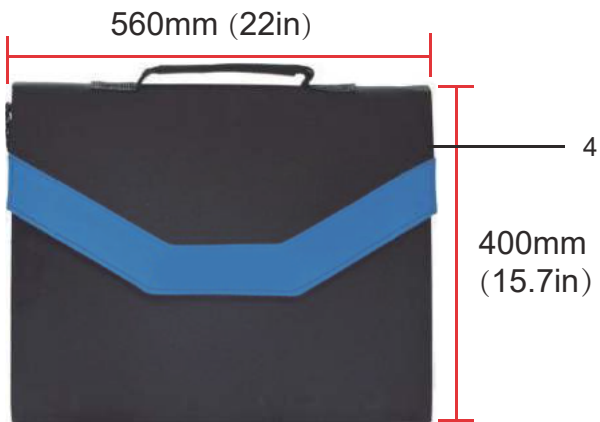
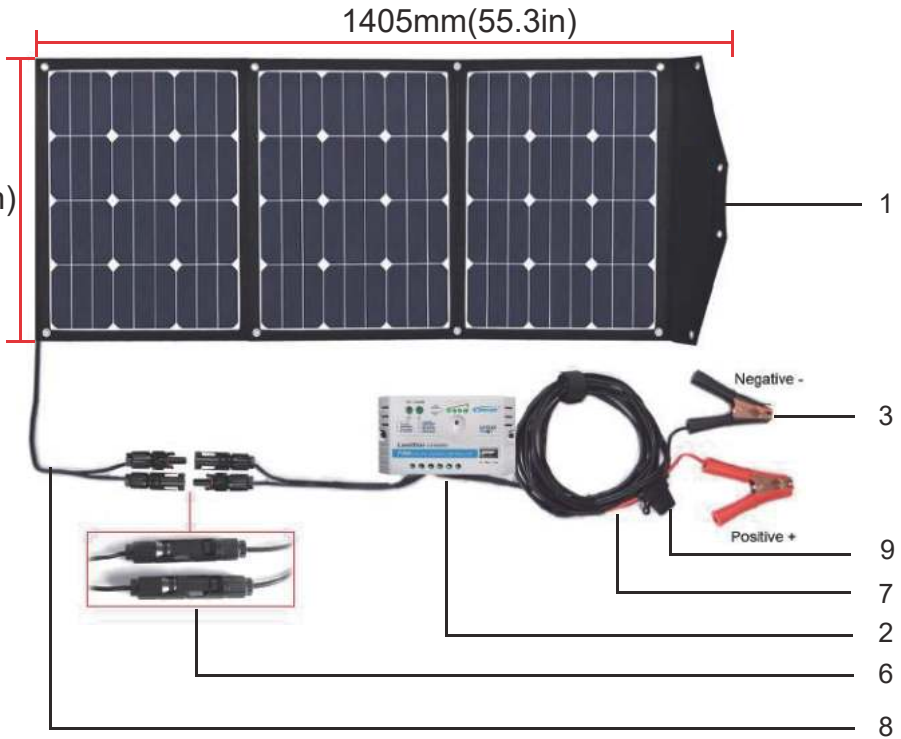


Product Introduction



Power Your Green Life!

Items	
1	3 x 35Watts Solar Panel
2	10A Charge Controller
3	Alligator clips
4	Suitcase with handle and pocket
5	Stands
6	MC4 Connectors (two pairs, removable)
7	Cable 14AWG 15ft
8	Cable 14AWG 3ft
9	Fuse

Introduction

This portable solar panel comes with a pre-installed charge controller. This charge controller protects battery against unsafe electrical conditions and must be used to charge 12V batteries. To charge solar generators with a built-in charge controller, simply use the MC4 cables provided and plug them into the cables that came with your power station to charge. A 12V battery and solar generator can be charged at the same time.

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Features

- Max 105 watts solar panel
- 10A PWM charge controller with USB output
- Portable
- Removable MC4 Connectors
- Charge 12V battery by alligator clamps- Sealed, Flooded, GEL, AGM, Lithium and other deep cycle batteries
- Charge 12V solar generator by MC4 adapter- battery with inverter, power bank/station with built-in charge controller. POWERECO solar generator 400Wh recommended
- Can be used on its own or as part of a larger solar system
- Extendable with MC4 Connectors

