iCHiLL

Quick reference guide

IC200L SERIES

Indice

1. General Advice

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.r.l.” (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (seeTechnical 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.

Full Manual

2. General Features

iCHILL IC200L is an electronic controller for chiller unit applications having one or two circuits:

- Air/air
- Air/water
- Water/water
- Motocondensing

Additional features :

- Heat pump with gas reversibility
- Free cooling function
- Recovery function

2.1 Main Function

Chiller management:
- One circuit up to 4 compressors
- Two circuits with different compressor number per circuit
- Double circuit up to 6 compressors
- Screw compressors

Compressor start up:
- Direct
- Part winding
- Star - delta

Compressor Soft start:
- With step valve
- Automatic start-unloading (without load).
- External by-pass gas valve.

Capacity step control:
- Continuous control
- Step control
- Modulation control (screw compressors)

Thermoregulation of the compressors
- Time running hours
- Number of start-up per hour

Cooling liquid injection
- With dedicated PTC probe

High temperature alarm of the compressor discharge side
- With dedicated PTC probe

Complete management of two pump groups of the water side
- 2 pumps evaporator side
- 2 pumps condenser side

Display layout customizable
- Temperature
- Pressure
- Time / RTC in real time

Other display readings
- Safety digital inputs
- Compressors running hours
- Number of compressor start-up
- Pump running hours
- Delay counting to the next defrost
- Proportional output percentage status
- Compressors discharge temperature

Alarm reset with custom password
- Alarm list
- Compressor thermal protection alarm

Single circuit stand-by
- Circuit maintenance
- To work with only one circuit

Single compressor stand-by
- Compressor maintenance
- Compressor malfunction

Pump down management
- With dedicated pressure switch
- Low pressure switch
- Low pressure transducer

Unloading circuit
- High temperature of the evaporator inlet water
- High temperature of the condenser inlet water (unit with recovery)
- High condensing pressure
- Low evaporating pressure

Maintenance messages
- Compressors
- Evaporator pumps
- Condenser pumps

Auxiliary relays
- Two configurable relay outputs not depending from the control algorithm can be managed through NTC, PTC or pressure probes.

Weekly Energy saving
- Three different time bands per day (only with RTC onboard)
- From digital input

Weekly ON/OFF:
- Three different time bands per day (only with RTC onboard)

Dynamic setpoint:
- Determined by analogue NTC input or 4÷20mA current input.

Change over :
- Automatic chiller or heat pump functioning depending from NTC analogue input.

Remote OFF:
- From configurable digital input.

Remote change over:
- From configurable digital input.

Hot start :
- Air / air unit

Defrost management:
- Combined control with temperature and pressure
- Forced defrost with low temperature of external air
- From configurable digital input
- Manual from keyboard

Boiler:
- For electrical integration heating or anti-freeze heaters

Two proportional outputs for condensing fan speed control (inverter or phase cut) with configurable signal:
- PWM
- 0÷10Volt
- 4÷20mA

Four proportional control outputs 0÷10V or ON/OFF
- To control the dumper in free cooling or recovery
- To control an external relay

Complete alarm management
- Internal Data logger up to 100 events

Supervisor / tele assistance/ monitoring
- TTL output for XJ485 interface (Mod #Bus protocol) for XWEB300 / XWEB3000 Dixell monitoring system for local and remote control

Up to 2 remote terminals with display read-out customizable
- With NTC ambient temperature probe

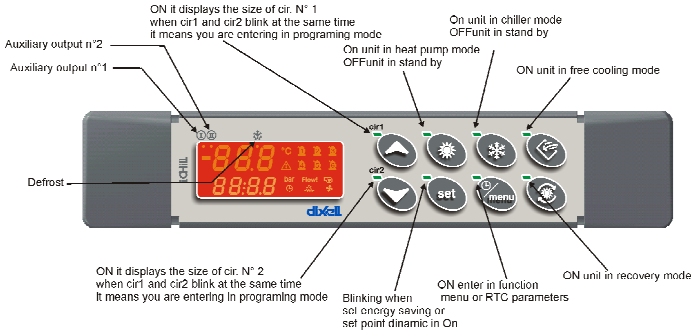
3. IC200 L Table of the Features

FEATURES	IC260L	IC261L	IC280L	IC281L
	CHILLER WITH HEAT PUMP		CHILLER WITH HEAT PUMP, FREE COOLING AND HEATING RECOVERY	
FRONTPANEL KEY BUTTONS				
6	●	●		
8			●	●
OUTPUT RELAYS				
10	●		●	
14		●		●
DIGITAL INPUTS				
18	configurable	configurable	configurable	configurable
PROBE INPUTS				
10 NTC - PTC - 4÷20mA - 0 ÷ 5Volt	configurable	configurable	configurable	configurable
PROPORTIONAL OUTPUTS				
Two PWM outputs for condensing fan	●	●	●	●
Two 0÷10V o 4÷20mA for condensing fan	configurable	configurable	configurable	configurable
Four 0÷10V outputs for Free cooling and Heating recovery, or to drive an external relay	configurable	configurable	configurable	configurable
OTHER OUTPUTS				
TTL / RS – 485 with Mod-Bus-Rtu protocol	●	●	●	●
Output for remote keyboard VI620	●	●		
Output for remote keyboard VI820			●	●
POWER SUPPLY				
12 Vac/dc (+15%;-10%)	●	●	●	●
24 Vac/dc (± 10%)	opt	opt	opt	opt
TOP DISPLAY				
± 3 led with decimal point	●	●	●	●
BOTTOM DISPLAY				
± 4 led with decimal point	●	●	●	●
OTHERS				
Internal RTC	opt	opt	opt	opt
Buzzer	opt	opt	opt	opt

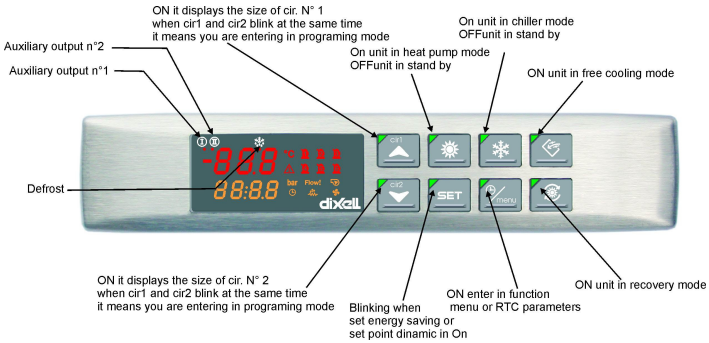
- configurable = configurable through parameter
- opt = optional
- ● = default
- free cooling **(IC280L / IC281L only)**
- Heating recovery **(IC280L / IC281L only)**

4. Interfaccia Utente

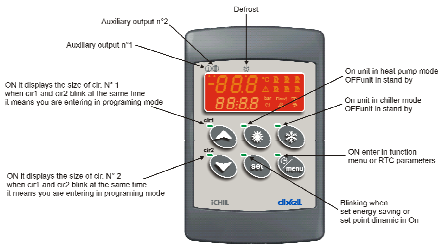
4.1 Use of the led on the models IC280L / IC281L



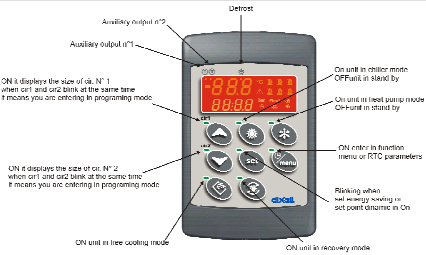
4.2 Use of the led on the metal models IC280L / IC281L



4.3 Use of the led on the models remote panels



VI620 / VI620S

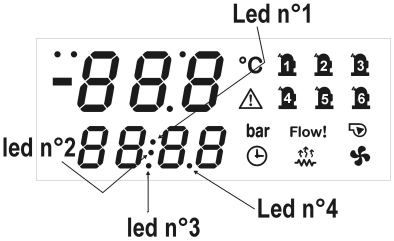


VI820 / VI820S

4.4 Le icone del Display

ICON	MEANING / FUNCTIONNING
°C	Celsius degrees:
°F	Fahrenheit degrees:
bar	Bar:
PSI	Psi:
1	ON = compressor 1 active
2	ON = compressor 2 active
3	ON = compressor 3 active
4	ON = compressor 4 active
5	ON = compressor 5 active
6	ON = compressor 6 active
⚠	General alarm:
	Anti freeze heaters/ integration heating / boiler:
Flow!	Flow alarm
	Real time clock:
	Water pump: On
	Condenser fan: ON

4.5 Meaning/ Functionning of the bottom display led



Led # 1 – 2 (With RTC)
If the bottom display shows the RTC the 1 and 2 leds are blinking.
Led # 1 – 2 In function Menu
During the time counting to the next defrost for one or both circuits the led 1 and 2 are blinking.
LEDParameter programming
In Pr2 level: led #3 indicates the visibility while the #1 and #2 show if the parameter can be modified or not.
In Pr3 level: led #3 and #4 indicate the visibility while the #1 and #2 show if the parameter can be modified or not.

4.6 Key Function

KEY	ACTION	FUNCTION
set	Push and release	Show chiller set point **SetC** and heat pump **SetH**
	Push two times	In chiller or heat pump if the Energy saving or the Dynamic setpoint are enabled it shows the real setpoint **Setr,** the led is blinking.
	Push for 3 seconds the release	Change between chiller / heat pump
	During the programming: push one time	Select a parameter or confirm a value
	Push one time with probe label showed on the bottom display	Change between the read-out of the circuit 1 and the circuit 2 and viceversa
cir1 UP KEY	Push one time	Select the readings of the first circuit
	Pushing one time during the programming	To change the parameter code or value
	Push for 1 second during the programming	1 time shows the Pr2 programming level 2 time shows the Pr3 programming level
cir2 DOWN KEY	Push one time	Select the readings of the second circuit
	Pushing one time during the programming	To change the parameter code or value
	Push one time	Turn the chiller on, if the unit is on led is on The led is blinking if there is a power on delay or during the pump down
	Push one time	Turn the heat pump on, if the unit is on led is on The led is blinking if there is a power on delay or during the pump down
menu	Push one time	enter the function Menu
	Push for 3 seconds	To set RTC parameters (if the RTC is inside)
	Pushing one time during the programming	To exit from a group of parameter
	Push one time	Start the heating recovery of the chiller unit, with recovery active the led is on
	Push one time	Start the free cooling of chiller unit, with free cooling active the led is on

4.7 Key Combinantion

KEY	ACTION	FUNCTION
	Push for 3 seconds together	Enter the programming
	In Pr3 level: push SET and the push DOWN key	Select the parameter level visibility Pr1 / Pr2 / Pr3
	Push one time together	Exit the programming
	Push 5 seconds (heat pump with ok condition)	Manual defrost
	In Pr3 programming level Push SET and then the MENU key	In Pr3 defines if the parameter can be changed or not in the other levels.

4.8 Led and Icons

ICON	LED	FUNCTION
	ON	Auxiliary relay #1 active
	OFF	Auxiliary relay #1 not active
	ON	Auxiliary relay #2 active
	OFF	Auxiliary relay #2 not active
	BLINKING	Defrost delay counting active
	ON	Defrost
	OFF	Defrost end

5. Remote Terminal

The iCHILL can be connected with 2 remote terminals. Each remote terminal can have the NTC probe on board that is used to show the loacl temperature and also to control the temperature regulation. For the connections use shielded cable for a maximum lenght of 150mt. In case of no communication between the instrument and the remotes the upper display shows "**noL"** (no link). Mod. VI620 - VI620S can be connected to IC260L – IC261L Mod. VI820 - VI820S can be connected to IC280L – IC281L Use the connection cable **CAB/CJ30** (2x0.2 mm^2) to interface the ichill connector to the shielded wire.

6. First Installing

6.1 On Board Clock (Optional)

Giving power supply the bottom display shows "**rtC**" alternated with a temperature or pressure value: **It is necessary to set the RTC.**
If the probes are not connected the display shows the corresponding probe alarm messages. In this situation the RTC setup and the programming are available.
ATTENTION

The RTC function is an optional and it is not possible to update the instrument but it is necessary to order the instrument already complete of this features.
With power failure the RTC back-up battery maximum duration is 1 week. After this period it is necessary to setup the clock again.

