

c-pro 3 nano

Programmable controllers (up to 25 I/O)



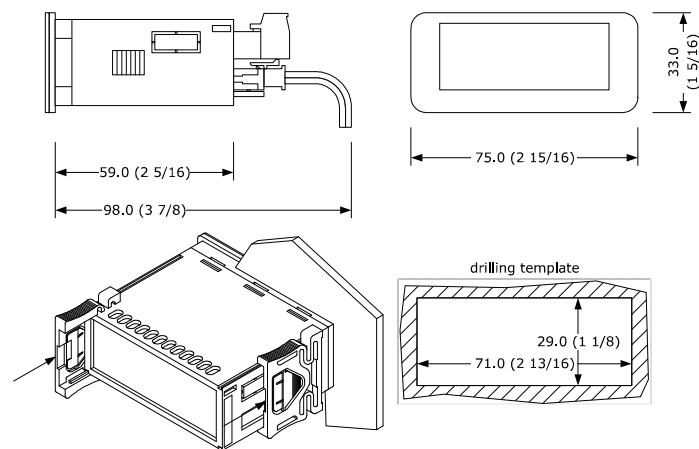
PLEASE READ CAREFULLY
and save this document
CONSIDER THE ENVIRONMENT

EN ENGLISH

- 12 VAC or 24 VAC/DC power supply (according to the model) not insulated
- models with clock
- up to 9 analogue inputs (can be configured also for dry contact digital input)
- up to 5 dry contact digital inputs
- up to 4 analogue outputs
- up to 7 electro-mechanical relay digital outputs
- alarm buzzer
- INTRABUS port (RS-485 MODBUS master/slave by connecting the serial interface EVIF22ISX)
- USB port
- models with RS-485 MODBUS master/slave port (can be configured with the UNI-PRO 3 development environment)
- models with CAN port.

1 MEASUREMENTS AND INSTALLATION

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



INSTALLATION PRECAUTIONS

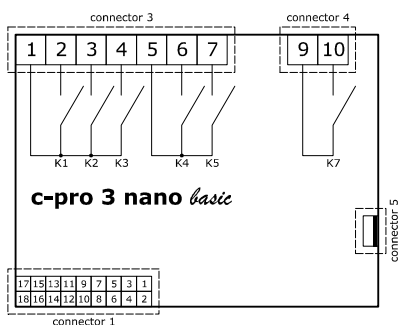
- The thickness of the panel must be between 0.8 and 2.0 mm (1/32 and 1/16 in)
- Ensure that the working conditions are within the limits stated in the **TECHNICAL SPECIFICATIONS** section
- Do not install the device close to heat sources, equipment with a strong magnetic field, in places subject to 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

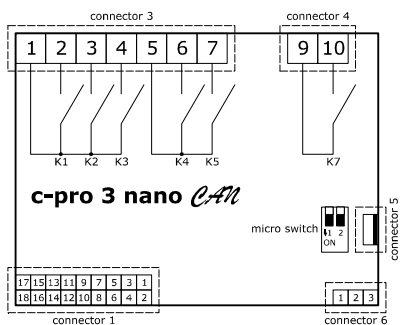
- N.B.**
- Use cables of an adequate section for the current running through them
 - To reduce any electromagnetic interference connect the power cables as far away as possible from the signal cables and, if necessary, connect to a RS-485 MODBUS network and/or a CAN network by using a twisted pair.

2.1 Connectors

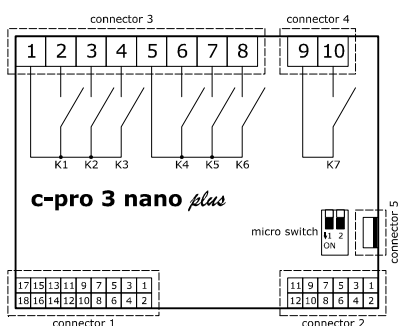
c-pro 3 nano basic model connectors.



c-pro 3 nano CAN model connectors.



c-pro 3 nano plus model connectors.



Description of connectors.

