



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 (junction box):	-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

Model	Min. measuring range	Max. measuring range	Nominal ($\Delta p=1\text{bar}$)	Zero point stability (of range)
	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]

* ($\Delta p=0,87\text{bar}$)

** ($\Delta p=0,95\text{bar}$)

*** ($\Delta p=0,93\text{bar}$)

**** ($\Delta p=0,66\text{bar}$)

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_{DC}, 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) (in approval procedure)

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

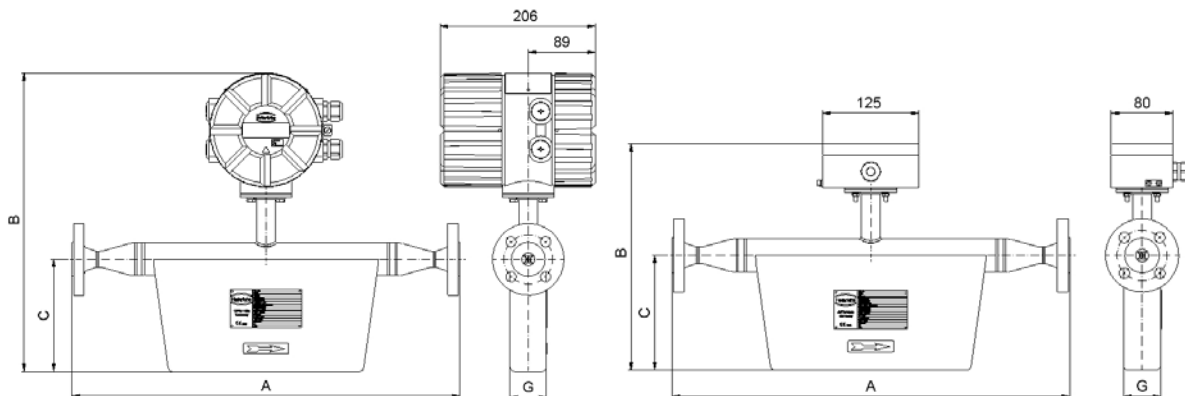
CE-Marking: Explosion Protection Directive 94/9/EC
EMC-Directive 89/336/EEC

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	End connection		End connection		End connection		End connection		End connection		
	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	
TMU008	SW10	--	SW12	--	DN10	360 [14,2]	½" NPT (f)	300 [11,8]	½" NPT (f)	300 [11,8]	½" CI150 366 [14,4] ½" CI600 375 [14,8]
TMU010	SW12	--	DN10	390 [15,4]	DN15	396 [15,6]	½" NPT (f)	300 [11,8]	½" CI150 416 [16,4] ½" CI600 425 [16,7]	¾" CI150 350 [13,8] ¾" CI600 360 [14,2]	
TMU015	--	--	DN15	515 [20,3]	DN25	520 [20,5]	½" NPT (f)	--	½" CI150 535 [21,1] ½" CI600 546 [21,5]	¾" CI150 546 [21,5] ¾" CI600 556 [21,9]	
TMU025	--	--	DN25	632 [24,9]	DN40	642 [25,3]	¾" CI150 657 [25,9]	¾" CI600 667 [26,3]	1" CI150 664 [26,1] 1" CI600 676 [26,6]	1½" CI150 676 [26,6] 1½" CI600 692 [27,2]	
TMU040	--	--	DN40	770 [30,3]	DN50	776 [30,6]	--	--	1½" CI150 804 [31,7] 1½" CI600 820 [32,3]	2" CI150 810 [31,9] 2" CI600 828 [32,6]	
TMU050	DN40	1018 [40,1]	DN50	1024 [40,3]	DN80	1044 [41,1]	1½" CI150 1050 [41,3] 1½" CI600 1066 [42,0]	--	2" CI150 1053 [41,5] 2" CI600 1072 [42,2]	3" CI150 1066 [42,0] 3" CI600 1091 [43,0]	
TMU080	DN50	1176 [46,3]	DN80	1196 [47,1]	DN100	1184 [46,6]	2" CI150 1207 [47,5] 2" CI600 1226 [48,3]	--	3" CI150 1218 [48,0] 3" CI600 1243 [48,9]	4" CI150 1230 [48,4] 4" CI300 1250 [49,2]	
TMU100	DN80	1370 [53,9]	DN100	1358 [53,5]	DN150	1090 [42,9]	3" CI150 1388 [54,6] 3" CI300 on request 3" CI600 1413 [55,6]	--	4" CI150 1400 [55,1] 4" CI300 1420 [55,9] 4" CI600 on request	6" CI150 1154 [45,4] 6" CI300 1173 [46,2] 6" CI600 on request	
TMU150	DN100	1726 [68,0]	DN150	1732 [68,2]	DN200	1448 [57,0]	4" CI150 1770 [69,7] 4" CI300 1790 [70,5] 4" CI600 on request	--	6" CI150 1796 [70,7] 6" CI300 1815 [71,5] 6" CI600 on request	8" CI150 1525 [60,0] 8" CI300 1545 [60,8] 8" CI600 on request	
TMU200	DN150	2184 [86,0]	DN200	2198 [86,5]	DN300	1864 [73,4]	6" CI150 2250 [88,6] 6" CI300 2270 [89,4] 6" CI600 on request	--	8" CI150 2270 [89,4] 8" CI300 2287 [90,0] 8" CI600 on request	10" CI150 1925 [75,8] 10" CI300 1957 [77,0] 10" CI600 on request	
TMU250	DN200	2268 [89,3]	DN250	2284 [89,9]	DN300	1900 [74,8]	8" CI150 2348 [92,4] 8" CI300 2363 [93,0] 8" CI600 on request	--	10" CI150 2348 [92,4] 10" CI300 2375 [93,5] 10" CI600 on request	12" CI150 1945 [76,6] 12" CI300 1977 [77,8] 12" CI600 on request	
TMU300	DN250	2913 [114,7]	DN300	2925 [115,2]	DN350	2933 [115,5]	10" CI150 2976 [117,2] 10" CI300 3008 [118,4] 10" CI600 on request	--	12" CI150 2995 [117,9] 12" CI300 3030 [119,3] 12" CI600 on request	14" CI150 3020 [118,9] 14" CI300 3050 [120,1] 14" CI600 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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