

FK 901A

ON-OFF simple digital controller for quick coolers control

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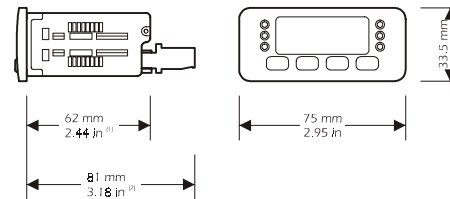
ENGLISH

smart guide

1 PREPARATIONS

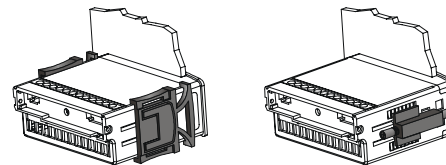
1.1 How to install the instrument

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 (by request)

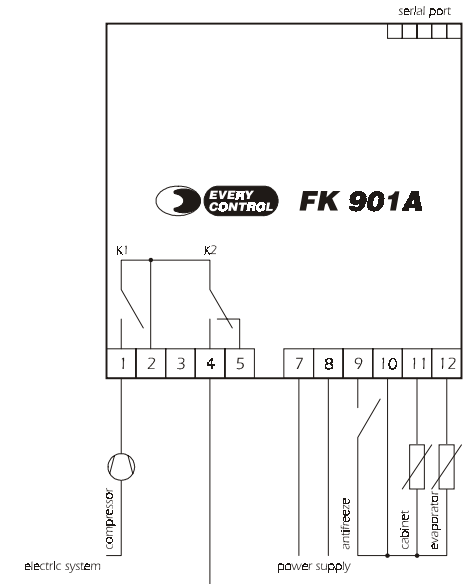
(2) maximum depth with extractable terminal blocks (standard model).



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.

1.2 Electrical connection



Relay K2 is normally activated.

2 OPERATION

2.1 Preliminary information

During the normal operation the instrument shows the cabinet temperature.

2.2 How to silence the buzzer

If you have to silence the buzzer:

- press

2.3 How to exclude/restore the alarms

If you have to exclude/restore the alarms ⁽³⁾:

- press for 2 s

Every time a lack of power supply takes place, as soon as the power supply will recover the alarms will automatically be recovered.

(3) except the corrupted memory data alarm, the cabinet probe alarm and the evaporator probe alarm.

2.4 Antifreeze function

The activation of the antifreeze input gives the activation of the function (if the input is active, the K2 will work in accordance

with F1 and F2; unless the input is active, relay K2 will be forced ON).

3 WORKING SETPOINT

3.1 How to set the working setpoint

If you have to modify the working setpoint value:

- press **set** and **↑** or **↓** ⁽⁴⁾

(4) 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 **PR**


If you have to select a parameter:

- press **↑** or **↓**

If you have to modify the value of the parameter:

- press **set** and **↑** or **↓**

If you have to gain access the second level:




- gain access the first level
- press **↑** or **↓** for selecting **PR**
- press **set** and **↑** or **↓** for setting "**-19**"
- press **↑** and **↓** for 4 s : the instrument will show **PO**

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
	Relay K1 LED if it is lighted, relay K1 will be ON if it flashes, a relay K1 delay will be running (look at the parameters C0, C1 and C2)
	Antifreeze LED if it is lighted, the antifreeze function will be activated
	Alarms exclusion LED if it is lighted, the alarms will not be excluded if it is OFF, the alarms will be excluded

6 ALARMS

6.1 Alarms

CODE	REASONS	REMEDIES	EFFECTS
E2	there is the corruption of the configuration memory data 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
E0	<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 the cabinet 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"> relay K1 will work in accordance with the parameters C5 and C6
E1	<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 antifreeze function is activated, relay K2 will work in accordance with relay K1 unless the antifreeze function is activated, relay K2 will be forced ON

cabinet	the cabinet temperature is outside the limit	test the temperature close to the probe	no effects
temperature	you have set with the parameter A1 or A2	(look at the parameters A0, A1 and A2)	
lower or upper temperature alarm			

Serial port: TTL with EVCOBUS communication protocol (for the configurer/cloner system CLONE and supervision system RICS).

The instrument shows the indications above flashing and the buzzer 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 (standard model), 75 x 33.5 x 62 mm (2.95 x 1.31 x 2.44 in) the model with screw terminal blocks (by request).

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, standard model) 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, by request) 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).

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.

Alarm buzzer: included.

