

New European MID Directive for Custody Transfer Measuring Instruments

Proven, certified technology for Fiscal & Custody transfer applications



New European Metrology Directive



Legal metrology in Europe has undergone some major changes, including the Measuring Instruments Directive (MID). This new directive applies to Custody Transfer metering for liquids and gases and is applicable in all 27 EU-countries (plus Norway and Switzerland).

As high flow rate applications for gases (i.e. non-domestic) are exempted in the MID, each country may decide to let these fall under national regulation. For liquid applications, the scope of MID refers to the complete installation (called ‘measuring systems for liquids other than water’) and for gas application to the meter only.

Nationally approved meters and measuring systems, installed before 30 October 2006, are not affected by MID. They may be used until the end of their life time and are still subject to subsequent verification as regulated nationally. Modifications on these meters and measuring systems do not fall within the scope of MID. Modifications will be re-evaluated by the national metrology authority, resulting in an extension of the existing national approval or a new MID certificate.

MID Transition and Compliance

Transition Period

The transition period for MID compliance is 10 years. Meters or measuring systems already type-approved by the national metrology authority before 30 October 2006 may be installed or used up till 30 October 2016. If, after 30 October 2006, a modification takes place on an already national type-approved meter or measuring system, the modification may lead to an extension of the existing national approval or to a new MID approval.

Newly designed meters and measuring systems

Meter and liquid measuring systems newly designed after 30 October 2006 will have to be submitted for type evaluation under the new MID Directive 2004/22/EC. The evaluation required on these new meters and systems will result in an EC type examination certificate with reference to the MID directive. Compliance with this directive is assumed when using the OIML recommendations OIML R117-1 (measuring systems for liquids other than water) and OIML R137-1 (for gas meter applications).



MID

Compliance Responsibility

There is a difference in responsibility between gas metering and liquid metering.

For Gas Metering

The responsibility resides with the manufacturer of the gas meter and, separately if applicable, with the manufacturer of the gas flow computer. The MID requirements apply only to the gas meter and gas flow computer and not to the installation. Therefore Emerson's Micro Motion has already obtained a MID EC-Type Examination Certificate for its Coriolis meter as a gas meter.

For Liquid Metering

The responsibility resides with the party who accepts responsibility for the complete measuring system. The responsibility for MID compliance has therefore to be mutually agreed between the involved parties. The involved parties include, but are not limited to, end users, engineering contractors/system integrators, manufacturers of liquid meters and manufacturers of other components.

MID liquid measurement systems for industrial applications are all unique and an EC examination certificate has to be obtained for each system.

One of the important considerations when installing a MID measuring system is the method of subsequent verification, as nationally regulated. This method may have an impact on the design of the measuring system and therefore an early involvement of the national inspection authority is recommended.



A Total Solution

Emerson Metering Skids...A Total Solution

Micro Motion Coriolis meters, from Emerson Process Management, are the first flow meters to obtain an MID EC-type examination certificate for gas meters and measuring systems for liquids, other than water. In addition, MID evaluation certificates have also been received for Micro Motion Coriolis meters used in a measuring system for liquids (component certificate).

Emerson delivers total measurement solutions to customers by offering metering skids including MID responsibility. An EC type examination certificate has already been obtained from the Dutch metrology authority (NMI) for a "generic" designed measuring system for liquids.

The approval simplifies and streamlines order processing as MID certified products will be suitable for installation in any European country. By proving significant customer benefits through cost savings on approval procedures and reduced commissioning times, Emerson is committed to ensuring that all of its products meet the latest industry standards.

Ideal Coriolis Measurement for Custody Transfer

Emerson's loading and unloading Coriolis measurement systems have been designed using Micro Motion ELITE Coriolis sensors – the most accurate direct mass flow, volume flow, density, and temperature measurement of liquids, gases, and slurries, while exhibiting exceptionally low pressure drop, available today.

