Electronic Controller for Compressor Racks

XC1008D -XC1011D- XC1015D and VGC810

Instructions Manual

INDEX

1. GENERAL WARNING

1.1 ⚠ Please read before using this manual

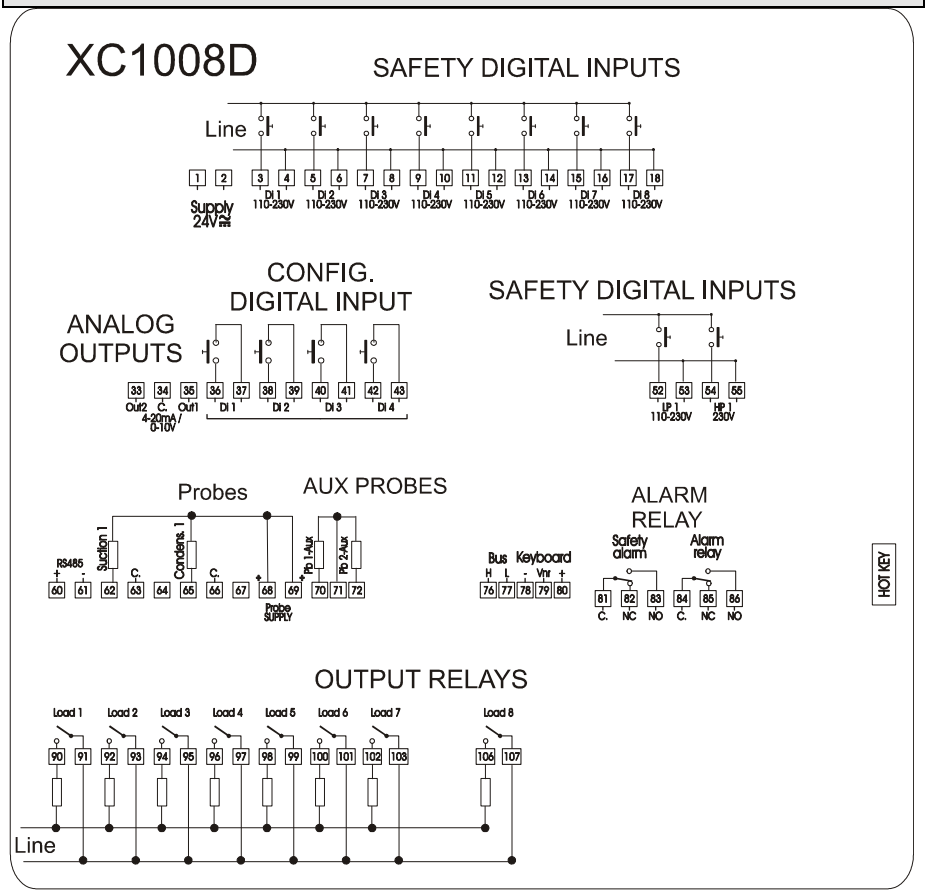
- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.

1.2 ⚠ Safety Precautions

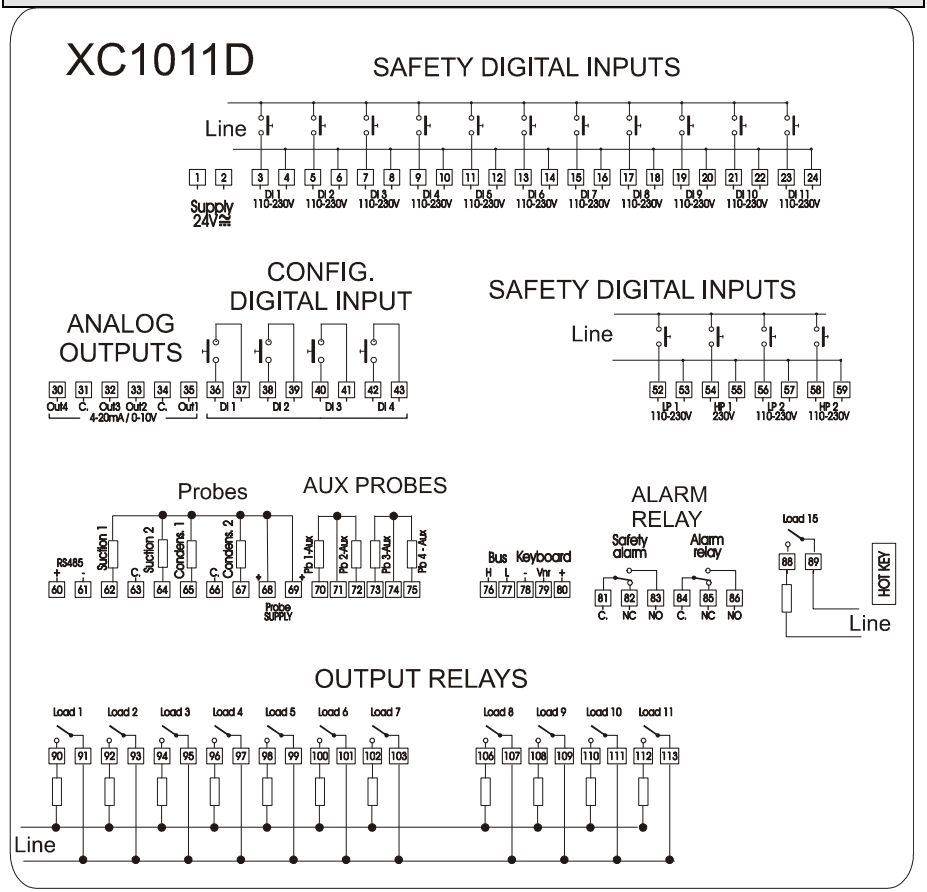
- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "DIXELL S.p.A." (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- Fit the probe where it is not accessible by the end user.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

2. Wiring connections

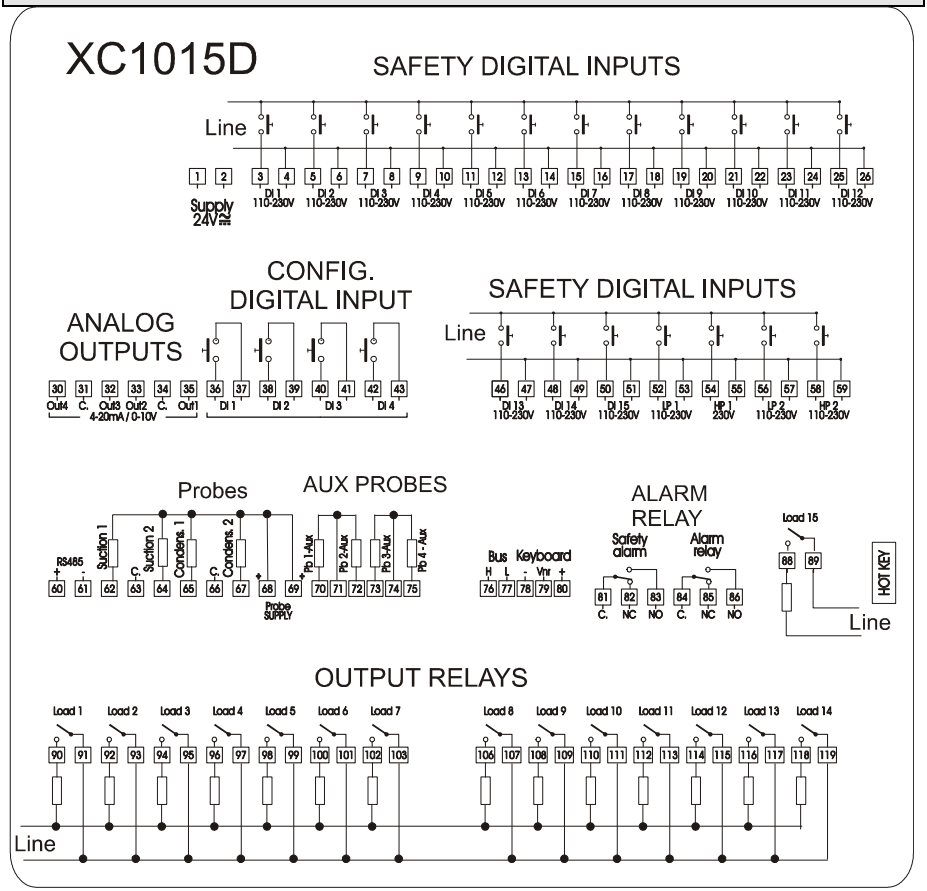
2.1 XC1008D



2.2 XC1011D


XC1011D
SAFETY DIGITAL INPUTS
Line
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Supply 24V
DI 1 110-230V
DI 2 110-230V
DI 3 110-230V
DI 4 110-230V
DI 5 110-230V
DI 6 110-230V
DI 7 110-230V
DI 8 110-230V
DI 9 110-230V
DI 10 110-230V
DI 11 110-230V
CONFIG. DIGITAL INPUT
ANALOG OUTPUTS
30 31 32 33 34 35 36 37 38 39 40 41 42 43
Out4 C. Out3 Out2 C. Out1
4-20mA / 0-10V
DI 1 DI 2 DI 3 DI 4
SAFETY DIGITAL INPUTS
Line
52 53 54 55 56 57 58 59
LP 1 110-230V
HP 1 230V
LP 2 110-230V
HP 2 110-230V
Probes
AUX PROBES
RS485 + - Suction 1 C Suction 2 Condens. 1 C Condens. 2
60 61 62 63 64 65 66 67 68 69
Probe SUPPLY
Pb 1-Aux Pb 2-Aux Pb 3-Aux Pb 4 - Aux
70 71 72 73 74 75
ALARM RELAY
Bus Keyboard
H L - Vnr +
76 77 78 79 80
Safety alarm
Alarm relay
81 82 83 84 85 86
C. NC NO C. NC NO
Load 15
88 89
HOT KEY
Line
OUTPUT RELAYS
Load 1 Load 2 Load 3 Load 4 Load 5 Load 6 Load 7
90 91 92 93 94 95 96 97 98 99 100 101 102 103
Load 8 Load 9 Load 10 Load 11
106 107 108 109 110 111 112 113
Line

2.3 XC1015D



2.4 Descriptions of the wiring connections

1 - 2 Power supply: ***WARNING:*** THE SUPPLY IS **24Vac/dc**

3 –26 Digital inputs for safeties of compressors and fans – *main voltage*. When an d. i. is activated, the corresponding output is switched OFF. ***Please note: the digital input 1 is linked to the relay 1 (oA1); d.i. 2 to relay 2 (oA2), etc.***

30-31Analog output 4 (0-10V or 4-20mA depends on the parameter 3Q1)
31-32 Analog output 3 (0-10V or 4-20mA depends on the parameter 3Q1)
34-35 Analog output 1 (0-10V or 4-20mA depends on the parameter 1Q1)
33-34 Analog output 2 (0-10V or 4-20mA depends on the parameter 1Q1)

36-37 Configurable digital input 1 (free voltage)
38-39 Configurable digital input 2 (free voltage)

40-41 Configurable digital input 3 (free voltage)
42-43Configurable digital input 4 (free voltage)

46-51 Digital inputs for safeties of compressors and fans – *main voltage*. When an d. i. is activated, the corresponding output is switched OFF. ***Please note: the digital input 1 is linked to the relay 1 (oA1); d.i. 2 to relay 2 (oA2), etc.***

52 - 53 Low pressure-switch input for circuit 1: input at the same voltage of loads.

54 - 55 High pressure-switch input for circuit 1: input at the same voltage of loads.

56 - 57 Low pressure-switch input for circuit 2: input at the same voltage of loads.

58 - 59 High pressure-switch input for circuit 2: input at the same voltage of loads.

60-61 RS485 output
62 –(63) or (68): Suction probe input for circuit 1:
with **AI1 = cur** or **rat** use 62 -68
with **AI1 = ntc** or **ptc** use 62 -63

64 –(63) or (68): Suction probe input for circuit 2:
with **AI1 = cur** or **rat** use 64 -68
with **AI1 = ntc** or **ptc** use 64 -63

65 –(66) or (69): Condensing probe input for circuit 1:
with **AI8 = cur** or **rat** use 65 -69
with **AI8 = ntc** or **ptc** use 65 -66

67 –(66) or (69): Condensing probe input for circuit 2:
with **AI8 = cur** or **rat** use 67 -69
with **AI8 = ntc** or **ptc** use 67 -66

70-71 Auxiliary probe 1

71-72 Auxiliary probe 2

73-74 Auxiliary probe 3

74-75 Auxiliary probe 4

78- 79- 80 Keyboard

81-82-83: **Safety relay:** the normally open contact is close when the instrument looses the control or is switched OFF

84-85-86: **Alarm relay**:

88 - 103 and 106 - 119 Relay configurable outputs for compressors, fans, alarms and aux. The functioning of the relays depends on the setting of the correspondent oAi.

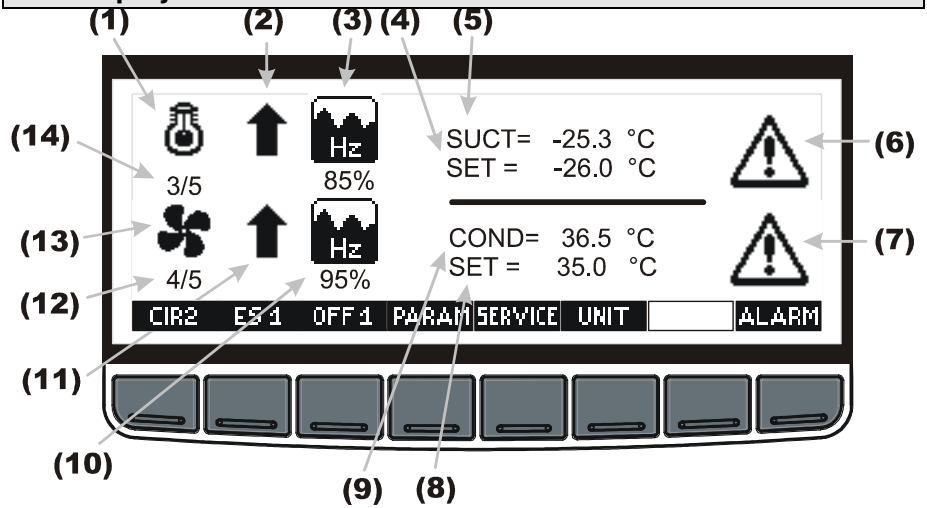
3. User interface

3.1 What is displayed when the keyboard is connected to the XC1015D

Where:
release: Rel Firmware XC1000D / release OS Visograph / release Program Visograph

Push the ENTER key to enter the standard visualization

3.2 Display visualization



(1) **Symbol of compressor**: it's present for the following configuration of the parameter C0. C0 = 1A0D; 1A1D, 2A0D, 2A1D, "2A2D

(2) **Status of the suction section**:

The pressure (temperature) is below the regulation band and the capacity of the plant is decreasing

The pressure (temperature) is above the regulation band and the capacity of the plant is increasing

(3) **Analog output status for frequency compressor:** it's present only if a frequency compressor is used. It displays the percentage of the analog output driving the inverter.

(4) **Suction pressure (temperature) set point:** : it's present for the following configuration of the parameter C0: 1A0D; 1A1D, 2A0D, 2A1D, "2A2D

(5) **Current value of suction pressure (temperature):** it's present for the following configuration of the parameter C0: 1A0D; 1A1D, 2A0D, 2A1D, "2A2D

(6) **Alarm:** it's display when an alarm happens in suction section

(7) **Alarm:** it's display when an alarm happens in delivery section

(8) **Delivery pressure (temperature) set point:** it's present for the following configuration of the parameter C0: 0A1D; 1A1D, 0A2D, 1A2D, "2A2D

(9) **Current value of delivery pressure (temperature):** it's present for the following configuration of the parameter C0: 0A1D; 1A1D, 0A2D, 1A2D, "2A2D

(10) **Analog output status for inverter for fan:** it's present only if an inverter for fan is used. It displays the percentage of the analog output driving the inverter.

(11) **Status of the delivery section**:

 The condenser pressure (temperature) is below the regulation band and the number of fans is decreasing

 The condenser pressure (temperature) is above the regulation band and the number of fans is increasing

(12) **Number of fans activated** / **Total number of fans** it's present for the following configuration of the parameter C0.
C0: 0A1D; 1A1D, 0A2D, 1A2D, "2A2D

(13) **Symbol of fan**: it's present for the following configuration of the parameter C0.
C0: 0A1D; 1A1D, 0A2D, 1A2D, "2A2D

(14) **Number of compressors and steps activated** / **Total number of compressors and steps.** it's present for the following configuration of the parameter C0.
C0 = 1A0D; 1A1D, 2A0D, 2A1D, 2A2D

Keys

ALARM **Alarm:** to enter the alarm menu

PARAM **Parameter:** to enter the parameter programming

SERVICE **Service:** to enter the Service menu

UNIT **Measurement unit:** to switch the probe visualization and set point from pressure to temperature and vice versa

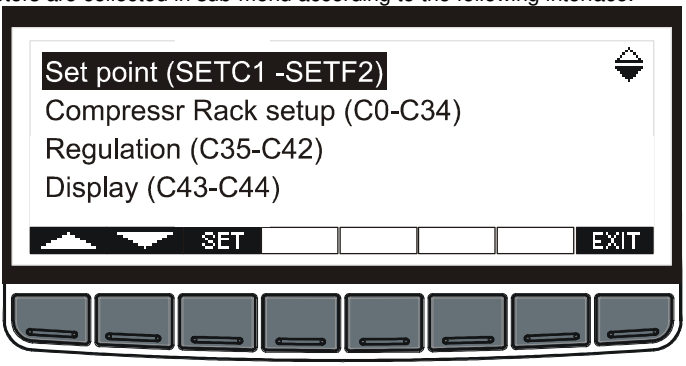
OFF 1 **To switch the controller off:** hold pushed for 10s to switch the controller off (it's enabled only if the parameter oT9 = yES)

ES 1 **Energy saving:** hold pushed for 10s to enable the energy saving cycle (the SET label starts flashing)

CIR2 **Circuit 2:** to pass to visualization of the variables of the second circuit, It's present for the following configuration of the parameter C0: 0A2D; 2A0D, 2A2D.

3.3 Programming

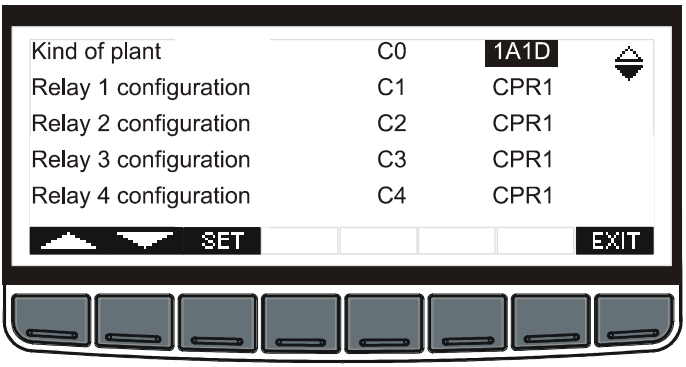
Push the PARAM key and the programming menu is entered.
The parameters are collected in sub-menu according to the following interface.



The parameters sub menu are the following:

Set Point (SETC1-SETF2)
Compressor Rack setup (C0-C34)
Regulation (C35-C42)
Analog Inputs (Ai1-Ai27)
Safety Digital Inputs (Di1-Di13)
Digital Inputs (Di14-Di27)
Display (C43-C44)
Compressor Action (CP1-CP8)
Safety Compressors (CP9-CP18)
Fan Action (F1-F8)
Safety Fans (F9-F10)
Compressor Alarms (AC1-AC19)
Fan Alarms (AF1-AF17)
Dynamic Setpoint Suction (o1-o8)
Analog Outputs 1-2 (1Q1-2Q16)
Analog Outputs 3-4 (3Q1-4Q16)
Auxiliary Outputs (AR1-AR12)
Other (oT1-OT9)

Push the SET key to enter a menu and the parameter with their value will be displayed: see below picture.



