



# The Meter Display™

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



AWWA C707-05  
COMPLIANT  
2 YEAR  
WARRANTY



## The Industry's Most Revolutionary Remote Display for Water Meters – Ever!

Not just 'a' meter display – **The Meter Display™!**

SCADAmetrics is pleased to introduce the new remote display for water meters that offers every feature one could ever want! – including the ability to work in conjunction with a co-connected AMI/AMR endpoint!

In the past, Meter Owners have been precluded from installing a remote wall display whenever the water meter's signal cable was already connected to an endpoint. However, because **The Meter Display** is outfitted with an integral pass-thru port, it can co-exist with an AMI/AMR system. And the pass-thru port is always functional, even if the battery is depleted or removed!

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

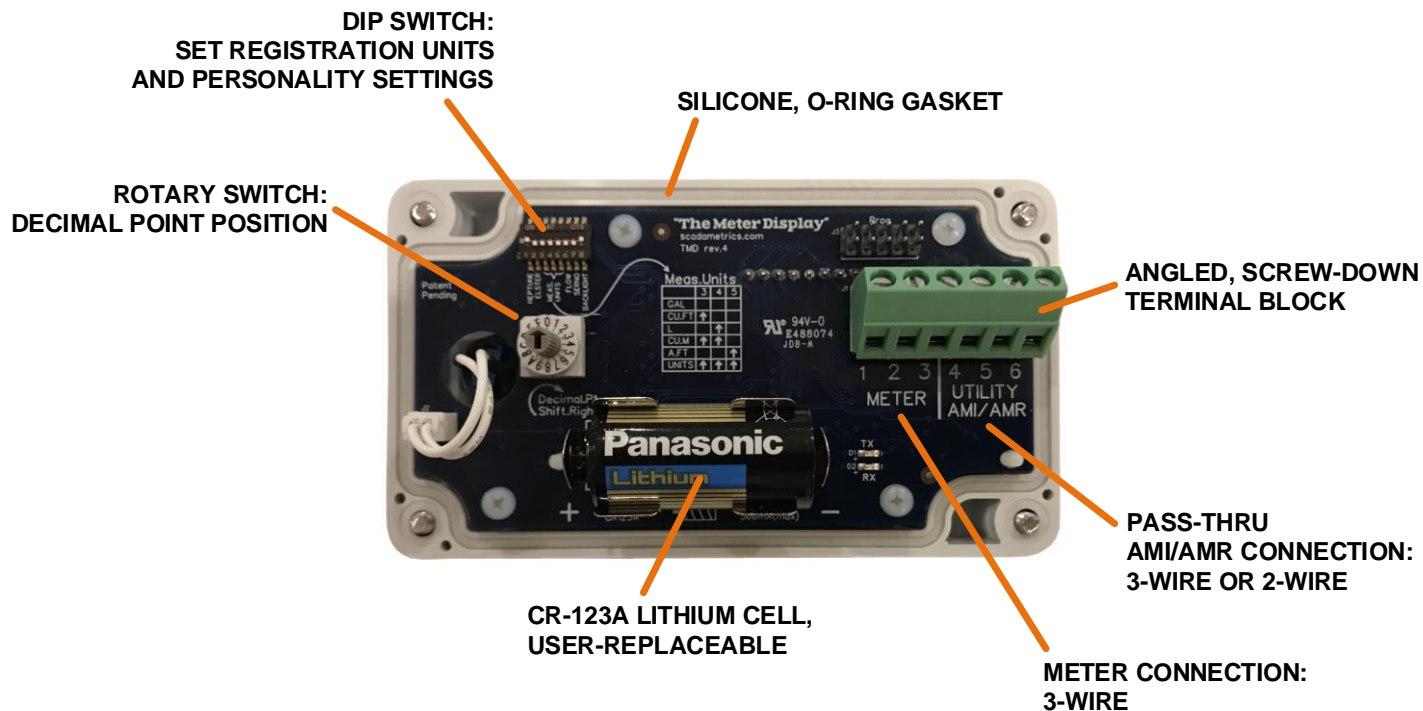
Permitting – If the meter is owned by the water utility, we recommend that you first contact its engineering department for permission!

