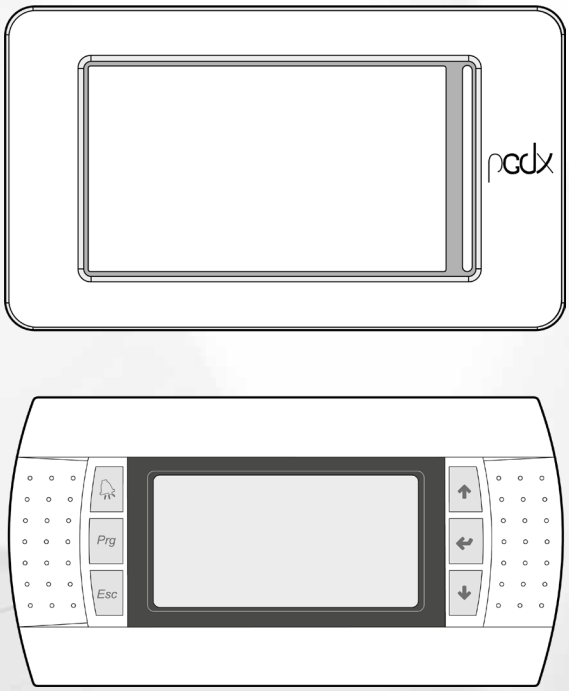
EN

25/04 - 4424411_02
Translation of Original instructions

Screw w/w range



CARD PCO5 - TOUCH PANEL PGDX - PANEL PGD1

AERMEC

www.aermec.com

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

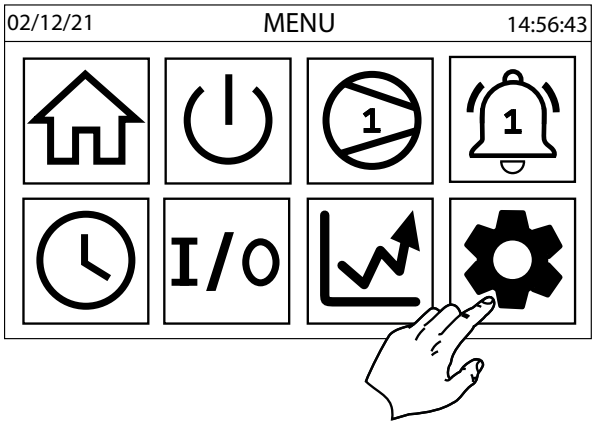
CE

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.

TABLE OF CONTENTS

1 USER INTERFACE (PGDX)

The user has the pGDx panel available with a 4.3" touch screen, which is used to display the complete machine status and change the parameters to configure it.
The structure of the various menus and displays is designed to be functional and easy to use.
The card stores all the default settings and any modifications.
After the absence of voltage for any period of time, the unit is able to start up again automatically, maintaining the original settings.



1.1 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.
once the desired icon is selected, the select menu opens, and it is possible to display or change the corresponding parameters.

CAUTION

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;

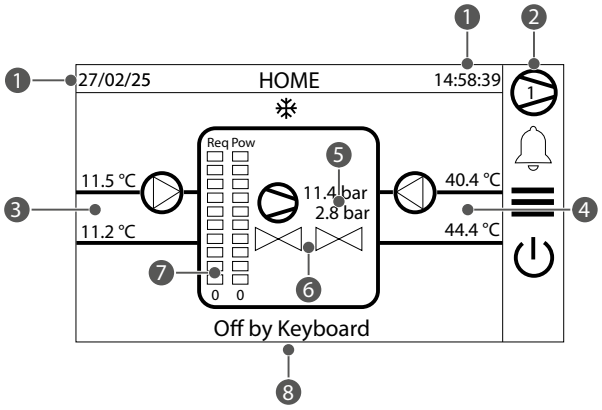
1.2 MENU ICONS

The following table contains the menu icons for the pGDx panel:

Icon	Meaning
	Home: Pressing this key displays the machine summary, where it is possible to find operating information such as temperature, pressures, setpoint, status.
	Chiller: Pressing this key displays the Chiller menu, which is the main menu where it is possible to display and change the operating mode of the machine and the adjustment setpoints.
1	**Unit selection:** Pressing this key makes it possible to select the compressor unit with which to dialogue. As each compressor is managed by a control card, each operating parameter must be programmed in all the cards.
 1	**Alarms:** Pressing this key displays the list of active alarms, it permits accessing the alarm log and resetting the alarms when they are no longer active. The key icon is red when there is at least one active alarm, and it turns black when there are no alarms. The number above it informs the user of which compressor is involved with the alarm.
	Time: Pressing this key displays the current time of the control card and the touch display and makes it possible to synchronise them. It is also possible to enable and program the weekly time bands to manage the chiller activity.
I/O	**Inputs/outputs:** Pressing this key displays the Input/Output menu to consult the status of all inputs (probes, contacts) and outputs (analogue, loads) of the control card and the peripherals connected to it (electronic valve driver, inverter, leak detector).
	Diagrams: Pressing this key displays some diagrams that characterise machine operation. The water input, output values, power output by the individual compressors and the compressor envelope if it is not the inverter type are present.

Icon	Meaning
	Home: Pressing this key displays the machine summary, where it is possible to find operating information such as temperature, pressures, setpoint, status.
	**Settings:** Pressing this key displays the Settings submenu where it is possible to access: • System language • Installer menu (password required) • Service menu (password required) • Manufacturer menu (password required) • Configurator (password required)

2 HOME MENU



This mask displays:

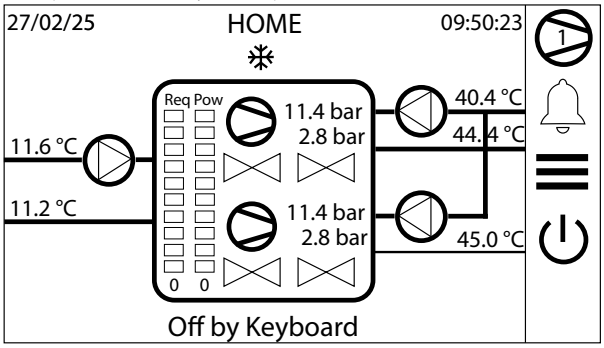
General unit status:

1. Current date and time
2. Control card whose parameters are displayed (pCO5+)
3. Evaporator (EV) input temperature;
3. Evaporator (EV) output temperature;
4. Condenser inlet temperature (CN);
4. Condenser outlet temperature (CN);
5. High, low pressure and compressor status;
6. Electronic valve status;
7. Request and power output;
8. **The machine operating status:**

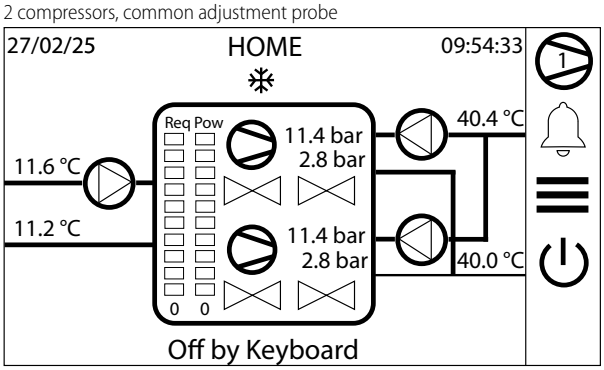
— ON: machine on
— PUMPDOWN: pumpdown cycle in progress
— OFF BY KEY: machine turned off by the keypad command
— OFF BY DIG. IN.: machine turned off by remote contact
— OFF BY SUPERVISOR.: machine turned off by supervisor
— OFF BY TIME BAND: machine turned off by the timer
— OFF BY ALARM: machine turned off by alarm
— OFF BY SER.OFFL: machine turned off due to failure of adjustment probe from supervisor

Depending on the number of compressors and the position of the adjustment probe, the Home page can appear differently.

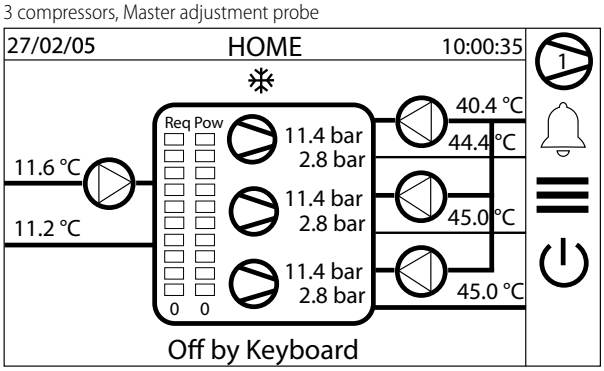
2 compressors, Master adjustment probe



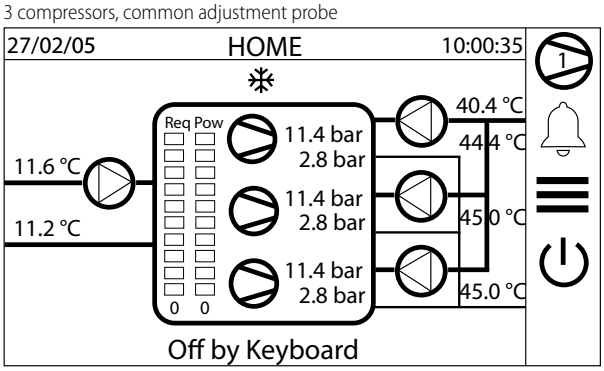
2 compressors, common adjustment probe



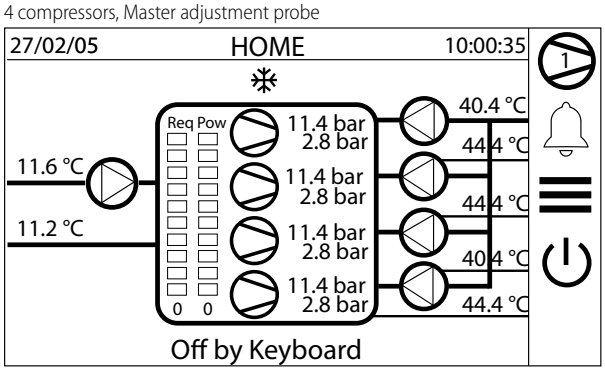
3 compressors, Master adjustment probe



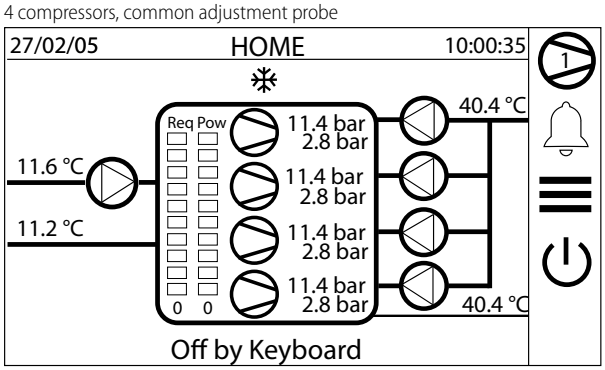
3 compressors, common adjustment probe



4 compressors, Master adjustment probe



4 compressors, common adjustment probe



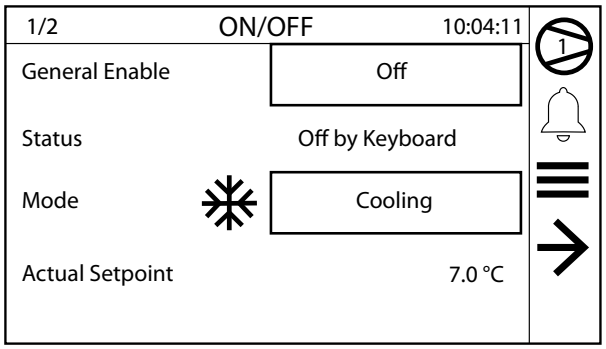
2.1 HOME MENU ICONS

The icons identify the main machine users such as compressors, electronic valves, pumps and communicate their status:

Icon	Description	Note
	Pump	There are different types of pump icons: **White:** pump stopped **Red:** pump alarm **Green:** pump operating
	Valve	There are different types of valve icons: **White:** electronic valve stopped **Red:** electronic valve alarm **Green:** electronic valve operating
	Compressor	There are different types of compressor icons: **White:** compressor stopped **Red:** compressor alarm **Green:** compressor operating
	Compressor disabled	
	Compressor reduced for prevention or safety differential	
	Compressor in pulldown phase	

3 CHILLER MENU

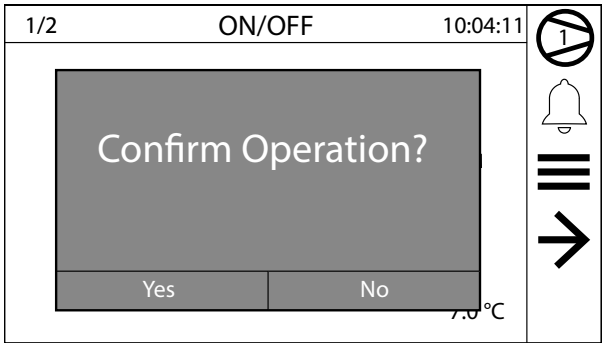
The Chiller menu makes it possible to identify the machine status and change the general enabling.



Machine operating status:

— **ON**: machine on
— **PUMPDOWN**: pumpdown cycle in progress
— **OFF BY KEY**: machine turned off by the keypad command
— **OFF BY DIG. IN.**: machine turned off by remote contact
— **OFF BY SUPERVISOR.**: machine turned off by supervisor
— **OFF BY TIME BAND**: machine turned off by the timer
— **OFF BY ALARM**: machine turned off by alarm
— **OFF BY SER.OFFL**: machine turned off due to failure of adjustment probe from supervisor

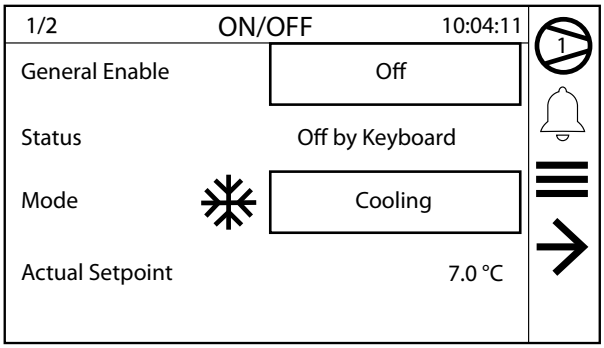
When a request is made to change the operating status, a window appears that requests operator confirmation:

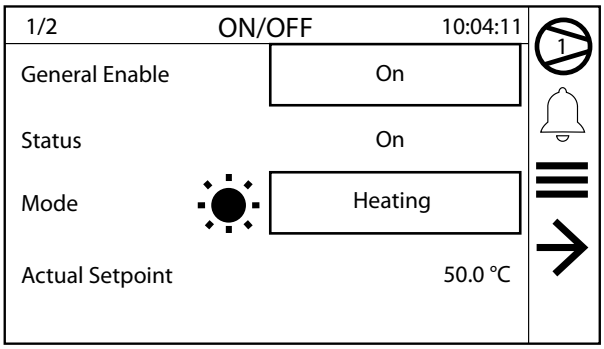


NOTICE

The general enabling is requested also if On/Off is enabled by the digital contact or by the supervisor.

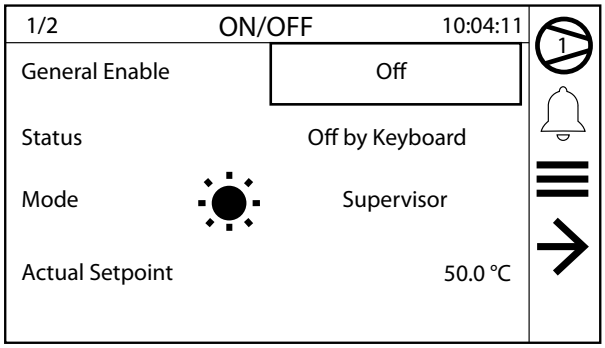
3.1 OPERATING MODE MONITOR

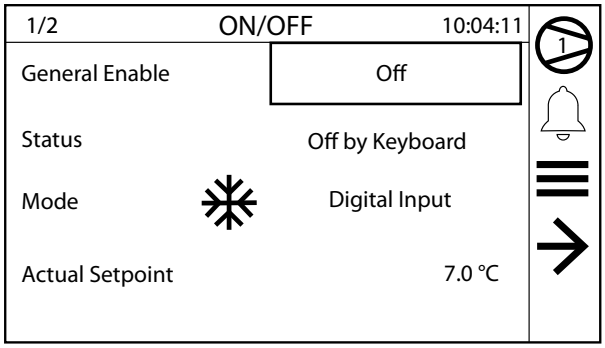




These masks are used to:

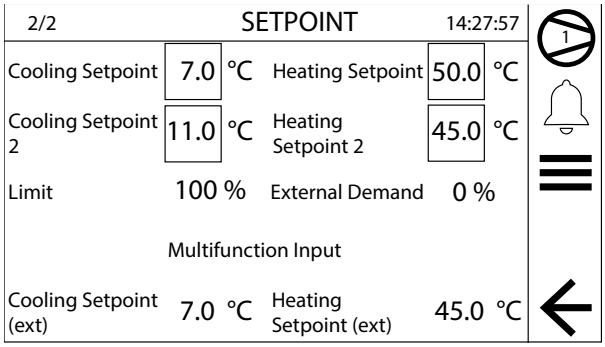
— Set general enabling
— View the machine operating status
— Select the operating mode
— View and change the current setpoint in use for adjustment





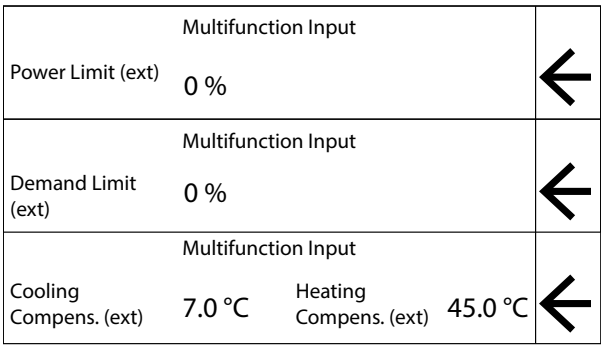
These masks are used to:
— Select the operating mode from supervisor
— Select the operating mode from digital input

3.2 MAIN SETPOINT MONITORS



This mask displays:
— Cooling setpoint or heating setpoint setting (enabled if it is a heat pump machine)
— Double cooling setpoint or double heating setpoint setting
— Limit: Limit of the power, owing to serial or multifunction input request
— External demand: power request due to serial or multifunction input request
— Multifunction input enabled for setpoint setting
— Cooling setpoint set from multifunction input
— Heat Setpoint set from multifunction input

3.3 MULTIFUNCTION INPUT MONITOR



This mask displays:
— Multifunction input enabled for cooling capacity limitation
— Maximum limit of the cooling capacity expressed as a percentage
— Multifunction input enabled for cooling capacity request
— Value of the cooling capacity requested as a percentage
— Multifunction input enabled for setpoint compensation
— Compensation to add to or deduct from the cooling set in °C
— Compensation to add to or deduct from the heating set in °C

4 UNIT SELECTION MENU

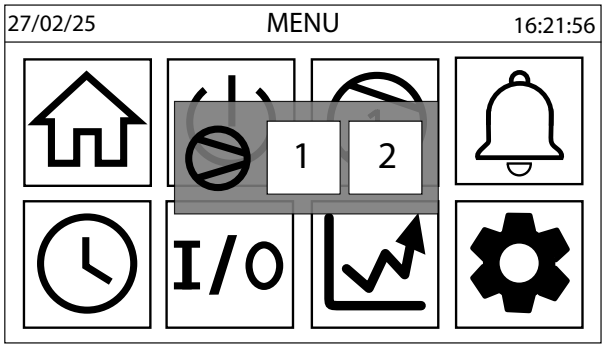
The Unit Selection menu makes it possible to select the compressor unit with which to dialogue.
Each compressor is controlled by a single separate control card. As a result, bi-compressor and tri-compressor machines have 2 or 3 control cards, each with its sizes and parameters.
When the machine is configured, via the Configurator menu, each card is automatically parametrised to be ready for use without any need for changes by the user/installer.

