EV3100M

Multi-sensor digital monitor

EVCO

**PLEASE READ CAREFULLY** and save this document
CONSIDER THE ENVIRONMENT

I ENGLISH

- 230 VAC or 115 VAC power supply (according to the model)
- multi-sensor input (PTC/NTC/J/K/Pt 100/Pt 1000/Ni 120/0-20 mA/4-20 mA/0-10 V/2-10 V)
- 1 TTL MODBUS slave port for EVJKEY programming key or for TTL/RS-485 EVIF22TSX serial interface.

Purchasing code	Power supply
EV3100M7	230 VAC
EV3100M5	115 VAC

1 MEASUREMENTS AND INSTALLATION

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

33.0 (1 5/16)
73.0 (2 7/8)
75.0 (2 15/16)
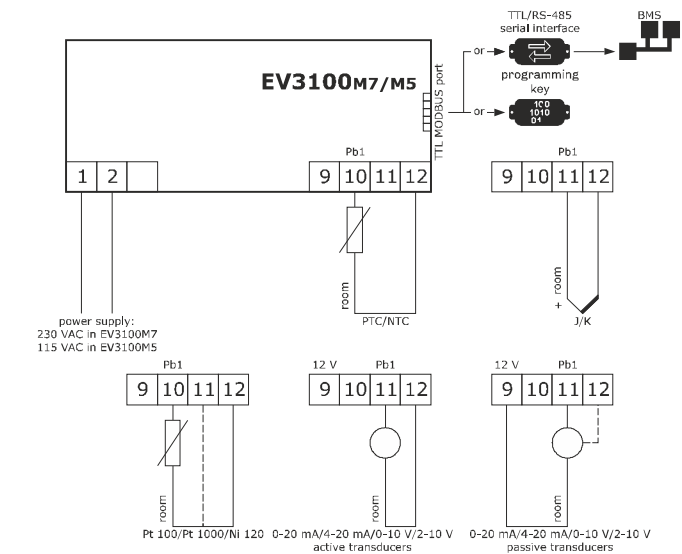74.0 (2 15/16)

drilling template
29.0 (1 1/8)
71.0 (2 13/16)
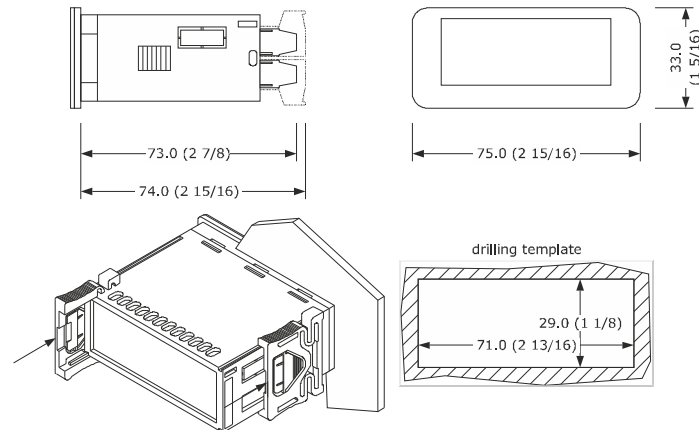
INSTALLATION PRECAUTIONS

- 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.

EV3100M7/M5
TTL/RS-485 serial interface
BMS
programming key

power supply:
230 VAC in EV3100M7
115 VAC in EV3100M5
PTC/NTC
J/K
room

Pt 100/Pt 1000/Ni 120   0-20 mA/4-20 mA/0-10 V/2-10 V active transducers   0-20 mA/4-20 mA/0-10 V/2-10 V passive transducers

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.
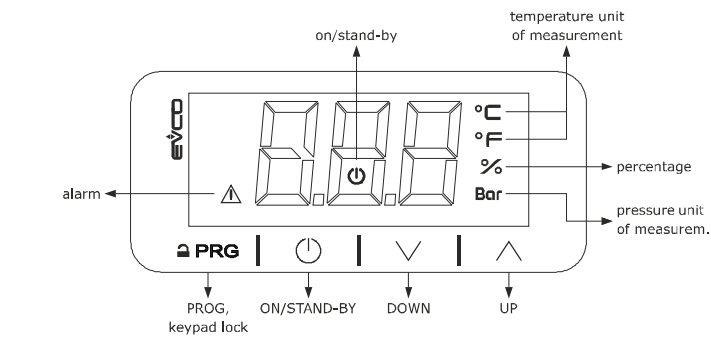
3 FIRST-TIME USE

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.
P0	2	type of probe **set the parameter before connecting the probe**	0 = PTC 1 = NTC 2 = J 3 = K 4 = Pt 100 3 wires 5 = Pt 100 2 wires 6 = Pt 1000 3 wires 7 = Pt 1000 2 wires 8 = 4-20 mA 9 = 0-20 mA 10= 2-10 V 11= 0-10 V 12= Ni 120 3 wires 13= Ni 120 2 wires
P2	0	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. When connecting to an RS-485 network, connect the EVIF22TSX interface.
6. Power up the device again.

4 USER INTERFACE AND MAIN FUNCTIONS

on/stand-by
temperature unit of measurement
°C
°F
%
Bar
percentage
pressure unit of measurem.
alarm
PROG, keypad lock
ON/STAND-BY
DOWN
UP

4.1 Switching the device on/off

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

If the device is switched on, the display will show the measured magnitude; if the display shows an alarm code, see the section *ALARMS*.

