

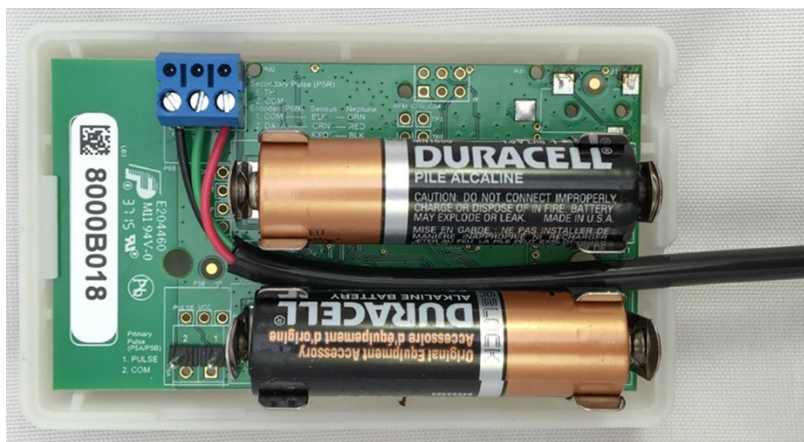
AN-102-E: Encoder MDT Wiring Guide

This guide contains the meter wiring instructions and various connector specs for our Encoder MDT, along with their identification within the CIT software. The following model numbers are covered:

- TW-105 B-E/G Encoder Display MDT (including Dual) *No AMR*
 - TW-160/165 B-E/G Encoder MDT (including Dual) Standard Range
 - TW-170/175 B-E/G Encoder MDT (including Dual) MAX Range
 - TW-167/177 S-E/G Encoder Submersible MDT Std/MAX
 - TW-140B-E Encoder MDT
 - TW-140B-ED Encoder MDT w/ Pulse out for Display
 - TW-140B-N Neptune only Encoder MDT
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- All Tehama Encoder MDTs with -E or E+ suffix can read both Sensus and Neptune meters. The E+ are able to read 8 digits from Neptune meters. Without the plus they can only read 6 digits.
 - Our old TW-140B-N Encoder MDT can only read Neptune meters.
 - Our new AllRead Encoder MDTs with -G suffix read the GWF Unico2coder® MP register

TW-170/175/160/165/105 Encoder Input MDTs

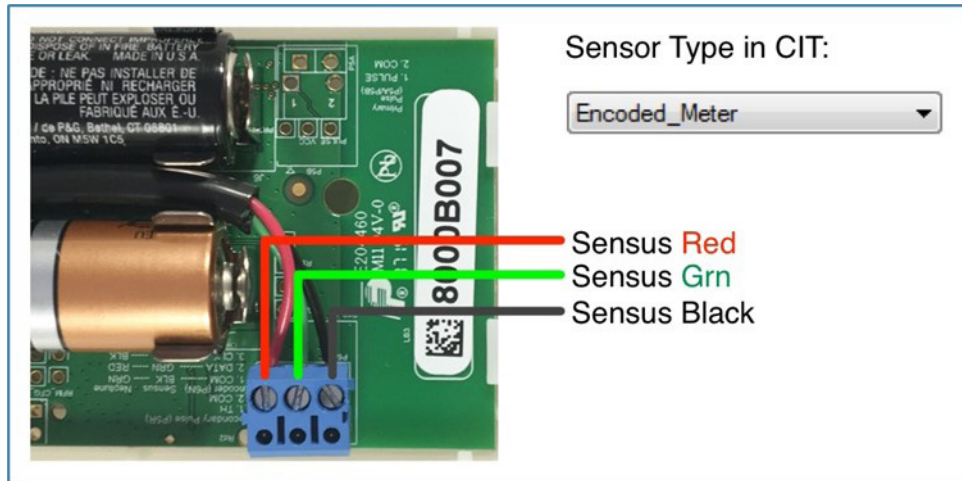
The TW-160/170 models of MDT (and display units TW-105, TW-165 and TW-175) use A 3 pin removable connector. The TW-160/170 units are designed to have the metering wires run between the batteries and through the hole at the bottom of the unit. When mounted vertically on drywall (recommended), this allows a good drip loop to be formed. The Display models have a cut-out in the back plate to run the wires into the electrical gang box when the Display MDT is screwed to the gang box.



