Electromagnetic Flow Meters

M2000

ModMAG® M-Series® | Electromagnetic Flow Meters

madshean

DESCRIPTION

The Badger Meter ModMAG® M2000 is the result of years of research and field use of electromagnetic flow meter technology. Based on Faraday's law of induction, these meters can measure water, wastewater, water-based fluids and other liquids that meet minimum electrical conductivity.

Designed, developed and manufactured under strict quality standards, this meter features sophisticated, processor-based signal conversion with accuracies of ±0.20% of rate ±1 mm/s. The wide selection of liner and electrode materials helps provide maximum compatibility and minimum maintenance over a long operating period.

The meter is best suited for bidirectional flow measurement of fluids with a conductivity > 5 µS/cm (> 20 µS/cm for demineralized water). The meter has high accuracy, is easy to use, and can be chosen for a wide variety of applications. The backlit, four-line display shows all actual flow measuring data, daily and complete information, including alarm messages. The standard transmitter has 4 programmable digital outputs, one digital input, power output and different interfaces. Integrated system self checkup makes putting into operation and service easier. For service purpose, the meter configuration can be kept or transferred to another meter without a new parametering via the optional back-up parameter function.

APPLICATION

The M2000 transmitter can be integrally mounted to the sensor or can be remote-mounted, if necessary and has many advantages over other conventional technologies. The meter targets a variety of applications and is well suited for the diverse water and wastewater treatment industry. The M2000 meter can accurately measure fluid flow—whether the fluid is water or a highly corrosive liquid, very viscous, contains a moderate amount of solids, or requires special handling. Today, electromagnetic meters are successfully used in industries including building automation, oil and gas, food and beverage, pharmaceutical, water and wastewater, and chemical.

STRAIGHT PIPE REQUIREMENTS

Run sufficient straight-pipe at the sensor inlet and outlet for optimum meter accuracy and performance. An equivalent of 3…7 diameters of straight pipe is required on the inlet (upstream) side to provide a stable flow profile. Two (2) diameters are required on the outlet (downstream) side.

In applications with limited space, the M2000 can be installed with zero straight pipe requirements and fulfils the accuracy according OIML R49 and MID Annex MI-001.

FEATURES

- Available in sizes 0.25…78 in. (6…2000 mm)
- Accuracy of ±0.2% of reading ±1 mm/s
- Flow Range 0.03…12 m/s
- Pulsed DC magnetic field for zero point stability
- Integral and remote signal converter availability
- Power Supply of 100…240V AC / 9…36V DC
- Corrosion-resistant liners for long life
- Zero Straight Run (0 x DN) OIML/MID
- User friendly programming procedure
- Empty pipe detection
- Power loss totalization
- Digital signal processor (32-bit)
- Non-volatile programming memory
- LCD display
- Rotating cover
- IP67 Housing
- Calibrated in state-of-the-art facilities
- Modbus® RTU or Modbus TCP/IP, HART, M-Bus, EtherNet/IP, BACnet/IP, BACnet MS/TP (BTL certification), Profibus DP
- Integrated data logger
- Verifications device
- NSF/ANSI/CAN 61 and 372 listed
- CSA / AWWA C715 certified
- BEACON®/AquaCUE® connectivity

Badger Meter

MAG-DS-01047-EN-25 (December 2022)

Product Data Sheet

ELECTRODES

When looking from the end of the meter into the inside bore, the two measuring electrodes are positioned at three o'clock and nine o'clock. M2000 electromagnetic meters have an "empty pipe detection" feature. This is accomplished with a third electrode positioned in the meter at twelve o'clock.

If this electrode is not covered by fluid for a minimum five-second duration, the meter displays an "empty pipe detection" condition, sends out an error message, if desired, and stops measuring to maintain accuracy. When the electrode again becomes covered with fluid, the error message disappears and the meter resumes measuring.

As an option to using grounding rings, a grounding electrode (fourth electrode) can be built into the meter during manufacturing to assure proper grounding. The position of this electrode is at six o'clock.

OPERATION

The flow meter is a stainless steel tube lined with a non-conductive material. Outside the tube, two DC powered electromagnetic coils are positioned opposing each other. Perpendicular to these coils, two electrodes are inserted into the flow tube. Energized coils create a magnetic field across the whole diameter of the pipe.

As a conductive fluid flows through the magnetic field, a voltage is induced across the electrodes. This voltage is proportional to the average flow velocity of the fluid and is measured by the two electrodes. The M2000 transmitter receives the sensor's analog signal, amplifies that signal and converts it into digital information. At the processor level, the signal is analyzed through a series of sophisticated software algorithms. After separating the signal from electrical noise, it is converted into both analog and digital signals that are used to display rate of flow and totalization.

With no moving parts in the flow stream, there is no pressure lost. Also, accuracy is not affected by temperature, pressure, viscosity or density and there is practically no maintenance required.

SPECIFICATIONS

NOTE: Permanently connected equipment requires the special considerations to satisfy the CEC and the Canadian deviations in the standard, including overcurrent and fault protection as required.

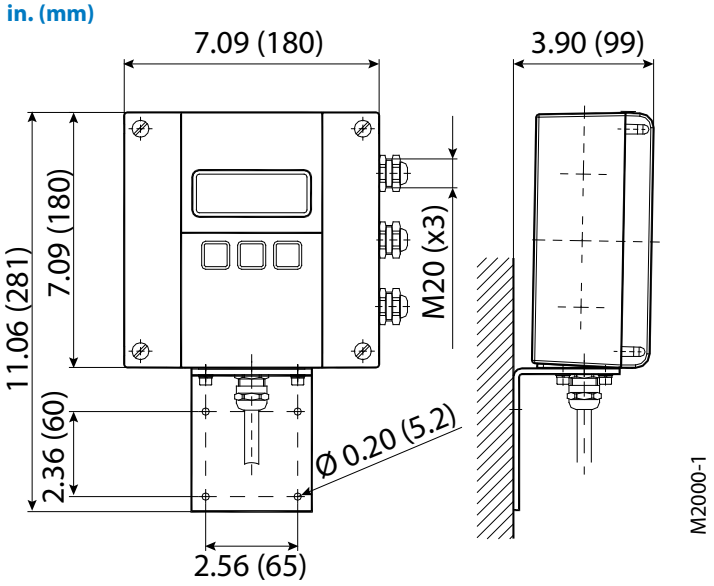
NOTE: DN represents nominal diameter in mm.

Transmitter Specifications

Flow Range	0.10…39.4 ft/s (0.03…12 m/s)
Accuracy	± 0.20% m.v. ± 1 mm/s OIML/MID: 2…12 in. (DN50…300) with 0d up and 0d downstream ±1% ≥ 0.5 ft/s (0.15 m/s)
Repeatability	± 0.1%
Power Supply	**AC Power Supply:** 100…240V AC (±10%); Typical Power: 20V A or 15W; Maximum Power: 26V A or 20W **Optional DC Power Supply:** 9…36V DC; Typical Power: 10W; Maximum Power: 14W
Analog Output	4…20 mA, 0…20 mA, 0…10 mA, 2…10 mA (programmable and scalable) Voltage sourced 24V DC isolated. Maximum loop resistance < 800 Ohms.
Digital Output	Four total, configurable 24V DC sourcing active output (up to 2),100 mA total, 50 mA each; sinking open collector output (up to four), 30V DC max, 100 mA each; solid-state relay (up to 2), 48V DC, 500 mA max, either polarity
	Absolute Digital Encoded output for connectivity to AquaCUE or BEACON cellular endpoints
Digital Input	Max 30V DC (programmable – positive zero return, external totalizer reset or preset batch start)
Frequency Output	Scalable up to 10 kHz, open collector up to 1 kHz, solid-state relay
Misc Output	High/low flow alarm (0…100% of flow), error alarm, empty pipe alarm, flow direction, preset batch alarm, 24V DC supply, ADE
Communication	RS232 Modbus RTU; RS485 Modbus RTU, HART, Profibus DP, BACnet MS/TP, Modbus TCP/IP, EtherNet/IP and BACnet/IP require separate daughterboards
Pulse Width	Scalable up to 10 kHz, passive open collector up to 10 kHz, active switched 24V DC. Up to two outputs (forward and reverse). Pulse width programmable from 1…1000 ms or 50% duty cycle.
Processing	32-bit DSP
Empty Pipe Detection	Field tunable for optimum performance based on specific application
Excitation Frequency	1 Hz, 3.75 Hz, 7.5 Hz or 15 Hz (factory optimized to pipe diameter)
Noise Dampening	Programmable 0…30 seconds
Low Flow Cut-Off	Programmable 0…10% of maximum flow
Galvanic Separation	250V
Fluid Conductivity	Minimum 5.0 µS/cm (minimum 20 µS/cm for demineralized water)
Fluid Temperature	**With Remote Transmitter:** PFA, PTFE & Halar 302° F (150° C) **With Meter-Mounted Transmitter:** Rubber 178° F, (80° C), PFA, PTFE & Halar 212° F (100° C)
Ambient Temperature	– 4…140° F (–20…60° C)
Relative Humidity	Up to 90 percent non-condensing

