

**Digital controllers with off cycle defrost, AUX relay, power supply 100 or 230VAC with or w/out battery backup.**

**XR30CX**

REF. 0-7020115, 0-7020110, 0-7020122, 0-7020202, 7020346.

**1. GENERAL WARNING**

**1.1 PLEASE READ BEFORE USING THIS MANUAL**

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

**1.2 SAFETY PRECAUTIONS**

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- **Warning:** disconnect all electrical connections before any kind of maintenance.
- 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**

NOTE: This manual is related to the following models:

Model description	User code	Power Supply	Options
XR30CX -4S1C1	0-7020115	100VAC	-
XR30CX -5S1C1	0-7020110	230VAC	-
XR30CX -5S1C1	0-7020122	230VAC	Battery backup
XR30CX -5S1C1	0-7020202	230VAC	Battery backup – Alarm with gold contacts

Model **XR30CX**, format 32x74mm, is a digital thermostat with off cycle defrosting function designed for refrigeration applications. It provides two relay outputs, one for the compressor and the other one for alarm signalling. It is also provided with a PT1000 or PTC probe input for temperature control. Moreover, the digital input can operate as third temperature probe.

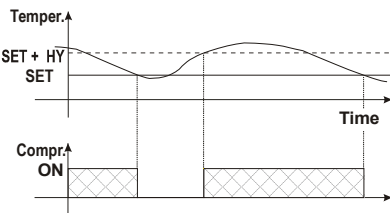
The battery-backup version is also provided with an input for external battery. It is used to supply the controller in case of main voltage failure.

By using the HOT-KEY input/output port is possible to upload a new parameter map from (program the controller) or save the actual parameter map to an external memory device (named HOTKEY memory). Moreover, by using this port is possible to connect the device to a network line (ModBUS-RTU compatible) such as a **dixell** monitoring units of X-WEB family. In this case, a special adapter (XJ485-CX) has to be used.

**3. CONTROLLING LOADS**

**3.1 COMPRESSOR**

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential (HY) from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again.



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

**3.2 DEFROST**

Defrost is performed through a simple stop of the compressor. Parameter **idF** controls the interval between defrost cycles, while its length is controlled by using **MdF** parameter.

**3.3 DEVICE OPERATIONS IN CASE OF POWER FAILURE, IF A BACK UP BATTERY IS CONNECTED (ONLY FOR 7020122 AND 7020202 MODELS)**

**3.3.1 Power failure without temperature alarm**

If the controller is connected to the battery, during a power failure:

1. The alarm LED icon will be lit.
2. The alarm relay will be activated according to the **Aro** parameter.
3. Every 5s the buzzer will ring 3 times during 1s.

The buzzer will be muted after pressing any button. It will restart ringing after the **bon** time if the power failure keeps on lasting. After pushing **SET** button, the controller will display the temperature for 5s.

**3.3.2 Power failure and temperature alarms**

If a temperature alarm happens during a power failure:

1. The alarm LED icon will be lit.
2. The buzzer will ring continuously.
3. The displays will show: real temperature for 1s, alarm label for 1s and remains off for 5s.

The buzzer will be muted for the **bon** time after pressing any button.

The battery can guarantee at least 50 hours of operations in this conditions.

The time for a full charge of the battery is 94 hours.

**4. FRONT PANEL COMMANDS**



<b>SET</b>	To display target set point. In programming mode it selects a parameter or confirm an operation.
	<b>(DEF)</b> To start a manual defrost.
	<b>(UP)</b> To see the max stored temperature. In programming mode it browses parameters or increases the displayed value.
	<b>(DOWN)</b> To see the min stored temperature. In programming mode it browses the parameters or decreases the displayed value.
	To switch the instrument on and off when <b>onF=offF</b> .
	NOT USED

**KEY COMBINATIONS:**

	To lock & unlock the keyboard.
<b>SET</b> +	To enter in programming mode.
<b>SET</b> +	To return to the room temperature 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
	ON	Defrost enabled
	ON	An alarm is occurring
	ON	Continuous cycle is running
	ON	Energy saving enabled
°C/°F	ON	Measurement unit
	Flashing	Programming phase

**5. MAX & MIN TEMPERATURE MEMORIZATION**

**5.1 HOW TO SEE THE MIN TEMPERATURE**

1. Press and release the **DOWN** button.
2. The "Lo" message will be displayed followed by the minimum temperature recorded.
3. By pressing the **DOWN** button again or by waiting for 5s the normal display will be restored.

