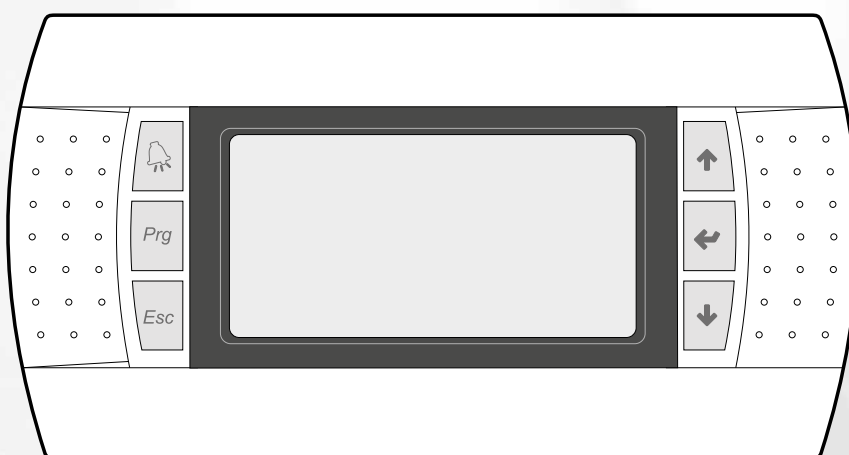


Multipurpose

User manual



■ CARD PC05 - PANEL PGD1

Dear Customer,

Thank you for wanting to learn about a product Aermec. This product is the result of many years of experience and in-depth engineering research, and it is built using top quality materials and advanced technologies.

The manual you are about to read is meant to present the product and help you select the unit that best meets the needs of your system.

However, please note that for a more accurate selection, you can also use the Magellano selection program, available on our website.

Aermec, always attentive to the continuous changes in the market and its regulations, reserves the right to make all the changes deemed necessary for improving the product, including technical data.

Thank you again.

Aermec S.p.A.

SAFETY CERTIFICATIONS



This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled disposal of Waste Electrical and Electronic Equipment (WEEE), please return the device using appropriate collection systems, or contact the retailer where the product was purchased. Please contact your local authority for further details. Illegal dumping of the product by the user entails the application of administrative sanctions provided by law.

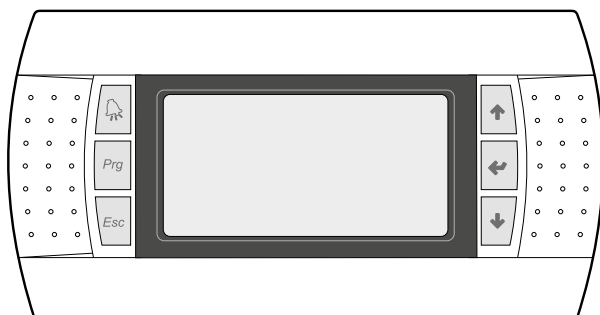
All specifications are subject to change without prior notice. Although every effort has been made to ensure accuracy, Aermec shall not be held liable for any errors or omissions.

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1 USER INTERFACE (PGD1)



The command panel of the unit allows the rapid setting of the working parameters of the machine, and their visualisation. The card stores all the default settings and any modifications.

The installation of the remote panel PGD1 makes it possible to copy from remote all the functions and settings available on the machine.

After the absence of voltage for any period of time, the unit is able to start up again automatically, maintaining the original settings.

The main user interface is a graphic monitor with six navigation keys; the displays are organised with a menu hierarchy, which is activated by pressing the navigation keys. The default view of these menus is represented by the main menu; you can navigate between the various parameters by using the arrow keys on the right-hand side of the panel; these keys are also used to change the selected parameters.

CAUTION



The 2-pipe units is set up for the production of cooled water, hot water and Domestic Hot Water (D.H.W.); No Anti-legionella Cycle is included. The 4-pipe units is set up for the production of cooled water and hot water.

1.1 START-UP PROCEDURE

After powering the unit, the control card will perform preliminary operations before it is ready to be used; these initial procedures last about 60 seconds before they are complete; two windows are displayed during the initial loading procedures (a start window and one for selecting the system language); these windows are specified below in the table.

NOTICE



The system language can be set in the window shown at start-up, or at any moment by changing the window contained in the installer menu.

Start-up procedure:



This window indicates the seconds remaining until the software loaded in the unit starts up (switching to the system language selection);

Language:

Language: **ENGLISH**

**Push ENTER for change
ESC to confirm**

Time show mask: **20**

This window makes it possible to select the language with which the system is started.

1.2 FUNCTION OF THE PGD1 CONTROL PANEL KEYS



: Displays the list of active and historical alarms (red LED on = active alarm);



: Press this key to enable navigation between the menus (fixed orange LED = winter operating mode active on system for 2-pipe+DHW machines);

For units with a 4-pipe system, the orange LED does not light up.



: Pressing this key returns to the previous window;



: Pressing this key can have different functions:

- Pressing this key when navigating menus/parameters passes to the next menu/parameter;
- Pressing this key when changing a parameter increases the value of the selected parameter;



: Pressing this key can have different functions:

- Pressing this key when navigating menus enters the selected menu;

- Pressing this key when navigating parameters selects the displayed parameter and enters change mode;
- Pressing this key when changing a parameter confirms the change to the value of the selected parameter;



: Pressing this key can have different functions:

- Pressing this key when navigating menus/parameters passes to the previous menu/parameter;
- Pressing this key when changing a parameter decreases the value of the selected parameter;

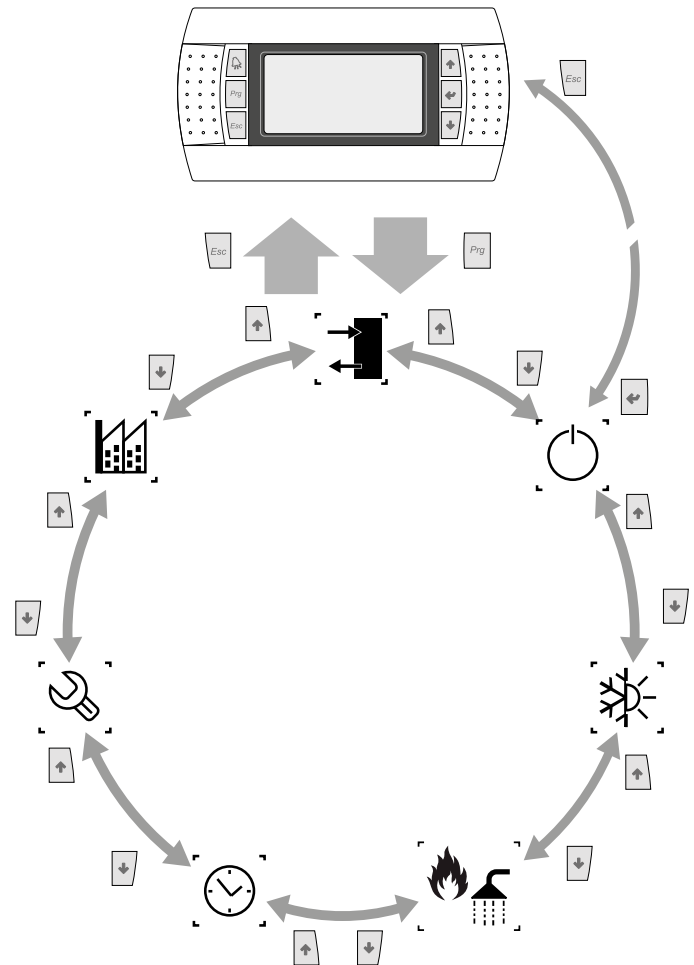
1.3 MENU STRUCTURE

All the functions for managing the unit as well as the information about its operation are displayed on the unit control panel; all the functions and information are organised into windows, which are in turn grouped in to menus. When the unit is operating normally, a main menu is displayed, which is used to select other operating menus. The menus are displayed via the rotation of the icons that represent them; once the desired icon is selected, the select menu opens, and it is possible to display or change the corresponding parameters. The procedure for navigating the menus, or changing the parameters, is explained in detail in the chapter "Operational utilisation procedures", to which reference is made for more information. The image shows the relationships between the various menus and the keys used for navigation.

