

SOLAR ALL-ELECTRIC KITS™

SCAN FOR THE
LATEST MANUAL

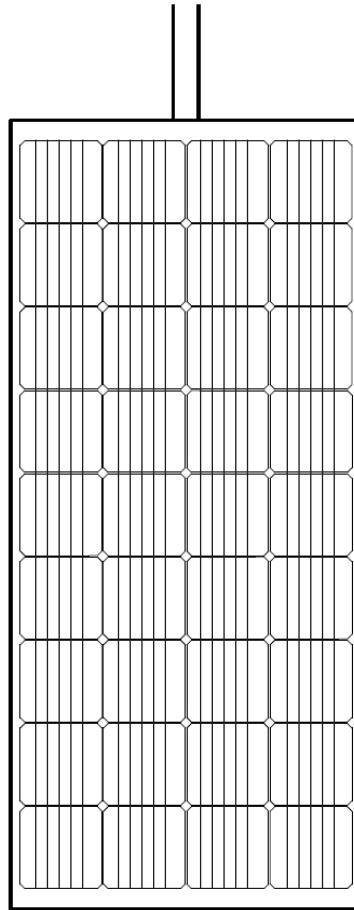


 SCAN ME

User Manual

GP-AE-4

GP-AE-6



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Worldwide Technical Support and Product Information gopowersolar.com

Go Power! | Dometic

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2. GENERAL INFORMATION



Congratulations on purchasing your Go Power! Solar All Electric Kit. You have chosen a clean, quiet and sustainable power source. Go Power! Solar Kits allow you to power appliances off-grid, without hooking up to shore power or a noisy generator. Go Power! solar kits will keep your batteries charged, ensuring you have power when you need it.

This large mobile DC power system is designed for full-time living—even powering a residential-sized electric refrigerator, in addition to lights, fans or water pumps. To power AC electronics or devices off-grid, such as a television or coffee maker, a DC to AC power inverter (sold separately) will be necessary. As with any off-grid power systems, the user is required to manage electrical loads to ensure continual power availability for essential services like the refrigerator. Your location and season (hours of sunlight available) play a role in how much energy can be harnessed from this kit.

Note This manual will aid in the process of installing the Go Power! Solar All Electric Kit. Please read and understand this manual and all included manuals before installing the Go Power! All Electric Solar Kit. Review all diagrams included in this guide for the easiest and safest installation. **Please retain this manual for future reference.**

2.1 WIRING DIAGRAMS

IMPORTANT: Please follow installation and wiring instructions exactly as outlined to ensure safety. We recommend installation by an RV technician or professional electrician to ensure adherence to relevant electrical codes. We have made every reasonable effort to ensure the accuracy of the instructions in this manual, but Go Power! does not guarantee that the information is error free, nor do we make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. The specifications in this manual are for reference purposes only and are subject to change without notice. For additional information please see www.gopowersolar.com.

DISCLAIMER: This kit has been engineered for use in a mobile application. Any variance by the end-user is solely of their own discretion. Valterra Power LLC (Go Power!) assumes no responsibility for improper installation in accordance with any laws and regulations governing: cottage, residential or commercial applications. Go Power! disclaims liability for any direct, indirect or incidental damages caused by, or in case of, installation not performed following the instructions and cautions in this manual. Go Power! will refuse requests for exchanges or returns, resulting from the purchase and installation of items which do not comply with local codes. To avoid such concerns Go Power! recommends installation by a professional electrician or RV technician. Examples that are shown within this manual are for illustrative purposes only.

2.2 HOW DOES A GO POWER! SOLAR CHARGING KIT WORK?

The solar panel converts the sun's energy into DC electricity and this electricity charges the battery. The battery stores the electricity, similar to a water tank storing water. This battery power may be used at any time to operate DC powered devices connected to the battery. To increase the battery service life, a solar controller is used to prevent the solar panels from overcharging the batteries. This process is managed by the GP-RVC-MPPT-30 controller(s) included in this kit. (See Figure 2-A on the following page for examples).

Note The Go Power! SOLAR-AE6 Kit includes 6 solar panels and the SOLAR-AE4 includes 4 solar panels for use with a 12-volt system.



WARNING: The solar panels in the SOLAR-AE6 kit are designed to be connected in 3 strings of 2 panels in SERIES. Each string of 2 panels will connect to the GP-RVC-MPPT-30 Solar Controller. Failure to follow this will cause the system to produce large voltages or currents which the GP-RVC-MPPT-30 Solar Controller and cabling is not designed to handle.

