

DESCRIPTION

Designed, developed and manufactured under strict quality standards, the M5000 electromagnetic flow meter features sophisticated, processor-based signal conversion with accuracies of $\pm 0.4\%$. Based on Faraday's Law of Induction, these meters can measure potable water, reclaimed water, ground water and clear, water-based applications that have minimal electrical conductivity.

With no moving parts in the flow stream, there is no pressure loss. Also, accuracy is not affected by temperature, pressure, viscosity or density and there is practically no maintenance required. It is encased in an IP67 housing (optional IP68), which makes it a reliable meter even when submerged.

APPLICATION

The M5000 mag meter is designed for applications without power line access, where flow is continuous, and when indication of rate and totalization are required. The M5000 can accurately measure fluid flow—the fluid is potable or reclaimed water and can contain a moderate amount of solids. The meter is successfully used in water distribution networks and irrigation.

The standard meter is equipped with an internal datalogger or M-Bus interface, or optionally with an externally powered RS485 interface with Modbus[®]. The collected data can also be retrieved via radio frequency or GSM/GPRS. The data can then be centrally compiled and evaluated. The meter can be checked without process interruption using the Verification Device.

OPERATING PRINCIPLE

The flow meter is a stainless steel tube lined with a non-conductive material. Outside the tube are two DC-powered electromagnetic coils positioned opposite each other. Perpendicular to the coils are two electrodes inserted into the flow tube. The energized coils create a magnetic field across the 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. This induced voltage is then amplified and digitally processed by the converter to produce an accurate analog or digital signal. The signal can then be used to indicate flow rate and totalization, or to communicate to remote sensors and controllers. In addition, the processor controls zero-flow stability, frequency outputs, serial communications, and other parameters.



FEATURES

- Available in sizes 1/2...24 in. (DN 15...600)
- Battery powered, with battery life up to 20 years
- $\pm 0.4\%$ of measured value ± 2 mm/s accuracy independent of fluid viscosity, density and temperature
- Unaffected by most solids contained in fluids
- LCD Display
- Pulsed DC magnetic field for zero point stability
- No pressure loss for low operational costs
- Corrosion resistant liners for long life
- Calibrated in state-of-the art facilities
- Integral and remote signal converter availability
- Optional grounding rings or grounding electrode
- Measurement largely independent of flow profile
- Low-power digital microcontroller (16 bit)
- Simple programming procedure
- Digital and infrared outputs
- Automatic zero-point stability
- Non-volatile programming
- NSF/ANSI/CAN 61 and 372, OIML and MID certified
- Data logging
- Verification device
- IP67/IP68 protection class
- Modbus RTU (RS232), IRDA, M-Bus, optional Modbus RTU (RS 485)

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. M5000 mag meters have an "empty pipe detection" feature. This is accomplished with a third electrode positioned in the meter between twelve o'clock and one o'clock.

If this electrode is not covered by fluid for a minimum five-second duration, the meter will display an "empty pipe detection" condition, send out an error message, if desired, and stop measuring to maintain accuracy. When the electrode again becomes covered with fluid, the error message will disappear and the meter will continue measuring.

The wide selection of liner and electrode materials helps provide maximum compatibility and minimum maintenance over a long operating period. The M5000 amplifier can be integrally mounted to the detector, or if necessary, mounted remotely. The amplifier is housed in a NEMA 4X (IP67) enclosure.

In addition 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 five o'clock.

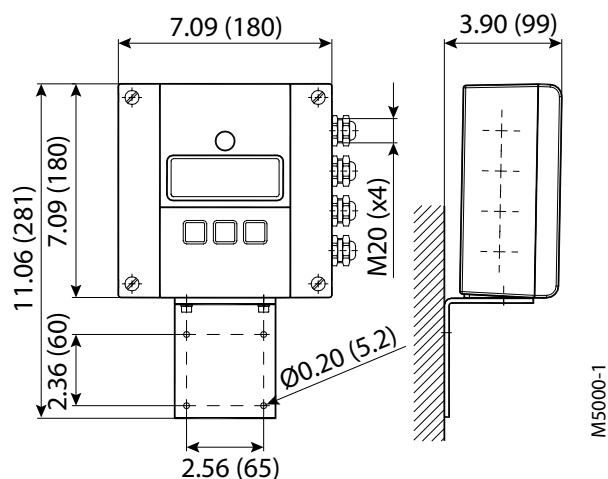
SPECIFICATIONS

NOTE: Measurements in DN are for Nominal Diameter in mm.

