# Go Power! OEM Install Guide: Solar On Board™

## 1   PLANNING

1. . Plan the layout of the solar panels on the RV rooftop.

**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 solar panel extension cables (can be purchased from Go Power!).
- Select a location where the surface is at least 1/2" thick and strong enough to support the solar panel hardware.
- Solar panels should be located a minimum of 3' from front-facing edge of the RV to reduce the 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.
- Ensure there is enough room to access the panels and other fixed obstacles for future inspection and maintenance.

2. Plan where the location of the Cable Entry Plate (GP-CEP) will be located on the RV roof. Optimal locations are along the center line of the RV towards the curb or road side.

**NOTE**
- Ensure the location is accessible to allow the cables from the solar panels to reach the controller location.
- The distance between the solar panels and battery compartment should be no more than 25-30' - a shorter wire run will lower the voltage drop, which increases the system efficiency.

3. Plan where the solar controller will be mounted inside the RV.

**NOTE**
- Ensure the location of the solar controller will be easily accessible inside the RV.
- Ensure the location will allow access for the cables to run to the battery compartment.

## 2   INSTALLATION

### 2.1   CABLE ENTRY PLATE

**NOTE**
If using the GP-CEP-1 (10" version), the cable will need to be extended to reach the solar controller location. A minimum of 10 AWG cable should be used with a heat-sealed butt splice or other approved connection. The cable must be 90°/105° C minimum, UL/CSA listed cable, positive (+) red and negative (-) black.

1. Mark the location of the CEP cable hole to be drilled for feeding the cables through the RV roof – details on install below. (See Figure 2-A)
2. When the CEP is installed, the hole for the cables should be along its center line and approximately 1.25" from the back edge.
3. Drill a small pilot hole in the chosen spot. Using the hole saw enlarge the hole to be 5/8" or 3/4" in diameter.
4. Remove any sharp edges from the hole.
5. 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.
6. Feed wires down through the hole until they reach the charge controller mounting location.
7. Apply a generous bead of sealant or apply butyl tape to the underside of the CEP following the channel provided as well as around all mounting holes

**NOTE**
- The sealant should expand significantly beyond bottom of the CEP.

8. 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.
9. Finish lowering the CEP on the RV roof and dispense a generous dab of sealant into each mounting hole.
10. Use 6 #12 or #10 stainless steel pan-head screws to secure the CEP to the RV roof, through the sealant and into the roof. (See Figure 2-B)

**NOTE**
- Do not over-tighten screws.

11. Apply a dab of sealant on top of an around the head of each screw and apply another generous bead of sealant around the perimeter of the CEP.
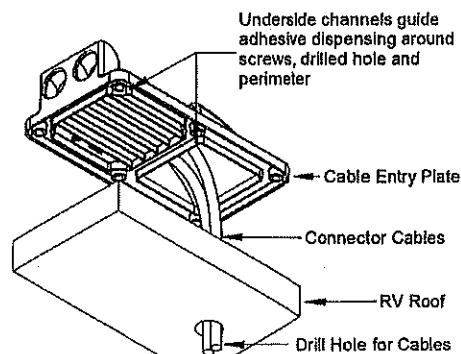


Underside channels guide adhesive dispensing around screws, drilled hole and perimeter

Cable Entry Plate

Connector Cables

RV Roof

Drill Hole for Cables

**FIGURE 2-A**



CEP Mounting Screws

Apply sealant around CEP perimeter and in all screw holes before and after installation

**FIGURE 2-B**

**Go Power!®**

## 2.2 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 can result in burns, whether the panel is connected or disconnected. When panels are connected in parallel currents are additive. 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 installing panels or wiring.**

1. Assemble 4x 'Z-foot' mounting feet onto the solar panel frame using the 1/4" bolts and nuts. This assembly is easily completed on the ground before the panels are brought up to the RV roof. (See Figure 2-C)
2. Tighten the nuts securely using a 7/16" wrench.

