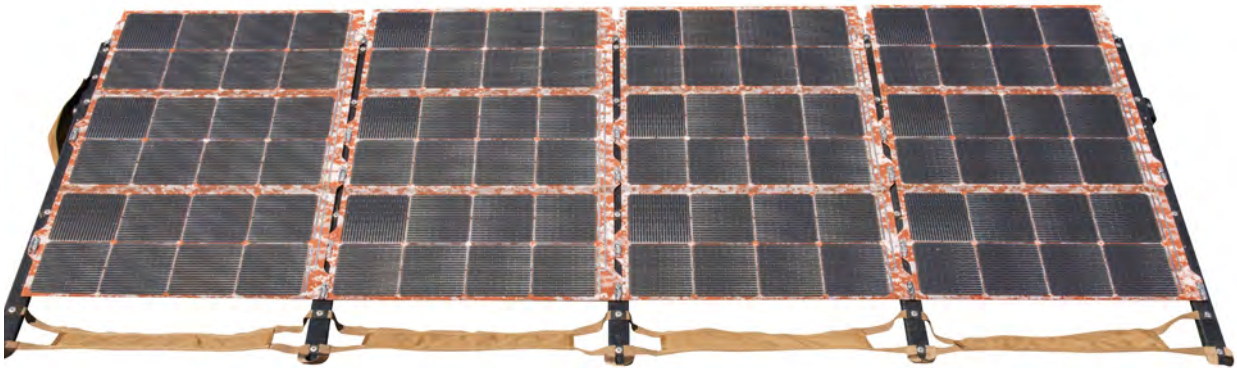
SOLAR STIK®

OPERATOR MANUAL FOR THE 420W EXPEDITION SOLAR ARRAY-C

P/N 11-1000034



DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Version 1.0

Updated:20191224

Contents

List of Figures

List of Tables

Revision History

Section	Page(s)	Description	Date
		Published	13 Apr 2018

GENERAL INFORMATION, THEORY OF OPERATION, AND EQUIPMENT DESCRIPTION

Introduction

Thank you for choosing the Solar Stik®, Inc. 420W Expedition Solar Array-C. This photovoltaic (PV) generator is lightweight, rugged, portable, and can be deployed on almost any terrain. The PV panels generate up to 420 Watts of power, which can be used for any application where independent power is required:

- PV power generation for remote locations where fuel-driven generators are not an option
- Decreased fuel consumption in Hybrid Power Systems
- Peak-shaving to decrease reliance on power from utility or grid

Like all Solar Stik Systems, the Expedition Solar Array-C is modular and scalable, allowing users to tailor generation capability in direct accordance with the load requirements.

Figure 1. Solar Arrays, Power Hub, and Expander Paks supporting a sensor

Product Safety Information and Instructions

This manual contains important safety instructions that must be followed during the installation and operation of the Solar Array. Read all instructions and safety information contained in this manual.

Exercise caution when handling or operating equipment. Live power may be present.

Safety Information Labels

Your safety and the safety of others is very important. This manual provides guidance on safe operating practices and how to achieve maximum performance from the Expedition Solar Array-C. Always observe and follow all safety protocols outlined below:

This is the safety alert symbol. This symbol alerts you to potential hazards that can kill you or hurt you and others. All safety messages will follow the safety alert symbol and the word “DANGER”, “WARNING”, or “CAUTION”. These words are defined as:

DANGER Indicates a hazardous situation which, if not avoided, **will result in death or serious injury**.

WARNING Indicates a hazardous situation which, if not avoided, **could result in death or serious injury**.

CAUTION Indicates a hazardous situation which, if not avoided, **could result in minor or moderate injury.**

All safety messages will identify what the potential hazard is, identify how to reduce the chance of injury, and identify what can happen if the instructions are not followed.

Limitations on Liability

Since the use of this manual and the conditions or methods of operation, use, and maintenance of this product are beyond the control of Solar Stik, this company does not assume responsibility and expressly disclaims liability for loss, damage, or expense—whether direct, indirect, consequential, or incidental—arising out of or anyway connected with such operation, use, or maintenance.

Due to continuous improvements and product updates, the images shown in this manual may not exactly match the unit purchased.

This equipment CAN BE USED IN CONNECTION WITH LIFE SUPPORT SYSTEMS OR OTHER MEDICAL EQUIPMENT or devices; however, without limiting the generality of the foregoing, Solar Stik, Inc. makes no representations or warranties regarding the use of the system in connection with life support systems or other medical equipment devices.

Fire Hazard

Fire Types

Class A fire - Fires in ordinary combustibles such as wood, paper, cloth, trash, and plastics.

Class B fire - Fires in flammable liquids such as gasoline, petroleum, oil, and paint.

Class C fire - Fires involving energized electrical equipment such as motors, transformers, and appliances. Remove the power source and the class C fire becomes a class A or B fire.

Recommended Fire Extinguisher

NSN 4210-00-288-7219 Fire Extinguisher, Carbon Dioxide, 10 lb
Carbon dioxide is a liquefied gas, which is highly effective fighting class B and C fires. These extinguishers are ideal for areas where contamination and/or cleanup are a concern, such as data processing centers, labs, and telecommunication rooms.

⚠ WARNING

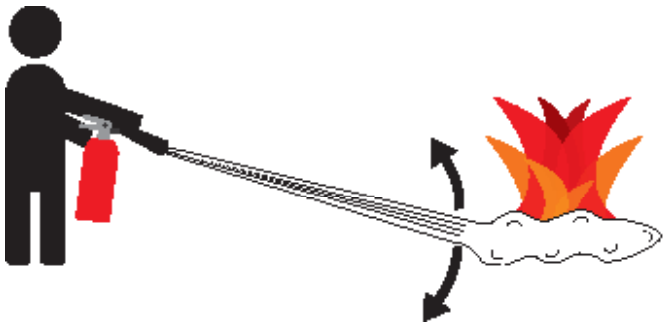
Only CO_2 (carbon dioxide) fire extinguishers should be used with Solar Stik equipment.

