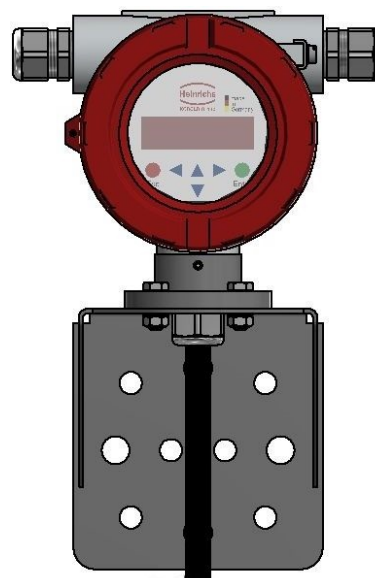




Magnetic-inductive flow meter

PITe / UMF2

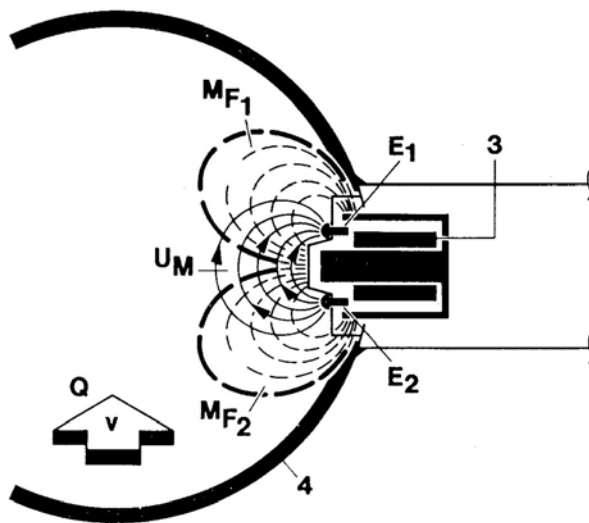
Technical Datasheet



- Maintenance-free
- Nearly no pressure drop
- Robust design
- Easy installation and start-up

Function

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 standardized electrical signal such as 4-20 mA or pulses. The sensor PITe can be used in combination with the Heinrichs Messtechnik UMF2 transmitter. The transmitter is mounted separately to the sensor.



MF1, MF2: Magnetic field
E1, E2: Electrodes
3: coils
4: pipeline
UM: 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 Data Sensor PITe

Armature:	Stainless steel 1.4404 / 316L / PTFE
Electrodes:	Hastelloy (others on request)
Nominal diameters:	DN80 up to DN400 - 3" up to 16" ANSI
Process connection:	welding stub Ø 40mm 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 up to +100°C, Stainless steel / PTFE
Ambient temperature:	-20°C up to +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 % URV: ± 1.5 % of measured value at Q ≤ 30 % URV: ± 1.5 % of measured value ± 2.5 % URV (under reference conditions)
Repeatability:	± 0.75 % (under reference conditions)
Degree of protection:	IP 65 (EN60529), PVC cable IP 68 (EN60529), PE cable

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]	Qmin (1 m/s)	Qmax (10 m/s)	Qmin (3 m/s)	Qmax (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

