NOTES ON YOUR GRAPE SOLAR KIT:

Please read all relevant manuals (panel manual, controller manual, Freedom XC manual, any other literature) before attempting to connect or assemble the kit.

For the 1200 watt Freedom XC kit using four Grape Solar 300 watt panels:

1. These kits use the MIdNite Solar Classic 150V charge controller. Make sure it is set to a 12-volt battery (the default setting).
2. Panels must be connected in a 2x2 series-parallel array.

QuickStart Setup

Step 1: Check your order to make sure that all parts are included. For the XC 1200W kit, the following should be included:

- Four 300 watt solar panels
- Four 15-foot MC4-compatible cables (one with a bare end, one with a ring lug end)
- MC4-compatible branch connector
- MidNite Solar Breaker Box (with a 250A breaker)
- Midnite Solar 60 amp breaker
- Midnite Solar 100 amp breaker
- Four 5-foot 4 awg cables (assorted connectors)
- Three 5-foot 2/0AWG cables (with ring-lugs)
- MidNite Classic 150V charge controller
- Freedom XC 2000W inverter
- Freedom XC Bluetooth remote
- Freedom XC GFCI outlet

Not supplied: mounting and racking for the panels, batteries (must be used with deep cycle, 12V batteries).

Step 2: For optimum output, place the panels so they are facing due south at approximately the same angle as your latitude, in full sun. 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.

Step 3: Divide the panels into sets of two. Connect them into series strings as shown below. This will leave one positive output and one negative output on each set.

Step 4: Connect two 15-foot cables (*with MC4-compatible connectors on both ends*) to the outputs of one panel string, so that you have two 15ft outputs total (one positive, one negative). Attach the two positive output ends of one (positive) branch connector, and the two negative output ends to the other (negative) branch connector. (see single-pair example below).

Step 5: Attach the 15ft cable with a ring lug to the positive branch connector, and the 15ft cable with a bare end to the negative branch connector (see example below).

Step 6: Connect the positive 15ft cable (with ring lug) to the input on the **60A** breaker as well as a 4AWG cable (ring lug-bare) to the output. Connect the 60A breaker output cable to the charge controller positive solar terminal (refer to the charge controller manual for details on terminals). Installing the breaker (in the off position) as per the instructions included with the breaker box.

Step 7: Connect the bare end of the negative 15ft cable to the charge controller negative solar terminal.

Step 8: Connect a 4AWG cable(ring lug-bare) from the charge controller battery positive to the input on the **100A** breaker as well as a 4AWG cable (ring lug-ring lug) to the output. Connect the output cable of the 100A breaker to the battery positive terminal, installing the breaker (in the off position) as per the instructions included with the breaker box.

Step 9: Connect a 4AWG cable (ring lug-bare) to the charge controller battery negative, and the negative battery terminal.

Step 10: Connect a 2/0AWG cable to the positive battery terminal, and to the input of the 250A breaker (in the off position). Connect a 2/0AWG cable to the output of the 250A breaker, and the positive DC terminal on the Freedom XC as per the instructions included with the Freedom XC.

Step 11: Connect a 2/0AWG cable to the negative battery terminal, and the negative DC terminal on the Freedom XC.

Step 12: Instal the GFCI outlet as per the instructions included.

Step 13: Connect the Bluetooth Remote Panel as per the instructions included.

Step 14: Turn on the 100A breaker, and configure the Classic 150V controller as per the instruction manual. In general, keep the controller at the factory settings.

NOTE: do not change the output voltage on the Classic 150, it must be 12 volts DC.

Step 15: Turn on the 250A breaker, and turn on the Freedom XC as per the instruction manual.

Step 16: Uncover the panels and turn on the 60A breaker. As the day progresses, you should see the battery charge increase, until the charge controller is in float mode. At this point the system can be used to provide power. Although the system can be used with partial battery charge, we recommend allowing the batteries to fully charge before initial use.