AERMEC

la prima per il clima

User Manual

Multichiller-Evo

EN

INDEX

QUICK REFERENCE

This manual shows all the user menu and installer menu masks contained in the management software of the Multichiller-Evo accessory, however, this page shows a summary diagram of the basic operations which the user might need, indicating the reference to this manual page which describes the desired function page (for all other information refer to the index):
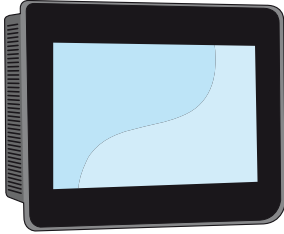
Switch the unit on or off (Page 15)

Select the functioning mode (Page 15)

Set a main working setpoint (Page 15)

Set the time periods (Page 16)

Change system language (Page 21)

Set the BMS parameters (Page 30)

REMEMBER THAT:
The Multichiller-Evo accessory is factory set with the data and parameters of the chillers used for the system it is, therefore, necessary, when ordering, to specify the number and type of chiller that the accessory will have to manage.
ATTENTION: after completing the installation of the Multichiller-Evo accessory, any changes, additions or removal of initially provided chillers, must be notified to the company for possible adjustment of the application.

DESCRIPTION OF THE ACCESSORY

The Multichiller-Evo allows you to manage the switch-on/off and timed programming of the chillers (up to nine) installed on the system. The accessory will manage the power demand by the utilities, sequentially powering the chillers to meet the power demand; this will be possible thanks to the functioning logics settable on the Multichiller-Evo software through its touchscreen.

The Multichiller-Evo is supplied within a wall-mounted IP66 electric box and an additional IP66 electric box with expansion board for connecting the input and output probes of the water produced. The connections to be made depend on the type of chiller (air-water or water-water) and the accessory has been designed for double ring applications (as shown in the following diagram); for any other application than the recommended ones, contact the company.

Recommended system (double ring with storage tank and circuit breaker)

Index	Component
1	Condensation probe (placed externally for air/water machines; on the condenser return for the water/water machines)
2	pCOe expansion board (supplied)
3	Circuit breaker temperature probe 1
4	Circuit breaker temperature probe 2
5	Pump
6	Non-return valve
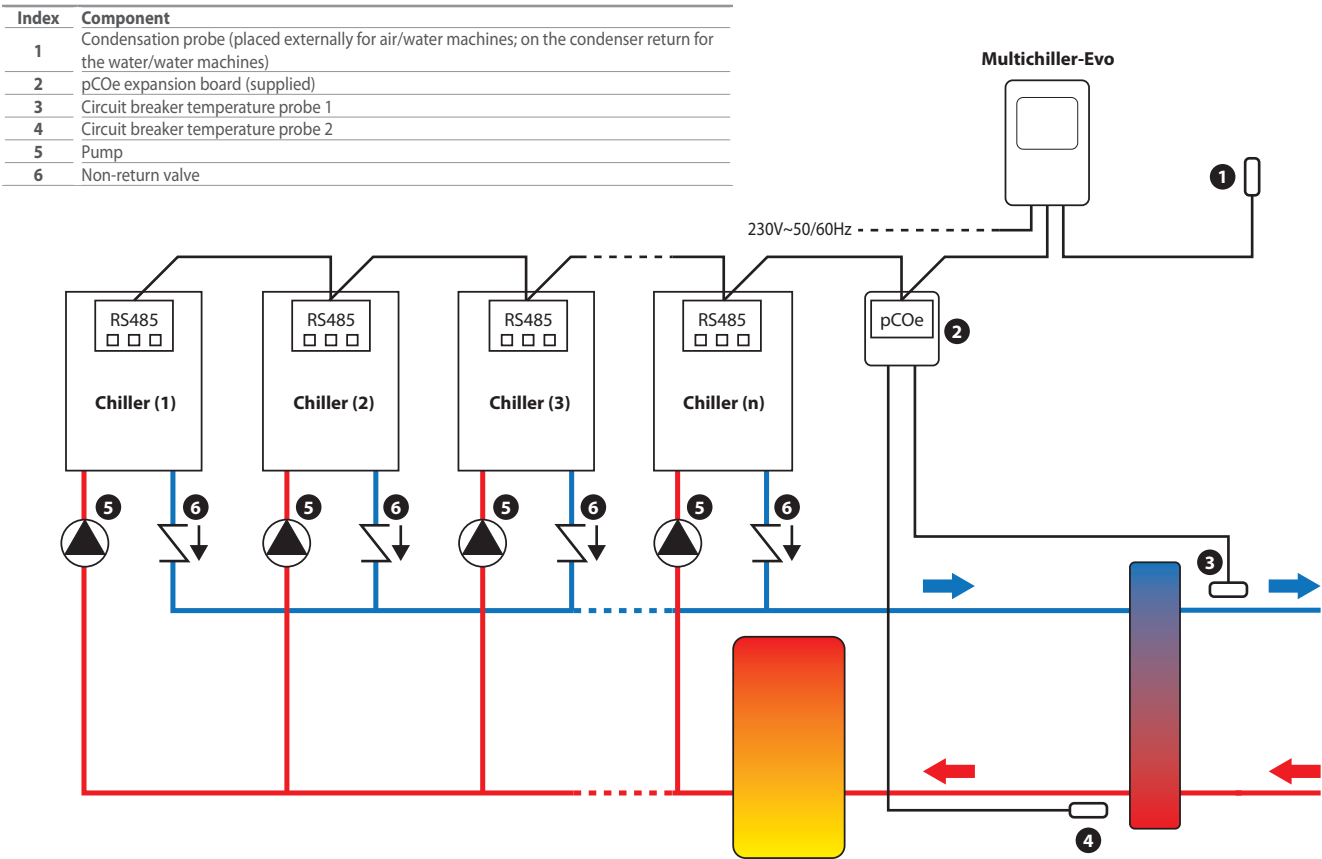
PAY SPECIAL ATTENTION:

1. The accessory can manage systems with chiller scroll, screw or centrifuge; however, the chillers connected to the Multichiller-Evo must all be of the same type (air-water or water-water);
2. The Multichiller-Evo does not manage any load outside the chiller; valve pumps or other specific loads cannot in any way be directly controlled by it;
3. Each chiller must be provided with internal or external pump, driven by the chiller board;
4. The evaporator of each chiller must have adequate parts to prevent the passage of water in case the chiller is not operating (non-return valves have been used in the example);
5. If the Multichiller-Eco does not manage multipurpose units, it is necessary to connect one of the supplied probes to the analogue input U1 (terminal board J2); this probe must be positioned so as to provide information on the condenser temperature:
• Outside if the chillers are air-water;
• On the source side if the chillers are water-water;
6. Each chiller communicates with Multichiller-Evo via Modbus network;

to achieve this connection, each chiller must be provided with appropriate board for serial communication via modbus;
7. The probes positioned in the circuit breaker storage tank and connected to the pCOe board must be set via software (through the procedure indicated on page 27) to determine which of the two will be used to read the system demand;
8. If you want to activate the system's set-point compensation function with climatic curve, use a NTC temperature probe (supplied) connected to the multifunction input U2 (terminal board J2), which must be set (through the procedure indicated on page 32) to associate the value read by the probe to the SET "COMPENSATION function;
9. The supplied temperature probes have a 15 m long cable;
10. If you want to insert the Multichiller-Evo within a BMS-managed system, you will need to purchase and install an AER485P1 serial board.

INSTALLATION

Multichiller-Evo general connection diagram

The diagram on the next page represents all the electrical connections that the user must make to properly install the Multichiller-Evo accessory. The probes used are supplied and the cable is 15 m long, while the power supply cable must be wired during installation

Index	Component
1	NTC probe to be installed: • Outdoors, in case of Air/Water chiller; • On the source return, in case of Water/Water chiller;
2	NTC probe to be installed outdoors (to be set for the climatic curve) or 0-10V or 4-20mA signal for multifunction input
3	In 2- or 4-pipe systems, NTC probe to be installed outdoors with climatic function for the recovery side or 0-10V or 4-20mA signal for multifunction input
4	NTC probe to be installed on the system return (probe sump supplied)
5	NTC probe to be installed on the system flow (probe sump supplied)
6	NTC probe to be installed on the return recovery (in 2/4-pipe systems)
7	NTC probe to be installed on the flow recovery (in 2/4-pipe systems)
8	Digital inputs available (normally open): ID1 = system side season change (the settings on the open/closed status are available on the installer's menu); ID2 = System side On/Off (open = On, closed = Off); ID3 = 2/4-pipe system recovery side On/Off (open = On, closed = Off); ID4 = Secondary system side set point (open = Set1, closed = Set2); ID5 = Secondary recovery side set point (open = Set1, closed = Set2); ID6 = Multifunction system side enabling (open = enabled, closed = disabled); ID7 = Multifunction recovery side enabling in 2/4-pipe systems (open = enabled, closed = disabled); **Attention: multifunction inputs ID6 and ID7 must also be enabled from the display;** ID8 = External alarm, system stopped and 2/4-pipe system recovery (open = no alarm, closed = alarm)
9	Digital output for summary of global alarms both for chillers and Multichiller Evo;
10	RS485 serial connection: MODBUS RTU protocol, baudrate 19200, 8bit of data, no parity, 2 bit stop. **Each chiller must be fitted with a special board for RS485 serial communication (to set the said board, refer to the chiller's manual).**
11	Total maximum length (from Multichiller-Evo to the last connected chiller) for the modbus network = 500m
12	Multichiller-Evo power supply (230V~50/60Hz); Use H05V-K or N07V-K cables with 300/500V insulation; minimum section > 1.5 mm^2
13	pCOe expansion board power supply (24Vac). Power the pCOe board from the dedicated transformer. On installation, a Class II safety transformer of at least 15 VA must be used to power just one expansion. It is recommended to separate the power supply of the pCOE expansion from that of the rest of the electric devices (contactors and other electro-mechanical components) inside the electric control board. Whenever the secondary of the transformer is on the ground, check that the earth wire is connected to terminal G0. Make sure that references G and G0 of all boards present in the control board are respected (the G0 reference must be kept for all boards).
14	AERNET accessory connection
15	Connection between the pCO5 board and Touch screen display. With software versions < 1.2.0 (obsolete), the touch screen must be connected to port J25 of board pCO5+

Notes regarding connection of Multichiller-Evo probes

The temperature probes supplied with the Multichiller-Evo accessory must be used differently according to the type of unit used. The table below summarises the connections for supplied probes based on the type of unit used and according to the potential functions selected for MULTICHILLER-EVO accessory functioning:

Type of chiller:	pCO5 analogue inputs (probes required for functioning)			pCOe analogue inputs (probes required for functioning)			
	U1	U2	U3	B1	B2	B3	B4
Cooling Only	YES	YES [1]	NO	YES	YES	NO	NO
Heat pump							
Multipurpose	Optional [1]	Optional [2]	Optional [2]	YES	YES	YES	YES

Notes regarding probes:
[1] This probe is required if you want to use the multifunction input controlled by NTC (refer to page 28 for more information), otherwise this probe does not need to be installed;

Notes regarding optional probes (these probes are not supplied):
[1] This probe can be used if you want to see the outdoor air temperature;
[2] This probe is recommended if you want to use the multifunction input controlled by NTC (refer to page 28 for more information);

Display Touch screen **15**

9 110/230-24vac
N
L

AERNET **14**

Baud rate = 19200
Data bit = 8
None parity
Stop bit = 2

Serial 1

10

NO1 NO2 C1
J12

Tx/Rx GND
J25 BMS2

Tx/Rx GND
J26 FBus2
J13

4 3 2 1

NO7 NO8 C7
J14

FieldBus card   BMS card

ID1...ID8

8

J5
Y4 D1 ID2 ID3 ID4 ID5 ID6 ID7 ID8 IDC1

ID8

L N

12 230V~50/60Hz

4
5
6
7

J5 J6 J7 J8

J9   J10

pCO^e

13

J4

J1 24vac   J2   J3 pLAN

pCOe: 10 (default)

ON 1 2 4 8

Serial Address

11

FieldBus card   BMS card

J1   J24   J2   J3   J4

U1 U2 U3 GND +VDC

1 U1 (NTC)

2

J2   J2   J2
U1 U2 U3 GND +VDC   U1 U2 U3 GND +VDC   U1 U2 U3 GND +VDC

U2 (NTC)   U2 (4-20mA)   U2 (0-10V)
            2 wire   U2 (4-20mA)
                           3 wire

3

J2   J2   J2
U1 U2 U3 GND +VDC   U1 U2 U3 GND +VDC   U1 U2 U3 GND +VDC

U3 (NTC)   U3 (4-20mA)   U3 (0-10V)
            2 wire   U3 (4-20mA)
                           3 wire

Chiller (1)

RS485
GND
+
-

Chiller (2)

RS485
GND
+
-

Chiller (n)

RS485
GND
+
-

7

Notes on the serial connection

Regardless of the type of power supply or earthing, use a shielded three-pole cable connected as shown. If the network exceeds the 100 m, the termination resistor is required (120Ω).
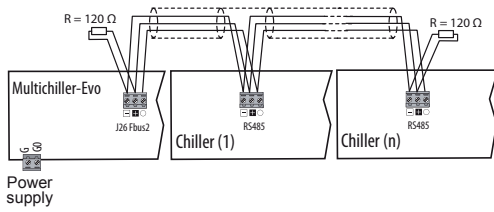
Shield earth connection mode:
The serial cable shield must be earth connected in different ways, depending on the length, as shown (A=FBus terminal, B=BMS terminal).

