XH78T

Temperature & Humidity Controller

(V. 1.1)

(FW version 75.14.01)

INDEX

1. IMPORTANT USER INFORMATION 4
2. PRODUCT DISPOSAL (WEEE) 5
3. GENERALITIES 6
4. USER INTERFACE 6
4.1 SCREENS 6
4.2 ICONS 8
4.3 GESTURES 8
4.4 HOME BROWSING 9
4.5 STATUS VISUALIZATION 9
4.6 STAND-BY MODE 9
4.7 VIRTUAL KEYBOARD 10
4.8 LOCK AND ULOCK DEVICE 10
4.9 SETPOINT MENU 10
4.9.1 TEMPERATURE SET POINT MODIFICATION 10
4.9.2 HUMIDITY SET POINT MODIFICATION 11
4.10 HOTKEY – UPLOAD 11
4.11 HOTKEY – DOWNLOAD 11
4.12 INFO MENU 12
4.13 PARAMETER MENU 12
4.14 PARAMETER MENU - ALL 12
4.15 PARAMETER MENU - GRP 13
4.16 PASSWORD MENU 14
4.17 X9 14
5. PARAMETER TABLE 15
5.1 PARAMETER DESCRIPTION 15
5.1.1 Main regulation parameters – rEG 15
5.1.2 Probe configuration parameters – Prb 17
5.1.3 Visualization parameters – diS 18
5.1.4 Defrost configuration parameters – dEF 18
5.1.5 Evaporator and condenser fan configuration parameters – Fan 20
5.1.6 Auxiliary regulator parameters – AUS 22
5.1.7 Dynamic Set Point 23
5.1.8 Alarm configuration parameters 23
5.1.9 Digital output configuration parameters – out 26
5.1.10 Analogue output configuration parameters – AoU 28
5.1.11 Digital input configuration parameters – inP 29
5.1.12 Energy saving configuration parameters – ES 32
5.1.13 Counters, read only values – Cnt 32
5.1.14 Real Time Clock configuration parameters – rtC 34
5.1.15 Memory storage management – E2 35
5.1.16 Serial Communication port configuration parameters – CoM 36
5.1.17 User Interface configuration parameters – Ui 36
5.1.18 Information, read only parameters – inF 37
6. REGULATION 38
6.1 ONOFF COMPRESSOR 38
6.2 HUMIDITY REGULATION 38
6.2.1 HUMIDITY VISUALISATION 38
7. ENERGY SAVING 39
7.1 BASIC ENERGY SAVING ALGORITHM 39
7.1.1 PARAMETERS INVOLVED 39
8. PULL DOWN FUNCTION 39
9. DEFROST OPERATIONS 40
9.1 DEFROST MODE 40
9.2 TIMED OR INTERVAL DEFROST 40
9.3 AUTOMATIC DEFROST 40
10. EVAPORATOR FAN 40
10.1 EVAPORATOR FAN AND DIGITAL INPUT 40
10.2 EVAPORATOR FAN CONTROL WITH ANALOGUE OUTPUT 41
10.2.1 SPECIAL CONDITIONS 41
10.3 EVAPORATOR FAN MAINTENANCE FUNCTION 42
11. CONDENSER FAN 42
11.1 CONDENSER FAN CONTROL WITH ANALOGUE OUTPUT 42
11.2 CONDENSER FAN MAINTENANCE FUNCTION 43
12. AUXILIARY REGULATOR 43
12.1 AUXILIARY REGULATOR 43
12.2 TIMED ACTIVATION 44
12.3 GENERAL NOTES 44
12.3.1 SPECIAL CONDITIONS 44
13. LIGHT OUTPUTS 44
13.1 ACTIVATION WHEN DEVICE GOES ON 44

13.2 ACTIVATION BY DOOR INPUT 45
13.3 ACTIVATION BY DIGITAL INPUT 45
13.4 ACTIVATION BY ENERGY SAVING 45
13.5 ACTIVATION BY MOTION SENSOR 45
13.6 ACTIVATION BY MODBUS COMMAND 45
13.7 ACTIVATION BY ANALOGUE OUTPUT (2AO=LIG) 45
13.7.1 SPECIAL CONDITIONS 45
14. SANITIZATION 46
14.1 SAFETIES 46
14.2 ACTIVATION BY ANALOGUE OUTPUT (2AO=SAN) 46
15. AIR EXTRACTION FAN 47
15.1 ACTIVATION BY ANALOGUE OUTPUT (2AO=EFN) 47
15.1.1 SPECIAL CONDITIONS 47
16. DIGITAL OUTPUTS 47
16.1 COMPRESSOR OUTPUT (OAX = CP1) 48
16.2 DEFROST OUTPUT (OAX = DEF) 48
16.3 EVAPORATOR FAN OUTPUT (OAX = FAN) 48
16.4 ALARM OUTPUT (OAX = ALR) 48
16.5 LIGHT OUTPUT (OAX = LIG) 48
16.6 AUXILIARY OUTPUT (OAX = AUS) 48
16.7 DEAD BAND REGULATION (OAX = DB) 48
16.8 ON/OFF OUTPUT (OAX = ONF) 48
16.9 ENERGY SAVING OUTPUT (OAX = HES) 48
16.10 CONDENSER FAN OUTPUT (OAX = CND) 48
16.11 SECOND COMPRESSOR OUTPUT (OAX = CP2) 48
16.12 SECOND DEFROST OUTPUT (OAX = DF2) 48
16.13 HEATER OUTPUT (OAX = HET) 48
16.14 INVERTER OUTPUT (OAX = INV) 48
16.15 DEHUMIDIFIER (OAX=DEH) 48
16.16 HUMIDIFIER (OAX=HUM) 48
16.17 SANITIZATION (OAX=SAN) 49
16.18 AIR EXTRACTION FAN 49
17. DIGITAL INPUTS 49
17.1 DOOR SWITCH (IXF=DOR) 49
17.2 START DEFROST (IXF=DEF) 49
17.3 AUXILIARY OUTPUT (IXF=AUS) 49
17.4 ENERGY SAVING (IXF=ES) 49
17.5 EXTERNAL WARNING ALARM (IXF=EAL) 49
17.6 EXTERNAL LOCK ALARM (IXF=BAL) 49
17.7 EXTERNAL PRESSURE ALARM (IXF=PAL) 49
17.8 EVAPORATOR FAN MODE (IXF=FAN) 49
17.9 REMOTE HOLIDAY MODE (IXF=HDF) 49
17.10 REMOTE ONOFF (IXF=ONF) 50
17.11 LIGHT OUTPUT (IXF=LIG) 50
17.12 PULL DOWN (IXF=CC) 50
17.13 MOTION SENSOR DETECTOR (IXF=EMT) 50
17.14 CHANGE PARAMETER MAP (IXF=MAP) 50
17.15 SANITIZATION (IXF=SAN) 50
17.16 AIR EXTRACTION FAN (IXF=EFN) 50
18. ANALOGUE OUTPUTS 50
18.1 ANALOGUE OUTPUT CONFIGURATION 50
18.2 TIMED ACTIVATION 50
18.3 FIXED VALUE 50
18.4 SANITIZATION 51
18.5 AIR EXTRACTION FAN 51
19. ALARM SIGNALLING 51
19.1 ALARM RECOVERY 51
20. SERIAL COMMUNICATION 51
21. INSTALLATION AND MOUNTING 52
22. WIRING DIAGRAM 52
23. TECHNICAL SPECIFICATIONS 53
24. APPENDIX 54
24.1 TOOLS 54
24.1.1 XH-REP 54
24.1.2 X-MOD 54
24.1.3 WIZMATE 54
24.1.4 HOTKEY 54
24.1.5 USB TO RS485 CONVERTER 54
24.2 EXAMPLE OF MENU NAVIGATION AND PARAMETER MODIFICATION 55

1. IMPORTANT USER INFORMATION

- The  symbol is intended to alert the user of a non-insultated voltage soruce within the product area that is sufficiently high to constitute a risk of electric shock to persons.

- The  symbol is intended to alert the user of important operating and maintenance (servicing) instructions.

- Dixell Srl reserves the right to modify this user's manual at any time without prior notice. The documentation can be downloaded from the website ***www.fulltouch.info*** even prior to purchase.

- This manual is an integral part of the product and must always be kept near the device for easy and quick reference. The product cannot be used as a safety device. Please read this manual very carfully be sure you understand the information provided before using the device.

- Verify that the power supply voltage is correct before connecting the device. Do not expose it to water or humidity: use the controller only within the operating limits, avoiding sudden temperature changes and high atmospheric humidity in order to prevent condensation from forming. Recommendations: disconnect all the electrical connections before performing any maintenance task; insert the probe where it cannot be reached by the End User; the device must not be opened; consider the maximum current that can be applied to each relay; make sure that the wires of the probes, of the loads and the electical power supply cables are sufficiently separated from each other, without crossing or intertwining. In case of applications in industrial environments, it may be useful to use the main filters as well as the inductive loads.

- The customer shall bear full responsibility and risk for product configuration in order to achieve the the final installation of the equipment/system. Upon the customer's request and following a specific agreement, Dixell Srl may be present during the start-up of the final machine/application, as a consultant, however, under no circumstances can the company be held responsible for the correct operation of the final equipment/system.

- Since Dixell products are part of a high-level technology, a qualification and a configuration/programming/commissioning stage is required to best use them. Otherwise, these products may malfunction and Dixell cannot be held responsible. The product must not be used in any way that differs from that stipulated in the documentation.

- The device must always be installed inside an electrical panel that can only be accessed by authorised personnel. For safety purposes, the keyboard must be the only part that can be reached.

- The electrical wiring connections must never be modify while the device is being used.

- It is good practice to bear in mind the following indications for all Dixell products:
    - Prevent the electronic circuits from getting wet as contact made with water, humidity or any other type of liquid can damage them. Comply with the temperature and humidity limits specified in the manual in order to store the product correctly.
    - The device must not be installed in particularly hot environments as high temperatures can damage the electronic circuits and/or plastic components forming part of the casing. Comply with the temperature and humidity limits specified in the manual in order to store the product correctly.
    - Under no circumstances is the device to be opened – the user does not need any internal component. Please contact qualified service personnel for any assistance.
    - Prevent the device from being dropped, knocked or shaken as either can cause irreparable damage.
    - Do not clean the device with corrosive chemical products, solvents or aggressive detergents.
    - The device must not be used in applications that differ from that specified in the following document.

- ***Separate the power supply of the device from the rest of the electrical devices connected inside the electrical panel. The secondary of the transformer must never be connected to the earth.***

- Dixell Srl reserves the right to change the components of its products, even without notice, ensuring the same and unchanged functionality."

2. PRODUCT DISPOSAL (WEEE)

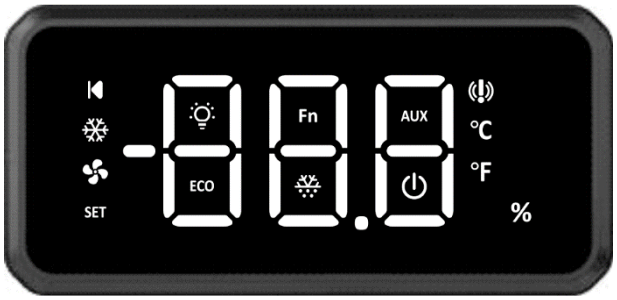
In compliance with the Directive 2002/96/EC of the European Parliament and of the Council of January 27th 2003 and to the relative national legislation, please note that:

- There lies the obligation not to dispose of electrical and electronic waste as municipal waste but to separate the waste.
- Public or private collection points must be used to dispose of the goods in accordance with local laws. Furthermore, at the end of the product's life, it is also possible to return this to the retailer when a new purchase is made.
- This equipment may contain hazardous substances. Improper use or incorrect disposal can have adverse effects on human health and the environment.
- The symbol shown on the product or the package indicates that the product has been placed on the market after August 13th 2005 and must be disposed of as separated waste.
- Should the product be disposed of incorrectly, sanctions may be applied as stipulated in applicable local regulations regarding waste disposal.

3. GENERALITIES

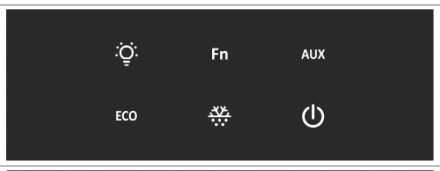
The **XH78T** is a microprocessor-based controller suitable for applications on medium or low temperature ventilated refrigeration units with control humidity and where variable speed compressor or ventilators can be used. It has 4 relay outputs to control fans, light, defrost or auxiliary outputs. The device is also provided with up to 4 NTC, PTC or PT1000 probe inputs. There are up to 2 configurable digital inputs. Probe P4 can be configured as an analogue input probe (4-20mA). By using the **HOT-KEY** it is possible to program the device quickly and easily. The controller implements Full Touch technology.

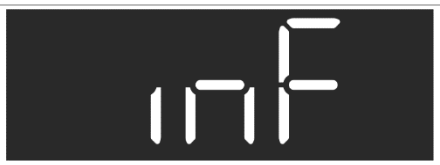
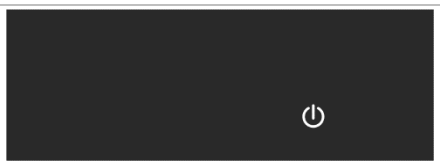
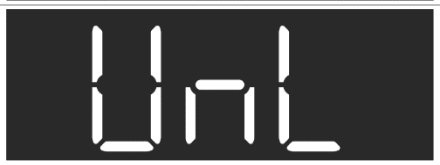
4. USER INTERFACE



XH78T has a capacitive user interface with Full Touch technology. The whole display area is used to interact with the device. Specific gestures are used to enable or disable functions, browse through screens and operational modes and modify the configuration of the device.

4.1 SCREENS

SCREEN	DESCRIPTION
	**Home:** this screen shows temperature value, measurement unit and active alarms only. This is the first screen after power on or after exit from other status
	**Virtual Keyboard:** this screen shows available functions. Activated function will blink when this screen is visualized.
	**Status Visualization:** This screen shows activated functions and regulation outputs (compressor, ventilators).
	**Setpoint Menu:** This screen enables the modification of the Set Point values.
	**Temperature Setpoint:** to see and modify the temperature setpoint value.
	**Humidity Setpoint:** to see and modify the humidity setpoint value.
	**Programming Mode:** This screen enables the modification of the parameters.

	**Parameter Menu - ALL:** enables the modification of all parameter values.
	**Parameter Menu - GrP:** Parameters are grouped as logic function (ex. regulation, defrost, etc.)
	**X9:** it is possible to create the label of the parameter to be visualized or modified.
	**Password menu:** insert the password to see and modify the protected (level Pr2) parameters
	**Info:** To scroll all I/O variables and status (probes, digital inputs, digital outputs, etc.)
	**Stand-By:** in this condition all outputs are deactivated.
	**HotKey Download:** frame animation is on during download operations (copy from HotKey to the internal memory)
	**HotKey Upload:** frame animation is on during during upload operations (copy from internal memory to the HotKey)
	**Device Locked:** V-Swipe from Home screen to lock or unlock the device
	**Device Unlocked:** V-Swipe from Home screen to lock or unlock the device

4.2 ICONS

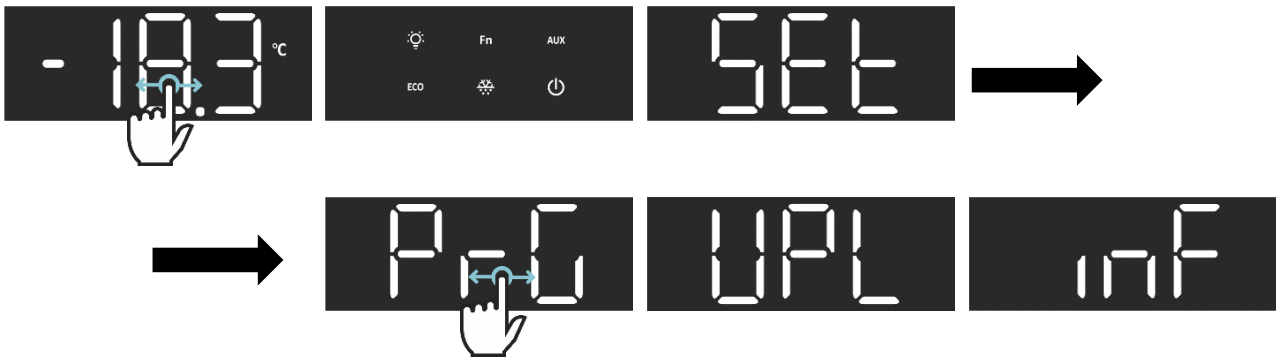
	DESCRIPTION	MODE	FUNCTION
	**LIGHT**	**OFF**	Function not available
		FLASH	When in the **Virtual Keyboard** screen: light output ON
		ON	When in the **Virtual Keyboard** screen: light output OFF
	**COMPRESSOR**	**OFF**	When in the **Loads Info** screen: compressor output OFF
		FLASH	Anti short cycle delay is running
		ON	When in the **Loads Info** screen: compressor output ON
	**FAN**	**OFF**	When in the **Loads Info** screen: evaporator fan output OFF
		FLASH	Activation delay is running
		ON	When in the **Loads Info** screen: evaporator fan output ON
	**DEFROST**	**OFF**	Function not available
		FLASH	When in the **Virtual Keyboard** screen: defrost ON
		ON	When in the **Virtual Keyboard** screen: defrost OFF
AUX	**AUX**	**OFF**	Function not available
		FLASH	When in the **Virtual Keyboard** screen: AUX output ON
		ON	When in the **Virtual Keyboard** screen: AUX output OFF
ECO	**ENERGY SAVING**	**OFF**	Function not available
		FLASH	When in the **Virtual Keyboard** screen: energy saving ON
		ON	When in the **Virtual Keyboard** screen: energy saving OFF
Fn	**FUNCTION**	**OFF**	Function not available
		FLASH	When in the **Virtual Keyboard** screen: function ON (see par. **b2C**)
		ON	When in the **Virtual Keyboard** screen: function OFF (see par. **b2C**)
	**ALARM**	**OFF**	No alarm is active
		FLASH	
		ON	Some alarm is active
°C	**Celsius Degree**	**OFF**	Not used
		FLASH	Not used
		ON	Measurement units: Celsius degree
°F	**Fahrenheit Degree**	**OFF**	Not used
		FLASH	Not used
		ON	Measurement units: Fahrenheit degree
	**ONOFF**	**OFF**	
		FLASH	
		ON	Only and always ON icon when the device is in standby mode
	**BACK**	**OFF**	
		FLASH	
		ON	Used to go back to previous levels on the menu tree
SET	**ENTER**	**OFF**	Save command not available
		FLASH	
		ON	Save command available

4.3 GESTURES

GESTURE	NAME	HOW-TO	DESCRIPTION
	**ONE TAP**	Press a specific area of the screen with a finger for 1 sec	**Switch ON / Switch OFF:** when in Virtual Keyboard, use this to turn on/off a specific function. When in Programming mode, use this to select a parameter or a parameter value.

