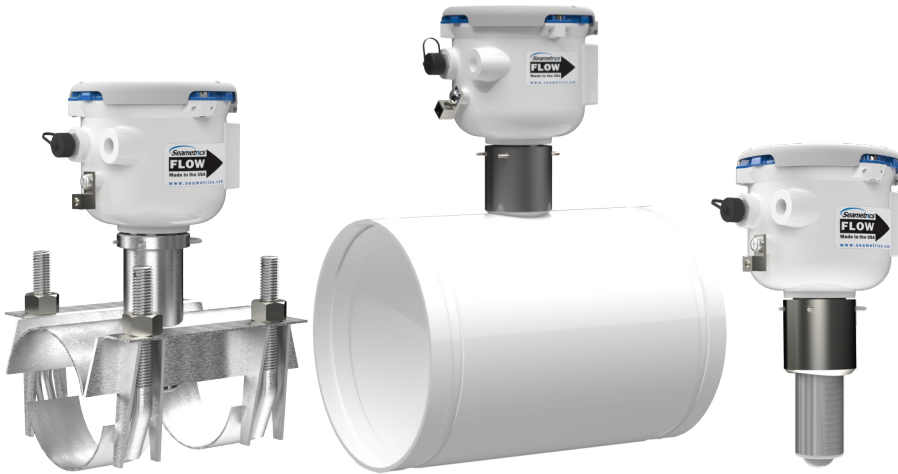


# EX90-SERIES

## ELECTROMAGNETIC INSERTION FLOW SENSOR




Saddle, Grooved Spool or Weld Fitting

### APPLICATIONS

Municipal water  
Water/Wastewater  
treatment  
Reuse/Reclaim water  
Industrial processes  
Cooling towers  
Pump towers  
Dewatering

### Features

- No moving parts
- Economical
- Durable
- Easy to install
- Easy to maintain
- Pulse output standard
- 5 year battery life
- NSF/ANSI Standard 61
- Data logging (Optional)
- 4-20mA (Optional)
- Sensus Smart Output (Optional)
- Modbus Output (Optional)
- Telemetry ready for wireless meter reading. Solutions available now by our sister company 

The **EX90-series** battery powered, insertion electromagnetic flow meter is designed for use with conductive fluids in 4"–12" pipe. The EX90's stainless steel body allows the meter to operate in a wide range of temperatures, pressure, and corrosive or dirty environments.

The EX90 is highly suitable for difficult applications. With no moving parts, these meters can be used in "dirty water" applications where debris would foul a mechanical meter. If the EX90 meter is used with a programmable controller, the output signal can be fed direct, with no other conditioning required.

Rate and total units can be set via the front panel touch key pad by the user. Bidirectional flow is standard with totals available in forward total, reverse total, net total, batch forward total and batch reverse total.

The EX90 is commonly battery powered and an output cable is available for transmitting the output signals to remote devices. The EX90 includes a Seametrics saddle (stainless steel), grooved spool (powder coated carbon steel tube with stainless steel insert) or a weld-o-let (ordered separately). The saddle has been designed to accommodate a wide range of pipe sizes and types while ensuring correct placement of the meter in the pipe.

The EX90 can be connected to external DC power and while Modbus is an option on all versions, 4-20mA is available on external DC powered versions only.