Push the SET key and use the **UP** and **DOWN** keys to modify the value.
Then push the SET key to store the new value and move to the following parameter.

NOTE: Pushing the **EXIT** button the initial screen shot is displayed.

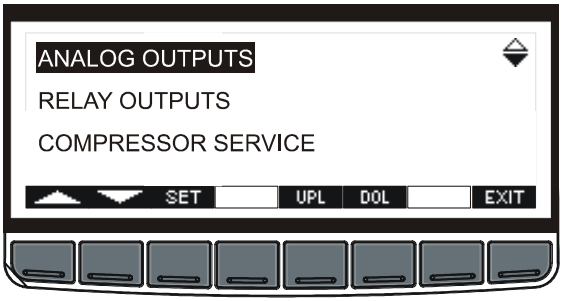
4. SERVICE MENU

The service menu collect the main functions of the controller.
From the Service menu is possible to:

- see the values of analog outputs
- see the status of compressor relay
- operate a maintenance section
- see the status of safety and configurable digital inputs
- see the values of the probes
- set the real time clock
- use the HOT KEY to program the instrument or to program the HOT KEY

4.1 How to enter the Service menu

From the main display screen push the SERVICE button and the SERVICE menu is entered. See below picture:



The Service sub-menu are the following:

```
ANALOG OUTPUTS
RELAY OUTPUTS
COMPRESSOR SERVICE
DIGITAL INPUTS
PROBES
REAL TIME CLOCK
```

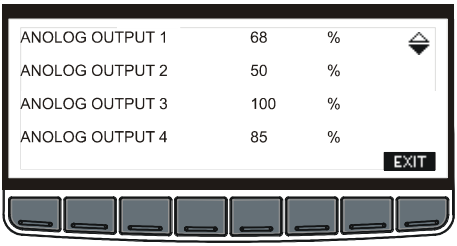
Select one of them with the UP or DOWN keys then push the SET key to enter the sub-menu

4.2 How to see the values of analog outputs

Procedure:

1. Enter the **SERVICE** menu
2. Select **ANALOG OUTPUTS** sub-menu
3. Push the **SET** key.

The **ANALOG OUTPUTS** sub-menu displays the status of the analog outputs of the controller, with the following layout:



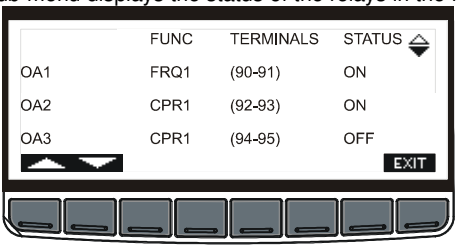
This outputs can be used to drive an external inverter or to repeat a main probe, by means of a signal 4-20mA or 0-10V.

4.3 How to see the status of the relays

Procedure:

1. Enter the **SERVICE** menu
2. Select **RELAY STATUS** sub-menu
3. Push the **SET** key.

The **RELAY STATUS** sub-menu displays the status of the relays in the following format:



4.4 COMPRESSOR SERVICE SUB- MENU – For maintenance sections

By means of the **COMPRESSOR SERVICE** sub-menu is possible to perform a maintenance section, consisting on:

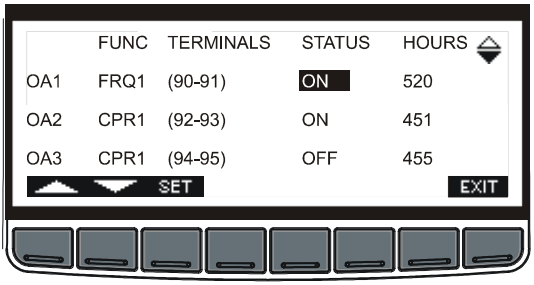
- disabled an output
- check and (eventually) erase the running hour of a load.

4.4.1 How to enter the "COMPRESSOR SERVICE" submenu.

Procedure:

1. Enter the **SERVICE** menu
2. Select **COMPRESSOR SERVICE** sub-menu
3. Push the **SET** key.

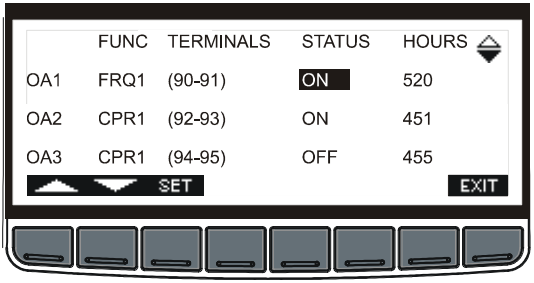
The **COMPRESSOR SERVICE** sub-menu displays the status of the relays with the following layout:



4.4.2 How to disabled/enabled an output during a maintenance section.

To disabled an output during a maintenance session means to exclude the output from the regulation:
To do it act as in the following

1. Enter the **COMPRESSOR SERVICE** sub-menu, as described in the previous paragraph.
2. Select the load by means of the UP and DOWN keys.
3. Push the SET key, then use the UP and DOWN keys to move the status to ON to OFF and vice versa.
4. Confirm the selection by means of the SET key.

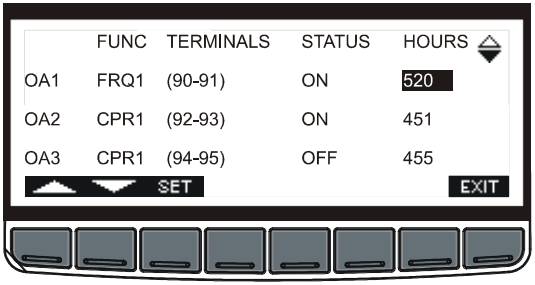


4.4.3 Regulation with some outputs disabled.

If some outputs are disabled they don't take part to the regulation, so the regulation goes on with the other outputs.

4.4.4 How to display the running hours of a load.

The controller memorises the running hours of each load.
To see how long a load has been working enter the **COMPRESSOR SERVICE** sub-menu.
The running hour are displayed with the following layout:



4.4.5 How to erase the running hours of a load

After a maintenance session usually is useful to erase the running our of a load.
To do it act as in the following

1. Enter the **COMPRESSOR SERVICE** sub-menu, as described in the paragraph. 4.4.1.
2. Select the load by means of the UP and DOWN keys.
3. Push the SET key, then use the DOWN key to decrease the running hour of the load..
4. Confirm the setting by means of the SET key.

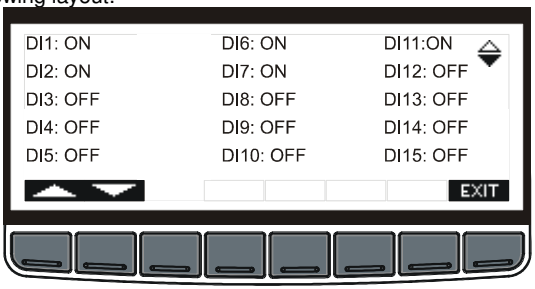
To exit: push the **EXIT** key to come back to the SERVICE menu.

4.5 How to see the status of digital inputs

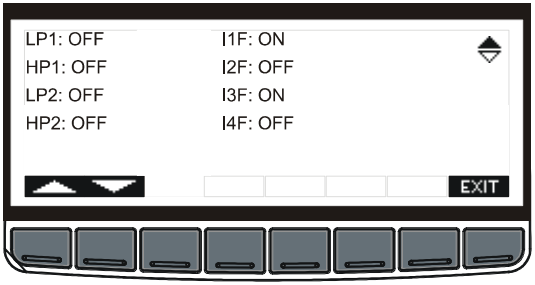
Procedure:

1. Enter the **SERVICE** menu
2. Select **DIGITAL INPUTS** sub-menu
3. Push the **SET** key.

The **DIGITAL INPUTS** sub-menu displays the status of the safety and configurable digital inputs, with the following layout:



Safety digital inputs



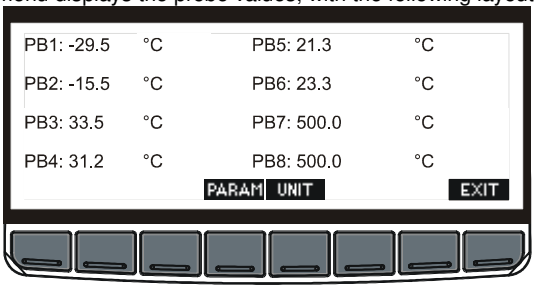
HP, LP and configurable inputs

4.6 How to see the values of the probes

Procedure:

1. Enter the **SERVICE** menu
2. Select **PROBES** sub-menu
3. Push the **SET** key.

The **PROBES** sub-menu displays the probe values, with the following layout:



To **change** the measurement unit, push **UNIT** button.

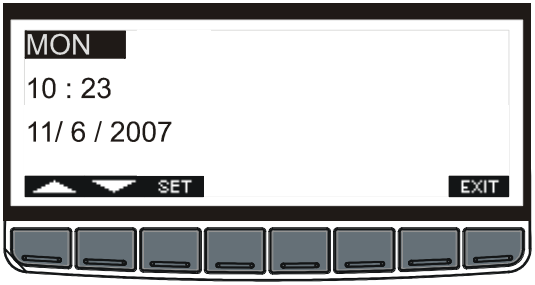
Note: if a probe displays the "500" value, this means that it's not connected/used.

4.7 How to set time and date

Procedure:

1. Enter the **SERVICE** menu
2. Select **REAL TIME CLOCK** sub-menu
3. Push the **SET** key.

The **REAL TIME CLOCK** sub-menu displays time and date, with the following layout:



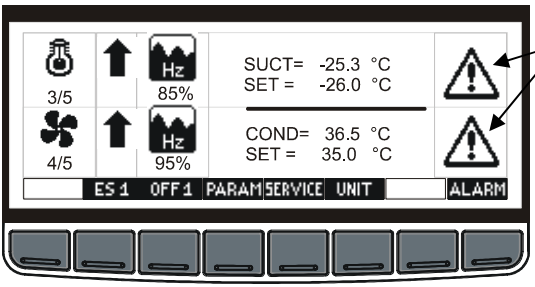
5. Set the day by means of the **UP** and **DOWN** keys.
6. Push the **SET** key, to confirm and pass to the setting of time.
7. Use the same procedure for the date.
8. Then confirm the selection by means of the SET key.

NOTE: to memorise the alarms and to enable the automatic energy saving cycle the real time clock has to be set.

5. Alarms

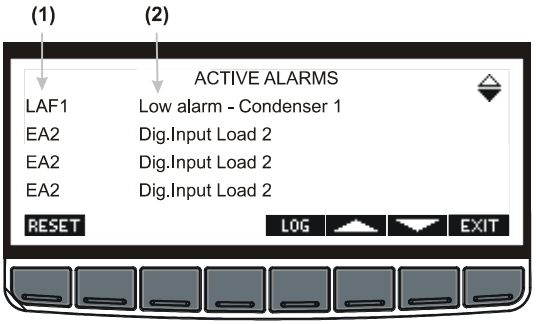
The controller memorises the last 100 alarms happened, together with their start and finish time. To see the alarms follow the following procedure.

5.1 Menu Active alarms



If the alarm icon is flashing on the main display, an alarm is occurring.

Push the **ALARM** key to enter the alarm menu.

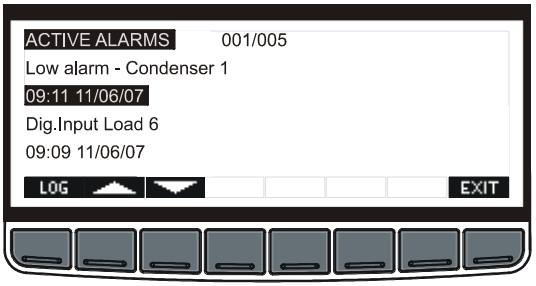


The alarm menu displays the active alarm with the following layout:
(1) = alarm code
(2) = alarm description

Push the **LOG button** to enter the **ALARM ACTIVE** log, as shown in the following picture

5.2 Active alarm log menu

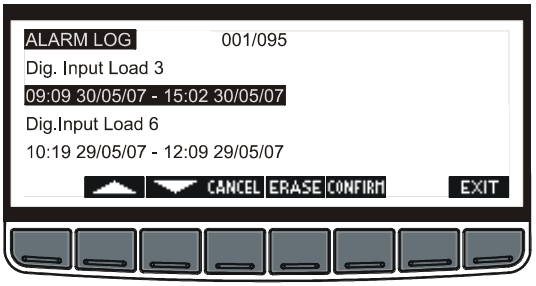
This menu contains all the information concerning the active alarms.
In the first line, it is displayed how many alarms are happening.



It's possible to move through the alarms by the UP and DOWN keys.

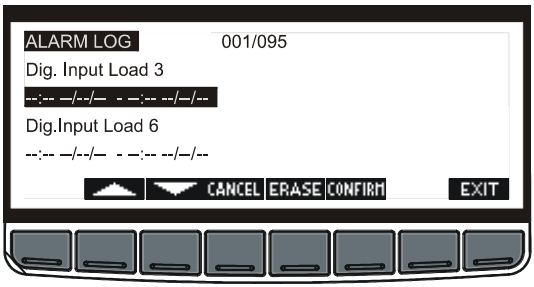
5.3 Active alarm log menu

Push the **LOG button** to enter the **ALARM LOG.**



This menu contains all the memorised alarms. For each alarm the starting time and date and the finish time and date are recorded.

Push the **ERASE button** to delete the whole archive of alarms.
The following display is shown:



Push the **CONFIRM button** to confirm the operation and delete the archive.
Push the **CANCEL button** to cancel the operation and come back to the ALARM LOG menu.

6. Parameters

6.1.1 Compressor Rack setup (C0-C34)

C0 **Kind of plant:** it set the kind of plant.
The following table shows the kind of plant can be set and which probes have to be used

C0	Kind of plant	Pb1	Pb2	Pb3	Pb4
0A1d	Only condenser fan			Delivery 1	
1A0d	Only compressors	Suction 1	-		-
1A1d	Compressors and fans 1 circuit	Suction 1		Delivery 1	
0A2d	Fans of circuit 1 and 2			Delivery 1	Delivery 2
2A0d	Compressors of circuit 1 and 2	Suction 1	Suction 2		
2A1d	Compressors of circuit 1 and 2 – 1 condenser	Suction 1	Suction 2	Delivery 1	-
2A2d	Compressors of circuit 1 and 2 – Fans of circuit 1 and 2	Suction 1	Suction 2	Delivery 1	Delivery 2

C1… C15 Relay 1…15 configuration: by means of parameter **C0 and C1…C15** the plant can be dimensioned according to the number and type of compressors and/or fans and the number of steps for each one.

Each relay according to the configuration of the oA(i) parameter can work as

Frq1 = frequency compressor circuit 1;
Frq2 = frequency compressor circuit 2;
CPr1 = compressor circuit 1;
CPr2 = compressor circuit 2,
StP = step of the previous compressor,
FrqF1 = frequency fan circuit 1;
FrqF2 = frequency fan circuit 2;
FAn1 = fan circuit 1,
FAn2 = = fan circuit 2,
ALr = alarm;
ALr1 = alarm 1
ALr2 = alarm 2
AUS1 = auxiliary output 1
AUS2 = auxiliary output 2,
AUS3 = auxiliary output 3,
AUS4 = auxiliary output 4,
onF = on / off relay
nu = relay not used

PLANT CONFIGURATION EXEMPLA:

Plant with 1 circuit with 6 compressors e 5 fans: **C0 = 1A1d; oA1 =** CPr1**; oA2 =** CPr1**; oA3 =** CPr1**, oA4 =** CPr1**, oA5 =** CPr1; **oA6** = CPr1; **oA7** = FAn1; **oA8** = FAn1; **oA9** = FAn1; **oA10** = FAn1; **oA11** = FAn1; **oA12** =**oA15** = nu
Plant with 1 circuit with 2 compressors with 1 step and 1 compressors with 3 steps e 4 fans: **C0 = 1A1d; oA1 =** CPr1**; oA2 =** CPr1**; oA3 =** CPr1**, oA4 =** Stp**, oA5 =** Stp; **oA6** = FAn1; **oA7** = FAn1; **oA8** = FAn1; **oA9** = FAn1; **oA10** =**oA15** = nu
Plant with 2 suctions and 2 deliveries: **Suction 1:** 1frequency compressor, 1 compressor with 1 step and 1 compressors with 2 steps **Delivery 1:** 3 fans **Suction 2:** 1frequency compressor, 2 compressors with 1 step **Delivery 2:** 1 inverter fan, 2 fans **C0 = 2A2d; oA1 =** Frq1**; oA2 =** CPr1**; oA3 =** CPr1**, oA4 =** Stp**, oA5 =** Fan1; **oA6** = FAn1; **oA7** = FAn1; **oA8** = Frq2; **oA9** = Cpr2; **oA10 =** Cpr2; **oA11 =** Fan2; **oA12 =** FrqF2; **oA13 =** Fan2; **oA14 = oA15** = nu

C16 Not used. It has to be set to **SPo**

C17 Valve output polarity - circuit 1: valve polarity: polarity of the outputs for capacity valves. It determines the state of the relays associated with the capacity valves:
oP=valve enabled with open contact;
cL= valve enabled with closed contact.

C18 Valve output polarity - circuit 2: valve polarity: polarity of the outputs for capacity valves. It determines the state of the relays associated with the capacity valves:
oP=valve enabled with open contact;
cL= valve enabled with closed contact.

C19…C33 not used

C34 Kind of gas: set the kind of freon used in the plant

r22 = R22; r404= R404A ; 507= R507; 134=134; r717=r717 (ammonia)

6.1.2 Regulation (C35-C42)

C35 **Type of regulation for compressor circuit 1:db =** neutral zone, **Pb =** proportional band.
C36 **Type of regulation for compressor circuit 2: db =** neutral zone, **Pb =** proportional band.
C37 **Kind of action circuit 1: CL =** cooling; **Ht=** heating
C38 **Kind of action circuit 2 CL =** cooling; **Ht=** heating
C39 **Compressor rotation circ1:**
YES = rotation: the algorithm distributes the working time between loads to ensure even run times.
no = fixed sequence: the compressors are enabled and disabled in fixed sequence: first, second etc.
C40 **Compressor rotation circ2:**
YES = rotation: the algorithm distributes the working time between loads to ensure even run times.
no = fixed sequence: the compressors are enabled and disabled in fixed sequence: first, second etc.
C41 **Fan rotation circ1:**
YES = rotation: the algorithm distributes the working time between loads to ensure even run times.
no = fixed sequence: the compressors are enabled and disabled in fixed sequence: first, second etc.
C42 **Fan rotation circ2:**
YES = rotation: the algorithm distributes the working time between loads to ensure even run times.
no = fixed sequence: the compressors are enabled and disabled in fixed sequence: first, second etc.

