

Installation and maintenance manual



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1. Introduction

Thanks for buying this QEM instruments. We'll be glad to receive any suggestion at our e-mail address info@gem.it.

1.1. Graphic signals meaning



Not reading the message will be dangerous for the instruments integrity and/or for the success of the operation.



Note: Important information for the correct use of the instruments.



For more informations see the user manual indicated in the message.



For more informations see the indicated pages.

1.2. Limited Warranty

For two (2) years from the original acquisition, QEM will repair or replace for free controls and devices that QEM thinks be imperfect in materials or quality. This warranty is not valid if the object has been tampered by not authorized persons or used in an inappropriate way. This warranty replaces all other warranties either expressed or implicit. QEM doesn't hold personally responsible for all charges (installation or uninstalling included), drawback, or damage caused by our products, made or sold. In any case, QEM total duty, always will not exceed the control total price. Claims for refunds of selling price, reparations, or replacements must be referred to QEM with all pertinent data (damage, purchase date, developed work and problem). It is not provided any duty for batteries and fusible cut-out consumption. The product must be returned only with a written notification, included the Number of Restitution Authorization QEM and must be paid all forwarding charges.

1.3. Validity Reference manuals

The documentation referred to the QEM strumentation in divided in many issues that allows an easy utilization.

 MIM - Base	MIM-Base: Installation and maintenance manual Hardware and software instruments descriptions..
 MIM - Card	MIM-Card: Installation and maintenance manual Hardware informations for the single spacialization card.
 MDU	MDU: User manual User information on the software.
 MIMAT	MIMAT: Service manual. Informations on: wiring, right calibration, parameters insertion and breakdown individuation.

It is possible to download manuals from www.qem.it

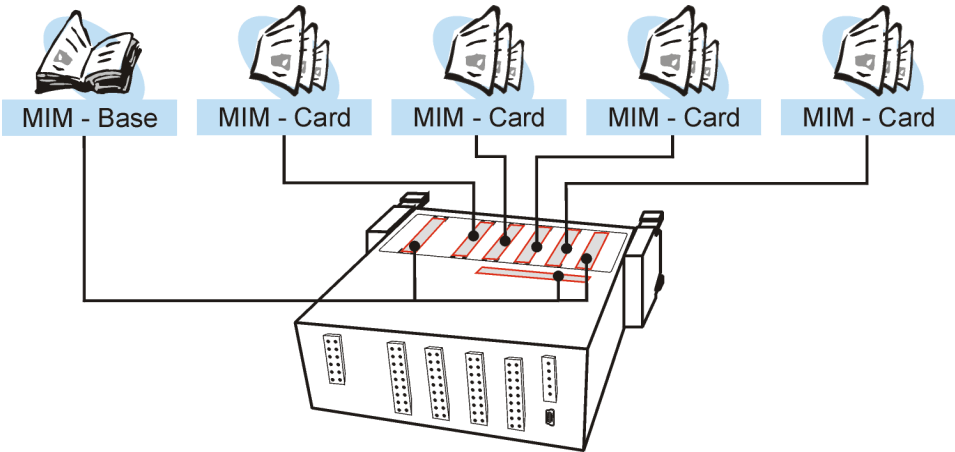


Fig. 1 manual and data sheet determination by instrument labels.

1.4. Validity

M: manual
S: instrument

The present document is fully valid excepted mistakes or omissions.

Release	Description	Date
1.0	M: New manual	27/06/2006
1.1	M: Up to date supply characteristics	11/05/2006
1.2	M: Up to date connector	23/05/2006
1.3	M: Up to date 24 Vdc supply note and cable.	08/06/2006
1.4	M: Up to date USER port connector	27/06/2006
1.5	M: Up to date serial port connector addresses	07/07/2006
1.6	M: Up to cable note	28/08/2006
1.7	M: Up to 6.1.1	28/02/2007
1.8	M: Up to electrical diagram	28/03/2007
1.9	M: Error in Applicative updating from MMC	16/07/2011
1.A	M: Error in RX/TX User connector table	14/09/2011

1.4.1. Trade Marks

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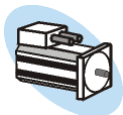
1.5. Norm reference

European norm includes some rules and recommendations about control security systems with elements of operator interface.

<i>Protection rating</i>	IP20 (In conformity with E N 60-5-29)
<i>Vibration resistance</i>	In conformity with IEC 68-2-6
<i>Bump resistance</i>	In conformity with IEC 68-2-27
<i>Noises immunity</i>	In conformity with EN 50082-2
<i>Emission levels</i>	In conformity with EN 50081-2
<i>Pack/Box</i>	DIN43700
<i>Omega guide for fixing the instrumentation to the switch-board</i>	DIN 46277 / 3

2. Description

R201AFxx is a controller of the Micro Qmove series, it is equipped with:



Axis control.



1 serial programming PROG port RS232 (mini USB)



1 serial multistandard (RS232/422/485)



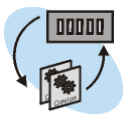
1 Memory Card MMC/ SD reader (Memory card not included).



Spring terminals (anti-vibration).



Instrument customization with specialization cards and firmware function.



Real Time Multitasking QMOS operative system for hardware sources handling using firmware devices.



Devices that provide ready solutions for the application development in the industrial automation.



Indispensable functions for the automation of machines and plants:

- PLC (Programmable Logic Controller),
- MC (Motion Controller),
- HMI (Human Machine Interface).



Modbus net wiring.



High level programming (QCL) or ladder (IEC1131).



Free development environment Qview5.



OCX libraries for serial communications with Windows® PC.

2.1. Product code

 With the Instrument Order Code it is possible to obtain his characteristics.

 **Specialization cards:** specialization cards can't be inserted in the instrument with any assortment.

Model	Characteristics										
R201AF	. 00 .	C1	/ SX3	/ CH4	/ CH4	/ CH4	/ DU1	/ 24Vac			
									Slot supply Power supply		
									Slot 6 : H1 specialization card		
									Slot 5 : H1 specialization card		
									Slot 4 : H1 specialization card		
									Slot 3 : H1 or L1 specialization card		
									Slot 2 : B1 specialization card		
									Gamma of Specialization card		
									Firmware version (00 = not installed)		
Hardware version R = Box/pack type; 2 = box dimensions; 0 = HMI not included; 1 = hardware compatibility rating; A = "Core" technical level; F = Programmability (completely programmable).											

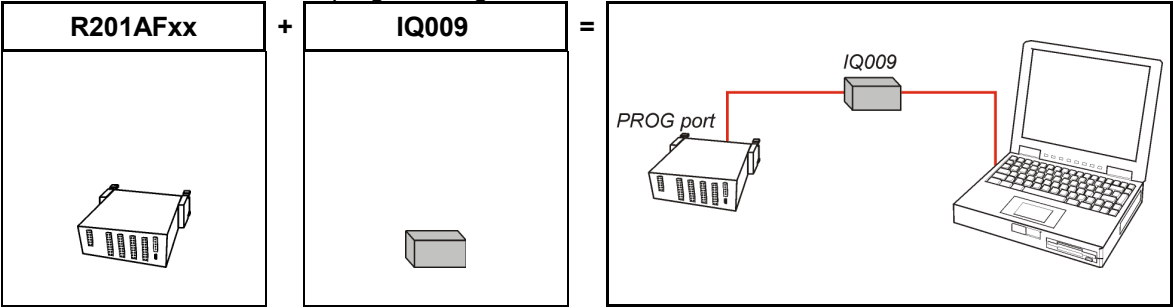
2.1.1. "Specialization cards" coding

Model	Characteristics			
H	3	- R	V	1
			Card numerical attribute	
			Card alpha-numerical attribute	
			Card functioning	
Card type				

2.2. Accessories

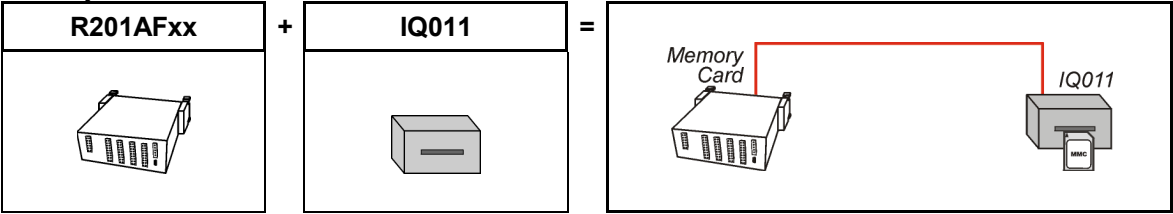
2.2.1. IQ009

Serial PC interface for CPU programming



2.2.2. IQ011

Memory Card reader interface



3. Product conformation

The R201AFxx is configured with a whole number of specialization cards inserted in the 2, 3, 4, 5, 6 slots (modularity).