### Contact Your Supplier



## Specifications\*

<b>Pipe Size</b>	4" to 12"			
<b>Materials</b>	<b>Sensor Body</b>	316 SS		
	<b>Electrodes</b>	Hastelloy		
	<b>Housing</b>	Powder-coated diecast aluminum		
	<b>Electrode Cap</b>	PVDF (Kynar®)		
	<b>O-Ring</b>	EPDM		
<b>Temperature</b>	<b>Operating</b>	10° to 140° F (-12° to 60° C)		
	<b>Storage</b>	-40° to 158° F (-40° to 70° C)		
	<b>Fluid Temp.</b>	32° to 200° F (0° to 93° C)		
<b>Meter Pressure</b>	200 psi (14 bar)			
<b>Flow Rate</b>	0.5 - 4.5 m/sec (1.64 - 14.8 ft/sec) (Low flow cutoff .15 m/sec; .49 ft/sec)			
<b>Calibration Accuracy</b>	<b>0.5 - 4.5 m/s (1.64-14.76 ft/sec)</b>	+/- 2% of reading		
	<b>0.3 - 0.5 m/sec (0.98 - 1.64 ft/sec)</b>	+/- (2% of reading + 0.25% of full scale)		
<b>Display</b>	<b>Type</b>	128x64 dot-matrix LCD		
	<b>Digits</b>	5 Digit Rate		8 Digit Total
	<b>Units</b>	Rate Volume Units	Rate Time Units	Total Volume Units
	<i>Please Note: All meters are factory set for gallons per minute (GPM) rate and acre foot total. If other units are required, they can be set in the field.</i>	Gallons Liters Barrels (42 gallons) Cubic Feet Cubic Meters Million Gallons <sup>1</sup> Mega Liters <sup>1</sup> Imperial Gallons Million Imperial Gallons <sup>1</sup>	Second Minute Hour Day	Gallons Cubic Meters x 1000 Cubic Feet Cubic Feet x 1000 Million Cubic Feet Imperial Gallons Imperial Gallons x 1000 Million Imperial Gallons Acre Inch Acre Foot Fluid Ounce
	<b>Bidirectional</b>	Forward Total, Reverse Total, Net Total, Batch Forward Total, Batch Reverse Total <sup>2</sup>		
<b>Power</b>	One lithium 7.2V 'D' size battery pack, replaceable. DC Power available for 4-20mA output meters			
<b>Scaled Pulse Output</b>	<b>Signal</b>	Current sinking pulse, isolated, 36 Vdc at 10 mA max		
	<b>Pulse Rates</b>	User-scalable from 0.1 to 99,999.9 volume units/pulse. Pulse width varies with output frequency, 150 pulses/sec max		
<b>Options</b>	<b>4-20Ma Current Loop</b>	Isolated, passive, 24Vdc, 650 Ω maximum current loop (External DC powered units only)		
	<b>Serial Communications</b>	Isolated, asynchronous serial RS485, Modbus® RTU protocol		
	<b>Sensus Smart Output</b>	Connects to Sensus SmartPoint		
<b>Cable</b>	<b>Optional Output Cable</b>	20ft (6m) standard length polyurethane jacketed cable—for power and outputs. (Lengths up to 200' (60 m) available.)		
<b>Conductivity</b>	>20 microSiemens/cm			
<b>Empty Pipe Detection</b>	Hardware/software, conductivity-based			
<b>Regulatory</b>	Certified to NSF/ANSI Standard 61 and NSF 372			
<b>Environmental</b>	IP67			

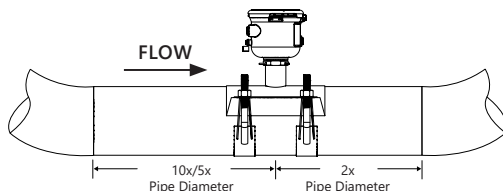
Modbus is a registered trademark of Schneider Electric.

\* Specifications subject to change. Please consult our website for the most current data (seametrics.com).

<sup>1</sup> Rate Time Unit is available in Day only.

<sup>2</sup> Forward & reverse flow totals are non-resettable. Batch forward total & batch reverse total can be reset.

Kynar is a registered trademark of Arkema, Inc.



Upstream straight pipe is selected during initial setup. Upstream options are 5X or 10X the diameter and are based on the amount of straight pipe available in either new or propeller meter replacement installation. Downstream straight pipe requirement is 2X the diameter. See programming setup for details.

# EX90-SERIES ELECTROMAGNETIC INSERTION FLOW SENSOR



## Features



Quickly and easily change Total Volume Units, Flow Rate Units, Pulse Output Scaling, and many other settings using the two light sensor button controls on the display panel.

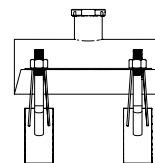
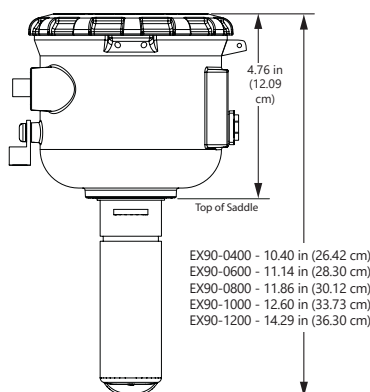
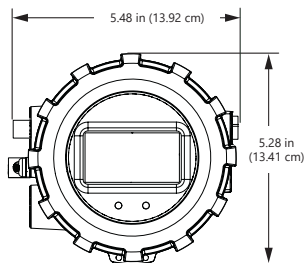


- Battery Powered
  - Bidirectional Flow Reading
  - Modbus Output (Optional)
  - Pulse Scaled Output
  - Built-in Data Logger (Optional)
  - Sensus Smart Output (Optional)
  - 4-20mA Output (Optional\*)
- \*Available on DC Powered Version

