

This is a short version of the EZ Meter installation instructions. The full version is available online at www.ezmeter.com/PDFs/UserManual.pdf.

Be Sure You Have the Right Meter: Verify that the voltages printed on the electronics module label are correct for your electrical system. Also be sure the maximum current draw on any leg will not exceed the maximum current specified on the label. A three element meter may be used with one, two or three active legs. Just be sure power is connected to L1 to power the meter.

Location: Choose a suitable location for the meter. Next to a breaker panel or disconnect box that will hold the current transformers (CTs) is ideal. You will need a conduit large enough to hold the voltage reference and CT wires. The CT wires can be extended up to 500' if needed which is preferable to extending the wires going to the display counters.

Enclosure: The meter must be installed in a suitable electric enclosure, either an enclosure purchased from Davidge, a suitable NEMA rated enclosure purchased locally, or a power pedestal at a marina or RV park. Mount the enclosure in the desired location using appropriate hardware and connect it to the breaker panel with conduit.

Davidge Controls offers a variety of NEMA-4X plastic enclosures capable of holding up to twelve meters. In some enclosures, meters may be mounted on the back of the panel. Current transformers may be packed inside the enclosure or separately.

All are installed in a similar manner. The first step is to determine where the enclosure will be mounted and where the conduit with the voltage reference, neutral, and current transformer wires will be located. This will usually be in the back of the enclosure behind the panel that holds the meters.

The next two steps are best performed on a work bench. Drill a hole in the enclosure for the connector to the conduit. A separate hole may be needed for an Automatic Meter Reading (AMR) network wire. If there is more than one meter in the enclosure, use 18 gauge (suggested) wire to connect all the neutrals together as well as the voltage inputs (connect all the L1s together, all the L2s together and all the L3s together, if applicable). Using 18 gauge wire will allow you to put two wires in each terminal so you can easily "daisy-chain" one meter to the next. Read Connecting the Voltage Inputs below for details.

If you have meters with an RS-485 interface for AMR, connect all the terminals with the same name together using CAT5 or whatever type of wire will be used for the RS-485 network. Unless this is the

last enclosure in the RS-485 network, you be connecting a CAT5 cable to the first meter in the enclosure and another to the last meter. These cables will go either to the computer or previous enclosure in the network and to the next enclosure. See the full User Manual referred to above for more details.

CAUTION *Turn Off Power Before Continuing*

Installing the CTs: See Fig. 1 if you are installing a meter to an electrical system that has a neutral, Fig. 2 for no neutral. For solid core CTs, you must disconnect the wires carrying the load to be measured, run them through a CT, then reconnect them. Connect the CT wires to the meter electronics module or short the wires together before turning power back on. Dangerous voltages may be generated if the CT wires are not properly shorted. Unless you are installing multiple CTs on a leg or you have a bidirectional meter, the direction mark on the CT may be disregarded. If you are installing a meter on a three phase electric system (even if you are only using one or two legs), you must match the CT inputs and voltage inputs for the same leg as in the diagrams. There is a 50% error if you don't.

Connecting the Voltage Inputs: The meter needs an AC voltage reference paired with each CT. The circuit providing the voltage reference must be protected by a 200 amp or smaller fuse or circuit breaker. If you use a small fuse, it should be a slow blow type fuse as the internal switching power supply creates a direct short from hot to neutral for half a cycle (1/120 second). You may use any wire from 24 to 12 gauge with 300 volt or 600 volt insulation as per local codes. To meet the requirements of the UL standard, the hot wires must be switched. Be sure the user (tenant) will not be able to turn off the switch and disable the meter. If you are metering a 440-480 volt, three-wire delta system, see the manual for the Phantom Neutral.

Connecting the Display: If you purchased a meter in an enclosure, the display will already be connected. Otherwise, mount the display in an appropriate place, then connect the two wires to COMN and DISPL terminals on the meter. See the online manual for diagrams if you have a meter with two display outputs.

