

Sommario


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A1-HMI-QC043



1. Informations

1.1 Release












Document release	Description	Note	Date
01	New manual	Valid for release from hardware 02 and major release firmware from 5 	05/07/2012

The controller has been designed for industrial environments in conformity to EC directive 2004/108/CE.


- EN 61000-6-4: Electromagnetic compatibility - Generic standard on emission for industrial environments
 - EN55011 Class A: Limits and measurement methods
- EN 61000-6-2: Electromagnetic compatibility - Generic standard on immunity for industrial environments
 - EN 61000-4-2: Electromagnetic compatibility - Electrostatic discharge immunity
 - EN 61000-4-3: Immunity to radiated, radio-frequency electromagnetic field
 - EN 61000-4-4: Electrical fast transients
 - EN 61000-4-5: Surge immunity
 - EN 61000-4-6: Conducted disturbance induced by radio-frequency
- Moreover the product is conform to the following standards:
 - EN 60529: Housing protection rating IP64
 - EN 60068-2-1: Environmental testing: Cold
 - EN 60068-2-2: Environmental testing: Dry heat
 - EN 60068-2-14: Environmental testing: Change of temperature
 - EN 60068-2-30: Environmental testing: Cyclic damp heat
 - EN 60068-2-6: Environmental testing: Sinusoidal vibration
 - EN 60068-2-27: Environmental testing: Shock vibration
 - EN 60068-2-64: Environmental testing: Random vibration

2. Description

A1-HMI-QC043 is a operator panel of the Qpanel+ series, can be equipped with:

Standard equipment	
	Graphics LCD display 4.3" TFT-256 COLORS-480x272px
	Resistive Touch Screen Panel
	1 PROG PORT serial program port (Use with IQ009) accessory
	1 multistandard (RS232/422/485) serial - USER PORT
	1 Memory Card MMC/SD reader
	4 signal leds
	8 system leds
	Anti-vibrating spring clamps
	Clock calendar
	Interchangeable front label
	Customizable function keys

2.1 Ordering code



The Ordering Code provides the exact product features.

Model				Features		
A1-HMI-QC043	-	01	/	TP01	/	24
						24 = APower supply
				TP00 = Keyboard code (TP00 = resistive touch-screen panel, logo and customizable function keys); TP01 = resistive touch-screen panel, logo and QEM function keys		
		01 = Firmware version (00 = not installed)				
<p>A1 = HMI family</p> <p>HMI = Human Machine Interface</p> <p>Q = Qpanel series</p> <p>C = Panel Graphic colors</p> <p>043 = Graphics LCD display 4,3" TFT-256 COLORS-480x272px; front panel dimensions (144x120mm); keyboard with 5 keys + 9 leds; box with standard DIN 43700</p>						

2.2 Product Label



- **a - Ordering Code**
- **b - Week made:** indicates the week and year of manufacture
- **c - Part number:** unique code that identifies an ordering code
- **d - Serial number:** product serial number, different for individual product
- **e - Hardware release:** version of hardware release

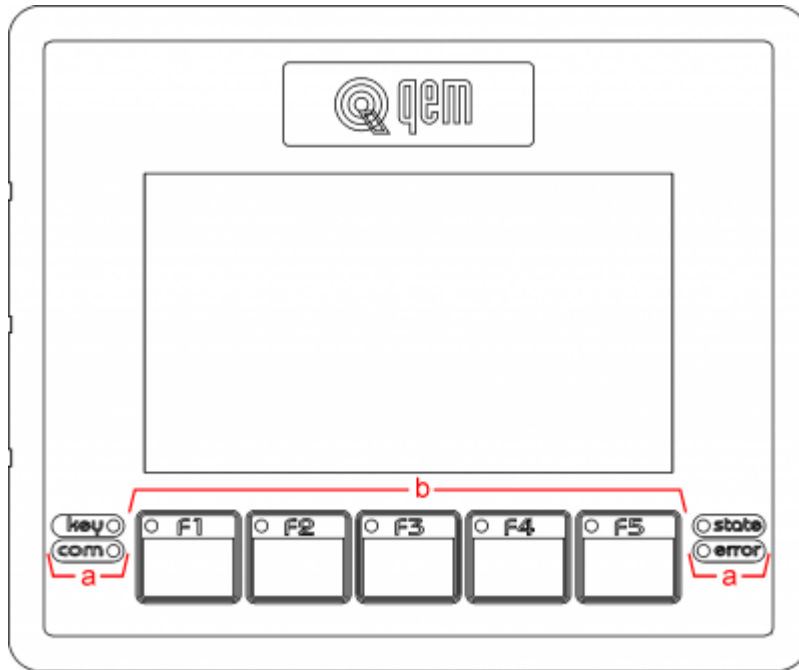
2.2.1 Hardware Versions

Is available only 1 version:

Model	Features			
	Digital inputs	Bidirectional counters 20KHz AB (24V-PP)	Analog inputs 12bit	Protected digital outputs
A1-HMI-QC043-01/TP00/24V	-	-	-	-

2.3 Product Configuration

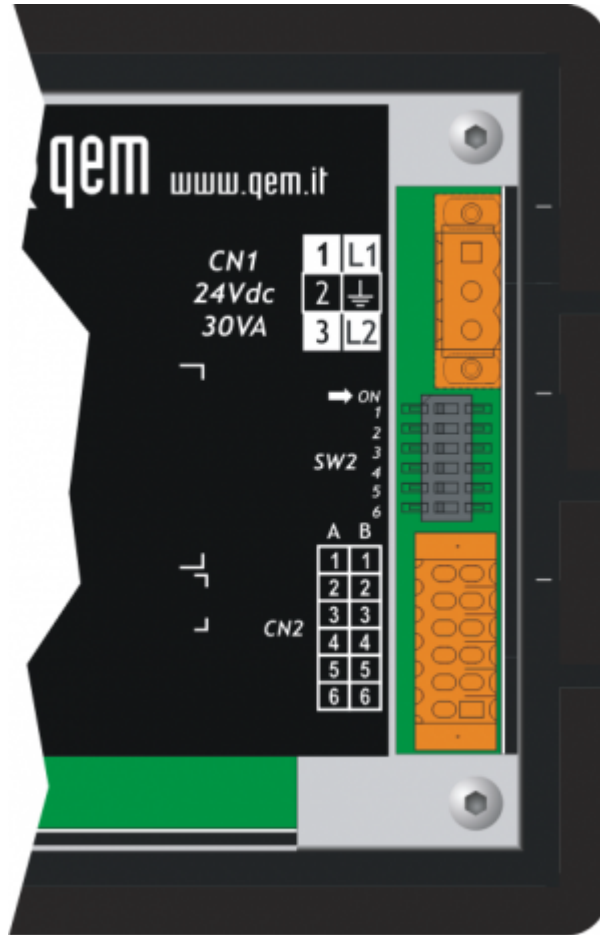
2.3.1 Front Panel



- **a** = System led's
- **b** = Function keys and led's

2.3.2 Back terminal blocks

The A1-HMI-QC043 does not have the specialization card.



3. Technical features

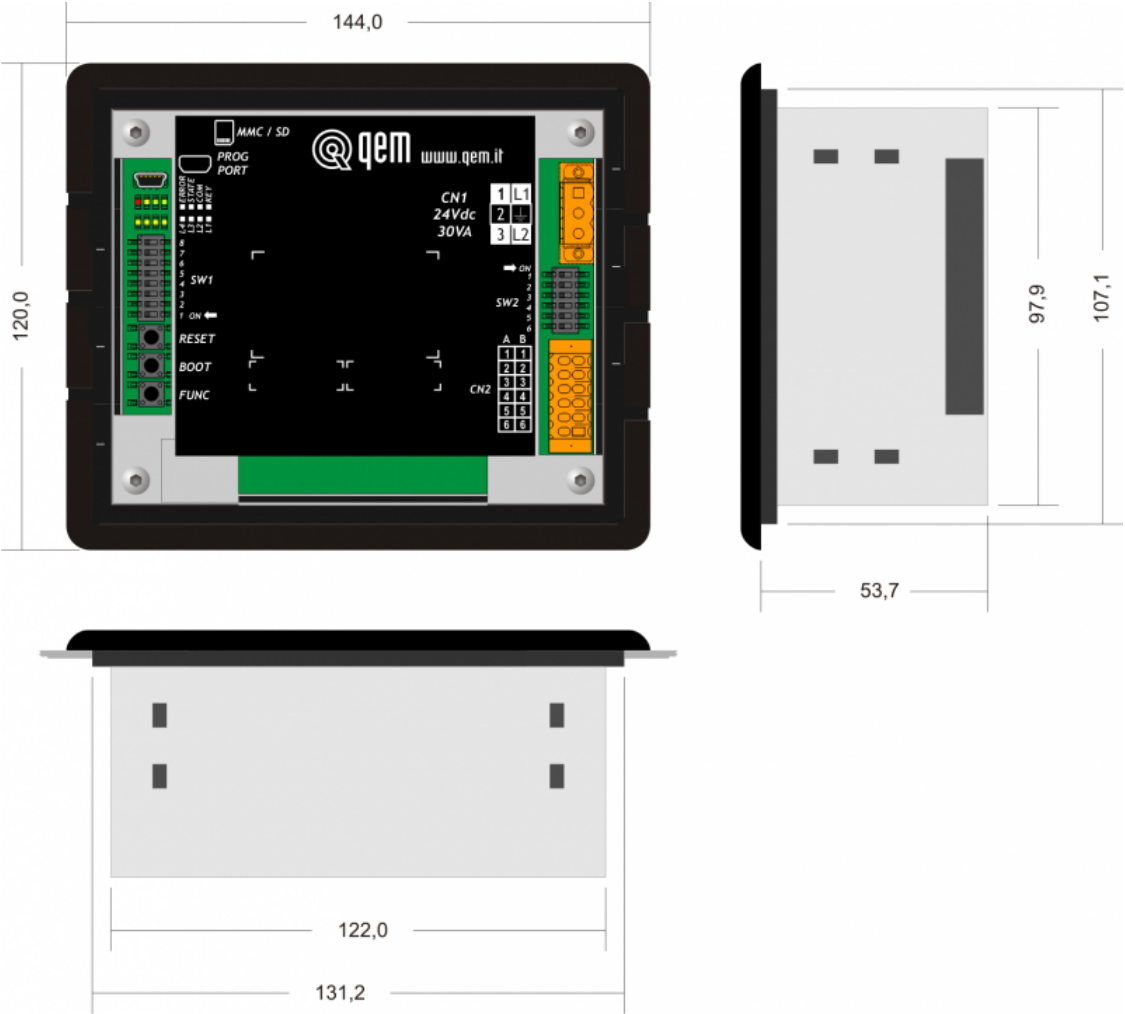
3.1 General features

Weight (full hardware)	600g
Housing	Sheet metal
Front panel	Alluminium
Outer Frame	Self-extinguishing Noryl
Display	LCD TFT 4.3" TFT-256 COLORS-480 x 272px
Touch screen	wire Resistive
Display dimensions	95 x 53.8mm / 4.3"
User led's	5
System led's	4 to front panel, 8 on rear
Function keys	5
System keys	3
Operating temperature	0 ÷ 50°C
Relative humidity	90% condensate free
Altitude	0 - 2000m s.l.m.
Transport and storage temperature	-25 ÷ +70 °C
Front protection rating	IP64

