Magnetic-Inductive Flowmeter

measuring • monitoring • analyzing

PITe + UMF2

- Measuring Range: 1...10 m/sec (3.28... 32.8 ft/sec)
- Accuracy: Greater than 30% of URV ±1.5% of Reading
- Less than 30% of URV ±1.5% of Reading + 2.5% of Full Scale
- p_{max}: 230 PSIG to 90 °C (194 °F), 200 PSIG to 100 °C (212 °F)
- t_{max}: 100 °C (212 °F)
- Connection: Welding Stub and M52 x 2 Union Nut for 3" to 16" pipes
- Material: Stainless Steel / PTFE, Hastelloy® Electrodes
- Outputs: Analog with HART®, Pulse, and Status

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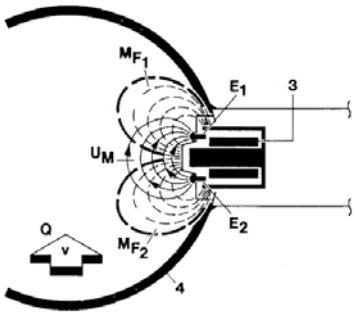
Description

An electrically conductive media flowing through an orientated magnetic field, in accordance to Faraday's law of induction, will induce a voltage proportional to the mean flow velocity rate and hence the volumetric flow. The PITe magnetic inductive flowmeter sensor is placed in a pipeline and when a conductive liquid flows by the magnetic field coil and two electrodes, the electrode voltage is detected by a transmitter and converted into a standardized signal such as a 4-20 mA or a pulse output. The PITe sensor can be used in conjunction with the UMF2 transmitter. It offers a simple compact design, is maintenance-free, and has almost no pressure drop. It is used to measure the volumetric flow of liquids, slurries and other electrically conductive media. Pressure, temperature, density and viscosity do not affect the measurement. However, it is not suitable for use with media that has solid particles or small gas bubbles.



MF1, MF2: Magnetic Field
E1, E2: Electrodes
3: Coils
4: Pipeline
U_m: Induced Voltage

Technical Details: PITe Sensor

Armature:	316L Stainless Steel, PTFE
Electrodes:	Hastelloy® C-4 (Others on Request)
Nominal Diameters:	3" ... 16" ANSI, DN 80 ... DN 400
Connection:	Welding Stub Ø 40 mm, 316L SS, with M52x2 union nut 316L SS (Other Connections on Request)
Nominal Pressure:	230 PSIG / 194 °F, 200 PSIG / 212 °F
Process Temp:	-4...212 °F
Ambient Temp:	-4...140 °F
Conductivity:	≥20 µS/cm
Straight Run:	10xD Inlet, 5xD Outlet
Measuring Range:	3.28...32 ft/sec
Measurement Deviation:	at (Q≥30% of Full Scale): ±1.5% of Reading at (Q≤30% of Full Scale): ±1.5% of Reading ±2.5% of Full Scale (Under Reference Conditions)
Repeatability:	±0.75% (Under Reference Conditions)
Protection:	IP 65 (EN60529), PVC Cable IP 68 (EN60529), PE Cable

Technical Details: Transmitter UMF2

Mounting:	Remote
Protection:	IP 65 or IP68 (EN60529)
Housing:	Die-cast Aluminum, Painted
Power Supply:	115 or 230 V_{AC}, 50 ... 60 Hz, 10 VA, or 24 V_{DC}, 10 W
Display:	LCD, 2 Lines, 16 Digits, Backlit
Interface Language:	English, German
Output: Standard	
1x Analog:	1 x 4-20 mA HART®, Active, Galvanically Isolated
2x Binary:	Passive, Galvanically Isolated 1 Pulse Output, Max. 1 kHz Freely Configurable 1 Status Output, Freely Configurable e.g. Empty Pipe Detection
Ambient Temp:	-4...140 °F
Communication:	HART®
Diagnostics:	Empty Pipe Detection, Coil Current Surveillance
Electromagnetic Tolerance:	EMC-Directive 2004/108/EG

No responsibility taken for errors; subject to change without prior notice.

Specific Flow Values: Recommended Flow According to Pipe Size

Measuring Ranges					
Nominal Diameter		Max Flow GPM	Max Flow LPM	Recommended Measuring Range GPM	Recommended Measuring Range LPM
inches	mm	Q_{max} (32.8 ft/sec)	Q_{max} (10 m/sec)	Q_{max} (19.68 ft/sec)	Q_{max} (6 m/sec)
3	80	723	3016	431	1810
4	100	1286	4710	777	2827
5	125	2009	7363	1205	4418
6	150	2893	10600	1726	6362
8	200	5143	18850	3078	11310
10	250	8036	29452	4819	17672
12	300	11557	42410	6948	25450
16	400	20572	75400	12312	45240

Order Details Sensor (Example: **PITe-S A504 138 H 4 00 0K**)