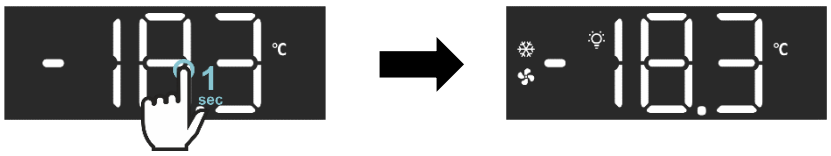
	**TAP and HOLD**	Press any place of the screen with a finger for 1 or 3 sec (depending on par. **bPt**)	**Enter / Save:** use this to enter Programming mode or Parameter menu and to save modifications. When in Virtual Keyboard, use this on the “ONOFF” to switch OFF and ON the device.
	**H-SWIPE**	Drag a finger across the screen, from left to right or from right to left	**Browse:** use horizontal swipe (right to left or left to right) to browse through HOME, Virtual Keyboard and Info View. When in programming mode: use horizontal swipe to browse through parameter menu.
	**V-SWIPE**	Drag a finger across the screen, from top to bottom or from bottom to top (overlapping only one of the digits)	**Modify:** use vertical swipe (from top to bottom or bottom to top) to change a parameter value.

4.4 HOME BROWSING



Use H-SWIPE to move through the screens. The logic implements a circular browsing: H-SWIPE to left or to right is possible. A programmable timeout is implemented to return **HOME** from any lateral screen.

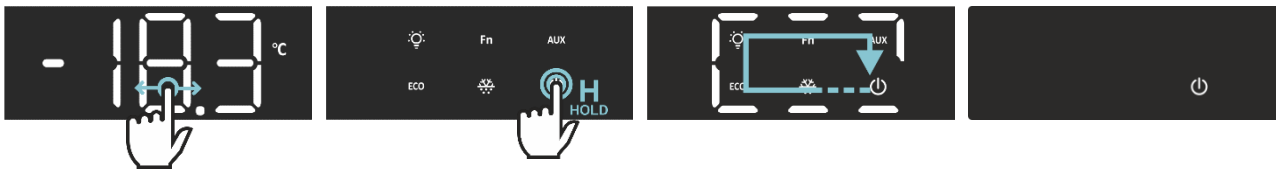
4.5 STATUS VISUALIZATION



Depending on par. **SC7** it is possible to visualize both the active outputs and functions when in HOME screen. In particular:

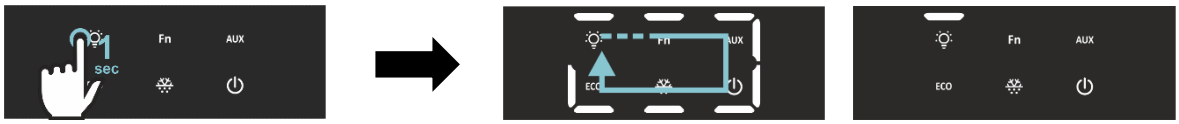
- **SC7=n**: active outputs or functions never visualized when in HOME screen
- **SC7=Y**: both active outputs or functions visualized when in HOME screen, for 3 sec, and only after touching the display anywhere.
- **SC7=ovr**: active outputs or functions always visualized (overlapped) when in HOME screen

4.6 STAND-BY MODE



When in **HOME** screen, H-swipe to go to the Virtual Keyboard screen and then touch the **OFF** icon for 3 sec. The beginning of this action will trigger an animation effect (a “snake” moving effect of the frame around the icons). to All outputs and alarms are deactivated in Stand-by mode.

4.7 VIRTUAL KEYBOARD



The Virtual Keyboard present some direct access function which can be enabled by touching the relative icon. The activation of any function will trigger an animation effect (a “snake” moving effect on the display) and, at the end, a segment above the function icon (or below, depending on the position of the icon) will be lit.

4.8 LOCK AND ULOCK DEVICE

It is possible to lock the device:

- Swiping-up (V-SWIPE) from HOME and then by touching the display anywhere (1 or 3 sec depending on par. **bPt**).
- Activating the “auto lock” function through a timer (par. **SCA**).

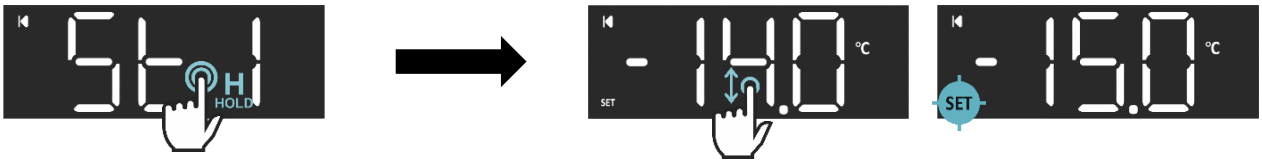
When locked, every action on the device will show a “LoC” blinking icon.

It is possible to unlock the device:
Swiping-up (V-SWIPE) from HOME and then by touching the display anywhere (1 or 3 sec depending on par. **bPt**).

4.9 SETPOINT MENU

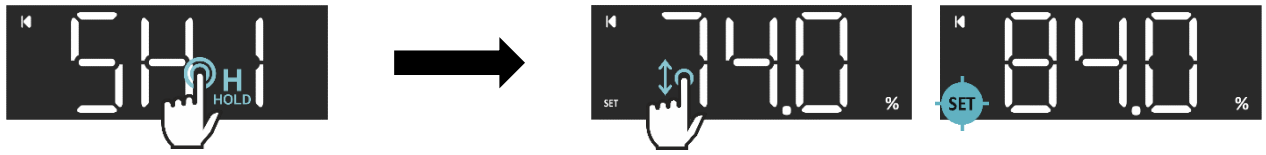
When in **Setpoint menu**, it is possible to enter the **Temperature** or **Humidity Setpoint modification** by touching the display anywhere. The label **St1** or **SH1** indicates that the modification of the temperature or humidity set point is enabled. Use H-swipe to move between temperature (**St1**) and humidity (**SH1**) **Setpoint Sub-Menus**. Press the **BACK** icon to exit (come back to the **Setpoint Screen**).

4.9.1 TEMPERATURE SET POINT MODIFICATION



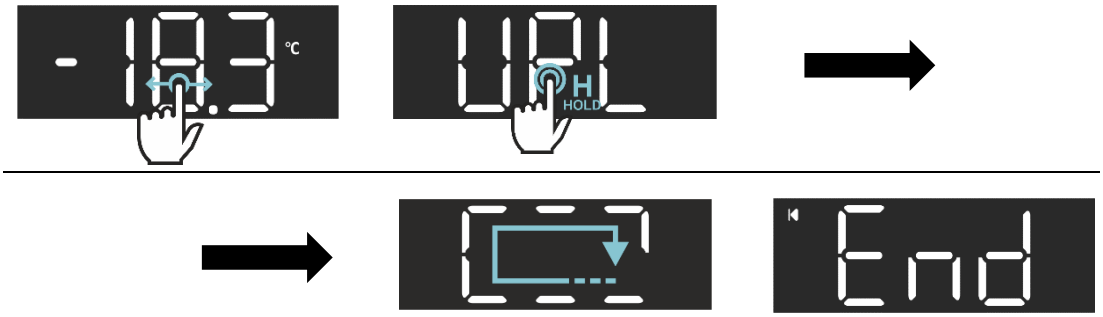
When in **Setpoint Menu St1**, it is possible to enter the **Temperature Setpoint modification** by touching the display anywhere (1 or 3 sec depending on par. **bPt**). Adjust the value through some V-SWIPE gestures on the top of every single digit and then confirm the new value by pressing the **SET** icon. Press the **BACK** icon to exit (come back to the **Setpoint Menu**) without saving.

4.9.2 HUMIDITY SET POINT MODIFICATION



When in **Setpoint Menu SH1**, it is possible to enter the **Humidity Setpoint modification** by touching the display anywhere (1 or 3 sec depending on par. **bPt**). Adjust the value through some V-SWIPE gestures on the top of every single digit and then confirm the new value by pressing the **SET** icon. Press the **BACK** icon to exit (come back to the **Setpoint Menu**) without saving.

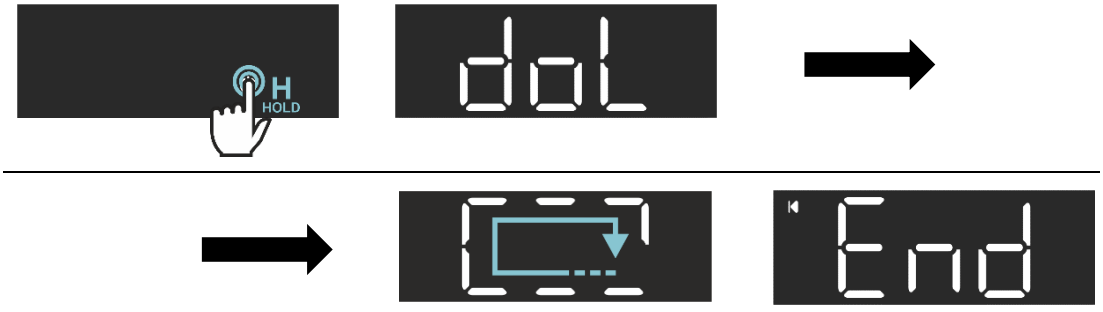
4.10 HOTKEY – UPLOAD



It is possible to use the **HotKey Upload Menu** function to save the current device configuration (parameter values) into the external memory. To do this, follow these instructions:

1. H-swipe to go on the **UPL** screen
2. Insert the HotKey (on the 5-pin ports on the back of the device)
3. Touch the the display anywhere (1 or 3 sec depending on par. **bPt**)
4. The copying procedure will start and will trigger an animation effect (a “snake” moving effect on the display).
5. At the end of the copying procedure, a message will notify the user that the operation has been competed successfully:
    a. **End**: all parameters have been copied
    b. **Err**: some error occours during copying operations

4.11 HOTKEY – DOWNLOAD

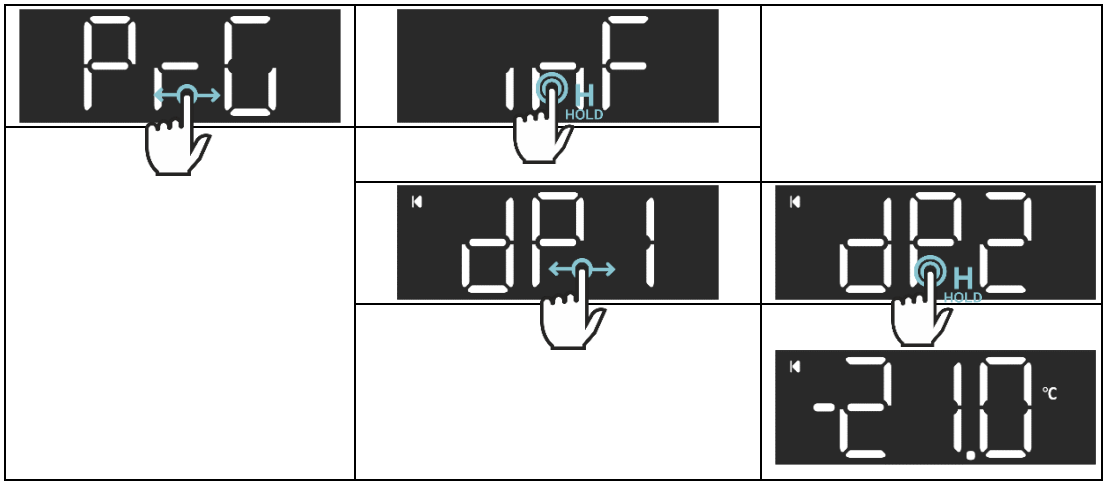


When in **Power-off** or in **Stand-by** mode, it is possible to activate the **HotKey Download Menu** function to copy a new configuration (parameter values) into the current device memory. To do this, follow these instructions:

1. Insert the HotKey (on the 5-pin ports on the back of the device)
2. Touch the **OFF** icon for 3 sec
3. After power-on, the copying procedure will start automatically and will trigger an animation effect (a “snake” moving effect on the display).
4. At the end of the copying procedure, a message will notify the user that the operation has been competed successfully:

a. **End**: all parameters have been copied
b. **Err**: some error occours during copying operations

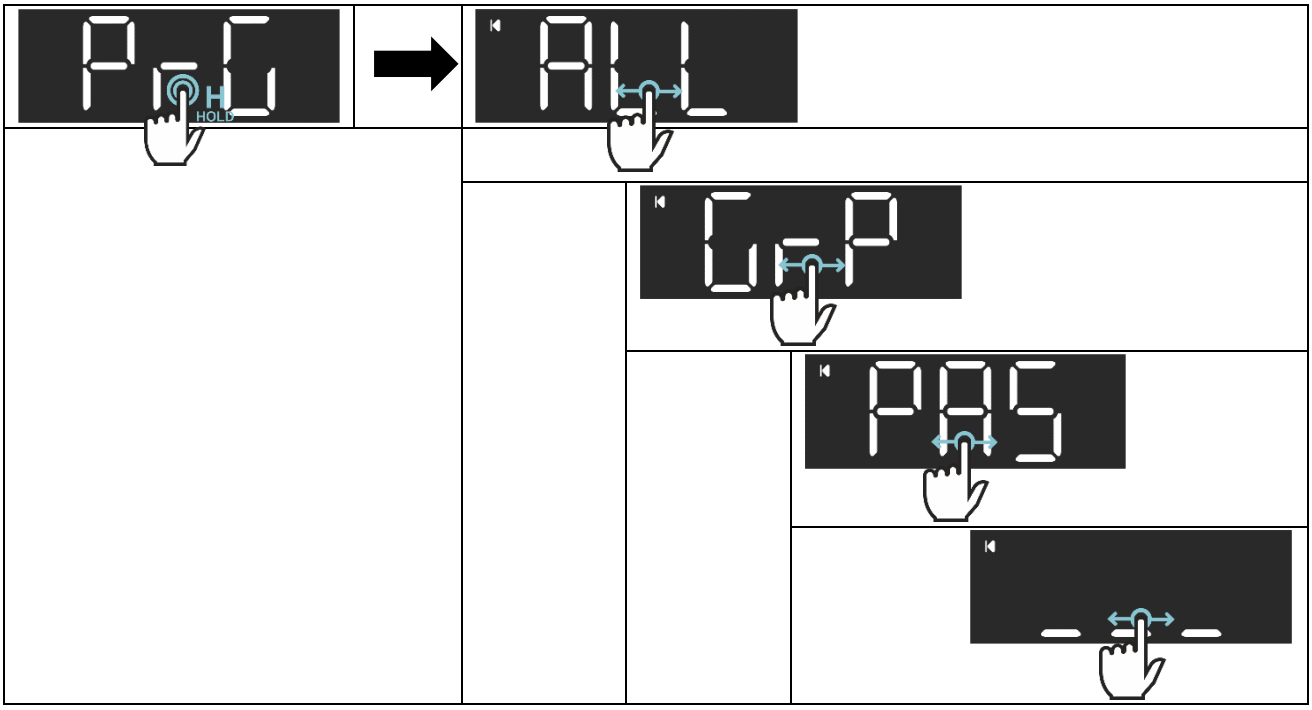
4.12 INFO MENU



The Info Menu shows the I/O values relative to the “inF” group:

- **dP1** to **dP4** = probe inputs values
- **di1** to **di3** = digital inputs status
- **ro1** to **ro4** = digital outputs status
- **Ao1**, **Ao2** = analogue output values

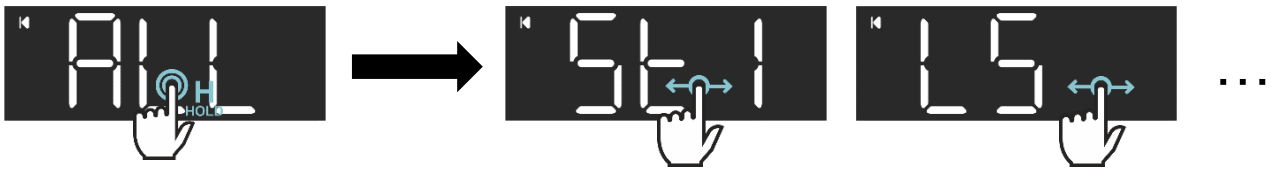
4.13 PARAMETER MENU



From the PRG screen is possible to unlock the programming menu by touching any area of the display (1 or 3 sec depending on par. **bPt**).

4.14 PARAMETER MENU - ALL

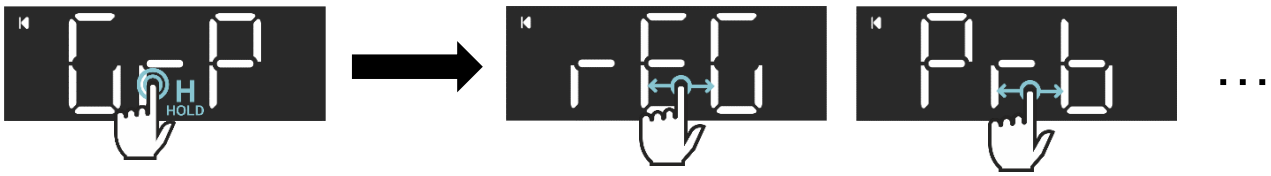
From **PrG** screen it is possible to enter the **Parameter Menu - ALL** touching the display anywhere (1 or 3 sec depending on par. **bPt**).