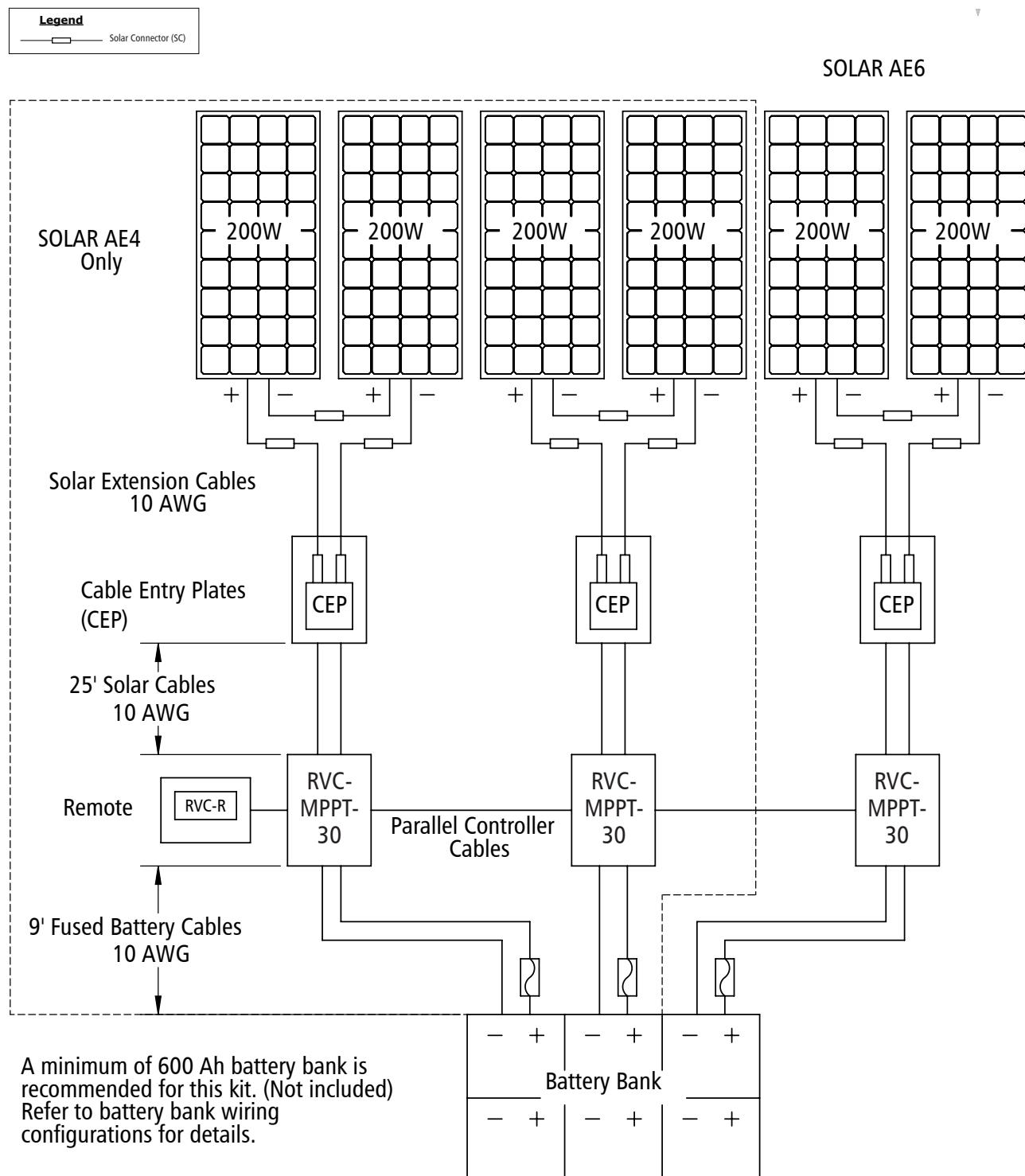


WARNING: The solar panels in the SOLAR-AE4 kit are designed to be connected in 2 strings of 2 panels in SERIES.



WARNING: Incorrect wiring can result in irreparable damage to the system (not covered under warranty), fire, or serious injuries.

FIGURE 2-A: SOLAR AE-4 AND AE-6 EXAMPLE WIRING DIAGRAM



2.3 CAUTIONS

Disconnect all power sources before attempting installation

Electricity can be very dangerous. Installation should be performed only by a licensed electrician or qualified personnel.

**Solar panel safety**

Photovoltaic panels generate DC electricity when exposed to sunlight or other light sources. Contact with the electrically active parts of the panel, such as terminals, can result in burns, sparks and lethal shock whether the panel is connected or disconnected.

When panels are connected in series, voltages are additive. Consequently, a system assembled from photovoltaic panels can produce high voltages, which constitute an increased hazard. Do not touch terminals while panel is exposed to light. Cover the panel face completely with opaque material to halt the production of electricity when installing or working with panels or wiring.

**Battery and wiring safety**

Observe all safety precautions of the battery manufacturer when handling or working around batteries. When charging, batteries produce hydrogen gas, which is highly explosive. Work in a well ventilated area and use caution when making or removing electrical connections. Ensure wires are disconnected from their power sources when wiring. Do not expose battery to open flame, cigarettes or sparks. Shield skin and eyes from battery acid.



Ensure all connections are tight and secure. Loose connections may generate sparks and heat. Be sure to check connections one week after installation to ensure they are still tight.

**Work safely**

Wear protective eyewear and appropriate clothing during installation. Use extreme caution when working with electricity and when handling and working around batteries. Use properly insulated tools only.

**Observe correct polarity at all times**

Reverse polarity of the battery terminals or solar terminals may damage the controller.

**Do not exceed the voltage and current ratings of the GP-RVC-30-MPPT Solar Charge Controller**

The total voltage of the solar system is the sum of the open circuit current of the solar panels in series. The voltage of the array is the rated open circuit voltage of the solar panels and is not to exceed 100 Voc.

The Imp current is not to exceed 30A for each string connected to the GP-RVC-30-MPPT Solar Controller(s). If your solar system exceeds these ratings, contact your dealer for a suitable controller alternative.



2.4 KIT PARTS CHECKLIST

Note

Please unpack and make sure all parts shown in the list below are included in the kit. If any parts are missing please contact Go Power!'s customer support team at customersupport@gopowersolar.com or 1-866-247-6527.

2.4.1 PARTS CHECKLIST

ITEM #	DESCRIPTION	SOLAR-AE4	SOLAR-AE6
01	GP-PV-200M, 200W solar panel	4	6
02	Solar panel mounting feet	16	24
03	1/4" bolt	16	24
04	1/4" lock nut	16	24
05	1/4" washer	32	48
06	#10 x 1" screw (for solar panel mounting feet and CEP)	40	60
07	#8 x 5/8" screw (for cable clamps)	24	36
08	SC-OUTPUT-6, 6' solar panel extension cable with SC connectors	1	2
09	SC-OUTPUT-10, 10' solar panel extension cable with SC connectors	1	2
10	Cable Entry Plate (CEP)	2	3
11	GP-RVC-30-MPPT, solar charge controller	2	3
12	GP-RVC-R, solar charge controller remote	1	1
13	Battery cables	2	3
14	Tie wrap	16	32
15	1/4" UV resistant cable clamp	12	18
16	3/8" cable clamp	12	18
17	GP-RVC-PC, Extension Branch Cable	1	2

Note

See Figure 2-B for parts images on next page.