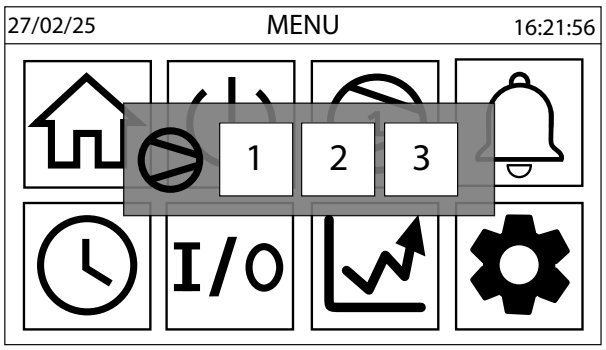
NOTICE

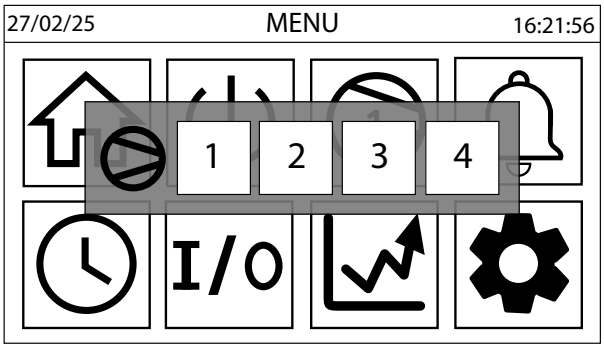
If it is necessary to change a parameter, it must be modified on each of the cards present.

The display touch screen can dialogue with each of the cards present via the unit selection menu.

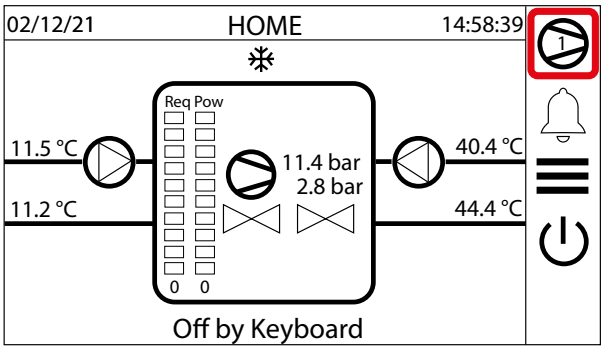
Pressing the key  opens a pop-up where it is possible to select which card to dialogue with, those present (2 cards for a bi-compressor, 3 cards for a tri-compressor, 4 cards for a quadri-compressor):







The same key also presents the user with information on which card was selected for communication.
There is a key (circled in red) on the side bar to the right with the same functionality:



The pGDx panel manages up to 4 cards:

Card 1 (Master): Controls compressor 1

Card 2 (Slave): Controls compressor 2

Card 3 (Slave): Controls compressor 3

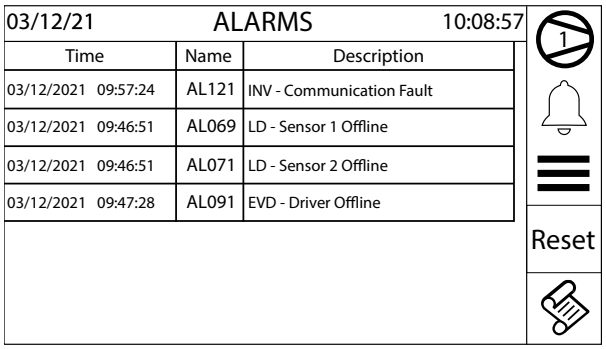
Card 4 (Slave): Controls compressor 4

NOTICE

Refer to the "Home menu" paragraph for the meanings of the compressor icons.

5 ALARM MENU

It is possible to consult the list of active alarms in this section.



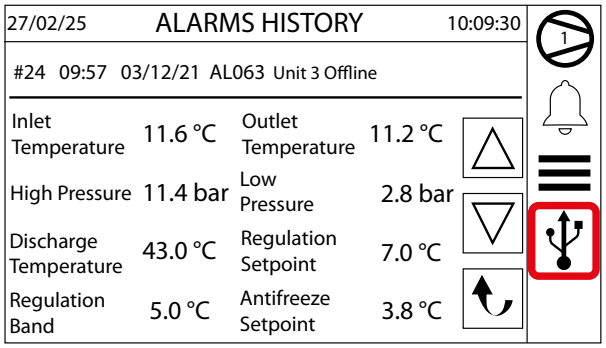
Each line represents a single alarm that occurred in the unit at the selected moment.
Some alarms are only present on the master card (address 1), whereas others can occur on any card.

Each line indicates:
— Date and time the alarm occurred;
— Univocal alarm ID code;
— Detailed alarm description.

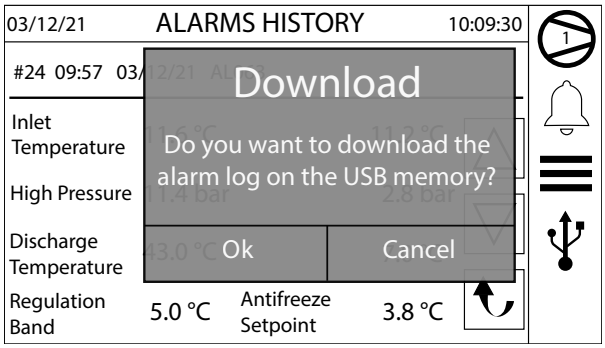
Icon	Meaning
	**Alarm warning:** Signals the presence of alarms. The key icon is red when there is at least one active alarm, and it turns white when there are no alarms. The number above it informs the user of which compressor is involved with the alarm.
Reset	**Alarm reset:** Pressing this key enters an alarm reset request. If the cause of the alarm is no longer present, the line disappears; if no more alarms are present, the global alarm signal turns off.
	**Alarm log:** Pressing this key displays the alarm log page.

5.1 ALARM HISTORY

The menu shows the last 25 alarms that occurred together with some parameters stored at the moment the alarm occurred.



Pressing the USB key makes it possible to request the download of the alarm log to a USB support connects to the panel:



NOTICE

The alarm history cannot be reset because the storage to memory is circular so each new alarm registered overwrites the oldest of the 25 stored to memory.

The parameters are:
— Time and date
— Input temperature
— Outlet Temperature
— High pressure
— Low pressure
— Discharge Temperature
— Regulation Setpoint
— Regulation Band
— Antifreeze Setpoint

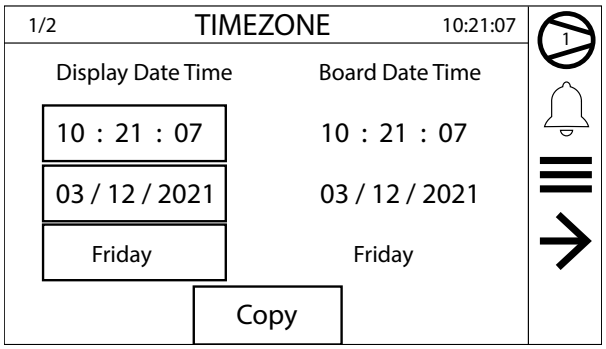
NOTICE

The downloaded alarm history (USB) will only include the information about the alarms that occurred and their date and time; the values shown on the display will not be saved.

6 CLOCK MENU

This menu is used to view and modify the following parameters:
— Time
— Date
— Day of the week
— Programmer timer and time bands for every day of the week

6.1 TIME, DATE AND DAY DISPLAY MONITOR

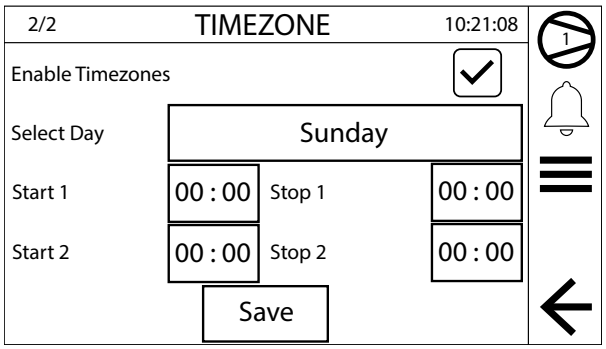


This mask is used to display and modify the time, date and day of the week parameters.

NOTICE

The time on the touch screen display is automatically synchronised with the time on the control card. There is a copy key that is used to copy the time on the display to the control card.

6.2 TIMER ENABLING MONITOR

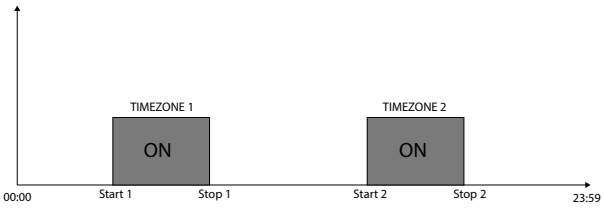


This mask is used to enable the weekly time band timer.

If the time bands are enabled:
— Changes the day of the week being programmed
— Changes the time zone 1
— Changes the time zone 2

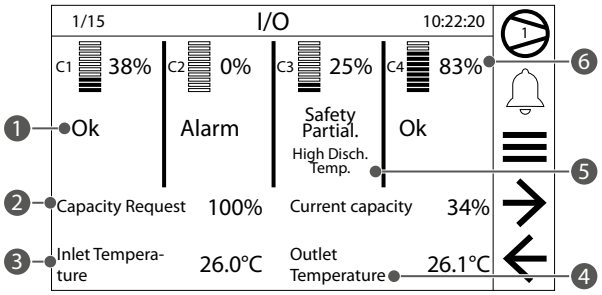
6.3 OPERATING ZONE DIAGRAM

If enabled, the weekly time band timer is used to set 2 operating zones for each day of the week (if one zone has the same start and stop time, it is disabled).
The diagram below shows an example of two operating zones:



7 INPUT/OUTPUT MENU

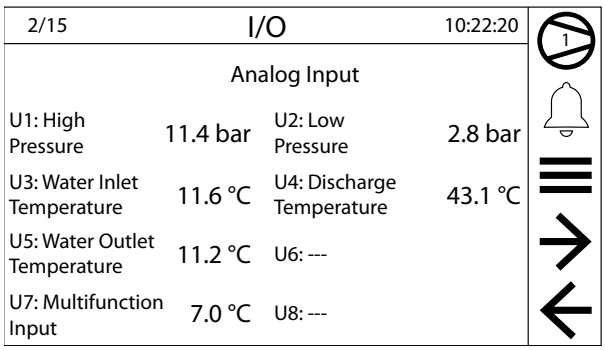
This menu is used to display the state of the inputs and outputs, both digital as well as analogue.
The first mask, which is present only in the master card parameters, summarises the machine status with a graphic indication of the compressor power, input temperature, master water output and circuit operating status.



This mask displays:

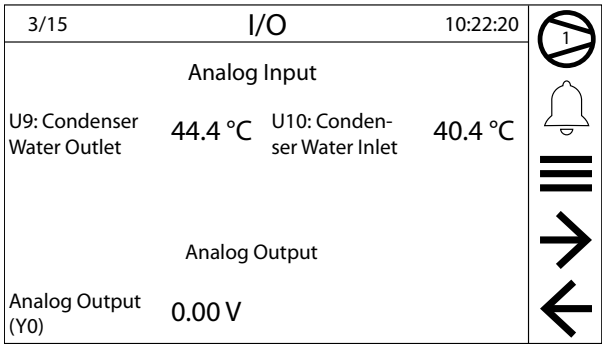
1. Status indication of circuits from 1 to 4:
— ok: operative
— Disabled: not enabled for operation
— Alarm: stopped due to alarm
— Safety capacity control: safety
— Safety differential: wait for safety differential
— Pulldown: wait for PullDown
2. Requested and output power
3. Water Inlet Temperature
4. Water Outlet Temperature
5. Indication of safety capacity control active
6. Cooling capacity of the compressors present from 1 to 4, expressed as a percentage

7.1 TRANSDUCER AND PROBE READING MONITOR



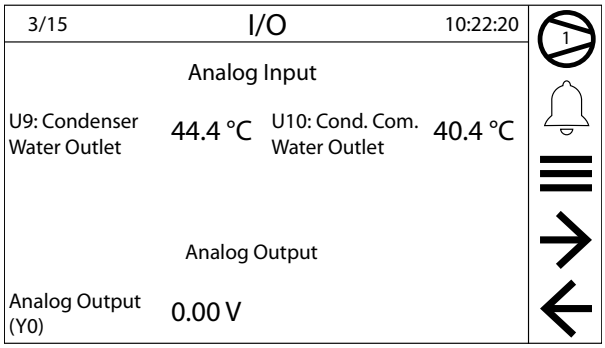
— **U1**: high pressure transducer reading
— **U2**: low pressure transducer reading
— **U3**: evaporator water inlet temperature probe reading (master only)
— **U3**: common water inlet temperature probe reading (in case of adjustment at the outlet with multiple parallel connected evaporators) (unit 2 only)
— **U4**: discharge gas temperature probe reading
— **U5**: evaporator water outlet temperature probe reading
— **U6**: Ammetric transformer inlet (A)
— **U7**: Multifunction input (master only)
— **U8**: evaporator input gas temperature probe reading

7.2 CONDENSER WATER INLET AND OUTLET TEMPERATURE MONITOR



— **U9**: condenser water outlet temperature
— **U10**: condenser water inlet temperature (master only)
— Voltage value at analogue output Y0

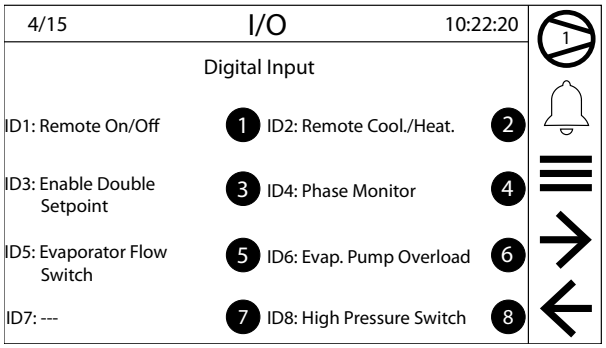
7.3 CONDENSER WATER OUTLET MONITOR

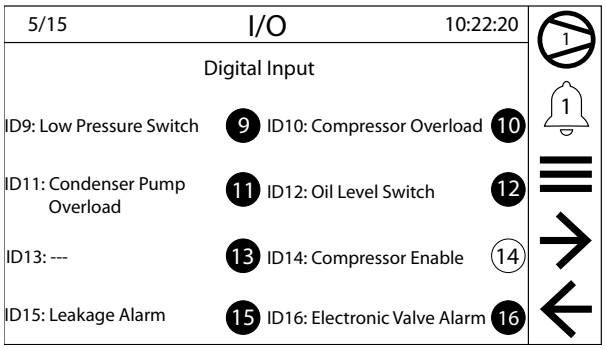


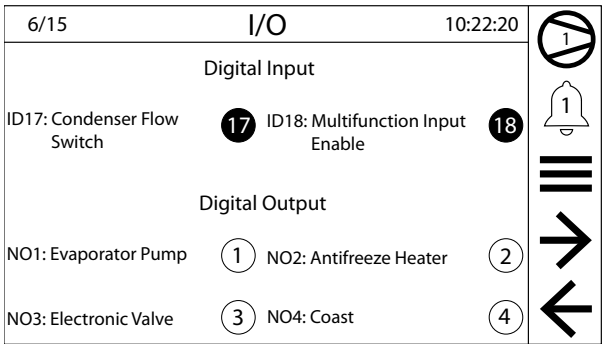
— **U9**: condenser water outlet temperature
— **U10**: common condenser water outlet temperature (unit 2 only)
— Voltage value at analogue output Y0

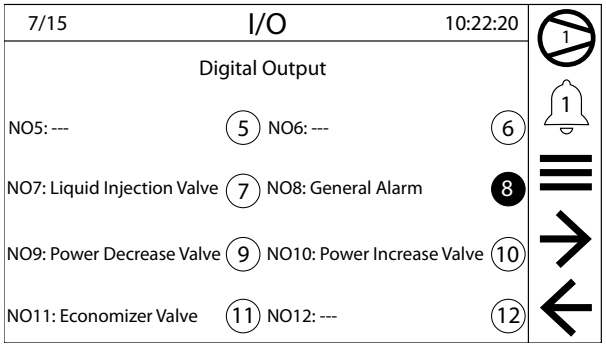
7.4 DIGITAL INPUT/OUTPUT GENERAL MONITOR

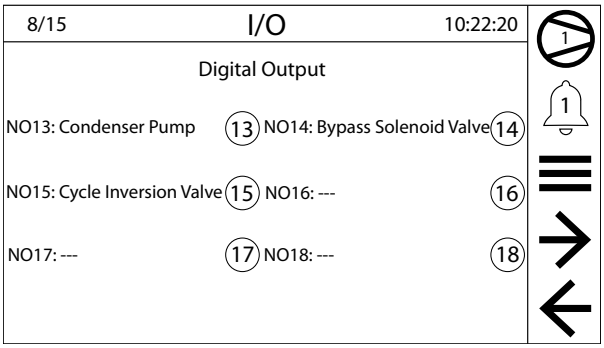
Digital input and output status:



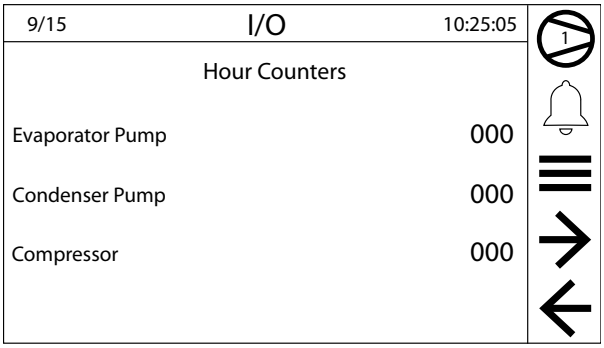






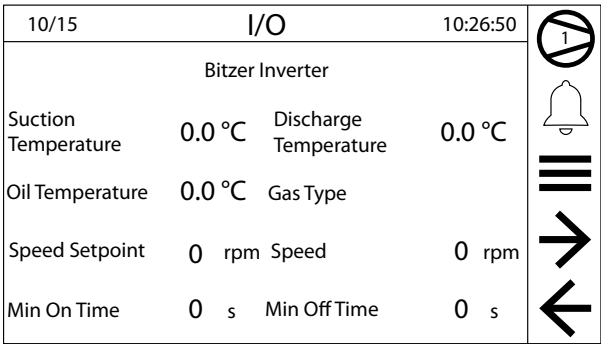


7.5 PUMP AND COMPRESSOR OPERATING HOURS MONITOR



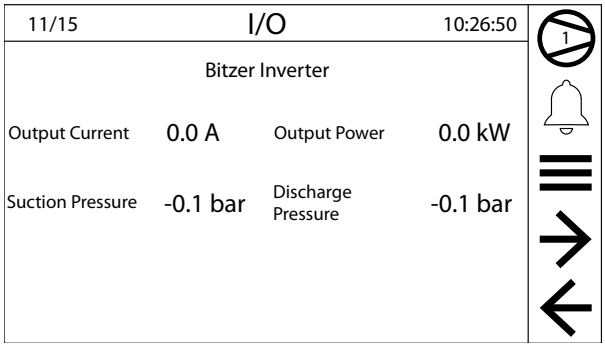
— Evaporator pump operating hours
— Condenser pump operating hours
— Compressor operating hours

7.6 COMPRESSED STATUS MONITOR (A)



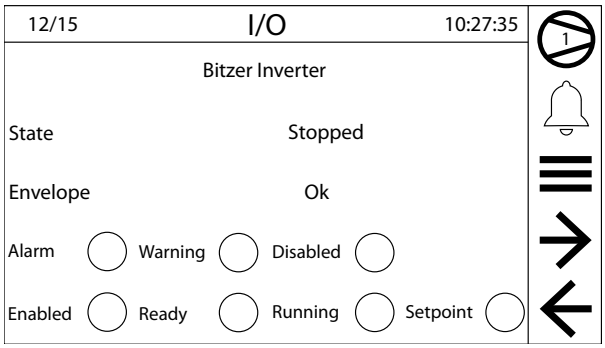
— Intake temperature read by the compressor
— Delivery temperature read by the compressor
— Oil temperature read by the compressor
— Type of gas set in the compressor
— Speed set from card setpoint
— No. of revs read by the compressor
— Minimum operating time remaining
— Minimum switching off time remaining

7.7 COMPRESSED STATUS MONITOR (B)



— Inverter compressor output current
— Inverter compressor output power
— Suction pressure read by inverter compressor
— Discharge pressure read by the inverter compressor

7.8 COMPRESSED STATUS MONITOR (C)



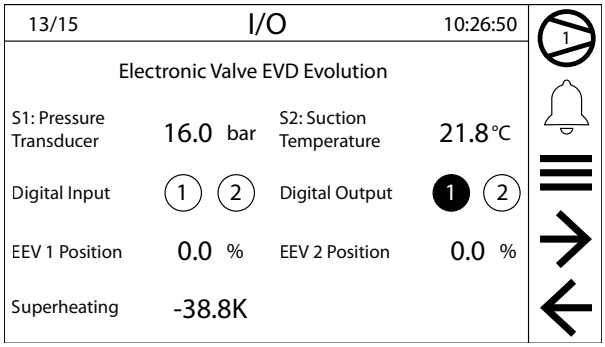
This mask displays:

1. Status:
— Stopped: compressor stopped
— Starting: compressor starting
— ON: compressor operating
— Switching off: compressor switching off
— War IN: out of envelope warning in warning zone
— War OUT: out of envelope warning in critical zone
— Alarm: compressor alarm

2. Envelope zone:
— Ok
— Suction Low, Discharge Low
— Suction Low
— Suction Low, Discharge High
— Discharge High
— Suction High, Discharge High
— Suction High
— Suction High, Discharge Low
— Discharge Low

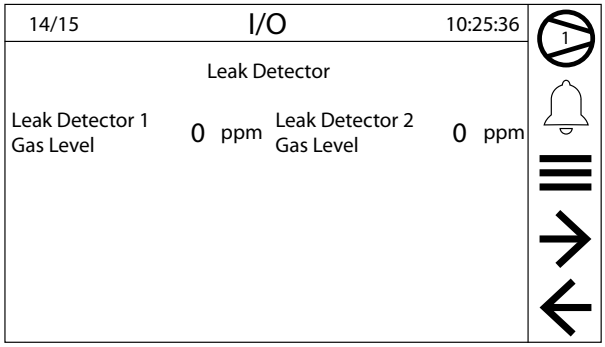
3. Compressor status summary:
— Alarm: alarm
— Warning: Warning
— Disabled: emergency stop
— Enable: enabled to start
— Ready: starting up
— ON: OPERATING
— Setpoint setpoint reached

7.9 VALVE STATUS MONITOR

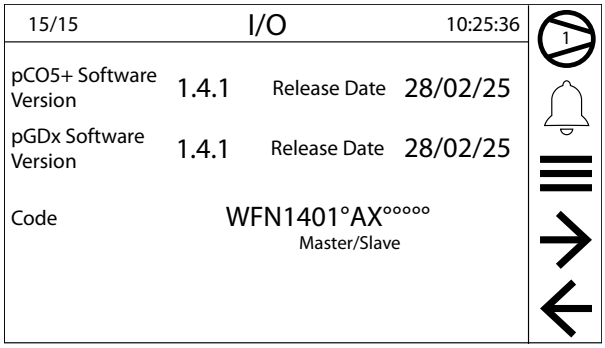


— Valve driver pressure and temperature
— Valve driver digital inputs
— Valve driver digital outputs
— Valve 1 position
— Valve 2 position
— Overheating

7.10 FLAMMABLE GAS AND SOFTWARE VERSION MONITOR



— Concentration of flammable gas detected by sensor 1
— Concentration of flammable gas detected by sensor 2



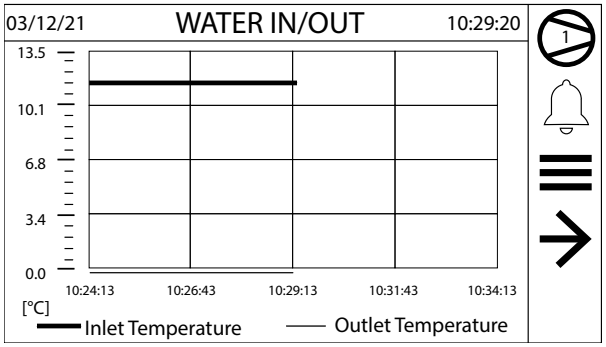
— Control card software version and version date
— Display software version and version date

— Unit ID

8 DIAGRAM MENU

In this menu it is possible to consult the live updated diagrams of some sizes, which are relevant for machine operation.

8.1 WATER INLET AND OUTLET TEMPERATURE MONITOR

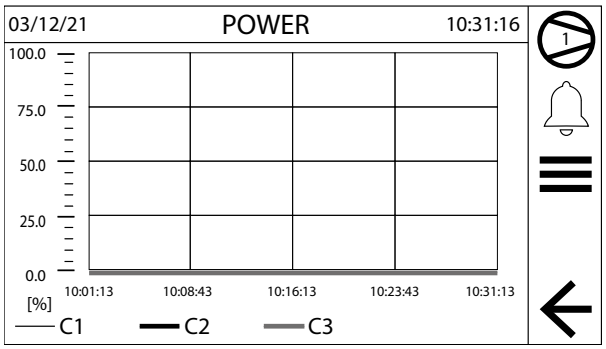


This mask is used to view the water inlet and outlet temperature.

NOTICE

The diagram samples the values every 5 seconds and displays 30 minutes of the log.

8.2 COOLING CAPACITY MONITOR



Cooling capacity output by each compressor:
— Unit 1 (C1)
— Unit 2 (C2)
— Unit 3 (C3)
— Unit 4 (C4)

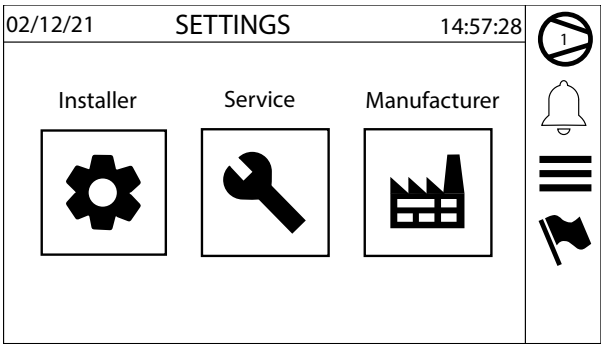
NOTICE

The diagram samples the values every 5 seconds and displays 30 minutes of the log.

The graph in the figure is provided only for exemplary purposes.

9 SETTINGS MENU

This menu is used to enter the submenus that contain the machine configuration parameters.

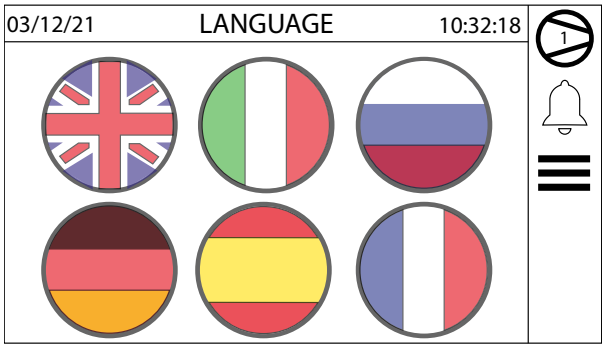


The parameters are organised in the following categories:

Icon	Meaning
	Selection of language and measurement system: Pressing this key displays the system language selection page, using the flag of the selected language, and the page for selecting the measurement system.
	Installer menu (password required): Pressing this key makes it possible to access the first level parameters, those that the machine installed can change for system requirements.
	Service menu (password required): Pressing this key makes it possible to access the second level parameters, those that the after sales service can change for special problem solving interventions.
	Manufacturer menu (password required): pressing this key makes it possible to access the third level parameters, those that the manufacturer can change for special requirements. **Warning: these parameters concern machine adjustment and operation; if the user changes these parameters, this can affect system integrity and therefore changing them is prohibited.**
	Configurator menu (password required): this section can be accessed by pressing any of the Installer, Service, Manufacturer keys, using the appropriate password. This menu is used to enter the machine model to configure the parameters to the correct default settings. **Warning: an incorrect configuration of this section can affect system integrity and therefore they cannot be changed by unauthorised personnel..**

9.1 LANGUAGE SELECTION MENU

This menu is used to select the system language.
All the descriptions and messages will be automatically translated into the selected language.



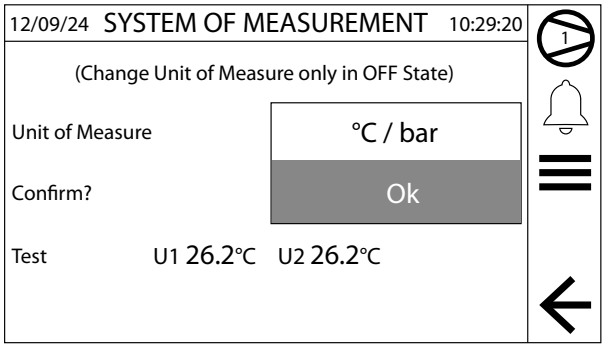
NOTICE

The card does not need to be restarted after the change.

9.2 MEASUREMENT SYSTEM SELECTION MENU

This menu is used to select the measurement system for the machine, either the International System (°C / bar) or the Imperial System (°F / psi). After confirming the change, all the temperature and pressure values will be recalculat-

ed into the new unit of measure; The change also applies to the values read via the BMS.



NOTICE

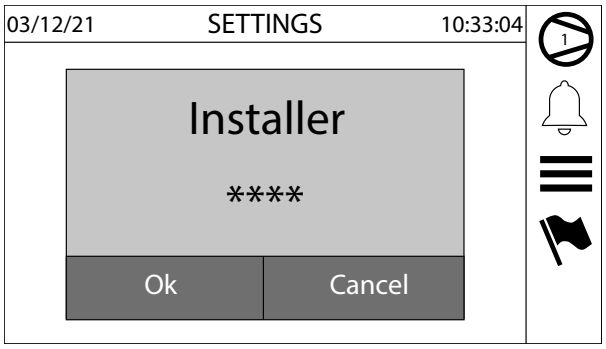
It is recommended to change the unit of measure when the machine is OFF and after performing its configuration. After changing the unit of measure, alarms could occur. In that case, reset them.

9.3 INSTALLER MENU

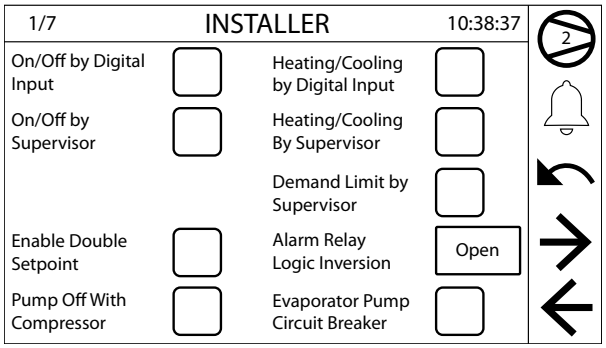
This menu contains the parameters necessary for the machine configuration and its functions.

9.3.1 Password monitor to access the installer menu

Enter the password to access the menu (the password is 0000).

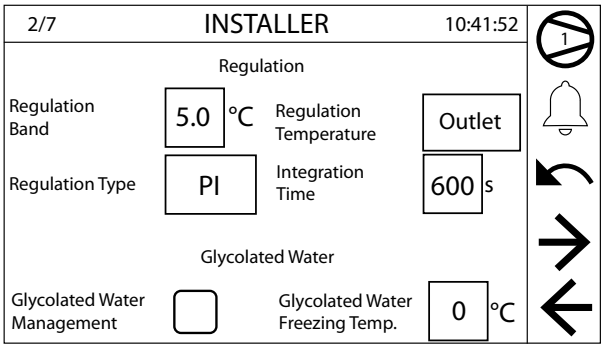


9.3.2 Digital input and supervisor command enabling monitor



— Digital input ON/OFF command enabling.
— Digital input cooling/heating command enabling.
— Supervisor ON/OFF command enabling.
— Supervisor cooling/heating command enabling.
— Modbus serial data maximum cooling power limit enabling.
— Double setpoint use enabling. If enabled via the ID3 digital input, if the setpoint is selected (contact open = normal setpoint, contact closed = double setpoint)
— Alarm relay logic inversion
— Pump heater alarm enabling. **(SLAVE ONLY)**
— Enabling at switching off of the evaporator pump with the compressor off relative to the pump output of the individual slave cards. **(SLAVE ONLY)**

9.3.3 Adjusting temperature monitor



These masks are used to view and modify the following parameters:

1. **Proportional band for the adjustment of the work thermostat.**
2. **Adjusting temperature selection:**

— INLET: Water inlet
— OUTLET: Water outlet

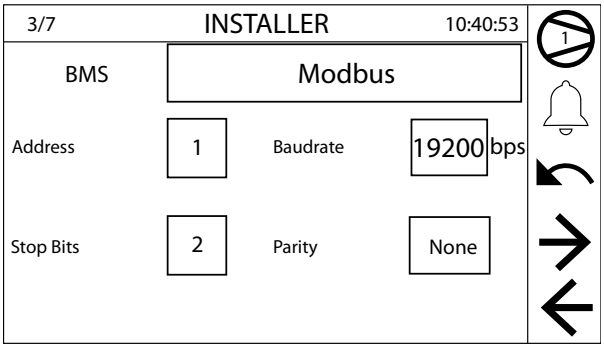
3. **Type of adjustment:**

— P: Proportional
— I: Integral
— PI: Proportional+ integral

4. **Integration time valid for PI or I adjustment.**
5. **Glycol water management enabling.**
6. **Water-glycol mixture freezing temperature (TCMA).**

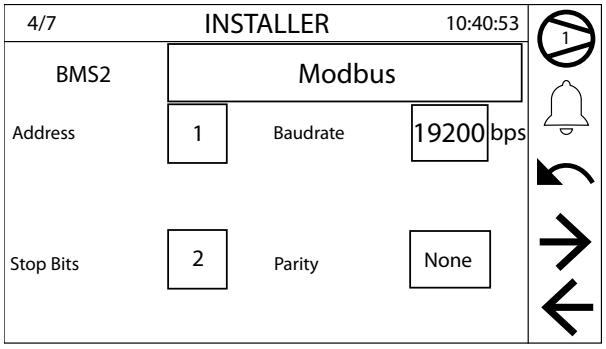
When the function is enabled, the following parameters are calculated automatically and cannot be changed:
— minimum limit of the cooling setpoint (TCMA + 4°C)
— antifreeze prevention setpoint (TCMA + 3.8°C)
— antifreeze alarm setpoint (TCMA + 3°C)
— antifreeze heater activation setpoint (TCMA + 3.5°C)
— cooling force-off setpoint (TCMA + 3.5°C)

9.3.4 BMS and BMS2 parameters monitor



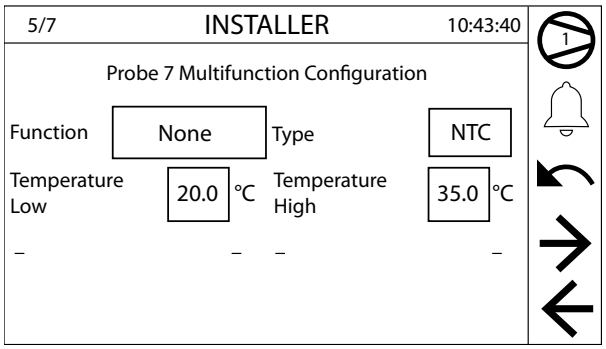
1. Type of protocol used for communication with the supervisor:

— Lon
— Modbus
2. Serial address **BMS** for supervisor.
3. Communication speed.
4. Communication stop bit
5. Communication parity



1. Type of protocol used for communication with the supervisor:
— Lon
— Modbus
2. Serial address **BMS2** for supervisor.
3. Communication speed.
4. Communication stop bit
5. Communication parity

9.3.5 Multifunction input monitor



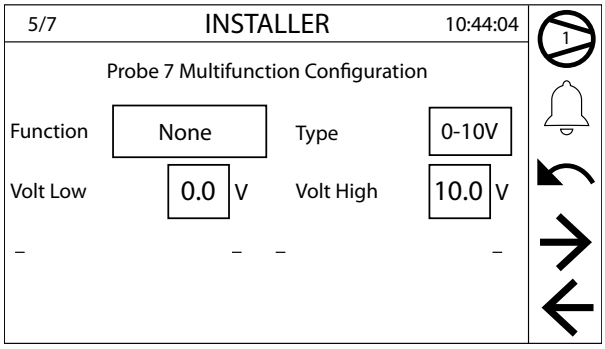
Multifunction input **(MASTER ONLY)** on input B7 active on master.

