

FK 203R

ON-OFF digital controller for ventilated refrigerating units

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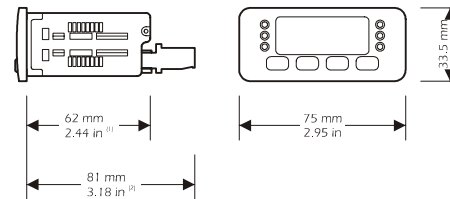
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ENGLISH

1 PREPARATIONS

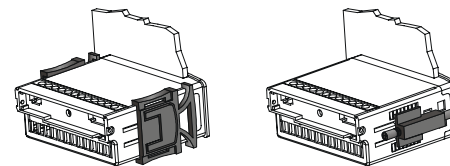
1.1 How to install the instrument

Panel mounting, panel cut out 71 x 29 mm (2.79 x 1.14 in), with click brackets (they are supplied by the builder) or screw brackets (by request).



(1) maximum depth with screw terminal blocks

(2) maximum depth with extractable terminal blocks.



installation with click brackets (on the left-hand side, they are supplied by the builder)

and screw brackets (on the right-hand side, by request); if you are using screw brackets, you have to moderate the clamping torque, in order not to damage the box and screw brackets.

2 OPERATION

2.1 Preliminary information

During the normal operation the instrument shows the cabinet temperature.

2.2 How to silence the buzzer (optional)

If you have to silence the buzzer:

- press

2.3 How to activate the defrost by hand

If you have to activate the defrost by hand:

- press for 4 s

Unless the evaporator temperature is below the defrost end temperature you have set with the parameter d2, the defrost will not be activated.

3 WORKING SETPOINT

3.1 How to set the working setpoint

If you have to modify the working setpoint value:

- press and or ⁽³⁾

(3) you can set the working setpoint between the limits you have set with the parameters r1 and r2.

4 CONFIGURATION PARAMETERS

4.1 How to set the configuration parameters

Configuration parameters are arranged on two levels.

If you have to gain access the first level:

- press and for 4 s ; the instrument will show *PA*

If you have to select a parameter:

- press or

If you have to modify the value of the parameter:

- press and or

If you have to gain access the second level:




- gain access the first level
- press or for selecting *PA*
- press and or for setting “-19”
- press and for 4 s ; the instrument will show *P0*

If you have to quit the procedure:

- press  and  for 4 s  or do not operate for about 60 s.

5 SIGNALS

5.1 Signals

LED	MEANING
	Compressor LED if it is lighted, the compressor will be ON if it flashes, a compressor delay will be running (look at the parameters C0, C1, C2 and C4)
	Defrost LED if it is lighted, the defrost output will be activated if it flashes: <ul style="list-style-type: none"> a defrost delay will be running (look at the parameters C0, C1, C2 and C4) the dripping will be running (look at the parameter d7)
	Evaporator fan LED if it is lighted, the evaporator fan will be ON if it flashes, the after dripping evaporator fan delay will be running (look at the parameter F5)

6 ALARMS

6.1 Alarms

CODE	REASONS	REMEDIES	EFFECTS
<i>E2</i> corrupted memory data	there is the corruption of the configuration data of the memory of the instrument	switch off the power supply of the instrument: unless the alarm disappears, you will have to change the instrument	<ul style="list-style-type: none"> you can not gain access the setting procedures all outputs will be forced OFF
<i>E0</i> cabinet probe alarm	<ul style="list-style-type: none"> the kind of cabinet probe you have connected is not right the cabinet probe plays up the connection instrument-cabinet probe is wrong 	<ul style="list-style-type: none"> look at the parameter /0 test the integrity of the probe test the instrument-probe connection 	<ul style="list-style-type: none"> the compressor will be forced to the status you have set with the parameter C3 if the defrost is running, it will immediately end

