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Mod: HN202-NP

Production code: SHTB202



Diamond
catering equipment

Instruction manual

XR06CX



Electronic control instrument

MAY 2012

**SET**

To display or change target set point, in programming mode it selects a parameter or confirm an operation.



To start a manual defrost.



In programming mode it browses the parameter codes or increases the displayed value.



In programming mode it browses the parameter codes or decreases the displayed value.

KEYS COMBINATION

To lock or unlock the keyboard.

SET

To enter the programming mode.

SET

To return to room temperature display.

LED	MODE	MEANING
	ON	Compressor enabled
	FLASHING	Anti short cycle delay enabled
	ON	Defrost in progress
	FLASHING	Dripping in progress
	ON	Fans output enabled
	FLASHING	Fans delay after defrost
°C	ON	Measurement unit
	FLASHING	Programming mode
°F	ON	Measurement unit
	FLASHING	Programming mode

HOW TO SEE THE SET POINT

- 1 Push and immediately release the **SET** key, the set point is displayed;
- 2 Push and immediately release the **SET** key or wait about 5s to return to the display of the temperature.

HOW TO CHANGE THE SETPOINT

- 1 Push the **SET** key for 3 seconds, the Set point is displayed and the °C or °F LED starts blinking;
- 2 To change the Set value push the or arrows. Then push the **SET** again to confirm.

NOTE: the set value is stored even when the procedure is exited without pressing the **SET** key.

HOW TO START A DEFROST

Push the key for at least 4 seconds and a manual defrost will start.

HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

- 1 Enter the Programming mode by pressing the **SET** + keys for 3s °C or °F LED start blinking;
- 2 Select the required parameter through or keys;
- 3 Press the **SET** key to display its value;
- 4 Change its value through or keys;
- 5 Press **SET** again to store the new value and move to the following parameter.

To exit: Press **SET** + or wait 30s without pressing a key.

NOTE: the set value is stored even when the procedure is exited without pressing the **SET** key.

HIDDEN MENU

The hidden menu includes all the parameters of the instrument; how to enter the hidden menu:

- 1 Enter the Programming mode by pressing the **SET** + keys for 3s. °C or °F LED start blinking;
- 2 Released the keys, then push again the **SET** + keys for more than 7s. The L2 label is displayed, immediately followed by the Hy parameter.

NOW YOU ARE IN THE HIDDEN MENU.

- 3 Select the required parameter, browsing the displayed parameters through the and keys;
- 4 Press the **SET** key to display its value;
- 5 Change its value through the or keys;
- 6 Press **SET** to store the new value and move to the following parameter.

To exit: Press **SET** + or wait 30s without pressing a key.

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

HOW TO MOVE A PARAMETER FROM L2 TO L1

Each parameter present in the second level (HIDDEN MENU) can be removed or put into "THE FIRST LEVEL" (user level) by pressing **SET** + . In the HIDDEN MENU (L2) when a parameter is present in the First Level, the decimal point LED is on.

TO LOCK THE KEYBOARD

Keep pressed the  and  keys for a few seconds. The "OF" message is displayed and the keyboard is locked. Now only the Set point can be displayed. If a key is pressed more than 3s the "OF" message is displayed again.

TO UNLOCK THE KEYBOARD

Keep pressed the  and  keys together for a few seconds, the "on" message is displayed: the keyboard is unlocked.