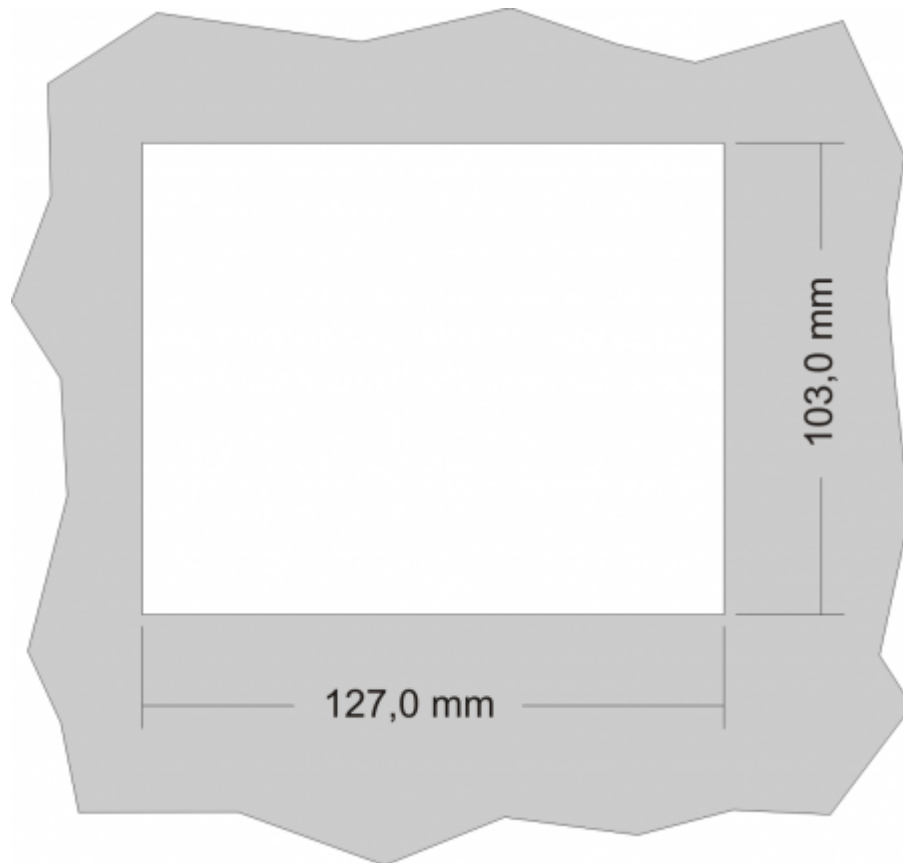
3.2 Dimensions



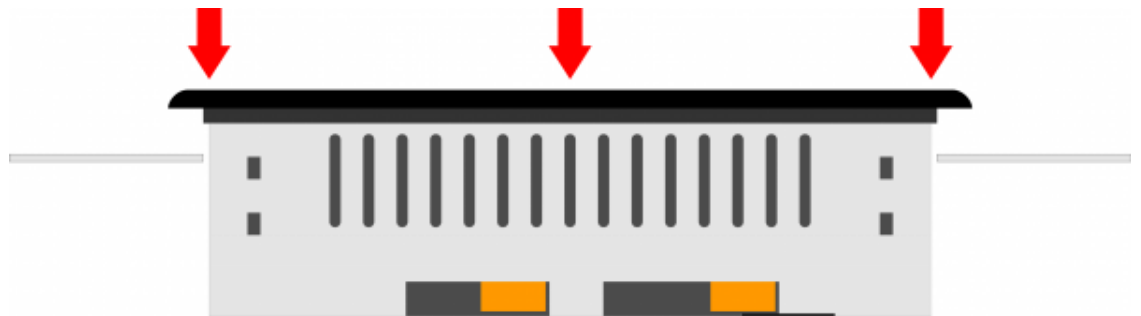
Lenghts in mm.



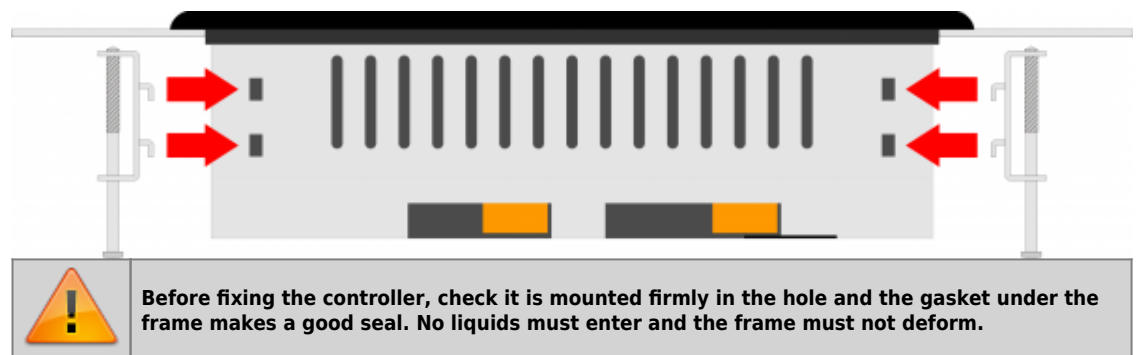
3.3 Hole template



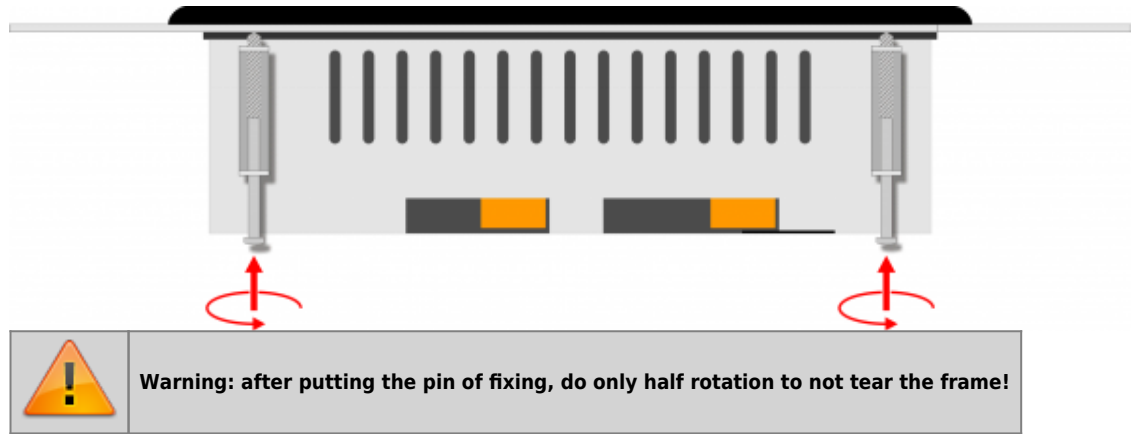
Fit the controller in the hole.



Apply the brackets.



Screw the controller in place.





- Please read carefully.
- See technical notes on Weidmuller terminals BLZF, BLZ and B2L.

Types of Connectors

	Family	Wire Section no end caps	Wire section with end caps	Characteristics of contact	Tools
	BLZF 3.5	0.3-1.50 mm ²	0.3-1 mm ²		Open the self-locking, spring clip terminals with a flat blade screwdriver to DIN 5264-A as shown below
	B2L 3.5	0.3-1.00 mm ²	0,3-0.5 mm ²		See the table below for recommended cap ends
	BLZF 5.08	0.3-2.50 mm ²	0.3-2.00 mm ²		To crimp the cap ends to the wire use the tool below
	BLZ 5.00	0.2-2.50 mm ²	0.1-1 mm ²		The screw terminals can be tightened with a flat blade screwdriver to DIN 5264 as shown in fig.4.7 Tightening torque: 0.4 - 0.5 Nm.

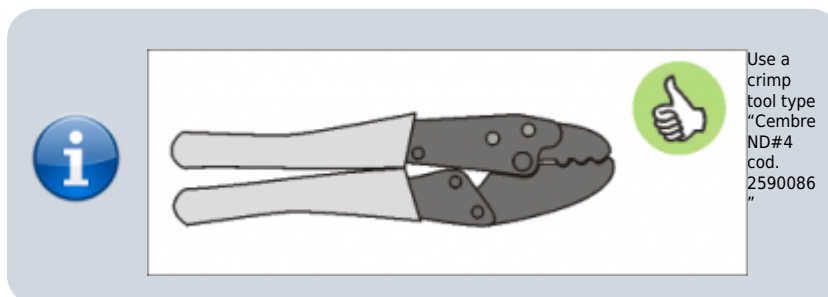
For a safer cabling, always use wire end caps

Tools

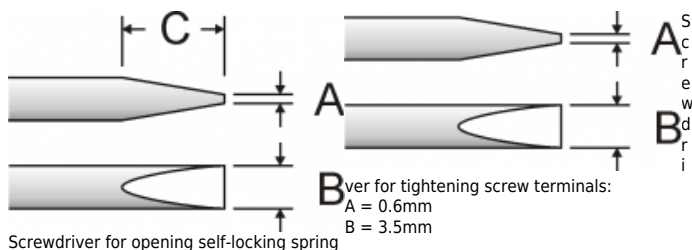
End caps

Wire section	End cap section	Make	Model
0.1-0.3 mm ²	0.95 mm ²	Cembre	PKE 308
0.3-0.5 mm ²	1.32 mm ²	Cembre	PKE 508
		BM	BM00601
1 mm ²	2.5mm ²	BM00603	PK 108
		BM	BM00603

