

VI. TROUBLE SOLUTION

Phenomenon	Trouble shooting
All the indicators are OFF	Check the battery wiring whether is well connected or tight connection or whether the voltage of the battery is normal or not.
Charging indicator ① is OFF during daytime when sunshine falls on PV modules properly	Check the PV and battery wire whether is well connected or tight connection.
Charging indicator ① is flashing	The battery voltage exceeds 13.8V, it enter into a float charge.
The battery Overlow indicator (red light) is ON, but the load does not start	The battery is low, the controller does not start. The load restart automatically until the voltage of battery has raise to the normal voltage ($\geq 12.2V$).
The load indicator ⑤ is OFF, the load does not start	Reference to the system wiring diagram, check the system whether is well connected or not. Check the power of the battery, the load starts only when the battery Overlow or Normal indicator (green light) is ON. Connect the solar module, charge the battery in the sufficient sunlight area for 3 to 5 hours.
The load indicator ⑥ is flashing and there is no output	When in the state of over current or short circuit protection, the controller will return to work automatically after finish trouble shooting for 3 seconds.
The load could not close	Check the mode setting, connect with the solar module, check whether the controller meets the load close condition or not.
Other phenomena	Check the wiring whether is tight or not, and the automatic identification of 12V/24V system is correct or not.

Note: We keep right to change and update without prior notice.

Version:2.0(MP)

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MPPT SOLAR CHARGE CONTROLLER

USER MANUAL

I . SAFETY

Full consideration to the safety of persons and property has been given when designing the products. However the incorrect connection may cause the system breakdown or even safety accident. For your safety and benefits, the following rules must be complied during the operation.

- Installation of this product shall be under the guidance of the professionals in this field.
- Prevent this controller from water, humidity and insects, to avoid short-circuit.
- Keep children and incapable persons away from the controller
- Keep the controller away from electrical heater, heating machine and other high temperature electrical appliances; avoid the controller suffering from insulation directly.
- Please check the rated voltage of solar panel, battery, and loads before connection. 12V rated voltage is 12V, 24V rated voltage is 24V.
- Make sure connections between positive and negative poles of Solar panels, Battery and Loads are correct.
- The diameter of connecting cable must be matched with the requirements of the current. Do not use thinner diameter cable, the thinner diameter. The larger resistance, this will cause higher temperature and output power decreasing.
- The total rated current of solar panel and loads must be smaller than the rated current of the controller.
- Components of system must be correctly and firmly connected. Prevent the terminals from oxidation and moldy, to avoid connection trouble.

II . FEATURES

- Our solar charge controller : Compared with normal solar charge controller made by other factories, this controller could increase efficiency by 10%-30%.
- This controller can charge and discharge at the same time.

Function:

- Always keep the battery on full voltage condition.
- Prevent the battery from over-charging.
- Prevent the battery from over-discharging.
- Prevent the battery from reverse charging to solar panels during nights.
- Reverse Polarity Protection for Battery
- Reverse Polarity Protection for Solar Panels
- When the battery voltage is low, the controller will automatically cut off the load

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from the system. If the voltage of battery is back to normal and the load will restart working.

- According to the battery voltage grade, the controller can automatically set charge -off voltage, the load-off voltage, the load-restore voltage. (The parameter is default under 25°C condition, locked by the CPU procedure, cannot adjust.)
- The controller will automatically compensate the temperature of the charging voltage according to the changes of working temperature.

III. CONNECTION

Connection Order: battery cable → load cable → solar panel cable

Connection of battery: Connect the battery cable to the output terminal of the controller, pay attention to the positive and negative charges protect from contrary connecting or short circuit (the positive and negative charges come together). If it is correct, the corresponding battery power indicator (Overlow, Normal, Full) will be bright. Otherwise, Check the connection is correct or not.

Connection of load: Connect the load cable to the output terminal of the controller, pay attention to the positive and negative protect from contrary connecting. Otherwise, it may burn the appliance.

Connection of solar panel: Connect solar panel cable to the output terminal of the controller, pay attention to the positive and negative charges protect from contrary connecting. If there is sunshine (PV array voltage greater than 10V), The charge indicator will be bright. Otherwise, check the cable connection.

IV. INDICATOR STATUS INSTRUCTIONS

Here we take the 12V voltage system as an example, 24V×2, Voltage parameters error $\pm 3\%$

1 PV charging status indicator

Constant ON (the voltage of solar panel should higher than 10V)

Flashing (in the state of float charge)

2 Battery Overlow indicator

Constant ON (when the battery charge, the voltage of battery is higher than 9.5V, lower than 12.2V, when the battery discharge, the voltage of battery is higher than 9.5V, lower than 10.5V)

3 Battery Normal indicator

Constant ON (when the battery charge, the voltage of battery is higher than 12.2V, lower than 13.5V)

Flashing (when the battery discharge, the voltage of battery is higher than 10.5V, lower than 12.2V, it means at this time the power is not enough, and it will come into the cut-off discharge state)

4 Battery Full indicator

Constant ON (the voltage of battery is higher than 13.5V)

5 Load output indicator

Only when the Battery Normal indicator or Battery Full indicator constant ON, the load can be work.

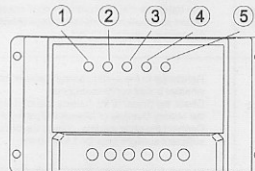
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Constant ON (normal output, the start output voltage is 12.2V, the cut off output voltage is 10.5V)

Flashing (when in the state of over current or short circuit protection, the controller will return to work automatically after finish trouble shooting for 3 seconds)

① ② ③ ④ ⑤ all the indicators extinguish (the battery is an abnormal state, it means the battery is over voltage higher than 16V or the battery is under voltage lower than 9.5V)

Load start-up conditions: the load is allowed to start only when the battery is in the state of Normal or Full, but once started. Once the load has open, it can work until the battery Normal indicator light ③ (flashing). When the battery further decline to the cut off discharge voltage, the battery Overlow indicator ② (red light ON), the Load forced to cut off the output in order to protect the battery.



V. PARAMETERS

Load current	05A	10A	15A	20A	30A
Rated Voltage	12V / 24V				
Empty load consumption	0.05W				
Charge circuit voltage drop	$\leq 0.20V$				
Discharge circuit voltage drop	$\leq 0.15V$				
Over voltage protection	16V; $\times 2/24V$				
Float charge voltage	13.8V; $\times 2/24V$ (fill come down to charging recovery voltage)				
Charge recovery voltage	13.8V; $\times 2/24V$				
Over discharge recovery voltage	12.2V; $\times 2/24V$				
Under voltage	12.2V; $\times 2/24V$				
Over discharge voltage	10.5V; $\times 2/24V$				
Temperature compensation	-3mV/°C/cell				
Working temperature	Industrial Grade: -25°C ~ +55°C				
Efficiency	95% ~ 97%				

*Parameters may customized by customers.

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