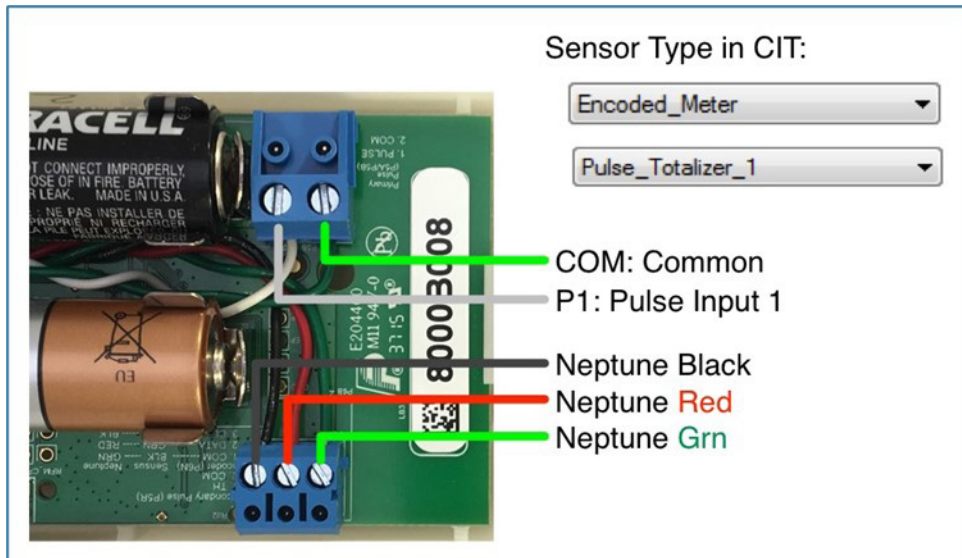
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Diagrams are based on wire color of each meter type and are different for various Encoded meters. The board is labeled with the color scheme for the two primary vendors of encoded meters. Unfortunately, those vendors that license the Sensus protocol may use a different color scheme; check with the manufacturer in this case to match it to the Sensus color scheme.

TW-170/175/160/165/105 B-E/G Encoder (Sensus/GWF)



TW-170/175/160/165/105 B-EP Encoder (Neptune) + Pulse

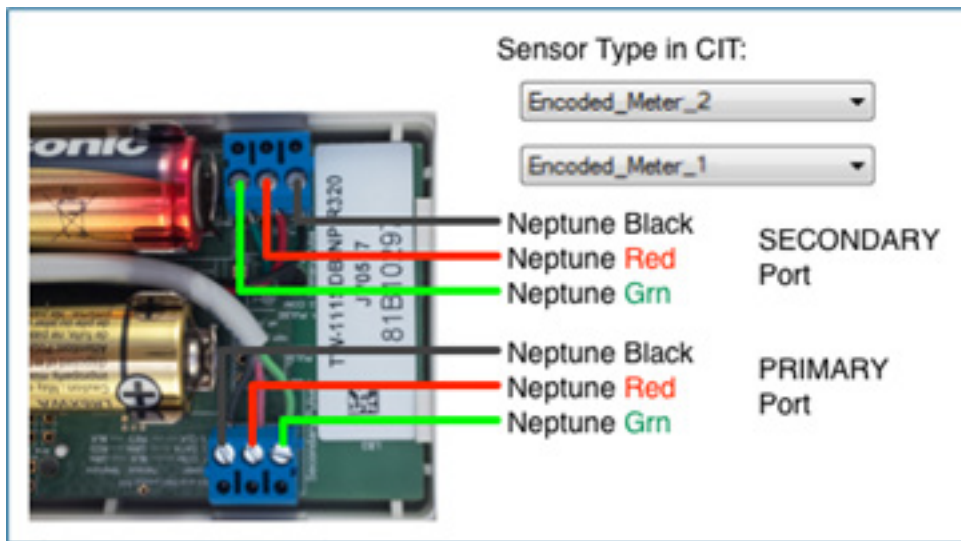


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TW-170/175/160/165/105 B-EE Dual Encoder (Neptune)