## Key Features -

- Simple and Easy-to-Use: Just Press the Button!
- For Outdoor or Indoor Use
- Large, 2x16 Character Backlit Display
- Built-In Pass-Thru Port for Co-Connection to an AMI/AMR System (Works Even After Battery Depletion!)
- Low Power Consumption / 10+ Year Battery Life\*
- User-Replaceable, Non-Proprietary Lithium Cell
- Displays Registration Units (Gallons, Cubic Feet, Cubic Meters, Liters, Acre Feet, Generic Units)
- Displays Correct Decimal Point Placement
- Reading Features a Comma Separator After Every 3<sup>rd</sup> Digit
- Compatible with All Late-Model, North American Encoder-Type Water Meters (Sensus 4-9-digit, Neptune 6,8,9-digit, Elster K-Frame Protocols).
- Displays Approximate Rate-of-Flow<sup>1</sup>. Requires Meter with 7/8/9-Digit Registration. 8/9-Digit Preferred.
- Displays Water Meter Serial Number
- Built to NEMA-4X, IP-66 Specifications. Not Submersible
- Rugged Polycarbonate Enclosure with Wall-Mount Flanges
- Easy Wiring, with Angled, Screw-Down Terminal Block
- Battery Voltage Display
- No Programming Required
- NTEP-Certified

Are you interested in how SCADAmetrics meter display technology can help you more closely monitor your water meter readings? Give us a call! We'll be glad to discuss the details!

<sup>1</sup>In order to correctly display rate-of-flow from Kamstrup FlowIQ meters, special **The Meter Display** Firmware is required. Please specify "for Kamstrup" when ordering.



## Engineering Specifications -

Dimensions:	5.75" x 3.50" x 1.75"
Weight:	8.5 Ounces
Physical Display:	2x16 Characters, Temperature-Compensated, Character Dimension: 0.114 x 0.203 inch
Displayed Metering Data:	Meter Totalization, Meter Serial Number
Displayed Flow Rate Data:	Approximate Flow Rate. Requires 7/8/9-Digit, Fine-Resolution Water Meter Register. 8/9-Digit Preferred.
Displayed Battery Status:	Volts (New Battery ~ 3.2V <sub>DC</sub> , Depleted Battery ~ 2.2V <sub>DC</sub> )
Pass-Thru Port for AMR/AMI:	Yes, Supports both 3-Wire and 2-Wire AMR Devices
Meter Cable Connection:	3-Position, 35deg Screw-Down Terminal Block, 12-26 AWG
AMR/AMI Cable Connection:	3-Position, 35deg Screw-Down Terminal Block, 12-26 AWG
Programming Method:	Integrated DIP Switch and Rotary Switch
Supported Units:	Gallon, Cubic Feet, Cubic Meters, Liters, Acre-Feet, Generic "Units"
Supported Multipliers:	x1, x10, x100, x1,000, x10,000, x100,000, x1,000,000, x10,000,1000
Supported Divisors:	x0.1, x0.01, x0.001, x0.0001, x0.00001, x0.000001, x0.0000001
Sensus Protocol Support:	Yes, Both Fixed and Variable Digit Sensus Protocols (4-9 digits)
Neptune Protocol Support:	Yes, Both 8-Digit "E-Coder Plus", and 6-Digit "Pro-Read" Protocols
Elster Protocol Support:	Yes, Auto-Fills Units and Decimal Shift Based on Elster K-Frame Protocol Information
Temperature:	-20C to 70C (-4°F to 158°F)
Relative Humidity:	5% to 95%, Non-Condensing
Enclosure Rating:	Built to NEMA-4X and IP-66 Specifications, Not Rated for Submersion
Push-Button Rating:	Built to IP68 Specifications
Manufacturing Location:	USA
Environmental:	ROHS-Compliant, Lead-Free
Meter Interface:	AWWA C707-05
NTEP-Certification:	Certificate No. CC-20-024
NTEP Security:	Two (2) Tamper-Evident Seals, Provided & Affixed by Registered Service Agency
Display Integrity Check:	Yes - Pixel Test Pattern Displayed
Internal Desiccant Pack:	Yes - Silica Gel, 5gm
Sealing Plug:	Yes - 1/4" NPT Plug. Replaces 2 <sup>nd</sup> Cable Gland If AMI/AMR Pass-Thru Port Not Used.
Warranty:	2 Years (see <a href="http://www.scadametrics.com">www.scadametrics.com</a> for details)
Battery:	Energizer 123 (EL123AP, 1500mAh) or Panasonic 123 (CR123A, 1550mAh), User-Replaceable
*Estimated Battery Life:	Lesser of 10 Years or 12,000 Basic Meter Reads (Backlight OFF, Flow OFF, Meter ID OFF), Lesser of 10 Years or 10,000 Enhanced Meter Reads (Backlight ON, Flow OFF, Meter ID OFF). Extreme Temperature Environments May Shorten Battery Life.

