



CDZ

**MANAGEMENT SOFTWARE FOR DIRECT
EXPANSION OR REFRIGERATED
WATER CONDITIONING UNIT**

SOFTWARE MANUAL

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1 INTRODUCTION

The following symbols will be used hereafter:



- 1) to focus the attention on particular functions



- 2) to emphasise criticalities which can lead to malfunctioning, alarms, reduced performance, dangerous situations and serious damage to the unit



NEVER MODIFY CONFIGURATION PARAMETERS WHICH YOU DO NOT KNOW OR THE MEANING OF WHICH IS NOT CLEAR TO AVOID SERIOUS DAMAGE TO THE UNIT, FREQUENT ALARMS OR REDUCED PERFORMANCE. IF IN DOUBT, CONTACT THE AFTER-SALES SERVICE



MAKE SURE THAT THE ELECTRIC POWER AVAILABLE IS SUFFICIENT TO GUARANTEE PROPER OPERATION OF THE UNIT IN ITS FULL OPERATING RANGE. IF IN DOUBT, CONTACT THE AFTER-SALES SERVICE



MAKE SURE THAT THE COOLING/THERMAL CAPACITY OF THE UNIT IS APPROPRIATE TO ITS REQUIREMENTS AND THAT THE FEATURES OF THE SYSTEM ARE SUITABLE FOR THE PROPER OPERATION OF THE UNIT. IF IN DOUBT, CONTACT THE AFTER-SALES SERVICE



BEFORE POWERING THE UNIT MAKE SURE THAT THE POWER SUPPLY VOLTAGE AVAILABLE COMPLIES WITH THAT INDICATED ON THE UNIT'S TECHNICAL DATA PLATE

This manual aims to illustrate the software functions and the procedures used to customize these functions so that they meet one's specific needs.

From here on, to describe the functions and relative parameters, the notation “ [**] ” will be used to refer to the parameter group. For example, when saying “... *it is possible to modify the user interface language [A]*...” this means that the parameter to modify the language belongs to parameter group A.

To search for the specific parameter, refer to the parameter list attached to the unit documentation and to that provided in the graphs relative to the menu structure carried in the "GENERAL" chapter for a quicker search of the parameter group

2 MANAGED UNITS

The CDZ software was developed to managed direct expansion units (DX), refrigerated water units (CW) and dual-cooling units (DUAL) that combine both systems.

- The DX units may have from 1 to 6 compressors managed as a mono or bi-circuit; moreover, 2 of the 6 compressors may be equipped with inverter technology in order to have continuous adjustment of the refrigerating power to the load. Dissipation side: the unit may be equipped with remote condenser with finned battery or with a plate condenser installed on the unit. In both cases, the software can manage the modulation of the fans / water valve, monitoring the condensation pressure value and properly managing the advance times necessary on the various devices during the start phase of the compressors.
- The CW units may be equipped with one or two independent water circuits; each one may be activated with remote controls or depending on the temperature condition of its own water circuit; moreover, each circuit may be managed with either a heating or cooling logic.
- The DUAL units combine the two systems described above, with the possibility to give priority to one of the two and manage the other one as an emergency.

These types of units have in common the management of accessory devices such as:

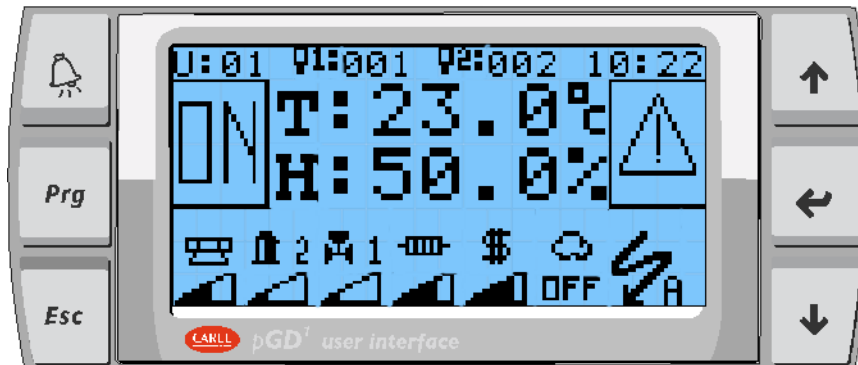
- HUMIDIFIERS with immersed electrodes that can be installed on the machine and various types of humidifiers that can be installed externally. In both cases, the alarms are managed and the power of the device is checked in a modulating manner.
- HEATING ELEMENTS are used with a heating or post-heating function in dehumidifying mode. The heating elements are protected against overloads by means of a thermostat and management of alarm from the microprocessor; they can be controlled through fractioning of the power (1-2-3 Steps) or in modulating mode through special regulators.
- FREECOOLING is used as an energy-saving resources, and it can be combined in direct version to the CW units and in direct/indirect version to the DX units. The purpose of this function is to take advantage of the colder air during the winter period for cooling the premises to be conditioned, activating the compressors only when this action is insufficient.

The software was designed to managed up to 16 units in the same LAN network, which can be subdivided into 8 subgroups within which the rotating units can be managed with units in standby. Inside each group, it is possible to have units with different accessories, so the units will usually rotate based on the established temporal rotation, however priority will be given to those units that can meet the specific requests of the plant. For example, if humidification is requested, the units with the humidifier will be forced or, in case of a cooling request and some units can operate in freecooling mode, these units will be forced for the purpose of achieving greater energy efficiency of the system.





3 GENERAL INFORMATION

3.1 USER INTERFACE

The user interface, PGD1, consists of an LCD display (8 rows x 22 columns) and 6 keys. It can be used to execute all of the programme operations, show the conditions of the operating unit at any time and change the parameters.



The 6 keys and how they are used are described in the following table.

	Key	Description
	ALARM	Press the ALARM key to access the alarm list. When an alarm is present, the pushbutton is lit up by a red LED
Prg	PROGRAM	Press the PRG key to access the main menu.
Esc	ESC	Press the ESC key to go back to the main menu or to the main mask.
	UP	Press the UP key to go to the next mask or to increase the value of a parameter.
	ENTER	Press ENTER to access a parameter to be edited, to confirm editing of a parameter or to select a menu item.
	DOWN	Press the DOWN key to go to the previous mask or to decrease the value of a parameter.

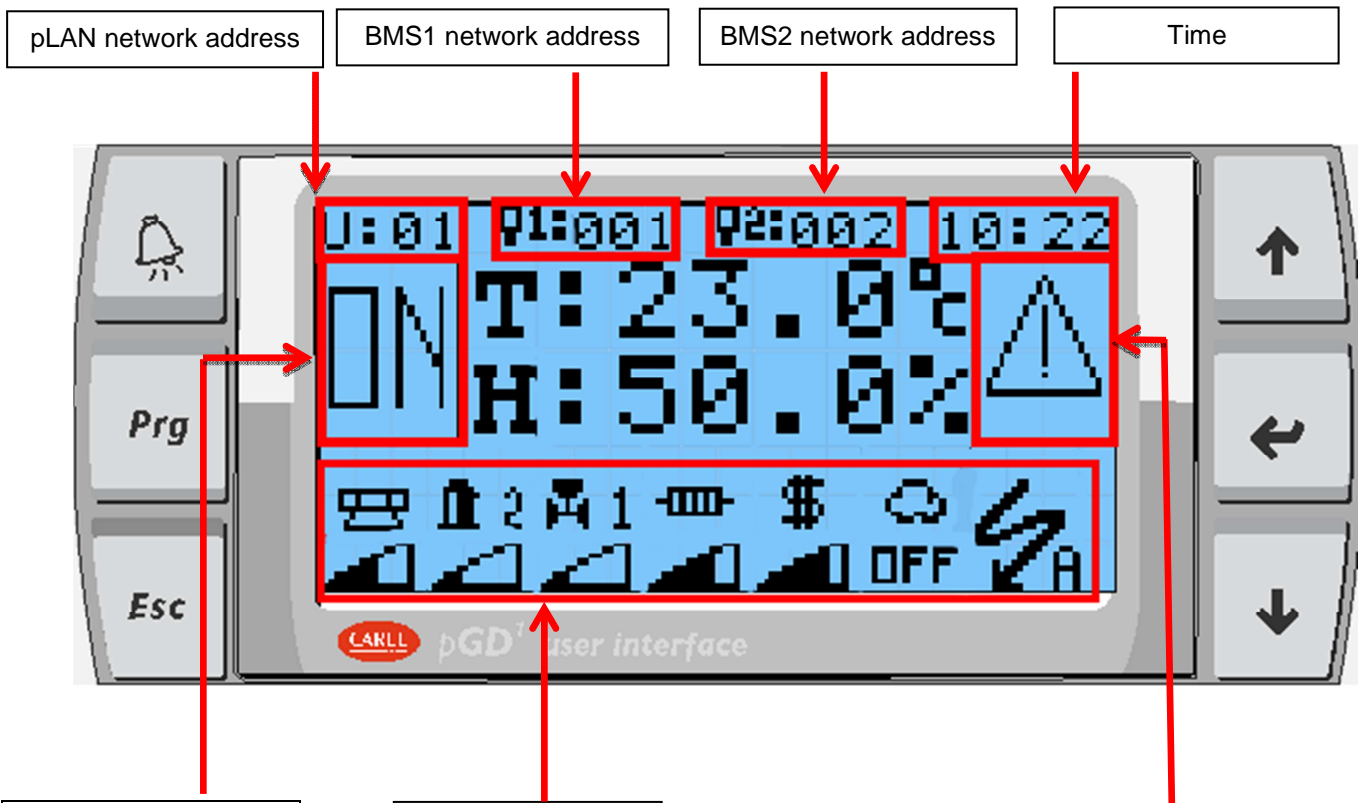
The following mask appears after powering on the board.



In this phase, the analogue inputs and control board memory are initialised. If no writing is displayed or the NO LINK message appears, the address of the display and of the board must be correctly configured.

i	<p>THE DISPLAY ADDRESS IS SET IN THE FACTORY. A SECOND SETTING MUST BE CARRIED OUT ONLY AFTER HAVING REPLACED THE DISPLAY OR IN CASE THE UNIT IS CONNECTED THROUGH THE LAN NETWORK WITH BOARD ADDRESS OTHER THAN 1</p>
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After the start phase, the system automatically goes to the main mask, which provides the temperature and humidity value of the room to be controlled and the operational status of the unit devices based on the activation of various icons.

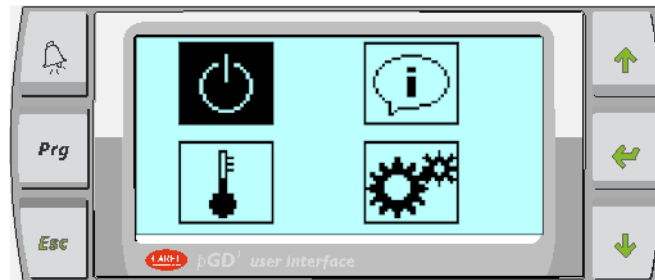


Unit status	
	Unit active
	Unit in standby
	Unit off via time bands.
	Unit off via supervision
	Unit off via remote contact.
	Unit off via display.
	Unit off via alarm

Display of active devices and of their instantaneous power

Notices	
	It indicates that a compressor envelope control action is active. The acronym at the top indicates the circuit concerned while the one at the bottom indicates the active action: RP-> Low compression ratio DP-> Low DP HL-> High evaporation pressure LP-> Low evaporation pressure. HP-> High condensation pressure HT-> High discharge temperature EP-> Circuit equalization in progress
	It indicates that the valves have been forced open in order to execute the vacuum procedure of the cooling circuit.
	It indicates that the anti-recirculation gate is moving to the open position in order to allow the start of the utility fans.
	It indicates the presence of an active alarm configured as a "Warning".
	It indicates the presence of an active alarm configured as a "Non serious alarm".
	It indicates the presence of an active alarm configured as a "Serious alarm".

From the main mask, press the arrow keys to access a simplified menu through which you can turn the unit on/off, change the set-points, access the unit status section and access the main menu.



If a command is selected, the status of the icon changes, as in the following example

	ON-OFF command not selected
	ON-OFF command selected

When a command is selected, just press ENTER to enter the function mask

	USE THE UP AND DOWN KEYS TO CHANGE SELECTION OF THE COMMAND USE THE ENTER KEY TO SELECT THE COMMAND
--	--

Meaning of the icons:

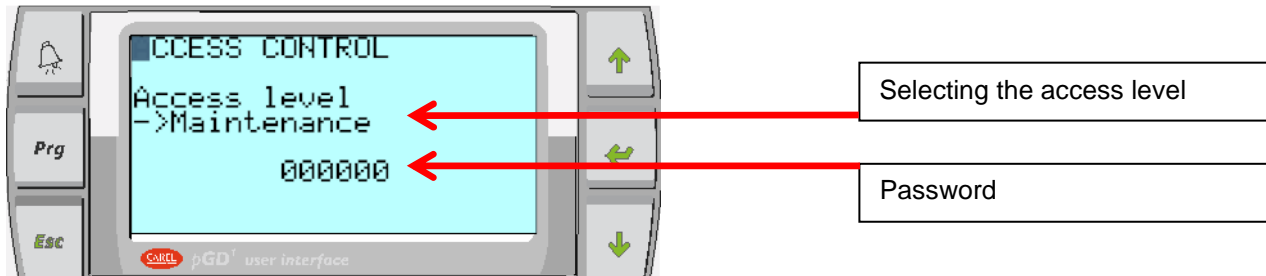
KEY	ICON	MEANING
1		Main ON-OFF of the unit
2		Access to the information menu
3		Setting the set-points
4		Access to advanced user/maintenance/manufacturer parameters menu

	YOU CAN RETURN TO THE MAIN MASK AT ANY TIME BY PRESSING ESC SEVERAL TIMES.
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	YOU CAN PASS FROM THE COMMAND MASK TO THE TEMPERATURE MASK AND VICE VERSA USING THE UP OR DOWN KEYS
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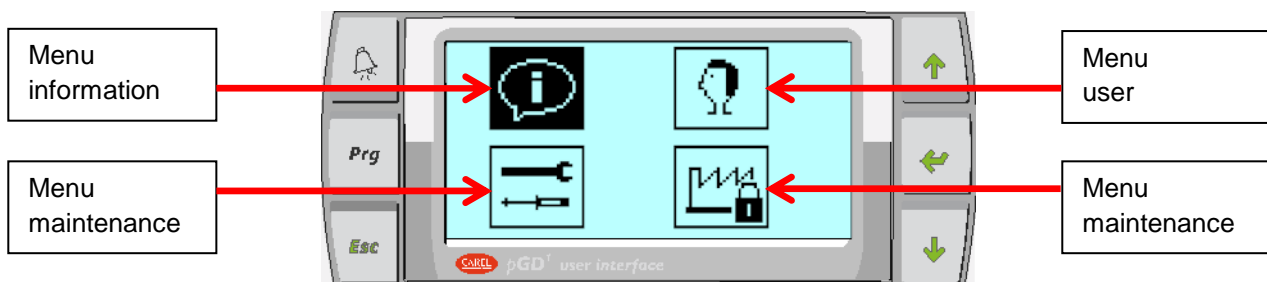
3.2 ACCESS TO THE MENUS

Press the key **PRG** or the command  to access the LOG-IN mask




If a valid password has already been entered, the access level will be displayed and the password field will show the text "*****". To log in with a different access level, you need to log out from the level you are currently in by keeping the PRG pressed for 3 seconds; then select the desired access level, enter the proper password and press ENTER.

After having selected the desired access level and entered the right password, the following mask is displayed:



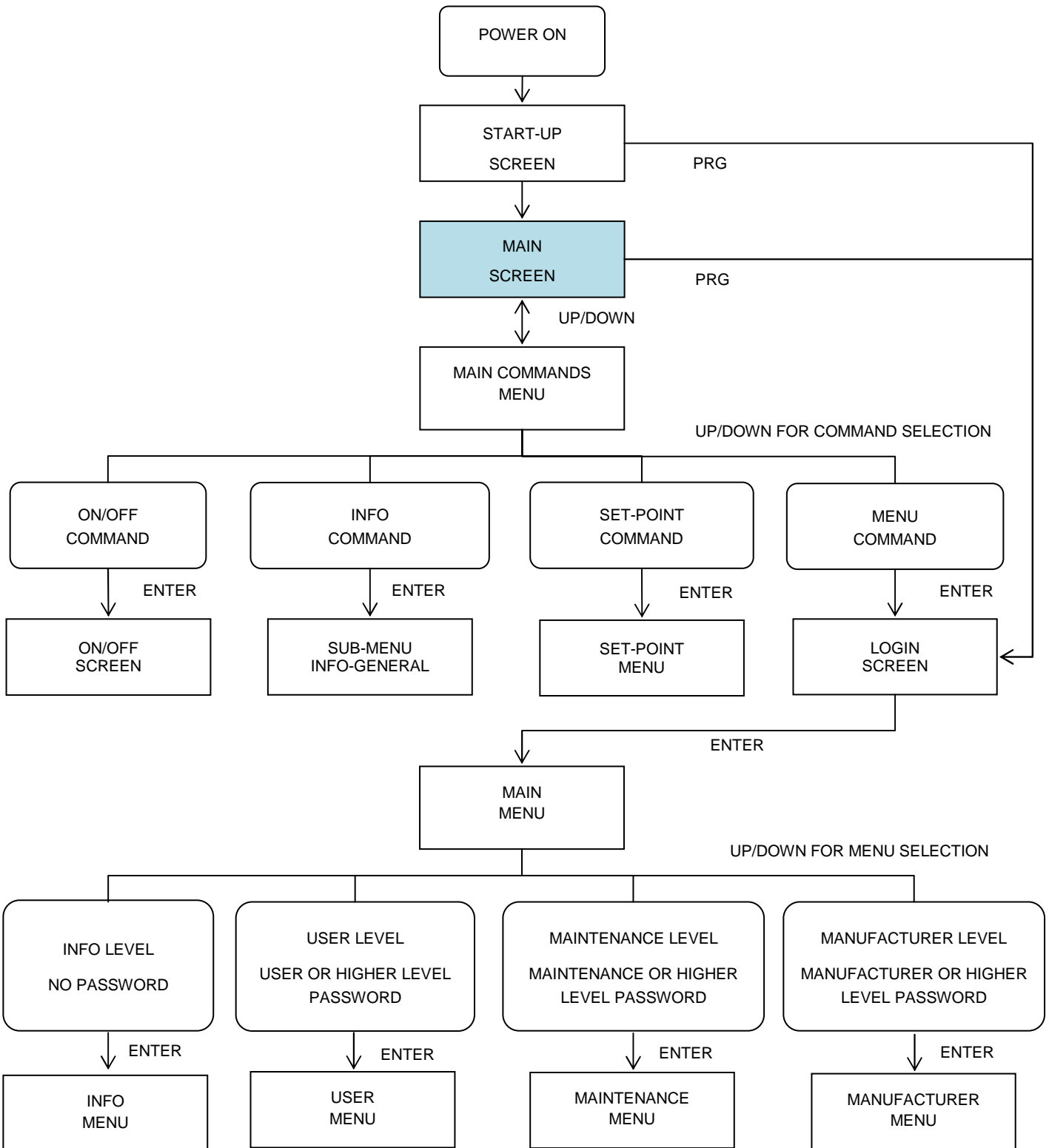
If the entered password is not correct or only enables part of the parameters, the relative selection key displays an icon with a lock (see the manufacturer menu in the previous example)

	<p>USE THE UP AND DOWN KEYS TO SELECT THE DESIRED MENU USE THE ENTER KEY TO ACCESS THE SELECTED MENU</p>
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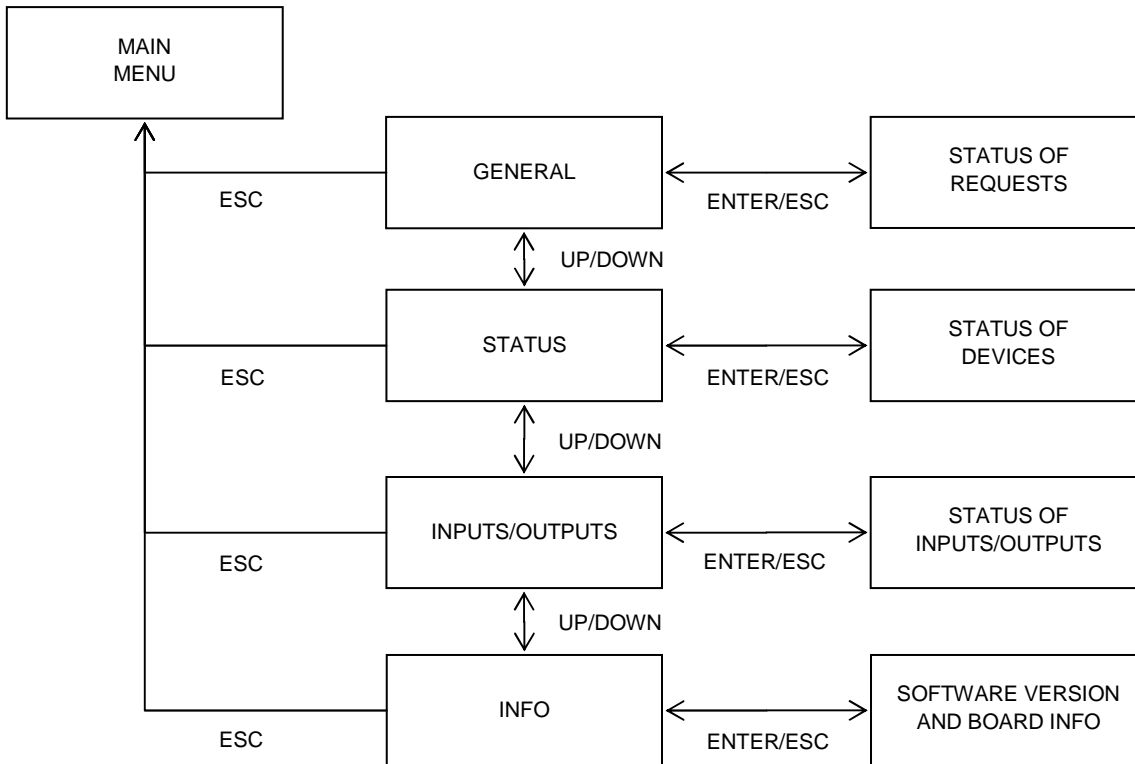
3.3 STRUCTURE OF THE MENUS

The following figures show the structure of the menus and of the submenus:

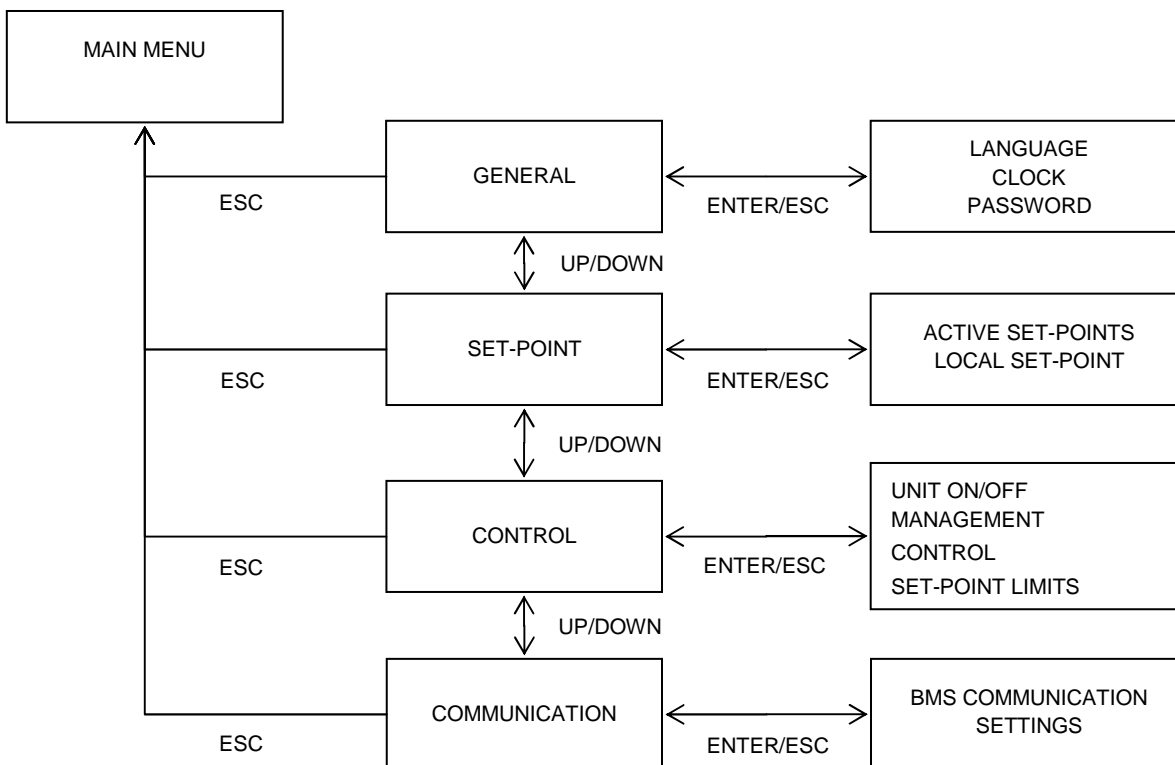
1) Main level



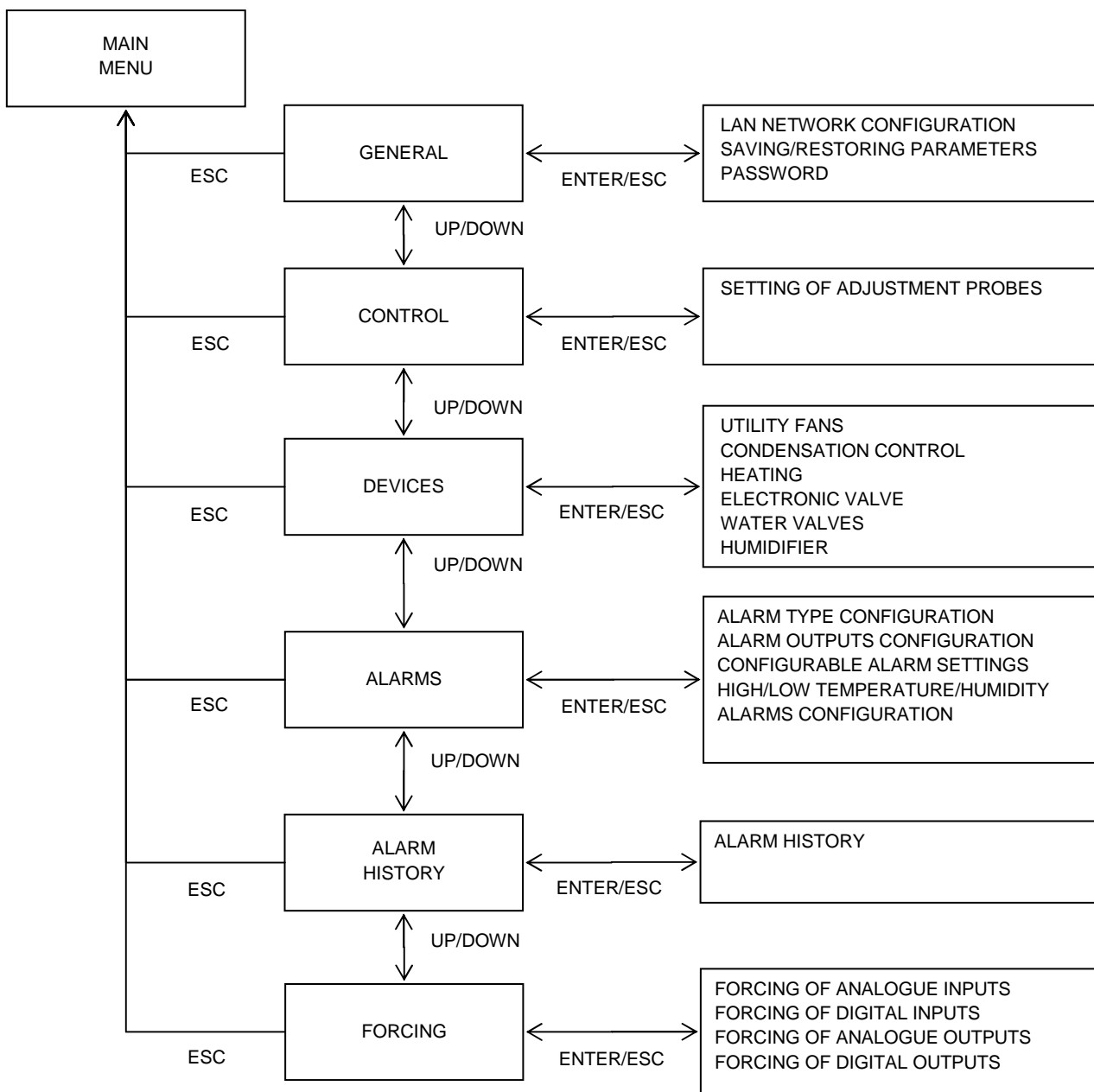
2) Structure of the **INFO MENU**



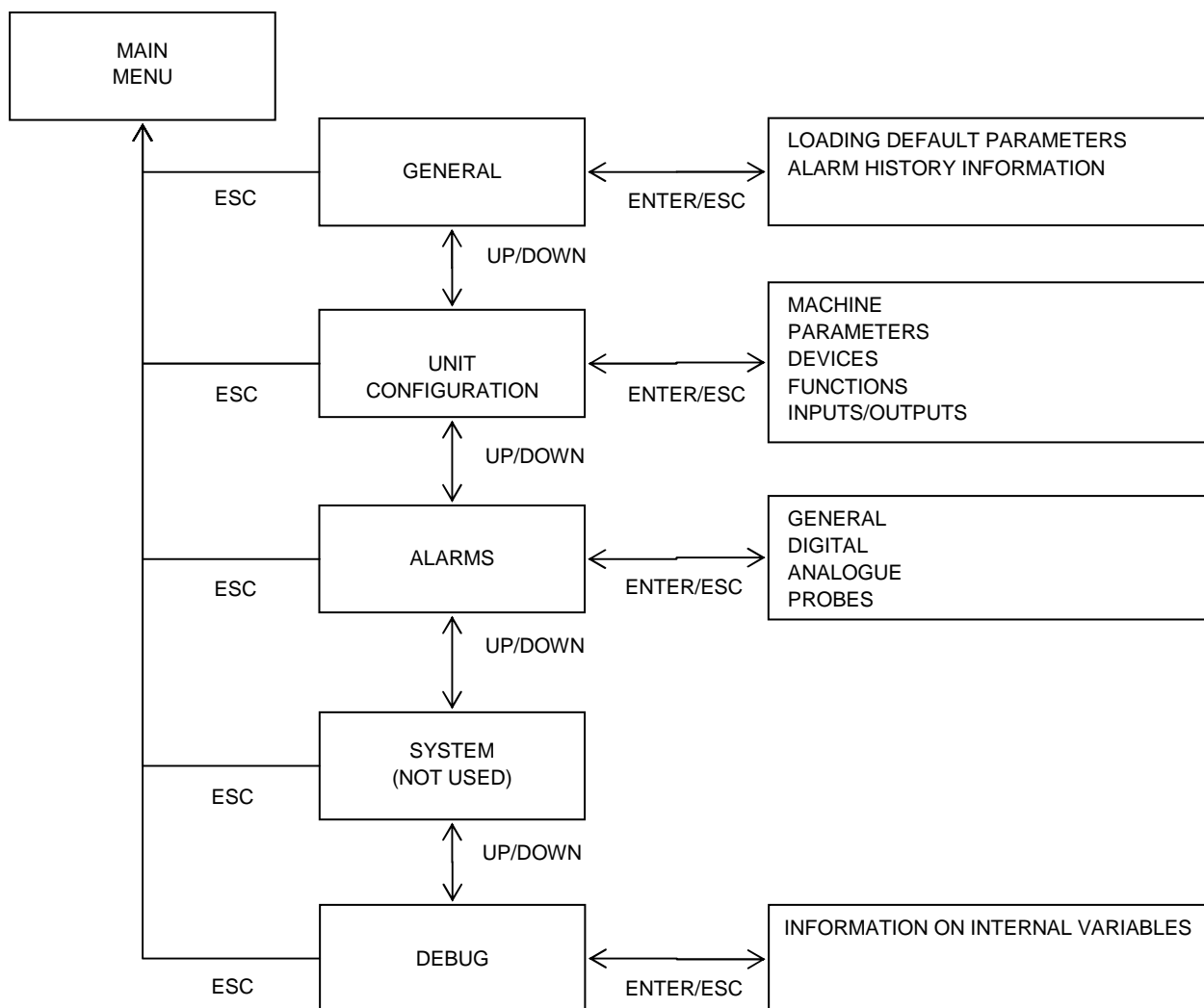
3) Structure of the **USER MENU**



4) Structure of the **MAINTENANCE MENU**





5) Structure of manufacturer menu



3.4 OPERATING INFORMATION

Information regarding unit operation can be found by means of:

- 1) Main screen (Temperature, humidity, status bar, notice area)
- 2) INFO menu

The INFO menu can be accessed by pressing key , or by means of key  with no password required. The INFO menu is subdivided in:

- 1) **General**: it contains information regarding the status of the production calls and requests and the progress status of the main functions/procedures;
- 2) **Status**: it contains the status of all devices connected to the microprocessor, such as the electronic valves driver, inverter, boards used to control the humidifiers, etc.
- 3) **Inputs/outputs**: status of all analogue/digital inputs and outputs with the view-only configuration parameters;
- 4) **Info**: software version, boot and bios installed, type of board and duration of program cycle

3.5 CONFIGURATION OF BMS AND WIRING RULES

The unit's control board can be interfaced with external supervision systems by means of the communication port BMS


1. To take advantage of this potentiality, proceed as follows:

- 1) Install one of the following communication boards in the special slot:
 - a. Serial RS485 (Modbus, Carel RS485, Commissioning)
 - b. Serial RS232 (Carel RS232)
 - c. PCOWEB (BacNet SNMP, Modbus TCP/IP, Webserver)
 - d. PCONET (BacNet MS-TP)
 - e. LONWORKS (TP/FT-10)

- 2) Select the specific communication protocol **[UC]**
 - a. CAREL SLAVE LOCAL 485
 - b. CAREL SLAVE REMOTE 232
 - c. MODBUS SLAVE
 - d. COMMISSIONING
 - e. GSM
 - f. LONWORKS

- 3) Configure the necessary communication parameters **[UC]**
 - a. Communication speed (1200÷19200)
 - b. Stop bit (1,2)
 - c. Parity (none, even, odd)
 - d. Address (1÷207)

- 4) Perform the bus communication in a workmanlike fashion

	<ol style="list-style-type: none">1) FOR BUS RS485 CONNECTIONS, USE ONLY SUITABLE BRAIDED SCREENED CABLE COMPATIBLE WITH EIA RS485 SPECIFICATIONS (FOR EXAMPLE, BELDEN 3107A)2) CONNECT THE EARTH BRAID ON ONE SIDE3) SEPARATE THE POWER CABLES FROM THE BUS CABLES4) NEVER WIND THE BUS CABLES AROUND THE POWER CABLES5) THE BUS CABLES MUST BE FAR AWAY FROM LARGE MOTORS, INVERTERS, ANTENNAS, NEON LIGHTS AND ANY OTHER SOURCE OF STRONG ELECTROMAGNETIC INTERFERENCE6) IN CASE OF SERIAL CONNECTIONS, NEVER CONNECT MORE THAN TWO CABLES TO THE SAME NODE
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4 USING THE UNIT

4.1 SWITCHING THE UNIT ON-OFF


The software provides different ways for turning on the unit, which can be freely selected by the final user **[R]**. The possible choices are:

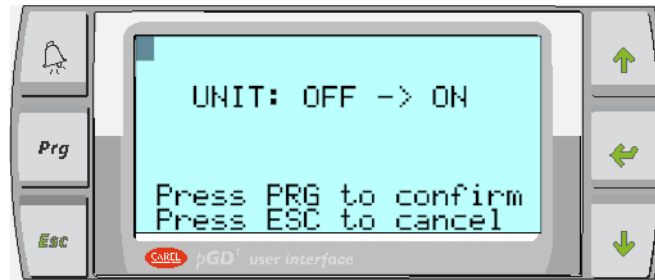
- 1) Switching on from local pGD display
- 2) Switching on from digital input
- 3) Switching on from supervisor
- 4) Timed switch on
- 5)



WHEN ONE OR MORE OPTIONS ARE ACTIVATED, ALL THE SELECTED SOURCES MUST GIVE CONSENT FOR THE UNIT TO SWITCH ON

In case multiple options are enabled and some of them are not giving their consent, an icon will be displayed in the status bar indicating which source is keeping the unit turned off.

To switch on the unit from the local display, access the command screen and select the start command , then press ENTER to access the switch-on mask:



- 1) Press PRG to confirm the new status, or
- 2) Press ESC to exit without changing the status

If the remote ON-OFF from the digital input has been enabled, the input has to be closed (with reversed logic, open with direct logic) so that the unit can be turned on



THE REMOTE ON/OFF TERMINALS ARE USUALLY LOCATED ON TERMINAL BLOCK X3, NUMBERED 11 AND 14. HOWEVER, REFER TO THE WIRING DIAGRAM



THE REMOTE ON/OFF TERMINALS ARE NORMALLY BRIDGED. IN THIS CASE, IF YOU WISH TO USE THIS FUNCTION, REMOVE THE BRIDGE AND CONNECT A POTENTIAL-FREE CONTACT. THE CONTACT DRAWS THE 24VAC VOLTAGE DIRECTLY FROM THE MACHINE THE DIGITAL INPUT MUST BE CONFIGURED PROPERLY



IF THE UNIT IS OFF DUE TO AN ALARM, THE ALARM MUST BE RESET TO HAVE CONSENT TO START

If the unit connected to a LAN network, the start consent is determined by the Master logics, and the final user cannot force the starting. In this case the user can only switch the unit off, using the main OFF switch on the local display.



IN ANY CASE, IF THE MAIN SWITCH OF THE UNIT IS OFF FROM THE PGD1 DISPLAY, IT CAN NEVER BE STARTED

If ON-OFF from the supervisor is among the selected options, then the BMS communication port must be configured and the following values must be written on the variable:


- 1) 0 = unit OFF
- 2) 1 = unit ON

See the list of supervision variables for the address of the specific variable

i	BEFORE SWITCHING ON-OFF FROM THE SUPERVISOR, MAKE SURE THAT THE COMMUNICATION PORT HAS BEEN CONFIGURED PROPERLY, THAT THE BUS IS WIRED CORRECTLY AND WITH A SUITABLE CABLE, AND THAT THE COMMUNICATION PROTOCOLS ARE COMPATIBLE
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i	FOR INFORMATION ON THE AVAILABLE COMMUNICATION PROTOCOLS, SEE THE COMMUNICATION CONFIGURATION SECTION
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4.2 SETTING THE SET-POINTS

To change the work set-point, selected the command  from the main menu and press ENTER:

Once you reach the following setting screen:



- 1) press ENTER as many times as it takes to move the flashing cursor on the set-point to be changed
- 2) use the UP key to increase the value
- 3) use the DOWN key to decrease the value
- 4) use the ENTER key to confirm the new value
- 5) use the ESC key to exit the screen without changing the set-point

The mask will only show the set-points available based on the machine configuration; for example, the heating set-point will be available only if the unit is equipped with heating resources and a separate set-point has been configured.

i	For additional functions to be applied to the set-point, please refer to the specific paragraph "USER PARAMETERS CONFIGURATION"
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i	By accessing the [S] parameter group in the User>Set-point menu, all the set-points can be adjusted
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5 CONFIGURATION OF USER PARAMETERS

By accessing the **[R]** parameter group in the User -> Adjustment menu, you can customize the temperature and humidity control characteristics based on the type of system and application.

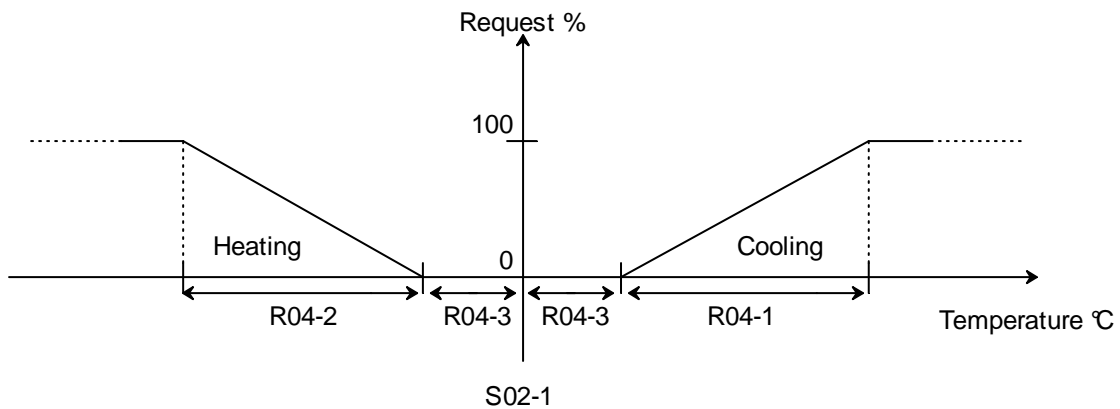
Below is an explanation of the user parameters:

UNIT ON/OFF CONFIGURATION (R00)		
Parameter	Description	Default
R00-1 On/Off from keyboard	Enables/Disables the possibility to switch off the unit from the keyboard (PGD1). Parameters YES : Enabled NO : Disabled	YES
R00-2 Password	Possibility to set a 4-digit numerical password that will have to be used afterwards to turn the unit on/off from the keyboard (PGD1). Parameters: "----" : Disabled password 0001 – 9999 : Valid password	----
R00-3 ON/OFF on from digital input	Enables/Disables the possibility to switch off the unit from the digital input. Parameters: YES : Enabled NO : Disabled	YES
R00-4 On/Off from supervisor	Enables/Disables the possibility to switch off the unit from the supervisor. Parameters: YES : Enabled NO : Disabled	NO
R00-5 On/Off from scheduler	Enables/Disables the possibility to switch off the unit from the scheduler. Parameters: YES : Enabled NO : Disabled	NO
ENABLING OF REQUESTS (R01)		
Parameter	Description	Default
R01-1 Cooling	It manages the enabling of the cooling request from digital input or from supervisor. Parameters: LOCAL : Always enabled DIN : Enabling from digital input BMS1 : Enabling from supervisor on port BMS1 BMS2 : Enabling from supervisor on port BMS2	LOCAL
R01-2 Heating	It manages the enabling of the heating request from digital input or from supervisor. Parameters: LOCAL : Always enabled DIN : Enabling from digital input BMS1 : Enabling from supervisor on port BMS1 BMS2 : Enabling from supervisor on port BMS2	LOCAL
R01-3 Humidifies	It manages the enabling of the humidification request from digital input or from supervisor. Parameters: LOCAL : Always enabled DIN : Enabling from digital input BMS1 : Enabling from supervisor on port BMS1 BMS2 : Enabling from supervisor on port BMS2	LOCAL
R01-4 Dehumidification	It manages the enabling of the dehumidification request from digital input or from supervisor. Parameters: LOCAL : Always enabled DIN : Enabling from digital input BMS1 : Enabling from supervisor on port BMS1 BMS2 : Enabling from supervisor on port BMS2	LOCAL

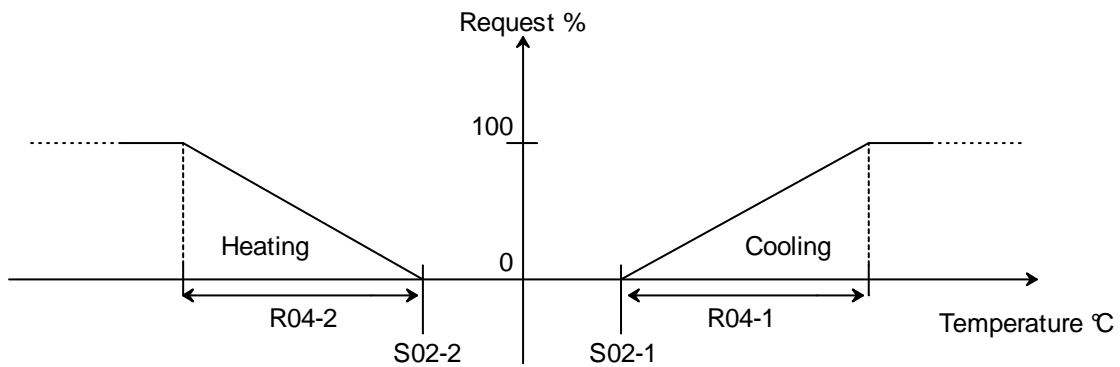
FORCING OF REQUESTS (R02)		
Parameter	Description	Default
R02-1 Cooling	It manages the forcing of the cooling request from digital input or from supervisor. Parameters: LOCAL : No active forcing AIN : Forcing from digital input BMS1 : Forcing from supervisor on port BMS1 BMS2 : Forcing from supervisor on port BMS2	LOCAL
R02-2 Heating	It manages the forcing of the heating request from digital input or from supervisor. Parameters: LOCAL : No active forcing AIN : Forcing from digital input BMS1 : Forcing from supervisor on port BMS1 BMS2 : Forcing from supervisor on port BMS2	LOCAL
R02-3 Humidifies	It manages the forcing of the humidification request from digital input or from supervisor. Parameters: LOCAL : No active forcing AIN : Forcing from digital input BMS1 : Forcing from supervisor on port BMS1 BMS2 : Forcing from supervisor on port BMS2	LOCAL
R02-4 Dehumidification	It manages the forcing of the dehumidification request from digital input or from supervisor. Parameters: LOCAL : No active forcing AIN : Forcing from digital input BMS1 : Forcing from supervisor on port BMS1 BMS2 : Forcing from supervisor on port BMS2	LOCAL
TEMPERATURE ADJUSTMENT (R03)		
Parameter	Description	Default
R03-1 Set-point	Active only if there is at least one heating resource; it allows to have two separate set-points: one to calculate the cooling request and the other to calculate the heating request. Parameters: Single : Single set-point for heating/cooling Separate : Separate set-point	Single
R03-2 Adjustment type	It sets the type of adjustment, which can be proportional or proportional + integral (P+I). It is advisable to use the P+I adjustment when the unit is equipped with modulating resources since it ensures greater system stability. Parameters: PROP : Proportional P+I : Proportional + integral	PROP
R03-3 Set-point from	It sets from where to take the set-point value, which can take place from the following inputs: Parameters: LOCAL : It enables the set-point set in the machine display BANDS : It enables the set-point from the scheduler BMS1 : It enables the set-point from the supervisor on port BMS1 BMS2 : It enables the set-point from the supervisor on port BMS2	LOCAL
R03-4 Adjustment temperature	It selects on which temperature probe the adjustment requests need to be calculated. Parameters: INLET : Temperature of the inlet air OUTLET : Temperature of the outlet air	INPUT
R03-5 Request calculation	Active only if multiple probes are considered for temperature control purposes; through this parameter, you can choose whether to use the average value or the maximum value from the available ones. Parameters: AVERAGE TEMPERATURE MAXIMUM TEMPERATURE	TEMPERATURE AVERAGE

TEMPERATURE ADJUSTMENT (R04)		
Parameter	Description	Default
R04-1 Cold differential	Setting of the cooling request differential. Parameters: 0.0 – 20.0 °C	3.0
R04-2 Heat differential	Setting of the heating request differential. Parameters: 0.0 – 20.0 °C	3.0
R04-3 Dead zone	Active with single set-point only and proportional type adjustment; it indicates the value of the dead zone around the set-point Parameters: 0.0 – 20.0 °C	0.5
R04-4 Integral time	Active only with the P+I type of adjustment; it represents the time Constant of the integral action Parameters: 000 – 999 Seconds	30

EXAMPLE OF ADJUSTMENT WITH SINGLE SET-POINT

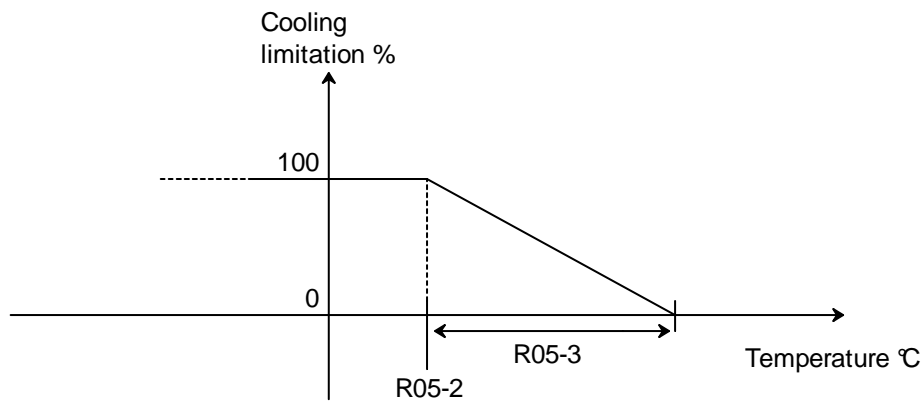


EXAMPLE OF ADJUSTMENT WITH SEPARATE SET-POINT



DELIVERY TEMPERATURE LIMIT (R05)		
Parameter	Description	Default
R05-1	Enabling of the delivery temperature limitation function. Parameters: YES : Enabled NO : Disabled	NO
R05-2 Set-point	It sets the delivery temperature limitation set-point Parameters: 0.0 – 30.0 °C	12.0
R05-3 Differential	It sets the delivery temperature limitation differential Parameters: 0.0 – 20.0 °C	3.0
R05-4 Integral time	Active only with the P+I type of adjustment; it represents the time Constant of the integral action Parameters: 000 – 999 Seconds	30

