

c-pro 3 giga IoT

Programmable controllers (up to 43 I/O)

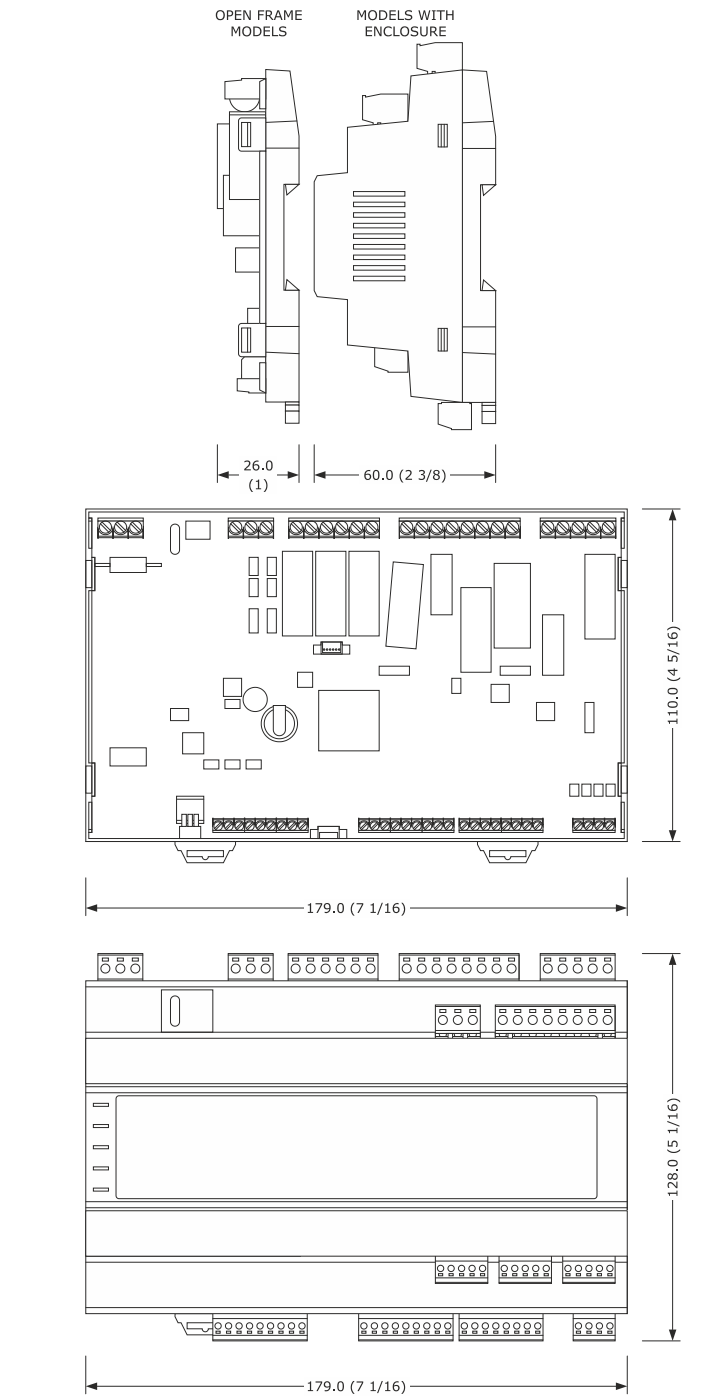


- EN ENGLISH
- blind open frame models or with enclosure
 - power supply 115... 230 VAC
 - clock
 - 10 analogue inputs, 16 in the plus controllers (can be configured also for dry contact digital input)
 - 3 dry contact digital inputs
 - 2 high voltage digital inputs
 - 4 analogue outputs, 8 in the plus controllers
 - 9 electro-mechanical relay digital outputs, 14 in the plus controllers, 11 in the U-EEV and B-EEV controllers
 - TTL MODBUS port
 - INTRABUS port (RS-485 MODBUS master/slave by connecting the serial interface EVIF22ISX)
 - RS-485 MODBUS slave port
 - RS-485 port (MODBUS master/slave, BACnet MS/TP)
 - CAN port
 - USB port
 - models with 2 integrated unipolar or bipolar stepper electronic expansion valves driver
 - Ethernet port (MODBUS TCP, WebServer, BACnet IP)
 - **the device must be programmed with version 3.24 of UNI-PRO 3 or higher**

