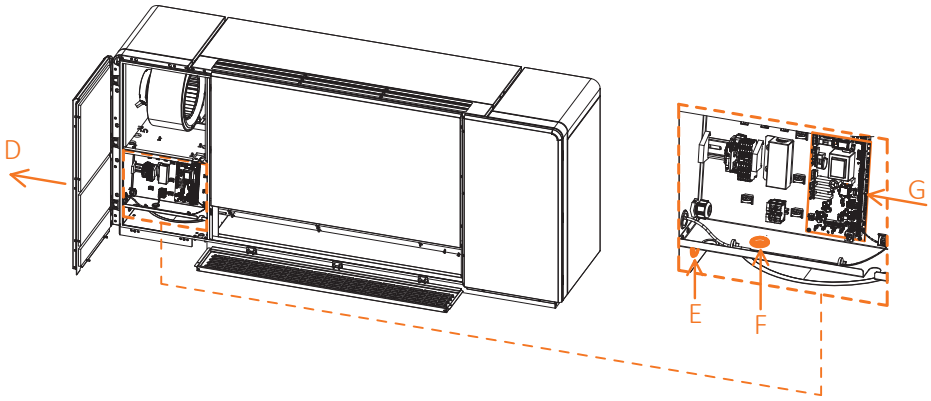
Loosen and remove the four screws that hold the intake grid-filter holder (A), and fold down the grid (B).



Loosen and remove the 4 screws that hold the left door (C) which gives access to the electrical cabinet.

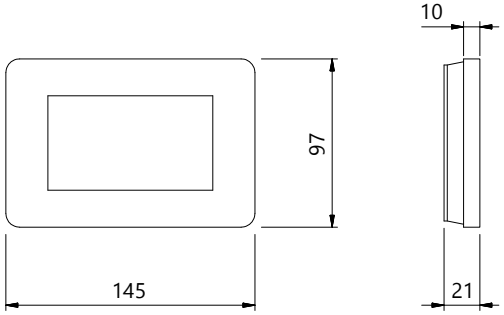


Fold down the left door, which gives access to the electrical cabinet (D).
The cables of the accessories (CO_2 sensor and remote panel) must be passed through the glands (E) and (F) to the electronic board (G). See wiring details in electrical diagrams.



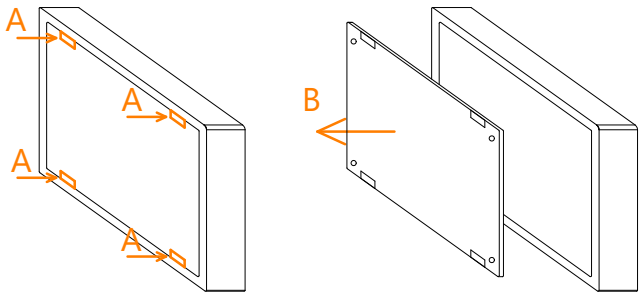
8.6.4.2. External Touch Display (ETD) control connection

The ETD is necessary to control the unit remotely (Except in case of integration to BMS), however the ETD is not included with the unit, therefore it must be ordered separately (supplied as an accessory). This is so since a single ETD can control up to 5 PURECLASS CL units.
The remote control is supplied with a 10 meter length cable, which can be replaced by a cable up to 30 meters (recommended control cable type. H05VV-F-4G 0.25). See details on the connection of the controller in the electrical diagrams at the end of the manual.
The ETD has an electrical protection IP-20 degree, so it is reserved exclusively for indoor usage sheltered from humidity.
Once the parameter setting is done, the remote control can be disconnected.

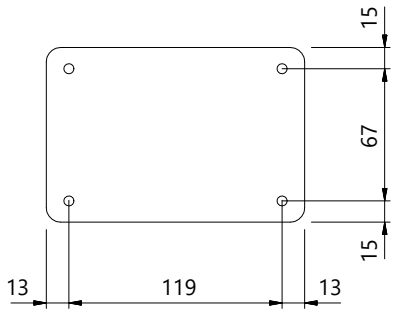


ETD surface installation procedure

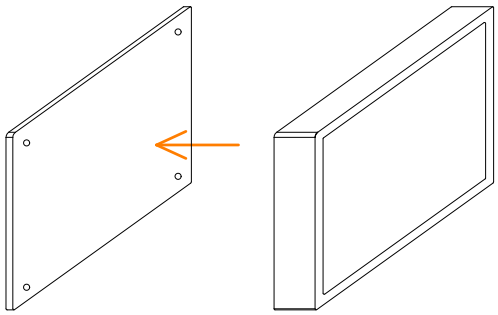
Control panel can be mounted in wall surface. To do this, it is necessary to remove the back cover. by pressing on the tabs (A) and removing the remote mounting bracket (B).



Screw the mounting bracket to the wall following the hole distribution:



And finally fit the ETD back to the mounting bracket, already fixed to the wall:



8.6.5. Connecting electrical accessories

The control included in the PURECLASS CL makes it possible to work on fixed predefined flow rates, as well as assign these flow rates to different time slots. To be able to work with variable airflow rates, it is necessary to add accessories:

To access the electric board see chapter "8.6.4.1. Access to the electric board (Just in case of accessories wiring)", page 20.

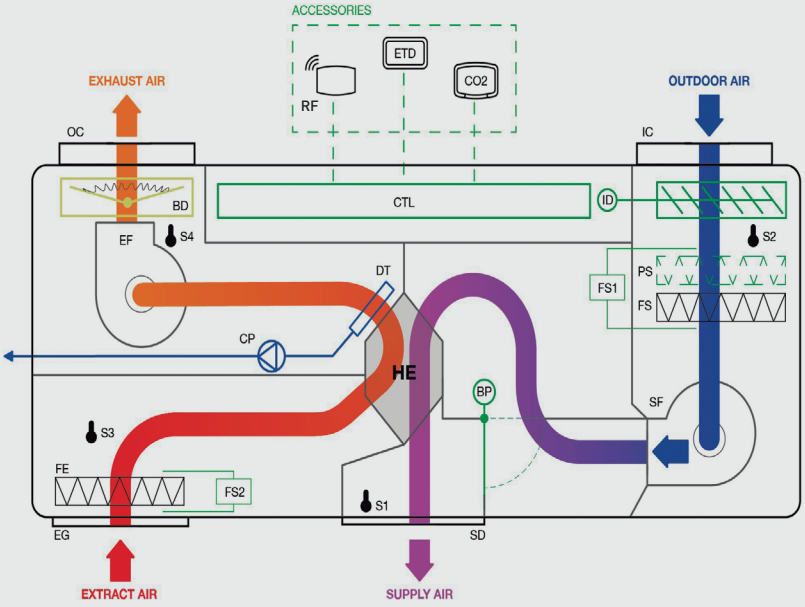
Recommended accessories for automatic fan speed regulation

Variable airflow[1] VAV by CO_2	Constant airflow[2] CAV
Ambient	
AIRSENS CO2 / SCO2-A 0-10V	Not required

[1] The PURECLASS CO2 versions have a factory-mounted CO_2 sensor, located in the intake plenum. These versions are incompatible with the use of external CO_2 sensors.
[2] This type of regulation is used to guarantee a constant airflow in the room, regardless of the filters fouling state.

9. COMPONENTS DIAGRAMS

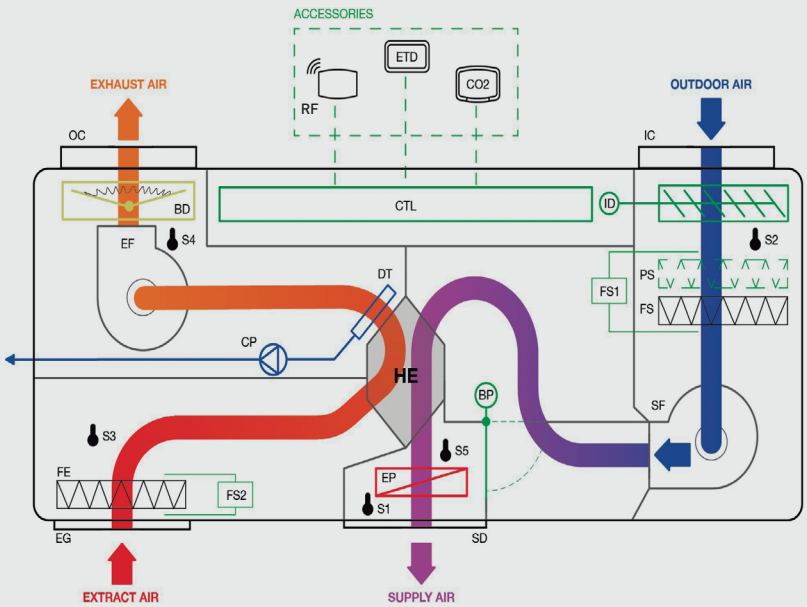
PURECLASS 800 CL (without heaters)



SF	Supply fan
EF	Extract fan
HE	Heat exchanger
DT	Drain tray
CP	Condensation pump (depending version)
FS	Supply air filter
PS	Supply air prefilter
FE	Extract air filter
BP	Bypass damper with actuator
BD	Backdraft damper (spring)
ID	Supply air damper with actuator
EG	Extract air grid
SD	Supply air diffuser
OC	Exhaust air outlet coupling
IC	Outdoor air inlet coupling
CTL	ADVANCED controller
S1	Supply air temperature probe
S2	Outdoor air temperature probe
S3	Extract air temperature probe
S4	Exhaust air temperature probe
FS1	Supply air filter clogging detector (Pressure switch)
FS2	Extract air filter clogging detector (Pressure switch)
ETD	External touch display (Accessory
CO2	External CO2 sensor (Accessory)
RF	Radio Frequency receiver REC.AIRSENS RF

The schematic position does not correspond exactly to the position in the real unit.

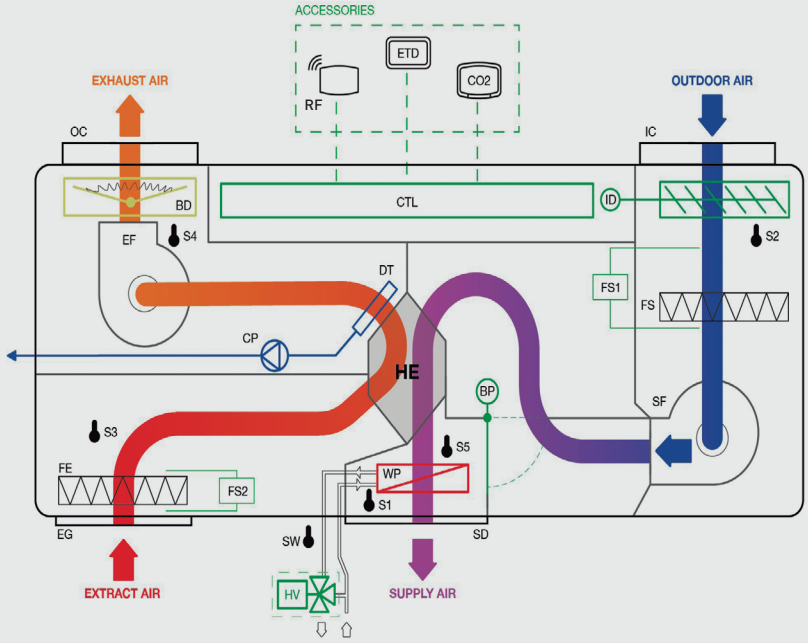
PURECLASS 800 CL DI (with electric post-heater)



SF	Supply fan
EF	Extract fan
HE	Heat exchanger
EP	Electric post-heater
DT	Drain tray
CP	Condensation pump (depending version)
FS	Supply air filter
PS	Supply air prefilter
FE	Extract air filter
BP	Bypass damper with actuator
BD	Backdraft damper (spring)
ID	Supply air damper with actuator
EG	Extract air grid
SD	Supply air diffuser
OC	Exhaust air outlet coupling
IC	Outdoor air inlet coupling
CTL	ADVANCED controller
S1	Supply air temperature probe
S2	Outdoor air temperature probe
S3	Extract air temperature probe
S4	Exhaust air temperature probe
S5	After heat exchanger air temperature probe
FS1	Supply air filter clogging detector (Pressure switch)
FS2	Extract air filter clogging detector (Pressure switch)
ETD	External touch display (Accessory
CO2	External CO2 sensor (Accessory)
RF	Radio Frequency receiver REC.AIRSENS RF

The schematic position does not correspond exactly to the position in the real unit.

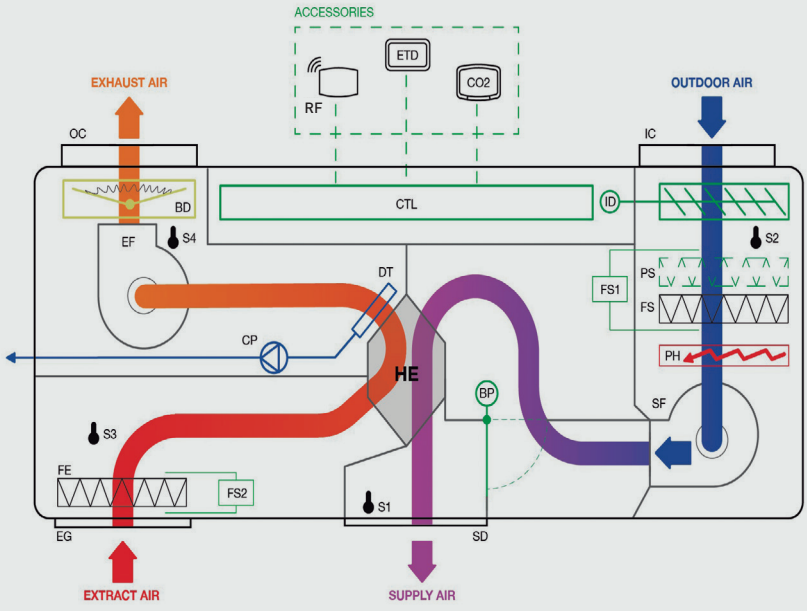
PURECLASS 800 CL DC (with hot water post-heater)



SF	Supply fan
EF	Extract fan
HE	Heat exchanger
WP	Water post-heater
DT	Drain tray
CP	Condensation pump (depending version)
FS	Supply air filter
PS	Supply air prefilter
FE	Extract air filter
BP	Bypass damper with actuator
BD	Backdraft damper (spring)
ID	Supply air damper with actuator
EG	Extract air grid
SD	Supply air diffuser
OC	Exhaust air outlet coupling
IC	Outdoor air inlet coupling
CTL	ADVANCED controller
S1	Supply air temperature probe
S2	Outdoor air temperature probe
S3	Extract air temperature probe
S4	Exhaust air temperature probe
S5	After heat exchanger air temperature probe
SW	Water coil frost protection probe
FS1	Supply air filter clogging detector (Pressure switch)
FS2	Extract air filter clogging detector (Pressure switch)
ETD	External touch display (Accessory
CO2	External CO2 sensor (Accessory)
RF	Radio Frequency receiver REC.AIRSENS RF
WV	Hot water valve (Accessory)

The schematic position does not correspond exactly to the position in the real unit.

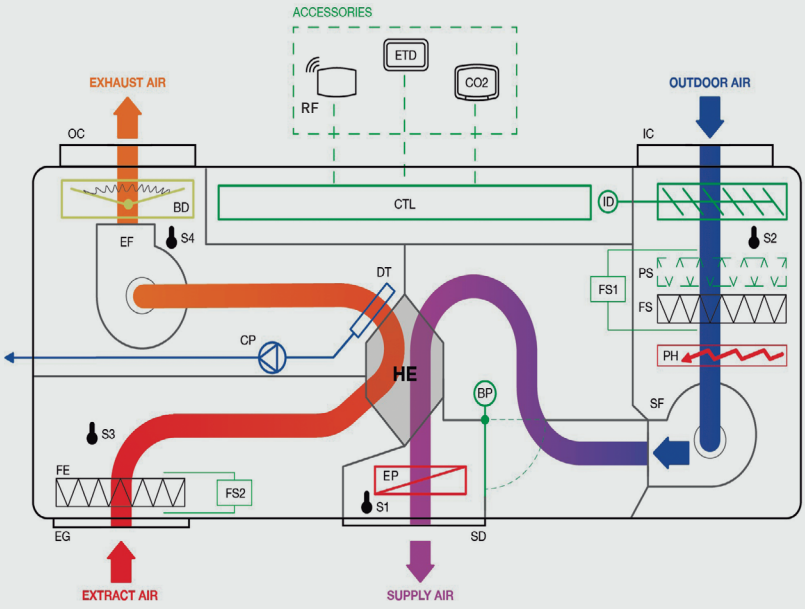
PURECLASS 800 CL PH (with pre-heater)



SF	Supply fan
EF	Extract fan
HE	Heat exchanger
PH	Electric pre-heater
DT	Drain tray
CP	Condensation pump (depending version)
FS	Supply air filter
PS	Supply air prefilter
FE	Extract air filter
BP	Bypass damper with actuator
BD	Backdraft damper (spring)
ID	Supply air damper with actuator
EG	Extract air grid
SD	Supply air diffuser
OC	Exhaust air outlet coupling
IC	Outdoor air inlet coupling
CTL	ADVANCED controller
S1	Supply air temperature probe
S2	Outdoor air temperature probe
S3	Extract air temperature probe
S4	Exhaust air temperature probe
FS1	Supply air filter clogging detector (Pressure switch)
FS2	Extract air filter clogging detector (Pressure switch)
ETD	External touch display (Accessory
CO2	External CO2 sensor (Accessory)
RF	Radio Frequency receiver REC.AIRSENS RF

The schematic position does not correspond exactly to the position in the real unit.

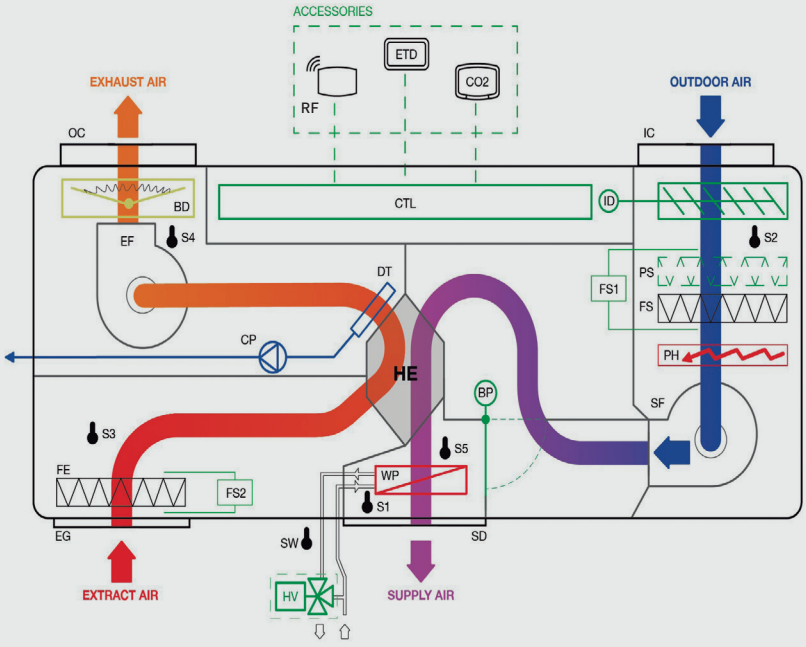
PURECLASS 800 CL PH DI (with electric pre-heater and post-heater)



SF	Supply fan
EF	Extract fan
HE	Heat exchanger
PH	Electric pre-heater
EP	Electric post-heater
DT	Drain tray
CP	Condensation pump (depending version)
FS	Supply air filter
PS	Supply air prefilter
FE	Extract air filter
BP	Bypass damper with actuator
BD	Backdraft damper (spring)
ID	Supply air damper with actuator
EG	Extract air grid
SD	Supply air diffuser
OC	Exhaust air outlet coupling
IC	Outdoor air inlet coupling
CTL	ADVANCED controller
S1	Supply air temperature probe
S2	Outdoor air temperature probe
S3	Extract air temperature probe
S4	Exhaust air temperature probe
S5	After heat exchanger air temperature probe
FS1	Supply air filter clogging detector (Pressure switch)
FS2	Extract air filter clogging detector (Pressure switch)
ETD	External touch display (Accessory
CO2	External CO2 sensor (Accessory)
RF	Radio Frequency receiver REC.AIRSENS RF

The schematic position does not correspond exactly to the position in the real unit.

PURECLASS 800 CL PH DC (with electric pre-heater and hot water postheater)



SF	Supply fan
EF	Extract fan
HE	Heat exchanger
PH	Electric pre-heater
WP	Water post-heater
DT	Drain tray
CP	Condensation pump (depending version)
FS	Supply air filter
PS	Supply air prefilter
FE	Extract air filter
BP	Bypass damper with actuator
BD	Backdraft damper (spring)
ID	Supply air damper with actuator
EG	Extract air grid
SD	Supply air diffuser
OC	Exhaust air outlet coupling
IC	Outdoor air inlet coupling
CTL	ADVANCED controller
S1	Supply air temperature probe
S2	Outdoor air temperature probe
S3	Extract air temperature probe
S4	Exhaust air temperature probe
S5	After heat exchanger air temperature probe
SW	Water coil frost protection probe
FS1	Supply air filter clogging detector (Pressure switch)
FS2	Extract air filter clogging detector (Pressure switch)
ETD	External touch display (Accessory
CO2	External CO2 sensor (Accessory)
RF	Radio Frequency receiver REC.AIRSENS RF
WV	Hot water valve (Accessory)

The schematic position does not correspond exactly to the position in the real unit.

10. CONTROL ADVANCED OPERATION

10.1. DESCRIPTION

PURECLASS CL units are equipped with the ADVANCED controller, a Plug & Play controller, factory mounted and wired that allows the management and supervision of the main components in the unit, as well as the adaptation* of the unit operation to the requirements of each application.

10.2. MAIN FUNCTIONS

ADVANCED controller main functions and characteristics:

FUNCTIONS
Fans adjustments
Automatic airflow adjustment in VAV mode, based on an external 0-10V signal (CO_2 sensor accessory or integrated depending on the version).
Automatic fans speed adjustment in CAV mode (Constant Airflow). The fans speed is adjusted to compensate filters fouling. Supply and extract fans independent control allowing the configuration of differents airflow values for each one (no accessories required).
Automatic airflow adjustment, according to a configurable time schedule (Configurable Timer).
BOOST* function (high-airflow timed activation via external volt-free contact).
REMOTE ON/OFF* function via external volt-free contact.
Temperature regulation
Display of the temperatures in the remote control panel ETD (Accessory).
Control of the supply temperature by opening the bypass (when the outside temperature allows it).
Regulation of internal electric postheater (Versions DI).
Regulation of internal water postheater (Versions DC). Available 0-10V output signal to manage 3 ways valve (accessory).
Bypass adjustment
Automatic operation of bypass free-cooling function.
Automatic operation of bypass as part of the heat exchanger defrost strategy.
SECURITY FUNCTIONS
Control of clogged filters via pressure switches (included).
Unit supervision with alarms shown in the remote control panel ETD (Accessory).
Fan failure detection.
Temperature probes failure detection.
Fire alarm function*. Activation of a predetermined behaviour of supply and extract fans after receive the input from the building fire switchboard.
COMMUNICATION
Wired remote control (accessory).
Digital input for REMOTE ON/OFF* function.
Digital input for BOOST* function (High speed timed activation).
Digital input for FIRE* central integration.
ALARM digital output.
Fans status (Run/Stop) digital output.
Can be integrated into the BMS - Modbus RTU (RS-485).

