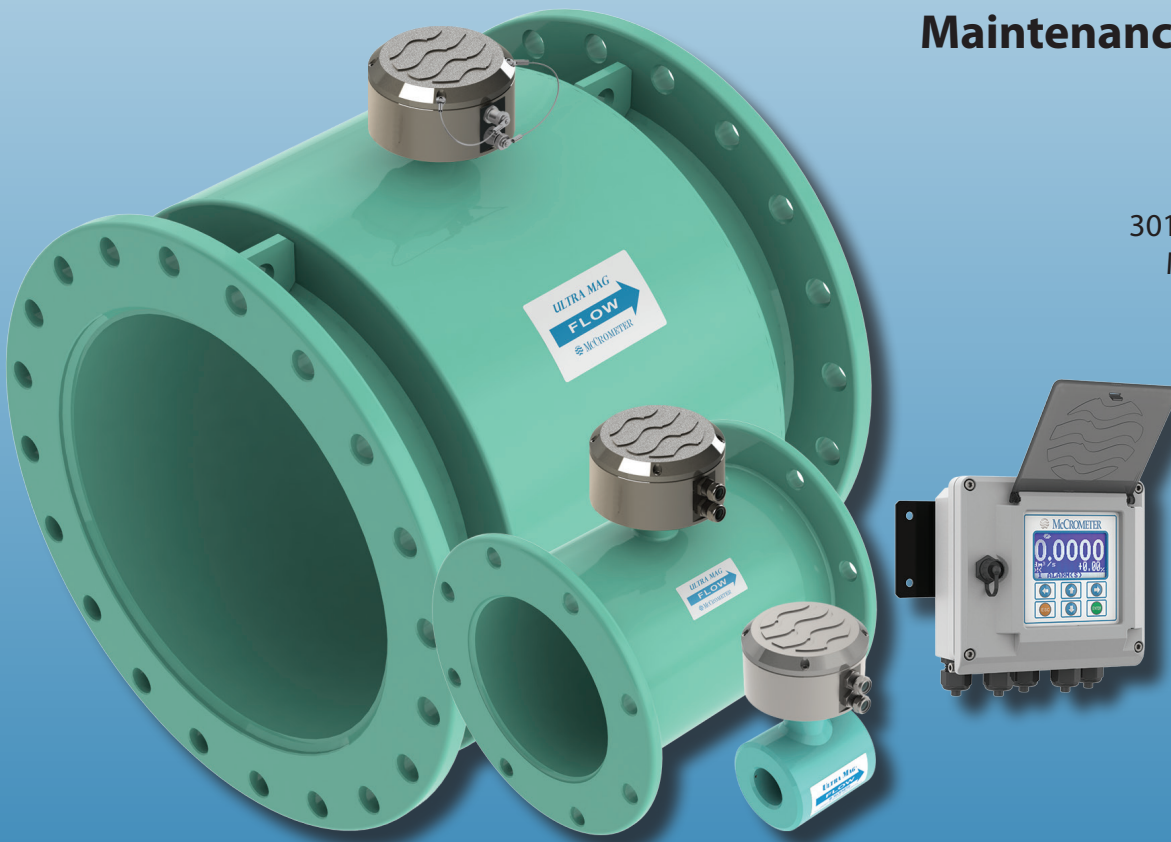




# Ultra Mag Electromagnetic Flow Meter

## Installation, Operation and Maintenance Manual

30119-03 Rev. 6.7  
March 14, 2023



### Standard Model

For use in non-hazardous locations

### HL Model

For use in hazardous locations:

- Class I, Division 2, Groups A-D, T5
- Class I, Zone 2 IIC T5



---

# Contents

<b>SAFETY</b> .....	<b>1</b>
<b>Safety Symbols And Warnings</b> .....	<b>1</b>
<b>Safety Warnings</b> .....	<b>1</b>
<b>1.0 INTRODUCTION</b> .....	<b>2</b>
1.1 Description.....	2
1.2 Uncrating.....	2
1.3 Serial Numbers.....	2
<b>2.0 PREPARING FOR A NEW INSTALLATION</b> .....	<b>3</b>
2.1 Pipe Run Requirements.....	3
2.2 Positioning and Orienting the Sensor.....	4
<b>3.0 INSTALLATION</b> .....	<b>5</b>
3.1 Wafer Style Meter Installation.....	5
3.2 Flanged Meter Installation.....	5
3.3 Grounding Considerations.....	5
3.4 Sensor Grounding.....	6
<b>4.0 QUICK CONNECT CABLE ENDS (OPTIONAL)</b> .....	<b>9</b>
<b>5.0 REPLACEMENT PARTS</b> .....	<b>10</b>
<b>6.0 SPECIFICATIONS, WEIGHTS, AND DIMENSIONS</b> .....	<b>11</b>
6.1 Flow Meter Specifications.....	11
6.2 Flow Meter Dimensions and Weights.....	14
6.3 ProComm Converter Specifications.....	16
6.4 ProComm Converter Dimensions.....	18
<b>7.0 RETURNING A UNIT FOR REPAIR</b> .....	<b>19</b>
<b>WARRANTY</b> .....	<b>20</b>

## **SAFETY**

### **Safety Symbols And Warnings**

Throughout this manual are safety warning and caution information boxes. Each warning and caution box will be identified by a large symbol indicating the type of information contained in the box. The symbols are explained below:



This symbol indicates important safety information. Failure to follow the instructions can result in serious injury or death.



This symbol indicates important information. Failure to follow the instructions can result in permanent damage to the meter or installation site.

