Digital controller for CDU management
XC10CX and XC30CX

1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.
- Dixell Srl reserves the right to change the composition of its products, even without notice, ensuring the same and unchanged functionality.

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.
- Fit the probe where it is not accessible by the End User. 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 (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

2. GENERAL DESCRIPTION

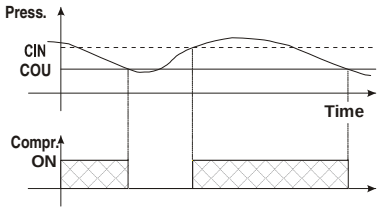
Model **XC30CX**, format 32x74mm, is a digital thermostat for condensing unit applications. It provides three digital (relay) outputs, one for the compressor and the other ones to control the fans. It is also provided with 2 NTC or ratiometric probe inputs, to be used on the suction and condenser line. Several digital inputs can operate to manage the condensing unit safeties. The **HOT-KEY** output allows to program the controller by means the **HOT-KEY** programming key. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard.

Model **XC10CX** differs from the **XC30CX** on the digital output number. In fact, the **XC10CX** has only one digital output, which is used to control the compressor.

3. CONTROLLING LOADS

3.1 COMPRESSOR

The regulation is performed according to the pressure measured by the suction probe P1.
The compressor cut in is give by the **Cin** parameter.
The compressor cut out is give by the **Cou** parameter.



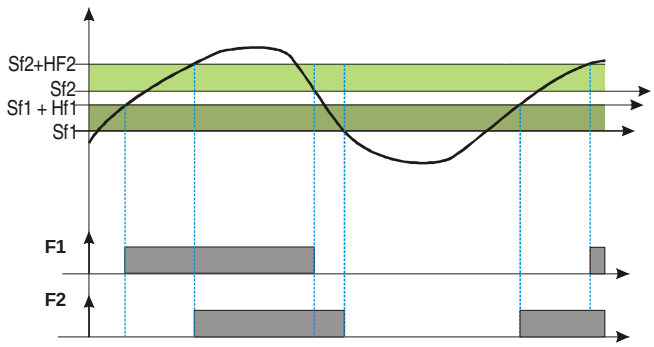
In case of fault in the regulation probe the start and stop of the compressor are timed through parameters **Con** and **CoF**.

3.2 FAN MANAGEMENT (ONLY FOR XC30CX)

The **XC30CX** is able to control 1 or 2 condenser fans.
A direct regulation is performed (cooling). It depends on the parameters:

SF1	**Set point for fan1** (with NTC probe: -40°C to SF2 or 40°F to SF2; with pressure probe: P2i to SF2 bar/PSI/kPA)
HF1	**Differential for fan 1** (0.1 to 10.0°C/bar; 1 to 100°F/PSI)
SF2	**Set point for fan2** (with NTC probe: SF1 to 110°C or SF1 to 230°F; with pressure probe: SF1 to P2E bar/PSI/kPA)
HF2	**Differential for fan 2** (0.1 to 10.0°C/bar; 1 to 100°F/PSI/kPA)

A fan is switched on when the temperature (pressure) is higher than **SF1+HF1** and switched off when it comes back to **SF1**, as explained in the following picture



3.3 FAN CYCLING (ONLY FOR XC30CX)

To share the running hours between the 2 fans, the XC30CX will record the operating hours of each fan. The controller will rotate the fan activation and de-activation to share the operating hours between the 2 fans.

Note: with only one fan, it will be activated with **T>SF1+HF1** and switched off with **T<SF1**.

4. FRONT PANEL COMMANDS

SET	To display target set point; in programming mode it selects a parameter or confirm an operation.
Start	**(RESTART)** It depends on the **rSC** parameter; **with rSC=rSt** it allows a manual restart and a "dead band reset"; with **rSC=nP** only the dead band reset is allowed.
∧	**(UP)** To see the condenser temperature for 5 sec; in programming mode it browses the parameter codes or increases the displayed value.
∨	**(DOWN)** To see the **dLt** temperature; in programming mode it browses the parameter codes or decreases the displayed value.
🔧	**(SERVICE)** To enter the service menu.
🕮	**(Alarm menu)** To enter the Alarm menu.

KEY COMBINATIONS:

∧ + ∨	To lock & unlock the keyboard.
SET + ∨	To enter in programming mode.
SET + ∧	To return to the suction pressure display.

