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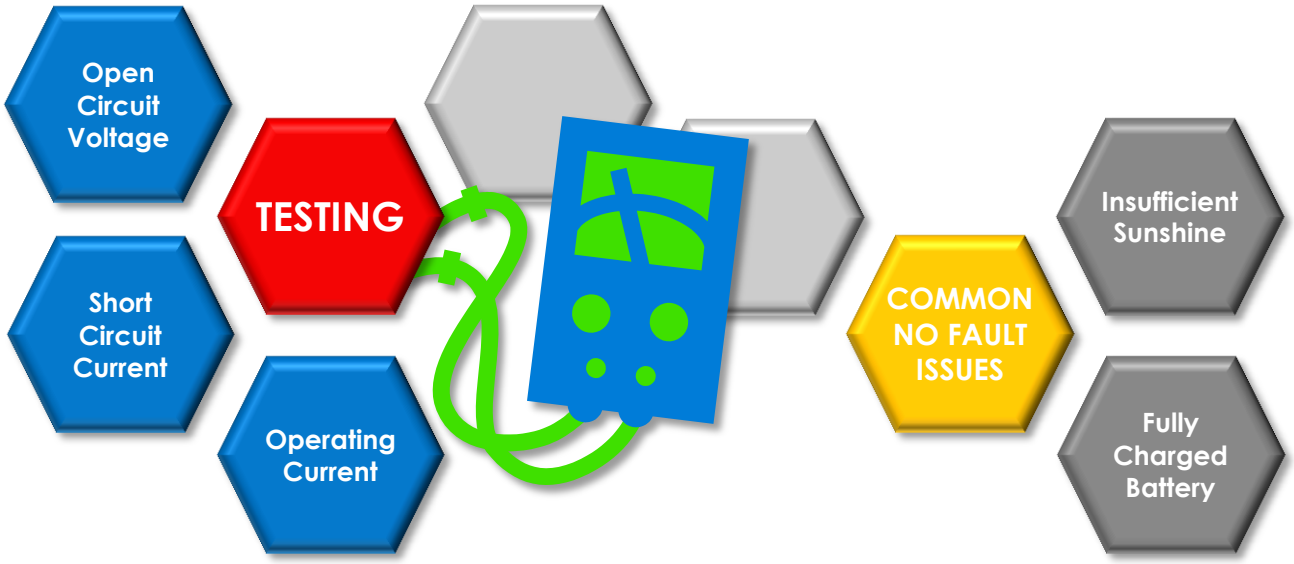
HOW TO TEST YOUR SYTEM



Sometimes you will want to check that your solar system is performing properly, or you may simply want to know what output your solar panel is giving. In this section we outline how to do this using a multimeter to measure current (amps) and voltage.

BEFORE YOU START

- Find the voltage (V) and current (A) ratings of your panel, you can usually find these written on the back of the panel.
- 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.
- Make sure you understand how to use the multimeter and that you are using appropriate settings for the power you expect to measure.
- 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 with nothing else connected. When disconnecting the 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.

CAUTION

- Observe polarities when connecting solar panels and batteries.
- Photovoltaic panels produce electricity when exposed to light, so it is recommended that you cover the front of the solar panel if outdoors to help avoid shocks. This is particularly important for higher voltage panels.
- Do not short circuit either the panel or the battery.

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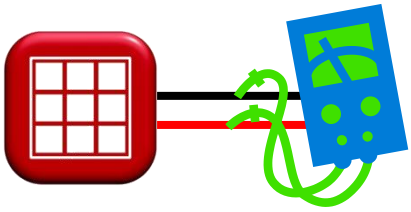
TO MEASURE OPEN CIRCUIT VOLTAGE - Volts (V_{oc})

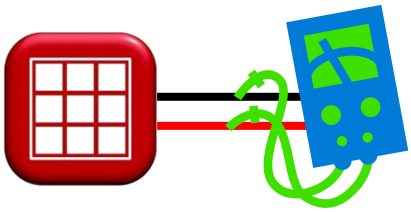


= 17 to 18 Volts

- Disconnect the solar panel completely from the battery and regulator.
- Angle the solar panel towards the sun.
- Measure the voltage between the +ve and -ve terminals by connecting the negative contact from the voltmeter to the negative on the panel and the positive contact on the voltmeter to the positive on the panel.