Using the Fire Extinguisher

When using the extinguisher on a fire, remember PASS:

Pull the pin.
Aim the nozzle or hose at the base of the fire from a safe distance.
Squeeze the operating lever to discharge the fire extinguishing agent.
Sweep the nozzle or hose from side to side until the fire is out. Move forward or around the fire as the fire diminishes.

Watch the area for reignition until the cause has been fixed.



Use Sweeping Motion

Electric Shock Hazard Related to Solar Panels

⚠ WARNING

Standing water around the electrical equipment and/or intrusion of water into the System components can increase the risk of electrical shock.

- PV panels produce electricity when exposed to light.
- Live power may be present at multiple terminals.
- Never route the cables through standing water.
- All cables and connections should remain dry and should be inspected regularly to ensure safe operating conditions.

DON'T LET THIS BE YOU!

HIGH VOLTAGE: Solar arrays, and generators produce potentially lethal line voltages. When servicing equipment, extreme care should be taken to protect against electrocution. Always work with another person in case an emergency occurs. Disconnect power before checking controllers or performing maintenance. Be sure the generator is properly grounded. Wear safety glasses whenever working on any part of the System that requires exposure to mechanical or direct electrical contacts.

Environmental and Handling Precautions

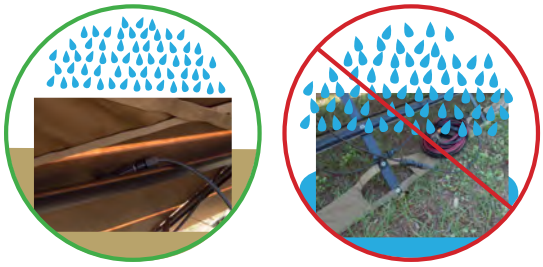
All Solar Stik components are ruggedized, yet there are a few things the operator can do to prevent failures and prolong the operational life of the product.

Wind

- It is imperative that the solar panels are properly secured to the ground so that they do not become dangerous projectiles in high winds.

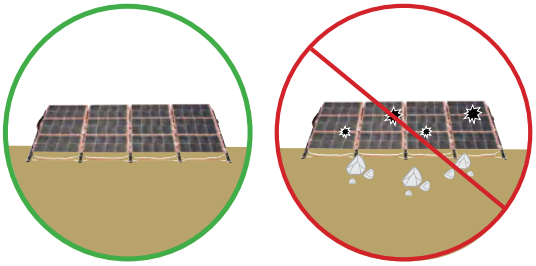
Water

- Do not operate equipment in or around standing water.
- Do not place cables that conduct electricity in or near standing water.



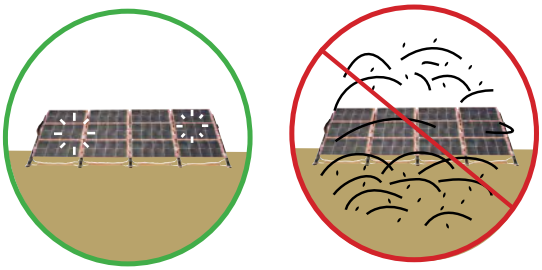
Impact

- The Solar Panels should be protected from being struck by hard objects.



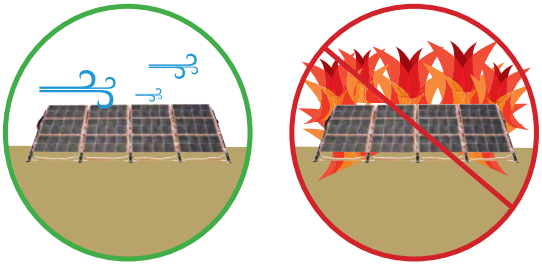
Dust

- All Solar Stik equipment is designed for operation in climates where high levels of dust or other particulates may exist.
- Clean the surface of the solar panels regularly to maintain maximum output. Dirty panels produce less power.



Heat

- Heat and solar loading reduce efficiency and life expectancy. Shade products (except solar panels) to prevent the negative effects of heat.
- Solar Panels should be placed so that they are exposed to adequate airflow.



THEORY OF OPERATION

Solar photovoltaic (PV) cells use sunlight to produce energy. All solar PV cells are made of materials called semiconductors that absorb photons when sunlight strikes the PV cell. The absorbed photons then knock electrons loose within the PV cells, allowing them to flow, which produces a current. Solar PV cells contain one or more electric field(s) that force the direction of electron flow. Placing metal contacts on the top and bottom of a PV cell harnesses this current so it can power external appliances, such as a calculator or pool pump.

On their own, solar PV cells produce a limited amount of energy, but when arranged and electrically connected and mounted on a supporting structure, the result is a solar PV panel that combines the electrical output of each solar PV cell, yielding a greater amount of energy production. The power, or wattage, that a solar cell or a panel of cells can produce is determined by measuring its current and voltage. See Stikopedia on Solar Stik's website for a primer on solar panels.

Equipment Description

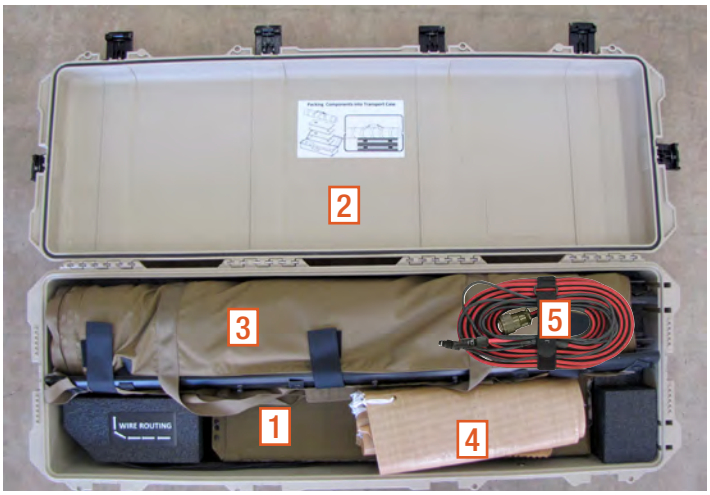
Color-coded Connections

The cables and port placards are color coded to simplify making the proper connection. The ends of each cable type are wrapped with colored heat shrink that matches the color of the placard next to the port to which it connects.

