



The Signalizer™

Model EMP_{v2} - US Patent No. 11,041,738



The Industry's Most Versatile 4-20 Milliamp and Pulse Signal Source for Badger's Encoder-Style 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!

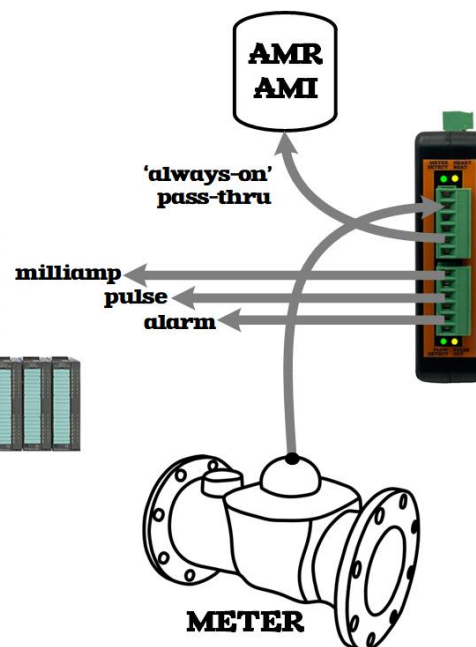
The Signalizer utilizes the popular encoder signal from the water meter to generate both a 4-20mA rate-of-flow signal¹ and a dry-contact pulse-per-volume signal. ...And because **The Signalizer** is outfitted with an integral pass-thru port, it can co-exist with an AMI/AMR system². Even if power is removed, the pass-thru port is always functional – ensuring continuous connectivity to the AMR/AMI system!

The Signalizer is compatible with every late-model, encoder-type water meter in North America – including those from **Badger, Neptune, Sensus, Metron-Farnier, Mueller, Kamstrup, Master Meter, RG3, Zenner, Elster-AMCO, McCrometer**, and many others!

¹**Encoder Resolution** – a high-fidelity 4-20mA signal requires high-resolution encoder resolution (8-9 digits). Therefore, for optimal performance, we recommend that you pre-program your water meter's encoder register for maximum resolution.

