EV3 300 series

Temperature modules for basic ovens

EN ENGLISH

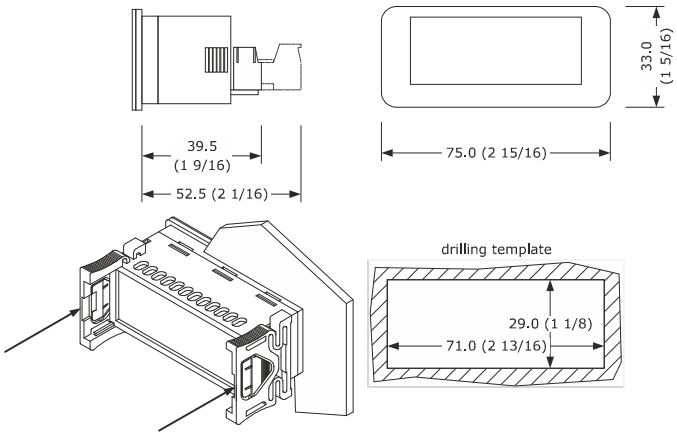
- user interface with push encoder or touch keys (according to the model).
- 230 VAC or 12 VAC/DC power supply (according to the model).
- regulation probe (J/K).
- multi-purpose input.
- relay output, 5 A res. @ 250 VAC or open collector, 12 VDC, 10 mA for SSR module control (according to the model).
- alarm buzzer.
- on-off/PID control.
- hot or cold mode regulation.
- operation with programming key.

N.B.
- the push encoder is not provided.
- for models with a push encoder user interface, it is mandatory.
- models with a touch key user interface also operate with push encoder.

Purchasing code	User interface	Power supply	Output
EV3301J2	push encoder	12 VAC/DC	relay, 5 A res.
EV3301J7	push encoder	230 VAC	relay, 5 A res.
EV3301J7VR0	push encoder	230 VAC	open collector, 12 VDC, 10 mA
EV3311J2	touch keys	12 VAC/DC	relay, 5 A res.
EV3311J7	touch keys	230 VAC	relay, 5 A res.
EV3311J7VR0	touch keys	230 VAC	open collector, 12 VDC, 10 mA

1 MEASUREMENTS AND INSTALLATION

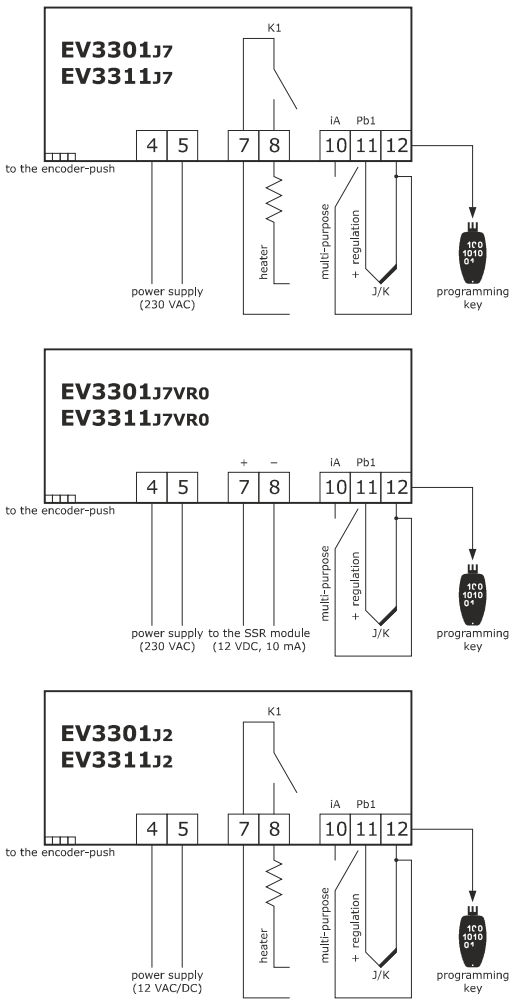
Measurements in mm (in); 39.5 (1 9/16) depth with fixed screw terminal blocks, 52.5 (2 1/16) depth with plug-in screw terminal blocks.
To be fitted to a panel, snap-in brackets provided.



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.
- ensure that the thermocouple is properly insulated from contact with metal parts or use an already insulated thermocouple.
- if necessary, extend the thermocouple cable using a compensating cable.
- to reduce any electromagnetic interference locate 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 is moved from a cold to a warm place, humidity may cause condensation to form inside. Wait for 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 carrying out any type of maintenance.
- do not use the device as a safety device.
- for repairs and for further information, contact the EVCO sales network.