ADJUSTMENT OF DELIVERY TEMPERATURE LIMIT

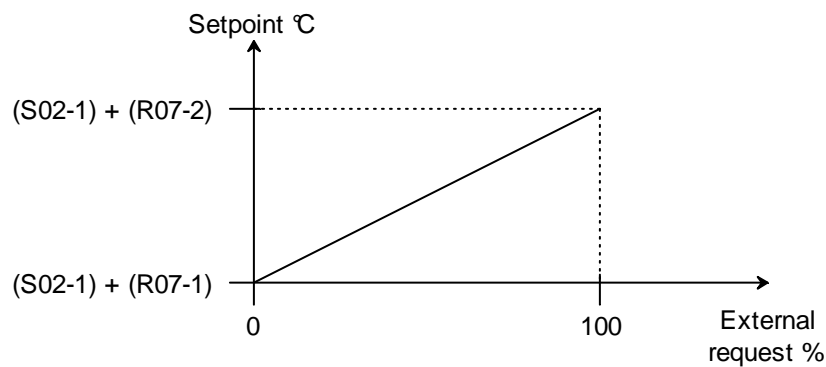


COMPRESSOR ON/OFF MANAGEMENT VIA TEMPERATURE (R06)

Parameter	Description	Default
R06-1	Enabling of the compressor On/Off management via temperature; this function subjects the switching on of the compressor, in addition to the usual adjustments, to precise switch on/off offsets around the set-point. It indicates the enabling of this function in units with P+I adjustment on the delivery temperature to prevent the compressor from continuously switching On/Off at low load.s Parameters: YES : Enabled NO : Disabled	NO
R06-2 Differential On	It sets the compressor enabling differential with respect to the set-point Parameters: 0.0 – 10.0 °C	2.0
R06-3 Differential Off	It sets the compressor disabling differential with respect to the set-point Parameters: 0.0 – 10.0 °C	2.0

SET-POINT VARIATION FROM REMOTE (R07)		
Parameter	Description	Default
R07-1 Minimum variation cooling set-point	It sets the minimum variation of the local set-point that can be obtained through the reference analogue input. Parameters: -9.9 – 9.9 °C	-5.0
R07-2 Maximum variation cooling set-point	It sets the maximum variation of the local set-point that can be obtained through the reference analogue input. Parameters: -9.9 – 9.9 °C	5.0
R07-3 Minimum variation heating setpoint	Active with separate set-point only; it sets the minimum variation of the local set-point that can be obtained through the reference analogue input. Parameters: -9.9 – 9.9 °C	-5.0
R07-4 Maximum variation heating set-point	Active with separate set-point only; it sets the maximum variation of the local set-point that can be obtained through the reference analogue input. Parameters: -9.9 – 9.9 °C	5.0
R07-5 Humidification-dehumidification set-point minimum variation.	It sets the minimum variation of the local set-point that can be obtained through the reference analogue input. Parameters: -9.9 – 9.9 %	-5.0
R07-6 Humidification-dehumidification set-point maximum variation.	It sets the maximum variation of the local set-point that can be obtained through the reference analogue input. Parameters: -9.9 – 9.9 %	5.0

EXAMPLE OF COLD SET-POINT VARIATION FROM REMOTE

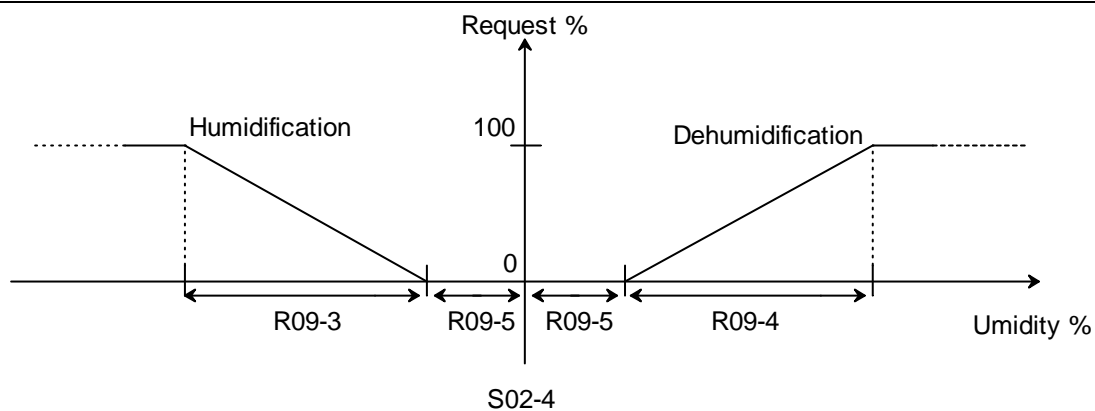


TEMPERATURE SET-POINT LIMITS (R08)

Parameter	Description	Default
R08-1 Enabling	It enables the set-point limits. Parameters: YES : Enabled NO : Disabled	YES
R08-2 Minimum cooling set-point	It sets the minimum limit of the cooling set-point. Parameters: 0.0 – 60.0 °C	20.0
R08-3 Maximum cooling set-point	It sets the maximum limit of the cooling set-point. Parameters: 0.0 – 60.0 °C	30.0
R08-4 Minimum heating set-point	Active with separate set-point only; it sets the minimum limit of the heating set-point. Parameters: 0.0 – 60.0 °C	5.0
R08-5 Maximum heating set-point	Active with separate set-point only; it sets the minimum limit of the heating set-point. Parameters: 0.0 – 60.0 °C	20.0

HUMIDITY ADJUSTMENT (R09)		
Parameter	Description	Default
R09-1 Set-point from	It sets from where to take the set-point value, which can take place from the following inputs: Parameters: LOCAL : It enables the set-point set in the machine display BANDS : It enables the set-point from the scheduler BMS1 : It enables the set-point from the supervisor on port BMS1 BMS2 : It enables the set-point from the supervisor on port BMS2	LOCAL
R09-2 Select humidification	Selects the humidity type Parameters: RELATIVE SPECIFIC	RELATIVE
R09-3 Differential humidification	Setting of the humidification request differential. Parameters: 0.0 – 99.9 %	5.0
R09-4 Differential dehumidification	Setting of the dehumidification request differential. Parameters: 0.0 – 99.9 %	5.0
R09-5 Dead zone	It indicates the value of the dead zone around the set-point Parameters: 0.0 – 20.0 %	2.0

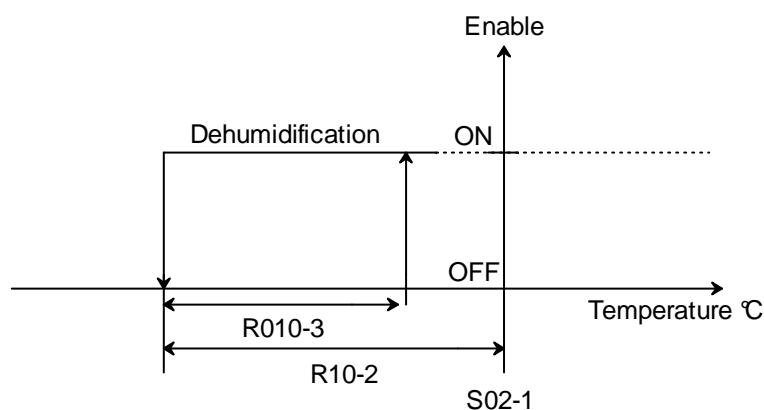
ADJUSTMENT EXAMPLES



DEHUMIDIFICATION LIMIT VIA TEMPERATURE (R10)

Parameter	Description	Default
R10-1 Enabling	It enables the dehumidification limit due to low temperature. Parameters: YES : Enabled NO : Disabled	YES
R10-2 Offset off	It sets the offset value with respect to the setpoint for deactivation of the dehumidification. Parameters: 0.0 – 15.0 °C	20.0
R10-3 Differential	It sets the differential to re-establish the dehumidification function. Parameters: 0.0 – 15.0 °C	30.0

ADJUSTMENT EXAMPLE



HUMIDITY SET-POINT LIMITS (R11)		
Parameter	Description	Default
R11-1 Enabling	It enables the set-point limits. Parameters: YES : Enabled NO : Disabled	YES
R11-2 Minimum humidity set-point.	It sets the minimum limit of the cooling set-point. Parameters: 0.0 – 99.9 %	40.0
R11-3 Maximum humidity set-point.	It sets the maximum limit of the cooling set-point. Parameters: 0.0 – 99.9 %	60.0

SETTING OF UNIT SWITCH-ON SCHEDULER (R12)

The screenshot shows the 'SCHEDULER ON/OFF' menu for R12. The day is set to 'MONDAY'. The start time is '08:00' and the end time is '17:00'. The status is set to 'OFF'. The 'Save Parameter' option is 'NO'. Red arrows point from text boxes to these elements: 'Selection of time slot start time' points to '08:00'; 'Time slot enabling/disabling' points to the 'OFF' status; 'Selection of day to be configured' points to 'MONDAY'; 'Select unit status' points to the 'ON/OFF' status; and 'Saving of settings' points to 'NO'.

In the example given above, the unit will be on in the time interval from 8:00 am until 5:00 pm and off from 5:00 pm until 8:00 pm. Up to 4 different switch on/off times can be set for each day of the week.

SETTING OF UNIT SET-POINT SCHEDULER (R13)

The screenshot shows the 'SCHEDULER SETPOINT' menu for R13. The day is set to 'MONDAY'. The start time is '08:00' and the end time is '13:00'. The set-points are: Cool 23.0%, Heat 18.0%, Hum 45%. The 'Save Parameter' option is 'NO'. Red arrows point from text boxes to these elements: 'Selection of time slot start time' points to '08:00'; 'Time slot enabling/disabling' points to the '13:00' time slot; 'Selection of day to be configured' points to 'MONDAY'; 'Select the set-point' points to the '23.0%' value; and 'Saving of settings' points to 'NO'.

In the example, the unit will operate with the set-points 23.0°C – 18.0°C – 45% in the time interval from 8:00 am until Noon, 25.0°C – 15.0°C – 50% in the time interval from Noon until 1:00 pm and 24.0°C – 17.0°C – 55% in the time interval from 1:00 pm until 8:00 am. It will also be possible to set up to 4 time intervals with different set-points.

COPY SCHEDULER DATA (R14)

R14-1 Copy from	It selects the day from which to copy the data set on the scheduler. Parameters: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday	Monday
R14-2 Copy to	Select the day in which to copy the data set on the scheduler. Parameters: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday	Monday
R14-3 Copy data	Confirm the copying of data Parameters: YES NO	No

FREE-COOLING CONFIGURATION (R15)		
Parameter	Description	Default
R15-1 Enabling	Enabling of free-cooling management. Parameters: YES : Enabled NO : Disabled	NO
R15-2 FC operation with valve/compressor	It enable operation of the valve (CW unit) or of the compressor (DX unit) together with the free-cooling. Parameters: SI : Simultaneous operation NO : Separate operation	YES
R15-3 Insufficient FC	Active with separate operation only; it enables a check to see whether the FC is sufficient to get rid of the load; in case it is insufficient, it will be disabled. Parameters: YES : Enabled NO : Disabled	NO
FREE-COOLING CONFIGURATION (R16)		
Parameter	Description	Default
R16-1 Low delivery temperature limit	It enables the reduction of the free-cooling capacity in order to limit the delivery temperature. Parameters: YES : Enabled NO : Disabled	NO
R16-2 Anti-freeze	In enables the protective function against freezing of the battery installed on the CW units; if the temperature of the air flowing into the battery falls below a certain value, the FC is disabled. Parameters: YES : Enabled NO : Disabled	YES
R16-3 Room overpressure	Active only with direct DX and DC type units; it enables the room overpressure control function by modulating the condensing fan on the opening of the FC gate. Parameters: YES : Enabled NO : Disabled	NO
INDIRECT FREE-COOLING ENABLING CONDITION (R17)		
Parameter	Description	Default
R17-1 Offset	Active with indirect FC only; it sets the offset value in order to enable the indirect free-cooling. Parameters: 0.0 – 99.9 °C	10.0
R17-2 Differential	Active with indirect FC only; it sets the differential value in order to disable the indirect free-cooling. Parameters: 0.0 – 99.9 °C	5.0
ADJUSTMENT GRAPH		
<p>The graph plots 'Indirect freecooling' status (ON/OFF) against 'Outdoor temperature °C'. A vertical axis labeled 'Enable' has 'ON' and 'OFF' markers. A horizontal axis is labeled 'Outdoor temperature °C'. A horizontal line represents the setpoint S02-1. A vertical line represents the differential R17-2. The offset R17-1 is the temperature difference between the setpoint and the start of the freecooling range. The freecooling range is shown as a shaded area between the setpoint and the differential line.</p>		
FORCING OF DRYCOOLER FANS WITH INDIRECT FC ENABLING ACTIVE (R18)		
R18-1 Speed	Active with indirect FC only; it sets the speed of the dry-cooler fans during the test phase in order to enable the direct free-cooling. Parameters: 0 – 100 %	100

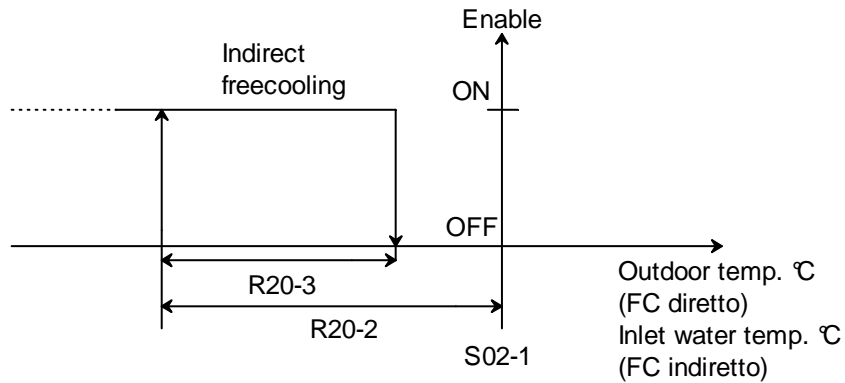
**FORCING COMPRESSORS OFF DURING THE TEST
FOR THE ENABLING OF THE INDIRECT FC (R19)**

Parameter	Description	Default
R19-1 Stop time	Active with indirect FC only; it sets the stop time of the compressors during the enabling test of the indirect free-cooling. The compressor stop is used to prevent the dissipated power in the FC water circuit from affecting the enabling test. Parameters: 0 – 9999 Seconds	180

FREE-COOLING ACTIVATION CONDITION (R20)

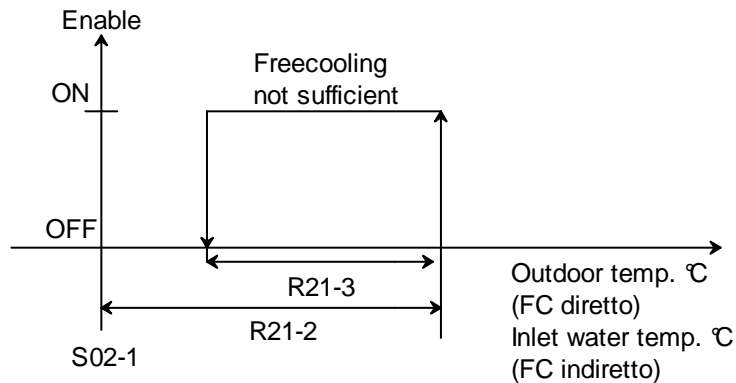
Parameter	Description	Default
R20-1 Adjustment variable	It sets the adjustment variable in order to enable/disable the free-cooling through the following parameters. Parameters: Tset : Set-point TinA : Air inlet temperature	Tset
R20-2 Offset	It sets the offset value for free-cooling activation. Parameters: 0.0 – 99.9 °C	5.0
R20-3 Differential	It sets the differential value for free-cooling deactivation. Parameters: 0.0 – 99.9 °C	2.0

ADJUSTMENT GRAPH



INSUFFICIENT FREE-COOLING DETECTION (R21)		
Parameter	Description	Default
R21-1 Adjustment variable	It sets on which variable the test should be carried out in order the check whether the power delivered by the free-cooling is sufficient. TinA : Air inlet temperature ToutA : Air outlet temperature	TinA
R21-2 Offset	It sets the offset value referred to the set-point in order to activate the insufficient free-cooling function that causes the FC to be deactivated. Parameters: 0.0 – 99.9 °C	4.0
R21-3 Differential	It sets the offset value in order to deactivate the insufficient free-cooling function, with a consequent new attempt to activate the FC. Parameters: 0.0 – 99.9 °C	2.0
R21-4 Activation delay	It sets the function activation delay 0 – 9999 Seconds	300
R21-5 Minimum activation time	It sets the minimum time of the duration of the active status of the function. Parameters: 0 – 9999 Seconds	120

ADJUSTMENT GRAPH



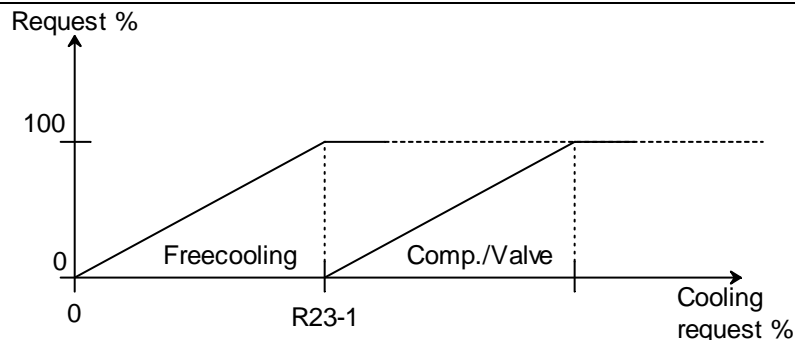
RETEST AFTER INSUFFICIENT FREE-COOLING DETECTION (R22)

Parameter	Description	Default
R22-1 Offset enabling condition	It sets an offset value that is added to the value set in parameter R17-1 in order to enable the free-cooling after an insufficient free-cooling condition. Parameters: 0.0 – 99.9 °C	5.0
R22-2 Offset activation condition	It sets an offset value that is added to the value set in parameter R20-2 in order to activate the free-cooling after an insufficient free-cooling condition. Parameters: 0.0 – 99.9 °C	5.0

DISTRIBUTION OF THE LOAD BETWEEN THE FREE-COOLING AND THE COMPRESSOR/VALVE (R23)

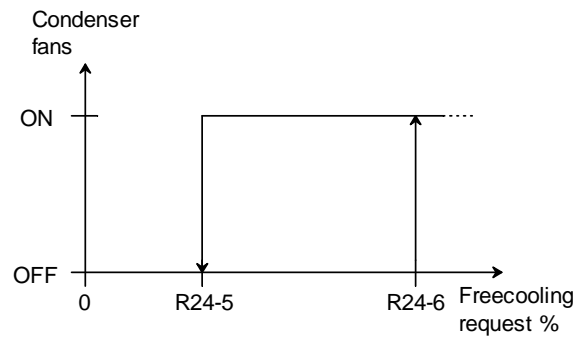
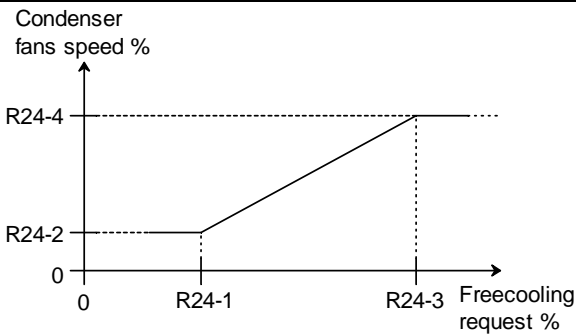
Parameter	Description	Default
R23-1 Free-cooling	It sets the request band dedicated to the free-cooling. In case of simultaneous free-cooling, it is possible to manage the request band on which to make the FC work and the band on which to make the compressor/valve work. Parameters: 0 – 100 %	50

ADJUSTMENT GRAPH



ROOM OVERPRESSURE MANAGEMENT (R24)		
Parameter	Description	Default
R24-1 FC min. request	It sets the FC request to which the fan minimum speed refers. Parameters: 0 – 100%	0
R24-2 Fan min. request	It sets the fan speed referred to the FC min. request. 0 – 100%	0
R24-3 FC max. request	It sets the FC request to which the fan maximum speed refers. Parameters: 0 – 100%	100
R24-4 Fan max. request	It sets the fan speed referred to the FC max. request. 0 – 100%	100
R24-5 Fan Off	It sets the request value needed to turn off the fan. Parameters: 0 – 100%	0
R24-6 Fan On	It sets the request value needed to turn on the fan. Parameters: 0 – 100%	5

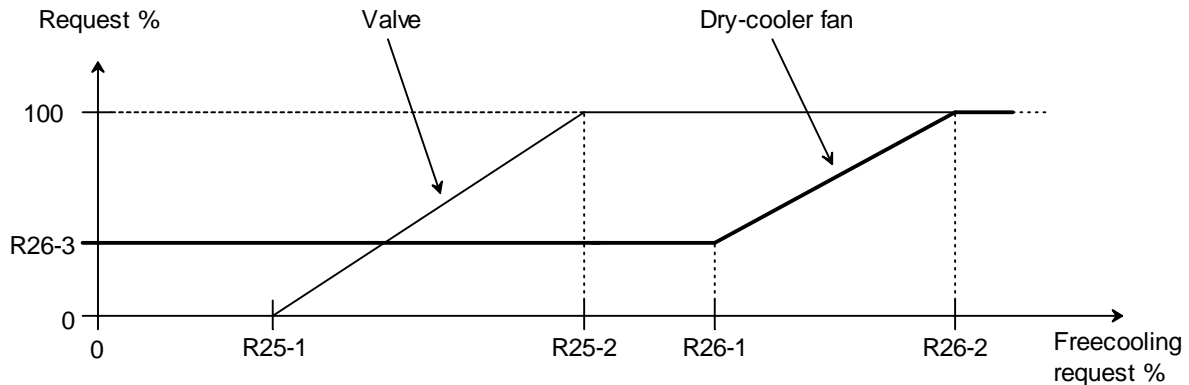
ADJUSTMENT GRAPH



RELATION BETWEEN FREE-COOLING REQUEST AND VALVE (R25)		
Parameter	Description	Default
(R25) Start of adjustment of valve	It sets the FC request to which the minimum opening of the FC valve refers. Parameters: 0 – 100%	0
R25-2 End of adjustment of valve	It sets the FC request to which the maximum opening of the FC valve refers. Parameters: 0 – 100%	50

RELATION BETWEEN FREE-COOLING REQUEST AND DRY-COOLER FANS (R26)		
Parameter	Description	Default
R26-1 Start of adjustment of fans	It sets the FC request to which the minimum dry-cooler fans request refers. Parameters: 0 – 100%	50
R26-2 End of adjustment of fans	It sets the FC request to which the maximum dry-cooler fans request refers. Parameters: 0 – 100%	100
R26-3 End of adjustment of fans	It sets the minimum dry-cooler fans request. Parameters: 0 – 100%	30

ADJUSTMENT GRAPH



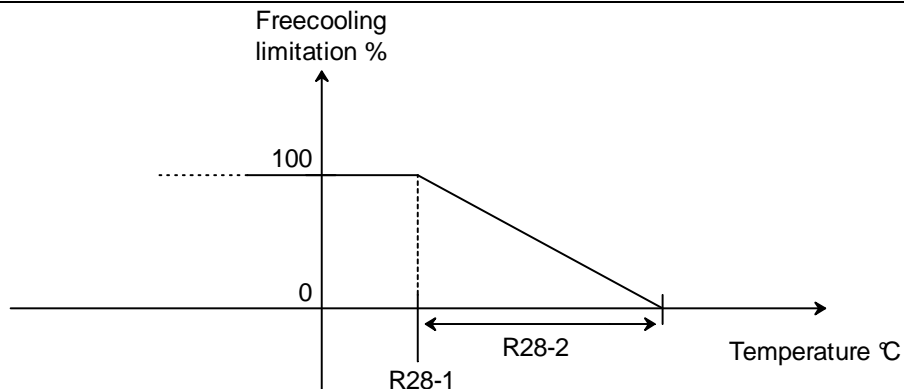
DRY-COOLER FANS OFF DELAY WITH NO COOLING REQUEST (R27)

Parameter	Description	Default
R27-1 Delay	It sets the delay when turning off the fans of the dry-cooler with no cooling request. Parameters: 0 – 9999 Seconds	180

MINIMUM DELIVERY TEMPERATURE LIMITS - FC (R28)

