

EPsolar LS0512EU

EPsolar LS0512EU PWM 5A w/USB Solar Panel Regulator Charge Controller User Manual

Model: LS0512EU

1. PRODUCT OVERVIEW

The EPsolar LS0512EU is a PWM solar charge controller designed for small solar systems, particularly home applications. It efficiently manages power flow from solar panels to batteries, extending battery life and improving overall system performance. This model includes a +5V/1.2A USB output for charging mobile devices and other electronics.

Key features include high-efficiency Series PWM charging, MOSFET electronic switching, intuitive LED indicators for battery status, support for Gel, Sealed, and Flooded battery types, manual load control, and temperature compensation.

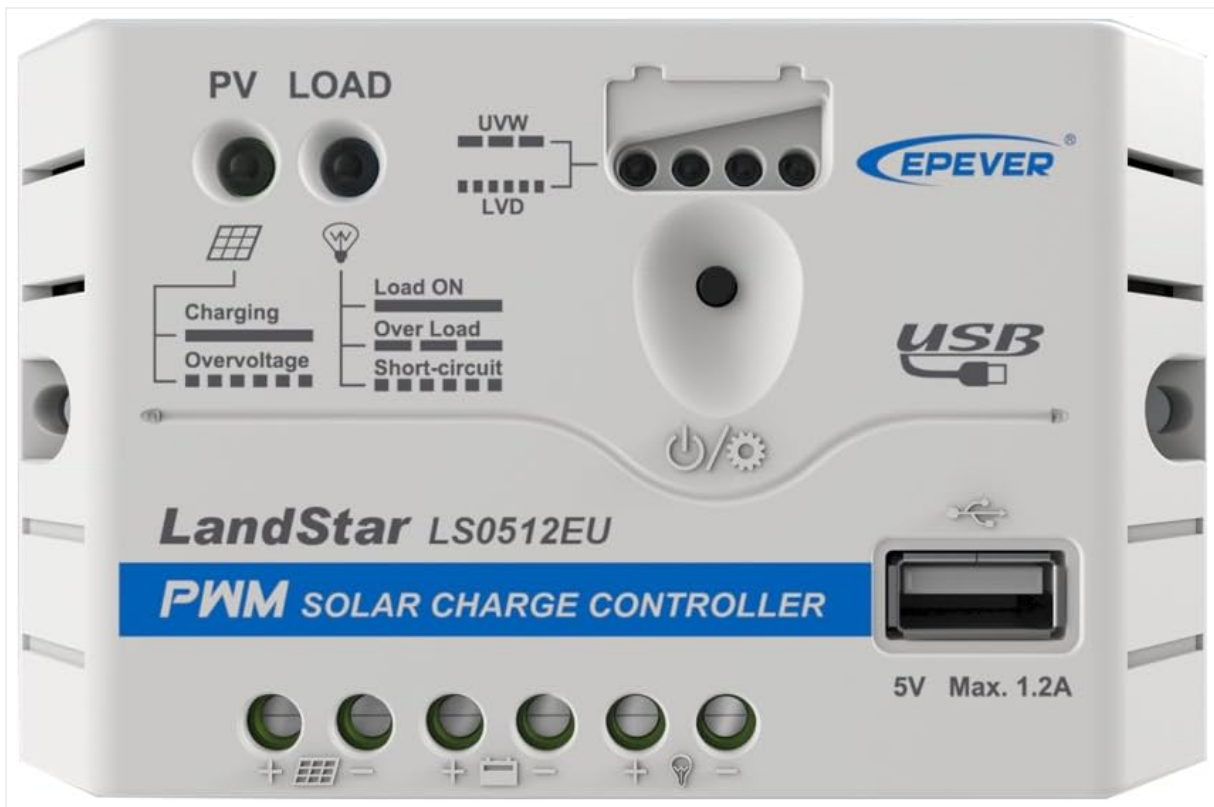


Figure 1: Front view of the EPsolar LS0512EU PWM Solar Charge Controller. This image shows the compact design and the various ports and indicators on the device's front panel.

