

SolarPodTM Standalone Installation sequence

There will be one package (or palette) of materials. This palette contains six sections (A1, A2, A3, A4, B1 & B2). A1, A2, A3, A4 are top panel portion and B1 and B2 are bottom portions. One box will contain framing hardware and the other two boxes will contain inverter & charge controller pre-assembled and one battery containing box. All tasks must be performed by qualified individuals familiar and trained in wiring safety and electrical codes.

Framing the Solar panels is the first step as given below. Refer to the installation video for mechanical framing installation. As this is a SolarPodTM Standalone, the electrical installation in the video will not be for the Standalone system. Ensure the solar panels face due south and have no (or minimal) shading to maximize solar potential.

Torque Specifications:

The torque specifications for the fastening of the bolts are:

Mechanical Torque:

Size	Torque
1/4" bolts and smaller	10 to 15 ft. lbs
3/8" bolts	20 to 25 ft. lbs
1/2" bolts	30 to 35 ft. lbs

Electrical Torque (for EM 6622 Ground lugs):

Wire Range, AWG	Wire Type	Torque in-lbs
# 6	Solid	50

The bolt sizes for mounting will be 1/4", 3/8" or 1/2".

Periodic re-inspection of the installation for loose components, loose fasteners and any corrosion, such that if found, the affected components are to be immediately replaced.

Underwriters Laboratories Information:

The ANSI UL2703 certification is valid only when mounted in the manner specified in this instructions. The system is certified for a 30lb/ft2 load rating. This system is Not Fire Rated. Tighten all hardware to the torque specifications in the table above. The Maximum (DC) Series Fuse Rating for each solar module is 15A. The assembled dimensions of the SolarPodTM is given in Figure 1. The UL2703 listing has been evaluated for these dimensions. The middle support panel tilt adjust bar must be 68" and 62" from A4 and A1 as shown in the Figure. The base feet must be between 78" and 60" from the center. The legs cannot be greater than 12" high. The SolarPodTM Grid Tied can be bonded together using a minimum AWG #6 size wire. SolarPodTM Grid Tied has been evaluated to a maximum overcurrent protection device (OCPD) of 15 Amps.

The PV module models that have been evaluated include:

CSA Listed - Canadian Solar - Models:	Trina Solar -UL File E306515, Category Control Number (CCN) QIIA- Models:	
CS6P-250P	TSM-215PD05	TSM-240PD05
CS6P-255P	TSM-220PD05	TSM-245PD05
	TSM-225PD05	TSM-250PD05
	TSM-230PD05	TSM-255PD05
	TSM-235PD05	TSM-260PD05

SolarPodTM Grid Tied may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

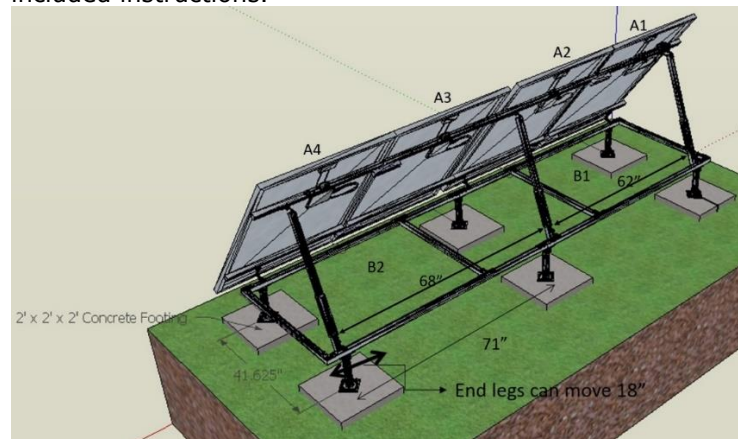


Figure 1: Dimensions of the three back supports and allowable leg offsets.

Periodic re-inspection of the installation for loose components, loose fasteners and any corrosion, such that if found, the affected components are to be immediately replaced.

SolarPod™ Grid Tied on-site assembly instructions:

1. Connect B1 to B2 using the wing brackets on both sides. Use Splice bars supplied. Secure the wing bracket using one, 3/8" bolt, lock washer, flat washer and strut nut torqued to 20ft-lb, per side of the U-Channel Tube. Use Splice bars supplied to attach the rail also, over the top of the wing bracket with 2 bolts per side of the splice. Secure four of the 3/8" bolts, lock washer, flat washer and strut nuts to 20 to 25 ft. lbs torque to bond the splice to the rail. Repeat for opposite site of rail.



