

# Magnetic Inductive Flowmeter for Conductive Fluids



measuring  
•  
monitoring  
•  
analyzing

DMH



- Measuring Range: 0.29...26.4 to 431.6...43,333 GPM
- Accuracy:  $\pm 0.3\%$  of Reading  
 $\pm 0.01\% \times Q_{\max}$
- $p_{\max}$ : 580 PSI
- $t_{\max}$ : 300 °F
- Connection: Flange ASME ½" ... 24"
- Lining Material: Hard Rubber, Soft Rubber, or PTFE
- Output: Analog with HART®, Pulse, and Status



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### Description

The KOBOLD DMH flowmeter is designed to measure and monitor the volume flow rate of liquids, pulps, pastes, and other electrically conductive media without loss of pressure and can be used in rugged environments. When an electrically conductive media passes through a directional magnetic field, a voltage is induced in accordance with Faraday's Law of Induction. The measured voltage is proportional to the mean rate of flow and consequently also to the volumetric flow rate. The flowmeter consists of a sensor that picks up the measuring signal generated from the induced voltage, and a transducer that converts this signal into a standardized output signal (4-20mA or pulse). The measuring transducer can be connected to the sensor directly or mounted remotely. Pressure, temperature, density, and viscosity do not affect the volume measurement. Large solids and gas bubbles should be avoided. The DMH offers a variety of lining, electrode, and process connection options.

The significant properties exhibited by DMH include

- Great choice of liners
- SS, Hastelloy®, tantalum, titanium, or platinum electrodes
- Wide variety of process connections
- Can be used in rough ambient conditions

### Common Application Media

- Acids, Alkalis
- Pastes
- Drinking Water, Waste Water

### Technical Data

#### Adj. Measuring

**Range Terminal Values:** 0.5...10 m/s

**Minimum Conductivity:**  $\geq 5 \mu\text{S/cm}$   
(for Liquids in General)  
 $\geq 20 \mu\text{S/cm}$   
(Demineralized Water)

**Accuracy:**  $\pm 0.3\%$  of read.  $\pm 0.01\% \times Q_{\text{max}}$   
**Repeatability:**  $\pm 0.15\%$  of read.  $\pm 0.005\% \times Q_{\text{max}}$   
(Reference Conditions: Water,  
Measured Media

Temperature of  $72^\circ\text{F} \pm 4\text{K}$ ,  
Ambient temperature  $72^\circ\text{F} \pm 2\text{K}$ ,  
Inlet  $\geq 10 \times$  Pipe Diameter,  
Outlet  $\geq 5 \times$  Pipe Diameter,  
 $Q_{\text{max}}$  at 10 m/s)

**Process Temperature:**  $32 \dots +176^\circ\text{F}$   
(Hard Rubber, Soft Rubber)  
 $-4 \dots 300^\circ\text{F}$  (PTFE)

**Ambient Temperature:**  $-4 \dots 140^\circ\text{F}$ ,  
Depending on Process Temp.



**Rated Pressure:** ASME 150 lb  
 $\frac{1}{2}'' \dots 24''$   
ASME 300 lb  
 $\frac{1}{2}'' \dots 24''$   
(Higher Pressures upon Request)  
Tri-Clamp® (ISO)  
 $\frac{1}{2}'' \dots 4''$  (Per Clamp Rating)

### Sensor Materials

**Linings:** Hard Rubber, Soft Rubber, or PTFE

### Reference/Grounding

**Electrodes:** Stainless Steel, Hastelloy C4®,  
Tantalum, Platinum, Titanium,  
(Other Materials upon Request)

**Housing:** Enameled Steel (DMH-1 & DMH-2)  
Stainless Steel (DMH-6)

**Process Connection:** Enameled Steel or Enameled 304  
Stainless Steel Flange ASME B16.5,  
Tri-Clamp® (ISO)  
(Other Connections upon Request)

**Nominal Sizes:**  $\frac{1}{2}''$  to  $24''$   
(Other Nominal Sizes upon Request)

**Protection Type:** IP 67 or IP 68

### Transmitter UMF2

**Display:** 2-line, Backlit  
Flow, Counter (Forward + Backward)

**Operation:** 6 buttons

**Assembly Type:** Compact or Remote

**Housing:** Enameled Die-cast Aluminum,  
Rotatable in  $90^\circ$  Steps



**Technical Data** (Continued):

**Outputs** Galvanically Isolated

**Analog:** 1 x 4-20 mA,  
Load: <600 Ω (>250 Ω for HART®)

**Pulse Output:** Passive, using Optocoupler,  
Max. 30 V, 60 mA, 1.8 W

**Status:** Passive, using Optocoupler  
Max. 30 V, 60 mA, 1.8 W

**Power Supply:** 115 V<sub>AC</sub>, 50/60 Hz, 10 VA  
230 V<sub>AC</sub>, 50/60 Hz, 10 VA  
24 V<sub>DC</sub> ±10%, 10W/VA