From **Parameter Menu - ALL**, it is possible to enter and browse the list of available parameters by using the H-swipe gesture. All parameters present into level Pr1 are immediately visible. To enter parameters into level Pr2 the password must be inserted.

4.15 PARAMETER MENU - GrP

From **Parameter Menu - ALL** menu it is possible to move on the **Parameter Menu - GrP** swiping left (H-swipe gesture). From **Parameter Menu - GrP** it is possible to enter the available group of parameters touching the display anywhere (1 or 3 sec depending on par. **bPt**). It is possible to browse through the available groups of parameters by using the H-swipe gesture. The circular construction of this menu permits to move left or right through the groups. All parameters present into level Pr1 are immediately visible. To enter parameters into level Pr2 the password must be inserted.

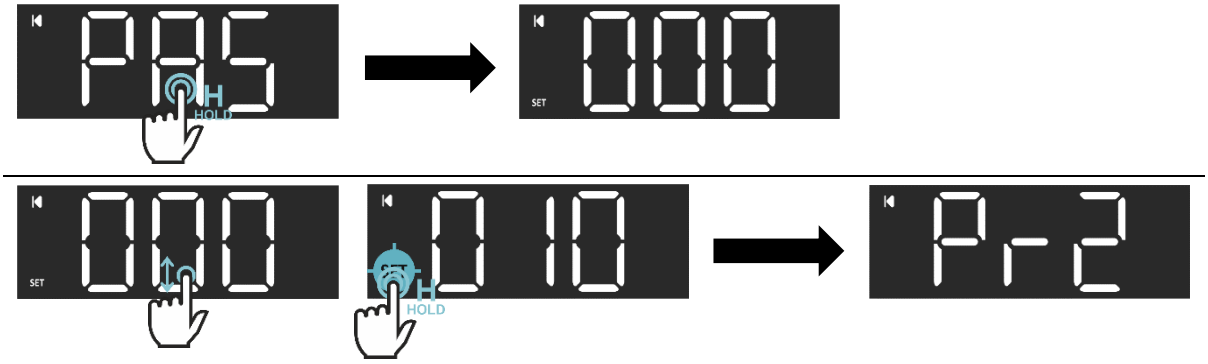


Here are the available groups:

Group Label	Description
rEG	Main regulation parameters
Prb	Probe configuration parameters
diS	Visualization parameters
dEF	Defrost configuration parameters
FAn	Evaporator and condenser fan configuration parameters
AUS	Auxiliary regulator parameters
ALr	Alarm configuration parameters
oUt	Digital and analogue output configuration parameters
inP	Digital input configuration parameters
ES	Energy saving configuration parameters
Cnt	Counters, read only values
rtC	Real Time Clock configuration parameters
E2	Memory storage management
CoM	Serial Communication port configuration parameters
Ui	User Interface configuration parameters
inF	Information, read only parameters

NOTE: depending on the configuration, some parameters or entire groups of them could not be available.

4.16 PASSWORD MENU



When in the **PAS** menu, it is possible to set the password value by touching the display anywhere (1 or 3 sec depending on par. **bPt**). Use V-swipe on every single digit to modify the value, then confirm the password value pressing the SET icon (1 or 3 sec depending on par. **bPt**).

The inserted value will blink and then the display will show:

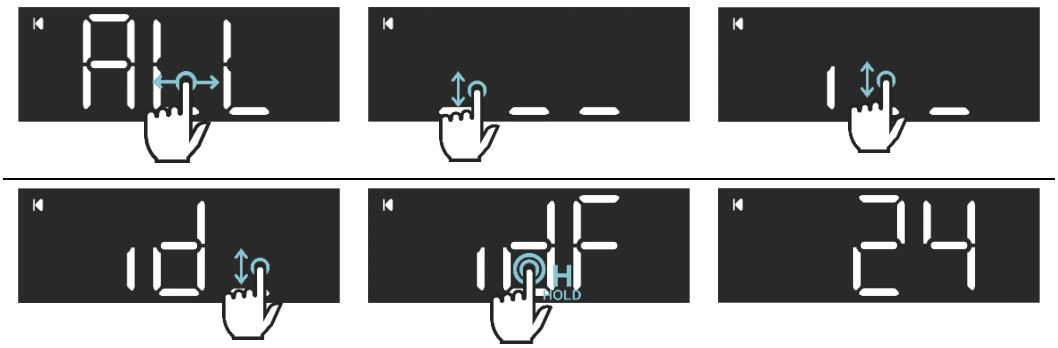
- **Pr2** if the password is correct
- **Err** if the password value is wrong

After 2 sec the display will show the **Parameter menu – ALL** with a blinking decimal point to indicate that protected parameters now are editable. Protected parameters will be now editable from all sub menus (ALL, GrP and X9) and until exiting the Programming mode.

4.17 X9

Every parameter is normally identified by a unique label that can have two or three alphanumeric characters. When in the "**X9**" Screen, it is possible to create the parameter label by swiping-up every single part of the label itself (first, second and third char). The system is able to drive the user through the available symbols, showing only the available ones to speed up the creation of the label.
For example, if a modification of the "interval between defrosts" parameters is required (label "idF"), these are the steps to follow:

- Enter the **X9** screen
- Swipe-up or down the first char position (lower segment on the left) until char "i" (lowercase) appears
- Move to the second char position (segment in the middle) and swipe-up or down until char "d" appears
- Move on the third char position (segment on the right) and swipe-up or down until char "F" appears
- Enter the par. value by touching the **PRG** icon for 3 sec.



NOTE: pay attention to the upper or lower case when browsing through the available characters.
For simplicity, here is the complete list of available characters: A, b, C, d, E, F, G, H, i, L, M, n, o, P, q, r, S, t, u, V, Y, 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9.

5. PARAMETER TABLE

Here are the descriptions of the device parameters.
Note: Some of these parameters below may not be present in this version; please see the configuration parameter paragraph.

Pr1	Parameter present into Pr1 level
Pr2	Parameter present into Pr2 level (gray shaded cells)

5.1 PARAMETER DESCRIPTION

5.1.1 Main regulation parameters – rEG

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
rEG	**SEt**	Set Point	LS to US	Range from LS to US.	10.0
rEG	**LS**	Minimum Set point	[-100.0°C to SET] [-148.0°F to SET]	Define the minimum value for the set point.	-100.0
rEG	**US**	Maximum Set point	[SET to 150.0°C] [SET to 302.0°F]	Define the maximum value for the set point.	150.0
rEG	**HY**	Compressor regulation differential in normal mode	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Set point differential. Compressor Cut-IN is T>SET+HY. Compressor Cut-OUT is T<=SET.	2.0
rEG	**HYE**	Compressor regulation differential in energy saving mode	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Set point differential in energy saving mode. Compressor Cut-IN is T>SET+HES+HYE. Compressor Cut-OUT is T<=SET+HES.	2.0
rEG	**HY1**	Proportional regulation differential in normal mode	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Used when a second onoff compressor or a variable speed compressor is configured.	2.0
rEG	**HYS**	Proportional regulation differential in energy saving mode	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Used when a second onoff compressor or a variable speed compressor is configured.	20
rEG	**HYd**	Deadband output regulation (oAx=db) differential	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Dead band output (oAx=db) is activated when T<SET-HYd.	2.0
rEG	**SH1**	Humidity Set Point	LSH to USH	Range from LSH to USH.	60.0
rEG	**LSH**	Minimum humidity Set Point	1LC to SH1	Fix the minimum value for the humidity set point.	30.0
rEG	**USH**	Maximum humidity Set Point	SH1 to 1UC	Fix the maximum value for the humidity set point.	80.0
rEG	**HHA**	Positive humidity regulation differential	0.1 to 50.0%	Dehumidification enabled if RH > SH1 + HHA. Dehumidification type is defined by par. tHU.	10.0
rEG	**HHb**	Negative humidity regulation differential	0.1 to 50.0%	Humidification enabled if RH < SH1 - HHb. Humidification type is defined by par. tHU.	10.0
rEG	**rAr**	Delay between compressor and db output (oAx=db) activation and vice versa	0 to 255 min	Used to avoid anti short-cycling between compressor (oAx=CPx) and dead band outputs (oAx=db).	1

rEG	**odS**	Output activation delay at start-up	0 to 255 min	This function is enabled after the instrument power-on and delays the activation of the outputs.	30
rEG	**AC**	Anti-short cycle delay	0 to 999 s	Delay between first compressor (CP1) stop and the next restart.	1
rEG	**AC1**	Anti-short cycle delay (2nd compressor)	0 to 999 s	Delay between second compressor (CP2) stop and the next restart.	0
rEG	**2CC**	Activation mode for 2nd compressor	FUL(0); HAF(1)	• FUL=delayed respect to main onoff compressor; • HAF=step activation logic, par. HY1 is used.	FUL
rEG	**rCC**	Enable compressor rotation	n(0); Y(1)	• n=compressor 1 is activated always as first; • Y= toggle compressor 1 and compressor 2 activation.	no
rEG	**MCo**	Maximum time with compressor on (0=disabled)	0 to 255 min	Define the maximum running time for onoff compressors.	0
rEG	**rtr**	Regulation percentage=F(P1; P2) (100=P1; 0=P2)	0 to 100	Weighted coefficient for double probe (P1 and P2) regulation R=P1*(rtr/100)+P2*(1-rtr/100). If rtr=100: only P1 value is used. If rtr=0: only P2 value is used.	100
rEG	**CCt**	Maximum duration for Pull Down	0.0 to 23h50min	When this interval ends, the Pull Down function is immediately stopped	00:00
rEG	**CCS**	Pull Down phase differential (SET+CCS or SET+HES+CCS)	[-12.0°C to 12.0°C] [-21.6°F to 21.6°F]	During any Pull Down, the regulation SETPOINT is moved to SET+CCS (in normal mode) or to SET+HES+CCS (in energy saving mode)	0.0
rEG	**oHt**	Threshold for automatic activation of Pull Down in normal mode (SET+HY+oHt)	[0.0°C to 25.0°C] [0.0°F to 45.0°F]	This is the upper limit used to automatically activate the Pull Down function	0.0
rEG	**oHE**	Threshold for automatic activation of Pull Down in energy saving mode (SET+HES+HYE+oHE)	[0.0°C to 25.0°C] [0.0°F to 45.0°F]	This is the upper limit used to automatically activate the Pull Down function in energy saving mode.	0.0
rEG	**Con**	Compressor ON time with faulty probe	0 to 255 min	Interval with compressor output ON in case of faulty regulation probe. With Con=0 compressor output is always OFF	20
rEG	**CoF**	Compressor OFF time with faulty probe	0 to 255 min	Interval with compressor output OFF in case of faulty regulation probe. With CoF=0 compressor output is always ON	10
rEG	**CHt**	Type of regulation: HT=heating; CL=cooling; db=dead band	Ht; CL; db	• Ht=heating only; • CL=cooling only; db=dead band regulation.	CL

rEG	**tHU**	Type of humidity regulation	nu; t1; t2; t3; t4; t5	• nu=not used • t1=humidification (oAx=HUM), dehumidification by cooling action (oAy=CP1) • t2=humidification (oAx=HUM), dehumidification by heating (oAy=db) and cooling action (oAz=CP1) • t3=dehumidification only by coolin action (oAx=CP1) and dehumidificator (oAy=dEH) • t4= dehumidification only by heating (oAx=db) and cooling action (oAy=CP1) • t5=humidification (oAx=HUM) and dehumidification (oAy=dEH) with dead band activation logic	t4
rEG	**rH1**	Delay before activating heating output for dehumidification	0 to 999 sec	Heating output activation is delayed when dehumidification starts.	60

5.1.2 Probe configuration parameters – Prb

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	RANGE
Prb	**P1C**	Probe P1 selection	ntC(0); Pt1(1)	ntC= NTC probe; Pt1= PT1000 probe	ntC
Prb	**P2C**	Probe P2 selection	ntC(0); Pt1(1)	ntC= NTC probe; Pt1= PT1000 probe	ntC
Prb	**P3C**	Probe P3 selection	ntC(0); Pt1(1)	ntC= NTC probe; Pt1= PT1000 probe	ntC
Prb	**ot**	Probe P1 calibration	[-12.0°C to 12.0°C] [-21.6°F to 21.6°F]	Allows to adjust any possible offset of the probe P1.	0.0
Prb	**P2P**	Probe P2 presence	n(0); Y(1)	n = not present; Y = present	Y
Prb	**oE**	Probe P2 calibration	[-12.0°C to 12.0°C] [-21.6°F to 21.6°F]	Allows to adjust any possible offset of the probe P2.	0.0
Prb	**P3P**	Probe P3 presence	n(0); Y(1)	n = not present; Y = present	n
Prb	**o3**	Probe P3 calibration	[-12.0°C to 12.0°C] [-21.6°F to 21.6°F]	Allows to adjust any possible offset of the probe P3.	0.0
Prb	**o4**	Probe P4 calibration	[-12.0°C to 12.0°C] [-21.6°F to 21.6°F]	Allows to adjust any possible offset of the probe P4.	0.0
Prb	**1UA**	Analogue input 1: upper limit for input scale	0 to 100%	Define the upper limit to adapt the range of the external transducer	20.0
Prb	**1LA**	Analogue input 1: lower limit for input scale	0 to 100%	Define the lower limit to adapt the range of the external transducer	4.0
Prb	**1UC**	Analogue input 1: upper limit for transduced scale	0 to 100%	Define the upper limit to adapt the scale of the external transducer	100.0

Prb	**1LC**	Analogue input 1: lower limit for transduced scale	0 to 100%	Define the lower limit to adapt the scale of the external transducer	0.0

5.1.3 Visualization parameters – diS

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
diS	**CF**	Temperature measurement unit: Celsius; Fahrenheit	°C(0); °F(1)	Select the measurement unit for temperature: °C = Celsius; °F = Fahrenheit	°C
diS	**rES**	Temperature resolution: decimal, integer	dE(0); in(1)	Select the resolution for temperature: dE = decimal; in = integer	dE
diS	**rEH**	Humidity resolution: decimal, integer	dE(0); in(1)	Select the resolution for humidity: dE = decimal; in = integer	dE
diS	**Lod**	Probe default displayed	P1(0); P2(1); P3(2); P4(3); SEt(4); dtr(5)	Px=probe “x”; Set=set point; dtr=probe visualization percentage.	P1
diS	**rEd**	Probe displayed on remote display	P1(0); P2(1); P3(2); P4(3); SEt(4); dtr(5)	Px=probe “x”; Set=set point; dtr=probe visualization percentage.	P1
diS	**dLY**	Temperature display delay (resolution 10 sec)	0.0 to 20min00s	Visualization filter used when the temperature increases: the display is updated of 1°C or 1°F after dLY interval.	00:00
diS	**dtr**	Probe visualization percentage, F(P1; P2)	0 to 100	Setting dtr=1 the display will show this value VALUE=0.01*P1+0.99*P2	99
diS	**dt**	Temperature value visualisation time	0 to 255 sec	Select the temperature visualization time	5
diS	**dH**	Humidity value visualisation time	0 to 255 sec	Select the humidity visualization time	5

5.1.4 Defrost configuration parameters – dEF

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
dEF	**EdF**	Defrost mode	rtC(0); in(1)	Define the defrost timed control: in=fixed intervals; rtC=following real time clock	in
dEF	**tdF**	Defrost type: electric heating, hot gas	EL(0); in(1)	Define the defrost mode: EL=electrical heaters; in=hot gas	EL
dEF	**dFP**	Probe selection for defrost control	nP(0); P1(1); P2(2); P3(3); P4(4)	nP=no probe; Px=probe “x”	nP
dEF	**dSP**	Probe selection for 2nd defrost control	nP(0); P1(1); P2(2); P3(3); P4(4)	nP=no probe; Px=probe “x”	nP
dEF	**dtE**	End defrost temperature	[-50.0°C to 50.0°C] [-58.0°F to 122.0°F]	Define the temperature threshold, measured by the evaporator probe (dFP), which causes the end of current defrost cycle	8.0
dEF	**dtS**	End 2nd defrost temperature	[-50.0°C to 50.0°C] [-58.0°F to 122.0°F]	Define the temperature threshold, measured by the evaporator probe (dSP), which causes the end of current defrost cycle	8.0
dEF	**idF**	Interval between two successive defrost cycles	0 to 255 hours	Determines the time interval between the beginning of two defrosting cycles. Valid when EdF=in.	12

dEF	**MdF**	Maximum length of defrost cycle	0 to 255 min	When dFP=nP (no evaporator probe presence) it sets the defrost duration. When dFP=Px (defrost end based on temperature measured by probe Px) it sets the maximum length for the defrost cycle. If PxP=n (probe not present or not configured) MdF works as defrost duration.	30
dEF	**MdS**	Maximum length of 2nd defrost cycle	0 to 255 min	When dSP=nP (no evaporator probe presence) it sets the second defrost duration. When dSP=Px (defrost end based on temperature measured by probe Px) it sets the maximum length for the defrost cycle. If PxP=n (probe not present or not configured) MdS works as defrost duration.	0
dEF	**dSd**	Start defrost delay	0 to 999 s	A fixed delay is applied to any manual defrost activation	0
dEF	**StC**	Compressor off-cycle before starting any defrost	0 to 255 s	Interval with compressor OFF before activating any hot gas defrost cycle	0
dEF	**dFd**	Displaying during defrost	rt(0); it(1); SEt(2); dEF(3); Coo(4)	• rt = show always the real temperature; • it = show always the start defrost temperature; • SEt = show always the Setpoint value; • dEF = show the label “dEF”; • Coo = show the label “dEF” during defrost and the label “Coo” after defrost and draining until T>SET+HY	dEF
dEF	**dFr**	Remote display visualization during defrost	rt(0); it(1); SEt(2); dEF(3); Coo(4)	• rt = show always the real temperature; • it = show always the start defrost temperature; • SEt = show always the Setpoint value; • dEF = show the label “dEF”; • Coo = show the label “dEF” during defrost and the label “Coo” after defrost and draining until T>SET+HY	rt
dEF	**dAd**	Temperature display delay after any defrost cycle	0 to 255 min	Delay before updating the temperature on the display after the end of any defrost.	2
dEF	**Fdt**	Draining time	0 to 255 min	During a draining phase the regulation is stopped.	1

dEF	**Hon**	Drain heater enabled after draining time (par. Fdt)	0 to 255 min	The relative output will stay on after draining time. Used only after a defrost phase.	0
dEF	**dPo**	Defrost cycle enebled at stat-up	n(0); Y(1)	Enables a defrost at power on	n
dEF	**HYP**	Differential temperature during any pre-defrost phase	[-12.0°C to 12.0°C] [-21.6°F to 21.6°F]	Move the regulation setpoint to the value SET-HYP during dAF interval	0.0
dEF	**Pd2**	Defrost output deactivation delay	0 to 255 s	Delay the defrost output deactivation	0
dEF	**dAF**	Pre-defrost time	0 to 255 min	Interval for pre-defrost function	0
dEF	**od1**	Automatic defrost (at the beginning of any energy saving)	n(0); Y(1)	n=function disabled; Y=function enabled	n
dEF	**od2**	Optimized defrost	n(0); Y(1)	n=function disabled; Y=function enabled	n
dEF	**dSt**	Temperature sampling time during an optimized defrost (valid only if od2=yes)	1 to 255 s	Timed control of the evaporator temperature. Used only with od2=Y	30
dEF	**SYd**	Tipe of synchronized defrost	nu; SYn; nSY	• nu=not used; • Syn=synchronized defrost; • nSY=desynchronized defrost.	nU
dEF	**dt1**	Differential temperature for latent heating control	0.1°C to 1.0°C	Timed control of the evaporator temperature. Used only with od2=Y.	0.5
dEF	**ErS**	Restart regulation after dripping and if SYd=nSY	n(0); Y(1)	n=the controller waits for all controllers to finish their defrost operations before restart regulation. Y=the controller restart regulation after dripping phase, without waiting for the others to finish their defrost operations.	n
dEF	**HUd**	Humidity regulation active during any defrost phase	n(0); Y(1)	n=humidity regulation deactivated; Y=humidity regulation activated.	n