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

Building or Factory Automation Controls

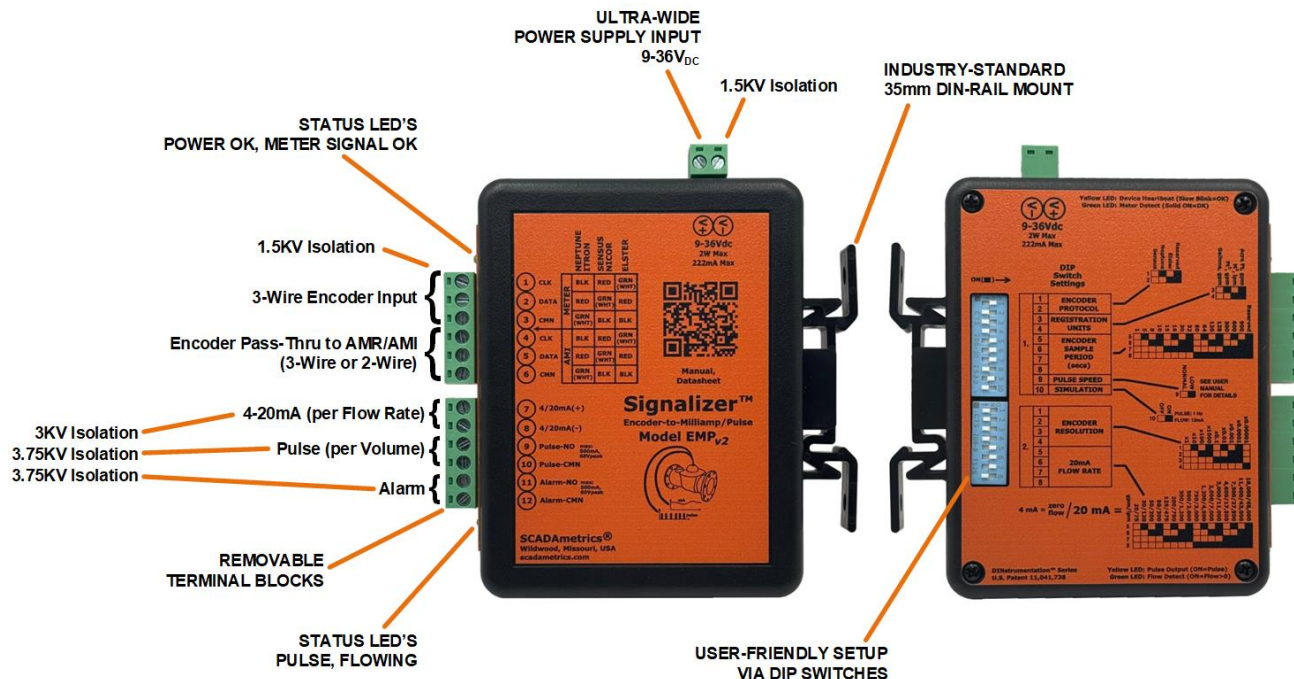


Key Features -

- 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 All Late-Model, North American Encoder-Type Water Meters (Neptune 6,8,9-digit MACH-10/E-CODER/ProCoder/ProRead, UI.1203/Sensus 4,5,6,7,8,9-digit, Elster K-Frame Protocols).
- 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-VO recognized materials.
- Simulation-Mode Feature: Emits 12mA and 1 Hz Pulse.
- Integral Common-Mode Rejection Choke

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!

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Engineering Specifications -

Dimensions: 4.5" x 5.0" x 1.275"
 Weight: 6.5 Ounces
 Supply Voltage: 9-36V_{DC}
 Supply Power: 1.25W
 Power Supply Isolation: 1500V_{RMS}
 EMI Suppression: EN55032 Class B Chebyshev DC Power Filter, 3-Wire Common-Mode Rejection Choke for Encoder Signal

Neptune Protocol Support: Yes, 8,9-Digit "MACH-10/ProCoder/E-CODER", 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
 AMI Pass-Thru Port Support: Universal – Works with All Major-Brand AMI/AMR Endpoints:
 Neptune, Sensus, Adara, Badger, Metron-Farnier, Itron, Master Meter, Hersey/Mueller, RG3, Zenner, Honeywell, Kamstrup, SCADAmetrics, Touchpads (All), Remote Displays (All)

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): 1, 5, 8, 10, 15, 16, 30, 32, 60, 64, 120, 128, 300, 600, 900, Reserved (User-Selectable)
 Programming Method: Integrated DIP Switches, 18-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_{RMS}
 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
 Contact Closure Duration: 50% Duty Cycle or 1000ms – whichever is less
 Alarm Output Type: Solid-State Dry-Contact, Closes if Meter or Signalizer Fault
 Pulse Resolution: Normal-Speed Mode (All Encoders): Pulse Resolution = Encoder Resolution
 Low-Speed Mode (8-Digit Encoders): Pulse Resolution = Encoder Resolution / 10
 Low-Speed Mode (9-Digit Encoders): Pulse Resolution = Encoder Resolution / 100
 Closed-Contact Resistance: 0.4 ohm, typical
 Closed-Contact Max Current: 500mA
 Open-Contact Max Voltage: 60V
 Pulse/Alarm Isolation: 3750V_{RMS}

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.scadametrix.com for details)

Engineering Dimensions (Inches) -



Meter Terminal Block Hookup -

Terminal	Function	UI.1203 Meter Color (Badger, Sensus, Metron-Farnier, Master Meter, Kamstrup, Mueller, Zenner, RG3, Aclara, Nicor Cable)	Neptune & Itron ERT	Elster
1	Meter Clock	Red	Black	White Green
2	Meter Data	Green White	Red	Red
3	Meter Cmn	Black	Green White	Black
4	Utility AMI Clock	Red	Black	White Green
5	Utility AMI Data	Green White	Red	Red
6	Utility AMI Cmn	Black	Green White	Black

Wiring Notes:

- With the exceptions of Neptune Technology Group and Elster-AMCO (aka Honeywell, ABB, Kent), most meter manufacturers follow the UI.1203/Sensus wire color-coding scheme.
- 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).
- 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).
- Alternative color-coding: manufacturers occasionally substitute a WHITE wire for a GREEN wire.
- If the recommended wiring has been attempted, and the display still reports "meter not detected", then re-try using each of the six possible wire color-coding combinations on terminals 1,2,3.