4.1 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	FUNCTION
	ON	Compressor enabled
	Flashing	Anti-short cycle delay enabled
Fan1	ON	Fan1 enabled (only for XC30CX)
Fan2	ON	Fans enabled (only for XC30CX)
kPA	ON	kPA display
	Flashing	Programming mode
bar	ON	bar display
	Flashing	Programming mode
PSI	ON	PSI display
	Flashing	Programming mode
🔧	ON	You're browsing the service menu
🕮	Flashing	A new alarm happened
	ON	You're browsing the alarm menu
🔔	ON	An alarm is occurring

5. OTHER FUNCTIONS

5.1 PRESSURE PROBE ERROR BY-PASS AT START UP

If a pressure probe error occurs at start-up, it will be by-passed for the **P1d** time, and the compressor will be switched on when the following conditions are satisfied:

- **odS**, regulation delay at start up, is expired.
- With **di1=Y**, the thermostat digital input 14-17 is enabled.
- The **HP** digital input or the **dLt** temperature is not locking the regulation.

In this period the controller displays the flashing label **P1E**.
If during the **P1d** time the pressure probe error recovers, the standard regulation will start, otherwise, when **P1d** expires the pressure probe error P1 will be signaled and the compressor will be switched on and off cyclically with **Con** and **CoF** period.

5.2 PRESSURE PROBE ERROR BY-PASS WHEN THE COMPRESSOR IS NOT WORKING

When the compressor is switched off the pressure probe error is not signalled. In this case if the pressure raises and exceeds the pressure probe range, the controller will display the last value flashing.
In this situation the compressor will restart when:

a. With **di1=Y**: the thermostat digital input (14-17) is enabled.
b. With **di1=n**: as soon as the delays for the compressor restart are expired.
c. If the compressor was switched off because of **HP** safety digital input or because of a too high **dLt** temperature, it will be able to restart as soon as these conditions are removed.

5.3 RESET DEAD BAND

If the pressure value is in the range [**Cou** to **Cin**] and the compressor relay is off, it's possible to force it keeping the **RESTART** key pressed for 2 sec. The compressor will run till the **Cou** threshold is reached.

5.4 EXTERNAL THEMOSTAT (14-17)

Function: the thermostat input, if present, enables the regulation only when active.
Contacts: 14-17 free voltage.

Parameters:

di1	**Thermostat digital input presence (14-17)** **n** = the regulation is performed independently from the status of digital input 14-17. **Y** = the regulation is performed only when the digital input 14-17 is enabled.
i1P	**Thermostat digital input polarity 14-17** **oP** = the digital input is activated by opening the contacts 14-17. **CL** = the digital input is activated by closing the contacts 14-17.

5.5 HP SAFETY PRESSURE SWITCH (15-17)

Function: the HP safety input, if present, switches off the compressor when active.
Contacts: 15-17 free voltage
Parameters:

di2	**HP safety digital input presence 15-17** **n** = the regulation is performed independently from the status of digital input 15-17. **Y** = the regulation is performed only when the digital input 15-17 is disabled.
i1P	**HP safety digital input polarity 15-17** **oP** = the digital input is activated by opening the contacts 15-17. **CL** = the digital input is activated by closing the contacts 15-17.
HPn	**HP safety digital input activation before compressor lock** **0** = always automatic restart **1 to 15** = when the number of activation of the digital input in an hour reaches **HPn** times, the regulation is locked and a manual restart is required.
HPF	**Minimum time of compressor off when the HP digital input is activated** (0 to 15 min).

5.5.1 Functioning

NOTE: the HP safety digital input is checked only when the compressor is running

If the **HP** safety digital input is activated, the following actions will be performed

a. The compressor will be shut down.
b. The display will show the "HP" message alternated with suction probe
c. The HP alarm counter will be increased.

5.5.2 Automatic restart

If the **HP** digital input is switched off, the compressor will be able to restart only when the **HPF** and **AC** timers are expired.
If the **HP** digital input is activated **HPn** times in an hour, a manual restart will be required. In this situation:

a. The compressor will be shut down.
b. The display will show the "HPL" message alternated with suction probe.
c. The HP alarm counter will be increased.

5.5.3 Manual restart

a. Switch the controller off and on **- or -**
b. With **rSC=rSt,** keep the RESTART key pressed more than 5 sec **- or -**
c. Enter programming mode and set **rSt=Y**.

