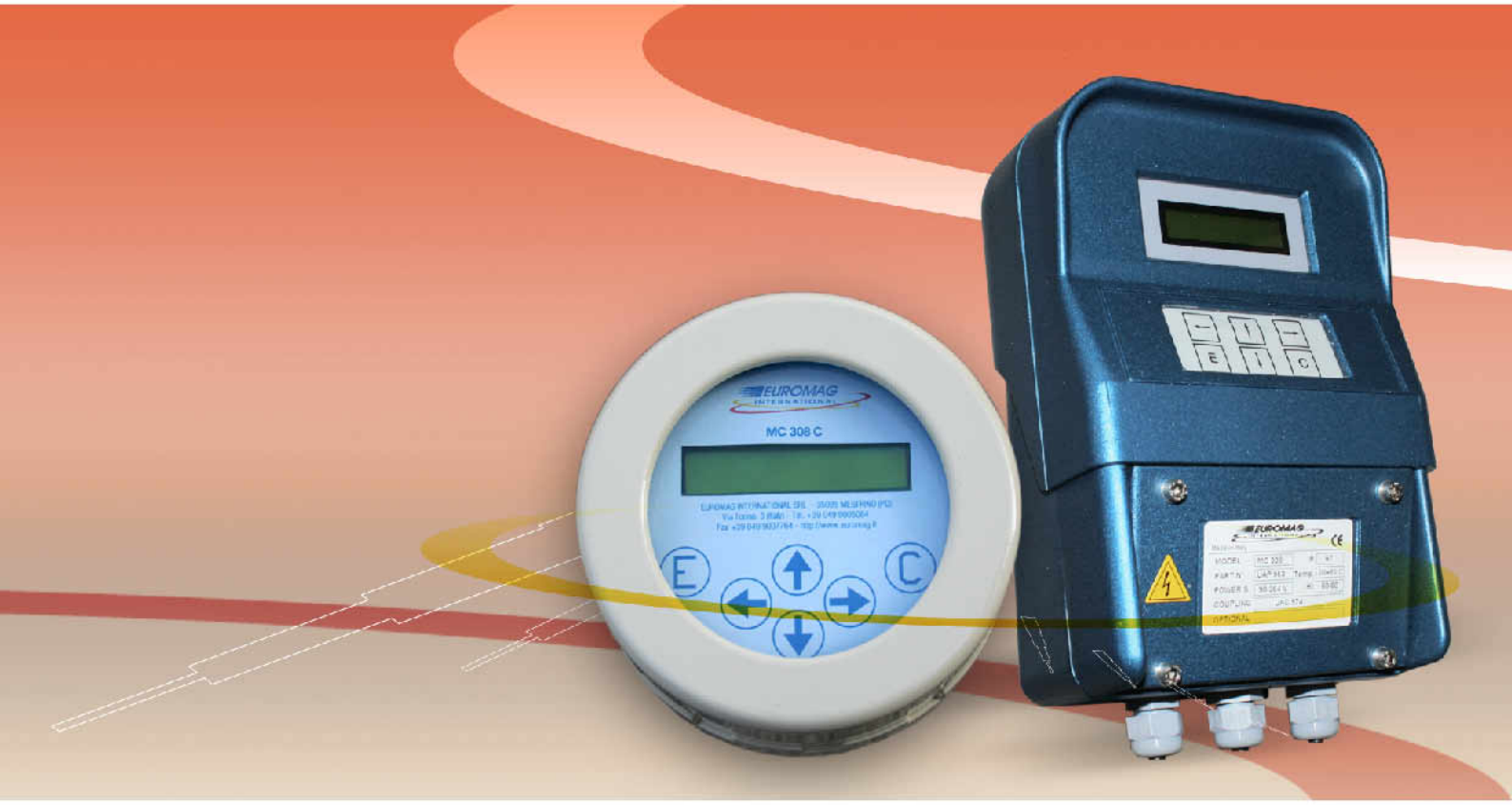
EUROMAG INTERNATIONAL

Electromagnetic flowmeters



Converter MC 308

DS150-1-ENG

Converter MC 308

EUROMAG INTERNATIONAL Converters Series MC308 represent the standard electronics available for all water cycle and process applications. It may be used with any EUROMAG electromagnetic flow sensor.

1. Case and assembly

MC308 converter is available in three different enclosures. ABS enclosure with protection degree IP 67; cast aluminium enclosure with protection degree IP 67; die cast aluminium cylindrical enclosure with protection degree IP 68.

MC 308 converters can be mounted both in the compact and separate version. The aluminum case, in the compact mounting, is equipped with a special bracket that allows the converter to remain vertical whatever the position of the sensor might be (vertical or horizontal).

Cylindrical aluminium enclosure may be rotated by 90° around the junction box axis without opening it.