(a): only 1 end earthed with jumper between the shields:
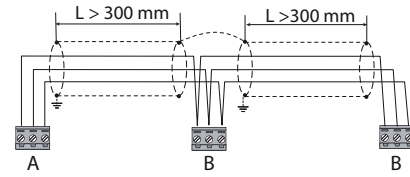
(b): 2 earth-connected ends:
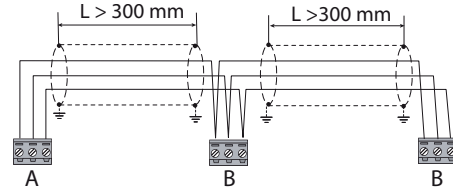
(c): only 1 earth-connected end:
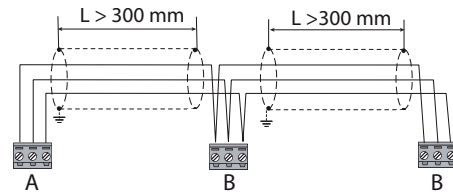
Material supplied

- Control system, equipped with metal electric box (for wall-mounting); this part contains the main board and touch-screen display to manage the user interface;
- Wall-mounting brackets for Multichiller-Evo metal box;
- Expansion module formed by a plastic electric box (for wall-mounting) with pCOe expansion board;
- 4 NTC probes with 15 m cable;
- 4 fairleads for NTC probes;
- 1 fairlead for power supply cable;
- 2 fairleads for serial connection;
- 1 fairlead for pCOe power supply;
- 3 probe sumps;
- Documentation in 5 languages;

STRUCTURE OF THE MENUS

The touch-screen panel on the Multichiller-Evo accessory allows the user to manage all the device function through its graphic interface specially designed to be used through the touchscreen; the information is easily and orderly managed thanks to the implementation of a "home" screen where you can view the state of the chillers connected to the accessory, while the settings or display of more specific parameters are organised through different menus accessible through appropriate selection page, here each menu is shown with a specific icon; the icons representing the various menus are highlighted in the following diagram:

SELECTING THE MENUS
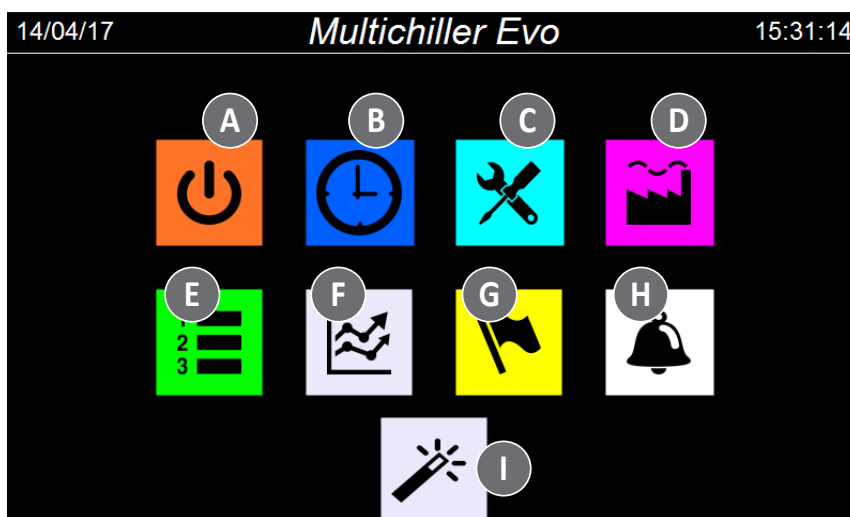
Icon	Menu	Description	Notes
A	ON/OFF	It allows you to turn the chillers on or off directly; it also contains the set points and differential settings and the control of the time periods enabled on the system	---
B	CLOCK	It allows you to adjust the system clock (on the pCO5+ main board and on the touch-screen control and command board)	---
C	INSTALLER	It allows you to view the state of inputs and outputs of the Multichiller-Evo control board, and it also allows you to: set the connection via BMS, set the thresholds and timings in the ignitions, view the software information, modify the access password and data to be used for the graphics menu; **ATTENTION: for software versions prior to version "1.2.0", the password is "0442".**	Password (0000)
D	MANUFACTURER	Protected menu not available to the user	Protected menu
E	SYSTEM LAYOUT	It allows you to view the information on each connected chiller (state, active loads, any alarms and their reset) and verify the values read by the temperature probes connected to the Multichiller-Evo	The first page is used as HOME
F	CHARTS	It allows you to view real-time charts of the values read by the temperature probes connected to the Multichiller-Evo	---
G	LANGUAGE	It allows you to select the system interface language	---
H	ALARMS	It allows you to view details on the active alarms and access the alarm log	If an alarm is active, the icon's background flashes red
I	Debug	It allows you to view the different pages containing a summary of the values read by the chiller probes; this tool is used by the technical after-sales service/assistance to identify any abnormal operation	This menu is not normally enabled, you must set the relevant parameter in the installer menu to activate it (page 35)

INTERACTING WITH THE GRAPHIC INTERFACE

The command and control interface of the unit is based on a touch-screen. The interface is designed to be used in a simple and intuitive manner; the lack of physical keys makes the application fully manageable by directly touching the screen, which significantly simplifies user management. Despite the software manages a lot of information grouped in windows, in turn managed through different menus, there are some basic features that apply to all possible operations, such as the selection of a window, the switching between windows or the entering of a precise numeric value; below are the basic operations available through the touch screen interface of the Multichiller-Evo accessory.

NAVIGATING THE APPLICATION PAGES

As already reported in the previous pages, the operating information of the unit are divided according to different menus, each of which has multiple pages; the basic operations for navigating through the various menus are:

- **Entering a menu:** to enter a menu you must activate the menu selection page by pressing the icon (▦) available on each page of the application (however, please note that if you are entering a sub-menu, this icon will not be available because replaced by the icon (↩) used to go back to the previous menu; then simply press the icon of the menu to be accessed (for further information on which menus are activated by the various icons, refer to the previous page);

- **Scrolling to the next or previous page of a menu:** once in one of the menus, simply press the "right arrow" icon (▶) to view the next page or the "left arrow" icon (◀) to view the previous page (unless the menu contains a single page);

- **Entering a sub-menu:** some information is gathered in sub-menus such as, for example, the adjustment of time periods; to access these sub-menus it is necessary to press the respective icons, in case of time periods the icon is (⏰); please note that some sub-menus will only be available if enabled through parameter, for example the time periods sub-menu will only be available if the adjustment in the settings on the system side is set from CLOCK;

- **Entering the alarms menu:** in all pages (in addition to the menu selection page) it will allow access to the Alarms menu; to do so, press the icon (🔔) which will flash red if there are active alarms;

Open the "selecting the menus" page:
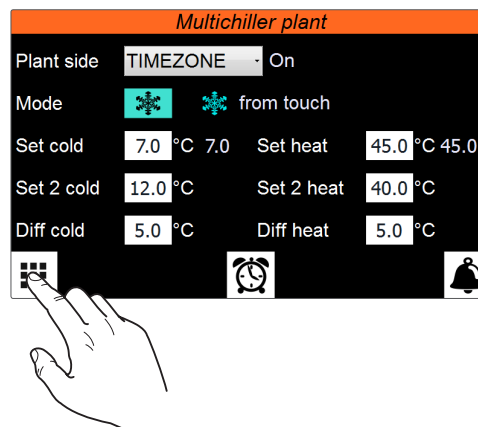
Select the previous or next page of a menu:
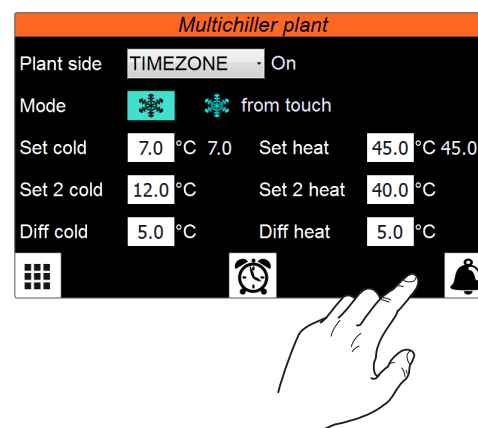
Enter the ALARMS menu:
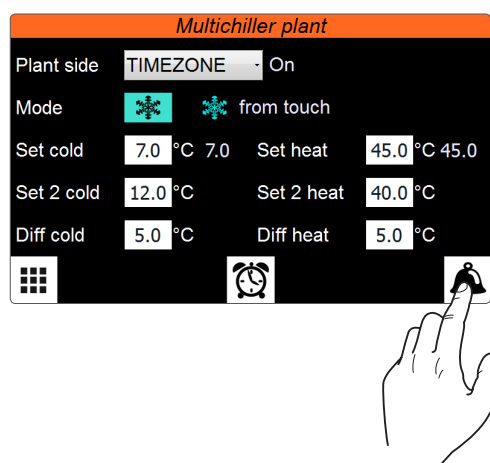
Enter a sub-menu:
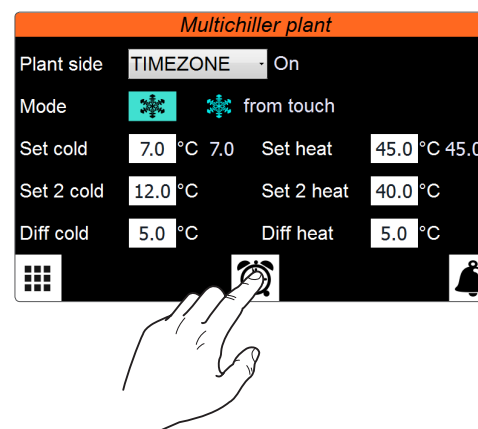
Many parameters require for the user to enter a numeric value or choose a certain value from a list. The masks that provide settable elements are made of a label that identifies the function of the value to be set and an area (identifiable by the differently coloured background) where to enter the value to be assigned.

To set a value you must:

1. Press the coloured area containing the value;
2. If it is a drop-down menu (grey background), the menu will open and you will be able (by pressing it) to select the option to be set; whereas, if it is a numeric value, after pressing the white area, a numeric keypad will appear with which to enter the desired value (to complete the entry, press the "Enter" key). Certain parameters (e.g. the functioning mode) can change status by simply pressing on the coloured areas that identify them;

⚠️ **Once you have selected a numeric value to be changed, the numeric keypad will show the Minimum and Maximum values accepted for the selected parameter.**

Select a value from the drop-down list:
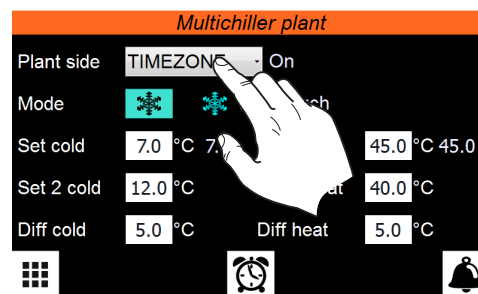
Modify switch state:
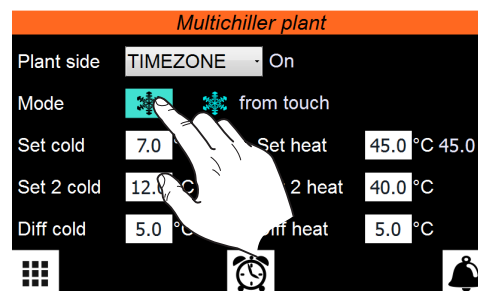
Set a new numeric value:
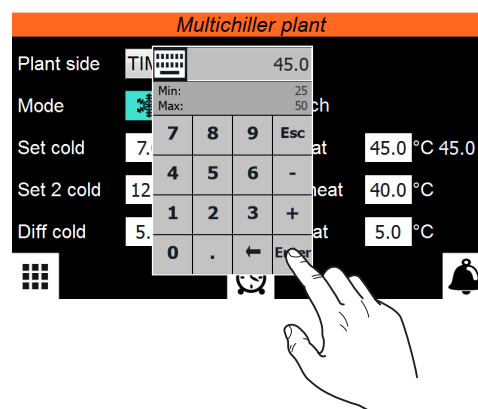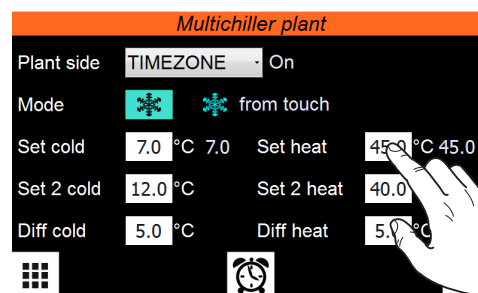
SYSTEM LAYOUT MENU

With the System layout menu you can monitor the overall state of the chillers in the system; the inlet, outlet water values, chiller state (on, off, in alarm, etc...), is all information available through this menu.

NOTE: the first page of this menu represents the home screen of the application;

SYSTEM LAYOUT - Chiller main monitor (HOME)

ACTIONS AVAILABLE:

A	Open the menu selecting page
B	Go to next page
C	Go to alarms menu;
D	Open the CHILLER sub-menu (1);
E	Open the CHILLER sub-menu (2);
F	Open the CHILLER sub-menu (3);
G	Open the CHILLER sub-menu (4);
H	Open the CHILLER sub-menu (5);
I	Open the CHILLER sub-menu (6);
L	Open the CHILLER sub-menu (7);
M	Open the CHILLER sub-menu (8);
N	Open the CHILLER sub-menu (9);
O	Open the MULTIPURPOSE sub-menu (1);
P	Open the MULTIPURPOSE sub-menu (2);
Q	Open the MULTIPURPOSE sub-menu (3);
R	Open the MULTIPURPOSE sub-menu (4);

ATTENTION: the CHILLER pages (which can be activated by pressing the corresponding icon) are only available if the chiller has been provided during the application loading phase; the current chiller status is represented by the graphics assumed by each icon:

 Chiller OFF

 Chiller ON

 Chiller in partial alarm (works at reduced power)

 Chiller in total alarm (chiller locked)

 Chiller offline
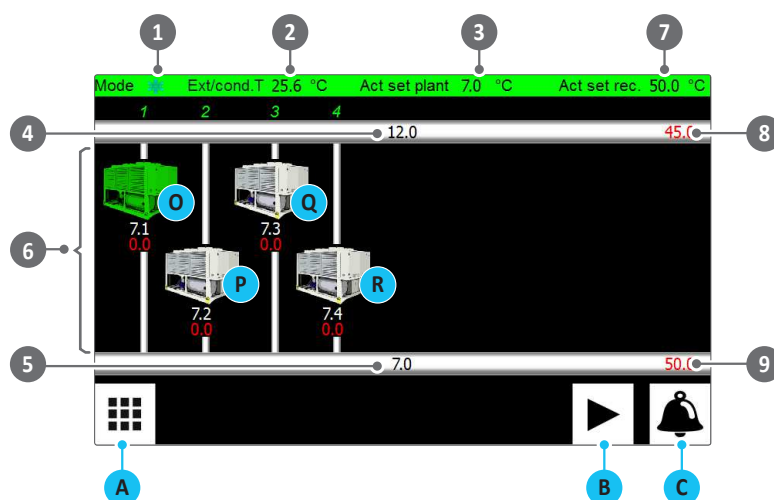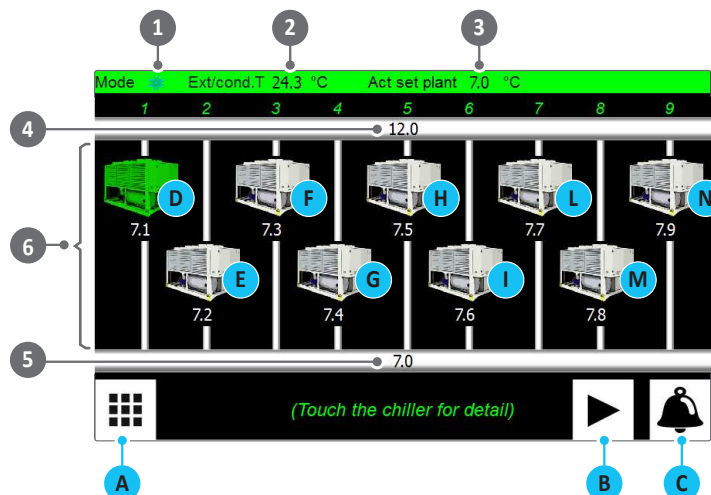
Index	Meaning
1	Indicates the current functioning mode: cooling (✲) or heating (✲)
2	Current temperature value detected by the NTC probe connected to output U1 on the Multichiller-Evo board. This probe must be installed outdoors in case of Air/water chiller or on the source return in case of *Water/Water* chiller
3	Current temperature value set as work set
4	Current temperature value read by the NTC probe connected on the pCOe board input B1
5	Current temperature value read by the NTC probe connected on the pCOe board input B2
6	Each image displays one of the units currently controlled by the MULTICHILLER-EVO accessory. The water value produced from the system side (white) and recovery unit side (red, only on multipurpose units) is associated with every image
7	Current temperature value set as recovery side set
8	Current temperature value read by the NTC probe connected on the pCOe board input B3
9	Current temperature value read by the NTC probe connected on the pCOe board input B4

