XR360C - XR370C - XR362C

CONTENTS

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.
- The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "DIXEL 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

Models **XR360C, XR370C** and **XR362C**, this one matched with the **XR30SL** slave, are 32x74 mm format microprocessor based controllers suitable for applications on medium or low temperature forced air refrigerating units. They are fitted with relay outputs to control compressor, defrost - which can be either electrical or hot gas - and fans. Both models allow up to three PTC probe inputs for thermal and defrost termination temperature control. The third probe, coupled with a configurable analogue output (optional), allows control of the evaporator's or condenser's fans speed through the **XRPW500** external module. The alarm conditions are signalled by the internal buzzer and by a 0÷12V/40mA output, while **XR370C** provides a suitable relay output. **XR360C** and **XR370C** include an output port for the **XJRS485** external serial module and a configurable digital input for external alarm. **XR362C** can have a built in RS485 serial output.

3. CONTROLLING LOADS

3.1 The compressor

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 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**".
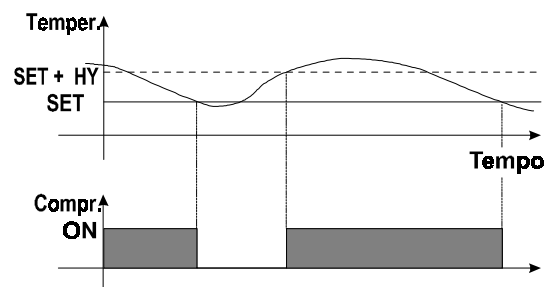
3.2 Fast Freezing

When defrost is not in progress, fast freezing can be activated by the "**UP**" key by holding it pressed for about 3 seconds. The compressor operates in continuous mode for the time set through the "**CCt**" parameter. The cycle can be terminated before the end of the set time using the same activation key.

3.3 Defrost

Two defrost modes are available through the "**tdF**" parameter: defrost through electrical heaters (tdF=0) and hot gas defrost (tdF=1). Other parameters are used to control the interval between defrost cycles, its maximum length and two defrost modes: timed or controlled by the evaporator's probe. At the end of defrost the Drip time starts - it is controlled through the "**Fdt**" parameter.

3.3.1 External consent for defrost end (par. dIC)

With dIC=3, the digital input can control the end of defrost. This feature can be used in a plant with more than one evaporator when some of them are controlled by devices able to signal, by means of an external contact, that the defrost is in progress. When the temperature of defrost end is reached (par. EdF), the controller checks the state of the digital input; if it is ON, the drain time starts (par. Fdt) and the normal regulation is stopped. When the digital input is switched off, the controller re-starts the normal regulation. In any case the normal regulation re-starts when the maximum length for defrost (par. MdF) is expired.

3.4 Control of evaporator fans

The fan control mode is selected by the parameter "**FnC**":

> FnC=0   fans will switch ON and OFF with the compressor
> FnC=1   fans will run continuously

In both cases fans will not run during defrost; after defrost termination there is a timed fan delay allowing for drip time, set by parameter **"Fnd"** in minutes.

An additional parameter "**FSt**" provides the setting of temperature, detected by the evaporator probe, above which the fans are always OFF. This can be used to make sure circulation of air occurs only if his temperature is lower than set in "FSt".

4. FRONT PANEL COMMANDS

SET: **TO DISPLAY TARGET SET POINT**: by pressing and releasing this key the set point is displayed for 5s.

TO MODIFY SET POINT: by holding the key pressed for at least 2s set point change mode is entered: the set point is displayed and the LEDs of the first and third digits blink. To change the value use the "**UP**" and "**DOWN**" keys. The new value can be stored either by pressing the **"SET"** key (the instrument restores temperature display) or by waiting the exit time-out to expire (15s).

▲ (**UP**):   in programming mode or in "**Function Menu**" it browses the parameter codes or increases the value of the displayed variable. Hold pressed for a faster change.

TO START A FAST FREEZING CYCLE: in normal operation, by holding it pressed for 3s the fast freezing cycle is started. Such cycle can be interrupted by holding the "**UP**" key pressed for 3s.

