



Electromagnetic Flowmeter for conductive fluids



measuring
•
monitoring
•
analysing

DMH



- Measuring range:
0.05...40376 m³/h
- Accuracy: ±0.3% of reading
±0.01% x Q_{max}
- p_{max}: PN40; t_{max}: -20...+150 °C
- Connection: flange DN 10 ... 1200,
ANSI 1/2" ... 48"
- Lining material: hard rubber,
soft rubber, PTFE / PFA
- Outputs: analogue with HART®,
pulses and status

SS



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Description

The KOBOLD DMH flowmeter is used to measure and monitor the volume flow rate of fluids, pulps, pastes and other electrically conductive materials, without loss of pressure.

When an electrically conductive medium passes through a directional magnetic field, a voltage is induced in accordance with Faraday's Law of Induction.

The size of this measurement voltage is proportional to the mean rate of flow and consequently also to the volume flow rate.

A 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 standardised output signal (4-20 mA or pulses). The measurement transducer can be affixed to the sensor or mounted separately.

Pressure, temperature, density and viscosity do not affect the volume measurement. Solid fractions and gas bubbles should be avoided.

The significant properties exhibited by DMH include:

- Great choice of linings
- Stainless steel, Hastelloy®, tantalum or platinum electrodes
- Wide variety of process connections
- Can be used in rough ambient conditions

Fields of Application

- Acids, alkalis
- Pastes
- Drinking water, waste water etc.

Technical Details

Adjustable measuring range terminal values:	0.5 ... 10 m/s
Minimum conductivity:	≥5 µS/cm (for fluids in general) ≥20 µS/cm (demineralised water)
Accuracy:	±0.3% of read. ±0.01% × Q _{max}
Repeat accuracy:	±0.15% of read. ±0.005% × Q _{max} (reference conditions: water, measured medium temperature of 22 °C ±4K, ambient temperature 22 °C ±2K, inlet path ≥ 10 × DN, outlet path ≥ 5 × DN, Q _{max} at 10 m/s)
Process temperature:	0 ... +80 °C (hard rubber, soft rubber) -20 ... +150 °C (PTFE); PFA -20 ... +130 °C (E-CTFE)
Ambient temperature:	-20 ... +60 °C, depending on process temperature
Rated pressure:	PN 40, (40 bar) DN 15 ... 300 (½"-12") PN 16, (16 bar) DN 10 ... 600 (½"-24") PN 10, (10 bar) DN 200 ... 600 PN 6, (6 bar) DN 700 ... 1200 higher pressures on request
Sensor materials	
Linings:	hard rubber, soft rubber, PTFE, PFA, E-CTFE
Electrodes:	stainless steel, Hastelloy® C4, tantalum, platinum, earth ring and other materials on request
Housing:	enamelled steel (DMH-1, DMH-2, DMH-5) stainless steel (DMH-6)
Process connection:	steel or stainless steel 1.4301 flange EN1092 and ASME B16.5, wafer version, foodstuff, screw seal DIN11851, Tri-Clamp®, other connections on request
Nominal sizes:	DN 10 ... DN 1200 other nominal sizes on request
Protection type:	IP 67, IP 68



Technical Details(continued)

Transducer UMF2(B)

Assembly type:	compact or separate
Housing:	enamelled die-cast aluminium
Power supply:	115 V _{AC} , 50 / 60 Hz, 10 VA 230 V _{AC} , 50 / 60 Hz, 10 VA 24 V _{DC} 10W
Outputs	
Analogue:	1 x 0(4)-20 mA, active, galvanically isolated
Pulse output:	passive, galvanically isolated 24 V, 60 mA
Status:	passive, galvanically isolated 24 V, 60 mA
Ambient temperature:	-20 ... +60 °C, depending on process temperature for compact version
Protection type:	IP 68 (EN60529)
Communication:	HART®
Diagnosis functions:	empty pipe recognition, flushing flow monitoring
Electromagnetic compatibility:	EMV directive 2004/108/EG