### **Safety Warnings**

When installing, operating, and maintaining McCrometer equipment where hazards may be present, you must protect yourself by wearing Personal Protective Equipment (PPE) and be trained to enter confined spaces. Examples of confined spaces are manholes, pumping stations, pipelines, pits, septic tanks, sewage digesters, vaults, degreasers, storage tanks, boilers, and furnaces.

You must follow all state and local laws, as well as Occupational Safety and Health Administration (OSHA) regulations concerning Personal Protective Equipment and confined-space entry. Specific requirements can be found in the OSHA section of the Code of Federal Regulations: *29 CFR, 1910.132 - 1910.140, Personal Protective Equipment; and CFR Title 29, Part 1910.146, Permit-Required Confined-Spaces.*



**WARNING!**

**Incorrect installation or removal of meters can result in serious injury or death.** Read the instructions in this manual on the proper procedures carefully.



**WARNING!**

**Never enter a confined space without testing the air at the top, middle, and bottom of the space.** The air may be toxic, oxygen deficient, or explosive. Do not trust your senses to determine if the air is safe. You cannot see or smell many toxic gases.



**WARNING!**

**Never enter a confined space without the proper safety equipment.** You may need a respirator, gas detector, tripod, lifeline, and other safety equipment.



**WARNING!**

**Never enter a confined space without standby/rescue personnel within earshot.** Standby/rescue personnel must know what action to take in case of an emergency.

## 1.0 INTRODUCTION

### 1.1 Description

Ultra Mag meters are available with integral or remote mount converters. Standard display features include forward, reverse and net flow totalizers, flow rate, alarm monitoring, and automatic self diagnostics to ensure integrity. All data and values are in selectable units of measurement. System compatibility is assured with a choice of current, pulse and serial data. Please refer to the converter manual provided with your meter.

Ultra Mag operating parameters are set via the electronics keypad. The software features multilevel password protection capability to prevent inadvertent program or setting changes. Data is stored in nonvolatile memory.

The flanged end tube design permits use in a wide range of applications. The fabricated tube is stainless steel with steel or stainless steel flanges and incorporates the UltraLiner, an NSF approved fusion-bonded epoxy liner.

### 1.2 Uncrating

The shipping crate contains the following items:

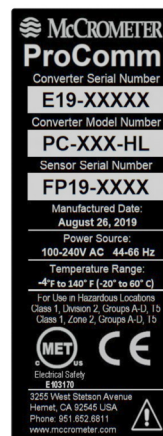
- Electromagnetic meter assembly with grounding wire attached
- Converter cable (attached to meter)
- Signal converter
- Grounding rings
- Ground wires (2)
- User manuals for both the sensor and converter
- Installation hardware (2" & 3" only)
- Gaskets (4) (2" & 3" only)

When uncrating the Ultra Mag, any damage due to rough or improper handling should be reported to the transportation firm and McCrometer. If for any reason it is determined that the unit or parts of the unit should be returned to the factory, please contact McCrometer for clearance prior to shipment. Each unit must be properly crated to prevent any further damage. The factory assumes no responsibility for equipment damaged in return shipment due to improper packaging.

### 1.3 Serial Numbers

The converter and sensor are supplied as a matched system. Verify the meter serial numbers on both the converter and sensor match. This will insure a properly calibrated system.

The tag on the side of the converter has the converter model number, the converter serial number and the meter serial number, which is calibrated to the converter. An example is shown at right.



**Figure 1. Converter serial number tag**

**i** **IMPORTANT:** Verify the meter serial numbers on both the converter and sensor match. This will insure a properly calibrated system. The meter serial number is located on a plate on the body of the sensor, and the converter serial number and the meter serial number are located on a label on the side of the converter. Insure the meter serial number on the sensor and the converter tags match.

## **2.0 PREPARING FOR A NEW INSTALLATION**

### **2.1 Pipe Run Requirements**

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

#### **2.1.1 Meter Mounted Converter Location**

Adjoining pipe must be adequately supported, and the area around the sensor should provide sufficient drainage to prevent flooding the converter or conduits.

The location chosen should provide room to read the display and be free from harsh electrical noise from adjacent equipment, cables, R.F.I., or E.M.I. The signal converter should not be subjected to intense, prolonged sunlight and/or vibrations. Unit should also be protected from heat.

#### **2.1.2 Remote Mount**

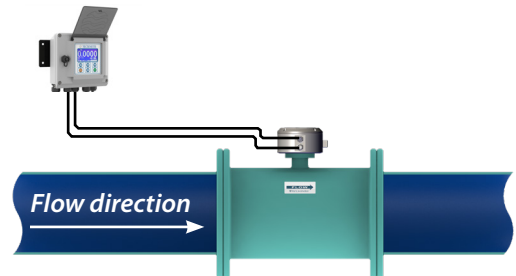
The signal converter may be installed in a desired location provided that free access is available to allow the display to be viewed as required. The unit can be either wall mounted or panel mounted with masonry fixings or nuts and bolts respectively via the fixing holes provided. The maximum distance between the meter and the converter is 200 feet. For applications with extended lengths, consult factory.

