

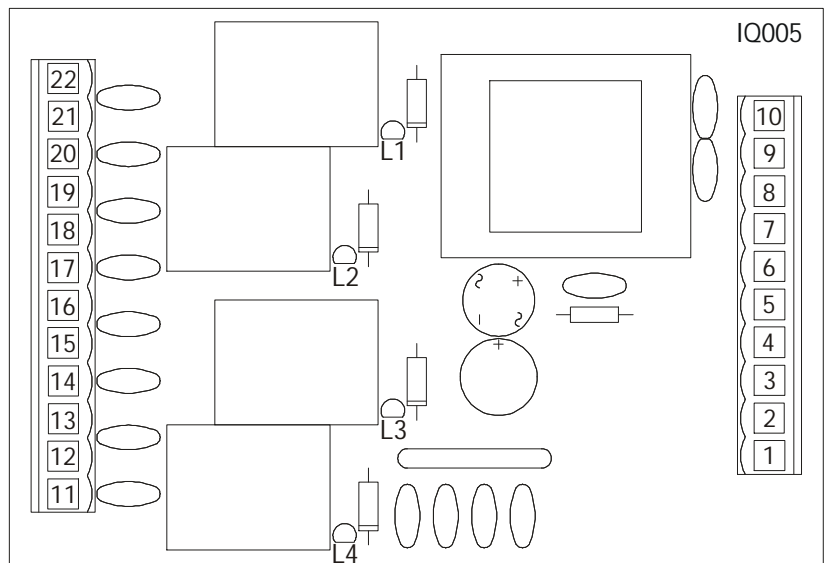
# IQ005

Quality in Electronic  
Manufacturing

[www.qem.it](http://www.qem.it)

# QEM

## User's and installation manual



Relay interface

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## CHAPTER 1 INTRODUCTION

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### **1 - 1 SUPPLEMENTARY NATURE OF MANUAL**

This manual is to be considered as a supplement to the installation, maintenance and servicing manual, which contains information on wiring, checking and eliminating faults, start-up and maintenance procedures. This manual gives instructions on the use and correct programming of the instrument.

You are urged, therefore, to read the manual carefully and, if you have any queries, to contact QEM for further explanations by sending the assistance fax contained in the manual.

### **1 - 2 REFERENCES**

The documentation concerning the instruments which are designed and sold by QEM has been divided into various sheets in order to allow an effective and quick reading according to the information being sought.

In this manual of use and setup we indicate the basic information for the setup and use of the described instrument. In the manual of installation and assistance all subjects being necessary for a correct setup and maintenance are cleared up.

## 1 - 3 RESPONSIBILITY AND VALIDITY

### **RESPONSIBILITY**

QEM is free from any responsibility for damages to people or things due to unobservance of the instructions and prescriptions contained in this manual and in the "Manual of installation, maintenance and assistance". We also state that the customer/purchaser must use the instrument according to the instructions supplied by QEM and in case of doubt he must send a written application to QEM. Any authorization for further use and replacement shall be deemed as valid by QEM, in case of contestation, only if it has been written by QEM.

No reprinting or republishing or delivery to third parties of this manual or of its parts is authorized unless a written authorization is provided by QEM. Any infraction shall provoke a request of indemnization for damages on behalf of QEM.

All rights generated by patents or models are reserved.

QEM reserves the right to partially or integrally modify the characteristics of the instrument described and the enclosed documentation.

### **Purpose**

The purpose of this manual is to indicate the general rules to use the instrument described.

### **Indication**

Write down and carefully store all parameters concerning the settings and programming of the instrument in order to make easier the eventual operations of replacement and assistance.

### **VALIDITY**

This manual can be applied to all designed instruments, built and tested by QEM and having the same ordering code. This document is integrally valid except for mistakes or omissions.

<b>Manual Release</b>	<b>Modifications made to the manual</b>	<b>Modifications Date</b>
100	New manual	24 / 05 / 04

**Emesso dal Responsabile Documentazione:** .....

**Approvato dal Responsabile di Prodotto:** .....

#### **1 - 4 DESCRIPTION OF OPERATION**

The IQ005 is a relay interface designed and released to be connected to the digital outputs by the QEM instruments. It is equipped with four relays self-supplied by an appropriate interior feeder.