5.6 BUMP START FUNCTION

Purpose: the bump start function is useful to get the refrigerant out of the compressor, without losing all of the oil, in the event of a flooded start and when pump-down and crank-case heaters are not applicable or inadequate.

Parameters:

bMP	**Bump start enabling** **n** = bump start disabled. **Y** = bump start enabled.
on	**Compressor on time:** 1 to 15 sec.
oFF	**Compressor off time:** 1 to 15 sec.
nub	**Number of cycle during bump start:** 1 to 15.
bEn	**Compressor stop time for next bump start:** 1.0 to 23h50min, res. 10 min.

5.6.1 Functioning

At power on, after a power down or when the compressor remains off for the **bEn** time, it is activated for **on** seconds and switched off for **oFF** seconds **nub** times.

5.7 COMPRESSOR SHUT DOWN WITH HIGH DLT TEMPERATURE ALARM

Purpose: with P3C=dLt, it's possible to connect a PTC 990ohm probe to the 16-17 terminals for monitoring the discharge line temperature. When the temperature reaches the set threshold, the compressor will be shut down.
Parameters

doF	**DLT alarm temperature to stop compressor:** don to 200°C; don to 392°F.
don	**DLT temperature for compressor restart:** -30.0°C to doF; -22°F to doF.
ALd	**Stop compressor delay:** 0 to 255 sec.
nPS	**Number of activation of DLT alarm in a hour to lock compressor** **0** = always automatic restart. **1 to 15** = when the DLT alarm happens **nPS** times in an hour, the regulation is locked and a manual restart is required.
dLF	**Minimum time of compressor off with dLt temperature alarm:** 0 to 15 min.

5.7.1 Functioning

When the temperature detected by the **DLT** probe is higher than **doF** value, the following actions will be performed:

a. The compressor will be shut down.
b. The display will show the "dLt" message alternated with suction probe.
c. The **dLt** alarm counter will be increased.

5.7.2 Automatic restart

When the temperature detected by the **dLT** probe is lower than the **don** value, the compressor will be able to restart only when both **dLF** and **AC** timers will expire.

If the temperature detected by the **dLT** probe reaches the **doF** value **nPS** times in an hour, a manual restart will be required.
In this situation:

a. The compressor will be shut down.
b. The display will show the "dLL" message alternated with suction probe.
c. The **dLL** alarm counter will be increased.

5.7.3 Manual restart

a. Switch controller off and on **- or -**
b. With **rSC=rSt**, keep the **RESTART** key pressed more than 5 sec **- or -**
c. Enter programming mode and set **rSt=Y**.

NOTE: In any case the compressor can restart only if the dLt temperature is less than don value.

6. MAIN INTERFACE

6.1 HOW TO SEE THE SETPOINT

1. Push and immediately release the **SET** key: the display will show the **Cin** message.
2. Push the **SET** key to see the value.
3. Push and immediately release the **SET** key: the display will show the **Cou** message.
4. Push the **SET** key to see the value.

6.2 HOW TO MODIFY THE SETPOINT

1. Keep push the **SET** key since the display will show the **Cin** message.
2. Push the **SET** key to see the value.
3. Use **UP** or **DOWN** to change its value
4. Push and immediately release the **SET** key: the display will show the **Cou** message.
5. Push the **SET** key to see the value.
6. Use **UP** or **DOWN** to change its value

6.3 HOW TO CHANGE A PARAMETER VALUE

To change a parameter value, operate as follows:
1. Enter the Programming mode by keeping **SET+DOWN** keys pressed 3 sec (the "**PSI**" or "**bar**" LED starts blinking).
2. Select the required parameter. Press **SET** key to display its actual value.
3. Use **UP** or **DOWN** to change its value.
4. Press **SET** to store the new value and move to the following parameter.

To exit: Press **SET+UP** or wait for 15 sec without pressing a key.
NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

6.4 THE HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

6.4.1 HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing the **SET+DOWN** buttons for 3 sec (the °**C** or °**F** LED will start blinking).
2. Released the buttons and then push again the **SET+DOWN** buttons for more than 7 sec. The Pr2 label will be displayed immediately followed from the **HY** parameter.
   Now it is possible to browse the hidden menu.
3. Select the required parameter.
4. Press the **SET** button to display its value.
5. Use **UP** or **DOWN** to change its value.
6. Press **SET** to store the new value and move to the following parameter.

To exit: Press **SET+DOWN** or wait 15 sec without pressing a key.