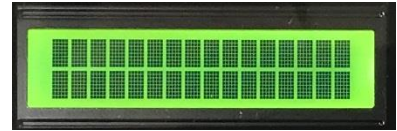
**Sample Screenshots -**



**Gallon Registration**



**Rate in Gallons per Minute**



**Pixel Integrity Test**



**Cubic Foot Registration**



**Rate in Cubic Meters per Hour**



**Battery Voltage Indication**



**Cubic Meter Registration**



**Rate in Liters per Minute**



**Prompt for Flow Rate**



**Acre Foot Registration**

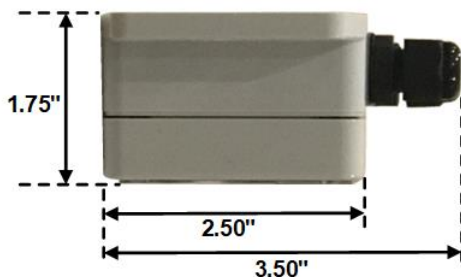


**Meter Serial Number Indication**



**Status Indication**

**Engineering Dimensions (Inches) -**



## Terminal Block Hookup -

Terminal	Function	Sensus Meter Color (Badger, Metron-Farnier, Master Meter, Kamstrup, 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

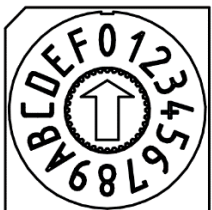
### Wiring Notes:

1. With the exceptions of Neptune Technology Group and Elster-AMCO (aka Honeywell, ABB, Kent), most meter manufacturers follow the Sensus 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.

## Dip Switch Settings -

1 2	Meter Brand	Sensus: 1=Down 2=Down Neptune: 1=Up 2=Down Elster: 1=Down 2=Up Sensus 7-Digit, Octave (MM): 1=Up 2=Up
3 4 5	Totalizer Units	Gal , gpm: 3=Down 4=Down 5=Down Ft <sup>3</sup> , gpm: 3=Up 4=Down 5=Down L , lpm: 3=Down 4=Up 5=Down M <sup>3</sup> , m <sup>3</sup> /hr: 3=Up 4=Up 5=Down AcreFt , gpm: 3=Down 4=Down 5=Up M <sup>3</sup> , lpm: 3=Up 4=Down 5=Up Units , upm: 3=Up 4=Up 5=Up
6	Display Appx Rate-of-Flow	ON: 6=Up
7	Display Meter ID	ON: 7=Up
8	Backlight Enable	ON: 8=Up

## Rotary Switch Settings -



0	x 1 (No Multiplier)
1	x 10
2	x 100
3	x 100
4	x 1,000
5	x 10,000
6	x 100,000
7	x 1,000,000
F	x 0.1
E	x 0.01
D	x 0.001
C	x 0.0001
B	x 0.00001
A	x 0.000001
9	x 0.0000001

# **QUICK-START GUIDE -**

## **Initial Setup:**

- 1. Open Up the Enclosure by Unscrewing the Four (4) Screws.**
- 2. Insert the Water Meter Cable Through the Left Cable Gland.**
- 3. Land the 3 Water Meter Cable Wires on the Meter Terminal Block (Terminals 1,2,3), Per Color-Coding Specified in the Datasheet.**
- 4. Set the Dip Switches, Per the Datasheet.**
- 5. Set the Rotary Switch to Correctly Set the Decimal Point.**
- 6. Press the "Read" Button and Verify That the Display's Reading is a Perfect Match to the Water Meter.**

## **Optional 1: AMI/AMR Parallel Connection:**

- 1. Insert the AMI/AMR Cable Through the Right Cable Gland.**
- 2. Land the 3 AMI/AMR Cable Wires on the AMI/AMR Terminal Block (Terminals 4,5,6), Per Color-Coding Specified in the Datasheet.**

## **Optional 2: No AMI/AMR Parallel Connection:**

- 1. Remove the Unused Cable Gland, and Replace with the Provided 1/4" NPT Plug. Make Sure to Make Use of the Rubber Washer from the Unused Cable Gland.**

## **Seal the Display:**

- 1. Ensure that the Enclosed Desiccant Pack is Inserted into the Base.**
- 2. Attach the Cover to the Base by Tightening the Four (4) Screws.**
- 3. Tighten the Cable Gland(s).**
- 4. State-Registered Service Agent Only: Affix the Two (2) Tamper-Evident Labels to the Left and Right Sides of the Display, Overlapping Both the Base and Cover.**