6.2 RTC Setup

1. Push **M** key for 3 seconds until the bottom display shows **"Hour**" and the top display shows its value.
2. Push **SET** one time: the value is blinking.
3. Use the Up and Down keys to adjust it. Push **SET** one time to confirm; automatically the display shows next parameter.
4. Repeat the operations 2. 3. and 4. for all the RTC parameters:

- **Min:** minutes (0÷60)
- **UdAy:** day of the week **(Sun** = Sunday, **Mon** =Monday, **tuE** =Tuesday, **UEd** = Wednesday, **tHu** = Thursday, **Fri** =Friday, **SAt** =Saturday)
- **dAy:** day of the month (0÷31)
- **MntH:** month (1÷12)
- **yEAr:** year (00÷99)

7. Display Layout

As default, In normal condition, the display shows the circuit 1 information.
The displayed circuit is indicated from the corresponding led **Cir1** on (UP key), or **Cir2** (circuit 2, **DOWN** key).

7.1 How to show the measurement list.

With the led Cir1 on, push UP or Down keys to display the labels of the information of the circuit 1.
With the led Cir2 on, push UP or Down keys to display the labels of the information of the circuit 2.
Each measurement is defined by a label that indicates which if it is a pressure a temperature or a time.

7.2 Show the circuit 1 or 2

To swap between the information of the two circuits use the UP and DOWN key to select a label then push SET, check the led.
Example in fig.1
Led cir1 is on: the top display shows the value of the output evaporator temperature (7.8°C) of the circuit 1,
The bottom display shows Out 1. Push SET key to swap to the circuit 2. **Example in Fig2**
Led cir2 is on: the top display shows the value of the output evaporator temperature (7.9°C) of the circuit 2, the bottom display shows Out 2.

Fig.1

Fig.2

8. Programming with the "hot key 64"

8.1 Download: how to program an instrument with a programmed

1. Turn off the instrument supply
2. Insert the hot key.
3. Turn on the power supply.
4. Immediately the parameters are downloaded.

During the download the regulation is locked and the top display shows the "**doL**" blinking label. At the end of the download will appear:

"End" if the programming procedure is completely OK, after 30seconds the regulation starts automatically.

"Err" if the programming procedure has found an error and the parameter have not been transferred. In this case turn off and then on the instrument supply to repeat the operation or remove the hot key, with power supply off, to restart the regulation.

8.2 Upload: How to program a "Hot Key" with the parameters of the instrument

1. Turn on the power supply.
2. Insert the hot key.
3. Enter the function Menu.
4. Select the **UPL** function (on the bottom display).
5. Push **SET** key and immediately the instrument starts transfer the parameters into the Hot key.

During the upload the regulation is locked and the top display shows the "**UPL**" blinking label. At the end of the UPLOAD will appear:

"End" if the programming procedure is completely OK, after 30seconds the regulation starts automatically.

"Err" if the programming procedure has found an error and the parameter have not been transferred. Repeat the procedure.

To exit the UPL function push the MENU key or wait the time-out (15 sec).

9. Programming using the keyboard

Through the instrument keyboard it is possible to enter the programming. In all the three accessible levels the user can show and modify both value and visibility of the parameters. To ensure an easy navigation through the different levels the common parameters have been named and grouped under a family name.

The three levels of programming:

- Pr1 User level
- Pr2 Maintenance level
- Pr3 OEM level

9.1 Password default values

- Password level Pr1 = **1**
- Password level Pr2 = **2**
- Password level Pr3 = **3**

Under the function Menu (to reset the Alarm Log or the Compressor Overload) the password is 0 (see parameter AL46)

Each password can be changed, the range is from 0 to 999.

Each parameter has two level: visibility and modify. Therefore it can be configured as follow:

- The parameter can be showed and changed.
- The parameter can be showed but not changed.

9.2 Enter the Pr1 - Pr2 - Pr3 programming levels

Pr1 LEVEL:

Push **SET** + **DOWN** together for 3 seconds, the top display shows the PAS label and the bottom display shows the Pr1 label. The leds cir1/cir2 are blinking (up and down leds) to inform that you now are in PR1 programming level.

Pr2 LEVEL:

From the Pr1 level push the UP key for 2 seconds and the bottom display will show Pr2. The top display still shows PAS.

Pr3 LEVEL:

From the Pr2 level push the UP key for 2 seconds and the bottom display will show Pr3. The top display still shows PAS.

After selecting the level push the SET key and the top display will show the 0 blinking value where to insert the password .

Set the password level using the UP and DOWN keys then confirm with SET key.

Dependening on the password value there will be the different level access, if the password is wrong the instrument shows the password value again.

ATTENTION:

For all the programming levels Pr1,2,3: the CF family (or configuration parameters) can not be changed if the unit is running in chiller, heat pump. The user can check the leds #1 and #2 and if they are blinking it is not possible to change this parameters but it is necessary to set the unit in stand-by and then enter the programming again.
During the defrost the dF family can't be programmed.

9.3 How to change a parameter value

Enter the programming

1. Push the **SET** + **DOWN** keys together for 3 seconds;
2. Select the parameter label with up and down keys;
3. Push **SET** to enter the parameter value;
4. Change the value with **UP** or **DOWN** keys;
5. Push "**SET**" to confirm, after some seconds the display shows the next parameter;
6. Exit: Push **SET + UP** together when a parameter label is displayed or wait 15seconds without pushing a key.

NOTE: a new parameter value is confirmed also after the 15 seconds of timeout is expired (without pushing SET key to confirm).

9.4 Change the Password value

Pr1 LEVEL

Remember that it is necessary to know the old password value.

1) Enter the Pr1 level
2) Select a parameter family.
3) Inside the family select the "**Pr1 - 1**", Pr1 on the bottom display, the current password value 1 on the top display. Push the SET key to change the value that now is blinking.
4) Use the UP or DOWN key to insert the NEW PASSWORD value, then push SET to confirm the new value.
5) The top display blinks for some seconds and then shows the next parameter.
6) Exit the programming pushing SET + UP together or wait the timeout.

Pr2 LEVEL

Remember that it is necessary to know the old password value.

1. Enter the Pr2 level
2. Select a parameter family.
3. Inside the family select the "**Pr2 - 2**", Pr2 on the bottom display, the current password value 2 on the top display. Push the SET key to change the value that now is blinking.
4. Use the UP or DOWN key to insert the NEW PASSWORD value, then push SET to confirm the new value.
5. The top display blinks for some seconds and then shows the next parameter
6. Exit the programming pushing SET + UP together or wait the timeout.

Inside the Pr2 level it is possible to change also the Pr1 password.

Pr3 LEVEL

Remember that it is necessary to know the old password value.

1. Enter the Pr3 level
2. Select a parameter family.
3. Inside the family select the "**Pr3 - 3**", Pr3 on the bottom display, the current password value "3" on the top display. Push the SET key to change the value that now is blinking.
4. Use the UP or DOWN key to insert the NEW PASSWORD value, then push SET to confirm the new value.
5. The top display blinks for some seconds and then shows the next parameter
6. Exit the programming pushing SET + UP together or wait the timeout.

Inside the Pr3 level it is possible to change also the Pr1 and Pr2 passwords.

9.5 Move a parameter level from Pr2 to Pr1

Enter Pr2 programming level

Select the parameter and if the led # 3 is off: the parameter is available only in Pr2.

To show the parameter also in Pr1:

1. Keep pushed SET key;
2. Push 1 time the DOWN key and the led 3 should be on, the parameter is now available in Pr1.

To hide the parameter in Pr1:

1. Keep pushed SET key;
2. Push 1 time the DOWN key and the led 3 should be off, the parameter is now removed from Pr1.

9.6 Move a parameter from Pr3 to Pr2 to Pr1

Enter Pr3 programming level, here the parameter are all visible:

Select the parameter, if all the leds are off the parameter is available only in Pr3.

To show the parameter also in Pr2 and Pr1:

1. Keep pushed SET key;
2. Push 1 time the DOWN key and the leds 3 and 4 should be on, the parameter is now available also in Pr2 / Pr1.

To show the parameter only in Pr2:

1. Keep pushed SET key;

2. Push 1 time the DOWN key and the leds 3 is off, the parameter is now available also in Pr2.
   To show the parameter only in Pr3:
1. Keep pushed SET key
2. Push 1 time the DOWN key and the leds 3 and 4 are off, the parameter is now available only in Pr3.

9.7 Visibility and Parameter value locked

To set the only visibility and lock the parameter value it is necessary enter Pr3 programming level.
Pr1 PARAMETER VISIBILITY
Enter the Pr3 level
1. Select the parameter;
2. Keep pushed the SET key;
3. Push 1 time the MENU key and the led 3 change from on to blinking: the parameter is visible in Pr1 but can't be changed.

Pr2 PARAMETER VISIBILITY
Enter the Pr3 level
1. Select the parameter;
2. Keep pushed the SET key;
3. Push 1 time the MENU key and the led 4 change from on to blinking the parameter is visible in Pr2 but can't be changed.

Leds 3 / 4 blinking: the parameter is visible in Pr1 and in Pr2 but in those levels now they can't be changed.

TO SET THE ORIGINAL TAG FOR THE PARAMETER Pr1 / Pr2
1. Keep pushed the **SET** key;
2. Push one time the **MENU** key, the leds 3 / 4 turn on, the parameter can be seen and modified in Pr1 and Pr2.

10. Function Menu " M" Key

The function Menu is composed of the following items:
1) Show and reset the alarms **ALrM**
2) Compressor overload alarm reset **COtr**
3) Show and reset the alarm log **ALOG**
4) Upload the parameter into the Hot Key **UPL**
5) Enable – disable one or the two circuits **CrEn**
6) Enable – disable one of the compressors **COEn**
7) Display the compressor discharge temperature **COdt**
8) Show and reset the number of compressor running hour **Hour**
9) Show and reset the number of compressor starts-up **COSn**
10) Show the condensing fan speed percentage of the proportional output **Cond**
11) Show the percentage of the proportional output 0 ÷ 10 Vdc **Pout**
12) Time counting to next defrost cycle, under heat pump mode, **dF**
13) Show the probe temperatures that enabled to control the auxiliary output **uS**
14) Show the probe the temperature of the remote panels **trEM**

MENU FUNCTION ACCESS: Push and release the **M** key.
MENU FUNCTION ACCESS: Push and release the **M** key or wait the 15seconds timeout limit.
With the **UP** or **DOWN** keys move inside the label list.

10.1 Alarm list: show and reset

ALrM FUNCTION
Enter the function MENU pushing M key one time
1) Use the **UP** or **DOWN** to select the AlrM label
2) Push **SET** key (Nothing happens if there are no active alarm events)
3) Bottom display: alarm label code. Top display: label **rSt** to reset or **NO** if it is not possible.
4) Use the **UP** or **DOWN** to scroll the alarm list.
5) Pushing SET when the rSt label is displayed the corresponding alarm will be reset, then the display shows next alarm in the list, pushing SET again the alarm is reset and the display shows next alarm etc. Nothing happens by pushing SET when the label NO is displayed, in this case push UP or DOWN to move to another alarm label.
6) To exit the ALrM reset function push MENU one time or wait the timeout.

10.2 Compressor overload alarm reset

COtr function resets the compressor overload alarm event.
Within the COtr function all the active compressor overload alarms are displayed in a list.
Labels involved in COtr: **CO1r = compressor 1 overload reset … CO6r = compressor 6 overload reset.** Labels CO1r – CO2r – CO3r – CO4r – CO5r - CO6r are available if the digital inputs have been previously configured.
ATTENTION
In the **COtr** function the alarm is displayed only after the number of events per hour have reched the Par. AL20 value,only after that number of events per hour the alarm becomes **MANUAL.**
MANUAL ALARM RESET PROCEDURE
Enter Menu function
1. Use **UP** or **DOWN** key and select the COtr on the bottom display.
2. Push **SET** one time, if there are active alarms the bottom display shows the alarm label eg. CO1r (for compressor 1) while the top display shows the label rSt to reset the alarm or NO if the alarm can

not be reset. Use the UP or DOWN keys to scroll all the alrm list.
3. Nothing happens by pushing SET when the label NO is displayed.
4. Pushing SET when the rSt label is displayed the corresponding alarm will be reset after the password: bottom display = ArSt while the top display = PAS.
5. Push SET and the top display blinks 0 while the bottom shows PAS. Insert the password using UP or DOWN key (see AL parameter family). If the password is OK the ArSt blinks for per 3seconds, if the password value is not correct the top display blinks 0 while the bottom shows PAS. If within 5 seconds no value is inserted the display label come back to CO1r function.
6. To exit the COtr function push MENU or wait the timeout.
7. Repeat operation 1 – 5 to reset the other alarms.