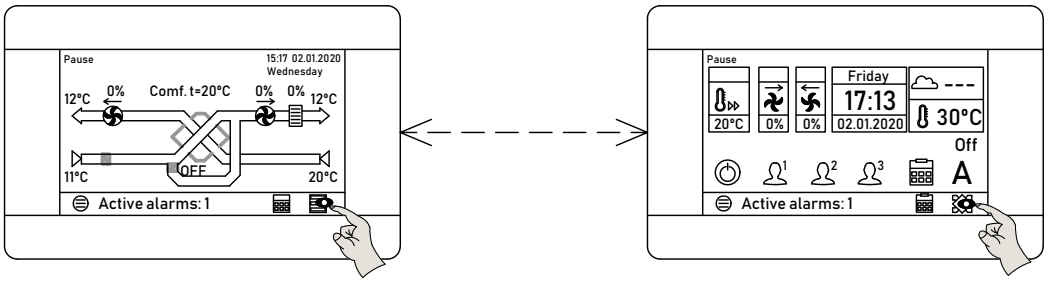
* These functions (Boost, Remote ON/OFF, Fire alarm) are not available for all versions. The number of digital inputs is limited and depends on the version. See the available functions for each version, as well as how to enable them in chapter "11. FUNCTIONS ASSOCIATED TO DIGITAL INPUTS (Boost, Remote ON/OFF, Fire alarm)", page 41.

10.3. USE OF REMOTE TERMINAL - USER LEVEL

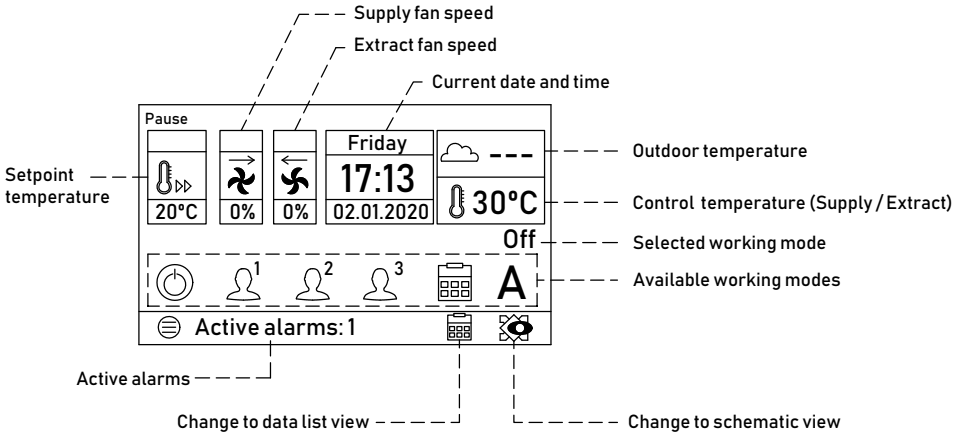
The ADVANCED control has a wired remote control panel ETD (accessory) that allows to supervise the operation of the unit as well as perform the configuration of the working modes of the unit. The control panel ETD is delivered as accessory since one ETD can manage up to 5 PURECLASS CL units.
The remote terminal is touch screen so navigation is done by tapping on its screen.

10.3.1. Navigation

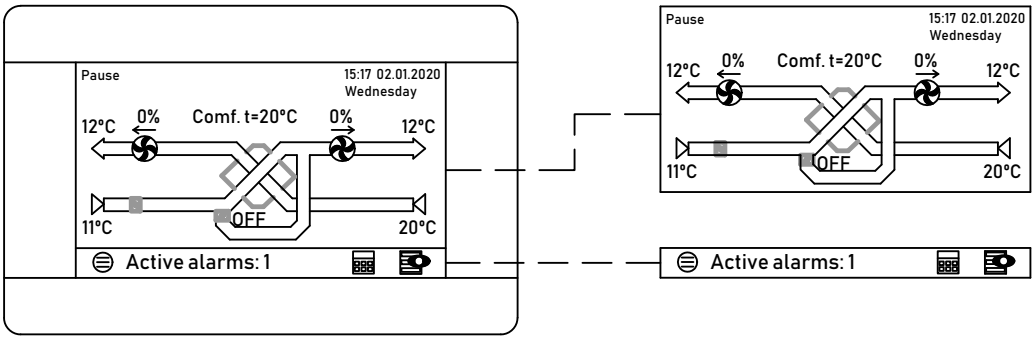
The main screen shows general information about the unit operation in two different ways of visualization: "List of variables" and "graphic representation". To move from one type of visualization to the other, press the icons in the bottom right corner.

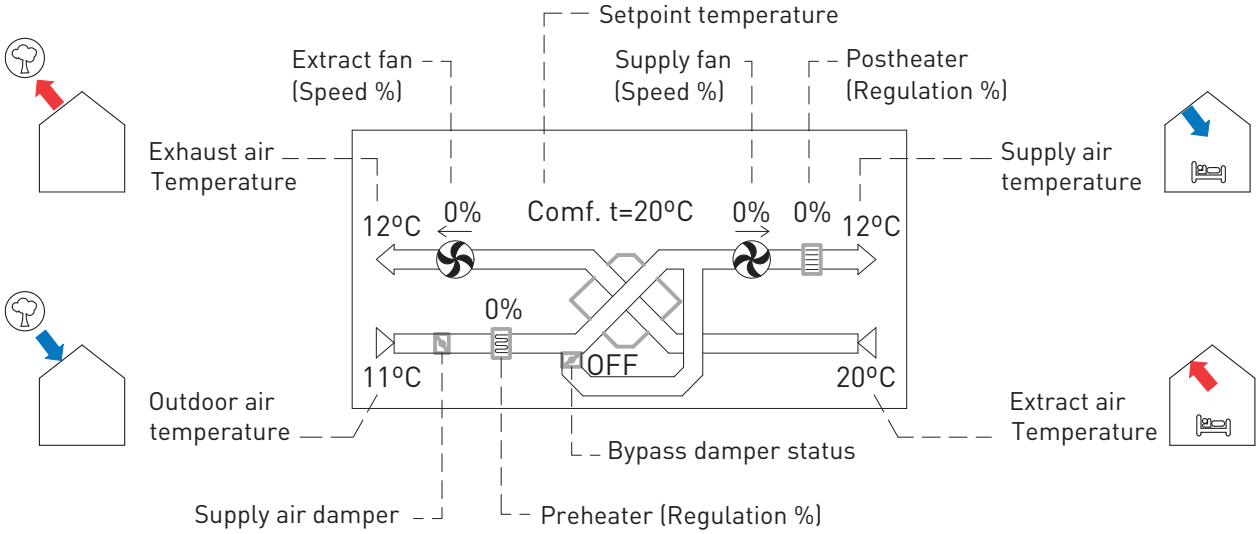


Information displayed in the "Data list" view:



Information displayed in the "Schematic representation" view:





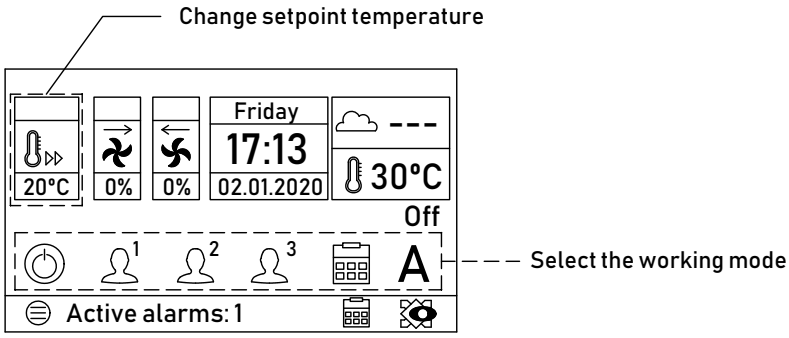
10.3.2. Access levels

There are 3 levels of access:

- User: Access to the parameters that a user may need. It allows making basic adjustments such as changing the fan speed or the temperature set point, as well as selecting the unit's operating mode (Use of time programming, remote stop the unit or possibly forcing a specific speed). No password is required.
- Installer: In addition to the functions and parameters accessible at the user level, it allows access to the configuration of advanced functions, such as set a fans operating mode (VAV or CAV), enable the IAQ sensor to modify fan speed depending on CO_2 level, modify the fan configuration, modify the defrost settings and strategy. Requires entering password, by default 1111.
- Producer: In addition to the functions and parameters accessible in the user and installer menu, it allows access to the configuration of additional functions related to coils management and assign functions to available digital inputs (Boost, remote ON/OFF, fire alarm). Requires entering password, by default 1951.

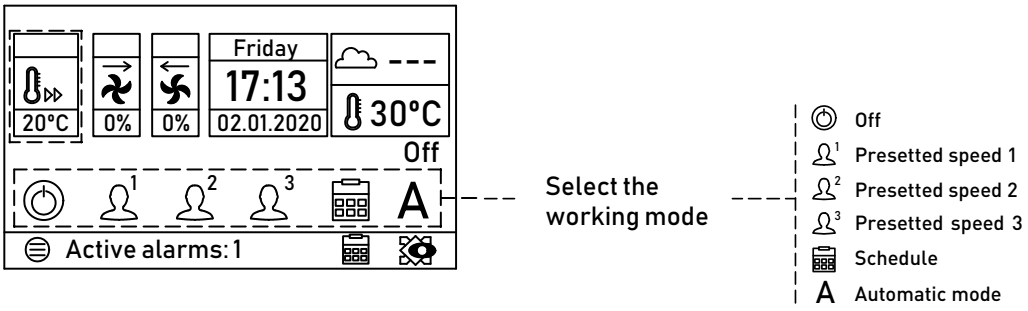
10.3.3. Quick access functions

From either the data list view it is possible to make direct access to the functions of "Fan speed adjusting" and "Changing the set temperature". The access is done through the following indicated icons:

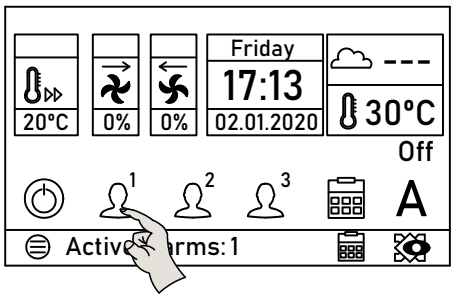


10.3.3.1. Fan speed adjustment

In the bottom zone of the screen, 6 icons allow to select the desired fan speed:

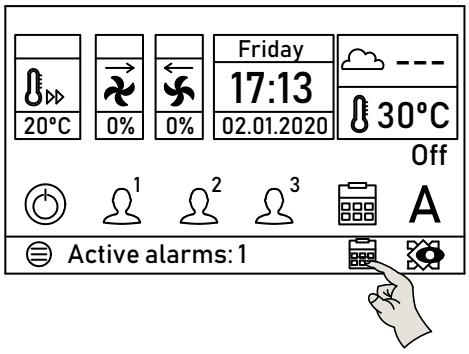


Modification of the value is made by pressing directly in the icon:



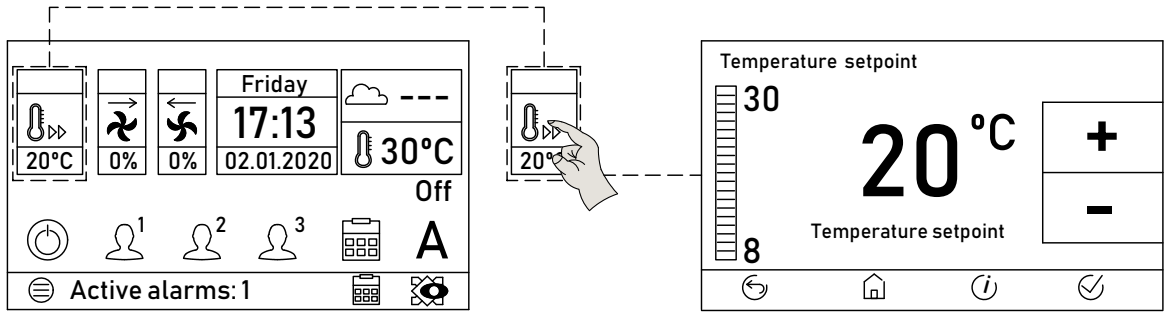
Once the speed has been selected, the icon appears remarked in a circle:

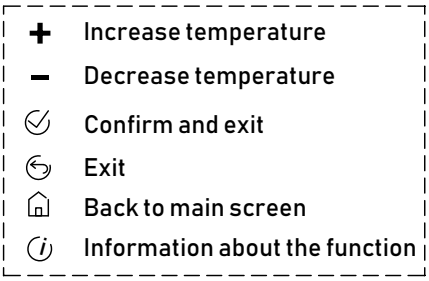
By pressing the calendar icon in the bottom part of the display, it is possible to access the time schedule configuration (See specific chapter TIME SCHEDULE):



10.3.3.2. Set temperature setting

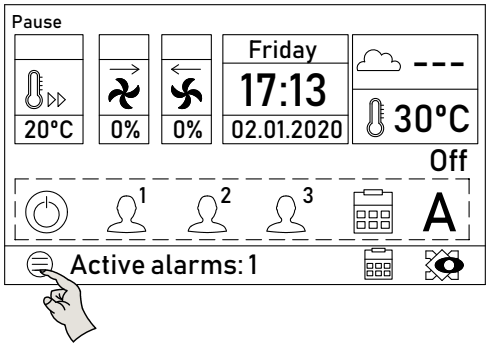
Pressing the SET POINT TEMPERATURE button will open a window indicating the current value of the set temperature. Modification of the value is made with the + or - buttons. Once modified, exit by pressing CONFIRM AND EXIT:

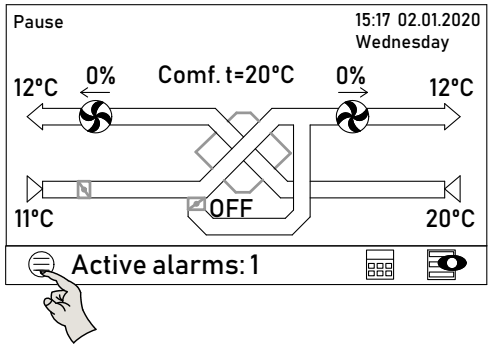




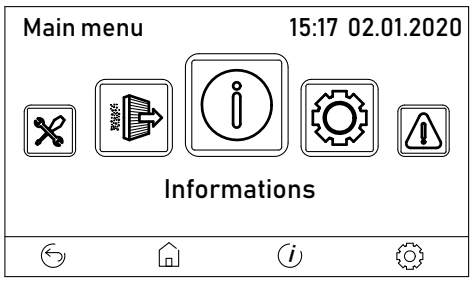
10.3.4. Main menu

Access to the main operating parameters of the equipment is done from the "main menu", which is accessed by pressing on the MENU button from any of both views:





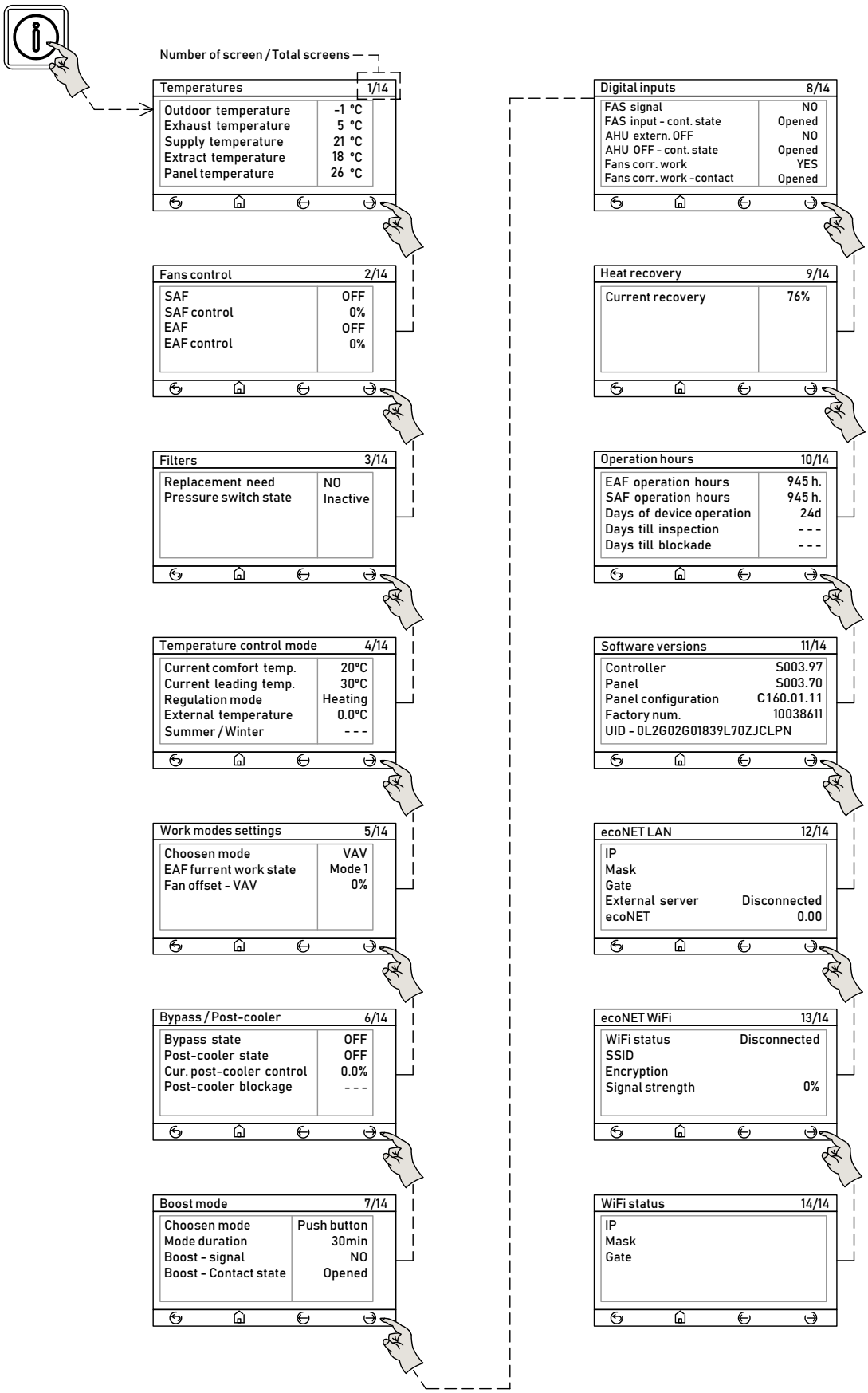
From this menu it is possible to read / configure the following information:



Submenu	Function	
Information	**Information (only read) of the following functional variables**	
	Parameter	**Description**
	Temperatures	Air temperatures
	Fans control	Fans state
	Filters	Filters state
	Temperature control mode	Post heater state (in case of existing)
	Work modes settings	Fans working mode
	Bypass	By-pass state
	Boost mode	Boost function state (High speed)
	Digital inputs	Digital inputs state
	Heat recovery	Current heat recovery efficiency
	Actuators	Bypass damper position
	Air Quality Sensor	Level of CO_2 (In case of existing)
	Operation hours	Working hours counter
	Software versions	Controller and remote panel ETD software versions
	ecoNET LAN	Not used
	ecoNET WiFi	Not used
	WiFi status	Not used
General settings	**Heat recovery unit configuration**	
	Parameter	**Description**
	Button pressing sound	Activate or deactivate the “beep” sound each time one of the icons-buttons on the remote is pressed
	Alarm sounds	Enable or disable the acoustic signal when an alarm occurs
	Screensaver settings	Screensaver settings. Allows to enable a screensaver: OFF: No screensaver ON: Activates a screensaver consisting of blanking the screen after a period of inactivity The screensaver only appears when the controller is on the main screens. It is not activated from the configuration menus
	ecoNET settings	Not used
	Panel address	Communication address of the HMI panel (This parameter must remain at 100. Do not modify
	Brightness	Adjust screen brightness
	Language	Change language
	Clock	Set the current time
	Date	Set the current date
	Default settings	Load default parameters (Do not modify)
	Software update	Update the controller and/or the remote panel software
Alarms	**Show active alarms**	
Time schedule	**Time programmer configuration** See specific chapter on the use of this function	
Service settings	**Access to advanced parameters** See specific chapter on the use of this function	
Filt. Work met. erase	**Reset the hour counter since filter change** Must be done after every filter change	

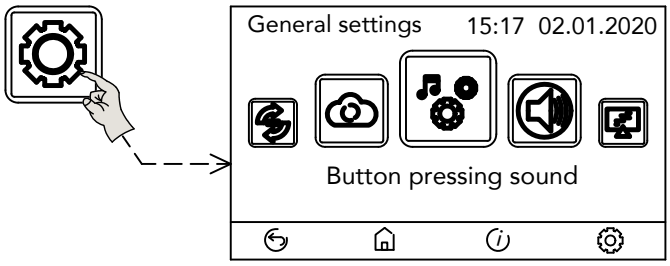
10.3.5. Information menu

Through this menu it is possible to have access to a large number of functional parameters of the equipment that allows to know the functional situation of the equipment (Temperatures, status of the inputs and outputs of the controller, operating hours, etc.)
All this information is read-only, it is not possible to modify any of the settings.
Exploded view of the Information submenu navigation:



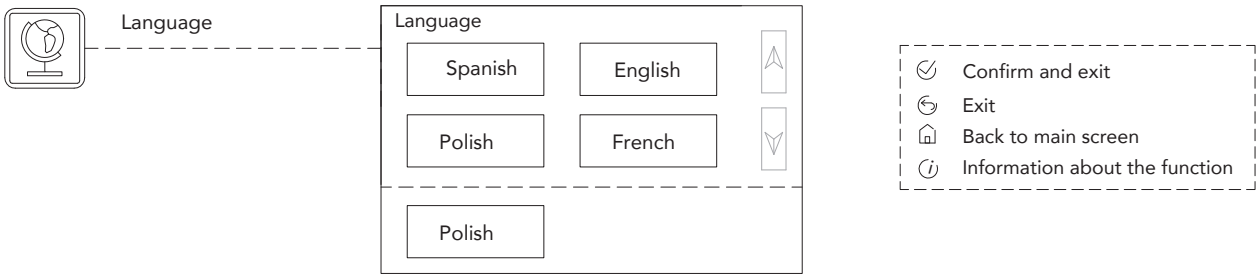
10.4. UNIT CONFIGURATION

Access to the General Settings menu parameters:



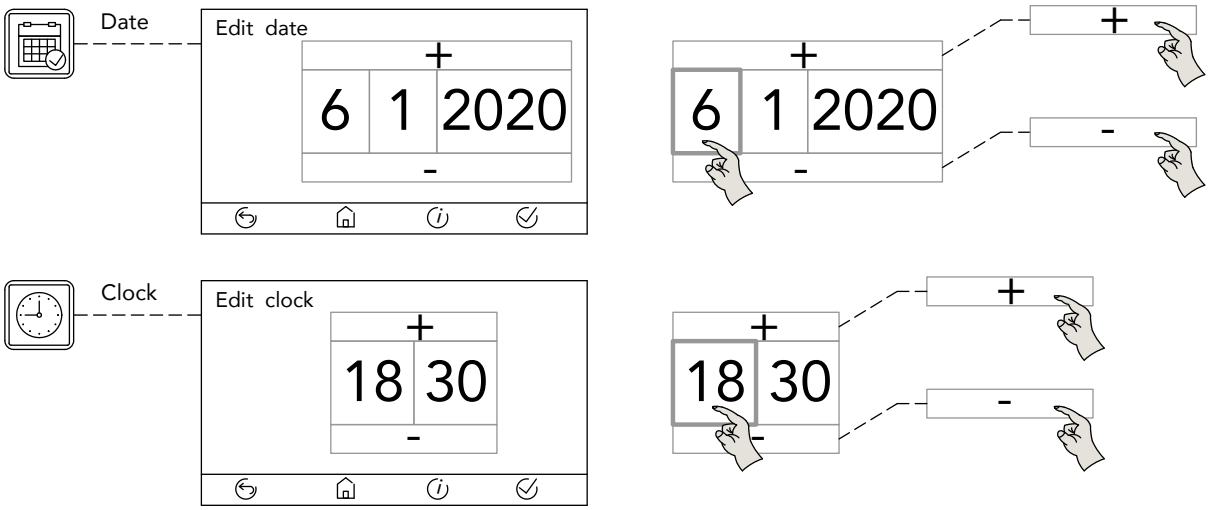
10.4.1. Change the idiom

From factory the controller is configured in English language. From the General Settings menu, access the Language button and select the desired idiom:



10.4.2. Setting the system date / time

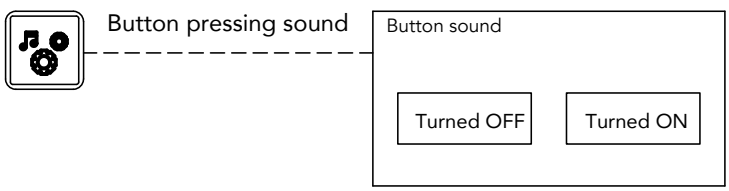
Allows to set the current date and time. It is important that both are well configured to have information in the alarm history and adjust the hourly timing appropriately.



