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 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 EEx ia IIC T6–T2 (Approval for Zone 0 inside flow tubes available)
CE-Marking:	Pressure Equipment Directive 97/23/EC

Ranges

TM015-S/H	300 [11.0]	3,000 [110.2]	3,000 [110.2]****	0.3 [0.0]
TM020-S/H	600 [22.0]	6,000 [220.5]	6,000 [220.5]*****	0.6 [0.0]
TM025-S/H	2,000 [73.5]	20,000 [734.9]	14,500 [532.8]	2 [0.1]
TM050-S	4,000 [147.0]	40,000 [1,469.7]	36,000 [1,322.8]	4 [0.1]
TM050-H	4,000 [147.0]	35,000 [1,286.0]	28,500 [1,047.2]	3.5 [0.1]

* (□p=0.69bar)
** (Dp=0.79bar)
*** (Dp=0.88bar)
**** (Dp=0.43bar)
****** (Dp=0.85bar)

TM008-T	40 [1.5]	350 [12.9]	325 [11.9]	0.035 [0.00]
TM010-T	120 [4.4]	1,200 [44.1]	1,130 [41.5]	0.12 [0.00]
TM015-T	400 [14.7]	3,000 [110.2]	3,000 [110.2]*	0.3 [0.0]
TM020-T	700 [25.7]	6,000 [220.5]	5,200 [191.1]	0.6 [0.0]
TM025-T	2,000 [73.5]	18,000 [661.4]	13,700 [503.4]	1.8 [0.1]
TM050-T	4,000 [147.0]	30,000 [1,102.3]	30,000 [1,102.3]	3 [0.1]
TM080-T	6,000 [220.5]	65,000 [2,388.3]	65,000 [2,388.3]**	6.5 [0.2]

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

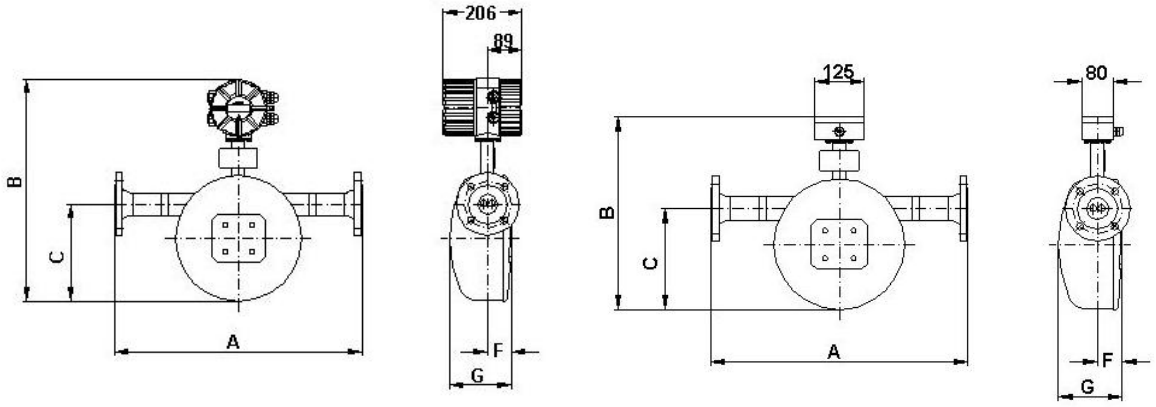
Certification

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

Model	A Endconnection	mm [inch]
TM002 - TM005	SW10/12 ¼" / ½" NPT (f) DN10/15 PN40 ASME ½" Cl150/300/600	350 [13.8]
TM006 - TM008	SW10/12 ¼" / ½" NPT (f) DN10/15 PN40 ASME ½" / ¾" Cl150/300/600	350 [13.8]
TM010	½" NPT (f) DN10/15/25 PN40 ASME ½" / ¾" / 1" Cl150/300/600	400 [15.7]
TM015 - TM020	¾" NPT (f) DN15/25/50 PN40 ASME ½" / ¾" / 1" / 1½" / 2" Cl150/300/600	550 [21.7]
TM025	¾" NPT (f) DN25/50 PN40 ASME ¾" / 1" / 1½" / 2" Cl150/300/600	650 [25.6]
TM050	DN50/80/100 PN40 ASME 1½" / 2" / 3" / 4" Cl150/300/600	750 [29.5]
TM080	DN100 PN16 ASME 4" Cl150	750 [29.5]

	B					C	F	G
	Integrated Mount Transmitter		Remote Mount Transmitter					
	-40°C - 100°C (-40°F to 212°F)	-40°C - 150°C (-40°F to 302°F)	-40°C - 100°C (-40°F to 212°F)	-40°C - 180°C (-40°F to 356°F)	-40°C - 260°C (-40°F to 500°F)			
Model	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]
TM002 - TM005	429 [16.9]	531 [20.9]	331 [13.0]	433 [17.0]	533 [21.0]	125 [4.9]	42 [1.7]	94 [3.7]
TM006 - TM008	429 [16.9]	531 [20.9]	331 [13.0]	433 [17.0]	533 [21.0]	125 [4.9]	42 [1.7]	94 [3.7]
TM010	482 [19.0]	584 [23.0]	384 [15.1]	486 [19.1]	586 [23.1]	170 [6.7]	45 [1.8]	112 [4.4]
TM015 - TM020	534 [21.0]	636 [25.0]	436 [17.2]	538 [21.2]	638 [25.1]	215 [8.5]	52 [2.0]	132 [5.2]
TM025	584 [23.0]	686 [27.0]	486 [19.1]	588 [23.1]	688 [27.1]	255 [10.0]	62 [2.4]	162 [6.4]
TM050	699 [27.5]	801 [31.5]	601 [23.7]	703 [27.7]	803 [31.6]	378 [14.9]	102 [4.0]	272 [10.7]
TM080	629 [24.8]	731 [28.8]	531 [20.9]	633 [24.9]	733 [28.9]	380 [15.0]	115 [4.5]	230 [9.1]



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

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