MITSUBISHI ELECTRIC

Control system

Evolution+ Version ME52

s-MEXT-G06-M1

TECHNICAL MANUAL

Italian is the original language. All other languages are translations from the original.
For safe and correct use, carefully read the installation, use and maintenance manual of the unit.

English

Before carrying out any operation on the machine, you must carefully read this manual and make sure you understand all the instructions and information given

Keep this manual in a known and easily accessible place to refer to as necessary during the entire life-span of the machine.

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SYMBOLS

A number of symbols are used to highlight some parts of the text that are of particular importance. These are described below.



WARNING:
Information on the occurrence of situations/operations which, if ignored or not duly acted upon, could put not only the Unit but also the functions of the Software and the various electronic parts at risk.



OBLIGATION:
Indicates the need to take appropriate precautions/perform specific operations to avoid compromising protection of the points of access reserved for authorised operators and/or operators who guarantee the proper operation of the Unit.



INFORMATION:
Indicates technical information of particular importance which should not be neglected.



NOTICE:
This is used to address practices not connected with possible physical injury.

1 INTRODUCTION

1.1 Operating requirements

The software described in this document was designed for use with precision air-conditioning units such as “Close Control” units (for data processing centres).

The software was designed for use on the following control systems:

- Control board EVOLUTION+ – Small with user terminals and PGD1 graphic interface.
- Control board EVOLUTION+ – Medium with user terminals and PGD1 graphic interface.
- Control board EVOLUTION+ – Large with user terminals and PGD1 graphic interface.



INFORMATION:
The EVOLUTION+ controller software is protected by a digital signature.
This means that it can only work on boards supplied by MEHITS and not on boards purchased from other dealers.

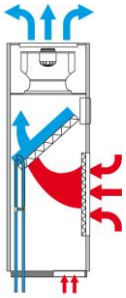
1.2 General functions

Below is a non-exhaustive list of the functions of the application:

- Adjustment of room temperature and humidity according to the setpoints entered using the user terminal.
- Complete visualisation of the operating status of the unit.
- Possibility of setting the adjustment parameters. Possibility of setting both the fundamental ones, by entering the **“User”** password, and the more advanced ones, by entering the **“Service”** and **“Factory”** (Manufacturer) password.
- Possibility of manually managing (manual override) all the unit devices.
- Management and acoustic and visual signalling (visual only by default) of faults (alarms), events and maintenance. It can store up to 200 events.
- Possibility of serial control and management.
- Possibility of operation of up to 10 units connected together in a local LAN network. Even with one or two backup units rotating on a time basis.

1.3 Units controlled

The application software in question can be installed on the following versions of air-conditioning units:

Type and diagram	Description	Unit code	Characteristics
SPLIT TYPE 	These direct expansion units use refrigerant for the transfer of heat. The air in the room is, therefore, treated in the evaporating coil where the refrigerant flows. The condensation heat is disposed of by one or two Mr. Slim external air condensing units which include an inverter compressor.	**s-MEXT**	• **Direct expansion coil to use in combination with one or two Mr. Slim condensing units** • **EC fans**

2 USER INTERFACE

2.1 User terminal

2.1.1 Technical characteristics

The user interface comprises:

- 132x64 pixel backlit LCD display (22 columns, 8 rows).
- 6 backlit buttons.

The connection between the microprocessor board and the user interface involves a 4-pole telephone cable equipped with RJ11 jack connector. The terminal is fed directly from the control board via this cable.

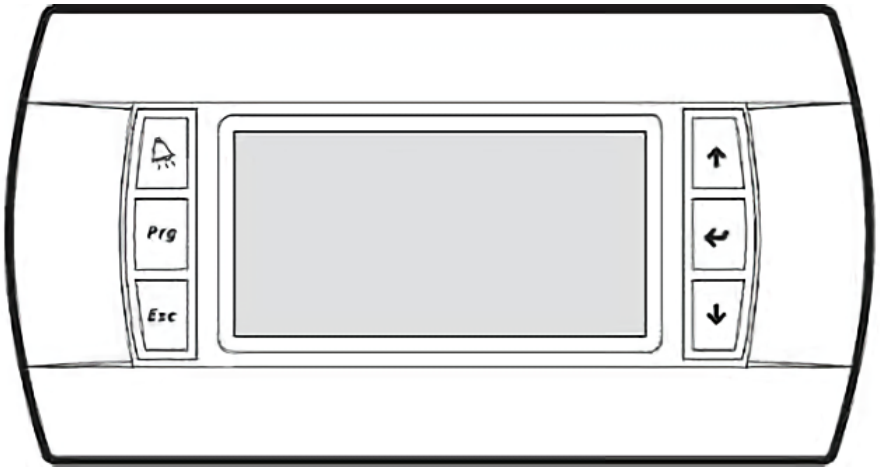


Figure 2-1: *user terminal.*

INFORMATION:
If the terminal is equipped with an acoustic warning, this is activated each time the number of active alarms increases.
To deactivate it, simply access the active alarms mask.
It deactivates automatically when there are no more active alarms.

2.1.2 Keys functions

Key	Name	Function
	**[ALARM]**	• **Everywhere*:*** accesses the Event menu where alarm and signalling events are displayed. • **In the "Event" menu:** restores the normal condition.
	**[PRG]**	• **In the main loop:** accesses the “Main” group. • **In the groups:** Accesses the selected menu or group • **In the menus:** returns to the group to which the menu belongs.
	**[ESC]**	• **In the main loop and in the "Main" group:** returns to the main mask. • **In other groups:** returns to the previous group. • **In the menus:** returns to the group to which the menu belongs.
	**[UP]**	• **Everywhere:** move around the masks and modify settable parameter values.
	**[DOWN]**	
	**[ENTER]**	• **In masks with a flashing cursor:** accesses the parameters that can be set and confirms the changes made. • **In the groups:** accesses the selected menu or group.

Table 1: *list of keys and related functions.*

Key combinations activate a set of specific functions:

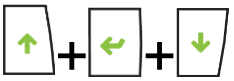
Keys	Name	Description
	**[ALARM + PRG + UP]**	• Increase or decrease screen contrast.
	**[ALARM + PRG + DOWN]**	
	**[ALARM + ESC]**	• In the shared keyboard mode, this combination allows to share screenshots and parameters among LAN connected units.
	**[UP + ENTER + DOWN]**	• Press for 5 seconds to set the LAN address of the user terminal.
	**[ALARM + ESC]**	• In the shared keyboard mode, this combination allows to share screenshots and parameters among LAN connected units.

Table 2: *list of key combinations and related functions.*

2.1.3 Key LED management

The key led indicators turn on in the following instances:

Keys	Name	Description
	**[ALARM]**	The LED is fixed in case of alarm and flashing in case of signal. Once the **[ALARM]** key is pressed, the LED becomes fixed. The LED is off if there are no active events. The LED flashes, with the “ACKNOWLEDGE ALARMS” function enabled, if there have been active alarms with automatic reset.
	**[PRG]**	• The LED is fixed when the unit is operating (ventilation ON).
	**[ESC]**	The LEDs are fixed in the following cases: • when any key is pressed; • when an alarm or signal is triggered. The LEDs will disengage along with the rear-lighting of the screen after 3 minutes of inactivity on the keyboard of the user terminal.
	**[UP]**	
	**[ENTER]**	
	**[DOWN]**	

Table 3: *list of LED indicators and related meanings.*

2.2 General characteristics of the interface

2.2.1 Groups of masks and menu structure

The tree structures for moving around the various menus of the controller are shown below.
Within the main loop or the different menus, indicated in italics, the **[UP]** and **[DOWN]** keys allow you to scroll through the different masks present.
Within the groups, indicated in bold, the **[UP]** and **[DOWN]** keys allow you to scroll through the various choices in the list.

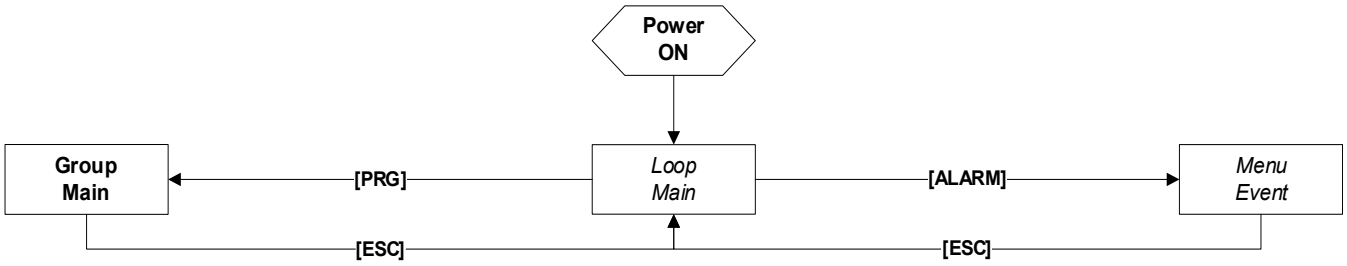


Figure 2-2: *basic navigation tree.*

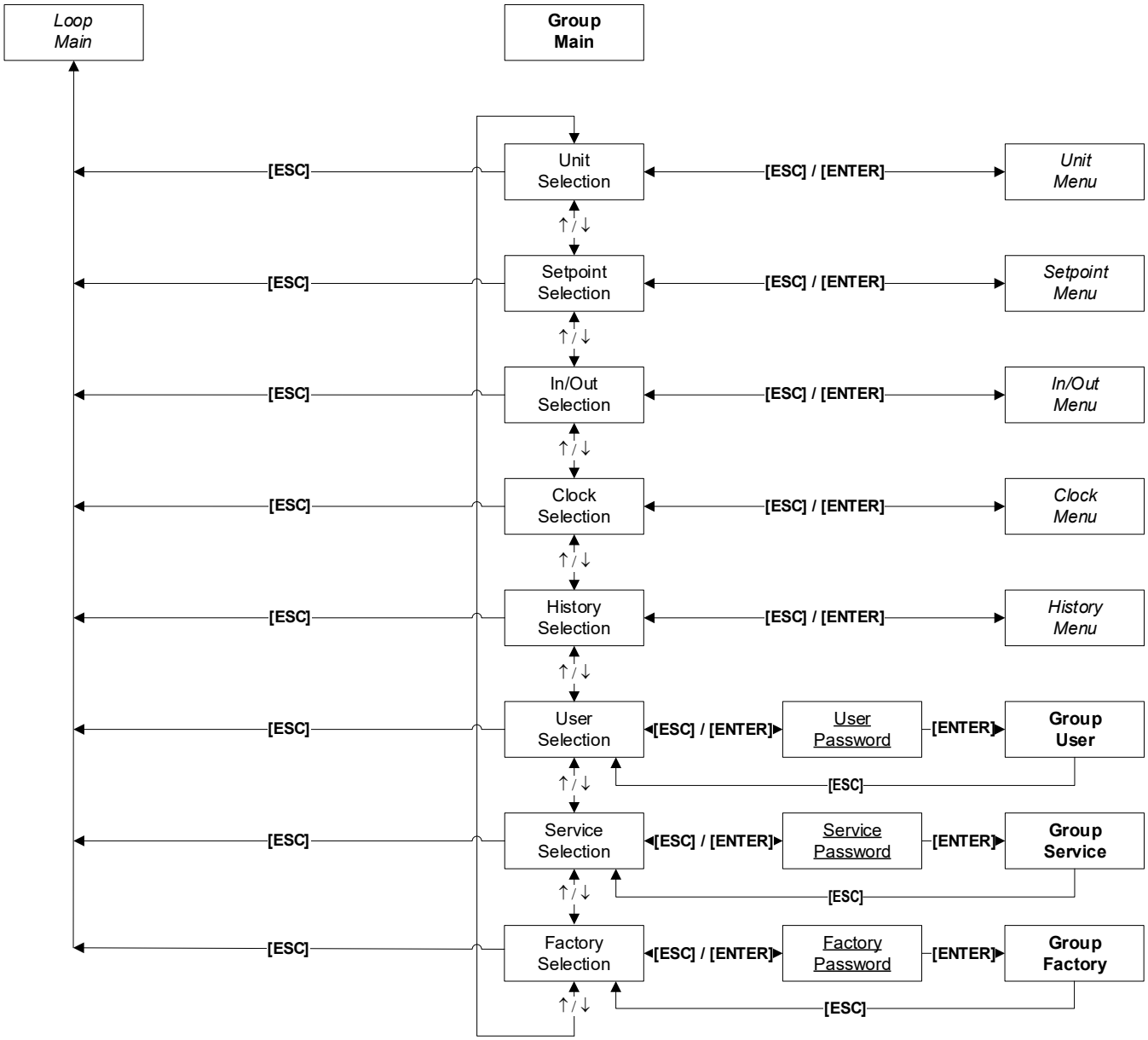


Figure 2-3: *tree for moving around the "Main" group.*

- The **"Unit" menu** displays the following information: temperature, pressure and circuit states.
- The **"Setpoint Menu"** is used to set the setpoints for the various available functions.
  It is possible to set different setpoints depending on the available operating modes (heat resources present, humidifier present, and dehumidifier present, etc.).
- The **"In/Out menu"** shows the status of the digital inputs and values read from the analogue inputs.
  It also shows the status of the digital outputs and the voltage supplied to the analogue outputs.
  If I/O expansions are present (depending on the configuration parameters), the inputs and outputs of the latter are also shown.
  Note: if an input is not configured, the display will read -88.8, if it is offline, it will read -99.9
- The **"Clock" menu** is used to set and display the date and time and configure the time bands.
- The **"Log menu"** is used to display the list of alarm events recorded by the unit.
- In the **"User" group** there are menus in which it is possible to display and set parameters related to the user programming of the unit.
- In the **"Service" group** there are menus in which it is possible to display and set parameters for the service configuration of the unit.
- In the **"Factory" group** there are menus in which it is possible to display and set parameters for the manufacturer's configuration of the unit.

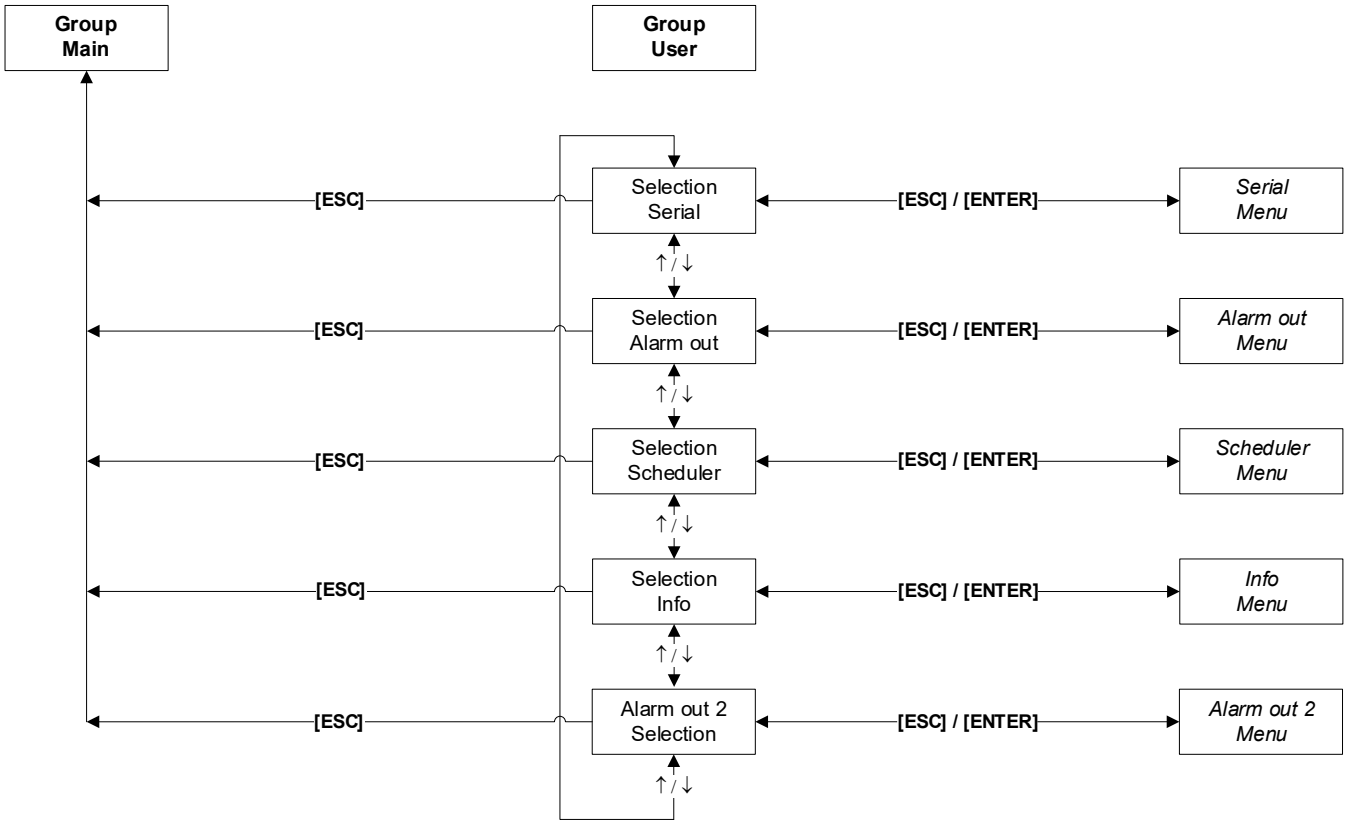


Figure 2-4: *tree for moving around the "User" group.*

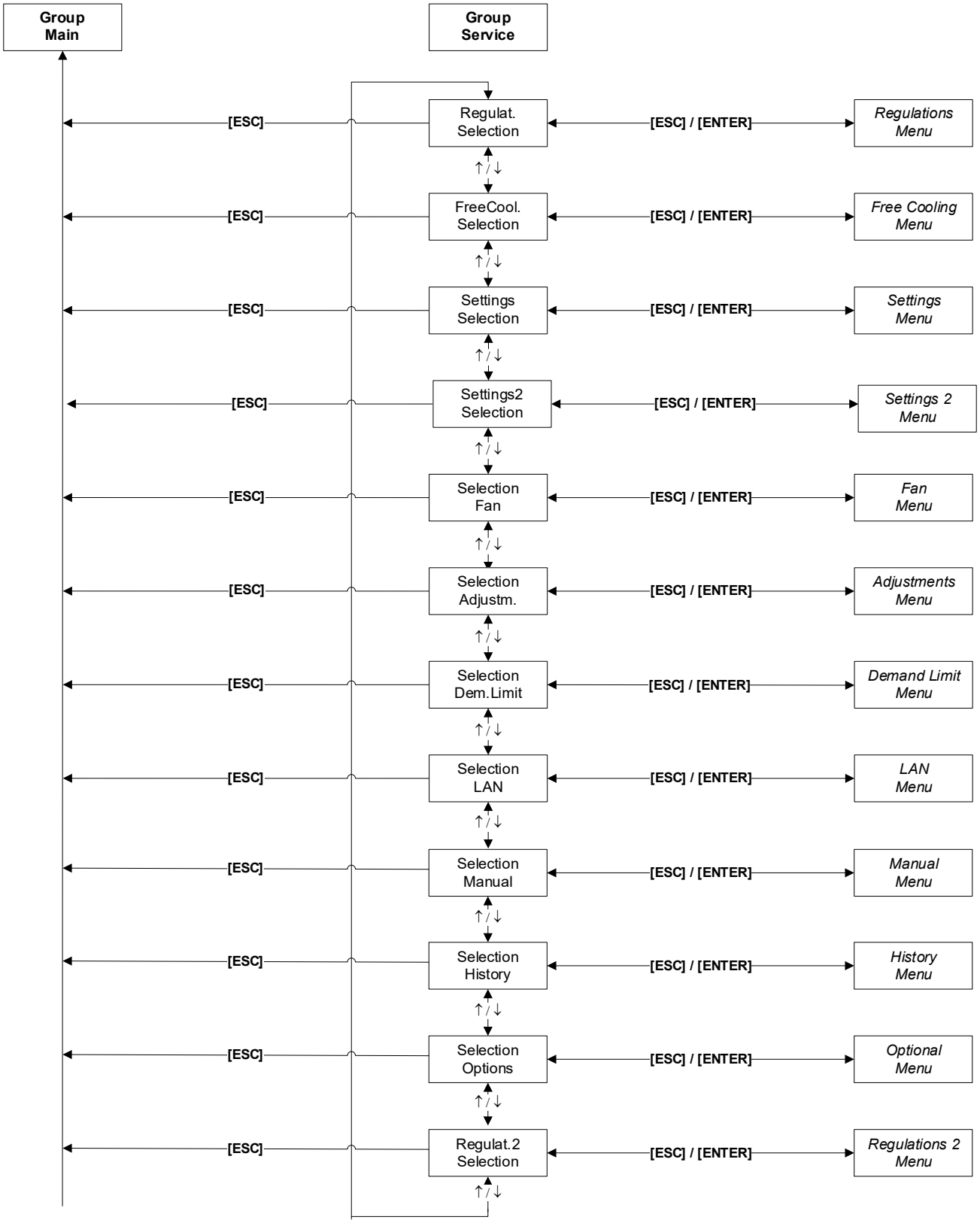


Figure 2-5: *tree for moving around the "Service" group.*

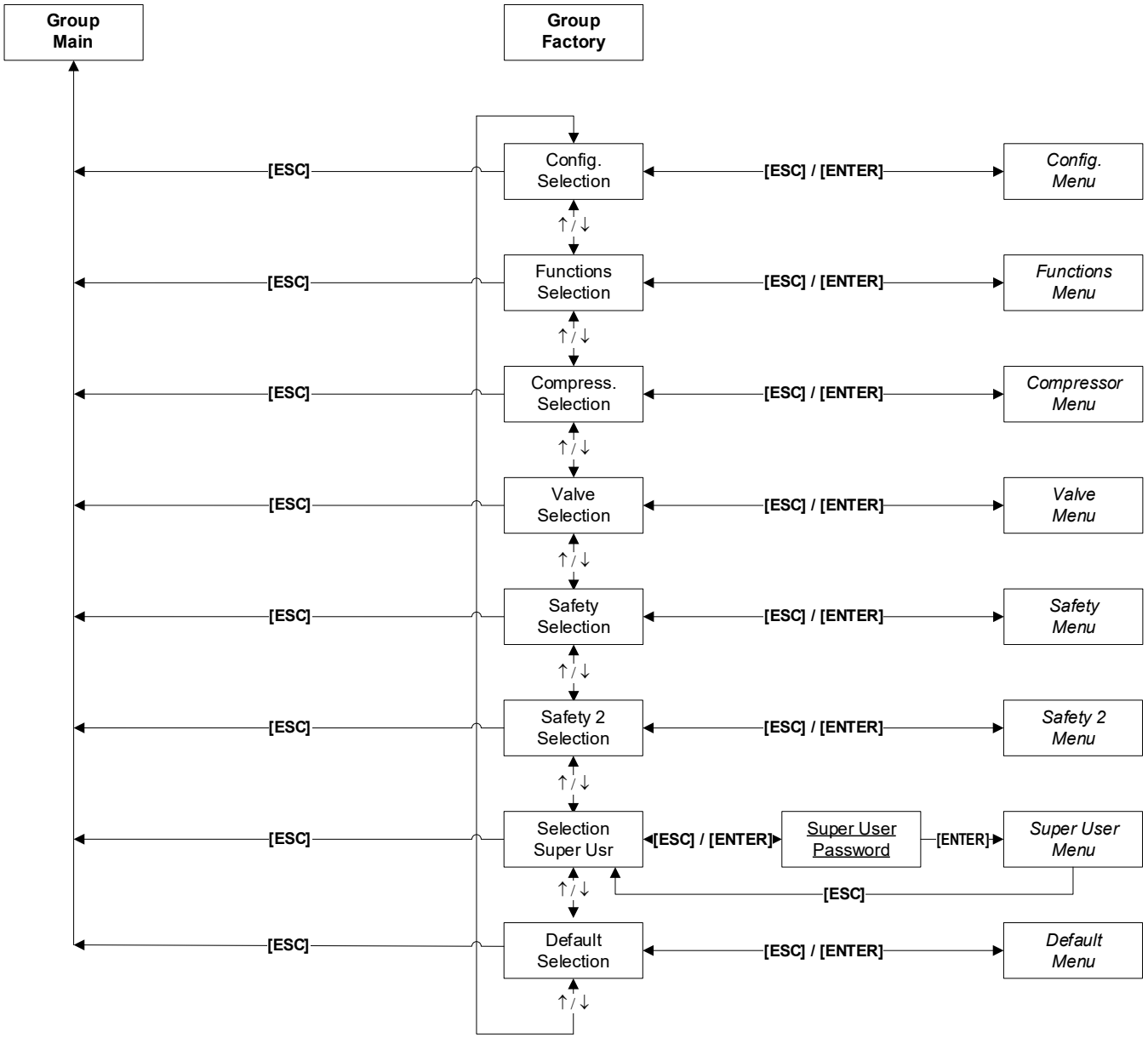


Figure 2-6: *tree for moving around the "Factory" group.*

Access to the **"User"**, **"Service"** and **"Factory" groups** is by means of passwords, the management of which is explained in the following chapter.

2.2.2 Password management

There are three menu groups that may be accessed upon entering a numeric password. Their access levels are as follows:

- **“User” password**, for the user.
- **“Service” password**, for maintenance and assistance operators.
- **“Factory” password**, for the sole and exclusive use of the manufacturer’s employees (not to be disclosed externally).

Within the "**Service**" menu there is an additional menu for the sole and exclusive use and knowledge of the personnel belonging to the manufacturing factory (it is disclosed externally only on request).

Some clarifications are given below:

- To enter the password, type every single digit in the set order from left to right.
- To move from one digit to the next press **[ENTER]**.
- To go back one digit just press **[ESC]**. If the cursor should be on the first digit to the left, then this brings back to the main window.

Below are the values of the **"User" password**, the **"Service" password**, the **"Manual" password** and the **"Factory” password**.

“User” Password
1234 (modifiable)

“Service” Password
9990 (modifiable)

“Manual” Password
1174 (not modifiable)

“Factory” Password
0000009982 (modifiable)

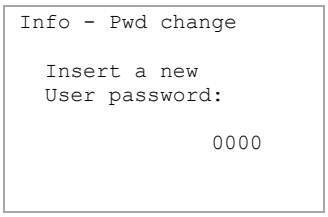
The **“Factory” password** is managed using the Service software, which for each controller configures a password, which is then saved in the job. The password is only available to the after-sales service.

Once at the last digit of the password, by pressing the **[ENTER]** key the software will compare the entered password with those stored in its memory. If the password entered is incorrect, the *"Wrong Password”* message is displayed for a few seconds. All the fields are cleared and the cursor moves back to the first entry position to the left.

To go back with the cursor to the previous password digit, just press the **[ESC]** key. It is then possible to return to the menu selection.

The **"Factory" password** can also be used when **"Service" passwords**, **"Manual"** and **"User” passwords** are requested. The **“Service” password** can also be used when the **“User” password** is requested.

To change the **“User” password** access the **“Info” menu** inside the **“User” group** and scroll the masks until the **“User” password** change mask appears.



The window to change the **“Service” password**, which can be accessed by entering the **“Settings” menu**, under the **“Service” group**.

The window to change the **“Factory” password** can be accessed from the **“Config” menu”**, under the **“Factory” group**. The **"Manual" password** is not editable.



OBLIGATION:
If the “Factory” password is changed, remember to re-enter the password generated by the “Service” software at the end of the test, after maintenance is completed.



INFORMATION:
The parameters in the menus of the “Factory” group can only be changed after switching off the unit (fan OFF).

With the **“User”** password (but also with **“Factory”** and **“Service”** passwords) it is possible to protect setpoint changes, unit status (on/off) and to display alarms. The function can be enabled from the **“Info”** menu within the **“User”** group (*user password request configuration for unlocking the display*).
If the **“User”** password request is enabled but you do not have one of the three passwords **(“Factory”**, **“Service”** and **“User”**), you can only view the machine status and probe values.

2.2.3 Language management

The controller pCO5+ has an additional memory containing all the supported languages.
During programming, all the languages are loaded to the controller and the end user can select the language to display.

The table below shows the languages available and their international codes:

English	Italian	German	Spanish	French	Swedish	Portuguese	Polish	Russian	Norwegian	Turkish	Greek	Chinese
EN	**EN**	**DE**	**ES**	**FR**	**SV**	**PT**	**PL**	**RU**	**NO**	**TR**	**EL**	**ZH**

To select any of the available languages, proceed as follows:

1)	Press **[ALARM]** and **[ENTER]** together. Hold them down until the mask shown to the side appears.	`> SYSTEM INFORMATION`
		`  LOG DATA`
		`  OTHER INFORMATION`
		`  FLASH NAND FILES`

2)	Press **[UP]** and **[DOWN]** to move the cursor “>” to the “FLASH NAND FILES” row and press **[ENTER]** to confirm the selection.	`  SYSTEM INFORMATION`
		`  LOG DATA`
		`  OTHER INFORMATION`
		`> FLASH NAND FILES`

3)	The mask shown at the side will appear, to confirm access to the “FLASH NAND FILES” menu. Press **[ESC]** to exit the menu without changing the language. Press **[UP]** and **[DOWN]** to scroll between the various files available.	`[ ]` `ME52r00xEN.iup`
4)	To select the files for the desired language, press **[ENTER]**. The displayed file is then selected and an "X" appears in square brackets. Press **[ENTER]** again to deselect the file.	`[X]` `ME52r00xEN.iup`
5)	Files with “.iup” extensions concern the language. The “.bin” file concerns the application. The “.grp” file concerns the graphic resources.	`[ ]` `ME52r00x.grp`
6)	It is necessary to select **exclusively an “.iup” file** depending on the language that you want to display (refer to the table showing the languages and international language codes).	`[X]` `ME52r00xEN.iup`
7)	Select the “.bin” file.	`[X]` `ME52r00x.bin`
8)	Select the “.grp” file.	`[X]` `ME52r00x.grp`

9)	After selecting one of the ".iup" files, the ".bin" file and the ".grp" file, press **[UP]** or **[DOWN]** to find the mask on the side and press **[ENTER].**	Press Enter to start copying
9b)	When requested by the mask at the side press **[ENTER]** and leave "NO" indicated. This mask only appears in large size software versions. Therefore it may not appear.	Erase Log data? NO press ENTER to conf.
10)	The mask on the side will appear, indicating that the files are being copied.	copy process is running
11)	At the end of the installation process, the mask on the side appears to confirm successful copying.	ok, copy completed. wait for restart
12)	During the process, messages such as "I/O BOARD FAULT" and "NO LINK" may appear. This is caused by the application restart process. The messages will disappear after a few seconds.	I/O BOARD FAULT NO LINK
13)	Once the operation has finished, the masks will appear in the selected language. The installed language can be checked in the "About" mask of the "Unit" menu.	Unit - About Evolution+ Code ME 52.00 EN

Perform all the steps of the procedure. If even just one file is omitted, the following faults may occur:

No ".iup" file selected. This means that no language has been selected and an empty mask will appear. Repeat the operation taking care to select a ".iup" file.	Select one iup file
No ".bin" file selected. This means that the application file has not been selected. Press **[ESC]** and repeat the operation, taking care to select the ".bin" file	ERROR : press menu select one blb file
No ".grp" file selected. This means that the graphics file has not been selected. The language and the application have been installed but the images will not be processed. Repeat the operation, taking care to select a ".grp" file.	Select one blb file
No file has been selected.	No files selected
An error occurred while copying to the NOR memory.	Error copying files
An error occurred while reading the file from the NAND memory.	Error reading file (11)
CRC (verification code) incorrectly calculated while copying to the NOR memory.	Error reading file (12)
An error occurred while reading the file from the NAND memory.	Error reading file (13)
An error occurred while writing to the NOR memory.	Writing error (14)
The file is too large to be a correct DEV file.	DEV file not valid
The file is not a correct DEV (heading not recognised).	Code error 9
All other situations.	Code error X



INFORMATION:
If no key is pressed for a few seconds, the display will exit the configuration screen. In this case, the procedure must be repeated.

3 GRAPHICAL TOUCH SCREEN INTERFACE

3.1 Front panel



Description:



[LED]

Steady red: one or more active alarms in the Red unit flashing: alarms to be checked in the log section (if acknowledge function enabled)

3.2 Hardware description



1. Micro USB port.
2. 24 VDC power input.
3. Serial output 1 for communication with the controller.

4 GENERAL WARNINGS



WARNING:
The Touch Screen terminal must only be powered with direct current at 24VDC.



WARNING:
Different input voltage and current values may damage the device.



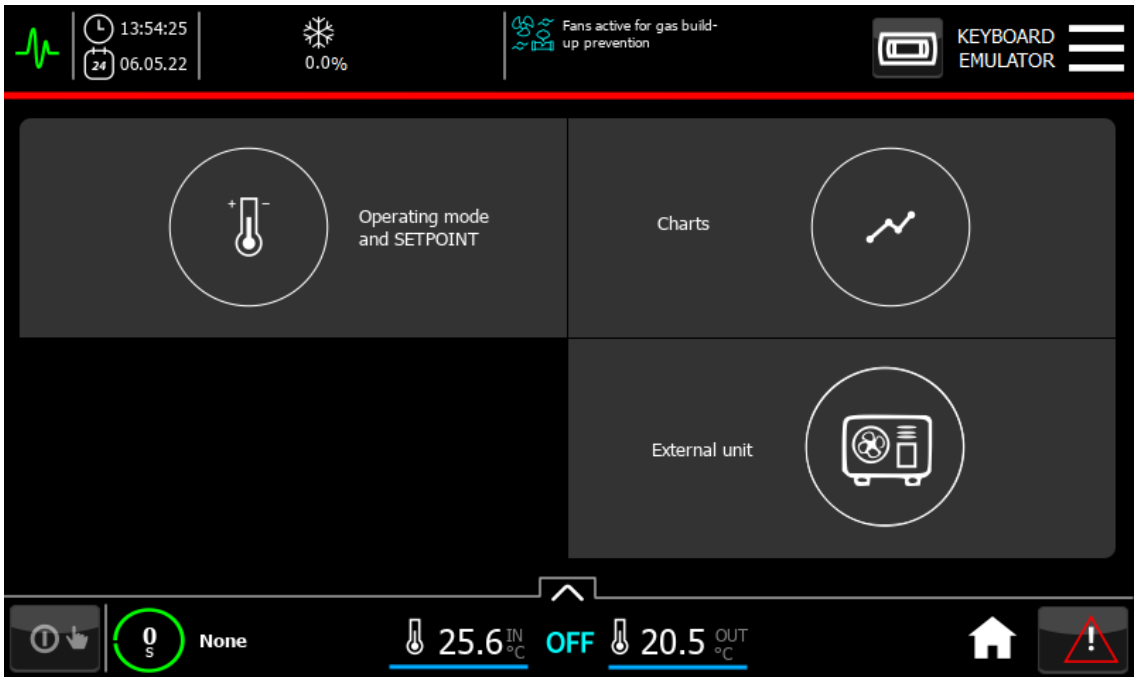
WARNING:
Use appropriate eye lugs for the relative terminals.
Loosen each screw, insert the eye lugs and then tighten the screws.
Afterwards, pull the cables slightly to check they are correctly tightened.



WARNING:
If used at particularly low temperatures, the response time of the display may increase noticeably.
This is normal and does not indicate a malfunction.

5 HOMEPAGE

In case of presence of s-MEXT External Unit, the following screen appears:





Button to access the Setpoint menu and Operating Mode



Button to access the Charts page



External Unit Access Button

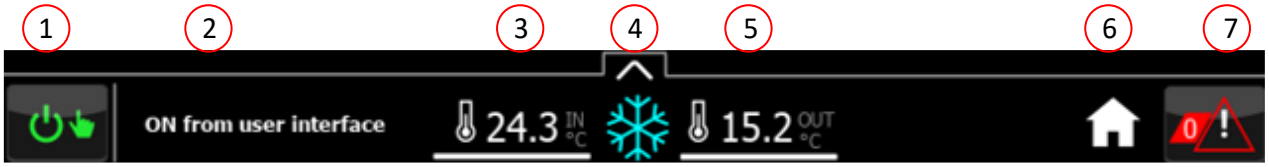
6 NAVIGATION

All the interface screens feature an upper and a lower bar:



The upper bar comprises, starting from the left:

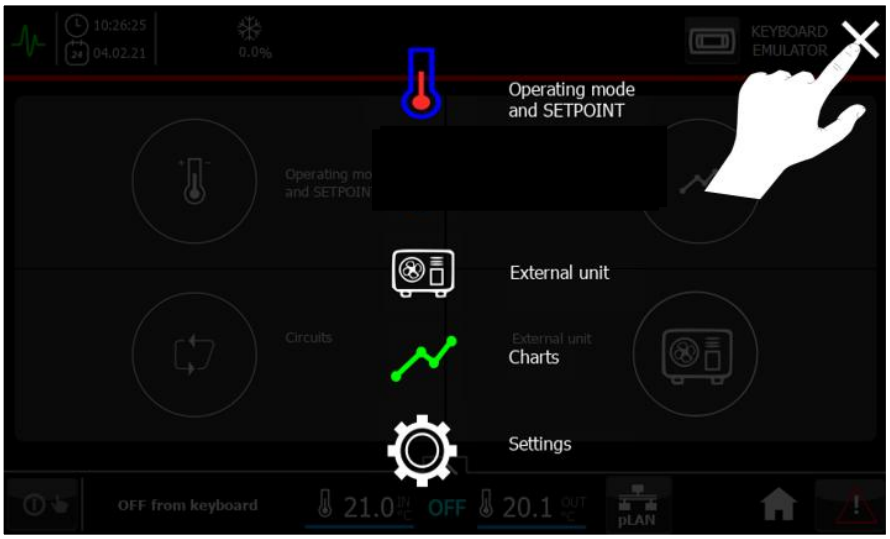
1. Status of connection with the controller. Green: connection OK; Red: connection error.
2. Date and Time.
3. External temperature value read by the dedicated probe.
4. Active percentage of *Cold*.
5. Active percentage of *Heating*.
6. Active percentage of *Post-Heating*.
7. Unit active functions.
8. Power unit readings.
9. PGD1 keyboard emulator.
10. Rapid access to the menu.



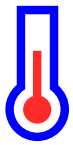
The lower bar comprises, starting from the left:

1. ON/OFF button.
2. Unit status.
3. Inlet air temperature.
4. Operating mode button.
5. Temperature of outlet air or percentage of humidity.
6. Home button for returning to the Homepage
7. Alarm button to access the alarm management screen, and the number of active alarms.

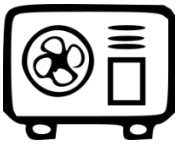
7 SLIDE-IN RAPID MENU



In the presence of External Unit, the drop-down “rapid menu” is used to access the following submenus:



Setpoint submenu & Operating Mode



External Unit submenu



Charts submenu

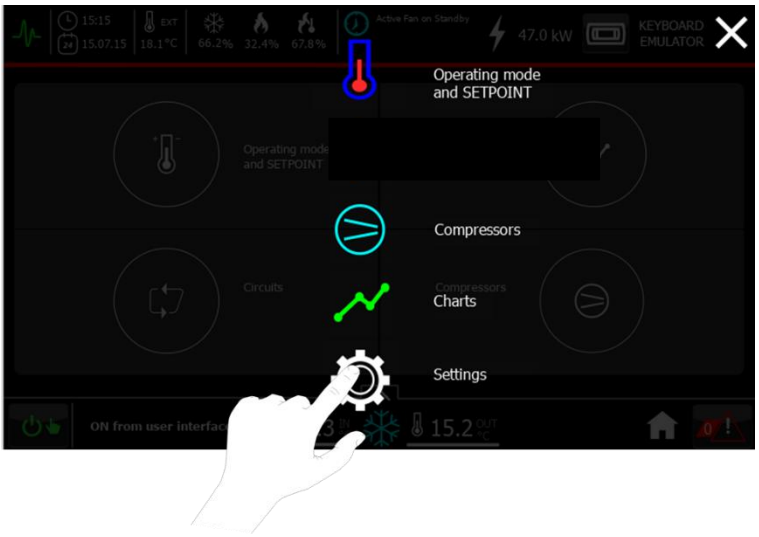


Setup submenu

7 LANGUAGE SETTING

To change the language of the user interface, proceed as follows:

- Select the Setup submenu from the “Rapid menu”



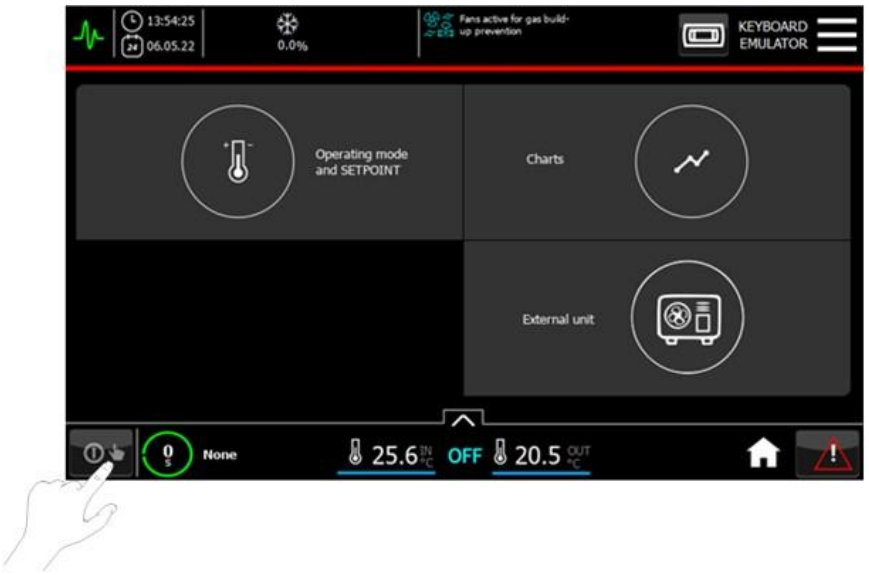
- Using the "Language" button select the desired language



8 UNIT SWITCHING ON AND OFF

To switch the unit on or off:

- On any screen, press the ON/OFF button on the far left of the bottom bar:



Pressing the ON/OFF button will open a screen: press "yes" to confirm power on or off, press "no" to cancel.



As well as switching the unit on and off, the ON/OFF button indicates the state of the machine according to the following icons:

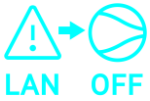
	Unit turned off (OFF) following alarms
	Unit turned on (ON) from the Touch Screen
	Unit turned off (OFF) from the Touch Screen
	Unit turned on (ON) following time band programming
	Unit turned off (OFF) following time band programming
	Unit turned on (ON) from the digital input
	Unit turned off (OFF) from the digital input
	Unit turned on (ON) from supervision
	Unit turned off (OFF) from supervision
	Unit turned on (ON) from LAN
	Unit turned off (OFF) from LAN
	The unit is switching off

There is also a string in the graphical interface next to the ON/OFF button identifying the operating status of the unit.

9 FLASHING ICONS

Flashing icons will appear on the bar at the top of the screen when one or more functions are active on the control. Available functions are:

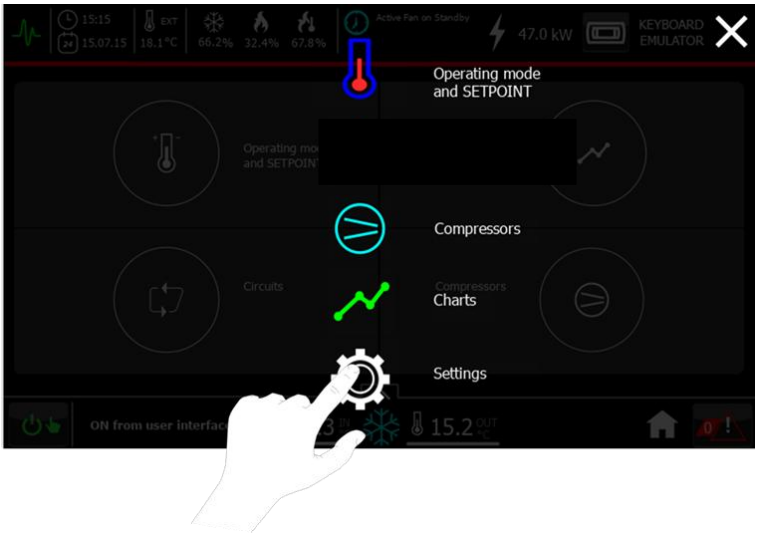
	Icon	Function	Description
1		Active time slots	Time bands active
2		Dehumidification protection active	The dehumidification protection is active (maximum or minimum temperature)
3		Safety reduction load HP	The demand reduction of at least one circuit is active due to high condensation pressures
4		Delivery air temperature protection active	The minimum delivery air temperature protection is active
5		Full Load	Maximum override of at least one circuit is active (oil protection)
6		Post-ventilation active	The heater cooling post-ventilation is active
7		Waiting for regulation to start	One or more compressors are blocked to comply with the start-up times, or the unit is awaiting regulation
8		High humidity pLAN rescue active	The unit is in pLAN rescue mode due to the high humidity limit being exceeded
9		Low humidity pLAN rescue active	The unit is in pLAN rescue mode due to the low humidity limit being exceeded
10		HotSpot protection for an active pLAN network	The unit considers its local temperature instead of the average temperature to control the Hot Spot concerned
11		Cold Spot protection for an active pLAN network	The unit considers its local temperature instead of the average temperature to control the Cold Spot concerned
12		Active Fan on Stand-by function active	The unit is on standby but the fan continues to run at a set speed
13		Safety Reduction Load LP	The demand reduction of at least one circuit is active due to reduced evaporation pressures

	Icon	Function	Description
14		High temperature pLAN rescue active	The unit is in pLAN rescue mode due to the high temperature limit being exceeded
15		Low temperature pLAN rescue active	The unit is in pLAN rescue mode due to the low temperature limit being exceeded
16		Fans active for gas build-up prevention	The unit is off, but the fans are kept in operation at reduced speed to prevent gas build-up in case of leaks
17		Fan forcing from alarm in pLAN	Ventilation has been forced to maximum level due to an alarm (no air flow or gas leak detected) in one of the other units connected to the pLAN network
18		External unit stopped due to a pLAN alarm	The Mr Slim external unit has been stopped due to an alarm (gas leak detected) in one of the other units connected to the pLAN network
19		Prevention of ice formation in piping	The unit forces the cooling demand sent to the PAC-IF cards to minimum and keeps ventilation at maximum to help prevent the formation of ice on the piping.
20		Heater post-ventilation function activation	When the unit is switched off, if the heaters were on the ventilation is kept on for 100 to 120 seconds to dissipate the heat from the heaters.
21		Extra Low Temperature Startup function activation	To prevent the machine from triggering an alarm, very low outside air temperatures cause a different start-up procedure than the standard procedure.
22		Fan Off Delay function activation	The fans remain active for a period of time even after the unit is switched off.

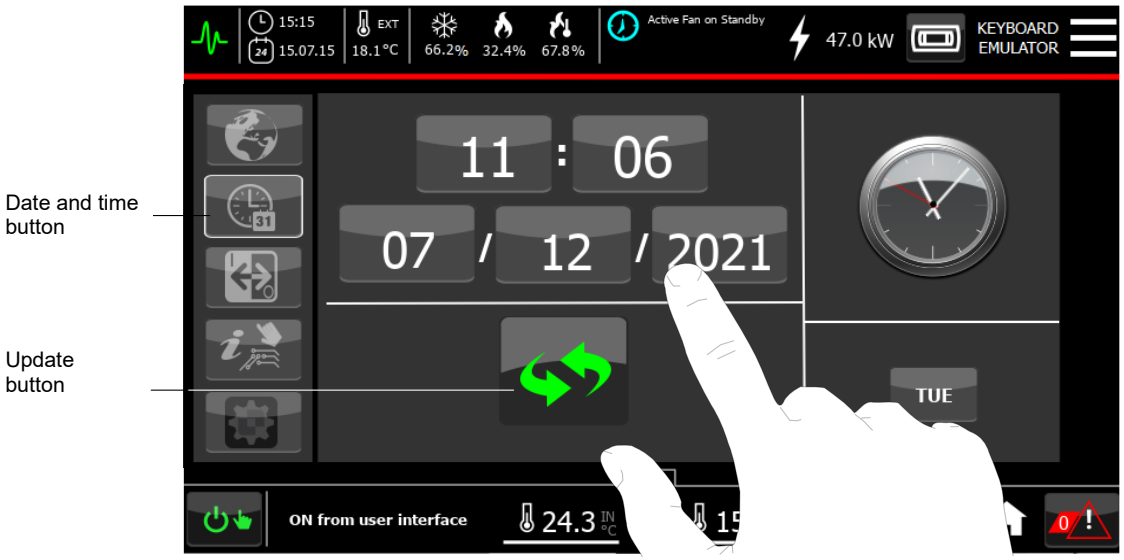
10 SETTING THE DATE AND TIME

To change the date and time, perform the following operations:

- Select the Setup submenu from the “Rapid menu”



- Press “Date and Time” to set the desired date and time. To confirm the changes, press the “update” button 



I/O PAGE

On the I/O screen, you can view the expansions present with their status:

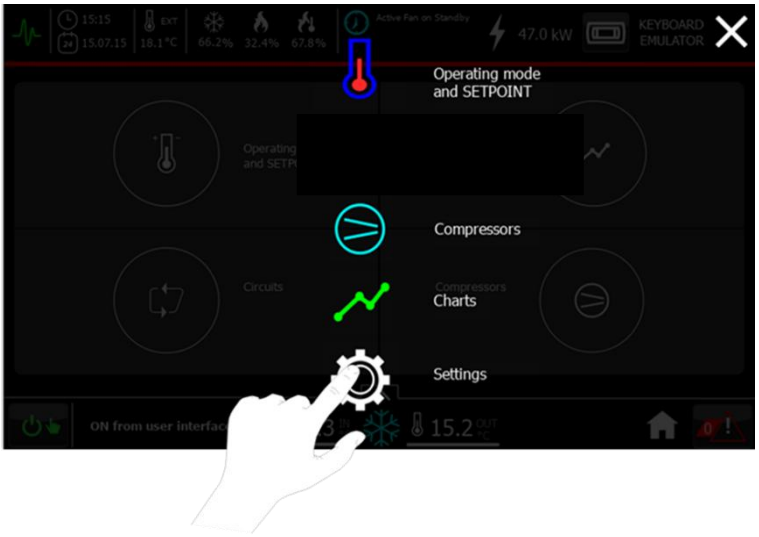
- Required;
- Not required;
- Online.



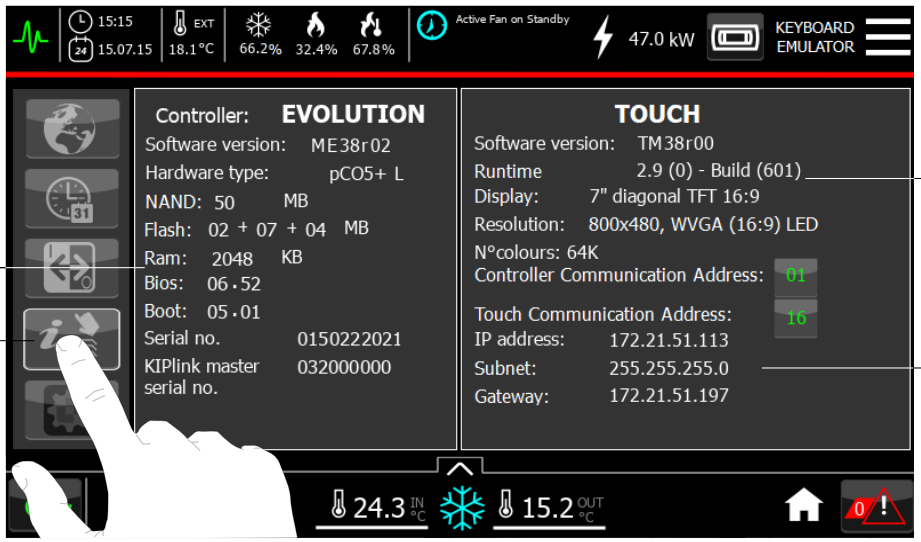
11 SOFTWARE INFORMATION AND PANEL SETUP

To view the information about the software, the network parameters, and other information concerning the panel setup, perform the following operations:

- Select the Setup submenu from the “Rapid menu”



- On the left side panel select the “Info” button

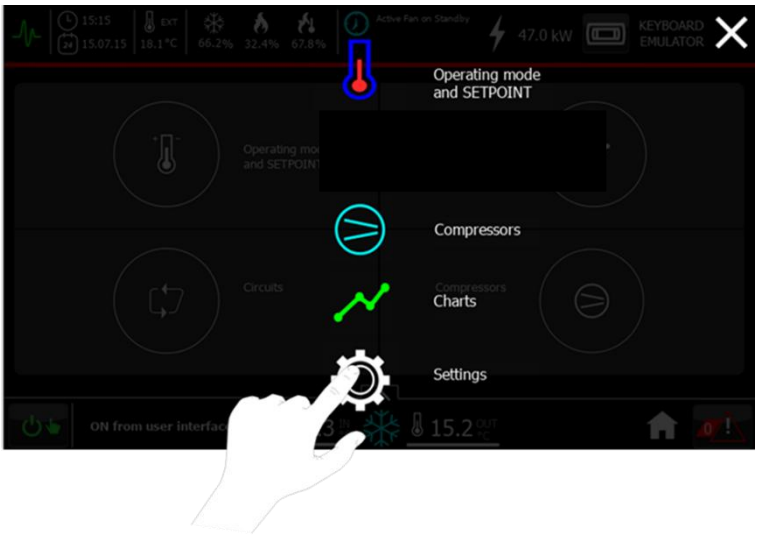


INFORMATION:
Using the appropriate interface keypad it is possible to set the Controller/touch communication address by pressing the value associated with the corresponding information in the "Controller information" section. The default value is 1.

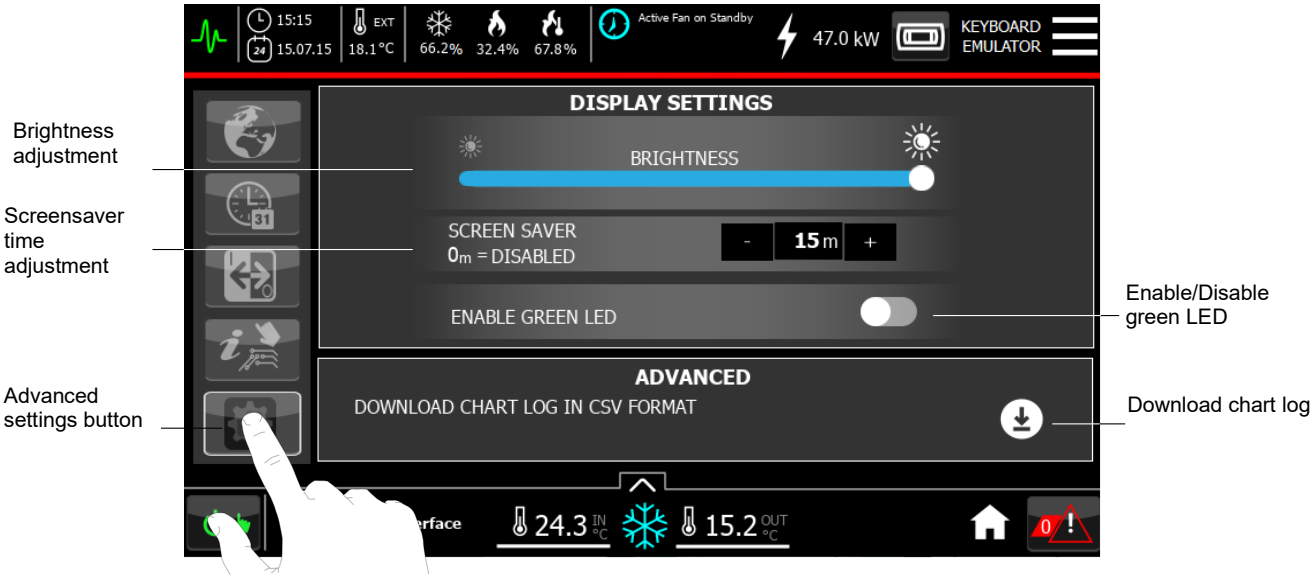
12 BRIGHTNESS ADJUSTMENT AND ADVANCED SETTINGS

To adjust the brightness of the display, enable/disable the green LED, or download the data displayed in the graphs onto a USB key (operation reserved for Service), carry out the following operations:

- Select the Setup submenu from the “Rapid menu”

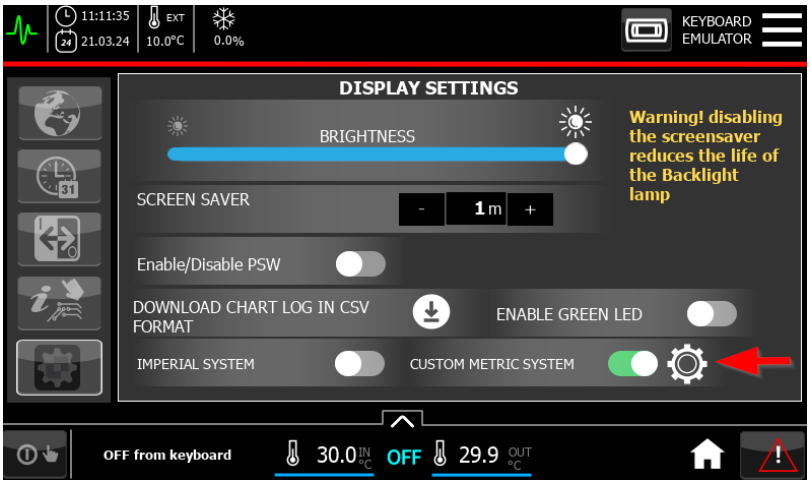


- On the left side panel select the “Advanced settings” button:

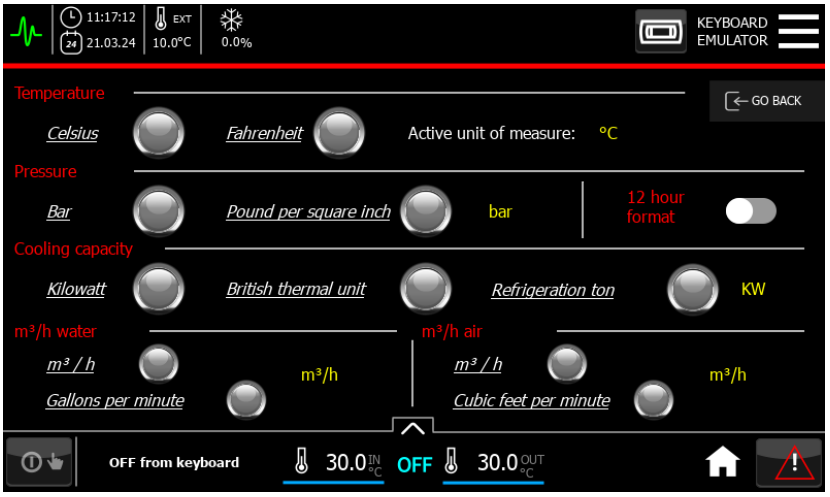


12.1 Imperial metric and custom system

By accessing the settings – display menu through the drop-down menu it will be possible to enable the imperial metric system or a Custom system as required for the units of measurement.
Both systems are protected by "Service" passwords.
It will be possible to modify the Custom system via the following button:

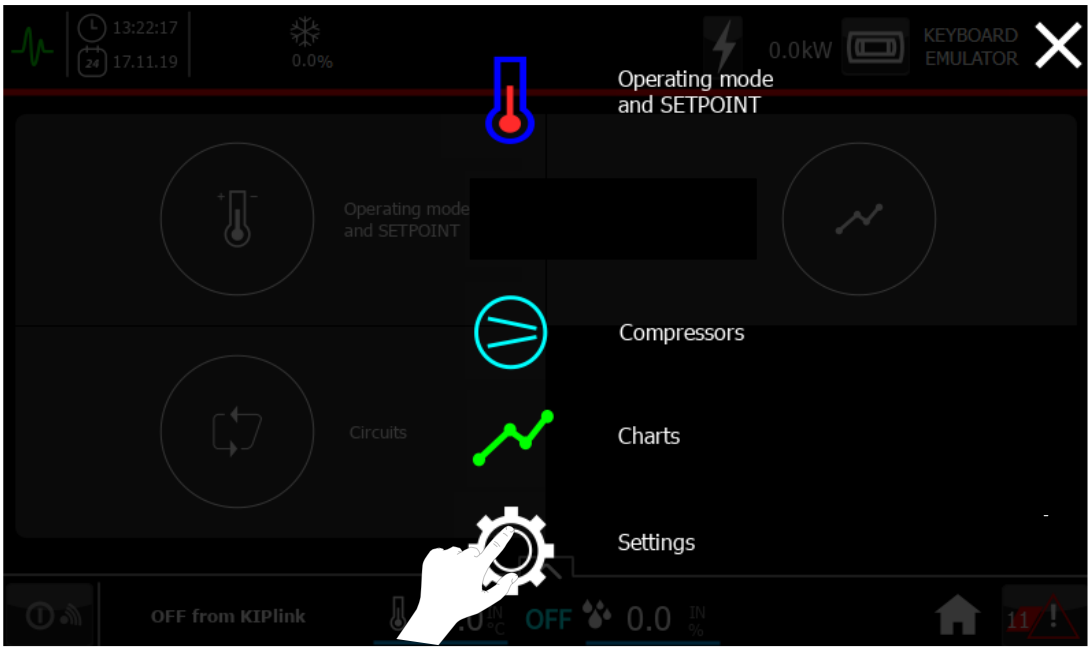


In the menu relating to the Custom metric system it will be possible to select (through the appropriate buttons) the unit of measurement for each quantity to be displayed on all pages.

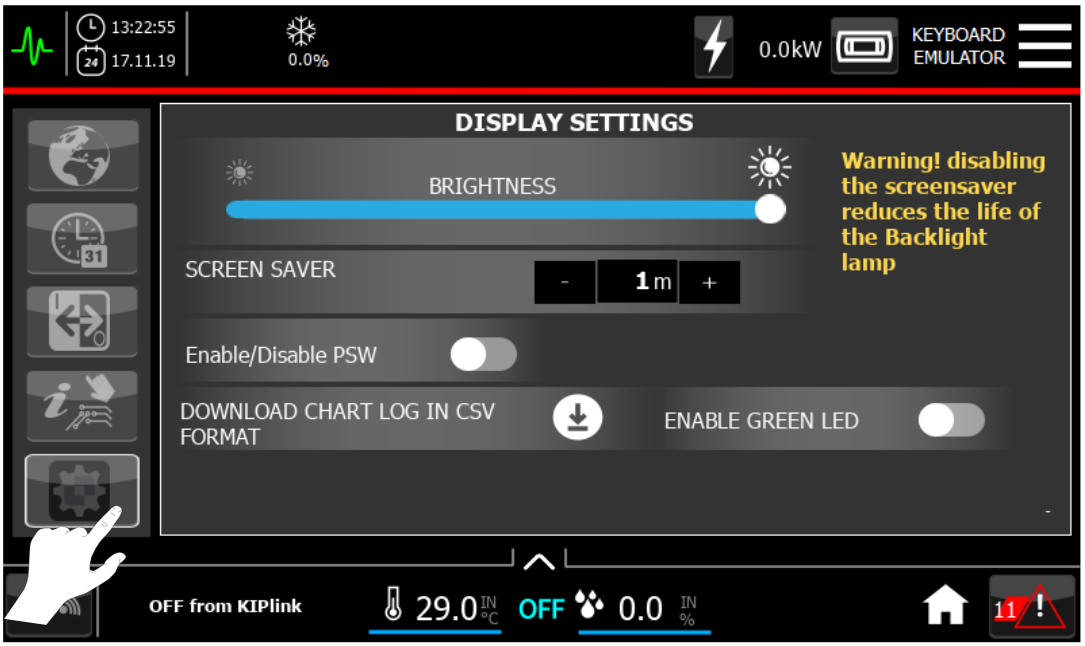


12.2 Enable or disable and change password

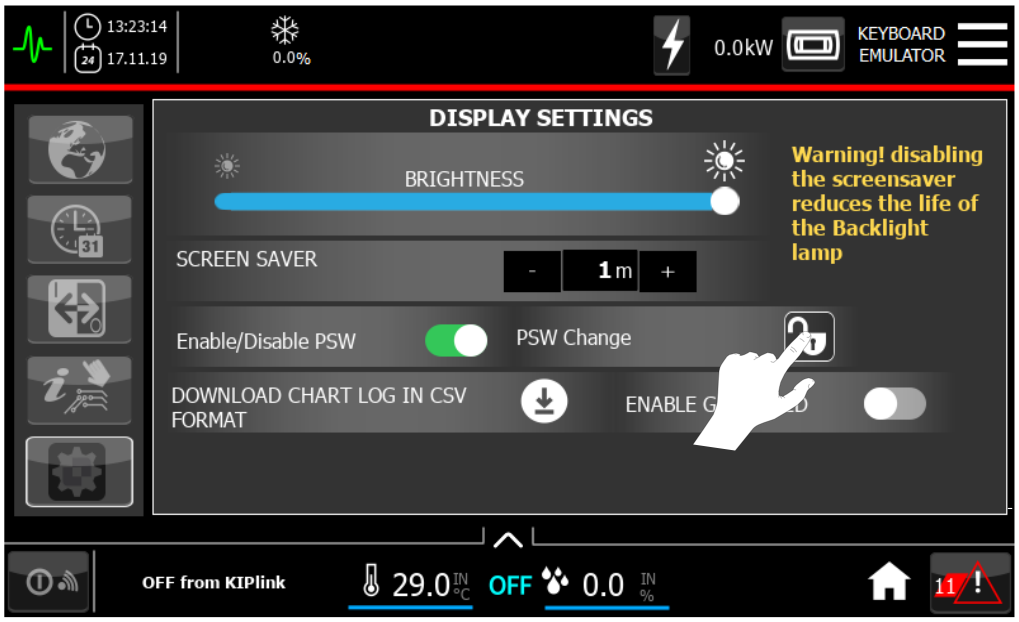
Select the “Settings” submenu from the “Rapid menu”:



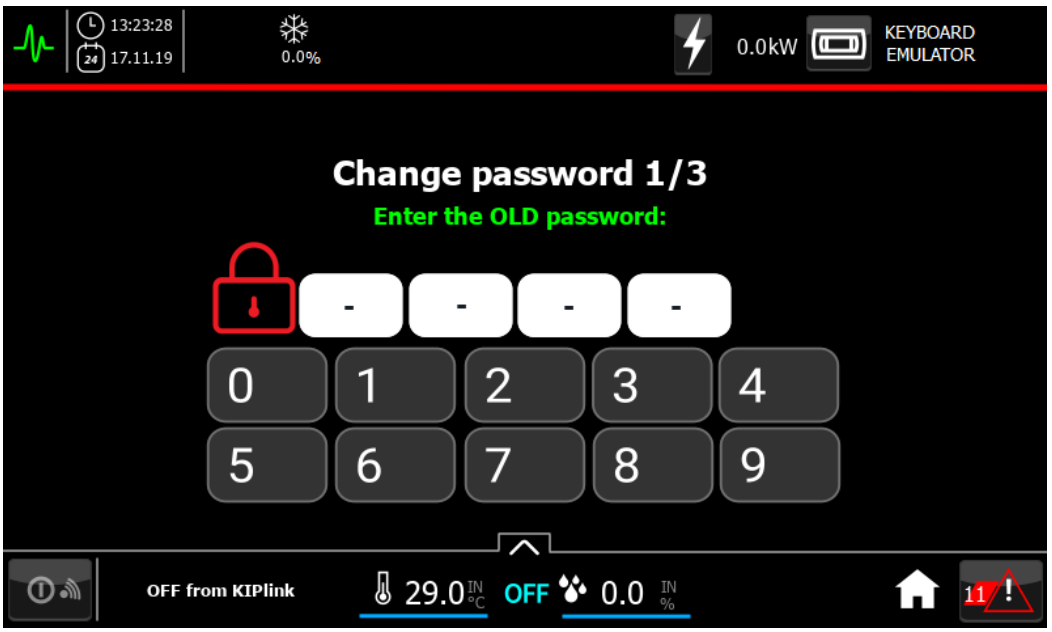
On the left side panel select the “Advanced settings” button:



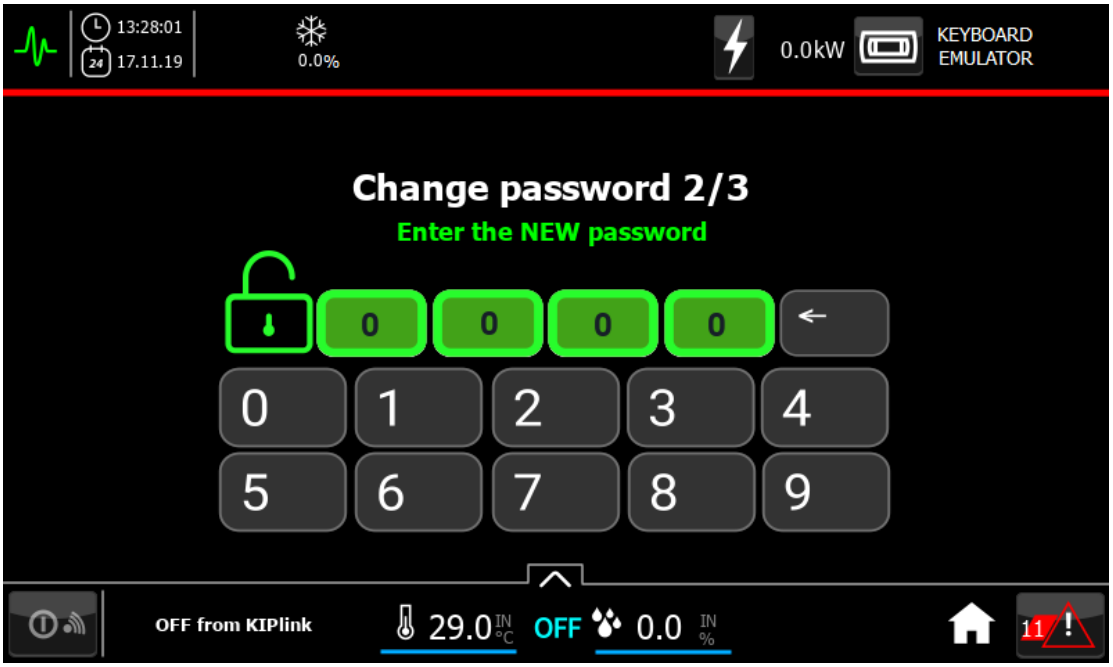
To change the password, the *"enable/disable PSW"* button must be enabled.
Select the open padlock button to open the password change pages.



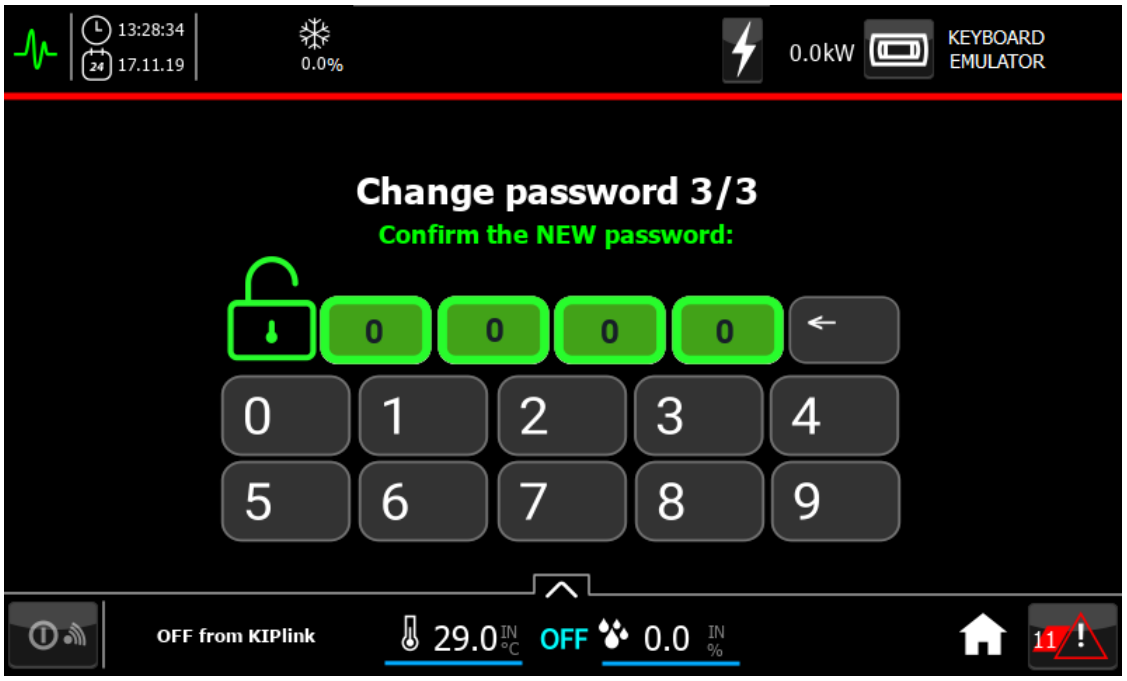
On the first page you will be asked to enter the old password (1971):



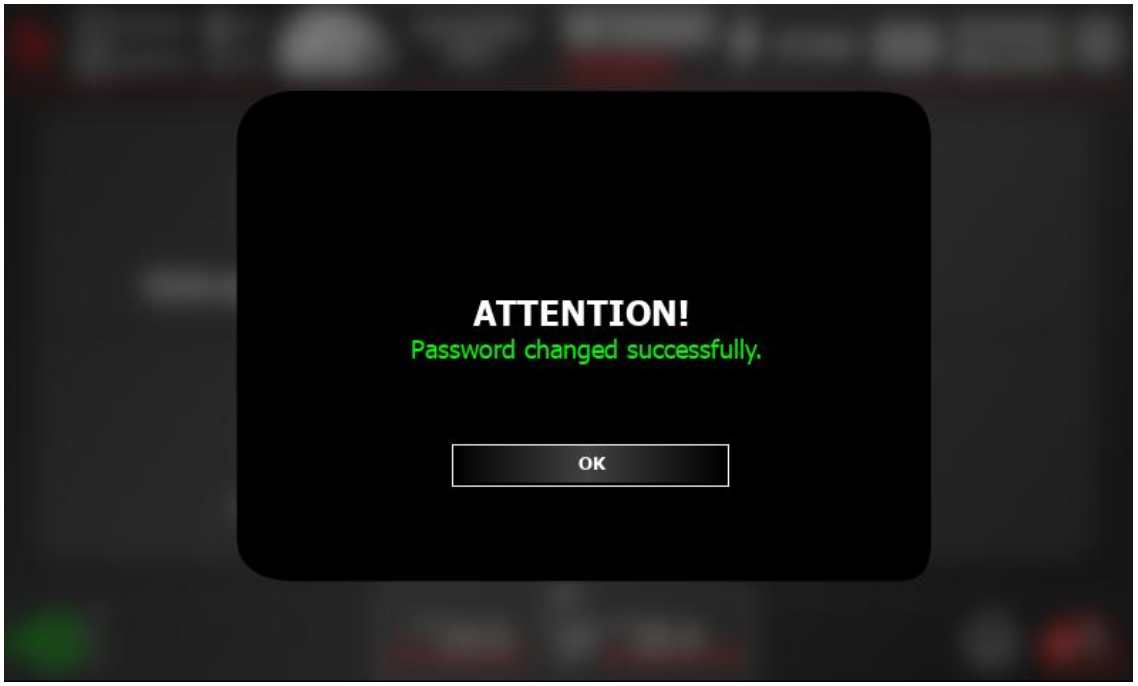
You will then be asked to enter the new password:



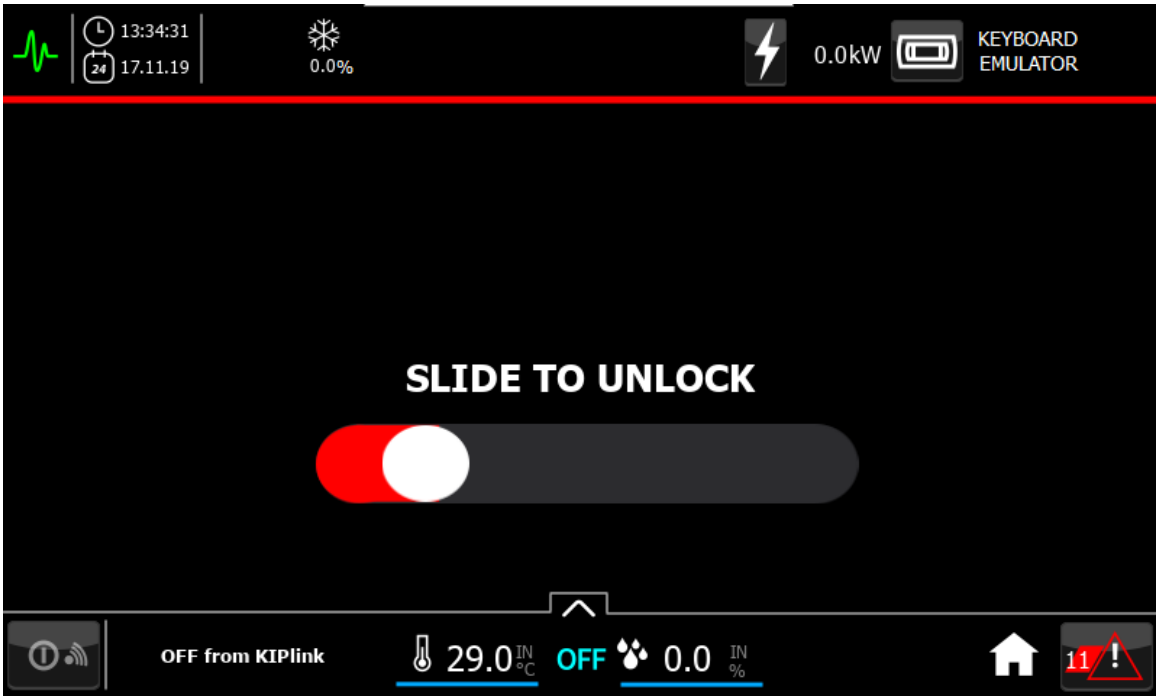
You will be asked to confirm the new password:



If the password entered the first time matches the one entered the second time, the following screen will be displayed:



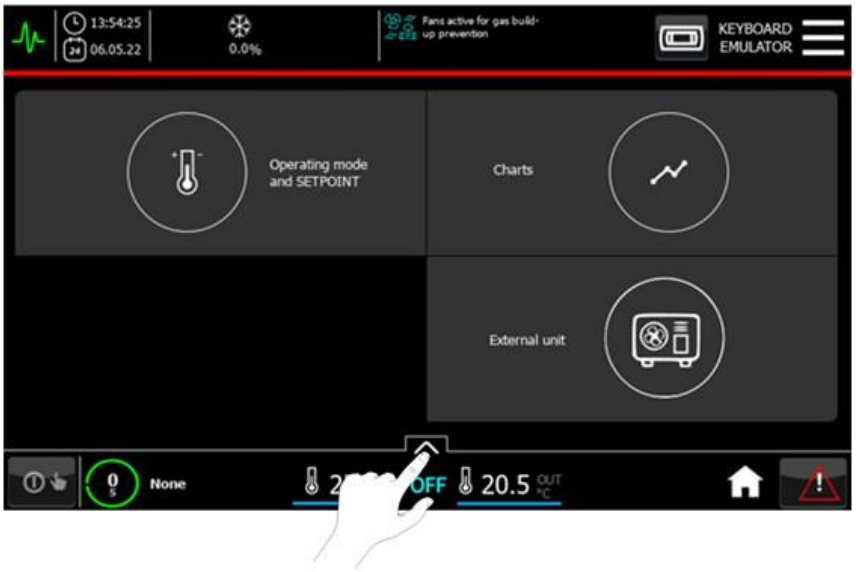
You will then be sent back to the “slide to unlock” home screen:



13 DISPLAYING UNIT TEMPERATURES AND ADJUSTMENTS

To view details of the operating temperature:

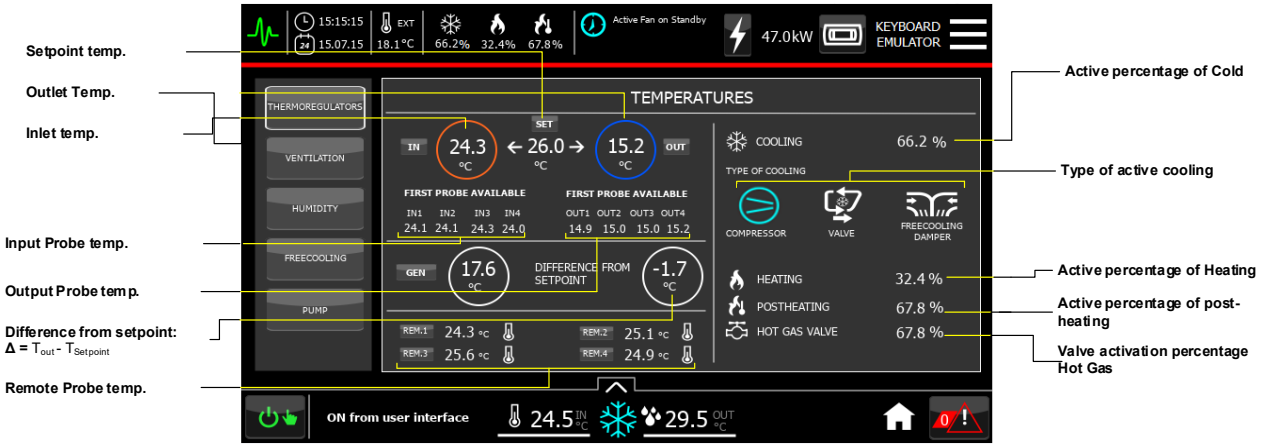
- From any screen, press the triangular arrow in the bottom bar:



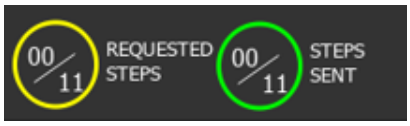
This opens a read-only screen showing details for every available operating mode. You can:

- View the inlet air temperature.
- View the outlet air temperature.
- View the deviation from the active outlet temperature Setpoint ($\Delta = T_{out} - T_{Setpoint}$).
- View the current operating percentage level.
- Access detailed information about Free Cooling (if set) through the window on the left of the screen.
- Access detailed information about the pump through the window on the left of the screen

13.1 Thermoregulators screen

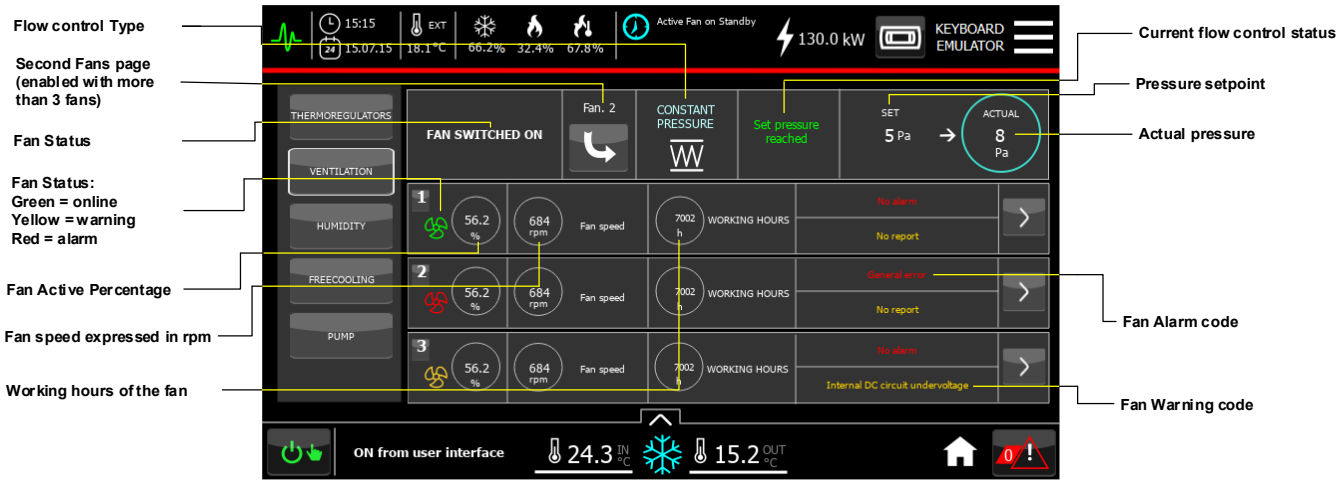


In case of s-MEXT unit, information on the steps required and sent is shown in the temperature tab:



13.2 Ventilation screen

The ventilation screen displays the following information:



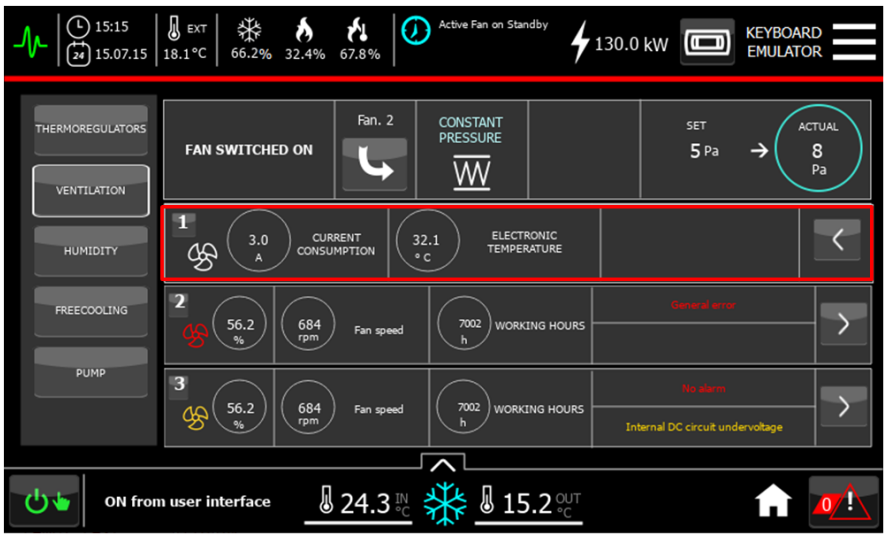
It is also possible to display some information on the AC fans and their operating time.

Pressing the button indicated in the figure:



Displays the information relating to:

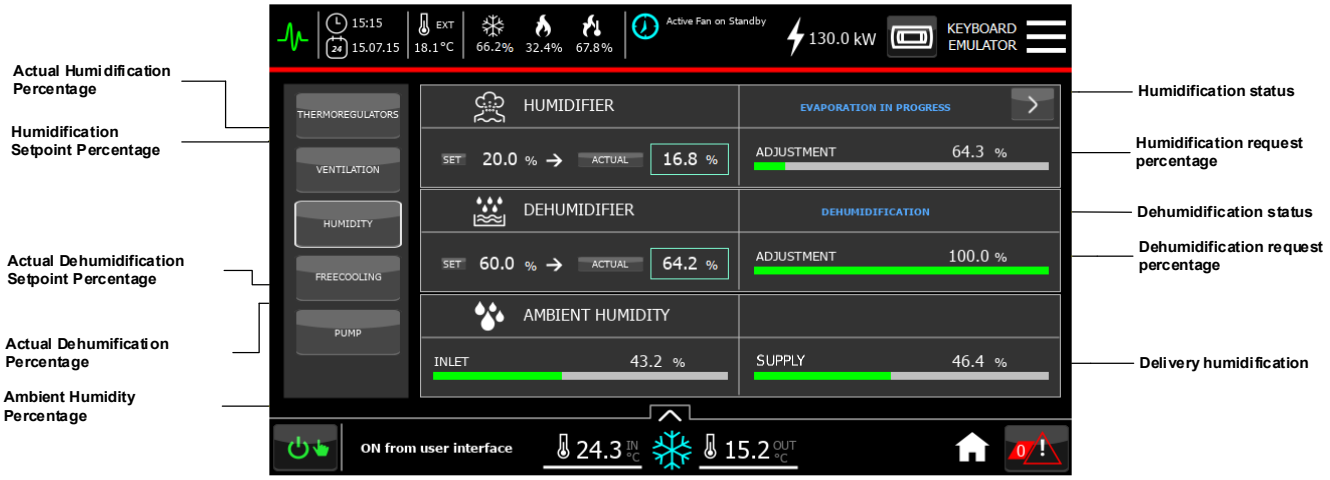
- Energy consumption
- Electronic temperature



13.3 Humidity screen

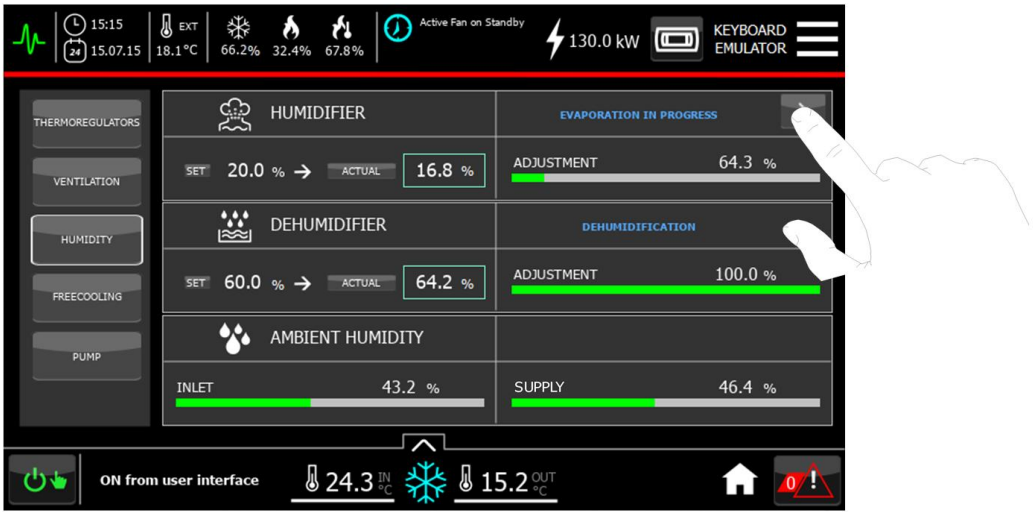
The humidifier/dehumidifier screen shows the following read-only information:

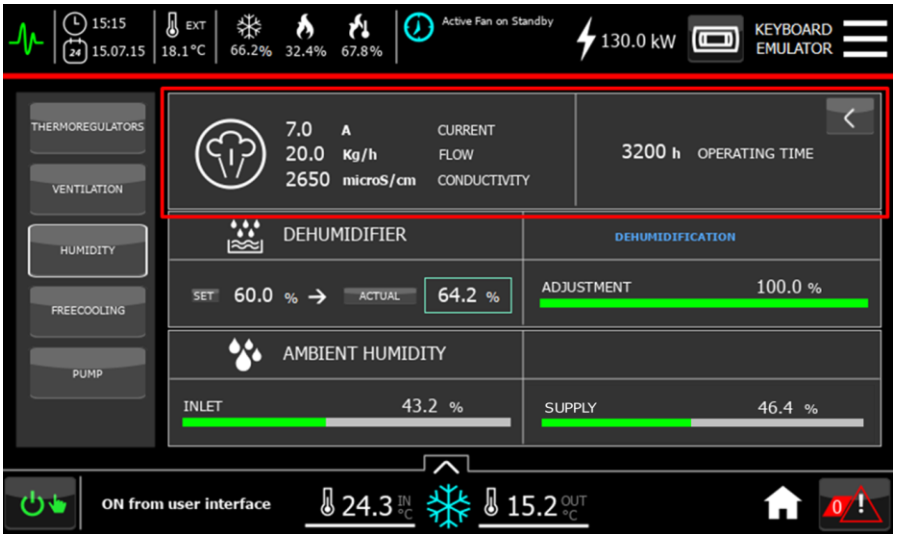
- Air humidification setpoint.
- Air dehumidification setpoint.



The button in the figure allows to view a page containing information such as:

- Current.
- Flow rate.
- Conductivity.
- Operating hours.

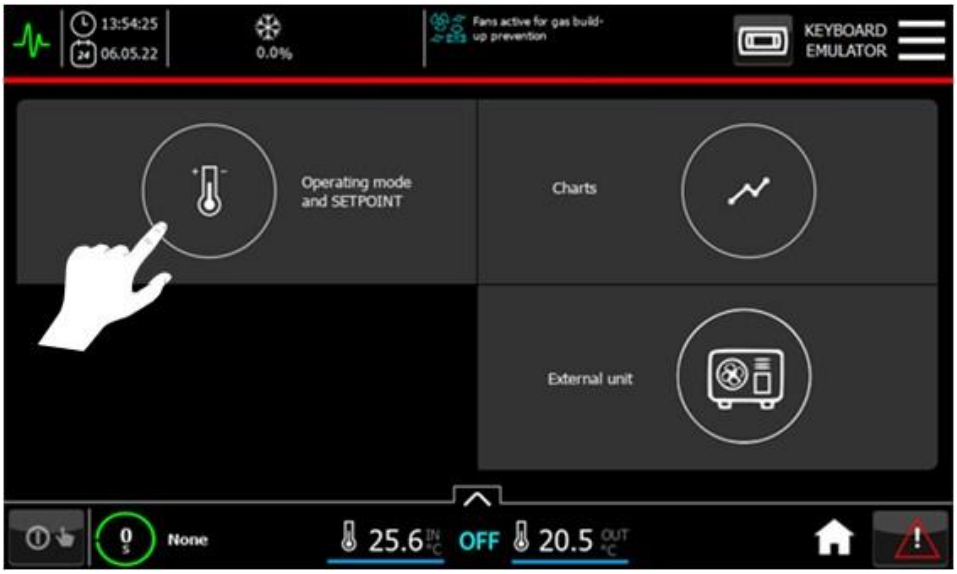




14 SETTING THE UNIT OPERATING MODE AND SETPOINTS

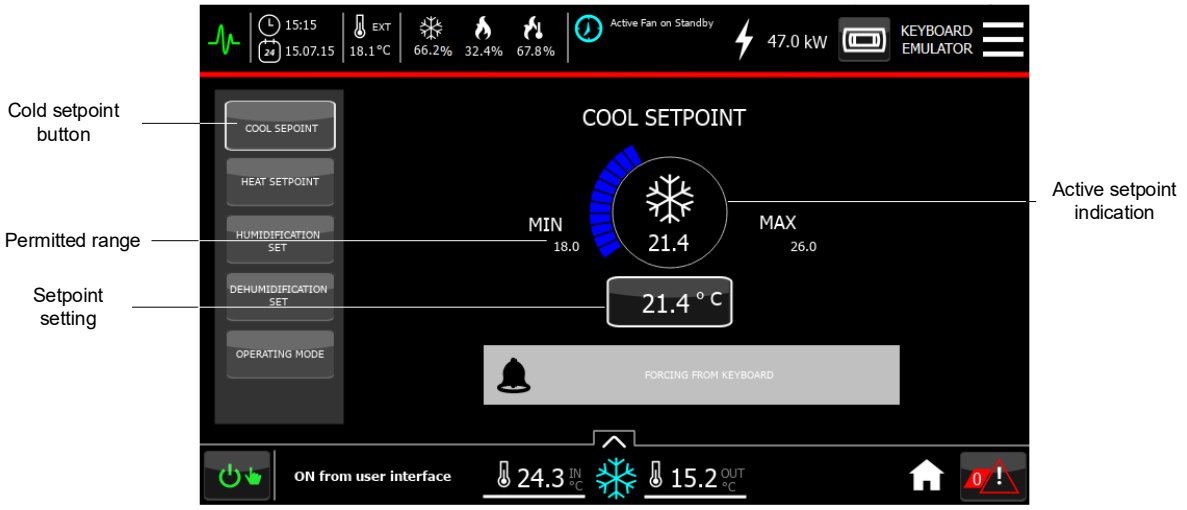
To set the unit operating mode and the Setpoint, proceed as follows:

- Select the Setpoint & Operating Mode submenu from the main screen:



14.1 Setpoint setting

Select the Cold Setpoint button on the left.
The type of adjustment for the cold setpoint can be either standard or advanced.
Set the desired value on the available field, paying attention to the limits indicated on the sides of the indicator.
The Setpoint can be forced by the unit and cannot therefore be edited on the touchscreen interface.

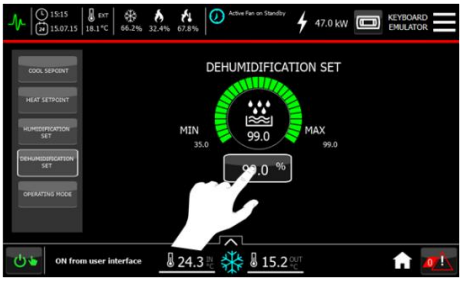


The hot, humidification and dehumidification setpoints are set in the same way as the cold setpoint:

Humidification setpoint



Dehumidification setpoint



14.2 Viewing the operating mode

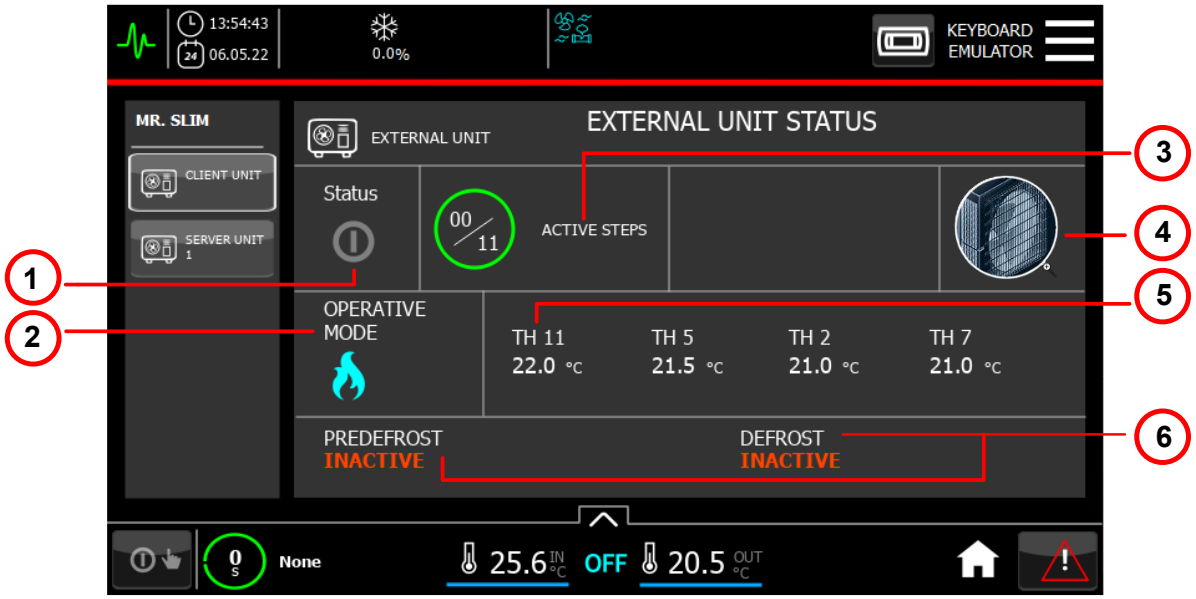
The following settings can be viewed by accessing the screen as shown in the figure below. The available settings are:

- Operating mode: cold or hot.
- Expansion type: direct or water.
- Active coils of the unit.
- Type of forcing, where applicable.