10.3 Compressor overload password.

The default value is **0** to change this value enter Pr3 level under the AL parameter family

10.4 Alarm log list

ALOG FUNCTION TO SEE THE ALARM LOG

The function and the alarm codes are visible only if there are alarm events. If many events are active at the same time the list displayed by increasing order.

Enter the function Menu

1. Select ALOG
2. Push **SET** one time. Nothing happens if there are no active alarm events.
3. The bottom display shows the alarm label, the top display shows the a number in the range 00 to 99.
4. Use the UP or DOWN keys to scroll the list.
5. To exit the ALOG function push MENU or wait the timeout.

10.5 Erase the Alarm log list

ALOG FUNCTION TO ERASE THE LOG LIST

1. Enter the function Menu.
2. Use the **UP** or **DOWN** keys to select ALOG on the bottom display.
3. Push on e time the **SET** key.
4. Within the ALOG function select with **UP** or **DOWN** keys, the **ArSt** label on the bottom display while the top display shows PAS.
5. Push **SET**: the bottom display shows **PAS** and the top display a blinking 0.
6. Insert the password (See parameter family AL)
7. If the password is OK the label **ArST** blinks for 5 seconds then the display returns to normal condition read-out (probes).
8. If the password is not correct the display shows **PAS** again. in any case is possible to scroll the list with **UP** or **DOWN**
9. To exit push the M key one time or wait the timeout.

10.6 Password value of the alarm list

The default value is **0** to change this value enter Pr3 level under the AL parameter family.

THE ALARM LIST CONTAINS 100 EVENTS IN A FIFO STRUCTURE. WHEN THE MEMORY IS FULL ANY NEW ALARM WILL ERASE THE OLDEST.

11. Display Information

11.1 Show the Set Point value

Push and release the **SET** key, the leds of the circuits are off and the set value is displayed.

In stand-by the bottom display shows **SetC** (set chiller), by pushing SET again the next label is **SetH** (set heat pump).

If the unit is running the only set displayed is related to the running mode.

11.2 Modify the Set Point

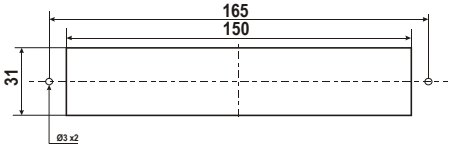
1) Push **SET** key for at least **3** seconds: the leds of the circuits are off and the set value is blinking.
2) Use the **UP** or **DOWN** key to modify the setpoint.
3) Push **SET** to confirm or wait the timeout (15seconds).

4) Installing And Mounting

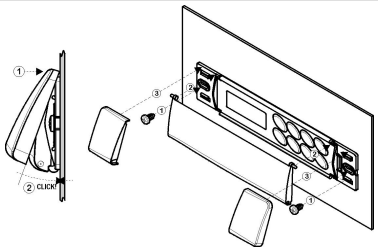
5) Panel cut- out

The instrument must be mounted on vertical panel, with panel cut-out 150x31mm, and screwed 2 screws ∅ 3 x 2mm, in between distance 165mm. The IP65 can be reached with the gasket RG-L (opzionale).

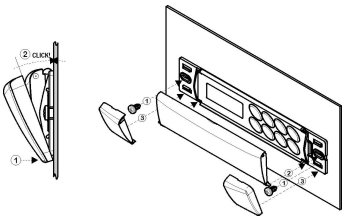
The ambient working temperature range should be between 0÷60°C. Avoid locations subject to heavy vibration, corrosive gases or excessive dirt. The same applies to the probes. Ensure ventilation around the instrument.



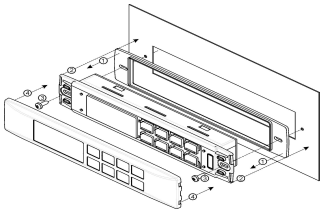
11.3 Plexiglass protection bottom open



11.4 Plexiglass protection top open

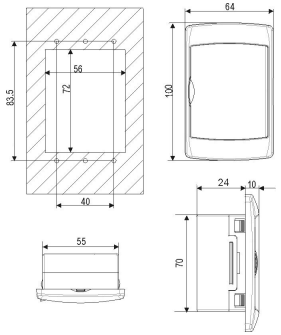


11.5 Montaggio Strumento Con Frontalino In Metallo



11.6 Vertical boards Vi620 – Vi820 panel cut-out

The remote terminals are for panel mounting, panel cut-out 72x56 mm, and screwed with two screws.The IP65 can be reached with the gasket RGW-V (optional).



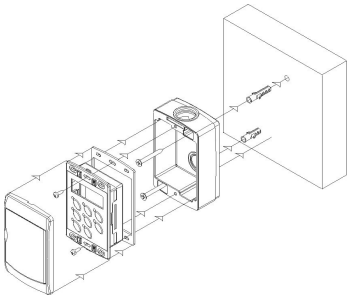


Fig. 1
WALL MOUNTING: use the vertical V-KIT (black, white and grey) as described in the following scheme:

12. Electrical Connections

The instrument is provided with:

- 3 removable terminal blocks MOLEX with 0.5 mm^2 wires: 16 / 8 /22 ways for digital / analogue inputs and modulating outputs.
- 4 removable screw terminal block STELVIO for 2.5 mm^2 wires connection: 3 / 4 / 5 / 6 ways for the relay outputs.
- 5 ways connector for TTL RS485 interface outputs.
- 2 ways connector for remote panels to be connected with the cable **CAB/CJ30**. The remote panels have two terminals for 2.5 mm^2 wires.
- The **LW30 KIT** is the complete kit with MOLEX + 3 mt wires already connected and the STELVIO terminals.
- Check the connecitons and the line voltage before turning on the power supply.
- Keep low voltage cables, such as analogue/digital inputs/outputs and probes, away from power cables and terminals.

Respect the maximum load current of each relay output, in case of power loads use filtered contactors .

13. Table Of The Output Status In Alarm Condition

The alarm codes are made of letters and numbers to define the different typologies:.

13.1 ALARM: "A" type and corresponding output off

Alarm Code	Alarm description	Comp	Anti freeze heaters Boiler	Support heaters	Evap. Pump. Supply fan	Condenser Pump	Ventilaz. cond. Cir1 Cir2	Auxiliary relay
AP1	Probe PB1 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP2	Probe PB2 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP3	Probe PB3 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP4	Probe PB4 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP5	Probe PB5 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP6	Probe PB6 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP7	Probe PB7 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP8	Probe PB8 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP9	Probe PB9 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AP10	Probe PB10 Alarm	Yes	Yes **(1)**	Yes			Yes	Yes **(2)**
AEFL	Low air temperature of the evaporator inlet (air / air unit) Alarm							
ACFL	Evaporator flow alarm	Yes	Yes (boiler)		Yes **(3)**		Yes	
AtSF	Condenser flow alarm	Yes				Yes **(3)**	Yes	
AtSF	Fan supply overload alarm	Yes		Yes	Yes		Yes	
AEUn	Unloading signalling from evaporator							
AtC1	Water pump overload alarm evaporator 1	Yes **(4)**	Yes (boiler) **(5)**		Yes		Yes	
AtC2	Water pump overload alarm support evaporator 2	Yes **(4)**	Yes (boiler) **(5)**		Yes		Yes	
AEE	Water pump overload alarm condenser 1	Yes **(4)**				Yes	Yes	
AFr	Water pump overload alarm support condenser 2	Yes **(4)**				Yes	Yes	
ALOC	Water pump maintenance evaporator 1							
ACF1	Water pump maintenance support evaporator 2							
ACF2	Water pump maintenance condenser 1							
ACF3	Water pump maintenance support condenser 2							
ACF4	Clock alarm							
ACF5	clock failure							
ACF6	Generic alarm with unit stopped	Yes			Yes	Yes	Yes	Yes
ACF7	Eeprom alarm	Yes			Yes	Yes	Yes	Yes
ACF8	Configuration alarm	Yes			Yes	Yes	Yes	Yes
ACF9	Configuration alarm	Yes			Yes	Yes	Yes	Yes
ArtF	Configuration alarm	Yes			Yes	Yes	Yes	Yes
ArtC	Configuration alarm	Yes			Yes	Yes	Yes	Yes
AEUn	Configuration alarm	Yes			Yes	Yes	Yes	Yes
ALti	Configuration alarm	Yes			Yes	Yes	Yes	Yes
AEP1	Configuration alarm	Yes			Yes	Yes	Yes	Yes
AEP2	Configuration alarm	Yes			Yes	Yes	Yes	Yes
ACP1	Configuration alarm	Yes			Yes	Yes	Yes	Yes
ACP2	Faulty clock							

(1) = with probe configured as anti-freeze / boiler control and Ar10 = 0
(2) = with probe configured as auxiliary relay control
(3) = with manual alarm procedure
(4) = Off compressors spenti with only 1 water pump configured or with 2 pumps but both in alarm from the corresponding digital inputs.
(5) = Boiler heaters off with only 1 water pump configured or with 2 pumps but both in alarm from the corresponding digital inputs (in this case the boiler heaters are on only with thermoregulation anti-freeze setpoint as evaporator protection function)

13.2 ALARM: "A" type and corresponding output off

Alarm Code	Alarm description	Compressors of the circuit (*n*)	Compressors of the other circuit	Fan condensing of the circuit (*n*)	Fan condensing of the other circuit
b(*n*)HP	High pressure switch of the circuit (***n***)	Yes		Yes after 60 seconds	
b(*n*)LP	Low pressure switch of the circuit (***n***)	Yes		Yes	
b(*n*)AC	Anti-freeze in chiller of the circuit (***n***)	Yes		Yes	
b(*n*)AH	Anti-freeze in heat pump of the circuit (***n***)	Yes		Yes	
b(*n*)hP	High condensing pressure of the circuit (***n***)	Yes		Yes after 60 seconds	
b(*n*)hP	High condensing temperature from NTC of the circuit (***n***)	Yes		Yes after 60 seconds	
b(*n*)LP	Low condensing pressure - (evaporating with low pressure transducer) with transducer of the circuit of the (***n***)	Yes		Yes	
b(*n*)lP	Low condensing temperature NTC circuit (***n***)	Yes		Yes	
b(*n*)tF	Fan overload circuit (***n***)	Yes		Yes	
b(*n*)PH	Pump down alarm in stop regulation of the circuit (***n***)	Yes		Yes	
b(*n*)PL	Pump down in regulation start-up of the circuit (***n***)	Yes		Yes	
b(*n*)dF	Bad defrost circuit (***n***)				
b(*n*)Cu	Unloading from condenser high temp/press of the circuit (***n***)				
b(*n*)Cu	Unloading from evaporator low temp/press of the circuit (***n***)	Yes		Yes	
b(*n*)rC	Recovery function disabled in circuit (**n**)				
b(*n*)ds	Circuit (**n**) disabled from keyboard	Yes		Yes	
b(*n*)Ac	Anti-freeze circuit (**n**) message in chiller				
b(*n*)Ah	Anti-freeze circuit (**n**) message in heat pump				