The four inputs acquisition is signalled by the ignition of its relative LED. For easier installation, provide an guide omega fastening (fixing).

**TECHNICAL, ELECTRICAL AND MECHANICAL CHARACTERISTICS****2 - 1 TECHNICAL CHARACTERISTICS**

Temperature .....	0÷40 °C
Humidity .....	90% without condensate
Max. altitude .....	2000 m on sea level
Atmosphere .....	No corrosive gas
Temperature of transport and storage .....	-25÷70 °C
Container's degree of protection .....	Conform to IEC 68-2-6 (Theoretical data)
Resistance to shocks .....	Conform to IEC 68-2-27 (Theoretical data)
Immunity to interferences: .....	Conform to EN 50082-2
Emission levels .....	Conform to EN 50081-2

The technical features specified are valid if all indications shown on the "Manual of installation, maintenance and assistance" have been observed.

**2 - 2 GENERAL ELECTRICAL CHARACTERISTICS - (POWER SUPPLY IN DC)**

Instrument's power supply .....	Choice among 24 - 115 - 230 Vac +10% -15% 50/60 Hz
Maximum Absorption .....	4 VA
Power supply issued by the instrument .....	27 Vdc (medium value) direct current no stabilized - 120 mA

**Attention:** the data related to the current supplied by the instrument are to be considered as maximum values. You must perform a careful check of the absorption and forecast if necessary some auxiliary feeders external to the instrument.

**2 - 3 CARATTERISTICHE MECCANICHE**

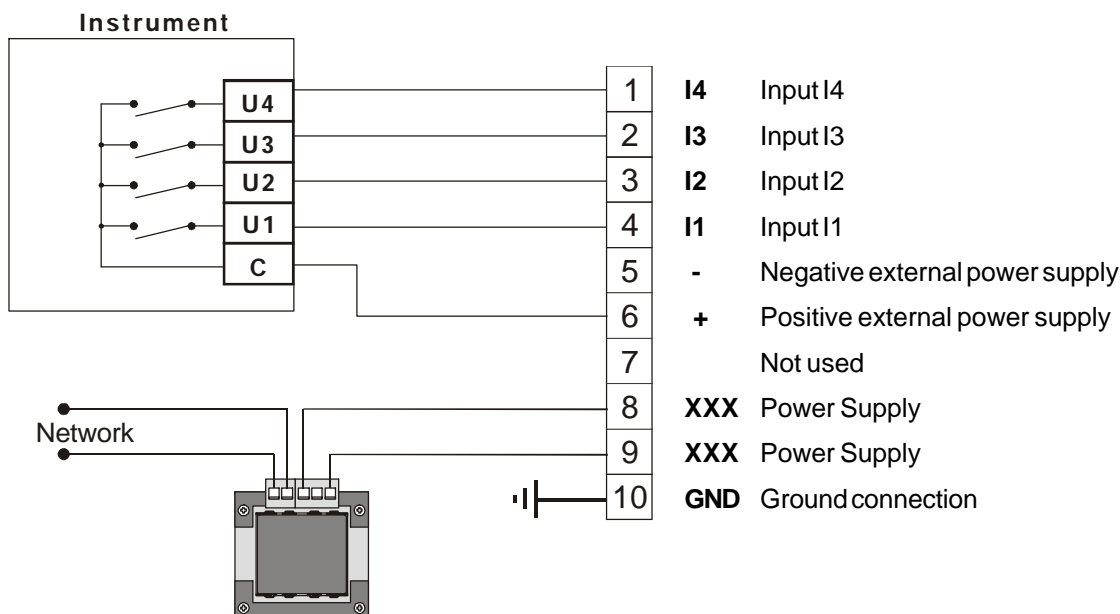
*Board type* ..... To view, with guide omega fastening. Sizes 76 x 127 x 55 mm

*Electric connections* ..... Polarized extractable terminal board with screw fixtures.  
Ø stiff and flexible: 0.2÷2.5 mm<sup>2</sup>

Weight ..... 300 gr

## 2 - 4 ELETTRICAL CONNECTIONS

### TERMINAL DESCRIPTION - ELECTRICAL CONNECTION EXAMPLE



#### Legend

C = Common outputs (mechanical or electrical)

U1 = Strument's Outputs 1

U2 = Strument's Outputs 2

U3 = Strument's Outputs 3

U4 = Strument's Outputs 4

#### Note

For long cabling, we suggest to use shielded wire, with braiding wire connected.

