VERA MAG®

Vera Mag Flow Meter Specification Sheet

Applies to the following models:

Vera Mag 3000

Vera Mag 5000

The Vera Mag 3000 utilizes our ProComm Go electronics which allows AC or DC power with battery backup or straight battery operation with pulse and 4-20mA outputs with an accuracy of +/- 1.0% of reading.

The Vera Mag 5000 utilizes our ProComm Max electronics which allows AC or DC power with Modbus, pulse and 4-20mA outputs with an accuracy of +/- 0.2% of reading.

Applications

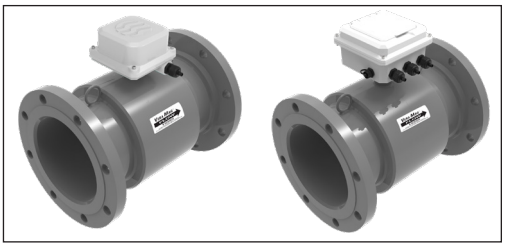
These Vera Mag flow meter models are intended for industrial and wastewater applications. These can include:

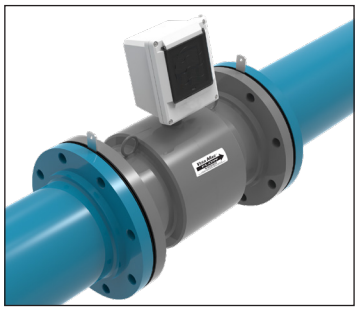
Industrial

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

Wastewater

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





Performance Advantages

- No obstruction to the flow
- No moving parts to wear or break
- Maintenance free
- Vera Mag 5000 offers standard 0.2% accuracy
- 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

Differences Between the Vera Mag 3000 and Vera Mag 5000

	Vera Mag 3000	Vera Mag 5000
Transmitter	ProComm GO	ProComm Max
Coating	3M 135 Gray Epoxy (200F)	
Sizes	ANSI #150 1.5" to 24" ANSI #300 1.5" to 24"	
End connections	ANSI #150 (285 PSI), ANSI #300 (500 PSI)	
Transmitter power	Battery, AC/DC with battery backup	AC / DC
Electrodes	SS or Hastelloy Electrodes	
Hazardous location	Class I, Division2	
Outputs	4-20mA, pulse	Modbus, 4-20mA, pulse, Hart

McCROMETER

Available Vera Mag End Connections

- 1.5" to 24": ANSI B16.5 150 lb raised face flanges
- 1.5" to 24": ANSI B16.5 300 lb raised face flanges

Quality Manufacturing

Vera 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 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.

Signal Transmitters

The signal transmitter is the reporting, input and output control device for the sensor. The transmitter allows the measurements, functional programming, control of the sensor and data recording to be communicated through the display and inputs/outputs. There are two different transmitter models used in various applications. Both transmitters are available as either meter mount or remote mount.

• ProComm GO Transmitter

The Vera Mag 3000 flow meter is accompanied by the ProComm GO electronics and is battery powered, ideal for remote installations and locations with unreliable power sources.

- Output options include pulse, 4-20mA, and telemetry
- Battery powered with optional AC/DC with battery backup
- Offering ±1% accuracy
- Optional built-in verification
- DIY battery replacement and in-field transmitter programming available via USB cable and laptop
- CE, UL certifications

• ProComm Max Transmitter

The Vera Mag 5000 is offered with the ProComm Max electronics, offering greater accuracy and more sophisticated output options for users needing superior system integration and data collection.

- Output options include Hart, ModBus, 4-20mA
- Optional Class 1 Div 2
- AC/DC powered
- ±0.2% standard accuracy
- Bi-directional flow available
- Rated to 200F for high temperatures
- CE, UL, CSA certifications

Installation

Vera 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 (2 - 12") or using McCrometer 316 SS grounding rings. For best performance, grounding rings are recommended for all sizes.