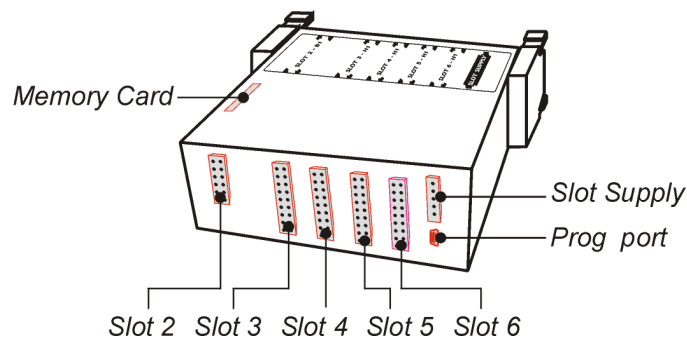


Fig. 2 Slot numeration

Slot	Description	Reference manuals
Slot 2	B1specialization cards (pg. 14)	MIM-Base
Slot 3	H1 or L1 specialization cards	MIM-Card
Slot 4	H1 specialization cards	MIM-Card
Slot 5		MIM-Card
Slot 6		MIM-Card
Slot supply	Power supply card (pg. 12)	MIM-Base
PROG port	CPU Program Port (pg. 14)	MIM-Base

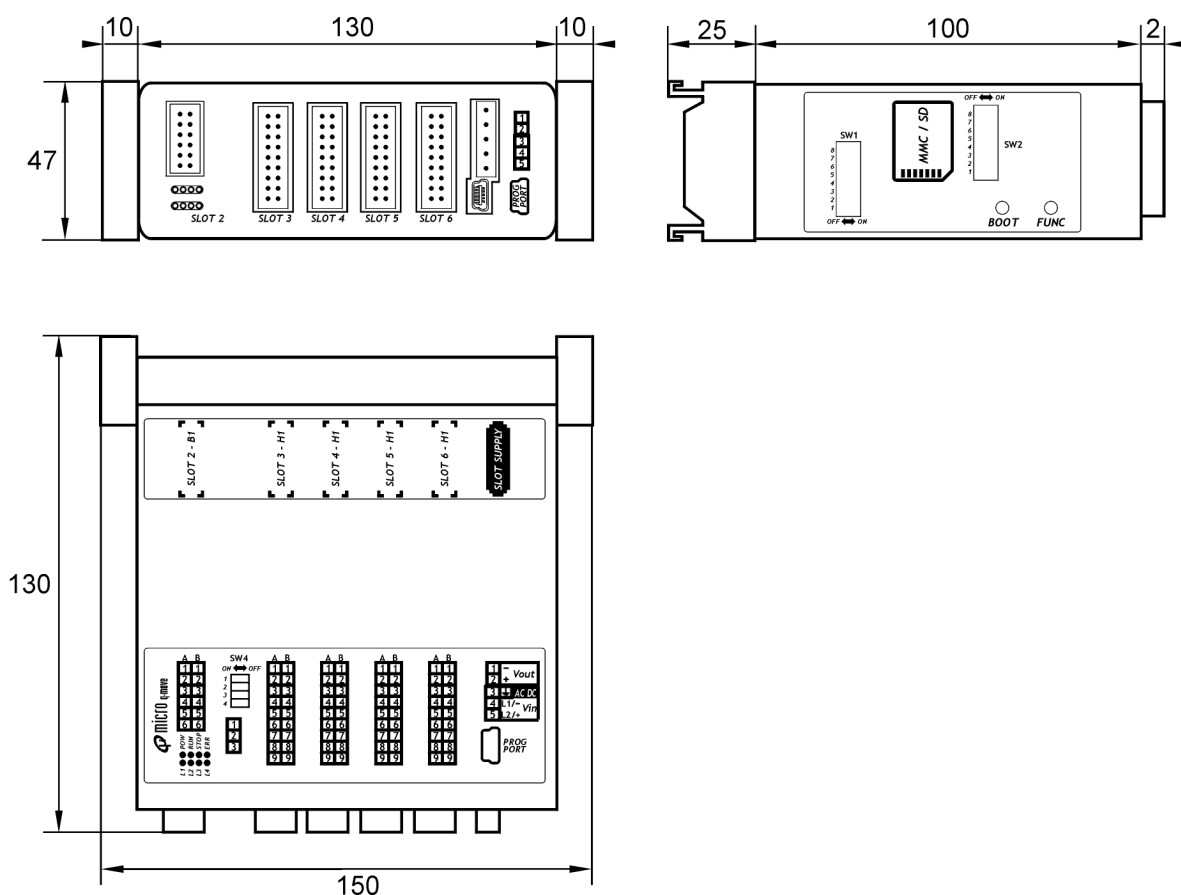
4. Technical Characteristics

Weight (maximum hardware configuration)	530 gr
Box material	Stainless steel (satined)
Display	no display
Buttons	2 (pg. 20)
Leds	8 (pg. 19)
Working temperature	0 ÷ 50 °C
Relative humidity	90% without condensation
Altitude	0 ÷ 2000 m s.l.m.
Atmosphere	Not corrosive gases
Stock and transportation temperature	-25 ÷ +70 °C

4.1. Mechanical dimensions



Misured in mm.



4.2. Mechanical installation

The fixing on the switchboard is made by an Omega Guide.

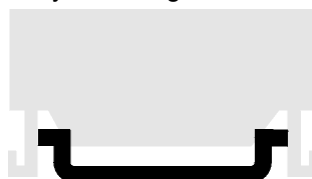
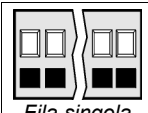
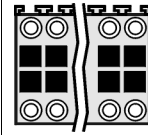


Fig. 3 Omega Guide: DIN 46277/ 3

4.3. Wiring

 Please see technical informations on terminals (Weidmuller) BLF and B2L

4.3.1. Connectors

	Family	Wire section without runners	Wire section with runners	Characteristics
 Fila singola	BLZF	0,3 ÷ 1,50 mm ²	0,3 ÷ 1 mm ²	Spring contact
 Fila doppia	B2L	0,3 ÷ 1,00 mm ²	0,3 ÷ 0,5 mm ²	

 Tests done by QEM confirm that using runners short-circuits are avoided.