11	<b>NC4</b>	Contact normal closed relay 4
12	<b>C4</b>	Common for relay 4
13	<b>NA4</b>	Contact normal opened relay 4
14	<b>NC3</b>	Contact normal closed relay 3
15	<b>C3</b>	Common for relay 3
16	<b>NA3</b>	Contact normal opened relay 3
17	<b>NC2</b>	Contact normal closed relay 2
18	<b>C2</b>	Common for relay 2
19	<b>NA2</b>	Contact normal opened relay 2
20	<b>NC1</b>	Contact normal closed relay 1
21	<b>C1</b>	Common for relay 1
22	<b>NA1</b>	Contact normal opened relay 1

## ELECTRICAL FEATURES

### Digital inputs

Polarization type .....	PNP
Nominal working voltage .....	24 Vdc
Voltage in logical state 0 .....	0÷3 Vdc
Voltage in logical state 1 .....	20÷28 Vdc
Absorption .....	25 mA

### Relay outp

Maximum applicable load .....	240 Vac - 3A (resistivo)
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**Important:** read carefully notes at page 9 and 10.

## CHAPTER 3 DIRECTIONS FOR CABLING

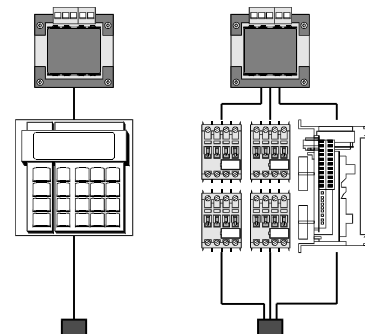
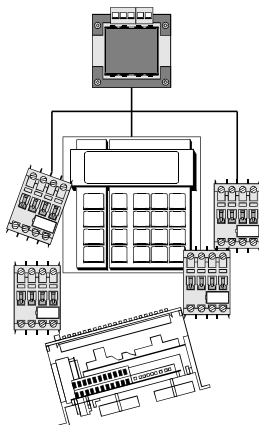
*This is an extraction from our Installation, maintenance and assistance manual. Please refer to that manual for designing and execution of the cablings.*

### PLACING

In cabling, separate the power part from the command part. The structure must allow a correct air flow for cooling.

The installation site must be dry and without vibrations; the environment temperature must be stable or anyway between the specified limits (see technical specifications).

The instrument position inside the board must be separated from the power components and from the cables connected to the power components (relais, drivers, inverters, brakes, ...).



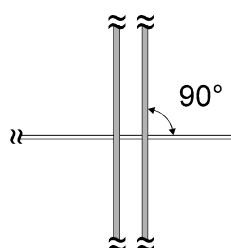
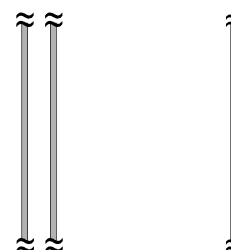
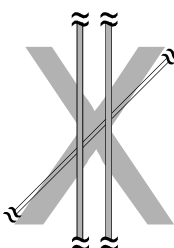
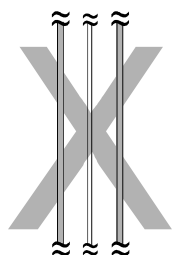
### CABLES

During the cabling separate physically the power conductors from the command ones.

If the cables must cross each others, the angle between them must be closer to 90 degrees.

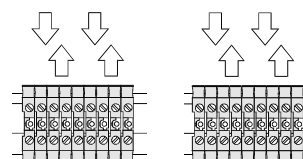
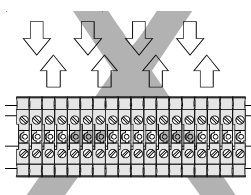
For the command signals, we suggest to use shielded cables with interlaced conductors; it's strongly suggested the use of shielded cables for transducers, analog IN/OUT, serials. The use of shielded cables for digital IN/OUT increase the reliability of the system.

