Vcolor

Programmable remote user interfaces, with
color touch-screen TFT graphic display

Hardware manual | ENGLISH

Code 144VCOE204

Important

Read this document thoroughly before installation and before use of the device and follow all recommendations; keep this document with the device for future consultation.

Only use the device in the way described in this document; do not use the same as a safety device.

Disposal

The device must be disposed of in compliance with local Standards regarding the collection of electric and electronic equipment.

Index

1   INTRODUCTION

1.1   Introduction

Vcolor is a range of programmable remote user interfaces.

Through the interfaces it is possible to manage the programmable controllers belonging to the *c-pro 3* range also at a distance, in particular the blind versions.

The user interface consists of a color touch-screen TFT graphic display, it can be developed through the UNI-PRO 3 development environment and according to the IEC standards it guarantees an IP40 protection rating (IP65 in case of panel mounting with gasket 0027000007, to order separately), for easy cleaning.

They can work both as browser of programmable controllers (browsers) and in commander mode, getting the controllers (slaves) to serve the commands coming from the interface.

The interfaces can easily be integrated both in residential and in commercial environments; at their front it is possible to apply the frontal plates CPVP EVCO (to order separately) or the plates belonging to the series "Living" and to the series "Light" BTicino.

Installation is by panel, built-in (in box like "506e" BTicino) or by wall (in wall mounting support CPVW00 EVCO, to order separately).

1.2   Summary table of the available models, the main features and the purchase codes

The following table shows the available models.

Available models:	EPV4CBR

The following table shows the main features of the devices.

User interface	*EPV4CBR*
118.0 x 111.0 mm (4.645 x 4.370 in; L x H)	•
320 x 240 pixel color touch-screen TFT graphic display	•
Connections:	*EPV4CBR*
screw removable terminal blocks	•
Power supply:	*EPV4CBR*
12... 24 VAC/12... 30 VDC	•
Communication ports:	*EPV4CBR*
RS-485 MODBUS	•
CAN CANBUS	•
USB	•
Other features:	*EPV4CBR*
real time clock	•
alarm and signalling buzzer	•

For further information look at chapter 10 "TECHNICAL DATA".

The following table shows the purchase codes.

Purchase codes:	EPV4CBR

For further information contact the EVCO sales network.

2   SIZE AND INSTALLATION

2.1   Size

The following drawing shows the size of the devices; size is in mm (in).
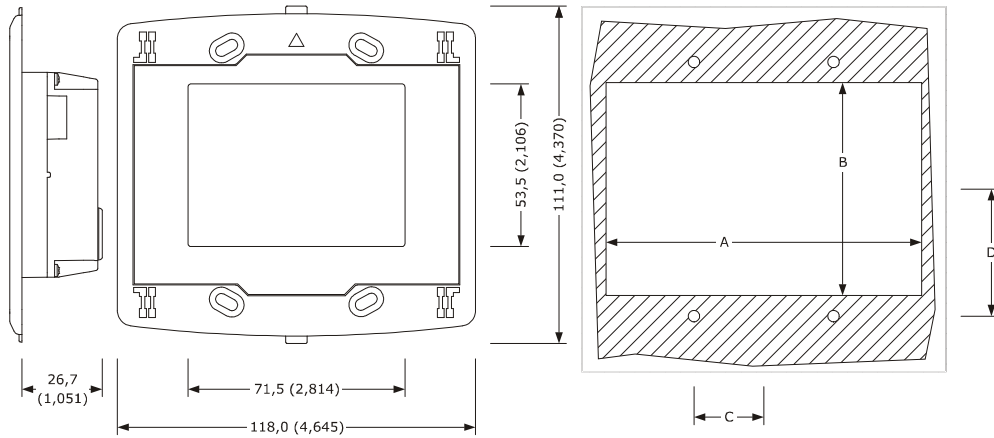
The following table shows the size of the panel cut-out in case of panel mounting; size is in mm (in).

Size	Minimum	Typical	Maximum
A	104.0 (4.094)	104.0 (4.094)	104.8 (4.125)
B	70.0 (2.755)	70.0 (2.755)	70.8 (2.787)
C	22.0 (0.866)	23.0 (0.905)	24.0 (0.944)
D	40.8 (1.606)	41.8 (1.645)	42.8 (1.685)

2.2   Panel mounting

The following drawing shows the installation of the devices.

According to the IEC standards, through the gasket 0027000007 (to order separately) it is possible to guarantee a protection rating IP65; through the frontal plates CPVP EVCO (to order separately) or the plates belonging to the series "Living" and to the series "Light" BTicino it is possible to integrate the devices both in residential and commercial environments.
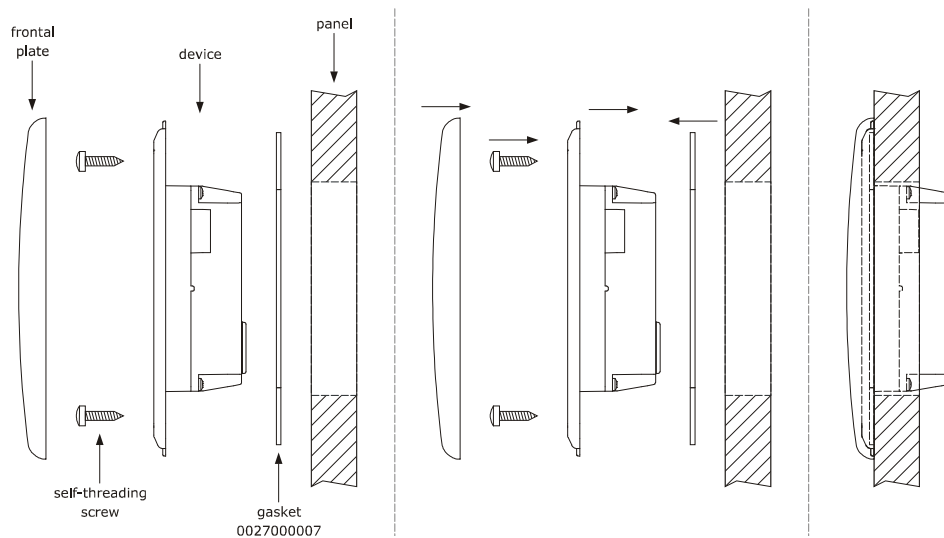
2.3   Built-in mounting

The following drawing shows the built-in mounting of the devices (in box like "506e" BTicino).

It is necessary to install the box vertically.

Through the frontal plates CPVP EVCO (to order separately) or the plates belonging to the series "Living" and to the series "Light" BTicino it is possible to integrate the devices both in residential and commercial environments.

2.4   Wall mounting

The following drawing shows the wall mounting of the devices (in wall mounting support CPVW00 EVCO, to order separately).