Function:
— None: no functionality
— Setpoint: working setpoint selection
— Limit: limitation of the cooling capacity
— Compensation: Setpoint compensation with temperature

Input signal type:
— NTC: input with temperature and probe NTC10K
— 0-10V: input 0-10 volt dc
— 4-20mA: Input 4-20mA

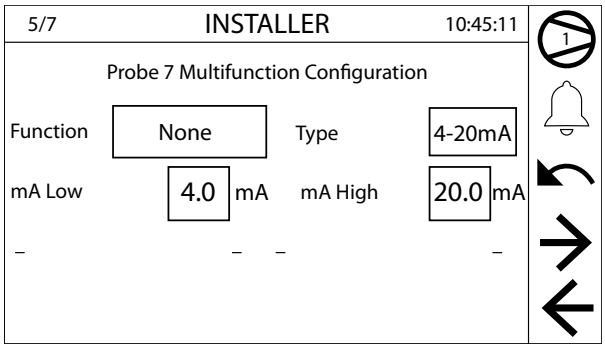
NTC type multifunction input enabled:
— NTC probe minimum temperature
— NTC probe maximum temperature

9.3.6 Input voltage monitor



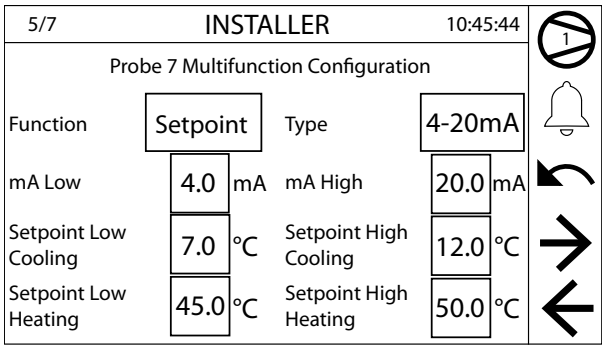
0 –10 volt type multifunction input enabled:
— Minimum input voltage
— Maximum input voltage

9.3.7 Input current monitor



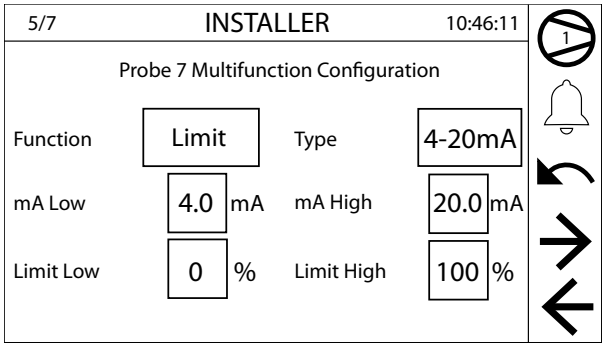
4-20mA type multifunction input enabled:
— Minimum input current
— Maximum input current

9.3.8 Heating and cooling setpoint monitor



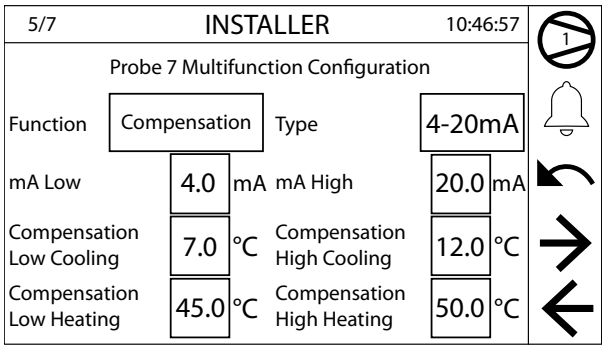
Multifunction input enabled with Setpoint function:
— Cooling setpoint corresponding to the minimum size of the input
— Cooling setpoint corresponding to the maximum size of the input
— Heating setpoint corresponding to the minimum size of the input
— Heating setpoint corresponding to the maximum size of the input

9.3.9 Multifunction input with cooling capacity limit monitor



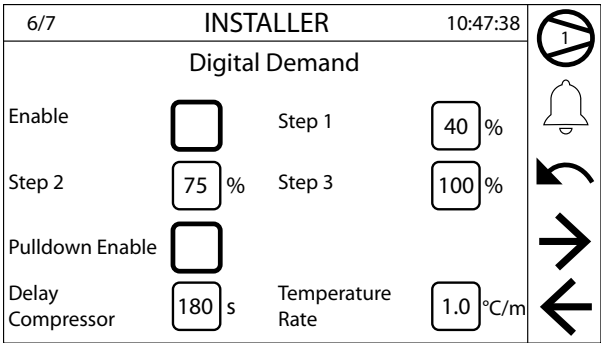
Multifunction input enabled with cooling capacity limit function:
— Power limit corresponding to the minimum size of the input
— Power limit corresponding to the maximum size of the input

9.3.10 Multifunction input with setpoint compensation monitor (A)



Multifunction input enabled with setpoint compensation with temperature probe function:
— Cooling setpoint compensation corresponding to the minimum size of the input
— Cooling setpoint compensation corresponding to the maximum size of the input
— Heating setpoint compensation corresponding to the minimum size of the input
— Heating setpoint compensation corresponding to the maximum size of the input

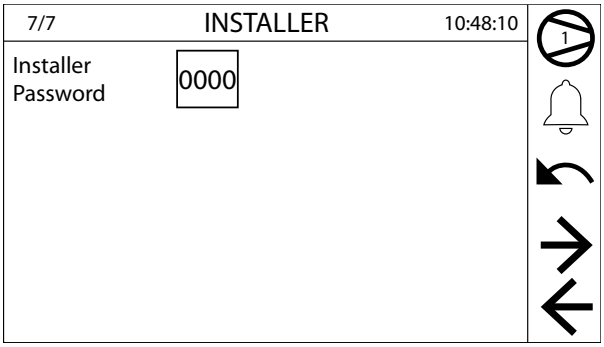
9.3.11 Digital contact enabling and setting monitor



Power request enabling from digital contacts ID 16, ID 17, ID 18.
Digital contact power step setting:
— Power step 1 ID 16
— Power step 2 ID 17
— Power step 3 ID 18

Pull Down control:
— Enabling
— Water temperature variation rate below which the activation of new steps is enabled
— Delay time between the activation of two subsequent steps

9.3.12 New password for installer menu monitor



Entering a new password for the installer menu.

10 ALARM

The alarms are divided into the following categories:
1. Signal only alarms (only a signal on the display, alarm relay)
2. Circuit alarms (they deactivate only the relative circuit, signal on the display, alarm relay)
3. Serious alarms (they deactivate all the system circuits, signal on the display, alarm relay)
4. Gas alarms (alarms related to the management of flammable gas)

The alarms must be considered as being manually reset, except for those specified otherwise.

10.1 SIGNAL ONLY ALARMS

Alarm	Source	Features
Pump maintenance	Count	Settable threshold
Compressor maintenance	Count	Settable threshold
Anti-freeze	Digital input	
Envelope (On/Off compressors)	Transducers	
Excessive entries in memory T	System	
T Memory Error	System	

10.2 CIRCUIT ALARMS

Alarm	Source	Features
High pressure	Pressure switch	
	Transducer	Settable threshold and differential
Low pressure	Transducer	Delayed with respect to compressor start Bypassed during and after the pumpdown cycle Settable alarm bypass time from compressor start Settable alarm threshold and differential
Low pressure LOW	Transducer	Enabled from the menu Settable threshold and differential
Compressor thermal	Digital input	
Oil differential	Digital input	Delayed at acquisition Settable acquisition delay time
Condenser pump thermal	Digital input	
Evaporator antifreeze	Probe	Settable threshold and differential
Condenser antifreeze	Probe	Settable threshold and differential
Discharge refrigerant temperature	Probe	Settable threshold and differential
Pressure differentials	Transducers	Settable threshold and delay from start
Probes faulty	Probes	
Evaporator gas antifreeze	Probe	Settable threshold and differential
Increment/decrement relay	A.T.	
A.T. fault	A.T.	
Anti-freeze	Probe	Settable threshold and differential
Unit offline		
Refrigerant drain circuit		
Electronic valve alarms	Valve driver	
Inverter alarms	Inverter	

10.3 SERIOUS ALARMS

Alarm	Source	Features
Configurator error		
Phase monitor	Digital input	
Evaporator pump thermal	Digital input	
Water inlet probe failure	Probe	
Water flow failure	Flow switch	Settable bypass from pump start and acquisition delay

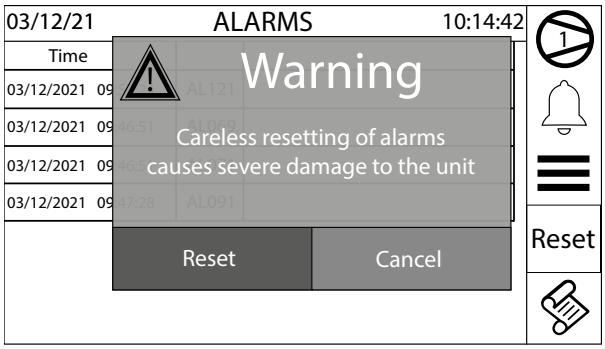
Alarm	Source	Features
Low pressure	Pressure switch	Delayed with respect to compressor start Bypassed during and after the pumpdown cycle Settable alarm bypass time from compressor start
Condenser High Pressure	Transducer	Settable threshold and duration of permanence above the threshold

10.4 GAS ALARMS

Alarm	Source	Features
High pressure	Pressure switch	
Low pressure	Pressure switch	
Gas Leakage	Leak detector	

10.5 ALARM RESET

Pressing the reset key activates the request to reset the active alarms.

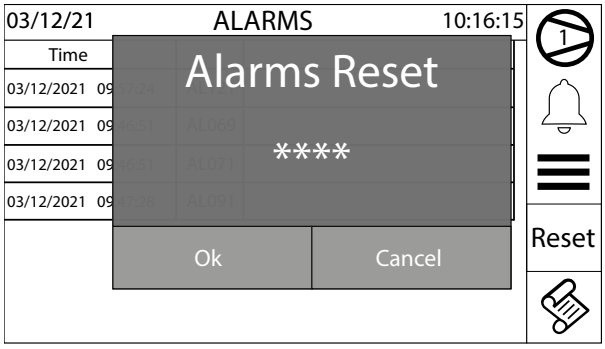


To reset the alarms, simply press the Reset key .

10.6 GAS ALARM RESET

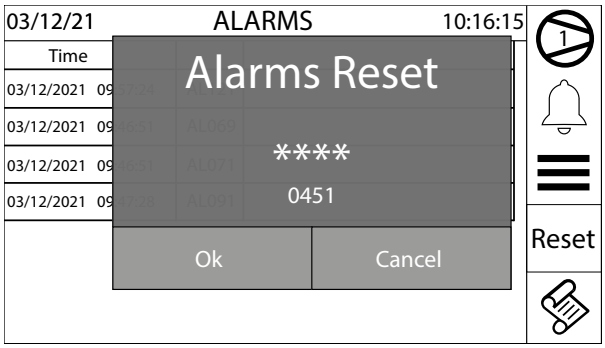
In the machines that use flammable gas, there are some alarms that require a password to be reset. This safety measure guarantees that the machine will be put back into operation only after the risk conditions have been eliminated by expert and prepared personnel.

The gas alarms are reset when the correct password is entered:



It is possible to reset the alarms using the dynamic password generated with the token, after activating the function in the Manufacturer menu.

The dynamic password is valid for one reset, then a new token will be generated that will be associated with a new password:



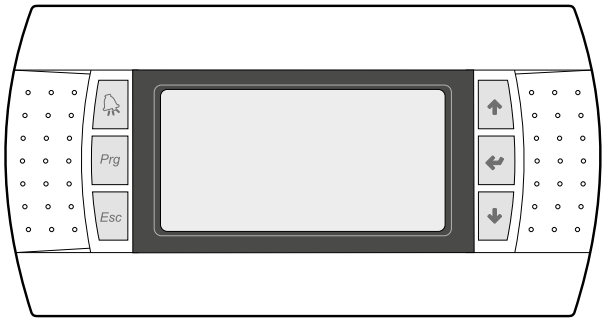
10.7 LIST OF ALARMS

Key:
— **Type 1**: alarm transmitted via Modbus from leak detector sensor
— **Type 2**: alarm transmitted via Modbus from the electronic expansion valve driver EVD evolution
— **Type 3**: alarm transmitted via Modbus from the inverter

Code	Description	Note	Type
AL001	Configurator error		
AL002	Phase monitor	Monitor contact Can be enabled from the master or the slave	
AL003	Anti-freeze	Evaporator water outlet probe < setpoint	
AL004	Compressor Overload	Thermomagnetic switch contact	
AL005	Evaporator flow switch	Flow switch contact Can be enabled from the master or the slave	
AL007	Compressor Oil Level	Pressure switch contact	
AL008	Low Differential Pressure	Difference between high and low pressure < setpoint	
AL009	High pressure	• Pressure switch contact • In machines "G" reset with password is required	
AL010	High pressure	High pressure > setpoint	
AL011	Low pressure	• Pressure switch contact • In machines "G" reset with password is required	
AL012	Low pressure	Low pressure < setpoint	
AL013	High Discharge Temperature	Discharge temperature > setpoint	
AL016	Condenser Pump Overload	Thermomagnetic switch contact	
AL017	Evaporator Pump Overload	Thermomagnetic switch contact	
AL020	Evaporator pump maintenance	Hours of operation reached warning	
AL021	Condenser pump maintenance	Hours of operation reached warning	
AL022	Compressor maintenance	Hours of operation reached warning	
AL031	Probe U1 broken or disconnected	Probe reading out of scale	
AL032	Probe U2 broken or disconnected	Probe reading out of scale	
AL033	Probe U3 broken or disconnected	Probe reading out of scale	
AL034	Probe U4 broken or disconnected	Probe reading out of scale	
AL035	Probe U5 broken or disconnected	Probe reading out of scale	
AL036	Probe U6 broken or disconnected	Probe reading out of scale	
AL037	Probe U7 broken or disconnected	Probe reading out of scale	
AL038	Probe U8 broken or disconnected	Probe reading out of scale	
AL039	Probe U9 broken or disconnected	Probe reading out of scale	
AL040	Probe U10 broken or disconnected	Probe reading out of scale	
AL044	Antifreeze from digital input	Digital input contact	
AL045	Capacity Decrease Relay	Capacity control decrease relay fault	
AL046	Capacity Increase Relay	Capacity control increase relay fault	
AL047	Amperometric transformer	Feeding voltage transformer reading out of range	
AL061	Unit 1 offline	Communication error with address card 1	
AL062	Unit 2 offline	Communication error with address card 2	
AL063	Unit 3 offline	Communication error with address card 3	
AL064	Unit 4 offline	Communication error with address card 4	
AL065	T Memory Excessive Writings	An excessive number of entries in EEPROM detected	
AL066	T Memory Error	Error in the EEPROM memory of card pCO5+	
AL067	Gas Leakage	• Leak detector contact • In machines "G" reset with password is required	
AL068	Leak detector – sensor error	Sensor fault communicated by leak detector	1
AL069	Leak detector – sensor offline	Communication error with leak detector	1
AL070	Leak detector – sensor error 2	Sensor fault communicated by leak detector	1
AL071	Leak detector – sensor offline 2	Communication error with leak detector	1
AL072	Gas antifreeze	Evaporator gas temperature < setpoint	
AL073	Refrigerant drain circuit	Overheating > setpoint	
AL074	Compressor out of envelope	Work conditions of the compressor out of limits	
AL075	Condenser High Pressure	High pressure > setpoint for the wait period	

Code	Description	Note	Type
AL076	Low pressure LOW	• Low pressure < setpoint • Enabled from the menu	
AL077	Anti-freeze/adjustment probe failure	No water outlet probe enabled	
AL078	Flowswitch condenser	Flow switch contact	
AL079	Condenser antifreeze	Condenser outlet temperature < setpoint	
AL080	Electronic expansion valve	Valve driver contact	
AL081	EVD - Configuration Error	Incorrect software configuration	2
AL082	EVD - EEPROM error		2
AL083	EVD - motor fault		2
AL084	EVD - LOP alarm		2
AL085	EVD - MOP alarm		2
AL086	EVD - Low overheating		2
AL087	EVD - Low suction temperature		2
AL088	EVD - High Condensation Temperature		2
AL089	EVD - probe S1 fault		2
AL090	EVD - probe S2 fault		2
AL091	EVD - driver offline		2
AL092	EVD - low battery		2
AL093	EVD - motor 2 fault		2
AL094	EVD - LOP 2 alarm		2
AL095	EVD - MOP 2 alarm		2
AL096	EVD - Low overheating 2		2
AL097	EVD - Low suction temperature 2		2
AL100	Inverter – envelop init error	The compressor is working out of envelope	3
AL101	Inverter – fault		3
AL102	Inverter – overcurrent		3
AL103	Inverter - over voltage		3
AL104	Inverter – over temperature	• Too high temperature of the inverter • Check valve liquid and / or refrìgerant charge. The valve is activated when the oil exceeds 100 ° C, and turns off when it falls below 95 °C	3
AL105	Inverter – under voltage		3
AL106	Inverter – power supply fault	Failure of a phase or imbalance between phases	3
AL107	Inverter – hardware fault		3
AL108	Inverter – temperature sensor fault	Fault inverter temperature sensors. Check engine oil sensor and sensor.	3
AL109	Inverter – hardware configuration error	Incorrect hardware configuration	3
AL110	Inverter – configuration data error	Incorrect software configuration	3
AL111	Inverter – configuration parameter error	Incorrect inverter parameters	3
AL112	Inverter – motor thermal overload	Motor winding temperature exceeds the limits	3
AL113	Inverter – motor overload		3
AL115	Inverter – motor phase failed		3
AL116	Inverter – high oil temperature	• High oil temperature (check oil heater) • Warning if greater than 115°C • Fault if greater than 120°C • Reset alarm if less than 105°C	3
AL117	Inverter – low oil temperature		3
AL118	Inverter - Compressor Short Cycling	Compressor starting is requested before the minimum time between two starts has passed. This occurs only at the Warning level	3
AL119	Inverter – envelope error	The compressor is working out of envelope	3
AL120	Inverter – serial control timeout	Power request from card pCO5+ to inverter timeout	3
AL121	Inverter – communication error		3
AL122	Inverter – datalog error		3
AL123	Inverter – pressure sensor fault		3

11 USER INTERFACE (PGD1)



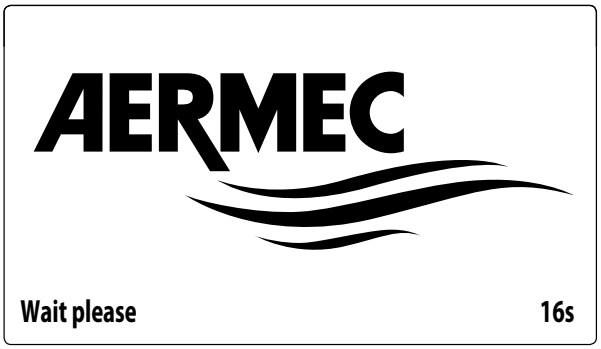
The command panel of the unit allows the rapid setting of the working parameters of the machine, and their visualisation. The card stores all the default settings and any modifications.
The installation of the remote panel PGD1 makes it possible to copy from remote all the functions and settings available 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.