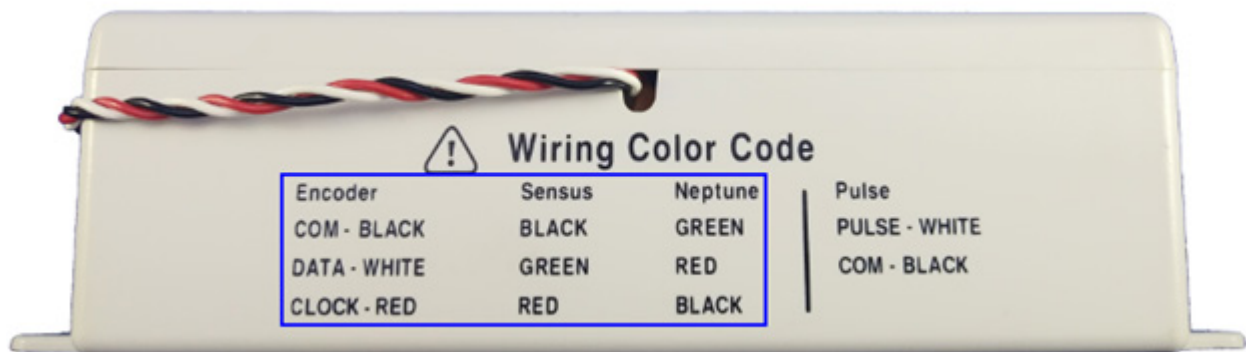
Important!! Note that the Encoder Primary/Secondary positions are opposite that uses for Pulse meters. The Primary Encoder connector is in the position that is labeled Secondary Pulse on the board. Also note that the wiring to the connector remains constant, so you can swap the two connectors to reverse which meter shows up as Encoded_Meter_1 and Encoded_Meter_2.

Use the Sensus wiring order shown above to use Sensus meters. The dual Encoder MDT can read two Sensus meters, two Neptune meters, or one of each.



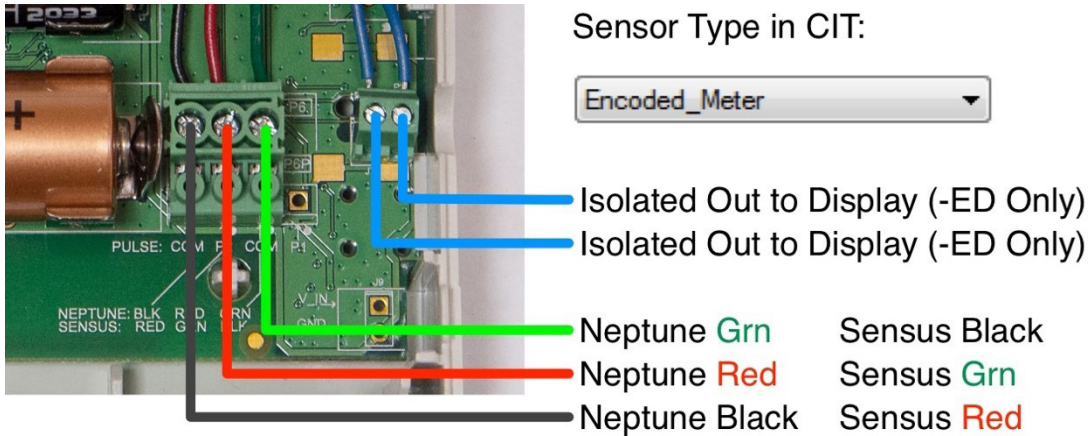
TW-167/177S-E Submersible MDT

The TW-167/177 submersible encoder MDTs do not have wiring connectors. The wires are already connected within the epoxy potted case. Meters interface to the sealed MDT wires by using waterproof IDC Splice connectors (or similar) between MDT and the Meter. The wiring information is printed on each MDT, as shown here. If these will be used in pits, it is recommended to further waterproof the connections by plunging the IDC connections into a grease-filled pod.



