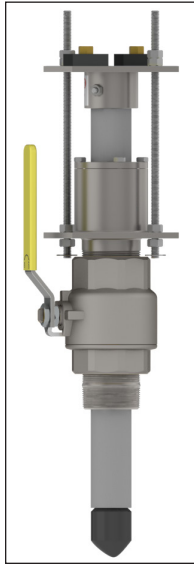


### SPI Mag® Sensor



#### ProComm Converter



#### ProComm GO Converter



The SPI Mag™ (Single Point Insertion) Electromagnetic Flow Meter is a hot tappable single point insertion flow meter for measuring forward flow. The sensor is available for one-inch or two-inch taps, depending upon line size and application.

The SPI Mag is a cost effective flow meter solution with a purchase price that is independent of line size making the cost to meter a sixty-inch line the same as a two-inch. The SPI Mag's hot tap installation allows for uninterrupted service as it installs without system shut-down, de-watering lines, cutting pipe or welding flanges. Installation costs are reduced by eliminating the need for heavy equipment or extensive manpower. The SPI can be easily re-located to various line sizes.

The compact insertion design fits in confined spaces and offers complete accessibility. The flow meter can be removed in pipes under pressure for easy inspection, cleaning, calibrating or verification. It is particularly cost-effective for retrofit applications replacing flow meters or in sites never metered before.

This cost effective flowmeter is available for line sizes from 2 to 96 inches. The flow sensor comes pre-calibrated from McCrometer's NIST traceable Calibration Lab and requires no recalibration in the field. With no moving parts and a single-piece design, the SPI Mag's sensor contains nothing to wear or break, and it is generally immune to clogging by sand, grit or other debris.

The SPI Mag is easily installed without interruption of the flow process. Sensor insertion hardware is utilized to insert the sensor through a ball valve or corporation stop in the flow conduit. Measurements are taken at the nearest pipe wall with negligible pressure drop in the pipe.

The SPI Mag allows profiling of the pipe inside diameter, further enhancing its measurement accuracy by allowing precise determination of mean velocities.

### TYPICAL WATER APPLICATIONS

Both 1" and 2" sizes can be used for waste water and clean water.

#### Wastewater

- Effluent
- Waste Activated Sludge (WAS)
- Return Activated Sludge (RAS)
- Reclaim / Recycle

#### Clean Water

- Raw Water Intake
- Clear Wells

### BENEFITS

- Easy to relocate to various line sizes
- Ease of hot-tap installation
- Installs without service interruption
- Insertion design for total accessibility
- Price is independent of line size
- No moving parts
- Does not require recalibration in the field

### PROCOMM CONVERTER

- Pre-programmed
- Curve-fitting algorithm to improve accuracy
- 4-20mA (1000 ohm) analog output
- Eight line graphical display
- Six key touch programming
- Rugged enclosure meets IP67



# Specification Sheet

## SPI Mag Model Flow Meter with Converter

### PART NUMBER MATRIX FOR SPI MAG WITH PROCOMM CONVERTER

28	-	-	-	-	-	-	-	-	-
Small or Large Body Sensor									
Small 1" Body Sensor	1								
Large 2" Body Sensor	2								
Meter Type									
Meter (Sensor, Tube, & Converter)	L								
Sensor Tube Length Options									
12" Tube Length	012								
18" Tube Length	018								
24" Tube Length	024								
30" Tube Length	030								
36" Tube Length	036								
Non Standard Tube Length	XXX								
Tube Material Options									
S316 Stainless Steel	S								
PVC Plastic	P								
Ball Valve Options									
Stainless Steel Valve (1" NPT 281, 2" NPT 282 Sensor)	N								
No Valve, hardware only (1" NPT 281, 2" NPT 282 Sensor)	X								
Remote Cable Length Options									
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								
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 + STD (Two 4-20, two Dig)	4								
Datalogger + Modbus + STD (Two 4-20, two Dig)	5								
Datalogger + Hart + STD (Two 4-20, two Dig)	6								
AMI Smart Output + STD (Two 4-20, two Dig)	7*								
Datalogger + 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								





28		-		-	
Output Cable Terminal Options					
Strain Relief (Standard)					1
Quick Connect Cable Terminals (25 & 50 ft only)					2
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



PART NUMBER MATRIX FOR STANDALONE SPI MAG

28	—	—	-	—
Small or Large Body Sensor				
Small 1" Body Sensor	1			
Large 2" Body Sensor	2			
Meter Type				
Sensor Only (No tube or Converter)	S			
Remote Cable Length Options				
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