11.1 START-UP PROCEDURE

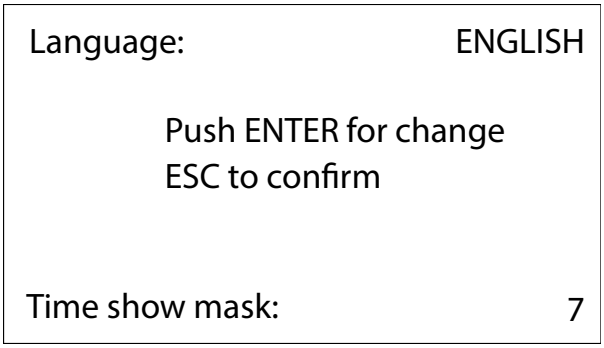
After powering the unit, the control card will perform preliminary operations before it is ready to be used; these initial procedures last about 60 seconds before they are complete; two windows are displayed during the initial loading procedures (a start window and one for selecting the system language);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



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



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

11.2 FUNCTION OF THE PGD1 CONTROL PANEL KEYS

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

: Pressing this key activates navigation between the menus;

: 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;

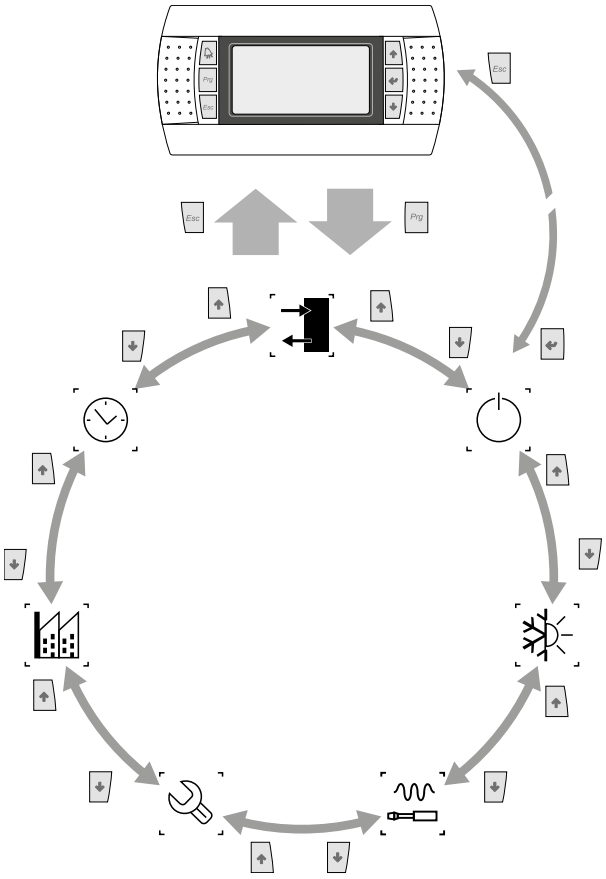
— Pressing this key when changing a parameter decreases the value of the selected parameter;

11.3 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 image shows the relationships between the various menus and the keys used for navigation.

CAUTION

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;



Menu icons:

IN/OUT: This menu contains advanced information about operating the unit;

ON/OFF: This menu is used to activate or deactivate the unit; it also provides state information;

CHILLER: This menu is used to set the operating mode, the setpoints for water production and the time bands to be applied to the system;

INSTALLER: This menu contains settings useful for the installer (Digital input enabling, BMS configuration, adjustments, pumps, etc ...);
WARNING: this menu is password protected, the value to be set for access is: 0000

ASSISTANCE: This menu is not accessible except by authorized staff;

MANUFACTURER: This menu is not accessible except by authorized staff;

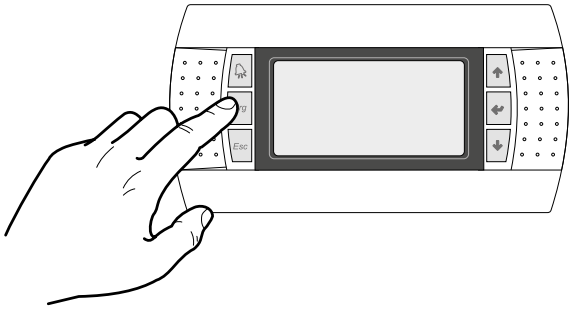
CLOCK: This menu contains the time settings for system management (date and time, calendar);

11.4 USER OPERATING PROCEDURES

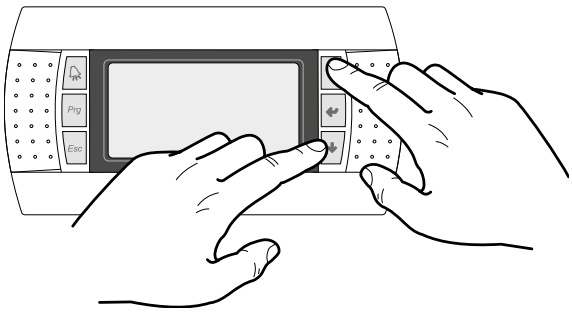
To check or modify the operating parameters of the unit it is necessary to use the interface of the control panel on the unit.
The basic operations that the user must be capable of, for the correct use of the unit, are:
— Moving between menus;
— Selecting and modifying a menu.

11.4.1 Moving between menus

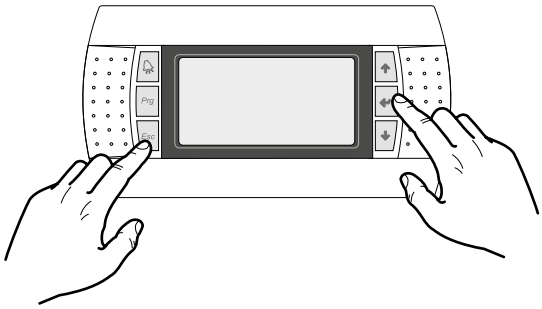
To move between the menus, the order in which they are displayed is shown in the previous page, enter the menu selection mode by pressing the key Prg;



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:

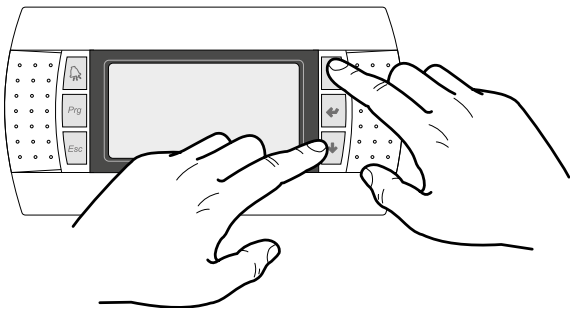


When the desired menu is seen press the key ↵ to enter the menu. Press the key Esc to return to the menu selection mode:



11.4.2 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:



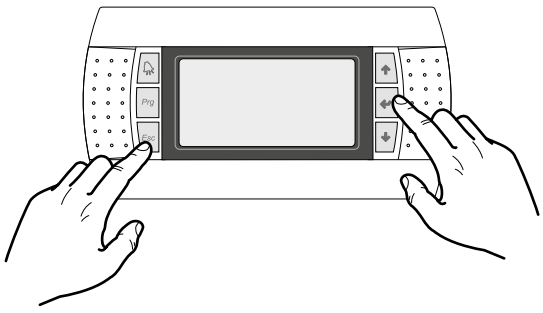
When the desired parameter is seen press the key ↵ to enter the parameter. To exit the parameter and return to the parameter selection mode press the key Esc.

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:

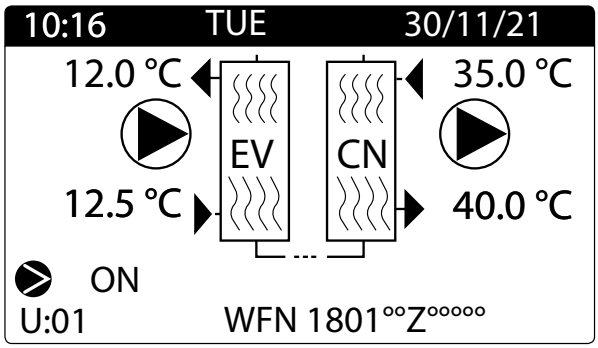
1. Pressing the key ↵ causes a flashing cursor to appear on the first modifiable field of the parameter. If no modifiable fields are displayed then the cursor will not appear.
2. Pressing the key ↑ or the key ↓, the value of the field can be increased or decreased;
3. Pressing the key ↵ confirms the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

12 MAIN MENU



This mask displays:

1. General unit status:

— Current date and time
— Evaporator (EV) input temperature; when it is just below the value relative to the evaporator input temperature, the icon of the currently active pump will appear (with the relative number);
— Evaporator (EV) output temperature;
— Condenser inlet temperature (CN);
— Condenser outlet temperature (CN);
— Machine model.

2. The machine operating status:

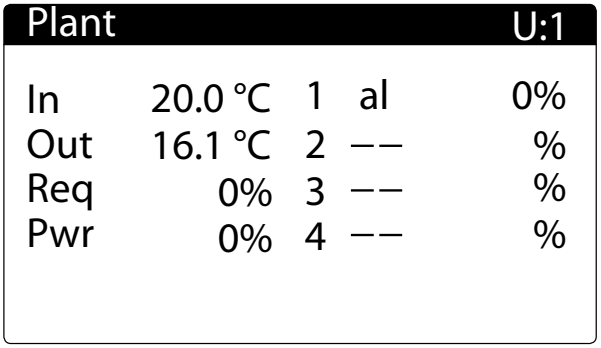
— ON: machine on
— PUMPDOWN: pumpdown cycle in progress
— OFF BY KEY: machine turned off by the keypad command
— OFF BY DIG. IN.: machine turned off by remote contact
— OFF BY SUPERV.: machine turned off by supervisor
— OFF BY TIME BAND: machine turned off by the timer
— OFF BY ALARM: machine turned off by alarm
— OFF BY SER.OFFL: machine turned off due to failure of adjustment probe from supervisor

NOTICE

Some icons can appear in the window, indicating certain system states::

— : indicates that the compressor is on;
— : indicates that the compressor is off;
— : indicates that the pump is on.

The second mask, which is present only in the master card parameters, summarises the machine status with a graphic indication of the compressor power (no. capacity controls), input temperature, master water output and circuit operating state.

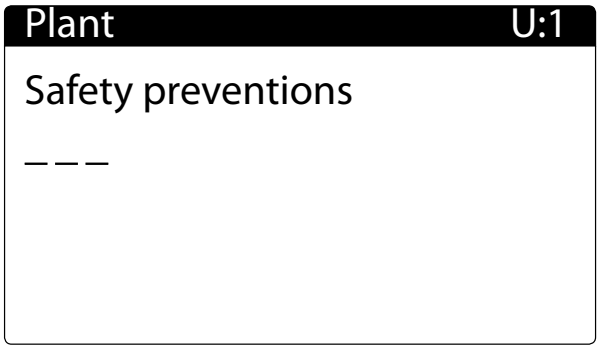


This mask displays:

1. In: water inlet temperature (master)
2. Out: water outlet temperature (master)
3. Req: thermostat request
4. Pwr: output power
5. Cooling capacity of the compressors present from 1 to 4, expressed as a percentage
6. Status indication of circuits from 1 to 4:

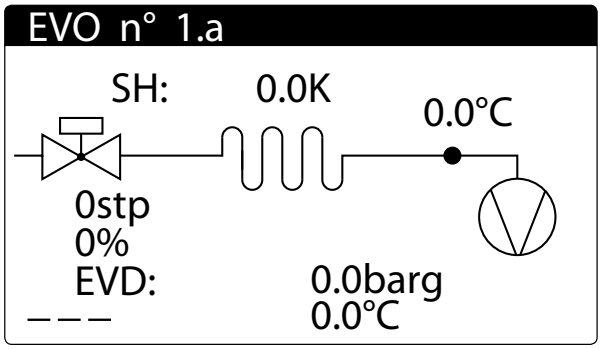
— ok: operative
— al: stopped due to alarm
— ---: No present
— sp: safety reducer
— WW: wait for safety differential
— PD: wait for PullDown

12.1 SAFETY CAPACITY CONTROL MONITOR



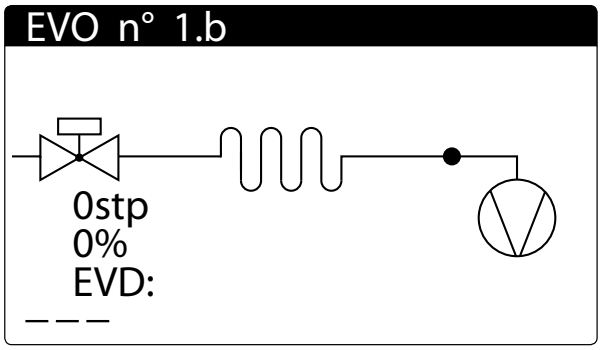
This mask displays the state of the safety capacity controls, indicating which one tripped.

12.2 VALVE 1 STATUS MONITOR



This mask displays the pressure, temperature, overheating and position of valve 1.

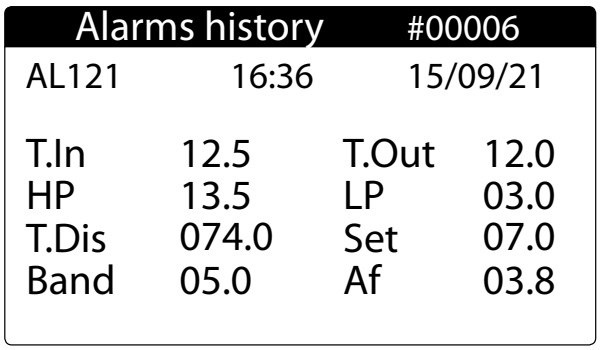
12.3 VALVE 2 STATUS MONITOR



This mask displays the position of valve 2.

13 ALARM LOG MENU

To display the alarm log menu, press the button  .
The menu shows the last 25 alarms that occurred together with some parameters stored at the moment the alarm occurred.



NOTICE

The alarm history cannot be reset because the storage to memory is circular so each new alarm registered overwrites the oldest of the 25 stored to memory.

The parameters are:

— **Time and date**

— **T. In.**:
Evaporator inlet temperature

— **T. Out.**:
Evaporator outlet temperature

— **HP**:
Condensing pressure

— **LP**:
Evaporating Pressure

— **T. Dis**:
Permanent gas temperature

— **Set**:
Working setpoint used

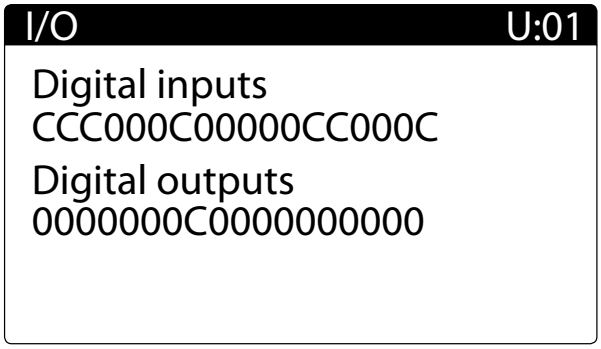
— **Band**:
Proportional band

— **Af**:
Evaporator antifreeze set

14 INPUT/OUTPUT MENU

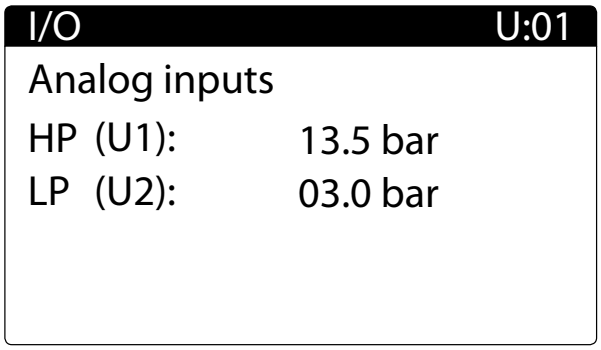
This menu is used to display the state of the inputs and outputs, both digital as well as analogue.

14.1 DIGITAL INPUT/OUTPUT GENERAL MONITOR



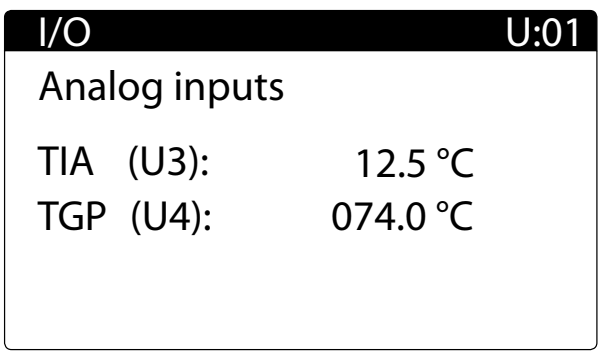
— **Digital input state**: starting from the left to the right, they are ID1 - ID18 (O = open; C = closed)
— **Digital output state**: starting from the left to the right, they are C1 - C18 (O = open; C = closed)

14.2 TRANSDUCER HIGH AND LOW PRESSURE MONITOR



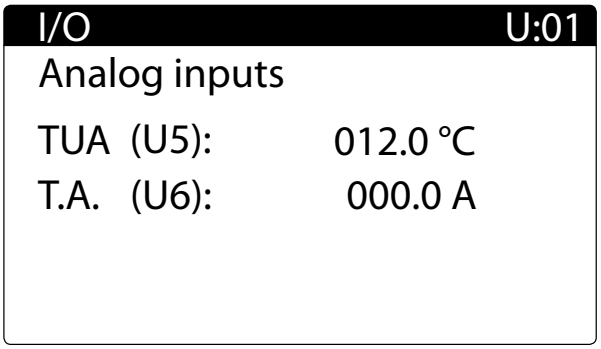
— **H.P. (U1)**: high pressure transducer reading
— **L.P. (U2)**: low pressure transducer reading

14.3 TIA, TUAC AND TGP PROBE VALUES MONITOR



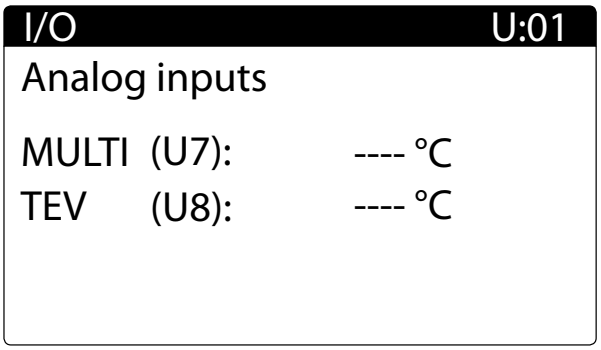
— **TIA (U3)**: evaporator water inlet temperature probe reading (master only)
— **TUAC (U3)**: common water inlet temperature probe reading (in case of adjustment at the outlet with multiple parallel connected evaporators) (unit 2 only)
— **TGP (U4)**: discharge gas temperature probe reading