GENERAL INFORMATION

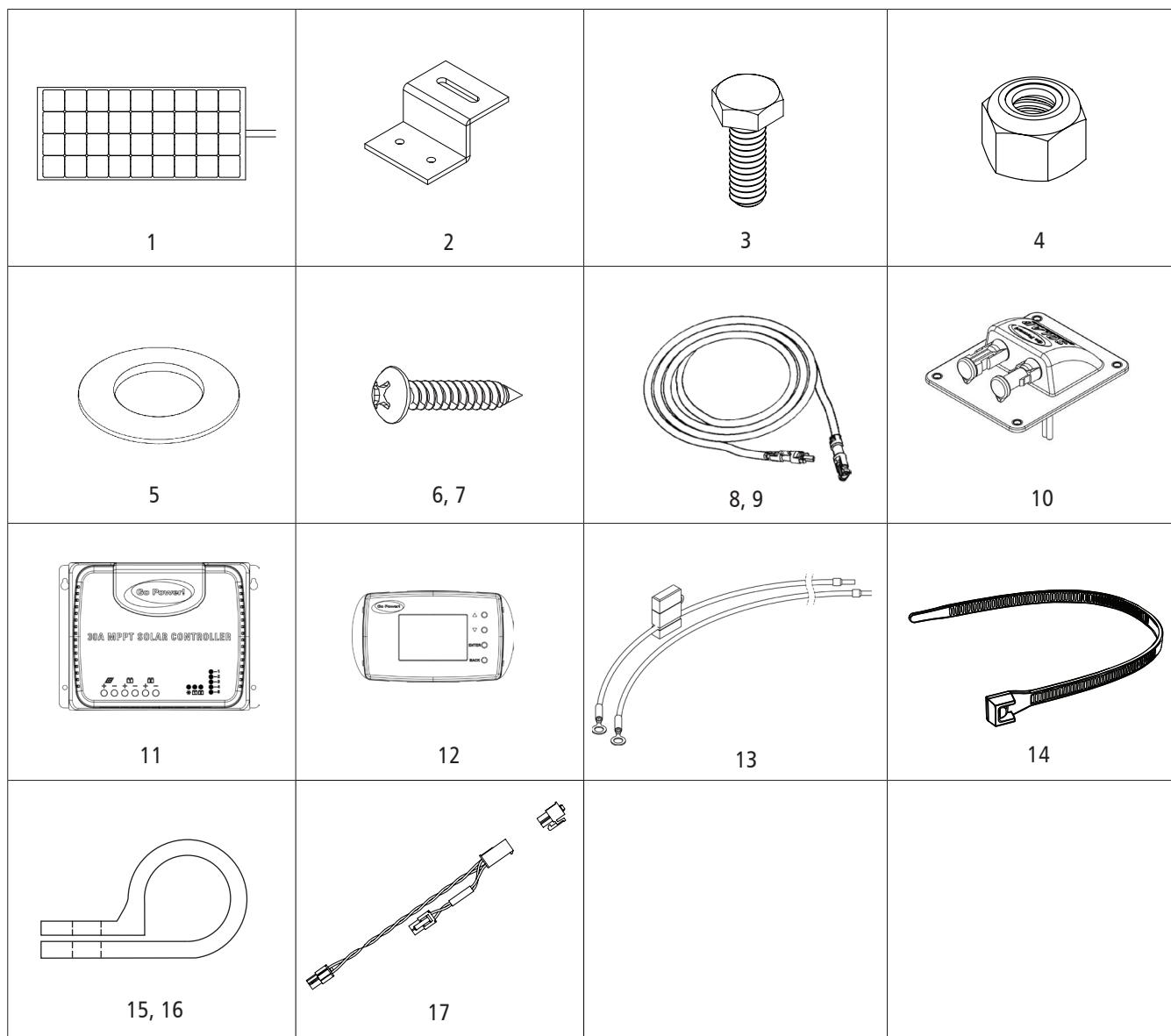


FIGURE 2-B: PART IMAGES



2.5 REQUIRED TOOLS

<ul style="list-style-type: none">a. Screwdriver (with #2 and #3 Phillips bits)b. 1" Hole Sawc. Pencil or Markerd. Plierse. Wire Strippers and Cuttersf. Power Drillg. #2 Phillips Power Drill Bit	<ul style="list-style-type: none">h. 2x 7/16" Wrenchesi. Caulking Gunj. Sealantk. Digital Multimeter (troubleshooting only)l. Torque Driver (optional)
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3. PLANNING LOCATIONS



3.1 PLACEMENT OF SOLAR PANELS

1. Remove all solar panels from their boxes. **Set aside the boxes as they will be used in the instructions to follow.**
2. Using the solar panel boxes as placeholders, plan the layout of the panels on your RV rooftop. Once you have positioned the boxes correctly, leave the boxes on the RV roof as place holders until the panels are installed. (See Figure 2-B for a sample layout).

Note

- Placement of the panels should be as close together as possible. Each panel has 3.3' of cable coming from the junction box. It may be necessary to use the included solar panel extension cables. If required, longer extension cables can be purchased. Please contact your dealer to purchase.
- Select a location where the mounting surface is at least 1/2" thick and strong enough to support the solar panel mounting hardware.
- Solar panels should be located a minimum of 3' from the front of the RV to reduce wind load on the panels.
- Avoid internal wiring when selecting the solar panel mounting locations for drilling the mounting holes.
- Ensure fixed obstacles, such as air conditioners, will not shade the solar panels. (Shading can greatly reduce the performance of the solar system).
- Ensure there is enough room to access the panels and other fixed obstacles for future inspection and maintenance.

3.2 CABLE ENTRY PLATE(S)

1. Plan where the Cable Entry Plate(s) (CEP) will be located on the RV roof.

Note

- Make sure it is within reach of the solar panels. It may be necessary to use the included extension cables to reach the CEP(s). If required, longer extension cables can be purchased. Please contact your dealer to purchase.
- Make sure the CEP location(s) is also accessible from the interior of the RV to route the cables to the charge controller.
- The GP-RVC-MPPT-30 charge controller(s) should be placed no more than 25' from the CEP(s). Closer is better to reduce the voltage loss due to resistance.

