# The Signalizer™

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

**Building or Factory Automation Controls**

MADE IN USA

RoHS Compliant

AWWA C707-05 COMPLIANT

2 YEAR WARRANTY

'always-on' pass-thru

AMR, AMI

milliamp
pulse
alarm
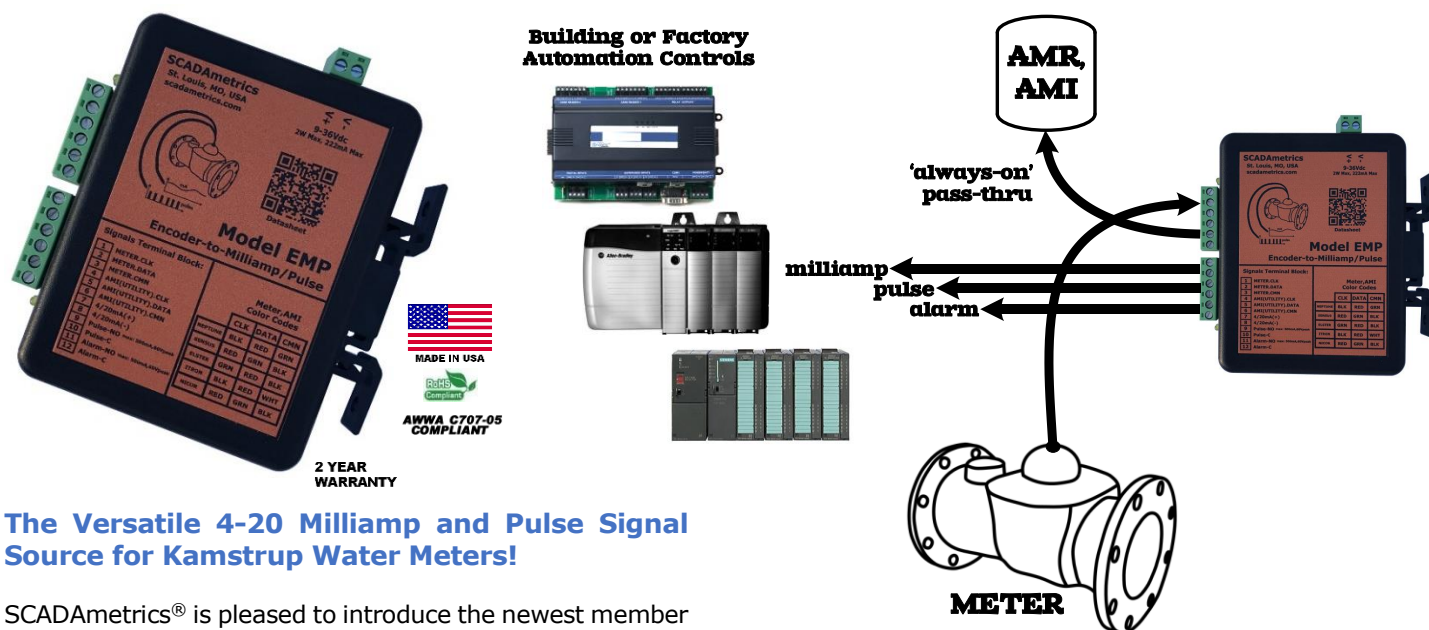
METER

## The Versatile 4-20 Milliamp and Pulse Signal Source for Kamstrup 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[1] 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[2]. 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 compatible with the FlowIQ 2200, 3200, and 4200 ultrasonic flow meters by Kamstrup Water Metering LLC (Cumming, GA).