M5000 Amplifier

Flow Range	0.1...32.8 ft/s (0.03...10 m/s)	
Accuracy	± 0.4% of measured value ± 2 mm/s OIML/MID: 2...12 in. (DN50...300) with 0d up and 0d downstream ±1% ≥ 1.2 ft/s (0.35 m/s)	
Repeatability	± 0.1%	
Data Logging	About 7,000 records (read out by Modbus or IrDA interface) Logging interval from 1 min to 24 h	
Ambient Temperature	-4...140° F (-20...60° C)	
Flow Direction	Uni-directional or bi-directional. Two separate programmable totalizers for uni-directional measurement.	
Digital Outputs (4)	Galvanically isolated open collector, 30V DC maximum, 20 mA each, maximum output frequency at 100 Hz	
Status Outputs	ADE, High/low flow alarm (0...100% of flow), error alarm, empty pipe alarm, flow direction	
Communication	RS232, Modbus RTU, IrDA, M-Bus, RS 485 (optional), External AMR or GSM/GPRS module (optional)	
Empty Pipe Detection	Separate electrode, field-tunable for optimum performance based on specific application	
Min-Max Flow Alarm	Programmable outputs 0...100% of flow	
Low Flow Cut-Off	Programmable 0...10% of maximum flow	
Galvanic Separation	Functional 500 volts	
Pulse Width	Programmable 5...500 ms	
Coil Power	Pulsed DC	
Sampling Rate	Programmable from 1 to 63 seconds. Standard sampling period is 15 seconds.	
Display	Two lines x 15 characters (7 on top + 8 on bottom), LCD display	
Programming	Three external buttons	
Units of Measure	Gallons, ounces, MGD, liters, cubic meters, cubic feet, imperial gallon, barrel, hectoliter and acre feet	
Battery Life	<i>Standard:</i> 10 years with one battery pack; <i>optional:</i> up to 20 years with two battery packs for sizes 6 in. (DN 150) or smaller.	
Power Supply	<i>Standard:</i> Internal lithium batteries 3.6 volt, optional external battery pack <i>Optional:</i> battery back-up model (100...240V AC or 9...36V DC)	
Processing	Low power microcontroller (16 bit)	
Amplifier Housing	NEMA 4X (IP67, optional IP68), cast aluminum, powder-coated paint	
Mounting	Detector-mount or remote wall mount (bracket supplied)	
Meter Enclosure Classification	<i>Standard:</i> NEMA 4X (IP67); <i>Optional:</i> Submersible NEMA 6P IP68, remote amplifier required	
Junction Box Enclosure Protection	For remote amplifier option:	<i>Standard:</i> Powder coated die-cast aluminum, NEMA 4 (IP67) <i>Optional:</i> Stainless steel housing 304, Submersible NEMA 6P (IP68)
Approvals	NSF/ANSI/CAN 61 and 372 OIML R49-1 MID MI-001	Models with hard rubber liner 4 in. (DN 100) size and up; PTFE liner, all sizes.

M5000 Amplifier Dimensions in Inches (Millimeters)



