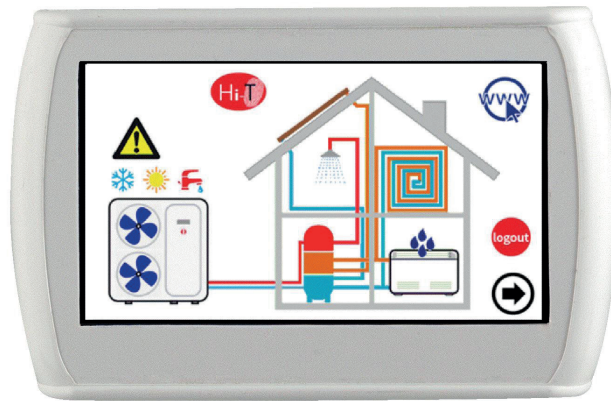


Unical®



TOUCH SCREEN_N

LCD Touch Screen Centralized
Remote Controller

USER'S AND INSTALLER'S MANUAL

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1 GENERAL NOTES

1.1 PERMITTED USE

The touch screen remote control panel allows the centralized management of a network of chiller/heat pump. It can also be used for partial functions (i.e. as a remote control panel of a single chiller/heat pump or ambient temperature thermostat).

It includes humidity and temperature sensors for the thermo hygrometric analysis of the environment and for the management of the double set point for radiant floor heating systems that use a dehumidification system.

The intuitive interface simplifies the use of the control; all the functions can be easily set through the use of immediate understanding synoptic.

The remote control supervises and periodically examines the network, there is a cycle time that elapses between the signaling or command request and the activation of the function, the cycle time depends on the largeness of a network of fancoils and heat pumps.

For multi-circuit units only the I/O ports and parameters of the first circuit can be displayed.

1.2 USE NOT PERMITTED

Any use different than that permitted is PROHIBITED.

1.3 TECHNICAL DATA

Features	Nominal	Min.	Max.
Power supply voltage	12Vac	10Vac	14Vac
Power supply frequency	50 - 60Hz	Tip-5%	Tip+5%
Operating ambient temperature	25°C	0°C	50°C
Operating humidity (non-condensing)	30%	10%	90%
Ambient storage temperature	25°C	-20°C	70°C
Ambient storage humidity (non-condensing)	30%	10%	90%
Class of device (according to EU REG 2013-811)	4		
Contribution of temperature control to the seasonal energy efficiency of heating environment. (according to EU REG 2013-811)	2%		

1.4 ELECTROMECHANICS CHARACTERISTICS

Terminals and connectors	Screw terminals
Analogue inputs	1 NTC sensor on board 1 humidity sensor on board
Serial	1 USB Host (for mass storage plug) 1 Isolated RS485 network for chiller/heat pump and fancoils 1 TTL serial port for future uses (optional plug-ins) 1 Ethernet port
Transformer	Device not included
Watch	RTC watch with backup condenser
Display	LCD TFT 4.3" 480x272 pixels
Keys	Resistive touch screen mounted on the LCD
Dimensions	128x81.2mm depth 35mm (box)
Case	Is made up of white plastic

2 Input/Output RESOURCES (I/O)

2.1 TOUCH SCREEN PCB

2.1.1 LAYOUT

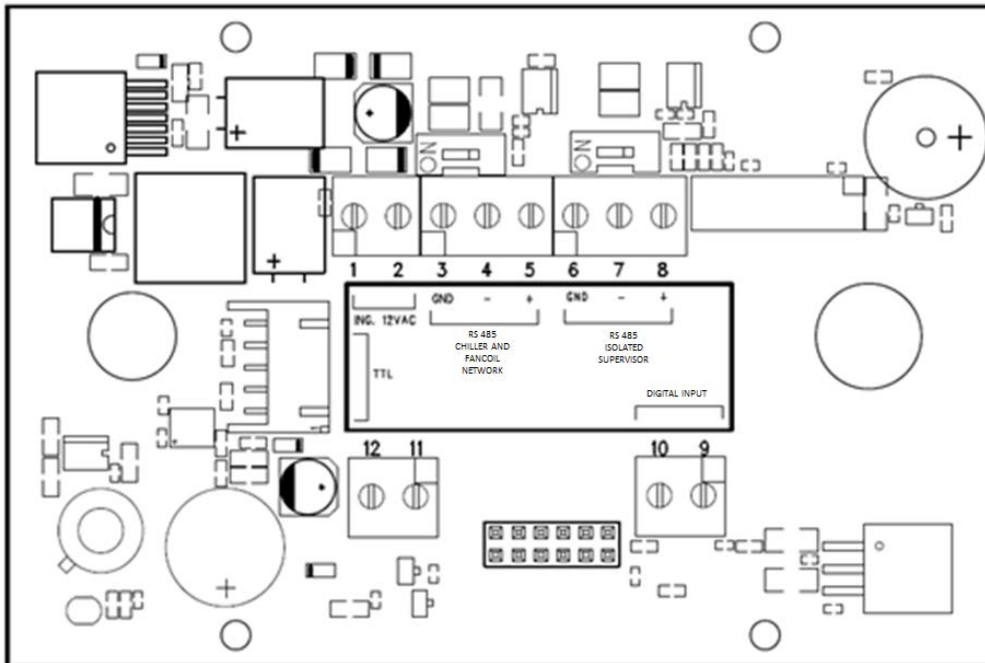


Figure 1. Layout

2.1.2 TOUCH-SCREEN USE

The interface has a resistive touch-screen LCD with sensitive areas applied to the contextual content of the active screen. It allows you to select items or perform functions with ease.

Do not exert too much pressure on the touch screen with your fingers and do not use a sharp object on the touch screen. Doing so may damage the touch screen or cause it to malfunction.

It is advisable to exert weaker pressure and not too fast on the screen and to become familiar with the use of the touch-screen itself, well calibrating the touch of your fingertip on the sensitive areas of the screens.

Do not put the touch-screen in contact with other electrical devices. Electrostatic discharge may cause a malfunction.

2.1.3 DISPLAY

The display is a TFT LCD 16/9 format with a diagonal 4.3". The resolution is 480 x 272 pixels. The LCD is handled with 16bit colour depth (65535 colours).

2.1.4 POWER SUPPLY

Description	Characteristics	ID
POWER SUPPLY 12VAC	12Vac (min. 10Vac – max. 14Vac)	

2.1.5 ANALOGUE INPUT

Description	Characteristics	ID
Room temperature	NTC probe, conversion range -20°C ÷ +100°C	
Relative humidity	0% - 90% at temperature between -20°C and 60°C	

2.1.6 SERIAL AND CONNECTIVITY

Description	Characteristics	ID
USB	USB Host (for mass storage plug) / connector type A	USB
RS485 isolate	Isolated RS485 to Modbus Serial chiller/heat pump and fancoils	
TTL	Modbus serial TTL for future use	
ETH	Ethernet port 10/100 BASE T for minimal web-server	

2.2 CLOCK

It's present a clock with backup battery.

2.3 CONNECTIONS

Open the control applying a slight pressure in the lower and upper parts of the device in order to separate the rear cover from the front one. Pass the cables through the hole in the rear over and make connections according to the following guidelines.

Terminals 1 and 2: 12 V AC power connect supply (terminal on chiller 12V- e 12V+).

Terminals 3-4-5: connect the RS-485 bus: terminal 3 to terminal GNDR, terminal 4 to R- and terminal 5 to R+.

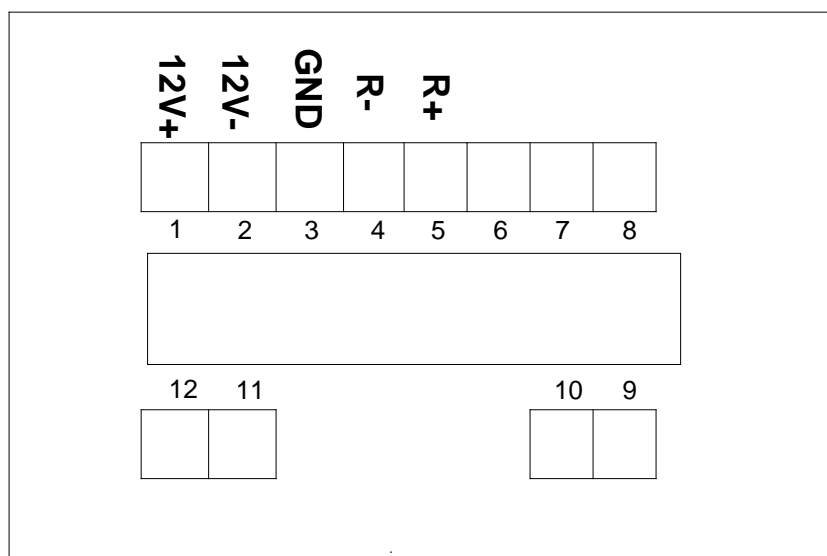


Figure 2. Electrical interface

HEAT PUMP Terminal		TOUCH SCREEN Terminal	TIPOLOGIA
HP_POWER ONE	HP_POWER N		
X-12.1	12N1	touch screen power supply (12V-)	Alimentazione 12Vac, 50Hz, 500mA
X-12.2	12AC1	touch screen power supply (12V+)	
X-4.1	GNDR	Ground touch screen RS-485 Modbus RTU (GNDR)	Comunicazione Modbus
X-5.1	R-	Modbus RTU touch screen signal (R-)	
X-5.2	R+	Modbus RTU touch screen signal (R+)	

2.4 INSTALLATION

The Touch Screen control is used for fixing to the wall according to DIN 503 standard.

In the rear part of the control some pre-drilled holes are present to be detached pursuing a pressure with a screwdriver, in such a way as to obtain the holes useful to the fixing. Of the 6 holes, use only the outer 2 holes of the horizontal series (see Figure 3).

Before you do this, open the control itself, applying a slight pressure in the lower and upper parts of the control, in order to separate the rear cover from the front one.

Use the rear panel and apply the holes in the two slots shown in the figure below.

Do not directly use the panel as a template to drill the holes on the wall; the electronics may be damaged during this operation.

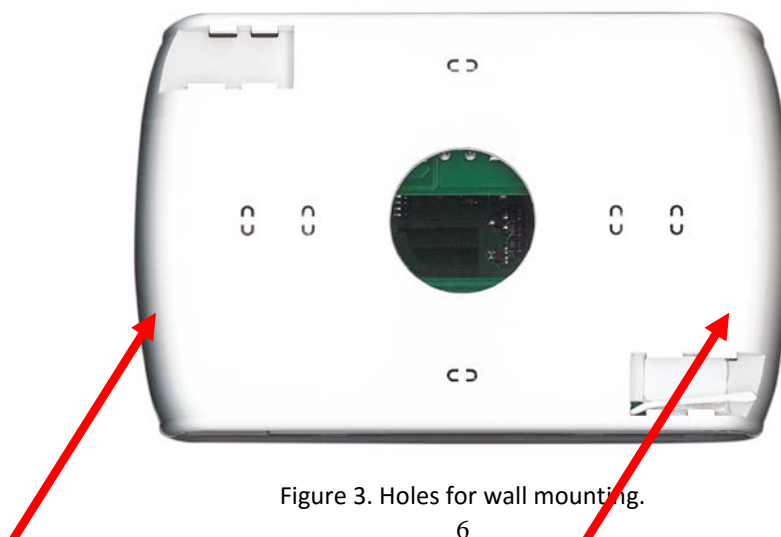


Figure 3. Holes for wall mounting.

3 USER INTERFACE

The touch-screen can be used in the following ways:

- Interface panel (unit interface) for a single heat pump
- Chillers/heat pumps network network manager
- Manager of Chiller/heat pump and fan coil units network
- Fancoil units network manager

To manage the system modularity, the interface foresees a home page which summarizes the whole plant, showing dynamically the enabled resources and hiding the ones not available in the current configuration. The interface also provides a second summary page including all the values of temperature and humidity detected in the system.

Through the menu it is possible to access to:

- Plant configuration
- Single units statuses
- Settings of machines, zones and plant system.

As alternative it is possible to directly access from the home page to detailed information, pressing on the display where are located the summarized information. E.g., pressing where are located the main information of the heat pump, you can enter in the menu of the heat pump status.

3.1 ICONS DISPLAY

All icons on the different screens can be shown in full colours or de-saturated as in the following example:



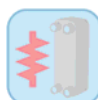
The colour saturation indicates that icon is usable; when pressed the related function is performed.

The transparency (de-saturated) indicates that icon is not usable and any touch on it has no resulting action.

For what concerns the side sliding bar which appears on the left side of the screen related to the single units connected into a network (see Paragraphs 3.4.1.3), if an icon appears fully coloured the related function is enabled and, in that specific moment is also active (i.e. if the “water anti-freeze” icon of the heat pump is present and coloured, as shown below, the plate exchanger electrical heating elements are switched on).



Instead, if the icon appears but is transparent (de-saturated), the related function is enabled but not that moment activated (i.e. if the “water anti-freeze” icon of the heat pump appears transparent, as shown below, the plate exchanger electrical heating elements are ready to work but currently switched off).



3.2 SCREENS AND ICONS

There might be some differences between screens and icons as they are currently shown. The Company reserves itself to modify and update them without prior notice and in relation to what shown in the present manual.

3.3 START PAGE



Figure 4. Start page

When turning ON the Touch Screen control panel, a splash screen appears with a logo to allow the time needed for loading the system.