ACTIONS AVAILABLE:

A Go back to System layout menu;

B Go to next page

C Go to alarms menu;

Chiller 1   Type NSM, NSMI, WSA, WSH, HWF, WS, WF

State   OFF

Mode

✓ Circ.1   ● CP1

Index	Meaning
1	Indicates the current Chiller to which the displayed data refers
2	Indicates the family to which the displayed Chiller belongs
3	Indicates the current state of the selected chiller; this can be: **On** = chiller currently operating; **Off** = chiller not currently operating;
4	Indicates the current functioning mode set on the unit: (cooling or heating);
5	Indicates the state of compressors related to the reference circuit (if the dot is grey the compressor is off, if it is green the compressor is on)
6	Indicates the relative circuit status: (✔) normal circuit; (✘) circuit in alarm

ACTIONS AVAILABLE:

A Go back to System layout menu

B Go back to previous page

C Go to next page

D Go to alarm menu

Chiller 1   Type NSM, NSMI, WSA, WSH, HWF, WS, WF

High pressure 1   10.0 bar
Low pressure 1   4.0 bar
Inlet water plant   12.0 °C
Delivery comp. temp. 1   70.0 °C
Outlet water plant 1   7.1 °C

Index	Meaning
1	Indicates the current Chiller to which the displayed data refers
2	Indicates the family to which the displayed Chiller belongs
3	Indicates the value read by the high pressure transducer on the selected chiller (this data may be repeated if the unit has several circuits)
4	Indicates the value read by the low pressure transducer on the selected chiller (this data may be repeated if the unit has several circuits)
5	Indicates the value read by the temperature probe for the selected chiller inlet water
6	Indicates the value read by the compressor 1 pressing line probe on the selected chiller (this data may be repeated if the unit has several compressors)
7	Indicates the value read by the temperature probe for the selected chiller outlet water

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ACTIONS AVAILABLE:

A	Go back to System layout menu
B	Go back to previous page
C	Allows (by pressing for a few seconds) to reset the alarms on the selected chiller
D	Go to next page
E	Go to alarm menu

Index	Meaning
1	Indicates the current Chiller to which the displayed data refers
2	Indicates the family to which the displayed Chiller belongs
3	Each line represents the status of a specific alarm of the chiller (may vary depending on the type of chiller); the status of each alarm may be: (✔) alarm not active on the chiller; (✘) alarm active on the chiller

ATTENTION: the information on this page depends on the type of chiller and could be subdivided into different pages that can be browsed using the (B) and (D) keys;

ACTIONS AVAILABLE:

A	Go back to System layout menu
B	Go back to previous page
C	Go to alarm menu
D	Each press allows you to enable or disable the chiller control (identified by its index) by the Multichiller-Evo. If this parameter is set at OFF, the chiller cannot in any way be switched on by the Multichiller-Evo (however, the probes would still be read)
E	Pressing the key allows you to reset the alarms of the indicated chiller

Index	Meaning
1	Indicates the state of the chiller to which the displayed data refers; this can be: **On** = chiller currently operating; **Off** = chiller not currently operating; **Alarm** = the chiller is in partial alarm, so it can provide a reduced power; **Serious al.** = the chiller is currently locked by a serious alarm; **offline** = the serial connection with the chiller is interrupted;

ON/OFF MENU

With the ON/OFF menu you can turn the chillers on or off; you can also set the main functioning parameters (work set, differentials and functioning modes) and any time programs to be used on the system.

ON/OFF - Main system side functioning settings

ACTIONS AVAILABLE:

A	Open the menu selecting page
B	Go to the TIME PERIODS SUB-MENU (only available if you have selected the CLOCK option for system side management)
C	Go to alarm menu
D	Go to the 2/4-pipe system recovery side settings page (only if a multipurpose unit is present)
E	Set the system side management (OFF, ON, SET2, CLOCK)
F	Set the functioning mode; before changing the functioning mode, make sure that all system chillers are off
G	Set the value of the cold set
H	Set the value of the heat set
I	Set the value of the cold secondary set
L	Set the value of the heat secondary set
M	Set the value of the cold differential
N	Set the value of the heat differential

Multichiller plant

Plant side	TIMEZONE	On	**1**
Mode	❄	❄ from touch	**2**
Set cold	7.0 °C 7.0	Set heat	45.0 °C 45.0
Set 2 cold	12.0	Set 2 heat	40.0 °C
Diff cold	5.0	Diff heat	5.0 °C
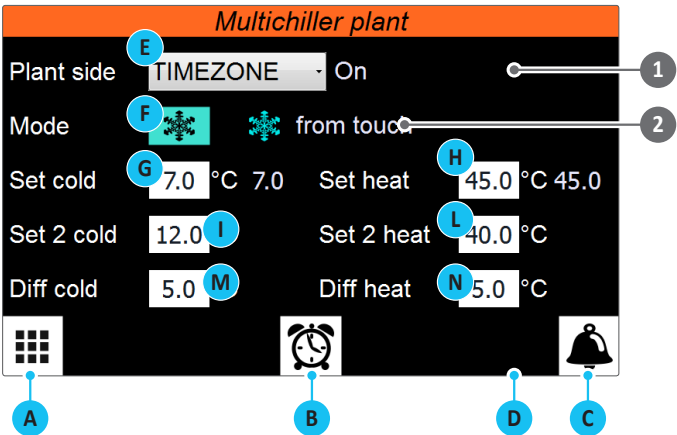
Index	Meaning
1	Indicates the actual status of the Multichiller-Evo
2	Indicates the actual chiller functioning mode, as well as indicate on which is the source of the current setting; this source can be: **by touch** = settings have been entered through touch panel on the Multichiller-Evo; **by digital input** = settings have been piloted through digital input ID1; **by BMS** = settings have been transmitted by BMS;

ACTIONS AVAILABLE:

A Go back to the On/Off menu;

B Go to next page;

C Go to alarms menu;

D Select the day of the week to be set;

E Set the start time (divided by hours and minutes) of the first time period;

F Set the end time (divided by hours and minutes) of the first time period;

G Set the action to be performed during the first time period;

H Set the start time (divided by hours and minutes) of the second time period;

I Set the end time (divided by hours and minutes) of the second time period;

L Set the action to be performed during the second time period;

M Set the start time (divided by hours and minutes) of the third time period;

N Set the end time (divided by hours and minutes) of the third time period;

O Set the action to be performed during the third time period;

P Set the start time (divided by hours and minutes) of the fourth time period;

Q Set the end time (divided by hours and minutes) of the fourth time period;

R Set the action to be performed during the fourth time period;

Timezone plant

1 Day	TUESDAY D		
2 Start	3 Stop	4 Action	
08 E 00	12 F 00	SET1 G	
16 H 00	22 I 00	SET1 L	
00 M 00	00 N 00	OFF O	
00 P 00	00 Q 00	OFF R	

A   B C

Index	Meaning
1	Indicates the day to which the displayed time settings refer
2	Indicates the start times for the time periods (each day can have up to four)
3	Indicates the end times for the time periods (each day can have up to four)
4	Indicates the action to be associated with each time period (each day can have up to four); the possible actions can be: OFF = during the specified time period the system chillers will be off; SET1 = during the specified time period the chillers will be on with the main set; SET2 = during the specified time period the chillers will be on with the secondary set;

ON/OFF - Main functioning settings - TIME PERIODS sub-menu - Copy hourly programs function

ACTIONS AVAILABLE:

A Go back to the On/Off menu;

B Go back to previous page;

C Go to alarms menu;

D Select the day of the week from which to copy the hourly program;

E Select the day of the week where to copy the hourly program;

F Copy the hourly program from the selected day to the selected day;

Index	Meaning
1	Indicates the day from which the hourly program will be copied
2	Indicates the day to which the hourly program will be copied (taken from the hourly program of the specified day)

ON/OFF - Main 2/4-pipe system recovery side functioning settings (visible if multipurpose units are present)

ACTIONS AVAILABLE:

A Open the menu selecting page

B Go to the TIME PERIODS SUB-MENU (only available if you have selected the CLOCK option for recovery side management)

C Go to alarm menu

D Go to the system side settings page

E Set the system side management (OFF, ON, SET2, CLOCK)

F Set the value of the recovery side set

G Set the value of the recovery side secondary set

H Set the value of the differential
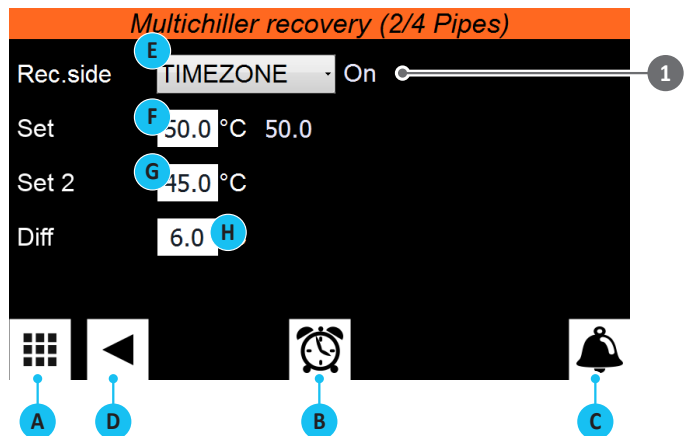
Index	Meaning
1	Indicates the actual status of the Multichiller-Evo

ACTIONS AVAILABLE:

A Go back to the On/Off menu;

B Go to next page;

C Go to alarms menu;

D Select the day of the week to be set;

E Set the start time (divided by hours and minutes) of the first time period;

F Set the end time (divided by hours and minutes) of the first time period;

G Set the action to be performed during the first time period;

H Set the start time (divided by hours and minutes) of the second time period;

I Set the end time (divided by hours and minutes) of the second time period;

L Set the action to be performed during the second time period;

M Set the start time (divided by hours and minutes) of the third time period;

N Set the end time (divided by hours and minutes) of the third time period;

O Set the action to be performed during the third time period;

P Set the start time (divided by hours and minutes) of the fourth time period;

Q Set the end time (divided by hours and minutes) of the fourth time period;

R Set the action to be performed during the fourth time period;

Timezone recovery (2/4 Pipes)

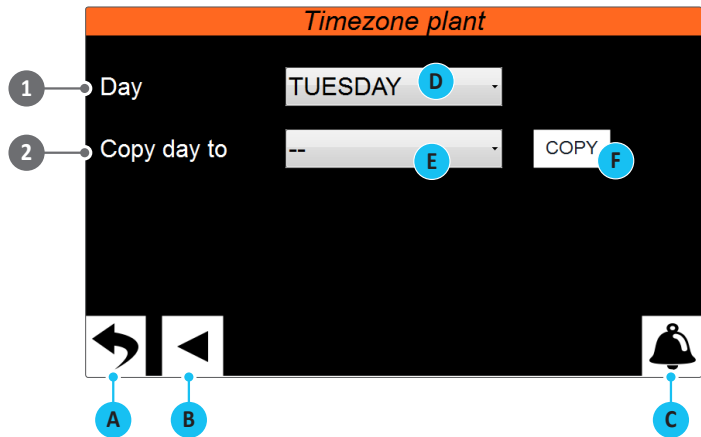| Index	Meaning
1	Indicates the day to which the displayed time settings refer
2	Indicates the start times for the time periods (each day can have up to four)
3	Indicates the end times for the time periods (each day can have up to four)
4	Indicates the action to be associated with each time period (each day can have up to four); the possible actions can be: OFF = during the specified time period the system chillers will be off; SET1 = during the specified time period the chillers will be on with the main set; SET2 = during the specified time period the chillers will be on with the secondary set;

ACTIONS AVAILABLE:

A Go back to the On/Off menu;

B Go back to previous page;

C Go to alarms menu;

D Select the day of the week from which to copy the hourly program;

E Select the day of the week where to copy the hourly program;

**F** Copy the hourly program from the selected day to the selected day;

Timezone recovery (2/4 Pipes)

1 → Day — FRIDAY **D**

2 → Copy day to — -- **E** COPY **F**

A B C
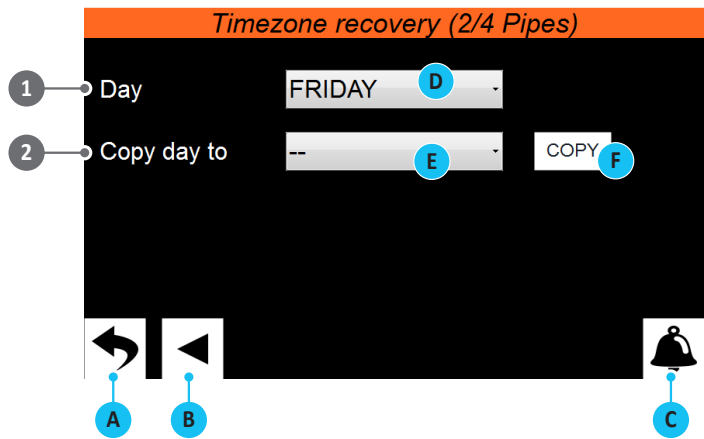
Index	Meaning
1	Indicates the day from which the hourly program will be copied
2	Indicates the day to which the hourly program will be copied (taken from the hourly program of the specified day)

CLOCK MENU

With the CLOCK menu you can set the system timer (on the pCO5+ board) and the display timer.

