

# AN-102-P: Pulse input Wiring Guide

This guide contains the various connector specs and meter wiring instructions for the pulse input MDTs. We also show how our CIT software will identify each input type. The following battery and line powered model numbers are covered:

- TW-160/165 (B/L)-P(P) Single/(Dual) Pulse input Standard Range
- TW-160/165 (B/L)-P(P)T Single/(Dual) Pulse with Time of Use option Std. Range
- TW-170/175 B-P(P) Single/(Dual) Pulse input Max Range
- TW-170/175 B-P(P)T Single/(Dual) Pulse with Time of Use option Max Range
- TW-167/177 S P (L) Single Submersible Pulse with (Leak Detection Cable)
- TW-140(B/L)-P(P) Single/(Dual) Pulse input
- TW-140(B/L)-P(P)T Single/(Dual) Pulse with Time of Use option
- TW-140B-Y Hersey Meter Compatible Single Pulse input

## Polarity Connection Concerns

### Most Water & Gas Meters

The polarity does not matter for most Water and Gas meters which typically use a magnetic reed type switch.

### Hersey & Some Badger Pulse Water Meters

For these meters, connect the Red wire to the P1 input, and the black to COM.

### Electric Meters

The polarity *is* important for connecting to most Electric meters.

- The Pulse Input (P1 or P2) goes to the meter's pulse output terminal, labeled variously WH+, P1, "+", or ISOLATED OUTPUT 10/100/1000.
- The Common input goes to the common terminal, variously labeled ISOL COM, "-", or COM.

## TW-160/165 and TW-170/175 MDTs

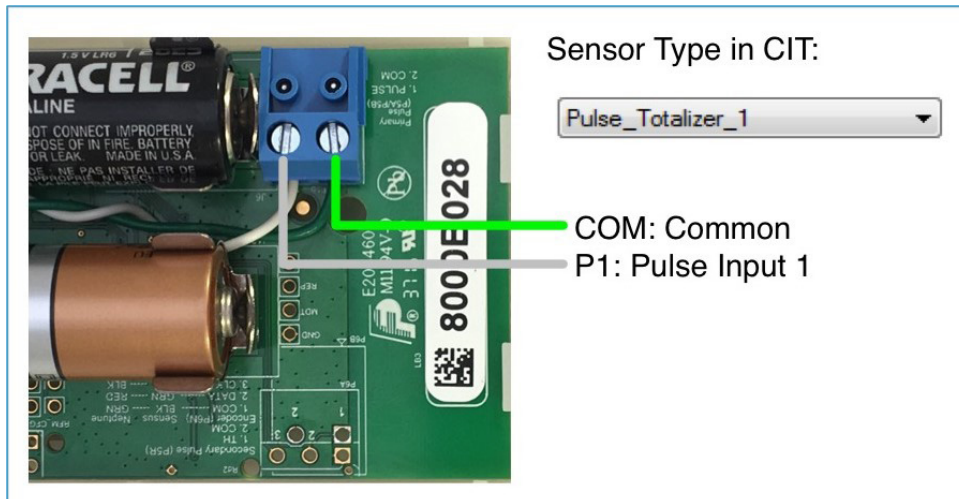
The TW-160/165 and TW-170/175 models of MDT use the standard 5mm removable connector. The unit is designed to have the metering wires run between the batteries (as shown in the picture below) and through the hole at the bottom of the unit. When mounted vertically on drywall (recommended), this allows a good drip loop to be formed.

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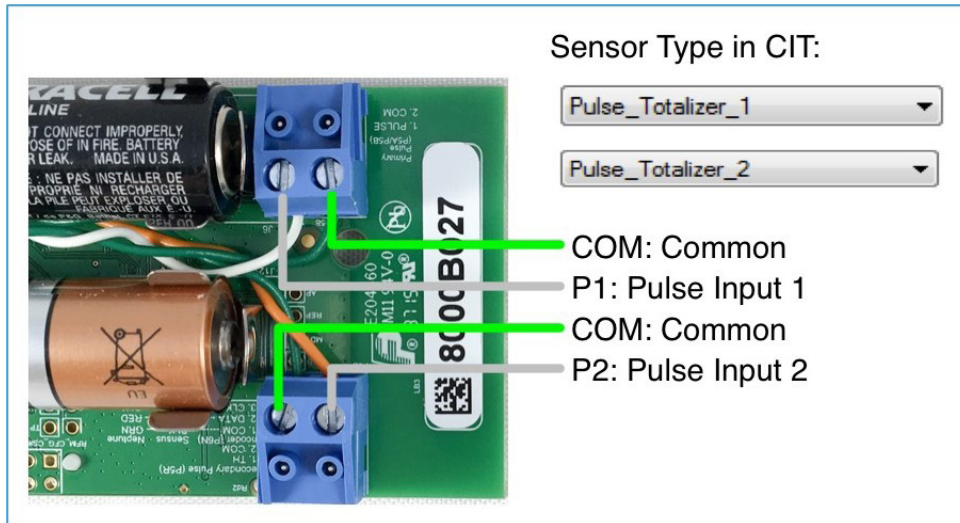
## TW-160/165 /170/175 B-P Single Pulse Input MDTs