**Electrical Connection:** Cable Connection M 20 x 1.5  
or ½" NPT

**Ambient Temperature:** -4 ... 140 °F,  
(Depending on process Temp.  
for Compact Version)

**Protection Type:** IP67 or IP 68

**Communication:** HART®

**Diagnosis Functions:** Empty Pipe Recognition,  
Flushing Flow Monitoring  
Error Message in Plain Text

**Measuring Range**

Line Size	Minimum Measuring Range		Maximum Measuring Range	
	(GPM)	(LPM)	(GPM)	(LPM)
½"	1.40	5.30	27.7	105.0
¾"	1.80	6.81	35.7	135.0
1"	3.90	14.73	77.5	293.3
1.25"	6.38	24.13	127.2	481.6
1.5"	8.53	32.26	170.3	645.0
2"	13.76	52.05	274.7	1040.0
2.5"	24.71	93.52	494.0	1870.0
3"	35.96	136.1	719.0	2722.0
4"	61.03	231.0	1269.0	4807.0
5"	100.5	380.1	2007.7	7600.0
6"	149.5	566.1	2952.1	11175.0
8"	264.2	999.9	5231.3	19803.0
10"	420.8	1592.8	8350.4	31610.0
12"	602.1	2279.0	11963.0	45285.0
14"	732.9	2739.9	14390.7	54475.0
16"	951.7	3602.2	18934.5	71675.0
18"	1206	4561.6	23991.3	90817.0
20"	1501	5680.4	29889.2	113143
24"	2175	8229.8	43333.9	164037



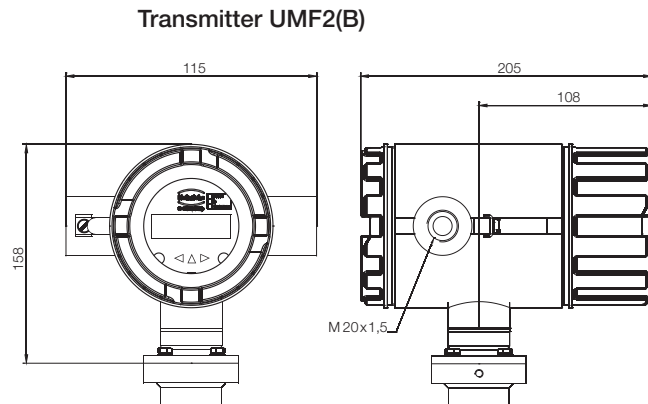
Magnetic Inductive Flowmeter Model DMH

Order Details (Example: DMH-1 L15 H 11 A 1 6)

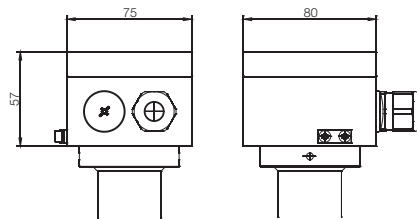
Model/ Flange Material	Process Connection <sup>1)</sup> (Flange acc. to ASME Form B1)	Liner Material	Reference/ Grounding Electrode Material	Version/ Cable Length	Electronic Transmitter	Power Supply/ Electrical Connection
DMH-1...= Enameled Steel	..L15.. = 1/2", 150 lb ..L20.. = 3/4", 150 lb ..L25.. = 1", 150 lb ..L32.. = 1.25", 150 lb ..L40.. = 1.5", 150 lb ..L50.. = 2", 150 lb ..L65.. = 2.5", 150 lb ..L80.. = 3", 150 lb ..L1H.. = 4", 150 lb ..L1Z.. = 5", 150 lb ..L1F.. = 6", 150 lb	..H.. = Hard Rubber  ..W.. = Soft Rubber	..11.. = Stainless Steel	..A.. = Compact, IP 67  <b>B ... H, IP 67</b>  ..B.. = Remote Version/2.5 m ..C.. = Remote Version/5 m ..D.. = Remote Version/10 m ..E.. = Remote Version/15 m ..F.. = Remote Version/ 20 m ..G.. = Remote Version/ 30 m ..H.. = Remote Version/ 50 m  <b>K ... R, IP 68</b> ..K.. = Remote Version/2.5 m ..L.. = Remote Version/5 m	..1.. = UMF2(B)- Electronics with Control Unit, without HART®  ..2.. = UMF2(B)- Electronics with Control Unit, with HART®	..0 = 230 V <sub>AC</sub> M20x1,5  ..4 = 115 V <sub>AC</sub> M20x1,5  ..3 = 24 V <sub>DC</sub> M20x1,5  ..5 = 230 V <sub>AC</sub> 1/2" NPT  ..6 = 115 V <sub>AC</sub> 1/2" NPT
DMH-2...= Enameled 304 SS	..T15.. = 1/2" ..T20.. = 3/4" ..T25.. = 1" ..T32.. = 1.25" ..T40.. = 1.5" ..T50.. = 2" ..T65.. = 2.5" ..T80.. = 3" ..T1H.. = 4"	..T.. = PTFE	..33.. = Hastelloy C4® ..44.. = Titanium ..55.. = Tantalum ..77.. = Platinum	..M.. = Remote Version/10 m ..N.. = Remote Version/15 m ..P.. = Remote Version/ 20 m ..Q.. = Remote Version/ 30 m ..R.. = Remote Version/ 50 m	..1.. = UMF2(B)- Electronics with Control Unit, without HART®  ..2.. = UMF2(B)- Electronics with Control Unit, with HART®	..0 = 230 V <sub>AC</sub> M20x1,5  ..4 = 115 V <sub>AC</sub> M20x1,5  ..3 = 24 V <sub>DC</sub> M20x1,5  ..5 = 230 V <sub>AC</sub> 1/2" NPT  ..6 = 115 V <sub>AC</sub> 1/2" NPT
DMH-6...= Tri-Clamp® 304 SS (ISO)	..T15.. = 1/2" ..T20.. = 3/4" ..T25.. = 1" ..T32.. = 1.25" ..T40.. = 1.5" ..T50.. = 2" ..T65.. = 2.5" ..T80.. = 3" ..T1H.. = 4"	..T.. = PTFE	..33.. = Hastelloy C4® ..44.. = Titanium ..55.. = Tantalum ..77.. = Platinum	..M.. = Remote Version/10 m ..N.. = Remote Version/15 m ..P.. = Remote Version/ 20 m ..Q.. = Remote Version/ 30 m ..R.. = Remote Version/ 50 m	..1.. = UMF2(B)- Electronics with Control Unit, without HART®  ..2.. = UMF2(B)- Electronics with Control Unit, with HART®	..0 = 230 V <sub>AC</sub> M20x1,5  ..4 = 115 V <sub>AC</sub> M20x1,5  ..3 = 24 V <sub>DC</sub> M20x1,5  ..5 = 230 V <sub>AC</sub> 1/2" NPT  ..6 = 115 V <sub>AC</sub> 1/2" NPT

