



**Global Solar Energy recommends having the PowerFLEX™ MOBILE Solar Kit professionally installed. Although the kit is relatively straightforward to install, working with high current battery systems and working on the roof of the RV can be dangerous.**



**Global Solar Energy will be happy to work directly with your dealer or service center of choice to ensure a proper, long lasting installation. Just send us their contact information or have them contact us and we'll take care of the rest.**



## **PowerFLEX™ MOBILE**

### **Solar Power for Your RV**



## **READ THIS PRIOR TO INSTALLING**

The PowerFLEX™ MOBILE Solar Charging Kit is intended for use on newer roofs that are in good condition when using only the adhesive to secure the solar panel to the roof.

Cleaning the roof is critical in obtaining a safe, secure and long-lasting installation. Failure to follow the included instructions can result in loss of adhesion, damage or loss of the product, and shortened product life.

Mechanical fasteners such as screws or rivets are recommended in any installation where the quality of the roof is questionable or if the vehicle is to be used in extreme environments.

Contact Global Solar Energy Technical Support if you have any questions, concerns or would like to discuss your special application.



# **PowerFLEX™ MOBILE**

## **Installation Instructions**

### **Solar Power for Your RV**

**Global Solar Energy, Inc.**

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**Tucson, AZ 85747**

[www.Solar4MyRV.com](http://www.Solar4MyRV.com)

[www.GlobalSolar.com](http://www.GlobalSolar.com)

#### **Technical Support**

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**520.351.5977**

## Contents:

INTRODUCTION & SAFETY INFORMATION.....	3
KIT CONTENTS .....	4
TOOLS REQUIRED FOR INSTALLATION .....	4
OTHER ITEMS .....	4
STORAGE & HANDLING PRECAUTIONS.....	5
INSTALLATION OVERVIEW .....	5
SOLAR PANEL LOCATON.....	6
ROOF SURFACE PREPARATION .....	6
INSTALLING THE SOLAR PANELS .....	8
INSTALLING THE EDGE TRIM .....	9
SPECIAL ROOF TYPES.....	12
LOCATING THE SOLAR CHARGE CONTROLLER.....	12
ROUTING THE CABLE.....	13
CONNECTING THE WIRING .....	17
MAINTENANCE.....	18
APPENDIX.....	20
<i>Technical Support</i> .....	20
<i>About The Solar Charge Controller</i> .....	20
<i>Charge Controller Specifications:</i> .....	21
<i>Solar Panel Specifications:</i> .....	21
Installation Summary Chart .....	22
Global Solar® PowerFLEX™ .....	23

## INTRODUCTION & SAFETY INFORMATION

The PowerFLEX™ MOBILE Kit product line, the premier solar solution for RV's, has been specifically developed for use on recreational vehicles and will provide years of reliable service when properly installed.

### **IMPORTANT**

READ THESE INSTRUCTIONS COMPLETELY BEFORE BEGINNING INSTALLATION

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN DAMAGED PRODUCT, DAMAGE TO THE RV, AND/OR PERSONAL INJURY

GLOBAL SOLAR ENERGY HIGHLY RECOMMENDS HAVING THIS SYSTEM INSTALLED BY A PROFESSIONAL RV TECHNICIAN

THE INSTALLER SHOULD BE FAMILIAR WITH:

DC electrical systems and wiring in RVs

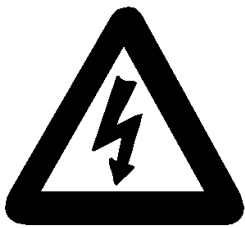
Working with high capacity battery systems

### **ADDITIONAL PRECAUTIONS**

NEVER MIX SOLAR PANELS OF DIFFERING BRANDS, PART NUMBERS OR POWER RATINGS IN THE SAME SYSTEM. DOING SO WILL RESULT IN POOR PERFORMANCE AND MAY DAMAGE COMPONENTS

WORKING WITH ELECTRICITY AND LEAD ACID BATTERIES CAN BE DANGEROUS

INSTALLATION OF THE SOLAR PANELS REQUIRES WORKING ON THE ROOF OF THE RV WHERE THERE IS A RISK OF FALLING



### **WARNING!**

SOLAR PANELS PRODUCE ELECTRICITY WHEN EXPOSED TO LIGHT EVEN WHEN NOT CONNECTED TO THE SYSTEM. THE SOLAR PANELS SHOULD BE COVERED WHENEVER WORKING ON THE SOLAR POWER SYSTEM IN ORDER TO AVOID ELECTRICAL SHOCK AND/OR ARCING.

## KIT CONTENTS

Your PowerFLEX™ MOBILE Solar Power Kit includes the following items:

ITEM	PFM-2K	PFM-1K	PFM-1E
PowerFLEX Solar Panel	2	1	1
Solar Charge Controller Kit <ol style="list-style-type: none"><li>1. Charge Controller, 1ea.</li><li>2. Standoff Blocks, 2ea.</li><li>3. Ring Terminals, 2ea.</li><li>4. #6 x 1" Screws, 2ea.</li><li>5. #6 x 2" Screws, 2ea.</li></ol>	1	1	-
Edge Trim Set (7 pieces)	2	1	1
Top right, top left, bottom, (4) sides			
Structural Adhesive Caulking 300 ml-310 ml	1	1	1
Cable with PV connector (1 Pos, 1 Neg)	20'	20'	0
Cable, 10 AWG/2-Conductor	20'	20'	0
Y-Connector Set (1 Pos, 1 Neg)	1	0	1
Inline ATC Fuse Holder w/20A Fuses	2	2	-
Ring Terminal, 10 AWG (Large)	2	2	-
Cable Tie Mounts	10	4	10
Cable Ties	14	6	14
Warranty Card	1	1	1
Installation Summary Sheet Document	1	1	1