Pollution Degree	2
Installation Category	II
Altitude	8202 ft (2500 m)
Flow Direction	Unidirectional or bidirectional two separate totalizers (programmable)
Totalization	Programmable/resettable
Units of Measure	Ounce, pound, liter, US gallon, imperial gallon, barrel, hectoliter, mega gallon, cubic meter, cubic feet, acre feet
Display	4 x 20 character display with backlight
Programming	Three-button, external manual or remote
Transmitter Housing	Cast aluminum, powder-coated paint
Mounting	Meter mount or remote wall mount (bracket supplied)
Locations	Indoor and outdoor
Meter Enclosure Classification	**Standard:** NEMA 4X (IP67); **Optional:** Submersible NEMA 6P (IP68) depth of 2 m for 72 hr), remote transmitter required
Junction Box Enclosure Protection	For remote transmitter option: powder-coated die-cast aluminum, NEMA 4 (IP67)
Cable Entries	M20 cable glands (3)
Optional Stainless Steel Grounding Rings	**Meter Size** / **Thickness of one ring** / **Thickness of one ring (DIN Flanges)** Up through 10 in. / 0.135 in. (3.429 mm) / 0.12 in. (3 mm) 12…78 in. / 0.187 in. (4.750 mm) / 0.12 in. (3 mm)
NSF/ANSI/CAN 61 and 372 Listed WRAS/ACS	Models with hard rubber liner, 4 in. size and larger; PTFE liner, all sizes WRAS (hard rubber), ACS (PTFE)
OIML R49-1 MID MI-001 AWWA C715	Size range: DN50…300 / 2…12 in. Minimum straight inlet flow: 0 DN /outlet flow: 0 DN Forward and reverse (bi-directional) flow on any orientation Ratio (Q3/Q1) up to 250 Accuracy Class 1
Token Features	Data Logging (Blue token); Store/Restore (Red token); Firmware Upgrade (Black token)

M2000 Transmitter Dimensions in. (mm)



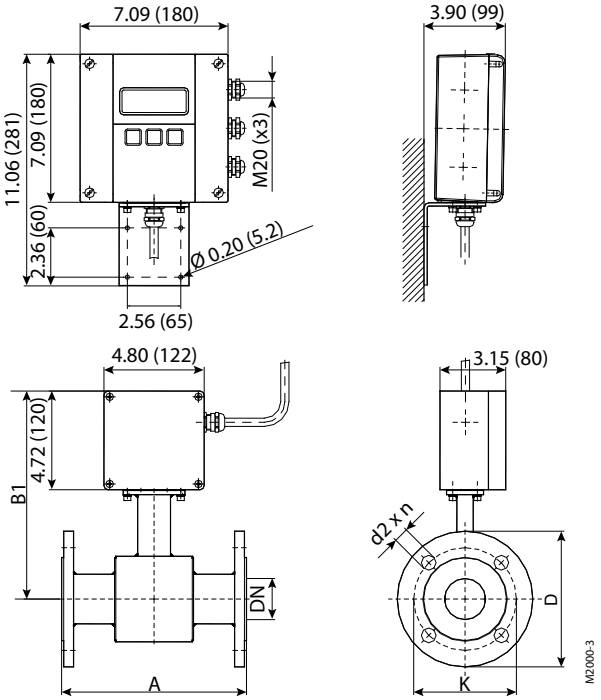
Sensor Type II Specifications

The electromagnetic sensor type II is not only available in a number of different flange process connections (DIN, ANSI, JIS, AWWA) but also in a number of liners like hard rubber, PTFE, PFA, or Halar. The sensor is configurable with up to 4 electrodes for measuring, empty pipe and grounding electrodes. Available in sizes from DN 6 TO DN 2000 and nominal pressures up to PN 100, the sensor type II is best suited for a variety of applications in the industry and the water/waste water industry.

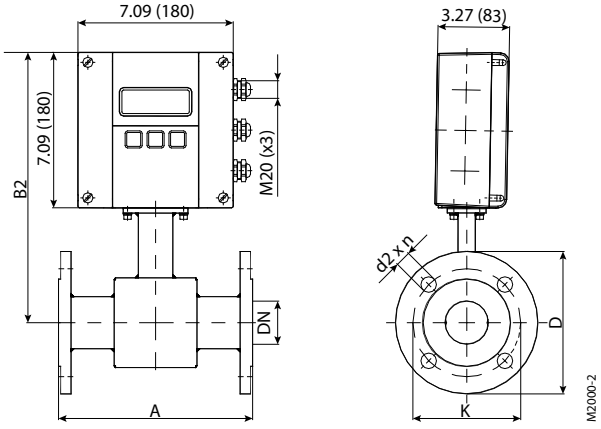
Size	1/4…78 in. (DN 6…2000)		
Flanges	**Standard:** ANSI B16.5, AWWA, ISO 1092-1, JIS and more in carbon steel; **Optional:** 304 or 316 stainless steel		
Nominal Pressure	Up to 1450 psi (100 bar)		
Pressure Rating	Line sizes 1/4…24 in: In accordance with ASME B16.5 Class 150 or Flange Rating Class 300 Line sizes 26…72 in: AWWA C-207 Class D or Class E Flange Rating		
Protection Class	NEMA 4X (IP67), optional NEMA 6P (IP68)		
Minimum Conductivity	5 µS/cm (20 µS/cm for demineralized water)		
Liner Material	Hard/soft rubber	1…78 in. (DN 25…2000)	32…176° F (0…80° C)
	PTFE	1/2…24 in. (DN 15…600)	–40…302° F (–40…150° C)
	Halar (ECTFE)	12 in. (DN 300) and larger	–40…302° F (–40…150° C)
	PFA	1/4…3/8 in. (DN 6…10)	—
Electrodes Materials	Hastelloy C (standard), Tantal Platinum / Gold plated, Platinum / Rhodium		
Housing	**Standard:** Carbon steel welded; **Optional:** 316 or 304 stainless steel		
Electrode Materials	**Standard:** Hastelloy C22; **Optional:** 316 stainless steel, gold/platinum plated, tantalum, platinum/rhodium		
Lay Length	1/4…3/4 in. (DN 6…20)	6.7 in. (170 mm)	
	1…2 in. (DN 25…50)	8.9 in. (225 mm)	
	2-1/2…4 in. (DN 65…100)	11.0 in. (280 mm)	
	5…8 in. (DN 125…200)	15.8 in. (400 mm)	
	10…14 in. (DN 250…350)	19.7 in. (500 mm)	
	16…28 in. (DN 400…700)	23.6 in. (600 mm)	
	30…40 in. (DN 750…1000)	31.5 in. (800 mm)	
	48…56 in. (DN 1200…1400)	39.4 in. (1000 mm)	
	64 in. (DN 1600)	63.0 in. (1600 mm)	
	72 in. (DN1800)	70.9 in. (1800 mm)	
	78 in. (DN2000)	78.7 in. (2000 mm)	

Sensor Type II Dimensions

Remote Version in. (mm)



Mounted Version in. (mm)



IMPORTANT: *Flange Sizes ≤ 24 in., Standard: ANSI B16.5 Class 150 RF forged carbon steel; Optional: 300 lb forged carbon steel, 316 or 304 stainless steel*
Flange Sizes > 24 in., Standard: AWWA Class D Flanges RF forged carbon steel

Flange ANSI Class 150
Up to 24 in. ASME B16.5 / > 24 in. AWWA Class D (ASME 16.47)