4.3.2. Instruments

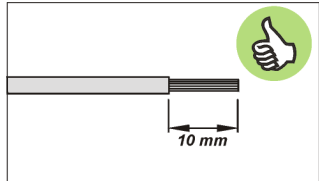


Fig. 4 Cable 10 mm

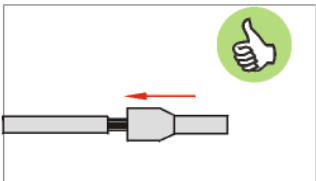


Fig. 5: We suggest the use:

Wire section	Mark	Model
0,5 mm ²	Cembre	PKE 508
	BM	BM00601
1 mm ²	Cembre	PK 108
	BM	BM00603

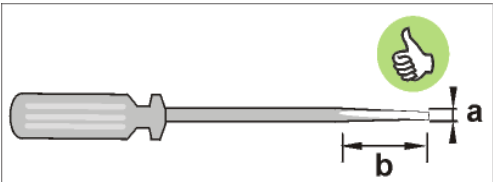


Fig. 6: Use a screwdriver to: a) 2,5; b) ≥7mm.

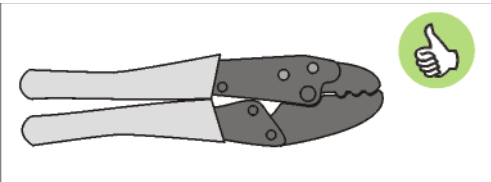
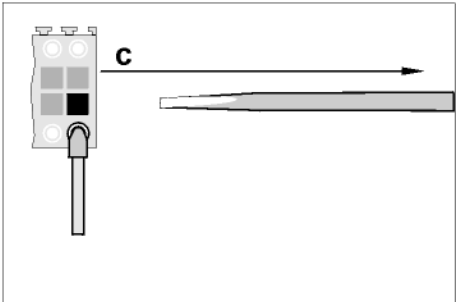
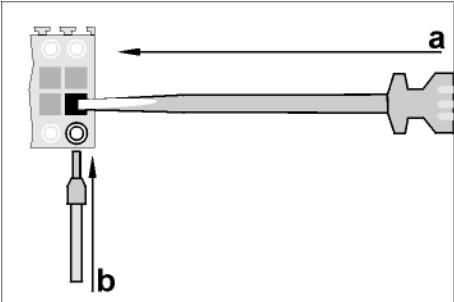


Fig. 7: Use a pliers “Cembre HKE” type.

4.3.3. Procedure



a) Insert the screwdriver; b) Insert the cable; c) Extract the screwdriver.

4.3.4. Cautions

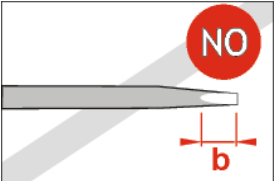


Fig. 8 Do not use a short point screwdriver. b) <7 mm

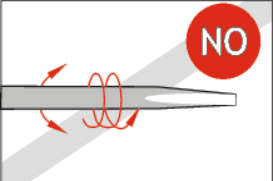


Fig. 9 Do not rotate the screwdriver in this way.

5. Electrical characteristics

5.1. Power supply



The wiring has to be done by specialized persons.



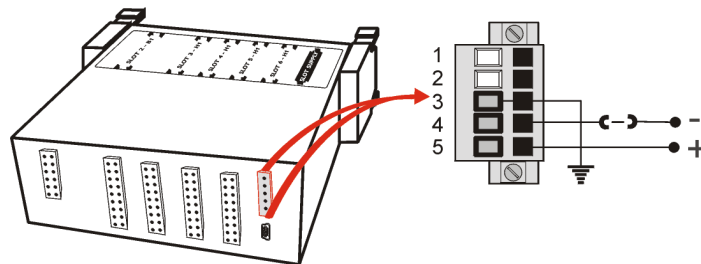
Before the use it is necessary to remove the voltage and all his parts.



For the CE norm, power supply voltage has to be insulated (at least 1500Vac).



The power supply can be available by some specialization card connectors.



Pin	Name	Description	
1	0 V	12V supplied by the instruments	
2	+12 V		
3	GND		
		24 Vac	24 Vdc
4	L1	~	-
5	L2	~	+

Power supply

	Vac	Vdc
Available power supply	24 Vac	24 Vdc
Range val	+/- 15 %	22 ÷ 27 Vdc
Max. Absorbent	15 VA	17 W
Frequency	50/60 Hz	

Power supply	+12 Vdc +/- 100mA
--------------	-------------------

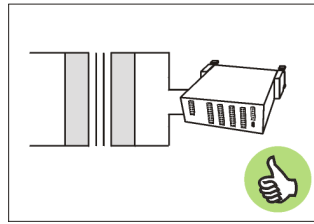


The power supply amount **can't be more than 100mA.**

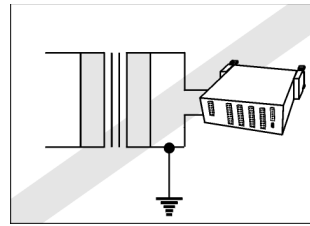
5.1.1. Power supply marks

24Vac Power Supply

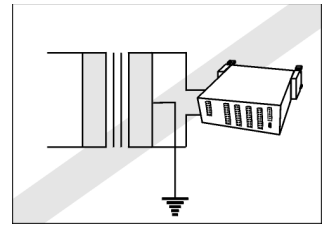
 For a correct use, please read the MIMAT manual.



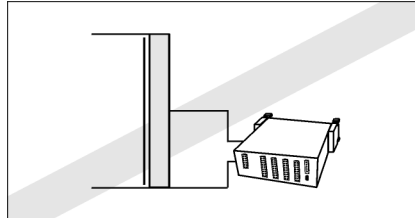
Use a 50VA min. sec. 24 Volt transformer



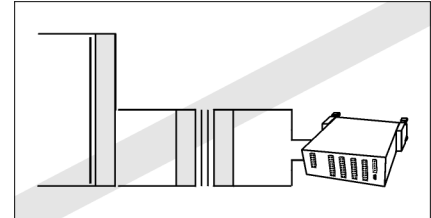
Don't connect power supply voltage to the ground



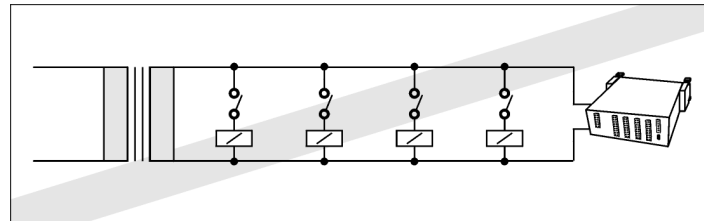
Don't connect the transformer central terminal to the ground



Don't connect the transformer central terminal to the ground



Don't use transformer headed by an autotransformer



Don't set coils, electro-valve etc. in parallel

24Vdc Power Supply

 In case of using "switching" feeders, is suggested to verify that the minimum current feed (min load). Without this current are possible bad oscillations in the tension. The min load falling is verified usually at the switching on.

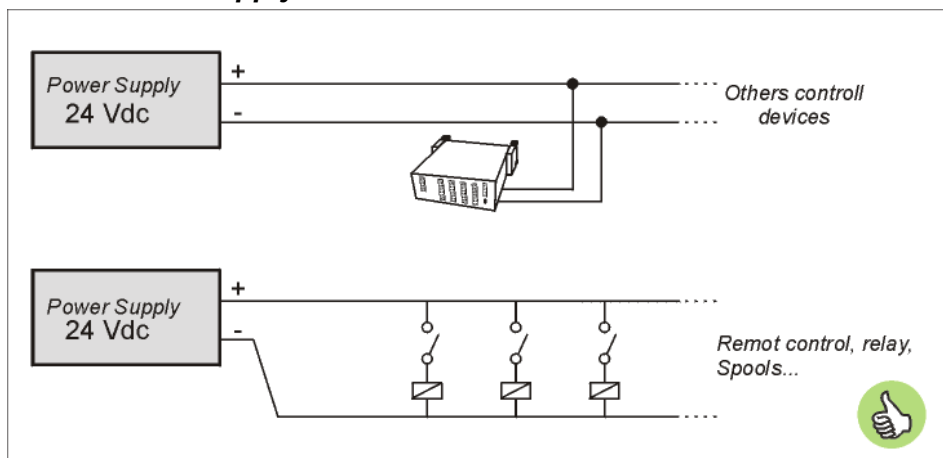


Fig. 10: Use two separated feeders: one for the control part, the second for the power part.