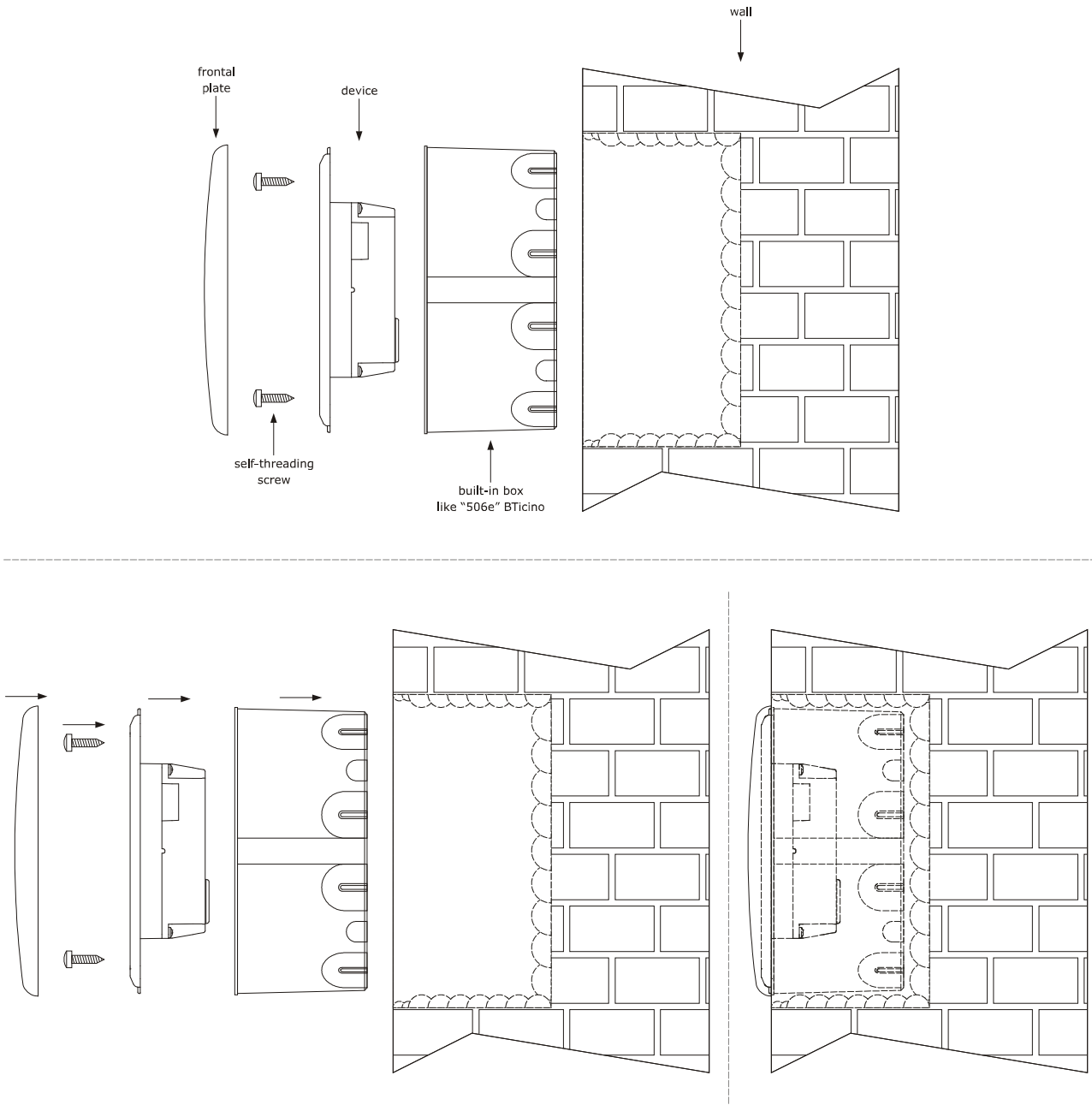According to the IEC standards, through the gasket 0027000007 (to order separately) it is possible to guarantee a protection rating IP65; through the frontal plates CPVP EVCO (to order separately) or the plates belonging to the series "Living" and to the series "Light" BTicino it is possible to integrate the devices both in residential and commercial environments.
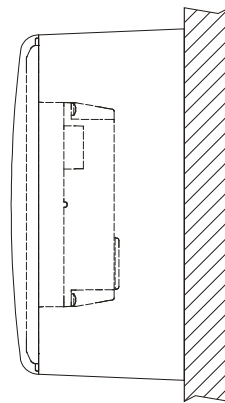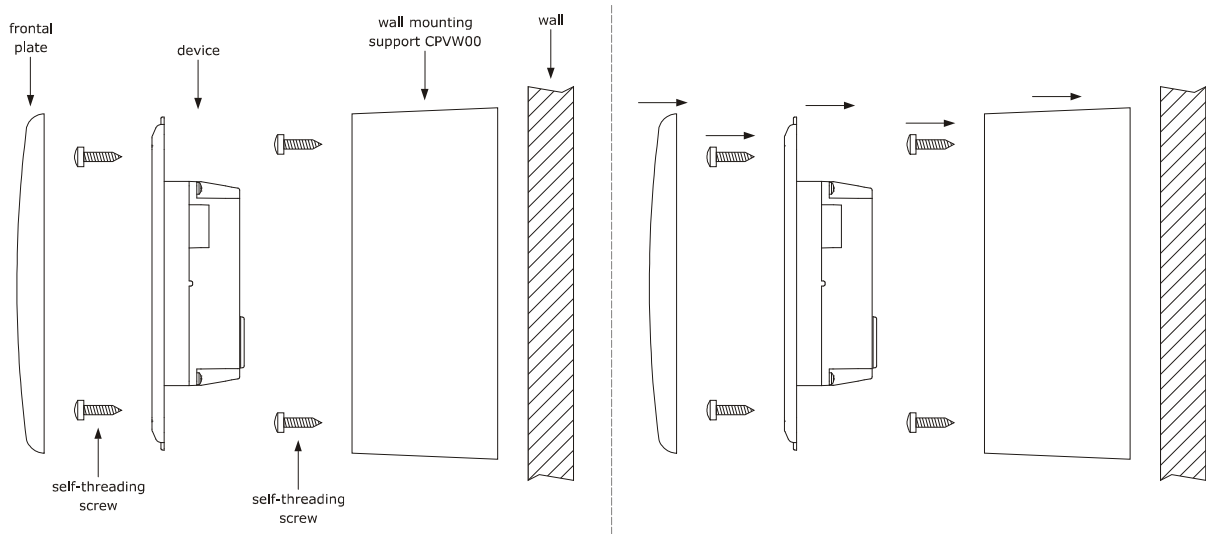
2.5   Additional information for installation

- make sure the working conditions of the device (operating temperature, operating humidity, etc.) are in the limits indicated; look at chapter 10 "TECHNICAL DATA".
- do not install the device close to heating sources (heaters, hot air ducts, etc.), devices having 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 possible contacts with the electrical parts must be ensured by a correct installation of the device; all the parts which ensure the protection must be fixed so that you can not remove them if not by using a tool.

3   WIRING DIAGRAM

3.1   Connectors

The following drawing shows the connectors of the devices.
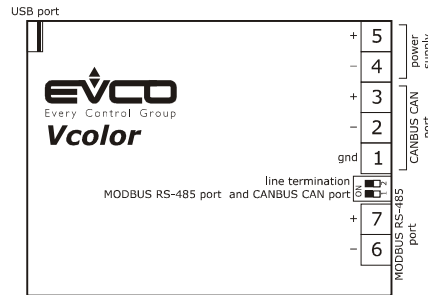
3.2   Meaning of connectors

The following tables show the meaning of the connectors of the devices.