User's guide

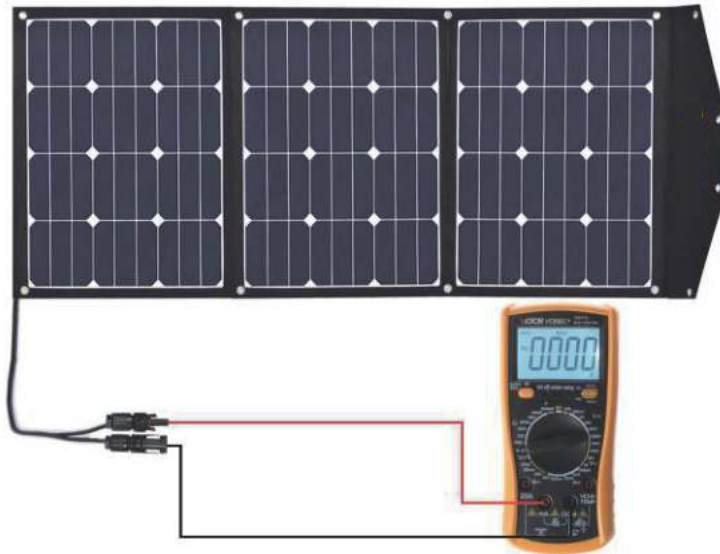
After receiving the solar panel kit, please check if all accessories are included in the package and prepare to test your kit:

1. Locate a sunlit area clear from hanging branches or obstacles.
2. Unfold the solar panels and face the front towards the sun.

Tip: To obtain the maximum output power of solar modules, it is recommended to adjust the solar modules based on solar trajectory.

How to test the solar panel

Method 1: use a multi-meter



Set your multi-meter to measure DC voltage and put the red probe on the red MC4 cable and the black probe on the black MC4 cable (this is the solar panel's direct output), make sure the connections are secure. the open-circuit voltage should be displayed on your multi-meter and it should be around 17.6V-23V.

If you're not getting something within that range or close to those numbers, you should check and make sure the solar panel is in direct sunlight and that the connections between the MC4 cables and the multi-meter is secure.

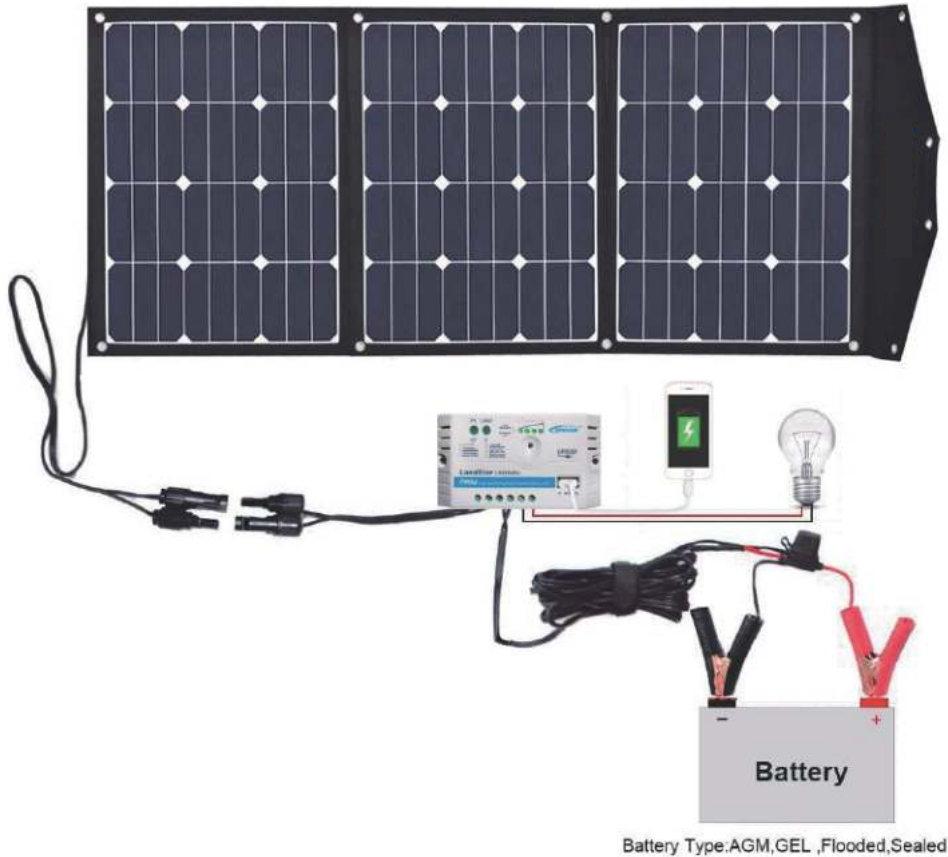
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Method 2: use your solar generator

To test if the solar panel is working with a solar generator with a built-in charge controller, connect the MC4 adapters that came with your solar generator and plug it in to the MC4 cables of the solar panel directly (Bypassing the charge controller). Turn your solar generator on and it should start charging from the solar panel.