## TOOLS REQUIRED FOR INSTALLATION

- Safety glasses suitable for use around liquid chemicals
- Phillips screw driver
- Wire cutters and strippers
- Caulking gun
- Crimping tool for 10 AWG connectors (ratcheting type preferred)
- Utility knife

## OTHER ITEMS

- Roof cleaning supplies appropriate for roof type
- Medium Synthetic Bristle Brush (E.g. deck scrub brush)
- Mild Liquid Dish Soap or RV-dealer-recommended wash
- Warm Water
- Isopropyl Alcohol >70%

- Pressure Washer / Hose With Spray Nozzle
- Tape measure

## STORAGE & HANDLING PRECAUTIONS

Failure to follow these Storage and Handling guidelines can lead to product damage and premature failure and violate the PowerFLEX™ MOBILE Limited Warranty.

- For the protection of PowerFLEX™ MOBILE kits, the kit contents and sealed boxes must always be stored between temperatures of 60°F (15°C) and 85°F (30°C).
- Do not use screws, nails, staples or otherwise puncture any part of the solar panel.
- The PowerFLEX™ solar panel must not be rolled to a diameter smaller than 20". Doing so may result in permanent internal damage and lead to immediate or premature failure. Do not fold or crease the solar panel.
- Scratches on the panel surface can occur if walked on improperly. Guidelines to avoid such damage include:
  - Keep walking on the solar panel to an absolute minimum.
  - Do not walk on the solar panel with hard soled shoes.
  - Inspect shoe tread for rocks or debris before stepping on the panel.
  - Be careful not to drop objects on the solar panel.
- The solar panel surface is slippery. Use extreme caution.
- Do not attempt to open the solar panel's junction box. The junction box contains no user serviceable parts.
- Do not attempt to open the solar charge controller. The controller contains no user serviceable parts.
- The solar panel can become very hot when left in direct Sun light. Gloves may be required in hotter climates.

## INSTALLATION OVERVIEW

The installation of the PowerFLEX™ MOBILE solar kit is fairly simple and straight forward with a little planning. The key installation steps are:

1. Choose a suitable location for the solar panel(s).
2. Prepare roof surface.
3. Install the solar panels, edge adhesive, and edge trim.
4. Choose the internal RV location for the charge controller.
5. Route the cable from the solar panels to the charge controller and then to the batteries.
6. Connect the wiring.

## SOLAR PANEL LOCATON

The following recommendations for location of the PowerFLEX™ solar panels are important to ensure best performance and aesthetics. The PowerFLEX™ solar panels:

- Need to be placed close enough to each other so that the pre-fabricated cables will reach. The included “Y” cables in the two panel system will allow the panels to be placed 6’-7’ apart.
- Route the cables such that they are not pulling or placing stress on the panel’s junction box. Bends or turns in the wiring should be gentle and as large as possible.
- Can be positioned either in-line with the RV or across it.
- Should be located in an area that is not shaded by the AC unit, satellite or TV antenna, roof vents, etc...
- Require a minimum of 21.5” x 81.5” area, including edging.

Note: It is a good idea to “dry fit” the solar panels and edge trim components prior to permanently adhering them to the roof.

## ROOF SURFACE PREPARATION

### **PROPER ROOF PREPARATION IS PARAMOUNT TO ATTAIN THE NECESSARY LONG-TERM ADHESION OF THE PANEL AND MOUNTING STRUCTURE**

Follow all recommendations in this section for Roof Preparation and associated precautions

#### Additional Precautions and Warnings

- New EPDM roofing surfaces may contain a layer of mica or other nonstick layer. This layer must be removed.
- Citrus based cleaners, denatured alcohol, or mineral spirits are not recommended for use on EPDM rubber roofing materials.
- All roofing surfaces can be very slippery when wet. Extreme caution should be taken and it is recommended to navigate the roofing surface on your hands and knees. This will greatly reduce the risk of falling.
- Note: For older rubber (EPDM) roofs, the solar panels should be adhered to the roof with screws as described in “SPECIAL ROOF TYPES” section.





## Directions for Roof Preparation

- A. Use a pressure washer or a hose with a spray nozzle to remove loose dirt and debris from the entire roof.
- B. Combine your mild liquid dish soap solution with warm water in a bucket or spray bottle.
  - a. A 20:1 ratio of warm water and mild liquid dish soap cleaner should be sufficient for new roofing surfaces (about 6oz of soap per gallon of water). Using cold or tepid water is not recommended as this will reduce the strength of the adhesive bond.
  - b. Always consult with the RV manufacturer for optimal cleaning methods.
- C. Using a medium bristle brush and the cleaning solution begin scrubbing the roofing surface in small areas that are easily reachable on your hands and knees (E.g. arm's length or 3' X 3' areas).
  - a. Beginning at one end of the roof and working toward the point of exit on the roof where the solar panels will be placed.
  - b. Be sure to also prepare the areas where the cable tie mounts will be placed [See section for ROUTING THE CABLE].
- D. Scrub the roofing surface in a circular motion applying a moderate amount of pressure until any visible evidence of dirt and debris is removed. Often, after surface dirt is removed, a light yellow surface coloration is observable. If such a yellow surface is visible, repeat the scrubbing step until the yellow disappears, leaving a clean white colored surface.
- E. Rinse the roof with water thoroughly to avoid any residue buildup.
- F. For EPDM roofs, wipe the area where the PowerFLEX™ panels will be adhered with Isopropyl Alcohol.
- G. In the case of Gel-coated Fiberglass roofs, the isopropyl alcohol wipe is not required. However, a final surface wax removal step is required with an appropriate wax-remover or acetone is required. All the other surface preparation steps are identical to EPDM roofs.