Size DN		A Standard		A ISO*		B1		B2		D		K		d2 x n	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
1/4	6	6.7	170	—	—	9.0	228	11.3	288	3.5	89	2.4	61	0.6 x 4	16 x 4
5/16	8	6.7	170	—	—	9.0	228	11.3	288	3.5	89	2.4	61	0.6 x 4	16 x 4
3/8	10	6.7	170	—	—	9.0	228	11.3	288	3.5	89	2.4	61	0.6 x 4	16 x 4
1/2	15	6.7	170	7.9	200	9.4	238	11.7	298	3.5	89	2.4	61	0.6 x 4	16 x 4
3/4	20	6.7	170	7.9	200	9.4	238	11.7	298	3.9	99	2.8	71	0.6 x 4	16 x 4
1	25	8.9	225	7.9	200	9.4	238	11.7	298	4.3	109	3.1	79	0.6 x 4	16 x 4
1-1/4	32	8.9	225	7.9	200	10.0	253	12.3	313	4.6	117	3.5	89	0.6 x 4	16 x 4
1-1/2	40	8.9	225	7.9	200	10.0	253	12.3	313	5.0	127	3.9	99	0.6 x 4	16 x 4
2	50	8.9	225	7.9	200	10.0	253	12.3	313	6.0	152	4.8	122	0.8 x 4	19 x 4
2-1/2	65	11.0	280	7.9	200	10.7	271	13.0	331	7.0	178	5.5	140	0.8 x 4	19 x 4
3	80	11.0	280	7.9	200	10.7	271	13.0	331	7.5	191	6.0	152	0.8 x 4	19 x 4
4	100	11.0	280	9.8	250	10.9	278	13.3	338	9.0	229	7.5	191	0.8 x 8	19 x 8
5	125	15.7	400	9.8	250	11.7	298	14.1	358	10.0	254	8.5	216	0.9 x 8	22 x 8
6	150	15.7	400	11.8	300	12.2	310	14.6	370	11.0	279	9.5	241	0.9 x 8	22 x 8
8	200	15.7	400	13.8	350	13.3	338	15.7	398	13.5	343	11.8	300	0.9 x 8	22 x 8
10	250	19.7	500	17.7	450	14.3	362	16.6	422	16.0	406	14.3	363	1.0 x 12	25 x 12
12	300	19.7	500	19.7	500	16.7	425	19.1	485	19.0	483	17.0	432	1.0 x 12	25 x 12
14	350	19.7	500	21.7	550	17.7	450	20.1	510	21.0	533	18.8	478	1.1 x 12	28 x 12
16	400	23.6	600	23.6	600	18.7	475	21.1	535	23.5	597	21.3	541	1.1 x 16	28 x 16
18	450	23.6	600	25.6	—	19.7	500	22.0	560	25.0	635	22.8	579	1.3 x 16	32 x 16
20	500	23.6	600	25.6	—	20.7	525	23.0	585	27.5	699	25.0	635	1.3 x 20	32 x 20
24	600	23.6	600	30.7	—	23.1	588	25.5	648	32.0	813	29.5	749	1.4 x 20	35 x 20
28	700	23.6	600	35.8	—	24.6	625	27.0	685	36.5	927	34.0	864	1.4 x 28	35 x 28
30	750	31.5	800	38.4	—	25.6	650	28.0	710	38.8	986	36.0	914	1.4 x 28	35 x 28
32	800	31.5	800	40.9	—	26.9	683	29.3	743	41.8	1062	38.5	978	1.6 x 28	41 x 28
36	900	31.5	800	46.1	—	28.5	725	30.9	785	46.0	1168	42.8	1087	1.6 x 32	41 x 32
40	1000	31.5	800	51.2	—	31.1	790	33.5	850	50.8	1290	47.3	1201	1.6 x 36	41 x 36
42	1050	39.4	1000	53.7	—	32.5	825	34.8	885	53.0	1346	49.5	1257	1.6 x 36	41 x 36
48	1200	39.4	1000	61.4	—	35.4	900	37.8	960	59.5	1511	56.0	1422	1.6 x 44	41 x 44
54	1350	39.4	1000	69.1	—	38.4	975	40.7	1035	66.3	1684	62.8	1595	1.9 x 44	48 x 44
56	1400	39.4	1000	71.7	—	39.4	1000	41.7	1060	68.8	1748	65.0	1651	1.9 x 48	48 x 48
Other sizes on request															

IMPORTANT: ISO* sensor lay length according to ISO 20456

Flange ANSI Class 300 ASME B16.5

Size DN		A Standard		A ISO*		B1		B2		D		K		d2 x n	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
1/2	15	6.7	170	7.9	200	9.4	238	11.7	298	3.8	95	2.6	67	0.6 x 4	16 x 4
3/4	20	6.7	170	7.9	200	9.4	238	11.7	298	4.6	117	3.3	83	0.8 x 4	19 x 4
1	25	8.9	225	7.9	200	9.4	238	11.7	298	4.9	124	3.5	89	0.8 x 4	19 x 4
1-1/4	32	8.9	225	7.9	200	10.0	253	12.3	313	5.3	133	3.9	99	0.8 x 4	19 x 4
1-1/2	40	8.9	225	7.9	200	10.0	253	12.3	313	6.1	155	4.5	114	0.9 x 4	22 x 4
2	50	8.9	225	7.9	200	10.0	253	12.3	313	6.5	165	5.0	127	0.8 x 8	19 x 8
2-1/2	65	11.0	280	7.9	200	10.7	271	13.0	331	7.5	191	5.9	149	0.9 x 8	22 x 8
3	80	11.0	280	7.9	200	10.7	271	13.0	331	8.3	210	6.6	168	0.9 x 8	22 x 8
4	100	11.0	280	9.8	250	10.9	278	13.3	338	10.0	254	7.9	200	0.9 x 8	22 x 8
5	125	15.7	400	9.8	250	11.7	298	14.1	358	11.0	279	9.3	235	0.9 x 8	22 x 8
6	150	15.7	400	11.8	300	12.2	310	14.6	370	12.5	318	10.6	270	0.9 x 12	22 x 12
8	200	15.7	400	13.8	350	13.3	338	15.7	398	15.0	381	13.0	330	1.0 x 12	25 x 12
10	250	19.7	500	17.7	450	14.3	362	16.6	422	17.5	445	15.3	387	1.1 x 16	28 x 16
12	300	19.7	500	19.7	500	16.7	425	19.1	485	20.5	521	17.8	451	1.3 x 16	32 x 16
14	350	19.7	500	21.7	550	17.7	450	20.1	510	23.0	584	20.3	514	1.3 x 20	32 x 20
16	400	23.6	600	23.6	600	18.7	475	21.1	535	25.5	648	22.5	572	1.4 x 20	35 x 20
18	450	23.6	600	25.6	—	19.7	500	22.0	560	28.0	711	24.8	629	1.4 x 24	35 x 24
20	500	23.6	600	25.6	—	20.7	525	23.0	585	30.5	775	27.0	686	1.4 x 24	35 x 24
24	600	23.6	600	30.7	—	23.1	588	25.5	648	36.0	914	32.0	813	1.6 x 24	41 x 24
Other sizes on request															

IMPORTANT: ISO* sensor lay length according to ISO 20456

Flange EN 1092-1 / PN 10

Size DN		A Standard		A ISO*		B1		B2		D		K		d2 x n	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
8	200	15.7	400	13.8	350	13.3	338	15.7	398	13.4	340	11.6	295	0.9 x 8	22 x 8
10	250	19.7	500	17.7	450	14.3	362	16.6	422	15.6	395	13.8	350	0.9 x 12	22 x 12
12	300	19.7	500	19.7	500	16.7	425	19.1	485	17.5	445	15.7	400	0.9 x 12	22 x 12
14	350	19.7	500	21.7	550	17.7	450	20.1	510	19.9	505	18.1	460	0.9 x 16	22 x 16
16	400	23.6	600	23.6	600	18.7	475	21.1	535	22.2	565	20.3	515	1.0 x 16	26 x 16
18	450	23.6	600	25.6	—	19.7	500	22.0	560	24.2	615	22.2	565	1.0 x 20	26 x 20
20	500	23.6	600	25.6	—	20.7	525	23.0	585	26.4	670	24.4	620	1.0 x 20	26 x 20
24	600	23.6	600	30.7	—	23.1	588	25.5	648	30.7	780	28.5	725	1.2 x 20	30 x 20
28	700	23.6	600	35.8	—	24.6	625	27.0	685	35.2	895	33.1	840	1.2 x 24	30 x 24
32	800	31.5	800	40.9	—	26.9	683	29.3	743	40.0	1015	37.4	950	1.3 x 24	33 x 24
36	900	31.5	800	46.1	—	28.5	725	30.9	785	43.9	1115	41.3	1050	1.3 x 28	33 x 28
40	1000	31.5	800	51.2	—	31.1	790	33.5	850	48.4	1230	45.7	1160	1.4 x 28	36 x 28
48	1200	39.4	1000	61.4	—	35.4	900	37.8	960	57.3	1455	54.3	1380	1.5 x 32	39 x 32
56	1400	39.4	1000	71.7	—	39.4	1000	41.7	1060	65.9	1675	62.6	1590	1.7 x 36	42 x 36
Other sizes on request															