# Specification Sheet

## SPI Mag Model Flow Meter with Converter

### FLOW METER SPECIFICATIONS

#### Measurement

- Volumetric flow in filled flow conduits 2" (50mm) to 96" (2,440 mm) diameter utilizing insertable velocity sensor. 1" meter = 2" to 30" pipe I.D.; 2" meter = 6" to 96" pipe I.D.
- Flow indication in English Standard or Metric units

#### Flow Measurement

Method	Electromagnetic
Accuracy	+/- 2% of measured value $\pm 0.03$ ft/s ( $\pm 0.009$ m/s)
Velocity range	+0.3 to +32 ft/s (+0.09 to +10 m/s)
Direction measurement	Has reverse flow indication

#### Materials

Sensor	Polyurethane exposed to flow
2" sensor mounting	PVC and Stainless Steel exposed to flow. (Stainless Steel Insertion Tube Optional)
Compression seal	Buna "N" O-Ring seal exposed to flow

#### Environmental Ranges

Pressure/ temperature limits	<ul style="list-style-type: none"><li>• PVC Insertion Tube: Up to 105°F (41°C) at 150 PSI</li><li>• Stainless Steel Insertion Tube: Up to 160°F (71°C) at 250 PSI (McCrometer recommends the use of Stainless Steel)</li></ul> <p>Note regarding storage: During freezing conditions and when meter is not in use, sensor must be removed from pipe and stored in dry conditions.</p> <p><b>NOTE: Damage to the sensor caused by allowing the sensor to freeze in the pipe is not covered by the warranty.</b></p>
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#### Electrical Connections

Compression gland seals for 0.125" to 0.375" dia. round cable

#### Sensor Cable Lengths

Standard	25' McCrometer supplied submersible cable with each remote mount unit.
Optional	Up to 200 feet, or 25 feet max for battery powered.

#### IP Rating

IP68 submersible sensor

### FLOW METER SPECIFICATIONS (CONT.)

#### Insertion Tube

To determine insertion tube length for typical near wall installations, divide the pipe I.D. by 8 and add 18".

For full profiles, add 18" to the pipe I.D.

Tube assemblies include rods and mounting hardware

##### 1" tube

- Stainless steel tube, 12" length. Will profile 4" pipe I.D.
- Stainless steel tube, 24" length. Will profile 16" pipe I.D.
- Stainless steel tube, 36" length. Will profile 28" pipe I.D.

##### 2" tube

- PVC tube, 18" length. Will profile a 10" pipe I.D.
- PVC tube, 24" length. Will profile a 16" pipe I.D.
- PVC tube, 30" length. Will profile a 22" pipe I.D.
- Opt.: stainless steel tube. Specify length - 240" maximum

#### System Options

- Stainless Steel ID Tag
- Sensor Insertion Tool
- Additional Sensor Cable up to 200' (for longer lengths consult factory)
- Valves

#### Ordering Requirements

At the time of ordering, please be prepared to provide the following information:

- Model and tap size
- Insertion tube length
- Pressure
- Minimum flow
- Maximum flow
- Typical flow
- Fluid
- Pipe I.D.
- Cable length
- Temperature
- Any other chemicals in use
- Indicator and totalizer units

### PROCOMM CONVERTER PART NUMBER MATRIX

<b>PC</b>	-				-	
<b>Converter Mounting Options</b>						
Remote Mount	R					
Meter Mount	M					
<b>Converter Power Options</b>						
A/C Power		A				
DC Power		D				
<b>Converter Output Options</b>						
Dual 4-20mA Analog, Dual Digital ( <i>Standard</i> )				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*		
<b>Smart Output Protocol Options (*7 or 8 output option required)</b>						
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	
ATT Wireless Telemetry System (RTU, Solar Panel, 15 ft 7 pin Cable)					ATT	
Verizon Wireless Telemetry System (RTU, Solar Panel, 15 ft 7 pin Cable)					VZW	