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:

3000:	1½" to 3" Flanged style meters	0D upstream / 0D downstream
	4" - 24" Steel flanged meters	2D upstream / 1D downstream
5000:	1½" to 3" Flanged style meters	0D upstream / 0D downstream
	4" - 24" Steel flanged meters	1D upstream / 0D downstream

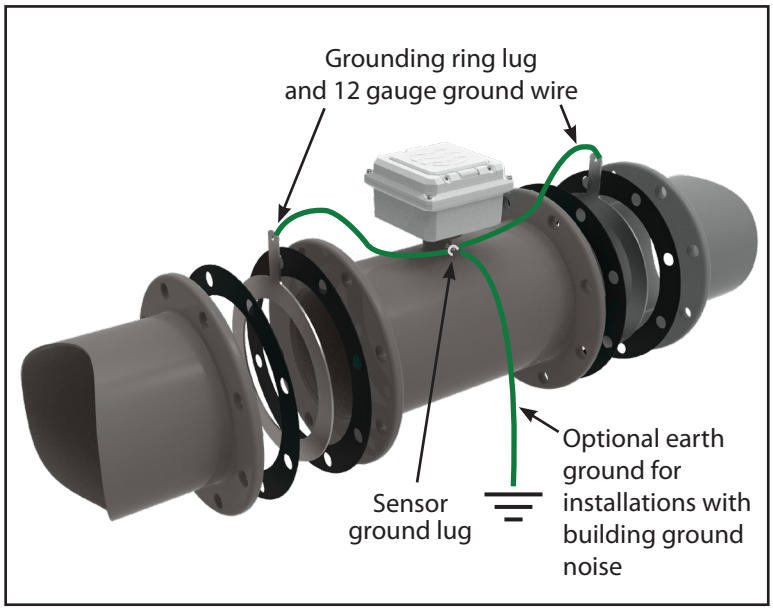
All blending and chemical injection should be done early enough so the flow media is thoroughly mixed prior to entering the measurement area.

Meter Grounding Recommendations

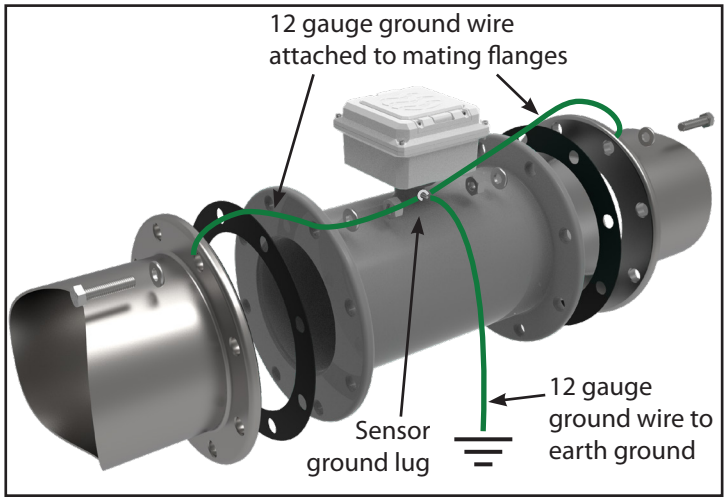
Grounding the meter body for safety according to national (NEC) or local electrical codes is recommended on ALL meter installations.

For best performance, grounding the fluid column is recommended when the meter is installed in an electrically noisy environment, such as with VFD pumps or nearby electrical systems with insufficient grounding.

See the Vera Mag IOM Manual, Lit. # 30126-25 or 30126-26, for more information on grounding configurations using grounding rods and grounding rings.



Recommended method of grounding



Alternative method of grounding with conductive or uncoated pipe

Vera Mag Flow Meter Specifications

All specifications apply to both 3000 and 5000 models except where noted.

Physical Specifications

Measurement Method	Electromagnetic flow based on Faraday's law
Directionality	Forward and reverse flow indication and forward, reverse, net totalization are standard with all meters
Pipe Sizes	1.5", 2", 2.5", 3", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24"
Body Style	**Flanged:** 1-1/2" to 24"
Materials	Carbon steel, stainless steel, epoxy liner
Liner	135 epoxy Ultraliner
Electrodes	Type 316 stainless steel, Hastelloy optional
Electrical Connections	• Compression gland seals • Quick-Connect
Signal Transmitter	Vera Mag 3000: ProComm GO Very Mag 5000: ProComm Max
Transmitter Mount	Either meter mount or remote mount
Sensor Cable Lengths	• **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.