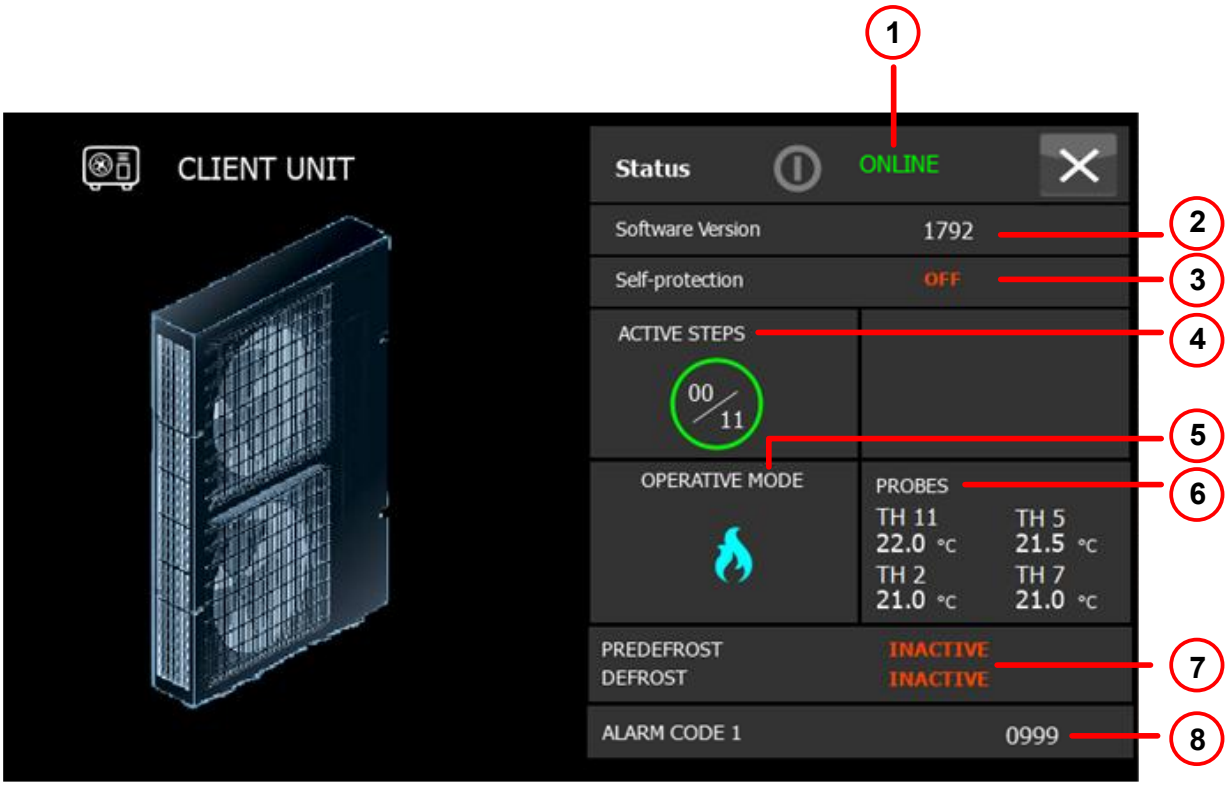
15 S-MEXT UNITS CONNECTED TO MR. SLIM EXTERNAL UNITS

Touch the “External Unit” key to enter the Client External Unit section and the External Server Unit (if present). The following information (present in both sections) is available on the screen:



1. Status.
2. Operating mode (summer/winter).
3. Active steps.
4. Access to detail page.
5. Temperature probes.
6. Defrost and Pre Defrost functions.

Touch the detail page (step 4) to enter a page that contains all the information on the Main tab and some additional information:



1. Status of the unit (Online/Offline).
2. Software release.
3. Self-protection.
4. Active steps.
5. Operating mode.
6. Probes.
7. Defrost and Pre Defrost functions.
8. Alarm code (if present).

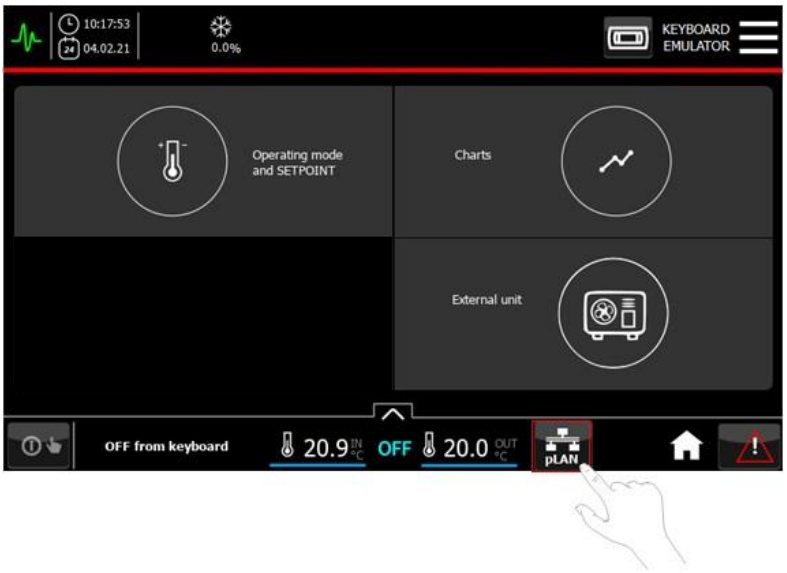
16 pLAN CONNECTED UNITS

In the case of units connected with the pLAN protocol, information on these can be obtained from the Touch Screen of the Master unit.
From the Touch Screen device, in order to display the information of the system Client devices:

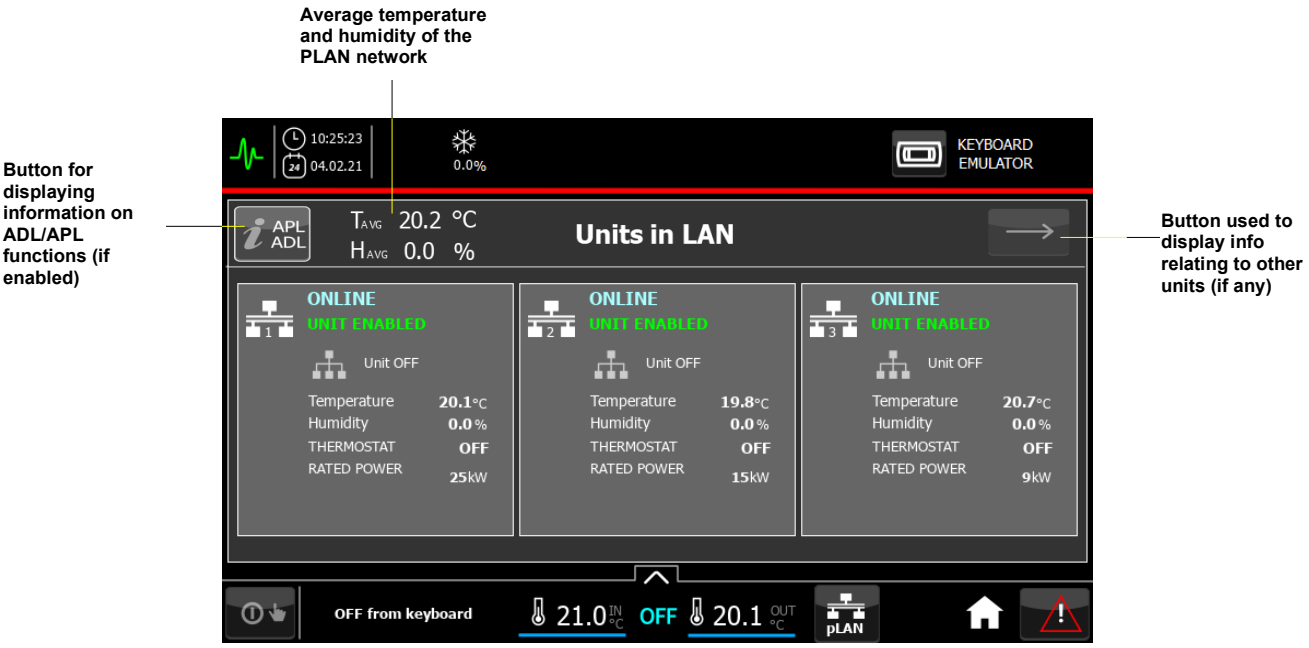
- From the Homepage, or any other page, touch the button relating to LAN units:

In case of multiple units in LAN, accessing the analysis screen allows to view the following information:

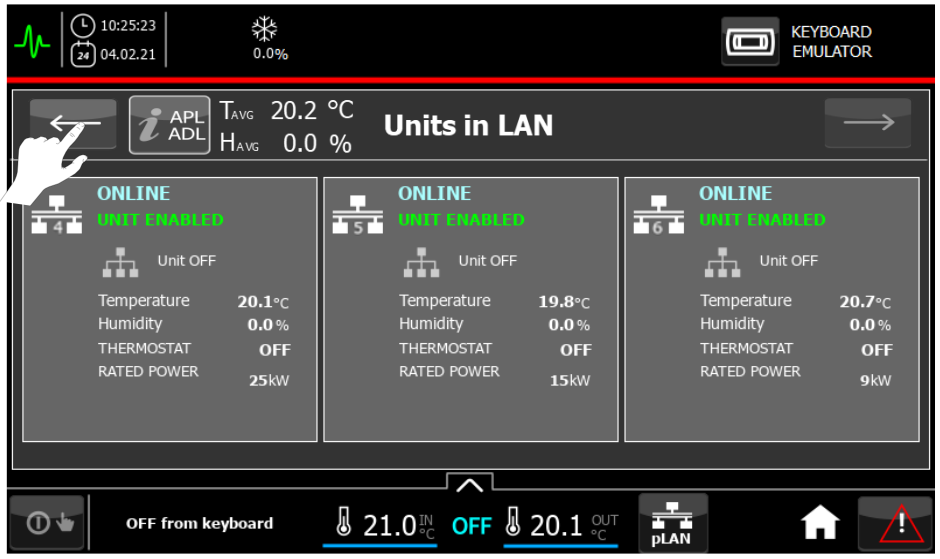
- Unit status.
- Controller online/offline status.
- Unit Enable/Disable.
- Temperature and humidity reading (if the T_H probe is present).
- In the case of Multidensity components:
    - Demand for increase or decrease in power.
    - Required rated power.



In case of four or more units in the LAN system, touch the top right corner arrow to view information about the other units:



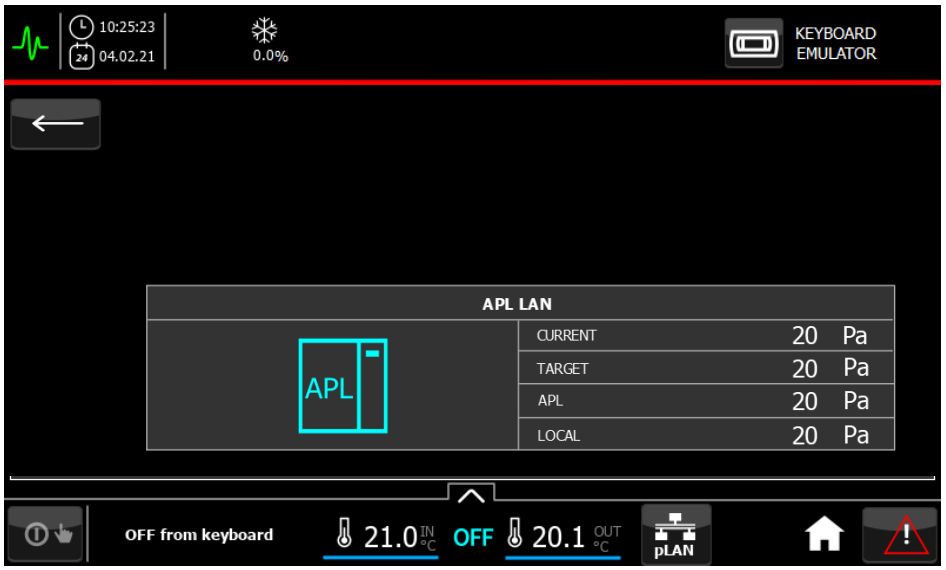
Touch the top left corner arrow to go back:



Below is a detailed explanation of the state of the unit:

Icon	Description
	Unit not present.
	Unknown unit status.
	Unit on stand-by.
	Unit off.
	Unit on.
	Unit on with active adjustment.
	Unit in Hot Spot.
	Unit in Cold Spot.
	Unit in alarm.
	Unit offline.

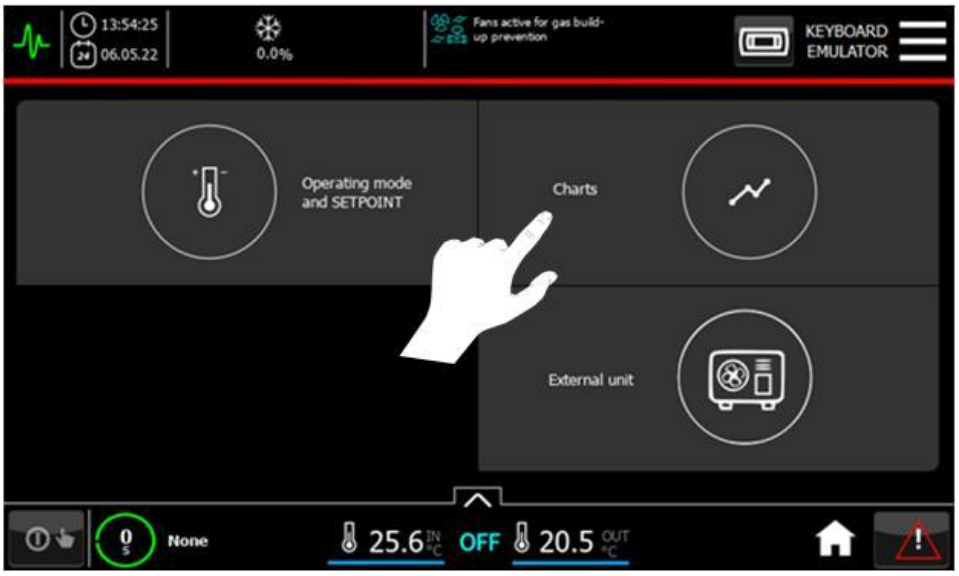
If the local area network LAN and the APL function are enabled, it is possible to view the detailed data by touching the relevant button:



17 CHART DISPLAY

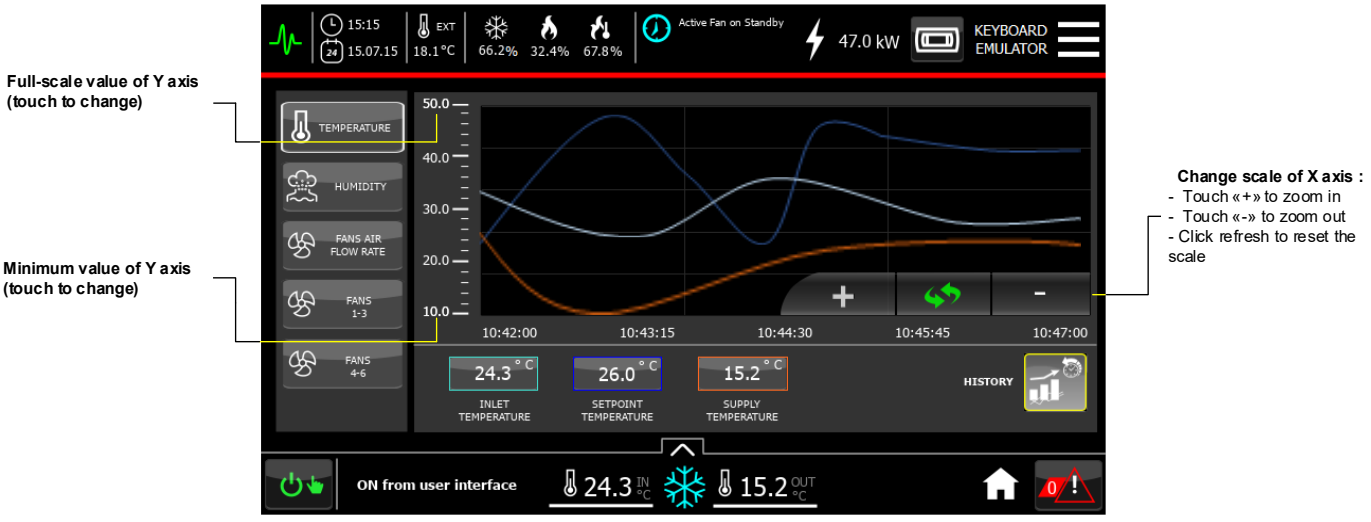
To display the graphs of the variables of interest for the operation of the unit:

- Select the Charts submenu from the main screen:



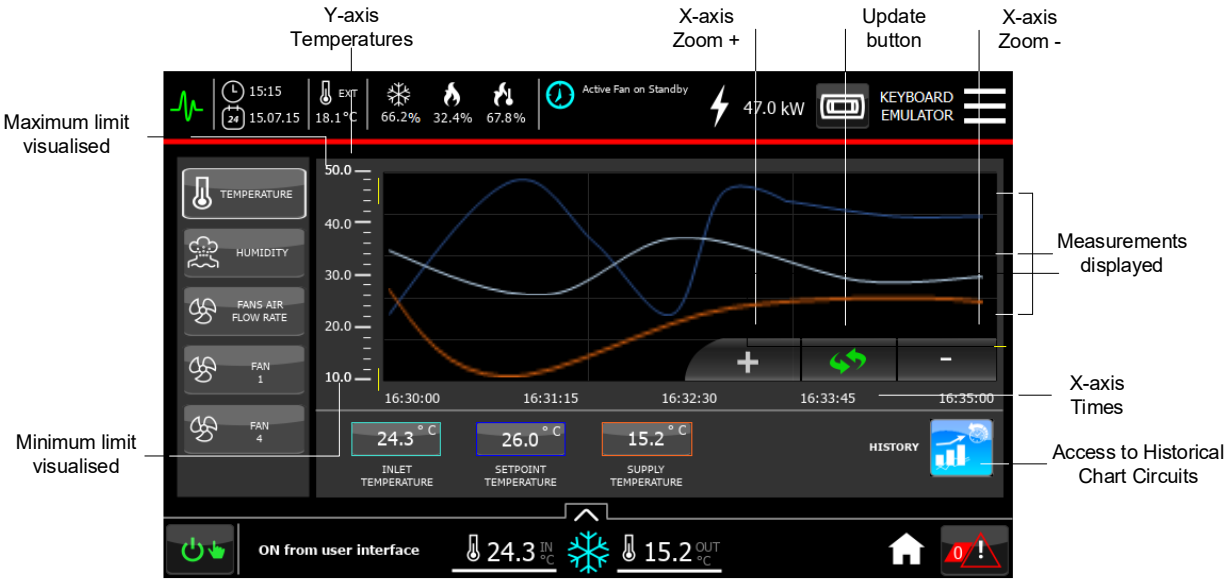
This will give access to the temperature chart screen.
By selecting the appropriate buttons on the left of the chart section, it is possible to view real-time and historical charts relating to:

- Temperature variables
- Humidity variables
- All fans



17.1 Real-time temperature charts

The screen displays the real-time temperature performance listed in the column to the right of the chart. The X-axis represents the time (HH:MM:SS) while the Y-axis shows the temperature (in centigrade).



The chart features the following customisable functions:

- Zoom + and – on the X-axis to decrease or increase the time scale.
- Button for resetting the X-axis zoom to its default value.
- Maximum and minimum limit of the customisable temperature scale.

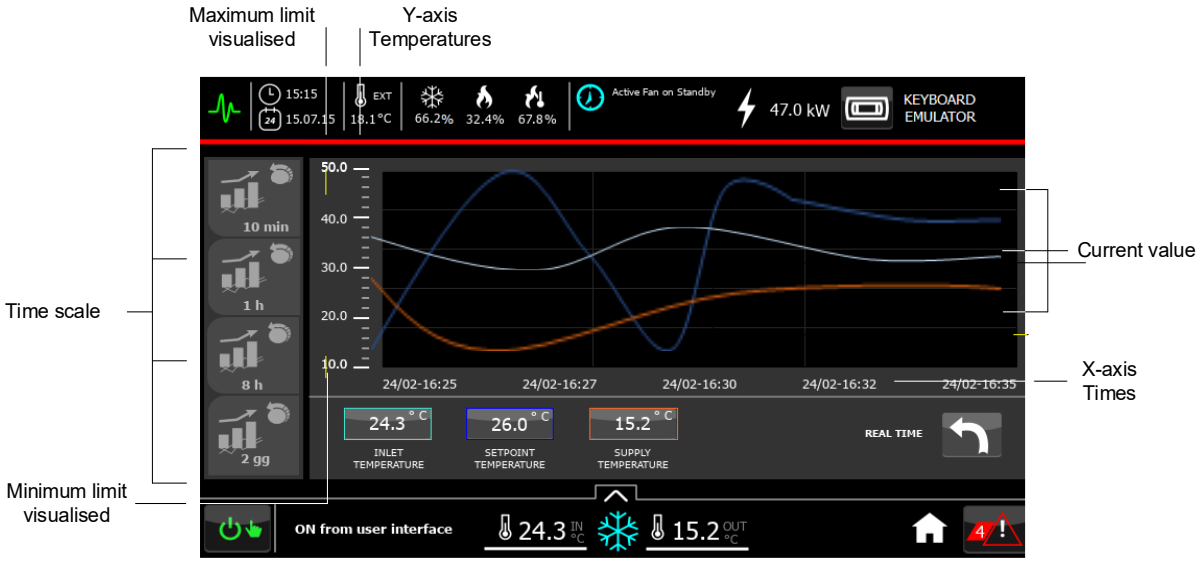


It is also possible to access:

- The corresponding historical chart section.
- From the left labels, the page of the circuit charts.

17.2 Historical temperature charts

The screen shows the historical charts of the measurements listed in the column to the right of the chart.
The X axis shows the reference date and time (in the format Day/Month – Hour/Minutes - DD: MM – hh:mm), while the Y axis shows the temperature (in degrees centigrade).

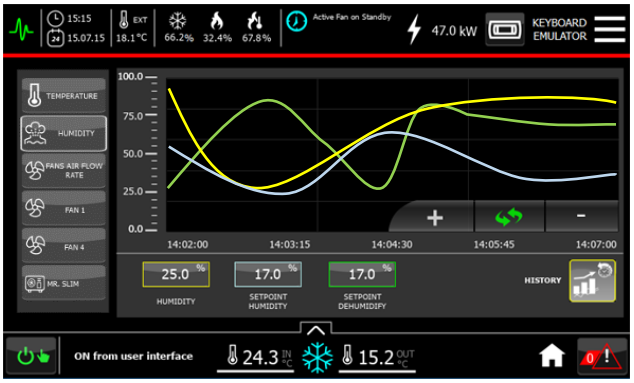


You can:

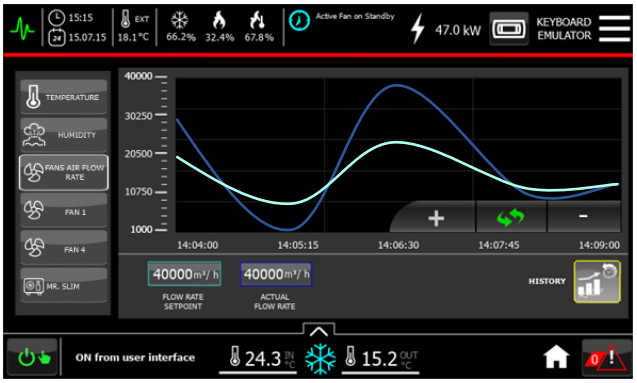
- Set the required time scale using the labels to the left of the screen.
- Move “Back” and “Forwards” in the time window multiplying the chosen scale.
- Set the maximum and minimum limits of the Y-axis by pressing the current limit values.

The charts for the other variables can be viewed in the same way as those for the temperature values, and are shown in the following images:

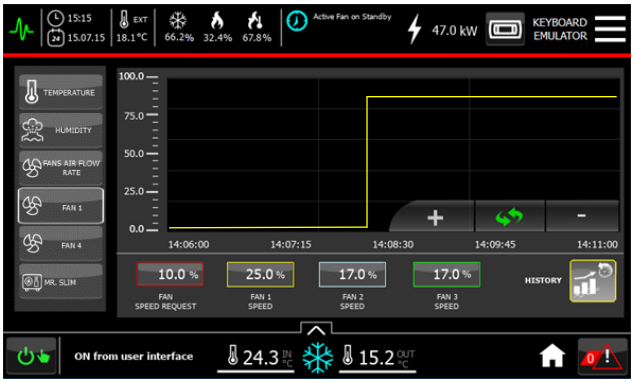
Humidity chart



Fans air flow rate chart



Fans chart

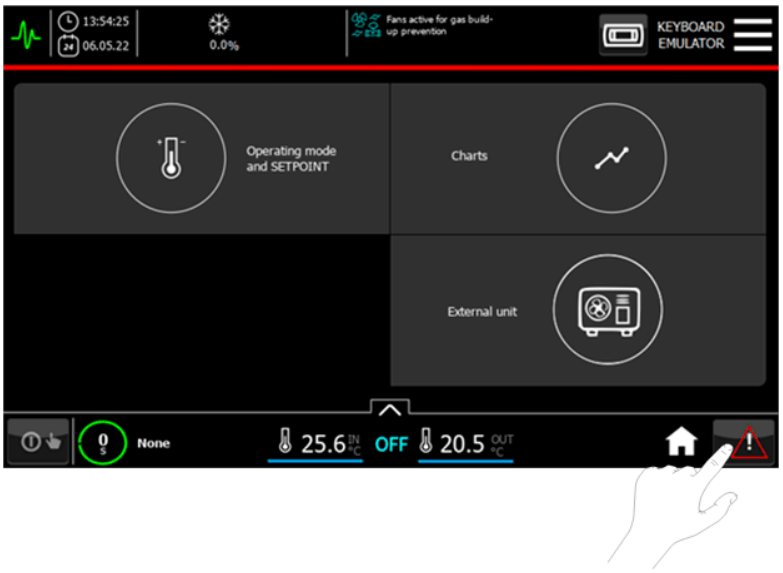


18 ALARMS AND EVENTS MANAGEMENT

The Alarms Button, on the far right of the lower bar of each screen, indicates whether any alarms are present: the white icon indicates that there are no pending alarms; the red icon indicates that there are pending alarms. If alarms are present, their number is also visualised.

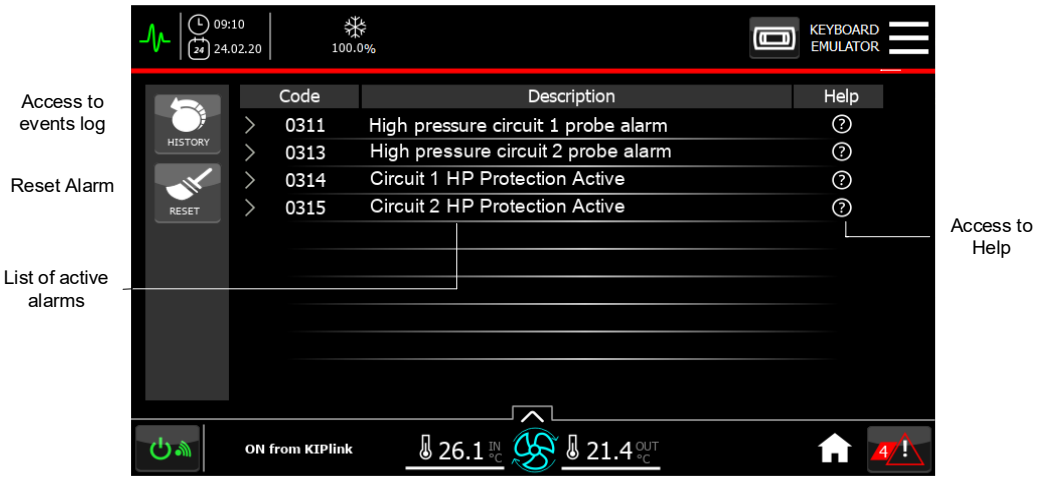
18.1 Accessing the active alarms page

- To access all the alarm management functions, press the Alarms Button 

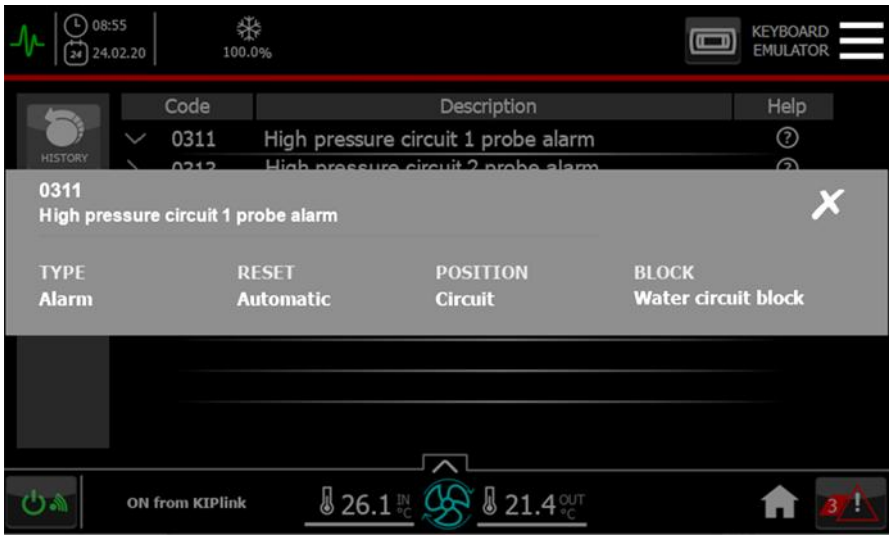


This accesses a screen containing a table in which it is possible to:

- Visualise the active alarms.
- Reset the manually resettable alarms.
- Access the events log page.
- Access the help pages.



- Access the details of each event by clicking on the appropriate button  or on the corresponding line. A drop-down window opens, with information on the type, the reset procedure, the position and the action required for the specific event.



INFORMATION:
A "loading" pop-up window appears upon initial access to the active alarms screen; wait a few seconds for the page to load.

INFORMATION:
The Active Alarms page shows the ten most recent alarms of the controller in the unit.

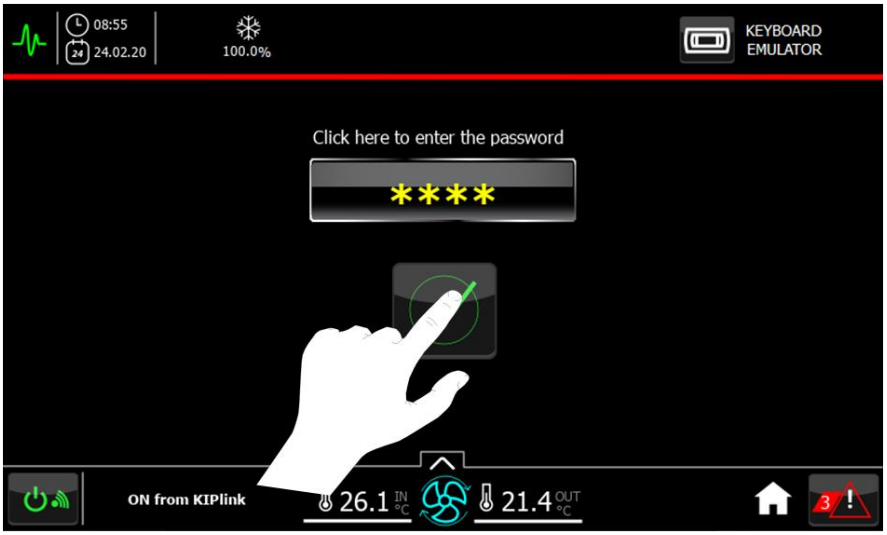
18.2 Accessing the help pages

To help users and the service to understand and possibly solve an alarm event, a basic help page and an advanced help page (reserved to the enabled Service) can be viewed for each event.

On the help screen, accessed by pressing it is possible to:



- Visualise an extended description of the event.
- Visualise an extended description of the event.
- Visualise an initial help message for the relative event.
- Return to the active events page.
- Access the advanced help page (only visible if the Service password is entered).



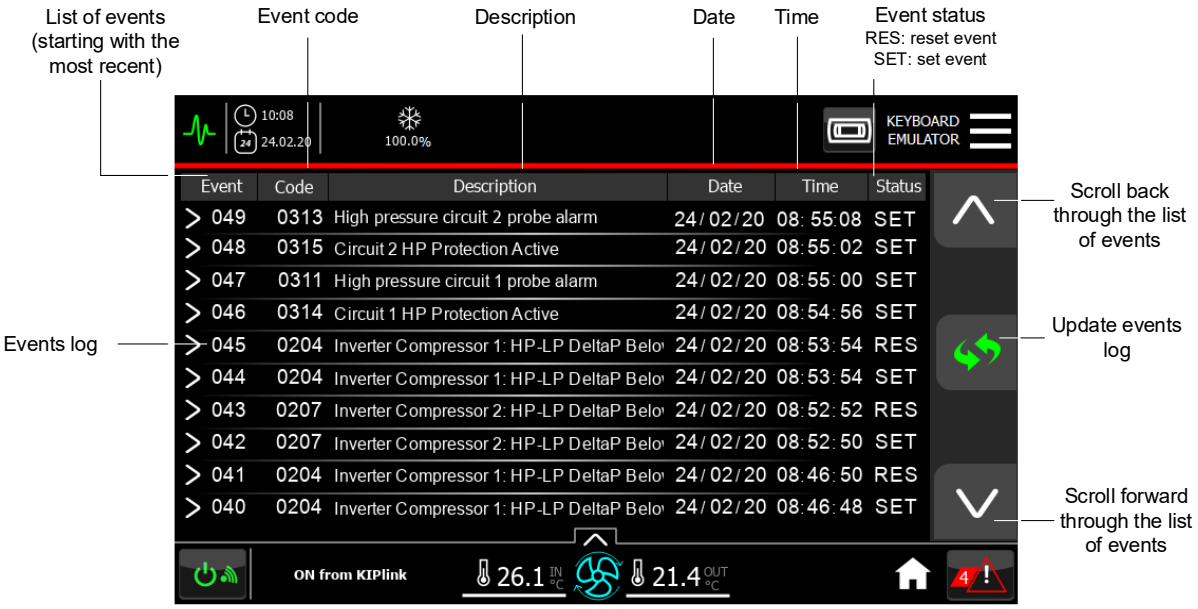
In this screen, it is possible to:

- Visualise an extended description of the event.
- Visualise a number of possible reasons.
- Visualise a number of recommended actions for solving the fault.
- Visualise the reset mode: manual or automatic.
- Return to the active events page.

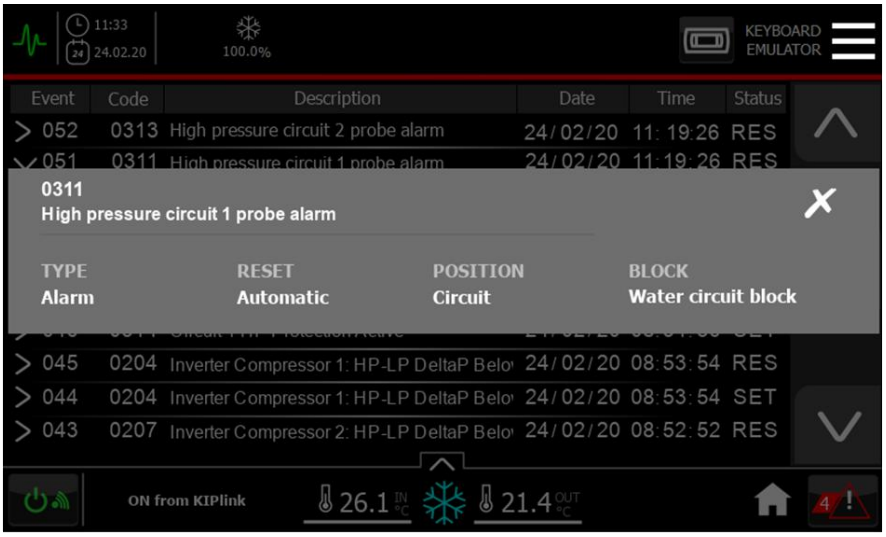
18.3 Event history display

The events log screen contains the following:

- Display the activation (SET) or deactivation (RES) events log with relative alarm code, description, date and time.
- Update the events list.
- Scroll the events list forward in time.



- Access the details of each event by clicking on the appropriate button or on the corresponding line. A drop-down window will open showing information on the type, reset mode, position and expected action for that given event.



INFORMATION:
A "loading" pop-up window appears upon initial access to the events log screen and/or when the "scroll forward/back" and "Update" buttons of the events log list are pressed; wait a few seconds.

INFORMATION:
The events log contains the last two hundred events saved in the controller of the unit. This means that if the touch screen malfunctions, the events saved on the controller can still be viewed on a replacement touch screen.

19 UPDATE OF SOFTWARE APPLICATION

19.1 Initial activities

Supply power to the Touch Screen device (warning: it requires 24V DC, NOT 24V AC. If the Touch Screen is powered by 24V AC, it flashes intermittently without starting) and wait for the completion of the initialisation process, which will take about 50 seconds:

- If the screen shows the User Interface Homepage (Figure 1), there already is a project.
- If a different screen appears, the Touch Screen has no project, has a project that must be deleted, or an “Unload” procedure has already been performed.

19.1.1 Deleting and Unloading

Be sure to delete any already installed software versions. These can be of two types:

a. Emulator project.
b. TMXXrYY project.

19.1.1.1 Emulator Project deletion

In case the pre-loaded project is the emulator, the following is the first screen that appears after the Touch Screen has been powered:

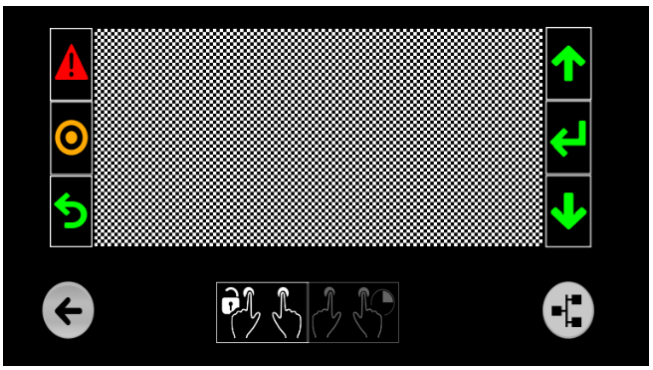


Figure 19-1: *Emulator project: Landing Page.*

1) Touch (a black point of the screen) for approximately ***10 seconds*** until the following screen appears:

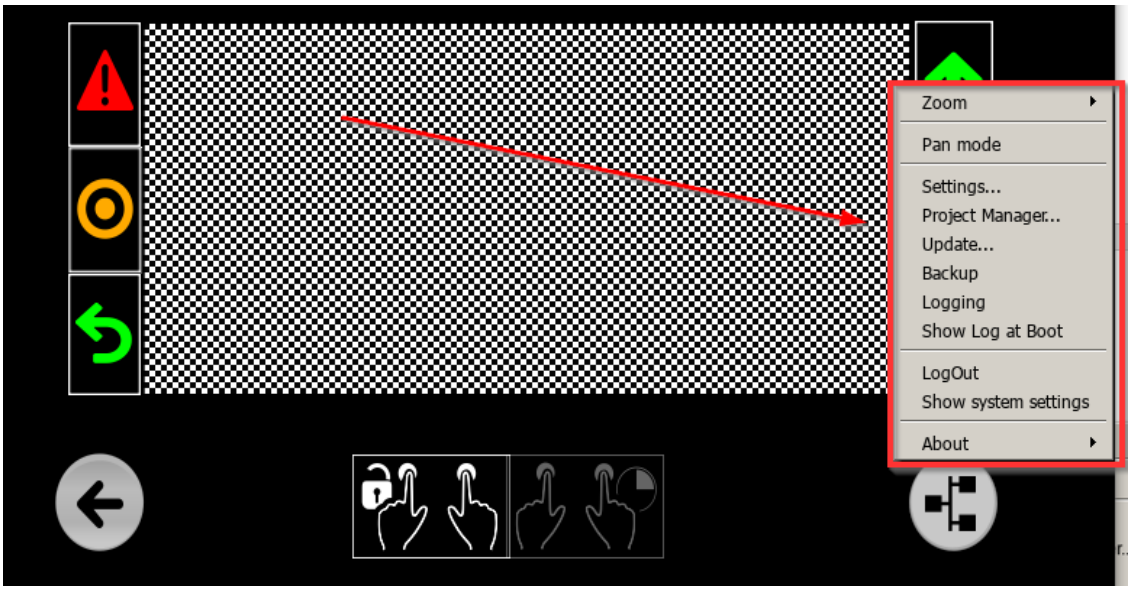


Figure 19-2: *Emulator project: Project manager.*

2) Select the “Project Manager” item until this window appears:

2a. to clean the Touch Screen memory, continue the deletion process as follows:

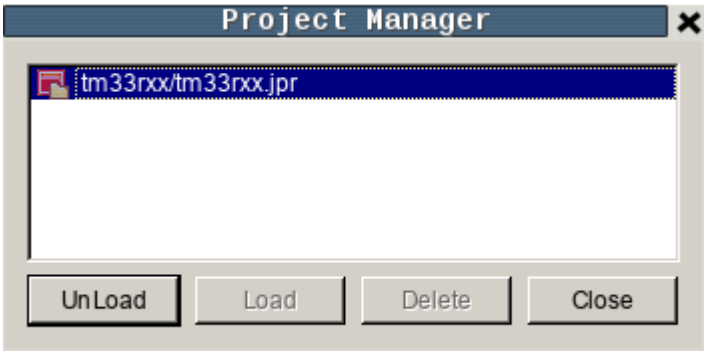
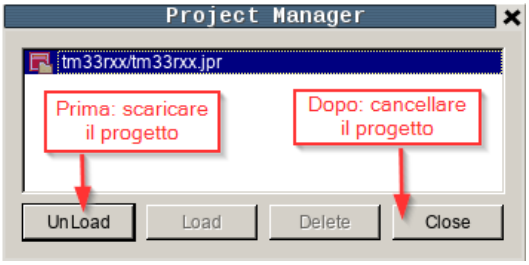


Figure 19-3: *Project Manager: display of projects.*

2b. To delete any loaded projects, press “Unload project” followed by “Delete project”.
In some cases, it may be possible to just delete the project without the need to first download it using the “Unload project” function: continue with the deletion, this is not a bug.



Or:

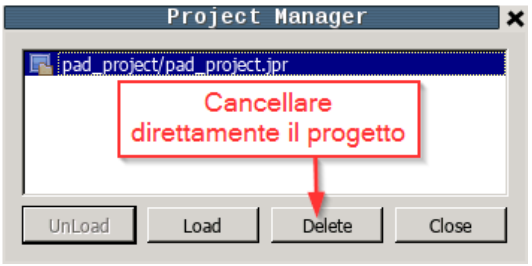


Figure 19-4: *Project Manager: projects management.*

NOTE:

a. The procedure must be repeated for each project, until the memory of the Touch Screen is completely clean. The deletion process of the previous project takes approximately 2 minutes. It might however take a few extra seconds, depending on the size of the previously installed project.

19.1.1.2 TMXXrYY project creation

If the preloaded project is a TMXXrYY software version, the following screen appears after the initialisation of the Touch Screen:

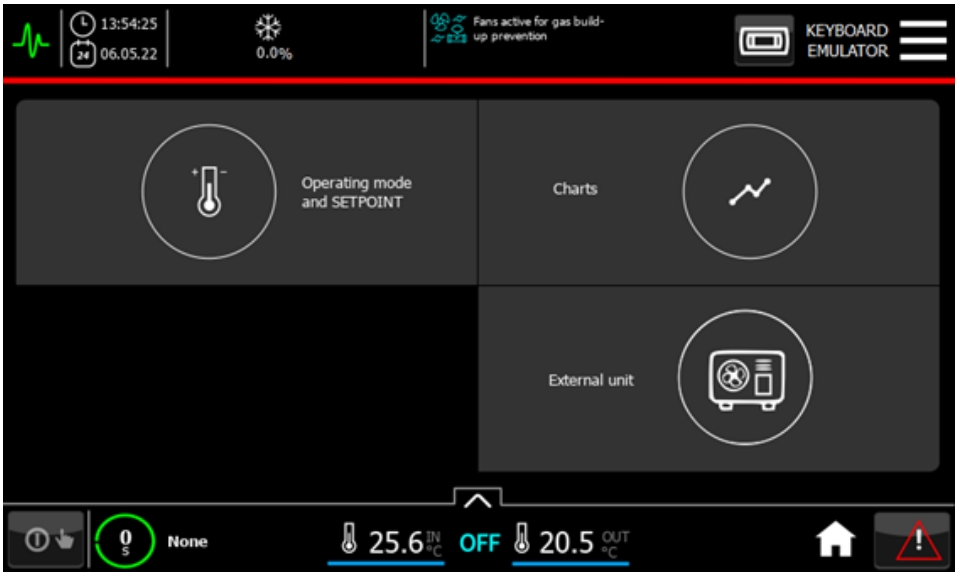


Figure 19-5: *EvolutionTouch: Homepage.*

Starting at the Home Page, touch the Quick Menu button on the top right:

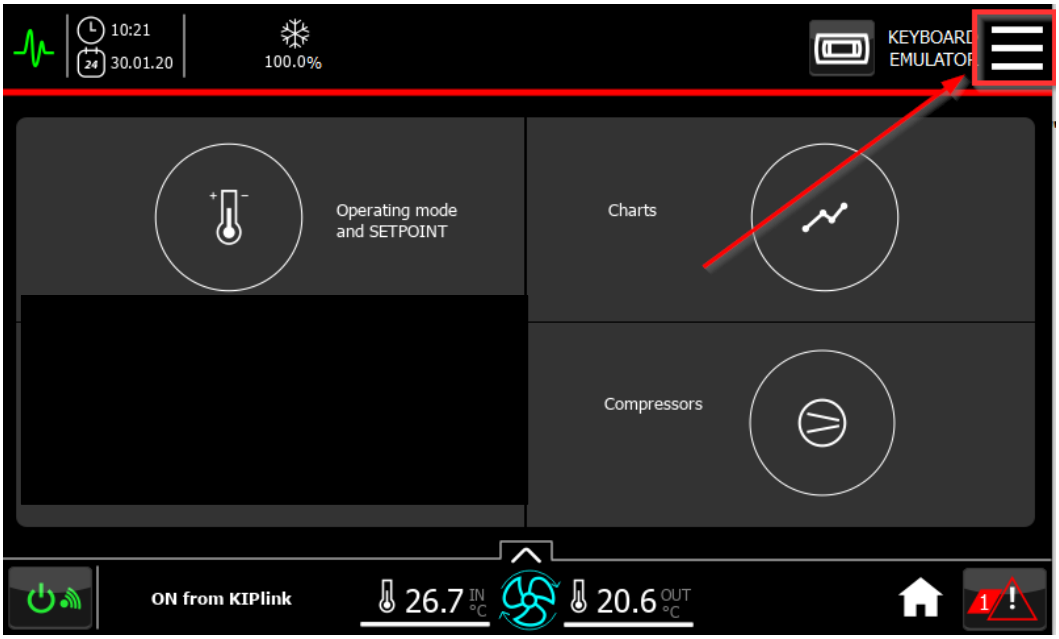


Figure 19-6: *EvolutionTouch: Access to the Quick Menu.*

1) Click “settings”:

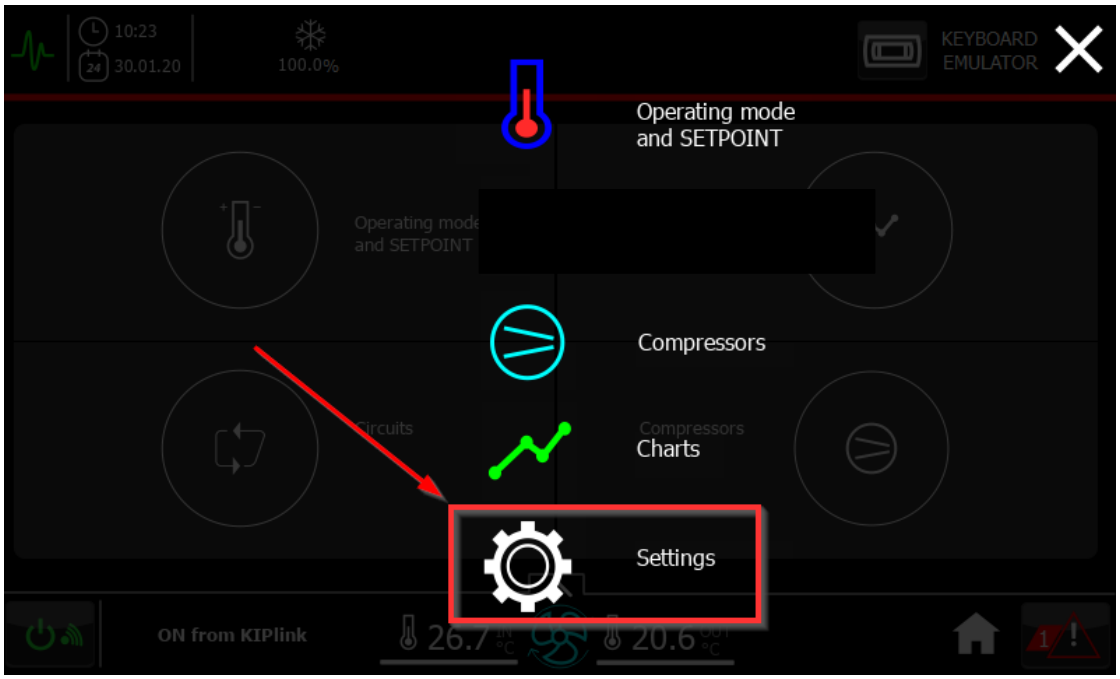


Figure 19-7: *EvolutionTouch: Quick menu.*

2) The firs setup page opens. Touch the last button at the bottom, “info”:

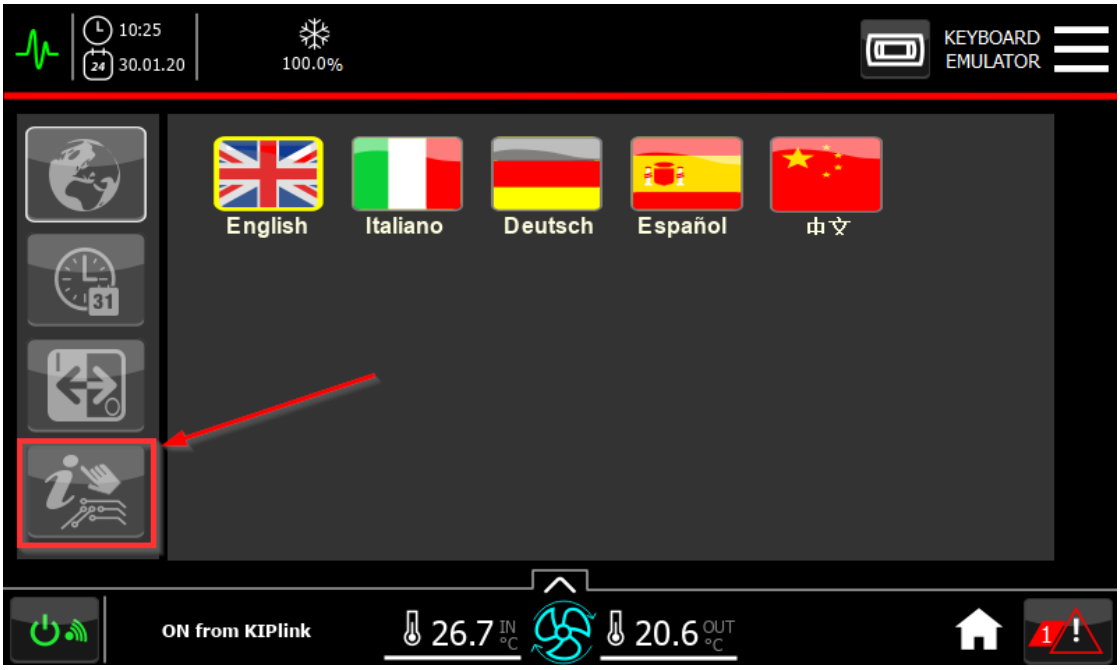


Figure 19-8: *EvolutionTouch: Quick menu.*

3) This page will open; touch and hold your finger on the highlighted area until the context menu appears:

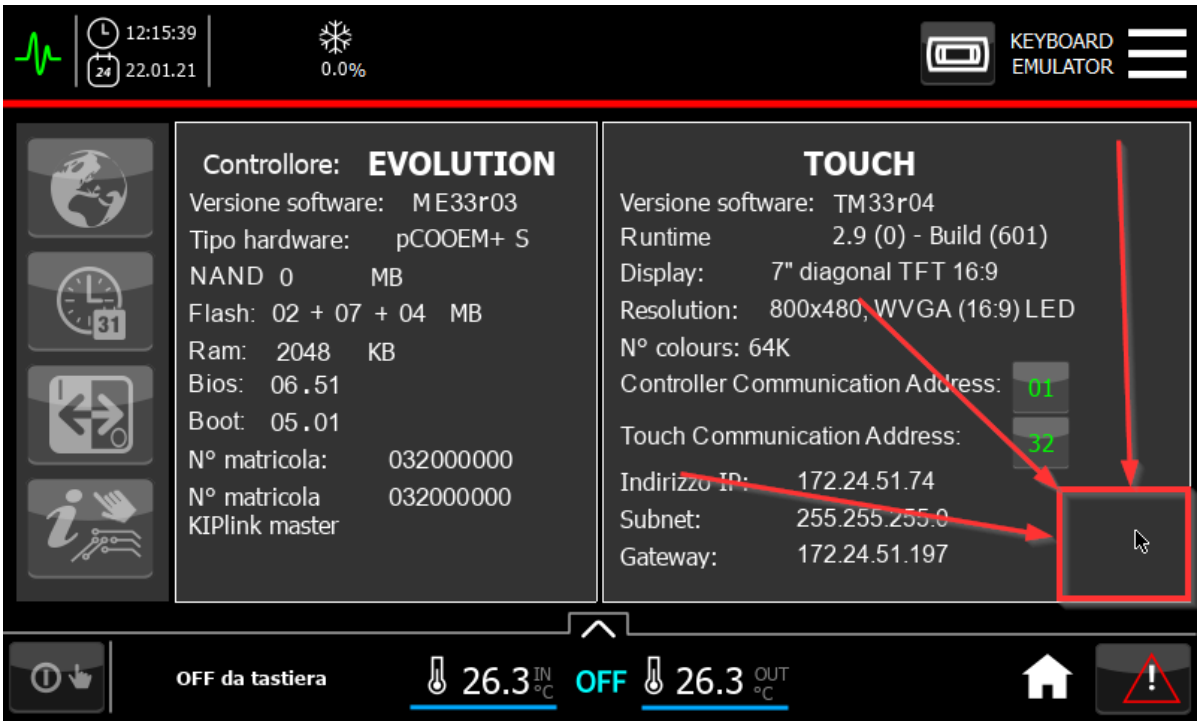


Figure 19-9: *EvolutionTouch: ProjectManager hotspot.*

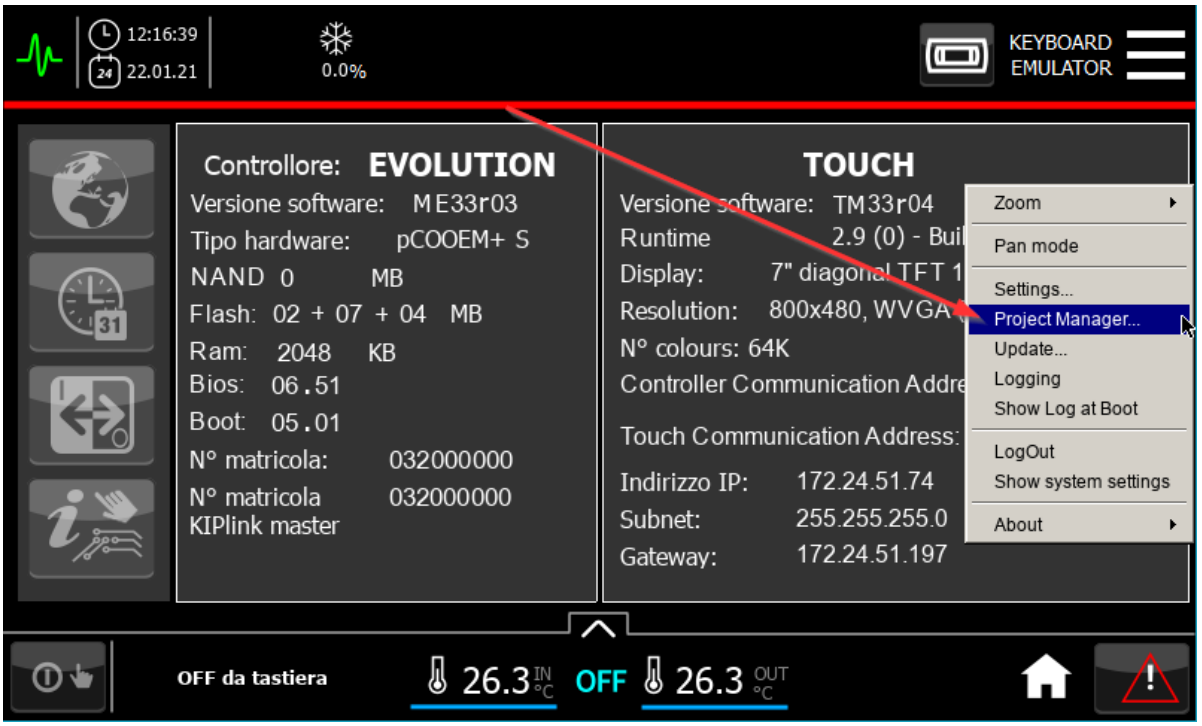


Figure 19-10: *EvolutionTouch: ProjectManager.*

4) Touch “Project Manager” as indicated.
5) To delete any loaded projects, press “Unload project” followed by “Delete project”:

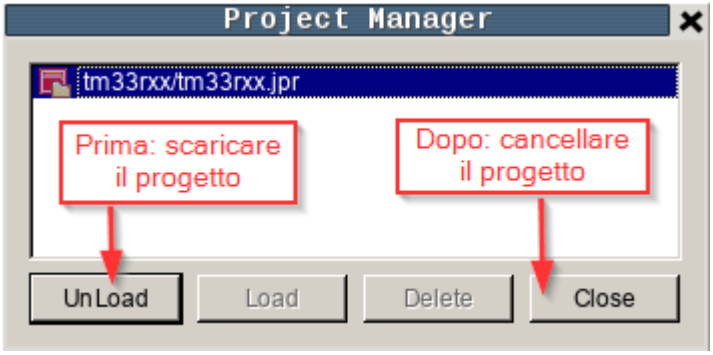


Figure 19-11: *Project Manager: projects management.*

NOTE:

a. The procedure must be repeated for each project, until the memory of the Touch Screen is completely clean.
b. The deletion process of the previous project takes approximately 2 minutes. It might however take a few extra seconds, depending on the size of the previously installed project.

1) Touch “Project Manager” as indicated.
2) To delete any loaded projects, press “Unload project” followed by “Delete project”:

19.1.2 Updates

Get a formatted FAT-32 USB stick.
Insert the USB stick into the pc port and save the “UpdatePackage.zip” application into the stick.
Take the correct file from the appropriate folder dedicated to the exchange of files with the technical centres.



Figure 19-12: *Loading of software version on USB key.*

NOTE:

a. The “UpdatePackage.zip” file must be saved directly in the USB stick root folder, not in any sub-folders.

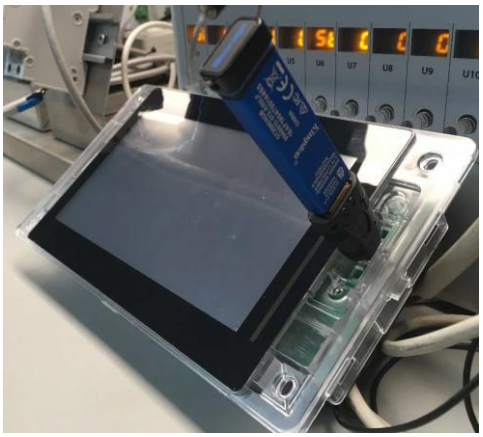


Figure 19-13: *EvolutionTouch [7"]: front USB port detail.*

NOTE:

a. a micro-USB adapter is required, as shown (Figure 14)

- Press the Touch Screen for approximately 10 seconds until the Context Menu is displayed (Figure 15):

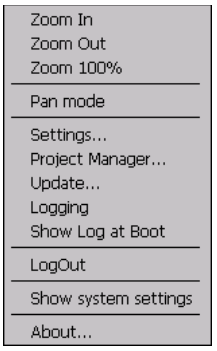


Figure 19-14: *Context menu.*

- Then select “**Update**…” and wait a few seconds:

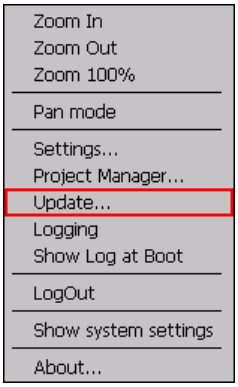


Figure 19-15: *Context menu: select the "Update" button.*

- When the following window appears, tick “**Auto select best match**” and press “**Next**”:

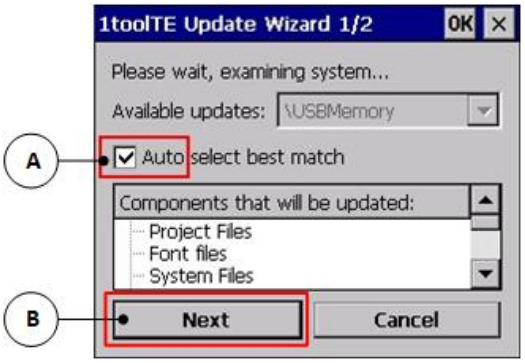


Figure 19-16: *Context menu: Update Wizard.*

- After approximately 10 seconds, the screen will show a feedback window (Figure 18) with information on the installation of the files in the Touch Screen.
  This process will take approximately **10 minutes**, with various messages appearing on the Touch Screen device, together with the blue progress bar.

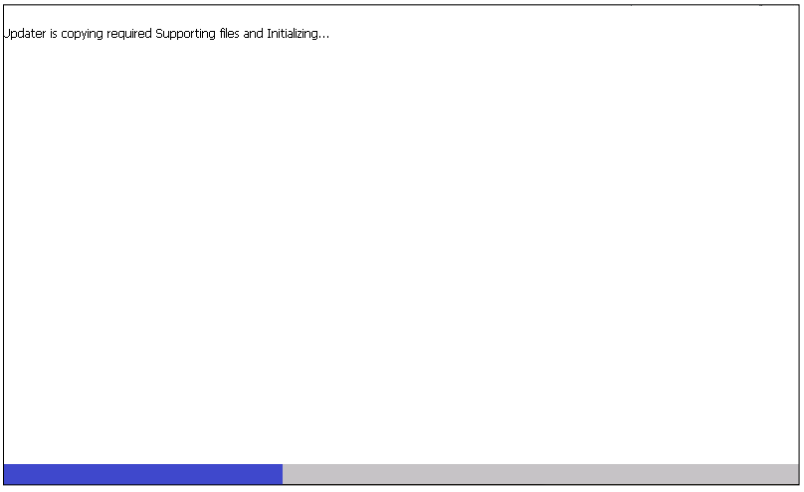


Figure 19-17: *Touch device: software update page.*

- Once the installation process has been completed, the Touch Screen will start automatically. Wait until the Homepage of the new installed application appears:



Figure 19-18: *EvolutionTouch [7"]:*
Homepage (no communication with the pCO5+ Evolution controller).

NOTE:

a. After the software has been updated, if there is no communication between the Touch Screen device and the controller, the screen shows

- The following two warnings

- Message indicating that the communication with the controller has been interrupted

- The communication icon on the top left is red 

In this case, it will be necessary to reset the communication parameters as described in Chapter 3 of this procedure.

b. Check that the version installed on the Touch Screen is the desired version by visiting the appropriate **"SETUP"** section containing the **"SOFTWARE AND PANEL SETUP INFO"** details:

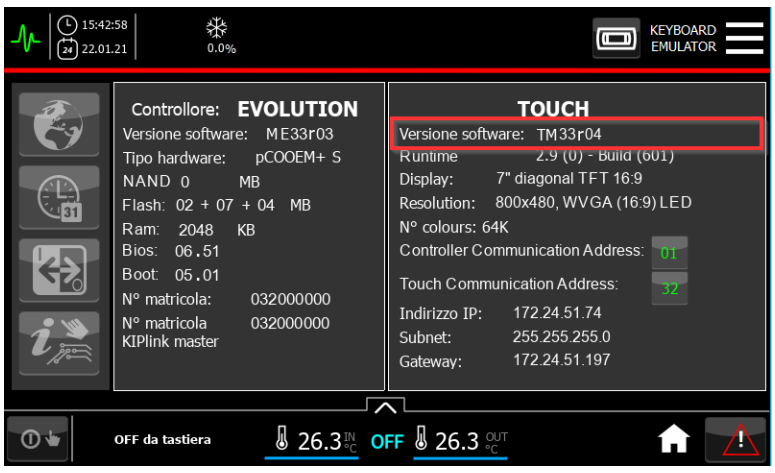


Figure 19-19: *EvolutionTouch [7"]: Software Touch version.*

20 PLAN ADDRESSING

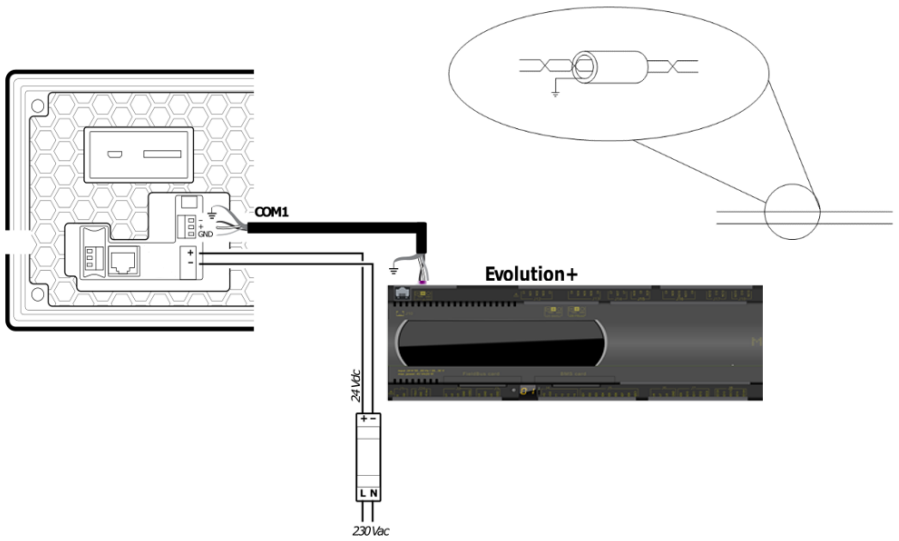
This chapter gives an example of a LAN configuration, assuming a system consisting of 3 units.

20.1 Electrical connections

A distinction must first be made between the electrical connections between the EVOLUTION+ controller and the EvolutionTouch device:

- pCO5+ controller → the connection is made between the J11 serial port of the controller and the Touch.
- pCO OEM controller → the connection is made between the J14 serial port of the controller and the Touch;

The wire, which is internally shielded and twisted, allows optimal communication between controller and Touch. If the wire length exceeds 30cm, it must be earthed on both ends.
As can be seen from the detail in the diagram below, the J11 pLAN serial port cable is shielded and twisted to prevent electromagnetic interference:



20.2 Example of LAN configuration

If the installation consists of several units communicating in pLAN, the following procedure must be carried out to ensure that each Touch device communicates correctly with its controller. The configuration provides for the following allocation scheme, up to a maximum of 15 units:

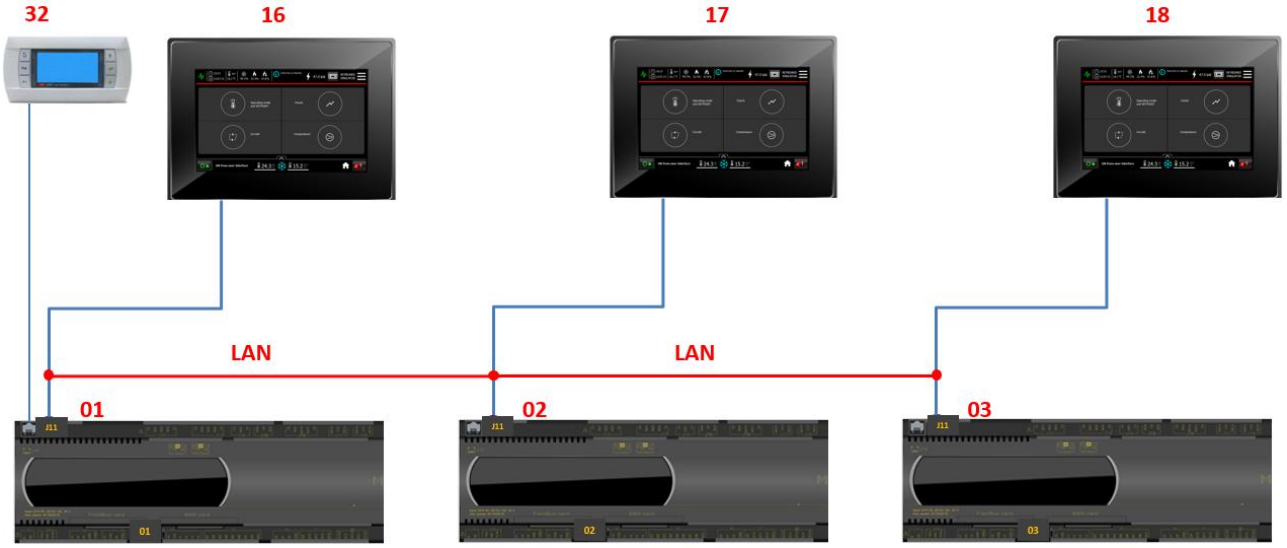
No. of network units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Unit address	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
PGD1 address (Shared)	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
EvolutionTouch Address	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30



INFORMATION:
The control board is supplied with LAN address = 1.

There are two possible scenarios: a**)** the pGD1 keyboard is present **b)** the pGD1 keyboard is not present (there are only the controllers and touchscreens).

a.
As an example, consider the following diagram of 3 Evolution+ controllers connected in LAN to one another, and each connected to its Touch via port J11 on the controller:



The following configuration will have to be performed for each unit, ensuring that the LAN connection is disconnected. Now connect the PGD1 keyboard to unit 01 and perform the following steps:

- Set the PGD1 address at 32:



- Configure unit P:01 as Trm1 16 Pr - Trm2 32 Sh - Trm3 None:



Next, disconnect the PGD1 keyboard from unit 01 and connect it to unit 02. Repeat the previous two steps for unit 02:

- Set the PGD1 address at 32:



- Configure unit P:02 as Trm1 17 Pr - Trm2 32 Sh - Trm3 None:



Next, disconnect the PGD1 keyboard from unit 02 and connect it to unit 03. Repeat the previous two steps for unit 03:

- Set the PGD1 address at 32:

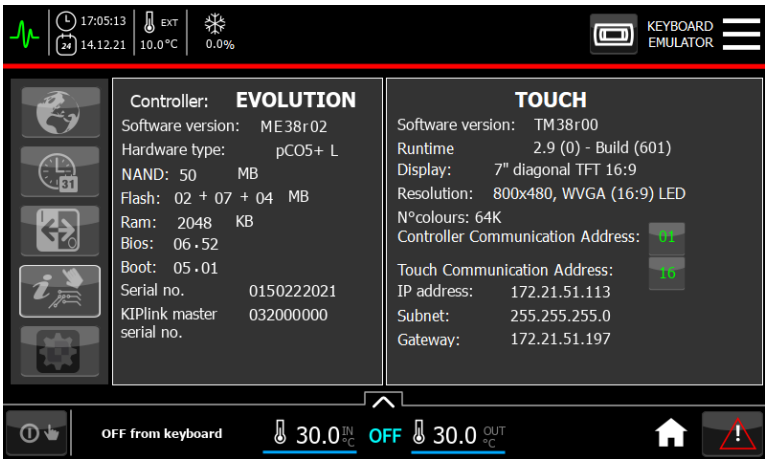


- Configure unit P:03 as Trm1 18 Pr - Trm2 32 Sh - Trm3 None:



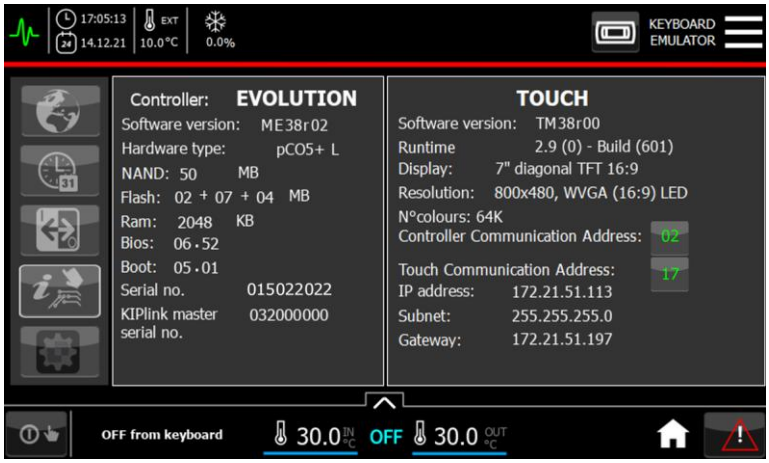
The PGD1 keyboard can now be used for all units because address 32 has been set as “Shared”.
You will now need to configure the pGDX touch devices. Keeping the pLAN connection between all units disconnected, configure the Touch connected to unit 01 as follows:

- Go to Settings and then touch the “Info” button. Set the controller communication address to 01 and the Touch communication address to 16.



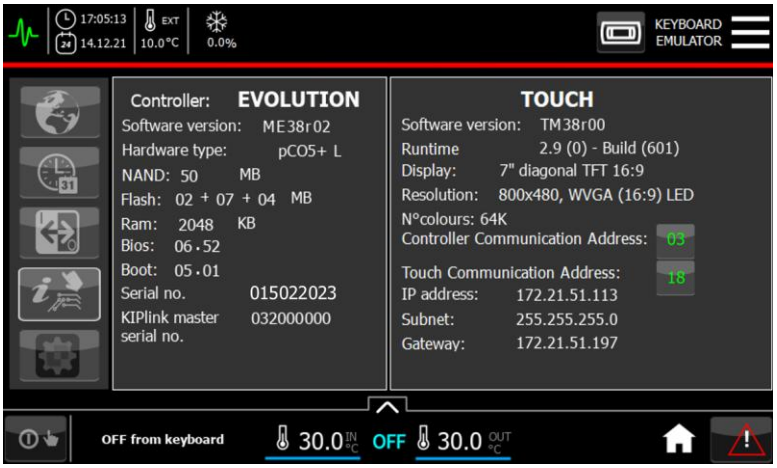
Now, keeping the pLAN connection between all units disconnected, configure the Touch connected to unit 02 as follows:

- Go to Settings and then touch the “Info” button. Set the controller communication address to 02 and the Touch communication address to 17:



Lastly, keeping the pLAN connection between all units disconnected, configure the Touch connected to unit 03 as follows:

- Go to Settings and then touch the “Info” button. Set the controller communication address to 03, while the Touch communication address must be set to 18:

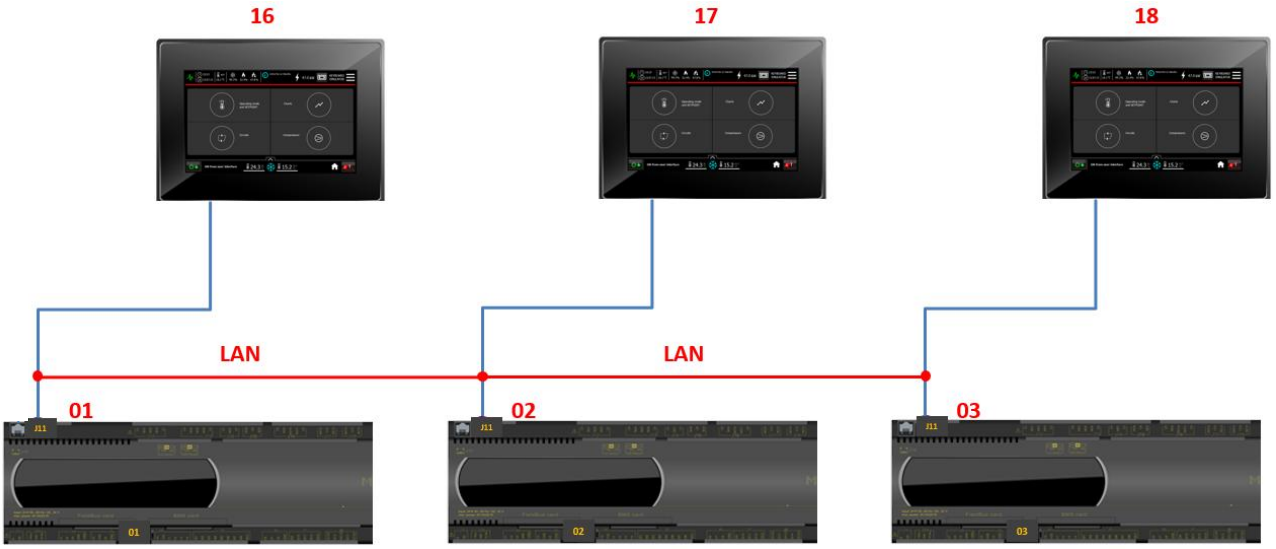


To complete configuration, perform the following steps:

1. Turn off the entire system by removing power;
2. With the system switched off, connect the controllers in LAN;
3. Turn the entire system on, providing power.

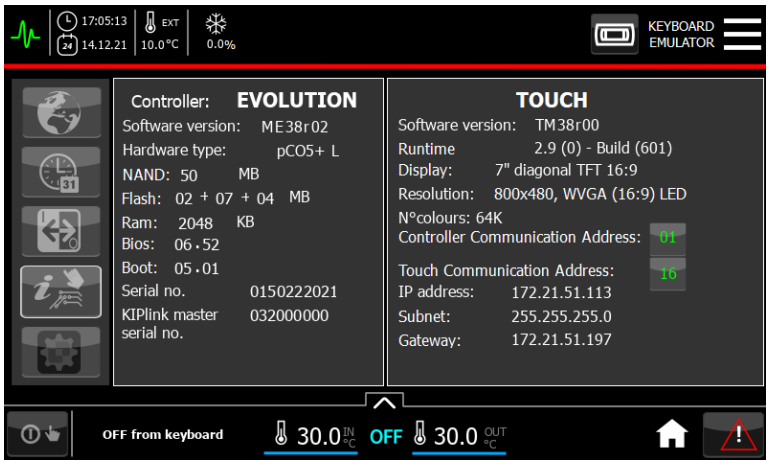
At this point each Touch device will communicate correctly with its controller, and the PGD1 keypad will be shared between all units.

b.
As an example, consider the following diagram of 3 Evolution+ controllers connected in LAN to one another, and each connected to its Touch via port J11 on the controller:



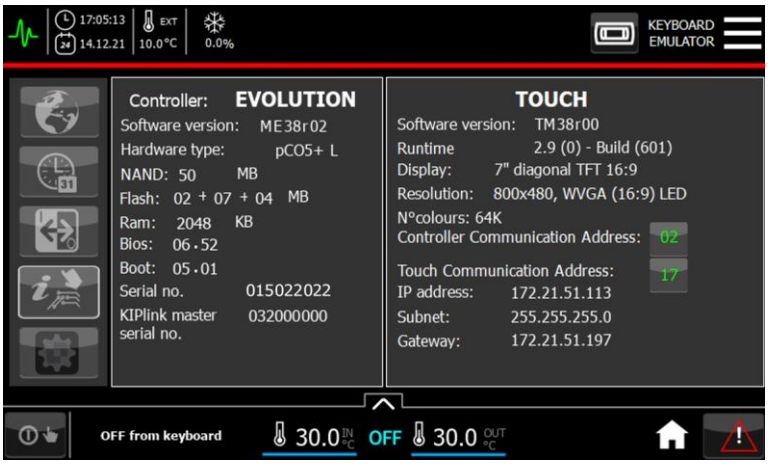
Keeping the pLAN connection between all units disconnected, configure the Touch connected to unit 01 as follows:

- Go to Settings and then touch the “Info” button. Set the controller communication address to 01 and the Touch communication address to 16.



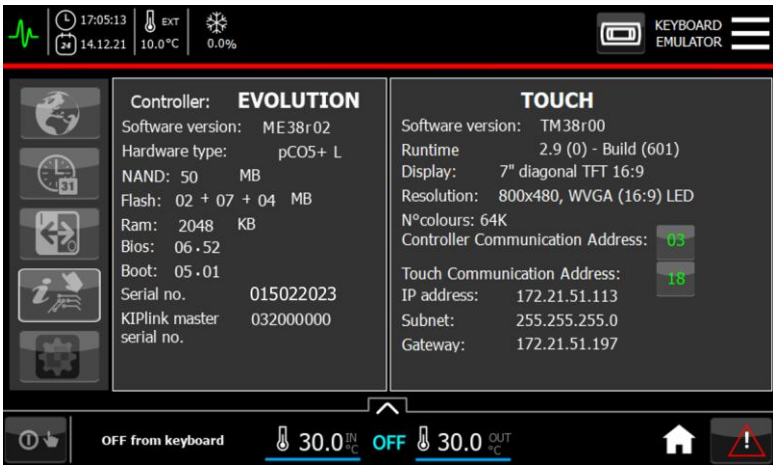
Now, keeping the pLAN connection between all units disconnected, configure the Touch connected to unit 02 as follows:

- Go to Settings and then touch the “Info” button. Set the controller communication address to 02 and the Touch communication address to 17:



Lastly, keeping the pLAN connection between all units disconnected, configure the Touch connected to unit 03 as follows:

- Go to Settings and then touch the “Info” button. Set the controller communication address to 03, while the Touch communication address must be set to 18:

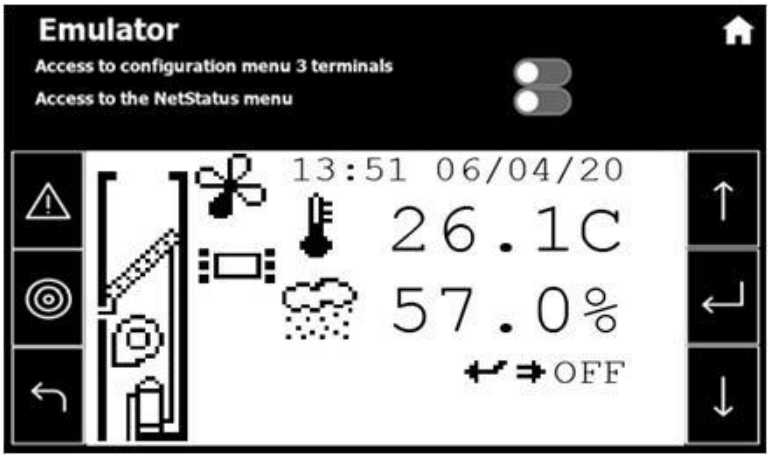


Configuration will now have to be carried out for each unit, making sure that the LAN connection is disconnected.
Turn all the touchscreen devices off and then on again.
Now connect the first touchscreen (16) to unit 01 and perform the following steps:

- Enter emulation mode



- Access the 3 terminals configuration menu:



- Configure unit P:01 as Trm1 16 Pr - Trm2 None - Trm3 None:

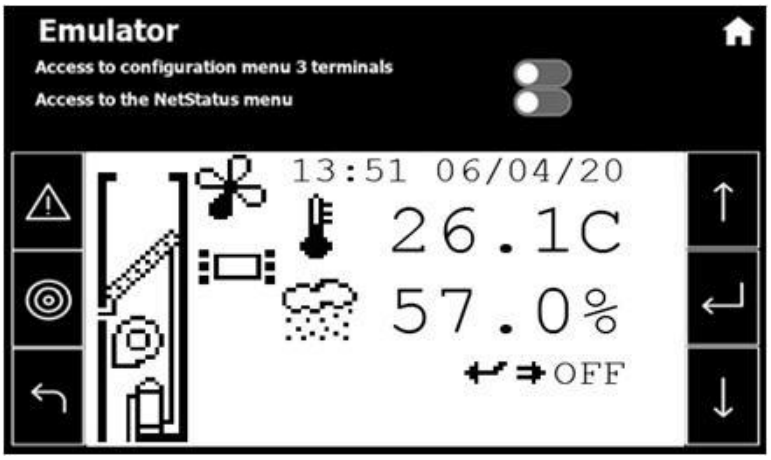


Next, disconnect the touchscreen from unit 01 and connect the second touchscreen (17) to unit 02 and repeat the two points above for unit 02:

- Enter emulation mode



- Access the 3 terminals configuration menu:



- Configure unit P:01 as Trm1 17 Pr - Trm2 None - Trm3 None:

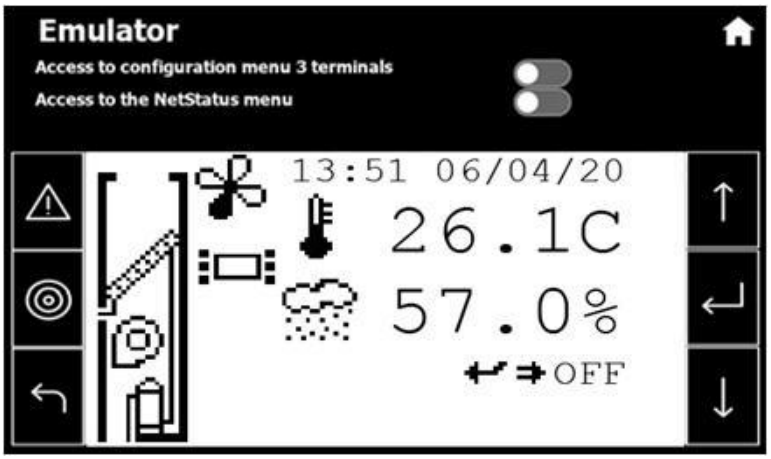


Next, disconnect the touchscreen from unit 02 and connect the third touchscreen (18) to unit 03 and repeat the previous two steps for unit 03:

- Enter emulation mode



- Access the 3 terminals configuration menu:



- Configure unit P:01 as Trm1 18 Pr - Trm2 None - Trm3 None:



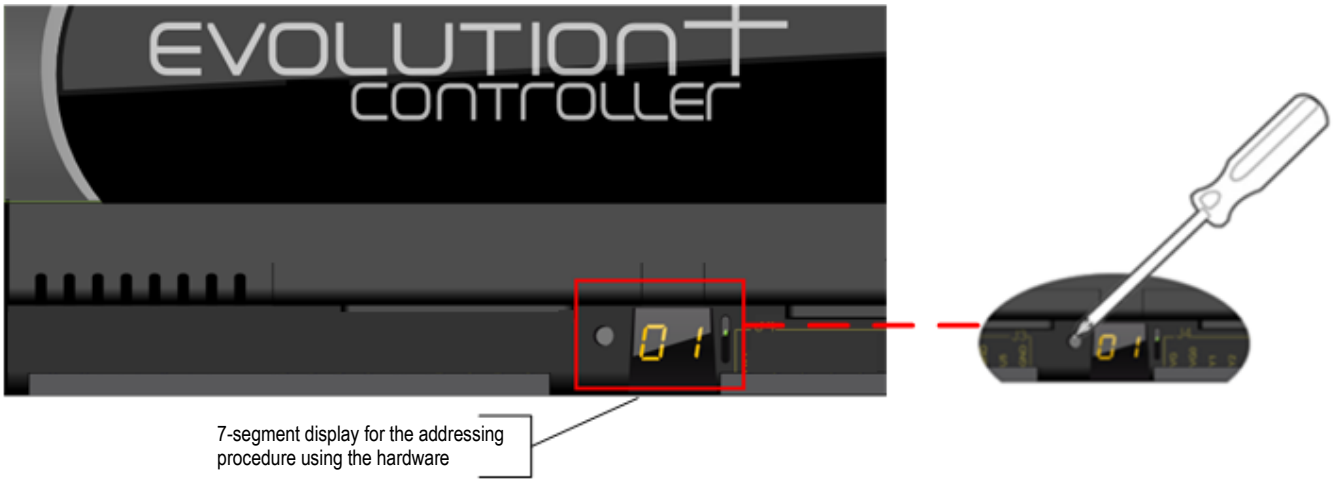
To complete configuration, perform the following steps:

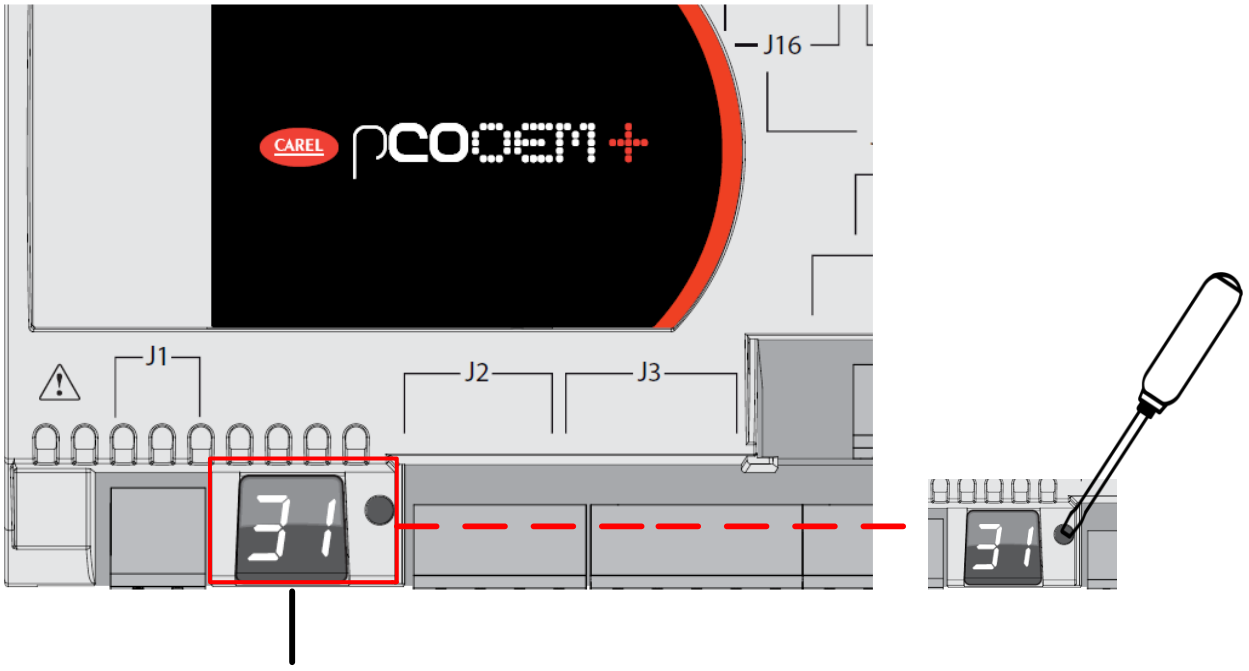
- Turn off the entire system by removing power;
- With the system switched off, connect the controllers in LAN;
- Turn the entire system on, providing power.

Each Touch device will now successfully communicate with its controller.

20.3 Addressing of the control board – From the board

The control board address is displayed by 7-segment screen in the following image:





Display a 7 segmenti per la procedura di indirizzamento via hardware

In order to display the current address, press the button on the left of the display briefly (for no more than 2 seconds) using, for instance, the tip of a screwdriver (Ø < 3mm). After 5 seconds from releasing the button, the address display turns off.

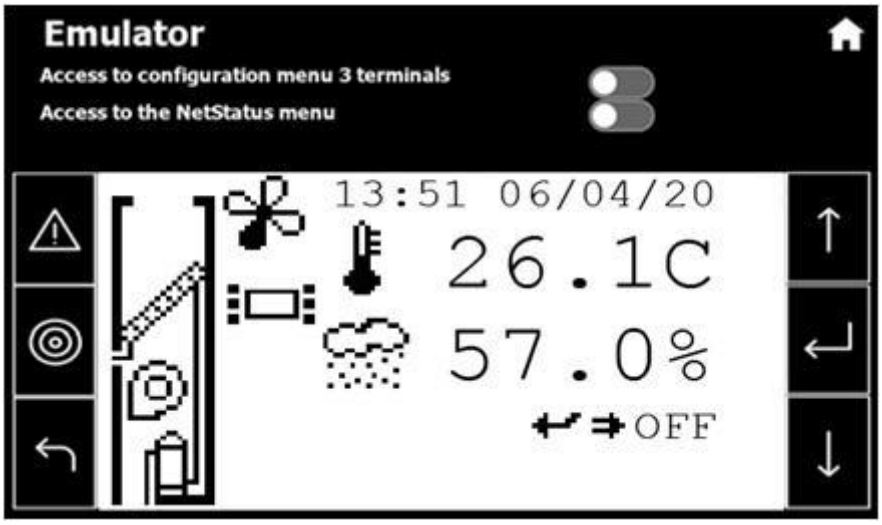
In order to change the board address, follow the process below:

1. Press the button with a screwdriver for at least 3 seconds. The saved address starts flashing.
2. Press the button repeatedly, or press and hold it to scroll through automatically, to find the required address.
3. Wait for at least 10 seconds. The display starts flashing quickly to indicate that the new address has been saved.
   In order to cancel the operation, turn off the control within 7 seconds of pressing the button last.
4. Turn off and restart the Evolutiontouch controller in order to activate the new address.

21 KEYBOARD EMULATOR - ACCESS TO THE PARAMETERS PAGES

Using the appropriate button located in the header, it is possible to emulate the keyboard. Press this button to access the password-protected manufacturer, user and service pages, and therefore also the parameters pages.





With this function, the PGD1 physical keyboard can be used to scroll between the screens.
The buttons can be used to scroll through the screens in the same way as the physical keyboard, while the three buttons at the top serve the following functions:

- **Button 1:** Touch this button to access the 3 terminals configuration menu
- **Button 2:** Touch this button to access the NetStat menu

22 TECHNICAL CHARACTERISTICS

Model	7” Touch Screen
Display	
Type	TFT LCD
Resolution	800x480 Wide
Active display area	7’’ diagonal
Colours	16.7M
Backlighting	LED - Lifetime 20 khrs @ 25 °C
Brightness adjustment	Yes - default auto power off after 15 min
Operator interface	
Touchscreen	Analog resistive
System LED indicators	8-colour notification bar
USB port	Host interface 2.0 - micro USB -B - 150 mA max (do not use to recharge devices) Lmax = 1m
COM1, Serial Port	RS485 max 115.2 Kb/s 3.81mm-pitch quick-disconnect screw connector Shielded cable AWG 20-22 with twisted pair for ± Lmax = 500m - tightening torque 0.25Nm (2.2lbf x in) Master/Slave with configuration dip switches (Fig.3)
SD Card slot	1
Vectorial graphics	Yes, including SVG 1.0 support
Dynamic objects	Yes. Visibility, position, rotation
Historical and trend	Yes. Limited to Flash memory
Multi-language	Yes, with runtime language setting and only limited by the available memory
Recipes	Yes. Limited to Flash memory
Alarms	Yes
Events log	Yes
Hardware Real Time Clock	Yes, with buffer battery
Power supply	24Vdc
Maximum power input	9 W
Fuse	Automatic
Weight	Approx 600 g
Battery	Non-rechargeable BR1225 lithium battery
Operating temperature	-20 to 60°C
Storage temperature	-30 to 70°C
Operating and storage humidity	5-85% relative humidity, non-condensing
Protection rating	Front IP20
Front panel LxH	270x185 mm
Holes AxB **	154x250.3 mm
Depth D+T	45+7 mm

23 TABLES OF MASKS

23.1 Status display masks

The various status display masks provide:

- a complete overview regarding the status of the unit;
- useful information for the unit maintenance operator.

In the **main loop** there are, in addition to the main mask and the *"Temperature Probes"* mask, only the masks that allow you to view the status of the various functions active on the unit, if any. This makes the main loop dynamic and quick to consult thanks to the reduced number of masks visible at any time.

The **"Unit" menu** contains all the masks that allow you to view the status of the various operating devices of the unit. It is therefore static and complete, and intended for occasional consultation.

The Temperature Probe mask can be found both in the main loop and the "Unit" menu. There is a shortcut that allows to switch from one to the other and vice versa simply by pressing **[ENTER]**.

The **"In/Out" menu** allows to control:

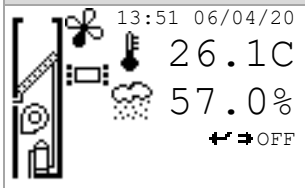
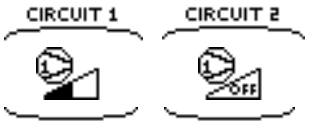
- the status of the input and output values of the controller board and the I/O expansion boards;
- the Modbus addresses used by active devices with Modbus communication.

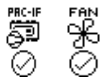
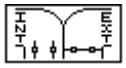
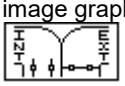
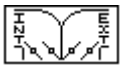
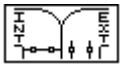
The **"Log" menu** allows you to view the alarm log. See the chapter "Event Log" for further information.

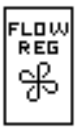
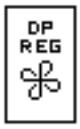
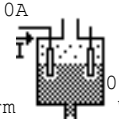
The following paragraphs list the status display masks belonging to the various menus.
Press the **[UP]** and**[DOWN]** keys to move from one mask to another.
To return to the menu selection list or main mask, press the **[ESC]** key.

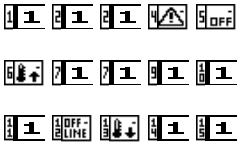
Note: if an input is not configured, the display will read -88.8, if it is offline, it will read -99.9

23.1.1 Main loop

Manual mask	Description
	Main mask. Displays the type of unit, the current date and time, the temperature and humidity currently used for adjustment, and the power-on status of the unit. For more information see the “Main mask” section.
Active Functions  Waiting for Regulation to Start	Display of the active functions in the unit. For more information see the “Active Functions Mask” section. Visible only when certain functions are active
Temperature Probes 24.0°C 15.0°C 35.0°C Go to Unit menu	Display of the **values of the temperature probes**. • Return temperature probe • Delivery temperature probe • External temperature probe Pressing the **[ENTER]** key switches to the *“Temperature Probes”* mask in the **“Unit" menu**. This shortcut provides quick access to the display masks of the unit's internal devices.
Compressor Status 	Display of the compressor status for direct expansion units with two circuits. For more information see the “Compressor Status Mask” section.
REQUEST STATUS  Step Req: 11 Sent: 11 Cooling Request: 100% Waiting: NONE Waiting time: 000sec	Display mask for cold request and steps sent to PAC-IF013B-E. The waiting times for sending steps to the Client PAC-IF013B-E are displayed: • **[NONE]** No delay. • **[SHORT WAIT]** Short wait (300 s / 5 min). • **[LONG WAIT]** Long wait (600 s / 10 min). • **[CHANGING MODE]** Cycle inversion/mode change (120 s / 2 min). • **[MIN T.OFF]** Minimum off (120 s / 2 min). Information visible only with s-MEXT units.

