



The Signalizer™

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



Building or Factory Automation Controls



AWWA C707-05 COMPLIANT

2 YEAR WARRANTY

The Versatile 4-20 Milliamp and Pulse Signal Source for Neptune MACH10, PROCODER, and ECODER 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!

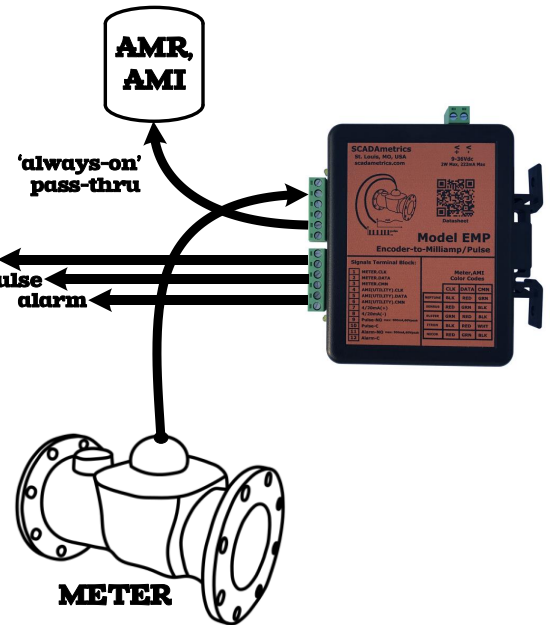
Meter Owners have traditionally been required to make a weighted buying decision: encoder-type meter?... or milliamp/pulse-type meter? **The Signalizer** allows you to easily have both with the same meter!

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 the Neptune MACH10, PROCODER, and ECODER registers.

¹**Encoder Resolution** – a high-fidelity 4-20mA signal requires high-resolution encoder resolution (8+ digits). Therefore, for optimal SIGNALIZER performance, we recommend the MACH10, PROCODER or ECODER register. The SIGNALIZER will only produce a pulse output signal when utilized with the PROREAD register. The SIGNALIZER is NOT compatible with the R900i versions of these registers.

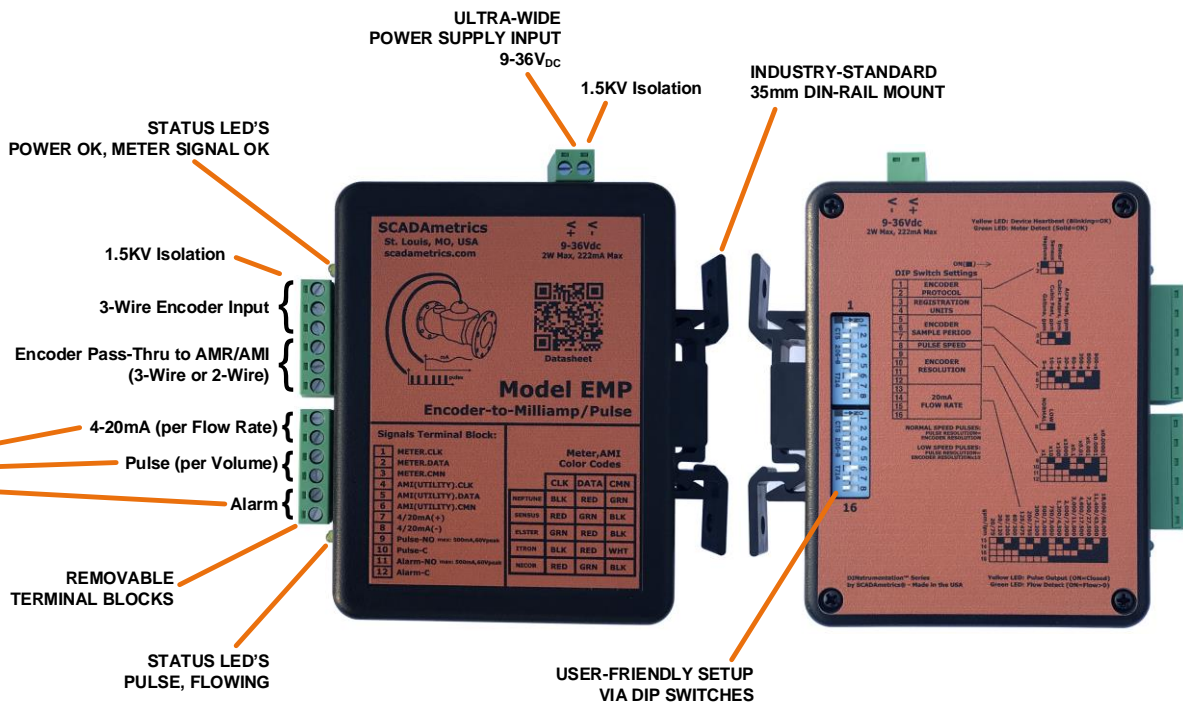
²**Permitting** – If the meter is owned by the water utility, we recommend that you first contact its engineering department for permission!