### PROCOMM GO CONVERTER PART NUMBER MATRIX

PG	-	-	-	-	-	-	-	-
<b>Converter Mounting Options</b>								
Meter Mount Converter (Standard)	M							
Remote Mount	R							
<b>Converter Power Options</b>								
Battery Power (Standard)	B							
Solar Power, Battery Backup	S							
A/C Power, Battery Backup	E							
DC Power, Battery Backup	F							
<b>Converter Output Options</b>								
No Outputs (Standard)	-							
No Outputs, DC Cable Only	0							
Two Digital Out	1							
4-20mA Analog only	2							
4-20mA Analog + Two Dig Out	3							
AMI Smart Output Only	4							
AMI Smart Output + Two Dig Out	5							
AMI Smart Output + 4-20mA Analog	6							
AMI Smart Output + 4-20mA Analog + Two Dig Out	7							
<b>DC Power/ Analog Out Cable Options</b>								
No DC Power or Outputs (Standard)	-							
No Cable - Output Configured (Quick Conn)	0							
6 ft (Open Leads - Strain Relief)	1							
25 ft (Open Leads)	2							
50 ft (Open Leads)	3							
<b>Pulse Cable Length Options</b>								
No Outputs (Standard)	-							
No Cable - Output Configured (Strain Relief or Quick Conn)	0							
6 ft (Open Leads)	1							
25 ft (Open Leads)	2							
50 ft (Open Leads)	3							
25 ft (7-Pin Male connector for Telemetry)	4							
50 ft (7-Pin Male connector for Telemetry)	5							
<b>Output Cable Terminal Options</b>								
Strain Relief (Standard)	1							
Quick Connect (25 & 50 ft Cable length only)	2							
<b>Smart Output Protocol Options (*4 - 7 output option required)</b>								
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							
ATT Wireless Telemetry System (RTU, Solar Panel, 15 ft 7 pin Cable)	ATT							
Verizon Wireless Telemetry System (RTU, Solar Panel, 15 ft 7 pin Cable)	VZW							

### 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)	Note: AC or DC must be specified at time of ordering.
	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> <li>• Datalogger</li> <li>• Built-in verification</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> </ul>	<ul style="list-style-type: none"> <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> </ul>

### PROCOMM CONVERTER SPECIFICATIONS (CONT.)

#### Certifications and Approvals

- ISO 9001:2015 certified quality management system
- CE
- Certified by MET to UL 61010-1



Note: These certifications apply to the ProComm converter only. See the meter's specifications for its certifications.

#### System Options

- DC power
- Additional sensor cable up to 475'/144.75 m
- Extension to hardware clearance
- Annual verification / calibration
- Stainless steel ID tag

#### Temperature Range

Operating and storage

-4° to 140° F (-20° to 60° C)

#### Converter Dimensions

- Height: 6.9" (17.5 cm)
- Width: 7.2" (18.25 cm)
- Depth: 6.2" (15.7 cm)

#### Keypad and Display

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

**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.

### PROCOMM GO CONVERTER SPECIFICATIONS

#### Physical Specifications

<b>Electronic Housing</b>	Diecast aluminum, powder coated enclosure w/ tamper resistant seal, 6½" x 6½" x 43/8" tall
<b>Converter Dimensions</b>	See "Dimensions" section for meter mount and remote mount converter dimensions.
<b>Power</b>	<b>Battery:</b> Standard: three 3.6V lithium-thionyl chloride (Li-SOCl <sub>2</sub> ) D size batteries with two AA backup batteries <b>AC Power:</b> 100-240VAC/45-66Hz (4W) <b>DC Power:</b> Linear power supply 10-35VDC (4 W)
<b>Electrical Connections</b>	<ul style="list-style-type: none"> <li>Optional shielded cable for 10-32VDC/4-20 mA output</li> <li>Optional shielded cable for pulse out</li> </ul>

#### Performance and Operational Specifications

<b>Battery Life</b>	Five-year expected battery life, five-year battery warranty
<b>Location</b>	Indoor or outdoor use
<b>Altitude</b>	Operating: 2000 meters Storage: 12,000 meters
<b>Operating Temperature</b>	-4° to 140° F (-20° to 60° C)
<b>Storage Temperature</b>	-4° to 140° F (-20° to 60° C)
<b>Relative Humidity</b>	0% to 100%
<b>IP Rating</b>	IP67 Die cast aluminum converter
<b>Outputs</b>	<b>Digital output:</b> Digital pulse (open collector) output for volumetric - Two isolated digital pulse (open collector) outputs for volumetric - AMI output <b>Analog output:</b> 4-20mA: Galvanically Isolated, 16 Bit resolution. All power configurations (including battery). Note: 9-30 VDC loop power required (not supplied via converter)

