



Ultra Mag® Sensor

ProComm Converter



Ultra Mag flow meters are manufactured to the highest standard available for mag meters.

The flanged end tube design permits use in a wide range of applications with up to 150 PSI working pressure.

The fabricated tube is stainless steel with steel or stainless steel flanges and is lined with UltraLiner™, an NSF approved, fusion bonded epoxy material.

Performance Advantages

- Flanged models need only 1 pipe diameter upstream of most flow disturbers
- No obstruction to the flow
- No moving parts to wear or break
- Maintenance free
- Accuracy +/- 0.5%
- Debris or solids will not clog the meter
- No head loss
- Bi-directional flow
- Empty pipe detection
- Unaffected by changes in density and viscosity
- No risk of liner delamination or separation
- Wide flow range
- Separated power and signal cables

Installation

Ultra Mag flow meter installation is similar to placing a short length of flanged end pipe in the line. The meter can be installed vertically, horizontally, or inclined on suction or discharge lines. The meter must have a full pipe of liquid for proper operation. Fluid must be grounded to both flanges of the sensor using McCrometer 316 SS grounding rings.

AVAILABLE ULTRA MAG END CONNECTIONS

UM-06

150 lb Flanges

- 4" - 48": Steel AWWA class "D" flat face flanges (150 psi)

Choice of Non Flanged Options

- 2" & 3": Steel wafer style
- Includes spool kit:
 - Steel AWWA CL D flat face flanges (150 psi)
 - Steel ANSI 150 lb RF flanges

TYPICAL APPLICATIONS

Industrial

- Raw Water
- Chilled Water
- Cooling Water
- Process Control
- Effluent Wastewater

Clean Water

- Well Water
- Potable Water
- Pump Stations
- Rate-of-Flow Control
- Raw Water Transmission

Wastewater

- Influent
- Effluent
- Reclaimed
- Lift Stations
- Waste Activated Sludge
- Return Activated Sludge

The meter needs to be located a minimum distance before and after flow disturbances, such as elbows, pumps, partially opened valves, and changes in pipe diameter. The uneven flow created by these obstructions can vary with each system.



The minimum distance is measured in pipe diameters (D). To ensure accuracy locate the sensor upstream and downstream of flow disturbances as follows:

2" & 3" Wafer style meters	3D upstream / 1D downstream
4" - 48" Steel flanged meters	1D upstream / 0D downstream

All blending and chemical injection should be done early enough so the flow media is thoroughly mixed prior to entering the measurement area.

ProComm Converter

The signal converter is the reporting, input and output control device for the sensor. The converter allows the measurements, functional programming, control of the sensor and data recording to be communicated through the display and inputs/outputs.

The microprocessor-based signal converter has a curve-fitting algorithm to improve accuracy, dual 4-20mA analog outputs, an optional RS485 communication port, an 8 line graphical backlit LCD display with 6-key touch programming, and a rugged enclosure that meets IP67.

In addition to a menu-driven self-diagnostic test mode, the converter continually monitors the microprocessor's functionality. The converter will output rate of flow and total volume. The converter also comes standard with password protection and many more features.

Isolated Power and Signal

The power and signal between the converter and sensor are isolated and placed in separate cables giving superior resistance to electrical signal noise compared to single cable designs. An added benefit from the dual cable design is a maximum cable length of up to 500ft.



Ultra Mag with ProComm Converter Part Number Matrix

UM		1	S	R	050	A	1	-	-	-	-	-
Nominal Line Size												
2 in	02											
3 in	03											
4 in	04											
6 in	06											
8 in	08											
10 in	10											
12 in	12											
14 in	14											
16 in	16											
18 in	18											
20 in	20											
24 in	24											
30 in	30											
36 in	36											
42 in	42											
48 in	48											
End Connection Options												
	AWWA Class D (150 psi Rating) (Standard)	1										
	ANSI Class 150# (285 psi Rating)	2										
	ANSI Class 300# (300 psi Rating)	3										
	AWWA Class F (300 psi Rating)	4										
	Wafer Style (2 & 3" Only)	N										
Electrode Material Options												
	S316 Stainless Steel (Standard)	S										
	Hastelloy	H										
Converter Mounting and Cable Connector Options												
	Meter Mount Converter	M										
	Strain Relief [Remote Mount] (Standard)	R										
	Quick Connect [Remote Mount]	Q										
	Strain Relief [Remote Mount Potted J Box]	P										
	Quick Connect [Remote Mount Potted J Box]	C										
Remote Cable Length Options												
	Meter Mount Converter [No remote Cable]	000										
	25 feet (Standard)	025										
	50 feet	050										
	75 feet	075										
	100 feet	100										
	125 feet	125										
	150 feet	150										
	175 feet	175										
	200 feet	200										
	500 feet	500										