▼ (**DOWN**):   in programming mode or in "Function Menu" it browses the parameter codes or decreases the value of the displayed variable. Hold pressed for a faster change.

❄   **TO START A MANUAL DEFROST:** by holding it pressed for 3s the defrost cycle is started

KEY COMBINATIONS:

▲+ ▼   **TO UNLOCK THE KEYBOARD:** when held pressed for 3s the keyboard is unlocked (see "LOC" function).

SET + ▼   **TO ENTER ON FUNCTION MENU:** when held pressed for 3s the Function Menu is entered.

SET + ▲   **TO RETURN TO THE ROOM TEMPERATURE DISPLAY:** programming end, return to the room temperature display.

4.1 Use of LEDS

A series of light points on the front panels is used to monitor the loads controlled by the instrument. Each LED function is described in the following table.

LED	MODE	Function
❄	ON	Compressor enabled
❄	FLASHING	- Programming Phase (flashing with ✿)
		- Anti-short cycle delay enabled
✿	ON	Fan enabled
✿	FLASHING	Programming Phase (flashing with ❄)

LED	MODE	Function
❄	ON	Defrost enabled
❄	FLASHING	Drip time in progress
❄	ON	Fast freezing enabled
((!))	ON	- ALARM signal - In "**Pr2**" indicates the parameter is also present in "Pr1"

4.2 Messages on the display

CODE	MODE	MEANING
rST	Flashing for 3 sec	Alarm output reset
POF	Flashing for 3 sec	Keypad locking enable
Pon	Flashing for 3 sec	Keypad unlocking

5. FUNCTION AND PARAMETERS' PROGRAMMING MENU

5.1 Function menu

Includes all the main functions controlled by the instrument.

5.1.1 Access procedure:
- The menu is entered by holding the **SET** and **DOWN** keys pressed for three seconds. The label of the first function is displayed.
- The **UP** and **DOWN** keys are used to cycle backwards or forward in the menu.
- By pressing the **SET** key the currently displayed function is enabled.

5.2 List of functions

1. "dFt": displays for 5s the time remaining to next defrost in hours & 10 min groups [hh.m]. (only in case of RTC fault)
2. "Pt2": displays for 5s the temperature of the second probe.
3. "Pt3": displays the temperature of the third probe, when present, for 5s, otherwise an "**OFF**" flashing message is displayed for 5s.
4. "Pr1": includes all user level accessible parameters.
5. "Pr2": includes all the instrument's parameters (at installer level). It can be accessed through a security code. Hence it is possible to modify all parameters and add or remove parameters from "**Pr1**" (user level) by pressing "**SET**" + "**DOWN**". When a parameter is enabled at user level, LED ((!)) (Alarm LED) is on.
6. "dIG": a security code protected function allowing to choose whether digital inputs are actived by opening or closing the contact, corresponding to normally open (standard configuration) or normally closed circuit.
7. "LOC": keyboard lock. In Pr2 when enabled the "POF" flashing message is displayed for a few seconds then the keys are locked. Only the set point display is enabled.
8. "tSt": start the instrument self test.
9. "ALr": displays any Alarm messages.
10. "Out": exits from menu

From functions "dFt", "Pt2" and "Pt3" you can exit by pressing SET or by time out. The instrument will go back to "Functions Menu". From all other functions the exit is by time out and the instrument will again display the room temperature.

5.3 Exit Timeout

If no key is pressed for more than 15 seconds the instrument reverts to room temperature display mode.

5.4 Accessing "Pr2" and "dIG" and SECURITY CODE input

To access parameters in "**Pr2**" and "**dIG**" a security code is required.
1. Enter Function Menu, select label "Pr2" or "**dIG**" and press the "**SET**" key. The "PAS" flashing message is displayed, shortly followed by "0 - -" with a flashing zero.
2. Use "**UP**" or "**DOWN**" to input the security code in the flashing digit;
3. Confirm the figure by pressing "**SET**".
4. Repeat operations 2 and 3 for the other digits.
5. If the security code is correct the access to "Pr2" or "**dIG**" is enabled by pressing "**SET**" on the last digit, otherwise the security code input process restarts from the beginning.

If no key is pressed for more than 15 seconds the instrument reverts to room temperature display mode.