Manual mask	Description
PAC-IF013B-E Client  Active Step: 11 Mode: COOLING Status: Online PAC-IF code: 00000	Client PAC-IF013B-E status. Pressing **[ENTER]** will take to the section containing additional Client PAC-IF card information. In case of alarm, the icon will flash showing the “PAC-IF code:” message followed by the alarm code from the PAC-IF card. For additional information on the meaning of the code, see the “Event Mask” chapter. Information visible only with s-MEXT units.
PAC-IF013B-E Server1  Active Step: 11 Mode: Cooling Status: Online PAC-IF code: 00000	Server 1 PAC-IF013B-E status. Pressing **[ENTER]** will take to the section containing additional Server 1 PAC-IF card information. In case of alarm, the icon will flash showing the “PAC-IF code:” message followed by the alarm code from the PAC-IF card. For additional information on the meaning of the code, see the “Event Mask” chapter. Information visible only with s-MEXT unit and Server 1 enabled.
Safety Reduction Load  Normal Work	Mask that displays the Safety Reduction Load function. For more information see the *“Safety Reduction Load Mask”* section.
Direct FreeCooling DeltaT 02.0 T.Int 25.0  T.Ext 23.0 Status: Enabled Pos.:All Internal 000%	Display of operation of the **Direct Free-cooling function**. Displayed: • Internal T, external T and Enabling of direct Free-cooling. • Damper position (internal only, mixing, external only) and the opening percentage. The image graphically describes the Free-cooling damper position: •  Damper in internal air only position. •  Damper in the internal and external air mixing position. •  Damper in external air only position. *Visible if the function is enabled.*
FlowRate  Current 02500m3/h	Mask that displays only the CONSTANT FLOW value. *Visible if the function is configured as value display only.*

Manual mask	Description
Constant FlowRate Reg.  Target 02500m3/h Current 02500m3/h Status On Target	CONSTANT CAPACITY operation display mask. *Visible if the function is configured.*
Constant DeltaP Regul.  Target 0010Pa Current 0010Pa Status On Target	CONSTANT HEAD operation display mask. *Visible if the function is configured.*
DeltaP  Current 0010Pa	Mask that displays only the CONSTANT HEAD value. *Visible if the function is configured as value display only.*
Humidifier 000.0kg/h 00.0A  0000µS/cm Alarm code:00 Warning code:0	HUMIDIFIER operation status display mask. *Visible if humidifier is present.*
Humidifier Status: ON Request: 023.0% 	EXTERNAL HUMIDIFIER operation status display mask. *Visible if external humidifier is present.*

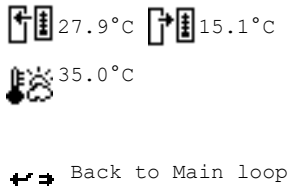
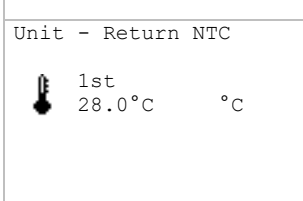
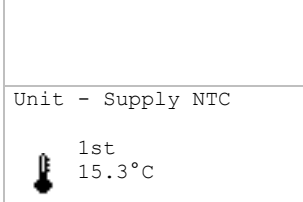
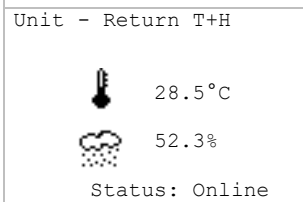
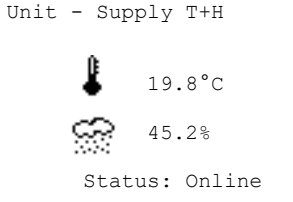
Manual mask	Description
LAN STATUS 	**Local network (LAN) status** display mask. This mask is displayed on all units in the same pLAN group. • Unknown unit. • Unit in standby (the and icons alternate). • Unit off. • Unit on (the and icons alternate). • Unit in adjustment (the and icons alternate). • Unit in Hot-Spot protection. • Unit with Cold-Spot protection. • Unit not operating. • Unit disconnected. When enabled it is possible to view the status of the ADL function: • ADL enabled. ADL ADL operating limit reached.
LAN Temp Values 1:20.1 2:21.2 3:19.6 4:22.0 5:20.7 6:21.5 7:20.5 8:19.6 9:20.2 10:20.3 11:19.8 12:20.1 13:20.1 14:21.5 15:20.0 Mean:20.5°C	Mask that displays all the temperature values read by the units on the pLAN network. This mask is displayed on all units in the same pLAN group. *Visible if the pLAN is configured.*
LAN Humid Values 1: 2: 3: 4: 50.0 5: 49.6 6: 49.9 7: 50.3 8: 50.9 9: 50.8 10: 51.0 11: 50.1 12: 50.0 13: 49.9 14: 50.1 15: 50.3 50.2 49.7 50.4 Mean:50.2%	Mask that displays all the humidity values read by the units on the pLAN network. This mask is displayed on all units in the same pLAN group. *Visible if the pLAN is configured.*
01 LAN APL Current:0020Pa Target: 0020Pa Fan speed: 000% APL 0020Pa Local 0020Pa APL Status: On Target	Display of the operating status of the **APL function**. This mask is displayed for all the units (LAN address=1 to 10). *Visible only if the local network (LAN) and the APL function are enabled.*
BMS Temperature Average Temperature Regulation from BMS 24.5°C s:Online	Display of the temperature sent by BMS. If the temperature sent is not correct, error is displayed instead of the temperature. If the BMS signal is lost, the words “Signal Lost” flash instead of the word Online See the chapter “Adjustment with temperature provided by the Supervisor” for further details

Manual mask	Description
↑ PAC-IF PAC-IF CLIENT ← ↓	Mask confirming access to the Client PAC-IF013B-E card additional information section. Press **[ESC]** to return to the Client PAC-IF013B-E card status mask. Information visible only with s-MEXT unit enabled.
PAC-IF013B-E Client Status: ON Mode: COOLING Step: 11 Communication: Online	Client PAC-IF info mask: • **[STATUS]** Status. • **[MODE]** Mode. • **[COMMUNICATION]** Communication. • **[STEP]** Adjustment step. Information visible only with s-MEXT units.
PAC-IF013B-E Client TH11: 10.0°C TH5: 13.0°C TH2: 09.0°C	Client PAC-IF info mask: • Suction temperature probe (TH11). • Two-phase temperature probe (TH5). • Liquid temperature probe (TH2). Information visible only with s-MEXT units.
PAC-IF013B-E Client TH7: 10.0°C	Client PAC-IF info mask: External temperature probe (TH7). Information visible only with s-MEXT units.
PAC-IF013B-E Client Compressor Status: ON Predefrost: OFF Defrost: ACTIVE Selfprotection: ACTIVE Software ver. 000001	Client PAC-IF info mask: • **[COMPRESSOR STATUS]** Compressor status. • **[PREDEFROST]** Predefrost. • **[DEFROST]** Defrost. • **[SELFPROTECTION]** Selfprotection. • **[SOFTWARE VER.]** PAC-IF SW version Information visible only with s-MEXT units.
↑ PAC-IF PAC-IF SERVER 1 ← ↓	Mask confirming access to the Server 1 PAC-IF013B-E card additional information section. Press **[ESC]** to return to the Server 1 PAC-IF013B-E card status mask. Information visible only with s-MEXT unit and Server 1 enabled.
PAC-IF013B-E Server1 Status: ON Mode: COOLING Step: 11 Communication: Online	Server1 PAC-IF info mask: • **[STATUS]** Status. • **[MODE]** Mode. • **[COMMUNICATION]** Communication. • **[STEP]** Adjustment step. Information visible only with s-MEXT unit and Server 1 enabled.

Manual mask	Description
PAC-IF013B-E Server1 TH11: 10.0°C TH5: 13.0°C TH2: 09.0°C	Server1 PAC-IF info mask: • Suction temperature probe (TH11). • Two-phase temperature probe (TH5). Liquid temperature probe (TH2). Information visible only with s-MEXT unit and Server 1 enabled.
PAC-IF013B-E Server1 TH7: 10.0°C	Server1 PAC-IF info mask: External temperature probe (TH7). Information visible only with s-MEXT unit and Server 1 enabled.
PAC-IF013B-E Server1 Compressor Status: ON Predefrost: OFF Defrost: ACTIVE Selfprotection: ACTIVE Software ver. 000001	Server1 PAC-IF info mask: • **[COMPRESSOR STATUS]** Compressor status. • **[PREDEFROST]** Predefrost. • **[DEFROST]** Defrost. • **[SELFPROTECTION]** Selfprotection. • **[SOFTWARE VER.]** PAC-IF SW version. Information visible only with s-MEXT unit and Server 1 enabled.

23.1.2 Unit Menu

Accessible from: “Main” group.

Manual mask	Description
	Access mask to unit menu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.
	Display of the values of the temperature probes. • Return temperature probe • Delivery temperature probe • External temperature probe
	Display of the values of the return air temperature NTC probes. The values are displayed depending on the number of NTC probes configured. *Visible if at least one return air temperature NTC probe is configured.*
	Display of the values of the delivery air temperature NTC probes. The values are displayed depending on the number of NTC probes configured. *Visible if at least one delivery air temperature NTC probe is configured.*
	Mask that displays the value of the serial generic probe (address 128). *Visible if the probe is configured.*
	Mask that displays the value of the air delivery serial probe (address 134). *Visible if the probe is configured.*

Manual mask	Description
Unit - Remote 1 T+H  30.2°C 53.0% Status: Online	Mask that displays the value of the serial remote probe 1 (address 129). *Visible if at least one serial remote probe is configured.*
Unit - Remote 2 T+H  31.0°C 50.5% Status: Online	Mask that displays the value of the serial remote probe 2 (address 130). *Visible if at least two serial remote probes are configured.*
Unit - Remote 3 T+H  29.9°C 52.2% Status: Online	Mask that displays the value of the serial remote probe 3 (address 131). *Visible if at least three serial remote probes are configured.*
Unit - Remote 4 T+H  30.4°C 51.7% Status: Online	Mask that displays the value of the serial remote probe 4 (address 132). *Visible if at least four serial remote probes are configured.*
Unit - External T+H  12.7°C 72.0% Status: Online	Mask that displays the value of the serial external probe (address 133). *Visible if the probe is configured.*
Unit - Pressure Probes  09.3bar  09.4bar	Display of the values of the pressure probes. • Circuit 1 low pressure probe (only with thermostatic valve) • Circuit 2 low pressure probe (only with thermostatic valve)

Manual mask	Description
Unit - Regulat. Ramps Cooling: 073.2% Heating: 000.0% Post Heating: 000.0% FC Damper: 100.0%	Regulation ramp punctual value reading.
Unit - Internal Fan Speed Request: 063% Regulation Type: Standard	Mask that displays the demand value and type of ventilation adjustment *Visible only on units with EC fans controlled by an analogue signal.*
Unit - Internal Fan Speed Request: 063% Reg: Standard Current Speed (%): Fan1: 063 Fan2: 063 Fan3: 063 Fan4: 000 Fan5: 063 Fan6: 630 Fan7: 000 Fan8: 000	Mask that displays the request value and type of ventilation adjustment and the actual speed of the fans. Only the data of the fans actually installed in the unit are displayed. *Visible only on units with EC fans controlled via serial communication.*
Unit Int. Fan Status Fan 1 00000000 Turned ON RPM:0800 No alarm Fan 2 00000000 Turned ON RPM:0800 No alarm	Display of the status of the internal EC 1 and 2 fans communicating via Modbus. In case of alarm or signal coming from the fan, both the alarm/signalling code and the corresponding description are visible. *Visible only on units with at least one EC fan controlled via serial communication.*
Unit - Int. Fan Status Fan 3 00000000 Turned On RPM:0800 No alarm Fan 4 08001000 In alarm RPM:0800 Motor overheating	Display of the status of the internal EC 3 and 4 fans communicating via Modbus. In case of alarm or signal coming from the fan, both the alarm/signalling code and the corresponding description are visible. *Visible only on units with at least 3 EC fans controlled via serial communication.*
Unit - Int. Fan Status Fan 5 00000000 Turned On RPM:0800 No alarm Fan 6 00000000 Turned On RPM:0800 No alarm	Display of the status of the internal EC 5 and 6 fans communicating via Modbus. In case of alarm or signal coming from the fan, both the alarm/signalling code and the corresponding description are visible. *Visible only on units with at least 5 EC fans controlled via serial communication.*

Manual mask	Description
Unit - Int. Fan Status Fan 7 00000000 Turned Off RPM:0000 No alarm Fan 8 00000000 Turned Off RPM:0000 No alarm	Display of the status of the internal EC 7 and 8 fans communicating via Modbus. In case of alarm or signal coming from the fan, both the alarm/signalling code and the corresponding description are visible. *Visible only on units with at least 7 EC fans controlled via serial communication.*
Unit - Supply damper Request: Closure Status: Close	Display of the status and request to the delivery/return damper. VISIBLE ONLY ON UNITS WITH DELIVERY/RETURN DAMPER ENABLED.
Unit - Energy Anlz. 1 Voltage (V) 231 Current (A) 035.1 Active Power(kW) 0007.3	Mask that displays the values detected by the network analyser. The supply voltage, input current and absorbed active power are displayed. *Visible if the network analyser is present and configured and the unit power supply is single-phase.*
Unit - Energy Anlz. 1 Voltage (V) L1-L2 403 L2-L3 403 L3-L1 403 Neutral 1 233 Neutral 2 233 Neutral 3 233	Mask that displays the electric values detected by the network analyser. It displays phase-phase and phase voltage (phase-neutral) values. *Visible if the network analyser is present and configured and the unit power supply is three-phase.*
Unit - Energy Anlz. 1 Current (A) Line 1 016.7 Line 2 016.7 Line 3 016.7 Neutral 000.0	Mask that displays the electric values detected by the network analyser. Phase currents and neutral current are displayed. *Visible if the network analyser is present and configured and the unit power supply is three-phase.*
Unit - Energy Anlz. 1 Active Power (kW) Phase 1 0003.5 Phase 2 0003.5 Phase 3 0003.5 Total 0010.5	Mask that displays the electric values detected by the network analyser. The phase active power and the total active power absorbed are displayed. *Visible if the network analyser is present and configured and the unit power supply is three-phase.*

Manual mask	Description
Unit - Energy Anlz. 1 Energy: 0075600kWh Time: 0000002h	Mask that displays the network analyser active energy and hour counter. *Visible if the network analyser is present and configured.*
Unit - Energy Anlz. 2 Voltage (V) 231 Current (A) 017.9 Active Power(kW)0003.7	Mask that displays the values detected by the network analyser 2. The supply voltage, input current and absorbed active power are displayed. *Visible if the network analyser 2 is present and configured and the unit power supply is single-phase.*
Unit - Energy Anlz. 2 Voltage (V) L1-L2 403 L2-L3 403 L3-L1 403 Neutral 1 233 Neutral 2 233 Neutral 3 233	Mask that displays the electric values detected by the network analyser 2. It displays phase-phase and phase voltage (phase-neutral) values. *Visible if the network analyser 2 is present and configured and the unit power supply is three-phase.*
Unit - Energy Anlz. 2 Current (A) Line 1 004.2 Line 2 004.2 Line 3 004.2 Neutral 000.0	Mask that displays the electric values detected by the network analyser 2. Phase currents and neutral current are displayed. *Visible if the network analyser 2 is present and configured and the unit power supply is three-phase.*
Unit - Energy Anlz. 2 Active Power (kW) Phase 1 0000.9 Phase 2 0000.9 Phase 3 0000.9 Total 0002.6	Mask that displays the electric values detected by the network analyser 2. The phase active power and the total active power absorbed are displayed. *Visible if the network analyser 2 is present and configured and the unit power supply is three-phase.*
Unit - Energy Anlz. 2 Energy: 0028350kWh Time: 0000003h	Mask that displays the network analyser 2 active energy and hour counter. *Visible if the network analyser 2 is present and configured.*

Manual mask	Description
Unit - ATS Transfer Delay: 0009s Return Delay: 0009s Working mode: Auto Operating mode: Local Alarm Code: 0009	Information on the status and line change times of the connected ATS. *Visible if the ATS is present and configured.*
Unit - ATS Line priority:Line 1 Power line 1: DISCONNECTED Source available Power line 2: DISCONNECTED Source available	Mask that displays the status of power supply line from the power circuit breaker. *Visible if the ATS is present and configured.*
Unit - ATS Voltage Source 1 (V) L1-L2 0400.0 L2-L3 0400.0 L3-L1 0400.0 Neutral 1 0230.0 Neutral 2 0230.0 Neutral 3 0230.0	Mask that displays the power supply of source 1 read by the ATS device. *Visible if the ATS is present and configured.*
Unit - ATS Voltage Source 2 (V) L1-L2 0400.0 L2-L3 0400.0 L3-L1 0400.0 Neutral 1 0230.0 Neutral 2 0230.0 Neutral 3 0230.0	Mask that displays the power supply of source 2 read by the ATS device. *Visible if the ATS is present and configured.*
Unit - APF APF status: Normal Alarm code: 00	Mask that displays the status and alarm code from the APF device. VISIBLE IF THE APF IS PRESENT AND CONFIGURED

Manual mask	Description
Unit - APF Power factor [cos(f)] Phase A: +0.95 Phase B: +0.87 Phase C: +0.92	Mask that displays the power factor from the APF device. VISIBLE IF THE APF IS PRESENT AND CONFIGURED
Unit - APF Voltage THD: Phase A: 04.56% Phase B: 04.12% Phase C: 03.98%	Mask that displays the harmonic distortion of the voltage on the power supply phases read by the APF device. *Visible if the APF is present and configured.*
Unit - APF Current THD: Phase A: 40.15% Phase B: 35.27% Phase C: 42.51%	Mask that displays the harmonic distortion of the current on the power supply phases read by the APF device. *Visible if the APF is present and configured.*
Unit - GSM Modem Status: Stand-by ext.modem Offline 000% Time next call: 0000s SMS Queue: 00	GSM MODEM status display mask. *Visible if the GSM modem is present and configured.*
Unit - KIPlink Status: Offline WiFi Network SSID: KIPlink_032000000 IP Address: 000.000.000.000 Channel: WiFi	Mask that DISPLAYS the status and main information of the KIPlink module. VISIBLE IF THE KIPLink IS PRESENT AND CONFIGURED.
Unit - KIPlink Module type: Master-EthOFF-WiFiON	Mask that DISPLAYS the status and main information of the KIPlink module.

Manual mask	Description
Unit - KIPlink Ethernet channel: IP: 192.168.030.001 Sub:255.255.255.000 Gw: 000.000.000.000	Mask that DISPLAYS the information of the KIPlink Ethernet network.
Unit - KIPlink WiFi channel: IP: 192.168.030.001 Sub:255.255.255.000 Gw: 000.000.000.000	Mask that DISPLAYS the information of the KIPlink Wi-Fi network.
Unit - KIPlink Network Info SSID master: KIPlink_032000000 IP master: 192.168.030.001 KIPlink ID: 01	Mask that DISPLAYS the status and main information of the NETWORK of the KIPlink MASTER module.
Unit - Work Hours ON 000008h	Displays the operating time of the fans and compressors in the various unit configurations.
Unit - Work Hours ON 1 000001h 2 000001h 000003h	Display of the heater and humidifier operating hours.
Unit - N° of Starts ON 0000001	Display of the number of unit and compressor starts in the different configurations of the unit.
Unit - N° of Starts ON 1 0000003 2 0000001 0000005	Display of the number of heater and humidifier starts.

Manual mask	Description
Unit - SN Serial Number of the Unit 032000000	Unit serial number.
Unit - About Evolution+ Code ME 52.00 EN HW pCO5+ M NAND 50MB Flash 2MB + 7MB + 4MB Ram 2048KB Boot 05.01 Bios 06.52	This mask contains the reference information for the application [Code ME 52.00 EN and subsequent MEXXrxx revisions]. The closed padlock symbol shows that the board is provided with its propriety software. The second part of the mask shows the hardware information, namely the size (S, M, L), the memories (NAND, Flash and RAM), and the versions of the basic software of the controller (boot and bios).

23.1.3 In/Out Menu

Accessible from: “Main” group.

Manual mask	Description
↑ In/Out ← ↓	Access mask to In/Out menu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu. **For the meaning of the various inputs and outputs, please refer to the “input/output configuration tables”.**
In/Out - Anlg. Inputs U1 28.0bar U2 26.2°C U3 15.3°C U4 09.3bar U5	Displays the status of the universal inputs. The values displayed depend on the unit configuration. For the meaning of each universal input, please refer to the “input/output configuration tables” *Visible only on units in which the pCO5+ small controller is installed.*
In/Out - Dgtl. Inputs ID1 ID5 ID2 ID6 ID3 ID7 ID4 ID8	Displays the status of the digital inputs. For the meaning of each digital input, please refer to the “input/output configuration tables”. *Visible only on units in which the pCO5+ small controller is installed.*
In/Out - Anlg. Outputs Y1 06.8V Y3 00.0V Y2 02.3V Y4 00.0V	Displays the status of the analogue outputs. The values displayed depend on the unit configuration. For the meaning of each analogue output, please refer to the “input/output configuration tables”.
In/Out - Dgtl. Outputs NO1 NO5 NO2 NO6 NO3 NO7 NO4 NO8	Displays the status of the digital outputs. For the meaning of each digital output, please refer to the “input/output configuration tables”. *Visible only on units in which the pCO5+ small controller is installed.*

Manual mask	Description
In/Out – EXP1 NO1 ID1 NO2 ID2 NO3 ID3 NO4 ID4 Y1 09.6V B1 000.0 B3 012.2 B2 028.1 B4 015.3	Displays the status of the inputs and outputs of the expansion board 1. *Visible only if one or more functions are enabled that require the presence of the expansion board 1.*
In/Out - Modbus Addr. Return T+H Probe:128 Remote 1 T+H Probe:129 Remote 2 T+H Probe:130 Remote 3 T+H Probe:133 Remote 4 T+H Probe:134 External T+H Probe:131	Displays the Modbus address used for communication with each of the enabled devices. *Visible only if one or more of the devices listed are present.*
In/Out - Modbus Addr. Supply T+H Probe: 134 EXP 1: 008	Displays the Modbus address used for communication with each of the enabled devices. *Visible only if one or more of the devices listed are present.*
In/Out - Modbus Addr. MD Modbus IF: 120 Internal Humidif: 148 Energy Analyzer 1: 031 Energy Analyzer 2: 032 Belimo EPV/EV MB 1:051 Belimo EPV/EV MB 2:052 ATS: 110 APF: 035	Displays the Modbus address used for communication with each of the enabled devices. *Visible only if one or more of the devices listed are present.*
In/Out – Modbus Addr. Fan 1: 041 Fan 5: 045 Fan 2: 042 Fan 6: 046 Fan 3: 043 Fan 7: 047 Fan 4: 044 Fan 8: 048	Displays the Modbus address used for communication with each of the enabled devices. *Visible only if one or more of the devices listed are present.*

23.1.4 History Menu

Accessible from: “Main” group.

Mask of the terminal	Description
↑ History ← ↓	Access mask to “History” menu (Alarm Log).
15:00:01 08/04/20 Evento N°003 A003 R Fire/Smoke Presence Alarm Reset: Manual Location: Plant Blocked: Unit	Mask displaying the **event history**. The following details are given for each one: • date and time; • event number, event code, activation or deactivation event: SET, RESET; • event description; • type of reset: AUTO (automatic), MAN (manual); • event location: Compressor, Circuit, Unit, Plant; • type of event block action: Compressor, Circuit, Unit, ChilledWater, Humidifier, El. Heater, Function.
User Password: 0000	Access mask to “User” menu. Enter the User password for access.

23.2 Main status display masks

23.2.1 Main Mask

Visible from: Main loop.

The figure below shows the main mask layout, including the (numbered) areas in which it is divided:

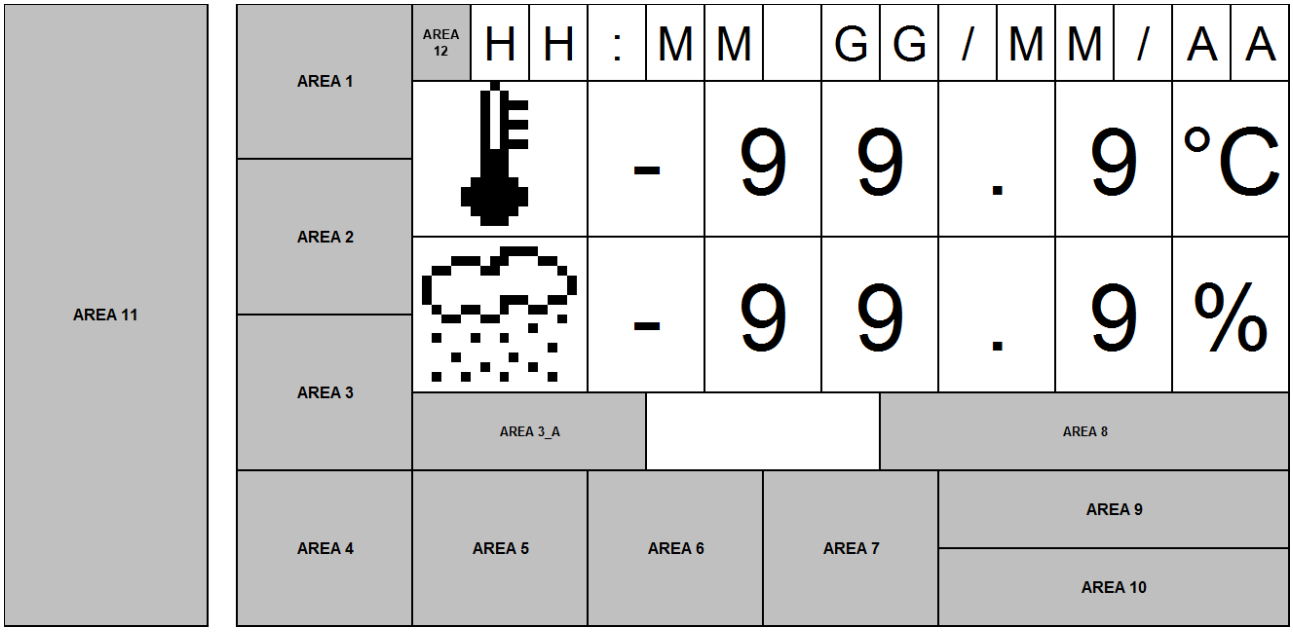


Figure 23-1: *main mask.*

The area above displays the hour and the date.
It also displays room humidity and temperature (only when the probe is installed) in real time (also in case the average value mode for the local LAN units connected should be active).

Following is a description of the main mask areas:

- Area 1: general unit status.
- Area 2: detailed status of the unit.
- Area 3: type of event (in case of active event).
- Area 3_A: code of the event (in case of active event).
- Area 4: cooling resources in operation.
- Area 5: Free-cooling resources in operation.
- Area 6: Humidity resources in operation.
- Area 7: Hot resources in operation.
- Area 8: current unit status (ON/OFF).
- Area 9: BMS address of the unit.
- Area 10: LAN address of the unit.
- Area 11: representation of the type of unit.
- Area 12: display of active functions icon.

The icons displayed in each area are listed on the following pages.

Area 1: general unit status:

	Unit off	
	Unit operating in normal mode	
	Unit running in maximum fan speed mode for fan alarm, or forcing ventilation where there is a gas leak, or if forced ventilation is enabled when an electrical heater is active (P15.26).	
	Unit operating on steady capacity mode	Normal operation
		Maximum flow reached
		Minimum flow reached
	Unit operating on steady residual ΔP mode	Normal operation
		Minimum flow reached
	The unit is off, but the fans are kept in operation at reduced speed to prevent gas build-up in case of leaks.	
	Unit in Active Fan on Stand-by.	
	Delivery damper opening.	
	The ventilation is waiting for the time indicated in parameter P20.02 to elapse.	

NOTE:
If icon flashes at the same time as icons , this means that the unit is on for Post-Ventilation of the heaters (see the relevant paragraph in the “Heating” chapter).

If both icons and flash, it means that the unit is switched on due to a ventilation stop delay, defined by parameter P23.88

Area 2: detailed status of the unit:

	Presence of an active alarm.
	Maintenance signal.
	Active manual controls.
	Unit on/off from terminal.
	Unit on/off from remote contact.
	Unit on/off from supervision system.
	Unit on/off from KIPlink.
	Unit on in local LAN.
	Unit turned on for LAN disconnection alarm.
STAND BY	Unit on stand-by.
M	Unit in manual mode

	Unit on for exceeding the high room temperature threshold.
	Unit on for exceeding the low room temperature threshold.
	Unit on for exceeding the high room humidity threshold.
	Unit on for exceeding the low room humidity threshold.
	Unit switched on for electric heater post ventilation function or ventilation stop delay (P23.88).
	Unit off and powered by ULTRACAP.
	Unit switched on/off from time bands.

Area 3: type of event; only displayed in case of active event:

	Fire/Smoke or water leak.
	Wrong phase sequence.
	Water leaks (flooding).
	Lack of air flow.
	Return temperature probe faulty.
	Remote temperature probe faulty.
	Return humidity probe faulty.
	Remote humidity probe faulty.

	Differential air pressure transducer faulty.
	Feed air temperature probe faulty.
	External air temperature probe faulty.
	Electric heater overheating.

	Fan 1 phase sequence.
	Fan 1 motor blocked.
	Fan 1 voltage problem.
	Fan 1 thermal problem.
	Fan 1 generic alarm.
	Fan 1 signal.
	Fan 1 offline.
	Return T+H probe offline.
	Remote T+H probe offline.
	I/O expansion 1 offline.
	Humidifier driver offline.
	Network analyser offline.
	BMS1 offline.

	Circuit 1 analogue low pressure probe faulty or disconnected.
	Circuit 1 low pressure switch triggered.
	Circuit 1 Frost-free function alarm.
	Humidifier cylinder expiry.
	Humidifier discharge.
	No water to the humidifier.
	Low humidifier current.
	High humidifier current.
	Generic humidifier alarm.
	LAN disconnected.
	Low return temperature (ambient).
	High return temperature (ambient).
	Low return humidity (ambient).
	High return humidity (ambient).
	EEPROM faulty.
	Maintenance request.
	Filters clogged.

NOTE:
The alarm icons on circuit 1 have equivalent versions for circuit 2, if present. The same applies to the fan alarm icons.

In case of several active events, the area displays the event having higher priority of all the present events. The order of severity for the events displayed in this area reflects the order in which the alarms are reported in the “events” table, from the most to the least severe. The severity of the events is valued based on the consequences they imply for the operation of the conditioning unit.

*For more information see the “Events masks” section.

Area 3_A: code of the active event:

A letter corresponding to the type of event (Signal or Alarm) is also displayed to the left of the code.

Area 4: cooling resources currently in operation:

	At least one compressor is active. *Only on units with more than one compressor.*

NOTE:

If icon flashes intermittently, the request for compressor start-up is in process but a countdown is active for safety timing purposes (see the corresponding section in the protection function chapter).

Area 5: Free-cooling resources currently in operation:

	Direct Free-cooling damper in adjustment.

Area 6: Humidity resources currently in operation:

	Dehumidifier active.
	Humidifier active.

When the icon flashes intermittently, the dehumidifier activation request is in process, though a temperature block is active (high or low temperature threshold, minimum temperature threshold).

Instead, when the icon flashes intermittently, the dehumidifier activation request is in process, though a countdown is active for compressor safety timing.

Area 7: Hot resources currently in operation:

1	First electric heater step active/Heater active.
2	Second electric heater step active.
1+2	Third electric heater step active.
	Electric heater active (if only 1 heater is present).
	Electric heater Post-Ventilation function active (flashing icon).

Area 8: current unit status (ON/OFF):

This indicator can also be used to switch the unit on/off.

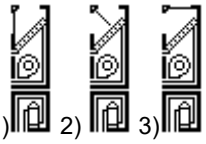
Area 9: BMS address of the unit (where the BMS one is engaged).

Area 10: LAN address of the unit (where the local network (LAN) is engaged):

The letter M to the right of the address informs that the unit is a Priority unit, S informs that the unit is a Secondary unit.

Area 11: representation of the type of unit:

In case of S-MEXT units, the following representation is given:

	Split Type unit.	
 1) 2) 3)	Split Type unit with Direct Free-cooling.	1) In recirculation position (only internal air). 2) In internal air + external air mixing position. 3) In external air-only position.

Area 12: display of active functions icon:

This area shows the icon, which indicates the presence of active functions and of the “Active functions” mask, where it is possible to see which functions are active.
For the characteristics and explanations of this mask, see the following section, “Active Functions Mask”.

23.2.2 Active Functions Mask

Visible from: Main loop.

INFORMATION:
The mask can be displayed only if one of the functions described below is active.

The appearance of the mask is signalled by the presence of the ± icon on the main mask. The image below shows the representation:

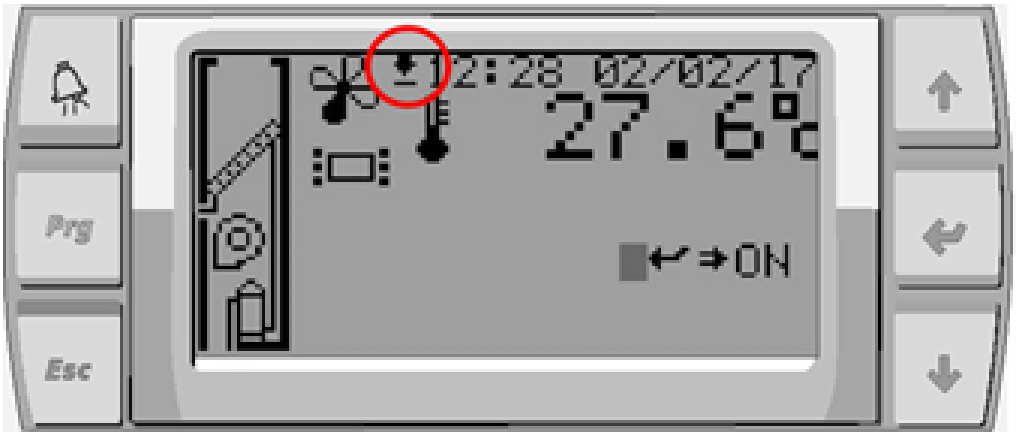


Figure 23-2: *mask display*

Press **[DOWN]** in the main mask to display the “Active Functions” mask.

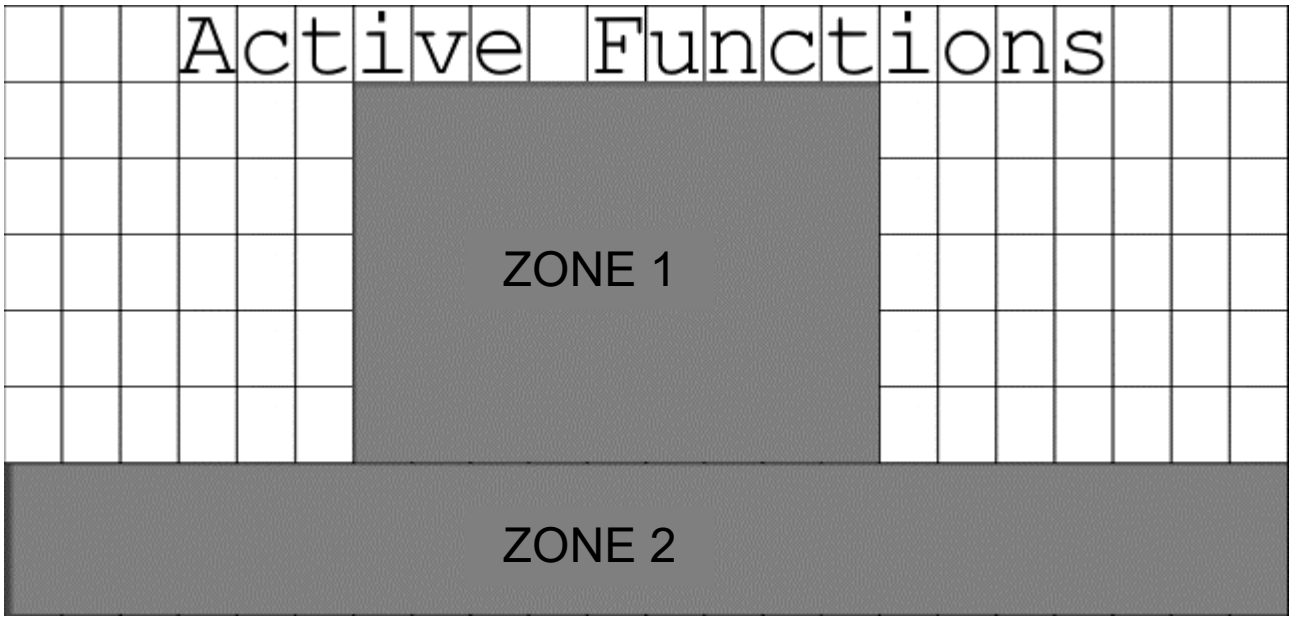
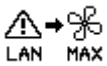
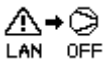
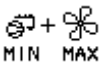


Figure 23-3: *representation of the "Active Functions" mask.*

Areas 1 and 2: flashing of all the active functions:

Icon	Function	Meaning
 Time Bands Activated	Time bands active.	Time bands active.
 Free Cooling Activated	Free-cooling active.	Unit in Free-cooling mode.
 Free cooling disabled from supervisor	Free-cooling is disabled from the supervisor.	Direct Free-cooling is disabled from the supervisor.
 Fan Active for Gas Build-Up Prevention	Fans in operation.	The unit is off, but the fans are kept in operation at reduced speed to prevent gas build-up in case of leaks.
 Supply Air Temp. Protection Activated	Delivery air temperature protection active.	The minimum delivery air temperature protection is active.
 Dehumidify Protection Activated	Dehumidification protection active.	The dehumidification protection is active (maximum or minimum temperature).
 Fan Boost By Alarm in the LAN	Fan boost due to LAN alarm.	Ventilation has been forced to maximum level due to an alarm (no air flow or gas leak detected) in one of the other units connected to the pLAN network.
 Safety Reduction Load (LP) Activated	Safety Reduction Load LP active.	The demand reduction of at least one circuit is active due to reduced evaporation pressures.
 External Unit Stopped By Alarm in the LAN	External unit stopped due to LAN alarm.	The Mr Slim external unit has been stopped due to an alarm (gas leak detected) in one of the other units connected to the pLAN network.
 Checking Cold Water Valve	Cold water valve control.	Function for control of correct operation of the cold water valve active.
 Post-Ventilation Activated	Post-ventilation active.	The heater cooling post-ventilation is active.
 Waiting for Regulation to Start	Waiting for regulation to start.	One or more compressors are ~~blocked~~awaiting start-up to comply with the protection ~~start-up~~ times, or the unit is awaiting adjustment.

Icon	Function	Meaning
 FC Damper Opened By Alarm in the LAN	Damper open due to alarm.	The Direct Free-cooling damper has been opened to maximum level due to an alarm (gas leak detected) in one of the other units connected to the pLAN network.
 High Temperature pLAN Rescue Activated	High temperature pLAN rescue active.	The unit is in pLAN rescue mode due to the high temperature limit being exceeded.
 Low Temperature pLAN Rescue Activated	Low temperature pLAN rescue active.	The unit is in pLAN rescue mode due to the low temperature limit being exceeded.
 High Humidity pLAN Rescue Activated	High humidity pLAN rescue active.	The unit is in pLAN rescue mode due to the high humidity limit being exceeded.
 Low Humidity pLAN Rescue Activated	Low humidity pLAN rescue active.	The unit is in pLAN rescue mode due to the low humidity limit being exceeded.
 Hot Spot Protection Activated	Hot Spot protection for an active pLAN network.	The unit considers its local temperature instead of the average temperature to adjust the Hot Spot concerned.
 Cold Spot Protection Activated	Cold Spot protection for an active pLAN network.	The unit considers its local temperature instead of the average temperature to control the Cold Spot concerned.
 Active Fan on Stand-by Activated	Fan on Standby function active.	The unit is on standby but the fan continues to run at a set speed.
 PERIODIC CHECK	Periodic control	The unit forces the cooling demand sent to the PAC-IF cards to minimum and keeps ventilation at maximum to help prevent the formation of ice on the piping.
 Extra low temperature startup	Start with low outside temperatures	The function for the start-up of the internal unit at very low outside temperatures is active (ExLT start-up function).
 Fan still active	Post-ventilation active.	Post-ventilation is active, in line with the settings of parameter P23.88
 Manual mode h m s	Manual management active (with indication of residual time).	It is possible to manually control individual connected devices.
 Waiting for the damper to open	Waiting for the delivery damper to open.	The unit is waiting for the delivery damper to be fully open before starting ventilation.

Icon	Function	Meaning
 Failure Management: Unit Shut Down	Failure Management: Unit switch off	The unit has lost its regulation probe and is switched off.
 Failure Management: Maximum Cooling	Failure Management: Maximum cold demand	The unit forces the cooling resources to the maximum demand.
 Failure Management: Maximum Fan	Failure Management: Maximum ventilation	The unit forces ventilation to the maximum.
 Stand-By Fan Active: Ventilation Active	Ventilation on stand-by.	The unit forces ventilation when turned “OFF” by user.
 Fast restart of the Cooling resources	Fast Restart of the unit	Following a power failure, if certain conditions are met, the unit enters into a “Fast Restart” phase to start the cooling resources as soon as possible.

NOTE:
All the active functions of the unit are displayed in the same mask (with the flashing of various icons).

23.2.3 Safety Reduction Load mask, s-MEXT unit

Visible from: main loop

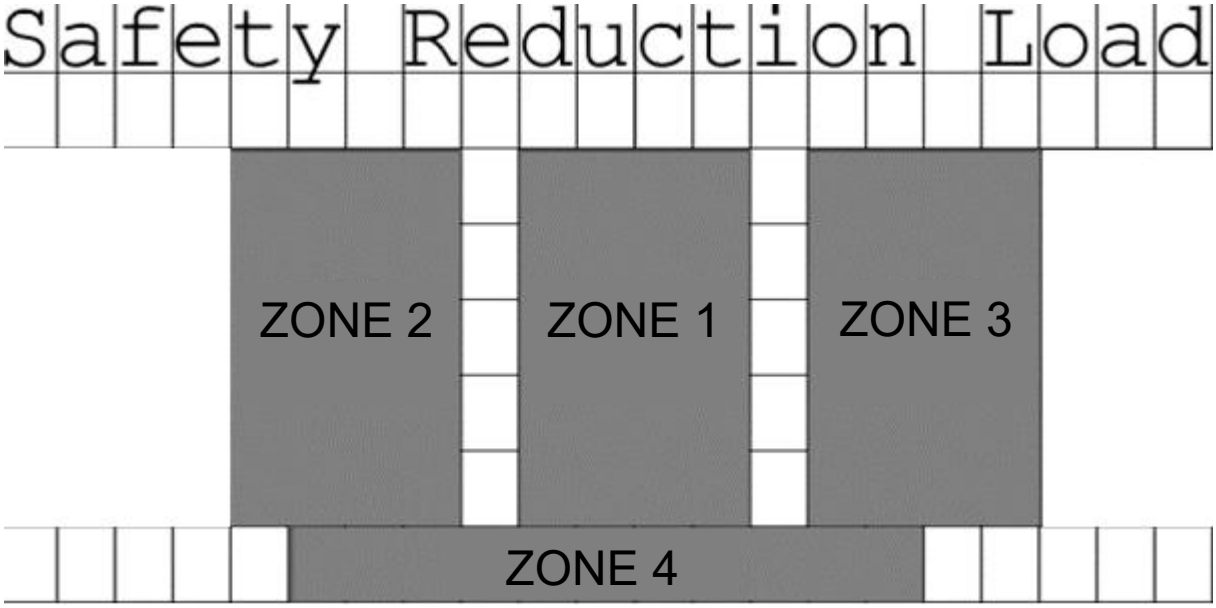
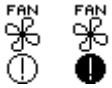
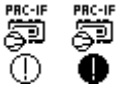
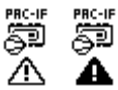


Figure 23-4: *representation of the "Safety Reduction Load" mask.*

Zone 1: fan status.

Icon	Meaning
	Normal fan operation.
	Fan in **Alert** mode (Flashing): • With SRL (LP) active: The speed of the fans increases with 2 alert steps.

Zone 2: status of the unit controlled by the PAC-IF interface.

Icon	Meaning
	Normal operation.
	Unit in **Alert** mode (Flashing): • With SRL (LP) active: The request is stopped at its last value before entering alert mode.
	Unit in **Protection** mode (Flashing): • With SRL (LP) active: The request sent to the unit decreases based on the set parameters.

Zone 3: protection status.

Icon	Meaning
NORMAL WORK	Protection enabled but not active.
(LP) → ACTIVE	SRL (LP) low pressure protection active.
RESTORING	The system is restoring the normal working conditions.

23.2.4 LAN APLMask

Visible from: Main loop.

This mask allows the status of the following two functions to be displayed:

- "Active Pressure Load".
- "H&L Local Pressure Protection".

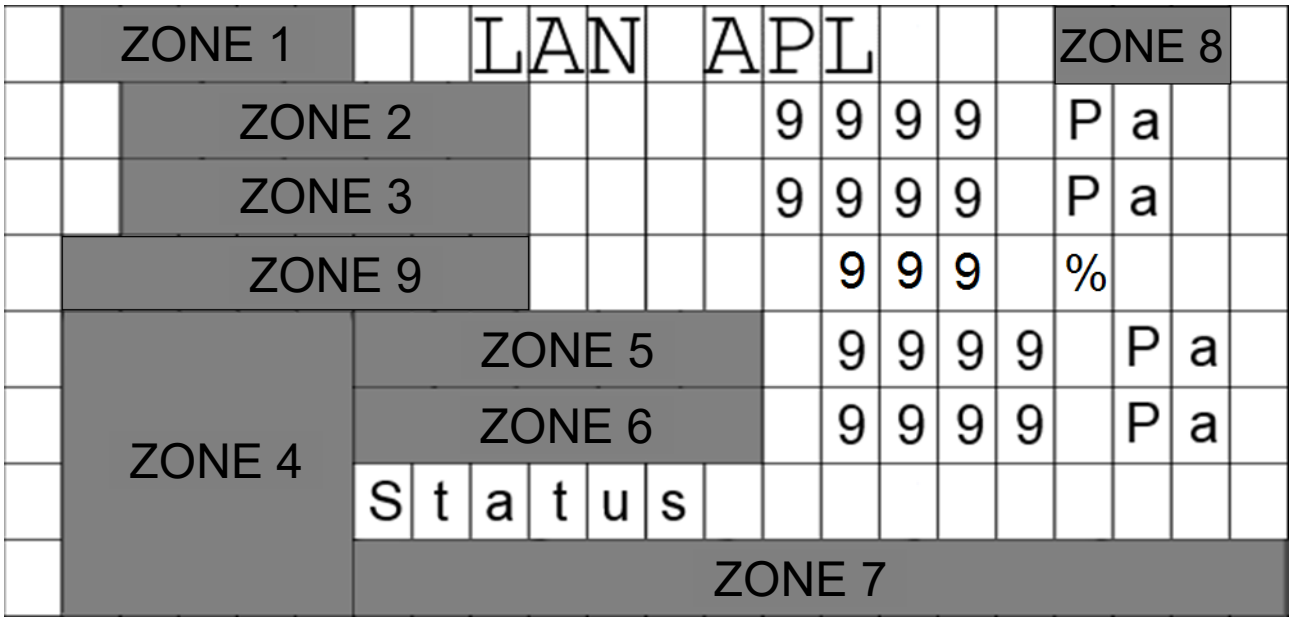


Figure23-5: *representation of the "LAN APL" mask.*

Zone 1: unit displayed:

Icon	Meaning
01. 10	Indicates the unit displayed (from address 1 to 10).

Zone 2: adjustment pressure:

Icon	Meaning
Current	Pressure value the unit is currently measuring.

Zone 3: target pressure:

Icon	Meaning
Target	DeltaP control setpoint

Zone 4: status of the unit:

Icon	Meaning
	Unit in normal operation APL.
	Unit in High local pressure protection mode. *Visible only if the function is enabled.*
	Unit in Low local pressure protection mode. *Visible only if the function is enabled.*

Zone 5: average pressure status:

Icon	Meaning
○ APL	The unit is not using the average pressure of the LAN for adjustment.
● APL	The unit is using the average pressure of the LAN for adjustment.

Zone 6: local pressure status:

Icon	Meaning
○ Local	The unit is not using the local pressure for adjustment.
● Local	The unit is using the local pressure for adjustment.

Zone 7: adjustment status:

Icon	Meaning
On Target	The unit has reached the required target pressure.
Regulation…	The unit is adjusting to reach the required target.
Starting…	The unit is waiting for the start-up time before modulation of the fans.
Min Speed	The unit has reached the minimum speed.
Unit OFF	The unit is off.
Alarm!!	The unit is in alarm mode because expansion is offline or because the pressure transducer is not working or is disconnected.

Zone 8: synchronisation status (for APL by client function):

Icon	Meaning
SYN	Synchronisation between the units is active (fan speed at minimum for 10 seconds)

Zone 9: target pressure:

Icon	Meaning
FAN SPEED	Current fan speed (in percentage)

23.3 Parameter changing masks

23.3.1 Access to parameter changing

The settable parameters can be distinguished according to the modification access mode, into three groups:

- parameters that can be reached using the **"User" group** menus with the **"User" password**;
- parameters that can be reached using the **"Service" group** menus with the **"Service" password**;
- parameters that can be reached using the **"Factory" group** menus with the **"Factory" password**.

The following parameters are added, which do not require passwords:

- parameters can be reached using the **"Setpoint" menu**;
- parameters can be reached using the **"Clock" menu**.

The numbering of the parameters is divided by menu:

- 1x corresponds to the menus of the **“Factory” group;**
- 2x corresponds to the menus of the **“Service” group;**
- 3x corresponds to the menus of the **“User” group**.



OBLIGATION:
The “Factory” and “Service” groups must be accessed only by authorised personnel.

- To access the "Main" group, press **[PRG]**. The various menus and sub-groups can be viewed in this group.
- Press **[UP]** or **[DOWN]** to move from one mask to another inside the same menu.
- To access the parameter, press **[ENTER]**. To change the parameter value, press **[UP**] or **[DOWN]**. To confirm the change, press the **[ENTER]** key again.
- To return to the menu selection list, press the **[ESC]** key.

Below are the masks of the menus used to set the parameters. The following is displayed:

- the description of the content of each mask;
- the identification numbers of the parameters in the masks ("Par No" column).
- 50 corresponds to the **“Setpoint” menu;**
- 900 corresponds to the **“Clock” menu**.

23.4 Table of masks

Manual mask	Description	Par	ID Par.
↑ Config. ← ↓	Access mask to “configuration” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Config ---------- P10.33 Unit type: Perimetral - - - - - - - - - - Cold type set: Direct Expansion	Unit type. [Perimetral | Rack Cooler | Cooling Door | Modular Perimetral | TLC | None] Displays the type of cooling resources set.	19	P10.33
Config ---------- P10.35 Amount of CW Circuits: 0 ---------- P10.34 Indirect Free Cooling enable: N Cold type set:DX	Parameter for setting the number of chilled water circuits Parameter for setting the use of a chilled water circuit as an Indirect Free-cooling circuit Displays the type of cooling resources set.	21 20	P10.35 P10.34
Config ---------- P10.36 Amount of DX Circuits: 1 Cold type set:DX	Parameter for setting the number of direct expansion circuits Displays the type of cooling resources set	22	P10.36
Config ----------10.54 Condensing unit type: None/t-Mate Cold type set:DX	Parameter for setting the type of condensing unit [None/t-Mate | HCAT/i-HCAT | m-MOCU | Mr.SLIM]] *Visible only with at least one direct expansion circuit installed.*	40	P10.54
Config ----------10.55 MIN time OFF Mr.SLIM: 120s	Minimum Mr. Slim unit OFF time. *With a Mr. Slim condensing unit*	41	P10.55
Config ---------- P10.10 Internal fan project speed: 070% Fan1: 0000 Fan2: 0000 Fan3: 0000 Fan4: 0000 Fan5: 0000 Fan6: 0000 Fan7: 0000 Fan8: 0000	Internal fan project speed. *Visible only on units with EC fans controlled via serial communication.*	1	P10.10

Manual mask	Description	Par	ID Par.
Config. --------------- P10.11 Maximum reduction of fan project speed: 20% Resulting Min speed: 070 - (070x 20%) = 056	Maximum reduction of the project speed (determines the minimum project speed of the internal fan).	2	P10.11
Config. --------------- P10.53 Unit gas type: R410A	Parameter for setting the type of gas used in direct expansion circuits. *Visible only on units with at least one direct expansion circuit.*	39	P10.53
Config. --------------- P10.16 Diff. pressure probe lower limit: 0000Pa --------------- P10.17 Diff. pressure probe upper limit: 0100Pa	Parameter for setting the Start scale value of the differential pressure transducer. Parameter that allows setting of the End scale value of the differential pressure transducer *Visible only on units with DeltaP or air flow rate control.*	7 8	P10.16 P10.17
Config. --------------- P10.29 LP pressure probe presence on main board: Y	Parameter for setting the presence of the low pressure transducer on the base board. *Visible only on units with at least one direct expansion circuit without external driver for electronic thermostatic control.*		
Config. --------------- P10.52 LP Probe Type: 4-20 mA	Parameter for setting the type of low pressure transducer (0:0-5Vrat, 1:4-20mA). *Visible only with the low pressure transducer on base board enabled.*		
Config. --------------- P10.30 LP pressure probe lower limit: 00.0bar --------------- P10.31 LP pressure probe upper limit: 30.0bar	Parameter for setting Start scale value of low pressure transducer. Parameter for setting End scale value of low pressure transducer. *Visible only on units with low pressure transducer on base board.*		

Manual mask	Description	Par	ID Par.
Config. --------------- P10.20 Outdoor temperature probe enable: N	External T probe enable. *Visible only on units without direct or indirect free-cooling.*	9	P10.20
Config. --------------- P10.22 Brand: Evolution+	Initial logo (0: Climaveneta - 1: De' Longhi - 2: ICS).	10	P10.22
Config. ------------ P10.26-28 Unit serial number: 032000000	Parameters for configuring the serial number of the unit.		
Config --------------- P10.48 Phase sequence 2 mana- gement on unit: Y	Parameter for managing the phase sequence control in power supply line 2.	34	P10.48
Config. --------------- P10.49 Dev. pow. by 2° line : Heat.:Y Hum.:N Param. value: 00001	Parameter for indicating the devices that must be inhibited upon opening of the phase sequence contact of power supply line 2. *Visible only with the line 2 phase sequence control enabled.*	35	P10.49
Config. --------------- P10.50 Number of return NTC probes : 4 --------------- P10.51 Number of supply NTC probes : 4	Parameter for indicating the number of return air NTC probes installed in the unit. Parameter for indicating the number of delivery air NTC probes installed in the unit.	36 37	P10.50 P10.51
Config. - Passwords User password: 0000 Service password: 0000	Displays the "Service" and "User" passwords set.		

Manual mask	Description	Par	ID Par.
Config. - Pwd change Insert a new Factory password: 0000000000	Sets a new “Factory” password. **Attention:** The value set in this field is the one and only to access the “Factory” group.		
Config. - About Evolution+ Code ME 52.00b001 EN HW pCO5+ M NAND 50MB Flash 2MB + 7MB + 4MB Ram 2048KB Boot 05.01 Bios 06.51	This mask contains the reference information for the application [Code ME 52.00 EN]. The closed padlock symbol shows that the board is provided with its propriety software; The second part of the mask shows information about the hardware: size (M, L, XL), memories (NAND 32MB, flash 2+2MB, ram 512KB) and versions of the installed operating system (boot and bios).		

Manual mask	Description	Par	ID Par.
↑  Functions ← ↓	Access mask to “functions” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Functions --------------- P11.01 Air flow control type: Disabled	Air flow control type. [Disabled | Constant Range | Constant DeltaP | Read Only DeltaP | Read Only Rate].	46	P11.01
Functions --------------- P11.36 Fans type: EC 0-10V --------------- P11.02 Amount of EC fans: 01	Parameter for setting the fan type. [AC | EC 0-10V | EC ModBus EBM | EC Modbus ZA | EC Modbus FT | EC Modbus DT | EC Modbus WOL] Parameter for setting the number of fans. *Visible only on units with EC fans.*	71 47	P11.36 P11.02
Functions --------------- P11.11 Fan special function 01 enable: N	Parameter used to activate the special function 01 of the fan. (0: disabled - 1: enabled).	48	P11.11
Functions - F.Restart --------------- P11.37 Fast Restart function enable: N	Parameter for enabling the “Fast Restart” function (fast restart of the unit following power failures).	72	P11.37
Functions - ATS --------------- P11.39 ATS Enable: Disable	Parameter for enabling the power circuit breaker monitoring function	74	P11.39
Functions - UCAP Mng. --------------- P11.40 UCAP Fan : Disable	Parameter for enabling the active fan function in case of voltage hole with Ultracap	75	P11.40

Manual mask	Description	Par	ID Par.
Functions - APF --------------- P11.41 APF Enable : Disable	Parameter for enabling the active power filter monitoring function	76	P11.41

Manual mask	Description	Par	ID Par.
↑  Compressor ← ↓	Access mask to “Compressors” submenu. Press **[UP] or [DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Compressor  Unit Without Compressor	Mask displayed if the unit is water-cooled.		

Manual mask	Description	Par	ID Par.
↑  Safety ← ↓	Access mask to Safety submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Safety ---------- P14.03 Temperature probe alarms delay time:060s	Parameters for setting the sensor alarm delay Time.	182	P14.03
Safety - DX Unit ---------- P14.08 Factory Min limit for Service Min limit for cooling setpoint: 20.0°C	Parameter for setting the Manufacturer lower limit cooling setpoint. *Visible only on units with at least one direct expansion circuit.*	185	P14.08
Safety ---------- P14.14 Manual mode automatic disabling after: 8h ---------- P14.15 Crit. Manual mode auto disabling after: 30m	Parameters for setting the Maximum time for manual operation and the Maximum time for manual operation of critical components.	191 192	P14.14 P14.15
Safety ---------- P14.97 Dehumidif. setpoint lower limit: 45%	Mask for configuring the minimum configuration limit of the dehumidification setpoint.	274	P14.97

Manual mask	Description	Par	ID Par.
↑  Safety 2 ← ↓	Access mask to “Safety 2” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Safety 2  No Safety 2 Parameters Available	Visible if no parameters are available in the menu for the configured unit.		
Safety 2 ---------- P15.15 Periodic Check funct. enable: N ---------- P15.16 Periodic Check funct. period: 540min	Periodic Check function enable. Periodic Check function running interval. *Visible only in case of s-MEXT units.*		
Safety 2 ---------- P15.17 Periodic Check funct. reduction: 03step ---------- P15.18 Periodic Check funct. duration: 005min	Periodic Check function step reduction. Periodic Check function duration. *Visible only in case of s-MEXT units.*		
Safety 2 ---------- P15.26 Force fan to max speed when an El.Heater is active: Y	Choice of forcing ventilation to the maximum design value (P10.10) while the electric heaters are on. *Visible only if the electric heaters are present.*	299	P15.26

Manual mask	Description	Par	ID Par.
↑ Default ← ↓	Access mask to “initialisation” menu. Press **[UP]** or **[DOWN]** to display the other mask and **[ESC]** to return to the submenu.		
Default Default Setup N	This restores the default values. Deletes the memory and installs "logical" values. The chiller must then be programmed with the parameter set during factory testing. The mask is not displayed when the chiller is ON.		
Default Reset History of Alarms N	Deletes the contents of the alarms log on the display.		
Default Connect KIPlink to the WiFi network CLIMA_WIFIeea N Verify the IP achieved with specific wizard tool	It allows to start the test mode for the KIPLink.		

Manual mask	Description	Par	ID Par.
↑  Regulations ← ↓	Access mask to “Adjustment” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Regulations --------------- P20.01 Regulation probe choice: Return Temp	Adjustment probe type (0:return - 1:delivery). Delivery adjustment applicable only to: • Single–circuit unit with 1 Inverter compressor • Dual circuit unit with Inverter compressor on the first circuit and ON/OFF compressors on the second circuit • Chilled water unit	300	P20.01
Regulations --------------- P20.02 Fan start delay after power-ON: 000s	Fan start delay after power ON.	301	P20.02
Regulations --------------- P20.03 Fan modulation delay: 120s	Ventilation modulation start delay.	302	P20.03
Regulations --------------- P20.04 Fan regulation delay: 060s	Start regulation delay	303	P20.04
Regulations --------------- P20.05 Regulation integral time: 900s	Integral adjustment time (units without inverter compressor).	304	P20.05
Regulations --------------- P20.06 Inv. comp. regulation integral time: 900s --------------- P20.07 Inv. comp. regulation derivative time: 000s	Integral adjustment time Inverter compressor adjustment derivative time		

Manual mask	Description	Par	ID Par.
Regulations --------------- P20.08 Dirty filters sensor presence: N --------------- P20.09 Fire/smoke sensor presence: N	Parameter for setting the dirty filters sensor (N:disabled - Y:enabled). Parameter for setting the fire/smoke sensor (N:disabled - Y:enabled).	307 308	P20.08 P20.09
Regulations --------------- P20.10 Flooding sensor presence: N	Parameter for setting the flooding sensor (N:disabled - Y:enabled).	309	P20.10
Regulations --------------- P20.13 Remote ON/OFF presence: N	Parameter for setting the ON/OFF remote contact (N:disabled - Y:enabled).	311	P20.13
Regulations --------------- P20.18 Regulation band in cooling: 01.5°C --------------- P20.19 Regulation band in heating: 01.5°C	Parameter for setting the cold adjustment band. Parameter for setting the hot adjustment band. *Visible only when the heating resources are present.*	316 317	P20.18 P20.19
Regulations --------------- P20.20 Regulation band for dehumidification:05%RH --------------- P20.21 Regulation band for humidification: 05%RH	Parameter for setting the dehumidification adjustment band. Parameter for setting the humidification adjustment band.	318 319	P20.20 P20.21
Regulations --------------- P20.22 Umidifier regulation integral time: 900s --------------- P20.23 Umidifier regulation derivative time: 000s	Parameter for setting the Integral humidification adjustment time (PID). Parameter for setting the humidification adjustment derivative time (PID). *Visible only if humidifier management is enabled.*	320 321	P20.22 P20.23
Regulations --------------- P20.24 Cooling setpoint lower limit: 18.0°C --------------- P20.25 Cooling setpoint upper limit: 32.0°C	Parameter for setting the Lower Limit cooling setpoint. Parameter for setting the Maximum Limit cooling setpoint.	322 323	P20.24 P20.25

Manual mask	Description	Par	ID Par.
Regulations ---------- P20.26 Heating setpoint lower limit: 12.0°C ----------	Parameter for setting the Lower Limit setpoint.	324	P20.26
Regulations ---------- P20.28 Supply air temp. limit function enable: N ---------- P20.28 Supply air temp. limit: 10.0°C	Parameter for setting the limitation according to delivery air temperature. Parameter for setting the Lower Limit delivery air temperature. *Visible only if the limitation function according to air delivery temperature is enabled.*	326 327	P20.28 P20.29
Regulations ---------- P20.44 Frost Protection funct type: Disabled	Parameter for configuring the frost-free control function. Possible configurations: Disabled – From LP transducer – From delivery temperature – From inlet gas temperature – Cumulative.	342	P20.44
Regulations ---------- P20.49 Delay bef. activating frost protect.: 10min	Parameter for setting the frost-free activation delay time.	347	P20.49
Regulations ---------- P20.50 Make Frost al. manual rearm after count: Y ---------- P20.51 Frost alarms count per hour before manual: 3	Parameter for setting the number of interventions per hour count for the frost-free function (0:disabled- 1:enabled). Parameter for setting the number of interventions per hour for the passage from the automatic reset alarm to the manual reset. Attention: If the number of counts per hour is disabled, the alarm is ONLY in MANUAL reset mode.	348 349	P20.50 P20.51
Regulations ---------- P20.53 Min Increase N.Zone for TSupply reg.:1.5°C ---------- P20.54 Min Decrease N.Zone for TSupply reg.:1.5°C	Parameter for setting the Neutral Zone for increasing the resources that control the delivery air. Parameter for setting the Neutral Zone for decreasing the resources that control the delivery air. *Visible only on direct expansion units with inverter compressor and active delivery adjustment or s-MEXT units and active delivery adjustment.*	350 351	P20.53 P20.54
Regulations ---------- P20.98 Max Increase N.Zone for TSupply reg:03.0°C ---------- P20.99 Max Decrease N.Zone for TSupply reg:03.0°C	Parameters for setting the Maximum variation of the switch-on neutral zone. Maximum variation of the shutdown neutral zone. *Visible only on direct expansion units with inverter compressor and active delivery adjustment or s-MEXT units and active delivery adjustment.*	395 396	P20.98 P20.99

Manual mask	Description	Par	ID Par.
Regulations --------------- P20.55 Time for reduction of Neutral Zone: 05min --------------- P20.64 FC valve position for reduct in N.Zone:80%	Parameter for setting the Neutral Zone reduction time for increasing or decreasing the resources that control the delivery air. Parameter for configuring opening of the FC valve for control of reduction of resources in the neutral zone. *Visible only on direct expansion units with inverter compressor and active delivery adjustment or s-MEXT units and active delivery adjustment.*	352 361	P20.55 P20.64
Regulations --------------- P20.56 Supply temp. setpoint lower limit: 10.0°C --------------- P20.57 Supply temp. setpoint upper limit: 25.0°C	Parameter for setting the lower and upper limit for setting the delivery air control setpoint. *Visible only on direct expansion units with inverter compressor and active delivery adjustment or s-MEXT units and active delivery adjustment or CW units and active delivery adjustment.*	353 354	P20.56 P20.57
Regulations --------------- P20.71 T+H limits alarm on unit OFF enable: Y --------------- P20.72 T+H limits alarm delay after unit ON: 600s	Parameter for configuring control of the ambient temperature limits with the unit OFF. Parameter for configuring the delay before activation of the ambient temperature limit alarms after the fan is activated.	368 369	P20.71 P20.72
Regulations --------------- P20.73 Safety Reduction Load (LP) enable: N	Parameter for configuring the SAFETY REDUCTION LOAD LOW PRESSURE function (0:disabled- 1:enabled). *Visible for all the units with inverter compressor.*	370	P20.73
Regulations --------------- P20.74 Circuit 1 SRL (LP) setpoint: 7.5bar --------------- P20.75 Circuit 1 SRL (LP) differential: 1.0bar	Parameters for configuring the values for activation and deactivation of the Safety Reduction Load Low Pressure function for circuit 1. *Visible when the safety reduction load LOW pressure function is enabled.*	371 372	P20.74 P20.75
Regulations --------------- P20.76 Circuit 1 SRL (LP) step time: 05min --------------- P20.77 SRL (LP) steps amount: 005	Parameters for configuring the number of frequency reduction steps and the time interval between the various steps. *Visible when the safety reduction load LOW pressure function is enabled.*	373 374	P20.76 P20.77
Regulations --------------- P20.79 Circuit 2 SRL (LP) setpoint: 7.5bar --------------- P20.80 Circuit 2 SRL (LP) differential: 1.0bar	Value for activation of the Safety Reduction Load LOW Pressure function for circuit 2. Parameter for configuring the value for deactivation of the Safety Reduction Load Low Pressure function for circuit 2. *Visible when the second circuit is present.*	376 377	P20.79 P20.80

Manual mask	Description	Par	ID Par.
Regulations --------------- P20.81 Circuit 2 SRL (LP) step time: 05min	Parameter for configuring the time the second compressor of circuit 2 remains off. *Visible when the second circuit is present.*	378	P20.81
Regulations --------------- P20.82 Amount of remote T+H probes enabled: 4	Parameter for indicating the number of remote serial TH probes connected to the unit.	379	P20.82
Regulations --------------- P20.83 Temperature type, fan regulation function Disabled	Function for control of ventilation (special function 02): • Disabled. • Return temperature. • Delivery temperature. • Temperature Delta (Return T. - Discharge T.).	380	P20.83
Regulations --------------- P20.84 Regulation band for fan regulation func.: 3.0°C	Temperature band for fan control.	381	P20.84

Manual mask	Description	Par	ID Par.
↑  Free Cooling ← ↓	Mask confirming access to the free-cooling operation submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
FC  Unit Without Free Cooling	Mask displayed if the free-cooling mode is not present.		
FC ---------- P21.09 Free Cooling damper regulation enable: N ---------- P21.10 Free Cooling damper control type: Digital	Parameter for setting free-cooling damper adjustment (N:disabled - Y:enabled) and parameter for setting the free-cooling damper control type (0:Digital - 1:Modulating).	404 405	P21.09 P21.10
FC - FC damper ---------- P21.11 Damper regulation setpoint: 03.0°C ---------- P21.12 Damper regulation differential: 01.0°C	Parameter for setting the threshold (Ambient T. - External T.) to enable free-cooling. Parameter for setting the hysteresis (Ambient T. - External T.) to disable free-cooling. *Visible only if management of the direct*free-cooling damper is enabled.	406 407	P21.11 P21.12
FC - FC damper ---------- P21.13 Min damper opening: 000% ---------- P21.14 Max damper opening: 100%	Parameter for setting the Minimum free-cooling damper opening and parameter for setting the Maximum free-cooling damper opening.	408 409	P21.13 P21.14
FC - FC damper ---------- P21.15 Damper deactivat. for high humidity enable:N ---------- P21.16 Humid. set to deact. damper: 60.0%RH	Parameter for setting free-cooling damper management for high humidity and humidity limit for disabling free-cooling damper.	410 411	P21.15 P21.16

Manual mask	Description	Par	ID Par.
FC - FC damper --------------- P21.17 Humid. diff to deact. damper: 01.0%RH	Parameter for setting the humidity hysteresis for inhibition of direct free-cooling. *Visible only if direct free-cooling inhibition for high humidity is enabled.*	412	P21.17
FC - FC damper --------------- P21.18 Enable damper management during compressor alarm or water flow alarm: N	Parameter for setting free-cooling damper management with compressor alarm (N:disabled - Y:enabled).	413	P21.18
FC - FC damper Damper during comp. or water flow alarm --------------- P21.19 Setpoint: 01.0°C --------------- P21.20 Differential: 00.5°C	Parameter for setting the Setpoint (T_ROOM-T_EXTERNAL) to adjust the free-cooling damper with compressor alarm. Parameter for setting the free-cooling damper regulation band with compressor alarm.	414 415	P21.19 P21.20
FC --------------- P21.22 Extraction Fan control enable: N	Parameter for enabling control of an extraction fan. *Visible only if direct free-cooling is available.*	417	P21.22

Manual mask	Description	Par	ID Par.
↑  Settings ← ↓	Access mask to “Settings” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu. The Settings menu contains the parameters relative to the alarm settings.		
Settings --------------- P22.01 Low temperature alarm setpoint: 10°C --------------- P22.02 High temperature alarm setpoint: 32°C	Parameter for setting the Low temperature alarm setpoint. Parameter for setting the High temperature alarm setpoint.	433 434	P22.01 P22.02
Settings --------------- P22.03 Low humidity alarm setpoint: 30%RH --------------- P22.04 High humidity alarm setpoint: 80%RH	Parameter for setting the Low humidity alarm setpoint. Parameter for setting the High humidity alarm setpoint.	435 436	P22.03 P22.04
Settings --------------- P22.13 Unit working hours set before mainten.:00000h	Parameter for setting the unit operating hours setpoint for maintenance.	445	P22.13
Settings --------------- P22.17 Heat. 1 working h. set before mainten.:00000h --------------- P22.18 Heat. 2 working h. set before mainten.:00000h	Parameters for setting the step 1 heater working hours for maintenance setpoint and the step 2 heater working hours for maintenance setpoint.	449 450	P22.17 P22.18
Settings --------------- P22.19 Humid. working h. set before mainten.:00000h	Parameters for setting the humidifier working hours for maintenance setpoint.	451	P22.19
Settings --------------- P22.21 Reset alarm by supervision system: N	Parameter for configuring the alarm reset from supervision (N:disabled - Y:enabled). *Visible only on dual coil units.*		

Manual mask	Description	Par	ID Par.
Settings --------------- P22.29 KIPlink module enable: N --------------- P22.30 KIPlink module type: Master-EthOFF-WifiON	Parameter for configuring the presence of the KIPlink module (N:disabled - Y:enabled) Parameter for configuring the type of KIPlink module (0:MASTER_eth off_wifi off - 1:CLIENT_eth off_wifi off - 2:MASTER_eth on_wifi off - 3:CLIENT_eth on_wifi off - 4:MASTER_eth off_wifi on - 5:CLIENT_eth off_wifi on - 6:MASTER_eth on_wifi on - 7:CLIENT_eth on_wifi on - -8:MASTER bridge - 9: CLIENT bridge)	461 462	P22.29 P22.30
Settings ------------ P22.31-42 KIPlink Ethernet channel IP: 192.168.030.001 SUB: 255.255.255.000 GW: 000.000.000.000	Parameters for configuring the ETH channel of the KIPLink module.	463 464 465 466 467 468 469 470 471 472 473 474	P22.31 P22.32 P22.33 P22.34 P22.35 P22.36 P22.37 P22.38 P22.39 P22.40 P22.41 P22.42
Settings ------------ P22.62-73 KIPlink WiFi channel IP: 192.168.030.001 SUB: 255.255.255.000 GW: 000.000.000.000	Parameters for configuring the Wi-Fi channel of the KIPLink module.	493 494 495 496 497 498 499 500 501 502 503 504	P22.62 P22.63 P22.64 P22.65 P22.66 P22.67 P22.68 P22.69 P22.70 P22.71 P22.72 P22.73
Settings ------------ P22.59-61 KIPlink Network Master serial num.: 032000000 --------------- P22.44 Communication channel to join: WiFi ch.	Parameters for configuring the serial number of the MASTER unit of the KIPLink network. Parameter for configuring the communication channel to be activated (visible only when both the ETH and the Wi-Fi communication channels are active).	490 491 492 475	P22.59 P22.60 P22.61 P22.44
Settings ------------ P22.45-48 KIPlink Network Master module - IP Address: 192.168.030.001 --------------- P22.49 ID: 01	Parameters to configure the IP address of the KIPLink MASTER module. Parameter to configure the name of the KIPLink network.	476 477 478 479 480	P22.45 P22.46 P22.47 P22.48 P22.49
Settings ---------- Send network config to KIPlink: N	Variable for sending the new IP configuration to the KIPLink module connected to the controller.		

Manual mask	Description	Par	ID Par.
Settings ---------- Start KIPlink upgrade: N	Variable for updating the KIPLink.		
Settings ---------- Reset to default value KIPlink Supervisor ReadWrite password: N	Variable for resetting the password of KIPLink for both read-only and write mode.		
Settings ---------- P22.55 BMS1 offline alarm enable: N ---------- P22.56 BMS1 offline detection timeout:015s	Parameters for setting BMS port 1 offline management and timeout.	486 487	P22.55 P22.56
Settings ---------- P22.57 BMS2 offline alarm enable: N ---------- P22.58 BMS2 offline detection timeout:015s	Parameters for setting BMS port 2 offline management and timeout. **Attention:** BMS2 port reserved for MEHITS.	488 489	P22.57 P22.58
Settings ---------- P22.75 Safety N.Zone decrease enable: N ---------- P22.76 Time for safety N.Zone decrease: 300s	Parameter for enabling the cold resources safety decrease function. Parameter for setting the delay time before a safety decrease. *Visible only on direct expansion units with inverter compressor and active delivery adjustment or s-MEXT units and active delivery adjustment.*	506 507	P22.75 P22.76
Settings ---------- P22.77 Time between two safety decreases:0600s	Parameter for setting the delay time between two safety decreases. *Visible only on direct expansion units with inverter compressor and active delivery adjustment or s-MEXT units and active delivery adjustment.*	508	P22.77
Settings ---------- P22.78 Fieldbus port: Fbus2	Parameter for selecting the Fieldbus port to be used.	509	P22.78

Manual mask	Description	Par	ID Par.
Settings --------------- P22.79 Air flow alarm detection delay from fan start: 045s	Parameter for setting the delay for activating the lack of airflow alarm during ventilation start up.	510	P22.79
Settings --------------- P22.92 Air flow alarm activation delay with no active comp. or heaters: 005s	Parameter for setting the delay for activating the lack of air flow alarm in the absence of compressors in operation or heaters in operation.	523	P22.92
Settings --------------- P22.80 Clogged filters alarm delay time: 008s	Parameter for setting the delay for activating the dirty filter signal. *Visible only if the dirty filter signal management is enabled.*	511	P22.80
Settings --------------- P22.81 Circuit 1 flow switch alarm delay time: 030s --------------- P22.82 Circuit 2 flow switch alarm delay time: 030s	Parameter for selecting the delay time before signalling of the alarm for no water at the condenser of circuit 1. Parameter for selecting the delay time before signalling of the alarm for no water at the condenser of circuit 2.	512 513	P22.81 P22.82
Settings --------------- P22.83 Flood event type: A-M --------------- P22.84 Phase Sequence event rearm type: A-A	Parameter for setting whether the flooding event should cause a notification or an alarm, and for selecting the reset type. Parameter for setting the phase sequence error alarm reset type.	514 515	P22.83 P22.84
Settings --------------- P22.85 Fire/smoke event type: A-M	Parameter for setting the type and reset of the Fire/Smoke event. *Visible only if smoke/fire sensor management is enabled.*	516	P22.85
Settings --------------- P22.88 External dumper alarm enable: N	Parameter for enabling control of the external damper alarm (not controlled by the logic).	519	P22.88

Manual mask	Description	Par	ID Par.
Settings --------------- P22.93 Phase Sequence 2 event rearm type: A-A	Parameter for setting the line 2 phase sequence alarm reset type. *Visible only with the line 2 phase sequence control enabled.*	524	P22.93
Settings --------------- P22.94 Low supply temp. alarm setpoint: 10°C --------------- P22.95 High supply temp. alarm setpoint: 32°C	Low air delivery temperature alarm setpoint. High air delivery temperature alarm setpoint.	525 526	P22.94 P22.95
Settings --------------- P22.96 Low supply humidity alarm setpoint: 30%RH --------------- P22.97 High supply humidity alarm setpoint: 80%RH	Low air delivery humidity alarm setpoint. High air delivery humidity alarm setpoint. *Visible only if the air delivery T+H probe is enabled.*	527 528	P22.96 P22.97
Settings - KIPlink QRcode-Status:Offline WiFi Network SSID: KIPlink_032000000 WiFi Password: 000000000 IP Address: 000.000.000.000	Mask that DISPLAYS the main information of the KIPLink module.		
Settings - KIPlink Status:Offline WiFi Network SSID: KIPlink_032000000 IP Address: 000.000.000.000 Channel: WiFi	Mask that DISPLAYS the status and main information of the KIPLink module.		
Settings - KIPlink Module type: Master-EthOFF-WiFiON	Mask that DISPLAYS the status and main information of the KIPLink module.		
Settings - KIPlink Ethernet channel: IP: 192.168.030.001 Sub:255.255.255.000 Gw: 000.000.000.000	Mask that DISPLAYS the information of the KIPLink Ethernet network.		

Manual mask	Description	Par	ID Par.
Settings - KIPlink WiFi channel: IP: 192.168.030.001 Sub:255.255.255.000 Gw: 000.000.000.000	Mask that DISPLAYS the information of the KIPLink Wi-Fi network.		
Settings - KIPlink Network Info SSID master: KIPlink_032000000 IP master: 192.168.030.001 KIPlink ID: 01	Mask that DISPLAYS the main information of the MASTER module of the KIPLink network.		
Settings - Pwd change Insert a new Service password: 0000			

Manual mask	Description	Par	ID Par.
↑  Fan ← ↓	Access mask to the “Fan” menu.		
Fan --------------- P23.01 Fan nominal speed: 070% Fan1: 0000 Fan2: 0000 Fan3: 0000 Fan4: 0000 Fan5: 0000 Fan6: 0000 Fan7: 0000 Fan8: 0000	Parameter for setting the nominal speed of the internal fan. *Visible only on units with EC fans controlled via serial communication.*	531	P23.01
Fan --------------- P23.02 Fan economy function enable: N --------------- P23.03 Fan speed while in economy mode: 50%	Parameter for setting the internal fan Economy Mode function (N:disabled - Y:enabled). Parameter for setting the internal fan speed with the Economy Mode function enabled.	532 533	P23.02 P23.03
Fan --------------- P23.95 Enable fans while Unit OFF by User: N --------------- P23.96 Fans' speed while Unit OFF by User: 070%	Parameter for enabling active ventilation with machine OFF. Fan speed when the machine is OFF. *Visible only for units with EC fans.*	625 626	P23.95 P23.96
Fan --------------- P23.73 Missing Air Flow alarm on ID2 enable: Y	Parameter for enabling the control of no air flow from the pressure switch.	603	P23.73
Fan --------------- P23.74 Air Flow alarm manual rearm after count: Y --------------- P23.75 AirFlow alarms cnt per hour before manual: 2	Parameter for configuring the counter of the number of trips per hour due to pressure switch air flow missing alarm. Parameter for setting the number of interventions per hour for the passage from the automatic reset alarm to the manual reset. *Visible only with pressure switch air flow missing control enabled.*	604 605	P23.74 P23.75
Unit --------------- P23.76 AirFanFlow alarm man. rearm after count: Y --------------- P23.77 AirFanFlow alarms cnt per hour bef. man.: 2	Parameter for configuring the counter of the number of trips per hour due to air flow missing alarm due to fan fault. Parameter for setting the number of interventions per hour for the passage from the automatic reset alarm to the manual reset.	606 607	P23.76 P23.77

Manual mask	Description	Par	ID Par.
Fan ---------- P23.71 Analog EC fan alarms on EXP enable: N	Parameter for enabling the forced nominal speed function on fan alarm. *Visible only on units with EC fans controlled by an analogue signal.*	601	P23.71
Fan ---------- P23.07 Fan speed modulation with inverter modul. enable: Y	Parameter for setting the Internal fan modulation function for inverter compressor units (N:disabled - Y:enabled). *Visible for units with inverter compressor or s-MEXT without air flow control.*	537	P23.07
Fan - Inverter modul. ---------- P23.08 Maximum reduction of fan project speed:050% Resulting Min speed: 070 - (070x050%) = 035	Parameter for setting the maximum design project speed reduction of internal fans in modulation. *Visible only if the internal fan modulation function or the special fan function 01 is enabled.*	538	P23.08
Fan - DX Unit ---------- P23.09 Set fixed fan speed to use when dehumificat. is active: Y	Parameter for setting the low internal fan speed for units with inverter compressor in dehumidification (N:disabled - Y:enabled). *Visible for units with inverter compressor or s-MEXT without air flow control and dehumidification enabled.*	539	P23.09
Fan - DX Unit ---------- P23.10 Fixed fan speed used when dehumidification is active: 060%	Parameter for setting the internal fan speed in dehumidification (maximum reduction in project speed).	540	P23.10
Fan ---------- P23.61 Post-ventilation for el. heaters enable: Y ---------- P23.62 Post-ventilation for el. heaters time: 060s	Parameters for configuring the post-ventilation function for the heaters and the post-ventilation time. *Visible when the electric heaters are present.*	591 592	P23.61 P23.62
Fan - Const. flow rate ---------- P23.65 Constant flow rate regulation setpoint: 002550m3/h ---------- P23.66 Differential: 025Pa	DeltaP setpoint for Constant Flow adjustment (divided by 100). DeltaP differential for Constant Flow adjustment. *Visible only if the fan adjustment is set according to air flow rate.*	595 596	P23.65 P23.66

Manual mask	Description	Par	ID Par.
Fan - Const. DeltaP --------------- P23.67 Constant DeltaP regulation setpoint: 010Pa --------------- P23.69 Differential: 05Pa	DeltaP setpoint for Constant DeltaP adjustment. DeltaP differential for Constant DeltaP adjustment. *Visible only if the fan setting is set according to air DeltaP.*	597 599	P23.67 P23.69
Fan - Const. DeltaP --------------- P23.68 Maximum reduction of fan nominal speed: 20% Resulting Min speed: 070 - (070X20%)= 056.0	Maximum reduction of nominal speed of the fan with Constant DeltaP adjustment (determines the minimum speed of the internal fans). *Visible only if the fan setting is set according to air DeltaP.*	598	P23.68
Fan - Const. flow/DP --------------- P23.70 Fan speed variation at each step: 1.0%	Speed variation for each step of the fan during adjustment of the Constant DeltaP and Constant Flow. *Visible only if the fan setting is set according to air DeltaP or air flow.*	600	P23.70
Fan - Const. flow/DP Flow Sensor Adjustment Real value 0000 Current value 0000 Set flow 0000 Store K? N	Calibration of the air differential transducer for the Constant Flow and Constant DeltaP functions.		
Fan --------------- P23.72 Fans start at Max speed: N	Parameter for setting the forcing of the fans at project speed with the return temperature higher than the corresponding setpoint. *Visible only if the fan adjustment based on air return temperature function is enabled.*	602	P23.72
Fan --------------- P23.88 Turn off fans delay : 0s	Parameter defining the ventilation stop delay (if ventilation consent is lost). In the case of a ventilation alarm, severe alarm or blocking alarm, the stop delay is reset.	618	P23.88

Manual mask	Description	Par	ID Par.
↑  Adjustments ← ↓	Access mask to the “Adjustments” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Adjustments ---------- P24.01 Return air temperature probe adj.: 0.0°C ---------- P24.02 Return air humidity probe adj.: 00.0%RH	Parameter for ambient temperature probe calibration. Parameter for ambient humidity probe calibration. *Visible only if the air return T+H probe is enabled.*	629 630	P24.01 P24.02
Adjustments ---------- P24.03 Supply air temperature probe adj.: 0.0°C ---------- P24.04 Outdoor air temp. probe adj.: 0.0°C	Parameters for calibrating the delivery air temperature probe and calibrating the external air temperature probe.	631 632	P24.03 P24.04
Adjustments ---------- P24.08 Circ 1 Low Pressure probe adj.: 0.0bar	Parameter for calibrating the circuit 1 low pressure probe.	636 637	P24.08
Adjustments ---------- P24.10 Circ 2 Low Pressure probe adj.: 0.0bar ----------	Parameter for calibrating the circuit 2 low pressure probe.	638	P24.10
Adjustments ---------- P24.20 Remote T+H 1 temp. probe adj.: 0.0°C ---------- P24.21 Remote T+H 1 humid. probe adj.: 00.0%	Parameter for calibrating the remote temperature / humidity sensor 1. *Visible only if at least one serial remote T+H probe is configured.*	648 649	P24.20 P24.21
Adjustments ---------- P24.40 Remote 2 T+H temp. probe adj.: 0.0°C ---------- P24.41 Remote 2 T+H humidity probe adj.: 00.0%	Parameter for calibrating the remote temperature / humidity sensor 2. *Visible only if at least two serial remote T+H probes are configured.*	668 669	P24.40 P24.41

Manual mask	Description	Par	ID Par.
Adjustments --------------- P24.42 Remote 3 T+H temp. probe adj.: 0.0°C --------------- P24.43 Remote 3 T+H humidity probe adj.: 00.0%	Parameter for calibrating the remote temperature / humidity sensor 3. *Visible only if at least three serial remote T+H probes are configured.*	670 671	P24.42 P24.43
Adjustments --------------- P24.44 Remote 4 T+H temp. probe adj.: 0.0°C --------------- P24.45 Remote 4 T+H humidity probe adj.: 00.0%	Parameter for calibrating the remote temperature / humidity sensor 4. *Visible only if at least four serial remote T+H probes are configured.*	672 673	P24.44 P24.45
Adjustments --------------- P24.23 Return T+H tem. probe updating diff.: 0.1°C --------------- P24.24 Return T+H hum. probe updating diff.: 0.1%	Parameter for setting the air return temperature reading resolution. Parameter for setting the air return humidity reading resolution. *Visible only if the air return serial T+H probe is enabled.*	651 652	P24.23 P24.24
Adjustments --------------- P24.50 Supply T+H tem. probe updating diff.: 0.5°C --------------- P24.51 Supply T+H hum. probe updating diff.: 0.5%	Parameter for setting the air delivery temperature reading resolution. Parameter for setting the air delivery humidity reading resolution. *Visible only if the air delivery serial T+H probe is enabled.*	678 679	P24.50 P24.51
Adjustments --------------- P24.25 Remote1 T+H tem. probe updating diff.: 0.1°C --------------- P24.26 Remote1 T+H hum. probe updating diff.: 0.1%	Parameter for setting the remote air 1 temperature reading resolution. Parameter for setting the remote air 1 humidity reading resolution. *Visible only if at least one serial remote T+H probe is configured.*	653 654	P24.25 P24.26
Adjustments --------------- P24.27 Remote2 T+H tem. probe updating diff.: 0.5°C --------------- P24.28 Remote2 T+H hum. probe updating diff.: 0.5%	Parameter for setting the remote air 2 temperature reading resolution. Parameter for setting the remote air 2 humidity reading resolution. *Visible only if at least two serial remote T+H probes are configured.*	655 656	P24.27 P24.28
Adjustments --------------- P24.29 Remote3 T+H tem. probe updating diff.: 0.5°C --------------- P24.30 Remote3 T+H hum. probe updating diff.: 0.5%	Parameter for setting the remote air 3 temperature reading resolution. Parameter for setting the remote air 3 humidity reading resolution. *Visible only if at least three serial remote T+H probes are configured.*	657 658	P24.29 P24.30

Manual mask	Description	Par	ID Par.
Adjustments --------------- P24.31 Remote4 T+H tem. probe updating diff.: 0.5°C --------------- P24.32 Remote4 T+H hum. probe updating diff.: 0.5%	Parameter for setting the remote air 4 temperature reading resolution. Parameter for setting the remote air 4 humidity reading resolution. *Visible only if at least four serial remote T+H probes are configured.*	659 660	P24.31 P24.32
Adjustments --------------- P24.33 TH air temperature probe adj.: 0.0°C	Parameter for calibrating the generic serial *T+H* probe air temperature sensor. *Visible only if the generic serial T+H probe is enabled.*	661 662	P24.33 P24.34
Adjustments --------------- P24.46 External T+H air temp. probe adj.: 0.0°C --------------- P24.47 External T+H Humidity probe adj.: 0.0%	Parameter for calibrating the external temperature / humidity sensor. *Visible only if the external serial T+H probe is enabled.*	674 675	P24.46 P24.47
Adjustments --------------- P24.48 Extern. T+H hum. probe updating diff.: 0.5% --------------- P24.49 Extern. T+H tem. probe updating diff.: 0.5°C	Parameter for setting the external air temperature reading resolution. Parameter for setting the external air humidity reading resolution. *Visible only if the external serial T+H probe is enabled.*	676 677	P24.48 P24.49
Adjustments --------------- P24.52 Supply T+H air temp. probe adj.: 0.0°C --------------- P24.53 Supply T+H Humidity probe adj.: 0.0%	Parameter for calibrating the air delivery temperature / humidity sensor. *Visible only if the air delivery serial T+H probe is enabled.*	680 681	P24.52 P24.53

Manual mask	Description	Par	ID Par.
↑ ⚠ Demand Limit ← ↓	Access mask to “Demand Limit” submenu. Press **[UP] or [DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Demand Limit ⚠ Demand Limit Not Available	Screen shown if it is not possible to use the Demand Limit function. *Visible only in units with Small control system.*		

Manual mask	Description	Par	ID Par.
↑ LAN ← ↓	Access mask to “LAN” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
LAN  Editable only from the Primary unit (Add.01)	This mask indicates that the LAN menu parameters can be edited only on the Primary unit. *Only displayed with secondary units.*		
LAN --------------- P26.01 Amount of units in the LAN: 01	Parameter for setting the number of units in LAN.	693	P26.01
LAN --------------- P26.03 Stand-by mode in LAN enable: N --------------- P26.04 Stand-by mode in LAN cycle time: 168h	Parameter for setting the standby mode in LAN function (N:disabled - Y:enabled) and parameter for setting the standby cycle time in LAN.	695 696	P26.03 P26.04
LAN --------------- P26.05 Amount of units in stand-by in the LAN:00 --------------- P26.06 Stand-by mode in LAN limits enable: Y	Parameter for setting the number of units in stand-by in LAN Parameter for setting the standby mode limit function in LAN (N:disabled Y:enabled). *Visible only if standby mode is enabled in LAN.*	697 698	P26.05 P26.06
LAN --------------- P26.02 Average values calcul. from LAN enable: N --------------- P26.08 Max temp. value calc. from LAN enable: N	Parameter for enabling the average calculation function in LAN (N:disabled Y:enabled). Parameter for enabling the maximum air adjustment temperature calculation function in LAN (0:disabled 1:enabled). *Visible only if LAN is enabled.*	694 700	P26.02 P26.08
LAN --------------- P26.11 H&L Local Temperature protection enable: N	Parameter for enabling Hot&Cold spot management. *Visible only if the average calculation function is enabled in LAN.*	703	P26.11

Manual mask	Description	Par	ID Par.
LAN ---------- P26.12 Diff. for ON with High local temp.: 02.0°C ---------- P26.13 Diff. for ON with Low local temp.: 02.0°C	Parameter for configuring the offset from the average temperature for activation of the Hot Spot function. Parameter for configuring the offset from the average temperature for activation of the Cold Spot function. *Visible only if Hot&Cold spot management is enabled.*	704 705	P26.12 P26.13
LAN ---------- P26.14 Delay before protection OFF with TReturn in range: 300s	Parameter for configuring the time of deactivation of the Hot & Cold Spot function after returning within the limits. *Visible only if Hot&Cold spot management is enabled.*	706	P26.14
LAN ---------- P26.15 Delay before protection ON with TReturn out of range: 060s	Parameter for configuring the time of activation of the Hot & Cold Spot function after exceeding the limits. *Visible only if Hot&Cold spot management is enabled.*	707	P26.15
LAN ---------- P26.16 Active Fan on Stand-by units enable: N ---------- P26.17 Stand-by units Active Fan speed: 070%	Parameter for enabling the Active Fan on Standby function. Parameter for setting the Internal fan speed with Active Fan on Standby in use.	708 709	P26.16 P26.17
LAN ---------- P26.18 Active Pressure Load enable: DISABLED ---------- P26.19 Disable APL during Diff.P probe alarm: N	Parameter for enabling the Active Pressure Load function (Disabled | By Unit | By Client) *Visible only if LAN is enabled and the fans are adjusted according to the air DeltaP.* Parameter for disabling fan adjustment according to Active Pressure. Load on units with differential air transducer in alarm. *Visible if Active Pressure Load function is enabled.*	710 711	P26.18 P26.19
LAN ---------- P26.20 H&L Local Pressure protection enable: N	Parameter for enabling the High & Low Local Pressure protection function. *Visible if Active Pressure Load function is enabled.*	712	P26.20
LAN ---------- P26.21 Diff. for ON with High local DeltaP: 010Pa ---------- P26.22 Diff. for ON with Low local DeltaP: 010Pa	Parameters for setting the threshold for independent fan control on units with above-average floor pressures. Parameters for setting the threshold for independent fan control on units with below-average floor pressures. *Visible only if high & low local pressure protection function is enabled.*	713 714	P26.21 P26.22

Manual mask	Description	Par	ID Par.
LAN --------------- P26.23 Delay before protection OFF with local DeltaP in range: 300s	Time before return to regulation according to the average pressure on units with local pressure within the norm. *Visible only if high & low local pressure protection function is enabled.*	715	P26.23
LAN --------------- P26.24 Delay before protection ON with local DeltaP out of range: 060s	Time before start of regulation according to local pressure on units with local pressure outside the norm. *Visible only if high & low local pressure protection function is enabled.*	716	P26.24
LAN --------------- P26.25 Unit group enabling: ✓✓✓✓✓XXXXX----- Units: 1 3 5 7 9 11 13 15 Param. value: 00031	Parameter for setting the network units that will be taken into consideration by the LAN logics (bit N: Unit with N address controller). *Visible only if the LAN is enabled.*	717	P26.25
LAN --------------- P26.26 Primary unit priority: ✓X✓X✓XXXXX---- Units: 1 3 5 7 9 11 13 15 Param. value: 00021	Parameter for setting the priority clients (bit N: Unit with N address controller). *Visible only if the LAN is enabled.*	718	P26.26
LAN --------------- P26.27 Primary unit forcing: ✓XXX✓XXXXX----- Units: 1 3 5 7 9 11 13 15 Param. value: 00017	Parameter for setting the forced clients (bit N: Unit with N address controller). *Visible only if the LAN is enabled.*	719	P26.27
LAN --------------- P26.29 Active Pressure Load regulation mode: Mean --------------- P26.30 Active Pressure Load control mode: Control	Parameter for setting the type of temperature calculation for the Fan Distribution Load function [Disabled | Average | Maximum | Minimum]. *Visible only on chilled water units with EC fans and LAN enabled.* Parameter for selecting the adjustment temperature (return or delivery) for the Fan Distribution Load function.	721 722	P26.29 P26.30

Manual mask	Description	Par	ID Par.
LAN --------------- P26.31 LAN unit rotation freq uency: Disable --------------- P26.32 Rotate at day: Monday	Parameter for setting the type of rotation [Disabled | Daily | Weekly | Monthly | Hourly] *Visible only if the LAN is enabled*. Parameter for setting the day of the week on which the rotation is to take place. *Visible only if weekly or monthly rotation is enabled.*	723 724	P26.31 P26.32
LAN --------------- P26.33 Rotate at hour: 00 --------------- P26.34 Rotate at minute: 00	Parameter for setting the time at which rotation is to take place. Parameter for setting the minute at which rotation is to take place. *Visible only if daily, weekly or monthly rotation is enabled.*	725 726	P26.33 P26.34

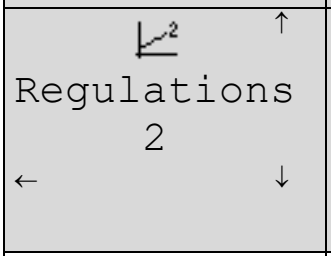
Manual mask	Description	Par	ID Par.
↑ Manual ← ↓	Access mask to the “Manual” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu. This submenu contains the masks for the manual control of the unit. This menu is used to reset the energy meter counts and reset the operating hours and the start counts of the various unit components.		
Core - Mode selection:Auto Time remaining Manual : 08h00m00s Critical: 00h30m00s	Enable manual operation (0: Auto - 1: Manual)		
Core - Intern. Fan Fan speed: 070% Auto: Active	Manual forcing of internal fan speed (unit in operation)		
Cooling - No Manual Cooling Parameters Available Auto: Active	This mask indicates that there are no cooling resources in the unit		
Cooling - Free Cool Damper: Close Auto: Active	Manual request to open the Direct Free-cooling Damper (0: Closed - 1: Open) Manual Direct Free-cooling damper opening request value (0-100%) Visible only if the direct free cooling damper is present, if manual operation is enabled and the unit is running		
Heating - No Manual Heating Parameters Available Auto: Active	Mask indicating the absence of heating resources in the configured unit.		
Heating - El. Heaters Step 1: Off Step 2: Off Auto: Active	Manual request to switch on electrical heater. Visible only if the electric heaters are present. Manual modulating heating elements request value. Visible only if modulating type electrical heating elements are present, if manual operation is enabled and the unit is running		

Manual mask	Description	Par	ID Par.
Humidity - No Manual Humidity Parameters Available Auto: Active	Mask indicating the absence of humidity control in the configured unit		
Humidity - Humidifier Status: Off power: 040% >not active (no req./shutd./dis.) Auto: Active	Display operation of the internal humidifier. Manual request for internal humidifier activation. Visible only if an internal type humidifier is present, if manual operation is enabled and the unit is running.		
Humidity - Humidifier Force pre-clean: N Force drain : N >not active (no req./shutd./dis.) Auto: Active	Manual request for internal humidifier pre-wash Visible if there is not already a humidifier pre-wash manual request Display operation of the internal humidifier Manual request for internal humidifier discharge Visible only if there is a manual internal humidifier activation, if manual operation is enabled and the unit is running.		
Humidity - Dehumidify Dehumidification: Off Auto: Active	Manual request to activate dehumidifying function Visible only if dehumidification management is enabled, if manual operation is enabled and the unit is running		
Critical - No Manual Critical Parameters Available Auto: Active	Mask indicating the absence of critical resources in the configured unit.		
Other - No Manual Other Parameters Available Auto: Active	Mask indicating the absence of other manually controllable resources in the configured unit.		

