



Coriolis Mass Flow Meter

TMR

- Replaces PD meters without modifying the piping
- No servicing required
- No filters needed
- Wear-free
- Process temperature up to 260°C
- Immune to vibration effects
- Immune to pipeline generated stresses

Function

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

Application

The TMR Series is specially designed to replace PD meters. Compared to PD meters the sensors series TMR are maintenance free and wear free. No filters are needed to protect the TMR against solids.

The TMR can be used to meter liquids. The TMR can be used in many standard applications common to chemical, petrochemical and oil industries. Approvals for service in custody transfer (fiscal metering) applications in preparation.

The TMR is easy to install and ideal designed for a replacement of PD meters without modifying existing pipe installations.



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 65 / IP 68 (EN60529) (NEMA 4X / 6)

Materials

Flow tubes, splitter, flanges:	1.4404 (316 L) / 1.4571 (316 Ti), others on request
Housing:	1.4301 (304 L) up to TMR040, St 37.2 / 1.4301 from TMR080

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

Model	Mass flow			Zero point stability (of range)
	Min. measuring range	Max. measuring range	Nominal ($\Delta p=1\text{bar}$)	
	kg/h [lbs/min]	kg/h [lbs/min]	kg/h [lbs/min]	kg/h [lbs/min]
TMR015	120 [4.4]	1,200 [44.1]	1,070 [39.3]	0.12 [0.004]
TMR025	2,000 [73.5]	20,000 [734.9]	15,000 [551.1]	2 [0.073]
TMR040	6,000 [220.5]	60,000 [2,204.6]	60,000 [2,204.6]	6 [0.220]
TMR080	25,000 [918.6]	120,000 [4,409.2]	120,000 [4,409.2]	12 [0.441]

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



Transmitter

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, $U_i=30\text{ V}$, $I_i=200\text{mA}$, $P_i=3\text{ W}$

Frequency: 1 KHz

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

Status: passive, optocoupler, $U_i=30\text{ V}$, $I_i=200\text{mA}$, $P_i=3\text{ W}$

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 TMR040
± 0.15% of reading ± zero point stability from TMR080

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

CE-Marking: Explosion Protection Directive 94/9/EC

Electromagnetic compatibility: EMC-Directive 89/336/EEC
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

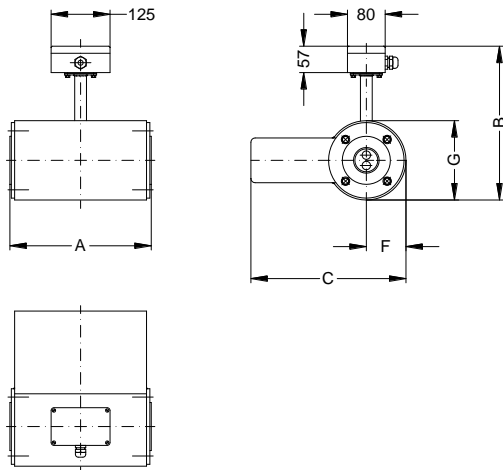
Dimensions

Model	A	
	End connection	mm [inch]
TMR010	DN20/25, ASME ¾/1"	215 [8.5]
TMR025	DN50, ASME 1½/2"	300 [11.8]
TMR040	DN65	450 [17.7]
TMR080	DN100 ASME 4"	650 [25.6]

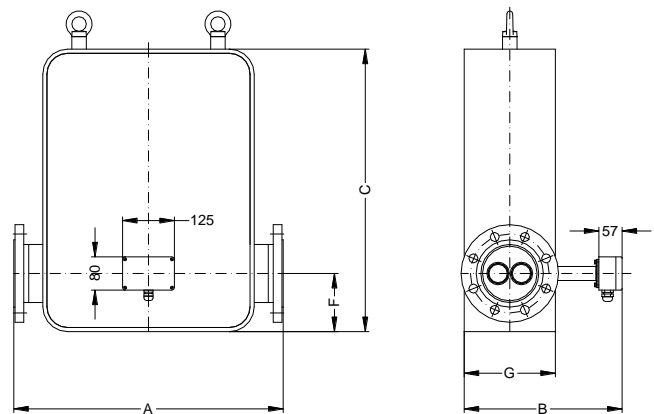
Model	B					C	F	G
	Integrated Mount Transmitter		Remote Mount Transmitter					
	-40°C - 100°C (-40°F to 212°F)	-40°C - 150°C (-40°F to 302°F)	-40°C - 100°C (-40°F to 212°F)	-40°C - 180°C (-40°F to 356°F)	-40°C - 260°C (-40°F to 500°F)			
mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	mm [inch]	
TMR015	374 [14.7]	476 [18.7]	276 [10.9]	378 [14.9]	478 [18.8]	215 [8.5]	57 [2.2]	114 [4.5]
TMR025	428 [16.9]	530 [20.9]	328 [12.9]	430 [16.9]	530 [20.9]	330 [13.0]	84.5 [3.3]	169 [6.7]
TMR040	449 [17.7]	551 [21.7]	349 [13.7]	451 [17.8]	551 [21.7]	350 [13.8]	95 [3.7]	190 [7.5]
TMR080	479 [18.9]	581 [22.9]	379 [14.9]	481 [18.9]	581 [22.9]	680 [26.8]	140 [5.5]	220 [8.7]

Dimensional deviations are possible due to special customer design.

Model TMR015, 025, 040



TMR080



For further information see device description TMR_UMC3_GB_XX_en
Subjects to change without notice.

Heinrichs Messtechnik GmbH

P. O. Box 600260
D-50682 Cologne

Robert-Perthel-Straße 9
D-50739 Cologne

Phone +49-221-49708-0
Fax +49-221-49708-178

www.heinrichs.eu
info@heinrichs.eu