NOTE1: if no parameter is present in Pr1 menu, after 3 sec the "**noP**" message will be displayed. Keep the buttons pushed till the Pr2 message will be displayed.

NOTE2: the set value is stored even when the procedure is exited by waiting for the time-out to expire

6.4.2 HOW TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA

Each parameter present in the hidden menu (Pr2) can be moved into the user level (Pr1) by pressing **SET+DOWN** buttons. If a parameter is part of the user level, when showed in the hidden menu the decimal point will be lit.

6.5 HOW TO LOCK THE KEYBOARD

1. Keep both **UP** and **DOWN** buttons pressed for more than 3 sec.
2. The "**PoF**" message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point or the MAX o Min temperature stored
3. If a button is pressed more than 3 sec the "**PoF**" message will be displayed.

6.6 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3 sec the **UP** and **DOWN** keys till the **"Pon"** message will be displayed.

7. ALARM MENU

The controller records in the Alarm menu the total number of activation of the following alarms.
- HP safety pressure switch activation (up to 999) - **HP** menu
- High **dLt** temperature alarm (up to 999) - **dLt** menu
- Total number of manual restarts (HPL and dLL) up to 255 - **LOC** menu.

7.1 HOW TO SEE THE ALARM COUNTERS

1. Push and release **ALR** key.
2. The controller will show the "HP" label.
3. Push **SET** key to see the number of activations.
4. The controller will show the "dLt" label.
5. Push the **SET** key to see the number of activations.
6. The controller will show the "LoC" label.
7. Push the **SET** key to see the number of activations.

8. SERVICE MENU

In the **SERVICE** menu are stored the following information:

- **Number of compressor activations: StH** (0 to 999, res. 1000); **StL** (0 to 999, res. 1) ES: **StH=22** and **StL=568**: the total number of compressor activations is 22568.
- **Compressor working time (hours): CHH** (0 to 65, res. 1000); **CHL** (0 to 999, res. 1). **NOTE:** When the 65535 value is reached, the storing will be locked and the **H_C** alarm will appear. **To reset** the alarm: enter programming mode and set **rCh=Y**.
- **Fan1 working time (hours): F1H** (0 to 65, res. 1000); **F1L** (0 to 999; res. 1). **NOTE:** When the 65535 value is reached, the storing will be locked and the **H_F** alarm will appear. **To reset** the alarm: enter programming mode and set **rFh=Y**.
- **Fan2 working time (hours): F2H** (0 to 65, res. 1000); **F2L** (0 to 999; res. 1). **NOTE:** When the 65535 value is reached, the storing will be locked and the **H_F** alarm will appear. **To reset** the alarm: enter programming mode and set **rFh=Y**.

8.1 HOW TO ENTER THE SERVICE MENU

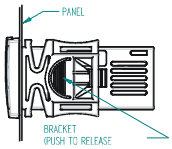
Keep **SERVICE** key pressed 3 sec. After that the menu StH, StL, CHH, CHL, F1H, F1L, F2H and F2L will be showed.
To exit: push and release **SERVICE** key or both **SET+UP** keys.

