



Coriolis Mass Flow Meter

TMU

- Immune to vibration effects
- Immune to pipeline generated stresses
- Extreme compact design

Function

The TMU 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 TMU Series is available with a direct mounted transmitter or in a remote mounted configuration.

Application

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



Technical Data

Sensor

End connections:	Flanges acc. EN 1092, ASME B16.5, DIN2512, special connections on request
Nominal pressure:	PN 40, ASME CI150 / 300 / 600 (Standard) Higher pressure rates optional
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
Housing:	1.4301 (304 L) up to TMU040, St 37.2 / 1.4301 from TMU050

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

	Min. measuring range	Max. measuring range	Nominal ($p=1\text{bar}$)	Zero point stability (of range)
Model	kg/h [lbs/min]	kg/h [lbs/min]	kg/h [lbs/min]	kg/h [lbs/min]
TMU008	60 [2.2]	600 [22.0]	330 [12.1]	0.06 [0.002]
TMU010	250 [9.2]	2500 [91.9]	1150 [42.3]	0.25 [0.01]
TMU015	1200 [44.1]	12000 [440.9]	5250 [192.9]	1.2 [0.04]
TMU025	3000 [110.2]	30000 [1102.3]	20000 [734.9]	3 [0.1]
TMU040	6000 [220.5]	60000 [2204.6]	55000 [2,020.9]*	6 [0.2]
TMU050	20000 [734.9]	80000 [2939.4]	74000 [2,719.0]	8 [0.3]
TMU080	25000 [918.6]	120000 [4409.2]	118000 [4,335.7]**	12 [0.4]
TMU100	30000 [1102.3]	200000 [7348.6]	200000 [7,348.6]***	20 [0.7]
TMU150	60000 [2204.6]	460000 [16901.8]	460000 [16,901.8]***	46 [1.7]
TMU200	150000 [5511.5]	700000 [25720.2]	700000 [25,720.2]****	70 [2.6]
TMU250	300000 [11022.9]	1500000 [55114.6]	1350000 [49,603.2]	150 [5.5]
TMU300	400000 [14697.2]	2200000 [80834.8]	1900000 [69,811.9]	220 [8.1]

* (Dp=0.87bar)

** (Dp=0.95bar)

*** (Dp=0.93bar)

**** (Dp=0.66bar)

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



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, $I_i=200$ mA, $P_i=3$ W

Frequency: 1 KHz

Binary 2: passive, optocoupler, $U_i=30$ V, $I_i=200$ mA, $P_i=3$ W

Status: passive, optocoupler, $U_i=30$ V, $I_i=200$ mA, $P_i=3$ 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 ± zero point stability up to TMU040

± 0.15% of reading ± zero point stability from TMU050

Gas: ± 0.5% of reading ± zero point stability

Density (liquid): ± 0.005 g/cm³ with density calibration

± 0.001 g/cm³ with special density calibration up to TMU040

± 0.002 g/cm³ with special density calibration from TMU050

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

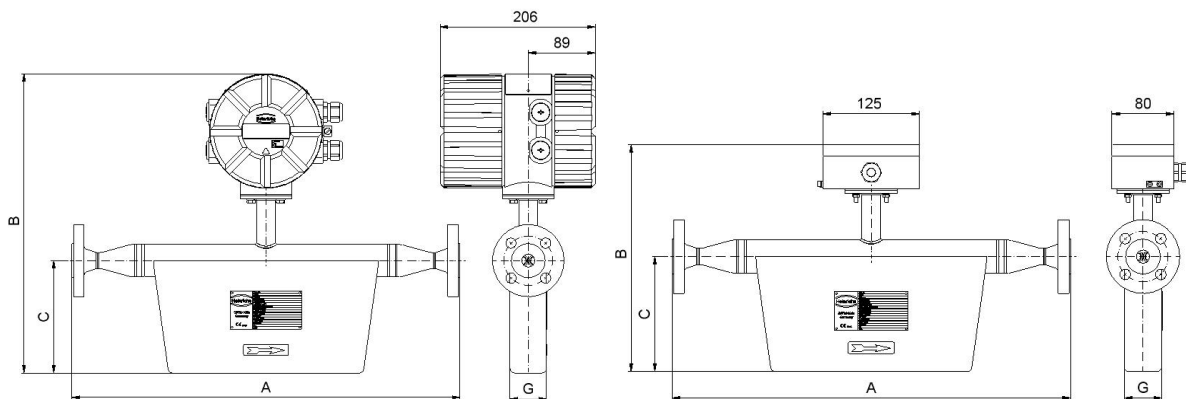
CE-Marking: Explosion Protection Directive 94/9/EC
EMC-Directive 89/336/EEC