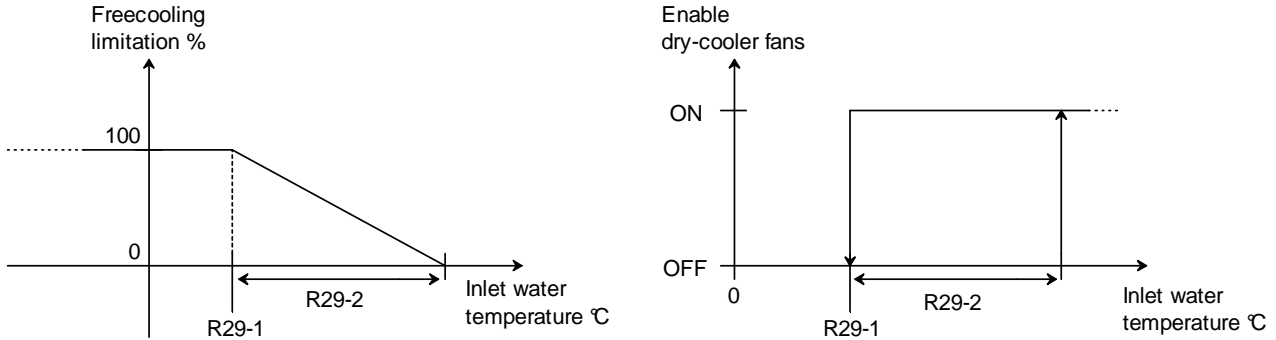
Parameter	Description	Default
R28-1 Set-point	It sets the set-point of the delivery temperature limits, working only on limiting the power of the FC. Parameters: 0.0 – 99.9 °C	12.0
R28-2 Differential	It sets the delivery temperature limitation differential. Parameters: 0.0 – 99.9 °C	3.0

ADJUSTMENT GRAPH



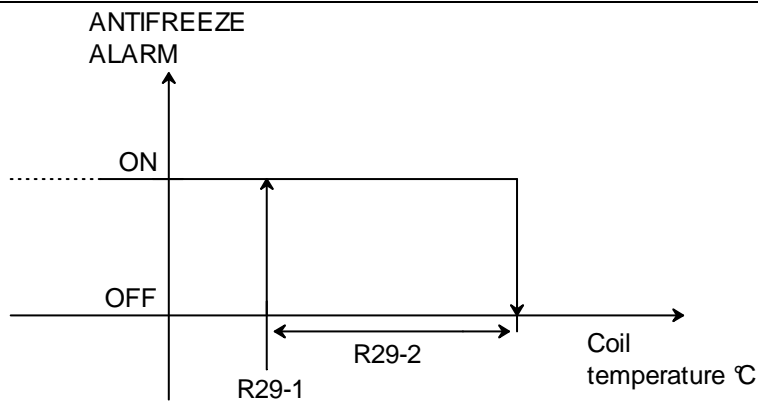
MINIMUM WATER INLET TEMPERATURE LIMITS - FC (R29)		
Parameter	Description	Default
R29-1 Set-point	It sets the set-point of the water inlet temperature limits, working only on limiting the power of the FC Parameters: 0.0 – 99.9 °C	12.0
R29-2 Differential	It sets the delivery temperature limitation differential. Parameters: 0.0 – 99.9 °C	3.0

ADJUSTMENT GRAPH



BATTERY WATER ANTI-FREEZE ALARM (R30)		
Parameter	Description	Default
R30-1 Set-point	It sets the set-point for the battery water anti-freeze alarm. The battery temperature is monitored through a temperature probe in order to prevent outside air that is too cold from freezing the battery. Parameters: 0 – 99.9 °C	5.0
R30-2 Differential	It sets the differential for resetting the anti-freeze alarm. Parameters: 0 – 99.9 °C	5.0
R30-3 Delay	Sets the anti-freeze alarm delay Parameters: 0 – 9999 Seconds	30
R30-3 Reset type	It sets the alarm reset in manual or automatic mode. Parameters: AUT : Automatic MAN : Manual	AUT

ADJUSTMENT GRAPH




FAN SPEED ADJUSTMENT (R31)		
Parameter	Description	Default
R31-1 Set-point from	It sets from where to take the set-point value, which can take place from the following inputs: Parameters: LOCAL : It enables the set-point set in the machine display BMS1 : It enables the set-point from the supervisor on port BMS1 BMS2 : It enables the set-point from the supervisor on port BMS2	LOCAL
R31-2 Differential	It sets the differential for the fans speed adjustment. Parameters: 0.0 – 9999 Pa	200
R31-2 Integral	It sets the time Constant of the integral action Parameters: 000 – 999 Seconds	60
FANS SPEEDS LIMITS (R32)		
Parameter	Description	Default
R32-1 Enabling	It enables the air flow set-points limits. Parameters: YES : Enabled NO : Disabled	YES
R32-2 Minimum air flow set-point	It sets the minimum limit of the air flow set-point. Parameters: 0.0 – 99900 m3/h	1000
R32-3 Maximum Air flow set-point	It sets the maximum limit of the air flow set-point. Parameters: 0.0 – 99900 m3/h	60000
R32-4 Minimum dP set-point	It sets the minimum limit of the dP set-point. Parameters: 0.0 – 999 Pa	10
R32-5 Maximum dP set-point	It sets the minimum limit of the dP set-point. Parameters: 0.0 – 999 Pa	50

6 ALARMS

6.1 PREAMBLE

The unit is provided with a series of devices/control functions which protect against faulty operation which could jeopardise proper functioning of the unit or cause it to break.


	NEVER MODIFY THE ALARM CONFIGURATION PARAMETERS. CONTACT THE AFTER-SALES SERVICE IF IN DOUBT OR NEEDING DIFFERENT SETTINGS FROM THE DEFAULT ONES
---	---

	NEVER MODIFY THE ELECTRIC WIRING WHILE TRYING TO BYPASS ALARMS AND SAFETY DEVICES
---	--

By a faulty operation situation (temporary or permanent) we mean:


- 1) Triggering of a protective device following failures of unit components;
- 2) Triggering of a protective device following problems on the system (for example: clogged filters, stopped pumps, closed system valves, mains voltage outside of allowed limits, etc.). In this case, the unit is stopped for precautionary measures to avoid permanent damage;
- 3) Temporary operation of the unit outside of the allowed operational limits.


In case of alarm and depending on the specific settings, the following occurs:


- 1) The unit stops;
- 2) The warning devices are activated:
 - a. Red LED on display,
 - b. Toggling of alarm relays,
 - c. Indication with specific icon on alarm status display () ,
 - d. Memorisation of alarm in alarm history.

In this case, by pressing *ALARM* you access the initial mask of the alarm list, where you can:

- 1) Use the UP or DOWN keys to scroll through the list of active alarms.
- 2) Press ESC to go back to the main mask without performing any action
- 3) Press ENTER to try to RESET ALL THE ACTIVE ALARMS

	IF, AFTER ONE OR MORE CONSECUTIVE RESETS, THE UNIT STAYS IN THE ALARM STATUS, CONTACT THE AFTER-SALES SERVICE.
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	IF, AFTER ONE OR MORE CONSECUTIVE RESETS, THE UNIT RESTARTS BUT GOES BACK TO THE ALARM STATUS, DO NOT ATTEMPT CONTINUOUS RESETS BUT RATHER CONTACT THE AFTER-SALES SERVICE.
---	--

	BEFORE CONTACTING THE AFTER-SALES SERVICE, TAKE NOTE OF THE UNIT SERIAL NUMBER PROVIDED ON THE TECHNICAL DATA PLATE AND OF THE SOFTWARE VERSION FOUND IN THE INFO MENU. DO NOT RESET THE ALARM LIST TO FACILITATE INVESTIGATION OF POSSIBLE CAUSES
---	---

For each alarm of the list, the following is displayed:

- 1) An identification code “**AL***** “ at the top right corner of the display
- 2) A brief description and perhaps some of the possible causes

The alarm history can be accessed from the service menu after entering the specific password. The following is memorised for each alarm:

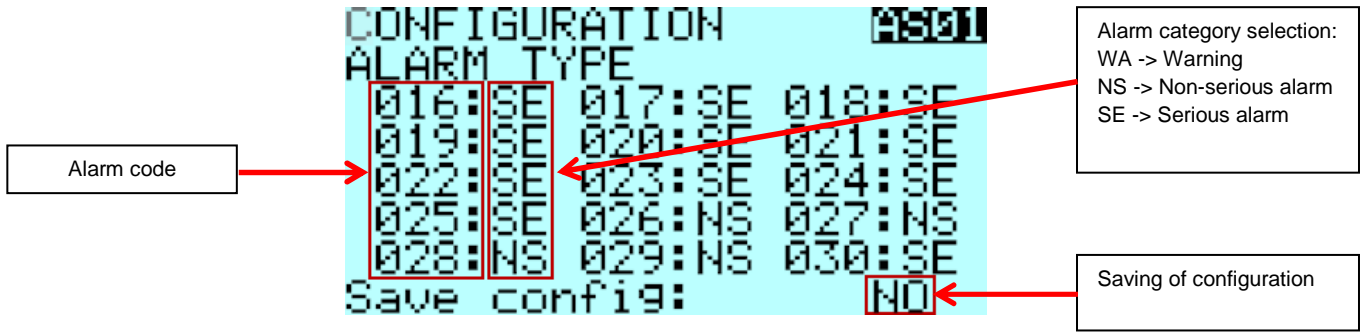
- 1) Date of the alarm
- 2) Time of the alarm
- 3) Alarm code
- 4) Brief description of the alarm

A maximum of 500 alarms can be memorised, beyond which the new alarms overwrite the less recent ones.

6.2 CONFIGURATION OF THE GRAVITY OF THE INDIVIDUAL ALARMS.

A degree of gravity can be defined for each single alarm code; the assigned value has no impact on the alarm action but only on the signals towards the outside.

In particular, three gravity categories have been defined: WARNING - NON-SERIOUS ALARM - SERIOUS ALARM, which can be set from the maintenance menu -> alarm configuration.

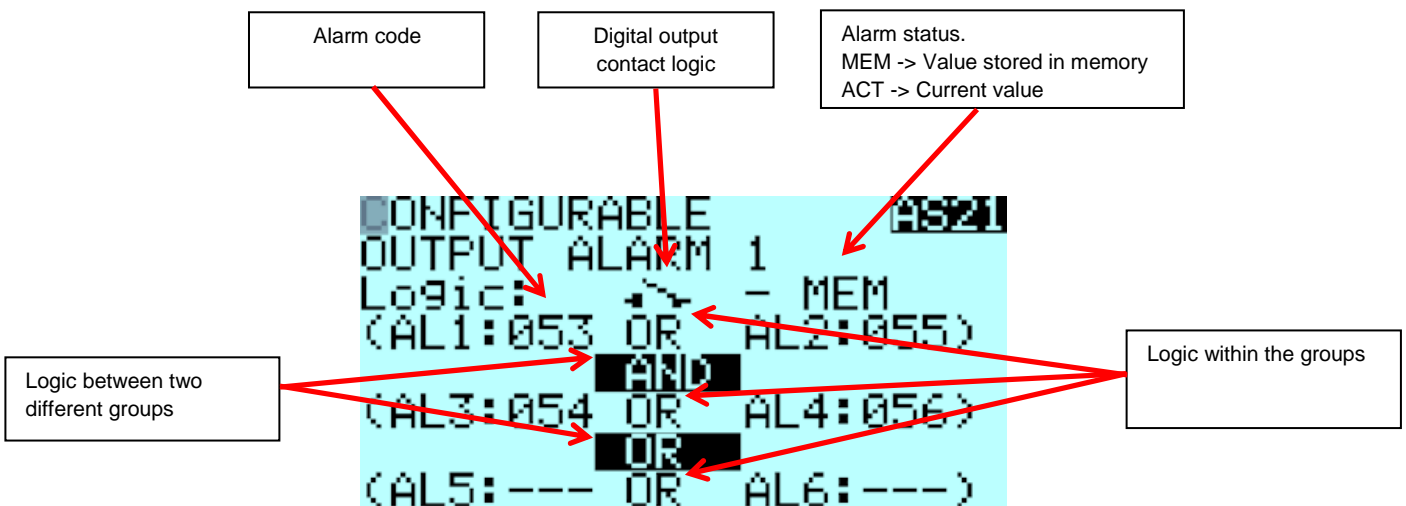


6.3 CONFIGURABLE ALARM OUTPUTS

The machine is factory equipped with 2 digital outputs used to externally communicate the alarm status; on request, these outputs can be extended up to 6.

For each digital output, the alarm contact logic can be configured, whether or not to use the current alarm status or the one stored in the memory and configurations with OR/AND logics consisting of a maximum of 6 alarms.

The configuration mask can be found in the Maintenance menu -> alarm configuration.



In the example described above, the following alarms were set:

- AL1 = 53 -> Circuit 1 low pressure alarm
- AL2 = 55 -> Circuit 1 high pressure alarm
- AL3 = 54 -> Circuit 2 low pressure alarm
- AL4 = 56 -> Circuit 2 high pressure alarm

With the logic set in the example, the digital output will switch only when a low or high pressure alarm is present on circuit 1 and, at the same time, a low or high pressure alarm on circuit 2; this example can be used to signal the total block of the machine chilling capacity.

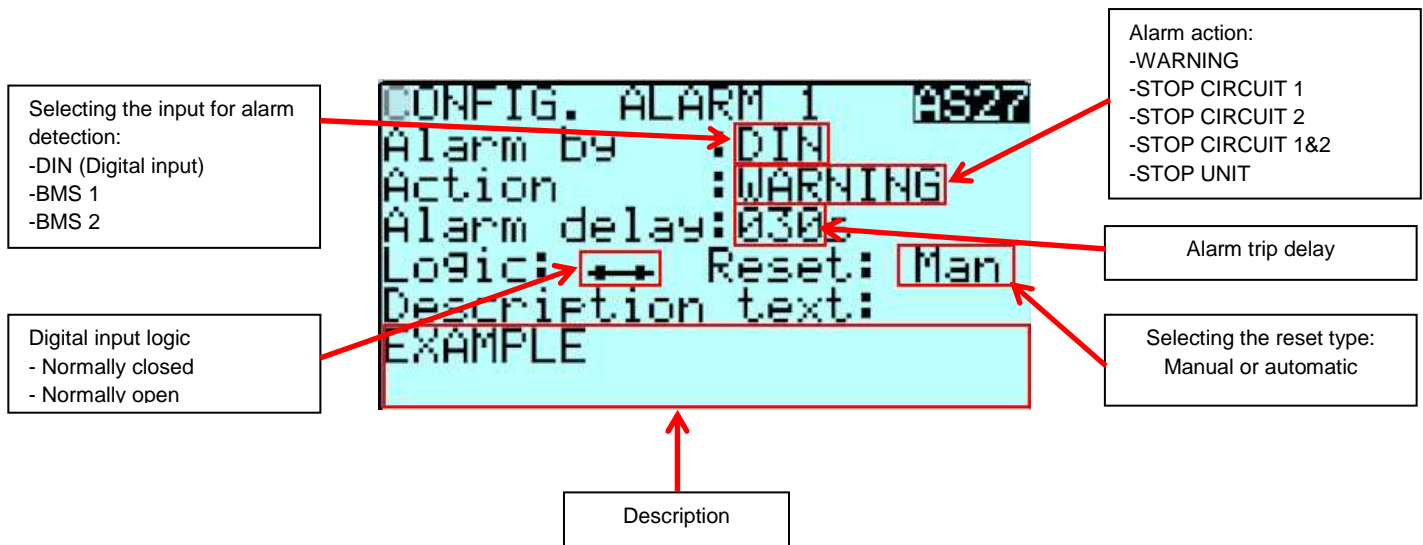
To extrapolate the description of the various alarm codes, reference must be made to the list of alarms.

6.4 CONFIGURABLE ALARM INPUTS

Upon request, the machine can be supplied with three digital inputs that can be used as configurable alarms by the customer.

For each single alarm, the tripping logic can be set, along with the device that must be stopped and the relevant description.

The following mask can be found in the Maintenance menu -> alarm configuration.



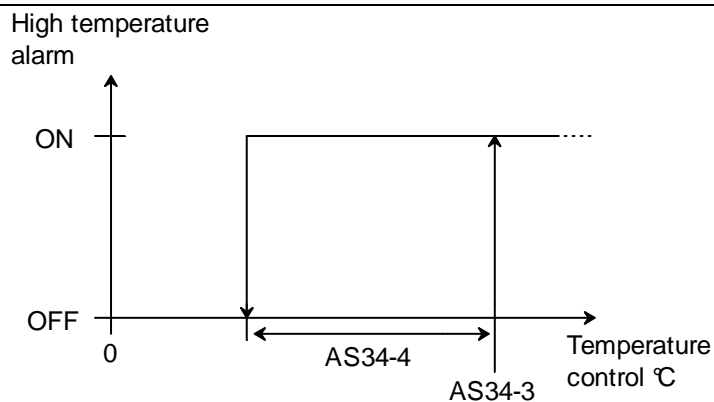
6.5 PLANT ALARMS

SMOKE/FIRE ALARM (AS32)		
Parameter	Description	Default
AS32-1 Enabling	It enables the smoke/fire alarm. Parameters: YES : Enabled NO : Disabled	YES
AS32-2 Logic	It selects the logic for digital input management. Parameters: N.C. : Normally-closed contact -> No alarm N.O. : Normally-open contact -> No alarm	N.C.
AS32-3 Unit Off	It enables the unit switch-off in case of smoke/fire alarm. Parameters: YES : Enabled NO : Disabled	YES
AS32-4 Start delay	Alarm delay during unit start-up; in order for it to be used, its value must be greater than the running alarm delay. Parameters: 0 – 999 Seconds	0
AS32-5 Running delay	Running delay alarm Parameters: 0 – 999 Seconds	0
FLOODING ALARM (AS33)		
Parameter	Description	Default
AS33-1 Enabling	It enables the flooding alarm. Parameters: YES : Enabled NO : Disabled	YES
AS33-2 Logic	It selects the logic for digital input management. Parameters: N.C. : Normally-closed contact -> No alarm N.O. : Normally-open contact -> No alarm	N.C.

AS33-3 Unit Off	In enables the unit switch-off in case of flooding alarm. Parameters: YES : Enabled NO : Disabled	YES
AS33-4 Start delay	Alarm delay during unit start-up; in order for it to be used, its value must be greater than the running alarm delay. Parameters: 0 – 999 Seconds	0
AS33-5 Running delay	Running delay alarm Parameters: 0 – 999 Seconds	0

HIGH ROOM TEMPERATURE ALARM (AS34)		
Parameter	Description	Default
AS34-1 Enabling	It enables the high temperature alarm. Parameters: YES : Enabled NO : Disabled	YES
AS34-2 Adjustment temperature	It selects which temperature value to use for alarm management. Parameters: INLET : Unit inlet air temperature OUTLET : Unit outlet air temperature	INLET
AS34-3 Set-point	Set-point used to activate the high temperature alarm. Parameters: -999.9 – 999.9 °C	30.0
AS34-4 Differential	Differential used to reset the high temperature alarm Parameters: 0.0 – 99.9 °C	3.0
AS34-5 Start delay	Alarm delay during unit start-up; in order for it to be used, its value must be greater than the running alarm delay. Parameters: 0 – 999 Seconds	0
AS34-6 Running delay	Running delay alarm Parameters: 0 – 999 Seconds	600

ADJUSTMENT GRAPH



LOW ROOM TEMPERATURE ALARM (AS36)		
Parameter	Description	Default
AS36-1 Enabling	It enables the low temperature alarm. Parameters: YES : Enabled NO : Disabled	YES
AS36-2 Adjustment temperature	It selects which temperature value to use for alarm management. Parameters: INLET : Unit inlet air temperature OUTLET : Unit outlet air temperature	INLET
AS36-3 Set-point	Set-point used to activate the high temperature alarm. Parameters: -999.9 – 999.9 °C	10.0
AS36-4 Differential	Differential used to reset the low temperature alarm Parameters: 0.0 – 99.9 °C	3.0
AS36-5 Start delay	Alarm delay during unit start-up; in order for it to be used, its value must be greater than the running alarm delay. Parameters: 0 – 999 Seconds	0

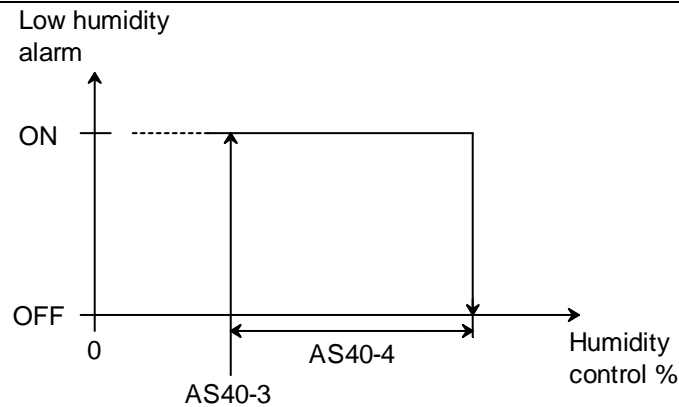
AS36-6 Running delay	Running delay alarm Parameters: 0 – 999 Seconds	600
ADJUSTMENT GRAPH		
<p>Low temperature alarm</p>		

HIGH ROOM HUMIDITY ALARM (AS38)		
Parameter	Description	Default
AS36-6 Enabling	It enables the high humidity alarm. Parameters: YES : Enabled NO : Disabled	YES
AS38-2 Adjustment temperature	It selects which humidity value to use for alarm management. Parameters: INLET : Unit inlet air humidity OUTLET : Unit outlet air humidity	INLET
AS38-3 Set-point	Set-point used to activate the high humidity alarm. Parameters: -999.9 – 999.9 °C	60.0
AS38-4 Differential	Differential used to reset the high humidity alarm Parameters: 0.0 – 99.9 °C	3.0
AS38-5 Start delay	Alarm delay during unit start-up; in order for it to be used, its value must be greater than the running alarm delay. Parameters: 0 – 999 Seconds	0
AS38-6 Running delay	Running delay alarm Parameters: 0 – 999 Seconds	600
ADJUSTMENT GRAPH		
<p>High humidity alarm</p>		

LOW ROOM HUMIDITY ALARM (AS36)		
Parameter	Description	Default
AS36-1 Enabling	It enables the low humidity alarm. Parameters: YES : Enabled NO : Disabled	YES
AS36-2 Adjustment temperature	It selects which humidity value to use for alarm management. Parameters: INLET : Unit inlet air humidity OUTLET : Unit outlet air humidity	INLET

AS36-3 Set-point	Set-point used to activate the high humidity alarm. Parameters: -999.9 – 999.9 °C	40.0
AS36-4 Differential	Differential used to reset the high humidity alarm Parameters: 0.0 – 99.9 °C	3.0
AS36-5 Start delay	Alarm delay during unit start-up; in order for it to be used, its value must be greater than the running alarm delay. Parameters: 0 – 999 Seconds	0
AS36-6 Running delay	Running delay alarm Parameters: 0 – 999 Seconds	600

ADJUSTMENT GRAPH



LOW ΔT DURING COOLING ALARM (AS42)		
Parameter	Description	Default
AS42-1 Enabling	It enables the low ΔT air during cooling alarm. Parameters: YES : Enabled NO : Disabled	NO
AS42-2 Set-point	Set-point for activation of low ΔT during cooling alarm Parameters: -999.9 – 999.9 °C	3.0
AS42-3 Differential	Differential for the reset of the low ΔT during cooling alarm. Parameters: 0.0 – 99.9 °C	0.0
AS42-4 Start delay	Alarm delay after the start of the cooling device; in order for it to be used, its value must be greater than the running alarm delay. Parameters: 0 – 999 Seconds	300
AS42-5 Running delay	Running delay alarm Parameters: 0 – 999 Seconds	120
LOW ΔT DURING HEATING ALARM (AS42)		
Parameter	Description	Default
AS44-1 Enabling	It enables the low ΔT air during heating alarm. Parameters: YES : Enabled NO : Disabled	NO
AS44-2 Set-point	Set-point for activation of low ΔT during heating alarm. Parameters: -999.9 – 999.9 °C	3.0
AS44-3 Differential	Differential for the reset of the low ΔT during heating alarm. Parameters: 0.0 – 99.9 °C	0.0
AS44-4 Start delay	Alarm delay after the start of the heating device; in order for it to be used, its value must be greater than the running alarm delay. Parameters: 0 – 999 Seconds	300
AS44-5 Running delay	Running delay alarm Parameters: 0 – 999 Seconds	120

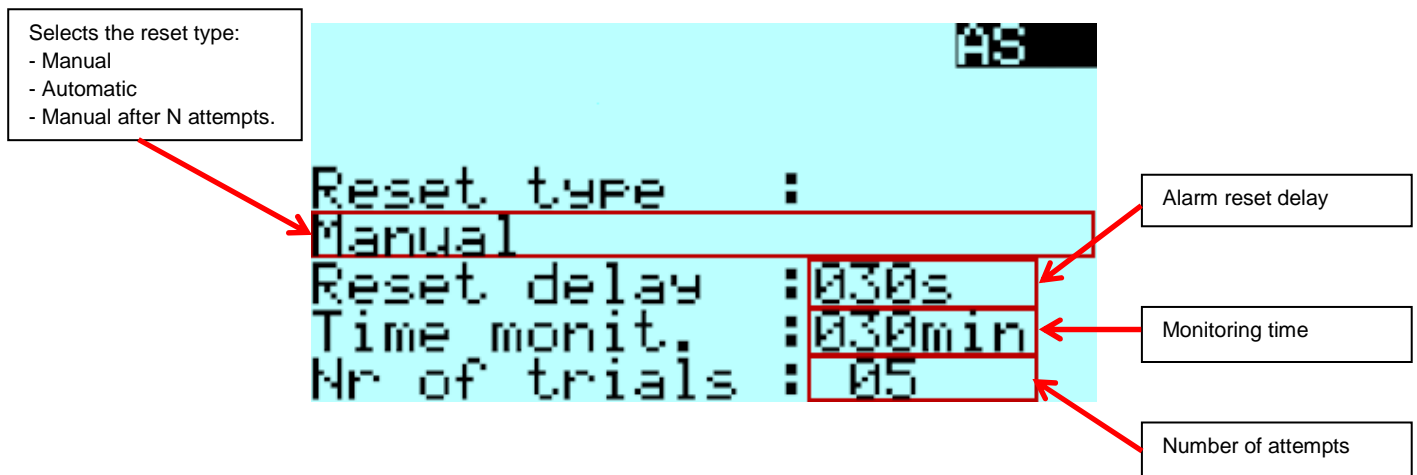
6.6 ALARM RESET

For each one of the aforementioned alarms, it is possible to configure the reset type of the alarm in three ways: MANUAL - AUTOMATIC - MANUAL AFTER N ATTEMPTS.

