

Milk tank controllers

XR80CX

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1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

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

1.2 SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning:** disconnect all electrical connections before any kind of maintenance.
- The instrument must not be opened.
- Fit the probe where it is not accessible by the end user.
- 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

Models **XR80CX**, 32x74mm format, is a microprocessor based controllers suitable for application in the milk preservation / refrigeration sector. It is equipped with one thermostat probe and two relay outputs to control the compressor and agitator.

The **XR80CX** allows a very accurate control of all the main functions required during the "milk-tank preservation" cycles, including the timed cycles of agitator functions. The operator can also manually start a timed agitation cycle by pushing the **UP** key on the instrument's front panel.

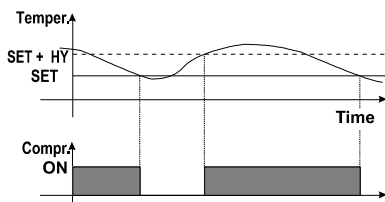
Each instrument is fully configurable through special parameters that can be easily programmed through the keypad.

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**.



4. AGITATION CYCLE

The functions of the agitator can be selected by means of the **AGC** parameter.

AGC=EL	(parallel) the agitator always operates when the compressor is running and continues to do so for a length of time - which can be set in parameter AGt (Duration of agitation cycle)- even after the compressor stops. If the compressor does not run longer than the time set in parameter iAG (interval between agitation cycles), the agitator will start to function anyway for the length of time set in parameter AGt .
AGC=in	The agitator operates independently from the compressor. The agitator is switched ON and OFF according to the iAG parameter independently from the state of the compressor. It

operates for the time set in the **AGt** parameter.

4.1 AGITATION CYCLE MANAGEMENT

Methods	Description
At power on	If parameter APo=Y , the cycle starts at the end of the odS delay, after power-on.
Manual	It can be started by means of the AGT key. The agitator stays ON for the time set in AGt parameter. The compressor keeps with the normal regulation. The agitator can also be stopped (if cycle was active) by using the AGT key. After that, the delay iAG will be reloaded.
Modbus command	After receiving the predefined command, a cycle will start (only for models with serial communication).
Digital Input	If i1F=AGt , an input signal will start a new cycle (if no cycle was running). If the odS delay (after power-on) is running, the cycle request activation will be postponed at the end of this interval of time.

5. FRONT PANEL COMMANDS



SET	To display target set point; in programming mode it selects a parameter or confirm an operation.
UP	(UP) To see the max stored temperature; in programming mode it browses the parameter codes or increases the displayed value.
DOWN	(DOWN) To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.
Power	To switch the instrument on and off (when onF=oFF).
AGT	(AGT) To switch on and off the light (when oA3=Lig).

KEY COMBINATIONS:

UP + DOWN	To lock & unlock the keyboard.
SET + DOWN	To enter in programming mode.
SET + UP	To return to the room temperature display.

5.1 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	Fans enabled
	Flashing	Fans delay after defrost in progress
🔊	ON	An alarm is occurring
🌀	ON	Continuous cycle is running
🌙	ON	Energy saving enabled
💡	ON	Light on
🔄	ON	Agitator enabled
	Flashing	Delay at power-on active (odS different from zero)
°C/°F	ON	Measurement unit
	Flashing	Programming phase

6. MAXIMUM AND MINIMUM TEMPERATURE FUNCTIONS

6.1 HOW TO: SEE THE MIN TEMPERATURE

- Press and release the **DOWN** key.
- The "Lo" message will be displayed followed by the minimum temperature recorded.
- By pressing the **DOWN** key again or by waiting 5 sec the normal display will be restored.

6.2 HOW TO: SEE THE MAX TEMPERATURE

- Press and release the **UP** key.
- The "Hi" message will be displayed followed by the maximum temperature recorded.
- By pressing the **UP** key again or by waiting 5 sec the normal display will be restored.

6.3 HOW TO: RESET THE MAX AND MIN TEMPERATURE RECORDED

- Keep the **SET** key pressed more than 3 sec, while the max or min temperature is displayed. ("rSt" message will be displayed)
To confirm the operation the "rSt" message will start blinking and the normal temperature will be displayed.

