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Operating Manual
D-EOMAH03704-25_01EN

COMPACT T AIR HANDLING UNIT

ATB

Original Instructions

Table of Contents

1 About this document

1.1 Notice

MicroTech 4	from Daikin Applied Europe	
Before starting	This document refers to the following components:	
Application range	Microtech 4	Controller
Users	Users of this document are intended to be:	
	- AHU users	
	- Sales staff	
Conventions	MicroTech 4 further in this document and when proper will be referred to as “MicroTech”	

2 Safety Information

Observe all safety directions and comply with the corresponding general safety regulations in order to preventpersonal injury and damage to property.

- Safety devices may not be removed, bypassed or taken out of operation.
- Apparatus and system components may only be used in a technically fault-free state. Faults that canaffect safety must be rectified immediately.
- Observe the required safety instructions against excessively high contact voltages.
- The plant may not be in operation if the standard safety devices are out of operation or if their effectsare influenced in some other way.
- All handling that affects the prescribed disconnection of the protective extra-low voltage (AC 24 V)must be avoided.
- **Disconnect the supply voltage before opening the apparatus cabinet. Never work when the power is on!**
- Avoid electromagnetic and other interference voltages in signal and connection cables.
- Assembly and installation of system and plant components may only be performed in accordance withcorresponding installation instructions and instructions for use.
- Every electric part of the system must be protected against static charging: electronic components, open printed circuit boards, freely accessible connectors and apparatus components that are connected with the internal connection.
- All equipment that is connected to the system must be CE marked and comply with the Machine SafetyDirective.

3 Introduction

This operating manual provides basic information that allows the control of the Daikin Air Handling Unit (AHU). Compact T AHUs are used for air conditioning and air handling in terms of pressure and temperature level control.

3.1 Basic Control System Diagnostic

Unit controllers, extension modules and communication modules are equipped with two status LED, BSP and BUS, to indicate the operational status of the devices. The “BUS” LED indicates the status of the communication with the controller. The meaning of the two status LED is indicated below.

- **MAIN CONTROLLER**
- BSP LED

LED Color	Mode
Solid Green	Application running
Solid Yellow	Application loaded but not running (*) or BSP Upgrade mode active
Solid Red	Hardware Error (*)
Flashing Green	BSP startup phase. The controller needs time for starting.
Flashing Yellow	Application not loaded (*)
Flashing Yellow/Red	Fail safe mode (in case that the BSP upgrade was interrupted)
Flashing Red	BSP Error (software error*)
Flashing Red/Green	Application/BSP update or initialization

(*) Contact Service.

- **EXTENSION MODULES**
- BSP LED

LED Color	Mode
Solid Green	BSP running
Solid Red	Hardware Error (*)
Flashing Red	BSP Error (*)
Flashing Red/Green	BSP upgrade mode

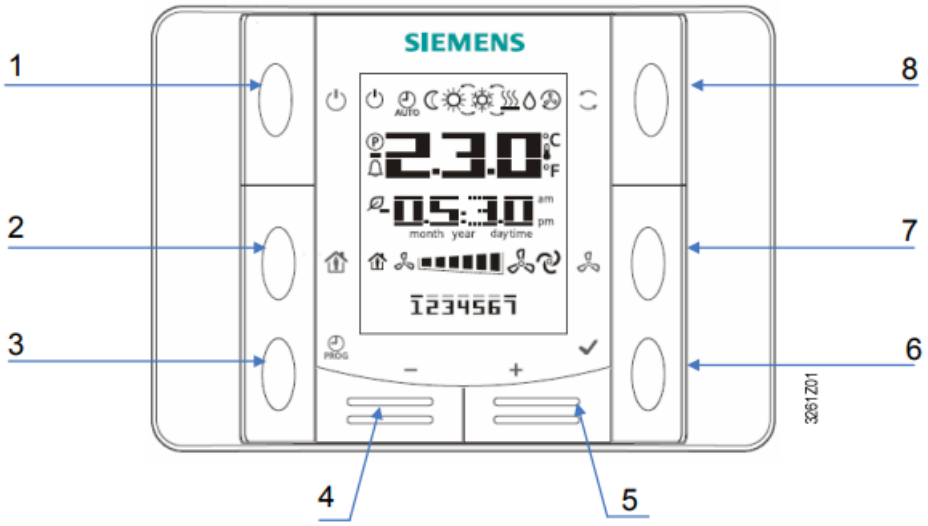
- BUS LED

LED Color	Mode
Solid Green	Communication running, I/O working
Solid Yellow	Communication running but parameter from the application wrong ormissing, or incorrect factory calibration
Solid Red	Communication down (*)

3.2 Room Interface

Unit has two different human machine interfaces (HMI from here on), one is a POL822 default, the other is POL895 or POL871, these have a lcd that can be plugged in the HMI port on controller (Th).
Explanation of hot points on both is explained here down:

1.1.1.Room Unit Interface



POL 822

Legend

No.	Icon	Name	Functions
1		**ON/OFF**	Button for power on or power off
2		**Presence**	Button progra
3	PROG	**Program**	Button date/ti gramn
4	–	**Minus**	Button for set-point adjustment, each operation of the **Minus (–)** button reduces the set point by 0.1 °C/0.5 °F or 0.5 °C/1.0 °F which is defined in controller's setting.
5	+	**Plus**	Button for set-point adjustment, each operation of the **Plus (+)** button increases the set point by 0.1 °C/0.5 °F or 0.5 °C/1.0 °F which is defined in controller's setting.
6	✓	**OK**	Button for confirmation of date/time and scheduler settings (*for POL822.60/XXX only*).
7		**Fan**	Button by con selecte selecte screen
8		**Mode**	Buttor omy. I HMI-S currer symb

Cooling/Heating

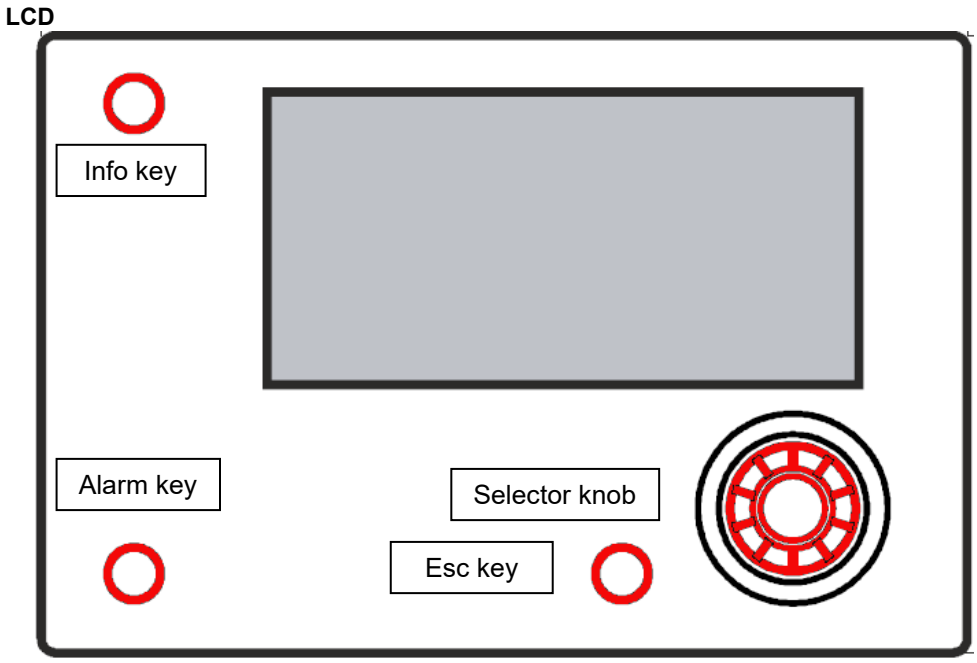


Figure 1 POL895

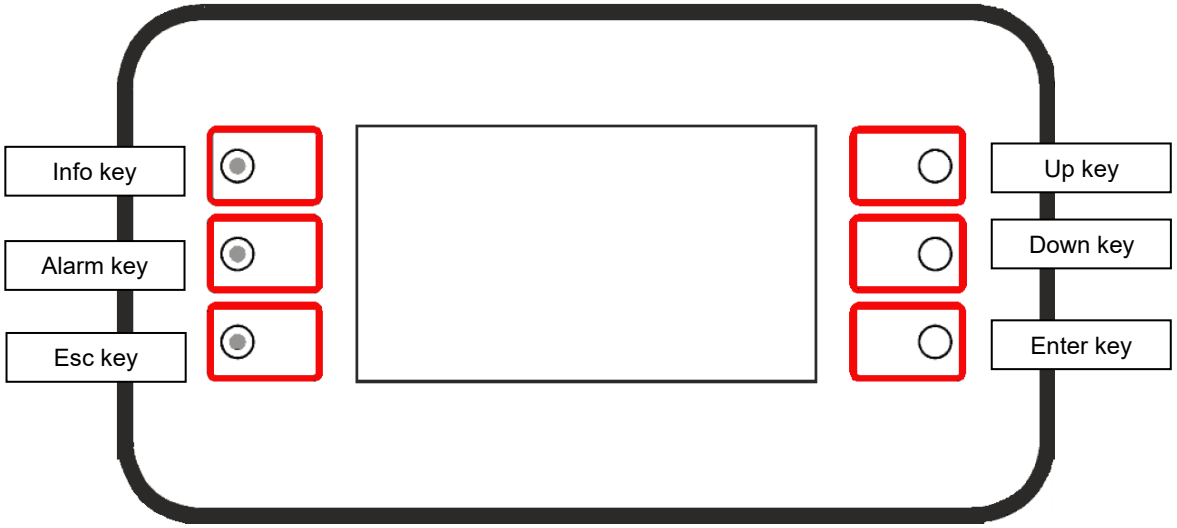


Figure 2 POL 871

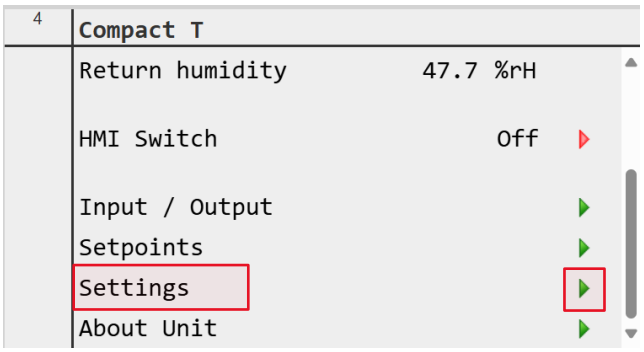
All HMIs except POL 822 allow navigation through the application pages, the available data can change, the LCD shows additional data to configure optional items such as BMS configuration, some of the additional values are protected with different level passwords to prevent wrong parameterizations to unauthorized users.
To select the voice the user must click on green triangle (web interface) or pushing knob POL895 or Enter key POL871.

3.3 Password

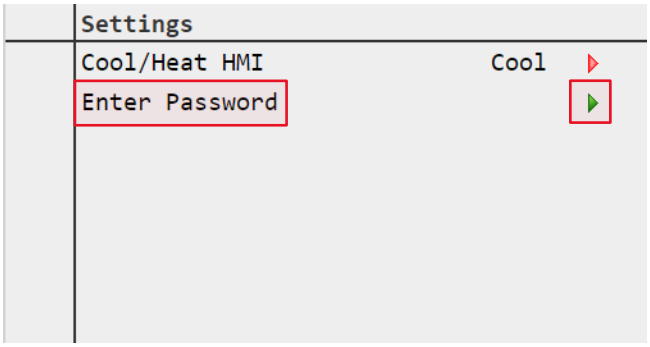
Different levels of password are available in the application; at each level different parameters are accessible. Summary of password and access level in the table below

Level name	Level index	Password
End user	--	--
User	6	5321
Maintenance	4	2526

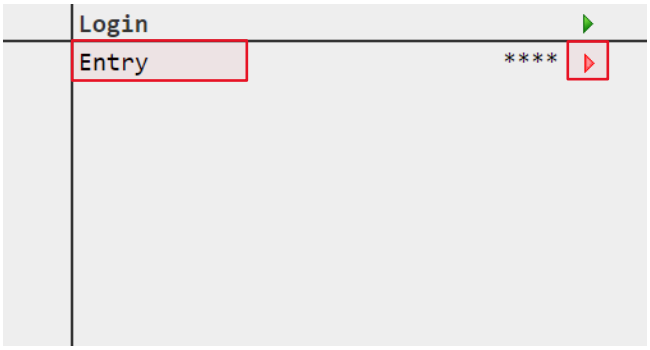
To access password input page, select “Settings” from main menu as shown below:



Select “Enter Password” to show menu with “Login”



Select “Entry” and use the needed value as reported in table at the beginning of the chapter



4. Control Functions

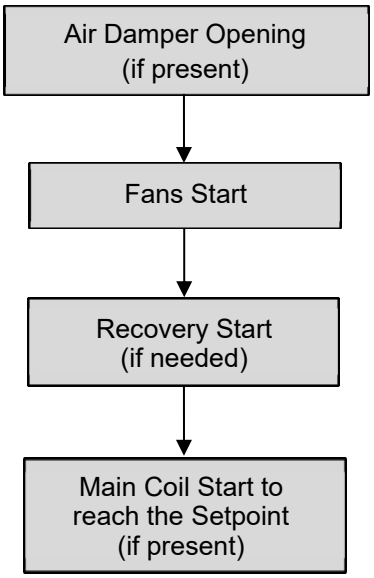
This section describes the main control functions available in Daikin Compact T Air Handling Units. The activation sequence of the devices installed in Daikin AHU for thermoregulation control is shown below.

- On the Base Unit the fans will be free to start immediately, while if you have dampers the fans will wait for the minimum opening before starting.

- Fan speed is monitored with an algorithm that evaluates the differential pressure by reading the pressure difference between the zone before the fan and the fan impeller, this placement allows us to control the machine in constant air flow, the system will adjust the fan speed to reach the setpoint and keep it as stable as possible.

- While reaching the setpoint the system will start treating the air with the heat recovery unit by-pass.

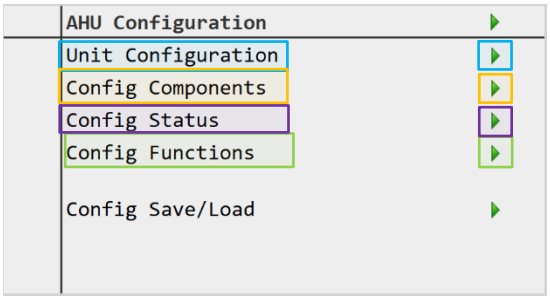
- If coils are present, the algorithm will start the control loops on Temperature and/or Humidity to meet the demand.
  Treatment control can be done on the supply temperature or the return temperature.



The start-up sequence is performed to meet the desired pressure/airflow and temperature setpoints as efficiently as, to keep energy consumption low.
Compact T is sold in its standard configuration and is dedicated to air exchange with heat exchanger with By-pass and external air filter, but there are various possibilities for configuration by adding the various Optional.

5 Configuration pages

For activation of the various components go, after putting the password in Settings, to the AHU Configuration, Unit Configuration, Config Components and Config Function.



3.4 Unit Configuration

To access the Unit Configuration page these steps must be followed
Password level :(Maintenance Level)
HMI Level: Main page → Settings → AHU Configuration → Unit Configuration.

3.5 Configuration Components

To access the Configuration Components page these steps must be followed
Password level :(Maintenance Level)
HMI Level: Main page → Settings → AHU Configuration → Config Components.

