SERIES HM 207

Available Versions and Options

Ordering Codes

Hardware Customizations

General Technical Characteristics

Electrical Characteristics

Mechanical Characteristics

Electric Connections

Hardware Structure

Complement to the "User's Manual"

Technical Leaflet SM207700

QEM® Quality in Electronic Manufacturing

WARNINGS

- This manual is a complement ot the "User's Manual"; it is necessary to get all information here indicated. We recommend then a careful reading and, in case of misunderstandings, please contact QEM for any further information by sending the assistance fax which you shall find enclosed to the manual of installation, maintenance and assistance.

- QEM is free from any responsibility for damages to people or things due to unobservance of the instructions and prescriptions contained in this leaflet. We also state that the customer/purchaser must use the instrument according to the instructions supplied by 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

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

- This document is integrally valid except for mistakes or omissions.

Manual Release	Modifications made to the Manual	Modifications Date
0	New manual	15 / 05 / 97

Issuance and Approval

Issued by the Person in Charge for the Documentation: ....

Approved by: - Person in Charge of Technical Office: ....

  - Person in Charge of Commercial Office: ....

  - Person in Charge for the Product: ....

The ordering codedefines the possible hardware configurations of the instrument according to the software version. The ordering code is made of various fields. For each field it is possible to define only one among the available options (CX = field X).

C1 C2 C3 / C4 / C5 / C6 / TXXX / VNXXX / VAC

AVAILABLE VERSIONS

FIELD 1 = Basic Hardware

FIELD 2
. = Basic version (power supply AC - see terminal board "*Logic*" on page 8)
N = Inputs of count for sensors NAMUR
V = DC Power supply
W = Digital inputs are not mounted

FIELD 3 = Software Version

AVAILABLE OPTIONS

FIELD 4
P = Front panel without keyboard
PC = Front panel without keyboard with clear pushbutton
PE = Front panel without keyboard with enter pushbutton
T = Keyboard of fixed programming

FIELD 5
0 = No analog output
1 = One analog output0÷10 V resolution 9 bits
2 = Two analog outputs 0÷10 V resolution 8 bits
3 = One analog output ± 10 V resolution 8 bits
4 = Two analog outputs ± 10 V resolution 7 bits
1A = One analog output 0÷10 V resolution 9 bits
2A = Two analog outputs 0÷10 V resolution 8 bits
3A = One analog output ± 10 V resolution 8 bits
4A = Two analog outputs ± 10 V resolution 7 bits
1B = One analog output 0÷10 V resolution 9 bits
2B = One analog output ± 10 V resolution 8 bits
L4 = 4 static outputs 24 V ac/dc - 50 mA
L6 = 6 static outputs 24 V ac/dc - 50 mA
U4 = 4 static outputs 110 V ac/dc - 0.2 A (it is possible to activate at the same time 3 outputs on 4)
U6 = 6 static outputs 110 V ac/dc - 0.2 A (it is possible to activate at the same time 3 outputs on 6)

FIELD 6
E = Expansion card with 2 digital inputs and 3 static outputs 24 Vac/dc - 70 mA
I5 = Expansion card with 5 digital inputs
E4 = 3 digital inputs and 2 static outputs (in case it is installed also an analog output, the output U4 has un updating time of 20 ms).
DF2 = Serial interface RS 422
RS2 = Serial interface RS 232C

FIELD 7
RS = Serial interface RS 232C
DF3 = Serial interface RS 422
DF4 = Serial interface RS 422 conenctable in multidrop
MD4 = Serial interface RS 485

Txxx = Identification code of the keyboard where "xxx" identifies the number corresponding to the silk screenprinting in use.

VNxxx = Special constructive versions, where "xxx" identifies the number corresponding to the version in use.

POWER SUPPLY (V AC)
It is possible to choose one among the following values:
24 Vac, 110 Vac and 220 Vac. We recommend to power supply the instrument at 24 Vac according to rules about safety and the Standard about Low Voltage. To the purposes of th eordering code it is compulsory to define the instrument's power supply voltage in alternated (unless you require the version with direct current power supply).