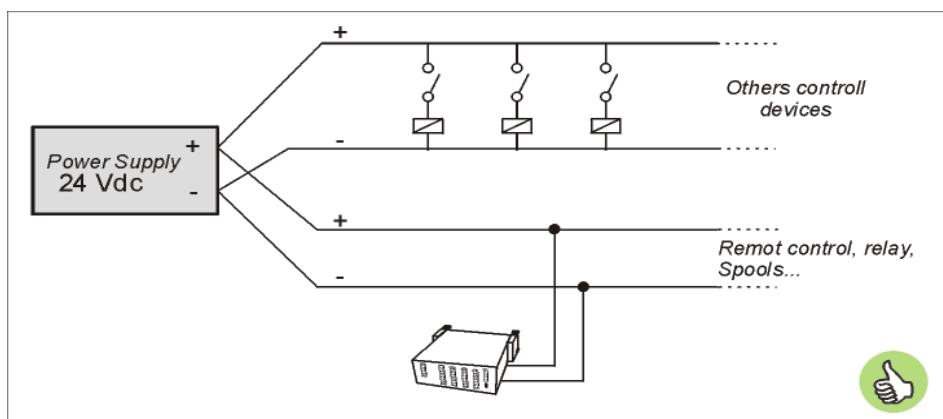


Fig. 11 In case of using only one feeder, use two separated lines: one for the control part, the second one for the power part

5.2. CPU (technologic level A)

For more informations on memory using and handling please, read the chapter for the programming. 25

Microprocessor	DSP	(16 bit)
Working frequency	40	MHz
RAM	105	Kb
Flash	128	Kb
FeRAM	6	Kb

5.3. Prog port

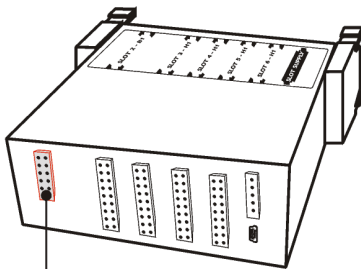
Used for software transferring/debugging on the CPU.

Electric Standard	TTL
Communication speed	57,6 Kbaud
Insulation	-

5.4. Memory Card reader

Memory card tipology	MMC/SD
Functions	Software updating
	Program data updating

5.5. Slot 2: B1-SX_

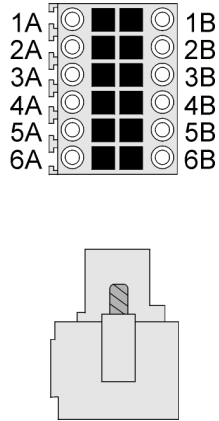


USER port

Fig. 12 Connectors position

Card code	Description
B1-SX1	n. 1 serial RS232
B1-SX2	n. 1 serial RS422
B1-SX3	n. 1 serial RS485
B1-SX4	n. 1 serial multistandard (RS232/422/485)

5.5.1. Connectors description

USER port	Terminal	RS232	RS422	RS485
	1A	-	-	A
	2A	-	-	B
	3A	0V (serial)		
	4A	0V (serial)		
	5A	TX	-	-
	6A	Ground (PE)		
	1B	-	RX	-
	2B	-	RX N	-
	3B	-	TX	-
	4B	-	TX N	-
	5B	RX	-	-
	6B	Ground (PE)		

5.5.2. RS232

Communication speed	4800 / 9600 / 19200 / 38400 / 57600 baud
Communication modality	Full duplex
Way of functioning	Riferred to 0V (serial)
Max. number Driver/Ricever	1 / 1
Max. cable lenght	15 m
Input impedance	$\geq 3 \text{ K}\Omega$
Short-circuit limit	$\geq 7 \text{ mA}$

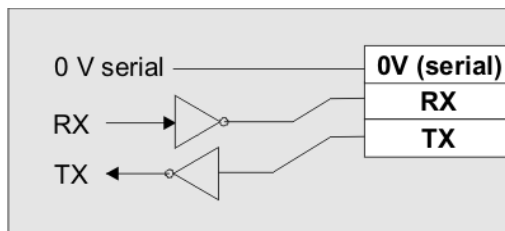


Fig. 13 electrical diagram

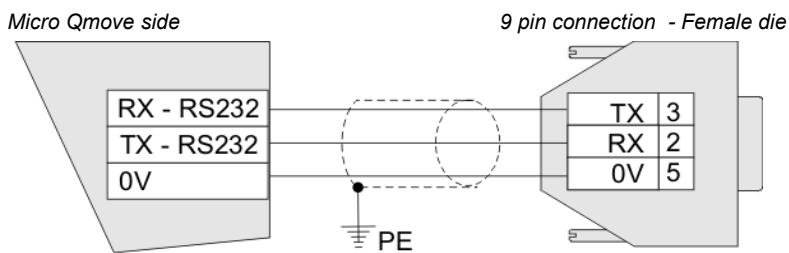


Fig. 14 Cable-Pc connection diagram

5.5.3. RS422

Communication speed	4800 / 9600 / 19200 / 38400 / 57600 baud
Communication modality	Full duplex
Way of functioning	Differential
Max. number Driver/Ricever	1 / 10
Max. cable lenght	1200 m
Input impedance	$\geq 12\text{ K}\Omega$
Short-circuit limit	$\geq 35\text{ mA}$

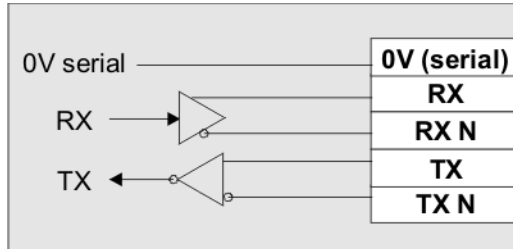


Fig. 15 Electrical diagram

Micro Qmove side (User port)

15 pin connection - Female die

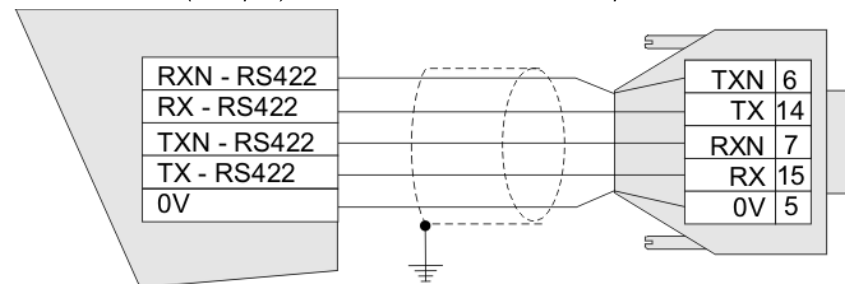


Fig. 16 User port-QEM HMI wiring diagram



For the activation of the internal termination resistance please see Settings, **Procedure and Signaling**. 18

5.5.4. RS485

Communication speed	4800 / 9600 / 19200 / 38400 / 57600 baud
Communication modality	Half duplex
Way of functioning	Differential
Max. number Driver/Ricever	32 / 32
Max. cable lenght	1200 m
Input impedance	$\geq 12 \text{ K}\Omega$
Short-circuit limit	$\geq 35 \text{ mA}$