2. PRODUCT COMPONENTS

Familiarize yourself with the components of your LS0512EU charge controller:

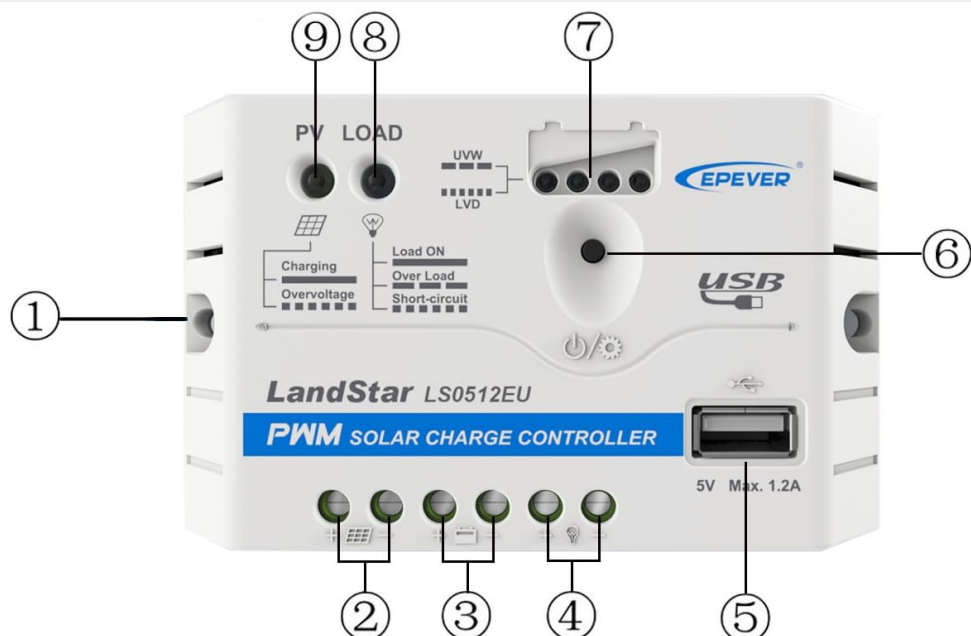


Figure 1 Product Feature

①	Mounting Hole Φ4.5	⑥	Button
②	PV Terminals	⑦	Battery status LED indicator
③	Battery Terminals	⑧	Load status LED indicator
④	Load Terminals	⑨	Charging status LED indicator
⑤	USB Output Port		

Figure 2: Diagram illustrating the key features and components of the LS0512EU controller. Each component is numbered for easy identification.

No.	Component	No.	Component
①	Mounting Hole Φ4.5	⑥	Button
②	PV Terminals	⑦	Battery status LED indicator
③	Battery Terminals	⑧	Load status LED indicator
④	Load Terminals	⑨	Charging status LED indicator
⑤	USB Output Port		

3. SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of your solar charge controller. Please follow these steps carefully.

3.1 Mounting

- Choose a dry, well-ventilated location away from direct sunlight, high temperatures, and water.
- Ensure there is sufficient space around the controller for air circulation.
- Mount the controller vertically on a wall or flat surface using the mounting holes (①) and appropriate screws.

3.2 Wiring Sequence

Connect the components in the following order to prevent damage:

1. **Connect the Battery:** Connect the battery to the Battery Terminals (③) of the controller. Ensure correct polarity (+ to + and - to -). The battery indicator (⑦) should illuminate.
2. **Connect the Solar Panel:** Connect the solar panel to the PV Terminals (②) of the controller. Ensure correct polarity. The charging indicator (⑨) should illuminate if the solar panel is producing power.
3. **Connect the Load:** Connect the DC load to the Load Terminals (④) of the controller. Ensure correct polarity.

Important: Always connect the battery first and disconnect it last. Reversing the connection order may damage the controller.

Models:

LS0512EU 5A,12V

LS1012EU 10A,12V

LS1024EU 10A,12/24V auto work

LS2024EU 20A,12/24V auto work

LS3024EU 30A,12/24V auto work

Electronic protections:

- Load overload protection
- Load short circuit protection
- Battery over discharge protection
- Battery reverse polarity protection



Figure 3: Wiring diagram for the LS0512EU solar charge controller, showing connections for solar panel, battery, and DC load, along with the USB output.

4. OPERATION

4.1 LED Indicators

The controller features intuitive LED indicators to display system status:

- **Battery Status LED (⑦):** Indicates the battery voltage level.
- **Load Status LED (⑧):** Indicates the status of the DC load (ON/OFF, Overload, Short-circuit).
- **Charging Status LED (⑨):** Indicates if the solar panel is charging the battery (Charging, Overvoltage).

4.2 Load Control

The load output can be manually controlled using the button (⑥). Press the button to toggle the DC load ON or OFF.

4.3 USB Output

The USB Output Port (⑤) provides a +5V/1.2A power supply for charging mobile phones, small fans, and other compatible electronic devices.

4.4 Battery Type Selection

The controller supports Gel, Sealed, and Flooded battery types. Refer to the technical specifications for default settings. Consult the full product manual for instructions on how to adjust battery type settings if necessary.