⚠️ **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. Failure to do so could cause the panels to be thrown from the RV.**

3. Place solar panel(s) on the roof, using layout from planning step.
4. Test that the solar panel cables can reach both connections on the CEP

**NOTE**
- If installing two solar panels, our MC4 branch connectors may be connected to the CEP at this time. The branch connectors are used for connecting two or more solar panels in parallel. (See Figure 2-D)

5. Apply sealant to the bottom of the solar panel mounting brackets before laying the panel in its final position. (Using the approved sealant for your RV roof type.)
6. Use the #10-16 x 1" screws provided in the kit to secure the 4 solar panel mounting feet to the RV.
7. Apply a generous amount of sealant on top and around each of the 4 'Z-foot' mounting feet to ensure a watertight installation. The 'Z-foot' and all screws should be completely covered with sealant.

**NOTE**
- Use approved sealant for the RV roof type.

8. Connect MC4 positive and negative cables to the CEP. (See Figure 2-E)
9. Secure any loose cables to the RV roof by plant/factory approved method.

**NOTE**
- Solar Flex™ modules are installed in the same way, without the mounting feet. Use the approved adhesive to attach panel to the roof along with 6 #10-16 x 1" pan-head screws (see attached drawing for more information).



Solar Panel Frame
Flange Bolt
Flange Nut
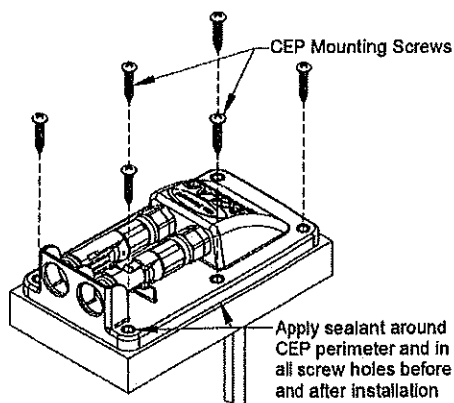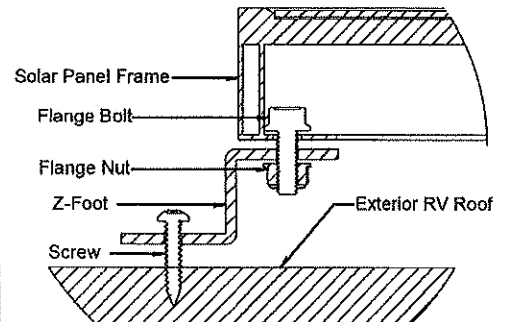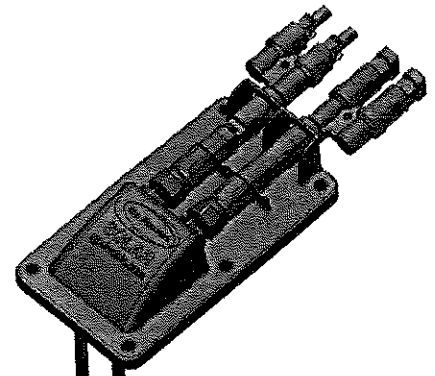Z-Foot
Screw
Exterior RV Roof

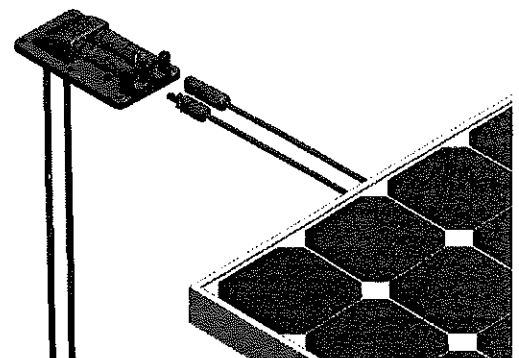FIGURE 2-C



FIGURE 2-D



FIGURE 2-E

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## 2.3 SOLAR CHARGE CONTROLLER

**NOTE**
- An inline fuse or breaker with a rating of 30A is recommended in the positive wire. This fuse or breaker should be placed between the solar charge controller and battery and as close as possible to the battery in a positive connection, in an easy to access location (within 18").