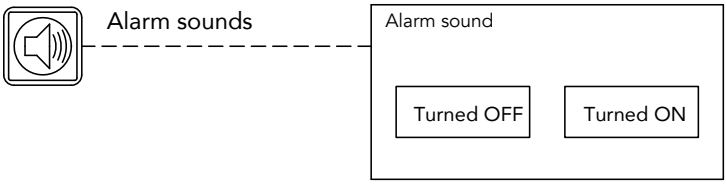
10.4.3. Image and sound settings

From the general setting menu it is possible to modify the default settings related to acoustic signals and the screen display:

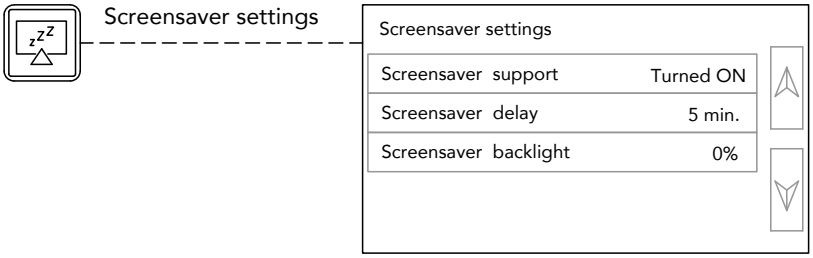
Modify or cancel the sound volume when pressing the button:



Modify or cancel the sound volume when an alarm is activated:



Activate a screensaver to be shown after a time of non-activity:

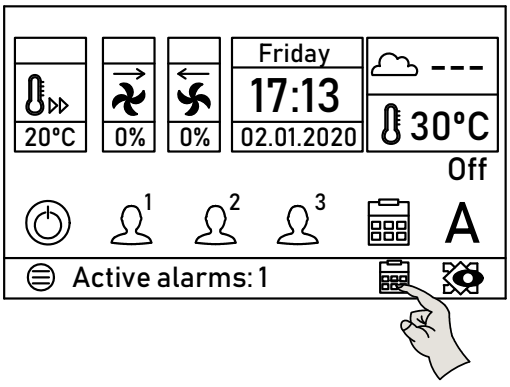


ecoNET settings (NOT USED)

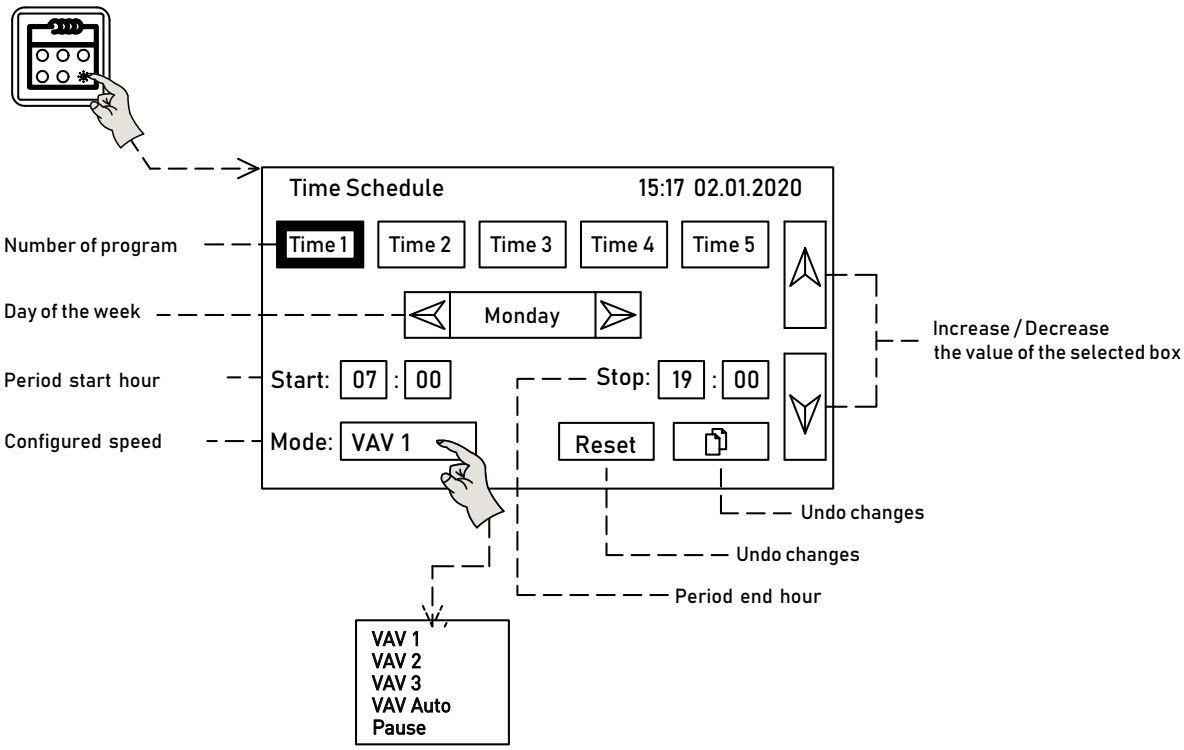
ecoTOUCH adress (NOT USED)

10.4.4. Time schedule

The controller has an internal time programmer that allows setting the working hours at different speeds (3 pre-defined speeds, automatic operation or stop of the fans).
The access to the time schedule specific screen can be done from the icons in the bottom part of the main display and from the main menu icon:



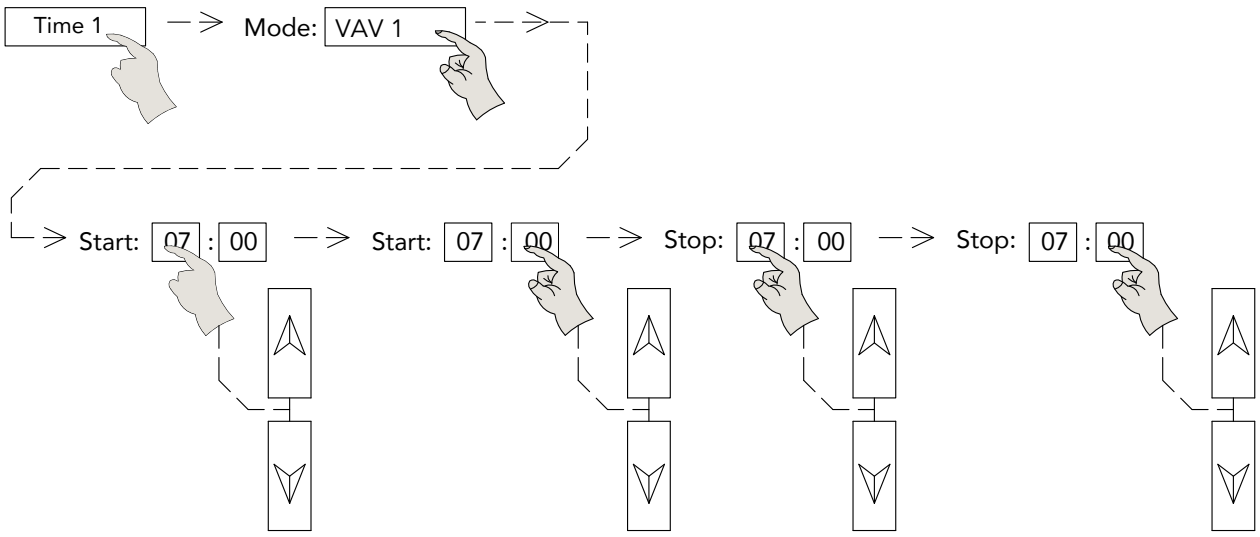
And from the main menu icon:



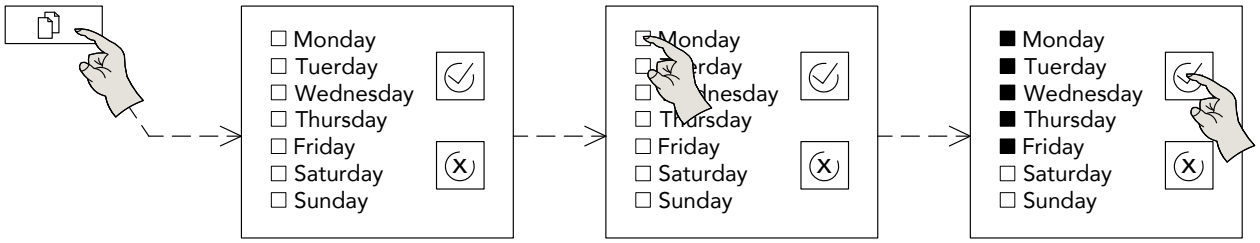
Scheduler settings:

The programmer works by time intervals. For each day, it is possible to configure 5 different intervals/programs (T1 to T5). By default, the unit is supplied without any preconfigured program (in the time and date boxes it appears -1 indicating that the box value is empty).

To create a new interval/program, follow the following sequence:

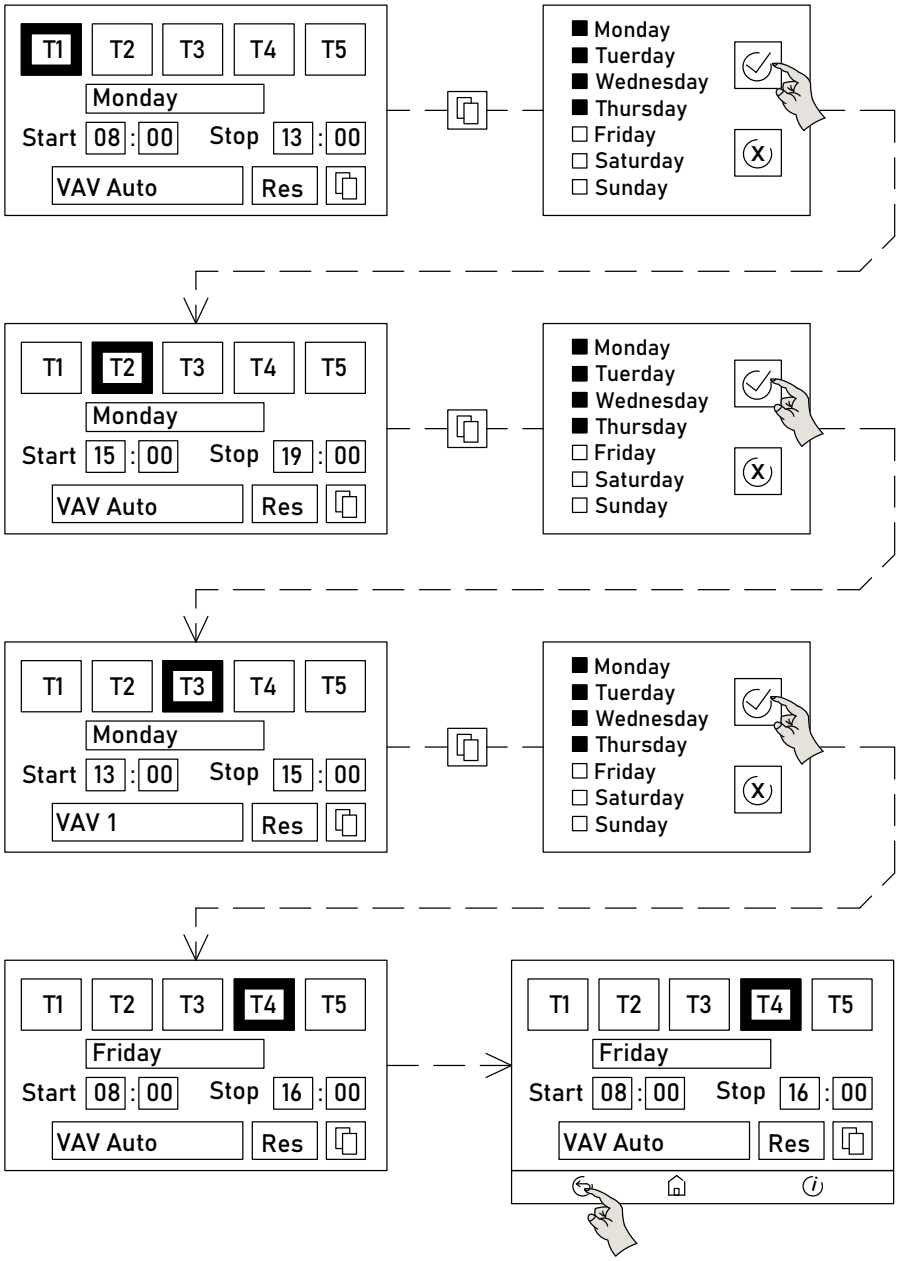


Once a schedule has been created for a particular day (T1 to T5), it is possible to copy the same schedule to other days:



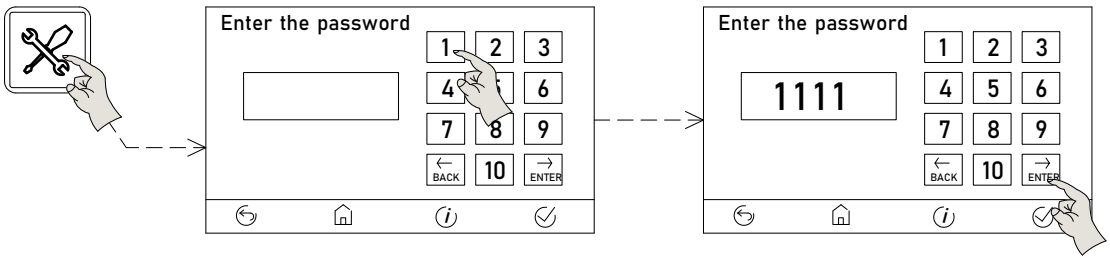
Example of time programming:

- Monday to Thursday:
  From 8:00 to 13:00 and from 15:00 to 19:00 in AUTO
  With high speed sweep from 13:00 to 15:00
- Friday:
  From 8:00 to 16:00 in AUTO



10.4.5. Unit configuration – installer parameters

The configuration of the installer parameters requires identification by password. The default password is 1111.
Access to installer parameters from the main menu:



Content of the functions and parameters accessible from the Installer menu:

IMPORTANT: Most of the parameters contained in this menu should not be modified by the installer or user. Its configuration has been made at the factory and its modification could lead to a malfunction of the unit. Limit yourself to setting only those parameters related to the equipment's working mode.

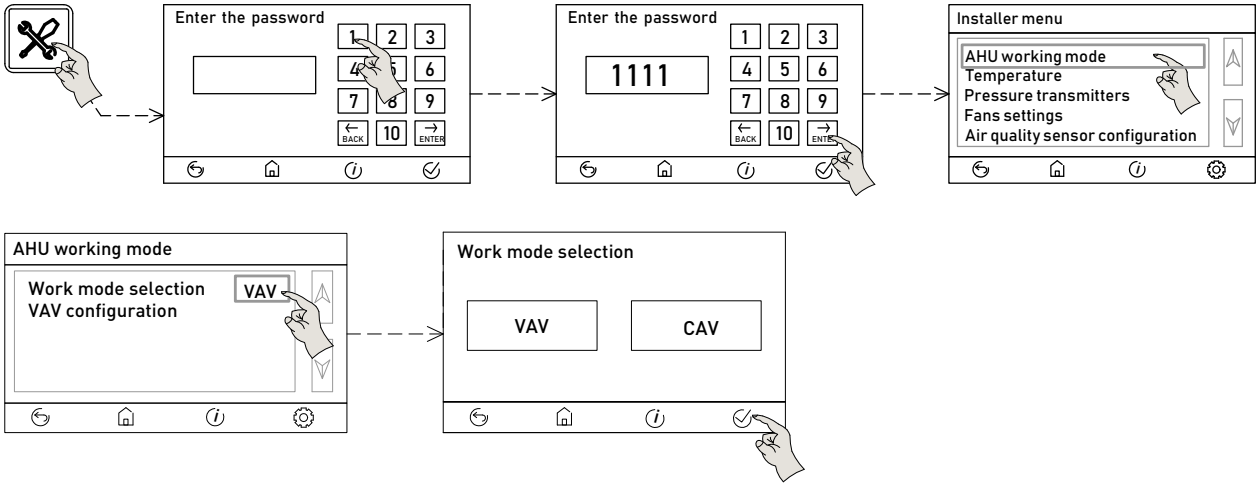
Menu	Function
AHU working mode	Configuration of the working mode of the fans (VAV and CAV) and adjust the parameters associated with each mode *See extended information in specific chapter*
Temperature	Define the setpoint temperature and the temperature control mode (on supply air or extract air)
Fans settings	Fan related settings: - Minimum and maximum speed - Proportional and integral regulation bands - Supply fan stop timing - Minimum outside operating temperature *See extended information in specific chapter*
AQS configuration	External sensor type for AUTO mode (CO_2 or humidity)
Bypass	By-pass control mode: - Manually opened - Manually closed - Automatic - Freecooling It allows defining freecooling control parameters such as: - Minimum differential between outside and inside temperature for the by-pass to activate - Minimum outside temperature below which the by-pass is not activated
Boost	Settings related to Boost mode such as: - Activation type: Push button or switch - Fan speed in Boost mode - Boost duration - Trigger digital signal type (NO / NC)
Filter settings	**DO NOT MODIFY THIS PARAMETER** Type of digital signal used for detection and timing in alarm activation: Normally open
Fire alarm system	Activation of fire mode and its configuration: - Type of activation signal (NO, NC) - Status of the supply and extraction fans during fire mode (Stop / Run) - Speed of the supply and extraction fans during fire mode (0-100%)
Burglar Alarm System	Not used
Exchanger antifreeze	**DO NOT MODIFY THIS PARAMETER** Settings related to heat exchanger antifreeze protection: - Antifreeze strategy (fans, bypass and preheater configuration)
Exchanger drying at stopping	Extract fan stop delay, used to eliminate the water that may remain inside the heat exchanger
Supply temp. prot.	**DO NOT MODIFY THIS PARAMETER** Protection against high supply air temperature (in case of postheater)
Alarms erase	Clear alarm history
Inspection	Set an alarm associated to preventive maintenance (Appears after X days from the activation of the function)
Default settings	**DO NOT MODIFY THIS PARAMETER** Reset factory settings
Modbus settings	Modify the Modbus communication settings. Modbus network (Id, transmission speed, stop bits, parity, etc.)
Exchanger cleaning	Not used
Additional controls	Configuration of the multi-unit control mode: Up to 5 units through a single ETD

10.4.6. Fans working modes

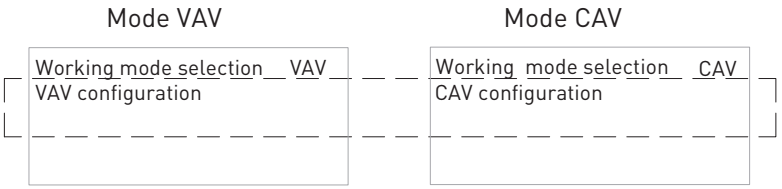
The unit fans can operate according to 2 operating modes:

- VAV: Variable airflow. The speed of the fans can be defined manually or in automatic mode depending on an external sensor supplied as accessory (Air quality, humidity or similar).
- CAV: Constant airflow. The speed of the fans is regulated to achieve a previously defined airflow and keep it constant over time, compensating the fouling effect of the filters. No accessories are required.

To define the fans working mode, access the installer menu and choose the working mode:



Once the desired mode is selected, exit by pressing the "Confirm and exit" button.
Depending on the selected mode, it is possible to define the parameters associated to each work mode:



10.4.6.1. Variable flow operation (VAV)

Recommended mode in single zone installations for operation at predefined fixed airflows or variable airflow depending on 0-10V signal from an external sensor.