Performance and Operational Specifications

Operating Temperature	-10 to 60°C (14 to 200°F)
Storage Temperature	-15 to 60°C (5 to 140° F)
IP Rating	• Quick Connect (NEMA 6P/IP68 with remote transmitter) • Compression gland seals (NEMA 6P/IP68 with remote transmitter)
Sensor Submersibility Depth	**With standard strain relief cable:** 1.8 m (6 ft.) **With optional quick connect cable:** 9 m (30 ft.)
Pressure Rating	• 285 PSI maximum working pressure • 500 PSI maximum working pressure
Velocity Range	0.2 to 32 FPS
Accuracy	• Vera Mag 3000: Battery powered: 1% of measured value ±0.006 ft/s (±0.0018 m/s) • Vera Mag 5000: Standard: +/- 0.2% of measured value ±0.006 ft/s (±0.0018 m/s) **IMPORTANT NOTICE ON FLOW METER ACCURACY:** The Vera Mag 3000 flow meter 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. The Vera Mag 5000 flow meter does not have this restriction. Multiple point wet flow calibration of every complete flow tube with its signal transmitter. 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 ±.0008ft/s (±0.25mm/s), whichever is greater

Vera Mag Flow Meter Specifications (cont.)

Head Loss	None. No obstruction in line and no moving parts
Conductivity	5 µs/cm
Pipe Run Requirements	3000: 1½" to 3" Flanged style meters — 0D upstream / 0D downstream 4" - 24" Steel flanged meters — 2D upstream / 1D downstream 5000: 1½" to 3" Flanged style meters — 0D upstream / 0D downstream 4" - 24" Steel flanged meters — 1D upstream / 0D downstream

Other Specifications

Certifications and Approvals	**Vera Mag 3000**
	Standard model:
	• ISO 9001:2015 certified quality management system
	• Certified by MET to UL 61010-1
	• Certified to NSF / ANSI Standards*
	HL Model:
	• ISO 9001:2015 certified quality management system
	• Certified by MET to UL 61010-1 and MET C22.2 No. 61010-1-04
	  • Class I, Division 2, Groups A-D, T4
	  • Class I, Zone 2, IIC T4
	• Certified to NSF / ANSI Standards*
	Vera Mag 5000
	• ISO 9001:2015 certified quality management system
	• Certified to NSF / ANSI Standards*

System Options	• Additional sensor cable up to 475' • Annual verification / calibration • Stainless steel ID tag
Meter Options and Accessories	• DC powered transmitter (10-35 VDC, 10 W) • Meter mounted transmitter • Extended warranty • ANSI flanges • Special lay lengths, including ISO standard lay lengths • Quick connect cable fittings • Transmitter sun shield • Battery or battery-solar powered transmitter
Output Options	• Modbus • HART • Smart Output™ (Sensus, Itron 6, Itron 9)
Warranty	**Meter:** 2 year warranty **Liner:** Lifetime guarantee

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

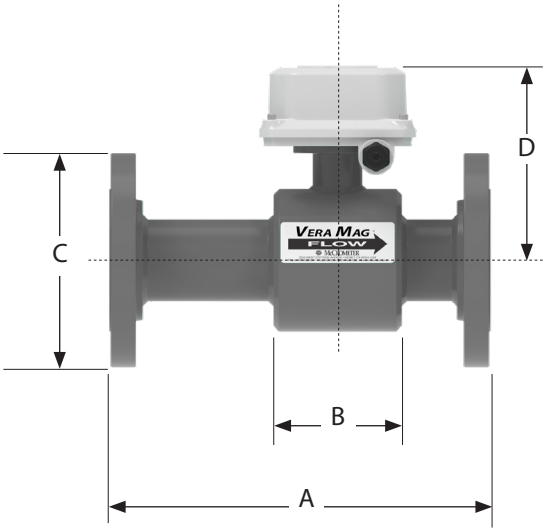
Flow Meter Dimensions and Weights

1½" to 3" Models

Pipe Size (Nominal)	Flow Ranges (0.2 to 32 FPS) Min-Max GPM	DIMENSIONS (Lay Lengths)							Est. Shipping Weight (lbs.)*	
		A**		B	C		D			
		CL150 ANSI 150#	CL300 ANSI 300#		CL150 ANSI 150#	CL300 ANSI 300#	CL150 ANSI 150#	CL300 ANSI 300#	CL150 ANSI 150#	CL300 ANSI 300#
1 ½"	1.29-200	11	14	4.5	5.0	6.1	6.5	7.25	93	not offered
2"	1.29-200	11	14	4.5	6.0	6.5	6.5	7.25	93	70
2 ½"	3.25-510	13.4	15.5	4.5	7.0	7.5	7.0	7.75	94	not offered
3"	3.25-510	13.4	15.5	4.5	7.5	8.25	7.0	7.75	94	80

