

DIGITAL CONTROLLER WITH ADVANCED ENERGY SAVING MANAGEMENT XR07CX

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1. GENERAL WARNINGS

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

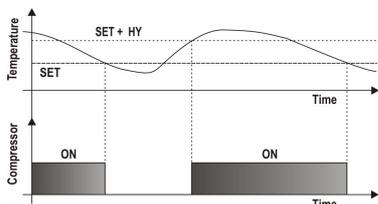
- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical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

The XR07CX, 32x74x60mm format, is a microprocessor based controller suitable for applications on medium or low temperature ventilated refrigeration units. It has four relay outputs to control compressor, fans and lights. The device is also provided with 3 NTC probe inputs: the first one for temperature control, the second one to be located onto the evaporator to control the defrost termination temperature and to manage the fan and the third, optional, to control the condenser temperature. There is also a configurable digital input. By using the HOT-KEY it is possible to program the instrument in a quick and easy way.

3. REGULATION

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential, the compressor will start. The compressor will stop when the temperature reaches the set point value again.



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

4. ENERGY SAVING MANAGEMENT

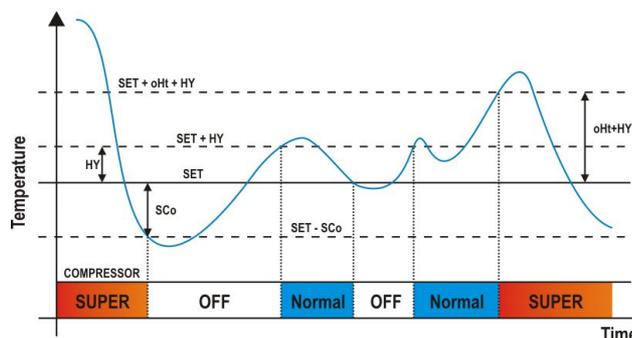
4.1 DESCRIPTION

The device permits to set different temperature to be used during normal and reduced use. The standard SET-POINT (SET) is used to maintain the temperature at a certain value when the energy saving status (ES) is not active. On the other side, when the ES status is active a different SET-POINT (SET_ES), higher than the standard one, will be used. The parameter HES will have to be set to change the regulation temperature according to the following formula:

$$SET_ES = SET + HES$$

There are also two different differential values for SET and SET_ES, which are used for compressor cut-in and cut-out: when ES status is active the HYE parameter will be used instead of the HY parameter.

5. SUPER COOLING

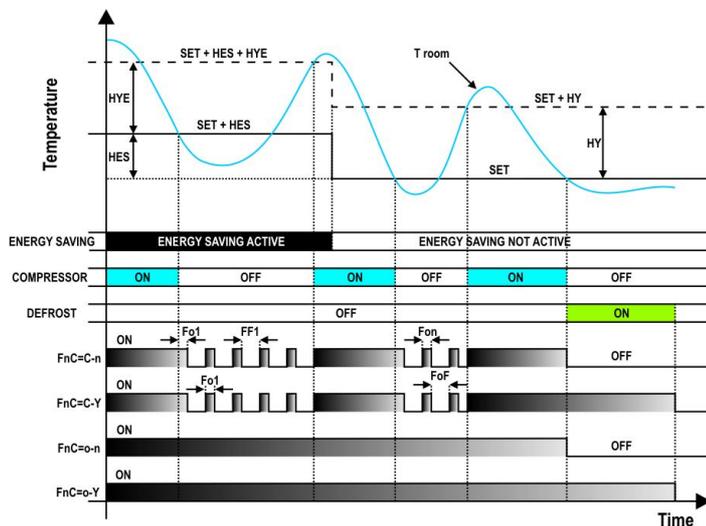


The SUPER-COOLING function is active when the room temperature measured from the probe 1 goes over the SET+oHt+HY value. In this case, a special set-point value, lower than the normal SET value, will be enabled. As soon as the room temperature reaches the SET-SCo value, the compressor will be stopped and the normal regulation will restart. N.B.: super-cooling function is disabled when SCo=0. The tSc parameter sets the maximum activation time for super cooling operations. When tSc expires, the super cooling will be stopped and the standard SET-POINT will be restored.