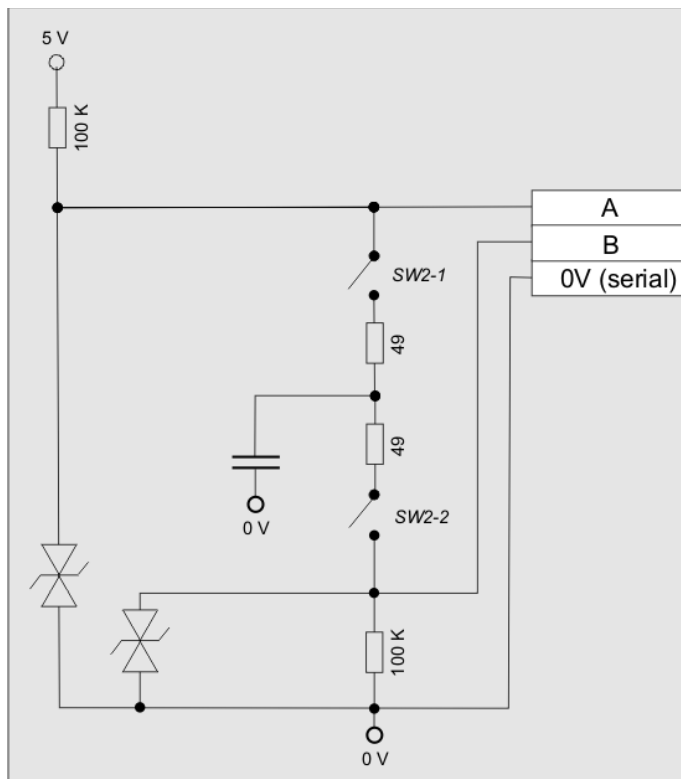


Fig. 17 Electrical diagram

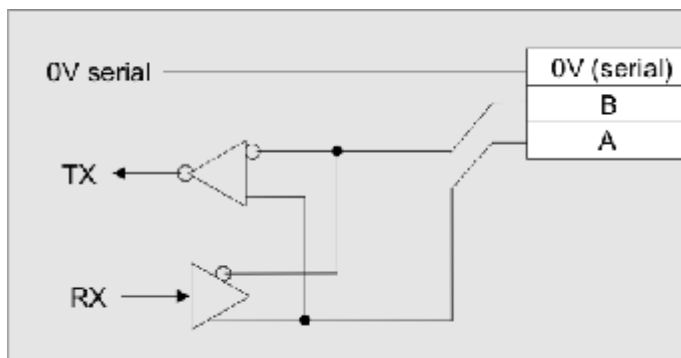
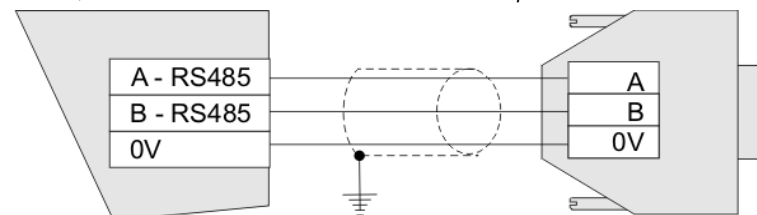


Fig. 18 Electrical diagram

Micro Qmove side

9 pin connection - Female die



6. Settings, procedures and signalling

6.1. Dip-switch settings

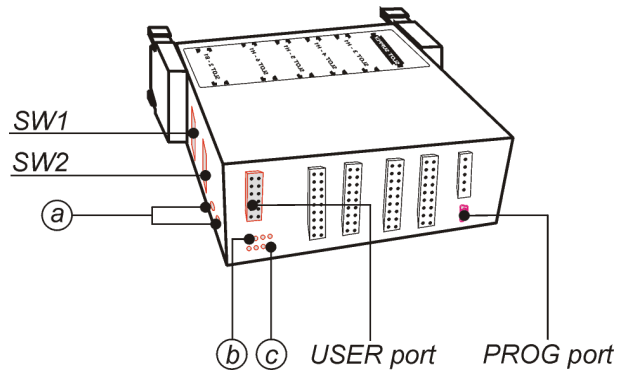


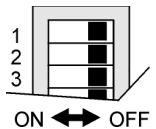
Fig. 19 a) buttons (pg.20); b) system led (pg.19); c) user led (programmable) (pg.20).

Switch name	Dip	DIP settings				Functions
SW1 1 2 3 4 5 6 7 8 ON ↔ OFF	1	OFF	OFF	ON	ON	Transmission speed selection PROG port
	2	OFF	ON	OFF	ON	
		Baud-rate 38400	Baud-rate 9600	Baud-rate 19200	Baud-rate 57600	
	3	OFF	OFF	ON	ON	Transmission speed selection USER port
	4	OFF	ON	OFF	ON	
		Baud-rate 38400	Baud-rate 9600	Baud-rate 19200	Baud-rate 57600	
	5	-				-
	6	OFF		ON		Way of functioning selection PROG port
		PROG port used for software transferring and debugging		PROG port usable like a second USER port.		
7	-				-	
8	X	X	OFF	ON	Electrical standard selection USER port	
SW2 1 2 3 4 5 6 7 8 ON ↔ OFF	1					
	2	please see 6.1.1 (pg. 19)				
	3	Termination and Polarization resistance USER port RS485				
	4	OFF	ON	OFF		X
	5	ON	OFF	OFF		X
	6	OFF	OFF	ON		X
	7	X	X	ON		OFF
	8	X	X	OFF		ON
	RS485	RS422	RS232	RS232		
	USER			PROG*		

* = USER port used like PROG port with electrical standard RS232.

X = not influential setting for the functioning.

6.1.1. Termination and Polarization resistance USER port RS485

Switch name	Dip	DIP settings	Functions
	1	ON	Internal pin resistance inserted
	2	ON	
	3	OFF	Set always off this dip

6.2. Led



6.2.1. Signals "System Led"



Fig. 20 System led

Led	Color	Description
 POW	Green	Instrument ON CPU in reset state
 RUN	Green	CPU in RUN state.
	Green (lamp.)	CPU in READY state.
 STOP	Yellow	CPU in STOP state
 ERR	Red	ERROR: the number of flashings indicate the problem
		n. 1 Bus error Bus not configured like in the applicative.
		n. 2 Checksum Error Altered FerRAM memorized data
		n. 3 Index Out of Bound Array index pointed on a not existing element
		n. 4 Not activated
		n. 5 Not activated
		n. 6 Division By Zero Without a math sense
		n. 7 Syntax ErrorAn intelligent card on bus doesn't work correctly The application has a not valid instruction
		n. 8 Watch Dog Error An intelligent card on bus doesn't work correctly
		n. 9 Stack Error The application met a not valid jump instruction

6.2.2. Signaling “User Led”

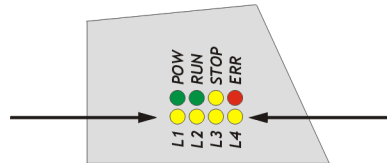
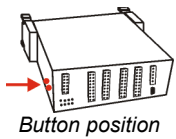


Fig. 21 User led

Led	Color	Description
L1	yellow	Programmable in the software through the system variable QMOVE:sys003 (pg.26) The led is always on when using system functions (pg.22)
L2		
L3		
L4		

6.3. Buttons



Button position

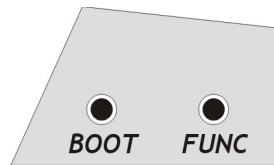


Fig. 22 Button position

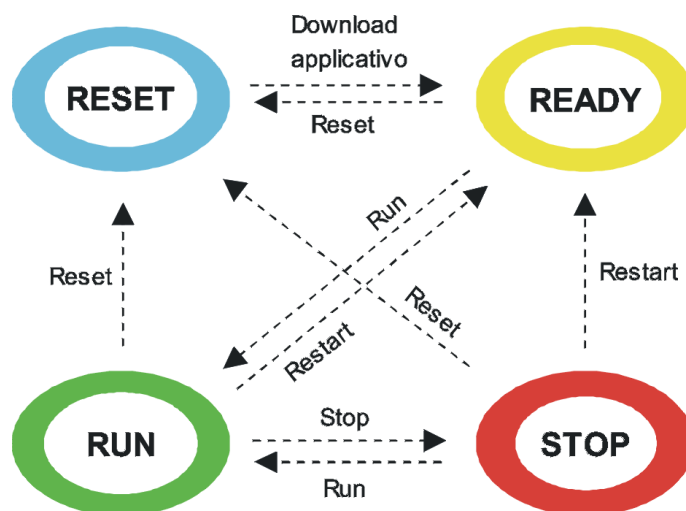
Name	Description
BOOT	Allows to use firmware transferring functions
FUNC	Pulsed at the switching on allows to use System Functions. (pg.22)



6.4. CPU states

The operative system in this state process only serial requests on PROG port.

