Installing the Counter: Cut out a rectangular hole in the meter enclosure for the counter. If the counter is made of clear plastic, the hole should be 1.085"x0.565". If it is black plastic, the hole should be 1.185"x0.875". If you use our mounting plate, drill a 1.25" (1.5" for the black counter) hole with a hole saw, snap the counter in the mounting plate, place the counter in the hole you just drilled and use the plate as a template to drill holes for four #6 screws or pop-rivets.

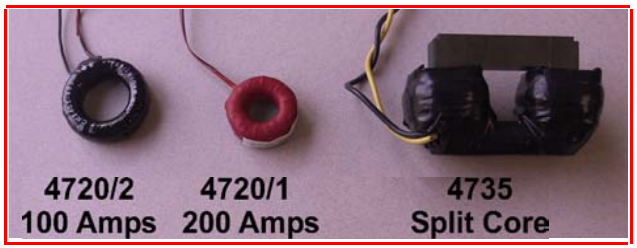
Connect the wires from the counter to the COMN and DISPL terminals on the electronic module. It does not matter which one goes to either terminal. If there is no DISPL terminal, see the specific instructions for that meter model.

Installing the CTs: If you are using **solid core CTs**, you must turn off the power to begin your installation. Disconnect one end of the wire (or wires) with the load to be measured and pass it through the center of the CT and reconnect the wire(s) where it was attached before. Connect the two wires coming out of the CT to the appropriate terminals on the electronics module. Begin connecting CTs to CT #1 and continue until all the CTs for that meter are installed. The direction of the current flow is not important except for the Everglades bidirectional meters.

You can install **split core CTs** without disconnecting the wire. If you have to install them without turning off power, remember that the wires coming from the CT present a serious shock hazard until they are connected to the meter. Be sure to secure the two parts of the CT so it cannot come apart.

If you run **more than one wire through a CT**, be sure that the current flow is the same direction for all wires and that all the wires are the same phase. That means there should be no voltage variation between the wire (if you touched them together, they would not spark). Failure to do so will cause the power flowing in one wire to be subtracted from the power flowing in the other wire instead of being added to it.

Arrange the CTs in the panel so they are separated two inches or more from each other. If they are closer than that, the **magnetic interference** will affect the accuracy of the meter.

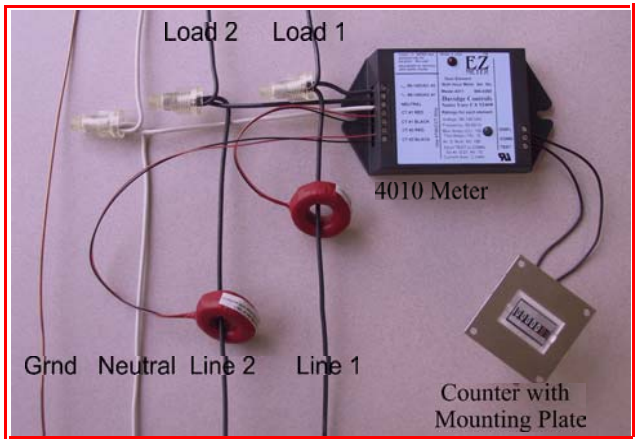


Electrical Connections: You need to provide a voltage reference for each phase of the power you are metering. If there is a neutral in the electrical system, you need to connect that to the meter as well. The voltage ranges printed on the electronics module label refer to the voltage between neutral and that terminal or between two hot lines if there is no neutral. The voltage ranges printed on the label control what meter works with what electrical system. The voltages associated with the meter names is the most commonly used voltage in the range.

Be sure to connect the VAC lines on the meter to a location that will not be turned off. The meters should be connected after the main circuit breaker rather than directly to the power company transformer.

The voltage reference phases must match the CT phases. Be sure that VAC #1 is connected to the same wire that passes through CT #1 and so on. This is particularly critical on three phase systems, somewhat less so on single phase systems.

You can use any wire between 12 and 22 gauge as long as it has appropriate voltage and fire ratings for your local building code. In general, use electrical wire, not speaker wire or computer LAN wire for this connection.



Instructions below are for specific DIGI Meter Models:

Bermuda: 2 Wire, 120 volts to neutral. Meters capable of handling two CTs are frequently shipped with one CT instead of a meter capable of only handling one CT. If you receive one of these, connect to the #1 terminals and ignore the others.