ACCESSORIES
Part number	Description
46200037	Extractable keyboard series 2
23040001	Front protection cover in polycarbonate IP54

Operation environment

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

Degree of protection of the container.................. IP41 (Conform to EN 60529)

Degree of frontal protection .... IP51 (Conform to EN 60529)

Resistance to vibrations:.................................. 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 characteristics specified are valid if you observed all instructions of the "Manual of installation, maintenance and assistance".

HM 207 (Power supply AC)

Instrument's power supply:...	Choice among 24-110-220 Vac ± 10% 50/60 Hz
Absorption in maximum hardware configuration:................................	12 VA
Display:..	6 display h=14 mm + 1 display h=8 mm high luminosity red colour
Memory:..	Non volatile by semiconductor
Microprocessor:..	H8-520 16 bit - 20 MHz
Power supply issued by the instrument:...	12 Vdc - 100 mA +/- 4%

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

Digital inputs (logic, options E, I5, E4)

Optoinsulation:...	2500 V rms
Type of polarization:..	NPN - PNP
Voltage of rated operation:..	12 Vdc
Voltage of logical status 0:..	0÷3V
Voltage of logical status 1:..	8÷24 V
Input resistance:..	1.2 KΩ
Internal voltage drop:..	1.2 V
Minimum time of adquisition:..	Apx 50 ms (with a verification every 5 ms)
Minimum time of adquisition (interrupt - I1 - I2):............................	500 μs

Digital inputs (NAMUR)

Optoinsulation:...	2500 V rms
Type of polarization:..	NPN / PNP
Tensione di funzionamento nominale:...	12 Vdc
Resistance of logic status 0:...	50÷1 KΩ
Resistance of logic status 1:...	2 KΩ ÷ ∞
Input resistance:..	220 Ω
Internal voltage drop:..	6.5 V
Minimum time of adquisition:..	Apx 50 ms (with a verification every 5 ms)
Minimum time of adquisition (interrupt - I1 - I2):............................	500 μs

Digital outputs (options E, E4)

Optoinsulation:...	2500 V rms
Load to be toggled:..	AC - DC (NPN - PNP)
Maximum operation voltage:..	24 Vac/dc
Internal voltage drop:..	2.5 V
Maximum current:..	70 mA
Dispersion current:..	20 μA
Toggling time from ON to OFF:...	max 120 μs
Toggling time from OFF to ON:...	max 8 μs

N.B. the toggling time depend upon the type of load; the data indicated refer to resistive loads.

Digital outputs (logic - options L4, L6)

Cards with 4 or 6 digital outputs. Characteristics as the standard digital outputs but with the following difference:

Maximum current:..	50 mA

Power Digital outputs (options U4, U6)

Cards with 4 or 6 digital outputs. Characteristics as the standard digital outputs but with the following differences:

Maximum operation voltage:..	110 Vac/dc
Maximum current:..	200 mA
Dispersion current:..	1 μA

Analog outputs CNC

Voltage Range:.. according to the ordering code
Minimum Range (volt):-9.6 ÷ 9.80
Resolution:... according to the ordering code
Insulation:...2500 V
Max current:.. 1 mA
Delta V f.s. : Delta I:.. 95 mV/mA

Serial RS 232C - RS 422 - RS 485

Conform to electric standard efined by the type of serial. Maximum transmission speed is 9600 baud.
For RS 232C, the maximum length of wiring is 15 m; for RS 422 and RS 485 it is 1200 m

HM 207V (DC Power Supply) - See also paragraph "REMARKS FOR DC POWER SUPPLY"

Instrument's power supply:..9÷26 Vdc
Absorption:.. 335 mA (with power supply of 15 Vdc with 100 mA of load on the supply of transducers - terminals 1 and 2).
power supplied issued by theinstrument:............................ 12 Vdc 100 mA

Attention: the datarelated to the current supplied by the instrument are to be considered as maximum values.
Perform then a careful check of the absorptions and forecast if necessary some auxiliary feeders external to the instrument.

