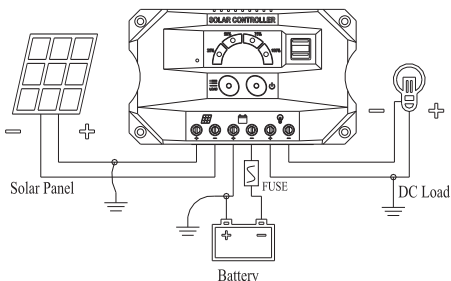


Solar Charge Controller User Manual

I Features

1. Vivid LED indicators show system battery capacity, charging and discharging state of battery.
2. Protection functions such as overcharging, over discharging, overload and reverse connection.
3. PWM charging increases charging efficiency by 3% to 6%, compared with non-PWM charging.
4. The parameters of charging and discharging are preset, so no need to adjust the parameters. (Special parameters need to be advised in advance.)
5. USB output function.

II Installation



1. Make sure installation site accords with safety stipulation and is clear of flammable or explosive, or corrosive gases and dust etc.
 2. Prepare all the installing tools and cables. Suggest you to choose the appropriate multi-core cables to ensure the current density $\leq 4A/mm^2$ so to reduce cable voltage drop.
 3. Put the controller in vertical surface, and a free space of 10cm on all sides must provided for better heat dissipation.
 4. Connect battery to controller first. After correct connection, check battery indicator on controller. If the indicator is not on, check whether the connection is right.
 5. Connect solar panels to controller. If there is sunlight illuminating solar panel, battery capacity indicators flashes which means connection is right, otherwise is incorrect.
 6. Connect load to controller. Make sure there's no reverse polarity connection, otherwise it will damage load.
- Disassembly:** To avoid accident, please dismantle connection as the following order: solar panels, battery and load.

III Operation

1. **Charging and display:** After controller is connected correctly, if the capacity indicators are not illuminating, it means sunlight is weak or none. And if the capacity indicators are illuminating, it means battery is charged by controller. When the indicator flashes, it means battery is in float charging mode which makes battery at full charging state to lengthen longevity of battery. Only when controller detects battery is over charged, can it start boost charging mode.
2. **Battery capacity and display:** When battery indicator is red and flashing, load is switched off or protecting battery

Battery capacity state	Full charged	75%	50%	25%	Low voltage disconnect
Indicator	4 leds	3 leds	2 leds	1 led	Red & flashing

3. **Load state and indicator:** When load indicator is green and flashing, load is switched off.

Load state	On	Off	Overload protection
Indicator	green on	green off	green & flashing quickly

IV Working mode

Normal controlling mode: no light control and timing control function use as normal controller.

V Faults and remedies

1. Only 1 red battery capacity indicator flashes means capacity is low. When battery voltage recovers, controller switches on load automatically.
2. Load indicator flashes slowly means controller output overloading. After removing redundant load, controller clears overload protection within 3 minutes.
3. Capacity indicator doesn't flash means solar panel isn't connected correctly. Make sure solar panel is correctly and firmly connected.
4. If all indicators are off, check whether fuse of controller is burnt. If burnt, make sure connections among solar panel, battery and load are correct.

VI Quality assurance

Manufacture provides 1 year warranty for solar charge controllers from invoice date
Please read the following instructions carefully. Free guarantee services will not be provided, including:

- It has been installed and operated otherwise than in accordance with the instructions
- Any unauthorized repair or modification has been carried out on the unit.
- It has been damaged through natural calamities.
- It has been damaged through transportation or storage.
- Batch numbers, serial numbers or identification-marks are manipulated or unidentifiable.
- Load connected has been damaged due to incorrect, reversed connection as controller is equipped with solar panel and battery reverse connection protection, but no REVERSE LOAD CONNECTION PROTECTION.
- It has been used to control power generated from any other type of device such as a Gasoline Generator rather than a solar panel to charge a lead acid battery.

VII Technical data

Rated current	5A 10A 15A 20A 30A	Low voltage protection	10.8V/21.6V		
System voltage	12V/24V (Auto)	Low voltage reconnecting	12.6V/25.2V		
No load loss	12.5mA (12V), 14.5mA (24V)	Overloading	>1.2* rated current		
Charging mode	PWM	USB output	5V/1A		
Float charging voltage	13.8V/27.6V	Installing cables size	≤ 6mm ²	≤ 10mm ²	≤ 16mm ²
Absorption charging voltage	14.4V/28.8V (lasting time: 2 hours)	Working temperature	-10 °C ~ 50 °C		
Charging/Discharging circuit voltage drop	<0.22V (<0.12V)	Dimension (L x W x H) (mm)	130x75x38	140x85x42.5	160x95x45
		Diameter of mounting hole (mm)	115x60-φ4.5	126x72-φ4.5	144x78-φ4.5
		Net weight (Approx.)	172g	227g	325g

※ This manual is subject to change without notice, and the company's interpretation of it shall prevail