Orange: Solar Circuit Connection

Solar Leash

What's Included in the System



420W Expedition Solar Array-C Kit	
1	(4 ea) 105 W Trifold Photovoltaic (PV) Solar Panel
2	Transport Case
3	Rollable Stand
4	(12 ea) Sandbags and (10 ea) Stakes (inside sandbag)
5	Solar Leash (sold separately)

Figure 2. 420W Expedition Solar Array-C components in transport case (top) and unpacked (bottom)

Figure 3. Sandbag (left) and stakes (right)

OPERATOR INSTRUCTIONS

420W Expedition Solar Array-C Setup Guide

1. Positioning and Orientation of System Components

Identify the best location for each component of the System, keeping in mind the length of all cables that will be used to connect all of the components. The typical Solar Leash provided is 30 ft. long (other lengths are available). These lengths may vary if using cables other than the ones supplied by Solar Stik.

The solar array can be deployed within a 30’ radius (the length of the Solar Leash) of the Power Pak or Power Hub. If the solar array must be deployed more than 30’ from the Power Pak or Power Hub, extensions are available.

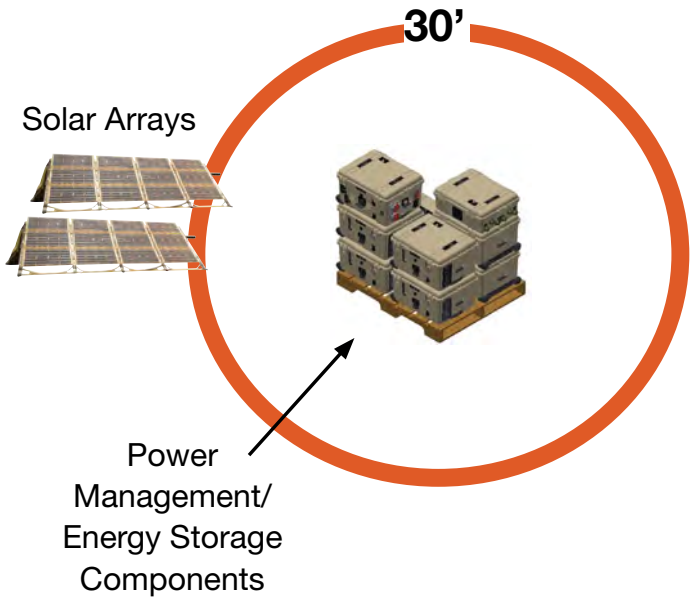


Figure 4. Working-space radius for the solar arrays and associated equipment

Figure 5. Setting up the Expedition Solar Array-C

2. Assemble the Solar Array

a. Unroll the support rack and stand it up.

Figure 6. Unrolling and standing up panel support rack

b. Unfold the (four) 4 PV panels and place them on the rack as shown.

Route cables as shown. Ensure the lead wires on the back of the panels are not caught between the nylon cross brace and the back of the panel (white arrow).

Figure 7. Unfolding and attaching PV panels

c. Secure panel into place using clips as shown.

Note: Ensure all four (4) panels ensures the panels are flat and free of strain-induced warping after seating. Lock all sliding latches after all four (4) panels are on the rack.

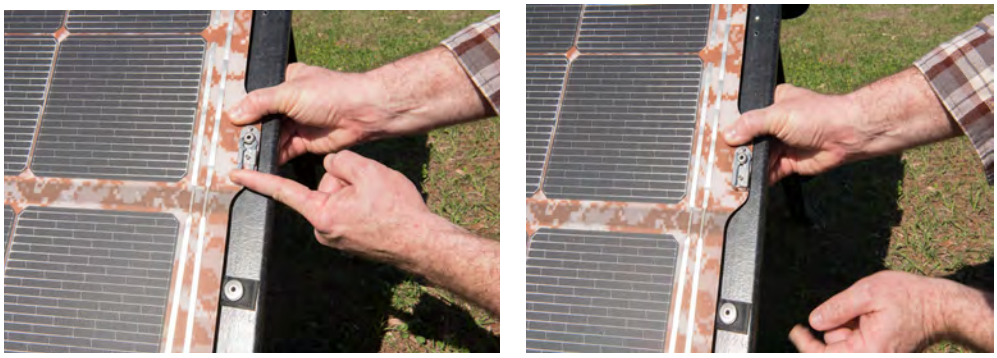


Figure 8. Seating PV panels from the top down

3. Connect the four (4) PV Panels of the Array in Series

a. Connect the four (4) PV panels as shown (Figure 10). There will be one (1) free connector at each end of the rack of panels*. Connect these two (2) free ends to the appropriate connectors of the 30' Solar Leash.