3.6 Configuration Functions

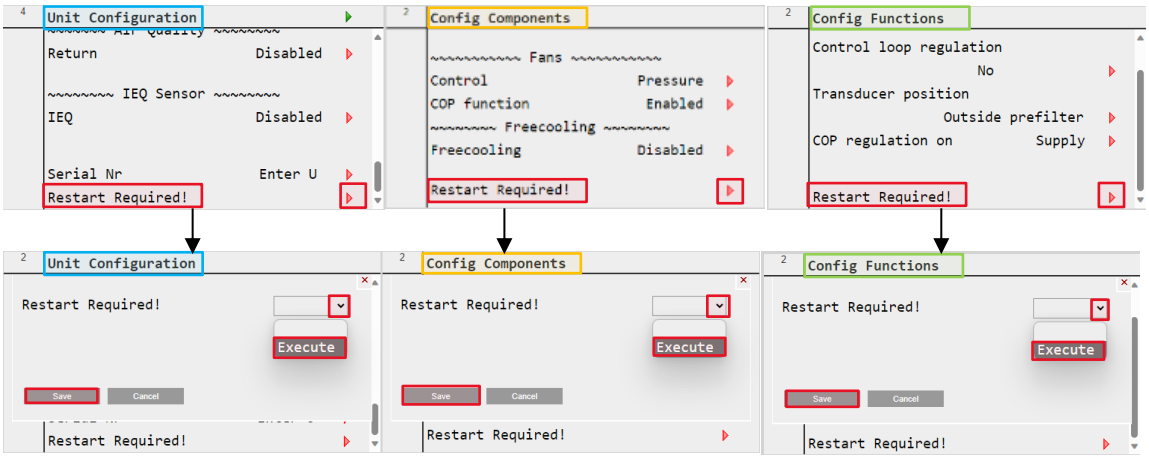
To access the Configuration Functions page these steps must be followed
Password level :(Maintenance Level)
HMI Level: Main page → Settings → AHU Configuration → Config Functions.

3.7 Configuration Status

To access the Configuration Status page these steps must be followed
Password level :(Maintenance Level)
HMI Level: Main page → Settings → AHU Configuration → Config Status.

3.8 Restart

Remember to go to the "Restart required!" item after you have made all the changes to each individual menu.



You can also restart with each individual change for each menu.

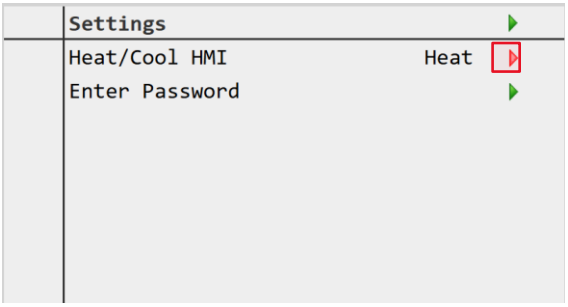
6 Unit Configuration

3.9 Heat/Cool HMI

The user can choose in which mode the unit will work

- HEAT (refers to heating mode)
- COOL (refers to cooling mode)

HMI Path: Main page → Settings → Heat/Cool HMI (No password is needed)



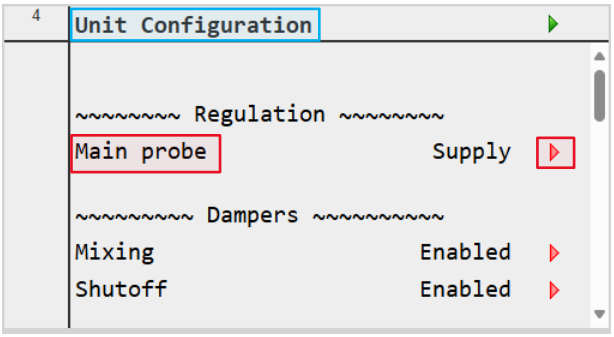
*Notice that: Each mode has its own setpoints, for more information refers to Setpoint chapter.

3.10 Regulation

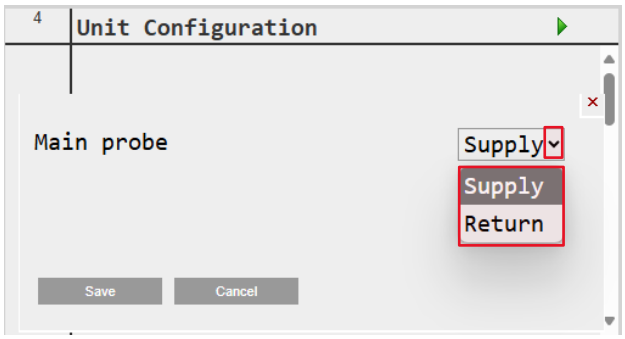
3.10.1 Main probe

The main probe position can be changed as follows:

- In Unit Configuration page
- Regulation section – Main probe



Indicate which probe is used for regulation: Supply or Return.



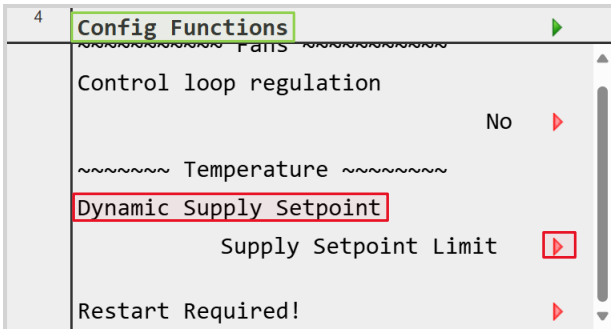
*Notice that:

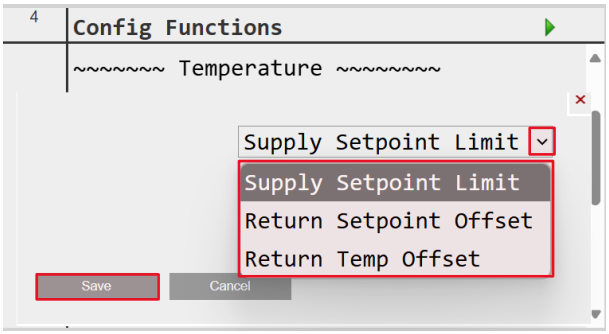
- The supply probe is connected to X10
- The return probe is connected to X11
- These probes are NTC10k type

3.10.2 Dynamic supply setpoint

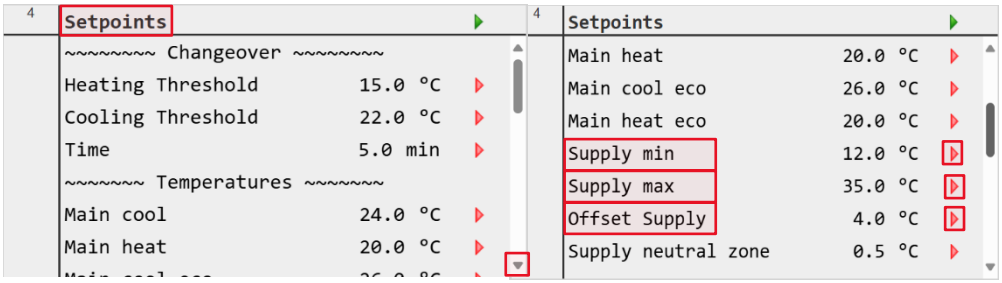
If the main probe is connected to the Return the user will have the possibility to change the dynamic setpoint of the supply temperature in the configuration function which can be selected from the following options

- **Supply setpoint limit**
  (The supply will be regulated based on the return setpoint with respect to a maximum and minimum range that can be set in Setpoints page (Supply min, Supply max))
- **Return setpoint offset**
  (The supply will be regulated based on the return setpoint with respect to an offset that can be set in Setpoints page (Offset Supply))
- **Return Temperature offset**
  (The supply will be regulated based on the return regulating temperature with respect to an offset that can be set in Setpoints page (Offset Supply))



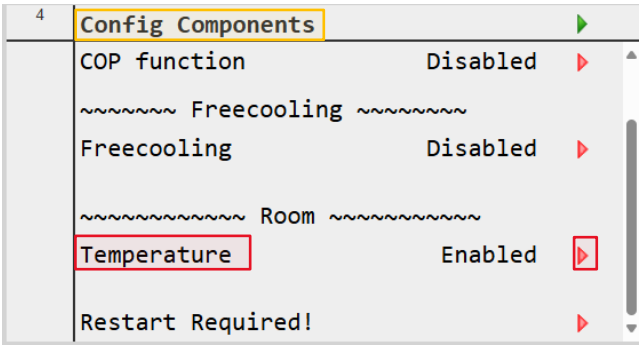


In the Setpoints page – Temperatures section



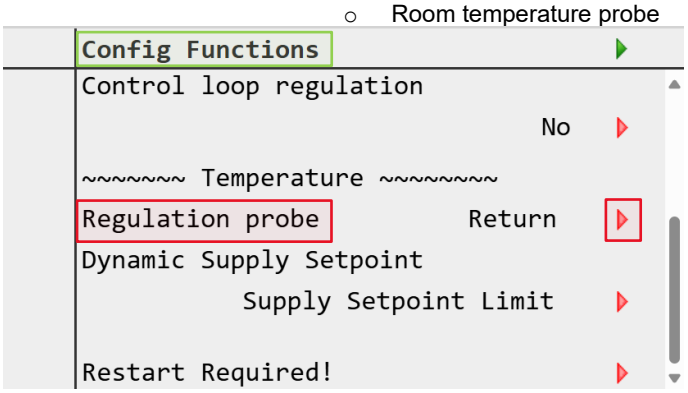
3.10.3 Room Unit

If the POL822 is available and connected to the CE+, CE- on T13 on POL 688 can be enabled in Configuration Component page – Room section



Notice that:

- If the Main probe is on the Return and the Room temperature is enabled the user has in Configuration Function page – Temperature section the option to choose on which probe to regulate
  - Return temperature probe
  - Room temperature probe



Notice that:

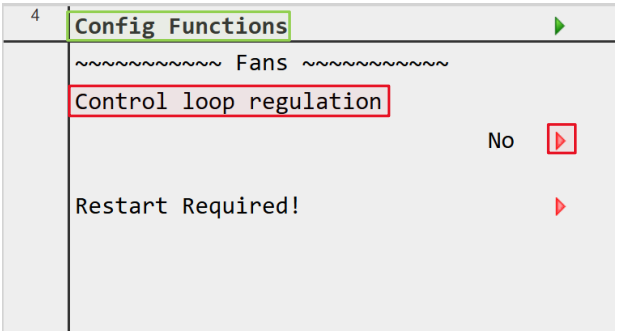
- If the regulation probe is selected to the Room, it will make the regulation based on the room temperature -as far as the room unit is not in alarming-
- If the dynamic supply setpoint is set on Return temperature offset while having the room unit enabled the return regulating temperature is the room temperature as well - as far as the room unit is not in alarming-

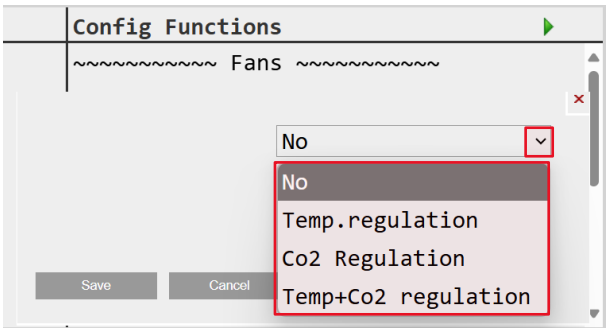
3.11 Fans

3.11.1 Control loop regulation

In the Configuration Functions, you can choose the regulation type for the fan control loop, which will adjust the minimum and maximum flow setpoint limits of the fans.
There are three modes:

- **Temperature Regulation**
  (The fans will regulate within the new flow setpoint limits based on the temperature sensor)
- **CO_2 Regulation**
  (The fans will regulate within the new flow setpoint limits based on the air quality sensor)
- **Temperature + CO_2 Regulation**
  (The fans will regulate within the new flow setpoint limits based on both the temperature and air quality sensor)



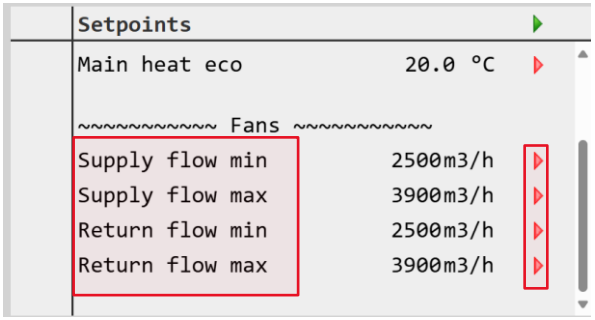


Notice that: The new flow setpoint limits can be set in the Setpoints page – Fans section

- Supply flow minimum
- Supply flow maximum
- Return flow minimum
- Return flow maximum

Notice that: Only one mode can be active at a time: COP or Control Loop Regulation

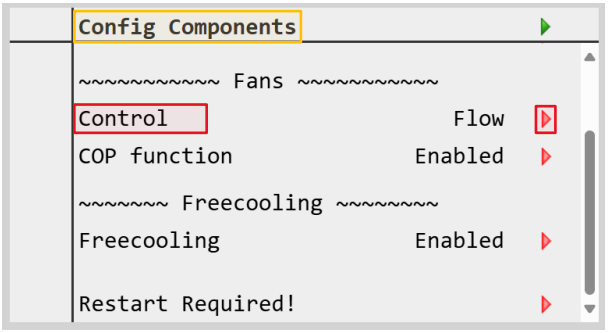
- Enabling COP will automatically disable Control Loop Regulation
- Enabling Control Loop Regulation will automatically disable COP



3.11.2 Fan control type

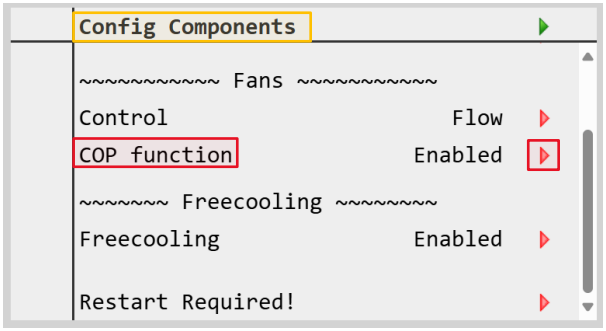
In the Configuration Components – Fans section, the user can choose the control regulation type for the fans which can be either:

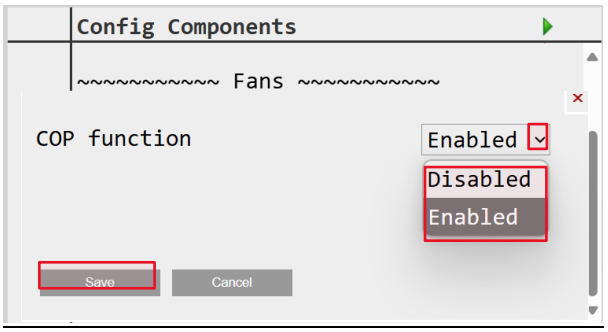
- On the flow
- On the pressure



3.11.3 COP Function

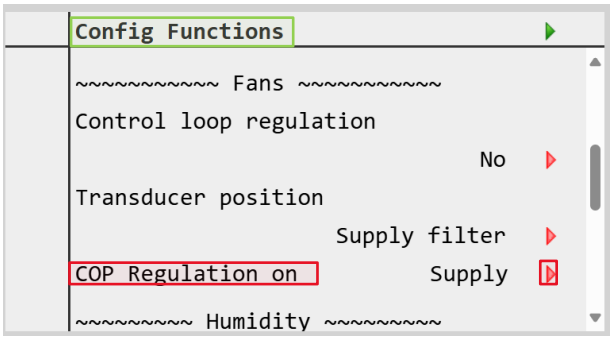
In the Configuration Components – Fans section, COP (Control of Pressure) function can be enabled
(Be aware that COP Function requires a transducer pressure on supply/return connected to P1, P2)

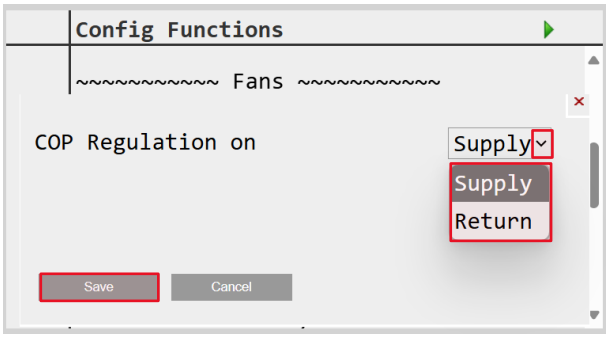




Once enabled in Configuration Functions the user can choose what the COP will regulate on (Supply or Return).
Notice that: Only one mode can be active at a time: COP or Control Loop Regulation