(***n***) identifies the circuit 1 or 2

13.3 ALARM: "A" type and corresponding compressor output off

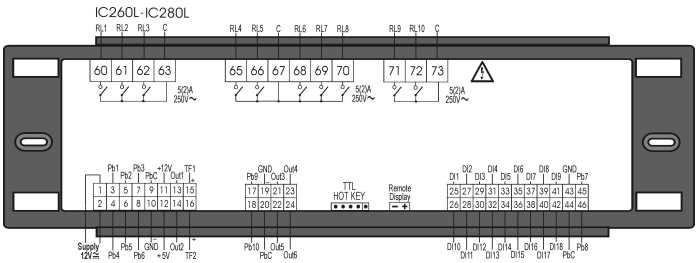
Alarm Code	Alarm description	Compressor (*n*)	Compressors not involved
C(*n*)HP	Compressor(*n*) high pressure switch	Yes	
C(*n*)oP	Compressor(*n*) oil pressure switch / Oil level switch	Yes	
C(*n*)tr	Compressor(*n*) overload	Yes	
C(*n*)dt	Compressor high discharge temperature	Yes	
C(*n*)dS	Compressor (n) disabled from keyboard	Yes	
C(*n*)Mn	Compressor(*n*) maintenane		

(*n*) identifies the compressor 1, 2 , 3 , 4 , 5 , 6

14. Wiring Connections

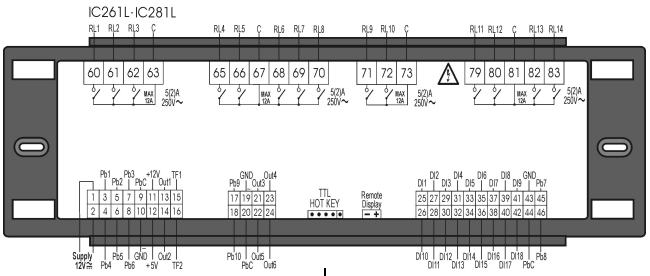
14.1 Hardware Resources for IC260L - IC280L Models

10 digital outputs (relays)
18 digital inputs (free of voltage)
10 analogue inputs: NTC probes or through configuration 6 NTC / PTC and 4 pressure transducer 4÷20mA or ratio-metric 0÷ 5.0Volt
6 modulating outputs
1 output for remote panel (max 2 remote panels)
1 TTL output for “Hot Key 64” connection or for XJ485, interface module for monitoring system, connection.
MAX current on the relay contacts relè 5(2)A 250V - MAX common current 12A 250V



14.2 Hardware Resources for IC261L - IC281L Models

14 digital outputs (relays)
18 digital inputs (free of voltage)
10 analogue inputs: NTC probes or through configuration 6 NTC / PTC and 4 pressure transducer 4÷20mA or ratio-metric 0÷ 5.0Volt
6 modulating outputs
1 output for remote panel (max 2 remote panels)
1 TTL output for “Hot Key 64” connection or for XJ485, interface module for monitoring system, connection.
MAX current on the relay contacts relè 5(2)A 250V - MAX common current 12A 250V



15. Analog and digital output configuration

15.1 Analog input Pb1 - Pb2 - Pb7 - Pb8 - Pb9 - Pb10

Parameters involved:
CF08 = Configuration PB1
CF09 = Configuration PB2
CF14 = Configuration PB7
CF15 = Configuration PB8
CF16 = Configuration PB9
CF17 = Configuration PB10

0. Not enabled
1. Temperature probe **PTC** for compressor #1 discharge
2. Temperature probe **PTC** for compressor #2 discharge
3. Temperature probe **PTC** for compressor #3 discharge
4. Temperature probe **PTC** for compressor #4 discharge
5. Temperature probe **PTC** for compressor #5 discharge
6. Temperature probe **PTC** for compressor #6 discharge
7. Temperature probe **NTC** for evaporator inlet
8. Temperature probe **NTC** for evaporator #1 outlet
9. Temperature probe **NTC** for evaporator #2 outlet
10. Temperature probe **NTC** for common evaporator outlet
11. Temperature probe **NTC** for common hot water condenser / recovery inlet
12. Temperature probe **NTC** for hot water of the condenser / recovery circuit #1 inlet
13. Temperature probe **NTC** for hot water of the condenser / recovery circuit #2 inlet
14. Temperature probe **NTC** for hot water of the condenser / recovery circuit #1 outlet
15. Temperature probe **NTC** for hot water of the condenser / recovery circuit #2 outlet
16. Temperature probe **NTC** for hot water of the condenser / recovery common outlet
17. Temperature probe **NTC** for free cooling water inlet circuit
18. Temperature probe **NTC** for free cooling external air temperature
19. Temperature probe **NTC** for dynamic setpoint external air / boiler / change over
20. Temperature probe **NTC** for combined defrost circuit #1
21. Temperature probe **NTC** for combined defrost circuit #2
22. Temperature probe **NTC** for auxiliary output #1
23. Temperature probe **NTC** for auxiliary output #2
24. Temperature probe **NTC** for condensing circuit #1
25. Temperature probe **NTC** for condensing circuit #2

After the number 25 the display configuration can be selected from **o 1** to **c63** that allows to set an analogue input as digital input (see polarity of the digital input/outputs).

15.2 Analog input Configuration Pb3 - Pb4 - Pb5 - Pb6

Parameter involved:
CF10 = Configuration PB3
CF11 = Configuration PB4
CF12 = Configuration PB5
CF13 = Configuration PB6

0 Not enabled
1 Temperature probe **PTC** for compressor 1 discharge
2 Temperature probe **PTC** for compressor 2 discharge
3 Temperature probe **PTC** for compressor 3 discharge
4 Temperature probe **PTC** for compressor 4 discharge
5 Temperature probe **PTC** for compressor 5 discharge
6 Temperature probe **PTC** for compressor 6 discharge
7 Temperature probe **NTC** for evaporator inlet
8 Temperature probe **NTC** for evaporator outlet # 1
9 Temperature probe **NTC** for evaporator outlet # 2
10 Temperature probe **NTC** for common evaporator outlet
11 Temperature probe **NTC** for common hot water condenser / recovery inlet
12 Temperature probe **NTC** for hot water condenser / recovery inlet circuit #1
13 Temperature probe **NTC** for hot water condenser / recovery inlet circuit #2
14 Temperature probe **NTC** for hot water condenser / recovery outlet circuit #1
15 Temperature probe **NTC** for hot water condenser / recovery outlet circuit #2
16 Temperature probe **NTC** for hot water condenser / recovery common outlet circuit
17 Temperature probe **NTC** for free cooling water inlet

18 Temperature probe **NTC** for free cooling external air
19 Temperature probe **NTC** for external air dynamic setpoint/ boiler / change over
20 Temperature probe **NTC** for combined defrost circuit #1
21 Temperature probe **NTC** for free cooling water inlet #2
22 Temperature probe **NTC** for auxiliary output #1
23 Temperature probe **NTC** for auxiliary output #2
24 Condenser probe circuit 1 (temperature **NTC** / pressure **4÷20 mA** / ratio-metric **0÷ 5Volt**)
25 Condenser probe circuit 2 (temperature **NTC** / pressure **4÷20 mA** / ratio-metric **0÷ 5Volt**)
26 Evaporator pressure probe circuit 1 (pressure **4÷20 mA** / ratio-metric **0÷ 5Volt**)
27 Evaporator pressure probe circuit 1 (pressure **4÷20 mA** / ratio-metric **0÷ 5Volt**)
28 Auxiliary output 1 pressure probe control (**4÷20 mA** / ratio-metric **0÷ 5Volt).**
29 Auxiliary output 2 pressure probe control (**4÷20 mA** / ratio-metric **0÷ 5Volt).**
30 Dynamic setpoint pressure probe (**4÷20 mA)**

After the number 30 the display read-out goes from "**o 1"** to "**c63"** that allows to set an analogue input as digital input (see polarity input of digital inputs).

15.3 Digital Input Configuration Id1 – Id18

Parameters involved:

CF36 = Configuration ID1…**CF53 =** Configuration ID18

0. Not enabled
1. Remote ON / OFF
2. Remote chiller / heat pump
3. Flow switch/ Supply fan overload
4. Flow switch of heated side
5. Antifreeze heater circuit 1
6. Antifreeze heater circuit 2
7. High pressure switch circuit # 1
8. High pressure switch circuit 2
9. Low pressure switch circuit 1
10. High pressure switch circuit 2
11. Compressor 1 high pressure
12. Compressor 2 high pressure
13. Compressor 3 high pressure
14. Compressor 4 high pressure
15. Compressor 5 high pressure
16. Compressor 6 high pressure
17. Compressor 1 overload
18. Compressor 2 overload
19. Compressor 3 overload
20. Compressor 4 overload
21. Compressor 5 overload
22. Compressor 6 overload
23. Condenser fan overload of circuit 1
24. Condenser fan overload of circuit 2
25. Condenser fan overload of circuit 1 and 2 (comun)
26. Water pump overload of evaporator 1
27. Water support pump overload of evaporator
28. Water pump overload of condenser 1
29. Water support pump overload of condenser
30. Recovery request for circuit 1
31. Recovery request for circuit 2
32. Defrost end of circuit 1
33. Defrost end of circuit 2
34. Energy Saving
35. Pressure switch / compressor 1 oil
36. Pressure switch / compressor 2 oil
37. Pressure switch / compressor 3 oil
38. Pressure switch / compressor 4 oil
39. Pressure switch / compressor 5 oil
40. Pressure switch / compressor 6 oil
41. Pump down pressure switch of circuit 1
42. Pump down pressure switch of circuit 2
43. Generic alarm from digital input with stop regulation
44. Digital input of thermoregulation request (motocondensing unit)
45. Digital input of cooling request (motocondensing unit)
46. Digital input of heating request (motocondensing unit)
47. Request / partialization 1 of compressor 1 (motocondensing unit)
48. Request / partialization 2 of compressor 1 (motocondensing unit)
49. Request / partialization 3 of compressor 1 (motocondensing unit)
50. Request compressor #2
51. Request / partialization 1 of compressor 2 (motocondensing unit)
52. Request / partialization 2 of compressor 2 (motocondensing unit)
53. Request / partialization 3 of compressor 2 (motocondensing unit)
54. Request compressor #3
55. Request / partialization 1 of compressor 3 (motocondensing unit)
56. Request / partialization 2 of compressor 3 (motocondensing unit)
57. Request / partialization 3 of compressor 3 (motocondensing unit)
58. Request compressor #4
59. Request / partialization 1 of compressor 4 (motocondensing unit)
60. Request / partialization 2 of compressor 4 (motocondensing unit)

61. Request / partialization 3 of compressor 4 (motocondensing unit)
62. Request compressor #5 (motocondensing unit)
63. Request compressor #6(motocondensing unit)

15.4 Digital Output (relay) Configuration RL1- RL14

Parameter involved:

CF54= Configuration RL1…**CF67=** Configuration RL14

0. Not enabled
1. Alarm
2. Evaporator water pump / Supply fan
3. Support water pump of the evaporator
4. Anti-freeze heater / integration heating / boiler circuit #1
5. Anti-freeze heater / integration heating / boiler circuit #2
6. Water pump of the condenser recovery circuit
7. Support water pump of the condenser recovery circuit
8. 4-way valve for chiller / heat pump inversion of the circuit #1
9. 4-way valve for chiller / heat pump inversion of the circuit #2
10. 1° condenser fan step ON/OFF control of the circuit #1
11. 2° condenser fan step ON/OFF control of the circuit #1
12. 3° condenser fan step ON/OFF control of the circuit #1
13. 4° condenser fan step ON/OFF control of the circuit #1
14. 1° condenser fan step ON/OFF control of the circuit #2
15. 2° condenser fan step ON/OFF control of the circuit #2
16. 3° condenser fan step ON/OFF control of the circuit #2
17. 4° condenser fan step ON/OFF control of the circuit #2
18. Solenoid valve of the pump-down circuit #1
19. Solenoid valve of the pump-down circuit #2
20. Recovery valve circuit #1
21. Recovery valve circuit #2
22. Free cooling ON/OFF valve
23. Auxiliary output circuit #1
24. Auxiliary output circuit #2
25. Pulse valve for screw compressor #1
26. Solenoid valve Intermittent for screw comp. #2
27. Solenoid valve of the liquid injection for compressor #1
28. Solenoid valve of the liquid injection for compressor #2
29. Direct start-up : compressor #1 relay
    PW start: relay PW #1 of the compressor #1
    Star-delta start: relay line #1 of the comp. #1
30. PW start: relay PW #2 of the compressor #1
    Star-delta start: relay linea #2 compressor #1
31. Star centre of the Star-delta start of the compressor 1#
32. Capacity step valve #1 compressor #1
33. Capacity step valve #2 compressor #1
34. Capacity step valve #3 compressor #1
35. By-pass gas valve compressor #1start
36. Direct start: compressor #2 start
    PW start: relay #1 of the compressor 2#
    Star-delta start: relay line #1 of the compressor #2
37. PW start: relay PW #2 of the compressor #2
    Star-delta start: relay line #2 of the compressor #2
38. Star centre of the Star-delta start of the compressor #2
39. Capacity step valve #1 compressor #2
40. Capacity step valve #2 compressor #2
41. Capacity step valve #3 compressor #2
42. By-pass gas valve compressor #2 start
43. Direct start: compressor #3 relay
    PW start: relay PW #1 of the compressor #3
    Star-delta start: relay line #1 of the compressor #3
44. PW start: relay PW #2 of the compressor #3
    Star-delta start: relay line #1 of the compressor #3
45. Star centre of the Star-delta start of the compressor #3
46. Capacity step valve #1 compressor #3
47. Capacity step valve #2 compressor #3
48. Capacity step valve #3 compressor #3
49. By-pass gas valve compressor #3 start
50. Direct start: compressor #4 relay
    PW start: PW#1 of the compressor #4
    Star-delta start: relay line #1 of the compressor #4
51. PW start: relay PW #2 of the compressor #4
    Star-delta start: relay line#1 of the compressor #4
52. Star centre of the Star-delta start of the compressor #4
53. Capacity step valve #1 of the compressor #4
54. Capacity step valve #2 of the compressor #4
55. Capacity step valve #3 of the compressor #4
56. By-pass gas valve compressor #4 start
57. Compressor #5 relay
58. Compressor #6 relay