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 MACH10, PROCODER, and ECODER 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!



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 "MACH10/PROCODER/ECODER", 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

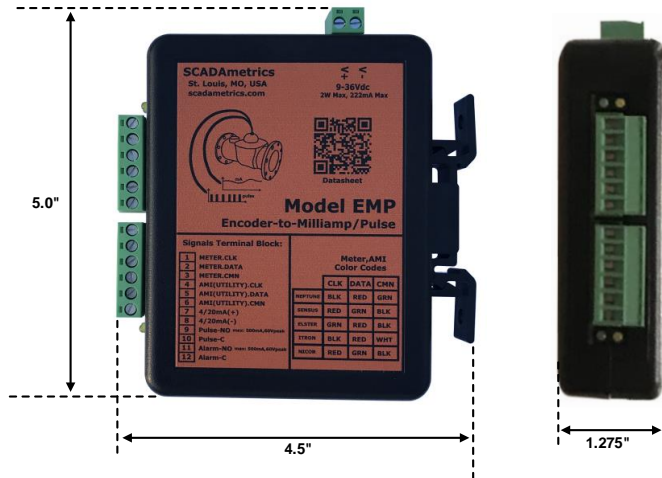
4-20mA Flow Range (gpm): 20,30,50,80,125,200,300,500,750,1200,2000,3000,4600,7300,11400,18000
 4-20mA Flow Range (lpm): 75,120,200,300,475,750,1200,2000,3000,4500,7000,11000,17500,27500,43000,68000
 4-20mA Resolution: 16-Bit DAC
 4-20mA Isolation: 3000V_{RMS}
 4-20mA Max Series Resistance: 500 Ω
 4-20mA 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
 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_{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 -

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

AMR/AMI Terminal Block Hookup -

Term.	Function	Neptune MIU With Standard Cable	Neptune (or other) MIU with Nicor Cable	Neptune (or other) MIU with Itron ERT Cable	Sensus, Badger, Mueller, Master-Meter, Metron-Farnier, Zenner, RG3, Kamstrup MIU	Elster AMCO MIU
4	AMI Clock	Black	Red	Black	Red	White Green
5	AMI Data	Red	Green White	Red	Green White	Red
6	AMI Ground	Green	Black	White Shield	Black	Black

