

c-pro 3 mega+ Programmable controllers

ENGLISH GETTING STARTED

1.1 Important

Read these instructions carefully before installing and using the controller and follow all additional information for installation and electrical connection; keep these instructions close to the controller for future consultations.

The controller must be disposed according to the local legislation about the collection for electrical and electronic equipment.

2 INTRODUCTION

2.1 Introduction

c-pro 3 mega+ is a family of programmable controllers.

The family is available in the version:

- with 122 x 32 pixel single colour LCD graphic display (black with rearlighting through white LED) and with a 6 buttons (with preset functions) keyboard made of silicone rubber integrated in the controller, hereinafter also called built-in versions
- blind (usable for example with an user interface such as **Vgraph** or **Vtouch**), hereinafter also called blind versions.

The controllers have got:

- real time clock
- alarm buzzer (not available in the blind versions)
- 8 analog inputs of which 3 configurable via configuration parameter for NTC / 0-20 mA / 4-20 mA and 5 configurable via configuration parameter for PTC / NTC / Pt 1000 probes / 0-20 mA / 4-20 mA / 0-5 V ratiometric / 0-10 V transducers
- 12 optoisolated digital inputs at 24 VAC / DC
- 5 analog outputs of which 1 non optoisolated PWM output, 2 non optoisolated outputs configurable via configuration parameter for PWM / 0-10 V signal and 2 non optoisolated outputs configurable via configuration parameter for 0-20 mA / 4-20 mA / 0-10 V signal

- 10 digital outputs (electromechanical relays) of which five 5 res. A @ 250 VAC SPST outputs, four 8 res. A @ 250 VAC SPST outputs and one 8 res. A @ 250 VAC SPDT output
- 5 non optoisolated communication ports of which 1 CAN port with CANbus communication protocol, 1 CAN or MP-Bus port (according to the model), 1 RS-485 port with Modbus slave communication protocol, 1 RS-485 port with Modbus master / slave communication protocol (configurable via application software) and 1 programming and debugging port.

Through the I/O expansion **c-pro 3 EXP hecto** or **c-pro 3 EXP hecto+** it is possible to increase the number of inputs and outputs.

Through the development environment UNI-PRO 3 (to order separately) it is possible to realize the application software and through the programming kit EVIF20TUXI (to order separately) it is possible to program the controller.

The devices look in case 10 DIN modules.

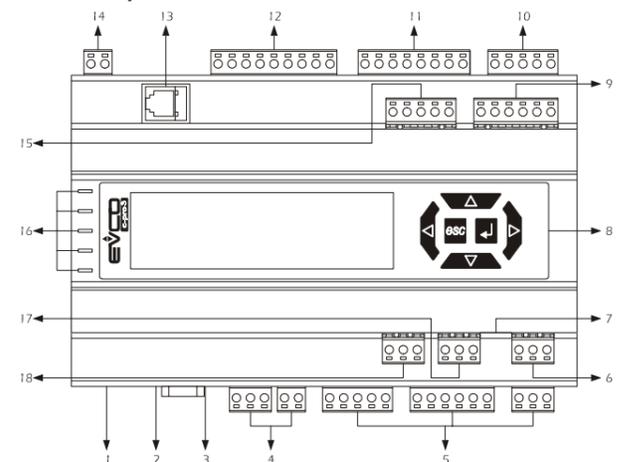
Installation is in electrical panel, on DIN rail.

Through the programming key EVKEY10 (to order separately) it is also possible to make the upload and the download of the configuration parameters.

For further information please consult the *Hardware manual of c-pro 3*.

3 DESCRIPTION

3.1 Description



The following table shows the meaning of the parts of the controller.