LED	ON	OFF	FLASHING
⚠	alarm active	-	-
⏻	device switched off	device switched on	device being switched on/off
°C/°F	temperature displayed	-	-
%	percentage displayed	-	-
Bar	pressure displayed	-	-

When 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**".

5 SETTINGS

5.1 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.

1. PRG Touch the PROG key for 4 s: the display will show the label "**PA**".
2. PRG Touch the PROG key.
3. Touch the UP or DOWN key within 15 s to set the PAS value (default "**-19**").
4. PRG Touch the PROG key (or take no action for 15 s): the display will show the label "**CA1**".
5. Touch the UP or DOWN key to select a parameter.
6. PRG Touch the PROG key.
7. Touch the UP or DOWN key within 15 s to set the value.
8. PRG Touch the PROG key (or take no action for 15 s).
9. PRG Touch the PROG key for 4 s (or take no action for 60 s) to exit the procedure.

5.2 Restoring factory (default) settings 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.

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

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

4. PRG Touch the PROG 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. PRG Touch the PROG key.
6. Touch the UP or DOWN key within 15 s to set "**4**".
7. PRG Touch the PROG 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. PRG Touch the PROG key for 2 s before action 6 to exit the procedure beforehand.

6 CONFIGURATION PARAMETERS

NO.	PAR.	DEF.	ANALOGUE INPUTS	MIN... MAX.
1	CA1	0.0	room probe offset	-25... 25 °C/°F
2	P0	2	type of probe	0 = PTC 1 = NTC 2 = J 3 = K 4 = Pt 100 3 wires 5 = Pt 100 2 wires 6 = Pt 1000 3 wires 7 = Pt 1000 2 wires 8 = 4-20 mA 9 = 0-20 mA 10= 2-10 V 11= 0-10 V 12= Ni 120 3 wires 13= Ni 120 2 wires
3	P1	1	enable decimal point °C	0 = no 1 = yes if P0 = 2 or 3, not effective if P0 = 8... 11, position of decimal point: 0 = none 1 = tens digit
4	P2	0	unit of measurement	0 = °C 1 = °F 2 = % 3 = bar 4 = none options 2... 4 effective only on LEDs and if P0 = 8... 11
5	P3	0.0	transducer calibration minimum value	-199... 999 points
6	P4	100	transducer calibration maximum value	-199... 999 points
7	P8	5	display refresh time	0... 250 s : 10

NO.	PAR.	DEF.	ALARMS	MIN... MAX.
8	A1	0.0	first alarm threshold	-199... 999 °C/°F
9	A2	0	first alarm type	0 = disabled 1 = minimum 2 = maximum
10	A3	0	first alarm delay	0... 999 min
11	A4	0.0	second alarm threshold	-199... 199 °C/°F
12	A5	0	second alarm type	0 = disabled 1 = absolute minimum 2 = absolute maximum
13	A6	0	second alarm delay	0... 999 min
14	A7	0	alarm delay from power-on	0... 999 min
15	A11	2.0	alarm switch-off differential	1... 99 °C/°F

NO.	PAR.	DEF.	SECURITY	MIN... MAX.
16	POF	1	enable ON/STAND-BY key	0 = no 1 = yes
17	PAS	-19	password	-99... 999

NO.	PAR.	DEF.	MODBUS	MIN... MAX.
18	LA	247	MODBUS address	1... 247
19	Lb	3	MODBUS baud rate	0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud even

7 ALARMS

CODE	MEANING	RESET	TO CORRECT
Pr1	room probe alarm	automatic	- check P0 - check integrity of the probe - check electrical connection
AL1	low first alarm	automatic	check A1 and A2
AH1	high first alarm	automatic	check A1 and A2
AL2	low second alarm	automatic	check A4 and A5
AH2	high second alarm	automatic	check A4 and A5

8 TECHNICAL SPECIFICATIONS

Purpose of the control device:	function controller.
Construction of the control device:	built-in electronic device.
Housing:	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 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 casing:	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)	Pico-Blade connector

Maximum permitted length for connection cables:

power supply: 10 m (32.8 ft)	analogue inputs: 10 m (32.8 ft).

Operating temperature:	from -5 to 55 °C (from 23 to 131 °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 insulated in EV3100M7
115 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 2 VA insulated in EV3100M5.

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 PTC, NTC, Pt 100, Pt 1000 or Ni 120 probes, J or K thermocouples, 0-20 mA, 4-20 mA, 0-10 V or 2-10 V transducers (room probe).
PTC probes:	Measurement field:	from -50 to 150 °C (from -58 to 302 °F).
	Resolution:	0.1 °C (1 °F).
NTC probes:	Measurement field:	from -40 to 110 °C (from -58 to 230 °F).
	Resolution:	0.1 °C (1 °F).
Pt 100 and Pt 1000 probes:	Measurement field:	from -100 to 650 °C (from -148 to 999 °F)
	Resolution:	0.1 °C (1 °F).
Ni 120 probes:	Measurement field:	from -80 to 300 °C (from -112 to 999 °F)
	Resolution:	0.1 °C (1 °F).
J thermocouples:	Measurement field:	from -90 to 700 °C (from -130 to 999 °F)
	Resolution:	1 °C (1 °F).
K thermocouples:	Measurement field:	from -90 to 999 °C (from -130 to 999 °F)
	Resolution:	1 °C (1 °F).
0-20 mA, 4-20 mA, 0-10 V and 2-10 V transducers:	can be configured	
Displays:	LED display, 3 digit, with function icons.	
Communications ports:	1 TTL MODBUS slave port for programming key or for (BMS) serial interface.	

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