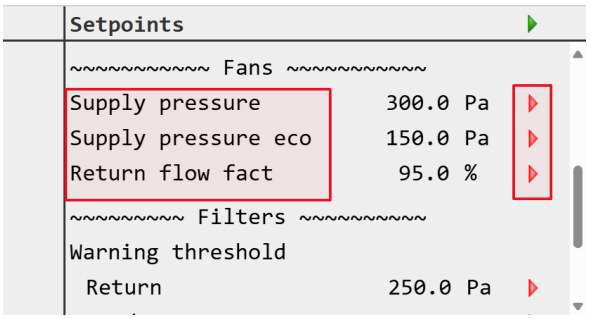
- Enabling COP will automatically disable Control Loop Regulation
- Enabling Control Loop Regulation will automatically disable COP



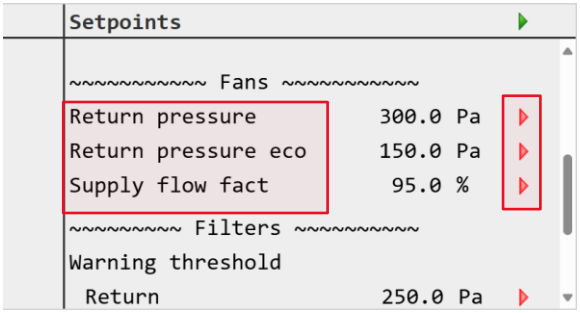


Notice that: Regulating the COP on the

- Supply: The supply fan is regulated based on the supply pressure setpoint, while the return fan is controlled proportionally to the supply airflow, using a return flow factor
- *(Supply pressure, Supply pressure economy, Return flow factor) can be modified in Setpoints page – Fans section*

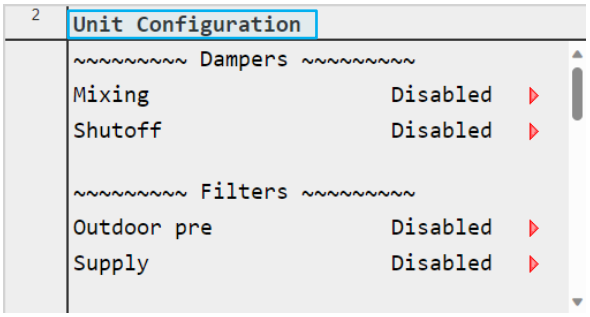


- Return: The return fan is regulated based on the return pressure setpoint, while the supply fan is controlled proportionally to the return airflow, using a supply flow factor
- *(Return pressure, Return pressure economy, Supply flow factor) can be modified in Setpoints page – Fans section*

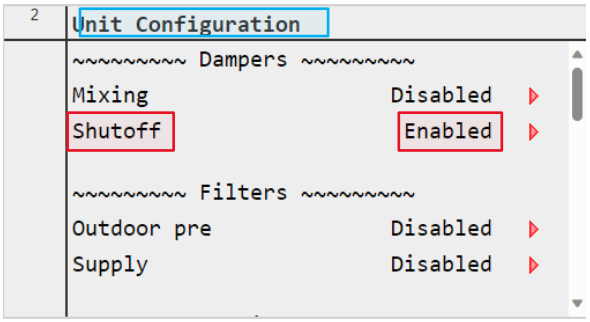


3.12 Dampers

Dampers can be enabled if available in Unit configuration page – Dampers section



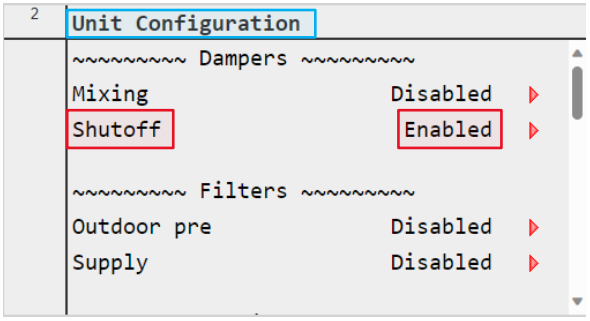
3.12.1 Outside and Exhaust air dampers



Which allows exclusion of AHU from direct and coming from outside ducts. Shutoff Damper, wire on terminals 13-14 and 15-16.

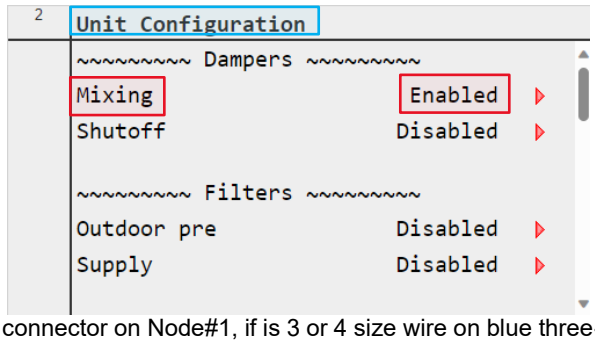
Notice that: Enabling the shutoff damper introduces a fixed time delay before fan startup to ensure the damper is fully open prior to operation (~ 150 sec)

3.12.2 Supply and Return air dampers



Which allows the exclusion of AHU from direct and coming from indoor ducts. Shutoff Damper, wire on terminals 13-14 and 15-16.

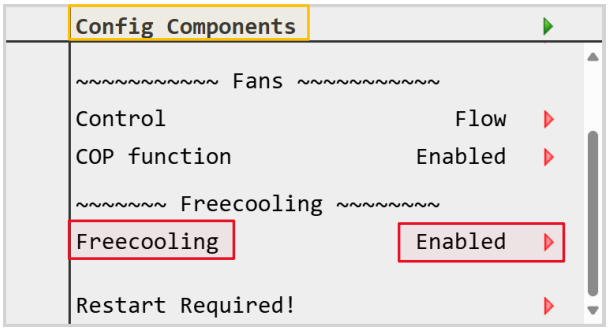
3.12.3 Mixing, Outside and Exhaust dampers

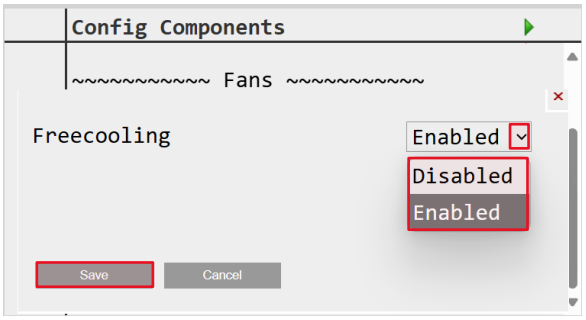


Which allows the software to determine whether it is convenient to use return air, outside air or mix the two. Outdoor and Exhaust modulating Dampers, wire on terminals 38-39-40 and 41-42-43.Mixing Damper, if is 5, 6 or 7 size wire on blue three-way connector on Node#1, if is 3 or 4 size wire on blue three-way connector on Node#2.

3.13 Free Cooling

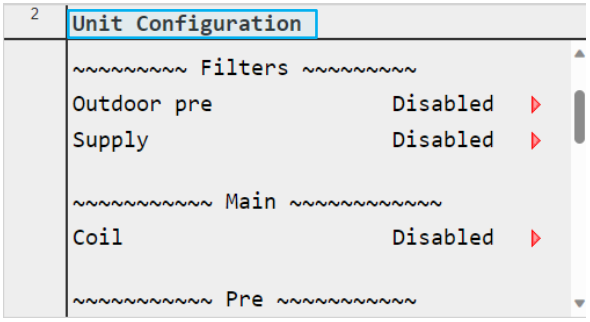
If the mixing damper is present the user has the option to enable the Free Cooling in the Configuration Components.



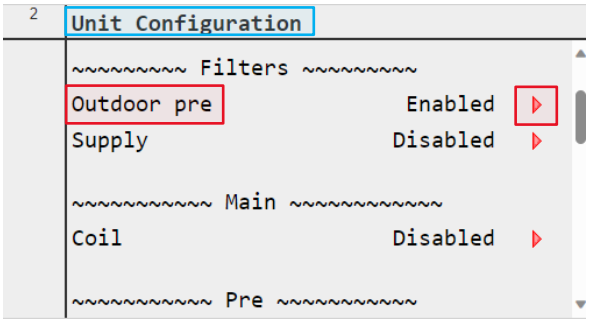


3. Filters

Base Unit

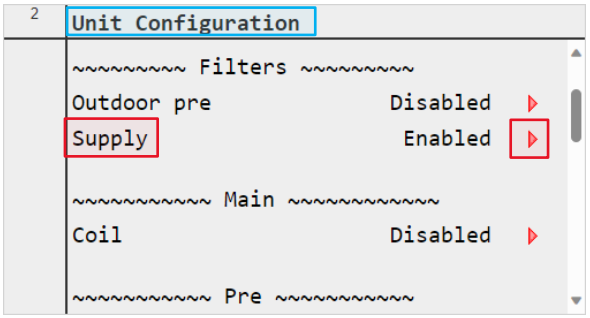


3.13.2 Outdoor air Pre-filter



Connect using a flexible tube to the + and - of P1 of Node#3.

3.13.3 Supply air Filter



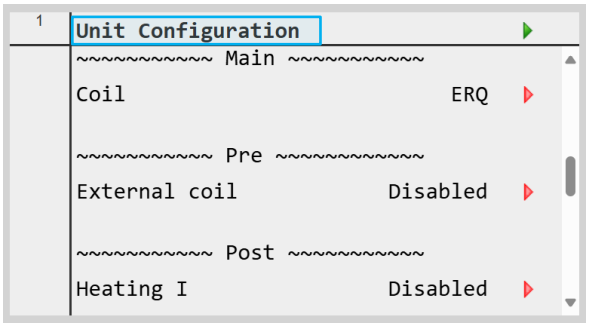
Connect using a flexible tube to the + and - of P2 of Node#3.

3.13.4 Return air and Outdoor air Filters

These filters are always active.

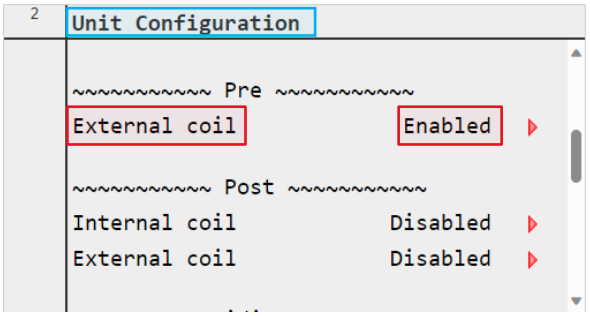
3.14 Coils

3.14.1 Base Unit

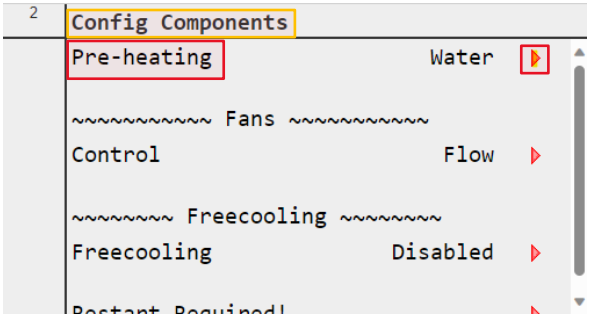


3.14.2 External Pre-heating coil

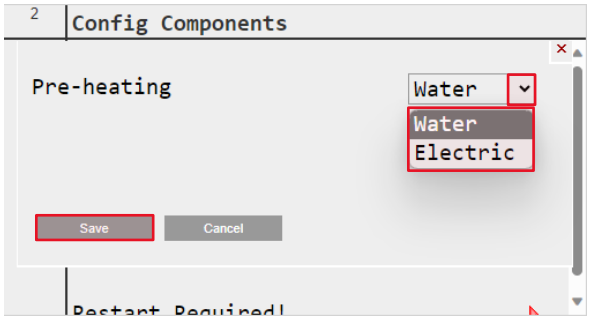
This Coil can be either Electric or Water, it is used to raise the inlet temperature of the AHU before the heat recovers.



It can be enabled in Unit configuration page – Pre section



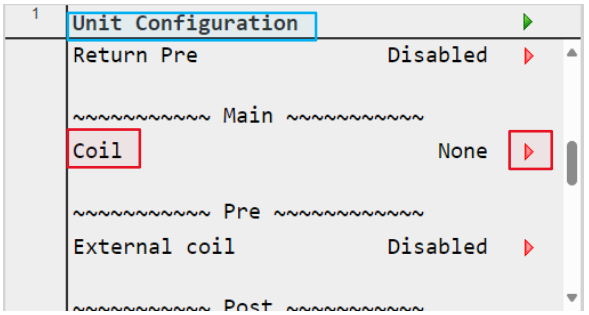
Its type can be selected in Configuration Components page – Coil section

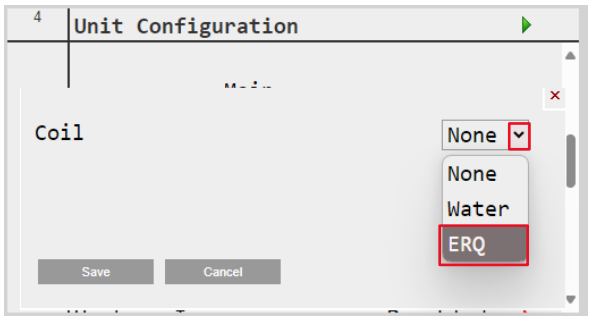


When selecting Electric Pre-heat you need to install the additional Outdoor temperature sensor on the duct before the Pre-heat coil and wire it to Node#3 on the black three-way connector as shown in the wiring diagram.

3.14.3 ERQ Main coil

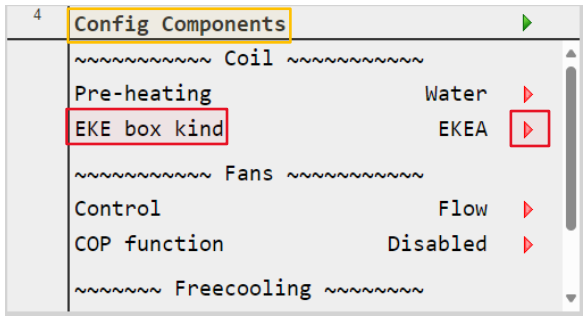
The Main coil can be either ERQ or Water, and it can be enabled in Unit Configuration – Main section





3.14.4 ERQ Main coil

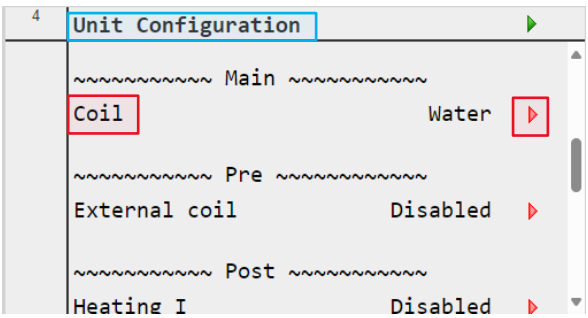
If the main coil is ERQ, the EKE box kind from the Configuration Components page – Coil is available



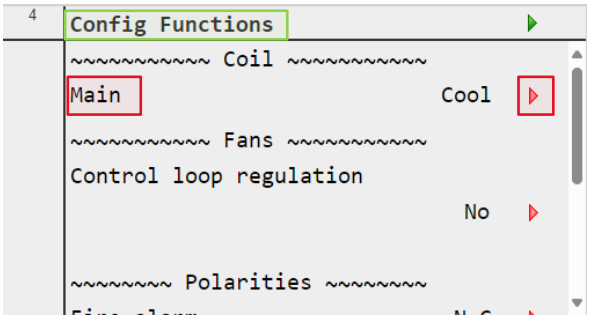
For DX solution, it provides the installation of our ERQ, maximum one circuit.