NOTICE



The following pages show all the masks contained in the menus available to the user; Tampering with the parameters in the installer menu could cause the unit to malfunction, therefore it is recommended to have these parameters changed only by personnel assigned to unit installation and configuration;



1.3.1 Menu icons

Icon	Menu	Menu function
	IN/OUT	Contains the information (temperature, pressure, etc.) of the system components.
	ON/OFF	Switches the unit on and off and sets its functioning mode (summer/winter) and eventual time periods.
2-PIPE VERSION		
	Plant	Management of the chiller parameters, standard/energy saving work set-point.
	Recovery	DHW management parameters(set-point, consent, temperature, time periods, etc...).
4-PIPE VERSION		
	COLD	Management of the chiller parameters, standard/energy saving work set-point when functioning in cooling mode.
	HOT	Management of the chiller parameters, standard/energy saving work set-point when functioning in heating mode.
Icon	Menu	Menu function
	Clock	Manages all parameters linked to the system time (hour, date, etc....).

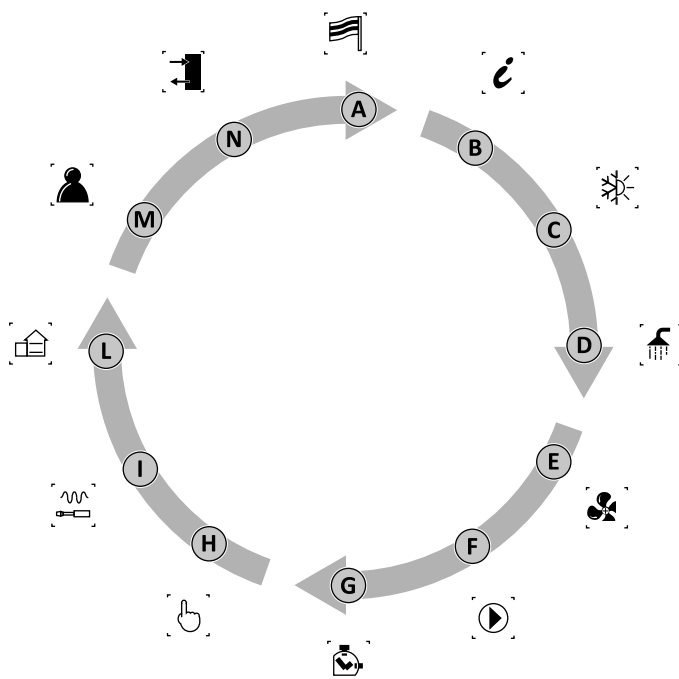
Icon	Menu	Menu function
	Help menu (PROTECTED menu)	Protects the after-sales assistance menu with password request.
	Manufacturer menu (PROTECTED menu)	Protects the manufacturer menu with password request.

Icon	Menu	Menu function
M 	MISCELLANEO	Setting assistance parameters
N 	IN/OUT	Input and output states

NOTICE

Parameters can be modified by authorised personnel alone

1.4 ASSISTANCE MENU (PROTECTED BY PASSWORD)



Icon	Menu	Menu function
A 	LANGUAGE	Selecting the user interface language
B 	INFO	Information regarding the software
C 	2 pipe CHILLER	Assistance parameters for the chiller
	4 PIPES COLD	Assistance parameters in cooling mode
	2 pipe RECOVERY	Assistance parameters for the DHW
D 	4 PIPES HOT	Assistance parameters in heating mode
	VENTILAT.	Ventilation assistance parameters
E 	GEOHERMAL SIDE	Service parameters of geothermal pump
F 	PUMPS	Pumps assistance parameters
G 	HOOR METER	Devices working hours timer
H 	MANUAL	Manual controls forcing
I 	ACCESSORIES	Enabling of accessories modules
L 	C.SYSTEM	Definition of system features

1.5 USER OPERATING PROCEDURES

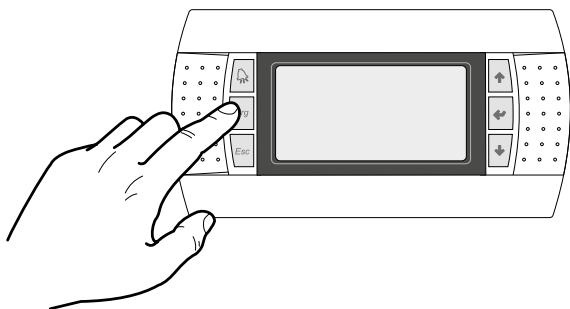
To check or modify the operating parameters of the unit it is necessary to use the interface of the control panel on the unit.

The basic operations that the user must be capable of, for the correct use of the unit, are:

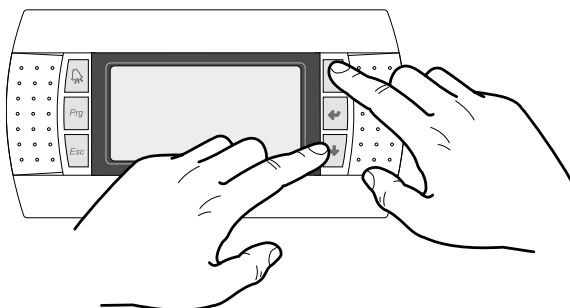
- Moving between menus;
- Selecting and modifying a menu.

1.5.1 Moving between menus

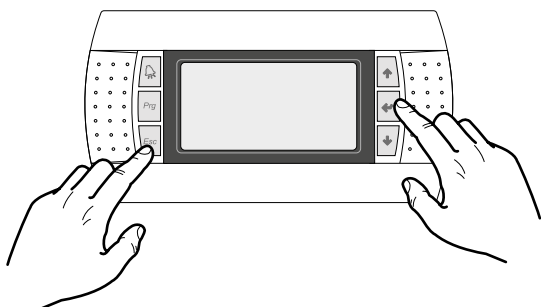
To move between the menus, the order in which they are displayed is shown in the previous page, enter the menu selection mode by pressing the key ;



Once in the menu selection mode it is possible to move between menus using the arrow keys: the key  to move to the previous menu, and the key  to move to the next menu:

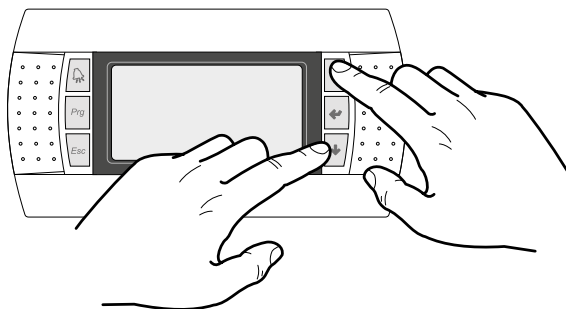


When the desired menu is seen press the key  to enter the menu. Press the key  to return to the menu selection mode:



1.5.2 Selecting and modifying a menu

Once in the menu selected, by following the procedure, it is possible to move between the screens using the arrow keys: the key  to move to the previous parameter, and the key  to move to the next parameter:



When the desired parameter is seen press the key  to enter the parameter. To exit the parameter and return to the parameter selection mode press the key .