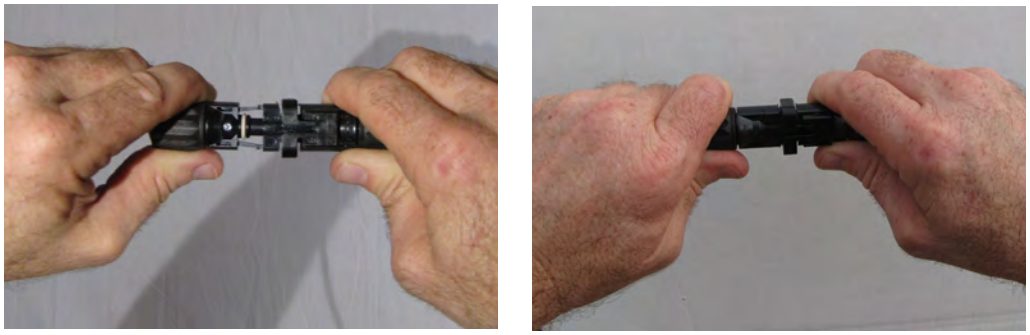


Figure 9. Connecting H4 PV solar panel leads

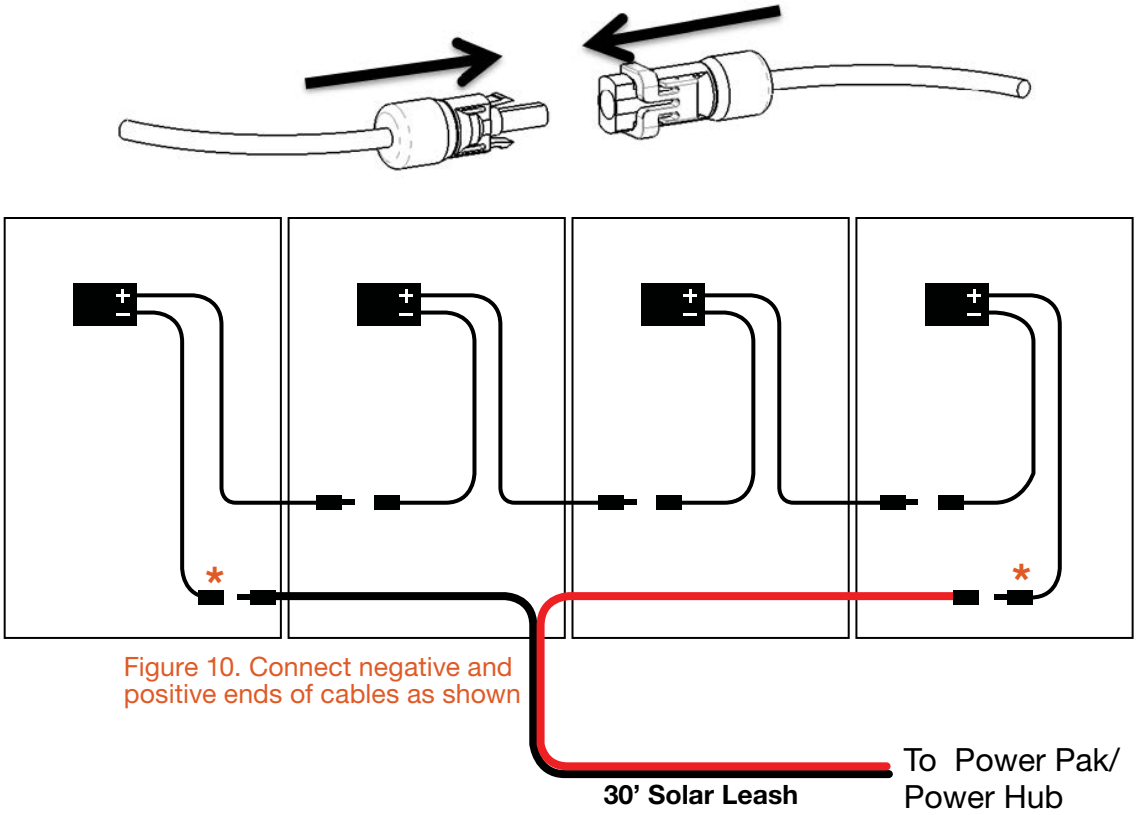


Figure 10. Connect negative and positive ends of cables as shown

b. Stow extra cable length (Figure 11A) between the panel and the frame (Figure 11B) to reduce exposure to water or other damage.

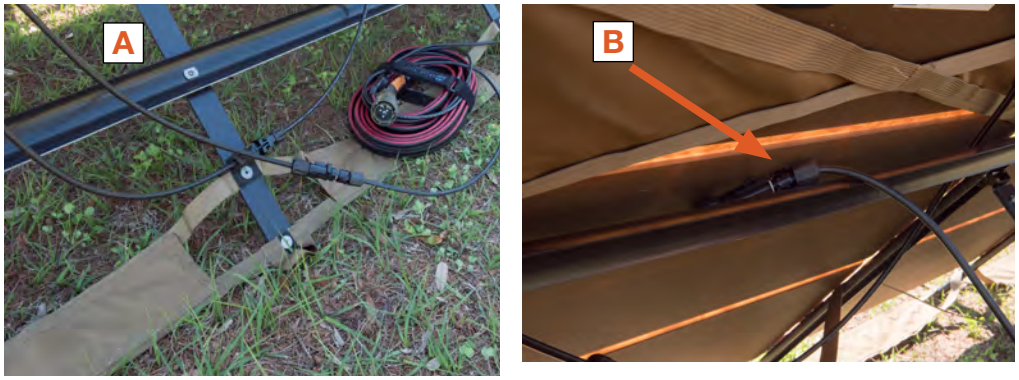


Figure 11. Loose solar panel lead wires (A) versus tucked away, protected wires and H4 PV connectors (B)

4. Connect Array to Solar-only Port of Power Pak or Power Hub

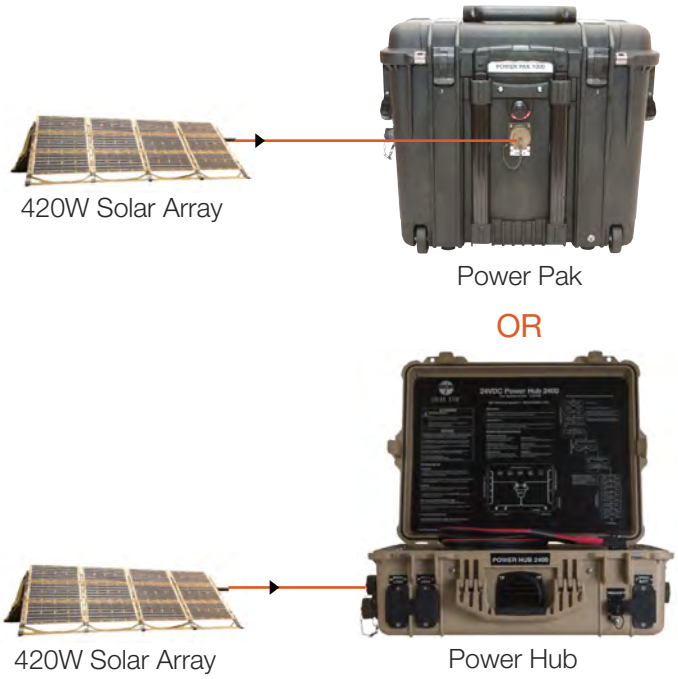


Figure 12. Solar Array connected to solar-only input ports of Power Hub or Power Pak

Figure 13. Connecting Solar Arrays to a Power Pak or Power Hub solar-only port

NOTICE

Do not secure the Solar Array to the ground until adequate leash length to the Power Pak or Power Hub has been verified and the panels have been oriented optimally toward the sun.