CLOCK - Date and time settings on the main board and on the touch display board

ACTIONS AVAILABLE:

A Open the menu selecting page;

B Go to alarms menu;

C Set the date (day/month/year) on the touch display board

D Set the time (hours:minutes) on the touch display board

E Set the date (day/month/year) on the pCO5+ board

F Set the time (hours:minutes) on the pCO5+ board

22/05/17 **Date & Time** 11:23:50

1 → Touch screen | pCO5+ ← 2
22/05/2017 | 22/05/07
11:23:50 | 11:20

3 → Set date & time | Set date & time ← 4

C 22 / 05 / 2017 | **E** 22 / 05 / 07
D 11 : 23 | **F** 07 : 23

A B
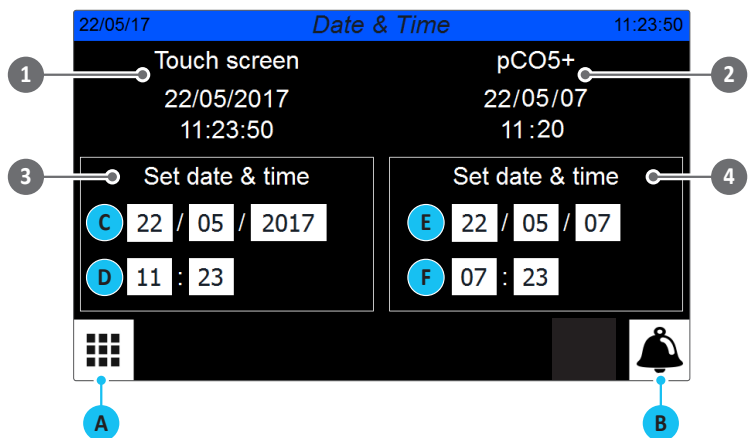
Index	Meaning
1	Indicates the actual date and time set on the pCO5+ board timer
2	Indicates the actual date and time set on the touch display board timer
3	Allows to adjust and/or modify the date and time on the pCO5+ board
4	Allows to adjust and/or modify the date and time on the touch display board

CHARTS MENU

With the CHARTS menu you can view the real-time chart of the probes connected to the pCOe expansion board (which must be connected on the system flow and return);

CHARTS - Displays real-time charts of the values read by the system side probes

ACTIONS AVAILABLE:

A Open the menu selecting page;

B Allows transferring the temperature data in a .CSV file on physical medium (connected to the USB port on the back of the touch screen display);

C Go to alarms menu;

D Allows you to scroll the chart back in time;

E Allows you to scroll the chart forward over time;

F Allows you to zoom out on the chart;

G Go to the graph regarding the recovery side (if multipurpose units are present);
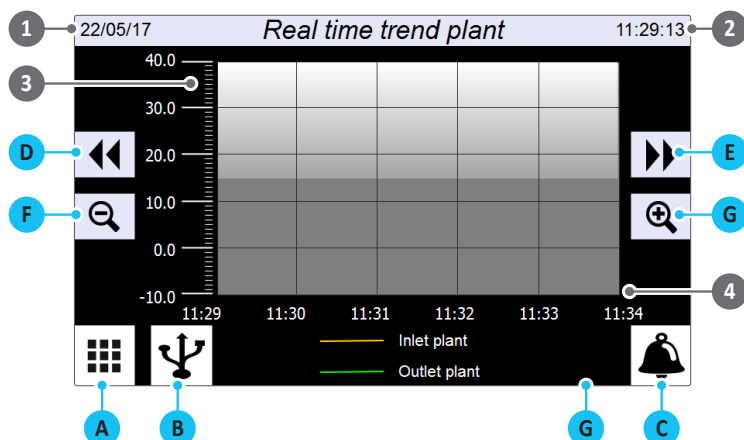
| 1 | 22/05/17 | *Real time trend plant* | 11:29:13 | 2 |

Inlet plant
Outlet plant

Index	Meaning
1	Indicates today's date
2	Indicates the current time
3	The Y axis indicates the temperature (°C)
4	The Y axis indicates the time to which to refer the temperature data read by the probes

CHARTS - Display charts in real time regarding values read by the 2/4-pipe system recovery side probes (visible if multipurpose units are present)

ACTIONS AVAILABLE:

A Open the menu selecting page;

B Go to the relative system side chart;

C Go to alarms menu;

D Allows you to scroll the chart back in time;

E Allows you to scroll the chart forward over time;

F Allows you to zoom out on the chart;

G Allows transferring the temperature data in a .CSV file on physical medium (connected to the USB port on the back of the touch screen display);

| 1 | 27/04/18 | *Real time trend recovery (2/4 Pipes)* | 11:43:31 | 2 |

Inlet rec.
Outlet rec.
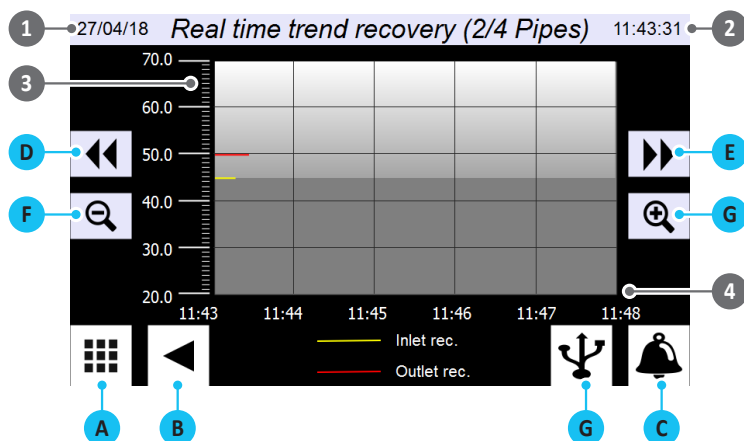
Index	Meaning
1	Indicates today's date
2	Indicates the current time
3	The Y axis indicates the temperature (°C)
4	The Y axis indicates the time to which to refer the temperature data read by the probes

LANGUAGE MENU

With the LANGUAGE menu you can select the system interface language;

LANGUAGE - Selection of system language

ACTIONS AVAILABLE:

A Open the menu selecting page;

B Go to alarms menu;

C Allows selecting the English language;

D Allows selecting the Italian language;
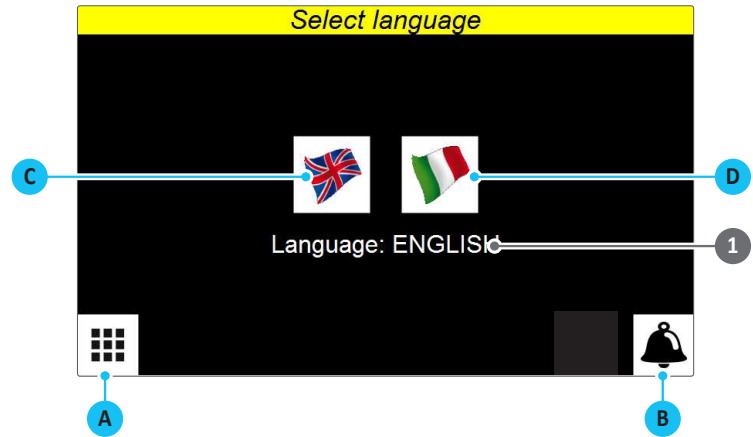
Index	Meaning
1	Indicates the actual language set on the system

INSTALLER MENU

With the INSTALLER menu you can access many of the settings available for the functioning and adjustment of the system; however, this menu may contain parameters whose modification is recommended only to the unit or system maintenance and/or after-sales assistance personnel, which is why the menu requires an access password.

Attention: for software versions prior to version "1.2.0", the password is: 0442

INSTALLER PASSWORD: 0000

INSTALLER - Access password entering

ACTIONS AVAILABLE:

A Allows entering the numeric value of the password (0442);

B Allows confirming the entered password;

C Go back to the menu selecting page;
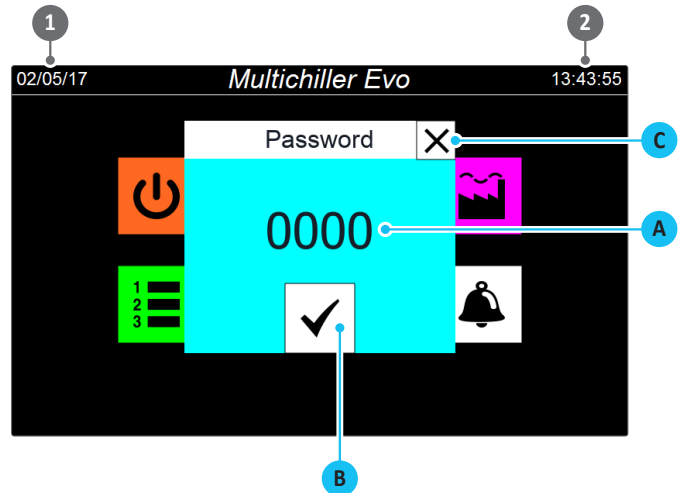
Index	Meaning
1	Indicates today's date
2	Indicates the current time

INSTALLER - Sub-menu selecting page

ACTIONS AVAILABLE:

A Open the menu selecting page;

B Go to alarms menu;

C Open the timing and threshold sub-menu;

D Open the password sub-menu;

E Open the charts sub-menu;

F Open the inputs/outputs sub-menu;

G Open the remote control sub-menu;

H Open the info sub-menu;

I Open the network sub-menu;

L Open the displays sub-menu;
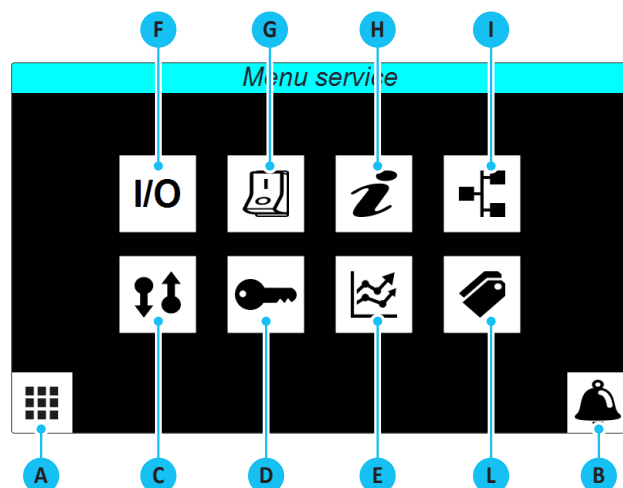
ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

Analog input pCO5+

1	Ext./cond. temp.	25.2 °C
2	Multif. plant	0.2
3	Multif. rec.(2/4P)	0.0
4	U4	-999.9 °C
5	U5	-999.9 °C
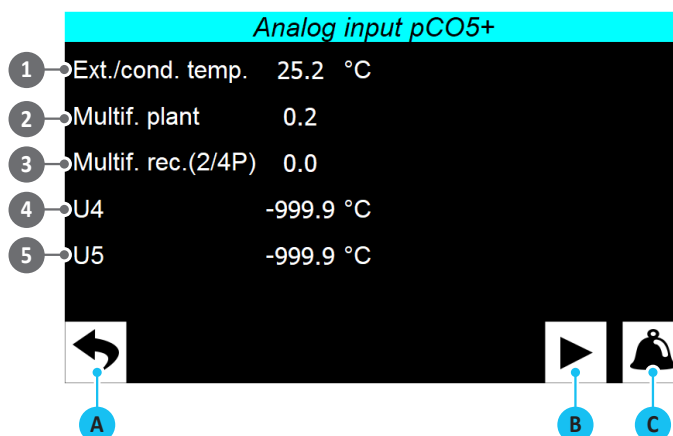
Index	Meaning
1	Current temperature value detected by the NTC probe connected to analogue input U1 on the Multichiller-Evo board. This probe must be installed outdoors in case of Air/water chiller or on the source return in case of Water/Water chiller
2	Indicates the value (the size of which must be set in the "remote control" menu window) read on the system side multifunction input
3	Indicates the value (the size of which must be set in the "remote control" menu window) read on the recovery side multifunction input
4	Not used
5	Not used

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

Digital input pCO5+

1	ID1 cool/heat	OPEN	ID7 multif.rec.(2/4P)	OPEN	**7**
2	ID2 off/on plant	OPEN	ID8 external alarm	OPEN	**8**
3	ID3 off/on rec.(2/4P)	OPEN			
4	ID4 set2 plant	OPEN			
5	ID5 set2 rec.(2/4P)	OPEN			
6	ID6 multif. plant	OPEN			
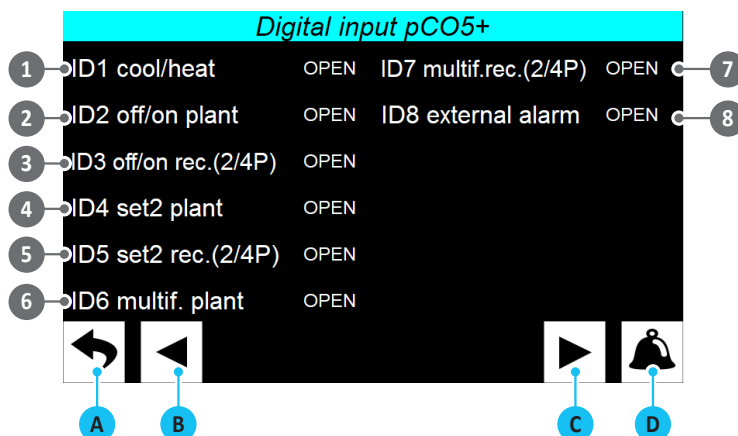
Index	Meaning
1	Indicates the actual state of digital input ID1 (functioning mode)
2	Indicates the actual state of digital input ID2 (connected to the system On/Off)
3	Indicates the actual state of digital input ID3 (connected to the recovery side On/Off)
4	Indicates the actual state of digital input ID4 (use secondary set on system)
5	Indicates the actual state of digital input ID5 (use secondary set on recovery side)
6	Indicates the actual state of digital input ID6 (system multifunction input)
7	Indicates the actual state of digital input ID7 (recovery side multifunction input)
8	Indicates the actual state of digital input ID8 (external alarm)

INSTALLER - Inputs/Outputs - Status of pCO5+ digital outputs

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

Digital Output pCO5+

1 NO1 alarm   NO7   7
2 NO2   NO8   8
3 NO3
4 NO4
5 NO5
6 NO6

A B C D
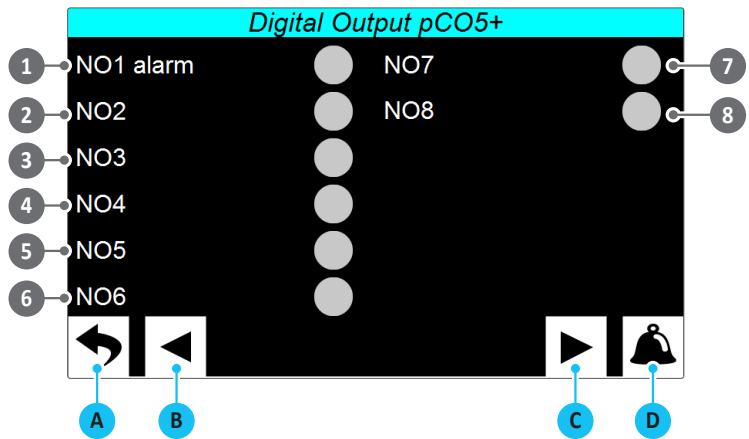
Index	Meaning
1	Indicates the status of digital output NO1 (grey = off; green = on); this output indicates the presence of an active alarm on the system
2	Not used
3	Not used
4	Not used
5	Not used
6	Not used
7	Not used
8	Not used

