



BATTERYLESS
ULTRAMODERN SOLAR DEVICES

Solar Generator Operation Manual



Introduction:

This operation manual is designed to provide comprehensive instructions for the operation of Cutting Edge Power BatteryLESS Solar Generators, covering the models with and without inverters.

Product overview:

The Cutting Edge Power BatteryLESS Solar Generators are innovative solar power systems that directly convert solar energy into usable electricity without the need for batteries. These generators provide a clean, efficient, and sustainable energy solution for various applications, including off-grid living, remote locations, and emergency backup power.

Safety Information:**General safety precautions:**

- Read and follow all instructions in this manual before installing or operating the solar generator.
- Do not attempt to install, repair, or modify the solar generator unless you are a qualified technician.
- Keep the solar generator away from children and pets.

Electrical safety:

- Always disconnect the solar panels from the BatteryLESS solar generator before performing any maintenance or troubleshooting.
- Use proper protective equipment, such as gloves and safety glasses, when working with electrical components.
- Do not touch live electrical parts or connections.

Product Components and Features:

Solar panel(s) (Sold separately): Convert sunlight into electricity.



Voltage regulator: Regulates the voltage and current from the solar panels.



Circuit breaker (if equipped): Provides overcurrent and short circuit protection.



Inverter (if equipped): Converts the direct current (DC) from the regulator into alternating current (AC) for use by appliances and devices.

Theory: It's important to understand the following concepts:

- BatteryLESS Solar Generators cannot output more power than the provided input.
- Solar panel output power is rated in laboratory conditions and rarely achieved in real life conditions. For example, a 100W solar panel will typically output about 60W in full sun.

Calculations:

- No power conversion is free. The cost is efficiency. BatteryLESS power output will lose about 15% of the input power. This should be included in your power output calculation. See calculations below.
- **Not providing enough power output to your device can damage the BatteryLESS Solar Generator.** You must calculate the expected power output before using this device. For example, if you're connecting (4) 100W solar panels, you can expect the panels to produce about 60W each x 4 = 240W. Subtracting the efficiency loss (15%), you can expect the available output to be about 204W.

$$\text{Solar Panel Power Produced} = \text{Solar Panel Rating (EX, 100W)} \times 0.6$$

$$\text{Solar Array Power Produced} = \text{Solar Panel Power Produced} \times \text{Qty of panel(s)}$$

$$\text{Available BatteryLESS Output Power} = \text{Solar Array Power Produced} \times 0.85$$

Note: If you want to avoid calculations, a general rule of thumb is to connect 2x as much power input as the output you need.

Installation:

Choose a location with adequate sunlight throughout the day. Ensure the site has enough space for the solar panels and other components. Clear any debris or obstructions that could affect the performance of the solar generator. Securely mount the solar panels on a stable surface, such as a roof or ground-mounted frame. Adjust the angle of the panels to maximize sunlight exposure based on your location.

Installing and connecting the solar panels:

Connect the negative (-) cable from the solar panel to the negative (-) input connector and the red positive (+) cable from the solar panel(s) to the positive (+) connector. If connecting multiple solar panels, you must use splitters to avoid exceeding the maximum input voltage of the BatteryLESS Solar Generator. Daisy chaining or wiring in series will result in damage to the BatteryLESS Solar Generator.

Operation:

The BatteryLESS Solar Generator does not have an on/off switch. Once the solar panel(s) are connected, it's always on. Once the solar panels are connected, the BatteryLESS Solar Generator output will be 12-13.8V DC (12V nominal). This is already connected to the inverter (if equipped) and/or the 12V output circuit breaker (if equipped). To turn off the device, simply disconnect the solar panel(s).

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