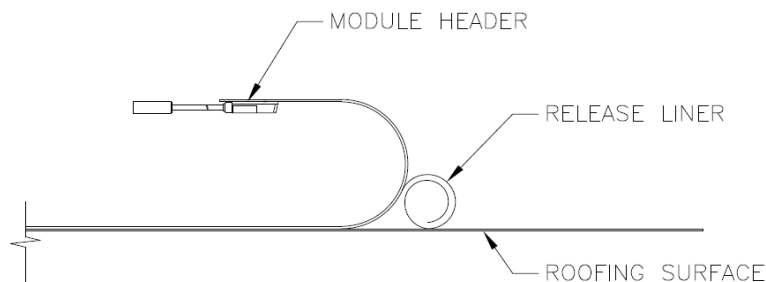
## INSTALLING THE SOLAR PANELS



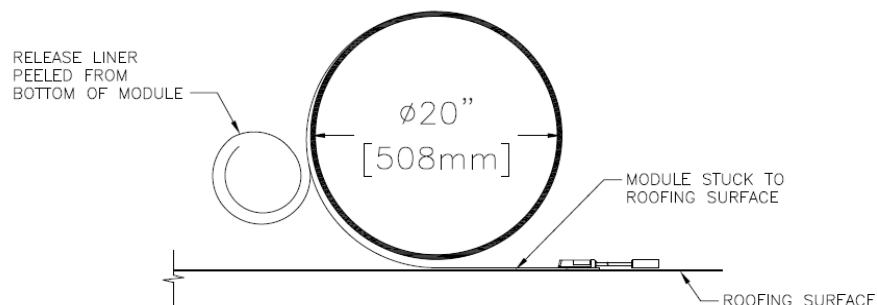
### **WARNING!**

**SOLAR PANELS PRODUCE ELECTRICITY WHEN EXPOSED TO LIGHT EVEN WHEN NOT CONNECTED TO THE SYSTEM. THE SOLAR PANELS SHOULD BE COVERED WHENEVER WORKING ON THE SOLAR POWER SYSTEM IN ORDER TO AVOID ELECTRICAL SHOCK AND/OR ARCING.**

- A. The PowerFLEX™ solar panels included a long piece of cardboard in the package. This piece of cardboard should be cut to the length of the solar panel and used to shade it during the installation. Use tape to hold the cardboard in place.
- B. Start by aligning the solar panel to the position chosen when locating the panels. As shown below, roll back one end of the panel about 2 feet and remove 10"-12" of the protective paper liner to expose the adhesive. Lay the panel back down and apply pressure to bond to the roof surface.

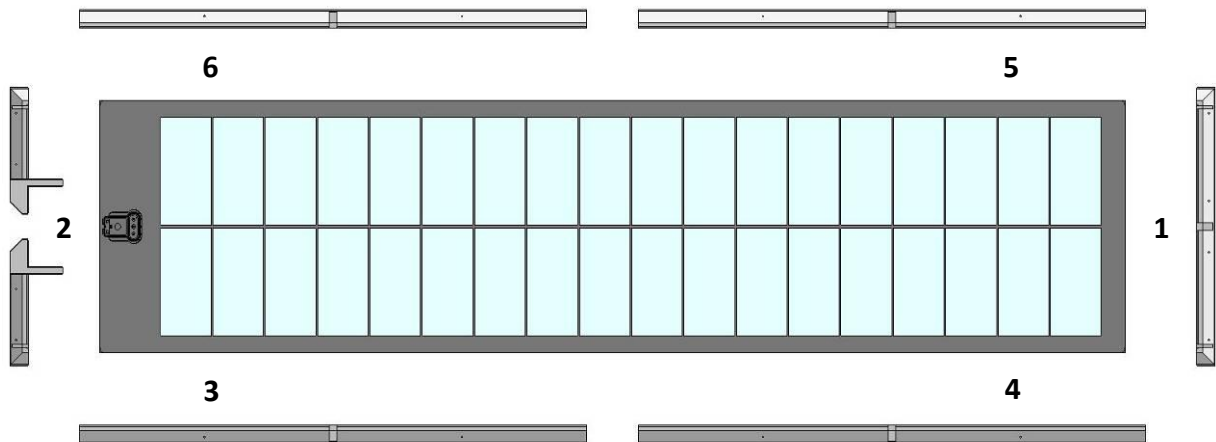


- C. Next, as shown below, go to the other end of the panel and roll it back towards the end already adhered. Pull the protective paper liner off slowly in 2 foot increments, applying pressure starting from the center and working towards the outer edges until the entire panel is affixed to the roof.