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 -	

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



9-36Vdc
2W Max, 222mA Max

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

Simulation Mode

1	Elster	
2	Sensus	
	Neptune	

ON(■) →

DIP Switch Settings

1

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

1	Acre Ft, gpm	
2	M ³ , lpm	
3	Ft ³ , gpm	
4	Gallons, gpm	

5	900-s	
6	600-s	
7	300-s	
	60-s	
	30-s	
	15-s	
	10-s	
	5-s	

8	NORMAL	
	LOW	

9	X0.00001	
10	X0.0001	
11	X0.001	
12	X0.01	
	X0.1	
	X100	
	X1000	
	X10	
	X1	

NORMAL SPEED PULSES:
PULSE RESOLUTION= ENCODER RESOLUTION

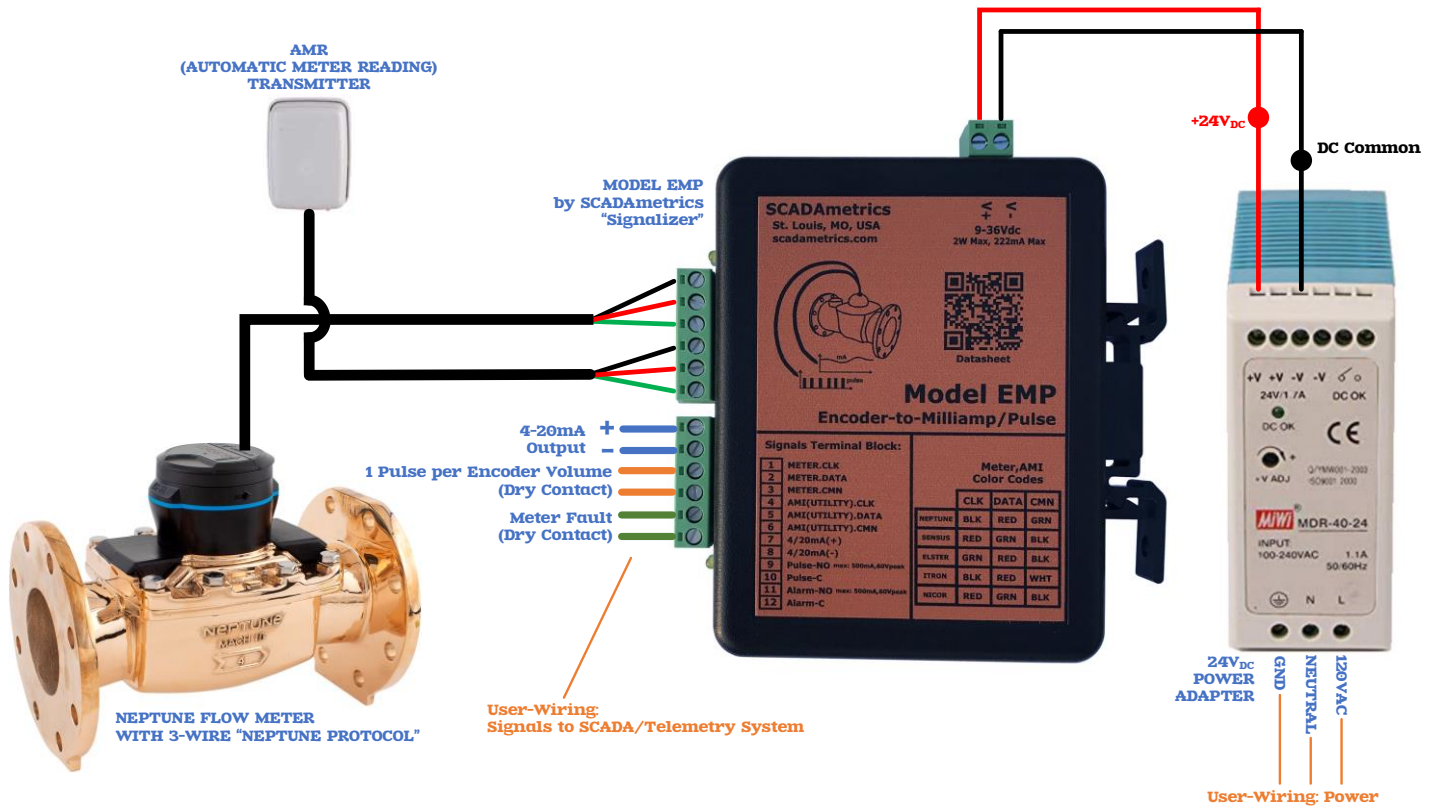
LOW SPEED PULSES:
PULSE RESOLUTION= ENCODER RESOLUTIONx10

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

13	18,000/68,000	
14	11,400/43,000	
15	7,300/27,500	
16	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	

16

QUICK-START GUIDE -



**WIRING FOR:
NEPTUNE MACH10, PROCODER, ECODER, & WATERFLUX 3070**
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_{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.

NEPTUNE WATER METERS - PERSONALITY SETTINGS FOR NEPTUNE WATER METERS.

Recommended DIP Switches 1-12, Settings for **Mach-10**:

Size	Gallon	Cubic Feet	Cubic Meters
5/8", 3/4", 1"	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= 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=ON DipSw.2= DipSw.3=ON DipSw.4= DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12= Normal Speed Pulse: 1 Pulse / 0.1 FT ³ Low Speed Pulse: 1 Pulse / 0.1 FT ³	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9= DipSw.10=ON DipSw.11=ON DipSw.12= Normal Speed Pulse: 1 Pulse / 0.001 M ³ Low Speed Pulse: 1 Pulse / 0.01 M ³
1.5", 2", 3", 4"	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= 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=ON DipSw.2= DipSw.3=ON DipSw.4= DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= Normal Speed Pulse: 1 Pulse / 0.1 FT ³ Low Speed Pulse: 1 Pulse / 1 FT ³	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12= Normal Speed Pulse: 1 Pulse / 0.01 M ³ Low Speed Pulse: 1 Pulse / 0.1 M ³
6"-12"	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= 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=ON DipSw.2= DipSw.3=ON DipSw.4= DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9= DipSw.10= DipSw.11= DipSw.12= Normal Speed Pulse: 1 Pulse / 1 FT ³ Low Speed Pulse: 1 Pulse / 10 FT ³	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= Normal Speed Pulse: 1 Pulse / 0.1 M ³ Low Speed Pulse: 1 Pulse / 1 M ³
16"	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9= DipSw.10=ON DipSw.11= DipSw.12= Normal Speed Pulse: 1 Pulse / 100 Gal Low Speed Pulse: 1 Pulse / 1000 Gal	DipSw.1=ON DipSw.2= DipSw.3=ON DipSw.4= DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9=ON DipSw.10= DipSw.11= DipSw.12= Normal Speed Pulse: 1 Pulse / 10 FT ³ Low Speed Pulse: 1 Pulse / 100 FT ³	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= DipSw.6= DipSw.7=ON DipSw.8= DipSw.9= DipSw.10= DipSw.11= DipSw.12= Normal Speed Pulse: 1 Pulse / 1 M ³ Low Speed Pulse: 1 Pulse / 10 M ³

NEPTUNE WATER METERS - PERSONALITY SETTINGS FOR NEPTUNE WATER METERS.