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

** DIM A is not according to ISO 20456 for the 1-1/2" to 3" size range.

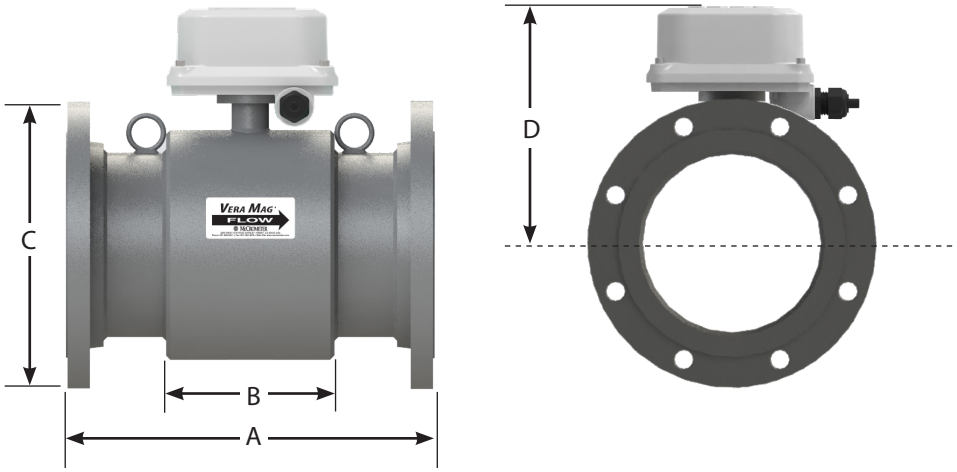


Dimensions and Weights (cont.)

4" to 12" Models Body Style

Pipe Size (Nominal)	Flow Ranges (0.2 to 32 FPS) Min-Max GPM	A**	B	C		D***	Est. Shipping Weight (lbs.)*	
		Lay Length	Shield Length	ANSI			ANSI	
				150# CL150	300# CL300		150# CL150	300# CL300
4"	6.97-1110	9.84	4.125	9.00	10.00	7.56	167	167
6"	16.1-2560	11.81	5.75	11.00	12.50	8.56	186	186
8"	29.2-4670	13.78	6.875	13.50	15.00	9.63	250	250
10"	46.3-7400	17.72	9.125	16.00	17.50	10.63	290	290
12"	67.3-10760	19.7	9.75	19.00	20.50	11.75	350	350

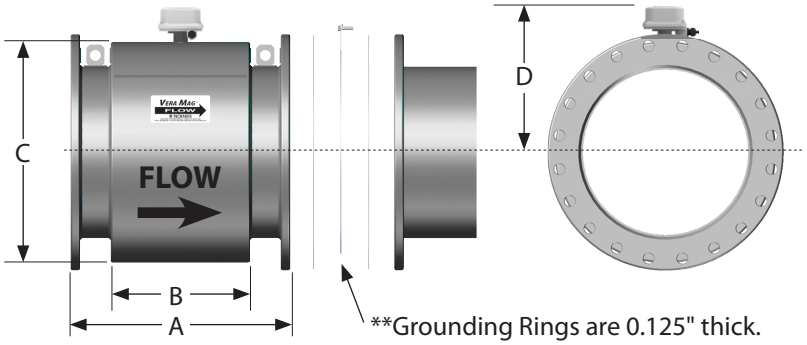
* Shipping weights are estimated and may change due to specific order packaging
** DIM A in accordance with ISO 20456 for 4" to 24" line sizes.
*** DIM D represents the remote transmitter height in relation to the meter centerline.