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Newer TW-140B-E model Encoder MDTs

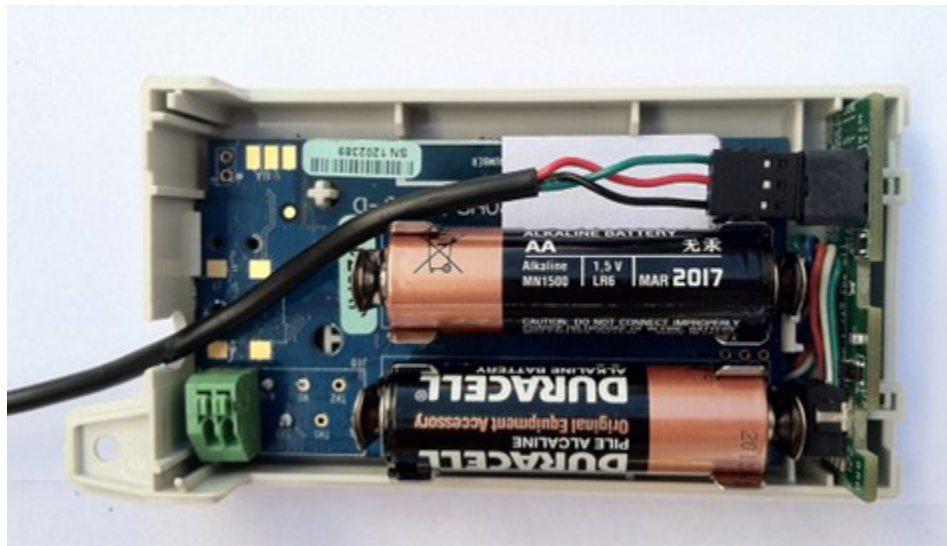


Our TW-140B-ED unit additionally provides a pulse output to drive a remote display as required in California. This output is an isolated dry-contact type and can drive any display that accepts this type of input. There is no polarity associated with this connection. The wiring colors for each meter type is written on the board to simplify installation.

Original TW-140B-N/E style Encoder MDTs

Our initial TW-140B-N product could only read Neptune registers. Later on we added Sensus support and changed the model number to TW-140B-E.

This first generation product is easily identified once opened, as the PCB is blue and there is a separate module at the back to interface to the Encoded meters. The units come with a removable black connector pre-installed at the factory.



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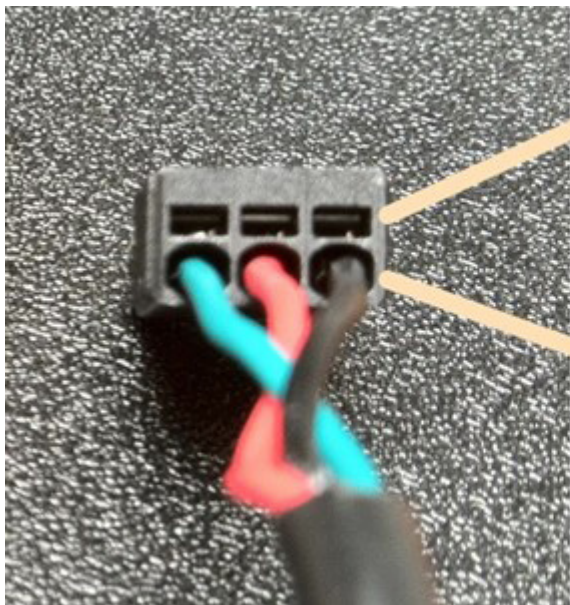
Instructions:

- Remove the connector with a slight tug on the connector.
- Insert the wires from the meter into the connector. There is a small spring in the connector to catch and secure the wires. If you need to remove the wires, the spring can be released by inserting a tiny flat blade screwdriver into the rectangular holes.
- Wire gauge must be between 20 and 26. Solid wire is recommended but not required. Use of small pliers recommended when inserting stranded wire.
- Once inserted, verify the connection integrity by giving a little tug on the wire to make sure it is solidly seated.
- The connector is keyed to insert in only one orientation. Insert the connector until a snap is heard.