2. PARAMETERS

REGULATION

- Hy Differential:** (0.1°C ÷ 25°C / 1°F ÷ 45°F) Intervention differential for set point. Compressor Cut IN is SET POINT + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.
- LS Minimum SET POINT:** (-55°C÷SET/-67°F÷SET): sets the minimum value for the set point.
- US Maximum SET POINT:** (SET÷99°C/ SET÷99°F): sets the maximum value for set point.
- ot First probe calibration:** (-10÷10°C / -17°F ÷ 17°F): through this parameter it is possible to correct any possible reading errors due to the excessive length of the cable of the probe 1.
- P2 Evaporator probe presence:** n= not present; y= the defrost stops by temperature.
- oE Second probe calibration:** (-10÷10°C / -17°F ÷ 17°F): through this parameter it is possible to correct any possible reading errors due to the excessive length of the cable of the probe 2.
- od Outputs activation delay at start up:** (0÷99min) 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.
- AC Anti-short cycle delay:** (0÷50 min) minimum interval between the compressor stop and the following restart.
- Cy Compressor ON time with faulty probe:** (0÷99 min) time during which the compressor is active in case of faulty thermostat probe. With Cy=0 the compressor is always OFF. Note: If Cy=0 and Cn=0 the compressor remains OFF.
- Cn Compressor OFF time with faulty probe:** (0÷99 min) time during which the compressor is OFF in case of faulty thermostat probe. With Cn=0 compressor is always on.

DISPLAY

- CF Measurement unit:** (°C÷°F) °C= Celsius; °F= Fahrenheit.
WARNING: When the measurement unit is changed the SET point and the values of the parameters Hy, LS, US, oE, o1, AU, AL have to be checked and modified if necessary.
- rE Resolution (only for °C):** (dE ÷ in) dE= decimal between -9.9 and 9.9 °C; in= integer.
- Ld Default display:** (P1 ÷ P2) P1= thermostat probe; P2= evaporator probe.
- dy Display delay:** (0÷15 min.) when the temperature increases, the display is updated of 1 °C/1°F after this time.

DEFROST

- td Defrost type:** (EL – in) EL= electrical heater, compressor OFF; in= hot gas, compressor ON;
- dE Defrost termination temperature:** (-55÷50°C / -67÷99°F) if dE= Pb it sets the temperature measured by the evaporator probe, which causes the end of defrost.
- id Interval between defrost cycles:** (0÷99 minutes) Determines the time interval between the beginning of two defrost cycles.
- Md Maximum length for defrost:** (0÷99 min. with 0 no defrost) when P2= n, (not evaporator probe: timed defrost) it sets the defrost duration, when P2= y (defrost end based on temperature) it sets the maximum length for defrost.
- dd Start defrost delay:** (0÷99min) This is useful, when different defrost start times are necessary, to avoid overloading the plant.
- dF Display during defrost:** (rt / it / SP / dF) rt= real temperature; it= start defrost temperature; SP= SET-POINT; dF= label dE.
- dt Drip time:** (0÷99 min) time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
- dP Defrost at power – ON:** (y÷n) y= at power on defrost starts; n= defrost doesn't start at power-on.

FANS

- FC Fans operating mode:** (cn, on, cY, oY) cn= runs with the compressor, OFF during defrost; on= continuous mode, OFF during defrost; cY= runs with the compressor, ON during defrost; oY= continuous mode, ON during defrost.
- Fd Fans delay after defrost:** (0÷99 min) Interval between end of defrost and evaporator fans start.
- FS Fans stop temperature:** (-55÷50°C/-67°F ÷ 99°F) setting of temperature, detected by evaporator probe, above which fans are always OFF.

ALARMS

- AA Temperature alarms configuration:** (Ab; rE) Ab= absolute temperature: alarm temperature is given by the ALL or ALU values. rE= temperature alarms are referred to the set point. Temperature alarm is enabled when the temperature exceeds the "SET+ALU" or "SET-ALL" values.
- AU Maximum temperature alarm:** (AL÷99°C/99°F) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- AL Minimum temperature alarm:** (-55÷AU°C /-55÷AU°F) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- Ad Temperature alarm delay:** (0÷99 min) time interval between the detection of an alarm condition and alarm signalling.

dA Exclusion of temperature alarm at startup: (0÷99 min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

DIGITAL INPUT

iP Digital input polarity: (oP ÷ cL) oP= activated by closing the contact; cL= activated by opening the contact.