IMPORTANT: ISO* sensor lay length according to ISO 20456

Flange EN 1092-1 / PN 16

Size DN		A Standard		A ISO*		B1		B2		D		K		d2 x n	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
1/4	6	6.7	170	—	—	9.0	228	11.3	288	3.5	90	2.4	60	0.6 x 4	14 x 4
5/16	8	6.7	170	—	—	9.0	228	11.3	288	3.5	90	2.4	60	0.6 x 4	14 x 4
3/8	10	6.7	170	—	—	9.0	228	11.3	288	3.5	90	2.4	60	0.6 x 4	14 x 4
1/2	15	6.7	170	7.9	200	9.4	238	11.7	298	3.7	95	2.6	65	0.6 x 4	14 x 4
3/4	20	6.7	170	7.9	200	9.4	238	11.7	298	4.1	105	3.0	75	0.6 x 4	14 x 4
1	25	8.9	225	7.9	200	9.4	238	11.7	298	4.5	115	3.3	85	0.6 x 4	14 x 4
1-1/4	32	8.9	225	7.9	200	10.0	253	12.3	313	5.5	140	3.9	100	0.7 x 4	18 x 4
1-1/2	40	8.9	225	7.9	200	10.0	253	12.3	313	5.9	150	4.3	110	0.7 x 4	18 x 4
2	50	8.9	225	7.9	200	10.0	253	12.3	313	6.5	165	4.9	125	0.7 x 4	18 x 4
2-1/2	65	11.0	280	7.9	200	10.7	271	13.0	331	7.3	185	5.7	145	0.7 x 4	18 x 4
3	80	11.0	280	7.9	200	10.7	271	13.0	331	7.9	200	6.3	160	0.7 x 8	18 x 8
4	100	11.0	280	9.8	250	10.9	278	13.3	338	8.7	220	7.1	180	0.7 x 8	18 x 8
5	125	15.7	400	9.8	250	11.7	298	14.1	358	9.8	250	8.3	210	0.7 x 8	18 x 8
6	150	15.7	400	11.8	300	12.2	310	14.6	370	11.2	285	9.4	240	0.9 x 8	22 x 8
8	200	15.7	400	13.8	350	13.3	338	15.7	398	13.4	340	11.6	295	0.9 x 12	22 x 12
10	250	19.7	500	17.7	450	14.3	362	16.6	422	15.9	405	14.0	355	1.0 x 12	26 x 12
12	300	19.7	500	19.7	500	16.7	425	19.1	485	18.1	460	16.1	410	1.0 x 12	26 x 12
14	350	19.7	500	21.7	550	17.7	450	20.1	510	20.5	520	18.5	470	1.0 x 16	26 x 16
16	400	23.6	600	23.6	600	18.7	475	21.1	535	22.8	580	20.7	525	1.2 x 16	30 x 16
18	450	23.6	600	25.6	—	19.7	500	22.0	560	25.2	640	23.0	585	1.2 x 20	30 x 20
20	500	23.6	600	25.6	—	20.7	525	23.0	585	28.1	715	25.6	650	1.3 x 20	33 x 20
24	600	23.6	600	30.7	—	23.1	588	25.5	648	33.1	840	30.3	770	1.4 x 20	36 x 20
28	700	23.6	600	35.8	—	24.6	625	27.0	685	35.8	910	33.1	840	1.4 x 24	36 x 24
32	800	31.5	800	40.9	—	26.9	683	29.3	743	40.4	1025	37.4	950	1.5 x 24	39 x 24
36	900	31.5	800	46.1	—	28.5	725	30.9	785	44.3	1125	41.3	1050	1.5 x 28	39 x 28
40	1000	31.5	800	51.2	—	31.1	790	33.5	850	49.4	1255	46.1	1170	1.7 x 28	42 x 28
48	1200	39.4	1000	61.4	—	35.4	900	37.8	960	58.5	1485	54.7	1390	1.9 x 32	48 x 32
56	1400	39.4	1000	71.7	—	39.4	1000	41.7	1060	66.3	1685	62.6	1590	1.9 x 36	48 x 36
Other sizes on request															

IMPORTANT: ISO* sensor lay length according to ISO 20456

Flange EN 1092-1 / PN 25

Size DN		A Standard		A ISO*		B1		B2		D		K		d2 x n	
inch	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**
1/2	15	6.7	170	7.9	200	9.4	238	11.7	298	3.7	95	2.6	65	0.6 x 4	14 x 4
3/4	20	6.7	170	7.9	200	9.4	238	11.7	298	4.1	105	3.0	75	0.6 x 4	14 x 4
1	25	8.9	225	7.9	200	9.4	238	11.7	298	4.5	115	3.3	85	0.6 x 4	14 x 4
1-1/4	32	8.9	225	7.9	200	10.0	253	12.3	313	5.5	140	3.9	100	0.7 x 4	18 x 4
1-1/2	40	8.9	225	7.9	200	10.0	253	12.3	313	5.9	150	4.3	110	0.7 x 4	18 x 4
2	50	8.9	225	7.9	200	10.0	253	12.3	313	6.5	165	4.9	125	0.7 x 4	18 x 4
2-1/2	65	11.0	280	7.9	200	10.7	271	13.0	331	7.3	185	5.7	145	0.7 x 4	18 x 8
3	80	11.0	280	7.9	200	10.7	271	13.0	331	7.9	200	6.3	160	0.7 x 8	18 x 8
4	100	11.0	280	9.8	250	10.9	278	13.3	338	9.3	235	7.5	190	0.9 x 8	22 x 8
5	125	15.7	400	9.8	250	11.7	298	14.1	358	10.6	270	8.7	220	1.0 x 8	26 x 8
6	150	15.7	400	11.8	300	12.2	310	14.6	370	11.8	300	9.8	250	1.0 x 8	26 x 8
8	200	15.7	400	13.8	350	13.3	338	15.7	398	14.2	360	12.2	310	1.0 x 8	26 x 12
10	250	19.7	500	17.7	450	14.3	362	16.6	422	16.7	425	14.6	370	1.2 x 12	30 x 12
12	300	19.7	500	19.7	500	16.7	425	19.1	485	19.1	485	16.9	430	1.2 x 12	30 x 16
14	350	19.7	500	21.7	550	17.7	450	20.1	510	21.9	555	19.3	490	1.3 x 16	33 x 16
16	400	23.6	600	23.6	600	18.7	475	21.1	535	24.4	620	21.7	550	1.4 x 16	36 x 16
18	450	23.6	600	25.6	—	19.7	500	22.0	560	26.4	670	23.6	600	1.4 x 20	36 x 20
20	500	23.6	600	25.6	—	20.7	525	23.0	585	28.7	730	26.0	660	1.4 x 20	36 x 20
24	600	23.6	600	30.7	—	23.1	588	25.5	648	33.3	845	30.3	770	1.5 x 20	39 x 20
28	700	23.6	600	35.8	—	24.6	625	27.0	685	37.8	960	34.4	875	1.7 x 24	42 x 24
32	800	31.5	800	40.9	—	26.9	683	29.3	743	42.7	1085	39.0	990	1.9 x 24	48 x 24
36	900	31.5	800	46.1	—	28.5	725	30.9	785	46.7	1185	42.9	1090	1.9 x 28	48 x 28
40	1000	31.5	800	51.2	—	31.1	790	33.5	850	52.0	1320	47.6	1210	2.2 x 28	56 x 28
Other sizes on request															