6. DEFROST

Two defrost modes are available: timed or controlled by the evaporator's probe. Other two parameters are used to control the interval between defrost cycles (iDf) and its maximum length (Mdf). During the defrost cycle is possible to select some different display indications by using the dFd parameter.

7. EVAPORATOR FANS



- With FnC parameter it can be selected the fans functioning:
- FnC=C-n → fans will switch ON and OFF with the compressor and not run during defrost; when compressor is OFF, fans will enter a duty-cycle working mode (see FoF, Fon, FF1 and Fo1 parameters).
 - FnC=O-n → fans will run even if the compressor is off, and not run during defrost;
 - FnC=C-Y → fans will switch ON and OFF with the compressor and run during defrost; when compressor is OFF all fans will enter a duty-cycle working mode (see FoF, Fon, FF1 and Fo1 parameters).
 - FnC=O-Y → fans will run continuously also during defrost.

After defrost, there is a timed fan delay allowing for drip time, set by means of the Fnd parameter.

An additional parameter FSt provides the setting of temperature, detected by the evaporator probe, above which the fans are always OFF. By using this parameter it is possible to assure air circulation only if air temperature is lower than FSt value.

NOTE: the condenser FAN output delay is managed by means of AC1 parameter. The above parameters do not affect the condenser FAN output.

7.1 EVAPORATOR FAN AND DIGITAL INPUT

When the digital input is configured as door switch (i1F=dor), fans and compressor status will depend on the odC parameter value:

- odC=no → normal regulation;
- odC=FA → evaporator fan OFF;
- odC=CP → compressor OFF;
- odC=F-C → compressor and evaporator fan OFF.

When rrd=Y the regulation will restart after a door open alarm.

8. CONDENSER FANS

The condenser fan works in parallel with the compressor output. By using the AC1 parameter is possible to delay its activation from 0 to 255 sec.

9. FRONT PANEL COMMANDS



SET	To display target set point, in programming mode it selects a parameter or confirm an operation
	(LIG) To switch on and off the light
	(DEF) To start a defrost
	(UP) In programming mode it browses the parameter codes or increases the displayed value.
	(DOWN) In programming mode it browses the parameter codes or decreases the displayed value.
	(ES) Keep it press for 3 sec to activate the Energy Saving mode

KEYS COMBINATION	
+	To lock or unlock the keyboard
SET +	To enter in programming mode
SET +	To return to room temperature display

ICON	MODE	MEANING
	On	Compressor enabled
	Flashing	Anti short cycle delay enabled (AC parameter)
	On	Light output enabled
	Flashing	Light output disabled
	On	Fans output enabled
	Flashing	Fans delay after defrost
	On	Measurement unit
	Flashing	Programming mode
	On	Energy saving mode active
	Flashing	Energy saving mode disabled
	On	An alarm condition is present
	Flashing	Start-up operations are pending

NOTE: Start-up operations lasts about 30 sec after powering on the device. At the end of this phase, the alarm icon will switch off if no alarm is active. Wait for the end of this interval of time before doing modifications on the parameter map.

9.1 HOW TO: SEE THE SET POINT

1. Push and immediately release the **SET** key, the set point will be showed.
2. Push and immediately release the **SET** key or wait for 5 sec to return to normal visualisation.

9.2 HOW TO: CHANGE THE SETPOINT

1. Push the **SET** key for more than 2 sec and then push the **SET** key again;
2. The value of the set point will be displayed and the "°C" LED starts blinking;
3. To change the Set value push the **UP** or **DOWN** button.
4. To memorise the new set point value push the **SET** key three times or wait for 10 sec.

9.3 HOW TO: START A MANUAL DEFROST

Push the **DEFROST** button for more than 2 sec to start a manual defrost.