9. PARAMETERS

LABEL	DESCRIPTION	RANGE
	COMPRESSOR REGULATION	
Cin	Compressor cut in	CoU to US bar/PSI/kPA
CoU	Compressor cut out	LS to Cin bar/PSI/kPA
LS	Minimum set point	P1i to Cou bar/PSI/kPA
US	Maximum set point	Cin to P1E bar/PSI/kPA
odS	Outputs delay at start up	0 to 255 sec
AC	Anti-short cycle delay	6 to 900 sec
ono	Minimum time between two compressor starts	0 to 15 min
Con	Compressor ON time with faulty probe	0 to 255 min
CoF	Compressor OFF time with faulty probe	0 to 255 min
	FAN REGULATION (ONLY FOR XC30CX)	
SF1	Set point for fan1	P2C=ntC: [-40.0°C to SF2] [-40°F to SF2] P2C=0-5: P2i to SF2 bar/PSI/kPA
HF1	Fan 1 differential	°C [0.1 to 10.0] / F [1 to 100]; bar [0.1 to 100] / PSI [1 to 100]; kPA [1 tp 100]
SF2	Set point for fan2	P2C=NTC: [SF1 to 110.0°C] [SF1 to 230°F] P2C=0-5: SF1 to P2E bar/PSI/kPA
HF2	Fan 2 differential	°C [0.1 to 10.0] / F [1 to 100]; bar [0.1 to 100] / PSI [1 to 100]; kPA [1 tp 100]
nFA	Number of fans on with P2 fault	0 to 2
	PROBE SETTING	
P1C	Probe 1 configuration (9-10-11) (only for XC30CX)	0-5 = ratiometric; ntC
P1i	Start scale for probe 1	°C [-50 to 110] / °F [-58 to 230]; bar [-1.0 to P2E] / PSI [-15 to P2E]; kPA [-100 to P2E]
P1E	End scale for probe 1	°C [-50 to 110] / °F [-58 to 230]; bar [P1i to 99.9] / PSI [P1i to 999]; kPA [P1i to 999]
P1F	Probe 1 offset	°C [-12.0 to 12.0] / °F [-21 to 21]; bar [-1.2 to 1.2] / PSI [-120 to 120]; kPA [-120 to 120]
P1d	Pressure probe error delay at start up	0 to 100 min
P2P	Probe 2 presence	no; YES
P2C	Probe 2 configuration	0-5=ratiometric; ntC=NTC probe
P2i	Start scale for probe 2	°C [-50 to 110] / °F [-58 to 230]; bar [-1.0 to P2E] / PSI [-15 to P2E]; kPA [-100 to P2E]
P2E	End scale for probe 2	°C [-50 to 110] / °F [-58 to 230]; bar [-1.0 to P2E] / PSI [-15 to P2E]; kPA [-100 to P2E]
P2F	Probe 2 offset	°C [-12.0 to 12.0] / °F [-21 to 21]; bar [-1.2 to 1.2] / PSI [-120 to 120]; kPA [-120 to 120]
P3C	Probe 3 configuration (16-17)	nu; dLt = probe PTC (990ohm); CPA = do not set it
P3F	Probe 3 offset	°C [-12.0 to 12.0] °F [-21 to 21]
	MEASUREMENT UNIT	
Unt	Measurement unit for pressure: PSI, bar, kPA	PSI; bar; kPA
CF	Measurement unit for temperature	°C; °F
rES	Resolution for °C : decimal point, integer	dE(0); in(1)
dLy	Pressure display delay	0 to 255 sec

LABEL	DESCRIPTION	RANGE
	BUMP START FUNCTION	
bMP	Bump start enabling	no; YES
on	Compressor on time	1 to 15 sec
oFF	Compressor off time	1 to 15 sec
nub	Number of cycle during bump start	1 to 15
bEn	Compressor stop time for next bump start	1.0 to 23h50min, res. 10 min
	DLT INPUT MANAGEMENT	
doF	DLT alarm temperature to stop compressor	[don to 200°C] [don to 392°F]
don	DLT temperature for compressor restart	[-30.0°C to doF] [-22°F to doF]
ALd	Stop compressor delay	0 to 255 sec
nPS	Number of activation of DLT alarm in a hour to lock compressor	0 to 15; 0 = always automatic restart
dLF	Minimum time of compressor off with dLL alarm	0 to 15 min
	HIGH CONDENSER TEMPERATURE	
AU2	Condenser Temperature/Pressure threshold for high alarm	P2C=ntC: [AH2 to 110.0°C] [AH2 to 230°F] P2C=0-5: AH2 to P2E bar/PSI/kPA
AH2	Differential for high Condenser Temperature/Pressure alarm recovery	P2C=ntC: [-40.0°C to AU2] [-40°F to AU2] P2C=0-5: P2i to AU2 bar/PSI/kPA
Ad2	High condenser temperature alarm delay	0 to 255min
	RELAY CONFIGURATION (ONLY FOR XC30CX)	
tbA	Buzzer muting	no; YES
oA2	Relay 1-2 configuration	FAn=Fan 1 Fn2=Fan 2 ALr=Alarm relay
	DIGITAL INPUT MANAGEMENT	
di1	Thermostat digital input presence 14-17	no; YES
i1P	Thermostat digital input polarity 14-17	oP; CL
di2	HP safety digital input presence 15-17	no; YES
i2P	HP safety digital input polarity 15-17	oP; CL
HPn	HP safety digital input activation before compressor lock	0 to 15; 0 = always automatic restart
HPF	Minimum time of compressor off with HP d.i. alarm	0 to 15 min
	COUNTER RESET	
rSt	Regulation restart with dLL and HPL alarm (only for XC30CX)	no; YES
rSA	Alarm counters reset (dLt, HP)	no; YES
rCA	Compressor activation counter reset	no; YES
rCH	Compressor running hours reset	no; YES
rFH	Fan running hours reset (only for XC30CX)	no; YES
	OTHERS	
dP1	P1 probe display	(Probe value)
dP2	P2 probe display	(Probe value)
dP3	P3 probe display	(Probe value)
rEL	Firmware Release	Readable only
Ptb	Map code	Readable only