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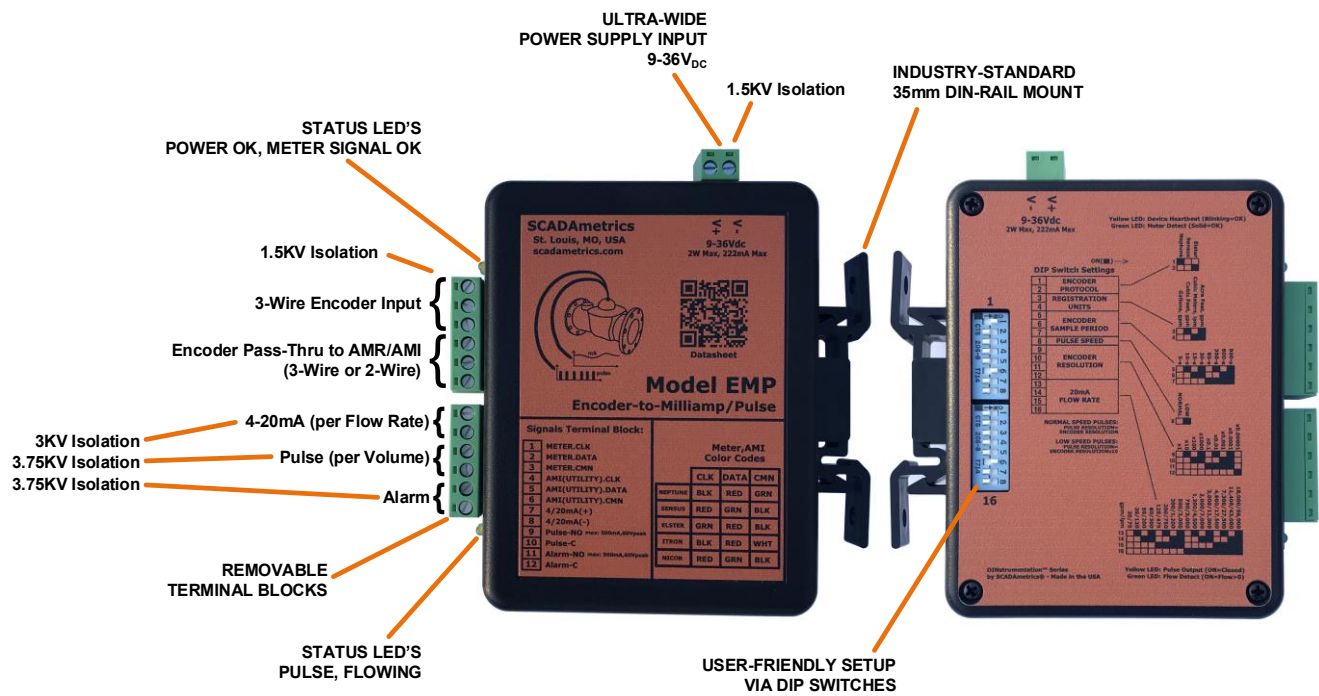
[2]**Permitting** – If the meter is owned by the water utility, we recommend that you first contact its engineering department for permission!

## 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 Kamstrup water meter 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-VO 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!

ULTRA-WIDE
POWER SUPPLY INPUT
9-36V$_{DC}$

1.5KV Isolation

INDUSTRY-STANDARD
35mm DIN-RAIL MOUNT

STATUS LED'S
POWER OK, METER SIGNAL OK

1.5KV Isolation

3-Wire Encoder Input

Encoder Pass-Thru to AMR/AMI
(3-Wire or 2-Wire)

4-20mA (per Flow Rate)

3KV Isolation
3.75KV Isolation          Pulse (per Volume)
3.75KV Isolation          Alarm