9.4 HOW TO: CHANGE A PARAMETER VALUE

To change the parameter values operate as follows:

1. Enter the Programming mode by pressing the **SET+DOWN** buttons for 3 sec ("°C" LED starts blinking).
2. Select the required parameter. Press the **SET** button to display its value
3. Use **UP** or **DOWN** buttons to change its value.
4. Press **SET** to store the new value and move to the following parameter.

To exit: Press **SET+UP** buttons or waits for 15 sec without pressing any key.

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

9.5 HOW TO: SHOW THE HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing **SET+DOWN** buttons for 3 sec ("°C" or "°F" LED starts blinking).
2. Released the keys and then push again **SET+DOWN** buttons for more than 7 sec. The "L2" label will be displayed immediately followed from the HY parameter.

NOW YOU ARE IN THE HIDDEN MENU.

3. Select the required parameter.
4. Press the **SET** key 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+UP** or wait for 15 sec without pressing any key.

NOTE1: if there are no parameters in L1, after 3 sec the "nP" label will be displayed. Keep the keys pushed till the "L2" message will be displayed.

NOTE2: the previous set value will be stored even if the programming mode is exited by waiting for the time-out to expire.

MOVE PARAMETERS FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

Each parameter present in the HIDDEN MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing **SET+DOWN**. If a parameter is visible also in the First Level, in the HIDDEN MENU the decimal point will be lit.

9.6 HOW TO: LOCK THE KEYBOARD

1. Keep both **UP** and **DOWN** buttons pressed for more than 3 sec.
2. The "oFF" label will be displayed and the keyboard will be locked. If any button is pressed more than 3 sec, the "oFF" message will be displayed.

9.7 HOW TO: UNLOCK THE KEYBOARD

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

10. PARAMETERS

REGULATION

HY	Differential: (0.1 to 25.0°C; 1 to 45°F) differential for set point. Compressor Cut-IN is [SET-POINT + HY]. Compressor Cut-OUT is when the temperature reaches the set point.
HYE	Differential when energy saving mode is active: (0.1 to 25.0°C; 1 to 45°F) differential for set point. Compressor Cut-IN is [SET-POINT + HES + HYE]. Compressor Cut-OUT is when the temperature reaches the [SET-POINT + HES].
LS	Minimum SET POINT: (-55.0°C to SET; -67°F to SET) sets the minimum value for the set point.
US	Maximum SET POINT: (SET to 110.0°C; SET to 230°F) set the maximum value for set point.
ot	First probe calibration: (-12.0 to 12.0°C; -21 to 21°F) allows to adjust any possible offset of the first probe.
P2P	Evaporator probe presence: n = not present; Y = the defrost stops by temperature.
oE	Second probe calibration: (-12.0 to 12.0°C; -21 to 21°F) allows to adjust any possible offset of the second probe.
P4P	Condenser probe presence: n = not present; Y = the condenser temperature alarm is managed.
o4	Condenser probe calibration: (-12.0 to 12.0°C; -21 to 21°F) allows to adjust any possible offset of the condenser probe.
odS	Outputs activation delay at start up: (0 to 255 min) this function is enabled after the 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 to 50 min) minimum interval between a compressor stop and the following restart.
AC1	Activation delay for condenser fan: (0 to 255 sec) delay for condenser fan activation.
Con	Compressor ON time with faulty probe: (0 to 255 min) time during which the compressor is active in case of faulty thermostat probe. With CY=0 compressor is always OFF.
CoF	Compressor OFF time with faulty probe: (0 to 255 min) time during which the compressor is OFF in case of faulty thermostat probe. With Cn=0 compressor is always active.
oHt	Over heating temperature: (1.0 to 12.0°C; 1 to 21°F) this is the upper threshold limit used to activate the super cooling function.
SCo	Differential for Super Cooling operation: (0.0 to 12°C; 0 to 21°F) this is the special set-point value used during a super cooling function (cut-off value for compressor). If SCo=0 , the super cooling function is disabled.
tSC	Super Cooling Expiration Time: (0.0 to 24h00min, res. 10 min) maximum lenght for super cooling mode.