**5.2 HOW TO SEE THE MAX TEMPERATURE**

1. Press and release the **UP** button.
2. The "Hi" message will be displayed, followed by the maximum recorded temperature.
3. By pressing the **UP** button again or by waiting for 5s, the normal display will be restored.

**5.3 HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED**

1. Keep **SET** button pressed more than 3s while the max or min temperature is displayed ("rSt" message will be displayed).
2. To confirm the operation the "rSt" message starts blinking and the normal temperature will be displayed.

6. MAIN FUNCTIONS

6.1 HOW TO SEE THE SETPOINT



1. Push and immediately release the **SET** button: the display will show the Set point value;
2. Push and immediately release the **SET** button or wait for 5 seconds to display the probe value again.

6.2 HOW TO CHANGE THE SETPOINT

1. Keep **SET** button pressed more than 2 seconds to change the Set point value.
2. The value of the set point will be displayed and the "°C" or "°F" LED icon will start blinking.
3. To change the Set-point value, push the **UP** or **DONW** buttons within 10s.
4. To memorise the new set point value, push the **SET** button again or wait for 10s.

6.3 HOW TO START A MANUAL DEFROST



Push the **DEF** key for more than 2 seconds and a manual defrost will start.

6.4 HOW TO CHANGE A PARAMETER VALUE

To change any parameter value, operate as follows:

1. Enter the Programming mode by pressing **SET + DOWN** for 3s (the "°C" or "°F" LED icons will start blinking).
2. Select the required parameter. Press **SET** to display its value.
3. Use **UP** or **DONW** 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 15s without pressing any key.

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

6.5 THE HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

6.5.1 HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing **SET + DOWN** for 3s (the "°C" or "°F" LED icons will start blinking).
2. Released the buttons and then push again them (**SET + DOWN**) for more than 7s. 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 **SET** to display its value
5. Use **UP** or **DONW** to change its value.
6. Press **SET** to store the new value and move to the following parameter.

To exit: Press **SET + UP** or wait for 15s without pressing any key.

NOTE1: if no parameter is present in Pr1, after 3s 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.

6.5.2 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.

6.6 HOW TO LOCK THE KEYBOARD

1. Keep pressed for more than 3 s the **UP + DOWN** buttons.
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 3s the "PoF" message will be displayed.

6.7 TO UNLOCK THE KEYBOARD

Keep pressed both **UP** and **DONW** for more than 3s till the "Pon" message will be displayed.

6.8 THE CONTINUOUS CYCLE

When defrost is not in progress, it can be activated by keeping the **UP** button pressed for about 3 seconds. The compressor operates to maintain the **CCS** set point for the time set through the **CCt** parameter. The cycle can be terminated before the end of the set time using the same activation button (**UP** for 3 seconds).

6.9 THE ON/OFF FUNCTION



When "onF=oFF", pushing the **ON/OFF** key, the instrument is switched off. The "OFF" message is displayed. In this configuration, the regulation is disabled.  
To switch the instrument on, push again the **ON/OFF** key.

WARNING: Loads connected to the normally closed contacts of the relays are always supplied and under voltage, even if the instrument is in stand by mode.

7. PARAMETERS

REGULATION

<b>HY</b>	<b>Differential:</b> (0.1+25.5°C; 1+255°F) intervention differential for set point. Compressor Cut IN is Set Point + differential ( <b>HY</b> ). Compressor Cut OUT is when the temperature reaches the set point.
<b>LS</b>	<b>Minimum set point:</b> (-100°C+SET; -148°F+SET) it sets the minimum value for the set point.
<b>US</b>	<b>Maximum set point:</b> (SET+150°C; SET+302°F) it sets the maximum value for set point.
<b>ot</b>	<b>Thermostat probe calibration:</b> (-12.0+12.0°C; -120+120°F) allows to adjust