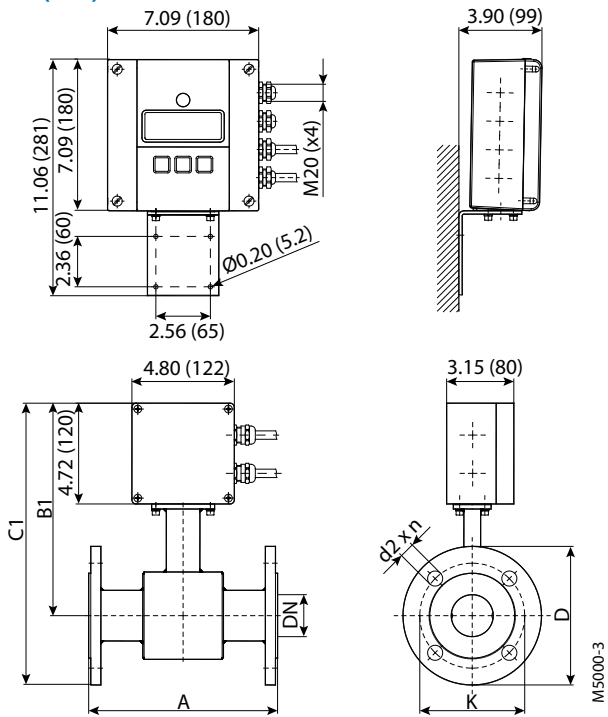
Detector Weight and Flow Range

Size in. (DN)	Est. Weight with Amplifier lb (kg)	Flow Range	
		US	Metric
1/2 (15)	17 (7.7)	0.084...28.0 GPM	0.318...106 l/min
3/4 (20)	17 (7.7)	0.149...49.8 GPM	0.57...188 l/min
1 (25)	18 (8.8)	0.233...78 GPM	0.88...295 l/min
1-1/4 (32)	20.3 (9.2)	0.382...127 GPM	1.45...483 l/min
1-1/2 (40)	22 (10)	0.60...199 GPM	2.26...754 l/min
2 (50)	26 (11.7)	0.93...311 GPM	3.53...1,178 l/min
2-1/2 (65)	35 (15.7)	1.58...526 GPM	0.358...119 m ³ /h
3 (80)	38 (17.1)	2.39...797 GPM	0.54...181 m ³ /h
4 (100)	49 (22.1)	3.73...1245 GPM	0.85...283 m ³ /h
5 (125)	60 (27.1)	5.8...1945 GPM	1.33...442 m ³ /h
6 (150)	71 (32.1)	8.4...2801 GPM	1.91...636 m ³ /h
8 (200)	96 (43.1)	14.9...4979 GPM	3.39...1131 m ³ /h
10 (250)	130 (59.1)	23.3...7780 GPM	5.3...1767 m ³ /h
12 (300)	219 (99.3)	33.6...11,204 GPM	7.6...2545 m ³ /h
14 (350)	287 (130.2)	45.7...15,249 GPM	10.4...3464 m ³ /h
16 (400)	354 (160.9)	60...19,918 GPM	13.6...4524 m ³ /h
18 (450)	409 (185.3)	76...25,208 GPM	17.2...5725 m ³ /h
20 (500)	502 (228.3)	93...31,121 GPM	21.2...7068 m ³ /h
22 (550)	532 (241.3)	113...37,657 GPM	25.7...8553 m ³ /h
24 (600)	561 (255.3)	134...44,814 GPM	30.5...10,178 m ³ /h