15.5 Condenser proportional control configuration (2 outputs)

Proportional outputs used to configure a proportional output signal to condenser fan control

Parameters involved:

CF68 = Condenser control configuration for circuit 1

CF69 = Condenser control configuration for circuit 2
0= 0 ÷ 10Vdc (for external mono or three-phase fan control board)
1= 4÷20mA (for external mono or three-phase fan control board)
2= PWM (only for external mono-phase fan control board with cut phase control)

15.6 Proportional output configuration 0 ÷ 10 Vdc (4 outputs)

Parameters involved:
CF70 = Proportional output 1 configuration
CF71 = Proportional output 2 configuration
CF72 = Proportional output 3 configuration
CF73 = Proportional output 4 configuration
0 Not enabled
1 Free cooling dumper / mixing valve
2 3-way valve for hot water
3 Dumper for air change
4 Auxiliary output
After the read-out number 4 the display goes from the label "**o 1"** to "**c22"** (see input/output polarity), that allow to configure the output as digital output to control an external relay.

15.7 Other Outputs

Hot key connection

TTL connection
Remote keyboard connection

16. Table Of The Parameters

MENU SELECTION

Label	Description
ALL	Shows all the parameters
ST	Shows only the Thermoregulation parameters
CF	Shows only the Configuration parameters
SD	Shows only the Dynamic Setpoint parameters
ES	Shows only the Energy Saving, RTC parameters
CO	Shows only the compressor parameters
US	Shows only the Auxiliary Output parameters
FA	Shows only the Fan Control parameters
Ar	Shows only the Antifreeze Control parameters
DF	Shows only the Defrost parameters
AL	Shows only the Alarm parameters

Thermoregulation

Par.	Description	min	max	u.m.	Res.
ST 1	Chiller Setpoint Allow to modify the setpoint of the unit in chiller mode	ST02	ST03	°C/°F	dec/int
ST 2	Chiller minimum Setpoint Minimum setpoint limit for ST 1	-30.0 -22	ST01	°C °F	dec/int
ST 3	Chiller maximum Setpoint Maximum setpoint limit for ST 1	ST01	70.0 158	°C °F	dec/int
ST 4	Heat pump setpoint Allow to modify the setpoint of the unit in heat pump mode	ST05	ST06	°C/°F	dec/int
ST 5	Heat pump minimum Setpoint Minimum setpoint limit for ST 4	-30.0 -22	ST04	°C °F	Dec int
ST 6	Heat pump maximum Setpoint Maximum setpoint limit for ST 4	ST04	70.0 158	°C °F	Dec int
ST 7	Regulation band in chiller mode	0.0 0	25.0 45	°C °F	Dec int
ST 8	Regulation band in chiller heat pump	0.0 0	25.0 45	°C °F	Dec int
ST 9	Thermoregulation probe selection in chiller 0= Temperature probe NTC for evaporator inlet 1= Temperature probe NTC for evaporator outlet 1 2= Temperature probe NTC for evaporator outlet 2 3= Temperature probe NTC for common evaporator outlet 4= Temperature NTC probe from remote panel 1 5= Temperature NTC probe from remote panel 2	0	5		
ST 10	Thermoregulation probe selection in heat pump 0= Temperature probe NTC for evaporator inlet 1= Temperature probe NTC for evaporator outlet 1 2= Temperature probe NTC for evaporator outlet 2 3= Temperature probe NTC for common evaporator outlet 4= Temperature NTC probe from remote panel 1 5= Temperature NTC probe from remote panel 2 6= Temperature probe for water common inlet of the condenser 7= Temperature probe for water inlet of the circuit # 1 condenser 8= Temperature probe for water inlet of the circuit # 2 condenser 9= Temperature probe for water outlet of the circuit # 1 condenser 10= Temperature probe for water outlet of the circuit # 2 condenser 11= Temperature probe for water common otlet of the condenser ATTENTION To have the same thermoregulation for chiller and heat pump mode, set the parameters ST09 and ST10 with the same value	0	11		

ST 11	Type of thermoregulation 0= Proportional 1= Neutral zone	0	2		
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Display read-out				
Para.	**Description**	**min**	**max**	**M. u.**	**Res.**
dP 1	Default read-out of the top display	0	14		
dP 2	Default read-out of the bottom display	0	17		
dP 3	Default display read-out configuration top / bottom 0= Configurable 1= Top display: Evaporator IN, Bottom display: Evaporator OUT 2= Top display: Condenser IN, Bottom display: Condenser OUT 3=Top display: temperature/Condensing pressure, Bottom Display: evaporating pressure	0	3		
	Display read-out of the remote terminals				
dP4	Top display default read-out of the remote terminal_1 0= the read-out depends on the paremeters dP01 – dP02 – dP03 1= the read-out shows the NTC probe of the remote panel.	0	1		
dP5	Top display default read-out of the remote terminal_2 0= the read-out depends on the paremeters dP01 – dP02 – dP03 1= the read-out shows the NTC probe of the remote panel.	0	1		
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Configuration				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
	Unit Model				
CF 1	Type of unit 0= Air / air Chiller 1= Air / water Chiller 2= Water / water Chiller	0	2		
CF 2	Heat pump 0= no 1= Yes	0	1		
CF 3	Motocondensing unit (not available) 0= no 1= si	0	1		
	Compressors				
CF 4	Compressors number for circuit #1 1= 1 2= 2 3= 3 4= 4	0	4		
CF 5	Compressors number for circuit #2 0= 0 1= 1 2= 2 3= 3	0	3		
CF 6	Number of compressor parzialization 0= none 1= 1 2= 2 3= 3	0	3		

	Analog Inputs				
CF 7	Pressure or temperature analogue input functioning **0 = Temperature / pressure NTC – 4÷20 mA :** The condensing temperature is controlled with NTC probe while for the evaporating pressures of the circuits 1 and 2 and the pressure probe configured as auxiliary output 1 and 2 are controlled with 4÷20mA transducers. **1 = Pressure control with 4÷20 mA:** To control the evaporating and condensing pressures it is necessary a 4÷20mA transducer. **2 = Temperature / pressure NTC – 0÷5Vdc:** The condensing temperature is controlled with NTC probe while for the evaporating pressures of the circuits 1 and 2 and the pressure probe configured as auxiliary output 1 and 2 are controlled with 0÷5Vdc transducers. **3 = Pressure control with 0÷5Vdc:** To control the evaporating and condensing pressures it is necessary a ratiometric 0÷5Vdc transducer.	0	3		
CF 8	PB1 Configuration If configured as digital input	0 o 1	25 c63		
CF 9	PB2 Configuration If configured as digital input	0 o 1	25 c63		
CF 10	PB3 Configuration If configured as digital input	0 o 1	30 c63		
CF 11	PB4 Configuration If configured as digital input	0 o 1	30 c63		
CF 12	PB5 Configuration If configured as digital input	0 o 1	30 c63		
CF 13	PB6 Configuration If configured as digital input	0 o 1	30 c63		
CF 14	PB7 Configuration If configured as digital input	0 o 1	25 c63		
CF 15	PB8 Configuration If configured as digital input	0 o 1	25 c63		
CF 16	PB9 Configuration If configured as digital input	0 o 1	25 c63		
CF 17	PB10 Configuration If configured as digital input	0 o 1	25 c63		
	Probe Offset				
CF 18	PB1 Offset	-12.0 -10	12.0 53	°C °F	Dec int
CF 19	PB2 Offset	-12.0 -10	12.0 53	°C °F	Dec int
CF 20	PB3 Offset	-12.0 -10 -5.0 -72	12.0 53 5.0 72	°C °F bar psi	Dec int dec int
CF 21	PB4 Offset	-12.0 -10 -5.0 -72	12.0 53 5.0 72	°C °F bar psi	Dec int dec int
CF 22	PB5 Offset	-12.0 -10 -5.0 -72	12.0 53 5.0 72	°C °F bar psi	Dec int dec int
CF 23	PB6 Offset	-12.0 -10 -5.0 -72	12.0 53 5.0 72	°C °F bar psi	Dec int dec int
CF 24	PB7 Offset	-12.0 -10	12.0 53	°C °F	Dec int
CF 25	PB8 Offset	-12.0 -10	12.0 53	°C °F	Dec int
CF 26	PB9 Offset	-12.0 -10	12.0 53	°C °F	Dec int
CF 27	PB10 Offset	-12.0 -10	12.0 53	°C °F	Dec int
CF 28	Pressure value at 4mA or 0.5 Vdc of the PB3 transducer	0 0	50.0 725	Bar psi	Dec int
CF 29	Pressure value at 20mA or 5 Vdc of the PB3 transducer	0 0	50.0 725	Bar psi	Dec int

CF 30	Pressure value at 4mA or 0.5 Vdc of the PB4 transducer	0 0	50.0 725	Bar psi	Dec int
CF 31	Pressure value at 20mA or 5 Vdc of the PB4 transducer	0 0	50.0 725	Bar psi	Dec int
CF 32	Pressure value at 4mA or 0.5 Vdc of the PB5 transducer	0 0	50.0 725	Bar psi	Dec int
CF 33	Pressure value at 20mA or 5 Vdc of the PB5 transducer	0 0	50.0 725	Bar psi	Dec int
CF 34	Pressure value at 4mA or 0.5 Vdc of the PB6 transducer	0 0	50.0 725	Bar psi	Dec int
CF 35	Pressure value at 20mA or 5 Vdc of the PB6 transducer	0 0	50.0 725	Bar psi	Dec int
	Digital Inputs				
CF 36	Configuration of ID1	0 -o1	c63		
CF 37	Configuration of ID2	0 -o1	c63		
CF 38	Configuration of ID3	0 -o1	c63		
CF 39	Configuration of ID4	0 -o1	c63		
CF 40	Configuration of ID5	0 -o1	c63		
CF 41	Configuration of ID6	0 -o1	c63		
CF 42	Configuration of ID7	0 -o1	c63		
CF 43	Configuration of ID8	0 -o1	c63		
CF 44	Configuration of ID9	0 -o1	c63		
CF 45	Configuration of ID10	0 -o1	c63		
CF 46	Configuration of ID11	0 -o1	c63		
CF 47	Configuration of ID12	0 -o1	c63		
CF 48	Configuration of ID13	0 -o1	c63		
CF 49	Configuration of ID14	0 -o1	c63		
CF 50	Configuration of ID15	0 -o1	c63		
CF 51	Configuration of ID16	0 -o1	c63		
CF 52	Configuration of ID17	0 -o1	c63		
CF 53	Configuration of ID18	0 -o1	c63		
	Relay Outputs				
CF 54	Configuration of RL1	0 -o1	c58		
CF 55	Configuration of RL2	0 -o1	c58		
CF 56	Configuration of RL3	0 -o1	c58		
CF 57	Configuration of RL4	0 -o1	c58		
CF 58	Configuration of RL5	0 -o1	c58		
CF 59	Configuration of RL6	0 -o1	c58		
CF 60	Configuration of RL7	0 -o1	c58		
CF 61	Configuration of RL8	0 -o1	c58		
CF 62	Configuration of RL9	0 -o1	c58		
CF 63	Configuration of RL10	0 -o1	c58		
CF 64	Configuration of RL11	0 -o1	c58		
CF 65	Configuration of RL12	0 -o1	c58		
CF 66	Configuration of RL13	0 -o1	c58		
CF 67	Configuration of RL14	0 -o1	c58		
	Condensing proportional outputs				
CF 68	Circuit 1 output signal: 0= 0 – 10Vdc 1= 4 ÷ 20mA 2= PWM for mono phase fan control board	0	2		
CF 69	Circuit 2 output signal: 0= 0 – 10V 1= 4 ÷ 20Ma 2= PWM for mono phase fan control board	0	2		
	Uscite modulanti				
CF 70	Proportional output 1 0= Not enabled 1= Free cooling Dumper / Mixing valve 2= 3-way valve for hot water 3= Dumper for air change 4= auxiliary output Relay driver ON / OFF	0 o 1	4 c28		