Electromagnetic Flowmeter Model DMH

Measuring Range

Flange DN	Pressure rating PN	Min. measuring range [m³/h]	Max. measuring range [m³/h]
10*	16	0.05	1.0
10*	16	0.09	1.8
10*	16	0.14	2.8
15	40	0.32	6.3
20	40	0.41	8.1
25	40	0.88	17.6
32	40	1.45	28.9
40	40	1.94	38.7
50	40	3.12	62.4
65	16	5.61	112
65	40	5.61	112
80	16	8.17	163
80	40	7.74	155
100	16	14.42	288
125	16/40	22.80	456
150	16/40	33.96	671
200	10/16/40	59.99	1188
250	10/40	95.57	1897
300	16/40	134.98	2682
300	10	136.74	2717
350	10/16	164.39	3269
400	10/16	216.13	4301
450	10/16	273.70	5449
500	10/16	340.82	6789
600	10/16	493.78	9842
700	6	676.98	13500
800	6	891.26	17780
900	6	1127.37	22497
1000	6	1399.61	27936
1200	6	2022.20	40376
ASME	lbs		
½*	150	0.05	1.0
½*	150	0.09	1.8
½*	150	0.14	2.8
½	150	0.32	6.3
¾	150	0.41	8.1
1	150	0.88	17.6
1 ¼	150	1.45	28.9
1 ½	150	1.94	38.7
2	150	3.12	62.4
2 ½	150	5.61	112
3	150	8.17	163
4	150	13.86	288
5	150	22.80	456
6	150	33.96	671
8	150	59.99	1188
10	150	95.57	1897
12	150	136.74	2717
14	150	164.39	3269
16	150	216.13	4301
18	150	273.70	5449
20	150	340.82	6789
24	150	493.78	9842

* Unit with PFA-lining, with 6, 8 and 10 mm tube



Order Details (Example: DMH-1 A15 H 1 0 A 1 0)

Model/ flange- material	Process connection ¹⁾ (flange acc. to EN 1092-1 Form B1)	Lining	Measuring electrode material ⁹⁾	Earth electrode material ⁹⁾	Versions/ cable lengths	Electronics	Power supply/ cable entry point
DMH-2 = stainless steel 1.4301	A06 ⁵⁾ = DN 10/6 mm, PN 16 A08 ⁵⁾ = DN 10/8 mm, PN 16 A10 ⁵⁾ = DN 10/10 mm, PN 16						
DMH-1 = enamelled steel	A15 ³⁾ = DN 15, PN40 A20 = DN 20, PN 40 A25 = DN 25, PN 40 A32 = DN 32, PN 40 A40 = DN 40, PN 40 A50 = DN 50, PN 40 C65 = DN 65, PN 16 A65 = DN 65, PN 40 C80 = DN 80, PN 16 A80 = DN 80, PN 40 C1H = DN 100, PN 16 A1H = DN 100, PN 40 C1Z = DN 125, PN 16 A1Z = DN 125, PN 40 C1F = DN 150, PN 16 A1F = DN 150, PN 40 D2H = DN 200, PN 10				A = compact, IP67 B ... H, IP 67 B = separate version/2.5 m C = separate version/5 m D = separate version/10 m E = separate version/15 m F = separate version/ 20 m		
DMH-2 = stainless steel 1.4301	C2H = DN 200, PN 16 A2H = DN 200, PN 40 D2F = DN 250, PN 10 A2F = DN 250, PN 40 D3H = DN 300, PN 10	H ⁶⁾ = hard rubber W ⁶⁾ = soft rubber	1 = stainless steel 3 = Hastel- loy [®] C4 4 = Titan 5 = tantalum 7 = platinum	0 ⁹⁾ = without 1 = stainless steel 3 = Hastel- loy [®] C4 4 = Titan 5 = tantalum 7 = platinum	G = separate version/ 30 m H = separate version/ 50 m K ... R, IP 68 K = separate version/2.5 m L = separate version/5 m M = separate version/10 m N = separate version/15 m P = separate version/ 20 m Q = separate version/ 30 m R = separate version/ 50 m	1 = UMF2(B)- electronics with control unit, without HART [®] 2 = UMF2(B)- electronics with control unit, with HART [®]	0 = 230 V _{AC} M20x1.5 4 = 115 V _{AC} M20x1.5 3 = 24 V _{DC} M20x1.5 5 = 230 V _{AC} ½" NPT 6 = 115 V _{AC} ½" NPT 8 = 24 V _{DC} ½" NPT
DMH-5 ²⁾ = wafer version	C3H = DN 300, PN 16 A3H = DN 300, PN 40 A3F = DN 350, PN 10 C3F = DN 350, PN 16 D4H = DN 400, PN 10 C4H = DN 400, PN 16 D4F = DN 450, PN 10 D5H = DN 500, PN 10 C5H = DN 500, PN 16 D6H = DN 600, PN 10 C6H = DN 600, PN 16 E7H = DN 700, PN 6 E8H = DN 800, PN 6 E9H = DN 900, PN 6 ET0 = DN 1000, PN 6 ET2 = DN 1200, PN 6	T ⁷⁾ = PTFE/ PFA					
DMH-6 ³⁾ = food connection	H ⁴⁾ 15 = DN 15 H ⁴⁾ 20 = DN 20 H ⁴⁾ 25 = DN 25 H ⁴⁾ 32 = DN 32 H ⁴⁾ 40 = DN 40 H ⁴⁾ 50 = DN 50 H ⁴⁾ 65 = DN 65 H ⁴⁾ 80 = DN 80 H ⁴⁾ 1H = DN 100						