	possible offset of the thermostat probe.
<b>odS</b>	<b>Outputs activation delay at start up:</b> (0+255min) this function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.
<b>AC</b>	<b>Anti-short cycle delay:</b> (0+50min) minimum interval between the compressor stop and the following restart.
<b>rtr</b>	<b>Percentage of the second and first probe for regulation:</b> (0+100; 100=P1, 0=P2) it allows to set the regulation according to the percentage of the first and second probe, as for the following formula (rtr(P1-P2)/100 + P2).
<b>CCt</b>	<b>Compressor ON time during continuous cycle:</b> (0.0+24h00min, res. 10min) allows to set the length of the continuous cycle. Compressor stays on without interruption during <b>CCt</b> time. This is useful, for instance, when the room is filled with new products.
<b>CCS</b>	<b>Set point for continuous cycle:</b> (-100+150°C; -148+302°F) it sets the set point used during the continuous cycle.
<b>Con</b>	<b>Compressor ON time with faulty probe:</b> (0+255min) time during which the compressor is active in case of faulty thermostat probe. With <b>Con=0</b> compressor is always OFF.
<b>CoF</b>	<b>Compressor OFF time with faulty probe:</b> (0+255min) time during which the compressor is OFF in case of faulty thermostat probe. With <b>CoF=0</b> compressor is always active.
<b>CH</b>	<b>Type of action:</b> (CL, Ht) <b>CL</b> = cooling; <b>Ht</b> = heating.

DISPLAY

<b>CF</b>	<b>Temperature measurement unit:</b> (°C; °F) °C = Celsius; °F = Fahrenheit. <b>WARNING:</b> When the measurement unit is changed the SET point and the values of the parameters <b>HY</b> , <b>LS</b> , <b>US</b> , <b>ot</b> , <b>ALU</b> and <b>ALL</b> have to be checked and modified (if necessary).
<b>rES</b>	<b>Resolution (for °C):</b> (in=1°C; dE=0.1°C) allows decimal point display.
<b>dLY</b>	<b>Display delay:</b> (0.0+20min00s; res. 10s) when the temperature increases, the display is updated of 1°C or 1°F after this time.

DEFROST

<b>idF</b>	<b>Interval between defrost cycles:</b> (0+120hours) determines the interval of time between two defrost cycles.
<b>MdF</b>	<b>(Maximum) length for defrost:</b> (0+255min) When <b>P2P=n</b> , (not evaporator probe: timed defrost) it sets the defrost duration. When <b>P2P=Y</b> (defrost end based on temperature) it sets the maximum length for defrost.
<b>dFd</b>	<b>Temperature displayed during defrost:</b> (rt; it; SET; dEF) <b>rt</b> = real temperature; <b>it</b> = temperature at defrost start; <b>SET</b> = set point; <b>dEF</b> = "dEF" label.
<b>dAd</b>	<b>MAX display delay after defrost:</b> (0+255min) sets the maximum time between the end of defrost and the restarting of the real room temperature display.

ALARMS

<b>ALC</b>	<b>Temperature alarms configuration:</b> (Ab; rE) <b>Ab</b> = absolute temperature, alarm temperature is given by the ALL or ALU values. <b>rE</b> = temperature alarms are referred to the set point. Temperature alarm is enabled when the temperature exceeds the [SET+ALU] or [SET-ALL] values.
<b>ALU</b>	<b>MAXIMUM temperature alarm:</b> • <b>ALC=Ab:</b> (SET+150°C; SET+302°F) • <b>ALC=rE:</b> (0.1+50°C; 1+90°F) When this temperature is reached, the alarm is enabled, possibly the <b>ALd</b> delay time.
<b>ALL</b>	<b>Minimum temperature alarm:</b> • <b>ALC=Ab:</b> (-100.0 ÷ SET°C; -148+302°F) • <b>ALC=rE:</b> (0.1+50°C; 1+90°F) When this temperature is reached, the alarm is enabled, possibly the <b>ALd</b> delay time.
<b>AFH</b>	<b>Differential for temperature alarm recovery:</b> (0.1+25.5°C; 1+45°F) intervention differential for recovery of temperature alarm.
<b>ALd</b>	<b>Temperature alarm delay:</b> (0+255 min) time interval between the detection of an alarm condition and alarm signalling.
<b>dAo</b>	<b>Exclusion of temperature alarm at start-up:</b> (0.0+23h 50min, res. 10min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

ALARM RELAY MANAGEMENT –FOR BATTERY-BACKUP MODELS (7020122 and 7020202)