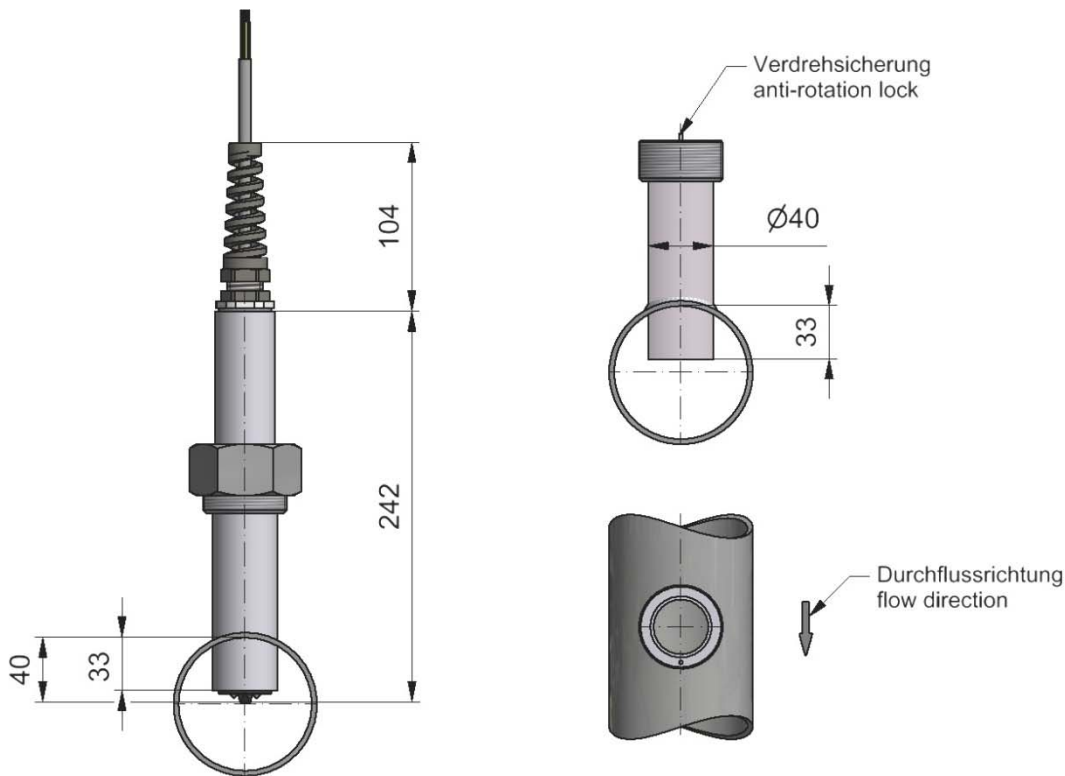
Installation conditions

Interference points (eg. Shut-off and control valves) shall be arranged in flow direction behind the sensor. If this is not possible, calming sections should be provided so that no vortex can extend into the measuring track of the sensor. The installation position in the pipeline should be chosen so that the sensor is always completely immersed in the fluid. Sewer pipes and non-return valves ensure this requirement.

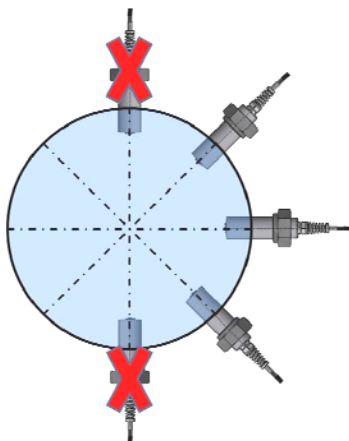
Immersion depth

The weld spigots must be installed so that the sensor tip, regardless of the pipeline nominal diameter, 40mm projects in the pipeline.

Before welding the socket to the pipe, the sensor must be removed from the welding socket!



Preferred mounting position



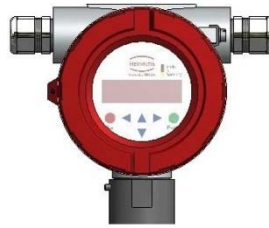
To avoid possible sources of error, the ideal angle of installation lies between 45° and 135°.

Top mounted (at 0 °): gas bubbles may gather.

Bottom mounted (at 180 °): deposits may arise



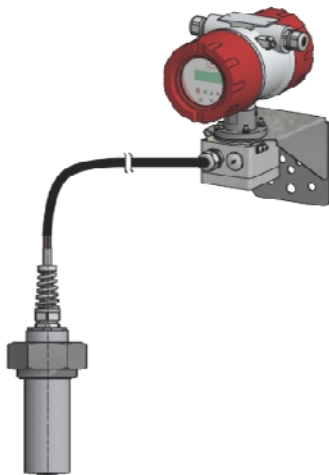
Transmitter UMF2



Mounting:	remote with junction box
Degree of protection:	IP67 (EN60529)
Housing:	die-cast aluminum, painted
Power supply:	115/230VAC 50/60Hz, 10 VA 24 VDC, 10W
Indication:	LCD, 2-lines, 16 digits, background lighted
Interface language:	German, English
Output:	
Standard	
1x 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 to +60 °C
Communication:	HART®
Diagnostic functions:	empty pipe detection, coil current surveillance
Electromagnetic tolerance:	EMC-Directive 2004/108/EG

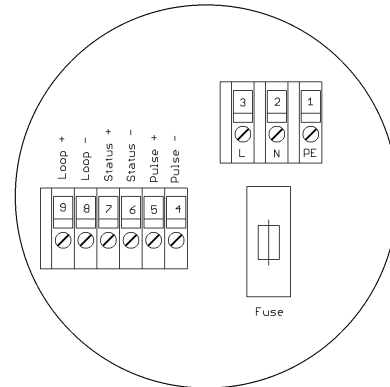
Electrical connections

Mounted version



The PITe sensor is available with a pre-assembled cable of various length. (standard is 5m)
This is connected via a junction box to the transmitter.