REMOVABLE
TERMINAL BLOCKS

STATUS LED'S
PULSE, FLOWING

USER-FRIENDLY SETUP
VIA DIP SWITCHES

SCADAmetrics
St. Louis, MO, USA
scadametrics.com

9-36Vdc
2W Max, 222mA Max

Datasheet

Model EMP
Encoder-to-Milliamp/Pulse

**Signals Terminal Block:**

| # | | Meter, AMI Color Codes |
|---|---|---|

| 1 | METER.CLK |
| 2 | METER.DATA |
| 3 | METER.CMN |
| 4 | AMI(UTILITY).CLK |
| 5 | AMI(UTILITY).DATA |
| 6 | AMI(UTILITY).CMN |
| 7 | 4/20mA(+) |
| 8 | 4/20mA(-) |
| 9 | Pulse-NO  Max: 500mA,60Vpeak |
| 10 | Pulse-C |
| 11 | Alarm-NO  Max: 500mA,60Vpeak |
| 12 | Alarm-C |

| | CLK | DATA | CMN |
|---|---|---|---|
| NEPTUNE | BLK | RED | GRN |
| SENSUS | RED | GRN | BLK |
| ELSTER | GRN | RED | BLK |
| ITRON | BLK | RED | WHT |
| NICOR | RED | GRN | BLK |

9-36Vdc
2W Max, 222mA Max

Yellow LED: Device HeartBeat (Blinking=OK)
Green LED: Meter Detect (Solid=OK)

DIP Switch Settings

ENCODER
PROTOCOL
REGISTRATION
UNITS
ENCODER
SAMPLE PERIOD
PULSE SPEED
ENCODER
RESOLUTION
20mA
FLOW RATE

NORMAL SPEED PULSES:
PULSE RESOLUTION=
ENCODER RESOLUTION

LOW SPEED PULSES:
PULSE RESOLUTION=
ENCODER RESOLUTION/xx

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

OiINstrumentation™ Series
by SCADAmetrics® – Made in the USA

# 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$_{RMS}$ |
| | |
| Neptune Protocol Support: | Yes, 8,9-Digit "MACH-10/ProCoder/E-CODER", and 6-Digit "ProRead" Protocols |
| UI-1203 Protocol Support: | Yes, Both Fixed and Variable Digit UI-1203 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: Kamstrup, Neptune, Sensus, Aclara, Badger, Metron-Farnier, Itron, Master Meter, Hersey/Mueller, RG3, Zenner, Honeywell, SCADAmetrics, Touchpads (All), Remote Displays (All) |
| | |
| Supported Units: | Gallon, Cubic Feet, Cubic Meters, Acre-Feet |
| Supported Scalors: | x1 , x10 , x100 , x1,000   ---   x0.1 , x0.01 , x0.001 , x0.0001 , x0.00001 |
| Encoder Sample Period (s): | 1, 8, 16, 32, 64, 128, 640, 960 (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$_{RMS}$ |
| 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: | Pulse Resolution = Encoder Resolution |
| | Low-Speed Mode (9-Digit Encoder Resolution): | Pulse Resolution = Encoder Resolution / 100 |
| | Low-Speed Mode (4,5,6,7,8-Digit Encoder Resolution): | 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$_{RMS}$ | |

| | |
|---|---|
| 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.scadametrics.com for details) |