iF Digital input configuration: (EA/bA/do/dF/Au/Hc) EA= external alarm: "EA" message is displayed ; bA= serious alarm "CA" message is displayed; do= door switch function; dF= defrost activation; Au= not used; Hc= inversion of the kind of action.

di Digital input delay: (0÷99 min) with iF= EA or bA delay between the detection of the external alarm condition and its signal ling. With iF= do it represents the delay to activate the door open alarm.

dC Compressor and fan status when open door: (no/Fn/cP/Fc): no= normal; Fn= Fans OFF; cP= Compressor OFF; Fc= Compressor and fans OFF.

rd Regulation with door open: (n÷y) n= no regulation if door is opened; Y= when di is elapsed regulation restarts even if door open alarm is present.

o1 Configuration output 1 (dF/Fn/AL/Au/db): through it, it is possible to configure the function of the output 1.

OTHER

dE Display of probe 1: (read only) it allows to display the value of the probe 1.

di Display of probe 2: (read only) it allows to display the value of the probe 2.

Pt Parameter table code.

rL Software release.

3. DIGITAL INPUTS

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

PRESSURE SWITCH FAILURE ALARM (iF=bA)

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

DOOR SWITCH (iF=do)

It signals the door status and the corresponding relay output status through the "dC" parameter: no= normal (any change); Fn= Fan OFF; cP= Compressor OFF; Fc= Compressor and fan OFF. Since the door is opened, after the delay time set through parameter "di", the door alarm is enabled, the display shows the message "dA". 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.

EXTERNAL ALARM (iF=EA)

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

START DEFROST (iF=dF)

It starts a defrost if there are the suitable conditions. After the defrost is finished, the normal regulation will restart only if the digital input is disabled otherwise the instrument will wait until the "Md" safety time is expired.

INVERSION OF CONTROLLER ACTION (iF=Hc)

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

4. ALARM SIGNALLING

MESSAGE	CAUSE	OUTPUTS
"P1"	Room probe failure	Compressor output according to "Cy" e "Cn"
"P2"	Evaporator probe failure	Defrost end is timed
"HA"	Maximum temperature alarm	Outputs unchanged
"LA"	Minimum temperature alarm	Outputs unchanged
"EA"	External alarm	Outputs unchanged
"CA"	Pressure switch failure alarm	All outputs OFF
"dA"	Door Open	Loads according to "dC"

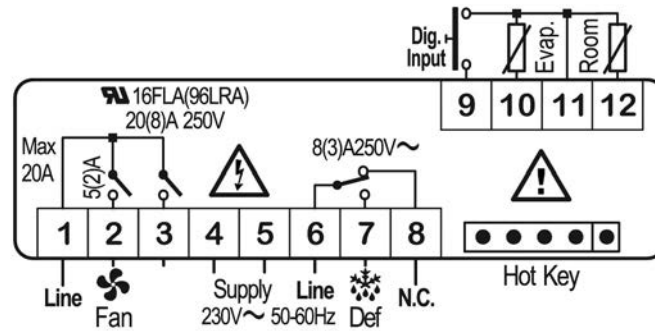
⚠ All the signals different from the ones specified in this manual indicate a serious damage to the electronic control panel. ⚠

ALARM RECOVERY

Probe alarms "P1" and "P2" go off some seconds after the fault in the related probe; they stop automatically some seconds after the probe restarts its normal operation. Check connections before replacing the probe. The Temperature alarms "HA" and "LA" stop automatically as soon as the temperature of the thermostat returns to normal values and when a defrost starts. Alarms "EA" and "CA" (with iF=bL) are disabled as soon as the digital input is deactivated.

5. GENERAL DATA

The **XR06CX** instrument is provided with two NTC probe inputs, one for temperature control, the other, to be located into the evaporator, to control the defrost termination temperature and to control the fan.