End cap crimping tool



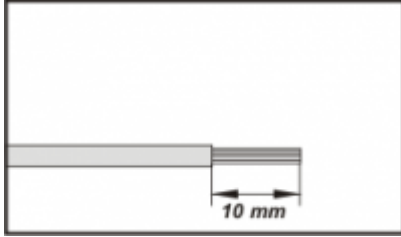
Screwdrivers



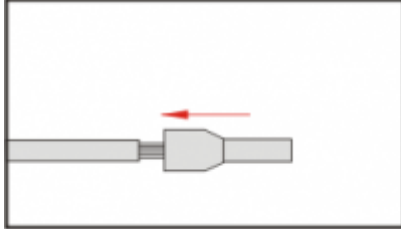
Screwdriver for opening self-locking spring

clip terminals:
A = 0.6mm
B = 2.5mm max
C = 7 mm min

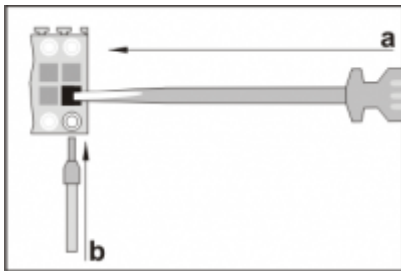
Procedure



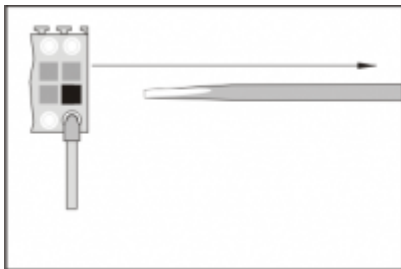
Strip 10mm of copper wire



Fit the end cap and crimp it with a crimping tool

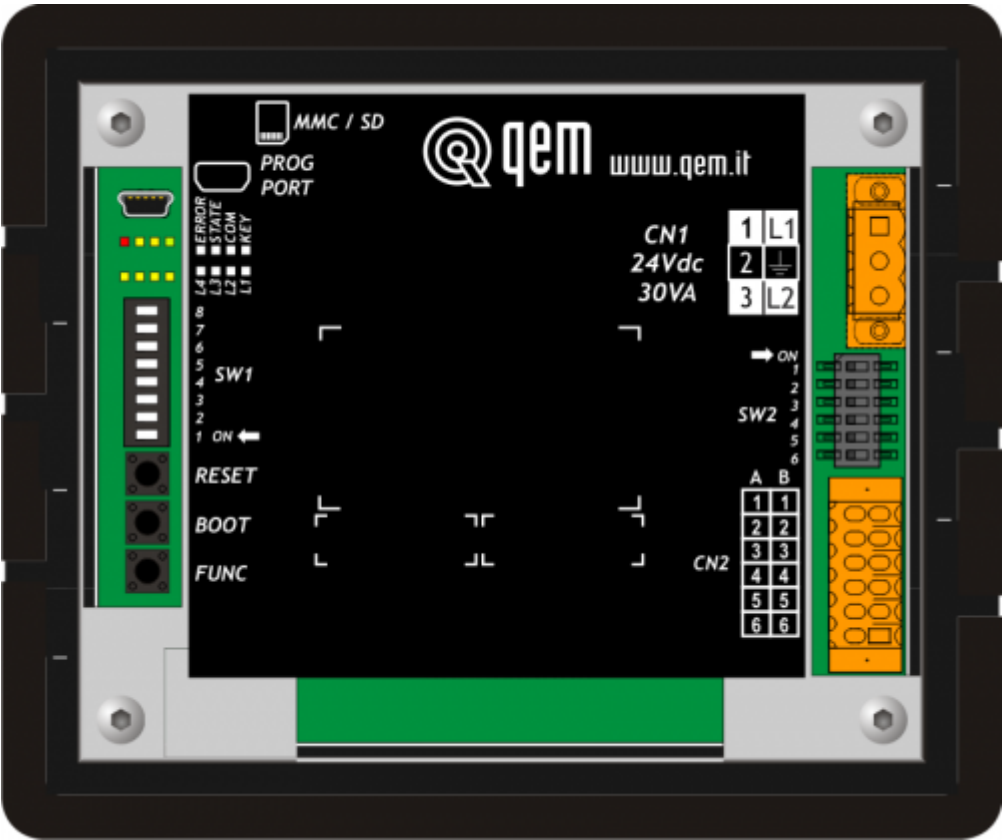


a) fit the screwdriver without turning it
b) fit the cable in the terminal

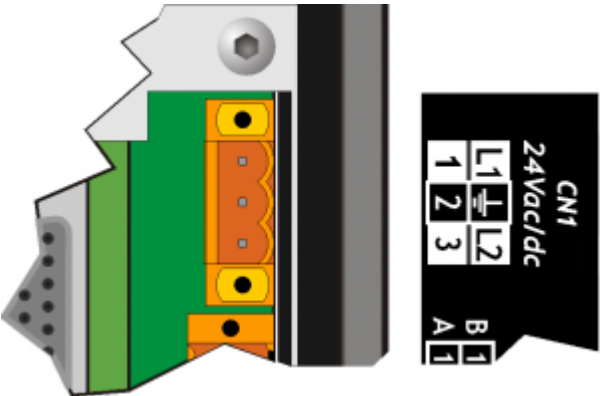


Remove the screwdriver

4. Electrical features and connections

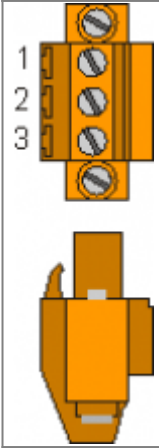


4.1 Power supply



4.1.1 Power supply

	<ul style="list-style-type: none">• The cabling must be carried out by specialist personnel and fitted with suitable anti-static precautions.• Before handling the controller, disconnect the power and all parts connected to it.• To guarantee compliance with EC regulations, the power supply must have a galvanic isolation of at least 1500Vac.	
	Power supply available	24 Vdc 24 Vac
	Valid range	22 ÷ 27 Vdc +/-15%
	Max Absorption	25W 30VA
	Frequency	50/60Hz

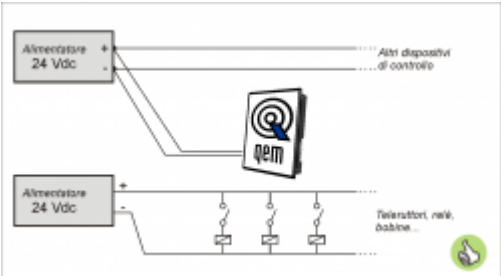
CN1	Terminal	Simbol	Description
	1	L1/-	Power supply phase AC / 0V Power supply DC
	2	GROUND	Ground-PE (signals)
	3	L2/+	Power supply phase AC / Positive power supply DC

4.1.2 Connection examples

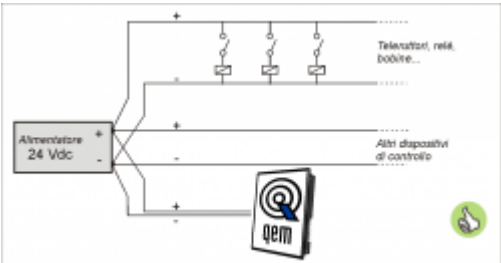
4.1.2.1 Connection examples for the 24Vdc power supply



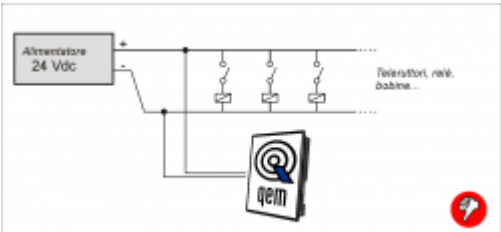
It requires the use of an insulated power supply with output 24Vdc +/-5% conforms to EN60950-1.



Use two separate power units: one for the control circuit and one for the power circuit

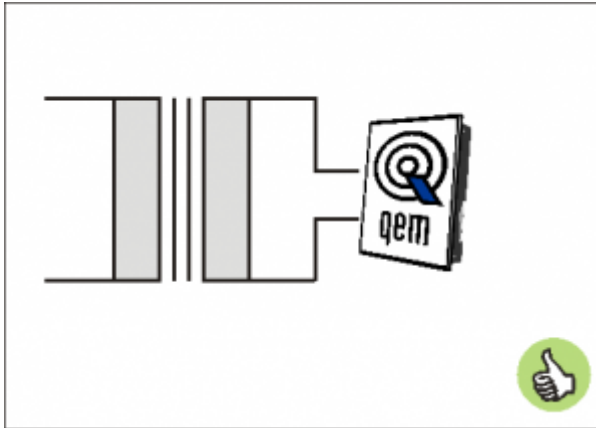


For a single power unit, use two separate lines: one for the control and one for the power

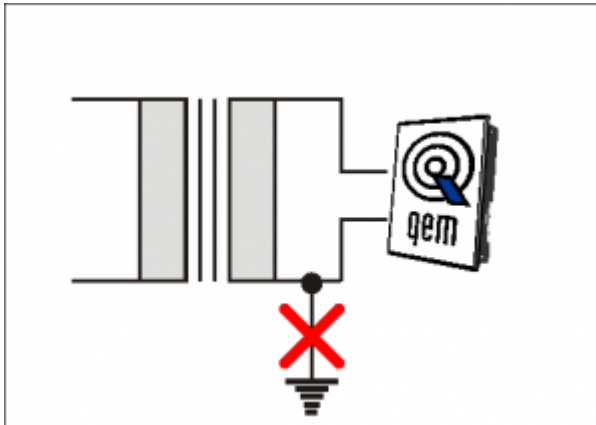


DO NOT use the same lines for the power circuit and the controller

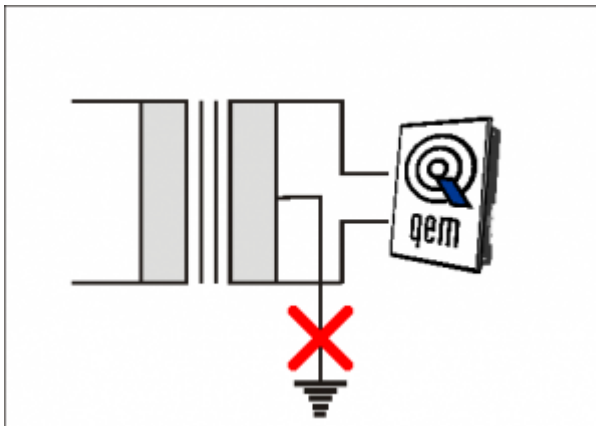
4.1.2.2 Connection examples for the 24Vac power supply