CANBUS CAN port

CAN port with CANBUS communication protocol.

Terminal	Meaning
1	ground (gnd)
2	negative pole (-)
3	positive pole (+)

The CANBUS CAN port is the port to communicate with the programmable controllers and the I/O expansions belonging to the ***c-pro 3*** range.

Power supply

Power supply device (12... 24 VAC/12... 30 VDC).

If the device is powered in direct current, it will be necessary to respect the polarity of the power supply voltage.

Terminal	Meaning
4	negative pole (-)
5	positive pole (+)

MODBUS RS-485 port

RS-485 port with MODBUS communication protocol.

If the device works in browser modality, the communication protocol will be slave; if the device works in commander modality, the communication protocol can be MODBUS master or MODBUS slave (this feature can be selected through the development environment UNI-PRO 3).

Also consult the manual *Modbus specifications and implementation guides* available on the web site www.modbus.org.

Terminal	Meaning
6	negative pole (B / -)
7	positive pole (A / +)

The following table shows the Function codes supported by the device, on condition that it works in commander modality and the communication protocol is MODBUS.

Function code	Meaning
FC 01	read coils
FC 02	read discrete inputs
FC 03	read multiple registers
FC 05	write single coil
FC 06	write single register
FC 08	diagnostic
FC 15	write multiple coils
FC 16	write multiple registers
FC 23	read write multiple registers (maximum 10 registers)

Through the MODBUS RS-485 port it is possible to make one of the following operations:

- configuring the device (through the Parameters Manager software set-up system)
- supervisioning the device (through the CloudEvolution plant monitoring and supervision system, via Web
- use of the MODBUS master functionality with other devices.

USB port

Through the USB port it is possible to make one of the following operations:

- upload and download the application software (through the development environment UNI-PRO 3 or through a USB flash drive)
- debugging the software (through the development environment UNI-PRO 3 and on condition the device works in commander modality)
- configuring the device (through the Parameters Manager software set-up system or through a USB flash drive)
- moving files (the development environment UNI-PRO 3)
- data logging (through a USB flash drive and on condition the device works in commander modality).

3.3 Plugging-in the line termination of the RS-485 network with MODBUS communication protocol

To reduce the reflections on the signal transmitted along the cables connecting the devices to a RS-485 network with MODBUS communication protocol it is necessary to plug-in the line termination of the first and of the last element of the network.

To plug-in the line termination, position micro switch 1 on position ON.

The micro switch is located at the back of the devices.

3.4   Plugging-in the line termination of the CAN network with CANBUS communication protocol

To reduce the reflections on the signal transmitted along the cables connecting the devices to a CAN network with CANBUS communication protocol it is necessary to plug-in the line termination of the first and of the last element of the network.

To plug-in the line termination, position micro switch 2 on position ON.

The micro switch is located at the back of the devices.

3.5   Polarizing the RS-485 network with MODBUS communication protocol

The devices are not able to polarize a RS-485 network with MOSBUS communication protocol; it is necessary the network is polarized by another element.

3.6   Example of wiring diagram

The following drawing shows an example of wiring diagram of the devices.
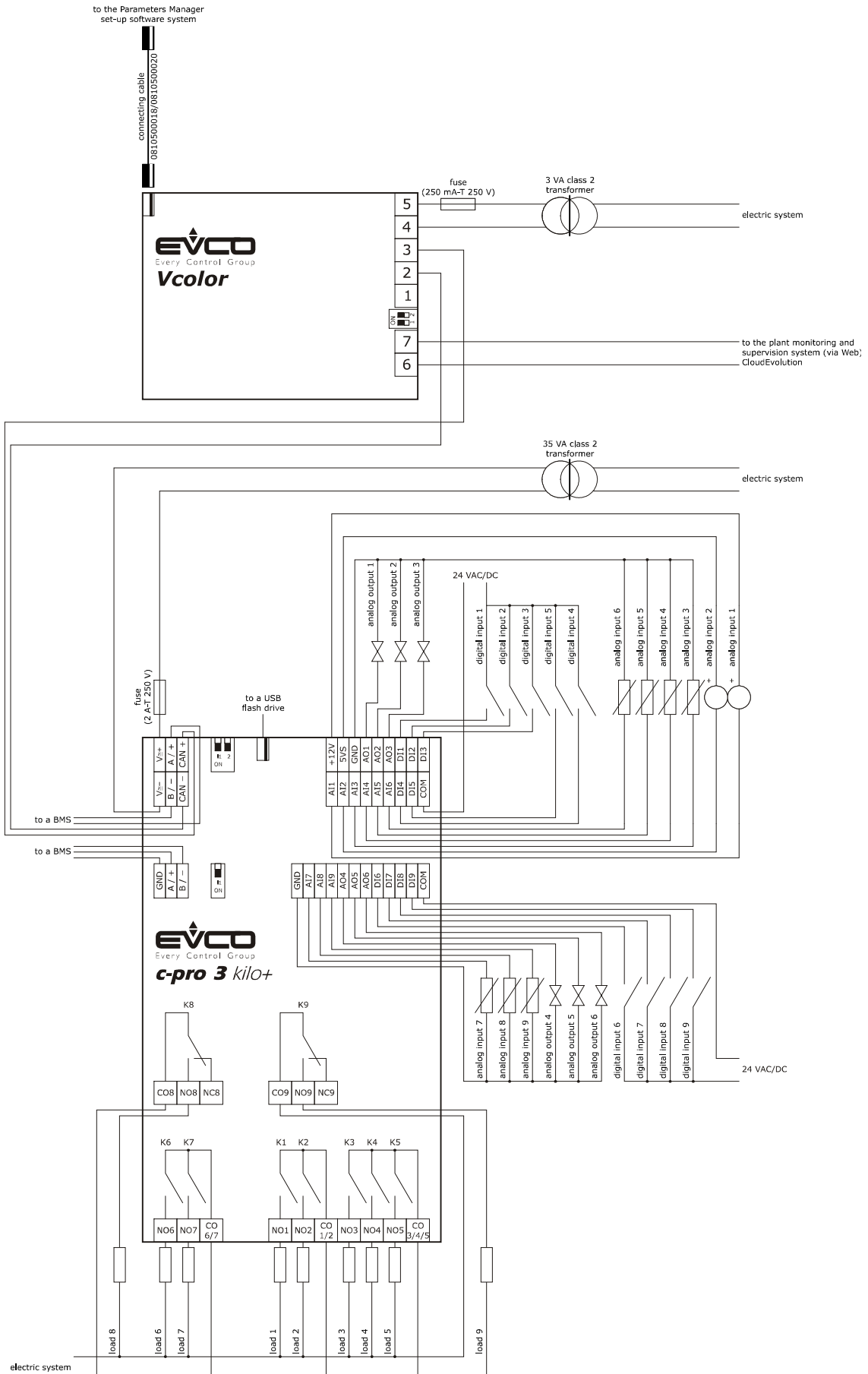
3.7   Additional information for wiring diagram

-      do not operate on the terminal blocks with electrical or pneumatic screwers
-      if the device has been moved from a cold location to a warm one, the humidity could condense on the inside; wait about an hour before powering it
-      test the working power supply voltage, working electrical frequency and working electrical power of the device; they must correspond with the local power supply; look at chapter 10 "TECHNICAL DATA".
-      disconnect the local power supply before servicing the device
-      connect the device to a RS-485 network with MODBUS communication protocol using a shielded cable
-      connect the device to a CAN network with CANBUS communication protocol using a shielded twisted pair
-      connect the power cables the most possible away from the signal's ones
-      for repairs and information on the device please contact the EVCO's sales network.