<b>tbA</b>	<b>Alarm relay silencing (with oA1=ALr):</b> (n, Y) <b>n</b> = silencing disabled; alarm relay stays on till alarm condition lasts. <b>Y</b> = silencing enabled; alarm relay is switched OFF by pressing a key during an alarm.
<b>Aro</b>	<b>Alarm relay activation with power failure:</b> (n, Y) <b>n</b> = the alarm relay is never activated during a power failure. <b>Y</b> = the alarm relay is activated during a power failure.
<b>ALF</b>	<b>Alarm relay activation for all the alarms:</b> (n, Y) <b>n</b> = the alarm relay is activated only in case of a temperature alarm or regulation probe failure. <b>Y</b> = the alarm relay is activated for all the alarms.
<b>bon</b>	<b>Time of buzzer restart after muting, in case of alarm duration:</b> (0+30min) when 0 the buzzer is always off after muting.
<b>AoP</b>	<b>Alarm relay polarity:</b> it set if the alarm relay is open or closed when an alarm happens. <b>CL</b> = terminals 1-2 closed during an alarm; <b>oP</b> = terminals 1-2 open during an alarm

DIGITAL INPUT

<b>i1P</b>	<b>Digital input polarity:</b> (oP; CL) <b>oP</b> = the digital input is activated by opening the contact; <b>CL</b> = the digital input is activated by closing the contact.
<b>i1F</b>	<b>Digital input configuration:</b> (EAL; bAL; PAL; dor; dEF; AUS; Htr; FAN; ES) <b>EAL</b> = external alarm: "EA" message is displayed; <b>bAL</b> = serious alarm "CA" message is displayed. <b>PAL</b> = pressure switch alarm, "CA" message is displayed; <b>dor</b> = door switch function; <b>dEF</b> = activation of a defrost cycle; <b>AUS</b> =to switch on the second relay if oA1 = AUS; <b>Htr</b> = kind of action inversion (cooling – heating); <b>FAN</b> = not set it; <b>ES</b> = Energy saving.

<b>did</b>	Digital input alarm delay when i1F=EAL or i1F=bAL: (0+255 min) delay between the detection of the external alarm condition and its signalling. <ul style="list-style-type: none"> <li>With i1F=dor: door open signalling delay.</li> <li>With i1F=PAL: time for pressure switch function. It is the time interval to calculate the number of the pressure switch activation.</li> </ul>
<b>nPS</b>	Number of pressure switch activation: (0+15) Number of activation, during the did interval, before signalling an alarm event (i2F=PAL). If the nPS activation during did time is reached, switch off and on the instrument to restart normal regulation.
<b>odc</b>	Compressor status when open door: (no; FAn; CP; F_C); no = normal; FAn = normal; CP = compressor OFF, F_C = compressor OFF.
<b>rrd</b>	Outputs restart after doA alarm: (n; Y) n = outputs not affected by the doA alarm; Y = outputs restart with the doA alarm.
<b>HES</b>	Temperature increase during the Energy Saving cycle: (-30.0+30.0°C; -54+54°F) it sets the increasing value of the set point [SET+HES] during the Energy Saving cycle.

**OTHER**

<b>Adr</b>	Serial address: (1+244) identifies the instrument address when connected to a ModBUS compatible monitoring system.
<b>PbC</b>	Type of probe: (ntC, CtC) it allows to set the kind of probe used by the instrument: PtC = PTC probe, Pt1 = Pt1000 probe.
<b>onF</b>	On/Off key enabling: (nU; oFF; ES) nU = disabled; oFF = enabled; ES = not set it.
<b>rSE</b>	Real set point: it shows the set point used during the energy saving cycle or during the continuous cycle.
<b>rEL</b>	Software release for internal use.
<b>Ptb</b>	Parameter table code: readable only.

**8. DIGITAL INPUT**

The free voltage digital input is programmable in different configurations by the i1F parameter.

**8.1 DOOR SWITCH INPUT (i1F = dor)**

It signals the door status and the corresponding relay output status through the odc parameter: no, Fan = normal (any change); CP, F\_C = Compressor OFF.  
Since the door is opened, after the delay time set through parameter did, the door alarm is enabled, the display shows the message "dA" and the regulation restarts is rtr=Y. The alarm stops as soon as the external digital input is disabled again. With the door open, the high and low temperature alarms are disabled.

**8.2 GENERIC ALARM (i1F = EAL)**

As soon as the digital input is activated the unit will wait for did time delay before signalling the "EAL" alarm message. The outputs status doesn't change. The alarm stops just after the digital input is deactivated.