5.1.5 Evaporator and condenser fan configuration parameters – Fan

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
FAn	**FAP**	Probe selection for evaporator fan	nP(0); P1(1); P2(2); P3(3); P4(4)	nP=no probe; Px=probe “x”	nP
FAn	**FSt**	Evaporator fan stop temperature	[-50.0°C to 50.0°C] [-58.0°F to 122.0°F]	Evaporator fan will stop when the measured temperature (from probe FAP) is T>FSt.	10.0
FAn	**HYF**	Evaporator fan regulator differential	[0.1°C to 25.0 °C] [0.1°F to 45.0°F]	Evaporator fan will start when the measured temperature (from probe FAP) is T<FSt-HYF.	2.0
FAn	**oFE**	Offset for evaporator fan activation and deactivation	[0.0°C to 25.0 °C] [0.0°F to 45.0°F]	Change the evaporator fan cut-in and cut-out	0.0

FAn	**FnC**	Evaporator fan operating mode	C_n(0); O_n(1); C_Y(2); O_Y(3)	• Cn = runs with the compressor, duty-cycle when compressor is OFF (see FoF, Fon, FF1 and Fo1 parameters) and OFF during defrost • on = continuous mode, OFF during defrost • CY = runs with the compressor, duty-cycle when compressor is OFF (see FoF, Fon, FF1 and Fo1 parameters) and ON during defrost • oY = continuous mode, ON during defrost	C_n
FAn	**Fnd**	Evaporator fan delay after defrost cycle	0 to 255 min	Delay before evaporator fan activation after any defrosts.	0
FAn	**FCt**	Differential temperature for cyclic activation of evaporator fans (0=disabled)	[0°C to 50°C] [0°F to 90°F]	Used to reduce anti short-cycling for evaporator fans.	0
FAn	**FSU**	Evaporator fan operating mode	Std(0); FoF(1); Fon(2)	• Std = standard mode, evaporator fan follows par FnC; • Fon = evaporator Fan always on; • FoF = evaporator fan always off	Std
FAn	**Ft**	Evaporator fan controlled during defrost	n(0); Y(1)	n = evaporator fan follows par. FnC during any defrost; Y = evaporator fan regulator is active during any defrost	n
FAn	**Fon**	Evaporator fan ON time in normal mode (with compressor OFF)	0 to 255 min	Used in normal mode. Interval with evaporator fan forced ON when compressor is OFF.	1
FAn	**FoF**	Evaporator fan OFF time in normal mode (with compressor OFF)	0 to 255 min	Used in normal mode. Interval with evaporator fan forced OFF when compressor is OFF.	2
FAn	**Fo1**	Evaporator fan ON time in energy saving (with compressor OFF)	0 to 255 min	Used in energy saving. Interval with evaporator fan forced ON when compressor is OFF.	2
FAn	**FF1**	Evaporator fan OFF time in energy saving (with compressor OFF)	0 to 255 min	Used in energy saving. Interval with evaporator fan forced OFF when compressor is OFF.	3
FAn	**Fd1**	Evaporator fan delay	0 to 255 s	Delay before activating evaporator fan	0
FAn	**Fd2**	Evaporator fan delay after closing door	0 to 255 s	Delay before activating evaporator fan and after closing the door	0
FAn	**FnU**	Number of motion detections before forcing evaporator fans at FMS	0 to 10	Evaporator fan speed reduction at FMS after Fnu motion detections.	0

FAn	**FMS**	Evaporator fan speed after Fnu motion detections	0 to 100 %	Evaporator fan speed after Fnu motion detections.	0
FAn	**Fti**	Evaporator fans operating at FMS	0 to 255 min	Interval with evaporator fan speed forced at FMS. 0 = function disabled.	0
FAn	**LA1**	Maintenance interval for evaporator fans (tens of hours)	0 to 999	A maintenance message “LA1” will appear on the display after LA1*10 hours	0
FAn	**rS1**	Maintenance function reset	n(0); Y(1)	Select Y and confirm to reset the maintenance message.	n
FAn	**FAC**	Probe selection for condenser fan	nP(0); P1(1); P2(2); P3(3); P4(4)	nP=no probe; Px=probe “x”	nP
FAn	**St2**	Set Point 2 Regulation (for condenser fan)	[-100.0°C to 150.0°C] [-148.0°F to 302.0°F]	Condenser fan will stop when the measured temperature (from probe FAC) is T<St2.	20.0
FAn	**HY2**	Set Point 2 differential (for condenser fan)	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Condenser fan will start when the measured temperature (from probe FAC) is T>St2+HY2.	10.0
FAn	**oFC**	Offset for condenser fan activation and deactivation	[0.0°C to 25.0 °C] [0.0°F to 45.0°F]	Offset used for proportional control (condenser fan controlled through analogue output).	0.0
FAn	**FCC**	Condenser fan operating mode	C_n(0); O_n(1); C_Y(2); O_Y(3)	• Cn = runs with the compressor and OFF during defrost • on = continuous mode, OFF during defrost • CY = runs with the compressor and ON during defrost • oY = continuous mode, ON during defrost	C_n
FAn	**Fd3**	Condenser fan activation delay	0 to 255 s	Delay before activating condenser fan	0
FAn	**Fd4**	Condenser fan deactivation delay	0 to 255 s	Delay before deactivating condenser fan	0
FAn	**LA2**	Maintenance interval for Condenser fan (tens of hours)	0 to 999	A maintenance message “LA2” will appear on the display after LA2*10 hours	0
FAn	**rS2**	Maintenance function reset for Condenser fan	n(0); Y(1)	Select Y and confirm to reset the maintenance message.	n
FAn	**iAE**	Interval between air extraction fan activation	0.0 to 24h00min (144)	Interval between two consecutive activation of the extraction fans	00:00
FAn	**tAE**	Air extraction fan running time	0 to 999 min	Interval with extraction fan ON	0

5.1.6 Auxiliary regulator parameters – AUS

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
AUS	**ACH**	Type of control for auxiliary regulator	CL(0); Ht(1)	CL = regulator works as "cooling"; Ht = regulator works as "heating"	CL
AUS	**SAA**	Set point for auxiliary regulator	[-100.0°C to 150.0°C] [-148.0°F to 302.0°F]	Define the temperature set point to switch the auxiliary relay.	0.0

AUS	**SHY**	Auxiliary regulator differential	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Differential for auxiliary output set point: • ACH=CL, AUX Cut in is [SAA+SHY]; AUX Cut out is SAA. • ACH=Ht, AUX Cut in is [SAA–SHY]; AUX Cut out is SAA.	0.1
AUS	**ArP**	Probe selection for auxiliary regulator	nP(0); P1(1); P2(2); P3(3); P4(4)	nP = no probe, the auxiliary relay is switched only by the digital input; Px=probe “x”.	nP
AUS	**Sdd**	Auxiliary regulator disabled during any defrost cycle	n(0); Y(1)	n = the auxiliary relay operates during defrost. Y = the auxiliary relay is switched off during defrost	n
AUS	**btA**	Base time for parameters Ato and AtF	SEC; Min	• SEC=base time is in second; • Min = base time is in minutes.	SEC
AUS	**Ato**	Interval of time with auxiliary output ON	0 to 255 s/min	Auxiliary output ON time (with base time defined by par. btA)	0
AUS	**AtF**	Interval of time with auxiliary output OFF	0 to 255 s/min	Auxiliary output OFF time (with base time defined by par. btA)	0

5.1.7 Dynamic Set Point

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
dYn	**dSi**	Reference probe for dynamic Set Point	nP(0); P1(1); P2(2); P3(3); P4(4)	nP = no probe, the regulation is deactivated; Px=probe “x” is used for dynamic set point calculation.	nP
dYn	**dSS**	Dynamic Set Point value	[-100.0°C to 150.0°C] [-148.0°F to 302.0°F]	Used to change dynamically the condenser fan cut-in and cut-out	0.0
dYn	**dSb**	Range dynamic Set Point	[-50.0°C to 50.0°C] [-90.0°F to 90.0°F]	Range for dynamic set point variation	10.0
dYn	**dSH**	Dynamic Set Point differential	[-50.0°C to 50.0°C] [-90.0°F to 90.0°F]	Magnitude for dynamic set point variation	5.0

5.1.8 Alarm configuration parameters

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
ALr	**ALP**	Probe selection for temperature alarms	nP(0); P1(1); P2(2); P3(3); P4(4)	nP=no probe; Px=probe “x”	nP
ALr	**ALC**	Temperature alarms configuration: relative, absolute	rE(0); Ab(1)	Type of alarm threshold: Ab = absolute; rE = relative (to the Setpoint)	Ab
ALr	**ALU**	High temperature alarm	°C[0.0° to 50.0° o ALL to 150.0°] °F[0.0° to 90.0° o ALL to 302.0°]	When this temperature is reached, the alarm is enabled after the ALd delay time. • If ALC=Ab: ALL to 150.0°C or ALL to 302°F. • If ALC=rE: 0.0 to 50.0°C or 0 to 90°F	150.0

ALr	**ALL**	Low temperature alarm	°C[0.0° to 50.0° o ALL to 150.0°] °F[0.0° to 90.0° o ALL to 302.0°]	When this temperature is reached, the alarm is enabled after the ALd delay time. • If ALC=Ab: -100.0°C to ALU or -148°F to ALU. • If ALC=rE: 0.0 to 50.0°C or 0 to 90°F.	-100.0
ALr	**AFH**	Temperature alarm differential	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Differential for alarm deactivation	2.0
ALr	**ALd**	Temperature alarm delay	0 to 255 min	Delay between the detection of an alarm condition and the relative alarm signaling.	0
ALr	**dot**	Temperature alarm delay with open door	0.0 to 24min00s	Delay between the detection of a door open condition and the relative alarm signaling.	00:00
ALr	**dAo**	Temperature alarm delay at start-up	0.0 to 24h00min	Delay between the detection of a temperature alarm condition and the relative alarm signaling at power-on.	00:00
ALr	**AP2**	Probe selection for 2nd temperature alarm	nP(0); P1(1); P2(2); P3(3); P4(4)	nP=no probe; Px=probe “x”.	nP
ALr	**AU1**	Pre-alarm threshold for 2nd temperature alarm (absolute value)	[-100.0°C to 150.0°C] [-148.0°F to 302.0°F]	Warning alarm threshold, message “AU1” is visualized on the display	100.0
ALr	**AH1**	2nd high temperature pre-alarm differential	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Differential for pre-alarm deactivation.	5.0
ALr	**Ad1**	2nd high temperature pre-alarm delay	0 to 255 min	Delay between the detection of any pre-alarm condition and the relative alarm signaling	0
ALr	**AL2**	2nd low temperature alarm	[-100.0°C to 150.0°C] [-148.0°F to 302.0°F]	Lower threshold for second temperature alarm.	-100.0
ALr	**AU2**	2nd high temperature alarm	[-100.0°C to 150.0°C] [-148.0°F to 302.0°F]	Upper threshold for second temperature alarm.	150.0
ALr	**AH2**	2nd temperature alarm differential	[0.1°C to 25.0°C] [0.1°F to 45.0°F]	Differential for second alarm deactivation.	5.0
ALr	**Ad2**	2nd temperature alarm delay	0 to 255 min	Delay between the detection of any alarm condition and the relative alarm signaling	0
ALr	**dA2**	2nd temperature alarm delay at start-up	0.0 to 24h00min	Delay between the detection of the second temperature alarm condition and the relative alarm signaling at power-on.	00:00
ALr	**bLL**	Compressor OFF due to 2nd low temperature alarm	n(0); Y(1); MAn(2)	• n=the compressor continues to work; • Y=the compressor is switched off while the alarm is ON; • MAn=a device reset (cycle power or stand-by) is required to reset this alarm.	n

ALr	**AC2**	Compressor OFF due to 2nd high temperature alarm	n(0); Y(1); MAn(2)	• n=the compressor continues to work; • Y=the compressor is switched off while the alarm is ON; • MAn=a device reset (cycle power or stand-by) is required to reset this alarm.	n
ALr	**SAF**	Differential for anti-freezing control	[0.0 to 25.5°C] [0.0 to 45.0°F]	Safety control. The regulation is stopped if T<SET+SAF	0.0
ALr	**tbA**	Alarm relay deactivation	n(0); Y(1)	n = it is not possible to deactivate a digital output set as an alarm output; Y = it is possible to deactivate both the buzzer and the digital output set as an alarm output.	n
ALr	**AHC**	Humidity alarm configuration	rE(0); Ab(1)	rE=relative; Ab=absolute	Ab
ALr	**AHL**	Low humidity alarm	rE [0.0 to 50.0%] or Ab [LC1 to AHU]	When this humidity value is reached, the alarm is enabled after the AHd delay time. - If AHC=Ab then 0.0°C to AHU. - If AHC=rE then 0.0 to 50.0%.	0.0
ALr	**AHU**	High humidity alarm	rE [0.0 to 50.0%] or Ab [AHL to UC1]	When this humidity value is reached, the alarm is enabled after the AHd delay time. - If AHC=Ab then AHL to 100.0%. - If AHC=rE then 0.0 to 50.0%.	100.0
ALr	**AHH**	Humidity alarm differential	0.5 to 25.0%	Differential for humidity alarm deactivation.	5.0
ALr	**AHd**	Humidity alarm delay	0 to 999 sec	Delay time between the detection of an alarm condition and the relative alarm signalling.	0
ALr	**dHo**	Humidity alarm delay at start-up	0.0 to 23h50min	Delay time between the detection of a humidity alarm condition and the relative alarm signalling, after starting up the instrument.	00:00
ALr	**doH**	Humidity alarm delay with door open	0 to 999 min	Delay time between the detection of a door open condition and the relative alarm signaling.	0
ALr	**EdA**	Temperature alarm inhibition after any defrost	0 to 255 min	All temperature alarms are disabled for interval EdA after any defrost.	0
ALr	**iSn**	Sanitization interval between two consecutive activations	0.0 to 24h00min	Cyclic activation of any sanitization output	00:00

ALr	**tSn**	Sanitization interval	0.0 to 24h00min	Duration for sanitization function	00:00

5.1.9 Digital output configuration parameters – out

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
oUt	**oA1**	Relay output oA1 configuration	nu(0); CP1(1); dEF(2); FAn(3); ALr(4); LiG(5); AUS(6); db(7); onF(8); HES(9); Cnd(10); CP2(11); dF2(12); HEt(13); inv(14); dEH(15); HUM(16); SAn(17); EFn(18)	• nu=not used; • CP1=onoff compressor 1; • dEF=defrost; • Fan=evaporator fan; • ALr=alarm; • LiG=light; • AUS=auxiliary relay; • db=neutral zone; • onF=always ON with instrument ON; • HES=energy saving; • Cnd=condenser fan; • CP2=second onoff compressor; • dF2=second defrost; • HEt=heater control; • inV=inverter output; • dEH=dehumidifier; • HUM=humidifier; • SAn=sanitization; • EFn=air extraction fan	CP1
oUt	**oA2**	Relay output oA2 configuration	nu(0); CP1(1); dEF(2); FAn(3); ALr(4); LiG(5); AUS(6); db(7); onF(8); HES(9); Cnd(10); CP2(11); dF2(12); HEt(13); inv(14); dEH(15); HUM(16); SAn(17); EFn(18)	• nu=not used; • CP1=onoff compressor 1; • dEF=defrost; • Fan=evaporator fan; • ALr=alarm; • LiG=light; • AUS=auxiliary relay; • db=neutral zone; • onF=always ON with instrument ON; • HES=energy saving; • Cnd=condenser fan; • CP2=second onoff compressor; • dF2=second defrost; • HEt=heater control; • inV=inverter output; • dEH=dehumidifier; • HUM=humidifier; • SAn=sanitization; EFn=air extraction fan	FAn

oUt	**oA3**	Relay output oA3 configuration	nu(0); CP1(1); dEF(2); FAn(3); ALr(4); LiG(5); AUS(6); db(7); onF(8); HES(9); Cnd(10); CP2(11); dF2(12); HEt(13); inv(14); dEH(15); HUM(16); SAn(17); EFn(18)	• nu=not used; • CP1=onoff compressor 1; • dEF=defrost; • Fan=evaporator fan; • ALr=alarm; • LiG=light; • AUS=auxiliary relay; • db=neutral zone; • onF=always ON with instrument ON; • HES=energy saving; • Cnd=condenser fan; • CP2=second onoff compressor; • dF2=second defrost; • HEt=heater control; • inV=inverter output; • dEH=dehumidifier; • HUM=humidifier; • SAn=sanitization; EFn=air extraction fan	dEF
oUt	**oA4**	Relay output oA4 configuration	nu(0); CP1(1); dEF(2); FAn(3); ALr(4); LiG(5); AUS(6); db(7); onF(8); HES(9); Cnd(10); CP2(11); dF2(12); HEt(13); inv(14); dEH(15); HUM(16); SAn(17); EFn(18)	• nu=not used; • CP1=onoff compressor 1; • dEF=defrost; • Fan=evaporator fan; • ALr=alarm; • LiG=light; • AUS=auxiliary relay; • db=neutral zone; • onF=always ON with instrument ON; • HES=energy saving; • Cnd=condenser fan; • CP2=second onoff compressor; • dF2=second defrost; • HEt=heater control; • inV=inverter output; • dEH=dehumidifier; • HUM=humidifier; • SAn=sanitization; EFn=air extraction fan	LiG
oUt	**AoP**	Alarm relay polarity	OP(0); CL(1)	oP = activated by opening the contact; CL = activated by closing the contact.	CL
oUt	**LoF**	Light output OFF when in stand-by	n(0); Y(1)	n=light output status unchanged after stand-by. Y=light output switched off after stand-by.	Y
oUt	**LAU**	Light output ON after power-on	n(0); Y(1)	n=light output unchanged; Y=light output forced ON.	n