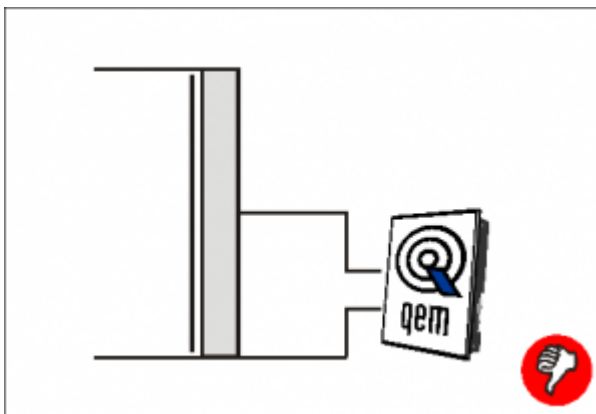
Use two separate power units: one for the control circuit and one for the power circuit



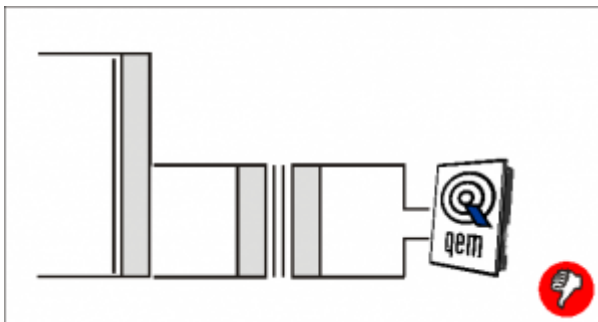
For a single power unit, use two separate lines: one for the control and one for the power



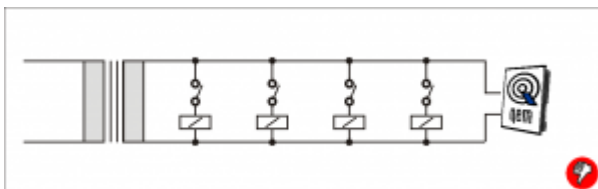
Do not connect the Central cable of the transformer on the ground



Do not use auto-transformers




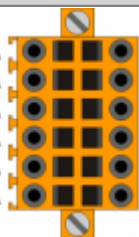
Do not use transformers preceded with auto-transformers



Do not connect parallel coils, solenoid valves etc.

4.2 Serial connections

PROG PORT	Description
	Serial port used for the transfer and debugging of the application program in the CPU. Use only with IQ009 or IQ013 .

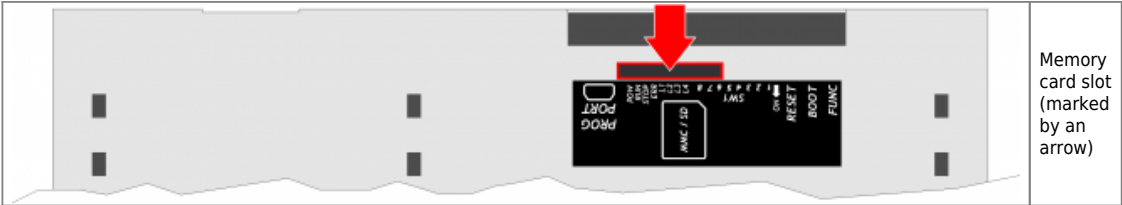
CN2	Terminal	RS232	RS422	RS485	Description
	1A	-	-	A	Terminal A - RS485
	2A	-	-	B	Terminal B - RS485
	3A	0V	0V	0V	USER PORT common
	4A	0V	0V	0V USER PORT common	
	5A	TX	-	-	Terminal TX - RS232
	6A	Terra			
	1B	-	RX	-	Terminal RX - RS422
	2B	-	RXN	-	Terminal RX N - RS422
	3B	-	TX	-	Terminal TX - RS422
	4B	-	TXN	-	Terminal TX N - RS422
	5B	RX	-	-	Terminal RX - RS232
	6B	Ground			

Setup of USER PORT electric standard

SW2	Num. Dip	Name DIP	Setting of DIP			Function
1	1	JP2	ON	X ¹⁾	X ²⁾	Termination RS485
2	2	JP3	ON	X ³⁾	X ⁴⁾	Polarization RS485
3	3	JP1	ON	X ⁵⁾	X ⁶⁾	
4	4		OFF	ON	OFF	Selection of USER PORT electric standard
5	5		ON	OFF	OFF	
6	6		OFF	OFF	ON	
ON ↔ OFF			RS485	RS422	RS232⁷⁾	

¹⁾ 2) 3) 4) 5) 6) X = setting not significant

⁷⁾ the USER PORT can be used as PROG PORT with RS232 electric standard, setting ON in DIP-8 of [SW1](#) and OFF in DIP-6 of [SW2](#)



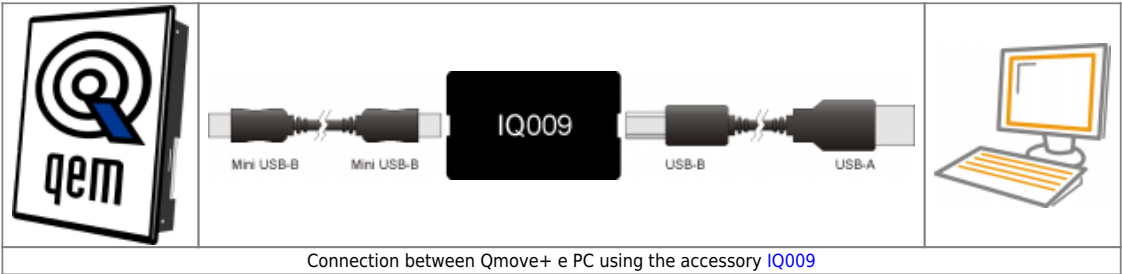
4.2.1 Serial connection features

Connector for IQ009 or IQ013

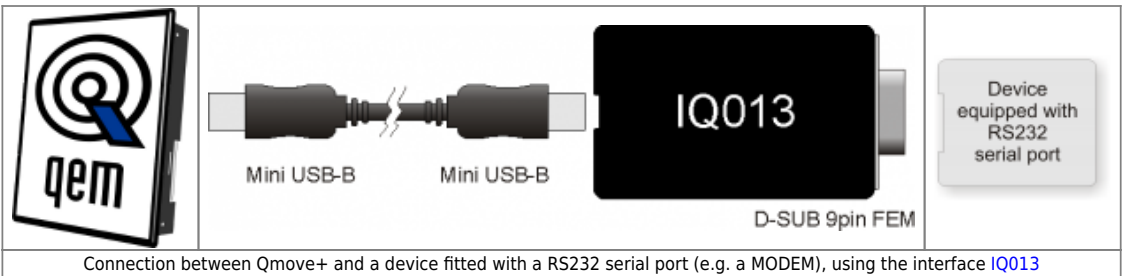
The USB mini-B connector does not support USB electrical standards, it can only be used with an interface IQ009 or IQ013.

It is used for the transfer and debugging of the application program in the CPU.

Electrical standard	TTL (Use serial interface IQ009 or IQ013)
Communication speed	Min. 9.6 Kbaud - max 115200 Kbaud settable by dip1 and 2 of the switch SW1
Insulation	None

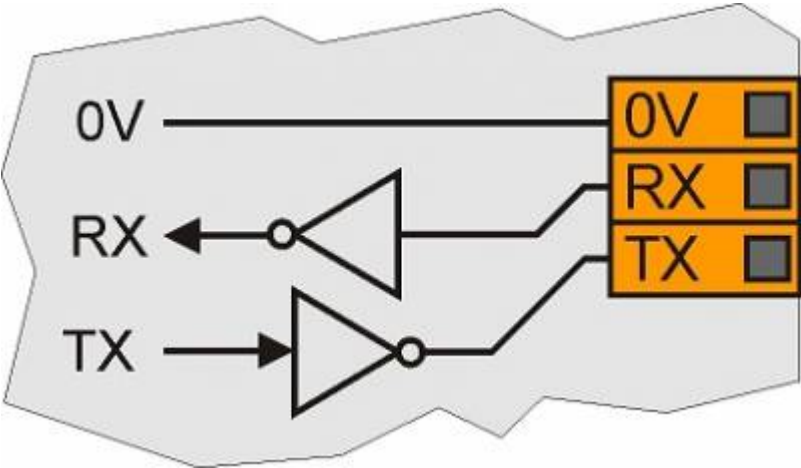


Connection between Qmove+ e PC using the accessory IQ009



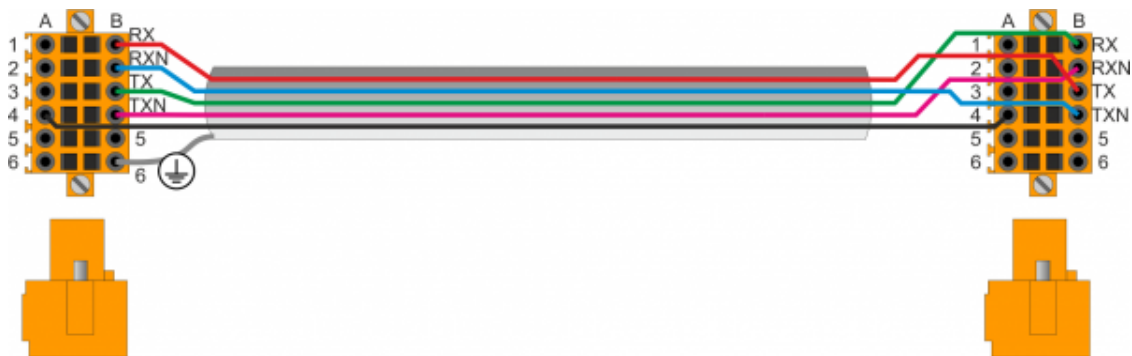
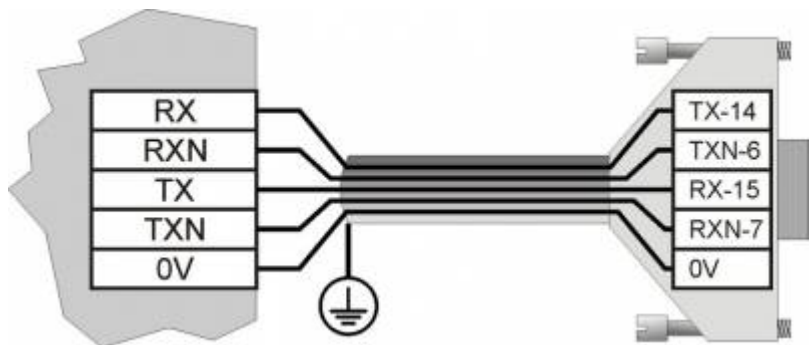
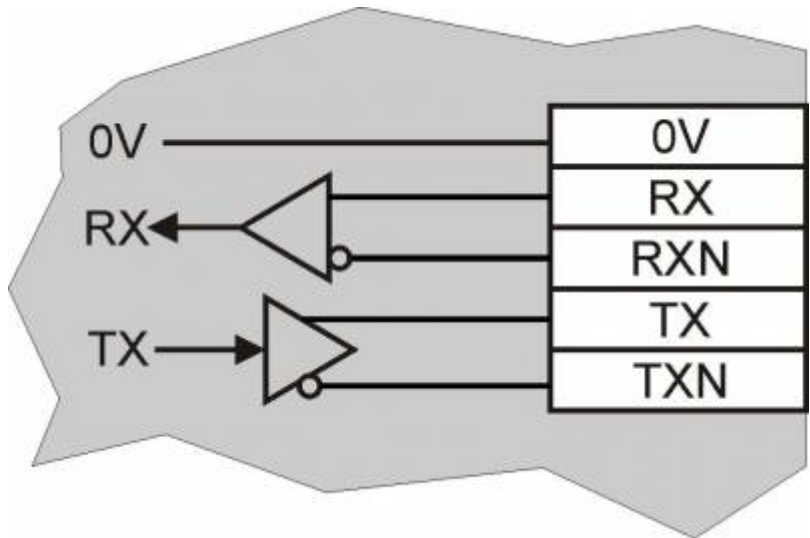
Connection between Qmove+ and a device fitted with a RS232 serial port (e.g. a MODEM), using the interface IQ013