1. The solar controller is designed to be flush mounted. Make an opening in the mounting location using the template included with the solar charge controller manual.
2. Strip the red positive and black negative wires (3/8 of an inch) coming down from the solar panels / CEP.
3. Connect red positive and black negative wires into the center terminals of the solar charge controller and tighten with flat head screw driver. The top center terminal is positive and the bottom center terminal is negative. Torque terminals to 16 in lb.
4. Strip the red positive and black negative wires (3/8 of an inch) that will run to the battery compartment.
5. Connect the red positive and black negative wires into the top terminals of the solar charge controller and tighten with flat head screw driver. The top terminal is positive and the second terminal from the top is negative. Torque terminals to 16 in lb.
6. If a separate, secondary battery such as a starting battery is also going to be charged by solar, repeat step five using the bottom two terminals (only if using our GP-PWM-30 with Dual Bank Battery chording. If going through engine compartment, 125°C cable will be needed.
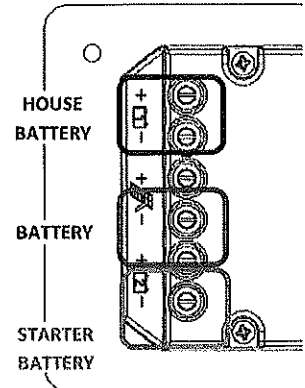
**NOTE**
- Ensure the cables are paired, secured together and run through the same hole as they are routed through to the battery. Both the positive and negative cable should terminate at the battery. This helps to cancel the inductive currents which reduces the amount of electronic noise radiated by the solar charge controller. **Always connect the negative cable to the battery before the positive.**

# 3 PROMOTIONAL MATERIALS

1. Place 'Solar on Board™ decal' on exterior of RV – decal should be placed near side door entrance on outside of RV.
2. Add 'Solar on Board™ hanger card' on kitchen cabinet or similar.

# 4 INSTALLATION DIAGRAMS

SOLAR MODULE WITH GP-MH-4
MOUNTING HARDWARE. WHEN USING
FLEX MODULES THE GP-MH-4 WILL NOT BE
REQUIRED. SEE SECTION (X) FOR
MOUNTING INSTRUCTIONS.

MC4 MALE AND FEMALE
CONNECT TO
CEP MALE AND FEMALE

CEP

CEP OPTIONS:
GP-CEP-1   (10")
GP-CEP-7   (7')
GP-CEP-10  (10')
GP-CEP-25  (25')

APPROVED CONNECTOR MAY BE
REQUIRED TO EXTEND WIRING TO
SOLAR CONTROLLER

GO POWER SOLAR
CONTROLLER

90°/105°C, UL/CSA
LISTED CABLES, #10
AWG MINIMUM

IF RUNNING WIRE THROUGH
ENGINE COMPARTMENT, YOU MUST
USE 125°C, UL/CSA LISTED CABLES,
#10 AWG MINIMUM, RED POSITIVE
AND BLACK NEGATIVE

90°/105°C, UL/CSA
LISTED CABLES, #10
AWG MINIMUM

(IF WIRE NOT IN
ENGINE
COMPARTMENT)

CHARGING
STARTING BATTERY
IS OPTIONAL

30 AMP INLINE FUSE
OR BREAKER
WITHIN 18" OF
BATTERY POSITIVE
(+) CONNECTION

+

STARTING
BATTERY BANK

RED (+)
BLACK (-)

30 AMP INLINE FUSE
OR BREAKER
WITHIN 18" OF
BATTERY POSITIVE
(+) CONNECTION

HOUSE BATTERY BANK

WARNING: DO NOT CONNECT BATTERY
NEGATIVE (-) TO CHASSIS GROUND

FIGURE 4-A (SOLAR ON BOARD WITH DUAL BANK
SOLAR CONTROLLER)