5.1.10 Analogue output configuration parameters – AoU

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
AoU	**1Ao**	Analogue output 1 configuration	nu(0); FrE(1); FAn(2)	• nu=not used; • FrE=frequency output signal for variable speed compressor; • FAn=following evaporator fan regulator	nu
AoU	**1oL**	Minimum value for analogue output 1	0 to 100%	Minimum value for analogue output 1	0
AoU	**1oH**	Maximum value for analogue output 1	0 to 100%	Maximum value for analogue output 1	100
AoU	**1At**	Interval with analogue output 1 forced at its maximum value	0 to 255 sec	Enabled after any activation, this is the interval with the analogue output 1 forced at 100%.	5
AoU	**2Ao**	Analogue output 2 configuration	nu(0); tiM(1); FAn(2); AUS(3); ALr(4); Cnd(5); LiG(6); vAL(7); SAn(8); EFn(9)	• nu=not used; • tiM=timed, the output will change between min and MAX value following Ato and AtF value respectively; • FAn=following evaporator fan regulator; • AUS=following auxiliary regulator; • ALr=following any alarm condition; • Cnd=following condenser fan regulator; • LiG=light modulation; • vAL=fixed value; • SAn=following sanitization logic; • EFn=following air extraction fan logic	nU
AoU	**2oL**	Minimum value for analogue output 2	0 to 100%	Select the minimum value for the range of the analogue output 2	0
AoU	**2oH**	Maximum value for analogue output 2	0 to 100%	Select the maximum value for the range of the analogue output 2	100
AoU	**2At**	Interval with analogue output 2 forced at its maximum value	0 to 255 sec	Enabled after any activation, this is the interval with the analogue output 2 forced at 100%.	5

AoU	**MA2**	Functional mode for analogue output 2	Std(0); StP(1)	• Std=standard; • StP=fixed steps, defined by LLx parameters, in cycling mode. If 2Ao=LiG, EFn, vAL, the relative output value will change between LL1 and LL4 by pressing a button configured as bxC,bxF=StP.	Std
AoU	**2on**	Interval with analogue output 2 enabled (valid if xAo=tiM)	0 to 999 sec	Define the interval with analogue output ON (valid if2Ao=tiM)	0
AoU	**2oF**	Interval with analogue output 2 disabled (valid if xAo=tiM)	0 to 999 sec	Define the interval with analogue output OFF (valid if2Ao=tiM)	0
AoU	**2AS**	Forced value for analogue output 2	0 to 100%	Analogue output value fixed at 2AS value until controller is ON.	50
AoU	**LL1**	Level 1	0 to 100%	Fixed level 1 for analogue output configured as MAx=StP	0
AoU	**LL2**	Level 2	0 to 100%	Fixed level 2 for analogue output configured as MAx=StP	30
AoU	**LL3**	Level 3	0 to 100%	Fixed level 3 for analogue output configured as MAx=StP	60
AoU	**LL4**	Level 4	0 to 100%	Fixed level 4 for analogue output configured as MAx=StP	100

5.1.11 Digital input configuration parameters – inP

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
inP	**ibt**	Base times for digital input 1	SEC(0); Min(1)	• SEC=seconds; • Min=minutes. Delay in activating the function linked to the digital inputs.	SEC
inP	**i1P**	Digital input 1 polarity	OP(0); CL(1)	oP = activated by opening the contact; CL = activated by closing the contact.	CL

inP	**i1F**	Digital input 1 configuration	nu(0); dor(1); dEF(2); AUS(3); EAL(4); bAL(5); PAL(6); ES(7); FAn(8); HdF(9); onF(10); LiG(11); CC(12); EMt(13); LPS(14); CLn(15); GAS(16); StC(17); SAn(18); tPA(19)	• nu=not used • dor=door switch function • dEF=defrost activation • AUS=auxiliary output • ES=energy saving mode activation • EAL=external warning alarm • bAL=external lock alarm • PAL=external pressure alarm • FAn=evaporator fan control • HdF=holiday defrost • onF=ON/OFF status change • LiG=light output control • CC=pull down activation • EMt=X-MOD motion detection sensor • MAP=reload factory default configuration (for the used parameter map) • SAn=Sanitization • EFn=Air extraction fan activation	nU
inP	**d1d**	Digital inputs 1 alarm delay (base time depends on par. ixt)	0 to 255 min/sec	delay between the detection of an external event and the activation of the relative function.	0
inP	**i2P**	Digital input 2 polarity	OP(0); CL(1)	oP = activated by opening the contact; CL = activated by closing the contact.	CL
inP	**i2F**	Digital input 2 configuration	nu(0); dor(1); dEF(2); AUS(3); EAL(4); bAL(5); PAL(6); ES(7); FAn(8); HdF(9); onF(10); LiG(11); CC(12); EMt(13); LPS(14); CLn(15); GAS(16); StC(17); SAn(18); tPA(19)	• nu=not used • dor=door switch function • dEF=defrost activation • AUS=auxiliary output • ES=energy saving mode activation • EAL=external warning alarm • bAL=external lock alarm • PAL=external pressure alarm • FAn=evaporator fan control • HdF=holiday defrost • onF=ON/OFF status change • LiG=light output control • CC=pull down activation • EMt=X-MOD motion detection sensor • MAP=reload factory default configuration (for the used parameter map) • SAn=Sanitization • EFn=Air extraction fan activation	nU

inP	**d2d**	Digital inputs 2 alarm delay (base time depends on par. ixt)	0 to 255 min/sec	delay between the detection of an external event and the activation of the relative function.	0
inP	**i3P**	Digital input 3 polarity	OP(0); CL(1)	oP = activated by opening the contact; CL = activated by closing the contact.	CL
inP	**i3F**	Digital input 3 configuration	nu(0); dor(1); dEF(2); AUS(3); EAL(4); bAL(5); PAL(6); ES(7); FAn(8); HdF(9); onF(10); LiG(11); CC(12); EMt(13); LPS(14); CLn(15); GAS(16); StC(17); SAn(18); tPA(19)	• nu=not used • dor=door switch function • dEF=defrost activation • AUS=auxiliary output • ES=energy saving mode activation • EAL=external warning alarm • bAL=external lock alarm • PAL=external pressure alarm • FAn=evaporator fan control • HdF=holiday defrost • onF=ON/OFF status change • LiG=light output control • CC=pull down activation • EMt=X-MOD motion detection sensor • MAP=reload factory default configuration (for the used parameter map) • SAn=Sanitization • EFn=Air extraction fan activation	nU
inP	**d3d**	Digital inputs 3 alarm delay (base time depends on par. ixt)	0 to 255 min/sec	delay between the detection of an external event and the activation of the relative function.	0
inP	**nPS**	Number of external pressure switch alarms before stopping the regulation	0 to 15	after reaching nPS events in the digital input alarm delay (par. dxd), the regulation will be stopped and a manual restart (ON/OFF, power OFF and power ON) will be required	0
inP	**odC**	Compressor and fan status after door opening	no(0); FAn(1); CPr(2); F-C(3)	• no = no regulation lockout; • FAn = Fan OFF; • CPr = Compressor OFF; • F-C = Compressor and fan OFF	FAn
inP	**rrd**	Regulation restart after door alarm	n(0); Y(1)	n = no regulation restart if the door is open; Y = when the rrd timer elapses, the regulation restarts even if a door open alarm is ON	n
inP	**CLi**	Light output activation from door input	n(0); Y(1)	n=light output unchanged after door opening; Y=light output activation after door opening.	n

inP	**LCi**	Time with light output forced ON (0=function disabled)	0 to 255 min	Interval with light output ON. 0=function disabled.	0
inP	**n01**	Number of motion detections before activating light output (valid if ixF=EMt)	0 to 10	Amount of motion detection events before activating light outputs	0
inP	**t01**	Time with light output forced ON after motion detection	0 to 255 min	Interval with light output ON. 0=function disabled.	0
inP	**EMF**	Temporary disabling of the light output activation from motion detection.	0 to 255 min	Reading inhibition interval after switching off the light output by means of a button or serial command (valid if ixF=EMt)	0

5.1.12 Energy saving configuration parameters – ES

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
ES	**ErA**	Energy saving algorithm	nu(0); bAS(1)	• nu=disabled, the energy saving mode activation is by button, real time clock or digital input; • bAS=basic algorithm, the energy saving mode activation depends on the the digital input.	nU
ES	**HES**	Temperature differential in energy saving	[-30.0°C to 30.0°C] [-54.0°F to 54.0°F]	Differential to add to the Setpoint during the Energy Saving cycle.	0.0
ES	**LdE**	Light output control in energy saving	n(0); Y(1)	Y=light outputs off when energy saving mode is active	n
ES	**StE**	Period to switch from normal mode to energy saving mode	0.0 to 24h00min	If the door stay closed for StE time, the energy saving mode will be activated (is ErA=bAS). NOTE: this will require a door switch to work.	00:00
ES	**EtS**	Period to switch from energy saving mode to normal mode	0.0 to 24h00min	Maximum time for energy saving mode (if ErA=bAS). NOTE: this will require a door switch to work.	00:00
ES	**dS**	Door opening time to switch from energy saving to normal mode	0 to 999 sec	The energy saving mode will be immediately deactivated as soon as the door stays open more than the dS time. NOTE: this will require a door switch to work.	5
ES	**nES**	Number of motion detections before disabling energy saving (valid if ixF=EMt)	0 to 255	Energy saving deactivation through X-MOD motion detection sensor.	0

5.1.13 Counters, read only values – Cnt

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
Cnt	**n1H**	Number of activations for relay output oA1 (thousands of) - Read Only	---	Total number of relay oA1 activations. This value is saved into controller memory.	

Cnt	**n1L**	Number of activations for relay output oA1 (units of) - Read Only	---	Total number of relay oA1 activations. This value is saved into controller memory.	
Cnt	**n2H**	Number of activations for relay output oA2 (thousands of) - Read Only	---	Total number of relay oA2 activations. This value is saved into controller memory.	
Cnt	**n2L**	Number of activations for relay output oA2 (units of) - Read Only	---	Total number of relay oA2 activations. This value is saved into controller memory.	
Cnt	**n3H**	Number of activations for relay output oA3 (thousands of) - Read Only	---	Total number of relay oA3 activations. This value is saved into controller memory.	
Cnt	**n3L**	Number of activations for relay output oA3 (units of) - Read Only	---	Total number of relay oA3 activations. This value is saved into controller memory.	
Cnt	**n4H**	Number of activations for relay output oA4 (thousands of) - Read Only	---	Total number of relay oA4 activations. This value is saved into controller memory.	
Cnt	**n4L**	Number of activations for relay output oA4 (units of) - Read Only	---	Total number of relay oA4 activations. This value is saved into controller memory.	
Cnt	**n5H**	Number of total activations of digital input 1 (thousand of) - Read Only	---	Total number of digital input 1 activations. This value is saved into controller memory.	
Cnt	**n5L**	Number of total activations of digital input 1 (units of) - Read Only	---	Total number of digital input 1 activations. This value is saved into controller memory.	
Cnt	**n6H**	Number of total activations of digital input 2 (thousand of) - Read Only	---	Total number of digital input 2 activations. This value is saved into controller memory.	
Cnt	**n6L**	Number of total activations of digital input 2 (units of) - Read Only	---	Total number of digital input 2 activations. This value is saved into controller memory.	
Cnt	**n7H**	Number of total activations of digital input 3 (thousand of) - Read Only	---	Total number of digital input 3 activations. This value is saved into controller memory.	
Cnt	**n7L**	Number of total activations of digital input 3 (units of) - Read Only	---	Total number of digital input 3 activations. This value is saved into controller memory.	
Cnt	**F1H**	Number of working hours for relay output oA1 (thousands of) - Read Only	---	Total number of working hours for relay oA1. This value is saved into controller memory.	
Cnt	**F1L**	Number of working hours for relay output oA1 (units of) - Read Only	---	Total number of working hours for relay oA1. This value is saved into controller memory.	

Cnt	**F2H**	Number of working hours for relay output oA2 (thousands of) - Read Only	---	Total number of working hours for relay oA2. This value is saved into controller memory.	
Cnt	**F2L**	Number of working hours for relay output oA2 (units of) - Read Only	---	Total number of working hours for relay oA2. This value is saved into controller memory.	
Cnt	**F3H**	Number of working hours for relay output oA3 (thousands of) - Read Only	---	Total number of working hours for relay oA3. This value is saved into controller memory.	
Cnt	**F3L**	Number of working hours for relay output oA3 (units of) - Read Only	---	Total number of working hours for relay oA3. This value is saved into controller memory.	
Cnt	**F4H**	Number of working hours for relay output oA4 (thousands of) - Read Only	---	Total number of working hours for relay oA4. This value is saved into controller memory.	
Cnt	**F4L**	Number of working hours for relay output oA4 (units of) - Read Only	---	Total number of working hours for relay oA4. This value is saved into controller memory.	
Cnt	**rSC**	Total counters reset	n(0); Y(1)	Reset command for all total counters	n

5.1.14 Real Time Clock configuration parameters – rtC

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
rtC	**HUr**	Hours - Read Only	---	Real time clock: hour value	
rtC	**Min**	Minutes - Read Only	---	Real time clock: minutes value	
rtC	**dAY**	Day of the week - Read Only	---	Real time clock: day of the week value	
rtC	**dYM**	Day of the month - Read Only	---	Real time clock: calendar day value	
rtC	**Mon**	Month - Read Only	---	Real time clock: month value	
rtC	**YAr**	Year - Read Only	---	Real time clock: year value	
rtC	**Hd1**	First day of weekend	Sun(0) to SAt(6); nu(7)	Select the first day of the weekend	Sun
rtC	**Hd2**	2nd day of weekend	Sun(0) to SAt(6); nu(7)	Select the second day of the weekend	Sun
rtC	**iLE**	Energy saving cycle starting time on working days	0.0 to 23h50min; nu(144)	Select the beginning of the energy saving mode on working days.	00:00
rtC	**dLE**	Energy saving cycle duration on working days	0.0 to 24h00min	Select the duration of the energy saving mode on working days.	00:00
rtC	**iSE**	Energy saving cycle starting time on weekends	0.0 to 23h50min; nu(144)	Select the beginning of the energy saving mode on weekends.	00:00
rtC	**dSE**	Energy saving cycle duration on weekends	0.0 to 24h00min	Select the duration of the energy saving mode on weekends.	00:00
rtC	**tSA**	Sanitization cycle starting time on working days	0.0 to 23h50min; nu(144)	sets the sanitization starting time on working days	00:00

rtC	**dSA**	Sanitization cycle duration on working days	0.0 to 24h00min	sets the duration of the sanitization cycle on working days.	00:00
rtC	**HSt**	Sanitization cycle starting time on weekends	0.0 to 23h50min; nu(144)	sets the sanitization starting time on weekend	00:00
rtC	**HSd**	Sanitization cycle duration on weekends	0.0 to 24h00min	sets the duration of the sanitization cycle on weekend.	00:00
rtC	**dd1**	Sunday defrost	n(0); Y(1)	Enable the Ld1 to Ld6 defrost operation on Sunday	n
rtC	**dd2**	Monday defrost	n(0); Y(1)	Enable the Ld1 to Ld6 defrost operation on Monday	n
rtC	**dd3**	Tuesday defrost	n(0); Y(1)	Enable the Ld1 to Ld6 defrost operation on Tuesday	n
rtC	**dd4**	Wednesday defrost	n(0); Y(1)	Enable the Ld1 to Ld6 defrost operation on Wednesday	n
rtC	**dd5**	Thursday defrost	n(0); Y(1)	Enable the Ld1 to Ld6 defrost operation on Thursday	n
rtC	**dd6**	Friday defrost	n(0); Y(1)	Enable the Ld1 to Ld6 defrost operation on Friday	n
rtC	**dd7**	Saturday defrost	n(0); Y(1)	Enable the Ld1 to Ld6 defrost operation on Saturday	n
rtC	**Ld1**	1st defrost starting time	0.0 to 23h50min; nu(144)	sets the beginning of the first programmable defrost cycle.	00:00
rtC	**Ld2**	2nd defrost starting time	0.0 to 23h50min; nu(144)	sets the beginning of the second programmable defrost cycle.	00:00
rtC	**Ld3**	3rd defrost starting time	0.0 to 23h50min; nu(144)	sets the beginning of the third programmable defrost cycle.	00:00
rtC	**Ld4**	4th defrost starting time	0.0 to 23h50min; nu(144)	sets the beginning of the fourth programmable defrost cycle.	00:00
rtC	**Ld5**	5th defrost starting time	0.0 to 23h50min; nu(144)	sets the beginning of the fifth programmable defrost cycle.	00:00
rtC	**Ld6**	6th defrost starting time	0.0 to 23h50min; nu(144)	sets the beginning of the sixth programmable defrost cycle.	00:00

5.1.15 Memory storage management – E2

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
E2	**MAP**	Current configuration	C-1(0); C-2(1)	to change configuration (parameter map) used	
E2	**LdM**	Restoring default setting	n(0); Y(1)	select Y and confirm to reload factory default values for the configuration currently used.	
E2	**rHA**	MAX and Min values reset for HACCP functions (valid if .eMiMa=1)	n(0); Y(1)	select Y and confirm to reset the memorized min and MAX temperature values (HACCP function must be enabled).	

