Ultra Mag models UM06 and UM08 flanged tube 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 300 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.

**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 the downstream flange of the sensor either via internal grounding electrodes (4 - 12”) or using McCrometer 316 SS grounding rings.

For best performance, grounding rings are recommended for all sizes. Any 90 or 45 degree elbows, valves, partially opened valves, etc. should not be placed closer than one pipe diameters upstream and zero pipe diameters 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.

**AVAILABLE ULTRA MAG FLANGED MODELS**

- **UM06**
  - Steel AWWA Class “D” flat face flanges (150 PSI)
- **UM08 2", 3", AND ≥14”**
  - Steel AWWA Class “F” raised face flanges (300 PSI)
- **UM08 4”TO 12”**
  - Steel ANSI 300 lb. Raised Face Flanges

**PERFORMANCE ADVANTAGES**

- Needs only 1 pipe diameter upstream of most flow disturbers
- No obstruction to the flow
- No moving parts to wear or break
- Maintenance free
- Worry-free accurate measurement
- 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

**TYPICAL APPLICATIONS**

- **Industrial**
  - Raw Water: Process Control
  - Chilled Water: Effluent Wastewater
  - Cooling Water

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

- **Wastewater**
  - Influent: Waste Activated
  - Effluent: Sludge
  - Reclaimed: Return Activated
  - Lift Stations: Sludge
## Ultra Mag Part Number Matrix

### NOMINAL LINE SIZE

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<th>UM</th>
<th>2 in</th>
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</table>

### END CONNECTION OPTIONS

- AWWA Flat Face Flanges (Class D or F) W
- ANSI Raised Face Flanges (150# or 300#) A

### ELECTRODE MATERIAL OPTIONS

- S316 Stainless Steel (Standard) S
- Hastelloy H

### CONVERTER MOUNTING AND CABLE CONNECTOR OPTIONS

- Strain Relief (Remote Mount Standard) R
- Quick Connect (Remote Mount) Q
- Meter Mount Converter M

### REMOTE CABLE LENGTH OPTIONS

<table>
<thead>
<tr>
<th>Cable Length</th>
<th>25 ft</th>
<th>50 ft</th>
<th>75 ft</th>
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</tbody>
</table>

- Custom Length Cable [User Specified] CST
- Meter Mount Converter [No Remote Cable] 000

### CONVERTER POWER OPTIONS

- AC Power A
- DC Power D
- Battery Power (25ft remote cable max) B

### 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
- AMI Smart Output + Dig Out + Datalogger (Battery power only) 9
- Digital Out + Datalogger (Standard Battery Power only) 0

### SMART OUTPUT PROTOCOL OPTIONS (*7 OR 8 OUTPUT OPTION REQUIRED)

- Sensus Protocol (6ft cable, Nicor Connector hardwired only) SEN
- Itron 6 digit Protocol (6ft cable, Nicor Connector hardwired only) ITR6
- Itron 9 digit Protocol (6ft cable, Nicor Connector hardwired only) ITR9

### NON STANDARD LENGTH OPTIONS

- McCrometer Length (Standard) --
- Competitor Meter Replacement Length 5
- Special Length [Customer Specified] X

---

McCROMETER

---

30107-09 Rev. 5.0 | 30AUG2019
## Flow Meter Specifications

### Pipe Sizes

<table>
<thead>
<tr>
<th>Diameter (inches)</th>
<th>Size</th>
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</thead>
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<td>2</td>
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<td>36</td>
<td>42</td>
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</tbody>
</table>

### Flow Direction Measurement

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

### Accuracy

- Plus or minus 0.5% of actual flow (battery powered is ±1% of flow)

**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

- 5-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 ±0.15%

### Repeatability

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

### Conductivity

- 5 µs/cm

### Liner

- UltraLiner NSF approved, fusion bonded epoxy

### Electrodes

- Type 316 stainless steel, others optional

### Electrical Connections

- Compression gland seals
- Quick-Connect

### IP Rating

- **Standard model**
  - Quick Connect (NEMA 6P/IP68 with remote converter)
  - Compression gland seals (NEMA 6P/IP68 with remote converter)

- **HL model**
  - 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.)