¹⁾ ASME-flange class 150: code Lxx, ASME-flange class 300: code Mxx (up to 1½" / DN 40), ANSI flange not available for sizes ≥ DN 700, other process connections on request

²⁾ Wafer version only for nominal width DN20...200; standard flange rating PN40 from DN20...DN40 and PN16 from DN50...DN200

³⁾ Only valid with PTFE coating

⁴⁾ For Tri-Clamp[®] connection replace H with T

⁵⁾ Only with PFA and 3 x HC4 electrode

⁶⁾ Only available with stainless steel electrode and stainless steel grounding electrode 11

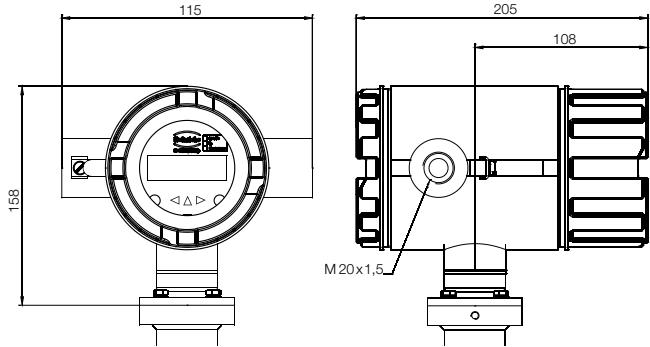
⁷⁾ Standard with electrode material and grounding electrode material 33. Not with stainless steel electrode. Process connection DN300/12" with E-CTFE lining instead of PTFE, T_{max}: 130°C

⁸⁾ Only for PTFE liner and electrode material option 4, 5, and 7 ⁹⁾ Measuring electrode material and grounding electrode material should be identical

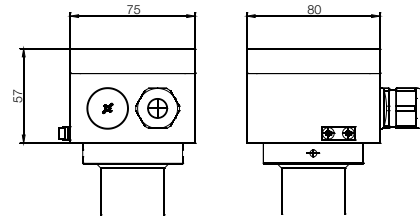


Dimensions [mm]

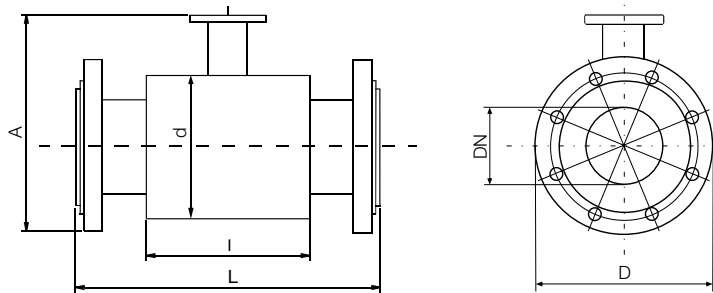
Transducer UMF2(B)