14.4 TRANSFORMER INLET AND EVAPORATOR WATER OUTLET TEMPERATURE MONITOR



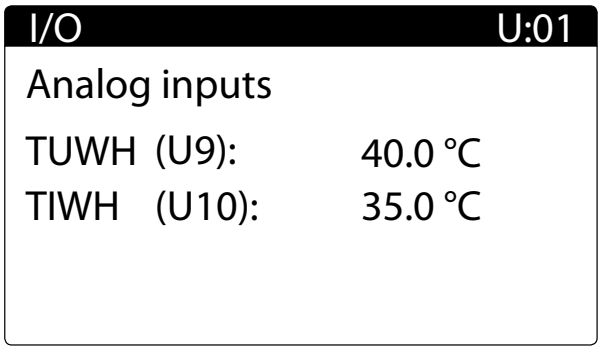
— **TUA (U5)**: evaporator water outlet temperature probe reading
— **T.A. (U6)**: Ammetric transformer input (A)

14.5 EVAPORATOR INLET GAS TEMPERATURE AND MULTIFUNCTION INPUT MONITOR



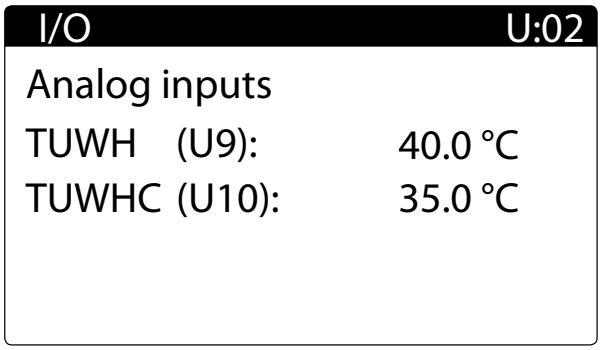
— **MULTI (U7)**: Multifunction input (master only)
— **TEV (U8)**: evaporator input gas temperature probe reading

14.6 CONDENSER WATER INLET/ OUTLET TEMPERATURE MONITOR



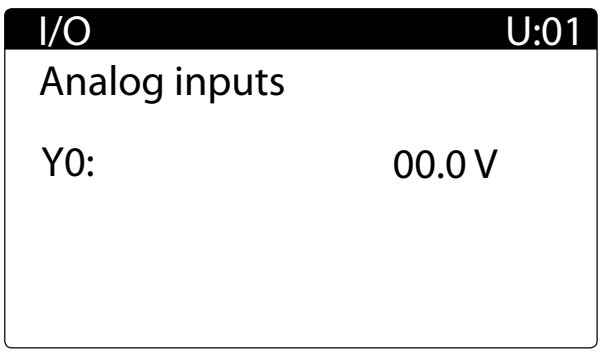
— **TUWH (U9)**: condenser water outlet temperature
— **TIWH (U10)**: condenser water inlet temperature (master)

14.7 CONDENSER WATER OUTLET MONITOR



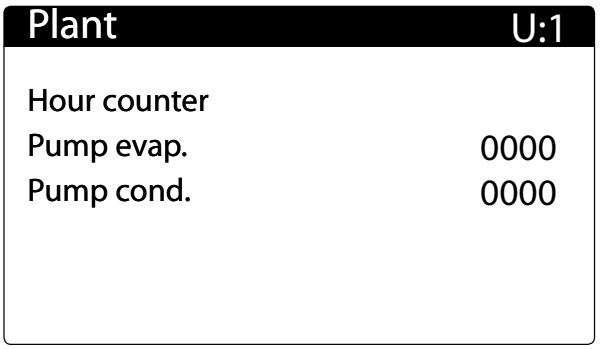
— **TUWH (U9)**: condenser water outlet temperature
— **TUWHC (U10)**: common condenser water outlet temperature (unit 2)

14.8 ANALOGUE OUTPUT VOLTAGE VALUE MONITOR



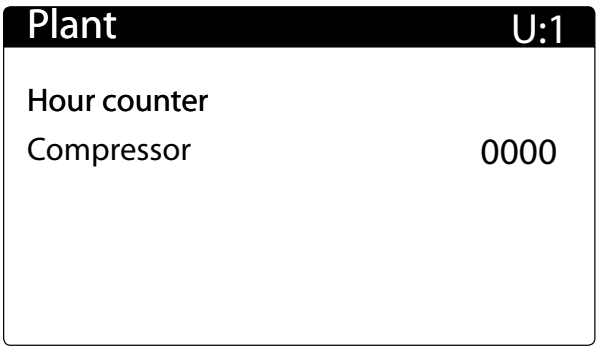
Voltage value at analogue output Y0 and Y1.

14.9 PUMP HOUR COUNTER MONITOR



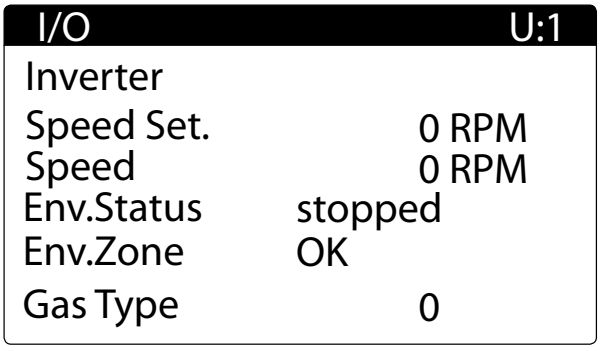
Running hours pump evaporator and condenser pump.

14.10 COMPRESSOR HOUR COUNTER MONITOR



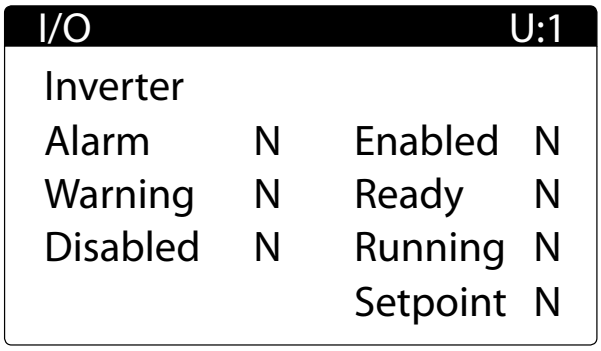
Compressor operating hours.

14.11 COMPRESSED STATUS MONITOR (A)



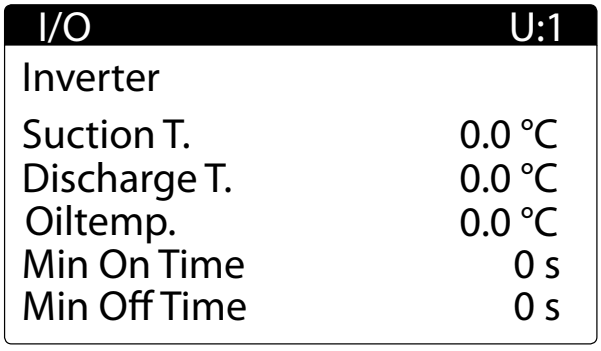
— Speed set from card setpoint
— No. of revs read by the compressor
— Status: Stopped, Start, On, Switch off, war IN, war OUT, alarm
— Envelope zone: OK, SLDL, SL, SLDH, DH, SHDH, SH, SHDL, DL
— Type of gas set in the compressor

14.12 COMPRESSED STATUS MONITOR (B)



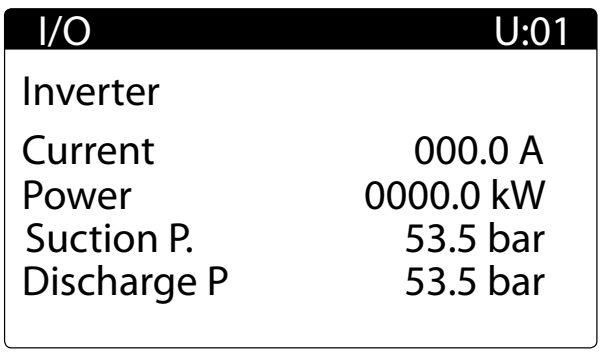
This mask is used to view the compressor status summary.

14.13 COMPRESSED STATUS MONITOR (C)



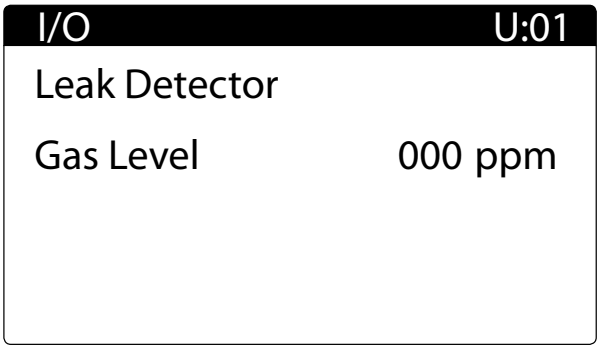
— Intake temperature read by the compressor
— Delivery temperature read by the compressor
— Oil temperature read by the compressor
— Minimum operating time remaining
— Minimum switching off time remaining

14.14 COMPRESSOR STATUS MONITOR (D)



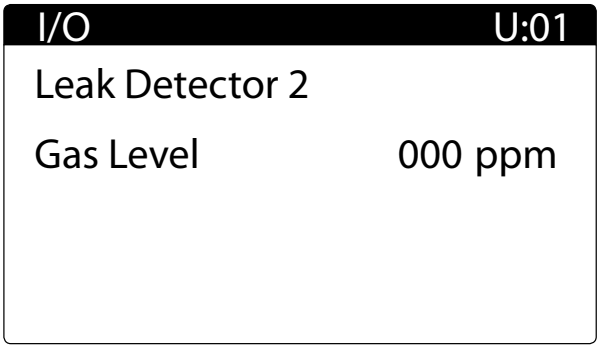
— Inverter current consumption
— Inverter power
— Suction pressure read by inverter compressor
— Discharge pressure read by the inverter compressor

14.15 GAS STATUS MONITOR (A)



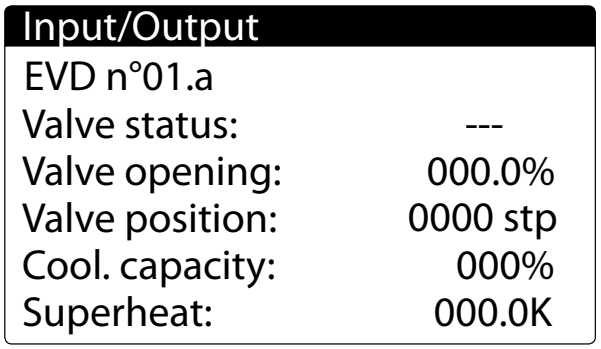
Concentration of flammable gas detected by sensor 1.

14.16 GAS STATUS MONITOR (B)



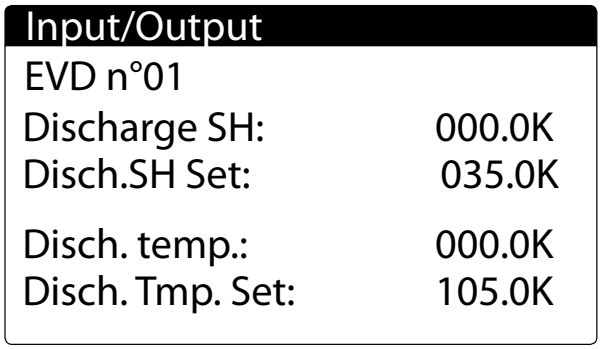
Concentration of flammable gas detected by sensor 2.

14.17 VALVE 1 (A) STATUS MONITOR



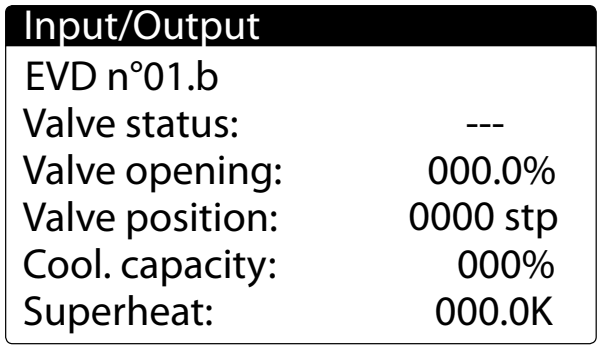
— Valve status
— Opening valve
— Valve position
— Cooling capacity
— Overheating

14.18 VALVE (B) STATUS MONITOR



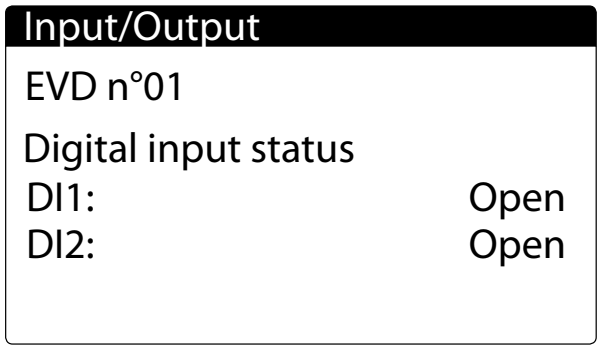
— Calculated overheating value
— Superheat setpoint
— Discharge temperature value
— Discharge temperature setpoint

14.19 VALVE 2 (C) STATUS MONITOR



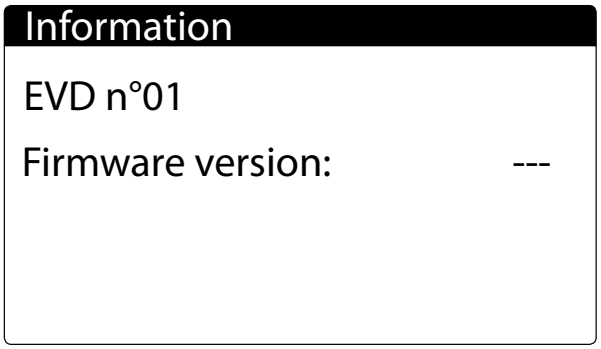
— Valve status
— Opening valve
— Valve position
— Cooling capacity
— Overheating

14.20 VALVE (D) STATUS MONITOR



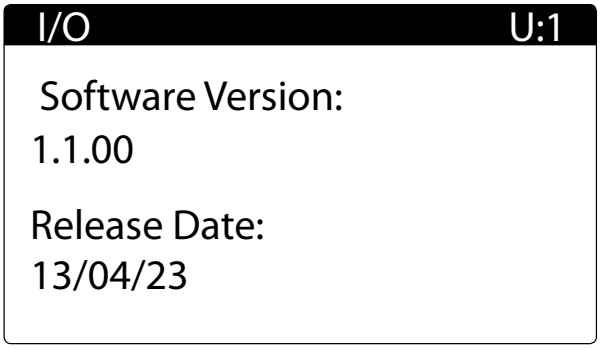
Displays the state of the EVD driver digital inputs.

14.21 VALVE (E) STATUS MONITOR



Displays the firmware version of the EVD driver.

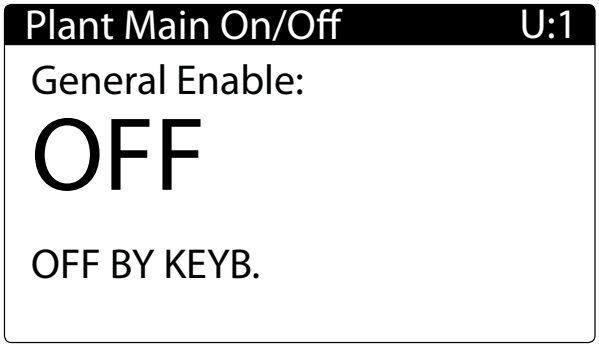
14.22 SOFTWARE STATUS MONITOR



Software version and version date.

15 ON/OFF MENU

The On/Off menu makes it possible to identify the machine status and change the general enabling.



This mask is used to view the machine operating status:

- **ON**: machine on
- **PUMPDOWN**: pumpdown cycle in progress
- **OFF BY KEY**: machine turned off by the keypad command
- **OFF BY DIG. IN.**: machine turned off by remote contact
- **OFF BY SUPERV.**: machine turned off by supervisor
- **OFF BY TIMER**: machine turned off by timer
- **OFF BY ALARM**: machine turned off by alarm
- **OFF BY SER.OFFL**: machine turned off due to failure of adjustment probe from supervisor

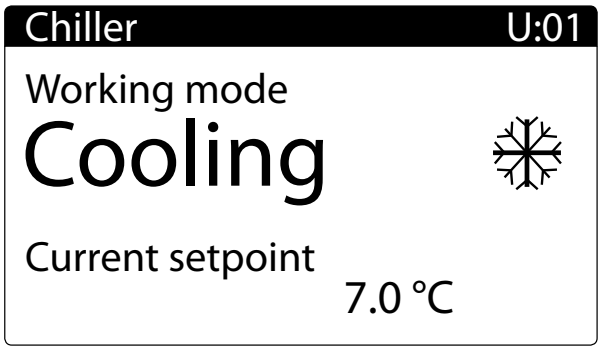
NOTICE

General enabling is requested also if On/Off is enabled from digital contact or from the supervisor.

16 CHILLER MENU

The Chiller menu makes it possible to identify the machine status and change the general enabling.

16.1 OPERATING MODE MONITOR



1. Selection of operating mode:
— Heat/Cool
— BMS
— Digital input

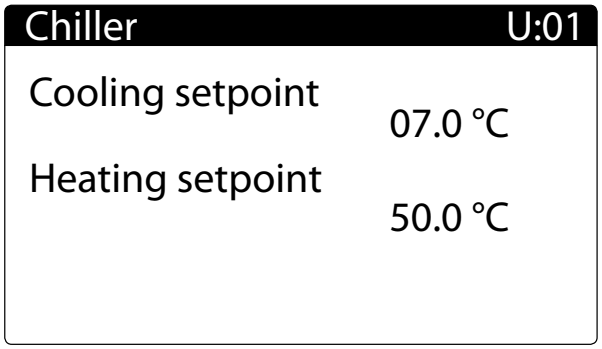
2. Actual setpoint in use for adjustment

NOTICE

Some icons can appear in the window, indicating certain system states::

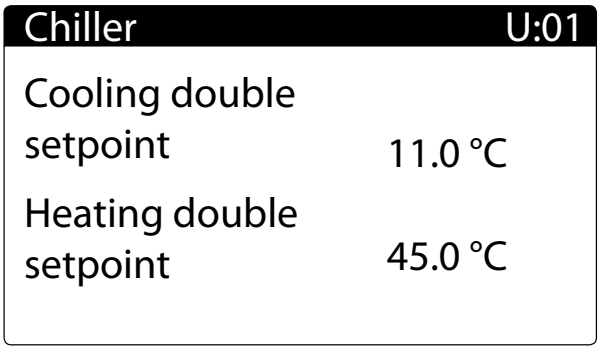
— ❄ : system chilled water production;
— ✳ : system hot water production.