---

**McCrometer**

Page 3
### Head Loss
None. No obstruction in line and no moving parts

### Warranty
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Meter</td>
<td>2 year warranty</td>
</tr>
<tr>
<td>Liner</td>
<td>Lifetime guarantee</td>
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</tbody>
</table>

### Pressure Range
150 PSI maximum working pressure (UM06); 300 PSI maximum working pressure (UM08)

### 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
<table>
<thead>
<tr>
<th>Standard Model</th>
<th>HL Model</th>
</tr>
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<tbody>
<tr>
<td>• ISO 9001:2015 certified quality management system</td>
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</tr>
<tr>
<td>• Certified by MET to UL 61010-1</td>
<td>• Certified by MET to UL 61010-1 and MET C22.2 No. 61010-1-04</td>
</tr>
<tr>
<td></td>
<td>• Class I, Division 2, Groups A-D, T5</td>
</tr>
<tr>
<td></td>
<td>• Class I, Zone 2, IIC T5</td>
</tr>
</tbody>
</table>

### System Options
- Hastelloy® electrodes
- Additional sensor cable up to 475’
- Annual verification / calibration
- Stainless steel ID tag

### Meter Options
- DC powered converter (10-35 VDC, 21 W)
- Meter mounted converter
- Extended warranty
- Hastelloy® electrodes
- ANSI or DIN flanges
- Quick Connect cable fittings
- Special lay lengths, including ISO standard lay lengths
- Converter sun shield
- HART® Converter
- Smart Output™ (Sensus or Itron compatible)
- Battery or battery-solar powered converter (Not MET approved, ±1% accuracy)
### FLOW METER PIPE SIZES AND FLOW RANGES

<table>
<thead>
<tr>
<th>Pipe Size (Nominal)</th>
<th>Meter Pipe ID</th>
<th>Flow Ranges GPM Standard</th>
<th>Flow Ranges Min - Max</th>
<th>DIMENSIONS (Lay Lengths)</th>
<th>Estimated Shipping Weight (lbs.)</th>
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* Laying lengths for meters with ANSI Class 150 Flanges are equal to UM08 laying lengths
** Consult factory

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**2" and 3" Models Body Style**

**4" to 12" Models Body Style**

**14+" Models Body Style**

Grounding Rings are 0.125" thick.
### PROCOMM CONVERTER PART NUMBER MATRIX

<table>
<thead>
<tr>
<th>PC</th>
<th>M</th>
<th>R</th>
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</table>

#### CONVERTER MOUNTING OPTIONS

- **Meter Mount**
- **Remote Mount**

#### CONVERTER POWER OPTIONS

- **AC Power**
- **DC Power**
- **Battery Power [25ft remote cable max]**
- **Solar Power, Battery Backup [25ft remote cable max]**

#### CONVERTER OUTPUT OPTIONS

- **Dual 4-20mA Analog, Dual Digital (Standard)**
- **Modbus + STD (Two 4-20, two Dig)**
- **Hart + STD (Two 4-20, two Dig)**
- **Datalogger/BIV + STD (Two 4-20, two Dig)**
- **Datalogger/BIV + Modbus + STD (Two 4-20, two Dig)**
- **Datalogger/BIV + Hart + STD (Two 4-20, two Dig)**
- **Datalogger/BIV + AMI Smart Output + STD (Two 4-20, two Dig)**
- **AMI Smart Output + Dig Out + Datalogger (Battery power only)**
- **Digital Out + Datalogger (Standard Battery Power only)**

#### SMART OUTPUT PROTOCOL OPTIONS *

- **No AMI Outputs**
- **Sensus Protocol (6ft cable, Nicor Connector hardwired only)**
- **Itron 6 digit Protocol (6ft cable, Nicor Connector hardwired only)**
- **Itron 9 digit Protocol (6ft cable, Nicor Connector hardwired only)**

#### HAZARDOUS LOCATION

- **Class I, Division 2, Groups A-D, T5**

*Smart Output protocol options require selection of converter output option 7, 8, or 9.*
## PROCOMM CONVERTER SPECIFICATIONS

### Power Source

<table>
<thead>
<tr>
<th>Power Source</th>
<th>AC</th>
<th>DC</th>
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<tr>
<td>100-240 VAC / 45-66 Hz (10 W)</td>
<td>10-35 VDC (10 W)</td>
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Note: AC or DC must be specified at time of ordering.

