EV3201

Controllers for refrigerated cabinets, undercounters and islands, with energy-saving strategies

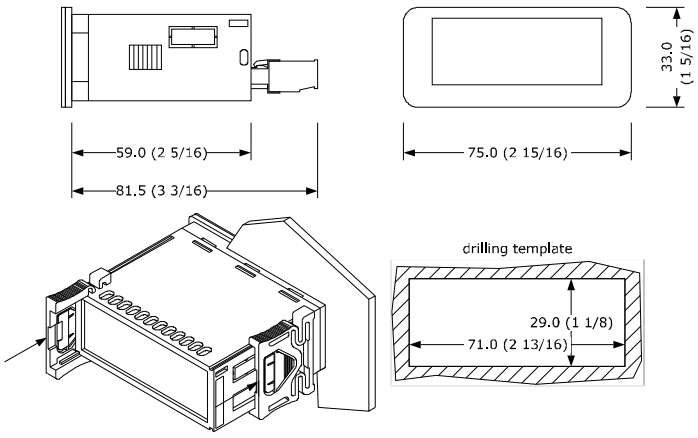
PLEASE READ CAREFULLY and save this document
CONSIDER THE ENVIRONMENT

E ENGLISH

- Controllers for normal temperature units.
- Power supply 230 VAC or 12-24 VAC/DC (according to the model).
- Cabinet probe (PTC/NTC).
- Door switch/multi-purpose input.
- Compressor relay 16 A res. @ 250 VAC.
- Cooling or heating operation.

1 MEASUREMENTS AND INSTALLATION

Measurements in mm (inches). To be fitted to a panel, snap-in brackets provided.

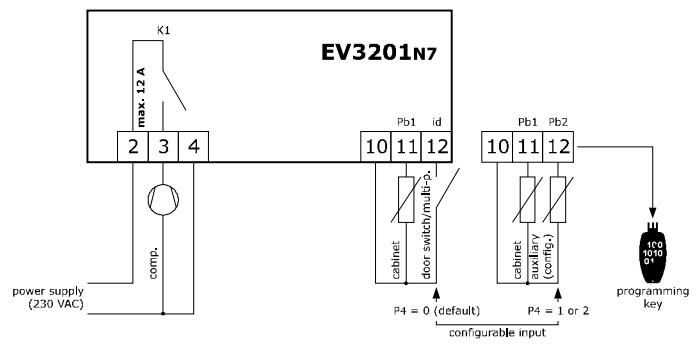


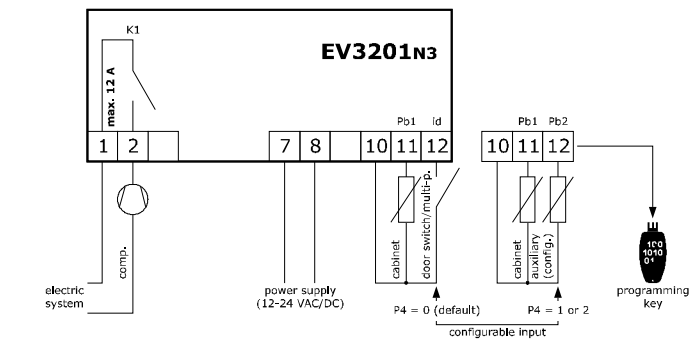
INSTALLATION PRECAUTIONS

- The thickness of the panel must be between 0.8 and 2.0 mm (1/32 and 1/16 in)
- Ensure that the working conditions are within the limits stated in the *TECHNICAL SPECIFICATIONS* section.
- Do not install the device close to heat sources, equipment with a strong magnetic field, in places subject to direct sunlight, rain, damp, excessive dust, mechanical vibrations or shocks.
- In compliance with safety regulations, the device must be installed properly to ensure adequate protection from contact with electrical parts. All protective parts must be fixed in such a way as to need the aid of a tool to remove them.

