EPcolor

Programmable remote user interfaces

(with Gui-PRO graphic tool)

Hardware Manual | ENGLISH

Code 144PCOLORE204

PLEASE READ CAREFULLY

and save this document

CONSIDER THE ENVIRONMENT

	Read this document carefully before installation and before using the device and take all the prescribed precautions. Keep this document with the device for future reference. Only use the device in the ways described in this document.

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

Index

1 INTRODUCTION

The EPcolor series is an elegant range of programmable remote user interfaces.
The 3.5 inch (EPcolor S), 5 inch (EPcolor M) or 7 inch (EPcolor L) TFT graphic display is fully touch-screen.
The EPcolor series is ideal for setting up user interfaces for applications developed on c-pro 3 programmable controllers. Thanks to the MODBUS protocol, they can also interact with third-party devices.
Highly evolved user interfaces can be set up using a wide range of predefined library graphics and templates. Moreover, the ability to automatically import fonts, load bitmaps and text translation files from a USB flash drive simplifies the human-machine interface personalisation process.

2 MAIN FEATURES OF THE MODELS AVAILABLE AND PURCHASING CODES

PURCHASING CODES	EPCJ01X4	-	EPCJ04X4V	EPCJ04T4V	EPCM01X4	EPCM00X4	EPCL00X4	EPCL01X4
Series	EPcolor S				EPcolor M		EPcolor L	
DISPLAY								
3.5 inch TFT touch-screen colour graphic display	•		•	•				
5 inch TFT touch-screen colour graphic display					•	•		
7 inch TFT touch-screen colour graphic display							•	•
INSTALLATION								
Panel-mounted	•					•		•
From behind					•		•	
Wall-mounted			•	•				
POWER SUPPLY								
24 VAC/12... 30 VDC not insulated	•		•	•	•	•	•	•
COMMUNICATIONS PORTS								
RS-485 MODBUS master					•	•	•	•
RS-485 MODBUS slave					•	•	•	•
RS-485 MODBUS master/slave	•		•	•				
CAN	•		•	•	•	•	•	•
USB	•		•	•	•	•	•	•
OTHER STANDARD FEATURES								
RTC	•		•	•	•	•	•	•
Alarm buzzer	•		•	•	•	•	•	•
Incorporated temperature sensor				•				
Programme memory	1 MB		1 MB	1 MB	1 MB	1 MB	1 MB	1 MB

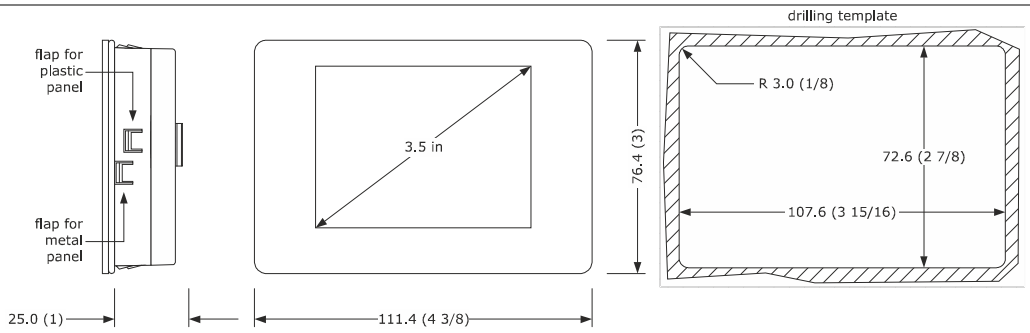
3 MEASUREMENTS AND INSTALLATION

3.1 Measurements and installation of models in the EPcolor S series

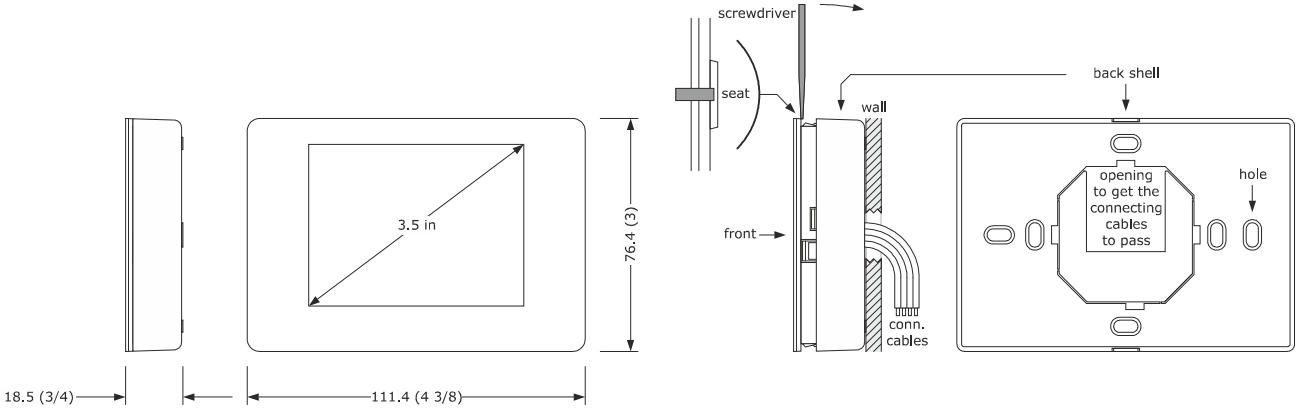
Measurements are expressed in mm (inches).