DISPLAY

CF	Measurement unit: (°C; °F) °C = Celsius; °F = Fahrenheit.
rES	Resolution: (dE; in) dE = decimal; in = integer.
dLY	Display delay: (0.0 to 20min00sec, res. 10 sec) when the temperature increases, the display is updated of 1°C or 1°F after this time.

DEFROST

dE	Defrost termination temperature: (-55 to 50°C; -67 to 122°F) if P2=Y it sets the temperature measured by the evaporator probe, which causes the end of defrost.
idF	Interval between defrost cycles: (0 to 255 hours) determines the time interval between the beginning of two defrosting cycles.
MdF	Maximum length for defrost: (0 to 255 min; 0 means no defrost) when P2P=n (not evaporator probe: timed defrost) it sets the defrost duration, when P2P=Y (defrost end based on temperature) it sets the maximum length for defrost.
dFd	Display during defrost: (rt; it; SP; dF) rt = real temperature; it = start defrost temperature; SP = SET-POINT; dF = label "dF".
dAF	Defrost delay after freezing: (0.0 to 24h00min, res. 10 min)

FANS

	Fans operating mode: (Cn; on; CY; oY)
FnC	<ul style="list-style-type: none"> • Cn = runs with the compressor, duty-cycle when compressor is OFF (see FoF, Fon, FF1 and Fo1 parameters) and OFF during defrost; • on = continuous mode, OFF during defrost; • CY = runs with the compressor, duty-cycle when compressor is OFF (see FoF, Fon, FF1 and Fo1 parameters) and ON during defrost; • oY = continuous mode, ON during defrost.
FSt	Fans stop temperature: (-55 to 50°C; -67 to 122°F) setting of temperature, detected by evaporator probe. Over this value of temperature fans are always OFF. NOTE: it works only for the evaporator fan, NOT for the condenser fan.
Fon	Fan on time when the compressor is off: (0 to 255 min) used when energy saving status is not active.
FoF	Fan off time when the compressor is off: (0 to 255 min) used when energy saving status is not active.

Fo1	Fan on time when the compressor is off: (0 to 255 min) used when energy saving status is active.
FF1	Fan off time when the compressor is off: (0 to 255 min) used when energy saving status is active.

ALARMS	
ALC	Alarm configuration: (Ab, rE) Ab = absolute; rE = relative.
ALU	Maximum temperature alarm: when this temperature is reached, the alarm is enabled after the Ad delay time. <ul style="list-style-type: none"> If ALC=Ab → ALL to 110.0°C or ALL to 230°F. If ALC=rE → 0.0 to 50.0°C or 0 to 90°F.
ALL	Minimum temperature alarm: when this temperature is reached, the alarm is enabled after the Ad delay time. <ul style="list-style-type: none"> If ALC=Ab → -55.0°C to ALU or -67°F to ALU. If ALC=rE → 0.0 to 50.0°C or 0 to 90°F.
AFH	Differential for temperature alarms: (0.1 to 25.0°C; 1 to 45°F) differential for alarms.
ALd	Temperature alarm delay: (0 to 255 min) delay time between the detection of an alarm condition and the relative alarm signalling.
dAo	Temperature alarm exclusion at start-up: (0.0 to 24h00min, res. 10 min) delay time between the detection of a temperature alarm condition and the relative alarm signalling, after powering on the instrument.

CONDENSER TEMPERATURE ALARM	
AP2	Probe selection for condenser temperature alarms: (nP; P1; P2; P3; P4)
AL2	Condenser low temperature alarm: (-55.0 to 110.0°C; -67 to 230°F)
AU2	Condenser high temperature alarm: (-55.0 to 110.0°C; -67 to 230°F)
AH2	Differential for condenser temperature alarm recovery: (0.1 to 25.0°C; 1 to 45°F)
Ad2	Condenser temperature alarm delay: (0 to 255 min; 255 = not used) delay time between the detection of a condenser alarm condition and the relative alarm signalling.
dA2	Delay of condenser temperature alarm at start up: (0.0 to 24h00min, res. 10 min)
bLL	Compressor off for condenser low temperature alarm: (n; Y) n = no, compressor keeps on working; Y = yes, compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.
AC2	Compressor off for condenser high temperature alarm: (n; Y) n = no, compressor keeps on working; Y = yes, compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.