Electromagnetic compatibility: EN 61000-6-2:1999 (immunity for industrial environments)
EN 61000-6-3:2001 (emissions residential 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											
	End connection	mm [inch]	End connection	mm [inch]	End connection	mm [inch]	End connection	mm [inch]	End connection	mm [inch]		
TMU008	SW10	--	SW12	--	DN10	360 [14.2]	½" NPT (f)	300 [11.8]	½" NPT (f)	300 [11.8]	½" CH150 ½" C600	366 [14.4] 375 [14.8]
TMU010	SW12	--	DN10	390 [15.4]	DN15	396 [15.6]	½" NPT (f)	300 [11.8]	½" CH150 ½" C600	416 [16.4] 425 [16.7]	½" CH150 ½" C600	350 [13.8] 360 [14.2]
TMU015	--	--	DN15	515 [20.3]	DN25	520 [20.5]	½" NPT (f)	--	½" CH150 ½" C600	535 [21.1] 546 [21.5]	½" CH150 ½" C600	546 [21.5] 556 [21.9]
TMU025	--	--	DN25	632 [24.9]	DN40	642 [25.3]	½" CH150	657 [25.9]	1" CH150	664 [26.1]	1½" CH150	676 [26.6]
TMU040	--	--	DN40	770 [30.3]	DN50	776 [30.6]	--	--	1½" CH150 1½" C600	804 [31.7] 820 [32.3]	2" CH150 2" C600	810 [31.9] 828 [32.6]
TMU050	DN40	1018 [40.1]	DN50	1024 [40.3]	DN80	1044 [41.1]	1½" CH150 1½" C600	1050 [41.3] 1066 [42.0]	2" CH150 2" C600	1053 [41.5] 1072 [42.2]	3" CH150 3" C600	1066 [42.0] 1091 [43.0]
TMU080	DN50	1176 [46.3]	DN80	1196 [47.1]	DN100	1184 [46.6]	2" CH150 2" C600	1207 [47.5] 1226 [48.3]	3" CH150 3" C600	1218 [48.0] 1243 [48.9]	4" CH150 4" C600	1230 [48.4] 1250 [49.2]
TMU100	DN80	1370 [53.9]	DN100	1338 [53.5]	DN150	1090 [42.9]	3" CH150 3" C600	1388 [54.6] 1413 [55.6]	4" CH150 4" C600	1400 [55.1] 1420 [55.9]	6" CH150 6" C600	1154 [45.4] 1173 [46.2] on request
TMU150	DN100	1726 [68.0]	DN150	1732 [68.2]	DN200	1448 [57.0]	4" CH150 4" C600	1770 [69.7] 1790 [70.5]	6" CH150 6" C600	1796 [70.7] 1815 [71.5]	8" CH150 8" C600	1525 [60.0] 1545 [60.8] on request
TMU200	DN150	2184 [86.0]	DN200	2198 [86.5]	DN300	1864 [73.4]	6" CH150 6" C600	2250 [88.6] 2270 [89.4]	8" CH150 8" C600	2270 [89.4] 2287 [90.0]	10" CH150 10" C600	1925 [75.8] 1957 [77.0] on request
TMU250	DN200	2268 [89.3]	DN250	2284 [89.9]	DN300	1900 [74.8]	8" CH150 8" C600	2348 [92.4] 2363 [93.0]	10" CH150 10" C600	2348 [92.4] 2375 [93.5]	12" CH150 12" C600	1945 [76.6] 1977 [77.8] on request
TMU300	DN250	2913 [114.7]	DN300	2925 [115.2]	DN350	2933 [115.5]	10" CH150 10" C600	2976 [117.2] 3008 [118.4]	12" CH150 12" C600	2995 [117.9] 3030 [119.3]	14" CH150 14" C600	3020 [118.9] 3050 [120.1] on request

Model	B					C	G
	Integral 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)		
mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	
TMU008	328 [12.9]	430 [16.9]	225 [8.9]	327 [12.9]	427 [16.8]	85 [3.3]	40 [1.6]
TMU010	343 [13.5]	445 [17.5]	240 [9.4]	342 [13.5]	442 [17.4]	100 [3.9]	40 [1.6]
TMU015	395 [15.6]	497 [19.6]	292 [11.5]	394 [15.5]	494 [19.4]	148 [5.8]	48 [1.9]
TMU025	460 [18.1]	562 [22.1]	357 [14.1]	459 [18.1]	559 [22.0]	200 [7.9]	74 [2.9]
TMU040	528 [20.8]	630 [24.8]	425 [16.7]	527 [20.7]	627 [24.7]	255 [10.0]	101 [4.0]
TMU050	1010 [39.8]	1112 [43.8]	907 [35.7]	1009 [39.7]	1109 [43.7]	615 [24.2]	230 [9.1]
TMU080	1210 [47.6]	1312 [51.7]	1107 [43.6]	1209 [47.6]	1309 [51.5]	800 [31.5]	250 [9.8]
TMU100	1230 [48.4]	1332 [52.4]	1127 [44.4]	1229 [48.4]	1329 [52.3]	815 [32.1]	270 [10.6]
TMU150	1560 [61.4]	1662 [65.4]	1457 [57.4]	1559 [61.4]	1659 [65.3]	1070 [42.1]	380 [15.0]
TMU200	1720 [67.7]	1822 [71.7]	1617 [63.7]	1719 [67.7]	1819 [71.6]	1210 [47.6]	400 [15.7]
TMU250	1860 [73.2]	1962 [77.2]	1757 [69.2]	1859 [73.2]	1959 [77.1]	1300 [51.2]	550 [21.7]
TMU300	1865 [73.4]	1967 [77.4]	1762 [69.4]	1864 [73.4]	1964 [77.3]	1400 [55.1]	510 [20.1]



For further information see device description TMU_UMC3_GB_XX_en
Subjects to change without notice.

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