IMPORTANT: ISO* sensor lay length according to ISO 20456

Flange EN 1092-1 / PN 40

Size DN		A Standard		A ISO*		B1		B2		D		K		d2 x n	
inch	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**
1/2	15	6.7	170	7.9	200	9.4	238	11.7	298	3.7	95	2.6	65	0.6 x 4	14 x 4
3/4	20	6.7	170	7.9	200	9.4	238	11.7	298	4.1	105	3.0	75	0.6 x 4	14 x 4
1	25	8.9	225	7.9	200	9.4	238	11.7	298	4.5	115	3.3	85	0.6 x 4	14 x 4
1-1/4	32	8.9	225	7.9	200	10.0	253	12.3	313	5.5	140	3.9	100	0.7 x 4	18 x 4
1-1/2	40	8.9	225	7.9	200	10.0	253	12.3	313	5.9	150	4.3	110	0.7 x 4	18 x 4
2	50	8.9	225	7.9	200	10.0	253	12.3	313	6.5	165	4.9	125	0.7 x 4	18 x 4
2-1/2	65	11.0	280	7.9	200	10.7	271	13.0	331	7.3	185	5.7	145	0.7 x 4	18 x 8
3	80	11.0	280	7.9	200	10.7	271	13.0	331	7.9	200	6.3	160	0.7 x 8	18 x 8
4	100	11.0	280	9.8	250	10.9	278	13.3	338	9.3	235	7.5	190	0.9 x 8	22 x 8
5	125	15.7	400	9.8	250	11.7	298	14.1	358	10.6	270	8.7	220	1.0 x 8	26 x 8
6	150	15.7	400	11.8	300	12.2	310	14.6	370	11.8	300	9.8	250	1.0 x 8	26 x 8
8	200	15.7	400	13.8	350	13.3	338	15.7	398	14.8	375	12.6	320	1.2 x 8	30 x 12
10	250	19.7	500	17.7	450	14.3	362	16.6	422	17.7	450	15.2	385	1.3 x 12	33 x 12
12	300	19.7	500	19.7	500	16.7	425	19.1	485	20.3	515	17.7	450	1.3 x 12	33 x 16
14	350	19.7	500	21.7	550	17.7	450	20.1	510	22.8	580	20.1	510	1.4 x 16	36 x 16
16	400	23.6	600	23.6	600	18.7	475	21.1	535	26.0	660	23.0	585	1.5 x 16	39 x 16
18	450	23.6	600	25.6	—	19.7	500	22.0	560	27.0	685	24.0	610	1.5 x 20	39 x 20
20	500	23.6	600	25.6	—	20.7	525	23.0	585	29.7	755	26.4	670	1.7 x 20	42 x 20
24	600	23.6	600	30.7	—	23.1	588	25.5	648	35.0	890	31.3	795	1.9 x 20	48 x 20
Other sizes on request															

IMPORTANT: ISO* sensor lay length according to ISO 20456

Weight and Flow Range

Size		Estimated Weight with M2000	Flow Range	
in.	**DN**	**lb (kg)**	**US**	**Metric**
1/4	6	8 (3.5)	0.0134…5.4 GPM	0.051…20.4 l/min
5/16	8	8 (3.5)	0.0239…9.6 GPM	0.09…36.2 l/min
3/8	10	8 (3.5)	0.0373…14.9 GPM	0.141…57 l/min
1/2	15	10 (4.5)	0.084…33.6 GPM	0.318…127 l/min
3/4	20	10 (4.5)	0.149…60 GPM	0.57…226 l/min
1	25	11 (5)	0.233…93 GPM	0.88…353 l/min
1-1/4	32	13 (6)	0.382…153 GPM	1.45…579 l/min
1-1/2	40	15.5 (7)	0.6…239 GPM	2.26…905 l/min
2	50	19 (8.5)	0.93…373 GPM	3.53…1,414 l/min
2-1/2	65	27.5 (12.5)	1.58…631 GPM	0.358…143 m^3/h
3	80	31 (14)	2.39…956 GPM	0.54…217 m^3/h
4	100	42 (19)	3.73…1,494 GPM	0.85…339 m^3/h
5	125	53 (24)	5.8…2,334 GPM	1.33…530 m^3/h
6	150	60.5 (27.5)	8.4…3,361 GPM	1.91…763 m^3/h
8	200	87 (39.5)	14.9…5,975 GPM	3.39…1,357 m^3/h
10	250	129 (58.5)	23.3…9,336 GPM	5.3…2,121 m^3/h
12	300	204 (92.5)	33.6…13,444 GPM	7.6…3,054 m^3/h
14	350	262 (119)	45.7…18,299 GPM	10.4…4,156 m^3/h
16	400	344 (156)	60…23,901 GPM	13.6…5,429 m^3/h
18	450	397 (180)	76…30,250 GPM	17.2…6,870 m^3/h
20	500	470 (213)	93…37,345 GPM	21.2…8,482 m^3/h
22	550	549 (249)	113…45,188 GPM	25.7…10,263 m^3/h
24	600	617 (280)	134…53,777 GPM	30.5…12,214 m^3/h
28	700	—	183…73,197 GPM	41.6…16,625 m^3/h
30	750	930 (422)	210…84,027 GPM	47.7…19,085 m^3/h
32	800	1171 (531)	239…95,604 GPM	54.3…21,714 m^3/h
36	900	1378 (625)	302…120,999 GPM	69…27,482 m^3/h
40	1000	—	373…149,381 GPM	85…33,928 m^3/h
48	1200	1788 (811)	538…215,109 GPM	122…48,857 m^3/h
56	1400	—	732…292,787 GPM	166…66,499 m^3/h
60	1500	2112 (958)	840…336,108 GPM	191…76,338 m^3/h
64	1600	2339 (1061)	956…382,416 GPM	217…86,856 m^3/h
72	1800	3219 (1460)	1210…483,996 GPM	275…109,927 m^3/h
78	2000	4101 (1860)	1494…597,525 GPM	339…135,713 m^3/h

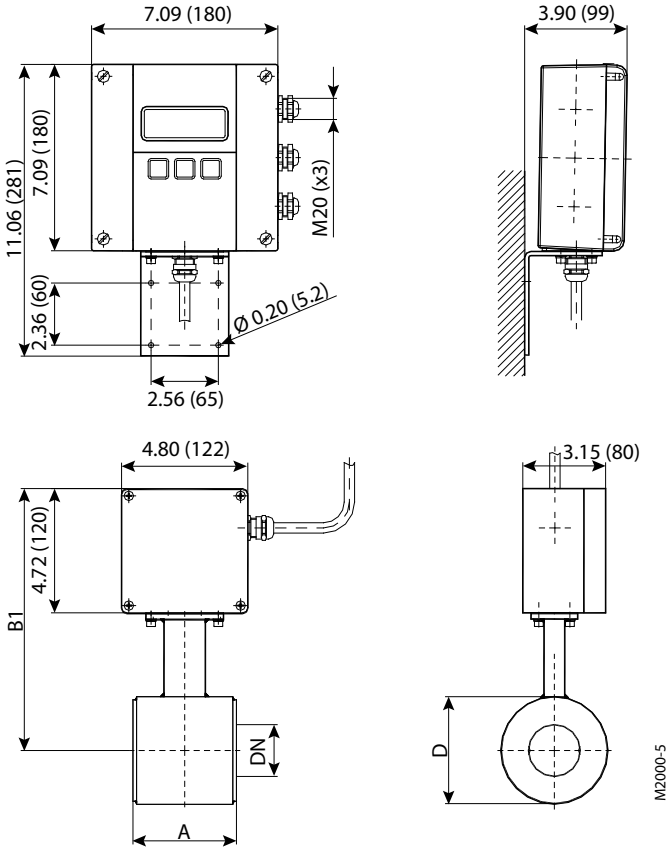
Sensor Type III Specifications

Thanks to its very short lay length, the sensor type III is often the right alternative to a lot of applications. Delivered with a PTFE liner, the sensor type III has a standard nominal pressure of PN 40.