Communication speed	4800, 9600, 19200, 38400, 57600, 115200 baud
Communication mode	Full duplex
Operating mode	Referred to 0V
Max. number of devices connected on the line	1
Max. cable length	15 m
Input impedance	≥ 3 Kohm
Short-circuit current limit	7 mA



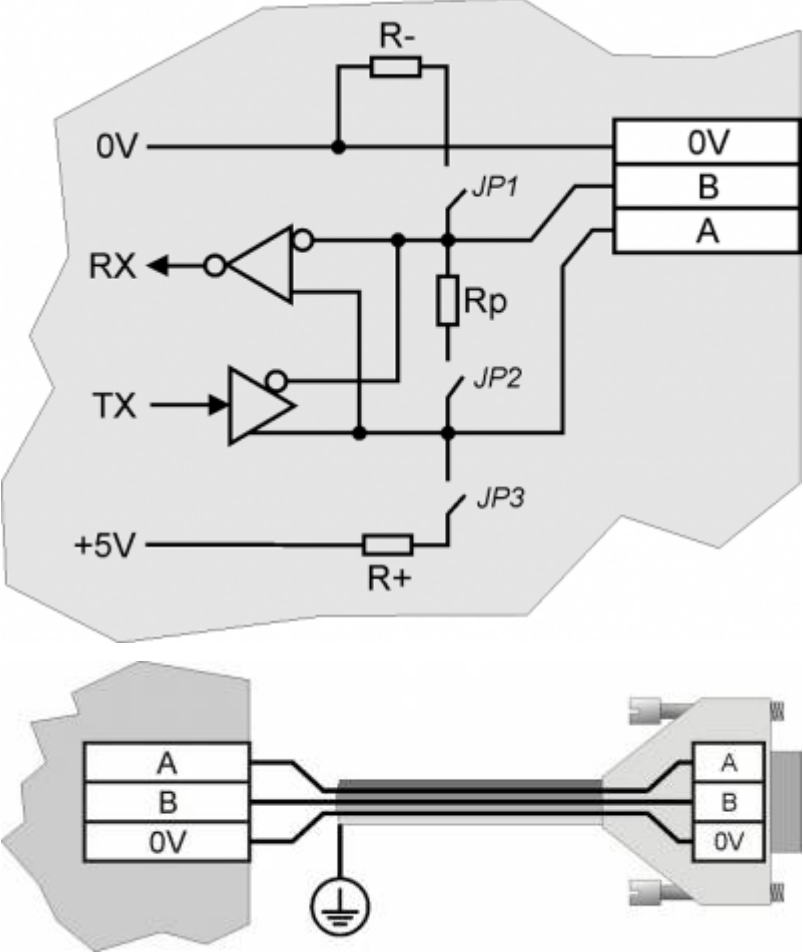


Communication speed	4800, 9600, 19200, 38400, 57600, 115200 baud
Communication mode	Full duplex
Operating mode	Differential
Max. number of devices connected on the line	1
Max. cable length	1200 m
Input impedance	≥ 12 Kohm
Short-circuit current limit	35 mA



To activate the internal termination resistance see [paragraph Setup of USER PORT electric standard](#), [Setup of AUX1 PORT electric standard](#) or [Setup of AUX2 PORT polarization and termination resistances](#)

Communication speed	4800 baud (only if used with SERCOM and/or MODBUS device), 9600 baud, 19200 baud, 38400 baud, 57600 baud
Communication mode	Half duplex
Operating mode	Differential
Max. number of devices connected on the line	32
Max. cable length	1200 m
Input impedance	$\geq 12\text{ Kohm}$
Short-circuit current limit	35 mA



Type of Memory Card to use	MMC, SD and SDHC up to 8GB For proper operation it is necessary that the device conforms to the standards set by "SD Association" (www.sdcard.org) or "Multi Media Card Association" (www.mmca.org).
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To use the Memory Cards they must first be formatted with FAT16 or FAT32 file system.

5. General information of operation

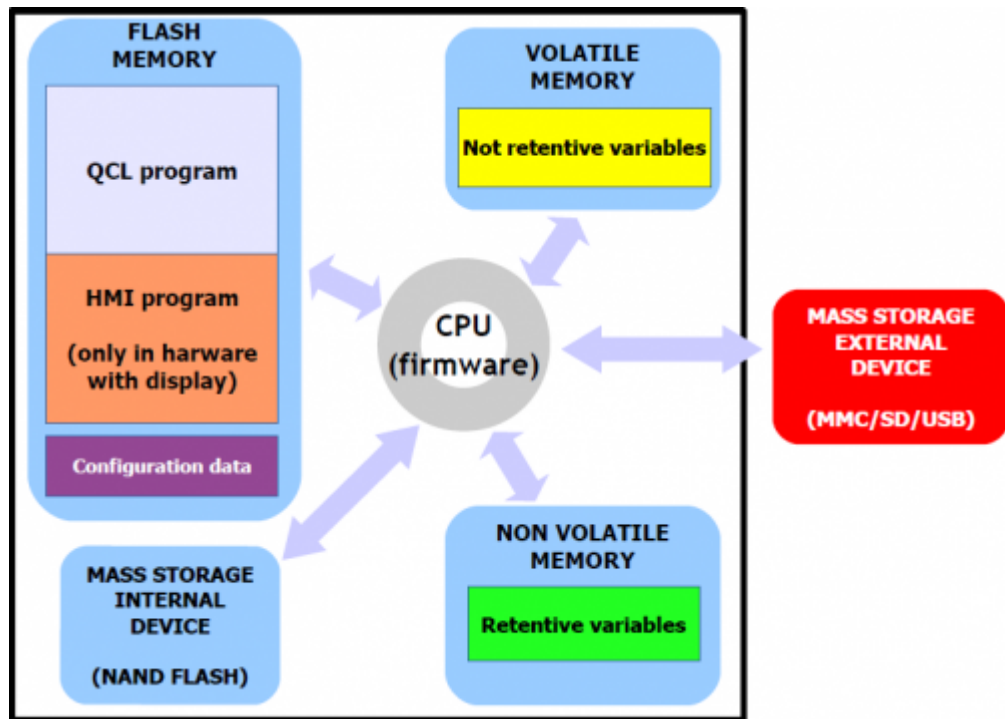
5.1 Introduction

This chapter will introduce some concepts and describes some operations of the product. These contents are partly related and implemented in firmware. This software implements all features that allow the product to be a component of the system programmable Qmove.

5.2 Organizing data and memories

To best understand the terms used in this chapter, it is important to know the organisation of data and memory in a QMOVE application. QMOVE applications are programs written in QCL language that, translated in binary code, are transferred onto QMOVE hardware and saved there. In the hardware, the microprocessor runs a program called firmware that interprets the above binary code instructions and performs the operations associated to them.

A QCL application, in addition to the instructions, is also composed of variables that the QCL instructions act on. Some of these variables are retentive, i.e. their values remain unaltered from shut-off to start up. The flow chart below illustrates the organisation of data in a QCL application transferred to the memory of any QMOVE hardware:



It can be noted that, the QMOVE hardware has several mass storage devices:

“Flash memory”, where the following is saved:

- **QCL program:** the series of QCL instructions translated into binary by the compiler.
- **HMI program:** the series of HMI screens translated into binary by the compiler. This program only exists when the QMOVE hardware has a display.
- **Configuration data:** the calibration and configuration data, the touch-screen calibration settings, the ethernet communication configuration data (IP address, etc...), etc.

“Non volatile memory”, which stores:

- **Retentive variables:** the group of variables that remains unaltered on a shut-off and startup (e.g. SYSTEM, ARRAYS, DATAGROUP, etc).

“Volatile memory”, which stores:

- **Not retentive variables:** the group of variables that is set to 0 at each startup (e.g. GLOBAL, ARRGBL, etc).

The volatile data memory is also used as dynamic memory. i.e. the memory used by the firmware for internal operations and active HMI screen management.

“Mass storage internal device” is managed by a standard filesystem and is useful to save information by the DATASTORE device (read - write binary or csv files with recipes, logs, various setups, etc). It's also used to store the backup of the application QMOVE and other service files.

“Mass storage external device” is managed by a standard filesystem and is useful for loading the QMOVE application, data loading/saving, firmware update or to save informations by the DATASTORE device.

5.3 SETUP PAGE



WARNING: The use of these procedures is potentially dangerous (see for example the application delete) and it is preferable that is carried out by a specialist supervision.

The system functions are special procedures that allow the user to perform various operations such as setting/calibration of devices, saving/restoring data and application on/from removable devices, deleting the application and management of storage devices.

To access the new system functions simply login to instrument SETUP.

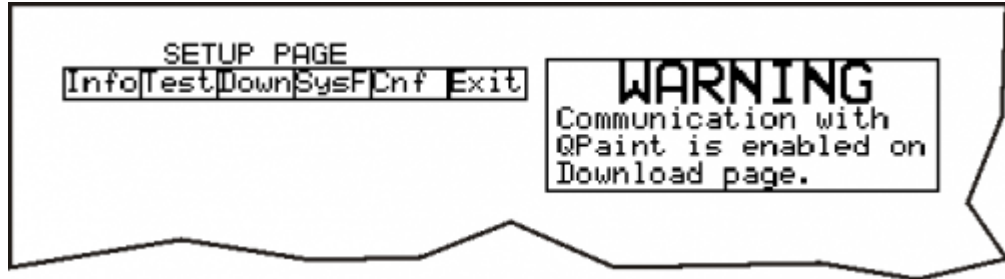
Note: If there is no Terminal application software will automatically enter in SETUP.