3.4 HOME PAGE

The home page has the following appearance:

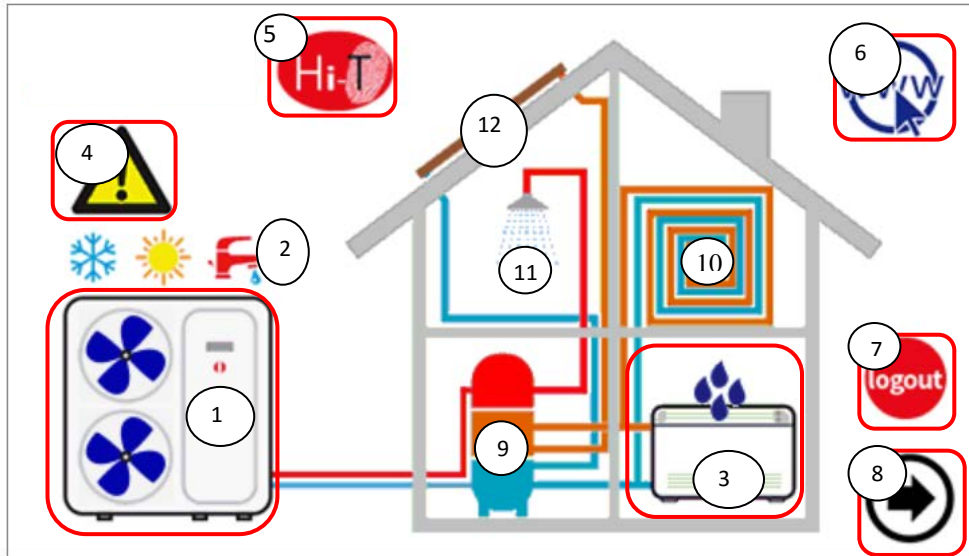


Figure 5. Home page – indication meanings

From the home page it is possible to access to the different device's screens, simply touching the displayed resource. The sensible areas (indicated in the image by red boxes) inside this page are:

1. Heat pump/chiller (for multi-circuit units only the I/O ports and the parameters of the first circuit can be displayed.)
2. Status system and mode system display
3. Fan coil (with a status message of dehumidification active mode)
4. Display of any active alarms in the system
5. Name of the keyboard (access to information on the firmware version)
6. Configuring the Ethernet network
7. Log-out (intermittent symbol if it's active)
8. Arrow of navigation, next page.

Graphically, it also contains information on the presence or absence of the following utilities:

9. Storage tanks (plant or if solar storage tank is present)
10. Radiant panels
11. Sanitary
12. Solar.

On the main screen, in fact, it appears only utilities present and properly installed in the network or the active warnings at the time of viewing.

If, for example, the network consists only of one or more chillers/heat pumps, without production of sanitary water and without storage tank, the screen shows graphically the presence of the chiller, but inside the house do not appear other objects; in this case the appearance is as below:

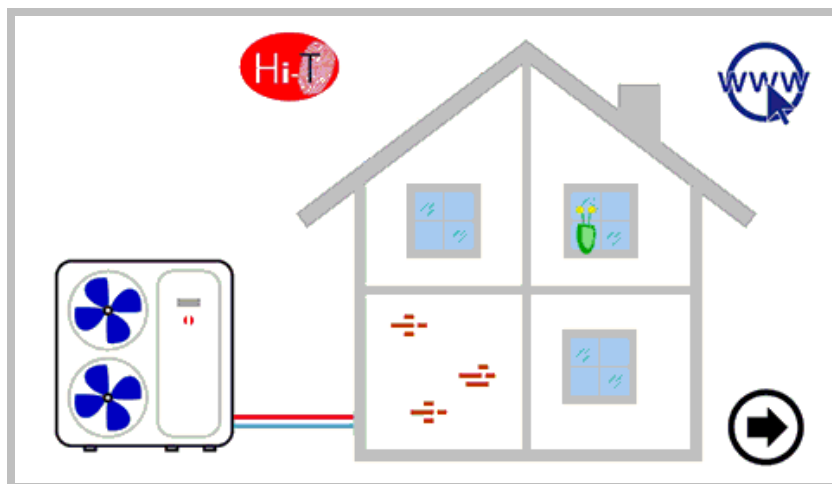






Figure 6. Home screen – only chiller is networked



Figure 7. Chiller/Heat Pump

Referring to the above figure, it is possible to obtain the following information:

- presence of chillers that are connected in the network (the chiller is correctly accepted when touching its figure you can access to the pages dedicated to itself);
- operating mode of the chiller (winter  summer  sanitary , **OFF** if any of the previous icons appears on the screen);
- operating status of the chiller (compressor running): the operation of the chiller shows graphically by the rotation of the fans 

Furthermore, the first home page can provide directly the following information, referring to fancoil units:

- Presence of fancoil units that are connected to the network, if the fancoil symbol appears on the display (Figure 8. Fancoil units connected to the network.);
- Fancoil units in dehumidification mode, if the symbol of the drops on the fan coil appears on the display (Figure 9. Fancoil units in dehumidification mode.).



Figure 8. Fancoil units connected to the network

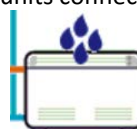


Figure 9. Fancoil units in dehumidification mode

3.4.1 CHILLER SCREEN/HEAT PUMP

From the main page, by pressing the chiller symbol (sensitive area number 1, Figure 5. Home page – indication meanings), you can access to the chiller page on network screen.

From here you can access to the information related to the operations of the chiller; then you can uniquely identify each chiller present by giving them names.

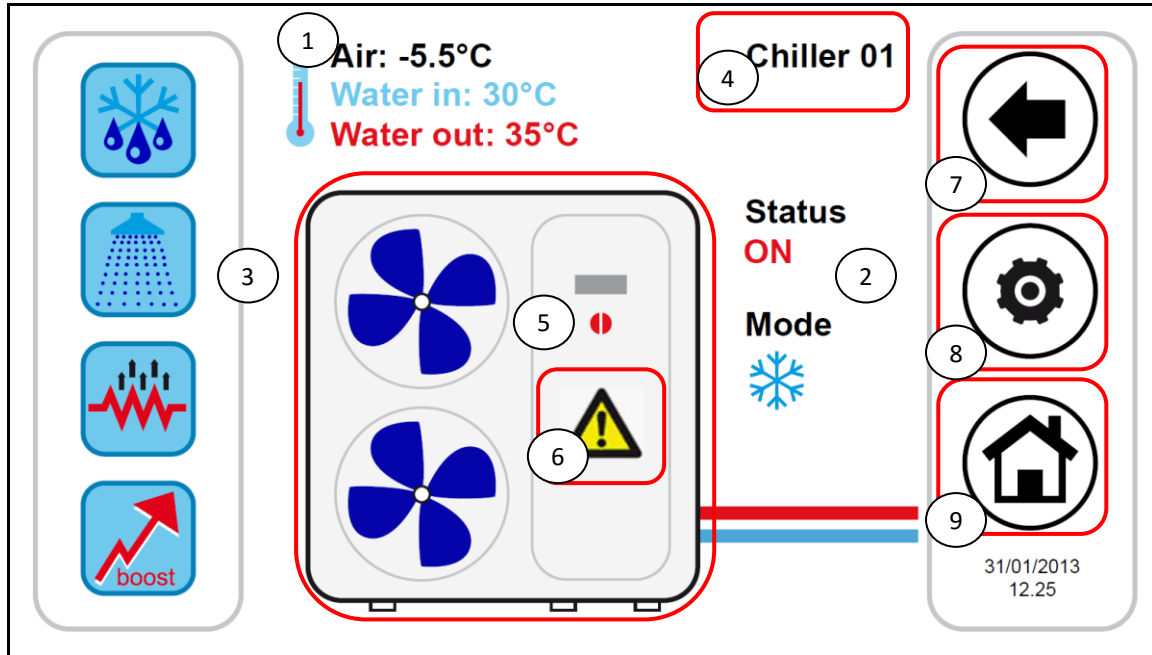


Figure 10. Chiller page – information and sensitive areas

The information in the chiller's page are:

1. Temperature detected by chillers (for a specific chiller):
 - a. Air temperature (°C)
 - b. Inlet water temperature (°C)
 - c. Outlet water temperature (°C)
2. Status and operation mode for a specific chiller
3. Active/activable functions (in the scroll bar on the left side of the screen)

Sensitive areas (indicated by red boxes in the figure) in this page are:

4. Chiller name (each time you press on it, you go to the next chiller installed in the network; otherwise, with a long press, you can rename the chiller)
5. Chiller/heat pump (with working signalling function given by the rotation of the fans); from here you access to an additional page of information about that specific chiller.
6. Active alarms of the displayed unit
7. Icons of the navigation sidebar
8. Icons of the navigation sidebar
9. Icons of the navigation sidebar

3.4.1.1 ASSIGNMENT OF NAMES TO THE CHILLERS

For the assignment of a name to given chiller, you must navigate between the pages of the chillers that are connected in the network until you get the page of the specific one that you want to change its name: for this purpose, you have to make a long press on the sensitive area 4. Once you find the chiller, press and hold for a few seconds in the same area 4. Then compose with the keyboard that appears the desired name.

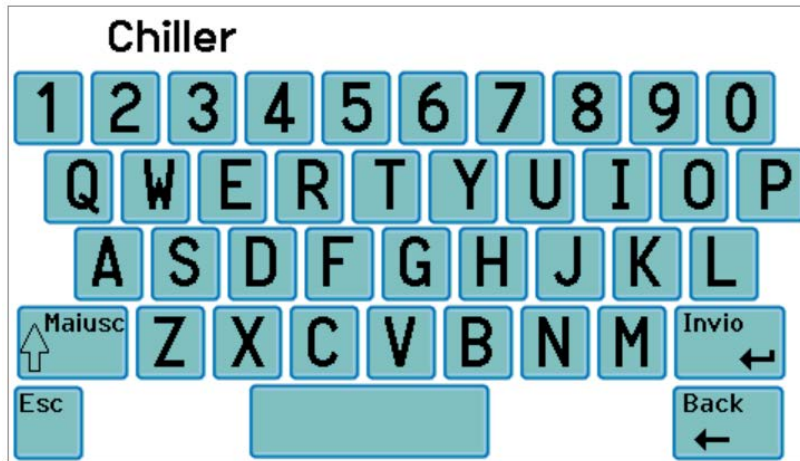



Figure 11. Insert chiller name


The name of the chiller can have a maximum of 13 characters.

3.4.1.2 CHILLER AREA

The area 5 shown in Figure 10 gives indications about the operation (compressor running) of the chiller, graphically displaying the fan rotation .

Press on the area 5 to get access to a further screen from which you can read the list of the real time data corresponding to the interested chiller such as:

- Inlet water temperature (°C)
- Outlet water temperature (°C)
- Sanitary probe temperature (if it's present and configured, °C).

Accessing the same page with service or manufacturer access right (to enable the access right, press on the “configurations” icon ) presents in the sensitive area 8 of Figure 10 and set the service/manufacturer password), the data displayed in real-time are:

- Inlet water temperature (°C)
- Outlet water temperature (°C)
- Sanitary probe temperature (if it's present and configured)
- High pressure (bar)
- Low pressure (bar)
- Compressor speed (Hz)
- Opening expansion valve (step)
- Fan speed (%)
- Pump speed (%)
- Overheating (°C)
- Compressor operating hours (Hr)
- Pump operating hours (Hr)

3.4.1.3 TOOLBAR CHILLER AREA

On the left scroll sidebar there are icons that symbolize the active/activable functions in the chiller taken into account. In particular:
 Colourful icon = function enabled,
 Lock icon = function configured on the machine but not currently active.

Below there is a table with icons that may appear in the scroll side bar.
 The presence/absence of a certain icon in the sidebar is depending on its function if enabled/disabled on the chiller.











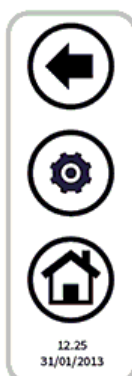
ORDER OF APPEARANCE	ICONS	FUNCTIONS
1		SANITARY HOT WATER
2		SANITARY INTEGRATION RESISTANCE
3		PLANT INTEGRATION RESISTANCE
4		BOILER ENABLEMENT
5		DOUBLE SET-POINT
6		DEHUMIDIFYING
7		SLAB FEATURE
8		DEFROST
9		ANTIFREEZE WATER
10		ANTIFREEZE TRAY RESISTANCE

Table 1. Order of appearance of the icons in the toolbar on the chiller

3.4.1.4 NAVIGATION AREA

In the toolbar which appears at the right side of the chillers' page, you have three icons for navigation between pages, as well as the date and time as shown below:



The first icon on the top allows you to return to the previous screen, the second allows you to enable maintainer/constructor access rights through a password to further information in real-time, the last returns to the Home screen.
 If an icon appears transparent, it means that is not accessible.

3.4.2 FANCOIL PAGE

From the main page, by touching the fancoil symbol (sensitive area number (3), Figure 5), you can access at the fancoils screen page in the network.

From this page of fancoils, you can display all information refeering to the operation of the individual fan coils, identified by the belonging's area and the identification number of each fancoil.