2 ELECTRICAL CONNECTION

N.B.
- Use cables of an adequate section for the current running through them.
- To reduce any electromagnetic interference connect the power cables as far away as possible from the signal cables.





PRECAUTIONS FOR ELECTRICAL CONNECTION

- If using an electrical or pneumatic screwdriver, adjust the tightening torque.
- If the device has been moved from a cold to a warm place, the humidity may have caused condensation to form inside. Wait about an hour before switching on the power.
- Make sure that the supply voltage, electrical frequency and power are within the set limits. See the section *TECHNICAL SPECIFICATIONS*.
- Disconnect the power supply before doing any type of maintenance.
- Do not use the device as safety device.
- For repairs and for further information, contact the EVCO sales network.

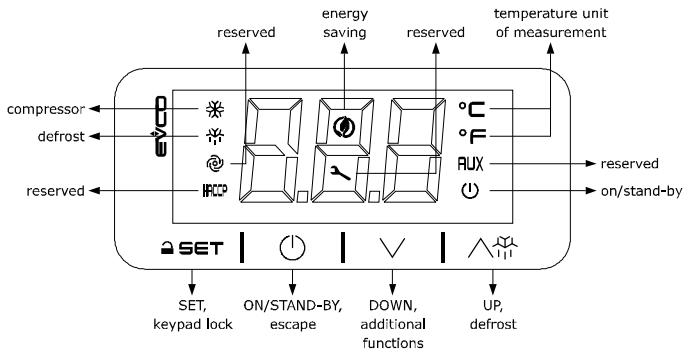
3 FIRST-TIME

1. Install following the instructions given in the section *MEASUREMENTS AND INSTALLATION*.
2. Power up the device as shown in the section *ELECTRICAL CONNECTION* and an internal test will be run.
   The test normally takes a few seconds, when it is finished the display will switch off.
3. Configure the device as shown in the section *Setting configuration parameters*.
   Recommended configuration parameters for first-time use.

PAR.	DEF.	PARAMETER	MIN... MAX.
SP	**0.0**	setpoint	r1... r2
P0	**1**	probe type	0 = PTC 1 = NTC
P2	**0**	temperature unit of measurement	0 = °C 1 = °F

   Then check that the remaining settings are appropriate; see the section *CONFIGURATION PARAMETERS*.
4. Disconnect the device from the mains.
5. Make the electrical connection as shown in the section *ELECTRICAL CONNECTION* without powering up the device.
6. Power up the device.

4 USER INTERFACE AND MAIN FUNCTIONS



4.1 Switching the device on/off

1. | SET | If POF = 1 (default), touch the ON/STAND-BY key for 4 s.

If the device is switched on, the display will show the P5 value ("cabinet temperature" default); if the display shows an alarm code, see the section *ALARMS*.

LED	ON	OFF	FLASHING
	compressor on	compressor off	- compressor protection active - setpoint setting active
	defrost active	-	dripping active
	- energy saving active - low consumption active	-	-
°C/°F	view temperature	-	-
	device off	device on	device on/off active

If 30 s have elapsed without the keys being pressed, the display will show the "**Loc**" label and the keypad will lock automatically.

4.2 Unlock keypad

Touch a key for 1 s: the display will show the label "**UnL**".

4.3 Set the setpoint

Check that the keypad is not locked.

1.	SET	Touch the SET key.
2.	UP/DOWN	Touch the UP or DOWN key within 15 s to set the value within the limits r1 and r2 (default "-40... 50")
3.	SET	Touch the SET key (or do not operate for 15 s).

4.4 Activate manual defrost (if r5 = 0, default)

Check that the keypad is not locked.

1. | UP | Touch the UP key for 2 s.

If P4 = 1, defrost is activated provided that the evaporator temperature is lower than the d2 threshold.

5 ADDITIONAL FUNCTIONS

5.1 View the temperature detected by the probes

Check that the keypad is not locked.