4   DESCRITPION

4.1   Description of the front

The following drawing shows the aspect of the front of the devices.
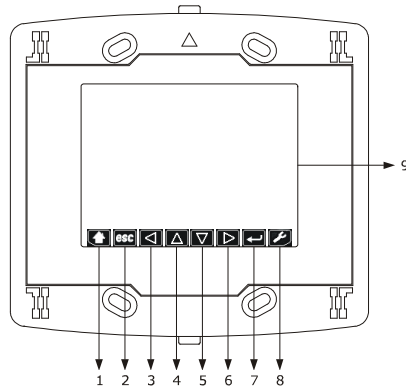
The following table shows the meaning of the parts of the front of the devices.

PART	MEANING
1	area "HOME"
2	area "ESCAPE"
3	area "LEFT"
4	area "UP"
5	area "DOWN"
6	area "RIGHT"
7	area "ENTER"
8	area "USER"
9	display

For further information look at the following chapters.

4.2   Description of the back

The following drawing shows the aspect of the back of the devices
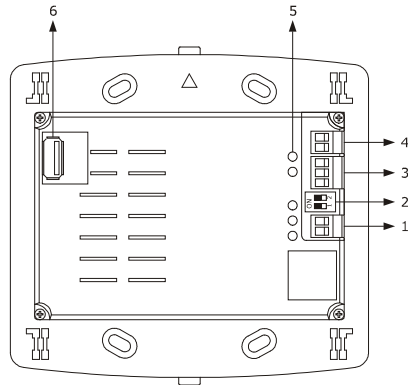
The following table shows the meaning of the parts of the back of the devices.

PART	MEANING
1	RS-485 communication port
2	dip switch to: - plug in the line termination of the RS-485 network with MODBUS communication protocol - plug in the line termination of the CAN network with CANBUS communication protocol
3	CAN communication port
4	power supply
5	signal LED
6	USB communication port

For further information look at the following chapters.

5   FIRST USE

5.1   First use

Operate as follows:

1.   Make the installation of the device with the modality shown in chapter 2 "SIZE AND INSTALLATION" following all the additional information related in paragraph 3.7 "

2.   Make the wiring diagram of the device as shown in chapter 3 "WIRING DIAGRAM" following all the additional information related in paragraph 3.7 "Additional information for wiring diagram" without wiring the power supply.

3.   Connect the power supply of the device: it will be started an internal test.
      The test takes typically some seconds.

4.   To the end of the internal test the display shows *Checking . . .*

5.   Press and release the area in the bottom right-hand corner of the display: the display will show the sensitive areas.

6.   Set the date and the time; look at paragraph 7.1 "Setting the date and the time".

7.   Configure the device with the procedure shown in paragraph 7.4 "Setting the configuration parameters of the menu "Networks"".
      The following table shows the meaning of the main configuration parameters; the parameters are listed with the order it is opportune the device is configured.

PARAM.	MENU	MEANING	FACTORY SETTING
MyNode	Networks / CAN bus	local CAN node address, or of the device	99
Network Node	Networks / CAN bus	remote CAN nodes address, or of the other elements of the network	- - -
Address	Networks / UART	device MODBUS address (meaningful on condition that the communication protocol is MODBUS slave)	1
Parity	Networks / UART	parity of the MODBUS communication none = none odd = odd even = even	even
Baudrate	Networks / UART	baud rate of the MODBUS communication 1200 = 1,200 baud 2400 = 2,400 baud 4800 = 4,800 baud 9600 = 9,600 baud 19200 = 19,200 baud 28800 = 28,800 baud 38400 = 38,400 baud 57600 = 57,600 baud	9600
Bit Stop	Networks / UART	number of stop bit of the MODBUS communication 1 bit = 1 bit 2 bit = 2 bit	1 bit

According to the factory setting the device works in browser modality.

For further information look at the following paragraphs.

6   PRELIMINARY INFORMATION

6.1   Switching on/off the device

To switch on the device, operate as follows:

1.   Connect the power supply: i twill be started an internal test.

          The test takes typically a few seconds.

2.   To the end of the internal test press and release the area in the bottom right-hand corner of the display: the display will show the sensitive areas.

To switch off the device, operate as follows:

3.   Switch off the power supply.

6.2   Access to the menu "Info", "Diagnostic" and "Debug"

To gain access to the menu "Info", "Diagnostic" and "Debug", operate as follows:

1.   Switch on the device and show the sensitive areas; look at paragraph 6.1 "Switching on/off the device".

2.   Press and release the area "USER": the display will show the menu "Network Status(CAN)".

3.   Press and release the area "ENTER": the display will show the menu "V-COLOR PROG".

4.   Press and release the area "DOWN" to select the menu (for example to select the menu "Diagnostic").

5.   Press and release the area "ENTER".

To quit the procedure, operate as follows:

6.   Press and release over and over again the area "ESCAPE".
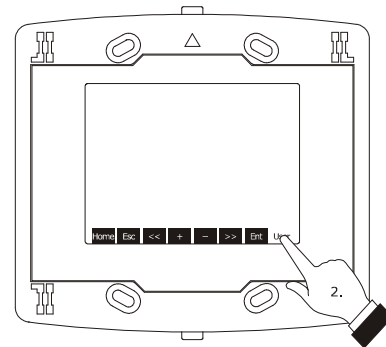
Showing the sensitive areas

Selecting the menu "Diagnostic"

7   CONFIGURATION

7.1   Setting the date and the time

According to the factory settings the date is shown in the format dd mm yy and the time in the format 24 h.

Through the parameters *Year format* and *Time AM/PM* it is possible to set respectively another year format and time format.

To set the date and the time, operate as follows:

1.   Switch on the device and show the sensitive areas; look at paragraph 6.1 "Switching on/off the device".

2.   Press and release the area "USER": the display will show the menu "Network Status (CAN)".
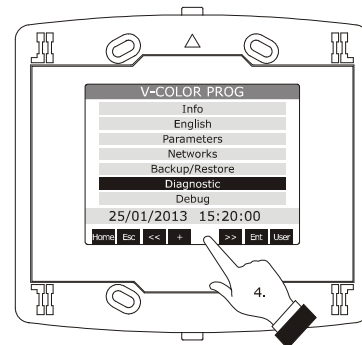
3.   Press and release the area "ENTER": the display will show the menu "V-COLOR PROG".

4.   Press and release the area "DOWN" to select the date and the time.

5.   Press and release the area "ENTER".

6.   Press and release the area "UP" or the area "DOWN" to set the value of the field.

7.   Press and release the area "LEFT" or the area "RIGHT" (possible modifications will be saved) to set the value of the following or previous field.