## 2.2 Positioning and Orienting the Sensor

The following installation recommendations should be followed (see Figure 2 for installation diagrams):

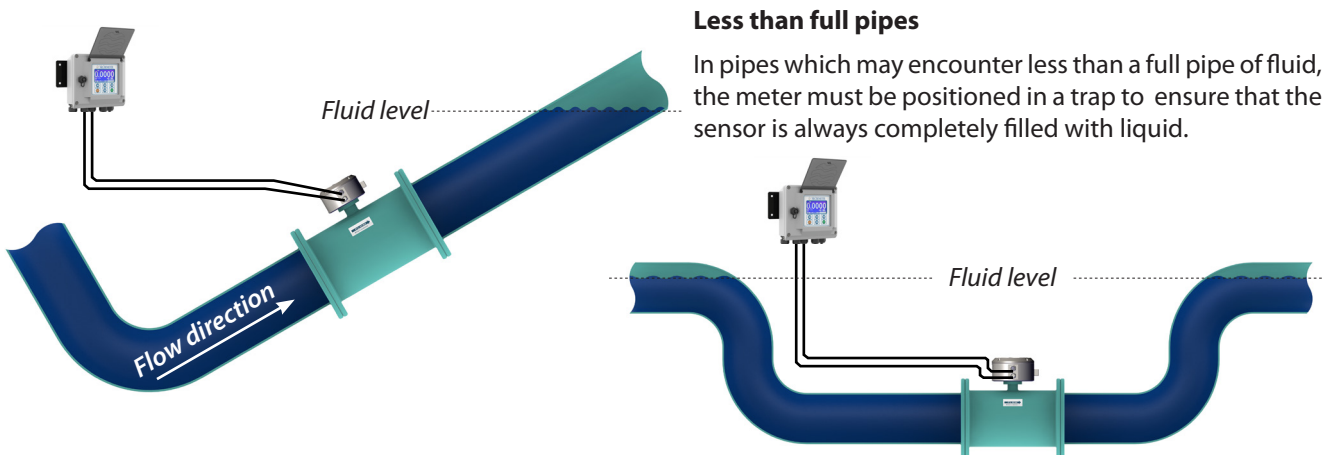
### Horizontal installation

In horizontal pipe runs, the meter should be installed so that the junction box is vertical insuring the electrodes are positioned to prevent coating by sediments or loss of electrode contact due to air bubbles.



### Vertical installation

In vertical pipe runs, the flow should be upward. In slurry application, a vertical position ensures optimal distribution of solids under all flow conditions.



### Less than full pipes

In pipes which may encounter less than a full pipe of fluid, the meter must be positioned in a trap to ensure that the sensor is always completely filled with liquid.

Figure 2. Sensor orientation options

### 3.0 **INSTALLATION**



**NOTE**  
Nothing in this manual supersedes local codes.

IMPORTANT



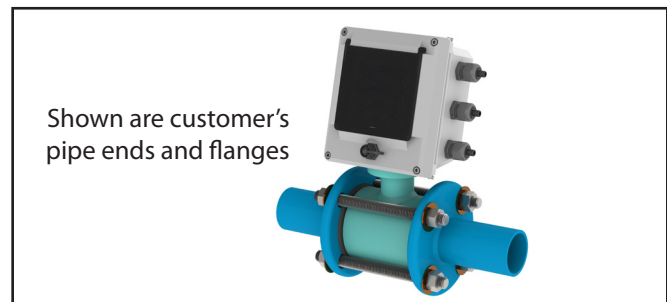
**NOTE**  
The flow of the medium should correspond to the direction shown by the arrow on the sensor.

IMPORTANT

#### 3.1 **Wafer Style Meter Installation**

Install the Ultra Mag between two flanged end pipes. Hardware and gaskets are provided, but customers must supply the flanged pipe ends. (Figure 3)

The flow meter may require grounding, depending on the environment they are being installed in. Refer to section 3.4 for a full description of grounding methods that are available.



**Figure 3. Wafer style meter Installation**

#### 3.2 **Flanged Meter Installation**

Install the Ultra Mag flow meter inline between two flanged end pipes. The flow meter may require grounding, depending on the environment they are being installed in. Refer to section 3.4 for a full description of grounding methods that are available.

#### 3.3 **Grounding Considerations**



**NOTE:** On meters installed on a line with cathodic protection it may be necessary to insulate the meter from the line. Consult your cathodic protection vendor for instructions.

IMPORTANT

##### 3.3.1 **Grounding and Electrical Interference**

The sensor body must have electrical contact with the media. This is achieved via grounding rings. For best performance, McCrometer provides grounding rings for all sizes, and they should be installed.

Always ensure that the converter and the sensor are grounded (earthed) correctly. The grounding of the sensor and converter ensures that the equipment and liquid have an equal potential. For most installations the quality of grounding by the provided cabling assures the sensor is properly grounded and additional grounding of the sensor is not required. However, in instances where this is not the case, i.e. the equipment and fluid do not have an equal potential, such as where the installation location and/or media is subjected to electrical interference, additional grounding steps may be required. Consult an electrician experienced with instrumentation installations to determine if electrical interference is present. For further information on installation environments and sensor grounding, please contact McCrometer Technical Support.

### 3.3.2 Fluid Conductivity

The fluid to be measured must have a minimum conductivity of  $5\mu\text{S}/\text{cm}$  for an electromagnetic flow meter to operate. Systems with such low conductivity require that the system is well grounded with no electrical interference. Also, In low conductivity fluids (less than  $50\mu\text{S}/\text{cm}$ ) long cable lengths may affect flow meter's ability to read the flow signal.

To eliminate rapid changes in fluid conductivity, it is recommended that all blending and chemical injecting be done downstream of the meter to avoid possible measurement error and/or issues. If blending or chemical injecting is performed upstream of the meter, it should be done upstream of the meter early enough so the flow media is thoroughly mixed prior to entering the measurement area.

### 3.4 Sensor Grounding

The grounding rings and gaskets must be used to ensure a positive seal at the flanges, and to ensure fluid is properly grounded to sensor. For best performance, McCrometer provides grounding rings, which should be installed for all sizes.

When installing into a PVC or plastic pipe system, grounding rings are required for all sizes.