**8.3 SERIOUS ALARM MODE (i1F = bAL)**

When the digital input is activated, the unit will wait for did delay before signalling the "CA" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is deactivated.

**8.4 PRESSURE SWITCH (i1F = PAL)**

If during the interval time set by did parameter the pressure switch reaches the nPS number of activation, the "CA" pressure alarm message will be displayed and the compressor and the regulation will be stopped. When the digital input is ON the compressor is always OFF.  
If the nPS activation in the did time is reached, switch off and on the instrument to restart normal regulation.

**8.5 START DEFROST (i1F = dFr)**

A defrost will start if there are the right conditions. After the defrost is finished, the normal regulation will restart only if the digital input is disabled otherwise the instrument will wait for MdF safety time to expire.

**8.6 INVERSION OF THE KIND OF ACTION: HEATING-COOLING (i1F = Htr)**

This function allows to invert the regulation of the controller: from cooling to heating and viceversa.

**8.7 ENERGY SAVING (i1F = ES)**

The Energy Saving function allows to change the set point value as the result of the [SET+ HES] (parameter) sum. This function is enabled until the digital input is activated.

**8.8 DIGITAL INPUTS POLARITY**

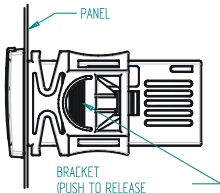
The digital input polarity depends on the i1P parameter.  

- i1P=CL: the input is activated by closing the contact.
- i1P=OP: the input is activated by opening the contact

**9. TTL SERIAL LINE – FOR MONITORING SYSTEMS**

It is possible to connect the instrument to a ModBUS-RTU compatible monitoring system (e.g. X-WEB500/3000/300) by using the TTL serial line available on the HOTKEY connector. An external adapter has to be used to connect the device to the network (e.g. a TTL/RS485 converter XJ485-CX).

**10. INSTALLATION AND MOUNTING**



Instrument XR30CX shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied.  
The temperature range allowed for correct operation is 0+60 °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 2.5mm². 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**

Message	Cause	Outputs
"P1"	Room probe failure	Compressor output acc. to par. Con and CoF.
"HA"	Maximum temperature alarm	Outputs unchanged.
"LA"	Minimum temperature alarm	Outputs unchanged.
"dA"	Door open	Compressor restart according to rrd.
"EA"	External alarm	Output unchanged.
"CA"	Serious external alarm (i1F=bAL)	All outputs OFF.
"CA"	Pressure switch alarm (i1F=PAL)	All outputs OFF

**13.1 ALARM RECOVERY**

Probe alarm "P1" starts some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe.  
Temperature alarms "HA" and "LA" automatically stop as soon as the temperature returns to normal values.  
Alarms "EA" and "CA" (with i1F=bAL) recover as soon as the digital input is disabled.  
Alarm "CA" (with i1F=PAL) recovers only by switching off and on the instrument.

**13.2 OTHER MESSAGES**

Pon	Keyboard unlocked.
PoF	Keyboard locked
noP	In programming mode: none parameter is present in Pr1 On the display or in dP2, dP3, dP4: the selected probe is nor enabled
noA	No alarm recorded.