Models to be fitted to a panel (with elastic holding flaps).

	N.B. The metal panel must be between 0.8 and 1.5 mm (1/32 and 1/16 in) thick, while the plastic panel must be between 0.8 and 3.4 mm (1/32 and 1/8 in).



Models to be mounted on the wall (with fixing screws and plugs) or in regular built-in boxes (with fixing screws).



1. Disengage the back cover from the front and the housing using a screwdriver.

2.1 Wall installation:

- 2.1.1 Rest the back cover on the wall in a place suitable for allowing the connection cables to feed through the opening.
- 2.1.2 Use the slots in the back cover as a guide for drilling the 4 holes with a diameter suitable for the plug.
  We recommend using 5 mm (3/16 inch) diameter plugs.
- 2.1.3 Insert the plugs into the holes drilled in the wall.
- 2.1.4 Fit the back cover to the wall with 4 screws.
  We recommend using flat countersunk screws.

2.2 Installation in a built-in box: fit the back cover to the box with 4 screws.
We recommend using flat countersunk screws.

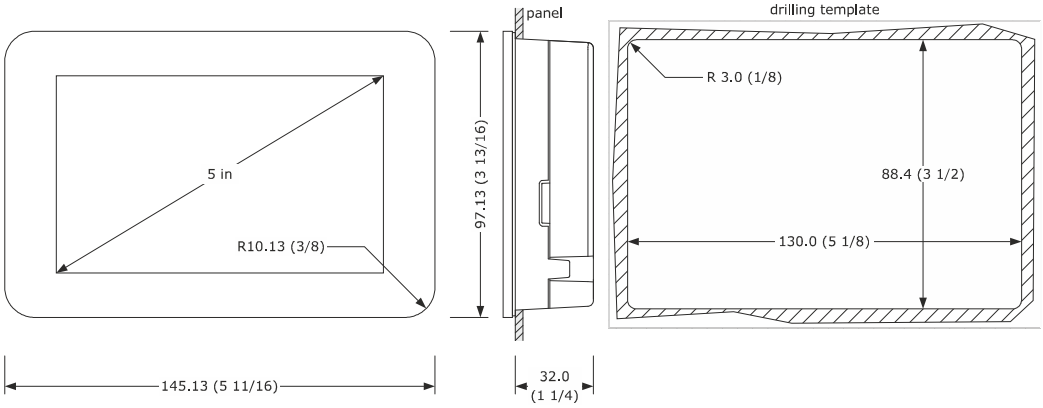
3. Make the electrical connection as shown in the section ELECTRICAL CONNECTION, without powering up the device.
4. Fit the front of the device to the back cover.

3.2 Measurements and installation of models in the EPcolor M series

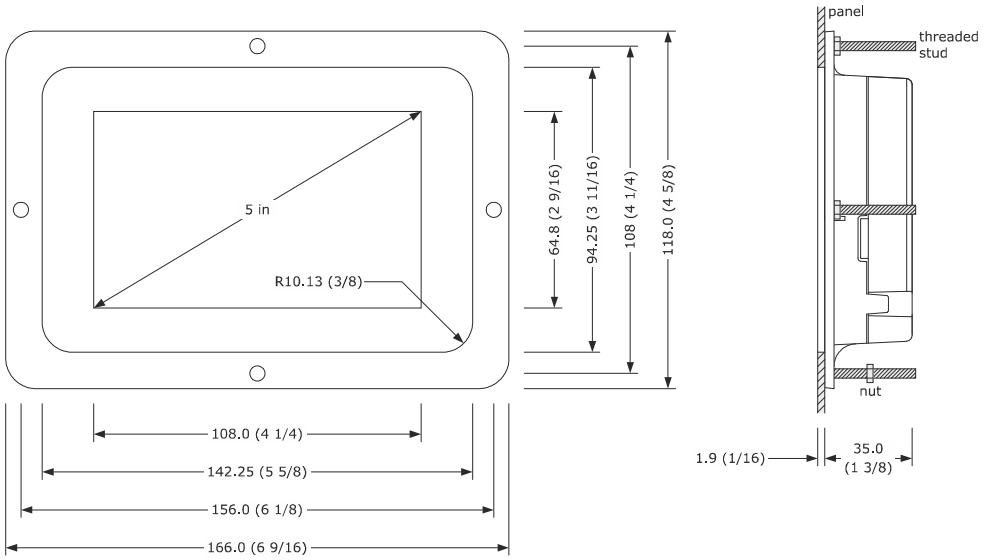
Measurements are expressed in mm (inches).

Models to be fitted to a panel (with elastic holding flaps).