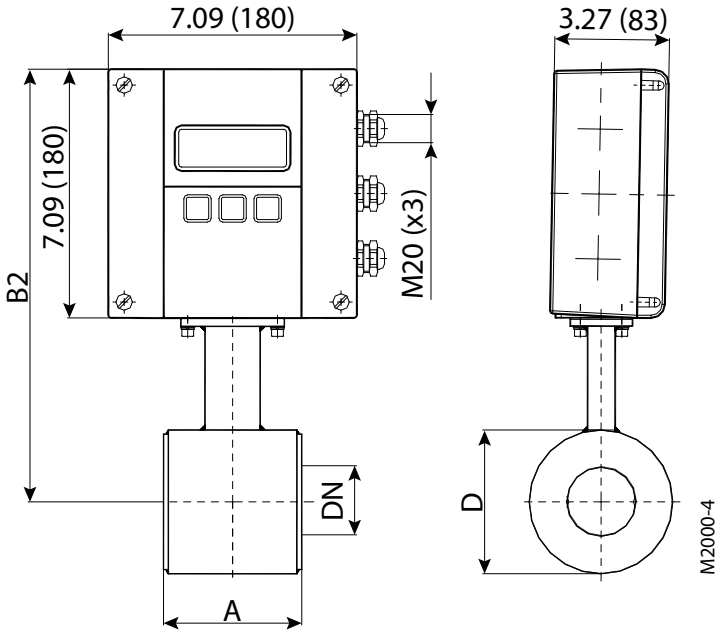
Size	1…4 in. (DN 25…100)	
Process Connection	Wafer connection (in-between flange mounting)	
Nominal Pressure	580 psi (40 bar)	
Protection Class	NEMA 4X (IP67), optional NEMA 6P (IP68)	
Minimum Conductivity	5 µS/cm (20 µS/cm for demineralized water)	
Liner Materials	PTFE	
Electrode Material	Hastelloy C (Standard), Tantal, Platinum / Gold Plated, Platinum / Rhodium	
Housing	Carbon Steel / optional stainless steel	
Lay Length	1…2 in. (DN 25…50)	4 in. (100 mm)
	2-1/2…4 in. (DN 65…100)	6 in. (150 mm)

Sensor Type III Dimensions

Remote Version
in. (mm)



Mounted Version
in. (mm)



in.	DN	A	B1	B2	D
1	25	3.94 (100)	9.37 (238)	7.24 (184)	2.91 (74)
1-1/4	32	3.94 (100)	9.57 (243)	7.44 (189)	3.31 (84)
1-1/2	40	3.94 (100)	9.76 (248)	7.64 (194)	3.70 (94)
2	50	3.94 (100)	9.96 (253)	7.83 (199)	4.09 (104)
2-1/2	65	5.91 (150)	10.47 (266)	8.35 (212)	5.08 (129)
3	80	5.91 (150)	10.67 (271)	8.54 (217)	5.51 (140)
4	100	5.91 (150)	10.98 (279)	8.86 (225)	6.14 (156)
580 psi (40 bar)					

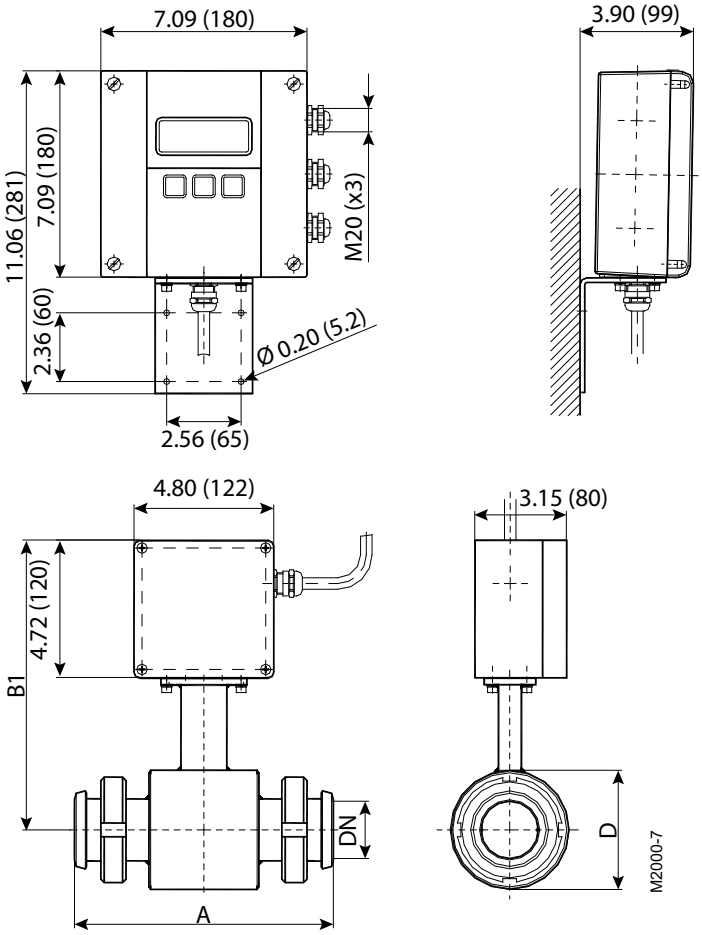
Sensor with Sanitary Process Connections Specifications

The sensor model is available with Tri-Clamp® BS4825/ISO2852, DIN11851, and more process connections. The sanitary sensor is delivered in a stainless steel housing and with PTFE/PFA lining.

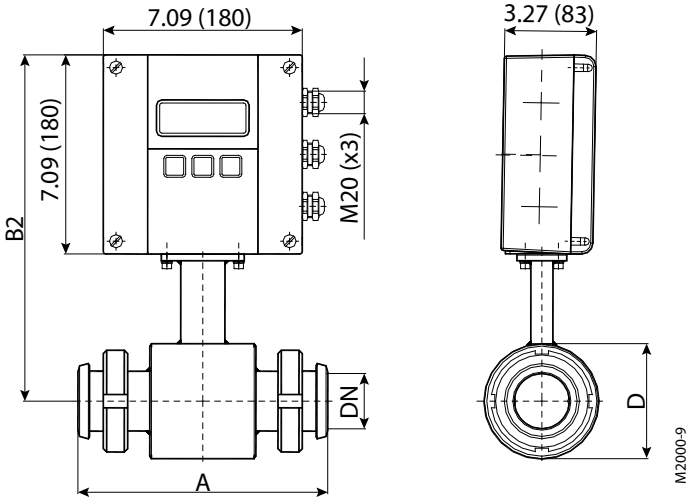
Size	3/8…4 in. (DN 10…100)		
Process Connection	Tri-Clamp BS4825/ISO2852, DIN 11851, customer specified, and more		
Nominal Pressure	145/230 psi (10/16 bar)		
Protection Class	NEMA 4X (IP67), optional NEMA 6P (IP68)		
Minimum Conductivity	5 µS/cm (20 µS/cm for demineralized water)		
Liner Materials	PTFE/PFA	–40…302° F (–40…150° C)	
Electrode Material	**Standard**: Hastelloy C; **Optional**: Tantal, Platinum / Gold plated, Platinum / Rhodium		
Housing	**Standard**: Carbon Steel; **Optional**: Stainless Steel		
Lay Length	Tri-Clamp Connection	3/8…2 in. (DN 10…50)	6 in. (145 mm)
		2-1/2…4 in. (DN 65…100)	8 in. (200 mm)
	DIN 11851 Connection	3/8…3/4 in. (DN 10…20)	7 in. (175 mm)
		1…2 in. (DN 25…50)	9 in. (225 mm)
		2-1/2…4 in. (DN 65…100)	11 in. (280 mm)

DIN 11851 Connection Dimensions

Remote Version
in. (mm)