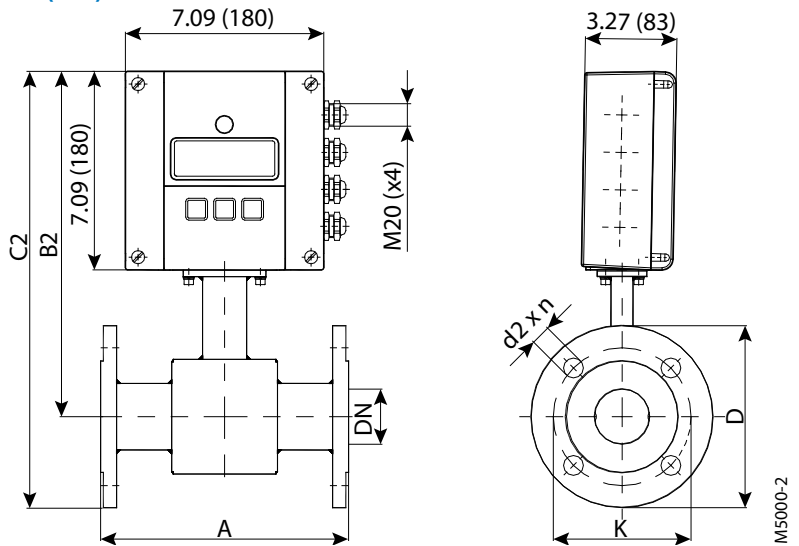
Detector Type VI

Size	1/2...24 in. (DN 15...600)		
Process Connection	Flange Type	DIN, ANSI, JIS, AWWA and more	
	Material	Standard: carbon steel; optional: stainless steel 304/316	
Pressure Limits	Up to 1450 psi (100 bar) PED		
Meter Enclosure Classification	Standard: NEMA 4X (IP67); Optional: Submersible NEMA 6P IP68, remote amplifier required		
Minimum Conductivity	≥20 µS/cm		
Liners	Material	Available for sizes	Fluid Temp for Remote Mount
	PTFE	1/2...24 in. (DN 15...600)	302° F (150° C)
	Hard rubber	1...24 in. (DN 25...600)	178° F (80° C)
Electrode Materials	Standard: Hastelloy® C; optional: Tantalum, Platinum/Gold plated, Platinum/Rhodium, 316 stainless steel		
Meter Housing Material	Standard: Carbon steel painted; optional: Stainless steel 304/316 or painted in C5M		
Optional Stainless Steel Grounding Rings	ANSI Flanges		All Other Flanges
	Meter Size	Thickness (of 1 ring)	Meter Size
	1/2...1 in. (DN 15...25)	0.135 in. (3.42 mm)	1/2... 24 in. (DN 15...600)
	12...24 in. (DN 300...600)	0.187 in. (4.75 mm)	0.12 in. (3 mm)

Remote Version in. (mm)



Mounted Version in. (mm)