5.1.16 Serial Communication port configuration parameters – CoM

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
CoM	**Adr**	Serial address for COM1	1 to 247	Device address for Modbus communication	1
CoM	**bAU**	Baudrate for COM1	9.6(0); 19.2(1); 38.4(2); 57.6(3); 115(4)	Select the correct baudrate for serial communication	9.6
CoM	**PAr**	Parity control for COM1	no(0); odd(1); EvE(2)	• no=no parity control; • odd=odd parity control; • EvE=even parity control	n
CoM	**FM**	Operating Mode for COM1	std(0); ro(1)	• Std = standard mode, both read and write commands are enabled • ro = read only value. No write commands are enabled.	Std
CoM	**oEM**	Test mode activation	n(0); Y(1)	Outputs can be activated and deactivated with modbus commands. When enabled, the regulators never change on the output status.	n

5.1.17 User Interface configuration parameters – Ui

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
Ui	**SC0**	Device Lock	n(0); Y(1)	• n=device never locked; • Y=device can be locked manually or automatically (if par. SCA > 0). When locked, any action on the display will show a “LoC” message.	n
Ui	**SC2**	Set point modification enabled	n(0); Y(1)	Enable SET menu for value modification	Y
Ui	**SC3**	Programming mode enabled	n(0); Y(1)	Enable PROGRAMMING menu for parameter values modification	Y
Ui	**SC5**	User interface timeout	10 to 255 sec	Timeout for function and menu exit	60
Ui	**SC7**	Active load icons visualization in Home	n(0); Y(1); ovr(2)	• n=never visualized; • Y=visualized for 3 sec after any touch; over=always visualized	Y
Ui	**SC8**	Info menu management	n(0); Y(1)	The info menu collect tha status of the I/Os. n=disabled; Y=enabled.	Y
Ui	**SC9**	“oFF” label in stand-by	n(0); Y(1)	Show the OFF label when in stand-by. OFF label is visualized 1 sec out of 10 sec.	n
Ui	**SCA**	Timeout for automatic device lock	0 to 255 min	Timer before automatic device lock. 0=function disabled.	0
Ui	**bPt**	Confirmation time for SET button	S(short)=1sec; L(Long)=3sec	Sets the confirmation time through SET button	S
Ui	**bS**	Alarm Sound Level	0 to 5	Buzzer level for alarm indication. 0=buzzer muted; 5=buzzer at maximum.	3

Ui	**b2C**	Button 2 configuration	nu(0); dEF(1)	• nu=not used; • Pdn=pull down activation; • MAP=configuration change; • SAn=sanitizazion; • EFn=air extraction fan	SAn
Ui	**b3C**	Button 3 configuration	nu(0); Std(1)	• nu=not used; • AUS=auxiliary output; • MAP=configuration change; • SAn=sanitizazion; • EFn=air extraction fan	AUS
Ui	**b4C**	Button 4 configuration	nu(0); Std(1)	• nu=not used; • ECo=energy saving; • MAP=configuration change; • SAn=sanitizazion; • EFn=air extraction fan	ECO
Ui	**b1F**	Button 1 enabled in stand-by	n(0); Y(1)	The relative function is enable also in stand-by mode	Y
Ui	**b2F**	Button 2 enabled in stand-by	n(0); Y(1)	The relative function is enable also in stand-by mode	n
Ui	**b3F**	Button 3 enabled in stand-by	n(0); Y(1)	The relative function is enable also in stand-by mode	n
Ui	**PSU**	Password for level Pr2	0 to 999	insert a value to protect all the parameters set on the level Pr2 from modification	0

5.1.18 Information, read only parameters – inF

GROUP	LABEL	DESCRIPTION	RANGE	MEANING	VALUE
inF	**dP1**	Probe P1 value - Read Only	---	Probe 1 real time value	
inF	**dP2**	Probe P2 value - Read Only	---	Probe 2 real time value	
inF	**dP3**	Probe P3 value - Read Only	---	Probe 3 real time value	
inF	**dP4**	Probe P4 value - Read Only	---	Probe 4 real time value	
inF	**di1**	Digital input 1 status - Read Only	---	Digital input 1 real time status	
inF	**di2**	Digital input 2 status - Read Only	---	Digital input 2 real time status	
inF	**di3**	Digital input 3 status - Read Only	---	Digital input 3 real time status	
inF	**r01**	Digital output 1 status - Read Only	---	Digital output 1 real time status	
inF	**r02**	Digital output 2 status - Read Only	---	Digital output 2 real time status	
inF	**r03**	Digital output 3 status - Read Only	---	Digital output 3 real time status	
inF	**r04**	Digital output 4 status - Read Only	---	Digital output 4 real time status	
inF	**Ao1**	Analogue output 1 value - Read Only	---	Analogue output 1 real time value	
inF	**Ao2**	Analogue output 2 value - Read Only	---	Analogue output 2 real time value	

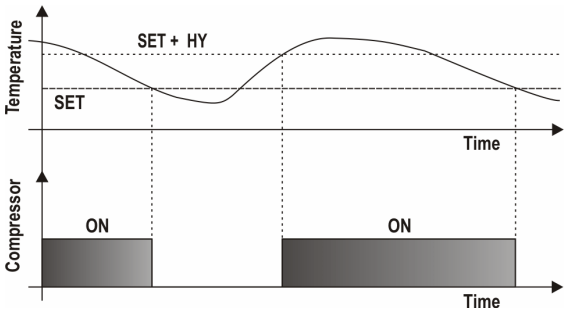
inF	**rSE**	Real regulation Set Point (SET + HES + SETd) - Read Only	---	Real regulation Setpoint. This value take into consideration other status or function activated such as Energy Saving mode.	
inF	**FdY**	Firmware release date: day - Read Only	---	Official release date	
inF	**FMn**	Firmware release date: month - Read Only	---	Official release date	
inF	**FYr**	Firmware release date: year - Read Only	---	Official release date	
inF	**rEL**	Firmware release - Read Only	---	Official release version	
inF	**SUb**	Firmware sub release - Read Only	---	Official release sub-version	
inF	**Ptb**	Parameter map version - Read Only	---	Official release for parameter map	

6. REGULATION

The controller is able to drive both ONOFF or variable speed compressors.

6.1 ONOFF COMPRESSOR

The regulation is based on the temperature measured by the thermostat probe (P1) with a positive differential respect to the set point: if the temperature increases and reaches the set point plus differential, the compressor will start. The compressor will stop when the temperature reaches the set point value again. In case of fault because of the thermostat probe, the start and stop of the compressor are timed through parameters **CoF** and **Con**.



6.2 HUMIDITY REGULATION

The humidity regulation is based on the humidity probe (P4C = Cur), which must be present and configured appropriately, on the humidity set **SH1** and on the regulation bands defined by parameters **HHA** and **HHb**. Based on the type of regulation (see par. **tHU**), the outputs are activated to humidify or dehumidify following the list below:

- **tHU = nu**: humidity regulation deactivated. The device works only as temperature control.
- **tHU = t1:** both humidification (**oAx=HUM**) and dehumidification by cooling action (**oAy=CP1)**.
- **tHU = t2:** both humidification (**oAx=HUM**) and dehumidification by cooling (**oAy=CP1)** and heating (**oAz=db**) action.
- **tHU = t3:** dehumidification only by cooling (**oAx=CP1**) and dehumidifier (**oAy=dEH**). Heating output (**oAz=db**), if configured, is activated with **rH1** delay respect dehumidifier activation and only if humidity set point is not reached yet.
- **tHU = t4:** dehumidification only by cooling (**oAx=CP1**) and heating (**oAy=db**) action.
- **tHU = t5:** both humidification and dehumidification, with dead band logic by humidifier (**oAx=HUM**) and dehumidifier (**oAy=dEH**).

NOTES:

- Temperature regulation has priority over humidity regulation. If there is a simultaneous request of cooling and dehumidification, the cooling output (compressor) will always have priority and will be activated first.

6.2.1 HUMIDITY VISUALISATION

The visualisation of the humidity value is possible only if the humidity probe is present and properly configured. The main display alternates the measurement value of temperature with the measurement value of humidity. This kind of view is active only on the HOME screen. The following parameters are used (with base time in

seconds):

- **dt**: temperature visualisation time on HOME screen
- **dH**: humidity visualisation time on HOME screen

NOTES:
- If **dt=0**: only the humidity value is visualised.
- If **dH=0**: only the temperature value is visualised.
- If **dt=0** e **dH=0**: only the temperature value is visualised.
- Humidity visualisation uses no special icons as unit of measurement and follows par. **rEH**. The internal resolution for humidity measurement is always 0.1 RH%.

7. ENERGY SAVING

The standard SET-POINT (**SET**) is used to maintain the temperature at a certain value when the energy saving status (ES) is not active. On the other hand, when the ES status is active a different SET-POINT (**SET_ES**), higher than the standard one, will be used. The parameter **HES** defines the energy setpoint according to the following formula: **SET_ES = SET + HES**
There are also two different differential values for **SET** and **SET_ES**, which are used for compressor cut-in and cut-out: when ES status is active, the **HYE** parameter will be used instead of the **HY** parameter.

7.1 BASIC ENERGY SAVING ALGORITHM

The energy saving status will be always saved in the internal memory to resume previous operation if a power failure occurs. The presence of a door switch to work properly (for example: **i1F=dor**) is required.

7.1.1 PARAMETERS INVOLVED

- **ErA:** energy saving algorithm
- **i1F or i2F:** set as door input to monitor the appliance usage
- **StE:** interval to switch from normal to energy saving mode
- **EtS:** interval to switch from energy saving to normal mode
- **HES:** SETPOINT differential when energy saving mode active
- **HYE:** regulation differential when energy saving mode is active
- **dS:** interval for door opening detection
- **LdE:** light output controlled by energy saving (OFF when energy saving mode is active)

FROM	TO	MODE
Normal mode	Energy Saving	Activate the ECO function from Virtual Keyboard screen. Door continuously closed for time **StE**.
Energy Saving	Normal mode	Activate the ECO function from Virtual Keyboard screen. Controller in ES mode for time **EtS**. If the controller is in ES mode, it returns in Standard mode when the door stays open more than time **dS**.

NOTE: the cycling mode (ES - Normal mode - ES - etc.) works if **i1F=dor**, **EtS** and **StE** are different from zero. If **EtS=0** or **StE=0,** the controller will not change the operating mode, and it will be possible to change from the normal mode to the energy saving mode by using the ES button or by setting **i1F=ES**.

8. PULL DOWN FUNCTION

The Pull Down is automatically activated:
- After any defrost cycle
- After power-on if **T>SET+CCS**
- When the regulation probe temperature **T** is:
    - **T>SET+HY+oHt** value in normal mode
    - **T>SET+HES+HYE+oHE** value in energy saving mode

In these cases, a different set-point value (**SET+CCS**) will be used. As soon as the room temperature reaches the **SET+CCS** value, the compressor will stop and the normal regulation will restart.
NOTE:
- Pull Down function is disabled when **CCS=0** or **CCt=0**.

- The **CCt** parameter sets the maximum activation time for any pull down. When **CCt** expires, the Pull Down will be immediately stopped and the standard SET-POINT will be restored

9. DEFROST OPERATIONS

Any defrost operation can be controlled in the following way:
- **EdF=rtC**: by using an internal real-time clock (only for models equipped with RTC)
- **EdF=in**: timed defrost, in this case a new defrost will start as soon as the idF timer elapses

9.1 DEFROST MODE

Two defrost modes are available: timed or controlled by a temperature probe. A couple of parameters are required to control intervals between defrost cycles (**idF**) and maximum duration (**MdF**). During a defrost cycle it is possible to select some different visualizations by using the par. **dFd**. Available defrost types are:
- **tdF=EL**: with an electric heater
- **tdF=in**: by using hot gas cycle

9.2 TIMED OR INTERVAL DEFROST

The defrost interval depends on the presence of the RTC (optional). The internal RTC is controlled by means of the **EdF** parameter:
- **EdF=in:** the defrost is made every **idF** time – standard way for controller without RTC.
- **EdF=rtC:** the defrost is real time controlled, depending on the day enabled in the parameters **dd1**…**dd7** and the hours set in the parameters **Ld1...Ld6**.

Other parameters are used to control defrosting cycles: the maximum length (**MdF**) and defrosting modes: timed or controlled by the evaporator's probe (**P2P**).
At the end of defrost dripping time is started, its length is set in the **Fdt** parameter. With **Fdt=0** the dripping time is disabled.

9.3 AUTOMATIC DEFROST

It is possible to automatically start a defrost as soon as the energy saving mode is activated. To do this, set par. **od1=Y**.

10. EVAPORATOR FAN

To enable the evaporator fan management it is required to set an evaporator probe (par. **FAP**). Here are the involved parameters:
- **FAP**: to select the control probe
- **FSt**: to select the deactivation setpoint
- **HYF**: differential
- **FnC**: to define the working mode:
  - **C-n:** in parallel with compressor output and stopped during any defrost. When compressor is OFF, they will start a duty-cycle mode (see **FoF**, **Fon**, **FF1** and **Fo1** parameters)
  - **O-n:** always on, stopped during any defrost
  - **C-Y:** in parallel with compressor output and always on during any defrost. When compressor is OFF, they will start a duty-cycle mode (see **FoF**, **Fon**, **FF1** and **Fo1** parameters)
  - **o-Y:** always on
- **Fnd:** activation delay after any defrost

10.1 EVAPORATOR FAN AND DIGITAL INPUT

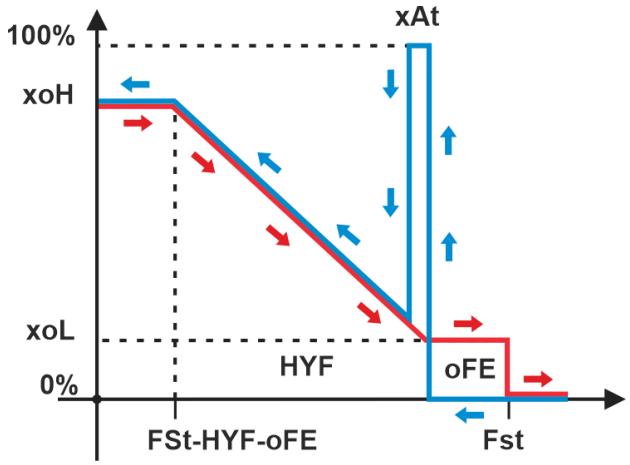
When a digital input is configured as a door switch (**ixF=dor**) and this digital input is active, evaporator fan and compressor status will depend on par. **odC**:
- **odC=no**: normal regulation
- **odC=FAn**: evaporator fan OFF
- **odC=CPr**: compressor OFF
- **odC=F-C**: compressor and evaporator fan OFF

When **rrd=Y**, the regulation restarts after **d1d** or **d2d** time.

10.2 EVAPORATOR FAN CONTROL WITH ANALOGUE OUTPUT

The analogue output **xAo (x=1, 2)** can be controlled by the evaporator fan regulator. In this case the regulation is proportional within the regulation band, excluding the first **xAt (x=1, 2)** seconds where it is activated at the maximum value **xoH (x=1, 2)**.

- With **T > FSt**: analogue output is OFF (0%)
- With **FST-oFE < T <= FSt**:
  - During any activation (temperature is decreasing) the analogue output stays OFF (0%)
  - During any deactivation (temperature is increasing) the analogue output stays at **xoL**
- With **FSt-HYF-oFE < T <= FSt-oFE**:
  - During any activation (temperature is decreasing) the analogue output will change proportionally in the range [**xoL** to **xoH**] (excluding the first **xAt** sec where the fixed value **xoH** is used)
  - During any deactivation (temperature is increasing) the analogue output will change proportionally in the range [**xoL** to **xoH**]
- With **T <= FSt-HYF-oFE**: analogue output stays at **xoH**



10.2.1 SPECIAL CONDITIONS

CONDITION	Output level
Output enabled and **FAP=nu**	**1oH or 2oH**
Output not enabled and **FAP=nu**	0%
Stand-by	0%
Error probe	**1oH or 2oH**
Output disabled through door open (**ixF=dor, odC=FAn or F-C**)	0%
Restart after door open alarm disabled (**ixF=dor, odC=FAn or F-C, rrd=n**)	0%
Restart after door open alarm enabled (**ixF=dor, odC=FAn or F-C, rrd=Y**)	**1oH or 2oH**
FnC=C-n or **C-Y** and at least a compressor ON	Controlled by evaporator fan regulator
FnC=C-n or **C-Y** and no compressor ON	During **Fon:** Controlled by evaporator fan regulator. During **FoF:** 0%
FnC=O-n or **O-Y**	Controlled by evaporator fan regulator
Defrost	**FnC=C-n**: 0% **FnC=O-n**: 0% **FnC=C-Y**: - **Ft=Y**: Controlled by evaporator fan regulator. - **Ft=n: 1oH or 2oH** **FnC=O-Y**: - **Ft=Y**: Controlled by evaporator fan regulator. - **Ft=n**: **1oH or 2oH**
Draining	Controlled by evaporator fan regulator
Lockout alarm	0%

Motion detection	After motion detection: output at **FMr** for **Fti.** Without motion detection: controlled by evaporator fan regulator
Anti short cycle (par. **FCt**)	Evaporator fan control disabled.

10.3 EVAPORATOR FAN MAINTENANCE FUNCTION

Par. **LA1** enables a threshold with the meaning of (tens of) hours of operation before maintenance. The counter will be increased when any evaporator fan output is ON.