5. ELECTRONIC PROTECTIONS

The LS0512EU controller incorporates several electronic protection features to ensure system safety and longevity:

- **Load Overload Protection:** Automatically disconnects the load if current exceeds the rated value.
- **Load Short Circuit Protection:** Protects against short circuits in the load circuit.
- **Battery Over Discharge Protection:** Prevents the battery from being discharged below a safe voltage level.
- **Battery Reverse Polarity Protection:** Protects the controller and battery from damage if the battery is connected with incorrect polarity.

6. MAINTENANCE

To ensure optimal performance and longevity of your solar charge controller, perform the following maintenance checks periodically:

- **Check Connections:** Ensure all wire connections are tight and secure. Loose connections can cause overheating and damage.
- **Clean Terminals:** Inspect terminals for corrosion. Clean if necessary.
- **Inspect Wiring:** Check for any signs of wear, fraying, or damage to the wiring. Replace damaged wires immediately.
- **Ventilation:** Ensure the controller's ventilation openings are clear and not obstructed to prevent overheating.
- **Environmental Check:** Verify that the installation environment remains dry and free from excessive dust or moisture.

7. TROUBLESHOOTING

If you encounter issues with your LS0512EU controller, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No display/Controller not working	Battery not connected or reverse polarity; Battery voltage too low.	Check battery connections and polarity. Ensure battery voltage is above the low voltage disconnect threshold.
Battery not charging	Solar panel not connected or reverse polarity; Insufficient sunlight; Faulty solar panel.	Check solar panel connections and polarity. Ensure panels are in direct sunlight. Test solar panel output.
Load not working	Load disconnected or reverse polarity; Load overload/short circuit; Battery low voltage disconnect.	Check load connections and polarity. Reduce load or check for short circuits. Charge battery.
USB output not working	Device not compatible; Battery voltage too low.	Ensure device is compatible with 5V/1.2A USB. Charge battery.

8. SPECIFICATIONS

The following table provides the technical specifications for the LS0512EU model:



Model	LS0512EU	LS1012EU	LS1024EU	LS2024EU	LS3024EU
Equalize charging voltage*	Gel: ----, Sealed: 14.6V, Flooded: 14.8V				
Boost charging voltage*	Gel: 14.2V, Sealed: 14.4V, Flooded: 14.6V				
Float charging voltage*	Gel / Sealed / Flooded:13.8V				
Low voltage reconnect voltage*	Gel / Sealed / Flooded:12.6V				
Low voltage disconnect voltage*	Gel / Sealed / Flooded:11.1V				
USB output	5VDC/1.2A				5VDC/2A
Self-consumption	12V≤5mA; 24V≤7mA				
Temperature compensation coefficient	-5mV/°C/2V (25℃)				
Grounding	Common Positive				
Overall dimension(mm)	109.7x65.5x20.8	120.3x67x21.8	120.3x67x21.8	148x85.6x34.8	148x106.8x43.7
Terminal	14AWG(2.5mm²)	12AWG(4mm²)	12AWG(4mm²)	10AWG(6mm²)	8AWG(10mm²)
Net Weight	0.09kg	0.1kg	0.1kg	0.18kg	0.29kg
Enclosure	IP20				
Working environment temperature	-35℃~+55℃				
Relative humidity	≤95% (N.C.)				

* Technical data for 12V system at 25°C, twice in 24V system.

Figure 4: Detailed technical specifications for various LS-EU series models, including the LS0512EU.

Parameter	LS0512EU
Equalize charging voltage*	Gel: ----, Sealed: 14.6V, Flooded: 14.8V
Boost charging voltage*	Gel: 14.2V, Sealed: 14.4V, Flooded: 14.6V
Float charging voltage*	Gel / Sealed / Flooded: 13.8V
Low voltage reconnect voltage*	Gel / Sealed / Flooded: 12.6V
Low voltage disconnect voltage*	Gel / Sealed / Flooded: 11.1V
USB output	5VDC/1.2A
Self-consumption	12V≤5mA; 24V≤7mA
Temperature compensation coefficient	-5mV/°C/2V (25°C)
Grounding	Common Positive
Overall dimension(mm)	109.7x65.5x20.8

Parameter	LS0512EU
Terminal	14AWG(2.5mm ²)
Net Weight	0.09kg
Enclosure	IP20
Working environment temperature	-35°C ~ +55°C
Relative humidity	≤95% (N.C.)

* Technical data for 12V system at 25°C, twice in 24V system.

9. SAFETY INFORMATION

- Read all instructions carefully before installation and operation.
- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- Ensure all wiring is correctly polarized and securely connected to prevent damage or fire.
- Install the controller in a well-ventilated area to prevent overheating.
- Keep the controller away from flammable materials and explosive gases.
- Wear appropriate personal protective equipment (PPE) when working with electrical systems.