8.   Repeat steps 6... 7.

To quit the procedure, operate as follows:

9.   Press and release over and over again the area "ESCAPE".
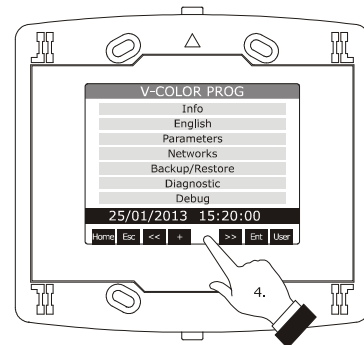
Selecting the date and the time

7.2 Setting the language for showing (if foreseen) the words of the application project

To set the language for showing (if foreseen) the words of the application project, operate as follows:

1. Switch on the device and show the sensitive areas; look at paragraph 6.1 "Switching on/off the device".
2. Press and release the area "USER": the display will show the menu "Network Status(CAN)".
3. Press and release the area "ENTER": the display will show the menu "V-COLOR PROG".
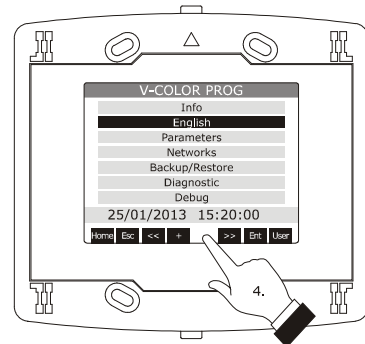4. Press and release the area "DOWN" to select the menu "Languages".
    If the device works in browser modality, the menu "Languuages" will not be accessible.
5. Press and release the area "ENTER".
6. Press and release "UP" or the area "DOWN" to set the value of the field.
7. Press and release the area "ENTER": the device will quit the procedure.

7.3 Setting the configuration parameters of the menu "Parameters"

To gain access to the procedure, operate as follows:

1. Switch on the device and show the sensitive areas; look at paragraph 6.1 "Switching on/off the device".
2. Press and release the area "USER": the display will show the menu "Network Status(CAN)".
3. Press and release the area "ENTER": the display will show the menu "V-COLOR PROG".
4. Press and release the area "DOWN" to select the menu "Parameters".
5. Press and release the area "ENTER": the display will show the window "Input Password".
6. Press and release again the area "ENTER".
7. Press and release the area "DOWN" to set "**-19**".
8. Press and release the area "ENTER": the device will show the menu "Parameters".

To select a parameter, operate as follows:

9. Press and release the area "UP" or the area "DOWN".

To set a parameter, operate as follows:

10. Press and release the area "ENTER".
11. Press and release the area "UP" or the area "DOWN" to set the value of the parameter.
12. Press and release the area "ENTER".

Selecting the menu "Languages"

Selecting the menu "Parameters"

Access to the menu "Parameters"

To quit the procedure, operate as follows:

13.　　　Press and release over and over again the area "ESCAPE".

Switch off/on the power supply of the device after the parameters setting.

7.4　Setting the configuration parameters of the menu "Networks"

To gain access to the procedure, operate as follows:

1.　　　Switch on the device and show the sensitive areas; look at paragraph 6.1 "Switching on/off the device".

2.　　　Press and release the area "USER": the display will show the menu "Network Status(CAN)".

3.　　　Press and release the area "ENTER": the display will show the menu "V-COLOR PROG".

4.　　　Press and release the area "DOWN" to select the menu "Networks".

5.　　　Press and release the area "ENTER": the display will show the submenu of the menu "Networks".

6.　　　Press and release the area "DOWN" to select the submenu (for example to select the submenu "UART").

7.　　　Press and release the area "ENTER": the display will show the window "Input Password".

8.　　　Press and release again the area "ENTER".

9.　　　Press and release the area "DOWN" to set "**-19**".

10.　　　Press and release the area "ENTER": the device will show the selected submenu.

To select a parameter, operate as follows:

11.　　　Press and release the area "UP" or the area "DOWN".

To set a parameter, operate as follows:

12.　　　Press and release the area "ENTER".

13.　　　Press and release the area "UP" or the area "DOWN" to set the value of the parameter.

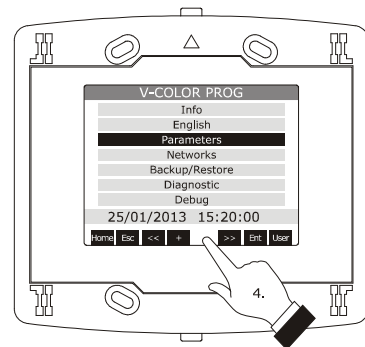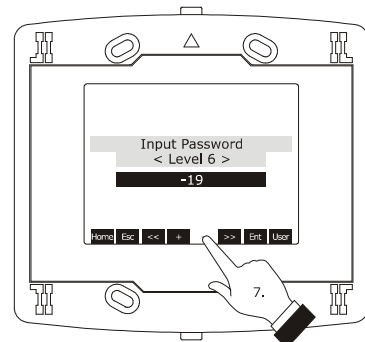14.　　　Press and release the area "ENTER".

To quit the procedure, operate as follows:

15.　　　Press and release over and over again the area "ESCAPE".

Switch off/on the power supply of the device after the parameters setting.
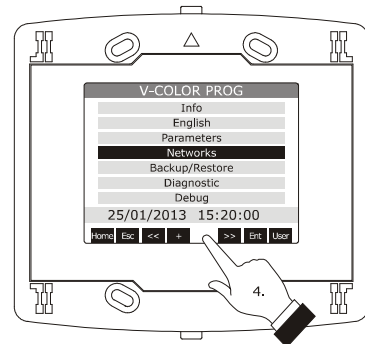
Selecting the menu "Networks"

Selecting the submenu "UART"

Access to the submenu of the menu "Networks"

7.5 Uploading and downloading the configuration parameters

7.5.1 Uploading the configuration parameters

The upload of the configuration parameters can be done on condition that the firmwares coincide.

To make the upload of the configuration parameters, operate as follows:

1. Switch on the device and show the sensitive areas; look at paragraph 6.1 "Switching on/off the device".

2. Press and release the area "USER": the display will show the menu "Network Status(CAN)".

3. Press and release the area "ENTER": the display will show the menu "V-COLOR PROG".

4. Press and release the area "DOWN" to select the menu "Backup/Restore".

    If the device works in browser modality, the menu "Backup/Restore" will not be available.

5. Press and release the area "ENTER": the display will show the window "Input Password".

6. Press and release again the area "ENTER".

7. Press and release the area "DOWN" to set "**-19**".

8. Press and release the area "ENTER": the display will show the submenu of the menu "Backup/Restore".

9. Press and release the area "DOWN" to select the submenu (for example the submenu "Backup Memory").

    Select the submenu "USB Key" to make the upload from a USB key (in this case it is necessary make sure to have plugged a USB key in the USB communication port and containing configuration parameters belonging to a firmware that coincides); select the submenu "Backup Memory" to make the upload of the memory of the device.

10. Press and release the area "ENTER": the display will show the submenu of the selected submenu (for example the submenu of the submenu "Backup Memory").