10. INSTALLATION AND MOUNTING



XC10CX and **XC30CX** shall be mounted on vertical panel, in a 29x71mm hole, and fixed using the special bracket supplied.
The temperature range allowed for correct operation is -10 to 55°C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

11. ELECTRICAL CONNECTIONS

The instrument is provided with screw terminal block to connect cables with a cross section up to 2.5mm^2. Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the probe cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

11.1 PROBE CONNECTION

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

12. HOW TO USE THE HOT KEY

12.1 HOW TO PROGRAM A HOT KEY FROM THE INSTRUMENT (UPLOAD)

1. Program one controller with the front keypad.
2. When the controller is ON, insert the "**HOT-KEY**" and push **UP** button; the "**uPL**" message appears followed a by a flashing "**End**" label.
3. Push **SET** button and the "**End**" will stop flashing.
4. Turn OFF the instrument, remove the "**HOT-KEY**" and then turn it ON again.

NOTE: the "**Err**" message appears in case of a failed programming operation. In this case push again button if you want to restart the upload again or remove the "**HOT-KEY**" to abort the operation.

12.2 HOW TO PROGRAM AN INSTRUMENT USING A HOT KEY (DOWNLOAD)

1. Turn OFF the instrument.
2. Insert a **pre-programmed** "**HOT-KEY**" **into the 5-PIN receptacle** and then turn the Controller ON.
3. The parameter list of the "**HOT-KEY**" will be automatically downloaded into the Controller memory. The "**doL**" message will blink followed a by a flashing "**End**" label.
4. After 10 seconds the instrument will restart working with the new parameters.
5. Remove the "**HOT-KEY**".

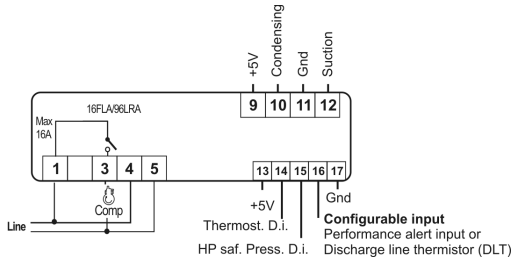
NOTE: the message "**Err**" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "**HOT-KEY**" to abort the operation.

13. ALARM SIGNALS

LABEL	MEANING	MODE
PoF	Keyboard locked	Flashing (3 sec)
Pon	Keyboard unlocked	Flashing (3 sec)
P1	Suction probe failure	Flashing
P2	Condenser probe failure	Flashing
P3	DLT probe failure	Flashing
HA	High condenser temperature alarm	Flashing
dLt	DLT temperature alarm	Flashing
dLL	DLT lock alam	Flashing
HP	Safety HP pressure switch alarm	Flashing
HPL	Safety HP pressure switch lock alarm	Flashing
C-H	Compressor working hour counter alarm	Flashing
F-H	Fan working hour counter alarm	Flashing
HdL	255LOC, 999HP or 999dLt has been reached. It is necessary to reset the counters	Flashing
EE	EE alarm	Flashing

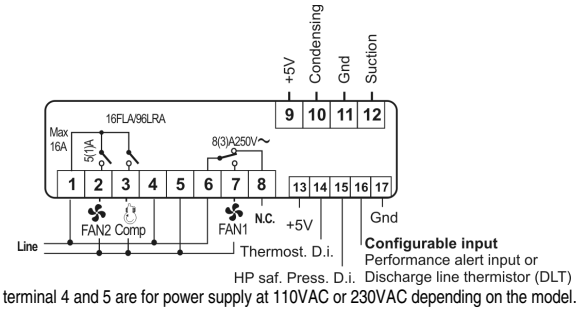
14. WIRING DIAGRAMS

14.1 XC10CX, 110 OR 230VAC



NOTE: terminal 4 and 5 are for power supply at 110VAC or 230VAC depending on the model.

14.2 XC30CX, 110 OR 230VAC



NOTE: terminal 4 and 5 are for power supply at 110VAC or 230VAC depending on the model.