## Engineering Dimensions (Inches) -
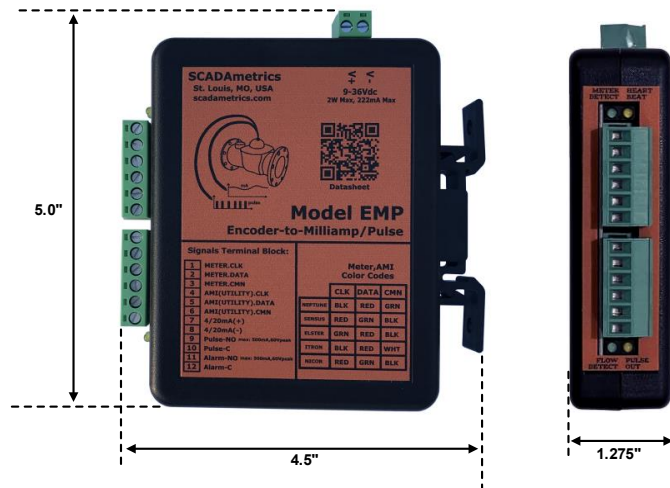


## Meter Terminal Block Hookup -

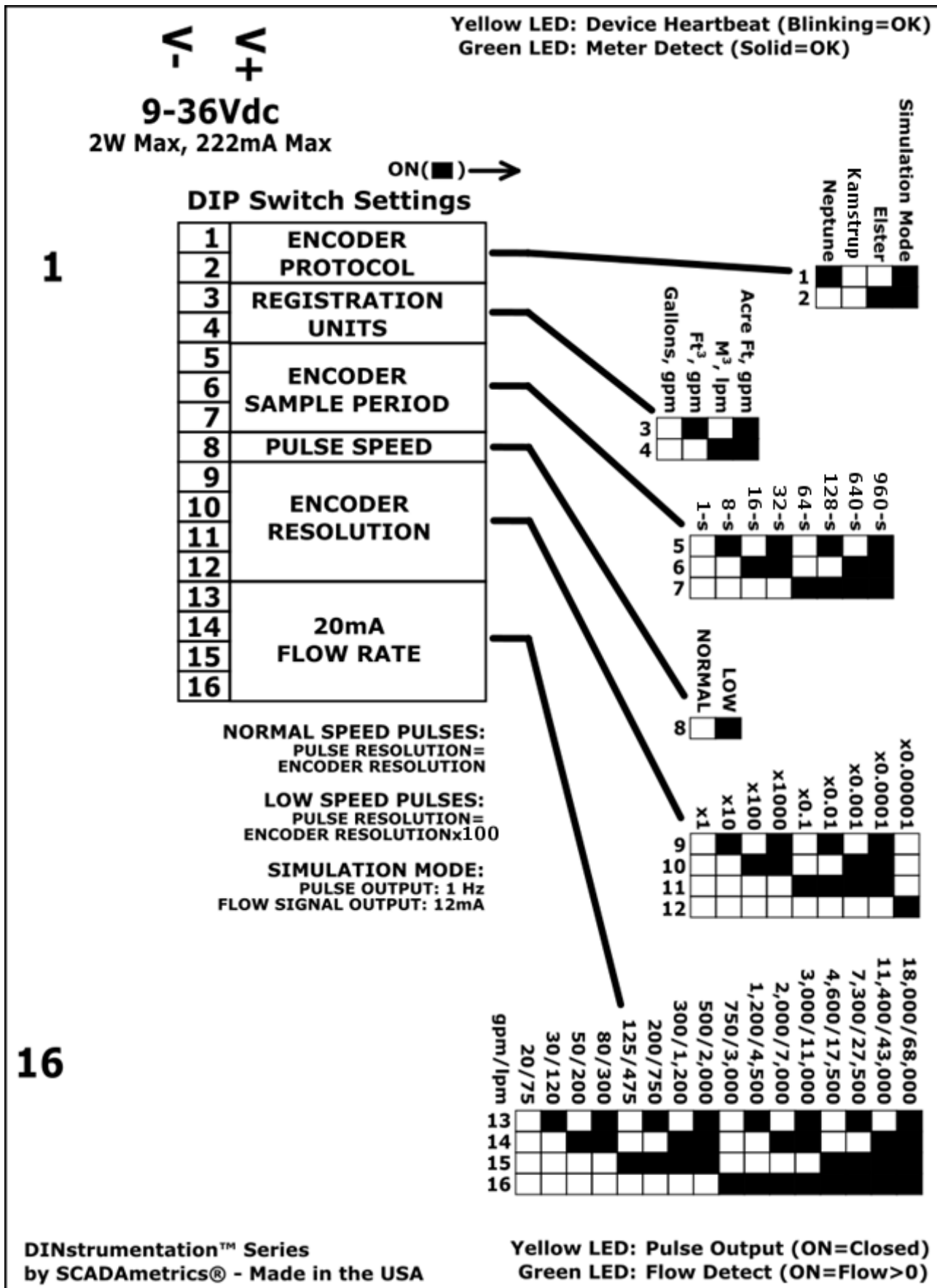| Terminal | Function | UI-1203 Meter Color (Kamstrup, Sensus, Badger, Metron-Farnier, Master Meter, Mueller, Zenner, RG3, Nicor Cable) | Neptune Color | Elster Color | Itron ERT Cable |
|---|---|---|---|---|---|
| 1 | Meter Clock | Red | Black | White\|Green | Black |
| 2 | Meter Data | Green\|White | Red | Red | Red |
| 3 | Meter Ground | Black | Green | Black | White\|Shield |
| | | | | | |
| 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. With the exceptions of Neptune Technology Group and Elster-AMCO (aka Honeywell, ABB, Kent), most meter manufacturers follow the UI-1203 wire color-coding scheme.