3.3 GP-RVC-MPPT-30 CHARGE CONTROLLER

1. Plan where the GP-RVC-MPPT-30 charge controller(s) will mount, see Figure 3-A for more detail including maximum distances.

Note

- The GP-RVC-MPPT-30 is designed to be mounted vertically in an indoor location inside a weatherproof enclosure.
- The GP-RVC-MPPT-30 weighs approximately 3.14lbs. – ensure the mounting location will hold this weight.
- The location will need access to the cables ends from the CEP, the battery compartment and the GP-RVC-R remote cable.
- The SOLAR-AE4 includes two GP-RVC-MPPT-30 solar controllers while the SOLAR-AE6 includes three GP-RVC-MPPT-30s to be connected with the provided parallelization cables. Each GP-RVC-MPPT-30 can charge up to a maximum of 30A.



WARNING: Failure to secure the GP-RVC-MPPT-30 could cause it to become dislodged while the RV is underway and cause severe damage to the unit and/or the RV.

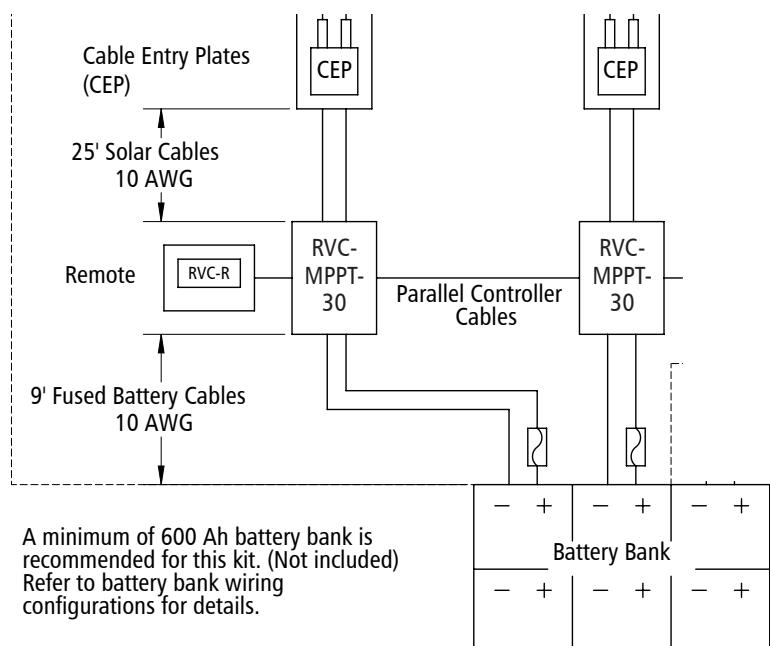


FIGURE 3-A

3.4 GP-RVC-R CHARGE CONTROLLER REMOTE

1. Plan where the GP-RVC-R remote will be installed. If space will allow, install the GP-RVC-R in the location where you find other instruments and controls (often in the instrumentation panel).

Note Make sure the GP-RVC-R location is also accessible for routing the cable to the GP-RVC-MPPT-30. The GP-RVC-R includes 25' of cable for connection between itself and the GP-RVC-R.

Design your solar set up here:

4.1 MOUNTING FEET

1. Assemble 4 mounting feet onto each of the solar panels frame using the 1/4" bolts, nuts and washers. This assembly is easily completed on the ground before the panels are brought up to the RV roof (See Figure 4-A).



WARNING:

- The mounting feet must be installed on the 4 outer holes in the panel frame.
- All 4 mounting feet must be used on a solar panel.

2. Tighten the nuts securely using a 7/16" wrench.

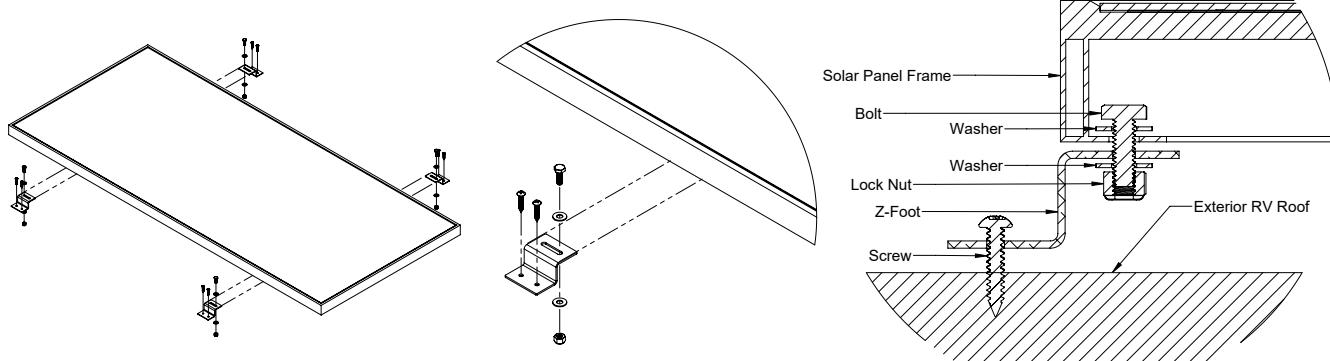


FIGURE 4-A: SOLAR PANEL INSTALLATION DETAILS

4.2 SOLAR PANELS



WARNING: Photovoltaic panels generate DC electricity when exposed to sunlight or other light sources. When exposed to light, contact with the electricity active parts of the panel, such as terminals, can result in burns, sparks and lethal shock whether the panel is connected or disconnected.

When panels are connected in series voltages are additive. Consequently a system assembled from photovoltaic panels can produce high voltages which constitute an increased hazard. Do not touch the terminals while the panel is exposed to light. Cover the panel faces completely with an opaque material to stop the production of electricity when working with panels or wiring – the cardboard shipping boxes are the perfect option to cover glass surface of the panels.

1. Locate the solar panels on the RV roof replacing each of the boxes used in the planning step.
2. Locate the CEP on the RV roof.
3. Test that the solar panel cables can reach each solar panel (See Figure 2-B).