## Flow Range\*

Nominal Pipe Size	4"	6"	8"	10"	12"
Low Flow Cutoff GPM	19.3	43.11	77.1	120.5	173.5
Low Flow Cutoff LPS	1.22	2.72	4.86	7.6	10.95
Min GPM	64.3	144.6	257	401.6	578.3
Min LPS	4.1	9.1	16.2	25.3	36.5
Max GPM	578	1301	2313	3614	5204
Max LPS	36.5	82.1	145.9	228	328.3

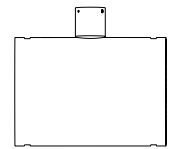
## Dimensions



**Saddle**  
Stainless steel



**Weld**  
316 stainless or carbon steel



**Grooved Spool**  
Powder coated carbon steel with stainless steel insert

Saddle Size	Saddle Range	Grooved Spool Size	Grooved Spool Diameter	Grooved Spool Length	Grooved Spool+Meter Weight (lbs.)
4"	4.00" - 4.90"	4"	4.50"	8"	12
6"	6.00" - 6.90"	6"	6.63"	9"	15
8"	8.00" - 9.05"	8"	8.63"	12"	22
10"	10.00" - 11.10"	10"	10.75"	15"	32
12"	12.10" - 13.20"	12"	12.75"	18"	47

Consult factory if your OD does not match.

## How to Order Worksheet

<b>EX90</b>	1	1a	2	3	4	5
	□ □ □ □	□ □ □ □	□ □	□	□ □	□ □ □ □
<b>1a Adapter:</b> 0 = Saddle V = Grooved Spool R = Weld-o-let (Ordered Separately)		<b>2 Power:</b> BX = Battery D1 = DC 60Hz D2 = DC 50Hz (Background)		<b>3 Outputs:</b> X = No optional output S = Modbus L = 4-20mA		

### Saddle/Grooved Spool Included, or Select a Weld-o-let Type from the Table Below (Ordered Separately)

1 Size	1a Adapter	2 Power	3 Optional Output <i>(Comes standard with one pulse output)</i>	4 Options	5 Power/Output Cable <i>(Must select one)</i>
-040 4"	-0	-BX	-X <i>(requires 4-pin cable for pulse output)</i>	-XX None	0000 No Cable <i>(Cable required for power/output)</i>
-060 6"	-V		-S <i>(requires 8-pin cable)</i>	-01 Data Logger	<u>4 Conductor</u> <u>8 Conductor</u>
-080 8"	-R			-02 Sensus Smart Output <i>(Includes 6' Cable)</i>	0064      0068 6 meter (20 ft)
-100 10"	<i>(Weld-o-let ordered separately from the table below)</i>				0154      0158 15 meter (50 ft)
-120 12"		-D1	-L <i>(requires 8-pin cable)</i>		0304      0308 30 meter (100 ft)
		-D2			0454      0458 45 meter (150 ft)
					0604      0608 60 meter (200 ft)

Modbus is a registered trademark of Schneider Electric.

Note: All meters are factory set for gallons per minute (GPM) rate and acre feet total. If other units are required, they can be programmed in the field.

Note2: Saddle included with -0 version, Grooved Spool included with -V version, but no fitting is included with -R version.

**Weldolet purchase is required from table below.**

Note3: The EX90 -BX can be externally powered by connecting DC power with the power/output cable. Batteries then serve as backup power.

Note4: Battery life is shortened when using Modbus with battery powered units. Expected battery life is approximately 1 year, based on usage.

For chemical or fertilizer injection applications, the injection point must be placed downstream of the meter or far enough upstream for complete mixing to occur before the flow reaches the meter. (See fertigation technical bulletin on Seametrics website, seametrics.com.)

**User is responsible for reviewing end use application with their supplier for product suitability.**

WELDOLET #	DESCRIPTION
104122-04-CS	Weldolet Kit, Carbon Steel 4"
104122-04-SS	Weldolet Kit, Stainless Steel 4"
104122-06-CS	Weldolet Kit, Carbon Steel 6"
104122-06-SS	Weldolet Kit, Stainless Steel 6"
104122-08-CS	Weldolet Kit, Carbon Steel 8"
104122-08-SS	Weldolet Kit, Stainless Steel 8"
104122-10-CS	Weldolet Kit, Carbon Steel 10"
104122-10-SS	Weldolet Kit, Stainless Steel 10"
104122-12-CS	Weldolet Kit, Carbon Steel 12"
104122-12-SS	Weldolet Kit, Stainless Steel 12"