Ultra Mag with ProComm Converter Part Number Matrix (cont.)

UM	-	1	S	R	050	A	1	-	---	-	---	-	---	-	---	-	---
Converter Power Options																	
A/C Power A																	
DC Power D																	
Converter Output Options																	
Dual 4-20mA Analog, Dual Digital (Standard) 1																	
Modbus + STD (Two 4-20, two Dig) 2																	
Hart + STD (Two 4-20, two Dig) 3																	
Datalogger/BIV + STD (Two 4-20, two Dig) 4																	
Datalogger/BIV + Modbus + STD (Two 4-20, two Dig) 5																	
Datalogger/BIV + Hart + STD (Two 4-20, two Dig) 6																	
AMI Smart Output + STD (Two 4-20, two Dig) 7																	
Datalogger/BIV + AMI Smart Output + STD (Two 4-20, two Dig) 8																	
Smart Output Protocol Options (*7 or 8 output option required)																	
No AMI Outputs -																	
Sensus Protocol (6ft cable, Nicor Connector hardwired only) SEN																	
Itron 6 digit Protocol (6ft cable, Nicor Connector hardwired only) IT6																	
Itron 9 digit [100W] Protocol (6ft cable, Nicor Connector hardwired only) IT9																	
Neptune Protocol (6ft cable, Nicor Connector hardwired only) NEP																	
Battery Power/ ATT wireless Telemetry System (RTU, Solar Panel, 7 Pin Cable) ATT																	
Battery Power/ Verizon wireless Telemetry System (RTU, Solar Panel, 7 Pin Cable) VZW																	
Non Standard Length Options																	
McCrometer Length (Standard) -																	
Competitor Replacement Length LS																	
Competitor Replacement Length LP																	
Special Length [Customer Specified] L(XX)																	
High Accuracy Calibration Option																	
Standard Accuracy 0.5% Calibration -																	
High Accuracy 0.2% calibration HA																	
Color Options																	
McCrometer Green (Standard) -																	
Sky Blue SB																	
Dark Blue DB																	
Lavender LV																	
White WH																	
Hazardous Area Location																	
Class 1, Division 2, Groups A-D, T5 HL																	

FLOW METER SPECIFICATIONS

Pipe Sizes

2", 3", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24", 30", 36", 42", 48"

Flow Direction Measurement

Forward and reverse flow indication and forward, reverse, net totalization are standard with all meters

Accuracy



- **Standard: +/- 0.5% of measured value ± 0.006 ft/s (± 0.0018 m/s)**
- Optional: +/- 0.2% of measured value ± 0.006 ft/s (± 0.0018 m/s)
- Battery powered: 1% of measured value ± 0.006 ft/s (± 0.0018 m/s)

IMPORTANT NOTICE ON FLOW METER ACCURACY: The flow meter, the cable and the electronics are factory calibrated for accuracy as a single unit. Changing the cable length with the Splice Kit changes the accuracy of the meter and invalidates the calibration certificate.

Accuracy Tests

Multiple point wet flow calibration of every complete flow tube with its signal converter. If desired, the tests can be witnessed by the customer. The McCrometer test facilities are traceable to the National Institute of Standards & Technology. Uncertainty relative to flow is $\pm 0.15\%$.