### Standard Outputs

- **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.

  - Volumetric Pulse
  - Flow Rate (Frequency)
  - Hardware Alarm
  - High/Low Flow Alarms
  - Empty Pipe
  - Directional Indication

  - Range Indication
  - Maximum switching voltage: 40 VDC
  - Maximum switching current: 100 mA

  - Maximum switching frequency: 1250 Hz
  - Insulation from other secondary circuits: 500 V

### Optional Outputs

- Modbus
- HART

- Smart Output™ (Sensus, Itron 6, Itron 9)

- Datalogger

- Built-in verification

### Galvanic Isolation

All inputs / outputs are galvanically isolated from power supply up to 500 V

### Engineering Units

- Cubic Meter
- Cubic Centimeter
- Milliliter
- Liter
- Cubic Decimeter
- Deciliter
- Hectoliter
- Cubic Inches

- US Gallons
- Imperial Gallons
- Cubic Feet
- Kilo Cubic Feet
- Standard Barrel
- Oil Barrel
- US Kilogallon
- Ten Thousands of Gallons

- Imperial Kilogallon
- Acre Feet
- Megagallon
- Imperial Megagallon
- Hundred Cubic Feet
- Megaliters

### Conductivity

Minimum conductivity of 5µS/cm

### Electrical Connections

- Compression gland seals for 0.24” to 0.47” diameter round cable
- Conduit option: 1/2” NPT threaded connections

### Sensor Cable Lengths

- **Standard**: 25’ McCrometer supplied submersible cable with each remote mount unit.
- **Optional**: Up to 500 feet, or 25 feet max for battery powered.

### IP Rating

IP67 Die cast aluminum converter (only when connected using compression gland seals)

* Not available with SPI Mag
### Certifications and Approvals

<table>
<thead>
<tr>
<th></th>
<th>Standard Model</th>
<th>HL Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• ISO 9001:2015 certified quality management system</td>
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<td>• CE</td>
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<td>• Certified by MET to UL 61010-1</td>
<td>• Certified by MET to UL 61010-1 and MET C22.2 No. 61010-1-04</td>
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<td></td>
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<td>• Class I, Division 2, Groups A-D, T5</td>
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<td></td>
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<td>• Class I, Zone 2 IIC T5</td>
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</tbody>
</table>

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

### System Options

- Hastelloy® electrodes*
- DC power
- Additional sensor cable up to 475’ (500’ max for FPI Mag)
- Extension to hardware clearance
- Annual verification / calibration
- Sensor insertion tool*
- Stainless steel ID tag

### Temperature Range

<table>
<thead>
<tr>
<th></th>
<th>Operating and storage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-20° to 60° C (-4° to 140° F)</td>
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</tbody>
</table>

### Converter Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Remote mount*</th>
<th>Meter mount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Height: 7.3” (18.5 cm)</td>
<td>• Height: 6.9” (17.5 cm)</td>
</tr>
<tr>
<td></td>
<td>• Width: 8.5” (21.6 cm)</td>
<td>• Width: 7.2” (18.25 cm)</td>
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<tr>
<td></td>
<td>• Depth: 4.3” (10.9 cm)</td>
<td>• Depth: 6.2” (15.7 cm)</td>
</tr>
</tbody>
</table>

### Keypad and Display

Can be used to access and change set-up parameters using six membrane keys and an LCD display

* Not available with SPI Mag

**Note regarding cable length:** McCrometer recommends minimizing cable length. Electromagnetic flow meters may have unfavorable signal strength to noise ratio in electrically noisy environments. Longer lengths of cable increase the likelihood of interference. In those cases where the meter’s signal must be transmitted a long distance, or where the environment may be particularly noisy, we suggest using the converter’s analog output(s). That allows locating the converter as close as possible to the metering location.
### METER MOUNT CONVERTER DIMENSIONS

Height 6.9” (20.1 cm)  
Width 7.2” (18.3 cm)  
Depth 6.2” (15.7 cm)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>6.9” (20.1 cm)</td>
</tr>
<tr>
<td>Width</td>
<td>7.2” (18.3 cm)</td>
</tr>
<tr>
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