VAV Manual: Run at preset speeds

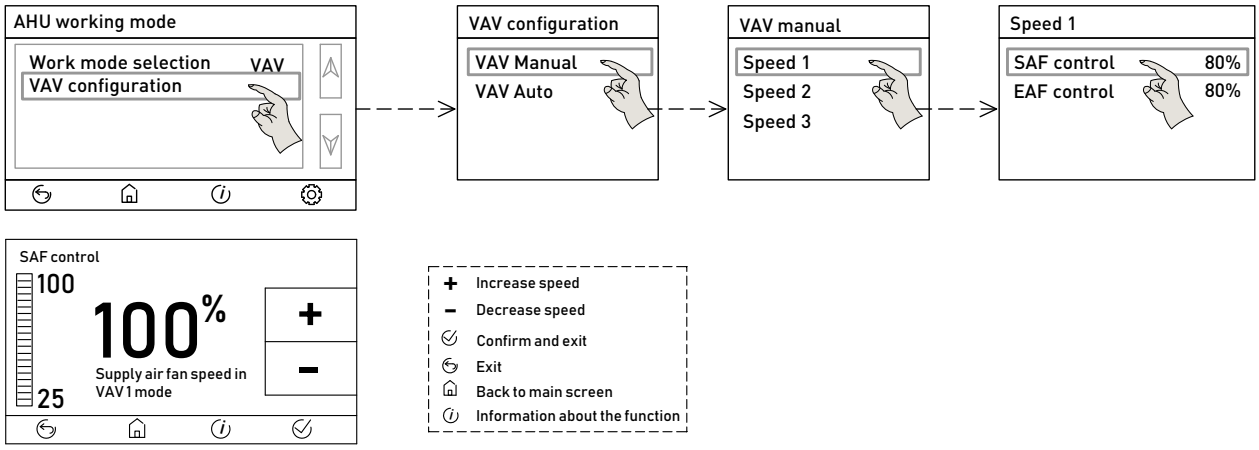
Assignment of speeds to supply air fan (SAF) and extract air fan (EAF):

The preset speed corresponds to an airflow rate according to the following table:

Speed (%)	Airflow (m^3/h)
20	200
30	300
40	400
50	500
60	600
70	700
80	800
90	900
100	1000

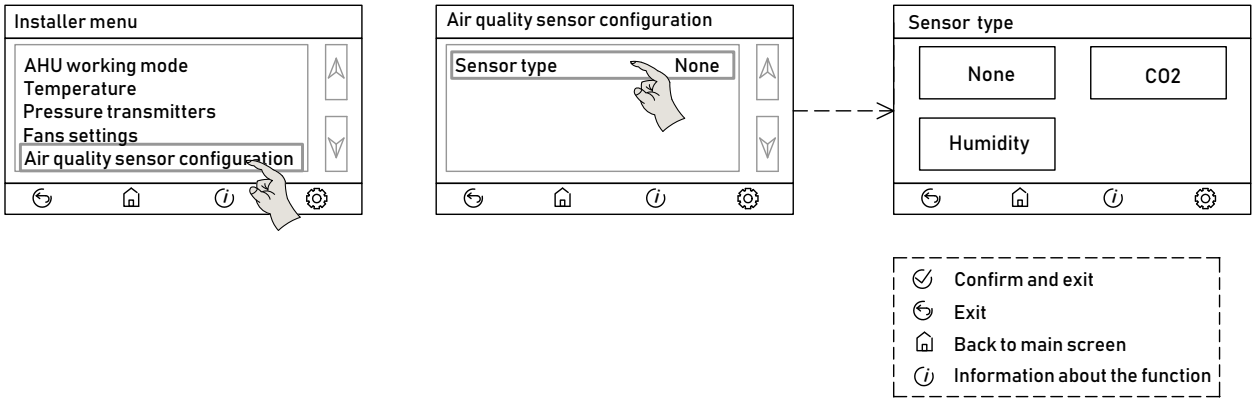
Values configured by default:
Speed 1: 80% = 800 m^3/h
Speed 2: 60% = 600 m^3/h
Speed 3: 40% = 400 m^3/h

Follow the procedure below for the 3 preset speeds/airflows:

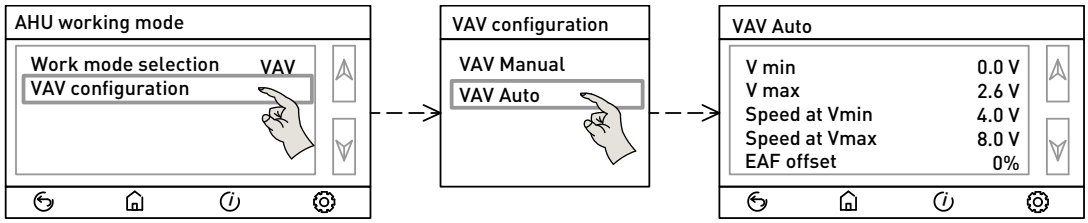


Automatic VAV mode operation

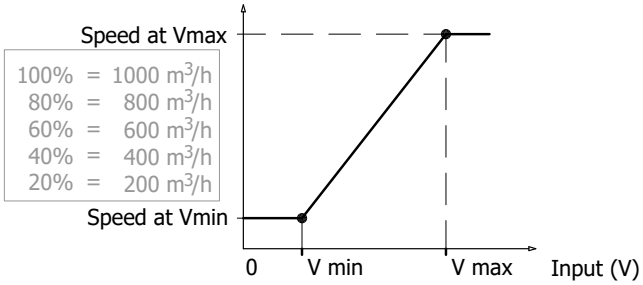
The fan speed is adjusted according to the value measured by an external 0-10 V sensor (CO_2 sensor, temperature or relative humidity).
Before configuring the sensor, it is necessary to enable the Indoor Air Quality function and select the type of external sensor:



Setting the Automatic VAV mode



These setting allow to define the fans regulation ramp, which is the relation between the input received from the external sensor and the regulation output to the fans B.



The airflow setting correspond to the supply air flow (fan master).
It is possible to have an offset between the supply airflow and the exhaust airflow using "slave fan offset". It is entered as a percentage between supply and extraction fan airflows (+/- 50%).

External CO2 sensors to regulate airflow according to Indoor Air Quality:

CO2 sensor wired to the controller	
Colorimetric indication of the CO2 level on the sensor	**Without indication of the CO2 level on the sensor**
AIRSENS CO2	SCO2-A 0/10V

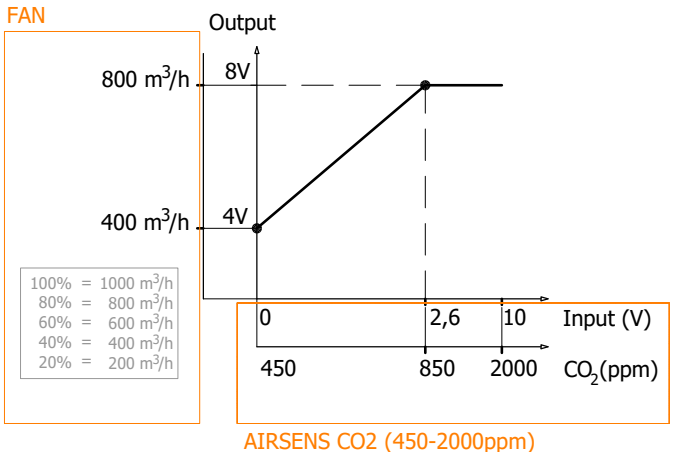
It is also possible to use wireless (RF) CO2 sensors, in that case a RF receptor has to be wired to the ADVANCED controller Analogic Input AN1. Accessories to be ordered for a wireless CO2 control:

CO2 sensor wireless	
Colorimetric indication of the CO2 level on the sensor	**Receptor Wired to the PURECLASS**
AIRSENS RF CO2	REC.AIRSENS RF

Important: PURECLASS CO2 versions incorporate the sensor inside the unit. These versions are incompatible with accessory sensors.

The settings by default are optimized for combination with a CO_2 sensor model AIRSENS CO2 with the following settings:

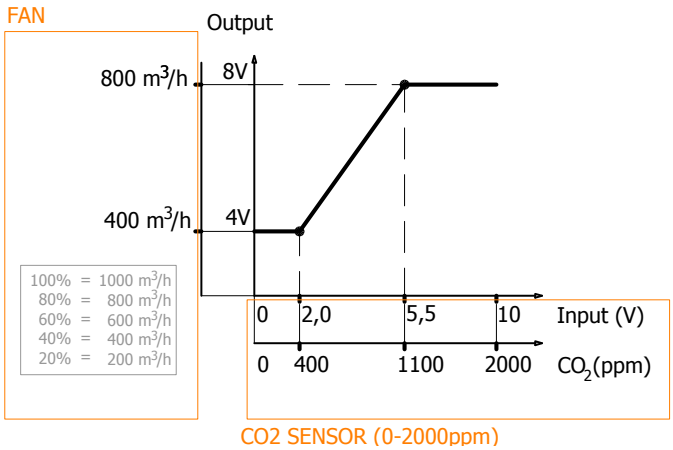
Configuration by default
- Low speed 4V = 400 m³/h up to 450 ppm of CO_2
- High speed 8V = 800 m³/h from 850 ppm of CO_2
- Proportional variable airflow from 400 m³/h to 800 m³/h when CO_2 is between 450 and 850 ppm.



AIRSENS CO2 (450-2000ppm)

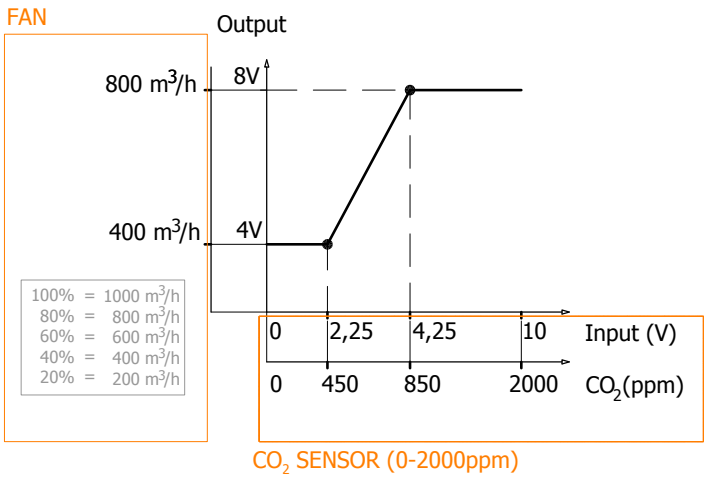
Example of configuration in case of CO_2 sensor (0-2000ppm range. 0-10V Output)

a) Configuration to achieve:
- Low speed 4V = 400 m³/h (up to 400 ppm of CO_2)
- High speed 8V = 800 m³/h (from 1100 ppm of CO_2)
- Proportional variable airflow from 400 m³/h to 800 m³/h when CO_2 is between 400 and 1100 ppm.



CO2 SENSOR (0-2000ppm)

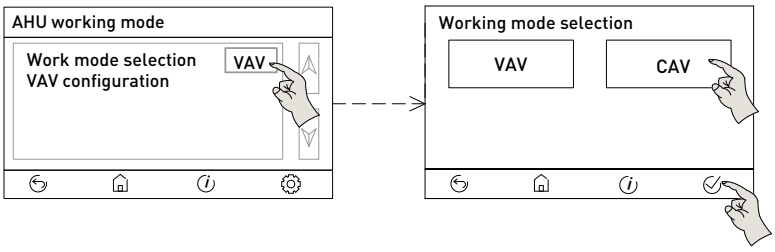
b) Configuration to achieve:
- Low speed 4V = 400 m³/h (up to 450 ppm of CO_2)
- High speed 8V = 800 m³/h (from 850 ppm of CO_2)
- Proportional variable airflow from 400 m³/h to 800 m³/h when CO_2 is between 450 and 850 ppm.



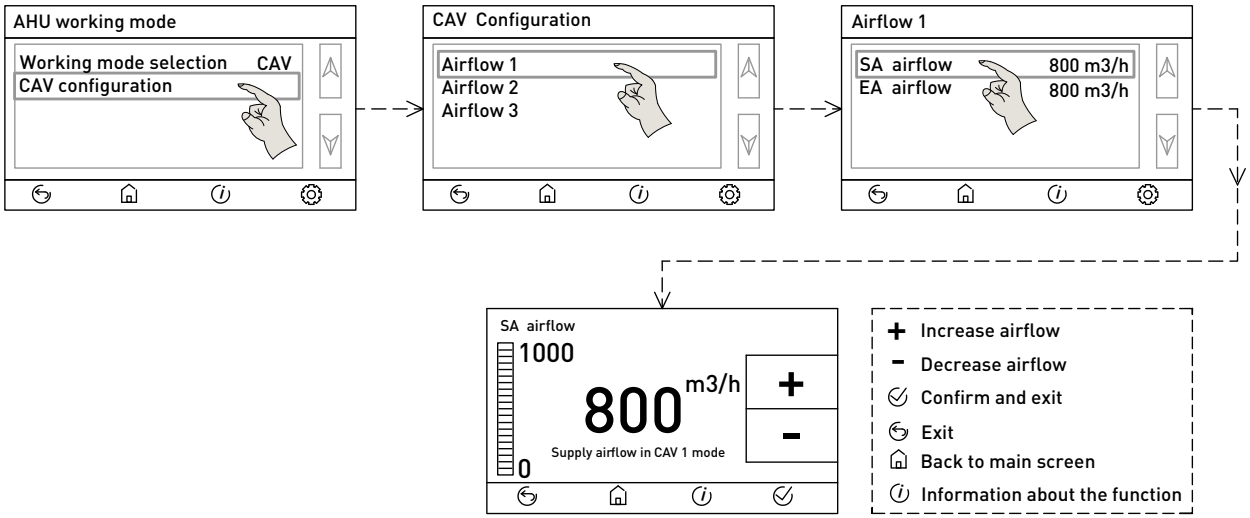
10.4.6.2. Constant flow operation (CAV)

Recommended mode in those installations where it is necessary to maintain a constant airflow. The speed of the fans is regulated to achieve a previously defined airflow and keep it constant over time.
The control of each fan is independent. The supply fan airflow (SAF) and the extract fan airflow (EAF) are independently controlled, which allows different airflow values to be configured in supply and extraction.

To select CAV mode follow the sequence:



Once selected, configure the value of the airflow setpoint:



Airflow values configured by default:
- Airflow 1: 800 m³/h
- Airflow 2: 600 m³/h
- Airflow 3: 400 m³/h

10.4.7. Filter supervision

PURECLASS CL heat recovery units are supplied with pressure switches mounted on both filters (supply and extraction). When the differential pressure value measured by the pressure switches exceeds 150 Pa an alarm is produced. Depending on the particularities of the installation (operating hours and pollution of the outdoor environment) it may be advisable to change the pressure switch setting as indicated in the follo wing table:

Filters state	Airflow	Action
The filters alarm appears often	When the dirty filter alarm is active, the airflow is correct	Increase pressure switch setting a higher value (ex: 200Pa)
No dirty filter alarm appears or it takes too long to appear.	Insufficient airflow due to filter clogging	Reduce the pressure switch setting to a lower value (Ex: 100 Pa)
The filters alarm appears with too much frequency	When the dirty filter alarm is active, the airflow is insufficient	The performance of the unit is not enough: - Review the unit status, paying special attention to the operation of the fans - Check leakages through the access doors and casing

To change the pressure switch setting, follow the sequence below:

Access the filter zone in which the pressure switch filters are placed, following the procedure:

1. Remove the 2 fixing screws (A) from the suction grill and open it (B). Loosen the 4 fixing screws on the bottom left panel (C) and open it (D). The pressure switches are located next to the electrical panel (E):
   - Supply air filter: On the right
   - Extract air filter: On the left

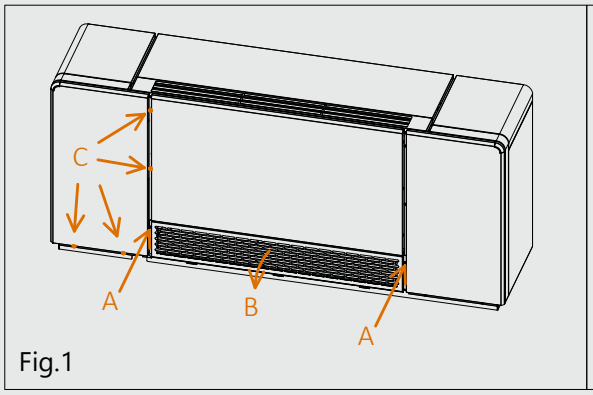


Fig.1

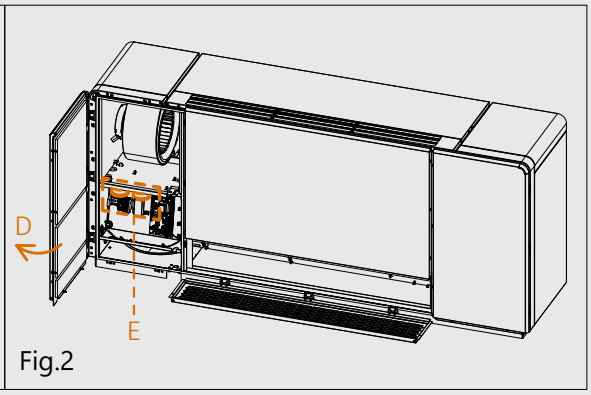
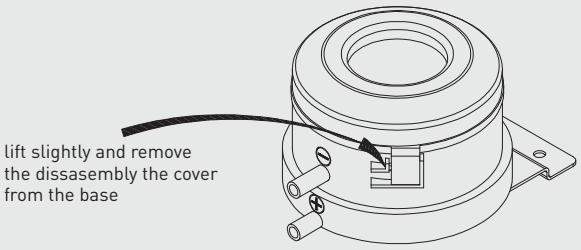
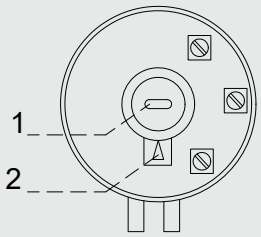


Fig.2

2. Lift the pressure switch cover



3. Turn the dial (1) using a flathead screwdriver, until the pointer (2) indicates the pressure value to be defined



11. FUNCTIONS ASSOCIATED TO DIGITAL INPUTS (BOOST, REMOTE ON/OFF, FIRE ALARM)

The number of available digital inputs depends on the version, and therefore not all of these functionalities can be enabled simultaneously in all versions. The following table shows the availability of digital inputs depending on the PURECLASS CL version:

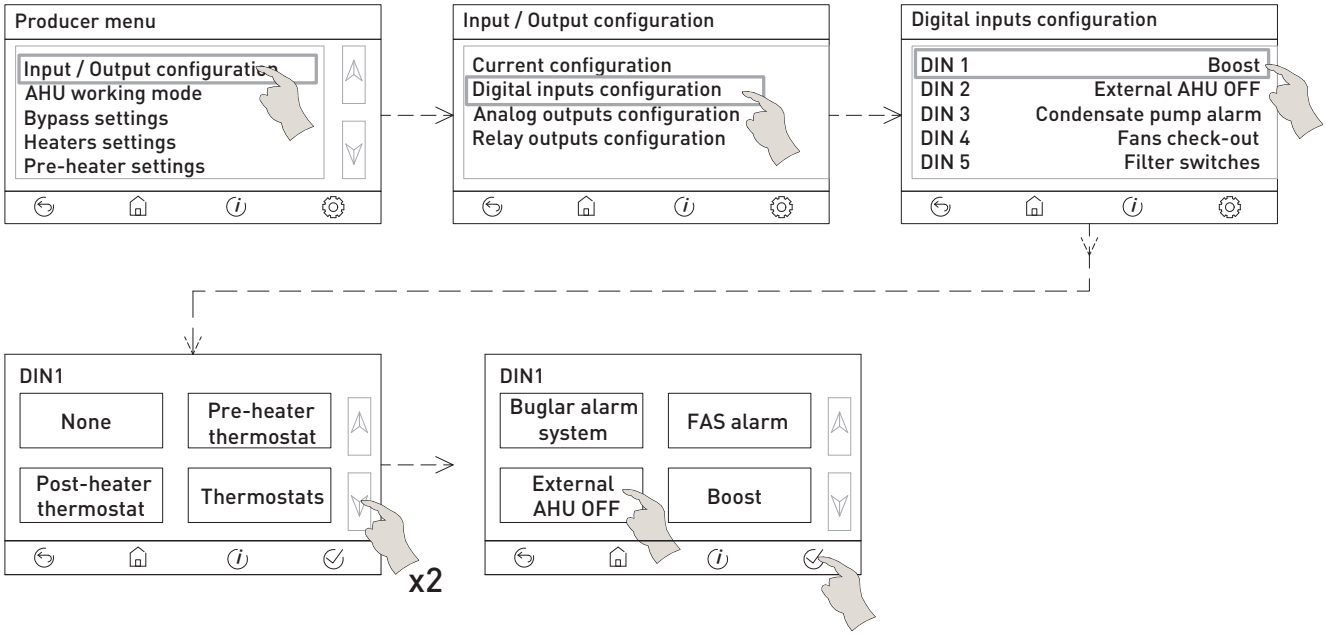
	PURECLASS VERSION					
	Std	**DC**	**DI**	**PH**	**PH + DI**	**PH + DC**
Digital Input	**Without preheater Without postheater**	**With water post heater**	**With electric postheater**	**With electric preheater**	**With electric preheater and electric postheater**	**With electric preheater and water postheater**
DIN 1	Boost	Boost	Boost	Boost	Boost	Boost
DIN 2	Remote ON/OFF	Remote ON/OFF	Condensate pump alarm	Condensate pump alarm	Condensate pump alarm	Condensate pump alarm
DIN 3	Condensate pump alarm	Condensate pump alarm	Electric battery overheating protection	Electric battery overheating protection	Electric batteries overheating protection	Electric battery overheating protection

Available digital inputs and its functionality by default. The user can change the functionality assignet to this digital inputs.

Digital input not available (Already associated to elemental functionalities). Important: These inputs can not be associated to other functionalities.

