



<b>Pr2</b>	Second probe error Remedies: <ul style="list-style-type: none"> <li>the same you saw in the previous case but related to the second probe</li> </ul> Effects: <ul style="list-style-type: none"> <li>the defrost will last the time you will have set with parameter d3</li> <li>if parameter d8 has value 2, the instrument will work as if parameter had value 0</li> <li>the alarm output will be turned on (if present)</li> </ul>
<b>Pr3</b>	Third probe error (only if parameter P4 has value 1 or 2) Remedies: <ul style="list-style-type: none"> <li>the same you saw in the previous case but related to the third probe</li> </ul> Effects: <ul style="list-style-type: none"> <li>if parameter P4 has value 2, the overheated condenser alarm (code <b>COH</b>) and the compressor locked alarm (code <b>CSd</b>) will never be activated</li> <li>the alarm output will be turned on (if present)</li> </ul>

When the cause that has provoked the alarm disappears, the instrument restores the normal operation.

## 8 TECHNICAL DATA

### 8.1 Technical data

**Box:** self-extinguishing grey.

**Frontal protection:** IP 65.

**Connections:** faston 6.3 mm (0.248 in) wide (power supply and outputs), screw terminal block (inputs), 5 poles connector (serial port); extractable terminal blocks or screw terminal blocks (power supply and outputs) by request.

## 9 WORKING SETPOINTS AND CONFIGURATION PARAMETERS

### 9.1 Working setpoints

	MIN.	MAX.	U.M.	DEF.	WORKING SETPOINTS
r1	r2		°C/°F (1)	0.0	working setpoint

### 9.2 Configuration parameters

PARAM.	MIN.	MAX.	U.M.	DEF.	WORKING SETPOINTS
SP	r1	r2	°C/°F (1)	0.0	working setpoint
PARAM.	MIN.	MAX.	U.M.	DEF.	MEASURE INPUTS
CA1	-25.0	25.0	°C/°F (1)	0.0	cabinet probe offset
CA2	-25.0	25.0	°C/°F (1)	0.0	second probe offset
CA3	-25.0	25.0	°C/°F (1)	0.0	third probe offset (only if P4 = 1 or 2)
P0	0	1	---	1	kind of probe 0 = PTC 1 = NTC
P1	0	1	---	1	decimal point Celsius degree (for the quantity to show during the normal operation) 1 = YES
P2	0	1	---	0	unit of measure temperature (2) 0 = °C 1 = °F
P3	0	2	---	1	second probe function 0 = probe not enabled 1 = defrost probe 2 = display probe
P4	0	3	---	3	third input function 0 = input not enabled 1 = measure input (third probe, display probe) 2 = measure input (third probe, condenser probe) 3 = digital input (multipurpose input)
P5	0	4	---	0	quantity to show during the normal operation 0 = cabinet temperature 1 = working setpoint 2 = temperature read by the second probe 3 = "cabinet temperature - temperature read by the second probe" 4 = temperature read by the third probe (only if P4 = 1 or 2)
P6	0	4	---	0	quantity shown by the remote indicator 0 = cabinet temperature 1 = working setpoint 2 = temperature read by the second probe 3 = "cabinet temperature - temperature read by the second probe" 4 = temperature read by the third probe (only if P4 = 1 or 2)
PARAM.	MIN.	MAX.	U.M.	DEF.	MAIN REGULATOR
r0	0.1	15.0	°C/°F (1)	2.0	working setpoint differential
r1	-99.0	r2	°C/°F (1)	-50.0	minimum working setpoint
r2	r1	99.0	°C/°F (1)	50.0	maximum working setpoint
r3	0	1	---	0	locking the working setpoint modification (with the procedure related in paragraph 4. 1) 1 = YES
r4	0.0	99.0	°C/°F (1)	0.0	temperature increase during function Energy Saving (only if P4 = 3); also look at i5
r5	0.0	99.0	°C/°F (1)	0.0	temperature decrease during function Overcooling; also look at r6
r6	0	99	min	30	duration of function Overcooling; also look at r5
PARAM.	MIN.	MAX.	U.M.	DEF.	COMPRESSOR PROTECTIONS
C0	0	240	min	0	compressor delay since you turn on the instrument (3)
C1	0	240	min	5	minimum time between two activations in succession of the compressor; also compressor delay since the end of the cabinet probe error (4) (5)
C2	0	240	min	3	minimum time the compressor remains turned off (4)
C3	0	240	s	0	minimum time the compressor remains turned on
C4	0	240	min	10	time the compressor remains turned off during the cabinet probe error; also look at C5
C5	0	240	min	10	time the compressor remains turned on during the cabinet probe error; also look at C4
C6	0.0	200.0	°C/°F (1)	80.0	condenser temperature above which the overheated condenser alarm is activated (only if P4 = 2) (6)
C7	0.0	200.0	°C/°F (1)	90.0	condenser temperature above which the compressor locked alarm is activated (only if P4 = 2)
C8	0	15	min	1	compressor locked alarm delay (only if P4 = 2) (7)
PARAM.	MIN.	MAX.	U.M.	DEF.	DEFROST
d0	0	99	h	8	defrost interval; also look at d8 (8) 0 = the defrost at intervals will never be activated
d2	-99.0	99.0	°C/°F (1)	2.0	defrost cutoff temperature (only if P3 = 1)

