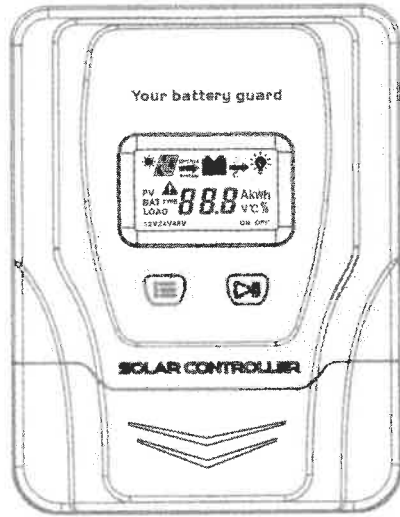
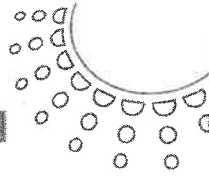




User's Manual



SOLAR CHARGE CONTROLLER

Ocean Dream Series

12V/24V 10A 20A 30A 40A 50A 60A
48V 30A 40A 50A 60A

Your battery guard

This series product base on in series PWM mode, with full digital technology and LCD display, auto run mode with large application range, such as off-grid solar home system, traffic indicator, solar street lights, solar garden lights and so on. The intelligent charging process has been optimized for long battery life and improved system performance.

Features

- ◆ 32bits CPU, sampling precision is higher, operation speed is faster
- ◆ 12V/24VDC Automatic Identification System Voltage
- ◆ 3 stages PWM charging: Bulk, Boost, Float
- ◆ Sealed, Gel, Flooded, LiFePO4, Li(NiCoMn)O2 battery selection procedure
- ◆ Humanized LCD displaying, dynamic display operation data and working state.
- ◆ Built-in operation log, account system working state
- ◆ Multi load control mode: Normal mode, Sensor mode, Timer mode
- ◆ Temperature Compensation Function and Controller Over Temperature Protection Function
- ◆ Fulllest digital protection functions: Overcharging, Over-discharging, Overload, Short Circuit, Reverse Connection, Controller Over-Temperature and so on.
- ◆ colorful connector distinguish plus and minus poles.
- ◆ 5V 2.4A USB output (10A 20A 5V 1.5A and 48V 5V 1A)

Important Safety Information

- ◆ It is better to install controller in the room. If install the controller outside, please keep the environment dry, avoid direct sunlight
- ◆ The controller will be hot in process of working, please keep the environment ventilation, away from flammable.
- ◆ The Voc of solar panels is high (especially 24V/48V system, please take care
- ◆ The battery had acidic electrolysis, please put on goggles during installation. If you accidentally exposed to electrolysis, please rinse with water.
- ◆ The battery has huge power, prohibit any conductor short circuit the positive and negative pole of battery. Suggest to adding a fuse between battery and controller. (Slow motion type, the action current of the fuse

SOLAR CHARGE CONTROLLER

The suggestion of using

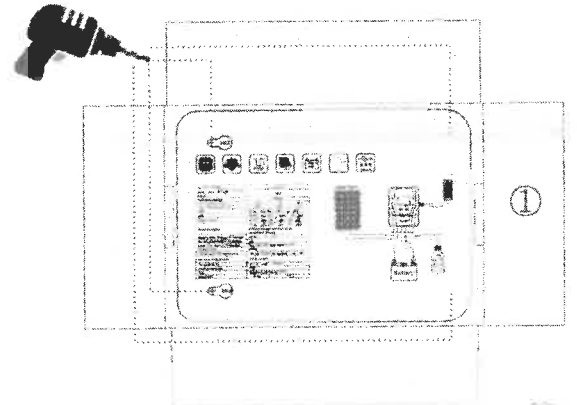
- ★ The controller could detect the temperature of environment to auto voltage of charging, so that the controller should be closed to be near as possible.
- ★ Recommend system current density of cables less than 3A/mm²
- ★ Try to use multi strand copper wire in order to connecting with the firmly. Loose power connection and/or corroded wires may cause resistive connections that melt wire insulation, burn surrounding or even cause fire.
- ★ The battery should be full charged each month. Or the battery destroyed

Installation of Instructions

Controller Fixed

- 1) The controller should be installed well-ventilated place, avoid sunlight, high temperature and do not install in location where water can enter the controller.
- 2) Please select correct screw to fix the controller on the wall or other platform. Screw M4, Screw cap diameter less than 10mm
- 3) Please reserve enough space between the wall and controller, to avoid cooling and cable connection.
- 4) Aluminum fins for natural cooling, we strong suggest hanging installation is better for air flow cooling effect.
- 5) Installation Icon

- ① Unfold the color box or user's manual and drill 4pcs suitable mounting hole with the hole positioning drawing on the back of the color box.



- ② Select the appropriate screws and secure the screw on the mounting hole.