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 -	

DIP Switch Setup (Also Imprinted on Device Rear Cover) -



9-36Vdc

2W Max

222mA Max

Yellow LED: Device Heartbeat (Slow Blink=OK)

Green LED: Meter Detect (Solid ON=OK)

ON(■)→

DIP Switch Settings

1.	1	ENCODER PROTOCOL
	2	
	3	REGISTRATION UNITS
	4	
	5	ENCODER SAMPLE PERIOD (secs)
	6	
	7	
	8	
	9	PULSE SPEED
	10	SIMULATION

2.	1	ENCODER RESOLUTION
	2	
	3	
	4	
	5	20mA FLOW RATE
	6	
	7	
	8	

	Reserved	Elster	Neptune	Sensus
1				
2				

Acre Ft, gpm			
M ³ , lpm			
Ft ³ , gpm			
Gallons, gpm			

	Reserved
	900
	600
	300
	128
	120
	64
	60
	32
	30
	16
	15
	10
	8
	5
	1
5	
6	
7	
8	

LOW
NORMAL
 SEE USER
MANUAL
FOR DETAILS

10 OFF ON PULSE: 1 Hz
FLOW: 12mA

FLOW: 12mA

x1	x10	x100	x1000	x0.1	x0.01	x0.001	x0.0001	x0.00001
1								
2								
3								
4								

