



# The Signalizer™

Model EMP - US Patent No. 11,041,738

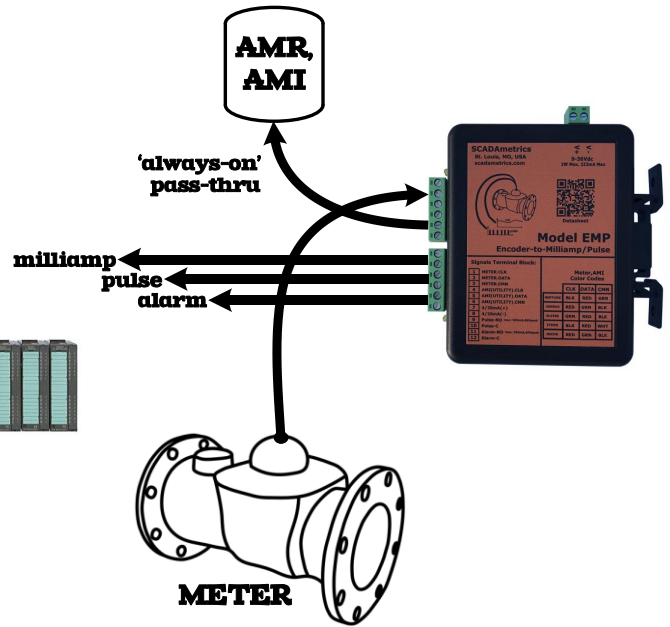


2 YEAR WARRANTY

Building or Factory Automation Controls



RoHS Compliant  
AWWA C707-05 COMPLIANT



## The Versatile 4-20 Milliamp and Pulse Signal Source for Sensus Water Meters!

SCADAMETRICS® is pleased to introduce the newest member of its DINstrumentation™ series – **The Signalizer™!**

This new electronic signal generator for water meters provides a 4-20 milliamp (flow) output and a dry contact pulse (per volume) output! – while still maintaining the meter’s ability to be co-connected to an AMI/AMR endpoint!

Meter Owners have traditionally been required to make a weighted buying decision: encoder-type meter?... or milliamp/pulse-type meter? **The Signalizer** allows you to easily have both with the same meter!

**The Signalizer** utilizes the popular encoder signal from the water meter to generate both a 4-20mA rate-of-flow signal<sup>1</sup> and a dry-contact pulse-per-volume signal. ...And because **The Signalizer** is outfitted with an integral pass-thru port, it can co-exist with an AMI/AMR system<sup>2</sup>. Even if power is removed, the pass-thru port is always functional – ensuring continuous connectivity to the AMR/AMI system!