	<ul style="list-style-type: none"> the cabinet temperature is outside the limits allowed by the working range of the instrument 	<ul style="list-style-type: none"> test the temperature close to the probe (it has to be between the limits allowed by the working range) 	<ul style="list-style-type: none"> the defrost will never be activated
<i>E1</i> evaporator probe alarm	<ul style="list-style-type: none"> the kind of evaporator probe you have connected is not right the evaporator probe plays up the connection instrument-evaporator probe is wrong the evaporator temperature is outside the limits allowed by the working range of the instrument 	<ul style="list-style-type: none"> look at the parameter /0 test the integrity of the probe test the instrument-probe connection test the temperature close to the probe (it has to be between the limits allowed by the working range) 	<ul style="list-style-type: none"> if the parameter dE has value 2, the instrument will work as if the parameter had value 0 if the parameter F0 has value 0, the evaporator fan will work in accordance with the compressor, except what you have set with the parameters d7, F4 and F5 the defrost will end by time (parameter d3)
cabinet temperature lower or upper temperature alarm	the cabinet temperature is outside the limit you have set with the parameter A1 or A2	test the temperature close to the probe (look at the parameters A0, A1 and A2)	no effect

The instrument shows the indications above flashing and the buzzer (optional) utters an intermittent beep.

7 TECHNICAL DATA

7.1 Technical data

Box: self-extinguishing grey.

Size: 75 x 33.5 x 81 mm (2.95 x 1.31 x 3.18 in) the model with extractable terminal blocks, 75 x 33.5 x 62 mm (2.95 x 1.31 x 2.44 in) the model with screw terminal blocks.

F6	0	1	—	0	kind of evaporator fan stop temperature (it is important if F0 = 0; 0 = absolute evaporator fan stop temperature, 1 = evaporator fan stop temperature relative to the cabinet temperature) ⁽⁸⁾
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LABEL	MIN.	MAX.	U.M.	DEF	SERIAL NETWORK (EVCOBUS)
L1	1	15	—	1	instrument address
L2	0	7	—	6	instrument group
L4	0	3	—	1	baud rate (0 = 1,200 baud, 1 = 2,400 baud, 2 = 4,800 baud, 3 = 9,600 baud)

(4) the unit of measure depends on the parameter /8

(5) unless the evaporator temperature is below the defrost end temperature you have set with the parameter d2, the defrost will not be activated

(6) if at the moment of the defrost activation the cabinet temperature is below the value "working setpoint + r0", the instrument will not show temperatures above that value;

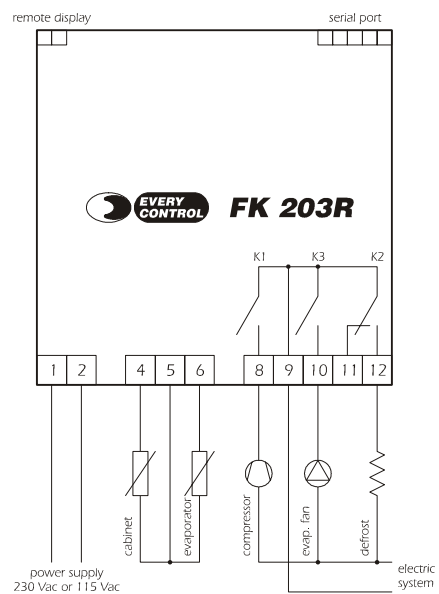
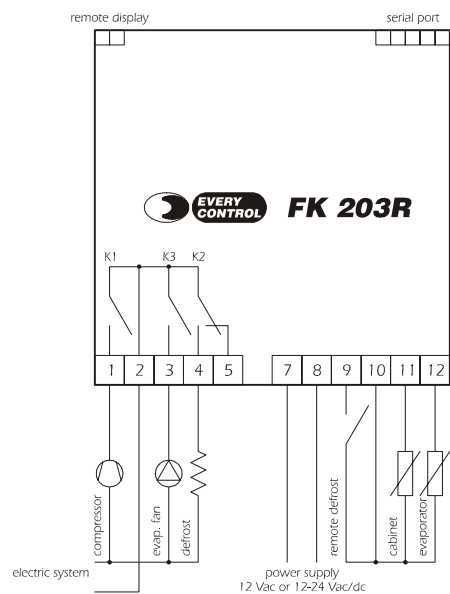
if at the moment of the defrost activation the cabinet temperature is above the value "working setpoint + r0", the instrument will not show the increases of the temperature (if the increase takes place below the value "working setpoint + r0", look at the previous case); the instrument restores the normal operation once the after dripping evaporator fan delay ends and the cabinet temperature falls below the freeze temperature

(7) if the lower temperature alarm takes place during the count of the delay, this last will be cleared

(8) the evaporator fan stop temperature is "cabinet temperature - F1"; you always have to consider the parameter F1 with positive sign.