	N.B. The metal panel must be between 0.8 and 1.5 mm (1/32 and 1/16 in) thick, while the plastic panel must be between 0.8 and 3.4 mm (1/32 and 1/8 in)



Models to be installed from behind (using threaded studs).

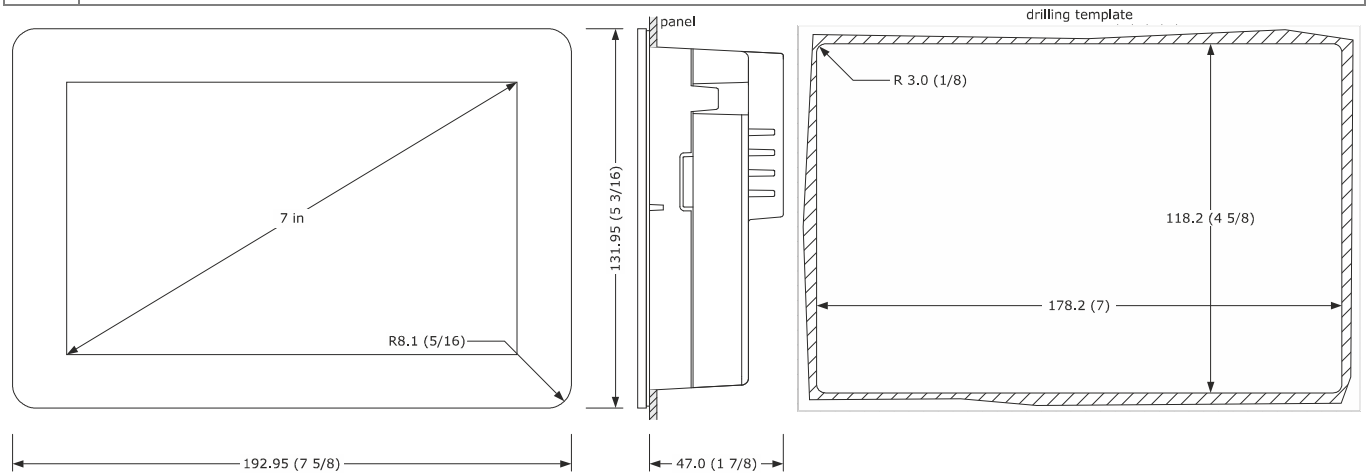


3.3 Measurements and installation of models in the EPcolor L series

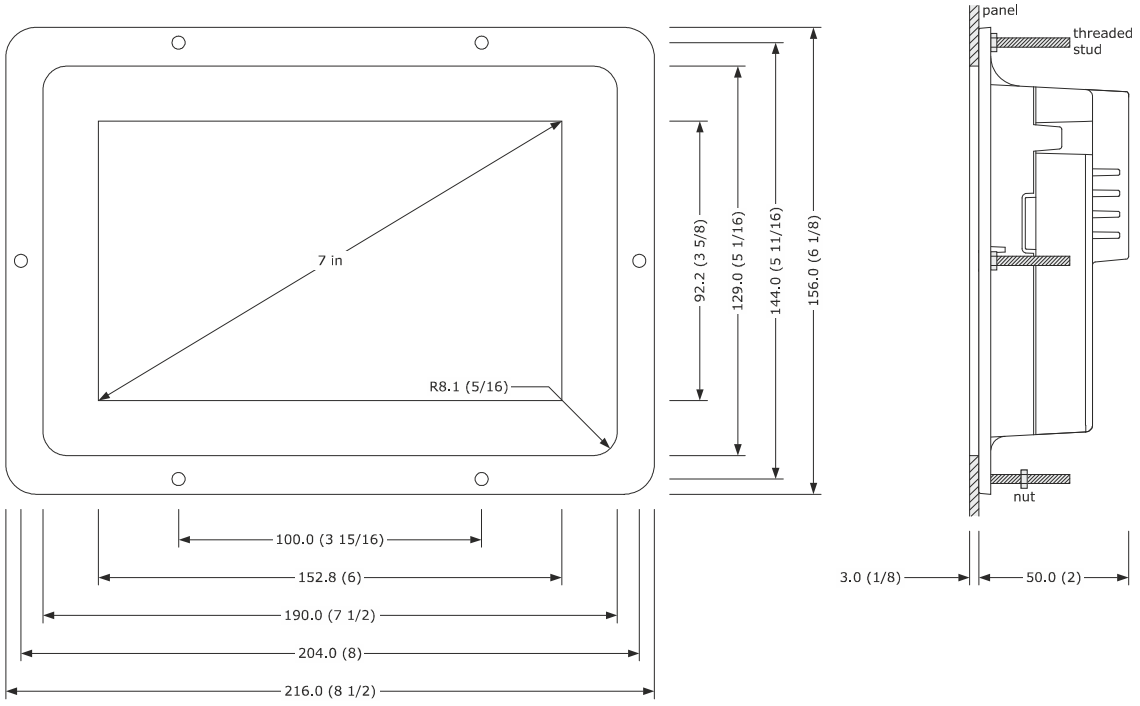
Measurements are expressed in mm (inches).