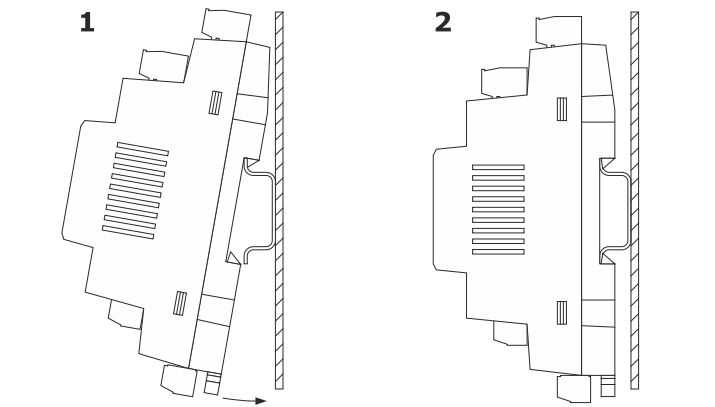
Kind of controller	Purchasing codes	Version	Power supply	I/O	Kind of integrated electronic expansion valves driver	Comm. ports
standard	EPG9OIX	blind open frame	115... 230 VAC	28	none	TTL, INTRABUS, 2 RS-485, CAN, USB and Ethernet
standard	EPG9BIX	blind with enclosure		28	none	
plus	EPG9BIP	blind with enclosure		43	none	
plus	EPG9BIQ	blind with enclosure		43	none	
U-EEV	EPG9BIU	blind with enclosure		36	2 unipolar stepper type	
B-EEV	EPG9BIW	blind with enclosure		36	2 bipolar stepper type	

1 MEASUREMENTS AND INSTALLATION

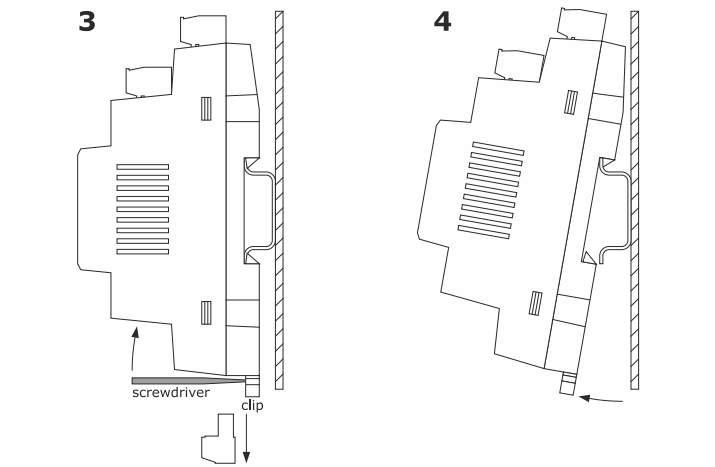
Measurements in mm (inches). To be fitted on a DIN rail, in a control panel.



To install the device operate as shown in pictures 1 and 2.



To remove the device, first remove any screw-in removable terminal blocks mounted in the lower part, then operate as shown in pictures 3 and 4.



To install the device again press down the clip before.

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.

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 and, if necessary, connect to a RS-485 MODBUS network and/or a CAN network by using a twisted pair.

2.1 Connectors

2.1.1 Connectors available both in standard and plus controllers

Description of connectors.

N.	DESCRIPTION
V~	device power supply (115... 230 VAC)
V~	device power supply (115... 230 VAC)

N.	DESCRIPTION
DIHV1	high voltage digital input; DI1
DIHV2	high voltage digital input; DI2
COM	high voltage digital inputs common contact

N.	DESCRIPTION
NO1	K1 digital output normally open contact (3 A res. @ 250 VAC)
CO1	K1 digital output common contact
NO2	K2 digital output normally open contact (3 A res. @ 250 VAC)
CO2	K2 digital output common contact
NO3	K3 digital output normally open contact (3 A res. @ 250 VAC)
CO3	K3 digital output common contact

N.	DESCRIPTION
NO4	K4 digital output normally open contact (3 A res. @ 250 VAC)
CO4	K4 digital output common contact
NO5	K5 digital output normally open contact (2 A res. @ 250 VAC)
CO5	K5 digital output common contact
NO6	K6 digital output normally open contact (3 A res. @ 250 VAC)
CO6	K6 digital output common contact
NO7	K7 digital output normally open contact (8 A res. @ 250 VAC)
CO7	K7 digital output common contact