SECURITY CODE is   321

NOTE: each parameter in "Pr2" can be removed or put into "Pr1" (user level) by pressing **"SET" + "DOWN"**. When a parameter is present in "Pr1" LED (⦿) (alarm LED) is on.

5.5 Changing a parameter's value

Each parameter is identified by a special alphanumeric code (label).

To change the parameter's value operate as follows:

1. Enter the "**Function Menu"** and select the parameters' list you require: Pr1, Pr2 or dIG.
2. Browse the parameters' list using "**UP**" or "**DOWN**" until the required parameter is displayed.
3. Press the "**SET**" key to display its value.
4. Use "**UP**" or "**DOWN**" to change its value.
5. Press "**SET**" to store the new value and skip to the following parameter.

TO EXIT: Press "**SET**" + "**UP**" or wait 15s without hitting a key.

NOTE: the set value is stored even when the procedure is exited by waiting the timeout to expire without pressing "**SET**".

6. LIST OF PARAMETERS

HY **Differential**: (maximum width 50°C/90°F; resolution 1°C/°F or 0.1°C). Intervention differential for set point, always positive. Compressor Cut IN is Set Point Plus Differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.

LS **Minimum set point**: (-60°C÷SET / -60°F÷SET): Sets the minimum value that can be input for the set point, to prevent the end user from setting incorrect temperature values.

US **Maximum set point**: (SET ÷ 50°C / SET ÷ 122°F). Set the maximum acceptable value for set point.

AC **Anti-short cycle delay**: (0÷30 min) minimum interval between the compressor stop and the following restart.

OdS **Outputs activation delay at start up:** (0÷30min) 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.

ALC **Set point alarms configuration**: (0=related to set point; 1=absolute) determines if temperature alarms are relative to set point or if alarms are referred to absolute temperatures.

ALU **MAXIMUM temperature alarm**: (when ALC =0 from 0 to 50 °C or from 0 to 90°F above the set point; when ALC = 1 from ALL to 50°C or from ALL to 122°F). When this temperature is reached the alarm is enabled, (possibly after the "Ald" delay time).

ALL **Minimum temperature alarm**: (when ALC = 0 from 0 to 50 °C or from 0 to 90°F below the set point; when ALC = 1 from -50 °C to ALU or from -58 °F to ALU). When this temperature is reached the alarm is enabled, (possibly after the "Ald" delay time).

Ald **Temperature alarm delay**: (0÷255 min) time interval between the detection of an alarm condition and alarm signalling.

dAO **Delay of temperature alarm at start-up**: (from 0 min to 23h 50 min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

EdA **Alarm delay at the end of defrost** (0÷255 min) Time interval between the detection of the temperature alarm condition at the end of defrost and alarm signalling.

CCt **Compressor ON time during fast freezing**: (0÷24 hours) allows to set the length of the fast freezing cycle. Can be used, for instance, when the room is filled with new products.

dAF **Defrost delay after fast freezing cycle**: (0÷23 h 50 min) time interval between the end of the fast freezing cycle and the following defrost related to it.

IdF **Interval between defrost cycles**: (1÷99 hours) Determines the time interval between the beginning of two defrost cycles.

MdF **Maximum length for defrost**: (0÷255 min) When EdF = 0 (timed defrost) it sets the defrost duration, when EdF = 1 or 2 (defrost termination based on temperature) it sets the maximum length for defrost.

SdF **Set point for SMARTFROST**: (-30÷30 °C/ -22÷86 °F) evaporator temperature which starts "Idf" counting (interval between defrosts) in SMARTFROST mode.

dtE **Defrost termination temperature**: (-50÷50 °C/ -58÷122 °F) Sets the temperature measured by the evaporator probe, which terminates the defrost.

dFd **Temperature displayed during defrost**: (0 = real temperature; 1 = temperature at defrost start; 2 = set point; 3 = "dEF" label)

dAd **MAX display delay after defrost**: (0÷255 min). Sets the maximum time between the end of defrost and the restarting of the real room temperature display.

tdF **Defrost type**: (0 = electrical heater; 1 = hot gas).