In the first mode, at the occurrence of an alarm event the red LED will light up on the display and the digital outputs will switch as configured by the user; this situation will continue until a reset event is not carried out on from the display, digital input or supervisor.

In the second mode, at the occurrence of an alarm event the red LED will light up on the display and the digital outputs will switch as configured by the user; once the set reset delay time has elapsed, a reset event of the active alarms will be automatically created.

In the third mode, at the occurrence of an alarm event the red LED will light up on the display and the digital outputs will switch as configured by the user; once the set reset delay time has elapsed, a reset event of the active alarms will be automatically created. However, if a number of resets that is equal to the number of set attempts are carried out automatically during the set monitoring time, from that moment onward a manual reset from the display, digital input or supervisor will be necessary to reset the alarm.



7 LAN NETWORK CONFIGURATION

The LAN network represents a physical connection between the microprocessor, the display and the other microprocessors for LAN rotation. This connection allows variables to be exchanged between one board and another, based on a logic established by the software, so that the units may work together in a functional manner.

7.1 MICROPROCESSOR ADDRESS CONFIGURATION

To configure the address of the pCO5, proceed as follows:

- Connect the pCO board to a PGD display with address configured on 0. (see PGD address configuration)
- Power on the board by pressing the ALARM and UP keys at the same time.
- press the UP key or the DOWN key to record the address.
- press the ENTER key to save and exit this procedure.

7.2 PGD ADDRESS CONFIGURATION

Proceed as follows to configure the PGD address:

- press UP+ENTER+DOWN for a few seconds
- press ENTER and then press the UP key or the DOWN key to record the address
- press the ENTER key to save and exit this procedure.

NOTES:

- If the microprocessor or PDG addresses are wrong, unit operation is not guaranteed, and the PGD is not able to display anything.
- after configuring the PGD addresses, the message "NO LINK" may appear for a few seconds.

7.3 DISPLAY CONNECTION

To connect the display, a cable with 6 wires and RJ11 connectors must be used; this cable is different from the standard telephone cable because in the display cable the connectors are arranged in reverse.

7.4 LAN NETWORK CONNECTION

To connect the various units, use a shielded cable with 2 wires (see wiring diagram); the data is sent through RS485 logic; no additional equipment is needed.

7.5 LAN NETWORK

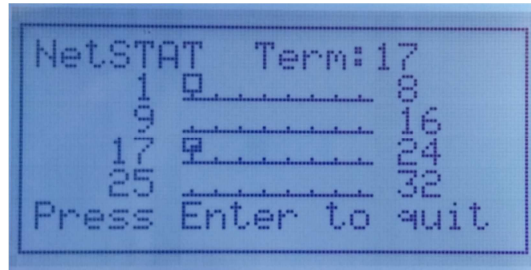
The units can be connected to other units on the LAN network (local area network), up to a maximum of 16 units. Each unit can be connected to a display for user interface purposes.

The following table lists the addresses of the microprocessor and of the display.

	ADDRESS pCO5 BOARD	ADDRESS PGD1 DISPLAY
UNIT 1	1	17
UNIT 2	2	18
UNIT 3	3	19
UNIT 4	4	20
UNIT 5	5	21
UNIT 6	6	22
UNIT 7	7	23
UNIT 8	8	24
UNIT 9	9	25
UNIT 10	10	26
UNIT 11	11	27
UNIT 12	12	28
UNIT 13	13	29
UNIT 14	14	30
UNIT 15	15	31
UNIT 16	16	32

7.6 LAN NETWORK STATUS

When the system is started, the LAN network may experience some problems due to improper electrical connections or to the fact that wrong addresses have been assigned. By means of a special mask, the status of the LAN network can be shown in real time, so as to verify whether the various devices (boards and displays) are properly wired and addressed. To access this mask, press at the same time the Up-Down-Enter keys of any network display for at least 10 sec. After the first 5 seconds, a mask appears; continue for an additional 5 seconds until the following mask is shown on the display:

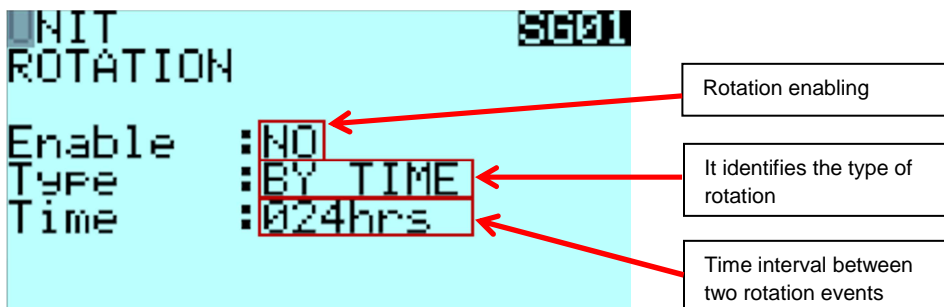


As you can see, the network addresses from 1 to 32 are displayed, along with a symbol indicating whether or not a display (small rectangle) or a microprocessor (large rectangle) is involved. The dash indicates that the board/display has a wrong address or that it is not properly connected. If the symbols appear or disappear, it means that the LAN network is unstable or, most likely, that there are duplicated addresses. The example shows that the network consists of a microprocessor with address 1 and a display with address 17. If you need to change the address of a device, you must first of all disconnect it from the LAN network, change the address and reconnect the device to the network. At each change of address, the system must be powered off and subsequently powered on.

7.7 LAN NETWORK CONFIGURATION

The management of the units network-connected units can be configured through the masks found in the Maintenance menu -> General; in particular, up to 8 subgroups of units can be created, within which it is possible to configure how many units are rotating and how many are in standby. Moreover, various functionalities can be activated which make it possible to force specific units under particular request conditions of the plant.

Below are the main adjustment masks:



```

UNIT ROTATION SG01
Enable : NO
Type : TIME_ZONE
Schedule: 12:00
Mo:0 Tu:0 We:0 Th:0
Fr:0 Sa:0 Su:0

```

- Rotation enabling
- It identifies the type of rotation
- Time for rotation tripping
- Selecting the days on which the rotation must take place

```

ONFIG. ROTATION SG02
UNIT
Unit to configure
-> 01
Configuration type
-> PRESENT NOT IN GROUP
Save configuration
-> NO

```

- Selection of unit to be configured
- Selecting the relevant group.
- Saving the configuration.

AVAILABLE GROUPS:

NOT PRESENT: It identifies the units not present on the LAN network.

PRESENT NOT IN A GROUP: It identified the units present on the LAN network but that do not belong to any rotation group.

PRESENT IN GROUP A-Q: It identifies the units present in a given group but that do not rotate.

ROTATION IN GROUP A-Q: It identifies the units present in a given group which can rotate.

```

ONFIG. STANDBY SG03
UNIT
Group to configure: A
Num. units standby: 00
Rotation step : 01
Save configuration: NO

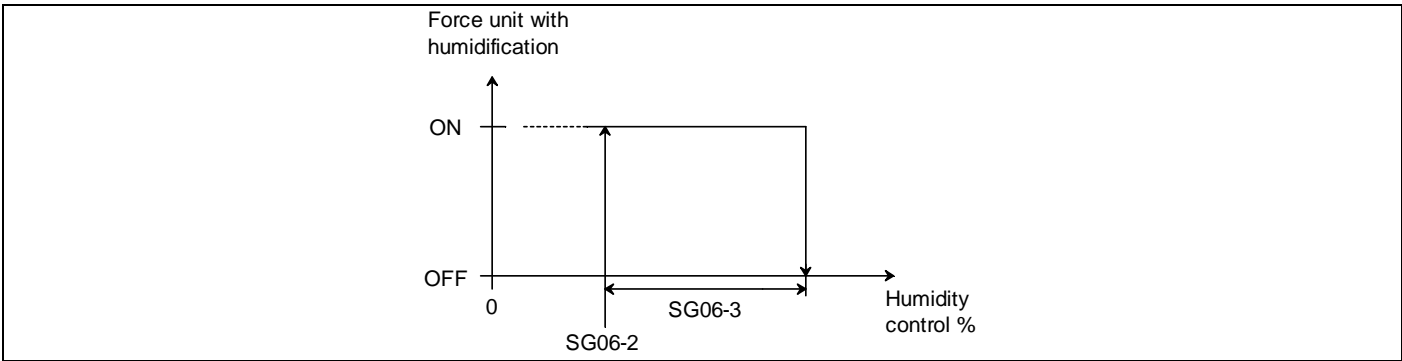
```

- Selection of group to be configured
- Configuration of the number of units on
- Configuration of the rotation steps.
- Saving the configuration.

7.8 LAN NETWORK PARAMETERS

ROTATION ON COMPRESSOR WORKING HOURS (SG04)		
Parameter	Description	Default
SG04-1 Control of compressor work hours.	It enables the control of the compressor work hours during the rotation phase. For each rotation event, the units with the smaller number of compressor work hours will be forced. Parameters: YES : Enabled NO : Disabled	NO
FORCING OF UNIT WITH DEHUMIDIFICATION (SG05)		
Parameter	Description	Default
SG05-1 Enabling	It enables the activation of units equipped with dehumidification resource in case the humidity exceeds given values. Parameters: YES : Enabled NO : Disabled	NO
SG05-2 Set-point	Set-point for the forcing of units with dehumidification resource. Parameters: 0.0 – 99.9 %	60.0
SG05-3 Differential	Differential for resetting the forcing of units with dehumidification resource. Parameters: 0 – 20.0 %	5.0
SG05-4 Control humidity	Configuration of the humidity value to be controlled Parameters: AVG IN H -> Average value of inlet humidity measurements MIN IN H -> Minimum value of inlet humidity measurements MAX IN H -> Maximum value of inlet humidity measurements AVG OUT H -> Average value of delivery humidity measurements MIN OUT H -> Minimum value of delivery humidity measurements MAX OUT H -> Maximum value of delivery humidity measurements	AVG IN H
ADJUSTMENT GRAPH		

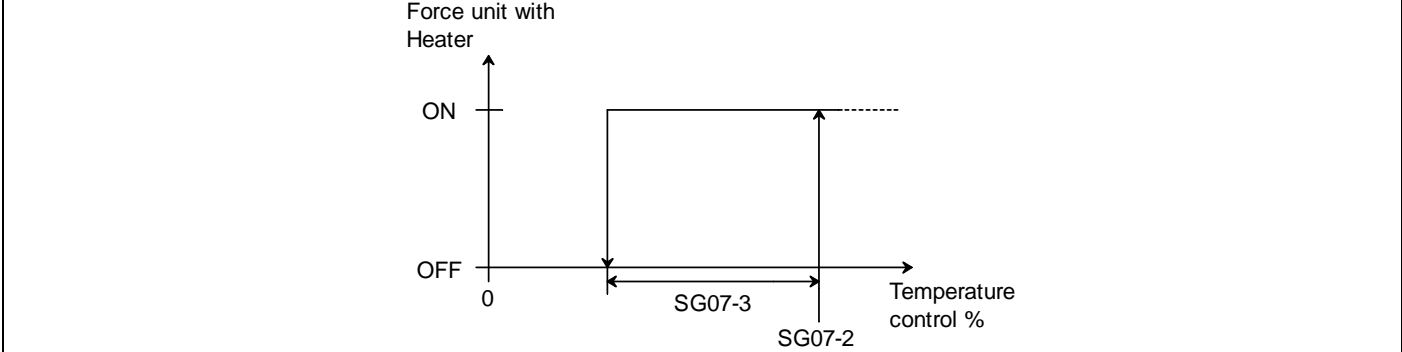
FORCING OF UNITS WITH HUMIDIFICATION (SG06)		
Parameter	Description	Default
SG06-1 Enabling	It enables the activation of units equipped with humidification resource in case the humidity exceeds given values. Parameters: YES : Enabled NO : Disabled	NO
SG06-2 Set-point	Set-point for the forcing of units with humidification resource. Parameters: 0.0 – 99.9 %	40.0
SG06-3 Differential	Differential for resetting the forcing of units with humidification resource. Parameters: 0 – 20.0 %	5.0
SG06-4 Control humidity	Configuration of the humidity value to be controlled Parameters: AVG IN H -> Average value of inlet humidity measurements MIN IN H -> Minimum value of inlet humidity measurements MAX IN H -> Maximum value of inlet humidity measurements AVG OUT IN H -> Average value of delivery humidity measurements MIN OUT H -> Minimum value of delivery humidity measurements MAX OUT H -> Maximum value of delivery humidity measurements	AVG IN H
ADJUSTMENT GRAPH		



FORCING OF UNITS WITH HEATING ELEMENTS (SG07)

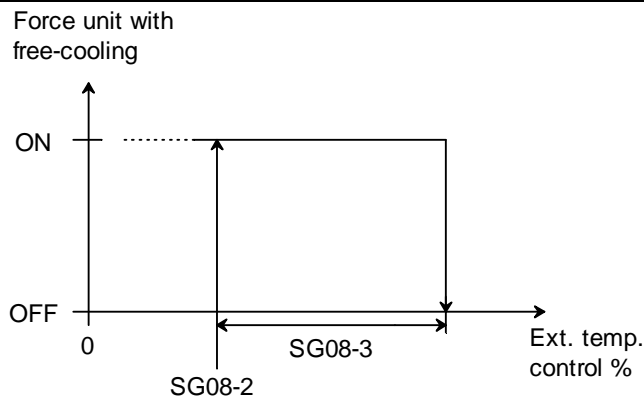
Parameter	Description	Default
SG07-1 Enabling	It enables the activation of units equipped with dehumidification resource in case the humidity exceeds given values. Parameters: YES : Enabled NO : Disabled	NO
SG07-2 Set-point	Set-point for the forcing of units with dehumidification resource. Parameters: 0.0 – 99.9 °C	15.0
SG07-3 Differential	Differential for resetting the forcing of units with dehumidification resource. Parameters: 0 – 20.0 °C	5.0
SG07-4 Control temperature	Configuration of the temperature value to be controlled Parameters: AVG IN T -> Average value of inlet temperature measurements MIN IN T -> Minimum value of inlet temperature measurements MAX IN T -> Maximum value of inlet temperature measurements AVG OUT T -> Average value of delivery temperature measurements MIN OUT T -> Minimum value of delivery temperature measurements MAX OUT T -> Maximum value of delivery humidity measurements	AVG IN T

ADJUSTMENT GRAPH

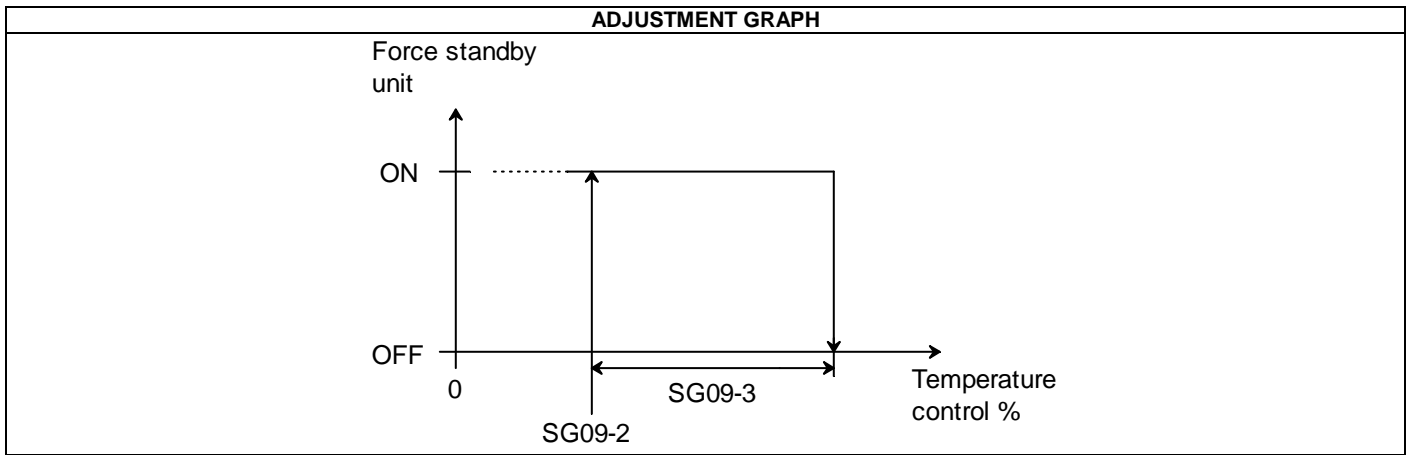


FORCING OF UNITS WITH FREE-COOLING (SG08)		
Parameter	Description	Default
SG08-1 Enabling	It enables the activation of units equipped with free-cooling resource in case the temperature of the external air falls below given values. Parameters: YES : Enabled NO : Disabled	NO
SG08-2 Set-point	Set-point for the forcing of units with humidification resource. Parameters: 0.0 – 99.9 °C	15.0
SG08-3 Differential	Differential for resetting the forcing of units with humidification resource. Parameters: 0 – 20.0 °C	5.0
SG08-4 Control temperature	Configuration of the external air temperature value to be controlled Parameters: AVG TEMPERATURE GROUP AVG TEMPERATURE ALL UNITS	AVG TEMPERATURE GROUP

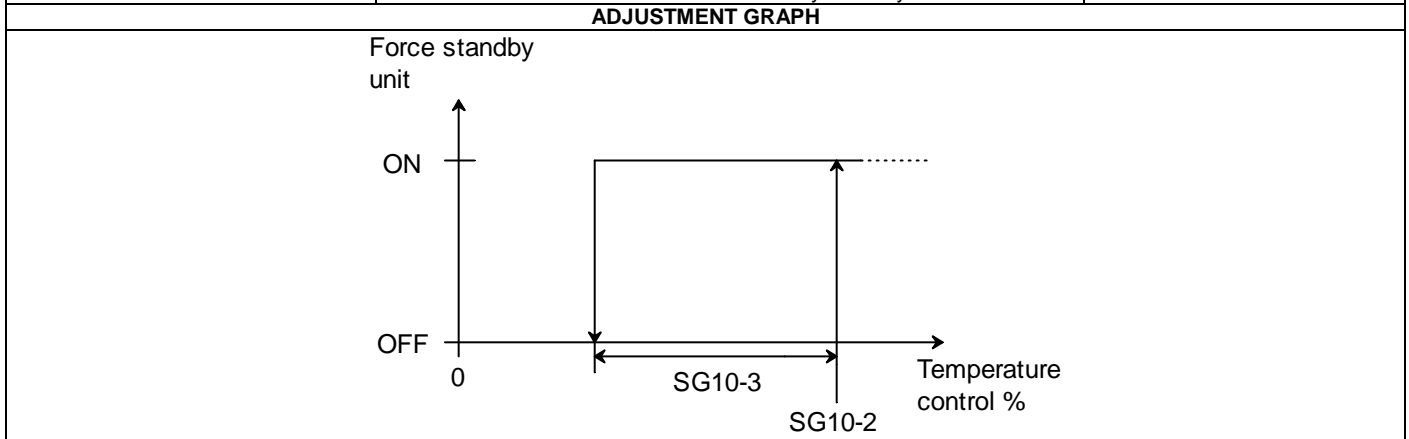
ADJUSTMENT GRAPH



FORCING OF STANDBY UNITS FOR LOW TEMPERATURE (SG09)		
Parameter	Description	Default
SG09-1 Enabling	It enables the activation of units on standby due to low temperature. Parameters: YES : Enabled NO : Disabled	NO
SG09-2 Set-point	Set-point for forcing the units on standby in case of low temperature. Parameters: 0.0 – 99.9 °C	10.0
SG09-3 Differential	Differential for resetting the forcing of units on standby Parameters: 0 – 20.0 °C	5.0
SG09-4 Delay	Delay for forcing the units on standby Parameters: 0 – 999 seconds	600
SG09-5 Control temperature	Configuration of the temperature value to be controlled Parameters: AVG IN T -> Average value of inlet temperature measurements MIN IN T -> Minimum value of inlet temperature measurements MAX IN T -> Maximum value of inlet temperature measurements AVG OUT T -> Average value of delivery temperature measurements MIN OUT T -> Minimum value of delivery temperature measurements MAX OUT T -> Maximum value of delivery humidity measurements	AVG IN T



FORCING OF STANDBY UNITS FOR HIGH TEMPERATURE (SG09)		
Parameter	Description	Default
SG10-1 Enabling	It enables the activation of units on standby due to high temperature. Parameters: YES : Enabled NO : Disabled	NO
SG10-2 Set-point	Set-point for forcing the units on standby in case of high temperature. Parameters: 0.0 – 99.9 °C	30.0
SG10-3 Differential	Differential for resetting the forcing of units on standby Parameters: 0 – 20.0 °C	5.0
SG10-4 Delay	Delay for forcing the units on standby Parameters: 0 – 999 seconds	600
SG10-5 Control temperature	Configuration of the temperature value to be controlled Parameters: AVG IN T -> Average value of inlet temperature measurements MIN IN T -> Minimum value of inlet temperature measurements MAX IN T -> Maximum value of inlet temperature measurements AVG OUT T -> Average value of delivery temperature measurements MIN OUT T -> Minimum value of delivery temperature measurements MAX OUT T -> Maximum value of delivery humidity measurements	AVG IN T



FORCING OF STANDBY UNITS FOR LOW HUMIDITY (SG11)		
Parameter	Description	Default
SG11-1 Enabling	It enables the activation of units on standby due to low humidity. Parameters: YES : Enabled NO : Disabled	NO
SG11-2 Set-point	Setpoint for forcing the units on standby in case of low humidity. Parameters: 0.0 – 99.9 %	35.0

SG11-3 Differential	Differential for resetting the forcing of units on standby Parameters: 0 – 20.0 %	5.0
SG11-4 Delay	Delay for forcing the units on standby Parameters: 0 – 999 seconds	600
SG11-5 Control humidity	Configuration of the humidity value to be controlled Parameters: AVG IN H -> Average value of inlet humidity measurements MIN IN H -> Minimum value of inlet humidity measurements MAX IN H -> Maximum value of inlet humidity measurements AVG OUT IN H -> Average value of delivery humidity measurements MIN OUT H -> Minimum value of delivery humidity measurements MAX OUT H -> Maximum value of delivery humidity measurements	AVG IN H
ADJUSTMENT GRAPH		
<p>Force standby unit</p>		

FORCING OF STANDBY UNITS FOR HIGH HUMIDITY (SG11)		
Parameter	Description	Default
SG12-1 Enabling	It enables the activation of units on standby due to high humidity. Parameters: YES : Enabled NO : Disabled	NO
SG12-2 Set-point	Setpoint for forcing the units on standby in case of high humidity. Parameters: 0.0 – 99.9 °C	30.0
SG12-3 Differential	Differential for resetting the forcing of units on standby Parameters: 0 – 20.0 °C	5.0
SG12-4 Delay	Delay for forcing the units on standby Parameters: 0 – 999 seconds	600
SG12-5 Control humidity	Configuration of the humidity value to be controlled Parameters: AVG IN H -> Average value of inlet humidity measurements MIN IN H -> Minimum value of inlet humidity measurements MAX IN H -> Maximum value of inlet humidity measurements AVG OUT H -> Average value of delivery humidity measurements MIN OUT H -> Minimum value of delivery humidity measurements MAX OUT H -> Maximum value of delivery humidity measurements	AVG IN H
ADJUSTMENT GRAPH		
<p>Force standby unit</p>		