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How to test if the charge controller is working



Step 1: Clamp the red battery clip to positive, black to negative and make sure the connection is secure. Make sure the solar panel MC4 cables are connected to the MC4 cables of the charge controller.

Step 2: When all the connections are complete, the charging status indicator should light up if the solar is under direct sunlight AND the battery is connected to the charge controller.

(Detailed information under Specifications section)

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Tip: The charge controller and the USB port will not respond unless it is connected to a battery!
Always connect the battery first, then load (if applicable) and then the solar panel.

For lights explanation, please check the Specifications section.

What are you going to use it for

1. Charge solar generators

1.1. Charge 12V Solar Generator with built-in Charge Controller



Step 1: understand your solar generator and prepare the MC4 adapter for your solar generator



Step 2: Disconnect MC4 Connectors and let it to be a solar panel with MC4 connectors

Step 3: Use your MC4 Adapter to charge your solar generator

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2. Charge your 12 Volt battery



The solar panel kit is designed to charge a large range of batteries including Sealed, Flooded, GEL, AGM, Lithium, lead-acid battery and other deep cycle battery. The batteries are used as car battery, RV battery, boat battery and emergency back-up battery.

Step 1: understand your battery: battery type, capacity and voltage

Step 2: check the charge controller's set up. We have defaulted the setting of the charge controller is for SEALED. (AGM is also included in SEALED type.) If your battery's type is different, please set your battery type with the charge controller following the instructions below.

The battery type setting method (on charge controller)

Press and hold the program button for more than 5 seconds, the battery indicator LED1, LED2, LED3 will flash accordingly. Press the button again to set up the exact battery type, after the selection, wait 5 seconds, no flashing lights means battery setting is completed, the specific content of the following table indicates

LED1	LED2	LED3	Battery Type
○	✘	✘	Sealed Lead Acid Battery (Sealed)
○	○	✘	Colloidal lead-acid batteries(Gel)
○	○	○	Opening lead-acid batteries(Flooded)

Note: "o" means lights on "x" means lights off

The load switch setting method:

When the controller is on (battery connected), press the Set button to control load output. Use this button to turn the load ON or OFF.

Tip: The USB port will only output when the Load is set to ON.

3. Join your current solar system by Parallel or Series Circuit

Step 1: Disconnect MC4 Connectors from the charge controller

Step 2: Connect panel with your current system with MC4 connectors. More connectors and extension cables may be needed.

Specifications

105W Foldable solar panel

Module Type	Module Size		N.M	Specification				
	Folded size	Unfolded size		Max Power	Open Power Voltage	Max-power Current	Open-Circuit Voltage	Short-Circuit Current
W	mm	mm	Kg	W	V	A	V	A
3×35W	560×400×20	1405×560×4	3.6 (7.9 lb)	105	18	5.8	21	6.1
	22×15.7×0.8(inches)	55.3×22×0.2(inches)						

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Charge Controller

This solar panel module comes with a 10A solar charge controller which will look like the one shown below. (colors may vary)