**The Signalizer** is compatible with the Omni, accuSTREAM, iPerl, and ECR registers by Sensus/Xylem (Morrisville, NC).

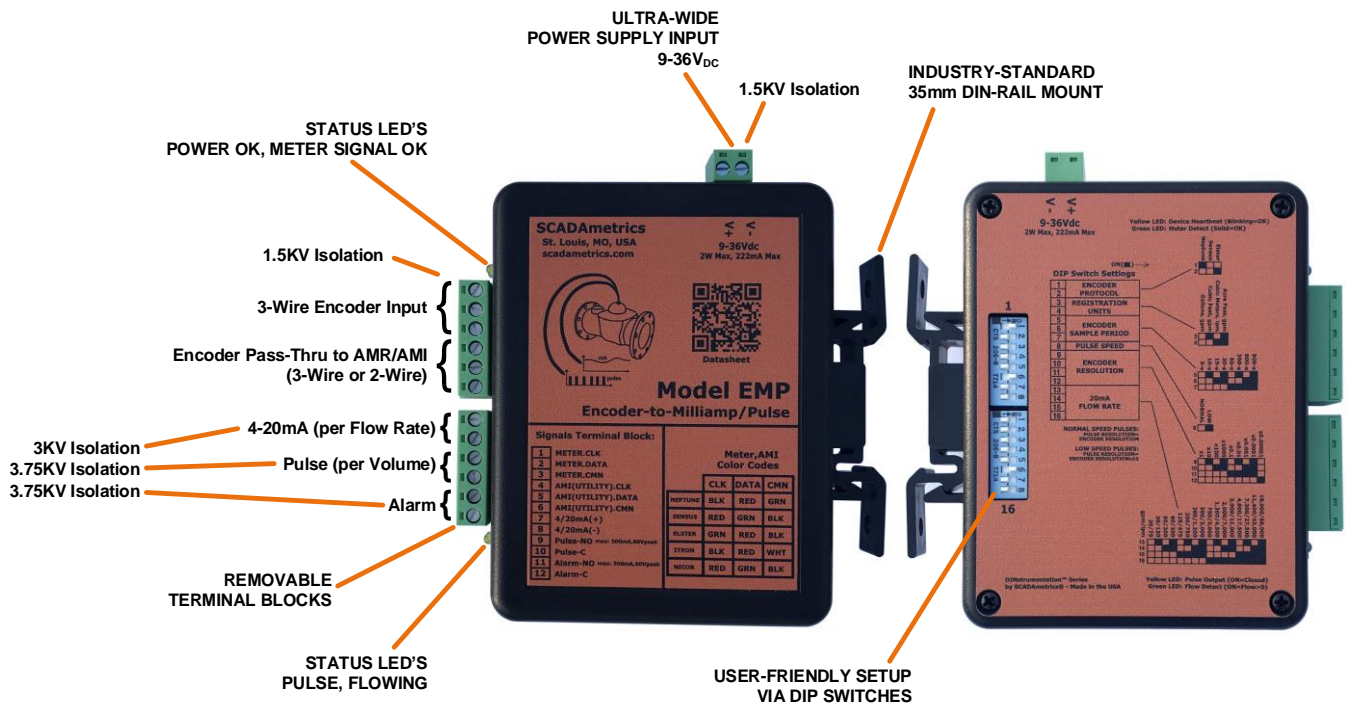
## Key Features -

- 4-20mA Flow-Proportional Output (3KV Isolation).
- Dry-Contact, Volume-Proportional Output (3.75KV Isolation).
- Dry-Contact Alarm Output (3.75KV Isolation).
- Built-In Pass-Thru Port for Co-Connection to an AMI/AMR System – Works Even If Power Down!
- Compatible with 3-wire version Sensus registers.
- Works with All Popular Registration Units (Gallons, Cubic Feet, Cubic Meters, Acre Feet).
- No Computer Required! – Setup via DIP Switches Only!
- Removable Terminal Blocks, Simplified Wiring Procedures.
- Mounts on standard 35mm industrial DIN-rail.
- 24VDC-Powered (1.5KV Isolation). Low 1.2W Power Consumption.
- Enclosure and Circuit Board: UL 94-V0 recognized materials.
- Simulation-Mode Feature: Emits 12mA and 1 Hz Pulse.

Are you interested in how SCADAMETRICS meter technology can help you more closely monitor the flow through your water meters? Give us a call! We’ll be glad to discuss the details!

<sup>1</sup>**Encoder Resolution** – a high-fidelity 4-20mA signal requires high-resolution encoder resolution (8+ digits). Therefore, for optimal 4-20mA SIGNALIZER performance, we recommend the Sensus register be pre-programmed to transmit eight (8) totalizer digits.

<sup>2</sup>**Permitting** – If the meter is owned by the water utility, we recommend that you first contact its engineering department for permission!



## Engineering Specifications -

Dimensions: 4.5" x 5.0" x 1.275"  
 Weight: 6.5 Ounces  
 Supply Voltage: 9-36V<sub>DC</sub>  
 Supply Power: 1.25W  
 Power Supply Isolation: 1500V<sub>RMS</sub>

Neptune Protocol Support: Yes, 8,9-Digit "MACH10/PROCORDER/ECORDER", and 6-Digit "PROREAD" Protocols  
 Sensus Protocol Support: Yes, Both Fixed and Variable Digit Sensus Protocols (4-9 digits)  
 Elster Protocol Support: Yes, Auto-Fills Units and Decimal Shift, Based on Embedded Info within Elster K-Frame  
 Supported Units: Gallon, Cubic Feet, Cubic Meters, Acre-Feet  
 Supported Scalars: x1, x10, x100, x1,000 --- x0.1, x0.01, x0.001, x0.0001, x0.00001  
 Encoder Sample Period (s): 5, 10, 15, 30, 60, 300, 600, 900 (User-Selectable)  
 Programming Method: Integrated DIP Switches, 16-Poles