**Working temperature:** from 0 to 55 °C (32 to 131 °F; 10 ... 90% of relative humidity without condensate).

**Power supply:** 230 Vac, 50/60 Hz, 3.5 VA; 115 Vac, 50/60 Hz, 3.5 VA by request.

**Alarm buzzer:** by request.

**Measure inputs:** 2 (cabinet probe and second probe configurable for evaporator probe or display probe) for PTC/NTC probes.

**Digital inputs:** third input configurable for measure input (display probe or condenser probe, for PTC/NTC probes) or digital input (multi-purpose, free of voltage, 5 V 1 mA).

**Working range:** from -50 to 150 °C (-50 to 300 °F) for PTC probe, from -40 to 105 °C (-40 to 220 °F) for NTC probe.

**Resolution:** 0.1 °C/1 °C/1 °F.

**Relay outputs:** 3 relays:

- compressor relay:** 8 A @ 250 Vac (NO contact)
- on-off/alarm relay:** 8 A @ 250 Vac (NO contact)
- cabinet light/demisting resistances/auxiliary output relay:** 8 A @ 250 Vac (NO contact).

**The maximum current allowed on the loads is 20 A.**

**Serial port:** port for the communication with the supervision system (through a serial interface) or with the programming key (via TTL, with MODBUS communication protocol).

**Further communication ports (by request):** port for the communication with the supervision system (via RS 485, with MODBUS communication protocol), port for the communication with the remote indicator.