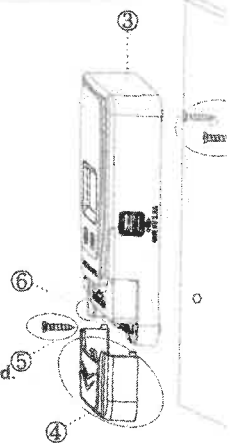
- ③ Align the fixed screw and hang the controller up.

- ④ Open the cover downward.

- ⑤ Secure the controller to the mounting hole with the other two screws.

- ⑥ Pull out the screwdriver, and use screwdriver connect the wire according to the order: 1, battery 2, solar panel 3, load.

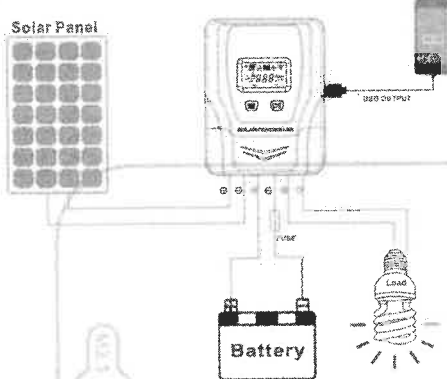
- ⑦ Insert the screwdriver and close the cover



Controller Connection

- ★ All terminals are in tight status after factory, in order to well connect please loose all terminals at first.
- ★ The following order of connection please do not free change, the controller have battery voltage auto selection function, or cause system recognition fault.
- ★ Before connection, please confirm the voltage of system fit for our controller. the open circuit of solar panel and maximum power at the using controller.

In order to avoid fault installation, please refer to below procedure



- As figure, first connected the battery to controller correct poles. In order to avoid short circuit, please screw the cable of battery to the controller in advance, then connected to battery poles secondly. If your connection is correct, the LCD displaying will show battery voltage and other technical data. If LCD no displaying, please check the fault. The length of cable between battery and controller as shorter as possible. Suggest to 30CM-100CM.
 - If short circuit happened on the terminals of controller, it will be result in fire or explode. Please be careful. (We strongly suggest to connecting a fuse at the battery side 1.5time of rated current of controller.)
 - If the battery reverse connection, the output of controller also same with battery polarity, please do not connect any load with controller at that time, or the load and controller will be destroyed
- As figure, connected solar panels with controller correctly, if the connection is successful and sunshine is full, the LCD will show solar panel and an arrow from solar panel to battery will be light.

Warning: The solar panel will generate very high voltage under sunshine, cause injury or destroy controller, especially in 24V system

- As figure, connected loads with controller correctly. In order to avoiding injury from load voltage, please close to the output of controller with button at first, then connected the load on the controller. The controller do not offer reverse connection protection for load, so please take care, reverse connection for output will be destroy loads.

Attention: If users want to connect inverter or inrush starting current loads, please connected them with battery directly, do not connected them with controller, or the controller load can not be start or destroy.

- USB output: USB offer 5V Max charging current 2.4A for Mobile, Laptop, MP3 and so on. (10A 20A 5V 1.5A and 48V 5V 1A)

Warning: Please do not connect USB loads to anywhere, the USB output negative poles is in series with Load negative poles.

About ground connection of solar system

Please noted, this solar charge controller designed by all positive connection, all components inside the controller are positive combined together. If your solar system needs ground connection, please let positive ground connection.

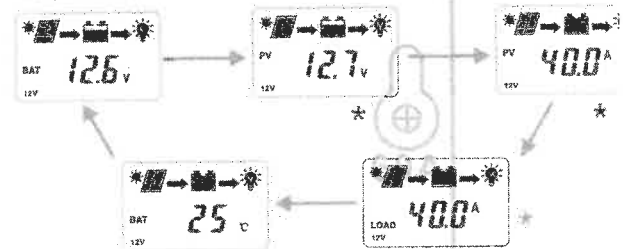
Warning: For some force to ground connected system, such as solar communication system, portable solar system, they are negative ground connected, at this time please do not positive connected, or can cause short circuit.

| Name | Symbol | Indicate Function |
|-------------|------------------|---|
| Solar Panel | | Correct connect solar panel and in daytime |
| | | No connect solar panel or wrong connection at night |
| | | charging |
| | | Float charging mode |
| | | Boost charging mode |
| Battery | | no charging |
| | | Data about charging |
| | | Battery capacity indicating |
| | 12V24V48V | Present System Voltage Show |
| Load | BAT | Data about battery |
| | BAT TYPE | Battery Type |
| | | Load on |
| | | Load off |
| | | Load Sensor Time mode output |
| | | Load Sensor maximum output |
| | LOAD | Data about load |
| | LOAD TYPE | Load working mode |

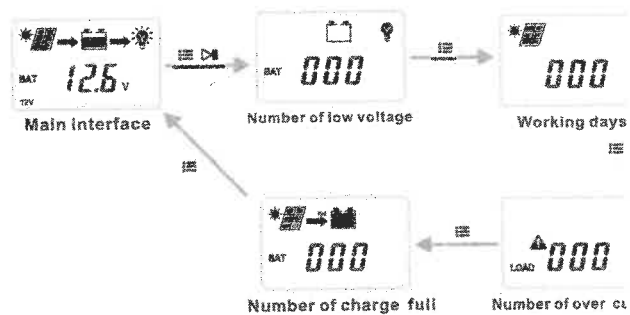
Operation and Indication of controller

Main Interface

If no operation at main interface inner 10s, the main interface will cycle battery voltage, PV voltage, PV current, load current, temperature each keep 3s, Long press "D" could speed loop display.