Manual mask	Description	Par	ID Par.
↑ Optional ← ↓	Access mask to the “Optional” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu. This submenu contains the masks containing the management enabling of various options.		
Optional ---------- P27.02 Electric heater enable: N ---------- P27.03 Electric heater type: ON-OFF	Electric heater configuration (N:disabled - Y:enabled). Configuration type Electric heating elements ON/OFF or Modulating heating element.	729 730	P27.02 P27.03
Optional ---------- P27.35 Electrical resistances configuration: 2R and 3 STEP	Parameter for defining the number and type of activation for electrical heaters. **None:** extreme case of none of the electrical heaters being activated. **1 Resistance:** presence and activation of a single heater depending on the required thermal load. **2R and 3Steps:** presence of two “different” electrical heaters with alternating activation and as the sum of both depending on the required thermal load. **2R and 2Steps:** presence of two “equal” electrical heaters with activation of one or both depending on the thermal load.	762	P27.35
Optional ---------- P27.37 El.heater alrm Digital Input cont. logic: ---------- P27.38 Electric heater alarm delay: 020s	Parameter for defining the type of NO/NC contact at rest or with heater thermal alarm event. Delay of heater thermal alarm display.		
Optional ---------- P27.04 T+H return probe (humidity sensor): N ---------- P27.05 Humidifier: Disabled	Parameter for enabling the air return serial T/H probe. Humidifier configuration (0:disabled - 1:internal - 2:external). *Visible only if the generic serial T+H probe is enabled.*	731 732	P27.04 P27.05
Optional ---------- P27.06 Humid. Cylinder type: 1 kg/h Reduct 200V 1-ph Drain Pump Confirm change: Y Type changed	Parameter for selecting the humidifier cylinder. Confirmation of the selected cylinder. *VIsible only if the internal humidifier type is set.*	733	P27.06
Optional ---------- P27.07 Max steam production: 100%	Parameter for selecting Maximum steam production from 0 to 100 % if an internal humidifier is present.	734	P27.07

Manual mask	Description	Par	ID Par.
↑ Optional ← ↓	Access mask to the “Optional” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu. This submenu contains the masks containing the management enabling of various options.		
Optional ---------- P27.16 Humidifier Periodical Drain funct. enable: N ---------- P27.17 Delay between each Periodical Drain: 024h	Parameter for enabling the periodic humidifier cylinder discharge function. *Visible only if the internal humidifier type is set.* Parameter for setting the interval of the periodic humidifier cylinder discharge function. *Visible only if the periodic humidifier cylinder discharge function is enabled.*	743 744	P27.16 P27.17
Optional ---------- P27.18 Humidifier Inactivity Drain funct. enable: N ---------- P27.19 Inactivity duration before Drain: 03d	Parameter for enabling the humidifier cylinder discharge function for inactivity. *Visible only if the internal humidifier type is set.* Parameter for setting the period of inactivity of the humidifier cylinder discharge function for inactivity. *Visible only if the humidifier cylinder discharge function for inactivity is enabled.*	745 746	P27.18 P27.19
Optional ---------- P27.09 Dehumidification enable: N	Dehumidifier configuration (N:disabled - Y:enabled).	736 755	P27.09
Optional ---------- P27.29 Diff. between setpoint humidification and dehumidification: 05%	Parameter for setting the minimum difference between humidification setpoint and dehumidification setpoint. *Visible only if both the humidifier and the dehumidification function are enabled.*	756	P27.29
Optional ---------- P27.11 Damper enable: N ---------- P27.12 Damper opening time: 120sec	Parameters used to configure the air delivery/return damper (N:disabled - Y:enabled) and the damper opening time.	738 739	P27.11 P27.12

Manual mask	Description	Par	ID Par.
↑ Optional ← ↓	Access mask to the “Optional” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu. This submenu contains the masks containing the management enabling of various options.		
Optional ---------- P27.13 Energy Analyzer 1 enable:Gavazzi CPT-DIN	Parameter for enabling the management of the network transducer (0: Disabled - 1: Gavazzi CPT-DIN - 2: Gavazzi EM210)	740	P27.13
Optional - Enrg. Anlz. ---------- P27.14 System type: 3-phase unbal 3/4-wire ---------- P27.15 Transformer ratio: 00020	Parameter for configuring the power supply system that can be 1-2-3 phases with balanced/unbalanced load, with or without neutral (Default: system 3/4 unbalanced wires) and Parameter for configuring the supply current transformer ratio (Default: 20) Visible only if the network analyser 1 is enabled	741 742	P27.14 P27.15
Optional ---------- P27.30 Energy Analyzer 2 enable:Gavazzi CPT-DIN	Parameter for enabling the management of the network transducer 2 (0: Disabled - 1: Gavazzi CPT-DIN - 2: Gavazzi EM210)	757	P27.30
Optional- Enrg. Anlz.2 ---------- P27.31 System type: 3-phase unbal 3/4-wire ---------- P27.32 Transformer ratio: 00020	Parameter for configuring the power supply system that can be 1-2-3 phases with balanced/unbalanced load, with or without neutral (Default: system 3/4 unbalanced wires) and Parameter for configuring the supply current transformer ratio (Default: 20) Visible only if the network analyser 2 is enabled	758 759	P27.31 P27.32
Optional ---------- P27.20 Setpoint Compensation enable: N	Parameter for setting the setpoint offset function enable.	747	P27.20
Optional ---------- P27.33 T+H external probe (humidity sensor): N ---------- P27.34 T+H Supply probe (humidity sensor): N	Parameter for enabling the external serial T/H probe. Parameter for enabling the air delivery serial T/H probe.	760 761	P27.33 P27.34

Manual mask	Description	Par	ID Par.
	Screen confirming access to the submenu containing further “Adjustment” parameters. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Regulations 2  No Regulations 2 Parameters Available	Mask displayed when none of the parameters of this menu for the unit are available.		
Regulations 2 ---------- P28.18 Sup. probes regulation TH NTC1 NTC2 NTC3 NTC4 THr1 THr2 THr3 THr4 Param. value: 00511	Parameter for indicating the temperature probes that will be used for the calculation of the delivery air temperature. Bit 0: NTC1 - Bit 1: NTC2 - Bit 2: NTC3 - Bit 3: NTC4 - Bit 4: TH - Bit 5: THr1 - Bit 6: THr2 - Bit 7: THr3 - Bit 8: THr4	790	P28.18
Regulations 2 ---------- P28.19 TH NTC1 NTC2 NTC3 NTC4 THr1 THr2 THr3 THr4 Param. value: 00511	Parameter for indicating the temperature probes that will be used for the calculation of the return air temperature. Bit 0: NTC1 - Bit 1: NTC2 - Bit 2: NTC3 - Bit 3: NTC4 - Bit 4: TH - Bit 5: THr1 - Bit 6: THr2 - Bit 7: THr3 - Bit 8: THr4	791	P28.19
Regulations 2 ---------- P28.20 Ret. calculation type: 1st probe enabled ---------- P28.21 Sup. calculation type: 1st probe enabled	Parameter for setting the type of calculation of the return air temperature. Parameter for setting the type of calculation of the delivery air temperature.	792 793	P28.20 P28.21
Regulations 2 ---------- P28.22 UV Lamp Activation: Disabled	Parameter for choosing the type of UV lamp activation command [Disabled] Parameter for switching the UV lamp on/off. *Visible only with UV lamp activation from keypad.*	794	P28.22
Regulations 2 ---------- P28.30 Measurement system: International	Enabling Imperial system [0: International metric system - 1: Imperial System].	802	P28.30

Manual mask	Description	Par	ID Par.
Regulations 2 ---------- P28.33 Config. soft shutdown function: Disabled	Parameter for setting the enabling of the Soft Shutdown function [Disabled].	805 806	P28.33 P28.34
Regulations 2 ---------- P28.35 Band Supply air temp. limit: 4°C	Parameter for setting the differential for delivery temperature protection. Visible only if the delivery temperature protection function is enabled.	807	P28.35
Regulations 2 ---------- P28.36 External fan speed signal: Disabled	Ventilation adjustment function configuration with special function 03 (0:Disabled - 1:BMS - 2: 0-5 V).	808	P28.36
Regulations 2 ---------- P28.37 High Temperature limit alarm diff: 0.5°C ---------- P28.40 Low Temperature limit alarm diff: 0.5°C	Parameter for setting the High Temperature alarm differential (in relation to the setpoint given by parameter P22.95 for delivery temperature control, or P22.02 for return temperature control). Parameter for setting the Low Temperature alarm differential (in relation to the setpoint given by parameter P22.94 for delivery probe control, or P22.01 for return temperature control).	809 812	P28.37 P28.40
Regulations 2 ---------- P28.38 Humidity limits alarm diff : 01% ---------- P28.39 Air probes limits alarm delay: 060s	Parameter for setting the air humidity probe limits alarm activation differential. Parameter for setting the "air probe limits" alarm delay.	810 811	P28.38 P28.39
Regulations 2 ---------- P28.47 Regulation type: Ordinary	Parameter for setting the type of adjustment (Ordinary/Advanced).	819	P28.47
Regulations 2 ---------- P28.48 Supply proportional band: 02.0°C ---------- P28.46 Supply integral time: 000sec	Parameter for setting the proportional band for delivery limitation. *Visible only with advanced adjustment set on the return.* Parameter for setting the integral time for delivery limitation. *Visible only with advanced adjustment set on the return.*	820 818	P28.48 P28.46

Manual mask	Description	Par	ID Par.
Regulations 2 ---------- P28.44 Higher diff. supply setpoint: 02.0°C ---------- P28.45 Lower diff. supply setpoint: 01.0°C	Parameter for setting the higher differential of the return setpoint for enabling and disabling delivery adjustment. *Visible only with advanced adjustment set on the delivery.* Parameter for setting the lower differential of the return setpoint for enabling and disabling delivery adjustment. *Visible only with advanced adjustment set on the delivery.*	816 817	P28.44 P28.45
Regulations 2 ---------- P28.41 Heating priority: None ---------- P28.42 Band working point: 000.0%	Parameter for setting the priority between ON/OFF heaters and the hot valve. Parameter for setting the duty point of the second hot resource with the lowest priority (in case of series operation).	813 814	P28.41 P28.42
Regulations 2 ---------- P28.49 Minimum step Handled by Mr.SLIM 1	Parameter for setting the minimum step (1 or 2) that can be sent to the Mr. Slim external unit by the thermoregulator of the internal unit. *Visible only for s-MEXT units.*	821	P28.49
Regulations 2 ---------- P28.50 Extra Low Temperature Startup: Disabled	Parameter for enabling the start-up function of the internal unit at very low outside temperatures (ExLT start-up function). *Visible only for s-MEXT units.*	822	P28.50
Regulations 2 ---------- P28.51 TH7 threshold for ExLT StartUP: 00.0°C ---------- P28.52 TH2-TH5 threshold for ExLT StartUP: 00.0°C	Parameter for setting the temperature threshold read by the external probe (TH7) below which ExLT start-up is activated. Parameter for setting the temperature threshold read by probes TH2 and TH5. Above this threshold, the ExLT function is no longer active and the internal unit adjusts as required. *Visible only for s-MEXT units.*	823 824	P28.51 P28.52
Regulations 2 ---------- P28.53 Min. time shutoff for ExLT StartUP: 000min	Parameter for setting the minimum shutdown time of the external unit, after which ExLT start-up is activated. *Visible only for s-MEXT units.*	825	P28.53
Regulations 2 ---------- P28.54 Flood sensor switch contact logic:	Parameter for changing the digital contact logic of the flood sensor. (N:NO - Y: NC)	826	P28.54

Manual mask	Description	Par	ID Par.
↑  Settings 2 ← ↓	Access mask to “Setting 2” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Settings --------------- P29.01 Very High temperature alarm setpoint: 10°C --------------- P29.04 Water valve sniffer opening perc. :100.0 %	Hazardous high temperature alarm setpoint.	838 841	P29.01 P29.04
Settings --------------- P29.05 A004 and A005 alarm filter time: 03 s	Parameter defining a delay for the activation of alarm 004 (default value 0s).	842	P29.05
Settings --------------- P29.06 Enabling acknowledge of alarm events occure d function: N	Enabling of the "acknowledge alarm” function.	843	P29.06
Settings --------------- P29.18 Failure management configuration:Disabled	Parameter for enabling the “Fault management” function and its A095 probe faulty alarm.	855	P29.18
Settings --------------- P29.19 Reg. Probe broken for fail active :One probe --------------- P29.20 Unit responce for Reg. Probe fail : Usual	If the adjustment probes are faulty, it will be possible to set (P29.19) if all or only one probe will activate the probe faulty alarm (0: One probe - 1:All probes) and set the relative response of the unit P29.20 (0: Operation - 1 Shutdown). *Visible only if the “failure management” function is enabled.*	856 857	P29.19 P29.20
Settings --------------- P29.23 RFan Probe broken for fail active :One probe --------------- P29.24 Unit responce for RFan Probe fail : Usual	Parameter for detailing the number of fan return adjustment probes for activation of the fault (0: one probe broken - 1: all probes broken) Parameter for defining how the unit reacts to one or more faulty fan intake control probes (0: normal - 1: 100% Fan Power) *Visible if the “special 02” function with intake temperature and the “fault management” function are enabled.*	860 861	P29.23 P29.24

Manual mask	Description	Par	ID Par.
↑  Serial ← ↓	Access mask to BMS management submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Unit ---------- P30.01 Config. of the serial line: Disabled	Parameters for setting the supervision presence. The serial line BMS1 can be configured as 0: Disabled, 1: supervisory enabled, 2: DCCMS type, 3: supervision with watch dog or 4: supervision with BMS offline management whereby the unit is switched OFF if online mode is reactivated after offline alarm sounds from BMS. If DCCMS-type supervision is configured, the protocol is set to "Modbus" type If supervision with a watchdog is configured for the maximum allowed time during which communication is interrupted by the BMS, refer to the BMS offline alarm parameter P22.56 in the “Setting” menu. 0:Disabled - 1:Supervisor - 2:DCCMS - 3:BMS with WatchDog - 4:BMS Mng OFFLINE	868	P30.01
Serial ---------- P30.02 BMS1 address: 011 ---------- P30.03 BMS1 protocol type: Standard	BMS1 port address. BMS1 port protocol type. [Standard | Modbus | GSM Modem | LON | Bacnet | TCP/IP | WinLoad] *Visible only if supervision is enabled.* - GSM Modem compatibility only for ME09 and earlier versions.	869 870	P30.02 P30.03
Serial ---------- P30.04 BMS1 baudrate: 19200	Baud rate for BMS1 port communication. [1200 | 2400 | 4800 | 9600 | 19200 | 38400] *Visible only if supervision is enabled.*	871	P30.04
Serial ---------- P30.12 BMS2 supervision enable: N	Parameter for setting the supervision presence on port BMS2. *Visible only if supervision is enabled and KIPLink is not.*	879	P30.12
Serial ---------- P30.13 BMS2 address: 002 ---------- P30.14 BMS2 baudrate: 38400	BMS2 port address. Baud rate for BMS2 port communication. [1200 | 2400 | 4800 | 9600 | 19200 | 38400] *Visible only if supervision is enabled on both ports and KIPLink is not.*	880 881	P30.13 P30.14

Manual mask	Description	Par	ID Par.
Serial --------------- P30.05 ON/OFF by BMS enable: N ---------------	Parameters to configure ON/OFF from BMS (N:disabled - Y:enabled) and, in case of cooled water unit, to change the SUMMER/WINTER mode from BMS (N:disabled - Y:enabled).	872	P30.05
Serial --------------- P30.09 Temp. regulation from Supervisor enable: N	Enabling adjustment according to temperature provided by BMS.	876	P30.09
Serial --------------- P30.11 FC Stop by Supervisor enable: N	Enabling Free Cooling operation block by BMS. *Visible only on units with direct free cooling.*	878	P30.11

Manual mask	Description	Par	ID Par.
 Alarm out ← ↓	Access mask to "Alarm out" submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Alarm out addressing --------------- P31.01 Alarm out A contact logic: --------------- P31.02 Alarm out B contact logic:	Parameters for setting the alarm A contact status (0:NO - 1:NC) and the alarm B contact status (0:NO - 1:NC).	883 884	P31.01 P31.02
Alarm out addressing --------------- P31.03 (003) Presence of Fire/Smoke: A	Addressing of the fire/smoke alarm on digital output.	885	P31.03
Alarm out addressing --------------- P31.04 (004) Wrong Phase Sequence or Supply Out of Limit: A	Addressing of the phase Sequence alarm on digital output.	886	P31.04
Alarm out addressing --------------- P31.10 (101) Loss of Air Flow: A	Addressing of the Air Flow alarm on digital output.	892	P31.10
Alarm out addressing --------------- P31.11 (120) Return Temp. Probe Fail./Disc.: A	Addressing of the room temperature probe alarm on digital output.	893	P31.11
Alarm out addressing --------------- P31.12 (125) Return Humidity Probe Fail./Disc.: A	Addressing of the room humidity probe alarm on digital output.	894	P31.12

Manual mask	Description	Par	ID Par.
Alarm out addressing --------------- P31.13 (130) Diff. Pressure Probe Fail./Disc.: A	Addressing of the differential pressure probe alarm on digital output.	895	P31.13
Alarm out addressing --------------- P31.14 (140) Supply Air Temp. Probe Fail./Disc.: A	Addressing of the delivery air temperature probe alarm on digital output.	896	P31.14
Alarm out addressing --------------- P31.16 (144) Outdoor Air Temp Probe Fail./Disc.: A	Addressing of the external air temperature probe alarm on digital output.	898	P31.16
Alarm out addressing --------------- P31.18 (150) Heaters Overheat or Heaters Contactor Failed: A	Addressing of the electric heaters alarm on digital output.	900	P31.18
Alarm out addressing --------------- P31.19 (180) Return T+H Probe Offline: A	Addressing of the T+H probe offline alarm on digital output.	901	P31.19
Alarm out addressing --------------- P31.23 (192) I/O Expansions 1-2-3-4 Offline: A --------------- P31.24 (199) Energy Analyzer Offline: A	Addressing of I/O expansion offline alarm on digital output Addressing of network transducer offline alarm on digital output.	905 906	P31.23 P31.24
Alarm out addressing --------------- P31.25 (195) Humidifier Board Offline: A	Addressing of the CPY humidifier module alarm on digital output.	907	P31.25

Manual mask	Description	Par	ID Par.
Alarm out addressing --------------- P31.42 (402) Humidifier Life Timer Expired: A --------------- P31.43 (404) Humidifier Drain Alarm: A	Addressing of the humidifier life expired alarm on digital output. Addressing of humidifier discharge fault alarm on digital output. *VIsible only if the internal humidifier type is set.*	924 925	P31.42 P31.43
Alarm out addressing --------------- P31.44 (406) Humidifier Loss of Water: A --------------- P31.45 (408) Humidifier Low Current: A	Addressing of the humidifier insufficient water alarm on digital output. Addressing of the humidifier electrodes low current alarm on digital output. *VIsible only if the internal humidifier type is set.*	926 927	P31.44 P31.45
Alarm out addressing --------------- P31.46 (410) Humidifier High Current: A --------------- P31.47 (412) Humidifier Generic Alarm: A	Addressing of the humidifier electrodes high current alarm on digital output. Addressing of the generic humidifier alarm on digital output. *VIsible only if the internal humidifier type is set.*	928 929	P31.46 P31.47
Alarm out addressing --------------- P31.48 (504) Demand Limit Mode: A --------------- P31.49 (010/510) Flood Alarm/ Flood Warning: A	Addressing of the Emergency alarm on digital output. Addressing of the flooding alarm on digital output.	930 931	P31.48 P31.49
Alarm out addressing --------------- P31.50 (520) LAN Interrupted: A	Addressing of the LAN alarm on digital output.	932	P31.50
Alarm out addressing --------------- P31.94 (529) Return Temp. Above HH Limit: A	Addressing of the hazardous high temperature alarm on digital output.	976	P31.94
Alarm out addressing --------------- P31.51 (530) Return Temp. Below Min. Limit: A --------------- P31.52 (531) Return Temp. Above Max. Limit: A	Addressing of the low temperature alarm on digital output. Addressing of the high temperature alarm on digital output.	933 934	P31.51 P31.52

Manual mask	Description	Par	ID Par.
Alarm out addressing --------------- P31.53 (540) Return Humidity Below Min. Limit: A --------------- P31.54 (541) Return Humidity Above Max. Limit: A	Addressing of the low humidity alarm on digital output. Addressing of the high humidity alarm on digital output.	935 936	P31.53 P31.54
Alarm out addressing --------------- P31.55 (601) EEPROM Error: A --------------- P31.56 (610) Maintenance Needed: A	Addressing of the EEPROM alarm on digital output. Addressing of the Maintenance alarm on digital output.	937 938	P31.55 P31.56
Alarm out addressing --------------- P31.57 (620) Faulty Fan: A --------------- P31.58 (630) Clogged Filters: A	Addressing of the faulty fan alarm on digital output. Addressing of the dirty filters alarm on digital output.	939 940	P31.57 P31.58
Alarm out addressing --------------- P31.62 (323) Circuit 1 Frost Protection Active: A --------------- P31.63 (324) Circuit 2 Frost Protection Active: A	Addressing of the circuit 1 and 2 frost-free function alarms on digital output.	944 945	P31.62 P31.63
Alarm out addressing --------------- P31.67 (711) BMS1 Bus Offline: A	Addressing of the BMS port 1 offline alarm on digital output.	949	P31.67
Alarm out addressing --------------- P31.68 (712) BMS2 Bus Offline: A	Addressing of the BMS port 2 offline alarm on digital output.	950	P31.68
Alarm out addressing --------------- P31.70 (121) Remote Temp. Probe Failed or Disconnected: A	Addressing of auxiliary temperature probe alarm on digital output *Visible when the auxiliary probe with address 129 is configured.*	952	P31.70

Manual mask	Description	Par	ID Par.
Alarm out addressing --------------- P31.71 (126) Remote Humidity Probe Failed or Disconnected: A	Addressing of the auxiliary humidity probe alarm on digital output. *Visible when the auxiliary probe with address 129 is configured.*	953	P31.71
Alarm out addressing --------------- P31.72 (181) Remote T+H Probe Offline: A	Addressing of the auxiliary probe offline alarm on digital output. *Visible when the auxiliary probe with address 129 is configured.*	954	P31.72
Alarm out addressing --------------- P31.84 (319) Circ. 1 LP Probe Failed/Disconn.: A --------------- P31.85 (321) Circ. 2 LP Probe Failed/Disconn.: A	Addressing of the circuit 1 low pressure probe alarm on digital output. Addressing of the circuit 2 low pressure probe alarm on digital output.	966 967	P31.84 P31.85
Alarm out addressing --------------- P31.98 (299) ATS offline alarm on output: A --------------- P31.99 (300) ATS V. Source alarm on output: A	ATS disconnected alarm addressing on digital output. Not available ATS sources alarm addressing on digital output. *Visible only if ATS is enabled.*	980 981	P31.98 P31.99

Manual mask	Description	Par	ID Par.
 ↑ Scheduler ← ↓	Access mask to the “Time bands manager” menu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu. This submenu allows the activation of time band management.		
Scheduler --------------- P32.01 Scheduler enable: N	Parameter for setting the time bands (N:disabled - Y:enabled).	963	P32.01

Manual mask	Description	Par	ID Par.
↑  Info ← ↓	Access mask to “Info” menu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu. This submenu can be used to change user password and display software info.		
Info - Pwd change Insert a new User password: 0000	Sets a new “User” password. **Attention:** The password entered in this field is the only one that allows access to the “user” menu.		
Info - About Evolution+ Code ME 52.00 EN HW pCO5+ M NAND 50MB Flash 2MB + 7MB + 4MB Ram 2048KB Boot 05.01 Bios 06.51	This mask contains the reference information for the application [Code ME 52.00 EN] and the technical reference manual [Man. C0]. The closed padlock symbol shows that the board is provided with its propriety software. The second part of the mask shows information about the hardware: size (M, L, XL), memories (NAND 32MB, flash 2+7MB, ram 2048KB) and versions of the installed operating system (boot and bios).		
Info Reset to default value KIPlink Supervisor ReadOnly password: N	Variable for resetting the password for read-only use of the KIPLink. *This is only possible if the touch screen is connected to the controller.*		
Info Reset to default value Touchscreen password Activation N	Activation of reset to default value of touch screen password. *This is only possible if the touch screen is connected to the controller.*		

Manual mask	Description	Par	ID Par.
Info User password config for display unlock: Disabled	Configuration of user password request to unlock the display.		

Manual mask	Description	Par	ID Par.
↑  Alarm out 2 ← ↓	Access mask to "Alarm out 2" submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Alarm out addressing 2 No Alarm out 2 Parameters Available	Mask displayed only if there are no parameters in Alarm out 2 menu for the selected unit.		
Alarm out addressing 2 --------------- P33.15 (151-154) Any Fan - Offline Alarm: A --------------- P33.16 (156-159) Any Fan - Phase Fault: A	Addressing of the fans offline alarms on digital output. Addressing of the fans phase sequence alarms on digital output. *Visible only on units with EC fans controlled via serial communication.*	997 998	P33.15 P33.16
Alarm out addressing 2 --------------- P33.17 (161-164) Any Fan - Motor Blocked: A --------------- P33.18 (166-169) Any Fan - Voltage Problem: A	Addressing of the fan motor blocked alarms on digital output. Addressing of the fans voltage problem alarms on digital output. *Visible only on units with EC fans controlled via serial communication.*	999 1000	P33.17 P33.18
Alarm out addressing 2 --------------- P33.19 (171-174) Any Fan - Heat Problem: A	Addressing of the fans thermal problem alarms on digital output. *Visible only on units with EC fans controlled via serial communication.*	1001	P33.19

Manual mask	Description	Par	ID Par.
Alarm out addressing 2 ---------- P33.20 (176-179) Any Fan - Generic Alarm: A	Addressing of the fans generic alarms on digital output. *Visible only on units with ec fans controlled via serial communication or on units on which the forced nominal speed on fan alarm function is enabled.*	1002	P33.20
Alarm out addressing 2 ---------- P33.50 (103) Air flow loss evaporator from fan alarm output: A	Addressing of the Air Flow alarm due to fan fault on digital output.	1032	P33.50
Alarm out addressing 2 ---------- P33.51 (147) Temp. sup. exp. out of range out: A ---------- P33.52 (119) Temperature reg. out of range out: A	Addressing of the special function 01 fan temperature signal disconnection alarm on digital output. Addressing of the adjustment temperature probe alarm on digital output.	1033 1034	P33.51 P33.52
Alarm out addressing 2 ---------- P33.53 (127) Remote 2 umidity out of range out: A ---------- P33.54 (122) Remote 2 temp. out of range out: A	Addressing of the remote serial humidity probe 2 alarm on digital output. Addressing of the remote serial temperature probe 2 alarm on digital output.	1036 1035	P33.54 P33.53
Alarm out addressing 2 ---------- P33.55 (128) Remote 3 umidity out of range out: A ---------- P33.56 (123) Remote 3 temp. out of range out: A	Addressing of the remote serial humidity probe 3 alarm on digital output. Addressing of the remote serial temperature probe 3 alarm on digital output.	1038 1037	P33.56 P33.55
Alarm out addressing 2 ---------- P33.57 (129) Remote 4 umidity out of range out: A ---------- P33.58 (124) Remote 4 temp. out of range out: A	Addressing of the remote serial humidity probe 4 alarm on digital output. Addressing of the remote serial temperature probe 4 alarm on digital output.	1040 1039	P33.58 P33.57
Alarm out addressing 2 ---------- P33.59 (131) Remote 2 offline alarm on output: A ---------- P33.60 (132) Remote 3 offline alarm on output: A	Addressing of the remote serial probe 2 offline alarm on digital output. Addressing of the remote serial probe 3 offline alarm on digital output.	1041 1042	P33.59 P33.60

Manual mask	Description	Par	ID Par.
Alarm out addressing 2 --------------- P33.61 (133) Remote 4 offline alarm on output: A --------------- P33.62 (134) Return NTC2 ran. alarm on output: A	Addressing of the remote serial probe 4 offline alarm on digital output. Addressing of the return air temperature probe NTC 2 alarm on digital output.	1043 1044	P33.61 P33.62
Alarm out addressing 2 --------------- P33.68 (200) Energy Analyzer2 offline: A --------------- P33.69 (450) T+H ext. temper. alarm on output: A	Addressing of the network transducer 2 offline alarm on digital output. Addressing of the external serial temperature probe alarm on digital output.	1050 1051	P33.68 P33.69
Alarm out addressing 2 --------------- P33.70 (451) T+H ext. humid. alarm on output: A --------------- P33.71 (452) T+H ext. offline alarm on output: A	Addressing of the external serial humidity probe alarm on digital output. Addressing of the external serial probe offline alarm on digital output.	1052 1053	P33.70 P33.71
Alarm out addressing 2 --------------- P33.72 (141) T+H gen. temp. alarm on output: A	Addressing of the generic serial temperature probe alarm on digital output.	1054	P33.72
Alarm out addressing 2 --------------- P33.74 (533) Supply Temp. above max limit: A --------------- P33.75 (532) Supply Temp. below min limit: A	Addressing of the high delivery temperature alarm on digital output. Addressing of the low delivery temperature alarm on digital output.	1056 1057	P33.74 P33.75
Alarm out addressing 2 --------------- P33.76 (543) Supply Humid. above max limit: A --------------- P33.77 (542) Supply Humid. below min limit: A	Addressing of the delivery humidity above maximum limit alarm on digital output. Addressing of the delivery humidity below minimum limit alarm on digital output. *Visible only if the delivery air T+H probe is present.*	1058 1059	P33.76 P33.77

Manual mask	Description	Par	ID Par.
Alarm out addressing 2 --------------- P33.80 (307) T+H sup. offline alarm on output: A	Addressing of the delivery serial probe offline alarm on digital output. *Visible only if the delivery air T+H probe is present.*	1062	P33.80
Alarm out addressing 2 --------------- P33.81 (308) T+H sup. temper. alarm on output: A --------------- P33.82 (309) T+H sup. humid. alarm on output: A	Addressing of the delivery temperature serial probe alarm on digital output. Addressing of the delivery humidity serial probe alarm on digital output. *Visible only if the delivery air T+H probe is present.*	1063 1064	P33.81 P33.82
Alarm out addressing 2 --------------- P33.83 (840)Mr.SLIM C System alarm on output: A --------------- P33.84 (841)Mr.SLIM C Circ. alarm on output: A	Addressing of PAC-IF Client system alarm (0: A – 1: None - 2: B). Addressing of Client PAC-IF circuit alarm (0: A – 1: None - 2: B). *Visible only in case of s-MEXT units.*	1065 1066	P33.83 P33.84
Alarm out addressing 2 --------------- P33.85 (842)Mr.SLIM C Probes alarm on output: A --------------- P33.86 (843)Mr.SLIM S1 System alarm on output: A	Addressing of Client PAC-IF probe alarm (0: A – 1: None - 2:B). Addressing of PAC-IF Server 1 system alarm (0: A – 1: None - 2: B). *Visible only in case of s-MEXT units.*	1067 1068	P33.85 P33.86
Alarm out addressing 2 --------------- P33.87 (844)Mr.SLIM S1 Circ. alarm on output: A --------------- P33.88 (845)Mr.SLIM S1 Probes alarm on output: A	Addressing of Server 1 PAC-IF circuit alarm (0: A – 1: None - 2: B). Addressing of Server 1 PAC-IF probe alarm (0: A – 1: None - 2: B). *Visible only in case of s-MEXT units.*	1069 1070	P33.87 P33.88
Alarm out addressing 2 --------------- P33.89 (188)Mr.SLIM C Offline alarm on output: A --------------- P33.90 (189)Mr.SLIM S1 Offlin alarm on output: A	Addressing of Client PAC-IF offline alarm (0: A – 1: None - 2: B). Addressing of Server 1 PAC-IF offline alarm (0: A – 1: None - 2: B). *Visible only in case of s-MEXT units.*	1071 1072	P33.89 P33.90

Manual mask	Description	Par	ID Par.
Alarm out addressing 2 --------------- P33.91 (050)Gas Leak detected alarm on output: A	Addressing of Client PAC-IF probe alarm (0: A – 1: None - 2: B) Addressing of PAC-IF Server 1 system alarm (0: A – 1: None - 2: B) *Visible only in case of s-MEXT units.*	1073	P33.91
Alarm out addressing 2 --------------- P33.21 (301) APF Offline alarm on output: A --------------- P33.73 (302) APF Status Alarm on output: A	Addressing of APF disconnected alarm (0: A - 1: None - 2: B). Addressing of APF device alarm in error (0: A - 1: None - 2: B)	1003 1055	P33.21 P33.73

Manual mask	Description	Par	ID Par.
 ↑ Alarm out 3 ← ↓	Access mask to "Alarm out 3" submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Alarm out addressing 3 No Alarm out 3 Parameters Available	Mask displayed only if there are no parameters in Alarm out 3 menu for the selected unit.		
Alarm out addressing 3 --------------- P34.02 (750)Return IO Probe T. Above limit: A --------------- P34.03 (751)Return IO Probe T. Below limit: A	Addressing of Return IO Probe 1 alarm: High air temperature (0:A - 1:None - 2:B) Addressing of Return IO Probe 1 alarm: Low air temperature (0:A - 1:None - 2:B)	1083 1084	P34.02 P34.03
Alarm out addressing 3 --------------- P34.10 (758)Supply IO Probe T. Above limit: A --------------- P34.11 (759)Supply IO Probe T. Below limit: A	Addressing of Delivery IO Probe 1 alarm: High air temperature (0:A - 1:None - 2:B) Addressing of Delivery IO Probe 1 alarm: Low air temperature (0:A - 1:None - 2:B)	1091	P34.10
Alarm out addressing 3 --------------- P34.18 (766)Remote TH Probe T. Above limit: A --------------- P34.19 (767)Remote TH Probe T. Below limit: A	Addressing of Remote T+H Probe 1 alarm: High air temperature (0:A - 1:None - 2:B) Addressing of Remote T+H Probe 1 alarm: Low air temperature (0:A - 1:None - 2:B)	1099 1100	P34.18 P34.19
Alarm out addressing 3 --------------- P34.20 (768)Remote TH Probe H. Above limit: A --------------- P34.21 (769)Remote TH Probe H. Below limit: A	Addressing of Remote T+H Probe 1 alarm: High air humidity (0:A - 1:None - 2:B) Addressing of Remote T+H Probe 1 alarm: Low air humidity (0:A - 1:None - 2:B)	1101 1102	P34.20 P34.21
Alarm out addressing 3 --------------- P34.22 (770)Remote TH Probe 2 T. Above limit: A --------------- P34.23 (771)Remote TH Probe 2 T. Below limit: A	Addressing of Remote T+H Probe 2 alarm: High air temperature (0:A - 1:None - 2:B) Addressing of Remote T+H Probe 2 alarm: Low air temperature (0:A - 1:None - 2:B)	1103 1104	P34.22 P34.23

Manual mask	Description	Par	ID Par.
Alarm out addressing 3 --------------- P34.24 (771)Remote TH Probe 2 H. Above limit: A --------------- P34.25 (772)Remote TH Probe 2 H. Below limit: A	Addressing of Remote T+H Probe 2 alarm: High air humidity (0:A - 1:None - 2:B) Addressing of Remote T+H Probe 2 alarm: Low air humidity (0:A - 1:None - 2:B)	1105 1106	P34.24 P34.25
Alarm out addressing 3 --------------- P34.26 (774)Remote TH Probe 3 T. Above limit: A --------------- P34.27 (775)Remote TH Probe 3 T. Below limit: A	Addressing of Remote T+H Probe 3 alarm: High air temperature (0:A - 1:None - 2:B) Addressing of Remote T+H Probe 3 alarm: Low air temperature (0:A - 1:None - 2:B)	1107 1108	P34.26 P34.27
Alarm out addressing 3 --------------- P34.28 (776)Remote TH Probe 3 H. Above limit: A --------------- P34.29 (777)Remote TH Probe 3 H. Below limit: A	Addressing of Remote T+H Probe 3 alarm: High air humidity (0:A - 1:None - 2:B) Addressing of Remote T+H Probe 3 alarm: Low air humidity (0:A - 1:None - 2:B)	1109 1110	P34.28 P34.29
Alarm out addressing 3 --------------- P34.30 (778)Remote TH Probe 4 T. Above limit: A --------------- P34.31 (779)Remote TH Probe 4 T. Below limit: A	Addressing of Remote T+H Probe 4 alarm: High air temperature (0:A - 1:None - 2:B) Addressing of Remote T+H Probe 4 alarm: Low air temperature (0:A - 1:None - 2:B)	1111 1112	P34.30 P34.31
Alarm out addressing 3 --------------- P34.32 (780)Remote TH Probe 4 H. Above limit: A --------------- P34.33 (781)Remote TH Probe 4 H. Below limit: A	Addressing of Remote T+H Probe 4 alarm: High air humidity (0:A - 1:None - 2:B) Addressing of Remote T+H Probe 4 alarm: Low air humidity (0:A - 1:None - 2:B)	1113 1114	P34.32 P34.33
Alarm out addressing 3 --------------- P34.34 (782)Return TH Probe T. Above limit: A --------------- P34.35 (783)Return TH Probe T. Below limit: A	Addressing of Return T+H Probe alarm: High air temperature (0:A - 1:None - 2:B) Addressing of Return T+H Probe alarm: Low air temperature (0:A - 1:None - 2:B)	1115 1116	P34.34 P34.35
Alarm out addressing 3 --------------- P34.36 (784)Return TH Probe H. Above limit: A --------------- P34.37 (785)Return TH Probe H. Below limit: A	Addressing of Return T+H Probe alarm: High air humidity (0:A - 1:None - 2:B) Addressing of Return T+H Probe alarm: Low air humidity (0:A - 1:None - 2:B)	1117 1118	P34.36 P34.37

Manual mask	Description	Par	ID Par.
Alarm out addressing 3 --------------- P34.38 (786)Supply TH Probe T. Above limit: A --------------- P34.39 (787)Supply TH Probe T. Below limit: A	Addressing of Delivery T+H Probe alarm: High air temperature (0:A - 1:None - 2:B) Addressing of Delivery T+H Probe alarm: Low air temperature (0:A - 1:None - 2:B)	1119 1120	P34.38 P34.39
Alarm out addressing 3 --------------- P34.40 (788)Supply TH Probe H. Above limit: A --------------- P34.41 (789)Supply TH Probe H. Below limit: A	Addressing of Delivery T+H Probe alarm: High air humidity (0:A - 1:None - 2:B) Addressing of Delivery T+H Probe alarm: Low air humidity (0:A - 1:None - 2:B)	1121 1122	P34.40 P34.41
Alarm out addressing 3 --------------- P34.42 (790)External TH Probe T. Above limit: A --------------- P34.43 (791)External TH Probe T. Below limit: A	Addressing of External T+H Probe alarm: High air temperature (0:A - 1:None - 2:B) Addressing of External T+H Probe alarm: Low air temperature (0:A - 1:None - 2:B)	1123 1124	P34.42 P34.43
Alarm out addressing 3 --------------- P34.44 (792)External TH Probe H. Above limit: A --------------- P34.45 (793)External TH Probe H. Below limit: A	Addressing of External T+H Probe alarm: High air humidity (0:A - 1:None - 2:B) Addressing of External T+H Probe alarm: Low air humidity (0:A - 1:None - 2:B)	1125 1126	P34.44 P34.45
Alarm out addressing 3 --------------- P34.46 (100)Unit switched OFF by local keyboard: A	Addressing of Unit switched off by local keyboard alarm (0:A - 1:None - 2:B)	1127	P34.46
Alarm out addressing 3 --------------- P34.47 (095)Failure mng. active : A	Addressing of Failure management active alarm (0:A - None - 2:B) *Visible only if the "failure management" function is enabled.*	1128	P34.47
Alarm out addressing 3 --------------- P34.48 (500)Setpoint variat. on alarm: A	Addressing of Setpoint variation failure alarm (0:A – None – 2:B) *Visible only if the related function is enabled.*	1129	P34.48

Manual mask	Description	Par	ID Par.
↑ DEV.Info ← ↓	Access mask to “Devices’ Info” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Devices' info ---------- P35.01-02 Unit operating hours: 000000h Reset:N ---------- P35.03-04 N°starts of Unit: 0000000 Reset:N	Parameter for setting the operating hours of the unit with relative count reset Parameter for setting the number of fan starts with relative count reset		
Devices' info ---------- P35.21-22 R1/Rm operating hours: 000000h Reset:N ---------- P35.23-24 N°starts of R1/Rm: 0000000 Reset:N	Parameter for setting the operating hours of heater 1 with relative count reset Parameter for setting the number of heater 1 starts with relative count reset		
Devices' info ---------- P35.25-26 R2 operating hours: 000000h Reset:N ---------- P35.27-28 N°starts of Res.2: 0000000 Reset:N	Parameter for setting the operating hours of heater 2 with relative count reset Parameter for setting the number of heater 2 starts with relative count reset Visible only if 2 ON/OFF heaters are set		
Devices' info ---------- P35.29-30 Humidifier operating hours: 000000h Reset:N ---------- P35.31-32 N°starts of Humidifie 0000000 Reset:N	Parameter for setting the operating hours of the humidifier cylinder with relative count reset Parameter for setting the number of humidifier cylinder starts with relative count reset Visible only if humidifier enabled		
Devices' info Reset counters: Y >Energy Analyzer 1 Energy: 0000000kWh Time: 0000000h	Mask for resetting the calculated active energy and network analyser 1 hour counts Visible only if the network analyser 1 is enabled		
Devices' info Reset counters: Y >Energy Analyzer 2 Energy: 0000000kWh Time: 0000000h	Mask for resetting the calculated active energy and network analyser 2 hour counts Visible only if the network analyser 2 is enabled		

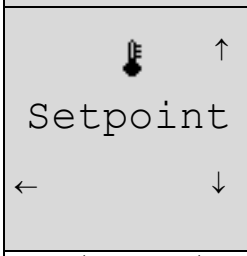
Manual mask	Manual description	Par	ID Par.
↑ Probe Limit ← ↓	Access mask to “Probe Limits” submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Probe Limit --------------- P36.01 Return IO probes High/ Low temperature alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the return IO probe limit alarms. Set a value higher than 0 to enable the alarms.	1164	P36.01
Probe Limit --------------- P36.02 Return IO probe high temp. limit: 032.0°C --------------- P36.03 Return IO probe low temp. limit: 010.0°C > alarms disabled	Return IO Probe 1 high temperature threshold. Return IO Probe 1 low temperature threshold.	1165 1166	P36.02 P36.03
Probe Limit --------------- P36.10 Supply IO probes High/ Low temperature alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the delivery IO probe limit alarms. Set a value higher than 0 to enable the alarms.	1173	P36.10
Probe Limit --------------- P36.11 Supply IO probe high temp. limit: 032.0°C --------------- P36.12 Supply IO probe low temp. limit: 010.0°C > alarms disabled	Delivery IO Probe 1 high temperature threshold. Delivery IO Probe 1 low temperature threshold.	1174	P36.11
Probe Limit --------------- P36.19 Remote TH probes High/ Low temperature alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the remote T+H probe temperature limit alarms. Set a value higher than 0 to enable the alarms.	1182	P36.19
Probe Limit --------------- P36.20 Remote TH probes High/ Low humidity alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the remote T+H probe humidity limit alarms. Set a value higher than 0 to enable the alarms.	1183	P36.20

Manual mask	Manual description	Par	ID Par.
Probe Limit --------------- P36.21 Remote TH probe high temp. limit: 032.0°C --------------- P36.22 Remote TH probe low temp. limit: 010.0°C > alarms disabled	Remote T+H probe 1 high temperature threshold. Remote T+H probe 1 low temperature threshold.	1184 1185	P36.21 P36.22
Probe Limit --------------- P36.23 Remote TH probe high humid. limit: 80% --------------- P36.24 Remote TH probe low humid. limit: 30% > alarms disabled	Remote T+H probe 1 high humidity threshold. Remote T+H probe 1 low humidity threshold.	1186 1187	P36.23 P36.24
Probe Limit --------------- P36.25 Remote TH probe 2 high temp. limit: 032.0°C --------------- P36.26 Remote TH probe 2 low temp. limit: 010.0°C > alarms disabled	Remote T+H probe 2 high temperature threshold. Remote T+H probe 2 low temperature threshold.	1188 1189	P36.25 P36.26
Probe Limit --------------- P36.27 Remote TH probe 2 high humid. limit: 80% --------------- P36.28 Remote TH probe 2 low humid. limit: 30% > alarms disabled	Remote T+H probe 2 high humidity threshold. Remote T+H probe 2 low humidity threshold.	1190 1191	P36.27 P36.28
Probe Limit --------------- P36.29 Remote TH probe 3 high temp. limit: 032.0°C --------------- P36.30 Remote TH probe 3 low temp. limit: 010.0°C > alarms disabled	Remote T+H probe 3 high temperature threshold. Remote T+H probe 3 low temperature threshold.	1192 1193	P36.29 P36.30
Probe Limit --------------- P36.31 Remote TH probe 3 high humid. limit: 80% --------------- P36.32 Remote TH probe 3 low humid. limit: 30% > alarms disabled	Remote T+H probe 3 high humidity threshold. Remote T+H probe 3 low humidity threshold.	1194 1195	P36.31 P36.32
Probe Limit --------------- P36.33 Remote TH probe 4 high temp. limit: 032.0°C --------------- P36.34 Remote TH probe 4 low temp. limit: 010.0°C > alarms disabled	Remote T+H probe 4 high temperature threshold. Remote T+H probe 4 low temperature threshold.	1196 1197	P36.33 P36.34

Manual mask	Manual description	Par	ID Par.
Probe Limit --------------- P36.35 Remote TH probe 4 high humid. limit: 80% --------------- P36.36 Remote TH probe 4 low humid. limit: 30% > alarms disabled	Remote T+H probe 4 high humidity threshold. Remote T+H probe 4 low humidity threshold.	1198 1199	P36.35 P36.36
Probe Limit --------------- P36.37 Return TH probe High/ Low temperature alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the return T+H probe temperature limit alarms. Set a value higher than 0 to enable the alarms.	1200	P36.37
Probe Limit --------------- P36.38 Return TH probe High/ Low humidity alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the return T+H probe humidity limit alarms. Set a value higher than 0 to enable the alarms.	1201	P36.38
Probe Limit --------------- P36.39 Return TH probe high temp. limit: 032.0°C --------------- P36.40 Return TH probe low temp. limit: 010.0°C > alarms disabled	Return T+H probe high temperature threshold. Return T+H probe low temperature threshold.	1202 1203	P36.39 P36.40
Probe Limit --------------- P36.41 Return TH probe high humid. limit: 80% --------------- P36.42 Return TH probe low humid. limit: 30% > alarms disabled	Return T+H probe high humidity threshold. Return T+H probe low humidity threshold.	1204 1205	P36.41 P36.42
Probe Limit --------------- P36.43 Supply TH probe High/ Low temperature alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the delivery T+H probe temperature limit alarms. Set a value higher than 0 to enable the alarms.	1206	P36.43
Probe Limit --------------- P36.44 Supply TH probe High/ Low humidity alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the delivery T+H probe humidity limit alarms. Set a value higher than 0 to enable the alarms.	1207	P36.44

Manual mask	Manual description	Par	ID Par.
Probe Limit --------------- P36.45 Supply TH probe high temp. limit: 032.0°C --------------- P36.46 Supply TH probe low temp. limit: 010.0°C > alarms disabled	Delivery T+H probe high temperature threshold. Delivery T+H probe low temperature threshold.	1208 1209	P36.45 P36.46
Probe Limit --------------- P36.47 Supply TH probe high humid. limit: 80% --------------- P36.48 Supply TH probe low humid. limit: 30% > alarms disabled	Delivery T+H probe high humidity threshold. Delivery T+H probe low humidity threshold.	1210 1211	P36.47 P36.48
Probe Limit --------------- P36.49 Extern. TH probe High/ Low temperature alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the external T+H probe temperature limit alarms. Set a value higher than 0 to enable the alarms.	1212	P36.49
Probe Limit --------------- P36.50 Extern. TH probe High/ Low humidity alarms delay : 000s Set > 0 to enable alarms	Parameter for setting delays on the external T+H probe humidity limit alarms. Set a value higher than 0 to enable the alarms.	1213	P36.50
Probe Limit --------------- P36.51 External TH probe high temp. limit: 032.0°C --------------- P36.52 External TH probe low temp. limit: 010.0°C > alarms disabled	External T+H probe high temperature threshold. External T+H probe low temperature threshold.	1214 1215	P36.51 P36.52
Probe Limit --------------- P36.53 External TH probe high humid. limit: 80% --------------- P36.54 External TH probe low humid. limit: 30% > alarms disabled	External T+H probe high humidity threshold. External T+H probe low humidity threshold.	1216 1217	P36.53 P36.54

Manual mask	Description	Par	ID Par.
↑ Custom. ← ↓	Access mask to the "Custom" submenu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Customizations --------------- P37.01 Enable unit OFF by key board alarm : N	Enabling of "Unit switched off by local keyboard" alarm.	1218	P37.01
Customizations --------------- P37.02 Delay BMS display for A004 & A005 : 00s Delay affects index (102 - 103 - 104)	Delay time before having info on alarms A004 and A005 to BMS	1219	P37.02

Manual mask	Description	Par	ID Par.
	Access mask to “setpoint” menu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Setpoint - Active Set - - - - - - - - - - - Cooling setpoint: 24.0°C - - - - - - - - - - - Heating setpoint: 24.0°C	Active setpoint display mask. *Visible only if ordinary adjustment is present.*		
Setpoint - Active Set - - - - - - - - - - - Cooling setpoint: Return: 24.0°C Supply: 18.0°C	Active setpoint display mask. *Visible only if advanced adjustment is present.*		
Setpoint - Edit Set --------------- P50.01 Cooling set: 24.0°C HeatSt Active P20.25 |-------|--------| 22.0°C 24.0°C 32.0°C	Parameter for setting the cooling setpoint. The parameters that limit the permissible range for the cooling setpoint are displayed. The values of the permissible range limits for the cooling setpoint are displayed.	1220	P50.01
Setpoint - Edit Set --------------- P50.02 Heating set: 22.0°C P20.26 Active ColdSt |-------|--------| 12.0°C 22.0°C 24.0°C	Parameter for setting the heating setpoint. *Visible only when the heating resources are present.* The parameters that limit the permissible range for the heating setpoint are displayed. The values of the permissible range limits for the heating setpoint are displayed.	1221	P50.02
Setpoint - Edit Set --------------- P50.01/16 Return set: 24.0°C P20.24 Active P20.25 |-------|--------| 22.0°C 24.0°C 32.0°C	Parameter for setting the return setpoint. *Visible only if advanced adjustment is present.* The parameters that limit the permissible range for the return setpoint are displayed. The values of the permissible range limits for the return setpoint are displayed.	1233 1220	P50.16 P50.01

Manual mask	Description	Par	ID Par.
Setpoint - Edit Set --------------- P50.01/17 Supply set: 18.0°C P50.17 Active ColdSet |-------|--------| 18.0°C 18.5°C 24.0°C	Parameter for setting the heating setpoint. *Visible only if advanced adjustment is present.* The parameters that limit the permissible range for the delivery setpoint are displayed. The values of the permissible range limits for the delivery setpoint are displayed.	1234 1220	P50.17 P50.01
Setpoint --------------- P50.03 Dehumidification setpoint: 55%RH --------------- P50.04 Humidification setpoint: 45%RH	Parameters for setting the dehumidifier and humidifier setpoints.	1222 1223	P50.03 P50.04
Setpoint --------------- P50.05 Cooling setpoint with LAN limits:30.0°C --------------- P50.06 Heating setpoint with LAN limits:18.0°C	Parameters for setting the cooling setpoint by LAN limits and heating setpoint by LAN limits.	1224 1225	P50.05 P50.06
Setpoint --------------- P50.07 Dehumdific. setpoint with LAN limits: 75%RH --------------- P50.08 Humdific. setpoint with LAN limits: 35%RH	Parameters for setting the dehumidifier setpoint by LAN limit and humidifier setpoint by LAN limits.	1226 1227	P50.07 P50.08
Setpoint --------------- P50.14 Temp. setpoint for fan regulation with fan reg.function enabled: 24.0°C	Parameter for setting the cold setpoint for the adjustment of the fan based on the return temperature. *Visible if the special fan function 02 is enabled.*	1231	P50.14
Setpoint --------------- P50.15 TReturn setpoint for fan regulation with return temp. fan reg. funct. enabled with LAN limits:30.0°C	Parameters for setting the cold setpoint for LAN limits for the adjustment of the fan based on the return temperature. *Visible if the special fan function 02 and LAN are enabled.*	1232	P50.15

Manual mask	Description	Par	ID Par.
↑ Clock ← ↓	Access mask to “clock” menu. Press **[UP]** or **[DOWN]** to scroll through the other masks and **[ESC]** to return to the submenu.		
Clock Clock card not installed	Mask indicating the lack or damage to the clock board.		
Clock Clock Config. Date Time 22/11/18 13:58	Current date and time setting.		
Clock Time bands not enabled. See Scheduler menu	Indicates that the time bands have been set correctly, though they are not enabled. To enable them, see Scheduler menu.		
Clock Time band programming: Advanced	Advanced time band programming manages four different daily time bands, type A and type B, C, D; each type can be personalised and each is independent from the others. Standard programming only allows for the use of A-type time bands.		
Clock-Weekly Timetable Monday A Tuesday B Wednesday B Thursday B Friday B Saturday C Sunday Disabled	Weekly timetable setting.		
Clock Band 1A Off Time 00:00 / 06:00 Sp C 24.0°C H 20.0°C Band 2A Regulat. Time 06:00 / 20:00 Sp C 24.0°C H 20.0°C	Setting band A, first and second daily time band. In the example, the machine regulates from 06.00 to 20.00. While it is off during all the other times of the week.		

Manual mask	Description	Par	ID Par.
Clock Band 3A Off Time 20:00 / 20:00 Sp C 24.0°C H 20.0°C Band 4A Off Time 20:00 / 20:00 Sp C 24.0°C H 20.0°C	Setting band A, third and fourth daily time band. In the example, the machine regulates from 06.00 to 20.00. While it is off during all the other times of the week.		
Clock Band 5A Off Time 20:00 / 20:00 Sp C 24.0°C H 20.0°C Band 6A Off Time 20:00 / 20:00 Sp C 24.0°C H 20.0°C	Setting band A, fifth and sixth daily time band. In the example, the machine regulates from 06.00 to 20.00. While it is off during all the other times of the week.		
Clock Band 7A Off Time 20:00 / 20:00 Sp C 24.0°C H 20.0°C Band 8A Off Time 20:00 / 20:00 Sp C 24.0°C H 20.0°C	Setting band A, seventh and eighth daily time band. In the example, the machine regulates from 06.00 to 20.00. While it is off during all the other times of the week.		
Clock Band 9A Off Time 20:00 / 20:00 Sp C 24.0°C H 20.0°C Band 10A Off Time 20:00 / 23:59 Sp C 24.0°C H 20.0°C	Setting band A, ninth and tenth daily time band. In the example, the machine regulates from 05.00 to 22.00. While it is off during all the other times of the week.		
Clock Band 1B Off Time 00:00 / 05:00 Sp C 24.0°C H 20.0°C Band 2B Off Time 05:00 / 22:00 Sp C 24.0°C H 20.0°C	Setting band B, first and second daily time band. In the example, the machine regulates from 05.00 to 22.00. While it is off during all the other times of the week.		
Clock Band 3B Off Time 22:00 / 22:00 Sp C 24.0°C H 20.0°C Band 4B Off Time 22:00 / 22:00 Sp C 24.0°C H 20.0°C	Setting band B, third and fourth daily time band. In the example, the machine regulates from 05.00 to 22.00. While it is off during all the other times of the week.		
Clock Band 5B Off Time 22:00 / 22:00 Sp C 24.0°C H 20.0°C Band 6B Off Time 22:00 / 22:00 Sp C 24.0°C H 20.0°C	Setting band B, fifth and sixth daily time band. In the example, the machine regulates from 05.00 to 22.00. While it is off during all the other times of the week.		

Manual mask	Description	Par	ID Par.
Clock Band 7B Off Time 22:00 / 22:00 Sp C 24.0°C H 20.0°C Band 8B Off Time 22:00 / 22:00 Sp C 24.0°C H 20.0°C	Setting band B, seventh and eighth daily time band. In the example, the machine regulates from 05.00 to 22.00. While it is off during all the other times of the week.		
Clock Band 9B Off Time 22:00 / 22:00 Sp C 24.0°C H 20.0°C Band 10B Off Time 22:00 / 23:59 Sp C 24.0°C H 20.0°C	Setting band B, ninth and tenth daily time band. In the example, the machine regulates from 06.00 to 20.00. While it is off during all the other times of the week.		
Clock Band 1C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 2C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C	Setting band C, first and second daily time band. In the example, the unit is always off.		
Clock Band 3C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 4C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C	Setting band C, third and fourth daily time band. In the example, the unit is always off.		
Clock Band 5C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 6C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C	Setting band C, fifth and sixth daily time band. In the example, the unit is always off.		
Clock Band 7C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 8C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C	Setting band C, seventh and eighth daily time band. In the example, the unit is always off.		
Clock Band 9C Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 10C Off Time 00:00 / 23:59 Sp C 24.0°C H 20.0°C	Setting band C, ninth and tenth daily time band. In the example, the unit is always off.		

Manual mask	Description	Par	ID Par.
Clock Band 1D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 2D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C	Setting band D, first and second daily time band. In the example, the unit is always off.		
Clock Band 3D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 4D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C	Setting band D, third and fourth daily time band. In the example, the unit is always off.		
Clock Band 5D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 6D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C	Setting band D, fifth and sixth daily time band. In the example, the unit is always off.		
Clock Band 7D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 8D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C	Setting band D, seventh and eighth daily time band. In the example, the unit is always off.		
Clock Band 9D Off Time 00:00 / 00:00 Sp C 24.0°C H 20.0°C Band 10D Off Time 00:00 / 23:59 Sp C 24.0°C H 20.0°C	Setting band D, ninth and tenth daily time band. In the example, the unit is always off.		

24 PARAMETER TABLE

The numbering of the parameters is divided by menu:

- 1x corresponds to the menus of the **"Factory" group;**
- 2x corresponds to the menus of the **"Service" group;**
- 3x corresponds to the menus of the **"User" group;**
- 50 corresponds to the **"Setpoint" menu;**
- 900 corresponds to the **"Clock" menu**.

The following table lists the controller parameters and the relative maximum and minimum values.



WARNING:
The "Default" column of the following table shows only the values assigned to the parameters using the default procedure.
Changing the value of some parameters causes the value of others to change automatically. It is therefore advisable to check all the parameters again after changes are made.

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P10.33	Unit type (0:Perimetral - 1:Rack Cooler - 2:Cooling Door - 3:Modular Perimetral - 4:TLC - 5: None)	5	-	0	P99.05	Manufacturer	Config.
P10.35	Number of chilled water circuits	0	-	0	2	Manufacturer	Config.
P10.36	Number of direct expansion circuits	1	-	0	2	Manufacturer	Config.
P10.54	Type of condensing unit (0:None/ t-Mate - 1:HCAT/i-HCAT - 2:m-MOCU - 3:sMEXT)	0	-	0	3	Manufacturer	Config.
P10.55	Minimum off time of MR SLIM units	120	-	0	500	Manufacturer	Config.
P10.10	Internal fan project speed	70	%	0	100	Manufacturer	Config.
P10.11	Internal fan minimum project speed (Maximum project speed reduction)	20	%	0	99	Manufacturer	Config.
P10.53	Type of Gas (0:R410A - 1:R32 - 2:R513A - 3:R454B)	0	-	0	3	Manufacturer	Config.
P10.16	Start scale value of differential pressure transducer	0	Pa	-400	1000	Manufacturer	Config.
P10.17	End scale value of differential pressure transducer	100	Pa	0	10000	Manufacturer	Config.
P10.20	Configuration of the external T probe on I/O PCO (0:Disabled - 1:Enabled)	0	-	0	1	Manufacturer	Config.
P10.22	Initial logo (0:Evolution - 1:De' Longhi - 2:ICS - 3:Neutral - 4:EATON - 5:Mitsubishi RC)	0	-	0	5	Manufacturer	Config.
P10.48	Enable of phase sequence 2 for unit	0	-	0	1	Manufacturer	Config.
P10.49	Devices powered by line 2	3	-	-32768	32767	Manufacturer	Config.
P10.50	Number of NTC return probes	1	-	0	4	Manufacturer	Config.
P10.51	Number of NTC delivery probes	1	-	0	4	Manufacturer	Config.
P11.01	Configuration of the type of air flow control (0:Disabled - 1:Flow rate - 2:DeltaP - 3:DeltaP Read Only - 4:Flow rate Read Only)	0	-	0	4	Manufacturer	Functions
P11.36	Fan type (0: AC - 1: EC 0-10V - 2: EC Modbus ebm-papst - 3: EC Modbus ZA - 4:EC Modbus FT - 5: EC Modbus DT - 6: EC Modbus WL)	0	-	0	6	Manufacturer	Functions
P11.02	Number of EC fans	0	-	0	P99.37	Manufacturer	Functions
P11.11	Configuration of the special fan function 01 (0:Disabled - 1:Enabled)	0	-	0	1	Manufacturer	Functions
P11.37	Enable Fast restart function	0	-	0	1	Manufacturer	Functions
P11.39	Parameter for selecting the type of ATS device (0:Disabled - 1:Schneider - 2:ABB compact - 3:ABB truONE - 4:Socomec)	0	-	0	4	Manufacturer	Functions
P11.40	Configuration of the active fan with ultracap (0:Disabled – 1:Enabled)	0	-	0	1	Manufacturer	Functions

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P11.41	Parameters for selecting the type of APF (0: Disabled - 1: Sikes Electric - 2: SinExcel)	0	-	0	2	Manufacturer	Functions
P14.03	Sensors alarm delay	60	s	5	999	Manufacturer	Safety
P14.04	Low pressure alarm delay	180	s	2	999	Manufacturer	Safety
P14.08	Constructor cold setpoint minimum limit	18	°C	10	30	Manufacturer	Safety
P14.14	Maximum manual operation time	4	h	1	8	Manufacturer	Safety
P14.15	Maximum time for critical components	30	min	5	60	Manufacturer	Safety
P14.97	Constructor dehumidification setpoint minimum limit	45	%	5	99	Manufacturer	Safety
P15.26	Force fan to max speed when an Electrical Heater is active (0: NO – 1:YES)	1	-	0	1	Manufacturer	Safety 2
P20.01	Regulation probe adjustment (0:Return - 1:Delivery)	0	-	0	1	Service	Regulations
P20.02	Fan start delay after power on	0	s	0	999	Service	Regulations
P20.03	Ventilation modulation start delay	120	s	0	500	Service	Regulations
P20.04	Start regulation delay	60	s	20	999	Service	Regulations
P20.05	Integral adjustment time (units without inverter)	900	s	0	999	Service	Regulations
P20.08	Dirty filter sensor configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Regulations
P20.09	Fire/smoke sensor configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Regulations
P20.10	Flooding sensor configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Regulations
P20.13	Remote ON/OFF contact configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Regulations
P20.18	Cold adjustment band	1.5	d_°C	0.5	20	Service	Regulations
P20.19	Hot adjustment band	1.5	d_°C	0.5	20	Service	Regulations
P20.20	Dehumidification adjustment band	5	%RH	1	15	Service	Regulations
P20.21	Humidification adjustment band	5	%RH	1	15	Service	Regulations
P20.22	Humidification adjustment integral time (PID)	900	s	0	999	Service	Regulations
P20.23	Humidification adjustment derivative time (PID)	0	s	0	999	Service	Regulations
P20.24	Cold setpoint minimum limit	18	°C	2	30	Service	Regulations
P20.25	Cold setpoint maximum limit	32	°C	25	60	Service	Regulations
P20.26	Hot setpoint minimum limit	12	°C	5	30	Service	Regulations
P20.27	Hot water temperature minimum limit	40	°C	0	99.9	Service	Regulations
P20.28	Delivery limit temperature configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Regulations
P20.29	Delivery air temperature minimum limit	10	°C	0	25	Service	Regulations
P20.44	Frost-free function configuration (0:Disabled-1:From LP transducer - 2:From delivery temperature - 3:From inlet gas temperature - 4:Cumulative)	0	-	0	4	Service	Regulations
P20.49	Frost-free function activation delay	10	min	1	99	Service	Regulations
P20.50	Configuration and activation of the counting of number of interventions per hour count for the frost-free function (0:Disabled-1:Enabled)	1	-	0	1	Service	Regulations
P20.51	Number of interventions per hour for the frost-free function	3	-	1	5	Service	Regulations
P20.53	Differential of Neutral Zone for switching on resources for control with air delivery probe	1.5	d_°C	0.1	9.9	Service	Regulations
P20.54	Differential of Neutral Zone for switching off resources for control with air delivery probe	1.5	d_°C	0.1	9.9	Service	Regulations
P20.98	Maximum variation of the switch-on Neutral Zone	3	d_°C	0	99.9	Service	Regulations

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P20.99	Maximum variation of the shutdown Neutral Zone	3	d_°C	0	99.9	Service	Regulations
P20.55	Maximum delay for reducing extension of Neutral Zone for control with air delivery probe	5	min	1	99	Service	Regulations
P20.64	Position of FC valve for shutdown of resources	80	%	0	99	Service	Regulations
P20.56	Minimum limit of cold setpoint for delivery air temperature control	10	°C	5	P20.57	Service	Regulations
P20.57	Maximum limit of cold setpoint for delivery air temperature control	25	°C	P20.56	40	Service	Regulations
P20.71	T+H limit alarm configuration with unit OFF (0:Disabled - 1:Enabled)	1	-	0	1	Service	Regulations
P20.72	Temp. and Hum. probe limits alarm delay when unit ON	600	s	1	999	Service	Regulations
P20.73	Safety Reduction Load LP function configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Regulations
P20.74	Circuit 1 Safety Reduction Load LP function activation setpoint	7	bar	0	9	Service	Regulations
P20.75	Circuit 1 Safety Reduction Load LP function differential	1	bar	0	1	Service	Regulations
P20.76	Step time for Circuit 1 Safety Reduction Load LP function	300	s	1	6000	Service	Regulations
P20.77	Number of steps for Circuit 1 Safety Reduction Load LP function	5	-	1	999	Service	Regulations
P20.78	Scaled frequency for each step of the Safety Reduction Load LP function	5	Hz	0	90	Service	Regulations
P20.79	Circuit 2 Safety Reduction Load LP function activation setpoint	7	bar	0	9	Service	Regulations
P20.80	Circuit 2 Safety Reduction Load LP function differential	1	bar	0	1	Service	Regulations
P20.81	Step time for Circuit 2 Safety Reduction Load LP function	300	s	1	6000	Service	Regulations
P20.82	Auxiliary/remote T+H probe configuration (0:None - 1: 1 probe enabled - 2: 2 probes enabled - 3: 3 probes enabled - 4: 4 probes enabled)	0	-	0	4	Service	Regulations
P20.83	Configuration of the ventilation control function special function 02 (0:Disabled - 1:Return T. - 2:Delivery T. - 3:Temperature Delta)	0	-	0	3	Service	Regulations
P20.84	Differential for control of special fan function 02	3	d_°C	0.1	9.9	Service	Regulations
P21.21	Value of the cold ramp for maximum opening of Free-cooling valve	50	%	0	100	Service	Free Cooling
P21.09	Free-cooling damper adjustment configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Free Cooling
P21.10	Free-cooling damper control type configuration (0:Digital - 1:Modulating)	1	-	0	1	Service	Free Cooling
P21.11	Setpoint T_ROOM-T_EXTERNAL for Free-cooling damper adjustment	3	°C	0	50	Service	Free Cooling
P21.12	Free-cooling damper adjustment band	1	d_°C	0	9.9	Service	Free Cooling
P21.13	Minimum Free-cooling damper opening	0	%	0	100	Service	Free Cooling
P21.14	Maximum Free-cooling damper opening	100	%	P21.13	100	Service	Free Cooling
P21.15	Free-cooling management configuration for high humidity	0	-	0	1	Service	Free Cooling
P21.16	Humidity limit for Free-cooling damper disable	60	%RH	0	99.9	Service	Free Cooling
P21.17	Humidity band for Free-cooling damper disable	1	%RH	0	9.9	Service	Free Cooling
P21.18	Free-cooling damper adjustment configuration with compressor alarm (0:Disabled - 1:Enabled)	0	-	0	1	Service	Free Cooling
P21.19	Setpoint (T_ROOM-T_EXTERNAL) to regulate the Free-cooling damper with compressor alarm	1	°C	1	50	Service	Free Cooling
P21.20	Free-cooling damper adjustment band with compressor alarm	0.5	d_°C	0	9.9	Service	Free Cooling

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P21.22	Enable control for the extraction fan (0:Disabled - 1:Enabled)	0	-	0	1	Service	Free Cooling
P22.01	Low temperature alarm setpoint	10	i_°C	0	30	Service	Settings
P22.02	High temperature alarm setpoint	32	i_°C	20	50	Service	Settings
P22.03	Low humidity alarm setpoint	30	%RH	0	70	Service	Settings
P22.04	High humidity alarm setpoint	80	%RH	30	99	Service	Settings
P22.13	Unit operating hours for maintenance setpoint (Thousands)	0	h	0	99	Service	Settings
P22.17	Step 1 heater operating hours for maintenance setpoint (Thousands)	0	h	0	99	Service	Settings
P22.18	Step 2 heater operating hours for maintenance setpoint (Thousands)	0	h	0	99	Service	Settings
P22.19	Humidifier operating hours for maintenance setpoint (Thousands)	0	h	0	4	Service	Settings
P22.29	Configuration of presence of KIPlink module (0:Disabled - 1:Enabled)	0	-	0	1	Service	Settings
P22.30	Type of KIPlink module (0:MASTER_eth off_wifi off - 1:CLIENT_eth off_wifi off - 2:MASTER_eth on_wifi off - 3:CLIENT_eth on_wifi off - 4:MASTER_eth off_wifi on - 5:CLIENT_eth off_wifi on - 6:MASTER_eth on_wifi on - 7:CLIENT_eth on_wifi on - 8:MASTER bridge - 9:CLIENT bridge)	4	-	0	9	Service	Settings
P22.31	Part 1 IP address of Ethernet channel KIPlink module	192	-	0	255	Service	Settings
P22.32	Part 2 IP address of Ethernet channel KIPlink module	168	-	0	255	Service	Settings
P22.33	Part 3 IP address of Ethernet channel KIPlink module	20	-	0	255	Service	Settings
P22.34	Part 4 IP address of Ethernet channel KIPlink module	1	-	0	255	Service	Settings
P22.35	Part 1 subnet mask of Ethernet channel KIPlink module	255	-	0	255	Service	Settings
P22.36	Part 2 subnet mask of Ethernet channel KIPlink module	255	-	0	255	Service	Settings
P22.37	Part 3 subnet mask of Ethernet channel KIPlink module	255	-	0	255	Service	Settings
P22.38	Part 4 subnet mask of Ethernet channel KIPlink module	0	-	0	255	Service	Settings
P22.39	Part 1 Ethernet channel KIPlink module gateway	0	-	0	255	Service	Settings
P22.40	Part 2 Ethernet channel KIPlink module gateway	0	-	0	255	Service	Settings
P22.41	Part 3 Ethernet channel KIPlink module gateway	0	-	0	255	Service	Settings
P22.42	Part 4 Ethernet channel KIPlink module gateway	0	-	0	255	Service	Settings
P22.62	Part 1 IP address of WiFi channel KIPLink module	192	-	0	255	Service	Settings
P22.63	Part 2 IP address of WiFi channel KIPLink module	168	-	0	255	Service	Settings
P22.64	Part 3 IP address of WiFi channel KIPLink module	30	-	0	255	Service	Settings
P22.65	Part 4 IP address of WiFi channel KIPLink module	1	-	0	255	Service	Settings
P22.66	Part 1 subnet mask of WiFi channel KIPLink module	255	-	0	255	Service	Settings
P22.67	Part 2 subnet mask of WiFi channel KIPLink module	255	-	0	255	Service	Settings
P22.68	Part 3 subnet mask of WiFi channel KIPLink module	255	-	0	255	Service	Settings
P22.69	Part 4 subnet mask of WiFi channel KIPLink module	0	-	0	255	Service	Settings
P22.70	Part 1 WiFi channel KIPLink module gateway	0	-	0	255	Service	Settings
P22.71	Part 2 WiFi channel KIPLink module gateway	0	-	0	255	Service	Settings
P22.72	Part 3 WiFi channel KIPLink module gateway	0	-	0	255	Service	Settings

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P22.73	Part 4 WiFi channel KIPLink module gateway	0	-	0	255	Service	Settings
P22.59	High part serial number of KIPLink master unit	32	-	0	999	Service	Settings
P22.60	Medium part serial number of KIPLink master unit	0	-	0	999	Service	Settings
P22.61	Low part serial number of KIPLink master unit	0	-	0	999	Service	Settings
P22.44	Communication channel (0:Ethernet - 1:WiFi)	1	-	0	1	Service	Settings
P22.45	Part 1 IP address of KIPlink MASTER module	192	-	0	255	Service	Settings
P22.46	Part 2 IP address of KIPlink MASTER module	168	-	0	255	Service	Settings
P22.47	Part 3 IP address of KIPlink MASTER module	30	-	0	255	Service	Settings
P22.48	Part 4 IP address of KIPlink MASTER module	1	-	0	255	Service	Settings
P22.49	Network KIPlink ID	1	-	1	99	Service	Settings
P22.55	BMS1 offline alarm management configuration (0: Disabled - 1: Enabled)	0	-	0	1	Service	Settings
P22.56	Timeout for BMS1 offline alarm	15	s	1	999	Service	Settings
P22.57	BMS2 offline alarm management configuration (0: Disabled - 1: Enabled)	0	-	0	1	Service	Settings
P22.58	Timeout for BMS2 offline alarm	120	s	1	999	Service	Settings
P22.75	Enable safety decrease for air delivery control (0:Disabled - 1:Enabled)	0	-	0	1	Service	Settings
P22.76	Delay for decrease for air delivery adjustment	300	s	0	600	Service	Settings
P22.77	Delay between two decreases for air delivery adjustment	600	s	0	1200	Service	Settings
P22.78	Port used for the Fieldbus (1:Fbus1 - 2:Fbus2)	2	-	1	2	Service	Settings
P22.79	Air flow alarm detection delay from ventilation start	45	s	15	180	Service	Settings
P22.92	Air flow alarm activation delay without compressors or heaters active	5	s	0	180	Service	Settings
P22.80	Dirty filters alarm delay	8	s	2	180	Service	Settings
P22.81	Circuit 1 water flow switch alarm delay	30	s	2	60	Service	Settings
P22.82	Circuit 2 water flow switch alarm delay	30	s	2	60	Service	Settings
P22.83	Flooding alarm type and reset configuration (0:Undefined - 1:Automatic Signal - 2:Manual Signal - 3:Automatic Alarm - 4:Manual Alarm)	4	-	0	4	Service	Settings
P22.84	Phase sequence alarm reset configuration (3:Automatic Alarm - 4:Manual Alarm)	3	-	3	4	Service	Settings
P22.85	Fire/smoke alarm type and reset configuration (0:Undefined - 1:Automatic Signal - 2:Manual Signal - 3:Automatic Alarm - 4:Manual Alarm)	4	-	0	4	Service	Settings
P22.88	Enable external damper alarm control (0:Disabled - 1:Enabled)	0	-	0	1	Service	Settings
P22.93	Phase sequence 2 reset type (3:Automatic Alarm - 4:Manual Alarm)	3	-	3	4	Service	Settings
P22.94	Low delivery temperature alarm setpoint	10	i_°C	0	30	Service	Settings
P22.95	High delivery temperature alarm setpoint	32	i_°C	20	50	Service	Settings
P22.96	Low delivery humidity alarm setpoint	30	%RH	0	70	Service	Settings
P22.97	High delivery humidity alarm setpoint	80	%RH	30	99	Service	Settings
P23.01	Nominal speed of internal fan	70	%	P99.01	P10.10	Service	Fan
P23.02	Internal fan Economy Mode function configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Fan
P23.03	Internal fan speed with Economy Mode enabled	50	%	0	99	Service	Fan

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P23.73	Enable of no flow from flow switch on ID2 alarm (0:Disabled - 1:Enabled)	1	-	0	1	Service	Fan
P23.74	Enable of semi-automatic reset following no flow from flow switch alarm (0: No - 1:Yes)	0	-	0	1	Service	Fan
P23.75	Count of flow switch alarm events	1	-	0	5	Service	Fan
P23.76	Enable of semi-automatic reset following no flow from fan alarm (0: No - 1:Yes)	0	-	0	1	Service	Fan
P23.77	Count of no flow from fan alarm events	1	-	0	5	Service	Fan
P23.71	I/O expansion 0-10Vdc fan alarm control enable (0:disabled - 1:enabled)	0	-	0	1	Service	Fan
P23.07	Internal fan modulation function configuration for inverter compressor units (0:Disabled - 1:Enabled)	1	-	0	1	Service	Fan
P23.08	Minimum modulation speed of the internal fan for inverter compressor units (maximum reduction of design speed)	50	%	0	P10.11	Service	Fan
P23.09	Internal fan low speed function configuration for inverter compressor units in dehumidification (0:Disabled - 1:Enabled)	1	-	0	1	Service	Fan
P23.10	Fixed speed of the internal fan in inverter compressor units with dehumidification Enabled	60	%	P99.01	P10.10	Service	Fan
P23.11	Air differential check time	60	s	0	999	Service	Fan
P23.12	EC condensation control function configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Fan
P23.61	Heater post-ventilation configuration for unit OFF (0:Disabled - 1:Enabled)	1	-	0	1	Service	Fan
P23.62	Heater post-ventilation time	60	s	1	999	Service	Fan
P23.65	Set Constant Flow adjustment (Divided by 100)	25	a_m3/h	10	2000	Service	Fan
P23.66	Pressure regulation differential for Constant Flow	25	Pa	5	100	Service	Fan
P23.67	Constant DeltaP adjustment setpoint	5	Pa	5	300	Service	Fan
P23.69	Pressure regulation differential for Constant DeltaP	5	Pa	1	50	Service	Fan
P23.68	Minimum internal fan speed in constant DeltaP (maximum nominal speed reduction)	20	%	0	P10.11	Service	Fan
P23.70	Fan control variation step	1	%	0	5	Service	Fan
P23.72	Start-up of the fan at maximum speed if the adjustment starts with the return temperature higher than the corresponding setpoint (0:Disabled - 1:Enabled)	0	-	0	1	Service	Fan
P23.88	Ventilation shutdown delay	0	s	0	32767	Service	Fan
P24.01	Room temperature probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.02	Room humidity probe calibration	0	%RH	-20	20	Service	Adjustments
P24.03	Delivery air temperature probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.04	External air temperature probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.08	Circuit 1 low pressure probe transducer	0	bar	-9.9	9.9	Service	Adjustments
P24.09	Inlet temperature probe 1 calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.10	Circuit 2 low pressure probe transducer	0	bar	-9.9	9.9	Service	Adjustments
P24.11	Inlet temperature probe 2 calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.20	Remote serial temperature 1 TH probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.21	Remote serial humidity 1 TH probe calibration	0	%RH	-20	20	Service	Adjustments
P24.40	Remote serial temperature 2 TH probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.41	Remote serial humidity 2 TH probe calibration	0	%RH	-20	20	Service	Adjustments

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P24.42	Remote serial temperature 3 TH probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.43	Remote serial humidity 3 TH probe calibration	0	%RH	-20	20	Service	Adjustments
P24.44	Remote serial temperature 4 TH probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.45	Remote serial humidity 4 TH probe calibration	0	%RH	-20	20	Service	Adjustments
P24.23	Temperature differential for the update of the reading of probe T+H 128	0.5	d_°C	0.1	2	Service	Adjustments
P24.24	Humidity differential for the update of the reading of probe T+H 128	0.5	%RH	0.1	2	Service	Adjustments
P24.50	Temperature differential for the update of the reading of the delivery T+H probe	0.5	d_°C	0.1	2	Service	Adjustments
P24.51	Humidity differential for the update of the reading of the delivery T+H probe	0.5	%RH	0.1	2	Service	Adjustments
P24.25	Temperature differential for the update of the reading of Remote 1 T+H probe	0.5	d_°C	0.1	2	Service	Adjustments
P24.26	Humidity differential for the update of the reading of Remote 1 probe	0.5	%RH	0.1	2	Service	Adjustments
P24.27	Temperature differential for the update of the reading of remote 2 T+H probe	0.5	d_°C	0.1	2	Service	Adjustments
P24.28	Humidity differential for the update of the reading of remote 2 T+H probe	0.5	%RH	0.1	2	Service	Adjustments
P24.29	Temperature differential for the update of the reading of remote 3 T+H probe	0.5	d_°C	0.1	2	Service	Adjustments
P24.30	Humidity differential for the update of the reading of remote 3 T+H probe	0.5	%RH	0.1	2	Service	Adjustments
P24.31	Temperature differential for the update of the reading of remote 4 T+H probe	0.5	d_°C	0.1	2	Service	Adjustments
P24.32	Humidity differential for the update of the reading of remote 4 T+H probe	0.5	%RH	0.1	2	Service	Adjustments
P24.33	Return T+H temperature probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.34	Return temperature probe 2 calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.46	External serial temperature TH probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.47	External serial humidity TH probe calibration	0	%RH	-20	20	Service	Adjustments
P24.48	Humidity differential for the update of the reading of external T+H probe	0.5	%RH	0.1	2	Service	Adjustments
P24.49	Temperature differential for the update of the reading of external T+H probe	0.5	d_°C	0.1	2	Service	Adjustments
P24.52	Delivery TH serial temperature probe calibration	0	d_°C	-9.9	9.9	Service	Adjustments
P24.53	Delivery TH serial humidity probe calibration	0	%RH	-20	20	Service	Adjustments
P26.01	Number of units in LAN	1	-	1	P99.31	Service	LAN
P26.03	Configuration of standby mode function in LAN (0:Disabled - 1:Enabled)	0	-	0	1	Service	LAN
P26.04	Standby cycle time in LAN	168	-	0	999	Service	LAN
P26.05	Configuration of number of units on standby in LAN (0:1 unit - 1:2 units)	0	-	0	P99.36	Service	LAN
P26.06	Configuration of standby mode limits function in LAN (0:Disabled - 1:Enabled)	1	-	0	1	Service	LAN
P26.02	Configuration of average calculation function in LAN (0:Disabled - 1:Enabled)	0	-	0	1	Service	LAN
P26.08	Configuration of maximum delivery temperature value calculation in LAN (0:Disabled - 1:Enabled)	0	-	0	1	Service	LAN
P26.11	Enable the H&L Local Temperature Protection function (0:Disabled - 1:Enabled)	0	-	0	1	Service	LAN
P26.12	Hot Spot function On differential	2	d_°C	0.5	99.9	Service	LAN
P26.13	Cold Spot function On differential	2	d_°C	0.5	99.9	Service	LAN

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P26.14	Time before protection Off when the temperature is between the limits of the Cold and Hot Spot	300	s	10	600	Service	LAN
P26.15	Time before protection On when outside the limit of the Hot or Cold Spot	60	s	10	600	Service	LAN
P26.16	Enable the Active Fan on Standby function (0:Disabled - 1:Enabled)	0	-	0	1	Service	LAN
P26.17	Internal fan speed with Active Fan on Standby in use	70	%	P99.01	100	Service	LAN
P26.18	Enable the Active Pressure Load function (0:Disabled - 1:By Unit - 2:By Client)	0	-	0	2	Service	LAN
P26.19	Enable APL operation in case of pressure transducer alarm (0:Disabled - 1:Enabled)	0	-	0	1	Service	LAN
P26.20	Enable the H&L Local Pressure Protection function (0:Disabled - 1:Enabled)	0	-	0	1	Service	LAN
P26.21	High local pressure function On differential	10	Pa	2	999	Service	LAN
P26.22	Low local pressure function On differential	10	Pa	2	999	Service	LAN
P26.23	Time before protection Off when the temperature is between the high and low local pressure limits	300	s	10	600	Service	LAN
P26.24	Time before protection On when outside the limit of the high or low local pressures	60	s	10	600	Service	LAN
P26.25	Units of the group	-1	-	-32768	32767	Service	LAN
P26.26	Choosing priority Primary units	0	-	-32768	32767	Service	LAN
P26.27	Choosing forced Primary units	0	-	-32768	32767	Service	LAN
P26.29	Active Pressure Load adjustment mode configuration (0:average - 1:min - 2:max)	0	-	0	2	Service	LAN
P26.30	Active Pressure Load modulation mode configuration (0:Control - 1:Limit)	0	-	0	1	Service	LAN
P26.31	Rotation frequency type configuration (0:disabled - 1:daily - 2:weekly - 3:monthly - 4:timed)	0	-	0	4	Service	LAN
P26.32	Weekday configuration for rotation	1	-	1	7	Service	LAN
P26.33	Hour configuration for rotation	0	-	0	23	Service	LAN
P26.34	Minute configuration for rotation	0	-	0	59	Service	LAN
P27.02	Resistor configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.03	Type of resistor (0:ON/OFF - 1:Modulating)	0	-	0	1	Service	Optional
P27.35	Electrical Heaters configuration (0: None - 1:1 Heater - 2:2 Heaters 3 steps - 3:2 Heaters 2 steps)	0	-	0	3	Service	Optional
P27.04	Humidity probe configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.05	Humidifier configuration (0:Disabled - 1:Internal - 2:External)	0	-	0	2	Service	Optional
P27.06	Humidifier model configuration (cylinder type)	0	-	0	P99.39	Service	Optional
P27.07	Maximum steam production	100	%	10	100	Service	Optional
P27.16	Enable the humidifier periodical drain function (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.17	Delay before each periodical drain	24	h	0	240	Service	Optional
P27.18	Enable the humidifier inactive draining function (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.19	Delay before each draining during inactivity	3	d	1	99	Service	Optional
P27.09	Dehumidifier configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.28	Enable the dehumidification function with Dew Point control (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.29	Humidification and dehumidification setpoint differential	5	%	1	10	Service	Optional

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P27.11	Delivery air damper configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.12	Damper opening stroke time	120	s	0	500	Service	Optional
P27.36	Damper position monitoring enable parameter (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.13	Line 1 network analyser presence (0:Disabled - 1:Gavazzi CPT-DIN - 2:Gavazzi EM210)	0	-	0	2	Service	Optional
P27.14	Line 1 power supply system type (0:3-ph unbalanced 3/4-wires - 1:1-ph 2-wires - 2:2-ph 3-wires - 3:3-ph balanced 3-wires - 4:3-ph balanced load - 5:3-ph Aron system)	5	-	0	5	Service	Optional
P27.15	Line 1 input current ampere transformation ratio	20	-	1	P99.40	Service	Optional
P27.30	Line 2 network analyser presence (0:Disabled - 1:Gavazzi CPT-DIN - 2:Gavazzi EM210)	0	-	0	2	Service	Optional
P27.31	Line 2 power supply system type (0:3-ph unbalanced 3/4-wires - 1:1-ph 2-wires - 2:2-ph 3-wires - 3:3-ph balanced 3-wires - 4:3-ph balanced load - 5:3-ph Aron system)	5	-	0	5	Service	Optional
P27.32	Line 2 input current ampere transformation ratio	20	-	1	P99.40	Service	Optional
P27.20	Enable the setpoint compensation function (0:Disabled - 1:Enabled)	0	-	0	1	Service	Optional
P27.33	Enable the external T+H probe	0	-	0	1	Service	Optional
P27.34	Enable the delivery T+H probe	0	-	0	1	Service	Optional
P28.18	Numerical value identifying the bit mask of the delivery probes which should help to calculate adjustment	1	-	-32768	32767	Service	Regulations 2
P28.19	Numerical value identifying the bit mask of the return probes which should help to calculate adjustment	1	-	-32768	32767	Service	Regulations 2
P28.20	Type of calculation for return probes (0-read 1st probe;1-Mean;2-Max;3-Min)	0	-	0	3	Service	Regulations 2
P28.21	Type of calculation for delivery probes (0-read 1st probe;1-Mean;2-Max;3-Min)	0	-	0	3	Service	Regulations 2
P28.22	UV lamp activation type (0:Disabled - 1:Keyboard/BMS - 2: ID)	0	-	0	2	Service	Regulations 2
P28.23	UV lamp activation request (0:Off - 1:On)	0	-	0	1	Service	Regulations 2
P28.30	Enabling Imperial system [0: International metric system - 1: Imperial System]	0	-	0	1	Service	Regulations 2
P28.33	Soft shutdown function enable (0: Disabled - 1: Enabled)	0	-	0	1	Service	Regulations 2
P28.34	Shutdown delay time (soft shutdown function)	0	s	0	999	Service	Regulations 2
P28.35	Minimum delivery air temperature limit band	4	d_°C	0.5	15	Service	Regulations 2
P28.36	Ventilation adjustment function configuration with special function 03 (0:Disabled - 1:BMS - 2: 0-5 V)	0	-	0	2	Service	Regulations 2
P28.37	Air probe high temperature limit alarm differential	0.5	d_°C	0	9.9	Service	Regulations 2
P28.40	Air probe low temperature limit alarm differential	0.5	d_°C	0	9.9	Service	Regulations 2
P28.38	Air humidity probe limit alarm differential	1	%	0	10	Service	Regulations 2
P28.39	Air probe limit alarm delay	60	s	5	999	Service	Regulations 2
P28.47	Adjustment selection variable (0:Ordinary adjustment- 1:Advanced adjustment)	0	-	0	1	Service	Regulations 2
P28.48	Delivery band for advanced return adjustment	1.5	d_°C	0	99.9	Service	Regulations 2
P28.46	Integral time for advanced return adjustment	900	s	0	999	Service	Regulations 2
P28.44	DeltaT upward adjustment activation in case of Advanced Delivery adjustment function	2	d_°C	0	99.9	Service	Regulations 2

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P28.45	DeltaT downward adjustment activation in case of Advanced Delivery adjustment function	1	d_°C	0	99.9	Service	Regulations 2
P28.41	Heating and Post-Heating Priority (0:None - 1:Valve and bkp heater - 2:Heater and bkp valve - 3:Valve - 4:Heater)	0	-	0	4	Service	Regulations 2
P28.42	Working priorities for serial heating and post-heating adjustment	50	%	10	90	Service	Regulations 2
P28.49	Minimum step managed by MrSlim	1	-	1	2	Service	Regulations 2
P28.50	Enable of MrSlim start-up with low external temperature (ExLT StartUP)	0	-	0	1	Service	Regulations 2
P28.51	Threshold TH7 for ExLT StartUP	0	°C	-99.9	99.9	Service	Regulations 2
P28.52	Threshold TH2-TH5 for ExLT StartUP	2	°C	-99.9	99.9	Service	Regulations 2
P28.53	MrSlim minimum shutdown time for ExLT function	0	s	0	546	Service	Regulations 2
P28.54	Flood sensor contact status (0:NO - 1:NC)	0	-	0	1	Service	Regulations 2
P28.65	Temperature differential for starting the unit in Fast mode	1	d_°C	0.1	20	Service	Regulations 2
P29.01	Hazardous high temperature alarm setpoint	35	i_°C	P22.02	99	Service	Settings 2
P29.04	Water valve opening percentage value during the sniffer function	100	%	0	100	Service	Settings 2
P29.05	Filter time for A004 and A005 alarm input	0	s	0	10	Service	Settings 2
P29.06	Alarm acknowledge enable	0	-	0	1	Service	Settings 2
P29.12	Touch alarm display type (0: no upper limit - 1: upper limit - 2: upper limit and icon +)	1	-	0	2	Service	Settings 2
P29.18	Fault management configuration (0:Disabled - 1:Enabled)	0	-	0	1	Service	Settings 2
P29.19	Breaking of adjustment probe(s) for activation of the fault (0: One broken probe - 1: All probes broken)	0	-	0	1	Service	Settings 2
P29.20	Reaction of unit to broken adjustment probe(s) (0: Normal - 1: Shutdown of unit - 2: 100% Cooling Power)	0	-	0	2	Service	Settings 2
P29.23	Breaking of fan return adjustment probe(s) for activation of the fault (0: One broken probe - 1: All probes broken)	0	-	0	1	Service	Settings 2
P29.24	Reaction of unit to broken fan return adjustment probe(s) (0: Normal - 1: 100% Fan Power)	0	-	0	1	Service	Settings 2
P30.01	#Supervision presence configuration (0:Disabled - 1:Supervisor - 2:DCCMS - 3:BMS with WatchDog - 4:BMS Mng OFFLINE)	0	-	0	4	User	Serial
P30.02	#BMS address configuration	11	-	1	207	User	Serial
P30.03	#BMS protocol configuration (0:Standard - 1:Modbus - 2:GSM Modem - 3:LON - 4:Bacnet - 5:TCP/IP - 6:WinLoad)	1	-	0	6	User	Serial
P30.04	#BMS baud rate configuration (0:1200 - 1:2400 - 2:4800 - 3:9600 - 4:19200 - 5:38400 - 6:76800)	4	-	0	6	User	Serial
P30.12	#Configuration of presence supervision on BMS2	0	-	0	1	User	Serial
P30.13	#BMS2 address configuration	2	-	1	207	User	Serial
P30.14	#BMS2 baud rate configuration (0:1200 - 1:2400 - 2:4800 - 3:9600 - 4:19200 - 5:38400 - 6:76800)	5	-	0	6	User	Serial
P30.05	ON/OFF configuration from BMS (0:Disabled - 1:Enabled)	0	-	0	1	User	Serial
P30.09	Enable for adjustment according to the average T calculated by Climapro (0:Disabled - 1:Enabled)	0	-	0	1	User	Serial
P30.11	Enable the stop of direct Free-cooling from supervisor (0: Disabled - 1: Enabled)	0	-	0	1	User	Serial
P32.01	Time bands configuration (0:Disabled - 1:Enabled)	0	-	0	1	User	Scheduler

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P31.01	Alarm A contact status configuration (0:NO - 1:NC)	0	-	0	1	User	Alarm out
P31.02	Alarm B contact status configuration (0:NO - 1:NC)	0	-	0	1	User	Alarm out
P31.03	Addressing of the fire/smoke alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.04	Addressing of the phase sequence alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.10	Addressing of the air flow alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.11	Addressing of the ambient air temperature probe alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.12	Addressing of the ambient humidity probe alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.13	Addressing of the differential pressure probe alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.14	Addressing of the air delivery temperature probe alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.16	Addressing of the external air temperature probe alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.18	Addressing of the electric heater alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.19	Addressing of the T+H probe offline alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.23	Addressing of the inverter IO expansions offline alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.24	Network transducer offline alarm addressing on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.25	Addressing of the humidifier CPY module offline alarm (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out
P31.42	Addressing of the humidifier life expired alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.43	Addressing of the humidifier discharge alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.44	Addressing of the humidifier insufficient water alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.45	Addressing of the humidifier low current alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.46	Addressing of the humidifier high current alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.47	Addressing of the humidifier generic alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.48	Addressing of the emergency alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.49	Addressing of the flooding alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.50	Addressing of the LAN alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.94	Addressing of hazardous high temperature alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.51	Addressing of the low temperature alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.52	Addressing of the high temperature alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.53	Addressing of the low humidity alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.54	Addressing of the high humidity alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.55	Addressing of the eeprom alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.56	Addressing of the maintenance alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P31.57	Faulty fan alarm addressing on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.58	Addressing of the dirty filters alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.62	Addressing of the circuit 1 frost-free protection alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.63	Addressing of the circuit 2 frost-free protection alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.67	Addressing of the BMS1 serial offline alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.68	Addressing of the BMS2 serial offline alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.70	Addressing of the address 129 auxiliary temperature probe alarm on digital output (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out
P31.71	Addressing of the address 129 auxiliary humidity probe alarm on digital output (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out
P31.72	Addressing of the address 129 auxiliary probe offline alarm on digital output (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out
P31.84	Addressing of the circuit 1 low pressure probe alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.85	Addressing of the circuit 2 low pressure probe alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out
P31.98	Addressing of ATS offline alarm (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out
P31.99	Addressing of ATS power source alarm (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out
P33.15	Addressing of the fan offline alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.16	Addressing of the fan phase sequence alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.17	Addressing of the fan motor seized alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.18	Addressing of the fan voltage fault alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.19	Addressing of the fan thermal fault alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.20	Addressing of the fan generic alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.50	Addressing of the no air flow from fan alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.51	Addressing of the exp1 delivery temperature alarm (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out 2
P33.52	Addressing of the adjustment temperature out of range alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.54	Addressing of the remote 2 T+H probe humidity alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.53	Addressing of the remote 2 T+H probe temperature alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.56	Addressing of the remote 2 T+H probe humidity alarm (0:A - 1:None - 3:B)	0	-	0	2	User	Alarm out 2
P33.55	Addressing of the remote 2 T+H probe temperature alarm (0:A - 1:None - 3:B)	0	-	0	2	User	Alarm out 2
P33.58	Addressing of the remote 4 T+H probe humidity alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.57	Addressing of the remote 4 T+H probe temperature alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.59	Addressing of the remote 2 T+H probe offline alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.60	Addressing of the remote 2 T+H probe offline alarm (0:A - 1:None - 3:B)	0	-	0	2	User	Alarm out 2
P33.61	Addressing of the remote 4 T+H probe offline alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P33.62	Addressing of the NTC2 return probe alarm (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out 2
P33.68	Network 2 transducer offline alarm addressing on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.69	Addressing of the external T+H probe temperature alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.70	Addressing of the external T+H probe humidity alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.71	Addressing of the offline external T+H alarm (0:A - 1:none - 2:B)	0	-	0	2	User	Alarm out 2
P33.72	Addressing of the return T+H probe temperature alarm (0:A – 1:None – 2:B)	0	-	0	2	User	Alarm out 2
P33.74	Addressing of the high delivery temperature alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.75	Addressing of the low delivery temperature alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.76	Addressing of the high delivery humidity alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.77	Addressing of the low delivery humidity alarm on digital output (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.80	Addressing of the delivery T+H offline alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.81	Addressing of the delivery T+H probe temperature alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.82	Addressing of the delivery T+H probe humidity alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.83	Addressing of PAC–IF Client system alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.84	Addressing of PAC–IF Client circuit alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.85	Addressing of PAC–IF Client probe alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.86	Addressing of PAC–IF Server1 system alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.87	Addressing of PAC–IF Server1 circuit alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.88	Addressing of PAC–IF Server1 probe alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.89	Addressing of PAC–IF Client offline alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.90	Addressing of PAC–IF Server 1 offline alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.91	Addressing of Gas leak alarm (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 2
P33.21	Addressing of APF modbus offline alarm (0:A – 1:none – 2:B)	0	-	0	2	User	Alarm out 2
P33.73	Addressing of APF system alarm (0:A – 1:None – 2:B)	0	-	0	2	User	Alarm out 2
P34.02	Addressing of digital output for Return IO Probe alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.03	Addressing of digital output for Return IO Probe alarm activation: Low air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.10	Addressing of digital output for Delivery IO Probe alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.18	Addressing of digital output for Remote TH Probe alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.19	Addressing of digital output for Remote TH Probe alarm activation: Low air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.20	Addressing of digital output for Remote TH Probe alarm activation: High air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.21	Addressing of digital output for Remote TH Probe alarm activation: Low air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P34.22	Addressing of digital output for Remote TH Probe 2 alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.23	Addressing of digital output for Remote TH Probe 2 alarm activation: Low air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.24	Addressing of digital output for Remote TH Probe 2 alarm activation: High air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.25	Addressing of digital output for Remote TH Probe 2 alarm activation: Low air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.26	Addressing of digital output for Remote TH Probe 3 alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.27	Addressing of digital output for Remote TH Probe 3 alarm activation: Low air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.28	Addressing of digital output for Remote TH Probe 3 alarm activation: High air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.29	Addressing of digital output for Remote TH Probe 3 alarm activation: Low air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.30	Addressing of digital output for Remote TH Probe 4 alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.31	Addressing of digital output for Remote TH Probe 4 alarm activation: Low air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.32	Addressing of digital output for Remote TH Probe 4 alarm activation: High air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.33	Addressing of digital output for Remote TH Probe 4 alarm activation: Low air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.34	Addressing of digital output for Return TH Probe alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.35	Addressing of digital output for Return TH Probe alarm activation: Low air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.36	Addressing of digital output for Return TH Probe alarm activation: High air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.37	Addressing of digital output for Return TH Probe alarm activation: Low air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.38	Addressing of digital output for Delivery TH Probe alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.39	Addressing of digital output for Delivery TH Probe alarm activation: Low air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.40	Addressing of digital output for Delivery TH Probe alarm activation: High air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.41	Addressing of digital output for Delivery TH Probe alarm activation: Low air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.42	Addressing of digital output for External TH Probe alarm activation: High air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.43	Addressing of digital output for External TH Probe alarm activation: Low air temperature (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.44	Addressing of digital output for External TH Probe alarm activation: High air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3

Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P34.45	Addressing of digital output for External TH Probe alarm activation: Low air humidity (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.46	Addressing of digital output for Unit switched off by local keyboard alarm activation (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.47	Addressing of digital output for Failure management active alarm activation (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P34.48	Addressing of digital output for Setpoint variation failure alarm activation (0:A - 1:None - 2:B)	0	-	0	2	User	Alarm out 3
P36.01	Return IO Probe: high/low temperature alarm activation delay	0	s	0	300	User	Prob. Lim
P36.02	Return IO Probe: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.03	Return IO Probe: Low temperature limit	10	°C	0	30	User	Prob. Lim
P36.10	Delivery IO Probes: high/low temperature alarm activation delay	0	s	0	300	User	Prob. Lim
P36.11	Delivery IO Probe: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.19	Remote TH Probes: high/low temperature alarm activation delay	0	s	0	300	User	Prob. Lim
P36.20	Remote TH Probes: high/low humidity alarm activation delay	0	s	0	300	User	Prob. Lim
P36.21	Remote TH Probe: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.22	Remote TH Probe: Low temperature limit	10	°C	0	30	User	Prob. Lim
P36.23	Remote TH Probe: Maximum humidity limit	80	%	30	99	User	Prob. Lim
P36.24	Remote TH Probe: Low humidity limit	30	%	0	70	User	Prob. Lim
P36.25	Remote TH Probe 2: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.26	Remote TH Probe 2: Low temperature limit	10	°C	0	30	User	Prob. Lim
P36.27	Remote TH Probe 2: Maximum humidity limit	80	%	30	99	User	Prob. Lim
P36.28	Remote TH Probe 2: Low humidity limit	30	%	0	70	User	Prob. Lim
P36.29	Remote TH Probe 3: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.30	Remote TH Probe 3: Low temperature limit	10	°C	0	30	User	Prob. Lim
P36.31	Remote TH Probe 3: Maximum humidity limit	80	%	30	99	User	Prob. Lim
P36.32	Remote TH Probe 3: Low humidity limit	30	%	0	70	User	Prob. Lim
P36.33	Remote TH Probe 4: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.34	Remote TH Probe 4: Low temperature limit	10	°C	0	30	User	Prob. Lim
P36.35	Remote TH Probe 4: Maximum humidity limit	80	%	30	99	User	Prob. Lim
P36.36	Remote TH Probe 4: Low humidity limit	30	%	0	70	User	Prob. Lim
P36.37	Return TH Probe: high/low temperature alarm activation delay	0	s	0	300	User	Prob. Lim
P36.38	Return TH Probe: high/low humidity alarm activation delay	0	s	0	300	User	Prob. Lim
P36.39	Return TH Probe: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.40	Return TH Probe: Low temperature limit	10	°C	0	30	User	Prob. Lim
P36.41	Return TH Probe: Maximum humidity limit	80	%	30	99	User	Prob. Lim
P36.42	Return TH Probe: Low humidity limit	30	%	0	70	User	Prob. Lim
P36.43	Delivery TH Probe: high/low temperature alarm activation delay	0	s	0	300	User	Prob. Lim
P36.44	Delivery TH Probe: high/low humidity alarm activation delay	0	s	0	300	User	Prob. Lim
P36.45	Delivery TH Probe: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.46	Delivery TH Probe: Low temperature limit	10	°C	0	30	User	Prob. Lim
P36.47	Delivery TH Probe: Maximum humidity limit	80	%	30	99	User	Prob. Lim

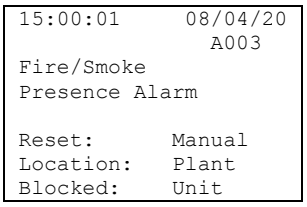
Par.N.	Description of parameter	Default	U.M.	Min	Max	Menu	Submenu
P36.48	Delivery TH Probe: Low humidity limit	30	%	0	70	User	Prob. Lim
P36.49	External TH Probe: high/low temperature alarm activation delay	0	s	0	300	User	Prob. Lim
P36.50	External TH Probe: high/low humidity alarm activation delay	0	s	0	300	User	Prob. Lim
P36.51	External TH Probe: High temperature limit	32	°C	20	50	User	Prob. Lim
P36.52	External TH Probe: Low temperature limit	10	°C	0	30	User	Prob. Lim
P36.53	External TH Probe: Maximum humidity limit	80	%	30	99	User	Prob. Lim
P36.54	External TH Probe: Low humidity limit	30	%	0	70	User	Prob. Lim
P37.01	Enabling display of unit OFF by local keyboard alarm (0:Disabled - 1:Enabled)	0	-	0	1	User	Custom.
P37.02	Display delay of alarms A004 and A005 to BMS (indx. 102 - 103 - 104)	0	s	0	99	User	Custom.
P50.01	Setpoint cooling	24	°C	P99.27	P99.28	Setpoint	Setpoint
P50.02	Hot setpoint	15	°C	P20.26	P99.30	Setpoint	Setpoint
P50.16	Return setpoint for advanced delivery adjustment	24	°C	0	41.7	Setpoint	Setpoint
P50.17	Delivery setpoint for advanced return adjustment	15	°C	0	99.9	Setpoint	Setpoint
P50.03	Dehumidification setpoint	55	%RH	P99.02	99	Setpoint	Setpoint
P50.04	Humidification setpoint	45	%RH	10	P99.03	Setpoint	Setpoint
P50.05	Cold setpoint for LAN limits	30	°C	P50.01	50	Setpoint	Setpoint
P50.06	Hot setpoint for LAN limits	18	°C	0	P50.02	Setpoint	Setpoint
P50.07	Dehumidification setpoint for LAN limits	75	%RH	P50.03	90	Setpoint	Setpoint
P50.08	Humidification setpoint for LAN limits	35	%RH	10	P50.04	Setpoint	Setpoint
P50.14	Setpoint for the adjustment of the fan using the fan adjustment based on temperature function	24	°C	2	60	Setpoint	Setpoint
P50.15	Setpoint for the adjustment of the fan using the fan adjustment based on return temperature for LAN limits function	30	°C	P50.14	40	Setpoint	Setpoint

24.1 Parameter limits table

Par.N.	Description
99.01	Minimum limit that can be set for the internal fan speed (Calculated as P10.10 – P10.11%)
99.02	Minimum limit that can be set for the dehumidification setpoint (Calculated as P50.04 + 5)
99.03	Maximum limit that can be set for the humidification setpoint (Calculated as P50.03 – 5)
99.07	Minimum limit that can be set for parameter P28.15 (Calculated as 100 – P28.16)
99.08	Minimum limit that can be set for parameter P28.16 (Calculated as 100 – P28.15)
99.18	Advanced time band enable limit, depends on the advanced time band enable P900.01 (Equal to 1 with standard programming, 4 with advanced programming)
99.19	Minimum value that can be set for time band control (Equal to 1 – unit off)
99.20	Maximum value that can be set for time band control (Equal to 2 – unit in adjustment)
99.21	Minimum limit of summer temperature setpoint for the control of time bands depending on the active adjustment (Equal to P20.24 with adjustment in return, P20.56 with adjustment in delivery)
99.22	Maximum limit of summer temperature setpoint for the control of time bands depending on the active adjustment (Equal to P20.25 with adjustment in return, P20.57 with adjustment in delivery)
99.23	Minimum limit of winter temperature setpoint for the control of time bands (Equal to P20.26)
99.24	Maximum limit of winter temperature setpoint for the control of time bands (Equal to P50.01)
99.25	Maximum value that can be set for low pressure setpoint for frost-free function (Equal to P11.20 in PRECISE/MTR2 units, otherwise 15 bar)
99.26	Minimum settable value for low pressure setpoint for PRECISE/MTR2 function (Equals P20.47)
99.27	Minimum limit that can be set for cooling setpoint depending on the active adjustment (Equal to P20.24 with adjustment in return, P20.56 with adjustment in delivery)
99.28	Maximum limit that can be set for cooling setpoint depending on the active adjustment (Equal to P20.25 with adjustment in return, P20.57 with adjustment in delivery)
99.29	Maximum value that can be set for the type of signal used for setpoint offset (equal to 7 if at least one probe is enabled for calculating the return temperature, otherwise 6)
99.30	Maximum value that can be set for the cold setpoint depending on the active adjustment (equal to the active cold setpoint).
99.31	Maximum value of units in LAN that can be set.
99.32	Maximum failure unit value with ADL LAN.
99.33	Minimum value for the percentage of cold ramp managed by the main coil with Extra Circuit (100-%extra circuit)
99.34	Minimum value for the percentage of cold ramp managed by the secondary coil with Extra Circuit (100-P28.15)
99.35	Valve A superheat setpoint
99.36	Maximum number of units in LAN on standby
99.37	Maximum number of Modbus fans
99.38	Minimum EEV SH set value
99.39	Maximum number of cylinders for CPY management
99.40	Maximum transformation ratio value of Energy meter
99.41	Maximum selection limit of water temperature input probe type (equal to 1 for EVR, EVR2 and EPR2 valves).
99.42	Maximum selection limit of water temperature output probe type (equal to 3 if EVR, EVR2 and EPR2 valves are present. Equal to 2 in Rack/Door or inlet water probe from Belimo valve).