d3	0	99	min	30	defrost duration if P3 = 0; defrost maximum duration if P3 = 1 0 = the defrost will never be activated
d4	0	1	---	0	defrost when you turn on the instrument (3) 1 = YES
d5	0	99	min	0	defrost delay when you turn on the instrument (if d4 = 1); also look at i5 (3)
d6	0	1	---	1	temperature shown during the defrost 0 = cabinet temperature 1 = if to the defrost activation the cabinet temperature is below "working setpoint + r0", at most "working setpoint + r0"; if to the defrost activation the cabinet temperature is above "working setpoint + r0", at most the cabinet temperature to the defrost activation (9)
d7	0	15	min	2	dripping duration
d8	0	2	---	0	kind of defrost interval 0 = the defrost will be activated when the instrument will have remained turned on the time d0 1 = the defrost will be activated when the compressor will have remained turned on the time d0 2 = the defrost will be activated when the evaporator temperature will have remained below the temperature d9 the time d0 (10)
d9	-99.0	99.0	°C/°F (1)	0.0	evaporator temperature above which the count of the defrost interval is suspended (only if d8 = 2)
PARAM.	MIN.	MAX.	U.M.	DEF.	ALARMS
A0	0	2	---	0	temperature joined to the lower temperature alarm 0 = cabinet temperature 1 = temperature read by the third probe (only if P4 = 1 or 2) (11) 2 = temperature read by the second probe (12)
A1	-99.0	99.0	°C/°F (1)	-10.0	temperature below which the lower temperature alarm is activated; also look at A0 and A2 (6)
A2	0	2	---	1	kind of lower temperature alarm 0 = alarm not enabled 1 = relative to the working setpoint (or "working setpoint - A1"; consider A1 without sign) 2 = absolute (or A1)
A3	0	1	---	0	temperature joined to the upper temperature alarm 0 = cabinet temperature 1 = temperature read by the third probe (only if P4 = 1 or 2) (11)
A4	-99.0	99.0	°C/°F (1)	10.0	temperature above which the upper temperature alarm is activated; also look at A3 and A5 (6)
A5	0	2	---	1	kind of upper temperature alarm 0 = alarm not enabled 1 = relative to the working setpoint (or "working setpoint + A4"; consider A4 without sign) 2 = absolute (or A4)
A6	0	240	min	120	upper temperature alarm delay since you turn on the instrument (only if A3 = 0 or if A3 = 1 and P4 = 1) (3)
A7	0	240	min	15	temperature alarm delay
A8	0	240	min	15	upper temperature alarm delay since the end of the dripping (only if A3 = 0 or if A3 = 1 and P4 = 1) (13)
PARAM.	MIN.	MAX.	U.M.	DEF.	DIGITAL INPUTS
i5	0	7	---	4	effect provoked by the activation of the multipurpose input (only if P4 = 3) (14) 0 = no effect 1 = <b>SYNCHRONIZING THE DEFROSTS</b> - spent the time d5 the defrost will be activated 2 = <b>ACTIVATING THE ENERGY SAVING</b> - function Energy Saving will be activated (as long as the input will be deactivated), on condition that function Overcooling is not running; also look at r4 3 = <b>CLOSING THE LOCK</b> - the cabinet light will be turned off (only if it will have been turned on by hand) and function Energy Saving will be activated (as long as the input will be deactivated), on condition that function Overcooling is not running; also look at r4 4 = <b>ACTIVATING THE EXTERNAL ALARM</b> - spent the time i7 the display will show the code <b>IA</b> flashing and the buzzer will be activated (as long as the input will be deactivated) 5 = <b>ACTIVATING THE MANOSTAT</b> - the compressor will be turned off, the display will show the code <b>IA</b> flashing and the buzzer will be activated (as long as the input will be deactivated); also look at i7, i8 and i9 6 = <b>ACTIVATING THE AUXILIARY OUTPUT</b> - the auxiliary output will be turned on (as long as the input will be deactivated) 7 = <b>TURNING OFF THE INSTRUMENT</b> - the instrument will be turned off (as long as the input will be deactivated)
i6	0	1	---	0	kind of contact multipurpose input (only if P4 = 3) 0 = NO (the input will be active if you close the contact) 1 = NC (the input will be active if you open the contact)
i7	0	120	min	0	if i5 = 4, delay to signal the multipurpose input alarm (only if P4 = 3) if i5 = 5, compressor delay since the deactivation of the multipurpose input (only if P4 = 3) (15)
i8	0	15	---	0	number of multipurpose input alarm such as to provoke instrument locked alarm (only if P4 = 3 and i5 = 5) 1 = alarm not enabled
i9	1	999	min	240	time without multipurpose input alarm in order that the alarm counter is cleared (only if P4 = 3 and i5 = 5)
PARAM.	MIN.	MAX.	U.M.	DEF.	OUTPUTS
u0	0	1	---	0	user managed by the second output (16) 0 = on-off 1 = alarm
u1	0	2	---	0	user managed by the third output (16) 0 = cabinet light 1 = demisting resistances 2 = auxiliary output
u2	0	1	---	0	possibility to turn on/off the cabinet light or the auxiliary output by hand when the instrument is turned off (17) 1 = YES
PARAM.	MIN.	MAX.	U.M.	DEF.	DEMISTING RESISTANCES (only if u1 = 1)
b0	-99.0	99.0	°C/°F (1)	-1.0	cabinet temperature above which the demisting resistances are turned off (only if the resistances have been turned on because of the regulator, not by hand) (6)
b1	0	120	min	5	time the demisting resistances remain turned on (only if the resistances have been turned on by hand)
PARAM.	MIN.	MAX.	U.M.	DEF.	SERIAL NETWORK (MODBUS)
LA	1	247	---	247	instrument address
Lb	0	3	---	2	baud rate 0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud

LP	0	2	---	2	parity 0 = none 1 = odd 2 = even
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(1) the unit of measure depends on parameter P2

(2) **set the parameters related to the regulators appropriately after the modification of the parameter**

(3) the parameter also has effect after an interruption of power supply that arises when the instrument is turned on

(4) the time you have set with the parameter is also counted when the instrument is turned off

(5) if parameter C1 has value 0, the delay since the end of the cabinet probe error will however be 2 min

(6) the differential of the parameter is 2 °C/4 °F

(7) if (when you turn on the instrument) the condenser temperature is above the one you have set with parameter C7, parameter C8 will have no effect

(8) the instrument stores the count of the defrost interval every 30 min; the modification of parameter d0 has effect since the end of the previous defrost interval or since the activation of a defrost by hand

(9) the display restores the normal operation as soon as the dripping ends and the cabinet temperature falls below the one that has locked the display (or if a temperature alarm arises)

(10) if parameter P3 has value 0, the instrument will work as if parameter d8 had value 0

(11) if parameter P4 has value 0 or 3, the instrument will work as if the parameter had value 0 (but it will not store the alarm)

(12) if parameter P3 has value 0, the instrument will work as if parameter A0 had value 0 (but it will not store the alarm)

(13) during the defrost and the dripping the temperature alarms are not enabled

(14) if parameter i5 has value 1, 2, 3, 6 or 7, the effect will not be signalled

(15) make sure the time you have set with parameter i7 is shorter than the one you have set with parameter i9

(16) to avoid damaging the connected user, modify the parameter when the instrument is turned off

(17) if parameter u2 has value 0, when you turn off the instrument the cabinet light or the auxiliary output will also be turned off; next time you turn on the instrument the user will be turned off.