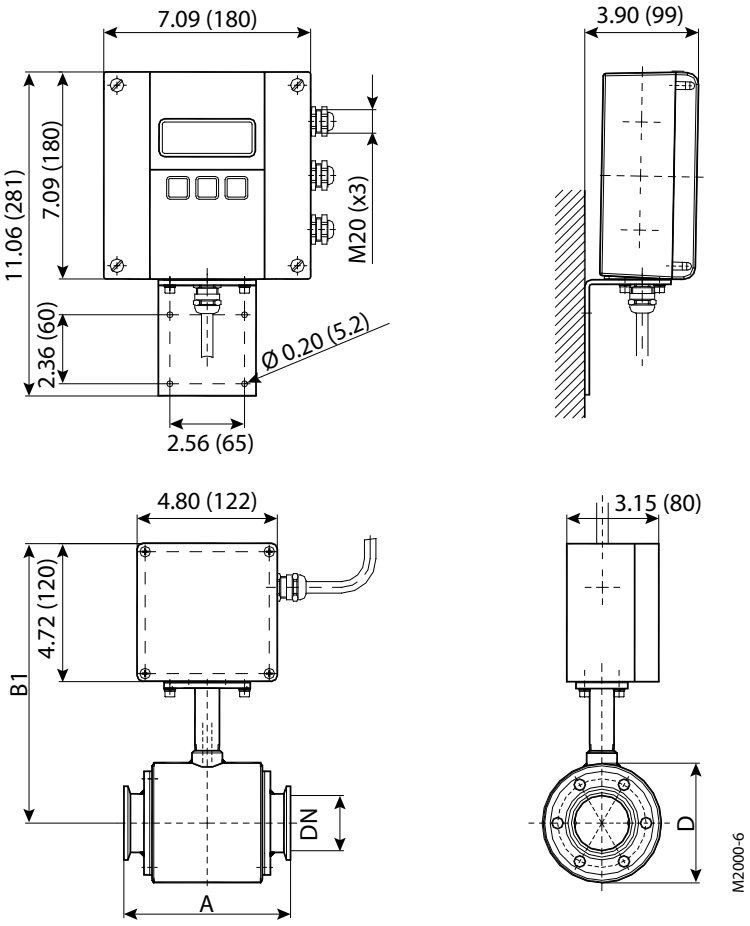
Mounted Version
in. mm



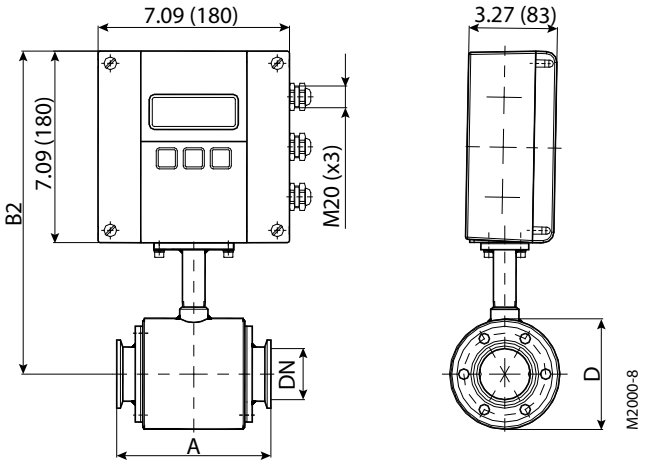
in.	DN	A	B1	B2	D
3/8	10	6.69 (170)	9.37 (238)	7.24 (184)	2.91 (74)
1/2	15	6.69 (170)	9.37 (238)	7.24 (184)	2.91 (74)
3/4	20	6.69 (170)	9.37 (238)	7.24 (184)	2.91 (74)
1	25	8.86 (225)	9.37 (238)	7.24 (184)	2.91 (74)
1-1/4	32	8.86 (225)	9.57 (243)	7.44 (189)	3.31 (84)
1-1/2	40	8.86 (225)	9.76 (248)	7.64 (194)	3.70 (94)
2	50	8.86 (225)	9.96 (253)	7.83 (199)	4.09 (104)
2-1/2	65	11.02 (280)	10.47 (266)	8.35 (212)	5.08 (129)
3	80	11.02 (280)	10.67 (271)	8.54 (217)	5.51 (140)
4	100	11.02 (280)	10.98 (279)	8.86 (225)	6.14 (156)
230 psi (16 bar)					

Tri-Clamp Connection Dimensions

Remote Version
in. (mm)

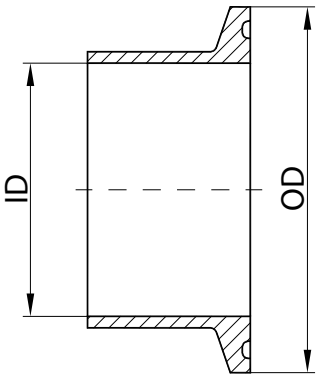


Mounted Version
in. (mm)



in.	DN	A	B1	B2	D
3/8	10	5.71 (145)	8.98 (228)	7.52 (191)	2.91 (74)
1/2	15	5.71 (145)	8.98 (228)	7.52 (191)	2.91 (74)
3/4	20	5.71 (145)	8.98 (228)	7.52 (191)	2.91 (74)
1	25	5.71 (145)	8.98 (228)	7.52 (191)	2.91 (74)
1-1/2	40	5.71 (145)	9.37 (238)	7.91 (201)	3.70 (94)
2	50	5.71 (145)	9.57 (243)	8.11 (206)	4.09 (104)
2-1/2	65	7.87 (200)	10.08 (256)	8.62 (219)	5.08 (129)
3	80	7.87 (200)	10.28 (261)	8.82 (224)	5.51 (140)
4	100	7.87 (200)	10.59 (269)	9.13 (232)	6.14 (156)
150 psi (10 bar)					

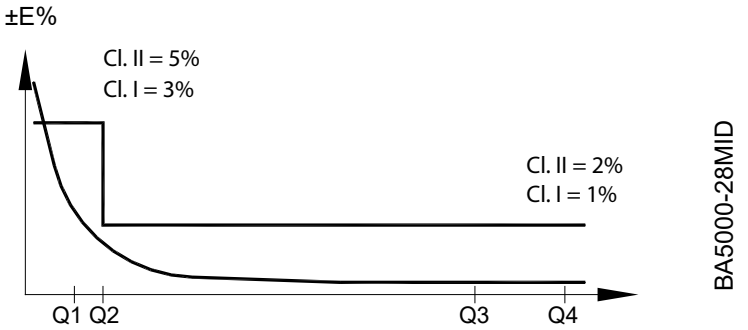
Tri-Clamp Connection



BS4825					ISO2852				
Size	OD		ID		Size	OD		ID	
in.	in.	mm	in.	mm	DN	in.	mm	in.	mm
—	—	—	—	—	10	0.98	25.0	0.55	14.0
1/2	0.98	25.0	0.37	9.4	15	1.99	50.5	0.71	18.1
3/4	0.98	25.0	0.62	15.75	20	1.99	50.5	0.90	22.9
1	1.99	50.5	0.87	22.1	25	1.99	50.5	1.13	28.7
—	—	—	—	—	32	2.52	64.0	1.51	38.4
1-1/2	1.99	50.5	1.37	34.8	40	2.52	64.0	1.74	44.3
2	2.52	64.0	1.87	47.5	50	3.05	77.5	2.22	56.3
2-1/2	3.05	77.5	2.37	60.2	65	3.58	91.0	2.84	72.1
3	3.58	91.0	2.87	72.9	80	4.17	106.0	3.32	84.3
4	4.69	119.0	3.83	97.4	100	5.12	130.0	4.32	109.7
Nominal Pressure 145 psi (10 bar)									

OIML APPROVED METER

The M2000 is type approved according to the international water meter standards OIML R49. The meter is approved as Class I and Class II for the detector sizes 2…12 inches (DN 50…300).