In the separate version, MC308 converters are connected to the sensors by means of a pair of cables, whose maximum length depends on the liquid conductivity (see diagram fig. 1). The weight and dimensions are presented in Table 3

MC308 with aluminium case

MC308 with ABS case

2. Coupling with sensors

MC308 converters may be coupled with any EUROMAG sensor (Table 1) whose coefficients KA and KB are established during calibration and marked on the sensor plate at the factory. The coupling is done by entering in the converter, via the keyboard, these two coefficients. Generally, this operation takes place in the factory, but it can also be done at site (see “Programming”).

3. Network connection

Several flow meters equipped with the MC308 converter can be connected to a network (up to 32 devices). Therefore only one TRM200 or a PC equipped with an RS485 interface are able to communicate with each of the 32 flow meters both for carrying out the remote presetting and also for receiving and showing the 32 measurements on the display or video. The extension of this network must not exceed 1500m.

MC308 C with aluminium case

4. "Low consumption" rate

When low energy consumption is required (battery operation and/or solar source) it is possible to activate the MC308 on "low consumption" mode. The system cycles between two positions:

4.1. "standing time" which lasts 10 seconds during which the flow rate is measured.(at 10 samples per second);

4.2. "sleeping time" (programmable duration at 1'; 5'; 10') during which the system continues generating impulses, showing the readings, and if required, it gives the signal 4-20 mA corresponding to the average of the last readings.

5. Digital outputs

MC 308 converter has two DIGITAL outputs. The first one may be used in two different ways:

a) generating pulses (one pulse per unit of volume passed) which can control a remote counter (electronic or mechanical);

b) generating a frequency proportional to the flow rate. This frequency is generally used in a PLC or in a frequency- current converter.

The second DIGITAL output is reserved for one of the following alarms programmable through the keyboard:

- maximum flow rate
- minimum flow rate
- empty pipe
- out of scale
- reverse flow rate
- dose control.

Both outputs are a transistor based with collector and emitter available at the terminal board and protected from surge due to inductive loads. A 24 Vdc power supply, common to both outputs, is available in the terminal board. Should an external direct voltage be used it shall be between 5 and 40 V.

For applications in which readings are required in the control room only, it may be advisable to install the blind converter (without keyboard and display) in the field and connect it via the RS 485 to a TRM200 repeater installed in the control room. The TRM200, equipped with keyboard and display, allows the measure readings and the converter remote presetting (under certain conditions). The distance between TRM200 and the converter must be less than 1500 meters. The use of TRM 200 does not impair the availability of MC308 converter outputs.

6. Dosage.

The MC 308 converter permits to dose any quantity of liquid. The dosed volumen is entered via the keyboard; the start command is given with the digital imput (local or remote) in this way, on/off output N º2 commands the valve opening. Once the preset volumen is reached, output N°2 switches off the flowrate.

7. Empty pipe alarm.

The MC 308 converter can be connected to sensors equipped with empty pipe electrodes to detect the empty pipe condition.

8. Precision

MC 308 converter coupled to any EUROMAG sensor guarantees an accuracy of ±0,2% of actual reading if the installation and operating instructions are strictly followed.

Overall metering accuracy is then determined by the sensor model installed.

9. Main characteristics

MC 308 electronic converter is adapted to all electromagnetic sensors produced by EUROMAG. The main characteristics of the MC308 converters are listed in Table 1.

Maximum lenght of cables according to the liquid conductivity.

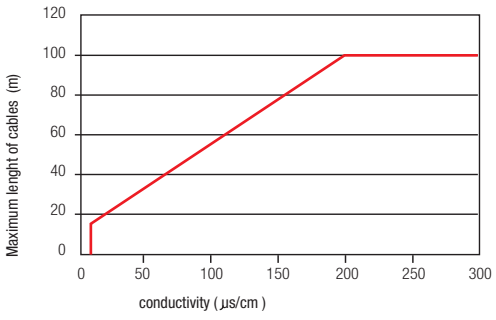


figure 1

10. Programming

MC 308 converters are very versatile devices thanks to their programmability, that can be done in different ways:

1) Through keyboard and display, if present (MC 308 can be ordered without these two elements);

2) Through connection to a TRM 200.

3) Through a TRM 100 portable programmer.

The ease of menu programming by means of one of the above mentioned devices makes MC308 converter very flexible .

Main parameters to be programmed are:

- KA and KB values.
- ND of the sensor.
- Full scale flow rate.
- Volume corresponding to one pulse.
- Setting and threshold of alarms.
- Dosage volume.

Default values of these and other parameters, if not specified by the Client, are assigned at the factory. These values are shown on the presetting sheet delivered with the flow meter.

The user may change the preset parameters at any significant value.

In order to avoid accidental modifications, some parameters are protected by a “password” or a personal key-word.