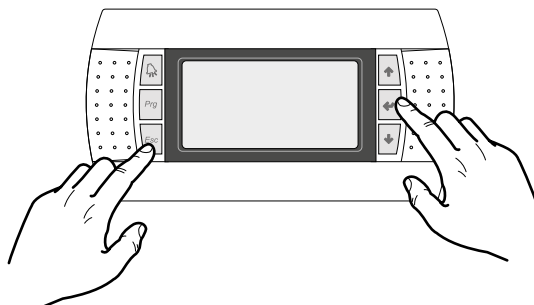
NOTICE



Once a parameter is selected by pressing the key , the parameter selection mode is automatically accessed.

In this mode the desired parameter values can be set with the following procedure:

1. Pressing the key  causes a flashing cursor to appear on the first modifiable field of the parameter. If no modifiable fields are displayed then the cursor will not appear.
2. Pressing the key  or the key , the value of the field can be increased or decreased;
3. Pressing the key  confirms the modification of the field value, saving it in memory.



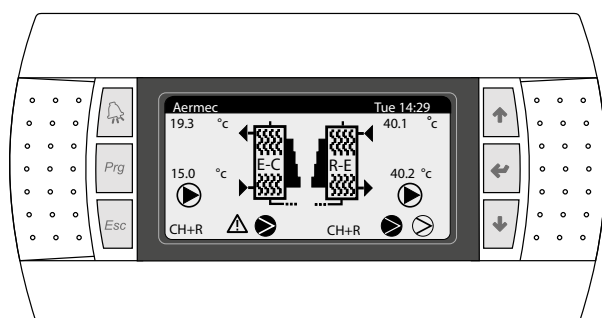
NOTICE



On the basis of the type of parameter selected the number of modifiable fields can change.

2 MAIN DISPLAY

This mask is used to display the unit's general status:



Icons:

Icon	Meaning
	Indicates water inlet and outlet temperature (evaporator in summer and condenser in winter)
	Indicates water inlet and outlet temperature of DHW side heat exchanger (recovery).
	Indicates the percentage of water requested by the machine intended for the system or for recovery.
	Indicates which pump is running. The icon on the left refers to the pump on the system side, on the right to the heat recovery pump. The number below shows which pump is on
	NRP Indicates that the anti-freeze resistance is active NXP Option not present
	Indicates that the flow switch is open. The compressors are turned off and the pumps release the flow switch.
	Indicates that low output temperature anti-freeze prevention is active (turns off the compressors).
	Indicates that the outlet high temperature prevention is active. Switches the compressors/ mode change off.
	Indicates compressor status: disabled(1), off (2), on (3), in alarm (4).

Description of the status in which the circuit can be found:

State	Meaning
C1 C2	The system is active and running
CH	Chiller operation
CH + R	Chiller + total recovery functioning
PC	Heat pump functioning
REC	Total recovery
DEFR	Defrost active

State	Meaning
WAIT	The circuit is in standby because configuration is changing
LC	Low load: Indicates low water content or low thermal load
OK	Set point achieved

2.1 DESCRIPTION OF THE STATUS IN WHICH THE CIRCUIT CAN BE FOUND

NRP 2-PIPE SYSTEM:

On/Off Unit	u3
Plant side	Enabled
Recovery side	Enabled
General enable:	YES

NRP 4-PIPE SYSTEM:

On/Off Unit	u3
Cold side	Enabled
Heat side	Enabled
General enable:	YES

State	Meaning
Enabled	The system is active and running
Off by alarm	There is a serious alarm which stops the system (check the list of alarms, below the alarm key)
General Off	The system is switched off by the terminal; check the On/Off screen
Off by supervisor (BMS)	The supervision system has prevented unit start-up
Off by clock	The set time bands switch off the whole system
Off by digital input	The digital input (ID8) is closed, so the system switches off
Off by display	System turned off by terminal. Control system screen
Off by Plant-side	NRP Plant-side disable: Recovery side not working NXP Option not present

State	Meaning
Anti-freeze	NRP Action to prevent ice formation in the water heat exchangers
	NXP Option not present
Manual Mode	The compressors or pumps are forced to manually

ATTENTION:



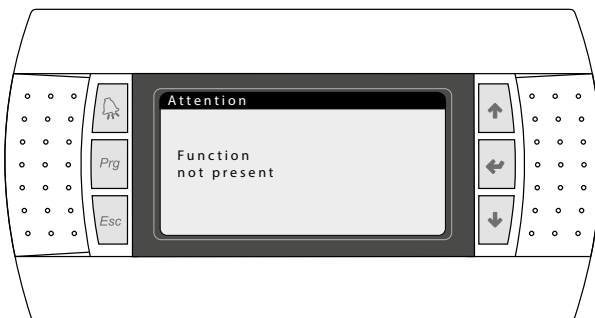
NRP 2-pipe system - Deactivated system / Off: also the recovery side is excluded



NRP 4-pipe system - Deactivated Cool Side / Off: also the heating side is excluded

Function not present

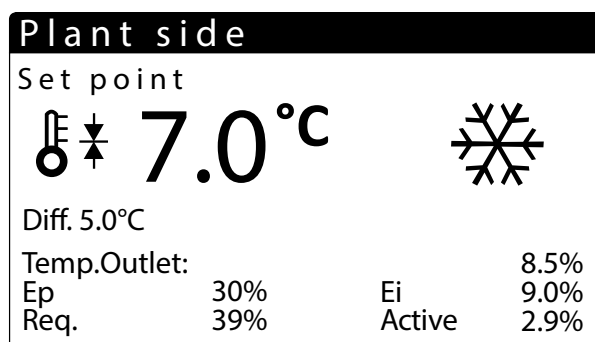
If a function is not present the following screen will be shown:



To return to the main screen press ESC.

3 2-PIPE SYSTEM

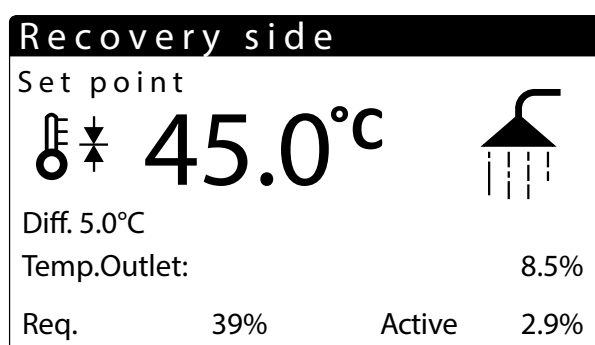
3.1 INFORMATION ON SYSTEM SIDE HEAT EXCHANGER



From this window it is possible to view the information relating to the heat exchanger on the system side:

- Current work set-point
- Evaporator inlet temperature
- Indicates the heat drop value
- Temperature at which machine is adjusted
- Percentage of proportional factor (if activated PID)
- Percentage of integral factor (if activated PID)
- Percentage requested by system
- The actual power percentage used

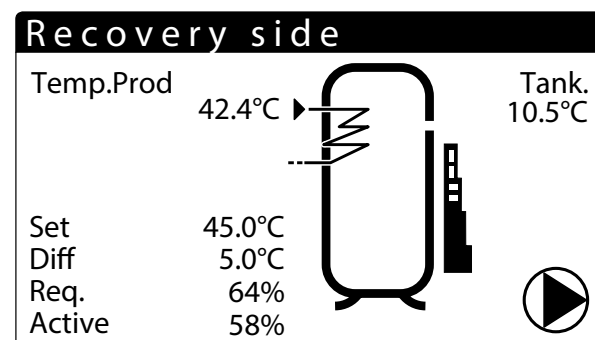
3.2 INFORMATION ON DHW SIDE HEAT EXCHANGER



From this window it is possible to view the information relating to the heat exchanger on the DHW side