A U-Channel at 10" to 12" long can also be used as splice bar.

2. Attach six feet to B1 and B2 to the 90 degree slot in the wing brackets on the six locations. Use one 3/8" bolt, lock washer, flat washer and strut nut to attach the foot to the bracket. Repeat for the 6 mounting legs/feet.

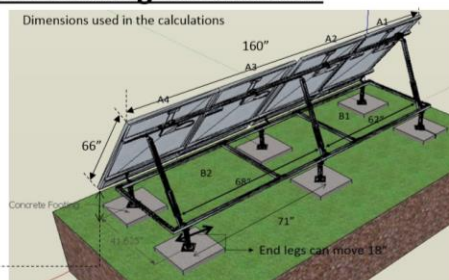


3. The ground is prepared to anchor the SolarPod™. Concrete footing or slab is recommended.

SolarPod™ Wind Loading Calculations

- Assumptions
 - SolarPod™ only.
 - Category C (Open Terrain)
 - Wind direction factor 0.85.
 - Wind speed = 120 mph
 - Category I (Represents no substantial hazard to human life)
 - θ angle for SolarPod™ = 45 degree to horizontal
 - Ground mount.

8" clearance from ground to solar panel



Wind Load Calculation Results

	Dead Load Required to resist Wind uplift	Max Horizontal Reaction
Short Side Reaction	-374 lb	-350 lb
Tall Side Reaction	-1038 lb.	494 lb.

Downward weight required to hold down

	Concrete FOOTING required to resist uplift & horizontal reactions	Concrete SLAB required to resist uplift and horizontal reactions
Short Side Reaction	4.75 cu.ft or 1'x1'x1'	45 cu. ft or 0.5'x15'x6'
Tall Side Reaction	7 cu. ft or 1.5'x1.5'x1.5'	

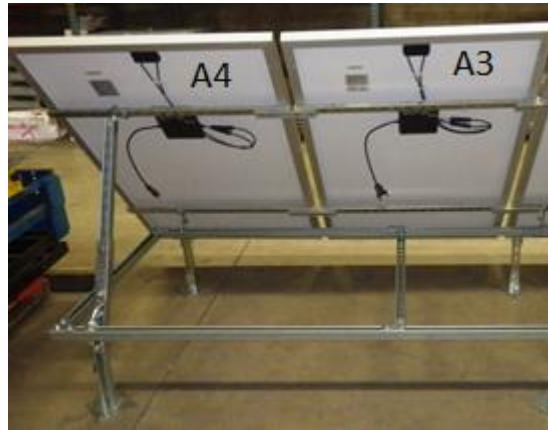
PE Stamped calculations are available upon purchase

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4. The SolarPod™ bottom frame is placed securely on footings (see #3 for details on footings).
5. Join A1 to A2 using the splice bars. Secure four of the 3/8" bolts, lock washer, flat washer and strut nuts to 20 to 25 ft- lbs torque, with two bolts per side of the module support strut. Repeat for lower support strut. A1 can be identified easily by a label on the back side of the solar module.
6. Join A3 and A4 as noted in #5.
7. The A1 & A2 will then be attached to the B1 side of the bottom portion through the hinge nut and square tube. B1 will have a 12GA U Channel tube inserted into the 2" Square Tube that is attached to the Hinge bracket. The U-Channel will be bolted to the 2" Square Tube through one,

3/8" bolt, lock washer, flat washer and strut nut. This will create the tilt of the panels in the system. The Hinge bracket bolt provided (1/2" bolt) will be torqued to 30ft-lbs to create the angle desired for the panel orientation to the sun. (A1&A2 is the panel top half with coil of wire). The upper Module Tube portion of A1 & A2 will be attached to a hinge bracket directly, through a 3/8" bolt, lock washer, flat washer, and strut nut.