Micro Motion ELITE Coriolis meters are suitable and certified to be used in the most severe applications to handle harsh fluid temperatures, ambient temperatures, immunity to vibration and shock (Class M3) and immune to electromagnetic environments (Class E3). Micro Motion Coriolis meters are suitable to be used in systems with accuracy classes of:

- 0.3 for pipeline measurement
- 0.5 for loading - unloading applications
- 1.0 for liquefied gasses (e.g. LPG)
- 2.5 for cryogenic applications (e.g. LNG)

These Emerson metering skids provide customers with a plug and play solution for the toughest, most stringent measurement requirements and applications:

- Direct mass flow, volume flow, and density measurement for liquid metering; for gas metering direct mass flow measurement only
- Superior overall skid accuracy
- No requirement for filters, straight runs or special mounting
- No moving parts, no maintenance
- Reliable and cost effective design
- Small footprint

Manufacturing within a controlled environment, Emerson's Micro Motion Coriolis skids are produced with exact consistency using high quality construction materials and are supported to ensure superior after-sales operations. Count on Emerson for global resources and expertise, project and component delivery control, engineering responsibility for skid and superior service.



Compliance for Liquid Measuring Systems



In applications where Emerson delivers only the meter, the availability of a Micro Motion MID evaluation certificate for the meter will simplify the evaluation process of the complete measuring system. Other relevant components of the measuring system, which are also subject to MID certification, are flow computers, temperature transmitters, pressure transmitters and air eliminators. Emerson will provide the required custody transfer documentation to the responsible party after signing a confidentiality agreement.

Complete MID Consultation

For questions related to the MID evaluation process, certification and compliance or consultancy, contact your local sales representative or the MID experts in the European Flow Centre directly at Custody_Transfer_Team@Emerson.com

The European Flow Centre is equipped with a fully traceable state-of-the-art calibration facility, certified by the Dutch Metrological Institute (NMI). The system uncertainty is 0,03% and well suited for MID class 0.3 calibration.

MID verification is performed as determined during the EC type examination. The procedure for the initial verification, as agreed with the Dutch Metrological Institute (NMI) consists of:

- Water calibration of the meter at the manufacturer's facility
- On site system evaluation of the zero flow and density
- Assessment concerning the involved equipment versus the type evaluated equipment
- Verification of required seals and marks
- Issuing the EC declaration of conformity for the whole measuring system (by the responsible party)

In case of a mass measurement application, no dynamic tests are required for the on site system evaluation. This translates into savings on proving costs and a faster start up process.

For volume and/ or density applications on liquefied gases dynamic tests on site are required.



ELITE High-Precision Mass Flow and Density Meters*

The world's most accurate Coriolis flow meter is now even better. Micro Motion ELITE sensors improvements now offer Coriolis flow measurement capabilities never before thought possible, with technology to handle even wider ranging process challenges.



- Liquid accuracy: $\pm 0,05\%$ of flow rate
- Gas accuracy: $\pm 0,35\%$ of flow rate
- Liquid repeatability: $\pm 0,025\%$ of flow rate
- Gas repeatability: $\pm 0,20\%$ of flow rate
- Liquid density accuracy: $\pm 0,2 \text{ kg/m}^3$
- Wetted parts: 316L or 304L stainless steel or nickel alloy
- Temperature rating: -240 to 204°C
- Pressure rating: 100 bar (stainless steel); 190 bar (nickel alloy)

* General specifications only. MID approval for: Gas, Liquid, Density



Model D600 High Capacity Meter

The D600, our largest sensor, is able to measure flows up to 1.636.364 kg/h, making it ideal for ship loading and unloading, and pipeline transfers.

- Liquid accuracy: $\pm 0,15\%$ of flow rate
- Gas accuracy: $\pm 0,65\%$ of flow rate
- Liquid repeatability: $\pm 0,05\%$ of flow rate
- Gas repeatability: $\pm 0,30\%$ of flow rate
- Liquid density accuracy: $\pm 0,5 \text{ kg/m}^3$
- Wetted parts: 316L stainless steel
- Temperature rating: -240 to 204°C *
- Pressure rating: 43 bar

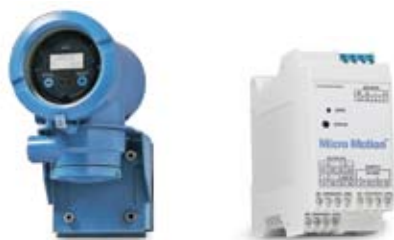
* General specifications only. MID approval for: Gas, Liquid, Density

F-Series Compact and Drainable Mass Flow and Density Meters*

F-Series is the best, drainable and compact Coriolis for high performance in process control, filling, and batching applications.