14+" Models Body Style

Pipe Size (nom.)	Flow Ranges (0.2 to 32 FPS) Min-Max GPM	Dimensions					Est. Shipping Weight (lbs.)*	
		A**	B	C		D***		
		Lay Length		150# CL150	300# CL300		150# CL150	300# CL300
14"	90.1-14410	21.65	10.375	21.00	23.00	13.56	480	480
16"	117-18670	23.62	12.375	23.50	25.50	14.31	500	639
18"	149-23820	23.00	12.375	25.00	28.00	15.31	600	600
20"	186-29600	25.59	14.375	27.50	30.50	16.25	725	725
24"	269-43040	30.70	18.875	32.00	36.00	18.25	1,430	1,430

*Shipping weights are estimated and may change due to specific order packaging
** DIM A in accordance with ISO 20456 for 4" to 24" line sizes.
*** DIM D represents the remote transmitter height in relation to the meter centerline.



Vera Mag 3000 Part Number Matrix

VM3		-									-		-		-		-	
Nominal Line Size																		
1.5"	0C																	
2"	02																	
2.5"	0D																	
3"	03																	
4"	04																	
6"	06																	
8"	08																	
10"	10																	
12"	12																	
14"	14																	
16"	16																	
18"	18																	
20"	20																	
24"	24																	
Flange Connections																		
ANSI Class 150# (285 psi Rating)	2																	
ANSI Class 300# (500 psi Rating)	3																	
Electrode Material Options																		
S316 Stainless Steel *(Standard)*	S																	
Hastelloy	H																	
Converter Mounting and Cable Connector Options																		
Meter Mount Converter	M																	
IP68 Strain Relief [Remote Mount] (Standard)	R																	
IP68 Quick Connect Potted Connector [Remote Mount]	Q																	
Converter Power Options																		
Battery Power *(Standard)*	B																	
Solar Power, Battery Backup	S																	
A/C Power, Battery Backup	E																	
DC Power, Battery Backup	F																	
Converter Output Options																		
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																	
DC Power/ Analog Out Cable Options																		
No DC Power or Outputs *(Standard)*																		
No Cable - Output Configured (Quick Conn)	0																	
6 ft (Open Leads)	1																	
25 ft (Open Leads)	2																	
50 ft (Open Leads)	3																	

continued on next page

Vera Mag 3000 Part Number Matrix (cont.)

VM3 -								-		-		-		-	
Pulse Cable Length Options															
No Outputs *(Standard)*															
No Cable - Output Configured (Quick Conn)	0														
6 ft (Open Leads)	1														
25 ft (Open Leads)	2														
50 ft (Open Leads)	3														
Output Cable Terminal Options															
No Output Cables															
Strain Relief		1													
Quick Connect Cable Terminals		2													
SmartTrax Options															
No SmartTrax Options															
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							
2 ft SmartTrax Standalone Unit ExactRead Cable (Strain Relief Only)								S02							
6 ft SmartTrax Standalone Unit ExactRead Cable (Strain Relief Only)								S06							
25 ft SmartTrax Standalone Unit ExactRead Cable (Strain Relief Only)								S25							
50 ft SmartTrax Standalone Unit ExactRead Cable (Strain Relief Only)								S50							
Non Standard Length Options															
ISO Length *(Standard)*															
McCrometer Length										MCC					
Custom Specified Length (Nominal Length)										d Length					
No Batteries, Battery Tray Options															
Includes Batteries (Standard)															
No Batteries (Alkaline Tray)												NBA			
No Batteries (Lithium Tray)												NBL			
Hazardous Area Location															
No Hazardous Location Needed															
Class 1, Division 2, Groups A-D, T5															HL

Vera Mag 5000 Part Number Matrix

VM5		-								-		-		-		-		-	
Nominal Line Size																			
1.5"	0C																		
2"	02																		
2.5"	0D																		
3"	03																		
4"	04																		
6"	06																		
8"	08																		
10"	10																		
12"	12																		
14"	14																		
16"	16																		
18"	18																		
20"	20																		
24"	24																		
End Connection Options																			
ANSI Class 150# (285 psi Rating)	2																		
ANSI Class 300# (300 psi Rating)	3																		
Electrode Material Options																			
S316 Stainless Steel *(Standard)*	S																		
Hastelloy	H																		
Transmitter Mounting and Cable Connector Options																			
Meter Mount Converter	M																		
IP68 Strain Relief [Remote Mount] (Standard)	R																		
IP68 Quick Connect Potted Connector [Remote Mount]	Q																		
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																		

Vera Mag 5000 Part Number Matrix (cont.)