5. Position the Solar Arrays for Optimal Orientation and Tilt

NOTICE
The setup location should have good exposure to sunlight and be away from other structures or potential hazards such as moving-vehicle thoroughfares.

Solar Array Orientation for Optimum PV Power Generation
PV generation requires direct sunlight for maximum performance. Optimal PV power generation is achieved by orienting all Solar Arrays in the same direction and at the same angle.

> **Note:** Harvesting PV energy will not improve by orienting subsets of Solar Arrays to capture morning, midday, and evening sun. In the Northern Hemisphere, the PV arrays should be positioned so that they face the noon sun, which is usually true South (true North if in the Southern Hemisphere).

Seasonal Adjustment of the Solar Array Tilt to Improve Output
The Solar Array performance can be improved by adjusting the tilt and orientation of the panels seasonally. The angle of the array, relative to the sun, can be adjusted between 30° and 90° prior to securing to the ground. The sun is higher overhead during the summer and lower during the winter.

Power output of the Solar Arrays can be monitored in real time on the Power Hub or Power Pak LCD user interface. (See the Operator Manuals for these products for instructions.) Monitoring the power output while orienting and choosing the best tilt angle for the panels will assist in finding and maintaining optimum power output throughout the year.

Shading
The Solar Arrays must be positioned so that no part of any panel is shaded. Because the panels are wired in series, if a single panel drops out of the circuit due to shading, the entire array (four panels) may stop producing power. During periods of inclement weather or if the Array is not positioned optimally, daily power generation levels may be reduced.

6. Secure the Array to the Ground

⚠ WARNING

Failure to properly secure the Solar Array(s) to the surface with sandbags could result in PV panel damage, injury, or death in high winds. Stakes should be used in addition to sandbags when possible. Wind damage can render panels nonfunctional or significantly reduce their functional life expectancy.

The Solar Array must be properly secured to the ground even in low-wind environments. The methods used for ground securing are determined by two factors:

1. The type of terrain upon which the Solar Arrays are to be operated—"hard" surface (such as pavement) or "soft" surface (such as dirt or sand).

2. The environmental conditions—wind conditions that the Solar Arrays might encounter.

Hard (Impenetrable Surface)

The Solar Array must be secured with sandbags. On hard surfaces, sandbags may be the only way to secure the PAM. Regardless of the surface, twelve (12) sandbags must be used to prevent damage in high winds whether or not the metal stakes are used.

Sandbags should weigh a minimum of 50 pounds each.

To secure with sandbags, one (1) sandbag is placed on each of the four (4) sandbag straps in the front, under the location where the PV panels attach to the rack, and two (2) sandbags are placed on each of the four (4) sandbag straps in the rear (see Figure 15).

Soft (Penetrable Surface)

The stakes provide ground securing stability when the panels are on soft ground.

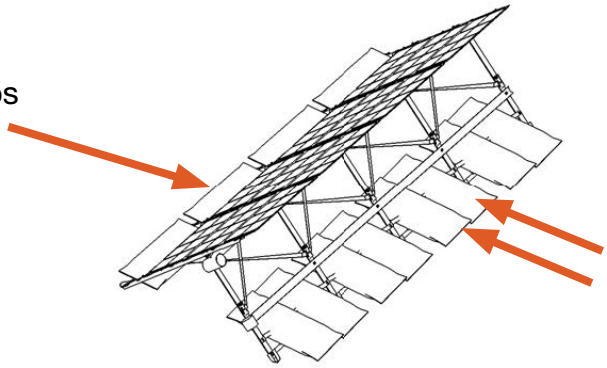
Important: The stakes should not be used as the sole source of ground securing in high-wind environments. Place the stakes through the loops at the end of each batten and drive them into the ground with a hammer.

Note: Before the Arrays are secured to the ground, be observant and take care to ensure that the panel support rack is not twisted. The rails of the rack should be straight and parallel with each other. If the support rack is twisted, the panels will be exposed to torsional strain, which can cause damage to the cells of the panel.

a. After all of the PV arrays have been oriented and connected to the Power Hub or Power Pak, secure the arrays with twelve (12) sandbags.

Figure 14. Securing the Solar Array with sandbags

Place one sandbag on each of the four (4) sandbag straps at the front, under the solar panels.



Place two sandbags on each of the four (4) sandbag straps in the rear.

Figure 15. Impenetrable surface—twelve (12) 50 lb sandbags in total

b. Ten (10) stakes should be used to secure the Solar Array if the ground is soft enough to be penetrated by the stakes. Secure the nylon loop under the “ears” at the top of the stake (arrows, Figure 16). If possible, drive the stakes deep enough to bury the lower edge of the ears but not so deep that the entire stake is under the surface because that makes removing the stakes difficult and could cut the nylon loop.

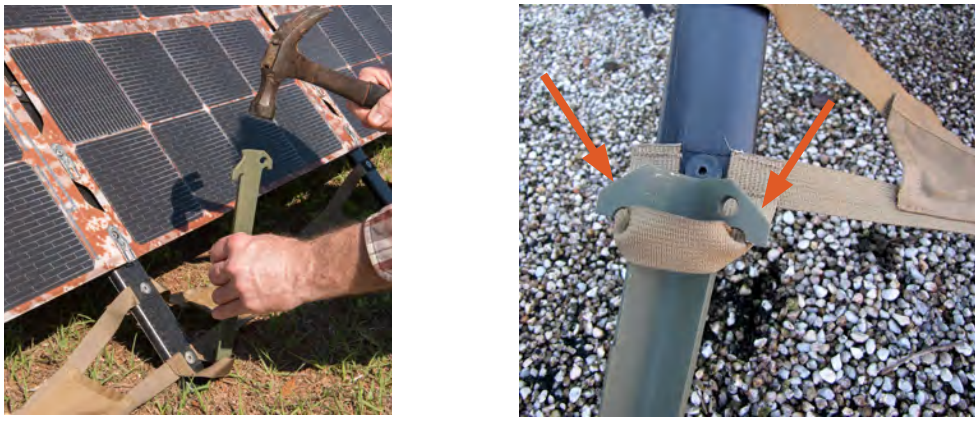


Figure 16. Securing PV arrays with stakes

Table 1. Terrain/Environment and Ground Securing Method

Terrain/Environment	Ground Securing Method
Impenetrable ground	Sandbags (x12) filled to 50 lb each
Penetrable ground	Stakes (x10)
High winds	Sandbags (x12) AND stakes (x10)