Models to be fitted to a panel (with elastic holding flaps).

	N.B. The metal panel must be between 0.8 and 1.5 mm (1/32 and 1/16 in) thick, while the plastic panel must be between 0.8 and 3.4 mm (1/32 and 1/8 in)



Models to be installed from behind (using threaded studs).



INSTALLATION PRECAUTIONS

- 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

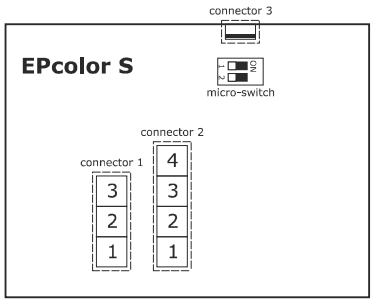
4 ELECTRICAL CONNECTION

	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 and, if necessary, connect to a RS-485 MODBUS network and/or a CAN network by using a twisted pair - for the CAN port of EPcolor S and EPcolor M use a ferrite (for example *Essentra RKCF-08-A5*) to which the conductors of the shielded cable must be wound with two coils

4.1 Electrical connection for models in the EPcolor S series

4.1.1 Connectors

Models to be fitted to a panel.



Connector 1

CONN.	DESCRIPTION
1	RS-485 MODBUS port GND reference
2	signal - RS-485 MODBUS port
3	signal + RS-485 MODBUS port

Connector 2

CONN.	DESCRIPTION
1	signal - CAN port
2	signal + CAN port
3	device power supply (24 VAC/ 12... 30 VDC); if the device is powered by direct current connect the negative terminal
4	device power supply (24 VAC/ 12... 30 VDC); if the device is powered by direct current connect the positive terminal

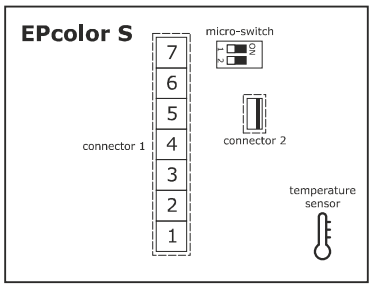
Connector 3

USB port to programme the device.

Micro-switch

- to fit the termination resistor of the RS-485 MODBUS port
- to fit the termination resistor of the CAN port.

Models to be mounted on the wall.



Connector 1

CONN.	DESCRIPTION
1	signal - CAN port
2	signal + CAN port
3	device power supply (24 VAC/ 12... 30 VDC); if the device is powered by direct current connect the negative terminal
4	device power supply (24 VAC/ 12... 30 VDC); if the device is powered by direct current connect the positive terminal
5	RS-485 MODBUS port GND reference
6	signal - RS-485 MODBUS port
7	signal + RS-485 MODBUS port

Connector 2

USB port to programme the device.

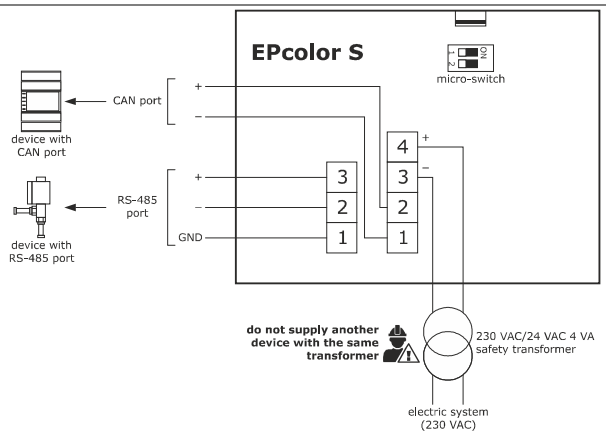
Micro-switch

- to fit the termination resistor of the RS-485 MODBUS port
- to fit the termination resistor of the CAN port.

4.1.2 Example of electrical connection

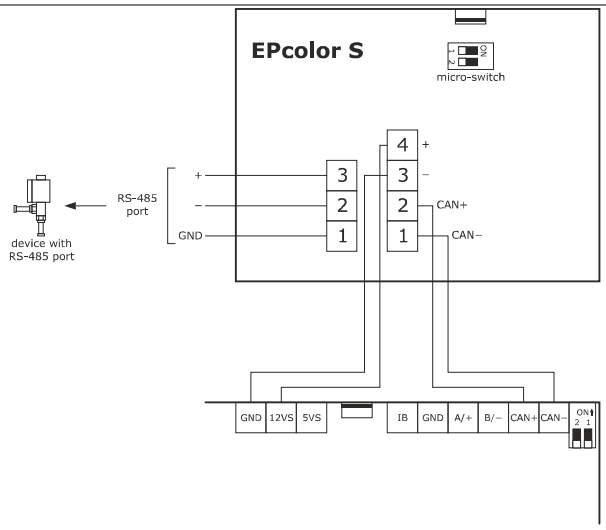
Models to be fitted to a panel with an independent power source.