Denali: Dual 2 Wire, 120 volts to neutral. This meter handles two separate 120 volt services. The service connected to 90-140 VAC #1 and CT #1 will register on the display connected to DISP1 and COMN. The second service is connected to the #2 terminals. If only one service is connected, connect to the #1 terminals. This meter can be connected as a Yosemite meter. Short DISP1 and DISP2 together and use just one counter.

Nassau: 3 Wire, 120V to neutral, 240V line to line. If used for a single 120 volt service, connect to the #1 terminals.

Everglades: Bidirectional, 3 Wire, 120V to neutral, 240V line to line. The Everglades meter is used in net metering systems or wherever current flow in both directions must be monitored separately. This is the only EZ Meter that requires the direction arrows to be considered during installation. Some CTs have an arrow and some have a dot. The dot represents the head of the arrow. The counter connected to the DIS-IN terminal will display power that flowed in the direction of the arrow, while power that flowed in the other direction will be displayed on the other counter. If you are measuring power on a 120 volt service, connect it to the #1 terminals and leave the #2 terminals empty.

Jamaica: 4 Wire, 3 phase Wye, 120V to neutral, 208V line to line. If used for a single 120 volt service, connect to the #1 terminals. It is also okay to use with only two elements connecting to the # 1 and #2 terminals.

Olympic: Dual 120/240 volts to neutral. The Olympic is essentially a Yellowstone meter with a second display. The 120 volt service connected to the #1 terminals outputs to DISP1 while the 240V service connected to the #2 and #3 terminals outputs to DISP2. The meter can be used for a 208V three phase system by shorting DISP1 and DISP2 together. If used for a 240 volt service without a 120 volt load, connect power to VAC #1 to power the meter.

Gettysburg: 4 Wire, 3 phase Wild Leg, 120/120/208V to neutral, 208V line to line. The Wild Leg is also known as the Stinger leg in some parts of the country. Connect the two 120V legs to VAC #1 and VAC #2 and connect the 208-240V leg to VAC #3. Caution - Doing this wrong will burn up the meter.

Biscayne: 2 Wire, 220 volts to neutral. Connect voltage to VAC #1 and VAC #2 terminals. Put the CT on the #2 wire.

Glacier: 2 Wire, 240 volts line to line. Connect one hot wire to VAC #1 and the other to VAC #2. Either load wire can go through the CT which is connected to the CT #1 terminals. Do not use this meter if an 120V to neutral loads exist.

Croix 3 Wire, 3 phase delta, 208 volts line to line. The Zion meter is accurate only when a relatively balanced load is applied to the three phases. Before installing the meter, use a clamp-on ammeter to determine the two legs that most equally balanced loads. Run these wires through the CTs and connect to the #2 and #3 terminals. Connect the other hot wire to VAC #1.

Cayman: 4 Wire, 3 phase Wye, 277V to neutral, 480V line to line. Follow the general instructions above. If you have special ordered a dual counter meter, it will work the same as the Olympic meter with higher voltage. Do not attempt to connect to a 480 volt delta without a neutral.

Shenandoah. 4 Wire, 3 phase Wild Leg, 240/240/440 volts to neutral, 440 volts line to line. Connect the same as the Gettysburg meter, except higher voltage.

Testing the Installed Meter:

After the meter has been installed, it is a good idea to turn power on the system and check to see that the meter was connected to the power line properly. This can be determined easily by looking at the red LED in the top, center portion of the label on the electronics module. This LED should glow a bright red whenever power is on.

If the meter is receiving power, the next step is to verify that the meter is operating properly. You will need a hair drier or other small appliance that uses approximately 1500 watts or more to be able to do the test in a reasonably short time. Since the meter measures each phase separately, you will need to test each phase individually.

Without getting into phase angle, resistance and impedance measurements, the following formula will tell you how many seconds it should take to count 0.01 kwh:

SECONDS = 4,320,000 / VOLTAGE / WATTAGE

where VOLTAGE is the AC voltage measured at the meter (it is important to measure this as variations up to 10% are common) and where WATTAGE is the wattage shown on the nameplate of the appliance providing the load.