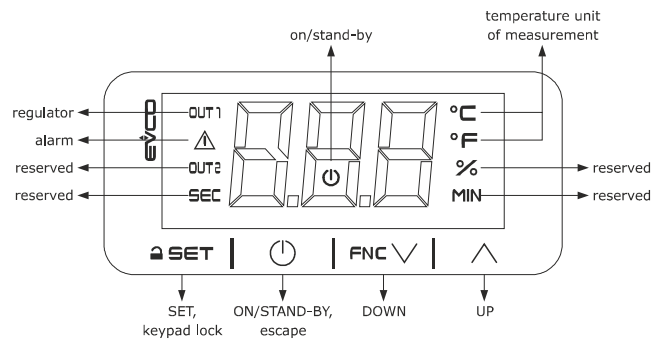
3 FIRST-TIME USE

1. Carry out the installation following the instructions given in the section *MEASUREMENTS AND INSTALLATION*.
2. Power up the device as set out in the section *ELECTRICAL CONNECTION*: an internal test will start up.
   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**	setpoint	r1... r2
P0	**2**	type of probe	2 = J 3 = K
P2	**0**	temperature measurement unit	0 = °C 1 = °F
r5	**1**	hot or cold mode regulation	0 = cold mode 1 = hot mode

   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. If necessary, connect the push encoder.
7. Power up the device.

4 USER INTERFACE AND MAIN FUNCTIONS



4.1 Switching the device on/off

To switch on push encoder models:

1.	push	Press the encoder.

To switch off push encoder models:

1.	push	Press the encoder for 2 s.

To switch on touch key models:

1.	ON/STAND-BY	Touch the ON/STAND-BY key.

To switch off touch key models:

1.	ON/STAND-BY	Touch the ON/STAND-BY key for 2 s.

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

LED	ON	OFF	FLASHING
OUT1	regulator active	-	- regulator protection active - setpoint being set
⚠	alarm active	-	-
OUT2	unused	-	-
SEC	unused	-	-
⏻	device switched off	device switched on	device being switched off
°C/°F	temperature display	-	-
%	unused	-	-
MIN	unused	-	-

If Loc = 1 and 30 s have elapsed without the keys being pressed, the display will show the "**Loc**" label and the keypad will lock automatically.

4.2 Unlocking the keypad

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

4.3 Setting the setpoint

For push encoder models:

1.	push	Rotate the encoder.
2.	push	Rotate the encoder within 15 s to set the value within the limits r1 and r2 (default "0... 350").
3.	push	Press the encoder.
4.		Take no action for 15 seconds to exit the procedure in advance: the device will not save the entered value.

For touch key models:
- check that the keypad is not locked.

1.	SET	Touch the SET key.
2.	FNC	Touch the UP or DOWN keys within 15s to set the value within the limits r1 and r2 (default "0... 350").
3.	SET	Touch the SET key.
4.	⏻	Touch the ON/STANDBY key (or take no action for 15 s) to exit the procedure in advance: the device will not save the entered value.

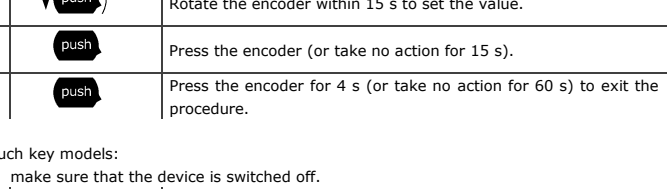
4.4 Silencing the buzzer

For push encoder models:
- rotate or press the encoder.

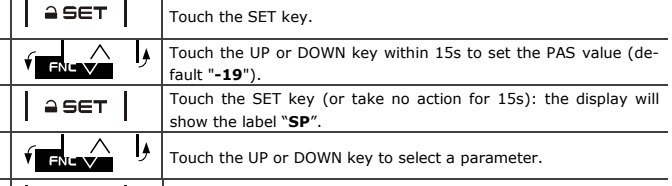
For touch key models:
- touch a key.

5 OPERATION WITH ON-OFF CONTROL

Cold mode regulation (r5 = 0).



Hot mode regulation (r5 = 1).



6 SETTINGS

6.1 Setting configuration parameters

N.B.
Changing parameter P2 from °C to °F (and vice versa) causes the value of the parameters whose unit of measurement is ° C or ° F to be changed automatically.

For push encoder models:
- make sure that the device is switched off.