	N.B. Do not power another device with the same transformer



Models for panel installation powered by another device.

	N.B. Make sure the current generated by the controller is enough to power the device



4.1.3 Fitting the termination resistor of the RS-485 port and the CAN port

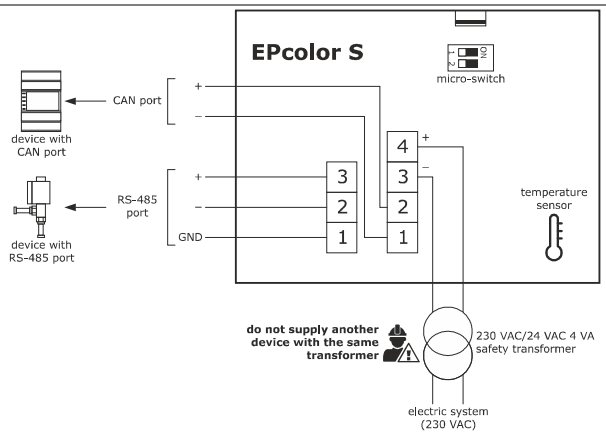
To fit the termination resistor of the RS-485 MODBUS port, place micro-switch 1 in the ON position.

To fit the termination resistor of the CAN port, place micro-switch 2 in the ON position.

The micro-switch is on the back of the device (first remove the back cover from the front).

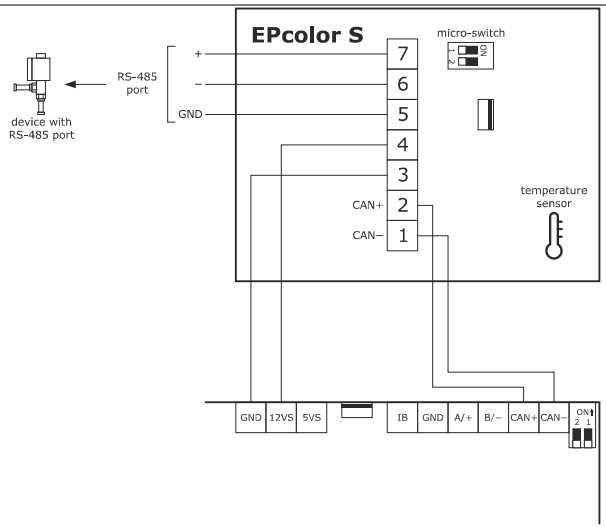
Models to be fitted to a wall with an independent power source.

	N.B. Do not power another device with the same transformer



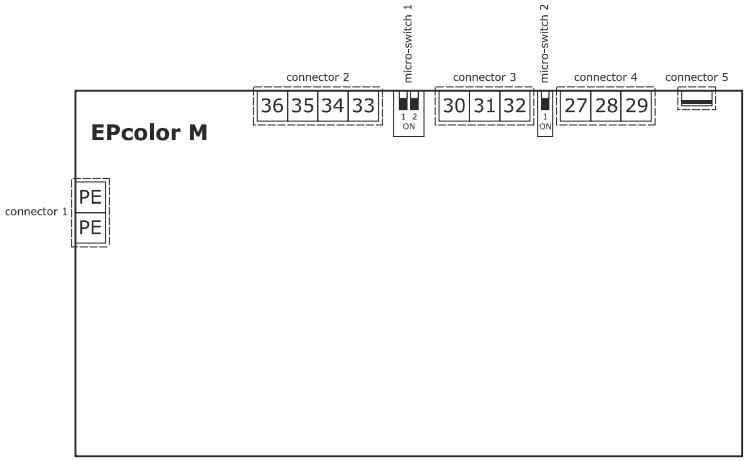
Models for wall installation powered by another device.

	N.B. Make sure the current generated by the controller is enough to power the device



4.2 Electrical connection for models in the EPcolor M series

4.2.1 Connectors



Connector 1

CONN.	DESCRIPTION
PE	appliance earthing
PE	appliance earthing

Connector 2

CONN.	DESCRIPTION
36	device power supply and RS-485 MODBUS master port GND reference
35	signal - RS-485 MODBUS master port
34	signal + RS-485 MODBUS master port
33	device power supply (24 VAC/12... 30 VDC)

Connector 3

CONN.	DESCRIPTION
30	RS-485 MODBUS slave port GND reference
31	signal - RS-485 MODBUS slave port
32	signal + RS-485 MODBUS slave port

Connector 4

CONN.	DESCRIPTION
27	CAN port GND reference
28	signal - CAN port
29	signal + CAN port

Connector 5

USB port to programme the device.