6.1.3 Display (C43-C44)

C43 **Displaying measurement unit:**
CEL_DEC: °C with decimal point;
CEL_INT: °C with decimal point **;**
FAR: °F**;**
Bar: bar**;**
PSI: PSI**;**
Kpa: KPA
C44 **Pressure display:** it indicates if the range of the probes are related to relative or absolute pressure.
rEL = relative pressure; **AbS:** absolute pressure

6.1.4 Analog Inputs (Ai1-Ai27)

AI1 **Kind of probe of P1 & P2:** it sets the kind of probes for suction sections: **Cur** = 4 ÷ 20 mA probe; **Ptc** = Ptc probe; **ntc** = NTC probe; **rAt =** rathiometric probe (0÷5V).
AI2 **Adjustment of read out for the probe 1 at 4mA/0V:** (-1.00 ÷ AI3bar; -15 ÷ AI3 PSI)
AI3 **Adjustment of read out for the probe 1 at 20mA/5V:** (AI2 ÷ 51.00 bar; AI2 ÷ 750 PSI)
AI4 **Probe 1 calibration:**
with **C43 = CEL_DEC or CEL_INT:** -12.0 ÷ 12.0 °C
with **C43 = bar:** -1.20 ÷ 1.20 bar;
with **C43 = FAR or PSI:** -120 ÷ 120 °F or PSI
AI5 **Adjustment of read out for the probe 2 at 4mA/0V:** (-1.00 ÷ AI6bar; -15 ÷ AI6 PSI)
AI6 **Adjustment of read out for the probe 2 at 20mA/5V:** (AI5 ÷ 51.00 bar; AI5 ÷ 750 PSI)
AI7 **Probe 2 calibration:**
with **C43 = CEL_DEC or CEL_INT:** -12.0 ÷ 12.0 °C
with **C43 = bar:** -1.20 ÷ 1.20 bar;
with **C43 = FAR or PSI:** -120 ÷ 120 °F or PSI
AI8 **Kind of probe of P2 & P4: :** it sets the kind of probes for delivery sections: **Cur** = 4 ÷ 20 mA probe; **Ptc** = Ptc probe; **ntc** = NTC probe; **rAt =** rathiometric probe (0÷5V).
AI9 **Adjustment of read out for the probe 3 at 4mA/0V:** (-1.00 ÷ AI10bar; -15 ÷ AI10 PSI)
AI10 **Adjustment of read out for the probe 3 at 20mA/5V:** (AI9 ÷ 51.00 bar; AI9 ÷ 750 PSI)
AI11 **Probe 3 calibration**
with **C43 = CEL_DEC or CEL_INT:** -12.0 ÷ 12.0 °C
with **C43 = bar:** -1.20 ÷ 1.20 bar;
with **C43 = FAR or PSI:** -120 ÷ 120 °F or PSI
AI12 **Adjustment of read out for the probe 4 at 4mA/0V:** (-1.00 ÷ AI13bar; -15 ÷ AI13 PSI)
AI13 **Adjustment of read out for the probe 4 at 20mA/5V:** (AI12 ÷ 51.00 bar; AI12 ÷ 750 PSI)

AI14 **Probe 4 calibration:**
with **C43 = CEL_DEC or CEL_INT:** -12.0 ÷ 12.0 °C
with **C43 = bar:** -1.20 ÷ 1.20 bar;
with **C43 = FAR or PSI:** -120 ÷ 120 °F or PSI

AI15 **Alarm activated in case of regulation faulty probe:**
nu = none relay; **AIr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

AI16 **Probe 1 AUX setting:** **ptc** = PTC probe**; ntc**= NTC probe

AI17 **Probe 1 AUX action type:** it sets the function ot the AUX1 probe (term. 70-71)
nu = not used
Au1 = thermostat probe for AUX1 relay**;**
Au2 = thermostat probe for AUX2 relay**;**
Au3 = thermostat probe for AUX3 relay**;**
Au4 = thermostat probe for AUX4 relay**;**
otC1 = for the optimization of the delivery pressure/temperature, circuit 1**;**
otC2 = for the optimization of the delivery pressure/temperature, circuit 2**; ;**
otA1 = for the optimization of the suction pressure/temperature, (dynamic set point) circuit 1**;**
otA2 = for the optimization of the suction pressure/temperature, (dynamic set point) circuit 2

AI18 **Probe 1 AUX calibration:** -12.0 ÷ 12.0 °C; -120 ÷ 120 °F

AI19 **Probe 2 AUX setting:** **ptc** = PTC probe**; ntc**= NTC probe

AI20 **Probe 2 AUX action type:** it sets the function ot the AUX1 probe (term. 71-72)
nu = not used
Au1 = thermostat probe for AUX1 relay**;**
Au2 = thermostat probe for AUX2 relay**;**
Au3 = thermostat probe for AUX3 relay**;**
Au4 = thermostat probe for AUX4 relay**;**
otC1 = for the optimization of the delivery pressure/temperature, circuit 1**;**
otC2 = for the optimization of the delivery pressure/temperature, circuit 2**; ;**
otA1 = for the optimization of the suction pressure/temperature, (dynamic set point) circuit 1**;**
otA2 = for the optimization of the suction pressure/temperature, (dynamic set point) circuit 2

AI21 **Probe 2 AUX calibration:** -12.0 ÷ 12.0 °C; -120 ÷ 120 °F

AI22 **Probe 3 AUX setting:** **ptc** = PTC probe**; ntc**= NTC probe

AI23 **Probe 3 AUX action type:** it sets the function ot the AUX1 probe (term. 73-74)
nu = not used
Au1 = thermostat probe for AUX1 relay**;**
Au2 = thermostat probe for AUX2 relay**;**
Au3 = thermostat probe for AUX3 relay**;**
Au4 = thermostat probe for AUX4 relay**;**
otC1 = for the optimization of the delivery pressure/temperature, circuit 1**;**
otC2 = for the optimization of the delivery pressure/temperature, circuit 2**; ;**
otA1 = for the optimization of the suction pressure/temperature, (dynamic set point) circuit 1**;**
otA2 = for the optimization of the suction pressure/temperature, (dynamic set point) circuit 2

AI24 **Probe 3 AUX calibration:** -12.0 ÷ 12.0 °C; -120 ÷ 120 °F

AI25 **Probe 4 AUX setting:** **ptc** = PTC probe**; ntc**= NTC probe

AI26 **Probe 4 AUX action type:** it sets the function ot the AUX1 probe (term. 74-75)
nu = not used
Au1 = thermostat probe for AUX1 relay**;**
Au2 = thermostat probe for AUX2 relay**;**
Au3 = thermostat probe for AUX3 relay**;**
Au4 = thermostat probe for AUX4 relay**;**
otC1 = for the optimization of the delivery pressure/temperature, circuit 1**;**
otC2 = for the optimization of the delivery pressure/temperature, circuit 2**; ;**
otA1 = for the optimization of the suction pressure/temperature, (dynamic set point) circuit 1**;**
otA2 = for the optimization of the suction pressure/temperature, (dynamic set point) circuit 2

AI27 **Probe 4 AUX calibration:** -12.0 ÷ 12.0 °C; -120 ÷ 120 °F

6.1.5 Safety Digital Inputs (Di1-Di13)

DI1 **Alarm for AUX faulty probe:** it allows to select in which way the AUX faulty probe condition has to be signalled:
nu = no relay activation, only visual signalling; **nu =** none relay; **Alr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

DI2 **Low pressure switch polarity – circuit 1:**
oP=LP d.i. enabled by voltage absence;
cL= LP d.i. enabled by voltage presence.

DI3 **Low pressure switch polarity – circuit 2:**
oP=LP d.i. enabled by voltage absence;
cL= LP d.i. enabled by voltage presence.

DI4 **High pressure switch polarity – circuit 1:**
oP=HP d.i. enabled by voltage absence;
cL= HP d.i. enabled by voltage presence.

DI5 **High pressure switch polarity – circuit 2:**
oP=HP d.i. enabled by voltage absence;
cL= HP d.i. enabled by voltage presence.

DI6 **Relay activated in case of pressure switch alarm:**
nu = no relay activation, only visual signalling; **Alr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

DI7 **Compressor alarm inputs polarity - circuit 1**
oP= d.i. enabled by voltage absence;
cL= d.i. enabled by voltage presence.

DI8 **Compressor alarm inputs polarity - circuit 2**
oP= d.i. enabled by voltage absence;
cL= d.i. enabled by voltage presence.

DI9 **Fan alarm inputs polarity - circuit 1**
oP= d.i. enabled by voltage absence;
cL= d.i. enabled by voltage presence.

DI10 **Fan alarm inputs polarity - circuit 2**
oP= d.i. enabled by voltage absence;
cL= d.i. enabled by voltage presence.

DI11 **Manual reset of compressor alarms signalled by d.i.**
no = automatic recover of alarm: regulation restart when the correspondent digital input is disabled
yES = manual recover for the alarms of compressors

DI12 **Manual reset of fan alarms signalled by d.i.**
no = automatic recover of alarm: a fan restarts when the correspondent digital input is disabled
yES = manual recover for the alarms of fan

DI13 **Relay activated in case of compressor or fan alarms:**
nu = no relay activation, only visual signalling; **Alr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

6.1.6 Digital Inputs (Di14-Di27)

DI14 **Polarity of configurable digital input 1 (term 36-37)**
oP: the digital input is activated by opening the contact;
CL: the digital input is activated by closing the contact.

DI15 **Function of configur. configurable digital input 1 (term. 36-37)**
ES1 = energy saving circuit 1
ES2 = energy saving circuit 2
OFF1 = circuit 1 stand –by
OFF2 = circuit 2 stand –by
LL1 = liquid level alarm for circuit 1
LL2 = liquid level alarm for circuit 2

DI16 **Delay of configurable d.i. 1** (0 ÷ 255 min)

DI17 **Polarity of configurable digital input 2 (term 38-39)**
oP: the digital input is activated by opening the contact;
CL: the digital input is activated by closing the contact.

DI18 **Function of configur. configurable digital input 2 (term. 38-39)**

ES1 = energy saving circuit 1
ES2 = energy saving circuit 2
OFF1 = circuit 1 stand –by
OFF2 = circuit 2 stand –by
LL1 = liquid level alarm for circuit 1
LL2 = liquid level alarm for circuit 2

DI19 **Delay of configurable d.i. 2** (0 ÷ 255 min)

DI20 **Polarity of configurable digital input 3 (term 40-41)**
oP: the digital input is activated by opening the contact;
CL: the digital input is activated by closing the contact.

DI21 **Function of configur. configurable digital input 3 (term. 40-41)**
ES1 = energy saving circuit 1
ES2 = energy saving circuit 2
OFF1 = circuit 1 stand –by
OFF2 = circuit 2 stand –by
LL1 = liquid level alarm for circuit 1
LL2 = liquid level alarm for circuit 2

DI22 **Delay of configurable d.i. 3** (0 ÷ 255 min)

DI23 **Polarity of configurable digital input 4 (term. 42-43)**
oP: the digital input is activated by opening the contact;
CL: the digital input is activated by closing the contact.

DI24 **Function of configur. configurable digital input 4 (term. 42-43)**
ES1 = energy saving circuit 1
ES2 = energy saving circuit 2
OFF1 = circuit 1 stand –by
OFF2 = circuit 2 stand –by
LL1 = liquid level alarm for circuit 1
LL2 = liquid level alarm for circuit 2

DI25 **Delay of configurable d.i. 4** (0 ÷ 255 min)

DI26 **Relay activated in case of liquid level alarm – circuit 1**
nu = no relay activation, only visual signalling; **Alr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

DI27 **Relay activated in case of liquid level alarm – circuit 2**
nu = no relay activation, only visual signalling; **Alr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

6.1.7 Compressor Action (CP1-CP8)

CP1 **Regulation band width for compressors- circuit 1** (0.10÷10.00 bar; 0.1÷25.0°C, 1÷80PSI, 1÷50°F) The band is symmetrical compared to the target set point, with extremes: SETC1+(CP1)/2 ... SETC1-(CP1)/2. The measurement unit depends on the C43 par.

CP2 **Minimum compressor set point - circuit 1** (AI2 ÷ SETC1 bar or PSI; -50.0 ÷ SETC1 °C; -58.0 ÷ SETC1 °F). The measurement unit depends on C43 parameter. It sets the minimum value that can be used for the compressor set point, to prevent the end user from setting incorrect values.

CP3 **Maximum compressor set point - circuit 1** (SETC1÷AI3 bar/PSI; SETC1÷150.0°C; SETC1÷302°F) The measurement unit depends on C43 parameter. It sets the maximum acceptable value for compressor set point.

CP4 **Compressor energy saving value - circuit 1** (-20.00÷20.00bar; -50.0÷50.0 °C; -300÷300 PSI; -90÷90 °F) this value is add to the compressor set point when the energy saving is enabled.

CP5 **Regulation band width for compressors - circuit 2** (0.10÷10.00 bar; 0.1÷25.0°C, 1÷80PSI, 1÷50°F). The band is symmetrical compared to the target set point, with extremes: SETC2+(CP5)/2 ... SETC2-(CP1)2. The measurement unit depends on the C43 par.

CP6 **Minimum compressor set point - circuit 2** (AI5 ÷ SETC2 bar or PSI; -50.0 ÷ SETC2 °C; -58.0 ÷ SETC2 °F). The measurement unit depends on C43 parameter. It sets the minimum value that can be used for the compressor set point, to prevent the end user from setting incorrect values.

CP7 **Maximum compressor set point - circuit 2** (SETC2÷AI6 bar/PSI; SETC2÷150.0°C; SETC2÷302°F) The measurement unit depends on C43 parameter. It sets the maximum acceptable value for compressor set point.

CP8 **Compressor energy saving value - circuit 2** (-20.00÷20.00bar; -50.0÷50.0 °C; -300÷300 PSI; -90÷90 °F) this value is add to the compressor set point when the energy saving is enabled.

6.1.8 Safety Compressors (CP9-CP18)

CP9 **Minimum time between 2 following switching ON of the same compressor** (0÷255 min).
CP10 **Minimum time between the switching off of a compressor and the following switching on.** (0÷255min).
Note: usually CP9 is greater than CP10
CP11 **Time delay between the insertion of two different compressors** (0 ÷ 99.5 min; res. 1sec)
CP12 **Time delay between switching off of two different compressors (**0 ÷ 99.5 min; res. 1sec)
CP13 **Minimum time load on (**0 ÷ 99.5 min; res. 1sec)
CP14 **Maximum time load on** (0 ÷ 24 h; with 0 this function is disabled.) If a compressor keeps staying on for the CP14 time, it's switched off and it can restart after the CP10 time.
CP15 **Minimum time a frequency compressor (CP1..CP16 =Frq1 or Frq2) stays off after CP14 time** (0÷255 min)
CP16 **CP11 delay enabled also for the first call**. If enabled, the triggering of the step is delayed for a "CP11" time, respect to the call.
no = "CP11" not enabled;
yES="CP11" enabled
CP17 **CP12 delay enabled also for the first off**. If enabled, the triggering of the step is delayed for a "CP12" time, respect to the call.
no = "CP12" not enabled;
yES="CP12" enabled
CP18 **Output delay at power on** (0 ÷ 255 sec)

6.1.9 Fan Action (F1-F8)

F1 **Regulation band width for fans – circuit 1** (0.10÷10.00 bar; 0.1÷30.0°C, 1÷80PSI, 1÷50°F)
Set the C43 par. and the target set point for fans before setting this parameter.
The band is symmetrical compared to the fan target set point, with extremes: SETF1-(F1)/2 ... SETF1+(F1)/2. The measurement unit depends on the C43 par.
F2 **Minimum fan set point – circuit 1 BAR: 2** (AI9 ÷ SETF1 bar or PSI; -50.0 ÷ SETF1 °C; -58.0 ÷ SETF1 °F). The measurement unit depends on C43 parameter. It sets the minimum value that can be used for the fan set point, to prevent the end user from setting incorrect values.
F3 **Maximum fan set point - circuit 1** (SETF1÷AI10 bar/PSI; SETF1÷150.0°C; SETF1÷302°F)
The measurement unit depends on C43 parameter. It sets the maximum acceptable value for fan set point.
F4 **Fan energy saving value - circuit 1** (-20.00÷20.00bar; -50.0÷50.0 °C; -300÷300 PSI; -90÷90 °F) this value is add to the fan set point when the energy saving is enabled.
F5 **Regulation band width for fans – circuit 2** (0.10÷10.00 bar; 0.1÷30.0°C, 1÷80PSI, 1÷50°F)
Set the C43 par. and the target set point for fans before setting this parameter.
The band is symmetrical compared to the fan target set point, with extremes: SETF2-(F5)/2 ... SETF2+(F5)/2. The measurement unit depends on the C43 par.
F6 **Minimum fan set point – circuit 2 BAR: 2** (AI12 ÷ SETF2 bar or PSI; -50.0 ÷ SETF2 °C; -58.0 ÷ SETF2 °F). The measurement unit depends on C43 parameter. It sets the minimum value that can be used for the fan set point, to prevent the end user from setting incorrect values.
F7 **Maximum fan set point - circuit 2** (SETF2÷AI13 bar/PSI; SETF2÷150.0°C; SETF2÷302°F)
The measurement unit depends on C43 parameter. It sets the maximum acceptable value for fan set point.
F8 **Fan energy saving value - circuit 2** (-20.00÷20.00bar; -50.0÷50.0 °C; -300÷300 PSI; -90÷90 °F) this value is add to the fan set point when the energy saving is enabled.

6.1.10 Safety Fans (F9-F10)

F9 **Time delay between the insertion of two different fans** (1 ÷ 255 sec)
F10 **Time delay between switching off of two different fans** (1 ÷ 255 sec)

6.1.11 Energy Saving Management (HS1-HS14)

HS1 **Energy Saving start time on Monday** (0:0÷23.5h; nu)
HS2 **Monday Energy Saving duration** (0:0÷23.5h)
HS3 **Energy Saving start time on Tuesday** (0:0÷23.5h; nu)
HS4 **Tuesday Energy Saving duration** (0:0÷23.5h)
HS5 **Energy Saving start time on Wednesday** (0:0÷23.5h; nu)
HS6 **Wednesday Energy Saving duration** (0:0÷23.5h)
HS7 **Energy Saving start time on Thursday** (0:0÷23.5h; nu)
HS8 **Thursday Energy Saving duration** (0:0÷23.5h)
HS9 **Energy Saving start time on Friday** (0:0÷23.5h; nu)
HS10 **Friday Energy Saving duration** (0:0÷23.5h)
HS11 **Energy Saving start time on Saturday** (0:0÷23.5h; nu)
HS12 **Saturday Energy Saving duration** (0:0÷23.5h)
HS13 **Energy Saving start time on Sunday** (0:0÷23.5h; nu)
HS14 **Sunday Energy Saving duration** (0:0÷23.5h)

6.1.12 Compressor Alarms (AC1-AC19)

AC1 **Probe 1 alarm exclusion at power on** (0 ÷ 255 min) it is the period starting from instrument switch on, before an alarm probe is signalled. During this time if the pressure is out of range all the compressor are switched on.

AC2 **Probe 2 alarm exclusion at power on** (0 ÷ 255 min) it is the period starting from instrument switch on, before an alarm probe is signalled. During this time if the pressure is out of range all the compressor are switched on.

AC3 **Low pressure (temperature) alarm for compressors – circuit 1:** (0.10 ÷ 30.00bar; 0.0 ÷ 100.0°C; 1÷430 PSI; 1÷200.0°F)
The measurement unit depends on C43 parameter. AC3 is always subtracted to the set point SETC1. When the value SETC1-AC3 is reached the "Low alarm - Suction 1" is enabled, (possibly after the AC5 delay time)

AC4 **High pressure (temperature) alarm for compressors – circuit 1:** (0.10 ÷ 30.00bar; 0.0 ÷ 100.0°C; 1 ÷ 430 PSI; 1 ÷ 200.0°F)
The measurement unit depends on C43 parameter. AC4 is always added to the set point SETC1. When the value SETC1+AC4 is reached the "High alarm - Suction 1" is enabled, (possibly after the AC5 delay time)

AC5 **Low and High compressor pressure (temperature) alarms delay – circuit 1** (0÷255 min) time interval between the detection of a pressure (temperature) alarm condition and alarm signalling.