Size in. (DN)	A Std* in. (mm)	A ISO** in. (mm)	B1 in. (mm)	B2 in. (mm)	C1 in. (mm)	C2 in. (mm)	with ANSI-flanges			with DIN-flanges		
							ø D in. (mm)	ø K in. (mm)	ø d2×n in. (mm)	ø D in. (mm)	ø K in. (mm)	ø d2×n in. (mm)
1/2 (15)	6.7 (170)	7.87 (200)	9.37 (238)	11.73 (298)	13.9 (351)	13.4 (342)	3.5 (88.9)	2.37 (60.3)	0.63 × 4 (15.9 × 4)	3.75 (95)	2.56 (65)	0.55 × 4 (14 × 4)
3/4 (20)	6.7 (170)	7.87 (200)	9.37 (238)	11.73 (298)	14 (356)	13.6 (347)	3.9 (98.4)	2.75 (69.8)	0.63 × 4 (15.9 × 4)	4.13 (105)	2.95 (75)	0.55 × 4 (14 × 4)
1 (25)	8.9 (225)	7.87 (200)	9.37 (238)	11.73 (298)	14.2 (361)	13.8 (352)	4.3 (107.9)	3.13 (79.4)	0.63 × 4 (15.9 × 4)	4.53 (115)	3.35 (85)	0.55 × 4 (14 × 4)
1-1/4 (32)	8.9 (225)	7.87 (200)	9.96 (253)	12.32 (313)	15 (381)	14.6 (372)	4.6 (117.5)	3.50 (88.9)	0.63 × 4 (15.9 × 4)	5.51 (140)	3.94 (100)	0.71 × 4 (18 × 4)
1-1/2 (40)	8.9 (225)	7.87 (200)	9.96 (253)	12.32 (313)	15.2 (386)	14.8 (376)	5.0 (127)	3.87 (98.4)	0.63 × 4 (15.9 × 4)	5.91 (150)	4.33 (110)	0.71 × 4 (18 × 4)
2 (50)	8.9 (225)	7.87 (200)	9.96 (253)	12.32 (313)	15.7 (398)	15.3 (389)	6.0 (152.4)	4.75 (120.6)	0.75 × 4 (19 × 4)	6.50 (165)	4.92 (125)	0.71 × 4 (18 × 4)
2-1/2 (65)	11.0 (280)	7.87 (200)	10.67 (271)	13.03 (331)	16.9 (429)	16.5 (420)	7.0 (177.8)	5.50 (139.7)	0.75 × 4 (19 × 4)	7.28 (185)	5.71 (145)	0.71 × 8 (18 × 8)
3 (80)	11.0 (280)	7.87 (200)	10.67 (271)	13.03 (331)	17.2 (435)	16.7 (426)	7.5 (190.5)	6.00 (152.4)	0.75 × 4 (19 × 4)	7.87 (200)	6.30 (160)	0.71 × 8 (18 × 8)
4 (100)	11.0 (280)	9.84 (250)	10.94 (278)	13.31 (338)	18.2 (461)	17.8 (452)	9.0 (228.6)	7.50 (190.5)	0.75 × 8 (19 × 8)	8.66 (220)	7.09 (180)	0.71 × 8 (18 × 8)
5 (125)	15.8 (400)	9.84 (250)	11.73 (298)	14.09 (358)	19.4 (493)	19 (484)	10.0 (254)	8.50 (215.9)	0.85 × 8 (22.2 × 8)	9.84 (250)	8.27 (210)	0.71 × 8 (18 × 8)
6 (150)	15.8 (400)	11.81 (300)	12.20 (310)	14.57 (370)	20.4 (519)	20 (510)	11.0 (279.4)	9.50 (241.3)	0.85 × 8 (22.2 × 8)	11.22 (285)	9.45 (240)	0.87 × 8 (22 × 8)
8 (200)	15.8 (400)	13.78 (350)	13.31 (338)	15.67 (398)	22.9 (583)	21.9 (558)	13.5 (342.9)	11.75 (298.4)	0.85 × 8 (22.2 × 8)	13.39 (340)	11.61 (295)	0.87 × 12 (22 × 12)
10 (250)	19.7 (500)	17.72 (450)	14.25 (362)	16.61 (422)	26.6 (676)	26.2 (677)	16.0 (406.4)	14.25 (361.9)	1.00 × 12 (25.4 × 12)	15.55 (395)	13.78 (350)	0.87 × 12 (22 × 12)
12 (300)	19.7 (500)	19.69 (500)	16.73 (425)	19.09 (485)	28.7 (729)	28.3 (720)	19.0 (482.6)	17.00 (431.8)	1.00 × 12 (25.4 × 12)	17.52 (445)	15.75 (400)	0.87 × 12 (22 × 12)
14 (350)	19.7 (500)	21.65 (550)	17.72 (450)	20.08 (510)	30.7 (779)	30.2 (768)	21.0 (533.4)	18.75 (476.2)	1.13 × 12 (28.6 × 12)	19.88 (505)	18.11 (460)	0.87 × 16 (22 × 16)
16 (400)	23.6 (600)	23.62 (600)	18.70 (475)	21.06 (535)	33.5 (851)	33.1 (842)	23.5 (596.9)	21.25 (539.7)	1.13 × 16 (28.6 × 16)	22.24 (565)	20.28 (515)	1.02 × 16 (26 × 16)
18 (450)	23.6 (600)	—	19.69 (500)	22.05 (560)	34.9 (885)	34.4 (876)	25.0 (635.0)	22.75 (577.8)	1.25 × 16 (31.7 × 16)	24.21 (615)	22.24 (565)	1.02 × 20 (26 × 20)
20 (500)	23.6 (600)	—	20.67 (525)	23.03 (585)	38 (964)	337.6 (955)	27.5 (698.5)	25.00 (635.0)	1.25 × 20 (31.7 × 20)	26.38 (670)	24.41 (620)	1.02 × 20 (26 × 20)
22 (550)	23.6 (600)	—	21.65 (550)	24.02 (610)	39.4 (1000)	39 (991)	29.5 (749.3)	27.25 (692.1)	1.37 × 20 (34.9 × 20)	—	—	—
24 (600)	23.6 (600)	—	23.15 (588)	25.51 (648)	42 (1066)	41.6 (1057)	32.0 (812.8)	29.50 (749.3)	1.37 × 20 (34.9 × 20)	30.71 (780)	28.54 (725)	1.18 × 20 (30 × 20)
Standard												
with ANSI-flanges		1/2...24 in.		Nominal Pressure 150 psi (10 bar)								
with DIN flanges		DN 15...200		Nominal Pressure 232 psi (16 bar)								
		DN 250...600		Nominal Pressure 150 psi (10 bar)								
Standard **ISO 20456												

PART NUMBER CONSTRUCTION

If you are interested in a product configuration that is not designated for your region, please contact Badger Meter.