FORCING OF UNITS ON STANDBY FOR HIGH HUMIDITY (SG13)		
Parameter	Description	Default
SG13-1 Automatic request control	It enables the automatic control of request. By enabling the function, you avoid having units within the same suystem working in conflict with each other; for example, units working in dehumidification mode and others working in humidification mode. Parameters: NO : Disabled YES CONTROL UNITS IN GROUP YES CONTROL ALL UNITS	YES CONTROL OF UNITS IN GROUP

CONTROL OF FANS FROM DP (SG14)		
Parameter	Description	Default
SG14-1 Enabling	It enables the control of the fan speed over the average of values of the DP sensors of the LAN-networked units. Parameters: YES : Enabled NO : Disabled	NO
SG12-2 Control type	It sets whether to control the speed of the unit fans subdivided by groups or common to all units. Parameters: CONTROL OF GROUP UNITS CONTROL OF ALL UNITS	CONTROL OF GROUP UNITS
SG12-3 Differential	It sets the differential for the fans speed control. Parameters: 0 – 999.0 Pa	100.0
SG12-4 Integral time	It sets the time constant of the integral action. Parameters: 000 – 999 Seconds	60

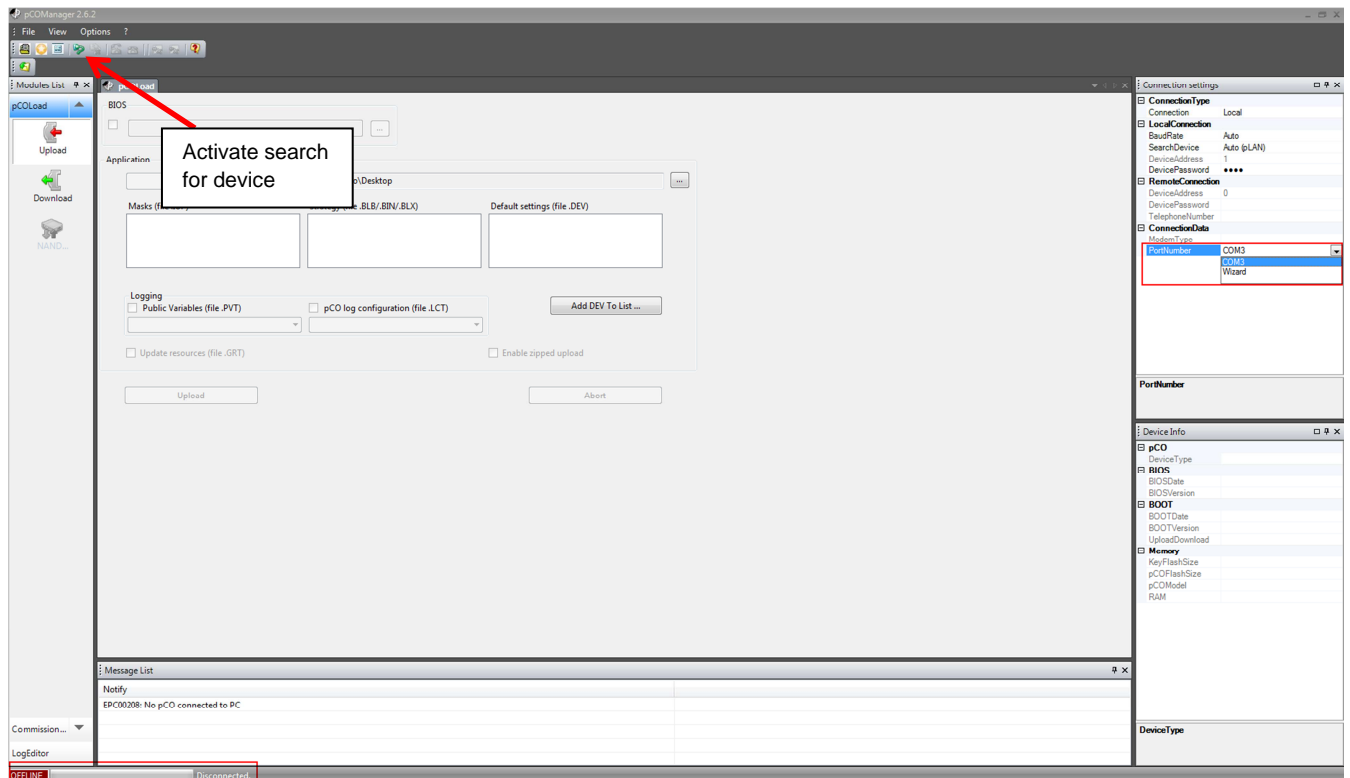
DYNAMIC SET-POINT FOR CHILLER UNITS (SG15)		
Parameter	Description	Default
SG15-1 Set-point	It sets the set-point of the maximum chilling request for the CW units. Parameters: 0 – 95 %	90
SG15-2 Differential	It sets the differential for control of the dynamic set-point. Parameters: 0 – 99 %	30
SG15-3 Differential	It sets the time constant of the integral action Parameters: 000 – 999 Seconds	100.0
SG15-4 Minimum signal	It sets the miniumum value of the output signal. Parameters: 0.0 – 10.0 V	0.0
SG15-5 Maximum signal	It sets the maximum value of the output signal. Parameters: 0.0 – 10.0 V	10.0

8 SOFTWARE UPDATE

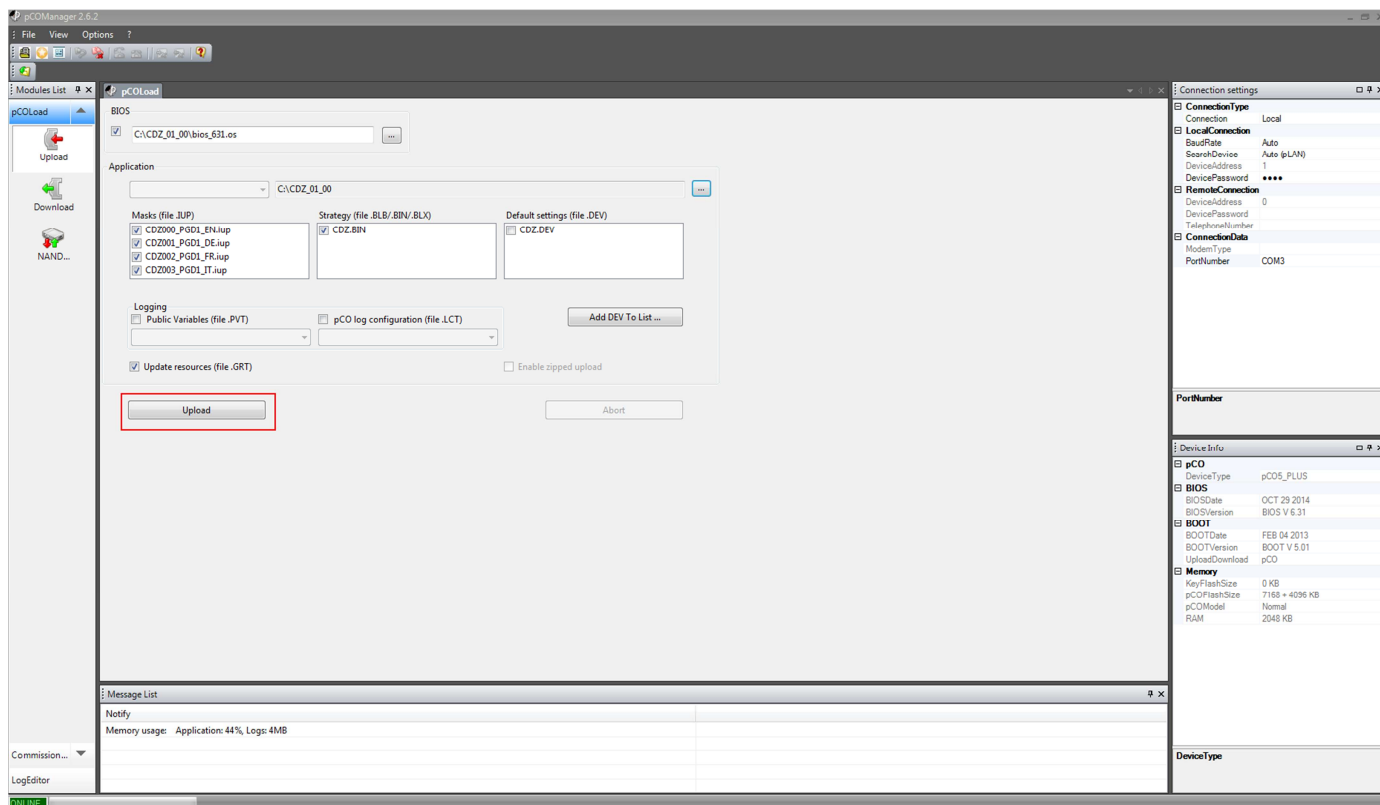
If the software needs to be updated, the devices will be programmed by downloading the application on the Flash buffer memory; this operation can be carried out using a USB -> 485 converter and a computer on which the pCO manager program has been installed.

PROCEDURE:

- 1) Install the program **pCO manager**, which can be requested from the assistance service or downloaded from the website <http://ksa.carel.com> subject to registration.
- 2) Power off the board to be programmed and connect the **CVSTDUTLF0** converter from port J10 of the board to be programmed and to a USB port of the PC.
- 3) Start the **pCO manager program** and set the **COM** port to which the converter is connected; if you don't know the value of this port, you can activate the **WIZARD** procedure.
- 4) Press the small green key at the top left, power on the board and wait for the **pCO manager** program to be online with the board, checking the status on the bottom left.



- 5) Once the connection has been established, select the Bios file and the application files that will be provided to you by the Assistance service, then click on **UPLOAD** to start the software update. During this phase, do not cut off power to the board or to the PC.



- 6) Once the update has ended, close **pCO manager**, turn off the board and then turn it back on.
- 7) Proceed with installing the default parameters; when the procedure has ended, turn off the board and then turn it back on
- 8) Change the special parameters according to the parameter list; once the configuratio has ended, turn off the board and then turn it back on.
- 9) Check on the info mask that the software version displayed is the desired one.

9 ALARM LIST

Alarm Code	Description
AL 001	Warning alarm (cumulative alarms)
AL 002	Not serious alarm (cumulative alarms)
AL 003	Serious alarm (cumulative alarms)
AL 004	Alarm circuit 1 (cumulative alarms)
AL 005	Alarm circuit 2 (cumulative alarms)
AL 006	---
AL 007	---
AL 008	---
AL 009	---
AL 010	Clock card alarm
AL 011	pLAN disconnect
AL 012	BMS 1 offline
AL 013	BMS 2 offline
AL 014	Inlet temperature probe 1 fault
AL 015	Inlet temperature probe 2 fault
AL 016	Inlet temperature probe 3 fault
AL 017	Outlet temperature probe 1 fault
AL 018	Outlet temperature probe 2 fault
AL 019	Outlet temperature probe 3 fault
AL 020	Inlet water temperature valve 1 probe fault
AL 021	Outlet water temperature valve 1 probe fault
AL 022	Bypass water temperature valve 1 probe fault
AL 023	Inlet water temperature valve 2 probe fault
AL 024	Outlet water temperature valve 2 probe fault
AL 025	Bypass water temperature valve 2 probe fault
AL 026	Coil temperature Probe fault
AL 027	External air temperature fault
AL 028	Inlet humidity probe fault
AL 029	Outlet humidity probe fault
AL 030	External humidity probe fault
AL 031	Low pressure probe C1 fault
AL 032	Low pressure probe C2 fault
AL 033	High pressure probe C1 fault

Alarm Code	Description
AL 034	High pressure probe C2 fault
AL 035	Suction temperature probe C1 fault
AL 036	Suction temperature probe C2 fault
AL 037	Discharge temperature probe C1 fault
AL 038	Discharge temperature probe C2 fault
AL 039	Condenser inlet water temperature fault
AL 040	Hot inlet water temperature fault
AL 041	Δ P probe fault
AL 042	Water flow probe valve 1 fault
AL 043	Water flow probe valve 2 fault
AL 044	Electrical panel temperature fault
AL 045	Analog fan speed signal error
AL 046	Low airflow alarm by pressostat
AL 047	Low airflow alarm by probe
AL 048	Dirty filter alarm by pressostat
AL 049	Thermal fan alarm
AL 050	Power supply alarm
AL 051	Thermal heater 1 alarm
AL 052	Thermal heater 2 alarm
AL 053	Low pressure C1 alarm by pressostat
AL 054	Low pressure C2 alarm by pressostat
AL 055	High pressure C1 alarm by pressostat
AL 056	High pressure C2 alarm by pressostat
AL 057	Low pressure C1 alarm by probe
AL 058	Low pressure C2 alarm by probe
AL 059	High pressure C1 alarm by probe
AL 060	High pressure C2 alarm by probe
AL 061	Thermal head inverter compressor 1 alarm
AL 062	Thermal head inverter compressor 2 alarm
AL 063	Water flow valve 1 alarm
AL 064	Water flow valve 2 alarm
AL 065	External humidifier alarm
AL 066	Flooding alarm

Alarm Code	Description
AL 067	Fire/smoke alarm
AL 068	Configurable alarm 1
AL 069	Configurable alarm 2
AL 070	Configurable alarm 3
AL 071	High temperature alarm
AL 072	Low temperature alarm
AL 073	High humidity alarm
AL 074	Low humidity alarm
AL 075	Freecooling alarm
AL 076	Start failure inverter compressor 1
AL 077	High discharge temperature inverter compressor 1
AL 078	High condensation pressure inverter compressor 1
AL 079	Low evaporating pressure inverter compressor 1
AL 080	High evaporating pressure inverter compressor 1
AL 081	Low ΔP inverter compressor 1
AL 082	Low pressure ratio inverter compressor 1
AL 083	Start failure inverter compressor 2
AL 084	High discharge temperature inverter compressor 2
AL 085	High condensation pressure inverter compressor 2
AL 086	Low evaporating pressure inverter compressor 2
AL 087	High evaporating pressure inverter compressor 2
AL 088	Low ΔP inverter compressor 2
AL 089	Low pressure ratio inverter compressor 2
AL 090	Working hours compressor 1 alarm
AL 091	Working hours compressor 2 alarm
AL 092	Working hours compressor 3 alarm
AL 093	Working hours compressor 4 alarm
AL 094	Working hours compressor 5 alarm
AL 095	Working hours compressor 6 alarm
AL 096	Working hours fan alarm
AL 097	Working hours air filter alarm
AL 098	Working hours humidifier alarm
AL 099	Working hours heater alarm
AL 100	Working hours freecooling alarm

Alarm Code	Description
AL 101	pCOe 1 offline alarm
AL 102	pCOe 2 offline alarm
AL 103	pCOe 3 offline alarm
AL 104	pCOe 4 offline alarm
AL 105	pCOe 5 offline alarm
AL 106	EVD EVO 1 offline alarm
AL 107	EVD EVO 1 LAN error
AL 108	EVD EVO 1 eeprom error
AL 109	EVD EVO 1 step motor error
AL 110	EVD EVO 1 FW not compatible
AL 111	EVD EVO 2 offline alarm
AL 112	EVD EVO 2 LAN error
AL 113	EVD EVO 2 eeprom error
AL 114	EVD EVO 2 step motor error
AL 115	EVD EVO 2 FW not compatible
AL 116	Inverter 1 general alarm
AL 117	Inverter 1 Display loss alarm
AL 118	Inverter 1 Safe torque OFF alarm
AL 119	Inverter 1 STO 1 loss alarm
AL 120	Inverter 1 STO 2 loss alarm
AL 121	Inverter 1 Under load alarm
AL 122	Inverter 1 Stall motor alarm
AL 123	Inverter 1 Encoder error
AL 124	Inverter 1 error parameter setting
AL 125	Inverter 1 SW incompatible
AL 126	Inverter 1 configuration file error
AL 127	Inverter 1 configuration file reading error
AL 128	Inverter 1 overcurrent alarm
AL 129	Inverter 1 current reading alarm
AL 130	Inverter 1 overvoltage BUS DC alarm
AL 131	Inverter 1 undervoltage BUS DC alarm
AL 132	Inverter 1 IGBT alarm
AL 133	Inverter 1 overheating control board alarm
AL 134	Inverter 1 thermistor error

Alarm Code	Description
AL 135	Inverter 1 Force trip
AL 136	Inverter 1 motor identification error
AL 137	Inverter 1 overspeed alarm
AL 138	Inverter 1 ground fault
AL 139	Inverter 1 short circuit alarm
AL 140	Inverter 1 wiring error
AL 141	Inverter 1 input phases failure
AL 142	Inverter 1 phase motor missing alarm
AL 143	Inverter 1 Driver internal error
AL 144	Inverter 1 serial communication error
AL 145	Inverter 1 motor overload alarm
AL 146	Inverter 1 drive overload alarm
AL 147	Inverter 1 overtorque alarm
AL 148	Inverter 1 excessive speed deviation alarm
AL 149	Inverter 1 No pulses are received
AL 150	Inverter 1 Memory error
AL 151	Inverter 1 Control board fault
AL 152	Inverter 1 output current imbalance
AL 153	Inverter 1 too many speed search restarts
AL 154	Inverter 1 current offset fault
AL 155	Inverter 1 run commands input error
AL 156	Inverter 1 cooling fan error
AL 157	Inverter 1 drive disabled
AL 158	Inverter 1 analog input reading error
AL 159	Inverter 1 Error Pfc
AL 160	Inverter 1 Error control speed
AL 161	Inverter 1 overcurrent during acceleration
AL 162	Inverter 1 overcurrent at constant speed
AL 163	Inverter 1 overcurrent during deceleration
AL 164	Inverter 1 current greater than 150% for 60 sec.
AL 165	Inverter 1 abnormal condition
AL 166	Inverter 1 High temperature drivers
AL 167	Inverter 1 Low temperature drivers
AL 168	Inverter 1 High current HW

Alarm Code	Description
AL 169	Inverter 1 error default parameters
AL 170	Inverter 1 Error ripple DC-BUS
AL 171	Inverter 1 Error autotuning
AL 172	Inverter 1 Offline alarm
AL 173	Inverter 1 write parameter error
AL 174	---
AL 175	---
AL 176	Inverter 2 general alarm
AL 177	Inverter 2 Display loss alarm
AL 178	Inverter 2 Safe torque OFF alarm
AL 179	Inverter 2 STO 1 loss alarm
AL 180	Inverter 2 STO 2 loss alarm
AL 181	Inverter 2 Under load alarm
AL 182	Inverter 2 Stall motor alarm
AL 183	Inverter 2 Encoder error
AL 184	Inverter 2 error parameter setting
AL 185	Inverter 2 SW incompatible
AL 186	Inverter 2 configuration file error
AL 187	Inverter 2 configuration file reading error
AL 188	Inverter 2 overcurrent alarm
AL 189	Inverter 2 current reading alarm
AL 190	Inverter 2 overvoltage BUS DC alarm
AL 191	Inverter 2 undervoltage BUS DC alarm
AL 192	Inverter 2 IGBT alarm
AL 193	Inverter 2 overheating control board alarm
AL 194	Inverter 2 thermistor error
AL 195	Inverter 2 Force trip
AL 196	Inverter 2 motor identification error
AL 197	Inverter 2 overspeed alarm
AL 198	Inverter 2 ground fault
AL 199	Inverter 2 short circuit alarm
AL 200	Inverter 2 wiring error
AL 201	Inverter 2 input phases failure
AL 202	Inverter 2 phase motor missing alarm

Alarm Code	Description
AL 203	Inverter 2 Driver internal error
AL 204	Inverter 2 serial communication error
AL 205	Inverter 2 motor overload alarm
AL 206	Inverter 2 drive overload alarm
AL 207	Inverter 2 overtorque alarm
AL 208	Inverter 2 excessive speed deviation alarm
AL 209	Inverter 2 No pulses are received
AL 210	Inverter 2 Memory error
AL 211	Inverter 2 Control board fault
AL 212	Inverter 2 output current imbalance
AL 213	Inverter 2 too many speed search restarts
AL 214	Inverter 2 current offset fault
AL 215	Inverter 2 run commands input error
AL 216	Inverter 2 cooling fan error
AL 217	Inverter 2 drive disabled
AL 218	Inverter 2 analog input reading error
AL 219	Inverter 2 Error Pfc
AL 220	Inverter 2 Error control speed
AL 221	Inverter 2 overcurrent during acceleration
AL 222	Inverter 2 overcurrent at constant speed
AL 223	Inverter 2 overcurrent during deceleration
AL 224	Inverter 2 current greater than 150% for 60 sec.
AL 225	Inverter 2 abnormal condition
AL 226	Inverter 2 High temperature drivers
AL 227	Inverter 2 Low temperature drivers
AL 228	Inverter 2 High current HW
AL 229	Inverter 2 error default parameters
AL 230	Inverter 2 Error ripple DC-BUS

Alarm Code	Description
AL 231	Inverter 2 Error autotuning
AL 232	Inverter 2 Offline alarm
AL 233	Inverter 2 write parameter error
AL 234	---
AL 235	---
AL 236	CPY internal memory error
AL 237	CPY configuration parameter error
AL 238	CPY memory backup error
AL 239	CPY communication error
AL 240	Humidifier high current alarm
AL 241	Humidifier low production
AL 242	Humidifier high conductivity alarm
AL 243	Humidifier high water level
AL 244	Humidifier lack of water
AL 245	Humidifier drain valve problem
AL 246	Humidifier cylinder depleted
AL 247	Humidifier cylinder dirty
AL 248	Humidifier cylinder foam
AL 249	CPY offline
AL 250	Hot gas pressure probe C1 fault
AL 251	Hot gas pressure probe C2 fault
AL 252	Variation generic/cool setpoint by analog input alarm
AL 253	Variation heat setpoint by analog input alarm
AL 254	Variation humidity setpoint by analog input alarm
AL 255	Low cooling ΔT alarm
AL 256	Low heating ΔT alarm

10 SUPERVISION VARIABLE LIST

ANALOG VARIABLE								
Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
51	51	51	Cooling setpoint	°C/°F	-99.9	99.9	R/W	R/W
52	52	52	Heating setpoint	°C/°F	-99.9	99.9	R/W	R/W
53	53	53	Emergency setpoint	°C/°F	-99.9	99.9	R/W	R/W
54	54	54	Humidity setpoint	%rH	-99.9	99.9	R/W	R/W
55	55	55	DP set point	Pa	0	99.9	R/W	R/W
71	71	71	Inlet temperature 1	°C/°F	-99.9	99.9	R	R
72	72	72	Inlet temperature 2	°C/°F	-99.9	99.9	R	R
73	73	73	Inlet temperature 3	°C/°F	-99.9	99.9	R	R
74	74	74	Outlet temperature 1	°C/°F	-99.9	99.9	R	R
75	75	75	Outlet temperature 2	°C/°F	-99.9	99.9	R	R
76	76	76	Outlet temperature 3	°C/°F	-99.9	99.9	R	R
77	77	77	Valve 1 inlet water temperature	°C/°F	-99.9	99.9	R	R
78	78	78	Valve 1 outlet water temperature	°C/°F	-99.9	99.9	R	R
79	79	79	Valve 1 water bypass temperature	°C/°F	-99.9	99.9	R	R
80	80	80	Valve 2 inlet water temperature	°C/°F	-99.9	99.9	R	R
81	81	81	Valve 2 outlet water temperature	°C/°F	-99.9	99.9	R	R
82	82	82	Valve 2 water bypass temperature	°C/°F	-99.9	99.9	R	R
83	83	83	Coil temperature	°C/°F	-99.9	99.9	R	R
84	84	84	Condenser inlet temperature water	°C/°F	-99.9	99.9	R	R
85	85	85	Hot water inlet temperature	°C/°F	-99.9	99.9	R	R
86	86	86	External air temperature by probe	°C/°F	-99.9	99.9	R	R
87	87	87	External air temperature by pLAN	°C/°F	-99.9	99.9	R	R
88	88	88	Suction temperature C1	°C/°F	-99.9	99.9	R	R
89	89	89	Discharge temperature C1	°C/°F	-99.9	99.9	R	R
90	90	90	Evaporation temperature Dew-point circuit 1	°C/°F	-99.9	99.9	R	R
91	91	91	Evaporation temperature Bubble-point circuit 1	°C/°F	-99.9	99.9	R	R
92	92	92	Condensation temperature Dew-point circuit 1	°C/°F	-99.9	99.9	R	R
93	93	93	Condensation temperature Bubble-point circuit 1	°C/°F	-99.9	99.9	R	R
94	94	94	Superheating circuit 1 value	K	-99.9	99.9	R	R
95	95	95	Suction temperature C2	°C/°F	-99.9	99.9	R	R
96	96	96	Discharge temperature C2	°C/°F	-99.9	99.9	R	R
97	97	97	Evaporation temperature Dew-point circuit 2	°C/°F	-99.9	99.9	R	R
98	98	98	Evaporation temperature Bubble-point circuit 2	°C/°F	-99.9	99.9	R	R
99	99	99	Condensation temperature Dew-point circuit 2	°C/°F	-99.9	99.9	R	R
100	100	100	Condensation temperature Bubble-point circuit 2	°C/°F	-99.9	99.9	R	R
101	101	101	Superheating circuit 2 value	K	-99.9	99.9	R	R
102	102	102	Inlet temperature average	°C/°F	-99.9	99.9	R	R
103	103	103	Inlet temperature average	°C/°F	-99.9	99.9	R	R
104	104	104	Inlet temperature average	°C/°F	-99.9	99.9	R	R
105	105	105	Outlet temperature average	°C/°F	-99.9	99.9	R	R