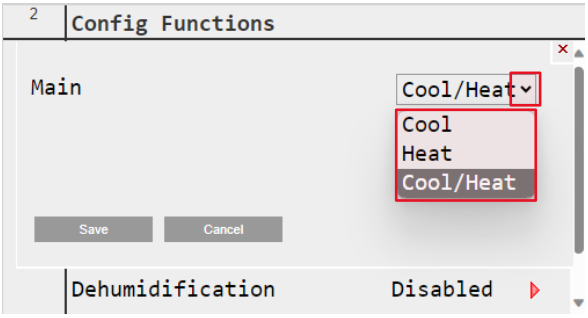
3.14.5 Water Main coil

The Main coil can be either ERQ or Water, and it can be enabled in Unit Configuration – Main section



For the water solution through the software, you can decide whether to have a heat only, cool only or a combined water coil in Configuration Function page – Coil section



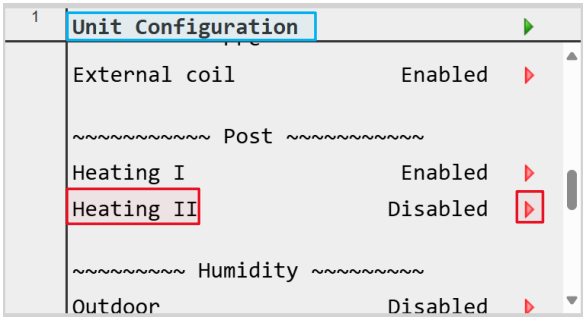


These coils are used to treat the air and reach the temperature setpoint.

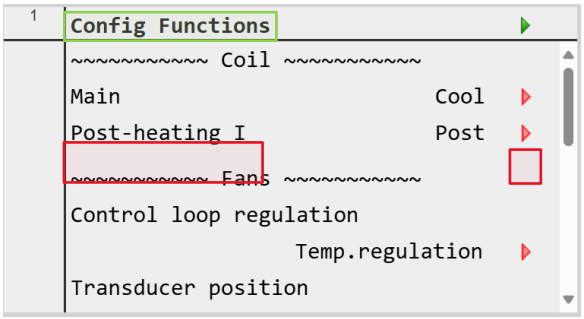
3.14.6 Post-heating coil

It can be either Electric or Water coil, the Electric one is a duct coil mounted externally to the AHU, while the Water coil is mounted internally to the unit on the slides just after the supply fan (**Attention! If you install the water coil you cannot install the Supply filter**) and can be used either as a Post or Heat water coil if you have provided a main cold water only coil.

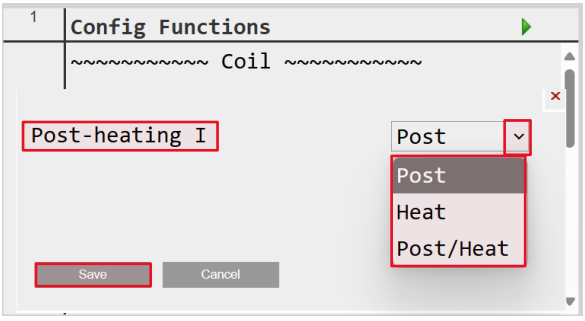
3.14.7 Internal Coil Heating I (Water)



Enabled Heating I in Unit Configuration



Select coil Function in Config. Function



The user can select the function to be

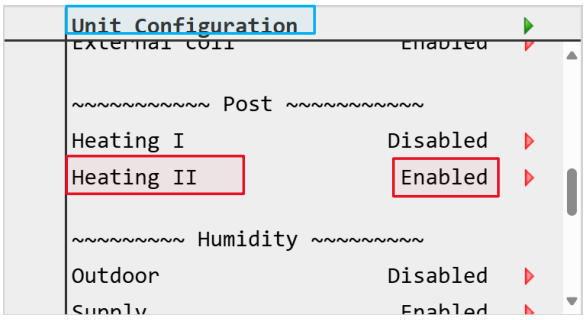
- Post → To let the heating occur after the dehumidification
- Heat → To let the heating occur if the main coil is not able to reach the set point
- Post / Heat →To have both functionality

Notice that:

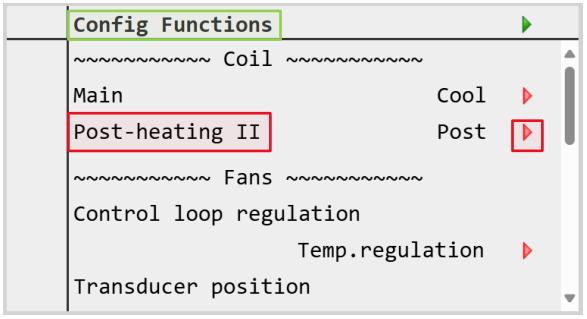
- You can either have (Post-Heating Water Coil Pump ON/OFF) or (R32 Low Flow)
- You can either have (Post Heating Water Coil Pump Alarm) or (R32 Leakage)

3.14.8 External coil Heating II (Electric)

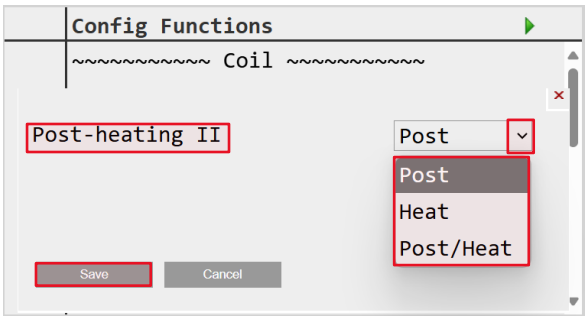
Enable External coil in Unit Configuration. This coil is used to supplement heat during heating when the main coil cannot reach in setpoint and/or for dehumidification.



When you enable the heating II coil, you are selecting Electric Post-heat, when you make this choice, you need to install the additional Supply temperature sensor on the duct after the Post-heat coil and wire it to Node#3 on the green three-way connector as shown in the wiring diagram



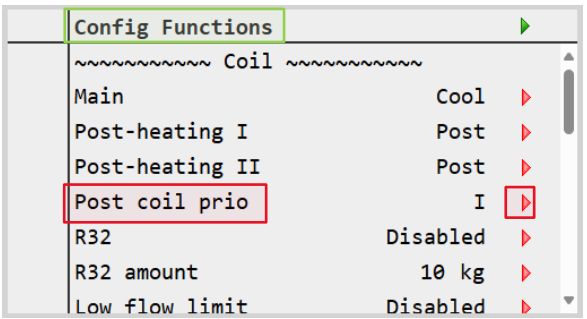
Select Coil function in Configuration Functions.



The user can select the function to be

- Post → To let the heating occur after the dehumidification
- Heat → To let the heating occur if the main coil is not able to reach the set point
- Post / Heat → To have both functionality

If both post heating coils are enabled an additional option is available in Configuration Function to choose the priority of these two coils.



3.15 Defrost

The defrost function in the AHU is designed to prevent ice build-up on the heat exchanger, ensuring efficient airflow and heat exchange, especially during low ambient temperatures or high humidity conditions.

3.15.1 Defrost logic

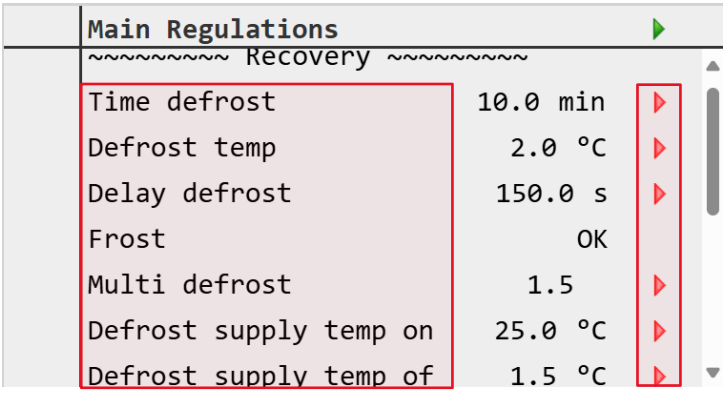
a- Detection Phase:
- The system monitors the coil temperature and ambient conditions.
- If frost is detected and conditions persist beyond 150 seconds, defrost is initiated.

b- Activation Phase:
- Once the defrost criteria are met, and the air supply temperature is greater than 25 C, the system enables the defrost mode.
- The defrost cycle will run up to a maximum of 10 minutes, unless it stopped earlier.

c- Termination Phase:
Defrost ends if:
- Coil temperature reaches 2.0 °C, OR
- Supply air temperature is less than 1.5 °C, OR
- Maximum defrost duration (10 minutes) is reached.

3.15.2 Defrost parameters

In Service page → Main Regulation – Recovery section (Maintenance password level is required)
the following defrost parameters are available:



- Time defrost: Maximum duration allowed for one defrost cycle. If defrost is not completed within this time, the system will terminate the cycle to prevent overheating.
  (10 minutes as default)

- Defrost temperature: Setpoint temperature to reach during defrost. When the heat exchanger sensor reaches this temperature, the defrost cycle ends.
  (2 degree Celsius as default)

- Delay defrost: Time delay before initiating defrost after conditions are met. This helps to avoid unnecessary defrosts due to short-term frost detection.
  (150 seconds as default)

- Frost: Indicates current frost status

- Multi defrost: The multiplier factor for safety reasons.
  (1.5 times as default)

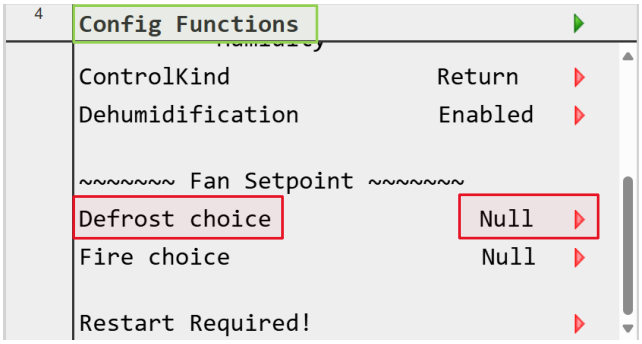
- Defrost supply temperature on: The least air supply temperature at which the unit can turn on the defrost mode if conditions are met. It prevents heaters from entering the defrost mode if the air supply temperature is less than a threshold.
  (25 degrees Celsius as default)

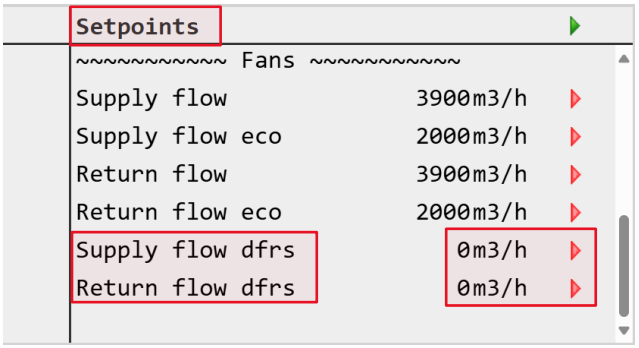
- Defrost supply temperature off: The lowest air supply temperature at which the unit can stay in defrost mode. It prevents heaters from defrosting if the air supply temperature is less than a threshold.
  (1.5 degrees Celsius as default).

3.15.3 Defrost Fan Setpoint

In Configuration Function page – Fan Setpoint page the user can customize the flow setpoints for defrost mode:

- When ***Active*** is selected as the defrost alarm type, users can define ***new airflow/pressure setpoints*** in Setpoints page – Fans section, that the unit will use to regulate fan speeds during a defrost alarm event.
- When ***Null*** is selected no changes in airflow/pressure setpoints will occur



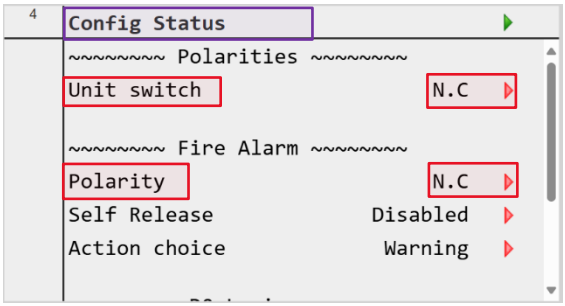


3.16 Status

In Configuration Status page different configuration can be changed

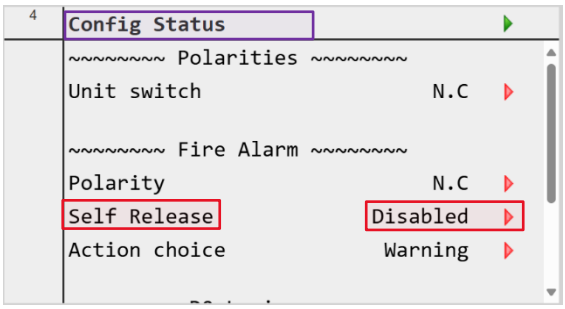
3.16.1 Polarities

Polarities of the Fire Alarm and the Unit Switch can be changed to
((N.C.) Normally Closed // (N.O.) Normally Open)

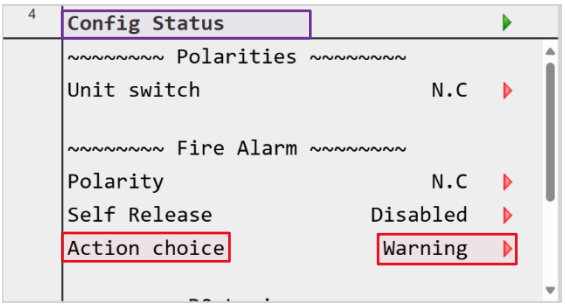


3.16.2 Self-Release

The self-releasing alarm of the Fire Alarm can be Enabled/Disabled



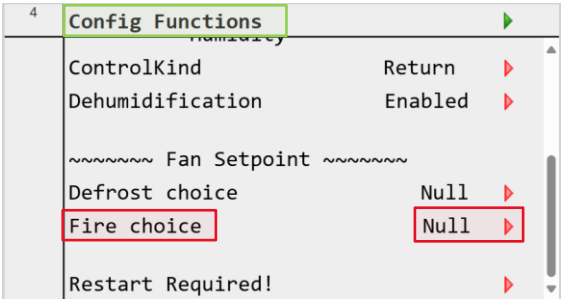
3.16.3 Alarm action choice



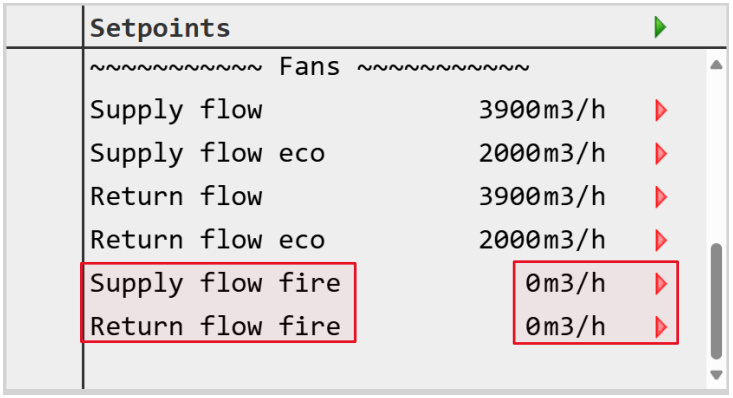
Alarm Type Selection for Fire Alarms:

- **Fault** *(Default, as in previous versions)*: The unit will stop operating in the event of a fire alarm.
- ***Warning***: The unit will continue operating. Fans will regulate according to ***user-defined flow/pressure setpoints***.