14.3 IN-OUT DESCRIPTION

Suction probe: the controller is able to manage both NTC 10K and ratiometric probes.
NTC: set par. **P1C=ntC**; connect the probe to the terminal 11 and 10.
Ratiometric: set par. **P1C=0-5**; use the terminal 9 (+5V) for supply, terminal 11 for gnd and 12 for Signal.
Condenser probe: the controller is able to manage both NTC 10K and ratiometric probes.
NTC: set par. **P2C=ntC**; connect the probe to the terminal 11 and 10.
Ratiometric: set par. **P2C=0-5**; use the terminal 9 (+5V) for supply, terminal 11 for gnd and 10 for Signal.
Thermostat input: use terminals 14-17.
HP input: use terminals 15-17.
DLT PTC 990ohm sensor: set **P3C=dLt**, then connect the probe to terminals 16-17.
CPA connection: not available.
Power supply: use terminals 4-5.
Compressor: use terminals 1-3.
FAN 1: use terminals 6-7 (only for XC30CX).
FAN 2: use terminals 1-2 (only for XC30CX).

15. TECHNICAL DATA

Housing: self extinguishing ABS
Case: frontal 32x74 mm; depth 70mm
Mounting: panel mounting in a 71x29mm panel cut-out
Protection: IP20
Frontal protection: IP65
Connections: spade on terminal blocks 6.2mm
Power supply: according to the model: 230Vac ±10%, 50/60Hz, 110Vac ±10%, 50/60Hz
Power absorption: 3VA max
Display: 3 digits, red LED, 14.2 mm high
Inputs: up to 3 probes
Digital input: free voltage contact
Relay outputs: **Compressor:** SPST 20(8) A, 250Vac
Fan2: SPST 5A, 250Vac or SPST 16(6)A 250Vac (only for XC30CX)
Fan1: SPDT 8(3) A, 250Vac or SPST 16(6)A 250Vac (only for XC30CX)
Data storing: on the non-volatile memory (EEPROM)
Kind of action: 1B
Pollution degree: 2
Software class: A
Rated impulsive voltage: 2500V
Overvoltage Category: II
Operating temperature: -10 to 55 °C (14 to 131°F)
Storage temperature: -30 to 85°C (-22 to 185°F)
Relative humidity: 20 to 85% (no condensing)
Measuring and regulation range: **NTC probe:** -40 to 110°C (-40 to 230°F)
PTC 990ohm probe: -50 to 150°C (-58 to 302°F)
Resolution: 0.1°C or 1°C or 1°F (selectable)
Accuracy (ambient temp. 25°C): ±0.7°C ±1 digit