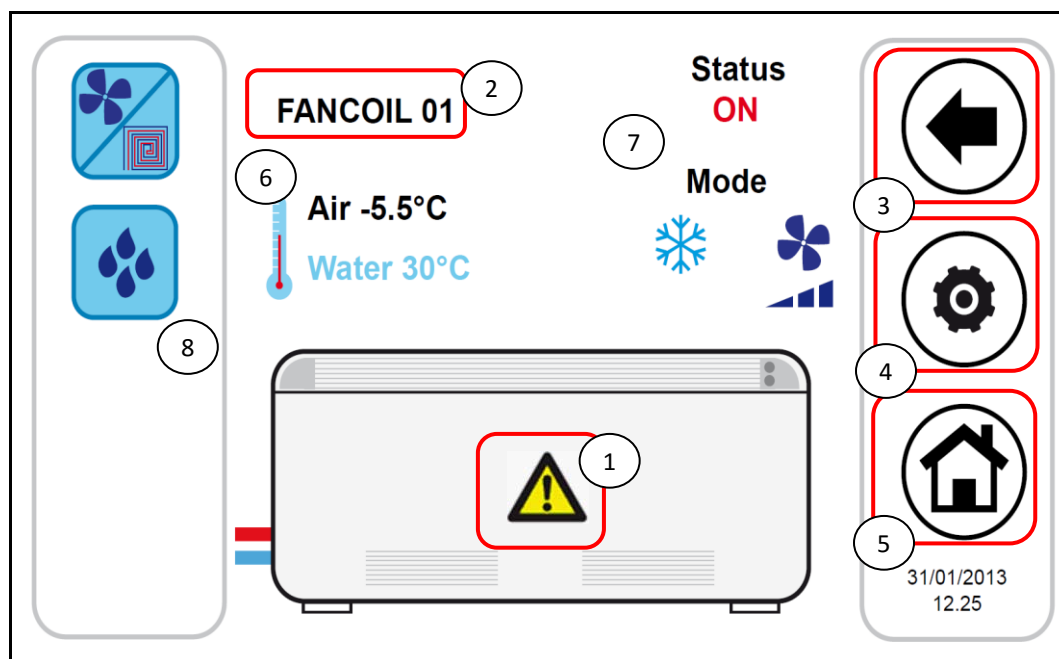


Figure 12. Information and fancoil page sensitive area

The sensitive area (indicated in the figure by red squares) in this screen are given below:

1. Active alarms of the displayed unit
2. Name of fancoil unit (the name, belonging zone and identification number of the fancoil will be displayed in this page, every time you press on the name area, you switch to the next fancoil unit on the network.
3. the name of the zone to which the fancoil belongs and the fancoil identification number are reported; every time you press the name area, you switch to the next fancoil unit on the network
4. 4. e 5. Navigation bar

The informations on fancoil page are given below:

6. Detected temperature in the fancoil zones (the average value of the fancoil temperatures in the area)
 - a. Air temperature (°C)
 - b. Inlet water temperature (°C)
7. Status and operating mode related to a specific fancoil (with fan speed)
8. Active and/or activable functions (in the bar of left scrolling)

By pressing on the configuration button (Sensitive area 4), you can get access to the fan setting. The fan setting can be changed for each zone, however if you change the fan setting of the fancoil number 1 of a certain zone, so this implies that the new setting will concer the entire zone. The fan setting page looks like this:

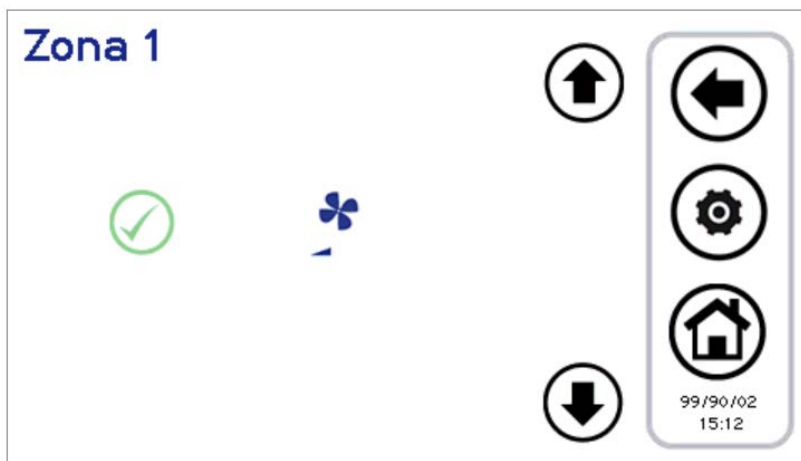



Figure 13. Fan speed configuration

The four slectable levels of speed:

- Minimum fan speed
- Medium fan speed
- Maximum fan speed
- Automatic fan speed (auto-mode)

To set the speed, use the up and down arrows buttons, and then press the green button  to confirm the selected speed.

3.4.2.1 BAR AREA OF FANCOIL FUNCTIONS

In the left scrollable sidebar, there are icons indicating the active and/or activatable functions for the considered fancoil unit. In particular:

Colored icone = active function,

Fuzzy icone = configured function but note active.

Herein below is reported a table with icons that may appear in the scrollable sidebar.

The presence/absence of the icon in the sidebar depends on the status of its corresponding function if enabled/disabled and if available on the fancoil unit.




ORDER OF APPEARANCE	ICONE	FUNCTION
1		WINDOW CONTACT
2		DOUBLE SET-POINT
3		HUMIDITY CONTROL

Table 2. Order of appearance of the icons in the fancoils function's bar

3.4.3 Touch Screen AREA



Pressing on the sensitive area 5 of Figure 5, you have access to a screen showing the version and the date of release of the firmware installed.

3.4.4 ETHERNET CONNECTION CONFIGURATION



Pressing on the sensitive area 6 of Figure 5, it appears the page:

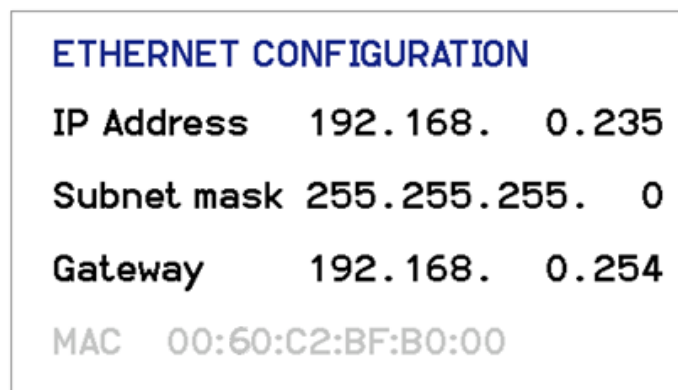


Figure 14. Ethernet network configuration page

On this page there are the addresses for the configuration of an Ethernet connection.

A parameter is present to also assign the connection port (parameter 65, port 80 default).

Logging in with maintainer/manufacturer permission, you can change the default addresses.

It's implemented a local web server to access to the Touch Screen from local area network with a HTML 4.01 compatible browser (see Paragraph 5.2).

3.5 SECOND MAIN PAGE

From the home page, touching the arrow icon to accede to the next screen, you can get access to a second screen of all measurements carried out by the temperature sensors and humidity sensors in the system.

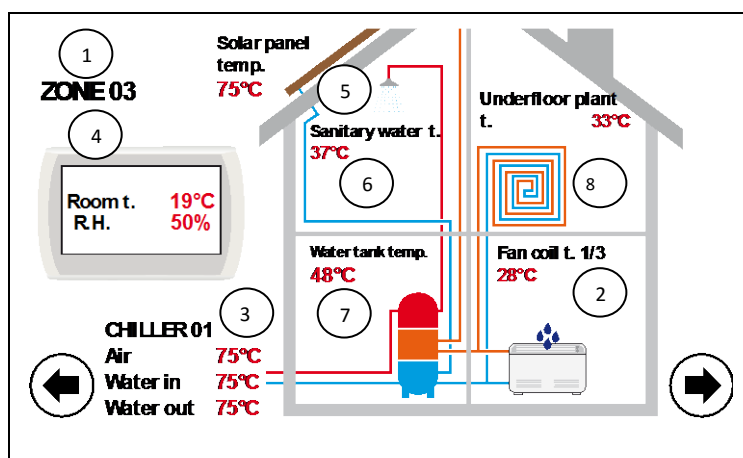


Figure 15. Second Main page

Referring to the figure above:

- The field 1 indicates the zone to which you are referring. When pressing on it, you enter in the next area, scrolling cyclically through the setting zones.
- The field 2 indicates the fan coil which is referenced within the zone selected from the field 1; pressing on it the index of the selected zone progresses in a cyclic manner, giving away all the fan coil units in the area. For each fan coil is shown the detected air temperature. These indications appear only if there are fan coils configured in the system.
- The field 3 indicates the chiller which it refers; by pressing on it, you progress to the next chiller in the network. For each chiller shown, you see the readings on the temperature of the water inlet and outlet of the chiller and on the air temperature measured by the probes on board.
- The field 4 shows the ambient temperature and the relative humidity measured by the sensors integrated in the Touch Screen panel.
- The field 5 indicates the presence of the solar system; then the indication on the temperature of the solar panels is shown. These indications appear only if in the system is configured a solar panel.
- The field 6 shows the enabling of domestic hot water production related to the selected chiller. It indicates the temperature of the domestic hot water.
- The field 7 indicates the presence of a storage tank connected to the selected chiller. The display will show the temperature of the plant storage tank when enabling the water plant remote sensor. Whereas it will show the temperature of the DHW tank if the hot water production is activated.
- The field 8 indicates the presence of radiant floor; this field is connected to the enablement of double set –point function.

In the case of faulty sensors or if are not properly configured and/or connected, it will appear the indication of error.

Note: The presence of DHW tank is referred to the fact that in the network is present a heat pump enabled in the DHW mode.

3.6 HOME SYSTEM

From the second page, touching the arrow icon to navigate to the next screen, you go to a third screen for general settings, the "system main page", showing the following functional icons:

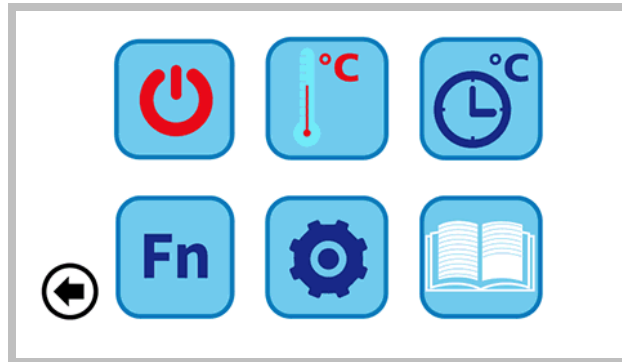


Figure 16. System main page


Above, from the left to right:

- 1) STATUS SETUP;
- 2) SET-POINT SETUP;
- 3) PROGRAMS AND CHRONO-THERMOSTAT.

In the bottom, from the left to right:

- 4) SPECIAL FUNCTIONS;
- 5) CONFIGURATION;
- 6) HELP MENU.

3.6.1 STATUS SETUP PAGE

Press the button  to enter into "Status setup" page.

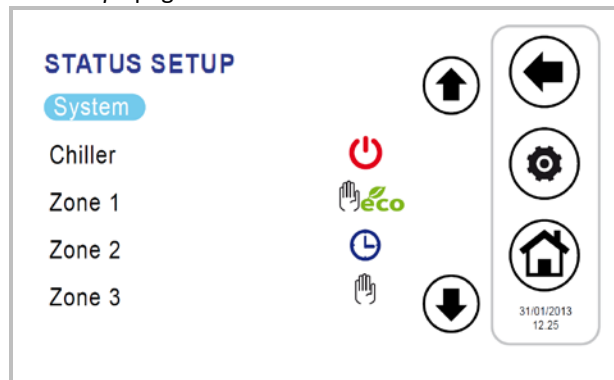



Figure 17. "Status setup" page

Pressing on "System" voice, you can set the status of the entire system, otherwise you can act on individual unit.

3.6.2 SET-POINT SETUP PAGE

Press the button  to enter into "Set-point setup" page.

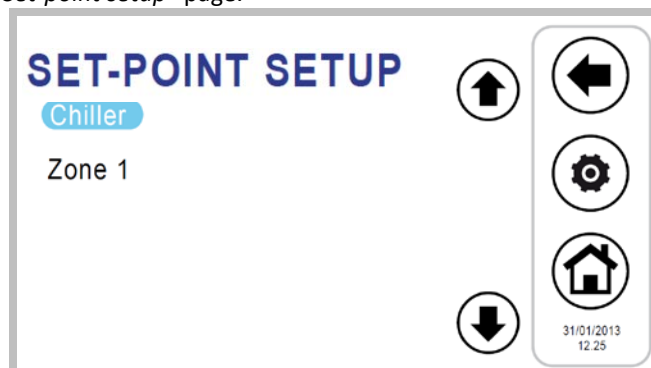



Figure 18. "Set-point setup" page

From this screen you can set the chiller’s parameters and also configurate the fancoil zones. If enabled, you can also set the sanitary hot water setpoint (see Paragraph 4.7.3) and for rapid DHW preparator, the second set-point (see Paragraph 4.10) and the offset for the climatic compensation (see Paragraph 4.11). It is also possible to set the set during use as a room thermostat.

3.6.3 PROGRAMS PAGE (CHRONOTHERMOSTAT)

Press the button  to enter into "Programs" page.

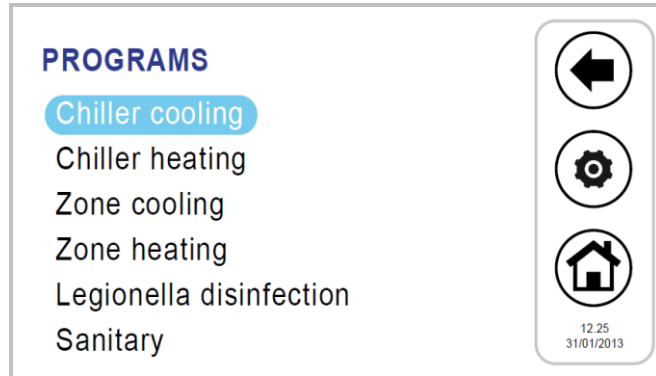




Figure 19. "Programs" page

From this page you can set separately the weekly program of each chiller and zones of fancoils. You can also program the legionella’s cycle and the production of hot water, if enabled (see Paragraph 4.7.4).

3.6.4 SPECIAL FUNCTIONS PAGE

Press the button  to enter into "Special Functions" page (see Paragraph 4.14).

3.6.5 CONFIGURATION PAGE

Press the button  to enter into "Configuration" page.