N.	DESCRIPTION
NO8	K8 digital output normally open contact (2 A res. @ 250 VAC)
CO8	K8 digital output common contact
NC9	K9 digital output normally closed contact
NO9	K9 digital output normally open contact (3 A res. @ 250 VAC)
CO9	K9 digital output common contact

N.	DESCRIPTION
CAN+	signal + CAN port
CAN-	signal - CAN port
A1/+	signal + RS-485 MODBUS slave port
B1/-	signal - RS-485 MODBUS slave port
A2/+	signal + RS-485 port (MODBUS master/slave, BACnet MS/TP)
B2/-	signal - RS-485 port (MODBUS master/slave, BACnet MS/TP)
IB	data INTRABUS port
GND	reference (GND)
12V	power supply remote user interfaces (13 VDC)

N.	DESCRIPTION
GND	reference (GND)
DI3	digital input 3 (dry contact and for pulse trains up to 2 KHz); DI3
DI4	digital input 4 (dry contact and for pulse trains up to 2 KHz); DI4
DI5	digital input 5 (dry contact and for pulse trains up to 2 KHz); DI5
AI1	analogue input 1 (for PTC, NTC or Pt 1000 probes); AI1 can be configured also for dry contact digital input
AI2	analogue input 2 (for PTC, NTC or Pt 1000 probes); AI2 can be configured also for dry contact digital input
AI3	analogue input 3 (for PTC, NTC or Pt 1000 probes); AI3 can be configured also for dry contact digital input
AI4	analogue input 4 (for PTC, NTC or Pt 1000 probes); AI4 can be configured also for dry contact digital input

AI5	analogue input 5 (for PTC, NTC or Pt 1000 probes); AI5 can be configured also for dry contact digital input
-----	---

N.	DESCRIPTION
GND	reference (GND)
AI6	analogue input 6 (for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers); AI6 can be configured also for dry contact digital input
AI7	analogue input 7 (for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers); AI7 can be configured also for dry contact digital input
AI8	analogue input 8 (for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers); AI8 can be configured also for dry contact digital input
AI9	analogue input 9 (for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers); AI9 can be configured also for dry contact digital input
AI10	analogue input 10 (for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers); AI10 can be configured also for dry contact digital input
+5V	power supply 0-5 V ratiometric transducers (5 VDC)
VS	power supply transducers (13 VDC)

N.	DESCRIPTION
AO1	analogue output 1 (for 0-10 V or PWM)
AO2	analogue output 2 (for 0-10 V or PWM)
AO3	analogue output 3 (for 0-10 V or PWM)
AO4	analogue output 4 (for 0-10 V or PWM)

2.1.2 Connectors only available in the plus controllers

Description of connectors.

N.	DESCRIPTION
NO10	K10 digital output normally open contact (8 A res. @ 250 VAC)
CO10	K10 digital output common contact
NC10	K10 digital output normally closed contact
NO11	K11 digital output normally open contact (2 A res. @ 250 VAC)
CO11	K11 digital output common contact
NO12	K12 digital output normally open contact (2 A res. @ 250 VAC)
CO12	K12 digital output common contact
NO13	K13 digital output normally open contact (2 A res. @ 250 VAC)
CO13	K13 digital output common contact
NO14	K14 digital output normally open contact (2 A res. @ 250 VAC)
CO14	K14 digital output common contact

N.	DESCRIPTION (for model EPG9BIP)
GND	reference (GND)
AO5	analogue output 5 (for 0-10 V or PWM)
AO6	analogue output 6 (for 0-10 V or PWM)
AO7	analogue output 7 (for 0-10 V or PWM)
AO8	analogue output 8 (for 0-10 V or PWM)

N.	DESCRIPTION (for model EPG9BIQ)
GND	reference (GND)
DI6	digital input 6 (dry contact); DI6
DI7	digital input 7 (dry contact); DI7
DI8	digital input 8 (dry contact); DI8
DI9	digital input 9 (dry contact); DI9

2.1.3 Connectors only available in the U-EEV and B-EEV controllers

Description of connectors.