AC6 **Low pressure (temperature) alarm for compressors – circuit 2:** (0.10 ÷ 30.00bar; 0.0 ÷ 100.0°C; 1÷430 PSI; 1÷200.0°F)
The measurement unit depends on C43 parameter. AC6 is always subtracted to the set point SETC2. When the value SETC2-AC6 is reached the "Low alarm - Suction 2" is enabled, (possibly after the AC8 delay time)

AC7 **High pressure (temperature) alarm for compressors – circuit 2:** (0.10 ÷ 30.00bar; 0.0 ÷ 100.0°C; 1 ÷ 430 PSI; 1 ÷ 200.0°F)
The measurement unit depends on C43 parameter. AC7 is always added to the set point SETC2. When the value SETC2+AC7 is reached the "High alarm - Suction 1" is enabled, (possibly after the AC8 delay time)

AC8 **Low and High compressor pressure (temperature) alarms delay – circuit 2** (0÷255 min) time interval between the detection of a pressure (temperature) alarm condition and alarm signalling.

AC9 **Relay activated in case of pressure (temperature) alarm**
nu = no relay activation, only visual signalling; **Alr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

AC10 **Service request**: (0÷25000h with 0 the function is disabled) number of running hours after that maintenance warning is generated

AC11 **Relay activated in case of service request alarm**
nu = no relay activation, only visual signalling; **Alr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

AC12 **Low pressure-switch intervention numbers – circuit 1: (0÷15).** Every time the pressure-switch is activated all the compressors of the circuit 1 are turned off. If the low pressure-switch is activated

AC12 times in the AC13 interval, the compressors of the first circuit are switched off and only the manually unlocking is possible.

AC13 **Pressure-switch interventions time (0÷255 min) – circuit 1** Interval, linked to the AC12 parameter, for counting interventions of the low pressure-switch.

AC14 **Number of steps engaged with suction probe 1 faulty** (0 ÷ 15)

AC15 **Not used**

AC16 **Low pressure-switch intervention numbers – circuit 2: (0÷15).** Every time the pressure-switch is activated all the compressors of the circuit 2 are turned off. If the low pressure-switch is activated AC16 times in the AC17 interval, the compressors of the second circuit are switched off and only the manually unlocking is possible.

AC17 **Pressure-switch interventions time (0÷255 min) – circuit 2** Interval, linked to the AC16 parameter, for counting interventions of the low pressure-switch.

AC18 **Number of steps engaged with suction probe 2 faulty** (0 ÷ 15)

AC19 **Not used**

6.1.13 Fan Alarms (AF1-AF17)

AF1 **Low pressure (temperature) alarm for fans – circuit 1:** (0.10 ÷ 30.00bar; 0.0 ÷ 100.0°C; 1÷430 PSI; 1÷200.0°F)
The measurement unit depends on C43 parameter. AF1 is always subtracted to the set point SETF1. When the value SETF1-AF1 is reached the "Low alarm – Condenser 1" is enabled, (possibly after the AF3 delay time)

AF2 **High pressure (temperature) alarm for fans– circuit 1:** (0.10 ÷ 30.00bar; 0.0 ÷ 100.0°C; 1 ÷ 430 PSI; 1 ÷ 200.0°F)
The measurement unit depends on C43 parameter. AF2 is always added to the set point SETF1. When the value SETF1+AF2 is reached the "High alarm – Condenser 1" is enabled, (possibly after the AF3 delay time)

AC5 **Low and High fan pressure (temperature) alarms delay – circuit 1** (0÷255 min) time interval between the detection of a pressure (temperature) alarm condition and alarm signalling.

AF4 **Compressors off with pressure (temperature) alarm for fans– circuit 1**
no = compressors are not influenced by this alarm
yES = compressors are turned off in case of high pressure (temperature) alarm of fans

AF5 **Interval between 2 compressors turning off in case of high pressure (temperature) alarm for fans – circuit 1** (0 ÷ 255 min)

AF6 **High pressure-switch intervention numbers – circuit 1: (0÷15).** Every time the pressure-switch is activated all the compressors of the circuit 1 are turned off and the fan turned on. If the high pressure-switch is activated AF6 times in the AF7 interval, the compressors of the first circuit are switched off and the fans on, only the manually unlocking is possible.

AF7 **High pressure-switch interventions time (0÷255 min) – circuit 1** Interval, linked to the AF6 parameter, for counting interventions of the high pressure-switch.

AF8 **Fans on with delivery probe faulty – circuit 1** (0 ÷ 15)

AF9 **Low pressure (temperature) alarm for fans – circuit 2:** (0.10 ÷ 30.00bar; 0.0 ÷ 100.0°C; 1÷430 PSI; 1÷200.0°F)
The measurement unit depends on C43 parameter. AF9 is always subtracted to the set point SETF2. When the value SETF2-AF9 is reached the "Low alarm – Condenser 2" is enabled, (possibly after the AF11 delay time)

AF10 **High pressure (temperature) alarm for fans– circuit 2:** (0.10 ÷ 30.00bar; 0.0 ÷ 100.0°C; 1 ÷ 430 PSI; 1 ÷ 200.0°F)
The measurement unit depends on C43 parameter. AF10 is always added to the set point SETF2. When the value SETF2+AF10 is reached the "High alarm – Condenser 2" is enabled, (possibly after the AF11 delay time)

AF11 **Low and High fan pressure (temperature) alarms delay – circuit 2** (0÷255 min) time interval between the detection of a pressure (temperature) alarm condition and alarm signalling.

AF12 **Compressors off with pressure (temperature) alarm for fans– circuit 2**
no = compressors are not influenced by this alarm
yES = compressors are turned off in case of high pressure (temperature) alarm of fans

AF13 **Interval between 2 compressors turning off in case of high pressure (temperature) alarm for fans – circuit 2** (0 ÷ 255 min)

AF14 **High pressure-switch intervention numbers – circuit 2: (0÷15).** Every time the pressure-switch is activated all the compressors of the circuit 2 are turned off and the fans turned on. If the high pressure-switch is activated AF14 times in the AF15 interval, the compressors of the second circuit are switched off and the fans on, only the manually unlocking is possible.

AF15 **High pressure-switch interventions time (0÷255 min) – circuit 2** Interval, linked to the AF14 parameter, for counting interventions of the high pressure-switch.

AF16 **Fans on with delivery probe faulty – circuit 2** (0 ÷ 15)

AF17 **Relay activated in case of pressure (temperature) alarms of fans**
nu = no relay activation, only visual signalling; **Alr:** alarm relay (term. 84-85-86); **ALr1:** all the oAi outputs set as ALr1, **ALr2:** all the oAi outputs set as ALr2

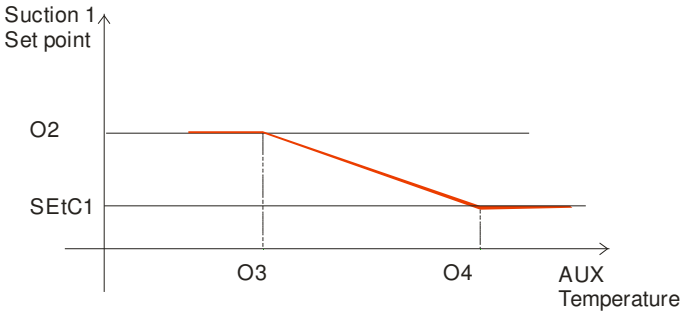
6.1.14 *Dynamic Setpoint Suction (o1-o8)*

O1 **Dynamic compressor set point function enabled - circuit 1**
no = standard regulation
yES = the SETC1 varies according to the setting of O2, O3, O4.
WARNING the dynamic set point requires a dedicated probe, so it's necessary one of the aux probes is set for this function in other words AI17 or AI20 or AI23 or AI27 has to be set as otA1

O2 **Maximum compressor set point - circuit 1** (SETC1÷CP3) It sets the maximum value of compressor set point used in the dynamic set point function.

O3 **External temperature for maximum set point - circuit 1** (-40÷O4 °C /-40÷O4°F) It's the temperature detected by the external AUX probe, at which the maximum set point is reached.

O4 **External temperature for standard set point– circuit 1** (O3÷150°C O3÷302°F)
1. with AUX temper. < O3 ==> "Real SEtC1" = O2
2. with AUX temper. > O4 ==> "Real SEtC1" = SEtC1
3. with O3 < AUX temper < O4 ==> SEtC1 < "Real SEtC1" < O2

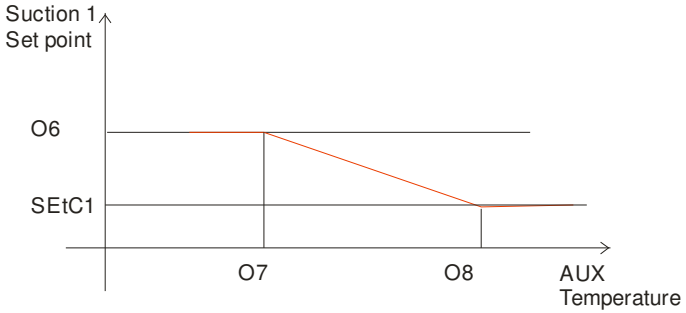


O5 **Dynamic compressor set point function enabled - circuit 2**
no = standard regulation
yES = the SETC2 varies according to the setting of O6, O7, O8.
WARNING the dynamic set point requires a dedicated probe, so it's necessary one of the aux probes is set for this function in other words AI17 or AI20 or AI23 or AI27 has to be set as otA2

O6 **Maximum compressor set point - circuit 2** (SETC2÷CP7) It sets the maximum value of compressor set point used in the dynamic set point function.

O7 **External temperature for maximum set point - circuit 1** (-40÷O8 °C /-40÷O8°F) It's the temperature detected by the external AUX probe, at which the maximum set point is reached.

O8 **External temperature for standard set point– circuit 2** (O7÷150°C O7÷302°F)
1. with AUX temper. < O7 ==> "Real SEtC2" = O6
2. with AUX temper. > O8 ==> "Real SEtC2" = SEtC2
3. with O7 < AUX temper < O8 ==> SEtC2 < "Real SEtC2" < O6



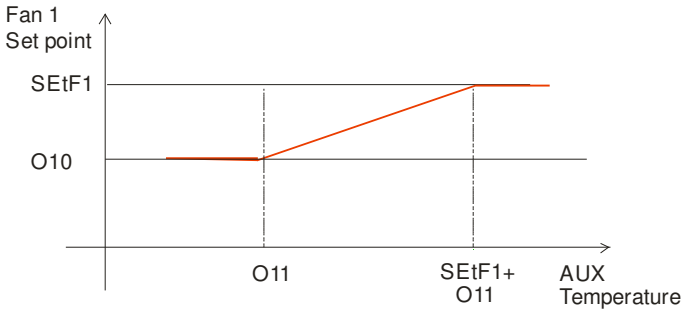
6.1.15 *Dynamic Setpoint Condenser (o9-o14)*

O9 **Dynamic set enabled for condenser- circuit 1**
no = standard regulation
yES = the SETF1 varies according to the setting of O10, O11.
WARNING the dynamic set point requires a dedicated probe, so it's necessary one of the aux probes is set for this function in other words AI17 or AI20 or AI23 or AI27 has to be set as otC1

O10 **Minimum condenser set point - circuit 1** (F2÷SETF1)

O11 **Differential for condenser dynamic set point –circuit 1** (-20.00÷20.00bar; -50.0÷50.0°C; -300 ÷ 300 PSI; -90÷90°F). The way of working of this algorithm is explained in the following exemplum.
EI.

With Temp(otc1) +O11 < O10	==> Real SEtF1 = O10
With Temp (otc1) + o11 > SETF1	==> Real SEtF1 = SEtF1
With O10 < Temp (otc1) + o11< SETF1	==> O10 <Real SEtF1 < SEtF1



O12 **Dynamic set enabled for condenser- circuit 2**
no = standard regulation
yES = the SETF2 varies according to the setting of O13, O14.
WARNING the dynamic set point requires a dedicated probe, so it's necessary one of the aux probes is set for this function in other words AI17 or AI20 or AI23 or AI27 has to be set as otC2.

O13 **Minimum condenser set point - circuit 2** (F6÷SETF2)

O14 **Differential for condenser dynamic set point –circuit 2** (-20.00÷20.00bar; -50.0÷50.0°C; -300 ÷ 300 PSI; -90÷90°F). The way of working of this algorithm is explained in the following exemplum.
EI.

With Temp(otc2) +O14 < O13	==> Real SEtF2 = O13
With Temp (otc2) + O14 > SETF2	==> Real SEtF2 = SEtF2
With O13 <Temp (otc2) + o14< SETF2	==> O13 <Real SEtF2 < SEtF2

6.1.16 Analog Outputs 1-2 (1Q1-2Q17)

1Q1 **Analog outputs 1-2 setting:** (4÷20 mA - 0÷10 V): It sets the kind of output for the first 2 analogue outputs (term. 33-34-35).

1Q2 **Analog output 1 function** (term. 34-35)
0 = pure analogue output
1 = output for inverter frequency compressor – circuit 1
2 = output for inverter frequency compressor – circuit 2
3 = output for inverter for fan– circuit 1;
4 = output for inverter for fan – circuit 2
5 = not used

1Q3 **Reference probe for analogue output 1,** it's used only when 1Q2 = 0
Pbc1= Suction Probe, circuit 1 (term. 62-63 or 62 -68)
Pbc2 = Suction Probe, circuit 2 (term. 64-63 or 64 -68)

1Q4 **Adjustment of read out for the analog output 1 at 4mA/0V** (-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F). It's used only when 1Q2 = 0

1Q5 **Adjustment of read out for the analog output 1 at 20mA/10V** (-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F). It's used only when 1Q2 = 0

1Q6 **Minimum value for analogue output 1** (0 ÷ 100%)

1Q7 **Analog output 1 value after compressor start** (1Q6 ÷ 100 %) It's the value of the analogue output after a compressor has started.

1Q8 **Analog output 1 value after compressor is switched off** (1Q6 ÷ 100 %) It's the value of the analogue output after a compressor has been switched off.

1Q9 **Exclusion band start value for analog output 1** (1Q7 ÷ 100 %): it allows to exclude a range of frequencies that could create problems to the compressor.

1Q10 **Exclusion band end value for analog output 1** (1Q9 ÷ 100 %)

1Q11 **Safety value for analog output 1** (0 ÷ 100 %): it's used in case of probe faulty.

1Q12 **Regulation delay after exit from Neutral Zone** (0 ÷ 255sec): it's the delay between the exit from neutral zone and the activation of the inverter

1Q13 **Analog output 1 rise time** (0 ÷ 255 sec). It's the time necessary to the analog output to pass from the 1Q6 and 100%.

1Q14 **Analog output 1 permanency before load activation** (0 ÷ 255 sec): the analog output remains at 100% value for this time before a load is activated.

1Q15 **Delay between pressure (temperature) goes down the neutral zone and start of analog output 1 decreasing** (0÷255sec).

1Q16 **Analog output 1 decreasing time (** 0 ÷ 255sec) It's the time necessary to the analog output to pass from the 100% to the 1Q6.

1Q17 **Analog output 1 permanency at 1Q6 before a load is switched off** (0 ÷ 255sec) The analog output remains at 1Q6 value before a load is switched off.

1Q18 **Analog output 1 decreasing time when a load is switched off** (0 ÷ 255sec) It the time necessary to the analog output to pass from maximum to 1Q8.

2Q1 **Analog output 2 function** (term. 33-34)
0 = pure analogue output
1 = output for inverter frequency compressor – circuit 1
2 = output for inverter frequency compressor – circuit 2
3 = output for inverter for fan– circuit 1;
4 = output for inverter for fan – circuit 2
5 = not used

2Q2 **Reference probe for analogue output 2,** it's used only when 2Q2 = 0
Pbc1= Suction Probe, circuit 1 (term. 62-63 or 62 -68)
Pbc2 = Suction Probe, circuit 2 (term. 64-63 or 64 -68)

2Q3 **Adjustment of read out for the analog output 2 at 4mA/0V** (-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F). It's used only when 2Q1 = 0

2Q4 **Adjustment of read out for the analog output 2 at 20mA/10V** (-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F). It's used only when 2Q1 = 0

2Q5 **Minimum value for analogue output 2** (0 ÷ 100%)

2Q6 **Analog output 2 value after compressor start** (2Q5 ÷ 100 %) It's the value of the analogue output after a compressor has started.

2Q7 **Analog output 2 value after compressor is switched off** (2Q5 ÷ 100 %) It's the value of the analogue output after a compressor has been switched off.

2Q8 **Exclusion band start value for analog output 2** (2Q6 ÷ 100 %): it allows to exclude a range of frequencies that could create problems to the compressor.
2Q9 **Exclusion band end value for analog output 2** (2Q8 ÷ 100 %)
2Q10 **Safety value for analog output 2** (0 ÷ 100 %): it's used in case of probe faulty.
2Q11 **Regulation delay after exit from Neutral Zone** (0 ÷ 255sec): it's the delay between the exit from neutral zone and the activation of the inverter
2Q12 **Analog output 2 rise time** (0 ÷ 255 sec). It's the time necessary to the analog output to pass from the 2Q5 and 100%.
2Q13 **Analog output 2 permanency before load activation** (0 ÷ 255 sec): the analog output remains at 100% value for this time before a load is activated.
2Q14 **Delay between pressure (temperature) goes down the neutral zone and start of analog output 2 decreasing** (0÷255sec).
2Q15 **Analog output 2 decreasing time (** 0 ÷ 255sec) It's the time necessary to the analog output to pass from the 100% to the 2Q5.
2Q16 **Analog output 2 permanency at 2Q5 before a load is switched off** (0 ÷ 255sec) The analog output remains at 2Q5 value before a load is switched off.
2Q17 **Analog output 2 decreasing time when a load is switched off** (0 ÷ 255sec) It the time necessary to the analog output to pass from maximum to 2Q7.

6.1.17 Analog Outputs 3-4 (3Q1-4Q17)

3Q1 **Analog outputs 3-4 setting:** (4÷20 mA - 0÷10 V): It sets the kind of output for the first 2 analogue outputs (term. 30-31-32).
3Q2 **Analog output 3 function** (term. 31-32)
0 = pure analogue output
1 = output for inverter frequency compressor – circuit 1
2 = output for inverter frequency compressor – circuit 2
3 = output for inverter for fan– circuit 1;
4 = output for inverter for fan – circuit 2
5 = not used
3Q3 **Reference probe for analogue output 3,** it's used only when 3Q2 = 0
Pbc3= Delivery Probe, circuit 1 (term. 65-66 or 65 -68)
Pbc4 = Delivery Probe, circuit 2 (term. 66-67 or 67 -68)
3Q4 **Adjustment of read out for the analog output 3 at 4mA/0V** (-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F). It's used only when 3Q2 = 0
3Q5 **Adjustment of read out for the analog output 3 at 20mA/10V** (-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F). It's used only when 3Q2 = 0
3Q6 **Minimum value for analogue output 3** (0 ÷ 100%)
3Q7 **Analog output 3 value after compressor start** (3Q6 ÷ 100 %) It's the value of the analogue output after a compressor has started.
3Q8 **Analog output 3 value after compressor is switched off** (3Q6 ÷ 100 %) It's the value of the analogue output after a compressor has been switched off.
3Q9 **Exclusion band start value for analog output 3** (3Q7 ÷ 100 %): it allows to exclude a range of frequencies that could create problems to the compressor.
3Q10 **Exclusion band end value for analog output 3** (3Q9 ÷ 100 %)
3Q11 **Safety value for analog output 3** (0 ÷ 100 %): it's used in case of probe faulty.
3Q12 **Analog output 3 delay after pressure has exited from Neutral Zone** (0 ÷ 255sec): it's the delay between the exit from neutral zone and the activation of the inverter
3Q13 **Analog output 3 rise time** (0 ÷ 255 sec). It's the time necessary to the analog output to pass from the 3Q6 and 100%.
3Q14 **Analog output 3 permanency before load activation** (0 ÷ 255 sec): the analog output remains at 100% value for this time before a load is activated.
3Q15 **Delay between pressure (temperature) goes down the neutral zone and start of analog output 3 decreasing** (0÷255sec).
3Q16 **Analog output 3 decreasing time (** 0 ÷ 255sec) It's the time necessary to the analog output to pass from the 100% to the 3Q6.
3Q17 **Analog output 3 permanency at 3Q6 before a load is switched off** (0 ÷ 255sec) The analog output remains at 3Q6 value before a load is switched off.
3Q18 **Analog output 3 decreasing time when a load is switched off** (0 ÷ 255sec) It the time necessary to the analog output to pass from maximum to 3Q8.