11. Press and release the area "DOWN" to select the submenu (for example the submenu "Hardware configuration").

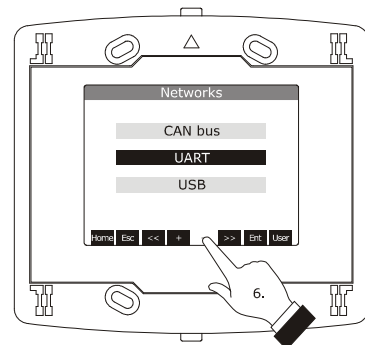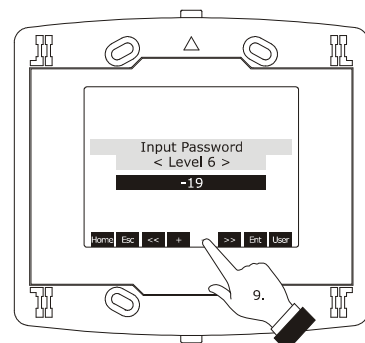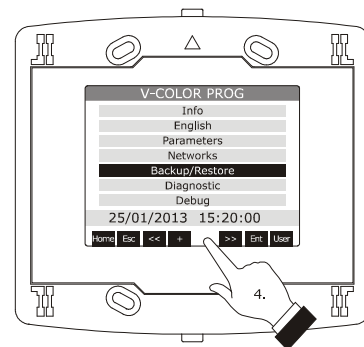   Select the submenu "Application parameters" to make the upload of the configuration parameters of the application software; select the submenu "Hardware configuration" to make the upload of the configuration parameters of the device.

12. Press and release the area "ENTER".

13. Press and release the area "DOWN" to select "**Restore from USB**" or "**Restore from memory**" (according to the option selected in step 9).

Selecting the menu "Backup/Restore"
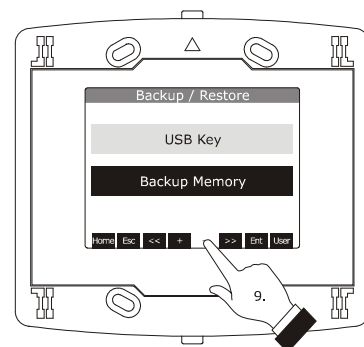
Selecting the submenu "Backup Memory"

Selecting the submenu "Hardware configuration"

14.   Press and release the area "ENTER": it will be started the upload of the configuration parameters.

The upload takes typically a few seconds; if the operation is not completed succesfully, the display will show an error indication (for example "**Status: Read Error**").

To quit the procedure, operate as follows:

15.   Press and release over and over again the area "ESCAPE".

7.5.2   Downloading the configuration parameters

To make the download of the configuration parameters, operate as follows:
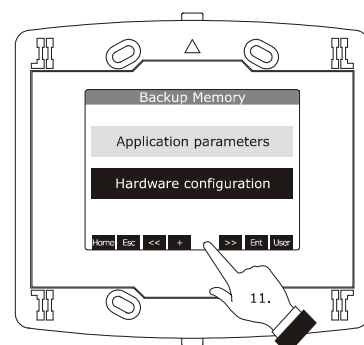
1.   Switch on the device and show the sensitive areas; look at paragraph 6.1 "Switching on/off the device".

2.   Press and release the area "USER": the display will show the menu "Network Status(CAN)".

3.   Press and release the area "ENTER": the display will show the menu "V-COLOR PROG".

4.   Press and release the area "DOWN" to select the menu "Backup/Restore".

If the device works in browser modality, the menu "Backup/Restore" will not be available.

5.   Press and release the area "ENTER": the display will show the window "Input Password".

6.   Press and release again the area "ENTER".

7.   Press and release the area "DOWN" to set "**-19**".

8.   Press and release the area "ENTER": the display will show the submenu of the menu "Backup/Restore".

9.   Press and release the area "DOWN" to select the submenu (for example the submenu "Backup Memory").

Select the submenu "USB Key" to make the download into a USB key (in this case it is necessary make sure to have plugged a USB key in the USB communication port); select the submenu "Backup Memory" to make the download of the memory of the device.

10.   Press and release the area "ENTER": the display will show the submenu of the selected submenu (for example the submenu of the submenu "Backup Memory").

11.   Press and release the area "DOWN" to select the submenu (for example the submenu "Hardware configuration").

Select the submenu "Application parameters" to make the download of the configuration parameters of the application software; select the submenu "Hardware configuration" to make the download of the configuration parameters of the device.

12.   Press and release the area "ENTER".

Selecting the menu "Backup/Restore"

Selecting the submenu "Backup Memory"
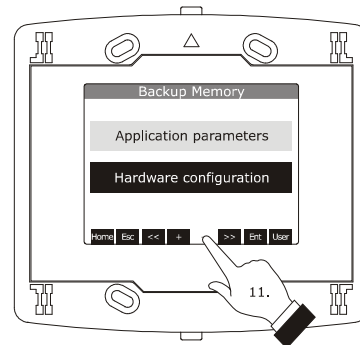
Selecting the submenu "Hardware configuration"

13.   Press and release the area "DOWN" to select "**Save on USB**" or "**Save on memory**" (according to the option selected in step 9).

14.   Press and release the area "ENTER": it will be started the download of the configuration parameters.
        The download takes typically a few seconds; if the operation is not completed succesfully, the display will show an error indication (for example "**Status: Read Error**").
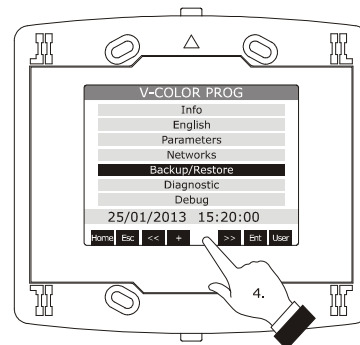
To quit the procedure, operate as follows:

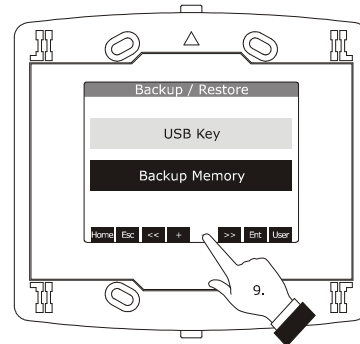15.   Press and release over and over again the area "ESCAPE".

7.6 Configuring an element of a CAN network with CANBUS communication protocol

To configure an element of a CAN network with CANBUS communication protocol, operate as follows:

1. Disconnect the power supply of the device and of the other element of the network.

2. Connect the device to the other element of the network through the CAN communication port; look at chapter 3 "WIRING DIAGRAM".

3. Connect the power supply of the device and of the other element of the network.

4. Set the configuration parameter *Network Node* with the procedure shown in paragraph 7.4 "Setting the configuration parameters of the menu "Networks"".

    According to the factory settings the CAN address of a controller is *1* (in this case it is necessary to set parameter *Network Node* to *[1] 1*) and the CAN address of an I/O expansion is *2* (in this case it is necessary to set the parameter *Network Node* to *[2] 2*).