16. DEFAULT SETTING VALUES

LABEL	RANGE	XC10CX		XC30CX	
		Value	Level	Value	Level
Cin	CoU to US bar/PSI/kPA	3.3	Pr1	3.3	Pr1
CoU	LS to Cin bar/PSI/kPA	2.6	Pr1	2.6	Pr1
LS	P1i to Cou bar/PSI/kPA	0.5	Pr2	0.5	Pr2
US	Cin to P1E bar/PSI/kPA	7.0	Pr2	7.0	Pr2
odS	0 to 255 sec	30	Pr2	30	Pr2
AC	6 to 900 sec	60	Pr2	60	Pr2
ono	0 to 15 min	5	Pr2	5	Pr2
Con	0 to 255 min	5	Pr2	5	Pr2
CoF	0 to 255 min	5	Pr2	5	Pr2
SF1	P2C=ntC: [-40.0°C to SF2] [-40°F to SF2] P2C=0-5: P2i to SF2 bar/PSI/kPA	-	-	13.0	Pr2
HF1	°C [0.1 to 10.0] / F [1 to 100]; bar [0.1 to 100 / PSI [1 to 100]; kPA [1 tp 100]	-	-	1.0	Pr2
SF2	P2C=NTC: [SF1 to 110.0°C] [SF1 to 230°F] P2C=0-5: SF1 to P2E bar/PSI/kPA	-	-	14.5	Pr2
HF2	°C [0.1 to 10.0] / F [1 to 100]; bar [0.1 to 100 / PSI [1 to 100]; kPA [1 tp 100]	-	-	1.0	Pr2
nFA	0 to 2	-	-	1	Pr2
P1C	°C [-50 to 110] / °F [-58 to 230]; bar [-1.0 to P2E] / PSI [-15 to P2E]; kPA [-100 to P2E]	-	-	0-5	Pr2
P1i	°C [-50 to 110] / °F [-58 to 230]; bar [-1.0 to P2E] / PSI [-15 to P2E]; kPA [-100 to P2E]	0	Pr2	0	Pr2
P1E	°C [-12.0 to 12.0] / °F [-21 to 21]; bar [-1.2 to 1.2] / PSI [-120 to 120]; kPA [-120 to 120]	15.0	Pr2	15.0	Pr2
P1F	°C [-50 to 110] / °F [-58 to 230]; bar [-1.0 to P2E] / PSI [-15 to P2E]; kPA [-100 to P2E]	0	Pr2	0	Pr2
P1d	0 ro 100 min	15	Pr2	15	Pr2
P2P	no(0); YES(1)	YES	Pr2	YES	Pr2
P2C	0-5 = ratiometric; ntC	0-5	Pr2	0-5	Pr2
P2i	°C [-50 to 110] / °F [-58 to 230]; bar [-1.0 to P2E] / PSI [-15 to P2E]; kPA [-100 to P2E]	0.0	Pr2	0.0	Pr2
P2E	°C [-50 to 110] / °F [-58 to 230]; bar [-1.0 to P2E] / PSI [-15 to P2E]; kPA [-100 to P2E]	30.0	Pr2	30.0	Pr2
P2F	°C [-12.0 to 12.0] / °F [-21 to 21]; bar [-1.2 to 1.2] / PSI [-120 to 120]; kPA [-120 to 120]	0.0	Pr2	0.0	Pr2
P3C	nu; dLt = DLT Probe PTC 990ohm; CPA = do not set it	nu	Pr2	nu	Pr2
P3F	[-12.0 to 12.0] [-21 to 21°F]	0	Pr2	0	Pr2
Unt	PSI; bar; kPA	bar	Pr2	bar	Pr2
CF	°C; °F	°C	Pr2	°C	Pr2
rES	dE(0); in(1)	dE	Pr2	dE	Pr2
dLy	0 to 255 sec	0	Pr2	0	Pr2
bMP	no(0); YES(1)	no	Pr2	no	Pr2
on	1 to 15 sec	2	Pr2	2	Pr2
oFF	1 to 15 sec	5	Pr2	5	Pr2
nub	1 to 15	3	Pr2	3	Pr2
bEn	1.0 to 23h50min; res. 10 min	4.0	Pr2	4.0	Pr2
doF	[don to 200°C] [don to 392°F]	105	Pr2	105	Pr2
don	[-30.0°C to doF] [-22°F to doF]	75	Pr2	75	Pr2
ALd	0 to 255 sec	10	Pr2	10	Pr2
nPS	0 to 15, 0 = always automatic restart	4	Pr2	4	Pr2
dLF	0 to 15 min	5	Pr2	5	Pr2
AU2	P2C=ntC: [AH2 to 110.0°C] [AH2 to 230°F] P2C=0-5: AH2 to P2E bar/PSI/kPA	23.0	Pr2	23.0	Pr2
AH2	P2C=ntC: [-40.0°C to AU2] [-40°F to AU2] P2C=0-5: P2i to AU2 bar/PSI/kPA	19.0	Pr2	19.0	Pr2
Ad2	0 to 255 min	0	Pr2	0	Pr2
tbA	no(0); YES(1)	-	-	YES	
oA2	FAn; Fn2; ALr	-	-	Fn2	Pr2
di1	no(0); YES(1)	YES	Pr2	no	Pr2
i1P	OP; CL	CL	Pr2	CL	Pr2
di2	no(0); YES(1)	no	Pr2	no	Pr2
i2P	OP; CL	CL	Pr2	CL	Pr2
HPn	0 to 15, 0 = always automatic restart	5	Pr2	5	Pr2
HPF	0 to 15 min	5	Pr2	5	Pr2
rSt	no(0); YES(1)	-	-	no	Pr2
rSA	no(0); YES(1)	no	Pr2	no	Pr2
rCA	no(0); YES(1)	no	Pr2	no	Pr2
rCH	no(0); YES(1)	no	Pr2	no	Pr2
rFH	no(0); YES(1)	-	-	no	Pr2
dP1	(Probe value)	-	Pr2	-	Pr2
dP2	(Probe value)	-	Pr2	-	Pr2
dP3	(Probe value)	-	Pr2	-	Pr2
rEL	Readable only	-	Pr2	-	Pr2
Ptb	Readable only	-	Pr2	-	Pr2

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