4Q1 **Analog output 4 function** (term. 30-31)
0 = pure analogue output
1 = output for inverter frequency compressor – circuit 1
2 = output for inverter frequency compressor – circuit 2
3 = output for inverter for fan– circuit 1;
4 = output for inverter for fan – circuit 2
5 = not used

4Q2 **Reference probe for analogue output 4,** it's used only when 4Q2 = 0
Pbc3= Delivery Probe, circuit 1 (term. 65-66 or 65 -68)
Pbc4 = Delivery Probe, circuit 2 (term. 66-67 or 67 -68)

4Q3 **Adjustment of read out for the analog output 4 at 4mA/0V** (-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F). It's used only when 4Q1 = 0

4Q4 **Adjustment of read out for the analog output 4 at 20mA/10V** (-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F). It's used only when 4Q1 = 0

4Q5 **Minimum value for analogue output 4** (0 ÷ 100%)

4Q6 **Analog output 4 value after compressor start** (4Q5 ÷ 100 %) It's the value of the analogue output after a compressor has started.

4Q7 **Analog output 4 value after compressor is switched off** (4Q5 ÷ 100 %) It's the value of the analogue output after a compressor has been switched off.

4Q8 **Exclusion band start value for analog output 4** (4Q6 ÷ 100 %): it allows to exclude a range of frequencies that could create problems to the compressor.

4Q9 **Exclusion band end value for analog output 4** (4Q8 ÷ 100 %)

4Q10 **Safety value for analog output 4** (0 ÷ 100 %): it's used in case of probe faulty.

4Q11 **Regulation delay after exit from Neutral Zone** (0 ÷ 255sec): it's the delay between the exit from neutral zone and the activation of the inverter

4Q12 **Analog output 4 rise time** (0 ÷ 255 sec). It's the time necessary to the analog output to pass from the 4Q5 and 100%.

4Q13 **Analog output 4 permanency before load activation** (0 ÷ 255 sec): the analog output remains at 100% value for this time before a load is activated.

4Q14 **Delay between pressure (temperature) goes down the neutral zone and start of analog output 4 decreasing** (0÷255sec).

4Q15 **Analog output 4 decreasing time (** 0 ÷ 255sec) It's the time necessary to the analog output to pass from the 100% to the 4Q5.

4Q16 **Analog output 4 permanency at 4Q5 before a load is switched off** (0 ÷ 255sec) The analog output remains at 4Q5 value before a load is switched off.

4Q17 **Analog output 4 decreasing time when a load is switched off** (0 ÷ 255sec) It the time necessary to the analog output to pass from maximum to 4Q7.

6.1.18 Auxiliary Outputs (AR1-AR12)

AR1 **Set point for auxiliary relay 1 (-40÷110°C/-40÷230°F)** it's is used for all the relays configured as AUS1.

AR2 **Differential for aux relay 1 (0,1÷25,0°C/1÷50°F)** Intervention differential for relay AUX1**.**
Cooling (AR3 = CL): Cut IN is AR1+ AR2. Cut OUT is when the temperature reaches the set point AR1.
Heating (AR3=Ht): Cut IN is AR1- AR2. Cut OUT is when the temperature reaches the set point. AR1

AR3 **Kind of action for aux. 1**
CL = cooling
Ht = heating

AR4 **Set point for auxiliary relay 2 (-40÷110°C/-40÷230°F)** it's is used for all the relays configured as AUS2.

AR5 **Differential for aux relay 2 (0,1÷25,0°C/1÷50°F)** Intervention differential for relay AUX2**.**
Cooling (AR6 = CL): Cut IN is AR4+ AR5. Cut OUT is when the temperature reaches the set point AR4.
Heating (AR36 = Ht): Cut IN is AR4- AR5. Cut OUT is when the temperature reaches the set point. AR4

AR6 **Kind of action for aux. 2**
CL = cooling
Ht = heating

AR7 **Set point for auxiliary relay 3 (-40÷110°C/-40÷230°F)** it's is used for all the relays configured as AUS3.

AR8 **Differential for aux relay 1 (0,1÷25,0°C/1÷50°F)** Intervention differential for relay AUX3**.**
Cooling (AR3 = CL): Cut IN is AR7+ AR8. Cut OUT is when the temperature reaches the set point AR7.
Heating (AR8=Ht): Cut IN is AR7- AR8. Cut OUT is when the temperature reaches the set point. AR7-

AR9 **Kind of action for aux. 3**
CL = cooling
Ht = heating

AR10 **Set point for auxiliary relay 4 (-40÷110°C/-40÷230°F)** it's is used for all the relays configured as AUS4.

AR11 **Differential for aux relay 4 (0,1÷25,0°C/1÷50°F)** Intervention differential for relay AUX4**.**
Cooling (AR12 = CL): Cut IN is AR10+ AR11. Cut OUT is when the temperature reaches the set point AR10.
Heating (AR12=Ht): Cut IN is AR10- AR11. Cut OUT is when the temperature reaches the set point. AR10

AR12 **Kind of action for aux. 4**
CL = cooling
Ht = heating

6.1.19 Other (oT1-oT9)

OT1 **Alarm relay off by keyboard** It's referred to the relay with terminals 84-85-86
no = alarm relay remains on for all the duration of the alarm
yES = the alarm relay is switched off by pushing a key

OT2 **Alarm relay polarity**
OP = alarm conditions 84-85 closed
CL = alarm conditions 84-85 open

OT3 **Alarm relay 1 off by keyboard** It's referred to the relays configured as ALr1
no = alarm relay remains on for all the duration of the alarm
yES = the alarm relay is switched off by pushing a key

OT4 **Alarm relay 1 polarity**
OP = the alarm relay terminals are open during an alarm
CL = the alarm relay terminals are closed during an alarm

OT5 **Alarm relay 2 off by keyboard** It's referred to the relays configured as ALr2
no = alarm relay remains on for all the duration of the alarm
yES = the alarm relay is switched off by pushing a key

OT6 **Alarm relay 2 polarity**
OP= the alarm relay terminals are open during an alarm
CL = the alarm relay terminals are closed during an alarm

OT7 **Serial address** **1 ÷ 247**

OT8 **Serial address for keyboard** **not used**

OT9 **Off function enabling**
no = it's not possible to switch the controller off by keyboard
YES = it's possible to switch the controller off by keyboard

7. Regulation

7.1 Neutral zone adjustment – only for compressors

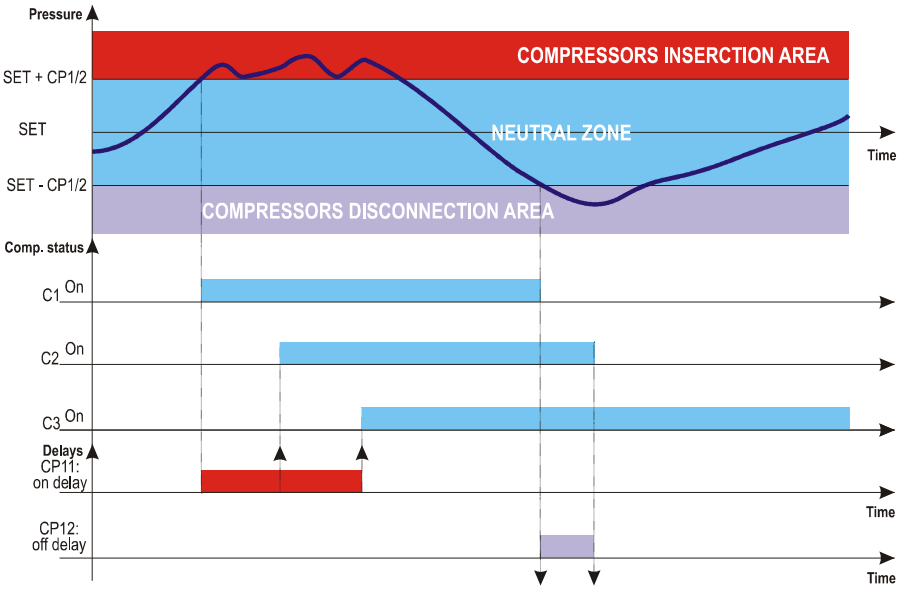
This kind of regulation is available only for compressors. The neutral zone (CP1) is symmetrical compared to the target set point, with extremes: set+CP1/2 ... set-CP1/2. If the pressure (temperature) is inside this zone the controller maintains the same number of loads switched on and off, without changing anything.
When the pressure (temperature) goes out from the zone, regulation starts. If the pressure is greater than SET+CP1/2, the loads are switching on with timing given by CP11parameter.

A load is turned on only if the his safety times **CP9, CP10, CP13** are over.
Regulation stops when the pressure (temperature) comes back into the neutral zone.

In the following a simplify exemplum that explains the regulation in neutral zone for compressor homogeneous with 1 step for each compressors. The safety times **CP9, CP10, CP13** are not considered. In the real regulation the a load is entered or turned off only if these times are over.

Ex. Dead band control, compressors with same capacities, 1 step for each compressor.
In this example:

oA1 = cPr1; oA2 = cPr1; oA3 = cPr1; number of compressors first circuit.
C35 = db dead band regulation
C39 = yES rotation
CP16 = no "CP11" delay not enabled at first calling after an equilibrium condition.
CP17 = no "CP12" delay not enabled at first calling after an equilibrium condition.



7.2 Proportional band adjustment – for compressors and fans

The regulation band (CP1) is divided into as many parts as there are stages according to the following formula:

 # steps = oAi = CPr1 or Step (number of compr. or steps).

The numbers of stages switched ON is proportional to the value of the input signal: when this distances itself from the target set point and enters the various bands, the compressors are switched ON, to be then turned OFF when the signal brings near the set point.

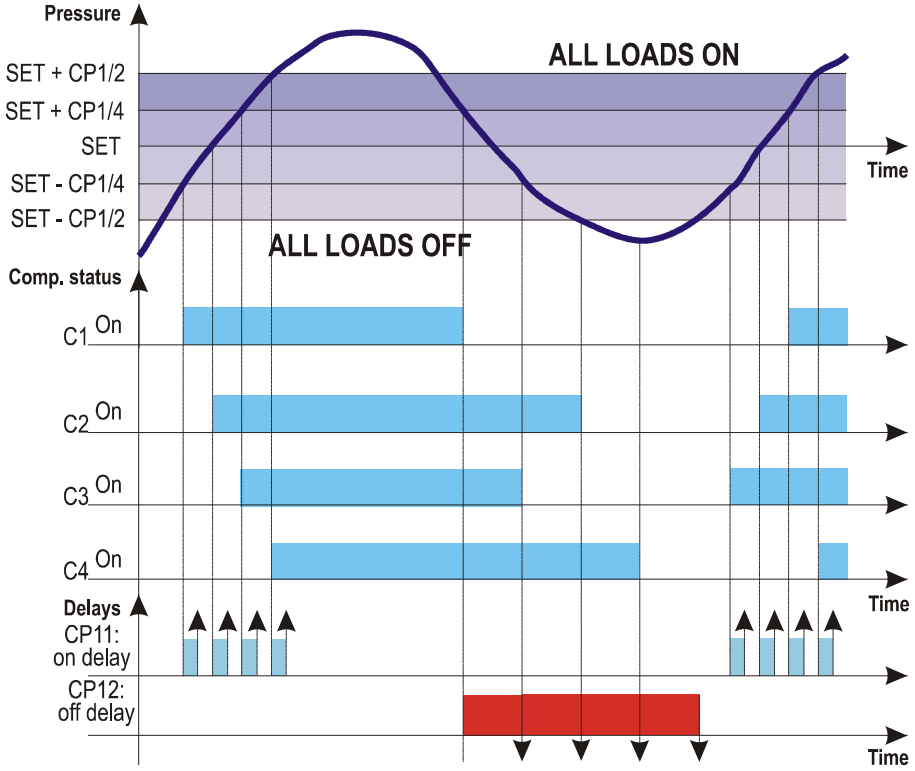
In this way if the pressure is greater than regulation band, all the compressors are on, if the pressure (temperature) is lower than the regulation band all the compressors are off.

Naturally also for this regulations all the delays (CP11 and CP12) safety times (**CP9, CP10, CP13**) are taken in account.

Regulation according to the running hours
The algorithm switch on and off the loads according to the running hours of each load. In this way the running hours are balanced.

Example

oA1 = cPr1; oA2 = cPr1; oA3 = cPr1; oA4 = cPr1: **4** compressors
C35 = Pb proportional band regulation
C39 = yES rotation
CP16 = no "CP11" delay not enabled at first calling after an equilibrium condition.
CP17 = no "CP12" delay not enabled at first calling after an equilibrium condition.

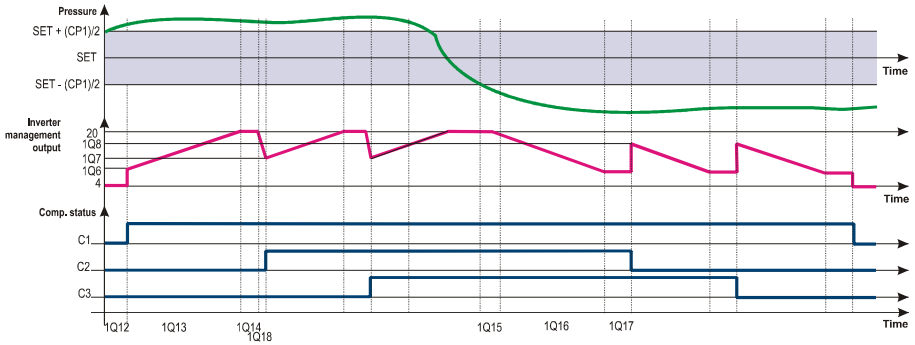


8. ANALOG OUTPUTS FOR INVERTERS

8.1 Compressor management

The analog outputs can be used in a rack with frequency compressor, driven by an inverter.
The regulation of the compressors in this case is changed as described in the following graph:

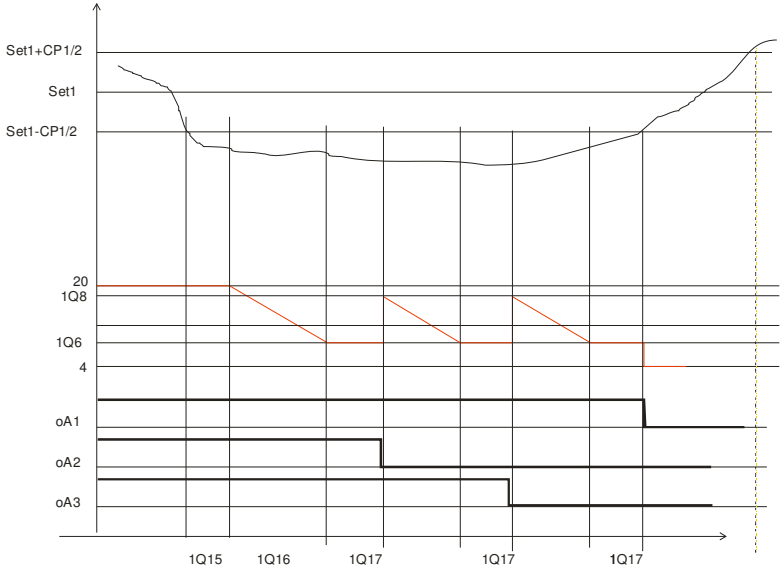
ES.
3 compressors, 1 of them with inverter
C1 = oA1 = FRQ1
C2 = oA2 = CPR1
C3 = oA3 = CPR1



where

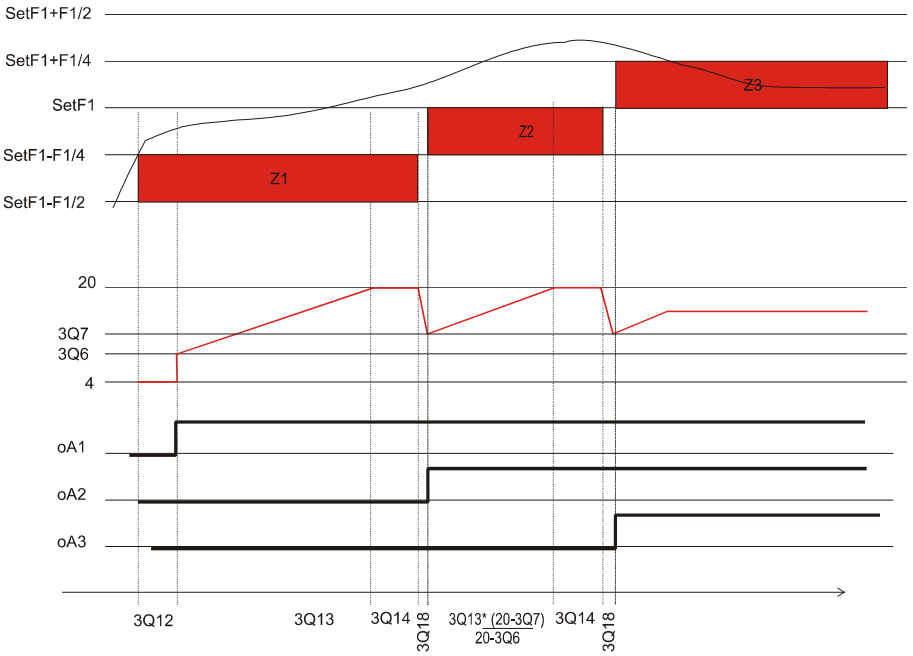
1Q6	Minimum value for analog out.1	0 ÷ 100 %
1Q7	Analog output1 value after compressor on	1Q6 ÷ 100 %
1Q8	Analog output1 value after compressor off	1Q6 ÷ 100 %
1Q12	Regulation delay after exit from neutral zone	0 ÷ 255 (sec)
1Q13	Analog output 1 rise time	0 ÷ 255 (sec)
1Q14	Analog output 1 permanency before load act.	0 ÷ 255 (sec)
1Q15	Analog output 1 decreasing. delay	0 ÷ 255 (sec)
1Q16	Analog output 1 decreasing time	0 ÷ 255 (sec)
1Q17	Analog output1 permanency before load off	0 ÷ 255 (sec)
1Q18	Analog output1 decreasing time, from 100% to 1Q8	0 ÷ 255 (sec)

8.1.1 *Frequency compressor when the power decreases*



8.2 Fan with inverter management when capacity increases

ES.
3 fans, 1 of them with inverter
oA1 = FRQ1F
oA2 = FAN1
oA3 = FAN1



9. Alarm list

Usually alarm conditions are signalled by means of:
1. Activation of alarm relays
2. Buzzer activation
3. Message on proper display
4. Log of alarms, hour, data and duration