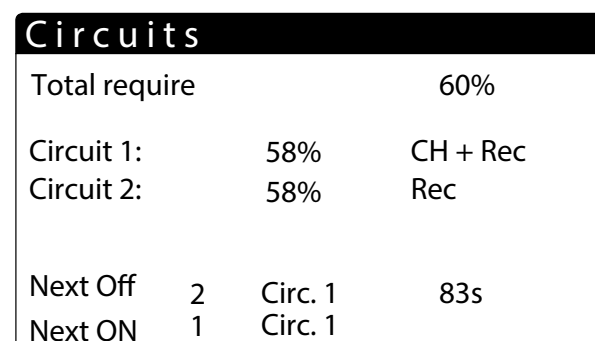
- Current work set-point
- Heat exchanger outlet temperature
- Indicates the heat drop value
- Temperature at which machine is adjusted
- Percentage requested by system
- The actual power percentage used

3.3 INFORMATION ON DHW STORAGE



- Leaving domestic hot water temperature
- Temperature within storage tank
- Indicates domestic hot water demand (in steps of 0 to 10)
- Is shown when the heat recovery pump is on. The number below shows which pump is on. If heat recovery and domestic hot water is enabled the pump will start if there is a demand for domestic hot water.

3.4 INFORMATION ON CIRCUITS 1 - 2



- Shows the circuit demand
- Shows the circuit status
- Shows which compressor will start/stop

4 4-PIPE SYSTEM

4.1 INFORMATION ON COOLING SIDE HEAT EXCHANGER

Cold side

Set point

7.0°C

Diff. 5.0°C

Temp.Outlet:		7.0°C
Ep	30%	Ei 9.0%
Req.	39%	Active 2.9%

From this window it is possible to view the information relating to the heat exchanger on the system side:

- Current work set-point
- Evaporator inlet temperature
- Indicates the heat drop value
- Temperature at which machine is adjusted
- Percentage of proportional factor (if activated PID)
- Percentage of integral factor (if activated PID)
- Percentage requested by system
- The actual power percentage used

4.2 INFORMATION ON HEATING SIDE HEAT EXCHANGER

Heat side

Set point

50.0°C

Diff. 5.0°C

Temp.Outlet:		48.0°C
Ep	30%	Ei 9.0%
Req.	39%	Active 2.9%

From this window it is possible to view the information relating to the heat exchanger on the DHW side

- Current work set-point
- Heat exchanger outlet temperature
- Indicates the heat drop value
- Temperature at which machine is adjusted
- Percentage requested by system
- The actual power percentage used

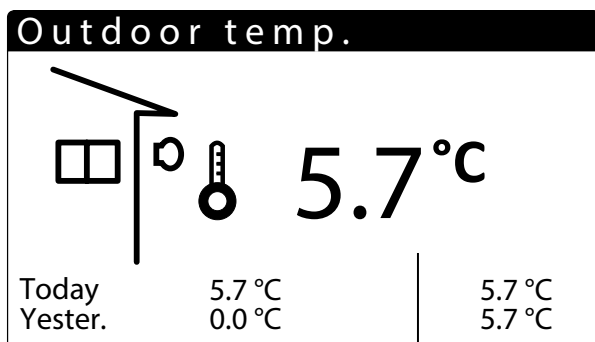
4.3 INFORMATION ON CIRCUITS 1 - 2

Circuits			
Total require		60%	
Circuit 1:	58%	CH + Rec	
Circuit 2:	58%	Rec	
Next Off	2	Circ. 1	83s
Next ON	1	Circ. 1	

- Shows the circuit demand
- Shows the circuit status
- Shows which compressor will start/stop

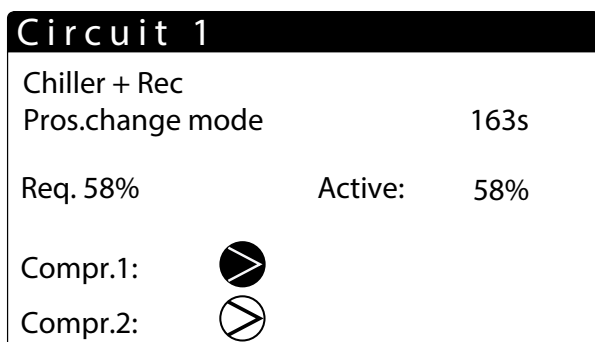
5 INPUT/OUTPUT MENU

5.1 INFORMATION REGARDING EXTERNAL TEMPERATURE



- **External temperature:** this window displays the data relative to the external temperature.
- **Today:** indicates the MIN and MAX temperature recorded during the day.
- **Yesterday:** indicates the MIN and MAX temperature recorded the previous day.
- **External temperature:** Indicates the external temperature currently detected by the outdoor air probe.

5.2 INFORMATION ON CIRCUIT STATUS AND CAPACITY

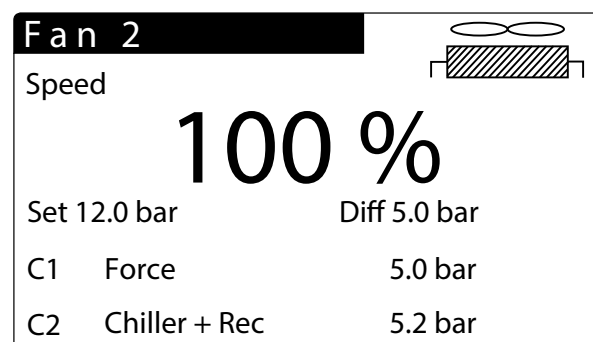
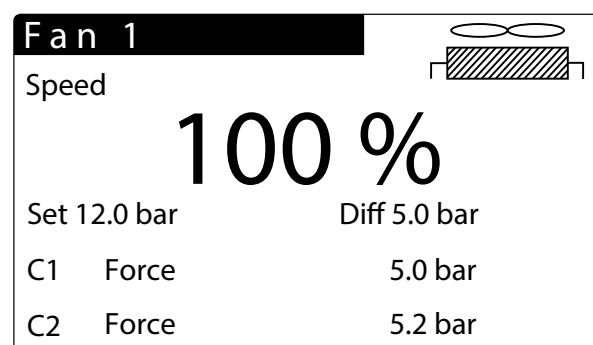


- Shows the circuit operating status:
- Off
- Chiller only
- Chiller+Rec
- Heat pump
- Heat recovery only
- Await part load
- Mode selected
- Defrost start
- Await inversion VIC
- Defrost
- Await exit defrost
- Turn on fan exit defrost
- Exit defrost
- No defrost System

No defrost Recovery

- Shows how many seconds until the next change of operation
- Shows the circuit demand
- Shows the compressor status:
- : indicates that the compressor is off;
- : indicates that the compressor is on;
- Min.On: Compressor on and in minimum run timer, right when this will finish;
- Min.Off: Compressor on and in minimum stop timer, right when this will finish;
- Off alarm: Compressor off due to alarm, see Alarm key.
- Shows the circuit active capacity

5.3 INFORMATION ON STATUS OF FANS (NRP)



This window displays the data relative to fan operation:
Ventilation 1: the screen is displayed if the two circuits have the same ventilation
Ventilation 2: the screen is displayed if the two circuits have separate ventilation

- Indicates the speed percentage at which the fan is rotating
- Indicates the current setting
- Indicates the possible statuses of the circuit (see chapter 2 Main display [on page 9](#))

- The Max Force mode is activated if the fans are operating in condensation and the outdoor temperature drops below the set value (assistance/fans menu).