The operative system has 4 functioning steps, called RESET, READY, STOP, RUN.



There are some CPU events that determinate the transition from one to another state. **RUN**, **RESET**, **STOP** and **RESTART** represent serial commands that normally are sent from the development environment.

The software download represent the procedure that allows to transfer the software to the CPU.

6.4.1. Reset

Led state	☒ <i>POW</i> (ON) ☐ <i>RUN</i> (OFF)
State Cause	The application is not present in the memory
Causes for this CPU state	At the switching on the application is not present in the memory.
	RESET serial command.

You can only pass a READY state downloading the applicative.

6.4.2. Ready

LED state	☒ <i>POW</i> (ON) ☒ <i>RUN</i> (Flashing)
State Cause	Valid applicative ready and waiting
Causes for this CPU state	Download applicative.

6.4.3. You can only pass to a RUN or RESET state. Run

Led state	☒ <i>POW</i> (ON) ☒ <i>RUN</i> (ON)
State Cause	Applicative executing
Causes for this CPU state	At the switching on the applicative is stored
	RUN command from a serial

You can pass to all other CPU states.

6.4.4. Stop

Led state	☒ <i>POW</i> (ON) ☒ <i>RUN</i> (ON) >> ☐ <i>RUN</i> (OFF)
Cause state	Stop executing
Causes for this CPU state	Serial command STOP sending
	Serial command STEP sending
	Serial command STEP-OVER sending
	In the software code interpretation there is a breakpoint.

From here you can pass to all other CPU state.

6.5. System Function

 Buttons cannot be accessed directly because are destined to expert users and never during the functioning

-  Led ON
-  Led OFF
-  Led flashing

To access on system function switch on the instrument pulsing Func button.

With led 4 activated it is possible to enter the menu

To scroll function pulse **Func**.

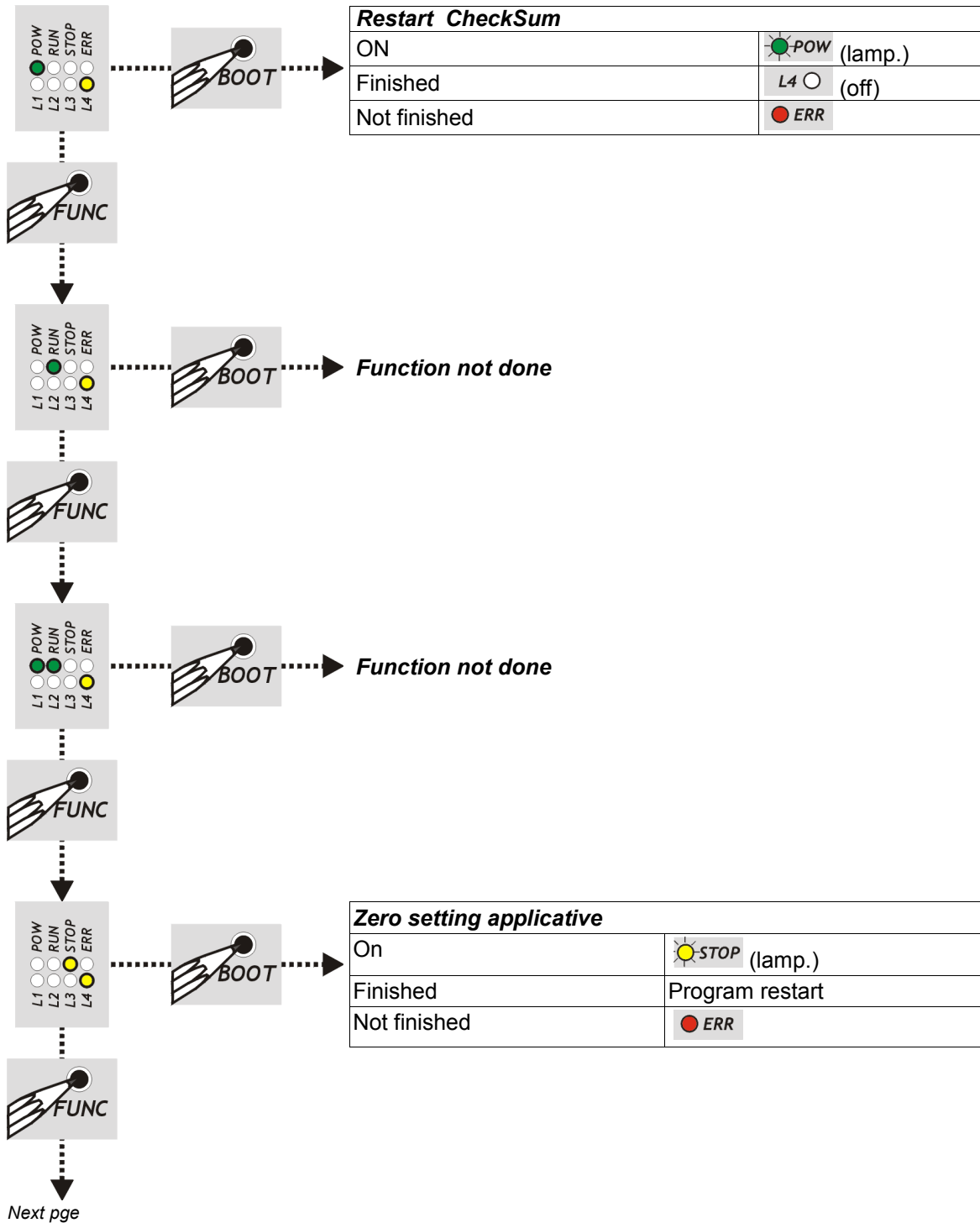
To execute functions pulse **BOOT**.(2 seconds).

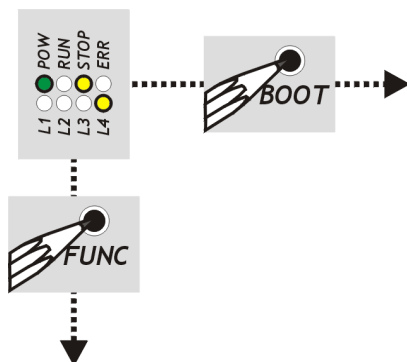
 **FUNC**

 **L4**

 **FUNC**

 **BOOT**





Applicative updating from MMC



ATTENTION!

Some rules for the updating with MMC:

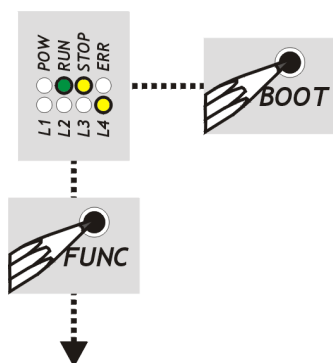
- The MMC has to be formatted with a filesystem FAT12, FAT16 or FAT32;
- The MMC has to be formatted because the instruments doesn't support fragmented files.