We suggest the use of terminal junctions.

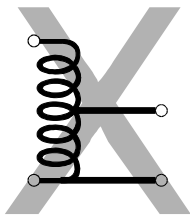


### TERMINAL

Do not use the same terminal for power cables (relais, drivers, inverters, brakes, ...) and signal cables (digital and analog signals IN/OUT, transducer signals,...).





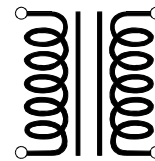


## POWER SUPPLY

We prescribe the use of transformers with the CE logo for the supply of **the only** instrument; the secondary must NOT be connected to ground (these are secondary NOT corrected: 55 - 0 - 55, 0 - 24 with 0 to ground ...)

Do not use auto-transformers (even if followed by normal transformers) because this solution does not allow a complete galvanic separation from primary to secondary.

Separate the supply of the electronic circuits from the power one.



Verify that the transformer power is enough to supply the circuits and verify the transformer gives the nominal power without voltage losses. The same indications are valid for the outputs supply (polarization voltage).

## FILTERS

If working in a medium disturber environment, the QEM instrumentation does not need filters; the use of these devices (preferable of second order), is suggested in presence of power supply with strong noise.

All relays, elettrovalve, coils, brakes, ... in the system must be equipped with suppressors.

For loads in AC use RC suppressors.

For loads in DC use diodes in antiparallel.

## GROUND

Use short ground connection. The connection must be executed leaving from the ground terminal of the instrument and to arrive on the metallic support. The metallic support will have in its turn to be connected to the earth bar mails to the inside of the switchboard. Moreover present must be itself be held who the earth can carry out its single function if the resistance of the earth circuit is within the maximum limits tax from the prescription.

The maximum resistance for the ground connection is 0.2-0.3 Ohm.

## RELAY

Dispose the connections parallel to the frame plane.

For the inputs mechanical/elettromechanical, we suggest the use of relays closed in inert atmosphere with contacts designed for 0.1 mA currents.

Use, if possible, the N.A. contact. The suggestion given for the relays must be used for all the other contacts type.

For on/off positioner with particularly elevated speeds of positioning slow, the use of relay is advised in continuous because, regarding those in alternated, has of the short times of answer. In this case the choice must be oriented towards relays to low inductance, so that they can be installs to you without diodes (that of it they would slow down the intervention).

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## CHAPTER 4

# ASSISTANCE

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### 4 - 1 HOW TO COMPLETE THE TECHNICAL ASSISTANCE FAX FORM

*If we are to provide you with a speedy, efficient and high-quality service, we need your help.*

*If ever you need the assistance of QEM in dealing with any technical problems that may arise in your applications and, even though all the instructions in the "Installation, maintenance and servicing" manual have been followed, the problem persists, we invite you to fully complete the fax form enclosed with the installation, maintenance and servicing manual and send it to the QEM assistance office.*

*In this way, our service engineers will have all the essential information for the understanding of your problem (thus avoiding long and costly telephone calls).*

*In thanking you for co-operation, we wish you all the best in your work.*

#### **NOTE**

If ever you have to send an instrument to us for repair, please read the points below carefully.

- If possible, use the original packaging. In any event, the packaging must protect the instrument from knocks during its journey.
- Enclose a detailed description of the problem that has occurred, along with the part of the wiring diagram where the instrument is located, in the package. If the problem involves data storage, enclose the instrument set-up programming (set-up, work measurements, auxiliary parameters ...).
- If necessary, ask us specifically for an estimate on the repairs. If no estimate is requested, the cost will be calculated on completion.
- Our service engineers will give priority to instruments that are sent to in accordance with the instructions in these notes.

### 4 - 2 WARRANTY

The warranty conditions are as stated in the general conditions of sale.

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**NOTE**

## NOTE



*This product is an electronic instrument and, therefore, should not be considered a machine. As a consequence, it is not subject to the requirements of EEC Directive 89/392 (Machine Directive). For this reason, we affirm that if the QEM instrument is used as a component of a machine, it may not be turned on if the machine does not satisfy the requirements of the Machine Directive.*

***The instruments marking does not relieve the customer from fulfilling the obligations of the law relative to the finished product.***