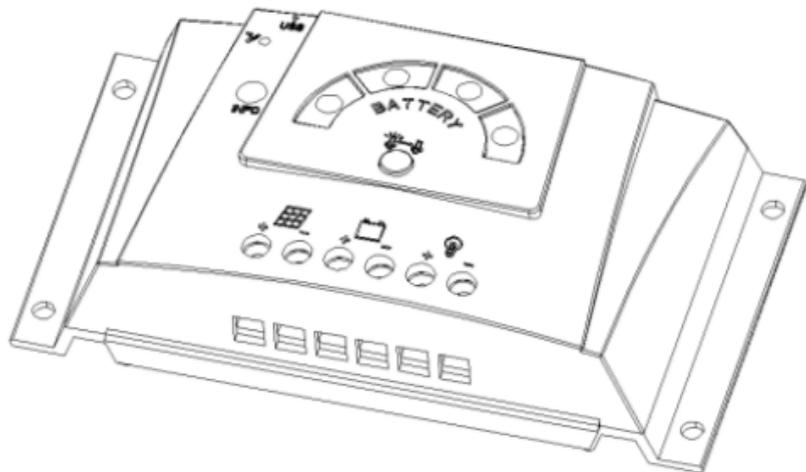

Solar Charge Controller

User's Manual



Please read this manual carefully before you use this product

I. Introduction

1. The controller use a MCU as the controlling core, so charging and discharging control strategy is more intelligent, charge and discharge control voltage more accurate, with battery low-voltage, over voltage, load over-current, short-circuit and other protective functions.
2. The controller use a red-green LED lamp to indicate the load state and load fault, There are four green LED to indicate the battery SOC and charging state.
3. The controller have one load control button, It can be used to turn on or turn off the load and the USB power.
4. The controller use 3 step charging controlling, It can improve the battery charging full and to extend the service life of the battery.
5. The controller with one USB power port (optional function).

II. Installation

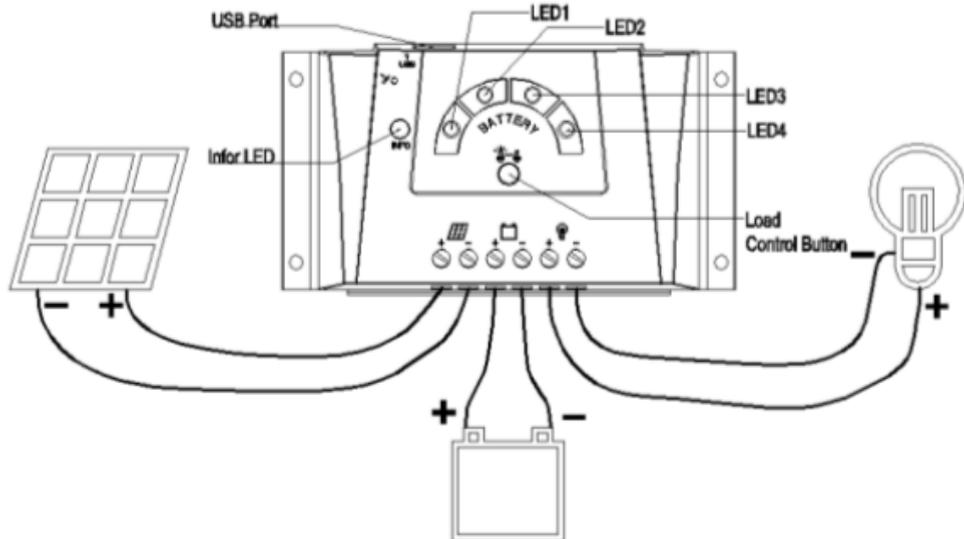
1. Check whether the installing place accords with safety stipulation. Avoid installing the controller in such places as wet, flammable, explosive places and places with corrosive gas.
2. Prepare all the installing tools and cables. Suggest you to choose the appropriate multi-core cables to ensure the current density $\leq 4\text{A}/\text{mm}^2$, and this can reduce the cable voltage drop.
3. Install the controller into a fixed vertical plane. In order to ensure good ventilation and heat dissipation, please keep the instance over 10 cm around the controller.
4. To connect the controller and the battery by cables with right polarity. After correct connection, check the indicator on the controller. If the indicator is not on, check whether the connection is right.