C1 Off: Circuit off

C1 Press.Cond: Fans control to high pressure (condensing)

C1 Chiller +Rec: Fans off because unit is operating in water/water mode

C1 Forced to Max: Fans are forced to maximum because the external temperature is higher than 30°C

C1 Press.Evap: Fans control to low pressure

NOTICE



NRP only unit

5.4 INFORMATIONS ABOUT GEOTHERMAL PUMP'S CONDITIONS (NXP)

Outdoor side pump			
In.	Water Geo	30.7 °C	
Out.	Water Geo	30.7 °C	
100 %			
Pro.		Int	
C1	Evap. Press.	HP1	25.2
C2	Chiller + Rec	HP2	

- Input and output temperature on geothermal side
- Speed percentage of geothermal pump
- High pressure circuit 1 and circuit 2
- Workings mode C1 and C2
- **PRO/INT**: Parameters are visible only if PID is selected

NOTICE



NXP only unit

5.5 INFORMATION ON DEFROSTING STATUS (NRP)

Defrost			
Circuit 1 Alarms			
Off			
LP	5.4 bar	Delta	0.0
Circuit 2 Alarms			
Off			
LP	5.4 bar	Delta	0.0

- Shows the defrost status of circuits 1 and 2
- Shows if the defrost mode is operating
- Shows the circuit operating status:

Off

Chiller only

Chiller+Rec

Heat pump

Heat recovery only

Await part load

Mode selected

Defrost start

Await inversion VIC

Defrost

Await exit defrost

Turn on fan exit defrost

Exit defrost

No defrost System

No defrost Recovery

- Shows actual set point value.

The Delta value shows the drop in pressure with time. When this level is reached the defrost operating cycle is started

NOTICE



NRP only unit

Description of defrosting states:

No SBR: No defrost

Off: Circuit off from display panel, or time clock, or digital input

Defr. Activ: Defrost active (the unit condenses in the ventilated coil)

On Smart: Defrost started due to drop

On Min LP: Defrost started due to low pressure reached

On Reboot: Defrost started after power loss

On Force: Defrost started forced from the display panel or forced by another defrost cycle

On TGP: Defrost started due to high discharge temperature

Defrost stopped due to high liquid temperature

End Time: Defrost stopped after maximum time reached

End Force: Defrost stopped forced from display panel

Startup Cmp: Defrost inhibited due to time after compressor start

High evap p.: Defrosting inhibited owing to high evaporation pressure

High T.Ext: Defrost inhibited due to high external temperature

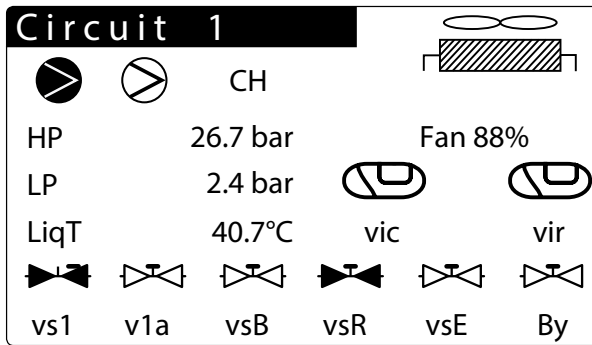
T.Bw Defr: Defrosting inhibited for the standby time between two defrosting interventions

Alarms: Circuit in alarm

On by Alarm: Defrost started due to return to alarm

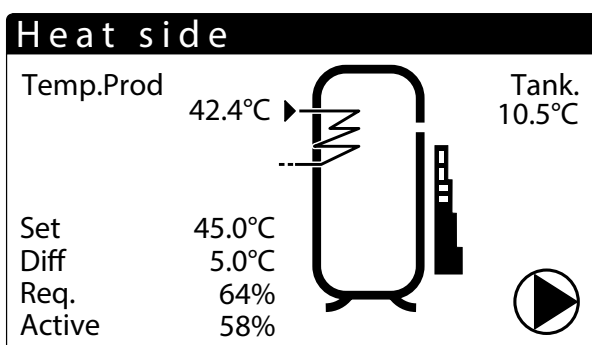
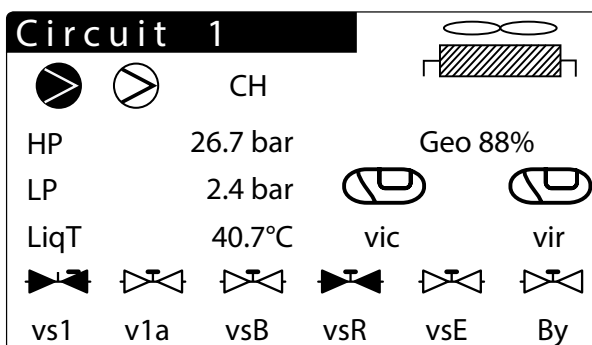
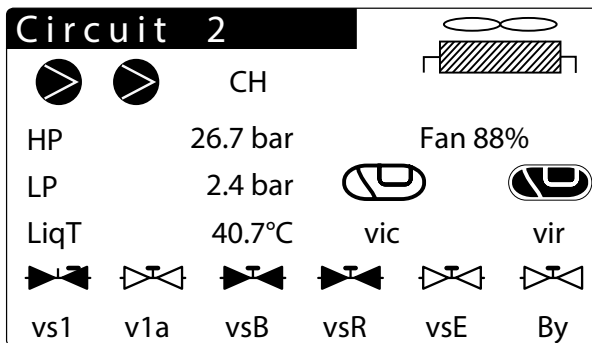
5.6 INDICATES THE STATUS OF THE CIRCUIT 1 AND CIRCUIT 2 VALVES

This window displays the data relative to circuit pressures and valve status:



vsB: battery solenoid valve
vsR: recovery solenoid valve
vsE: evaporator solenoid valve
By: defrost spilling valve

— Indicates speed percentage at which the fan works.
— Indicates the speed (as a percentage) at which the geo-thermal pump is working



- Displays the status of the compressors (disabled - on - off - alarm)
- Indicates the high and low pressure values of the circuit.
- Indicates the refrigerant liquid (Liq T) and pressing gas (Tgp) temperature.
- Indicates the valve status:
VIC - Cycle Reversing Valve
VIR - Recovery Reversing Valve
vs1: liquid intercept. solenoid valve
v1a: liquid intercept. solenoid valve

5.7 INPUTS/OUTPUTS LIST - PCO BOARD

Digital outputs	Range	Master
NO1		CP1 (compressor) circuit 1 (CC1)
NO2		CP2 (compressor) circuit 1 (CC1A)
NO3		CP1 (compressor) circuit 2 (CC2)
NO4		CP2 (compressor) circuit 2 (CC2A)
NO5		VS1 (liquid interception solenoid valve) circuit 1
NO6		VS2 (liquid interception solenoid valve) circuit 1
NO7 (exchange)		Pump 1 evaporator
NO8		Serious alarm
NO9		Pump 2 evaporator
NO10	NRP	Condenser fan 1
NO10	NXP	Geothermal pump
NO11		Condenser fan 2
NO12		VIC1 (cycle reversing valve)
NO13		VIR1 (recovery reversing valve)
NO14		VIC2 (cycle reversing valve)
NO15		VIR2 (recovery reversing valve)
NO16		Anti-freeze resistance
NO17		VS1 (liquid interception solenoid valve) circuit 2
NO18		VS2 (liquid interception solenoid valve) circuit 2
Digital inputs		Master
ID1		High pressure circuit 1
ID2		Low pressure circuit 1
ID3		Remote On-Off
ID4		Remote heating/cooling
ID5		Evaporator flow switch
ID6		Circuit 1 circuit breaker CP1 (MT1)
ID7		Circuit 1 circuit breaker CP2 (MT1A)
ID8		Phase monitor alarm
ID9		High pressure circuit 2
ID10		Low pressure circuit 2
ID11		Circuit 2 circuit breaker CP1 (MT2)
ID12		Circuit 2 circuit breaker CP2 (MT2A)
ID13		Evaporative pump 1 circuit breaker
ID14		Evaporative pump 2 circuit breaker
ID15		Fan 1 circuit breaker
ID15		Circuit breaker of geothermal pump
ID16		Fan 2 circuit breaker
ID17		Geothermal flow switch
ID18		Multifunction input enabling
Analogue outputs		Master
Y1 (0-10V)		
Y2 (0-10V)		Evaporator modulating pump
Y3 (0-10V)	NRP	Modulating 1 fan
Y3 (0-10V)	NXP	Geothermal modulating pump
Y4 (0-10V)		Modulating 2 fan
Analogue inputs		Master
B1		High pressure circuit 1
B2		Low pressure circuit 1
B3		Evaporator water outlet temperature
B4		Evaporator water inlet temperature
B5		Pressing line gas temperature (PT1000) Circuit1
B6		High pressure circuit 2
B7		Low pressure circuit 2
B8		Multi-function input
B9		External air temperature
B10		Pressing line gas temperature (PT1000) Circuit2