N.	DESCRIPTION
NO10	K10 digital output normally open contact (5 A res. @ 250 VAC)
CO10	K10 digital output common contact
NO11	K11 digital output normally open contact (5 A res. @ 250 VAC)
CO11	K11 digital output common contact

N.	DESCRIPTION
REF	power supply engine unipolar or bipolar stepper electronic expansion valve 1 (12 VDC, 260 mA max. winding in the U-EEV controllers, 12 VDC, 200 mA max. winding in the B-EEV controllers)
OUT4	output 4 unipolar or bipolar stepper electronic expansion valve 1 engine control
OUT3	output 4 unipolar or bipolar stepper electronic expansion valve 1 engine control
OUT2	output 4 unipolar or bipolar stepper electronic expansion valve 1 engine control
OUT1	output 4 unipolar or bipolar stepper electronic expansion valve 1 engine control

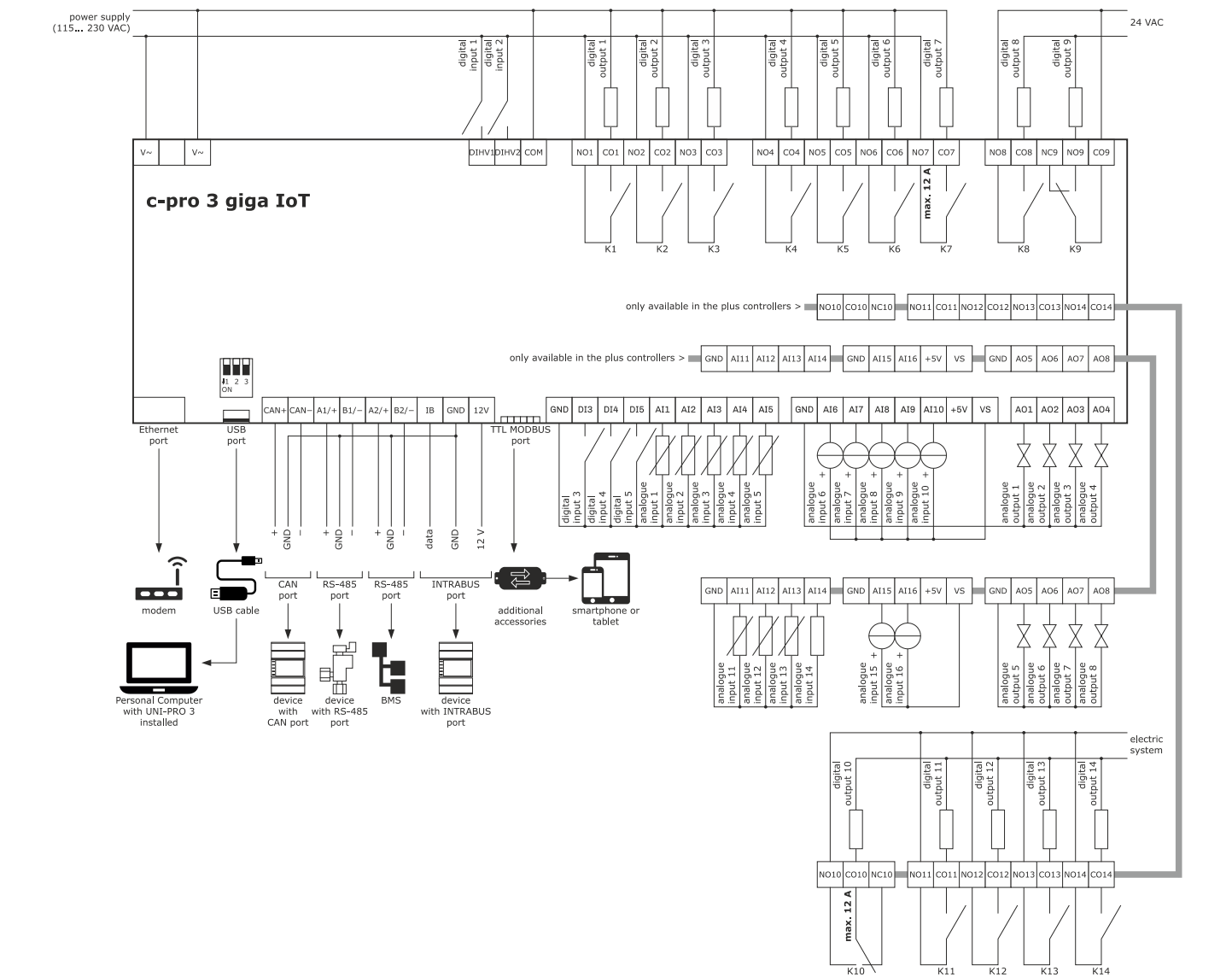
N.	DESCRIPTION
REF	power supply engine unipolar or bipolar stepper electronic expansion valve 2 (12 VDC, 260 mA max. winding in the U-EEV controllers, 12 VDC, 200 mA max. winding in the B-EEV controllers)
OUT4	output 4 unipolar or bipolar stepper electronic expansion valve 2 engine control
OUT3	output 4 unipolar or bipolar stepper electronic expansion valve 2 engine control
OUT2	output 4 unipolar or bipolar stepper electronic expansion valve 2 engine control
OUT1	output 4 unipolar or bipolar stepper electronic expansion valve 2 engine control