DIGITAL INPUT	
i1P	Digital input polarity: (oP; CL) oP = activated by closing the contact; CL = activated by opening the contact.
i1F	Digital input configuration: (dor; dEF; LiG; AUS) <ul style="list-style-type: none"> dor = door switch function; dEF = defrost activation; LiG = light activation / deactivation. AUS = not used. ES = energy saving activation / deactivation.
did	Digital input delay: (0 to 255 min) when i1F=EAL or bAL, it is the delay between the detection of an external alarm condition and the relative signalling. When i1F=dor, this represents the delay before the activation of the door open alarm.
odC	Compressor and fan status when the door is open: (no; FAn; CP; F-C); no = normal; FAn = Fans OFF; CP = Compressor OFF; F-C = Compressor and fans OFF.
rrd	Regulation when door is open: (n; Y) n = no regulation if door is opened; Y = when did is elapsed, regulation restarts even if a door open alarm is present.

ENERGY SAVING	
ErA	Kind of energy saving: (nu, bAS) nu = not used. bAS = based on time intervals StE and EtS.
HES	Temperature variation during the Energy Saving cycle: (-30.0 to 30.0°C; -54 to 54°F) it sets the increasing value of the set point during the Energy Saving cycle.
LdE	Light output status during energy saving mode: (n; Y) the light status depends on the energy saving mode and is managed from the device.
StE	Time interval to change mode from normal to energy saving: (0.0 to 23h50min, res. 10 min) if no open of the door is detected during this interval of time, the operating mode will change to energy saving mode.
EtS	Time interval to change from energy saving to normal mode: (0.0 to 23h50min, res. 10 min) if energy saving mode is active, it will change and come back in normal mode at the end of this interval of time.
dS	Door open time to change mode: (0 to 999 sec) the energy saving mode will be immediately disabled (if active) when the door stay open more than dS time.

OTHER	
d1	Thermostat probe display (read only)
d2	Evaporator probe display (read only)
d4	Condenser probe display (read only)
rSE	Real Set point (read only)
rEL	Firmware Release (read only)
Ptb	Parameter code table (read only)
FdY	Firmware release daY (read only)
FmT	Firmware release Month (read only)
FYr	Firmware release Year (read only)

11. DIGITAL INPUT

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

DOOR SWITCH (i1F=dor)

It signals the door status and the corresponding relay output status through the odC parameter: no = normal (any change); FAn = Fan OFF; CP = Compressor OFF; F-C = Compressor and fan 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 if rrd = 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.

START DEFROST (i1F=dEF)

It starts a defrost 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 until the MdF safety time is expired.

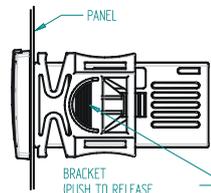
LIGHT CONTROL (i1F=LiG)

The light output status will change with the digital input.

ENERGY SAVING (i1F=ES)

The energy saving mode will be enabled / disabled with the digital input.

12. INSTALLATION AND MOUNTING



Instrument XR07CX 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 to 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.

13. 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.

13.1 PROBES

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.

14. USE THE HOT KEY

14.1 SAVE PARAMETERS IN A HOT KEY (UPLOAD FROM INSTRUMENT)

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

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

14.2 COPY PARAMETERS FROM A HOT KEY (DOWNLOAD PARAMETER VALUES)

1. Turn OFF the instrument.
2. Insert a programmed "HOT-KEY" into the 5-PIN receptacle and then turn the Controller ON.
3. Automatically the parameter list of the "HOT-KEY" is downloaded into the Controller memory, the "do" message is blinking followed a by flashing "End".
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.

