



**Grape Solar 50-Watt Off Grid Kit  
(GS-50-KIT)  
Quick Connect Guide**

**IMPORTANT: Please read the Panel User Manual, the kit sizing guide (available at [www.grapesolar.com/manuals.html](http://www.grapesolar.com/manuals.html)) and the PWM-165 manual before following the steps in this guide.**

**TOOLS REQUIRED: wire cutter/stripper, phillips head screwdriver**

Exclusion for Documentation

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Important: Installations of this kind must be certified/approved as “code-compliant” to the national and local building and electrical codes. Installers should have adequate knowledge of national and local code to ensure the installation passes inspection by the local electric authority.

Important: Proper fuses or breakers should be used to comply with all local and national codes. Contact Grape Solar for specific recommendations.

Important: All batteries used for this system should be identical. Batteries must be deep cycle. Do not mix battery types or sizes. Do not mix old batteries with new batteries. Performance and charging anomalies can occur if types, sizes, or age of batteries are not identical.

**Step 1:** Check your order to make sure that all parts are included. For the GS-50-KIT, this is:

- 1 pc GS-STAR-50W solar panel,
- 1 pc 15-foot MC4-to-MC4 cable (cut this in half, strip to 1/4” of bare wire on cut ends)
- 1 pc red/black 5-foot bare-wire-to-ring-lug cable pair, and
- 1 pc Grape Solar PWM-165 charge controller.



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**Step 2:** If you are connecting the system during daylight, cover the panel with cardboard, cloth, or a similar option so that it does not output power. Place the panel so it is facing due south at approximately the same angle as your latitude, in full sun.



**Step 3:** Mount the controller if desired (note that it must be in a NEMA-4 rated enclosure if it is outdoors). Use the 5-foot red & black cable pair to connect your positive and negative battery terminals to the battery inputs on the charge controller.



**Step 4:** Attach the lug end of the red cable to the positive terminal on the battery. Attach the lug end of the black cable to the negative terminal on the battery. If your battery has sufficient charge (11.5 volts or more), you should now see the LCD display light up on the controller. This means the controller has power (controllers are powered by the battery, not the panels).



**Step 5:** Cut the 15-foot MC4 cable into two equal halves (7.5 feet each). Strip back the wire on the cut end around 1/4 inch to expose the wire (see photos to right). Connect the MC4-comparable ends of the 7.5 foot wires to the panel. Follow the positive lead and mark the bare wire end of the 7.5 foot cable to differentiate it from the negative.



**Step 6:** Connect the bare wire end of the positive cable to the “Solar +” input of the PWM-165, and the negative cable end to the “Solar -” input.



**Step 7:** Uncover the panel. As the day progresses, you should see the battery charge percentage increase until it is reading 100%. Once the battery is fully charged, you can use it to provide power through an inverter or through the load control output of the PWM-165.

FOR MORE DETAILED INFORMATION, INCLUDING INSTALLATION GUIDES AND MANUALS, SEE:

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