WARNING: Do not connect the solar panels together at this time.

4. Test that the end solar panel cables can reach the CEP (panel last in line).

WARNING: Do not connect the solar panels to the CEP at this time.

5. Thoroughly clean the RV roof around the hole in the area the mounting feet will be located.
6. Use the #10 x 1" screws provided in the kit to secure the 4 solar panel mounting feet to the RV.

WARNING: All 4 mounting feet must be securely fastened to the RV roof. Failure to do so could cause the panels to be thrown from the RV while it is underway.

7. Apply sealant under and around each of the 4 mounting feet to ensure a watertight installation.

Note

Use appropriate sealant as recommended by your RV Dealer for your RV roof.

INSTALLATION

4.3 CABLE ENTRY PLATE(S)

1. Use the included tie-wraps to secure the cables together approximately every 5'.

Note

- This helps reduce the amount of electrical noise radiated by the kit.
- Ensure these paired cables run through the same hole(s) as they are routed through the interior of the RV.

2. Mark the location of the CEP cable hole to be drilled for feeding the cables through the snap bushing and the RV roof – details on install below.
3. When the CEP is installed the hole for the cables should be along its center line and approximately 1.75" from the back edge. (See Figure 9-A drill template).
4. Mark the location of the CEP cable hole to be drilled for feeding the cables through the snap bushing and the RV roof – details on install below. (See Figure 4-C).
5. Drill a small pilot hole in the chosen spot. Using the hole saw enlarge the hole to be 1" in diameter.
6. Remove any sharp edges from the hole.
7. Thoroughly clean the RV roof around the hole in the area the CEP will be mounted. A clean surface is critical to ensuring a watertight seal.
8. Feed wires down through the until they reach the charge controller mounting location.
9. Apply a generous bead of sealant to the underside of the CEP around the large opening and around all mounting holes.

Note

The sealant should expand significantly beyond the bottom of the CEP.

10. Lower the CEP down until just the tip of the caulking gun fits under the CEP. Apply a generous bead into and around the cable hole including the cable as well. (See Figure 4-D).
11. Finish lowering the CEP on the RV roof.
12. Dispense a generous dab of sealant into each mounting hole.
13. Using the 4 of #10 x 1" screws provided, secure the CEP to the RV roof – through the sealant and into the roof. (See Figure 4-E).

Note

Do not over-tighten screws.

14. Apply a dab of sealant on top of and around the head of each screw.
15. Apply another generous bead of sealant around the perimeter of the CEP.
16. Secure the exposed solar panel cables using the cable clamps provided.
17. Repeat Steps 1-16 for each additional CEP.

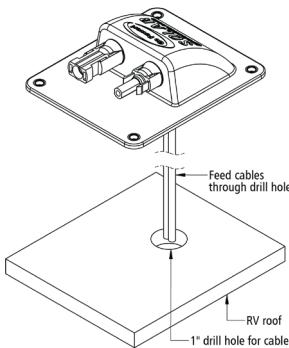


FIGURE 4-B

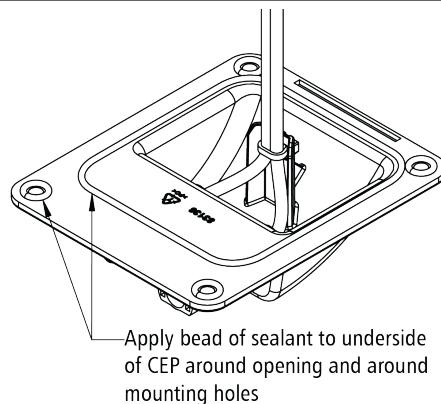


FIGURE 4-C

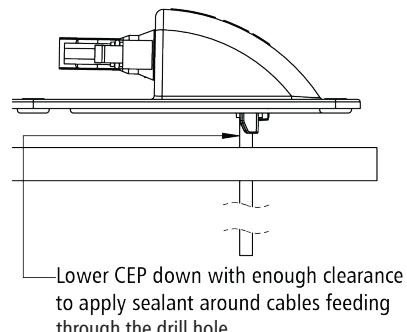


FIGURE 4-D

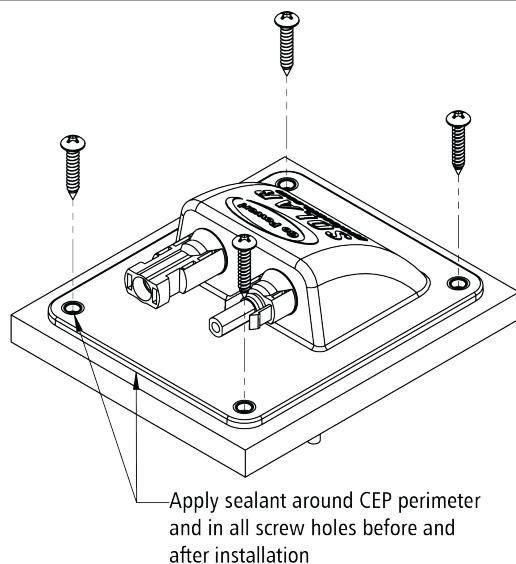


FIGURE 4-E

4.5 GP-RVC-MPPT-30 CHARGE CONTROLLER(S)

Note You will need the GP-RVC-MPPT-30 User Manual included in the kit to complete installation

1. The GP-RVC-MPPT-30 charge controller should be mounted within 9' of the battery for optimal operation. The GP-RVC-MPPT-30 is designed to be mounted vertically on the side of a wall in a weather tight enclosure.

Note The GP-RVC-MPPT-30 must be mounted indoors in a dry location - such as inside the battery compartment.