1.	push	Press the encoder for 4 s: the display will show the label "**PA**".
2.	push	Press the encoder.
3.	push	Rotate the encoder within 15 s to set the PAS value (default "**-19**").
4.	push	Press the encoder (or take no action for 15 s): the display will show the label "**SP**".
5.	push	Rotate the encoder to select a parameter.
6.	push	Press the encoder.
7.	push	Rotate the encoder within 15 s to set the value.
8.	push	Press the encoder (or take no action for 15 s).
9.	push	Press the encoder for 4 s (or take no action for 60 s) to exit the procedure.

For touch key models:
- make sure that the device is switched off.

1.	SET	Touch the SET key for 4 s: the display will show the label "**PA**".
2.	SET	Touch the SET key.
3.	FNC	Touch the UP or DOWN key within 15s to set the PAS value (default "**-19**").
4.	SET	Touch the SET key (or take no action for 15s): the display will show the label "**SP**".
5.	FNC	Touch the UP or DOWN key to select a parameter.
6.	SET	Touch the SET key.
7.	FNC	Touch the UP or DOWN key within 15s to set the value.
8.	SET	Touch the SET key (or take no action for 15s).
9.	SET	Touch the SET key for 4s (or take no action for 60s) to exit the procedure.

6.2 Restoring factory settings (default) and saving customised settings

N.B.
- Check that the factory settings are appropriate; see the section *CONFIGURATION PARAMETERS*.
- Saving customised settings overwrites the factory settings.

For push encoder models:
- make sure that the device is switched off.

1.	push	Press the encoder for 4 s: the display will show the label "**PA**".
2.	push	Press the encoder.
3.	push	Rotate the encoder within 15 s to set the value.

VAL.	DESCRIPTION
149	value for restoring the factory information (default)
161	value for saving customised settings

4.	push	Press the encoder (or take no action for 15 s): the display will show the label "**dEF**" (for setting the "**149**" value) or the label "**MAP**" (for setting the "**161**" value).
5.	push	Press the encoder.
6.	push	Rotate the encoder within 15 s to set the value "**4**".
7.	push	Press the encoder (or take no action for 15 s): the display will show "**- - -**" flashing for 4 s, after which the device will exit the procedure.
8.		Disconnect the device from the power supply.
9.	push	Press the encoder for 2s before action 6 to exit the procedure beforehand.

For touch key models:
- make sure that the device is switched off.

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

VAL.	DESCRIPTION
149	value for restoring the factory information (default)
161	value for saving customised settings

4.	SET	Touch the SET key (or take no action for 15 s): the display will show the label "**dEF**" (for setting the "**149**" value) or the label "**MAP**" (for setting the "**161**" value).
5.	SET	Touch the SET key.
6.	FNC	Touch the UP or DOWN key within 15s to set "**4**".
7.	SET	Touch the SET key (or take no action for 15 s): the display will show "- - -" flashing for 4 s, after which the device will exit the procedure.
8.		Disconnect the device from the power supply.
9.	SET	Touch the SET key for 2s before action 6 to exit the procedure beforehand.