5. Press and release over and over again the area "ESCAPE" as long as the display shows the menu "Network Status(CAN)".

6. Press and release the area "DOWN" to select the element of the network.

7. Press and release the area "ENTER": the display will show the main menu of the element of the network.

8. Configure the element of the network with the procedures shown in chapter 7 "CONFIGURATION".

Switch off/on the power supply of the element of the network after the configuration.

	address	status	more...
local	99	OK	>>
node 1 :	1	OK	>>
node 2 :	2	OK	>>
node 3 :	0	-	>>
node 4 :	0	-	>>
node 5 :	0	-	>>
node 6 :	0	-	>>
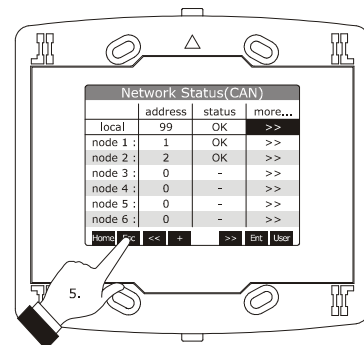
Showing the menu "Network Status(CAN)"

7.7   List of the configuration parameters

7.7.1   Configuration parameters of the menu "Info"

The following table shows the meaning of the configuration parameters of the menu "Info".

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
PROJ	parameter available in read only mode				information on the application project (project, version and revision)
FW	parameter available in read only mode				information on the firmware (code, version, revision and under revison)
HW	parameter available in read only mode				information on the hardware (version, revision, generic (G) or special (S))
SW	parameter available in read only mode				information on the development environment UNI-PRO 3 (version and revision)
SN	parameter available in read only mode				informazioni relative al serial number e all'esito del collaudo produttivo
DATE	parameter available in read only mode				date and time of the last compiling of the application project

7.7.2   Configuration parameters of the menu "Languages"

The following table shows the meaning of the configuration parameters of the menu "Languages".

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
English	parameter available in read only mode				showing the words of the application software in English (if foreseen)
Italiano	parameter available in read only mode				showing the words of the application software in Italian (if foreseen)
Français	parameter available in read only mode				showing the words of the application software in French (if foreseen)
Español	parameter available in read only mode				showing the words of the application software in Spanish (if foreseen)
Deutsch	parameter available in read only mode				showing the words of the application software in German (if foreseen)
Russian	parameter available in read only mode				showing the words of the application software in Russian (if foreseen)
Português	parameter available in read only mode				showing the words of the application software in Portoguese (if foreseen)

7.7.3   Configuration parameters of the menu "Parameters"

The following table shows the meaning of the configuration parameters of the menu "Parameters".

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
Date Char Separator	- - -	- - -	- - -	- - -	ASCII character date separator
Year format	- - -	- - -	- - -	YY	year format YY = two numbers (for example *13*) YYYY = four numbers (for example *2013*)
Date format	- - -	- - -	- - -	dd mm yy	date format yy mm dd = year, month and day mm dd yy = month, day and year dd mm yy = day, month and year
Time Char Separator	- - -	- - -	- - -	:	ASCII character time separator
Time With Sec	- - -	- - -	- - -	YES	showing the seconds in the time YES = yes
Time AM/PM	- - -	- - -	- - -	NO	time format NO = 24 h (for example *15:20*) YES = 12 h (for example *3:20 PM*)
Backlight Mode	- - -	- - -	- - -	TIME	kind of back light OFF = the back light will always be off ON = the back light will always be on TIME = the back light will be on the time you have set with parameter *Backlight Timeout* from the last operation
Backlight Timeout	0	240	s	60	backlight duration (meaningful if parameter *Backlight Mode* has value *Time*)
I/O Timeout	0	240	s	60	time-out of the local CAN communication, or of the device (once the time you have set with this parameter has elapsed without CAN communication, the remote I/O coming from the controllers will be disabled)
Print Loading	- - -	- - -	- - -	NO	showing the indication *Loading . . .* when loading a page of the application project YES = yes
Password Timeout	0	240	s	60	time-out of the access password for menu "Parameters", "Networks" and "Backup/Restore" (once the time you have set with this parameter has elapsed from the last operation after the menu has been accessed, to gain access to it again it is necessary to set the password again)

Beep Mode	0	2	- - -	2	kind of beep when pressing a sensitive area of the display of the device 0 = no beep 1 = always 2 = on condition the area is sensitive
Print Frame	0	1	- - -	0	showing frames instead small size pages 1 = yes

7.7.4 Configuration parameters of the submenu "CAN bus" of the menu "Networks"

The following table shows the meaning of the configuration parameters of the section "CAN Network" of the submenu "CAN bus" of the menu "Networks".

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
MyNode	1	127	- - -	99	local CAN node address, or of the device
Master	- - -	- - -	- - -	YES	the device always works as master
Baud	- - -	- - -	- - -	Auto	baud rate of the CAN communication 20K = 20,000 baud 50K = 50,000 baud 125K = 125,000 baud 500K = 500,000 baud Auto = the device automatically detects the baud rate of the other elements of the networr, on condition that it is one of those listed here above; on afterwards set the baud rate to the same value of the other elements
Timeout	1	240	s	5	time-out of the remote CAN communication, or with the other elements of the network (once the time you have set with this parameter has elapsed without CAN communication with an element, this is disabled)
Network Node	[1] 1	[32] 127	- - -	- - -	remote CAN nodes address, or of the other elements of the network (example for [1] 2) [1] = node 2 = node address

Press and release key "RIGHT" to show the section "CAN Status" of the submenu "CAN bus" of the menu "Networks" .

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
Cnt Rx	parameter available in read only mode				reserved
Cnt Tx	parameter available in read only mode				reserved
Cnt Ovf	parameter available in read only mode				reserved
Cnt Passive	parameter available in read only mode				reserved
Cnt Bus Off	parameter available in read only mode				reserved
BufRx Valid	parameter available in read only mode				reserved
BufTx Valid	parameter available in read only mode				reserved
Cnt Tx Err	parameter available in read only mode				reserved
Cnt Rx Err	parameter available in read only mode				reserved
Cnt Stuff	parameter available in read only mode				reserved
Cnt Form	parameter available in read only mode				reserved
Cnt Ack	parameter available in read only mode				reserved
Cnt Bit1	parameter available in read only mode				reserved
Cnt Bit0	parameter available in read only mode				reserved
Cnt CRC	parameter available in read only mode				reserved

Press and release again key "RIGHT" to show the section "CAN Bit Timing" of the submenu "CAN bus" of the menu "Networks" .

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
BRP	parameter available in read only mode				reserved
SJW	parameter available in read only mode				reserved
T.SEG1	parameter available in read only mode				reserved
T.SEG2	parameter available in read only mode				reserved

7.7.5   Configuration parameters of the submenu "UART" of the menu "Networks"

The following table shows the meaning of the configuration parameters of the submenu "UART" of the menu "Networks".