VM5 -				-		-		-		-		-	
Transmitter Power Options													
A/C Power	A												
DC Power	D												
Transmitter Analog/Hart Output Options													
Single 4-20mA Analog, Dual Digital (Standard)		1											
Dual 4-20mA Analog, Dual Digital		2											
1 Hart 4-20mA Analog, 1 Standard 4-20mA Analog, Dual Digital		3											
Transmitter Digital Output Options													
No Digital Protocol Outputs													
Modbus Protocol			MOD										
Ethernet IP Protocol *Future Option			EIP										
Output Protocol Types													
No Digital outputs													
RTU (RS485) Output (Modbus)					R								
TCP/IP Output (Modbus, Ethernet IP)					E								
Smart Output Protocol / SmartTrax Options													
No AMI Outputs/ SmartTrax													
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						
2 ft SmartTrax Standalone Unit ExactRead Cable (Strain Relief Only)							S02						
6 ft SmartTrax Standalone Unit ExactRead Cable (Strain Relief Only)							S06						
25 ft SmartTrax Standalone Unit ExactRead Cable (Strain Relief Only)							S25						
50 ft SmartTrax Standalone Unit ExactRead Cable (Strain Relief Only)							S50						
Non Standard Length Options													
ISO Length *(Standard)*													
McCrometer Length										MCC			
Competitor Replacement Length										LS	Select		
Competitor Replacement Length										LP	Length		
Custom Specified Length (Nominal Length)										d Length			
Accuracy Options													
High Accuracy 0.2% Calibration											HA		
Hazardous Area Location													
No Hazardous Location Needed													
Class 1, Division 2, Groups A-D, T5													HL

ProComm GO Transmitter Specifications

Physical Specifications

Electronic Housing	Diecast aluminum, powder coated enclosure w/ tamper resistant seal, 6½" x 6½" x 43/8" tall
Transmitter Dimensions	See "Dimensions" section for meter mount and remote mount transmitter dimensions.
Power	**Battery:** Standard: three 3.6V lithium-thionyl chloride (Li-SOCI2) D size batteries with two AA backup batteries **AC Power:** 100-240VAC/45-66Hz (4W) **DC Power:** Linear power supply 10-35VDC (4 W)
Electrical Connections	• Optional shielded cable for 10-32VDC/4-20 mA output • Optional shielded cable for pulse out

Performance and Operational Specifications

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

Display and Measurement

Display	• 2-Line LCD display (no backlight) • Non-volatile memory • Anti-reverse totalizer (standard) • Total (to 9 digits of precision)	• Flow rate and velocity (to 5 digits of precision) • Two alarms: low battery and empty pipe (optional) • Opening lid activates display
Digits	5 Rate, 9 Total	

Units

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 Transmitter Specifications (cont.)

Display and Measurement (cont.)

Totalizer Units

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)		

Data Logger

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
- CE
- Certified by MET to UL 61010-1

HL Model

- ISO 9001:2015 certified quality management system
- CE
- Certified by MET to UL 61010-1 and MET C22.2 No. 61010-1-04
  - Class I, Division 2, Groups A B C D, T4
  - Class I, Zone 2, IIC T4

Note: ProComm GO with SmartTrax On Board is not available for hazardous locations.

ProComm Max Transmitter Specifications

ProComm Max devices equipped with the optional HART Expansion Card are capable of point-to-point communication as a Slave device with a HART-capable Master device, or with a HART-enabled 4-20 Master device.

WARNING
THE PROCOMM MAX DEVICE MUST FIRST BE DISCONNECTED FROM ITS POWER SOURCE BEFORE ATTEMPTING INSTALLATION OR WIRING OF EXPANSION CARDS. IGNORING THIS WARNING MAY RESULT IN IRREPARABLE DAMAGE TO YOUR PROCOMM MAX DEVICE

7.1 Hardware Installation

Instructions for HART Expansion Card installation can be found in Section 3.4 of this manual.

To connect your ProComm MAX with optional HART Expansion Card to another HART-capable device Master device, terminate your 2-conductor HART or 4-20 cable in the unpopulated 2-position plug that is installed in the 2-position terminal block on the HART Expansion Card in accordance with Table I.