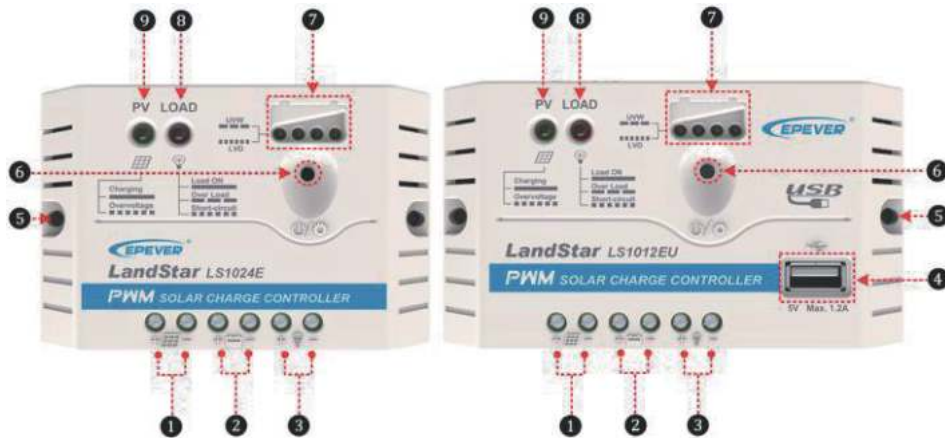


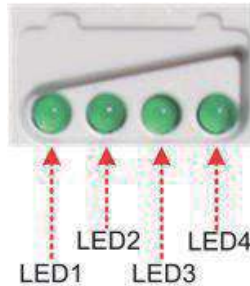
Figure 1 Product Feature

①	PV Terminals	⑥	Load Switch Button
②	Battery Terminals	⑦	Battery status LED indicator
③	Load Terminals	⑧	Load status LED indicator
④	USB output interface (LS E series only)	⑨	Charging status LED indicator
⑤	Mounting Hole Ø4.5		

Charging and load status indicator

Indicator	Color	Status	Instruction
Charging status LED indicator	Green	On Solid	In Charging
	Green	OFF	No Charging
	Green	Fast Flashing	Battery Over Voltage
Load status LED indicator	Green	On Solid	Load ON
	Green	OFF	Load OFF
	Green	Slowly Flashing	Load over load
	Green	Fast Flashing	Load short circuit

Battery status indicator



LED1	LED2	LED3	LED4	Battery Status
Slowly Flashing	×	×	×	Under voltage
Fast Flashing	×	×	×	Over discharge
Battery LED indicator status during voltage is up				
○	○	×	×	$12.8V < U_{bat} < 13.4V$
○	○	○	×	$13.4V < U_{bat} < 14.1V$
○	○	○	○	$14.1V < U_{bat}$
Battery LED indicator status during voltage is down				
○	○	○	×	$12.8V < U_{bat} < 13.4V$
○	○	×	×	$12.4V < U_{bat} < 12.8V$
○	×	×	×	$U_{bat} < 12.4V$

Troubleshooting

Faults	Possible reasons	Troubleshooting
LED Charging indicator turn off during daytime when sunshine falls on PV modules properly	PV array disconnection	Confirm that PV and battery wire connections are correct and tight
No LED indicator	Battery voltage maybe less than 8V	Measure battery voltage with the multi-meter. Min.8V can start up the controller
Charging status LED indicator Fast flashing	Battery Over Voltage	Check if battery voltage is higher than OVD, and disconnect the PV
LED1 Fast flashing	Battery over discharged	When the battery voltage is restored to or above LVR point (low voltage reconnect voltage), the load will recover
Load status LED indicator slowly flashing	Load over load ^①	①Please reduce the number of electric equipments. ②Press the button or repower the controller.
Load status LED indicator fast flashing	Load short circuit	①Check carefully loads connection, clear the fault. ②Press the button or repower the controller.

①When load current reaches 1.25 times, 1.5 times and 2 times more than nominal value, the controller will automatically turn off loads in 60s, 5s and 1s respectively.

Frequently Asked Questions(FAQ)

POWERECO is always open to customers with technical support, if you have any issues, please feel free to contact POWERECO by email at Team@powereco.com

Here we collected some frequently asked questions for reference:

Q: What kind of battery can be charged by these solar modules

A: 1. sealed lead-acid battery (Sealed) 2. colloidal lead-acid battery (Gel) 3. the opening lead-acid batteries (Flooded)

Q: How to clean the solar panel surface?

A: When dust and dirt cover the surface of solar module, it can be cleaned with a soft brush, then use a damp cloth to wipe the surface to remove the remaining dust and dirt. Anything that covers the solar cells should be removed as soon as possible so as not to affect performance.

Q: Are the foldable solar modules are waterproof?

A: Because the system contains sophisticated electronic components, please prevent water from contacting the module during use.

Q: How can I get my battery's information?

A: To get your battery's information, please contact your battery's manufacturer or check your battery label.

Q: Is the charge controller waterproof, what is IP rate for that?

A: No, the charge controller is not waterproof.

Q: Can I use an extension cables in the system?

A: Yes, any extension cable with MC4 connectors can be used before the solar charge controller. POWERECO has 20ft 14AWG extension cables.

Q: How do I get the MC4 Adapter for my solar generator?

A: Please contact your solar generator's seller or manufacturer to get a MC4 adapter. The MC4 is a solar industrial universal connector. If your solar generator's supplier does not provide it, please contact POWERECO to get it customized.

Q: It worked for my car battery and it does not charge my solar generator.

A: Please check your solar generator's connection and voltage. Some generators in the market are designed to be unique like 24V battery. Most solar generators in the market is 12V. Please contact your solar generator's supplier for the voltage confirmation.

