Coriolis Mass Flow Meter

**TM**

- Immune to vibration effects
- Immune to pipeline generated stresses
- High-pressure applications
- Wide selection of wetted materials

**Function**

The TM Series Mass Flow Meter utilizes the Coriolis principle of operation to measure mass flow. Density and temperature are simultaneously monitored and volumetric flow is additionally calculated with these parameters. The TM Series is available with a direct mounted transmitter or in a remote mounted configuration.

**Application**

The TM Series can be used to meter nearly all liquid or gaseous media. Available in a variety of end connections, the TM can be used in many applications common to chemical, petrochemical, oil and gas, food and pharmaceutical industries. The TM Series is also used for precise dosing applications. Approvals for service in custody transfer (fiscal metering) applications are also available.

The TM Series has the following unique features:

- Superior Accuracy
- Industry’s widest selection of wetted materials
- Thick pipe wall construction for ultra-high pressure capability
- Superior heating jacket technology
Technical Data

Sensor
End connections: Flanges acc. EN 1092, ASME B16.5, DIN2512, JIS, NPT, screw pipe connection, special connections on request
Nominal pressure: PN 40, ASME Cl150 / 300 / 600 (Standard) higher pressure rates optional max. 900 bar
Process temperature: -40°C to +260°C (-40°F to +500°F)
Ambient temperature
integral mounted transmitter: see UMC3 ambient temperature
remote mounted transmitter: -40°C to +100°C (-40°F to +212°F)
Ingress protection: IP 66 / IP 68 (EN60529) (NEMA 4X / 6)

Materials
Flow tubes, splitter, flanges: 1.4404 (316 L) / 1.4571 (316 Ti), Hastelloy C-22 Hastelloy B-2, Monel, Nickel, Tantalum, other materials on request
Housing: 1.4301 (304 L)/Al up to TM025, St 37.2/Al or 1.4301 TM050 Pressure-resistant version welded or screwed

Certification
Explosion protection: Sensor circuits: intrinsically safe
DMT 01 ATEX E 149 X
II 1/2G Ex ia IIC T6–T2
(Approval for Zone 0 inside flow tubes available)

CE-Marking: Pressure Equipment Directive 97/23/EC

Ranges

<table>
<thead>
<tr>
<th>Model</th>
<th>Range (mm)</th>
<th>Resolution (mm)</th>
<th>Flow Velocity (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM015-SH</td>
<td>300 [11.0]</td>
<td>3,000 [110.2]</td>
<td>3,000 [110.2]****</td>
</tr>
<tr>
<td>TM020-SH</td>
<td>600 [22.0]</td>
<td>6,000 [220.5]</td>
<td>6,000 [220.5]****</td>
</tr>
<tr>
<td>TM025-SH</td>
<td>2,000 [73.5]</td>
<td>20,000 [734.9]</td>
<td>14,500 [532.8]</td>
</tr>
<tr>
<td>TM050-S</td>
<td>4,000 [147.0]</td>
<td>40,000 [1469.7]</td>
<td>36,000 [1322.8]</td>
</tr>
<tr>
<td>TM050-H</td>
<td>4,000 [147.0]</td>
<td>35,000 [1286.0]</td>
<td>26,500 [1047.2]</td>
</tr>
</tbody>
</table>

* (Dp=0.69bar) 
** (Dp=0.79bar) 
*** (Dp=0.88bar) 
**** (Dp=0.93bar) 
***** (Dp=0.95bar)

<table>
<thead>
<tr>
<th>Model</th>
<th>Range (mm)</th>
<th>Resolution (mm)</th>
<th>Flow Velocity (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM008-T</td>
<td>40 [1.5]</td>
<td>350 [12.9]</td>
<td>325 [11.9]</td>
</tr>
<tr>
<td>TM010-T</td>
<td>120 [4.4]</td>
<td>1,200 [44.1]</td>
<td>1,130 [41.5]</td>
</tr>
<tr>
<td>TM015-T</td>
<td>400 [14.7]</td>
<td>3,000 [110.2]</td>
<td>3,000 [110.2]*</td>
</tr>
<tr>
<td>TM020-T</td>
<td>700 [25.7]</td>
<td>6,000 [220.5]</td>
<td>5,200 [191.1]</td>
</tr>
<tr>
<td>TM025-T</td>
<td>2,000 [73.5]</td>
<td>18,000 [661.4]</td>
<td>13,700 [503.4]</td>
</tr>
<tr>
<td>TM050-T</td>
<td>4,000 [147.0]</td>
<td>30,000 [1102.3]</td>
<td>30,000 [1102.3]</td>
</tr>
<tr>
<td>TM080-T</td>
<td>6,000 [220.5]</td>
<td>65,000 [2388.3]</td>
<td>65,000 [2388.3]**</td>
</tr>
</tbody>
</table>

Reference condition: according to IEC 770
Water at 20°C

* (Dp=0.57bar) 
** (Dp=0.68bar)
Transmitter UMC3

Mounting: integrated or remote mount (junction box or plug in connector)

Power supply:
19 - 36 VDC, 24 VAC +/- 20%,
90 - 265 VAC

Outputs: Galvanically isolated
Current: 2 x 0/4-20 mA
Binary 1: active, potential free 24 V=, max. 200 mA
passive, optocoupler, U_i=30 V, I_i=200mA, P_i=3 W
Frequency: 1 KHz
Binary 2: passive, optocoupler, U_i=30 V, I_i=200mA, P_i=3 W
Status: passive, optocoupler, U_i=30 V, I_i=200mA, P_i=3 W
Input Binary: Counter reset

Ambient temperature:
-20°C to +60°C (-4°F to +140°F)
-20°C to +80°C (-4°F to +176°F) (as special version)

Ingress protection: IP 68 (EN60529) (NEMA 6)

Communication: HART®
Profibus-PA
Modbus RTU (RS 485)

Accuracy
Liquid: ± 0.1% of reading (± 0,05% with spec. calibr.)
± zero point stability
Gas: ± 0.5% of reading ± zero point stability
Density (liquid): ± 0.005 g/cm³ (with density calibration)
± 0.003 g/cm³ (with special density calibration)
Volume: ± 0.2% of reading ± zero point stability

Certification
Explosion protection: BVS 05 ATEX E 021 X
Increased safety EEx e (connection area): II (1)2G EEx de [ia] IIC/IIB T6–T3
Explosion proof EEx d (connection area): II (1)2G EEx d [ia] IIC/IIB T6–T3
Signal output/ input: Intrinsically safe or not intrinsically safe

FM XP-AIS / I / 1 / A B C D / T*: CD 06100
FMC XP-AIS / I / 1 / C D / T*: CD 06101
NEPSI Approval Cert No. GYJ06477

CE-Marking: Explosion Protection Directive 94/9/EC
EMC-Directive 89/336/EEC

Electromagnetic compatibility:
EN 61000-6-3:2001 (emissions residential environments)
EN 61000-6-2:1999 (immunity for industrial environments)
EN 55011:1998+A1: 1999 Group 1, Class B (radio interference)
EN 61000-4-2 to DIN EN 61000-4-6
EN 61000-4-8
EN 61000-4-11
EN 61000-4-29
EN 61326
## Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Endconnection</th>
<th>A [mm]</th>
<th>B [mm]</th>
</tr>
</thead>
</table>

For further information see device description TM_UMC3_GB_XX_en
Subjects to change without notice.

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