5.8 INPUTS/OUTPUTS LIST - MPC BOARD

Digital Outputs	Range	Master
NO1		Recovery pump 1
NO2		Recovery pump 2
NO3		CP3 circuit 1 (CC1B)
NO4		CP3 circuit 2 (CC2B)
NO5		VS-R (recovery solenoid valve) circuit 1
NO6		VS-R (recovery solenoid valve) circuit 2
NO7 (exchange)		VS-B (battery solenoid valve) circuit 1
NO8		VS-B (battery solenoid valve) circuit 2
NO9		VS-E (evaporator solenoid valve) circuit 1
NO10		VS-E (evaporator solenoid valve) circuit 2
NO11		VBV circuit1
NO12		VBV circuit2
Digital inputs		
ID1		Recovery flow switch
ID2		Thermomagnetic switch on pump 1 - recovery
ID3		Thermomagnetic switch on pump 2 - recovery
ID4		Circuit 1 circuit breaker CP3 (MT1B)
ID5		Circuit 2 circuit breaker CP3 (MT2B)
ID6		On/Off remote D.H.W. /Hot water
ID7		Qualify according to setpoint D.H.W.
ID8		
ID9		
ID10		
ANALOGUE outputs		
Y1 (0-10V)		
Y2 (0-10V)		
Y3 (0-10V)		
Y4 (0-10V)		
Analogue inputs		
B1 (NTC)		Recovery inlet water temperature
B2 (NTC)		Recovery 1 outlet water temperature
B3 (NTC)		Evaporator common outlet water temperature (Master/Slave)
B4 (NTC)		Recovery common outlet water temperature (Master/Slave)
B5 (NTC)		DHW storage tank temperature (optional)
B6 (NTC)		Recovery 2 outlet water temperature
B7 (NTC)	NRP	Liquid temperature (defrost end) Circuit 1
B7 (NTC)	NXP	Geothermal's input water temperature (end of defrosting) Circuit 1
B8 (NTC)		
B9 (NTC; NTC HT;)		
B10 (NTC)	NRP	Liquid temperature (defrost end) Circuit 2
B10 (NTC)	NXP	Geothermal's output water temperature
B11 (0-5V)		
B12 (0-5V)		

6 ON/OFF MENU

6.1 UNIT SWITCH-ON/OFF AND SETTINGS ON THE FUNCTIONING MODE (2 PIPES)

On/Off Unit	
Plant side	Off to clock
Recovery side	Off to clock
General enable:	YES

- Unit On/Off: the data relative to the status of the unit and its functioning mode are set in this window.
- General ON/Off status, enabled by user.

6.2 UNIT SWITCH-ON/OFF AND SETTINGS ON THE FUNCTIONING MODE (4 PIPES)

On/Off Unit	
Cold side	Off for Alarm
Heat side	Off for Alarm
General enable:	YES

- Unit On/Off: the data relative to the status of the unit and its functioning mode are set in this window.
- General ON/Off status, enabled by user.

7 SYSTEM MENU (2 PIPES)

7.1 VISUALISATION OF CURRENT CHILLER SETTINGS

Plant side	
OFF	to clock
Switch ON:	BY CLOCK
MODE SELECTION:	BY CALENDAR

Displays the current settings of the chiller:

- **NO**: The system does not produce cold/hot water, recovery is managed separately
- **Yes**: the unit is running and the system is adjusted at the default set-point
- **Yes with set2**: the unit is running and the system is adjusted at the second set-point
- **By clock**: the system is adjusted by the set time periods, when active.

Mode selection:

- **BY SUPERV**: the unit is managed by remote control via the BMS system.
- **BY DIG INPUT**: if the digital contact (auxiliary device) closes, the heating mode is activated
- **BY EXT TEMP**: cooling or heating mode is selected depending on the external temperature
- **BY CALENDAR**: the unit produces hot water depending on the period set
- **HEATING**: the unit produces hot water
- **COOLING**: the unit produces cold water

7.2 SYSTEM SET-POINT DISPLAY 1

Plant side	
Setpoint 1	
	7.0°C
	45.0°C

- Displays the current settings of the chiller

- Indicates the cold water production set-point
- Indicates the hot water production set-point

7.3 SYSTEM SET-POINT DISPLAY 2

Plant side

Setpoint 2



12.0°C



40.0°C

- Displays set-point 2 (only if enabled)
- Indicates the set-points for production of cold water
- Indicates the set-points for production of hot water

7.4 ENABLING: BY CLOCK

Plant side

DAY MONDAY

ON	OFF	SEL
a: 8: 0	12: 0	OFF
b: 16: 0	22: 0	ON

Plant side

DAY MONDAY

ON	OFF	SEL
c: 0: 0	0: 0	Set2
d: 0: 0	0: 0	ON

- Indicates the day of the week
 - Indicates whether the unit is on or off
 - Indicates the time periods of the day and can set unit switch-on and switch-off:
- SEL - it is possible to select, for the relative time period, whether to leave the unit OFF or ON, using the default set-point or the second set-point (Set2)
- Indicates the day with the settings to be copied

Plant side

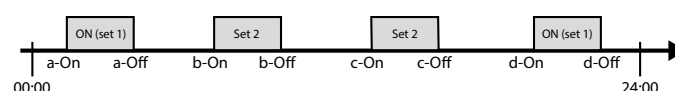
Time zone

DAY MONDAY

Copy to ALL No

- Indicates the day where the settings must be copied.
- The settings may be copied on a single day or on all days: No = disables the day setting copy function Yes = enables the day setting copy function

Each program has 8 days and each day has four time periods at which the switch-on and switch-off time, set point 2 or switch-on/switch-off can be set. Outside these 4 time periods the program will switch the system off:



7.5 MODE SELECTION: BY CALENDAR

Cooling/Heating

Select Cool/Heat with Calendar

Start Cooling 0/---
Finish Cooling 0/---

- Sets the starting date of the period at which the heating unit can be activated.
- Sets the final date of the period at which the heating unit can be deactivated.

7.6 MODE SELECTION: EXTERNAL TEMPERATURE

Cooling/Heating	
Select Cool/Heat with External Temperature	
Set ON Heating	26°C
Set ON Cooling	07.0°C

- Sets the external temperature at which the unit must be activated in cooling mode
- Sets the external temperature at which the unit must be activated in heating mode

8 RECOVERY MENU (2 PIPES)

CAUTION



The NRP - 2-pipe unit è is set up for production of Domestic Hot Water (D.H.W.). No Anti-legionella Cycle is included.