Pipe Run Requirements

2" & 3" wafer style

3D upstream / 1D downstream

4" and larger flanged

1D upstream / 0D downstream

Repeatability

$\pm 0.05\%$ or ± 0.0008 ft/s (± 0.25 mm/s), whichever is greater

Conductivity

5 μ s/cm

Liner

UltraLiner NSF approved, fusion bonded epoxy

Electrodes

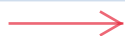
Type 316 stainless steel, others optional

Electrical Connections



- Compression gland seals
- Quick-Connect

Sensor Cable Lengths



Standard

50' McCrometer supplied submersible cable with each remote mount unit.

Optional

Up to 500'/152.4 m, or 25'/7.6 m max for battery powered.

Quick Connect

Available in standard cable lengths:
 Feet: 25, 50, 75, 100, 125, 150, 175, 200, 500
 Meters: 7.6, 15.25, 22.5, 30.5, 38.1, 45.75, 53.3, 61, 152.4
 Custom cable lengths at additional cost.



FLOW METER SPECIFICATIONS (CONT.)

IP Rating

→ Standard model	<ul style="list-style-type: none"> Quick Connect (NEMA 6P/IP68 with remote converter) Compression gland seals (NEMA 6P/IP68 with remote converter)
HL model	<ul style="list-style-type: none"> Quick Connect (IP67) Compression gland seals (IP67)

Sensor Submersibility Depth

→ With standard strain relief cable	9 m (30 ft.)
With optional quick connect cable	1.8 m (6 ft.)

Head Loss

None. No obstruction in line and no moving parts

Warranty

Meter	2 year warranty
Liner	Lifetime guarantee

Pressure Range

→	AWWA Class D (150 psi Rating) (Standard) ANSI Class 150# (285 psi Rating) ANSI Class 300# (300 psi Rating) AWWA Class F (300 psi Rating)
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Velocity Range

.2 to 32 FPS

Temperature Range

Sensor Operating: -10 to 60°C (14 to 140°F)
Sensor Storage: -15 to 60°C (5 to 140°F)

Certifications and Approvals

→ Standard Model	<ul style="list-style-type: none"> ISO 9001:2015 certified quality management system Certified by MET to UL 61010-1 / CSA C22.2 No. 61010-1 Certified to NSF / ANSI Standards* 	  
HL Model	<ul style="list-style-type: none"> ISO 9001:2015 certified quality management system Certified by MET: Safety: UL61010-1 / CSA C22.2 No. 61010-1, Third Edition: Safety of Electrical Equipment For Measurement, Control, and Laboratory Use Certified by MET: Standards: ANSI / ISA12.12.01 / CSA C22.2 No. 213, Nonincendive Electrical Equipment <ul style="list-style-type: none"> Class I and II, Division 2 Class III, Divisions 1 and 2 Hazardous (Classified) Locations Certified to NSF / ANSI Standards* 	

Available System Options

- Hastelloy® electrodes
- Additional sensor cable up to 475'
- Annual verification / calibration
- Stainless steel ID tag

* Ultra Mag is certified by IAPMO R&T to NSF/ANSI 61 for material safety and NSF/ANSI 372 for low lead content.



FLOW METER SPECIFICATIONS (CONT.)

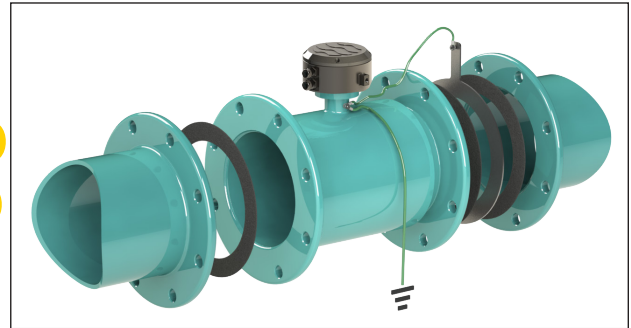
Available Meter Options

- | | |
|--|---|
| <ul style="list-style-type: none">• DC powered converter (10-35 VDC, 21 W)• Meter mounted converter• Extended warranty• Hastelloy® electrodes• ANSI or DIN flanges• Special lay lengths, including ISO standard lay lengths | <ul style="list-style-type: none">• Quick Connect cable fittings• Converter sun shield• HART® Converter• Smart Output™ (Sensus or Itron compatible)• Battery or battery-solar powered converter |
|--|---|

METER GROUNDING RECOMMENDATIONS

Grounding the meter body for safety according to national (NEC) or local electrical codes is recommended on ALL meter installations.