Model	Material	Process Connection	Sensor Length	Electrode Material	Transmitter, Remote	Approval/ Certificate (Order Separately)	Special Configuration
PITe-	**..S..** = 316L and 316-Ti SS, PTFE	**..A504..** = Weld on Adaptor for Pipe Sizes 3"...16" (DN80… DN400) **..309B..** = Flange Conn. DN25 PN40	**..138..** = 138.5 mm (L= 165 mm with Flange Connection DN25 PN40)	**..H..** = Hastelloy® C-4 **..X..** = Special	**..4..** = IP65, Incl. 5 m PVC-Cable Conn. **..5..** = IP68, Incl. 5 m PE Cable Conn.	**..00..** = Without Approval/ Certificate **..01..** = Certificate of Compliance 2.1 **..02..** = Test Report 2.2 **..0B..** = Material Certificate 3.1 **..0C..** = Material Certificate 3.2	**..0K** = Without **..XK** = With Special Configuration

Order Details Transmitter (Example: **UMF2-E1 2 G0BK**)

Model	Protection[1)]	Power Supply	Output Signal
UMF2-	**..E1..** = IP65, Remote Electronics ½" NPT **..F1..** = IP65, Remote Electronics M20x1.5 **..G1..** = IP68, Remote Electronics ½" NPT **..H1..** = IP68, Remote Electronics M20x1.5	**..1..** = 230 V_{AC}(+10%, -15%) 50/60 Hz **..2..** = 115 V_{AC} (+10%, -15%) 50/60 Hz **..4..** = 24 V_{DC} (±15%)	**..F0BK** = Current Output 1: (0)4-20 mA Pulse Output: Passive U_m = 24 V_{DC} Status Output: Passive U_m = 24 V_{DC} **..G0BK** = Current Output 1: (0)4-20 mA HART® Pulse Output: Passive U_m = 24 V_{DC} Status Output: Passive U_m = 24 V_{DC}

[1)] Pipe Mount Kit Included

Order Details Certificates

Certificate	Code
Certificate of Compliance 2.1	**DOK-HMT01**
Test Report 2.2	**DOK-HMT02**
Inspection Certificate with Material Analysis 3.1 (DIN EN 10204:2004)	**DOK-HMT0B**
Inspection Certificate with Material Analysis 3.2 (DIN EN 10204:2004)	**DOK-HMT0C**

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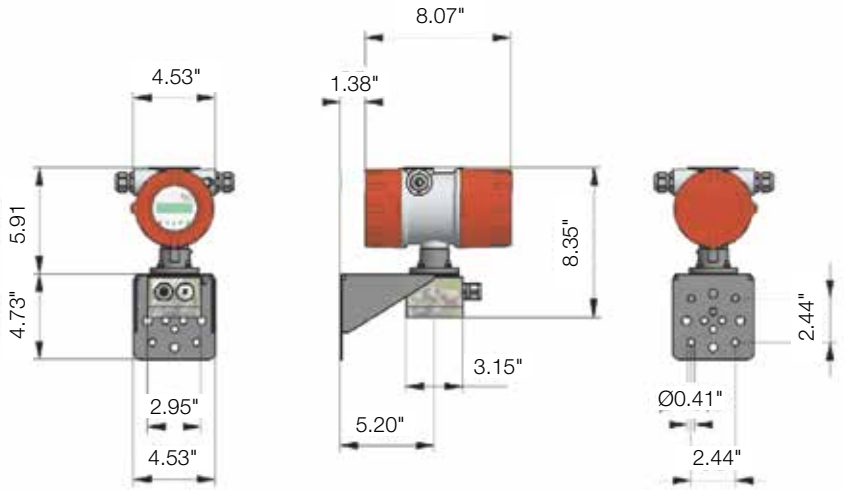
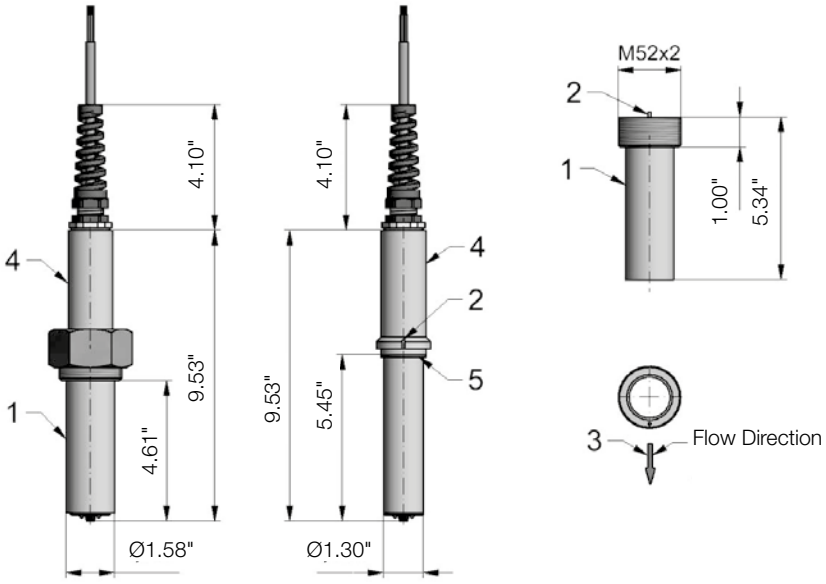
Dimensions: Transmitter UMF2



Dimensions: Sensor PITe



1: Welding Socket
2: Anti-rotation Lock
3: Flow Direction
4: Armature
5: Gasket

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