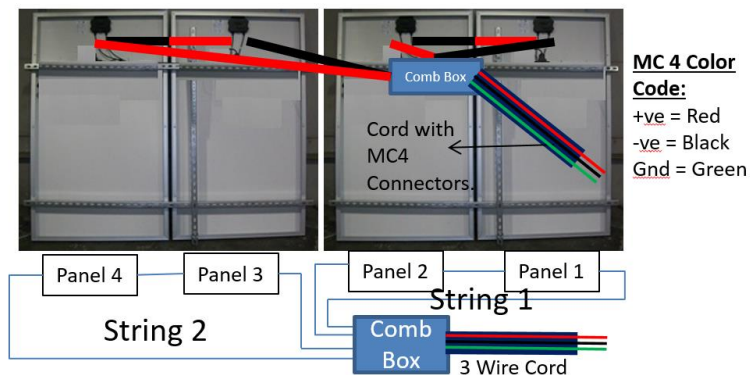


8. The A3 & A4 will then be attached to the B2 side of the bottom as noted in #7 above.
9. Then the "A1 & A2" AND "A3 & A4" will be connected using the splice bar (flat 4 hole plate in the box). There are two splice bars given in the box with hardware. Attach with two, 3/8" bolts, lock washer, flat washer and strut nut on either side of the splice and torque to 20 ft-lb.



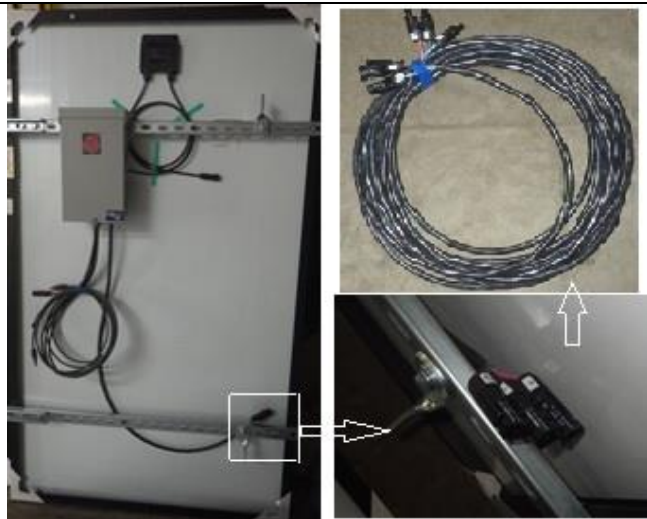
10. Grade 8 "gold" bolts are used to fasten the telescopic legs to the tilt angle.
11. Now the electrical portion begins.
12. On the back of each panel, there will be a +ve and -ve wire. Connect the +ve of one to the -ve of the adjacent. The connections are shown pictorially in the figure below.

Four panel SolarPod™ for Model #1003, #1004 and #1005. String wiring per diagram below:



13. The combiner box will have a three MC4 connector cable that will connect to the extension cable. Insert the connectors as marked with "+" to "+", "-" to "-" and "G" to "G". The +ve is red, the -ve is black and ground is blue. The extension cord is a direct bury cord however, the connectors cannot be buried.

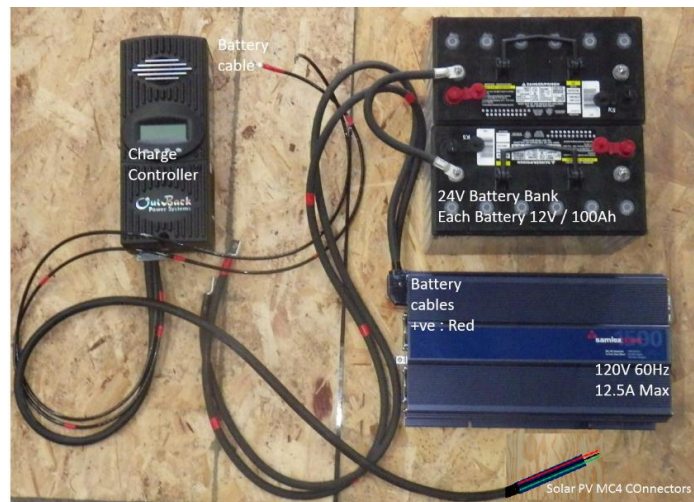
Ways to protect the cord from any physical damage to the cords is the responsibility of the installer.



