

AcP Alarm relay polarity: it set if the alarm relay is open or closed when an alarm happens. CL= terminals 1-2 closed during an alarm; oP=terminals 1-2 opening during an alarm.

DIGITAL INPUT

IFP Digital input polarity: oP= the digital input is activated by opening the contact; CL= the digital input is activated by closing the contact.

IFH 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; dEF = activation of a defrost cycle; AUS = not enabled; Htr= kind of action inversion (cooling-heating); Fan= not set; ES= energy saving.

did (0-255 min) with IFP= EAL or IFH = bAL digital input alarm delay: delay between the detection of the external alarm condition and its signalling.

nPS Pressure switch number: (0-15) Number of activation of the pressure switch, during the "did" interval, before signalling the alarm event (IF= PAL).

odc Compressor and fan status when open door: no = normal; Fan = Fan OFF; CPr = Compressor OFF; F_C = Compressor and fan OFF.

rrd Outputs restart after doA alarm: no = outputs not affected by the doA alarm; yES = outputs restart with the doA alarm.

HES Temperature increase during the Energy Saving cycle: (-30,0°C, 30,0°C, 54+54°F) it sets the increasing value of the set point during the Energy Saving cycle.

OTHER

Adr Serial address (1-244): identifies the instrument address when connected to a ModBUS system.

PbC Type of probe: it allows to set the kind of probe used by the instrument. PbC = PBC probe, ntc = NTC probe.

onF on/off key enabling: nu = disabled; oFF = enabled; ES = not set.

dP1 Thermostat probe display

dP2 Evaporator probe display (Only for XR40CX)

dP3 Third probe display - optional

dP4 Fourth probe display

rSE Real set point: it shows the set point used during the energy saving cycle or during the continuous cycle.

rEL Software release for internal use.

Pb Parameter table code: readable only.

11. DIGITAL INPUT

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

11.1 DOOR SWITCH (IF=Fdor)

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 "did", the door alarm is enabled, the display shows the message dA and the regulation restarts at rES = 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.

11.2 GENERIC ALARM (IF= EAL)

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

11.4 PRESSURE SWITCH (IF= 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.

11.5 START DEFROST (IF=FdF) (Only for XR20CX - XR30CX - XR40CX)

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

11.6 INVERSION OF THE KIND OF ACTION: HEATING-COOLING (IF= Htr)

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

11.7 ENERGY SAVING (IF= 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.

11.8 DIGITAL INPUT POLARITY

The digital input polarity depends on the IFP parameter. IFP=CL: the input is activated by closing the contact. IFP=OP: the input is activated by opening the contact.

12. TTL SERIAL LINE FOR MONITORING SYSTEMS

The TTL serial line, available through the HOT KEY connector, allows by means of the external TTLRS485 converter, XR485-CX, to connect the instrument to a monitoring system ModBUS-RTU compatible such as the X-WEB5003000300.

13. X-REP OUTPUT OPTIONAL

As optional an X-REP can be connected to the instrument, through the HOY KEY connector. The X-REP output EXCLUDES the serial connection. To connect the X-REP to the instrument the following connectors must be used CAB-51F(1m), CAB-52F(2m), CAB-53F(3m).

14. INSTALLATION AND MOUNTING

Instruments shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied.

The temperature range allowed for correct operation is 0-60°C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

15. ELECTRICAL CONNECTIONS

The instruments are provided with screw terminal block to connect cables with a cross section up to 2,5 mm². 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.

15.1 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 or from the warmest place during defrost, to prevent premature defrost termination.

16. HOW TO USE THE HOT KEY

16.1 HOW TO PROGRAM THE HOT KEY FROM THE INSTRUMENT (UPL.OAD)

1. Program one controller with the front keypad;
2. When the controller is ON, insert the Hot key and push > key; the uP message appears followed by a flashing Ed;
3. Push SET key and the Ed will stop flashing;
4. Turn OFF the instrument remove the Hot Key, then turn it ON again.
NOTE: the Er message is displayed for failed programming. In this case push again > key if you want to restart the upload again or remove the Hot key to abort the operation.

16.2 HOW TO PROGRAM AN INSTRUMENT USING HOT KEY (DOWNLOAD)

1. Turn OFF the instrument;
2. Insert a programmed "Hot Key" into the 5PIN 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 by a flashing Ed;
4. After 10 seconds the instrument will restart working with the new parameters;
5. Remove the Hot Key.
NOTE: the Er message is displayed for failed programming. In this case push again > key if you want to restart the upload again or remove the "Hot key" to abort the operation.