25 ALARMS

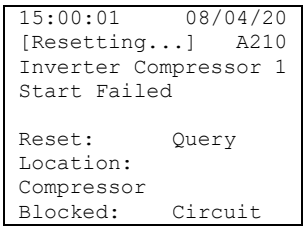
Press the **[ALARM]** key once to enter the **"Event" menu** showing the alarm and signalling event messages along with their codes.



If there is more than one event, scroll the menu using the **[UP]** and **[DOWN]** keys. Press **[ESC]** to exit this menu.

In order to reset an event, press the **[ALARM]** key another time. The event will be reset only if the condition that caused it has been solved. The event otherwise remains active.

In case of A "Query" type alarm event, the reset request action is indicated in the mask, as shown in the figure:



If the **[ALARM]** key is pressed and there are no events to be displayed, the system shows the message "No Events detected".

For every event, the following properties are defined:

- **Event type:** indicates the presence of a Warning (W), Signal (S) or Alarm (A);
- **Reset type:** indicates whether reset is manual (Manual) or automatic (Auto);
- **Location:** indicates where in the unit the alarm has taken place;
- **Action:** indicates where the *block* caused by the alarm is located.

Some events can be configured by type and type of reset, manual or automatic. It is also possible to define the number of interventions per hour, after which the event automatically switches to manual reset.

Letters	Display description	Description
Key to "Type of Event" column.		
A	Event A###	Alarm with resource/unit block. Sets the "alarm cumulative".
S	Event S###	Display signal. Does not set the "alarm cumulative".
S/A	Event S### Event A###	Signal or Alarm. It is possible to select one of the two modes using the parameter. The "alarm cumulative" is set in the case the event is an alarm.
S*	Event S###	Display signal with "alarm cumulative" setting.
W	Event W###	Warning on display. Does not set the "alarm cumulative".
Key to Type of Reset" column.		
A	Type: Auto	Automatic rearm (if the condition causing the alarm disappears, the alarm resets automatically).
M	Type: Manual	Manual rearm (if the condition causing the alarm disappears, the alarm must be reset from the keyboard).
A/M	Type: Auto Type: Manual	Automatic reset if the type of reset set in the parameter is automatic. Manual reset if the type of reset set in the parameter is manual.
A->M	Type: Auto Type: Manual	Automatic rearm alarm for the first N interventions in one hour. After which it is manual.
Q	Type: Query	When resetting the alarm from the keyboard, the controller makes an alarm reset request to the Modbus. The request remains on hold until there is a response from

Letters	Display description	Description
		the driver, for a maximum time of five seconds. Following a positive response from the Modbus driver, the alarm will reset in the controller. If the modbus driver is reset automatically, the alarm in the controller is reset.
OFF	Type: OFF	Reset requiring disconnection and reconnection of the power supply to the unit to reset it.
Key to "Position" column.		
CO	Location: Compressor	Event involving the compressor.
CI	Location: Circuit	Event involving the cooling circuit.
U	Location: Unit	Event involving the unit.
P	Location: Plant	Event involving the plant.
FN	Location: Fuction	Function affected by the event.
Key to "Action" column.		
-	Action: NO	No block (row not visible on the mask).
U	Action: Unit	Unit block.
-/U	Action: Unit	No block if the type of reset set in the parameter is automatic block (row not visible on the mask). Block of the unit if the type of reset set in the parameter is manual.
CI	Action: Circuit	Block of the cooling circuit involved in the event.
CO	Action: Compressor	Block of the compressor involved in the event.
CW	Action: ChillWater	Block of the water circuit involved in the event.
HU	Action: Humidifier	Block of the humidifier.
EH	Action: El. Heater	Block of the electric heater or heat resource involved in the event.
FN	Action: Function	Block of the function involved in the event.
Key of the "Action" column for the "Function" category.		
FC	Not Displayed	Block of the Free-cooling function.
FC Ind		Block of the Indirect Free-cooling function (FC unit).
Lim		Block of the function regarding the output air temperature limit.
HU		Block of the humidity control function.
DH		Block of the dehumidifier control function.
Reg		Block of the temperature adjustment function.

25.1 Table of alarm and signalling events

The descriptions and codes of the events are given on the following pages.

Code	Display description	Details	Event Time	Reset Time	Position	Action
-	No Events detected	No event available.				
003	Event A003 Fire/Smoke Presence Alarm	Fire/smoke detector engagement. *Visible only if the detecting input is present.*	A	A/M	P	U
004	Event A004 Wrong Phase Seq. or Supply Out of Limit	Wrong connection of the phases or power supply out of limits. It completely stops the unit. *Not visible for the cooled water units.*	A	A/M	P	U
010[1]	Event A010 Flood Alarm: Check Water Connections	Flooding sensor engagement alarm. *Visible only if the detecting input is present.*	A	A/M	P	NO/U
050	Event A050 Gas Leak Detected.	Gas leak detection	A	A	U	CI
095	Event A095 Failure Management Activated	Failure management active	A	A	U	U
100	Event A100 Unit switched OFF by local keyboard	Unit switched off by local keyboard	S	A	U	-
101	Event A101 Loss of Air Flow Check Switch	Lack of air flow on the evaporator from flow switch. *Visible only if the detecting input is present.*	A	A->M	U	U
103	Event A103 Loss of Air Flow Check Fan	Lack of evaporator air flow due to fan fault.	A	A->M	U	U
119	Event A119 No Regulation Probe Available	No probe available for temperature adjustment.	A	A	U	FN Reg
120	Event A120 Return Temp. Probe Failed/Disconnected	Return temperature NTC sensor fault (ambient).	A	A	U	FN FC
121	Event A121 Remote Temp. Probe Failed/Disconnected	Remote T+H probe temperature sensor fault. *Visible only when the Remote T+H probe is present.*	A	A	U	NO

[1] This event is displayed only if the P22.83 parameter is set as “Alarm - Automatic” or “Alarm - Manual”.

Code	Display description	Details	Event Time	Reset Time	Position	Action
122	Event A122 Remote Temp. Probe2 Failed/Disconnected	Remote T+H probe 2 temperature sensor fault. *Visible only when the Remote T+H probe 2 is present.*	A	A	U	NO
123	Event A123 Remote Temp. Probe3 Failed/Disconnected	Remote T+H probe 3 temperature sensor fault. *Visible only when the Remote T+H probe 3 is present.*	A	A	U	NO
124	Event A124 Remote Temp. Probe4 Failed/Disconnected	Remote T+H probe 4 temperature sensor fault. *Visible only when the Remote T+H probe 4 is present.*	A	A	U	NO
125	Event A125 Ret T+H Humidity Probe Failed/Disconnected	Return T+H probe humidity sensor fault. *Visible only when the Return T+H probe is present.*	A	A	U	FN HU+DH
126	Event A126 Remote Humidity Probe Failed/Disconnected	Remote T+H probe humidity sensor fault. *Visible only when the Remote T+H probe is present.*	A	A	U	NO
127	Event A127 Remote Humidity Probe2 Failed/Disconnected	Remote T+H probe 2 humidity sensor fault. *Visible only when the Remote T+H probe 2 is present.*	A	A	U	NO
128	Event A128 Remote Humidity Probe3 Failed/Disconnected	Remote T+H probe 3 humidity sensor fault. *Visible only when the Remote T+H probe 3 is present.*	A	A	U	NO
129	Event A129 Remote Humidity Probe4 Failed/Disconnected	Remote T+H probe 4 humidity sensor fault. *Visible only when the Remote T+H probe 4 is present.*	A	A	U	NO
130	Event A130 Diff. Pressure Probe Failed/Disconnected	Air differential pressure probe fault. *Visible only if capacity or air DeltaP control is enabled.*	A	A	U	FN
131	Event A131 Remote 2 Probe Offline	Remote T+H probe 2 disconnection alarm (serial connection). *Visible only if the probe is enabled.*	A	A	U	NO
132	Event A132 Remote 3 Probe Offline	Remote T+H probe 3 disconnection alarm (serial connection). *Visible only if the probe is enabled.*	A	A	U	NO
133	Event A133 Remote 4 Probe Offline	Remote T+H probe 4 disconnection alarm (serial connection). *Visible only if the probe is enabled.*	A	A	U	NO
140	Event A140 Supply Air T. Probe Failed/Disconnected	Delivery air temperature probe fault.	A	A	U	FN Lim
141	Event A141 Return Temp. T+H Probe Failed/Disconnected	Return T+H probe temperature sensor fault. *Visible only when the Return T+H probe is present.*	A	A	U	NO

Code	Display description	Details	Event Time	Reset Time	Position	Action
144	Event A144 Outdoor Air T. Probe Failed/Disconnected	External air temperature probe faulty. *Visible only on units with Direct Free-cooling.*	A	A	U	FN FC
150	Event A150 Heaters Overheating or Heaters Contactor Fail	Heater safety thermostat engagement. *Visible only if the unit is configured with electric heaters.*	A	M	U	EH
151	Event A151 Fan 1 Offline	No communication with fan 1. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
152	Event A152 Fan 2 Offline	No communication with fan 2. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
153	Event A153 Fan 3 Offline	No communication with fan 3. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
154	Event A154 Fan 4 Offline	No communication with fan 4. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
155	Event A155 Fan 5 Offline	No communication with fan 5. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
156	Event A156 Fan 1 Phase Fault	Incorrect phase sequence for fan 1. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
157	Event A157 Fan 2 Phase Fault	Incorrect phase sequence for fan 2. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
158	Event A158 Fan 3 Phase Fault	Incorrect phase sequence for fan 3. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
159	Event A159 Fan 4 Phase Fault	Incorrect phase sequence for fan 4. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
160	Event A160 Fan 5 Phase Fault	Incorrect phase sequence for fan 5. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
161	Event A161 Fan 1 Motor Blocked	Fan 1 motor blocked. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
162	Event A162 Fan 2 Motor Blocked	Fan 2 motor blocked. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-

Code	Display description	Details	Event Time	Reset Time	Position	Action
163	Event A163 Fan 3 Motor Blocked	Fan 3 motor blocked. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
164	Event A164 Fan 4 Motor Blocked	Fan 4 motor blocked. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
165	Event A165 Fan 4 Motor Blocked	Fan 5 motor blocked. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
166	Event A166 Fan 1 Voltage Problem	Current problem on fan 1. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
167	Event A167 Fan 2 Voltage Problem	Current problem on fan 2. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
168	Event A168 Fan 3 Voltage Problem	Current problem on fan 3. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
169	Event A169 Fan 4 Voltage Problem	Current problem on fan 4. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
170	Event A170 Fan 5 Voltage Problem	Current problem on fan 5. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
171	Event A171 Fan 1 Heat Problem	Temperature problem on fan 1. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
172	Event A172 Fan 2 Heat Problem	Temperature problem on fan 2. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
173	Event A173 Fan 3 Heat Problem	Temperature problem on fan 3. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-

Code	Display description	Details	Event Time	Reset Time	Position	Action
174	Event A174 Fan 4 Heat Problem	Temperature problem on fan 4. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
175	Event A175 Fan 5 Heat Problem	Temperature problem on fan 5. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
176	Event A176 Fan 1 Generic Alarm	Generic problem on fan 1. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
177	Event A177 Fan 2 Generic Alarm	Generic problem on fan 2. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
178	Event A178 Fan 3 Generic Alarm	Generic problem on fan 3. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
179	Event A179 Fan 4 Generic Alarm	Generic problem on fan 4. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
180	Event A180 Return T+H Probe Offline	Return T+H probe disconnection alarm (serial connection). *Visible only if the probe is enabled.*	A	A	U	FN
181	Event A181 Remote T+H Probe Offline	Remote T+H probe disconnection alarm (serial connection). *Visible only if the probe is enabled.*	A	A	U	NO
188	Event A188 PAC-IF Client offline alarm	PAC-IF Client disconnection alarm (Mr. Slim connection board).	A	A	P	CI
189	Event A189 PAC-IF Server1 offline alarm	PAC-IF Server 1 disconnection alarm (Mr. Slim connection board).	A	A	P	CI
192	Event A192 I/O Expansion Board 1 Offline	I/O expansion 1 disconnection alarm (serial connection). *Visible only if the unit requires expansion.*	A	A	U	FN
195	Event A195 Humidifier Board Offline	CPY humidifier board disconnection alarm (serial connection). *Visible only if internal control humidifier is present.*	A	A	U	HU

Code	Display description	Details	Event Time	Reset Time	Position	Action
196	Event A196 Fan 5 Generic Alarm	Generic problem on fan 5. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
199	Event A199 Energy Analyzer 1 Offline	Network analyser disconnection alarm (serial connection). *Visible only if the network analyser is enabled.*	A	A	U	FN
200	Event A200 Energy Analyzer 2 Offline	Network analyser 2 disconnection alarm (serial connection). *Visible only if the network analyser 2 is enabled.*	A	A	U	FN
299	Event A299 ATS Offline	ATS offline modbus alarm	A	A	U	FN
300	Event A300 ATS Failed/Disconnected	ATS disconnected alarm	A	A	U	FN
301	Event A301 APF Offline	APF offline modbus alarm	A	A	U	FN
302	Event A302 APF System Alarm	APF status alarm	A	A	U	FN
307	Event A307 Sup. T+H Probe Failed/Disconnected	Delivery T+H probe disconnection alarm (serial connection). *Visible only if the probe is enabled.*	A	A	U	NO
308	Event A308 Sup. Temp.T+H Probe Failed/Disconnected	Delivery T+H probe temperature sensor fault. *Visible only when the Delivery T+H probe is present*.	A	A	U	NO
309	Event A309 Sup. Hum. T+H Probe Failed/Disconnected	Delivery T+H probe humidity sensor fault. *Visible only when the Delivery T+H probe is present*.	A	A	U	NO
319	Event A319 Circ. 1 LP Probe Failed/Disconnected	Circuit 1 low pressure transducer fault alarm. *Visible only if the transducer is present.*	A	A	CI	FN
320	Event A320 Circ. 1 LP Switch Triggered	Circuit 1 low pressure alarm from pressure switch.	A	A->M	CI	CI
321	Event A321 Circ. 2 LP Probe Failed/Disconnected	Circuit 2 low pressure transducer fault alarm. *Visible only if the transducer is present.*	A	A	CI	FN
322	Event A322 Circ. 2 LP Switch Triggered	Circuit 2 low pressure alarm from pressure switch.	A	A->M	CI	CI
323	Event A323 Circ. 1 Frost Protect. Active	Circuit 1 frost-free function protection alarm.	A	A->M	CI	CI
324	Event A324 Circ. 2 Frost Protect. Active	Circuit 2 frost-free function protection alarm.	A	A->M	CI	CI

Code	Display description	Details	Event Time	Reset Time	Position	Action
402	Event A402 Humidifier: Life Timer Expired	Humidifier cylinder expiry alarm. *Visible only if internal humidity control is present.*	A	A	U	HU
404	Event A404 Humidifier: Drain Alarm	Humidifier discharge alarm. *Visible only if internal humidity control is present.*	A	A	U	HU
406	Event A406 Humidifier: Loss of Water	Leak of humidifier water alarm. *Visible only if internal humidity control is present.*	A	A	U	HU
408	Event A408 Humidifier: Low Current	Low humidifier current alarm. *Visible only if internal humidity control is present.*	A	A	U	HU
410	Event A410 Humidifier: High Current	High humidifier current alarm. *Visible only if internal humidity control is present.*	A	A	U	HU
412	Event A412 Humidifier: Generic Alarm	Generic humidifier alarm. For alarm details, please refer to the chapter on internal humidifier control.	A	M	U	HU
450	Event A450 Ext. Temp. T+H Probe Failed/Disconnected .	External T+H probe temperature alarm.	A	A	U	NO
451	Event A451 Ext. Hum. T+H Probe Failed/Disconnected . .	External T+H probe humidity alarm.	A	A	U	NO
452	Event A452 Ext. T+H Probe Failed/Disconnected . .	External T+H probe offline alarm.	A	A	U	NO
454	Event A454 Fan 6 Offline	No communication with fan 6. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
455	Event A455 Fan 6 Phase Fault	Incorrect phase sequence for fan 6. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
456	Event A456 Fan 6 Motor Blocked	Fan 6 motor blocked. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
457	Event A457 Fan 6 Voltage Problem	Current problem on fan 6. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
458	Event A458 Fan 6 Heat Problem	Temperature problem on fan 6. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-

Code	Display description	Details	Event Time	Reset Time	Position	Action
459	Event A459 Fan 6 Generic Alarm	Generic problem on fan 6. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
460	Event A460 Fan 7 Offline	No communication with fan 7. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
461	Event A461 Fan 7 Phase Fault	Incorrect phase sequence for fan 7. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
462	Event A462 Fan 7 Motor Blocked	Fan 7 motor blocked. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
463	Event A463 Fan 7 Voltage Problem	Current problem on fan 7. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
464	Event A464 Fan 7 Heat Problem	Temperature problem on fan 7. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
465	Event A465 Fan 7 Generic Alarm	Generic problem on fan 7. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
466	Event A466 Fan 8 Offline	No communication with fan 8. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
467	Event A677 Fan 8 Phase Fault	Incorrect phase sequence for fan 8. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
468	Event A468 Fan 8 Motor Blocked	Fan 8 motor blocked. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
469	Event A469 Fan 8 Voltage Problem	Current problem on fan 8 See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
470	Event A470 Fan 8 Heat Problem	Temperature problem on fan 8. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-

Code	Display description	Details	Event Time	Reset Time	Position	Action
471	Event A471 Fan 2 Generic Alarm	Generic problem on fan 8. See the third row for details on the problem. *Visible only if the unit has at least one EC fan.*	A	A/M	U	CI/-
503	Event A003 Presence of Fire/Smoke	Fire/smoke detector engagement. *Visible only if the detecting input is present*.	S	A/M	P	U
510[2]	Event S510 Flood Signal: Check Water Connections	Flooding sensor engagement signal. *Visible only if the detecting input is present.*	S	A/M	P	NO
520	Event S520 LAN Interrupted	Reports a disconnection or interruption in the local network (LAN). *Visible only if the local network (LAN) management is set.*	S	A	P	NO
529	Event S529 Return Temperature Above HH Limit	Indicates that the return temperature is above the hazardous high temperature threshold limit set.	S*	A	P	NO
530	Event S530 Return Temperature Below Min. Limit	Reports that the return temperature is below the minimum set level.	S*	A	P	NO
531	Event S531 Return Temperature Above Max. Limit	Reports that the return temperature is above the maximum set level.	S*	A	P	NO
532	Event S532 Supply Temperature Below Min. Limit	Signals that the delivery temperature is below the minimum set level.	S*	A	P	NO
533	Event S533 Supply Temperature Above Max. Limit	Signals that the delivery temperature is above the maximum set level.	S*	A	P	NO
540	Event S540 Return Humidity Below Min. Limit	Reports that the return humidity is below the minimum set level. *Visible only if humidity control is present.*	S	A	P	NO
541	Event S541 Return Humidity Above Max. Limit	Reports that the return humidity is above the maximum set level. *Visible only if humidity control is present.*	S	A	P	NO
542	Event S542 Supply Humidity Below Min. Limit	Signals that the delivery humidity is below the minimum set level. *Visible only if the delivery air T/H probe is present.*	S	A	P	NO
543	Event S543 Supply Humidity Above Max. Limit	Signals that the delivery humidity is above the maximum set level. *Visible only if the delivery air T/H probe is present.*	S	A	P	NO
601	Event S601 EEPROM Error: Replace Control Board	Reports a problem to the controller permanent memory.	S	A	U	NO
610	Event S610 Maintenance Needed	Request of maintenance due to operating hour limit exceeded (fan unit, compressors, heaters, humidifier).	S	A	U	NO

[2]This event is displayed only if the P22.83 parameter is set as “Automatic signal” or “Manual signal”.

Code	Display description	Details	Event Time	Reset Time	Position	Action
620	Event S620 Electronic Fan ERROR	Reports that there is a problem on at least one fan. *Visible only if the detecting input is present.*	S	A	U	NO
630	Event S630 Clogged Filters: Clean or Replace	It indicates that the air filters are dirty. *Visible only if the detecting input is present.*	S	A	U	NO
711	Event S711 BMS1 Bus Offline	Signals that the BMS1 bus is disconnected (the supervisor no longer queries the controller).	S	A	P	NO
712	Event S712 BMS2 Bus Offline	Signals that the BMS2 bus is disconnected (the KIPlink no longer queries the controller).	S	A	P	NO
750	Event A750 Return IO Probe Temp. Above Max. Limit	Return Probe Alarm: High air temperature	A	A	U	-
751	Event A751 Return IO Probe Temp. Below Min. Limit	Return Probe Alarm: Low air temperature	A	A	U	-
758	Event A758 Supply IO Probe Temp. Above Max. Limit	Delivery Probe Alarm: High air temperature	A	A	U	-
759	Event A759 Supply IO Probe Temp. Below Min. Limit	Delivery Probe Alarm: Low air temperature	A	A	U	-
766	Event A766 Remote TH Probe Temp. Above Max. Limit	Remote TH Probe: High air temperature	A	A	U	-
767	Event A767 Remote TH Probe Temp. Below Min. Limit	Remote TH Probe: Low air temperature	A	A	U	-
768	Event A768 Remote TH Probe Hum. Above Max. Limit	Remote TH Probe: High air humidity	A	A	U	-
769	Event A769 Remote TH Probe Hum. Below Min. Limit	Remote TH Probe: Low air humidity	A	A	U	-
770	Event A770 Remote TH Probe 2 Temp. Above Max. Limit	Remote TH Probe 2: High air temperature	A	A	U	-
771	Event A771 Remote TH Probe 2 Temp. Below Min. Limit	Remote TH Probe 2: Low air temperature	A	A	U	-

Code	Display description	Details	Event Time	Reset Time	Position	Action
772	Event A772 Remote TH Probe 2 Hum. Above Max. Limit	Remote TH Probe 2: High air humidity	A	A	U	-
773	Event A773 Remote TH Probe 2 Hum. Below Min. Limit	Remote TH Probe 2: Low air humidity	A	A	U	-
774	Event A774 Remote TH Probe 3 Temp. Above Max. Limit	Remote TH Probe 3: High air temperature	A	A	U	-
775	Event A775 Remote TH Probe 3 Temp. Below Min. Limit	Remote TH Probe 3: Low air temperature	A	A	U	-
776	Event A776 Remote TH Probe 3 Hum. Above Max. Limit	Remote TH Probe 3: High air humidity	A	A	U	-
777	Event A777 Remote TH Probe 3 Hum. Below Min. Limit	Remote TH Probe 3: Low air humidity	A	A	U	-
778	Event A778 Remote TH Probe 4 Temp. Above Max. Limit	Remote TH Probe 4: High air temperature	A	A	U	-
779	Event A779 Remote TH Probe 4 Temp. Below Min. Limit	Remote TH Probe 4: Low air temperature	A	A	U	-
780	Event A780 Remote TH Probe 4 Hum. Above Max. Limit	Remote TH Probe 4: High air humidity	A	A	U	-
781	Event A781 Remote TH Probe 4 Hum. Below Min. Limit	Remote TH Probe 4: Low air humidity	A	A	U	-
782	Event A782 Return TH Probe Temp. Above Max. Limit	Return TH Probe: High air temperature	A	A	U	-
783	Event A783 Return TH Probe Temp. Below Min. Limit	Return TH Probe: Low air temperature	A	A	U	-
784	Event A784 Return TH Probe Hum. Above Max. Limit	Return TH Probe: High air humidity	A	A	U	-

Code	Display description	Details	Event Time	Reset Time	Position	Action
785	Event A785 Return TH Probe Hum. Below Min. Limit	Return TH Probe: Low air humidity	A	A	U	-
786	Event A786 Supply TH Probe Temp. Above Max. Limit	Delivery TH Probe: High air temperature	A	A	U	-
787	Event A787 Supply TH Probe Temp. Below Min. Limit	Delivery TH Probe: Low air temperature	A	A	U	-
788	Event A788 Supply TH Probe Hum. Above Max. Limit	Delivery TH Probe: High air humidity	A	A	U	-
789	Event A789 Supply TH Probe Hum. Below Min. Limit	Delivery TH Probe: Low air humidity	A	A	U	-
790	Event A790 External TH Probe Temp. Above Max. Limit	External TH Probe: High air temperature	A	A	U	-
791	Event A791 External TH Probe Temp. Below Min. Limit	External TH Probe: Low air temperature	A	A	U	-
792	Event A792 External TH Probe Hum. Above Max. Limit	External TH Probe: High air humidity	A	A	U	-
793	Event A793 External TH Probe Hum. Below Min. Limit	External TH Probe: Low air humidity	A	A	U	-
840	Event A840 PAC-IF Client system alarm	Mr. Slim alarm connected to Client PAC-IF013B-E.	A	A	P	CI
841	Event A841 PAC-IF Client circuit alarm	PAC-IF013B-E Client circuit alarm.	A	A	P	CI
842	Event A842 PAC-IF Client probes alarm	Mr. Slim probe alarm connected to Client PAC-IF013B-E.	A	A	P	CI
843	Event A843 PAC-IF Server1 system alarm	Mr. Slim alarm connected to Server 1 PAC-IF013B-E.	A	A	P	CI
844	Event A844 PAC-IF Server1 circuit alarm	Server 1 PAC-IF013B-E circuit alarm.	A	A	P	CI
845	Event A845 PAC-IF Server1 probes alarm	Mr. Slim probe alarm connected to Server 1 PAC-IF013B-E.	A	A	P	CI

25.1.1 Events contributing to activation of the emergency unit on the LAN (if present)

For LAN-connected units, if one of the following events occurs, the emergency unit is activated as described in the relevant chapter.

CODE	DESCRIPTION
A010	Flooding alarm
A101	Lack of evaporator air flow from flow switch
A103	Lack of evaporator air flow due to fan fault
A120	Return temperature probe alarm
A125	Return T+H humidity probe alarm
A130	Air differential pressure switch alarm
A140	Delivery temperature probe alarm
A144	External temperature probe alarm
A150	Heaters thermostat Alarm
A192	I/O expansion 1 offline alarm
A195	Humidifier disconnection alarm
A319	Circuit 1 Low Pressure Probe Failed/Disconnected
A320	Circuit 1 low pressure
A321	Circuit 2 Low Pressure Probe Failed/Disconnected
A322	Circuit 2 low pressure
A323	Frost protection circuit 1 active
A324	Frost protection circuit 2 active
A402	Humidifier cylinder expiry alarm
A404	Humidifier discharge alarm
A406	Lack of humidifier water alarm.
A408	Low humidifier current
A410	High humidifier current
A412	Generic humidifier alarm

25.2 Table of alarms for Inverter compressors with ABB driver ACS580/480

The SIAM inverter compressor alarms are transmitted by the driver to the EVOLUTION+ controller via the serial line.
Refer to the ABB manual for further info.

The compressor alarm codes are grouped below for each alarm that is read by the controller:

EVOLUTION+			SIAM compressor alarms (ABB driver)	
Code	**Display description**	**Type**	**Code**	**ABB description**
184 185 186 187	Event A18X Inverter X Offline	Al- Auto	--	Offline mode
210 232 264 286	Event A2XX Inverter Compressor X: Start Failed	Al- Man	Fault -159(hex FF61) 28961(hex 7121) ERROR ID RUN	The motor identification procedure was not completed successfully. Check and correct: • The motor connections. • The nominal values of the motor in the parameters of the group 99 - Motor data.
			Fault 28961(hex 7121) MOTOR STALL	Motor or process stalling. The motor is operating in the stall area. Check and correct: • Excessive loads. • Insufficient motor power. • parameters 35.51…35.53 and 35.55…35.56
211 233 265 287	Event A2XX Inverter Compressor X: Circuit Power Alarm	Al- Man	Fault 9008(hex 2330) DC OVERVOLTAGE	Excessive intermediate circuit DC voltage Check the input voltage level and the presence of static or transient overvoltages on the power line. Check that the overvoltage controller is switched on, the deceleration time, the chopper and the braking resistor (if used). DC overvoltage control must be disabled if a chopper and braking resistor are used
			Fault 12816 (hex 3210) MINIMUM DC VOLTAGE	Insufficient intermediate circuit DC voltage. Check the input power supply and fuses and that the minimum voltage controller is switched on.
			Fault 12832 (hex 3220) NO SUPPLY PHASE	The intermediate circuit DC voltage fluctuates due to a phase loss on the input power line or a blown fuse. Check: • the fuses on the input power line and the installation. • Check for any power supply imbalances. • the load
			Fault 12592 (hex 3130) POWER WIRING ERROR	Incorrect input power and motor cable connection (i.e. the input power cable is connected to the motor connection of the frequency converter). Check: • that the input power connections are not connected to the converter output. • if the power supply earth connection is a triangle loop and if the motor cable has a high capacitance
212 233 266 288	Event A2XX Inverter Compressor	Al- Man	Fault 9024 (hex 340) SHORT CIRCUIT	Short circuit in the motor cable(s) or motor. Damaged motor or motor cable. Internal converter fault Noise due to high frequencies on the STO lines

EVOLUTION+			SIAM compressor alarms (ABB driver)	
Code	**Display description**	**Type**	**Code**	**ABB description**
	X: Motor Power Alarm		Fault 12673 (hex 3181) EARTH FAULT	Possible earth fault detected in the motor or motor cables. The unit monitors for any earth faults while it is running and not running. Detection is more sensitive when the unit is not running and can generate false positives. Possible corrections: • check/correct any faults on the input wiring; • check that the motor cable does not exceed the maximum length specified; • an input power supply with a triangle earth connection and motor cables with high capacity can cause false error reports during tests when not running
			Fault 29456 (hex 7310) OVERSPEED	The motor speed is faster than 120% of the highest (in size) between the MINIMUM SPEED 30.11 or the MAXIMUM SPEED 30.12. Check and correct: • parameter settings for 30.11 and 30.12; • adequacy of the motor braking torque; • application of torque control; • chopper and braking resistor.
			Fault 13185 (hex 3381) -32766 (hex 8002) 28962 (hex 7122) MOTOR PHASE MISSING	Motor circuit failure. One of the motor phases is lost. Check and correct: • motor failure; • motor cable failure; • thermal relay failure (if used); • internal faults
213 235 267 289	Event A2XX Inverter Compressor X: Overcurrent Alarm	AI-Man	Fault 8976 (hex2310) OVERCURRENT	The output current is too high. In addition to an actual overcurrent situation, this fault can also be caused by a ground fault or the loss of a supply phase. Check and correct: • excessive motor loads; • the acceleration times in the parameters of group 23 Ramp ref speed (speed control), 26 Sequence ref torque (torque control) or 28 Sequence ref frequency (frequency control) • parameters 46.01 Speed adjustment, 46.02 Frequency adjustment and 46.03 Torque adjustment • faulty connections, motor cables or motor.
214 236 268 290	Event A2XX Inverter Compressor X: Motor Thermal Alarm	AI-Man	Fault 16656 (hex4110) MAXIMUM DRIVE TEMPERATURE	The unit's heat sink has overheated. Check and correct: • fan failure; • air flow obstructions; • dust or dirt on the heat sink; • ambient temperature is too hot; • excessive motor loads
			Fault 18833(hex 4991) MOTOR OVERTEMPERATURE	The motor is too hot, based on the device estimate or on the temperature feedback. • check the overloaded motor; • check the temperature sensors.

EVOLUTION+			SIAM compressor alarms (ABB driver)	
Code	**Display description**	**Type**	**Code**	**ABB description**
				IGBT overload (Insulated Gate Bipolar Transistor), excessive temperature difference between the IGBTs of different phases or excessive temperature of the IGBTs Excessive temperature of the converter module or the power supply module Check the motor cable. Check the environmental conditions. Check the air flow and functioning of the fans. Check that there is not too much build-up of dust on the heat sink fins. Check the motor power compared with the converter power
			Fault 22145(hex 5681) Comunic u.poten	Communication errors detected between the converter control unit and the power supply unit. Check the connections between the converter control unit and the power supply unit. Check the value of the parameter 95.04 Ctrl board power supply
			Fault 26241(hex 6681) EFB communication loss	Embedded fieldbus (EFB) communication interruption. Check the status of the fieldbus master (online/offline/error, etc.). Check the connections of the cables on terminals EIA-485/X5 29, 30 and 31 on the control unit.
			Fault 29968(hex 7510) FBA A Communication	Loss of cyclic communication between the converter and the fieldbus adapter A module or between the PLC and the fieldbus adapter A module.
220 242 274 296	Event A2XX Inverter Compressor X: Generic Alarm	Al-Man	All other	See ABB manual.

25.3 Table of alarms for Inverter compressors with Danfoss driver

The Danfoss inverter compressor alarms are transmitted by the driver to the EVOLUTION+ controller via the serial line.
Refer to the Danfoss manual for further info.

The compressor alarm codes are grouped below for each alarm that is read by the controller:
In the inverter parameters, events are set as alarms (A) and not as warnings (W)

EVOLUTION+			SIAM compressor alarms (ABB driver)	
Code	**Display description**	**Type**	**Code**	**ABB description**
184 185 186 187	Event A18X Inverter X Offline	Al-Auto	W/A 36 Mains failure	Power failure. Check the fuses and power supply of the inverter.
210 232 264 286	Event A2XX Inverter Compressor X: Start Failed	Al-Man	A 18 Start-up failed	The speed was not able to exceed the compressor's maximum starting speed [RPM] parameter during start-up within the allowed time. This could be caused by a blocked motor.
211 233 265 287	Event A2XX Inverter Compressor X: Circuit Power Alarm	Al-Man	W/A 8 Insufficient voltage of DC circuit	The voltage of the intermediate circuit (DC connection) has fallen below the undervoltage limit. Check that the supply voltage matches the voltage of the frequency converter.
			W/A 7 Overvoltage of DC circuit	The voltage of the DC circuit (DC connection) exceeds the limit, and the frequency converter trips after a while. Connect a braking resistor and/or extend the ramp time.
			W/A 4 Loss of supply voltage phase	A phase on the supply side is missing or the mains voltage imbalance is too high. This message also appears when there is a fault in the input rectifier of the frequency converter. Check the supply voltage and supply currents of the frequency converter.
			W/A 2 Analogue input signal below minimum	This warning or alarm only appears if programmed by the user. The signal at one of the analogue inputs is less than 50% of the minimum value programmed for that input. Possible causes are interrupted wiring or a faulty device sending the signal. Check the connections.
212 233 266 288	Event A2XX Inverter Compressor X: Motor Power Alarm	Al-Man	A 14 Earth fault	There is current from the output phases to earth, in the cable between the frequency converter and the motor, or in the motor itself. Disconnect the power supply to the frequency converter and repair the earth fault. Check for earth faults in the motor by measuring the earth resistance of the motor and motor cables with a megohmeter.
			W /A 13 Overcurrent	The inverter's peak current limit is exceeded. This fault can be caused by a shock load or too fast an acceleration ramp with high inertia loads. • Switch off the power supply and check whether the motor shaft can be turned. • Check whether the motor size matches the frequency of the converter and whether the motor parameters correspond to the actual parameters.

EVOLUTION+			SIAM compressor alarms (ABB driver)	
Code	**Display description**	**Type**	**Code**	**ABB description**
			W /A 12 Maximum torque limit exceeded	The torque exceeded the value set in the parameters. Extend the acceleration or deceleration time if the event occurs in one of these phases. If it occurs during travel, possibly increase the torque limit after verifying that the system can operate safely with a higher torque. Check the application for excessive current draw of the motor.
			W/A 10 Thermal overload of the motor	Excessive temperature of the motor detected by the electronic thermal protection (ETR). The motor has been running with an overload of more than 100% for too long. • Check the motor for overheating. • Check whether the motor is mechanically overloaded. • Check that the motor data is set correctly in the inverter parameters.
			A 16 Short circuit	Short circuit in the motor or windings.
			A 33 Inrush failure	Too many start-ups occurred in a short period of time. Allow the unit to cool down to operating temperature.
			A 30 U phase missing	The U phase of the motor is missing between the frequency converter and the motor. • Switch off the power supply to the frequency converter. • Check the U phase of the motor.
			A 31 V phase missing	The V phase of the motor is missing between the frequency converter and the motor. • Switch off the power supply to the frequency converter. • Check the U phase of the motor.
			A 32 W phase missing	The W phase of the motor is missing between the frequency converter and the motor. • Switch off the power supply to the frequency converter. • Check the U phase of the motor.
213 235 267 289	Event A2XX Inverter Compressor X: Overcurrent Alarm	Al-Man	A 9 Inverter overload	The frequency converter is about to switch off due to an overload (current too high for too long).
214 236 268 290	Event A2XX Inverter Compressor X: Motor Thermal Alarm	Al-Man	W/A 11 Motor thermistor overtemperature	• Check whether the thermistor is disconnected. • Check the motor for overheating. • Check whether the motor is mechanically overloaded.
215 237 269 291	Event A2XX Inverter Compressor X: Communication Alarm	Al-Man	W/A 17 Connection timeout	There is no communication with the frequency converter. • Check the connections of the serial communication cable. • Check that the communication equipment works properly. • Check correct installation according to the EMC requirements.
			W/A 34 Fieldbus communication error	Connection error.
220 242 274 296	Event A2XX Inverter Compressor X: Generic Alarm	Al-Man	W/As remaining	See Danfoss manual.

25.4 Table of internal humidifier alarms with CPY board

The internal humidifier alarms managed by the CPY board are transmitted by the board to the EVOLUTION+ controller via the serial line.
The CPY board alarm codes are grouped below for each alarm that is signalled by the controller:

EVOLUTION+			CPY alarms		
Code	**Display description**	**Type**	**Code**	**Red indicator LED**	**Description**
195	Event A195 Humidifier Board Offline	Al-Auto	1	2 slow flashes	Device Offline.
402	Event A402 Humidifier: Life Timer Expired Reset/Clean Cylinder	Al-Auto	3	8 fast flashes	Mn - Cylinder life.
404	Event A404 Humidifier: Drain Alarm	Al-Auto	12	5 slow flashes	Ed - Drain alarm.
406	Event A406 Humidifier: Loss of Water	Al-Auto	11	3 slow flashes	EF - Missing water.
408	Event A408 Humidifier: Low Current	Al-Auto	8	4 slow flashes	EP - Low production.
410	Event A410 Humidifier: High Current	Al-Auto	4	5 fast flashes	EC - High conductivity.
			7	2 fast flashes	EH - High current.
412	Event A412 Humidifier: Generic Alarm	Al-Auto	2		I64/I82 val. Incorrect.
			5	4 fast flashes	E1 - Params not dwnld.
			6	3 fast flashes	E0 - Calib.Par. not ok.
			9	8 slow flashes	EU - Full cylinder.
			10	7 slow flashes	E3 - Probe not conn.

Differently from alarms, warnings forwarded by the CPY board to the EVOLUTION+ controller are not grouped into notifications, but can only be displayed on the internal humidifier dedicated mask:

CPY warnings	
Code	**Description**
0	No warning.
1	CY: maintenance warning.
2	EA: foam present.
3	CP: cylinder depletion forewarning.
4	CL: depleted cylinder.
5	E2: damaged Eeprom.

Refer to the CPY board manual for further info.

25.5 PAC-IF013B-E board alarms table

EVOLUTION+			PAC-IF013B-E board alarms	
Code	**Display description**	**Type**	**Code**	**Description A**
188	Event A188 PAC-IF Client offline alarm			PAC-IF Client disconnection alarm (Mr. Slim connection board).
189	Event A189 PAC-IF Server1 offline alarm			PAC-IF Server 1 disconnection alarm (Mr. Slim connection board).
840	Event A840 PAC-IF Client system alarm		E0/E4	Loss of communication between remote controller and Client PAC-IF013B-E.
			E1	Loss of communication between remote controller and Client PAC-IF013B-E.
			E2	Loss of communication between remote controller and Client PAC-IF013B-E.
			E3/E5	Loss of communication between remote controller and Client PAC-IF013B-E.
			E6	Loss of communication between Client PAC-IF013B-E and Mr. Slim external unit.
			E7	Loss of communication between Client PAC-IF013B-E and Mr. Slim external unit.
			Pb	Client PAC-IF013B-E fault.
			EE	DIP SWITCH setting error (Client PAC-IF013B-E).
841	Event A841 PAC-IF Client circuit alarm		P6F	Subcooling protection (Freezing).
			P6H	Overheating protection.
			PL	Refrigerant circuit fault (Client PAC-IF013B-E).
842	Event A842 PAC-IF Client probes alarm		P1	Target air temperature sensor faulty TH1 (PAC-IF013B-E Server 1).
			P2	Liquid temperature sensor faulty TH2 (PAC-IF013B-E Server 1).
			P9	Two-phase temperature sensor faulty TH5 (PAC-IF013B-E Server 1).
843	Event A843 PAC-IF Server1 system alarm		E0/E4	Communication loss between remote controller and Server 1 PAC-IF013B-E.
			E1	Communication loss between remote controller and Server 1 PAC-IF013B-E.
			E2	Communication loss between remote controller and Server 1 PAC-IF013B-E
			E3/E5	Communication loss between remote controller and Server 1 PAC-IF013B-E
			E6	Loss of communication between Server1 PAC–IF013B–E and Mr Slim external unit
			E7	Loss of communication between Server1 PAC–IF013B–E and Mr Slim external unit
			Pb	Server 1 PAC-IF013B-E fault
			EE	DIP SWITCH setting error (Client PAC-IF013B-E)
844	Event A844 PAC-IF Server1 circuit alarm		P6F	Subcooling protection (Freezing)
			P6H	Overheating protection
			PL	Refrigerant circuit fault (Client PAC-IF013B-E)

EVOLUTION+			PAC-IF013B-E board alarms	
Code	**Display description**	**Type**	**Code**	**Description A**
845	Event A845 PAC-IF Server1 probes alarm		P1	Target air temperature sensor faulty TH1 (PAC-IF013B-E Server 1)
			P2	Liquid temperature sensor faulty TH2 (PAC-IF013B-E Server 1)
			P9	Two-phase temperature sensor faulty TH5 (PAC-IF013B-E Server 1)

25.6 "Acknowledge alarm" function.

In the case of alarms with automatic reset, it is possible to have information of alarm occurrence and its reset by enabling the "acknowledge alarm"' function (P29.06).

Keys	Name	Description
	**[ALARM]**	The LED of the **[ALARM]** key is fixed in the event of a blocking alarm. If the alarm condition does not persist, the alarm resets and the unit or resource previously in alarm restarts. Information on the occurrence of an automatic reset alarm and its resetting can be seen by the flashing of the key.

Pressing the **[ALARM]** key brings up the screen "No Events Found - Alarm event occurred - Go to alarm history to acknowledge it!".
In the events log, the most recent is the reset of the reported automatic alarm.
To switch off the flashing of the **[ALARM]** key LED, it is necessary to access the event log.

25.7 Event and maintenance management

25.7.1 Origin of events

The events managed by the software fall into the following categories:

- **Events from external contact:** when the contact switches from closed to open, an event is generated.
- **System events:** events coming directly from the control board diagnostics routine.
- **Threshold events:** events directly generated by the software as a result of thresholds that can either be fixed or set from the user terminal.

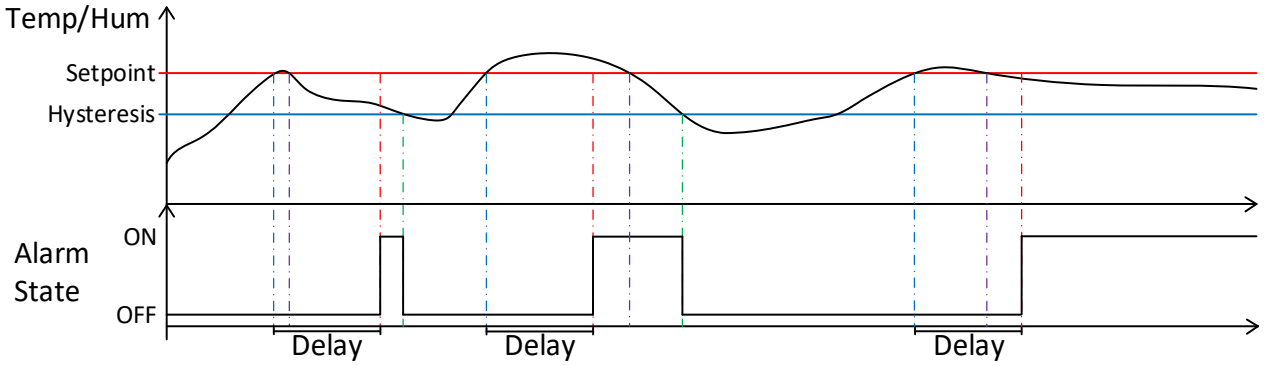
25.7.2 Threshold events



INFORMATION:
The high/low temperature and high/low humidity alarms may occur even when the unit is turned off.
The parameters for enabling and configuring are in the "Settings" menu, which can be accessed by entering the "Service" password.

The setpoint and differential parameters of the following events can be found under the **"Settings" and "Settings2" menus**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

Here is an example of the return/delivery high temperature/humidity alarm activation logic, bearing in mind that the setpoint, the hysteresis and the delay can all be parametrised:



25.7.2.1 *HT room high temperature alarm*

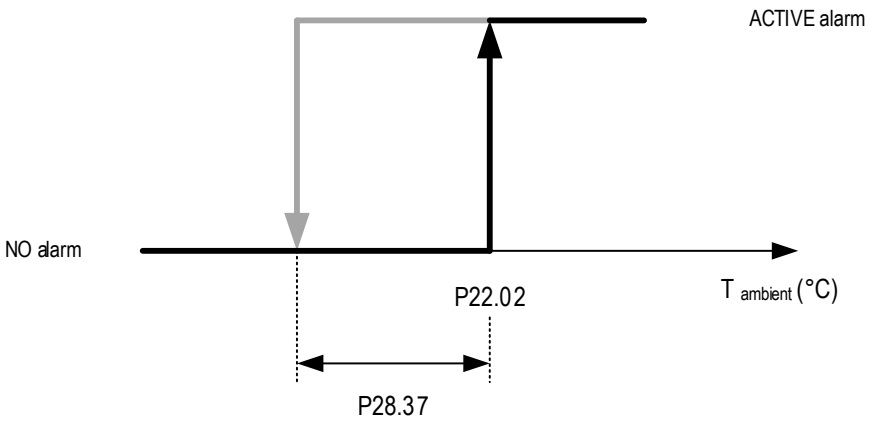


Figure 25-1: *High temperature alarm activation chart.*

25.7.2.2 *HHT hazardous high ambient temperature alarm*

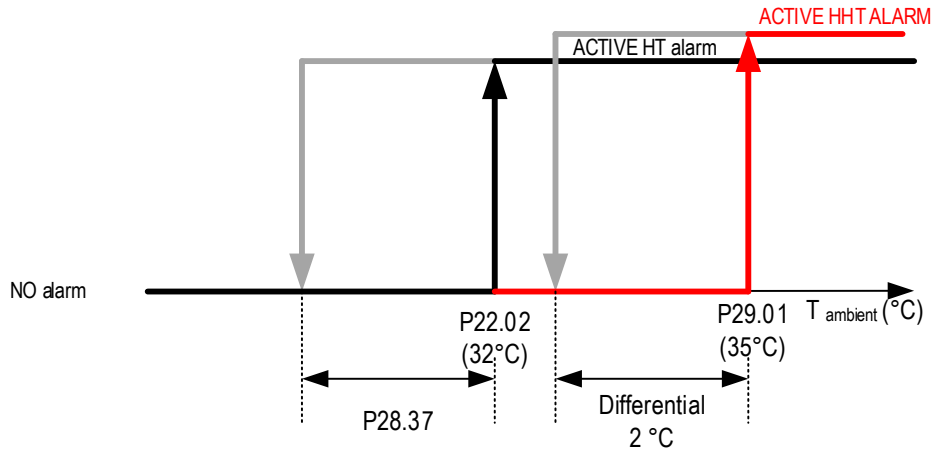


Figure 25-2: *Hazardous high temperature alarm activation chart.*

25.7.2.3 *Low room temperature alarm*

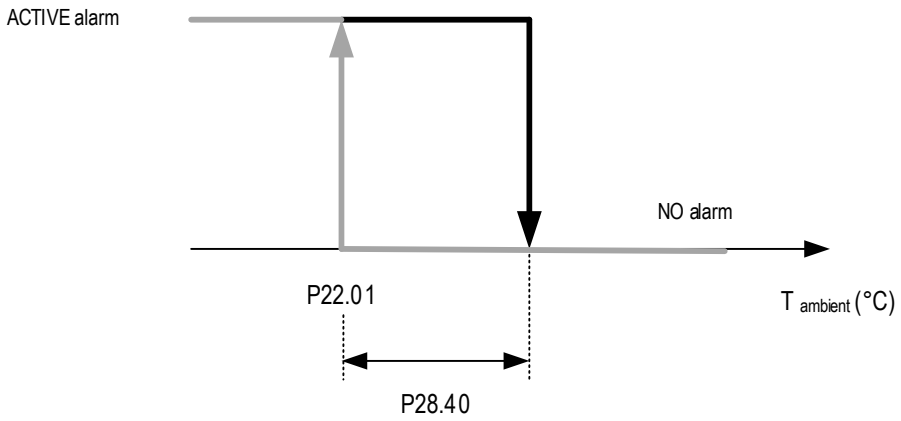


Figure 25-3: *Low temperature alarm activation chart.*

25.7.2.4 *High room humidity alarm*

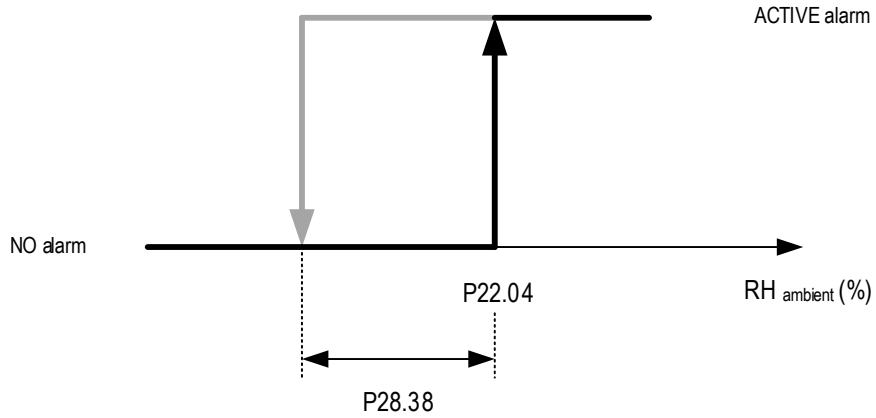


Figure25-4: *High humidity alarm activation graph.*

25.7.2.5 *Low room humidity alarm*

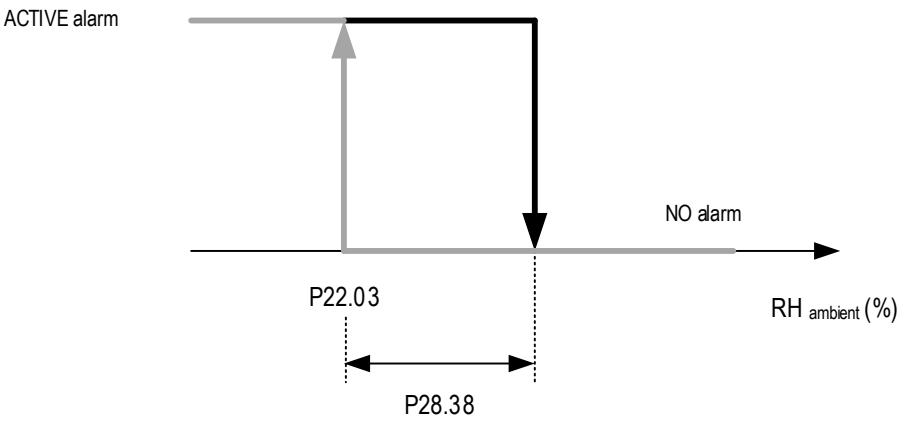


Figure25-5: *Low humidity alarm activation graph.*

25.7.2.6 *Delivery high temperature alarm*

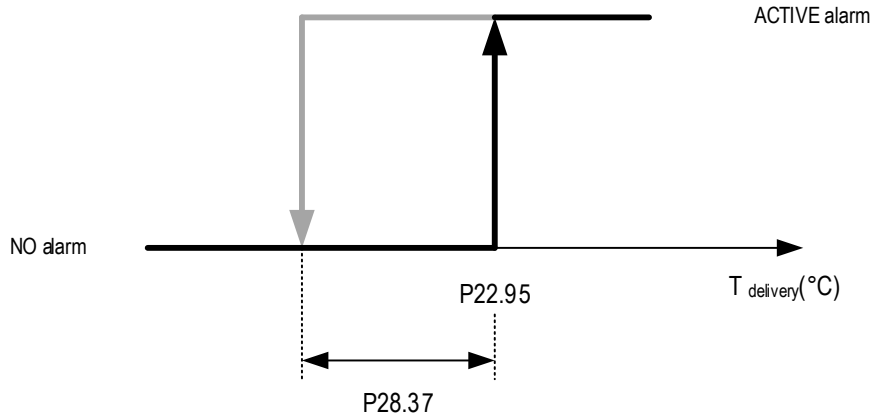


Figure 25-6: *High delivery temperature alarm activation chart.*

25.7.2.7 *Delivery low temperature alarm*

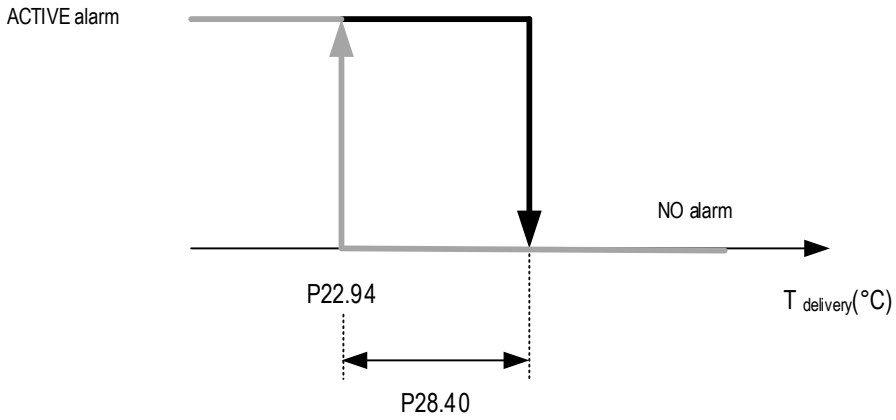


Figure 25-7: *Low delivery temperature alarm activation chart.*

25.7.2.8 Delivery high humidity alarm

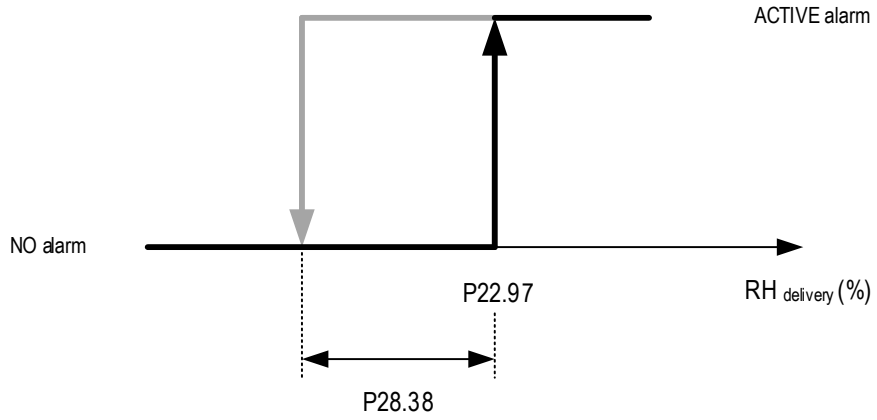


Figure25-8: *High supply humidity alarm activation graph.*

25.7.2.9 Delivery low humidity alarm

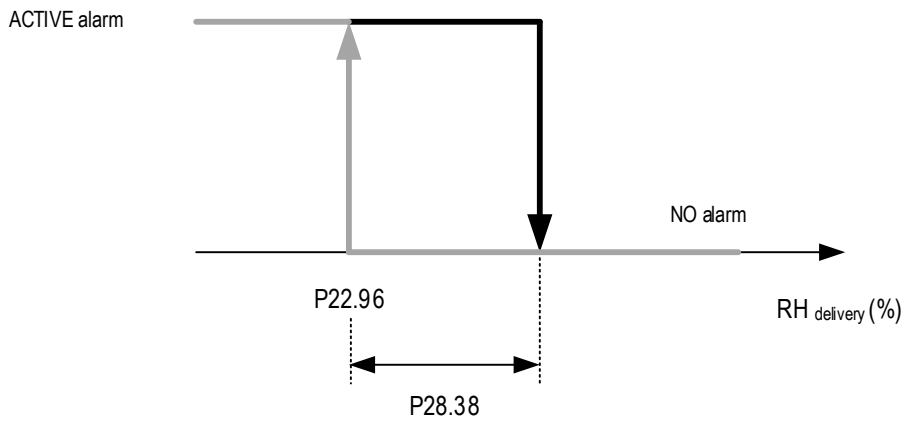


Figure25-9: *Low supply humidity alarm activation graph.*

Operational with dehumidification active

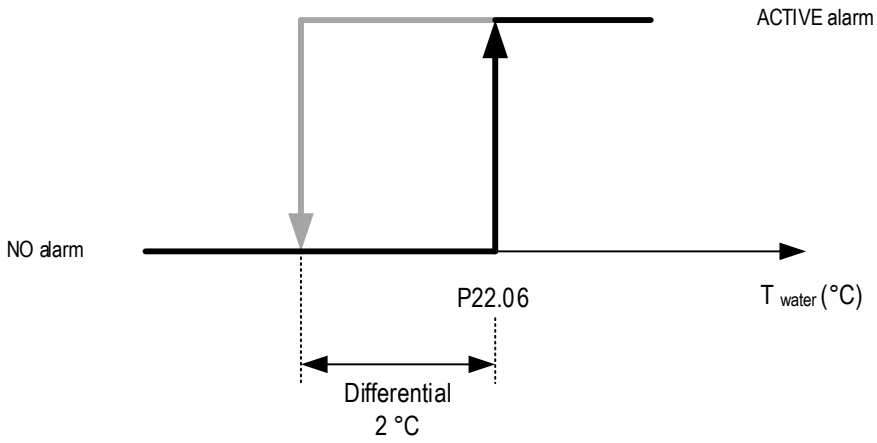


Figure 25-10: *HIGH water temperature with dehumidification active alarm activation chart.*

Cooling operation for water circuit 1

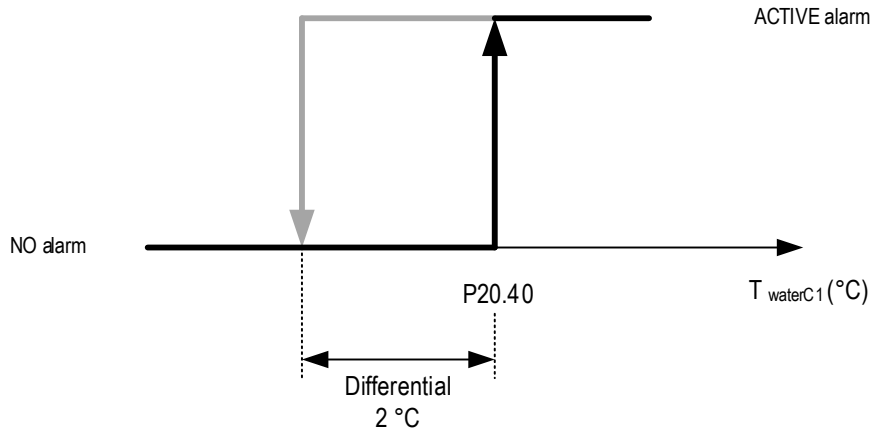


Figure25-11: *High temperature water circuit 1 alarm activation graph.*

Heating operation for water circuit 1

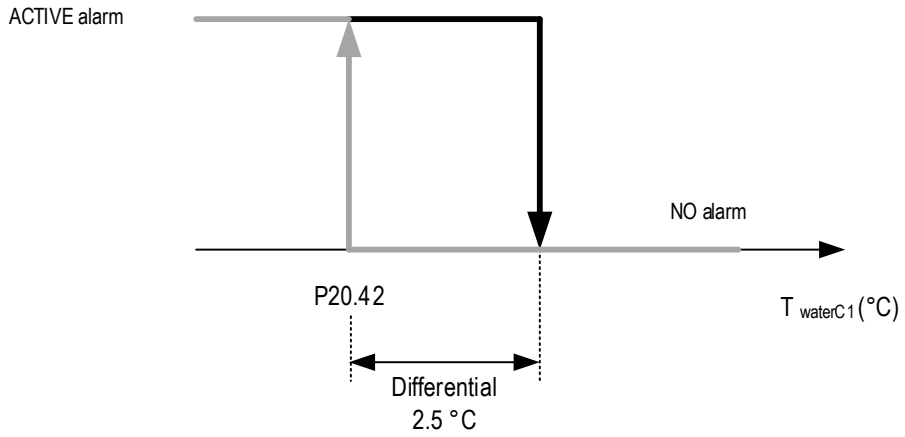


Figure25-12: *Low water temperature alarm activation chart circuit 1.*

Cooling operation for water circuit 2

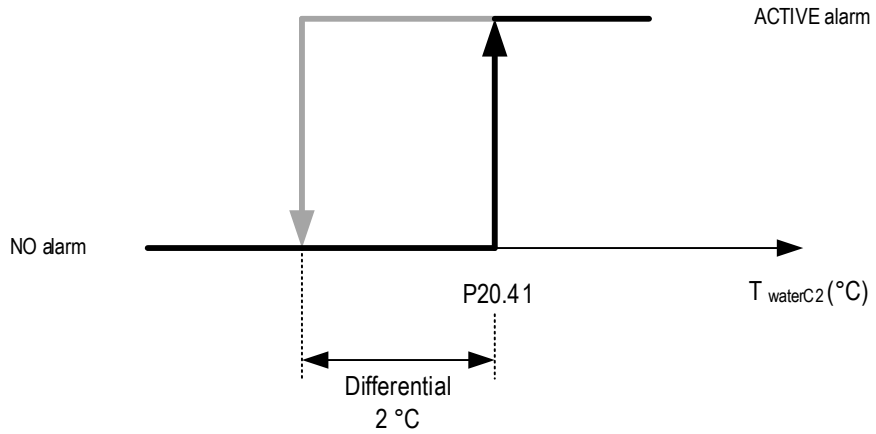


Figure25-13: *High temperature water circuit 2 alarm activation graph.*

Heating operation for water circuit 2

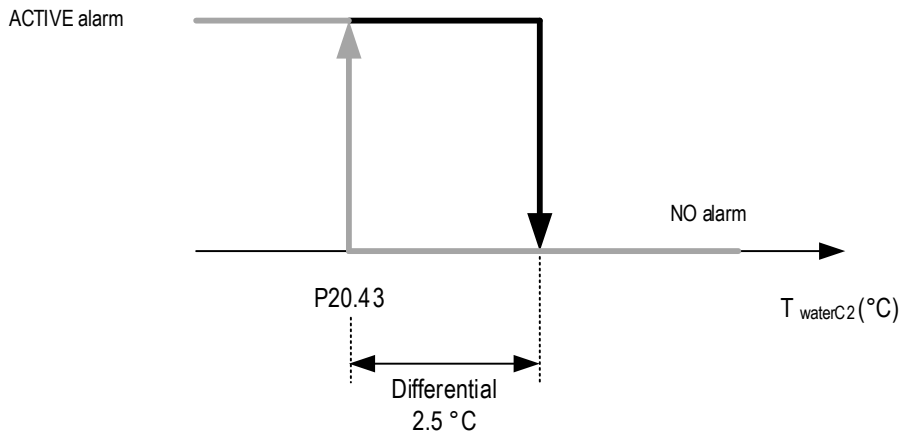
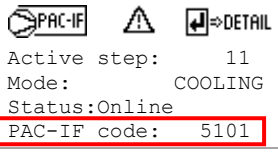
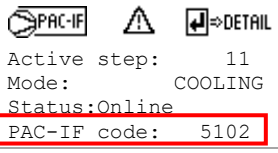


Figure25-14: *Low water temperature alarm activation chart circuit 2.*

25.7.3 PAC-IF013B-E alarms

The PAC-IF013B-E info dedicated masks - for S-MEXT units -, show the alarm codes read by the boards, if present, as shown below.

Mask of the terminal	PAC-IF013-E position
PAC-IF013B-E CLIENT  Active step: 11 Mode: COOLING Status:Online PAC-IF code: 5101	**Client**
PAC-IF013B-E Server1  Active step: 11 Mode: COOLING Status:Online PAC-IF code: 5102	**Server 1**

Below is the list for decoding the code read by the PAC-IF013B-E card:

Error code (Modbus)	Error code (Remote controller)	Description
5101	P1	Refer to the PAC-IF013B-E installation manual
5102	P2	
1503	P6 (Freezing)	
1504	P6 (Overheating)	
5103	P9	
6831 6834	“E0” or “E4”	
6201	E1	
6202	E2	

Error code (Modbus)	Error code (Remote controller)	Description
6832 6833	“E3” or “E5”	Refer to the PAC-IF013B-E installation manual
6840 6843	E6	
6842	E7	
0404	Fb	
1514	PL	
5111	PU	
7130	EE	

INFORMATION:
A PAC-IF code: 9999 corresponds to the offline alarm of the Mr. Slim unit. For Client PAC-IF we have AL188, while for Server PAC-IF we have AL189.

25.7.4 Alarm or signal events

A distinction should be made between the types of event:

- **Warning:** this event does not stop anything but, if the condition continues , it could generate an Alarm event. The alarm cumulative does not need to be set.
- **Notification:** event that does not stop anything and does not compromise the unit operation. The alarm cumulative needs to be set.
- **Alarm:** event blocking a device or the whole unit. The alarm cumulative needs to be set.

In case of an event:

- The red led flashes intermittently in case of a Signal.
- The red led is fixed in case of an Alarm event.
- The main mask lights up.
- The area 2 in the main mask displays the alarm icon (represented by an operating buzzer).
- The area 3 of the main mask displays an icon reporting the cause of the alarm and, next to it, the type of event (Signal/Alarm) and the associated event code.

By pressing the **[ALARM]** key once, the event detail mask appears. This mask provides the following information:

- event type (Signal/Alarm);
- event code;
- reset type (Manual/Automatic);
- event position (Compressor/Circuit/Unit/Plant);
- action type (Compressor/Circuit/Unit/Water circuit/Heater/Humidifier/Specific function block);
- event description.

The event is reset by pressing the **[ALARM]** key in the **"Event"** menu (accessed by pressing the **[ALARM]** key). If the **[ESC]** key is pressed, there is no reset and the event stays active.

For the event type details, refer to the table in the "Event Table" section of the "User interface" chapter.

25.7.5 Setting delays

Under the **"Safety" menu**, accessed with the **"Factory" password**, it is possible to modify the alarm event cut-in times relative to air flow, exceeded limits, clogged filter signalling and low pressure alarm, compatibly with unit configuration.

25.7.6 Event signalling relay

The control board provides two relay outputs for signalling events.

The **"Alarm Out" menu**, which can be accessed by entering the **"User" password**, it is possible to configure the outputs differently from the default setting.
More specifically, these masks may:

- Set the idle status of the output contacts.
- Set the contact to which the signal is to be addressed.

25.7.6.1 Setting the output contact logic

In the **"Alarm Out" menu**, accessible through the **"User" password**, it is possible to configure the output contact idle status.
The logic may be:

- Normally open (NO)  .
- Normally closed (NC)  (in this case it is possible to detect also the lack of power feed to the board).

25.7.6.2 Output contact setting

In the **"Alarm Out" menu**, accessible through the "**User" password**, it is possible to set, for each type of event included in the configured unit, the contact to which the signal is to be addressed. The operator may choose from:

- Output "A".
- No outlet.
- Output "B".

All events are addressed by default to output "A".

25.7.7 "Failure response" function

The "Failure response" function is used to manage the unit's behaviour in the event of an alarm.

With the "Failure response" function enabled, the user can decide how the unit reacts with the conditions of alarm A095: "Failure management activated".

Alarm A095 is calculated on the choice, made by the parameter (P29.19), of how many adjustment probes should be in alarm (one or all) and what the unit's response is (normal operation, unit OFF or maximum chilling power available) (P29.20).

If the machine has two circuits, alarm A095 is also calculated on whether both circuits are in alarm or only one is.

The function is valid for both delivery and return adjustment.

For units with delivery adjustment and active fan adjustment according to temperature (formerly special function 02 fan), it is possible to select in the parameter (P29.23) how many return air probes are to be in alarm (one or all) and the corresponding ventilation response (normal operation or maximum ventilation) (P29.24).

25.7.8 Log

25.7.8.1 General information

Thanks to the control board buffer memory, events can be recorded.
The recorded events are the following:

- all events;
- every time the conditioning unit switches on, meant as controller start;
- any activation of the Demand Limit mode (if enabled).

The events log has two access levels:

- User level.
- Service level.

25.7.8.2 Event history display

The User level log, which can be accessed from the **"History" menu** of the "Main" group, shows all the events, with the exception of "Warnings", while on the Service level, accessible via the "History" menu with the "Service" password, all events are displayed.

25.7.8.3 The events log

Below is an example of the events log

```
15:00:01     08/04/20
Event N°003  A003 R
Fire/Smoke
Presence Alarm

Reset:       Manual
Location:    Plant
Blocked:     Unit
```

The layout contains the following information:

- event date and time;
- event number;
- event status (SET / RESET);
- event code and type (Signal / Alarm / Warning);
- type of event reset (AUTO / MAN);
- text describing the event;
- location where the problem is found (Compressor, Circuit, Unit, Plant);
- alarm block action, that is, what the event has caused to block (Compressor, Circuit, Unit, Chilled Water, Humidifier, El. Heater, Function).

25.7.8.4 Deleting the events log

To delete the events log on the display, access the relative mask in the **"Default" menu**, which can be accessed by entering the **"Factory" password**.

25.7.9 Black box for event log

Through the **"Service"** software, the application software allows displaying the event log, with the possibility of graphically representing the events stored by the controller.

The controller stores the following variables. If present and enabled, depending on the type of machine.

Variable	Description
Temperature active setpoint	Cooling setpoint active.
Heating temperature active setpoint	Heating active setpoint.
Humidity active setpoint	Humidity active setpoint.
Constant delivery adjustment setpoint	Active setpoint for air flow adjustment
Constant DeltaP adjustment setpoint	Active setpoint for air pressure difference adjustment
Free-cooling Temperature	Not used.
External Temperature	Value read by the External air temperature probe.
Differential air pressure	Value read by the differential air pressure transducer (only in units with constant DeltaP control).
Air flow	Estimated current air flow value (only in units with constant flow control).
Room temperature	Value read by the Ambient air temperature probe.
Ambient humidity	Value read by the ambient air humidity probe.
Delivery temperature	Value read by the Delivery air Temperature probe.
Resistance step demanded	Number of cooling steps required.
Unit status	Unit status.
Fan status	Fan status.
Dehumidification status	Dehumidification status (bit–coded value).
Humidifier status	Humidifier status.
Unit operation mode	Unit operation mode.
Fan speed	Fan speed expressed in %.
Free-cooling damper opening	Opening of Free-cooling damper, if present, expressed in %.
Cold request	Demand of the room for the cooling resource in %.
Heat request	Demand of the room for the heat resource in %.

INFORMATION:
The black box for Historical Events is only available by connecting the controller with “Service” software.

Whenever an event (Signal or Alarm) is activated, the controller stores the variable mentioned above for each event 10 minutes preceding the event itself (a value every 30 seconds).
The following black box variables have been codified according to a logic defined by MEHITS. Their meanings are described below.

The *Unit status* variable can have the following meaning:

0	Unit switched on from keyboard.
1	Unit switched on from remote digital contact.
2	Unit switched on from pLAN.
3	Unit switched on from time bands.
4	Unit switched on from supervision.
5	Unit switched off by an alarm.
6	Unit switched off from supervision.
7	Unit switched off from time bands.
8	Unit switched off from pLAN.
9	Unit switched off from remote digital contact.
10	Unit switched off from keyboard.
11	Unit switched off from deactivated fan (with Demand Limit function).
12	Unit switching off.

This variable is calculated according to a predetermined priority defined during the creation of the software and can not be changed.

The *Fan status* variable can have the following meaning:

0	Fan switched off.
1	Fan switched on.
2	Constant flow control activated.
3	Constant DeltaP control activated.
4	Maximum flow reached.
5	Minimum flow reached.
6	Maximum output to fan.
7	Minimum DeltaP reached.
8	Maximum ventilation request per alarm.

The *Humidifier status* variable can have the following meaning:

0	Humidifier not activated (switched off, disabled, not demanded).
1	Evaporation cycle start.
2	Cylinder being filled.
3	Water being evaporated.
4	Cylinder being emptied.
5	Cylinder being emptied (by dilution or manually).
6	End of cylinder emptying cycle.
7	Complete emptying due to long term inactivity.
8	Complete emptying due to manual demand.

If the external humidifier has been configured, the *Humidifier status* variable can take on the following meaning:

0	Humidifier not activated (switched off, disabled, not demanded).
1	---
2	---
3	Water being evaporated.
4	---
5	---
6	---
7	---
8	---

The *Unit functioning mode* variable can have the following meaning:

0	Unit OFF.
1	Unit in ventilation mode only.
2	Unit in cooling mode.
3	Unit in free cooling mode.
4	Unit in cooling + free cooling mode.
5	Unit in dehumidification mode.
6	Unit in dehumidification + post–heating mode.
7	Unit in humidification mode.
8	Unit in humidification + cooling mode.
9	Unit in heating mode.
10	Unit in humidification + heating mode.

With regard to the bit-coded variables, these need to be transformed into 16 bit boolean (one word) and decoded bit by bit. The value of each bit has a particular meaning.

The bits of the *Dehumidification status* can have the following meaning:

Bit 0	Dehumidifier active.
Bit 1	Dehumidification resistance step activated.
Bit 2	Dehumidification demanded.
Bit 3	Dehumidification demanded (no protection for active temperature limits).
Bit 4	Maximum active temperature limit (depends on the set point).
Bit 5	Minimum active temperature limit (depends on the set point set).
Bit 6	Low active dehumidification temperature limit (depends on the parameter).
Bit 7	---
Bit 8	---
Bit 9	---
Bit 10	---
Bit 11	---
Bit 12	---
Bit 13	---
Bit 14	---
Bit 15	---

Therefore, using the **Service** software, it is possible to obtain the following graph:

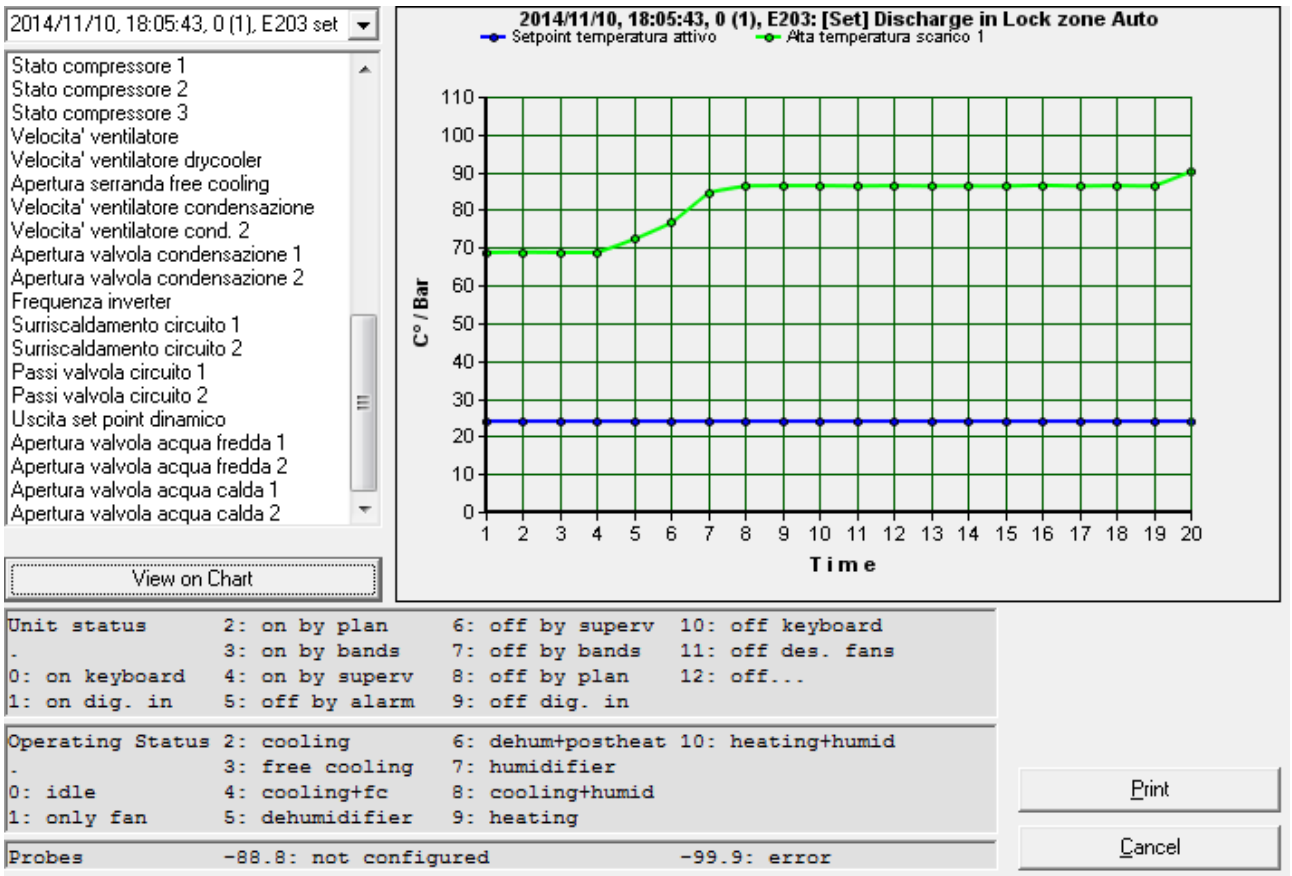


Figure25-15: *black box analysis screen with "Service" Software.*

The points in the chart with the "time" = 20 value correspond to the time at which the event is activated.
The points in the chart with the “time” = 0 value correspond to the situation of the unit 10 minutes before the occurrence of the event.

25.7.10 Black box for parameters

The application software logs all changes made to the unit parameters, recording the date and time of the change and indicating the old value and the new one after the change. It also keeps a record of all the unit parameters, to offer an overview of the status of the unit.

The file generated by the Parameters black box is encrypted and only readable using the **“Service”** software.

25.7.11 Maintenance signals

The software displays, in the same form as an Alarm / Signal event, the need to perform maintenance on the devices inside the unit, i.e.:

- fan;
- electric heaters;
- humidifier.

The signal is displayed when the set number of operating hours is exceeded. If the number of hours is equal to 0 (default value) the maintenance signal for that device is disabled and therefore never appears.

The unit devices that certainly require periodic maintenance are the air filters and the humidifier. As regards the air filters, the maintenance signal coincides with the ventilation signal, as the filter operating hours are the same as the fan operating hours.

After the signal is acknowledged, the counter can be reset and the hours start from zero.

Both the setting of the operating hour thresholds and the reset procedure are performed on the **"Settings" menu**, accessible through the **"Service" password.**

26 UNIT START-UP

26.1 Software upload

The units are already configured. If required (e.g. software updates), the cards must be programmed by **uploading** the software inside the “Flash” memory.
This operation can be performed only using the “Service” software.
The computer communicates with the pCO board using a USB-RS485 converter.

26.2 Unit power supply



WARNING:
For units with a compressor: connect the unit to the power supply at least 8 hours before starting it.
Failure to do so, will make the guarantee null and void.

When the unit is fed, wait approximately 55 seconds in the case of the pCO5+ controller before the application starts to run. This time interval may not be cancelled because it is necessary for the control board to initialise the user terminal. During this stage, the user terminal display is on but it does not show anything.

When starting the programme, ventilation starts automatically without any delay, unless the unit is not connected to the local LAN network. In this case, each unit of the network is activated after a delay in seconds equal to the LAN Address x5, in order to prevent all the units from starting together when the power returns after a black-out. This risk cannot be avoided if there are several units that are not connected with each other in a network.

26.3 Start of ventilation

There are different procedures for starting or stopping the unit: using the user interface buttons or selecting from the display.

The unit can start up only if all the elements required to start up the unit are ON, which are:

1. On/Off from user interface (keypad pGD1 or touch screen).
2. On/Off from digital input.
3. On/Off from local network (LAN).
4. On/Off from time bands.
5. On/Off from KIPLink.
6. On/Off from supervision.

If even just one control element is OFF, the unit remains off and indicates on the HMI (Human Machine Interface) which element is preventing the unit from starting up.



INFORMATION:
If the unit is equipped with a delivery damper, the ventilation will start with a delay defined using parameter P27.12.

1. **Using the user interface:**

The “On/Off” parameter is displayed on the main mask. “Off” means that the unit is switched off while “On” means that the unit is switched on.
Proceed as follows:

- To switch on:
  - go to the "On/Off" parameter by pressing **[ENTER]**;
  - press **[UP**] or **[DOWN]** so that "On" appears;
  - press **[ENTER]** again to confirm. If “On” continues to be displayed it means that the unit has been switched on.

- To switch off:
  - Move to the “On/Off” parameter and change to “Off” using the same procedure used to switch the unit on;
  - press **[ENTER]** again to confirm. If “Off” continues to be displayed it means that the unit has been switched off.

2. **By digital input:**

This procedure can only be used if the digital input is present and if the parameter "Enable On/Off from digital input" in the **"Regulations" menu** has been set to "Yes". The "Regulations" menu can be accessed using the **"Service" password**.
Proceed as follows:

- *To switch on:* close the remote On/Off contact. The corresponding icon is displayed in the main mask.
- *To switch off:* open the remote On/Off contact. The corresponding icon is displayed in the main mask.

3. **Using local network (LAN) protocol**

This mode requires the unit to be connected in a LAN network.
The On/Off command is forwarded by the priority unit.
The corresponding icon is displayed in the main mask.

4. **Using time bands**

Make sure that “Clock board not installed” is not displayed in the **“Clock” menu**.
Check that the “Scheduler config” parameter in the **“User” menu** is set to “Yes”.

Proceed as follows:

- *To switch on:* set the required switching on time in the **“Clock” menu**. The unit switches on when the set time is reached.
  The “On from time bands” message appears in the main mask to show that the unit has been switched on. ***Note*:** the unit does not switch on if it is set to “Off from keyboard” or “Off from digital input”.
- *To switch off:* set the required switching off time in the **“Clock” menu**. The unit switches off when the set time is reached. The “Off from time bands” message appears in the main mask to show that the unit has been switched off.

After enabling time bands from the “Enable time bands” parameter in the **“Scheduler” menu**, time bands can be set and different setpoints can be specified according to requirements.

The following must be defined to ensure correct use of the time bands:

1. The type of programming of the time bands:
   - *Standard*: allows to only set one programming group (A). A maximum of 10 time bands can be assigned to each day of the week.
   - *Advanced*: allows to set up to 4 different types of programming groups (A, B, C and D). A maximum of 10 different time bands can be assigned to each day of the week.
2. For each day of the week:
   - Disable the time bands: on the day selected, the controller runs without the time bands.
   - Enable a type of time band (A, B, C or D): on the day selected, the controller runs as programmed.
3. For each time band:
   - Unit status: OFF (unit turned off by time bands) or in adjustment mode (unit turned ON by time bands).
   - Time band start time (for the first time band, this is fixed at 00:00).
   - Time band end time (for the tenth time band, this is fixed at 23:59).
   - Cooling setpoint.
   - Heating setpoint (when applicable and configured).

INFORMATION:
The time bands B, C and D are shown only when “Advanced” programming is selected.

INFORMATION:
To use a smaller number of bands, simply set the time a band end to the same time it begins.
In this way, the band in question is ignored.

WARNING:
When setting time bands, in particular, when switching between adjustment based on return temperature and delivery temperature and vice versa, check that the hot set < cold set relationship is respected

Below are a few examples that, in graphical form, use bands A, B and C in the **“Clock” menu**.
The weekly chart uses band A for Monday, band B for Tuesday, Wednesday, Thursday and Friday, and band C for Saturday, while for Sunday the bands are disabled.

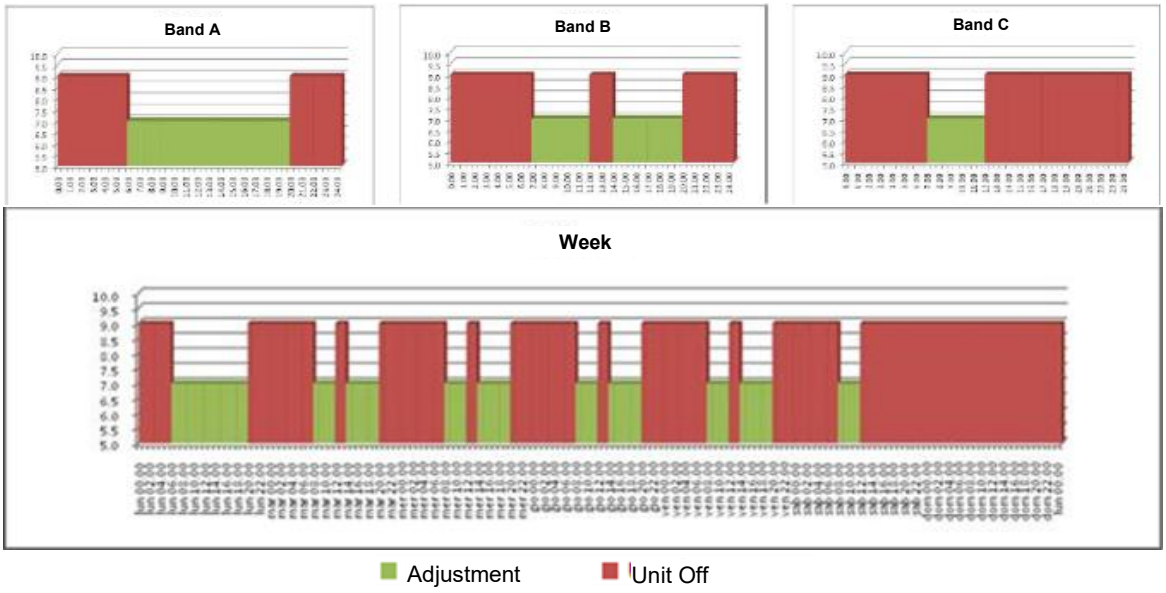


Figure 26-1: *example of daily time band settings.*

5. With the KIPlink

If the KIPlink is enabled and connected, it is possible to switch the unit on or off from the web page. For more information, refer to the dedicated manual.

6. Using the supervision protocol

This procedure can only be used if the serial board is present.
Check in the **"User menu"** that the parameters "Serial line enabling" and "On/Off enabling from supervisor" are set to "Yes".

Proceed as follows:

- *To switch on:* send the switching on command from the protocol. The corresponding icon is displayed in the main mask.
  ***Note*:** the unit does not switch on if it is set to "Off from keyboard" or "Off from digital input".
- *To switch off:* send the switching off command from the protocol. The corresponding icon is displayed in the main mask.

26.4 Start of automatic adjustment

Temperature and humidity adjustment is enabled 60 seconds (settable time, minimum value: 20 seconds) after the unit is activated, that is, after ventilation is started. The aim is to give the unit time to circulate the ambient air for long enough to assure correct reading of ambient temperature and humidity values.

Automatic adjustment permission is immediately withdrawn when ventilation is disabled or when the manual commands are enabled.

26.5 Manual management

Through this function it is possible to manually control the individual devices connected without the aid of timing, compressors rotation and regardless of the adjustment and values measured by the probes. The only support present in manual mode is the management of alarms and safety functions to safeguard the integrity of the devices.

The manual mode can be activated at any time only during the operation of the unit, through the **"Service" menu** and by selecting **Manual** that can be enabled with the **"Manual" password** or with the **"Factory" password**.
The manual mode ends if it is disabled by the user or once a maximum time settable via the P14.14 parameter has elapsed.