If ***Warning*** has been selected as Action choice for fire alarm, then in Configuration Functions page – Fan Setpoint section the Fire choice option is available



- Custom flow setpoints for ***Warning*** mode in Fire mode:
  - When ***Active*** is selected as the fire alarm type, users can define ***new airflow/pressure setpoints*** in Setpoints page – Fans section that the unit will use to regulate fan speeds during a fire alarm event.
  - When ***Null*** is selected no changes in airflow/pressure setpoints will occur

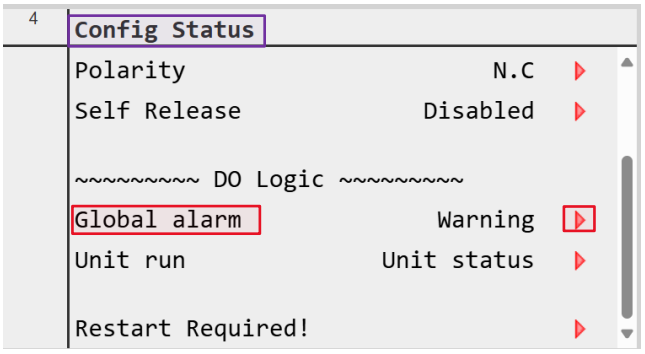


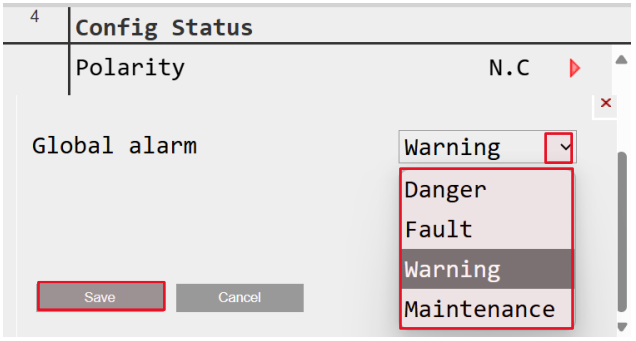
3.17 DO Logic

3.17.1 Global Alarm

The Global Alarm output activates when the user-selected alarm level is triggered:

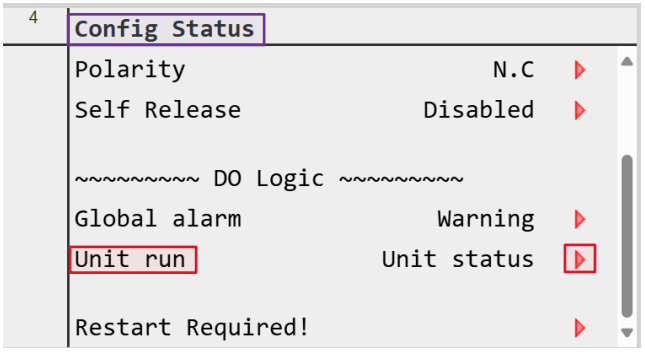
- Danger
- Fault
- Warning
- Maintenance

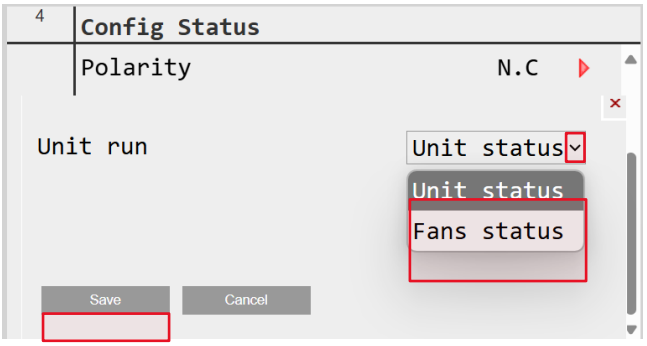




3.17.2 Unit Run

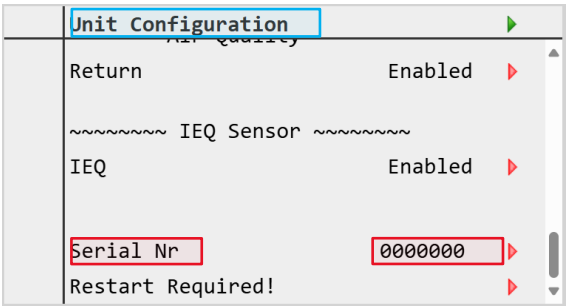
In Configuration Status, Unit Run can be chosen based on (Unit or Fans) Status.





3.18 Serial Number

The user has the possibility to add the Serial Number in the Unit Configuration.



4 Optional Node#3

The optional node is used to manage some components that can be added to the unit configuration, is sold with its connecting cable, use terminals 61 to 66 following the following coloring:

- M-Black
- G-Red
- A-White
- B-Brown
- REF-Green
- SHLD-Black (shrink-wrap)

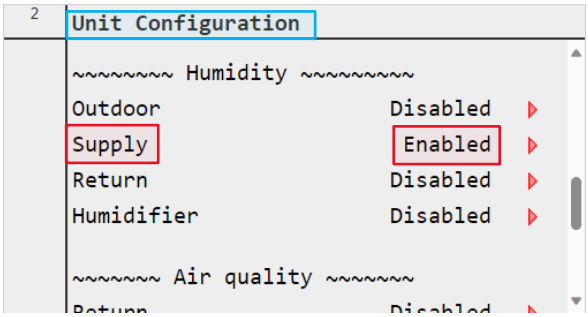
4.1.1 Electrical pre-heating

Explained in Pre-heating coil section

4.1.2 Electrical post-heating

Explained in Post-heating coil section

4.1.3 Supply air humidity



Wire the cables on green three-way connector.

4.1.4 Additional Outdoor air temperature probe

Explained in Pre-heating coil section

4.1.5 Additional Supply air temperature probe

Explained in Post-heating coil section

4.1.6 Pressure transducer for outdoor air pre-filter

Explained in Filter section

4.1.7 Pressure transducer for supply air filter

Explained in Filter section

4.1.8 Pressure transducer for AHU pressure control on supply air duct

Install the pressure outlet on the duct after the supply fan and connect it using a flexible tube to the + of P1 or P2 of Node#3, select by the interface which transducer you have connected it to and change fan control type from Airflow to Pressure.

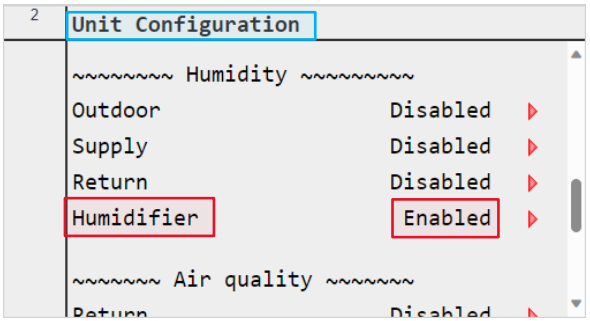
5 Optional on the electric panel

Other components can be installed directly on the X1 terminal block of the control panel and can be enabled in Unit Configuration:

5.1.1 RQ

Wire ON/OFF on 7-8 terminals, Alarm on 28-29, Signal on 34-35 and the Defrost on 55-56, follow the wiring diagram.
Enabling at section 2.3-2.2

5.1.2 Humidifier



Wire ON/OFF on 9-10 terminals, Alarm on 30-31 and Signal on 36-37.

5.1.3 Outdoor, Exhaust, Supply and Return Dampers

Explained in Dampers section

5.1.4 Water coils pumps

Explained in Coils section

5.1.5 Frost switch

It's always enabled, if you have a unit with a post and/or heat water coil just connect the component on terminals 22-23 (Warning! 230V is present) of terminal block X1 to enable the function.

5.1.6 Pol 902

5.1.7 Pol 908

5.1.8 Pol 822

Wire component on terminals 24-25

5.1.9 Pol 895

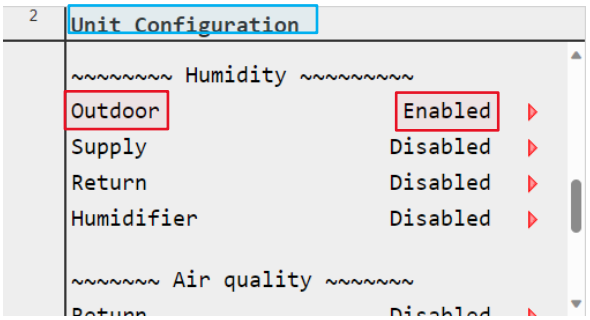
Wire component on terminals 24-25

5.1.10 Water coils valves

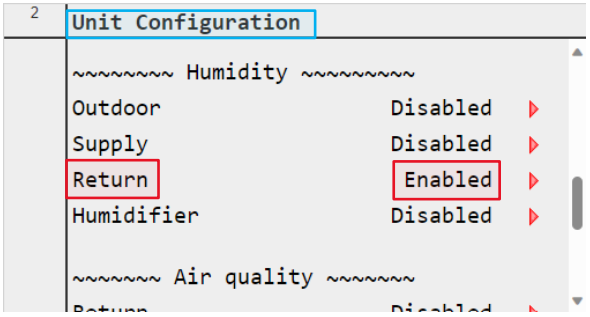
Explained in Coils section

5.1.11 Outdoor air humidity probe

Wire components on terminals 44-45-46.

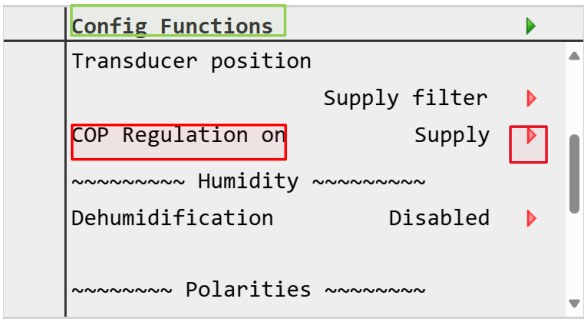


5.1.12 Return air humidity probe



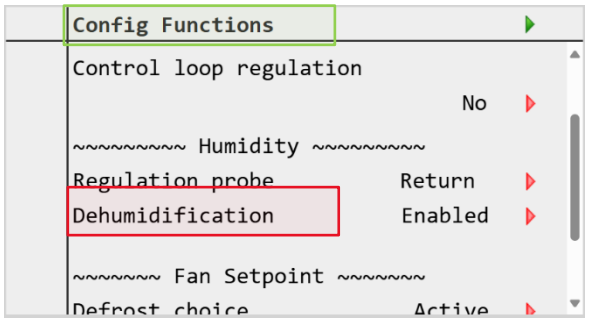
Wire components on terminal 47-48-49.

Once the Return air humidity is enabled you can choose to enable the Dehumidification in Configuration Functions

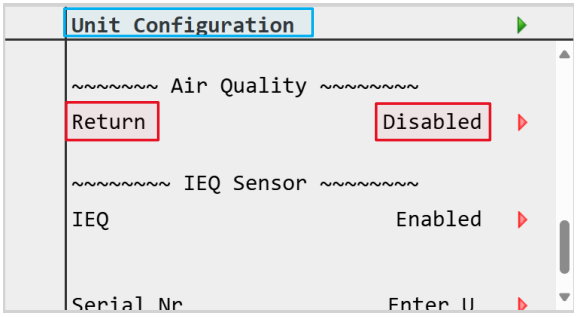


5.1.13 Humidity regulation probe

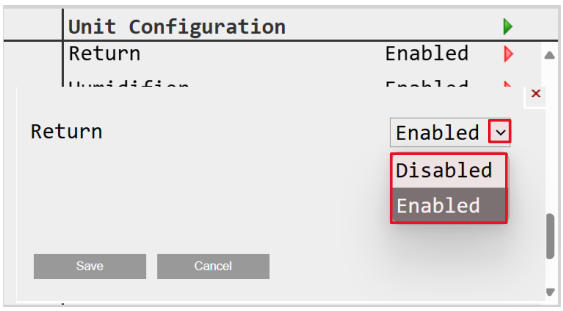
In Configuration Functions page – Humidity section, the user can select the regulation probe of humidity to be on supply or return



5.1.14 CO2 probe

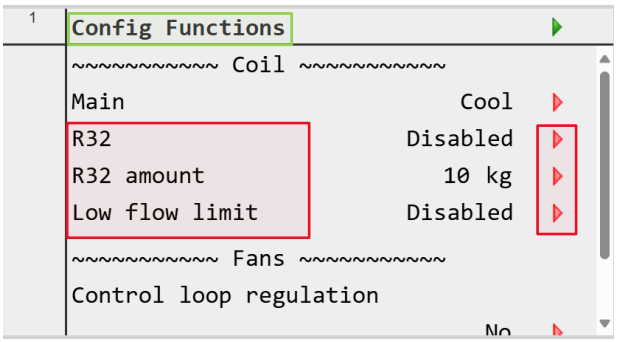


Wire components on terminal 50-51-52.



5.1.15 R32

If the Main coil is ERQ is present, a R32 enabling option is available in Configuration Function page



Notice that:

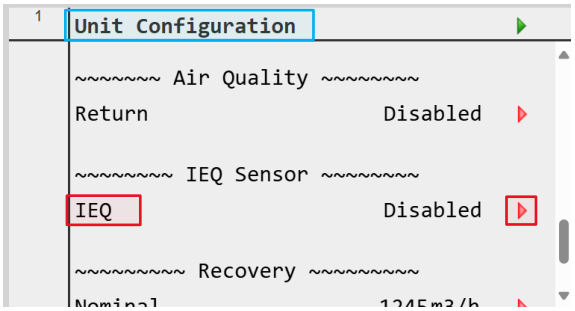
- R32 Low Flow is connected on terminal 18-17
- R32 Leakage is connected on terminal 57-58
- If enabled the Low Flow Alarm is triggered when the calculated threshold (which is obtained by multiplying the configured R32 amount by a fixed factor) is lower than the actual flow supply for a continuous duration of 5 seconds (or 120 seconds during startup).

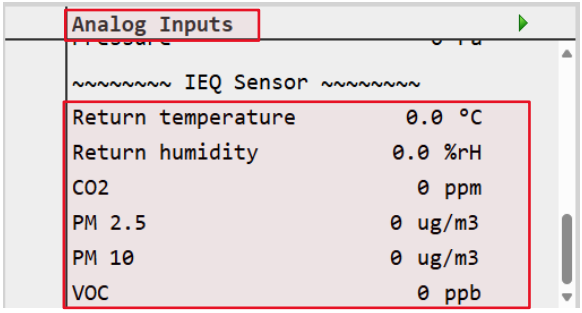
Notice also that:

- You can either have (Post-Heating Water Coil Pump ON/OFF) or (R32 Low Flow)
- You can either have (Post Heating Water Coil Pump Alarm) or (R32 Leakage)

5.1.16 IEQ Sensor

Enabling the IEQ Sensor in Configuration Unit shows its parameters in Analog Inputs Interface.





5.2 Other Function

5.2.1 AHU General Alarm
Free changeover contact to remote the alarm status of the unit.

5.2.2 AHU Run
Free changeover contact to have an enabling.

5.2.3 Cool/Heat Status (Output)
Free contact that changes depending on the type of treatment of the unit.

5.2.4 Fire Alarm
Connection for a possible fire detection component.

5.2.5 Comfort/Economy
Provision for a switch to change all set points (must have set comfort set points).

5.2.6 Unit Enable Switch
Provision for a remote switch to enable the unit.

5.2.7 Supply Temperature option
Having the Supply Temperature Optional with main and post heating II the regulation will be on the supply temperature optional

- Main
  - Heating → Supply Temperature Optional
  - Cooling → Supply Temperature Optional
  - Heating/Cooling → Supply Temperature Optional
    - Post I → Supply Temperature Optional
    - Post II → Supply Temperature Optional

- However, if the Supply Temperature Optional is in alarming, then:

  - Main
    - Heating → Supply Temperature
    - Cooling → Supply Temperature
    - Heating/Cooling → Supply Temperature
      - Post I → Supply Temperature
      - Post II → OFF

  - Notice that: Having the Supply Temperature Optional available will change the alarming of the Supply Temperature from fault to warning.
    And if both supply temperature and supply temperature optional are in alarm the unit goes in fault alarm.

5.2.8 Cool/Heat Status (Input)

Provision for a switch to change the type of treatment of the unit.

6 Main Menu screen

The unit is sold without its own on-board interface. The parameters can be accessed in various ways, via web interface if the unit is connected to the network, via Pol 895 with which you have the possibility to access the various menus of the AHU depending on the password entered and with Pol 822 which it only allows you to read the temperature of the environment where it is installed, turn the AHU ON/OFF, change the temperature set point and change the hot/cold status of the unit (if set by the HMI on the control).