INSTALLER - Inputs/Outputs - Status of pCO5+ analogue outputs

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

D Go to alarms menu;

Analog output pCO5+

1 Y1   0.0 %
2 Y2   0.0 %
3 Y3   0.0 %
4 Y4   0.0 %

A B C D

Index	Meaning
1	Not used
2	Not used
3	Not used
4	Not used

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ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

D Go to alarms menu;

Analog input pCOe

1 — Inlet plant	0.0	°C
2 — Outlet plant	0.0	°C
3 — Inlet rec.(2/4P)	0.0	°C
4 — Outlet rec.(2/4P)	0.0	°C

A B C D

Index	Meaning
1	Actual temperature value detected by the NTC probe connected to analogue input B1 on the pCOe expansion board;
2	Actual temperature value detected by the NTC probe connected to analogue input B2 on the pCOe expansion board;
3	Actual temperature value detected by the NTC probe connected to analogue input B3 on the pCOe expansion board;
4	Actual temperature value detected by the NTC probe connected to analogue input B4 on the pCOe expansion board;

INSTALLER - Inputs/Outputs - Status of pCOe digital inputs

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

D Go to alarms menu;

Digital input pCOe

1 — ID1	close
2 — ID2	close
3 — ID3	close
4 — ID4	close

A B C D

Index	Meaning
1	Not used
2	Not used
3	Not used
4	Not used

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

D Go to alarms menu;

Digital Output pCOe

1 NO1
2 NO2
3 NO3
4 NO4

A B C D

Index	Meaning
1	Not used
2	Not used
3	Not used
4	Not used

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

Analog output pCOe

1 Y1   0.0 %

A B C
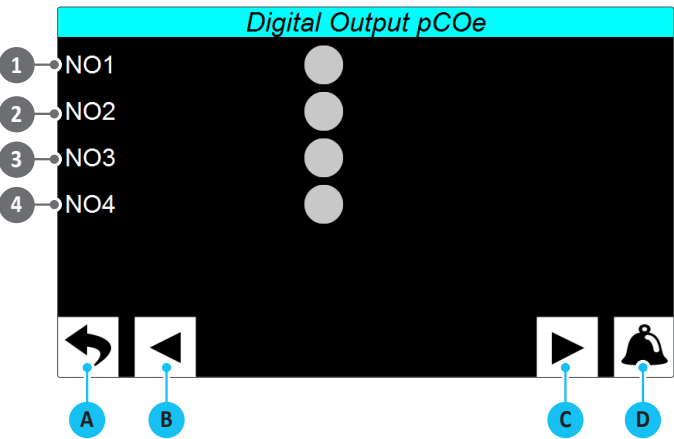
Index	Meaning
1	Not used

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

D Select the logic with which to control the chiller ignition based on the power demand by the system;

E Allows selecting whether to use a chiller always ON as system demand monitor;

F Allows selecting which probe to use to start the first chiller in case you did not select "NO" in the Last chiller always ON field (system side);

G Allows selecting which probe to use to start the first chiller in case you did not select "NO" in the Last chiller always ON field (recovery side);

OFF/ON chiller manager

1 Multichiller manager — STATIC THRESHOLDS — D

2 Last chiller always ON — YES — E

3 Re-start plant with — OUTLET B2 pCOe1 — F

4 Re-start rec.(2/4P) with — OUTLET B4 pCOe1 — G

A   B   C

Index	Meaning
1	Indicates which logic will be used to control the ignition commands compared to the power demand by the system; these logics can be: **All chillers on** = when the Multichiller-Evo gives the On command, all system chillers will be set to On (observing the "Next On delay" timing specified on the next page), while the chillers will be set to Off (observing the "Next Off delay with multichiller Off" specified on the next page) once Off has been set by the Multichiller-Evo; **Fixed thresholds** = this logic involves the ignition of the first chiller together with the Multichiller-Evo; the thermostats of the remaining chillers will be subsequently controlled and when the average power demand will be higher than the "partialisation On %" (specified on the next page) for longer than the "Next On delay" (again, available on the next page), then an additional chiller will be set to On (choosing the one that worked less hours) and so forth... similar logic will be used (in the opposite direction) to calculate the chiller switch-off; **Optimiser 1** = during the Multichiller-Evo commissioning, the loading is met using the fixed threshold logic; then this logic manages the chiller ignitions based on an algorithm that verifies the system's power demand and its stability over time. If the power demand is stable, the best combination will be calculated between the available chillers (which can be activated with partialisations different from each other) to provide for the demand itself (in this way the hours worked by each chiller will not be taken into account); **Optimiser 2** = during the Multichiller-Evo commissioning, the loading is met using the fixed threshold logic; then this logic follows the same algorithm as above, however, in this case, the calculated combination will operate the selected chillers with the same partialisation steps;
2	Indicates whether to use one of the chillers as monitor for the system's power demand; in this case, the chiller will always remain on and the Multichiller-Evo uses its thermostat to establish the power demand; if you select "NO", the Multichiller-Evo will use one of the probes connected to the pCOe expansion board (according to the one selected for the "System re-start") to establish the threshold below which to start the first chiller
3	Indicates which threshold, connected to the pCOe expansion board, will be used to read the temperature below which to consent to start the first chiller (system side)
4	Indicates which threshold, connected to the pCOe expansion board, will be used to read the temperature below which to consent to start the first chiller (recovery side)

⚠ **REMEMBER THAT:**
OPTIMISATION 1 and OPTIMISATION 2 multichiller management is not available with multipurpose machines

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ACTIONS AVAILABLE:

A   Go back to the submenu selecting page;

B   Go back to previous page;
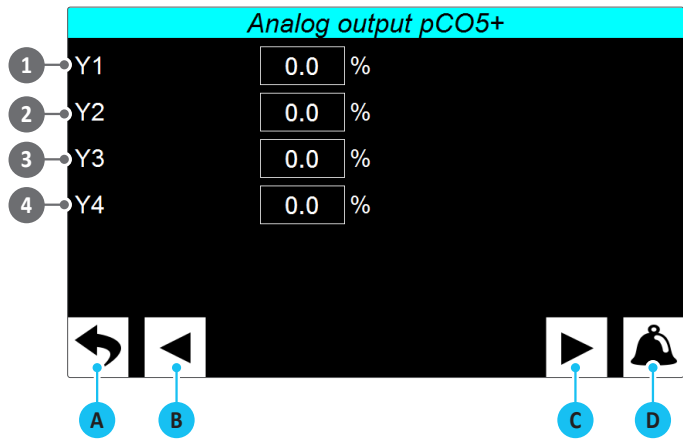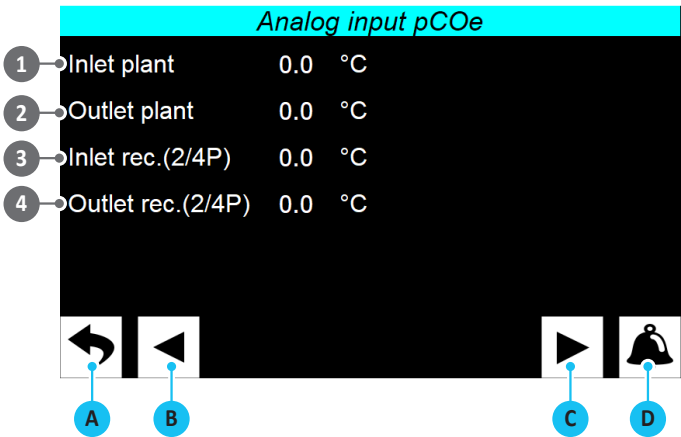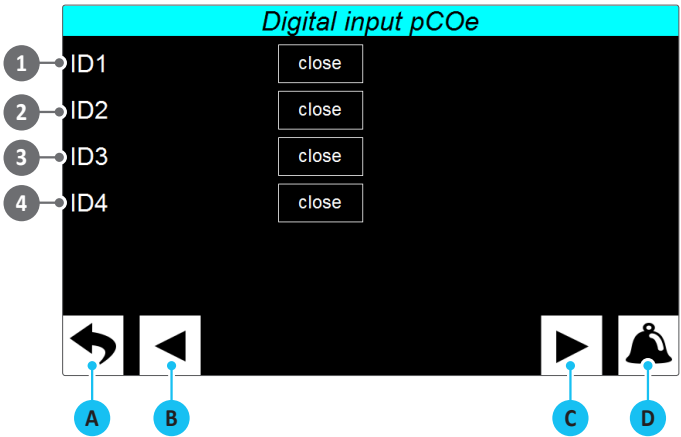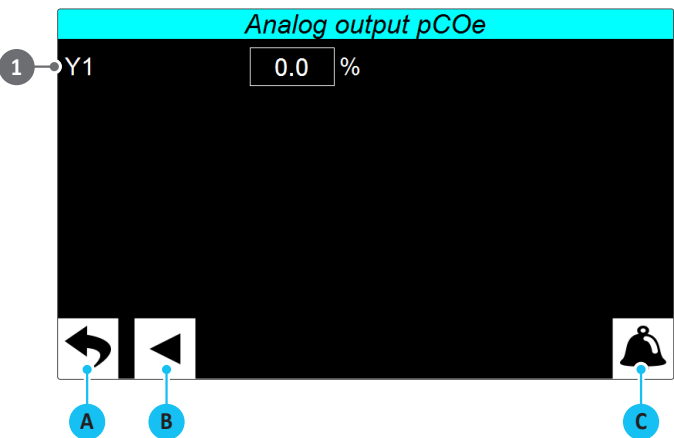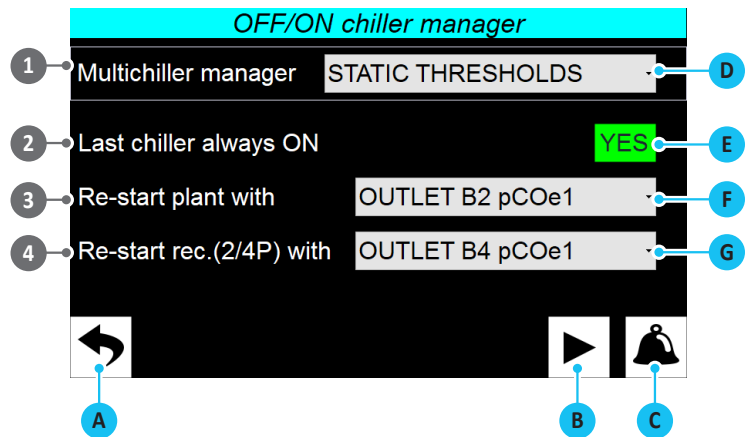
C   Go to next page;

D   Go to alarms menu;

E   Set the power percentage beyond which to enable the ignition of an additional chiller;

F   Set the power percentage above which the chillers that remain on after switching off one of the active chillers, will work;

G   Set the duration of the power demand, maintaining it above the threshold defined in parameter (E), to enable the ignition of an additional chiller;

H   Set the duration of the power demand, maintaining it below the threshold defined in parameter (F), to enable the switch-off of a chiller;

I   Set the interval between switch-offs with the direct command from Multichiller-Evo;

Static threshold

1	% partialization ON	100.0 % E
2	% partialization OFF	40.0 % F
3	Delay next ON	180 s G
4	Delay next OFF	60 s H
5	Delay next OFF with multichiller OFF	10 s I

A   B   C   D

Index	Meaning
1	Indicates the power threshold that the currently active chiller (or the average of the same, if there is more than one active chiller) must reach, and maintain for a certain time, for the Multichiller-Evo to decide to switch-on an additional chiller to provide for the system's power demand;
2	Indicates the power threshold that the currently active chiller (or the average of the same, if there is more than one active chiller) must reach, and maintain for a certain time, for the Multichiller-Evo to decide to switch-off a chiller as the power demand is met;
3	Indicates the time for which the system's power demand should remain above the value expressed on "Partialisation ON %" to enable the ignition command of an additional chiller;
4	Indicates the time for which the system's power demand should remain below the value expressed on "Partialisation OFF %" to enable the switch-off command of an additional chiller;
5	If all chillers are forced to Off by the direct command on the Multichiller-Evo (page 14), the switch-offs will be delayed from one another of the time specified in this parameter;

ACTIONS AVAILABLE:

A   Go back to the submenu selecting page;

B   Go back to previous page;

C   Go to next page;

D   Go to alarms menu;

E   Set the interval between sampling to run the optimisation algorithm;

F   Set the time interval necessary to consider the power demand stable;

G   Set the maximum and minimum percentage variation with respect to the sampled power demand to be able to consider it stable;

H   Set the minimum energy saving percentage during the possible chiller configuration change to make the same change effective;

Optimization

1	Interval acquisition demand power	300 s E
2	Interval stable demand power	60 s F
3	% stable power	5.0 % G
4	% save power to switch	5.0 % H

A   B   C   D

Index	Meaning
1	Indicates the functioning time after which to sample the average of the current power required from the chillers (calculated in percentage); in order to initiate the optimisation algorithm, this value must be maintained (possibly deviate of a percentage value of "stable system power %") for a minimum time called "Stable power demand interval";
2	Indicates the minimum duration of the system's power demand to be considered stable and run the optimisation algorithm;
3	Indicates the percentage to be added or subtracted from the value sampled at the beginning of the control to establish the power demand;
4	Indicates the minimum energy gain percentage in order to make effective the chiller configuration change possibly proposed by the optimisation algorithm

ACTIONS AVAILABLE:
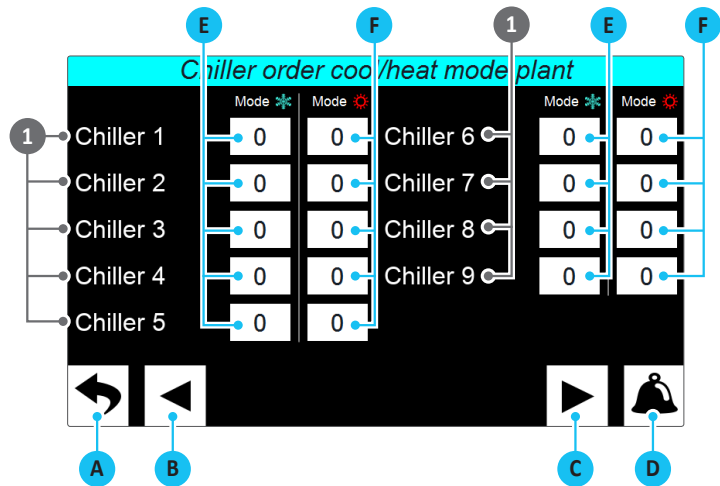
A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Set the cooling priority of the chillers;