5.3.1 Procedure

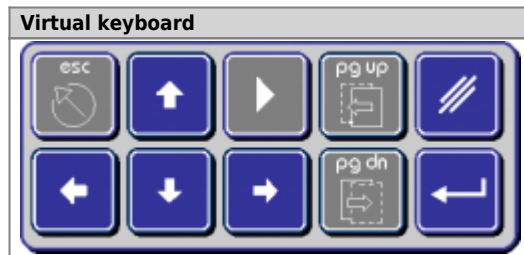
To access in the **System functions**, press the **BOOT** key or press together the keys **"F2 + F4 + F5"**.



The following menu appears:



To select a function using the vertical arrows of the virtual keyboard, then press Enter for view the selected function. The system restarts and displays the system function selected.



5.3.2 Setup page menu

Lists and describes all system functions.

5.3.2.1 Navigation keys

To enter/confirm the functions press ENTER key



The UP and DOWN keys perform changes of values.



To switch from one page to another press PAGE DOWN key or PAGE UP key



For exit from the menu press the ESC key



Note: For exit from the system functions select "EXIT" from the main menu.

5.3.2.2 Info menu

5.3.2.2.1 INFO PAGE 1/6



5.3.2.2.2 FW code

Firmware code (ex. HD010003)

5.3.2.2.3 FW ver.

Firmware version (ex. 01.0.3)

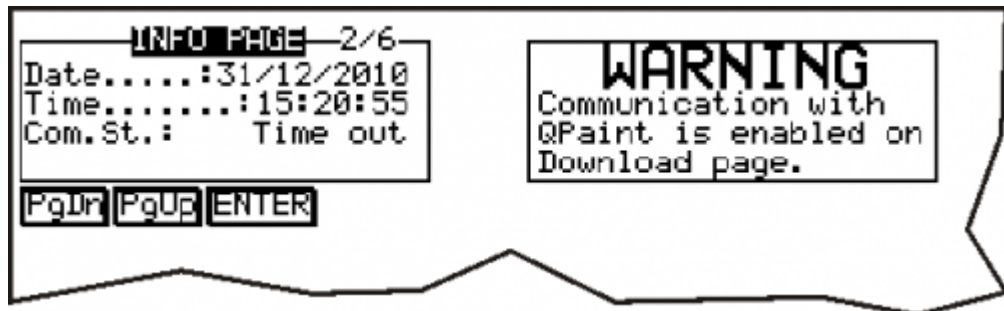
5.3.2.2.4 IF code

Data not available.

5.3.2.2.5 IF ver.

Data not available.

INFO PAGE 2/6



5.3.2.2.6 Date

System date.



The ESC key is inhibited until the confirmation of all the fields by pressing the ENTER key.



5.3.2.2.7 Time

System clock.



The ESC key is inhibited until the confirmation of all the fields by pressing the ENTER key.



5.3.2.2.8 Com.St.

Reports the status of the serial communication. If everything is OK the message: **Ok**

If the 'COM' led is ON and the 'STATE' led flashing, the connection between the HMI and the QMOVE is not active. The reasons can be:

Checksum wrong Appears the 'No match' message, which means that the application built for the Terminal is not compatible with the QMOVE software and then the communication is not established because it may create incompatibilities in data of the system. The 'No match' condition excludes communication problems due to connection errors or problems related to serial ports.

Communication interrupted Appears the 'Time Out' message, which means that the terminal not received response or the response has not been received completely. If the 'COM' led is ON it probably means there is a malfunction of one of the two devices (QMOVE or HMI) or connection between the device. If the 'COM' led is OFF means that at least one 'Time Out' occurred from the power ON (example an electrical noise).

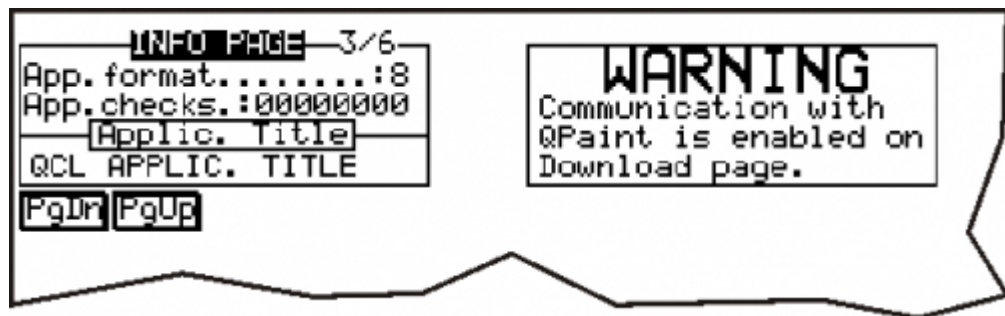
Reading errors Appears the 'Read Error' message, which means that the response string to a reading didn't the correct syntax of the Protocol. This can happen if the Terminal makes a request of a variable with index out of range. For example the read request of an element of an array, where the value of i is greater than the size of the array itself; if i is a constant value that the compiler of the application can inspect and report the error, but if i is the value that is contained in a variable can take place such an error.

Writing errors Appears the 'Write Error' message, which means that the response string to a reading didn't the correct syntax laid down in the Protocol. All that has been described for the readings also applies to torn writes

Backup error Appears the 'Backup Error' message, which means that the QMOVE application data backup operation is not successful.

Restore error Appears the 'Restore Error' message, which means that the restore operation of data of the QMOVE application is not successful.

5.3.2.2.9 INFO PAGE 3/6



5.3.2.2.10 App.format

Identifies the type of application file format. It is used to prevent the execution of applications with a format that is not compatible with the firmware. (Is an information used only by the development "QPaint" software).

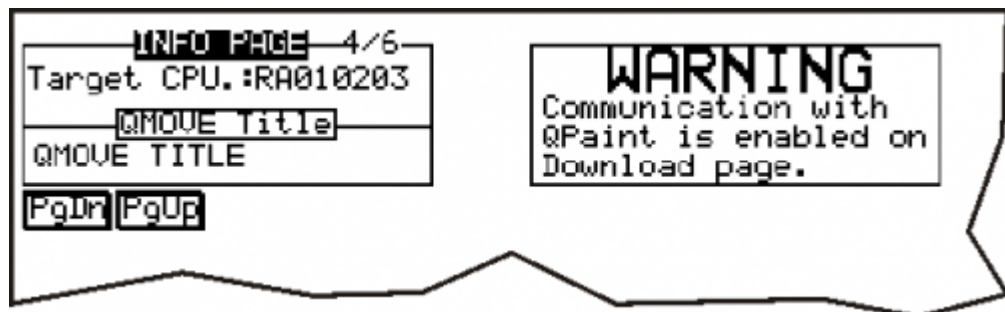
5.3.2.2.11 App.checks

The value allows you to uniquely identify a particular application. It is computed on the information used in the download of the application.

5.3.2.2.12 App.title

Is a string that is set in the configuration "Qpaint" program to identify the application. Cannot be changed.

5.3.2.2.13 INFO PAGE 4/6



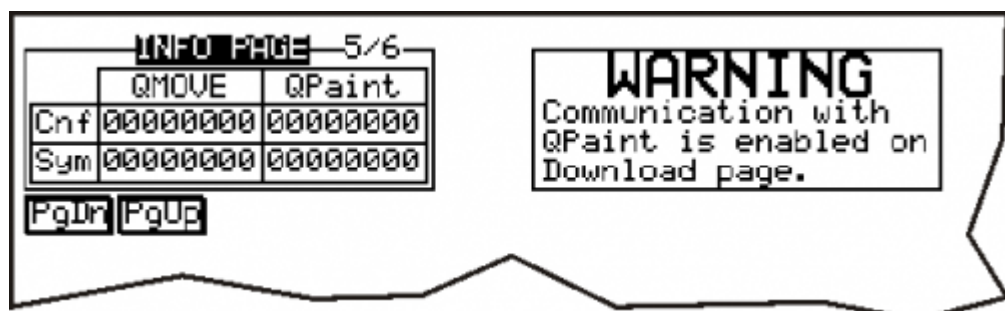
5.3.2.2.14 Target CPU

You see the CPU type connected with the Terminal. This information is detected with a reading from the Qmove CPU.

5.3.2.2.15 Qmove Title

Is the application title exists in the Qmove CPU. This information is detected with a serial reading by Qmove CPU.

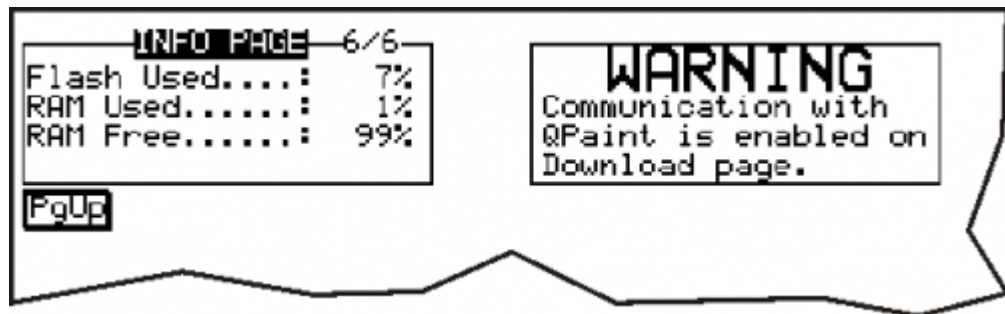
5.3.2.2.16 INFO PAGE 5/6



5.3.2.2.17 Checksum table

You see the checksum file configuration and application Qmove symbols and symbols which the application has been generated. The first is read with the serial from the CPU, the second is a value contained in the data download. If the checksum do no match, the connection isn't enabled between the Terminal and Qmove variables. (see [“no match error or incorrect Checksum”](#)).

5.3.2.2.18 INFO PAGE 6/6



5.3.2.2.19 Flash Used

The value refers to the space occupied in the flash memory of QPaint project. The value is the same to the one displayed on the download page.