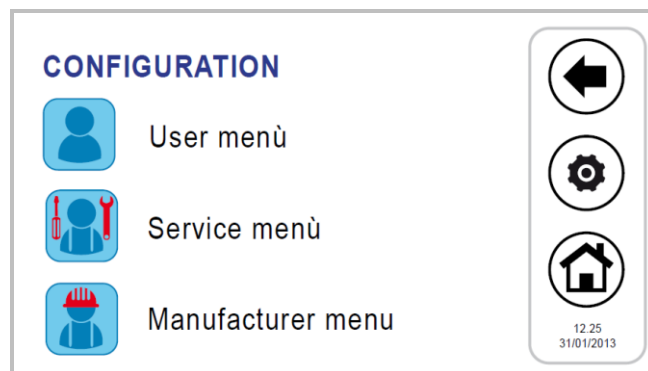


Figure 20. "Configuration" page

From the configuration screen, you can access to the User-Setup menu, to the service menu and to the manufacturer menu. Press on each of these items; it will appear a numeric keypad for entering a password.

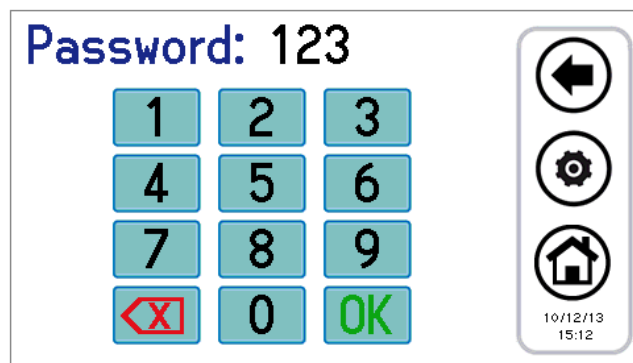


Figure 21. Password entry

The user password is set by default to "0" (modifiable).

3.6.5.1 USER MENU – KEYBOARD SETUP

To access the user menu you have to set the user password (modifiable): **0**.

From here you can:

- Set the date and the hour by pressing on "Clock" key (it appears on the screen shown in Figure 22);
- Set the language by pressing on "Language";
- Access to the setup of the keyboard, pressing on "Parameters".



Figure 22. Date and hour page settings

It is possible to change the setup of the keyboard according to the parameters shown in the following table:

N.	PARAMETERS NAME	UNIT	DEFAULT VALUE	MINIMUM VALUE	MAXIMUM VALUE
1/3	User password	Numb	0	0	999
2/3	Idle Backlight intensity	%	5	0	100
3/3	Screensaver unlock Psw	Numb	0	0	999

Table 3. User's parameters menu (keyboard setup).

To change the value of a parameter:

- Enter in "Parameters", use the up and down arrows to scroll through the pages of the parameters, until you find the desired parameter;
- press on the currently set value;
- the present value turns red to indicate that it can be changed by using the up and down arrows;
- Select the desired value and press the confirmation tick (✓).

Note: If you press outside the confirmation area, it returns again the previously value.

3.6.5.2 SERVICE MENU

In order to access to the menu, you must set the service password.


From here you can:

- configure the network, by pressing on the button "Address configuration";
- configure zones, by pressing on the button "Area Configuration";
- access to service's parameters Chillers, Touch Screen and fancoils, pressing on button "Parameters";
- Access to the alarm history, by pressing on "Alarm list".

The screens shown are as follows:

1. Address configuration
 - 1.1. Addresses assigns
 - 1.2. Scan network
2. Configuration of zone
 - 2.1. Zone 01
 - 2.2. Zone 02
 - 2.3. Zone xx
3. Maintenance parameters
 - 3.1. Chiller
 - 3.1.1. Chiller 01
 - 3.1.2. Chiller 02
 - 3.1.3. Chiller xx
 - 3.2. Keyboard
 - 3.3. Fancoil
4. Alarm list

To change the value of a parameter:

- Enter in *Parameter List*, use the up and down arrows to scroll through the pages of the parameters, until you find the desired parameter;
- press on the currently set value;
- the present value turns red to indicate that it can be changed by using the up and down arrows;
- Select the desired value and press the confirmation tick .

Note: If you press outside the confirmation area, it returns again the previously value.

3.6.5.3 MANUFACTURER MENU

To access to the manufacturer menu you must set the manufacturer password.

From here you can:

- access to the manufacturer parameters of the chiller, by pressing on "Chiller" button;
- Access to the manufacturer parameters of the Touch Screen, by pressing on "Keyboard"

3.6.6 HELP PAGE



On the instructions are given guidance on the meaning of the buttons; in the list that appears, for each icon is indicated its function.

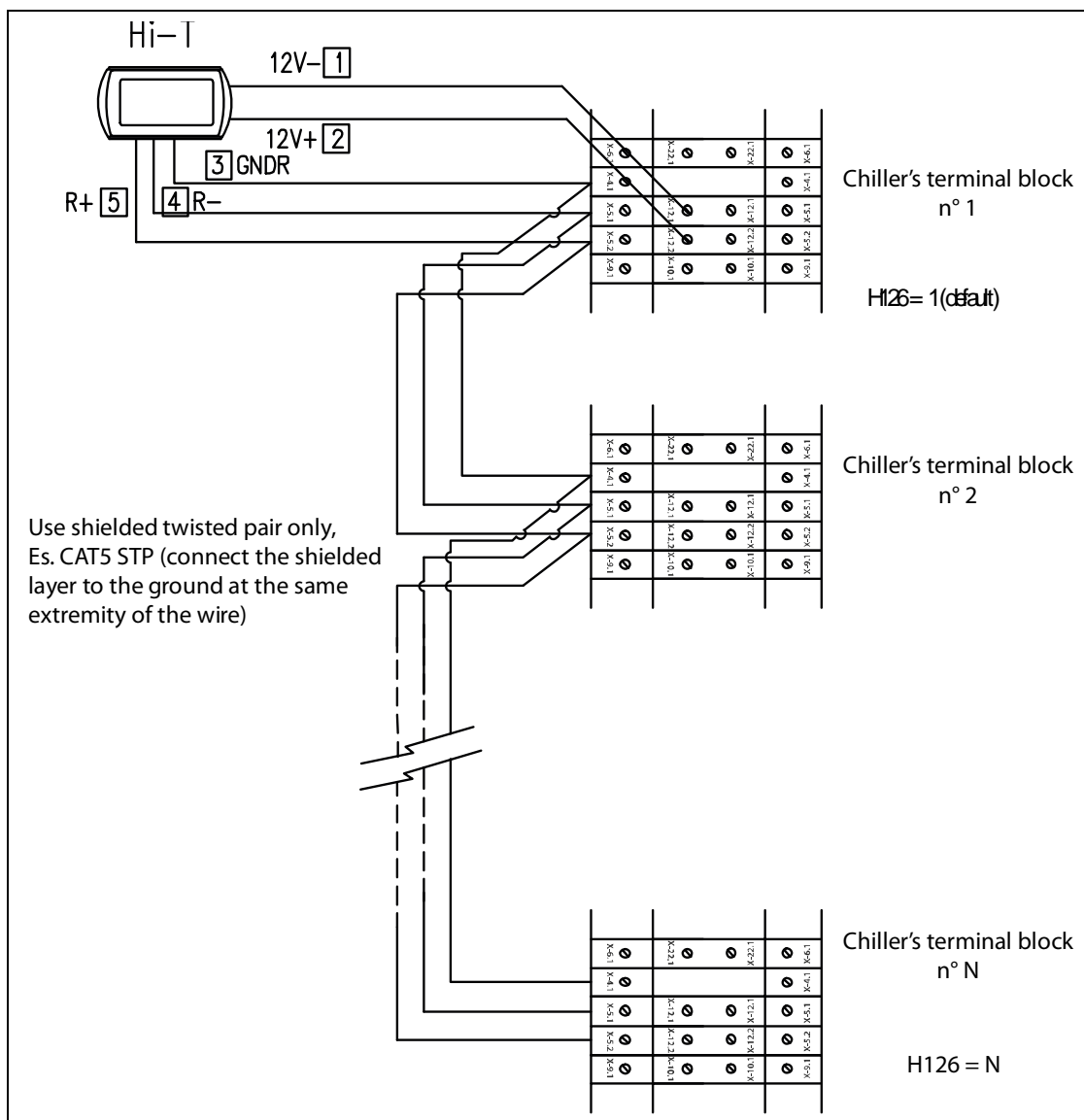
4 MACHINES STATUS AND FUNCTIONS

4.1 NETWORK MANAGEMENT

A network managed by the remote control Touch Screen can be composed of a maximum of 7 chiller/heat pumps and a maximum of 80 fancoil units. For what concerns the configuration of the network, you have the following functions as indicated below:

- fancoils addressing procedure;
- automatic scanning of the network to discover devices;
- radiant panel's management (according to the set-point).

4.2 REMOTE CONTROL CONNECTION WITH MULTIPLE CHILLERS IN THE NETWORK



In the each on-board control panel, set the chiller (parameter **H126**) as described above.

Then connect the chiller and the remote control Touch Screen as shown in the drawing.

In the remote control Touch Screen, by setting the parameter **Par 8/65** (*Configuration- > Service Menu > Keyboard*) related to the number of chillers in the network, you can configure the network: with **Par 8/65 = 0** all the chiller in network feature a similar operation (parallel operation, according to a single set point), while whit **Par 8/65 ≠ 0** we have a decalibration on the steps of the chiller set point, allowing a cascade operation. In particular, the parameters to be set in a network of the chiller to be configured in a cascade are:

- **Par 8/65**: number of chillers in the network (for cascade operation);
- **Par 9/65**: Rotation period (for cascade operation);
- **Par 10/65**: (default 2.0°C): differential chiller (for cascade operation).

In the case of cascade configuration (**Par 8/65 ≠ 0**), the set point of each chiller is changed by a multiple value of the parameter **Par 10/44** (°C) (differential chiller), according to a step-decalibration. After each period equal to **Par 9/65** minutes, the priorities for the

intervention of the chillers change, by rotating the decalibration of the set point of the chillers, in order to balance the load on the various machines. If a chiller is in alarm, it is excluded from the regulation. By default **Par 8/65=0**.

4.3 CHILLER/HEAT PUMPS MANAGEMENT

Up to 7 chiller HP_POWER series can operate by mean of the Touch Screen remote control panel. The main functions that can be regulated are:

- ON/OFF controlling;
- Change of season (summer, winter, summer with sanitary mode, winter with sanitary mode, sanitary mode);
- Set-point setting;
- Display current alarms;
- Alarm history residing in the keyboard with the date and the time of the event;
- Access to the parameters of the chiller (password protected);
- Display of the main statuses of the chiller;
- Weekly programming in summer, winter, sanitary mode and of the legionella disinfection cycle.

4.3.1 ENABLING INDIVIDUAL CHILLER FOR SANITARY WATER PRODUCTION

Among the chillers (in the network) that are enabled to produce DHW water, you can choose using the appropriate sub-menu in "Status setup", which of these may participate in the sanitary production (see Paragraph 4.7.2). Only those selected will be enabled to the production of sanitary water, all the others are used exclusively for the plant.

4.4 MANAGEMENT OF FANCOIL UNITS (inactive)

With the "Touch Screen" remote control panel, we can manage up to 80 fancoils, with a maximum number of 9 zones. Note that, the fan coil settings can be done for individual zones (not for individual units). The main functions that can be set are given below:

- ON/OFF (of the system and/or of the zone with relative scheduler);
- Season (of the system);
- Fan speed (fancoil of the zone);
- Dehumidification control.

The set-point will be sent also to the fan coils of the belonging zone. Note that, a correction can be done locally by mean of the fancoil's knob.

4.5 INITIAL CONFIGURATION PROCEDURE OF "Touch Screen" REMOTE CONTROL PANEL

Note: To make easy the installation and utilization of the remote control panel for water terminal units management, it is recommended to separately power on the water terminal units (fancoils); each terminal unit must be intercepted from its proper disconnecter.

4.5.1 ADDRESSING

During the first startup step, it is necessary to power on separately each water terminal unit. The addressing process takes place respecting the following steps:


1. A unique addresses should be assigned to each water terminal unit on the network, to do this, you can use the dip switches (first valid address is the value 10).
In the case of addressing beyond the value 32, it is necessary to set an address lower than 32 using the dip-switches and acting on the parameter 23 of the concerned fan coil. Once the parameter has been configured, it's recommended to set the dip switches in a definitive way and restart the water terminal unit.
2. Each fancoil (water terminal unit) must have a unique address. It is important to assign consecutive addresses to the fancoils of the same zone (eg if there are 3 fancoils inside the same hall and if you want to associate them to a single thermal zone called for example **ATRIO**, you need to assign to fancoils a series of addresses from 10 to 12, etc.);
3. Once all the fan coils have been configured, should be powerd on;

4.5.2 NETWORK SCANNING

One the addressing has been done for each fan coil, it is necessary to perform a network scanning to check if all the fancoils are correctly recognized. To do this, it's recommended to:

1. Power on all the fancoil units;

From the main page of the system, press on the following button  to enter in the "Configuration" page;

2. Press then on the button  to enter in the "Service menu";
3. Introduce the service password and press on the confirmation tick;
4. Enter in "Network scanning";
5. Press the confirmation tick near the word "Start:" and wait the system to scan the network;
6. At the end of scanning phase, the system should find all the chillers (max 7 in cascade) and all the fancoil units of the same network. If the number of fan coils found does not match with those installed, so the wiring is not done correctly.

In the case of disconnection from the network of one or more fan coils that were correctly addressed and detected (for example in case fancoils' power supply failure), the centralized remote controller proceeds with updating the number of fancoils actually in operation in the system with a delay of 2 minutes from the occurrence of the failure, after update, an error message will be displayed. When the disconnected fan coils are reconnected, the centralized remote controller recognizes them automatically, preserving the previous settings.