PAN HEAD SCREWS
SIZE: #8 OR #10 OR #12

OPTIONAL APPROVED
SEALANT TO ADHERE
PANEL TO ROOF

OPTIONAL BEAD OF APPROVED
SEALANT AROUND
PERIMETER OF PANEL
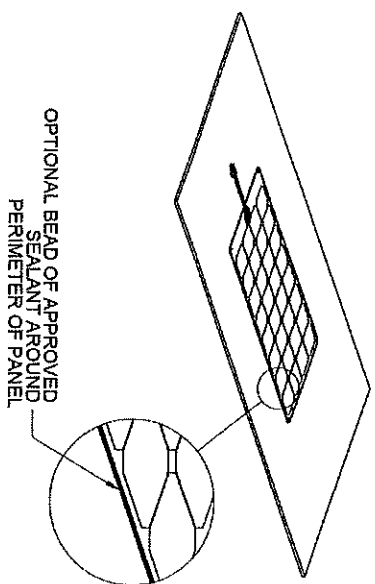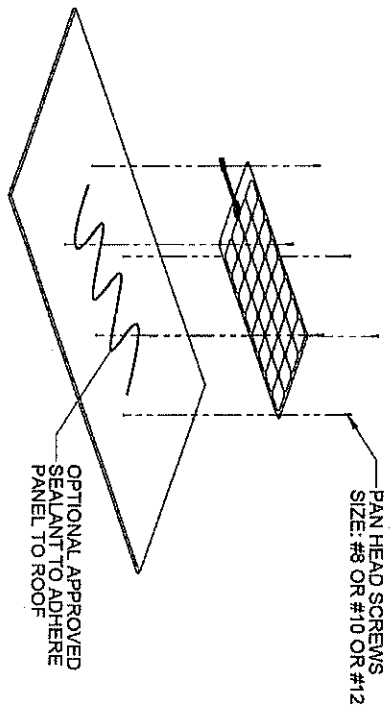
FIGURE 4-C (SOLAR ON BOARD SOLAR FLEX
INSTALLATION)

SOLAR MODULE WITH GP-MH-4
MOUNTING HARDWARE. WHEN USING
FLEX MODULES THE GP-MH-4 WILL NOT BE
REQUIRED. SEE SECTION (X) FOR
MOUNTING INSTRUCTIONS.

BUTT SPLICE WITH HEATSHRINK OR
APPROVED CONNECTOR MAY BE
REQUIRED TO EXTEND WIRING TO
SOLAR CONTROLLER

MC4 MALE AND FEMALE
CONNECT TO
CEP MALE AND FEMALE

CEP

90°/105°C, UL/CSA
LISTED CABLES, #10
AWG MINIMUM

CEP OPTIONS:
GP-CEP-1      (10")
GP-CEP-7      (7')
GP-CEP-10    (10')
GP-CEP-25    (25')

GO POWER SOLAR
CONTROLLER

RED (+)
BLACK (-)