CF 71	Proportional output 2 0= Not enabled 1= Free cooling Dumper / Mixing valve 2= 3-way valve for hot water 3= Dumper for air change 4= auxiliary output Relay driver ON / OFF	0 o 1	4 c28		
CF 72	Proportional output 3 0= Not enabled 1= Free cooling Dumper / Mixing valve 2= 3-way valve for hot water 3= Dumper for air change 4= auxiliary output Relay driver ON / OFF	0 o 1	4 c28		
CF 73	Proportional output 4 0= Not enabled 1= Free cooling Dumper / Mixing valve 2= 3-way valve for hot water 3= Dumper for air change 4= auxiliary output Relay driver ON / OFF	0 o 1	4 c28		
	Terminale remoto				
CF 74	Remote Panel 1 configuration 0= Not enabled 1= 6 keys 2= 6 keys and NTC ambient temperature sensor 3= 8 keys 4= 8 keys and NTC ambient temperature sensor	0	4		
CF 75	Remote Panel 2 configuration 0= Not enabled 1= 6 keys 2= 6 keys and NTC ambient temperature sensor 3= 8 keys 4= 8 keys and NTC ambient temperature sensor	0	4		
CF 76	Offset of the NTC probe of the remote terminal # 1	-12.0 -10	12.0 53	°C °F	Dec int
CF 77	Offset of the NTC probe of the remote terminal # 2	-12.0 -10	12.0 53	°C °F	Dec int
	Icon function				
CF 78	Icon function 0= ❄ chiller / ✹ heat pump 1= ✹ chiller / ❄ heat pump	0	1		
	Chiller / heat pump selection mode				
CF 79	0= from keyboard 1= from digital input 2= from analogue input	0	2		
	Automatic Change over				
CF 80	Change over setpoint for chiller/ heat pump inversion if Par. CF80=2	-30.0 -22	70.0 158	°C °F	Dec int
CF 81	Change over temperature differential if Par. CF80=2	0 0	25.0 45	°C °F	Dec int
	U. m. Unit of measurement				
CF 82	°C or °F selection 0= °C / °BAR 1= °F / °psi	0	1		
	Voltage frequency				
CF 83	Power supply frequency 0= 50 Hz 1= 60 Hz 2= cc voltage (ATTENTION with Par. CF81 = 2 the proportional outputs for fan control are not enabled and the frequency alarm is inhibited)	0	2		
	Serial Address				
CF 84	Serial address	1	247		
CF 85	Firmware Release				
CF 86	Eeprom parameter map				

Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Dynamic Setpoint				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
Sd 1	Maximum dynamic Offset in chiller mode	-30.0 -54	30.0 54	°C °F	Dec int
Sd 2	Maximum dynamic Offset in heat pump mode	-30.0 -54	30.0 54	°C °F	Dec int
Sd 3	External air setpoint in chiller mode	-30.0 -22	70.0 158	°C °F	Dec int
Sd 4	External air setpoint in heat pump mode	-30 -22	70.0 158	°C °F	Dec int
Sd 5	External air differential in chiller mode	-30.0 -54	30.0 54	°C °F	Dec int
Sd 6	External air differential in heat pump mode	-30.0 -54	30.0 54	°C °F	Dec int
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Energy saving				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
ES 1	Start of the Time band 1 (0÷24)	0	24.00	Hr	10 Min
ES 2	End of the Time Band 1 (0÷24)	0	24.00	Hr	10 Min
ES 3	Start of the Time band 2 (0÷24)	0	24.00	Hr	10 Min
ES 4	End of the Time Band 2 (0÷24)	0	24.00	Hr	10 Min
ES 5	Start of the Time band 3 (0÷24)	0	24.00	Hr	10 Min
ES 6	End of the Time Band 3 (0÷24)	0	24.00	Hr	10 Min
ES 7	Monday: energy saving activated Automatic unit on-off	0 - 0	7 - 7		
ES 8	Tuesday energy saving activated Automatic unit on-off	0 - 0	7 - 7		
ES 9	Wednesday energy saving activated Automatic unit on-off	0 - 0	7 - 7		
ES 10	Thursday energy saving activated Automatic unit on-off	0 - 0	7 - 7		
ES 11	Friday energy saving activated Automatic unit on-off	0 - 0	7 - 7		
ES 12	Saturday energy saving activated Automatic unit on-off	0 - 0	7 - 7		
ES 13	Sunday energy saving activated Automatic unit on-off	0 - 0	7 - 7		
ES 14	Energy Saving setpoint offset in chiller mode	-30.0 -54	30.0 54	°C °F	Dec int
ES 15	Energy Saving differential in chiller mode	0.0 0	25.0 45	°C °F	Dec int
ES 16	Energy Saving setpoint offset in heat pump mode	-30.0 -54	30.0 54	°C °F	Dec int
ES 17	Energy Saving differential in heat pump mode	0.0 0	25.0 45	°C °F	Dec int
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Compressors				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
CO 1	Minimum compressor ON time after the start-up.	0	250	10 sec	10 sec
CO 2	Minimum compressor OFF time after the switching off.	0	250	10 sec	10 sec
CO 3	ON delay time between two compressors or compressor and valve. During this time the led of the next resource is blinking.	1	250	Sec	
CO 4	OFF delay time between two compressors or compressor and valve. During this time the led of the next resource is blinking.	0	250	Sec	
CO 5	Output time delay after the main power supply start-up to the unit. All the loads are delayed in case of frequently power failures.	0	250	10 Sec	10 sec
	Partialization (Capacity Control)				

CO 6	Functioning (see Capacity Control) 0= With on/off steps 1= Continuous with steps and direct action 2= Continuous with steps and reverse action 3= Continuous with steps and direct total action	0	3		
CO 7	Start-up with minimum compressor power / automatic start-unloading valve 0 = Only at the compressor start-up (Minimum power automatic start-unloading valve off) 1= At the compressor start-up and during the termoregulation (Minimum power / automatic start-unloading valve off) 2 = Only at the screw compressor start-up (Minimum power automatic start-unloading valve off) 3= At the compressor start-up and during the termoregulation (Minimum power / Unloading valve ON with compressor off)	0	3		
CO 8	Relay ON time of the Solenoid valve Intermittent for screw compressor, with 0 the function is not enabled.	0	250	Sec	
CO 9	Relay OFF time of the Solenoid valve Intermittent for screw compressor	0	250	Sec	
	Compressor start-up				
CO 10	Kind of compressor start-up 0= Direct (vedi avviamento compressors) 1= Part - winding 2= Star-delta	0	2		
CO 11	If CO10= 1 part - winding start-up time. To change the time delay between the two contactors of the two compressor circuits. Se CO10= 2 Star-delta start-up time. To change the time delay between the contactor of the line 1 and the contactor of the centre of the star. (see part – winding /start-triangle functioning)	0	100	Dec. di Sec	0.1 sec
CO 12	If CO10= 2 Time of Star-delta start. Time delay to turn off the centre star contactor and to turn on the line 2 contactor (see Star-delta functioning)	0	50	Dec. di Sec	0.1 sec
CO 13	By-pass gas valve start-up time / automatic start-unloading valve (capacity step control)	0	250	sec	
	Rotating – Balancing – Compressors Thermoregulation				
CO 14	Compressor rotation (See compressor rotation) 0 = Sequential 1 = Compressors rotation based on time running hours 2 = Compressors rotation based on number of starts-up	0	2		
CO 15	Circuit balancing (See Circuit balancing) 0= Circuit saturation 1= Circuit balancing	0	1		
	Evaporator water pump				
CO 16	Operative mode of the evaporator pump / supply fan (See Evaporator pump function) 0= Not enabled (evaporator pump or supply fan). 1= Continuous. When the unit is running in Chiller or HP the pump or the supply fan is running. 2= With compressor. When a compressor is running also the pump or the supply fan is running.	0	2		
CO 17	ON compressor delay after water pump / supply fan start-up (See water pump functioning).	1	250	Min	
CO 18	OFF delay evaporator water pump / supply fan after compressor switching OFF. This delay is also active when the unit is turned in stand-by (See evaporator water pump function).	0	250	Min	
CO 19	Number of time running hours for pump rotation (See water pump group function)	0	999	10Hr	10Hr
CO 20	Time to make run the pumps together before rotating from one to the other (See water pump group function)	0	250	Sec	
	Condenser water pump				
CO 21	Operative mode for condenser water pump (See condenser water pump function) 0= Not enabled. 1= Continuous. When the unit is running in Chiller or HP the is running. 2= With compressor. When a compressor is running also the pump is running.	0	2		
CO 22	Free				
CO 23	OFF delay condenser water pump after compressor switching OFF. This delay is also active when the unit is turned in stand-by (See evaporator water pump function).	0	250	Min	
CO 24	Number of time running hours for pump rotation (See water pump group function).	0	999	10Hr	10Hr
CO 25	Time to make run the pumps together before rotating from one to the other (See water pump group function).	0	250	Sec	
	Load maintenance				
CO 26	Compressor 1 hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
CO 27	Compressor 2 hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
CO 28	Compressor 3 hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
CO 29	Compressor 4 hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
CO 30	Compressor 5 hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
CO 31	Compressor 6 hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
CO 32	"Evaporator pump / Supply fan" hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
CO 33	2nd Evaporator pump hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
CO 34	Condenser pump hour counter set (See maintenance request)	0	999	10 Hr	10 Hr

