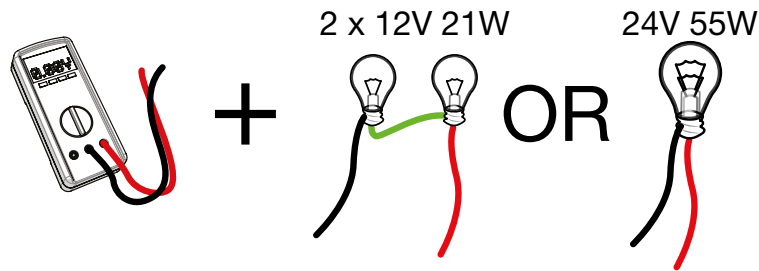


Incorrectly testing solar panels can sometimes lead to inaccurate results when trying to diagnose a fault. Below are the correct ways to test an unregulated solar panel. (Redarc's BCDC, LFP and BMS ranges need to see a 12V nominal unregulated solar input; The below test procedures and results are based on this).

**Tools required:**

- Multimeter
- 2 x 12V 21W globes in series or 1 x 24V 55W incandescent globe with wires attached

**Things also needed:**

- The specifications of the solar panel being testing: the Open Circuit Voltage ( $V_{oc}$ ) and Short Circuit Current ( $I_{sc}$ ). Most of the time these are detailed on the back of the solar panels.
- SUNLIGHT!!!! Testing solar panels either at night time or in poor sunlight conditions will give false and misleading results. For the best and most accurate performance indication, full, bright sunlight is required directly onto the panel.
- Ensure the solar panel is disconnected from a regulator and battery.

**Testing Open Circuit Voltage ( $V_{oc}$ )**

Have the panel disconnected from the regulator and the multimeter set to measure DC Voltage (this is usually shown as “V  $\equiv$ ” on the multimeter).

Connect the positive lead of the multimeter to the positive wire (or terminal) of the solar panel, and the negative lead of the multimeter to the negative wire (or terminal) of the solar panel. The multimeter will now show the Open Circuit Voltage of the solar panel.

**Results (typical)**

12V nominal panel: 18 to 28V.

24V nominal panel: 34 to 56V.

# TECH TIP

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**Testing Short Circuit Current ( $I_{sc}$ )**

Have the panel disconnected from the regulator and the multimeter set to measure current (A) - ensure that a minimum setting of 10A is selected (Note: for panels with an  $I_{sc}$  greater than 10A, a multimeter with suitable current rating should be sourced).

Directly connect the positive lead of your multimeter to the positive wire (or terminal) of the solar panel, and the negative lead of the multimeter to the negative wire (or terminal) of the solar panel. This will show the Short Circuit Current of the solar panel.

**Results (typical values for Redarc products shown):**

Blankets		Fixed Panels		Folding Panels	
Part	$I_{sc}$ Current (A)	Part	$I_{sc}$ Current (A)	Part	$I_{sc}$ Current (A)
SAF1112	7.6A	SMR1050	3A	SMP1090	5.4A
SSF1115	6.2A	SMR1080	4.8A	SMP1120	7.2A
SSF1150	9.3A	SMR1120	7.22A	SMP1150	9A
SSF1190	12.3A	SMR1150 (-SL)	8.6-9A		

**LOAD TESTING THE PANEL:**

There may be some instances where the above tests will give results within the specifications, however applying load to a panel can expose hidden faults.

In this case a simple visual test can be done using a 2 x 12V 21W globes in series or 1 x 24V 55W incandescent globe.

Connect the globes' wires to the positive and negative wires of the panel (polarity is not crucial to observe, but do be cautious). The globe should illuminate brightly if the panel is working correctly and full sun is available. Failure to illuminate may indicate a faulty panel or connection.

**TECH TIP**