#### Display and Measurement

Display	<ul style="list-style-type: none"><li>• 2-Line LCD display (no backlight)</li><li>• Non-volatile memory</li><li>• Anti-reverse totalizer (standard)</li><li>• Total (to 9 digits of precision)</li></ul>		<ul style="list-style-type: none"><li>• Flow rate and velocity (to 5 digits of precision)</li><li>• Two alarms: low battery and empty pipe (optional)</li><li>• Opening lid activates display</li></ul>			
	Digits					
Units	5 Rate, 9 Total					
	GPM	Gallons per minute	IGM	Imperial gal per minute	CFM	Cubic feet per minute
	MGD	Mega gal per day	MI9	Miners inch (9G)	B5M	Barrels per minute (55G)
	CFS	Cubic feet per second	MI1	Miners inch (11.22G)	B5H	Barrels per hour (55G)
	MLD	Megaliters per day	APD	Acre feet per day	B5D	Barrels per day (55G)
	LPS	Liters per second	KLH	Kiloliters per hour	B4M	Barrels per minute (42G)
	CMH	Cubic meters per hour	LPH	Liters per hour	B4H	Barrels per hour (42G)
	LPM	Liters per minute	CMM	Cubic meters per minute	B4D	Barrels per day (42G)
GPH	Gallons per hour	CFM	Cubic feet per minute			

### PROCOMM GO CONVERTER SPECIFICATIONS (CONT.)

<b>Totalizer Units</b>	GAL	Gallons	B42	Barrel (42G)	MH1	Miners Inch Hour (11.22G)
	CUF	Cubic Feet	B46	Barrel (46G)	MD1	Miners Inch Day (11.22G)
	AFT	Acre Feet	B55	Barrel (55G)	MH9	Miners Inch Hour (9G)
	CUM	Cubic Meters	IMG	Imperial Gallon	MD9	Miners Inch Day (9G)
	LIT	Liters	AIN	Acre Inch	KGL	Kilo Gallons
	MML	Megaliter	TON	Ton (Short)	MGL	Mega Gallons
	MTT	Metric Ton (KL)	MM1	Miners Inch Minute (11.22G)	IN3	Cubic Inch
	B31	Barrel (31G)	MM9	Miners Inch Minute (9G)		
<b>Data Logger</b>	Standard with all models, minimum of five years of data stored					

### Other Specifications

#### Options and Accessories

- Data Logger - included as standard with five years of data storage at default (12hr) interval. (Cable sold separately)
- AC, DC, and battery powered with battery backup powered available

