345mm
(13.6 in)

30m
(1.2 in)

645mm
(25.4 in)

12

13

6
5
3
2
1
7
14a + − 14b
14
4
11
8
10
9
9a +
9b −

Accessories:

1. Handle	9a. Red Positive Battery Clip
2. Latches	9b. Black Negative Battery Clip
3. Aluminum frame	10. Anderson Plug
4. Aluminum support legs	11. Fuse
5. Solar charge controller	12. Handy carry bag
6. Junction box	13. Corner protector
7. Label	14. MC4 cables
8. Cable	14a. Red Positive MC4 Cable
9. Battery Clips	14b. Black Negative MC4 Cable

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.

Features

- Max 60 watts solar panel
- 10A PWM charge controller
- 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. ACOPOWER solar generator 150wh and 220wh recommended
- Can be used on its own or as part of a larger solar system
- Extendable with MC4 Connectors
- Can be connected with one additional solar panel to form a bigger system (additional adapter needed, please contact us for details)
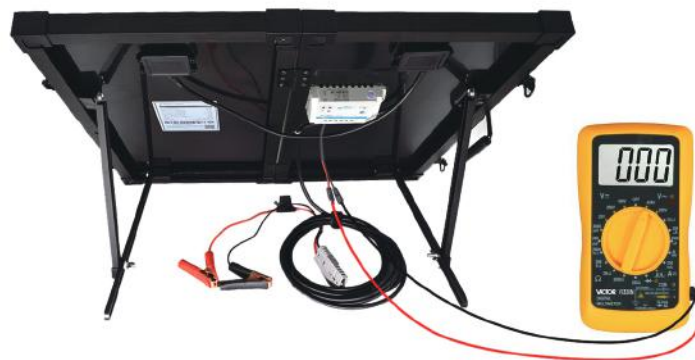
User's guide

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. Unclip the two latches (2, Table 1) on the side of the unit and fold two panels outward. Extend the two support legs (4, Table 1) to desired length and lock the stands in position. Set solar panel kit in the position facing 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 multimeter

Set your multi-meter to measure DC voltage and put the red probe on the red positive MC4 cable (14a, Table 1) and the black probe on the black MC4 cable (14b, Table 1) and 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. This is your solar panel's voltage without going through the charge controller.

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.
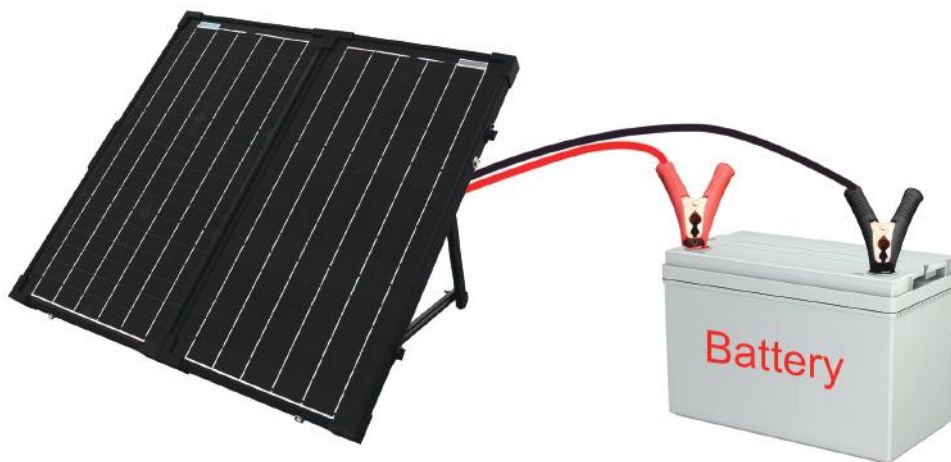
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Method 2: Use your solar generator

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 (14a and 14b, Table 1). Turn your solar generator on and it should start charging from the solar panel.

How to test if the charge controller is working

Choose: GEL、Flooded、Sealed

When testing the charge controller, please make sure a battery in working condition is used. The charge controller will not power on with a bad battery. A good thing to do is to test with your 12 V car battery.

Step 1: Clamp the red positive battery clip (9a, Table1) to the positive terminal of 12V battery, black negative battery clip (9b, Table 1) to the negative terminal and make sure the connection is secure.