1.	DOWN	Touch the DOWN key for 4 s.
2.	UP/DOWN	Touch the UP or DOWN key within 15 s to select a label.

LAB.	DESCRIPTION
Pb1	cabinet temperature
Pb2	auxiliary temperature (if P4 = 1 or 2)

3.	SET	Touch the SET key.
4.	ON/STAND-BY	Touch the ON/STAND-BY key (or do not operate for 60 s) to exit the procedure.

6 SETTINGS

6.1 Setting configuration parameters

1.	SET	Touch the SET key for 4 s: the display will show the label "**PA**".
2.	SET	Touch the SET key.
3.	UP/DOWN	Touch the UP or DOWN key within 15 s to set the PAS value (default "**-19**").
4.	SET	Touch the SET key (or do not operate for 15 s): the display will show the label "**SP**".
5.	UP/DOWN	Touch the UP or DOWN key to select a parameter.
6.	SET	Touch the SET key.
7.	UP/DOWN	Touch the UP or DOWN key within 15 s to set the value.
8.	SET	Touch the SET key (or do not operate for 15 s).
9.	SET	Touch the SET key for 4 s (or do not operate for 60 s) to exit the procedure.

6.2 Restore the factory settings (default) and store customized settings as default

N.B.
- Check that the factory settings are appropriate; see the section *CONFIGURATION PARAMETERS*.
- the storing of customized settings overwrites the default.

1.	SET	Touch the SET key for 4 s: the display will show the label "**PA**".
2.	SET	Touch the SET key.
3.	UP/DOWN	Touch the UP or DOWN key within 15 s to set the value.

VAL.	DESCRIPTION
149	value to restore the factory settings (default)
161	value to store customized settings as default

4.	SET	Touch the SET key (or do not operate for 15 s): the display will show the label "**dEF**" (when value "**149**" is set) or the label "**MAP**" (when value "**161**" is set).
5.	SET	Touch the SET key.
6.	UP/DOWN	Touch the UP or DOWN key within 15 s to set "**4**".
7.	SET	Touch the SET key (or do not operate for 15 s): the display will show for 4 s "**- - -**" flashing, then the device will exit the procedure.
8.	Interrupt the power supply to the device.	
9.	SET	Touch the SET key 2 s before action 6. to exit the procedure beforehand.