F Set the cooling heating priority of the chillers;

Chiller order cool/heat mode plant

	Mode ❄	Mode ☀		Mode ❄	Mode ☀
Chiller 1	0	0	Chiller 6	0	0
Chiller 2	0	0	Chiller 7	0	0
Chiller 3	0	0	Chiller 8	0	0
Chiller 4	0	0	Chiller 9	0	0
Chiller 5	0	0			

Index	Meaning
1	Indicates the priority index assigned to the chiller (n) both cooling and heating; the lower the index the higher the chiller priority during ignition; if two or more chillers have the same priority index, the one with the least number of worked hours will have priority (in order to balance them); the logic is reversed during switch-off, starting to switch-off the chiller with the higher index (if more chillers have the same index, the one with the highest number of worked hours will switch-off first);

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to alarms menu;

D Allows to set a possible backup chiller;

Backup chiller

Backup chiller   NONE

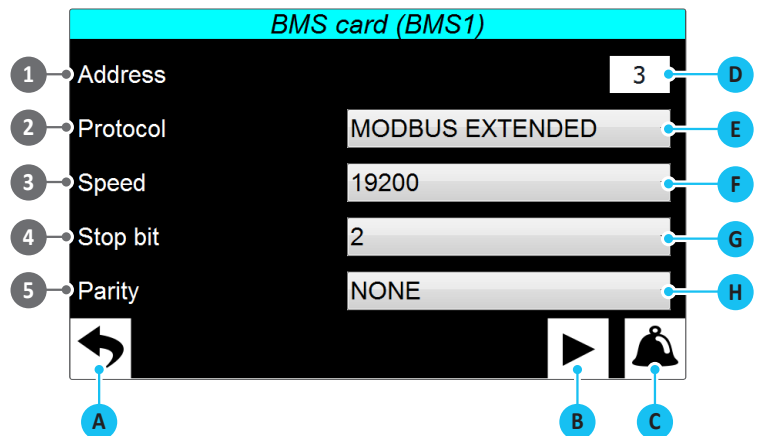| Index	Meaning
1	Indicates the possible chiller used as backup; if one of the system chillers is indicated as backup, said chiller will always be off, automatically activating it if another chiller is locked by a serious alarm;

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ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

D Allows setting the address of the AER485P1 serial board (not supplied);

E Allows selecting the protocol to be used in the communication with the BMS;

F Allows setting the serial communication speed with the BMS;

G Allows selecting the number of stop bits to be used in the communication with the BMS;

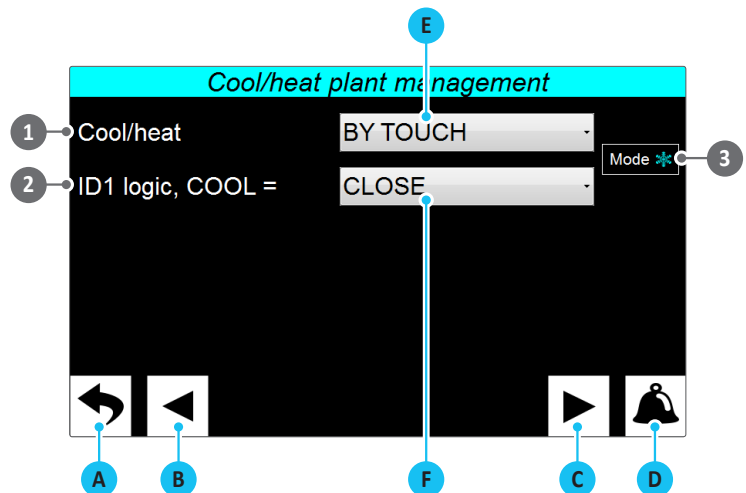**H** Allows setting the type of serial communication parity with the BMS;

BMS card (BMS1)

1	Address	3 — D
2	Protocol	MODBUS EXTENDED — E
3	Speed	19200 — F
4	Stop bit	2 — G
5	Parity	NONE — H

A · B · C

Index	Meaning
1	Indicates the address associated with the AER485P1 board (not supplied) connected to the Multichiller-Evo pCO5+ board to communicate with an external BMS system;
2	Indicates the type of protocol used to communicate with the BMS system; this protocol can be: **CAREL** = Carel property protocol; **MODBUS EXTENDED** = Modbus extended protocol; **WINLOAD** = communication via winload;
3	Indicates the communication speed for connection with the BMS;
4	Indicates the number of stop bits used in the communication protocol with the BMS;
5	Indicates the type of parity used in the communication protocol with the BMS;

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Allows you to select the changeover management to be applied to the system;

F Allows selecting the management logic of the ID1 digital input;

Cool/heat plant management

1	Cool/heat	BY TOUCH — E
2	ID1 logic, COOL =	CLOSE — F

Mode ✷ — 3

A · B · F · C · D

Index	Meaning
1	Indicates the type of changeover management type; this management can be: **COOLING ONLY** = the chillers do not provide for the heating function so the system is set for cooling management only; **FROM TOUCH** = the changeover between heating and cooling is allowed through the touch screen interface; **FROM DIG. INP. ID1** = the changeover is managed by the ID1 digital input on the pCO5+ board; **FROM BMS**: the season change is managed via remote control from BMS;
2	Indicates (if you have chosen to manage the changeover via digital input ID1) which input status to associate with the cooling mode (open or closed);
3	Indicates the current functioning mode set for the system;

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ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Allows enabling or disabling the ID2 digital input;

F Allows enabling or disabling the ID3 digital input;

G Allows enabling the system's On/Off by BMS;

Off/on management

1 — Off/on plant from digital input ID2 — NO — E

2 — Off/on recovery (2/4 Pipes) from digital input ID3 — NO — F

3 — Off/on plant and recovery (2/4 Pipes) from BMS — NO — G

A   B   C   D
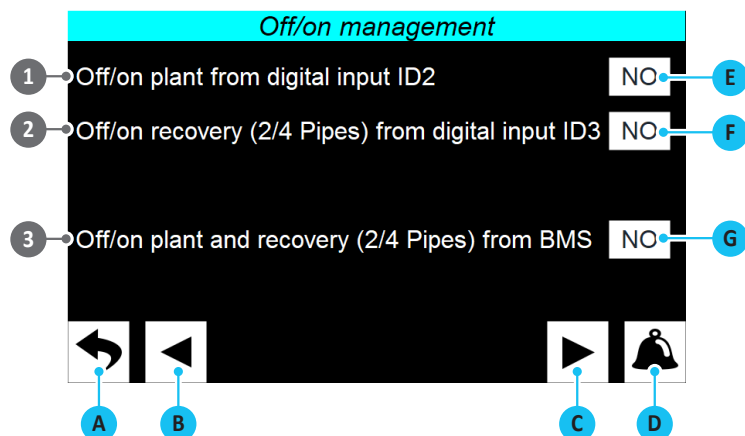
Index	Meaning
1	Set whether to enable the system's On/Off from the ID2 digital input
2	Set whether to enable the system's On/Off from the ID3 digital input
3	Enable On/off from BMS

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Allows you to select the units of measurement to apply;

F Allows you to apply the units of measurement selected;

Unit of measure

Pay attention!
1. Disconnect modbus line
2. Change °C/bar --> °F/psi into the Chillers
3. Change °C/bar --> °F/psi into the Multichiller
4. Connect modbus line

E

1 — Unit of measure   °C / bar ▾   NO — F

2 — Actual setpoint   7.0 °C

A   B   C   D
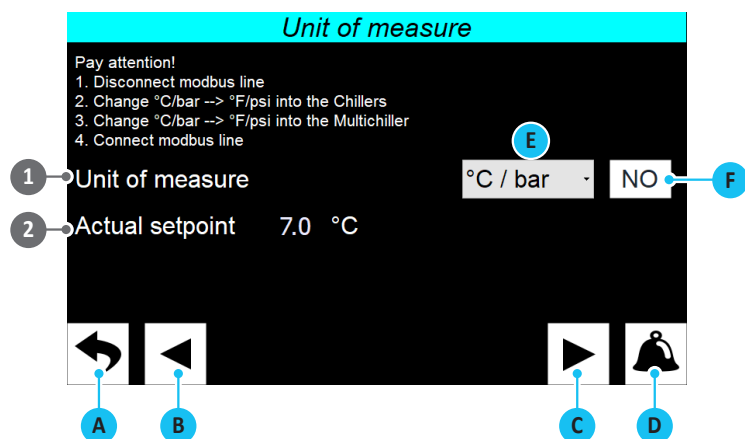
Index	Meaning
1	Sets and confirms the units of measurement to use to manage the units
2	Displays the actual set point with the relative unit of measurement applied

⚠️ **REMEMBER THAT:**
To change the units of measurement, follow the instructions provided on the display!

ACTIONS AVAILABLE:

A   Go back to the submenu selecting page;

B   Go back to previous page;

C   Go to next page;

D   Go to alarms menu;

E   Allows selecting the function to be assigned to the system's multi-function input;
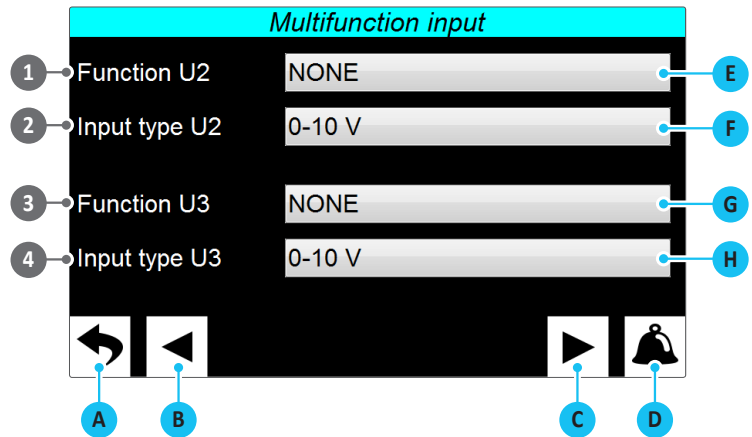
F   Allows selecting the type of signal applied to the system's multi-function input;

G   Allows selecting the function to be assigned to the recovery's multi-function input;

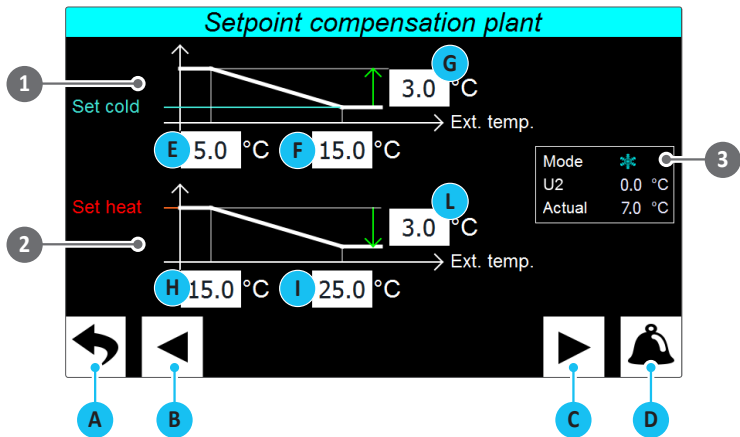**H**   Allows selecting the type of signal applied to the recovery's multi-function input;

Multifunction input

1 Function U2	NONE — E
2 Input type U2	0-10 V — F
3 Function U3	NONE — G
4 Input type U3	0-10 V — H

Index	Meaning
1	Set the function associated with the U2 multi-function input (for the multi-function input to be enabled, the ID6 input needs to be open); this function can be: **NONE** = input disabled; **SET COMPENSATION** = input used to manage the outdoor air probe (supplied) used for the set correction function with climatic curve; **POWER LIMIT** = input used to calculate the maximum number of chillers to be used depending on the type of signal specified at input; **POWER DEMAND** = input used to calculate the maximum number of chillers to be used depending on the type of signal specified at input;
2	Specifies the type of signal at multi-function input; this signal can be: **0-10V** = a voltage signal from 0 to 10V; **4-20mA** = a current signal from 4 to 20mA; **NTC** = a signal from the NTC temperature probe (option to be selected if the supplied probe has been connected for compensation with the climatic curve);
3	Set the function associated with the U3 multi-function input (for the multi-function input to be enabled, the ID7 input needs to be open); this function can be: **NONE** = input disabled; **SET COMPENSATION** = input used to manage the outdoor air probe (supplied) used for the set correction function with climatic curve; **POWER LIMIT** = input used to calculate the maximum number of chillers to be used depending on the type of signal specified at input; **POWER DEMAND** = input used to calculate the maximum number of chillers to be used depending on the type of signal specified at input;
4	Specifies the type of signal at multi-function input; this signal can be: **0-10V** = a voltage signal from 0 to 10V; **4-20mA** = a current signal from 4 to 20mA; **NTC** = a signal from the NTC temperature probe (option to be selected if the supplied probe has been connected for compensation with the climatic curve);

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Allows setting at which outdoor air temperature to use the primary cooling set;

F Allows setting at which outdoor air temperature to raise the primary cooling set;

G Allows setting the increase to be applied to the cooling set for the indicated temperature;

H Allows setting at which outdoor air temperature to use the primary heating set;

I Allows setting at which outdoor air temperature to lower the primary heating set;

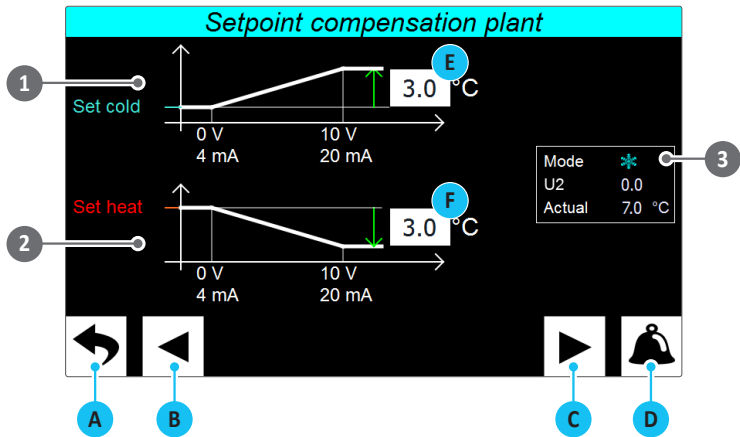**L** Allows setting the decrease to be applied to the heating set for the indicated temperature;