5.3.2.2.20 RAM Used

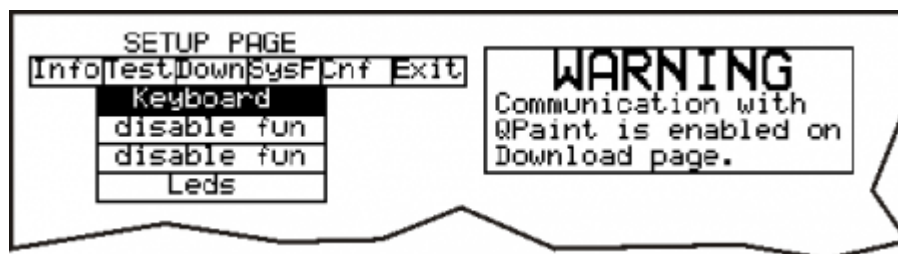
The value refers to the space occupied in the RAM memory from the current page displayed by the terminal before logging on to the Setup. The value refers to all structures allocated to run the page.

5.3.2.2.21 RAM Free

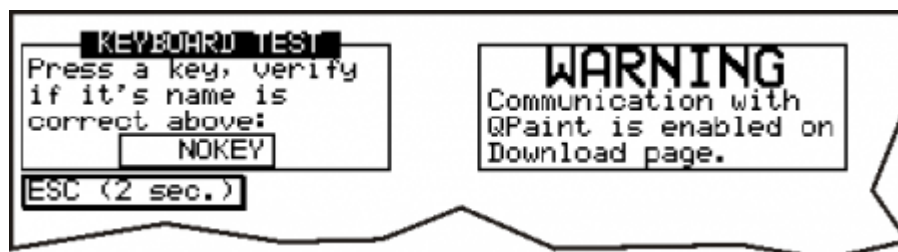
The value refers to the free space of the RAM memory. The sum of the first and third value, indicates the total RAM memory space.

5.3.2.3 Test Menu

The HMI has the following test procedures to assist the operator:



5.3.2.3.1 Keyboard

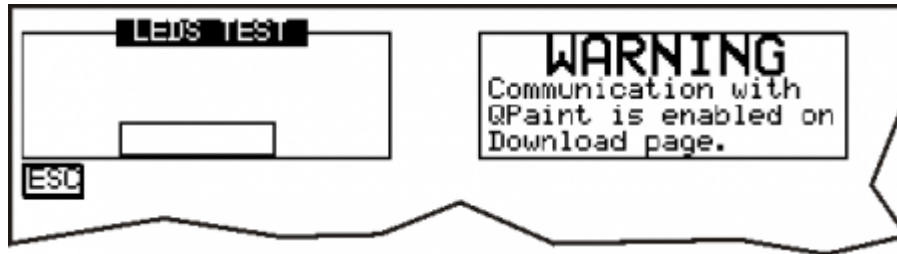


At the pressure of any button you see the message.



For exit press and hold the “ESC” key for 2 sec.

5.3.2.3.2 Leds



The function key leds are activated in succession with variable frequency.

Don't execute the system leds test ("Key", "Com", "State", "Error") because the function it isn't programmable and because their indications are not essential to the functionality.

5.3.2.4 Down Menu (Download)



The DOWNLOAD procedure allows the Terminal to receive the information needed to run the application designed by the user. The steps performed during the download procedure are:

1. Verifying the connection
2. Flash memory delete
3. Displays the size of your application to receive
4. Software download

5.3.2.5 SysF Menu (System Functions)



The entry in this menu is indicated by the following Leds:

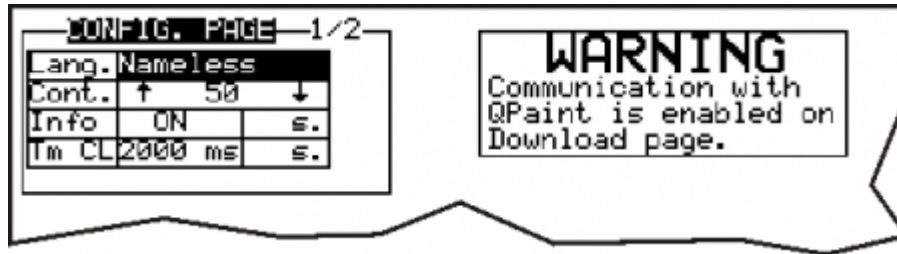
Led ON	Color	Menù SysF description	System function	Description
L2	Yellow	Delete App.	Application delete	Delete the application
L1 L2		Upload MMC	Application upload from MMC/SD	Application upload from MMC/SD. The file must be named as: appqtp.bin
L3		Touch Calib.	Touch Calibration	The Touch Screen calibration.

For the description of functions see section [System functions](#)

5.3.2.6 Cnf Menu (Configuration)

The changes will be put into execution at the exit from the configuration page.

5.3.2.6.1 Config. Page 1/2



Each time you press the button ENTER key you jump from one sector to another sector.

Lang.

Is the choice of the languages to be used. This array of strings is decided at design time in the Setup program.

Cont.

Is the value of the display contrast.

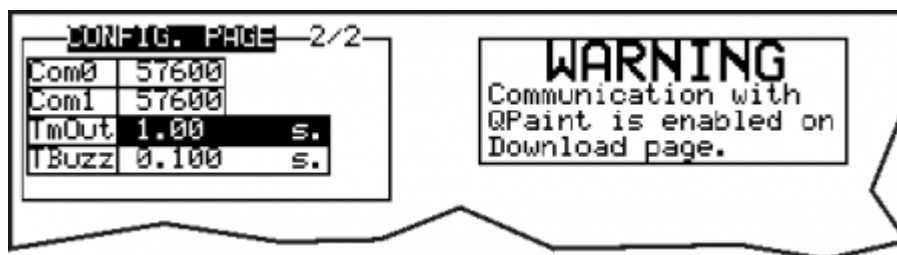
Info

Debug informations (default = OFF).

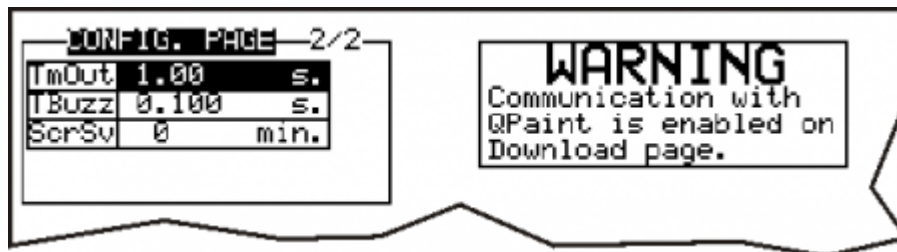
Tm CL

CLEAR key time. During the dataentry, if the CLEAR button is pressed for longer than the time set the given typed is cleared. If the CLEAR button is pressed impulsively you cancel only one digit of the given type.

5.3.2.6.2 Config. Page 2/2



Depending on the firmware version can also exit this window:



Com0

Serial port speed System.

Com1

Serial port speed AUX.

TmOut

Timeout on request to the CPU (default = 1.00 s).

TBuzz

Operating time of the buzz when press a button (default = 0.100 s).

ScrSv

Screen-saver settings:

0 = disable (default). Display always on.

1..60 = switches off the display after pressing the buttons or touch after 1..60 minutes. Press any key or touch the display for resumes.





5.3.3 System functions

5.3.3.1 Delete App. function

SYSTEM FUNCTIONS

Application delete

Press BOOT or F5 for 2 sec. to execute
Press FUNC or F1 to EXIT

Press the BOOT key/F5 key for 2 seconds the the selected function is executed.	<div><div>F5</div><div></div><div>BOOT</div></div>
The POW led starts flashing to indicate that the selected function is running.	<div><div></div><div>POW</div></div>
When the function ends the POW led stops flashing.	<div><div></div><div>POW</div></div>
Press the FUNC key/F1 key to exit from the function	<div><div><div>F1</div><div></div><div>FUNC</div></div></div>

SYSTEM FUNCTIONS

Application delete

Executing...

Delete HMI Application

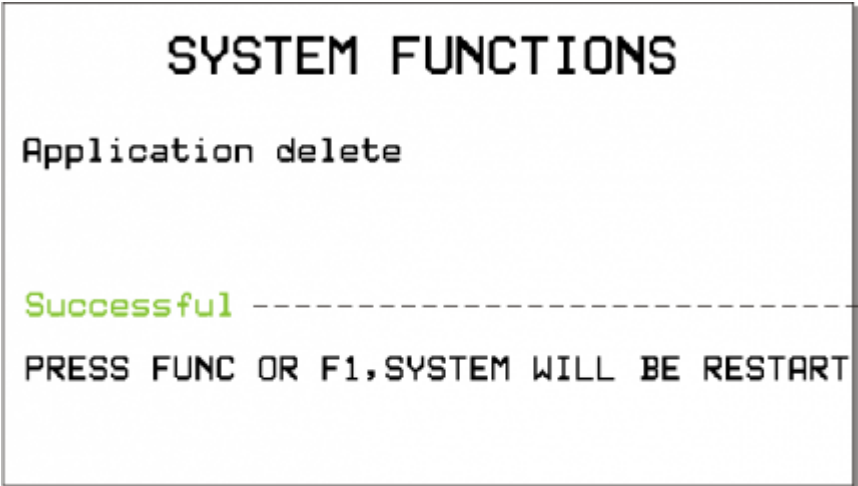
Progress: 100%

a

b

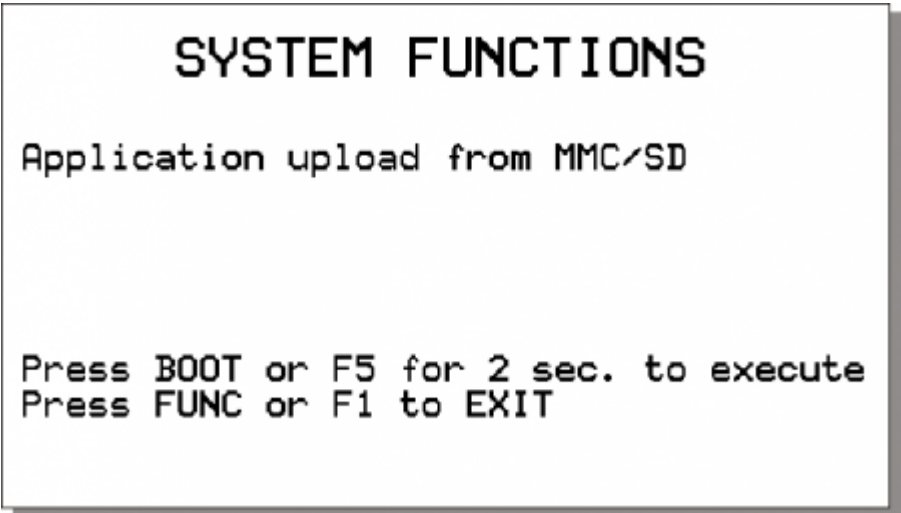
c







- **a** = indicates that the function is in running.
- **b** = task running.
- **c** = percentage of the function executed.