- The file names have to be:
 "APPLIC.BIN" for applicative file. "APPLIC.DAT" for data file (optional).

Not other kind of files are allowed. The system is not CASE-SENSITIVE with file names.

This files have to be generated by Qview 5 with "Export binary file" function and with "Save Data..."function.

On	POW (lamp.) STOP (lamp.)
Finished	L4 (off)
Not finished	L1 POW L2 RUN L3 STOP L4 ERR Flashing for errors (pg.24)



Function not done

Return at the first function

6.5.1. Error code “Updating from MMC”

Code	Description
● POW	Generic download error
● RUN	Qmos version error
● POW ● RUN	Storage error, writing error on the internal medium.
● STOP	Out of memory error, too much memory requested
● POW ● STOP	Download data error, the data file loading is not correct
● RUN ● STOP	Configuration download error.
● POW ● RUN ● STOP	Not used
● L1	“File download version” error, the file has an internal version not supported
● POW ● L1	Not used
● RUN ● L1	Opening file error, file opening on MMC not happened. Verify fragmentation, file name and format.
● POW ● RUN ● L1	Seek file error, not correct seek operation
● STOP ● L1	Error in fputc, BIN file content not correct
● POW ● STOP ● L1	file download version, the file has a not admitted version
● RUN ● STOP ● L1	Error in read long from file,the file .BIN content is not correct
● POW ● RUN ● STOP ● L1	Error in retentive size, the application uses to much retentive variables
● L2	Error in power down open, the data erasing in FRAM has problems
● POW ● L2	Error in version char, the file .BIN content is not correct

7. Programming Informations

The information in this part are strictly related with hardware and firmware sources disponibles in R201AFxx.



For other informations on programming, read Qview manual.

7.1. Bus declaration



To declare other hardware sources read MIM-Card.

Slot	Card name	Firmware version
1	201AF	XX(01,02...)
2	B1S00	.
3	.	.
4	.	.
5	.	.
6	.	.

The CPU has to be declared among disponible hardware versions in BUS

Specialization Card size B1

Specialization Card size H1

Specialization Card size H1

Specialization Card size H1

Specialization Card size H1

Example:

BUS

```
1 201AF 02 ;slot 1
2 B1S00 . ;slot 2
3 . . ;slot 3 (empty)
4 . . ;slot 4 (empty)
5 . . ;slot 5 (empty)
6 . . ;slot 6 (empty)
```

7.2. Card Identification

From the development environment QVIEW 5 is possible to identify the CPU connected by MONITOR-BUS function.

7.3. System requirements

It is possible to develop software applications for D221AFxx using QVIEW5 with library card S1-LIB5001.22(or superior).

7.4. Operative system limitation

The QMOS operative system utilized in Micro Qmove this following limitations compared to Qmove line:

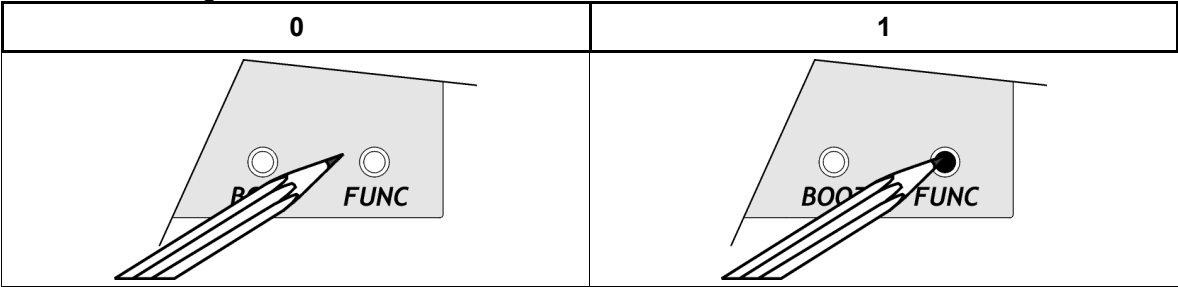
Description	Notes
SINGLE type data (floating point)	Not available
FSTEP,FPROG support	It won't be possible the direct compatibility with CPUA applications. However, the application conversion is simple.
Trigonometric operations	These operations not disponible as direct instructions, can be realized by QCL functions.
Watch point	Not available
Data group	Non available (some device place at disposal memory cells, long type, for data control in recipe)
Continuous access to arrays by BIN1 protocol	Not available
Task execution in INTERRUPT or TEMPO	Not available

7.5. System variables

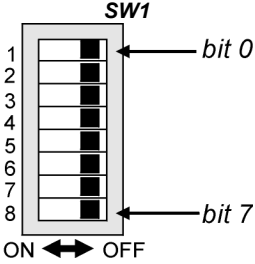
At the time are handled this variables.

7.5.1. QMOVE:sys001

Allows the reading of the state of **FUNC** button.

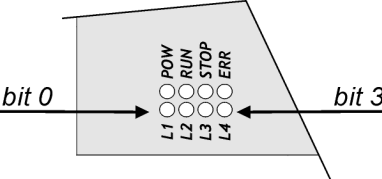


7.5.2. QMOVE:sys002



It is possible to read the **Dip-switch SW1** state associable with the first 8 bit of the system variable **QMOVE:sys002**.
The dip n° 8 is not connected electronically, so the bit 7, of QMOVE: sys002, is always zero.

7.5.3. QMOVE:sys003



It is possible to activate the **User Led** L1, L2, L3, L4 from the applicative joining the first 4 bit of the system variable **QMOVE:sys003**

7.5.4. QMOVE:sys004

Allows the antiglitch filter impostation. The values admitted are 19÷220 in kHz. At the power on the impostation is 220KHz. The variable can be read and written in every moment.
The antiglitch filter influence:

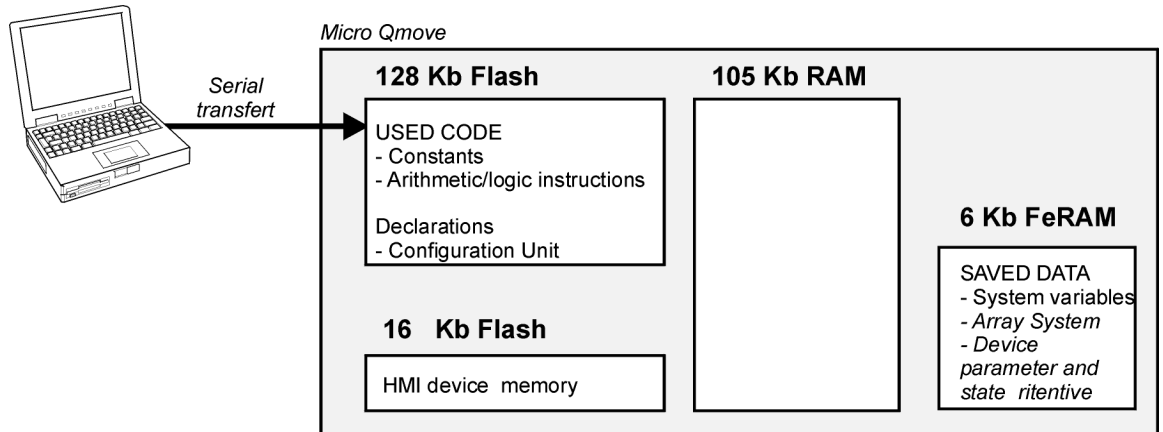
- The frequency reading by device **FREQ** if the interrupt is acquired with line 1 or 2;
- Zero impulses reading with the interrupt line 1 or 2;
- Bidirectional counting reading by admitted devices.