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

Digital inputs: 1 for antifreeze function (NO contact) without voltage (it works with 5 mA).

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 -55 to 99 °C.

Resolution: 1 °C.

Display: one red LED 3-digit display 13.2 mm (0.51 in) high, relay K1 status indicator, programming status indicators.

Outputs: 2 relays: one 10 A @ 250 Vac relay for one ½ HP @ 230 Vac compressor control (NO contact) and one 8 A @ 250 Vac relay for antifreeze function control (change-over contact).

8 WORKING SETPOINT AND CONFIGURATION PARAMETERS

8.1 Working setpoint

LABEL	MIN.	MAX.	U.M.	DEF.	WORKING SETPOINT
r1	r2	°C	-20	working setpoint	

8.2 First level parameters

LABEL	MIN.	MAX.	U.M.	DEF.	PASSWORD
PA	-55	99	—	0	password

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUTS
/1	-99	99	°C	0	cabinet probe calibration (you have to set eight points for adjusting one degree)
/6	-99	99	°C	0	evaporator probe calibration (you have to set eight points for adjusting one degree)

LABEL	MIN.	MAX.	U.M.	DEF.	REGULATOR
r0	1	15	°C	3	hysteresis (differential, it is relative to the working setpoint)

LABEL	MIN.	MAX.	U.M.	DEF.	EVAPORATOR
dA	—	—	°C	—	evaporator temperature showing

LABEL	MIN.	MAX.	U.M.	DEF.	ALARMS
A1	-55	99	°C	2	lower temperature alarm threshold (it is relative to the working setpoint, 0 = it will never be activated)

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	0	cabinet probe calibration (you have to set eight points for adjusting one degree)
/6	-99	99	°C	0	evaporator probe calibration (you have to set eight points for adjusting one degree)

LABEL	MIN.	MAX.	U.M.	DEF.	REGULATOR
r0	1	15	°C	3	hysteresis (differential, it is relative to the working setpoint)
r1	-55	r2	°C	-50	minimum value you can assign to the working setpoint
r2	r1	99	°C	50	maximum value you can assign to the working setpoint

LABEL	MIN.	MAX.	U.M.	DEF.	RELAY K1 PROTECTION ⁽⁵⁾
C0	0	240	min	0	minimum delay between you turn the instrument ON and the first relay activation
C1	0	240	min	0	minimum delay between two relay activation in succession
C2	0	240	min	0	minimum delay between the relay gets OFF and the following activation
C5	1	240	min	1	cycle time for the relay activation during the cabinet probe alarm

C6	0	100	%	100	percentage of C5 the relay is ON during the cabinet probe failure
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LABEL	MIN.	MAX.	U.M.	DEF.	EVAPORATOR
dA	—	—	°C	—	evaporator temperature showing

LABEL	MIN.	MAX.	U.M.	DEF.	ALARMS
A0	1	15	°C	2	hysteresis (differential, it is relative to A1 and A2, it is important if A1 and/or A2 ≠ 0)
A1	-55	99	°C	2	lower temperature alarm threshold (it is relative to the working setpoint, 0 = it will never be activated)
A2	0	120	°C	120	upper temperature alarm threshold (it is relative to the working setpoint, 0 = it will never be activated)
A3	0	240	min	0	temperature alarm exclusion time since you turn the instrument ON (it is important if A1 and/or A2 ≠ 0)
A6	0	240	min	0	temperature alarm exclusion time (it is important if A1 and/or A2 ≠ 0) ⁽⁶⁾

LABEL	MIN.	MAX.	U.M.	DEF.	ANTIFREEZE
F1	-55	99	°C	-15	temperature relay K2 gets OFF (the contact switches on terminal 5, evaporator temperature, it is important if the antifreeze function is activated)
F2	1	15	°C	2	hysteresis (differential, it is relative to F1, it is important if the antifreeze function is activated)

LABEL	MIN.	MAX.	U.M.	DEF.	SERIAL NETWORK (EVCOCBUS)
L1	1	15	—	1	instrument address
L2	0	7	—	0	instrument group
L4	0	3	—	1	baud rate (0 = 1,200 baud, 1 = 2,400 baud, 2 = 4,800 baud, 3 = 9,600 baud)

⁽⁵⁾ relay K1 gets ON and OFF with a delay of 3 s

⁽⁶⁾ if the temperature alarm does not disappear at the end of the time you have set with the parameter A3, it will further be excluded for the time you have set with the parameter A6.