ELECTROMAGNETIC FLOW METER

“FULL BORE” SENSORS INSTALLATION MANUAL

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**INTRODUCTION**

This manual is integral part of the product. Read this manual carefully. It contains important indications for the safety of use and of maintenance.

The technical information and the relative products of this manual may be modified without any previous notice.

The flow meter must be used for the use it has been built for. The improper use, possible tampering of the instrument or parts of it and substitutions of any components not original, will void the warranty.

The manufacturer is considered responsible only if the instrument is used in its original configuration and setting.

The flowmeter makes measures of liquids with conductivity greater than 5µS/cm; it consists of a sensor (described in this manual) and a converter, see the converter manual provided.

If the sensor is supplied in compact version to the converter, consider the operating temperatures more restrictive, otherwise refer to the respective manuals (page 5).

Use care when transporting, unpacking and handling the flowmeter. In the case of prolonged storage and transportation, use and store in the original container in a dry place, do not stack more than 3 packs one above the other. In the case of wooden crates do not place one above the other.

For the cleaning of the device use only a damp cloth, and for the maintenance/repairs, contact the customer service.

For the disposal of the device and of the packaging make strict reference to regulations.

**START UP AND MAINTENANCE OF THE INSTRUMENTS**

Before starting up the instrument, always make a sure connection to ground is suitable per page 6. Verify periodically: the cables integrity, the tightening of the sealing elements (cable glands, covers, etc.), the mechanical mounting of the instrument on the pipe or on the wall stand.
SAFETY

Before using the instrument, always make sure there is a connection to ground.

Avoid any attempt to repair the instrument. If the instrument is not functioning properly, please call the nearest assistance service.

Pay maximum attention during the operation.

FLOW DIRECTION

Before installing the sensor, locate the direction of the liquid flow in the piping.

The sign of the flow rate is positive, when the flow direction is from - to + as printed on the serial tag.

If after the installation, it becomes necessary to reverse the sign of the flow, it is enough to reverse the sign of the coefficient KA in the Sensor Menu under the Main Menu. For example, if the KA is +1.2345 you can change the sign to negative (-1.2345) to reverse the indicated flow direction.
INSTALLATION SUSPENSION METHOD
Suspension method during installation recommended for ALL SENSORS WITH EYEBOLTS.

Centering cylinders can be very helpful when aligning the inside diameter of the pipe with the inside diameter of the flow sensor (including gaskets and/or grounding rings,) especially with large sensors. An offset sensor, gasket or grounding ring can create severe turbulence inside the sensor that may adversely affect flow readings.

OPERATING TEMPERATURES

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<tr>
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<th>EBONITE LINING</th>
<th>PP LINING</th>
<th>PTFE LINING</th>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Min</td>
</tr>
<tr>
<td>°C</td>
<td>0</td>
<td>80</td>
<td>-5</td>
</tr>
<tr>
<td>°F</td>
<td>30</td>
<td>176</td>
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The eye-bolts are designed to support exclusively the weight of the meter.
CRITICAL PRECAUTIONS FOR PROPER INSTALLATION!

**NO**

- Vertical installation with descending flow is not recommended.
- Avoid the installation of the sensor in a long pipe line without support.
- Pipe must be full for proper operation.
- Avoid installation near curves or hydraulic accessories.
- Do not use the closing force of the mounting bolts to pull the flange to the sensor.

**YES**

- Vertical installation is preferable with ascending flow.
- Installations on long pipe runs please use anti-vibration joints.
- During operation the pipe must be completely full of liquid or completely empty.
- Install the sensor away from curves and hydraulic accessories*.
- Before tightening the nuts bring the sensor as close to the flange as possible.

*Refer to installation manual for additional information.
GROUNDING INSTRUCTION

For correct operation of the meter it is ALWAYS NECESSARY that the sensor and the liquid are equipotential, so ALWAYS connect the sensor and converter to ground:

**Grounding with Metallic Pipe**

- Sensors with grounding post on the connection box
- Wafer Sensor
- Flanged Sensor

**Grounding with Insulated Pipe**

- Insulating Gasket
- Metallic Ring
- Insulating Bushing

If the sensor has to be mounted on a pipe made of an insulating material it is necessary to:

- Install two metal grounding rings between the sensor flanges and the counter flanges of the pipe line,

OR:

- Use a sensor with the additional grounding electrode.

**Grounding with cathode protected pipe**

- Insulating Gasket
- Metallic Ring
- Insulating Bushing

If the sensor must be install in the piping with a cathode protection, it is necessary to:

- Use insulating bushings to isolate the bolts.

- Use metal grounding rings to ground the liquid using insulating gaskets between the rings.
TORQUES (lbf-ft) FOR BOLTS SENSOR MS 1000/2500

Tighten uniformly in diagonally opposite sequence

The torques listed are applicable to flanges UNI 2223, DIN 2501, BS 4504, ANSI B16.5

The use of flange gaskets (DIN 2690) is required.
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