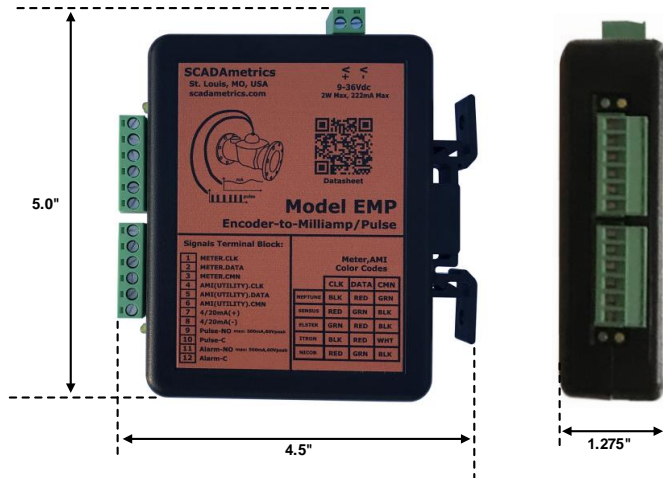
4-20mA Flow Range (gpm): 20,30,50,80,125,200,300,500,750,1200,2000,3000,4600,7300,11400,18000  
 4-20mA Flow Range (lpm): 75,120,200,300,475,750,1200,2000,3000,4500,7000,11000,17500,27500,43000,68000  
 4-20mA Resolution: 16-Bit DAC  
 4-20mA Isolation: 3000V<sub>RMS</sub>  
 4-20mA Max Series Resistance: 500 Ω  
 4-20mA Signal Type: Active. Therefore, do not add an external loop supply, or else damage to the unit will result!

Pulse Output Type: Solid-State Dry-Contact, 1 Pulse-per-Encoder Resolution  
 Alarm Output Type: Solid-State Dry-Contact, Closes if Meter or Signalizer Fault  
 Pulse Resolution: Normal-Speed Mode: Pulse Resolution = Encoder Resolution  
 Low-Speed Mode: Pulse Resolution = Encoder Resolution / 10  
 Closed-Contact Resistance: 0.4 ohm, typical  
 Closed-Contact Max Current: 500mA  
 Open-Contact Max Voltage: 60V  
 Pulse/Alarm Isolation: 3750V<sub>RMS</sub>

Meter Cable Connection: 3-Position, Removable Screw-Down Terminal Block, 12-26 AWG  
 Pass-Thru Cable Connection: 3-Position, Removable Screw-Down Terminal Block, 12-26 AWG  
 Pass-Thru Port for AMR/AMI: Yes, Supports both 3-Wire and 2-Wire AMR Devices

Temperature: -40C to 85C (-40°F to 185°F)  
 Relative Humidity: 5% to 95%, Non-Condensing  
 Enclosure Rating: Built to IP40 Specifications, Not Rated for Submersion /Outdoor Use  
 Manufacturing Location: USA  
 Environmental: ROHS-Compliant, Lead-Free  
 Meter Interface: AWWA C707-05  
 Warranty: 2 Years (see www.scadametrics.com for details)

## Engineering Dimensions (Inches) -



## Meter Terminal Block Hookup -

Term.	Function	Sensus Meter with Standard Cable	Sensus Meter with Nicor Cable	Sensus Meter with Itron ERT Cable
1	Meter Clock	Red	Red	Black
2	Meter Data	Green	Green	Red
3	Meter Ground	Black	Black	White Shield

## AMR/AMI Terminal Block Hookup -

Term.	Function	Sensus (Metron-Farnier, Badger, Master Meter, Kamstrup, Mueller, Zenner, RG3, Nicor Cable)	Neptune Color	Elster Color	Itron ERT Cable
4	Utility AMI Clock	Red	Black	White   Green	Black
5	Utility AMI Data	Green   White	Red	Red	Red
6	Utility AMI Ground	Black	Green	Black	White   Shield