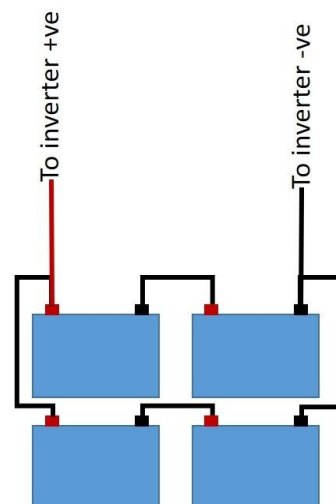
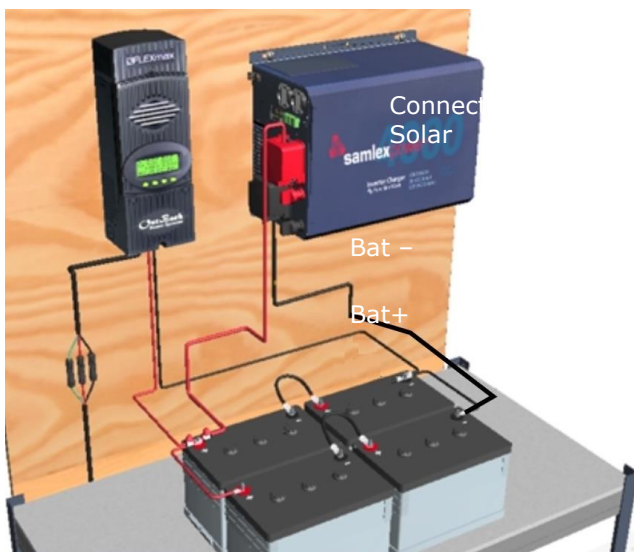
14. Attach the battery unit to the inverter before you connect the Solar panels.

Model #1003:

Please see photo to the right as illustration. Check all connections are secure. The positive wires are marked red. Connect the battery to inverter and then to charge controller. Ensure the charge controller and inverter turns on. The password for the charge controller is 141. Connect the solar PV plugs. Ensure the battery is charged for at least 4 to 6 hrs in full Sun before you start to plug devices. This completes the installation.

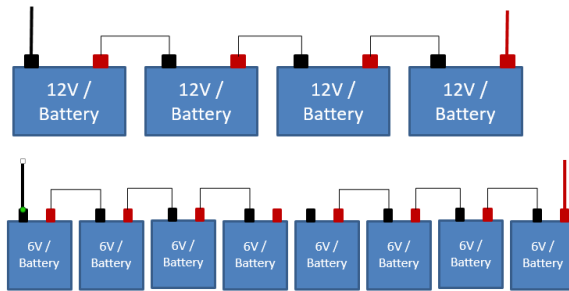


Model #1004:

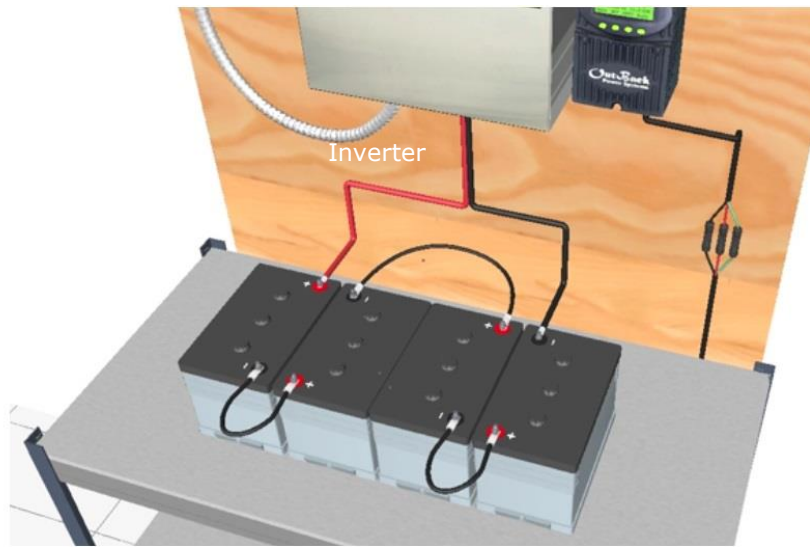


All terminals are labeled and must be torqued to enable good contact with the terminator of the devices.

Model #1005:



48V Battery Bank:
Four 12V batteries
Or
Eight 6V batteries



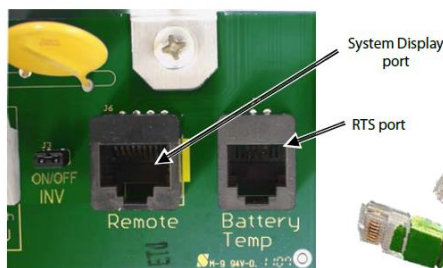
All terminals are labeled and must be torqued to enable good contact with the terminator of the devices.