2. Follow the GP-RVC-MPPT-30 installation section in the User Manual.
3. Cut any excess length from the positive (red) and negative (black) 10 AWG solar cables, if required.
4. Strip 1/2" of insulation from the positive end the solar cable coming from the CEP.
5. Insert the stripped end of the positive cable coming from the CEP into the solar positive (PV+) terminal of the primary GP-RVC-MPPT-30.
6. Repeat steps 4-5 for the negative (black) solar cable coming from the CEP, but inserting the stripped end into the solar negative (PV-) terminal of the primary GP-RVC-MPPT-30.
7. Connect the ferrule end of the 9ft. positive (red) cable from the battery to the battery positive (BAT+) terminal of the primary GP-RVC-MPPT-30. Follow the GP-RVC-MPPT-30 User Manual for additional details and recommended torque and strip lengths.
8. Connect the ferrule end of the 9ft. negative (black) cable to battery negative (BAT-) terminal of the GP-RVC-MPPT-30. Follow the GP-RVC-MPPT-30 User Manual for additional details and recommended torque and strip lengths.
9. Repeat steps 3-8 for each additional set of solar and battery cables for each additional GP-RVC-MPPT-30.
10. Use the included tie-wraps to secure the cables together.

Note

- This helps reduces the amount of electronic noise radiated by the kit.
- Ensure these paired cables run through the same hole(s) as they are routed.

11. Use the 3/8" white cable clamps to secure the cable to the RV.
12. Follow the GP-RVC-MPPT-30 User Manual "Wiring for Parallel Operation" section for wiring the RS-485 ports of the two controllers together and configuring the controllers for parallel operation.

4.6 GP-RVC-R CONTROLLER REMOTE

1. Using location planned for the GP-RVC-R controller remote, follow the GP-RVC-R User Manual regarding installation.
2. Connect the remote to the GP-RVC-MPPT-30 and the GP-RVC-R remote via the supplied cable.

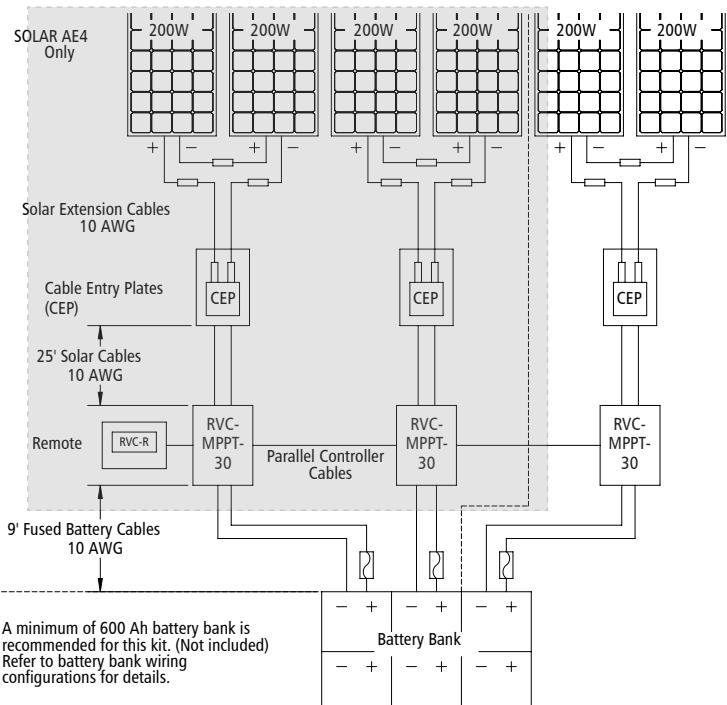


FIGURE 4-F

5. CONNECTIONS

5.1 SOLAR PANELS

1. Before beginning you must securely cover the solar panels with a solid, non-transparent material. We recommend that you use the solar panel shipping boxes.
2. For the **SOLAR-AE6** kit, connect 3 strings of 2 solar panels together in **series**. This means 2 solar panels are to be in series by connecting the positive of one panel to the negative of an adjacent panel. (See Figure 5-A).
3. For the **SOLAR-AE4** kit, connect 2 strings of 2 panels together in **series**. (See Figure 5-A).
4. Recall from the planning section that it may be necessary to use the provided 6' or 10' solar extension cables for this step.

Note Solar panels use polarized SC connectors, meaning the positive connector is different than the negative connector. Each connector has its polarity symbol (+ or -) embossed near the end of the connector. This polarity symbol is relative to the solar panel. To extend a cable, an opposite polarity connector must be used. For example, a negative connector must plug into a positive connector in order to extend it. It is advisable to attach or mark the positive cable in order to avoid confusion during the installation. (See Figure 5-B and Figure 5-C).

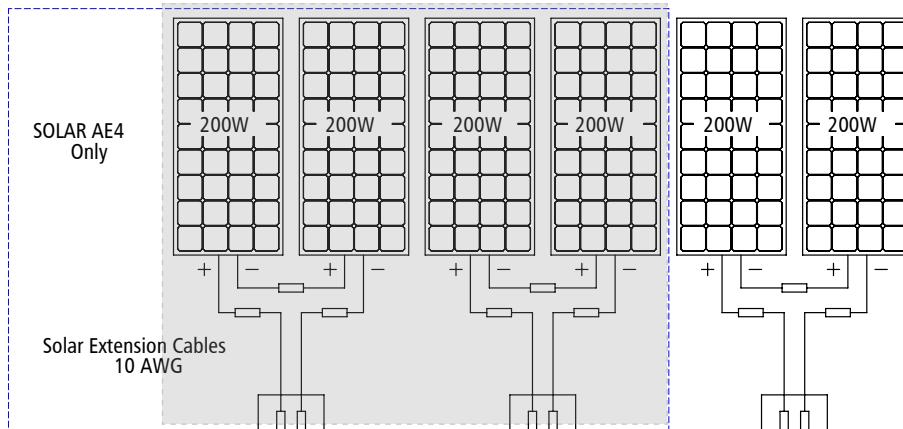


FIGURE 5-A: SOLAR-AE-4 & SOLAR-AE-6

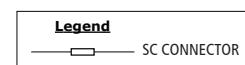


FIGURE 5-B: SC NEGATIVE

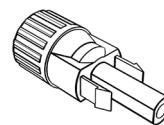


FIGURE 5-C: SC POSITIVE

5.2 CABLE ENTRY PLATE(S)

1. Remove the sealing caps from the ends of the SC connectors in the CEP(s).
2. Connect the positive and negative connectors from one string of solar panels to the CEP. Repeat for each string of solar panels.. (See Figure 5-D).
3. Recall from the planning section that it may be necessary to use the provided 6' or 10' solar extension cables for this step.