7. MAIN FUNCTIONS

7.1 HOW TO: SEE THE SET POINT

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

7.2 HOW TO CHANGE THE SET POINT

1. Push the **SET** key more than 2 sec to change the Set point value.
2. The value of the set point will be displayed and the "°C" or "°F" LED will start blinking.
3. To change the Set value push the **UP** or **DOWN** arrows within 10 sec.

To save the new set point value, push the **SET** key again or wait for 10 sec.

7.3 HOW TO CHANGE A PARAMETER VALUE

To change a parameter value, operate as follows:

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

To exit: Press **SET+UP** buttons or waiting 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.

7.4 THE HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

7.4.1 HOW TO: ENTER THE HIDDEN MENU

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

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

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

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

7.4.2 HOW TO: MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

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

7.5 HOW TO LOCK THE KEYBOARD

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

7.6 TO UNLOCK THE KEYBOARD

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

7.7 THE CONTINUOUS CYCLE

When defrost is not in progress, it can be activated by holding the **UP** key pressed for about 3 sec. 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 key **UP** for 3 sec.

7.8 THE ON/OFF FUNCTION



With "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.

8. LIST OF PARAMETERS

REGULATION

HY	Differential: (0.1 to 25.5°C; 1 to 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: (-100°C to SET; -148°F to SET) sets the minimum value for the set point.
US	Maximum set point: (SET to 150°C; SET to 302°F) set the maximum value for set point.
ot	Thermostat probe calibration: (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offset of the thermostat probe.
odS	Outputs activation delay at start up: (0 to 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.

AC	Anti-short cycle delay: (0 to 50min) minimum interval between the compressor stop and the following restart.
Con	Compressor ON time with faulty probe: (0 to 255min) 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 to 255min) time during which the compressor is OFF in case of faulty thermostat probe. With CoF=0 compressor is always active.

DISPLAY

CF	Temperature 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 , ot , ALU and ALL have to be checked and modified (if necessary).
rES	Resolution (for °C): (in=1°C; dE=0.1°C) allows decimal point display.

AGITATION CYCLE

AGC	Agitator configuration: (EL; in) EL = switched ON and OFF with the compressor; in = switched ON according to parameter iAG .
tiC	Resolution for the Agt parameter: nP = the Agt parameter is in minutes Pb = the Agt parameter is in seconds.
iAG	Interval between agitation cycles: (1 to 120 min) Determines the time interval between two agitation cycles. NOTE: when a continuous agitation cycle is started, the time counting is reset and starts from zero.
AGt	Length for agitation cycle: (0 to 255 min/sec) It sets the agitation cycle duration.
AP0	First agitation cycle after start-up: Y = immediately; n = after the iAG time.

ALARMS

ALC	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.
ALU	MAXIMUM temperature alarm: • If ALC=Ab: [ALL to 150.0°C or ALL to 302°F] • If ALC=rE: [0.0 to 50.0°C or 0 to 90°F] when this temperature is reached the alarm is enabled, after the ALd delay time.
ALL	Minimum temperature alarm: • If ALC=Ab: [-100°C to ALU; -148 to ALU] • If ALC=rE: [0.0 to 50.0°C or 0 to 90°F] when this temperature is reached the alarm is enabled, after the ALd delay time.
ALd	Temperature alarm delay: (0 to 255 min) time interval between the detection of an alarm condition and alarm signalling.
dAo	Exclusion of temperature alarm at start-up: (0.0 to 24h00min, res. 10min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

DIGITAL INPUTS

i1P	First digital input polarity: (oP; CL) oP = the digital input is activated by opening the contact; CL = the digital input is activated by closing the contact.
i1F	Digital input configuration: • EAL = external alarm, "EA" message is displayed. • bAL = serious alarm, "CA" message is displayed. • PAL = pressure switch alarm, "CA" message is displayed. • dor = door switch function. • AGt = agitator cycle activation. • AUS = not enabled. • Htr = kind of action inversion (cooling – heating). • FAn = not set it. • ES = Energy saving.
did	Digital input 1 alarm delay: (0 to 255 min) delay between the detection of the external alarm condition and its signalling. When i1F=PAL , it is the interval of time to calculate the number of pressure switch activation.
nPS	Number of pressure switch activation: (0 to 15) Number of activation, during the did interval, before signalling an alarm event (i1F=PAL). If the nPS activation during did time is reached, switch off and on the instrument to restart normal regulation.
odC	Compressor status when open door: (no; FAn; CPr; F_C;) no = normal; FAn = normal; CPr = compressor OFF; F_C = compressor OFF.
rrd	Outputs restart after door open alarm: (n; Y) n = outputs follow the odC parameter. Y = outputs restart with a door open alarm.
HES	Delta temperature during an Energy Saving cycle: (-30.0 to 30.0°C; -54 to 54°F) it sets the increasing value of the set point [SET+HES] during the Energy Saving cycle.