Connecting the Isolated Pulse Outputs: If you purchased a meter to connect to a pulse counting system, connect the negative or ground wire to the ISO- terminal on the meter and the positive wire to the ISO+ terminal. This output is similar to a dry contact closure except that it is polarity sensitive. If it doesn't work, try reversing the wires. Additional information is in the online manual.

Connecting RS-485 or RS-232 Serial Cables: If you purchased a Plus or Modbus meter, see the online manual for installation instructions. The meters are capable of logging kilowatt hours (kwh), watts, volts, amps, power factor and more. Meter reading software prepares invoices and reports for logged readings which can also be exported to Microsoft Excel.

Operating the Meter: When power is applied to the meter, the red LED should turn on and remain on steady. Depending on the capacity of the meter, the red LED should flash off briefly every 0.01 kwh, 0.1 kwh or 1.0 kwh, a value printed on the meter label.

If the red LED flashes on and off every one or two seconds, it indicates the meter is sensing a low power factor (high phase angle) on one or more legs. This can be caused by a capacitive or inductive load, or it may indicate that the meter was not installed properly. Check to make sure that the voltage and CT connections for each leg are properly connected. If this condition exists and is allowed to continue, the meter will only record half the power that is actually used. If you have a Plus or Modbus meter, you can read the phase angle with your computer. The online manual tells how to disable the low power factor warning.

Reading the Meter: EZMeters are normally shipped with an output resolution of 1.0 kwh. They may be special ordered with output resolution of either 0.1 kwh or 0.01 kwh. For meters with 1.0 kwh and 0.01 kwh resolution, all the digits of the display will be the same color. The right hand digit on displays for meters with 0.1 kwh resolution will be red indicating tenths of kwh for that digit. In other words, put a decimal point where the numbers change colors. A multiplier is not needed (multiplier = 1). The resolution is also printed on the meter label.

Before you decide the meter doesn't work, be sure you have waited long enough. A 100 watt light bulb will take 10 hours to use 1 kwh. A 1500 watt heat gun will take 40 minutes. At 1500 watts, the red LED (if 0.01 kwh) will flash every 24 seconds.

Software: Free software for billing and data logging is available at www.ezmeter.com. Navigate to the Automatic Meter Reading section and download the EZMeter Power Suite QuickStart Guide. There is an annual charge for some of the Power Suite features.

Technical Support:
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FIG 1. 4-Wire, 3-Phase WYE Meter (Types A, C & D) With RS-232 or RS-485 Installation Diagram
 NOTE: If Used in 2- OR 3-Wire Systems, Power Must be Connected to L1. (Type A Voltages Shown.)