EdF **Defrost mode**: EdF = 0 Time controlled defrost. The defrost lasts for the duration of time set in parameter MdF. On termination the drip down time starts (param. Fdt)

EdF = 1 Temperature controlled defrost. Defrost terminates when the evaporator reaches the temperature set in parameter dtE (defrost termination temperature).

NOTE: If at the start of defrost the evaporator temperature is higher than dtE then the defrost will be skipped.

EdF = 2 SMARTFROST mode. The time IdF (interval between defrosts) is increased when the compressor is running (even non consecutively) and the evaporator temperature is less than the value in "SdF" (set point for SMARTFROST). Defrost terminates on temperature.

Fdt **Drip time**: (0÷60 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.

dPO **First defrost after start-up**: (0 = immediately ; 1 = after the IdF time)

FnC **Fans operating mode**: (0 = runs with the compressor; 1 = continuous mode)

Fnd **Fan delay after defrost:** (0 to 255 min) The time interval between end of defrost and evaporator fans start.

FSt **Fan stop temperature**: (-50÷50°C/-58÷122°F) if the temperature, detected by the evaporator probe is above FSt the fan is stopped. Serves to avoid blowing warm air around the room.

C3 **Third probe configuration**: (0 = not present; 1 = for analogue output; 2 = for remote display: the instrument shows the temperature measured by the first probe, the remote display shows the temperature measured by the third probe)

AOS **Analogue output start point**; ***Only on models with Analog Output*** -(-50÷50°C or -58°÷122 °F). Sets the temperature at which the analogue output begins.

APb **Analogue output band width**: ***Only on models with Analog Output*** (-50÷50°C or -90÷90°F) sets the width of the regulation band for the analogue output. If APb is **positive** then it is above the start point and the kind of action is direct (condenser application). If APb is **negative** then it is below the start point and the kind of action is inverse (evaporator application). See also "**Analogue Output**" chapter.

CAO **Input type for the analogue output**; ***Only on models with Analog Output -*** four input types can be selected:

0 = room probe temperature: T1

1 = temperature difference between the room probe and the evaporator probe: T1 - T2

2 = temperature of the third probe T3

3 = temperature difference between the ambient probe and the third probe T1 - T3

The analogue output will be proportional to these quantities. Attention shall be paid in adjusting the other parameters of the analogue output in compliance with the choice made, once the input quantity has been chosen.

Ot **Thermostat probe calibration**: (-30÷30°C, resolution 0.1 °C; or -54÷54 °F, resolution 1 °F) Permits calibration of the thermostat probe.

OE **Evaporator probe calibration**: (-30÷30°C, resolution 0.1 °C; or -54÷54 °F, resolution 1 °F). Permits calibration of the of the evaporator probe.

O3 **Third probe calibration**: (-30÷30°C resolution 0.1 °C; or -54÷54 °F, resolution 1 °F) Permits calibration the third probe.

Or3 **Remote display Offset:** (-30÷30°C resolution 0.1 °C; or -54÷54 °F, resolution 1 °F) Permits to adjust the temperature shows by the remote display.

rES **Resolution (for °C)**: (0 = 1°C; 1 = 0.1 °C) allows decimal point display.

CF **Temperature measurement unit**: 0 = Celsius; 1 = Fahrenheit.

COn **Compressor ON time with faulty probe**: (0÷255 min) time during which the compressor is active in case of faulty thermostat probe. With COn=0 compressor is always OFF.

COF **Compressor OFF time with faulty probe**: (0÷255min) time during which the compressor is off in case of faulty thermostat probe. With COF=0 compressor is always active.

dIC **Digital input #1 operating mode**: four operating modes can be selected:

0 = generic alarm: the buzzer and the alarm output are enabled, the flashing message "EA" is displayed, the other outputs are not modified;

1 = klixon alarm: the buzzer and the alarm output are enabled, the flashing message "CA" is displayed, the other outputs are set to OFF state;

2 = serious alarm mode: same as for Klixon alarm, but the flashing "OFF" message is displayed.