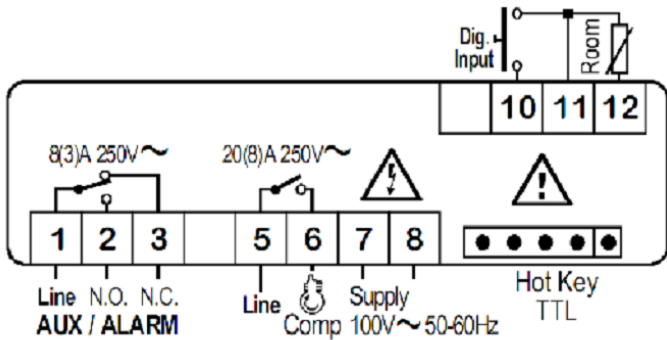
**14. TECHNICAL DATA**

**Housing:** self extinguishing ABS.  
**Case:** XR30CX frontal 32x74mm; depth 60mm.  
**Mounting:** XR30CX panel mounting in a 71x29mm panel cut-out.  
**Protection:** IP20. **Frontal protection:** XR30CX IP65.  
**Connections:** Screw terminal block ≤ 2.5 mm² wiring.  
**Model 7020346 and 7020345:** fast-on tabs 6,3mm for loads and power supply; Disconnect able screw terminal blocks for probe, digital input and  
**Power supply:** according to the model: 100Vac ±10%, 50/60Hz; or 230Vac ±10%, 50/60Hz, or 120Vac ±10%, 50/60Hz, or  
**Power absorption:** 3VA max.  
**Display:** 3 digits red LEDs, 14.2 mm high.  
**Digital input:** free voltage contact.  
**Analogue Input:** a PT1000 or PTC probe, set via parameter.  
**Relay outputs:**  
**Compressor:** 20(8)A, 250Vac.  
**Alarm:** SPDT 8(3)A, 250Vac.  
**Connectors for external backup battery (only for battery-backup model).**  
**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:** 0+60°C.  
**Storage temperature:** -30+85 °C.  
**Relative humidity:** 20+85% (no condensing).  
**Measuring and regulation range:**  
**Pt1000 probe:** -100+100°C (-148+212°F).

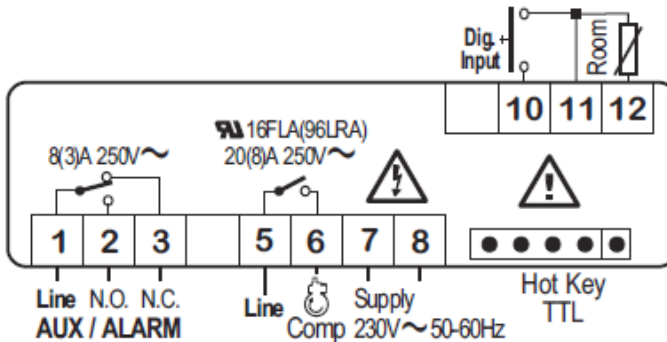
PTC probe: -55÷150°C (-67÷302°F).  
 Resolution: 0.1°C or 1°C or 1°F (selectable).  
 Accuracy (ambient temp. 25°C): ±0.7 °C ±1 digit.  
 Only for battery backup model:  
 Type of battery: 6Vdc, 1.2Ah.  
 Charging time: 94hours.

15. CONNECTIONS

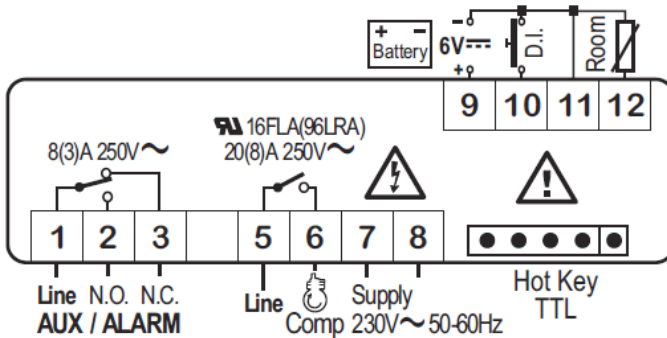
15.1 XR30CX -4S1C1 (0-7020115)



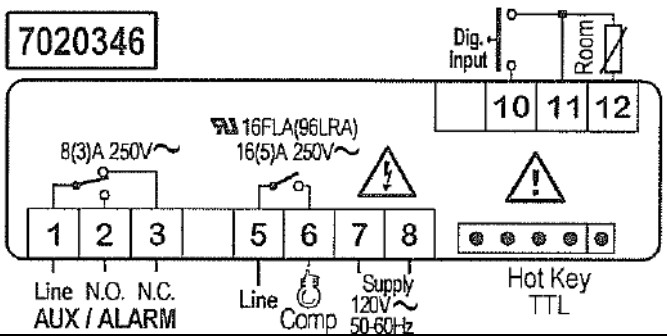
15.2 XR30CX -5S1C1 WITHOUT BATTERY BACKUP (0-7020110) AND XR30CX -5S1C7 (7020345)