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
Address	1	247	- - -	1	MODBUS address of the device (meaningful if the communication protocol is MODBUS slave)
Parity	- - -	- - -	- - -	even	parity of the MODBUS communication none = none odd = odd even = even
Baudrate	- - -	- - -	- - -	9600	baud rate of the MODBUS communication 1200 = 1,200 baud 2400 = 2,400 baud 4800 = 4,800 baud 9600 = 9,600 baud 19200 = 19,200 baud 28800 = 28,800 baud 38400 = 38,400 baud 57600 = 57,600 baud
Bit Stop	- - -	- - -	- - -	1 bit	number of stop bit of the MODBUS communication 1 bit = 1 bit 2 bit = 2 bit
Timeout	2	240	s	10	time-out of the local MODBUS communication, or of the device (once the time you have set with this parameter has elapsed from the transmission of a request without answer, the transmission of the request is considered failed and the following request is transmitted; meaningful if the communication protocol is MODBUS master)

7.7.6   Configuration parameters of the submenu "USB" of the menu "Networks"

The following table shows the meaning of the configuration parameters of the submenu "USB" of the menu "Networks".

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
USB Status Device	parameter available in read only mode				reserved
Device Status Idle Speed	parameter available in read only mode				reserved

7.7.7   Configuration parameters of the menu "Diagnostics"

The following table shows the meaning of the configuration parameters of the menu "Diagnostics".

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
EEPROM	parameter available in read only mode				status of the non volatile memory OK = not in error ERR = in error
RTC	parameter available in read only mode				status of the real time clock OK = not in error ERR = in error LOW = loss of data DISAB = disabled
STACK	parameter available in read only mode				status of the stack OK = not in error ERR = in error (for overfow)
MATH	parameter available in read only mode				status of the math OK = not in error ERR = in error (for overfow, for under flow, for division by zero or for NaN)
KEY PAR	parameter available in read only mode				result of the upload and the download of the application software parameters or of the configuration parameters through the USB key OK = operation completed succesfully ERR = operation not completed succesfully

7.7.8   Configuration parameters of the menu "Debug"

The following table shows the meaning of the configuration parameters of the menu "Debug".

PARAM.	MIN.	MAX.	U.M.	DEF.	DESCRIPTION
Main time	parameter available in read only mode				main cycle time of the application software (in ms)
max time main	parameter available in read only mode				maximum value of the main cycle time of the application software (in ms)
free stack main	parameter available in read only mode				minimum main free stack
100ms time	parameter available in read only mode				reserved
max time 100 ms	parameter available in read only mode				reserved
free stack 100 ms	parameter available in read only mode				reserved

8   SIGNALS

8.1   Signals

The following tables shows the meaning of the LED of the device.

LED colour	Meaning
green	LED power supply device if it is lit, the device will be powered
green	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
red	LED error if it is lit, an error will be arisen
red	LED CAN transmission if it is lit, the device will be configured to communicate via CANBUS with another device but the CAN communication will not have been set up if it flashes slowly, the CANBUS communication will have been set up but it will not be completely correct if it flashes quickly, the CANBUS communication will have been set up and will be correct if it is out, no CANBUS communication will be running
red	LED CAN reception if it is lit, the device will be configured to communicate via CANBUS with another device but the CAN communication will not have been set up if it flashes slowly, the CANBUS communication will have been set up but it will not be completely correct if it flashes quickly, the CANBUS communication will have been set up and will be correct if it is out, no CANBUS communication will be running

The LED are located at the back of the devices; look at paragraph 4.2 "Description of the back".

9   ACCESSORIES

9.1   Connecting cables 0810500018/0810500020

9.1.1   Preliminary information

Through the cables it is possible to make more accessible the USB port of the devices.

The cable 0810500018 is 2.0 m long; the cable 0810500020 is 0.5 m long.

9.2   Frontal plates CPVP

9.2.1   Preliminary information

Through the plates it is possible to integrate the devices both in residential and commercial environments.

The following table shows the available models.

Colour	Code
white	CPVP00
black	CPVP01

9.3   Wall mounting support CPVW00

9.3.1   Preliminary information

Through the support it is possible to install the devices by wall, reducing the installing operation to a minimum.

9.4   Gasket 0027000007

9.4.1   Preliminary information

According to the IEC standards, through the gasket it is possible to guarantee an IP65 protection rating in case of panel mounting.

10   TECHNICAL DATA

10.1   Technical data

Purpose of control:	operating control device.
Construction of control:	independently mounted control.
Operating time:	continuous.
Box:	self-extinguishing transparent.
Size:	118.0 x 111.0 x 26.7 mm (4.645 x 4.370 x 1.051 in; L x H x P).
Mounting:	- by panel, with self-threading screws - built-in (in box like "506e" BTicino and self-threading screws) - by wall (in wall mounting support CPVW00 EVCO, to order separately and with self-threading screws).
Protection rating:	IP40 (according to the IEC standards, P65 in case of panel mounting with gasket 0027000007, to order separately); type 1 enclosure for UL and CSA.

Connections:	- screw removable terminal blocks (power supply, RS-485 MODBUS port and CAN CANBUS port); nominal cross section of cables 28 ÷ 16 AWG, screw torque 2.2 lb-in
	- USB connector type A (USB port).
	
	The maximum length of the connecting cables are the following:
	- power supply: 10 m (32.8 ft)
	- RS-485 MODBUS port: 1,000 m (3,280 ft)
	- CAN CANBUS port:
	        - 1,000 m (3,280 ft) with baud rate 20,000 baud
	        - 500 m (1,640 ft) with baud rate 50,000 baud
	        - 250 m (820 ft) with baud rate 125,000 baud
	        - 50 m (164 ft) with baud rate 500,000 baud.
	According to the factory settings, the device automatically detects the baud rate of the other elements of the network, on condition that it is one of those listed here above; on afterwards set the baud rate to the same value of the other elements.

Working temperature:	from 0 to 55 °C (from 32 to 131 °F).
Storage temperature:	from -10 to 70 °C (from 14 to 158 °F).
Working humidity:	from 10 to 90 % of relative humidity without condensate.
Pollution situation:	2.

Power supply:	- 12 (±10%)... 24 VAC (±15%), 50 / 60 Hz (±3 Hz), 3 VA max - 12... 30 VDC, 2 W max supplied by a class 2 circuit. Protect the power supply by one of the following fuses: - 250 mA-T if the device is powered in alternating current - 250 mA-T if the device is powered in direct current. If the device is powered in direct current, it will be necessary to respect the polarity of the power supply voltage. The power supply must galvanically be isolated by those of the other elements of the RS-485 network with MODBUS communication protocol or the CAN network with CANBUS communication protocol.
Rated impulse voltage:	330 V.
Overvoltage category:	I.
Software class:	A.
Real time clock:	incorporated (SuperCap). Data maintenance in case of absence of the power supply: 24 h full loaded. Loading time: 2 min (powered by the power supply of the device).
Type 1 or type 2 actions:	Type 1.
Display:	320 x 240 pixel color resistive touch-screen TFT graphic display.
Communication ports:	3 ports: - 1 RS-485 port with MODBUS communication protocol - 1 CAN port with CANBUS communication protocol - 1 USB port.
Alarm buzzer:	incorporated.

Vcolor

Programmable remote user interfaces, with colour touch-screen TFT graphic display

Hardware manual ver. 2.0

PT - 21/17

Code 144VCOE204

EVCO S.p.A.

Via Feltre 81, 32036 Sedico Belluno ITALY

Phone +39/0437/8422 | Fax +39/0437/83648

info@evco.it | www.evco.it