OTHER

Adr	Serial address: (1 to 247) identifies the instrument address when connected to a ModBUS compatible monitoring system.
PbC	Type of probe: (PtC; nTC) it allows to set the kind of probe used by the instrument: PtC = PTC probe, nTC = NTC probe.
onF	On/Off key enabling: (nU; oFF; ES) nU = disabled; oFF = enabled; ES = not set it.
rES	Real Set Point: SET+ES+SETd (read only).
rEL	Software release for internal use (read only).
Ptb	Parameter table code (read only).

9. DIGITAL INPUTS

The free voltage digital inputs are programmable by the **i1F** parameter.

9.1 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 statuses don't change. The alarm stops just after the digital input is deactivated.

9.2 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.

9.3 PRESSURE SWITCH (i1F = PAL)

If during the interval time set by **did** parameter, the pressure switch has reached the number of activation of the **nPS** parameter; the **CA** pressure alarm message will be displayed. The compressor and the regulation are 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.**

9.4 DOOR SWITCH INPUT (i1F = dor)

It signals the door status and the corresponding relay output status through the **odC** parameter: **no** = normal (any change); **FAn** = Fan OFF; **CPr** = Compressor OFF; **F_C** = Compressor and fan OFF. Since the door is opened, after the delay time set through parameter **doA**, the door alarm is enabled, the display shows the message **dA** and the **regulation restarts** is **rtr=YES**. 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.

9.5 START AGITATION CYCLE (i1F = AGt)

It starts an agitation cycle if there are the right conditions.

9.6 SWITCH THE AUXILIARY RELAY (i1F = AUS)

With **oA3** = AUS the digital input switched the status of the auxiliary relay.

9.7 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.

9.8 ENERGY SAVING (i2F = 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.

9.9 DIGITAL INPUTS POLARITY

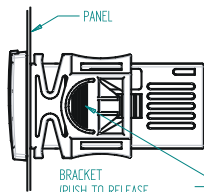
The digital input polarity depends on the **i1P** parameter.

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

i1P=oP: the input is activated by opening the contact.

10. TTL SERIAL LINE – FOR MONITORING SYSTEMS

The TTL serial line, available through the HOTKEY connector, allows to connect the instrument to a monitoring system **ModBUS-RTU** compatible (such as the X-WEB500/3000/300) by using an external TTL/RS485 converter (Eg. Dixell **XJ485-CX**).

11. INSTALLATION AND MOUNTING

Instrument **XR77CX** 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.

12. 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.

12.1 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.

13. HOW TO USE THE HOT KEY**13.1 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.

13.2 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.

14. 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 and fans restarts
"EA"	External alarm	Output unchanged.
"CA"	Serious external alarm (i1F=bAL)	All outputs OFF.
"CA"	Pressure switch alarm (i1F=PAL)	All outputs OFF

14.1 ALARM "EE"

The instrument is provided with an internal check verifying memory integrity. Alarm **"EE"** will flash when a failure in the internal memory is detected. Please call the Dixell Service in this case.

14.2 ALARM RECOVERY

Probe alarms **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.

15. TECHNICAL DATA

Housing: self extinguishing ABS

Case: frontal 32x74 mm; depth 60mm

Mounting: panel mounting in a 71x29mm panel cut-out

Protection: IP20

Frontal protection: IP65 with frontal gasket RG-C (optional)

Connections: Screw terminal block ≤ 2.5 mm² wiring

Power supply: according to the model: 230Vac ±10%, 50/60Hz, 110Vac ±10%, 50/60Hz

Power absorption: 3VA max

Display: 3 digits, red LED, 14.2 mm high;

Inputs: 1 PTC or NTC probe.