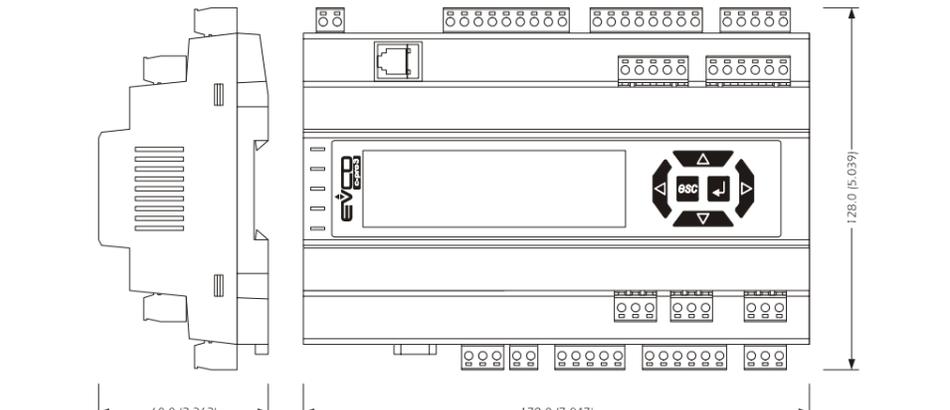
PART	MEANING
1	RS-485 port with Modbus slave communication protocol (hereinafter also called first RS-485 port)
2	RS-485 port with Modbus master / slave communication protocol (hereinafter also called second RS-485 port)
3	micro-switch to: - plug in the terminations of the RS-485 ports - polarize the network of the second RS-485 port - plug in the termination of the first CAN port
4	first CAN port
5	digital outputs 1... 8
6	second CAN port or MP-Bus port (according to the model)
7	micro-switch to plug in the termination of the second CAN port

8	display and keyboard (not available in the blind versions)
9	digital inputs 8... 12
10	analog outputs 1... 3
11	digital inputs 1... 7
12	analog inputs 1... 5
13	programming and debugging port
14	power supply
15	analog inputs 6... 8
16	signalling LEDs
17	analog outputs 4 and 5
18	digital outputs 9 and 10

4 SIZE AND INSTALLATION

4.1 Size

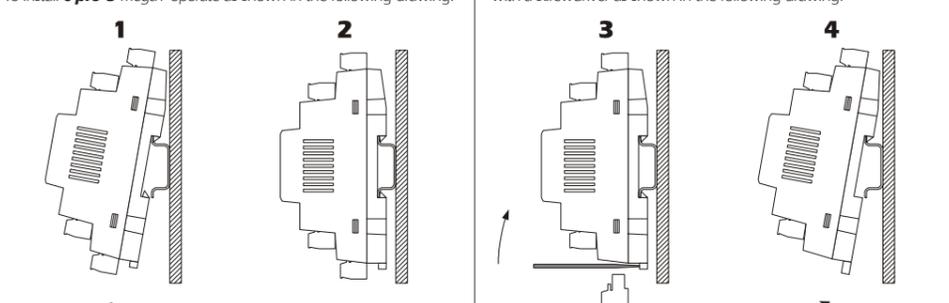
10 DIN modules; size in mm (in).



4.2 Installation

On DIN rail 35.0 x 7.5 mm (1.377 x 0.295 in) or 35.0 x 15.0 mm (1.377 x 0.590 in).

To install **c-pro 3 mega+** operate as shown in the following drawing.



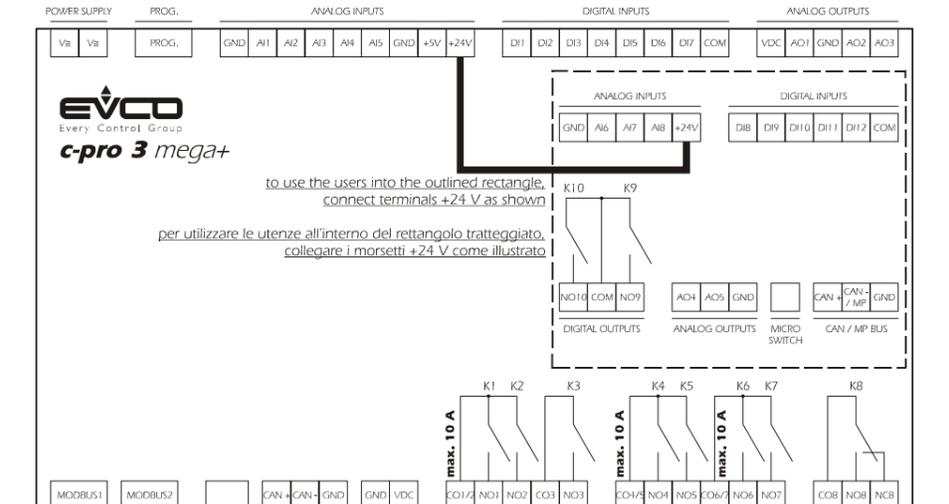
To install **c-pro 3 mega+** again press the DIN rail clips to the end first.