15. Attach the other end female without weather proof to the inverter with the male twist lock without weather proof boot.

Connect the wires as labelled on the wire. Ensure the bolts are torqued for best contact.

16. Power up sequence:

- a. Ensure all DC breakers in the DC Circuit Breaker Box are off.
- b. If your model is #1005 using the GS 4048 inverter, then open the front cover and look for the "Remote" connector. Connect the "Mate" to "Remote" using the cable provided with the Mate. The Mate does not come in a standard order.



The Mate is monitoring and needs to be separately ordered.

- c. Turn on the Charge Controller to PV.
- d. Turn on the Charge Controller to Battery Circuit Breaker.
- e. Program the charge controller. Charge Controller Password is "141".
 - i. Language – English
 - ii. Nominal System Voltage : Model #1004 – 12V ; Model 1005 – 48V
- f. Turn on the Inverter:
 - i. Model #1005: Turn on the toggle Switch.
 - ii. If Mate is present: On the Mate press the inverter button (top left). Then turn the inverter "ON".

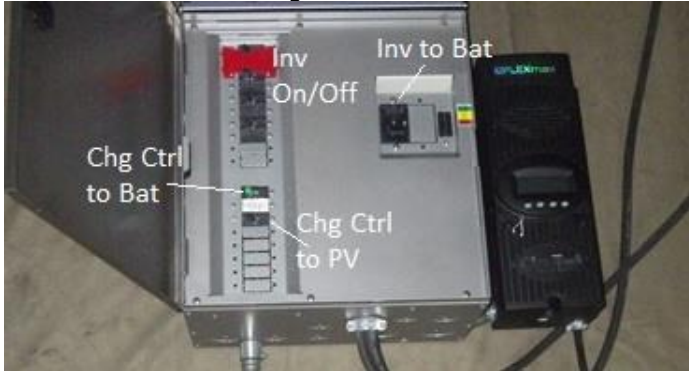
- g. Turn on the PV Array by connecting the twist lock plugs.
 - i. Check charging status. Must indicate charging if enough Sun light present.
 - ii. Verify in the inverter there is 120V output between L1 and Neutral.
 - iii. Program float and absorption voltages for the DTM31 battery on the charge controller as follows:

Model	Float voltage	Absorption Voltage
1003	27V	28.2
1004	13.5V	14.1
1005	54V	56.4V

17. Run #6 ground wire through ground lug provided inside the DC Breaker Box and use a ground rod appropriately distanced to ground the SolarPod™ Standalone.

Model #1003 does not have a DC Breaker box. Run a ground wire (AWG #6) between the charge controller and inverter ground.

Model #1004 & 1005 have DC breaker boxes. The DC Breaker Box has a ground bar. The ground bar must be wired to a ground rod.



Ground bar must be wired with AWG #6 or larger wire to a code compliant ground rod.

18. Ensure the solar panels are facing due south and have no shading.
19. Allow some time to let the battery charge (about 1 or 2 days; may depend on weather & Sun exposure).
20. Read the manuals for the charge controller and inverter and get familiar with them.
 - Model 1003: The outlets in the inverter can take only 120VAC and a maximum of 12A. The inverter is a pure sine wave inverter.
 - Model 1004: The outlets in the inverter can take only 120VAC and a maximum of 17A. The inverter is a pure sine wave inverter.
 - Model 1005: The outlets in the inverter can take only 120VAC / 240VAC and a maximum of 34A. The inverter is a pure sine wave inverter.
21. The warranties are from the manufacturers of the charge controller, inverter & solar panel warranties.
22. Ground fault protection :
 - a. Model #1003: The Samlex inverter has a ground fault detection. Connect the ground from the charge controller to the Samlex inverter through a minimum #6 wire.
 - b. Model #1004, & 1005: The Charge controller to battery and the inverter to battery are connected through a GFDI breaker.
23. System Voltage:
 - a. Model #1003: 24V DC system. 12V batteries have to be hooked in series to get 24V.
 - b. Model #1004: 12V DC system. 12V batteries have to be hooked in parallel & not in series.
 - c. Model #1005: 48V DC system. 12V batteries have to be hooked in series to get 48V.
24. You are now making SolarPod™ power. Enjoy the system. It is suggested that if you are using the AC load intermittently to shut off the inverter breaker (Inverter to Battery Breaker in the DC Breaker Box) while keeping the other two breakers on. This helps to reduce draining of the battery when AC loads are not in use.