15.3 XR30CX -5S1C1 WITH BATTERY BACKUP (0-7020122 AND 0-7020202)



15.4 XR30CX -5S1C7 WITHOUT BATTERY BACKUP (7020346)



16. DEFAULT SETTING VALUES

Label	Name	Range	No batt. backup	With batt. backup	Level
SEt	Set point	LS + US	-62	-82	---
HY	Differential	[0.1 ÷ 25.5°C] [1 ÷ 255°F]	[1°C] [1°F]	[1°C] [1°F]	Pr1
LS	Minimum set point	[-100.0°C + SET] [-148°F + SET]	[-63°C] [-81°F]	[-95°C] [-139°F]	Pr2
US	Maximum set point	[SET + 150.0°C] [SET + 302°F]	[-30°C] [-22°F]	[-60°C] [-76°F]	Pr2
ot	Thermostat probe calibration	[-12 ÷ 12°C] [-120 ÷ 120°F]	[0°C] [0°F]	[0°C] [0°F]	Pr1
odS	Outputs delay at start up	0 ÷ 255 min	0	0	Pr2
AC	Anti-short cycle delay	0 ÷ 50 min	5	5	Pr1
CcT	Continuous cycle duration	0.0 ÷ 24h 00min, res. 10min	0.0	0.0	Pr2
CCS	Set point for continuous cycle	[-100 ÷ 150°C] [-148 ÷ 302°F]	[-62°C] [-79°F]	[-82°C] [-115°F]	Pr2
Con	Compressor ON time with faulty probe	0 ÷ 255 min	60	60	Pr2
CoF	Compressor OFF time with faulty probe	0 ÷ 255 min	5	5	Pr2
CH	Kind of action	CL=cooling; HT= heating	CL	CL	Pr2
CF	Temperature measurement unit	°C; °F	°C	°C	Pr2
rES	Resolution	in = integer; dE = dec.point	in	in	Pr2
dLY	Display temperature delay	0 ÷ 20min 00s, res. 10s	0.0	0.0	Pr2
idF	Interval between defrost cycles	1 ÷ 120 hours	0	0	Pr1
MdF	(Maximum) length for defrost	0 ÷ 255 min	0	0	Pr1
dFd	Displaying during defrost	rt; it; SET; DEF	rt	rt	Pr2
dAd	MAX display delay after defrost	0 ÷ 255 min	0	0	Pr2
ALC	Temperature alarms configuration	rE= related to set Ab = absolute	rE	rE	Pr2
ALU	MAXIMUM temperature alarm	[Set + 110°C] [Set + 230°F]	[15°C] [59°F]	[15°C] [59°F]	Pr1
ALL	Minimum temperature alarm	[-100°C ÷ Set] [-148°F ÷ Set]	[50°C] [122°F]	[50°C] [122°F]	Pr1
AFH	Differential for temperature alarm recovery	[0.1°C + 25.5°C] [1°F+45°F]	[1°C] [1°F]	[1°C] [1°F]	Pr2
ALd	Temperature alarm delay	0 ÷ 255 min	0	0	Pr2
dAo	Delay of temperature alarm at start up	0 ÷ 23h 50min, res. 10min	1.3	1.3	Pr2
tbA	Alarm relay disabling	n; Y	Y	Y	Pr2
Aro	Alarm relay activation with power failure	n; Y	Y	Y	Pr2
ALF	Alarm relay activation for all the alarms	n; Y	Y	Y	Pr2
bon	Time of buzzer restart after muting, in case of alarm duration	0 ÷ 30 min	30	30	Pr2
AoP	Alarm relay polarity (oA1=ALr)	oP; CL	CL	CL	Pr2
i1P	Digital input polarity	oP=opening; CL=closing	CL	CL	Pr1
i1F	Digital input configuration	EAL; bAL; PAL; dor; dEF; Htr; AUS	AUS	AUS	Pr1
did	Digital input alarm delay	0 ÷ 255 min	15	15	Pr1
nPS	Number of activation of pressure switch	0 ÷ 15	15	15	Pr2
odc	Compress status when open door	no; FAn; CPn; F_C	no	no	Pr2
rrd	Regulation restart with door open alarm	n; Y	Y	Y	Pr2
HES	Differential for Energy Saving	[-30°C + 30°C] [-54°F+54°F]	[1°C] [1°F]	[1°C] [1°F]	Pr2
Adr	Serial address	0 ÷ 247	1	1	Pr2
PbC	Kind of probe	PtM; PtC	PtM	PtM	Pr2
onF	on/off key enabling	nU; oFF; ES	nU	nU	Pr2
rSE	Real set point value	actual set	--	--	Pr2
rEL	Software release	--	--	--	Pr2
Ptb	Map code	--	--	--	Pr2