Micro-switch 1

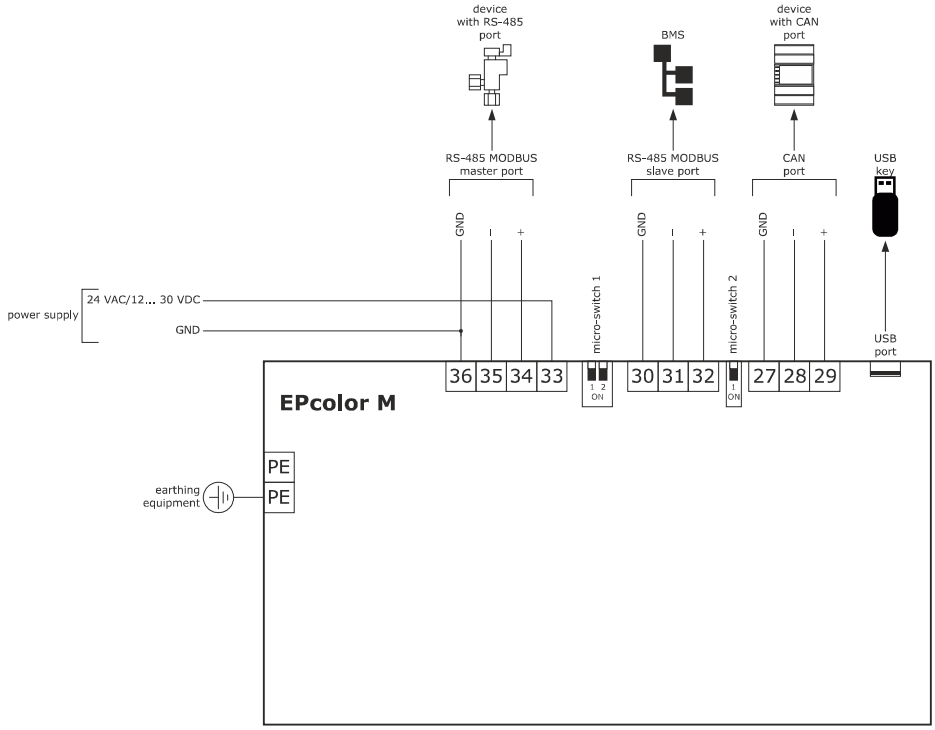
- to fit the termination resistor of the RS-485 MODBUS master port
- to fit the termination resistor of the RS-485 MODBUS slave port.

Micro-switch 2

To fit the termination resistor of the CAN port.

4.2.2 Example of electrical connection

	N.B. Do not power another device with the same transformer



4.2.3 Fitting the termination resistor of the RS-485 ports and the CAN port

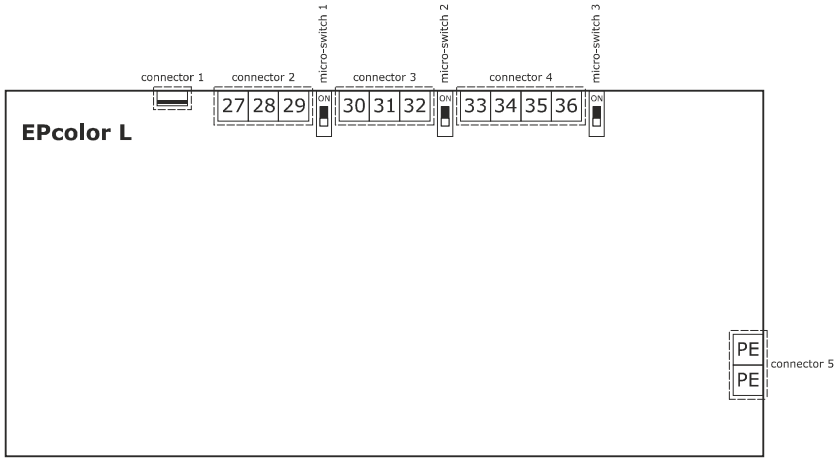
To fit the termination resistor of the RS-485 MODBUS master port, place dip 1 of micro-switch 1 in the ON position.

To fit the termination resistor of the RS-485 MODBUS slave port, place dip 2 of micro-switch 1 in the ON position.

To fit the termination resistor of the CAN port, place micro-switch 2 in the ON position.

4.3 Electrical connection for models in the EPcolor L series

4.3.1 Connectors



Connector 1

USB port to programme the device.

Connector 2

CONN.	DESCRIPTION
27	CAN port GND reference
28	signal - CAN port
29	signal + CAN port

Connector 3

CONN.	DESCRIPTION
30	RS-485 MODBUS slave port GND reference
31	signal - RS-485 MODBUS slave port
32	signal + RS-485 MODBUS slave port

Connector 4

CONN.	DESCRIPTION
33	device power supply and RS-485 MODBUS master port GND reference
34	signal - RS-485 MODBUS master port
35	signal + RS-485 MODBUS master port
36	device power supply (24 VAC/12... 30 VDC)

Connector 5

CONN.	DESCRIPTION
PE	appliance earthing
PE	appliance earthing

Micro-switch 1

To fit the termination resistor of the CAN port.