Inputs (DC Power supply)

Not optoinsulated

## Ingressi digitali (NAMUR - DC Power supply)

Not available

Uscite statiche (DC Power supply)

Not optoinsulated

## Uscite statiche di potenza (DC Power supply)

Not optoinsulated

N.B. The technical and electrical characteristics mentioned above must be considered as valid only for the version with power supply in direct current. The characteristics which are not mentiond are the same than those indicated for the version with power supply in alternated current.
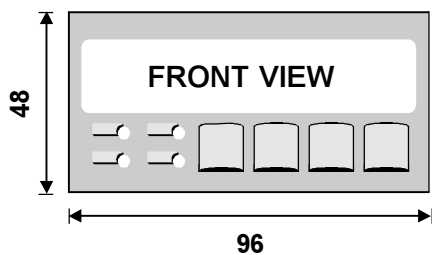
The overall size, the drilling hole and everything described in this paragraph must be deemed as valid for those instruments having hardware configurations being different from those int he figure

N.B. All sizes are in millimeters.

FRONT VIEW

48

96

REAR VIEW

45

92,8

45 + 0,6

92,8 + 0,2

45

144
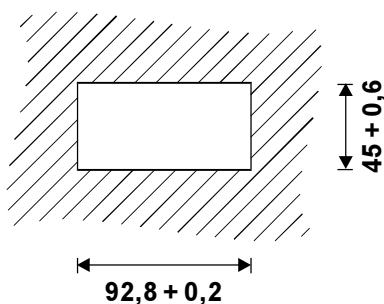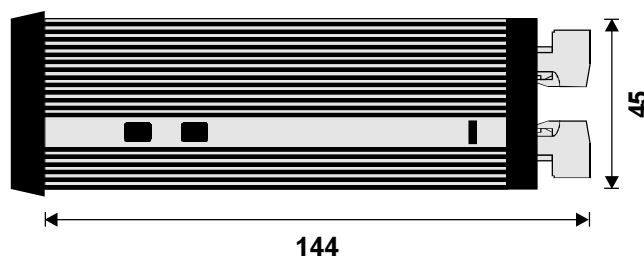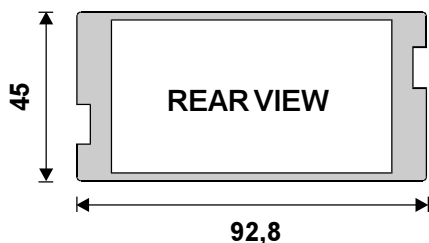
Type of instrument: .... In a closed container, size according to DIN 43700 48 x 96 x 144 mm

Electric connections: ...... Extractable polarized terminalboard with screw fixations.
$\varnothing$ of stiff and flexible wires: 0.2÷2.5 mm

Keyboard: .... In plexiglass covered with antiscratch polyester with 4 mechanical keys and 4 red signalling leds.

Weight:......................... 550 gr (in the maximum hardware configuration - version with power supply in AC)
330 gr (in the maximum hardware configuration - version with power supply in DC)

Logic

1	**+**	Positive of transducers power supply
2	**-**	Negative of transducers power supply
3	**P1**	Terminal of polarization of inputs I1, I2, I3, I4
4	**I1**	Input I1
5	**I2**	Input I2
6	**I3**	Input I3
7	**I4**	Input I4
8	**C1**	Terminal of polarization of outputs U1, U2
9	**U1**	Output U1
10	**U2**	Output U2
11	**GND**	Ground connection
12	**XXX**	Power supply voltage
13	**XXX**	Power supply voltage

Card of inputs outputs / E4 / 1B / 2B / DF4 / MD4

14	**P2**	Terminal of polarization of inputs I5, I6, I7
15	**I5**	Input I5
16	**I6**	Input I6
17	**I7**	Input I7
18	**C2**	Terminal of polarization of outputs U3, U4
19	**U3**	Output U3
20	**U4**	Output U4
21	**GND**	Common of analog output (cold pole)
22	**AN1**	Analog output (hot pole)
23	**RX**	Reception of serial port DF4 / Channel A serial port MD4
24	**TX**	Transmission serial port DF4 / Channel B serial port MD4
25	**$\overline{RX}$**	Not allowed reception serial port DF4
26	**$\overline{TX}$**	Not allowed transmission serial port DF4

Options E / 0 / 1 / 2 / 3 / 4 / RS

14	**P2**	Terminal of polarization of inputs I5, I6
15	**I5**	Input I5
16	**I6**	Input I6
17	**C2**	Terminal of polarization of outputs U3, U4, U5
18	**U3**	Output U3
19	**U4**	Output U4
20	**U5**	Output U5
21	**GND**	Common of analog output (cold pole)
22	**AN1**	Analog output 1 (hot pole)
23	**AN2**	Analog output 2 (hot pole)
24	**GND**	Common of serial port RS
25	**RX**	Reception serial port RS
26	**TX**	Transmission serial port RS