2. 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).

3. 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).

4. Alternative color-coding: manufacturers occasionally substitute a WHITE wire for a GREEN wire.

5. 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 – | |

**9-36Vdc**
2W Max, 222mA Max

Yellow LED: Device Heartbeat (Blinking=OK)
Green LED: Meter Detect (Solid=OK)

ON(■)→

**DIP Switch Settings**

| 1 | ENCODER |
| 2 | PROTOCOL |
| 3 | REGISTRATION |
| 4 | UNITS |
| 5 | ENCODER |
| 6 | SAMPLE PERIOD |
| 7 | |
| 8 | PULSE SPEED |
| 9 | |
| 10 | ENCODER |
| 11 | RESOLUTION |
| 12 | |
| 13 | |
| 14 | 20mA |
| 15 | FLOW RATE |
| 16 | |

1

16

Simulation Mode
Elster
Kamstrup
Neptune

Gallons, gpm
Ft³, gpm
M³, lpm
Acre Ft, gpm

960-s
640-s
128-s
64-s
32-s
16-s
8-s
1-s

LOW
NORMAL

x1
x10
x100
x1000
x0.1
x0.01
x0.001
x0.0001
x0.00001

gpm/lpm
20/75
30/120
50/200
80/300
125/475
200/750
300/1,200
500/2,000
750/3,000
1,200/4,500
2,000/7,000
3,000/11,000
4,600/17,500
7,300/27,500
11,400/43,000
18,000/68,000

**NORMAL SPEED PULSES:**
PULSE RESOLUTION=
ENCODER RESOLUTION

**LOW SPEED PULSES:**
PULSE RESOLUTION=
ENCODER RESOLUTIONx100

**SIMULATION MODE:**
PULSE OUTPUT: 1 Hz
FLOW SIGNAL OUTPUT: 12mA

**DINstrumentation™ Series**
by SCADAmetrics® - Made in the USA

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

# QUICK-START GUIDE –



...FROM EXTERNAL 24V$_{DC}$ POWER ADAPTER

+24V$_{DC}$
DC Common

READy MTU AMI/AMR (AUTOMATIC METER READING) TRANSMITTER

MODEL EMP by SCADAmetrics "Signalizer"

SCADAmetrics
St. Louis, MO, USA
scadametrics.com

9-36Vdc
2W Max, 222mA Max

Datasheet

**Model EMP**
Encoder-to-Milliamp/Pulse

KAMSTRUP FLOW-IQ

4-20mA Output

1 Pulse per Encoder Volume (Dry Contact)

Meter Fault Alarm (Dry Contact)

Signals Terminal Block:

| 1 | METER.CLK |
| 2 | METER.DATA |
| 3 | METER.CMN |
| 4 | AMI(UTILITY).CLK |
| 5 | AMI(UTILITY).DATA |
| 6 | AMI(UTILITY).CMN |
| 7 | 4/20mA(+) |
| 8 | 4/20mA(-) |
| 9 | Pulse-NO max: 500mA,60Vpeak |
| 10 | Pulse-C |
| 11 | Alarm-NO max: 500mA,60Vpeak |
| 12 | Alarm-C |

Meter,AMI Color Codes

| | CLK | DATA | CMN |
|---|---|---|---|
| NEPTUNE | BLK | RED | GRN |
| SENSUS | RED | GRN | BLK |
| ELSTER | GRN | RED | BLK |
| ITRON | BLK | RED | WHT |
| NICOR | RED | GRN | BLK |

Signals to SCADA/Telemetry System

KAMSTRUP FLOW-IQ

**KAMSTRUP WIRING**
Fig.1

## 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 $24V_{DC}$ 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.