Grounding the fluid column is always recommended. Grounding rings should be installed to establish a connection to earth ground. See the Ultra Mag IOM Manual, Lit. # 30119-03, for more information on grounding configurations using grounding rods and grounding rings.



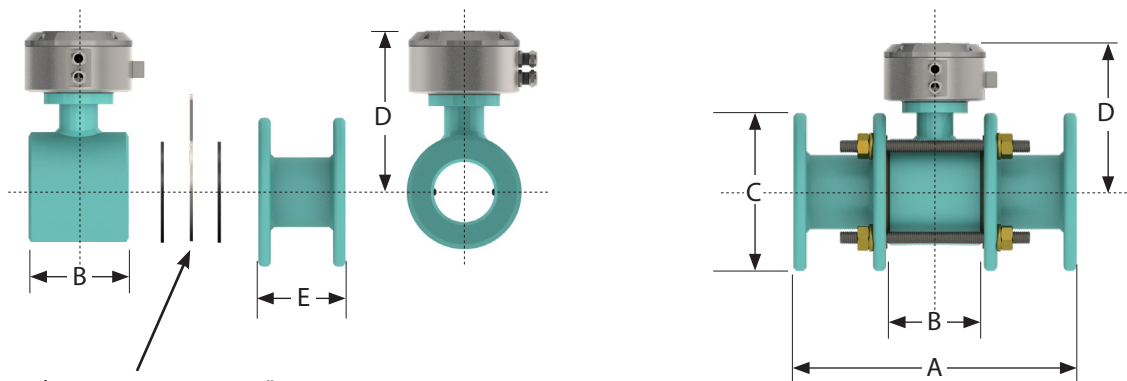
DIMENSIONS AND WEIGHTS

2" and 3" Models Body Style

Use model shown below for dimensions.

Meter Type	Pipe Size (Nominal)	Meter Pipe ID	Flow Ranges GPM Standard .2 to 32 FPS Min - Max	DIMENSIONS (Lay Lengths)								Est. Shipping Weight (lbs.)*		
				A		B	C		D		E		CL150 AWWA Class D	CL300 ANSI #300
				CL150 AWWA Class D	CL300 ANSI #300		CL150 AWWA Class D	CL300 ANSI #300	CL150 AWWA Class D	CL300 ANSI #300	CL150 AWWA Class D	CL300 ANSI #300		
Wafer style	2"	1.625	2 - 310	11	14	4.5	6.0	6.5	6.5	7.25	3.15	4.69	9.6	10.1
	3"	2.625	5 - 700	13.4	15.5	4.5	7.5	8.25	7.0	7.75	4.35	5.44	11.3	11.8

* For remote mount meters, add 4 lbs for ProComm converter.



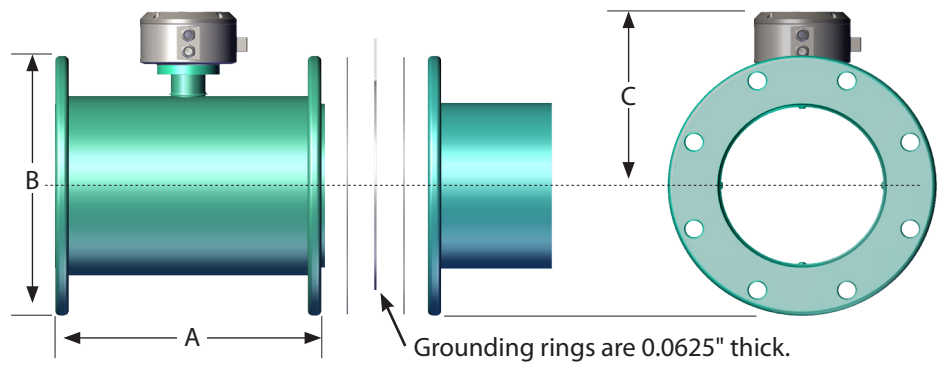
Grounding rings are 0.0625" (1.5875 mm) thick.