6.1 LCD/Web interface

Through Main Menu screen the user can read the main important information necessary for monitoring the AHU status. In particular, the user can:

- Control the AHU status
- Read main values
- Switch unit Off/On
- Change the AHU Setpoint
- Access to the I/O overview menu
- Access settings
- About Unit
- Restore alarm conditions

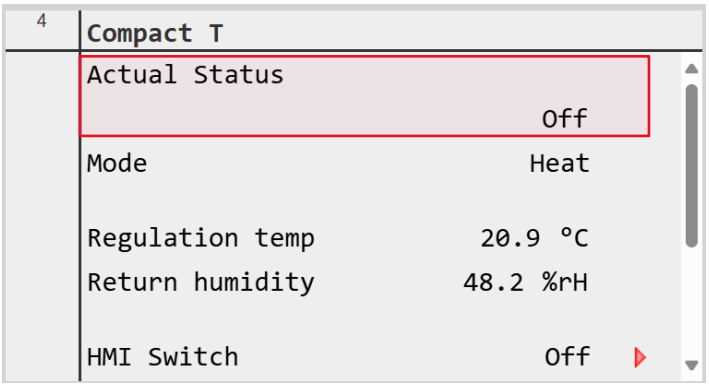
Next chapters will describe any item of the main menu. In the following table the user can find all the items ofthe main menu screen and the section where it is described.

Main Menu item	Section
Actual status	Display the actual status of the AHU. ***(Chapter 8)***
Mode	Display the type of treatment Cool or Heat ***(Chapter 9)***
Supply/Return temp	Display actual supply, return temperature used to regulate treatment system. (***Chapter 10***)
HMI switch	Change the unit status from OFF to On and vice versa.(***Chapter 11***)
Input/Output	Allow user to access the menu that shows all the input/output values of the AHU. (***Chapter 12***)
Setpoints	Allow user to access the menu that shows unit setpoints. (***Chapter 13***)
Settings	Allow the user to access the menu that shows all unit settings (up to the password input). (***Chapter 14***)
About unit	Allow the user to access information about the control system of the AHU. (***Chapter 16***)
Restore alarm condition	Allow the user to reset alarms once the problem is fixed. (***Chapter 17***)

7 Actual status

This item displays the actual status of the AHU. All possible statuses are reported in the table below.

HMI Path: Main page → Actual status



Main Menu item	Value	Description
Actual status	- Off by fire alarm - Off by alarm - Off by Recovery Frost - Off by Scheduler - Off by DI switch - Off by BMS - Off - On - On by Scheduler - Ventilation - Economy	– ***Off by fire alarm:*** Highest priority alarm, the unit is switched off immediately. – ***Off by alarm*** The unit is switched off due to alarms which doesn't allow the system to work in safety condition. – ***Off by Recovery Frost*** The unit has been temporarily switched off to ensure effective defrosting during the Frost Recovery process. – ***Off by Scheduler*** The unit has been switched off as per the scheduled shutdown. – ***Off by DI switch*** The unit is switched off by the selector on the electrical panel. – ***Off by BMS*** The unit is switched off by BMS command. – ***Off*** The unit is switched off by HMI command. – ***On*** The unit is switched on and operational. – ***On by Scheduler*** The unit has been switched on as per the scheduled turning on. – ***Ventilation*** The unit is in Ventilation mode. – ***Economy*** The unit is in Economy mode.

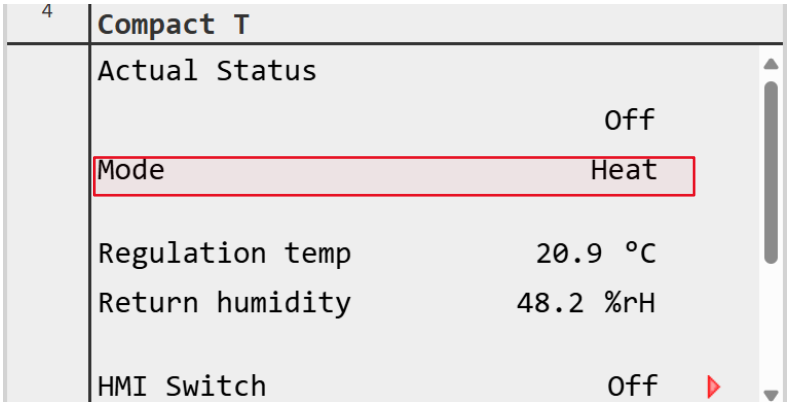
On status follows a priority chain according to the following table:

HMI switch	Panel switch	BMS	Unit actual status
Off	X	X	Off
On	Off	X	Off
On	On	Off	Off (if BMS enabled) On (if BMS disabled)
On	On	On	On

The "X" value means that whichever state doesn't affect the unit actual status.

8 Mode

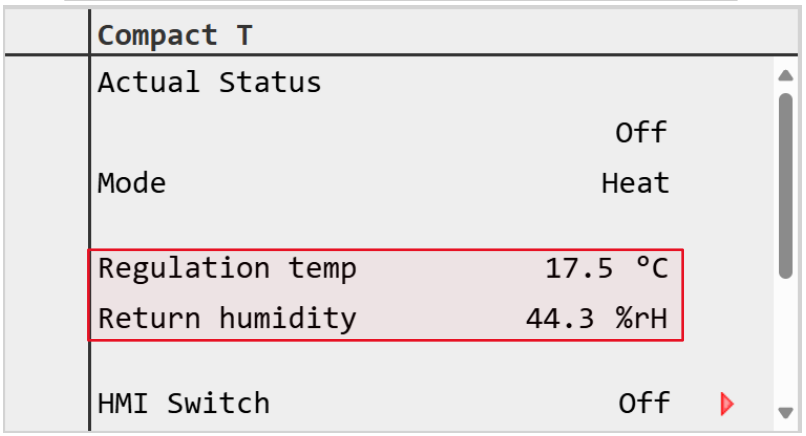
This item displays the mode of the AHU, the possible modes are cool or heat.



9 Regulation Temperature // Return Humidity

These items (read-only) display the actual air temperature value used to regulate the AHU and if enabled the Return Humidity.

HMI Path: Main page -> Regulation Temperature // Return Humidity

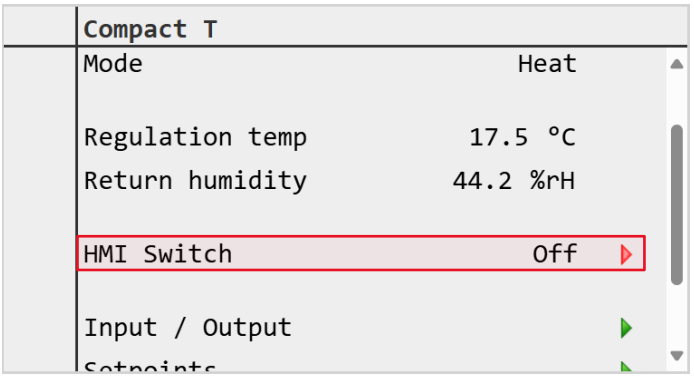


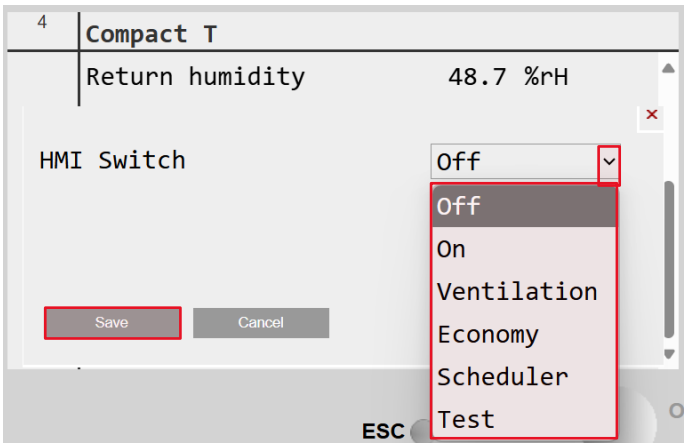
The probe will monitor the temperature value, and the system will use the temperature to ensure the setpoint is maintained.
The system will be able to provide optimized commands to correct any deviation from the temperature set point with all the treatment systems envisaged, increasing or decreasing the signal sent to the treatment system.
The same applies to the return probe if selected as the control temperature.

10 HMI Switch

This item displays and allows you to set the status of the AHU.

HMI Path: Main Menu → HMI Switch

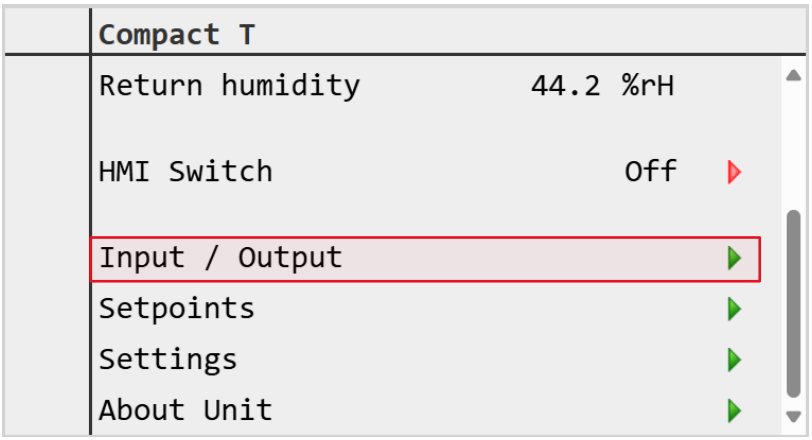




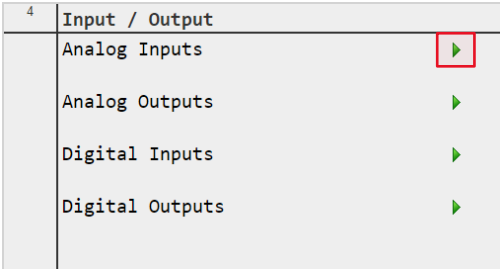
11 Input/Output

This menu (read-only) allows to access submenus of read values throughout the application.

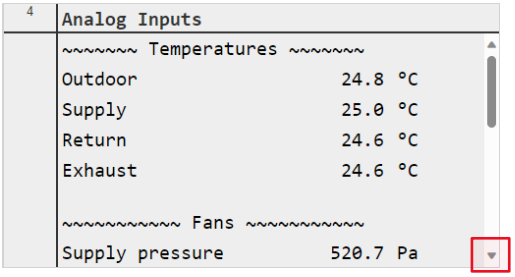
HMI Path: Main Menu → Input/Output



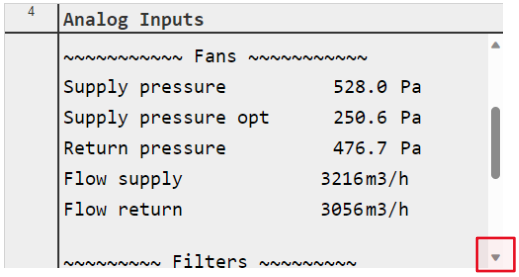
Selecting “Input/Output” a menu shows the access to sub menus dedicated to different signals of the system as explained below:

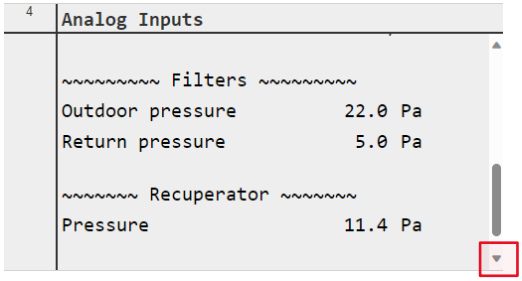


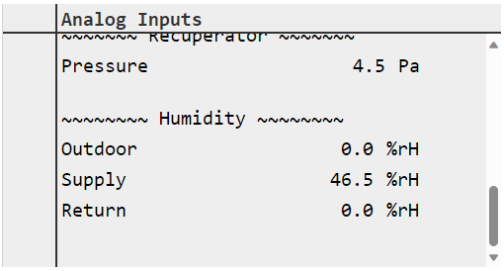
Select “Analog Inputs” to show probes and transducers values.

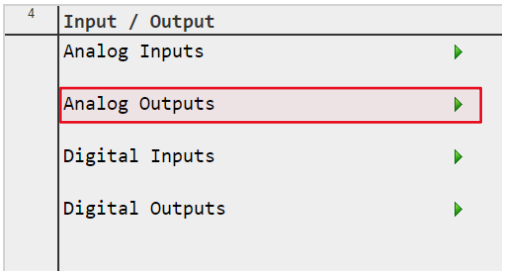


Scroll down to show remaining values.

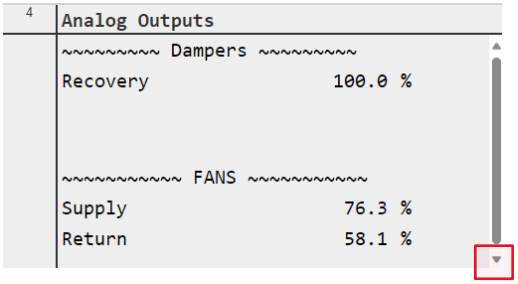




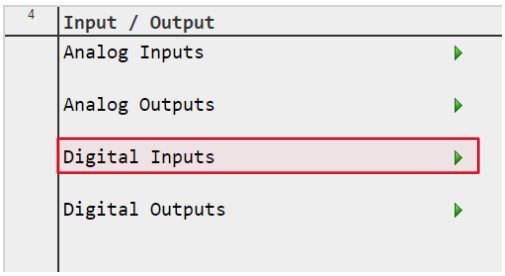




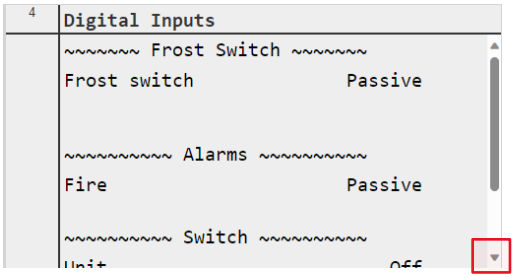
Select “Analog Outputs” to show coil and fans values.



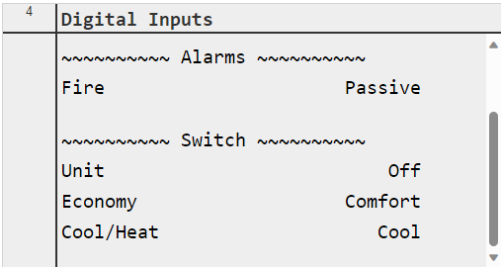
When you enable the components, the various sections will be created, scroll to view all.

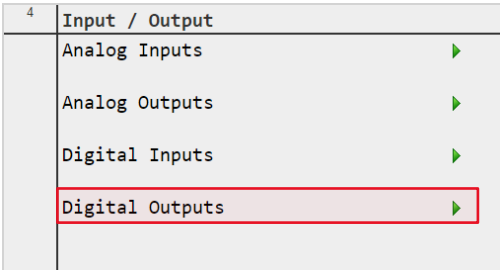


Select “Digital Inputs” to show alarms and switch status.

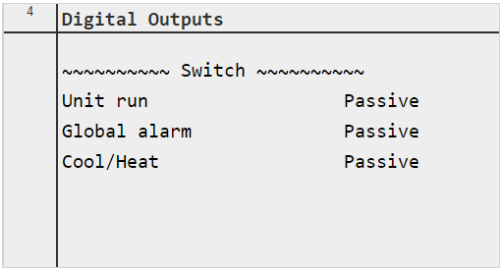


Scroll down to show remaining values.





Select “Digital Outputs” to show command and switch.

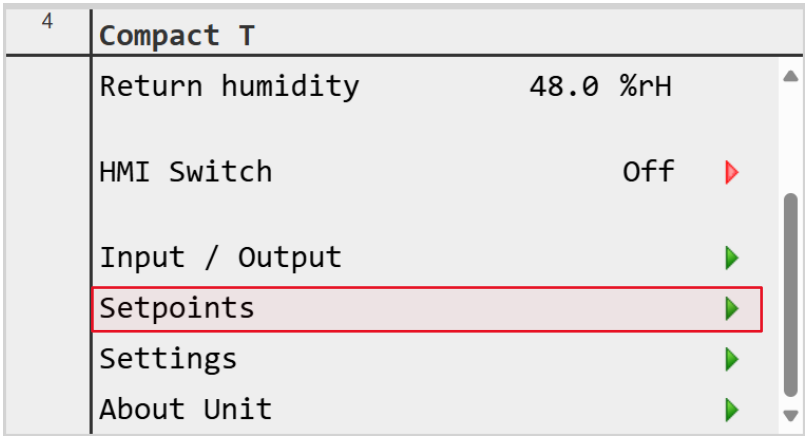


When you enable the components, the various sections will be created, scroll to view all.