#### Information For Grounding Ring Installations

- Gaskets must be used on either side of the grounding ring to provide a proper seal on the flanges. One gasket is used on flanges without a grounding ring.
- Rings & gaskets must align concentrically with the pipe so they do not obstruct or affect flow through the tube.
- The two grounding rings and four gaskets require an additional installation width of 0.5".



**Figure 5. Sensor grounding for all meters**

**3. Sensor grounding for all meters**

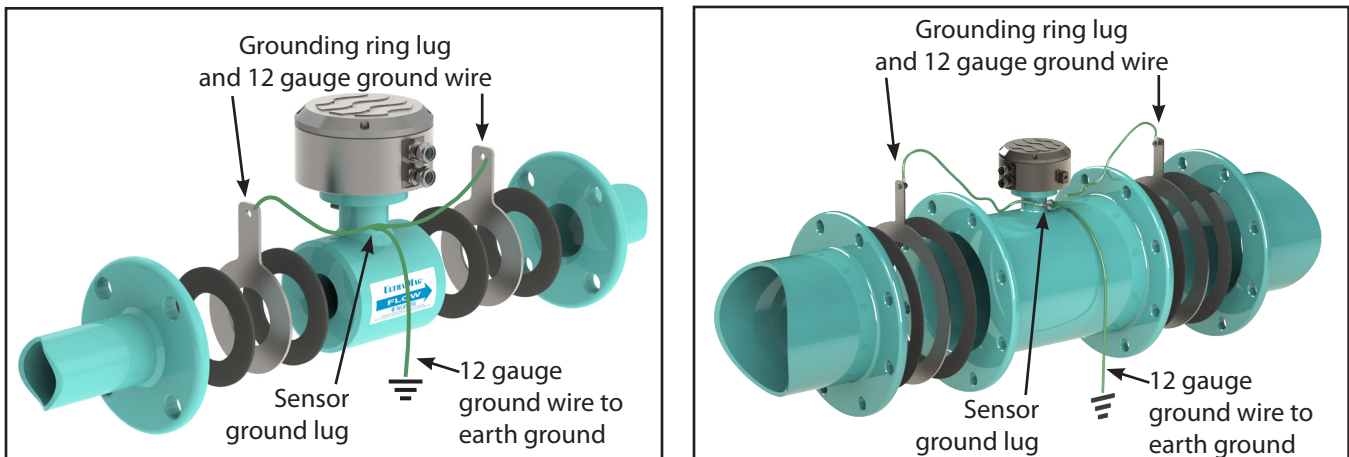
If there is electrical noise in the fluid column or electrical current in the pipe, it can be minimized or eliminated using grounding rings or by grounding the pipeline.

**a. Non-conductive pipe**

Attach the provided 12 gauge wire, or equivalent, to the sensor ground lug and to the TWO grounding ring lugs. *See below.*

**Note:** Non-conductive pipe includes PVC and plastic pipe.

Attach the provided 12 gauge wire, or equivalent, to the ground lug and an isolated grounding rod. (Figure 6)



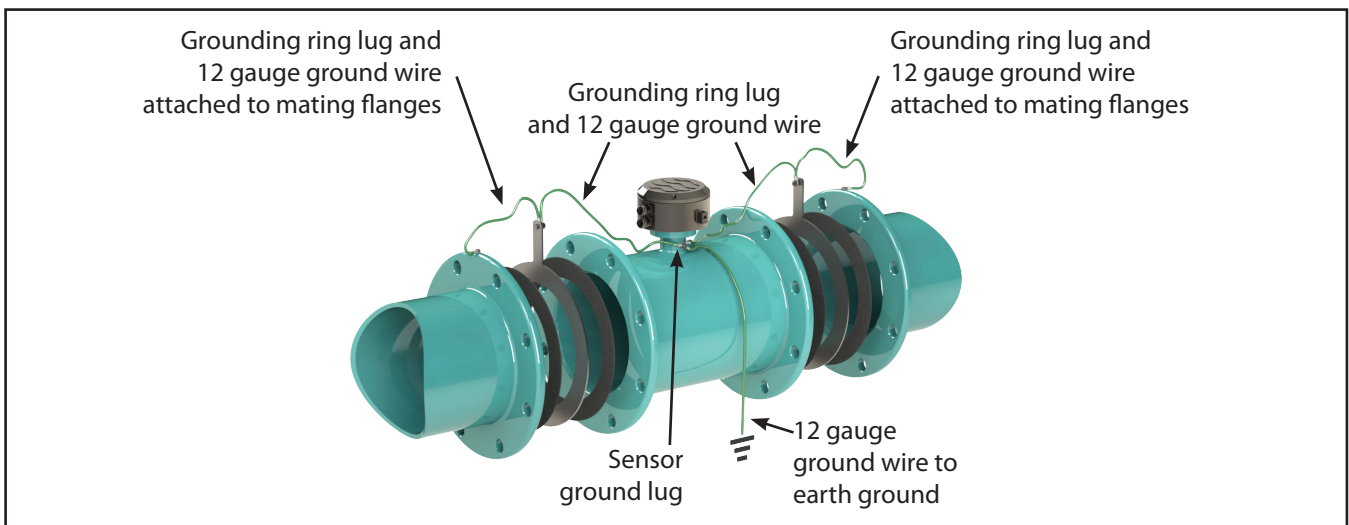
**Figure 6. Sensor grounding with non-conductive pipe**