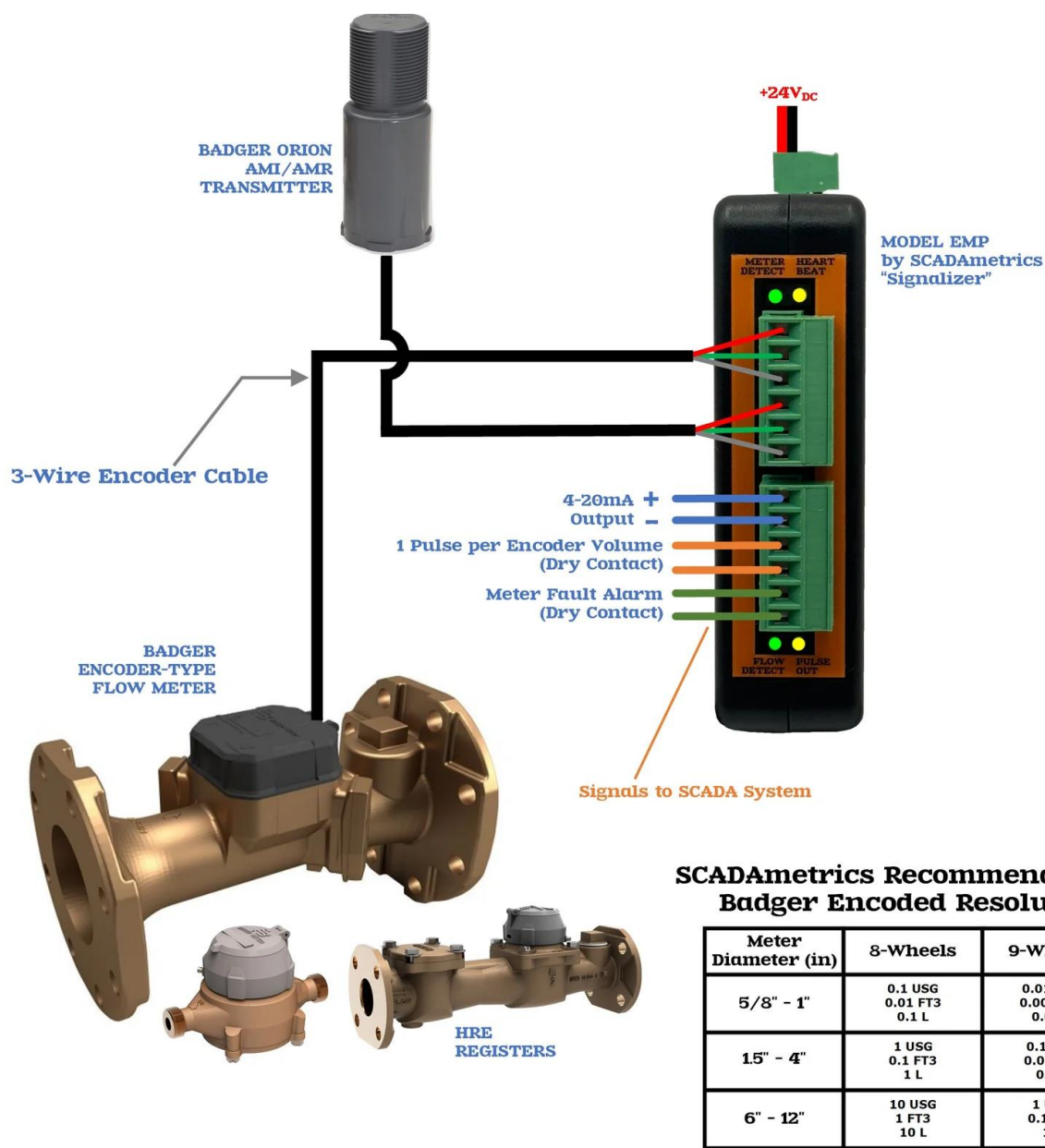
Flow Rate (gpm/lpm)	Cycle 5	Cycle 6	Cycle 7	Cycle 8
18,000 / 68,000				
11,400 / 43,000				
7,300 / 27,500				
4,600 / 17,500				
3,000 / 11,000				
2,000 / 7,000				
1,200 / 4,500				
750 / 3,000				
500 / 2,000				
300 / 1,200				
200 / 750				
125 / 475				
80 / 300				
50 / 200				
30 / 120				
20 / 75				

$$4 \text{ mA} = \frac{\text{zero flow}}{20 \text{ mA}} =$$

DINstrumentation™ Series
U.S. Patent 11,041,738

Yellow LED: Pulse Output (ON=Pulse)
Green LED: Flow Detect (ON=Flow>0)

QUICK-START GUIDE -



**BADGER
WIRING
Fig. 1**

In order for the Badger Meter to be compatible with the EMP Signalizer, the meter should be outfitted with the proper Badger register type (3-wire encoder).

The register's encoded signal should be programmed for the maximum number of digits (9 digits for the HRE-LCD and E-Series, 8 digits for the HRE-MECH).

See table in Fig.1 (above) for details.

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**
- 3. wires to Signalizer terminals 4,5,6 (see above table for color-coding).**
- 4. (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.**
- 5. (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.**
- 6. (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.**
- 7. Set the DIP Switches, per the Datasheet.**
- 8. Connect DC voltage source to the Signalizer's V+/V- terminals. An isolated 24V_{DC} power supply is recommended.**

Apply Power, and Observe...

- The upper yellow 'Hearbeat' LED should light up YELLOW with an OCCASIONAL BLINK, signifying that the Signalizer is working.
- During bootup, if the meter is detected, the upper green 'Meter OK' LED will blink ON for each detected encoded digit (from 4 to 9 blinks).
- After bootup, the upper green 'Meter OK' LED should light up SOLID GREEN, signifying that the meter has been successfully detected. A fast green blink means "Meter Not 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.

BADGER WATER METERS - PERSONALITY SETTINGS FOR BADGER WATER METERS.