#### Safety

- IEC 61010-1, Pollution Degree II
- Overvoltage protection Category III

### Certifications

#### Standard Model

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

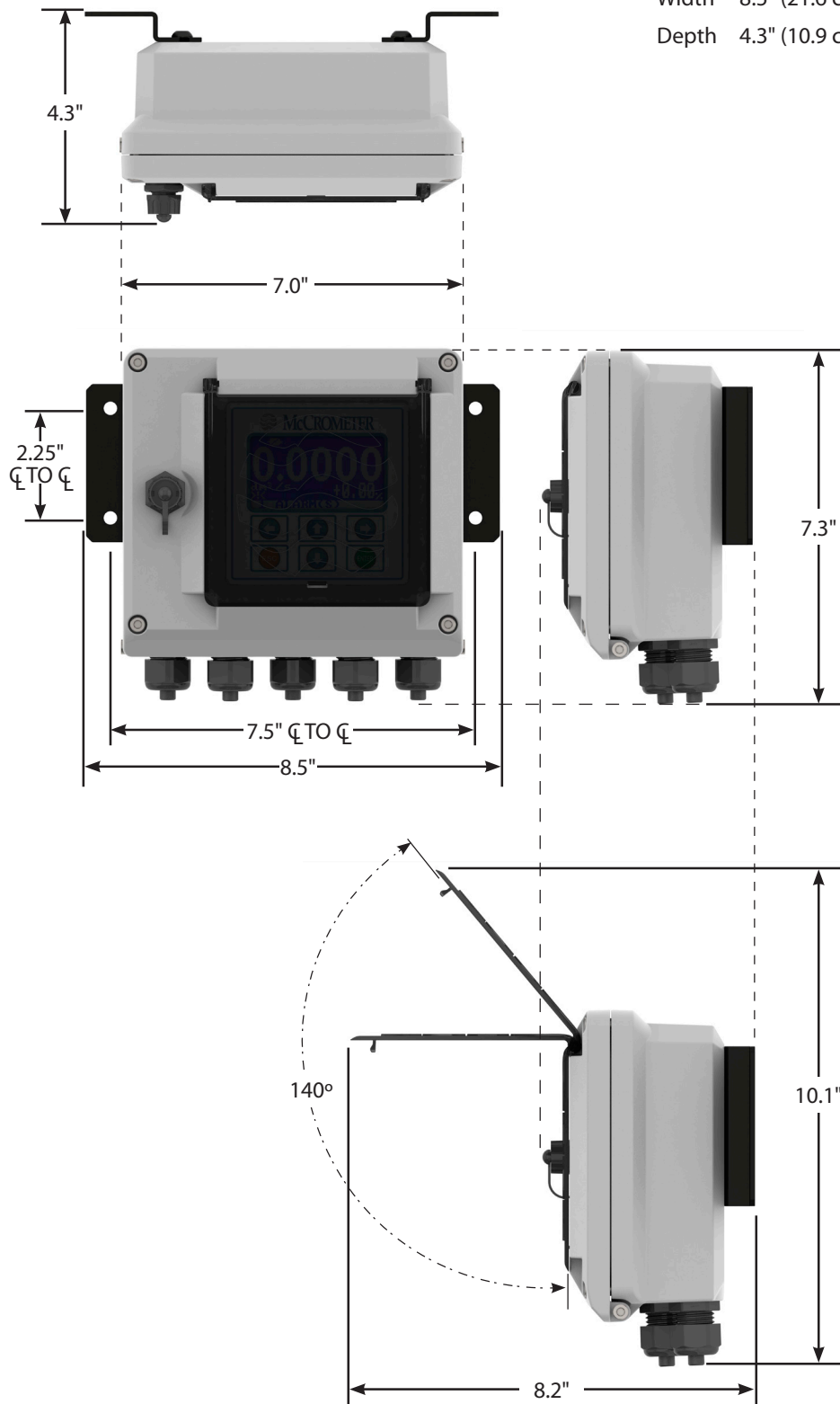


### PROCOMM CONVERTER DIMENSIONS

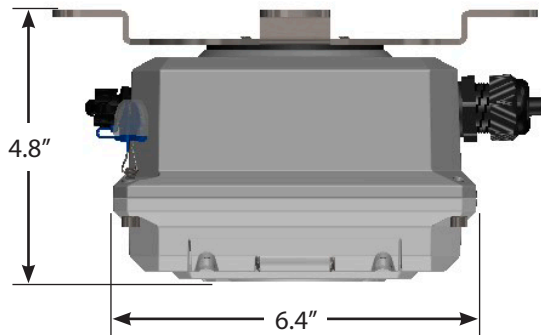
Height 7.3" (18.5 cm)

Width 8.5" (21.6 cm)

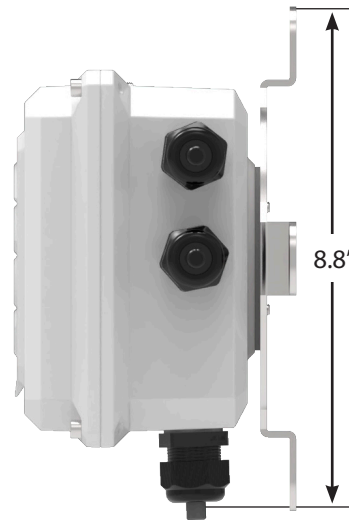
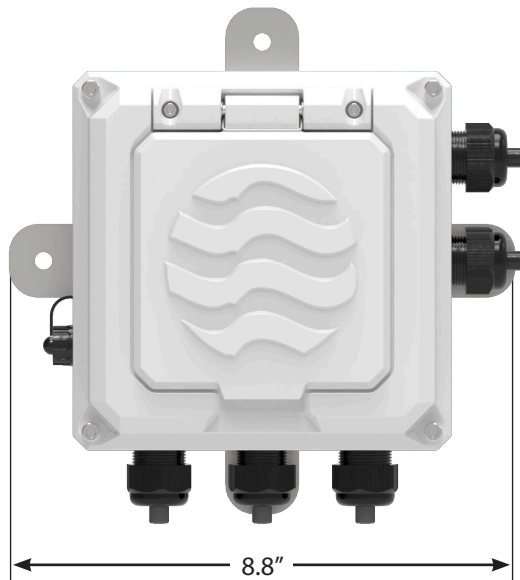
Depth 4.3" (10.9 cm)



### PROCOMM GO CONVERTER DIMENSIONS



*Remote mount converter*



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