7.6. Serial ports addresses

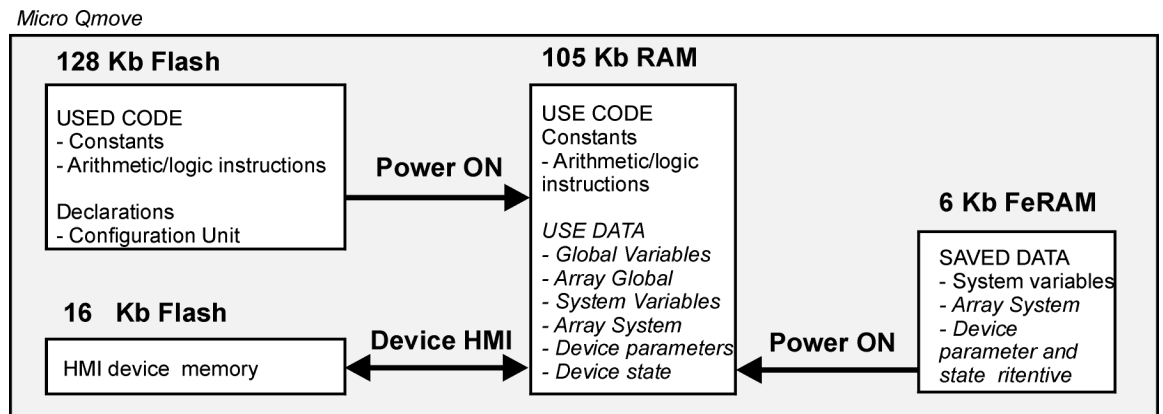
The serial ports addresses that have to be specified on MODBUS and SERCOM devices are:
PROG : 0,
USER : 1

7.7. Memory handling

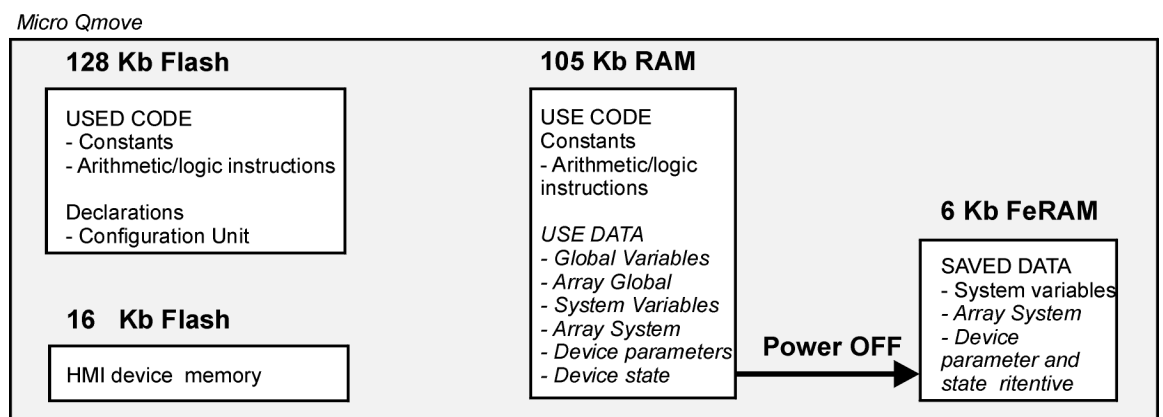
The applicative program is transferred by PROG port to his Flash memory 128Kbyte (memory not volatile).



At the POWER ON, the applicative is transferred and the declared data structure image is transferred in the RAM memory. Beside the values of retentive data saved in FeRAM are restored in the RAM.



Exist 16Kbyte not volatile memories (Flash) accessible only from HMI device. At the power off, the data values present in the RAM are saved in FeRAM.



During the applicative downloading it is signaled an error, that can be:

- The 105Kbyte RAM memory are exceeded for the USED CODE and USED DATA storing;
- The 6 Kbyte FeRAM memory are exceeded to store retentive data.

The used storage is visualizable by Qview from "CPU Monitor Panel": USED CODE & DATA; USED RETENTIVE.

8. Available firmwares

Every firmware version is different for different device configurations.

Below is reported the time occupation rate for a device CPU elaboration reported to a 1ms. This can be useful to choose the device sample time.

Device	Description	Occupation in%	Available firmware		
			01	02	03
ANINP	Analogic input acquisition	10.6	☒	☒	☒
COUNTER3	Bidirectional incremental counter acquisition with 2 digital output compared handling.	10.6	☒	☒	☒
DAC	Analogic output handling	0.0	☒	☒	☒
EANPOS	Servo actuated axis control with a speed modulation made by an analogic output +/-10V (feedback from incremental encoder).	75.0	☒	-	-
HEAD	Eight polishing (milling or grinding) heads handling, with quota correction in function of the speed belt.	50.0	-	-	☒
HMI	Controllers handling with display, numeric keyboard, recipes, alarms and messages	75.0	☒	☒	☒
OOPOS3	Axis ON/OFF control with incremental encoder feedback and with automatic inertial recalculation handling.	50.0	-	☒	-
SERCOM	Serial asynchronous communications control	10.6	☒	☒	☒
FREQ	Measure of commutation frequency of digital input in interrupt	10.6	☒	☒	☒

Firmware 01 Servo actuated axis control(+/- 10V) not interpolated

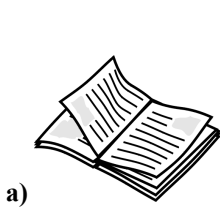
Firmware 02 ON/OFF axis control

Firmware 03 Eight polishing (milling or grinding) heads handling.

9. Assistance

9.1. Service

In order to provide a quick service, we need your help.



a) Follow all MIMAT indications (www.qem.it)



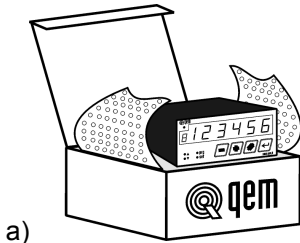
b) If the problem persists, compile the fax inserted in the MIMAT manual and send to QEM.



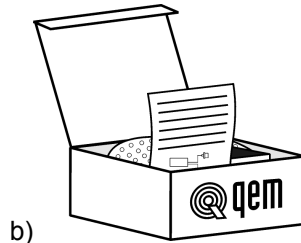
c) Our technicians will obtain necessary elements for understanding your problem.

9.2. Sending

It is recommended to pack properly the instrumentation.



a) Use the original pack



b) Enclose:
- A problem description;
- The part of the electric diagram where the instrument is inserted.
- Instrument programming (set-up, working quotas, parameters...).
- Request a reparation estimate; if not request, it will be calculated at the end.



c) An exhaustive description of the problem allows a quick individuation and resolution of the problem. A good pack will take care of your instrument.

Motivation

QEM informs the customers that instrumentation delivered not properly packed won't be repaired, except in case that the customer takes all the service responsibilities.

Modulo per Assistenza Tecnica

Module for Technical Service

Ditta / Firm : Rif. :

Indirizzo / Address:

Tel. Fax.

E – mail

Codice strumento / Instrument Code :

Alimentazione strumento / Power Supply:

Tipo di macchina / Machine type:

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.....

Descrizione ciclo macchina / Cycle machine description:

.....

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Parametri / Parameters:

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Descrizione anomalia / Anomaly Description:

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Frequenza anomalia / Anomaly frequency :

- ☐ Continuo / Continuous
- ☐ Saltuario / Irregular
- ☐ Dopo un certo tempo / After a few time
- ☐ All'accensione / At the switching on
- ☐ Allo spegnimento / At the switching off
- ☐ Altro / **Other** :

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