Index	Meaning
1	Indicates the chart that summarises the functioning of the climatic curve applied to the cooling set; setting at which outdoor air temperature (read by the NTC probe connected at the multi-function input duly set, as explained in the previous page) the cooling work set remains unchanged and at which it is increased and by how much
2	Indicates the chart that summarises the functioning of the climatic curve applied to the heating set; setting at which outdoor air temperature (read by the NTC probe connected at the multi-function input duly set, as explained in the previous page) the heating work set remains unchanged and at which it is decreased and by how much
3	It summarises the current system state, indicating the active functioning mode, the temperature read by the NTC probe connected to the U2 input and the set resulting from the correction according to the described curve

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Allows setting the increase to be applied to the cooling set at the maximum of the input signal;

F Allows setting the decrease to be applied to the heating set at the maximum of the input signal;

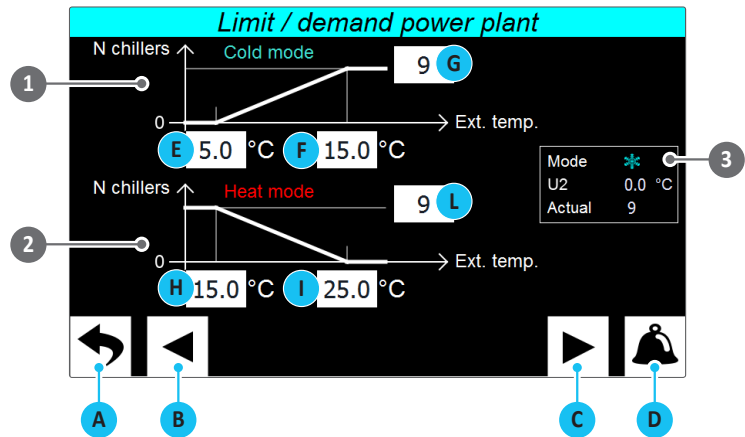| Index	Meaning
1	Indicates the chart that summarises the functioning of the climatic curve applied to the cooling set; setting the increase to be applied to the cooling set at maximum of the input signal
2	Indicates the chart that summarises the functioning of the climatic curve applied to the heating set; setting the decrease to be applied to the heating set at maximum of the input signal
3	It summarises the current system state, indicating the active functioning mode, U2 input value and the set resulting from the correction according to the described curve

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Allows setting up to which temperature no chiller will be activated (cooling);

F Allows setting at which temperature the specified number of chillers will be activated;

G Allows setting the maximum number of chillers that can be activated;

H Allows setting up to which temperature no chiller will be activated (heating);

I Allows setting at which temperature the specified number of chillers will be activated;

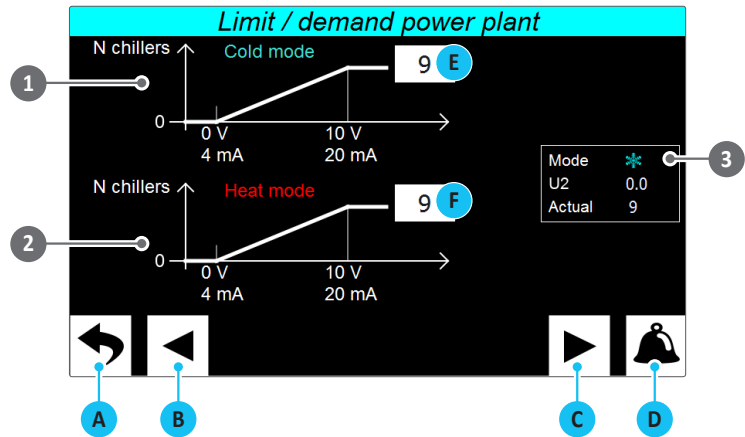L Allows setting the maximum number of chillers that can be activated;

Index	Meaning
1	Indicates the chart representing the power demand or limitation (if selected as function on the U2 input, with temperature variation) according to the temperature read by the NTC probe connected to the U2 input; the chart shows the temperature at which no chiller is active, and the one at which to activate the maximum number of chillers specified for the cooling mode
2	Indicates the chart representing the power demand or limitation (if selected as function on the U2 input, with temperature variation) according to the temperature read by the NTC probe connected to the U2 input; the chart shows the temperature at which no chiller is active, and the one at which to activate the maximum number of chillers specified for the heating mode
3	It summarises the current system state, indicating the active functioning mode, the temperature read by the NTC probe connected to the U2 input and the maximum number of chillers that can be activated at that time

INSTALLER - Remote control - Power demand/limitation settings (U2 set as voltage or current value)

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Allows setting the maximum number of chillers that can be activated in cooling at the maximum of the input signal;

F Allows setting the maximum number of chillers that can be activated in heating at the maximum of the input signal;

Index	Meaning
1	Indicates the chart representing the power demand or limitation (if selected as function on the U2 input, with voltage or current signal) according to the U2 input signal value; the chart shows the values at which no chiller is active, and those at which to activate the maximum number of chillers specified for the cooling mode
2	Indicates the chart representing the power demand or limitation (if selected as function on the U2 input, with voltage or current signal) according to the U2 input signal value; the chart shows the values at which no chiller is active, and those at which to activate the maximum number of chillers specified for the heating mode
3	It summarises the current system state, indicating the active functioning mode, the U2 input signal value and the maximum number of chillers that can be activated at that time

ACTIONS AVAILABLE:

A   Go back to the submenu selecting page;

B   Go back to previous page;

C   Go to next page;

D   Go to alarms menu;

E   Allows setting at which outdoor air temperature to use the primary recovery side set;

F   Allows setting at which outdoor air temperature to lower the primary recovery side set;

G   Allows setting the decrease to be applied to the recovery side set for the indicated temperature;

H   Allows setting the decrease to be applied to the heating set at the maximum of the input signal;

Setpoint compensation recovery (2/4 Pipes)

Index	Meaning
1	Indicates the chart that summarises the functioning of the climatic curve applied to the recovery side set; setting at which outdoor air temperature (read by the NTC probe connected to the multi-function input duly set) the recovery work set remains unchanged and at which it is decreased and by how much
2	Indicates the chart that summarises the functioning of the climatic curve applied to the recovery side set; setting the decrease to be applied to the heating set at maximum of the input signal
3	Indicates the value read by the device connected to input U3 and the set resulting from correction according to the curve described

ACTIONS AVAILABLE:

A   Go back to the submenu selecting page;

B   Go back to previous page;

C   Go to alarms menu;

D   Allows setting up to which recovery temperature no chiller will be activated;

E   Allows setting at which temperature the specified number of chillers will be activated;

F   Allows setting the maximum number of chillers that can be activated;

G   Allows setting the maximum number of chillers that can be activated at the maximum of the input signal;

Limit / demand power recovery (2/4 Pipes)

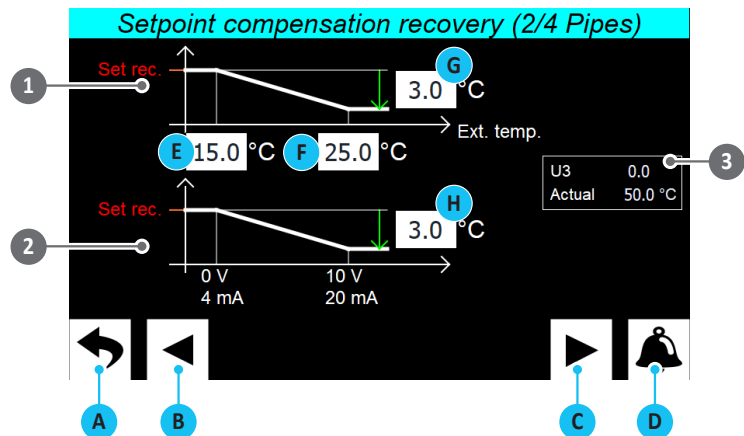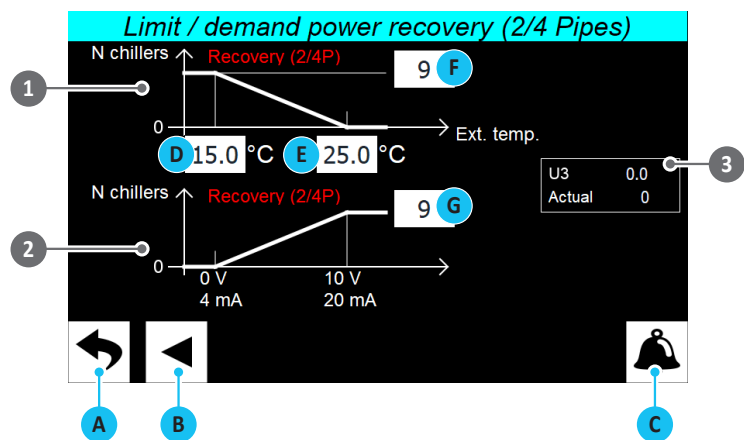| Index	Meaning
1	Indicates the chart representing the power demand or limitation (if selected as function on the U3 input, with temperature variation) according to the temperature read by the NTC probe connected to the U3 input; the chart shows the temperature at which no chiller is active, and the one at which to activate the maximum number of chillers specified for the recovery mode
2	Indicates the chart representing the power demand or limitation (if selected as function on the U3 input, with voltage or current signal) according to the U3 input signal value; the chart shows the values at which no chiller is active, and those at which to activate the maximum number of chillers specified for the recovery mode
3	Indicates the value read by the device connected to input U3 and the maximum number of chillers that can be activated at that time

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to alarms menu;

C Allows setting the value to be assigned to the password to access the installer menu;

Change password

1 Service password   **C** 0442
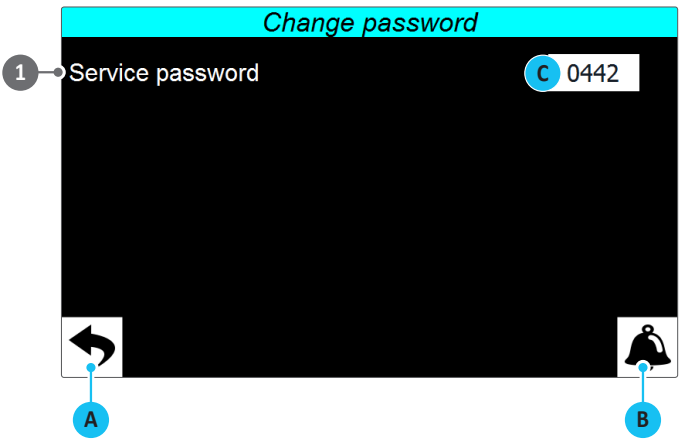
Index	Meaning
1	Indicates the value to be used as password to access the installer menu

⚠️ **ATTENTION: Please make a note of any password change in order to avoid possible forgetfulness;**

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to alarms menu;

Info

pCO5+		Touch screen	
Software version	1.0.1	Software version	1.0.1
Bios	6.42	Main OS version	1.61C
Boot	5.01	Runtime version	1.90 (0) - Build (1079)
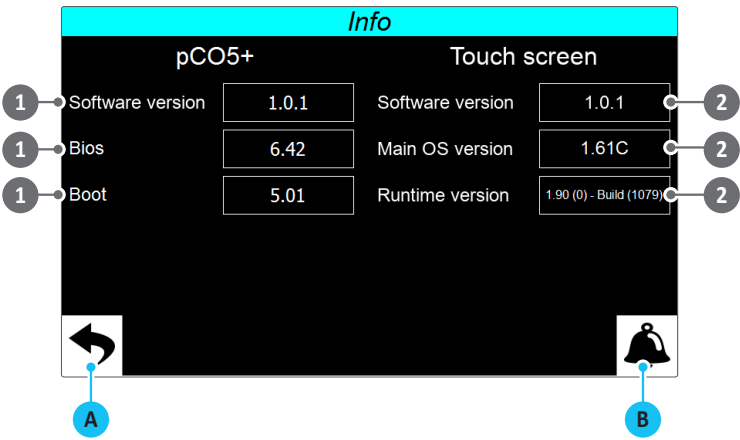
Index	Meaning
1	Indicates the software component versions of the main pCO5+ board
2	Indicates the software component versions of the touch screen

INSTALLER - Charts - Temperature probe setting for charts values

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to alarms menu;

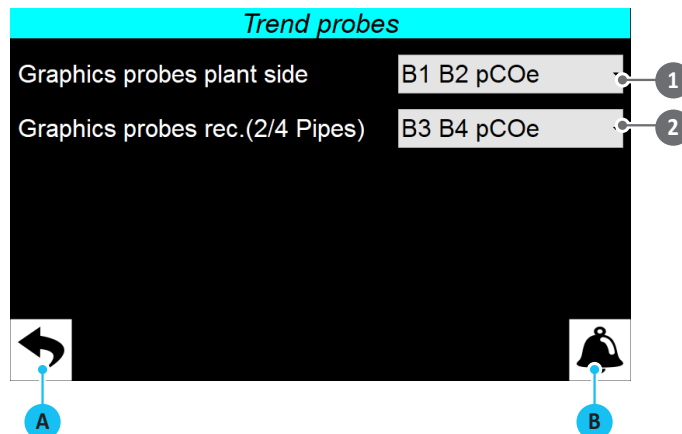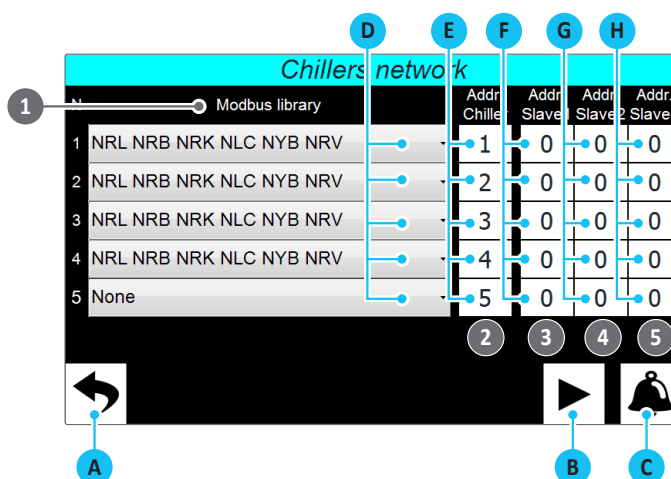| Index	Meaning
1	Indicates which temperature probes are used for the charts (system side)
2	Indicates which temperature probes are used for the charts (recovery side)

INSTALLER - Chillers network - Set of the connected chillers (Page 1)

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go to next page;

C Go to alarms menu;

D Allows selecting the Modbus library to be assigned to the indicated chiller;