- 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.

# KAMSTRUP WATER METERS –
## PERSONALITY SETTINGS FOR KAMTRUP WATER METERS.

**Recommended DIP Switches 1-12, Settings for FlowIQ 2200, 3200, 4200:**

| Size | Gallon | Cubic Feet | Cubic Meters | |
|---|---|---|---|---|
| 5/8", 3/4", 1" | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 0.01 Gal**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=<br>DipSw.4=<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=<br>DipSw.10=<br>DipSw.11=ON<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 0.01 Gal<br><br>Low Speed Pulse:<br>1 Pulse / 1 Gal | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 0.001 FT$^3$**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=ON<br>DipSw.4=<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=ON<br>DipSw.10=<br>DipSw.11=ON<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 0.001 FT$^3$<br><br>Low Speed Pulse:<br>1 Pulse / 0.1 FT$^3$ | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 0.0001 M$^3$**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=<br>DipSw.4=ON<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=<br>DipSw.10=ON<br>DipSw.11=ON<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 0.0001 M$^3$<br><br>Low Speed Pulse:<br>1 Pulse / 0.01 M$^3$ | <br><br><br><br><br><br>**Flow IQ** |
| 1.5", 2", 3", 4" | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 0.1 Gal**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=<br>DipSw.4=<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=<br>DipSw.10=<br>DipSw.11=<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 0.1 Gal<br><br>Low Speed Pulse:<br>1 Pulse / 10 Gal | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 0.01 FT$^3$**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=ON<br>DipSw.4=<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=<br>DipSw.10=<br>DipSw.11=ON<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 0.01 FT$^3$<br><br>Low Speed Pulse:<br>1 Pulse / 1 FT$^3$ | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 0.001 M$^3$**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=<br>DipSw.4=ON<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=ON<br>DipSw.10=<br>DipSw.11=ON<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 0.001 M$^3$<br><br>Low Speed Pulse:<br>1 Pulse / 0.1 M$^3$ | **DIP Switches 5,6,7:**<br><br>The sample period (seconds) on the Signalizer should be set 8, 16 (default), 32, 64, 128, 640, or 960. |
| 6"-12" | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 1 Gal**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=<br>DipSw.4=<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=ON<br>DipSw.10=<br>DipSw.11=<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 1 Gal<br><br>Low Speed Pulse:<br>1 Pulse / 100 Gal | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 0.1 FT$^3$**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=ON<br>DipSw.4=<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=<br>DipSw.10=<br>DipSw.11=<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 0.1 FT$^3$<br><br>Low Speed Pulse:<br>1 Pulse / 10 FT$^3$ | **Pre-Program FlowIQ: 9 Encoded Digits Resolution = 0.01 M$^3$**<br><br>DipSw.1=<br>DipSw.2=<br>DipSw.3=<br>DipSw.4=ON<br><br>DipSw.5=<br>DipSw.6=<br>DipSw.7=ON<br>DipSw.8=<br><br>DipSw.9=<br>DipSw.10=<br>DipSw.11=ON<br>DipSw.12=<br><br>Normal Speed Pulse:<br>1 Pulse / 0.01 M$^3$<br><br>Low Speed Pulse:<br>1 Pulse / 1 M$^3$ | |