7. STANDARD VALUES

Label	Description	Range	level	Defrost BY AIR TA	Defrost BY HOT GAS TN TB	Defrost BY HEATERS TN TB
REGULATION						
SET	Set point	LS ÷ US	L1	10	0 -22	0 -22
Hy	Differential	0,1 ÷ 25°C/1 ÷ 45 °F	L1	2	2 2	2 2
LS	Minimum Set Point	-55° C ÷ SET/67° F ÷ SET	L2	5	-5 -25	-5 -25
US	Maximum Set Point	SET ÷ 99 °C/SET ÷ 210 °F	L2	15	5 -18	5 -18
ot	First probe calibration	-10 ÷ +10 °C/-18 ÷ +18°F	L1	0	0 0	0 0
P2	Second probe presence	n ÷ Y	L1	n	y y	y y
oE	Second probe calibration	-10 ÷ +10 °C/-18 ÷ +18°F	L2	0	0 0	0 0
od	Outputs activation delay at start up	0 ÷ 99 min	L2	0	0 0	0 0
AC	Anti-short cycle delay	0 ÷ 50 min	L1	2	2 2	2 2
Cy	Compressor ON time faulty probe	0 ÷ 99 min	L2	0	0 0	0 0
Cn	Compressor OFF time faulty probe	0 ÷ 99 min	L2	0	0 0	0 0
DISPLAY						
CF	Measurement unit	°C ÷ °F	L2	°C	°C °C	°C °C
rE	Resolution (only for °C)	in ÷ dE	L1	in	in in	in in
Ld	Default Display	P1 - P2	L2	P1	P1 P1	P1 P1
dy	Display delay	0 ÷ 15 min	L2	0	0 0	0 0
DEFROST						
td	Defrost type	EL - in	L1	EL	In In	EL EL
dE	Defrost termination temperature	-55 ÷ +50 °C/-58 ÷ +122°F	L1	50	20 20	30 30
id	Interval between defrost cycles	0 ÷ 99 hours	L1	4	4 4	4 4
Md	Maximum length for defrost	0 ÷ 99 min	L1	20	20 20	30 30
dd	Start defrost delay	0 ÷ 99 min	L2	0	0 0	0 0
dF	Display during defrost	rt - it - SP - dE	L2	rt	rt rt	rt rt
dt	Drip time	0 ÷ 99 min	L2	0	2 2	2 2
dP	Defrost at power-on	n - y	L2	n	n n	n n
FANS						
FC	Fans operating mode	cn - on - cY - oY	L1	oY	on on	on on
Fd	Fans delay after defrost	0 ÷ 99 min	L1	0	3 3	3 3
FS	Fans stop temperature	-55 ÷ +50 °C/-58 ÷ +122°F	L2	40	40 40	40 40
ALARMS						
AA	Temperature alarms configuration	rE - Ab	L2	rE	rE rE	rE rE
AU	Maximum temperature alarm	AL ÷ +99 °C/AL ÷ +210°F	L1	5	5 5	5 5
AL	Minimum temperature alarm	-55,0 °C + AU/67 °F ÷ AU	L1	5	5 5	5 5
Ad	Temperature alarm delay	0 ÷ 99 min	L2	0	0 0	0 0
dA	Exclusion of temp. alarm at start up	0 ÷ 99 min	L2	90	90 90	90 90
DIGITAL INPUT						
iP	Digital input polarity	oP ÷ cL	L1	oP	oP oP	oP oP
iF	Digital input configuration	EA-bA-do-dF-Au-hc	L1	bA	bA bA	bA bA
di	Digital input delay	0 ÷ 99 min	L1	0	0 0	0 0
dC	Compressor and fan status with open door	no/Fn/cP/Fc	L2	Fc	Fc Fc	Fc Fc
rd	Regulation with door open	n - y	L2	y	y y	y y
OTHER						
d1	Thermostat probe display	Read Only	L2	-	- -	- -
d2	Evaporator probe display	Read Only	L1	-	- -	- -
Pt	Parameter code table	Read Only	L2	-	- -	- -
rL	Firmware release	Read Only	L2	-	- -	- -