5. To connect the controller and the solar panels by cables with right polarity. If there is sunshine the battery capacity indicators will be in the animation state, and this means the connection is right, otherwise, please check the connection.

6. To connect the controller and the load by cables with right polarity. Pay attention to + - polarity to avoid reversed connection, otherwise, it will damage the load.

Demolition: In case of any accident, please disconnect the solar panel, battery, and load with controller in order.

Note: Reversed battery polarity will not damage the controller, but you load will be damaged.



III. LED Indicator Instruction

LED1	LED2	LED3	LED4	Meanings
●				No charging, the SOC is between 0% and 25%.
●	●			No charging, the SOC is between 25% and 50%.
●	●	●		No charging, the SOC is between 50% and 75%.
●	●	●	●	No charging, the SOC is between 75% and 100%.
●	●	●	⊠	Flash slowly, absorption charging state, duration 2 hours.
●	●	●	● — ⊠	5s remain light, 5s flash slowly, float charging state.
⊠	⊠	⊠	⊠	LED is in the animation state, start from LED1, end with the current SOC state.bulk charging state.

Info LED	Meanings
Green	The load is in the normal state of supply.
Green Flash Slowly	The load has been manually closed.
Red	Load short-circuit protection.
Orange Flash Slowly	Load over-current protection.
Red Flash Slowly	The battery is low voltage, the load has been closed.
Red Flash Fastly	The battery is over-voltage, the load has been closed.
Short-circuit and overload protection will be unlocked automatically after dark.	

IV. Troubleshooting

The Fault Performance	Failure Cause	Solution
The controller is connected to the battery without indicator light.	The battery reverse-connected or battery voltage is too low	Check the polarity of the battery to the controller cable, check the voltage of the battery
Connect the solar panel	Solar panel reverse polarity	Check the polarity of solar

to the controller without charge indication	connection or the connecting line is open circuit or solar panel voltage is too low	panel, connecting line and the voltage of solar panel
Controller short-circuit protection	The wires connected to the terminal of load is short circuit	Check the connecting line of the controller and remove the fault then turn on the load manually
Battery over-voltage protection	There may be other charge connected to the battery	Check the charger voltage of other connection to the battery is in normal range
USB power supply interface without output	USB power supply with the load output in parallel, when the load output due to short-circuit or over current and other reason to protect, the USB power will stop the out put	After the failure of load side is excluded, turn on the load manually

V. Quality Assurance

The solar charge controller has a warranty of 1 year from date of invoice.

Please read these instructions very carefully.

The manufacturer shall not be liable for damages to the controller, including:

- The installation is not completed according to the instructions in this user's manual.
- The controller is used in conditions outside of the environmental and technical requirements, such as wet and damp conditions.
- The controller is opened & repaired by yourself or any other unauthorized person.
- Instances of natural disasters (Acts of God) out of our control which can cause the breakdown, damage and aging of the controller.
- Improper transportation or storage.
- The warranty is immediately void if batch numbers, serial numbers or identification-marks are manipulated or are unidentifiable.
- The controller is equipped with solar panel and battery reverse connection protection, but it **does not have load reversed connection protection**. We are not liable for damage caused to loads due to incorrect, reversed connection of loads.

VI. Specifications

Rated Current	10A	15A	20A	Over Current Protect	1.25 times, 10S
Rated Voltage	12V/24V Auto			No Load Loss	≤16mA
Solar Input	≤50V			USB Power	5V/1A Max(optional)
Float Voltage	13.8V/27.6V			Charging Mode	3 step, PWM charge
Absorption Voltage	14.4V/28.8V			Specification of Cable	AWG 5# (6mm ²)
LVD	10.7V/21.4V			Working Temperature	-20℃~50℃
LVR	12.6V/25.2V			Storage Temperature	-30℃~70℃
HVD	15.5V/31.0V			Humidity	≤90%, no condensation
HVR	15.0V/30.0V			Mounting Hole	150mm×64mm --Φ5
Charge/Discharge Voltage Drop	≤0.3V/≤0.2V			Dimension	166mm×88mm×38mm
				Weight	270g