- At main interface short press "D" could on or off the load.
- At main interface, long press "E" and "D" together 5s could show operation log, such as times of LVD, working days, times of over current protection times of HVD.



Main Interface



Attention: About the control parameter of battery, we had fully consider user's working condition, if customers want to adjust the parameter, please refer to battery supplier suggestion, or unreasonable adjust will destroy battery.

| Battery Type | SEL | GEL | FLD | LIF LiFePO4(4s/12V; 8s/24V) | LI3 Li(NiCoMn)O2 (3s/12V; 6s/24V) |
|--------------------------|--------|--------|--------|-----------------------------------|--|
| Over Voltage Disconnect | 16.0V | 16.0 V | 16.0 V | 16.0V | 17.5V |
| Charging Limited Voltage | 15.0 V | 15.0 V | 15.0 V | 14.8V | 17.0V |
| Over Voltage Reconnect | 15.0 V | 15.0 V | 15.0 V | 14.8V | 17.0V |
| Boost charge | 14.4 V | 14.2 V | 14.6 V | 14.6V | 12.6V |
| Float charge | 13.8 V | 13.8 V | 13.8 V | 14.2V | 12.3V |
| Boost Restart Voltage | 12.6V | 12.6V | 12.6V | 13V | 11.5V |
| Low voltage reconnect | 12.6V | 12.6V | 12.6V | 12.6V | 11.0V |
| Low voltage disconnect | 11.0V | 11.0V | 11.0V | 11.0V | 9.2V |

Parameter Indication

◆ Fault Symbol Indication

| State | Symbol | Condition |
|--|--------|---|
| LVD protection | | Battery empty and Warning Flash together |
| HVD protection | | Battery full and Warning Flash together |
| Load Over current protection | | Load and Warning Flash together |
| Over temperature protection (controller) | | Temperature symbol and Warning Flash together |

◆ Short Circuit and Reverse Connected Protection (Solar Panel)

When the solar panels have short circuit or reverse connection, the controller will be off the charging immediately, after clearing of the short circuit, the charging will be automatically feedback.

◆ Reverse Connection of battery Protection

If the batter reverse connection, the controller will not destroy, corrected the connection the controller will be normally working.

◆ Battery Over Voltage Protection

When the voltage of battery was more than 16.5V, the controller will be auto closed charging and output. So that decrease the destroy of the battery and loads.

◆ Battery Low Voltage Protection (LVD)

When the voltage of battery was reach to LVD (Low Voltage Disconnection) point, the controller will be auto closed the output in order to avoid over-discharge the battery.

◆ Overload Protection

If the current of load is more than 1.1times rated current of controller, the controller will be cut off the output after 60s and lock. Users have to decrease loads and press "DII" unlock, or 30s later the controller will auto restart unlock.

◆ Load Short Circuit Protection

When the current of load more than 2times of rated current, the controller will be confirm short circuit, the controller will be auto cut off the output and lock. Users have to clearing the short circuit and press "DII" unlock, or 30s later the controller will auto restart unlock

◆ Over Temperature Protection

When the inside temperature of controller was more than 85°C, the controller will be off the charging and discharging, temperature symbol and warning flash, when the temperature get down to 65°C, the controller auto feedback.

◆ Lightning Protection

This product could only protect small lightning induction, we suggest users to use lightning rod at frequency area.

Fault and Handling

| Fault Phenomenon | Possible reason | Handling |
|--|---|---|
| LCD no display after connected with battery | <ul style="list-style-type: none"> ● Battery Low ● Battery Reverse Connection ● The connection cut off | Please confirm battery reconnection with battery |
| Full of sunshine vertical on solar panel, no solar symbol and no charging symbol on LCD. | The solar panel connection open circuit, short circuit, or reverse connected | Please check the panels if the connection |
| The controller displaying LVD | The battery is over discharging | Please design is Please full |
| The controller displaying HVD | The voltage of battery is high | Please fit panel and get down the fault please connect with reconnect |
| The controller displaying Over Current Protection | The load is short circuit, or over load or high surge power | Please check cables for the power rated power of |

Mechanical Size

| Charge and load current | 10A | 20A | 30A/40A | 50A |
|-----------------------------------|-------------------|-------------------|-------------------|-------------------|
| Size (L×W×H)mm | 165×120×39.4 | 170×130×50 | 190×140 | 190×140 |
| Mounting holes distance (A×B×C)mm | 84×92×134 | 111×114×124 | 128×128 | 128×128 |
| Weight (g) | 225 | 350 | 480 | 690 |
| Terminal scale | 10mm ² | 16mm ² | 16mm ² | 25mm ² |