If **LA1 = 0** the maintenance function is disabled (for all types of evaporator fans).
After reaching the value indicated in par. **LA1**:

- The label relating to the maintenance alarm will appear on the display (**"FSr"**: condenser fan service).
- The buzzer, if present, will not be activated.
- The alarm relay, if present, will not be activated.
- The modbus alarm status will be set.

To reset this maintenance alarm:

- Enter programming mode, access par. **rS1** and set it to **"Y"** and confirm with the SET button.
- Send the reset command via Modbus.

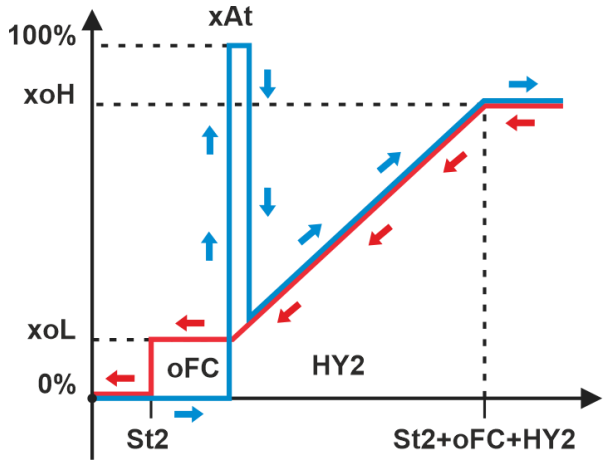
After the counter reset:

- The maintenance alarm will be deactivated (label and modbus status reset).
- The counter relating to the maintenance alarm will be reloaded.

11. CONDENSER FAN

To enable the condenser fan management it is required to set a condenser probe (par. **FAC**). Here are the involved parameters:

- **FAC**: to select the control probe
- **St2**: to select the deactivation setpoint
- **HY2**: differential
- **FCC**: to define the working mode:
  - **C-n:** in parallel with compressor output and stopped during any defrost. When compressor is OFF, they will start a duty-cycle mode (see **FoF**, **Fon**, **FF1** and **Fo1** parameters)
  - **o-n:** always on, stopped during any defrost
  - **C-Y:** in parallel with compressor output and always on during any defrost. When compressor is OFF, they will start a duty-cycle mode (see **FoF**, **Fon**, **FF1** and **Fo1** parameters)
  - **o-Y:** always on



11.1 CONDENSER FAN CONTROL WITH ANALOGUE OUTPUT

The analogue output 2 can be controlled by the condenser fan regulator. In this case the regulation is proportional within the regulation band, excluding the first **2At** seconds where it is activated at the maximum value (**100%**).

- With **T < St2**: analogue output is OFF (0%)
- With **St2 <= T < St2+oFC**:
  - During any activation (temperature is increasing) the analogue output stays OFF (0%)
  - During any deactivation (temperature is decreasing) the analogue output stays at **2oL**
- With **St2+oFC <= T < St2+oFC+HY2**:
  - During any activation (temperature is increasing) the analogue output will change proportionally in the range [**2oL** to **2oH**] (excluding the first **2At** sec where the fixed value **2oH** is used)
  - During any deactivation (temperature is decreasing) the analogue output will change proportionally in the range [**2oL** to **2oH**]
- With **T > St2+HYF+oFE**: analogue output stays at **2oH**

11.2 CONDENSER FAN MAINTENANCE FUNCTION

Par. **LA2** enables a threshold with the meaning of (tens of) hours of operation before maintenance. The counter will be increased when any evaporator fan output is ON.

If **LA2 = 0** the maintenance function is disabled (for all types of evaporator fans).
After reaching the value indicated in par. **LA2**:
- The label relating to the maintenance alarm will appear on the display (**"CSr"**: condenser fan service).
- The buzzer, if present, will not be activated.
- The alarm relay, if present, will not be activated.
- The modbus alarm status will be set.

To reset this maintenance alarm:
- Enter programming mode, access par. **rS2** and set it to **"Y"** and confirm with the SET button.
- Send the reset command via Modbus.

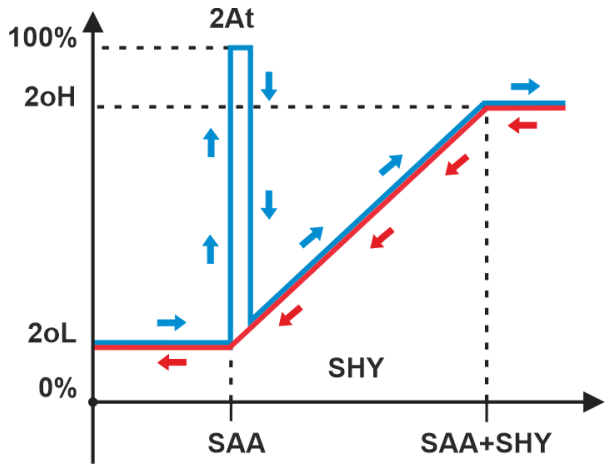
After the counter reset:
- The maintenance alarm will be deactivated (label and modbus status reset).
- The counter relating to the maintenance alarm will be reloaded.

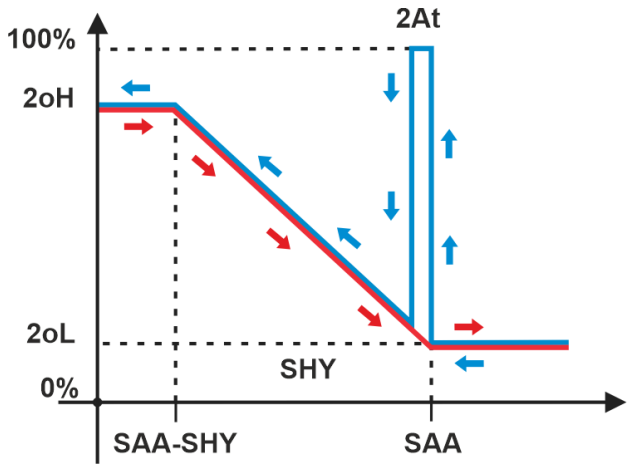
12. AUXILIARY REGULATOR

The auxiliary output can be managed by digital inputs (**oAx=AUS**, **ixF=AUS**): the output is switched on and off following the relative digital input status.

12.1 AUXILIARY REGULATOR

The auxiliary regulator can be used to manage the auxiliary output. Here are the involved parameters:
- **ACH:** type of regulation for the auxiliary output: **Ht**=inversely proportional (heating); **CL**=directly proportional (cooling).
- **SAA:** set point for regulation band.
- **SHY:** differential for regulation band.
- **ArP:** probe for auxiliary regulator.
- **Sdd:** auxiliary output OFF during any defrost.
- **2At:** start-up interval at max.





12.2 TIMED ACTIVATION

The following parameters can be used to define fixed activation and deactivation intervals.

- **btA:** base time for auxiliary output activation and deactivation intervals.
- **Ato:** auxiliary activation interval.
- **AtF:** auxiliary deactivation interval.

12.3 GENERAL NOTES

if **oAx=AUS** and **ArP=nP** (no probe for auxiliary digital output) the auxiliary output can be managed by:

- Digital input if **ixF=AUS.**
- Auxiliary button (if set as **AUS**).
- Serial command (Modbus protocol).
- Fixed interval of time if **Ato>0** and **AtF>0** (if **Ato=0** or **AtF=0** the auxiliary output is disabled).

12.3.1 SPECIAL CONDITIONS

Device status	Probe condition	Command type	Relay output	Analogue output
ON	Available	Button Digital input Modbus command	Activation: output forced ON Deactivation: output forced OFF, after that the auxiliary regulator regains control.	Activation: output forced ON Deactivation: output forced OFF, after that the auxiliary regulator regains control.
ON	Error	Button Digital input Modbus command	Cyclic activation following par. **Ato** and **AtF.** Activation or deactivation by button, digital input oe Modbus command will force the output ON or OFF.	Cyclic activation following par. **Ato** and **AtF.** Activation or deactivation by button, digital input or Modbus command will force the output at **2oH** or **2oL**.
ON	Not available, **ArP=nu**	Button Digital input Modbus command	Cyclic activation following par. **Ato** and **AtF.** Activation or deactivation by button, digital input oe Modbus command will force the output ON or OFF.	Cyclic activation following par. **Ato** and **AtF.** Activation or deactivation by button, digital input oe Modbus command will force the output at **2oH** or **2oL**.
OFF	Available	Button Digital input Modbus command	Activation: output forced ON Deactivation: output forced OFF	Activation: output forced at **2oH** Deactivation: output forced at 0%
OFF	Error	Button Digital input Modbus command	Activation: output forced ON Deactivation: output forced OFF	Activation: output forced at **2oH** Deactivation: output forced at 0%
OFF	Not available, **ArP=nu**	Button Digital input Modbus command	Activation: output forced ON Deactivation: output forced OFF	Activation: output forced at **2oH** Deactivation: output forced at 0%

13. LIGHT OUTPUTS

The light output can be managed by:

- Device ON, if **LAU=Y**
- Door input, if **ixF=dor** and **CLi=Y**
- Button, if set as **bxC=LiG**
- Digital inputs, if set as **ixF=LiG**
- Energy saving, if **LdE=Y**
- Motion sensor, if **ixF=EMt**
- Modbus command

13.1 ACTIVATION WHEN DEVICE GOES ON

If par. **LAU=Y**, every power on will activate the light output.
If par. **LoF=Y**, light output will be switched off after power off or in stand-by.

13.2 ACTIVATION BY DOOR INPUT

If par. **ixF=dor (x=1,2,3)** and **CLi=Y**, the light output:
- Will be activated after door opening event
- Will be deactivated after door closing event

13.3 ACTIVATION BY DIGITAL INPUT

When par. **ixF=LiG (x=1,2,3),** the light output:
- Stays ON until receiving next OFF command if par. **LCi=0**.
- Stays ON until timer **LCi** expire if par. **LCi>0**.

NOTE: if another available digital input is set as **ixF=dor**, this function is automatically disabled.

13.4 ACTIVATION BY ENERGY SAVING

The energy saving mode can modify the light output status as follow:
- **LdE=Y**: light output OFF when energy saving ON and light output ON when energy saving OFF.
- **LdE=n**: light output not affected by energy saving status.

13.5 ACTIVATION BY MOTION SENSOR

When par. **ixF=EMt (x=1,2,3)** the light output status will be modified by external motion sensor (model X-MOD). The logic follows.
- The light output will be activated after detecting **n01** motion events.
- The light output will stay ON for **t01** min.

13.6 ACTIVATION BY MODBUS COMMAND

The light outputs can be activated or deactivated by modbus command.

13.7 ACTIVATION BY ANALOGUE OUTPUT (2Ao=LiG)

The analogue output can be used to vary the level of light intensity. The operation mode is defined by the following parameters:
- **MA2** = standard mode (**Std**), variation with predefined levels (**StP**)
    - If **MA2=Std**: analogue output 2 is activated (forced to value **2oH**) and deactivated (forced to value **2oL**) by using the **LiG** button.
    - If **MA2=StP**: analogue output 2 will assume one of the values par. **LL1...LL4**. Every pressure on the **LiG** button will change the value from **LLx** (current one) to **LLy** (next one). A sound will inform the user about the selected level (1 bip for **LL1**, 2 bips for **LL2** and so on).
- **LLx** = these parameters are used to define 4 fixed values for the analogue output 2. Any pressure of the **LiG** button will change the value of the analogue output, selecting the next available level in a cyclic manner (**LL1**, **LL2**, **LL3**, **LL4**, **LL1**, …).

NOTES:
- The current level **LLx** is saved into memory in case of power off or stand-by. At start-up the saved value will be used to set the light output level.
- If **MA2=StP**, the **2oL** and **2oH** evalues and the interval **2At** will not considered.

13.7.1 SPECIAL CONDITIONS

Condition	Output level
Stand-by with par. **MAx=Std**	If **LoF=Y**: 0% If **LoF=n**: previous value.
Stand-by with par. **MAx=StP**	If **LoF=Y**: 0% If **LoF=n**: previous level **LLx**
Power-on or exit from stand-by, par. **MAx=Std**	If **LAU=Y**: **2oH** If **LAU=n**: 0%
Power-on or exit from stand-by, par. **MAx=StP**	If **LAU=Y**: previous saved level **LLx**. If **LAU=n**: 0%
Output toggle by button, with device ON and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by modbus command, with device ON and par. **MAx=Std**	ON = **2oH** OFF = 0%

Output toggle by digital input, with device ON and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by button, with device ON and par. **MAx=StP**	Move through levels**: LL1→LL2→LL3→LL4→LL1→**…
Output toggle by modbus command, with device ON and par.**MAx=StP**	Set level **LLx**
Output toggle by digital input, with device ON and par. **MAx=StP**	Output unchanged, digital input disabled.
Output toggle by button, with device OFF and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by modbus command, with device OFF and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by digital input, with device OFF and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by button, with device OFF and par. **MAx=StP**	**LL1→LL2→LL3→LL4→LL1→**… If output value=0% after going in stand-by, first button press will set level **LL1**.
Output toggle by modbus command, with device OFF and par. **MAx=StP**	Set level **LLx**
Output toggle by digital input, with device OFF and par. **MAx=StP**	Output unchanged, digital input disabled.
Lockout alarm	Output unchanged.

14. SANITIZATION

The sanitization output is controlled by:
- Button, if set as **bxC=SAn**
- Digital inputs, if set as **ixF=SAn**
- Modbus command
- Fixed intervals, par. **iSn** and **tSn** (set **iSn>tSn** for optimal operation)
- Pre-programmed intervals (only with real time clock), par. **dSA**, **dSH**, **HSt** and **HSt**.

NOTES:
- After power-off, stand-by or in case of any blackout the running sanitization task is stopped and reset. Sanitization status is never saved in memory.
- Pre-programmed activations (RTC enabled) inhibit fixed intervals.
- Manual activations (by button, digital inputs or modbus commands):
  - Have no priority. Every command changes the current sanitization status.
  - Work also in stand-by mode.
  - Work with fixed or pre-programmed intervals.

14.1 SAFETIES

The sanitization can be:
- Disabled in case of door open event and if par. **ixF=dor (x=1,2,3)**
- Enabled and disabled by button, if par. **bxC=SAn (x=2,3,4)**
- Enabled and disabled by modbus command

NOTES:
- Any sanitization activation received during a door open condition will be postponed after the next door closed event.
- Any lockout alarm immediately stops the sanitization.

14.2 ACTIVATION BY ANALOGUE OUTPUT (2Ao=SAn)

Condition	Output level
Sanitization enabled	**2oH**
Sanitization disabled	0%
Stand-by	0%
Lockout alarm	0%

15. AIR EXTRACTION FAN

The air extraction fan output is controlled by:
- Button, if set as **bxC=EFn (x=2,3)**
- Digital input, if set as **ixF=EFn (x=1,2,3)**
- Modbus command
- Fixed intervals, par. **iAE** and **tAE** (set **iAE>tAE** for optimal operation)

15.1 ACTIVATION BY ANALOGUE OUTPUT (2Ao=EFn)

The analogue output can be used to change the ventilator speed. The operation mode is defined by the following parameters:
- If **MA2=Std**: analogue output 2 is activated (forced to value **2oH**) and deactivated (forced to value **0%**).
- If **MA2=StP**: analogue output 2 will assume one of the values par. **LL1...LL4**. Every pressure of the **bxC=EFn (x=2,3)** button will change the value from **LLx** (current one) to **LLy** (next one). A sound will inform the user about the selected level (1 bip for **LL1**, 2 bips for **LL2** and so on).

NOTES:
- The current level **LLx** is saved into memory in case of power off or stand-by. At start-up the saved value will be used to set the light output level.
- If **MA2=StP**, the **2oL** and **2oH** evalues and the interval **2At** will not considered.

15.1.1 SPECIAL CONDITIONS

Condition	Output level
Output enabled	**2oH**
Output disabled	0%
Stand-by	0%
Output toggle by button, with device ON and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by modbus command, with device ON and par.**MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by digital input, with device ON and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by button, with device ON and par. **MAx=StP**	**LL1→LL2→LL3→LL4→LL1→**…
Output toggle by modbus command, with device ON and par.**MAx=StP**	Set level **LLx**
Output toggle by digital input, with device ON and par. **MAx=StP**	Output unchanged, digital input disabled.
Output toggle by button, with device OFF and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by modbus command, with device OFF and par.**MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by digital input, with device OFF and par. **MAx=Std**	ON = **2oH** OFF = 0%
Output toggle by button, with device OFF and par. **MAx=StP**	**LL1→LL2→LL3→LL4→LL1→**… If output value=0% after going in stand-by, first button press will set level **LL1**.
Output toggle by modbus command, with device OFF and par. **MAx=StP**	Set level **LLx**
Output toggle by button, with device OFF and par. **MAx=StP**	Output unchanged, digital input disabled.
Lockout alarm	Output unchanged.

16. DIGITAL OUTPUTS

Depending on the model, one or more digital outputs (relays) can be configurated with one of the following functionalities.

16.1 COMPRESSOR OUTPUT (oAx = CP1)

With **oAx=CP1** the relay operates as the main regulation output.

16.2 DEFROST OUTPUT (oAx = dEF)

With **oAx=dEF** the relay operates as a defrost output.

16.3 EVAPORATOR FAN OUTPUT (oAx = FAn)

With **oAx=FAn** the relay operates as an evaporator fan output.

16.4 ALARM OUTPUT (oAx = ALr)

With **oAx=ALr** the output operates as an alarm output. It is activated every time an alarm happens. Its status depends on the **tbA** parameter: if **tbA=Y**, the output is deactivated by pressing any key.
If **tbA=n**, the alarm output stays on until the alarm condition recovers.

16.5 LIGHT OUTPUT (oAx = LiG)

With **oAx=LiG** the relay operates as a light output.

16.6 AUXILIARY OUTPUT (oAx = AUS)

See the AUXILIARY REGULATOR paragraph for furter information.