2.1.4 Connectors available both in the plus controllers and in the U-EEV and B-EEV controllers

Description of connectors.

N.	DESCRIPTION
GND	reference (GND)
AI11	analogue input 11 (for PTC, NTC or Pt 1000 probes); AI11 can be configured also for dry contact digital input
AI12	analogue input 12 (for PTC, NTC or Pt 1000 probes); AI12 can be configured also for dry contact digital input
AI13	analogue input 13 (for PTC, NTC or Pt 1000 probes); AI13 can be configured also for dry contact digital input
AI14	analogue input 14 (for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers); AI14 can be configured also for dry contact digital input

N.	DESCRIPTION
GND	reference (GND)
AI15	analogue input 15 (for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers); AI15 can be configured also for dry contact digital input
AI16	analogue input 16 (for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers); AI16 can be configured also for dry contact digital input
+5V	power supply 0-5 V ratiometric transducers (5 VDC)
VS	power supply transducers (13 VDC)

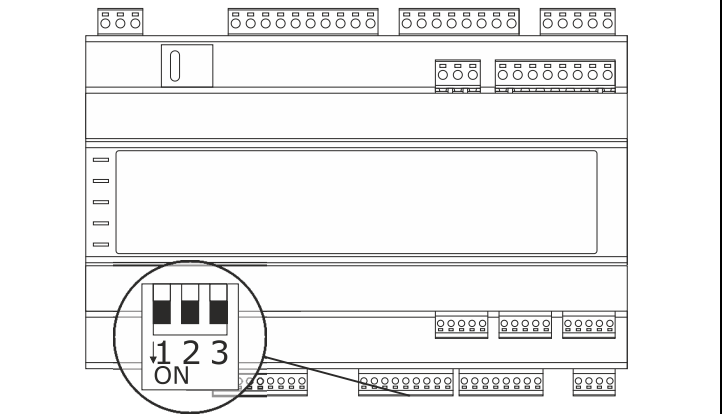


2.3 Fitting the termination resistor of RS-485 networks and CAN network

To fit the CAN network termination resistor, place micro-switch **CANLT** in position ON.

To fit the termination resistor of the RS-485 network connected to the RS-485 MODBUS slave port, place micro-switch **MBS1LT** in position ON.

To fit the termination resistor of the RS-485 network connected to the RS-485 port (MODBUS master/slave, BACnet MS/TP), place micro-switch **MBS2LT** in position ON.