Recommended DIP Switches 1.1 thru 2.4
for **HRE-LCD** and **E-Series** Registers Programmed for **9 Digits**:

Size	Gallon	Cubic Feet	Cubic Meters
5/8" 3/4" 1"	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 0.01 Gal DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1=ON DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.01 Gal Recommended: Low Speed Pulse: 1 Pulse / 1 Gal	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 0.001 FT³ DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2=ON DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.001 FT³ Recommended: Low Speed Pulse: 1 Pulse / 0.1 FT³	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 0.0001 M³ DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1=ON DipSw.2.2=ON DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.0001 M³ Recommended: Low Speed Pulse: 1 Pulse / 0.01 M³
1.5" 2" 3" 4"	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 0.1 Gal DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.1 Gal Recommended: Low Speed Pulse: 1 Pulse / 10 Gal	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 0.01 FT³ DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1=ON DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.01 FT³ Recommended: Low Speed Pulse: 1 Pulse / 1 FT³	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 0.001 M³ DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2=ON DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.001 M³ Recommended: Low Speed Pulse: 1 Pulse / 0.1 M³
6"-12"	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 1 Gal DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 1 Gal Recommended: Low Speed Pulse: 1 Pulse / 100 Gal	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 0.1 FT³ DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.1 FT³ Recommended: Low Speed Pulse: 1 Pulse / 10 FT³	Pre-Program HRE-LCD: 9 Encoded Digits Resolution = 0.01 M³ DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1=ON DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.01 M³ Recommended: Low Speed Pulse: 1 Pulse / 1 M³



HRE-LCD



E-SERIES

DIP Switches 5,6,7,8:

The sample period (seconds) on the Signalizer should be set to 15, 30 (default), 60, or 120.

BADGER WATER METERS - PERSONALITY SETTINGS FOR BADGER WATER METERS.

Recommended DIP Switches 1.1 thru 2.4
for **HRE-MECH** and **HRE-LCD** and **E-Series** Registers Programmed for **8 Digits**:

Size	Gallon	Cubic Feet	Cubic Meters	
5/8" 3/4" 1"	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 0.1 Gal DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1=ON DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 0.1 Gal Low Speed Pulse: 1 Pulse / 1 Gal	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 0.01 FT ³ DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2=ON DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 0.01 FT ³ Low Speed Pulse: 1 Pulse / 0.1 FT ³	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 0.001 M ³ DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1=ON DipSw.2.2=ON DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 0.001 M ³ Low Speed Pulse: 1 Pulse / 0.01 M ³	 HRE-MECH
	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 1 Gal DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 1 Gal Low Speed Pulse: 1 Pulse / 10 Gal	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 0.1 FT ³ DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2=ON DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 0.1 FT ³ Low Speed Pulse: 1 Pulse / 1 FT ³	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 0.01 M ³ DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2=ON DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 0.01 M ³ Low Speed Pulse: 1 Pulse / 0.1 M ³	 HRE-LCD
	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 10 Gal DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 10 Gal Low Speed Pulse: 1 Pulse / 100 Gal	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 1 FT ³ DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 1 FT ³ Low Speed Pulse: 1 Pulse / 10 FT ³	Pre-Program HRE-LCD: 8 Encoded Digits Resolution = 0.1 M ³ DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7=ON DipSw.1.8= DipSw.1.9=ON DipSw1.10= DipSw.2.1=ON DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Recommended: Normal Speed Pulse: 1 Pulse / 0.1 M ³ Low Speed Pulse: 1 Pulse / 1 M ³	 E-SERIES DIP Switches 5,6,7,8: The sample period (seconds) on the Signalizer should be set to 15, 30 (default), 60, or 120.

BADGER WATER METERS - PERSONALITY SETTINGS FOR BADGER WATER METERS.

