

# EC 6-190

**ON-OFF digital controller for ventilated re-  
frigerating units**

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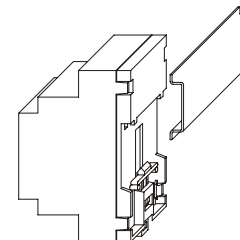
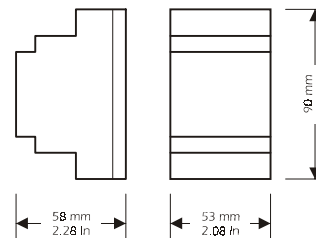
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**ENGLISH**

## 1 PREPARATIONS

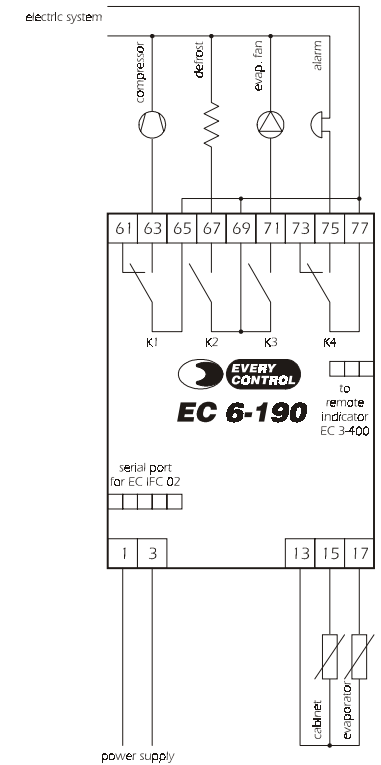
### 1.1 How to install the instrument

On DIN rail (it is not supplied by the builder).



DIN rail installation (it is not supplied by the builder).

## 1.2 Electrical connection



## 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 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 <sup>(1)</sup>

(1) 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 and or

If you have to gain access the second level:

- gain access the first level
- press or for selecting *PR*
- press and or for setting “-19”
- press and for 4 s : the instrument will show *PD*

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"> <li>a defrost delay will be running (look at the parameters C0, C1, C2 and C4)</li> <li>the dripping will be running (look at the parameter d7)</li> </ul>
	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>	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"> <li>you can not gain access the setting procedures</li> <li>the compressor, defrost output and evaporator fan will be forced OFF</li> <li>the alarm output will be activated</li> </ul>
<i>E0</i>	<ul style="list-style-type: none"> <li>the kind of cabinet probe connected is not right</li> <li>the cabinet probe plays up</li> <li>the connection instrument-cabinet probe is wrong</li> <li>the cabinet temperature is outside the limits allowed by the working range of the instrument</li> </ul>	<ul style="list-style-type: none"> <li>look at the parameter /0</li> <li>test the integrity of the probe</li> <li>test the instrument-probe connection</li> <li>test the temperature close to the probe (it has to be between the limits allowed by the working range)</li> </ul>	<ul style="list-style-type: none"> <li>the alarm output will be activated</li> <li>the compressor will be forced to the status you have set with the parameter C3</li> <li>if the defrost is running, it will immediately end</li> <li>the defrost will never be activated</li> </ul>
<i>E1</i>	<ul style="list-style-type: none"> <li>the kind of evaporator probe you have connected is not right</li> <li>the evaporator probe plays up</li> <li>the connection instrument-evaporator probe is wrong</li> <li>the evaporator temperature is outside the limits allowed by the working range of the instrument</li> </ul>	<ul style="list-style-type: none"> <li>look at the parameter /0</li> <li>test the integrity of the probe</li> <li>test the instrument-probe connection</li> <li>test the temperature close to the probe (it has to be between the limits allowed by the working range)</li> </ul>	<ul style="list-style-type: none"> <li>the alarm output will be activated</li> <li>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</li> <li>the defrost will end by time (parameter d3)</li> </ul>

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) <sup>(5)</sup>
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LABEL	MIN.	MAX.	U.M.	DEF.	SERIAL NETWORK (EVCOBUS)
L0	—	—	—	—	reserved
L1	1	15	—	1	instrument address

(2) the unit of measure depends on the parameter db

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

(4) the instrument restores the normal operation once the dripping ends and the cabinet temperature gets the working setpoint

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

<b>cabinet</b>	the cabinet temperature is outside the limit	test the temperature close to the probe	the alarm output will be activated
<b>temperature</b>	you have set with the parameter A1 or A2	(look at the parameters A0, A1 and A2)	
lower or upper temperature alarm			

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:** 53 x 90 x 58 mm (2.08 x 3.54 x 2.28 in, 3 DIN modules).