3 = external consent for defrost end: when the temperature of defrost end is reached (par. EdF), the controller checks the state of the digital input; if it is ON, the drain time starts (par. Fdt) and the normal regulation is stopped. When the digital input is switched off, the controller re-starts the normal regulation. In any case the normal regulation re-starts when the maximum length for defrost (par. MdF) is expired.

dId **Digital input delay**: (0÷255 min) delay between the detection of the external alarm condition (input #1) and its signalling.

tbA **Buzzer and alarm relay silencing**: (0 = mute disabled, 1 = mute enabled).

Ad l.Ad2 **RS485 serial address (0÷94)**: identifies the instrument within a control or supervising system.

Ptb **Parameter table** (read only) It shows the code of the map used in factory to set the parameters.

7. DIGITAL INPUT

The digital input is used to signal an alarm or as external consent for the end of the defrost. The kind of action depends on the **dIC** parameter as reported in the Parameters Menu.

7.1 Function "dIG"

The "**dIG**" function, included in the Function Menu and protected by a security code, allows to choose whether the digital input shall be active corresponding to normally closed or open circuit.

Once the function has been selected and the security code entered, the "In1" label will be displayed. To access the value press "**SET**". Values can be modified in the 0 ÷ 1 range:

0 = Digital input is activated **by opening** the contact;

1 = Digital input is activated **by closing** the contact.

Standard configuration: digital input is activated by closing the contact.

To exit: do not press any key for 15s.

8. ANALOGUE OUTPUT (OPTIONAL)

The analogue output is obtained through a 4÷20mA signal proportional to the input selected in parameter "**CAO**". Through the analogue output the speed of fans can be regulated according to the input variable.

The following input types can be selected through the "**CAO**" parameter:

"**CAO**" = 0   room temperature: T1
"**CAO**" = 1   room temperature - evaporator temperature : T1 - T2
"**CAO**" = 2   third probe temperature: T3
"**CAO**" = 3   room temperature - third probe temperature : T1 - T3

NOTE: When "C3" = 0, third probe missing, only configurations "CAO" = 0 and "CAO" = 1 are allowed.

To adjust the analogue input the following parameters are available:

"**AOS**" = Start point for analogue output
"**APb**" = Band width for analogue output can be either positive (direct action)and negative (inverse action).
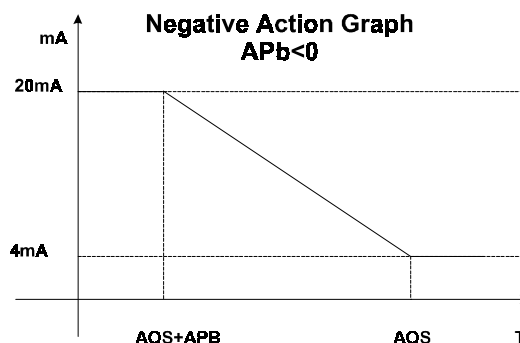
Named T the input, the relationship input-output is given by the following chart with APb>0 (condenser application).
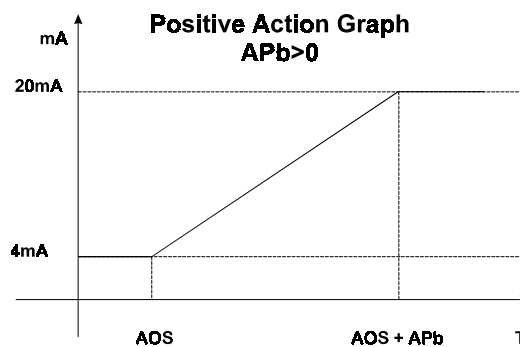
In the common area between AOS and AOS+APb the analogue output is:

$$\text{Analogue Output} = \frac{T - AOS}{APb} \bullet (20mA - 4mA) + 4mA$$

Named T the input, the relationship input-output is given by the following chart with APb<0 (evaporator application).

NOTE: When the defrost is in progress, the analogue output is set to the minimum value (4 mA). This condition lasts until the defrost terminates.

9. INSTALLATION AND MOUNTING

Instruments **XR360C, XR362C** and **XR370C** are panel mounted, in a 29x71 mm hole, and fixed using the special bracket supplied.
XR30SL shall be mounted on an omega DIN rail.
The ambient 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 the probes. Let air circulate by the cooling holes.