Table I. HART terminal block pin-out description

Plug position	4-20 / HART
44	(-)
45	(+)

7.2 Configuration

After card installation, the following four HART parameters, called Dynamic Variables, can be configured in the ProComm MAX menu to hold various Device Variables.

Code	Dynamic Variable	Default Device Variable
PV	Primary	0 (Forward flow Rate)
SV	Secondary	1 (Flow Velocity
TV	Tertiary	2 (Reverse Flow Rate)
QV	Quaternary	3 (Net Totalizer)

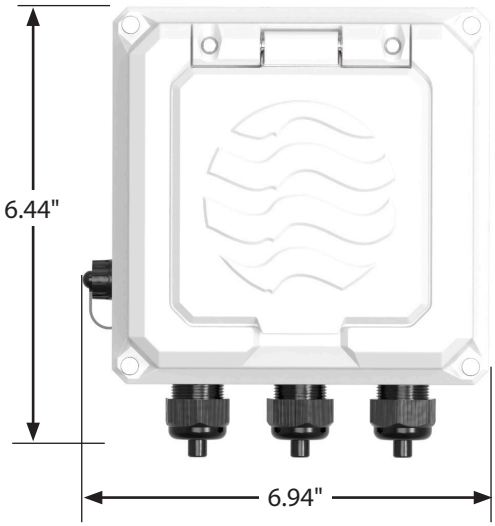
Refer to Section 4.2 for details relating to menu navigation.

Refer to Table II for a list of Device Variables that can be stored in the above Dynamic Variables.

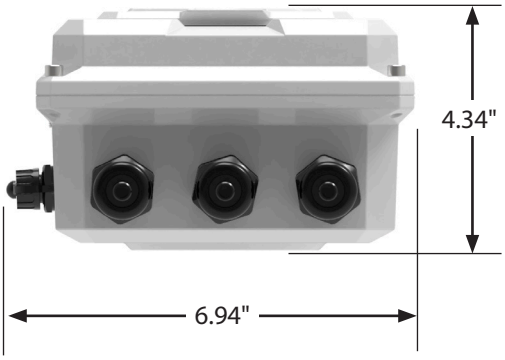
Table II: Device Variables

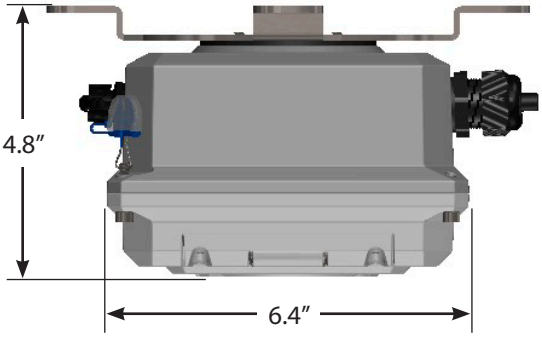
Device Variable	Type	Data	Description
0	FLOAT	Forward Flow Rate	Flow rate incrementing the positive totalizer
1	FLOAT	Flow Velocity	Linear Flow rate in ft/sec
2	FLOAT	Reverse Flow Rate	Flow rate incrementing the negative totalizer
3	FLOAT	Net Totalizer	Difference of Positive and Negative Totals
4	FLOAT	Totalizer (+)	Positive Flow Total Value
5	FLOAT	Totalizer (-)	Negative Flow Total Value
6	FLOAT	Batch Total (+)	Positive Resettable Batch Total Value
7	FLOAT	Batch Total (-)	Negative Resettable Batch Total Value