17. ALARM SIGNALLING

MESS.	CAUSE	OUTPUTS
P1	Room probe failure	Compressor output acc. to par. "Con" and "COF"
P2	Evaporator probe failure	Defrost end is limited
P3	Third probe failure	Outputs unchanged
P4	Fourth probe failure	Outputs unchanged
HA	Maximum temperature alarm	Outputs unchanged
LA	Minimum temperature alarm	Outputs unchanged
HA2	Condenser low temperature	It depends on the "Ac2" parameter
LA2	Condenser low temperature	It depends on the "ALL" parameter
CA	Door open	Compressor according to int.
EA	External alarm	Output unchanged
CA	Serious external alarm (IF=bAL)	All outputs OFF
CA	Pressure switch alarm (IF=PAL)	All outputs OFF

17.1 ALARM RECOVERY

Probe alarms P1, P2, P3 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, LA, HA2 and LA2 automatically stop as soon as the temperature returns to normal values.

Alarms EA and CA (with IF=bAL) recover as soon as the digital input is disabled.

Alarm CA (with IF=PAL) recovers only by switching off and on the instrument.

17.2 OTHER MESSAGES

Pos	Keyboard unlocked
Pos	Keyboard locked

On the display or in dP2, dP3, dP4: the selected probe is not enabled

18. TECHNICAL DATA

Housing: self extinguishing ABS.
Case: frontal 32x74 mm; depth 60mm.
Mounting: panel mounting in a 71x25mm panel cut-out.
Protection: IP20.
Frontal protection: IP65.
Connections: Screw terminal block 2,5 mm² wiring.
Power supply: according to the model: 9-40Vdc, 12Vdc/60, ±10%; 24Vdc/60, ±10%; 50/60Hz, 110Vdc 10%, 50/60Hz.
Power absorption: 3,9VA max.
Display: 3 digits, red LED, 14,2 mm high.
Inputs: Up to 4 NTC or PTC probes.
Digital input: free voltage contact.
Relay outputs: compressor SPST 8(3)A, 250Vac or 20(9)A 250Vac; aux: SPDT 8(3)A, 250Vac; defrost: SPDT 8(3)A, 250Vac.
Data storing: on the non-volatile memory (EEPROM).
Kind of action: ID.
Pollution grade: 2.
Software class: A.
Rated impulsive voltage: 250V.
Overvoltage Category: II.
Operating temperature: 0-60°C.
Storage temperature: -30-85°C.
Relative humidity: 20-85% (no condensing).
Messuring and regulation range: NTC probe: -40-110°C (-40-230°F); PTC probe: -50-150°C (-58-302°F).
Resolution: 0,1°C or 1°F (selectable).
Accuracy (ambient temp. 25°C): ±1°C ±1 digit (XR10CX, XR20CX); ±0,7°C ±1 digit.