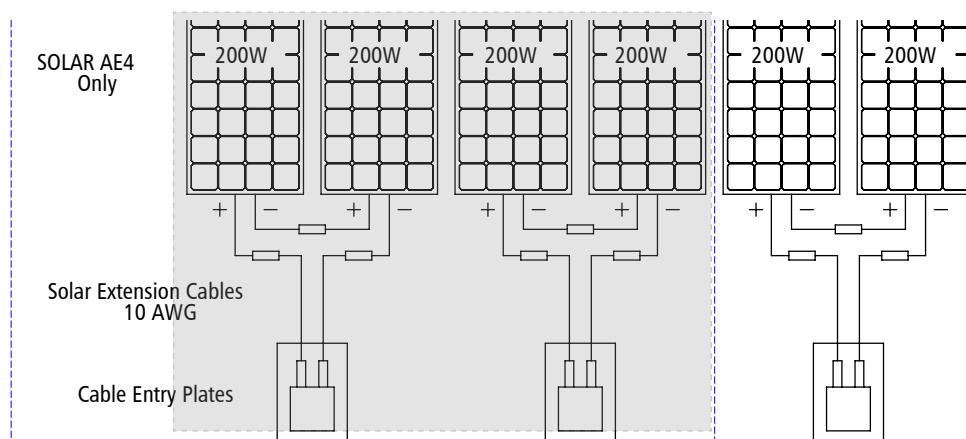


FIGURE 5-D: SOLAR-AE-4 & SOLAR-AE-6

5.3 BATTERY



WARNING Ensure that correct polarity is being observed when making connections to the batteries. Serious damage to equipment could result if these instructions are not followed exactly.

1. Connect the ring terminal of the negative (black) cable from the GP-RVC-MPPT-30 to the battery's negative terminal. Connect the ring terminal of the fused positive (red) cable from the GP-RVC-MPPT-30 to the battery's positive terminal. Tighten according to the battery manufacturer's recommendations.



Note The individual batteries must be connected together before the connection to the GP-RVC-MPPT-30 is made. (See Figure 5-G for typical battery configurations). Go Power! recommends the use of the Go Power! GP-AGM-100-12V or GP-AGM-224-6V batteries with this kit.

2. Repeat Step 1 for each additional set of battery cables and GP-RVC-MPPT-30 controller(s).

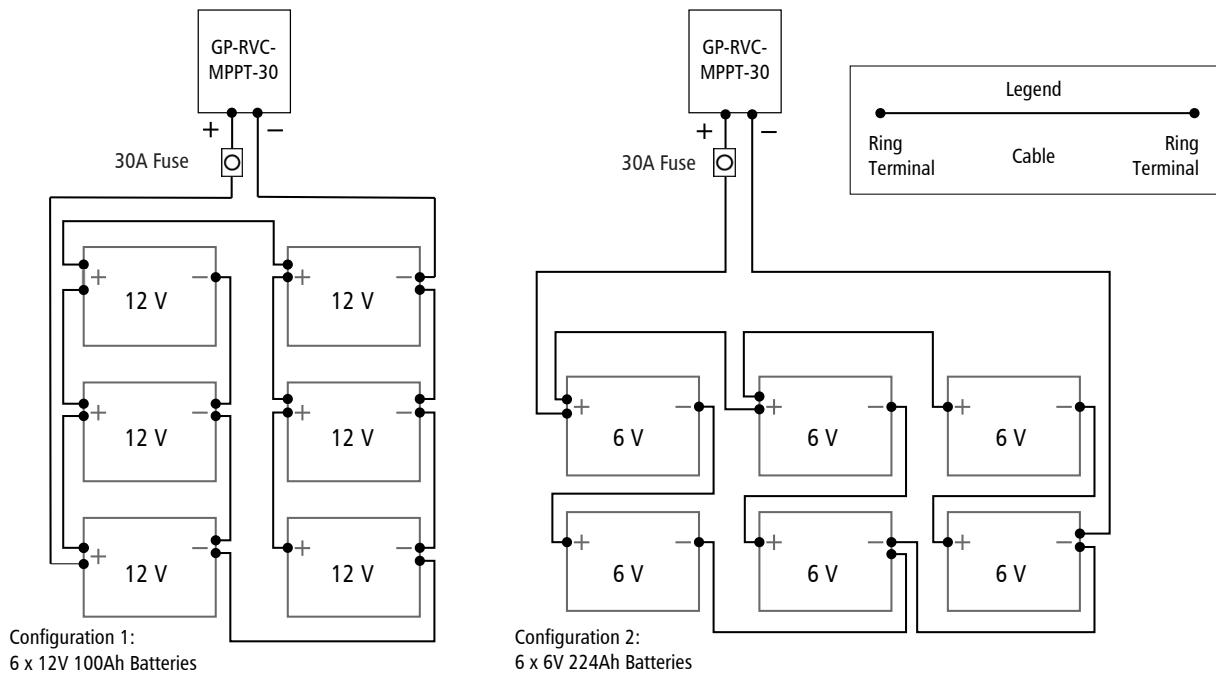


FIGURE 5-G: TYPICAL BATTERY BANK CONFIGURATIONS

6. OPERATING



1. The installation is complete. Remove the opaque material from the solar panels.
2. Switch the Circuit Breaker to the on position.
3. Follow the GP-RVC-MPPT-30 User Manual for setup and operating steps.