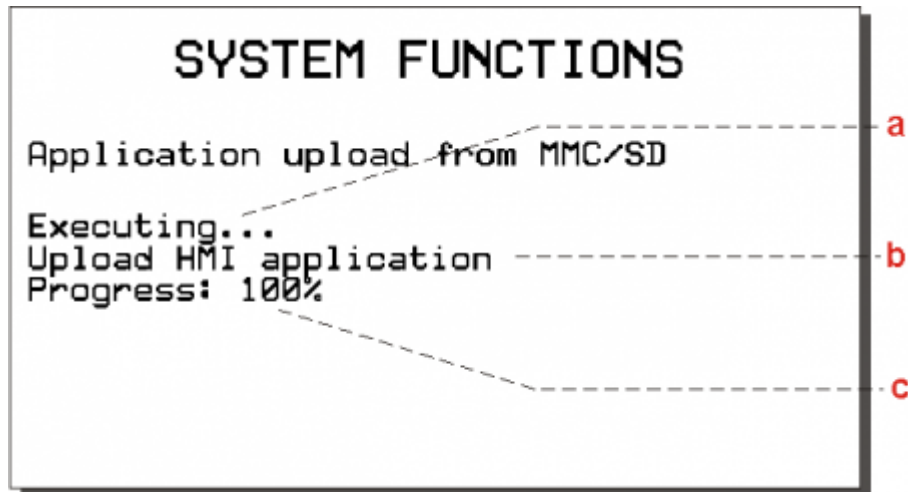


- d = indicates that the function was successful.

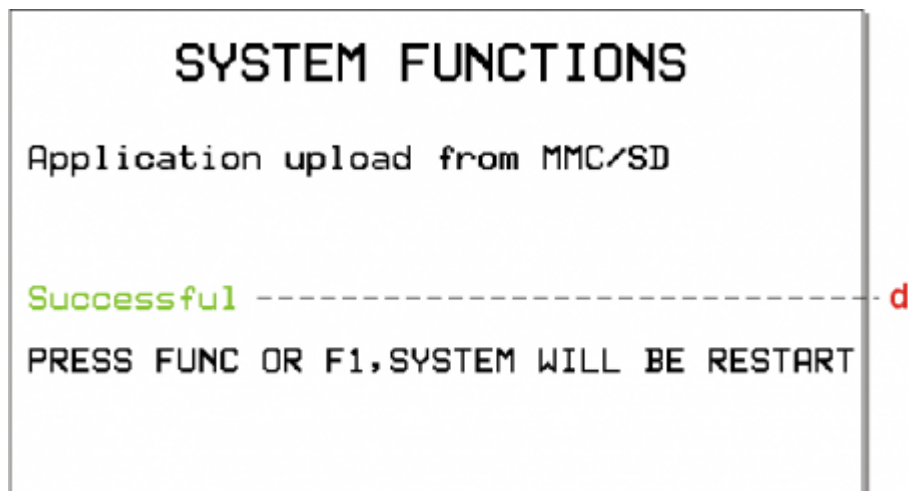
5.3.3.2 Upload MMC function



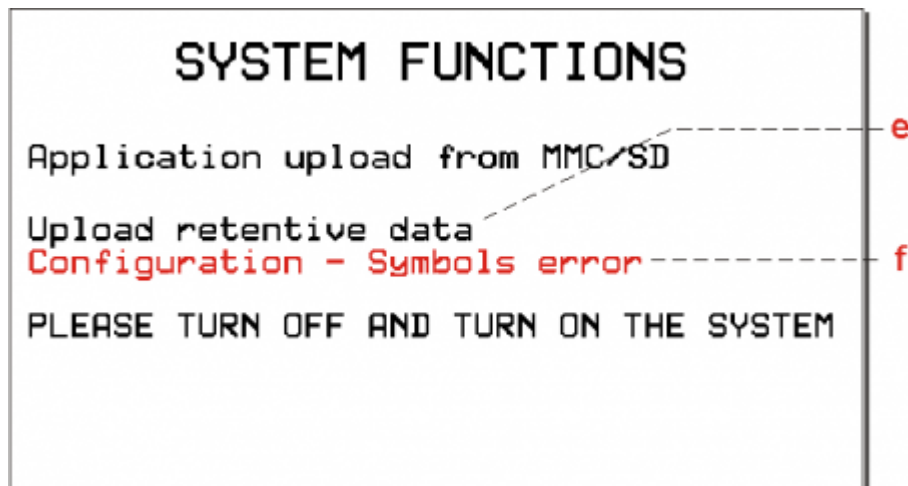
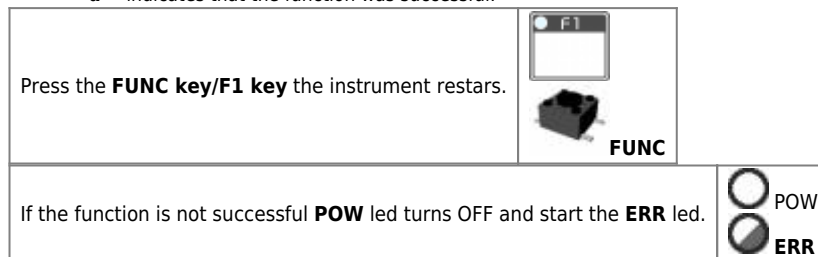
Press the BOOT key/F5 key for 2 seconds the selected function is executed.	  BOOT
The POW led starts flashing to indicate that the selected function is running.	 POW
When the function ends the POW led stops flashing.	 POW
Press the FUNC key/F1 key to exit from the function	  FUNC



- a = indicates that the system is running.
- b = operation running.
- c = percentage of function executed.



- d = indicates that the function was successful.


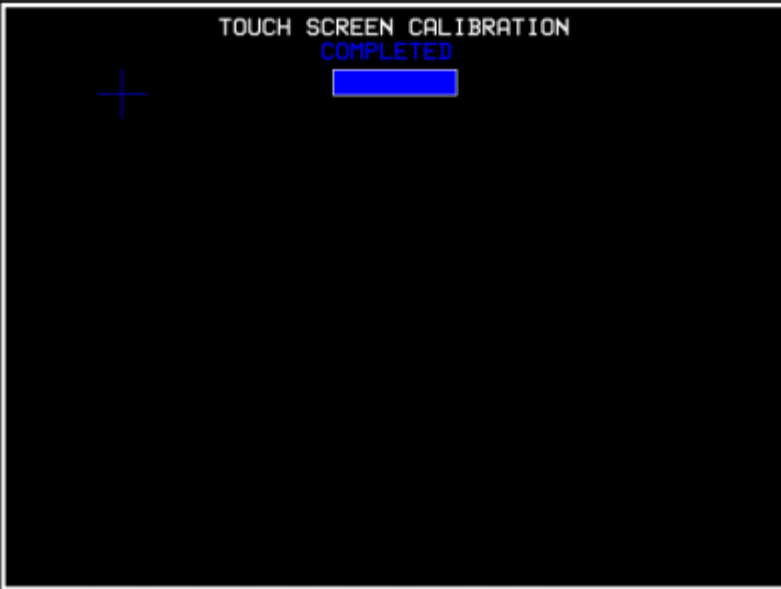



- e = operation that caused the error.
- f = indicates the type of error occurred.

The number of flashes indicates the type of error occurred as shown in table [Error messages of system functions](#).

5.3.3.3 Touch Calib. function

This procedure, only available on instruments with touch-screen. Need to calibrate the pointing device.

	<p>At the entrance of the procedure, is presented with a screen that has a blue cross. Press the center of the cross until the progress bar has reached completion.</p>
	<p>Appears the “COMPLETED” message and and you can release the pressure.</p> <p>Note: If the pressure is released before completion of the progress bar, the procedure is aborted and the “!! OPERATION ABORTED !!” message</p>
	<p>Thereupon a new Green Cross. Even in this case, repeat until the progress bar is complete and is displayed “COMPLETED” message.</p>



It then proposed a final page with a new cyan colored cross. Even in this case, repeat until the progress bar is complete and is displayed. **“COMPLETED”** message.

5.3.3.4 Error messages of system functions

When a system function ends with an error displays a message that describes the cause of the error.

Error/Flashing number ERR led	Message
1	Generic error
2	Open/Exist/Create file error
3	Read file error
4	Write file error
5	Out of Memory error
6	QMos Version error
7	Checksum Error
8	Symbols checksum No Match
9	Configuration / Symbols error
10	File format error
11	Format error
12	Device not present or unformatted
13	Application not present error
14	Touch operation failure
15	File compression type not support
16	Target don't match project !
17	Fw version don't match project !
18	File copy error
19	Function not enabled

5.4 Information for programming

In this section are collected all the product information you need while you are programming, or during development of an application QCL.

5.4.1 Development softwares

For programming the product you should use the Qview-5 for QCL and Qpaint-5 for the design of graphics pages. Both of these software are contained in a software package called Qworkbench and it is freely downloadable from the site Qem (in the download section).

For programming with the development software QPaint-5 it is important select the correctly the target. Select *Project* → *Target Configuration* and select the correctly model.

This paragraph looks at how to measure an estimate of use of the product's memories. The **nonvolatile memory** is available to memorise the **QCL** program and has a capacity of 512KB.

The memory space occupied is equal to the size of the .BIN file generated by Qview. The percentage memory occupied can be viewed in the CPU panel of Qview under “Used CODE memory”, or this information can be obtained from the value of parameter “sizeapp” of the QMOS device.

The **nonvolatile memory** available to memorise the **HMI** program has a capacity of 5.5MB.

The memory space occupied is equal to the size of the .BIN file generated by Qpaint, whose value (in bytes) is viewed in parameter “memqtp” of the MMIQ2 device.

The **nonvolatile data memory** used to memorise **retentive variables**, has a capacity of 819KB.

The percentage memory occupied can be viewed in the CPU panel of Qview, under “Used RETENTIVE”, or this information can be obtained from the value of parameter “sizeret” of the QMOS device.

The **volatile data memory** used to memorise **non ritentive variables** has a capacity that depends on various factors (e.g. the HMI and QCL program sizes, the HMI screen being viewed, etc)

The general memory of the free system, available as volatile data memory, is indicated by parameter “memfree” in the MMIQ2 device.

6. Available accessories

- [IQ009](#)
- [Connectors polarization Kit](#)
- [Front panel customization kit](#)

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