### Wiring Notes:

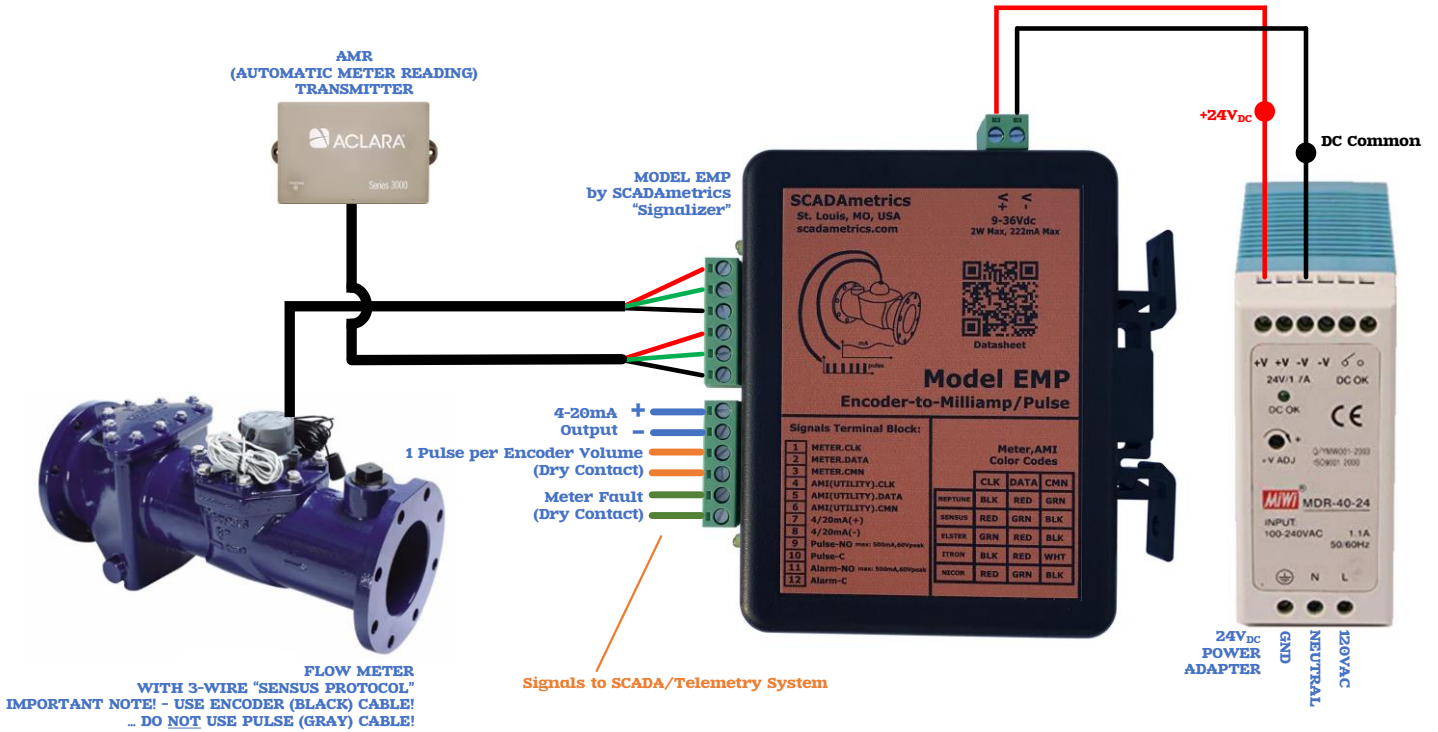
1. Meter Terminal Block Hookup (Terminals 1,2,3): Apply the color-coding that pertains to the manufacturer of the Water Meter (or manufacturer of the Specialty Cable, such as Nicor or Itron).
2. Utility AMI/AMR Terminal Block Hookup (Terminals 4,5,6): Apply the color-coding that pertains to the manufacturer of the AMI/AMR Endpoint (or manufacturer of the Specialty Cable, such as Nicor or Itron).

## Signal Terminal Block Hookup -

Terminal	Function	Notes
7	4-20mA +	Settable Range via DIP Switches
8	4-20mA -	
9	Pulse +	Solid-State Dry Contact (N-O) 500mA Max, 60V Max
10	Pulse -	
11	Alarm +	Solid-State Dry Contact (N-O) 500mA Max, 60V Max
12	Alarm -	