Recommended DIP Switches 1-12 for **Pro-Coder**, **E-Coder**, and **WaterFlux 3070** Registers:

Size	Gallon	Cubic Feet	Cubic Meters	
5/8", 3/4", 1"	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= 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=ON DipSw.2= DipSw.3=ON DipSw.4= DipSw.5= 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 ³ Low Speed Pulse: 1 Pulse / 0.1 FT ³	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= 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 ³ Low Speed Pulse: 1 Pulse / 0.01 M ³	
1.5", 2", 3", 4"	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= 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=ON DipSw.2= DipSw.3=ON DipSw.4= DipSw.5= DipSw.6=ON DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= Normal Speed Pulse: 1 Pulse / 0.1 FT ³ Low Speed Pulse: 1 Pulse / 1 FT ³	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= 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 ³ Low Speed Pulse: 1 Pulse / 0.1 M ³	Special Case! – For 1.5" T-10 with E-Coder... DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= 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 ³ Low Speed Pulse: 1 Pulse / 0.01 M ³
6"-12"	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= 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=ON DipSw.2= DipSw.3=ON DipSw.4= DipSw.5= DipSw.6=ON DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11= DipSw.12= Normal Speed Pulse: 1 Pulse / 1 FT ³ Low Speed Pulse: 1 Pulse / 10 FT ³	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= DipSw.6=ON DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= Normal Speed Pulse: 1 Pulse / 0.1 M ³ Low Speed Pulse: 1 Pulse / 1 M ³	
16"	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6=ON DipSw.7= DipSw.8= DipSw.9= DipSw.10=ON DipSw.11= DipSw.12= Normal Speed Pulse: 1 Pulse / 100 Gal Low Speed Pulse: 1 Pulse / 1000 Gal	DipSw.1=ON DipSw.2= DipSw.3=ON DipSw.4= DipSw.5= DipSw.6=ON DipSw.7= DipSw.8= DipSw.9=ON DipSw.10= DipSw.11= DipSw.12= Normal Speed Pulse: 1 Pulse / 10 FT ³ Low Speed Pulse: 1 Pulse / 100 FT ³	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4=ON DipSw.5= DipSw.6=ON DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11= DipSw.12= Normal Speed Pulse: 1 Pulse / 1 M ³ Low Speed Pulse: 1 Pulse / 10 M ³	

NEPTUNE WATER METERS - PERSONALITY SETTINGS FOR NEPTUNE WATER METERS (CONT).

Recommended DIP Switches 13-16 for **Mach-10**, **Pro-Coder**, **E-Coder**, and **WaterFlux 3070** Registers:

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" Mach10, T10 20 gpm 75 lpm	DipSw.13= DipSw.14= DipSw.15= DipSw.16=
3/4" Mach10, T10 30 gpm 120 lpm	DipSw.13=ON DipSw.14= DipSw.15= DipSw.16=
1" Mach10, T10 50 gpm 200 lpm	DipSw.13= DipSw.14=ON DipSw.15= DipSw.16=
1.5" Mach10, T10 125 gpm 475 lpm	DipSw.13= DipSw.14= DipSw.15=ON DipSw.16=
2" Mach10, T10, 1.5-2" HPT 200 gpm 750 lpm	DipSw.13=ON DipSw.14= DipSw.15=ON DipSw.16=
3" Mach10, HPT 500 gpm 2000 lpm	DipSw.13=ON DipSw.14=ON DipSw.15=ON DipSw.16=
4" Mach10, HPT 1200 gpm 4500 lpm	DipSw.13=ON DipSw.14= DipSw.15= DipSw.16=ON
6" Mach10, HPT 3000 gpm 11000 lpm	DipSw.13=ON DipSw.14=ON DipSw.15= DipSw.16=ON
8" Mach10, HPT 4600 gpm 17500 lpm	DipSw.13= DipSw.14= DipSw.15=ON DipSw.16=ON
10" Mach10, HPT 7300 gpm 27500 lpm	DipSw.13=ON DipSw.14= DipSw.15=ON DipSw.16=ON
12" Mach10, HPT 11400 gpm 43000 lpm	DipSw.13= DipSw.14=ON DipSw.15=ON DipSw.16=ON
16" Mach10, HPT 18000 gpm 68000 lpm	DipSw.13=ON DipSw.14=ON DipSw.15=ON DipSw.16=ON