9 ELECTRICAL CONNECTION

9.1 Electrical connection



Installation: panel mounting, panel cut out 71 x 29 mm (2.79 x 1.14 in), with click brackets (they are supplied by the builder) or screw brackets (by request).

Frontal protection: IP 65.

Connections: extractable terminal blocks with pitch 5 mm (0.19 in) for cables up to 2.5 mm² (0.38 sq in, power supply, inputs and outputs) or screw terminal blocks with pitch 5 mm (0.19 in) for cables up to 2.5 mm² (0.38 sq in, power supply, inputs and outputs), 5 poles single line male connector with pitch 2.5 mm (0.09 in, serial port), 2 poles single line male connector with pitch 2.5 mm (0.09 in, remote indicator).

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

Power supply: 12 Vac/dc, 50/60 Hz, 1.5 VA or 12-24 Vac/dc, 50/60 Hz, 1.5 VA or 230 Vac, 50/60 Hz, 1.5 VA or 115 Vac, 50/60 Hz, 1.5 VA.

Alarm buzzer: only the models with power supply 12 Vac/dc or 12-24 Vac/dc and by request.

Measure inputs: 2 (cabinet and evaporator probe) for PTC or NTC probes.

Digital inputs: 1 for remote defrost (NO contact) without voltage (it works with 5 mA); only the models with power supply 12 Vac/dc or 12-24 Vac/dc.

Working range: from -50 to 99 °C (-58 to 210 °F) for PTC probe, from -40 to 99 °C (-40 to 210 °F) for NTC probe.

Setpoint range: from -99 to 99 °C (-99 to 99 °F).

Resolution: 1 °F with unit of measure in Fahrenheit, 1 °C with unit of measure in Celsius.

Display: one red LED 3-digit display 13.2 mm (0.51 in) high, output status indicators.

Outputs: 3 relays: one 10 A @ 250 Vac relay for one ½ HP @ 230 Vac compressor control (NO contact), one 8 A @ 250 Vac relay for evaporator fan control (NO contact) and one 8 A @ 250 Vac relay for defrost system control (change-over contact).

Kind of defrost: electric and hot gas defrost.

Defrost control: defrost interval, defrost end temperature, defrost maximum length and defrost interval count mode (automatic, by hand and remote).

Serial port: TTL with EVCOBUS communication protocol.

8 WORKING SETPOINT AND CONFIGURATION PARAMETERS (STANDARD VALUES)

8.1 Working setpoint

LABEL	MIN.	MAX.	U.M.	DEF.	WORKING SETPOINT
r1	r2	°C/°F ⁽⁴⁾	0	working setpoint	

8.2 First level parameters

LABEL	MIN.	MAX.	U.M.	DEF.	PASSWORD
PA	-99	99	—	0	password

LABEL	MIN.	MAX.	U.M.	DEF.	REGULATOR
r0	1	15	°C/°F ⁽⁴⁾	2	hysteresis (differential, it is relative to the working setpoint)

LABEL	MIN.	MAX.	U.M.	DEF.	DEFROST
dA	—	—	°C/°F ⁽⁴⁾	—	evaporator temperature showing

8.3 Second level parameters

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUTS
/0	1	4	—	1	kind of probe (1 = PTC, 2 = reserved, 3 = NTC, 4 = reserved)
/1	-99	99	°C/°F ⁽⁴⁾	0	cabinet probe calibration (you have to set eight points for adjusting one degree)
/6	-99	99	°C/°F ⁽⁴⁾	0	evaporator probe calibration (you have to set eight points for adjusting one degree)
/8	0	1	—	1	temperature unit of measure (0 = Fahrenheit degree, 1 = Celsius degree)