Q: My battery is two 6V batteries in series, can I use this kit?

A: Yes. Two 6V batteries in series is considered a 12 Volts battery.

Q: My battery is AGM, which battery setting shall I use?

A: Please use SEALED, which is default setting.

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Q: My battery is lithium battery, which battery setting shall I use?

A: please use FLOODED.

Q: will the system discharge my battery after sunset?

A: No. The charge controller avoids discharging from battery.

Q: Can I use my own controller, or can I use MPPT charge controller?

A: Yes, if you would like to do so, please remove the charge controller and use the solar panel with MC4 connectors to connect your own controller.

Q: I connect the kit with my battery with red clamp to Positive and black clamp to Negative, why the lights of charge controller are not on?

A: we suggest charging your car battery for the kit's test. And then test your solar panel's open circuit voltage and battery's voltage. If the solar panel open circuit voltage is good and the battery's voltage is lower than rechargeable voltage, the battery should be recharged some other way or replaced before charging with the solar panel.

Q: Can I use the solar panel to jumpstart a drained battery?

A: No, the drain car battery has lower voltage than what the kit could recharge. Therefore, please jump start the battery and make sure the battery is high enough, then charge it by the solar panel.

Q: Can I use the solar panel to avoid my battery drain?

A: Yes.

Q: My RV has a Zamp solar plug or other types of plugs, how do I use this solar panel kit?

A: You will need to refer to the RV user manual and find out what kind of adapter you may need. Most adapters are sold on Amazon. Please contact team@powereco.com if you can't find what you need.

Q: The solar panel kit has the correct voltage reading but it won't charge my generator.

A: Please check the voltage rating of your generator, it might be rated at 24V and this solar panel kit is only for charging 12V batteries. Another possibility is that the generator is already fully charged.

Safety Tips

- Before using the product, read all safety precautions.
- If the product is abnormal or damaged, do not use.
- Do not allow water to enter the controller
- Prevent sharp objects from impacting the surface of solar modules
- Ensure proper battery clip connection to prevent short circuits.
- No user license serviceable parts inside. Do not disassemble or attempt to repair it.
- Do not touch the exposed electrical conductor of battery.

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Warranty

Limited Product Warranty-One Years Repair,Replacement and refund Remedy, but fuse excluded

The solar panel itself comes with an 18-months workmanship warranty and a 25-year 85% output warranty.

Within 30 days of purchase: Items can be returned for a full refund or replacement, we will cover return shipping due to quality issues, buyer pays return shipping and replacement shipping due to non-quality issues.

Within 30 days to 6 months: Items can be replaced new or refurbished due to quality issues, we will cover return shipping. Items can be replaced with a restocking fee due to non-quality issues, buyer pays for all shipping.

Within 6 months to 18 months: Items can be replaced refurbished due to quality issues, buyer pays for all shipping.

Accessories:

Within 30 days of purchase: Items can be returned for a full refund or replacement, we will cover return shipping due to quality issues, buyer pays return shipping and replacement shipping due to non-quality issues.

Within 30 days to 6 months: Items can be replaced new or refurbished due to quality issues, we will cover return shipping. Items can be replaced with a restocking fee due to non-quality issues, buyer pays for all shipping.

Within 6 months to 18 months: Items can be replaced refurbished due to quality issues, buyer pays for all shipping.

Charge Controller:

The controller itself comes with a 1-year warranty.

Within 30 days of purchase: Items can be returned for a full refund or replacement, we will cover return shipping due to quality issues, buyer pays return shipping and replacement shipping due to non-quality issues.

Within 30 days to 6 months: Items can be replaced new or refurbished due to quality issues, we will cover return shipping. Items can be replaced with a restocking fee due to non-quality issues, buyer pays for all shipping.

Within 6 months to 1 year: Items can be replaced refurbished due to quality issues, buyer pays for all shipping.

Seller shall not be responsible or liable in any way to the customer or any third-party arising from any non-performance or delay in performance of any terms and conditions of sale, including this "Limited Warranty for PV Modules", due to acts of God, war, riots, strikes, warlike conditions, plague or other epidemics, fire, flood, or any other similar cause or circumstance beyond reasonable control. such cases, this Limited Warranty shall be suspended without liability for the period of delay reasonably attributable to such causes.

Register your warranty with POWERECO, please visit: <https://www.powereco.com>

Thank you for your business and support!

POWERECO Team

technical support: team@powereco.com
www.powereco.com

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