DIMENSIONS AND WEIGHTS (CONT.)

4" to 12" Models Body Style

Pipe Size (Nominal)	Meter Pipe ID		Flow Ranges GPM Standard .2 to 32 FPS Min - Max	DIMENSIONS (Lay Lengths)					Est. Shipping Weight (lbs.)*	
	CL150 AWWA Class D	CL300 ANSI #300		A		B		C	CL150 AWWA Class D	CL300 ANSI #300
				CL150 AWWA Class D	CL300 ANSI #300	CL150 AWWA Class D	CL300 ANSI #300			
4"	3.834	3.76	8 - 1,140	13.40	13.40	9.00	10.00	7.28	78	108
6"	5.782	5.732	19 - 2,660	14.60	14.60	11.00	12.50	8.25	82	138
8"	7.782	7.732	33 - 4,870	16.10	17.25	13.50	15.00	9.25	115	195
10"	9.782	9.732	52 - 7,670	18.50	18.50	16.00	17.50	10.5	144	247
12"	11.782	11.732	74 - 11,180	19.70	19.70	19.00	20.50	11.5	193	342

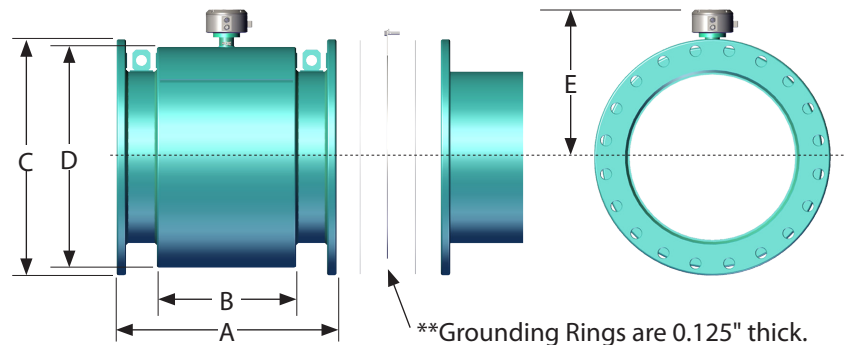
* For remote mount meters, add 4 lbs for ProComm converter.



14+\" Models Body Style

Pipe Size (Nominal)	Meter Pipe ID	Flow Ranges GPM Standard .2 to 32 FPS Min - Max	DIMENSIONS (Lay Lengths)						Est. Shipping Weight (lbs.)*		
			CL150 AWWA Class D	CL300 ANSI #300	B	C		D	E	CL150 AWWA Class D	CL300 ANSI #300
						CL150 AWWA Class D	CL300 ANSI #300				
14"	13.63	90 - 16,070	21.70	22.75	11.875	21.00	23.00	20.135	14.56	321	476
16"	15.50	118 - 20,900	23.60	25.25	14.25	23.50	25.50	21.635	15.32	390	645
18"	17.50	150 - 26,480	23.60	25.25	14.25	25.00	28.00	23.635	16.32	446	750
20"	19.50	185 - 32,720	25.60	28.25	16.06	27.50	30.50	25.6975	17.35	588	874
24"	23.50	270 - 47,180	30.70	35.75	21.75	32.00	36.00	29.51	19.25	769	1,568
30"	29.25	420 - 73,620	35.80	41.75	25.25	38.75	43.00	35.6975	22.35	1,261	2,317
36"	35.25	610 - 105,930	46.10	46.10	28.63	46.00	50.00	42.76	25.88	1,696	2,915
42"	41.25	830 - 144,370	48.05	***	36.25	52.75	***	48.135	28.57	***	***
48"	47.25	1,080 - 188,430	50.00	***	36.25	59.50	***	54.135	31.57	***	***

* For remote mount meters, add 4 lbs for ProComm converter.