Inadequate Ground Securing: Solar Panel Damage

The images below illustrate the damage that may occur when a solar array is deployed with inadequate ground securing. Solar Arrays are lightweight and have a large surface area, making them ideal to catch wind and become airborne projectiles. All parts of the array and stand are flexible and are susceptible to damage due to torsional strain (the presumptive cause of the damage to earlier versions of solar panels shown in Figure 18 through Figure 20) as well as impact. Damage could also occur to the equipment attached to the Solar Array via the Solar Leash.

⚠ WARNING

Unsecured arrays propelled by high winds may collide with personnel, potentially causing injury.

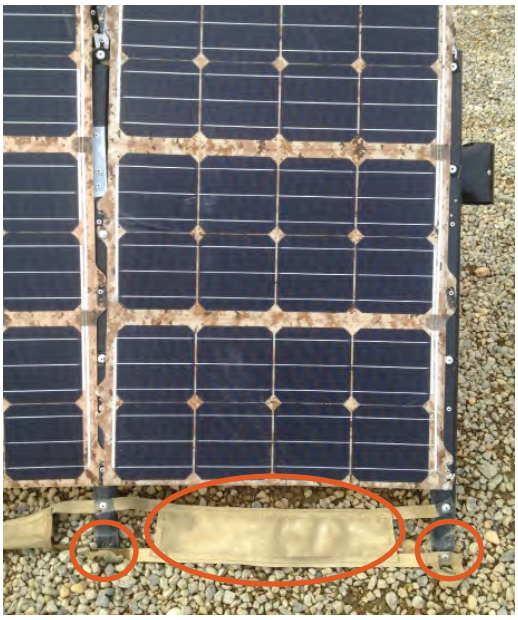


Figure 17. Array deployed without ground securing: no stakes and no sandbags

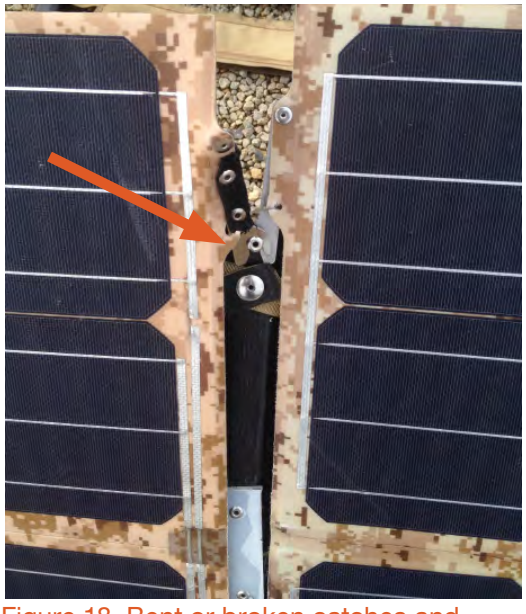


Figure 18. Bent or broken catches and latches along side of the PV panel

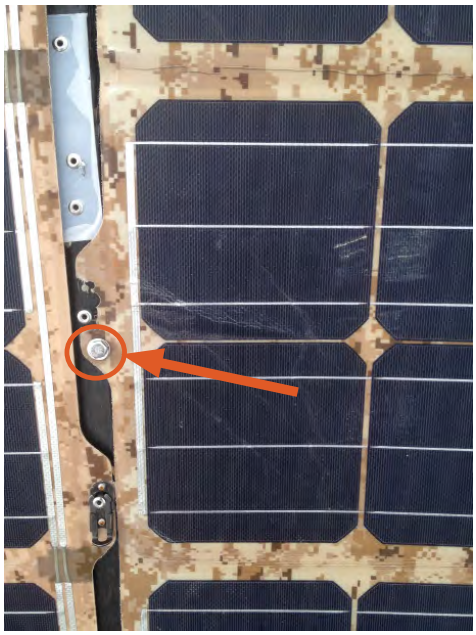


Figure 19. Improvised repair: panel secured to stand with bolt

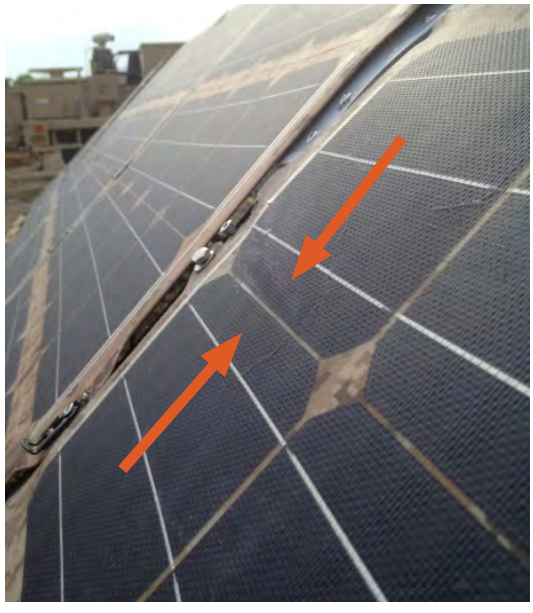


Figure 20. Bent and creased PV panel

Disassembling and Repacking the Solar Array

Repacking the Solar Array is safe and simple when done correctly. Please follow the instructions below. Failure to follow the instructions may result in damage to the PV panels and difficulty fitting all of the pieces back into the carry case.