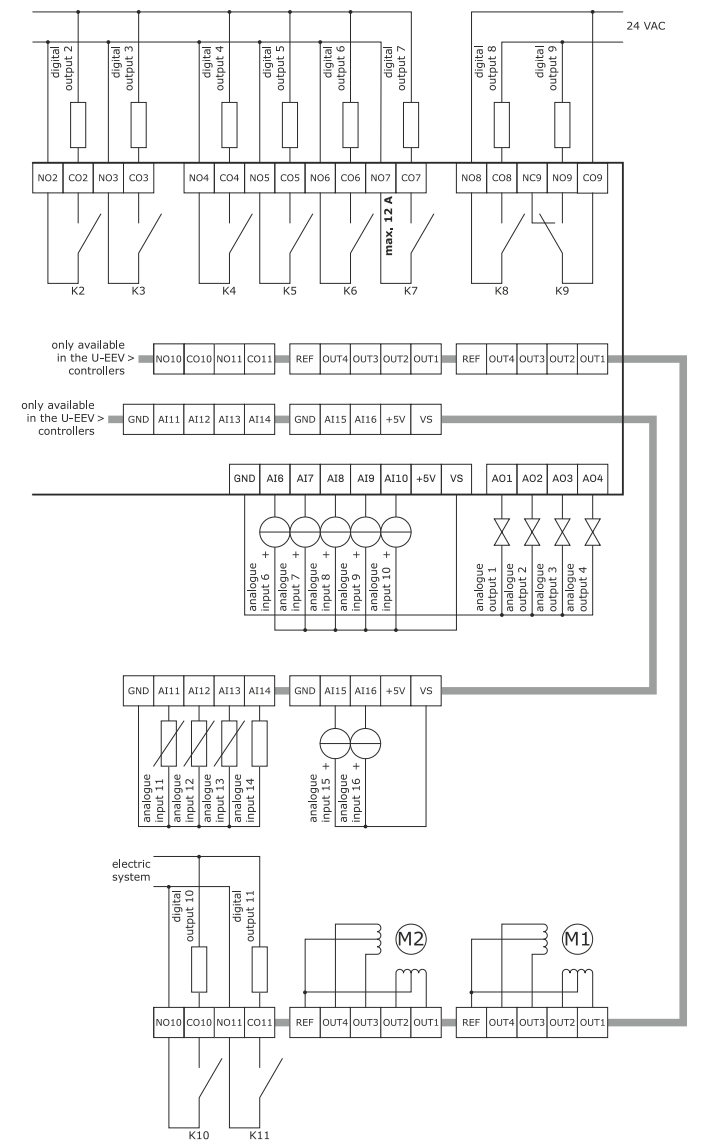
PRECAUTIONS FOR ELECTRICAL CONNECTION

- 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 TECHNICAL SPECIFICATIONS		
Purpose of the control device:		Function controller.
Construction of the control device:		Built-in electronic device.
Container:		Grey, self-extinguishing.
Category of heat and fire resistance:		D.
Measurements:		
10 DIN modules: 179.0 x 110.0 x 26.0 mm (7 1/16 x 4 5/16 x 1 in) the open frame models		10 DIN modules: 179.0 x 128.0 x 60.0 mm (7 1/16 x 5 1/16 x 2 3/8 in) the models with enclosure.
Mounting methods for the control device:		To be fitted on a DIN rail, in a control panel.
Degree of protection provided by the covering:		
IP00 the open frame models		IP40 the front of the models with enclosure.
Connection method:		
screw terminal blocks for wires up to 1.5 mm² and 2.5 mm² the open frame models		removable screw terminal blocks for wires up to 1.5 mm² and 2.5 mm² the models with enclosure
removable clamp terminal blocks for wires up to 1.5 mm² the plus controllers		Pico-Blade connector
Micro-USB connector		RJ45 F telephone connector.
Maximum permitted length for connection cables:		
Power supply: 10 m (32.8 ft)		Analogue inputs: 10 m (32.8 ft)
Auxiliary power supply and 0-5 V ratiometric transducer power supply: 10 m (32.8 ft)		Digital inputs: 10 m (32.8 ft)
0-10 V analogue outputs: 10 m (32.8 ft)		PWM analogue outputs: 1 m (3.28 ft)
Digital outputs: 100 m (328 ft)		INTRABUS port: 10 m (32.8 ft)
Unipolar or bipolar stepper electronic expansion valves driver: 3 m (9.84 ft)		
RS-485 MODBUS port: 1,000 m (3,280 ft)		USB port: 1 m (3.28 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.	
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/UE.