Characteristics of the MC308 series

Power supply	HV-90...264 Vac	LV - 24 Vac/dc
Low consumption	●	●
Output 1 DIGITAL Impulse/Frequency 24 Vdc	●	●
Output 2 DIGITAL 24 Vdc (alarms) [1]	●	●
Output analogue 4(0) - 20 mA [2]	●	●
Digital input [3]	●	●
Use of terminal TRM100	●	●
Electrical connections PG 11	●	●
Direct/reverse flowrate	●	●
Universal empty pipe alarm [5]	●	●
Interface RS 485 for network connection [4]	●	●
Output 4(0) - 20 mA	●	●
Autoranging	●	●
Display 2 lines and 16 characters	●	●
Metric System: decimal, English, American	●	●
Degree of protection IP 67	●	●
Language: Italian, English, Spanish	●	●
Operation environmental temperature -20 °C a + 60 °C	●	●

[1] In Table 2 the available alarms are shown.

[2] Maximum load 800 Ohm

[3] In Table 2 all the possible funtions of the digital input are shown.

[4] Interface MODBUS RS232/485 and PROFIBUS P.A. are available on request.

[5] Available as standard on MC308C, on request for other versions.

table 1

Devices	Available Functions
Digital input	- Totalizer reset
	- Totalizer stop via internal and external
	- External calibration system (if certified)
	- Scale exchange
	- Start/stop dosage
Output 4 (0) ¸ 20 mA	Maximum load 800 Ohm
Output pulse/ frequency	Maximum frequency output 1kHz
	Pulses duration 0,5…9999 ms

table 2

Overall dimensions

Dimensioni e peso dei convertitori della famiglia MC308

Versions of MC308	Width	Height	Depth	Weight
MC308 in ABS [1]	148.0 mm	257.0 mm	106.0 mm	1200 g
MC308 in Alluminium [2]	170.0 mm	275.0 mm	132.0 mm	4000 g
MC 308 C in Alluminium [3]	117.0 mm	181.0 mm	175.0 mm	2600g