- Disconnect the Solar Array from the Power Hub or Power Pak.
- Carefully clean the surface of the solar panels with a clean microfiber cloth.
- Disconnect the cables that link the panels in series (Figure 21).
- Undo the latches that secure the PV panels to the support stand (Figure 21).
- Remove and fold the PV panels so that the junction box on the back of the panel remains on the exterior of the folded panel (circle in Figure 22). If the junction box is folded into the interior, the panels may be damaged when compressed in the case.
- Place the folded solar panels into the case alternating the orientation of the panels so that the junction boxes stack as shown on the diagram in PAM Case (Figure 22 inset)
  Threading the panel leads around the designated organizer (left enlarged portion of Figure 22)
- Roll the support panels (Figure 23). It is critical that the support panels be rolled straight and tight. Failure to do this will result in difficulty fitting the parts into the storage and transport case. The flexible rails can pinch and injure hands and fingers if care is not taken.
- When the stand is fully rolled, wrap it with the integrated cover and secure the cover with the three (3) Velcro straps (Figure 23).

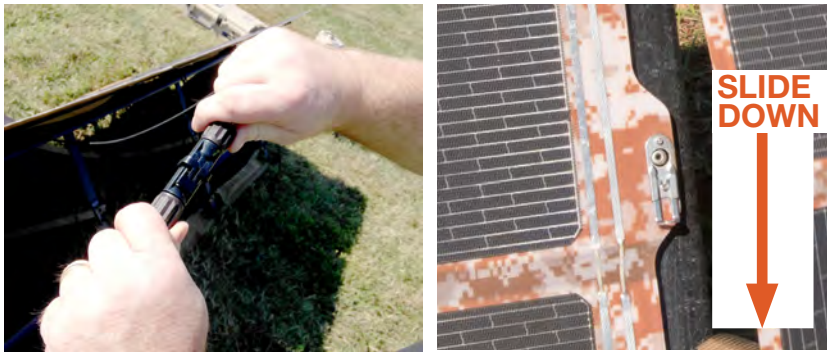


Figure 21. Disconnecting cables and unlocking panels from rack

Figure 22. Proper folding of Solar Arrays and routing/stowing of cables

Figure 23. Rolling the Solar Array and securing with Velcro straps

TROUBLESHOOTING PROCEDURES

This section contains troubleshooting information for locating and correcting operating troubles that may develop in the Solar Array. Each malfunction is followed by a list of tests or inspections to help you to determine probable causes and corrective actions to take. You should perform the tests/ inspections and corrective actions in the order listed. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or cannot be corrected by listed corrective actions, contact Solar Stik Technical Support.

Equipment Condition Statement: The Power Pak or Power Hub is fully functional and operating normally.

No Power from the Solar Array

Step 1. Verify that the Solar Array is oriented for maximal sun exposure.
a. If the Solar Array is oriented for maximal sun exposure go to step 2.
b. If not, orient the Solar Array for maximal sun exposure (Solar Array setup step 5).

Step 2. Check the Solar Leash connection at the Power Pak or Power Hub.
a. If the Solar Leash is properly connected to the Power Pak or Power Hub go to step 3.
b. If the Solar Leash is loose or not connected, tighten or connect properly.

Step 3. Check the H4 PV connections between the Solar Leash and the Solar Array (Figure 9).
a. If H4 PV connections between the Solar Leash and Solar Array are secure, go to step 4.
b. If H4 PV connections are loose or disconnected, tighten or connect them properly (Figure 9).

Step 4. Check H4 PV series connections between each PV panel.
a. If H4 PV connections between each PV panel are secure, go to step 5.
b. If H4 PV connections are loose or disconnected, tighten or connect them properly.

Step 5. If the no-voltage problem persists, contact Solar Stik Technical Support.

Lower than Expected Voltage from the Solar Array

Step 1. Verify that the Solar Array is oriented for maximal sun exposure and is NOT shaded.
a. If the Solar Array is oriented for maximal sun exposure and NOT shaded, go to step 2.
b. Remove the shading obstruction or move the Solar Array to eliminate the shading.
c. Orient the Solar Array for maximal sun exposure (Solar Array setup step 5).

Step 2. Measure Solar Array V_{oc} at pins A and C of the bayonet connector of the Solar Leash.
a. If the Solar Array V_{oc} at pins A and C of the bayonet connector of the Solar Leash is within acceptable limits (see Measuring Maximum Power and Open Circuit Voltages section), the Solar Array is operating normally. Contact Solar Stik Technical Support for further assistance.
b. If V_{oc} measured at pins A and C of the bayonet connector is below ~30 V*, go to step 3.

Step 3. Check the H4 PV connections between the Solar Leash and the Solar Array (Figure 9).
a. If H4 PV connections between the Solar Leash and the Solar Array are connected properly, go to step 4.
b. If H4 PV connections are loose or disconnected, tighten or connect them properly.

Troubleshooting (continued)

Step 4. Check the V_{oc} at the H4 PV Solar Array output leads (see Measuring Maximum Power and Open Circuit Voltages section).

a. If the V_{oc} is within acceptable limits, replace the Solar Leash.
b. If the V_{oc} at the H4 PV Solar Array output leads is equal to the V_{oc} measured at pins A and C of the bayonet connector, go to step 5.

Step 5. Check the H4 PV series connections between each PV panel.

a. If the H4 PV connections between each PV panel are secure, go to step 6.
b. If the H4 PV connections are loose or disconnected, tighten or connect them properly.

Step 6. Check V_{oc} at the positive and negative terminals of the H4 PV connections of each PV panel.

a. If the V_{oc} measured at the H4 PV connections of all panels is within acceptable limits* (see Measuring Maximum Power and Open Circuit Voltages section), contact Solar Stik Technical Support for further assistance.
b. If the V_{oc} measured at the H4 PV connections of any panel is not within acceptable limits*, replace the panel.

*This value may vary depending on weather/environmental conditions (i.e., lower if overcast).

Derating, Solar Loading, and Airflow

Derating occurs when the power output of the Solar Arrays is diminished below their rated values. Solar Arrays may accumulate excessive amounts of heat due to solar loading and lack of airflow, resulting in derating.

Locate Solar Arrays where airflow is unobstructed to reduce the impact of solar loading–induced derating.