<sup>1)</sup> ASME-flange class 300 lb: code Mxx, other process connections on request

Dimensions (mm)

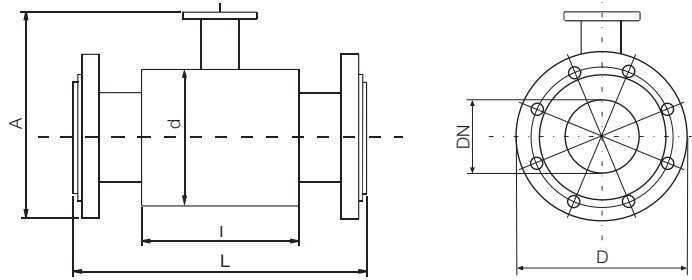


**Connection Box for Sensor, Remote Version**



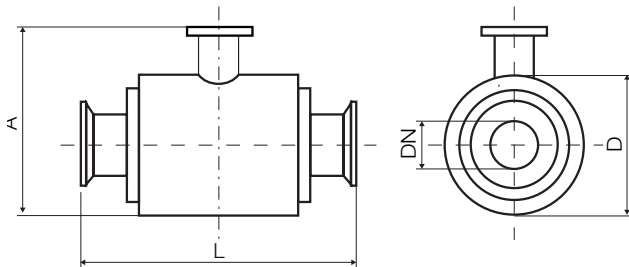
Dimensions (mm)

Sensor, Flange Connection



Line Size	Flange ASME	D	d	A	L	I	Weight* (lbs)
1/2"	150	95	62	164	200	66	7
3/4"	150	105	62	170	200	66	7
1"	150	115	72	180	200	96	7
1 1/4"	150	140	82	199	200	96	9
1 1/2"	150	150	92	209	200	96	9
2"	150	165	107	223	200	96	13.5
2 1/2"	150	185	127	244	200	96	20
3"	150	200	142	260	200	96	32
4"	150	220	162	280	250	96	36
5"	150	250	192	310	250	126	42
6"	150	285	218	340	300	126	25
8"	150	340	274	398	350	211	56
10"	150	395	370	480	450	211	120
12"	150	445	420	535	500	320	170
14"	150	505	480	584	550	320	203
16"	150	565	530	642	600	320	256
18"	150	c/f	c/f	c/f	600	320	340
20"	150	670	640	752	600	320	370
24"	150	780	760	870	600	320	695

Dimension of Tri-Clamp® Connection (ISO)



DN PN10	D	A	L (ISO mm)	L (ISO Inch)
			[mm]	[mm]
1/2"	74	144	145	137
3/4"	74	144	145	137
1"	74	144	145	137
1 1/2"	94	164	145	137
2"	104	174	145	137
2 1/2"	129	199	200	192
3"	142	227	200	-
4"	162	247	200	-

\* Weights of the sensors are only approximate values, please also include the weight of the electronic assembly - approx. 5.6 lbs.