9.1 Alarm conditions – summary table

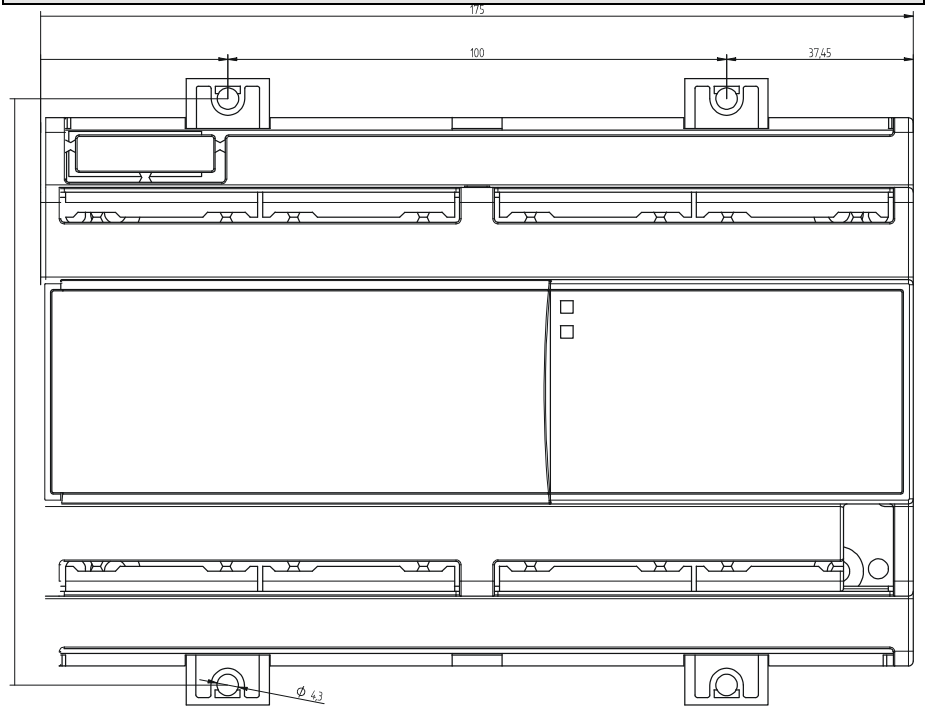
Code	Description	Cause	Action	Reset
E0L1 (E0L2)	Low pressure-switch alarm for circuit 1 (2)	Low pressure switch input 1 (2) enabled, terminals 52-53 (56-57).	– All compressors of circuit 1 (2) are turned off. Fans unchanged.	**Automatically** if the number of activation are less than Ac12 (Ac16) in the Ac13 (Ac17) time when the input is disable. - The compressors restarts working according to the working algorithm. **Manually**(if Ac12 (Ac16) activation happened in the Ac13 (Ac17) time When the input is disable: a. turn off and on the instrument.. - The compressors restarts working according to the working algorithm.
E0H1 (E0H2)	**High pressure switch fro circuit 1 (2) alarm**	High pressure switch input 1 (2) enabled - terminals 54-55 (58-59)	- All compressors of circuit 1 (2) are turned off. - All fans are of circuit 1 (2) turned on.	**Automatically** if the number of activation are less than AF7 (AF14) in AF8 (AF15) time when the input is disable. - Compressors and fans restart working according to the working algorithm. **Manually** if AF7 (AF14) activation happened in the AF8 (AF15) time When the input is disable: - turn off and on the instrument.. Compressors and fans restarts working according to the working algorithm.
P1 (P2)	**Suction probe circuit 1 (2) failure alarm**	Probe 1 (2) failure or out of range	– The compressors are activated according to the AC14 (AC18) parameters.	**Automatically** as soon as the probe restarts working.
P3 (P4)	**Condensing probe circuit 1 (2) failure alarm**	Probe 3 (4) failure or out of range	– The fans are activated according to the AF8 (AF16) parameters.	**Automatically** as soon as the probe restarts working.
EA1÷ EA15	Compressor safeties alarm	Safeties compressor input activation. NOTE: with step compressors 1 input for each compressor has to be used.	– the corresponding compressor is turned off. (with step compressors all relays referred to the input are disabled).	**Automatically** as soon as the input is disabled.
A02F	**Fan safeties alarm**	Safeties fan input activation.	– The corresponding output is disabled	**Automatically** as soon as the input is disabled.

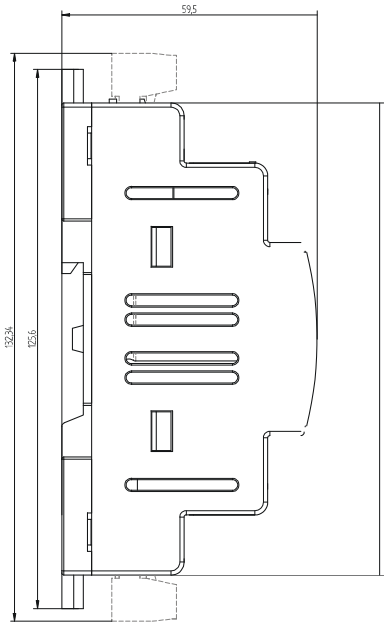
Code	Description	Cause	Action	Reset
LAC1 (LAC)	**Minimum pressure (temperature) alarm compressors for circuit 1 (2)**	Suction pressure or temperature lower than SETC1-AC3 (SETC2 –AC6) value	– signalling only	**Automatically:** as soon as the pressure or temperature reaches the SETC1-AC3 (SETC2 – AC6) + differential value. (differential = 0.3bar or 1°C)
LAF1 (LAF2	**Minimum pressure (temperature) alarm fans section for circuit 1 (2)**	Condensing pressure or temperature lower than SETF1-AF1 (SETF2 –AF9) value	– signalling only	**Automatically:** as soon as the pressure or temperature reaches the (SETF1-AF1 (SETF2 – AF9) + differential) value. (differential = 0.3bar or 1°C)
HAC1 (HAC2	**Maximum pressure (temperature) alarm compressors for circuit 1 (2)**	Suction pressure or temperature higher than SETC1+AC4 (SETC2 +AC7) value	– signalling only	**Automatically:** as soon as the pressure or temperature reaches the (SETC1-AC4 (SETC2 – AC7) - differential) value. (differential = 0.3bar or 1°C)
HAF1 (HAF2	**Maximum pressure (temperature) alarm fans section for circuit 1 (2)**	Condensing pressure or temperature higher than SETF1+AF2 (SETF2 +AF10) value	– It depends on parameter AF4 (AF12)	**Automatically:** as soon as the pressure or temperature reaches the SETF1+AF2 (SETF2 +AF10) - differential value. (differential = 0.3bar or 1°C)
LL1(LL 2)	**Liquid level alarm for circuit 1 (2)**	Proper digital input enabled	– signalling only	**Automatically** as soon as the input is disabled
Clock failure	**Clock failure alarm**	Problem on RTC board	– signalling only With this alarm the activation by RTC of the reduced set point and the alarm log are not available.	**Manually:** it is necessary to replace the RTC board.
Set clock	**Clock data lost**	The clock back up battery is exhausted	– signalling only – With this alarm the activation by RTC of the reduced set point and the alarm log are not available.	**Manually:** set the data and the time
SEr1÷ SEr15	**Compressors maintenance alarm**	A compressor has worked for the time set in the AC10 parameter	- signalling only	**Manually:** reset the running hour of the compressor (see par. 4.4)

10. Mounting & installation

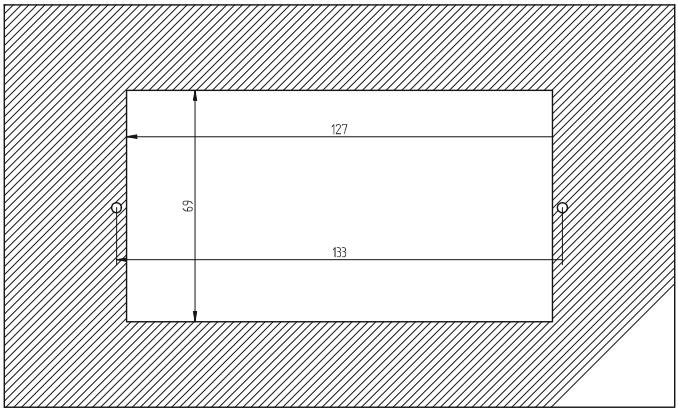
The instruments are suitable only for internal use. They are din rail mounted.
The ambient operating temperature range is between 0÷60°C.
Avoid locations subject to heavy vibration, corrosive gases or excessive dirt. The same applies to the probes. Ensure ventilation around the instrument.

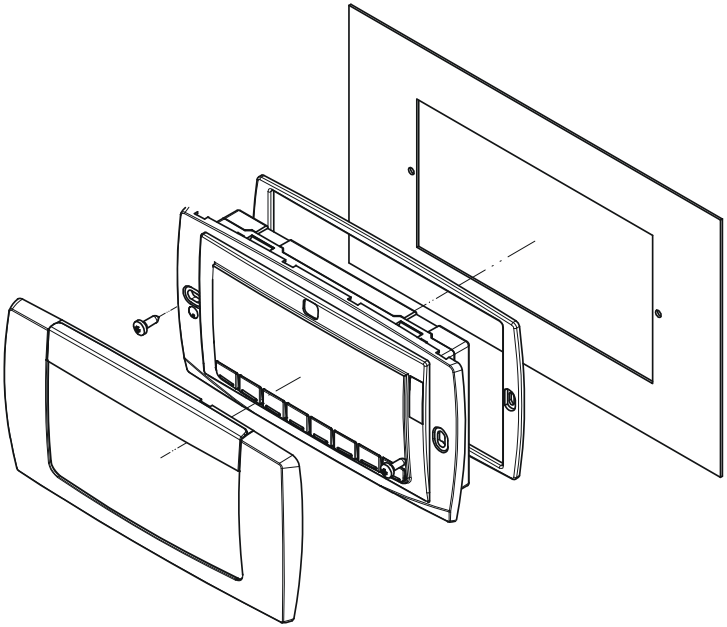
10.1 XC1000D dimensions





10.2 VG810 dimensions and mounting





11. Electrical connections

The instruments are provided with disconnectable screw terminal blocks to connect cables with a cross section up to 2,5 mm^2.
Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the input connection cables from the power supply cables, from the outputs and the power connections. **Do not exceed the maximum current allowed on each relay**, in case of heavier loads use a suitable external relay.

11.1 Probes connection

Pressure probe (4 - 20 mA): respect the polarity. If using terminal ends be sure there are no bear parts which could cause short circuiting or introduce noise disturbance at high frequencies. To minimise the induced disturbances use shielded cables with the shield connected to earth.
Temperature probe: it is recommended to place the temperature probe away from direct air streams to correctly measure the temperature.

12. RS485 serial link

All models can be integrated into the monitoring and alarm system using the RS485 serial port. They use the standard ModBus RTU protocol, so they can be fitted in a system integrator using this protocol.

13. Technical features

Housing: plastic self extinguishing V0.
Case: 144x72 mm; depth 100 mm.
Mounting: panel mounting 135x69cut out
Number of configurable relays: XC1015D: 15(max)
XC1011D: 11
XC1008D: **8**
Power supply: 24Vac/dc ± 10%,
Type of compressors: simple, multi-stage, different power
Type of refrigerant: R22, R134a, R404a,R507
Compressor alarm inputs: 15, line voltage, connected to the loads
Safety Pressure switch inputs: 4 line voltage, low and high circuit
Global Alarm output: 1 relay 8A 250Vac
Liquid level alarm input: 1, line voltage
Alarm logger: the last 100 alarm conditions are stored and displayed
Easy programming: via hot- key
Communication Protocol: Standard ModBus RTU, full documented
Operating temperature: 0÷60°C
Storage temperature: -30÷85 °C
Resolution: 1/100 Bar for suction
Accuracy: better than 1% of F.S.
RTC back up battery: up to 4 month

14. Parameter visibility and default setting

Label	rAC = 0A1d	rAC = 1A0d	rAC = 1A1d	rAC = 0A2d	rAC = 2A0d	rAC = 2A1d	rAC = 2A2d
SEtC1		✓	✓		✓	✓	✓
SEtF1	✓		✓	✓	✓	✓	✓
SEtC2					✓	✓	✓
SEtF2				✓			✓
C0	✓	✓	✓	✓	✓	✓	✓
C1	✓	✓	✓	✓	✓	✓	✓
C2	✓	✓	✓	✓	✓	✓	✓
C3	✓	✓	✓	✓	✓	✓	✓
C4	✓	✓	✓	✓	✓	✓	✓
C5	✓	✓	✓	✓	✓	✓	✓
C6	✓	✓	✓	✓	✓	✓	✓
C7	✓	✓	✓	✓	✓	✓	✓
C8	✓	✓	✓	✓	✓	✓	✓
C9	✓	✓	✓	✓	✓	✓	✓
C10	✓	✓	✓	✓	✓	✓	✓
C11	✓	✓	✓	✓	✓	✓	✓
C12	✓	✓	✓	✓	✓	✓	✓
C13	✓	✓	✓	✓	✓	✓	✓
C14	✓	✓	✓	✓	✓	✓	✓
C15	✓	✓	✓	✓	✓	✓	✓
C16		✓	✓		✓	✓	✓
C17		✓	✓		✓	✓	✓
C18					✓	✓	✓
C19		✓	✓		✓	✓	✓
C20		✓	✓		✓	✓	✓
C21		✓	✓		✓	✓	✓
C22		✓	✓		✓	✓	✓
C23		✓	✓		✓	✓	✓
C24		✓	✓		✓	✓	✓
C25		✓	✓		✓	✓	✓
C26		✓	✓		✓	✓	✓
C27		✓	✓		✓	✓	✓
C28		✓	✓		✓	✓	✓
C29		✓	✓		✓	✓	✓
C30		✓	✓		✓	✓	✓
C31		✓	✓		✓	✓	✓
C32		✓	✓		✓	✓	✓
C33		✓	✓		✓	✓	✓
C34	✓	✓	✓	✓	✓	✓	✓
C35		✓	✓		✓	✓	✓
C36					✓	✓	✓
C37	✓	✓	✓	✓	✓	✓	✓
C38				✓	✓	✓	✓
C39		✓	✓		✓	✓	✓
C40					✓	✓	✓
C41	✓		✓	✓		✓	✓
C42				✓		✓	✓
C43	✓	✓	✓	✓	✓	✓	✓

Label	rAC = 0A1d	rAC = 1A0d	rAC = 1A1d	rAC = 0A2d	rAC = 2A0d	rAC = 2A1d	rAC = 2A2d
C44	✓	✓	✓	✓	✓	✓	✓
AI1		✓	✓		✓	✓	✓
AI2		✓	✓		✓	✓	✓
AI3		✓	✓		✓	✓	✓
AI4		✓	✓		✓	✓	✓
AI5	✓		✓	✓		✓	✓
AI6	✓		✓	✓		✓	✓
AI7	✓		✓	✓		✓	✓
AI8	✓		✓	✓		✓	✓
AI9		✓	✓		✓	✓	✓
AI10		✓	✓		✓	✓	✓
AI11		✓	✓		✓	✓	✓
AI12	✓			✓			✓
AI13	✓			✓			✓
AI14	✓			✓			✓
AI15	✓	✓	✓	✓	✓	✓	✓
AI16	✓	✓	✓	✓	✓	✓	✓
AI17	✓	✓	✓	✓	✓	✓	✓
AI18	✓	✓	✓	✓	✓	✓	✓
AI19	✓	✓	✓	✓	✓	✓	✓
AI20	✓	✓	✓	✓	✓	✓	✓
AI21	✓	✓	✓	✓	✓	✓	✓
AI22	✓	✓	✓	✓	✓	✓	✓
AI23	✓	✓	✓	✓	✓	✓	✓
AI24	✓	✓	✓	✓	✓	✓	✓
AI25	✓	✓	✓	✓	✓	✓	✓
AI26	✓	✓	✓	✓	✓	✓	✓
AI27	✓	✓	✓	✓	✓	✓	✓
DI1	✓	✓	✓	✓	✓	✓	✓
DI2	✓	✓	✓	✓	✓	✓	✓
DI3				✓	✓	✓	✓
DI4	✓	✓	✓	✓	✓	✓	✓
DI5				✓	✓	✓	✓
DI6	✓	✓	✓	✓	✓	✓	✓
DI7		✓	✓		✓	✓	✓
DI8					✓	✓	✓
DI9	✓		✓	✓		✓	✓
DI10				✓		✓	✓
DI11		✓	✓		✓	✓	✓
DI12	✓		✓	✓		✓	✓
DI13	✓	✓	✓	✓	✓	✓	✓
DI14	✓	✓	✓	✓	✓	✓	✓
DI15	✓	✓	✓	✓	✓	✓	✓
DI16	✓	✓	✓	✓	✓	✓	✓
DI17	✓	✓	✓	✓	✓	✓	✓
DI18	✓	✓	✓	✓	✓	✓	✓
DI19	✓	✓	✓	✓	✓	✓	✓
DI20	✓	✓	✓	✓	✓	✓	✓
DI21	✓	✓	✓	✓	✓	✓	✓
DI22	✓	✓	✓	✓	✓	✓	✓
DI23	✓	✓	✓	✓	✓	✓	✓
DI24	✓	✓	✓	✓	✓	✓	✓

Label	rAC = 0A1d	rAC = 1A0d	rAC = 1A1d	rAC = 0A2d	rAC = 2A0d	rAC = 2A1d	rAC = 2A2d
DI25	✓	✓	✓	✓	✓	✓	✓
DI26		✓	✓		✓	✓	✓
DI27					✓	✓	✓
CP1		✓	✓		✓	✓	✓
CP2		✓	✓		✓	✓	✓
CP3		✓	✓		✓	✓	✓
CP4		✓	✓		✓	✓	✓
CP5					✓	✓	✓
CP6					✓	✓	✓
CP7					✓	✓	✓
CP8					✓	✓	✓
CP9		✓	✓		✓	✓	✓
CP10		✓	✓		✓	✓	✓
CP11		✓	✓		✓	✓	✓
CP12		✓	✓		✓	✓	✓
CP13		✓	✓		✓	✓	✓
CP14		✓	✓		✓	✓	✓
CP15		✓	✓		✓	✓	✓
CP16		✓	✓		✓	✓	✓
CP17	✓	✓	✓	✓	✓	✓	✓
F1	✓		✓	✓		✓	✓
F2	✓		✓	✓		✓	✓
F3	✓		✓	✓		✓	✓
F4	✓		✓	✓		✓	✓
F5				✓			✓
F6				✓			✓
F7				✓			✓
F8				✓			✓
F9	✓		✓	✓		✓	✓
F10	✓		✓	✓		✓	✓
HS1	✓	✓	✓	✓	✓	✓	✓
HS2	✓	✓	✓	✓	✓	✓	✓
HS3	✓	✓	✓	✓	✓	✓	✓
HS4	✓	✓	✓	✓	✓	✓	✓
HS5	✓	✓	✓	✓	✓	✓	✓
HS6	✓	✓	✓	✓	✓	✓	✓
HS7	✓	✓	✓	✓	✓	✓	✓
HS8	✓	✓	✓	✓	✓	✓	✓
HS9	✓	✓	✓	✓	✓	✓	✓
HS10	✓	✓	✓	✓	✓	✓	✓
HS11	✓	✓	✓	✓	✓	✓	✓
HS12	✓	✓	✓	✓	✓	✓	✓
HS13	✓	✓	✓	✓	✓	✓	✓
HS14	✓	✓	✓	✓	✓	✓	✓
AC1		✓	✓		✓	✓	✓
AC2					✓	✓	✓
AC3		✓	✓		✓	✓	✓
AC4		✓	✓		✓	✓	✓
AC5		✓	✓		✓	✓	✓