Micro-switch 2

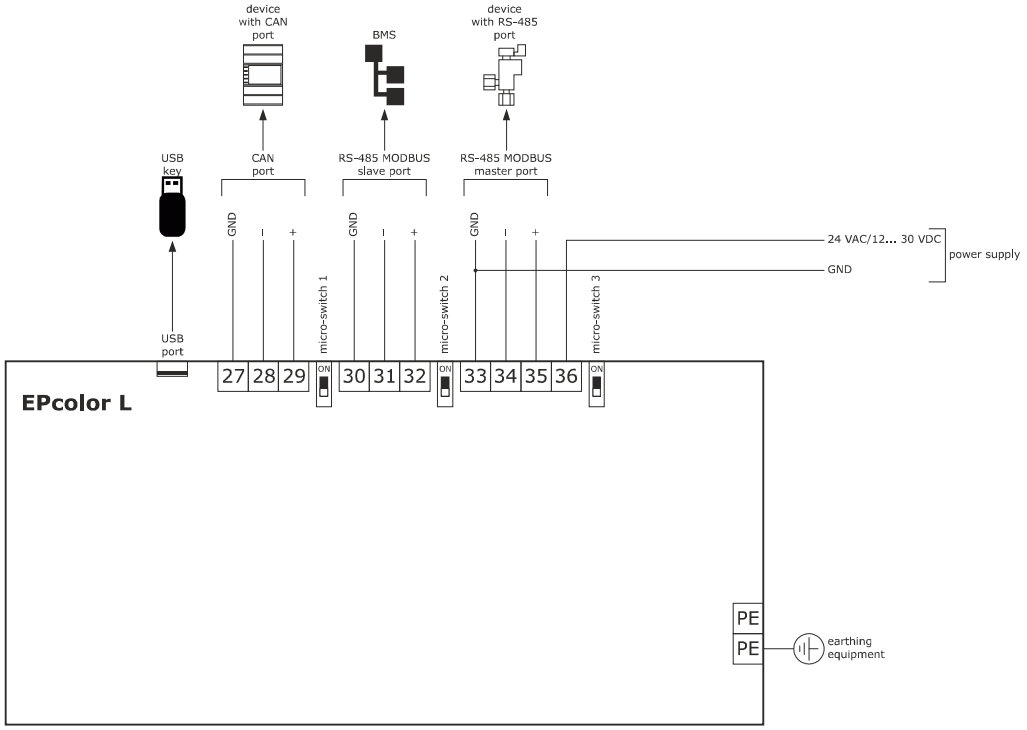
To fit the termination resistor of the RS-485 MODBUS slave port.

Micro-switch 3

To fit the termination resistor of the RS-485 MODBUS master port.

4.3.2 Example of electrical connection

	N.B. Do not power another device with the same transformer



4.3.3 Fitting the termination resistor of the RS-485 ports and the CAN port

To fit the termination resistor of the CAN port, place micro-switch 1 in the ON position.

To fit the termination resistor of the RS-485 MODBUS port, place micro-switch 2 in the ON position.

To fit the termination resistor of the RS-485 MODBUS port, place micro-switch 3 in the ON position.

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 further information, contact the EVCO sales network

5 TECHNICAL SPECIFICATIONS

5.1 Technical specifications of models in the EPcolor S series

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		
111.4 x 76.4 x 25.0 mm (4 3/8 x 3 x 1 in) for panel installation models	111.4 x 76.4 x 18.5 mm (4 3/8 x 3 x 3/ 4 in) for wall installation models	
Mounting methods for the control device	According to the model, panel (with elastic holding flaps), wall (with fixing plugs and screws) or in regular built-in boxes (with fixing screws)	
Degree of protection provided by the casing	IP30 (IP65 in the event of panel installation)	
Connection method		
Plug-in screw terminal blocks for wires up to 1 mm² for panel installation models	Fixed screw terminal blocks for wires up to 1 mm² for wall mounted models	
Maximum permitted length for connection cables		
Power supply: 10 m (32.8 ft)	RS-485 MODBUS port: 1,000 m (3,280 ft)	
CAN port: - 1,000 m (3,280 ft), baud rate: 20,000 baud - 500 m (1,640 ft), baud rate: 50,000 baud - 250 m (820 ft), baud rate: 125,000 baud - 50 m (164 ft), baud rate: 500,000 baud Over 10 m (32.8 ft) use a screened cable	USB port: 1 m (3.28 ft)	
Operating temperature	From -10 to 55 °C (from 14 to 131 °F)	
Storage temperature	From -20 to 70 °C (from -4 to 158 °F)	
Operating humidity	Relative humidity without condensate from 5 to 95%	
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	24 VAC (±15%), 50/60 Hz (±3 Hz), max. 4 VA not insulated or 12... 30 VDC, max. 2 W not insulated (independent power source or power generated by a controller)	
Earthing methods for the control device	None	
Rated impulse-withstand voltage	330 V	
Over-voltage category	I	
Software class and structure	A	
Clock	Built-in secondary lithium battery	
Clock drift	≤ 55 s/month at 25 °C (77 °F)	
Clock battery autonomy in the absence of a power supply	> 6 months at 25 °C (77 °F)	
Clock battery charging time	24 h (the battery is charged by the power supply of the device)	
Displays	3.5-inch capacitive TFT touch-screen graphic display, 320x240 px, 256 colours	
Alarm buzzer	Built-in	
Incorporated sensors	Temperature (according to the model)	
Incorporated sensors working range	From 0 to 40 °C (from 32 to 104 °F)	
Programme memory	1 MB	

