Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Magnetic-inductive Flow Meter

KOBOLD

measuring • monitoring • analysing

PITe

- Measuring range: up to 10 m/s
- Accuracy: ±1,5% of reading ± 2,5% of full scale
- p_{max}: PN 16; t_{max}: -20 ... +100 °C
- Connection: welding stub and M52 x 2 union nut for DN 80 ... 400
- Material: stainless steel / PTFE, Hastelloy® electrodes
- Outputs: analogue with HART®, pulse and status

S5

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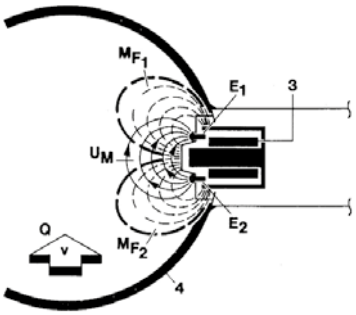
Description

An electrically conductive medium 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 flow meter consists of a tube, here the pipeline, through which a conductive liquid flows, a magnetic field coil and two electrodes. The electrode voltage is detected by a transmitter and converted into standardised electrical signal such as 4-20 mA or pulses. The sensor PITe can be used in combination with the UMF2 transmitter. The transmitter is mounted separately to the sensor.



MF1, MF2: magnetic field
E1, E2: electrodes
3: coils
4: pipeline
U_m: induced voltage

Application

The magnetic-inductive flow sensor PITe is used to measure the volume flow of liquids, slurries, pastes and other electrically conductive media with almost no pressure drop. Pressure, temperature, density and viscosity do not affect the volume measurements. Solid particles and small gas bubbles should be avoided.

The sensor PITe has the following significant characteristics:

- simple design
- maintenance-free
- very compact design
- almost no pressure drop

Technical Details

Armature:	stainless steel 1.4404, 316L, PTFE
Electrodes:	Hastelloy® (others on request)
Nominal diameters:	DN 80 ... DN 400, 3" ... 16" ANSI
Process connection:	welding stub Ø 40 mm stainless steel 1.4404, 316L with M52x2 union nut stainless steel 1.4404/316L (other connections on request)
Nominal pressure:	PN16 (16 bar/90 °C; 14 bar/100 °C)
Process temperature:	-20 °C ... +100 °C, stainless steel, PTFE
Ambient temperature:	-20 °C ... +60 °C
Conductivity:	≥20 µS/cm
Straight inlet- outlet:	10xD inlet, 5xD outlet
Measuring range:	1 m/s ... 10 m/s
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

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

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Transmitter UMF2

Mounting:	remote
Protection:	IP 67 (EN60529)
Housing:	die-cast aluminum, painted
Power supply:	115 ... 230 V_{AC}, 50 ... 60 Hz, 10 VA, 24 V_{DC}, 10 W
Display:	LCD, 2 lines, 16 digits, background lighted
Interface language:	German, English
Output:	
standard 1 x analogue:	1 x 0 / 4-20 mA HART®, active, galvanically isolated
2x binary:	passive, galvanically isolated 1 pulse output, max. 1 kHz free configurable 1 status output, free configurable e.g. empty pipe detection
Ambient temperature:	-20 °C ... +60 °C,
Communication:	HART®
Diagnostic functions:	empty pipe detection, coil current surveillance
Electromagnetic tolerance:	EMC-Directive 2004/108/EG

Specific flow values

Recommended flow according to pipe size

Measuring ranges					
Nominal diameter		**Min./max. flow (1-10 m/s)**		**Recommended measuring range (3-6 m/s)**	
[mm]	[inch]	Q_{min} (1 m/s)	Q_{max} (10 m/s)	Q_{min} (3 m/s)	Q_{max} (6 m/s)
80	3	18 m³/h	180 m³/h	54 m³/h	108 m³/h
100	4	28 m³/h	280 m³/h	84 m³/h	168 m³/h
125	5	43 m³/h	430 m³/h	129 m³/h	258 m³/h
150	6	65 m³/h	650 m³/h	195 m³/h	390 m³/h
200	8	115 m³/h	1150 m³/h	345 m³/h	790 m³/h
250	10	180 m³/h	1800 m³/h	540 m³/h	1080 m³/h
300	12	252 m³/h	2520 m³/h	756 m³/h	1512 m³/h
400	16	450 m³/h	4500 m³/h	1357 m³/h	2714 m³/h