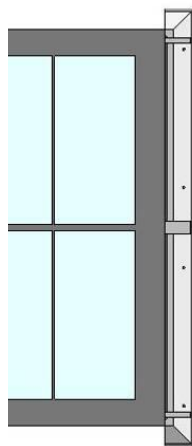
## INSTALLING THE EDGE TRIM

### Suggested Sequence



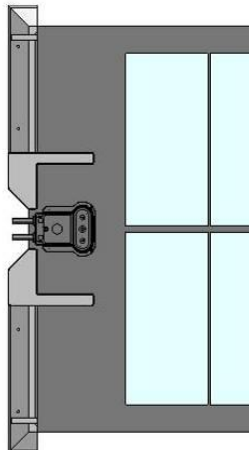
The installation of edging framework is a 3 step process

1. Ensure all parts fit together well around the panel.
  2. In the recommended sequence (labeled above), one edge at a time, apply the liquid adhesive to the panel edge using a caulking gun, and then adhere the edge pieces to the panel edge.
  3. Repeat above step for the remaining 3 panel edges, in the recommended sequence.
1. Ensure Proper Fit
    - A. Lay the 7 rubber edge trim pieces around the perimeter of the PowerFLEX™ panel.
    - B. Starting at the end opposite the cables [labeled “1” above], carefully place the trim piece so that the inner edge of edge trim piece is centered and butted against the edge of the panel.
    - C. Next, align and place the two trim pieces at the wiring end of the panel [labeled “2” above] in the same manner, making sure the trim parts fit properly against the edge of the panel.
    - D. Place a long, side trim piece [labeled “3” and “4” above] so that there is a 1/8” gap between it and the end trim that has already been placed. Repeat for the remaining pieces of side trim [labeled “5” and “6” above]. A gap where the two side pieces meet in the center is normal.



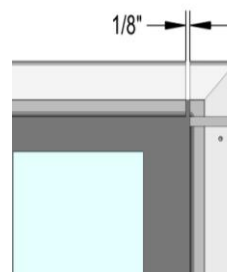
1

Trim at bottom of panel



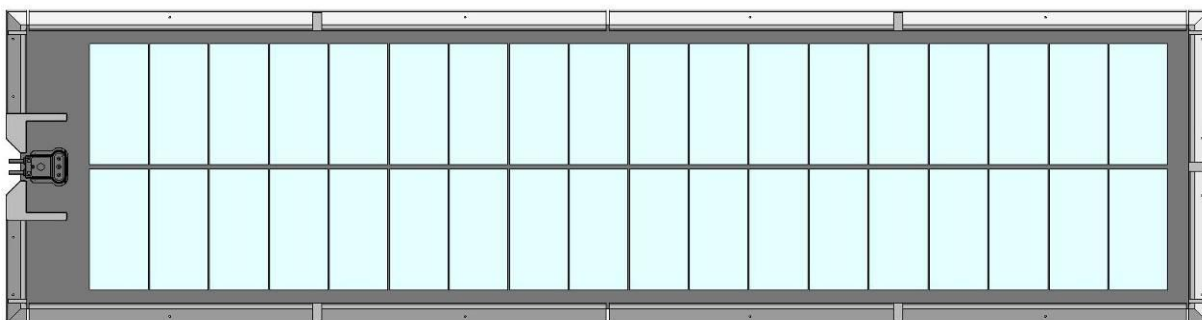
2

Trim at top of panel



3-6

Trim at corners with 1/8" gap



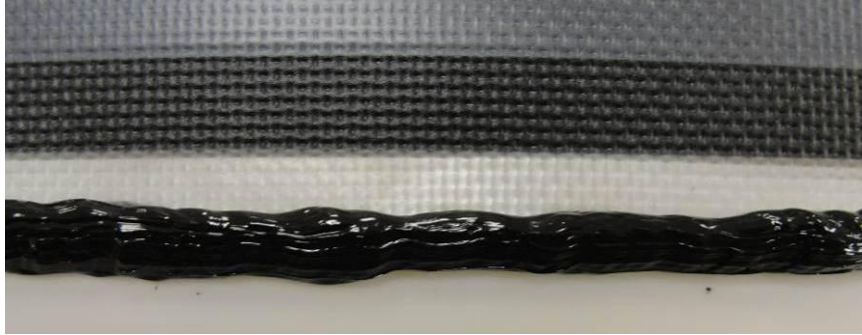
All edge trim in place

## 2. Procedure for mounting-edge attachment to edge of panel

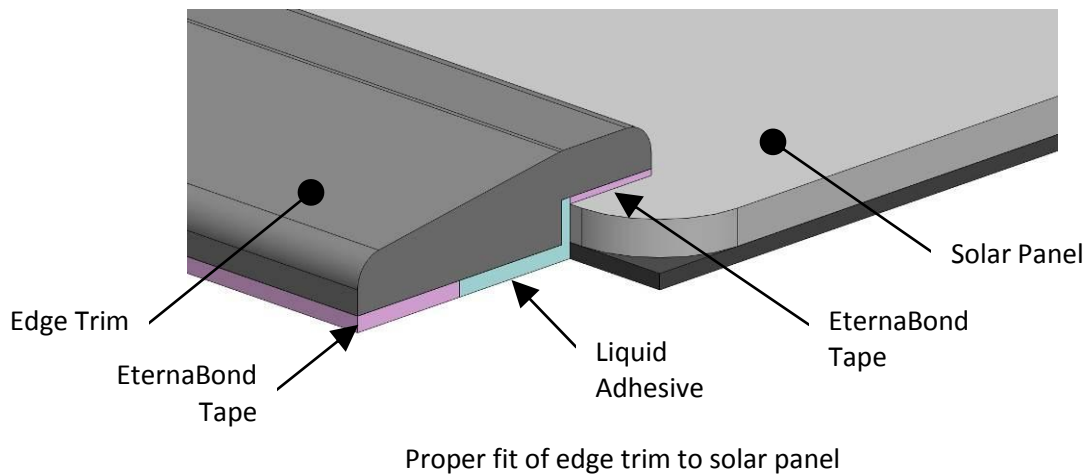
- A. Prepare the tip of the adhesive tube by cutting the tip at a 45° angle. The opening should be approximately 3/16" in diameter. Prepare and use the adhesive as described here.