E Allows setting the modbus address of the indicated chiller;

F Allows setting the slave 1 modbus address for the indicated chiller (NSM family);

G Allows setting the slave 2 modbus address for the indicated chiller (NSM family);

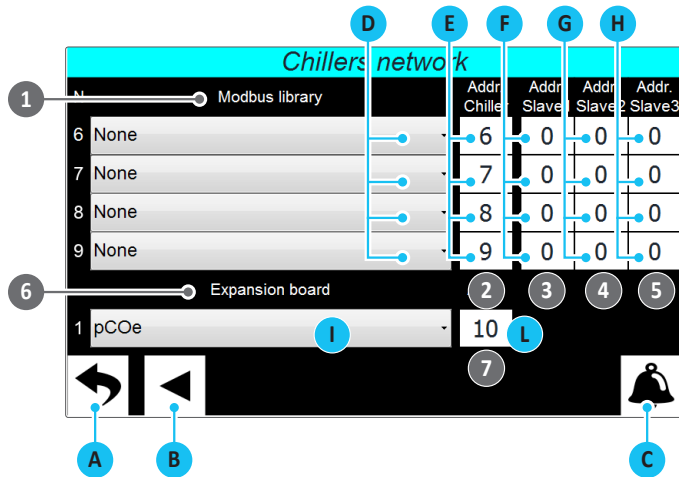**H** Allows setting the slave 3 modbus address for the indicated chiller (NSM family);

Index	Meaning
1	Indicates the modbus library used to communicate with the network chillers; the number on the left indicates the chiller to which we refer. If you want to add a chiller, you must specify the correct library to be used for serial communication. However, if a chiller is added at a later stage, the overall management needs to be "fixed threshold" since, in order to use the optimised managements, it is necessary to load the specific data of the units on the Multichiller-Evo (for more information, contact the after-sales service/assistance)
2	Indicates the modbus address to be assigned to each chiller
3	Indicates, only for the NSM units working in master/slave mode, the chiller slave 1 address
4	Indicates, only for the NSM units working in master/slave mode, the chiller slave 2 address
5	Indicates, only for the NSM units working in master/slave mode, the chiller slave 3 address

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to alarms menu;

D Allows selecting the Modbus library to be assigned to the indicated chiller;

E Allows setting the modbus address of the indicated chiller;

F Allows setting the slave 1 modbus address for the indicated chiller (NSM);

G Allows setting the slave 2 modbus address for the indicated chiller (NSM);

H Allows setting the slave 3 modbus address for the indicated chiller (NSM);

I Allows specifying whether a pCOe expansion board is present;

L Allows specifying the pCOe board address (this address must be the same as the one specified on the pCOe via dipswitch);

Index	Meaning
1	Indicates the modbus library used to communicate with the network chillers; the number on the left indicates the chiller to which we refer. If you want to add a chiller, you must specify the correct library to be used for serial communication. However, if a chiller is added at a later stage, the overall management needs to be "fixed threshold" since, in order to use the optimised managements, it is necessary to load the specific data of the units on the Multichiller-Evo (for more information, contact the after-sales service/assistance)
2	Indicates the modbus address to be assigned to each chiller
3	Indicates, only for the NSM units working in master/slave mode, the chiller slave 1 address
4	Indicates, only for the NSM units working in master/slave mode, the chiller slave 2 address
5	Indicates, only for the NSM units working in master/slave mode, the chiller slave 3 address
6	Specifies whether the pCOe expansion board is present
7	Indicates the Modbus address assigned to the pCOe board. The address assigned to the pCOe board must match the one set on the same board via dipswitch. By default, the dips on the board are set to assign the pCOe address 10, however, if desired, you can modify it with a value between 1 and 15, by properly modifying the dips on the pCOe board

ATTENTION: the dipswitches on the pCOe used to set the serial address made up of 4 "weighed" dips; the value assigned to the serial address of the pCOe board will be equal to the sum of the active dips values (to activate a dip it is necessary to move it down); below are some examples:

2 + 8 = pCOe address: 10 (default)
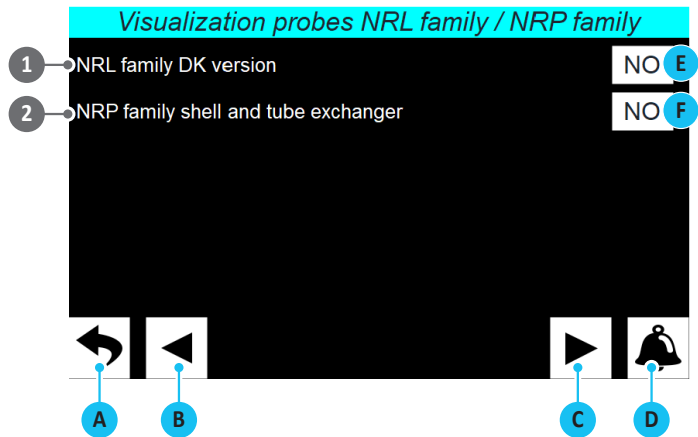
1 + 4 = pCOe address: 5

2 + 4 + 8 = pCOe address: 14

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Allows enabling the display of the DK chiller probes;

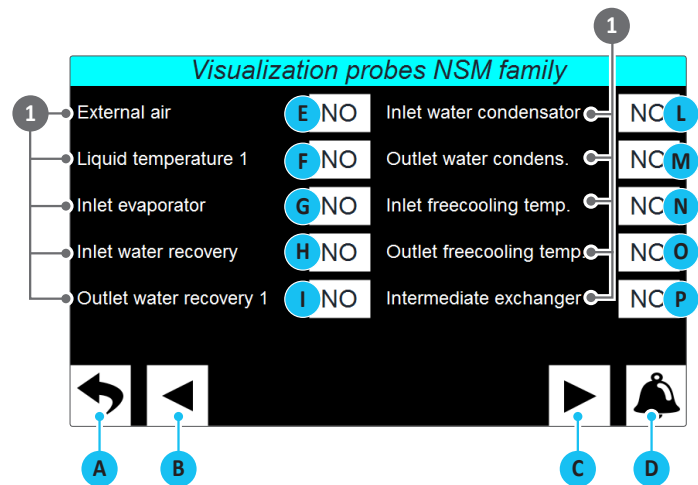F Allows enabling the display of the NRP shell and tube chiller probes;

ATTENTION: the accessory cannot manage mixed systems; for a correct value display, all system chillers must (in this case) be in DK version;

Visualization probes NRL family / NRP family

1 NRL family DK version   NO E

2 NRP family shell and tube exchanger   NO F

A   B   C   D

Index	Meaning
1	Indicates whether to enable reading of the specific probes for the DK version chillers; if enabled, reading of these probes will be displayed on the monitor pages of each individual chiller
2	Indicates whether to enable reading of the various probes specific for NRP chillers; if enabled, reading of these probes will be displayed on the monitor pages of each individual chiller

ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to next page;

D Go to alarms menu;

E Enables/disables outdoor air probe reading;

F Enables/disables liquid 1 temperature probe reading;

G Enables/disables evaporator input temperature probe reading;

H Enables/disables recovery 1 water inlet temperature probe reading;

I Enables/disables recovery 1 outlet temperature probe reading;

L Enables/disables condenser water outlet temperature probe reading;

M Enables/disables condenser water outlet temperature probe reading;

N Enables/disables freecooling input temperature probe reading;

O Enables/disables freecooling output temperature probe reading;

P Enables/disables intermediate exchanger temperature probe reading;

Visualization probes NSM family   1

1 External air   E NO   Inlet water condensator   NC L
   Liquid temperature 1   F NO   Outlet water condens.   NC M
   Inlet evaporator   G NO   Inlet freecooling temp.   NC N
   Inlet water recovery   H NO   Outlet freecooling temp   NC O
   Outlet water recovery 1   I NO   Intermediate exchanger   NC P

A   B   C   D

Index	Meaning
1	Indicates whether to enable reading of the various probes specific for the NSM chillers; if enabled, reading of these probes will be displayed on the monitor pages of each individual chiller (page 12)

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ACTIONS AVAILABLE:

A Go back to the submenu selecting page;

B Go back to previous page;

C Go to alarms menu;

D Allows enabling the display of the debug menu;

E Enables display of the system's differential for WRL units;

Visualization main menù

1 — Show differential plant (if chiller WRL)   NO

2 —
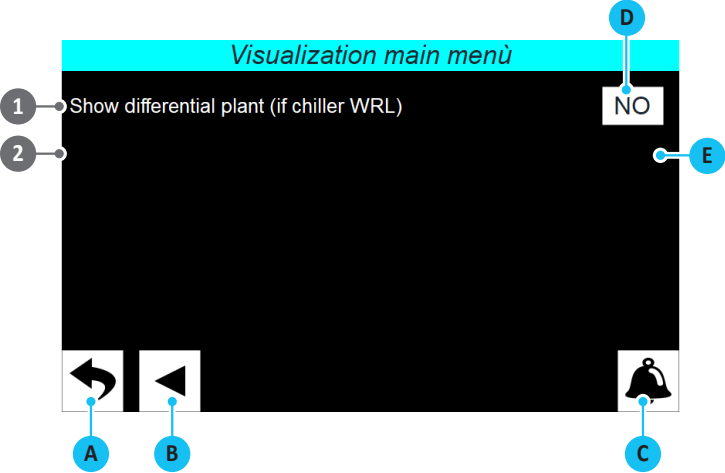
Index	Meaning
1	Indicates whether to enable the appearance (in the menu selecting page) of the debug menu
2	In the case of WRL chillers, the system differential in the Multichiller Evo page is hidden. This is because the WRL unit does not have a modbus system differential. If the WRL software is updated, then it can be displayed.

ATTENTION: the debug menu is a tool normally used by the technical after-sales service/ assistance to detect any abnormal behaviours;

MANUFACTURER MENU

The MANUFACTURER menu contains confidential settings, the modification of which is not available to the user or installer; the parameters contained in this menu are only available to the company's technical after-sales service/assistance;

MANUFACTURER - Access password entering

ACTIONS AVAILABLE:

A Allows entering the numeric value of the password;

B Allows confirming the entered password;

C Go back to the menu selecting page;
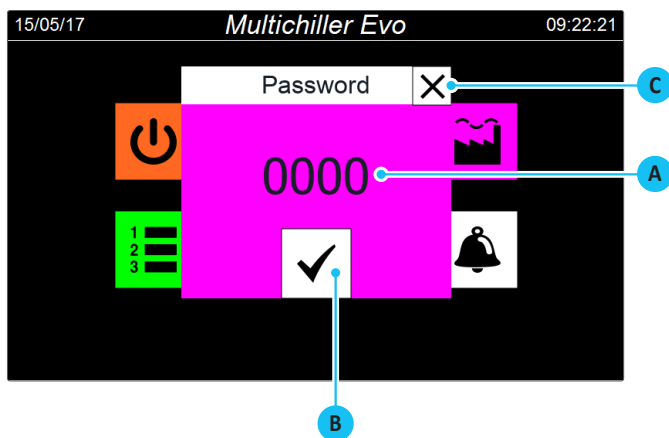
ALARMS MENU

With the ALARMS menu you can view, and possibly reset, the alarm conditions arisen in the unit during its functioning; the alarms are divided into different categories according to their severity. Please note that some of them may cause serious damage to the unit, therefore, before performing the reset, you must be sure of the nature of the alarm and its cause (possibly by referring to the specific after-sales assistance personnel)

ALARMS - Displays active alarms

ACTIONS AVAILABLE:

A Open the menu selecting page;

B Go to alarms log;

Index	Meaning
1	Date and time of the alarm
2	Alarm code and description

ALARMS - Displays alarms log

ACTIONS AVAILABLE:

A Open the menu selecting page;

B Update the alarm log:

C Go back to the active alarms page;

D Allows selecting to filter the log displaying only the occurred alarms within a certain selected period;

Index	Meaning
1	Indicates the period to which the displayed alarms refer
2	Date and time of the alarm
3	Alarm code and description
4	Date and time the alarm was reset
5	Code and description of reset alarm

Index	Meaning
AL001	U1 broken or disconnected
AL002	U2 broken or disconnected
AL003	U3 broken or disconnected
AL004	U4 broken or disconnected
AL005	U5 broken or disconnected
AL006	U6 broken or disconnected
AL007	U7 broken or disconnected
AL008	U8 broken or disconnected
AL009	U9 broken or disconnected
AL010	U10 broken or disconnected
AL011	1B1 broken or disconnected
AL012	1B2 broken or disconnected
AL013	1B3 broken or disconnected
AL014	1B4 broken or disconnected
AL015	2B1 broken or disconnected
AL016	2B2 broken or disconnected
AL017	2B3 broken or disconnected
AL018	2B4 broken or disconnected
AL019	pCOe1 offline
AL020	pCOe2 offline
AL021	Chiller1 offline
AL022	Chiller2 offline
AL023	Chiller3 offline
AL024	Chiller4 offline
AL025	Chiller5 offline
AL026	Chiller6 offline
AL027	Chiller7 offline
AL028	Chiller8 offline
AL029	Chiller9 offline
AL030	Initialis. Completed, reboot PLC!
AL031	Slave1 Chiller1 offline
AL032	Slave2 Chiller1 offline
AL033	Slave3 Chiller1 offline
AL034	Slave1 Chiller2 offline
AL035	Slave2 Chiller2 offline
AL036	Slave3 Chiller2 offline

Index	Meaning
AL037	Slave1 Chiller3 offline
AL038	Slave2 Chiller3 offline
AL039	Slave3 Chiller3 offline
AL040	Slave1 Chiller4 offline
AL041	Slave2 Chiller4 offline
AL042	Slave3 Chiller4 offline
AL043	Slave1 Chiller5 offline
AL044	Slave2 Chiller5 offline
AL045	Slave3 Chiller5 offline
AL046	Slave1 Chiller6 offline
AL047	Slave2 Chiller6 offline
AL048	Slave3 Chiller6 offline
AL049	Slave1 Chiller7 offline
AL050	Slave2 Chiller7 offline
AL051	Slave3 Chiller7 offline
AL052	Slave1 Chiller8 offline
AL053	Slave2 Chiller8 offline
AL054	Slave3 Chiller8 offline
AL055	Slave1 Chiller9 offline
AL056	Slave2 Chiller9 offline
AL057	Slave3 Chiller9 offline
AL058	Alarm from digital input 8
AL059	
AL060	Permanent Memory pCO5+
AL061	Chiller1 alarm
AL062	Chiller2 alarm
AL063	Chiller3 alarm
AL064	Chiller4 alarm
AL065	Chiller5 alarm
AL066	Chiller6 alarm
AL067	Chiller7 alarm
AL068	Chiller8 alarm
AL069	Chiller9 alarm
AL070	
AL071	

AERMEC

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