# QUICK-START GUIDE -



## WIRING FOR: SENSUS OMNI-T2/R2/F2/C2, IPERL, ACCUSTREAM, & ECR WATER METERS

Fig1

## **Initial Setup:**

- 1. Attach the water meter's three (3) encoder wires to Signalizer terminals 1,2,3 (see above table for color-coding).**
- 2. (If Applicable) Attach the AMR/AMI endpoint's three (3) encoder wires to Signalizer terminals 4,5,6 (see above table for color-coding).**
- 3. (If Applicable) Connect the 4-20mA output signal to PLC/Controller: Terminals 7(+) and 8(-). Important Note! – The Signalizer™ provides loop power. The user must not add an additional loop power supply, or else damage to the unit will result.**
- 4. (If Applicable) Connect the pulse output signal to the PLC/Controller: Terminals 9 and 10. Important Note! – The pulse output is a solid-state, dry-contact type. 500mA max, 60V max. Circuit must be current-limited by external means.**
- 5. (If Applicable) Connect the alarm output signal to the PLC/Controller: Important Note! – The alarm output is a solid-state, dry-contact type. 500mA max, 60V max. Circuit must be current-limited by external means.**
- 6. Set the DIP Switches, per the Datasheet.**
- 7. Connect DC voltage source to the Signalizer's V+/V- terminals. An isolated 24V<sub>DC</sub> power supply is recommended.**

## **Apply Power, and Observe...**

- The Upper Yellow 'Heartbeat' LED should light up YELLOW, with an OCCASIONAL BLINK, signifying that the Signalizer is working.
- The Upper Green 'Meter OK' LED should light up SOLID GREEN, signifying that the meter has been successfully detected.
- The Lower Yellow LED will follow the Pulse Output (LED ON=Contact Closure).
- The Lower Green LED will light up SOLID GREEN during periods when Positive Flow is Detected.

# SENSUS WATER METERS -

## Recommended DIP Switches 1-12 FOR 8-DIGIT (NYC-DEP) METERS:

Size	Gallon	Cubic Feet	Cubic Meters
<b>5/8" iPerl, accuSTREAM</b> <b>3/4" iPerl, accuSTREAM</b> <b>1" iPerl, accuSTREAM</b>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9= DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.1 Gal  Low Speed Pulse: 1 Pulse / 1 Gal	DipSw.1= DipSw.2= DipSw.3=ON DipSw.4=  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.01 FT <sup>3</sup>  Low Speed Pulse: 1 Pulse / 0.1 FT <sup>3</sup>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=ON  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9=ON DipSw.10=ON DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.001 M <sup>3</sup>  Low Speed Pulse: 1 Pulse / 0.01 M <sup>3</sup>
<b>1.5" Omni-R2/T2/C2</b> <b>2" Omni-R2/T2/C2</b> <b>3" Omni-T2/C2</b>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9= DipSw.10= DipSw.11= DipSw.12=  Normal Speed Pulse: 1 Pulse / 1 Gal  Low Speed Pulse: 1 Pulse / 10 Gal	DipSw.1= DipSw.2= DipSw.3=ON DipSw.4=  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9= DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.1 FT <sup>3</sup>  Low Speed Pulse: 1 Pulse / 1 FT <sup>3</sup>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=ON  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.01 M <sup>3</sup>  Low Speed Pulse: 1 Pulse / 0.1 M <sup>3</sup>
<b>4" Omni-T2/F2/C2</b> <b>6" Omni-T2/F2/C2</b> <b>8" Omni-T2/F2/C2</b> <b>10" Omni-T2/F2/C2</b>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9=ON DipSw.10= DipSw.11= DipSw.12=  Normal Speed Pulse: 1 Pulse / 10 Gal  Low Speed Pulse: 1 Pulse / 100 Gal	DipSw.1= DipSw.2= DipSw.3=ON DipSw.4=  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9= DipSw.10= DipSw.11= DipSw.12=  Normal Speed Pulse: 1 Pulse / 1 FT <sup>3</sup>  Low Speed Pulse: 1 Pulse / 10 FT <sup>3</sup>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=ON  DipSw.5= DipSw.6=ON DipSw.7=ON DipSw.8=  DipSw.9= DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.1 M <sup>3</sup>  Low Speed Pulse: 1 Pulse / 1 M <sup>3</sup>

For NYC DEP Meter Applications, The Signalizer Sample Period Is Set To 600 Seconds (DIP Switches 5,6,7) In Order to Reduce Battery Wear Within the Water Meter.