Label	rAC = 0A1d	rAC = 1A0d	rAC = 1A1d	rAC = 0A2d	rAC = 2A0d	rAC = 2A1d	rAC = 2A2d
AC6					✓	✓	✓
AC7					✓	✓	✓
AC8					✓	✓	✓
AC9		✓	✓		✓	✓	✓
AC10		✓	✓		✓	✓	✓
AC11		✓	✓		✓	✓	✓
AC12	✓	✓	✓	✓	✓	✓	✓
AC13	✓	✓	✓	✓	✓	✓	✓
AC14		✓	✓		✓	✓	✓
AC15		✓	✓		✓	✓	✓
AC16					✓	✓	✓
AC17					✓	✓	✓
AC18					✓	✓	✓
AC19					✓	✓	✓
AF1	✓		✓	✓		✓	✓
AF2	✓		✓	✓		✓	✓
AF3	✓		✓	✓		✓	✓
AF4	✓		✓	✓		✓	✓
AF5	✓		✓	✓		✓	✓
AF6	✓	✓	✓	✓	✓	✓	✓
AF7	✓	✓	✓	✓	✓	✓	✓
AF8	✓		✓	✓		✓	✓
AF9				✓			✓
AF10				✓			✓
AF11				✓			✓
AF12				✓			✓
AF13				✓			✓
AF14				✓	✓	✓	✓
AF15				✓	✓	✓	✓
AF16				✓			✓
AF17	✓		✓	✓		✓	✓
O1		✓	✓		✓	✓	✓
O2		✓	✓		✓	✓	✓
O3		✓	✓		✓	✓	✓
O4		✓	✓		✓	✓	✓
O5					✓	✓	✓
O6					✓	✓	✓
O7					✓	✓	✓
O8					✓	✓	✓
O10	✓		✓	✓		✓	✓
O11	✓		✓	✓		✓	✓
O12	✓		✓	✓		✓	✓
O13				✓			✓
O14				✓			✓
O15				✓			✓
QC1	✓	✓	✓	✓	✓	✓	✓
QC2	✓	✓	✓	✓	✓	✓	✓
QC3	✓	✓	✓	✓	✓	✓	✓
QC4	✓	✓	✓	✓	✓	✓	✓
QC5	✓	✓	✓	✓	✓	✓	✓
QC6	✓	✓	✓	✓	✓	✓	✓

Label	rAC = 0A1d	rAC = 1A0d	rAC = 1A1d	rAC = 0A2d	rAC = 2A0d	rAC = 2A1d	rAC = 2A2d
QC7	✓	✓	✓	✓	✓	✓	✓
QC8	✓	✓	✓	✓	✓	✓	✓
QC9	✓	✓	✓	✓	✓	✓	✓
QC10	✓	✓	✓	✓	✓	✓	✓
QC11	✓	✓	✓	✓	✓	✓	✓
QC12	✓	✓	✓	✓	✓	✓	✓
QC13	✓	✓	✓	✓	✓	✓	✓
QC14	✓	✓	✓	✓	✓	✓	✓
QC15	✓	✓	✓	✓	✓	✓	✓
QC16	✓	✓	✓	✓	✓	✓	✓
QC17	✓	✓	✓	✓	✓	✓	✓
QC18	✓	✓	✓	✓	✓	✓	✓
QC19	✓	✓	✓	✓	✓	✓	✓
QC20	✓	✓	✓	✓	✓	✓	✓
QC21	✓	✓	✓	✓	✓	✓	✓
QC22	✓	✓	✓	✓	✓	✓	✓
QC23	✓	✓	✓	✓	✓	✓	✓
QC24	✓	✓	✓	✓	✓	✓	✓
QC25	✓	✓	✓	✓	✓	✓	✓
QC26	✓	✓	✓	✓	✓	✓	✓
QC27	✓	✓	✓	✓	✓	✓	✓
QC28	✓	✓	✓	✓	✓	✓	✓
QC29	✓	✓	✓	✓	✓	✓	✓
QF1	✓	✓	✓	✓	✓	✓	✓
QF2	✓	✓	✓	✓	✓	✓	✓
QF3	✓	✓	✓	✓	✓	✓	✓
QF4	✓	✓	✓	✓	✓	✓	✓
QF5	✓	✓	✓	✓	✓	✓	✓
QF6	✓	✓	✓	✓	✓	✓	✓
QF7	✓	✓	✓	✓	✓	✓	✓
QF8	✓	✓	✓	✓	✓	✓	✓
QF9	✓	✓	✓	✓	✓	✓	✓
QF10	✓	✓	✓	✓	✓	✓	✓
QF11	✓	✓	✓	✓	✓	✓	✓
QF12	✓	✓	✓	✓	✓	✓	✓
QF13	✓	✓	✓	✓	✓	✓	✓
QF14	✓	✓	✓	✓	✓	✓	✓
QF15	✓	✓	✓	✓	✓	✓	✓
QF16	✓	✓	✓	✓	✓	✓	✓
QF17	✓	✓	✓	✓	✓	✓	✓
QF18	✓	✓	✓	✓	✓	✓	✓
QF19	✓	✓	✓	✓	✓	✓	✓
QF20	✓	✓	✓	✓	✓	✓	✓
QF21	✓	✓	✓	✓	✓	✓	✓
QF22	✓	✓	✓	✓	✓	✓	✓
QF23	✓	✓	✓	✓	✓	✓	✓
QF24	✓	✓	✓	✓	✓	✓	✓
QF25	✓	✓	✓	✓	✓	✓	✓
QF26	✓	✓	✓	✓	✓	✓	✓
QF27	✓	✓	✓	✓	✓	✓	✓
QF28	✓	✓	✓	✓	✓	✓	✓
QF29	✓	✓	✓	✓	✓	✓	✓
OT1	✓	✓	✓	✓	✓	✓	✓

Label	rAC = 0A1d	rAC = 1A0d	rAC = 1A1d	rAC = 0A2d	rAC = 2A0d	rAC = 2A1d	rAC = 2A2d
OT2	✓	✓	✓	✓	✓	✓	✓
OT3	✓	✓	✓	✓	✓	✓	✓
OT4	✓	✓	✓	✓	✓	✓	✓
OT5	✓	✓	✓	✓	✓	✓	✓
OT6	✓	✓	✓	✓	✓	✓	✓
OT7	✓	✓	✓	✓	✓	✓	✓
OT8	✓	✓	✓	✓	✓	✓	✓
OT9	✓	✓	✓	✓	✓	✓	✓

15. Default setting

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
SEtC1	-18,0	-18,0	-18,0	Compressor set point circuit 1	
SEtF1	35,0	35,0	35,0	Fan set point circuit 1	
SEtC2	-18,0	-18,0	-18,0	Compressor set point circuit 2	
SEtF2	35,0	35,0	35,0	Fan set point circuit 2	
C0	1A1D	1A1D	1A1D	Kind of plant	0A1d(0) - 1A0d(1) - 1A1d(2) - 0A2d(3) - 2A0d(4) - 2A1d(5) - 2A2d(6)
C1	CPr1	CPr1	CPr1	Relay 1 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C2	CPr1	CPr1	CPr1	Relay 2 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C3	CPr1	CPr1	CPr1	Relay 3 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C4	CPr1	CPr1	CPr1	Relay 4 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C5	Fan1	CPr1	CPr1	Relay 5 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C6	Fan1	Fan1	Fan1	Relay 6 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C7	Fan1	Fan1	Fan1	Relay 7 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C8	Fan1	Fan1	Fan1	Relay 8 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C9	nu	Fan1	Fan1	Relay 9 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C10	nu	Fan1	Fan1	Relay 10 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C11	nu	nu	nu	Relay 11 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C12	nu	nu	nu	Relay 12 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4;

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
					onF; nu
C13	nu	nu	nu	Relay 13 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C14	nu	nu	nu	Relay 14 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C15	nu	nu	nu	Relay 15 configuration	Frq1; Frq2; CPr1; CPr2; StP; Frq1F; Frq2F; FAn1; FAn2; Alr; ALr1; ALr2; AUS1; AUS2; AUS3; AUS4; onF; nu
C16	SPo	SPo	SPo	Kind of compressors	SPo(0) - dPo(1)
C17	cL	cL	cL	Valve polarity circuit 1	OP(0) - CL(1)
C18	cL	cL	cL	Valve polarity circuit 2	OP(0) - CL(1)
C19	0	0	0	Power of compressor 1	0 ÷ 255
C20	0	0	0	Power of compressor 2	0 ÷ 255
C21	0	0	0	Power of compressor 3	0 ÷ 255
C22	0	0	0	Power of compressor 4	0 ÷ 255
C23	0	0	0	Power of compressor 5	0 ÷ 255
C24	0	0	0	Power of compressor 6	0 ÷ 255
C25	0	0	0	Power of compressor 7	0 ÷ 255
C26	0	0	0	Power of compressor 8	0 ÷ 255
C27	0	0	0	Power of compressor 9	0 ÷ 255
C28	0	0	0	Power of compressor 10	0 ÷ 255
C29	0	0	0	Power of compressor 11	0 ÷ 255
C30	0	0	0	Power of compressor 12	0 ÷ 255
C31	0	0	0	Power of compressor 13	0 ÷ 255
C32	0	0	0	Power of compressor 14	0 ÷ 255
C33	0	0	0	Power of compressor 15	0 ÷ 255
C34	404	404	404	Kind of gas	r22(0) - 404(1) - 507(2) - 134(3) - 717(4)
C35	db	db	db	Regulation for compressor circuit 1	db(0) - Pb(1)
C36	db	db	db	Regulation for compressor circuit 2	db(0) - Pb(1)
C37	cL	cL	cL	Kind of action circuit 1	CL(0) - Ht(1)
C38	cL	cL	cL	Kind of action circuit 2	CL(0) - Ht(1)
C39	yES	yES	yES	Compressor rotation circuit 1	no(0) - yES(1)
C40	yES	yES	yES	Compressor rotation circuit 2	no(0) - yES(1)
C41	yES	yES	yES	Fan rotation circuit 1	no(0) - yES(1)
C42	yES	yES	yES	Fan rotation circuit 2	no(0) - yES(1)
C43	C/dec	C/dec	C/dec	Displaying measurement unit	CEL_DEC (0); CEL_INT (1); FAR (2); Bar(3); PSI(4); Kpa (5)
C44	rEL	rEL	rEL	Pressure display (rel/abs)	rEL(0) - AbS(1)
AI1	Cur	Cur	Cur	Kind of probe of P1 & P2	Cur(0) - Ptc(1) - ntc(2) - rAt(3)
AI2	-0,5	-0,5	-0,5	Probe 1 readout at 4mA/0V	(-1.00 ÷ AI3)^{BAR} (-15 ÷ AI3)^{PSI}
AI3	11,0	11,0	11,0	Probe 1 readout at 20mA/5V	(AI2 ÷ 51.00)^{BAR} (AI2 ÷ 750)^{PSI}
AI4	0,0	0,0	0,0	Probe 1 calibration	$^{(dEU=bar\ o\ °C)}$ -12.0 ÷ 12.0 $^{(dEU=PSI\ o\ °F)}$ -120 ÷ 120
AI5	-0,5	-0,5	-0,5	Probe 2 readout at 4mA/0V	(-1.00 ÷ AI6)^{BAR} (-15 ÷ AI6)^{PSI}
AI6	11,0	11,0	11,0	Probe 2 readout at 20mA/5V	(AI5 ÷ 51.00)^{BAR} (AI5 ÷ 750)^{PSI}
AI7	0,0	0,0	0,0	Probe 2 calibration	$^{(dEU=bar\ o\ °C)}$ -12.0 ÷ 12.0 $^{(dEU=PSI\ o\ °F)}$ -120 ÷ 120
AI8	Cur	Cur	Cur	Kind of probe of P2 & P4	Cur(0) - Ptc(1) - ntc(2) - rAt(3)
AI9	0,0	0,0	0,0	Probe 3 readout at 4mA/0V	(-1.00 ÷ AI10)^{BAR} (-15 ÷ AI10)^{PSI}
AI10	30,0	30,0	30,0	Probe 3 readout at 20mA/5V	(AI9 ÷ 51.00)^{BAR} (AI9 ÷ 750)^{PSI}
AI11	0,0	0,0	0,0	Probe 3 calibration	$^{(dEU=bar\ o\ °C)}$ -12.0 ÷ 12.0 $^{(dEU=PSI\ o\ °F)}$ -120 ÷ 120
AI12	0,0	0,0	0,0	Probe 4 readout at 4mA/0V	(-1.00 ÷ AI13)^{BAR} (-15 ÷ AI13)^{PSI}

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
AI13	30,0	30,0	30,0	Probe 4 readout at 20mA/5V	(AI12 ÷ 51.00)^{BAR} (AI12 ÷ 750)^{PSI}
AI14	0,0	0,0	0,0	Probe 4 calibration	(dEU=bar o °C) -12.0 ÷ 12.0 (dEU=PSI o °F) -120 ÷ 120
AI15	ALr	ALr	ALr	Alarm relay for regulation faulty probe	nu(0) - Alr(1) - ALr1(2) - ALr2(3)
AI16	ntc	ntc	ntc	Probe 5 setting (ntc/ptc)	ptc(0) - ntc(1)
AI17	nu	nu	nu	Probe 5 action type	**nu =** not used; **Au1** = thermostat for AUX1; **Au2** = thermostat for AUX2; **Au3** = thermostat for AUX3; **Au4** = thermostat for AUX4; **otC1** = dynamic set point for fan circuit 1 **otC2** = dynamic set point for fan circuit 2 **otA1** = dynamic set point for compressor circuit 1 **otA2** = dynamic set point for compressor circuit 2
AI18	0,0	0,0	0,0	Probe 5 calibration	(dEU=bar o °C) -12.0 ÷ 12.0 (dEU=PSI o °F) -120 ÷ 120
AI19	ntc	ntc	ntc	Probe 6 setting (ntc/ptc)	ptc(0) - ntc(1)
AI20	nu	nu	nu	Probe 6 action type	**nu =** not used; **Au1** = thermostat for AUX1; **Au2** = thermostat for AUX2; **Au3** = thermostat for AUX3; **Au4** = thermostat for AUX4; **otC1** = dynamic set point for fan circuit 1 **otC2** = dynamic set point for fan circuit 2 **otA1** = dynamic set point for compressor circuit 1 **otA2** = dynamic set point for compressor circuit 2
AI21	0,0	0,0	0,0	Probe 6 calibration	(dEU=bar o °C) -12.0 ÷ 12.0 (dEU=PSI o °F) -120 ÷ 120
AI22	ntc	ntc	ntc	Probe 7 setting (ntc/ptc)	ptc(0) - ntc(1)
AI23	nu	nu	nu	Probe 7 action type	**nu =** not used; **Au1** = thermostat for AUX1; **Au2** = thermostat for AUX2; **Au3** = thermostat for AUX3; **Au4** = thermostat for AUX4; **otC1** = dynamic set point for fan circuit 1 **otC2** = dynamic set point for fan circuit 2 **otA1** = dynamic set point for compressor circuit 1 **otA2** = dynamic set point for compressor circuit 2
AI24	0,0	0,0	0,0	Probe 7 calibration	(dEU=bar o °C) -12.0 ÷ 12.0 (dEU=PSI o °F) -120 ÷ 120
AI25	ntc	ntc	ntc	Probe 8 setting (ntc/ptc)	ptc(0) - ntc(1)
AI26	nu	nu	nu	Probe 8 action type	**nu =** not used; **Au1** = thermostat for AUX1; **Au2** = thermostat for AUX2; **Au3** = thermostat for AUX3; **Au4** = thermostat for AUX4; **otC1** = dynamic set point for fan circuit 1

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
					otC2 = dynamic set point for fan circuit 2 **otA1** = dynamic set point for compressor circuit 1 **otA2** = dynamic set point for compressor circuit 2
AI27	0,0	0,0	0,0	Probe 8 calibration	(dEU=bar o °C) -12.0 ÷ 12.0 (dEU=PSI o °F) -120 ÷ 120
DI1	ALr	ALr	ALr	Alarm relay for AUX faulty probe	nu(0) - ALr(1) - ALr1(2) - ALr2(3)
DI2	cL	cL	cL	LP swtich polarity - circuit 1	OP(0) - CL(1)
DI3	cL	cL	cL	LP swtich polarity - circuit 2	OP(0) - CL(1)
DI4	cL	cL	cL	HP swtich polarity - circuit 1	OP(0) - CL(1)
DI5	cL	cL	cL	HP swtich polarity - circuit 2	OP(0) - CL(1)
DI6	ALr	ALr	ALr	Relay for pressure switch alarm	nu(0) - ALr(1) - ALr1(2) - ALr2(3)
DI7	cL	cL	cL	Safe input polarity compressor circuit 1	OP(0) - CL(1)
DI8	cL	cL	cL	Safe input polarity compressor circuit 2	OP(0) - CL(1)
DI9	cL	cL	cL	Safety input polarity fan circuit 1	OP(0) - CL(1)
DI10	cL	cL	cL	Safety input polarity fan circuit 2	OP(0) - CL(1)
DI11	no	no	no	Manual restart for compressor alarm	no(0) - yES(1)
DI12	no	no	no	Manual restart for fan alarm	no(0) - yES(1)
DI13	ALr	ALr	ALr	Relay for compressor or fan alarm	nu(0) - ALr(1) - ALr1(2) - ALr2(3)
DI14	CL	CL	CL	Polarity of configurable digital input 1	OP(0) - CL(1)
DI15	LL1	LL1	LL1	Function of configurable digital input 1	ES1(0) - ES2(1) - OFF1(2) - OFF2(3) - LL1(4) - LL2(5)
DI16	10	10	10	Delay of config. digital input 1	0 ÷ 255 (min)
DI17	CL	CL	CL	Polarity of configurable digital input 2	OP(0) - CL(1)
DI18	ES1	ES1	ES1	Function of configurable digital input 2	ES1(0) - ES2(1) - OFF1(2) - OFF2(3) - LL1(4) - LL2(5)
DI19	0	0	0	Delay of config. digital input 2	0 ÷ 255 (min)
DI20	CL	CL	CL	Polarity of configurable digital input 3	OP(0) - CL(1)
DI21	LL2	LL2	LL2	Function of configurable digital input 3	ES1(0) - ES2(1) - OFF1(2) - OFF2(3) - LL1(4) - LL2(5)
DI22	0	0	0	Delay of config. digital input 3	0 ÷ 255 (min)
DI23	CL	CL	CL	Polarity of configurable digital input 4	OP(0) - CL(1)
DI24	ES2	ES2	ES2	Function of configurable digital input 4	ES1(0) - ES2(1) - OFF1(2) - OFF2(3) - LL1(4) - LL2(5)
DI25	0	0	0	Delay of config. digital input 4	0 ÷ 255 (min)
DI26	ALr	ALr	ALr	Relay for LL alarm - circuit 1	nu(0) - ALr(1) - ALr1(2) - ALr2(3)
DI27	ALr	ALr	ALr	Relay for LL alarm - circuit 2	nu(0) - ALr(1) - ALr1(2) - ALr2(3)
CP1	4.0	4.0	4.0	Regulation band width circuit 1	(BAR) 0.10÷10.00 (°C) 0.0÷25.0 (PSI) 1÷80 (°F) 1÷50
CP2	-40,0	-40,0	-40,0	Minimum set point circuit 1	BAR: (AI2 ÷ SETC1); °C: (-50.0 ÷ SETC1); PSI : (AI2 ÷ SETC1); °F : (-58.0 ÷ SETC1)
CP3	10,0	10,0	10,0	Maximum set point circuit 1	BAR: (SETC1÷AI3); °C : (SETC1 ÷ 150.0); PSI : (SETC1 ÷ AI3); °F: (SETC1 ÷ 302)
CP4	0	0	0	Energy saving circuit 1	(BAR) -20.00÷20.00 (°C) -50.0÷50.0 (PSI) -300÷300 (°F) -90÷90
CP5	4.0	4.0	4.0	Regulation band width circuit 2	(BAR) 0.10÷10.00 (°C) 0.0÷25.0 (PSI) 1÷80 (°F)