16.2 MAIN SETPOINT MONITORS



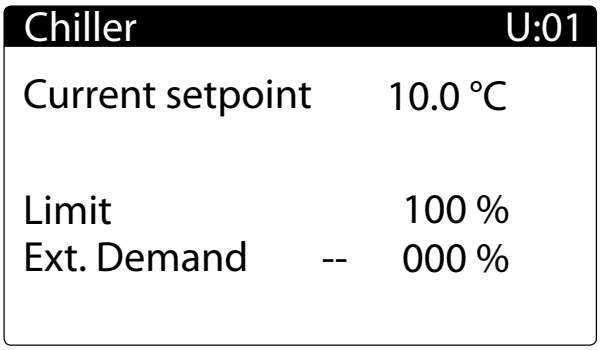
— Setting of cooling set
— Setting of heating set (enabled for heat pump machine)

16.3 DOUBLE SET SETTING MONITOR



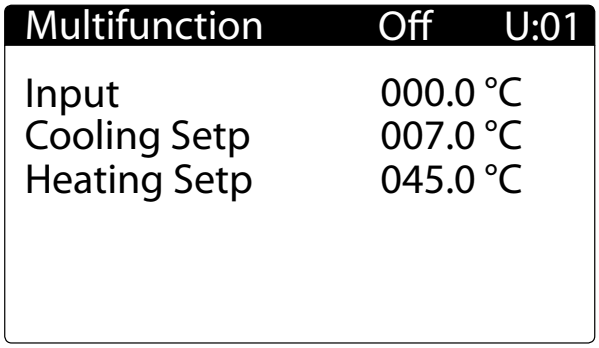
— Double cooling set setting (window enabled if the double setpoint is enabled see the manufacturer menu)
— Double heating set setting (window enabled if the double setpoint is enabled see the manufacturer menu)

16.4 CURRENT SETPOINT MONITOR



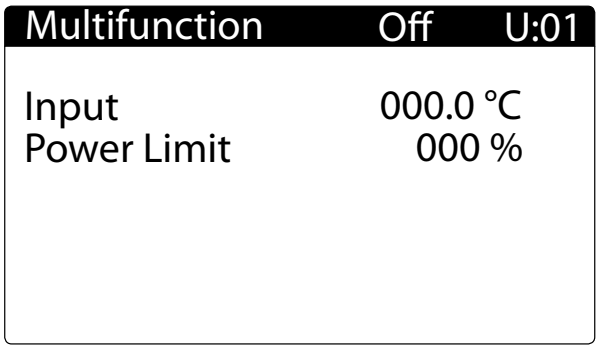
— Setpoint currently used, selected from those possible (hot, cold, double hot, double cold, multifunction input, serial)
— Limit: Limit of the power, owing to serial or multifunction input request
— The string Ext demand is visible only if the Supervisor demand function is enabled
— The symbol >> indicates that communication is active, and the percentage figure of requested power is valid.

16.5 MULTIFUNCTION INPUT MONITOR (A)



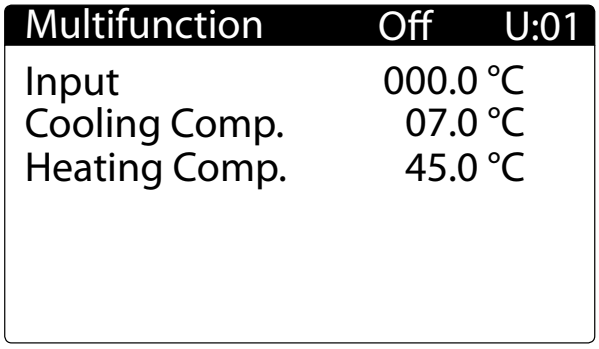
— Multifunction input enabled for setpoint setting
— Input value in the size selected
— Cooling setpoint set from multifunction input
— Heat Setpoint set from multifunction input

16.6 MULTIFUNCTION INPUT MONITOR (B)



— Multifunction input enabled for cooling capacity limitation
— Input value in the size selected
— Maximum limit of the cooling capacity expressed as a percentage

16.7 MULTIFUNCTION INPUT MONITOR (C)



— Multifunction input enabled for setpoint compensation
— Input value in the size selected
— Compensation to add to/deduct from the cooling set in °C
— Compensation to add to/deduct from the heating set in °C

17 CLOCK MENU

This menu is used to view and modify the following parameters:
— Time
— Date
— Day of the week
— Programmer timer and time bands for every day of the week

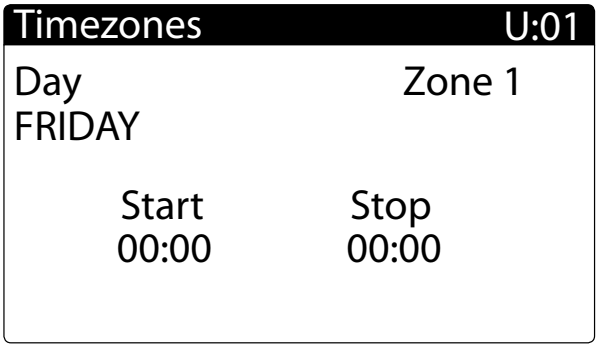
17.1 TIME, DATE AND DAY DISPLAY MONITOR

This mask is used to display and modify the time, date and day of the week parameters.

17.2 TIMER ENABLING MONITOR

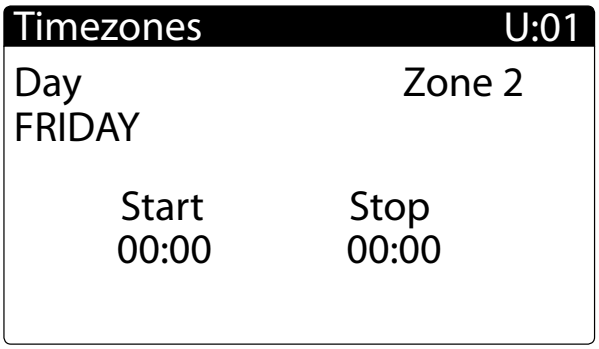
This mask is used to enable the weekly time band timer (Y = enabled, N = disabled).

17.3 TIME ZONE 1 CHANGE MONITOR



This mask is used to modify the day of the week and the times of zone 1 (see the Zone diagram).

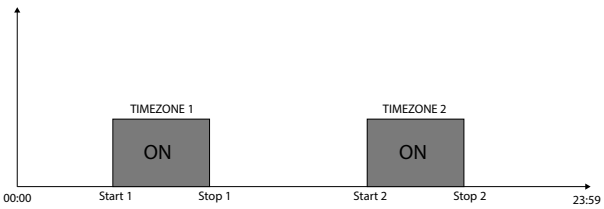
17.4 TIME ZONE 2 CHANGE MONITOR



This mask is used to modify the times of zone 2 (see the Zone diagram).

17.5 OPERATING ZONE DIAGRAM

If enabled, the weekly time band timer is used to set 2 operating zones for each day of the week (if one zone has the same start and stop time, it is disabled).
The diagram below shows an example of two operating zones:

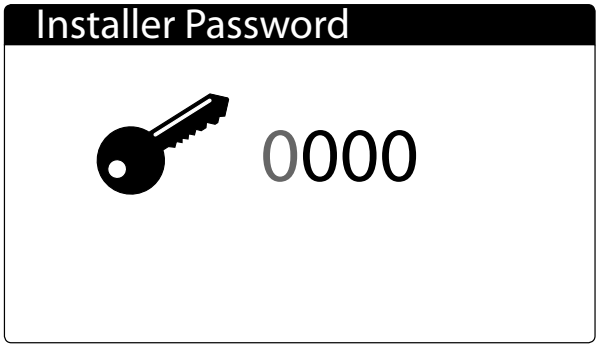


18 INSTALLER MENU

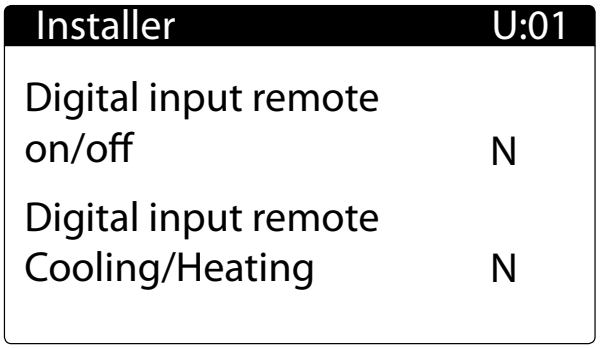
This menu contains the parameters necessary for the machine configuration and its functions.

18.1 PASSWORD MONITOR TO ACCESS THE INSTALLER MENU

Enter the password to access the menu (the password is 0000).

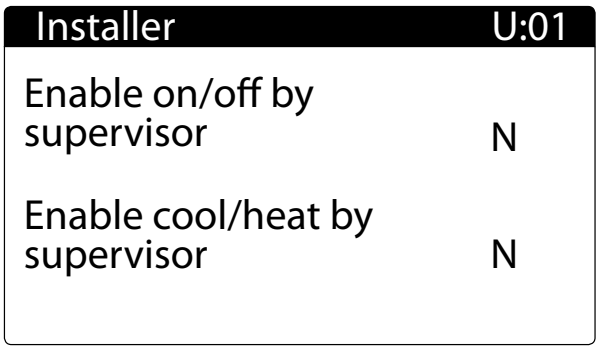


18.2 DIGITAL INPUT COMMAND ENABLING MONITOR



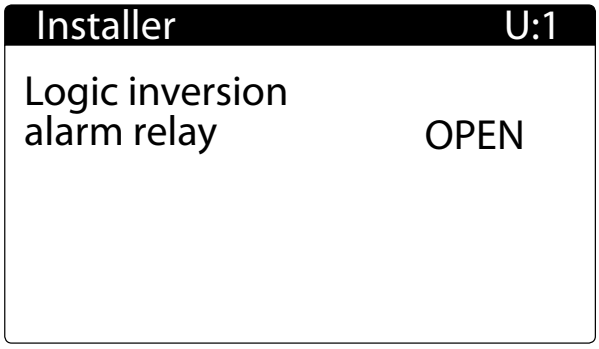
— Digital input ON/OFF command enabling **(MASTER ONLY).**
— Digital input cooling/heating command enabling

18.3 SUPERVISOR COMMAND ENABLING MONITOR



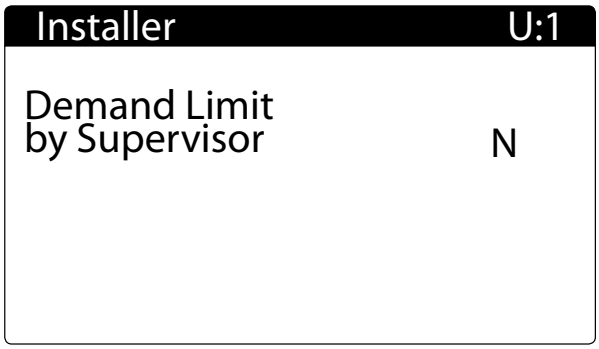
— Supervisor ON/OFF command enabling
— Supervisor cooling/heating command enabling

18.4 ALARM RELAY LOGIC MONITOR



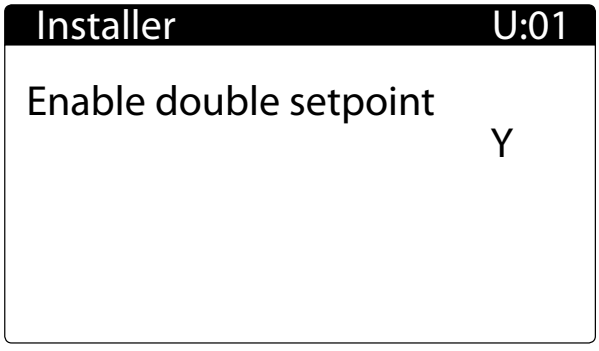
General alarm contact logic inversion.

18.5 SUPERVISOR FUNCTIONALITY ENABLING MONITOR



If enabled, the power request is acquired not via a temperature probe and work set, but via Modbus serial data. Modbus serial data maximum cooling power limit enabling. **(MASTER ONLY).**

18.6 DOUBLE SETPOINT ENABLING MONITOR



Double setpoint use enabling **(MASTER ONLY).**

If enabled via the ID3 digital input, if the set is selected (contact open = normal setpoint, contact closed = double setpoint)

18.7 HEATER ALARM ENABLING MONITOR

Installer	U:02
Evaporator pump : Circuit breaker	N
Pump off with compressor	N

— Pump thermal alarm enabling **(SLAVE ONLY).**
— Enabling at switching off of the evaporator pump with the compressor off relative to the pump output of the individual slave cards

18.8 THERMOSTAT ADJUSTMENT MONITOR

Installer	U:01
Temperature band	05.0 °C

Proportional band for the adjustment of the work thermostat **(MASTER ONLY).**

18.9 ADJUSTING TEMPERATURE MONITOR

Installer	U:01
Regulatation Type	OUTLET

Adjusting temperature selection **(MASTER ONLY):**
— **INLET**: Water inlet
— **OUTLET**: Water outlet

18.10 TYPE OF ADJUSTMENT MONITOR

Installer	U:01
regulation type	
Type	PI
Integration t.	0600s

— Type of adjustment **(MASTER ONLY)** PROP = proportional, INT = integral, PI = proportional + integral.
— Integration time valid for PI or INT adjustment

18.11 GLYCOL WATER TEMPERATURE AND ENABLING MONITOR

Installer	U:01
Glycolated water management	N
Glycolated water freezing temp.	00.0 °C

Glycol water management enabling.
Water-glycol mixture freezing temperature (TCMA).
When the function is enabled, the following parameters are calculated automatically and cannot be changed:
— minimum limit of the cooling setpoint (TCMA + 4°C)
— antifreeze prevention setpoint (TCMA + 3.8°C)
— antifreeze alarm setpoint (TCMA + 3°C)
— antifreeze heater activation setpoint (TCMA + 3.5°C)
— cooling force-off setpoint (TCMA + 3.5°C)

18.12 BMS PARAMETERS MONITOR

Installer	U:1
Supervisor	(BMS)
Protocol	Modbus
Address	1
Baudrate	19200
Stop bits	2
Parity	N

— Type of protocol used for communication with the supervisor: Lon, pCOweb, Modbus
— Serial address 1 for supervisor
— Speed of communication
— Communication stop bit
— Communication parity

18.13 BMS2 PARAMETERS MONITOR

Installer	U:1
Supervisor	(BMS2)
Protocol	Modbus
Address	1
Baudrate	19200
Stop bits	2
Parity	N

— Serial address 2 for supervisor
— Speed of communication
— Communication stop bit
— Communication parity

18.14 MULTIFUNCTION INPUT MONITOR

Installer	U:01
Probe 7 config.	
Function	None
Type	NTC

Multifunction input **(MASTER ONLY)** on input B7 active on master.

Function:
— None: no functionality
— Setpoint: working setpoint selection
— Limit: limitation of the cooling capacity
— Comp.Ext: Setpoint compensation with temperature

Type:
— NTC: input with temperature and probe NTC10K
— 0-10V: input 0-10 volt dc
— 4-20mA: Input 4-20mA

18.15 NTC PROBE TEMPERATURE MONITOR

Installer	U:01
Probe 7 config.	
NTC Type	
Temp. Low	20.0 °C
Temp. High	35.0 °C

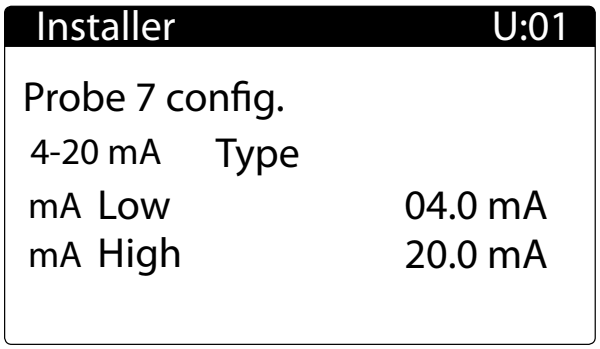
— NTC type multifunction input enabled **(MASTER ONLY)**
— NTC probe minimum temperature
— NTC probe maximum temperature

18.16 INPUT VOLTAGE MONITOR

Installer	U:01
Probe 7 config.	
0-10 Volt Type	
Volt Low	00.0 V
Volt High	10.0 V

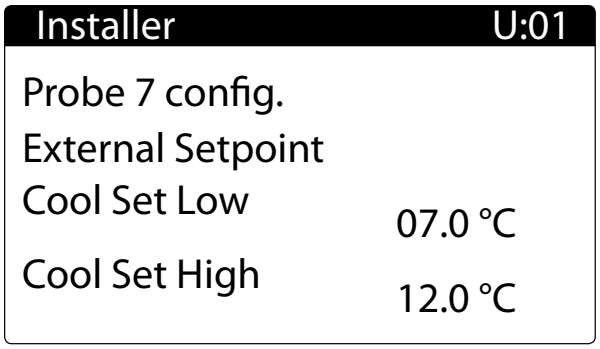
— 0 –10 volt type multifunction input enabled **(MASTER ONLY)**
— Minimum input voltage
— Maximum input voltage

18.17 INPUT CURRENT MONITOR



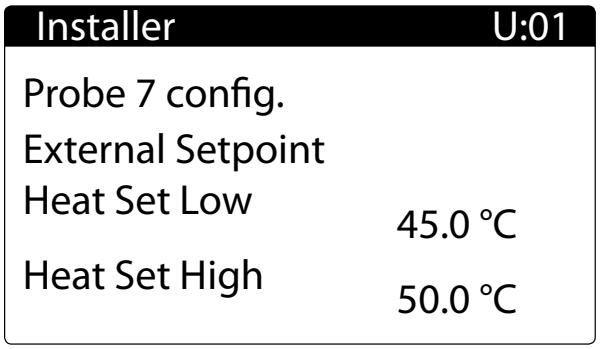
— 4 -20mA type multifunction input enabled **(MASTER ONLY)**
— Minimum input current
— Maximum input current

18.18 COOLING SETPOINT MONITOR



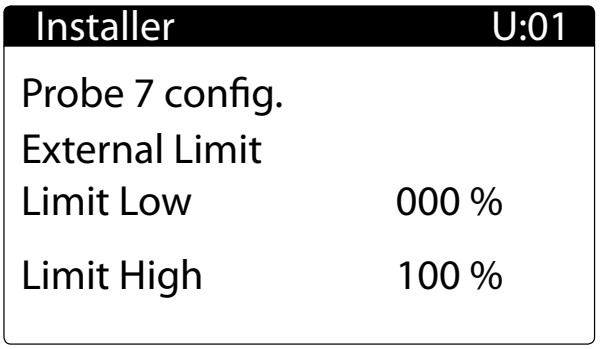
— Multifunction input enabled with Setpoint function **(MASTER ONLY)**
— Cooling setpoint corresponding to the minimum size of the input
— Cooling setpoint corresponding to the maximum size of the input

18.19 HEATING SETPOINT MONITOR



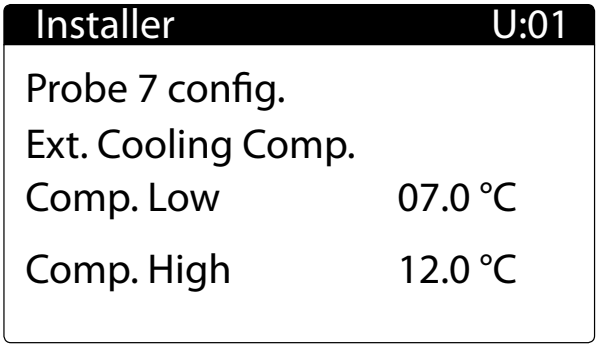
— Multifunction input enabled with Setpoint function **(MASTER ONLY)**
— Heating setpoint corresponding to the minimum size of the input
— Heating setpoint corresponding to the maximum size of the input