7 CONFIGURATION PARAMETERS

No.	PAR.	DEF.	SETPOINT	MIN... MAX.
1	SP	**0**	setpoint	r1... r2
No.	**PAR.**	**DEF.**	**ANALOGUE INPUTS**	**MIN... MAX.**
2	CA1	**0**	regulation probe offset	-25... 25 °C/°F
3	P0	**2**	type of probe	2 = J 3 = K
4	P2	**0**	temperature measurement unit	0 = °C 1 = °F
5	P4	**1**	enable regulator LED	0 = no 1 = yes
6	P5	**0**	value displayed	0 = regulation temperature 1 = setpoint 2 = setpoint if regulation temperature > setpoint, regulation temperature if regulation temperature < setpoint – P6
7	P6	**20**	display unlock threshold for P5 = 2	1... 99 °C/°F setpoint - P6
8	P7	**0**	display with device switched off	0 = display off + on/standby LED on 1 = regulation temperature + on/standby LED on 2 = label OFF + on/stand-by LED off
9	P8	**5**	display refresh time	0... 250 s: 10
No.	**PAR.**	**DEF.**	**REGULATION**	**MIN... MAX.**
10	r0	**5**	setpoint differential	1... 99 °C/°F if u0 = 3, cold mode regulation differential
11	r1	**0**	minimum setpoint	-199 °C/°F... r2
12	r2	**350**	maximum setpoint	r1... 999 °C/°F
13	r5	**1**	hot or cold mode regulation	0 = cold mode 1 = hot mode
14	r11	**0**	setpoint offset from digital input	-199... 999 °C/°F
15	r14	**0**	proportional band	0... 999 °C/°F 0 = PID control disabled
16	r15	**60**	integral action time	0... 999 s
17	r16	**30**	derivative action time	0... 999 s
18	r17	**180**	PID regulator cycle time	1... 999 s
19	r18	**0**	PID regulator minimum time on	0... 240 s
20	r19	**0**	PID regulator minimum time off	0... 240 s
No.	**PAR.**	**DEF.**	**REGULATOR PROTECTIONS**	**MIN... MAX.**
21	C1	**0**	minimum time between two power-ons of regulator	0... 240 min
22	C2	**0**	minimum time off and delay from power-on of regulator	0... 240 min
23	C3	**0**	regulator minimum time on	0... 240 s
24	C4	**0**	regulator activity during regulation probe alarm	0 = off 1 = on
No.	**PAR.**	**DEF.**	**ALARMS**	**MIN... MAX.**
25	A1	**0**	temperature alarm threshold	-199... 999 °C/°F
26	A2	**0**	temperature alarm type	0 = disabled 1 = absolute low 2 = absolute high 3 = low relative to setpoint 4 = high relative to setpoint
27	A3	**0**	temperature alarm delay	0... 999 min
28	A7	**0**	temperature alarm delay after modifying setpoint and power-on	0... 999 min
29	A8	**0**	additional alarm signal delay after silencing if the condition persists	0... 999 min
30	A11	**2**	temperature alarm switch off differential	1... 99 °C/°F
No.	**PAR.**	**DEF.**	**DIGITAL INPUTS**	**MIN... MAX.**
31	i5	**0**	multi-purpose input function	0 = disabled 1 = alarm iA 2 = alarm iA + regulator off 3 = switches device on/off 4 = modifies setpoint
32	i6	**0**	multi-purpose input activation	0 = with contact closed 1 = with contact open
33	i7	**0**	multi-purpose input alarm delay	0... 999 s
No.	**PAR.**	**DEF.**	**SECURITY**	**MIN... MAX.**
34	Loc	**1**	enable keypad lock	0 = no 1 = yes not available for EV3301
35	PAS	**-19**	password	-99... 999 do not set "**149**" or "**161**"
36	nS1	**- - -**	display of K1 relay start-ups in thousands	0... 999 start-ups x 1,000

8 ALARMS

COD.	DESCRIPTION	RESET	TO CORRECT
Pr1	regulation probe alarm	automatic	- check P0 - check probe integrity - check electrical connection
AL	temperature alarm	automatic	check A1 and A2
iA	multi-purpose input alarm	automatic	check i5 and i6

9 TECHNICAL SPECIFICATIONS

Purpose of the control device		function controller
Construction of the control device		built-in electronic device
Container		black, self-extinguishin
Category of heat and fire resistance		D
Measurements		
75.0 x 33.0 x 39.5 mm (2 15/16 x 1 5/16 x 1 9/16 in) with fixed screw terminal blocks		75.0 x 33.0 x 52.5 mm (2 15/16 x 1 5/16 x 2 15/16 in) with plug-in 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	plug-in screw terminal blocks for wires up to 2.5 mm² (on request)	JST connector
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 60 °C (from 32 to 140 °F)
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
Compliance:		
RoHS 2011/65/EC	WEEE 2012/19/EU	REACH (EC) Regulation no. 1907/2006
EMC 2014/30/EU		LVD 2014/35/EU
Power supply:		
230 VAC (+10 % -15 %), 50/60 Hz (±3 Hz), max. 2 VA in EV3... J7		
12 VAC/DC (+10% -15%), 50/60 Hz (±3 Hz), max. 5 VA/3W in EV3... J2		
Earthing methods for the control device		none
Rated impulse-withstand voltage		4 KV
Over-voltage category		III
Software class and structure		A
Analogue inputs		1 for J/K thermocouples (regulation probe)
J thermocouples	Measurement field:	from 0 to 700 °C (from 32 to 999 °F)
	Resolution:	1 °C (1 °F)
K thermocouples	Measurement field:	from 0 to 999 °C (from 32 to 999 °F)
	Resolution:	1 °C (1 °F)
Digital inputs	1 dry contact (multi-purpose)	
Dry contact	Contact type:	5 VDC, 1.5 mA
	Power supply:	none
	Protection:	none
Digital outputs	1 with electro-mechanical relay (K1) or open collector (according to the model)	
K1 relay	SPST, 5 A res. @ 250 VAC	
Open collector	6... 14 VDC, 10 mA	
Type 1 or Type 2 Actions	Type 1	
Additional features of Type 1 or Type 2 actions	C	
Displays	LED display, 3 digit, with function icons	
Alarm buzzer	Built-in	
Communications ports	1 port for push encoder	

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

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