**b. Conductive pipe**

Use this grounding method for conductive pipes with pipe or fluid column noise

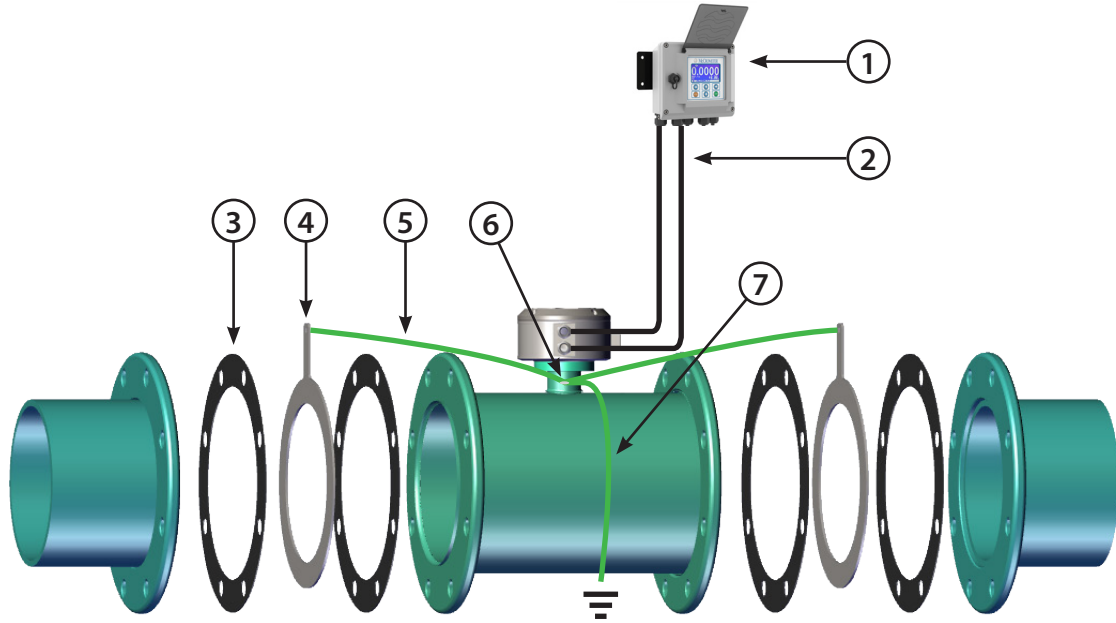
Attach the provided 12 gauge wire, or equivalent, to the sensor ground lug and to the TWO grounding ring lugs. *See below.* Next, using a 12 gauge wire, connect both grounding rings to the mating flanges. (Figure 7)

Attach the provided 12 gauge wire, or equivalent, to the ground lug and an isolated grounding rod.



**Figure 7. Sensor grounding with conductive pipe**

**5.0 REPLACEMENT PARTS**



The image above is representative for all Ultra Mag meter models and sizes.

NO.	PART NUMBER	DESCRIPTION
1	PC-RA1	AC Converter (Dual 4-20mA Output)
1	PC-RD1	DC Converter (Dual 4-20mA Output)
1	PC-RA2	AC Converter w/ Modbus RS485 Communications Protocol
1	PC-RD2	DC Converter w/ Modbus RS485 Communications Protocol
2	15035 / 15036	Dual Cables - Submersible
3	1-1557-*	Gaskets - Provided By Others
4	3-2781-*	Grounding Rings, Stainless Steel
5	3-2757-##	Grounding Wire Assembly
6	1-1201-10	Nut, Hex, Brass
7	15029	Earth Ground Wire

\* INSERT METER SIZE TO COMPLETE PART NUMBER - INSERT -02 FOR 2", -04 FOR 4", -06 FOR 6", ETC.  
 ## -W = 2" - 16" -14 = 14" - 20" -24 = 24" - 30" -36 = 36" - 48"




**When ordering replacement parts, please specify: Meter Size • Meter Model • Meter Serial Number**

## 6.0 SPECIFICATIONS, WEIGHTS, AND DIMENSIONS

### 6.1 Flow Meter Specifications

<b>Pipe Sizes</b>	
2", 3", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24", 30", 36", 42", 48"	
<b>Flow Direction Measurement</b>	
Forward and reverse flow indication and forward, reverse, net totalization are standard with all meters	
<b>Accuracy</b>	
<ul style="list-style-type: none"> <li>Standard: +/- 0.5% of measured value <math>\pm 0.006</math> ft/s (<math>\pm 0.0018</math> m/s)</li> <li>Optional: +/- 0.2% of measured value <math>\pm 0.006</math> ft/s (<math>\pm 0.0018</math> m/s)</li> <li>Battery powered: 1% of measured value <math>\pm 0.006</math> ft/s (<math>\pm 0.0018</math> m/s)</li> </ul> <p><b>IMPORTANT NOTICE ON FLOW METER ACCURACY:</b> 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.</p>	
<b>Accuracy Tests</b>	
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 $\pm 0.15\%$ .	
<b>Pipe Run Requirements</b>	
2" & 3" wafer style	3D upstream / 1D downstream
4" and larger flanged	1D upstream / 0D downstream
<b>Repeatability</b>	
$\pm 0.05\%$ or $\pm 0.0008$ ft/s ( $\pm 0.25$ mm/s), whichever is greater	
<b>Conductivity</b>	
5 $\mu$ s/cm	
<b>Liner</b>	
UltraLiner NSF approved, fusion bonded epoxy	
<b>Electrodes</b>	
Type 316 stainless steel, others optional	
<b>Electrical Connections</b>	
<ul style="list-style-type: none"> <li>Compression gland seals</li> <li>Quick-Connect</li> </ul>	
<b>Sensor Cable Lengths</b>	
Standard	25'/7.6 m 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.)**