For example, a 1500 watt hair dryer on 120 volts will use 0.01 kwh in 4,320,000 / 120 / 1500 or 24 seconds.

To set the meter in test mode, install a short piece of wire between the terminals marked **TEST** and **COMN** on the meter. This will cause the meter to count every 0.01 kwh instead of every 0.1 kwh.

To check a 120 volt service, turn on your heater and begin timing when the mechanical counter advances the first time. The counter should advance again about 24 seconds later (or whatever time you figured using the formula above for the load you are testing with.)

Be sure to remove the wire from the **TEST** and **COMN** terminals after testing the meter.

If you have several meters but don't have a voltage meter, you can test several meters and if they all use the same number of seconds, you can assume the meters are working okay even if the time observed is different than the calculated time. This test will also correct for variation in the actual number of watts used by the appliance versus the number shown on the name plate.

Trouble Shooting

Try the following steps if the meter does not work. A simple AC voltmeter will make trouble shooting much easier.

No Red LED

Be sure that line and neutral wires are connected properly and that power is turned on. Check this with your voltmeter by measuring the voltage between the Neutral and VAC #1 terminals (between VAC #1 and VAC #2 if no neutral on the meter). The voltage should fall in the range specified for the meter. If it does not, you have not connected it properly, the power is not turned on, or you have the wrong meter for your electrical system. Check the voltage between the neutral (usually white wire) and ground. This voltage should be close to zero.

No Green LED

The green LEDs are normally off. They flash briefly when the mechanical counter advances.

Green LED flashes but Counter does not change

The meter is correctly detecting the usage of power but the mechanical counter is not moving. Be sure the counter is connected properly with one wire going to **COMN** and one wire going to **DISPL** When the green LED flashes, the mechanical counter should advance. With 2-in1 meters, when the top green LED flashes, the counter connected to **DISP1** should advance indicating current measured with the transformer connected to the CT #1 terminals. When the bottom green LED flashes, the counter connected to **DISP2** should advance.

If the counter is properly connected and does not advance when it should, replace the counter with a different one.

The time is wrong when doing the accuracy check.

Be sure all the terminals are wired correctly and screwed down tight.

Be sure a wire is installed between **TEST** and **COMN** terminals.

Be sure the hair dryer or other electrical load is plugged into the proper circuit.

Be sure that the hair dryer is the only thing drawing current through this meter.

Be sure the wire to the dryer only passes through the current transformer one time.

Still doesn't work

Call Tech Support at (805) 688-9696 between 9:00AM and 5:00PM Pacific Time, Monday through Friday.

Davidge Controls
583 Refugio Road
Santa Ynez, CA 93460

Digi-Watt Operating Instructions

After installation, the Digi-Watt is simple to operate. The red LED indicates that power has been applied to the meter. The green LED will flash briefly whenever the display counter advances. Otherwise it stays off.

Most meters count in tenths of kilowatt hours in normal mode and hundredths of kilowatt hours in test mode. Install a short wire between COMN and TEST to enter test mode. Check the Kh and Kt values on the meter label to verify how it was set at the factory. Meters can be ordered with resolutions from 1.0 to 0.0001 kwh (1000 to 0.1 watthours).

If the meter appears to operate erratically, it is probably because it measures each phase separately and advances the counter when each phase accumulates a tenth of a kwh (or other resolution)

CAUTION

Serious injury can result from electric shock. Be sure to turnoff the power before installing any meter.

Fire can result from loose electrical connections. Ensure that all connections are secure.

If you do not understand these instructions, hire an experienced electrician to install the meter for you. Help is also available from the factory by phone or email.

In most localities, a permit and inspection is required to install the meters.

In California, Maryland and Canada, meters are regulated by the state when used for revenue billing. Contact the local Weights & Measures office. Special meters are available for California that meet the state's security requirements.

Digi-Meter Installation Instructions

The Digi Meter consists of an electronics module, one or more current transformers (CTs), and one or two electro-mechanical display counters. The electronics module should be mounted in a NEMA enclosure suitable for the location. The CTs and display counters may be mounted in the same enclosure or mounted in remote location. A common practice is to mount the CTs in a breaker panel and mount everything else in a separate adjacent enclosure. Both the CTs and counters can be mounted 100 feet or more from the electronics module by extending the wire.