To reconfigure the functionality associated to a digital input follow the procedure:

Example showing how to associate "Remote ON/OFF" function to Digital input DIN1:

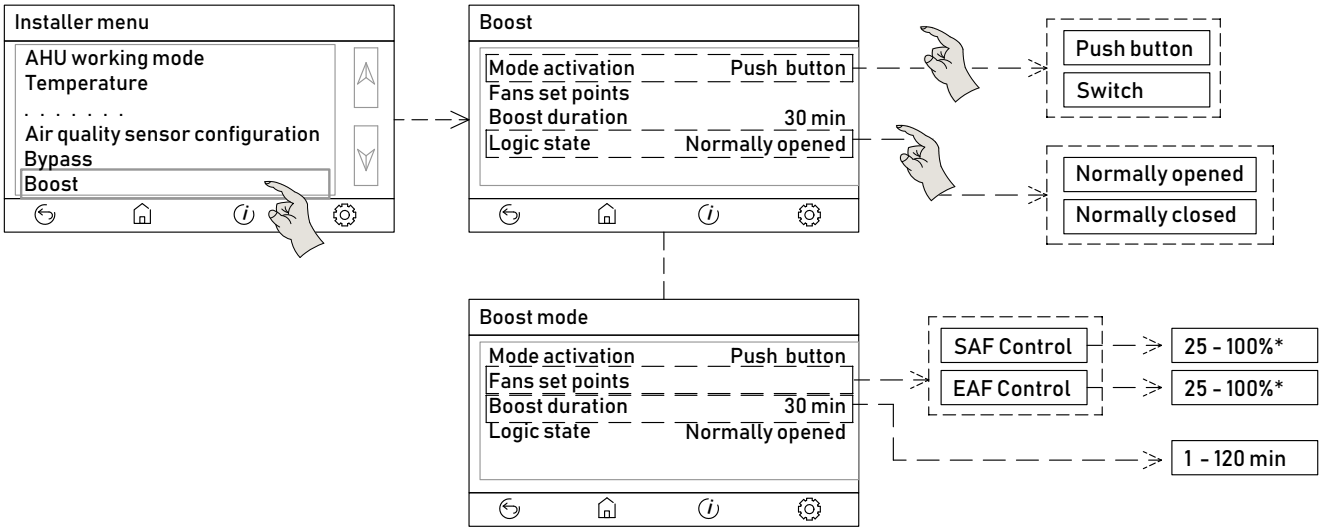


11.1. BOOST FUNCTION

By closing an external digital contact, it is possible to force the fan operation a higher airflow for a setted time.

Operation: when activating the boost mode on terminals DIN1 to DIN3 (previously configured), fans start running at Boost airflow. The unit will stay at that airflow during the preset time (30 minutes by default). After this time the fans go back to its previously selected airflow. By means of the corresponding advance parameters it is possible to configure the boost parameters:

- Type of activation signal:
  - *Push button:* The unit will work at the configured airflow during the Boost time.
  - *Switch:* the unit will work at the configured airflow as long as the switch is activated.
- Duration of boost time (just when activation mode is done by push button).
- Type of contact (NO, NC).



* Correspondence between % and airflow
100% = 1000 m³/h
80% = 800 m³/h
60% = 600 m³/h
40% = 400 m³/h
20% = 200 m³/h

11.2. REMOTE STOP-START

It is possible to start-stop the unit by means of an external digital contact (see electric diagrams). The contact closure between the digital input, will produce the unit stop. DIN1 to DIN3 has to be previously configured.

When the equipment is stopped remotely the control hand terminal displays an alarm message, warning that it is possible that the unit will be start up from remote suddenly.

11.3. FIRE FUNCTION (FIRE)

It is possible to assign a digital input to the FIRE function DIN1 to DIN3 has to be previously configured. After receiving the signal from an external fire control unit,it will be forced a predetermined behavior of the heat recovery unit fans.

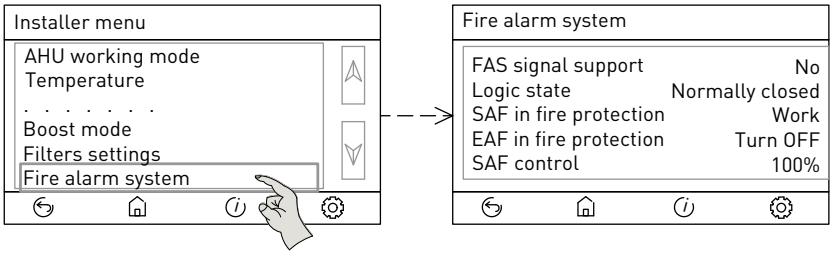
Input signal type: Potential free (contact closed = Alarm).

It is possible to assign the following behaviors:

Fire alarm strategy by default:

• Stop both fans.

The fire alarm strategy can be modified, adapting the unit behaiviour to the local regulations. To modify them is necessary to access the Fire alarm menu:



12. OTHER FUNCTIONALITIES

12.1. PROTECTION OF HEAT EXCHANGER UNIT

This functionality prevents freezing of the condensates existing inside the heat exchanger (on the side of the exhaust air).
In order to protect the heat exchanger against frost, when the exhaust air temperature descends 3ºC, the unit comes into DEFROST mode. The ADVANCED controller implemented 3 different strategies:

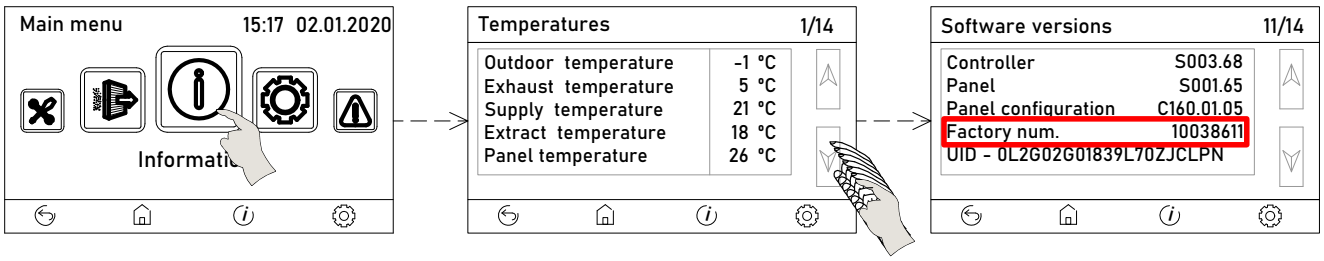
Order	Function	Strategy
1	Pre-heater activation	• In case of units equipped with preheater (PH versions), the controller will activate proportionaly the heating to increase the outdoor air temperature before the heat exchanger, and maintain the exhaust air temperature up to 3°C.
2	Fans unbalancing	• In case of units without preheater or in case the preheater power is not enough, the supply fan airflow is reduced sequencially until the risk of freeze disappears. During this process the extract fan EAF remains at his nominal airflow. Once supply fan is at minimum speed, extract fan speed is increased progressively.
3	By-pass opening	• In extraordinary cases, in which strategies 1 and 2 have not been enough, the by-pass damper opens, diverting the supply air directly into the building and using the exhaust air to defrost the heat exchanger.

13. USE OF 1 EXTERNAL DISPLAY (ETD) WITH MORE THAN ONE UNIT

The ADVANCED control equipped on the PURECLASS 800 CL equipment allows each unit to be managed by an independent ETD remote panel. However, it is also possible to control up to 5 units with a single ETD.
To carry out the cabling and network configuration, follow the procedure detailed below. Pay attention to this information and do not skip any steps as this would cause loss of communication on the network.

Step 1. Acquisition of factory numbers

To obtain the factory number, the ETD must be connected to the PURECLASS controller independently (Only one PURECLASS connected to the ETD).
Write down the "factory number" following the sequence below:

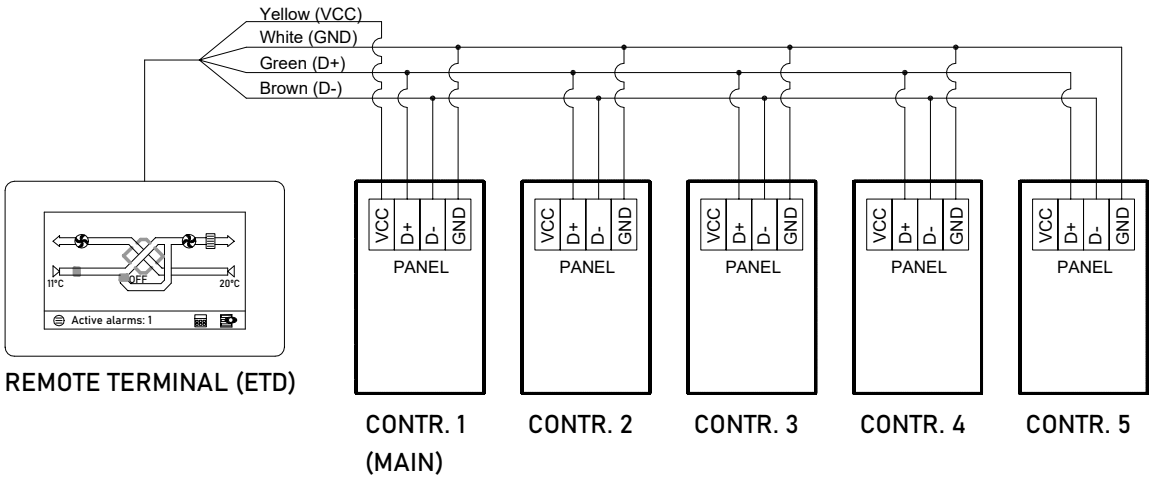


Important: Do this before wiring the communication network (Step 2) otherwise the ETD could shown the factory number of other unit in the net.

Step 2. Wiring

ATENTION! Before wiring the communication network, it is necessary to obtain the factory number of each of the PURECLASS controllers (Step 1).

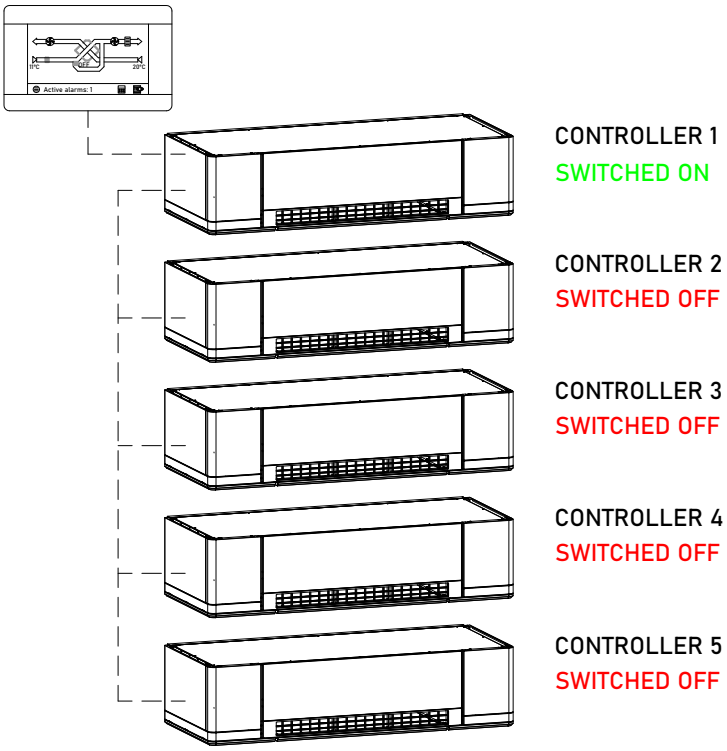
Make the Modbus communication wiring between the units in the net and the remote terminal (ETD):



Once the “Factory numbers” of all controllers have been noted and the wiring between remote controller and controllers is finished (See wiring diagrams at the end of this manual), it is moment to proceed with the configuration of the whole system.

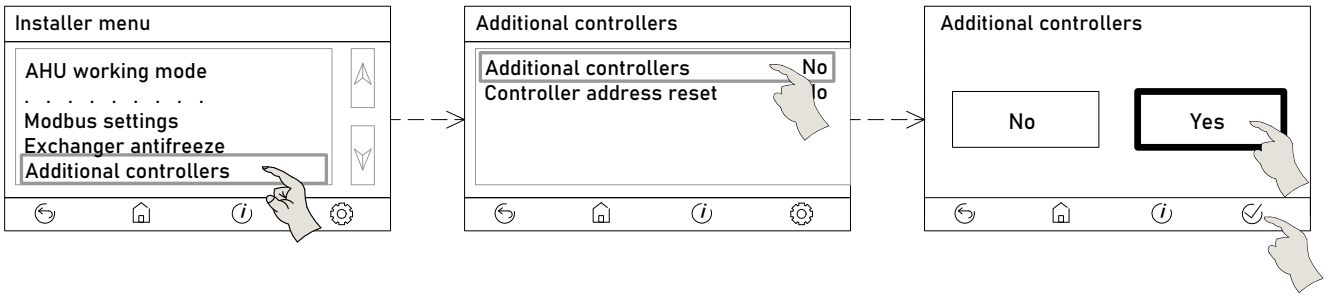
Step 3. Enable the Additional controllers functionality and configure the net

Power on only the main controller (first controller in the net).

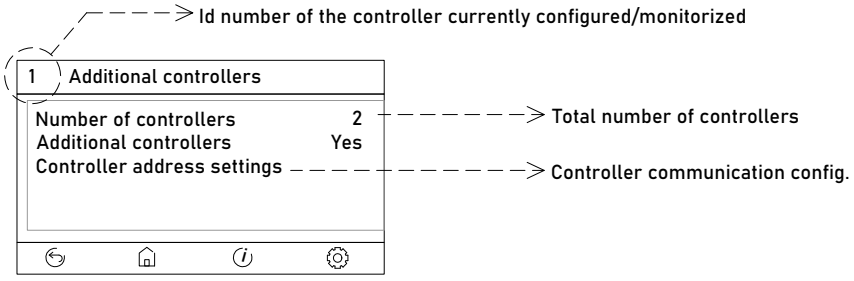


At this moment, all the units in the net are identified with the same ID number, therefore it's necessary to change the ID numbers of the rest of the controllers. Follow the next indications to change the controllers ID numbers.

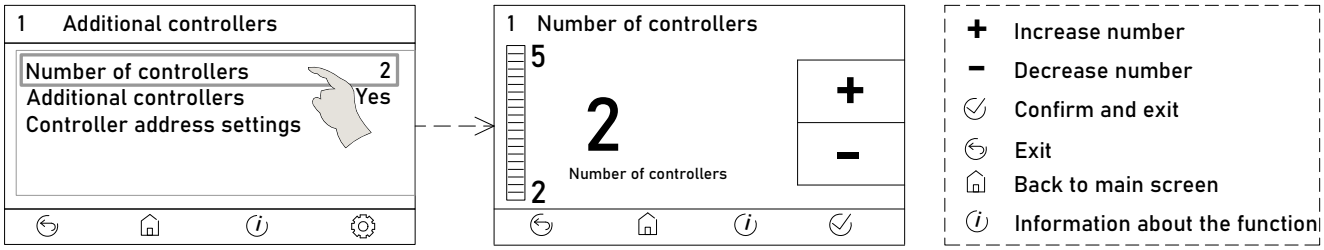
Access the Installer Menu and activate the function Additional Controllers:



Once the functionality about additional controllers has been enabled, references to multi-equipment control begin to appear on the screens:

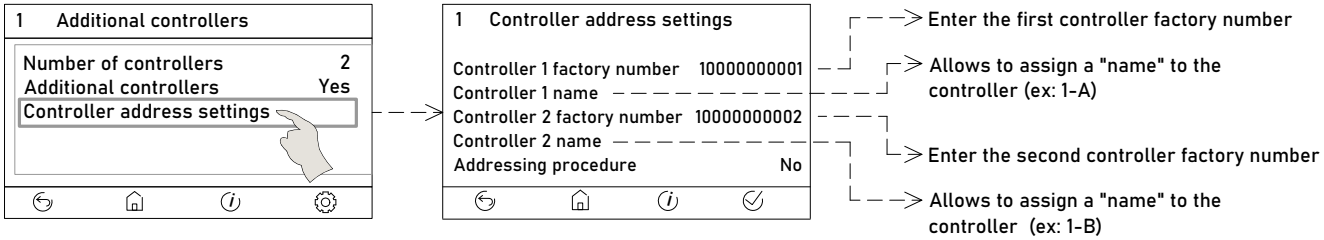


Enter then the number of controllers the ETD will manage (Maximum 5 units):



Step 4. Configure the units in the net

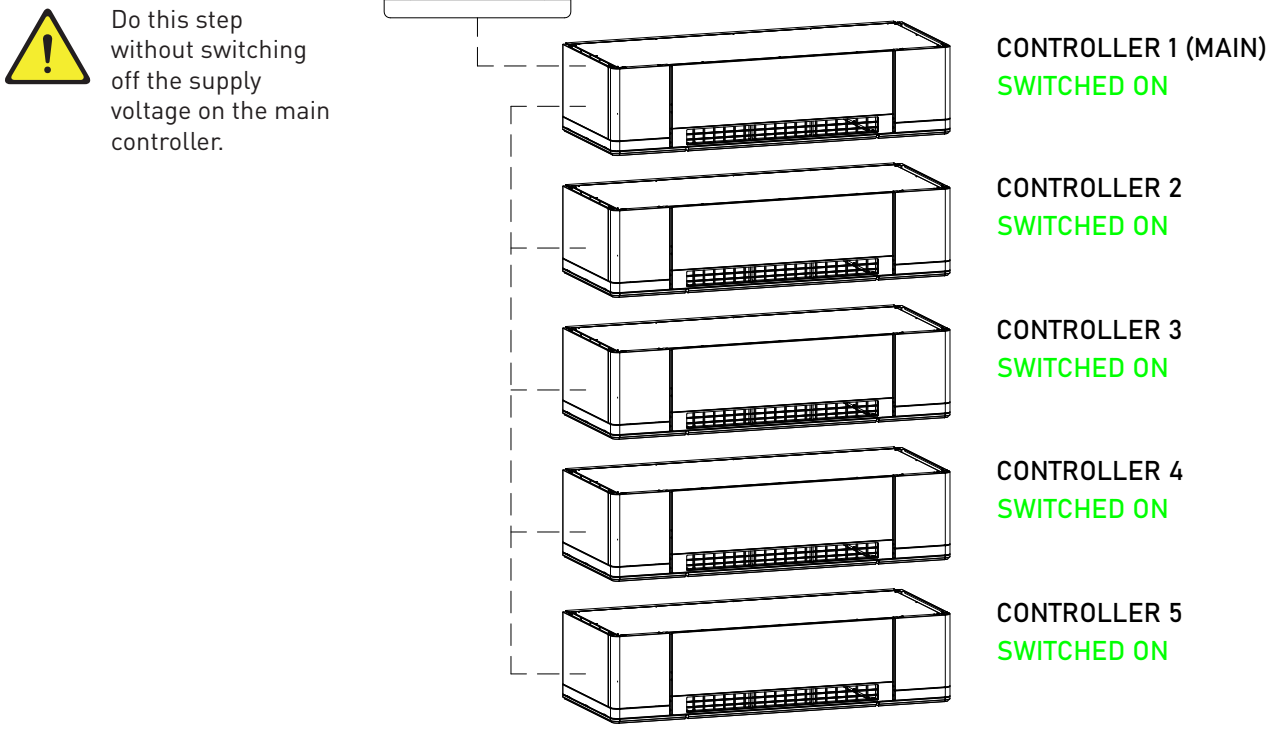
Specify all the controllers factory numbers (that had been noted previously) as well as the name or ID that you want to assign to each controller (can be left in blank):



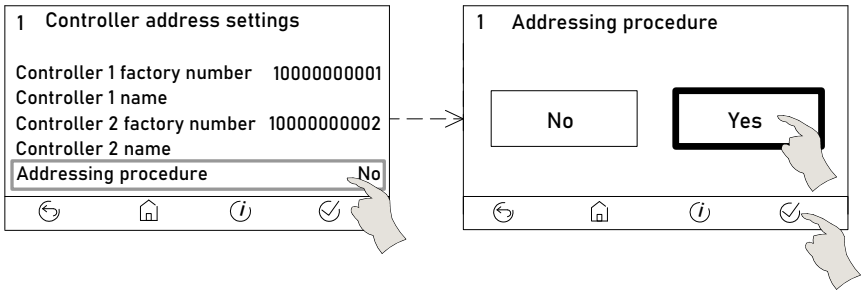
At this point the ETD has all the information of the units in the net and the addressing procedure can be performed.

Step 5. Addressing procedure

In order to carry out the "Addressing procedure" all the units in the net have to be under voltage.

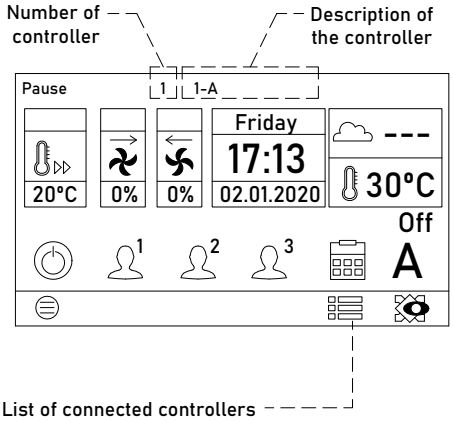


Carry out the addressing procedure:

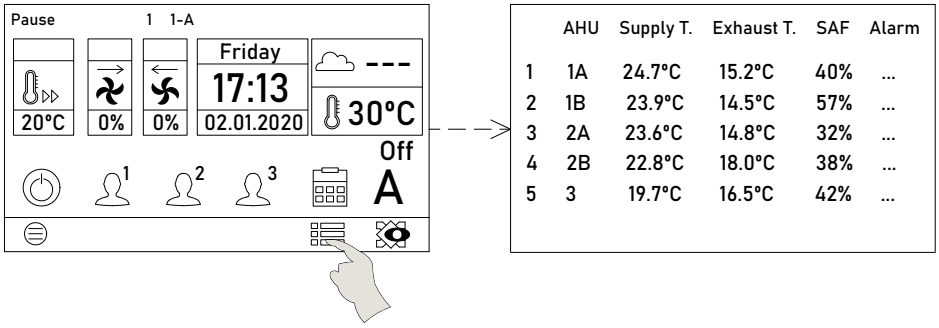


The time between powering up all controllers and the addressing procedure should be minimized (avoid too much time elapses between all equipment being under voltage and the activation of the procedure). On the contrary, there could exist a communication conflict and it will not be possible to enter in the installer menu.

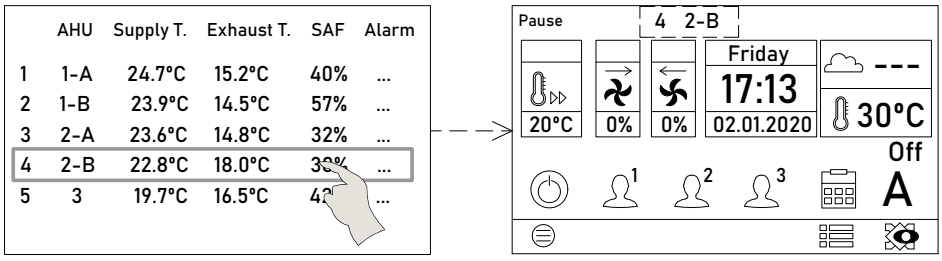
Once activated and after waiting for some time (the adressing produce can take up to 2 minutes) until the system is stabilized, the communication with all controllers will be established. In the controller selection list screen all controllers will be visible.