[1] Figure 2

[2] Figure 3

[3] Figure 4

Table 3

Fig. 2 - MC 308 in ABS

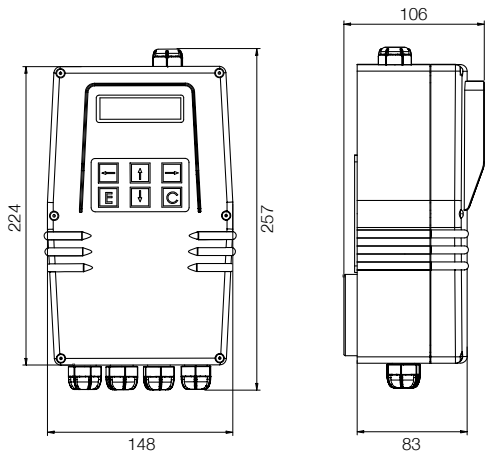


Fig. 3 - MC 308 in Aluminium

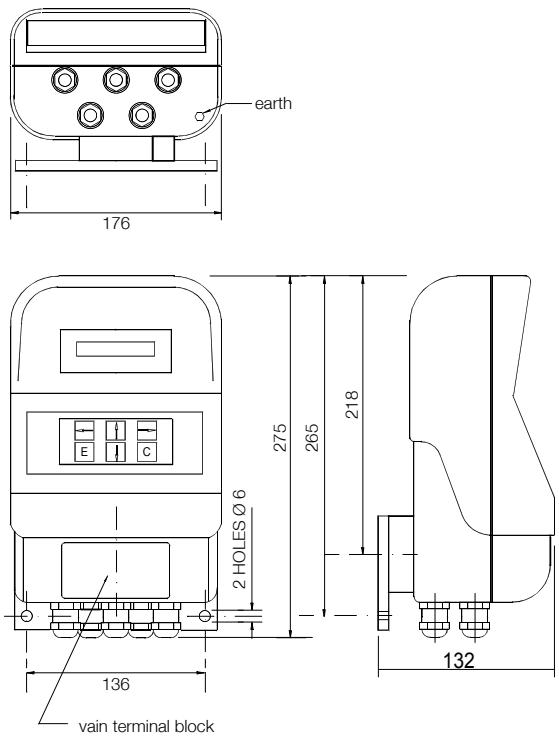


Fig. 4 - MC 308 C in Alluminium Compact Version

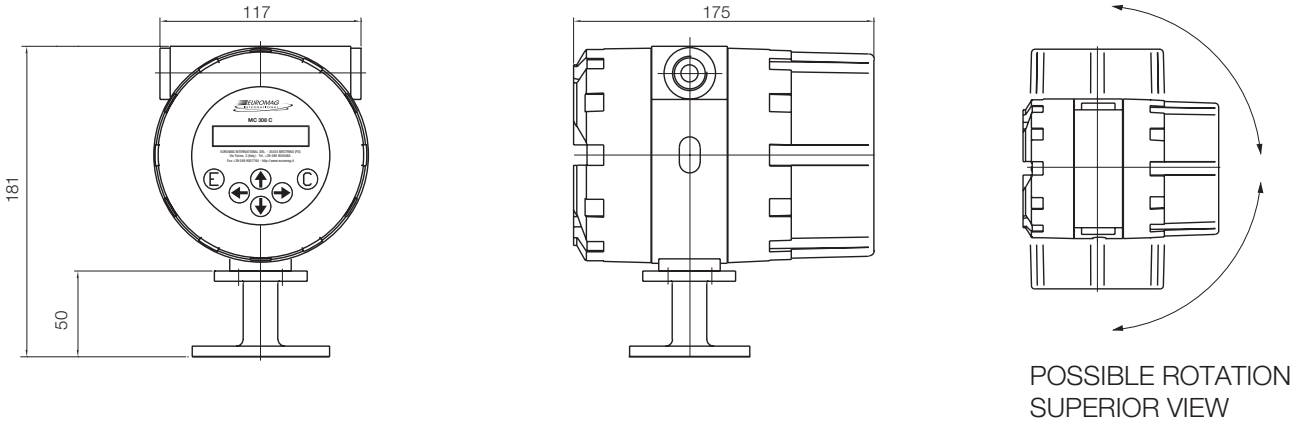
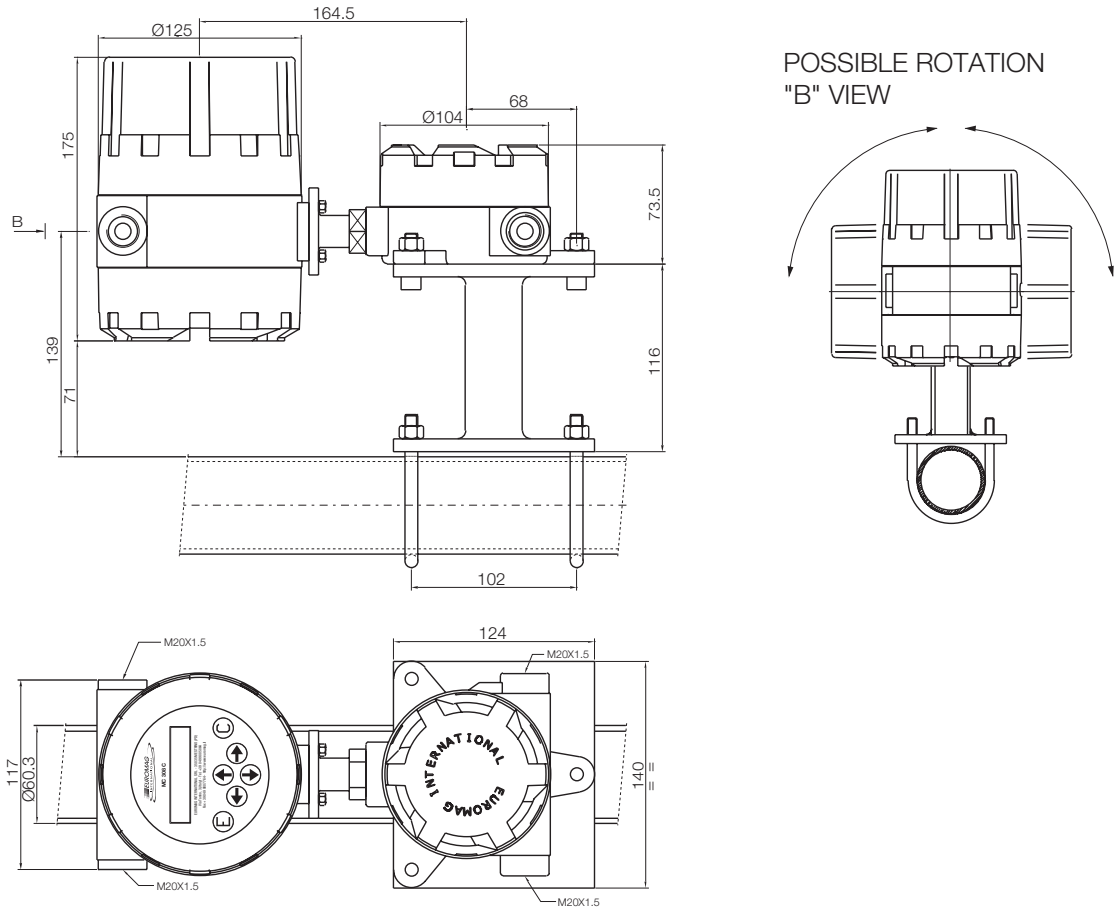


Fig. 5 - MC 308 C in Alluminium Separate Version



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