15. ALARM SIGNALLING

Mess.	Cause	Outputs
"P1"	Room probe failure	Compressor output according to Con e CoF
"P2"	Evaporator probe failure	Defrost end is timed
"P4"	Condenser probe failure	Condenser temperature alarm is not managed
"HA"	Maximum temperature alarm	Outputs unchanged
"LA"	Minimum temperature alarm	Outputs unchanged
"dA"	Door open more than doA time	Compressor and fans restarts

15.1 ALARM RECOVERY

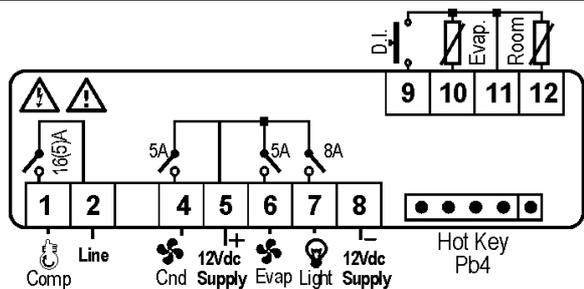
Probe alarms "P1", "P2" and "P4" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe. Temperature alarms "HA" and "LA" automatically stop as soon as the temperature returns to normal values.

16. TECHNICAL DATA

Housing: self extinguishing ABS
Case: frontal 32x74 mm; depth 60mm
Mounting: panel mounting in a 71x29mm panel cut-out
Body Protection: IP20
Frontal protection: IP65
Connections: Screw terminal block ≤ 2.5 mm² wiring
Power supply: 12Vdc
Power absorption: 3.5VA max
Display: 3 digits red LED, 14.2 mm high
Inputs: up to 3 NTC probes.
Digital input: free voltage contact.
Relay outputs: Compressor SPST 16(6)A 250VAC
 Light: SPDT 8(3)A, 250VAC
 Fans: SPST 5(2)A, 250VAC
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 to 60°C (32 to 140°F)
Storage temperature: -25 to 60°C (-13 to 140°F)
Relative humidity: 20 to 85% (no condensing)
Measuring and regulation range:
 NTC -40 to 110°C (-40 to 230°F)
Resolution: 0.1°C or 1°C (selectable).
Accuracy (ambient temp. 25°C): ±0.1°C ±1 digit.

17. CONNECTIONS

17.1 XR07CX – 16+8+8+8A – 12VDC



18. DEFAULT SETTING VALUES

LABEL	DESCRIPTION	RANGE	DEFAULT
SEt	Set Point	LS; US	12
HY	Differential when energy saving mode is not active	[0.1 to 25°C] [1 to 45°F]	4.0°C
HYE	Differential when energy saving mode is active	[0.1 to 25°C] [1 to 45°F]	4.0°C
LS	Minimum Set Point	[-55°C to SET] [-67°F to SET]	3.0°C
US	Maximum Set Point	[SET to 110°C] [SET to 230°F]	18.0°C
ot	First probe calibration	[-12.0 to 12.0°C] [-21 to 21°F]	0.0
P2P	Second probe presence	n, Y	n
oE	Second probe calibration	[-12.0 to 12.0°C] [-21 to 21°F]	0.0
P4P	Condenser probe presence	n, Y	n
o4	Condenser probe calibration	[-12.0 to 12.0°C] [-21 to 21°F]	0.0
odS	Outputs activation delay at start up	0 to 255 min	0
AC	Anti-short cycle delay	0 to 50 min	3
AC1	Activation delay for condenser fan	0 to 255 sec	3
Con	Compressor ON time faulty probe	0 to 255 min	5
CoF	Compressor OFF time faulty probe	0 to 255 min	5
CF	Temperature Measurement unit	°C; °F	°C
rES	Display Resolution (valid only for °C): decimal or integer	dE; in	in
dLY	Display delay	0.0 to 20min00sec, res. 10 sec	20.0
dIE	Defrost termination temperature	[-55 to 50°C] [-67 to 122°F]	0.0°C
idF	Interval between defrost cycles	0 to 255 hours	4
MdF	Maximum length for defrost	0 to 255 min	15
dFd	Display during defrost	rt; it; SEt; dEF; dEG	dEF
dAd	Max display delay after defrost	0 to 255 min	30
dAF	Defrost delay after fast freezing	0.0 to 24h00min, res. 10 min	0.0
dSC	Defrost during super cooling operation	n; Y	Y
FnC	Fans operating mode	Cn; on; CY; oY	oY
FSt	Fans stop temperature	[-55 to 50°C] [-67 to 122°F]	0.0°C
Fon	Fan on time when compressor off (ES not active)	0 to 15 min	0
FoF	Fan off time when compressor off (ES not active)	0 to 15 min	0
Fo1	Fan on time when compressor off (ES active)	0 to 15 min	0