Step 2: When all the connections are complete, the Battery status indicator (9, Figure 1) should light up if the battery is connected to the charge controller. If the solar panel is under direct sunlight, the charging status indicator (10, Figure 1) will be on as well. (Detailed information under Specifications section)

Tip: The charge controller will not respond unless it is connected to a battery! Always connect the battery first, then load (if applicable).
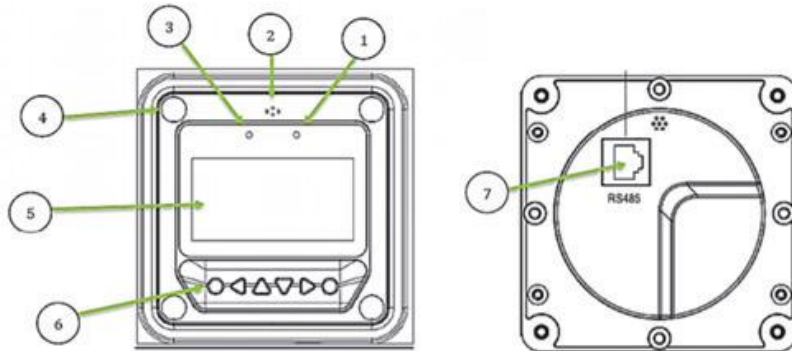
For lights explanation, please check the Specifications section.

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How to change the battery type?   Tip:MT-50 remote meter needs to be purchased separately

To change the battery type to something other than sealed(default), a MT-50 remote meter is needed. For a more detailed guide, follow the user manual for the MT-50 remote meter. Below will be a simple explanation on how to change the battery type.
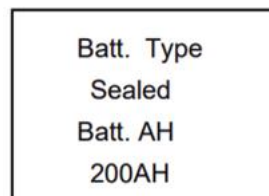
Parts:

1.	Communication Indicator
2.	Alarm Sound port
3.	Warning Indicator
4.	4 X Mounting Holes
5.	Display Screen
6.	Navigation Buttons
7.	RS485 Port

1. Connect the MT-50 to the charge controller with the RS485 cable. After an initial welcome screen and device info screen. A similar screen will be shown with your own parameters:

2. Press "ESC" to access the main menu, use the up and down keys to move through menu.
3. Press the down arrow until you reach "4. Control Parameters" the screen should look like below

Batt. Type
Sealed
Batt. AH
200AH

4. Once battery type is highlighted, press the up or down arrow to select batter type, press "ok" and confirm to save battery type. Please refer to the table for all customizable parameters:

Control parameters table

Parameters	Default	Range
Battery type	Sealed	Sealed/Gel/Flooded/User
Battery Ah	200Ah	1~9999Ah
Temperature compensation	-3mv/℃/12V	0~-9mv
Raled voltage	Auto	Auto/12V/24V/36V/48V

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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

2. Charge your 12 Volt battery

Battery   **Lead-acid Battery**   **Lithium**

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.

3. Connect in parallel with another solar panel to charge a 12V battery faster

When you combine two solar panels in parallel, the current from the two solar panels are added together and this will enable the battery to charge faster. For more information about adapters needed, please contact us.

Warning: Make sure the combined current is lower than the rated current of the charge controller which is 10 amps for this model.

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Specifications

60w solar panel

Type	Module Size	N.W	Specification				
			Max-Power	Max-Power Voltage	Max-power Current	Open-Circuit Voltage	Short-circuit Current
Module	mm	Kg	W	V	A	V	A
2*30w	645*345*30 (25.4*13.6*1.2in)	9.6 (21.2 lb)	2*30	17.8	2*1.69	22.3	2*1.82

Charge Controller

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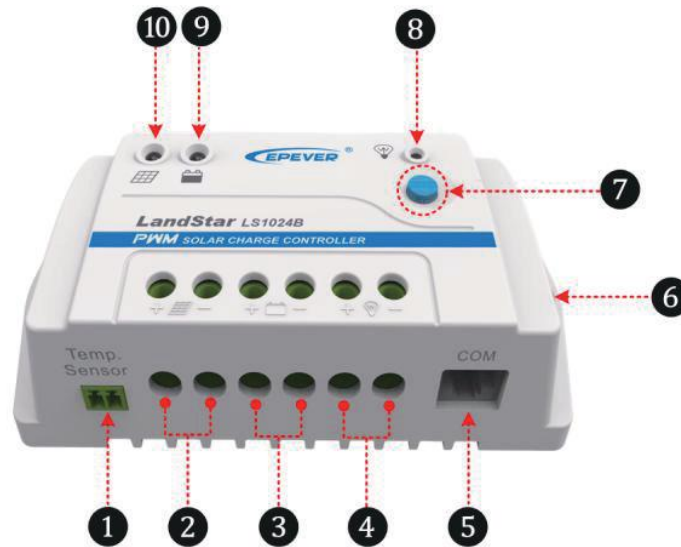

Figure 1 Characteristic

❶	Remote Temperature(RTS)Port★	❻	Mounting Hole	
❷	PV Terminals	❼	Button	
❸	Battery Terminals	❽	Load status indicator	
❹	Load Terminals	❾	Battery status indicator	
❺	RS485 communication Port	❿	Charge status indicator	