Q2/Q1 = 1.6 and Q4/Q3 = 1.25

OIML R 49 specification for Class I

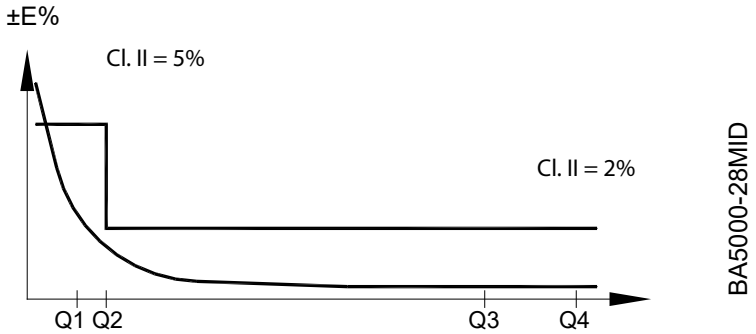
Size in. (DN)	**2 (50)**	**2 1/2 (65)**	**3 (80)**	**4 (100)**	**5 (125)**	**6 (150)**	**8 (200)**	**10 (250)**	**12 (300)**
R (Q3/Q1)	200	200	200	250	250	160	160	160	100
Q1 [m^3/h]	0.315	0.5	0.8	1	1.6	3.94	6.25	10	15.63
Q2 [m^3/h]	0.504	0.8	1.28	1.6	2.56	6,3	10	16	25
Q3 [m^3/h]	**63**	**100**	**160**	**250**	**400**	**630**	**1000**	**1600**	**1600**
Q4 [m^3/h]	78.75	125	200	312.5	500	787.5	1250	2000	2000
OIML R49 Class	1								

OIML R 49 specification for Class II

Size in. (DN)	**6 (150)**	**8 (200)**
R (Q3/Q1)	250	250
Q1 [m^3/h]	2.52	4
Q2 [m^3/h]	4.03	6.4
Q3 [m^3/h]	**630**	**1000**
Q4 [m^3/h]	787.5	1250
OIML R49 Class	2	

MID APPROVED METER (MI-001)

The M2000 is type approved according to Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 Measuring Instruments (MID) Annex MI-001. The meter is approved for the detector sizes 2…12 inches (DN 50…300).



Q2/Q1 = 1.6 and Q4/Q3 = 1.25

Size in. (DN)	**2 (50)**	**2-1/2 (65)**	**3 (80)**	**4 (100)**	**5 (125)**	**6 (150)**	**8 (200)**	**10 (250)**	**12 (300)**
R (Q3/Q1)	200	200	200	250	250	250	250	160	100
Q1 [m^3/h]	0.315	0.5	0.8	1	1.6	2.52	4	10	15.63
Q2 [m^3/h]	0.504	0.8	1,28	1.6	2.56	4.03	6.4	16	25
Q3 [m^3/h]	**63**	**100**	**160**	**250**	**400**	**630**	**1000**	**1600**	**1600**
Q4 [m^3/h]	78.75	125	200	312.5	500	787.5	1250	2000	2000

The conformity declaration of above certificate is according to module B (type approval) and D (quality insurance of production).

PART NUMBER CONSTRUCTION

ModMAG®
Model M2000

Model Code: 2M | | A | | | | | | H | | | | | C | | | D | B | A | | | | |

General area

Size

DN 6	1/4 IN.	liner PFA / 304 SST	002
DN 8	5/16 IN.	liner PFA / 304 SST	003
DN 10	3/8 IN.	liner PFA / 304 SST	004
DN 15	1/2 IN.		005
DN 20	3/4 IN.		007
DN 25	1 IN.		010
DN 32	1-1/4 IN.		012
DN 40	1-1/2 IN.		015
DN 50	2 IN.		020
DN 65	2-1/2 IN.		025
DN 80	3 IN.		030
DN 100	4 IN.		040
DN 125	5 IN.		050
DN 150	6 IN.		060
DN 200	8 IN.		080
DN 250	10 IN.		100
DN 300	12 IN.		120
DN 350	14 IN.		140
DN 400	16 IN.		160
DN 450	18 IN.		180
DN 500	20 IN.		200
	22 IN.		220
DN 600	24 IN.		240
DN 700	28 IN.		280
	30 IN.		300
DN 800	32 IN.		320
DN 900	36 IN.		360
DN 1000	40 IN.		400
	42 IN.		420
DN 1200	48 IN.		480
	54 IN.		540
DN 1400	56 IN.		560

Process connection

EN 1092-1 PN 40	FEE
EN 1092-1 PN 25	FED
EN 1092-1 PN 16	FEC
EN 1092-1 PN 10	FEB
ASME Class 300	FAB
ASME Class 150	FAA
TriClamp ISO 2852	TAE
TriClamp BS 4825	TAB
Threads DIN 11851	DAA
Wafer	WAA

Flange and Housing material

Carbon Steel (Standard)	C1
Carbon Steel w/ CSM Paint	C2
304 Stainless Steel Connection / Housing	S3
316 Stainless Steel Connection / Housing	S7
Carbon Steel Process Connections (Std. Paint) / 316 Stainless Steel Housing	C4

Liner Material

Hard Rubber		H
PTFE	for sizes > DN10 (3/8 IN.)	P
PFA	DN 6...DN 10 (1/4... 3/8 IN.) with PFA liner	A

Electrodes / Measuring, Empty pipe, Grounding

Hastelloy C-22 (Standard / Measuring Empty pipe & Grounding)	A
Hastelloy C-22 (Standard / Measuring & Empty pipe)	J
AISI 316/1.4571	B
Tantalum	C
Platinum/Rhodium	D

Grounding rings

No Grounding Rings	X
304 Stainless Steel Grounding Rings	A
316 Stainless Steel Grounding Rings	B

Meter LayLength

Standard	S
ISO 20456	O

Transmitter, Power Supply, Hardware

110/220V AC; Meter-Mounted	SA	AA	C
110/220V AC; Remote-Mounted	RA	AA	C
9...36V DC; Meter-Mounted	SA	AB	C
9...36V DC; Remote-Mounted	RA	AB	C

Junction Box (for remote mounted version)

Aluminum Enclosure; IP67 (Type 6/4X) Rating		A
Aluminum Enclosure; IP68 (Type 6P) Rating	(submersible option)	B
Stainless Steel Enclosure; IP67 (Type 6/4X) Rating		C
Stainless Steel Enclosure; IP68 (Type 6P) Rating	(submersible option)	D
None | Used for "Sensor-Mounted" Transmitter Configurations		X

Remote Cable Length (for remote mounted version)

15 ft.	5 m	MA
30 ft.	10 m	MB
50 ft.	15 m	MC
65 ft.	20 m	MD
80 ft.	25 m	ME
100 ft.	30 m	MF
115 ft.	35 m	MG
130 ft.	40 m	MH
150 ft.	45 m	MJ
165 ft.	50 m	MK
180 ft.	55 m	MM
200 ft.	60 m	MN
215 ft.	65 m	MP
230 ft.	70 m	MQ
245 ft.	75 m	MR
260 ft.	80 m	MS
280 ft.	85 m	MT
295 ft.	90 m	MU
310 ft.	95 m	MV
330 ft.	100 m	NW
360 ft.	110 m	NB
390 ft.	120 m	ND
425 ft.	130 m	NF
460 ft.	140 m	NH
500 ft.	150 m	NK
None | Used for "Sensor-Mounted" Transmitters Configuration		WW

Input/Output Channel

Standard Input/Output	D	B	A

Communications

Standard Communication (RS232 Modbus RTU)	B
Modbus RTU (RS-485)	L
HART	P
Profibus DP	E
Modbus TCP/IP	G
EtherNet/IP; ODVA	H
M-Bus wired	M
BACnet/IP	N
BACnet MS/TP	Q

Wiring Method

Twist Tight: 5 ft. (1.52 m)	TF
Twist Tight: 10 ft. (3.05 m)	TH
Twist Tight; 25 ft. (7.62 m)	TJ
Twist Tight; 75 ft. (22.86 m)	TK
None | No Endpoint (Standard)	XX

Programming

Gallons/gallons per minute (North America Standard)	NA
Gallons/cubic feet per minute	NC
Gallons/cubic meters per second	ND
Cubic Meters/gallons per minute	NE
Cubic Feet/gallons per minute	NJ
Cubic Feet/cubic feet per minute	NK
Cubic Feet/cubic meters per hour	NL
Liters/gallons per minute	NM
Million Gallons/gallons per minute	NS
Gallons/millions gallons per day	NT
Acre Feet/gallons per minute	NU
Second-Foot Day/cubic feet per second	NV
Standard (Default Metric units based on size)	EA
m^3/s and m^3	EB
m^3/min and m^3	EC
m^3/h and m^3	ED
L/s and L	EE
L/min and L	EF
L/h and L	EG

Testing & Tagging

0.2%	3-Point Calibration; Factory (Standard)	F
0.2%	3-Point Calibration in Factory / Stainless steel Tag	S
0.5%	1-Point Calibration; Factory	L
0.5%	1-Point Calibration in Factory / Stainless steel Tag	M
OIML R49 Cl 1 TYPE CALIBRATED; 3PT; Q1-Q3		N
3rd Party Calibrated		3
3rd Party Calibrated w/ Stainless Steel Tag		T
State of Kansas Certified (North America only)		K

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