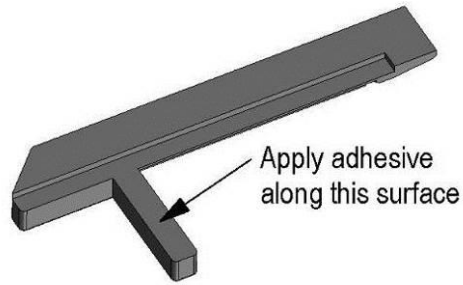
- B. Starting with the edge trim piece labeled in the sketch above as #1,
- i. Apply the liquid adhesive to the panel edge, leaving a bead approximately 3/16" wide. The trim piece must be placed within 10 minutes of dispensing the adhesive.



Adhesive bead along the edge of the solar panel (Normally transparent; Shown as black for clarity)



- ii. For the associated edge trim piece, remove the protective liner to expose the adhesive.
- iii. Adhere the edge trim piece to the panel edge by carefully placing it so that the inner edge of edge trim piece is gently butted against the edge of the panel like was done in the trail run.
- iv. Apply even pressure to ensure edge trim piece is uniformly secured
- v. Repeat above process for panel edge #2 using the 2 separate edging pieces. Apply a 3/16" wide bead of adhesive to the bottom surface of the edge trim piece that extends over the panel.



- C. Repeat above process for panel edge #3 and #4, being sure to
  - i. Butt the edge of each piece against the already-placed pieces AND
  - ii. Ensure that the outer edge of the new piece matches the outer edge of the existing piece [See above sketch].
3. The system should be allowed to cure a minimum of one hour prior to moving the vehicle. It may be driven after six hours but, will not be fully cured until 24 hours.

## SPECIAL ROOF TYPES

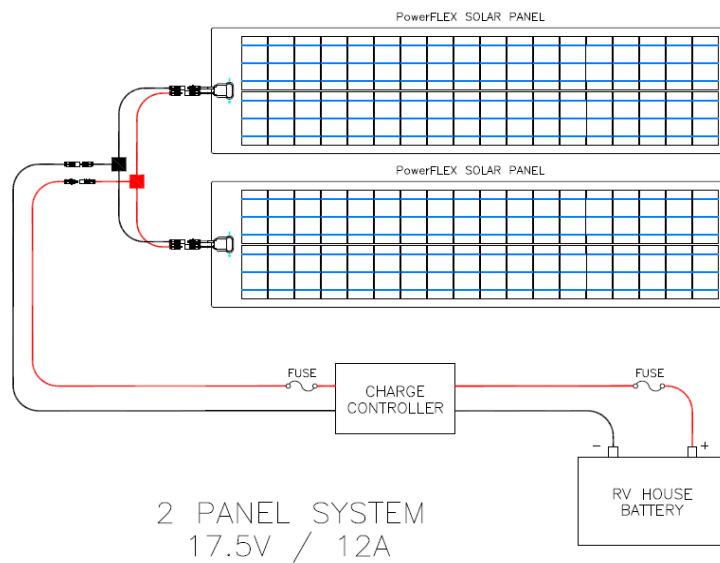
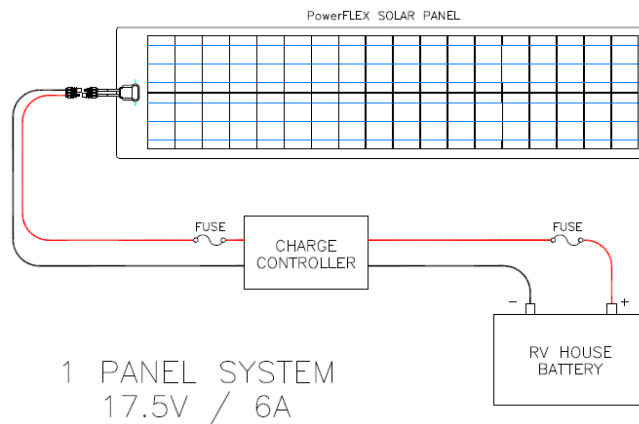
- RVs with older rubber rooftops may not be able to achieve sufficient bonding using only the adhesive due to “chalking” or severe oxidation.
  - In these cases, it is recommended that screws be used to secure the rubber edge trim components to the roof, especially on the upwind edge of the panel.
  - The edge trim parts are marked with a small dimple indicating where screws should be placed. Using these pre-marked locations will ensure that the screw will not go through the solar panel.
  - Use #8 x 1” stainless steel pan or truss head sheet metal screws.
- RVs constructed with a metal skin, such as most Airstream travel trailers, should use pop rivets or through-bolts in addition to the adhesive mounting system. These fasteners must be located in the pre-marked dimples on the rubber edge trim components to avoid damaging the panel.

## LOCATING THE SOLAR CHARGE CONTROLLER

The solar charge controller is designed to be flush mounted in an interior wall of the RV. Choose a location that is convenient for routing the cable and for viewing. Flush mounting the controller will require cutting a hole in the wall or cabinet that is 4-11/16” wide by 3-11/16” tall.