LABEL	MIN.	MAX.	U.M.	DEF.	REGULATOR
r0	1	15	°C/°F ⁽⁴⁾	2	hysteresis (differential, it is relative to the working setpoint)
r1	-99	r2	°C/°F ⁽⁴⁾	-50	minimum value you can assign to the working setpoint
r2	r1	99	°C/°F ⁽⁴⁾	50	maximum value you can assign to the working setpoint

LABEL	MIN.	MAX.	U.M.	DEF.	COMPRESSOR PROTECTION
C0	0	15	min	0	minimum delay between you turn the instrument ON and the first compressor activation
C1	0	15	min	5	minimum delay between two compressor activation in succession
C2	0	15	min	3	minimum delay between the compressor gets OFF and the following activation
C3	0	1	—	0	compressor status during the cabinet probe alarm (0 = it will be forced OFF, 1 = it will be forced ON)
C4	0	1	—	0	fixed delay since the compressor gets ON and OFF (1 = YES, for 3 s)

LABEL	MIN.	MAX.	U.M.	DEF.	DEFROST
d0	0	99	h	8	defrost interval; look at dE as well ⁽⁵⁾ (0 = the defrost will never automatically be activated)
d1	0	1	—	0	kind of defrost (0 = electric defrost, 1 = hot gas defrost)
d2	-99	99	°C/°F ⁽⁴⁾	2	defrost end temperature (evaporator temperature)
d3	0	99	min	30	defrost maximum length (0 = the defrost will never be activated)
d4	0	1	—	0	defrost activation every time you turn the instrument ON (1 = YES) ⁽⁵⁾
d5	0	99	min	0	delay between you turn the instrument ON and the defrost activation (it is important if d4 = 1)
d6	0	1	—	1	freeze of the temperature showed by the instrument during the defrost (1 = YES) ⁽⁶⁾
d7	0	15	min	2	dripping time
d8	0	15	h	1	upper temperature alarm exclusion time since the end of the defrost (since the end of d3, it is important if A2 ≠ 0) ⁽⁷⁾
d9	0	1	—	0	compressor protections cleaning at the moment of the defrost activation (it is important if d1 = 1; 1 = YES)
dA	—	—	°C/°F ⁽⁴⁾	—	evaporator temperature showing
dE	0	2	—	0	defrost interval count mode; look at d0 as well (0 = the instrument counts the working time, 1 = the instrument counts the sum of the times the compressor is ON, 2 = the instrument counts the sum of the times the evaporator temperature is below dF)
dF	-99	99	°C/°F ⁽⁴⁾	0	defrost interval count freeze threshold (evaporator temperature, it is important if dE = 2)

LABEL	MIN.	MAX.	U.M.	DEF.	ALARMS
A0	1	15	°C/°F ⁽⁴⁾	2	hysteresis (differential, it is relative to A1 and A2, it is important if A1 and/or A2 ≠ 0)
A1	-99	0	°C/°F ⁽⁴⁾	-10	lower temperature alarm threshold (it is relative to the working setpoint, 0 = it will never be activated)
A2	0	99	°C/°F ⁽⁴⁾	10	upper temperature alarm threshold (it is relative to the working setpoint, 0 = it will never be activated)
A3	0	15	h	2	upper temperature alarm exclusion time since you turn the instrument ON (it is important if A2 ≠ 0) ⁽⁷⁾
A6	0	240	min	5	temperature alarm exclusion time (it is important if A1 and/or A2 ≠ 0)

LABEL	MIN.	MAX.	U.M.	DEF.	EVAPORATOR FAN
F0	0	1	—	0	evaporator fan action during the normal operation (0 = it will work in accordance with F1 and F2, 1 = it will be forced ON); look at F3 as well
F1	-99	99	°C/°F ⁽⁴⁾	-1	evaporator fan stop temperature (evaporator temperature, it is important if F0 = 0); look at F6 as well
F2	1	15	°C/°F ⁽⁴⁾	2	hysteresis (differential, it is relative to F1, it is important if F0 = 0)
F3	0	1	—	0	evaporator fan OFF when the compressor is OFF (1 = YES)
F4	0	1	—	1	evaporator fan OFF during the defrost (1 = YES)
F5	0	15	min	2	after dripping evaporator fan delay