

How to connect the TriMetric up to 350-400 feet away from batteries using Cat5 cable.

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The TriMetric TM-2020 or TM-2025 meters must be connected to the batteries and shunt usually by a four wire cable. One requirement is that the wire from the “G1” terminal on the TriMetric and the shunt must not have excessively high resistance in order to work properly. We suggest that the “G1” wire from batteries to meter should have a resistance value be under two ohms or so. When the distance is under 50 feet, there are no special requirements for the wire—but here is a way to use Cat5 cable with eight #24 conductors for distances up to about 350 feet.

This method involves using multiple wires in the Cat5 cable for the G1 wire (as described in more detail below) and, to reduce or eliminate voltage error:

For the TM-2020: Using two separate conductors for the + and +M function.

For the TM-2025: Paralleling two conductors for the +B1 function.

Cat 5 cable with 8 conductors has four “twisted pairs” whose pairs can be easily identified by their colors. One pair, for example, has one wire that is blue, and its pair being blue and white. Other pairs are similarly matched, for example red and red-white.

1. **For TriMetric G1 conductor up to 350 feet:** Choose two pairs (four wires total: for example red, red-white, brown, brown-white) and at **each** cable end connect all four conductors together, so that you make one effective conductor that has only 1/4 the total resistance. (If you are going less than 170 feet or so, you could put just two wires together instead of four.) Connect one end to the “G1” terminal on the TriMetric terminal block and connect the other end of the bunch either to the Kelvin terminal near the “load” side of the shunt, or possibly more conveniently it can go to the large bolt on the load side of the shunt (not the battery minus side). The total resistance of this group of four will be under two ohms if under 330 feet long.
2. **For G2 and Sig conductors:** Choose another pair—use one of the pair (for example green) for G2 and the other in this pair (green-white) for Sig.
 - 2A. The “G2” wire **must** be connected directly to the little Kelvin screw (near the “load” side of the shunt.)
 - 2B. The “Sig” wire goes **directly** to the other little Kelvin screw (near the “battery negative” side of the shunt.)
3. **For the + side conductors:** Use the last pair to connect the + wires as follows:
 - 3A. **For the TM-2020 only**, disconnect the wire jumper (if any) at the meter terminal block that connects the “+” and “+M” terminals. Connect one of the other unused wires to the “+” terminal and connect the other wire of the pair to the “+M” terminal. At the battery end connect both of these pairs together and to the battery + terminal. This will eliminate any TriMetric voltage error due to the long wires to the battery.
 - 3B. **For the TM-2025 only**, Take one pair, and connect them together at both ends. Use this one (larger) wire for the B1+ connection. This will reduce the voltage error to less than 0.1 volts at 330 feet.