FF1	Fan off time when compressor off (ES active)	0 to 15 min	0
ALC	Temperature alarms configuration	rE, Ab	rE
ALU	Maximum temperature alarm	[ALL to 110.0°C] [ALL to 230°F]	50.0°C
ALL	Minimum temperature alarm	[-55°C to ALU] [-67°F to ALU]	50.0°C
AFH	Differential for temperature alarm recovery	[0.1 to 25.5°C] [1 to 45°F]	1.0°C
Ald	Temperature alarm delay	0 to 255 min	15
dAo	Exclusion of temperature alarm at start-up	0.0 to 24h00min, res. 10 min	24.0
AP2	Probe selection for condenser temperature alarms	nP; P1; P2; P3; P4	nP
AL2	Condenser low temperature alarm	[-55.0 to 110.0°C] [-67 to 230°F]	-55.0
AU2	Condenser high temperature alarm	[-55.0 to 110.0°C] [-67 to 230°F]	150.0
AH2	Differential for condenser temperature alarm recovery	[0.1 to 25.5°C] [1 to 45°F]	10.0
Ad2	Condenser temperature alarm delay	0 to 254 min; 255=not used	15
dA2	Delay of condenser temperature alarm at start up	0.0 to 24h00min, res. 10 min	24.0
bLL	Compressor off for condenser low temperature alarm	n; Y	n
AC2	Compressor off for condenser high temperature alarm	n; Y	n
i1P	Digital input polarity	CL; oP	CL
i1F	Digital input configuration	dor; dEF; LiG; AUS; ES	dor
did	Digital input delay	0 to 255 min	15
doA	Door open alarm delay	0 to 255 min	15
odC	Compressor and fan status when open door	no; Fn; CP; FC	FAn
rrd	Regulation with door open	n; Y	Y
ErA	Energy saving algorithm	nu, bAS	nu
HES	Temperature variation during the Energy Saving cycle	-30+30°C	30.0°C
LdE	Energy Saving mode control light status	n; Y	n
StE	Normal to energy saving mode time	0.0 to 23h50min, res. 10 min	4.00
EtS	Energy saving to normal mode	0.0 to 23h50min, res. 10 min	6.00
dS	Open door delay before changing mode (immediately from EtS to StE)	0 to 999 sec	10
oHt	Over heating temperature	[1.0 to 12.0°C] [1 to 21°F]	0.0°C
SCo	Differential for super cooling operation	[0.0 to 12.0°C] [0 to 21°F]	0.0°C
tSC	Super Cooling expiration time	0.0 to 24h00min	0.0
dP1	Thermostat probe display	Read Only	---
dP2	Evaporator probe display	Read Only	---
dP4	Condenser probe display	Read Only	---
rSE	Real Set point	Read Only	---
rEL	Firmware release	Read Only	---
Ptb	Parameter code table	Read Only	---
FdY	Firmware release date (daY)	Read Only	---
FMt	Firmware release date (Month)	Read Only	---
FYr	Firmware release date (Year)	Read Only	---