4.3 Additional information for installation

- working conditions (working temperature, humidity, etc.) must be between the limits indicated in the technical data
- do not install the controller close to heating sources (heaters, hot air ducts, etc.), devices provided with big magnetos (big speakers, etc.), locations subject to direct sunlight, rain, humidity, dust, mechanical vibrations or bumps
- according to the safety legislation, the protection against electrical parts must be ensured by a correct installation of the controller; the parts that ensure the protection must be installed so that you can not remove them if not by using a tool.

5 ELECTRICAL CONNECTION

5.1 Electrical connection



The following tables show the meaning of the connectors.

MODBUS1

RS-485 port with Modbus slave communication protocol.

MODBUS2

RS-485 port with Modbus master / slave communication protocol (configurable via application software).

MICRO-SWITCH

Micro-switch to:

- plug in the terminations of the RS-485 ports; also look at paragraph 5.2
- polarize the network of the second RS-485 port; also look at paragraph 5.3
- plug in the termination of the first CAN port; also look at paragraph 5.4.

CAN BUS

first CAN port.

TERM.	MEANING
CAN +	signal +
CAN -	signal -
GND	ground

power supply user interface

TERM.	MEANING
GND	ground
VDC	power supply user interface (24 VDC, 120 mA max.)

DIGITAL OUTPUTS

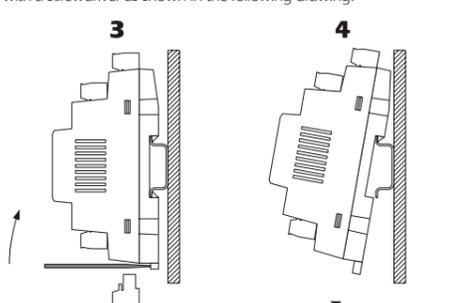
digital outputs 1, 2 and 3 (electromechanical relays).

TERM.	MEANING
CO1/2	common digital outputs 1 and 2
NO1	normally open contact digital output 1
NO2	normally open contact digital output 2
CO3	common digital output 3
NO3	normally open contact digital output 3

digital outputs 4, 5, 6 and 7 (electromechanical relays).

TERM.	MEANING
CO4/5	common digital outputs 4 and 5
NO4	normally open contact digital output 4
NO5	normally open contact digital output 5
CO6/7	common digital outputs 6 and 7

To remove **c-pro 3 mega+** remove possible extractable screw terminal blocks plugged at the bottom first, then operate on the DIN rail clips with a screwdriver as shown in the following drawing.



TERM.	MEANING
GND	ground
AI1	analog input 1
AI2	analog input 2
AI3	analog input 3
AI4	analog input 4
AI5	analog input 5
GND	ground
+5V	power supply 0-5 V ratiometric transducers (5 VDC, 40 mA max.)
+24V	power supply 0-20 mA / 4-20 mA / 0-10 V transducers (24 VDC, 120 mA max.)

PROG

Programming and debugging port.

POWER SUPPLY

TERM.	MEANING
V _≡	power supply controller (24 VAC / 20... 40 VDC)
V _≡	power supply controller (24 VAC / 20... 40 VDC)

If the controller is supplied in direct current, one will not have to respect the polarity of the power supply voltage.

DIGITAL OUTPUTS

digital outputs 9 and 10 (electromechanical relays).

TERM.	MEANING
NO10	normally open contact digital output 10
COM	common digital outputs 9 and 10
NO9	normally open contact digital output 9

ANALOG OUTPUTS

TERM.	MEANING
AO4	analog output 4 (configurable via configuration parameter for PWM / 0-10 V signal)
AO5	analog output 5 (configurable via configuration parameter for PWM / 0-10 V signal)

MICRO-SWITCH

Micro-switch to plug in the termination of the second CAN port; also look at paragraph 5.5.