<b>IP Rating</b>	
<b>Standard model</b>	<ul style="list-style-type: none"> <li>• Quick Connect (NEMA 6P/IP68 with remote converter)</li> <li>• Compression gland seals (NEMA 6P/IP68 with remote converter)</li> </ul>
<b>HL model</b>	<ul style="list-style-type: none"> <li>• Quick Connect (IP67)</li> <li>• Compression gland seals (IP67)</li> </ul>
<b>Sensor Submersibility Depth</b>	
<b>With standard strain relief cable</b>	9 m (30 ft.)
<b>With optional quick connect cable</b>	1.8 m (6 ft.)
<b>Head Loss</b>	
	None. No obstruction in line and no moving parts
<b>Warranty</b>	
<b>Meter</b>	2 year warranty
<b>Liner</b>	Lifetime guarantee
<b>Pressure Range</b>	
	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)
<b>Velocity Range</b>	
	.2 to 32 FPS
<b>Temperature Range</b>	
	Sensor Operating: -10 to 60°C (14 to 140°F) Sensor Storage: -15 to 60°C (5 to 140° F)
<b>Certifications and Approvals</b>	
<b>Standard Model</b>	<ul style="list-style-type: none"> <li>• ISO 9001:2015 certified quality management system</li> <li>• Certified by MET to UL 61010-1 / CSA C22.2 No. 61010-1</li> <li>• Certified to NSF / ANSI Standards*</li> </ul>
<b>HL Model</b>	<ul style="list-style-type: none"> <li>• ISO 9001:2015 certified quality management system</li> <li>• Certified by MET: Safety: UL61010-1 / CSA C22.2 No. 61010-1, Third Edition: Safety of Electrical Equipment For Measurement, Control, and Laboratory Use</li> <li>• Certified by MET: Standards: ANSI / ISA12.12.01 / CSA C22.2 No. 213, Nonincendive Electrical Equipment               <ul style="list-style-type: none"> <li>• Class I and II, Division 2</li> <li>• Class III, Divisions 1 and 2 Hazardous (Classified) Locations</li> </ul> </li> <li>• Certified to NSF / ANSI Standards*</li> </ul>
	  
<b>System Options</b>	
	<ul style="list-style-type: none"> <li>• Hastelloy® electrodes</li> <li>• Additional sensor cable up to 475'</li> <li>• Annual verification / calibration</li> <li>• Stainless steel ID tag</li> </ul>

\* 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.)

### Meter Options

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

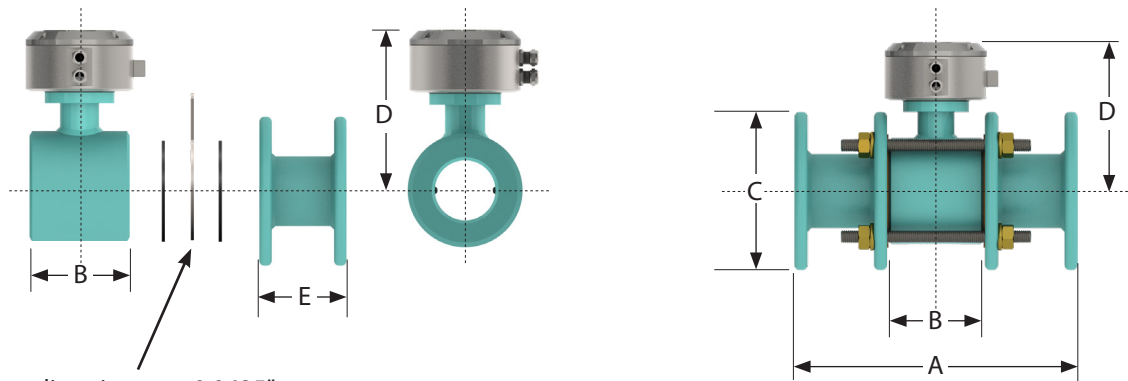
## 6.2 Flow Meter Dimensions and Weights

### 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.

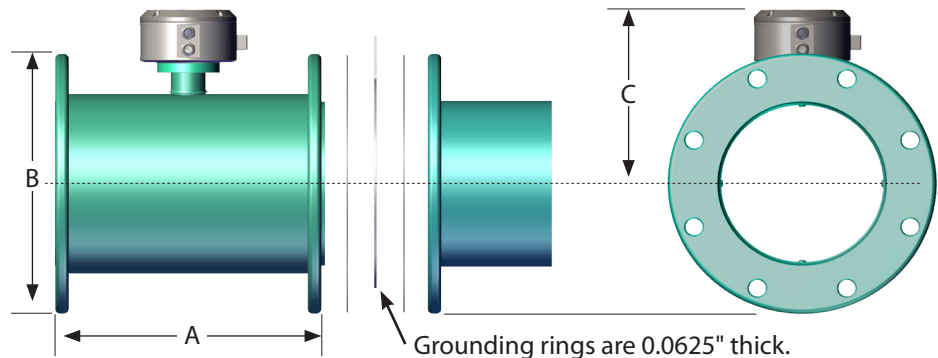


Grounding rings are 0.0625" (1.5875 mm) thick.

### 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.

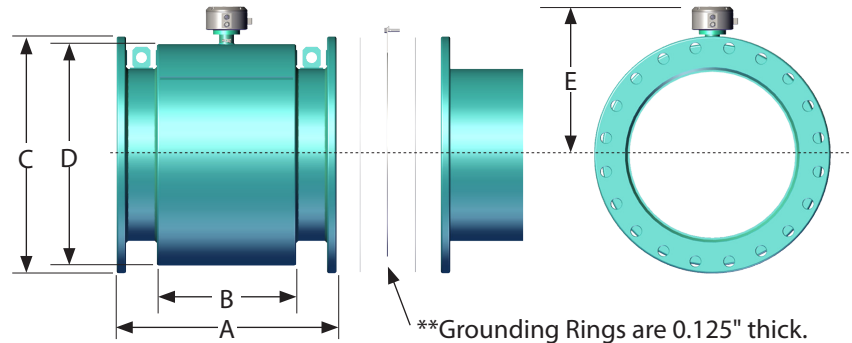


Grounding rings are 0.0625" thick.