Connector 1

No.	DESCRIPTION
1	analogue input 6 (for PTC, NTC or Pt 1000 probes; can be configured also for dry contact digital input)
2	analogue input 1 (for NTC probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers; can be configured also for dry contact digital input)
3	analogue input 7 (for PTC, NTC or Pt 1000 probes; can be configured also for dry contact digital input)

4	analogue input 2 (for NTC probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers; can be configured also for dry contact digital input)
5	digital input 1 (dry contact and for pulse trains up to 2 KHz)
6	analogue input 3 (for PTC, NTC or Pt 1000 probes; can be configured also for dry contact digital input)
7	digital input 2 (dry contact and for pulse trains up to 2 KHz)
8	analogue input 4 (for PTC, NTC or Pt 1000 probes; can be configured also for dry contact digital input)
9	digital input 3 (dry contact)
10	analogue input 5 (for PTC, NTC or Pt 1000 probes; can be configured also for dry contact digital input)
11	analogue output 1 (for 0-10 V, PWM or phase cutting signal)
12	reference (GND)
13	analogue output 2 (for 0-10 V, PWM or phase cutting signal)
14	INTRABUS port data
15	auxiliary power supply (12 VDC)
16	reference (GND)
17	device power supply (12 VAC or 24 VAC/DC, according to the model). If the device is fed by DC power, it is not necessary to take account of the supply voltage polarity.
18	device power supply (12 VAC or 24 VAC/DC, according to the model). If the device is fed by DC power, it is not necessary to take account of the supply voltage polarity.

Connector 2

No.	DESCRIPTION
1	signal + RS-485 MODBUS master/slave port
2	signal + CAN port
3	signal - RS-485 MODBUS master/slave port
4	signal - CAN port
5	ratiometric transducer power supply 0-5 V (5 VDC)
6	reference (GND)
7	analogue output 3 (for 0-10 V, 0-20 mA or 4-20 mA signal)
8	analogue output 4 (for 0-10 V, 0-20 mA or 4-20 mA signal)
9	digital input 4 (dry contact)
10	analogue input 8 (for NTC probes, 0-5 V ratiometric transducers, 0-10 V, 0-20 mA or 4-20 mA transducers; can be configured also for dry contact digital input)
11	digital input 5 (dry contact)
12	analogue input 9 (for NTC probes, 0-5 V ratiometric transducers, 0-10 V, 0-20 mA or 4-20 mA transducers; can be configured also for dry contact digital input)

Connector 3

No.	DESCRIPTION
1	K1, K2 and K3 digital output common contact
2	K1 digital output normally open contact (3 A res. @ 250 VAC)
3	K2 digital output normally open contact (3 A res. @ 250 VAC)
4	K3 digital output normally open contact (3 A res. @ 250 VAC)
5	K4, K5 and K6 digital output common contact
6	K4 digital output normally open contact (3 A res. @ 250 VAC)
7	K5 digital output normally open contact (3 A res. @ 250 VAC)
8	K6 digital output normally open contact (3 A res. @ 250 VAC)

Connector 4

No.	DESCRIPTION
1	K7 digital output common contact
2	K7 digital output normally open contact (3 A res. @ 250 VAC)

Connector 5

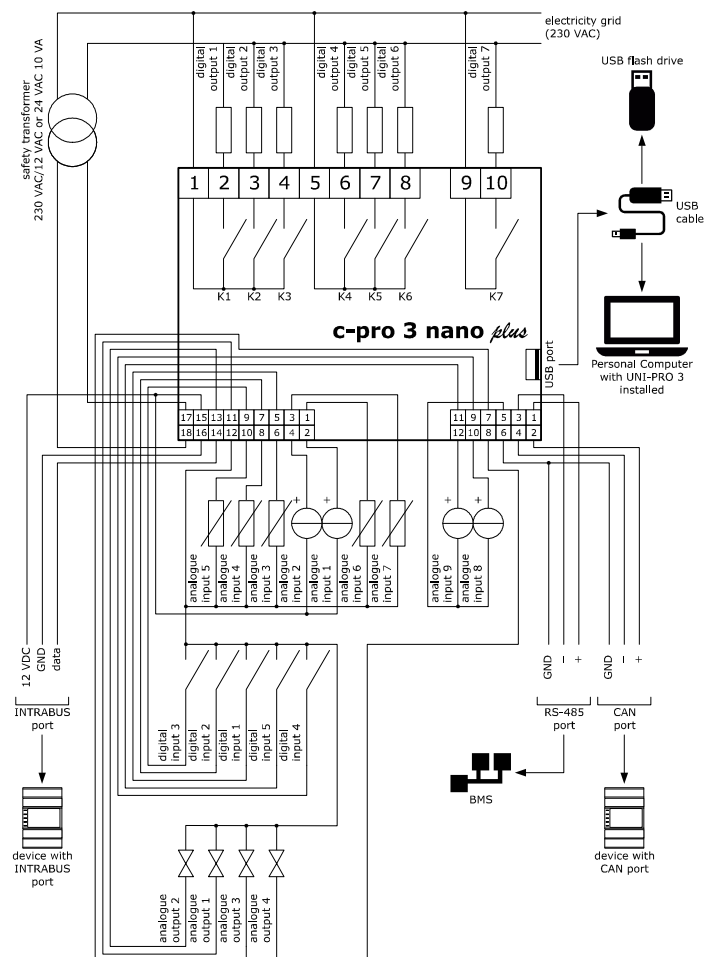
USB port.