## ROUTING THE CABLE

The overall circuit is generally as follows



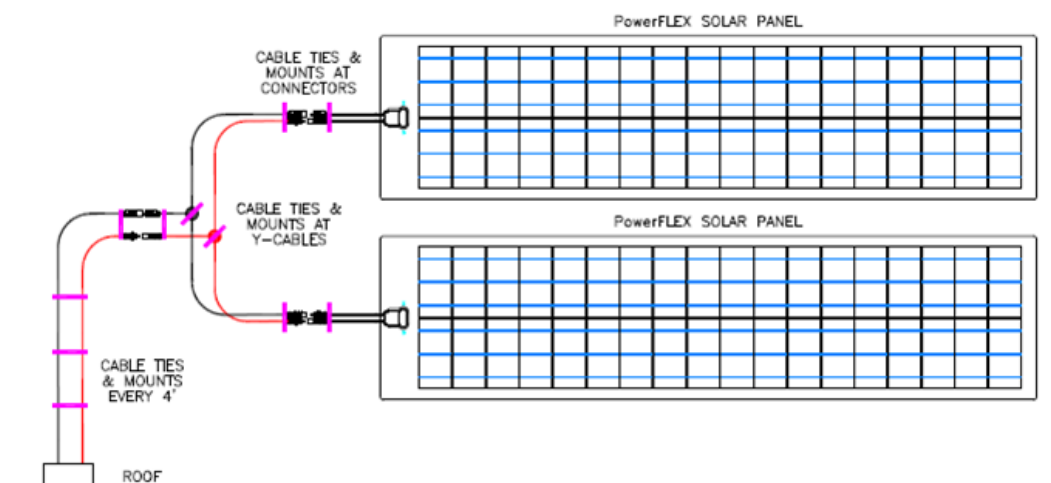
- Your PowerFLEX™ MOBILE kit came with 20' lengths of 10 AWG solar cable with connectors to the panels and a 20' length of 10 AWG / 2-conductor cable to link the controller to the battery. These lengths should be sufficient for most installations. If more cable is required, use wire that is the same conductor size or larger. Using a smaller wire size can result in performance losses and potentially create a fire hazard. See the following wire-sizing table for further information.

### Wire Size (AWG) for <7% Voltage Drop

Current (A) (# PFM Panels)	Distance (FT)										
	10	15	20	25	30	35	40	45	50	55	60
6 (1)	12	12	12	12	12	12	12	12	12	10	10
12 (2)	12	12	12	12	10	10	10	8	8	8	8
18 (3)	12	12	10	10	8	8	8	6	6	6	6
24 (4)	12	10	10	8	8	6	6	6	6	4	4
30 (5)	10	10	8	8	6	6	6	4	4	4	4
36 (6)	10	8	8	6	6	4	4	4	4	3	3

Note: 90°C, Copper Conductor

- When routing the cable, leave a foot or so extra at each end to make connections easier.
- In most cases, the refrigerator vent is the best place to route the cable from the roof into the RV. Some RVs have the refrigerator located in a slide-out. In this case, an alternate location will be required and may require creating a roof or front cap penetration. This should be performed by a professional RV technician to ensure a watertight seal.
- Starting at the solar panel connections, plan the routing for the Y-cables and connection cables [see below] across the roof to the entry location. Use the provided cable tie mounts and cable ties to secure the cable to the roof. Be sure to prepare the roof surface in the same manner as already described for ensuring good panel and edging adhesion prior to sticking down the cable tie mounts.
  - A cable tie mount must be placed directly adjacent to each side of each pair of cable connectors, at the center of each “Y” cable (where the three cables join in the middle) and then at least every 4’ along the roof to the point of entry. Use additional mounts anywhere the cable is not well supported. Additional cable tie mounts can be purchased at your local hardware store if needed.





- **Cable tie mounts must be applied in the following manner to ensure proper adhesion:**

Insert the supplied cable tie into the cable tie mount.



Apply the supplied adhesive to the bottom of the cable tie mount and affix to the location where you will be routing the cabling.



Adjust the cable tie so the connector of cable tie protrudes 1" from the center of the cable tie mount.



Allow the adhesive to cure for 1-hour before securing the PV cables with the cable tie mounts.



- Continue routing the cable to the solar charge controller location and cut to the appropriate length. Mark the Positive (+) cable prior to cutting. Remember to leave some extra cable to make the final connections easier.
- At the charge controller end of the PV cable, strip 3/8" of insulation to expose the copper wire. Next, cut the loop on one of the included ATC inline fuse holders and strip 3/8" of insulation from each end. Be sure a fuse is NOT in the holder. The fuse will be inserted in a later step. Crimp a splice connector to one end of the fuse wire and one of the small ring terminals to the other. Do not use the large ring terminal at this step. Crimp the other end of the splice connector to the positive (+) wire. Crimp another small ring terminal to the negative end of the cable. Do not connect the cable to the charge controller yet. This will be done in a later step.
- Route the 10AWG, 2-conductor cable from the charge controller to the battery location. Strip the cable as above at the charge controller end and crimp small ring terminal to each wire. Do not connect the cable to the charge controller yet.
- At the battery location, cut the cable from the charge controller to the desired length. Remove approximately 12" of the outer jacket of the 10AWG, 2-conductor cable. Strip the wire ends as above and attach the other inline fuse holder to the positive wire. Make sure a fuse is NOT in the fuse holder. Crimp a large ring terminal to the other end of the fuse holder and to the negative wire. **WARNING** - Do not locate the inline fuse holder elsewhere on the cable. For safest installation it must be located at the battery.