7. SPECIFICATIONS

GP-PV-200M Solar Panel Specs

Rated power (Pm)	200W
Maximum power voltage (Vmp)	20.8V
Maximum power current (Imp)	9.6A
Open circuit voltage (Voc)	24.3V
Short circuit current (Isc)	10.09A

GP-RVC-MPPT-30 Specs (Detailed specs available in the solar controller manual)

Maximum Solar Array Current	30A (amperage is reduced above 50 °C)
Maximum Solar Array Power	600/1200W
Maximum Solar Voltage	100 Voc



The Go Power! warranty is valid against defects in materials and workmanship for the specific product warranty period. It is not valid against defects resulting from, but not limited to:

- Misuse and/or abuse, neglect or accident
- Exceeding the unit's design limits
- Improper installation, including, but not limited to, improper environmental protection and improper hook-up
- Acts of God, including lightning, floods, earthquakes, fire, and high winds
- Damage in handling, including damage encountered during shipment

A warranty shall be considered void if the warranted product is in any way opened or altered. The warranty will be void if any eyelet, rivets, or other fasteners used to seal the unit are removed or altered, or if the unit's serial number is in any way removed, altered, replaced, defaced, or rendered illegible.

Warranty Return Procedure

Before contacting Go Power!'s customer service department, please read the "frequently asked questions" section of our website to troubleshoot the problem. If trouble persists:

1. Call your Go Power!™ Technical Support team (1-866-247-6527) or
2. Return defective product to place of purchase

Unless approved by Go Power! management, all product shipped collect to Go Power! will be refused. Test items or items that are not under warranty, or units that are not defective, will be charged a minimum bench charge of (\$50.00 US) plus taxes and shipping. A 15% restocking charge will be applied on goods returned and accepted as "new" stock.

An RMA number (Return Materials Authorization number) from Go Power! Customer Service is required prior to returning any Go Power! Products. Go Power! reserves the right to refuse any items sent to Go Power! without an associated RMA number. To obtain an RMA number, please contact customersupport@gopowersolar.com or Telephone 1-866-247-6527 or Fax 1-866-607-6527 worldwide – or Toll Free for US & Canada 1-866-247-6527.

Out of Warranty

Go Power! electronic products are non-repairable, Go Power! does not perform repairs on its products nor does it contract out those repairs to a third party. Go Power! does not supply schematics or replacement parts for any of its electronic products.

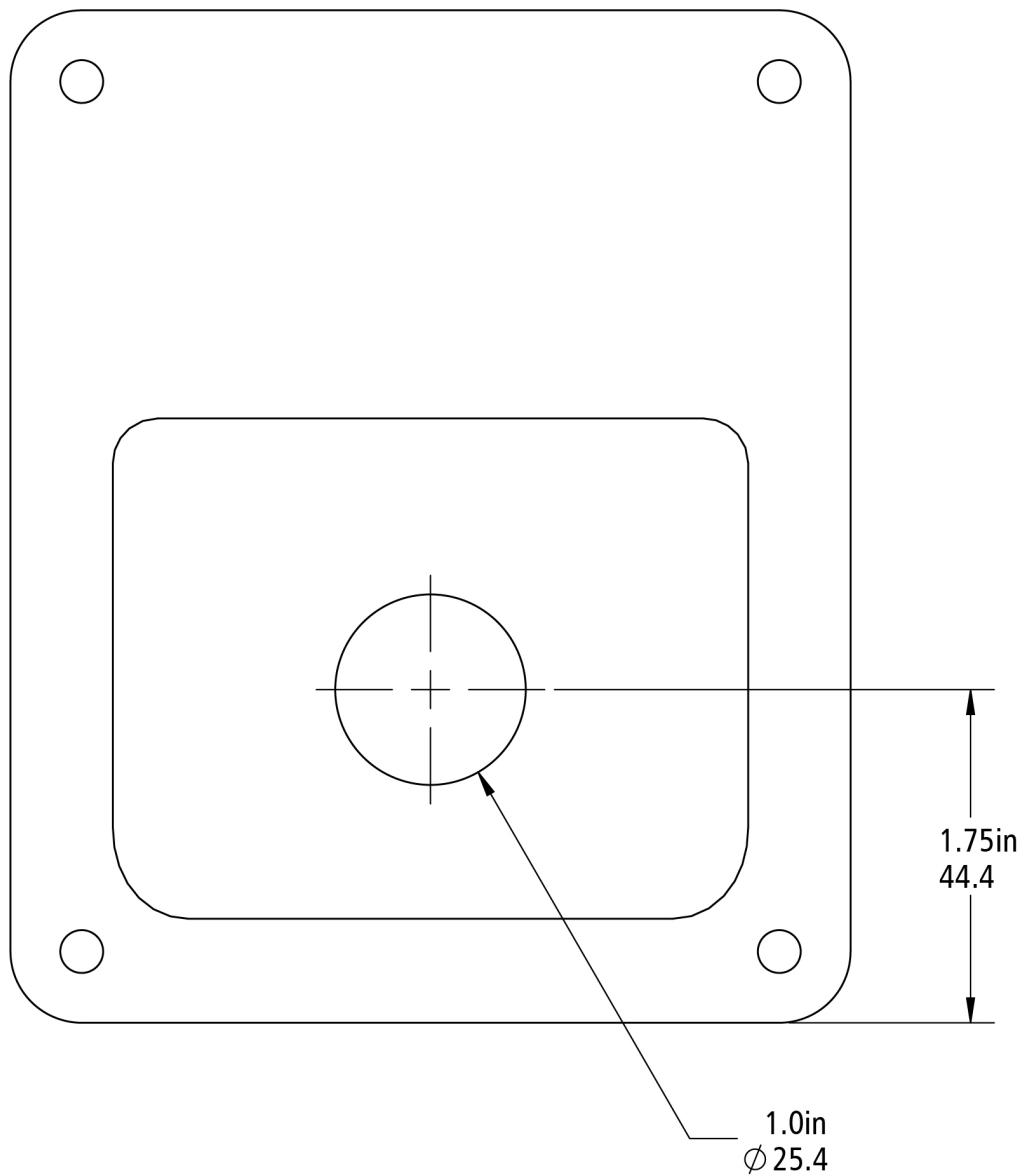


FIGURE 9-A: CEP DRILL TEMPLATE

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Worldwide Technical Support and Product Information gopowersolar.com

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