Recommended DIP Switches 1.1 thru 2.4 for **ADE** Registers:

Size	Gallon	Cubic Feet	Cubic Meters	
5/8" 3/4" 1"	DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6= DipSw.1.7=ON DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1=ON DipSw.2.2= DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 10 Gal Low Speed Pulse: 1 Pulse / 100 Gal	DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6= DipSw.1.7=ON DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 1 FT ³ Low Speed Pulse: 1 Pulse / 10 FT ³	DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7= DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3=ON DipSw.2.4= Normal Speed Pulse: 1 Pulse / 0.1 M ³ Low Speed Pulse: 1 Pulse / 1 M ³	 ADE
1.5" 2" 3" 4"	DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6= DipSw.1.7=ON DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1= DipSw.2.2=ON DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 100 Gal Low Speed Pulse: 1 Pulse / 1000 Gal	DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6= DipSw.1.7=ON DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1=ON DipSw.2.2= DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 10 FT ³ Low Speed Pulse: 1 Pulse / 100 FT ³	DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7= DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1= DipSw.2.2= DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 1 M ³ Low Speed Pulse: 1 Pulse / 10 M ³	4-20mA Not Available ADE registers feature relatively coarse, 6-digit totalizer resolution, as opposed to fine 9-digit and 8-digit totalizer resolution with the HRE and E-Series registers, and therefore do NOT support the Signalizer's 4-20 milliamp output function.
6"-12"	DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6= DipSw.1.7=ON DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1=ON DipSw.2.2=ON DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 1000 Gal Low Speed Pulse: 1 Pulse / 10,000 Gal	DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6= DipSw.1.7=ON DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1= DipSw.2.2=ON DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 100 FT ³ Low Speed Pulse: 1 Pulse / 1000 FT ³	DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7= DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1=ON DipSw.2.2= DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 10 M ³ Low Speed Pulse: 1 Pulse / 100 M ³	Field-Upgradeable An ADE Register may be easily field-upgraded to an HRE-LCD or LCD-MECH Register. Please contact SCADAmetrics or your local Badger representative.
16"	DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4= DipSw.1.5= DipSw.1.6= DipSw.1.7=ON DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1= SPECIAL-CALL DipSw.2.2= SPECIAL-CALL DipSw.2.3= SPECIAL-CALL DipSw.2.4= SPECIAL-CALL Normal Speed Pulse: 1 Pulse / 10,000 Gal Low Speed Pulse: 1 Pulse / 100,000 Gal	DipSw.1.1= DipSw.1.2= DipSw.1.3=ON DipSw.1.4= DipSw.1.5= DipSw.1.6= DipSw.1.7=ON DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1=ON DipSw.2.2=ON DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 1000 FT ³ Low Speed Pulse: 1 Pulse / 10,000 FT ³	DipSw.1.1= DipSw.1.2= DipSw.1.3= DipSw.1.4=ON DipSw.1.5= DipSw.1.6=ON DipSw.1.7= DipSw.1.8= DipSw.1.9= DipSw.1.10= DipSw.2.1= DipSw.2.2=ON DipSw.2.3= DipSw.2.4= Normal Speed Pulse: 1 Pulse / 100 M ³ Low Speed Pulse: 1 Pulse / 1,000 M ³	

BADGER WATER METERS – PERSONALITY SETTINGS FOR BADGER WATER METERS (CONT).

Recommended DIP Switches 2.5 thru 2.8 for
HRE-LCD, HRE-MECH, ADE, E-SERIES, and M-Series MagMeter Registers:

The following Flow Span settings are *suggested*, and may need to be adjusted, based on actual maximum flow conditions:

Size (Inch Diameter)	Gallon , Cubic Feet , Cubic Meters
5/8" 20 gpm 75 lpm	DipSw.2.5= DipSw.2.6= DipSw.2.7= DipSw.2.8=
3/4" 30 gpm 120 lpm	DipSw.2.5=ON DipSw.2.6= DipSw.2.7= DipSw.2.8=
1" 50 gpm 200 lpm	DipSw.2.5= DipSw.2.6=ON DipSw.2.7= DipSw.2.8=
1.5" 125 gpm 475 lpm	DipSw.2.5= DipSw.2.6= DipSw.2.7=ON DipSw.2.8=
2" 200 gpm 750 lpm	DipSw.2.5=ON DipSw.2.6= DipSw.2.7=ON DipSw.2.8=
3" 500 gpm 2000 lpm	DipSw.2.5=ON DipSw.2.6=ON DipSw.2.7=ON DipSw.2.8=
4" 1200 gpm 4500 lpm	DipSw.2.5=ON DipSw.2.6= DipSw.2.7= DipSw.2.8=ON
6" 3000 gpm 11000 lpm	DipSw.2.5=ON DipSw.2.6=ON DipSw.2.7= DipSw.2.8=ON
8" 4600 gpm 17500 lpm	DipSw.2.5= DipSw.2.6= DipSw.2.7=ON DipSw.2.8=ON
10" 7300 gpm 27500 lpm	DipSw.2.5=ON DipSw.2.6= DipSw.2.7=ON DipSw.2.8=ON
12" 11400 gpm 43000 lpm	DipSw.2.5= DipSw.2.6=ON DipSw.2.7=ON DipSw.2.8=ON
16" 18000 gpm 68000 lpm	DipSw.2.5=ON DipSw.2.6=ON DipSw.2.7=ON DipSw.2.8=ON

UI.1203 / SENSUS-COMPATIBLE WATER METERS -

UI.1203 / Sensus-compatible water meters generally feature programmable resolution; so therefore, the user must field-adjust the decimal point shift:

1. Set both DIP switches 1.1 and 1.2 to the “down” position.
2. Note the **Registration Units** on the water meter’s register, and set TheSignalizer’s DIP switches 1.3, 1.4 according to the key on page 4 of this datasheet.
3. Note the **Totalization Reading** on the water meter’s register. It is important to note that the “transmitted” totalization AMR signal may only consist of a subset of the displayed numbers. In order to determine how many digits are transmitted in the AMR signal, follow step 4 below:
4. Use a SCADAmetrics TheMeterDisplay™ to display the “transmitted” AMR signal as follows:
 - a. Connect the Water Meter’s [RED, GREEN, BLACK] wires to TheMeterDisplay’s terminals [1,2,3] respectively; and press the “Read” button. The “transmitted” digits will be displayed.
 - b. Adjust TheMeterDisplay’s Decimal Point Shift (Rotary Switch), so that the displayed reading on TheMeterDisplay is a proper match to the reading on the water meter’s register.
 - c. Set the multiplier on the Signalizer to match the multiplier determined on TheMeterDisplay as follows:

TheMeterDisplay Rotary Switch	Signalizer Dip Switches				Multiplier
	2.1	2.2	2.3	2.4	
0	OFF	OFF	OFF	OFF	x1
1	ON	OFF	OFF	OFF	x10
2	OFF	ON	OFF	OFF	x100
3	ON	ON	OFF	OFF	x1000
F	OFF	OFF	ON	OFF	X0.1
E	ON	OFF	ON	OFF	X0.01
D	OFF	ON	ON	OFF	X0.001
C	ON	ON	ON	OFF	X0.0001
B	OFF	OFF	OFF	ON	X0.00001

FAST-REACTION BATCHING METER APPLICATIONS -

- (a) Fast-Reaction Batch Control Meter Applications require ultra-fast pulse output reaction time: ~1 sec.

CAUTION! – Please ensure that the connected encoder-type flow meter can tolerate ultra-short sample periods. (i.e. Make sure there are no water meter register battery issues!)

Examples of Meter Registers that do not contain a battery, or otherwise can tolerate ultra-short sample periods:

- **Badger HR/E-MECHANICAL**
- **Badger ADE**
- **Badger M-Series Magnetic Flow Meters**
- **Neptune PROCODER**
- **Neptune ECODER**
- **Neptune PROREAD**
- **Sensus ICE/ECR**
- **Hersey/Mueller TRANSLATOR**

Fast Reaction Time DIP Switch Settings:

[1.5 , 1.6 , 1.7 , 1.8] = [OFF , OFF , OFF , OFF]