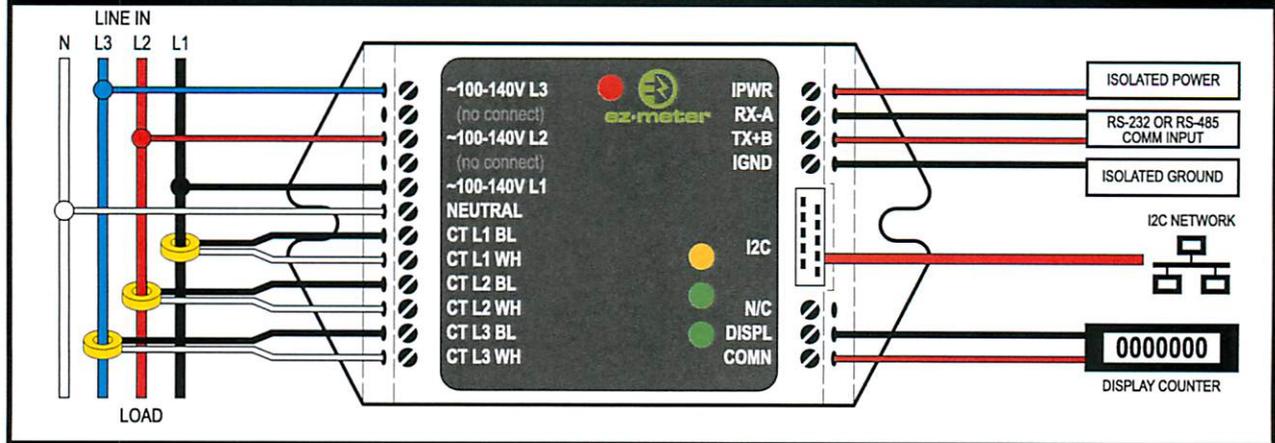


FIG 2. 4-Wire, 3-Phase Delta Meter (Type B & E)
 NOTE: High (Stinger) Leg Must be Connected to L3.

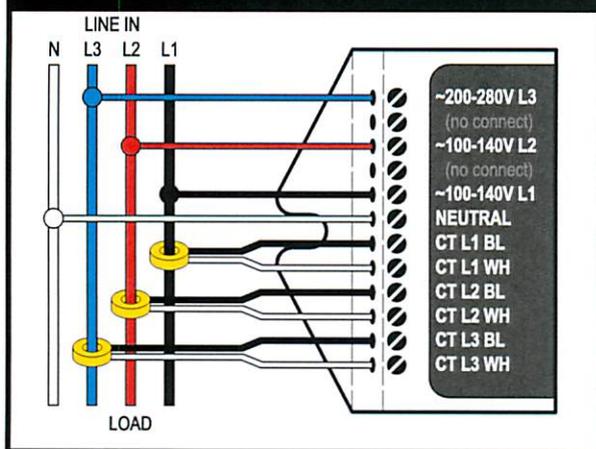


FIG 3. 3-Wire, Single-Phase Meter (Type A & E)
 NOTE: Any One or Two Legs of 3Φ Power May be Used as Long as Power is Connected to L1 to Power Meter.

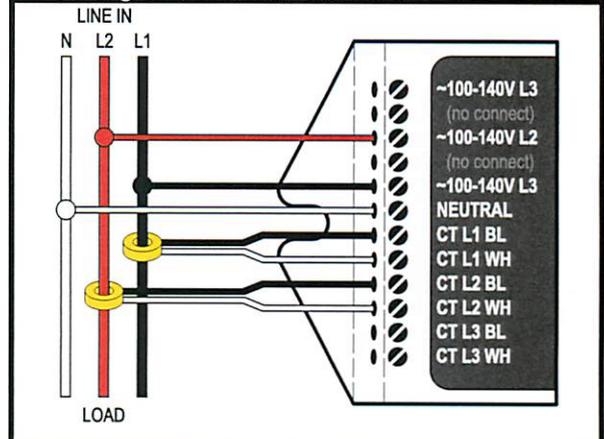


FIG 4. 4-Wire, 3-Phase Delta Meter (Type F & G).
 Type E Meter With Phantom Neutral Suggested for 480V.

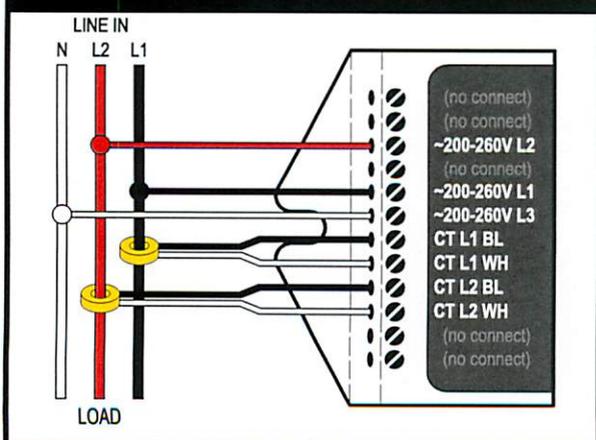


FIG 5. 2-Wire, Single Phase (Type F & G)