## CONNECTING THE WIRING

Prior to connecting any of the wires, be sure the fuses are removed from the fuse holders and the solar panels are covered.



### **WARNING – RISK OF EXPLOSIVE GASES**

**Working around lead-acid batteries can be dangerous.  
Batteries generate explosive gases during normal battery operation.**

- Wear complete eye and clothing protection when working with lead-acid batteries.
- Follow all safety and application precautions from the battery supplier.
- Always operate the charge controller in an open, well-ventilated area.
- Never smoke or allow spark or flame in the vicinity of the battery. Lead-acid batteries generate explosive gases.
- Neutralize any acid spills thoroughly with baking soda before attempting to clean up.
- Make sure someone is within range of your voice to come to your aid if needed while working with lead-acid batteries.
- Have plenty of fresh water and soap nearby in case battery acid comes in contact with your skin or clothing. Wash with soap and water immediately and then get medical attention.
- Avoid touching your eyes while working with batteries. Corrosive particles may get into your eyes. If this occurs, flush eyes immediately with running water for at least 10 minutes. Immediately seek medical attention.
- Never attempt to charge a frozen battery.
- Remove all personal metal items from your body such as rings, bracelets, necklaces and watches while working on or around batteries. A battery can produce a short circuit current high enough to weld a ring (or the like) to metal, causing a severe burn.
- Take care not to drop any metal tool or object onto the battery. This may result in a spark or short circuit across the battery or other electrical device that could cause an explosion.
- Note that in the 2-panel configuration, the panels are connected in parallel (positive-to-positive and negative-to-negative). Do not connect in series.

## **WHEN ALL OTHER INSTALLATION AND SAFETY ITEMS HAVE BEEN COMPLETED**

Final connections should be made in the following order:

1. Ensure that the cardboard covers over the solar panels are still in place.
2. Select GEL or LEAD ACID battery mode.
3. Connect the positive (+) lead of the solar array to the ARRAY POSITIVE (+) terminal of the charge controller.
4. Connect the negative (-) lead of the solar array to the ARRAY NEGATIVE (-) terminal of the charge controller.
5. Connect the positive cable from the battery to the BATTERY POSITIVE (+) terminal of the charge controller.
6. Connect the negative cable from the battery to the BATTERY NEGATIVE (-) terminal of the charge controller.
7. Once all of the wiring connections are complete, insert the provided 20A ATC fuses into the fuse holders and close the water resistant caps.
8. Next, remove the cardboard covering the solar panels.
9. Check the front panel of the charge controller. Provided there is sufficient Sun light, the "POWER" and "CHARGING" or "FLOAT" LED lights should be on. If the "PROTECTION" and/or "BATTERY REVERSE" lights are on, cover the solar panel(s) and check the wiring.

## **MAINTENANCE**

Proper maintenance is important and will ensure years of reliable performance. If your PowerFLEX™ MOBILE system will be stored in shaded conditions for longer than one week, it is recommended that the PV system fuse nearest to the battery first be removed at the beginning of this storage period and only while the modules are shaded.

- . The solar panel(s) should be checked periodically and before each trip for the following:
  - In the case that the battery is to be disconnected the PV fuse closest to the battery must first be removed.
  - Verify there is good adhesion of each solar panel and edge trim part.
  - Check that all wiring is secure.
  - Make sure the solar panels are clean. Excessive dirt or debris will reduce the power output. Bird droppings are corrosive and should be removed as soon as possible.

- Use only water or water with mild liquid dish soap to clean the panels. A clean, soft brush may be gently used to remove stubborn deposits. Never use high pressure sprayers to clean the solar panels.
- Avoid long periods of standing water on the solar panels. Make sure the water channels are clear and free of obstructions.

## APPENDIX

### Technical Support

For technical assistance, please contact Global Solar Energy Technical Support at:

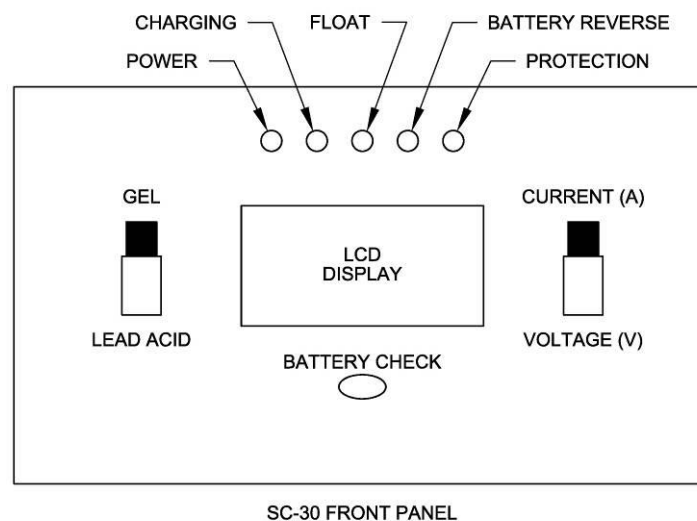
RVSolarSupport@GlobalSolar.com

520.351.5977

### About The Solar Charge Controller

For further controller information, see Manufacturer's literature.

The solar charge controller is designed to protect your 12 volt GEL or LEAD ACID battery from being overcharged by the solar panels and against connecting in reverse polarity. The LCD display will indicate charging current or battery voltage.