# NEPTUNE WATER METERS - PERSONALITY SETTINGS FOR NEPTUNE WATER METERS.

Settings for E-Coder, Pro-Coder, Mach-10, and WaterFlux 3070 Registers:

Size	Gallon	Cubic Feet	Cubic Meters
5/8", 3/4", 1"	DipSw.1=Up DipSw.2=Down DipSw.3=Down DipSw.4=Down DipSw.5=Down RotarySw=F	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Down DipSw.5=Down RotarySw=E	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Up DipSw.5=Down RotarySw=D
1.5", 2", 3", 4"	DipSw.1=Up DipSw.2=Down DipSw.3=Down DipSw.4=Down DipSw.5=Down RotarySw=0	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Down DipSw.5=Down RotarySw=F	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Up DipSw.5=Down RotarySw=E  Special Case! – For 1.5" T-10 with E-Coder, Set RotarySw=D
6"-12"	DipSw.1=Up DipSw.2=Down DipSw.3=Down DipSw.4=Down DipSw.5=Down RotarySw=1	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Down DipSw.5=Down RotarySw=0	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Up DipSw.5=Down RotarySw=F
16", 20"	DipSw.1=Up DipSw.2=Down DipSw.3=Down DipSw.4=Down DipSw.5=Down RotarySw=2	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Down DipSw.5=Down RotarySw=1	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Up DipSw.5=Down RotarySw=0

Settings for Auto H65N Pro-Read Registers:

Size	Gallon	Cubic Feet	Cubic Meters
5/8", 3/4", 1"	DipSw.1=Up DipSw.2=Down DipSw.3=Down DipSw.4=Down DipSw.5=Down RotarySw=1	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Down DipSw.5=Down RotarySw=0	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Up DipSw.5=Down RotarySw=F
1.5", 2", 3", 4"	DipSw.1=Up DipSw.2=Down DipSw.3=Down DipSw.4=Down DipSw.5=Down RotarySw=2	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Down DipSw.5=Down RotarySw=1	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Up DipSw.5=Down RotarySw=0
6"-12"	DipSw.1=Up DipSw.2=Down DipSw.3=Down DipSw.4=Down DipSw.5=Down RotarySw=3	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Down DipSw.5=Down RotarySw=2	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Up DipSw.5=Down RotarySw=1
16", 20"	DipSw.1=Up DipSw.2=Down DipSw.3=Down DipSw.4=Down DipSw.5=Down RotarySw=4	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Down DipSw.5=Down RotarySw=3	DipSw.1=Up DipSw.2=Down DipSw.3=Up DipSw.4=Up DipSw.5=Down RotarySw=2

## **SENSUS-COMPATIBLE WATER METERS - PERSONALITY SETTINGS FOR SENSUS-COMPATIBLE WATER METERS. ALL ENCODER METERS, EXCEPT FOR NEPTUNE AND ELSTER, ARE SENSUS-COMPATIBLE.**

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 and 2 to the "down" position.
2. Note the Totalization Reading and Units on the water meter's register.
3. Connect the Water Meter encoder cable to **TheMeterDisplay** terminals: 1(red), 2(green), 3(black).
4. Press the "Read" Button on **TheMeterDisplay**.
5. Adjust the Decimal Point Shift (Rotary Switch), so that the displayed reading on **TheMeterDisplay** is a match to the reading on the water meter's register.
6. Set the Units on **TheMeterDisplay** by setting dip switches 2,3,4.

## **ELSTER-AMCO WATER METERS - PERSONALITY SETTINGS FOR ELSTER-AMCO WATER METERS (aka HONEYWELL, ABB, KENT).**

Elster-AMCO (aka Honeywell, ABB, Kent) water meters generally are programmed to communicate using Elster's "K-Frame" protocol, which embeds units and decimal point shift information within the digital message. **TheMeterDisplay** takes full advantage of this information and automatically configures its display settings based on that embedded information. Therefore, dip switches 3,4,5 may be left in their default positions (all down), and the rotary switch may be left in its default position ('0').

Caveat: Elster-AMCO (aka Honeywell, ABB, Kent) water meters can be purchased to include the "Sensus" protocol. If **TheMeterDisplay** shows "Meter Not Detected" on the display, then retry setup while treating the meter as a "Sensus-compatible". In this case, that means you will need to follow Sensus wire color-coding, and follow the "Sensus-Compatible" setup of the dip switches and rotary switch.