For communications ports	
1 RS-485 MODBUS master/slave port	1 CAN port
1 USB port	

5.2 Technical specifications of models in the EPcolor M series

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	
Mounting methods for the control device	According to the model, to be installed from behind using threaded studs or to a panel with elastic holding flaps	
Degree of protection provided by the casing	IP40 (IP65 in the event of panel installation)	
Connection method	Plug-in screw terminal blocks for wires up to 1 mm²	
Maximum permitted length for connection cables		
Power supply: 10 m (32.8 ft)	RS-485 MODBUS ports: 1,000 m (3,280 ft)	
CAN port: - 1,000 m (3,280 ft), baud rate: 20,000 baud - 500 m (1,640 ft), baud rate: 50,000 baud - 250 m (820 ft), baud rate: 125,000 baud - 50 m (164 ft), baud rate: 500,000 baud Over 10 m (32.8 ft) use a screened cable	USB port: 1 m (3.28 ft)	
Operating temperature	From 0 to 55 °C (from 32 to 131 °F)	
Storage temperature	From -20 to 70 °C (from -4 to 158 °F)	
Operating humidity	Relative humidity without condensate from 5 to 95%	
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	24 VAC (±15%), 50/60 Hz (±3 Hz), max. 6.5 VA not insulated or 12... 30 VDC, max. 3 W not insulated	
Earthing methods for the control device	None	
Rated impulse-withstand voltage	330 V	
Over-voltage category	I	
Software class and structure	A	
Clock	Built-in secondary lithium battery	
Clock drift	≤ 55 s/month at 25 °C (77 °F)	
Clock battery autonomy in the absence of a power supply	> 6 months at 25 °C (77 °F)	
Clock battery charging time	24 h (the battery is charged by the power supply of the device)	
Displays	5-inch capacitive TFT touch-screen graphic display, 800x480 px, 65K colours	
Alarm buzzer	Built-in	
Programme memory	1 MB	
Communications ports		
1 RS-485 MODBUS master port	1 RS-485 MODBUS slave port	
1 CAN port	1 USB port	

5.3 Technical specifications of models in the EPcolor L series

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		
216.0 x 156.0 x 50.0 mm (8 1/2 x 6 1/8 x 2 in) for models to be installed from behind	192.95 x 131.95 x 47.0 mm (7 5/8 x 5 3/16 x 1 7/8 in) for panel installation models	
Mounting methods for the control device	According to the model, to be installed from behind using threaded studs or to a panel with elastic holding flaps	
Degree of protection provided by the casing	IP40 (IP65 in the event of panel installation)	
Connection method	Plug-in screw terminal blocks for wires up to 1 mm²	
Maximum permitted length for connection cables		
Power supply: 10 m (32.8 ft)	RS-485 MODBUS ports: 1,000 m (3,280 ft)	
CAN port: - 1,000 m (3,280 ft), baud rate: 20,000 baud - 500 m (1,640 ft), baud rate: 50,000 baud - 250 m (820 ft), baud rate: 125,000 baud - 50 m (164 ft), baud rate: 500,000 baud Over 10 m (32.8 ft) use a screened cable	USB port: 1 m (3.28 ft)	
Operating temperature	From 0 to 55 °C (from 32 to 131 °F)	
Storage temperature	From -20 to 70 °C (from -4 to 158 °F)	
Operating humidity	Relative humidity without condensate from 5 to 95%	
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	24 VAC (±15%), 50/60 Hz (±3 Hz), max. 10 VA not insulated or 12... 30 VDC, max. 4.6 W not insulated	
Earthing methods for the control device	None	
Rated impulse-withstand voltage	330 V	
Over-voltage category	I	
Software class and structure	A	
Clock	Built-in secondary lithium battery	
Clock drift	≤ 55 s/month at 25 °C (77 °F)	
Clock battery autonomy in the absence of a power supply	> 6 months at 25 °C (77 °F)	
Clock battery charging time	24 h (the battery is charged by the power supply of the device)	
Displays	7-inch capacitive TFT touch-screen graphic display, 800x480 px, 65K colours	
Alarm buzzer	Built-in	
Programme memory	1 MB	
Communications ports		
1 RS-485 MODBUS master port	1 RS-485 MODBUS slave port	
1 CAN port	1 USB port	

EPcolor
Programmable remote user interfaces (with Gui-PRO graphic tool)
PT - 14/21
Code 144PCOLORE204

EVCO S.p.A.
Via Feltre 81, 32036 Sedico (BL) ITALY
phone +39 0437 8422 **fax** +39 0437 83648
email info@evco.it **web** www.evco.it