Connection box for sensor, separate version



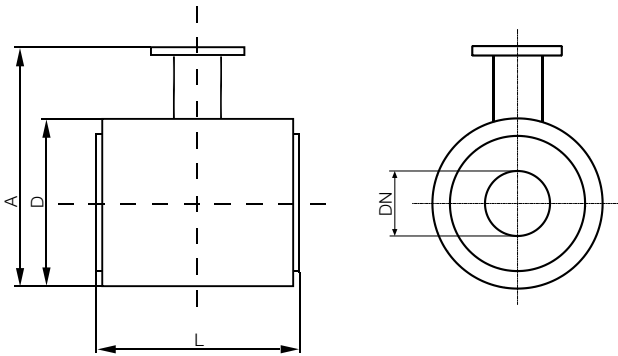
Sensor, flange connection



DN	PN	ASME	D [mm]	D ANSI	d [mm]	A [mm]	L [mm]	I [mm]	Weight* [kg]
10/6	40	1/2"	90	88.9	77	164	230	100	3
10/8	40	1/2"	90	88.9	77	164	230	100	3
10	40	1/2"	90	88.9	77	164	230	100	3
15	40	1/2"	95	88.9	62	164	200	66	3
20	40	3/4"	105	98.4	62	170	200	66	3
25	40	1"	115	107.9	72	180	200	96	3
32	40	1 1/4"	140	117.5	82	199	200	96	4
40	40	1 1/2"	150	127	92	209	200	96	4
50	40	2"	165	152.4	107	223	200	96	6
65	16/40	2 1/2"	185	177.8	127	244	200	96	9
80	16/40	3"	200	190.5	142	260	200	96	14
100	16/40	4"	220	228.6	162	280	250	96	16
125	16/40	5"	250	254	192	310	250	126	19
150	16/40	6"	285	279.4	218	340	300	126	25
200	10/16/40	8"	340	342.9	274	398	350	211	41
250	10/40	10"	395	406.4	370	480	450	211	54
300	10/16/40	12"	445	482.6	420	535	500	320	77
350	10/16	14"	505	533.4	480	584	550	320	92
400	10/16	16"	565	596.9	530	642	600	320	116
450	10/16	18"	615	635	on request	on request	on request	on request	on request
500	10/16	20"	670	698.5	640	752	600	320	167
600	10/16	24"	780	812.8	760	870	600	320	315
700	6	28"	895	927.1	880	990	700	420	on request
800	6	32"	1015	1060	960	1100	800	420	427
900	6	36"	1115	1075	1040	1185	800	520	on request
1000	6	40"	1230	1230	1140	1290	800	520	500
1200	6	48"	1405	1405	1340	1510	1200	520	680

* Weights of the sensors are only approximate values, including the weight of the electronics approx. 2.4 kg

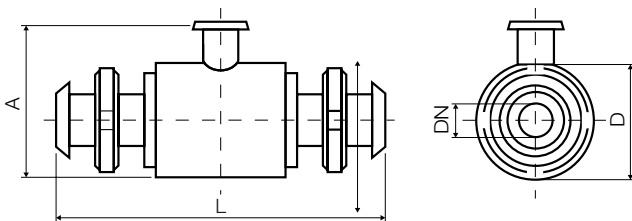
Dimensions (continuation)
Sensor, wafer flange



DN	PN	D [mm]	A [mm]	L [mm]	Weight* [kg]
20	40	62	145	74	1.5
25	40	72	158	104	2
32	40	82	168	104	2
40	40	92	179	104	2
50	40	107	192	104	3
65	40	127	212	104	3
80	40	142	227	104	4
100	16	162	247	104	4
125	16	192	277	134	6
150	16	218	303	134	8
200	16	274	359	219	10

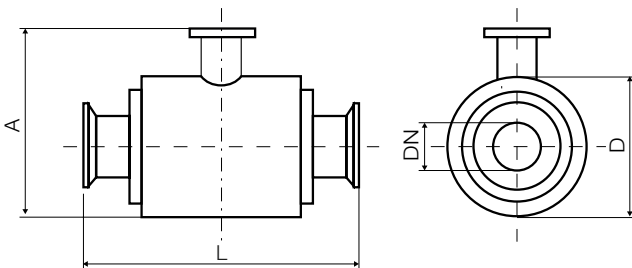
* Weights of the sensors are only approximate values, including the weight of the electronics approx. 2.4 kg

Food connection acc. to DIN 11851



DN PN10	D	A	L
15	74	144	170
20	74	144	170
25	74	144	225
32	84	154	225
40	94	164	225
50	104	174	225
65	129	199	280
80	140	210	280
100	156	226	280

Connection Tri-Clamp® (ISO)



DN PN10	D	A	L (ISO mm)	L (ISO Inch)
			[mm]	[mm]
½"	74	144	145	137
¾"	74	144	145	137
1"	74	144	145	137
1½"	94	164	145	137
2"	104	174	145	137
2½"	129	199	200	192
3"	142	227	200	-
4"	162	247	200	-