## 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.)*	
			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				
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.



### 6.3 ProComm Converter Specifications

Physical Specifications		
<b>Electronic Housing</b>	Diecast aluminum, powder coated enclosure w/ tamper resistant seal	
<b>Converter Dimensions</b>	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)
<b>Power</b>	AC Power:	100-240 VAC / 45-66 Hz (10 W)
	DC Power:	12-48 VDC (10 W)
<b>Connection Options</b>	<ul style="list-style-type: none"> <li>• Compression gland seals for 0.24" to 0.47" diameter round cable</li> <li>• Conduit option: 1/2" NPT threaded connections</li> </ul>	
<b>Galvanic Isolation</b>	All inputs / outputs are galvanically isolated from power supply up to 500 V	
<b>Conductivity</b>	Minimum conductivity of 5µS/cm	
Performance and Operational Specifications		
<b>Accuracy</b>	<ul style="list-style-type: none"> <li>• ±0.5% from 1 f/s to max velocity, up to ±1% for 0.3 to 1 f/s</li> <li>• ±1% for reverse flow</li> </ul>	
<b>Location</b>	Indoor or outdoor use	
<b>Operating and Storage Temperature</b>	-4° to 140° F (-20° to 60° C)	
<b>IP Rating</b>	IP67 Die cast aluminum converter (only when connected using compression gland seals)	
<b>Standard Outputs</b>	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.	
<b>Optional Outputs</b>	<ul style="list-style-type: none"> <li>• Volumetric Pulse</li> <li>• Flow Rate (Frequency)</li> <li>• Hardware Alarm</li> <li>• High/Low Flow Alarms</li> <li>• Empty Pipe</li> <li>• Directional Indication</li> </ul>	<ul style="list-style-type: none"> <li>• Range Indication</li> <li>• Maximum switching voltage: 40 VDC</li> <li>• Maximum switching current: 100mA</li> </ul>
	<ul style="list-style-type: none"> <li>• Modbus</li> <li>• HART</li> </ul>	<ul style="list-style-type: none"> <li>• Smart Output™ (Sensus, Itron 6, Itron 9)</li> </ul>
Display and Measurement		
<b>Keyboard and Display</b>	Can be used to access and change set-up parameters using six membrane keys and an LCD display	
<b>Engineering Units</b>	<ul style="list-style-type: none"> <li>• Cubic Meter</li> <li>• Cubic Centimeter</li> <li>• Milliliter</li> <li>• Liter</li> <li>• Cubic Decimeter</li> <li>• Decaliter</li> <li>• Hectoliter</li> <li>• Cubic Inches</li> <li>• US Gallons</li> <li>• Imperial Gallons</li> <li>• Cubic Feet</li> <li>• Kilo Cubic Feet</li> <li>• Standard Barrel</li> <li>• Oil Barrel</li> <li>• US Kilogallon</li> <li>• Ten Thousands of Gallons</li> <li>• Imperial Kilogallon</li> <li>• Acre Feet</li> <li>• Megagallon</li> <li>• Imperial Megagallon</li> <li>• Hundred Cubic Feet</li> <li>• Megaliters</li> </ul>	



## Other Specifications

**Standard Model**

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

**HL Model**

- ISO 9001:2015 certified quality management system
- CE
- 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



**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**

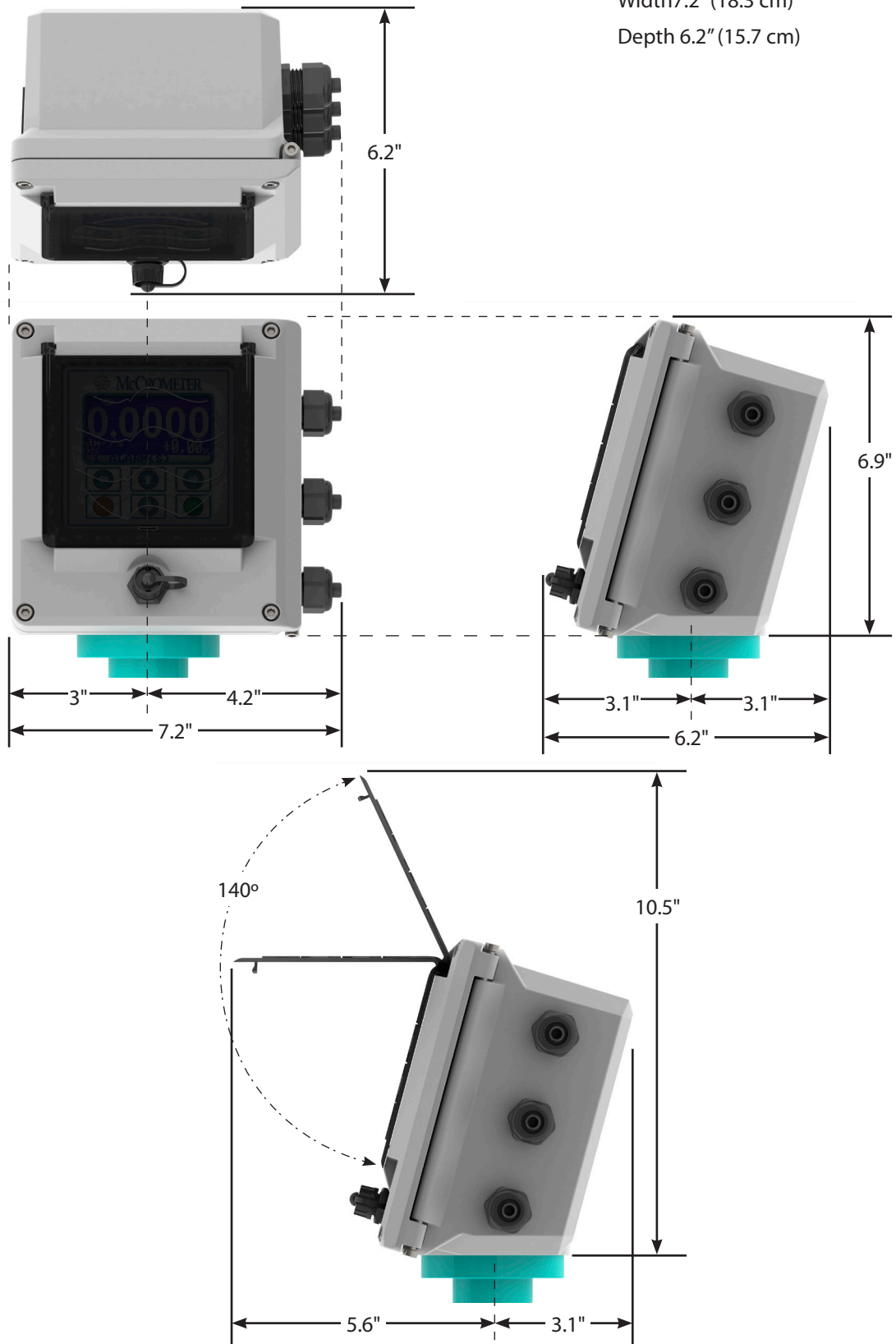
The ProComm converter, models PC-RA1-HL series and PC-MA1-HL series have no user serviceable parts.