CAN / MP BUS

for the models with second CAN port

TERM.	MEANING
CAN +	signal +
CAN - / MP	signal -
GND	ground

for the models with MP-Bus port

TERM.	MEANING
CAN - / MP	signal
GND	ground

DIGITAL INPUTS

TERM.	MEANING
DI8	digital input 8
DI9	digital input 9
DI10	digital input 10
DI11	digital input 11
DI12	digital input 12
COM	common digital inputs

The digital inputs are usable on condition that they are supplied at 24 VAC / DC.

ANALOG INPUTS

Each analog input is configurable via configuration parameter for NTC probes / 0-20 mA / 4-20 mA transducer.

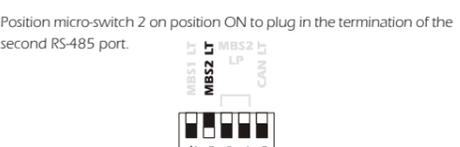
TERM.	MEANING
GND	ground
AI6	analog input 6
AI7	analog input 7
AI8	analog input 8
+24V	power supply 0-20 mA / 4-20 mA transducers (24 VDC, 120 mA max.)

5.2 Plugging in the terminations of the RS-485 ports

Position micro-switch 1 on position ON to plug in the termination of the first RS-485 port.

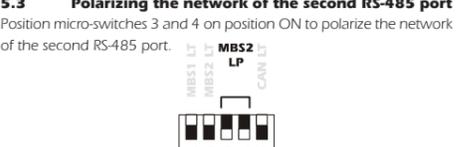


Position micro-switch 2 on position ON to plug in the termination of the second RS-485 port.



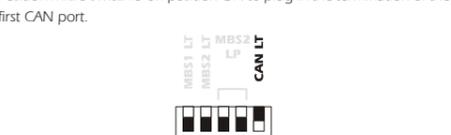
5.3 Polarizing the network of the second RS-485 port

Position micro-switches 3 and 4 on position ON to plug in the termination of the second RS-485 port.



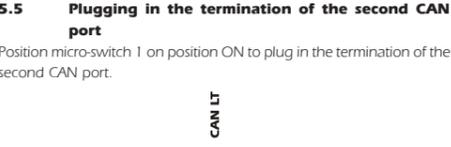
5.4 Plugging in the termination of the first CAN port

Position micro-switch 5 on position ON to plug in the termination of the first CAN port.



5.5 Plugging in the termination of the second CAN port

Position micro-switch 1 on position ON to plug in the termination of the second CAN port.



5.6 Additional information for electrical connection

- do not operate on the terminal blocks with electrical or pneumatic screwdrivers
- if the controller has been moved from a cold location to a warm one, the humidity could condense on the inside; wait about an hour before supplying it
- test the working power supply voltage, working electrical frequency and working electrical power of the controller; they must correspond with the local power supply
- connect the controller to the other devices using a twisted pair
- disconnect the local power supply before servicing the controller
- do not use the controller as safety device
- for repairs and information on the controller please contact EVCO sales network.

6 SIGNALS

6.1 LEDs at the front of the controller

LED	MEANING
ON	LED power supply if it is lit, the controller will be supplied if it is out, the controller will not be supplied
RUN	LED run if it is lit, the application software will be compiled and running in release modality if it flashes slowly, the application software will be compiled and running in debug modality if it flashes quickly, the application software will be compiled, running in debug modality and stopped in a breakpoint if it is out: - the controller will not be compatible with the application software - the controller will not be enabled to work with the special ABL (Application Block Libraries)

6.2 LEDs of the RS-485 ports

COLOUR MEANING

yellow	LED Modbus communication if it is lit, no Modbus communication will be running if it flashes quickly, the Modbus communication will have been set up and will be correct if it is out, the controller will not be configured to communicate via Modbus
red	LED Error if it is lit, an internal error will have arisen if it flashes quickly, a configuration error will have arisen if it is out, no error will be running

7 TECHNICAL DATA

7.1 Technical data

Purpose of control: programmable controller for applications in refrigeration, ventilation and air conditioning.

Construction of control: electronic control device to be incorporated.