★If the temperature sensor is short-circuited or damaged, the controller will charge or discharge at the default temperature setting of 25 ºC.
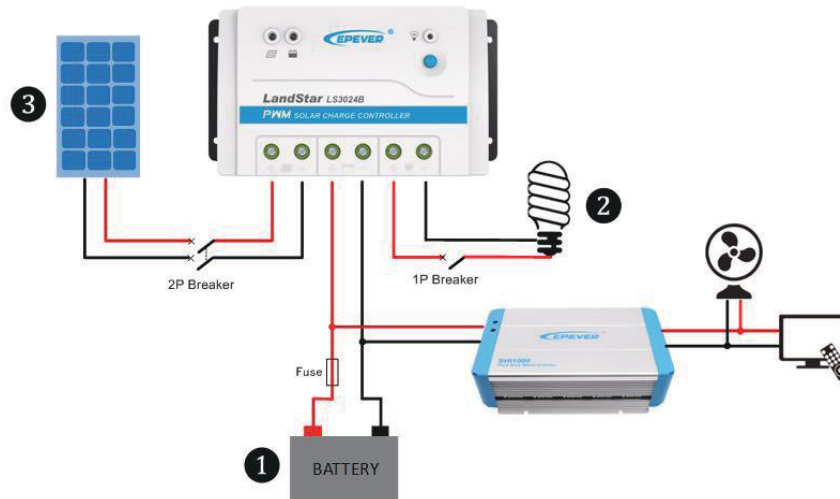
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![ACOPOWER logo] ACOPOWER

Wiring

Figure 2 Connection diagram

Installation Procedure:

Connect the system in the order of ❶ battery 🔋 → ❷ load 💡 → ❸ PV array ▦ in accordance with Figure 2″ Connection diagram″ and disconnect the system in the reverse order ❸❷❶ .

Indicators and buttons

(1)Indicator

Indicator	Color	Status	Information
▦	Green	On Solid	PV connection normal ,but low voltage(low irradiance) from PV, no charging
	Green	OFF	No PV voltage(night time) or PV connection problem
	Green	Slowly Flashing(1Hz)	In charging
	Green	Fast Flashing(4Hz)	PV Over voltage
🔋	Green	On Solid	Normal
	Green	Slowly Flashing(1Hz)	Full
	Green	Fast Flashing(4Hz)	Over voltage
	Orange	On Solid	Under voltage
	Red	On Solid	Over discharged
	Red	Slowly Flashing(1Hz)	Battery Overheating
💡	Red	On Solid	Load ON
	Red	OFF	Load OFF
	Red	Slowly Flashing(1Hz)	Load overload
	Red	Fast Flashing(4Hz)	Load short circuit
Charge, Load and Battery(orange)indicator flashing			Controller Overheating
Charge, Load and Battery(red)indicator flashing			System voltage error

(2)Button

①The load is turned ON/OFF via the button when the working mode is Manual Control.
②Clear the faults for the load overload and short circuit .

Troubleshooting

Faults	Possible reasons	Troubleshooting
Charging LED indicator off during daytime when sunshine falls on PV modules properly	PV array disconnection	Confirm that PV and battery wire connections are correct and tight
Wire connection is correct, the controller is not working.	Battery voltage is lower than 8V	Please check the voltage of battery. At least 8V voltage to activate the controller.
Battery indicator green slowly flashing	Battery over voltage	Check if battery voltage is higher than OVD(over voltage disconnect voltage), and disconnect the PV.
Battery indicator red on solid	Battery over discharged	When the battery voltage is restored to or above LVR(low voltage reconnect voltage), the load will recover
Battery indicator red slowly flashing	Battery Overheating	The controller will automatically turn the system off. But while the temperature decline to be below 55 ℃, the controller will resume.
Charge, Load and Battery(orange)indicator flashing	Controller Overheating	When heat sink of controller exceeds 85℃, the controller will automatically cut input and output circuit. When the temperature below 75℃,the controller will resume to work.
Load indicator red slowly flashing	Load Overload	①Please reduce the number of electric equipments. ②Restart the controller. ③wait for one night-day cycle (night time>3 hours).
Load indicator red fast flashing	Load Short Circuit	①Check carefully loads connection, clear the fault. ②Restart the controller. ③wait for one night-day cycle (night time>3 hours).

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FREQUENTLY ASKED QUESTIONS(FAQ)

ACOPOWER is always open to customers with technical support, if you have any issues, please feel free to contact ACOPOWER by email at support@acopower.com
Here we collected some frequently asked questions for reference:

Q. What type of batteries can be used with the kit?
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. ACOPOWER 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 ACOPOWER 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.

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.

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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 support@acopower.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.

Q: How to prevent a short circuit?
A: To prevent short circuits, make sure positive (red) and negative (black) never touch when there's current flowing. For the MC4 cables, make sure they never make contact when the solar panel is under the sun. For the battery clamps, make sure they never make contact when a battery is connected, it is safe for them to touch.

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 ACOPWER, please visit: https://www.acopower.com select "Warranty Registration".

Thank you for your business and support!

ACOPOWER Team

technical support: support@acopower.com

www.acopower.com

Warranty Registration Web

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