**Installation:** on DIN rail (it is not supplied by the builder).

**Frontal protection:** IP 40.

**Connections:** screw terminal blocks with pitch 5 mm (0.19 in) for cables up to 2.5 mm<sup>2</sup> (0.38 sq in, power supply, inputs and outputs), 5 poles single line female connector with pitch 2.5 mm (0.09 in, serial port), 3 poles single line male connector with pitch 2.5 mm (0.09 in, to remote indicator).

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

**Power supply:** 230 Vac, 50/60 Hz, 2 VA (standard model) or 115 Vac, 50/60 Hz, 2 VA (by request).

**Alarm buzzer:** included.

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

**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 (-55 to 99 °F).

**Resolution:** 1 °C.

**Display:** one red LED 3-digit display 13.2 mm (0.51 in) high, compressor, evaporator fan and defrost output status indicators.

**Outputs:** 4 relays: one 5 A @ 250 Vac relay for one ½ HP @ 230 Vac compressor control (change-over contact), one 5 A @ 250 Vac relay for evaporator fan control (NO contact), one 5 A @ 250 Vac relay for defrost system control (NO contact) and one 5 A @ 250 Vac relay for alarms control (the relay will be deactivated during the normal operation and it will be activated during an alarm condition, change-over contact).

**Kind of defrost:** electric and hot gas defrost.

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

**Serial port:** TTL with EVCOBUS communication protocol, adapt for serial interface

EC IFC 02 (for the configurator/cloner system CLONE and supervision system RICS).

## 8 WORKING SETPOINT AND CONFIGURATION PARAMETERS

### 8.1 Working setpoint

LABEL	MIN.	MAX.	U.M.	DEF.	WORKING SETPOINT
r1	r2	°C	2	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.	REGULATOR
r0	1	15	°C	2	hysteresis (differential, it is relative to the working setpoint)

LABEL	MIN.	MAX.	U.M.	DEF.	DEFROST
dA	—	—	°C	—	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	-55	99	°C	0	cabinet and evaporator probes calibration (you have to set eight points for adjusting one degree)
/2	0	6	—	3	probes reading speed (0 = fast, ..., 6 = slow)
/3	—	—	—	—	reserved

LABEL	MIN.	MAX.	U.M.	DEF.	REGULATOR
r0	1	15	°C	2	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.	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/min <sup>(2)</sup>	8	defrost interval <sup>(3)</sup> (0 = the defrost will never automatically be activated)
d1	0	1	—	0	kind of defrost (0 = electric defrost, 1 = hot gas defrost)
d2	-55	99	°C	2	defrost end temperature (evaporator temperature)
d3	1	99	min/s <sup>(2)</sup>	30	defrost maximum length
d4	0	1	—	0	defrost activation every time you turn the instrument ON (1 = YES) <sup>(3)</sup>
d5	0	99	min/s <sup>(2)</sup>	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) <sup>(4)</sup>
d7	0	15	min/s <sup>(2)</sup>	2	dripping time
d8	0	15	h	1	temperature alarm exclusion time since the end of the after dripping evaporator fan delay (since the end of F5, it is important if db = 0 and A1 and/or A2 ≠ 0)
d9	0	1	—	0	compressor protections cleaning at the moment of the defrost activation (it is important if d1 = 1; 1 = YES)
dA	—	—	°C	—	evaporator temperature showing
db	0	1	—	0	unit of measure defrost times (0 = d0 in hours, d3, d5, d7 and F5 in minutes, 1 = d0 in minutes, d3, d5, d7 and F5 in seconds)

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	0	°C	-10	lower temperature alarm threshold (it is relative to the working setpoint, 0 = it will never be activated)
A2	0	99	°C	10	upper temperature alarm threshold (it is relative to the working setpoint, 0 = it will never be activated)
A3	0	15	h	2	temperature alarm exclusion time since you turn the instrument ON (it is important if A1 and/or A2 ≠ 0)
A4	—	—	—	—	reserved

LABEL	MIN.	MAX.	U.M.	DEF.	EVAPORATOR FAN
F0	0	1	—	1	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	-55	99	°C	-1	evaporator fan stop temperature (evaporator temperature, it is important if F0 = 0); look at F6 as well
F2	2	15	°C	2	hysteresis (differential, it is relative to F1, it is important if F0 = 0)
F3	0	1	—	1	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/s <sup>(2)</sup>	15	after dripping evaporator fan delay