Detector and Amplifier Ordering Information for North America

Hard Rubber Liner

M5												
M5000	Meter Type	Detector			Electrodes & Grounding	Amplifier	Remote Cable Length	Communications/Outputs	Wiring Method	Unit of Measure Totalizer/ Flow Rate	Testing & Tagging	
		HARD RUBBER C-Steel 150# flanges	HARD RUBBER C-Steel 300# flanges	HARD RUBBER Stainless Steel 150# flanges								
		R1	R2	R4								
Meter Type- Standard LL												
1/2 in.	005	N/A	N/A	N/A								
3/4 in.	007	N/A	N/A	N/A								
1 in.	010	—	—	—								
1-1/4 in.	012	—	—	—								
1-1/2 in.	015	—	—	—								
2 in.	020	—	—	—								
2-1/2 in.	025	—	—	—								
3 in.	030	—	—	—								
4 in.	040	—	—	—								
5 in.	050	—	—	—								
6 in.	060	—	—	—								
8 in.	080	—	—	—								
10 in.	100	—	—	—								
12 in.	120	—	—	—								
14 in.	140	—	—	—								
16 in.	160	—	—	—								
18 in.	180	—	—	—								
20 in.	200	—	—	—								
22 in.	220	—	—	—								
24 in.	240	—	—	—								
36 in.	360	—	—	N/A								
Electrodes & Grounding												
Alloy C with 316 Stainless Steel Grounding Rings					A							
Stainless Steel with 316 Stainless Steel Grounding Rings					S							
Alloy C Electrode and Grounding Electrode					C							
Stainless Steel Electrode and Grounding Electrode					D							
Amplifier Type												
Battery Powered; Meter Mounted					H							
Battery Powered; Remote Mounted					J							
Battery Powered; Remote Mounted; Submersible					K							
Battery Powered; Remote Mounted; Submersible (IP68)					L							
Remote Cable Length												
None						WW						
5 ft. Standard Cable						AA						
10 ft. Standard Cable						AB						
15 ft. Standard Cable						AC						
30 ft. Standard Cable						AF						
50 ft. Standard Cable						AK						
75 ft. Standard Cable						AR						
100 ft. Standard Cable						BW						
Communications/Outputs												
Standard Output							S					
Standard Output with MODBUS 485 RTU							M					
Wiring Method												
None								XX				
Twist Tight - 5 ft. (MTR, ASSY)								TF				
Twist Tight - 10 ft. (MTR, ASSY)								TH				
Twist Tight - 25 ft. (MTR, ASSY)								TJ				
Twist Tight - 75 ft. (MTR, ASSY)								TK				
Nicol - 6 ft. (MTR, ASSY)								NG				
Nicol - 25 ft. (MTR, ASSY)								NJ				
Itron - 5 ft. (MTR, ASSY)								CF				
Itron - 25 ft. (MTR, ASSY)								CJ				
Unit of Measure Totalizer/ Flow Rate												
Gallons/gallons per minute									G			
Gallons/cubic feet per minute									B			
Gallons/cubic meters per second									D			
Cubic Meters/gallons per minute									C			
Cubic Meters/cubic meters per second									E			
Cubic Meters/cubic meters per minute									T			
Cubic Meters/cubic meters per hour									H			
Cubic Feet/gallons per minute									F			
Cubic Feet/cubic feet per minute									J			
Cubic Feet/cubic meters per hour									K			
Liters/gallons per minute									L			
Liters/liters per second									N			
Liters/liters per minute									P			
Liters/liters per hour									Q			
Million Gallons/gallons per minute									M			
Gallons/millions gallons per day									R			
Acre Feet/gallons per minute									A			
Second-Foot Day/cubic feet per second									S			
Custom Units									Z			
Testing & Tagging												
Factory Calibrated										F		
3rd Party Calibrated										3		
Factory Calibrated/Stainless Steel Tag										S		
3rd Party Calibrated w/ Stainless Steel Tag										T		
State of Kansas Certified										K		