ANALOG VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
106	106	106	Outlet temperature average	°C/°F	-99.9	99.9	R	R
107	107	107	Outlet temperature average	°C/°F	-99.9	99.9	R	R
108	108	108	Regulation temperature	°C/°F	-99.9	99.9	R	R
109	109	109	Regulation temperature	°C/°F	-99.9	99.9	R	R
110	110	110	Regulation temperature	°C/°F	-99.9	99.9	R	R
111	111	111	Inlet air humidity	%rH	0	99.9	R	R
112	112	112	Outlet air humidity	%rH	0	99.9	R	R
113	113	113	External air humidity	%rH	0	99.9	R	R
114	114	114	Low pressure circuit 1 value	BAR	-99.9	99.9	R	R
115	115	115	High pressure circuit 1 value	BAR	-99.9	99.9	R	R
116	116	116	Hot gas pressure circuit 1 value	BAR	-99.9	99.9	R	R
117	117	117	Low pressure circuit 2 value	BAR	-99.9	99.9	R	R
118	118	118	High pressure circuit 2 value	BAR	-99.9	99.9	R	R
119	119	119	Hot gas pressure circuit 2 value	BAR	-99.9	99.9	R	R
120	120	120	DP value	Pa	0	3000.0	R	R
121	121	121	Steam production (Kg/h)	Kg/h	0	99.9	R	R
122	122	122	Inverter compressor 1 speed	rps	-999.9	999.9	R	R
123	123	123	Inverter compressor 2 speed	rps	-999.9	999.9	R	R
131	131	131	Cooling temperature setpoint active	°C/°F	0	99.9	R	R
132	132	132	Heating temperature setpoint active	°C/°F	0	99.9	R	R
133	133	133	Emergency temperature setpoint active	°C/°F	0	99.9	R	R
134	134	134	Humidity setpoint active	%rH	0	99.9	R	R
135	135	135	DP setpoint active (Pa)	Pa	0	3276.7	R	R

INTEGER VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
51	5052	5052	External fan request (0-1000)	---	0	1000	R/W	R/W
52	5053	5053	Cooling request by BMS (0 - 1000)	---	0	1000	R/W	R/W
53	5054	5054	Heating request by BMS (0 - 1000)	---	0	1000	R/W	R/W
54	5055	5055	Humidifier request by BMS (0 - 1000)	---	0	1000	R/W	R/W
55	5056	5056	Dehumidifier request by BMS (0 - 1000)	---	0	1000	R/W	R/W
56	5057	5057	BMS air flow set point (m3/h * 100)	---	0	999	R/W	R/W
57	5058	5058	BMS 1 Watchdog integer variables	---	0	32767	R/W	-
58	5059	5059	BMS 2 Watchdog integer variables	---	0	32767	-	R/W
71	5072	5072	Software code (HF1200XXXX)	---	0	9999	R	R
72	5073	5073	Hours	---	0	99	R	R
73	5074	5074	Minute	---	-32768	32767	R	R
74	5075	5075	Day	---	0	99	R	R
75	5076	5076	Month	---	0	99	R	R
76	5077	5077	Year	---	0	99	R	R

INTEGER VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
77	5078	5078	Weekday (1= Monday, 2= Tuesday, 3= Wednesday, 4= Thursday, 5= Friday, 6= Saturday, 7= Sunday)	---	0	9	R	R
80	5081	5081	Stato unità (0= Unità On, 1= Standby, 2= Off da schedulatore, 3= Off da BMS, 4= Off da DIN, 5= Off da tastiera, 6= Off da allarme)	---	0	6	R	R
81	5082	5082	Analog input 1 pco1	---	0	1	R	R
82	5083	5083	Analog input 2 pco1	---	0	1	R	R
83	5084	5084	Analog input 3 pco1	---	0	1	R	R
84	5085	5085	Analog input 4 pco1	---	0	1	R	R
85	5086	5086	Analog input 5 pco1	---	0	1	R	R
86	5087	5087	Analog input 6 pco1	---	0	1	R	R
87	5088	5088	Analog input 7 pco1	---	0	1	R	R
88	5089	5089	Analog input 8 pco1	---	0	1	R	R
89	5090	5090	Analog input 9 pco1	---	0	1	R	R
90	5091	5091	Analog input 10 pco1	---	0	1	R	R
91	5092	5092	Analog input 1 pcoe1	---	0	1	R	R
92	5093	5093	Analog input 2 pcoe1	---	0	1	R	R
93	5094	5094	Analog input 3 pcoe1	---	0	1	R	R
94	5095	5095	Analog input 4 pcoe1	---	0	1	R	R
95	5096	5096	Analog input 1 pcoe2	---	0	1	R	R
96	5097	5097	Analog input 2 pcoe2	---	0	1	R	R
97	5098	5098	Analog input 3 pcoe2	---	0	1	R	R
98	5099	5099	Analog input 4 pcoe2	---	0	1	R	R
99	5100	5100	Analog input 1 pcoe3	---	0	1	R	R
100	5101	5101	Analog input 2 pcoe3	---	0	1	R	R
101	5102	5102	Analog input 3 pcoe3	---	0	1	R	R
102	5103	5103	Analog input 4 pcoe3	---	0	1	R	R
103	5104	5104	Analog input 1 pcoe4	---	0	1	R	R
104	5105	5105	Analog input 2 pcoe4	---	0	1	R	R
105	5106	5106	Analog input 3 pcoe4	---	0	1	R	R
106	5107	5107	Analog input 4 pcoe4	---	0	1	R	R
107	5108	5108	Analog input 1 pcoe5	---	0	1	R	R
108	5109	5109	Analog input 2 pcoe5	---	0	1	R	R
109	5110	5110	Analog input 3 pcoe5	---	0	1	R	R
110	5111	5111	Analog input 4 pcoe5	---	0	1	R	R
111	5112	5112	Analog input 1 EEV1	---	-32768	32767	R	R
112	5113	5113	Analog input 2 EEV1	---	-32768	32767	R	R
113	5114	5114	Analog input 3 EEV1	---	-32768	32767	R	R
114	5115	5115	Analog input 4 EEV1	---	-32768	32767	R	R
115	5116	5116	Analog input 1 EEV2	---	-32768	32767	R	R
116	5117	5117	Analog input 2 EEV2	---	-32768	32767	R	R
117	5118	5118	Analog input 3 EEV2	---	-32768	32767	R	R

INTEGER VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
118	5119	5119	Analog input 4 EEV2	---	-32768	32767	R	R
141	5142	5142	Analog output 1 pco1 (0 = 0V,1000= 10V)	---	0	1000	R	R
142	5143	5143	Analog output 2 pco1 (0 = 0V,1000= 10V)	---	0	1000	R	R
143	5144	5144	Analog output 3 pco1 (0 = 0V,1000= 10V)	---	0	1000	R	R
144	5145	5145	Analog output 4 pco1 (0 = 0V,1000= 10V)	---	0	1000	R	R
145	5146	5146	Analog output 5 pco1 (0 = 0V,1000= 10V)	---	0	1000	R	R
146	5147	5147	Analog output 6 pco1 (0 = 0V,1000= 10V)	---	0	1000	R	R
147	5148	5148	Analog output 1 pcoe1 (0 = 0V,1000= 10V)	---	0	1000	R	R
148	5149	5149	Analog output 1 pcoe2 (0 = 0V,1000= 10V)	---	0	1000	R	R
149	5150	5150	Analog output 1 pcoe3 (0 = 0V,1000= 10V)	---	0	1000	R	R
150	5151	5151	Analog output 1 pcoe4 (0 = 0V,1000= 10V)	---	0	1000	R	R
151	5152	5152	Analog output 1 pcoe5 (0 = 0V,1000= 10V)	---	0	1000	R	R
171	5172	5172	Alarm data from 1 to 15 (Bit1 = AL1, Bit15 = AL15)	---	-32768	32767	R	R
172	5173	5173	Alarm data from 16 to 31 (Bit0 = AL16, Bit15 = AL31)	---	-32768	32767	R	R
173	5174	5174	Alarm data from 32 to 47 (Bit0 = AL32, Bit15 = AL47)	---	-32768	32767	R	R
174	5175	5175	Alarm data from 48 to 63 (Bit0 = AL48, Bit15 = AL63)	---	-32768	32767	R	R
175	5176	5176	Alarm data from 64 to 79 (Bit0 = AL64, Bit15 = AL79)	---	-32768	32767	R	R
176	5177	5177	Alarm data from 80 to 95 (Bit0 = AL80, Bit15 = AL95)	---	-32768	32767	R	R
177	5178	5178	Alarm data from 96 to 111 (Bit0 = AL96, Bit15 = AL111)	---	-32768	32767	R	R
178	5179	5179	Alarm data from 112 to 127 (Bit0 = AL112, Bit15 = AL127)	---	-32768	32767	R	R
179	5180	5180	Alarm data from 128 to 143 (Bit0 = AL128, Bit15 = AL143)	---	-32768	32767	R	R
180	5181	5181	Alarm data from 144 to 159 (Bit0 = AL144, Bit15 = AL159)	---	-32768	32767	R	R
181	5182	5182	Alarm data from 160 to 175 (Bit0 = AL160, Bit15 = AL175)	---	-32768	32767	R	R
182	5183	5183	Alarm data from 176 to 191 (Bit0 = AL176, Bit15 = AL191)	---	-32768	32767	R	R
183	5184	5184	Alarm data from 192 to 207 (Bit0 = AL192, Bit15 = AL207)	---	-32768	32767	R	R
184	5185	5185	Alarm data from 208 to 223 (Bit0 = AL208, Bit15 = AL223)	---	-32768	32767	R	R
185	5186	5186	Alarm data from 224 to 239 (Bit0 = AL224, Bit15 = AL239)	---	-32768	32767	R	R
186	5187	5187	Alarm data from 240 to 255 (Bit0 = AL240, Bit15 = AL255)	---	-32768	32767	R	R
187	5188	5188	Alarm data from 256 to 271 (Bit0 = AL256, Bit15 = AL271)	---	-32768	32767	R	R
188	5189	5189	Alarm data from 272 to 287 (Bit0 = AL272, Bit15 = AL287)	---	-32768	32767	R	R
189	5190	5190	Alarm data from 288 to 303 (Bit0 = AL288, Bit15 = AL303)	---	-32768	32767	R	R
190	5191	5191	Alarm data from 304 to 319 (Bit0 = AL304, Bit15 = AL319)	---	-32768	32767	R	R
191	5192	5192	Cooling request 0-1000	---	0	1000	R	R
192	5193	5193	Heating request 0-1000	---	0	1000	R	R
193	5194	5194	Emergency request 0-1000	---	0	1000	R	R
194	5195	5195	Humidity request 0-1000	---	0	1000	R	R
195	5196	5196	Dehumidity request 0-1000	---	0	1000	R	R
196	5197	5197	Fans request 1	---	0	1000	R	R
197	5198	5198	Fans request 2	---	0	1000	R	R
198	5199	5199	Fans request 3	---	0	1000	R	R
199	5200	5200	Fans speed 1 (0-1000)	---	0	1000	R	R
200	5201	5201	Fans speed 2 (0-1000)	---	0	1000	R	R

INTEGER VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
201	5202	5202	Fans speed 3 (0-1000)	---	0	1000	R	R
202	5203	5203	Airflow setpoint active ((m3/h)/10)	---	-32768	32767	R	R
203	5204	5204	Current air flow ((m3/h)/10)	---	0	32767	R	R
204	5205	5205	Valve 1 Position (0 - 1000)	---	0	1000	R	R
205	5206	5206	Valve 2 Position (0 - 1000)	---	0	1000	R	R
206	5207	5207	Water flow valve 1(l/h) or (m3/h /10)	---	-32768	32767	R	R
207	5208	5208	Water flow valve 2(l/h) or (m3/h /10)	---	-32768	32767	R	R
208	5209	5209	Hot water valve request (0-1000)	---	0	1000	R	R
209	5210	5210	Feedback 0-1000 inverter 1	---	0	1000	R	R
210	5211	5211	Feedback 0-1000 inverter 2	---	0	1000	R	R
211	5212	5212	Envelope action circuit 1 (0= None, 1= Low pressure ratio, 2= Low DP, 3= Max LP, 4= Min LP, 5= Max HP, 6= High discharge temp.)	---	0	9	R	R
212	5213	5213	Envelope action circuit 2 (0= None, 1= Low pressure ratio, 2= Low DP, 3= Max LP, 4= Min LP, 5= Max HP, 6= High discharge temp.)	---	0	9	R	R
213	5214	5214	Electronic expansion valve 1 position (0-100%)	---	0	100	R	R
214	5215	5215	Electronic expansion valve 2 position (0-100%)	---	0	100	R	R
215	5216	5216	Condenser/Evaporator or drycooler fans speed	---	0	1000	R	R
216	5217	5217	Condenser/Evaporator fans speed 2	---	0	1000	R	R
217	5218	5218	Hot gas precise request circuit 1	---	0	1000	R	R
218	5219	5219	Hot gas precise request circuit 2	---	0	1000	R	R
219	5220	5220	Hot gas bypass request circuit 1	---	0	1000	R	R
220	5221	5221	Hot gas bypass request circuit 2	---	0	1000	R	R
221	5222	5222	Heater production (0-1000)	---	0	1000	R	R
222	5223	5223	Humidifier production (0-1000)	---	0	1000	R	R
223	5224	5224	Fan working hours (h)	---	0	9999	R	R
224	5225	5225	Fan working hours (h*10000)	---	0	9999	R	R
225	5226	5226	Filter working hours (h)	---	0	9999	R	R
226	5227	5227	Filter working hours (h*10000)	---	0	9999	R	R
227	5228	5228	Humidifier working hours (h)	---	0	9999	R	R
228	5229	5229	Humidifier working hours (h*10000)	---	0	9999	R	R
229	5230	5230	Heater working hours (h)	---	0	9999	R	R
230	5231	5231	Heater working hours (h*10000)	---	0	9999	R	R
231	5232	5232	FC working hours (h)	---	0	9999	R	R
232	5233	5233	FC working hours (h*10000)	---	0	9999	R	R
233	5234	5234	Compressor 1 working hours (h)	---	0	9999	R	R
234	5235	5235	Compressor 1 working hours (h*10000)	---	0	9999	R	R

INTEGER VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
235	5236	5236	Compressor 2 working hours (h)	---	0	9999	R	R
236	5237	5237	Compressor 2 working hours (h*10000)	---	0	9999	R	R
237	5238	5238	Compressor 3 working hours (h)	---	0	9999	R	R
238	5239	5239	Compressor 3 working hours (h*10000)	---	0	9999	R	R
239	5240	5240	Compressor 4 working hours (h)	---	0	9999	R	R
240	5241	5241	Compressor 4 working hours (h*10000)	---	0	9999	R	R
241	5242	5242	Compressor 5 working hours (h)	---	0	9999	R	R
242	5243	5243	Compressor 5 working hours (h*10000)	---	0	9999	R	R
243	5244	5244	Compressor 6 working hours (h)	---	0	9999	R	R
244	5245	5245	Compressor 6 working hours (h*10000)	---	0	9999	R	R

DIGITAL VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
51	51	51	Request SMS unit info	---	0	1	R/W	R/W
52	52	52	On/Off unit by BMS (0= Off, 1= On)	---	0	1	R/W	R/W
53	53	53	Enable valve 1 by BMS (0= Off, 1= On)	---	0	1	R/W	R/W
54	54	54	Enable valve 2 by BMS (0= Off, 1= On)	---	0	1	R/W	R/W
55	55	55	Valve 1 logic cooling/heating valve by BMS (0= Cooling, 1= Heating)	---	0	1	R/W	R/W
56	56	56	Valve 2 logic cooling/heating valve by BMS (0= Cooling, 1= Heating)	---	0	1	R/W	R/W
57	57	57	Freecooling deactivation (0= FC enable, 1= FC Disable)	---	0	1	R/W	R/W
58	58	58	Enable cooling request by BMS (0= Disable, 1= Enabled)	---	0	1	R/W	R/W
59	59	59	Enable Heating request by BMS (0= Disable, 1= Enabled)	---	0	1	R/W	R/W
60	60	60	Enable humidifier request by BMS (0= Disable, 1= Enabled)	---	0	1	R/W	R/W
61	61	61	Enable dehumidifier request by BMS (0= Disable, 1= Enabled)	---	0	1	R/W	R/W
62	62	62	Dual cooling priority (0= CW, 1= DX)	---	0	1	R/W	R/W
63	63	63	Fans speed forced by BMS (0= Not forced, 1= Forced)	---	0	1	R/W	R/W
64	64	64	Limit max compressor speed by BMS (0= Limit disable, 1= Limit enable)	---	0	1	R/W	R/W
65	65	65	Configurable alarm 1 by BMS (0= Alarm not active, 1= Alarm active)	---	0	1	R/W	R/W

DIGITAL VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
66	66	66	Configurable alarm 2 by BMS (0= Alarm not active, 1= Alarm active)	---	0	1	R/W	R/W
67	67	67	Configurable alarm 3 by BMS (0= Alarm not active, 1= Alarm active)	---	0	1	R/W	R/W
68	68	68	Reset alarm (0= No request, 1= Request)	---	0	1	R/W	R/W
69	69	69	Reset alarm all unit in pLAN (only on master unit)	---	0	1	R/W	R/W
70	70	70	BMS 1 Watchdog Digital Variables	---	0	1	R/W	-
71	71	71	BMS 2 Watchdog Digital Variables	---	0	1	-	R/W
81	81	81	Digital input 1 pco1 (0= Open,1= Close)	---	0	1	R	R
82	82	82	Digital input 2 pco1 (0= Open,1= Close)	---	0	1	R	R
83	83	83	Digital input 3 pco1 (0= Open,1= Close)	---	0	1	R	R
84	84	84	Digital input 4 pco1 (0= Open,1= Close)	---	0	1	R	R
85	85	85	Digital input 5 pco1 (0= Open,1= Close)	---	0	1	R	R
86	86	86	Digital input 6 pco1 (0= Open,1= Close)	---	0	1	R	R
87	87	87	Digital input 7 pco1 (0= Open,1= Close)	---	0	1	R	R
88	88	88	Digital input 8 pco1 (0= Open,1= Close)	---	0	1	R	R
89	89	89	Digital input 9 pco1 (0= Open,1= Close)	---	0	1	R	R
90	90	90	Digital input 10 pco1 (0= Open,1= Close)	---	0	1	R	R
91	91	91	Digital input 11 pco1 (0= Open,1= Close)	---	0	1	R	R
92	92	92	Digital input 12 pco1 (0= Open,1= Close)	---	0	1	R	R
93	93	93	Digital input 13 pco1 (0= Open,1= Close)	---	0	1	R	R
94	94	94	Digital input 14 pco1 (0= Open,1= Close)	---	0	1	R	R
95	95	95	Digital input 15 pco1 (0= Open,1= Close)	---	0	1	R	R
96	96	96	Digital input 16 pco1 (0= Open,1= Close)	---	0	1	R	R
97	97	97	Digital input 17 pco1 (0= Open,1= Close)	---	0	1	R	R
98	98	98	Digital input 18 pco1 (0= Open,1= Close)	---	0	1	R	R
99	99	99	Digital input 1 pcoe1 (0= Open,1= Close)	---	0	1	R	R
100	100	100	Digital input 2 pcoe1 (0= Open,1= Close)	---	0	1	R	R
101	101	101	Digital input 3 pcoe1 (0= Open,1= Close)	---	0	1	R	R
102	102	102	Digital input 4 pcoe1 (0= Open,1= Close)	---	0	1	R	R
103	103	103	Digital input 1 pcoe2 (0= Open,1= Close)	---	0	1	R	R
104	104	104	Digital input 2 pcoe2 (0= Open,1= Close)	---	0	1	R	R
105	105	105	Digital input 3 pcoe2 (0= Open,1= Close)	---	0	1	R	R
106	106	106	Digital input 4 pcoe2 (0= Open,1= Close)	---	0	1	R	R
107	107	107	Digital input 1 pcoe3 (0= Open,1= Close)	---	0	1	R	R
108	108	108	Digital input 2 pcoe3 (0= Open,1= Close)	---	0	1	R	R
109	109	109	Digital input 3 pcoe3 (0= Open,1= Close)	---	0	1	R	R
110	110	110	Digital input 4 pcoe3 (0= Open,1= Close)	---	0	1	R	R
111	111	111	Digital input 1 pcoe4 (0= Open,1= Close)	---	0	1	R	R
112	112	112	Digital input 2 pcoe4 (0= Open,1= Close)	---	0	1	R	R
113	113	113	Digital input 3 pcoe4 (0= Open,1= Close)	---	0	1	R	R
114	114	114	Digital input 4 pcoe4 (0= Open,1= Close)	---	0	1	R	R

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Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
115	115	115	Digital input 1 pcoe5 (0= Open,1= Close)	---	0	1	R	R
116	116	116	Digital input 2 pcoe5 (0= Open,1= Close)	---	0	1	R	R
117	117	117	Digital input 3 pcoe5 (0= Open,1= Close)	---	0	1	R	R
118	118	118	Digital input 4 pcoe5 (0= Open,1= Close)	---	0	1	R	R
119	119	119	Digital input 1 EEV1 (0= Open,1= Close)	---	0	1	R	R
120	120	120	Digital input 2 EEV1 (0= Open,1= Close)	---	0	1	R	R
121	121	121	Digital input 1 EEV2 (0= Open,1= Close)	---	0	1	R	R
122	122	122	Digital input 2 EEV2 (0= Open,1= Close)	---	0	1	R	R
123	123	123	Digital input 1 INV1 (0= Open,1= Close)	---	0	1	R	R
124	124	124	Digital input 2 INV1 (0= Open,1= Close)	---	0	1	R	R
125	125	125	Digital input 3 INV1 (0= Open,1= Close)	---	0	1	R	R
126	126	126	Digital input 4 INV1 (0= Open,1= Close)	---	0	1	R	R
127	127	127	Digital input 5 INV1 (0= Open,1= Close)	---	0	1	R	R
128	128	128	Digital input 6 INV1 (0= Open,1= Close)	---	0	1	R	R
129	129	129	Digital input 1 INV2 (0= Open,1= Close)	---	0	1	R	R
130	130	130	Digital input 2 INV2 (0= Open,1= Close)	---	0	1	R	R
131	131	131	Digital input 3 INV2 (0= Open,1= Close)	---	0	1	R	R
132	132	132	Digital input 4 INV2 (0= Open,1= Close)	---	0	1	R	R
133	133	133	Digital input 5 INV2 (0= Open,1= Close)	---	0	1	R	R
134	134	134	Digital input 6 INV2 (0= Open,1= Close)	---	0	1	R	R
160	160	160	Digital output 1 pco1 (0= Open,1= Close)	---	0	1	R	R
161	161	161	Digital output 2 pco1 (0= Open,1= Close)	---	0	1	R	R
162	162	162	Digital output 3 pco1 (0= Open,1= Close)	---	0	1	R	R
163	163	163	Digital output 4 pco1 (0= Open,1= Close)	---	0	1	R	R
164	164	164	Digital output 5 pco1 (0= Open,1= Close)	---	0	1	R	R
165	165	165	Digital output 6 pco1 (0= Open,1= Close)	---	0	1	R	R
166	166	166	Digital output 7 pco1 (0= Open,1= Close)	---	0	1	R	R
167	167	167	Digital output 8 pco1 (0= Open,1= Close)	---	0	1	R	R
168	168	168	Digital output 9 pco1 (0= Open,1= Close)	---	0	1	R	R
169	169	169	Digital output 10 pco1 (0= Open,1= Close)	---	0	1	R	R
170	170	170	Digital output 11 pco1 (0= Open,1= Close)	---	0	1	R	R
171	171	171	Digital output 12 pco1 (0= Open,1= Close)	---	0	1	R	R
172	172	172	Digital output 13 pco1 (0= Open,1= Close)	---	0	1	R	R
173	173	173	Digital output 14 pco1 (0= Open,1= Close)	---	0	1	R	R
174	174	174	Digital output 15 pco1 (0= Open,1= Close)	---	0	1	R	R
175	175	175	Digital output 16 pco1 (0= Open,1= Close)	---	0	1	R	R
176	176	176	Digital output 17 pco1 (0= Open,1= Close)	---	0	1	R	R
177	177	177	Digital output 18 pco1 (0= Open,1= Close)	---	0	1	R	R
178	178	178	Digital output 1 pcoe1 (0= Open,1= Close)	---	0	1	R	R
179	179	179	Digital output 2 pcoe1 (0= Open,1= Close)	---	0	1	R	R
180	180	180	Digital output 3 pcoe1 (0= Open,1= Close)	---	0	1	R	R
181	181	181	Digital output 4 pcoe1 (0= Open,1= Close)	---	0	1	R	R