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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)	Supplement equipment
PITe-	**S** = stainless steel (1.4571/ 1.4404), PTFE	**A504** = weld-on adaptor for pipe sizes DN 80…DN 400 **309B** = flange connection DN25 PN40	**138** = 138.5 mm (L = 166 mm with flange connection DN25 PN40)	**H** = Hastelloy® C-4 **X** = special	**4** = IP65, incl. 5 m PVC-cable connection **5** = IP68, incl. 5 m PE cable connection	**00** = without approval/ certificate **01** = material certificate 2.1 **02** = material certificate 2.2 **0B** = material certificate 3.1 **0C** = material certificate 3.2	**0K** = without **XK** = with (see supplement equipment)

Order Details Transmitter (example: **UMF2 E1 1 F0BK**)

Model	Protection[1)]	Power supply	Output signal
UMF2-	**E1** = IP 65, remote electronics ½" NPT **F1** = IP 65, remote electronics M20x1.5 **G1** = IP 68, remote electronics ½" NPT **H1** = IP 68, 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 output1: (0)4-20 mA pulse output: passive U_m=24 V_{DC} status output: passive U_m=24 V_{DC} **G0BK** = current output1: (0)4-20 mA HART® pulse output: passive U_m=24 V_{DC} status output: passive U_m=24 V_{DC}

[1)] Inclusive pipe mount kit

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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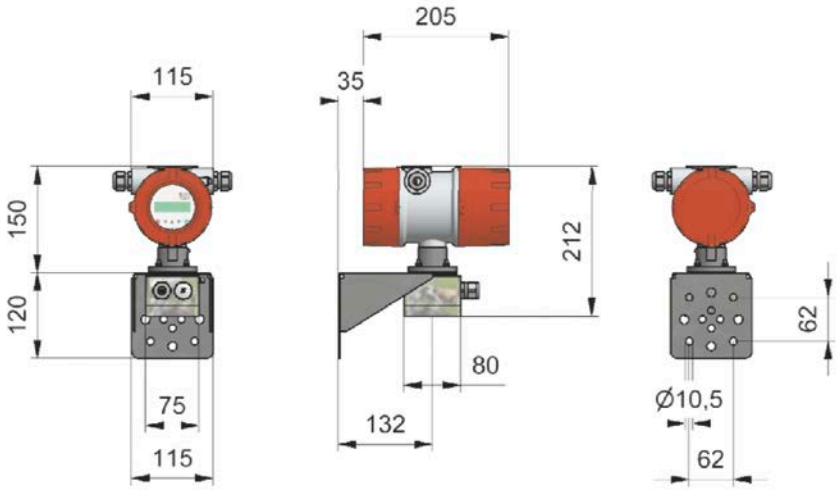
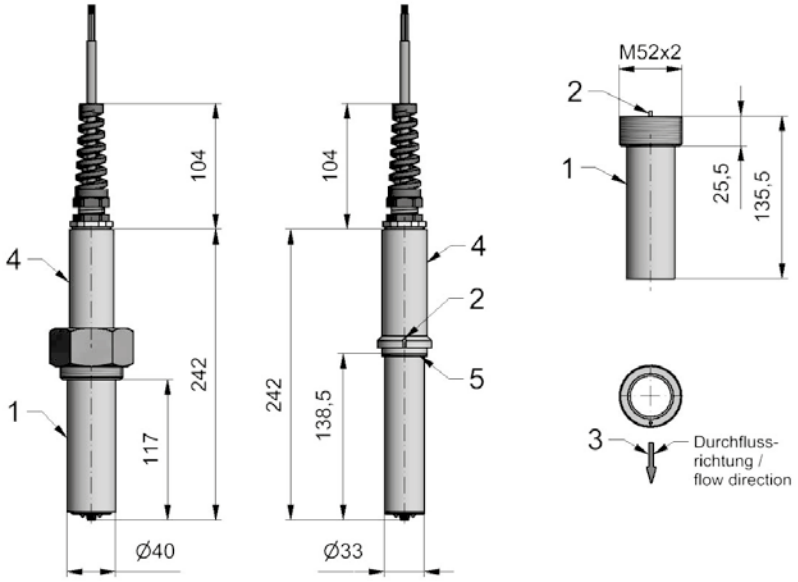
Dimensions [mm]

Transmitter UMF2



Sensor PITe



1: Welding socket
2: Anti-rotation lock
3: Flow direction
4: Armature
5: Gasket

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