# KAMSTRUP WATER METERS –
## PERSONALITY SETTINGS FOR KAMSTRUP WATER METERS (CONT).

**Recommended DIP Switches 13-16 for <mark>FLOWIQ 2200, FLOWIQ 3200, FLOWIQ 4200</mark>:**

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

| Size | Gallon , Cubic Feet , Cubic Meters |
|---|---|
| 5/8"<br><br>20 gpm<br>75 lpm | DipSw.13=<br>DipSw.14=<br>DipSw.15=<br>DipSw.16= |
| 3/4"<br><br>30 gpm<br>120 lpm | DipSw.13=ON<br>DipSw.14=<br>DipSw.15=<br>DipSw.16= |
| 1"<br><br>50 gpm<br>200 lpm | DipSw.13=<br>DipSw.14=ON<br>DipSw.15=<br>DipSw.16= |
| 1.5"<br><br>125 gpm<br>475 lpm | DipSw.13=<br>DipSw.14=<br>DipSw.15=ON<br>DipSw.16= |
| 2"<br><br>200 gpm<br>750 lpm | DipSw.13=ON<br>DipSw.14=<br>DipSw.15=ON<br>DipSw.16= |
| 3"<br><br>500 gpm<br>2000 lpm | DipSw.13=ON<br>DipSw.14=ON<br>DipSw.15=ON<br>DipSw.16= |
| 4"<br><br>1200 gpm<br>4500 lpm | DipSw.13=ON<br>DipSw.14=<br>DipSw.15=<br>DipSw.16=ON |
| 6"<br><br>3000 gpm<br>11000 lpm | DipSw.13=ON<br>DipSw.14=ON<br>DipSw.15=<br>DipSw.16=ON |
| 8"<br><br>4600 gpm<br>17500 lpm | DipSw.13=<br>DipSw.14=<br>DipSw.15=ON<br>DipSw.16=ON |
| 10"<br><br>7300 gpm<br>27500 lpm | DipSw.13=ON<br>DipSw.14=<br>DipSw.15=ON<br>DipSw.16=ON |
| 12"<br><br>11400 gpm<br>43000 lpm | DipSw.13=<br>DipSw.14=ON<br>DipSw.15=ON<br>DipSw.16=ON |

# UI-1203-COMPATIBLE WATER METERS –
## PERSONALITY SETTINGS FOR UI-1203-COMPATIBLE WATER METERS.

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

1. Set both DIP switches 1 and 2 to the "down" position.

2. Note the <mark>Registration Units</mark> on the water meter's register, and set TheSignalizer's DIP switches 3,4 according to the key on page 4 of this datasheet.

3. Note the <mark>Totalization Reading</mark> 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 TheSignalizer to match the multiplier determined on TheMeterDisplay as follows:

| TheMeterDisplay Rotary Switch | TheSignalizer Dip Switches | | | | Multiplier |
|---|---|---|---|---|---|
| | 9 | 10 | 11 | 12 | |
| 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 |

# KAMSTRUP SAMPLING TIMES –

- ## KAMSTRUP FLOW-IQ WATER METERS

(a) Kamstrup Flow-IQ series water meters communicate using UI-1203 Protocol. However, the Flow-IQ meters only update their reading on the encoded signal wire every 8 seconds. Hence, the Signalizer must have a sample period (seconds) that is an even multiple of 8 seconds (8, 16, 32, 64, 128, 640, 960).

When the Internal Jumper[1] is installed onto the Signalizer Factory Header as illustrated below, then the interrogation sample timings are adjusted accordingly:

| Signalizer Sample Period Setting (sec) DIP Switch Settings | Non-Standard Sample Period (sec) | |
|---|---|---|
| 5 | 1 | User for Fast Batch Control |
| 10 | 8 | Valid Settings for Kamstrup Flow-IQ 2200, 3200, 4200 |
| 15 | 16 | |
| 30 | 32 | |
| 60 | 64 | |
| 300 | 128 | |
| 600 | 640 | |
| 900 | 960 | |

(1) Requires Setting of "Kamstrup Sampling Mode" Activation Jumper.
   User Must Open Device Case, and Set Shunt Jumper on Circuit Board Utility Header:



Activate Non-Standard Sampling Mode    De-Activate Non-Standard Sampling Mode