- Mass flow accuracy: $\pm 0,10\%$ of flow rate
- Volume flow accuracy: $\pm 0,15\%$ of flow rate
- Gas flow accuracy: $\pm 0,50\%$ of flow rate
- Density accuracy: $\pm 1,0 \text{ kg/m}^3$
- Wetted parts: 316L SS or nickel alloy
- Temperature rating: -100 to 180°C *
- Pressure rating: 100 bar (stainless steel); 150 bar (nickel alloy)

* General specifications only. MID approval for Mass Liquid, Density Liquid and Volume Liquid



Series 2000 Transmitters*

The Micro Motion Model 2500 and 2700 transmitters offer great flexibility and adaptability depending on need. Transmitters are available for DIN rail mounting, integral mounting, local operator interface and more. They feature a simple 4-wire connection to the sensor for power and signal. Micro Motion transmitters eliminate the expense of running custom cables or providing a separate power source at the sensor offering greater flexibility and savings.

- Integral or remote mount versions
- Display and local operator interface
- Configurable I/O board (analog, frequency and discrete out/inputs)
- Multi- or single-variable measurement
- Digital communications
- Process variables for flow, density, and enhanced density

* General specifications only. MID approval for: Gas, Liquid, Density



Micro Motion, a division of Emerson Process Management, is known globally in over 85 countries for its quality and reliability. As part of the Emerson PlantWeb® digital plant architecture, Micro Motion products enable increased plant availability, decreased costs and enhanced safety. With over 500000 Micro Motion meters installed around the world, Emerson delivers application expertise, service and technical support not available elsewhere.



Benefit from the wide range of Micro Motion solutions available

- In-line meter verification of electronics and sensor – without the need for tools or down-time
- Exceptional measurement and operating performance in entrained gas conditions
- World-leading dedicated density measurement devices
- Solutions for high and extreme temperature applications
- Best-in-class compact and drainable Coriolis
- TÜV safety-certified Coriolis for SIL-2 and SIL-3 applications

www.micromotion.com

©2008. Micro Motion, Inc. All rights reserved. Emerson Process Management, Micro Motion, MVD and PlantWeb are marks of one of the Emerson Process Management family of companies. The Micro Motion and Emerson logos are trademarks and service marks of Emerson Electric Co. All other marks are the property of their respective owners. Solartron is a registered trademark of Lloyd Instruments Limited, a subsidiary of Ametek, Inc.

The contents of this publication are presented for informational purposes only and, while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, expressed or implied, regarding the products or services described herein or their use or applicability. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.



Emerson Process Management Micro Motion Americas

Worldwide Headquarters
7070 Winchester Circle
Boulder, Colorado USA 80301
Tel. 800 522 6277
Tel. +1 (303) 527 5200
Fax. +1 (303) 530 8459
Mexico Tel. +52 55 5728 0800
Argentina Tel. +54 11 4837 7000
Brazil Tel. +55 15 3238 3677
Venezuela Tel. +58 26 1731 3446



Emerson Process Management Micro Motion Europe/Middle East

Central & Eastern Europe
Tel. +41 (0) 41 7686 111
Dubai Tel. +971 4883 5235
France Tel. 0800 917 901
Germany Tel. 0800 182 5347
Italy Tel. 8008 77334
The Netherlands Tel. +31 (0) 318 495 555
U.K. Tel. 0870 240 1978
Russia/CIS Tel. +7 495 981 9811



Emerson Process Management Micro Motion Asia Pacific

Australia	Tel. +61 3 9721 0200
China	Tel. +86 21 2892 9000
India	Tel. +91 22 5662 0566
Japan	Tel. +81 3 5769 6803
Korea	Tel. +82 2 3438 4600
Singapore	Tel. +65 6 777 8211