10. ELECTRICAL CONNECTIONS

The instruments are provided with screw terminal block to connect cables with a cross section up to 2,5 mm^2.
Instrument **XR362C** is connected to slave module **XR30SL** through a multipolar connector (included). It accommodates the instrument relays and the transformer powering the whole system. Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the input connection 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.

10.1 Probes 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 and from the warmest place during defrost, to prevent premature defrost termination. The third probe can be placed either on the evaporator or on the condenser - refer to the installation general hints.

11. SERIAL OUTPUT RS485

The models XR360C and XR370C can be connected, by means of TTL serial outputs, to the external XJ RS485 serial module to interface the instrument with the monitoring and supervising system XJ500. The model XR362C can have a built in RS485 serial interface.

12. REMOTE DISPLAY XR REP

The remote display XR REP can be connected to the instruments. The XR REP repeats the temperature shows by the controller or displays the temperature measured by the third probe.
By means the **C3** parameter can be select the kind of display:
C3=0,1 it displays the room temperature
C3=2   it displays the temperature of the third probe.

13. ALARM SIGNALS

Message - Mode		Cause	Outputs
"EE"	Flashing	Data or memory failure	Alarm output ON; Other outputs unchanged
"P1"	Flashing	Probe 1 failure	Alarm output ON; Compressor output according to parameters "**COn**" and "**COF**"
"P2"	Alternating with room temperature	Probe 2 failure	Alarm output ON; Other outputs unchanged; defrost termination is timed
"P3"	Alternating with room temperature	Probe 3 failure	Alarm output ON; Other outputs unchanged; When controlled by P3, analogue output OFF
"HA"	Alternating with room temperature	Maximum temperature alarm	Alarm output ON; Other outputs unchanged.
"LA"	Alternating with room temperature	Minimum temperature alarm	Alarm output ON; Other outputs unchanged.
"FF"	Alternating with room temperature	Fast freezing interrupted by power failure	Alarm output ON; Other outputs unchanged.
"EA"	Alternating with room temperature	External alarm	Alarm output ON; Other outputs unchanged.
"CA"	Alternating with room temperature	Klixon alarm	Alarm output ON; Other outputs OFF.

Message - Mode	Cause	Outputs
"OFF" Alternating with room temperature	Serious external alarm	Alarm output ON; Other outputs OFF.

13.1 Silencing buzzer / alarm relay output

Once the alarm signal is detected the buzzer and the alarm output can be disabled by pressing any key. The display signal remains as long as the alarm condition remains. Disabling can be inhibited by setting "**tbA**" to 0 in which case the alarm relay remains active as long as the alarm condition lasts.

13.2 Alarm "EE"

The instruments in the Dixell range are provided with an internal check verifying data integrity. Alarm "EE" flashes when a failure in the internal memory is detected. In such case the alarm output enabled.

       WHAT TO DO
1. Cancel the alarm by pressing a key.
2. Check the value of all parameters and restore correct values when wrong.
3. Check the correct instrument operation and in case of further errors call the service.

13.3 Alarm reset through keyboard

It is referred to alarms "**EE**" and "**FF**". Reset is performed by pressing any key while the alarm is being signalled, then message "**rES**" is displayed for about 3s before normal operation is restored.

13.4 Alarm recovery

Probe alarms "**P1**", "**P2**" and "**P3**" start 30 seconds after the fault in the related probe; they automatically stop 30 seconds after the probe restarts normal operation. Check connections before replacing the probe.
Temperature alarms "**HA**" and "**LA**" automatically stop as soon as the thermostat temperature returns to normal values and when defrost starts.
Alarm "**FF**" automatically stops after 30 minutes.
External alarms "**EA**", "**CA**", "**OFF**" and stop as soon as the external digital input is disabled.

14. SELF DIAGNOSIS

The device self test can be forced by triggering function "**tSt**" in the Function Menu.
Self test progress:
1) Each segment or decimal point is turned on alternatively in all digits (3 segments in parallel);
2) All digits in the display are turned on, one by one;
3) All digits in the display are turned on simultaneously;
4) LEDS are activated, one by one;
5) All relays are activated, one by one, for 3s, regardless of configuration;
6) Digital input test:
   - if a key is pressed the "Fx" message is displayed (x = number of the key pressed).
   - If the digital input is enabled the "In1" message is displayed.
7) All the parameters and their values are displayed in sequence.
Once the self test cycle is over the instrument restores normal operation.