Includes TW-165B-H Hersey variation.



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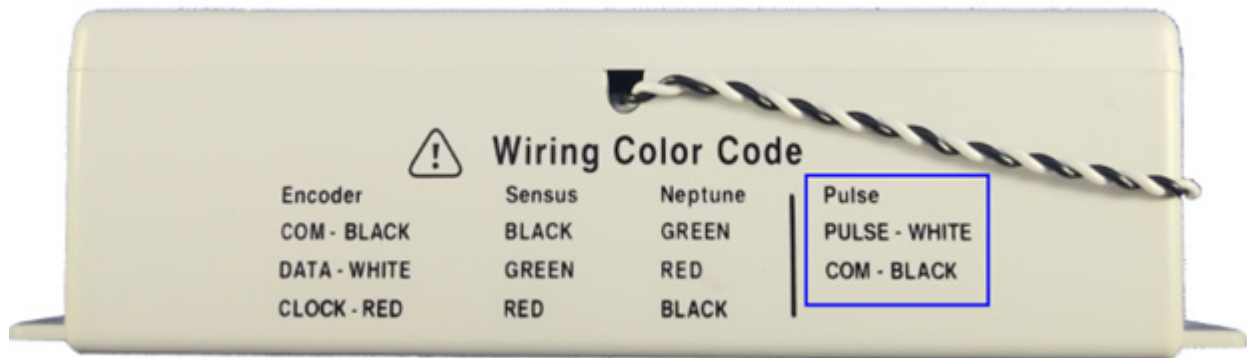
## TW-160/165 & TW-170/175 B-PP Dual Pulse Input MDTs



Note that you can swap the Meter connectors and the polarity remains correct.

## TW-167/177 S-P Submersible MDTs

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.



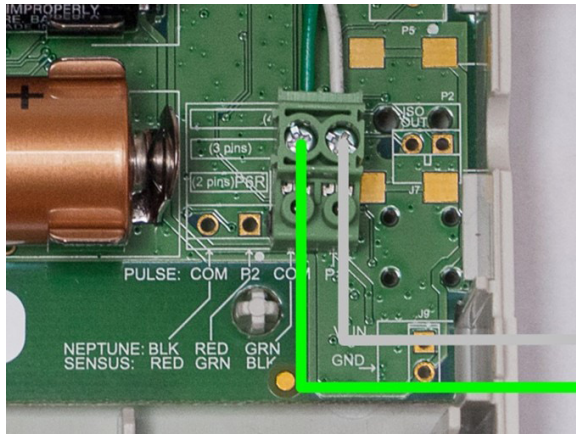
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## TW-140 MDTs

### Newer TW-140 Single Pulse Input MDTs

Models manufactured after May, 2014

Serial Number greater than 81A0A000



Sensor Type in CIT:

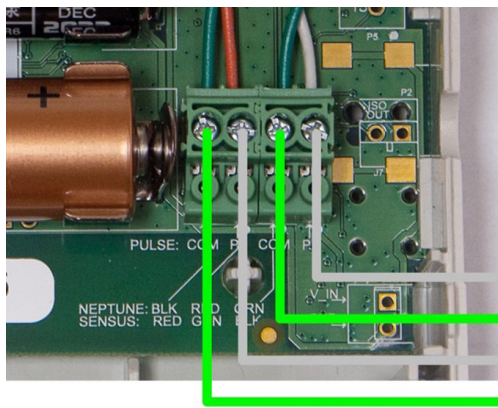
Pulse\_Totalizer\_1

P1: Pulse Input 1  
COM: Common

### Newer TW-140 Dual Pulse Input MDTs

Models manufactured after May, 2014

Serial Number greater than 81A0A000



Sensor Type in CIT:

Pulse\_Totalizer\_1

Pulse\_Totalizer\_2

P1: Pulse Input 1  
COM: Common  
P2: Pulse Input 2  
COM: Common

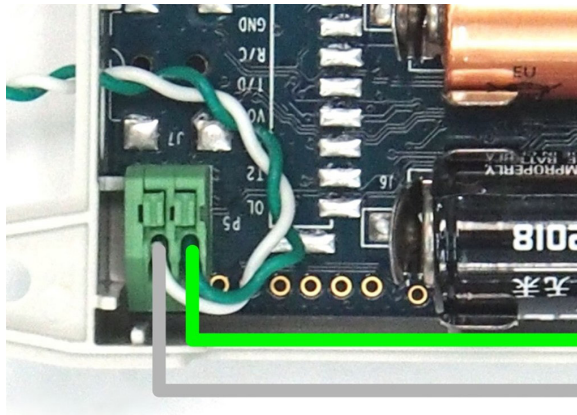
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## TW-140 MDTs

### Older TW-140 Single Pulse Input MDTs

Models manufactured before May, 2014

Serial Number less than 81A0A000



Sensor Type in CIT:

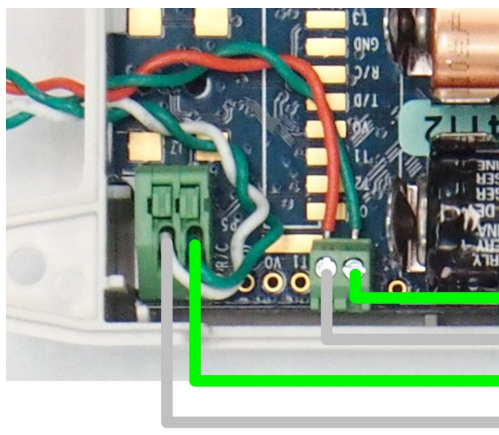
COM: Common  
P1: Pulse Input 1

### Older TW-140 Dual Pulse Input MDTs

Models manufactured before May, 2014

Serial Number less than 81A0A000

Note! Single input Hersey Meter compatible MDTs use the P2 input connector; the P1 connector is not installed on TW-140B-Y units.



Sensor Type in CIT:

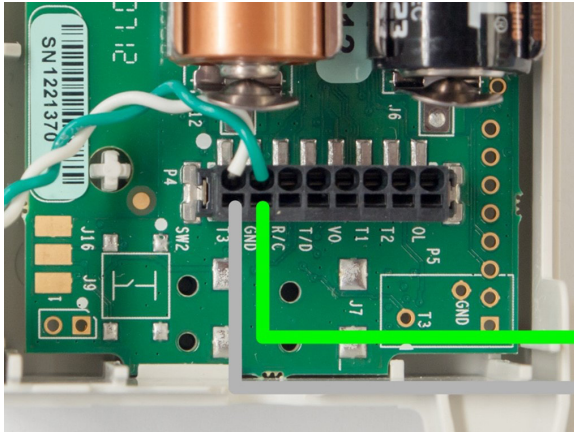
COM: Common  
P2: Pulse Input 2  
COM: Common  
P1: Pulse Input 1

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## Special Model Single Pulse Input

Rare, only 1000 made in May, 2014

Serial Number range 81A0A400 to 81A0A7FF



Sensor Type in CIT:

Pulse\_Totalizer\_1

COM: Common

P1: Pulse Input 1

## Connector Specifications

### TW-160/165 & TW-170/175 Removable Connector Specs:

Used on all TW-160/165 and TW-170/175 MDTs Pulse MDTs. Connector is compatible with other transmitters and some meters in the market.

Wire size (solid/stranded):	14 to 22 AWG
Strip Length	1/4 inch (6mm)
Blade Type	2.5mm Flat



### TW-140 Removable Connector Specs:

Used on all 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 Phillip 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.

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## Spring Connector Specs:

Used on older MDT units as primary pulse input.

Wire size (solid/stranded): 20 to 26 AWG

Strip Length 5/16 in (8mm)

Blade Type Not Applicable



Insert the wire at 30° to 45° from perpendicular

## Non-Removable Screw Connector Specs:

Used on all units for Power input, on older units for secondary Pulse input, Runtime input, and occasionally as primary pulse input

Wire size (solid/stranded): 18 to 28 AWG

Strip Length 3/16 in (5mm)

Blade Type 1.5 to 1.8 mm Flat