7 CONFIGURATION PARAMETERS

N.	PAR.	DEF.	SETPOINT	MIN... MAX.
1	SP	**0.0**	setpoint	r1... r2
N.	**PAR.**	**DEF.**	**ANALOGUE INPUTS**	**MIN... MAX.**
2	CA1	**0.0**	cabinet probe offset	-25... 25 °C/°F
3	CA2	**0.0**	auxiliary probe offset	-25... 25 °C/°F
4	P0	**1**	probe type	0 = PTC 1 = NTC
5	P1	**1**	enable °C decimal point	0 = no 1 = yes
6	P2	**0**	temperature unit of measurement	0 = °C 1 = °F
7	P4	**0**	configurable input function	0 = door switch/multi-purpose input 1 = evaporator probe 2 = condenser probe
8	P5	**0**	value displayed	0 = cabinet temperature 1 = setpoint 2 = auxiliary temperature
9	P8	**5**	display refresh time	0... 250 s : 10
N.	**PAR.**	**DEF.**	**REGULATION**	**MIN... MAX.**
10	r0	**2.0**	setpoint differential	1... 15 °C/°F
11	r1	**-40**	minimum setpoint	-99 °C/°F... r2
12	r2	**50.0**	maximum setpoint	r1... 99 °C/°F
13	r4	**0.0**	setpoint offset in energy saving	0... 99 °C/°F
14	r5	**0**	cooling or heating operation	0 = cooling 1 = heating
15	r12	**1**	position of the r0 differential	0 = asymmetric 1 = symmetric
N.	**PAR.**	**DEF.**	**COMPRESSOR**	**MIN... MAX.**
16	C0	**0**	compressor on delay after power-on	0... 240 min
17	C2	**3**	compressor off minimum time	0... 240 min
18	C3	**0**	compressor on minimum time	0... 240 s
19	C4	**0**	compressor off time during cabinet probe alarm	0... 240 min
20	C5	**10**	compressor on time during cabinet probe alarm	0... 240 min
21	C6	**80.0**	threshold for high condensation warning	0... 199 °C/°F differential = 2 °C/4 °F
22	C7	**90.0**	threshold for high condensation alarm	0... 199 °C/°F
23	C8	**1**	high condensation alarm delay	0... 15 min
N.	**PAR.**	**DEF.**	**DEFROST (if r5 = 0)**	**MIN... MAX.**
24	d0	**8**	automatic defrost interval	0... 99 h 0 = only manual if d8 = 3, maximum interval
25	d2	**2.0**	threshold for defrost end	-99... 99 °C/°F
26	d3	**30**	defrost duration	0... 99 min se P3 = 1, maximum duration
27	d4	**0**	enable defrost at power-on	0 = no 1 = yes
28	d5	**0**	defrost dealy after power-on	0... 99 min
29	d6	**1**	value displayed during defrost	0 = cabinet temperature 1 = display locked 2 = dEF label
30	d7	**0**	dripping time	0... 15 min
31	d8	**0**	defrost interval counting mode	0 = device on hours 1 = compressor on hours 2 = hours evaporator temperature < d9 3 = adaptive
32	d9	**0.0**	evaporation threshold for automatic defrost interval counting	-99... 99 °C/°F
33	d11	**0**	enable defrost timeout alarm	0 = no 1 = yes
34	d18	**40**	adaptive defrost interval	0... 999 min if compressor on + evaporator temperature < d22 0 = only manual
35	d19	**3.0**	threshold for adaptive defrost (relative to optimal evaporation temperature)	0... 40 °C/°F optimal evaporation temperature - d19
36	d20	**180**	compressor on consecutive time for defrost	0... 999 min 0 = disabled
37	d22	**2.0**	evaporation threshold for adaptive defrost interval counting (relative to optimal evaporation temperature)	0... 19 °C/°F optimal evaporation temperature + d22
N.	**PAR.**	**DEF.**	**ALARMS**	**MIN... MAX.**
38	A1	**10.0**	threshold for low temperature alarm (relative to setpoint)	0... 99 °C/°F SP - A1 0 = disabled
39	A4	**10.0**	threshold for high temperature alarm (relative to setpoint)	0... 99 °C/°F SP + A4 0 = disabled
40	A6	**12**	high temperature alarm delay after power-on	0... 99 min x 10
41	A7	**15**	high/low temperature alarms delay	0... 199 min
42	A11	**2.0**	high/low temperature alarms reset differential	1... 15 °C/°F
N.	**PAR.**	**DEF.**	**DIGITAL INPUTS**	**MIN... MAX.**
43	i0	**1**	door switch/multi-purpose input function	0 = none 1 = compressor off 2 = energy saving 3 = iA alarm 4 = iA alarm (pressure switch)
44	i1	**0**	door switch/multi-purpose input activation	0 = with contact closed 1 = with contact open
45	i2	**30**	open door alarm delay	-1... 120 min -1 = disabled if i0 = 3, multi-purpose input alarm delay if i0 = 4, compressor on delay after alarm reset
46	i3	**15**	regulation inhibition maximum time with door open	-1... 120 min -1 = until the closing
47	i10	**0**	door closed consecutive time for energy saving	0... 999 min after regulation temperature < SP 0 = disabled
48	i13	**180**	number of door openings for defrost	0... 240 0 = disabled
49	i14	**32**	door open consecutive time for defrost	0... 240 min 0 = disabled
N.	**PAR.**	**DEF.**	**ENERGY SAVING (if r5 = 0)**	**MIN... MAX.**
50	HE2	**0**	energy saving maximum duration	0... 999 min -1 = until the door opening
51	HE3	**0**	consecutive time without operating on keys for low consumption	0... 240 min
N.	**PAR.**	**DEF.**	**SAFETIES**	**MIN... MAX.**
52	POF	**1**	enable ON/STAND-BY key	0 = no 1 = yes
53	PAS	**-19**	password	-99... 999