CO 35	2nd Condenser pump hour counter set (See maintenance request)	0	999	10 Hr	10 Hr
	Pump down				
CO 36	Pump down operating mode (See pump down ON/OFF function) 0= Not enabled 1= Unit off with pump–down, unit on without pump–down 2= Unit off with pump–down, unit on with pump–down 3= Chiller mode off with pump–down, chiller mode on without pump–down 4= Chiller mode off with pump–down, chiller mode on with pump–down	0	4		
CO 37	Pump–down pressure setpoint (See pump down ON/OFF function)	0 0	50.0 725	Bar psi	Dec int
CO 38	Pump-down pressure differential (See pump down ON/OFF function)	0 0	14.0 203	Bar psi	Dec int
CO 39	Maximum pump–down time duration at start-up and stop (See pump down ON/OFF function)	0	250	Sec	
	Evaporator Unloading				
CO 40	Unloading compressor setpoint in chiller. From high temperature of the evaporator water inlet (See unloading function).	-30 0	70.0 725	°C °F	Dec int
CO 41	Unloading Differential. From high temperature of the evaporator water inlet (See unloading function).	0.0 0	25.0 45	°C °F	Dec int
CO 42	Delay time to engage the Unloading function from high temperature of the evaporator water inlet (See unloading function).	0	250	Sec	10sec
CO 43	Maximum unloading duration time to keep activated the Unloading function from high temperature of the evaporator water inlet (See unloading function).	0	250	Min	
	Condenser Unloading				
CO 44	Unloading compressor setpoint. From temperature / pressure in chiller mode (See unloading function).	0 0	50.0 725	Bar psi	Dec int
CO 45	Unloading Differential. From temperature / pressure in chiller mode (See unloading function).	0.0 0	14.0 203	Bar Psi	Dec int
CO 46	Unloading compressor setpoint. From temperature / pressure in HP mode (See unloading function).	0 0	50.0 725	Bar psi	Dec int
CO 47	Unloading Differential. From temperature / pressure in HP mode (See unloading function).	0.0 0	14.0 203	Bar Psi	Dec int
CO 48	Maximum unloading duration time from temperature/pressure control.	0	250	Min	
CO 49	Number of steps for circuit with active unloading 1= 1st step 2= 2nd step 3= 3rd step	1	3		
CO 50	Minimum ON time of the capacity step after the unloading function start (only for capacity compressor)	0	250	Sec	
	Compressor liquid injection				
CO 51	Setpoint of the solenoid valve (on) of the liquid injection	0 0	150 302	°C °F	Dec / int int
CO 52	Setpoint of the solenoid valve (off) of the liquid injection	0.0 0	25.0 45	°C °F	Dec int
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Auxiliary relay menu function				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
	Auxiliary relay of the circuit 1				
US 1	Auxiliary relay 1 operating mode (See graph and auxiliary relay functions) 0= Not enabled 1= Always available with direct action 2= Available only when the unit is on with direct action 3= Always available with reverse action 4= Available only when the unit is on with reverse action	0	4		
US 2	Analog input configuration for auxiliary relay 1 control. Allows to select which probe value Pb1..Pb10 controls the relay	1	10		
US 3	Auxiliary setpoint 1 (See graph and auxiliary relay functions)	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
US 4	Auxiliary differential 1 (See graph and auxiliary relay functions)	0.0 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
	Auxiliary relay circuit 2				

US 5	Auxiliary relay 2 operating mode (See graph and auxiliary relay functions) 0= Not enabled 1= Always available with direct action 2= Available only when the unit is on with direct action 3= Always available with reverse action 4= Available only when the unit is on with reverse action	0	4		
US 6	Analogue input configuration for auxiliary relay 2 control . Allows to select which probe value Pb1..Pb10 controls the relay	1	10		
US 7	Auxiliary setpoint 2 (See graph and auxiliary relay functions)	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
US 8	Auxiliary differential 1 (See graph and auxiliary relay functions)	0.0 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Condenser fan				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
FA 1	Fan configuration output 0 = Not enabled 1 = Always on 2 = ON/OFF regulation with steps 3 = ON/OFF Continuous regulation 4 = Proportional speed control	0	4		
FA 2	Fan operating mode 0= Dependent from the compressor 1= Independent from the compressor	0	1		
FA 3	If the condenser fan control is the triac output, when the regulation starts the trigger output will drive the condenser fan at the maximum voltage for the time FA 3 then, then the regulation will follow the temperature/pressure of the probe.	0	250	Sec	
FA 4	Phase shifting of the fan motor	0	8	Micro Sec	250µs
FA 5	Number of condensing circuits 0= one condenser circuit 1= tow condenser circuits	0	1		
FA 6	Pre-ventilation time before turning on the compressor in chiller mode. To turn on the fan at the maximum speed before the compressor and reduce the successive condensing temperature/pressure increasing. (only if FA01=4)	0	250	Sec	
	Fan in Chiller mode				
FA 7	Minimum speed for condenser fan in Chiller mode. To set the minimum fan speed percentage value (30..100%), it is related to the fan power supply.	30	100	%	
FA 8	Maximum speed for condenser fan in Chiller mode. To set the maximim fan speed percentage value (30..100%), it is related to the fan power supply.	30	100	%	
FA 9	**Proportional speed control FA01 = 4** Temperature or pressure limit to enable the minimum speed FA 7 **ON/OFF regulation FA01 = 2/3** SETpoint step n° 1	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
FA 10	**Proportional speed control FA01 = 4** Temperature or pressure limit to enable the maximum speed FA 8 **ON/OFF regulation FA01 = 2/3** SETpoint step n° 2	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
FA 11	**Proportional speed control FA01 = 4** Proportional band for condenser fan control in chiller To set the temperature/pressure differential between the minimum and the maximum of the fan speed regulation. **ON/OFF regulation FA01 = 2/3** Differential step circuit n° 1	0.0 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
FA 12	**Proportional speed control FA01 = 4** CUT-OFF differential in chiller. To set a temperature/pressure differential to stop the fan. **ON/OFF regulation FA01 = 2/3** Differential step circuit n° 2	0.0 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
FA 13	Over ride CUT- OFF in chiller. To set a temperature/pressure differential to keep the minimum fan speed.	0.0 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int

FA 14	CUT-OFF time delay. To set a time delay before activating the CUT-OFF function after the fan start-up. If after the compressor start-up the proportional regulator requires to turn off the fan (cut-off) and FA14≠0, the fan is on at the minimum speed for the time set in this parameter. If FA14=0 the function is disabled.	0	250	Sec	
FA 15	Night speed in chiller. To set the maximum fan speed percentage value (30..100%), it is related to the fan power supply.	30	100	%	
	Fan in Heat pump mode				
FA 16	Minimum speed for condenser fan in Heat Pump mode. To set the minimum fan speed percentage value (30..100%), it is related to the fan power supply.	30	100	%	
FA 17	Maximum speed for condenser fan in Heat Pump mode. To set the maximum fan speed percentage value (30..100%), it is related to the fan power supply.	30	100	%	
FA 18	**Proportional speed control FA01 = 4** Temperature or pressure limit to enable the minimum speed FA16 **ON/OFF regulation FA01 = 2/3** SETpoint step n° 1	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
FA 19	**Proportional speed control FA01 = 4** Temperature or pressure limit to enable the maximum speed FA17 **ON/OFF regulation FA01 = 2/3** SETpoint step n° 2	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
FA 20	**Proportional speed control FA01 = 4** Proportional band for condenser fan control in heat pump To set the temperature/pressure differential between the minimum and the maximum of the fan speed regulation. **ON/OFF regulation FA01 = 2/3** Differential step circuit n° 1	0.0 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
FA 21	**Proportional speed control FA01 = 4** CUT-OFF differential in heat pump. To set a temperature/pressure differential to stop the fan. **ON/OFF regulation FA01 = 2/3** Differential step circuit n° 2	0.0 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
FA 22	Over ride CUT- OFF in Heat pump. To set a temperature/pressure differential to keep the minimum fan speed.	0.0 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
FA 23	Night speed in Heat pump. To set the maximum fan speed percentage value (30..100%), it is related to the fan power supply.	30	100	%	
	Hot start				
FA 24	Hot start setpoint	-30.0 -22	70.0 158	°C °F	Dec int
FA 25	Hot start differential	0.0 0	25.0 45	°C °F	Dec int
	3 / 4 step condenser Fan in Chiller mode				
FA 26	**ON/OFF regulation FA01 = 2/3** SETpoint step n° 3	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
FA 27	**ON/OFF regulation FA01 = 2/3** SETpoint step n° 4	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
	3 / 4 step condenser Fan in heat pump				
FA 28	**ON/OFF regulation FA01 = 2/3** SETpoint step n° 3	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
FA 29	**ON/OFF regulation FA01 = 2/3** SETpoint step n° 4	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Antifreeze heaters – Integration heating - boiler				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
Ar 1	Anti-freeze heaters/integration heating setpoint for air/air unit in Chiller mode. To set a temperature value, below this value the anti-freeze relay is activated.	-30.0 -22	70.0 158	°C °F	Dec int

Ar 2	Regulation band for antifreeze in Chiller mode.	0.1 0	25.0 45	°C °F	Dec Int
Ar 3	Set Anti-freeze heaters/integration heating setpoint for air/air unit in HP mode. To set a temperature value, below this value the anti-freeze relay is activated.	-30.0 -22	70.0 158	°C °F	Dec int
Ar 4	Regulation band for antifreeze in HP mode.	-30.0 -22	70.0 158	°C °F	Dec int
Ar 5	Antifreeze heaters / integration heating in defrost 0= ON only with thermoregulation control 1= ON with thermoregulation and during the defrosting cycle	0	1		
Ar 6	Antifreeze alarm probe / heaters / appoggio in Chiller mode. 0= Not enabled 1= Evaporator inlet 2= Evaporator outlet 1 and 2 3= Evaporator outlet 1 and 2 and common outlet	0	3		
Ar 7	Antifreeze alarm probe / heaters / support heaters in HP mode. 0= Not enabled 1= Evaporator inlet. 2= Evaporator outlet 1 and 2. 3= Evaporator outlet 1 and 2 and common outlet.	0	3		
Ar 8	Thermoregulation probe for anti-freeze alarm / condenser heaters. 0= not enabled. 1= Condenser common water inlet probe. 2= Condenser common water inlet and condenser inlet 1 / 2 probe. 3= Condenser water outlet 1 / 2 probe. 4= Condenser water outlet 1 / 2 and common outlet.	0	4		
Ar 9	Anti-freeze heaters or condenser/evaporator water pump control with unit in remote OFF or stand-by mode: 0= Control not enable 1=Controlled by anti-freeze thermoregulation.	0	1		
Ar 10	Anti-freeze heaters control for condenser/evaporator faulty probe: 0= Anti-freeze heaters OFF 1= Anti-freeze heaters ON	0	1		
	Boiler function				
Ar 11	Boiler function 0=Not enabled 1=Enabled for integration heating 2= Enabled for heating	0	2		
Ar 12	External air temperaure setpoint for boiler heaters (on)	-30.0 -22	70.0 158	°C °F	Dec int
Ar 13	Temperature differential for boiler heaters (off)	0 0	25.0 45	°C °F	Dec int
Ar 14	Time delay before turning the boiler on	0	250		Min
	Boiler function in Chiller mode				
Ar 15	Setpoint for boiler heaters (on) in chiller	-30.0 -22	70.0 158	°C °F	Dec int
Ar 16	Proportional band for boiler heaters in chiller	-30.0 -22	70.0 158	°C °F	Dec int
	Boiler function in heat pump				
Ar 17	Setpoint for boiler heaters (on) in HP	-30.0 -22	70.0 158	°C °F	Dec int
Ar 18	Proportional band for boiler heaters in HP	0.1 0	25.0 45	°C °F	Dec int
Ar 19	External air setpoint to stop the compressor as integration function	-30.0 -22	70.0 158	°C °F	Dec int
Ar 20	External air differential to stop the compressor as integration function	0.1 0	25.0 45	°C °F	Dec int
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Defrost				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
dF 1	Defrost configuration: 0= Not enabled 1= Temperature / pressure 2= start depends on par. dF24 stop for time duration 3= start depends on par. dF24 stop for external contact	0	3		

dF 2	Temperature or pressure of the defrost start-up	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F bar psi	Dec int Dec Int
dF 3	Temperature or pressure of the defrost stop	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F bar psi	Dec int Dec Int
dF 4	Minimum defrost duration.	0	250	Sec	
dF 5	Maximum defrost duration.	1	250	Min	
dF 6	Time delay between the defrost of two circuits	0	250	Min	
dF 7	OFF compressor delay before the defrost	0	250	Sec	
dF 8	OFF compressor delay after the defrost	0	250	Sec	
dF 9	Defrost interval time of the same circuit	1	99	Min	
dF 10	Temperature setpoint for combined defrost of the 1st circuit after parameter DF10 counting.	-30.0 -22	70.0 158	°C °F	Dec int
dF 11	Temperature setpoint for combined defrost end of the 1st circuit.	-30.0 -22	70.0 158	°C °F	Dec int
dF 12	Temperature setpoint for combined defrost of the 2nd circuit after parameter DF10 counting.	-30.0 -22	70.0 158	°C °F	Dec int
dF 13	Temperature setpoint for combined defrost end of the 2nd circuit.	-30.0 -22	70.0 158	°C °F	Dec int
dF 14	Activation of all the steps of the 1st circuit during the defrost. 0= Not enabled 1= Enabled	0	1		
dF 15	Activation of all the steps of the 2nd circuit during the defrost. 0= Not enabled 1= Enabled	0	1		
dF 16	Time delay between two compressor ON in defrost mode	0	250	Sec	
dF 17	Fan control during defrost / dripping time 0= Not enabled 1= Only in defrost 2= For both functions defrost / dripping time	0	2		
dF 18	Pressure / temperature setpoint to force the ventilation ON during the defrost.	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F bar psi	Dec int Dec Int
	Forced defrost				
dF 19	Minimum time delay before a forced defrost	0	250	sec	
dF 20	Pressure / temperature setpoint for a forced defrost	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F bar psi	Dec int Dec int
dF 21	Forced defrost differential	0.1 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
	Defrost operative mode				
dF 22	Defrost start-up with 2 circuits 0= Independent 1= If both have reached the necessary requirements 2= If one has reached the necessary requirements	0	2		
dF 23	End defrost for two circuits and common ventilation. 0= Independent 1= If both have reached the necessary end defrost requirements 2= If one has reached the necessary end defrost requirements	0	2		
	Start / stop defrost from analog input				
Par.	**description**	**min**	**max**	**M. u.**	**Res.**
dF 24	Start / stop defrost probe 0= start and stop with condenser temperatur / pressure probe 1= start with evaporator pressure probe / stop with condenser temperatur / pressure probe 2= start with condenser temperatur / pressure probe / stop with evaporator pressure probe 3= start and stop with evaporator pressure probe	0	3		
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Recovery				