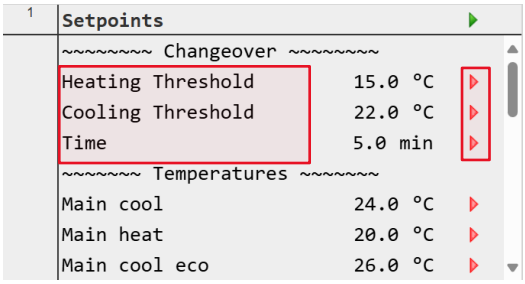
12 Setpoint

This menu allows the user to access all setpoints used to control AHU.

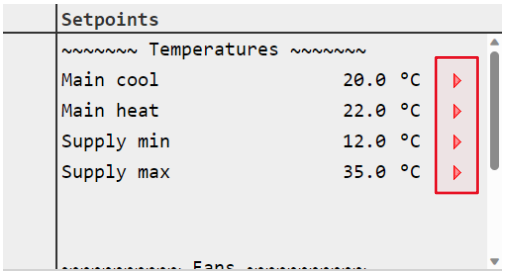
HMI Path: Main Menu → Setpoints



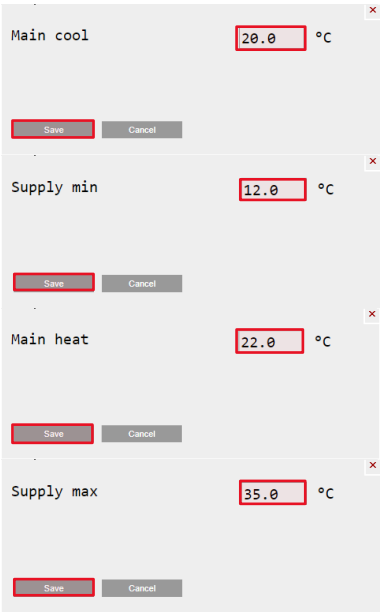
Setpoints for *Outdoor temperature* or *Regulation temperature* as the changeover method in Heat/Cool kind are available in Changeover section.



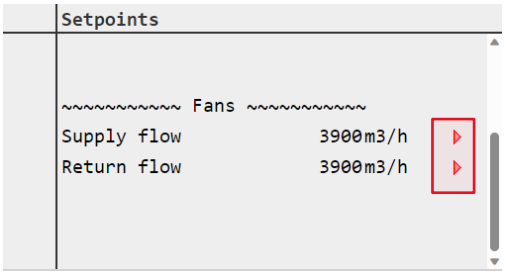
Selecting “Setpoints” a page allows to change all setpoints values, used by the system to target regulation algorithm.



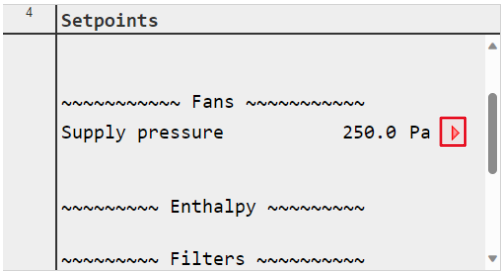
These setpoints is used to regulate the treatment system modulation by a PI algo using supply/return temperature as feedback.
if the regulation temperature is the return one you will have four setpoints (as in the image) if instead you regulate on the supply, you will only have the first two setpoints.



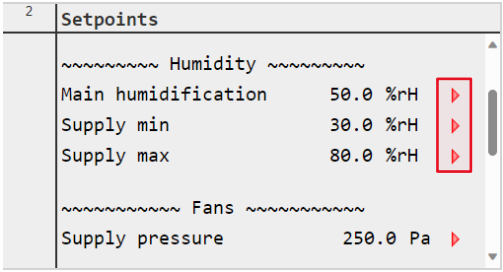
When adjusting on the return temperature we need to set the desired temperature on the Main cool or Main heat item after which we need to set the threshold below which we do not want to go in case of Cool (supply min) on the supply temperature and the threshold above which we do not want to go in case of Heat (supply max) also on the supply temperature.
This allows us to adjust the temperature within a range between the return and supply temperatures. This type of regulation is used to avoid excessive temperature changes and to have high energy savings.



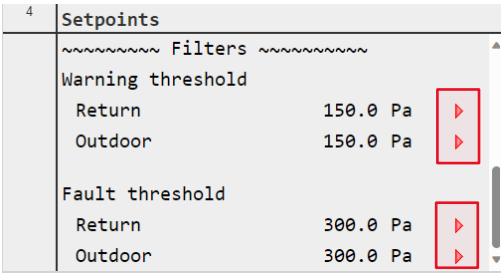
These setpoints is used to set the air flow or pressure you want for the environment and keep the fan as stable as possible.
Set both air flow.



This setpoint
is used to set the pressure you want for the environment and keep the fan as stable as possible.
Attention! to set the pressure you must change the tubes configuration on the supply and return Fans of base unit as per the instructions.
You can also enable the COP function if you have node#3 by connecting the + of DP1 or the of DP2, as required, to the pressure tap mounted on the supply duct. This function will adjust on the supply pressure and, thanks to the algorithm, manage the speed of the return fan. The setpoint displayed will be only that of the supply pressure.



If the humidifier and humidity probes are enabled, you can be set the humidification setpoint and the minimum and maximum supply humidity thresholds.
This control loop has the same operation as the temperature loop. this allows us to have high energy saving and excellent accuracy on the regulation.

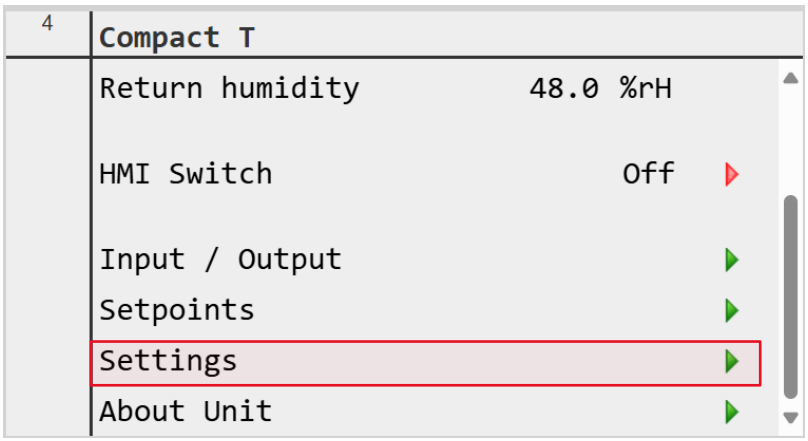


This setpoint is used to set the pressure difference you want to report on each activated filter. the first is just a warning, the second is a fault that stop the AHU.

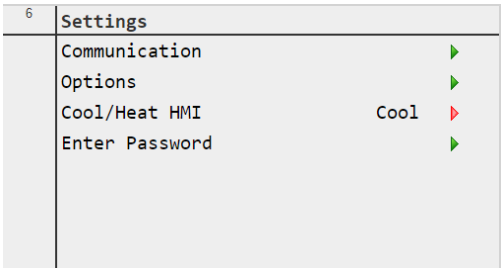
13 Settings

This menu, up to the password level, allows the user to access submenus for communication channels.

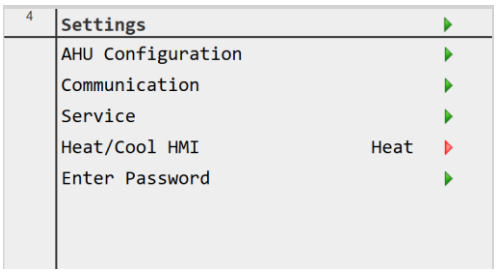
HMI Path: Main Menu → Setting



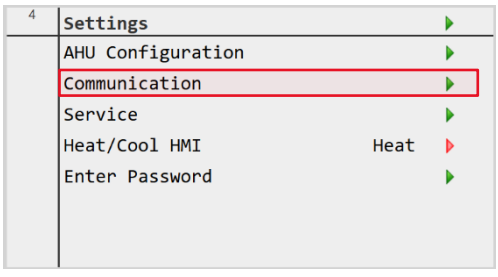
Selecting settings and logging with needed password to access different menu as show below:



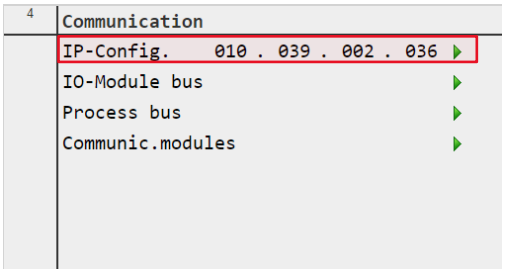
Menu with User level password.



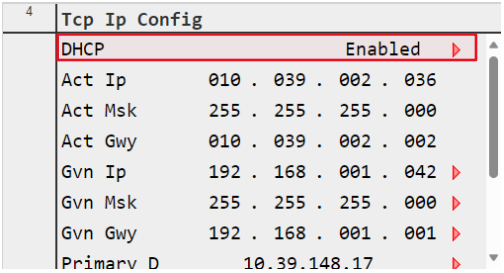
Menu with Maintenance level password.



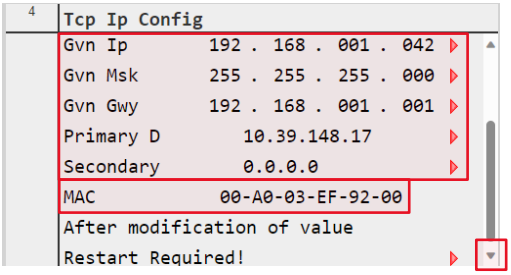
Select “Communication” to access different channel parametrization.



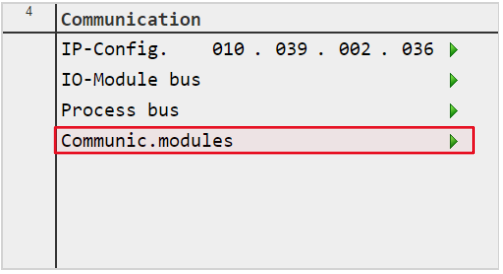
Select “IP-Config.” to access configuration of IP address of the control system.



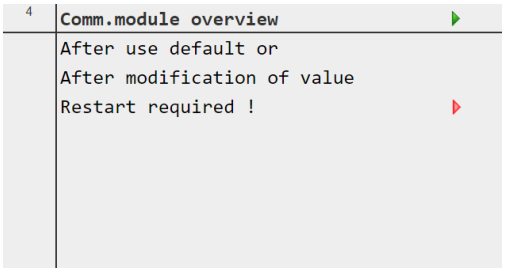
Select “DHCP” to enable or disable the service.



Scroll down to show remaining values.
In case of DHCP disabled use Gvn (given) fields to assign specific IP values to the control system.
MAC is the mac address of the POL688 (control system) of the unit.

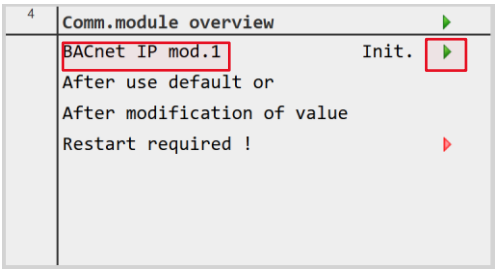


Select “Communic. modules” to access configuration of additional comm modules if present.

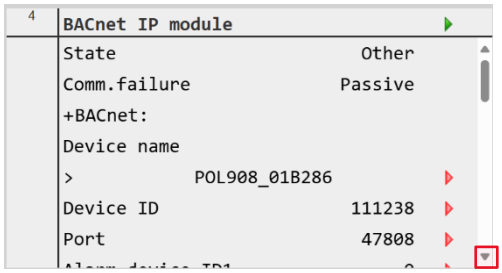


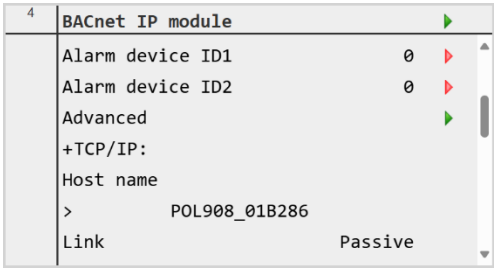
In the presence of a connected module, specific menu will appear to allow parametrization (communication setting) of every single module installed.

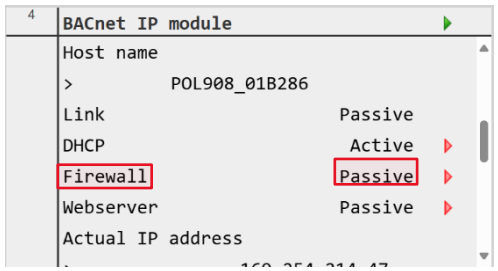
13.1 BACnet POL 908



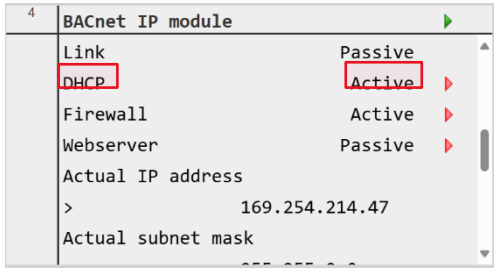
After connecting POL 908 to the main controller and restarting, a new menu appears (BACnet IP mod. x)



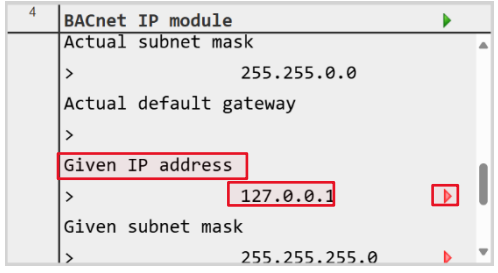




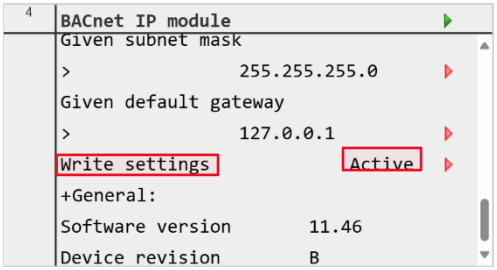
The Firewall must be disactivated.



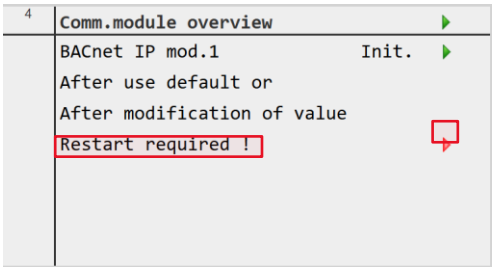
Be aware that the DHCP must be disactivated if POL908 is directly connected to a personal computer and activated if connected to the network.



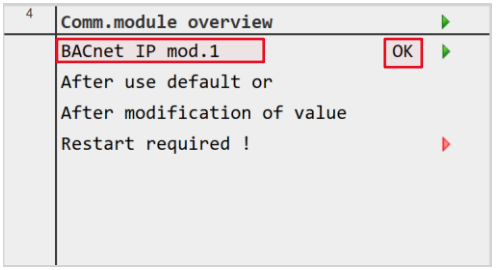
If the DHCP is passive (POL 908 connected point to point to a pc) a given IP address is required



Write Settings must be activated.

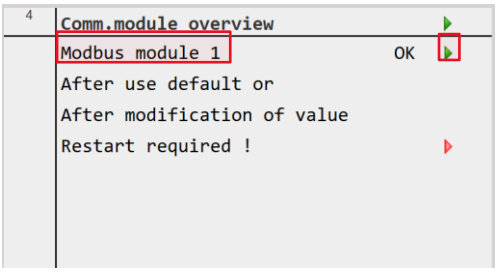


Now a restart is required.