8.1 RECOVERY SET-POINT DISPLAY

Recovery side	
Off to clock	
External temperature	
Enable:	YES

Displays the current settings of the heat exchanger.

YES: the unit does not produce hot water for DHW use

NO: the unit is running and the system is adjusted at the default set-point.

BY CLOCK: the system is adjusted by the set time periods, when active.

Yes with set2: the unit is running and the system is adjusted at the second set-point.

Recovery side	
Setpoint 1:	45.0 °C
Setpoint 2:	45.0 °C

— Displays the current settings of the chiller

— Displays the heat exchanger outlet water temperature at the default set-point

— Displays the heat exchanger outlet water temperature at the second set-point

9 COOL MENU (4 PIPES)

Cold side	
OFF	to clock
Enable:	BY CLOCK

NO: the system does not produce cold/hot water

Yes: the unit is running and the system is adjusted at the default set-point

Yes with set2: the unit is running and the system is adjusted at the second set-point

BY CLOCK: the system is adjusted by the set time periods, when active.

9.1 DISPLAY OF COOLING SIDE HEAT EXCHANGER SET-POINT 1

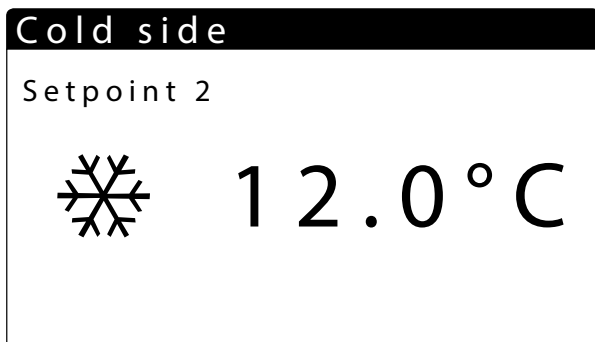
Cold side	
Setpoint 1	
	7.0 °C

— Displays the current settings of the chiller

— Indicates that the system default set-point is active

— Indicates the cooling set-point temperature

9.2 DISPLAY OF COOLING SIDE HEAT EXCHANGER SET-POINT 2



- Displays set-point 1 and set-point 2 (only if enabled)
- Indicates the set-points for production of cold water
- Indicates the set-points for production of hot water

CAUTION



To set the time periods, see the chapter 7.4 Enabling: BY CLOCK [on page 19](#)

10 HEAT MENU (4 PIPES)

CAUTION



The NRP 4-pipe unit is set up for production of Domestic Hot Water (D.H.W.).

Heat side

Off to clock
External temperature



Enable:

YES

NO: the unit does not produce hot water on system side

YES: the unit is running and the system is adjusted at the default set-point.

BY CLOCK: the system is adjusted by the set time periods, when active.

Yes with set2: the unit is running and the system is adjusted at the second set-point.

10.1 DISPLAY OF HEATING SIDE SET-POINT

Heat side

Setpoint 1:

45.0°C

Setpoint 2:

45.0°C

- Displays the current settings of the chiller
- Displays the heat exchanger outlet water temperature at the default set-point
- Displays the heat exchanger outlet water temperature at the second set-point

11 CLOCK MENU

11.1 SYSTEM TIME AND DATE SETTINGS

Clock	
Day:	Tuesday
Time:	3 May 2011
Hour:	14:04

- Displays the day of the week (it cannot be changed from this window).
- The date of the system can be modified
- The time of the system can be modified

11.2 DAYLIGHT SAVING TIME SETTINGS

Clock	
Automatic change	
Hour solar/legal	Yes
Transition Time:	1h
Start:	LAST SUNDAY
in MARCH	at 2.00
End:	LAST SUNDAY
in OCTOBER	at 3.00

- **Clock:** the daylight saving time settings are displayed in this window.
- **Day-light saving time:** this parameter indicates whether to enable adjustment of system time based on the date, according to the subsequent settings.
- **Transition time:** This parameter indicates how much the system time must be increased or decreased based on time change (depending on whether it is the start or finish of daylight savings time).
- **Start of daylight saving time use:** this parameter indicates which day of the month you must start to use daylight saving time; in order to specify this, you must set two parts of the same parameter, the first indicating the week (first, second, third or last), the second indicating the day of the week.
- **Start month:** this parameter indicates the month in which to start to use the daylight saving time setting
- **Start time:** this parameter indicates the time in which to start to use the daylight saving time setting
- **End of daylight saving time use:** this parameter indicates which day of the month you must quit using daylight saving time; in order to specify this, you must set

two parts of the same parameter, the first indicating the week (first, second, third or last), the second indicating the day of the week.

- **End month:** this parameter indicates the month in which to quit using the daylight saving time setting
- **End hour:** this parameter indicates the time in which to quit using the daylight saving time setting

11.3 SETTING THE CALENDAR FUNCTION

Calendar		
Start	Finish	Action
01 / JAN.	06 / FEB.	OFF
05 / JAN.	08 / FEB.	HOL.
0 / ---	0 / ---	---
0 / ---	0 / ---	---
0 / ---	0 / ---	---

- **Calendar:** this window sets the actions to be carried out in the calendar function; this function allows you to set 5 periods, specifying the length in days, and to connect a specific action to be carried out to each one of them.
- **Start:** Indicates the start date for the 5 periods that can be set.
- **End:** Indicates the end date for the 5 periods that can be set.
- **Action:** indicates the action to be carried out for each of the 5 periods set in the calendar.
- **Time periods start date:** these parameters specify the starting date (day/month) for each period; if you set 00/00 as the start and end value, this period will be disabled.
- **Time periods end date:** these parameters specify the end date (day/month) for each period; if you set 00/00 as the start and end value, this period will be disabled.
- **Actions set for the time periods:** these parameters specify the action to be carried out corresponding to the set periods; the actions can be:
Off (unit switch-off during the period selected);
Fest (for each day of the period selected, settings relative to the time periods specified for the "HOLIDAY" will be carried out);
--- (no action).

12 ALARM MENU

Every time an alarm is generated, it is saved in an area of memory called "alarms log", which contains the last 100 alarms recorded in the unit. For every alarm saved, different information is recorded regarding the unit situation at that time (work temperatures and pressures), so that the technical after-sales staff can have a clear view of the unit when a given alarm occurs.

To access the alarms log:

1. press the key  and enter the alarms display;
2. if they are present, scroll all active alarms using the  key and reach the icon that indicates the activation of the alarms log;
3. press the key  to enter the alarms log;
4. to exit the alarms log, press  or .

Alarm
AL05

High pressure sensor
circuit 1
broken or not connect

Active alarms: 15 

- **Alarm code:** this parameter indicates the alarm code. This code can be found in the previous pages (alarms summary table).
- **Alarm description:** this parameter indicates the description of the alarm saved.
- **Alarm number:** this value indicates the progressive number assigned to the alarm; this value goes from 0 (first alar recorded) to 99 (last alarm recorded).
- Indicates the possibility of scrolling the displays of the various active alarms signalled by pressing the keys  and .

12.1 ALARM HISTORY

Alarm



Push key ENTER
to go HISTORY alarm

By using the keys   to scroll inside the alarms menu, you access the indicated screen from whence it is possible to enter the alarms log MENU.