ProComm GO Transmitter Dimensions

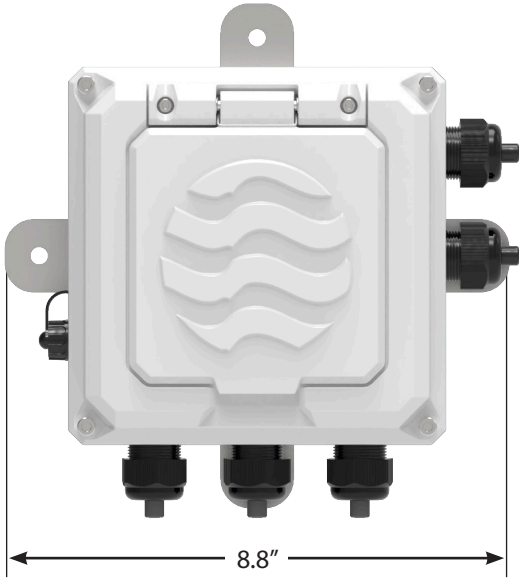


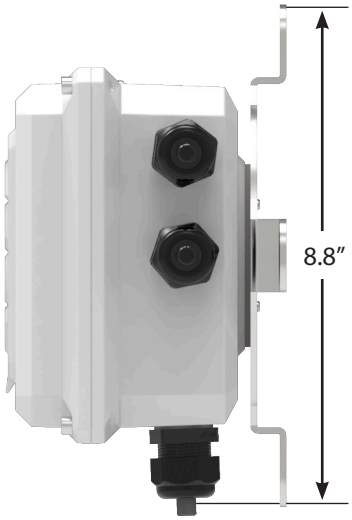
Meter mount converter





Remote mount converter





settings:

Polling Address: 0

Preamble: 5 (0xff, 0xff, 0xff, 0xff, 0xff)

Universal Commands: 0, 1, 2, 3

HART protocol revision: 7

7.4 Commands

The optional HART Expansion Card supports various Universal Commands and will respond to any HART revision 7 Master device, handheld or otherwise. These commands adhere to HART protocol revision 7. Refer to Table III for detailed information.

Table III: Commands

Cmd	Description	Start Delimiter	Address Field Format
0	Read unique identifier	0x02	Short frame
1	Read primary variable	0x82	Long frame
2	Read current and % of range	0x82	Long frame
3	Read current and dynamic variables	0x82	Long frame

Note: HART commands not described in Table III are not supported

Note: Unit Codes described in Tables IV and V

Device Identification Number

Responses to commands 1-3 contain a long address frame consisting of 5 bytes. Bytes 2-4 contain the Device Identification Number (DIN). The DIN contains a partial device serial number. For example, a device with serial number FP24-0123 will have a DIN of 240123.

ProComm Max Transmitter Dimensions (cont.)

Physical Specifications

Electronic Housing	Diecast aluminum, powder coated enclosure w/ tamper resistant seal
Transmitter 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 / 47-66 Hz (10 W) DC Power: 10-35 VDC (10 W) Note: AC or DC must be specified at time of ordering.
Connection Options	Conduit option: 1/2" NPT threaded connections
Galvanic Isolation	All outputs are galvanically isolated from power supply up to 500 V
Conductivity	Minimum conductivity of 5µS/cm

Performance and Operational Specifications

Location	Indoor or outdoor use
Operating and Storage Temperature	-4° to 140° F (-20° to 60° C)
IP Rating	IP67 Die cast aluminum transmitter
Standard Outputs	Single 4-20mA (standard). Galvanically isolated and fully programmable for zero and full scale. A second 4-20mA is available. Two separate digital programmable outputs: open collector transistor usable for pulse, frequency, or alarm settings. • Volumetric Pulse • Range Indication • Maximum switching voltage: 35 VDC • Maximum switching current: 100mA • Insulation from other secondary circuits: 500V • Datalogger (12-hour increments as default)
Optional Outputs	• Modbus • HART • Ethernet IP • Smart Output™ (Sensus, Itron 6, Itron 9)

Display and Measurement

Keyboard and Display	Can be used to access and change set-up parameters using six membrane keys and an LCD display
Units	GAL Gallons, CUF Cubic Feet, AFT Acre Feet, CUM Cubic Meters, LIT Liters, MML Megaliter, MTT Metric Ton (KL), B31 Barrel (31G), B42 Barrel (42G), B46 Barrel (46G), B55 Barrel (55G), IMG Imperial Gallon, AIN Acre Inch, TON Ton (Short), MM1 Miners Inch Minute (11.22G), MM9 Miners Inch Minute (9G), MH1 Miners Inch Hour (11.22G), MD1 Miners Inch Day (11.22G), MH9 Miners Inch Hour (9G), MD9 Miners Inch Day (9G), KGL Kilo Gallons, MGL Mega Gallons, IN3 Cubic Inch

Other Specifications

Certifications	• ISO 9001:2015 certified quality management system • CE • CRN (ANSI) (Field Mag only, 4"-12" ANSI #150 meters)

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