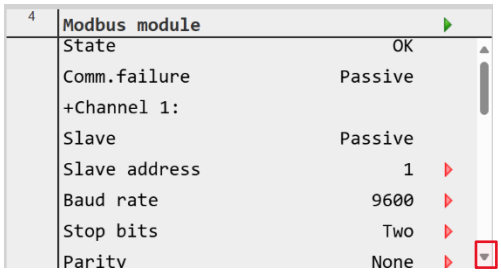


After restarting wait till seeing the OK message

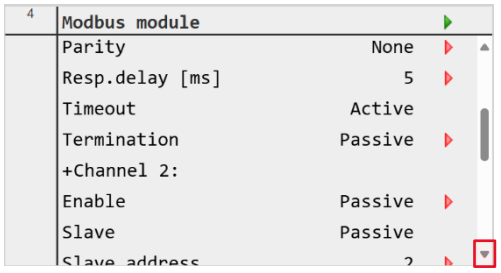
13.2 Modbus POL902

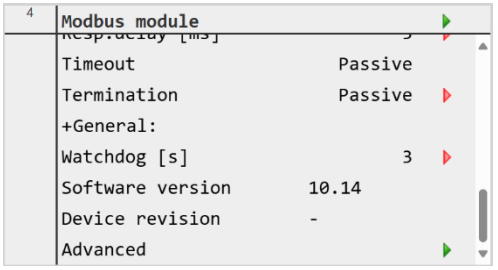


After connecting POL 902 to the main controller and restarting, a new menu appears (Modbus module x)



Modbus's settings can be modified as needed.



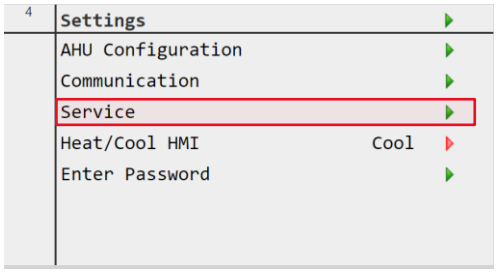


14 Service

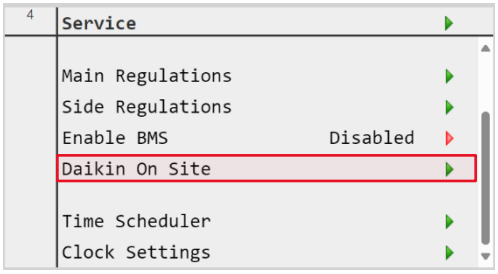
From Settings you can enter to Service where you can access several services as

- Daikin On Site
- Main regulation
- Language Selection
- Heat/Cool kind
- Enabling BMS
- Time Scheduler
- Clock Settings

HMI Path: Main Menu → Settings → Service

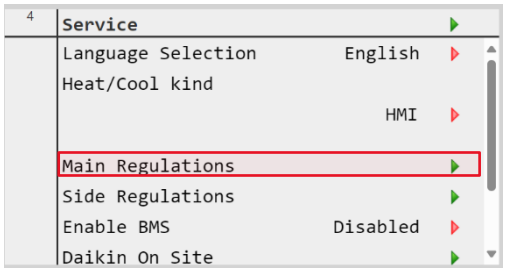


- Daikin On Site

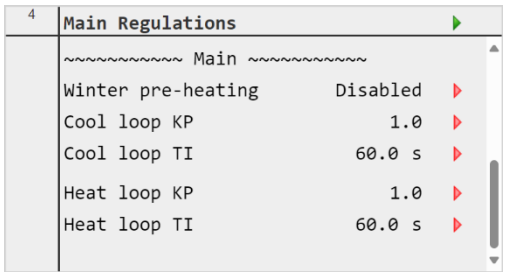


Select “Daikin on Site” to access cloud connection if available.

- Main Regulation

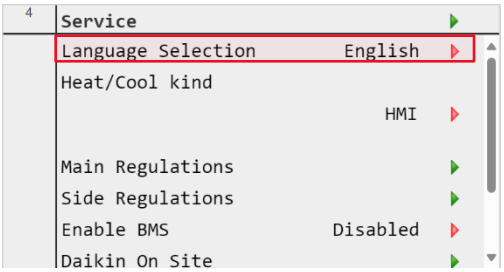


Select “Main Regulation” to adjust the loop timing of some features.



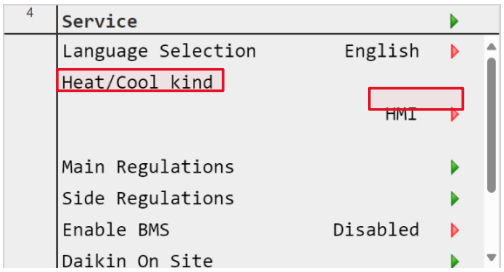
Enabling the Winter pre-heating feature gives the coils more time to heat before fans ventilate

- Language Selection



Select “Language Selection” to change language of HMI if available.

- Cool/Heat kind



Select “Cool/Heat kind” to access menu.

The user can select the method for determining the system’s operating mode (heating or cooling) using one of the following options:

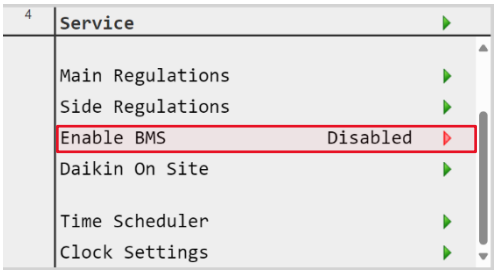
- HMI (using the POL895)
- Panel switch
- BMS
- Outdoor temperature
- Regulation temperature

When using Outdoor temperature or Regulation temperature as the changeover method, three setpoints are available in the Setpoints page – Changeover section:

- Heating Threshold
- Cooling Threshold
- Time

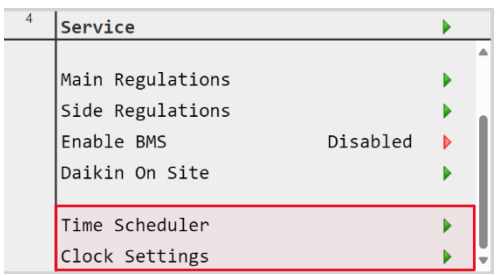
  - If the measured temperature exceeds the Cooling Threshold continuously for a period longer than the Time setpoint, the system switches to Cooling mode.
  - If the measured temperature falls below the Heating Threshold continuously for a period longer than the Time setpoint, the system switches to Heating mode.

- Enabling BMS



Select “Enable BMS” to access menu that Allow to enable or disable BMS functionality (Off / On of the unit). from emote).

- Time Scheduler and Clock Settings

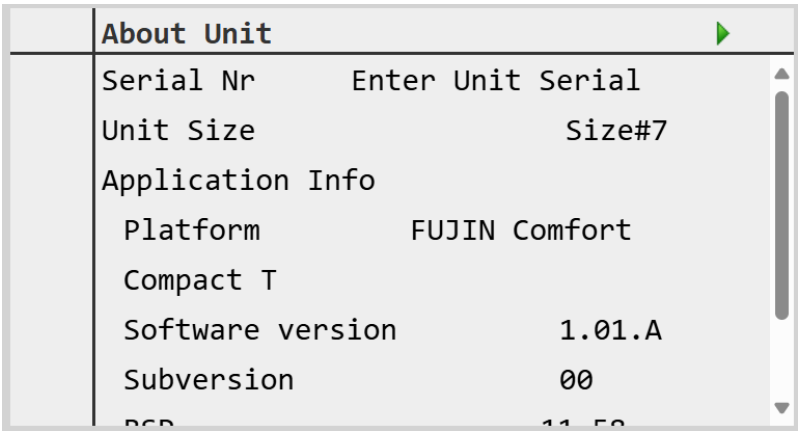


Select “Time Scheduler” and “Clock Settings” to program the start-up and shutdown of the unit by time slots and days of the week.

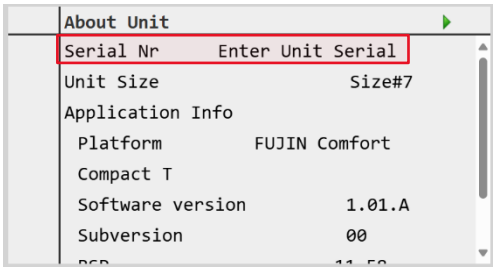
15 About Unit

This menu allows the user to access information about unit software.

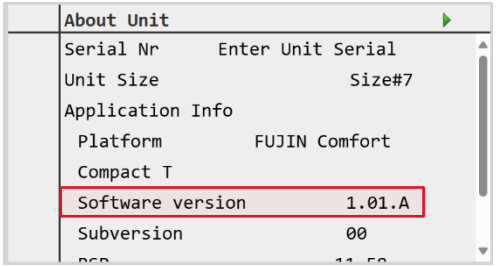
HMI Path: Main Menu -> About unit



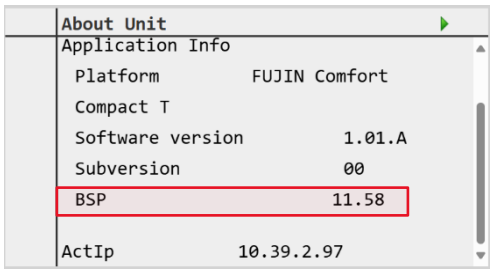
This page shows useful information to note while contacting service in case of need.
Single information is explained below:



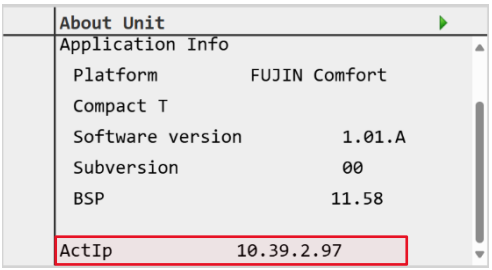
“Serial number” show the specific serial number of the unit.



“Software version:” shows the application release running on the unit control system.



“BSP” shows the release of the operating system running on the unit control system.



“Act IP” show the actual IP address of the control system board.

16 Alarm

16.1 Alarm list

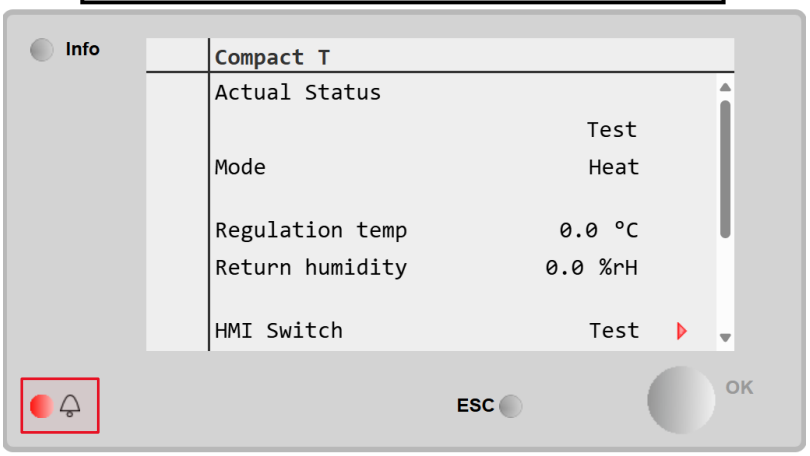
Alarms		Class	High Limit	Low Limit
Type	Name			
Digital Inputs	PreHeating electrical alarm	WA1		
	Combine pump alarm	WA1		
	ERQ alarm	WA1		
	Humidifier alarm	WA1		
	Fire alarm	FL1/WA1		
	Post heathing pump alarm	WA1		
	Post Heathing electrical alarm	WA1		
Analog inputs	Outdoor temperature	WA1	80 °C	- 20 °C
	Outdoor temperature optional	WA1	80 °C	- 20 °C
	Supply temperature	FL1/WA1	80 °C	- 20 °C
	Supply temperature optional	WA1	80 °C	- 20 °C
	Return temperature	WA1	80 °C	- 20 °C
	Exhaust temperature	WA1	1000 Pa	0 Pa
	Outdoor pre-filter optional pressure	WA1	1000 Pa	0 Pa
	Outdoor filter pressure	WA1	1000 Pa	0 Pa
	Supply fan pressure	FL1	1000 Pa	0 Pa
	Supply fan pressure optional	FL1	1000 Pa	0 Pa
	Return fan pressure optional	FL1	1000 Pa	0 Pa
	Supply filter pressure optional	WA1	1000 Pa	0 Pa
	Return filter pressure	WA1	1000 Pa	0 Pa
	Return fan pressure	FL1	1000 Pa	0 Pa
	Outdoor humidity	WA1	100 %r.H	0 %r.H
	Supply humidity	WA1	100 %r.H	0 %r.H
	Return humidity	WA1	100 %r.H	0 %r.H
	Return CO2	WA1	1950 ppb	0 ppb
Communication	FAN	FL1		
	Node#1	FL1		
	Node#2	FL1		
	Node#3	FL1		

Legend		
WA1 =	Warning	The unit will continue to work by reporting the alarm.
FL1 =	Fault	The unit will stop operation as it is a critical alarm.

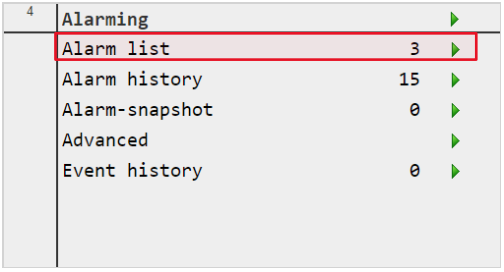
16.2 Alarm Reset

This menu allows the user to reset alarms once the problem is fixed.

HMI Path: Main Menu -> Red blinking bell

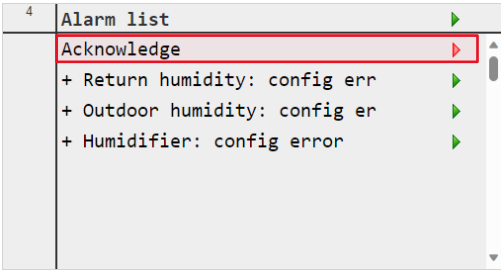


This page shows everything about the alarms and allows reset once the problem is fixed.
To access the reset, you must enter one of the passwords described in the previous chapters.



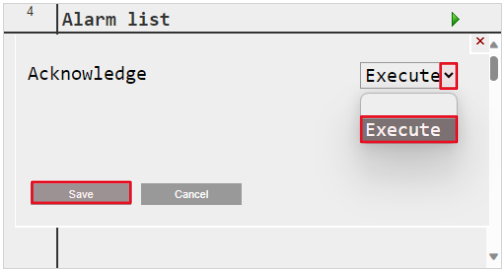
Select “Alarm list” to open the page where all the alarms are shown.

The number next to the green triangle means the number of alarms present.



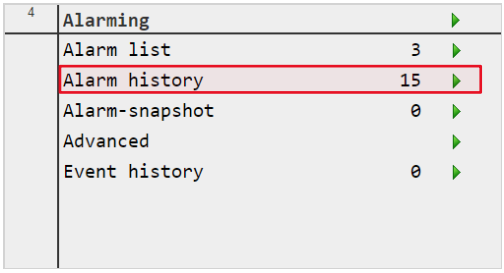
Select "Acknowledge" to open the page where you can execute the reset command select execute and press save.

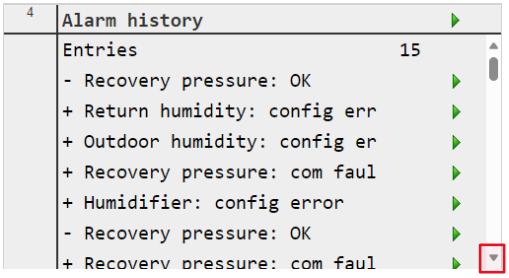
([User password](#) level or above is required).



If the problem has been solved the alarm will disappear from the list.

Select "Alarm history" to view the list of actions taken for each alarm.





Scroll to view all list.

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