**6.4 ProComm Converter Dimensions**

Height 6.9" (20.1 cm)

Width 7.2" (18.3 cm)

Depth 6.2" (15.7 cm)



## **7.0 RETURNING A UNIT FOR REPAIR**

If the unit needs to be returned to the factory for repair, please do the following:

- Prior to calling for a return authorization number, determine the model number, serial number, and reason for return.
- Contact McCrometer Customer Service Department and ask for a Return Authorization (RA) number.
  - Telephone: 1-800-220-2279
  - Email: [customerservice@mccrometer.com](mailto:customerservice@mccrometer.com)
- Ship the meter in the original packaging, if possible. Do not ship manuals, power cords, or other parts with your unit unless required for repair.
- Please make sure the meter is clean and free from foreign debris prior to shipping. McCrometer may charge a cleaning fee if the meter is sent without being cleaned.
- Write the RA number on the outside of the shipping box. All return shipments should be insured.
- Address all shipments to:

McCrometer, Inc.  
RMA #  
3255 W. Stetson Avenue  
Hemet, CA 92545

## **WARRANTY**

This Warranty shall apply to and be limited to the original purchaser consumer of any McCrometer product. Meters or instruments defective because of faulty material or workmanship will be repaired or replaced, at the option of McCrometer, free of charge, FOB the factory in Hemet, California, within a period of two (2) years from the date of delivery.

Repairs or modifications by others than McCrometer or their authorized representatives shall render this Warranty null and void in the event that factory examination reveals that such repair or modification was detrimental to the meter or instrument. Any deviations from the factory calibration require notification in writing to McCrometer of such recalibrations or this Warranty shall be voided.

In case of a claim under this Warranty, the claimant is instructed to contact McCrometer Inc., Attn: Technical Support, 3255 W. Stetson Ave., Hemet, California 92545, and to provide an identification or description of the meter or instrument, the date of delivery, and the nature of the problem.

The Warranty provided above is the only Warranty made by McCrometer with respect to its products or any parts thereof and is made expressly in lieu of any other warranties, by course of dealing, usages of trade or otherwise, expressed or implied, including but not limited to any implied warranties of fitness for any particular purpose or of merchantability under the uniform commercial code. It is agreed this Warranty is in lieu of and buyer hereby waives all other warranties, guarantees or liabilities arising by law or otherwise. Seller shall not incur any other obligations or liabilities or be liable to buyer, or any customer of buyer for any anticipated or lost profits, incidental or consequential damages, or any other losses or expenses incurred by reason of the purchase, installation, repair, use or misuse by buyer or third parties of its products (including any parts repaired or replaced); and seller does not authorize any person to assume for seller any other liability in connection with the products or parts thereof. This Warranty cannot be extended, altered or varied except by a written instrument signed by seller and buyer.

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

McCrometer reserves the right to make improvements and repairs on product components which are beyond the Warranty period at the manufacturer's option and expense, without obligation to renew the expired Warranty on the components or on the entire unit. Due to the rapid advancement of meter design technology, McCrometer reserves the right to make improvements in design and material without prior notice to the trade.

All sales and all agreements in relation to sales shall be deemed made at the manufacturer's place of business in Hemet, California and any dispute arising from any sale or agreement shall be interpreted under the laws of the State of California.

## OTHER McCROMETER PRODUCTS INCLUDE:

---

### Propeller Flow Meters



### Differential Pressure Flow Meters



### Magnetic Flow Meters



### Connected Solutions



Copyright © 2001-2023 McCrometer, Inc. All printed material should not be changed or altered without permission of McCrometer. Any published pricing, technical data, and instructions are subject to change without notice. Contact your McCrometer representative for current pricing, technical data, and instructions.

3255 WEST STETSON AVENUE • HEMET, CALIFORNIA 92545 USA  
TEL: 951-652-6811 • 800-220-2279 • FAX: 951-652-3078  
[www.mccrometer.com](http://www.mccrometer.com)