# SENSUS WATER METERS -

Recommended **DIP Switches 1-12** FOR **8-DIGIT (SUB-METER) METERS:**

Size	Gallon	Cubic Feet	Cubic Meters
<b>5/8" iPerl, accuSTREAM</b> <b>3/4" iPerl, accuSTREAM</b> <b>1" iPerl, accuSTREAM</b>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9= DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.1 Gal  Low Speed Pulse: 1 Pulse / 1 Gal	DipSw.1= DipSw.2= DipSw.3=ON DipSw.4=  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.01 FT <sup>3</sup>  Low Speed Pulse: 1 Pulse / 0.1 FT <sup>3</sup>	DipSw.1= DipSw.2= DipSw.3=ON DipSw.4=ON  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9= DipSw.10=ON DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.001 M <sup>3</sup>  Low Speed Pulse: 1 Pulse / 0.01 M <sup>3</sup>
<b>1.5" Omni-R2/T2/F2</b> <b>2" Omni-R2/T2/F2</b> <b>3" Omni-T2/F2</b>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9= DipSw.10= DipSw.11= DipSw.12=  Normal Speed Pulse: 1 Pulse / 1 Gal  Low Speed Pulse: 1 Pulse / 10 Gal	DipSw.1= DipSw.2= DipSw.3=ON DipSw.4=  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9= DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.1 FT <sup>3</sup>  Low Speed Pulse: 1 Pulse / 1 FT <sup>3</sup>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=ON  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.01 M <sup>3</sup>  Low Speed Pulse: 1 Pulse / 0.1 M <sup>3</sup>
<b>4" Omni-T2/F2</b> <b>6" Omni-T2/F2</b> <b>8" Omni-T2/F2</b> <b>10" Omni-T2/F2</b>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9=ON DipSw.10= DipSw.11= DipSw.12=  Normal Speed Pulse: 1 Pulse / 10 Gal  Low Speed Pulse: 1 Pulse / 100 Gal	DipSw.1= DipSw.2= DipSw.3=ON DipSw.4=  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9= DipSw.10= DipSw.11= DipSw.12=  Normal Speed Pulse: 1 Pulse / 1 FT <sup>3</sup>  Low Speed Pulse: 1 Pulse / 10 FT <sup>3</sup>	DipSw.1= DipSw.2= DipSw.3= DipSw.4=ON  DipSw.5=ON DipSw.6=ON DipSw.7= DipSw.8=  DipSw.9= DipSw.10= DipSw.11=ON DipSw.12=  Normal Speed Pulse: 1 Pulse / 0.1 M <sup>3</sup>  Low Speed Pulse: 1 Pulse / 1 M <sup>3</sup>

**For Sub-Meter Applications, The Signalizer Sample Period Is Set To 30 Seconds (DIP Switches 5,6,7) In Order to Provide Faster 4-20mA Updates to the BMS System.**



# SENSUS WATER METERS -

Recommended **DIP Switches 13-16:**

The Following Are \*Suggested\* Flow Span Settings, and May Need to Be Adjusted Based on Anticipated Max Flow Conditions.

Size	Gallon , Cubic Feet , Cubic Meters	
5/8" iPerl, accuSTREAM 20 gpm 75 lpm	DipSw.13= DipSw.14= DipSw.15= DipSw.16=	4-20mA Span Settings Are Based Solely on Meter Size and Maximum Expected Flow Rates.
3/4" iPerl, accuSTREAM 30 gpm 120 lpm	DipSw.13=ON DipSw.14= DipSw.15= DipSw.16=	
1" iPerl, accuSTREAM 50 gpm 200 lpm	DipSw.13= DipSw.14=ON DipSw.15= DipSw.16=	
1.5" Omni 125 gpm 475 lpm	DipSw.13= DipSw.14= DipSw.15=ON DipSw.16=	
2" Omni 200 gpm 750 lpm	DipSw.13=ON DipSw.14= DipSw.15=ON DipSw.16=	
3" Omni 200 gpm 750 lpm	DipSw.13=ON DipSw.14= DipSw.15=ON DipSw.16=	
4" Omni 1200 gpm 4500 lpm	DipSw.13=ON DipSw.14= DipSw.15= DipSw.16=ON	
6" Omni 3000 gpm 11000 lpm	DipSw.13=ON DipSw.14=ON DipSw.15= DipSw.16=ON	
8" Omni 4600 gpm 17500 lpm	DipSw.13= DipSw.14= DipSw.15=ON DipSw.16=ON	
10" Omni 7300 gpm 27500 lpm	DipSw.13=ON DipSw.14= DipSw.15=ON DipSw.16=ON	