15. TECHNICAL DATA

Housing: self extinguishing ABS.
Case
    XR360C, XR362C, XR370C: frontal 32x74 mm; depth 70mm;
    XR30SL: 4 DIN modules 70x85 mm; depth 61mm
Mounting
    XR360C, XR362C, XR370C: panel mounting in a 71x29 mm panel cut-out.
    XR30SL: DIN RAIL mounted in a omega (3) din rail
Frontal protection: XR360C, XR362C, XR370C IP65
Connections: Screw terminal block $\leq 2,5$ mm^2 wiring.
XR362C is connected to the slave module **XR30SL** through a multipolar connector.
Power supply
    XR360C, XR370C: 12Vac/dc, -10% +15% 50/60Hz**.**
    XR362C: powered by the slave **XR30SL**
    XR30SL: 110/230Vac, ±10%, 50/60Hz
Power absorption: 3VA max.
Display: 3 digits, red LED, 14,2 mm high.
Inputs: up to 3 PTC probes.

Relay outputs:.
    compressor
        XR360C, XR370C: relè SPST 8(3) A, 250Vac
        XR362C: relè SPST 16(6) A, 250Vac
    defrost
        XR360C, XR362C: relè SPDT 8(3)A, 250Vac
        XR370C: relè SPST 8(3)A, 250Vac
    fans
        XR360C, XR362C: relè SPST 8(3)A, 250Vac
        XR370C: relè SPST 5(2)A, 250Vac
    alarm: **XR370C:** SPDT relay, 8(3)A, 250Vac
Other output
    XR360C: alarm 12Vdc/40mA
    XR360C, XR370C, XR362C: buzzer for acoustical alarm
Analogue output: 4÷20mA (optional)
Serial output
    XR360C, XR370C output for external serial module XJRS485
    XR362C: built in RS485 (optional)
Data storing: on the non-volatile memory (EEPROM).
Operating temperature: 0÷60 °C.
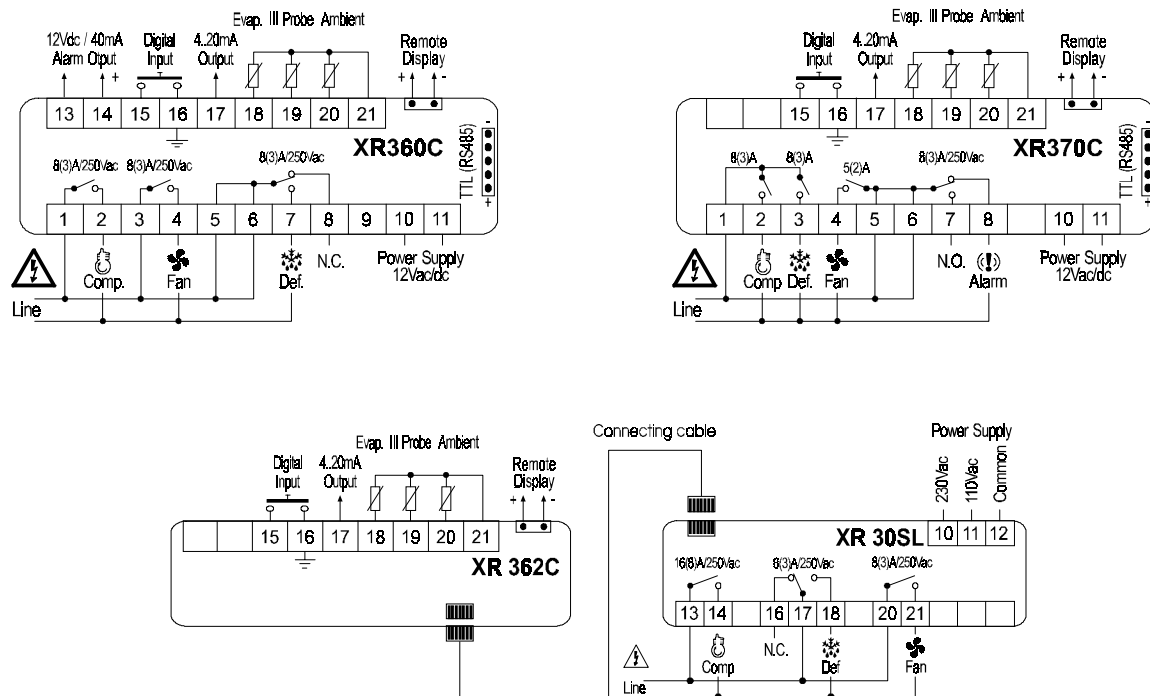**Relative humidity:** 20÷85% (no condensing)