The color coding for each meter type is on the following page.

For Neptune Meters

Following the color coding marks on the Neptune meter, B/G/R (Black, Green, Red), insert the wires into the connector in the order shown below.



Insert small screwdriver into top hole to remove wire.

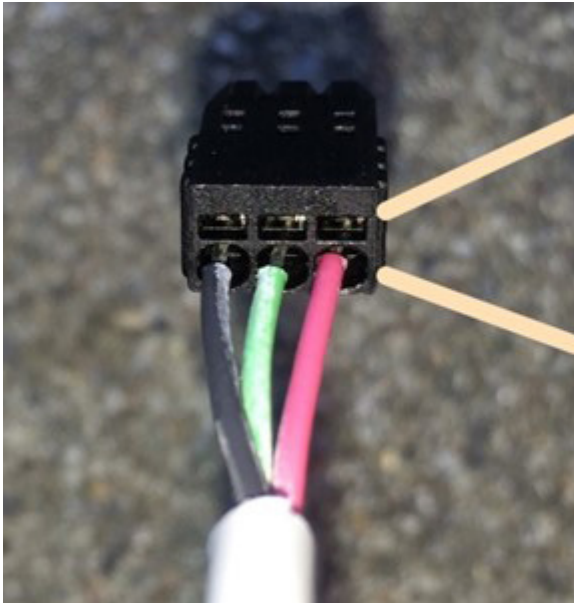
Push wires into bottom holes. Pinch spring will secure wire.

Neptune Wiring

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For Sensus Meters

Insert wires from the meter in the order shown here



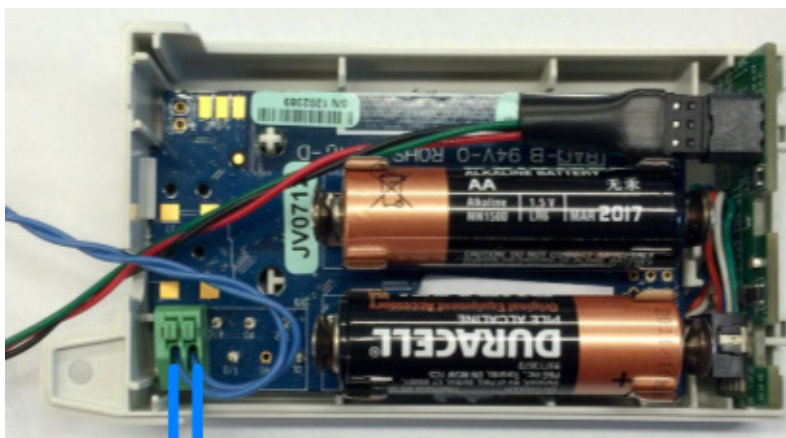
Insert small screwdriver into top hole to remove wire.

Push wires into bottom holes. Pinch spring will secure wire.

Sensus Wiring

Original style -ED (Display pulse output) units

The meter connection is the same as shown above. The display is connected to the MDT using the screw terminals as shown below. The output is not polarity sensitive.



Isolated Out to Display (-ED Only)

Isolated Out to Display (-ED Only)

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Connector Specifications

TW-140/160/170 series Removable Connector Specs:

Used on all Encoder MDT products sold after Q2/2014.

Wire size (solid/stranded):	16 to 26 AWG
Strip Length	3/16 in (5mm)
Blade Type	2.0mm Flat or Phillips 00



Connectors can come in green and blue colors. They are not interchangeable. MDT models shipped with blue connectors must use the blue connectors and vice versa.