Detector and Amplifier Ordering Information for North America

PTFE Liner

M5											
M5000	Meter Type	Detector			Electrodes & Grounding	Amplifier	Remote cable	Communications/Outputs	Wiring Method	Unit of Measure Totalizer/Flow Rate	Testing & Tagging
		PTFE C-Steel 150# flanges	PTFE C-Steel 300# flanges	PTFE Stainless Steel 150# flanges							
Meter Type- Standard LL	P1	P2	P4								
1/2 in.	005	—	—	—							
3/4 in.	007	—	—	—							
1 in.	010	—	—	—							
1-1/4 in.	012	—	—	—							
1-1/2 in.	015	—	—	—							
2 in.	020	—	—	—							
2-1/2 in.	025	—	—	—							
3 in.	030	—	—	—							
4 in.	040	—	—	—							
5 in.	050	—	—	—							
6 in.	060	—	—	—							
8 in.	080	—	—	—							
10 in.	100	—	—	—							
12 in.	120	—	—	—							
14 in.	140	—	—	—							
16 in.	160	—	—	—							
18 in.	180	—	—	—							
20 in.	200	—	—	—							
22 in.	220	—	—	—							
24 in.	240	—	—	—							
Electrodes & Grounding											
Alloy C with 316 Stainless Steel Grounding Rings					A						
Stainless Steel with 316 Stainless Steel Grounding Rings					S						
Alloy C Electrode and Grounding Electrode					C						
Stainless Steel Electrode and Grounding Electrode					D						
Amplifier Type											
Battery Powered; Meter Mounted						H					
Battery Powered; Remote Mounted						J					
Battery Powered; Remote Mounted; Submersible						K					
Battery Powered; Remote Mounted; Submersible (IP68)						L					
Remote Cable Length											
None						WW					
5 ft. Standard Cable						AA					
10 ft. Standard Cable						AB					
15 ft. Standard Cable						AC					
30 ft. Standard Cable						AF					
50 ft. Standard Cable						AK					
75 ft. Standard Cable						AR					
100 ft. Standard Cable						BW					
Communications/Outputs											
Standard Output							S				
Standard Output with MODBUS 485 RTU							M				
Wiring Method											
None								XX			
Twist Tight - 5 ft. (MTR, ASSY)								TF			
Twist Tight - 10 ft. (MTR, ASSY)								TH			
Twist Tight - 25 ft. (MTR, ASSY)								TJ			
Twist Tight - 75 ft. (MTR, ASSY)								TK			
Nicor - 6 ft. (MTR, ASSY)								NG			
Nicor - 25 ft. (MTR, ASSY)								NJ			
Itron - 5 ft. (MTR, ASSY)								CF			
Itron - 25 ft. (MTR, ASSY)								CJ			
Unit of Measure Totalizer/ Flow Rate											
Gallons/gallons per minute									G		
Gallons/cubic feet per minute									B		
Gallons/cubic meters per second									D		
Cubic Meters/gallons per minute									C		
Cubic Meters/cubic meters per second									E		
Cubic Meters/cubic meters per minute									T		
Cubic Meters/cubic meters per hour									H		
Cubic Feet/gallons per minute									F		
Cubic Feet/cubic feet per minute									J		
Cubic Feet/cubic meters per hour									K		
Liters/gallons per minute									L		
Liters/liters per second									N		
Liters/liters per minute									P		
Liters/liters per hour									Q		
Million Gallons/gallons per minute									M		
Gallons/millions gallons per day									R		
Acre Feet/gallons per minute									A		
Second-Foot Day/cubic feet per second									S		
Custom Units									Z		
Testing & Tagging											
Factory Calibrated										F	
3rd Party Calibrated										3	
Factory Calibrated/Stainless Steel Tag										S	
3rd Party Calibrated w/ Stainless Steel Tag										T	
State of Kansas Certified										K	

Detector Ordering Information International

	MID	□ - □ / □ - □ / □ - □ - □ / □ - □
Model	MID electromagnetic flow meter	MID
Type	Type 6	6
Size	DN 15 to 600	
Pressure rate		
Process connection	DIN flanges	F
	ANSI flanges	A
Process Connection Material	C-steel	ST
	SST 1.4301 (ANSI 304)	V2
	SST 1.4404 (ANSI 316)	V4
Liner	PTFE	PT
	Hard rubber	HG
	Soft rubber	WG
	Halar	HA
Electrodes	Measure + empty pipe electrode	ML
	Measure + grounding + empty pipe electrode	MEL
Electrode material	Hastelloy C	HC
	Tantalum	TA
	Platinum/gold plated	PG
	Platinum/Rhodium	PR
Housing	C-steel	St
	SST 1.4301 (ANSI 304)	V2
	SST 1.4404 (ANSI 306)	V4

Amplifier Ordering Information International

				m
Amplifier	M5000 (battery-operated/no battery pack)	M50B0		
	M5000 (battery-operated/1 battery pack)	M50B1		
	M5000 (battery-operated/2 battery packs)	M50B2		
	Line powered (battery back-up/100...240V AC)	M50AB		
	Line Powered (battery back-up/9...36V DC)	M50DB		
Mounted/remote/cable length	Amplifier detector mounted	M		
	Remote version cable length	R		
Remote amplifier with cable length	Remote amplifier with 10 m cable length			10
	Remote amplifier with 15 m cable length			15
	Remote amplifier with 20 m cable length			20
	Remote amplifier with 25 m cable length			25
	Remote amplifier with 30 m cable length			30

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