4.5.3 ASSIGNMENT OF THE FANCOILS TO THE ZONES AND ZONE NAME CUSTOMIZATION

To associate the fan coils to the desired zones, it is necessary to follow the below procedure:

1. enter in the "Configuration" page and from there in the "Service Menu" following the same procedure as in Paragraph 4.5.1 (points 2-4) and select the "Zone configuration" voice;
2. Presse on "Zone 1";
3. press on the second line where the actual name "Zone 1" appears and change the name of the zone using the keyboard which appears on the screen (you can enter a maximum of 9 characters);
4. to confirm the new name press "Enter", otherwise on "Esc" key;
5. press on the value that appears in correspondence with the voice "From" (the value is highlighted in red);
6. use the arrows keys to select the address of the first fancoil of the zone that you are configuring;
7. press on the confirmation tick ✓;
8. press on the value that appears in correspondence with the voice "To" (the value is highlighted in red);
9. use the arrows keys to select the address of the last fancoil of the zone that you are configuring;
10. press the confirmation tick ✓;
11. repeat the operations from number 2 to number 10, applying the same procedure to the other zones that you want to configure

4.6 SOLAR MANAGEMENT


This function is not totally configurable by Touch Screen controller. It is necessary to act directly on the chiller/heat pump on-board controller only if present expansion module by setting the parameters **H85** to be **39**, **H86** to be **38** and **H103** to be **30**. The final enablement becomes by configuring the parameter **S01** to be 1 and configuring the relative **S** parameters also by mean of the Touch Screen remote controller.

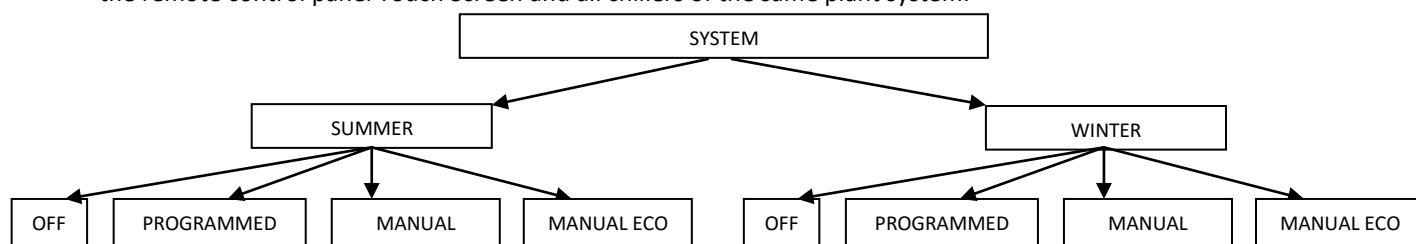
4.7 ASSOCIATES UNIT OPERATION

4.7.1 ON/OFF

After have benn performed the configuration of the zones and once have been associated with the fan coils, you can proceed to the "first start" of the connected units. You can turn on or off with a single tap the whole system headed by a single keyboard Touch Screen; otherwise you can individually turn on the chiller and also manage individually the zones.

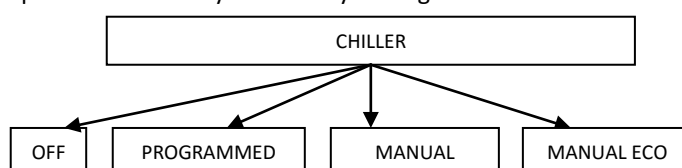
For operate the entire system:

1. from the main page of the system, go to "Status setup" ;
2. in the menu that appears are listed: SYSTEM, CHILLER, nth ZONES.
3. Push on "System" and with a single operation, you can turn on or off all the fan coil units of all zones that are connected to the remote control panel Touch Screen and all chillers of the same plant system:



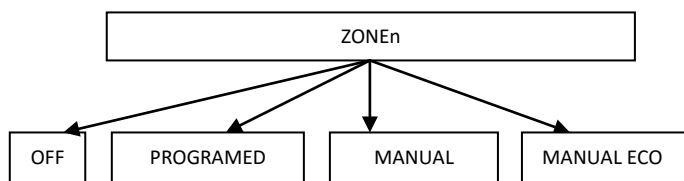
With "Manual" and "Manual eco" the set-point temperature set in the menu "Set water" and "Set water eco" is activated; they respectively correspond to the temperature of "normal" operation (1st set-point) and to the working temperature during the energy-saving operation (set-point economy) of various zones/locales.

By accessing "Set Status" and press on "Chiller" you can only manage the chiller interested in:



With "Manual" and "Manual eco", the set-point temperature set in the menu "Set water" and "Set water eco" is activated; they correspond respectively to the temperature of the outlet water during normal operation and during the energy-saving operation (Ex: in summer mode "Set water" might be 7°C, while "Set water eco" could be 10°C).

After getting access to "Status Setting" and pressing on "ZoneN" it is possible to control differently each individual zone (for example, the control of zone 1 is not a sufficient condition for starting up the chiller if it is already in off mode):



With "Manual" and "Manual eco" the set-point temperature set in the menu "Set water" and "Set water eco" is activated; they respectively correspond to the temperature of "normal" operation (1st set-point) and to the working temperature during the energy-saving operation (set-point economy) of various zones/locales.

Once you have set the status, in the "Set Status" the following icons may appear in the coincidence of the unit/zone set:



Another way to set only certain zones/units in a given status can be as follows:

1. set "System" in the manual, manual eco or programmed mode;
2. put off units/zones that you do not want to activate.

The icon of "inactive thermostat" indicates the status of the ambient thermostat function of the Touch Screen control panel. To enable the thermostat function, press the corresponding icon. For the settings related to the function please refer to paragraph "AMBIENT THERMOSTAT".

Note: Once the status is set from the "Touch Screen" control panel, you must wait a minute to ensure that communication with the on-board control of the units in the network is going and the units themselves are activated in the set status.

4.7.2 ON/OFF SANITARY MODE

If the DHW mode is enabled (from Home -> Configuration -> Service Menu -> Parameters -> Chiller -> Chiller name -> **H10**: sanitary presence = 1), in "Status setup" also appears the word "Sanitary mode". From here you can decide which chiller to enables to produce the domestic hot water:

1. Enter the "Settings status", then in "Sanitary mode";
2. On the next screen select "All" to enable all the chiller to the production of sanitary water, or select only the chiller interested in this production (the other will be used exclusively for the plant);
3. Confirm by pressing the confirmation tick in the upper right area;

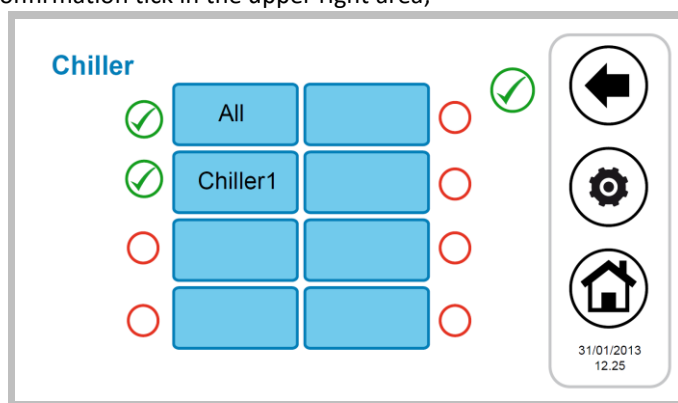
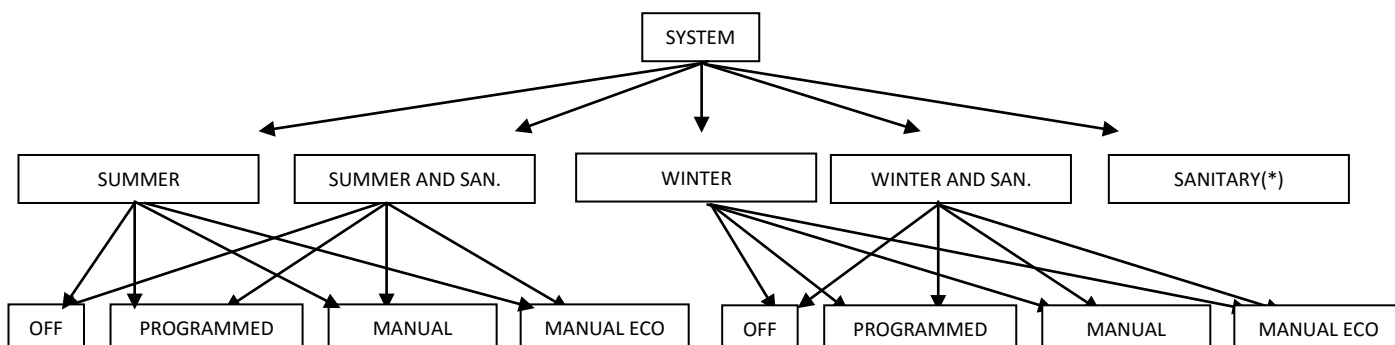


Figure 23. Chiller choice for sanitary water

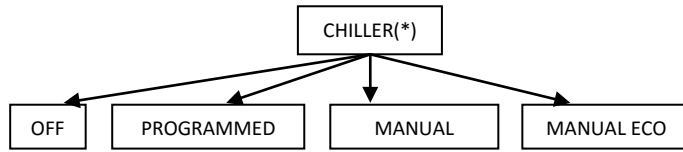
4. In the "System" menu (system main page -> "Status setup" -> "System"), with the sanitary mode enabled by the parameter **H10**, it appears also the words "Winter and san", "Summer and san", "Sanitary".



- If the status of the system is set to "Summer and san" or "Winter and san", the priority is given on the production of domestic hot water; therefore the system goes first in domestic hot water production, when the sanitary is satisfied, the system switches the mode to summer or winter operation.

(*) If from: System main page -> "Status setup" -> "System" you select only the "Sanitary":


to put the sanitary in "OFF" or "Programmed" or "Manual" mode, then go to "Status setup", enter to "Chiller" and from there select the status (in this case both "Manual" and "Manual eco" set the chiller in the sanitary manual mode).



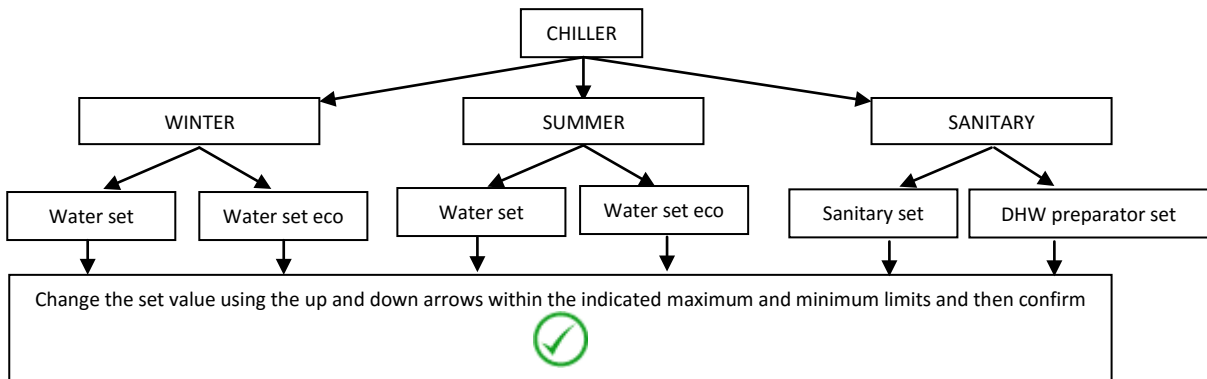
Note: Once the sanitary status is set from the "Touch Screen" control panel, you must wait a minute to ensure that communication with the on-board control of the units in the network is going and the units themselves are activated in the set status.

4.7.3 SETTING OF THE SET-POINT

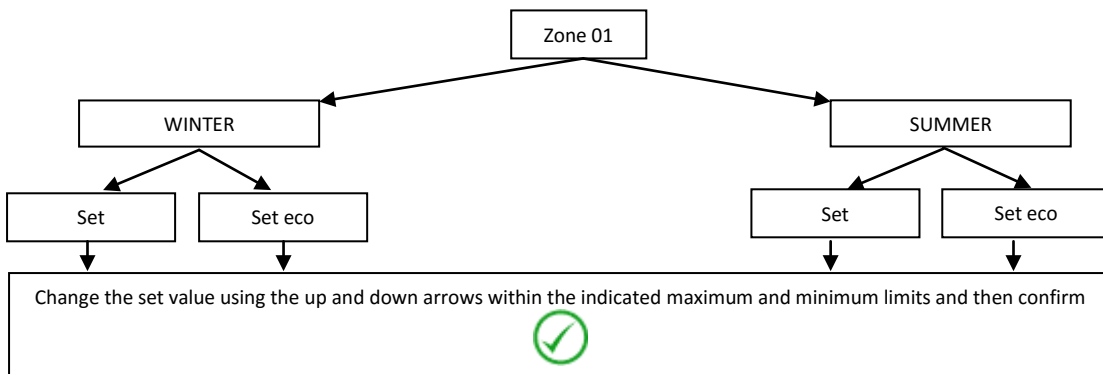
Management procedure of the set point of the different zones and chillers:

- from the system main page, go to "Set-point setup" ;
- at this point, you find a list of assigned chillers and the areas there were previously assigned:
 - CHILLER
 - ZONE1
 - ZONE2
 -
- select chiller or zone of consideration;
- possible settings are "Winter", "Summer", "Sanitary" for the chiller, "Winter" and "Summer" for the fan coil zones:

CHILLER

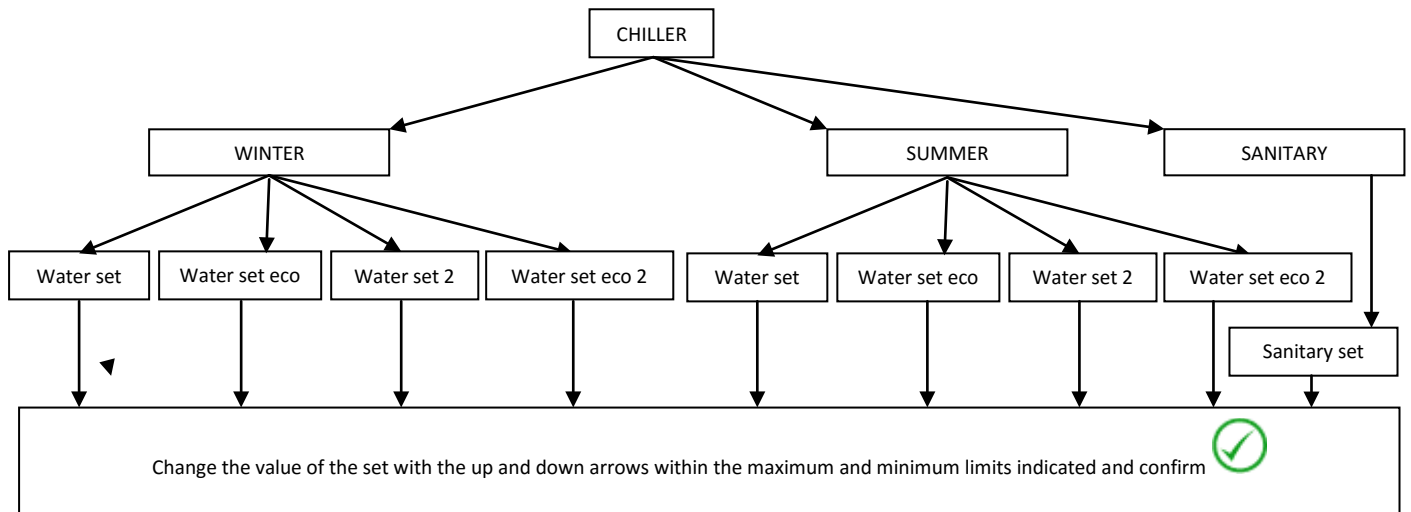


ZONE n




If the double set-point function is enabled (from Home System -> Configuration -> Service Menu -> Parameters -> Chiller -> Chiller name -> H129: Enable second setpoint = 2, or 3, or 4), (see Paragraph 4.9), the possible settings for the chiller are:

DOUBLE SET-POINT



4.7.4 PROGRAMS SETUP (CHRONOTHERMOSTAT)

The chronothermostat programming takes place separately from chillers and fancoil terminal units: so it is necessary to program both the switching on and off of the chillers, and the switching on and off of the zones to which the fan coils are associated; the starting-up of a programmed zone is not a sufficient condition for the startup of the in parallel connected chiller(s) to the plant.

From the main page of the system, go to "Programs" ;

Now you can choose between 4 programs:

- "Summer Chiller", to set the weekly time programming of chillers in cooling mode;
- "Winter Chiller", to set the weekly time programming of chillers in winter mode;
- "Zones summer", for setting the weekly program of the zones in summer mode,
- "Zones winter", for setting the weekly program of the zones in winter mode

In addition, if is enabled the sanitary mode (from System main page-> Configuration -> Service menu -> Parameters -> Chiller -> Chiller name -> H10: sanitary presence = 1), you can access to two other programs:

- "Sanitary mode" to set the weekly time programming mode of the chiller in sanitary mode.
- "Legionella disinfections" to set the weekly time programming of the legionella disinfection cycle.

4.7.4.1 WEEKLY CHILLER PROGRAMMING

For the chiller can be defined on the seven days, independently and with minimum steps of 15 minutes, the status of operations:

- Off
- Normal operation (use of normal water control set)
- Economical operation (use of the set of economic regulation of water)

The weekly programming in summer operation is distinct from that one in winter mode.

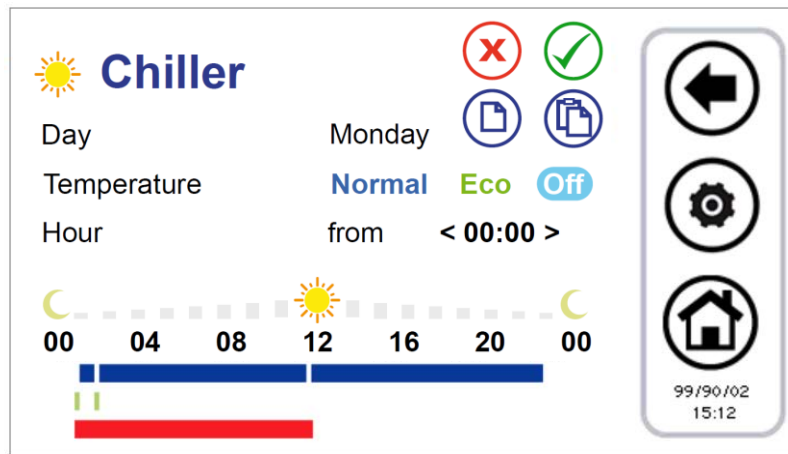


Figure 24. Chronothermostat, "Summer Chiller" page

1. Scheduling of a day time-line:

- press on the day currently displayed to move to the next days and select a day;
- choose if you want to set the way of operation in normal mode (press "Normal"), or Economy (press "Eco"), or if you want to set to Off (press "Off");
- check that after "Hour" appears the word "From" (if appears instead the word "To", you need to press it once to display the word "From") and select the hour and minute (the minimum allowable variation is 15 minutes) for the beginning of the time period;
- press once on the "From" in a manner that appears the word "To" and select the hour and minute (the minimum variation permitted is 15 minutes) for the end of the time period;
- confirm the single time period pressing the green symbol of confirmation ✓;
- afterwards you can observe that, correspondingly to the selected time period, you will see a time-line bar of the colour of the type of the selected set (if normal blue, green when in economy mode, no bar in "Off");
- repeat the above steps for all the time slots that you want to set on that particular day.
- To exit and save changes you have made (on the whole program, for all week), press the <ESC> ⬅ button, while if you press the <Home> 🏠 button, you will exit without saving the changes.

2. It is possible to copy the programming for a particular day in another day; to do this:

- select the day you want to copy the scheduling;
- press the copy icon 📄;
- select the day on which you want to copy the scheduling;
- press the paste icon 📄.

3. It is possible to erase the programming of certain day or of all days, to do this:

- press the delete icon ✖;
- at this point a screen will appear where you can select individual days to delete or select all the days;
- to confirm your selections, press the confirmation tick ✓ on the top right side.

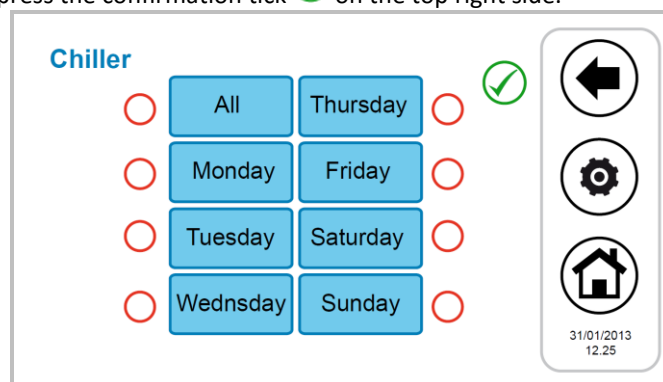


Figure 25. Chronothermostat, erase programming page

The chronothermostat (configuration page) colourful time-lines shows: the blue time-line indicating normal operation, the green time-line indicating the economical operation, the red time-line indicating the time in which the legionella cycle is programmed (thus the machine in that condition may be active even if the scheduler is set to Off).

4.7.4.2 WEEKLY PROGRAM SANITARY WATER PRODUCTION

In a similar way to what is reported for the settings on the chronothermostat of chillers and fan coils, you can define when to enable the production of sanitary hot water (by setting the individual days of the week, with a minimum step of 15 minutes). The settings that you can do are:

- Normal: Enable function;
- Off: Disabled function.

To set the programming, go to "Programs" -> "Sanitary" (the word "Sanitary" appears only if you have enabled the sanitary mode: System Main -> Configuration -> Service menu -> Parameters -> Chiller -> Chiller name -> **H10: Sanitary presence = 1**).

The procedure for configuring the programmable chronothermostat is therefore similar to those described above, with the only difference that the choice of the operation is only between "Normal" and "Off" (see figure below).

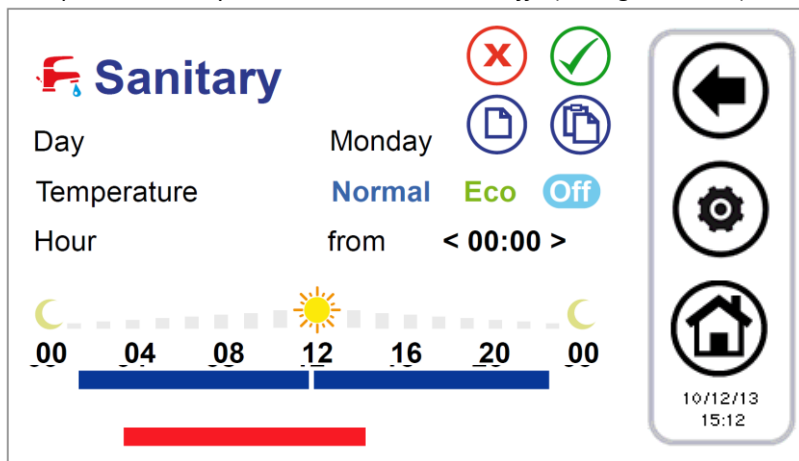


Figure 26. Chronothermostat, "Sanitary" page.

In the period when the function is active, the machines enabled to produce sanitary water are placed in the seasonal operation of the plant scheduled by the plant scheduler with the addition of the sanitary mode, that is, respectively:

- Summer + sanitary
- Winter + sanitary
- Only sanitary

4.7.4.3 ZONES AND FANCOILS WEEKLY PROGRAM

In a similar way to the scheduling of the chillers, it is possible to set the "weekly program" of each individual zone independently of the summer and winter seasons, with a resolution of 15 minutes.

The possible settings are:

- Zone in off mode;
- Zone in normal operation (normal room set-point temperature);
- Zone in economic operation (economic room set-point temperature)

Therefore entering the "Summer Zone" or "Winter Zone" the list of all the configured zones is displayed. At this point it is necessary to select the zone that you wish to set; the chronothermostat configuration procedure is then the same as that already reported for the chillers. In fact, the graphical appearance and functionalities of the page are identical to those already described.

4.7.4.4 LEGIONELLA DISINFECTION WEEKLY PROGRAM FUNCTION

If the sanitary function is enabled (from system main page -> Configuration -> Service menu -> Parameters -> Chiller -> Chiller name -> **H10: Sanitary presence = 1**), you can program the hours of the individual days of the week for activating the cycle of anti-legionella disinfection.

You select only the starting time (with 15 minutes steps), since the duration of the cycle is defined by a parameter with maintainer access rights (System main page --> Configuration -> Service menu -> Parameters -> Keyboard -> **Par 31/65: Legionella disinfection enable time**).

To carry out the programming you must enter into "Programs" -> "Legionella disinfection"; the procedure is simple because you have to select only the starting day and hour for the cycle (see the below figure).

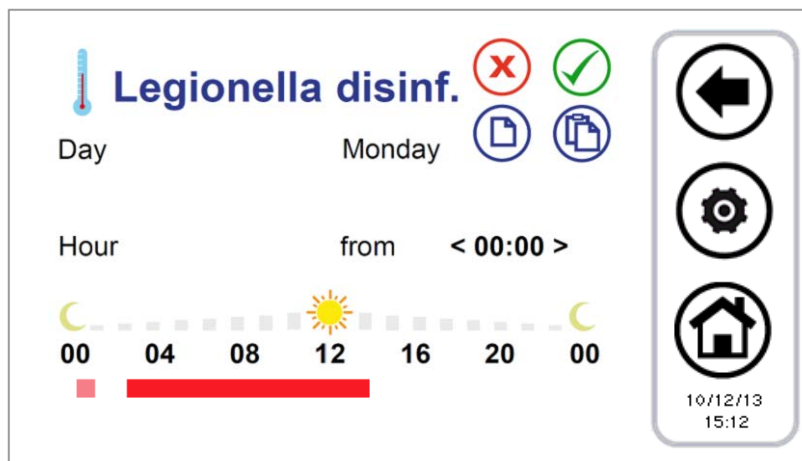


Figure 27. Chronothermostat, "Legionella disinfection" page

The set timeline appears red-colored.

The pink line shows the eventual setting of the previous day that overruns in current day because the duration exceeds the midnight.

It is necessary to enable the electric heaters in sanitary integration, by setting the parameter **R15 = 1**.

OPERATION:

- When anti-legionella cycle is expected, the heat pump unit changes automatically into sanitary mode in order to reach the setting values of the parameter **R27** (50°C.)
- When the DHW temperature sensor meets the value of **R27**, the compressor will stop operation and the DHW electric heater (DO = 26) will start after **R16** (1min).
- The DHW electric heater turns off if one of the following conditions is fulfilled:
 - The DHW temperature sensor detects a temperature = **R25** (80°C), hysteresis 'cut-on' of 1°C.
 - The finishing of the programmed cycle.

4.7.5 AMBIENT THERMOSTAT

The "Touch Screen" control panel can operate as a typical ambient thermostat.

The ambient thermostat function, for each zone will be enabled/disabled, using the corresponding button at the bottom of the screen of the zone status setting.

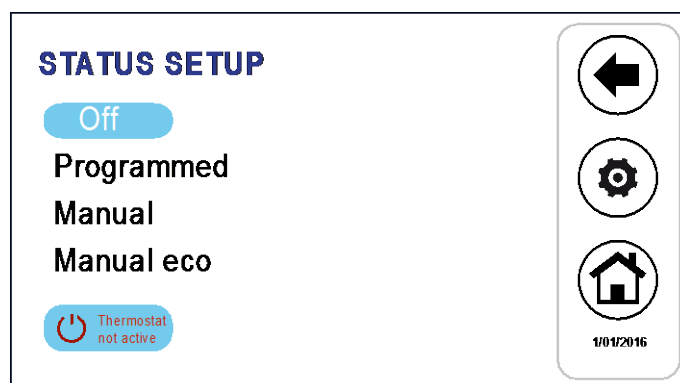


Figure 28. Status of Zone Status settings

The thermostat activation key has two states depending on if the function is enabled or disabled.