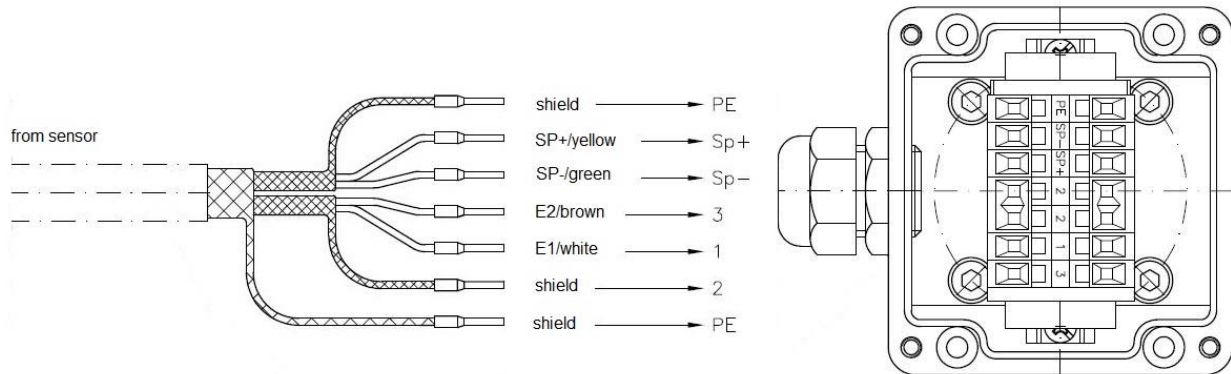
Terminal compartment of the Transmitter



Terminal 1	PE	Protective conductor
Terminal 2	N	Power supply
Terminal 3	L	Power supply
Terminal 4		Pulse output passive (-)
Terminal 5		Pulse output passive (+)
Terminal 6		Status output passive (-)
Terminal 7		Status output passive (+)
Terminal 8		Current output active (-)
Terminal 9		Current output active (+)

L, N max. 115/230V AC, 50/60Hz or 24V DC

Connection Sensor



To sustain best possible interference free measurements, you may consider the following hints:

To avoid errors from cable movement for media with low conductivity, use a protective conduit and/or fasten the interconnecting cable.

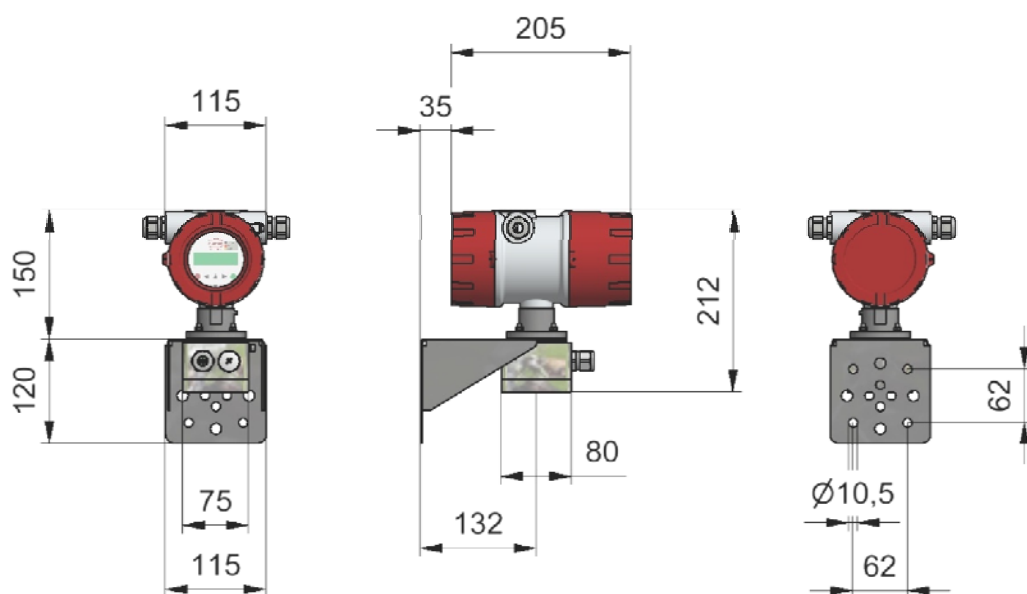
Avoid laying the cable close to electrical machines, control gears or other electrical fields.

Make sure you have the potential equalization between sensor and transmitter connected.