You should measure a voltage of around 17-18V

TO MEASURE SHORT CIRCUIT CURRENT - Amps (I_{sc})

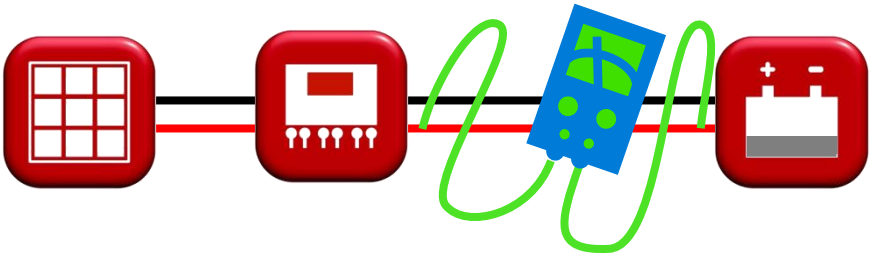


= 4.0 to 4.5 Amps

- Disconnect the solar panel completely from the battery and regulator.
- Angle the solar panel towards the sun.
- Ensure that the multimeter is set at 10A, at least to start with. You can change the setting later if required.
- Measure the current by connecting the +ve lead on the voltmeter to the +ve on the panel and the -ve from the voltmeter to the -ve on the panel.

You should be measuring around 4-5A

TO MEASURE OPERATING CURRENT - Amps (I_L)



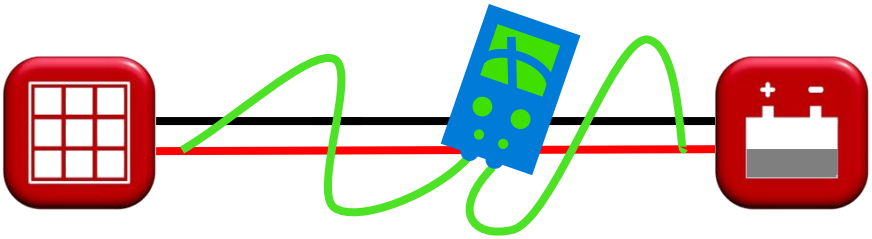
= 3.5 to 4.0 Amps

- Connect the panel to the regulator and battery.
- Ensure that the multimeter is set at 10A, at least to start with. You can change the setting later if required.
- Disconnect the positive cable between the battery and the regulator
- Measure the operating current by connecting the +ve from the multimeter to the positive cable from the regulator, and the -ve from the meter to the positive battery terminal.

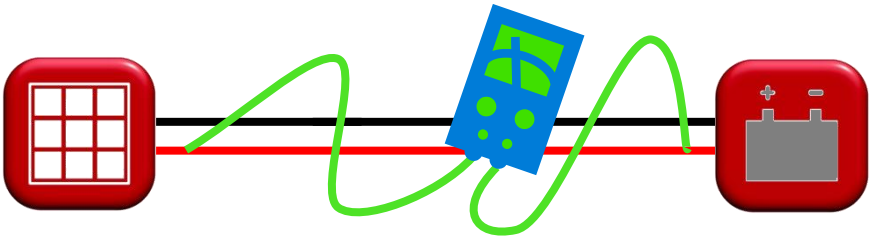
- This measures the current that the panel and charge controller are passing to the battery. If you connect the meter the wrong way round then you will get a negative current showing.
- Remember, if the battery is full it may not be accepting current, resulting in a low reading.

Expect a current of around 3.5-4A in good sunshine, with an empty battery.

TO TEST THE REGULATOR



= 3.5 to 4.0 Amps



= 0 Amps

- Measure the operating current as described previously.
- Re-connect the solar panel directly to the battery without the regulator.
- Disconnect the positive cable between the battery and the panel.
- Measure the operating current by connecting the +ve from the multimeter to the positive cable from the panel and the -ve from the meter to the positive battery terminal.
- If there was no operating current when the regulator was fitted, but there is now an operating current present without the regulator, then the regulator may be faulty.
- Remember, if the battery is full it may not be accepting current, resulting in a low reading.

SOME FINAL CHECKS

- Check the condition of any fuses that might be in the power path.
- Verify the system wiring is correct and intact.
- Check all the connections and terminals for good electrical contact.
- Should your system for whatever reason not be giving the results you expect, please contact us for further advice.