

# Solar Charge Controller

## 1. General Information

LS EPD series solar charge controller adopts the most advanced digital technique and operates fully automatically. It is ideal for extreme environments with corrosion, dust, water, etc., and has various unique functions:

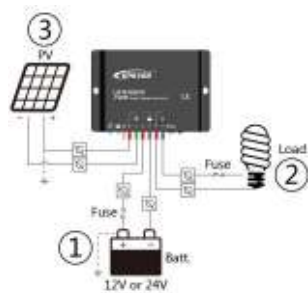
- Electronic protection: Over charging, over-discharging, overload, short circuit, and reverse protection of solar module
- High efficient Series PWM charging increases the battery lifetime and improves the solar system performance
- Widely used, automatically recognizes day/night
- Battery LED to indicate battery status
- Industrial design, the wide application range
- Digital tube menu, only one key solve all setting simply
- Intelligent timer function with 1~13 hours option
- IP67 protection

## 2. Features and Mounting



**Do not install this product in humid, salt spray, corrosion, greasy, flammable, explosive, dust accumulative, or other severe environments.**

①	Charging Status LED indicator	⑥	Load Terminals
②	Battery Status LED indicator	⑦	Digital tube
③	Temperature Sensor	⑧	Key
④	Solar Module Terminals	⑨	Aluminum housing



⑤	Battery Terminals	⑩	Mounting hole Φ5
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### ● Mounting

- 1) Connect components to the charge controller in the sequence “①Battery > ②Load > ③PV” and pay much attention to the “+” and “-.” Always power the battery first.
- 2) Check whether the battery indicator is green after powering the battery. If it's not green, please refer to chapter 4.
- 3) The fast-acting fuse should be installed as close to the battery. The suggested distance is within 150mm.

## 3. Indicators Description and Operation

### 1) Indicator Status Description

Charging Status	Green	On Solid	Normal
LED indicator	Green	Fast Flashing	Overvoltage
Battery Status LED indicator	Green	On Solid	Normal
	Green	Slowly Flashing	Full
	Orange	On Solid	Under voltage
	Red	On Solid	Over discharged
Radix Point of Digital tube (Load indicator)	Red	On Solid	Load ON
	Red	Slowly Flashing	Over Load
	Red	Fast Flashing	Short Circuit

### 2) Operation



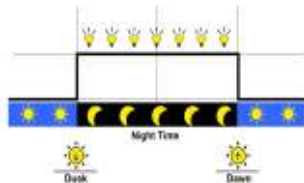
**Digital tube Key**

The digital tube displays the load work mode; please refer to the correspondence table of Load Work Mode & LED digital tube value. Pressing the key to configure the parameter, refer to the below configuration method:

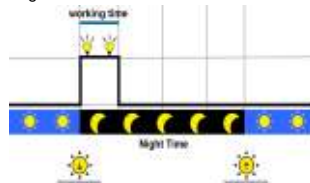
- 1) After Powering on, disconnect the PV or connect the PV (Voltage<5V), and the light of the digital tube point goes on; Connect the PV (Voltage>6V), and the light of the digital tube point goes off.
- 2) The key can be used to operate switching on/off the load (Manual control) or clearing the faults
- 3) Press the button over 5S to light the digital tube and enter the parameter browsing mode. End-users can cycle browse the parameter by clicking the button.
- 4) After the digital tube displays the value to be configured, release the key and wait for 15S. The Digital Tube stops flashing; the configuration is successful.

## > Load mode

- Manual Control: Control the load via the button.
- Light ON/OFF



- Light ON + Timer



**Note: In the mode of Light ON/OFF and Light ON/Timer, the Load is turned on after 10Min. Delay.**

- Test Mode (Default): Test Mode is the same as Light Control Mode without delay.

## > The correspondence table of Load Work Mode & LED digital tube value

Value	Working mode	Value	Working mode
<b>0</b>	Light ON / OFF	<b>0.</b>	Light ON + 8 hours
<b>1</b>	Light ON + 1 hours	<b>1.</b>	Light ON + 9 hours
<b>2</b>	Light ON + 2hours	<b>2.</b>	Light ON + 10 hours
<b>3</b>	Light ON + 3hours	<b>3.</b>	Light ON + 11 hours
<b>4</b>	Light ON + 4 hours	<b>4.</b>	Light ON + 12 hours
<b>5</b>	Light ON + 5 hours	<b>5.</b>	Light ON + 13 hours
<b>6</b>	Light ON + 6 hours	<b>6.</b>	Manual Control
<b>7</b>	Light ON + 7 hours	<b>7.</b>	Test Mode

## 4. Troubleshooting

Faults	Possible reasons	Troubleshooting
Charging LED is off during daytime when sunshine falls on PV modules properly	PV array disconnection	Check that PV and battery wire connections are correct and tight
Battery indicator green fast flashing	Battery voltage higher than over voltage disconnect voltage	1. Disconnect the solar array and measure whether the battery voltage is too high; 2. Change the controller; 3. Change the battery
The battery indicator flashes red and loads not working	Battery over-discharged	The controller cut off the output automatically. The indicator will return to green automatically when fully

The radix point of digital tube fast flashing and load not working	Short circuit	Clear short circuit. It is reactivated after being delayed 10 seconds for the first time. If over one time, press the key to clear the error, and the controller will resume after 3s or restart the controller
The radix point of the digital tube is slowly flashing, and loads are not working	Overload	Please reduce the number of electric equipment. When load power reaches 1.25-1.5 times, 1.5-2 times, and 2 times more than the nominal value, the controller will turn off loads in 60 seconds, 5 seconds, and 1 second. Press the key to clear the error, and the controller will resume after 3s or restart the controller

## 5. Technical Specifications

Item	LS1024EPD	LS2024EPD
Nominal system voltage	12/24VDC Auto	12/24VDC Auto
Max. PV input voltage	50V	50V
Rated current	10A	20A
Equalize Voltage	14.8V(12V); 29.6V(24V)	
Boost Voltage	14.4V(12V); 28.8V(24V)	
Float Voltage	13.7V(12V); 27.4V(24V)	
Low Voltage Reconnect Voltage	12.6V(12V); 25.2V(24V)	
Low Voltage Disconnect Voltage	11.2V(12V); 22.4V(24V)	
Self-consumption	≤4.58mA(12V); ≤6.01mA(24V)	
Temperature compensation coefficient	-5mV/°C/2V(25°C)	
Environment temperature	-35°C ~ +50°C	
Enclosure	IP67	
Dimension (L x W x H)	108.5mm × 75mm × 25.6mm	
Mounting size	100.5mm	
Mounting hole size	Φ5	
Power cable	PV/BAT/LOAD: 4.0mm <sup>2</sup>	PV/BAT/LOAD: 6.0mm <sup>2</sup>
Net weight	410g	435g

**Any changes without prior notice!**

Version number: V2.2