Manual management is divided into six sections. The submenus are:

- **Core:** to enable manual function and internal fan.
- **Cooling:** to manually control the cooling elements.
- **Heating:** to manually control the heating elements.
- **Humidity:** to manually control humidification and dehumidification.

26.5.1 "Core" submenu

In this section you can enable the desired mode between "automatic" and "manual".
Once the manual mode is enabled, a time window set by the parameter P14.14 will start; here it will be possible to individually control the devices. The time left will be visible at all times in all submenus.
Once the time has expired, the unit will return to automatic mode, in order to resume proper operation independently.
To check if the unit is in manual mode, there is always a visual notification in the "Main" mask and in the "Active Functions" mask with the following icon:



Upon activation of the mode, the controller will ensure that the unit is controlled by pGD, Touch, BMS, following the usual ME priority. All controllable (non-critical) devices in the thermodynamic circuit will continue to operate with the last value received from the PID control prior to activation of the manual mode. Meanwhile, critical devices, by default, will return to automatic mode.



INFORMATION:
To enable the manual mode, it is necessary for the internal fans to start. It will be necessary to wait for the damper times or the times set for regulation.

During the mode switches and during the control in manual mode, to prevent high power requests, all requests will be made linearly during a predetermined time.

Example: you request to control the speed of the extraction fan:
initial speed: 30%; desired speed: 80%.

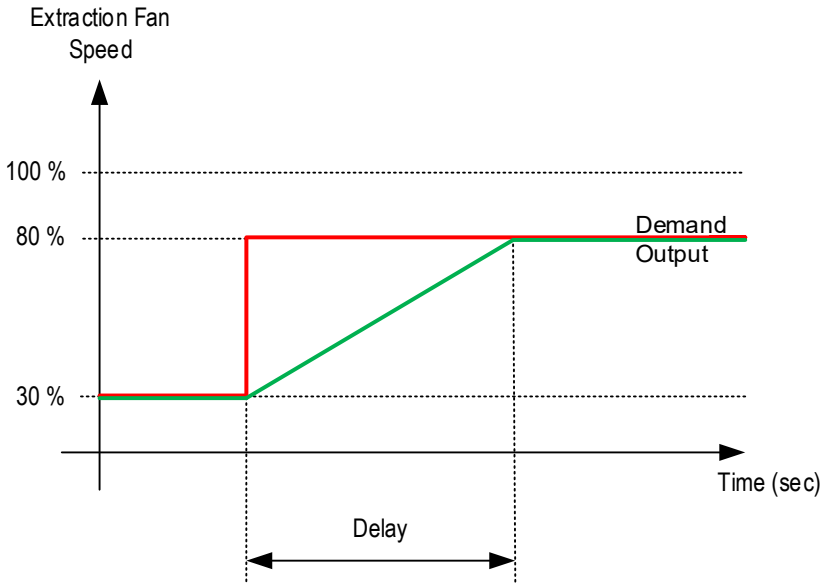


Figure 26-2: *Extraction fan speed change example*

In the menu it is possible to manually control the speed of the internal fan through a 0-100% request limited to the design parameters. The request will be limited above by the nominal design speed established by the parameter P10.10 and will be limited below by the minimum reduction of the nominal speed set by the parameter P10.11.

26.5.2 "Cooling" submenu

In this section you can control all the cooling components. In particular:

- the free-cooling damper.

In the transition from manual to automatic mode, the compressors will have a delay of 15 seconds, all other devices will immediately switch to automatic mode. To respect the safety of the unit.

26.5.3 "Heating" submenu

In this section you can control all the heating components. In particular:

- on/off electrical heaters.

26.5.4 "Humidity" submenu

In this section you can control the humidification controller. In particular, it is possible to enable:

- The humidifier.
- The dehumidification.

26.6 Fast Restart function

The application has a logic to reduce the cooling capacity delivery times in the event of a voltage hole with a controller equipped with “Ultracap” buffer battery.
The logic is enabled via parameter P11.37. Parameters P11.42 and P11.43 define the maximum duration of power failure to consider a “Fast Restart”, and the maximum number of starts allowed in 24 hours.
If the maximum number of Fast Restarts is reached in 24 hours, an 805 alert is generated and the next restart is not considered a Fast Restart.
When power is restored, if the duration of the power failure is shorter than parameter P11.42, the control waiting times (P20.03, P20.04) are bypassed anyway.



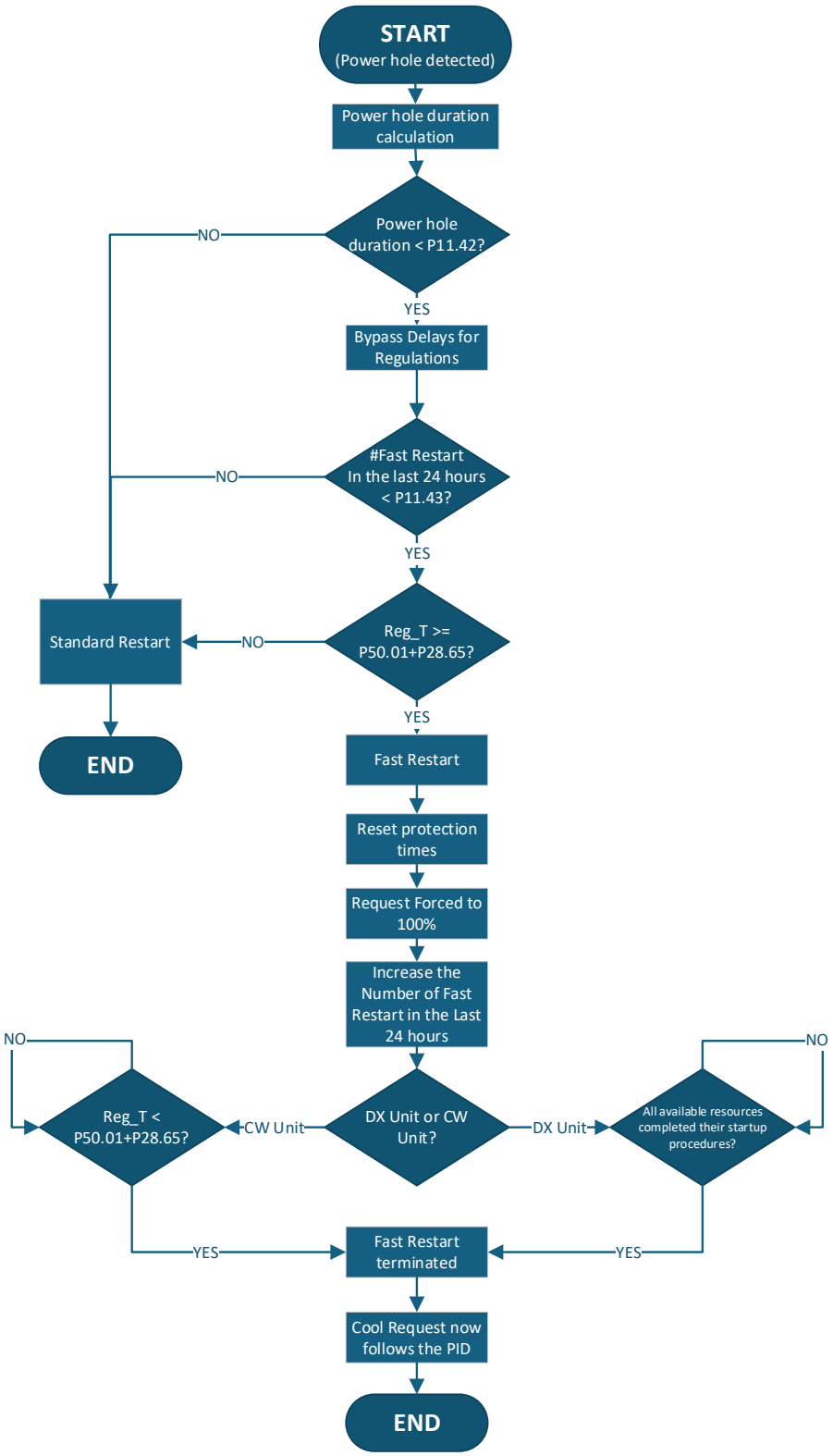
INFORMATION:
The function is only available for units with compressors only (DX units) or for chilled water only units (CW units).

The table below shows the following parameters:

- For Fast Restart (first column on the left).
- For standard start-up (last column on the right).

ID Par for Fast Restart	Description	ID Par for standard start-up
P11.37	Enable Fast restart function.	
P11.42	Maximum duration of power interruption to restart the unit in a “fast” manner.	
P11.43	Maximum number of “fast” restarts in 24 hours.	
P12.52	Starting frequency for start-up of inverter compressor during Fast Restart.	P12.19
P12.53	Duration of starting frequency of inverter compressor during Fast Restart.	P12.20
P12.54	Compressor start-up delay during Fast Restart (for dual-circuit units).	P14.07
P13.49	EEV opening preparatory to Fast Restart (%).	
P23.81	Fan speed during Fast Restart (if P23.97 = “from parameter”).	
P23.97	Type of fans Fast Restart (0: From configuration - 1: From parameter).	
P23.98	Air differential pressure check time in Fast Restart.	P23.11
P28.65	Temperature differential for starting the unit in “fast” mode.	P20.18
P29.25	Pump enable time after valve ON - Circuit 1 in fast restart	P23.38
P29.26	Pump enable time after valve ON - Circuit 2 in fast restart	P23.50
P29.27	Compressor enable time after pump ON - Circuit 1 in fast restart	P23.42
P29.28	Compressor enable time after pump ON - Circuit 2 in fast restart	P23.54
P29.29	Pre-condensation time in fast restart	P23.87
P29.30	Pump activation time delay after valve ON on circuit in fast restart	P29.11

The following diagram outlines the initial conditions to access Fast Restart and the steps to achieve them:

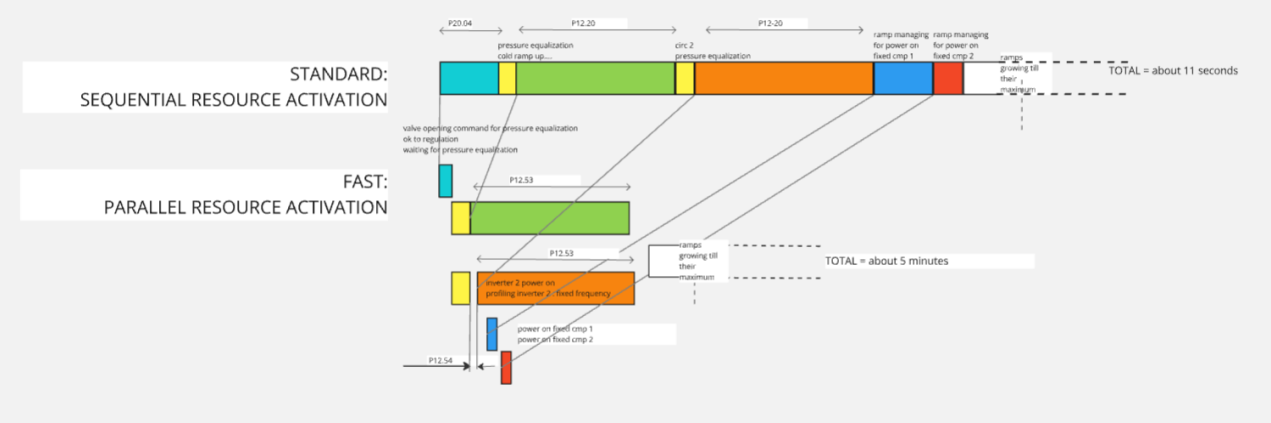


Conditions and type of resource activation do not depend on the type of unit (DX or CW).
On the other hand, the conditions for releasing the temporary “Fast Restart” condition and restoring the standard setting depend on the type of unit.

26.6.1 Direct Expansion Unit

The Fast Restart phase only ends when all resources that can be activated during this phase have been turned on and have finished the start-up procedure (finished profiling phase for inverter compressors).

The following time diagram shows the activation of resources in a four-circuit inverter + ON/OFF unit in standard (sequential) and “fast” (parallel) start-up, which allows a reduction of more than 50% of the time for maximum cooling power output.



For more information regarding the starting logic of the compressors, refer to the chapters "Direct expansion units".

26.6.2 Chilled Water Unit

The function can be enabled with modulating valves (0-10V o Modbus), not 3-way valves.

The Fast Restart phase ends only and only when the control temperature falls below the Setpoint (P50.01) and the activation differential (P28.65).

26.6.3 Ventilation

During the “Fast Restart” phase, the ventilation can assume 2 behaviours depending on how parameter P23.97 is set:

- By Unit Configuration: ventilation restarts following normal modulation.
- By Parameter: ventilation restarts by fixed command (the command is parameter P23.81).



INFORMATION:
If the unit regulates in constant flow or constant DeltaP (P11.01 = 1 or 2), then the waiting time for regulation is bypassed (P20.03) and ventilation will immediately start regulating using a different scan time than normal (P23.98 instead of P23.11).

27 FUNCTION DESCRIPTIONS

27.1 s-MEXT Main Unit

27.1.1 Operating principle of the s-MEXT units

The s-MEXT units are direct expansion units combined with one or two external “Mr.Slim” condensing units, equipped with inverter compressors. The cooling demand is converted into 11 steps and sent to the Mr.Slim units.

27.1.2 Communication with the Mr. Slim unit

When managing and controlling Mr. Slim units, the s-MEXT hardware needs to installed with interface boards (PAC-IF013B-E) through which the s-MEXT unit will send commands and information requests from the Mr. Slim units. The peripheral must be wired following the wiring diagram.



Figure 27-1: *Peripheral: PAC -IF013B-E*

The wiring present is shown in the following table:

Terminal board	Wiring	Description
TB6	T, N, L	PAC -IF board power supply, 230 V ac.
	S2, S3	Condensing signal.
TB61	bk	TH5 two-phase temperature probe.
	wh	TH2 liquid temperature probe.
	bw	TH11 coil 1 input temperature probe.
	RC	Remote Keyboard PAR-IF013RC-E (only in the presence of multiple Mr. Slim external units).
TB63	A, B, SG	Serial connection between controller and PAC-IF board (A: +, B: -, SG: GND). It is recommended to install a 120 Ohm resistor as interference filter between terminals A and B.

There are two possible connections for the use of Mr. Slim which are defined based on the number of Mr. Slims to be used with the s-MEXT unit.
They are identified by the following diagrams.

27.1.3 Connection to only one external Mr Slim unit

The connection, represented in the figure below, requires the internal unit (s–MEXT) to control through the RTU Modbus protocol the PAC–IF013B–E card, which will then manage the external Mr. Slim unit:

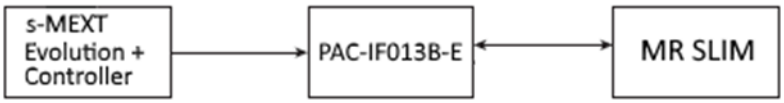


Figure 27-2: *logic diagram of connection to 1 Mr. Slim unit.*

27.1.4 Connection to more than one external Mr. Slim unit

With this connection, represented in the figure below, the internal unit (s–MEXT) controls through the RTU Modbus protocol the Client PAC–IF013B–E card, which will then manage both the first external Mr Slim unit (address 0) and the Server1 PAC–IF013B–E card.
The Server1 PAC–IF013B–E card manages the second Mr Slim unit (address 1).

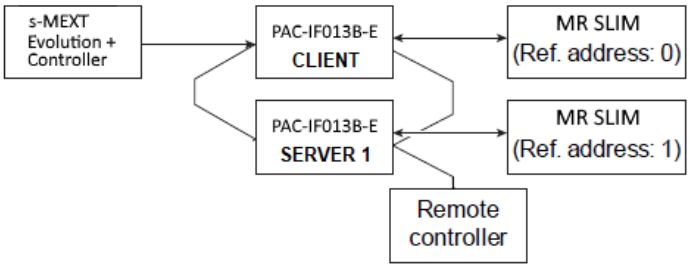


Figure 27-3: *logic diagram for connection to 2 Mr Slim units.*

In this case, the PAC–IF013B–E Client card must be configured for the IMOUC function (Intelligent Multiple Outdoor Unit Control), independently managed by the PAC–IF013B–E, and a PAR-IF013RC-E remote keyboard ("remote controller") must be present.

27.1.5 Cold request generation

The external Mr. Slim unit replaces the chilling circuit not present in the s-MEXT units according to the controller's request for thermoadjustment. This logic provides for a PID-type temperature control, with the following operation:

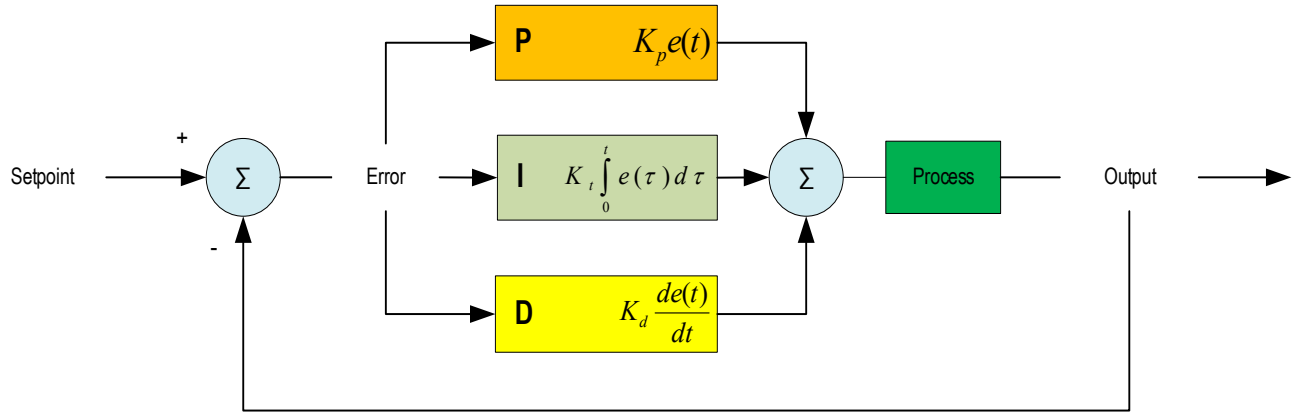


Figure 27-4: *PID control logic operation.*

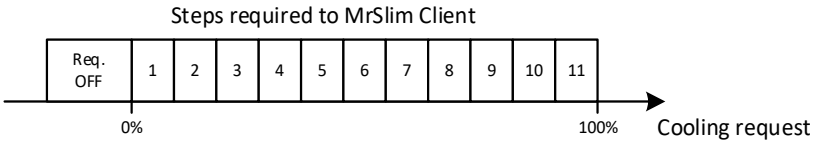
The control variable is the return or delivery temperature and the controlled variable is the adjustment ramp (defined in values from 0 to 100%). The higher the ramp value, the higher the request sent to external units.

It is also possible to enable fan modulation, together with speed change, in order to improve system adjustment.

The cooling capacity request calculated by the s–MEXT unit (0–100%) using the PID regulator, will then be converted into a defined number of request steps and sent to the Client PAC–IF card. The Client PAC-IF will then send the capacity request to any connected Server PAC-IF.

The number of request steps sent to the Client PAC-IF varies depending on whether the minimum step that can be sent to the Mr. Slim external unit by the thermoregulator of the internal unit is 1 or 2 (value set with parameter P28.49). In detail:

- If "minimum step" = 1, then the cooling capacity demand calculated by the s-MEXT unit (0-100%) is converted into 11 demand steps and sent to the Client Mr. Slim.



- If "minimum step" = 2, then the cooling capacity demand calculated by the s-MEXT unit (0-100%) is converted into 11 demand steps, and the step = 1 demands are in turn converted into step = 2 demands before being sent to the Client Mr. Slim.

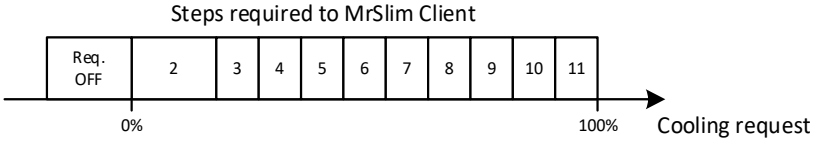


Figure 27-5: Step subdivision logic operation.

During the operation of the PAC-IF card, the passage through the steps is sent in accordance with the following time scales:

- **5 min** if the last step forwarding was equal or lower than 5 (in relation to the already active power)
- **10 min** if the last step forwarding exceeded 5.

The following chart shows the way the above time scales work:

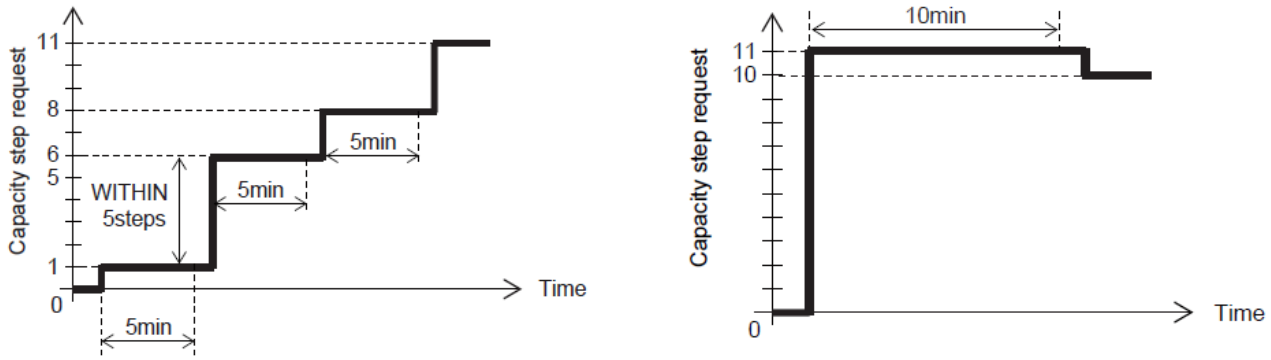


Figure 27-5: *timing logic operation.*

In view of the long wait between two variations of request to the Client PAC-IF, there must be a time delay of **5 seconds** before sending a power variation, to make sure that the value is the actually requested value.
This is to ensure that the value is not subject to transient and sudden changes in demand.

Moreover, a minimum ON time of 3 minutes before switching off will be ensured.
In case of recalling of PAC–IF card step 0 (switch OFF), it will also be necessary to wait a minimum switch off time (maintaining of step 0).

The activation of these time delays will be notified on PGD1 in the following way:

- No delay.
- Short delay (5 minutes).
- Long delay (10 minutes).
- Hot/cold mode change (2 minutes)
- Minimum OFF time.

In addition to the compliance with the above time scales, the switching on of the PAC–IF card will also be subjected to the consent from the s-MEXT unit to carry out the adjustment (example: Unit ON from keypad/KIPLink), and to the absence of any critical/blocking alarms that would cause the switching off of the s-MEXT unit.

27.1.6 Mr. Slim unit alarm management

In the event of a blocking alarm for the Client unit, the entire cooling circuit is blocked and, consequently, the machine will be switched OFF in an alarm condition; on the other hand, if there is a blocking alarm only for the Server 1 unit, the Client will manage the request based on the available resources.

27.1.7 Lack of voltage

The following table summarises the behaviour of the internal unit and the external units in the event of a power failure:

Lack of voltage	
Unit not powered	**Description**
Client	A few minutes after the power failure, in the pGD1 of the s-MEXT unit: 1) The **A840** - PAC-IF Client system alarm - is displayed in the main mask and in the alarms mask for a few seconds. The same alarm is saved in the "Alarm log". 2) Alarm **6840** is displayed in the PAC-IF013B-E info masks (see the PAC-IF013B-E alarms dedicated chapter). 3) The two alarms and the flashing of the red LED in pGD1 reset after a few moments. 4) All of them are then re-proposed approximately every 5 minutes (timing defined internally by Mr. Slim) during the time the event persists. On a functional level, the moment the alarm is displayed: 1) The external unit Mr. Slim Server1 is forced to OFF. 2) The s-MEXT internal unit stays in operation as it was before the fault, without changes or interruptions. 3) After a few minutes from shutdown, the Mr. Slim Server1 unit will switch on again. However, if power has not yet been restored at the Client unit, the alarm will reappear and the unit will switch back OFF. When power to the Client unit is restored: 1) Alarm **A188** - PAC-IF Client offline alarm - is displayed in pGD1 of the s-MEXT unit and the step request to the PAC-IF is reset. 2) After an internal PAC-IF time has elapsed, the alarm will automatically reset. 3) Correct operation of the Mr. Slim units will then be resumed, following the time scales typical of the switching on procedure.
Server1	A few minutes after the power failure, in the pGD1 of the s-MEXT unit: 1) Alarm **A843** - PAC-IF Server1 system alarm - is displayed in the main mask and in the alarms mask for a few seconds. The same alarm is saved in the "Alarm log". 2) Alarm **6840** is displayed in the PAC-IF013B-E info masks (see the PAC-IF013B-E alarms dedicated chapter). 3) The two alarms and the flashing of the red LED in pGD1 reset after a few moments. 4) All of them are then re-proposed approximately every 5 minutes (timing defined internally by Mr. Slim) during the time the event persists. On a functional level, the moment the alarm is displayed: 1) The Mr. Slim Client external unit manages the request based on the available resources. 2) The s-MEXT internal unit stays in operation as it was before the fault, without changes or interruptions. When power to the Server1 unit is restored:

Lack of voltage	
Unit not powered	**Description**
	1) Alarm **A189** - PAC-IF Server1 offline alarm - is displayed in pGD1 of the s-MEXT unit. 2) After an internal PAC-IF time has elapsed, the same will automatically reset. 3) Correct operation of the Mr. Slim units will then be resumed, following the time scales typical of the switching on procedure.
Client + Server1	A few minutes after the power failure, in the pGD1 of the s-MEXT unit: 1) Alarms **A840** - PAC-IF Client system alarm - and **A843** - PAC-IF Server1 system alarm - are displayed in the main mask and in the alarms mask for a few seconds. The same alarms are saved in the "Alarm log". 2) Alarm **6840** is displayed in the PAC-IF013B-E info masks (see the PAC-IF013B-E alarms dedicated chapter). 3) The three alarms and the flashing of the red LED in pGD1 reset after a few moments. 4) All of them are then re-proposed approximately every 5 minutes (timing defined internally by Mr. Slim) during the time the event persists. On a functional level, the moment the alarm is displayed: 1) The s-MEXT internal unit stays in operation as it was before the fault, without changes or interruptions. When power to the Client and Server1 units is restored: 1) Alarms **A188** - PAC-IF Client offline alarm - and **A189** - PAC-IF Server1 offline alarm - are displayed in pGD1 of the s-MEXT unit and the step request to the PAC-IF is reset. 2) After an internal PAC-IF time has elapsed, the same will automatically reset. 3) Correct operation of the Mr. Slim units will then be resumed, following the time scales typical of the switching on procedure.
s-MEXT Main Unit	In the event of a power failure to the main unit, the Client and Server 1 units are also instantly switched OFF. The moment the power supply is re-established, the unit will restart in line with the standard start-up times, and the alarm log of the same will only show a power-up.

27.1.8 Management of dehumidification

In order to be able to dehumidify as soon as consent is given by the logic (see the “Activating dehumidification” section in the “Dehumidification chapter), the request is set to the maximum step.

The flow rate reduction function can be enabled in dehumidification.
If the function is enabled, the fan speed is taken to a fixed value equal to the “Fan Speed when Dehumidif active” speed.

The parameters for enabling the required flow reduction and speed are under **“Fan” menu**, which can be accessed by entering the **“Service” password**.
For the default values, see the parameters table.

27.1.9 Unit start-up with very low external temperature (ExLT start-up function)

s-MEXT units have a function (Extra Low Temperature startuop, ExLT startup) that triggers a different start-up logic for the s-MEXT unit when the outside temperature is below a set value. The purpose is to avoid a situation where, if the external temperature is very low, the Mr. Slim unit will block the start-up attempt due to internal protections. During ExLT start-up, the logic increases the speed of the fans to the maximum (as allowed by the design) and requires the minimum possible step from the external unit.

In detail, the function is as follows:

- when the outside temperature (read by the TH7 probe) is lower than a value defined by parameter P28.51 (for units with 2 Mr. Slims, the minimum value of the two TH7 probes is taken).
- at each new cold request (when the ramp calculated by the PID goes from a value of 0% to a value >0%).
- if the external unit has been switched off for a period of time longer than a value that can be set using parameter P28.53 (for units with 2 Mr. Slims, the shutdown time of the client unit is considered).

The internal fans will run at maximum speed (defined by parameter P10.10) and the external unit (Mr. Slim) will be requested to run at minimum speed, bypassing the demand of the thermoregulator.
The external unit will switch from a 0 step request to a request of 1 or 2 steps, and a **5-minute wait** will be required before sending a step change request. Once the wait has elapsed, the temperatures detected by the TH2 and TH5 probes will begin to be read (for units with 2 Mr. Slims, the lower values between those read by the two TH2 probes and the two TH5 probes are taken), and when the lower temperature between those read by the TH2 and TH5 probes rises above a value defined by parameter P28.52, this transitory situation will end and the fan step and speed will follow the request of the thermoregulator.

The ExLT start-up function can be enabled with parameter P28.50 in the **"Regulation 2" menu,** which can be accessed using the **"Service” password**.
For the default values, see the parameters table.

28 TEMPERATURE SETTINGS

The heating and cooling resources are managed on the basis of the temperature values measured by the return or delivery probe depending on the parameter settings. This temperature is compared with the set value (setpoint), and based on the difference, the devices may activate. The proportional band selects the working area and may assume (as for the setpoints) different heating and cooling values.

The software can be used to manage three temperature adjustment types:

- Purely Proportional adjustment.
- Proportional + Integral adjustment.
- Proportional + Integral + Derivative adjustment (only in units with inverter compressor).

The basic programme setting (default) features Proportional + Integral adjustment with an elevated integral time constant, therefore very close to purely proportional adjustment.



INFORMATION:
All the adjustment diagrams shown in this manual refer to a purely proportional adjustment.

Compared with the diagrams described above, Proportional + Integral adjustment can reduce (with respect to the distance between ambient temperature and setpoint) the activation time of the cooling and heating devices and consequently delay shutdown. This effect is more marked the longer the “permanent off-balance” phenomenon continues, that is, the immobility of the ambient temperature in a different point from the set setpoint.
In any case, the delay/anticipation of the unit enable/disable never goes beyond the limit of the opposite proportional band.

Integral adjustment is always disabled (and therefore pure Proportional adjustment is involved) in three circumstances:

- Setting the two cooling and heating setpoints so as to create a neutral zone (when the two setpoints are different).
  In this case, no adjustment resources must ever be enabled in the temperature zone between the two setpoints. The integral adjustment delay must therefore be disabled.
- Direct expansion unit with just one compressor.
  In this case the integral component has no sense as, even if a permanent off-balance condition is established following activation of the compressor, there is no other resource that can allow the system to leave that condition.
- In case of dehumidification.
  In this case, inhibition prevents the delay from making the operation of the second compressor overlap with the activation of the active heating resources for post-heating.

It is also possible to manually disable the integral component by setting the integral time constant to zero.

28.1 Advanced delivery adjustment



WARNING:
This adjustment can only and exclusively be set with cooling resources. If the machine features humidity controls or uses heating devices, this function must be disabled.

With delivery adjustment it is possible to enable ambient temperature controls.
The thermoregulator can be enabled using parameter P28.47, which defines the type of adjustment, either: **ordinary** (P28.47 = 0) or **advanced** (P28.47 = 1).
The parameter is available in the **“Regulations” menu**, which can be accessed using the **“Service” password**.

With advanced delivery adjustment there is no consent to the regulator, even if the delivery temperature is far from its set point, due to the ambient temperature demand being met, not exceeding the offset for activation of parameter P28.44.
If the ambient temperature increases until it exceeds the offset for activation (there is demand from the ambient), consent is given to the thermoregulator. The regulator starts the cooling resources and the delivery temperature moves to the delivery setpoint.
If the ambient temperature falls below the offset for deactivation as set in parameter P28.45 (the ambient setpoint is fully met), consent is removed from the thermoregulator.

The delivery setpoint (P50.17) and the ambient setpoint (P50.16) parameters are available in the **"Setpoint" menu**.

The activation/deactivation differentials (P28.44 and P28.45) are available in the **"Regulations" menu,** which can be accessed using the **"Service" password**.
For the default values, see the parameters table.

28.2 Advanced return adjustment



WARNING:
This adjustment can only and exclusively be set with cooling resources. If the machine features humidity controls or uses heating devices, this function must be disabled.

With return adjustment, it is possible to enable the delivery temperature controls.
The function can be enabled using parameter P28.47, which defines the type of adjustment, either: **ordinary** (P28.47 = 0) or **advanced** (P28.47 = 1).
The parameter is available in the **"Regulations" menu**, which can be accessed using the **"Service" password**.

The adjustment consists of two stages:

- The PID control of the return temperature.
- Delivery adjustment for actuator control based on the power demand by the room.

The return setpoint (P50.16) and delivery setpoint (P50.17) parameters are available in the **"Setpoint" menu**.

The following table lists the possible thermoregulations that can be set:

Probe	Type of adjustment	Purpose
Return	Ordinary	Adjust the return temperature to a desired setpoint.
Return	Advanced	Adjust the return temperature to a desired setpoint and control the delivery temperature within a set range.
Delivery	Ordinary	Adjust the delivery temperature to a fixed setpoint.
Delivery	Advanced	Adjust the delivery temperature to a fixed setpoint only if the room requires it.

28.3 Management of the limits of the cooling setpoint

The parameter for setting the setpoint according to the selected type of unit is automatically limited to specific, default values.

The set values are given in the table below:

Description	P20.24 (°C)	P20.25 (°C)
unit combined with Mr.Slim condensing unit.	18	32

The parameters P20.24 and P20.25 are in the **"Regulation" menu**, which can be accessed by entering the **"Service" password**.

OBLIGATION:
Although the parameters P20.24 and P20.25 can be accessed with the "Service" password, please contact MEHITS before setting different values.

When the unit is equipped with heating resources (electric heaters) and return adjustment is enabled, the minimum allowable setpoint value is limited by the value of the heating setpoint value.
The chart below illustrates the limitation described above:

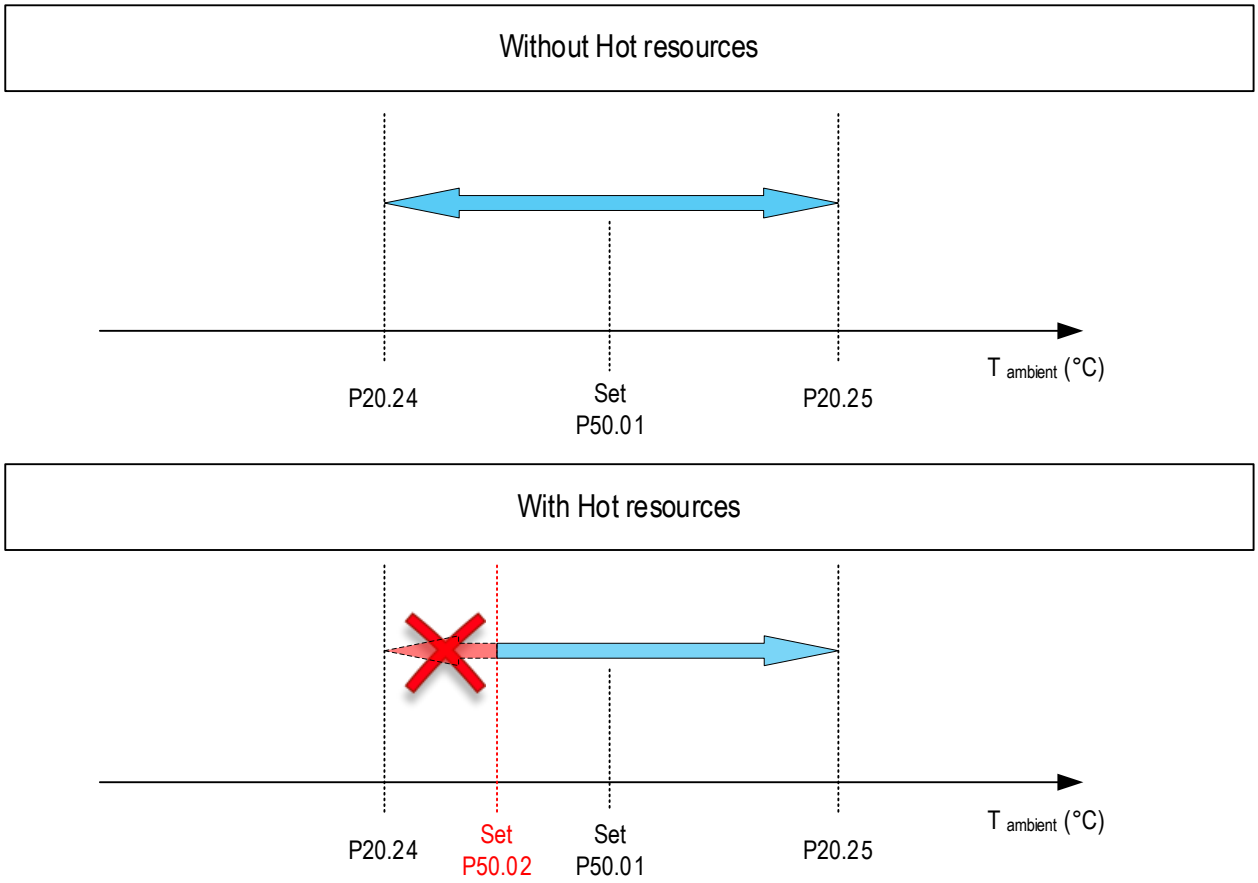


Figure 28-1: *setpoint limit management charts.*

28.4 Temperature probes management

The application can manage one NTC probe on the return, one NTC probe on the delivery, one air return serial T/H probe, one air delivery serial T/H probe and up to 8 remote serial T/H probes at the same time, for a total of 14 probes, for the adjustment of the temperature of the ambient being controlled.

Depending on the number of probes installed, the parameters and the operating status of the configured probes, the unit will calculate the return and delivery temperatures for adjustment purposes.

The various temperatures read by the probes can be seen from the **"Unit" menu**, and so can the values calculated for the return and delivery temperatures.
The latter can also be seen in the Main Loop.

28.4.1 Configuration of the installed probes

The application allows to define how many and which probes are installed in the machine.
Once enabled, they will be available for display only and, depending on the settings, to contribute to the calculation of the return and delivery temperature.

The enabling of the air return serial T/H probe is defined by parameter P27.04 in the **"Optional" menu**.
The enabling of the air delivery serial T/H probe is defined by parameter P27.34 in the **"Optional" Menu**
The number of remote serial T/H probes is defined by parameter P20.82 in the **Regulations Menu**.

28.4.2 Type of temperature calculation

Based on the number of the configured probes, and the ones selected for the calculations, it will be possible to define the type of calculation completed by the application for the return and delivery temperature.
The following 4 calculation modes are available for both:

- Temperature of the first probe enabled.
- Average of the read temperatures.
- Highest temperature among those read.
- Lowest temperature among those read.

Apart from the "First probe enabled", the other 3 modes only consider the actually available probes, meaning those that are not in alarm.

"First probe enabled" mode returns as the temperature resulting from the calculation the first one among the ones selected for use.
The order with which the application considers the probes to be used is as follows:

1. NTC probes. For the return temperature it only considers the return NTC probe; for the delivery probes it only considers the delivery NTC probe.
2. Air return serial T/H probe, only considered for the calculation of the return temperature, or air delivery serial T/H probe, only considered for the calculation of the delivery temperature.
3. Remote serial T/H probes in ascending numerical order.

The probes to be used for the calculation of the return temperature are specified using parameter P28.19 in the **Regulations2 Menu**.
The probes to be used for the calculation of the delivery temperature are specified using parameter P28.18 in the **Regulations2 Menu**.
The type of return temperature calculation is defined by parameter P28.20 in the **Regulations2 Menu**.
The type of delivery temperature calculation is defined by parameter P28.21 in the **Regulations2 Menu**.



WARNING:
As the masks of parameters P28.18 and P28.19 display and allow to specify the probes to use for the calculations based on the settings of parameters P10.50, P10.51, P27.04, P27.34 and P20.82, in order to avoid parameter mistakes, and therefore temperature calculation mistakes, change the probe configuration parameters following this order:
Define the probes installed in the machine using parameters P27.04, P27.34 e P20.82.
Then specify which of these probes to use for the calculations using parameters P28.18 and P28.19.
Lastly excludes the probes not installed in the machine using parameters P10.50, P10.51, P27.04, P27.34 and P20.82.

28.4.3 Selection of the adjustment temperature

It is possible to choose between the following temperatures for the adjustment through parameter P20.01:

- Return air temperature calculated.
- Delivery air temperature calculated.



INFORMATION:
Should all the probes configured for the calculation of the adjustment temperature be in alarm, the application will generate alarm A119 and disable temperature adjustment.

The adjustment with delivery air probe is also allowed if electric heaters are present.
In this case, the cooling devices will adjust based on the delivery temperature and the cooling setpoint P50.01, while the electric heaters and the other heating devices will adjust based on the return temperature and the heating setpoint P50.02.

28.5 Minimum delivery temperature limit

28.5.1 Objectives

Setting a minimum limit to the delivery temperature may be a request justified by the presence, very close to the unit delivery outlet, of devices that are sensitive to relatively low temperatures.
The delivery temperature can only fall excessively if there is a sudden decrease in the temperature of the cold coil (evaporation temperature). This has effects on the room temperature that can only be measured after a certain period of time (the time required for the mixing of the delivery air with the ambient air to decrease the temperature sufficiently for it to be measured by the probe on the unit).

As soon as the delivery temperature falls below the set value, the cooling demand is reset, and subsequently the compressor turns off in the direct expansion unit or the valve in the chilled water unit closes.

28.5.2 Adjustment logic

In specific, the adjustment is as follows: when the value of the delivery temperature is nearer to the setpoint (minimum limit) than the cooling demand, the adjustment automatically switches to the cooling demand of the ramp for the adjustment of the delivery temperature.

For example, if cooling demand is 90%, while the delivery temperature adjustment ramp requires 50%, the cooling demand adapts to the seconds and considers the 50% value.

This function is managed by considering the ramp of the minimum values shown in the following figure:

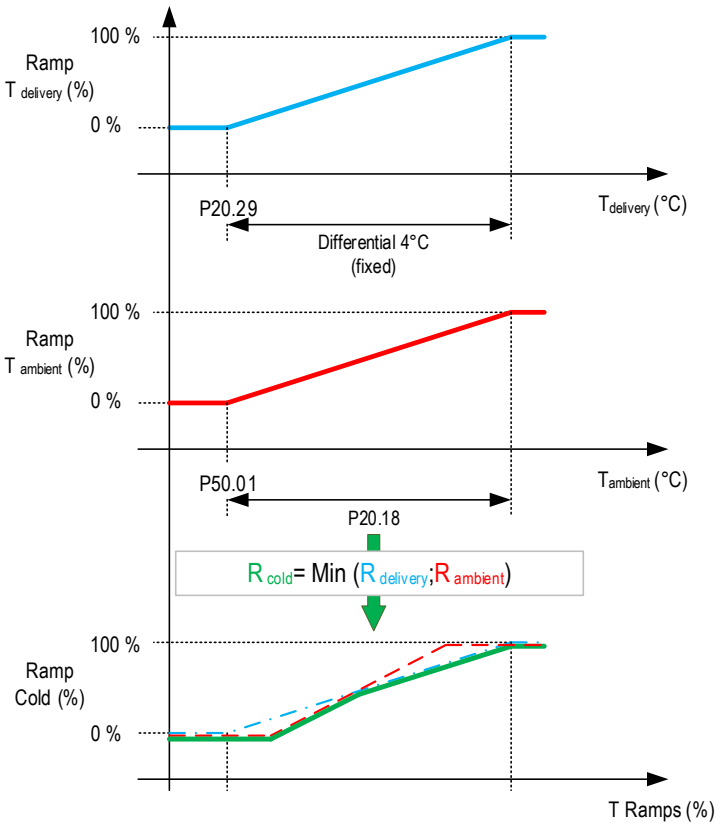


Figure28-2: *Cooling request limitation chart.*

The minimum delivery set parameter is in the **"Regulations" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.
The minimum delivery differential can be set with parameter P28.35, in the "Regulations 2" menu, accessible via the "Service" password.

29 ADJUSTMENT WITH TEMPERATURE PROVIDED BY THE SUPERVISOR



INFORMATION:
To enable the parameter for this adjustment (P30.09) it will be necessary to enable the supervision.

This adjustment is available only for the port BMS1 and compatible only with the Modbus protocol.

The function involves use of the temperature from a Supervisor system. With this function, it is possible to perform an adjustment at average temperature by simply passing the same temperature to all the units concerned (the Supervisor can calculate it by measuring the temperatures of all the connected units, or by simply measuring a temperature).

If the BMS1 channel goes offline (Supervisor disconnected or faulty), adjustment of each unit returns to the relative local temperature measured by the adjustment probe.

The variable for adjustment with the temperature provided by the Supervisor is the following:

Register/Coil Modbus protocol	Protocol addresses: Standard | Trend | Bacnet	Type	Flow	Conversion factor	Unit of measurement	Description
40171	042	I	IN	Value/10	°C	Value of the average calculated by Climapro

For reasons of safety, a second variable indicates whether the Supervisor has succeeded in sending the temperature (or succeeded in calculating the average temperature, if used for this purpose).
In case of error notification, the SW sends the temperature measured by the probe of the unit instead of the variable sent by the Supervisor.

The variable for signalling the error is the following:

Register/Coil Modbus protocol	Protocol addresses: Standard | Trend | Bacnet	Type	Flow	Conversion factor	Unit of measurement	Description
025	024	B	IN	-	-	Average status from Climapro (0: Error | 1: OK)

Is managed as follows:

- 0: Error sending temperature / Error calculating Average.
- 1: Temperature send correctly / Average calculated correctly.



WARNING:
The two variables at the address I[42] and B[24] respectively must be managed by the Supervisor, otherwise they have no meaning and the units adjust according to their own temperature.
The logics for average adjustment, or any other logics, must be managed by the Supervisor, as the SW simply manages the value assigned to the variables that are made available to BMS for the function.

Enabling the function also automatically enables offline management of the alarm BMS1 (A711 - BMS1 bus OFFLINE).

The dedicated mask can be found under the **main loop**.



OBLIGATION:
Enable this function for all the units involved in adjustment.

Refer to the interfacing manual for further info.

The parameters for enabling and configuring the function are in the **"Serial" menu** that can be accessed with the **"User" password**.
For the default values, see the parameters table.

30 HEATING

30.1 Heating resources

The sources available for ambient air heating are the following:

- Electric heaters, managed as simple on/off loads.

INFORMATION:
Activation of the electrical heating elements can force the ventilation request to the maximum construction speed (P10.10) if the parameter P15.26 is enabled.

30.2 On/off heater management

The parameter **(P27.35)** indicating the presence, the number and the activation type of ON/OFF electric heaters is in the **"Optional" menu**, which can be accessed by entering the **"Service" password**.

SINGLE-STAGE management: 1R 1STEP

You can have only one ON/OFF Heater and only one heater step.

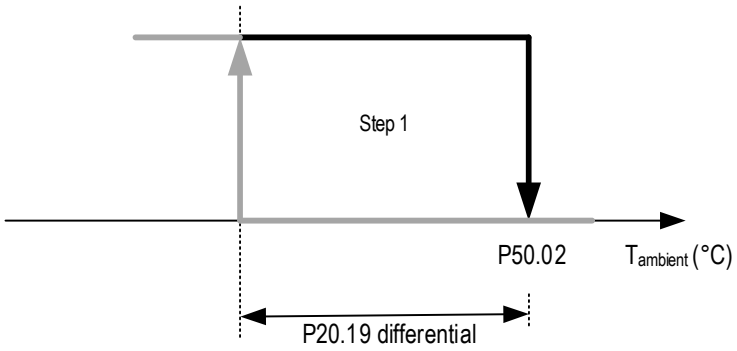


Figure30-1: *Hot resource management chart in the case of a Telephony unit with only 1 heater.*

Or you can have 2 Heaters with equal or different loads.

TWO-STAGE management: 2R 2STEP

TWO-STAGE heater management is generally used for equal heaters.

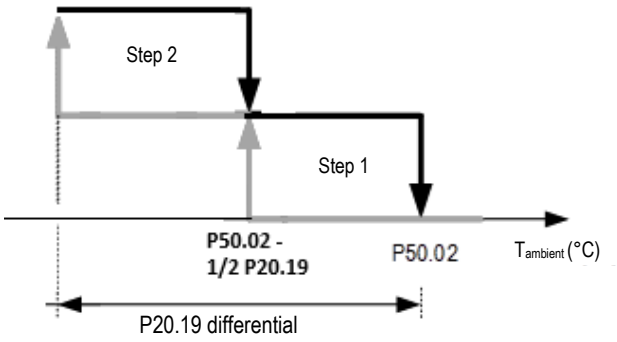


Figure30-2: *Hot resource management chart with 2 Resistors*

The heating Setpoint parameter is in the **"Setpoint" menu**.
The heating differential parameter is in the **"Regulations" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

The association of the heaters with the steps is:

- *Step 1*: heaters 1.
- *Step 2*: heaters 1 + heaters 2.

THREE-STAGE management: 2R 3 STEP

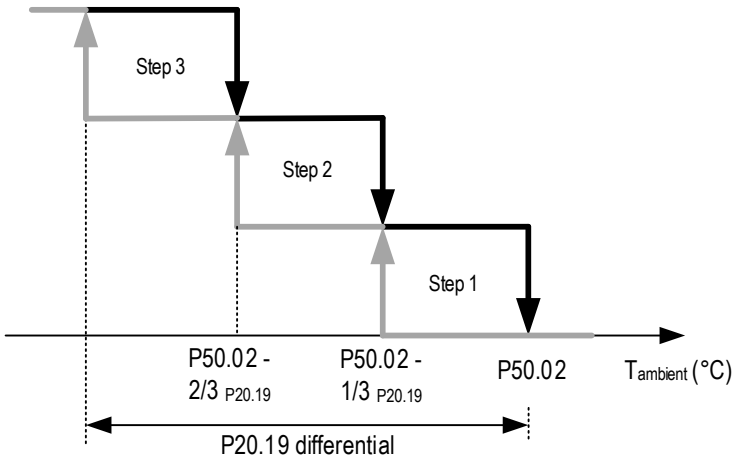


Figure30-3: *Hot resource management chart with 2 Resistors.*

The association of the heaters with the steps reflects the "binary management":

- *Step 1*: heaters 1
- *Step 2*: heaters 2.
- *Step 3*: heaters 1 + heaters 2.

Heater activation is only possible when all the following conditions are met:

- adjustment consent is active;
- the heater overheating alarm is not present (from thermostat);
- the dirty filters signal is not present;
- if present, the valve of the hot water coil is not already open (in case of hot water available with priority 1 or 3);
- the heat gas by-pass is present (for post-heating) and the dehumidifier is active;
- none of the compressors are in cooling mode;
- the operation of the heaters is enabled during Demand Limit (in case of active DL).

30.3 Post-ventilation function for the electric heaters

This function, available for all the units equipped with electric heaters, allows the cooling of the electric heaters when the unit is turned off and the electric heaters are still active.

When the OFF command is given (at the keyboard, by the supervisor, or remotely), the fan continues to run at nominal speed for a period of time set in the parameter (P23.61).

The diagram below illustrates the function described above.

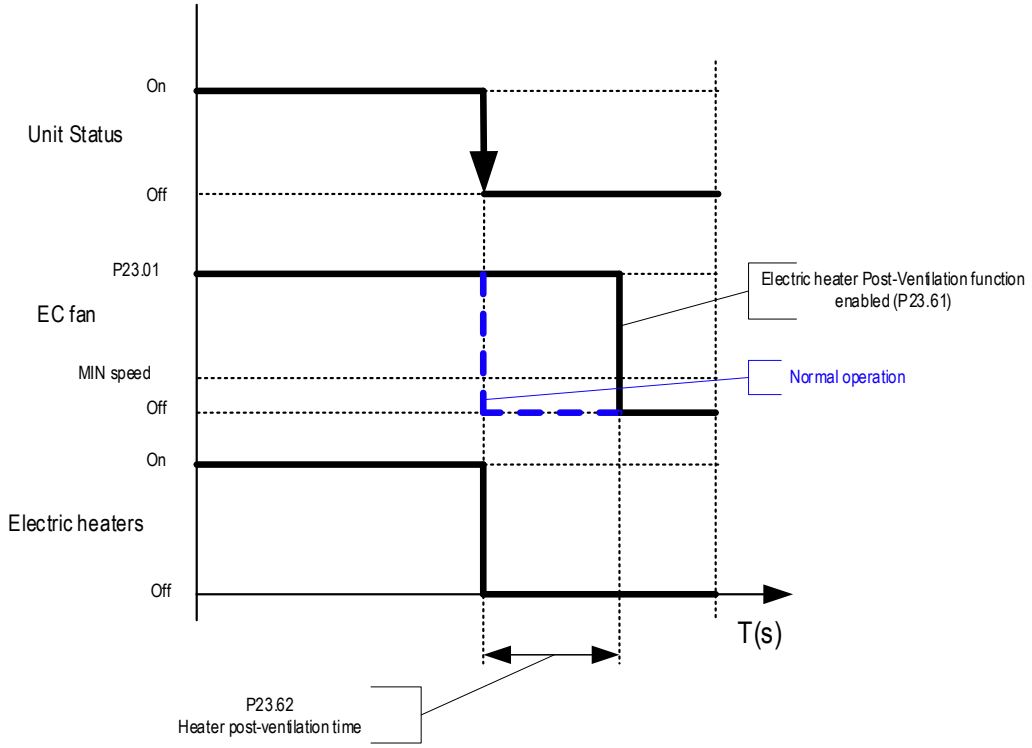


Figure 30-4: *chart showing the Post-Ventilation function for the electric heaters.*

During the post-ventilation cycle, the icons of electric heaters and fans flash on the main mask.

The parameters for enabling and configuring the Post-Ventilation function for the electric heaters are in the **"Fan" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

31 DEHUMIDIFICATION

31.1 Dehumidification start-up

Activating dehumidification happens through an On/Off logic according to the step reported in the following diagram.

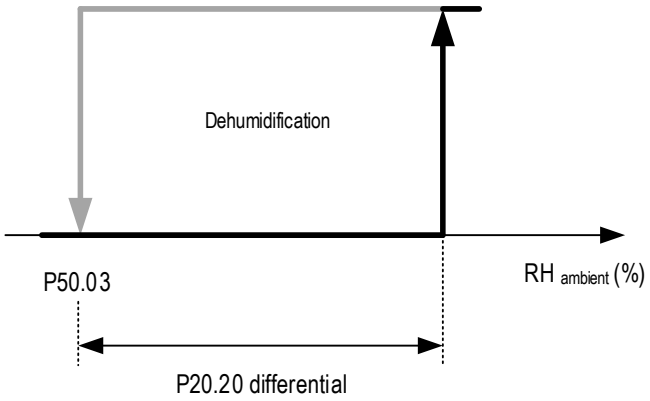


Figure 31-1: *dehumidification start-up graph.*

The dehumidify setting parameter is under the **"setpoint" menu**.
The dehumidify differential parameter is under the **"Regulations" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

The actions following the step activation are enabled:
1. after adjustment consent;
2. if the room humidity probe is present;
3. if the dehumidify adjustment is enabled;
4. if there is no room humidity probe alarm.

The step only activates when at least 6 minutes have expired from the previous activation.

31.2 Dehumidification in s-MEXT units

The s-MEXT unit will forward the dehumidification request 0/1, which will then be converted into maximum cooling capacity request for the PAC-IF board, and sent to the same in accordance with the time scales indicated in the "x-MEXT unit Cooling" subsection.
The ventilation will switch to the percentage dictated by parameter P23.10.

31.3 Dehumidification limits

31.3.1 General considerations

When the dehumidification function is enabled, the reaction of the ambient temperature depends on the heat load present at that moment:
- If the heat load is such as to require maximum cooling power, the decrease in sensible power caused by the activation of the dehumidification function may not allow the present thermal load to be addressed. Therefore, the risk is that the ambient temperature rises excessively.
- If the thermal load does not require cooling resources, activation of dehumidification lowers the temperature below the setpoint.

To avoid losing control of the temperature in these two cases, upper and lower limits must be set, beyond which the dehumidification function is disabled.

31.3.2 Upper limit

In the first case, the following must be observed:

Even in the absence of an upper limit the temperature increase cannot continue indefinitely, as with the increase of the room temperature:

- the sensible capacity of the unit increases and the latent capacity increases;
- the relative humidity decreases (up to three percentage points for each degree).

It should also be considered that the sensible power of the unit is very often higher than that requested by the maximum ambient thermal load.

There is an absolute upper limit managed according to the step shown in the chart below.

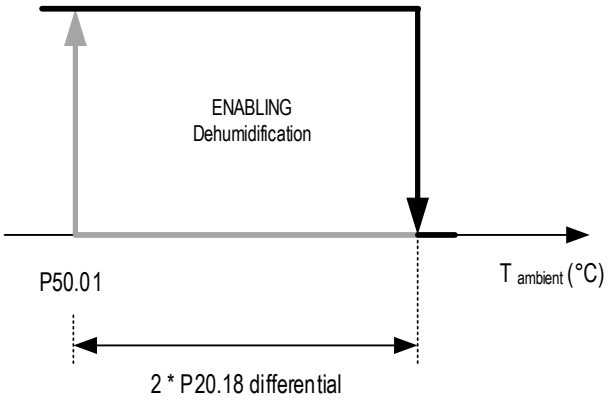


Figure 31-2: *upper dehumidification limit graph.*

Dehumidification is deactivated if room temperature exceeds the limit set out in the following formula:

$$Limite\ superiore = Set\ Freddo\ [P50.01] + (Differenziale\ Freddo\ [P20.18] * 2)$$

The dehumidifier will restore normal operation when the room temperature value falls below the “Cooling setpoint” parameter value.

The cooling Setpoint parameter is in the **“Setpoint” menu**.
The cooling differential parameter is under the **“Regulations” menu**, which can be accessed by entering the **“Service” password**.
For the default values, see the parameters table.

31.3.3 Lower limit

There is also an absolute lower limit for dehumidifier operation; it is managed according to a step whose position on the room temperature axis depends on the presence or absence of resources for post-heating, if any.

If there are **no** heat resources available (heaters), the lower limit step refers to the cooling setpoint, as shown in the following figure:

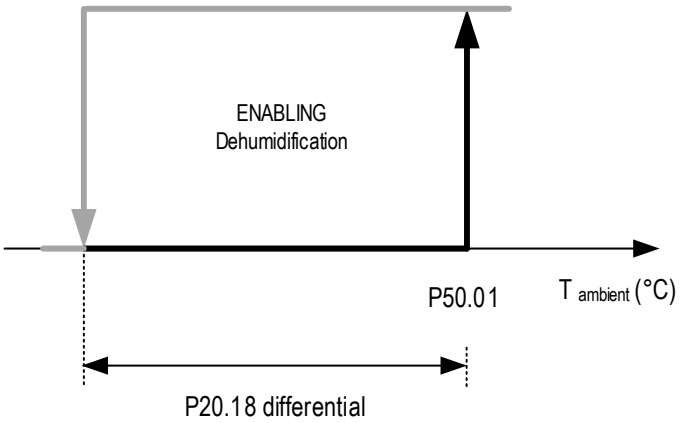


Figure 31-3: *lower dehumidification limit graph for cold only units.*

If there are heating resources available, the lower limit step refers to the heating setpoint, as shown in the following figure:

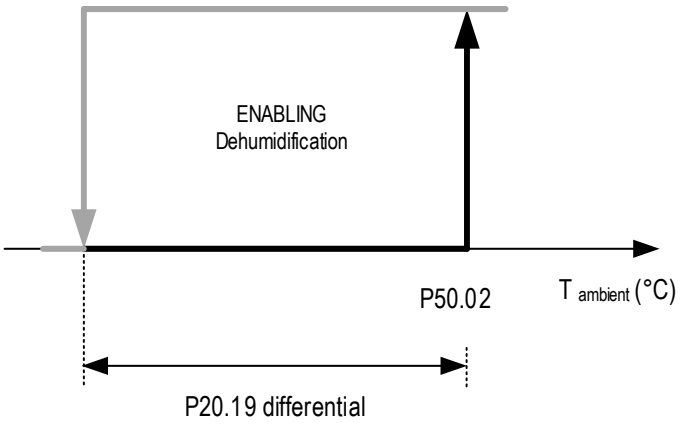


Figure 31-4: *lower dehumidification limit graph for units with heat resources.*

The cooling setpoint and heating setpoint parameters are in the **"Setpoint" menu**.
The heating and cooling differential parameters are in the **"Regulations" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

Disabling occurs after 60 seconds (this value cannot be changed) if heating resources are present (if, therefore, post-heating is active), otherwise it is immediate.

Dehumidification continues as normal when the room temperature value rises above the "cooling setpoint" or "heating setpoint" parameter value.

31.3.4 Combination of the limits

Combined use of the high and low limits is shown in the graph below:

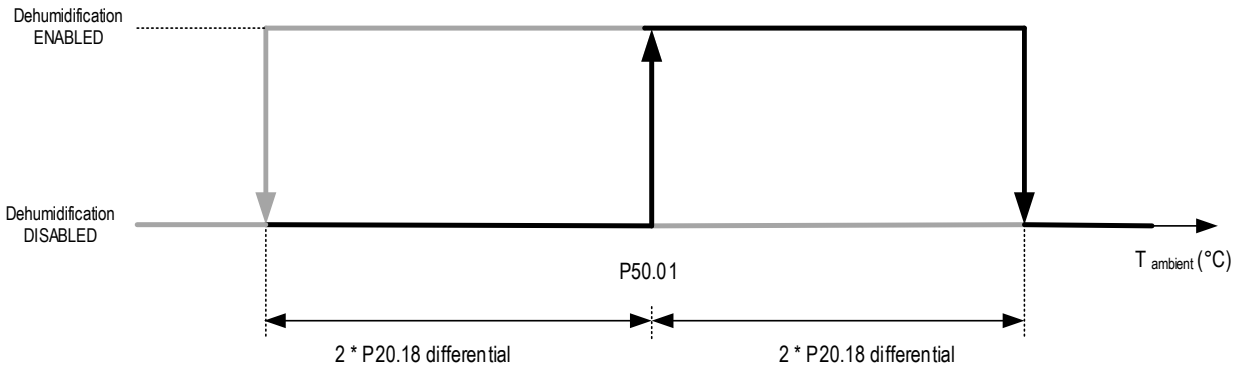


Figure 31-5: *dehumidification temperature limit graph.*

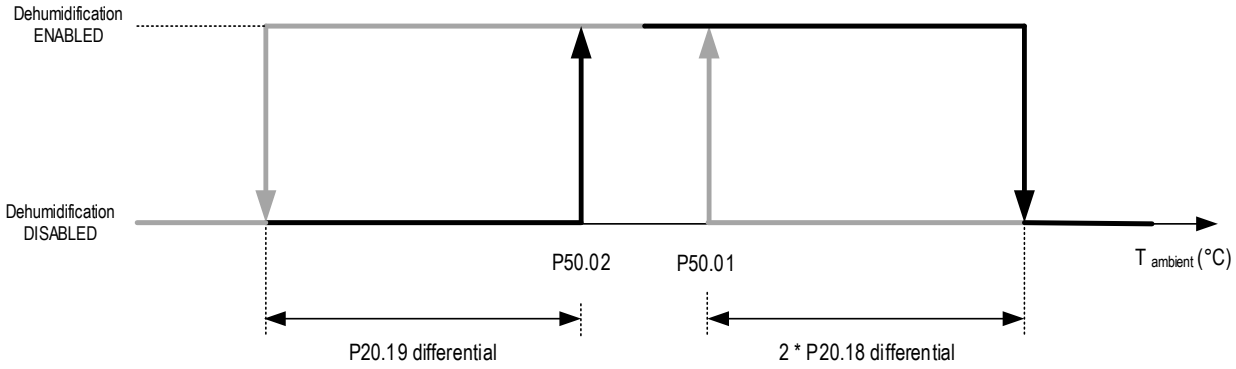


Figure 31-6: *dehumidification temperature limit graph with heating resources.*

31.4 Dehumidification setpoint limit

Limits for the humidification and dehumidification setpoints are set on the controller to ensure correct operation of the humidification and dehumidification functions.

In particular, the dehumidification setpoint should always be:

- Greater than or equal to the Humidification setpoint + P27.29.
- Greater than or equal to the minimum limit for the dehumidification setpoint.

The first condition permits the creation of a dead zone between the dehumidification and humidification logics. This condition is considered only if the unit is configured to work with complete humidity control (with humidification and dehumidification).

The second condition is always present if the unit is configured to control dehumidification and protects the unit by preventing it from working in conditions of low humidity - conditions that could cause the unit to run at low evaporation temperatures.

Operation in the two conditions described above can be summarised with the chart below:

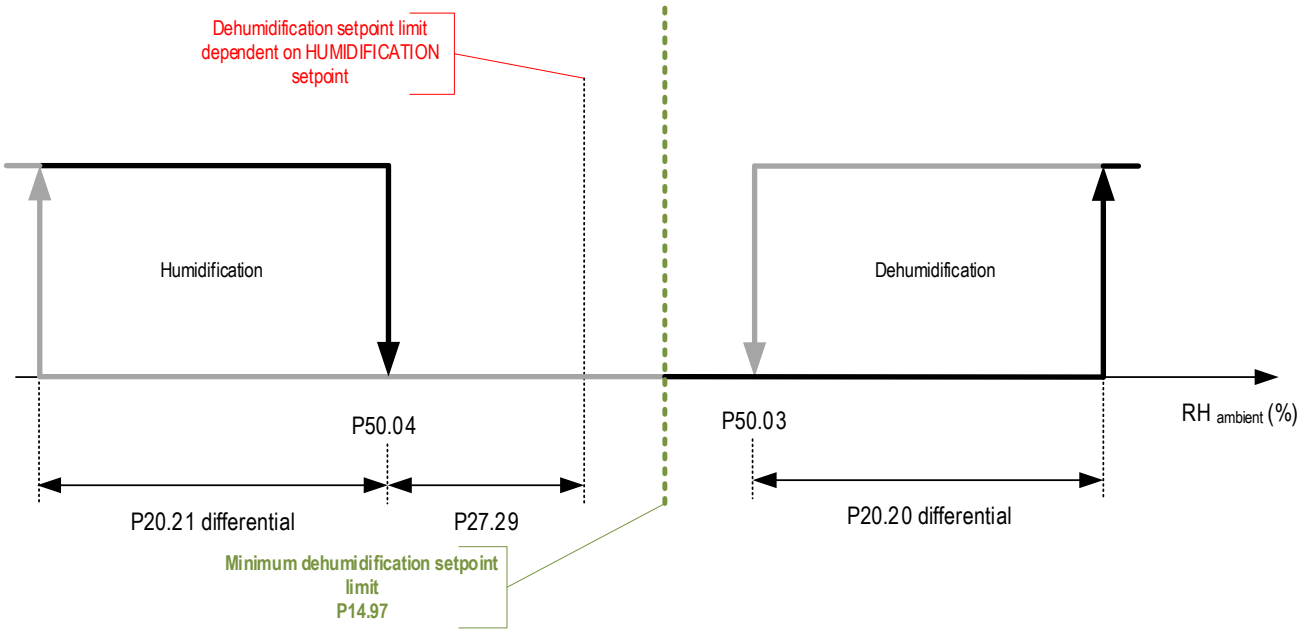


Figure 31-7: *chart of management of the limit of the dehumidification setpoint.*

The Dehumidification and Humidification setting parameters are under the **"Setpoint" menu**.
The Dehumidification and Humidification differential parameters are under the **"Regulations" menu**, which can be accessed by entering the **"Service" password**.
The Dehumidify set point minimum limit parameter is under the **"Safety" menu**, which can be accessed by entering the **"Factory" password**.

OBLIGATION:
All changes made to the minimum limit of the dehumidification setpoint must be authorised by MEHITS who will provide the new minimum value to be set for the single unit in use.

31.5 Post - heating

If heating resources are present it is possible to enable them for post-heating, that is, heating the air after it crosses the cooling coil. This makes it possible to avoid prematurely interrupting the dehumidification function to reach the previously described lower limit.

For this purpose, the activation of the heating resources must not be distributed inside the heating differential band as it would be expected for heating as, in this case, maximum heating power would occur simultaneously with dehumidification disabling.

Therefore, the heating power must be distributed over an ambient temperature band, so that the maximum heating power occurs at a value that is not only higher than the previously indicated lower limit, but also relatively distant from the same. This allows the heat resources, after being enabled, to effectively change the ambient air temperature before it reaches the lower dehumidification limit. This is particularly important in small environments, where the activation of the dehumidification causes a quick decrease of the temperature.

As a result, the post-heating resources are enabled on the first half of the heating band, as shown in the following diagrams.

The heat resources available for post-heating may be:

- electric heaters;

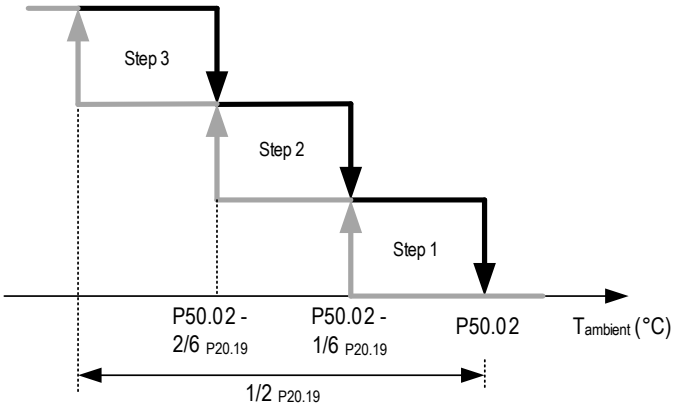


Figure 31-8: *management of post-heating and heating resources with only one actuator available.*

All the resources, if present, can be selected from the **"Config" menu** accessible through the **"Factory" password**.

The following table summarises the methods used to manage the heating resources both in heating and in post-heating:

Heating resources present	Central heating resources	Post-heating resources
Electric heaters only	Electric heaters	Electric heaters

The cooling Setpoint parameter is in the **"Setpoint" menu**.
The cooling differential parameter is under the **"Regulations" menu**, which can be accessed by entering the **"Service" password**.

32 HUMIDIFICATION

32.1 Introduction

The software allows humidification to be performed by the:

- Integrated humidifier on board the unit.

Activating the humidifying device is enabled only when all the following conditions are met:

- Adjustment consent is active.
- There is no humidity probe alarm.
- The humidifier has not been temporarily disabled for maintenance.
- The humidifier is not performing any water loading/unloading activities.
- Humidifying is enabled during Demand Limit (in case of active DL).

32.2 Integrated humidifier

In case of built-in humidifier, disabling may also occur in the following cases:

- following the interruption of communication through the network (RS485 serial), the CPY board stops the KUE unit by opening the contact. It then waits without producing steam and the “Humidifier Offline” alarm is displayed. When communication with the external controller is reinstated, the CPY board automatically meets the demand of the external controller, and the alarm disappears;
- when the driver M2.4 and M2.5 (enable) contact is opened.

32.2.1 Operating principle

The integrated humidifier belongs to the steam humidifier category, and, in particular, consists of an OEM Carel immersed electrode humidifier.
Configure the type of humidifier in use under the **“Optional” menu** that can be accessed with the **“Service” password**.



INFORMATION:
The relationship between the value of the parameter and the set type of cylinder is described in the relevant paragraph of the “Annexes” chapter.

Immersed electrode humidifiers produce steam by heating and boiling the water inside the cylinder. Heat is obtained from the flow of electricity through the water in the cylinder. This procedure is performed by applying voltage to the electrodes (network) immersed in the water.

At the beginning, when the cylinder is new or freshly cleaned, the amount of current depends almost exclusively on the type of feed water. The richer the water is in salts, the more current it conducts, and the sooner it reaches the required steam production level. Over time, the salt deposit in the cylinder increases (as it does not evaporate with the water), contributing towards reaching nominal production.

At full capacity, the required production level is automatically maintained by adjusting the absorbed current and maintaining the water level in the cylinder.
The salt deposits that build up over time progressively exhaust the cylinder. To prevent excessive build-up, the humidifier periodically automatically discharges and replaces a certain amount of water

32.2.2 Vapour production adjustment

The production of vapour by the integrated humidifier constantly depends on the humidification demand according to ambient humidity adjustment.
The programme adjusts humidity according to the reading of the humidity probe, the humidity setpoint and the humidity differential. Using the PID control the humidity level is taken to the “Humidity setpoint” value as quickly as possible. The production of vapour is proportional to the PID outlet demand.

The humidify setting parameter is under the **“Setpoint” menu**.

The range of values that may be set for the setpoint depend on the activation or deactivation of the dehumidify function.
In particular:

- Dehumidification **enabled**: the maximum humidify setpoint is (the dehumidify setpoint - 5) %.
- Dehumidification **disabled**: the maximum humidify setpoint is 99%.

This avoids overlapping of the setpoints and not to have a dead zone on adjustment.

The humidify differential parameter (adjustment band) is under the **“Regulations” menu**, which can be accessed by entering the **”Service” password**.
For the default values, see the parameters table.
The humidifier is enabled/disabled when demand (PID outlet) is 10% greater or lower.
The maximum production of vapour (P0 parameter in the CPY controller module) is set by default to 100%.

To change the maximum vapour adjustment set the relative parameters under the **“Optional” menu**, which can be accessed by entering the **“Service” password**.

32.2.3 Initial pre-wash of the lines and the cylinder

Allows to clean the water lines and cylinder, most importantly after the hydraulic connections and/or replacing the cylinder. The cylinder is filled and emptied 3 times in order to remove any impurities present in the pipes and cylinder.

The lines and the cylinder can be pre-washed at any time, using the screen or using terminal M2.7.

Pre-wash from terminal:

1. Access the **"Manual" menu**, accessible through the **"Service" password** and the **"Manual”** password.
2. Access the **"Humidity" submenu.**
3. Set:
    a. Enable manual operation.
    b. Enable manual operation of internal fan (=”unit in operation”).
4. Enable manual activation of the humidifier.
5. Access the pre-wash start mask, without the serial humidification request. The manual discharge forcing command is in the same mask.

Pre-wash via terminal M2.7:

1. Switch off the CPY board.
2. Short circuit M2.7 on M2.5.
3. Switch on the CPY board.
4. Pre-washing starts.

32.2.4 Reset cylinder hour counter

The reset can be performed in the following way:

1. Access the **"Manual" menu**, accessible through the **"Service" password** and the **"Manual”** password.
2. Access the **"Humidity" submenu.**
3. Enable manual operations on the humidifier.
4. Access the mask used to reset the cylinder operating hours.

The cylinder hour counter must be reset whenever the cylinder is changed in order to allow it to start rapidly.

32.2.5 Dilution drain

The humidifier drains and replaces automatically a part of water contained in the cylinder, in order to prevent excess concentration of salts following the evaporation process.
The drain valve is activated for a set time when internal conductivity exceeds the maximum limit. This situation is indirectly detected by calculating evaporation speed.

The electrodes are not powered during automatic draining to ensure the drained water is not live.

32.2.6 Periodic drain

It is recommended that this function is enabled through parameter P27.16 when using water rich in substances such as humus and slit. The humidifier drains and automatically replaces the water in the cylinder to prevent the accumulation of these substances.
The function requires the humidifier to drain and replace the water in the cylinder after 24h (P27.17) of continuous operation (continuous production of steam).

The parameters for enabling and configuring the function are in the **“Optional” menu**, which can be accessed by entering the **“Service” password**.

32.2.7 Drain due to inactivity

When the function is enabled, using parameter P27.18, the humidifier drains all the water in the cylinder after 3 days (P27.19) of inactivity (not producing steam) to avoid stagnation and hygiene risks.

The parameters for enabling and configuring the function are in the **“Optional” menu**, which can be accessed by entering the **“Service” password**.

32.2.8 Manual discharge

It is also possible to discharge the humidifier water manually. The steps for going this are listed below:

1. Switch unit off
2. Access the **"Manual" menu**, accessible through the **"Service" password** and the **"Manual”** password.
3. Access the **"Humidity" submenu.**
4. Set:
    a. Enable manual operation.
    b. Enable manual operation of internal fan (=”unit in operation”).
5. Enable manual activation of the humidifier.
6. In the following mask, enable “manual discharge”.

Once finished, disable the previously enabled functions and commands.

32.2.9 Alarm management

The terminal displays the active alarms.
The Alarms and Signals relative to humidifier operation are detailed in the controller alarms section.

A crucial point of humidifier operation is excess current control. In fact, whenever voltage is applied to the boiler electrodes after a period of shutdown, short but very intense current peaks can be observed.

In the initial period, if excess current occurs, the algorithm responds immediately by removing voltage from the electrodes and performing a forced discharge for approximately 5/10 seconds, depending on whether a current peak occurs in the first 20 seconds after switch on, or after.
In particular, if there is no current peak in the first 20 seconds the next peak generates a 5 second discharge.
If there is a current peak during the first 20 seconds, a 10 second discharge is performed after the first peak and a 30 second discharge is performed if a subsequent peak occurs.
If the excess current continues, the humidifier is disabled, a forced discharge is performed and a high current alarm is signalled.

The conductivity of the supply water is measured by the conductivity meter when the inlet solenoid valve is opened (max. measurable value 2000 µS/cm). The low conductivity alarm is generated by the EP-Low production alarm of the CPY board.

The humidifier detects the lack of inlet water (or low flow) and checks whether the current at the electrodes increases after the inlet solenoid valve is opened. In this case the controller displays the no water alarm.

The controller sets parameters b1 and b2 of the CPY board to 0 and parameter b5 (conductivity pre-alarm threshold) to 1500 µS/cm and b6 (conductivity alarm threshold) to 2000 µS/cm. For details, consult the CPY board manual.

32.2.10 Maintenance of the integrated humidifier

As well as the periodic inspections of the vapour distributor and the water inlet and outlet solenoid valves, maintenance of these appliances normally involves cleaning or replacing the vapour production cylinder. This is generally required for the following reasons:

- formation of solid lime scale deposits on the surface of the electrodes due to the temporary hardness of the water. As they are dielectric, these deposits prevent current from passing through;
- the storage boiler filling with large pieces of solid waste that occupy the space until they prevent the inlet and outlet water from flowing correctly;
- patina of non-conductive substances covering the electrodes due to the foam forming as a result of the possible presence of surface-active agents in the water;
- corrosion of the metal electrodes. This phenomenon occurs when the water, rich in aggressive chemicals such as chlorine, is excessively concentrated due to outflow difficulties or insufficient drainage (softened water is rich in chlorides and should therefore be avoided). In the more significant cases electrical discharges can take place between the electrodes which amplify the phenomenon as they produce metal particles that dissolve in the water and make it even more conductive;
- possible damage to the boiler walls due to the current that allows the solid deposits to pass and create a short circuit between the electrodes.

To prevent this, the suitability of the water used in the humidifier should always be verified.

In any case, the storage boiler must be inspected once a month and maintenance performed when necessary. Depending on the conditions of the water, maintenance must be performed after a maximum of 4000 operating hours. After this time, the “Life Timer Expired” alarm appears.

Maintenance can involve one of the following two operations:

- replacing the storage boiler;
- cleaning the storage boiler.

Although it is common practice to remove the power from the humidifier and then perform maintenance, the programme still provides the pre-washing and forced draining procedures under the **“Manual” menu** as described above.

33 TEMPERATURE AND HUMIDITY MEASUREMENT

33.1 Return air T+H probe

This probe is available for all the units that require humidity control and allows the enabling of the following functions:

- dehumidification;
- humidification.

It also allows the reading of the humidity, in addition to temperature, and can be used for the calculation of the return temperature.

The probe is connected via Modbus to the Fieldbus port defined using the controller parameters at address 128.

33.2 Delivery air T+H probe

This probe is available for all the units.
It allows the reading of the humidity, in addition to temperature, and can be used for the calculation of the delivery temperature.
The probe is connected via Modbus to the Fieldbus port of the pCO5+ with the address 134.

33.3 Remote T+H probes

These probes are available for all the units and the remote T+H probe 1 allows to enable the following function:

- Return setpoint offset.

It also allows the reading of the remote temperatures and humidities and can be used for the calculation of both the return and the delivery temperature.

Probe 1 is connected via Modbus to the Fieldbus port defined using the controller parameters at address 129.
Probe 2 is connected via Modbus to the Fieldbus port defined using the controller parameters at address 130.
Probe 3 is connected via Modbus to the Fieldbus port defined using the controller parameters at address 131.
Probe 4 is connected via Modbus to the Fieldbus port defined using the controller parameters at address 132.

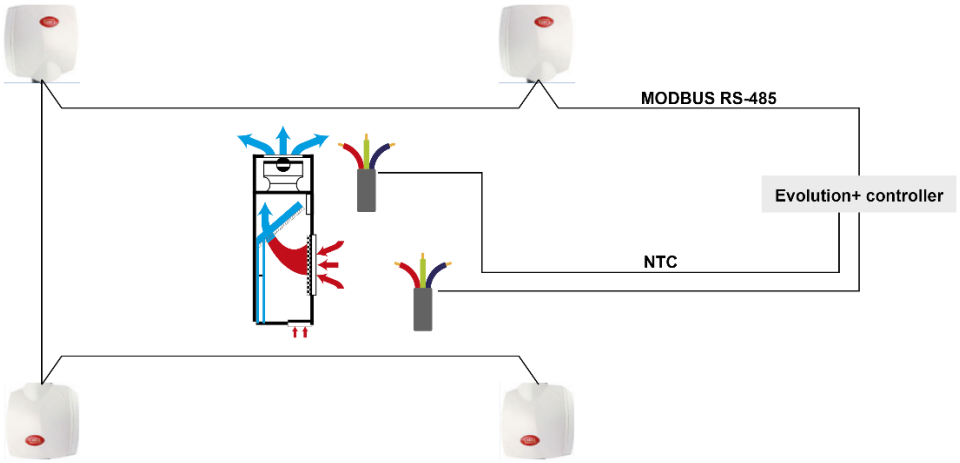


Figure33-1: *Example connection of 4 remote T+H probes on unit equipped with 2 on-board NTC probes.*

33.4 External T+H Probe

This probe is available for all the units.
It also allows the reading of the external temperature and humidity.
The probe is connected via Modbus to the Fieldbus port defined using the controller parameters at address 133.

34 INTERNAL AIR FAN MANAGEMENT

34.1 Introduction

- The unit mounts EC radial evaporating fans (Standard Low Head model).

34.2 Standard operation

Under normal operation conditions, the fan is operated always at the same speed, corresponding to the speed set by means of the user interface during testing.

34.3 Modulation operation

Under normal operating conditions, the fan modulates based on the demand to the inverter compressor.

In case of S-MEXT units, the ventilation is modulated based on the adjustment step requested to the Client PAC-IF013B-E.

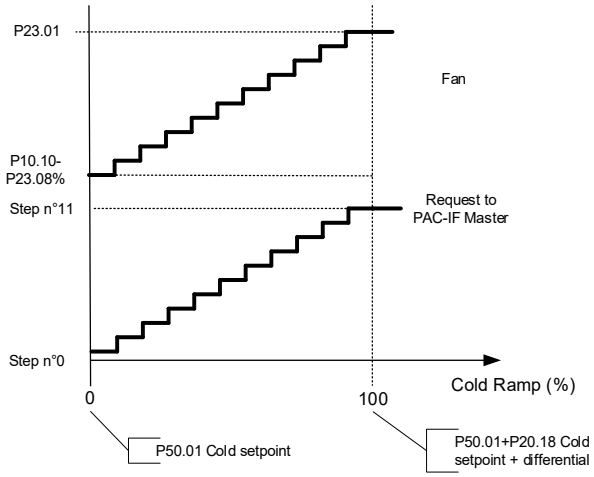


Figure34-1: *representation of modulating fan management.*

34.4 Economy Function

There is also a function, called Economy, which consists of lowering the fan speed (at a given value) when no adjustment devices are active (basically, when compressors, heaters, humidifiers, etc. are not active).
The economy function is only possible if the modulation function is not active.
The goal is to obtain energy savings, which may be remarkable if the device thermal load in the environment is arranged in different proportions depending on varying time bands.

This function can be enabled in the fan configuration masks at the user terminal.

34.5 Automatic speed adjustment function

This function allows to automatically adjust EC radial fan speed. It may follow two logics:

- Constant flow rate adjustment.
- Constant residual ΔP adjustment.

For these two logics, a differential pressure transducer is used and positioned so as to detect the pressure value used for regulation.

This function cannot be used when the fan is modulating to the compressor speed.

34.5.1 Constant flow rate adjustment

The pressure transducer detects the pressure difference on the fan outlet, as shown in the figure below:

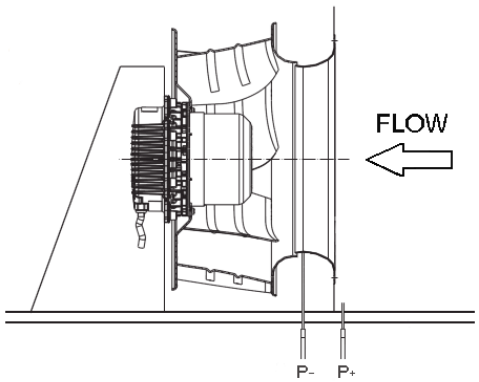


Figure34-2: *pressure socket positioning chart for differential pressure probe.*

After being acquired, the ΔP value is compared with the setpoint derived from the following function:

$$\Delta P = \frac{Q_{set}^{\ 2}}{k^2} = \frac{\left(Q_t / n\right)^2}{k^2}$$

Where:

- Q_{set} = desired calculated flow setpoint;
- Q_t = flow setpoint entered using the keypad;
- n = number of fans;
- k = characteristic value of the measurement inlet (varies according to the diameter).

The k value can be defined using the parameter in the **"Functions" menu**, which can be accessed using the **"Factory" password**.

The controller adjusts following the chart below:

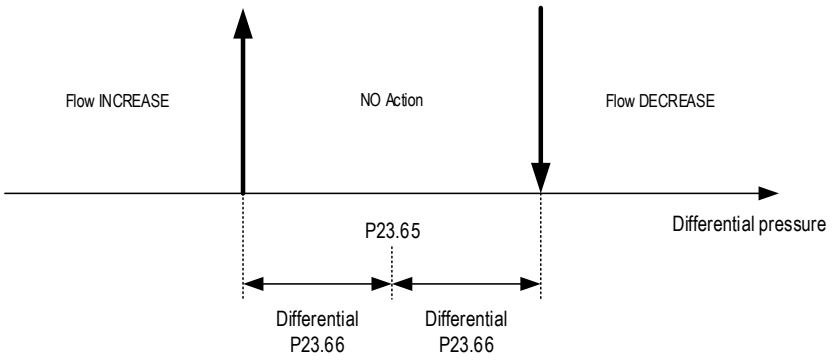


Figure34-3: *fan adjustment chart.*

The "Diff. press set" is derived from the above formula.
When configuring the unit the project flow value and the number of fans in the unit are entered.
The programme also requires that the fan flow is never less than the set rated flow.

The parameters entry mask is under the **"Fan" menu** accessible through the **"Service" password**.
The purpose of adjustment is to keep the flow rate constant when there is an increase in the loss of load, with reference to the graph below.

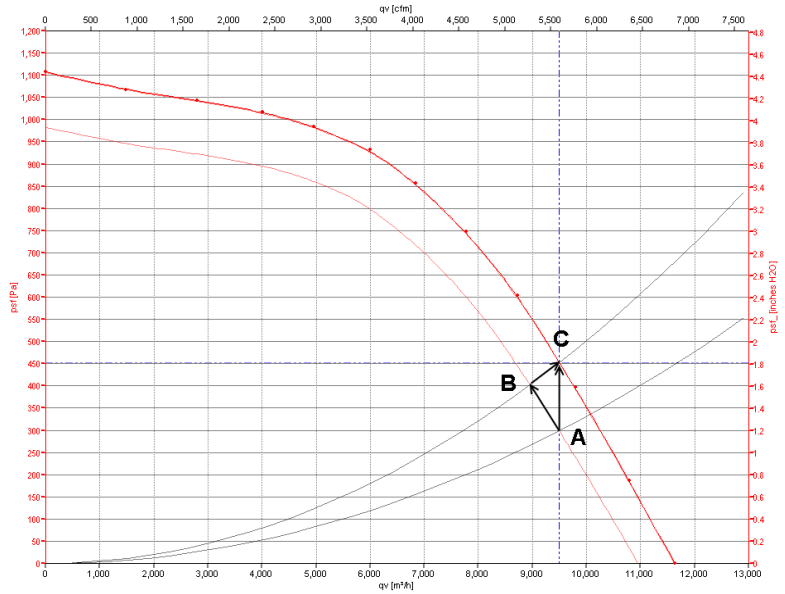


Figure34-4: *fan operation curve graph with constant flow logic.*

Starting from nominal work point (A), the increase in load loss (due, for instance, to clogged filters) from P1 and P2 causes a shift in the fan work point along the curve towards point B, with the ensuing capacity decrease. The logic tries to restore the work point by increasing the speed and move back towards work point C.

To avoid continuous speed adjustment without giving the fan time to adjust to the new speed value and consequently not allowing the pressure transducer to measure the new differential pressure value, there is a “scan time” that sets the time between the two fan signal variations.

The EC control parameters are under the **“Fan” menu**, accessible through the **“Service” password**.
The default values are the following:

- scan time = 60 sec;
- step voltage = 10 (corresponds to a 0.1V_{DC} signal increase / decrease).
- hyst flow = 25
- Fan modulation delay = 120 sec.

The Fan modulation delay is used whenever the unit is started in order to allow the fan to start. Once this time elapses, speed adjustment begins.
This parameter is in the **“Regulations” menu** that can be accessed with the **“Service” password**.

34.5.2 Constant residual ΔP adjustment

The pressure transducer is positioned according to the following figure:

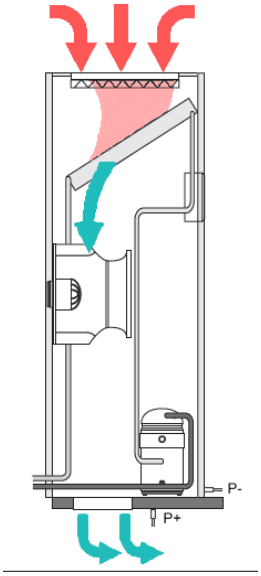


Figure34-5: *pressure socket positioning chart for differential pressure probe.*

The controller adjusts following the chart below:

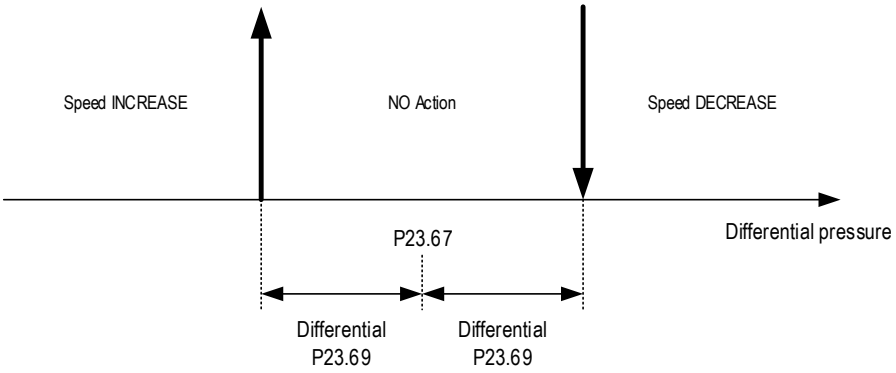


Figure34-6: *fan adjustment chart.*

During the configuration of the unit the design differential pressure value is entered.
The programme also requires the fan to have a minimum flow rate below which the controller cannot go. This value is also entered during unit configuration.

The parameters entry mask is under the **"Fan" menu** accessible through the **"Service" password**.

INFORMATION:
The minimum fan speed cannot fall below the value of P23.01 - P23.68%.

The purpose of adjustment is to keep the residual ΔP constant when there is an increase in the counter–pressure, with reference to the following graph:

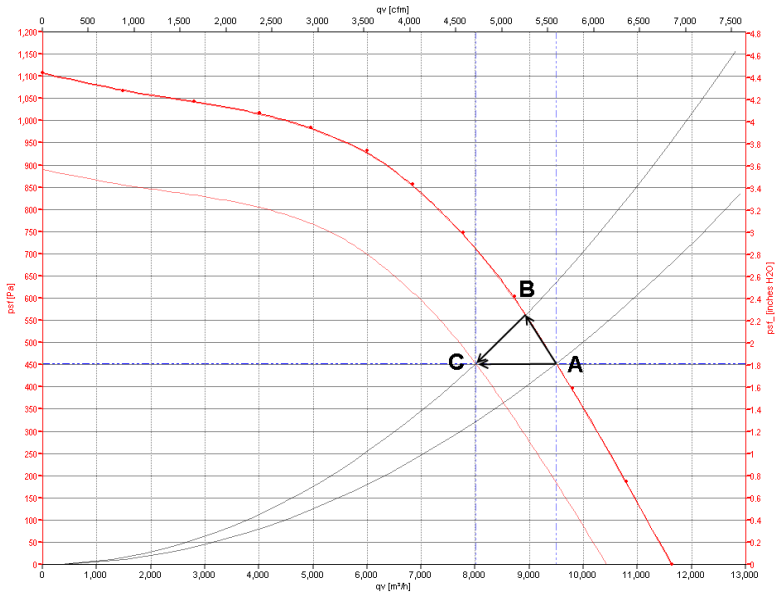


Figure34-7: *fan operation curve graph with constant head logic.*

Starting from nominal work point (A), the increase in counter-pressure (due, for instance to a damper closing) causes a shift in the fan work point along the curve towards point B, with the ensuing increase in pressure. The logic tries to restore the work point by decreasing the speed and move back towards work point C.

To avoid continuous speed adjustment without giving the fan time to adjust to the new speed value and consequently not allowing the pressure transducer to measure the new differential pressure value, there is a "scan time" that sets the time between the two fan signal variations.

The EC control parameters are under the **"Fan" menu**, accessible through the **"Service" password**.
The default values are the following:

- scan time = 60 sec;
- step voltage = 10 (corresponds to a $0.1V_{DC}$ signal increase / decrease).
- hyst flow = 25
- Fan modulation delay = 120 sec.

The "Fan modulation delay" is used whenever the unit is started in order to allow the fan to start. Once this time elapses, speed adjustment begins.
This parameter is in the **"Regulations" menu** that can be accessed with the **"Service" password**.

34.5.3 Calibrating the constant flow function

To allow greater adjustment precision a calibration mask has been included, which evaluates the difference between the real value read by the transducer and the value to reach.

Calibration is performed during production testing using the following mask:

```
Fan - Const. flow/DP
Flow Sensor Adjustment

Real value    0000
Current value 0000
Set flow      0000

Store K?      N
```

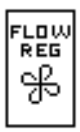
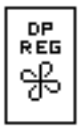
Once the value of "k" has been memorised correct, operation can be resumed.

This mask is under the **"Fan" menu** accessible through the **Service" password** and only appears during the function configuration phase.

As soon as the offset is memorised, the mask is automatically hidden.
To re-calibrate, disable the function and enable it again.

34.5.4 Operation data display

From the main mask it is possible to open the following masks that display the operation data of the two functions:

Constant FlowRate Reg.  Target 02500m3/h Current 02500m3/h Status On Target	Display of operation of the **Constant Capacity function**. *Visible if the function is enabled.*
Constant DeltaP Regul.  Target 0010Pa Current 0010Pa Status On Target	Display of operation of the **Constant Head function**. *Visible if the function is enabled.*

34.6 Command from supervisor

This function allows direct control of the internal fans of the unit by sending a ventilation command to the controller from the supervision system.

The fan speed is changed according to the last command received. This means that if communication fails between the controller and the supervisor, the fans will continue to run at the same speed of the command received before communication failure.

The protection functions of the fans, like the Safety Reduction Load, always take priority and switch off the unit when one or more blocking alarms are activated.

34.7 Management of internal fan alarms

In units with EC fans connected via digital output, the alarm contacts of the fans are connected directly to the digital contact for the Lack of Air Flow blocking alarm (A101).

In units with EC fans connected via Modbus, the events of each fan are managed independently. The generation of the blocking alarm depends on the number of fans on the unit:

Number of fans (P11.02)	Number of fans in alarm for BOOST phase	Number of fans in alarm for machine ALARM A103
1	-	1
2	1	2
3	1-2	3
4	1-2	3-4
5	1-2-3	4-5
6	1-2-3	4-5-6
7	1-2-3-4	5-6-7
8	1-2-3-4	5-6-7-8

During the "BOOST phase" (indicated by the MAX icon on the main screen) the fan command is forced to the maximum design value (P10.10), in order to compensate for the decrease in flow rate. This “BOOST phase” is not carried out if constant flow rate or constant working head control (P11.01 = 1 or P11.01 = 2) is enabled, as the controller itself will calculate the ventilation command so as to guarantee a constant flow rate or working head.

INFORMATION:
To get feedback on the status of the 0-10V fans it is necessary to enable parameter P23.71, which requires I/O expansions to which the fan thermal protections are connected to the digital inputs.

Fan signalling events (Generic Warning) are always non-blocking.

34.8 Operation in case of voltage hole



OBLIGATION:
To use this function it is necessary that the unit adopts EC fans controlled by Modbus and that the controller is equipped with Ultracap.

This function allows the EC fans to be kept active in the event of a voltage hole in the controller (24V) equipped with Ultracap. At this stage, the fan speed will depend on the last value read by the Modbus communication before the voltage hole.
This function can activated only if:

- there is no alarm on the fan;
- there is no blockage by PAC-IF;
- there is no unit shutdown request;
- there is no power supply (24V) to the controller.

The parameter for enabling function is under the **"Functions" menu** accessible through the **"Factory" password**.

34.9 Fan adjustment based on temperature (former fan special function 02)

The function can be activated via parameter P20.83 and again via the same it is possible to adjust the fan speed according to:

- return temperature;
- delivery temperature;
- temperature differential (return temperature - delivery temperature).

34.9.1 Fan adjustment based on return temperature

This special function permits modulation of the EC fan using the return air (ambient air) probe as the adjustment temperature, at the same time adjusting the actuators using the delivery air temperature.

In this way, the temperature probe on the delivery line adjusts the actuators in relation to the setpoint for normal adjustment (P50.01) and the differential (P20.18), in order to keep the delivery temperature constant.
The ambient air temperature probe adjusts the rotation speed of the fan based on a setpoint (P50.14) and differential (P20.84), gradually decreasing the number of revolutions of the fan with the decrease of the thermal load of the room.

As long as the return air temperature is higher or equal to the corresponding setpoint, the number of fan revolutions is the maximum that can be reached by the fan model installed on the unit.
As soon as such temperature falls below the setpoint, the fans start reducing their number of revolutions, until they reach the minimum set using parameter P23.05. This behaviour may be disabled by parameter P23.72.