8:22 29/3/11
N°003

AL 42 Recovery anti-freeze
Temp. Outlet

	In	Out
Plant	15.7°C	24.5°C
Recov.	0.0°C	0.0°C

C1:    OFF

C2:    OFF

8:22 29/3/11
N°003

AL 76 High temp.TGP
circuit 2

	LP bar	HP bar
Circ 1	8.3	12.5
Circ 2	4.0	14.7

Plant 100%

Recov 70%

The following descriptions are possible for each alarm:

- Date and time of triggering
- Nature of alarm
- System side input/output temperature
- Recovery input/output temperature
- Status of compressors
- Low pressure
- Status of unit
- Status of compressors
- Status of pumps
- High pressure

13 LIST OF ALARMS

There are three types of alarm resets:

- **Auto:** automatic, when the event causing the alarm stops, also the alarm disappears.
- **Semi (semi-automatic)** = the alarm is automatic, but if it is triggered more than 3 times in an hour then it becomes with manual reset;
- **Manual:** manual, to restart normal operation manual acknowledgement is necessary.

CAUTION



Keep the  button pressed to rearm the alarm manually.

The alarms log cannot be reset and as the memory available is suitable to contain 100 alarms, once the index has reached the value of 99, its increase will start from 00 again (over-writing the oldest alarm).

Code	Range	Description	Note	Delay	Reset
AL01		Clock battery faulty or not connected			Manual
AL02		Expansion memory damaged			Manual
AL03		ID8 phase monitor			
AL04		Board re-start from lost power			
AL05		High pressure sensor circuit 1 faulty or not connected	B1	30s	
AL06		High pressure sensor circuit 2 faulty or not connected	B6	30s	
AL07		Low pressure sensor circuit 1 faulty or not connected	B2	30s	
AL08		Low pressure sensor circuit 2 faulty or not connected	B7	30s	
AL09		Inlet water temp sensor evap. faulty or not connected	B4	30s	
AL10		Evap Out. Temp. broken or disconnected	B3	30s	
AL11		Outlet water temp sensor evap.com. faulty or not connected	B3 uPC	30s	
AL12		Inlet water temp sensor recovery faulty or not connected	B1 uPC	30s	
AL13		Outlet water temp sensor recovery1 faulty or not connected	B2 uPC	30s	
AL14		Outlet water temp sensor recovery2 faulty or not connected	B6 uPC	30s	
AL15		Outlet water temp sensor recovery common faulty or not connected	B4 uPC	30s	
AL16		External temperature sensor faulty or not connected	B9	30s	
AL17	NRP	Circuit 1 Liquid temperature probe broken or not connected			Manual - 30s
AL17	NXP	Geothermal input's temperature probe is broken or not connected			Manual - 30s
AL18	NRP	Liquid temperature sensor circuit 2 faulty or not connected			Manual - 30s
AL18	NXP	Geothermal output's temperature probe is broken or not connected			Manual - 30s
AL19		Request for maintenance on compressors of circuit 1			Manual
AL21		Circuit 1 Pump 1 Rec. maintenance			Manual
AL22		Circuit 1 Pump 1 Rec. maintenance			Manual
AL23		Circuit breaker compressor 1 circuit 1			Manual
AL24		ID13 Pump 1 system overload	ID 6		Manual
AL25		ID14 Pump 2 system overload			Manual
AL26		Thermal alarm heat recovery pump 1			Manual
AL27		Pump 2 rec. overload			Manual
AL28	NRP	ID15 Fan circuit breaker circuit 1			Manual
AL28	NXP	ID15 Thermal geothermal pump			Manual
AL29		ID16 Fan circuit breaker circuit 2			Manual
AL30		Low pressure indicated by pressure switch on circuit 1		180s + 3s "M48"	Manual
AL31		Low pressure sensor circuit 1			Manual

Code	Range	Description	Note	Delay	Reset
AL32		High pressure indicated by pressure switch on circuit 1			Manual
AL33		High pressure sensor circuit 1			Manual
AL34		Circuit 1 Low pressure from probe (not delayed)			Manual
AL35		Circuit 2 Low pressure from probe (not delayed)			Manual
AL36		Circ 1 prevention by probe			---
AL37		Circ 2 prevention by probe			---
AL38		Loss of evaporator water flow			Manual
AL39		Loss of heat recovery water flow			Manual
AL40		Anti-freeze alarm system inlet/outlet temperature		3°C "Ma9"	
AL41		Anti-freeze alarm system common outlet temperature		3°C "Ma9"	
AL42		Anti-freeze alarm heat recovery 1 inlet/outlet temperature		3°C "Ma12"	
AL43		Anti-freeze alarm heat recovery 2 outlet temperature		3°C "Ma12"	
AL44		Output temp com. rec. anti-freeze		3°C "Ma12"	
AL45		Expansion IO (uPC) Off-line		20 s	
AL46		Expansion IO (pCOe) Off-line		20 s	
AL47		Forcing off recovery 1			
AL48		Discharge gas temperature sensor circuit 1 faulty or not connected		30 s	
AL49		Discharge gas temperature sensor circuit 2 faulty or not connected		30 s	
AL50		Board re-start from lost power	It is not an alarm		
AL51		Circuit 1 Comp. 2 maintenance	Display only	"W18"	
AL52		Circuit 1 Comp.3 maintenance	Display only	W18"	
AL53		Circuit 2 Comp.1 maintenance	Display only	W18"	
AL54		Circuit 2 Comp.2 maintenance	Display only	W18"	
AL55		Circuit 2 Comp.3 maintenance	Display only	W18"	
AL56		Circuit 2 Fan maintenance	Display only	W18"	
AL57		Circuit 1 Pump 2 Rec. maintenance	Display only	W18"	
AL58		Circuit 1 Pump 2 syst. maintenance	Display only	W18"	
AL59		Circuit breaker compressor 2 circuit 1			Manual
AL60		Circuit breaker compressor 3 circuit 1			Manual
AL61		Circuit breaker compressor 1 circuit 2			Manual
AL62		Circuit breaker compressor 2 circuit 2			Manual
AL63		Circuit breaker compressor 3 circuit 2			Manual
AL64		Pressure switch BP 2 from pressure switch		180s + 3s "M48"	Manual
AL65		Low pressure 2 from probe			Manual
AL66		High pressure pressostat circuit 2			Manual
AL67		High pressure sensor circuit 2			Manual
AL68		Circ.1 low pressure prevention			
AL69		Circ.2 low pressure prevention			
AL71	NRP	Recovery 2 output anti-freeze		3°C "Ma12"	
AL71	NXP	Forcing off recovery 2		3°C "Ma12"	
AL72	NRP	Rec. common output anti-freeze		3°C "Ma12"	
AL72	NXP	Forcing off common recovery		3°C "Ma12"	
AL73		Circuit 1 TGP prevention		"Ma39"	
AL74		Circuit 2 TGP prevention		"Ma39"	
AL75		High discharge gas temperature circuit 1		"Ma54"	
AL76		High discharge gas temperature circuit 2		"Ma54"	
AL78		Defrost on system not available			
AL79		Defrost on recovery not available			
AL80		Alarm Offline Master board disconnected			
AL81		Alarm Offline NRP 2 board disconnected			
AL82		Alarm Offline NRP 3 board disconnected			
AL83		Alarm Offline NRP 4 board disconnected			
AL84		High system inlet temperature alarm			Semi Automatic
AL85		Alarm high temperature - Recovery inlet			Semi Automatic

Code	Range	Description	Note	Delay	Reset
AL86		Heating off forcing, circuit 1			Automatic
AL87		Heating off forcing, circuit 2			Automatic
AL88		Cooling off forcing, circuit 1			Automatic
AL89		Cooling off forcing, circuit 2			Automatic
AL91		Geothermal flow switch alarm			
AL92		Alarm antifreeze geo			

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Aermec S.p.A.

Via Roma, 996 - 37040 Bevilacqua (VR) - Italia

Tel. +39 0442 633 111 - Fax +39 0442 93577

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