PROCOMM CONVERTER SPECIFICATIONS

Physical Specifications

Electronic Housing	Diecast aluminum, powder coated enclosure w/ tamper resistant seal	
Converter Dimensions	Remote Mount:	Height: 7.3" (18.5 cm) Width: 8.5" (21.6 cm) Depth: 4.3" (10.9 cm)
	Meter Mount:	Height: 6.9" (17.5 cm) Width: 7.2" (18.25 cm) Depth: 6.2" (15.7 cm)
Power	AC Power:	100-240 VAC / 45-66 Hz (10 W)
	DC Power:	12-48 VDC (10 W)
Connection Options	<ul style="list-style-type: none"> • Compression gland seals for 0.24" to 0.47" diameter round cable • Conduit option: 1/2" NPT threaded connections 	
Galvanic Isolation	All inputs / outputs are galvanically isolated from power supply up to 500 V	
Conductivity	Minimum conductivity of 5µS/cm	

Note: AC or DC must be specified at time of ordering.

Performance and Operational Specifications

Accuracy	<ul style="list-style-type: none"> • ±0.5% from 1 f/s to max velocity, up to ±1% for 0.3 to 1 f/s • ±1% for reverse flow 		
Location	Indoor or outdoor use		
Operating and Storage Temperature	-4° to 140° F (-20° to 60° C)		
IP Rating	IP67 Die cast aluminum converter (only when connected using compression gland seals)		
Standard Outputs	Dual 4-20mA Outputs: Galvanically isolated and fully programmable for zero and full scale (0-21mA rangeability)		
	Two separate digital programmable outputs: open collector transistor usable for pulse, frequency, or alarm settings.		
Optional Outputs	<ul style="list-style-type: none"> • Volumetric Pulse • Flow Rate (Frequency) • Hardware Alarm • High/Low Flow Alarms • Empty Pipe • Directional Indication 	<ul style="list-style-type: none"> • Range Indication • Maximum switching voltage: 40 VDC • Maximum switching current: 100mA 	<ul style="list-style-type: none"> • Maximum switching frequency: 1250 Hz • Insulation from other secondary circuits: 500V
	<ul style="list-style-type: none"> • Modbus • HART 	<ul style="list-style-type: none"> • Smart Output™ (Sensus, Itron 6, Itron 9) 	<ul style="list-style-type: none"> • Datalogger • Built-in verification

Display and Measurement

Keyboard and Display	Can be used to access and change set-up parameters using six membrane keys and an LCD display		
Engineering Units	<ul style="list-style-type: none"> • Cubic Meter • Cubic Centimeter • Milliliter • Liter • Cubic Decimeter • Decaliter • Hectoliter • Cubic Inches 	<ul style="list-style-type: none"> • US Gallons • Imperial Gallons • Cubic Feet • Kilo Cubic Feet • Standard Barrel • Oil Barrel • US Kilogallon • Ten Thousands of Gallons 	<ul style="list-style-type: none"> • Imperial Kilogallon • Acre Feet • Megagallon • Imperial Megagallon • Hundred Cubic Feet • Megaliters

PROCOMM CONVERTER SPECIFICATIONS (CONT.)

Other Specifications

Standard Model

- ISO 9001:2015 certified quality management system
- Certified by MET to UL 61010-1 / CSA C22.2 No. 61010-1
- Certified to NSF / ANSI Standards*

HL Model

- ISO 9001:2015 certified quality management system
- Certified by MET: Safety: UL61010-1 / CSA C22.2 No. 61010-1, Third Edition: Safety of Electrical Equipment For Measurement, Control, and Laboratory Use
- Certified by MET: Standards: ANSI / ISA12.12.01 / CSA C22.2 No. 213, Nonincendive Electrical Equipment
 - Class I and II, Division 2
 - Class III, Divisions 1 and 2 Hazardous (Classified) Locations
- Certified to NSF / ANSI Standards*



IMPORTANT

Electrical safety certifications above do not apply to model 282L Single Point Insertion (SPI Mag) Electromagnetic Flow Meter.



IMPORTANT

Refer to certification requirements. Do not substitute components.



IMPORTANT

The ProComm converter, models PC-RA1-HL series and PC-MA1-HL series have no user serviceable parts.

PROCOMM CONVERTER REMOTE MOUNT DIMENSIONS

Height 7.3" (18.5 cm)
Width 8.5" (21.6 cm)
Depth 4.3" (10.9 cm)