16.7 DEAD BAND REGULATION (oAx = db)

With **oAx=db** the output can be used to control, for example, a heater element. It is used to implement a dead band regulation. If so:

- **oAx=db** cut in is **SET-HYd**
- **oAx=db** cut out is **SET**

16.8 ON/OFF OUTPUT (oAx = onF)

When **oAx=onF**, the output is activated when the controller is switched on and deactivated when the controller is switched off.

16.9 ENERGY SAVING OUTPUT (oAx = HES)

When **oAx=HES**, the output is activated when the energy saving mode is active and vice-versa.

16.10 CONDENSER FAN OUTPUT (oAx = Cnd)

With **oAx=Cnd** the relay operates as a condenser fan output.

16.11 SECOND COMPRESSOR OUTPUT (oAx = CP2)

With **oAx=CP2** the relay operates as a second regulation output. This function is available only for special models and normally must be not selected.

16.12 SECOND DEFROST OUTPUT (oAx = dF2)

With **oAx=dF2** the relay operates as second defrost output. This function is available only for special models and normally must be not selected.

16.13 HEATER OUTPUT (oAx = HEt)

With **oAx=HEt** the relay operates as a heater output. In this case, it will be used during and after any defrost cycle. The par. **Hon** defines the time the relative output will stay active after the end of a defrost operation.

16.14 INVERTER OUTPUT (oAx = inV)

The output is enabled when the inverter (variable speed compressor) is ON.

16.15 DEHUMIDIFIER (oAx=dEH)

With **oAx=dEH** the relay operates as a dehumidifier output. Check the type of humidity regulation, par. **tHU**, for more information.

16.16 HUMIDIFIER (oAx=HUM)

With **oAx=HUM** the relay operates as a humidifier output. Check the type of humidity regulation, par. **tHU**, for more information.

16.17 SANITIZATION (oAx=San)

With **oAx=SAn** the relay operates as a sanitization output. See the relative paragraph for more information.

16.18 AIR EXTRACTION FAN

With **oAx=EFn** the relay operates as an air extraction fan output. See the relative paragraph for more information.

17. DIGITAL INPUTS

The digital inputs are programmable by using par. **i1F**, **i2F** and **i3F**.
- **i1F**: available only if **P3P=n**.
- **i2F**: always available
- **i3F**: available only if **P4P=n**.

17.1 DOOR SWITCH (ixF=dor)

It signals the door status. Some relay outputs can be toggled depending on the **odC** parameter:
- **odC = no** no change
- **odC = FAn** evaporator fan will be switched off
- **odC = CPr** compressor will be switched off
- **odC = F-C** both compressor and evaporator fan will be switched off

Since the door is opened:
- the door alarm is enabled
- the display shows the message “dA”
- the regulation restarts only if **rrd = Y**.

The alarm stops as soon as the external digital input is disabled again. During door open conditions, the high and low temperature alarms are disabled.

17.2 START DEFROST (ixF=dEF)

It starts a defrost if all conditions are fulfilled (temperature, delays, etc.). After finishing a defrost, the normal regulation will restart only if the digital input is disabled, otherwise the instrument will wait until the **MdF** safety time is expired.

17.3 AUXILIARY OUTPUT (ixF=AUS)

The AUX output (if present and configured) will be enabled / disabled following the status of the relative digital input.

17.4 ENERGY SAVING (ixF=ES)

The energy saving mode will be enabled / disabled following the status of the relative digital input.

17.5 EXTERNAL WARNING ALARM (ixF=EAL)

It is used to detect an external alarm. It does not lock the regulation.

17.6 EXTERNAL LOCK ALARM (ixF=bAL)

It is used to detect any critical external alarm. It locks immediately the regulation.

17.7 EXTERNAL PRESSURE ALARM (ixF=PAL)

It is used to detect any pressure external alarm. This signal locks the regulation after detecting **nPS** events in the interval **dxd**.

17.8 EVAPORATOR FAN MODE (ixF=FAn)

It is used to control the evaporator fan.

17.9 REMOTE HOLIDAY MODE (ixF=HdF)

It is used to force the holiday mode.

17.10 REMOTE ONOFF (ixF=onF)

It is used to switch ON and OFF the device remotely.

17.11 LIGHT OUTPUT (ixF=LiG)

It is used to control the light output.

17.12 PULL DOWN (ixF=CC)

It is used to activate the pull down.

17.13 MOTION SENSOR DETECTOR (ixF=EMt)

It is used to connect an X-MOD motion sensor. Please note that motion sensor can be connected only to the HOTKEY port, so digital input 2 must be properly configured.

17.14 CHANGE PARAMETER MAP (ixF=MAP)

Change the parameter map between C-1 and C-2.

17.15 SANITIZATION (ixF=SAn)

It is used to activate the sanitization function.

17.16 AIR EXTRACTION FAN (ixF=EFn)

It is used to activate the air extraction function.

18. ANALOGUE OUTPUTS

The controller is equipped with:
- A PWM configurable analogue output (par. **1Ao**). NOTE: this output has no synchronization with power supply.
- A 0-10Vdc configurable analogue output (par. **2Ao**)

18.1 ANALOGUE OUTPUT CONFIGURATION

The following parameters are used to set up the analogue outputs:
- **1oL, 2oL** = minimum value
- **1oH, 2oH** = maximum value
- **1At, 2At** = interval with analogue output at maximum value after activation

The following functions can be used with the analogue outputs 1:
- **nu** = output disabled.
- **FrE** = frequency output. In this case the output value is calculated from variable speed compressor regulator. Par. **1oL**, **1oH** and **1At** are not considered at all.
- **FAn** = the evaporator fan regulator defines the output value.

The following functions can be used with the analogue outputs 2:
- **nu** = output disabled.
- **tiM** = timed activation.
- **FAn** = the evaporator fan regulator defines the output value.
- **AUS** = the auxiliary regulator defines the output value.
- **ALr** = output at maximum value in case of any alarm condition. Output at minimum value in all other cases.
- **Cnd** = the condenser fan regulator defines the output value.
- **LiG** = the output value will change accordingly to par. **MA2** and **LLx**.
- **vAL** = fixed value
- **SAn** = sanitization
- **EFn** = air extraction fan

18.2 TIMED ACTIVATION

In this case the analogue output will stay at **2oL** during **AtF** time and at **2oH** during **Ato** time.
NOTE: in stand-by the analogue output stays at 0%.

18.3 FIXED VALUE

In this case the analogue output will stay at value **2AS**.
NOTES:
- Values **2oL** and **2oH** are not considered.

- In stand-by the analogue output stays at 0%.

18.4 SANITIZATION

See the sanitization paragraph for furter information.

18.5 AIR EXTRACTION FAN

See the air extraction fan paragraph for furter information.

19. ALARM SIGNALLING

Label	Cause	Outputs
P1	P1 probe failure	Compressor output according to **Con** e **CoF**
P2	P2 probe failure	Depends on the relative function
P3	P3 probe failure	Depends on the relative function
P4	P4 probe failure	Depends on the relative function
HA	High temperature alarm	Outputs unchanged
LA	Low temperature alarm	Outputs unchanged
H2	Second high temperature alarm	Compressor output according to **AC2**
L2	Second low temperature alarm	Compressor output according to **bLL**
HHA	High humudity alarm	Outputs unchanged
HLA	Low humidity alarm	Outputs unchanged
dA	Door open alarm	Compressor and fan follows par. **odC**
EA	Warning external alarm	Outputs unchanged
CA	Lock external alarm	Outputs disabled
EE	Internal memory alarm	Outputs unchanged
rtC	Real time clock not properly set	Outputs unchanged
rtF	Real time clock failure (HW problem)	Outputs unchanged
SAn	Sanification output active	Other outputs unchanged

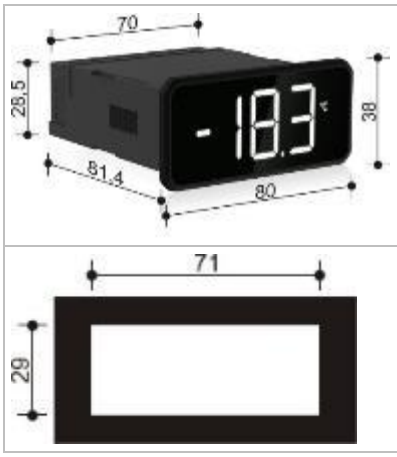
19.1 ALARM RECOVERY

Probe alarms **P1**, **P2**, **P3** and **P4** are activated some seconds after detecting a fault condition in the relative probe. These alarms are automatically reset some seconds after the relative probe restarts normal operations. Always check the connections (probe – device terminals) before replacing the probe.
Temperature alarms **HA**, **LA**, **H2** and **L2** are automatically reset as soon as the temperature is within the normal working range.
Memory alarm **EE** can be reset by pressing any button.
The alarms **EA**, **CA** and **dA** are automatically reset as soon as the relative digital input is disabled.
The internal buzzer can be muted by touching any area of the display and only if parameter **tbA=Y**.

20. SERIAL COMMUNICATION

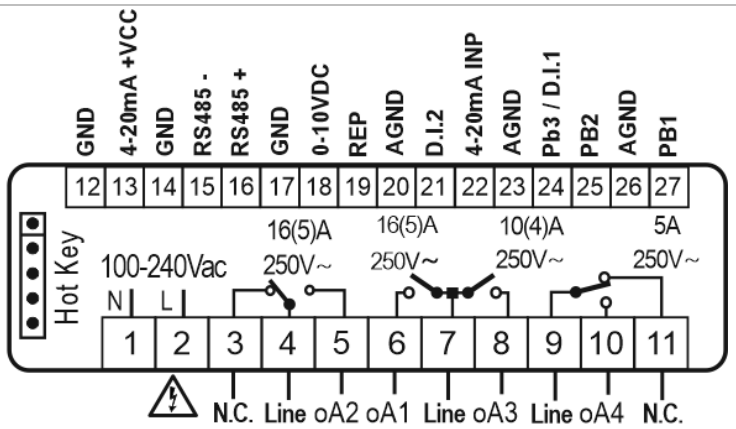
The device supports different baudrates (par. **bAU**) and parity control (par. **PAr**). Please check the serial network to adapt them according to the other devices.

21. INSTALLATION AND MOUNTING



Instrument **XH78T** shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied. The temperature range allowed for correct operation is 0 to 60°C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate through the cooling holes.

22. WIRING DIAGRAM



Power Supply: 100-240VAC, 50-60Hz

PIN	Label	Description
12	4-20mA GND	Ground for 4-20mA sensor
13	4-20mA +VCC	Power supply for 4-20mA sensor
14	GND	Ground for RS485 serial port
15	RS485-	Negative terminal for RS485 (-) serial port
16	RS485+	Positive terminal for RS485 (+) serial port
17	GND	Ground for analogue output 0-10Vdc
18	0-10VDC	Analogue output 0-10Vdc
19	REP	Remote display
20	AGND	Ground for digital inputs and remote display
21	D.I.2	Digital input 2
22	4-20mA INP	Analogue input for 4-20mA sensor
23	AGND	Ground for analogue and digital inputs
24	Pb3/D.I.1	Analogue input 3 (temperature only) / Digital input 1
25	Pb2	Analogue input 2 (temperature only)
26	AGND	Ground for analogue and digital inputs
27	Pb1	Analogue input 1 (temperature only)

23. TECHNICAL SPECIFICATIONS

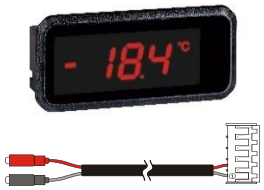
FEATURES	DESCRIPTION			
Housing	Self-extinguishing PC/PC+ABS			
Dimensions	Front 38x80 mm; case depth 81mm			
Mounting device	Panel, 71x29mm panel cut-out			
Degree of Protection	**NEMA – UL 50e**	Indoor use only, type 1 enclosure		
	IP-IEC/EN 60529	Front panel: IP66	Rear Housing: IP20	
Power Supply	100 to 240VAC±10%, 50/60Hz			
Overvoltage Category	II			
Rated Power	100-240VAC: 3VA			
Rated Impulse Voltage	2500V			
Display	White display, LED type, 3 digits with decimal point and multi-function icons			
Buzzer	Internal, always present			
Software Class	A			
Terminal blocks / Terminal Connections	Plug-in or screw terminal block, wire section between 0,5 and 2,5 mm2 Max tightening force: 0.3 N/m for 3,5mm pitch, 0.4 N/m for 5,0mm pitch			
Data Storing	**Real Time Clock:** Data maintenance up to 6 months with lithium battery. **Other parameters:** internal flash.			
Type of Action	1.B			
Pollution Degree	2, non-condensing humidity			
Ambient Operating Temperature and Humidity	**IEC/EN**	0T55°C; 20-85 rH% (non-condensing humidity)		
	UL-CAN/CSA	-20T55°C; 20-85 rH% (non-condensing humidity)		
Shipping and storage temperature	-40T85°C; 20-85 rH% (non-condensing humidity)			
Resistance to Heat	UL 94 V-0			
Measurement range	**NTC:** -40T110°C, resolution 0.1°C or 1°C (selectable); **PT1000:** -100T150°C, resolution 0.1°C or 1°C (selectable); **PTC:** -50T150°C, resolution 0.1°C or 1°C (selectable) *4-20mA: 0.0 to 100.0% RH; resolution 0.5% RH with Dixell probe models "XH20P"*			
Accuracy	NTC, PTC, PT1000: ±1% compared to the full scale 4-20mA: ±1% compared to the full scale			
Inputs	Up to 4 NTC, PTC or PT1000 (configurable); Up to 2 voltage free contacts			
	A 3-wire analogue input 4-20mA with onboard power supply; Terminal 2: max supply voltage = 12Vdc; max supply current = 25mA			
Relay Outputs		**Nominal**	**UL**	**IEC**
	oA1	SPST 16A, 250VAC	Resistive load 11A (NO), 240Vac, 30k cycles; Motor load 10FLA/60LRA (NO), 240Vac, 30k cycles; Pilot Duty B300 (NO), 6k cycles	10(4)A (NO), 240Vac, 100k cycles
	oA2	SPDT 16A, 250VAC	Resistive load 11A (NO), 240Vac, 30k cycles; Motor load 10FLA/60LRA (NO), 240Vac, 30k cycles; Pilot Duty B300 (NO), 6k cycles	10(4)A (NO), 240Vac, 100k cycles
	oA3	SPST 10A, 250VAC	Resistive load 4A (NO), 230Vac, 100k cycles; Pilot Duty C300 (NO), 100k cycles	4A (NO), 240Vac, 25k cycles
	oA4	SPDT 5A, 250VAC	Resistive load 5A (NO), 230Vac, 100k cycles; Motor load 4FLA/4LRA (NO), 100k cycles	5A (NO/NC), 240Vac, 100k cycles
Optional	**oA4**	SPST 5A, 250VAC	Resistive load 4A (NO), 240Vac, 100k cycles; Motor load 1/8HP (NO), 120/240Vac, 30k cycles; Pilot duty C300 (NO), 100k cycles	5A (NO), 240Vac, 100k cycles; 1(1)A (NO), 240Vac, 100k cycles
	oA4	SPDT 7A, 250Vac	Resistive load 5A (NO), 240Vac, 100k cycles; Motor load 4FLA/4LRA (NO), 240Vac, 100k cycles	5A (NC), 240Vac, 100K cycles; 5A (NO), 240Vac, 20K cycles
	oA1	SPST 16A inrush, 250VAC	Resistive load 11A, 240Vac, 50k cycles;	11A, 240Vac, 30k cycles
Maximum ampacity on terminal 7	9A (COM oA1 oA3)			

FEATURES	DESCRIPTION		
Analogue Outputs	**1Ao**	Frequency output; Supply max voltage=12Vdc; Max supply current=2mA; duty cycle 50%; 0 to 166 Hz Accuracy: ±1Hz compared to the full scale	A3: Freq A4: GND
	2Ao	0-10Vdc; Max supply current=5mA Accuracy: ±1% compared to the full scale	A1: V+ A2: GND
Remote Display	**XH-REP**	Max cable length: 10 m; Do not connect third party devices.	
I/O port	HOT-KEY: MAX voltage allowed is 5 VDC. DO NOT CONNECT ANY EXTERNAL POWER SUPPLY.		
Purpose of control	Operating control		
Construction of control	Built-in control, intended to be used in Class I or Class II equipment		
Approvals	R290/R600a: relays tested according to IEC EN60079:0 and IEC EN60079:15 IEC 60730-1; IEC 60730-2-9 UL 60730-1; UL 60730-2-9 CAN/CSA E60730-1; CAN/CSA E60730-2-9		

24. APPENDIX

24.1 TOOLS

24.1.1 XH-REP



The XH-REP remote display enables the visualization of a second temperature value. A special cable must be used to connect an XH-REP to the controller (code DD200002 00). The remote display usage will disable the serial communication.

24.1.2 X-MOD

The **X-MOD** is a motion detection sensor that allows to detect the proximity of customers or service staff. 5Vdc power supply version must be used. The X_MOD usage will disable the serial communication.

24.1.3 WIZMATE

WIZMATE software, used in combination with the XJ485USB, allows to manage the configuration of the controller.

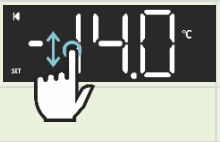
24.1.4 HOTKEY

The **HOT-KEY** is used for a quick and easy upload (from device to **HOT-KEY**) or download (from **HOT-KEY** to device) of the parameter map. The 64K version must be used (code **DK00000300**).

24.1.5 USB TO RS485 CONVERTER

XJ485USB is an optically isolated converter with 2.5kV maximum voltage isolation on data channels. It has a small plastic box with 2 indication LEDs, RX and TX, to quickly monitor the network communication. Power supply directly from USB port.

24.2 EXAMPLE OF MENU NAVIGATION AND PARAMETER MODIFICATION

	. . .		TAP and HOLD anywhere			
			TAP and HOLD anywhere			
				TAP and HOLD anywhere to show the current value of par. “LS”		
				V-SWIPE on every single digit to modify		
				TAP and HOLD “SET” to save and exit		

DIXELL EMERSON
Dixell S.r.l. - Z.I. Via dell'Industria, 27 - 32016 Alpago (BL) ITALY
Tel. +39.0437.9833 r.a. - Fax +39.0437.989313 - EmersonClimate.com/Dixell - dixell@emerson.com