Storage temperature: -30÷85 °C.
Measuring range: -55÷50 °C
Resolution: 0,1 °C or 1 °F (selectable).
Controller Accuracy a 25°C: ±0,3 °C ±1 digit

16. CONNECTIONS

17. DEFAULT SETTING VALUES - STANDARD MODELS

PARAMETER	RANGE	LEVEL	DEFAULT °C/°F
Set point	LS÷US	Pr1	-5/23
Hy	1÷50°C o 1÷90°F	Pr1	2/4
LS	-50.0°C÷Set or -58°F÷Set	Pr2	-30/-22
US	Set÷50.0°C Set÷122°F	Pr2	20/68
AC	0÷255 min	Pr2	1
OdS	0÷30	Pr2	1
ALC	0=Relative; 1=Absolute	Pr2	0
ALU	with ALC=1: ALL÷50°C/122°F with ALC=0: 0÷50°C/90°F	Pr2	10/18
ALL	with ALC=1: -50°C/-58°F÷ALU with ALC=0: 0÷50°C/90°F	Pr2	10/18
ALd	0 ÷ 255 min	Pr2	15
dAO	0' ÷ 23h e 50'	Pr2	1.30
EdA	0' ÷ 255 min	Pr2	30
CCt	0 ÷ 24 hours	Pr2	4
dAF	0' ÷ 23h e 50'	Pr2	2
IdF	1 ÷ 99 hours	Pr2	6
MdF	0 ÷ 255 min	Pr2	30
SdF	-30 ÷ 30 °C -22÷86/°F	Pr2	0/32
dtE	-50 ÷ 50 °C/-58÷122°F	Pr2	8/46
dFd	0=Real; 1=Start; 2=Set; 3=dEF	Pr2	1
dAd	0 ÷ 255 min	Pr2	30
tdF	0=Resistor; 1=Hot gas	Pr2	0
EdF	0=Timed; 1=Evaporator Probe; 2=SMARTFROST	Pr2	1
Fdt	0 ÷ 255 min	Pr2	0
dPO	0=Immediately; 1=after IdF	Pr2	1
FnC	0=With Compr. 1=Continuous	Pr2	1
Fnd	0÷255 min	Pr2	10
Fst	-50÷50°C or -58÷122°F	Pr2	-1/30
C3	0=Not present 1=An.Out; 2=For remote display	Pr2	0
AOS *	-50÷50°C or -58÷122°F	Pr2	0/32
APb *	-50÷50°C o -90÷90°F	Pr2	0/0
CAO *	0=T1; 1=T1-T2; 2=T3; 3=T1-T3	Pr2	0
Ot	-30÷30°C or -54÷54°F	Pr2	0
OE	-30÷30°C or -54÷54°F	Pr2	0
O3	-30÷30°C or -54÷54°F	Pr2	0
Or3	-30÷30°C or -54÷54°F	Pr2	0
rES	0 = 1°C; 1 = 0,1°C	Pr2	1
CF	0 = °C; 1 = °F	Pr2	0/1
COn	0÷255 min	Pr2	15
COF	0÷255 min	Pr2	30
dIC	0=Generic; 1=Klixon; 2=Cut-off; 3= External consent	Pr2	0
dId	0÷255 min	Pr2	5
tBA	0=Disable 1=Enable	Pr2	1
Ad1	0÷94	Pr2	0
Ad2	0÷94	Pr2	1
Ptb	----	Pr2	--

Only on models with Analog Output