Relay outputs:

Compressor: SPST relay 20(8)A, 250Vac

Agitator: SPDT relay 8(3) A, 250Vac

Kind of action: 1B

Pollution degree: normal

Software class: A

Data storing: on the non-volatile memory (EEPROM)

Operating temperature: 0 to 60°C (32 to 140°F)

Storage temperature: -30 to 85°C (-22 to 185°F)

Relative humidity: 20 to 85% (no condensing)

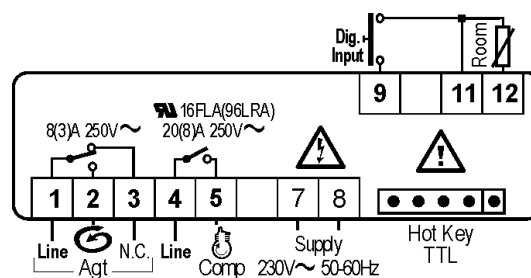
Measuring and regulation range:

PTC probe: -50 to 150°C (-58 to 302°F)

NTC probe: -40 to 110°C (-58 to 230°F)

Resolution: 0.1°C or 1°C or 1°F (selectable)

Accuracy (ambient temp. 25°C): ±0.7°C ±1 digit

16. CONNECTIONS

110Vac supply: connect to the terminals 7 and 8.

17. DEFAULT SETTING VALUES

Label	Description	Range	Value	Menu
SEt	Temperature Set Point	LS to US	2.0	---
Hy	Differential	[0.1°C to 25.5°C] [1°F to 45°F]	2.0	Pr1
LS	Minimum set point	[-55.0°C to SET] [-67°F to SET]	-30.0	Pr2
US	Maximum set point	[SET to 150.0°C] [SET to 302°F]	20.0	Pr2
SrS	Second set point	[SET to US] [SET to US]	5.0	N.V.
Srt	Compressor off time with SrS set point	0 to 255 min	0	N.V.
ot	Thermostat probe calibration	[-12.0°C to 12.0°C] [-21°F to 21°F]	0.0	Pr1

odS	Outputs delay at start up	0 to 255 min	0	Pr2
AC	Anti-short cycle delay	0 to 50 min	1	Pr1
Con	Compressor ON time with faulty probe	0 to 255 min	15	Pr2
CoF	Compressor OFF time with faulty probe	0 to 255 min	30	Pr2
CF	Temperature measurement unit	°C(0); °F(1)	°C	Pr2
rES	Resolution	dE(0); in(1)	dE	Pr1
AGC	Agitator configuration	EL(0); in(1)	EL	Pr2
tiC	Agt parameter resolution (min/ sec)	Min(0); SEC(1)	Min	Pr2
iAG	Interval between 2 agitator cycles	0 to 120 min	15	Pr1
AGt	Agitator cycle duration	0 to 255 min/sec	3	Pr1
APo	Agitator cycle enabled at power on	n(0); Y(1)	n	Pr2
ALC	Temperature alarms configuration	rE(0); Ab(1)	Ab	Pr2
ALU	Maximum temperature alarm	°C[0.0 to 50.0 o ALL to 150.0] °F[0 to 90 o ALL to 302]	100	Pr1
ALL	Minimum temperature alarm	°C[0.0 to 50.0 o -55.0 to ALU] °F[0 to 90 o -67.0 to ALU]	-50.0	Pr1
ALd	Temperature alarm delay	0 to 255 min	15	Pr1
dAo	Delay of temperature alarm at start up	0.0 to 24h00min (144)	1.3	Pr2
i1P	Digital input 1 polarity	oP(0); CL(1)	CL	Pr2
i1F	Digital input 1 configuration	EAL(0); bAL(1); PAL(2); dor(3); AGt(4); AUS(5); Htr(6); FAn(7); ES(8)	EAL	Pr2
did	Digital input alarm delay	0 to 255 min	0	Pr2
nPS	Number of activation of pressure switch	0 to 15	15	Pr2
odC	Compress and fan status when open door	no(0); FAn(1); CPr(2); F-C(3)	no	Pr2
rrd	Regulation restart with door open alarm	n(0); Y(1)	n	Pr2
HES	Differential for Energy Saving	[-30°C to 30°C] [-54°F to 54°F]	0.0	Pr2
Adr	Serial address	1 to 247	1	Pr2
PbC	Kind of probe	PtC(0); ntC(1)	ntC	Pr2
onF	On/off key configuration	nu(0); OFF(1); ES(2)	nu	Pr2
rSE	Real Set point (SET + ES + SETd)	sola lettura	- - -	Pr2
rEL	Firmware Release	sola lettura	6.5	Pr2
Ptb	Map code	sola lettura	1	Pr2

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