Opzions I5 / 1A / 2A / 3A / 4A / DF3

14	**P2**	Terminal of polarization of inputs I5, I6, I7, I8, I9
15	**I5**	Input I5
16	**I6**	Input I6
17	**I7**	Input I7
18	**I8**	Input I8
19	**I9**	Input I9
20	**GND**	Common of analog output (cold pole)
21	**AN1**	Analog output 1 (hot pole)
22	**AN2**	Analog output 2 (hot pole)
23	**RX**	Reception serial port DF3
24	**TX**	Transmission serial port DF3
25	**$\overline{\text{RX}}$**	Not allowed reception serial port DF3
26	**$\overline{\text{TX}}$**	Not allowed transmission serial port DF3

Options L4 / L6 / U4 / U6 / 3 / RS2 / DF2

14	**C2**	Comon of outputs U3÷U8
15	**U3**	Output U3
16	**U4**	Output U4
17	**U5**	Output U5
18	**U6**	Output U6
19	**U7**	Output U7
20	**U8**	Output U8
21	**GND**	Common of serial port RS2
22	**RX**	Reception serial ports RS2 / DF2
23	**TX**	Transmission serial ports RS2 / DF2
24	**$\overline{RX}$**	Not allowed reception serial port DF2
25	**$\overline{TX}$**	Not allowed transmission serial port DF2

REMARKS FOR DC POWER SUPPLY

- The terminals 2 and 12, negative of transducers' power supply and negative of instrument's power supply are internally in common.

- The polarities of the power supply voltage (+ / -), must observe the marks of the terminals 12 and 13. The inversion of this wiring does not create any type of damage.

- We recommend to use power supply voltage of the transducers (terminals 1 and 2) only if the power supply of the instrument is greater than 15 Vdc.

- The instrument can mount all available expansion cards for the series HM 207 (in these cases we suggest to supply the instrument with a voltage greater than 15 Vdc).

ELECTRIC CONNECTIONS VERSION WITH POWER SUPPLY IN DC

1	**+**	Positive of transducers'power supply (see electric characteristics)
2	**-**	Negative of transducers'power supply (see electric characteristics)
3	**P1**	Terminal of polarization of inputs I1, I2, I3, I4
4	**I1**	Input I1
5	**I2**	Input I2
6	**I3**	Input I3
7	**I4**	Input I4
8	**C1**	Terminal of polarization of outputs U1, U2
9	**U1**	Output U1
10	**U2**	Output U2
11	**GND**	Ground connection
12	**-**	**Negative of power supply voltage Vdc (9 ÷ 26 Vdc)**.
13	**+**	**Positive of power supply voltage Vdc (9 ÷ 26 Vdc)**.

REMARKS FOR DC POWER SUPPLY

GROUND CONNECTION AND CABLE SCREENING

INSTRUMENT'S TERMINAL BOARD
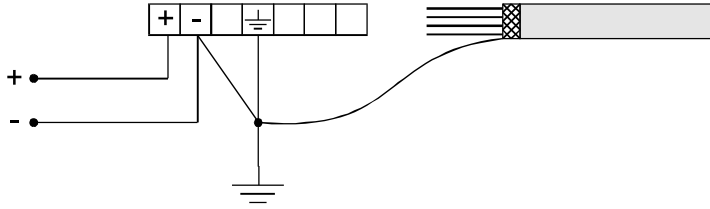
Connect the reference of the power supply (0V) to the metallic mass and to the ground.

The braidings of the screened cables must be ground connected respecting all instructions indicated in the paragraph "Use of the screened cable" of the Manual of Installation, maintenance and assistance".

Even though the reference of the power supplt (0 V) is ground connected, you must absolutely not use the ground for the return of current.

WARNINGS

- Before extracting or introducing the connectors or to handle in any way the instrument, remove power supply to the instrument and to all parts conencted to it; wait at least two minutes from the moment of the switching OFF in order to allow all the internal energy to be discharged.
- It is **COMPULSORY** to perform the connections as indicated in the drawing.

REMARKS

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