		DEFAULT SETTING VALUES				
LABEL	DESCRIPTION	RANGE	XR10CX	XR20CX	XR30CX	XR40CX
Set	Set Point	LS - US	5,0°C / 41°F	3,0°C / 37°F	3,0°C / 37°F	5,0°C / 0°F
Hy	Differential	0,1-25°C / 1-45°F	2,0°C / 4°F	2,0°C / 4°F	2,0°C / 4°F	2,0°C / 4°F
LS	Minimum Set Point	-55°C +SET / -67°F +SET	-50,0°C / -58°F	-50,0°C / -58°F	-50,0°C / -58°F	-50,0°C / -58°F
US	Maximum Set Point	SET+150°C / SET+302°F	110°C / 230°F	110°C / 230°F	110°C / 230°F	110°C / 230°F
ot	First probe calibration	-12-12°C / -21-21°F	0,0°C / 0°F	0,0°C / 0°F	0,0°C / 0°F	0,0°C / 0°F
P2P	Second probe presence	n - y	-	-	-	y
eE	Second probe calibration	-12-12°C / -21-21°F	-	-	-	0,0
P3P	Third probe presence	n - y	n	n	n	n
o3	Third probe calibration	-12-12°C / -21-21°F	0,0°C / 0°F	0,0°C / 0°F	0,0°C / 0°F	0,0°C / 0°F
P4P	Fourth probe presence	n - y	n	n	n	n
o4	Fourth probe calibration	-12-12°C / -21-21°F	0,0°C / 0°F	0,0°C / 0°F	0,0°C / 0°F	0,0°C / 0°F
oDS	Outputs activation delay at start up	0 + 255 min	0	0	0	0
AC	Antishort cycle delay	0 + 50 min	1	1	1	1
rtr	P1-P2 percentage for regulation	0 + 100 (100=P1, 0=P2)	-	-	-	100
CCl	Continuous cycle duration	0 + 24 h	-	0,0	0,0	0,0
CCS	Set Point for continuous cycle	-55,0-150,0°C / -67-302°F	-	3°C / 37°F	3°C / 37°F	-5,0°C / 0°F
Con	Compressor ON with faulty probe	0 + 255 min	15	15	15	15
CoF	Compressor OFF with faulty probe	0 + 255 min	30	30	30	30
CH	Kind of action	cl + Ht	cl	cl	cl	-
CF	Measurement units	°C / °F	°C / °F	°C / °F	°C / °F	°C / °F
RES	Resolution (only for °C)	dE - h	dE / in	dE / in	dE / in	dE / in
Lod	Probe displayed	dtr	-	-	-	P1
eD	X-REP display	P1; P2; P3; P4; Set; dtr	-	-	-	P1
rEly	Display delay	0-20,0min(10sec.)	0	0	0	0
dtr	P1-P2 percentage for dsply	1 + 99	-	-	-	50
IFP	Defrost type	EL: in	-	-	-	EL
dFP	Probe selection for def. termination	nP; P1; P2; P3; P4	-	-	-	P2
dIE	Defrost termination temperature	-50-50°C	-	-	-	8°C / 46°F
IdF	Interval between def. cycles	0 + 120 h	-	8	8	6
MdF	Max length for def.	0 + 255 min	-	20	20	30
dFd	Display during def.	rt; it; Set; dEF	-	it	it	it
dAd	MAX display delay after defrost	0 + 255 min	-	30	30	30
Fdt	Draining time	0-120 min	-	-	-	0
dPo	First defrost after start up	n - y	-	-	-	n
dAF	Defrost delay after fast freezing	0 + 23h and 50'	-	-	-	0,0
ALC	Temperature alarms configuration	rE-Ab	Ab	Ab	Ab	Ab
ALU	Max temperature alarm	Set 110,0°C; ...	110°C / 230°F	110°C / 230°F	110°C / 230°F	110°C / 230°F
ALL	Min temperature alarm	-50-50°C / -58-122°F	-50,0°C / -58°F	-50,0°C / -58°F	-50,0°C / -58°F	-50,0°C / -58°F
AFH	Differential for temp. alarm recovery	0,1°C +25,5°F / 1°F +45°F	1°C / 2°F	1°C / 2°F	1°C / 2°F	1°C / 2°F
AdL	Temperature alarm delay	0 + 255 min	15	15	15	15
oA	Exclusion of temp. alarm at start up	0 + 24 h	1,0	1,3	1,3	1,3
AP2	Probe for temp. alarm of condenser	nP; P1; P2; P3; P4	P4	P4	P4	P4
AL2	Condenser for low temp. alarm	-55,0-150,0°C / -67-302°F	-40°C / -40°F	-40°C / -40°F	-40°C / -40°F	-40°C / -40°F
AU2	Condenser for high temp. alarm	-55,0-150,0°C / -67-302°F	110°C / 230°F	110°C / 230°F	110°C / 230°F	110°C / 230°F
AH2	Differential for condenser temp. alarm recovery	0,1°C +25,5°F / 1°F +45°F	5°C / 10°F	5°C / 10°F	5°C / 10°F	5°C / 10°F
Ad2	Condenser temp. alarm at start up	0 + 254 (min.), 255-n	15	15	15	15
da2	Delay of cond. temp. alarm at start up	0 + 24 h	1,0	1,3	1,3	1,3
bLL	Compressor off for condenser low temp. alarm	n - y	n	n	n	n
AC2	Compressor off for condenser high temp. alarm	n - y	n	n	n	n
tBA	Alarm relay disabling	n - y	-	-	-	y
oA1	2 nd def configuration	AL-dEF-Lig-AUS; onF-Fan-dEF2	-	-	-	Lig
AcP	Alarm relay polarity	cl - OP	-	-	-	cl
IFP	Digital input polarity	cl - OP	cl	cl	cl	cl
IFH	Digital input configuration	EAL-bAL-PAL-dor; dEF-Htr-AUS	EAL	EAL	EAL	dor
did	Digital input alarm delay	0 + 255 min	5	5	15	5
nPS	Number of activation of pressure switch	0 + 15	15	15	15	15
oDC	Comp. status when open door	no; Fan; CPr; F_C	no	no	no	no
rrd	Regulation restart with door open	n - y	y	y	y	y
HES	Differential for Energy Saving	-30°C-30°C / -54°F+54°F	0,0°C / 0°F	0,0°C / 0°F	0,0°C / 0°F	0,0°C / 0°F
Adr	Serial address	0 + 247	1	1	1	1
PbC	Kind of probe	Ptc - ntc	ntc	ntc	ntc	ntc
onF	On/off key enabling	nu - OFF-ES	nu	nu	nu	nu
dP1	Room probe display	Probe value	-	-	-	-
dP2	Evaporator probe display	Probe value	-	-	-	-
dP3	Third probe display	Probe value	-	-	-	-
dP4	Fourth probe display	Probe value	-	-	-	-
rSE	Real set point value	Read only	-	-	-	-
rEL	Software release	Read only	-	-	-	-
Pb	Parameter code table	Read only	-	-	-	-

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