8 ALARMS

COD.	DESCRIPTION	RESET	REMEDIES
Pr1	cabinet probe alarm	automatic	- check P0
Pr2	auxiliary probe alarm	automatic	- check probe integrity - check electrical connection
AL	low temperature alarm	automatic	check A1
AH	high temperature alarm	automatic	check A4
id	open door alarm	automatic	check i0 e i1
COH	high condensation warning	automatic	check C6
CSd	high condensation alarm	manual	- switch the device off and on - check C7
iA	multi-purpose input alarm	automatic	check i0 and i1
dFd	defrost timeout alarm	manual	- touch a key - check d2, d3 and d11

9 TECHNICAL SPECIFICATIONS

Purpose of the control device			Function controller
Construction of the control device			Built-in electronic device
Container			Black, self-extinguishing
Category of heat and fire resistance			D
Measurements			
75.0 x 33.0 x 59.0 mm (2 15/16 x 1 5/16 x 2 5/16 in) with fixed screw terminal blocks			75.0 x 33.0 x 81.5 mm (2 15/16 x 1 5/16 x 3 3/16 in) with removable screw terminal blocks
Mounting methods for the control device			To be fitted to a panel, snap-in brackets provided
Degree of protection provided by the covering			IP65 (front)
Connection method			
Fixed screw terminal blocks for wires up to 2,5 mm²			Removable screw terminal blocks for wires up to 2,5 mm²; by request
Maximum permitted length for connection cables			
Power supply: 10 m (32.8 ft)			Analogue inputs: 10 m (32.8 ft)
Digital inputs: 10 m (32.8 ft)			Digital outputs: 10 m (32.8 ft)
Operating temperature			From 0 to 55 °C (from 32 to 131 °F); from 0 to 50 °C (from 32 a 122 °F) in EV3... N3
Storage temperature			From -25 to 70 °C (from -13 to 158 °F)
Operating humidity			Relative humidity without condensate from 10 to 90%
Pollution status of the control device			2
Conformity			
RoHS 2011/65/CE	WEEE 2012/19/EU		REACH (EC) Regulation 1907/2006
EMC 2014/30/UE			LVD 2014/35/UE
Power supply			
230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 2 VA insulated in EV3... N7			
12-24 VAC/DC (+10% -15%), 50/60 Hz (±3 Hz), max. 4 VA/2W in EV3... N3, provided by a SELV class 2 source			
Earthing methods for the control device			None
Rated impulse-withstand voltage			4 KV
Over-voltage category			III; II in EV3... N3
Software class and structure			A
Analogue inputs			1 for PTC or NTC probes (cabinet probe)
PTC probes	Sensor type		KTY 81-121 (990 Ω @ 25 °C, 77 °F)
	Measurement field		From -50 to 150 °C (from -58 to 302 °F)
	Resolution		0.1 °C (1 °F)
NTC probes	Sensor type		ß3435 (10 K□Ω @ 25 °C, 77 °F)
	Measurement field		From -40 to 105 °C (from -40 to 221 °F)
	Resolution		0.1 °C (1 °F)
Other inputs		Input configurable for analogue input (auxiliary probe) or digital input (door switch/multi-purpose, dry contact)	
Dry contact		Contact type	5 VDC, 1.5 mA
		Power supply	None
		Protection	None
Digital outputs		1 electro-mechanical relay (compressor relay)	
Compressor relay (K1)		SPST, 16 A res. @ 250 VAC	
Type 1 or Type 2 Actions			Type 1
Additional features of Type 1 or Type 2 actions			C
Displays			3 digits custom display, with function icons

N.B.
The device must be disposed of according to local regulations governing the collection of electrical and electronic waste.

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