Connector 6

No.	DESCRIPTION
1	reference (GND)
2	signal - CAN port
3	signal + CAN port

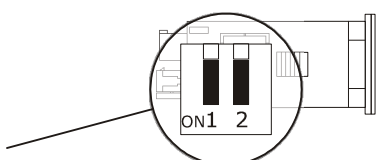
2.2 Electrical connection

Example of electrical connection for c-pro 3 nano plus models.



2.3 Fitting the termination resistor of RS-485 MODBUS network, CAN network and polarisation of RS-485 MODBUS network

To fit the RS-485 MODBUS network termination resistor, place micro-switch 1 in position ON.
To fit the CAN network termination resistor, place micro-switch 2 in position ON.

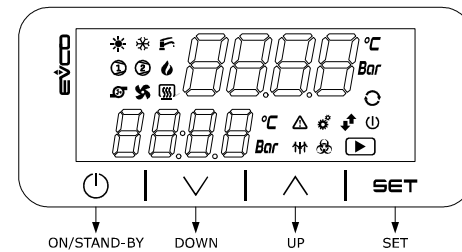


The RS-485 MODBUS network can be polarised using the UNI-PRO 3 development environment.

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 USER INTERFACE



For more information see the hardware manual.

4 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).
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:	
Micro-Fit connectors	Plug-in screw terminal blocks for wires up to 2.5 mm ²
	Female Micro USB 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, 0-20 mA and 4-20 mA analogue outputs: 10 m (32.8 ft)	PWM analogue outputs: 1 m (3.28 ft)
Phase cutting analogue outputs: 1 m (3.28 ft)	digital outputs: 100 m (328 ft)
INTRABUS port: 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
USB port: 1 m (3.28 ft).	
To cable the device, we recommend using the CJAV40, CJAV41 or CJAV42 connection kit (to be ordered separately). To program it, use USB 081050023 cable (to be ordered separately).	
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.
Power supply (according to the model):	12 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 7 VA not insulated
	24 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 7 VA not insulated
	24 VDC (+30% -15%), max. 5 W not insulated.
Protect the power supply with a 2 A-T 250 VAC fuse.	
Earthing methods for the control device:	None.
Rated impulse-withstand voltage:	4 KV.
Over-voltage category:	III.
Software class and structure:	A.
Clock:	According to the model (with secondary lithium battery).
Clock drift:	≤ 60s/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 (can be configured also for dry contact digital input) Up to 4 for NTC probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers (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: 0.1 °C (1 °F).
0-5 V transducers:	Input resistance: ≥ 10 KΩ Resolution: 0.01 V.
0-10 V transducers:	Input resistance: ≤ 200 Ω Resolution: 0.01 mA.
4-20 mA transducers:	Input resistance: ≤ 200 Ω Resolution: 0.01 mA.
Auxiliary power supply:	
If the device has a power supply of 12 VAC, 12 VDC +10% -15%, 120 mA max.	If the device has a power supply of 24 VAC/DC, 12 VDC, 120 mA max.
Ratiometric transducer power supply:	5 VDC, +10% -15%, 20 mA max.
Digital inputs:	2 dry contact and for pulse trains up to 2 KHz Up to 3, dry contact.
Dry contact:	Contact type: 3.3 VDC, 1 mA Power supply: None.
Analogue outputs:	2 for 0-10 V, PWM or phase cutting signal According to the model, 2 for 0-10 V, 0-20 mA or 4-20 mA signal.
0-10 V signal:	Minimum applicable impedance: 1 KΩ Resolution: 0.01 V.
PWM signal:	Power supply: 0... 10 VDC (+16% -25%), 10 mA max. Frequency: 10 Hz... 2 KHz Duty: 0... 100%.
0-20 mA and 4-20 mA signal:	Input resistance: 40... 300 Ω Resolution: 0.05 mA.

