

How to Use Multimeter to Measure Volts and Amps of Solar Panel

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VSS have been supplying solar panels since 2008. There have been some after-sales queries on our solar panels from our customers. We found that the testing process and testing data from some of our customers has not been correct when using a multimeter. Therefore, we have added this article on how to use a multimeter and hope this helps.

How do you make sure you get enough output to satisfy your electric needs when you buy and install solar panels? Most camping and travelling need more than one solar panel to run their whole electric system. However, how do you verify if your solar panel is working? While checking if your 12V battery can run devices or vehicles is a pretty good sign that everything is well, this doesn't always tell you how the panel is doing. The fact is that solar panels are passive energy gatherers, and we can't tell much just by looking at or touching them. The best way to check for signs of life is to measure a solar panel's volts and Amps. Properly testing your solar panels is a very important but often overlooked procedure. You wouldn't believe how many people completely skip testing solar panels and forget to confirm their solar power output before installing them. By learning how to test solar panels you can ensure that you don't waste your time installing panels that you'll have to take down and fix.

Before you start :

1. Find the voltage (V) and current (A) ratings of your panel (you can usually find these written on the back of the panel).
2. Check that sunlight conditions are suitable for producing readings on your system. To obtain the rated output of your panel you will need full, bright sunlight falling directly onto the panel. Remember, no sun no power.
3. Make sure you understand how to use the multimeter, and that you are using appropriate settings for the power you expect to measure.

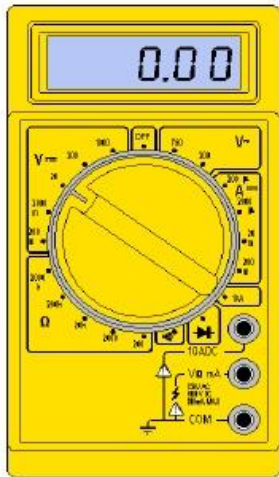
Using a Multimeter to Test Solar Panels

You can measure Volts and Amps with a special tool called a multimeter. There are 2 styles of multimeters in the following.

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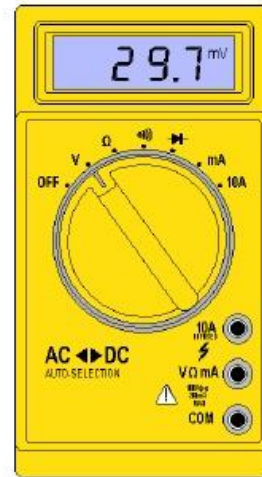
Switched

Manually switch between ranges to get most accurate reading.



Auto Range

Switches between ranges automatically for best reading.



Both of these styles work the same

When you use the switched multimeter, make sure you select the appropriate function on your multimeter. Most multimeters have functions for measuring several different quantities. To measure amperage or Voltage of solar panel, you need to set the function to **DC amperage** or **DC Voltage**.



Testing solar panels for volts

To test a 18V solar panel voltage output directly, put your solar panel in direct sunlight, set your multi-meter to the DC “volts” setting.

You Tube video link - <https://www.youtube.com/watch?v=8eK1Qts1RbY>

You want to choose a voltage range capable of displaying the maximum possible voltage of the panel in the open circuit, this means that if you have a panel rated for 20 volts, you should set the multi-meter to read up to 200 volts to ensure that you receive an accurate reading. Now the negative (black) probe connects to the port labelled COM and the red (positive) probe connects to the port usually labelled V/ Ω /mA, then simply touch the multi-meter probes with the solar panel leads, matching their corresponding polarity (red to red, black to black) You will receive a fairly accurate reading of the volts created by your panel. If the panel is new, then the voltage should be very close to the panel’s rating. For used panels, a slightly lower voltage should still be acceptable, although this is up to your own preference.



Testing Solar Panels for Amps

To test solar panel amperage output, put your solar panel in direct sunlight, set your multi-meter to the DC “amps” setting.

To ensure that you don’t blow your device’s fuse, set the maximum amperage sensitivity to well above your expected reading. Please adjust black probe connects to the port labelled COM and the red probe connects to the port usually labelled 10A.



(Sample Testing: VSS 100W Folding Solar Panel)

After doing your solar panel testing, you should find that the solar panel output (for the solar panel you built) is about 21 volts and 5 amps. Whenever you have these two values you can figure out the wattage by multiplying them together.

Volts x Amps = Watts

So... 21 Volts x 5 Amps =105Watts

And if you are testing a charge controller you will need to make sure that the battery is NOT fully charged otherwise it will not be able to accept current.

The first two measurements use the solar panel on its own. When disconnecting the solar panel, regulator, and battery, take care to disconnect the panel from the regulator first, and then disconnect the regulator from the battery. When reconnecting, connect the regulator to the battery first, and then connect to the solar panel. This will avoid causing damage to the regulator.