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
					1÷50
CP6	-40,0	-40,0	-40,0	Minimum set point circuit 2	BAR: (AI5 ÷ SETC2); °C: (-50.0 ÷ SETC2); PSI : (AI5 ÷ SETC2); °F : (-58.0 ÷ SETC2)
CP7	10,0	10,0	10,0	Maximum set point circuit 2	BAR: (SETC2÷AI6); °C : (SETC2 ÷ 150.0); PSI : (SETC2 ÷ AI6); °F: (SETC2 ÷ 302)
CP8	0	0	0	Energy saving circuit 2	(BAR) -20.00÷20.00 (°C) -50.0÷50.0 (PSI) -300÷300 (°F) -90÷90
CP9	5	5	5	2 start compressor delay	0 ÷ 255 (min)
CP10	2	2	2	Minimum time load off	0 ÷ 255 (min)
CP11	15	15	15	2 different load start delay	0 ÷ 99.5 (min.1sec)
CP12	5	5	5	2 different load off delay	0 ÷ 99.5 (min.1sec)
CP13	15	15	15	Minimum time load on	0 ÷ 99.5 (min.1sec)
CP14	0	0	0	Maximum time load on	0 ÷ 24 (h) – with 0 the function is disabled
CP15	0	0	0	Min time Frq1-2 off after CP14	0 ÷ 255 (min)
CP16	no	no	no	CP11 enabled also at first on	no(0) - yES(1)
CP17	no	no	no	CP12 enabled also at first off	no(0) - yES(1)
CP18	10	10	10	Output delay at power on	0 ÷ 255 (sec)
F1	4,0	4,0	4,0	Regulation band width circuit 1	(BAR) 0.10÷10.00 (°C) 0.0÷30.0 (PSI) 1÷80 (°F) 1÷50.0
F2	10,0	10,0	10,0	Minimum set point circuit 1	BAR: (AI9 ÷SETF1); °C: (-50.0 ÷ SETF1); PSI : (AI9 ÷ SETF1); °F : (-58.0 ÷ SETF1)
F3	60,0	60,0	60,0	Maximum set point circuit 1	BAR: (SETF1÷AI10); °C : (SETF1 ÷ 150.0); PSI : (SETF1 ÷ AI10); °F: (SETF1 ÷ 302)
F4	0,0	0,0	0,0	Energy saving circuit 1	(BAR) -20.00÷20.00 (°C) -50.0÷50.0 (PSI) -300÷300 (°F) -90÷90
F5	4,0	4,0	4,0	Regulation band width circuit 2	(BAR) 0.10÷10.00 (°C) 0.0÷30.0 (PSI) 1÷80 (°F) 1÷50.0
F6	10,0	10,0	10,0	Minimum set point circuit 2	BAR: (AI12 ÷ SETF2); °C: (-50.0 ÷ SETF2); PSI : (AI12 ÷ SETF2); °F : (-58.0 ÷ SETF2)
F7	60,0	60,0	60,0	Maximum set point circuit 2	BAR: (SETF2÷AI13); °C : (SETF2 ÷ 150.0); PSI : (SETF2 ÷ AI13); °F: (SETF2 ÷ 302)
F8	0,0	0,0	0,0	Energy saving circuit 2	(BAR) -20.00÷20.00 (°C) -50.0÷50.0 (PSI) -300÷300 (°F) -90÷90
F9	15	15	15	2 different fan start delay	1 ÷ 255 (sec)
F10	5	5	5	2 different fan off delay	1 ÷ 255 (sec)
HS1	nu	nu	nu	Energy Saving start time on Monday	0:0÷23.5h; nu
HS2	00,00	00,00	00,00	Monday Energy Saving duration	0:0÷23.5h;
HS3	nu	nu	nu	Energy Saving start time on Tuesday	0:0÷23.5h; nu
HS4	00,00	00,00	00,00	Tuesday Energy Saving duration	0:0÷23.5h;
HS5	nu	nu	nu	Energy Saving start time on Wednesday	0:0÷23.5h; nu
HS6	00,00	00,00	00,00	Wednesday Energy Saving duration	0:0÷23.5h;
HS7	nu	nu	nu	Energy Saving start time on Thursday	0:0÷23.5h; nu
HS8	00,00	00,00	00,00	Thursday Energy Saving duration	0:0÷23.5h;
HS9	nu	nu	nu	Energy Saving start time on Friday	0:0÷23.5h; nu
HS10	00,00	00,00	00,00	Friday Energy Saving duration	0:0÷23.5h;
HS11	nu	nu	nu	Energy Saving start time on Saturday	0:0÷23.5h; nu
HS12	00,00	00,00	00,00	Saturday Energy Saving duration	0:0÷23.5h;
HS13	nu	nu	nu	Energy Saving start time on	0:0÷23.5h; nu

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
				Sunday	
HS14	00,00	00,00	00,00	Sunday Energy Saving duration	0:0÷23.5h;
AC1	30	30	30	Probe 1 alarm delay at power on	0 ÷ 255 (min)
AC2	30	30	30	Probe 2 alarm delay at power on	0 ÷ 255 (min)
AC3	15,0	15,0	15,0	Minimum temp/press alarm circuit 1	(0.10 ÷ 30.00)BAR (0.0 ÷ 100.0)°C (1 ÷ 430)PSI (1 ÷ 200.0)°F
AC4	20,0	20,0	20,0	Maximum temp/press alarm circuit 1	(0.10 ÷ 30.00)BAR (0.0 ÷ 100.0)°C (1 ÷ 430)PSI (1 ÷ 200.0)°F
AC5	20	20	20	Temp/press alarm delay circuit 1	0 ÷ 255 (min)
AC6	15,0	15,0	15,0	Minimum temp/press alarm circuit 2	(0.10 ÷ 30.00)BAR (0.0 ÷ 100.0)°C (1 ÷ 430)PSI (1 ÷ 200.0)°F
AC7	20,0	20,0	20,0	Maximum temp/press alarm circuit 2	(0.10 ÷ 30.00)BAR (0.0 ÷ 100.0)°C (1 ÷ 430)PSI (1 ÷ 200.0)°F
AC8	20	20	20	Temp/press alarm delay circuit 2	0 ÷ 255 (min)
AC9	ALr	ALr	ALr	Relay for temp/press alarm	nu(0) - ALr(1) - ALr1(2) - ALr2(3)
AC10	20000	20000	20000	Running hours for maintenance	1 ÷ 25000 (0= disabled)
AC11	ALr	ALr	ALr	Relay for maintenance alarm	nu(0) - ALr(1) - ALr1(2) - ALr2(3)
AC12	15	15	15	LP switch 1 activation number	0 ÷ 15
AC13	15	15	15	LP switch 1 activation time	0 ÷ 255 (min)
AC14	2	2	2	Compressor on-faulty probe1	0 ÷ 15
AC15	50	50	50	Capacity engaged-faulty P1	0 ÷ 100 (%)
AC16	15	15	15	LP switch 2 activation number	0 ÷ 15
AC17	15	15	15	LP switch 2 activation time	0 ÷ 255 (min)
AC18	2	2	2	Compressor on-faulty probe2	0 ÷ 15
AC19	50	50	50	Capacity engaged-faulty P2	0 ÷ 100 (%)
AF1	20,0	20,0	20,0	Minimum temp/press alarm circuit 1	(0.10 ÷ 30.00)BAR (0.0 ÷ 100.0)°C (1 ÷ 430)PSI (1 ÷ 200.0)°F
AF2	20,0	20,0	20,0	Maximum temp/press alarm circuit 1	(0.10 ÷ 30.00)BAR (0.0 ÷ 100.0)°C (1 ÷ 430)PSI (1 ÷ 200.0)°F
AF3	20	20	20	Temp/press alarm delay circuit 1	0 ÷ 255 (min)
AF4	no	no	no	compressor off with max alarm 1	no(0) - yES(1)
AF5	2	2	2	Off delay with max alarm 1	0 ÷ 255 (min)
AF6	15	15	15	HP switch 1 activation number	0 ÷15
AF7	15	15	15	HP switch 1 activation time	0 ÷ 255 (min)
AF8	2	2	2	Fans on with faulty probe 3	0 ÷ 15
AF9	20,0	20,0	20,0	Minimum temp/press alarm circuit 2	(0.10 ÷ 30.00)BAR (0.0 ÷ 100.0)°C (1 ÷ 430)PSI (1 ÷ 200.0)°F
AF10	20,0	20,0	20,0	Maximum temp/press alarm circuit 2	(0.10 ÷ 30.00)BAR (0.0 ÷ 100.0)°C (1 ÷ 430)PSI (1 ÷ 200.0)°F
AF11	20	20	20	Temp/press alarm delay circuit 2	0 ÷ 255 (min)
AF12	no	no	no	compressor off with max alarm 2	no(0) - yES(1)
AF13	2	2	2	Off delay with max alarm 2	0 ÷ 255 (min)
AF14	15	15	15	HP switch 2 activation number	0 ÷15
AF15	15	15	15	HP switch 2 activation time	0 ÷ 255 (min)
AF16	2	2	2	Fans on with faulty probe 3	0 ÷ 15
AF17	ALr	ALr	ALr	Relay for temp/press alarm	nu(0) - ALr(1) - ALr1(2) - ALr2(3)
O1	no	no	no	Dynamic set enabled - circuit 1	no(0) - yES(1)
O2	-18,0	-18,0	-18,0	Maximum set for circuit 1	SETC1÷CP3
O3	15,0	15,0	15,0	Dynamic set start temp. circuit 1	-40÷O4 °C /-40÷O4°F
O4	15,0	15,0	15,0	Dynamic set stop temp. circuit 1	O3÷150°C /O3÷302°F
O5	no	no	no	Dynamic set enabled - circuit 2	no(0) - yES(1)
O6	-18,0	-18,0	-18,0	Maximum set for circuit 2	SETC2÷CP7
O7	15,0	15,0	15,0	Dynamic set start temp. circuit 2	-40÷O8°C /-40÷O8°F
O8	15,0	15,0	15,0	Dynamic set stop temp. circuit 2	O7÷150°C /O7÷302°F

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
O9	no	no	no	Dynamic set enabled - circuit 1	no(0) - yES(1)
O10	25,0	25,0	25,0	Minimum condens. set - circuit 1	F2÷SETF1
O11	15	15	15	Differential dynamic set-circuit 1	(BAR) -20.00÷20.00 (°C) -50.0÷50.0 (PSI) -300÷300 (°F) -90÷90
O12	no	no	no	Dynamic set enabled - circuit 2	no(0) - yES(1)
O13	25,0	25,0	25,0	Minimum condens. set - circuit 2	F6÷SETF2
O14	15	15	15	Differential dynamic set-circuit 2	(BAR) -20.00÷20.00 (°C) -50.0÷50.0 (PSI) -300÷300 (°F) -90÷90
1Q1	4.20mA	4.20mA	4.20mA	Analog outputs 1-2 setting	4.20 mA (0) - 0.10 V (1)
1Q2	nu	nu	nu	Analog output 1 function	0 = pure analog output; 1 = inverter for compressor circuit 1; 2 = inverter for compressor circuit 2 3= inverter for fan circuit 1; 4 = inverter for fan circuit 2
1Q3	Pbc1	Pbc1	Pbc1	Probe for analog output 1	Pbc1(0) - Pbc2(1) ; used only when 1Q2 = 0
1Q4	0.0	0.0	0.0	Lower limit for analog output1	-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F;
1Q5	100.0	100.0	100.0	Upper limit for analog output1	-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F;
1Q6	30	30	30	Minimum value for analog out.1	0 ÷ 100 %
1Q7	40	40	40	Analog output1 value after compressor start	1Q6 ÷ 100 %
1Q8	40	40	40	Analog output1 value after compressor off	1Q6 ÷ 100 %
1Q9	40	40	40	Exclusion band start value 1	1Q7 ÷ 100 %
1Q10	40	40	40	Exclusion band end value 1	1Q9 ÷ 100 %
1Q11	50	50	50	Safety value for Analog output 1	0 ÷ 100 (%)
1Q12	0	0	0	Regulation delay after exit from neutral zone	0 ÷ 255 (sec)
1Q13	150	150	150	Analog output 1 rise time	0 ÷ 255 (sec)
1Q14	10	10	10	Analog output 1 permanency before load act.	0 ÷ 255 (sec)
1Q15	0	0	0	Analog output 1 decreasing. delay	0 ÷ 255 (sec)
1Q16	150	150	150	Analog output 1 decreasing time	0 ÷ 255 (sec)
1Q17	10	10	10	Analog output1 permanency before load off	0 ÷ 255 (sec)
1Q18	5	5	5	Analog output1 decreasing time, from 100% to 1Q8	0 ÷ 255 (sec)
2Q1	nu	nu	nu	Analog output 2 function	0 = pure analog output; 1 = inverter for compressor circuit 1; 2 = inverter for compressor circuit 2 3= inverter for fan circuit 1; 4 = inverter for fan circuit 2
2Q2	Pbc1	Pbc1	Pbc1	Probe for analog output 2	Pbc1(0) - Pbc2(1) ; used only when 2Q2 = 0
2Q3	0.0	0.0	0.0	Lower limit for analog output2	-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F;
2Q4	100.0	100.0	100.0	Upper limit for analog output2	-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F;
2Q5	30	30	30	Minimum value for analog out.2	0 ÷ 100 (%)
2Q6	40	40	40	Analog output 2 value after compressor start	2Q5 ÷ 100 %
2Q7	40	40	40	Analog output 2 value after compressor off	2Q5 ÷ 100 %
2Q8	40	40	40	Exclusion band start value 2	2Q6 ÷ 100 %
2Q9	40	40	40	Exclusion band end value 2	2Q8 ÷ 100 %
2Q10	50	50	50	Safety value for Analog output 2	0 ÷ 100 (%)
2Q11	0	0	0	Regulation delay after exit from	0 ÷ 255 (sec)

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
				neutral zone	
2Q12	150	150	150	Analog output 2 rise time	0 ÷ 255 (sec)
2Q13	10	10	10	Ao2 permanency before load act.	0 ÷ 255 (sec)
2Q14	0	0	0	Analog output 2 decreasing. delay	0 ÷ 255 (sec)
2Q15	150	150	150	Analog output 2 decreasing time	0 ÷ 255 (sec)
2Q16	10	10	10	Analog output 2 permanency before load off	0 ÷ 255 (sec)
2Q17	5	5	5	Analog output2 decreasing time, from 100% to 2Q7	0 ÷ 255 (sec)
3Q1	4.20mA	4.20mA	4.20mA	Analog outputs 3-4 setting	4.20 mA (0) - 0.10 V (1)
3Q2	nu	nu	nu	Analog output 3 function	0 = pure analog output; 1 = inverter for compressor circuit 1; 2 = inverter for compressor circuit 2 3= inverter for fan circuit 1; 4 = inverter for fan circuit 2
3Q3	Pbc3	Pbc3	Pbc3	Probe for analog output 3	Pbc3(0); Pbc4(1); used only when 3Q2 = 0
3Q4	0.0	0.0	0.0	Lower limit for analog output3	-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F;
3Q5	100.0	100.0	100.0	Upper limit for analog output3	-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F;
3Q6	30	30	30	Minimum value for analog out.3	0 ÷ 100 (%)
3Q7	40	40	40	Analog output 3 value after fan start	3Q6 ÷ 100 %
3Q8	40	40	40	Analog output 3 value after fan off	3Q6 ÷ 100 %
3Q9	40	40	40	Exclusion band start value 3	3Q7 ÷ 100 %
3Q10	40	40	40	Exclusion band end value 3	3Q9 ÷ 100 %
3Q11	50	50	50	Safety value for Analog output 3	0 ÷ 100 (%)
3Q12	0	0	0	Regulation delay after exit from neutral zone	0 ÷ 255 (sec)
3Q13	150	150	150	Analog output 3 rise time	0 ÷ 255 (sec)
3Q14	10	10	10	Ao3 permanency before load act.	0 ÷ 255 (sec)
3Q15	0	0	0	Analog output 3 decreasing. delay	0 ÷ 255 (sec)
3Q16	150	150	150	Analog output 3 decreasing time	0 ÷ 255 (sec)
3Q17	10	10	10	Analog output 3 permanency before load off	0 ÷ 255 (sec)
3Q18	5	5	5	Analog output3 decreasing time, from 100% to 3Q8	0 ÷ 255 (sec)
4Q1	nu	nu	nu	Analog output 4 function	0 = pure analog output; 1 = inverter for compressor circuit 1; 2 = inverter for compressor circuit 2 3= inverter for fan circuit 1; 4 = inverter for fan circuit 2
4Q2	Pbc4	Pbc4	Pbc4	Probe for analog output 4	Pbc3(0); Pbc4(1); used only when 4Q1 = 0
4Q3	0.0	0.0	0.0	Lower limit for analog output4	-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F;
4Q4	100.0	100.0	100.0	Upper limit for analog output4	-1÷51 bar; -15÷750PSI; -50÷150°C; -58÷302°F;
4Q5	30	30	30	Minimum value for analog out.4	0 ÷ 100 (%)
4Q6	40	40	40	Analog output 4 value after fan start	4Q5÷ 100 %
4Q7	40	40	40	Analog output 4 value after fan off	4Q5÷ 100 %
4Q8	40	40	40	Exclusion band start value 4	4Q6 ÷ 100 %
4Q9	40	40	40	Exclusion band end value 4	4Q8 ÷ 100 %
4Q10	50	50	50	Safety value for Analog output 4	0 ÷ 100 (%)
4Q11	0	0	0	Regulation delay after neutral zone exit	0 ÷ 255 (sec)

Label	XC 1008 D	XC 1011 D	XC 1015 D	Description	Range
4Q12	150	150	150	Analog output4 rise time	0 ÷ 255 (sec)
4Q13	10	10	10	Analog output4 permanency before load act.	0 ÷ 255 (sec)
4Q14	0	0	0	Analog output4 decreasing. delay	0 ÷ 255 (sec)
4Q15	150	150	150	Analog output4 decreasing time	0 ÷ 255 (sec)
4Q16	10	10	10	Analog output4 permanency before load off	0 ÷ 255 (sec)
4Q17	5	5	5	Analog output4 decreasing time, from 100% to 4Q7	0 ÷ 255 (sec)
AR1	0,0	0,0	0,0	Set point aux. relay 1	-40÷110°C/-40÷230°F
AR2	1,0	1,0	1,0	Differential for aux relay 1	0,1÷25,0°C/1÷50°F
AR3	CL	CL	CL	Kind of action for aux. 1	CL(0) = cooling; Ht(1) = heating
AR4	0,0	0,0	0,0	Set point aux. relay 2	-40÷110°C/-40÷230°F
AR5	1,0	1,0	1,0	Differential for aux relay 2	0,1÷25,0°C/1÷50°F
AR6	CL	CL	CL	Kind of action for aux. 2	CL(0) = cooling; Ht(1) = heating
AR7	0,0	0,0	0,0	Set point aux. relay 3	-40÷110°C/-40÷230°F
AR8	1,0	1,0	1,0	Differential for aux relay 3	0,1÷25,0°C/1÷50°F
AR9	CL	CL	CL	Kind of action for aux. 3	CL(0) = cooling; Ht(1) = heating
AR10	0,0	0,0	0,0	Set point aux. relay 4	-40÷110°C/-40÷230°F
AR11	1,0	1,0	1,0	Differential for aux relay 4	0,1÷25,0°C/1÷50°F
AR12	CL	CL	CL	Kind of action for aux. 4	CL(0) = cooling; Ht(1) = heating
OT1	yES	yES	yES	Alarm relay off by keyboard	no(0) - yES(1)
OT2	CL	CL	CL	Alarm relay polarity	OP(0) - CL(1)
OT3	yES	yES	yES	Alarm relay 1 off by keyboard	no(0) - yES(1)
OT4	OP	OP	OP	Alarm relay 1 polarity	OP(0) - CL(1)
OT5	yES	yES	yES	Alarm relay 2 off by keyboard	no(0) - yES(1)
OT6	OP	OP	OP	Alarm relay 2 polarity	OP(0) - CL(1)
OT7	1	1	1	Serial address	1 ÷ 247
OT8	1	1	1	Serial address for keyboard	1 ÷ 16
OT9	NO	NO	NO	Off function enabling	no(0) - yES(1)

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