To check that communication with all the controls has been established, click on the multi-unit icon at the bottom of the screen:



To change the controller to view and configure, click directly on any point of the controller information. The reference to the current controller is displayed at the top of the screen (Number of controller and Description):



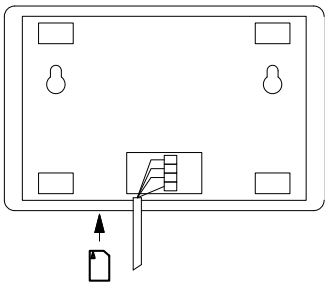
Comunication lost (between controllers and ETD)

In the event of a communication failure between any of the controllers and the ETD control (This type of error is usually due to a deficiency in the communication network wiring or external interference), the system will automatically reset, following the next sequence:

1. After the error, the communication between controllers and ETD is reinitialized.
2. Next, after about 1 minute the communication process begins again, starting from the first to the last unit in the net.
3. When reaching the unit that lost communication, the system ignores it and jumps to the next unit.
4. After finishing the cycle, which may take several minutes, communication with the rest of the controllers is reestablished.

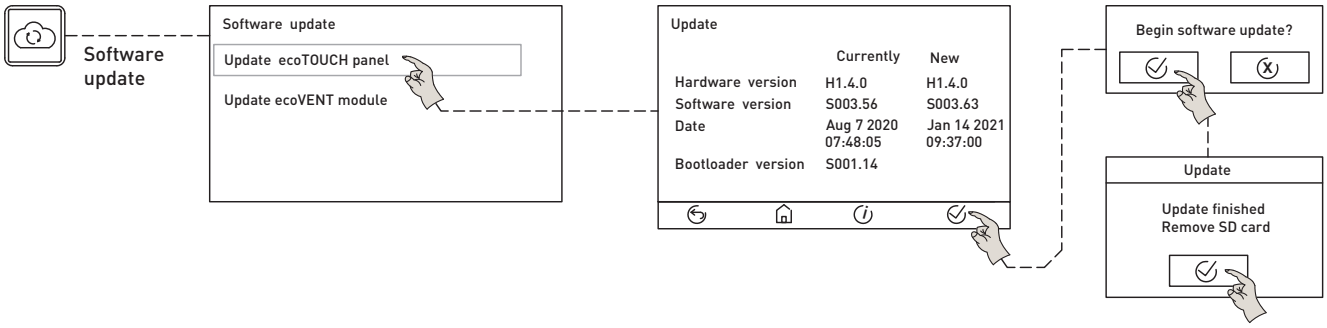
14. UPDATE THE CONTROLLER

In some cases it may be necessary to update the version of the ADVANCED control software (Development of new functionalities, improvements, new languages...). The controller has separate softwares, for the controller and for the hand terminal. To update the version, it is necessary to copy the new software versions in a microSD card. Insert the microSD card in the slot at the bottom back of the remote hand terminal.

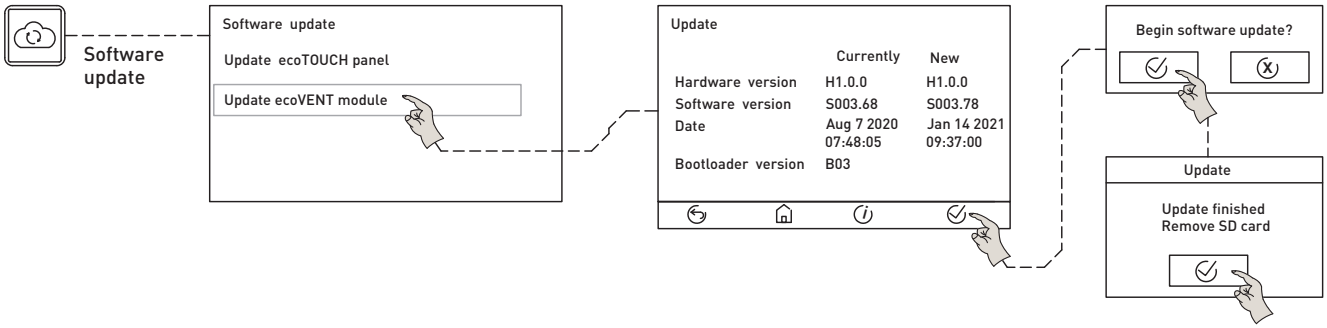


The Software Update menu is not shown if there is no SD card fitted in the slot

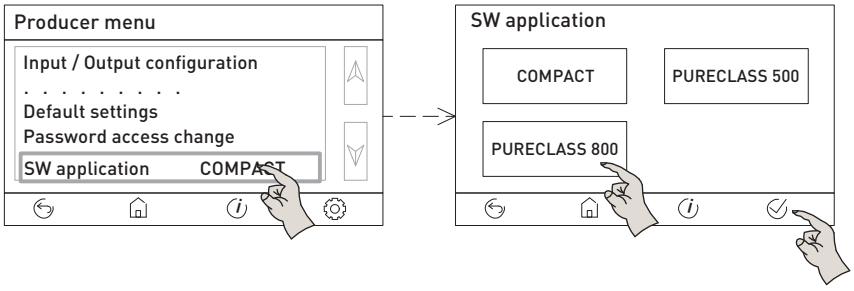
Before starting the update process, it is shown the current and the new software versions.
Process to update the remote hand terminal software:



Process to update the controller software:



Once the controller is updated, load the PURECLASS software application:



15. CONTROLLER RECONFIGURATION

IMPORTANT

After load a new software version, it is necessary to reconfigure the unit, as the factory settings are deleted.
Necessary reconfiguration:

- Language
- Time schedule
- Fan working mode
- Pre-heater configuration (if exists)
- Post-heater configuration (if exists)
- Configuration of special functions (fire function, remote stop-start and other special functions) if they have been configured.

If you have to perform a reset, contact Soler Palau Technical Service for advice.

16. BUILDING MANAGEMENT SYSTEM (BMS) CONNECTION

The controller has a Modbus communication module through which it is possible to control the unit from an external BMS, as well as monitor a large part of the functional variables of the unit.
By default, the communication is enabled, therefore to control the unit via an external BMS it is that simple to wire the RS-485 net to the main board conectors COM3 and ISO.
The use of the remote controller and the integration to BMS are compatible. The controller will obey the last order received regardless of where it comes from. To avoid interactions between orders, it is recommended that once the unit is integrated into the Modbus network, proceed to unwire the remote control.

ADVANCED characteristics of the Modbus-RTU controller

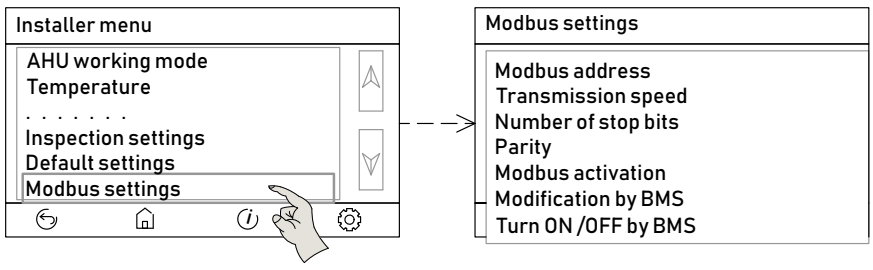
Addressing	Slave: configurable address from 1 to 247
Diffusion	Yes
Transmission speed	19200 (Selectable values: 9200 / 115200)
Parity	None (Selectable values: Even / Odd)
Mode	RTU
Electrical interface	RS-485 2W-wired or RS232

MODBUS message

Address	Function	Data	CRC verification
8 bits	8 bits	N x 8 bits	16 bits

The format for each byte in RTU mode is:
Code system: 8–bit binary
Bits per Byte: 1 bit of START (start)
8 data bits, the most significant bit is sent the first
1 bit for the parity
1 bit of STOP (configurable 2 bits of STOP)

The modification of the Modbus parameters is done through the Modbus settings in the installer menu:



The following table shows all the parameters that can be managed from the BMS. Those that tend to be integrated most frequently are shown in bold.

Complete Modbus memory map

Modbus address	Register description	Value			Register options	Variable type	Notes
		Min.	Max.	Def.			
0	ecoVENT program version	0	0xFFFF	0	R	HEX	Format: SXXX.YYY XXX – older byte, YYY – younger byte
1	Factory number – chars 1 and 2	12336	23130	-	R	ASCII	-
2	Factory number – chars 3 and 4	12336	23130	-	R	ASCII	-
3	Factory number – chars 5 and 6	12336	23130	-	R	ASCII	-
4	Factory number – chars 7 and 8	12336	23130	-	R	ASCII	-
5	Factory number – chars 9 and 10	12336	23130	-	R	ASCII	-
17	Correct work status of the unit (supply or exhaust fans should be on)	0	1	1	R	integer	0 – unit (fans) stops; 1 – unit (fans) works
18	Unit alarm state	0	1	0	R	integer	0 – inactive; 1 – active
19	Minute to be set in internal clock	0	59	1	R/W	integer	
20	Hour to be set in internal clock	0	23	1	R/W	integer	
21	Day of month to be set in ecoVENT internal clock	1	31	1	R/W	integer	
22	Month to be set in internal clock	1	12	1	R/W	integer	
23	Year to be set in internal clock	2015	2099	2021	R/W	integer	
25	**Set point temperature**	**8**	**30**	**0**	**R/W**	**integer**	**Unit: °C**
26	**Supply air temperature**	**-40**	**85**	**0**	**R**	**integer**	**999 – if sensor were damaged; Unit: °C**
27	**Extraction air temperature**	**-40**	**85**	**0**	**R**	**integer**	**999 – if sensor were damaged; Unit: °C**
28	Exhausted air temperature	-40	85	0	R	integer	999 – if sensor were damaged; Unit: °C
29	**Outdoor air temperature**	**-40**	**85**	**0**	**R**	**integer**	**999 – if sensor were damaged; Unit: °C**
30	After heat exchanger temp.	-40	85	0	R	integer	999 - if sensor were damaged; Unit: °C
33	Temperature control probe	2	3	3	R/W	integer	2 – Extract: Probe in the extracted air plenum; 3 – Supply: Probe in the supply air plenum
34	State of digital inputs	0	31	0	R	HEX	0x01 – DIN1 shorten; 0x02 – DIN2 shorten; 0x04 – DIN3 shorten; 0x08 – DIN4 shorten; 0x10 – DIN5 shorten
37	Signal form the electric heater thermostat (In the case of the PH DI version, a single signal for both heaters)	0	1	0	R	integer	0 – no signal; 1 – signal is active
39	Signal from Fire Alarm System (FAS)	0	1	0	R	integer	0 – no signal; 1 – signal is active
42	Remote deactivation signal	0	1	0	R	integer	0 – normal operation; 1 – unit stop
43	**Boost activation signal**	**0**	**1**	**0**	**R**	**Integer**	**0 – no signal; 1 – signal is active**
44	Signal from pressure switch (supply air filter or exhaust air filter)	0	1	0	R	Integer	0 – no signal; 1 – boost is activated
46	Signal from fan supervision system fans integrated relay	0	1	0	R	integer	0 – no signal; 1 – signal is active

Modbus address	Register description	Value			Register options	Variable type	Notes
		Min.	Max.	Def.			
47	Heat exchanger drying function enabling	0	1	0	R/W	UINT8	0x00 – procedure disabled; 0x01 – procedure enabled
48	Heat exchanger drying function state	0	2	-	R	UINT8	0 – no action (no reason to work - ahu is not working or procedure is blocked) 1 – action pending 2 – no action (ready to work – ahu is working)
49	Exhaust fan stop delay	1	120	1	R/W	UINT8	Unit: min.
50	Exhaust fan set point during drying	Dyn.*	Dyn.*	50	R/W	UINT8	Unit: %
54	Relay outputs state (both: voltage and non-voltage)	0	31	0	R	HEX	0x01 – OUT1 active; 0x02 – OUT2 active; 0x04 – OUT3 active: 0x08 – REL1 active; 0x10 – REL2 active; 0x20 – REL3 active
55	Operating mode for supply air fan	0	1	0	R	integer	0 – supply fan OFF 1 – supply fan ON
56	**Supply air fan current control**	**0**	**100**	**0**	**R**	**integer**	**Unit: %; 20 = 200 m³/h; 80 = 800 m³/h**
57	Operating mode for exhaust air fan	0	1	0	R	integer	0 – exhaust fan OFF 1 – exhaust fan ON
58	**Exhaust air fan current control**	**0**	**100**	**0**	**R**	**integer**	**Unit: %; 20 = 200 m³/h; 80 = 800 m³/h**
63	Bypass operation mode	0	1	0	R	integer	0 – bypass OFF; 1 – bypass ON
64	Bypass damper current control	0	100	0	R	integer	Unit: %
65	Pre-heater operation mode	0	1	0	R	integer	0 – pre-heater OFF; 1 – pre-heater ON
66	Pre-heater current control	0	100	0	R	integer	Unit: %
67	Post-heater operation mode	0	1	0	R	integer	0 – post-heater OFF; 1 – post-heater ON
68	Post-heater current control	0	100	0	R	integer	Unit: %
71	Condensation pump function enabling	0	1	0	R/W	UINT8	0x00 – procedure disabled; 0x01 – procedure enabled
72	Condensation pump function state	0	2	0	R/W	UINT8	0x00 – DIN is inactive 0x01 – DIN active (after detect multiple alarm active, this bit can be not set); 0x02 – setting this bit would reset multiple alarm
73	Measured CO_2	0	2000	0	R	integer	Unit: ppm; Parameter value rounded to 1
74	Measured relative humidity	0	100	0	R	integer	Unit: %; Parameter value rounded to 1
78	Current heat exchanger efficiency	0	100	0	R	-	Unit: %; Parameter value rounded to 1
79	Set regulation mode	1	8	1	R/W	integer	0x01 – VAV mode 0x08 – CAV mode
80	Set operating mode	0	15	0	R/W	integer	0 – OFF mode 2 – manual control 3 – mode 1 4 – mode 2 5 – mode 3 8 – mode AUTO VAV 12 – schedule
81	Current season mode (Summer / Winter mode)	0	4	4	R/W	integer	0x01 – Summer mode 0x02 – Winter mode 0x04 – Auto mode 0x08 – Ventilation
82	Temperature with winter mode being turned ON	-20	20	6	R/W	integer	Unit: °C
83	Hysteresis with summer mode being turned ON	0	20	14	R/W	integer	Unit: °C
84	Anti-freezing mode state	0	1	0	R	integer	0 – anti-freezing mode inactive 1 – anti-freezing mode active

Modbus address	Register description	Value			Register options	Variable type	Notes
		Min.	Max.	Def.			
85	Pre-set supply air fan control in VAV 1 mode	Dyn.*	Dyn.*	100	R/W	integer	Unit: %; 20 = 200 m³/h; 80 = 800 m³/h
86	Pre-set exhaust air fan control in VAV 1 mode	Dyn.*	Dyn.*	100	R/W	integer	Unit: %; 20 = 200 m³/h; 80 = 800 m³/h
87	Pre-set supply air fan control in VAV 2 mode	Dyn.*	Dyn.*	60	R/W	integer	Unit: %; 20 = 200 m³/h; 80 = 800 m³/h
88	Pre-set exhaust air fan control in VAV 2 mode	Dyn.*	Dyn.*	60	R/W	integer	Unit: %; 20 = 200 m³/h; 80 = 800 m³/h
89	Pre-set supply air fan control in VAV 3 mode	Dyn.*	Dyn.*	30	R/W	integer	Unit: %; 20 = 200 m³/h; 80 = 800 m³/h
90	Pre-set exhaust air fan control in VAV 3 mode	Dyn.*	Dyn.*	30	R/W	integer	Unit: %; 20 = 200 m³/h; 80 = 800 m³/h
91	Minimum voltage to start linear characteristic control by CO_2 in AUTO-VAV mode	0.0	10.0	2.0	R/W	float	Parameter resolution: 0.1; to modify the parameter please send: requested value x 10
92	Maximum voltage end linear characteristic control by CO_2 in AUTO-VAV mode	0.0	10.0	8.0	R/W	float	Parameter resolution: 0.1; to modify the parameter please send: requested value x 10
93	Pre-set SAF and EAF control at start of linear characteristic in AUTO-VAV mode	2	10	4.5	R/W	float	Parameter resolution: 0.1; to modify the parameter please send: requested value x 10
94	Pre-set SAF and EAF control at the end of linear characteristic in AUTO-VAV mode	Dyn.**	10	10	R/W	float	Parameter resolution: 0.1; to modify the parameter please send: requested value x 10
95	Exhaust fan control shift in AUTO-VAV mode	-50	50	0	R/W	integer	Unit: %
109	Bypass damper actual control mode	0	3	0	R/W	integer	0 – Bypass OFF 1 – Bypass ON 2 – Bypass AUTO 3 – Freecooling
111	Analog air quality sensor settings	0	2	0	R/W	integer	0 – OFF 1 – CO_2 sensor 2 – relative humidity sensor
120	Boost mode settings	0	1	0	R/W	integer	0 – control from button in panel 1 – control from external switch
121	Boost duration (only if controlled from panel button)	1	120	30	R/W	integer	Unit: min.
122	Pre-set supply air fan control in Boost mode	Dyn.*	Dyn.*	100	R/W	integer	Unit: %
123	Pre-set exhaust air fan control in Boost mode	Dyn.*	Dyn.*	100	R/W	integer	Unit: %
124	Cleaning mechanism settings	0	1	0	R/W	integer	0 – cleaning mechanism turn OFF; 1 – cleaning mechanism turn ON
125	Cleaning mechanism manual mode turned ON	0	1	0	R/W	integer	0 – no; 1 – yes
126	Too high supply temperature protection procedure	0	2	1	R/W	integer	0 – turn OFF procedure 1 – turn OFF AHU 2 – turn OFF post- heater
127	Too low supply temperature protection procedure	0	2	1	R/W	integer	0 – turn OFF procedure 1 – turn OFF SAF 2 – Turn ON post- heater
128	Supply air temperature higher limit	30	80	70	R/W	integer	Unit: °C
129	Operation pause in AHU OFF mode	10	100	10	R/W	integer	Unit: min.
130	Supply air temperature low limit	1	25	5	R/W	integer	Unit: °C
131	Low temperature detection time	1	15	3	R/W	integer	Unit: min.
132	Filters contamination detection time	0	60	30	R/W	integer	Unit: sec.
133	Anti-freeze procedure settings	0	1	1	R/W	integer	0 – procedure turn OFF 1 – procedure turn ON
137	Anti-freeze procedure turn ON temperature	-10	10	3	R/W	integer	Unit: °C

Modbus address	Register description	Value			Register options	Variable type	Notes
		Min.	Max.	Def.			
138	Anti-freeze procedure turn OFF hysteresis	1	10	3	R/W	integer	Unit: °C
140	Supply air fan lower set point	0	50	25	R/W	integer	Unit: %
141	Exhaust air fan lower set point	0	50	25	R/W	integer	Unit: %
142	Supply air fan higher set point	50	100	100	R/W	integer	Unit: %
143	Exhaust air fan higher set point	50	100	100	R/W	integer	Unit: %
144	Supply air fan stop delay (after heater work)	1	20	2	R/W	integer	Unit: min.
145	Exhaust air fan stop delay (after heater work)	0	20	2	R/W	integer	Unit: min
146	Supply fan start delay	0	200	0	R/W	integer	Unit: sec.
147	Exhaust fan start delay	0	200	0	R/W	integer	Unit: sec.
186	Enabling water heater prevention by dedicated temperature probe	0	2	1	R/W	UINT8	0x00 - procedure disabled (no use of T6 sensor) and no fans at water heater protection 0x01 - procedure enabled (use of T6 sensor) and no fans at water heater protection 0x02 - procedure disabled (no use of T6 sensor) and use of fans at water heater protection 0x03 - procedure enabled (use of T6 sensor) and use of fans at water heater protection

Notes:
* the value range of these parameters depends on set value: Minimum and maximum fan control
** minimum value of this parameter depends on the value set as the lowest control set point (parameter 88)

Modbus address	Register description	Value			Register options	Variable type	Notes
		Min.	Max.	Def.			
200	**Supply air temperature probe error**	0	1	0	R	UINT16	0 – alarm inactive; 1 – alarm active
201	**Extraction temperature sensor defective**	0	1	0	R	integer	0 – alarm inactive; 1 – alarm active
202	**External temperature sensor defective**	0	1	0	R	integer	0 – alarm inactive; 1 – alarm active
203	**Exhaust temperature sensor defective**	0	1	0	R	integer	0 – alarm inactive; 1 – alarm active
208	**Contamination of supply air filter or exhaust air filter**	0	1	0	R	integer	0 – alarm inactive; 1 – alarm active
209	**General inspection required on manufacturer service**	0	1	0	R	integer	0 – alarm inactive; 1 – alarm active
210	**No confirmation of fans correct operation**	0	1	0	R	integer	0 – alarm inactive; 1 – alarm active
211	**Possible overheating of pre-heater**	0	1	0	R	Integer	0 – alarm inactive; 1 – alarm active
212	**Possible overheating of post-heater**	0	1	0	R	Integer	0 – alarm inactive; 1 – alarm active
216	**Anti-freeze procedure activation for post-heater**	0	1	0	R	Integer	0 – alarm inactive; 1 – alarm active
217	**Too high supply temperature – protection procedure turned ON**	0	1	0	R	Integer	0 – alarm inactive; 1 – alarm active
219	**AHU blocked by water post-heater alarm**	0	1	0	R	UINT16	0 – alarm inactive; 1 – alarm active
220	**Condensation pump blocking alarm**	0	1	0	R	UINT16	0 – alarm inactive; 1 – alarm active
221	**Condensation pump alarm**	0	1	0	R	UINT16	0 – alarm inactive; 1 – alarm active

17. INSPECTION, MAINTENANCE AND CLEANING

17.1. Filters replacement

Before changing filters, disconnect the power from the equipment.

Extract air filter

Access to extract filter is done by open the extraction grill panel (hinged) located on the underside of the unit. To replace the filter, follow the following sequence:

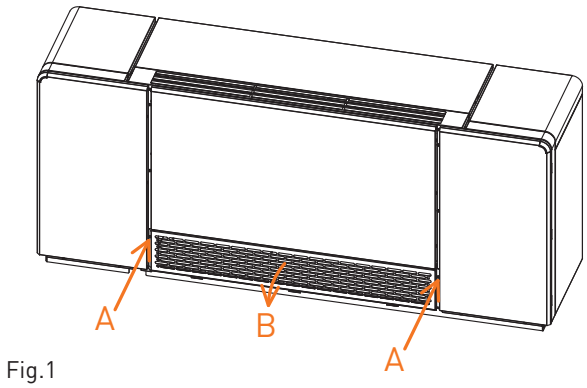


Fig.1

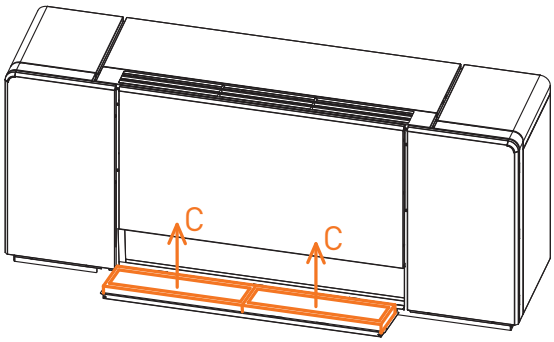


Fig.2

1. Loosen and remove the two screws that hold the intake grid-filter holder (A), and fold down the grid (B).
2. Tilt the intake grid-filter holder (C), and remove the extract filter, which is divided into two parts.