#### LED Indication:

**Power:** Solar panel(s) are generating sufficient voltage.

**Charging:** The battery is being charged.

**Float:** The battery is fully charged and is being maintained in float mode.

**Battery Reverse:** The connection to the battery is backwards.

**Protection:** The internal temperature of the controller has reached approximately 60°C. The controller will return to normal once the temperature reaches approximately 55°C. In some situations, the protection light may come on intermittently. This can occur when the battery is close to being fully charged and the solar panels are producing more power than required to charge the battery and does not indicate a problem with the system.

#### Battery Check Button:

Pressing this button will display the battery voltage when the solar panels are not connected to the controller or the controller output voltage when the solar panels are connected.

**Switches:**

**GEL / LEAD ACID:** Select the battery type used.

**Current / Voltage:** Sets the LCD display to indicate charging current (A) or battery voltage (V) in the charging mode.

**Charge Controller Specifications:**

<b>Max Solar Panel Array Power</b>	<b>400W</b>
<b>Input Voltage</b>	<b>16.5V – 22V</b>
<b>Max Input Voltage</b>	<b>25V</b>
<b>Max Charging Current</b>	<b>30A</b>
<b>Continuous Current Rating</b>	<b>25A</b>
<b>Constant Voltage – GEL Battery</b>	<b>14.2V</b>
<b>Constant Voltage – Lead Acid Battery</b>	<b>14.6V</b>
<b>Float Voltage</b>	<b>13.5V</b>
<b>Temperature Protection</b>	<b>OK (by electronic circuit)</b>
<b>Battery Reverse Protection</b>	<b>OK (by electronic circuit)</b>
<b>Output Short Protection</b>	<b>OK (by electronic circuit)</b>
<b>Operating Temperature</b>	<b>0°C ~ 40°C</b>
<b>Storage Temperature</b>	<b>-10°C ~ 70°C</b>
<b>Dimension (mm)</b>	<b>181(L) x 104(H) x 31(D)</b>
<b>Weight</b>	<b>275g</b>

**CAUTION:**

- This charge controller is for 12V systems only. Do not use with other voltage systems.
- Do not exceed the maximum input ratings.
- Do not reverse the BATTERY and ARRAY connections to the controller.
- If your PowerFLEX™ MOBILE system will be stored in shaded conditions for longer than one week, it is recommended that the BATTERY be disconnected from both the load and also the ARRAY.

**Solar Panel Specifications:**

<b>Nominal Power (Pmax)</b>	<b>100W</b>
<b>Voltage (Vmp)</b>	<b>17.8V</b>
<b>Nominal Current (Imp)</b>	<b>5.6A</b>
<b>Open Circuit Voltage (Voc)</b>	<b>23.3V</b>
<b>Short Circuit Current (Isc)</b>	<b>6.4A</b>
<b>Power Tolerance</b>	<b>±7%</b>

Specifications are for one (1) solar panel at STC (Standard Test Conditions) of 1000W/m<sup>2</sup>, 25°C, AM1.5

## Installation Summary Chart

### REMEMBER SAFETY AT ALL STEPS

Step #	Description	Key Requirements
0	Ensure that the roof is suitably new for good adhesion	No undue discoloration or chalking. Must clean up properly with the recommended methods. See the Roof Surface Preparation Section of the Installation instructions for details
1	Choose a suitable location for the solar panel(s)	See the Solar Panel Location Section of the Installation instructions for details. Avoid shading, install on same plane, and ensure cables reach where desired
2	Choose the internal RV location for the charge controller to define the location of the cables	
3	Prepare roof surface	See the Roof Surface Preparation Section of the Installation instructions for details Scrub very well with a medium bristle brush with Warm water and liquid dish soap (~6 oz. per gallon) until no yellow surface color remains. Rinse well with water when done Be sure to also prepare surface for the cable hold-downs in their appropriate places
4	Install and cover the solar panels	See the Installing the Solar Panels Section of the Installation instructions for details Wipe cleaned roof with isopropyl ("rubbing") alcohol just prior to applying solar panel Apply the solar panel using the proper rolling method stated in the instructions, and ensure attachment is void-free. Cover the panel(s) with the supplied cardboard sheet
5	Install the edge adhesive and edge trim	See the Installing the Edge Trim Section of the Installation instructions for details Layout the edge trim around the module perimeter to ensure proper fit BEFORE application of any adhesives In the proper sequence, apply a 3/16" wide bead of liquid adhesive to 1 edge at a time starting with the bottom edge. See instructions to ensure that the adhesive is applied to the bottom of the top trim piece arms! 1 Edge at a time, as above, and within 10-15 minutes of applying the liquid adhesive to the panel edge, peel off the affix the edge trim pieces into place
6	Route the cable from the solar panels to the charge controller and then to the batteries	See the Routing the Cable Section of the Installation instructions for details
7	Connect the wiring when fully prepared, add the fuses and uncover the modules	See the Connecting the Wiring Section of the Installation instructions for details





## **Global Solar® PowerFLEX™**

### **Mobile Limited Warranty**

Global Solar Energy, Inc. is proud to offer the PowerFLEX™ Mobile product with a  
FIVE-YEAR Limited Warranty.

Global Solar warrants the product will be free from defects in materials and workmanship under normal use conditions during the warranty period. This limited warranty applies only if the product was (a) purchased from an authorized Global Solar dealer or distributor and (b) stored, installed and maintained according to Global Solar's instructions. To avoid damage to the PowerFLEX Mobile product or your vehicle, Global Solar recommends using a qualified professional to install your product.

Please refer to [www.Solar4MyRV.com](http://www.Solar4MyRV.com) for the full details of the warranty. If there is any conflict between this warranty and the full details on the website, the full details will control. Also, visit our website for information on extended warranty products.