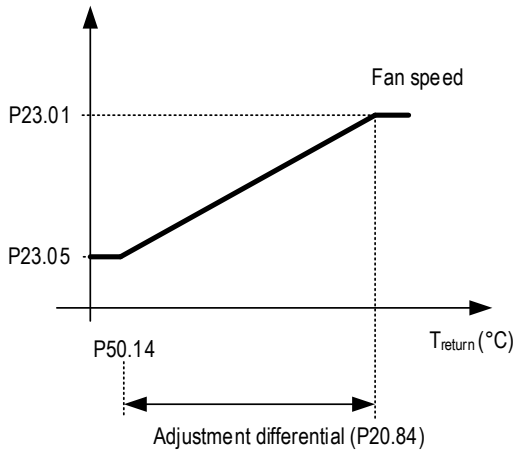


Figure34-8: *fan modulation as a function of the recovery temperature*

34.9.2 Fan adjustment based on delivery temperature

This special function permits modulation of the EC fan using the delivery air probe as the adjustment temperature, at the same time adjusting the actuators using the delivery air temperature.

In this way, the temperature probe on the delivery line adjusts the actuators in relation to the setpoint for normal adjustment (P50.01) and the differential (P20.18), in order to keep the delivery temperature constant.
The delivery temperature probe also adjusts the rotation speed of the fan based on a setpoint (P50.14) and differential (P20.84), gradually decreasing the number of revolutions of the fan with the decrease of the thermal load of the room.

As long as the delivery air temperature is higher or equal to the corresponding setpoint, the number of fan revolutions is the maximum that can be reached by the fan model installed on the unit.
As soon as such temperature falls below the setpoint, the fans start reducing their number of revolutions, until they reach the minimum set using parameter P23.05. This behaviour may be disabled by parameter P23.72.

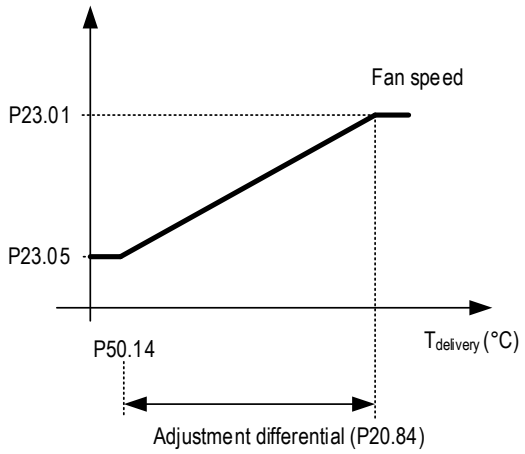


Figure34-9: *fan modulation as a function of supply temperature.*

34.9.3 Fan adjustment based on temperature differential

This special function permits modulation of the EC fan using the temperature differential (return temperature – delivery temperature) as the adjustment temperature, at the same time adjusting the actuators using the delivery air temperature.

In this way, the temperature probe on the delivery line adjusts the actuators in relation to the setpoint for normal adjustment (P50.01) and the differential (P20.18), in order to keep the delivery temperature constant.
The temperature differential adjusts the rotation speed of the fan based on a setpoint (P50.14) and differential (P20.84), gradually decreasing the number of revolutions of the fan with the decrease of the thermal load of the room.

As long as the temperature difference between the return and the delivery temperature is equal or higher than the corresponding setpoint, the number of fan revolutions is the maximum that can be reached by the fan model installed on the unit.
As soon as such temperature falls below the setpoint, the fans start reducing their number of revolutions, until they reach the minimum set using parameter P23.05. This behaviour may be disabled by parameter P23.72.

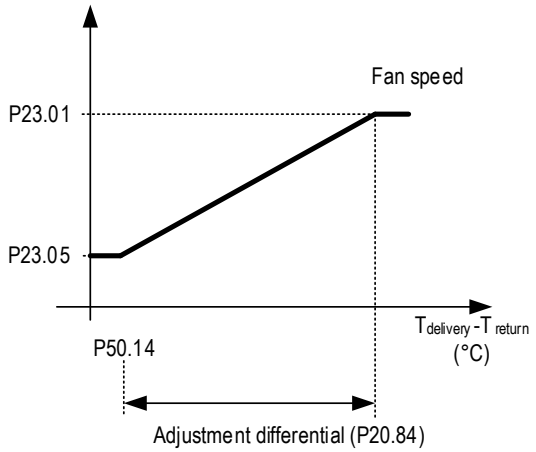


Figure34-10: *fan modulation as a function of the difference between recovery temperature and delivery temperature*

The following diagram shows possible use of the function by a plant:

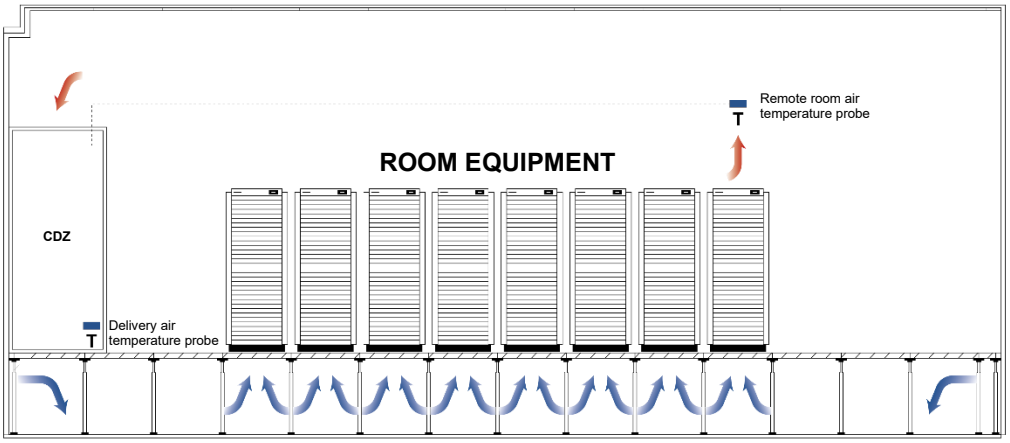


Figure34-11: *diagram possible use of the fan adjustment function according to the restart temperature.*



WARNING:
In case of an alarm signalling a faulty or disconnected return temperature probe, the speed of the fans is set at the speed defined in the parameter P23.01.

The parameter for enabling the fan adjustment based on return temperature function and the differential adjustment parameter can be found under the **"Regulations" menu**, which can be accessed by entering the **"Service" password**. The Set point parameter is under the **"Setpoint" menu**.

34.10 Direct ventilation control through 0-5 V signal or BMS (special function 03 fan)

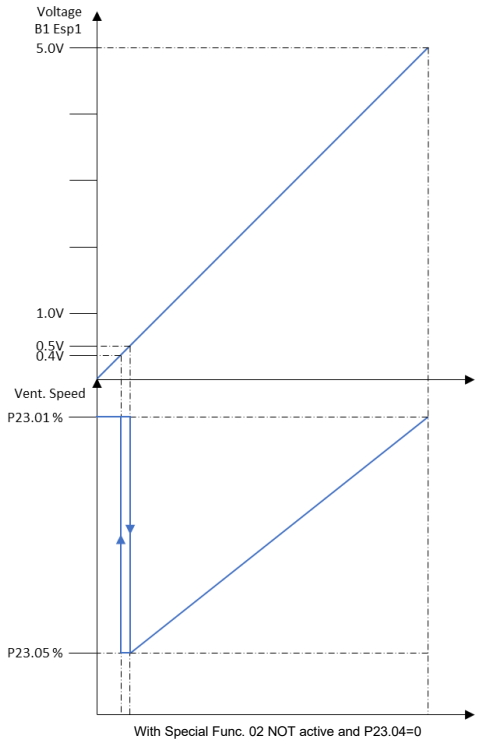
The new special function 03 is used to control the fan through an external signal (analogue or through BMS).
When this function or special function 02 are enabled, special function 01 is disabled. When special function 01 is enabled, special functions 02 and 03 are disabled.
Special function 03 can be configured to read a signal as follows:

- Analogue 0-5 V though analogue input B1 of expansion 1;
- Value through BMS.

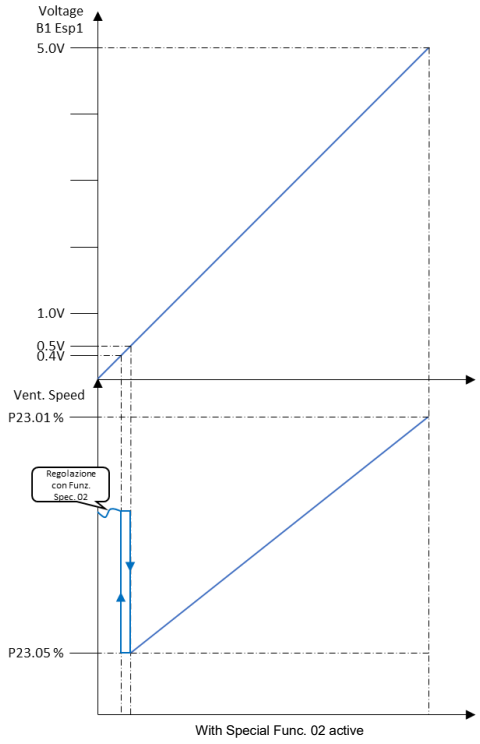
34.10.1 Operation with 0-5 V signal

When this mode is set, expansion 1 will be enabled and the signal must be connected to input B1. The fan will vary its speed proportionally between the minimum and maximum set through the fan operating parameters.
The system also checks that the signal does not fall below 0.5 V or that expansion 1 does not go OFFLINE. If this happens and the machine is in operation:

- If special function 02 is active, then the speed adjustment is handled by the same.
- If special function 02 is not active, then the adjustment of the fan speed will follow the configuration of menu parameter P23.04 (0= Standard, 1= Modulating).



With Special Func. 02 NOT active and P23.04=0

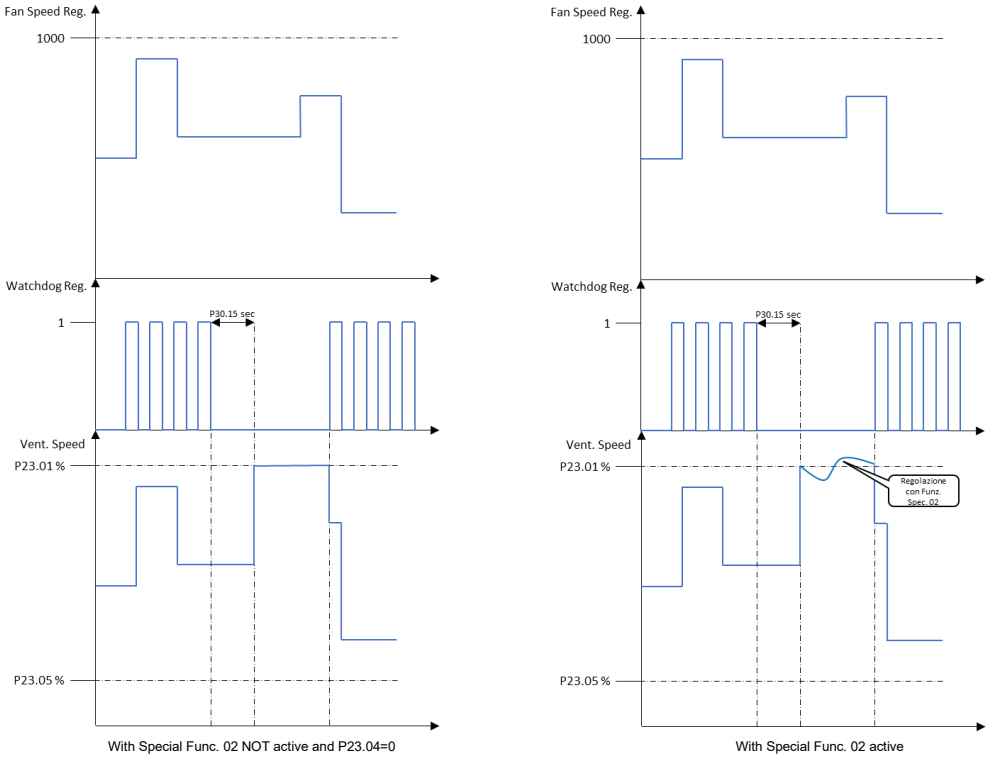


With Special Func. 02 active

With Special Func. 02 NOT active and P23.04=1 (Modulating), when the signal is less than 0.4V, it does not go to the P23.01 value but follows the compressor thermoregulation.

The main menu has a mask that summarised the operation of the fan based on the received 0-5 V external signal.

34.10.2 Operation with value through BMS



With this mode, the fan speed will be controlled by a 0-1000 signal sent through BMS and will vary between the minimum and maximum set through the fan operating parameters.
If BMS Watchdog is enabled (P30.01), the system checks that the device connected through BMS continues to communicate with the unit's on board controller by writing "1" on the dedicated Modbus register (Modbus bool 66).
If communication is interrupted and the variable in the dedicated Modbus Watchdog register remains fixed at 0 for a given time indicated by a parameter (P22.56), there will be two outcomes:

- If special function 02 is active, then the speed adjustment is handled by the same.
- If special function 02 is not active, then the adjustment of the fan speed will follow the configuration of menu parameter P23.04 (0= Standard, 1= Modulating).

34.10.3 Room Temperature Control during fan operation with BMS ("Emergency Mode" function)

The "Emergency mode" function is used to force the fan speed to the maximum permitted value when the room temperature exceeds a threshold defined by a parameter.
~~The "function enable" and "emergency threshold" parameters are entered in the superuser menu~~.
The Emergency Mode parameters, to enable the function and to define the Emergency threshold, are:

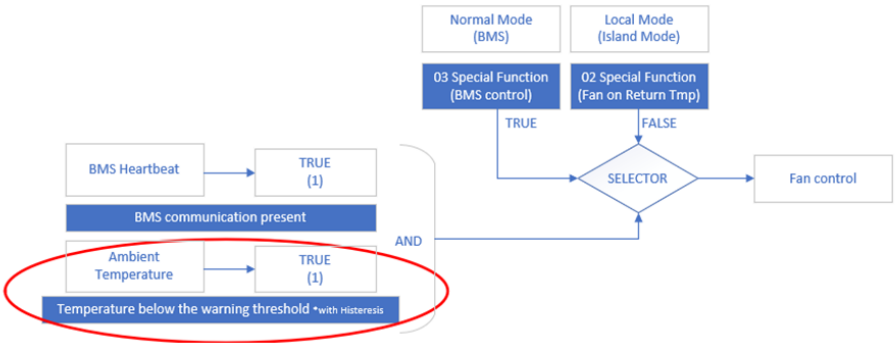
- P28.55
- P28.56
- P28.57

To have the "Emergency Mode" function, special function 03 (P28.36) is used with special function 02 enabled (P20.83R=Return T.).

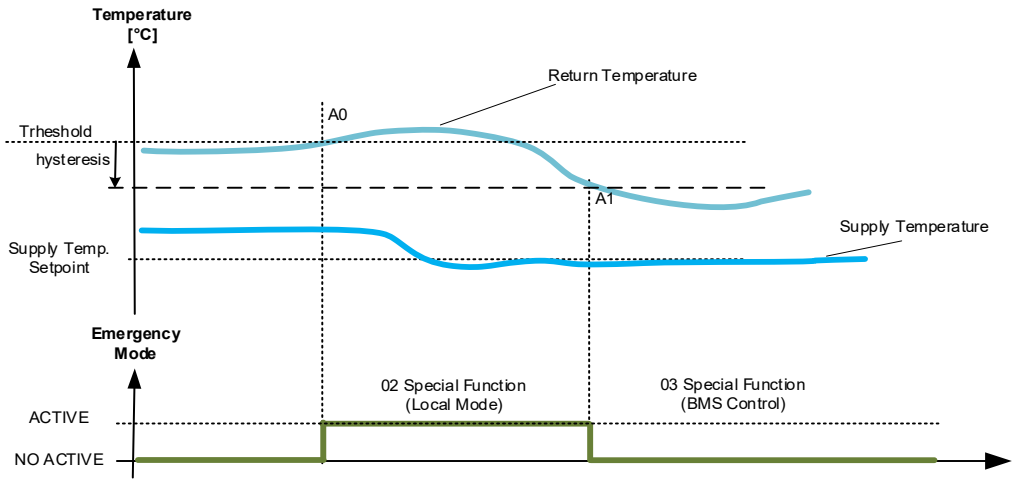
"Normal Mode" is defined as fan operation depending on the BMS signal or on the 0-5 Volt input on expansion (cases of spec. function 03).
"Local Mode" is defined as fan operation depending on the return temperature (spec. function 02).

When the "Emergency mode" function is enabled, it switches from "Normal Mode" fan operation to "Local Mode" fan speed control if both conditions of BMS communication present (or valid 0-5 Volt signal) and recovery temperature below a given emergency threshold are not met.

The fan control returns to "Normal Mode" if the recovery temperature falls below the given emergency temperature threshold with differential.



Operating diagram.



Unit adjustment diagram.

34.11 Ventilation forced when turned OFF by the User

It is possible to force ventilation when the machine is turned off by the User or LAN, bringing the ventilation to a value defined in the parameter.
The function can be enabled via parameter P23.95 and the forcing command is parameter P23.96.

35 DAMPER MANAGEMENT

35.1 Delivery damper

The management of the delivery damper involves a delay in switching on the fan that depends on the enablement of the parameter P27.36. If this parameter is not active, the fan will wait for a time defined by the parameter P27.12 before starting. If P27.36 is active, the fan will wait for feedback from the damper.

The parameter for configuring the presence of the damper feedback is in the **"Optional" menu**, accessible through the **"Service" password**.

Damper feedback is not available for PRECISE/MTR2 units

Moreover, once the damper is enabled, a delay is inserted in order to allow the air flow alarm to be detected. This delay is set according to the contents of the datasheet of the damper motor.

The parameter for configuring the damper opening time is under the **“Optional” menu**, which can be accessed by entering the **“Service” password**.
For the default values, see the parameters table.

35.2 Direct Free-cooling damper

The Direct Free-cooling damper is available for all unit types, with the exception of units with Indirect Free-cooling.

It remains shut if:

- the fan is off (unit OFF);
- direct Free-cooling is not enabled;
- the compressor or the valve are active and temporary operation is not enabled.

In all the other cases, the opening is defined by the following adjustment charts, showing the modulating (analogue, on the left) and on/off (digital, on the right) adjustments.

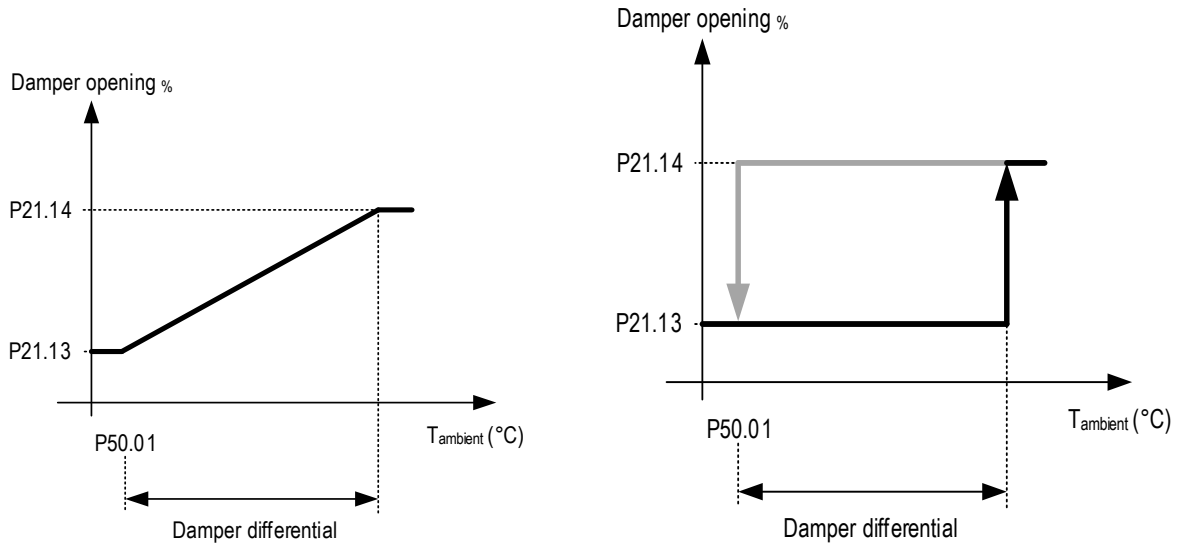


Figure 35-1: *graph of Direct Free-Cooling damper adjustment.*

Damper modulation, if enabled, is integral proportional.

The parameter for the selection of the type of damper adjustment (P20.10) can be found under the **“Free-cooling” menu**, which can be accessed by entering the **“Service” password**.

The parameters for configuring the Free-cooling function are in the **“Free-cooling” menu**, which can be accessed by entering the **“Service” password**.

The setpoint and adjustment band values for all the types of units are in the **"Free-cooling" menu**, which can be accessed by entering the **"Service"** password.
For the default values, see the parameters table.

35.3 Temperature adjustment in units with Direct Freecooling

INFORMATION:
Parameter P21.21 is set as follows, depending on the type of unit:
- P21.21 = 33% when the unit has two or three compressors, or is a CW unit with Series adjustment.
- P21.21 = 50% when the unit has one compressor, or is a CW unit with Standard or Modulating adjustment.

The parameter can in any case be set using the "Free-cooling" menu, which can be accessed by entering the "Service" password.

The temperature adjustment charts are modified as shown in the following paragraphs.

35.3.1 s-MEXT unit regulation with Direct Free-cooling

INFORMATION:
Parameter P21.21 is set as follows, depending on the type of unit:
- P21.21 = 33% if the unit has two connected Mr Slim units.
- P21.21 = 50% if the unit only has one connected Mr. Slim unit.

The parameter can in any case be set using the "Freecooling" menu, which can be accessed by entering the "Service" password.

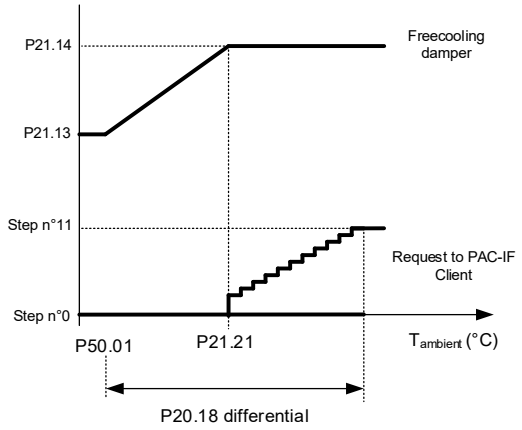


Figure 35-2: *resource activation chart for Split Type unit with 1 Mr. Slim and Free-cooling damper.*

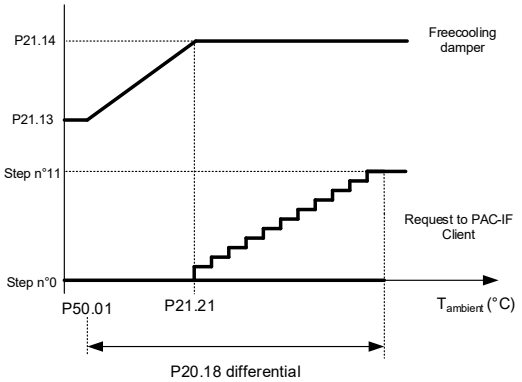


Figure 35-3: *resource activation chart for Split Type unit with 2 Mr. Slim and Free-cooling damper.*

35.4 Enable Direct Free-cooling

Enabling Direct Free-cooling is allowed by the difference between external and room temperatures. In case the difference between room and external temperature should be higher than a set value, the Free-cooling adjustment is enabled.

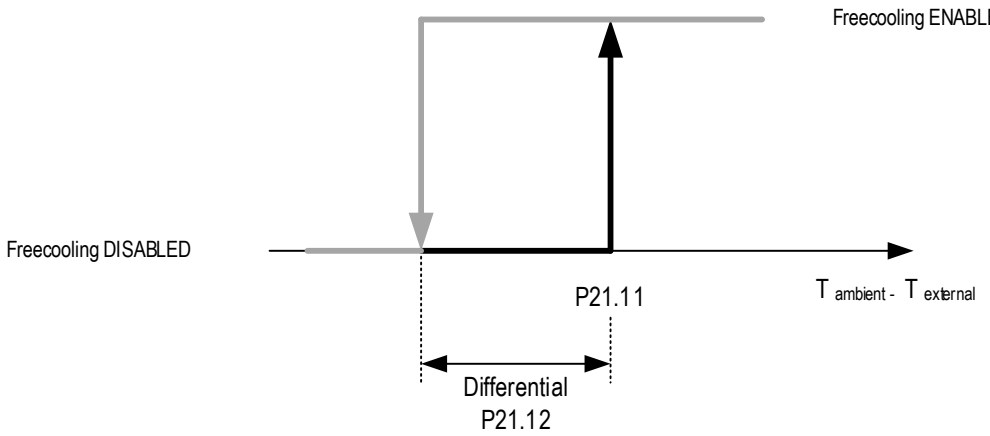


Figure 35-4: *Direct Free-cooling enable chart.*

In the **"Free-cooling" menu**, accessible through the **"Service" password**, the operator can set the setpoint and the band for enabling Free-cooling.
The FC and FC band parameter settings are under the **"Free-cooling" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

35.5 Maximum humidity limit

If the high humidity limitation function is enabled, the controller behaves according to the following chart.

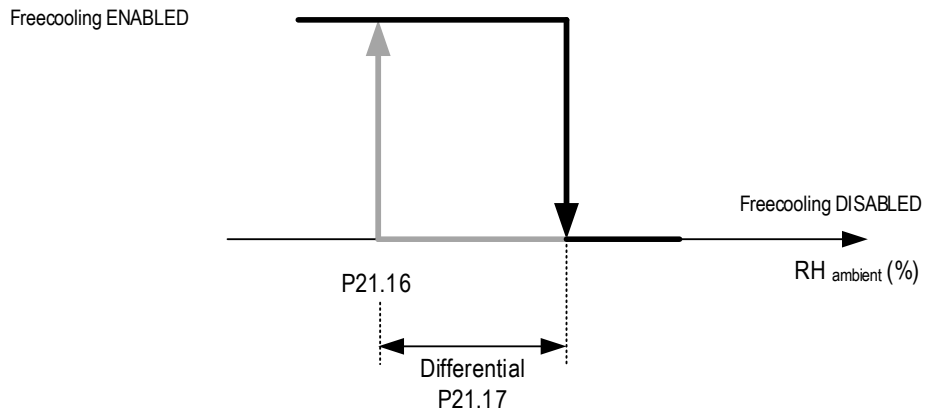


Figure 35-5: *high humidity direct Free-cooling limitation chart.*

The parameters for this function are under the **"Free-cooling" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

35.6 Direct Free-cooling operation during cooling resource alarm

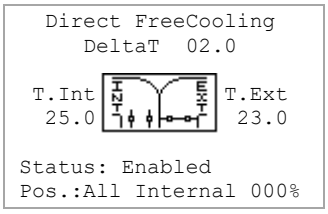
With Direct Free-cooling enabled, it is possible to select whether or not to enable Free-cooling operation when a cooling resource alarm appears (compressor or water flow alarm).

In particular, the parameter can be used to select compressor alarm setpoint and band in case of direct expansion resource, or water flow (no water) alarm condition for water–cooled units.

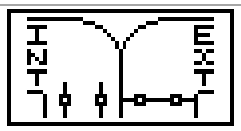
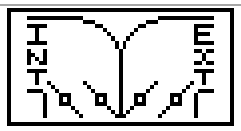
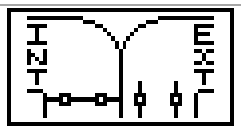
The setpoint and adjustment band values for all the types of units are in the **"Free-cooling" menu**, which can be accessed by entering the **"Service"** password.
For the default values, see the parameters table.

35.7 Direct Free-cooling status display mask

Free-cooling status can be viewed at any time.
From the main mask, by pressing the **[DOWN]** key, the operator opens the following mask:



The image graphically describes the Free-cooling damper position:

	Damper in internal air **only** position.
	Damper in the internal and external air mixing position.
	Damper in external air **only** position.

The following values are also reported:

- external air temperature (left of the image);
- external air temperature (right of the image);
- temperature difference (centre, above the image);
- Free-cooling status (enabled or disabled);
- damper position (internal only, mixing, external only) and the opening percentage.

36 CONTROL AND PROTECTION FUNCTIONS

36.1.1 Control upon start-up of the unit

The fan start-up logic controls the operation of the valve, forcing its maximum opening and then waiting for a time P13.03 for the auxiliary contact to change status.

If the valve does not respond, the logic performs a maximum of three controls at one minute intervals before signalling the alarm. After activation of the alarm, a control is performed every hour to check for failure of the valve.
If the contact changes status at any time during this procedure, the logic enables regular control.

The alarm is reset automatically and at any time when the valve starts to run again.

The parameters to be set are in the **"Settings" menu** which can be accessed using the **"Service" password**.

WARNING:
If the cold water valve logic inversion function has been enabled (P10.23 = Y), the function is the same, but the steps are reversed. Therefore, the valve is first forced to maximum opening and then to close.

The diagrams below illustrate operation as described above:

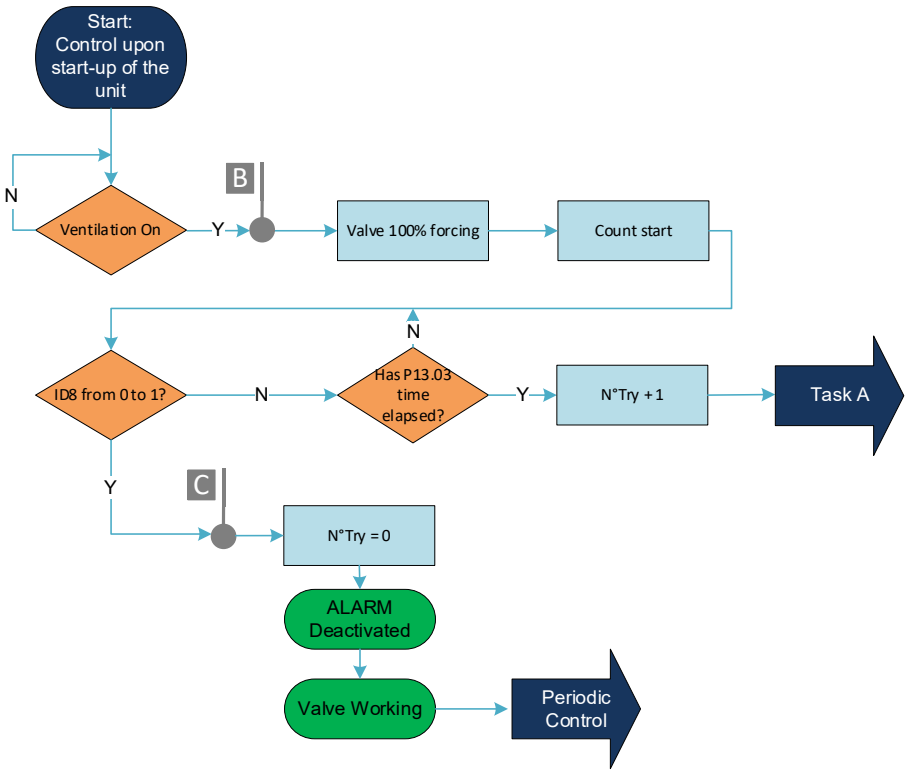


Figure 36-1: *flowchart: control upon start-up of the unit.*

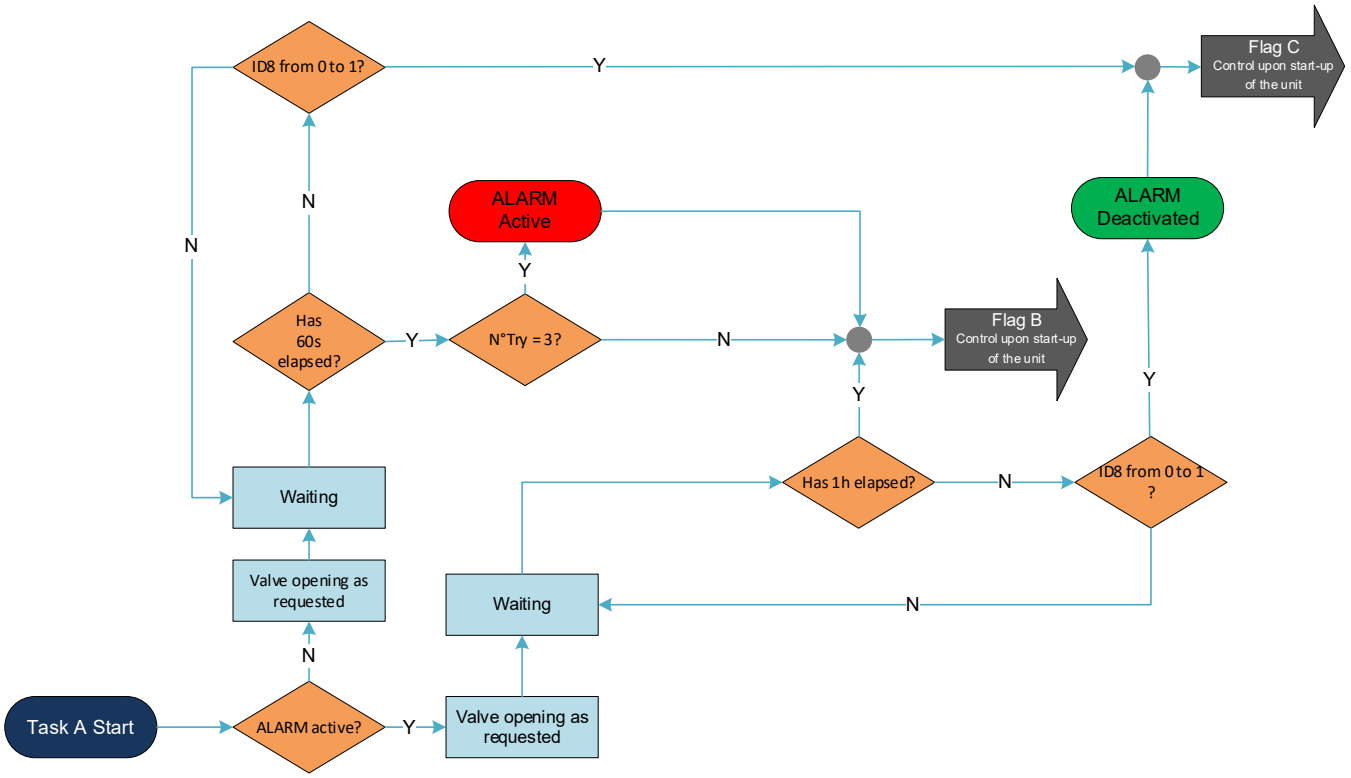


Figure 36-2: *flowchart: Task A.*

36.1.2 Periodic control

Once the start-up control has been completed, the regular control starts counting a time equal to parameter P22.87 (in hours).

After finishing counting, the last valve adjustment ramp value is saved and the logic forces closure for a period of time equal to A. This is the time that from the current position the valve would take to close completely, and is calculated as follows:

$$A = P13.03 - B$$

Legend:

- P13.03: Tempo nel quale la valvola passa da totalmente chiusa a totalmente aperta e viceversa.
- B: Ultimo valore della rampa di regolazione della valvola alla richiesta del controllo periodico (%).

When the time "A" has elapsed, maximum opening of the valve is forced and the logic waits for a maximum time set by parameter P13.03 for the auxiliary contact to change status. When the status changes, the valve returns to adjustment mode and new counting starts again for the next control (P22.87).

If the valve does not respond, a maximum of three forcing operations are attempted at intervals of 60s before a fault alarm is triggered. After triggering of the alarm, the logic repeats the forcing operation every hour to check that the valve is actually faulty.

If the contact changes status at any time during this procedure, the logic records the control as correct and starts counting again for the next control.



INFORMATION:
During counting between attempts the valve is left in adjustment mode, both in case of the attempts made before the alarm, and those once every hour after the triggering of the alarm.

The alarm is reset automatically and at any time when the valve restarts (switching of status of the digital contact ID8). A new count then starts for the next control.

The parameters for configuring the function are in the **"Settings" menu** that can be accessed with the **"Service" password**.



WARNING:
If the cold water valve logic inversion function has been enabled (P10.23 = Y), the function is the same, but the steps are reversed. Therefore, the valve is first forced to maximum opening and then to close.

The diagrams below illustrate operation as described above:

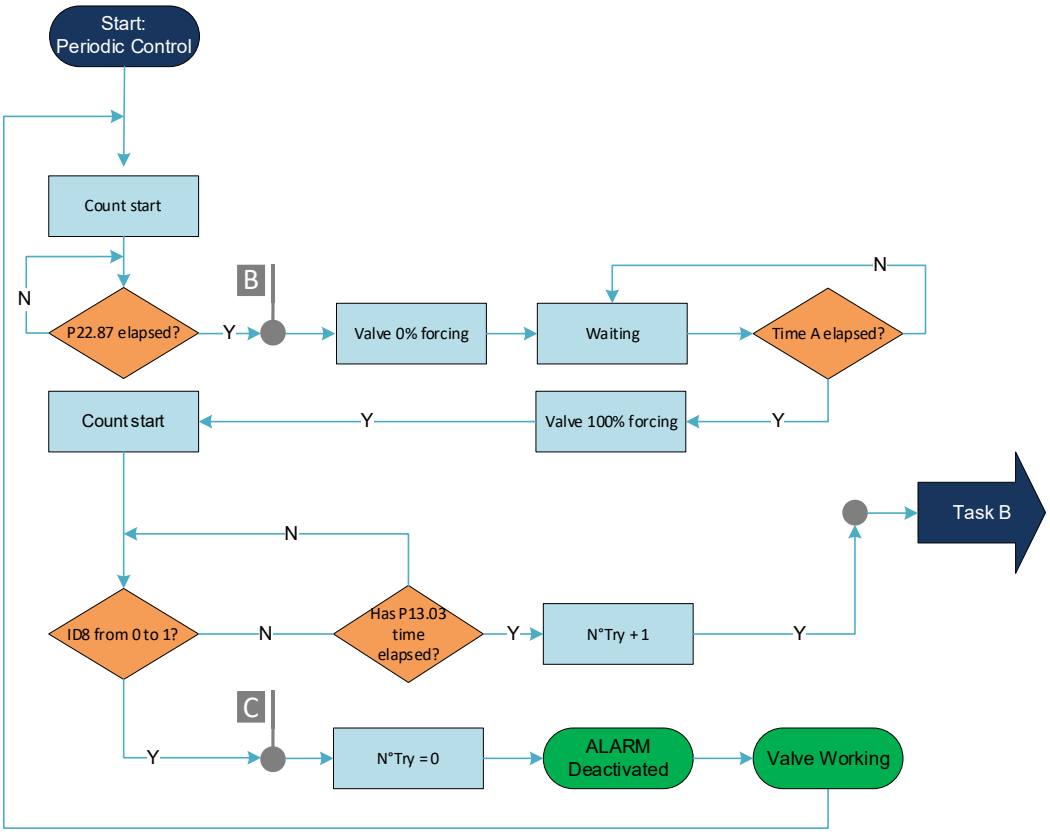


Figure 36-3: *flowchart: Periodic Control.*

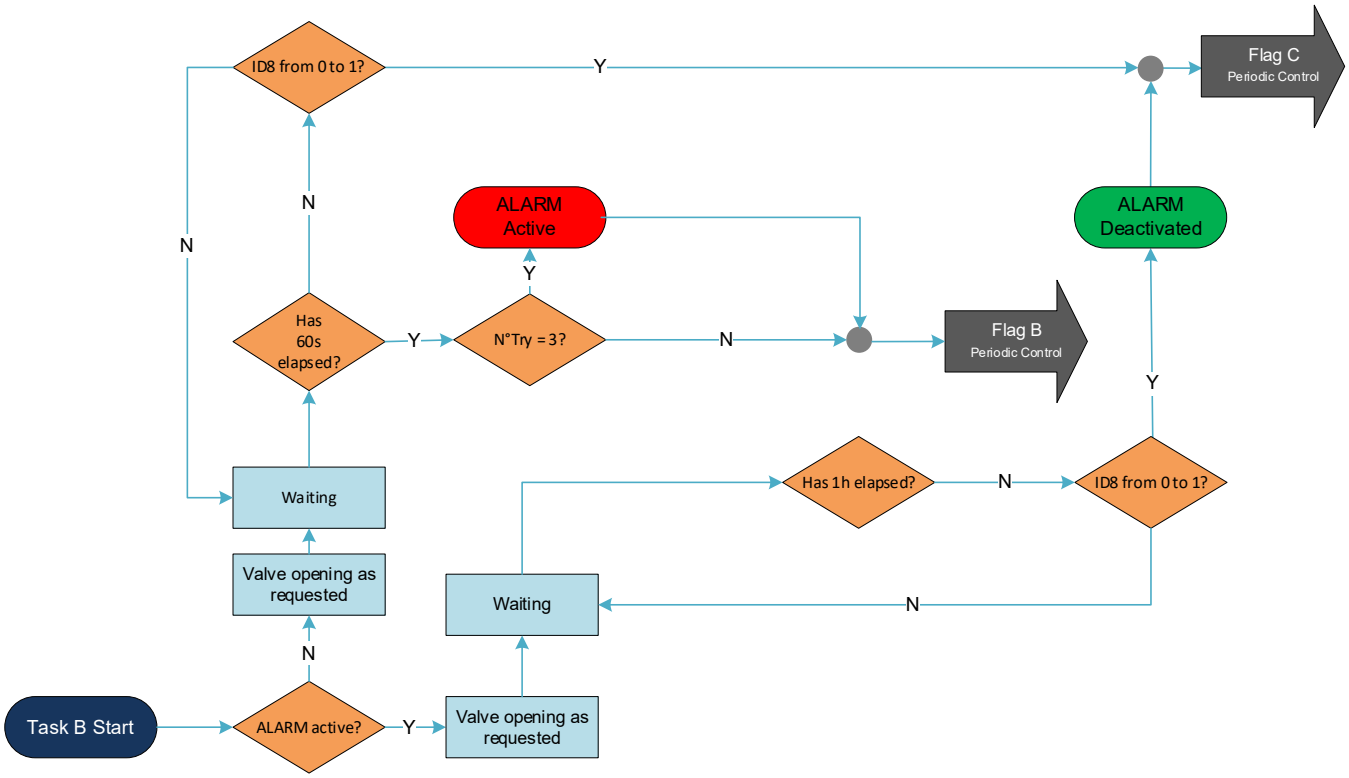


Figure 36-4: *flowchart: Task B.*

36.1.3 Safety Reduction Load (LP) function, s-MEXT unit with Mr. Slim

In s-MEXT units with Mr Slim, the main purpose of the function is to keep the low pressure at a value set using the parameter, should it fall below a "setpoint" value. This is to avoid the frost-free function from tripping at low temperatures, and stopping the unit due to the probability of ice forming on the coil.
The function activates if the pressure falls below the setpoint value (P20.74), and operates on two levels:

- “Alert” level (less incisive).
- “Protection” level.



INFORMATION:
For two-circuit units, when there are two pressure probes there is only one setpoint. When activating the function, the lower of the two values read by the probe is taken into account.



INFORMATION:
The time between steps is set by parameters P20.76 for circuit 1 and P20.81 for circuit 2.
The number of steps is set by parameter P20.77 for both circuits and its minimum value is fixed at 1.



INFORMATION:
The function prevents the compressor from dropping below the minimum frequency, irrespective of the number of steps and Hz value to be scaled for each step.

If the pressure does not increase again even after all the protection steps have been carried out, the frost-free function trips, turning off the faulty circuit.
If the pressure rises above setpoint + differential (P20.74 + P20.75), the function increases the demand on the compressor step by step, backwards, until it returns to normal operation in t-control.



INFORMATION:
The safety times of the compressors are observed.

The charts in the following pages show the operation described above:

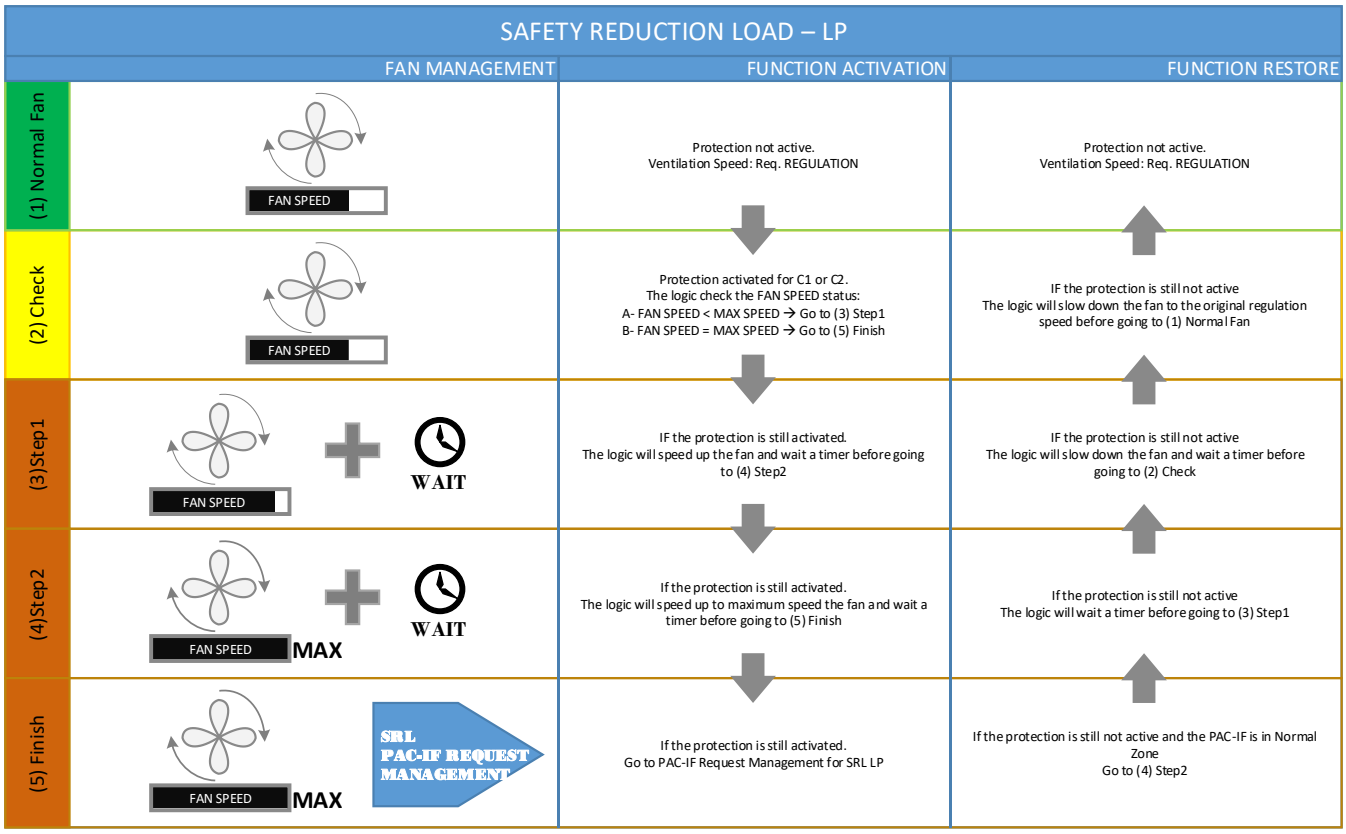


Figure 36-5: *representation of fan management, reduction load safety function.*

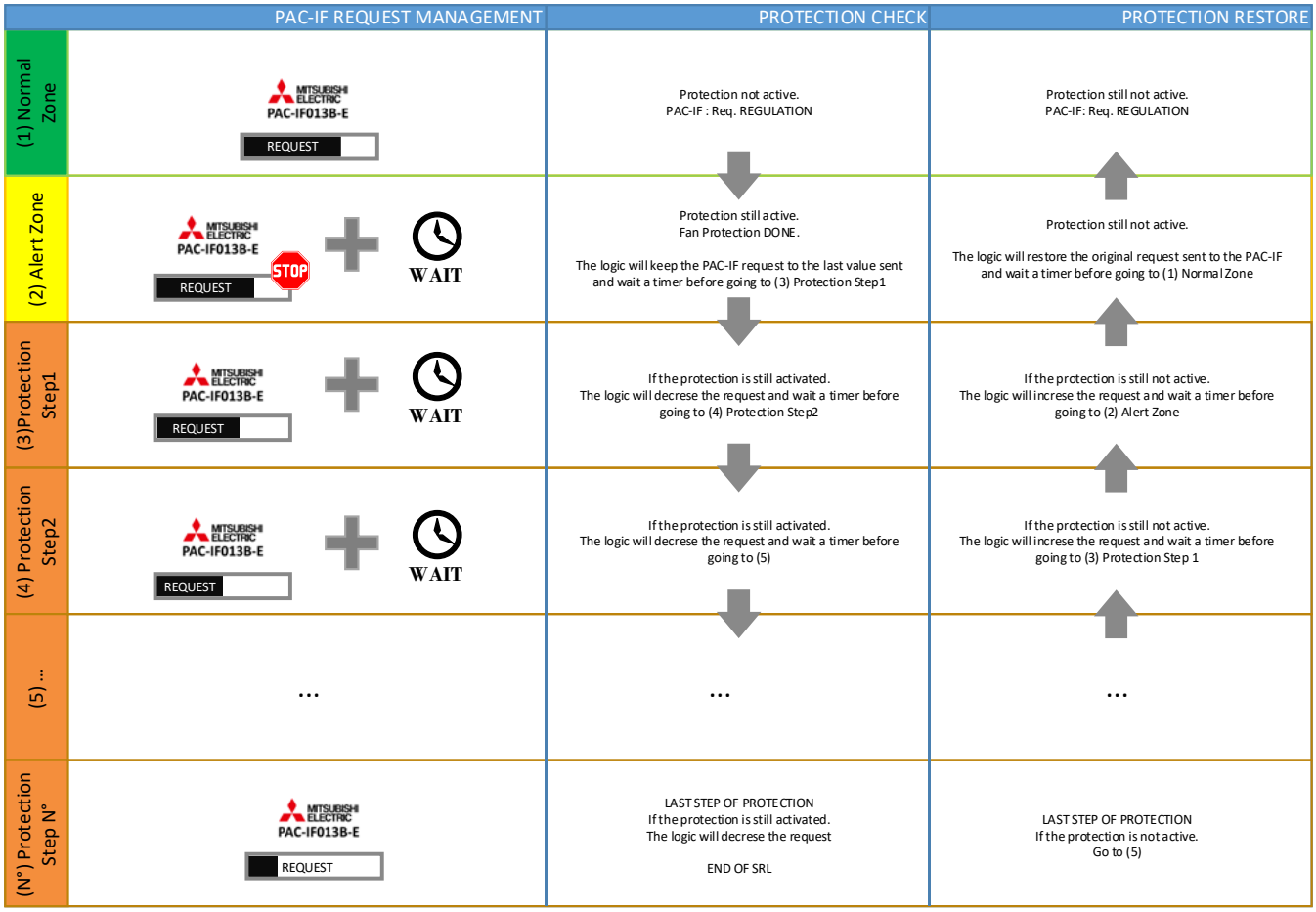


Figure 36-6: *representation of Mr. Slim management, reduction load safety function.*

As indicated by the chart, the alert level is bypassed if the fan is already running at 90% of the maximum nominal speed. The way the function works can be displayed from the **"Unit" menu**.

36.2 Periodic forcing on the ventilation and the cold demand (periodic check) (s-MEXT unit)

This function, hereafter also called “Periodic check”, is only available for S-MEXT units. It periodically forces the ventilation of the S-MEXT indoor evaporating unit and the cold request sent to the PAC-IF interfaces of the MR. SLIM outdoor condensing units. This reduces the possibility of ice forming on the pipes. The combination of the two actions causes in fact a rise in the temperature of the evaporating coil, and therefore of the gas circulating inside it, which facilitates the melting of any ice that may have formed on the pipes of the refrigeration circuit.

During forcing, the icon shown in section 2.4.2 in the “Active Functions” mask will be displayed.

Below is a diagram of the operation:

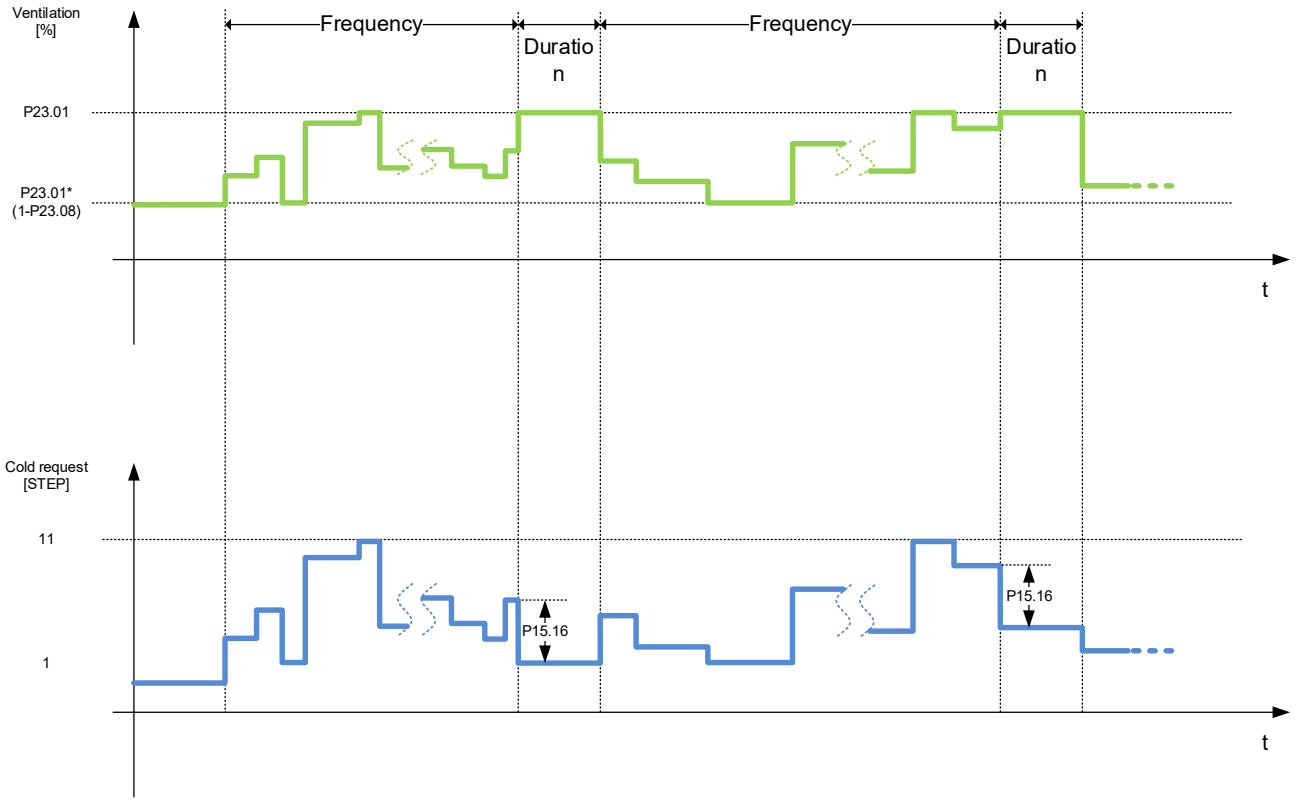


Figure 36-7: *“periodic check” operation representation.*

At set intervals ("Periodicity", parameter P15.16), the ventilation of the indoor evaporating unit (S-MEXT) is forced to the design speed (parameter P23.01), while at the same time the cooling demand to the PAC-IF is reduced (second parameter P15.17). This state is maintained for a time (“Duration”) that can be set using parameter P15.18.

37 ANALYSIS AND FUNCTIONS ON THE POWER SUPPLY NETWORK

The application includes functions that take into account the electric power supply networks to which the units are connected.
In specific, the application can:

- acquire the electrical data of the power supply networks to which the unit is connected through one or two network analysers;
- check the connection of the power supplies and the correct phase sequence of one or two power supply networks.

37.1 Network analyser

Up to two Gavazzi CPT-DIN.AV5.3.H.S1.AX or EM210 network analysers can be used to measure the main electrical variables.
The converters are connected to the controller via the Fieldbus port 2 (with RS485 cable) using the Modbus protocol.

Communication with the transducer and the system type (single-phase, three-phase), and the transformation ratio of the current transformers connected between the power supply and the transducers, can be set in the **“Optional” menu**, which can be accessed by entering the**“Service” password**.

Once configured, the masks for displaying the electrical measurements made are enabled in the main menu.
The displayed variables are:

- phase to phase voltage, only on three–phase units;
- phase voltage (phase–neutral);
- phase current;
- neutral current only on three–phase units;
- active phase power, only on three–phase units;
- total active power;
- active energy;
- hour counts.

The reset of the energy meters and hour meter is carried out from the **"Manual" menu**, accessible through the **"Service” password** and the **"Manual”** password.

If the transducers do not communicate with the controller due to a broken cable or communication errors, the corresponding offline notifications appear (Automatic reset).

37.2 Active power filter

In the case of non-linear electrical loads, current and voltage waveforms can be distorted into a non-sinusoidal wave, causing disturbances in the power line. To avoid this scenario, an active power filter is installed parallel to the power grid. The active filter monitors the electrical network in real time by analysing the harmonics and reactive components and produces current equal to but opposite to the detected disturbances. The current is distributed in the power supply system, thus achieving the function of harmonic containment and reactive dynamic compensation.

The filters are connected to the controller through the Fieldbus port (via RS485 cable) with Modbus protocol with the appropriate communication parameters and filter address set to 35.
It is possible to enable Modbus communication with the active filter by enabling the P11.41 parameter within the **"Functions" menu**, setting the device model, which can be:

- Sikes Electric;
- SinExcel.

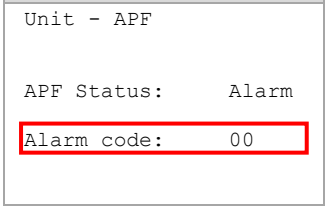
By enabling the device, some information related to the power grid in the Unit pGD or Touch menu can be displayed, such as:

- the power factor.
- total harmonic distortion of the voltage (THDV)
- the total harmonic distortion of the current (THDI).

These quantities will be displayed for all three feeding phases.

If the device does not communicate with the controller due to interrupted cable or communication errors, the relevant offline notification (Automatic reset) will appear.
If the Fieldbus communication is correct but device is in alarm, it will be possible to analyse the nature of the alarm by reading the code in the masks dedicated to the info of the Unit menu filter, the alarm codes read by the boards can be displayed, if present, as represented below.

Unit menu mask



37.2.1 Sikes APF alarms table

Below is the list for decoding the code read by the Sikes active harmonic filter:

Error code	Description
1	Abnormal voltage in the grid
2	Grid frequency anomaly
3	The bus soft start fails
4	Abnormal shutdown of DC bus
5	The external CT is misconfigured
6	Module output overcurrent
7	Auxiliary power is abnormal
8	The IGBT of branch phase 1A is overheated
9	The IGBT of branch phase 1B is overheated
10	The IGBT of branch phase 1C is overheated
11	The IGBT of branch phase 2A is overheated
12	The IGBT of branch phase 2B is overheated
13	The IGBT of branch phase 2C is overheated
14	Power CAN communication is abnormal
15	Fan abnormal
16	Module dialing abnormal

37.2.2 SinExcel APF alarms table

Below is the table for decoding the code read by the SinExcel active harmonic filter, bearing in mind that the variable is bit-coded; therefore, the **Bit** column will contain the position of the active bit:

Bit	Description	Common cause	MB Description
0	IGBT AHF Inverter short-circuit fault	Short-circuit, the current is beyond the tollerant range of IGBT;	AHF inverter short-circuit failure
1	Output current abnormal	The load current changes too fast; Resonance;	Output current abnormal Output current unbalance
2	IGBT Inverter AHF overheat	Enviroment temperature is high; Ventilation is broken; Fan is broken;	Inverter over-temperature Fan failure Cooling system failure Air switch abnormal disconnect
3	CT ratio setting error	The load current is bigger than the retad current of CT; CT wiring is wrong;	CT ratio setting failure CT current zero point calibration failure
4	IGBT Inverter overload	The module faulty alarm; Resonance;	Inverter overload failure
5	Frequency abnormal	Input voltage frequency is beyond range [45Hz ~62.5Hz]; Faulty alarm;	Input frequency abnormal
6	Input power abnormal	Voltage is beyond module tolerable range; Wire connection error; Fuse is broken;	Input voltage abnormal Fuse failure Grid voltage sampling failure
7	Input phase sequence error	Phase sequence connect wrong;	Input phase reverse
8	Monitor parameter setting fault	CT location is wrong; Total capacity setting is wrong;	Monitoring parameter setting failure Controller parameter setting failure Capacity reading failure
9	Emergency shut down	Emergency button is pressed down; The emergency button is normal closed type; The connection of EPO is not correct; False alarm of monitor.; The module is broken;	Emergency stop System failure
10	Communication Failure	RS485 cable connection is wrong; Dip switch setting error communication parameter setting is not correct;; Slaver modules are too many, communication delay; If the product has WIFI module inside, check if the local address setting is match with dip switch setting;	Module communication failure
11	Offline fault	The dip switch setting error; Internal cable wiring is not connected well;	CAN communication failure
12	Software incompatibility	Software of the control or of the module are incompatible	Control software compatibility failure Module software compatibility failure
13	Busbar error	An error accured on the Busbar	Busbar differential abnormal Busbar sampling failure
	Electric operating mechanism error	An error accured on the Electric operating mechanism	Electric operating mechanism failed to connect Electric operating mechanism failed to disconnect
14	Generic Alarm	Other alarms that cannot be classified into one of the previous categories	Auxiliary power failure Capacitor over-current Soft-starter failure Sync signal failure Hall sensor failure Harmocis exceed limits

37.3 Automatic transfer switch

An automatic transfer switch or ATS is a device that automatically transfers power from a primary voltage source to a secondary voltage source.
The information is received by the pCO via Modbus connection with the ATS having address: 26.

Enabling ATS monitoring via Modbus communication is defined by parameter P11.38 in the **"Functions" menu**, from which the device model is selected, which can be:

- Schneider Electric;
- ABB OTM Compact;
- ABB truONE.
- Socomec.

By selecting this function you can display some information related to the ATS in the Unit pGD or Touch menu.
The displayed variables are:

- Primary power line connection
- Primary voltage source available
- Secondary power line connection
- Secondary voltage source available
- Phase-Phase and/or Phase-Neutral voltages source 1
- Phase-Phase and/or Phase-Neutral voltages source 2

In the event of a wrong Modbus address or communication error, an ATS offline alarm will be generated.
If both power lines are disconnected an ATS disconnected alarm will be generated after a delay of 60 seconds. Both alarms reset automatically.

37.3.1 Table of ATS ABB alarms of the OTM Compact

The ATS information mask not only shows information on how the ATS works, but also the alarm code, which follows this logic:

Code	Description
0	No alarms
1	Switch I transfer fail
2	Switch II transfer fail
3	Both I and II are ON
4	Switch I transfer fail in emergency OFF
5	Switch II transfer fail in emergency OFF

37.3.2 Schneider ATS alarms table

The ATS information mask not only shows information on how the ATS works, but also the alarm code, which follows this logic:

Code	Description
0	No alarms
1	Error when transfering to A position
2	Error when transfering to N position
3	Error when transfering to OFF position
4	Error when transfering to invalid position
5	Error when in non-handle mode

37.3.3 Table of ATS ABB truONE alarms

The ATS information mask not only shows information on how the ATS works, but also the alarm code, which follows this logic:

Code	Description
0	No alarms
1	Error while trasfering the line
2	Position switch not available
3	Internal malfunction
4	Control voltage error
5	Neutral disconnected
6	Configuration error
7	Overtemperature

37.3.4 Socomec ATS alarms table

The ATS information mask not only shows information on how the ATS works, but also the alarm code, which follows this logic:

Code	Code	Meaning
0	No alarms	-
1	F00 Op Fct	Limited number of operations in a defined period.
2	F03 Neutral	The neutral on source I is not wired on the same side as the neutral on source II .
3	F11 FLT – 1	Fault on source I.
4	F21 FLT – 2	Fault on source II.
5	F12 ALR – 1	Alarm on source I.
6	F22 ALR – 2	Alarm on source II.
7	F13 ROT – 1	Either invert two phases on source I, or change the status of the ROT PH variable in the Setup menu.
8	F23 ROT – 2	Either invert two phases on source II, or change the status of the ROT PH variable in the Setup menu.
9	F14 CAP – 1	Recharging malfunction of capacitor associated with source I.
10	F24 CAP – 2	Recharging malfunction of capacitor associated with source II.
11	F15 PWR – 1	The power is insufficient to leave position II.
12	F25 PWR – 2	The power is insufficient to leave position I.
13	F16 POS – 1	Following an electric or automatic order, position 0 is not reached.
14	F26 POS – 2	Following an electric or automatic order, position I is not reached.
15	F06 POS – 0	Following an electric or automatic order, position II is not reached.

38 MANAGEMENT OF DUAL SUPPLY

Units with management of dual supply with ATS (Automatic Transfer Switch) can be combined with a buffer battery module that keeps the controller powered during automatic switch-over from one supply to the other.

The logic constantly monitors the supply of power between the G and G0 terminals of the controller, and the status of the contact of the phase sequence relay.
When there is a mains power cut, the logic of the controller remains active because the buffer battery supplies power to the controller.

At this point, the logic implements the following steps:

- the unit is turned OFF due to an alarm;
- until the digital inputs are bypassed (except ID1 that detects the presence of power);
- the alarms of the inverter (when applicable) are bypassed;
- the safety times of the compressors are reset;
- the alarm log and the BBX are bypassed;

These steps are carried out to then allow the unit to restart as soon as the mains power supply returns.

When the mains power supply returns, the controller is powered again between terminals G and G0, and the unit turns ON again, ready to continue normal operation.

To do this, the logic does the following:

- turns ON the unit;
- activates reading of the status of the digital inputs;
- activates management of inverter alarms;
- activates management of the alarm log and BBX;
- resets all the alarms 5 seconds after the power supply is restored;
- the unit runs again according to the normal adjustment logic.

The icon  on the main mask indicates activation of dual supply.

39 LOCAL LAN NETWORK MANAGEMENT

39.1 Purpose of the local LAN network

Connecting the units to the LAN network (meaning the PCO boards mounted on each unit) allows the following functions to be performed:

- balancing the operating hours among the different units by rotating the reserve units (Stand-by);
- turning on the reserve units in case other units should turn off due to an alarm, maintenance or power feed interruption;
- turning on reserve units to offset the excessive thermal load;
- checking up to 15 units with a single user terminal (shared user terminal);
- operating with all units based on the average temperature and humidity values read by the temperature probes only in the operating units.



OBLIGATION:
To allow the LAN to operate correctly, the units must have the same software version and revision (e.g.: ME21r00).
If there is more than one version, update to the latest version or create two different LANs.



WARNING:
The ME software is not compatible with the previous versions (LD).

39.2 Preliminary operations

39.2.1 Introduction

As the BIOS contained inside the control board is already fitted out to manage a local network connection of the board:

- it cyclically performs a check-up of the hardware (of the local board) required for network communication and of its settings (for example, the network address, which must be different from 0);
- it cyclically performs a check-up of the connection status of the local unit with the rest of the LAN;
- it cyclically performs a global checkup of the rest of the LAN which can be seen by the unit in question;
- it cyclically performs the transmission and reception routine of the variables of the local unit involved in transmission.

For correct operation of the units connected to the local LAN network, it is necessary to perform the following operations.

39.2.2 Network cabling

For the purposes of setting a local LAN network among the units, it is necessary for the installer to lay an electrical connection among the same by means of a screened cable (not included in the supply).



INFORMATION:
It is recommended to use twisted couple of AWG24 cabling (2 wires in total) + Belden 8723 or 8102 type sheath.



WARNING:
The electrical connections must be installed by qualified staff, when the unit is off and not fed. The LAN serial low safety voltage (SELV) cabling must be kept safely far from the power cables.



WARNING:
The connections must be made directly on the unit main terminal board: The RX/TX+, RX/TX-, and GND connection terminals do not vary from unit to unit and are clearly indicated on the electrical diagram on board the unit.

All control boards being part of the local network are connected according to a bus arrangement.

The user terminals are directly connected to the board. Each control board sends, in turn, the network variables to the other control boards in the LAN network. Moreover, each control board constantly sends display management data to its private user terminal and the shared one.

As there is a fairly large quantity of display management data (especially if graphic symbols are present), one line is entirely reserved (the above-mentioned bus) to transmitting the variables, and at the most to managing the shared terminal, whilst setting private terminal management on direct connection lines (dedicated) between the user terminal and the relative control board, so as not to slow down the global transmission speed of the network.

39.2.3 Network configuration

The configuration requires the following assignments.

Unit address	Managed terminals
1	16 (private). 32 (shared).
2	17 (private). 32 (shared).
3	18 (private). 32 (shared).
4	19 (private). 32 (shared).
5	20 (private). 32 (shared).
6	21 (private). 32 (shared).
7	22 (private). 32 (shared).
8	23 (private). 32 (shared).
9	24 (private). 32 (shared).
10	25 (private). 32 (shared).
11	26 (private). 32 (shared).
12	27 (private). 32 (shared).
13	28 (private). 32 (shared).
14	29 (private). 32 (shared).
15	30 (private). 32 (shared).



INFORMATION:
The control board is supplied with LAN address = 1.

The address may be checked directly on the control board or by means of the user terminal, following the steps indicated under the following sections.

39.2.4 Addressing of the control board - From the board

The control board address is displayed by 7-segment screen in the following image:

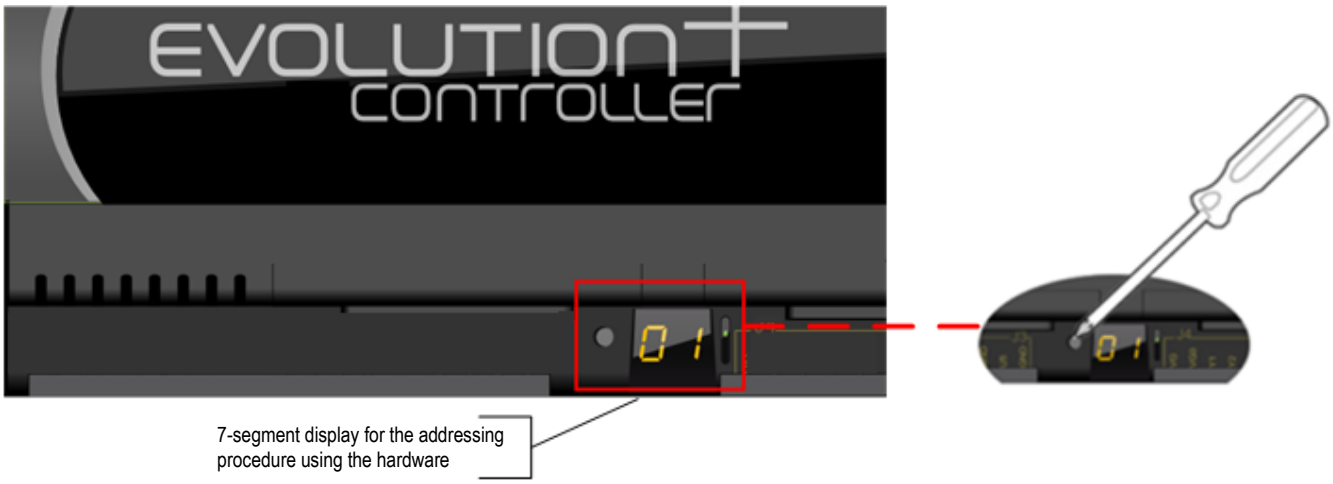


Figure39-1: *pCO5+ control board addressing.*

In order to display the current address, press the button on the left of the display briefly (for no more than 2 seconds) using, for instance, the tip of a screwdriver (Ø < 3mm). After 5 seconds from releasing the button, the address display turns off.

In order to change the board address, follow the process below:

1. Press the button with a screwdriver for at least 3 seconds. The saved address starts flashing.
2. Press the button repeatedly, or press and hold it to scroll through automatically, to find the required address.
3. Wait for at least 10 seconds. The display starts flashing quickly to indicate that the new address has been saved.
   In order to cancel the operation, turn off the control within 7 seconds of pressing the button last.
4. Turn off and restart the EVOLUTION+ controller in order to activate the new address.

39.2.5 Addressing of the control board - from the user terminal

1)	Press and hold **[UP]+[DOWN]+[ENTER]** at the same time for at least 3 seconds to enter configuration mode. A mask is displayed with the cursor flashing in the top left corner.	`Display address Setting.....: 11`
		
		`I/O Board address: 01`

2)	Press **[ENTER]** once to modify the address of the terminal (display address setting). The cursor will move to the terminal address field. Press **[UP]** or **[DOWN]** to select the value 0 and then press **[ENTER]** again to confirm. The value will be saved in the permanent memory of the **terminal**.	`Display address Setting.....: 00`
3)	The appearance of the mask shown at the side indicates that the keyboard address has been set.	`Display Address changed`

4)	Turn the board off and then on again by pressing and holding **[ALARM]+[UP]** at the same time. Wait until the board address setting mask appears, then release the keys.	`####################`
		`selftest`
		`please wait...`
		`####################`

5)	After the appearance of the mask shown at the side, press **[UP]** or **[DOWN]** to set the desired address and then press **[ENTER]** again to confirm.
	The value will be saved in the permanent memory of the **controller**.
	Turn off and restart the EVOLUTION+ controller in order to activate the new address.
		`pLan address: 1`
		`UP: increase`
		`DOWN: decrease`
		`ENTER: save & exit`



INFORMATION:
If no key is pressed for a few seconds, the display will exit the configuration screen. In this case, the procedure must be repeated.

39.2.6 Addressing of the user terminal

Once the keyboard has been connected to the device, run the following procedure.

1)	Press and hold **[UP]+[DOWN]+[ENTER]** at the same time for at least 3 seconds to enter configuration mode. A mask is displayed with the cursor flashing in the top left corner.	`Display address Setting.....: 00`

2)	Press **[ENTER]** once to modify the address of the terminal (display address setting). The cursor will move to the terminal address field. Press **[UP]** or **[DOWN]** to select the value of the desired address and then press **[ENTER]** again to confirm.
	The value will be saved in the permanent memory of the **terminal**.
		`Display address Setting.....: 21`
		
		`I/O Board address: --`

3)	The appearance of the mask shown at the side indicates that the keyboard address has been set.	`Display Address changed`
4)	If an empty mask or a mask showing “NO LINK" appears after pressing **[ESC]**, it means that the keyboard is not communicating with any boards. The addressing of the controller board, the configuration of the terminals associated with the board or the configuration of the LAN local area network must be performed.	`NO LINK`



INFORMATION:
If no key is pressed for a few seconds, the display will exit the configuration screen. In this case, the procedure must be repeated.

39.2.7 Configuration of the terminals associated with the board

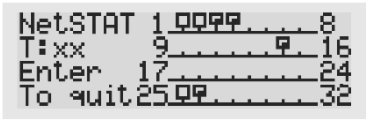
1)	Press and hold **[UP]+[DOWN]+[ENTER]** at the same time for at least 3 seconds to enter configuration mode. A mask is displayed with the cursor flashing in the top left corner.	Display address Setting.....: 11 I/O Board address: --
2)	Press **[ENTER]** twice to modify the address of the board to be configured. The cursor will move on the board address field. Press **[UP]** or **[DOWN]** to select the value of the board address to be configured and then press **[ENTER]** again to confirm.	Display address Setting.....: 11 I/O Board address: --
3)	The access mask for configuration of the associated terminals appears. Press **[ENTER]** to continue.	Terminal config Press ENTER to continue
4)	The address of the board being configured appears in the top left of the mask shown alongside for configuration of the associated terminals. The three lower lines permit association of up to three terminals, the addresses of which must be set in the second column of each line. It is possible to establish whether the terminal is private (Pr) or shared (Sh) in the third column. Press **[UP]** and **[DOWN]** to change the value of the parameter selected with the cursor, and **[ENTER]** to move the cursor. With the cursor on the "No" variable next to "Ok?", press **[ENTER]** again to make any further changes, otherwise press **[UP]** to change the value to "Yes", and press **[ENTER]** to save the changes and exit the mask. The values are saved in the permanent memory of the **controller**.	P:01 Adr Priv/Shared Trm1 11 Pr Trm2 32 Sh Trm3 None -- Ok?No



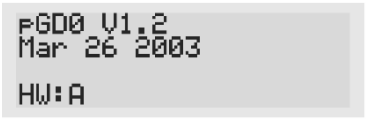
INFORMATION:
If no key is pressed for a few seconds, the display will exit the configuration screen. In this case, the procedure must be repeated.

39.2.8 Network status display (NetSTAT)

Press and hold the **[UP]+[DOWN]+[ENTER]** configuration buttons for at least 10 seconds (only in the LAN mode) to open the synoptic screen of the network seen from the user terminal in question. The screen exemplifies the status of the LAN, showing how many and what devices are connected, and with which address.



Press **[UP]** and **[DOWN]** to view the firmware version resident in the terminal.



To exit the NetSTAT screen, press **[ENTER]**.

39.3 Settings on the user terminal

In the presence of units connected to a local LAN network, indicate the total number of connected unit on the Priority unit, then, if needed, enable the functions provided by the LAN. The functions are as follows:

- regulation based on the temperature and humidity average value read by all network units;
- presence of backup units that rotate and are possibly ready to intervene in the presence of extreme ambient temperature and humidity conditions.

The configuration parameters for the LAN network are under the **"LAN" menu**, which can be accessed by entering the **"Service" password**.
These are visible on all connected units in the same group.

More specifically, the settable parameters are:

- number of units connected to the local LAN network;
- enabling average calculation functions in LAN;
- enable the backup unit and its rotation;
- interval of time between one rotation and the next (in other words: stand-by time);
- number of backup units;
- enable the start function for the backup units when exceeding the room temperature and humidity limits;
- definition of units belonging to the same group;
- definition of Priority units;
- definition of forced Priority units;

39.4 Information exchanged between units in LAN

To be able to work in a coordinated manner, the units in LAN exchange a set of information necessary to execute group logics correctly and to be able to display their operating status on the display. The information exchanged includes both dynamic information (for example temperatures) and parameters.

Below is a list of the information exchanged:

Dynamic information	Parameters
Unit not eligible for Priority due to S601 signalling	P20.01
Presence of one of the alarms that cause the units to rotate	P23.04
Active and regulating unit	P23.11
Unavailability of the control temperature probe	P23.98
Unavailability of the control humidity probe	P23.67
Activation of H&L Hot Spot logic	P23.69
Activation of H&L Cold Spot logic	P23.70
Air differential pressure transducer availability	P26.01
Availability of regulation according to APL logic	P26.02
Reached maximum fan speed	P26.03
Reached minimum fan speed	P26.04
Unit starting ventilation	P26.05
Unit waiting to start ventilation	P26.06
Unit OFF due to blocking alarm	P26.08
~~**Unit adjustment temperature**~~	P26.09
~~**Unit adjustment humidity**~~	P26.11
Request percentage of use of cold water coils	P26.12
Cooling request generated by ADL logic	P26.13
Post-heating request generated by ADL logic	P26.14
Unit air differential pressure	P26.15
Request to vary ventilation generated by APL logic	P26.16
Request to command ventilation generated by FDL logic	P26.17
Unit return temperature	P26.18
Unit delivery temperature	P26.19
Unit return humidity	P26.20
Active cooling setpoint of the unit	P26.21
	P26.22
	P26.23
	P26.24
	P26.25
	P26.26
	P26.27
	P26.28
	P26.29
	P26.30
	P26.31
	P26.32
	P26.33
	P26.34

Dynamic information is constantly exchanged between all units in the same group.

Parameters are sent from the Priority unit to the Secondary units whenever the latter communicate with a Controller other than the one they were communicating with. The cases in which this situation occurs may be different, for example the first time the LAN is established, when a unit that was isolated becomes part of the network again.
When this happens, the parameters are not sent immediately but with a 30-second delay (that cannot be changed), the purpose of which is to wait for communication between the various units to stabilize before sending the parameter values.



OBLIGATION:
To avoid misalignments in the parameters of the units, only make changes to the parameters listed above after adding more units to the system, and only before removing existing units from the same.

39.5 Election of Priority Controller

Since the LAN logic requires that the various units that are part of the same group work in a coordinated way, it is necessary to have a unit that plays the role of Priority and that coordinates all the others.

Bearing in mind that the composition of the group may change, both due to voluntary actions (e.g. power failure of one of the units for maintenance) and involuntary actions (failure of the controller of one of the units), and that such actions could also occur on the Priority unit, a logic is implemented whose purpose is to dynamically elect one of the units of the group to the role of Priority unit.

The address of the unit that will assume the role of Priority is established in two stages:

1. in the first stage the addresses of the units that can take on the role of Priority units are selected;
2. in the second stage, the address of the unit that will play this role is determined, starting from those selected in the first stage.

The addresses of the first stage are chosen by making the following checks:

1. all units with a pLAN address between 1 and P26.01 are considered;
2. among these units, only those indicated as belonging to the same group by means of parameter P2~~7~~6.25 are considered;
3. among these units, only those that communicate with one another are considered.

Then, in the second stage, the lowest of the following is chosen as the Priority unit address:

1. those of the units designated as Forced Priority units (P26.27), if set;
2. those of the units designated as Priority units (P26.26) on which the S601 signal is not active, if set;
3. those chosen in the first stage on which the S601 signal is not active.

The operations described are carried out at each program cycle and consequently a variation in the result of the first stage, for example due to the disconnection of a unit, may lead to the election of a new Priority unit.

The switching of a unit from Priority to Secondary takes place with a delay of 5 seconds from the designation of a new Priority unit. This is to prevent the units from losing the values of the parameters exchanged through the LAN network due to a momentary unavailability of the new Priority, for example following the restoration of the units after a blackout.
The 5 second delay allows the last designated Priority to send the parameter values through the LAN network to the Secondary units before becoming Slave itself following the designation of a new Priority.

39.6 Backup unit management (Stand-by)

39.6.1 Introduction

In an installation made up of on units and stand-by units, there may be imbalances in the operating hours that cause the former to age faster because of the failure to use the latter. In order to solve this problem, the local network (LAN) always rotates between the units of the same group in order to even out the operating hours.
Basically, the rotation puts an active unit in stand-by and turns on a unit that was previously in stand-by.

39.6.2 Rotation management

The rotation of the reserve unit is managed entirely by the Priority unit and starts from the unit with the lower address, that is, address 1, and works its way up.

The time-based rotation modes managed by the application are as follows, defined through parameter P26.31:

- at hourly intervals;
- at a set time every day;
- at a set time and day every week;
- at a set time and day the first week of each month.

The number of backup units varies from 0 (no backup units) to N-1, with N equal to the number of units in the same group (all units in backup and only one in operation). The reference parameter is P26.05 in the **"LAN" menu**

The configuration parameters for rotation are under the **"LAN" menu**, which can be accessed by entering the **"Service" password**.



INFORMATION:
If the rotation time interval is set to zero, no further rotation takes place. Therefore the backup units remain the same, activating only in case of the faults and alarms indicated in the following paragraphs.



INFORMATION:
Rotation of the backup units can be forced manually with the specific command in the "Manual" menu that can be accessed with the "Service" password.
For reasons of safety, at least 10 minutes must elapse between each instance of manual forcing (this period of time is fixed and cannot be changed).
The time remaining until the next instance of forcing is indicated in the forcing mask.

39.6.3 Reserve units activation mode

Units in stand-by interrupt their stand-by status if:

- A blocking alarm occurs on one of the active units.
- Switching off by user, such as ON/OFF digital input, KIPLink, keypad (pGD1 or touch screen pGDX), time bands or supervision depending on what is enabled; a stand-by unit is chosen in the subnet to replace the unit switched off by the user.
- LAN disconnection is detected; see next paragraph for more details;
- The set temperature and/or humidity limits are exceeded; only if parameter P26.06 is enabled, the unit will start for at least 10 minutes, as indicated in paragraph 24.6.5.

As regards the first two bullet points, turning on the stand–by unit is entirely managed by the Priority unit.

39.6.4 Backup unit activation events

See the events table in the chapter "Event masks" to know the events that contribute to activate the backup units, highlighted by their code in bold.

If one of the units in operation stops due to one of the alarms described above and causes activation of a back-up unit, calculation of the time for rotation is stopped until all the units return to normal operation and are no longer in alarm mode.

In the event that no other backup units are available, all units will maintain their operating status unless unit blocking alarms are generated or OFF commands are issued.

Below is an example of calculation of the time for rotation:
Assuming there are two units where U1 is the Priority and U2 is the Secondary, counting of the time for rotation is as follows:

A. **STARTING SITUATION**
   - U1: stand-by
   - U2: ON

   Counting of the time of unit 2 for rotation is in progress.

B. **EVENT 1**
   - U1: ON
   - U2: OFF for alarm

   Counting of the time for rotation is blocked at the last value reached.

C. **RETURN TO NORMAL CONDITIONS**
   - U1: stand-by
   - U2: ON

   Counting of the time of unit 2 for rotation resumes at the last value reached before the alarm.

In general, the logic will activate the backup unit with the lowest available address, i.e. the ones put in standby by the Priority unit.

39.6.5 Exceeding the limits

The backup units activate and deactivate automatically depending of the four activation steps shown below. It is sufficient for one of the four steps to be active to request units activation.



WARNING:
The setpoints in the diagrams below are different from those normally used for adjustment, and are those specifically set for the backup unit.
The differentials, on the other hand, are the same as those set for normal adjustment.

The setpoint parameters for the following steps are under the **"setpoint" menu**.
The Hot and Cold differential parameters are under the **"Regulations" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

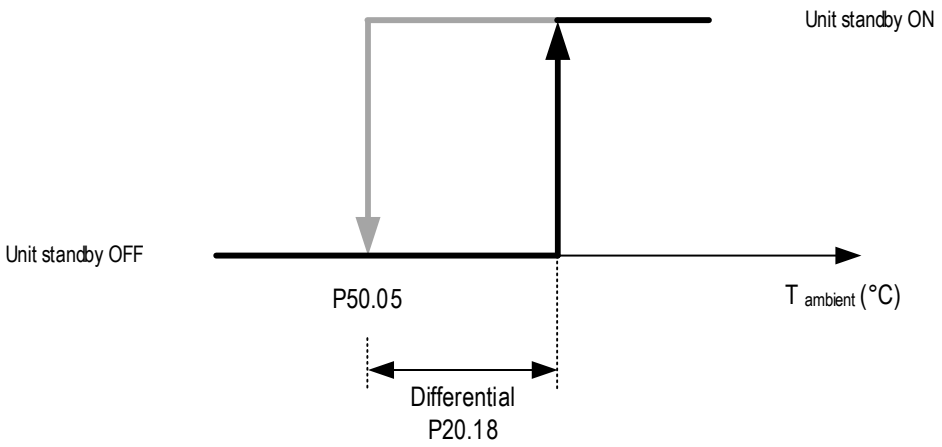


Figure 39-2: *chart of backup unit activation for exceeding cooling setpoint.*

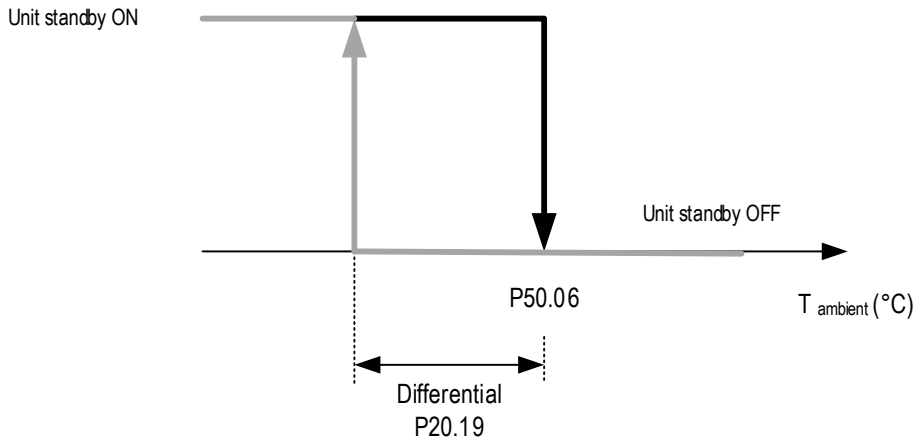


Figure 39-3: *chart of backup unit activation for exceeding heating setpoint.*

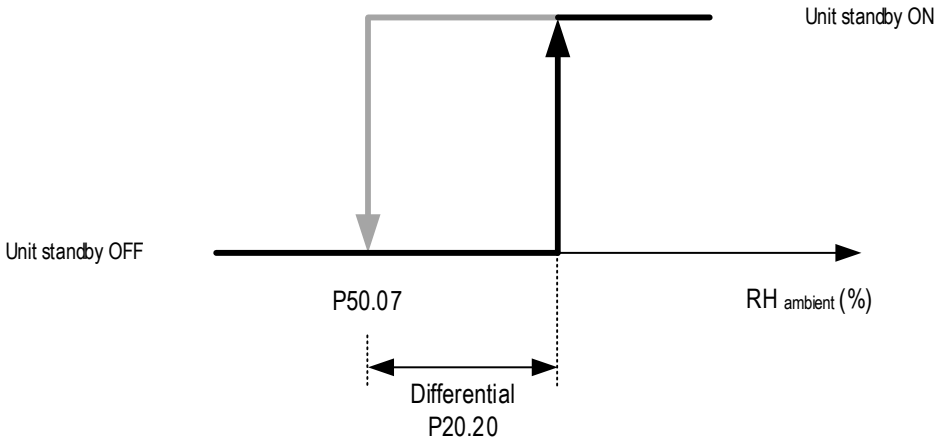


Figure 39-4: *chart of backup unit activation for exceeding Dehumidify setpoint.*

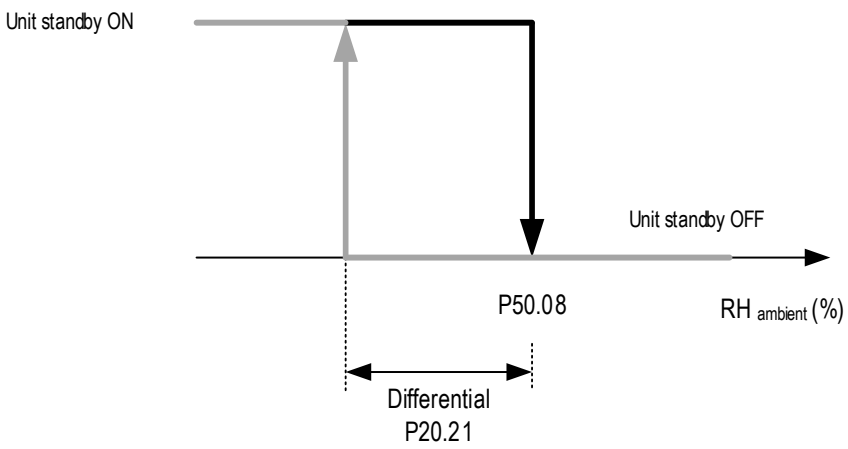


Figure 39-5: *chart of backup unit activation for exceeding Humidify setpoint.*

When one of the above four steps is activated, 30 seconds (unmodifiable value) must elapse before the backup unit is actually active, meaning before ventilation is active.

After ventilation starts, wait for adjustment permission (60 seconds) before the conditioning unit adjustment devices activate. Humidity and temperature adjustment occurs as per normal operation, the only difference being the active setpoints, which in this case are those shown in the graphs in this paragraph.

The activation of the unit in stand-by for exceeding the limits lasts for a minimum of 10 minutes (cannot be set).

As regards the alarms for exceeding the temperature and humidity limits, the thresholds used by the backup units for managing these alarms are moved (up or down depending on whether the type of limit is high or low) by an amount equal to the difference between the normal setpoint and the one relative to the units reactivated by the stand-by.

There is also a procedure whereby, when the value of a setpoint is modified, the corresponding value relative to the units in stand-by is automatically moved and updated.

The chart below illustrates operation of the units in LAN with the standby function active:

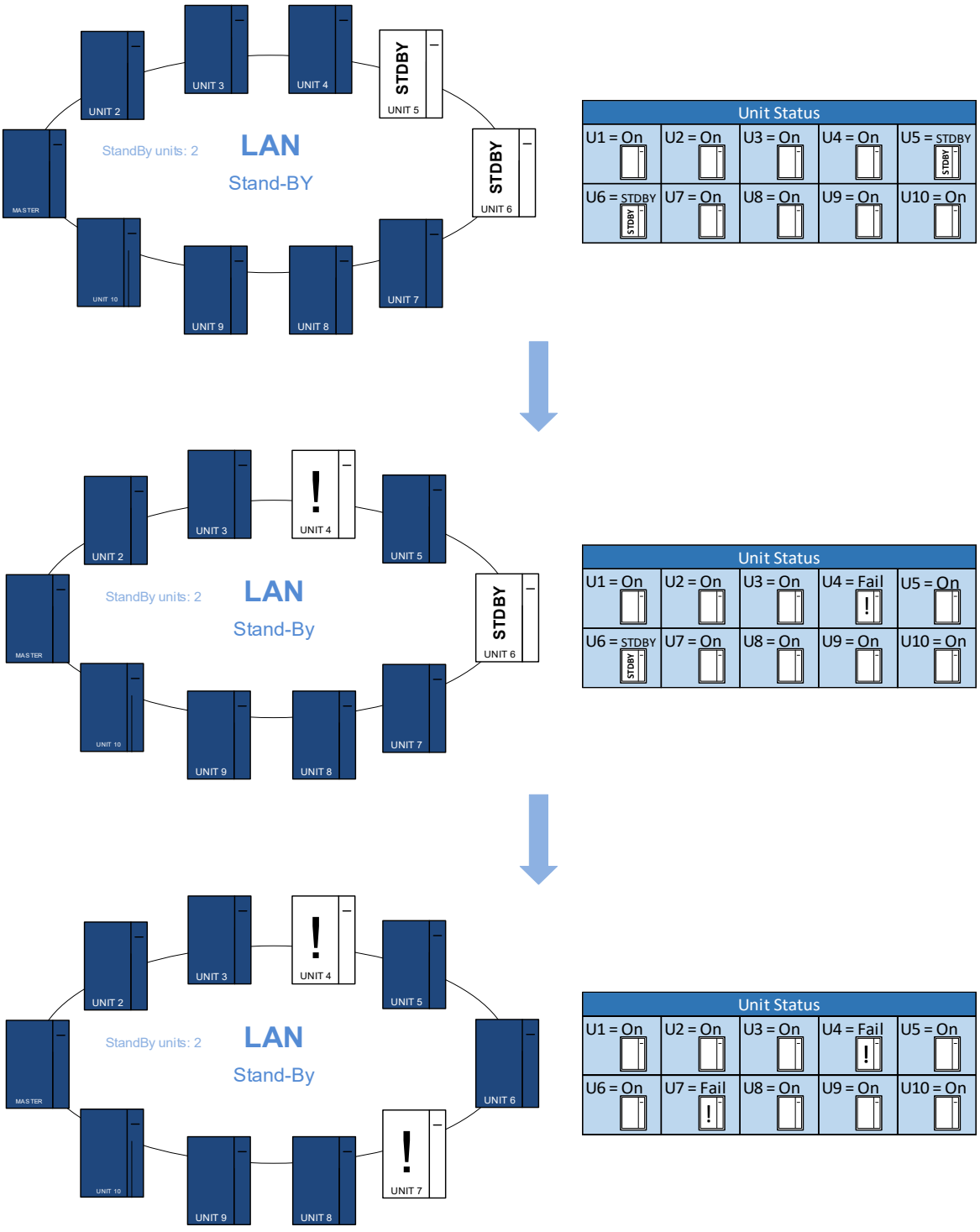


Figure 39-6: *chart showing operation of the Stand-by function.*

The parameters for enabling and configuring the Stand-by function are under the **"LAN" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.



INFORMATION:
This mask is displayed on all units in the same group.

39.7 Active fan on stand-by

Adjustment is available only on units with stand-by management enabled.

39.7.1 Introduction

The function allows the use of dynamic standby: during standby, reserve units do not turn off the fan, but keep it running at the speed set in parameter P26.17. When the Priority decides to turn on the units in AFS mode, they return to adjustment mode and the units that go into stand-by stop and keep the fan running at the speed set in parameter P26.17.



INFORMATION:
If a unit is set to OFF (via keyboard, digital input, BMS, ...) this command will have priority over the Active Fan on Standby.
As a result, the unit will be switched off completely, including the fans.

39.7.2 Operation

The following functions are used to manage the LAN network:

- Management of back-up units (Stand-by).
- Active Fan on Stand-by (AFS).

Both functions manage the LAN network as follows:

1. Management of the back-up units and their activation is managed by the Stand-by function (P26.03) according to its own rules (described in the chapter on stand-by management) for switching the back-up units on/off.
2. Operation of the units in stand-by is managed by the AFS function (P26.16) which controls dynamic stand-by.

The diagram below represents the operating mode described above:

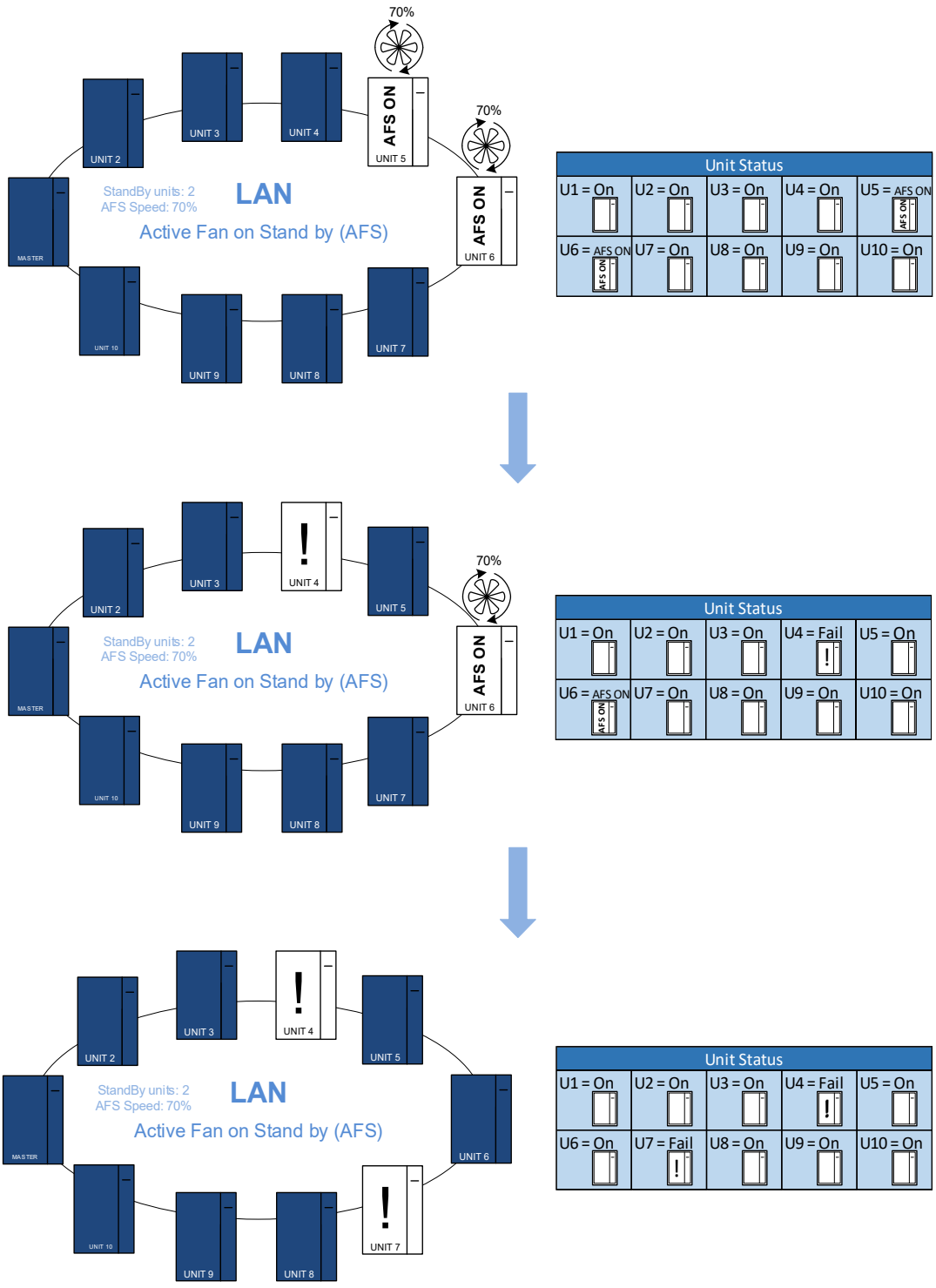


Figure 39-7: *chart showing operation of the Active Fan on Stand-by function.*

The parameters for enabling and configuring the Active Fan on Stand-by function are in the **"LAN" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

INFORMATION:
This mask is displayed on all units in the same group.