Figure 29. Activation icon

When the icon shows the voice "thermostat off" (default) this means that the thermoregulation of the reference zone is performed with the remote air temperature sensor of the fancoil unit.

To activate the ambient thermostat function in the zone:

- 1) Press the activation icon, displaying "Thermostat on".
- 2) Select the mode in which the thermoregulation shall be carried out of the reference zone, by setting the parameters from **P46** to **P54** for the winter and from **P55** to **P63** for the summer. See Chapter 7.

The call of the ambient thermostat shall be active when the setpoint of the zone is not fulfilled, the heat pump is enabled for operation.

The call of the ambient thermostat is disabled when the temperature detected by the **Touch Screen** thermostat is greater than the zone setpoint, and the heat pump is in standby mode.

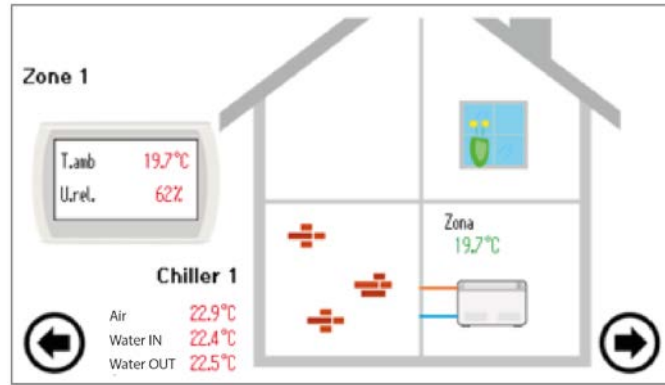


Figure 30. Second main page

On the individual fancoil screen, the displayed temperature is the one given by the temperature sensor of the fancoil unit (HNSbox) and not the one used for temperature regulation.

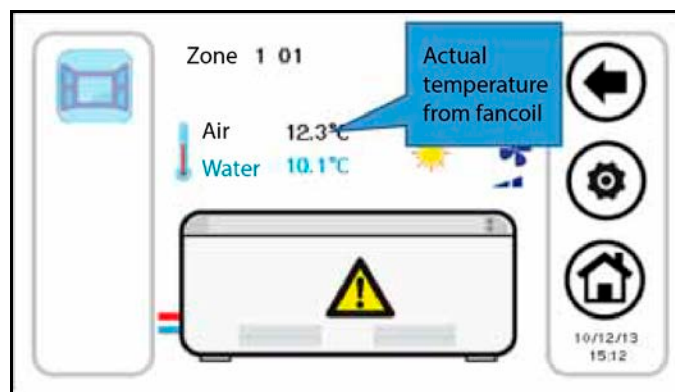





Figure 31. Fancoil page

4.8 KEYBOARD SETTINGS PROCEDURE

4.8.1 SETTING OF LANGUAGE AND DATE/TIME

To set the keyboard language:

1. from the system main page, go to "Configuration" ;
2. then, go to "User menu" ;
3. enter the user password and press the confirmation tick  (The default password is 0);
4. go to "Language";
5. Select the desired language.

To set the date and the time of the keyboard:

1. from the system main page, go to "Configuration" -> "User menu";
2. enter the user's password and press the tick key to confirm;
3. go to "Clock";
4. set date and time using the arrows (the values to adjust will be red-colored);
5. when all values are set, press the icon with the tick to confirm.

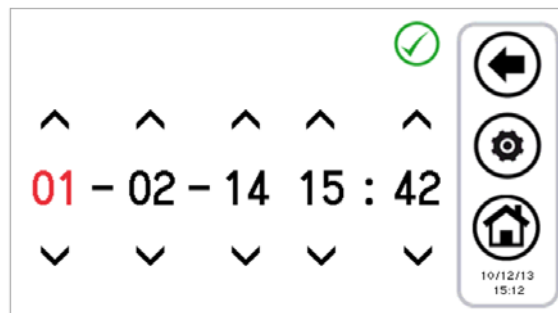


Figure 32. Page "Clock"

4.9 DIAGNOSTIC ERRORS

4.9.1 ACTIVE ALARMS

You can display the current alarms of the connected units. To do this, from the home page, press the triangle icon of danger, if present; from here you can access to the list of all active alarms in the system.

Also, when you are in an unit page (i.e. Chiller page, see Paragraph 3.4.1), by pressing the triangle that appears on the machine, you go to a menu where you can see current alarms of the selected machine.

4.9.2 ALARM HISTORY

The keyboard manages a detected alarms list for all the plant that shows the date and time of the alarm, the affected machine and alarm type. In the historic are stored up to 100 alarms, once exceeded the limit, it automatically deletes the older alarms.

To go to the alarm history: from the system main page, go into "Configuration" -> "Service menu" -> "Alarm list".

Having maintainer password, you can set that the alarm history is also accessible from the user menu; to do this go into "Configuration" -> "Service menu" -> "Parameters" -> "Keyboard" -> **Par 33/65: Enable user alarm log = 1.**

4.10 DOUBLE SET-POINT FUNCTION

The double set-point function introduces a second plant side set-point (both in cooling mode and in heating mode).

The application field is primarily that of the floor-cooling assisted by fancoil units for dehumidification.

The purpose of the application is to prevent in any condition the formation of condensation on the floor, and in any case to ensure the welfare thermo hygrometric.

The activation of the double set-point is by means of maintainer parameters (from System main page -> Configuration -> Service menu -> Parameters -> Chiller -> Chiller name -> **H129: Enable second setpoint ≥ 2** , ref. the control manuals of the chiller unit for allowable values). It is required also to set a digital output for controlling the three-way valve used to divert the flow of water between the floor and fan coils. The function of humidistat is instead carried out directly by the Touch Screen remote control panel, by means of its integrated sensors and the logic internally implemented related to the control of dew point and dehumidification.

Please refer to the manual of the chiller for the correct setting of parameters related to the double set-point, as well as for the electrical connections to be done in the terminal board of the chiller.

The set-points can be set with double set-point function enabled are:

Setpoint	Setpoint on Touch	Setpoint onboard control panel
First setpoint (°C)	T water	Coo/Hea
First setpoint eco (°C)	T Water ECO	
Second setpoint (°C)	T2 water	Co2/He2
Second setpoint eco (°C)	T2 water ECO	

Table 4. Set point settings with enable double set point.

To manage the setpoint:

- from the Touch Screen controller → "Set-point setup" menu -> "Chiller" -> "Summer" o "Winter" (see Paragraph 4.7.3).
- from the on-board control panel → SET button.

The second setpoint is greater than the first set point in summer and lower in winter:

- in summer: $T_2 \geq T$
- in winter: $T_2 \leq T$

The parameters to be set for the management of dehumidification are accessible from the service menu (Configuration -> Service menu -> Parameters -> Keyboard):

Parameter	Name	Unit	Default	Min.	Max.
Par 42/65	Dew-point temp. margin	°C	5.0	0.0	50.0
Par 43/65	Min. staying time in dehumidification	Seconds	300	0	600
Par 44/65	Max. staying time in dehumidification	Seconds	600	0	1200

Table 5. Service keyboard parameters for dehumidification

Note 1: Set the lower limit of the winter first setpoint to 25°C

- set the parameter **H129 to be** 3 or 4.
- Set the Winter second setpoint from 35°C to 25°C
- Re-set the parameter **H129** to be 0
- Now it's possible to decrease the winter setpoint to 25°C.

Note 2: If in the chiller is configured the presence of a digital input to the management of the second set point (chiller parameter **H53=26**, terminals SE-SE, ref. Chiller manual), the management of the humidity control is not done from the remote control.

The digital input is also possibly used for switch between the first and second set point during operation in winter mode.

With double set-point function enabled, if the chiller works on the second set-point (radiant panels side), the double set-point icon appears in the toolbar of the functions in the pages of chillers and fan coils and it remains transparent.

If, however, the chiller switch to thermoregulate on the first set-point (fan coil side), the double set-point icon appears colourful.

With parameters **H129>1**:





	FLOOR SIDE FUNCTION (2° SET-POINT)	FAN COIL SIDE FUNCTION (1° SET-POINT)
DOUBLE SET-POINT ICON		
DEHUMIDIFICATION ICON		 if dehumidification is active

Table 6. Double set-point/dehumidification icon

4.10.1 DEW POINT TEMPERATURE

The dew point temperature will be calculated by reading the internal temperature and humidity sensors.

Given the ambient temperature and ambient humidity, the remote control calculates the dew point (Td).

The formula used for the calculation of the dew point is the Magnus-Tetens approximation, this approximation is valid for values of Td between 0 °C and 50 °C, therefore, if the calculation gives a value out of these limits yes takes the limit value as Td (0 °C and 50 °C respectively).

Meaning of parameters:

- Tint: ambient temperature detected by the indoor temperature sensor (°C)
- Tr: calculated temperature of the dew point (°C)
- odr: adjustment offset (°C)
- Hy: adjustment hysteresis (°C)
- tAr: adjustment time (min.)
- Activation time relay: 0÷100% of tAr

The temperature that is measured from the sensor inside the controller will be compared with the dew point (evaluated at the last moment of tAr) added to the parameters odr and Hy:

- If $Tr < Tint < Tr + odr \rightarrow$ the relay is activated for all next tAr time.
- If $Tr + odr < Tint < Tr + odr + Hy \rightarrow$ the relay is activated for the percentage value of tAr that is detected on the pump.
- If $Tint > Tr + odr + Hy \rightarrow$ the relay is activated for all the next tAr time.

The parameters tAr, odr and Hy are set in the factory and can be changed.

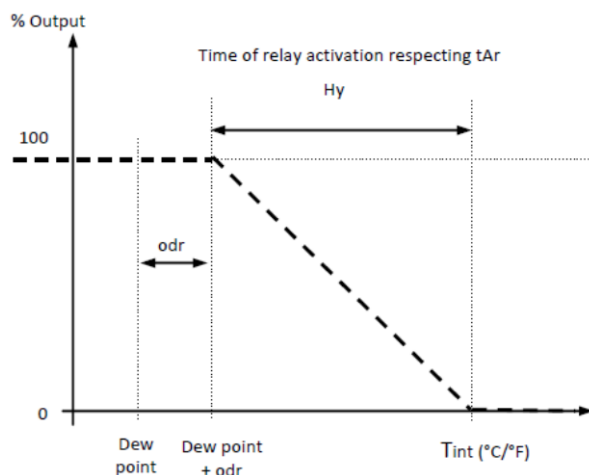


Figure 33. Dew point temperature – Humidostat

Given the environmental temperature and the humidity, the Touch Screen remote control calculates the dew point.

In operation of the plant in summer mode, with the double set-point function active on chillers and thermoregulation normally made with the radiant panels (second set of work), it activates a control to keep the dew point of at least a quantity defined by the keyboard maintainer parameter **Par42/65**: "Dew-point temp. margin " °C below the ambient temperature detected by the control itself.

Instead, when $ambient\ temperature < Dew\ Point + Margin\ temp.\ Point$:

- The fan coils for dehumidification turn on.
- The chiller start working with the set-point for the fan coils.

The permanence remains in this status until the temperature returns to:

$$Ambient\ temperature \geq Dew\ point + Dew\ temp.\ margin + 1^{\circ}C.$$

Even in the case where the above condition is verified, it remains in the status of dehumidification for at least the time set by maintainer parameter **Par43/65**: "Min. staying time in dehumidification", in order to avoid annoying oscillations.

If the above condition is not satisfied after a maximum time given by the maintainer parameter **Par44/65**: "Max Dehumidification time", the machine comes out from dehumidification. To avoid returning immediately, in this case it requires a minimum staying in adjustment to the radiant panels, still given by **Par43/65**: "Max. staying time in dehumidification".

4.11 CLIMATIC COMPENSATION

It is possible to compensate the set-point according to outdoor temperature, in a different way between heating and cooling modes, first and second set-point.

In such a case be sure that the **b08** parameter (System main page -> Configuration -> Service menu -> Parameters -> Chiller -> Chiller name -> **b08: Enab. dynamic set point**) is disabled (=0) on the chiller.

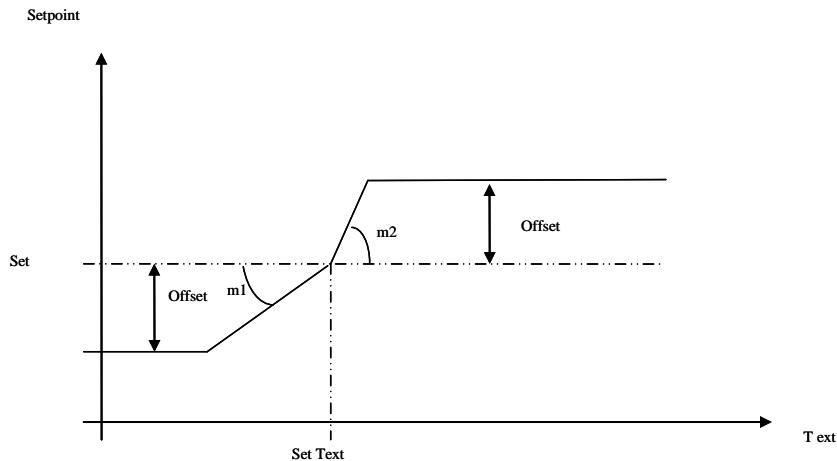


Figure 34. Climatic compensation.

- $Set = T_{water}, T_{water\ ECO}$ o $T_2\ water, T_2\ water\ ECO$, settable from the page: "Set-point setup" -> "Chiller".
- *Offset* = offset settable from the page: "Set-point setup" -> "Chiller" (the variable "Offset" appears only if the "m" coefficients have been configured).
- *Set Text, m1, m2* = parameters which can be set from: "Configuration" -> "Service menu" -> "Parameters" -> "Keyboard" (see paragraph Touch Screen control panel configuration parameters).