In the process of assembling the new filter, follow the reverse order, paying attention to the arrow that defines the direction of the air that you will find in the new S&P filter.

Supply air filters

To access the supply air filter it is necessary to first open the extraction filter panel and then open the right door on the bottom of the unit, following the sequence:

1. Loosen and remove the four screws that hold the right pannel (A), and fold it down (B).
2. To remove it, pull down filter locking lever system (C) and pull down on the filter (D). To facilitate the operation, use the tool supplied with the equipment (E).

In the process of assembling the new filter, follow the reverse order, paying attention to the arrow that defines the direction of the air that you will find in the new S&P filter.

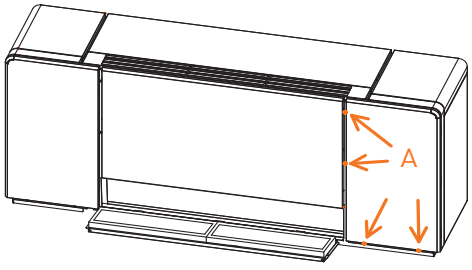


Fig.1

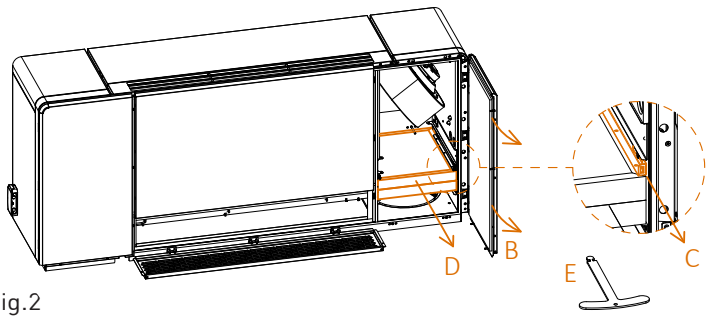


Fig.2

References of filters included in the unit

Side	Filter	Type		Dimensions		
		ISO-16890	EN-779	Length (mm)	Width (mm)	Frame (mm)
Supply air	AFR PURECLASS 800 CL G4-SUP	ISO Coarse 60%	G4	441	365	48
	AFR PURECLASS 800 CL F7-SUP	ePM1 50%	F7	441	365	48
Extract air	AFR PURECLASS 800 CL M5-EXT	ePM10 50%	M5	1104*	158	48

* The extraction filter is divided into two half-length filters.

Accessories

Side	Filter	Type		Dimensions		
		ISO-16890	EN-779	Length (mm)	Width (mm)	Frame (mm)
Supply air	AFR PURECLASS 800 CL M5-SUP	ePM10 50%	M5	441	365	48
Supply air	AFR PURECLASS 800 CL F9-SUP	ePM1 80%	F9	441	365	48

17.2. HEAT EXCHANGER

The heat exchanger is protected by filters, although dedicated cleaning of the heat exchanger is recommended once a year. Cleaning is carried out in-situ by blowing compressed air on the fins of the exchanger, while the smooth surfaces of the condensate tray can be cleaned with a damp cloth.

To access the heat exchanger, follow the following sequence:
1. Loosen the 4 screws that secure the front cover (A).
2. Open the front cover by pulling it up (B). The 2 articulated arms in the cover, allow it to remain the cover open when reaching its upper position.
3. Remove the screws that hold the two heat exchanger inspection doors (C).
4. Open the doors by tilting them downwards (D).

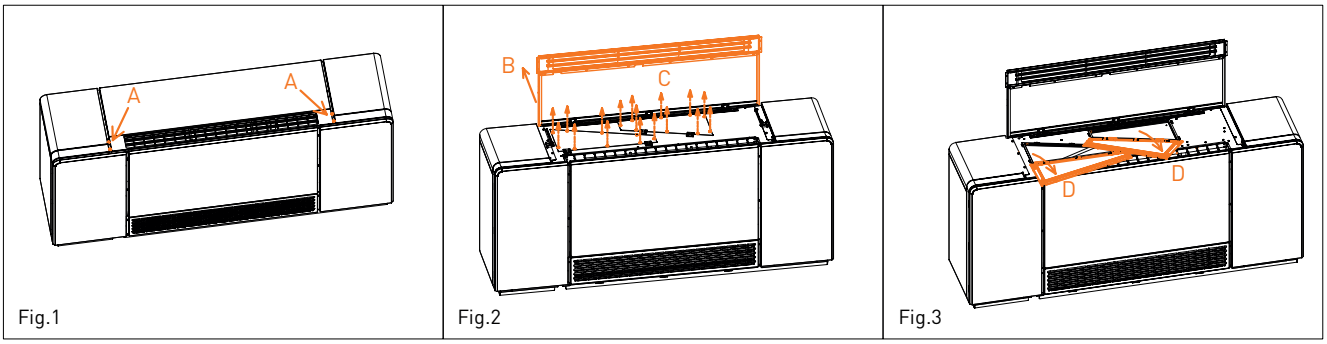


Fig.1 Fig.2 Fig.3

17.3. FANS

During maintenance tasks, it is advisable to clean the fans at least once a year. Access to fans is done through opening the lower side panels as described in the previous chapters. Clean the fan blades by gently brushing with a brush, avoiding hitting the blades as this could cause the fan to become unbalanced and consequently generate vibrations and noises.

17.4. CONDENSATION DRAINPIPE

Inspect the drainpipe regularly and make sure it is not blocked, if this is the case, remove the obstruction.
Check that the drain pipe was done according to the indication included in the point "Condensate drainage" of this manual.
The siphon should always be full of water. Check its level periodically, refilling it if necessary. An empty siphon can cause the condensate tray to overflow and water leak through the equipment enclosure.

17.5. LIST OF SPARE PARTS

Type		S&P code	
Electronics	External touch display (ETD)	5800089000	ETD PURECLASS CL
	Controller	R153190111	CONTROLADOR ADVANCED
	Air temperature probe	R153190013	TEMPERATURE SENSOR (800 mm)
	Coil frost protection temperature probe	R153190014	TEMPERATURE SENSOR (1650 mm)
	Condensation pump	R153667113	CONDENSATE PUMP
	Damper actuator (by-pass / fresh air damper)	R153191003	SERVO 5NM PURECLASS 800 CL
	Damper	R153191004	DAMPER
	Power supply	R153136777	POWER SUPPLY 24V
Filters	Supply air prefilter	5800078000	AFR PURECLASS 800 CL G4-SUP 365x441x48
	Supply air filter	5800077700	AFR PURECLASS 800 CL F7-SUP 365x441x48
	Extract air filter	5800077800	AFR PURECLASS 800 CL M5-EXT 552x158x48
	Supply air filter	5800077900	AFR PURECLASS 800 CL F9-SUP 365x441x48
	Supply air filter	5800078100	AFR PURECLASS 800 CL M5-SUP 365x441x48
Fans	Supply air fan	R153191005	SUPPLY AIR FAN PURECLASS 800 CL
	Extract air fan	R153191006	EXTRACT AIR FAN PURECLASS 800 CL
Panels	Left side pannel	R153191001	LEFT PANEL PURECLASS 800 CL
	Right side pannel	R153191002	RIGHT PANEL PURECLASS 800 CL
Heaters/Coils	Electronic heater regulator (common for preheater and postheater)	R153191012	HEATER REGULATOR PURECLASS 800 CL
	Electric pre-heater 2kW	R153191007	ELECTRIC PREHEATER 2KW PURECLASS 800 CL
	Electric post-heater 3kW	R153191009	ELECTRIC POSTHEATER 3KW PURECLASS 800 CL
	Electric post-heater 1,5kW	R153191010	ELECTRIC POSTHEATER 1,5KW PURECLASS 800 CL
	Hot water coil	R153191008	WATER POSTHEATER PURECLASS 800 CL

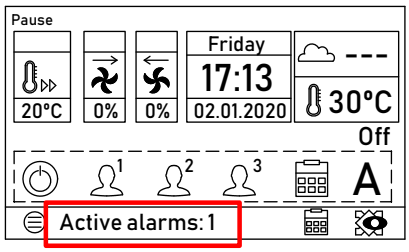
18. OPERATION ANOMALIES

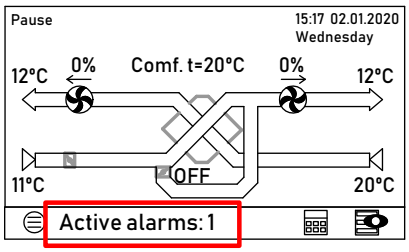
18.1. GENERAL ANOMALIES

Anomaly	Cause	Solution
Difficult to start.	Reduced power supply voltage. Insufficient static torque of motor.	Check motor specification plate. Check the motor supply voltage and the control input signal. Change the motor is necessary. Contact the **S&P** After sales service.
Insufficient airflow. Insufficient pressure.	Blocked pipes and/or inlet points closed. Fan obstructed. Filter overloaded. Insufficient rotation speed. Exchanger package blocked.	Clean inlet tubes. Clean fan. Clean or replace filter. Check power supply voltage. Clean the exchanger.
Supply air temperature too cold.	Outdoor air -5ºC or less. Lack of post-heating or pre-heating battery.	Check the operation of the preheater/postheater. Contact the **S&P** After sales service.
Insufficient performance of the exchanger.	Fins dirty.	Clean the exchanger.
Formation of frost on the exchanger.	Outdoor air below -5ºC. Lack of preheater.	Check the operation of the preheater. In case of absence, add it to the unit. Contact the **S&P** After sales service.
High noise level.	Airflow too high. Dirty filters.	Reduces the set flow rate. Replace the filters and reduce the filter change setting on the filter pressure switches. Contact the **S&P** After sales service.
There is water inside the unit.	Drain clogged or wrongly dimentioned.	Check if exists a body/object obstructing the passage of water and remove it. Verify that the drain trap exists and is correctly sized according to the instructins of this manual.

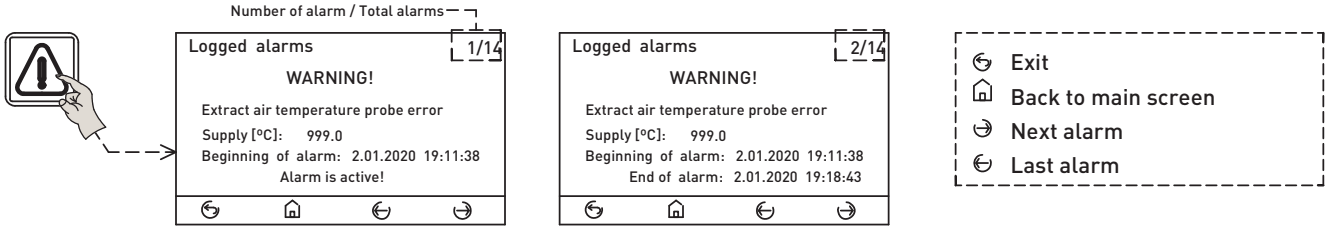
18.2. LIST OF ALARMS

If an alarm is activated or an error occurs, the alarm indication will shown in the display:





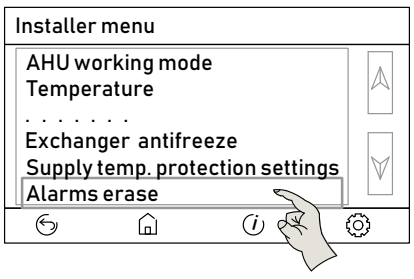
In case of alarm it is possible to access the alarms menu and get detailed information about the last alarms appeared:



Alarm messages and possible causes:

Alarm message	Meaning	Correction
No communication with controller	The comunication between controller and remote terminal is lost	Check wire and connections
Supply air temperature probe error	The controller is not receiving information from supply air temperature probe	Check the wiring / Replace the damaged probe
Aft. exchanger temperature probe error	The controller is not receiving information from the Aft. Exchanger temperature probe	Check the wiring / Replace the damaged probe
Exhausted air temperature probe error	The controller is not receiving information from exhaust air temperature probe	Check the wiring / Replace the damaged probe
Filters contamination poss	The filter is clogged	Clean / Replace the dirty filter
Outdoor air temperature probe error	The controller is not receiving information from the outdoor air temperature probe	Check the wiring / Replace the damaged probe
Extract air temperature probe error	The controller is not receiving information from the extract air temperature probe	Check the wiring / Replace the damaged probe
FAS signal support procedure is active	The FIRE alarm is activated	Check the status of the digital input from the fire alarm central
Filters lifetime has expired. Change them or call service	Filters lifetime counter indicates filter maintenance is required	Clean / Replace the dirty filter
Too high room supply air temperature	Supply temperature is too high	Check the temperature settings / Verify the post-heating components (water valve, battery...)
Producer service general inspection required	Regular maintenance required	Call the S&P official service to perform a regular maintenance operation
Periodic inspection approaches	Regular maintenance required soon	-
Unauthorized start-up - device locked	The access code introduced is wrong - Access is blocked	Contact S&P service
Too low room supply air temperature	Supply temperature is too low	Check the temperature settings / Verify the post- heating components (water valve, battery...)
Preheater and/or postheater thermostat(s) activation	The electric pre-heater and/or postheater thermal protection is activated	Increase the airflow / Verify the heating system components (preheater, postheater, temperature probes, heater regulator)
Leading temperature probe error	The controller is not receiving information from the leading temperature probe	Check the wiring / Replace the damaged probe
Lack of compatibility between controller and panel	Software version is not compatible with the hardware version	Contact S&P After sales service
No fans work confirmation	Fans are stopped while should be running	Verify the fans wiring and state
Filter contamination	Supply and/or extract filters are clogged	Turn off the unit and replace the filters

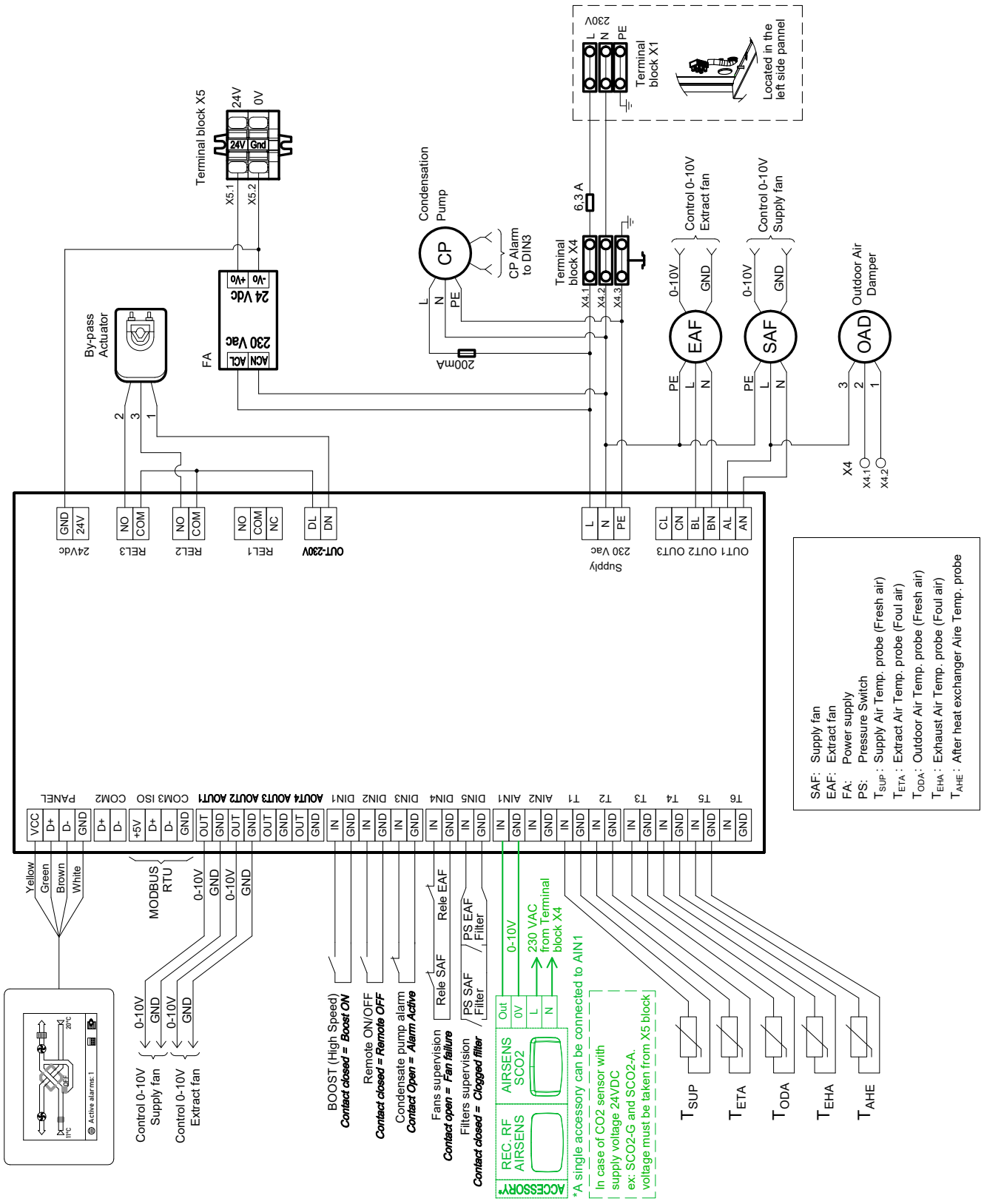
Once the problem which generated the alarm is solved, it is possible to clear the alarm message:



19. WIRING DIAGRAMS

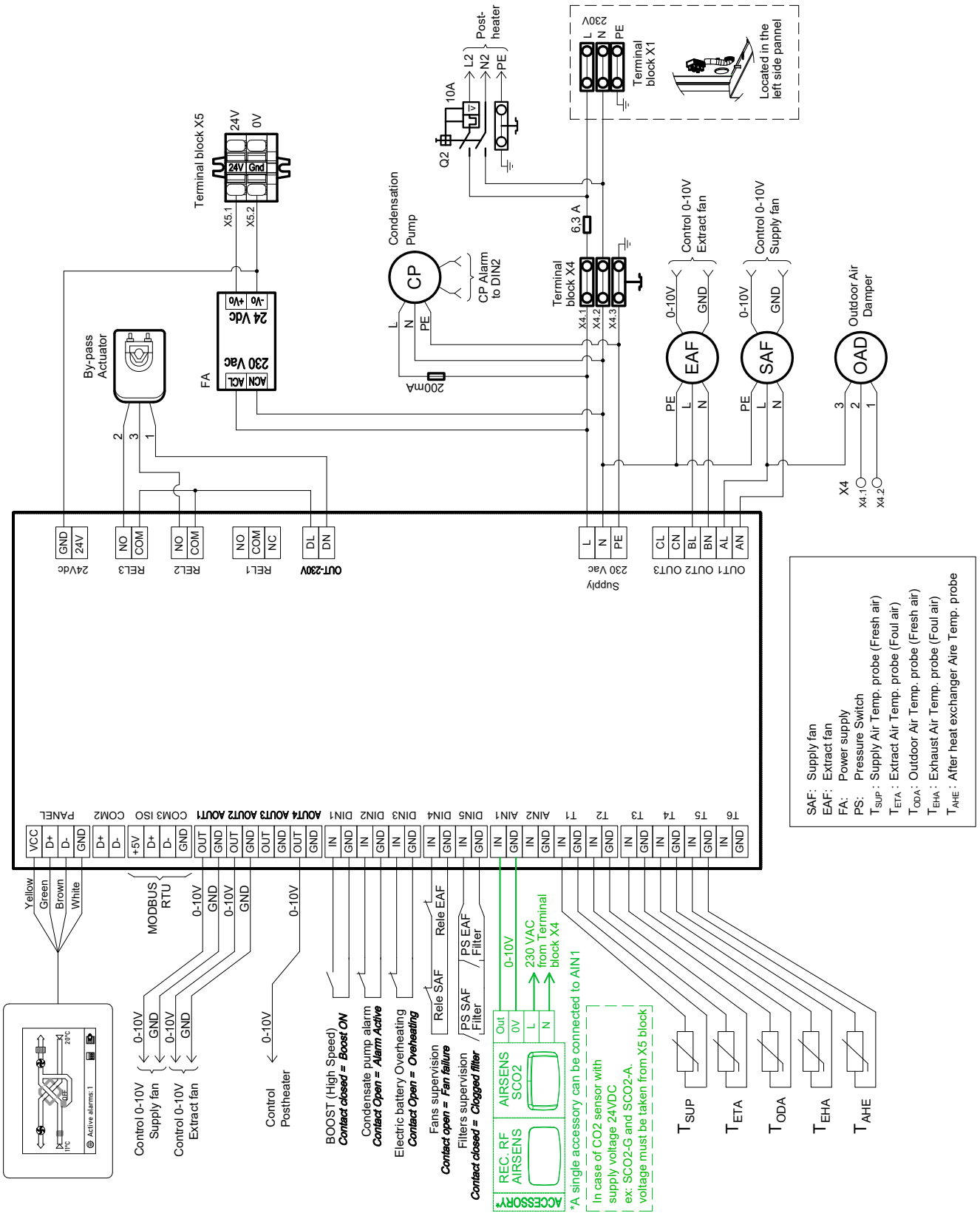
19.1. PURECLASS 800 CL.