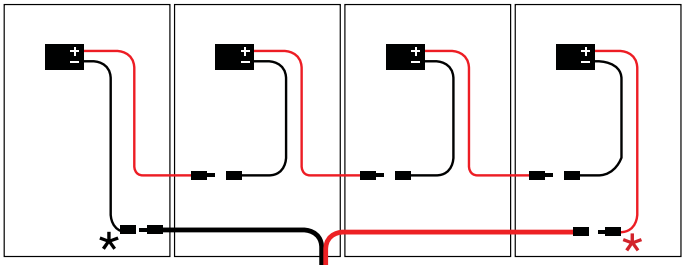
Measuring Maximum Power and Open Circuit Voltages

Voltage “open circuit” (V_{oc}) is unregulated panel voltage and measured directly from the leads of a panel or an array when not connected to a “load” such as a charge controller (Power Hub or Power Pak). Voltage “maximum power” (V_{mp}) is the voltage at which the maximum power of a panel or array is produced when connected to a charge control, or when the panel is considered “under load”.

The V_{oc} of a single solar panel in the Solar Array is approximately 15.72 V under standard test conditions (STC). In the Solar Array, four (4) panels are connected in series; therefore, the V_{oc} for the four (4) panels could theoretically be as high as 62.88 V. Once the panels are connected to the Power Hub or Power Pak (i.e., the panels are connected to a “load”), it is more likely that the operator will see voltages around 50 V_{mp} reported on the user interface.

The V_{oc} and V_{mp} should be measured for each Solar Array or panel under “ideal solar conditions” if possible. This means that the panels should be oriented directly at the sun and unshaded on a clear day in order to identify the maximum V_{mp} and V_{oc}.

Procedure to Measure V_{oc} of a Solar Array



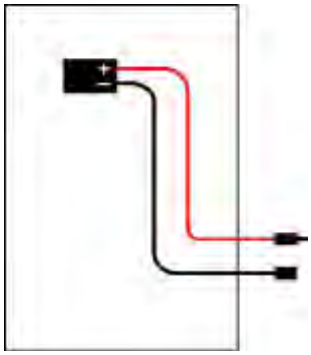
Positive (*) and negative (*) Solar Array output leads

In the Solar Array, four (4) solar panels are connected in series. The rated V_{oc} for the array in this configuration is 62.88; however, the voltage may vary.

30’ Solar Leash

To measure V_{oc} from a single Solar Array, carefully place the leads of the voltmeter on pins A and C in the bayonet connector at the end of the Solar Leash. Pin B is unused. Under ideal conditions, the reading should be 50 V or more.

Procedure to Measure V_{oc} of a Single Solar Panel



The voltage measurement across the terminals of the two Solar Array panel leads is the V_{oc} of the panel. The reading should be approximately 15 V under ideal conditions.

MAINTENANCE INSTRUCTIONS

Preventive Care and Maintenance

- Ensure the solar panels are clean and positioned for maximum daily sunlight exposure.
- Use the Velcro straps to secure the Solar Leashes and provide strain relief at locations where the leashes are stressed.
- Check the integrity of electrical connectors on a monthly basis.

SUPPORTING INFORMATION

Technical Specifications

General	
Frame Construction	Composite, rollable frame
Frame Adjustment Angles	0°, 35° (custom angles available)
Solar Panel Construction	Non-glass, antireflective, antistatic, and low-visibility front surface
Ground Securing	Sandbags/ stakes
Setup/Stowage Time	5 minutes
Transport Case	Pelican iM 3220 or soft case
Warranty	1-year materials and workmanship

Performance Specifications (@ 77 °F/25 °C)	
Array Voltage	50 V
Array Current	8.5 V
Array Power	420 W

Solar Panel (@ 77 °F/25 °C)	
Max Power (Pmax)	420W
Rated Voltage (Vmp)	105 W
Rated Current (Imp)	8.5 A
Cell Type	Monocrystalline
Cell Efficiency (%)	>18%

Connections	
Solar Panel Connectors	MC4 (custom connectors available)

Environmental	
Operating Temperature	-4 °F to +140 °F (-20 °C to +60 °C) with solar loading
Storage Temperature	-25 °F to 160 °F (-32 °C to +71 °C)
Maximum Wind Load	50 mph with provided ground securing
Hailstone Impact	Resists 1 inch hail at 50 mph
Intrusion Protection	IP67

Weights and Dimensions (L x W x H)	
Solar Panel Weight	6.83 lb (3.1 kg) (4) each
Transport Weight	74 lb (33.6 kg) - Hard Case
Solar Panel Dimensions	Unfolded- 28.8 x 40.5 x .25 in (73.2 x 102.9 x .635 cm) Folded- 28.8 x 13.8 x 1 in (73.2 x 35.1 x 2.54 cm)
Assembled Dimensions	4 x 10 ft
Transport Dimensions	48 x 17 x 9 in

ABOUT SOLAR STIK, INC.

Mission Statement
Using American-made components and constant innovation, Solar Stik creates portable power solutions that enable self-sufficiency for the soldier, the sailor, and beyond. In doing so, we save lives, change lives, and help revive American manufacturing.

STIKopedia
STIKopedia is a compilation of everything you would ever want to know about portable Hybrid Power Systems, including the philosophy and mechanics of high-efficiency circuits, and the individual technologies used to create them.

Solar Stik Training and Education

- **Solar School (St. Augustine, FL)** provides an introduction to the design and support of small-scale, renewable-energy, power generation systems, with detailed explanation of system components. Advanced configuration options with hands-on deployment of actual systems will enhance student understanding.

- **Solar Stik New Equipment Training (on site)** teaches Hybrid System configuration options with hands-on deployment of actual systems to enhance student understanding.

Solar Stik Training Courses are tailored to the specific needs of the students. To schedule Solar Stik Training or to learn more about the curriculum, please contact us.

Contact

Technical Support Line
800-793-4364 Ext. 102
(24 hours a day, 365 days a year)

Address
Solar Stik, Inc.
226 West King Street
Saint Augustine, Florida 32084

Website
www.solarstik.com