To exclude the climatic compensation from the user, you have to set to zero all the offsets in the menu "Set-point setup" -> "Chiller". To exclude the climatic compensation from the service, you have to set to zero the "m" coefficients in the service menu, keyboard parameters.

The outdoor temperature is detected by a dedicated sensor already wired to the heat pump.

4.12 SECONDARY CIRCULATOR

It allows the management of a secondary or re-launching circulator to serve the plant. The following functions should be active:

- Secondary circulator management function, see the related paragraph in the user's-installer's manual of the unit;
- Ambient thermostat function, see paragraph 4.7.5.

The secondary pump will be activated if there is the thermostat call (zone of Touch Screen is fulfilled).

After the end of the plant call (zone of Touch Screen is fulfilled), the secondary pump will turn off after a delay of **P02** (post-pumping).

The thermoregulation of the heat pump is independent of the thermostat call.

When the heat pump is off, the secondary (re-launching) circulator will be off regardless of the thermostat call.

4.13 OTHER FUNCTIONS

For any information related to other functions of the chillers or fancoil units that are reported in the display of Touch Screen remote control panel (e.g. enablement or activation of plant electrical heater, sanitary electrical heater, boiler integration, defrosting cycle, water-side or air-side anti-freeze heaters, etc...), please refer to chillers' and fancoils instructions manuals.

4.14 SPECIAL FUNCTIONS

From the main menu, choosing the icon "additional functions", you go to the following menu:



Figure 35. Page of "Special functions".

The available functions are described in the following paragraphs.

4.14.1 SCREED FUNCTION

By pressing the icon related to the screed function you access to a new menu in which you can choose which units should be enabled to this function:

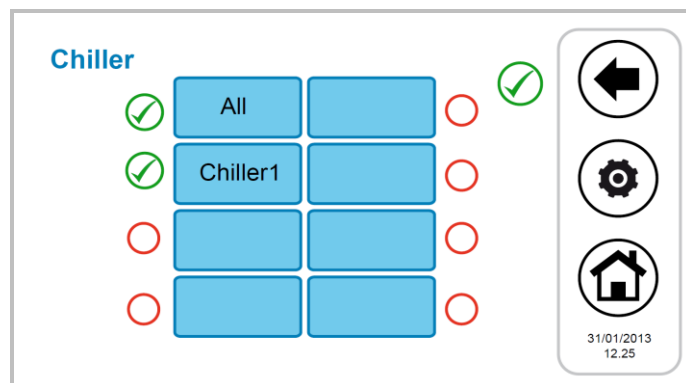


Figure 36. Chiller multiple choice, screed function.

Once you choose the chillers which participate to this regulation, the system has the following behaviour:

- All the heat pumps enabled in the screed function are forced to heat mode.
- All the heat pumps not enabled in the screed function are forced to off mode.
- The heat pumps set-point is given by the parameter "Screed function set", which can be set among the service parameters (*Configuration -> Service menu -> Keyboard -> Par 36/65: "Screed function Set"*).
- The function has a duration given by the service parameter: *Configuration -> Service menu -> Keyboard -> Par 37/65: "Duration screed function"*. After such period the system returns to the previous settings.

4.15 PASSWORD AND PROTECTIONS

There are more protection and password levels.

An initial distinction includes the following three access levels:

- User's level
- Service level
- Manufacturer's level

To each of these three different levels you can access from the "Configuration" screen, previously inserting a dedicated password.

The user's password, default set to "0", can be modified by accessing to user's parameters (see Paragraph 3.6.5.1).

The service's password can be modified by accessing to service parameters (see Paragraph 3.6.5.2).

The manufacturer's password can be modified by accessing to manufacturer's parameters (see Paragraph 3.6.5.3).

Once the password has been inserted, is allowed the full navigation in all the pages in which the access has been granted.

Once the navigation has terminated, log-out should be done by a touch on the related symbol which is flashing in the low-right side of the home page.



The log-out happens automatically after 5 minutes of touch-screen inactivity or after 20 minutes from the access to the current level of protection. These timing values can be modified from service or manufacturer's parameter.

There is a password to unlock the screensaver, set by default to "0" and modifiable by accessing to user's parameters (see Paragraph 3.6.5.1).

5 REMOTE ACCESS

The device can interact with the local network by an Ethernet port access.

The access must be enabled through a manual installation in the local network (no DHCP services are forecasted).

The device can communicate through browsers compatible with HTML 4.01 and/or TPFT services RFC 1350 compliant.

The web-server interface is a textual type and is below described.

5.1 SECURITY

The insertion of the touch screen in a LAN network must guarantee a higher level security, which must be ensured by the installer, against undesired attacks from outside agents (hacker).

The device will not enforce security systems and will assume that anyone who interacts from the network is enabled to do so.

5.2 LOCAL WEB SERVER

A local web-server has been implemented to access to Touch Screen from the local network with a browser HTML 4.01 compatible.

To access check on page "*Ethernet Configuration*" accessible from the home page by pushing on the following icon:



Accessing by service/manufacturer's allowances, it is possible to modify the default values of each address. After having modified the addresses, please shut down and restart the Touch Screen in order to validate the modifications.

After carrying out the connection, you can display the following pages:



Figure 37. Touch Screen Ethernet main page

The indications on Status, Season and Alarms are those of the entire system.

The room temperature and the relative humidity are the ones measured from the sensors integrated inside the current Touch Screen. To shift to next available pages, click on the links at the page bottom.

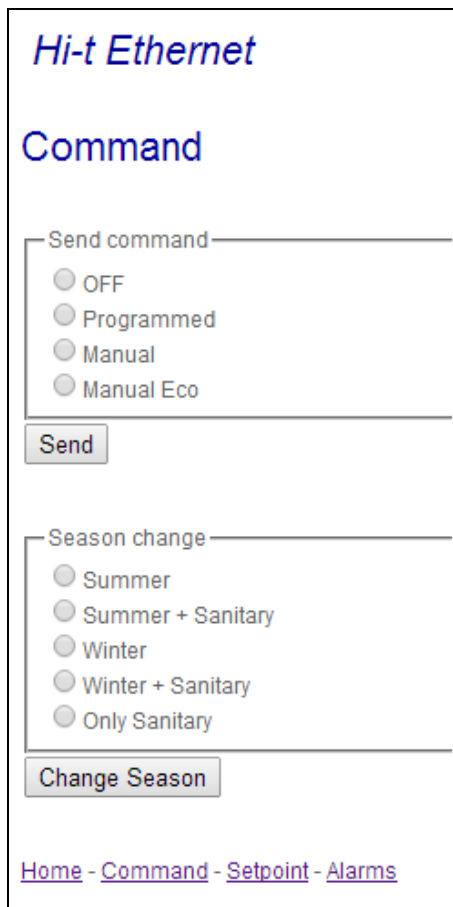


Figure 38. Touch Screen Ethernet "Command" page

The commands present in the "Command" page are referred to the entire system.

The operating command allows you to choose between: OFF, programmed mode, manual mode, manual economy mode. As for the change of season, the states can be set: summer, summer + sanitary, winter, winter + sanitary, sanitary only. Once sent the commands, a confirmation page will be displayed.

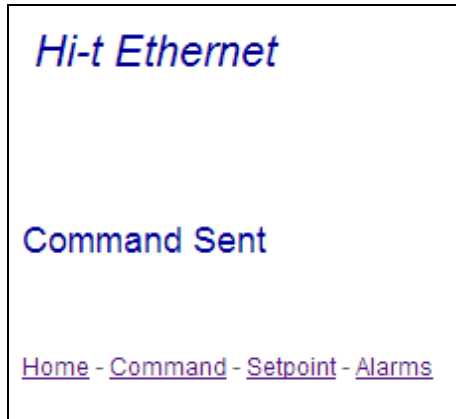


Figure 39. Command sent confirmation page



Figure 40. Touch Screen Ethernet "Set-point" page

In the "Set-point" page are available, in read only mode, the set-point set by Touch Screen.

The set-points set for the winter season (water set-point, economy water set-point and, if enabled, double set-point, second water set-point and second water economy set-point appear) under "Winter". , while under the heading "Summer" the set-points set for the summer season appear (water set-point, economy water set-point and, if enabled the double set-point, second water set-point and second water set-point economy).



Figure 41. Touch Screen Ethernet “Alarms” page

The “Alarms” page is related to all the active alarms inside the system at the moment when the page is shown.

6 FIRMWARE UPDATE

In the home page, by pressing on the symbol in the left-high side, showing Hi-T, it is possible to see the current firmware version installed in the touch-screen.



In case of firmware update, it is possible to make the upgrade by means of a USB key, using the on-board USB port.

For the upgrade:

- copy the upgrade file in the main root of a USB pen-drive;
- insert the pen-drive into the Touch Screen USB port;
- enter into “Configurations -> “User’s menu” (see Paragraph 3.6.5.1);
- after having inserted the user’s password and entered into “User’s menu”, select the string which appears “*Firmware update*”;
- the controller automatically recognizes the firmware presence inside the USB pen-drive and starts the updating procedure;
- follow the instructions shown in the display and extract the pen-drive only when requested by the message “*Remove the USB pen. The panel will reboot to finish the update*”;
- wait until the update has completed.

7 “TOUCH SCREEN” CONTROL PANEL CONFIGURATION PARAMETERS

The maintainer parameters of the chillers are reported in the control manual of HP_POWER units.

The maintainer parameters of the remote control panel are listed below:

N°	PARAMETER	MINIMUM VALUE	MAXIMUM VALUE	DEFAULT VALUE	MEASUREMENT UNIT
1	Communication Timeout	1	255	120	Seconds
2	Maintenance PSW	0	999	/	---
3	Min FC cooling setpoint	1.0	60.0	15.0	°C
4	Max FC cooling setpoint	1.0	60.0	45.0	°C
5	Min FC heating setpoint	1.0	60.0	5.0	°C
6	Max FC heating setpoint	1.0	60.0	45.0	°C
7	Keypad address	100	130	100	---
8	Number of chiller in network	0	7	0	---
9	Rotation time	0	800	30	Minutes
10	Diff. between units	1.0	60.0	2.0	°C
11	Set Text comp CHIL Cool	0.0	50.0	20.0	°C
12	Set Text comp CHIL Heat	-20.0	35.0	10.0	°C
13	m1 comp Text CHIL	-10.0	10.0	0.0	---
14	m2 comp Text CHIL	-10.0	10.0	0.0	---
15	m3 comp Text CHIL	-10.0	10.0	0.0	---
16	m4 comp Text CHIL	-10.0	10.0	0.0	---
17	Set Text comp FC Cool	0.0	50.0	25.0	°C
18	Set Text comp FC Heat	-20.0	35.0	15.0	°C
19	m5 comp Text FC	-10.0	10.0	0.0	---
20	m6 comp Text FC	-10.0	10.0	0.0	---
21	Set2 Text comp CHIL Cool	0.0	50.0	20.0	°C
22	Set2 Text comp CHIL Heat	-20.0	35.0	10.0	°C
23	Second m1 comp Text CHIL	-10.0	10.0	0.0	---
24	Second m2 comp Text CHIL	-10.0	10.0	0.0	---
25	Second m3 comp Text CHIL	-10.0	10.0	0.0	---
26	Second m4 comp Text CHIL	-10.0	10.0	0.0	---
27	ID on 15-16	0	1	0	---
28	Enables the Beep touch	0	1	1	---
29	Maintainer Psw Timeout	0	120	5	Minutes
30	Maintainer Psw exit time	0	120	20	Minutes
31	Legionella disinfection duration	10	600	60	Minutes
32	User Password	0	999	0	---
33	Enables user alarm log	0	1	0	---
34	Idle Backlight intensity	0	100	5	%
35	Screensaver unlock Psw	0	999	0	---
36	Screed function set	0.0	55.0	35.0	°C
37	Duration screed function	0	100	10	Ore
38	Timeout LCD navigation	30	300	60	Seconds
39	Thermostat temp. decalibration	-10.0	10.0	0.0	°C
40	Thermostat humidity decalibration	-10.0	10.0	0.0	%
41	Bitmap forcing icons	0	4095	0	---
42	Dew-point temp. margin	0.0	50.0	5.0	°C
43	Min. staying time dehumidification	0	600	300	Seconds
44	Max. staying time dehumidification	0	1200	600	Seconds
45	Behavior offline chiller system for adjusment of unique pump in network	0	1	0	Flag

Touch Screen

N°	PARAMETER	MINIMUM VALUE	MAXIMUM VALUE	DEFAULT VALUE	MEASUREMENT UNIT
46	Regulation temperature in zone 1 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	3	---
47	Regulation temperature in zone 2 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
48	Regulation temperature in zone 3 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
49	Regulation temperature in zone 4 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
50	Regulation temperature in zone 5 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
51	Regulation temperature in zone 6 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
52	Regulation temperature in zone 7 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
53	Regulation temperature in zone 8 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by "Touch Screen" remote control panel	0	3	1	---

N°	PARAMETER	MINIMUM VALUE	MAXIMUM VALUE	DEFAULT VALUE	MEASUREMENT UNIT
54	Regulation temperature in zone 9 "Winter" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
55	Temperature regulation in zone 1 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	3	---
56	Regulation temperature in zone 2 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
57	Regulation temperature in zone 3 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
58	Regulation temperature in zone 4 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
59	Regulation temperature in zone 5 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
60	Regulation temperature in zone 6 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
61	Regulation temperature in zone 7 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---

Touch Screen

N°	PARAMETER	MINIMUM VALUE	MAXIMUM VALUE	DEFAULT VALUE	MEASUREMENT UNIT
62	Regulation temperature in zone 8 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
63	Regulation temperature in zone 9 "Summer" 0 = Average temp. of the fancoils of the zone 1 = Minimum temp. of the fancoils of the zone 2 = Maximum temp. of the fancoils of the zone 3 = Temperature measured by the "Touch Screen" control panel	0	3	1	---
64	Polling duration	0.1	1.0	0.1	Seconds
65	Port for web server	0	9999	80	---

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