Par.	description	min	max	M. u.	Res.
rC 1	Recovery modes 0 = not enabled 1 = 2 indipendent circuit 2 = both the circuit in parallel	0	2		
rC 2	Delay time delay with step forced off	0	250	Sec	
rC 3	Delay time delay with step forced off after the recovery valve activation	0	250	Sec	
rC 4	Recovery minimum time	0	250	Min	
rC 5	Minimum interval time between the end and the beginning of the next recovery	0	250	Min	
rC 6	Temperature setpoint to disable the recovery	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F Bar Psi	Dec int Dec int
rC 7	Temperature differential to restore the recovery	0.1 0 0.0 0	25.0 45 14.0 203	°C °F Bar Psi	Dec int Dec int
rC 8	Maximum time with recovery disabled (if temperature/pressure within rC6-rC7)	0	250	Min	
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		
	Alarms				
Par.	**Description**	**min**	**max**	**M. u.**	**Res.**
	Low alarm				
AL 1	Low pressure alarm delay from analog and digital input	0	250	Sec	
AL 2	Low pressure alarm delay from digital input after compressor stop if the low pressure switch is used for the pump down.	10	250	Sec	
AL 3	Low pressure alarm setpoint from analogue input	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F bar psi	Dec int Dec int
AL 4	Low pressure alarm differential from analogue input	0.1 0 0.0 0	25.0 45 14.0 203	°C °F bar psi	Dec int Dec Int
AL 5	Maximum number of low pressure events from digital/analogue inputs: Manual reset if AL05 = 0 Automatic reset if AL05 =16 From automatic to manual reset if AL05= 1..15	0	16		
AL 6	Low temperature/pressure alarm during defrost 0= Not enabled 1= Enabled	0	1		
AL 7	Low temperature/pressure alarm delay during defrost	0	250	Sec	
AL 8	Low temperature/pressure alarm with unit in OFF or stand – by: 0 = Not enabled 1= Alarm enabled	0	1		
	High Alarm				
AL 9	High temperature/pressure alarm from analogue input	-30.0 -22 0.0 0	70.0 158 50.0 725	°C °F bar psi	Dec int Dec int
AL 10	High temperature/pressure alarm differential from analogue input	0.1 0 0.0 0	25.0 45 14.0 203	°C °F bar psi	Dec int Dec int
	Oil Alarm				
AL 11	Low oil pressure / level delay from digital input	0	250	Sec	
AL 12	Minimum time for low oil pressure / level from digital input activation in normal working condition.	0	250	Sec	
AL 13	Maximum number of low oil pressure/level events: Always manual reset if AL13= 0 Always automatic reset if AL13 =16 From automatic to manual reset if AL13 = 1..15	0	16		
	Flow alarm				

AL 14	Configuration 0= Not enabled 1= Only for chiller 2= Only for heat pump 3= For both chiller and heat pump	0	3		
AL 15	"Flow switch / supply fan overload" alarm delay after pump/fun activation.	0	250	Sec	
AL 16	Maximum number of "flow switch/supply fan" alarm events Always manual reset if AL16 = 0 Always automatic reset if AL16 =16 From automatic to manual reset if AL16 =1..15	0/1	16		
AL 17	Minimum "Flow switch / supply fan overload" active time duration.	0	250	Sec	
AL 18	Minimum "Flow switch / supply fan overload" not active time duration.	0	250	Sec	
	Compressor overload alarm				
AL 19	Compressor overload alarm delay after compressor start-up	0	250	Sec	
AL 20	Maximum number of compressor overload alarm events Always manual reset if AL20 = 0 Always automatic reset if AL20 =16 From automatic to manual reset if AL20 =1..15	0	16		
	Pump down alarm				
AL 21	Maximum number of pump down alarm events per hour in stop condition. After this number the alarm is logged, displayed and signalled with alarm relay + buzzer. Manual reset if AL21 = 0 Automatic reset if AL21 =16 From automatic to manual reset if AL21 =1..15	0	16		
AL 22	Maximum number of pump down alarm events per hour in start-up condition. After this number the alarm is logged, displayed and signalled with alarm relay + buzzer. Always manual reset if AL22 = 0 Always automatic reset if AL22 =16 From automatic to manual reset if AL21 =1..15 and parameter AL23 config.	0	16		
AL 23	Select if the pump down alarm must change from automatic to manual reset: 0= Always automatic reset 1= Manual reset after AL21 alarm events	0	1		
	Anti-freeze alarm in Chiller mode				
AL 24	Minimum antifreeze setpoint in chiller (from –30 °C to AL24)	-30.0 -22	AL24	°C °F	Dec int
AL 25	Maximum antifreeze setpoint in chiller (from AL24 to 70 °C)	AL24	70.0 158	°C °F	Dec int
AL 26	Setpoint temperature for low anti-freeze alarm, low ambient temperature (air/air), low temperature air outlet (air/air). From AL24 to AL25.	AL24	AL25	°C/°F	Dec/int
AL 27	Differential of alarm reset in Chiller mode for anti-freeze, low ambient air temperature or low outlet air temperature alarms.	0 0	25.0 45	°C °F	Dec int
AL 28	Alarm delay for anti-freeze, low ambient air temperature or low outlet air temperature. The temperature must be lower than AL26 for this time duration before having the alarm event.	0	250	Sec	
AL 29	Maximum number of alarm events anti-freeze, low ambient air temperature or low outlet air temperature before changing from automatic to manual alarm reset: Always manual reset if AL29 = 0 Always automatic reset if AL29 = 16 From automatic to manual if AL29 = 1. .15	0	16		
AL 30	Anti-freeze alarm configuration in chiller 0= to turn the compressors off when the anti-freeze control probe is lower than AL26 (after the time delay), the display shows the alarm label. Buzzer and Alarm relay are not activated. 1= to turn the compressors off when the anti-freeze control probe is lower than AL26 (after the time delay), the display shows the alarm label. Buzzer and Alarm relay are activated.	0	1		
	Anti-freeze alarm in Heat pump mode				
AL 31	Setpoint of the minimum limit in heat pump (va da – 30 °C a AL32)	-30.0 -22	AL31	°C °F	Dec int
AL 32	Setpoint of the maximum limit in heat pump (va da AL31 a 70 °C)	AL31	70.0 158	°C °F	Dec int
AL 33	Anti-freeze alarm setpoint in heat pump Setpoint temperature for low anti-freeze alarm, low ambient temperature (air/air), low temperature air outlet (air/air). (from AL31 to AL32)	AL31	AL32	°C/°F	Dec/int
AL 34	Alarm differential in heat pump. To reset the anti-freeze, low ambient Temperature (air/air), low temperature air outlet (air/air) alarms.	0 0	25.0 45	°C °F	Dec int

AL 35	Anti-freeze alarm delay in HP for low outlet air temperature (air/air) **Attention** If during the Stand-by or remote off there is an anti-freeze alarm event, and the AL35 <>0, starting the heat pump mode, from keyboard or digital input. In this case the anti-freeze alarm is aborted and the compressor starts for the AL35 time to heat the air or the water. After the AL35 time if the antifreeze probe value is still lower than AL33 setpoint, for maximum AL36 seconds, the unit is stopped and the anti-freeze alarm is generated again.	0	250	Sec	
AL 36	Anti-freeze alarm delay for low air ambient temperature or low outlet air temperature in heat pump normal condition. The detected temperature must be lower than AL33 for the time AL36 before giving the alarm	0	250	Sec	
AL 37	Maximum number of anti-freeze alarm events for low air ambient temperature or low outlet air temperature in heat pump. It sets the alarm reset condition: Always manual reset AL37 = 0 Always automatic reset AL37 = 16 From automatic to manual reset if AL37 = 1..15	0	16		
AL 38	Anti-freeze alarm configuration in heat pump 0= to turn the compressors off when the anti-freeze control probe is lower than AL33 (after the time delay), the display shows the alarm label. Buzzer and Alarm relay are not activated. 1= to turn the compressors off when the anti-freeze control probe is lower than AL33 (after the time delay), the display shows the alarm label. Buzzer and Alarm relay are activated.	0	1		
	Compressor high discharge temperature				
AL 39	Compressor high discharge temperature setpoint	0 0	150 302	°C °F	Dec / int int
AL 40	Compressor high discharge temperature differential	0 0	25.0 45	°C °F	Dec int
AL 41	Number of compressor high discharge temperature events per hour to determine the alarm reset condition: Always manual reset if AL41 = 0 Always automatic reset if AL41 =16 From automatic to manual if AL41 = 1..15	0	16		
AL 42	Maximum number of generic alarm events (each event stop the regulation) before turning the alarm from automatic to manual: Always manual AL42 = 0 Always automatic AL42 =16 From manual to utomatic if AL42 value is between 1 and 15	0	16		
AL 43	Generic alarm delay time after the digital input activation	0	250	Sec	
AL 44	Generic alarm delay time after the digital input is not activate	0	250	10 sec	10 sec
	Alarm relay				
AL 45	Enable alarm relay with unit in off or stand – by: 0= Alarm output not enabled 1= Alarm output enabled	0	1		
	Password reset: Alarm log – Compressor overload				
AL 46	Password value to reset the alarm log or the compressor overload alarm.	0	999		
AL 47	Thermal alarm of the compressor 0= lock the compressor 1= lock the whole circuit	0	1		
Pr1	Password	0	999		
Pr2	Password	0	999		
Pr3	Password	0	999		

17. Technical Data

Housing: self extinguishing ABS.
Case: frontal 185x38 mm; depth 70mm (L format)
Mounting: panel mounting in a 150x31mm panel cut-out
Frontal protection: IP65 with gasket
Display:
Top Display 3 digits with d.p.
Bottom Display 4 digits with d.p.
Connections: Removable screw terminal block 2,5mm2.
Power supply:
12Vac/dc,-10%÷+15%
24 Vac/dc±10%. 50/60 HZ (opzionale)
Power absorption: 10VA max.
Inputs: 10 NTC or 6 NTC + 4 (4 ÷ 20ma – 0 ÷ 5Volt)
Digital inputs: # 18 (free voltage)
Relay outputs: 14 SPDT 5(2) A, 250Vac.
Data storing: on the non-volatile memory (EEPROM).
Operating temperature: 0÷60 °C.
Storage temperature: -30÷85 °C.
Relative humidity: 20,85% (no condensing)
Measuring range: - 30÷70 °C (- 22 ÷ 158 °F) NTC / 0÷150 °C (0÷302 °F) PTC or 0÷ 50 bar (0÷725 psi)
Resolution: 0,1 °C or 1 °F (selectable)
Accuracy of the controller at 25°C: ±0,7 °C ±1 digit