18.20 MULTIFUNCTION INPUT WITH COOLING CAPACITY LIMIT MONITOR



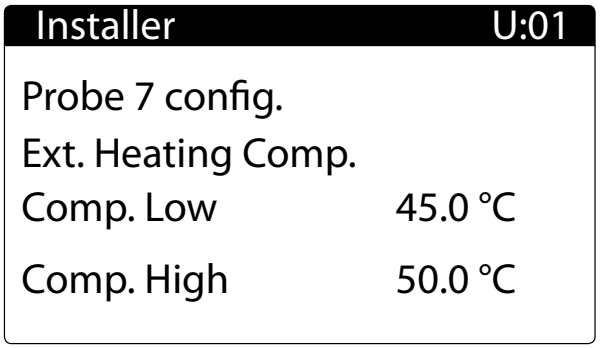
— Multifunction input enabled with cooling capacity limit function **(MASTER ONLY)**
— Power limit corresponding to the minimum size of the input
— Power limit corresponding to the maximum size of the input

18.21 MULTIFUNCTION INPUT WITH SETPOINT COMPENSATION MONITOR (A)



— Multifunction input enabled with setpoint compensation with temperature probe function **(MASTER ONLY)**
— Cooling set compensation corresponding to the minimum size of the input
— Cooling set compensation corresponding to the maximum size of the input

18.22 MULTIFUNCTION INPUT WITH SETPOINT COMPENSATION MONITOR (B)

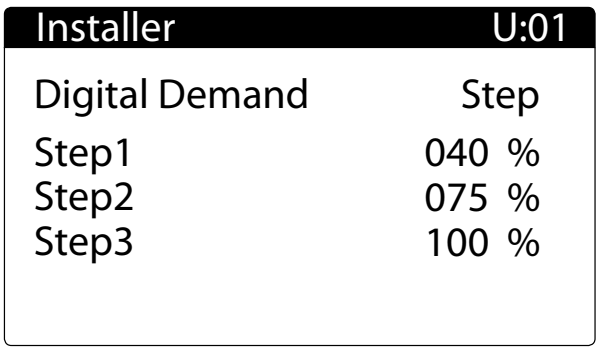


— Multifunction input enabled with setpoint compensation with temperature probe function **(MASTER ONLY)**
— Heating set compensation corresponding to the minimum size of the input
— Heating set compensation corresponding to the maximum size of the input

18.23 DIGITAL CONTACT ENABLING MONITOR

Power request enabling from digital contacts ID 16, ID 17, ID 18 **(MASTER ONLY).**

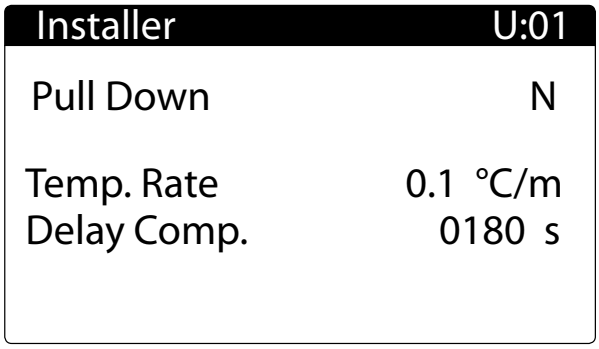
18.24 DIGITAL CONTACT SETTING MONITOR



Digital contact power step setting **(MASTER ONLY)**:

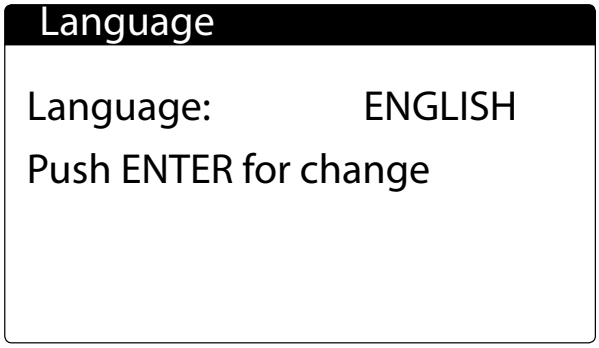
— Power step 1 ID 16
— Power step 2 ID 17
— Power step 3 ID 18

18.25 PULL DOWN CONTROL ENABLING MONITOR



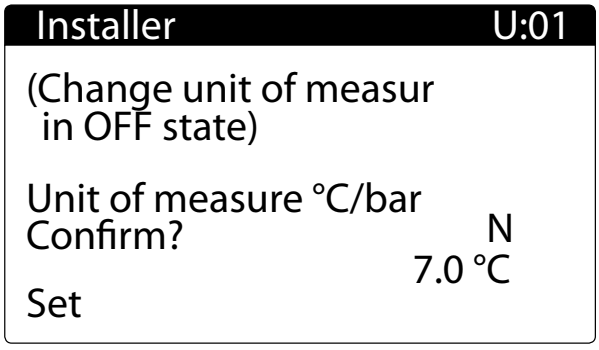
Pull Down control enabling **(MASTER ONLY)**:
— Water temperature variation rate below which the activation of new steps is enabled
— Delay time between the activation of two subsequent steps

18.26 LANGUAGE SELECTION MONITOR



This mask is used to select the language:
ENGLISH, ITALIANO, DEUTSCHE, ESPANOL, FRANCAISE.

18.27 UNIT OF MEASURE MONITOR

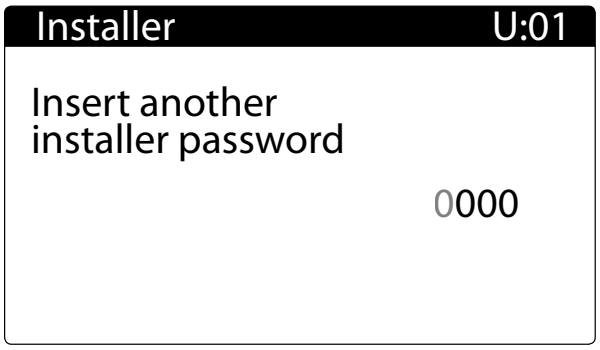


This mask is used to select the unit of measure.

NOTICE

Change the unit of measure when the machine is OFF and after performing its configuration.

18.28 NEW PASSWORD FOR INSTALLER MENU MONITOR



Entering a new password for the installer menu.

19 ALARM

The alarms are divided into the following categories:
1. Signal only alarms (only a signal on the display, alarm relay)
2. Circuit alarms (they deactivate only the relative circuit, signal on the display, alarm relay)
3. Serious alarms (they deactivate all the system circuits, signal on the display, alarm relay)
4. Gas alarms (alarms related to the management of flammable gas)

The alarms must be considered as being manually reset, except for those specified otherwise.

19.1 SIGNAL ONLY ALARMS

Alarm	Source	Features
Pump maintenance	Count	Settable threshold
Compressor maintenance	Count	Settable threshold
Anti-freeze	Digital input	
Envelope (On/Off compressors)	Transducers	
Excessive entries in memory T	System	
T Memory Error	System	

19.2 CIRCUIT ALARMS

Alarm	Source	Features
High pressure	Pressure switch	
	Transducer	Settable threshold and differential
Low pressure	Transducer	Delayed with respect to compressor start Bypassed during and after the pumpdown cycle Settable alarm bypass time from compressor start Settable alarm threshold and differential
Low pressure LOW	Transducer	Enabled from the menu
		Settable threshold and differential
Compressor thermal	Digital input	
Oil differential	Digital input	Delayed at acquisition
		Settable acquisition delay time
Condenser pump thermal	Digital input	
Evaporator antifreeze	Probe	Settable threshold and differential
Condenser antifreeze	Probe	Settable threshold and differential
Discharge refrigerant temperature	Probe	Settable threshold and differential
Pressure differentials	Transducers	Settable threshold and delay from start
Probes faulty	Probes	
Evaporator gas antifreeze	Probe	Settable threshold and differential
Increment/decrement relay	A.T.	
A.T. fault	A.T.	
Anti-freeze	Probe	Settable threshold and differential
Unit offline		
Refrigerant drain circuit		
Electronic valve alarms	Valve driver	
Inverter alarms	Inverter	

19.3 SERIOUS ALARMS

Alarm	Source	Features
Configurator error		
Phase monitor	Digital input	
Evaporator pump thermal	Digital input	
Water inlet probe failure	Probe	
Water flow failure	Flow switch	Settable bypass from pump start and acquisition delay

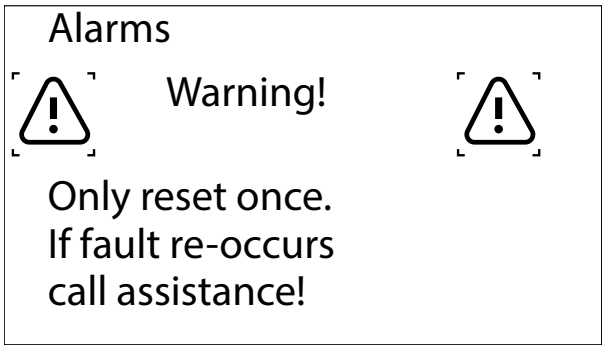
Alarm	Source	Features
Low pressure	Pressure switch	Delayed with respect to compressor start Bypassed during and after the pumpdown cycle Settable alarm bypass time from compressor start
Condenser High Pressure	Transducer	Settable threshold and duration of permanence above the threshold

19.4 GAS ALARMS

Alarm	Source	Features
High pressure	Pressure switch	
Low pressure	Pressure switch	
Gas Leakage	Leak detector	

19.5 ALARM RESET

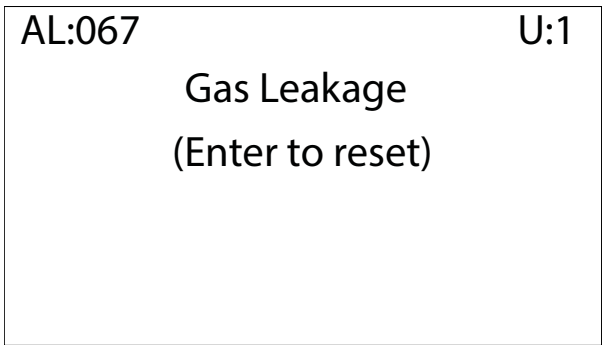
To reset the alarms, simply press the key .



The list of active alarms can be accessed using the arrows and .

19.6 GAS ALARM RESET

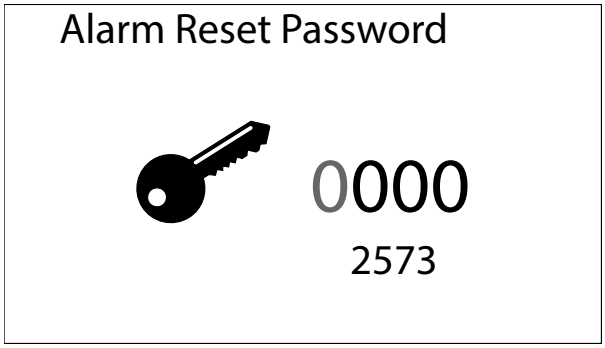
In the machines that use flammable gas, there are some alarms that require a password to be reset. This safety measure guarantees that the machine will be put back into operation only after the risk conditions have been eliminated by expert and prepared personnel.



To reset the alarms, simply press the key .

The gas alarms are reset when the correct password is entered.
It is possible to reset the alarms using the dynamic password generated with the token, after activating the function in the Manufacturer menu.

The dynamic password is valid for one reset, then a new token will be generated that will be associated with a new password:



19.7 LIST OF ALARMS

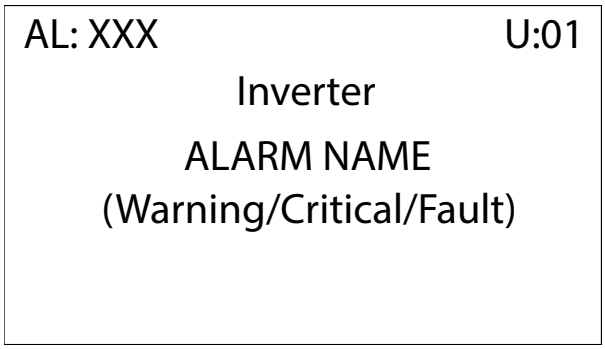
Key:
— **Type 1**: alarm transmitted via Modbus from leak detector sensor
— **Type 2**: alarm transmitted via Modbus from the electronic expansion valve driver EVD evolution
— **Type 3**: alarm transmitted via Modbus from the inverter

Code	Description	Note	Type
AL001	Configurator error		
AL002	Phase monitor	Monitor contact Can be enabled from the master or the slave	
AL003	Anti-freeze	Evaporator water outlet probe < setpoint	
AL004	Compressor Overload	Thermomagnetic switch contact	
AL005	Evaporator flow switch	• Flow switch contact • Can be enabled from the master or the slave	
AL007	Compressor Oil Level	Pressure switch contact	
AL008	Low Differential Pressure	Difference between high and low pressure < setpoint	
AL009	High pressure	Pressure switch contact In machines "G" reset with password is required	
AL010	High pressure	High pressure > setpoint	
AL011	Low pressure	• Pressure switch contact • In machines "G" reset with password is required	
AL012	Low pressure	Low pressure < setpoint	
AL013	High Discharge Temperature	Discharge temperature > setpoint	
AL016	Condenser Pump Overload	Thermomagnetic switch contact	
AL017	Evaporator Pump Overload	Thermomagnetic switch contact	
AL020	Evaporator pump maintenance	Hours of operation reached warning	
AL021	Condenser pump maintenance	Hours of operation reached warning	
AL022	Compressor maintenance	Hours of operation reached warning	
AL031	Probe U1 broken or disconnected	Probe reading out of scale	
AL032	Probe U2 broken or disconnected	Probe reading out of scale	
AL033	Probe U3 broken or disconnected	Probe reading out of scale	
AL034	Probe U4 broken or disconnected	Probe reading out of scale	
AL035	Probe U5 broken or disconnected	Probe reading out of scale	
AL036	Probe U6 broken or disconnected	Probe reading out of scale	
AL037	Probe U7 broken or disconnected	Probe reading out of scale	
AL038	Probe U8 broken or disconnected	Probe reading out of scale	
AL039	Probe U9 broken or disconnected	Probe reading out of scale	
AL040	Probe U10 broken or disconnected	Probe reading out of scale	
AL044	Antifreeze from digital input	Digital input contact	
AL045	Capacity Decrease Relay	Capacity control decrease relay fault	
AL046	Capacity Increase Relay	Capacity control increase relay fault	
AL047	Amperometric transformer	Feeding voltage transformer reading out of range	
AL061	Unit 1 offline	Communication error with address card 1	
AL062	Unit 2 offline	Communication error with address card 2	

Code	Description	Note	Type
AL063	Unit 3 offline	Communication error with address card 3	
AL064	Unit 4 offline	Communication error with address card 4	
AL065	T Memory Excessive Writings	An excessive number of entries in EEPROM detected	
AL066	T Memory Error	Error in the EEPROM memory of card pCO5+	
AL067	Gas Leakage	• Leak detector contact • In machines "G" reset with password is required	
AL068	Leak detector – sensor error	Sensor fault communicated by leak detector	1
AL069	Leak detector – sensor offline	Communication error with leak detector	1
AL070	Leak detector – sensor error 2	Sensor fault communicated by leak detector	1
AL071	Leak detector – sensor offline 2	Communication error with leak detector	1
AL072	Gas antifreeze	Evaporator gas temperature < setpoint	
AL073	Refrigerant drain circuit	Overheating > setpoint	
AL074	Compressor out of envelope	Work conditions of the compressor out of limits	
AL075	Condenser High Pressure	High pressure > setpoint for the wait period	
AL076	Low pressure LOW	• Low pressure < setpoint • Enabled from the menu	
AL077	Anti-freeze/adjustment probe failure	No water outlet probe enabled	
AL078	Flowswitch condenser	Flow switch contact	
AL079	Condenser antifreeze	Condenser outlet temperature < setpoint	
AL080	Electronic expansion valve	Valve driver contact	
AL081	EVD - Configuration Error	Incorrect software configuration	2
AL082	EVD - EEPROM error		2
AL083	EVD - motor fault		2
AL084	EVD - LOP alarm		2
AL085	EVD - MOP alarm		2
AL086	EVD - Low overheating		2
AL087	EVD - Low suction temperature		2
AL088	EVD - High Condensation Temperature		2
AL089	EVD - probe S1 fault		2
AL090	EVD - probe S2 fault		2
AL091	EVD - driver offline		2
AL092	EVD - low battery		2
AL093	EVD - motor 2 fault		2
AL094	EVD - LOP 2 alarm		2
AL095	EVD - MOP 2 alarm		2
AL096	EVD - Low overheating 2		2
AL097	EVD - Low suction temperature 2		2
AL100	Inverter – envelop init error	The compressor is working out of envelope	3
AL101	Inverter – fault		3
AL102	Inverter – overcurrent		3
AL103	Inverter - over voltage		3
AL104	Inverter – over temperature	• Too high temperature of the inverter • Check valve liquid and / or refrìgerant charge. The valve is activated when the oil exceeds 100 ° C, and turns off when it falls below 95 °C	3
AL105	Inverter – under voltage		3
AL106	Inverter – power supply fault	Failure of a phase or imbalance between phases	3
AL107	Inverter – hardware fault		3
AL108	Inverter – temperature sensor fault	Fault inverter temperature sensors. Check engine oil sensor and sensor.	3
AL109	Inverter – hardware configuration error	Incorrect hardware configuration	3
AL110	Inverter – configuration data error	Incorrect software configuration	3
AL111	Inverter – configuration parameter error	Incorrect inverter parameters	3
AL112	Inverter – motor thermal overload	Motor winding temperature exceeds the limits	3
AL113	Inverter – motor overload		3
AL115	Inverter – motor phase failed		3

Code	Description	Note	Type
AL116	Inverter – high oil temperature	• High oil temperature (check oil heater) • Warning if greater than 115°C • Fault if greater than 120°C • Reset alarm if less than 105°C	3
AL117	Inverter – low oil temperature		3
AL118	Inverter - Compressor Short Cycling	Compressor starting is requested before the minimum time between two starts has passed. This occurs only at the Warning level	3
AL119	Inverter – envelope error	The compressor is working out of envelope	3
AL120	Inverter – serial control timeout	Power request from card pCO5+ to inverter timeout	3
AL121	Inverter – communication error		3
AL122	Inverter – datalog error		3
AL123	Inverter – pressure sensor fault		3

The alarms read by the compressor inverter card can have three levels, as indicated in the example window:



— **Warning**: pre-alarm condition
— **Critical**: becomes Fault after 30″
— **Fault**: compressor OFF manual reset alarm

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