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Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
182	182	182	Digital output 1 pcoe2 (0= Open,1= Close)	---	0	1	R	R
183	183	183	Digital output 2 pcoe2 (0= Open,1= Close)	---	0	1	R	R
184	184	184	Digital output 3 pcoe2 (0= Open,1= Close)	---	0	1	R	R
185	185	185	Digital output 4 pcoe2 (0= Open,1= Close)	---	0	1	R	R
186	186	186	Digital output 1 pcoe3 (0= Open,1= Close)	---	0	1	R	R
187	187	187	Digital output 2 pcoe3 (0= Open,1= Close)	---	0	1	R	R
188	188	188	Digital output 3 pcoe3 (0= Open,1= Close)	---	0	1	R	R
189	189	189	Digital output 4 pcoe3 (0= Open,1= Close)	---	0	1	R	R
190	190	190	Digital output 1 pcoe4 (0= Open,1= Close)	---	0	1	R	R
191	191	191	Digital output 2 pcoe4 (0= Open,1= Close)	---	0	1	R	R
192	192	192	Digital output 3 pcoe4 (0= Open,1= Close)	---	0	1	R	R
193	193	193	Digital output 4 pcoe4 (0= Open,1= Close)	---	0	1	R	R
194	194	194	Digital output 1 pcoe5 (0= Open,1= Close)	---	0	1	R	R
195	195	195	Digital output 2 pcoe5 (0= Open,1= Close)	---	0	1	R	R
196	196	196	Digital output 3 pcoe5 (0= Open,1= Close)	---	0	1	R	R
197	197	197	Digital output 4 pcoe5 (0= Open,1= Close)	---	0	1	R	R
198	198	198	Digital output 1 EEV1 (0= Open,1= Close)	---	0	1	R	R
199	199	199	Digital output 2 EEV1 (0= Open,1= Close)	---	0	1	R	R
220	220	220	AL001 - Warning alarm	---	0	1	R	R
221	221	221	AL002 - Not serious alarm	---	0	1	R	R
222	222	222	AL003 - Serious alarm	---	0	1	R	R
224	224	224	AL004 - Circuit 1 alarm	---	0	1	R	R
225	225	225	AL005 - Circuit 2 alarm	---	0	1	R	R
230	230	230	AL010 - Clock alarm	---	0	1	R	R
231	231	231	AL011 - pLAN Disconnect	---	0	1	R	R
232	232	232	AL012 - BMS 1 Offline alarm	---	0	1	R	R
233	233	233	AL013 - BMS 2 Offline alarm	---	0	1	R	R
234	234	234	AL014 - Inlet temp. probe 1 alarm	---	0	1	R	R
235	235	235	AL015 - Inlet temp. probe 2 alarm	---	0	1	R	R
236	236	236	AL016 - Inlet temp. probe 3 alarm	---	0	1	R	R
237	237	237	AL017 - Outlet temp. probe 1 alarm	---	0	1	R	R
238	238	238	AL018 - Outlet temp. probe 2 alarm	---	0	1	R	R
239	239	239	AL019 - Outlet temp. probe 3 alarm	---	0	1	R	R
240	240	240	AL020 - Valve 1 inlet water temp. probe alarm	---	0	1	R	R
241	241	241	AL021 - Valve 1 outlet water temp. probe alarm	---	0	1	R	R
242	242	242	AL022 - Valve 1 bypass water temp. probe alarm	---	0	1	R	R
243	243	243	AL023 - Valve 2 inlet water temp. probe alarm	---	0	1	R	R
244	244	244	AL024 - Valve 2 outlet water temp. probe alarm	---	0	1	R	R
245	245	245	AL025 - Valve 2 bypass water temp. probe alarm	---	0	1	R	R
246	246	246	AL026 - Coil temp. probe alarm	---	0	1	R	R
247	247	247	AL027 - Coil temp. probe alarm	---	0	1	R	R
248	248	248	AL028 - Inlet humidity probe alarm	---	0	1	R	R

DIGITAL VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
249	249	249	AL029 - Outlet humidity probe alarm	---	0	1	R	R
250	250	250	AL030 - External air probe alarm	---	0	1	R	R
251	251	251	AL031 - Low press. C1 probe alarm	---	0	1	R	R
252	252	252	AL032 - Low press. C2 probe alarm	---	0	1	R	R
253	253	253	AL033 - High press. C1 probe alarm	---	0	1	R	R
254	254	254	AL034 - High press. C1 probe alarm	---	0	1	R	R
255	255	255	AL035 - Suction temp. C1 probe alarm	---	0	1	R	R
256	256	256	AL036 - Suction temp. C2 probe alarm	---	0	1	R	R
257	257	257	AL037 - Discharge temp. C1 probe alarm	---	0	1	R	R
258	258	258	AL038 - Discharge temp. C2 probe alarm	---	0	1	R	R
259	259	259	AL039 - Inlet condenser temp. probe alarm	---	0	1	R	R
260	260	260	AL040 - Inlet hot water temp. probe alarm	---	0	1	R	R
261	261	261	AL041 - DP probe alarm	---	0	1	R	R
262	262	262	AL042 - Water flow valve 1 probe alarm	---	0	1	R	R
263	263	263	AL043 - Water flow valve 2 probe alarm	---	0	1	R	R
264	264	264	AL044 - Electrical panel temp. probe alarm	---	0	1	R	R
265	265	265	AL045 - Analog request alarm	---	0	1	R	R
266	266	266	AL046 - Airflow alarm by switch	---	0	1	R	R
267	267	267	AL047 - Airflow alarm by probe	---	0	1	R	R
268	268	268	AL048 - Dirty filter alarm	---	0	1	R	R
269	269	269	AL049 - Thermal fan alarm	---	0	1	R	R
270	270	270	AL050 - Power supply alarm	---	0	1	R	R
271	271	271	AL051 - Heater step 1 alarm	---	0	1	R	R
272	272	272	AL052 - Heater step 2 alarm	---	0	1	R	R
273	273	273	AL053 - Low pressure C1 alarm by pressostat	---	0	1	R	R
274	274	274	AL054 - Low pressure C2 alarm by pressostat	---	0	1	R	R
275	275	275	AL055 - High pressure C1 alarm by pressostat	---	0	1	R	R
276	276	276	AL056 - High pressure C2 alarm by pressostat	---	0	1	R	R
277	277	277	AL057 - Low pressure C1 alarm by probe	---	0	1	R	R
278	278	278	AL058 - Low pressure C2 alarm by probe	---	0	1	R	R
279	279	279	AL059 - High pressure C1 alarm by probe	---	0	1	R	R
280	280	280	AL060 - High pressure C2 alarm by probe	---	0	1	R	R
281	281	281	AL061 - Thermal head comp. inverter 1	---	0	1	R	R
282	282	282	AL062 - Thermal head comp. inverter 2	---	0	1	R	R
283	283	283	AL063 - Flow switch valve 1 alarm	---	0	1	R	R
284	284	284	AL064 - Flow switch valve 1 alarm	---	0	1	R	R
285	285	285	AL065 - External humidifier alarm	---	0	1	R	R
286	286	286	AL066 - Flooding alarm	---	0	1	R	R
287	287	287	AL067 - Fire/smoke alarm	---	0	1	R	R
288	288	288	AL068 - Settable alarm 1	---	0	1	R	R
289	289	289	AL069 - Settable alarm 2	---	0	1	R	R
290	290	290	AL070 - Settable alarm 3	---	0	1	R	R

DIGITAL VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
291	291	291	AL071 - High room temp. alarm	---	0	1	R	R
292	292	292	AL072 - Low room temp. alarm	---	0	1	R	R
293	293	293	AL073 - High room humidity alarm	---	0	1	R	R
294	294	294	AL074 - Low room humidity alarm	---	0	1	R	R
295	295	295	AL075 - Freecooling low temperature alarm	---	0	1	R	R
296	296	296	AL076 - Start failure envelope 1 alarm	---	0	1	R	R
297	297	297	AL077 - Max discharge temp. envelope 1 alarm	---	0	1	R	R
298	298	298	AL078 - Max condensing pressure envelope 1 alarm	---	0	1	R	R
299	299	299	AL079 - Min evaporating pressure envelope 1 alarm	---	0	1	R	R
300	300	300	AL080 - Max evaporating pressure envelope 1 alarm	---	0	1	R	R
301	301	301	AL081 - Min differential pressure envelope 1 alarm	---	0	1	R	R
302	302	302	AL082 - Min pressure ratio envelope 1 alarm	---	0	1	R	R
303	303	303	AL083 - Start failure envelope 2 alarm	---	0	1	R	R
304	304	304	AL084 - Max discharge temp. envelope 1 alarm	---	0	1	R	R
305	305	305	AL085 - Max condensing pressure envelope 2 alarm	---	0	1	R	R
306	306	306	AL086 - Min evaporating pressure envelope 2 alarm	---	0	1	R	R
307	307	307	AL087 - Max evaporating pressure envelope 2 alarm	---	0	1	R	R
308	308	308	AL088 - Min differential pressure envelope 2 alarm	---	0	1	R	R
309	309	309	AL089 - Min pressure ratio envelope 2 alarm	---	0	1	R	R
310	310	310	AL090 - Working hours compressor 1 alarm	---	0	1	R	R
311	311	311	AL091 - Working hours compressor 2 alarm	---	0	1	R	R
312	312	312	AL092 - Working hours compressor 3 alarm	---	0	1	R	R
313	313	313	AL093 - Working hours compressor 3 alarm	---	0	1	R	R
314	314	314	AL094 - Working hours compressor 5 alarm	---	0	1	R	R
315	315	315	AL095 - Working hours compressor 6 alarm	---	0	1	R	R
316	316	316	AL096 - Working hours fans alarm	---	0	1	R	R
317	317	317	AL097 - Working hours filter alarm	---	0	1	R	R
318	318	318	AL098 - Working hours humidifier alarm	---	0	1	R	R
319	319	319	AL097 - Working hours heater alarm	---	0	1	R	R
320	320	320	AL100 - Working hours FC alarm	---	0	1	R	R
321	321	321	AL101 - pCOE 1 offline alarm	---	0	1	R	R
322	322	322	AL102 - pCOE 2 offline alarm	---	0	1	R	R
323	323	323	AL103 - pCOE 3 offline alarm	---	0	1	R	R
324	324	324	AL104 - pCOE 4 offline alarm	---	0	1	R	R
325	325	325	AL105 - pCOE 5 offline alarm	---	0	1	R	R
326	326	326	AL106 - EEV 1 offline alarm	---	0	1	R	R
327	327	327	AL107 - EEV 1 Lan error	---	0	1	R	R
328	328	328	AL108 - EEV 1 Eprom error	---	0	1	R	R
329	329	329	AL109 - EEV 1 Step motor error	---	0	1	R	R
330	330	330	AL110 - EEV 1 Firmware not compatible	---	0	1	R	R
331	331	331	AL111 - EEV 2 offline alarm	---	0	1	R	R
332	332	332	AL112 - EEV 2 Lan error	---	0	1	R	R

DIGITAL VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
333	333	333	AL113 - EEV 2 Eprom error	---	0	1	R	R
334	334	334	AL114 - EEV 2 Step motor error	---	0	1	R	R
335	335	335	AL115 - EEV 2 Firmware not compatible	---	0	1	R	R
336	336	336	AL116 - General alarm inverter 1	---	0	1	R	R
337	337	337	AL117 - Display loss alarm inverter 1	---	0	1	R	R
338	338	338	AL118 - Safe torque Off alarm inverter 1	---	0	1	R	R
339	339	339	AL119 - STO 1 loss alarm inverter 1	---	0	1	R	R
340	340	340	AL120 - STO 2 loss alarm inverter 1	---	0	1	R	R
341	341	341	AL121 - Underload alarm inverter 1	---	0	1	R	R
342	342	342	AL122 - Stall motor alarm inverter 1	---	0	1	R	R
343	343	343	AL123 - Encoder error inverter 1	---	0	1	R	R
344	344	344	AL124 - Parameter setting error inverter 1	---	0	1	R	R
345	345	345	AL125 - SW Incompatible alarm inverter 1	---	0	1	R	R
346	346	346	AL126 - Configuration file error inverter 1	---	0	1	R	R
347	347	347	AL127 - Configuration file reading error inverter 1	---	0	1	R	R
348	348	348	AL128 - Overcurrent motor inverter 1	---	0	1	R	R
349	349	349	AL129 - Read current error inverter 1	---	0	1	R	R
350	350	350	AL130 - High voltage DC BUS alarm inverter 1	---	0	1	R	R
351	351	351	AL131 - Low voltage DC BUS alarm inverter 1	---	0	1	R	R
352	352	352	AL132 - High temperature IGBT alarm inverter 1	---	0	1	R	R
353	353	353	AL133 - High temperature CB alarm inverter 1	---	0	1	R	R
354	354	354	AL134 - Thermal switch error inverter 1	---	0	1	R	R
355	355	355	AL135 - Force trip inverter 1	---	0	1	R	R
356	356	356	AL136 - Error identification motor inverter 1	---	0	1	R	R
357	357	357	AL137 - Error high speed motor inverter 1	---	0	1	R	R
358	358	358	AL138 - Earth fault inverter 1	---	0	1	R	R
359	359	359	AL139 - Short circuit alarm inverter 1	---	0	1	R	R
360	360	360	AL140 - Wiring error inverter 1	---	0	1	R	R
361	361	361	AL141 - Power phase loss alarm inverter 1	---	0	1	R	R
362	362	362	AL142 - Motor Phase Loss alarm inverter 1	---	0	1	R	R
363	363	363	AL143 - Drive internal error inverter 1	---	0	1	R	R
364	364	364	AL144 - Communication error inverter 1	---	0	1	R	R
365	365	365	AL145 - Motor overload alarm inverter 1	---	0	1	R	R
366	366	366	AL146 - Inverter overload alarm inverter 1	---	0	1	R	R
367	367	367	AL147 - Overtorque alarm inverter 1	---	0	1	R	R
368	368	368	AL148 - Excessive speed deviation alarm inverter 1	---	0	1	R	R
369	369	369	AL149 - No pulses received alarm inverter 1	---	0	1	R	R
370	370	370	AL150 - Memory error inverter 1	---	0	1	R	R
371	371	371	AL151 - Control board error inverter 1	---	0	1	R	R
372	372	372	AL152 - Output current imbalance inverter 1	---	0	1	R	R
373	373	373	AL153 - High speed to restart alarm inverter 1	---	0	1	R	R
374	374	374	AL154 - Current offset fault alarm inverter 1	---	0	1	R	R

DIGITAL VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
375	375	375	AL155 - Run command error inverter 1	---	0	1	R	R
376	376	376	AL156 - Fan error inverter 1	---	0	1	R	R
377	377	377	AL157 - Driver disable alarm inverter 1	---	0	1	R	R
378	378	378	AL158 - Analog reading error inverter 1	---	0	1	R	R
379	379	379	AL159 - PFC error inverter 1	---	0	1	R	R
380	380	380	AL160 - Speed control error inverter 1	---	0	1	R	R
381	381	381	AL161 - Overcurrent acceleration alarm inverter 1	---	0	1	R	R
382	382	382	AL162 - Overcurrent constant speed alarm inverter 1	---	0	1	R	R
383	383	383	AL163 - Overcurrent deceleration alarm inverter 1	---	0	1	R	R
384	384	384	AL164 - Current greater than 150 alarm inverter 1	---	0	1	R	R
385	385	385	AL165 - Abnormal condition alarm inverter 1	---	0	1	R	R
386	386	386	AL166 - Driver high temperature alarm inverter 1	---	0	1	R	R
387	387	387	AL167 - Driver low temperature alarm inverter 1	---	0	1	R	R
388	388	388	AL168 - High current HW alarm inverter 1	---	0	1	R	R
389	389	389	AL169 - Default parameter error inverter 1	---	0	1	R	R
390	390	390	AL170 - Ripple DC BUS error inverter 1	---	0	1	R	R
391	391	391	AL171 - Autotuning error inverter 1	---	0	1	R	R
392	392	392	AL172 - Offline inverter 1	---	0	1	R	R
393	393	393	AL173 - Write parameter error inverter 1	---	0	1	R	R
396	396	396	AL176 - General alarm inverter 2	---	0	1	R	R
397	397	397	AL177 - Display loss alarm inverter 2	---	0	1	R	R
398	398	398	AL178 - Safe torque Off alarm inverter 2	---	0	1	R	R
399	399	399	AL179 - STO 1 loss alarm inverter 2	---	0	1	R	R
400	400	400	AL180 - STO 2 loss alarm inverter 2	---	0	1	R	R
401	401	401	AL181 - Underload alarm inverter 2	---	0	1	R	R
402	402	402	AL182 - Stall motor alarm inverter 2	---	0	1	R	R
403	403	403	AL183 - Encoder error inverter 2	---	0	1	R	R
404	404	404	AL184 - Parameter setting error inverter 2	---	0	1	R	R
405	405	405	AL185 - SW Incompatible alarm inverter 2	---	0	1	R	R
406	406	406	AL186 - Configuration file error inverter 2	---	0	1	R	R
407	407	407	AL187 - Configuration file reading error inverter 2	---	0	1	R	R
408	408	408	AL188 - Overcurrent motor inverter 2	---	0	1	R	R
409	409	409	AL189 - Read current error inverter 2	---	0	1	R	R
410	410	410	AL190 - High voltage DC BUS alarm inverter 2	---	0	1	R	R
411	411	411	AL191 - Low voltage DC BUS alarm inverter 2	---	0	1	R	R
412	412	412	AL192 - High temperature IGBT alarm inverter 2	---	0	1	R	R
413	413	413	AL193 - High temperature CB alarm inverter 2	---	0	1	R	R
414	414	414	AL194 - Thermal switch error inverter 2	---	0	1	R	R
415	415	415	AL195 - Force trip inverter 2	---	0	1	R	R
416	416	416	AL196 - Error identification motor inverter 2	---	0	1	R	R
417	417	417	AL197 - Error high speed motor inverter 2	---	0	1	R	R
418	418	418	AL198 - Earth fault inverter 2	---	0	1	R	R

DIGITAL VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
419	419	419	AL199 - Short circuit alarm inverter 2	---	0	1	R	R
420	420	420	AL200 - Wiring error inverter 2	---	0	1	R	R
421	421	421	AL201 - Power phase loss alarm inverter 2	---	0	1	R	R
422	422	422	AL202 - Motor Phase Loss alarm inverter 2	---	0	1	R	R
423	423	423	AL203 - Drive internal error inverter 2	---	0	1	R	R
424	424	424	AL204 - Communication error inverter 2	---	0	1	R	R
425	425	425	AL205 - Motor overload alarm inverter 2	---	0	1	R	R
426	426	426	AL206 - Inverter overload alarm inverter 2	---	0	1	R	R
427	427	427	AL207 - Overtorque alarm inverter 2	---	0	1	R	R
428	428	428	AL208 - Excessive speed deviation alarm inverter 2	---	0	1	R	R
429	429	429	AL209 - No pulses received alarm inverter 2	---	0	1	R	R
430	430	430	AL210 - Memory error inverter 2	---	0	1	R	R
431	431	431	AL211 - Control board error inverter 2	---	0	1	R	R
432	432	432	AL212 - Output current imbalance inverter 2	---	0	1	R	R
433	433	433	AL213 - High speed to restart alarm inverter 2	---	0	1	R	R
434	434	434	AL214 - Current offset fault alarm inverter 2	---	0	1	R	R
435	435	435	AL215 - Run command error inverter 2	---	0	1	R	R
436	436	436	AL216 - Fan error inverter 2	---	0	1	R	R
437	437	437	AL217 - Driver disable alarm inverter 2	---	0	1	R	R
438	438	438	AL218 - Analog reading error inverter 2	---	0	1	R	R
439	439	439	AL219 - PFC error inverter 2	---	0	1	R	R
440	440	440	AL220 - Speed control error inverter 2	---	0	1	R	R
441	441	441	AL221 - Overcurrent acceleration alarm inverter 2	---	0	1	R	R
442	442	442	AL222 - Overcurrent constant speed alarm inverter 2	---	0	1	R	R
443	443	443	AL223 - Overcurrent deceleration alarm inverter 2	---	0	1	R	R
444	444	444	AL224 - Current greater than 150 alarm inverter 2	---	0	1	R	R
445	445	445	AL225 - Abnormal condition alarm inverter 2	---	0	1	R	R
446	446	446	AL226 - Driver high temperature alarm inverter 2	---	0	1	R	R
447	447	447	AL227 - Driver low temperature alarm inverter 2	---	0	1	R	R
448	448	448	AL228 - High current HW alarm inverter 2	---	0	1	R	R
449	449	449	AL229 - Default parameter error inverter 2	---	0	1	R	R
450	450	450	AL230 - Ripple DC BUS error inverter 2	---	0	1	R	R
451	451	451	AL231 - Autotuning error inverter 2	---	0	1	R	R
452	452	452	AL232 - Offline inverter 2	---	0	1	R	R
453	453	453	AL233 - Write parameter error inverter 2	---	0	1	R	R
456	456	456	AL233 - CPY internal memory error	---	0	1	R	R
457	457	457	AL237 - CPY configuration parameter error	---	0	1	R	R
458	458	458	AL238 - CPY memory backup error	---	0	1	R	R
459	459	459	AL239 - CPY communication error	---	0	1	R	R
460	460	460	AL240 - CPY high current alarm	---	0	1	R	R
461	461	461	AL241 - CPY low production alarm	---	0	1	R	R
462	462	462	AL242 - CPY high conductivity alarm	---	0	1	R	R

DIGITAL VARIABLE

Carel Address	Modbus RS485 Address	Modbus TCP-IP Address	Description	UOM	Min	Max	Read/Write BMS 1	Read/Write BMS 2
463	463	463	AL243 - CPY high water level alarm	---	0	1	R	R
464	464	464	AL244 - CPY lack of water alarm	---	0	1	R	R
465	465	465	AL245 - CPY drain valve problem alarm	---	0	1	R	R
466	466	466	AL246 - CPY cylinder depleted alarm	---	0	1	R	R
467	467	467	AL247 - CPY cylinder dirty alarm	---	0	1	R	R
468	468	468	AL248 - CPY cylinder foam alarm	---	0	1	R	R
469	469	469	AL249 - CPY offline alarm	---	0	1	R	R
470	470	470	AL250 - Hot gas pressure circuit 1 probe alarm	---	0	1	R	R
471	471	471	AL251 - Hot gas pressure circuit 2 probe alarm	---	0	1	R	R
472	472	472	AL252 - Alarm variation general/cooling setpoint by analog input	---	0	1	R	R
473	473	473	AL253 - Alarm variation heating setpoint by analog input	---	0	1	R	R
474	474	474	AL254 - Alarm variation humidity setpoint by analog input	---	0	1	R	R
475	475	475	AL255 - Low cooling dT alarm	---	0	1	R	R
476	476	476	AL256 - Low Heating dT alarm	---	0	1	R	R
541	541	541	Configurable alarm 1 status	---	0	1	R	R
542	542	542	Configurable alarm 2 status	---	0	1	R	R
543	543	543	Configurable alarm 3 status	---	0	1	R	R
544	544	544	Configurable alarm 4 status	---	0	1	R	R
545	545	545	Configurable alarm 5 status	---	0	1	R	R
546	546	546	Configurable alarm 6 status	---	0	1	R	R
550	550	550	General alarm (0= Ok, 1= Alarm)	---	0	1	R	R
551	551	551	Unit ready (0= Not ready, 1= Ready)	---	0	1	R	R
552	552	552	Unit On/Off status (0= Off, 1= On)	---	0	1	R	R
553	553	553	Unit off by alarm (0= Ok, 1= Alarm)	---	0	1	R	R
554	554	554	Compressor 1 status (0= Off, 1= On)	---	0	1	R	R
555	555	555	Compressor 2 status (0= Off, 1= On)	---	0	1	R	R
556	556	556	Compressor 3 status (0= Off, 1= On)	---	0	1	R	R
557	557	557	Compressor 4 status (0= Off, 1= On)	---	0	1	R	R
558	558	558	Compressor 5 status (0= Off, 1= On)	---	0	1	R	R
559	559	559	Compressor 6 status (0= Off, 1= On)	---	0	1	R	R
560	560	560	Compressors status (0= Off, 1= On)	---	0	1	R	R
561	561	561	Power line active (0= Line A, 1= Line B)	---	0	1	R	R