90°/105°C, UL/CSA
LISTED CABLES, #10
AWG MINIMUM

30 AMP INLINE FUSE
OR BREAKER WITHIN
18" OF BATTERY
POSITIVE (+)
CONNECTION

BATTERY BANK

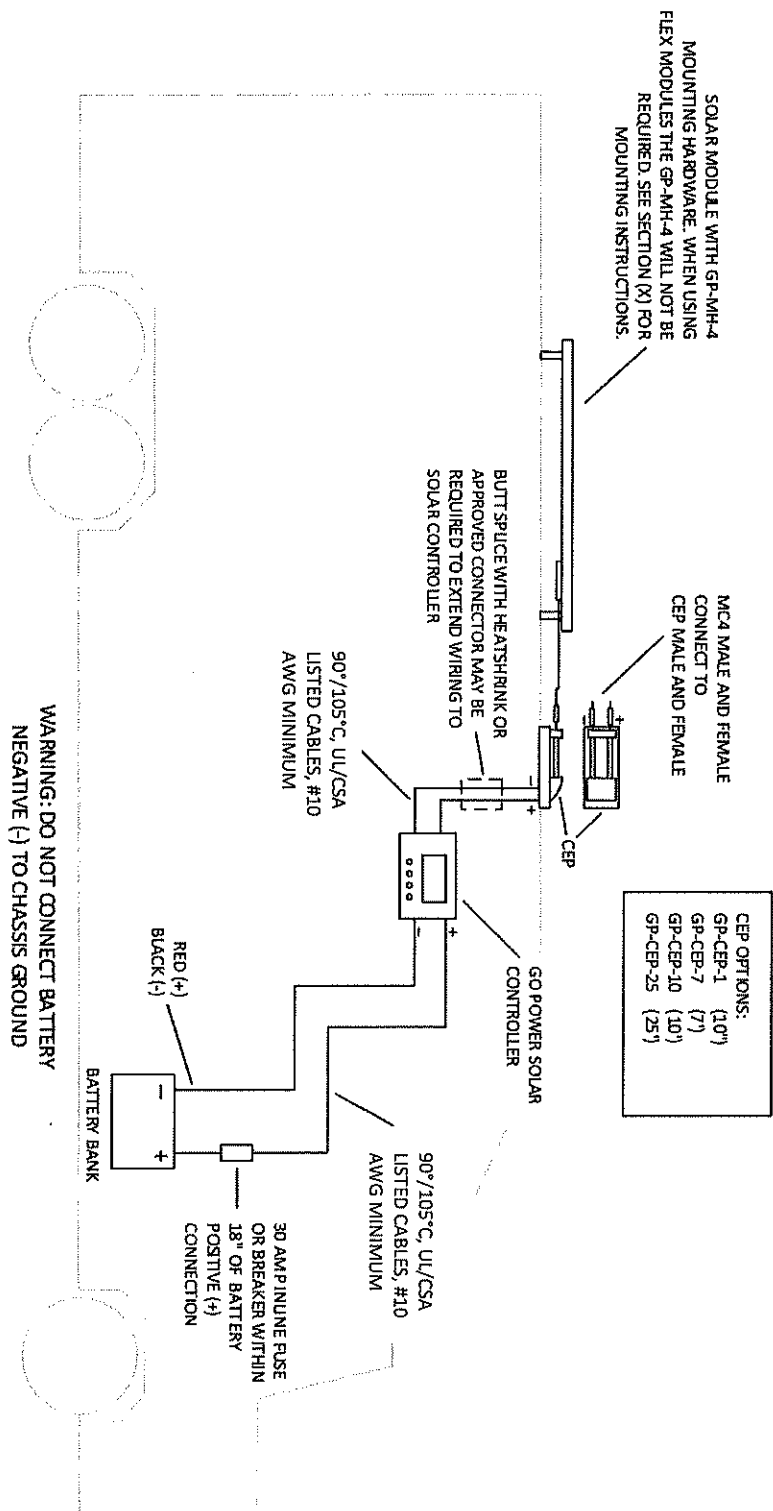WARNING: DO NOT CONNECT BATTERY
NEGATIVE (-) TO CHASSIS GROUND

FIGURE 4-8 (SOLAR ON BOARD WITH SINGLE BANK
SOLAR CONTROLLER)

## IC Series Go Power Lithium Battery Set Up.

Go to Unit Setting and hit enter;

Scroll to Final Charge and hit enter;

Scroll to set to Float and hit enter;

Scroll through unit setting to battery type and hit enter;

Scroll to Custom and hit enter;

Set absorption to 14.3VDC and hit enter;

Set Float to 14.1VDC and hit enter;

Set equalize to 14.1VDC and hit enter;

You are not set for charging Go Power 12 volt lithium batteries.