Standard version without preheater nor postheater

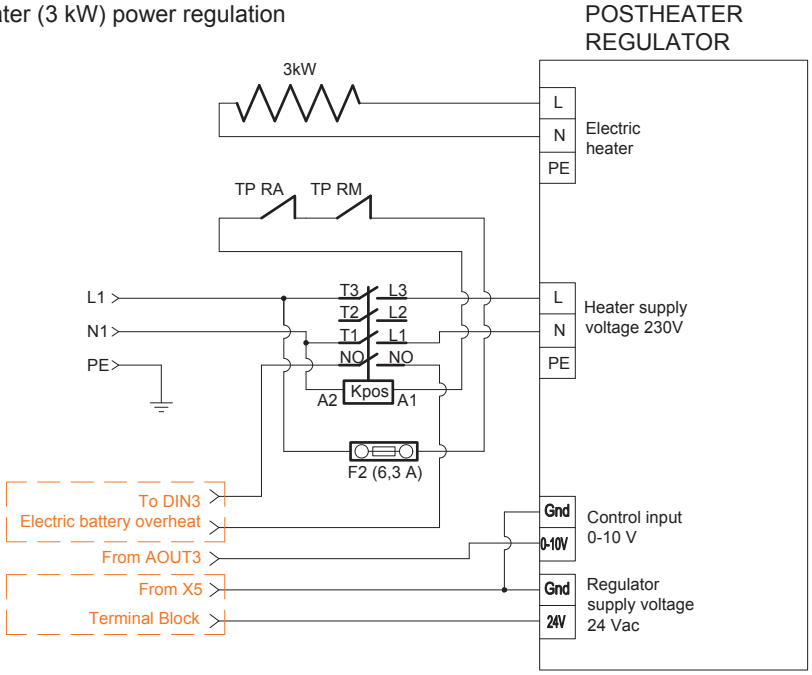


19.2. PURECLASS 800 CL DI.

Version with integrated electric postheater

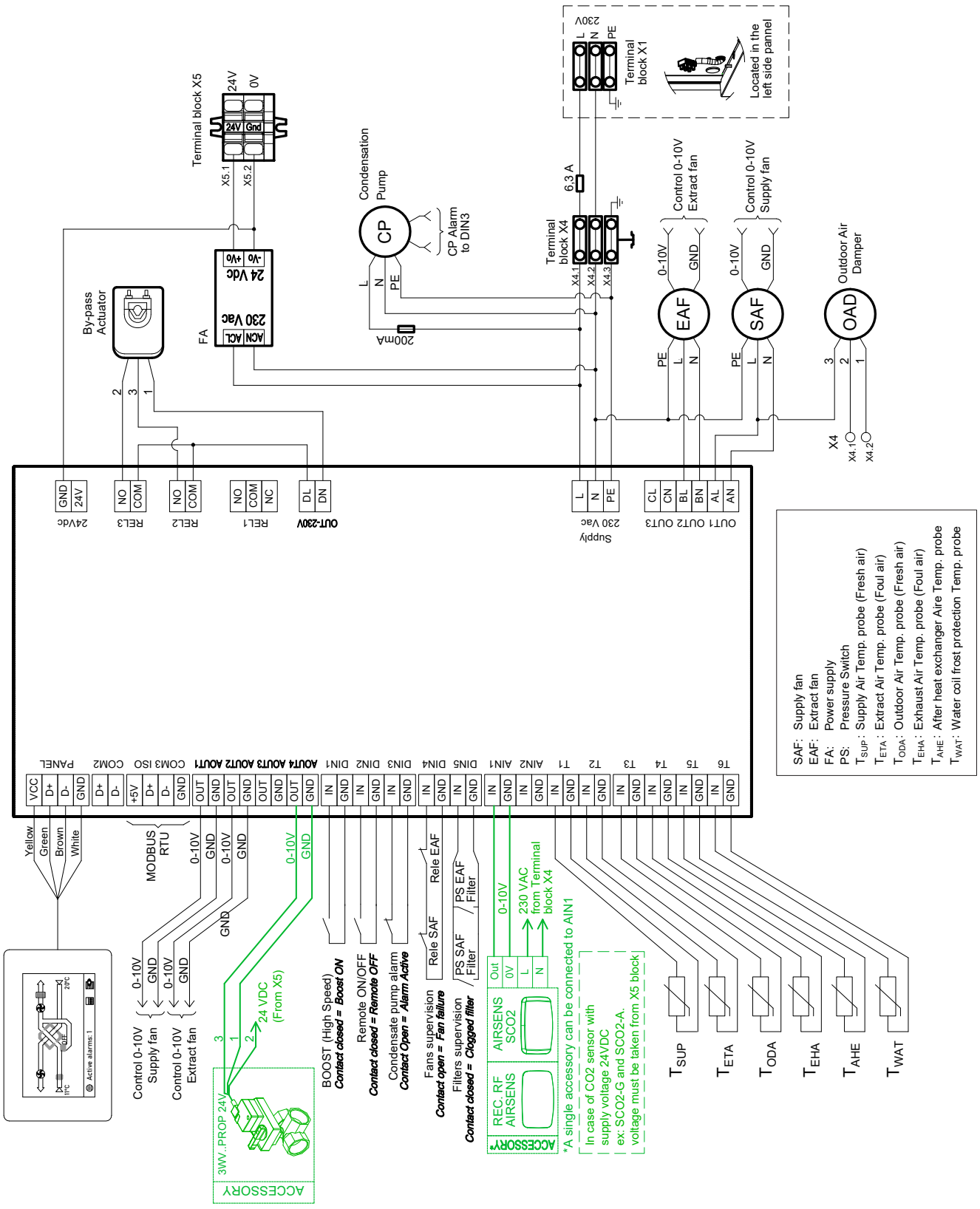


Post-heater (3 kW) power regulation



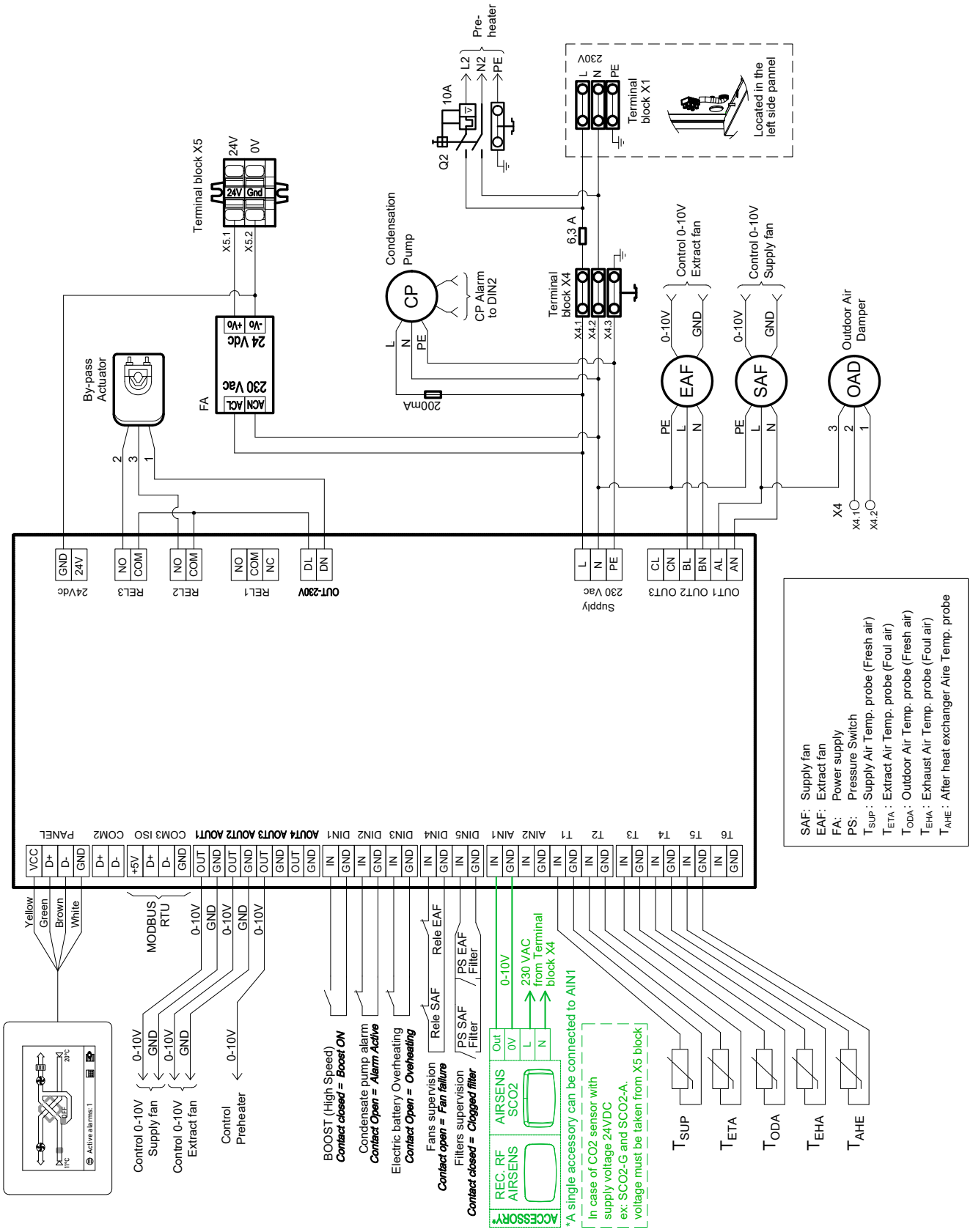
19.3. PURECLASS 800 CL DC.

Version with integrated water postheater



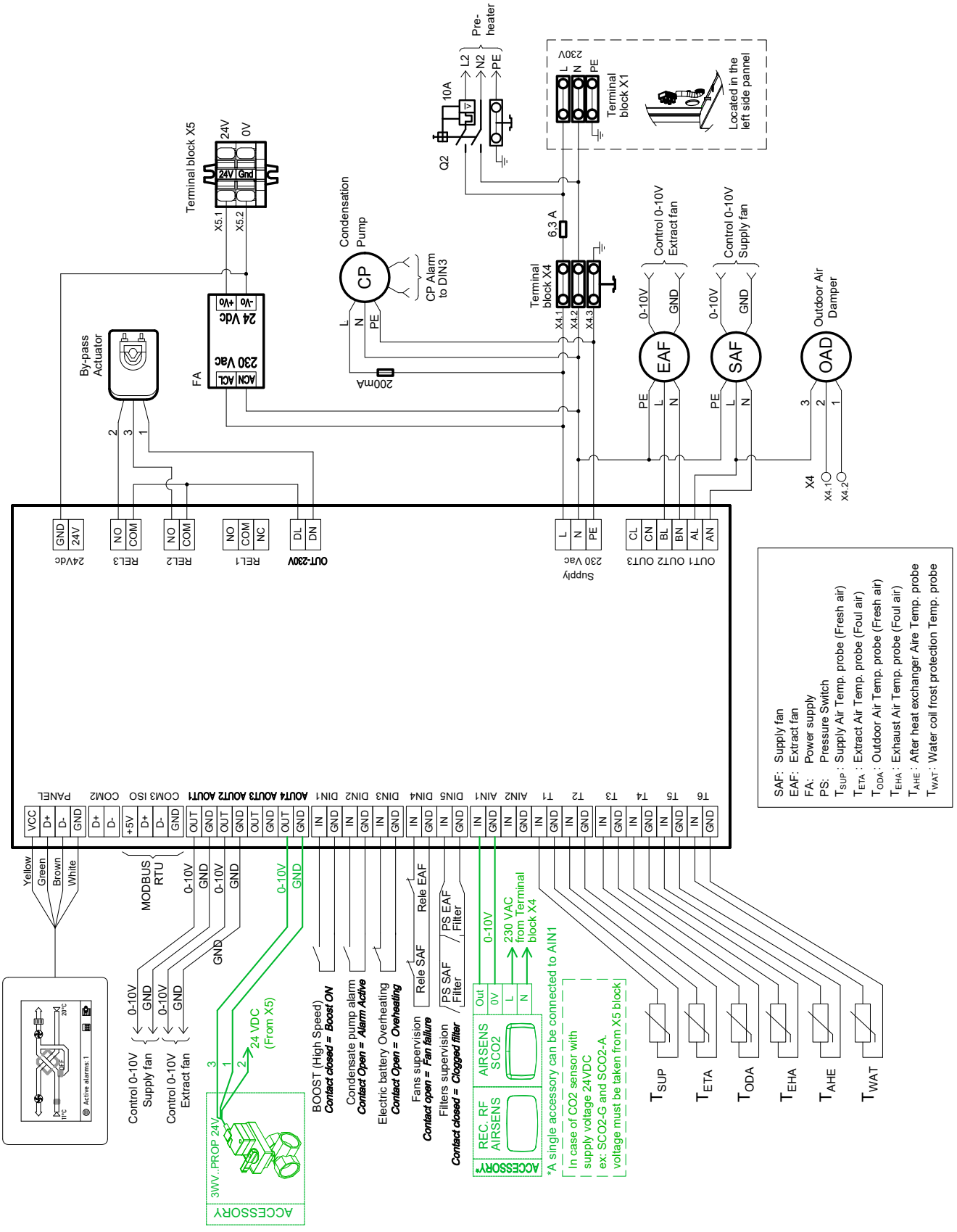
19.4. PURECLASS 800 CL PH.

Version with integrated electric preheater



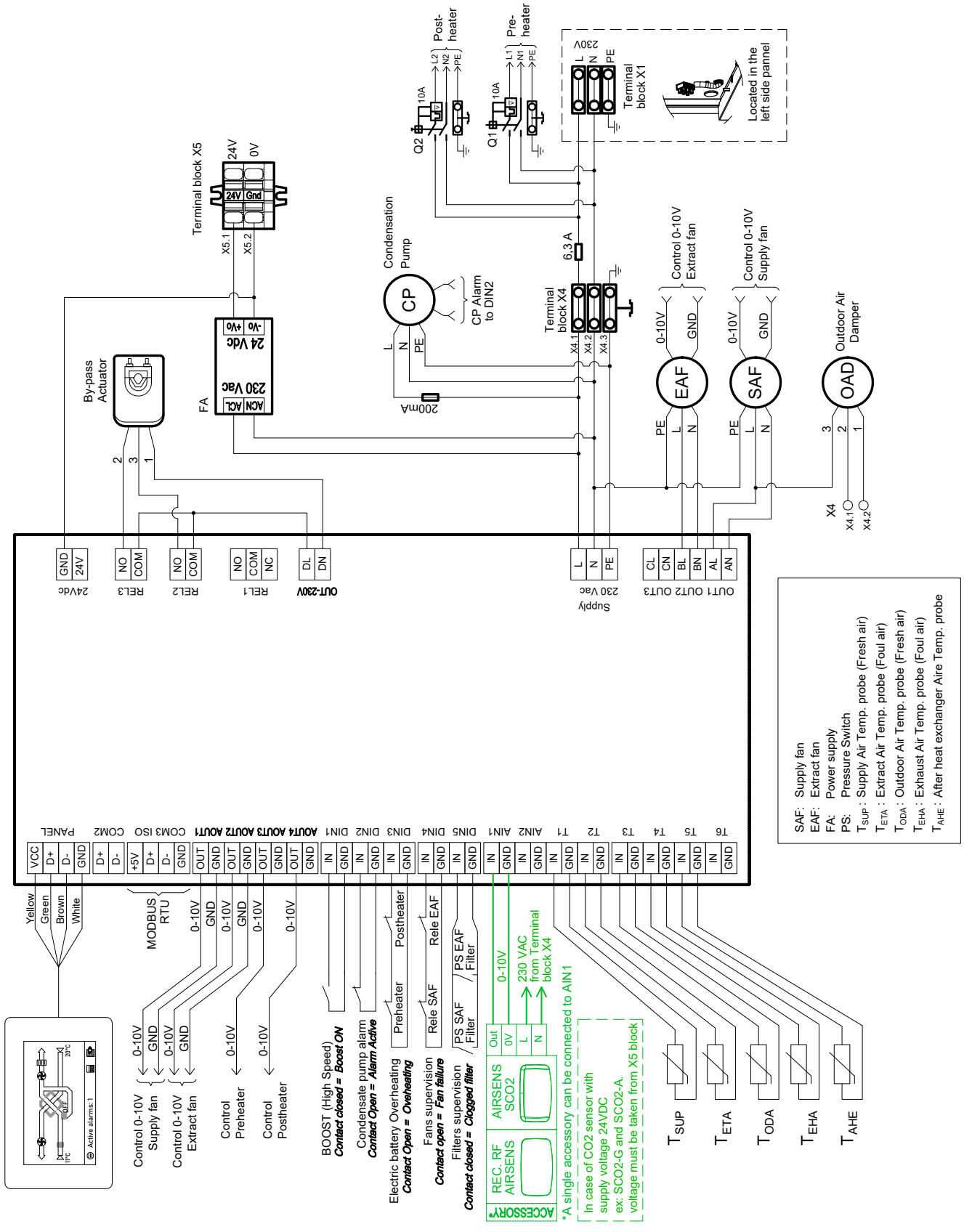
19.5. PURECLASS 800 CL PH DC.

Version with integrated electric preheater and water postheater

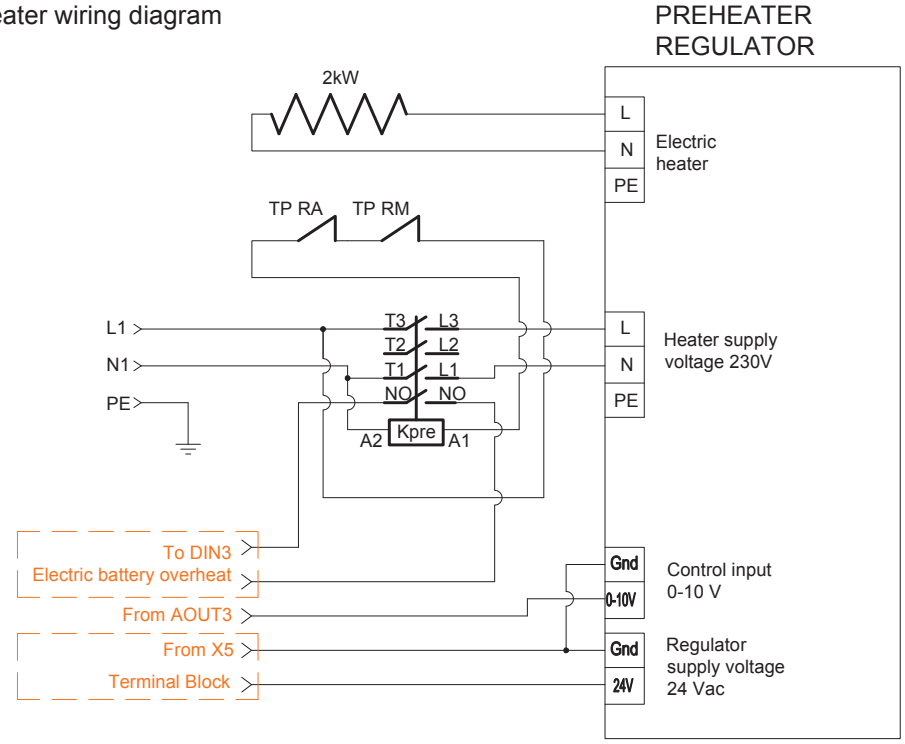


19.6. PURECLASS 800 CL PH DI.

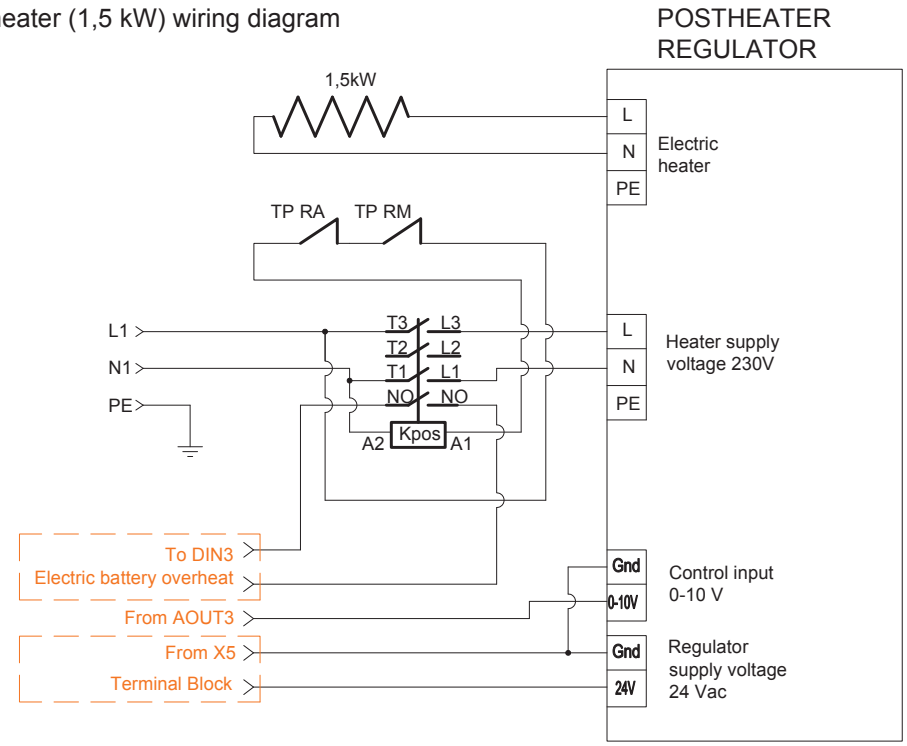
Version with integrated electric preheater and electric postheater



Pre-heater wiring diagram

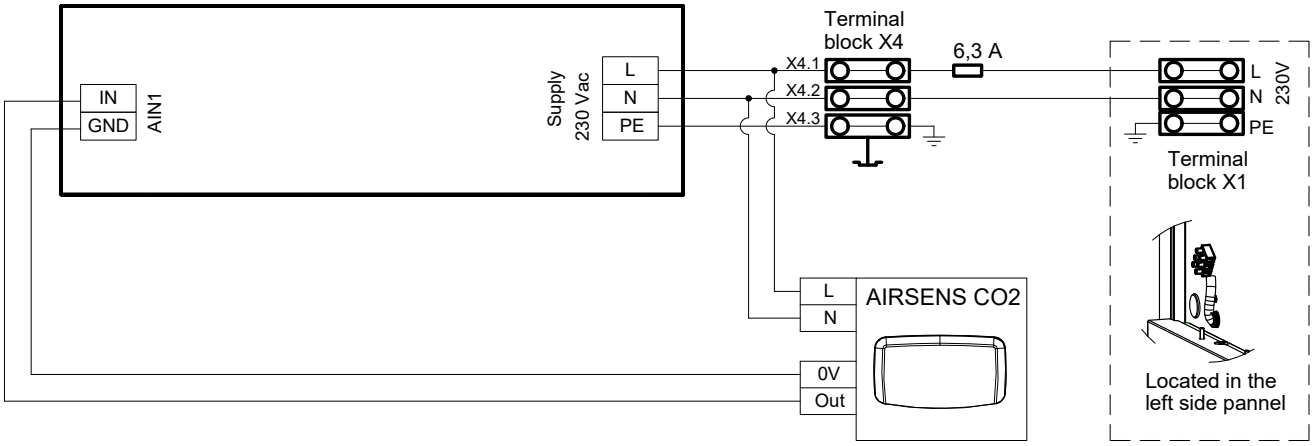


Post-heater (1,5 kW) wiring diagram



19.7. Particulaties of versions PURECLASS 800 CL CO2 (with integrated CO2 sensor)

PURECLASS 800 CL CO2 versions include a AIRSENS CO2 sensor built into the unit. The sensor, located between the exhaust air filter and heat exchanger, is wired to the controller. These versions are incompatible with the use of external CO2 sensors (accessories). CO2 sensor specific wiring:



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