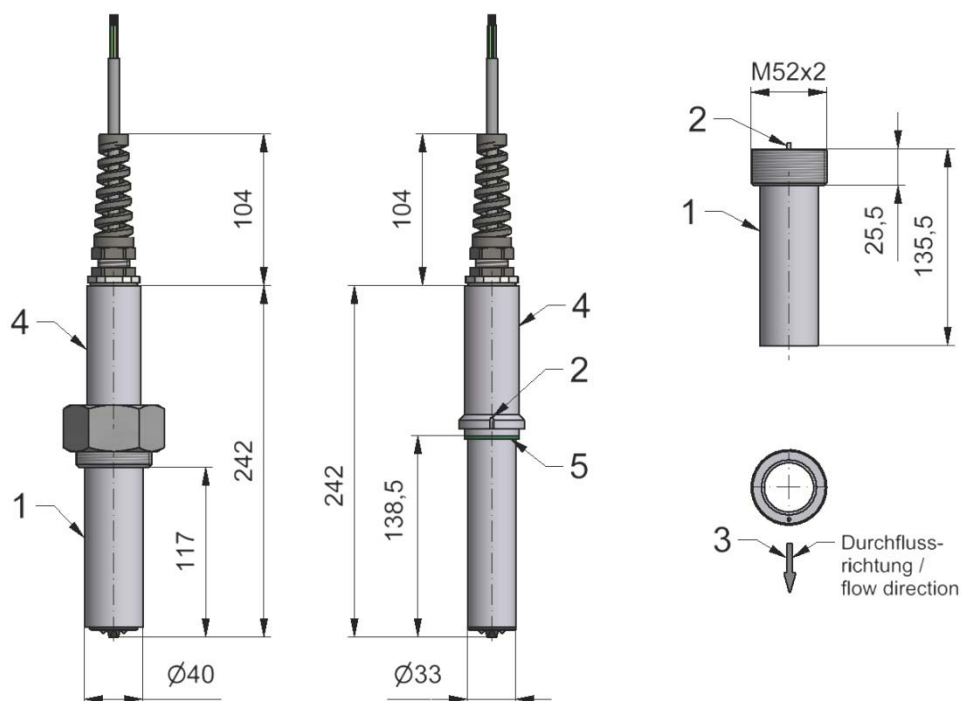
Dimensions Transmitter UMF2

(All dimensions in mm)



Dimensions Sensor PITe

(All dimensions in mm)



1: welding socket, 2: anti-rotation lock, 3: flow direction, 4: armature
5: gasket



Modelcode

PITe

Model		Temperature	
S	stainless steel (1.4571/1.4404)/PTFE for pipe sizes DN80..DN400 / 3"...16"	Tmax. = 100°C	
X	Special on request		
Process connection		Pressure rating	
A504	Weld on adaptor for pipe sizes DN80/3"..DN400/16" c/w. cap nut	PN16	
309B	Flange connection DN25 PN40	PN16	
XXXX	Special on request		
Sensor length			
013	138,5 mm		
XXX	Special on request		
Electrode Material			
H	Hastelloy		
X	Special on request		
Mounting of Transmitter		Protection	Connection to Sensor
4	Remote Transmitter	IP65	Cable 5m
5	Remote Transmitter	IP68	Cable 5m
Approval			
0	without		
Certificate			
0	w/o		
1	Material certificate 2.1		
2	Material certificate 2.2		
B	Material certificate 3.1 (DIN EN 10204:2004)		
C	Material certificate 3.2 (DIN EN 10204:2004)		
-			
Supplement Equipment			
0	without		
X	Special on request		
-			
Version			
H	Heinrichs		
K	Kobold		



Code	Transmitter
UMF2	Mounting
	IP 65 (Terminal conn. box on transmitter standard)
E	remote electronics incl. DN50/2" pipe mount kit ½" NPT (f)
F	remote electronics incl. DN50/2" pipe mount kit M20 x 1,5
	IP 68 (Terminal conn. box on transmitter standard)
G	remote electronics incl. DN50/2" pipe mount kit ½" NPT (f)
H	remote electronics incl. DN50/2" pipe mount kit M20 x 1,5
-	
	Display / Interface Board
1	Integral within transmitter housing
	Power Supply
1	230V AC (+10%, -15%), 50/60Hz
2	115V AC (+10%, -15%), 50/60Hz
4	24V DC (±15%)
	Output Signal
F	Current output 1: (0) 4 - 20mA Pulse output: passive Um=24V DC Status output: passive Um=24V DC
G	Current output 1: (0) 4 - 20mA HART Pulse output: passive Um=24V DC Status output: passive Um=24V DC
	Design
OBH	Heinrichs
OBK	Kobold

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