39.8 Temperature and humidity average management

39.8.1 Introduction

When the units are connected to a LAN network, it is possible to leverage their connection to operate them according to the average humidity and temperature value of all active units (that is, with active ventilation) not in the alarm status.

39.8.2 Average calculation

The average calculation is performed by all units in the same group only if the adjustment based on the average value has been enabled from the user terminal. To perform this calculation, all units in the same group share the ambient temperature and humidity values read by their probes and calculate the average.

The average temperature and humidity consider only those units that:

- they belong to the same group;
- are not in stand-by (in case the reserve unit rotation function is enabled);
- are not in alarm (see following chapters);
- are not switched off by the user (pGD1 keypad, pGDX touch screen, digital ON/OFF input, KIPLink, time bands or supervision, depending on what is enabled).

The user terminal of each individual unit in the same group also displays the value read by its own temperature probe.

These averages are then used as a reference value for adjustment. Each unit adjusts the cold request using this value based on its own setpoints.

39.8.3 Enable the use of the average

Use of the average temperature and humidity value is only enabled if:

- The function is enabled.
- Faults in the LAN connection of the units belonging to the same group are not found.

If faults are detected in the LAN network, the unit immediately exits average based adjustment mode and only works based on local values (i.e.: the values read by the unit probes).

The diagram below represents the operating mode described above:

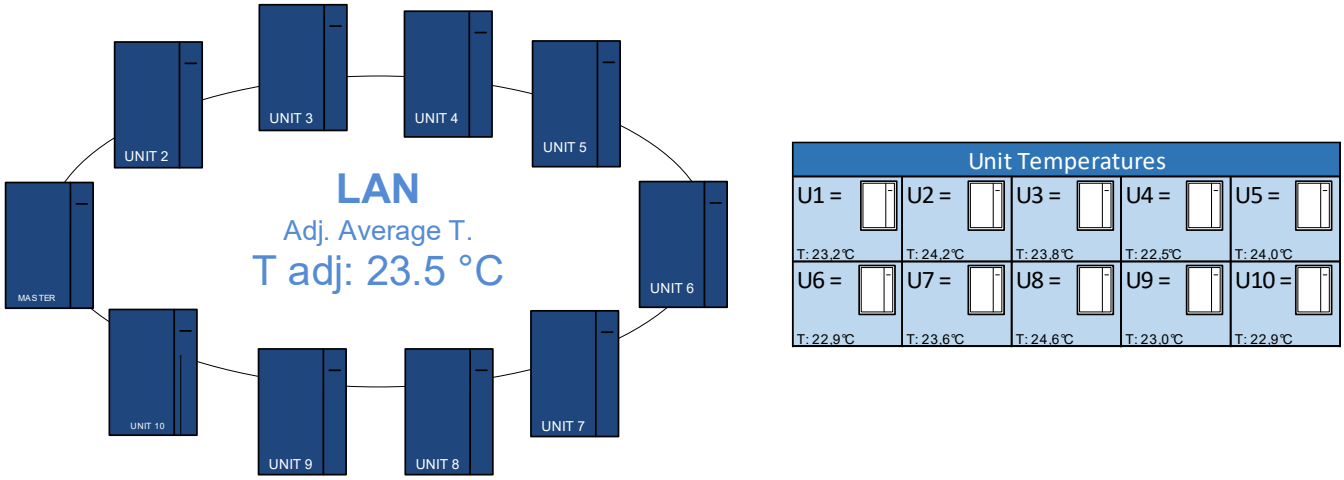


Figure 39-8: *chart showing the adjustment according to the average temperature and humidity.*

The parameters for enabling and configuring the average based adjustment mode are under the **"LAN" menu**, which can be accessed by entering the **"Service" password**.

For the default values, see the parameters table.

39.9 H&L Local Temperature Protection

This function, available for all units in the same group and that adjust according to the average temperature (P26.02=Y), permits monitoring the formation of Hot and Cold Spots in a room controlled by various units on the LAN network.

INFORMATION:
The function can be viewed only after enabling the LAN network and adjustment according to the average temperature.
The parameters for setting and enabling this function can be modified only by the Priority unit.

The protection is enabled so that the air temperature in the room is not too high or too low, according to the following criteria:

- Hot Spot protection:

$$Temperatura\ Aria\ locale > Temperatura\ Aria\ media + P26.12$$

- Cold Spot protection:

$$Temperatura\ Aria\ locale < Temperatura\ Aria\ media - P26.13$$

When the function is activated as a result of one of the above limits being reached for a time greater than P26.15, it "frees" the protected unit from having to adjust according to the average temperature. In this way, the unit can adjust according to its own local air temperature, and the temperature fault detected in that individual unit can be managed independently.

After the local air temperature has been brought by the independent unit back within the Hot Spot and Cold Spot limit for a time greater than P26.14, the unit is reconnected to the LAN and made to adjust according to the average temperature.

INFORMATION:
This function is available for units in standby and in ADL mode, which must be configured for adjustment according to average temperature and humidity.

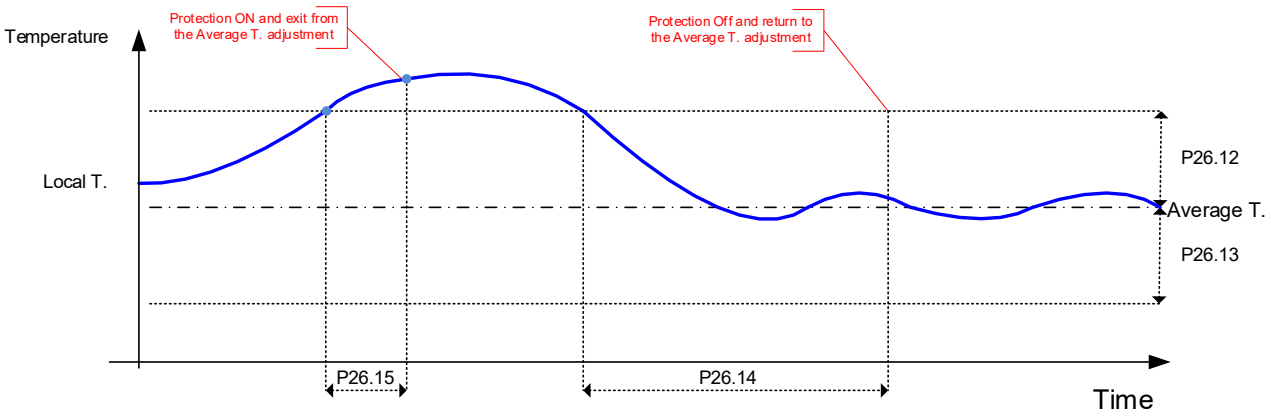
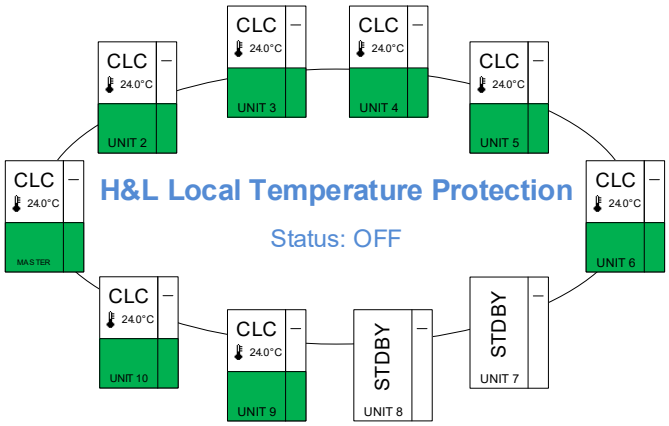


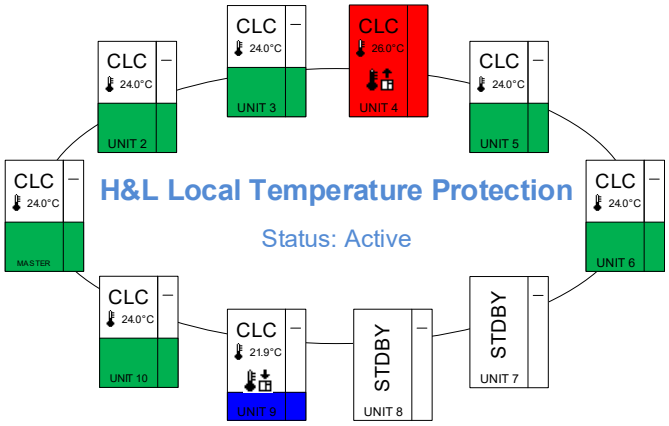
Figure 39-9: *chart showing the H&L Local Temperature Protection.*

The diagram below illustrates the function described above.

- Setpoint: 23.0 °C
- Band : 2.0°C



LAN Status					
UNIT	T.LOCAL	T.MEDIA	DELTA HOTSPOT	DELTA COLDSPOT	T.REG.
U1	24.0°C	24.01°C	2.0°C	2.0°C	24.0°C
U2	24.2°C				24.0°C
U3	23.8°C				24.0°C
U4	24.1°C				24.0°C
U5	23.7°C				24.0°C
U6	24.1°C				24.0°C
U7	-				-
U8	-				-
U9	23.9°C				24.0°C
U10	24.3°C				24.0°C



LAN Status					
UNIT	T.LOCAL	T.MEDIA	DELTA HOTSPOT	DELTA COLDSPOT	T.REG.
U1	24.0°C	24.03°C	2.0°C	2.0°C	24.0°C
U2	24.2°C				24.0°C
U3	23.8°C				24.0°C
U4	26.0°C				26.0°C
U5	23.7°C				24.0°C
U6	24.1°C				24.0°C
U7	-				-
U8	-				-
U9	21.9°C				21.9°C
U10	24.3°C				24.0°C

Figure 39-10: *example of operation of the H&L Local Temperature Protection.*

The parameters for enabling and configuring the Precise function are in the **"LAN" menu**, which can be accessed by entering the **"Service" password**.
For the default values, see the parameters table.

39.10 Active Pressure Load (APL)

The function can be enabled for all units in the same group with Constant Head ventilation adjustment.

39.10.1 Active Pressure Load by unit

The APL by unit function allows the units on which it is enabled to adjust their own fans according to the average, minimum or maximum pressure read by the pressure transducers installed in each unit.

INFORMATION:
The Priority excludes from the pressure calculation the units in the same group that are in the following conditions:

- expansion disconnected;
- the pressure transducer is not working or is disconnected;
- the (P20.04) start delay from damper opening adjustment has not been respected;
- the unit is off or faulty.

The unit is disconnected from the LAN network.

The calculation of the adjustment pressure is carried out by all the units belonging to the same group on which the APL function is enabled. To perform this calculation, all the units in the same group share the air pressure values read by their transducers and complete the calculation selected through parameter P26.29.

Each one of them then starts to adjust its fans with Constant Head regulation according to this calculated value.

The diagram below illustrates the function described above.

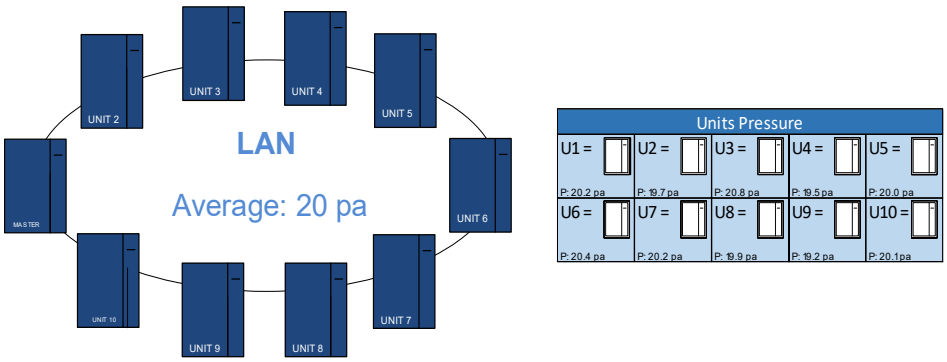


Figure39-11: *graph representing the operation of the APL function with calculation of the average pressure.*

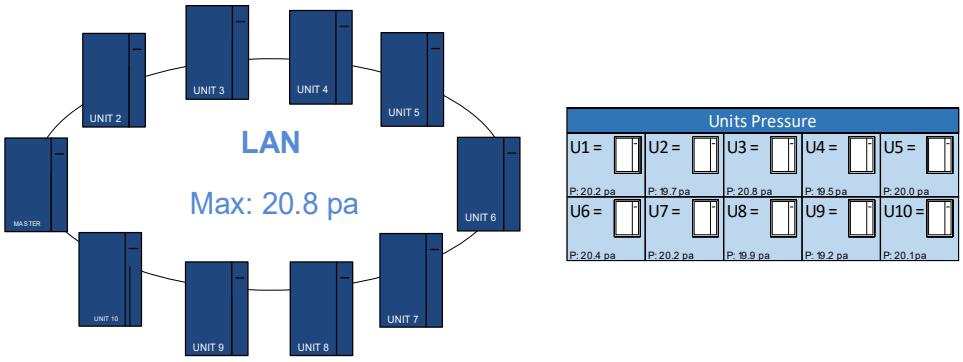


Figure39-12: *graph representing the operation of the APL function with maximum pressure.*

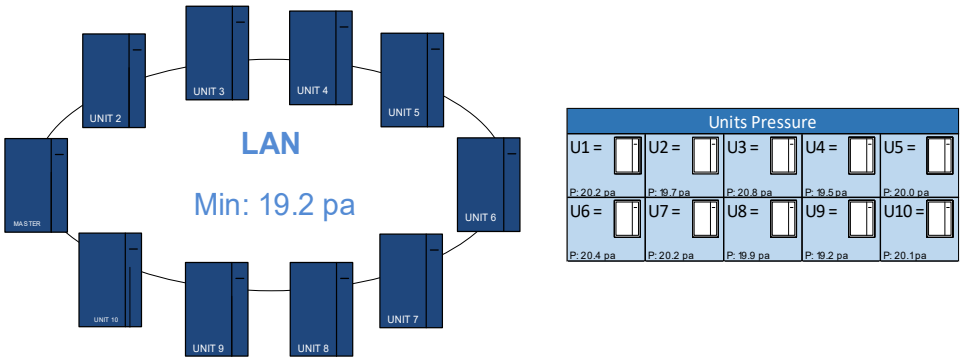


Figure39-13: *graph representing the operation of the APL function with minimum pressure.*

Once the Constant Head adjustment has been configured on the Priority unit and the APL has been enabled, it will enable DeltaP adjustment on all the units in the same group.



INFORMATION:
The enabling parameters can be modified only by the Priority unit and only if parameters P11.01 and P26.01 are set as follows:

- P11.01 = Delta P;
- P26.01 >= 2.

The units remain in calculated pressure-based adjustment mode, unless one of the following conditions occur:

- unit in protection against high/low local temperature (P26.20);
- the unit cannot communicate with any Priority unit;
- the time delay for the start of the adjustment of modulating fans has not been complied with (P20.03);
- expansion disconnected or pressure transducer not working/disconnected (only if parameter P26.19 enabled).



WARNING:
While the units adjust according to the calculated pressure, the setting parameters (setpoint, band, etc.) of the Constant head are those of the Priority unit.

If parameter P26.19 is not enabled, even in case of offline expansion alarm or pressure transducer alarm the units continue to work based on the calculated pressure provided by the Priority, but are excluded for the purpose of this calculation.

Through parameter P26.30, it is possible to choose whether to carry the adjustment in "Control" mode, therefore increasing or decreasing the ventilation demand depending on the pressure, or in "Limit" mode, therefore only increasing the ventilation demand.

The calculated pressure value, the type of adjustment and the local pressure value can be viewed on the supervision system.
The parameters for enabling and configuring the function are in the **"LAN" menu** that can be accessed with the **"Service" password**.

39.10.2 Active Pressure Load by client

With the APL by client function, units belonging to the same group on which the function is enabled share the air pressure values read by their transducers with the client unit. The client unit performs the type of calculation chosen via parameter P26.29. (pressure average, maximum or minimum value), calculates the fan adjustment and communicates this to all other units in the group.
In this way the fans of all units will run at the same speed.

When one or more units reconnect to the LAN, the client unit performs a synchronisation between all unit fans, setting them at minimum speed for 10 seconds and then providing the updated adjustment. This state is highlighted in the APL mask as SYN



WARNING:
As long as the client unit is in OFF mode, no shared command is provided. Thus, the server units are adjusted locally based on their DeltaP.

39.11 H&L Local Pressure Protection

This function, available for all units in the same group and with APL function enabled, permits monitoring the formation of High Pressure Spots and Low Pressure Spots in a room controlled by various units on the LAN network.

INFORMATION:
The function can be viewed only after enabling the LAN network and the Active Pressure Load function.
The parameters for setting and enabling this function can be modified only by the Priority unit.

The protection is enabled when the differential pressure read by the local probe of each unit is not too high or too low, according to the following criteria:

- High pressure Spot protection:
$$Pressione\ diff.locale > Pressione\ diff.media + P26.21(10Pa)$$
- Low pressure Spot protection:
$$Pressione\ diff.locale < Pressione\ diff.media - P26.22(10Pa)$$

When the function is activated as a result of one the above limits being reached for a time greater than P26.24, it "frees" the protected unit from having to adjust according to the average pressure, so that it can adjust according to the pressure read by its own probe, and the pressure fault detected in that individual unit can be managed independently.
After the local differential pressure detected by the "freed" unit has been within the limit of the High pressure Spot and Low pressure Spot for a time greater than P26.23, the unit is reconnected to the LAN and made to adjust according to the average pressure.

INFORMATION:
The units are included in the average calculation even if in high or low pressure protection.

The diagram below represents the operating mode described above:

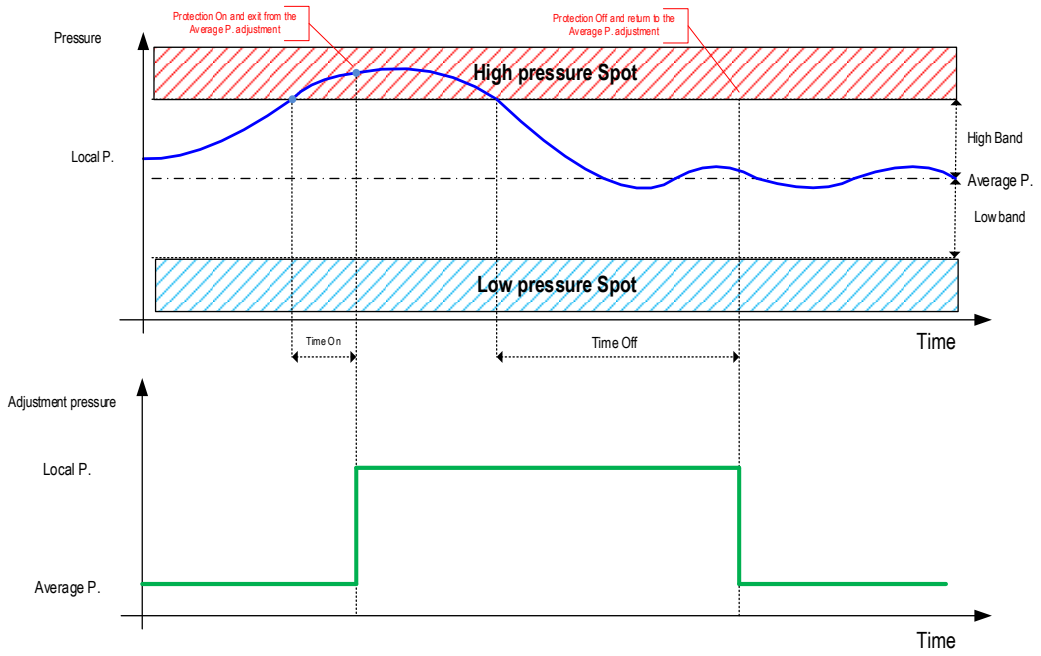


Figure39-14: *Example of H&L Local Pressure Protection operation*



WARNING:
The function does not activate even in conditions of high or low temperature, if the unit is affected by an offline expansion alarm or if the pressure transducer is faulty or disconnected.

The parameters for enabling and configuring the function are in the **"LAN" menu** that can be accessed with the **"Service" password**.

39.12 LAN alarm management

39.12.1 Preliminary considerations

The network may be disconnected because of one of the following instances:

- fault in the LAN board of the controller (integrated into the board: in this case the entire board must be replaced);
- LAN board connection cable disconnected;
- unit or controller power feed disconnected;
- cable broken in between the two units.

The options are two:

- One or more units are no longer visible.
- The network is broken into one (or more) sections.

Every unit constantly receives status information (namely, visibility or invisibility) of all other units that should be connected to the network (based on the number of LAN units set through the user terminal). Every unit is capable of detecting any disconnection.

39.12.2 Management algorithm

The algorithm generally involves the following:

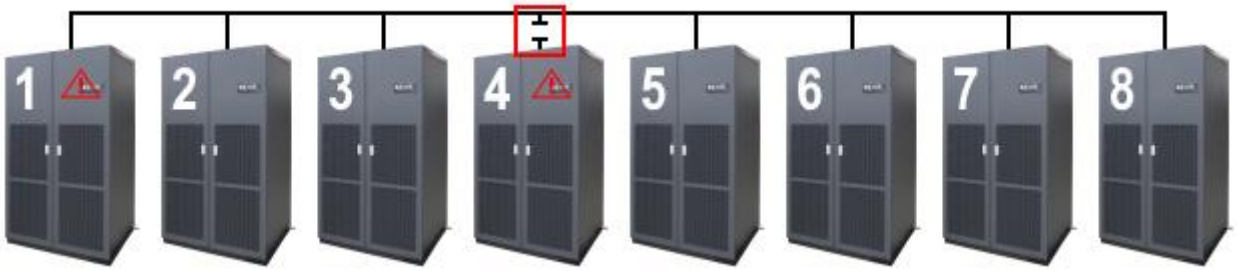
- If there is a unit that is disconnected from the mains, it will be signalled by the disconnected unit (if powered) and the unit with the lowest address.
- If the highest visible unit is not the one planned to be last or the lowest one is not 1 (that is, the one planned to be first), then there has been a network truncation, causing one or more sections, and the signal is provided by the highest and the lowest units of each section.

39.12.3 Examples

The following examples refer to a LAN with 8 “Perimeter” units connected.

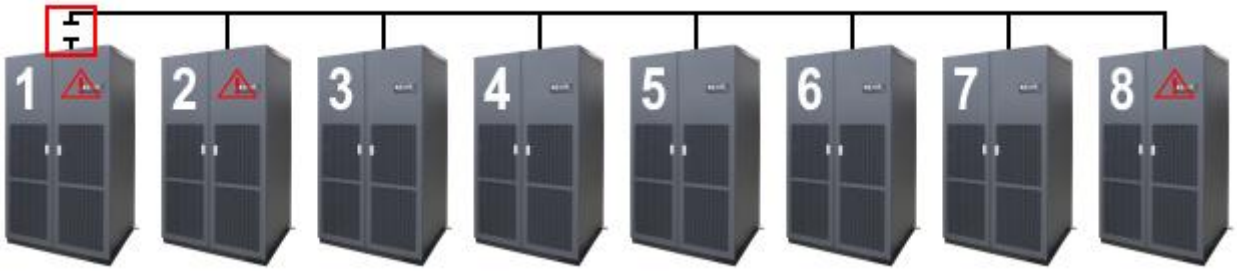
Example 1

- Situation: unit 4 disconnected from all the others.
- Units signalling the LAN disconnected alarm: 1 and 4 (if powered and working).



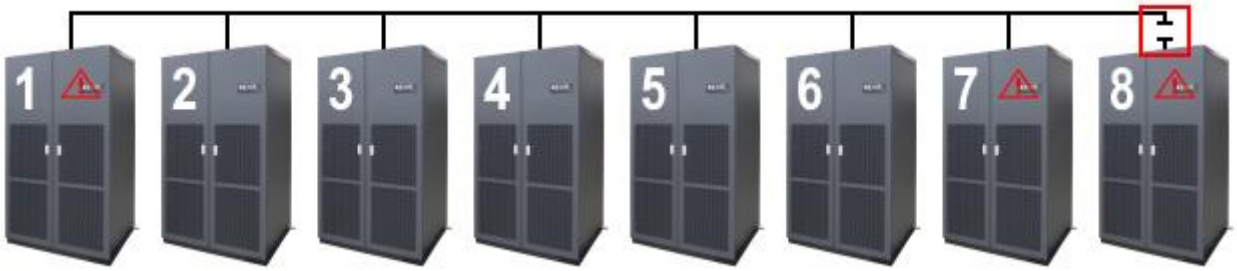
Example 2

- Situation: unit 1 disconnected from all the other “Perimeter” units.
- Units signalling the LAN disconnected alarm: 1 (if powered and working) 2 and 8.



Example 3

- Situation: “Perimeter” unit 8 disconnected from all the others units.
- Units signalling the LAN disconnected alarm: 1, 7 and 8 (if powered and working).



Example 4

- Situation: “Perimeter” unit network split into two sections.
- Units signalling the LAN disconnected alarm: 1, 3, 4 and 8.



Example 5

- Situation: “Perimeter” unit network split into three sections.
- Units signalling the LAN disconnected alarm: 1, 2, 3, 4, 5 and 8.



Example 6

- Situation: “Perimeter” unit network split into two sections and unit 6 disconnected.
- Units signalling the LAN disconnected alarm: 1, 3, 4, 6 (if powered and working) and 8.



39.12.4 Consequences of the alarm

When a unit detects a disconnection on the local LAN network, the following occurs:

- signal on the main mask;
- forced unit activation in case it is in stand-by;
- average adjustment inhibited, in case it has been previously enabled;
- time count interruption for reserve unit rotation;
- election of a new Priority if the network is divided into several sections.

Moreover, the Priority unit activates a backup unit.

39.13 Shared user terminal

The shared user terminal (address 32) is managed by the application as follows:

- Usually, it displays the information regarding the unit selected by the user by pressing **[ESC]** and **[ALARM]** simultaneously. Whenever this is done the terminal switches onto the upper unit address.
- In case of maintenance alarm or signal on any of the units connected to the LAN network, the user terminal automatically switches onto the alarm or signal unit, in order to allow proper signalling.

Physically, the shared terminal may be connected to any of the network boards. Moreover, it may be connected both on the unit (panel terminal) and in remote position (wall terminal).

39.13.1 Connecting the remote keyboard

As a standard, there is only the on-board keyboard, directly connected to the J10 connector.
It is possible to connect a remote keyboard to the unit and it is possible to choose from different configurations.

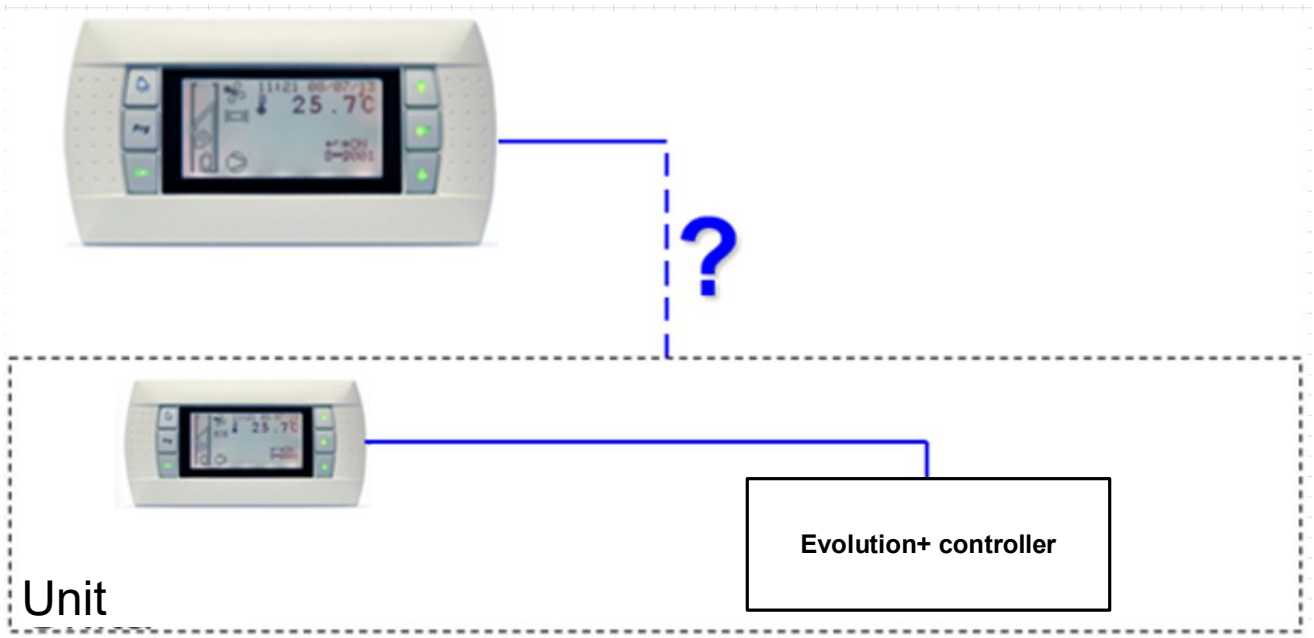
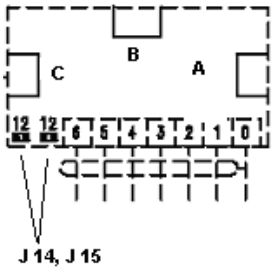


Figure 39-15: *remote keyboard connection diagram.*

39.13.2 “T” shunt

This is a shunt with phone connectors that is used in both the local network (LAN) and global network.
The two jumpers J14 and J15 must short circuit pins 1 and 2.
There is also a terminal board. The meanings of the various terminals are explained below:

1.	Image and wiring diagram of a T shunt.		
2.	Meaning of the terminal board.	**Screw terminal**	**Function**
		0	Earth (shielded cable sheath)
		1	+VRL=30V
		2	GND
		3	Rx-/Tx-
		4	Rx+/Tx+
		5	GND
		6	+VRL=30V

39.13.3 Remote keyboard up to 200 metres

The connection of a remote keyboard requires the use of two “T” shunt boards:

- one near the controller;
- one near the remote keyboard.

In case of a remote keyboard monitoring a single unit for a distance of less than 200 metres, the correct configuration is as follows:

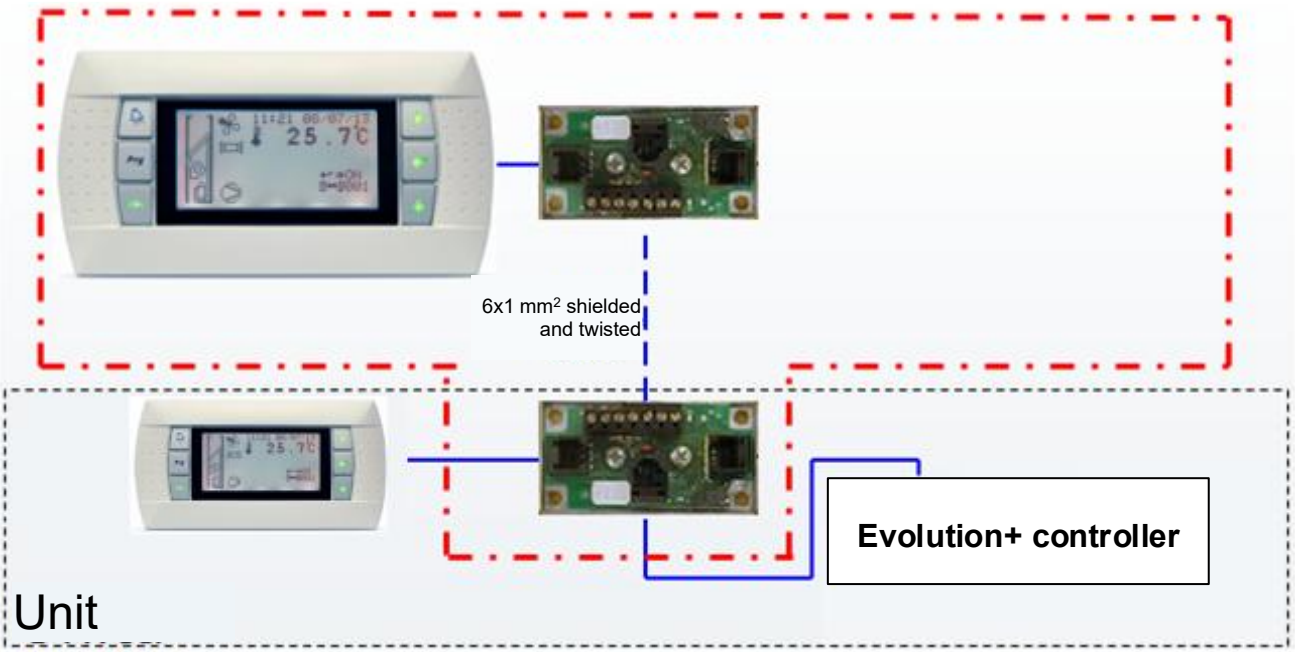


Figure 39-16: *diagram for connecting a remote keyboard up to 200 m.*

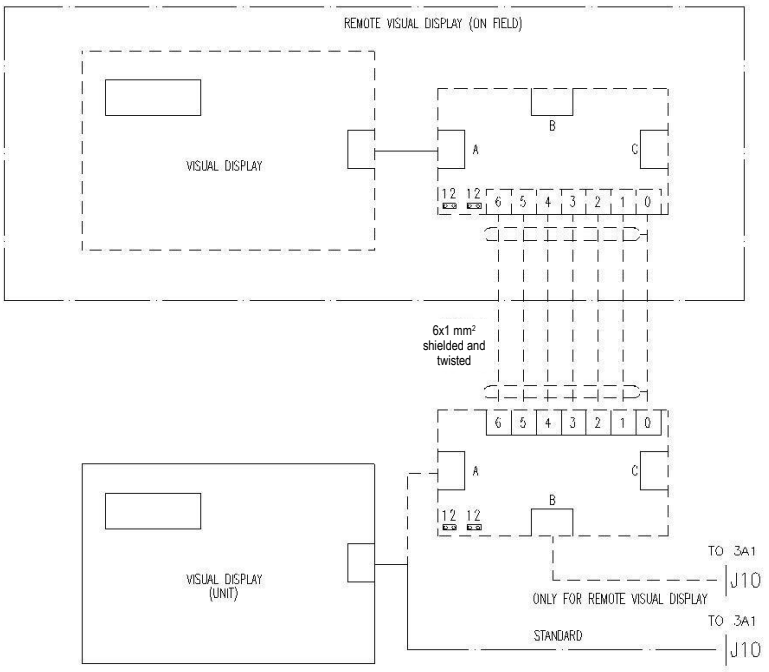


Figure 39-17: *wiring diagram for connecting a remote keyboard up to 200 m.*

39.13.4 Remote keyboard from 200 metres up to 500 metres

If the remote keyboard must be installed over 200m away from the local network (LAN), a power unit must be installed near the remote keyboard.
The remote keyboard cannot be installed more than 500 m away.
The only difference between this and a remote keyboard up to 200 metres is the connection of the power unit to terminals 1 and 2 of the T shunt (the one near the remote keyboard). In this case a 3-wire cable connecting the two T-shunts is sufficient.

If just one chiller is connected, the connection diagram is:

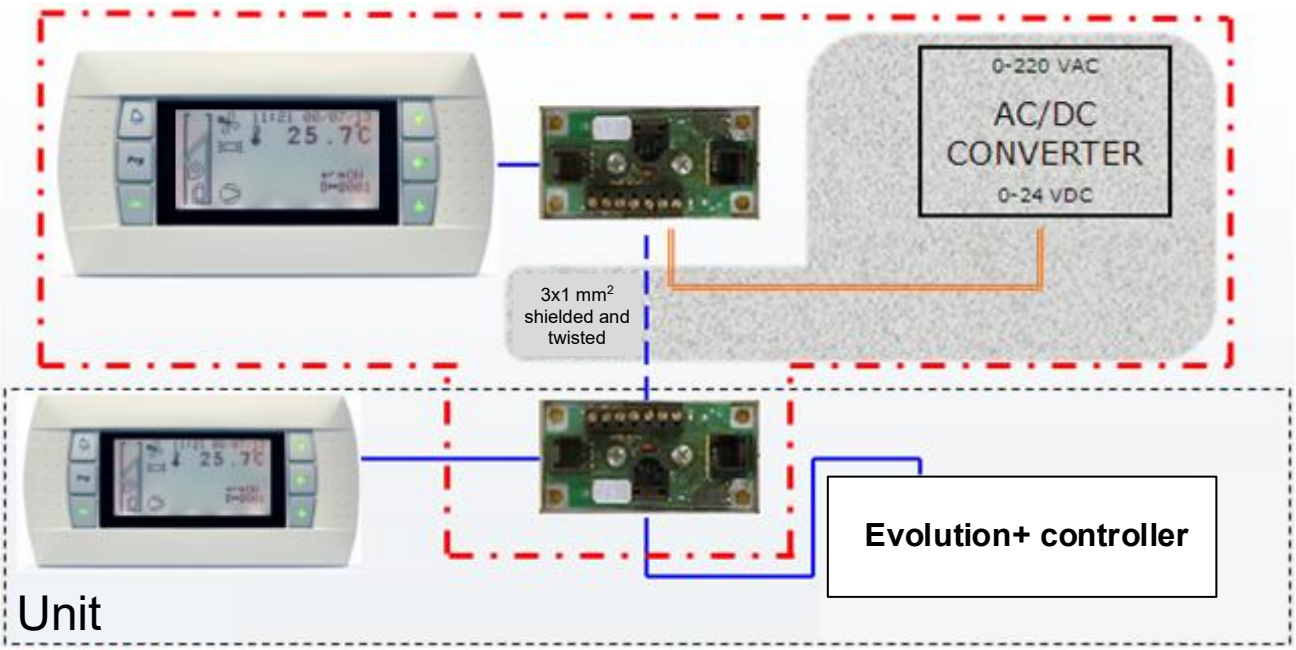


Figure 39-18: *diagram for connecting a remote keyboard from 200 m to 500 m.*

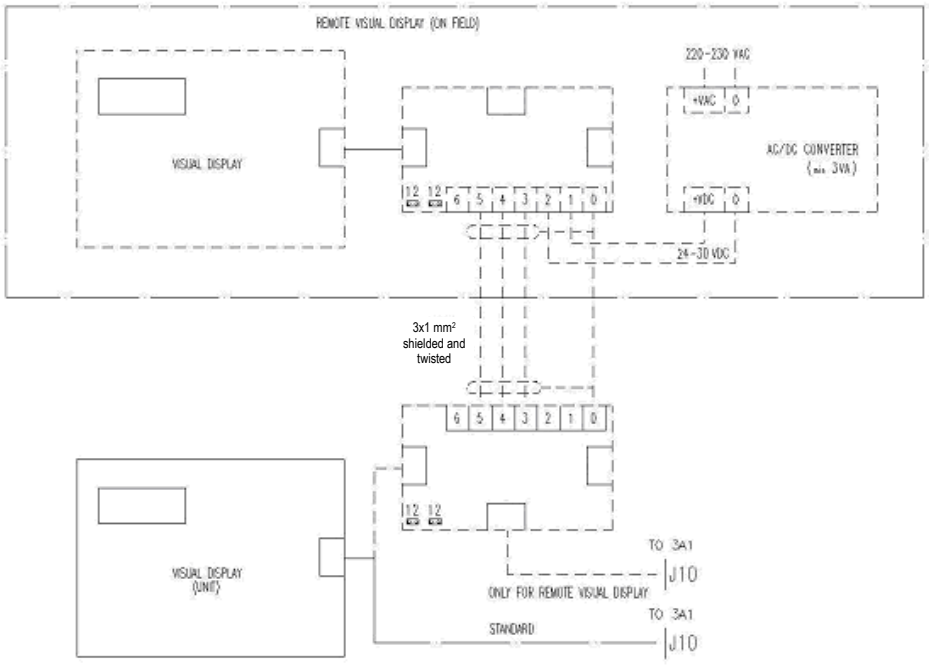


Figure 39-19: *wiring diagram for connecting a remote keyboard from 200 m to 500 m.*

39.13.5 Remote keyboard for more than one unit

To connect more than one unit to the same remote keyboard, connect the two boards together by jumpering connectors J11.
A configuration similar to the two shown above should only be used on the first board in the network (the one nearest the remote keyboard).

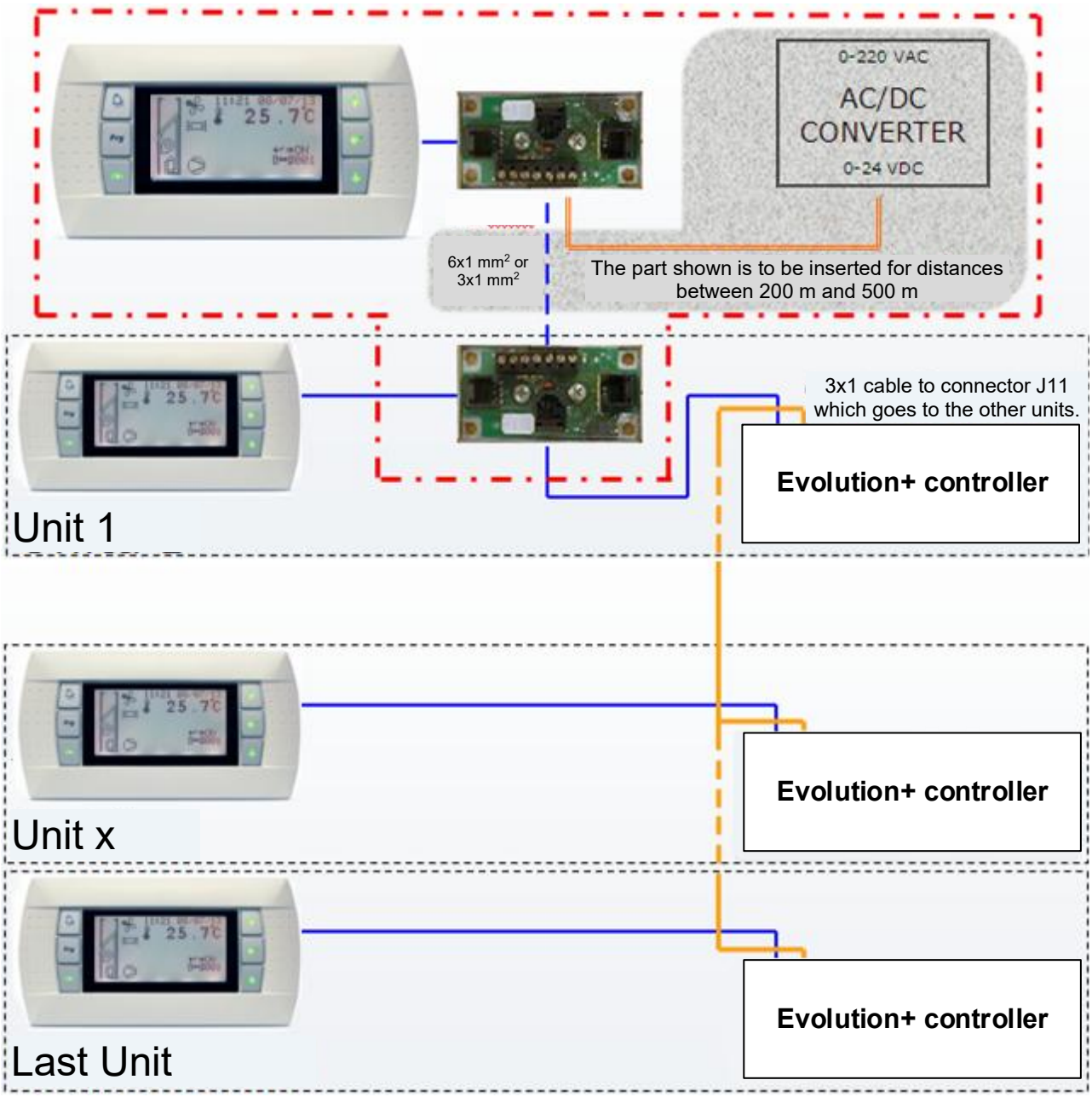


Figure 39-20: *diagram for connecting a remote keyboard to more than one unit*

40 HARDWARE

40.1 Hardware architecture

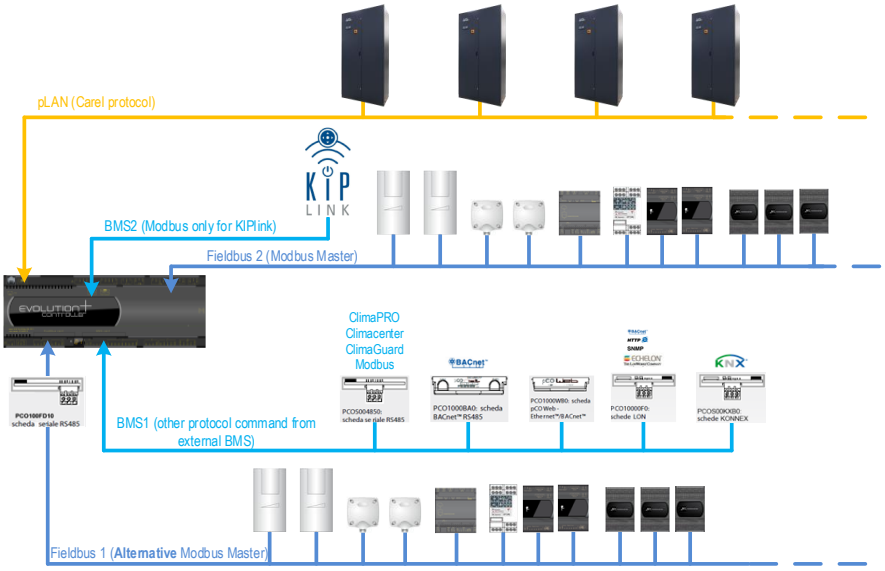


Figure 40-1: *hardware architecture diagram.*

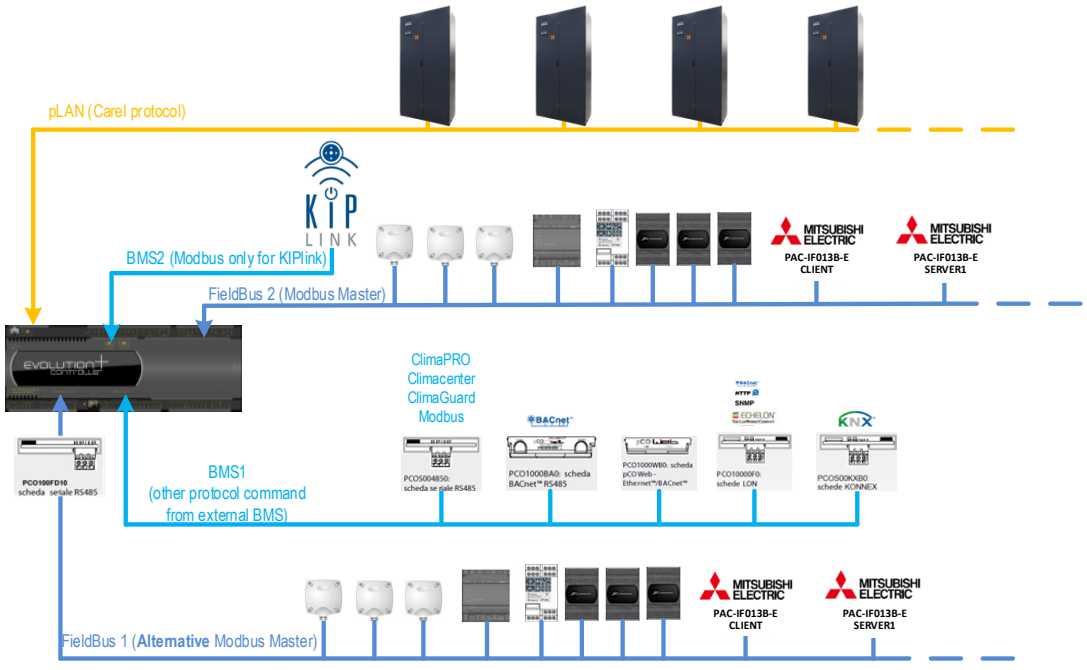


Figure40-2: *s-MEXT unit hardware architecture diagram.*

40.2 Parts

40.2.1 PCO5+ controllers

The various pieces of hardware used for the software architecture are shown below



Figure40-3: *pCO5 controller board + size "S".*



Figure40-4: *pCO5 controller board + size "M".*

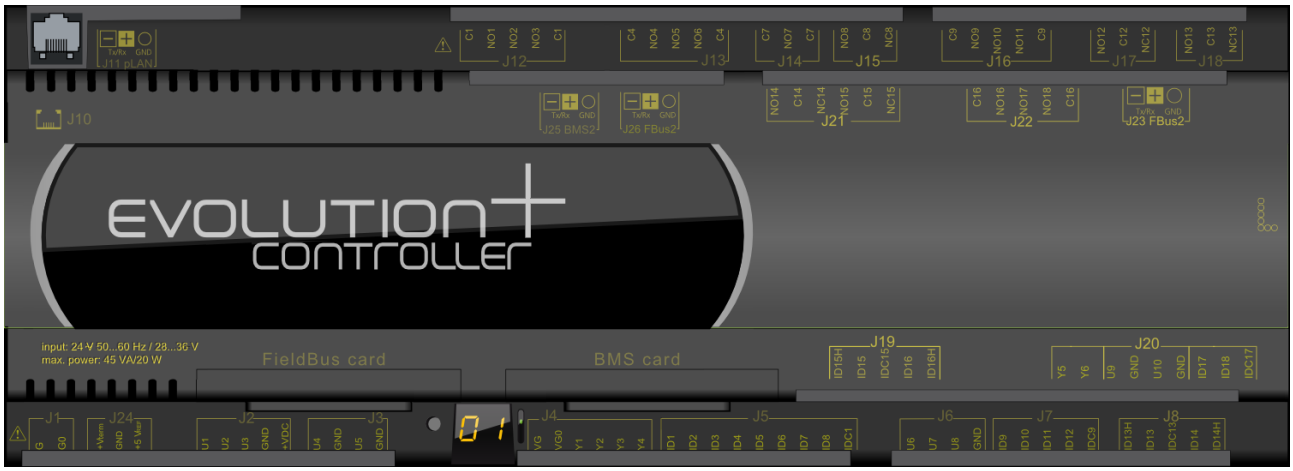


Figure40-5: *pCO5 controller board + size "L".*

40.2.2 Other connected boards



Figure 40-6: *pCOe I/O expansion board.*

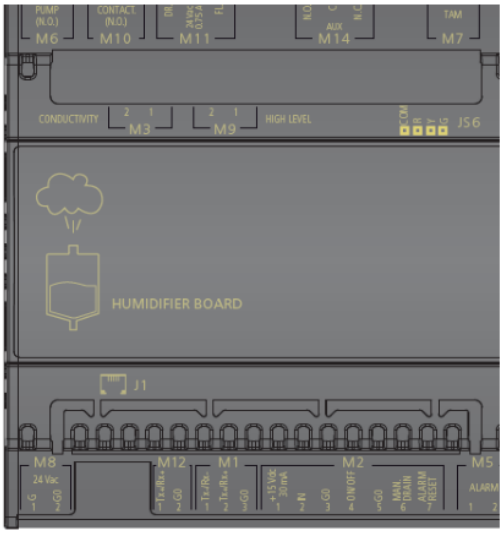
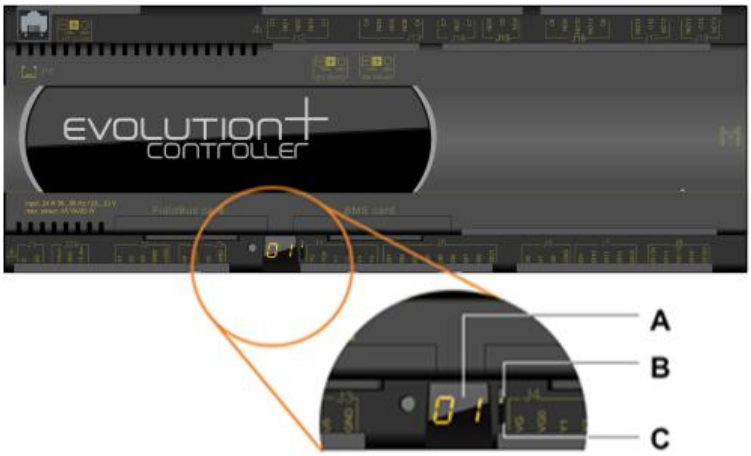


Figure 40-7: *Humidifier CPY control board.*

40.3 Meaning of the LEDS

Some of the hardware uses the LEDs described below.

LEDs on the pCO5+ “controller” board:



A	A 7-segment display for viewing and setting the address of the board.
B	Power LED.
C	Overload LED.

Figure 40-8: *LEDs on the controller board.*

LEDs on the pCOe I/O expansion board:

A (yellow)	On	Powered up.
B (green)	On	Correct communication between the expansion board and the base board.
C (yellow)	On	Probe error.
D (red)	On	"I/O mis-match" error.
	Blinking	No communication between the expansion board and the base board.
Note: Various LEDs may come on together.		

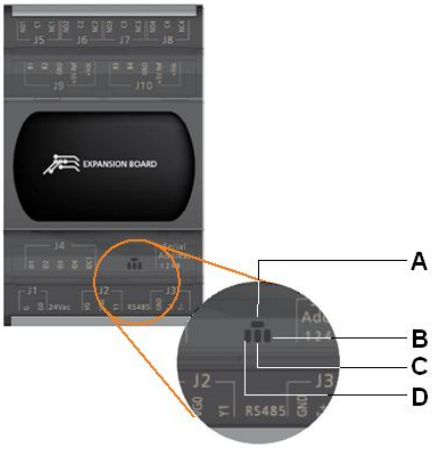


Figure 40-9: *LEDs on the expansion I/O board.*

40.4 Configuration of Modbus devices

40.4.1 Table of Modbus devices addresses

Each device connected to the controller via the Modbus protocol must have a univocal Modbus address.
The addresses that must have the devices connected to the Modbus network are listed below, together with the methods for changing address with respect the one initially set by the supplier.
The devices are connected by default to Fieldbus port 2 (can be changed in the parameter).

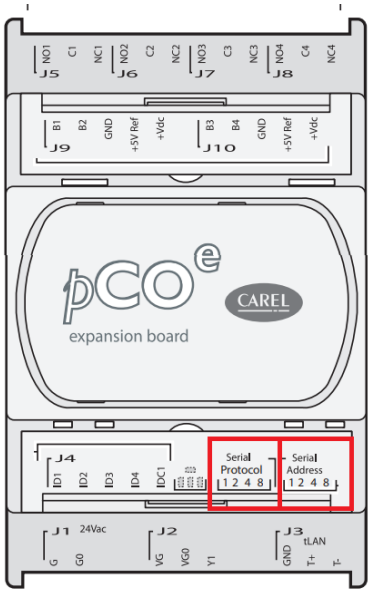
Module	Models	Modbus address	Method for changing address
Expansion Board 1	Carel pCOe	8	Dip switch.
Mitsubishi board	PAC-IF013B-E Client	21	Dip switch.
Mitsubishi board	PAC-IF013B-E Server 1	22	Dip switch.
Automatic transfer switch	Schneider ABB OTM Compact ABB truONE	26	Depending on the device used.
Network analyser	Gavazzi CPT Gavazzi EM210	31	CPTASoft configuration software.
Network analyser 2	Gavazzi CPT Gavazzi EM210	32	CPTASoft configuration software.
Active power filter	Sikes Electric SinExcel	35	Via device interface
Internal fan 1	Ebmpapst Ziehl Abegg Fans Tech Delta Wolong	41	Depending on the device used.
Internal fan 2	Ebmpapst Ziehl Abegg Fans Tech Delta Wolong	42	Depending on the device used.
Internal fan 3	Ebmpapst Ziehl Abegg Fans Tech Delta Wolong	43	Depending on the device used.
Internal fan 4	Ebmpapst Ziehl Abegg Fans Tech Delta Wolong	44	Depending on the device used.
Internal fan 5	Ebmpapst Ziehl Abegg Fans Tech Delta Wolong	45	Depending on the device used.
Internal fan 6	Ebmpapst Ziehl Abegg Fans Tech Delta Wolong	46	Depending on the device used.
Internal fan 7	Ebmpapst Ziehl Abegg Fans Tech Delta Wolong	47	Depending on the device used.

Module	Models	Modbus address	Method for changing address
Internal fan 8	Ebmpapst Ziehl Abegg Fans Tech Delta Wolong	48	Depending on the device used.
Return T+H Probe	Carel DPW	128	Dip switch.
Remote T+H probe 1	Carel DPW	129	Dip switch.
Remote T+H probe 2	Carel DPW	130	Dip switch.
Remote T+H probe 3	Carel DPW	131	Dip switch.
Remote T+H probe 4	Carel DPW	132	Dip switch.
External T+H Probe	Carel DPW	133	Dip switch.
Delivery T+H Probe	Carel DPW	134	Dip switch.
Humidifier board	Carel CPY	148	Default.

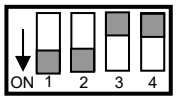
Detailed information on how to configure some of the devices is given in the following chapters.

40.4.2 Configuration of the I/O expansions

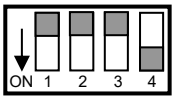
The configuration of the I/O expansions is completed using two sets of dip-switches: the first one identifies the communication protocol, while the second identifies the address.



The settings of the various dip switches are shown below:
SERIAL PROTOCOL: set



SERIAL ADDRESS: set according to the expansion number as per the table below

Expansion No.	Address	Dip Switch
1	8	

40.4.3 Configuration of T+H probes

The T+H probe module communication parameters are configured using the Dip-Switches on the probe electronic boards.

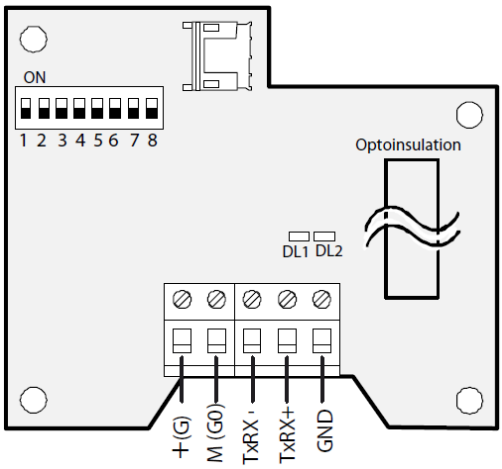


Figure40-10: *T+H probe module layout.*

The settings of the various switches are shown below:

DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	DIP 6	DIP 7	DIP 8
Address (from 128 to 159), see table					Communication protocol (see table)		Baud rate (see table)
-	-	-	-	-	OFF	ON	OFF

DIP 1, 2, 3, 4, 5						
DIP 1	**DIP 2**	**DIP 3**	**DIP 4**	**DIP 5**	**Address**	**Probe description**
OFF	OFF	OFF	OFF	OFF	128	Return
ON	OFF	OFF	OFF	OFF	129	Remote 1
OFF	ON	OFF	OFF	OFF	130	Remote 2
ON	ON	OFF	OFF	OFF	131	Remote 3
OFF	OFF	ON	OFF	OFF	132	Remote 4
ON	OFF	ON	OFF	OFF	133	External
OFF	ON	ON	OFF	OFF	134	Delivery

As can be seen from the table above, address encoding is provided via the first five Dip Switches.
The addresses are to be considered with a binary value and the address scale ranges from a minimum value of 128 to a maximum value of 159. Only addresses in the table are considered.

DIP 6, 7		
DIP 6	**DIP 7**	Communication protocol
OFF	OFF	Carel protocol
ON	OFF	Auto (superv. Carel – Modbus)
OFF	**ON**	**Modbus 8-None-2**
ON	ON	Modbus 8-Even-1

DIP 8	
DIP 6	Baud rate
OFF	**19200**
ON	9600

The probe must be configured to communicate with Mobus protocol parity 8N2, baud rate 19200 Bit/s.

40.4.4 PAC-IF013B-E board configuration

The configuration of the communication parameters for the Master PAC-IF013B-E interface card is completed using the DIP Switches (SW1, 2, 3, 4, 6) of the electronic cards.

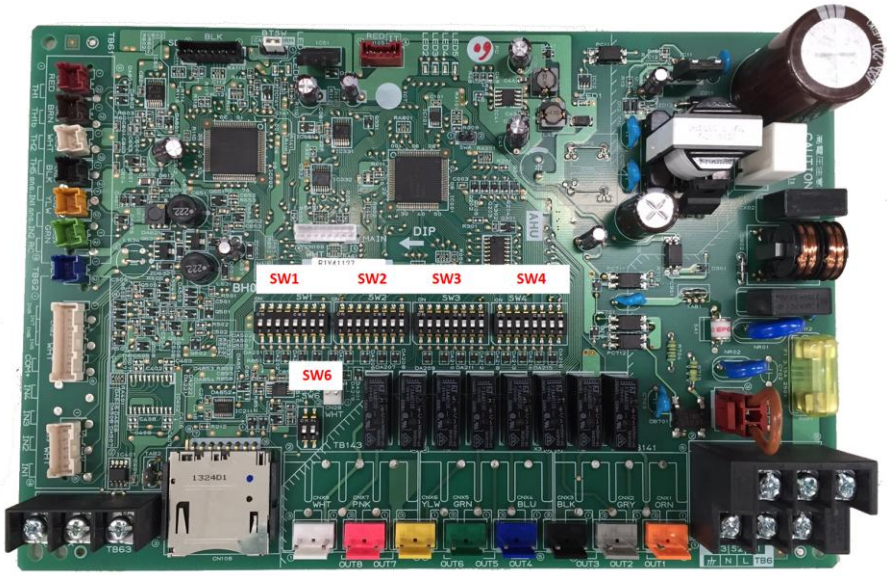


Figure 40-11: *Peripheral: PAC -IF013B-E*

WARNING:
When setting the switches, the PAC-IF013B-E peripheral board **MUST NOT BE POWERED**.

OBLIGATION:
Once the dip-switches have been set, disconnect the power from the controller and then power both the controller and the peripheral at the same time.

The DIP-switches will always be set according to the wiring diagram and the conformity of the unit settings (graphical note: the black rectangle indicates the switch position; black at top = ON, black at bottom = OFF).



Figure 40-12: *example of switch configuration PAC-IF013B-E Client for a unit with a single combined Mr.Slim.*



Figure 40-13: *example of switch configuration PAC-IF013B-E Client for a unit with two combined Mr.Slims.*



Figure 40-14: *example of switch configuration PAC-IF013B-E Server1 for a unit with two combined Mr.Slims.*

The settings of the various switches are shown below:

Switch 1								
Communication type (ModBus)			TH11 (OFF = enabled)	TH5 (OFF = enabled)	Save to SD Card	TH1 (OFF control in delivery)	External unit control	
SW 1 -1	SW 1-2	SW 1-3	SW 1-4	SW 1-5	SW 1-6	SW 1-7	SW 1-8	
ON	ON	ON	OFF	OFF	OFF	OFF	With IMOUC disabled (unit with 1 Mr.Slim)	With IMOUC enabled (unit with 2 Mr.Slim)
							OFF	ON

Switch 2							
Fixed operation mode (see table)		Fixed temperature setting (see table)			Automatic expansion valve control	TH2 (OFF = enabled)	TH1 (OFF = enabled)
SW 2 -1	**SW 2-2**	**SW 2-3**	**SW 2-4**	**SW 2-5**	**SW 2-6**	**SW 2-7**	**SW 2-8**
OFF	OFF	OFF	OFF	OFF	ON	OFF	ON

SW 2-1 and SW 2-2		
SW 2 -1	**SW 2-2**	**Description**
OFF	**OFF**	**Not in fixed mode (varies depending on the remote control)**
ON	OFF	Fixed cooling
OFF	ON	Fixed heating
ON	ON	External input

SW 2-3, SW 2-4, SW 2-5			
SW 2-3	**SW 2-4**	**SW 2-5**	**Description**
OFF	**OFF**	**OFF**	**Not in fixed mode**
ON	OFF	OFF	Summer 19°/ winter 17° fixed
OFF	ON	OFF	20° C
ON	ON	OFF	22° C
OFF	OFF	ON	24° C
ON	OFF	ON	26 °C
OFF	ON	ON	28 °C
ON	ON	ON	Summer 30° C / Winter 28° C

Switch 3							
Unused			Thermoregulation Off Point (see table)		ModBus Baud Rate (see table)		
SW 3 -1	**SW 3-2**	**SW 3-3**	**SW 3-4**	**SW 3-5**	**SW 3-6**	**SW 3-7**	**SW 3-8**
OFF	OFF	OFF	ON	OFF	OFF	OFF	ON

SW 3-4 and SW 3-5		
SW 3-4	**SW 3-5**	**Description (Difference)**
OFF	OFF	1 °C
OFF	ON	2 °C
ON	**OFF**	**3 °C**
ON	ON	5 °C

SW 3-6, SW 3-7, SW 3-8			
SW 3-6	**SW 3-7**	**SW 3-8**	**Description (BMS speed)**
OFF	OFF	OFF	1200 bps
ON	OFF	OFF	24000 bps
OFF	ON	OFF	4800 bps
ON	ON	OFF	9600 bps
OFF	**OFF**	**ON**	**19200 bps**
ON	OFF	ON	38400 bps
OFF	ON	ON	57600 bps
ON	ON	ON	Not used

Switch 4								
Address setting (see below)						Parity type (see table)		Stop bits (see table)
SW 4 -1		**SW 4-2**		**SW 4-3**	**SW 4-4**	**SW 5-5**	**SW 4-6**	**SW 4-7**	**SW 4-8**
Address = 21 (Client)	Address = 22 (Server1)	Address = 21 (Client)	Address = 22 (Server1)	ON	OFF	ON	OFF	ON	ON
ON	OFF	OFF	ON						

SW 4-1, SW 4-2, SW 4-3, SW 4-4, SW 4-5						
SW 4 -1	**SW 4-2**	**SW 4-3**	**SW 4-4**	**SW 4-5**	**Address**	**Attribution**
ON	OFF	ON	OFF	ON	21	Client
OFF	ON	ON	OFF	ON	22	Server1

As can be seen from the table above, the relevant switch for encoding the address is SW4 via the five Dip Switches. The addresses are to be considered with a binary value and the address scale ranges from a minimum value of 1 to a maximum value of 31. Only addresses 21 (Client) and 22 (Server) are considered.

SW 4-6, SW 4-7		
SW 4-6	**SW 4-7**	**Description**
OFF	OFF	Odd
ON	OFF	Even
OFF	**ON**	**None**
ON	ON	N/A

SW 4-8	
SW 4-8	**Description**
OFF	1 bit
ON	**2 bit**

Switch 6	
Type of external unit control (per step: OFF/Step1/Step2/…/Step11)	
SW 6-1	**SW 6-2**
OFF	OFF

40.5 Input/output configuration tables

40.5.1 s-MEXT-G00

HW **pCO5+**
pCO size **Small**
Circuits **1/2**

Controller

Analogue Inputs

Connector		Type	Description
J2	U1	4-20mA	Circuit 2 evaporation pressure transducer(1)
	U2	NTC	Ambient air temperature
	U3	NTC	Delivery air temperature
J3	U4	4-20mA	Evaporation pressure transducer
	U5	/	Remote on/off
Free		0	

Analogue Outputs

Connector		Type	Description
J4	Y1	0-10V_{DC}	Internal Electronic Fan
	Y2		**Free**
	Y3		**Free**
	Y4		**Free**
Free		3	

Digital Inputs

Connector		Type	Description
J5	ID1	/	Phase Sequence
	ID2	/	Air flow differential pressure switch
	ID3	/	Clogged filter differential pressure switch
	ID4	/	Heater thermostat
	ID5	/	Fire / Fumes sensor
	ID6	/	Flooding sensor
	ID7		**Free**
	ID8	/	Gas leak sensor
Free		1	

Digital Outputs

Connector		Type	Description
J12	NO1	/	Internal Fan + Delivery Damper
	NO2		**Free**
	NO3		**Free**
J13	NO4	/	Heater 1
	NO5	/	Heater 2
	NO6		**Free**
J14	NO7	/	Alarm A
J15	NO8	/	Alarm B
Free		3	

Note: (1) in case of unit with two circuits

I/O expansion 1

Analogue Inputs

Connector		Type	Description
J9	B1	4-20mA 0-5V_{DC}	Air differential pressure transducer **As an alternative:** Delivery air temperature from superv.
	B2		**Free**
J10	B3	NTC	External Air Temperature
	B4		**Free**
Free		2	

Digital Inputs

Connector		Type	Description
J4	ID1		**Free**
	ID2		**Free**
	ID3		**Free**
	ID4		**Free**
Free		4	

Analogue Outputs

Connector		Type	Description
J2	Y1	0- 10V_{DC}	Direct Free-cooling damper
Free		0	

Digital Outputs

Connector		Type	Description
J5	NO1 NC1	/	Direct OPEN FC
J6	NO2 NC2		**Free**
J7	NO3 NC3		**Free**
J8	NO4 NC4		**Free**
Free		3	

40.6 Functions req. expansions

40.6.1 Overview

Additional function	Function / Signals	I/Os used	Expansion address	Type of function	Minimum SW
Air Flow Control	Helps to keep air flow constant. Uses a 4-20mA transducer to measure differential pressure. *Alternative to Delta P Control.*	B1	8	Standard	ME00
Delta P Control	Helps to keep air Delta P constant. Uses a 4-20mA transducer to measure differential pressure. *Alternative to Air Flow control.*	B1	8	Standard	ME00
Direct Free cooling	Direct Free-cooling control. Measurement of analogue input for external temperature, digital Freecooling activation contact, and 0-10V_{DC} analogue output for damper control.	NO1 Y1 B3	8	Standard	ME00

41 ANNEXES

All the polygons are then grouped in 8 zones (which cannot be edited). The split is illustrated in the chart below:

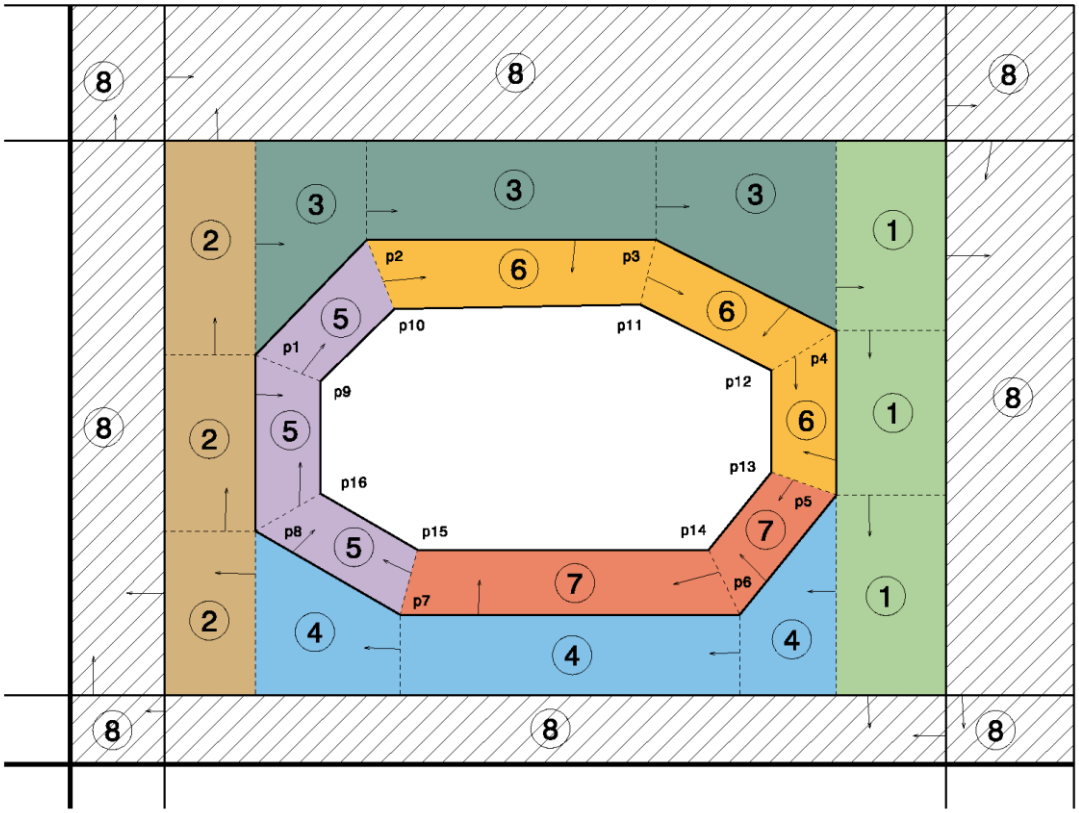


Figure 41-1: *split of the envelope into zones.*

For each zone the following can be set:

- new effective minimum and maximum working frequency limits;
- whether or not to stop the compressor;
- the time after which to stop the compressor.

When the compressor is shut down, the logic generates an out of envelope alarm signal.
For zone 8 it is not possible to decide whether or not to change frequency. Entering the zone stops the compressor immediately and generates an alarm signal.

The images below represent the work ranges of the inverter compressors that can be selected in the application.

41.1.1 Siam ANB

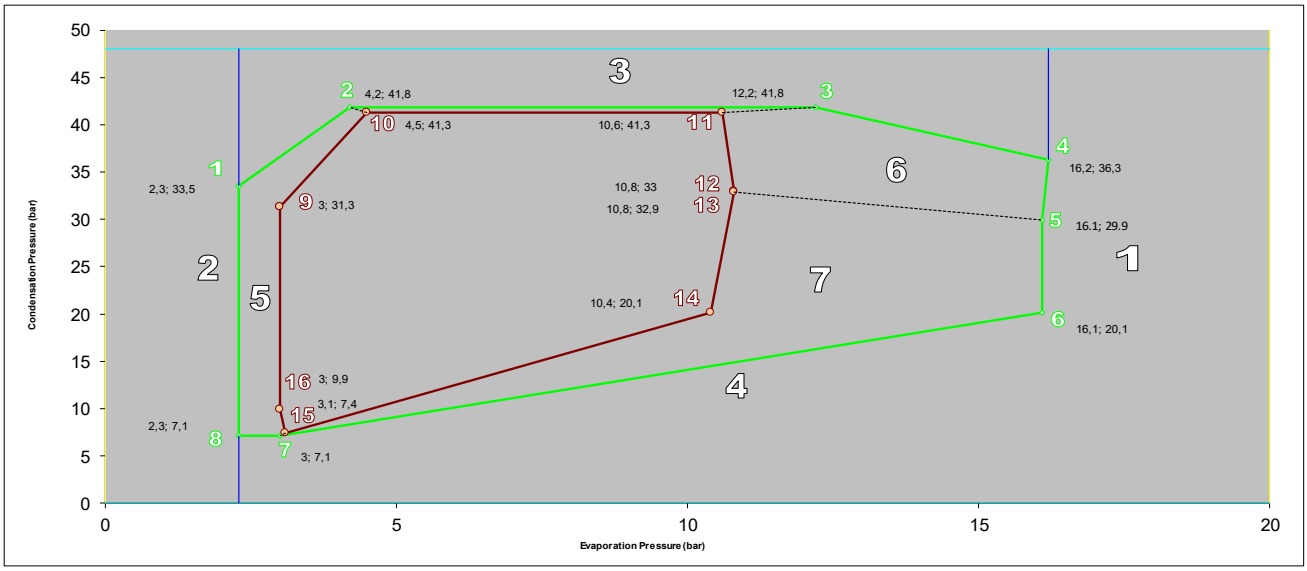


Figure 41-2: *Siam ANB envelope compressor.*

41.1.2 Siam TNB

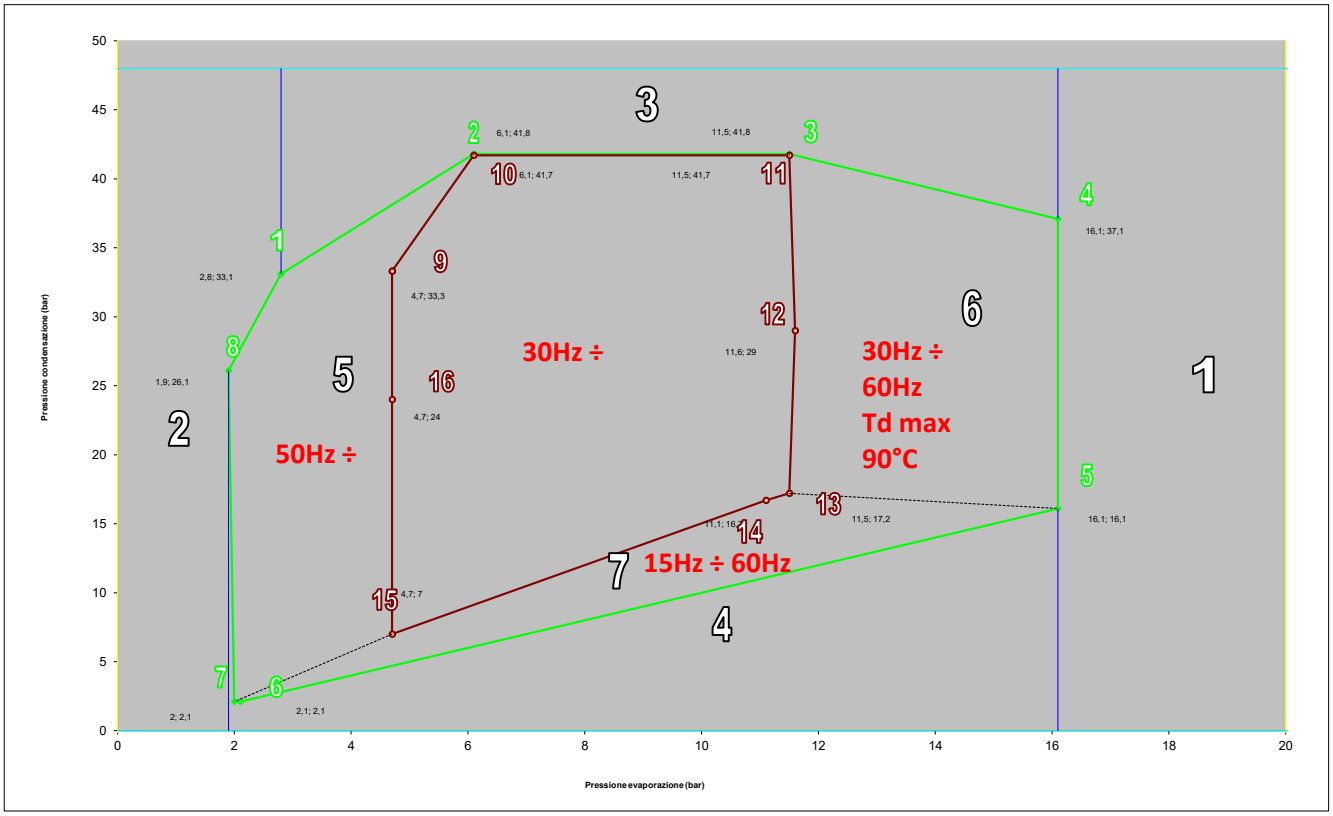


Figure 41-3: *Siam TNB envelope compressor.*

41.2 PID Controller control parameters

The EVOLUTION+ software is equipped with some PID adjusters for controlling:

- on/off compressors (enabling/disabling only);
- inverter compressors;
- water valves;
- humidifier.;
- fans with special function 01 active.

The graph below shows the operating logic of a PID control:

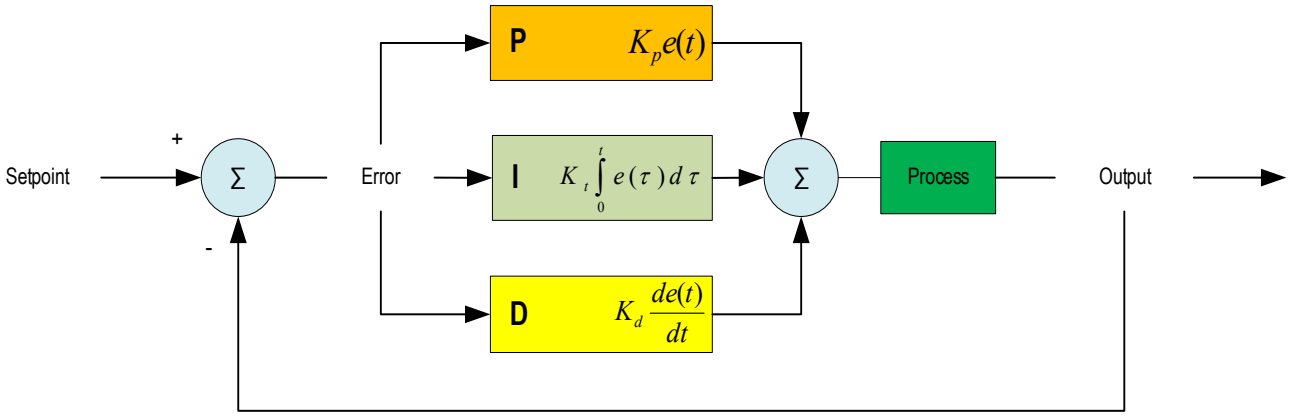


Figure 41-4: *PID operating control logic.*

This type of control involves three types of action:

- **P**roportional action.
- **I**ntegral action.
- **D**erivative action.

The values of the three types of action can be modified to change the effects on the controlled output variable (inverter frequency, valve opening, steam production, fan speed, etc.) and, therefore, the adjustment itself.

The default parameters of the controller allow sufficiently precise and rapid adjustment within the response times. However, in certain cases it may be necessary to make certain changes depending on the required result of the adjustment.

The parameters can all be set under the **“Regulations” menu**, which can be accessed by entering the **“Service” password**.
For the default values, see the parameters table.

Below are a few guidelines concerning the effect of each action.

41.2.1 Proportional Action

The proportional action sets a basic control action for what is currently happening. The value of this action is proportional to the error, i.e. the deviation of the measured unit in relation to the setpoint.

This action is defined using the proportional constant K_p (also known as proportional gain) calculated with this formula:

$$K_p = \frac{100}{B_p}$$

Where B_p is the value of the proportional band defined by one of the following parameters:

- P20.18 (for temperature adjustment).
- P20.21 (for humidity adjustment).

The proportional band B_p defines the maximum error capable of bringing the proportional action to 100%.

A low B_p value can therefore cause an extreme reaction even when there are slight variations in the error, while a high value ensures little variation of the control variable even when there are serious errors.

The following table shows the reactions on the system caused by the **decrease** of the proportional band and resulting increase of the proportional constant.

Parameter (Decreases)	Constant (Increases)	Promptness of response	Overshoot	Balancing time	Error at full power	Stability
B_p	K_p	Increases	Increases	Decreases (slightly)	Decreases	Worsens

41.2.2 Integral Action

The integral action is an action of control on the basis of what has happened in the past. The value of this action is proportional to the sum of the errors of the previous moments.

This action is defined using the integral constant K_i (also known as integral gain) calculated with this formula:

$$K_i = \frac{K_p}{T_i}$$

T_i is the value of the integral time defined by one of the following parameters:

- P20.05 (for the adjustment of direct expansion units with on/off compressor or chilled water units).
- P20.06 (for the adjustment of direct expansion units with inverter compressor).
- P20.22 (for humidifier adjustment).
- P20.95 (for the adjustment of direct expansion units with compressors with delivery air adjustment active and Free-cooling).

The following table shows the reactions on the system caused by the **decrease** of the integral time and resulting increase of the integral constant:

Parameter (Decreases)	Constant (Increases)	Promptness of response	Overshoot	Balancing time	Error at full power	Stability
T_i	K_i	Increases	Increases	Increases	Cancels out	Worsens

The integral action can be disabled by setting the integral time to 0.

41.2.3 Derivative Action

The derivative action sets a control action based on the prediction of what will happen in the future. The value of this action is proportional to the error trend (increase or decrease).

This action helps to improve dynamic performance, while maintaining the high value of the proportional action, but is less simple to adjust. It is useful in that, if the output deviates too quickly from the setpoint value, the error derivative and, therefore, the derivative action, can be significant.

This action is defined using the derivative constant K_d (also known as derivative gain) calculated with this formula:

$$K_d = K_p * T_d$$

Where T_d is the value of the derivative time defined by one of the following parameters:

- P20.07 (for the adjustment of direct expansion units with inverter compressor).
- P20.23 (for humidifier adjustment).
- P20.96 (for the adjustment of direct expansion units with compressors with delivery air adjustment active and Free-cooling).

The T_d time defines the projected time horizon: If too small, it will not have a good anticipatory effect; if too large, its forecast may be completely wide of the mark.

The following table shows the reactions on the system caused by the **increase** of the derivative time and resulting increase of the derivative constant.

Parameter (Increases)	Constant (Increases)	Promptness of response	Overshoot	Balancing time	Error at full power	Stability
T_d	K_d	Increases (slightly)	Decreases	Decreases (slightly)	Does not change	Improves

The derivative action can be disabled by setting the derivative time to 0.

41.2.4 The combined effect of the three actions

The control action of the system is, therefore, calculated, one moment at a time, as the sum of the three contributions (Proportional, Integral and Derivative).

The **P**roportional Action represents the **component most sensitive to the current value of the error**:

- High K_p values entail a significant reaction also for slight error variations.
- Reduced values transfer on the control variable limited variations also in case of significant errors.

The **I**ntegral action varies in a linear manner following the action of proportionality coefficient K_p/T_i and, as mentioned above, **takes the past trend of the error into account**:

- Reduced T_i values lend greater importance to past system history.
- High values decrease the weight of the integral action by transferring to the control variable variations that are more dependent on the current error value.

The **D**erivative action varies in a linear manner with the error derivative following the action of proportionality coefficient K_p*T_d and, as mentioned before, **takes the current trend of the error into account**:

- High T_d values place greater importance on what may be the future trend of the error, with greater reliance on the algorithm.
- Lower values transfer to the control variable variations that are less dependent on future trends.

The image below illustrates what has been said above:

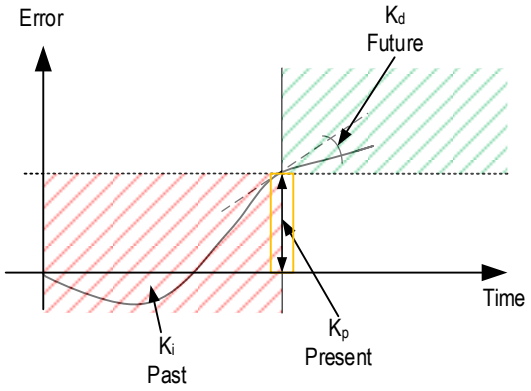


Figure 41-5: *representation of the three actions.*

41.2.5 Anti-Windup control (control of integral error)

The PID adjuster has an integral error control function called Anti-Windup.

This function is used when the demand of the PID reaches 100%. In this case, without the function, the integral action of the controller would continue to integrate the error and render the PID adjuster inactive even if the error were to decrease in relation to the setpoint, causing the system to overshoot. This would continue until the end of the integral period (time T_i).

This function stops the calculation of the integral action until demand falls again below 100%.

41.3 Definition of the humidifier's configuration parameter

Below is the conversion table for the value of the parameter P27.06 and the configured type of cylinder.

Value P27.06	Definition
0	<Select the Model>
1	001-1 kg/h Reduct 200V 1-ph Drain Pump
2	002-1 kg/h Reduct 208V 1-ph Drain Pump
3	003-1 kg/h Reduct 230V 1-ph Drain Pump
4	004-1 kg/h 200V 1-ph Drain Pump
5	005-1 kg/h 208V 1-ph Drain Pump
6	006-1 kg/h 230V 1-ph Drain Pump
7	007-3 kg/h Reduct 200V 1-ph Drain Pump
8	008-3 kg/h Reduct 208V 1-ph Drain Pump
9	009-3 kg/h Reduct 230V 1-ph Drain Pump
10	010-3 kg/h Reduct 208V 3-ph Drain Pump
11	011-3 kg/h Reduct 230V 3-ph Drain Pump
12	012-3 kg/h Reduct 400V 3-ph Drain Pump
13	013-3 kg/h 200V 1-ph Drain Pump
14	014-3 kg/h 208V 1-ph Drain Pump
15	015-3 kg/h 230V 1-ph Drain Pump
16	016-3 kg/h 200V 3-ph Drain Pump
17	017-3 kg/h 208V 3-ph Drain Pump
18	018-3 kg/h 230V 3-ph Drain Pump
19	019-3 kg/h 400V 3-ph Drain Pump
20	020-3 kg/h 460V 3-ph Drain Pump
21	021-5 kg/h 200V 1-ph Drain Pump
22	022-5 kg/h 208V 1-ph Drain Pump
23	023-5 kg/h 230V 1-ph Drain Pump
24	024-5 kg/h 200V 3-ph Drain Pump
25	025-5 kg/h 208V 3-ph Drain Pump
26	026-5 kg/h 230V 3-ph Drain Pump
27	027-5 kg/h 400V 3-ph Drain Pump
28	028-5 kg/h 460V 3-ph Drain Pump
29	029-5 kg/h 575V 3-ph Drain Pump
30	030-8 kg/h 200V 3-ph Drain Pump
31	031-8 kg/h 208V 3-ph Drain Pump
32	032-8 kg/h 230V 3-ph Drain Pump
33	033-8 kg/h 400V 3-ph Drain Pump
34	034-8 kg/h 460V 3-ph Drain Pump

Value P27.06	Definition
35	035-8 kg/h 575V 3-ph Drain Pump
36	036-9 kg/h 208V 1-ph Drain Pump
37	037-9 kg/h 230V 1-ph Drain Pump
38	038-10 kg/h 200V 3-ph Drain Pump
39	039-10 kg/h 208V 3-ph Drain Pump
40	040-10 kg/h 230V 3-ph Drain Pump
41	041-10 kg/h 400V 3-ph Drain Pump
42	042-10 kg/h 460V 3-ph Drain Pump
43	043-10 kg/h 575V 3-ph Drain Pump
44	044-15 kg/h 200V 3-ph Drain Pump
45	045-15 kg/h 208V 3-ph Drain Pump
46	046-15 kg/h 230V 3-ph Drain Pump
47	047-15 kg/h 400V 3-ph Drain Pump
48	048-15 kg/h 460V 3-ph Drain Pump
49	049-15 kg/h 575V 3-ph Drain Pump
50	050-18 kg/h 400V 3-ph Drain Pump
51	051-18 kg/h 460V 3-ph Drain Pump
52	052-18 kg/h 575V 3-ph Drain Pump
53	053-25 kg/h 200V 3-ph Drain Pump
54	054-25 kg/h 208V 3-ph Drain Pump
55	055-25 kg/h 230V 3-ph Drain Pump
56	056-25 kg/h 400V 3-ph Drain Pump
57	057-25 kg/h 460V 3-ph Drain Pump
58	058-25 kg/h 575V 3-ph Drain Pump
59	059-35 kg/h 200V 3-ph Drain Pump
60	060-35 kg/h 208V 3-ph Drain Pump
61	061-35 kg/h 230V 3-ph Drain Pump
62	062-35 kg/h 400V 3-ph Drain Pump
63	063-35 kg/h 460V 3-ph Drain Pump
64	064-35 kg/h 575V 3-ph Drain Pump
65	065-45 kg/h 400V 3-ph Drain Pump
66	066-45 kg/h 460V 3-ph Drain Pump
67	067-45 kg/h 575V 3-ph Drain Pump
68	068-1 kg/h Reduct 1-ph Drain Pump
69	069-1 kg/h Reduct 1-ph Drain Valve

Value P27.06	Definition
70	070-1 kg/h Reduct 1-ph Drain Valve
71	071-1 kg/h 200V 1-ph Drain Valve
72	072-1 kg/h 208V 1-ph Drain Valve
73	073-1 kg/h 230V 1-ph Drain Valve
74	074-3 kg/h Reduct 200V 1-ph Drain Valve
75	075-3 kg/h Reduct 208V 1-ph Drain Valve
76	076-3 kg/h Reduct 230V 1-ph Drain Valve
77	077-3 kg/h Reduct 208V 3-ph Drain Valve
78	078-3 kg/h Reduct 230V 3-ph Drain Valve
79	079-3 kg/h Reduct 400V 3-ph Drain Valve
80	080-3 kg/h 200V 1-ph Drain Valve
81	081-3 kg/h 208V 1-ph Drain Valve
82	082-3 kg/h 230V 1-ph Drain Valve
83	083-3 kg/h 200V 3-ph Drain Valve
84	084-3 kg/h 208V 3-ph Drain Valve
85	085-3 kg/h 230V 3-ph Drain Valve
86	086-3 kg/h 400V 3-ph Drain Valve
87	087-3 kg/h 460V 3-ph Drain Valve
88	088-5 kg/h 200V 1-ph Drain Valve
89	089-5 kg/h 208V 1-ph Drain Valve
90	090-5 kg/h 230V 1-ph Drain Valve
91	091-5 kg/h 200V 3-ph Drain Valve
92	092-5 kg/h 208V 3-ph Drain Valve
93	093-5 kg/h 230V 3-ph Drain Valve
94	094-5 kg/h 400V 3-ph Drain Valve
95	095-5 kg/h 460V 3-ph Drain Valve

Value P27.06	Definition
96	096-5 kg/h 575V 3-ph Drain Valve
97	097-8 kg/h 200V 3-ph Drain Valve
98	098-8 kg/h 208V 3-ph Drain Valve
99	099-8 kg/h 230V 3-ph Drain Valve
100	100-8 kg/h 400V 3-ph Drain Valve
101	101-8 kg/h 460V 3-ph Drain Valve
102	102-8 kg/h 575V 3-ph Drain Valve
103	103-9 kg/h 208V 1-ph Drain Valve
104	104-9 kg/h 230V 1-ph Drain Valve
105	105-10 kg/h 200V 3-ph Drain Valve
106	106-10 kg/h 208V 3-ph Drain Valve
107	107-10 kg/h 230V 3-ph Drain Valve
108	108-10 kg/h 400V 3-ph Drain Valve
109	109-10 kg/h 460V 3-ph Drain Valve
110	110-10 kg/h 575V 3-ph Drain Valve
111	111-15 kg/h 200V 3-ph Drain Valve
112	112-15 kg/h 208V 3-ph Drain Valve
113	113-15 kg/h 230V 3-ph Drain Valve
114	114-15 kg/h 400V 3-ph Drain Valve
115	115-15 kg/h 460V 3-ph Drain Valve
116	116-15 kg/h 575V 3-ph Drain Valve
117	117-18 kg/h 400V 3-ph Drain Valve
118	118-18 kg/h 460V 3-ph Drain Valve
119	119-18 kg/h 575V 3-ph Drain Valve
120	120-3 kg/h Reduct 460V 3-ph Drain Pump
121	121-3 kg/h Reduct 460V 3-ph Drain Valve

41.4 Non-linear behaviour of the analogue inputs of the “E” expansions (when configured for 0-5V, 0-1V, 4-20mA)

The behaviour of the analogue inputs of the pCOE expansions is non-linear when they are configured for 0-5 V or 0-1 V signals.
When configured for 0-5V, their behaviour is linear from 0 to 4.77 V (with hysteresis at 4.5 V).
When configured for 0-1V, their behaviour is linear from 0 to 0.97 V (with hysteresis at 0.95 V).
When configured for 4-20mA, their behaviour is linear from 4 to 19 mA (with hysteresis at 18 mA).

To exploit the linearity of the inputs, 0-4.5 V (or 0-0.95 V or 0-18 mA) signals must be used and scaled as necessary.

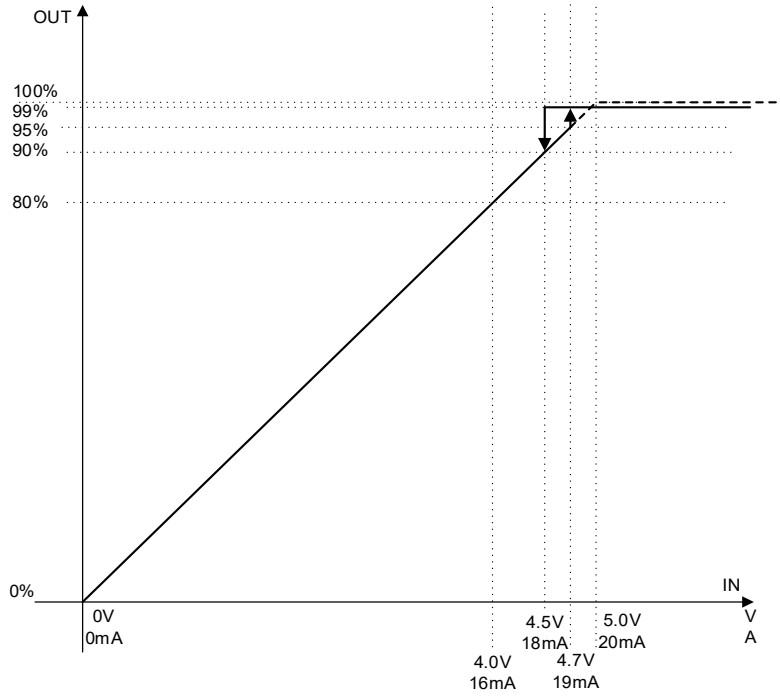


Figure 41-6: *Relationship between input (current or voltage) and signal reading by the expansion*

For example, a signal that does not reach 5.0 V must be used and values scaled for the maximum setpoint variation must be set.

Therefore, in order to have a variation of 5000 m3/h:

- providing an input signal of 0-5V.
- maximum flow setpoint var. = 5000 m3/h.
- providing an input signal of 0-4.7V.
- Maximum flow setpoint variation = 5320 m3/h.

42 DISPOSAL

PACKAGING DISPOSAL

Packaging materials (cardboard, plastic, etc.) can be treated as standard solid city waste. Therefore, compliance with the sorting requirements for city waste is all that is required.
Before disposing of the packaging material, always refer to the specific regulations of the country of disposal.

DO NOT DISPERSE INTO THE ENVIRONMENT!

PRODUCT DISPOSAL

Our products are made using different materials. Most of them (plastic and electric cables) can be treated as standard solid city waste. They can be recycled by taking them at authorised centres for sorted disposal.



Other components (electronic boards) may contain pollutants.
Therefore, they must be removed and handed over to companies authorised for their recovery and disposal.
Before proceeding, always refer to the specific regulations of the country of disposal.

DO NOT DISPERSE INTO THE ENVIRONMENT!

MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

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