Power supply:		115... 230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 16 VA, 20 VA in the plus controllers, 27 VA in the U-EEV and B-EEV controllers.
Earthing methods for the control device:		None.
Rated impulse-withstand voltage:		2.5 KV.
Over-voltage category:		II.
Software class and structure:		A.
Clock:		With secondary lithium battery.
Clock drift:		≤ 30s/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:		24h (the battery is charged by the power supply of the device).
Analogue inputs:		5 for PTC, NTC or Pt 1000 probes, 8 in the plus controllers and in the U-EEV and B-EEV controllers (can be configured also for dry contact digital input)
		5 for PTC, NTC or Pt 1000 probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers, 8 in the plus controllers and in the U-EEV and B-EEV controllers (can be configured also for dry contact digital input).
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:	B3435 (10 KΩ @ 25 °C, 77 °F)
	Measurement field:	from -50 to 120 °C (from -58 to 248 °F)
	Resolution:	0.1 °C (1 °F).
Pt 1000 probes:	Sensor type:	1 KΩ @ 0 °C, 32 °F
	Measurement field:	from -100 to 400 °C (from -148 to 752 °F)
	Resolution:	1 °C (1 °F).
0-5 V transducers:	Input resistance:	≥ 10 KΩ
	Resolution:	0.01 V.
0-10 V transducers:	Input resistance:	≥ 10 KΩ
	Resolution:	0.01 V.
0/4-20 mA transducers:	Input resistance:	≤ 200 Ω
	Resolution:	0.01 mA.
Power supply remote user interfaces:		13 VDC, +20 % -10%, 150 mA max.
Power supply transducers:		13 VDC, +20 % -10%, 100 mA max. (+40 mA max. in the plus controllers, 60 mA in the U-EEV and B-EEV controllers).
Power supply 0-5 V ratiometric transducers:		5 VDC, ±15 %, 20 mA max. (+40 mA max. in the plus controllers).
Digital inputs:		3 dry contact and for pulse trains up to 2 KHz 2 high voltage.
Dry contact:	Contact type:	3.3 VDC, 1 mA
	Power supply:	
High voltage contac:	Power supply:	115... 230 VAC.
Unipolar stepper electronic expansion valves driver:		according to the model, 2 (12 VDC, 260 mA max. winding).
Bipolar stepper electronic expansion valves driver:		according to the model, 2 (12 VDC, 200 mA max. winding).
Analogue outputs:		4 for 0-10 V or PWM signal, 8 in the plus controllers
0-10 V signal:	Minimum applicable impedance:	1 KΩ
	Resolution:	0.01 V.
	Power supply:	0... 10 VDC, 10 mA max.
	Frequency:	10 Hz... 2 KHz
PWM signal:	Duty:	0... 100%.
	Resolution:	1% up to 500 Hz, 5% up to 2 KHz.
Digital outputs:		2 with SPST electro-mechanical relay, 2 A res. @ 250 VAC, 6 in the plus controllers
		5 with SPST electro-mechanical relay, 3 A res. @ 250 VAC
		1 with SPDT electro-mechanical relay, 3 A res. @ 250 VAC, 2 in the plus controllers
		2 with SPST electro-mechanical relay, 5 A res. @ 250 VAC, only available in the U-EEV and B-EEV controllers
		1 with SPST electro-mechanical relay, 8 A res. @ 250 VAC.

Example of electrical connection for U-EEV controllers.



The device guarantees:

- reinforced insulation between SELV circuits and relay outputs
- reinforced insulation between "groups" of relay outputs
- basic insulation between relay outputs belonging to the same group
- reinforced insulation between live parts and SELV circuits
- reinforced insulation between "group 1" of relay outputs (K1... K3) and high voltage digital inputs (DIHV1 and DIHV2)
- basic insulation between live parts of opposite polarity (line-neutral).

Type 1 or Type 2 Actions:	Type 1.
Additional features of Type 1 or Type 2 actions:	C.
Communications ports:	
1 TTL MODBUS port	1 INTRABUS port (RS-485 MODBUS master/slave by connecting the serial interface EVIF22ISX)
1 RS-485 MODBUS slave port	1 RS-485 port (MODBUS master/slave, BACnet MS/TP)
1 CAN port	1 USB port
Ethernet port (MODBUS TCP, WebServer, BACnet IP).	

CPU: 200 MHz.
RAM: 512 kB.
Program memory: 2 MB.
External FLASH: 32 MB.
Memory for Web Server: 8 MB.
Datalog memory: 8 MB.

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

This document and the solutions contained therein are the intellectual property of EVCO and thus protected by the Italian Intellectual Property Rights Code (CPI). EVCO imposes an absolute ban on the full or partial reproduction and disclosure of the content other than with the express approval of EVCO. The customer (manufacturer, installer or end-user) assumes all responsibility for the configuration of the device.

EVCO accepts no liability for any possible errors in this document and reserves the right to make any changes, at any time without prejudice to the essential functional and safety features of the equipment.