

Maximum Power Point Tracking Series

Solar charge controller User Manual



Battery voltage	12V/24V/36V/48V	12V/24V/36V/48V
Charging current	45A	60A
Max. voltage of solar panel	150V	150V

I. Safety Attention:

The input voltage is high, so please read the instruction before operation and please do not operate the controller before training.

1. Warning: The symbol means the operation is dangerous; please surely get safety prepared before operations.
2. Attention: The symbol means the operation is destructiveness.
3. Reminder: The symbol means the suggestions and hints to the operator.

II. Features:

1. Can be used in all kinds of bad environment with Aluminum frame.
2. Double crest or multi crest tracing technique design, when the solar panel is under shadow or part of the solar panel is damaged, multi crest will turn up in I-V curve, and the controller can still trace the Max. Power Point.
3. Built-in maximum power point tracking algorithm which could promote energy utilization efficiency of pv system. The charging efficiency is 15%~20% higher than PWM mode.
4. Adopting sorts of tracking algorithm to track the best working point of I-V curve promptly and accurately, the MPPT efficiency could reach to 99.9%
5. The use of advanced digital power technology, circuit energy conversion efficiency is as high as 98%
6. Four stage charging order mode: MPPT-equalizing charging-boost charging-float charging.
7. With current-limiting charging mode, when the power of solar panel is over-sized and charging current exceeds the rated current, the controller will lower the charging power, which enables the system to work under the rated charging current.
8. It can communicate with PC by communication wires and cables, read or set controller's running parameters and monitor the system operation status.
9. The controller can realize networking operation by the link with

telecommunication cable.

10. Have the fault code indication; it helps users confirm the system fault

11. 12V/24V/36V/48V auto identified.

12. Support data storage, the storage span can reach 5 years.

13. It can connect with LCD screen monitoring and the controller parameters are amendable.

14. Built-in temperature sensor, when the temperature exceeds the set value, the charging current will lower down followed by the decrease of temperature, so as to control the controller's temperature rise.

15. With temperature compensation function to adjust the charge and discharge parameters automatically, which can improve battery service life.

16. Various system protection functions. Including over-charge, over-discharge, over-load, over-heat, the battery reverses connection protection and so on.

17. TVS lightning protection.

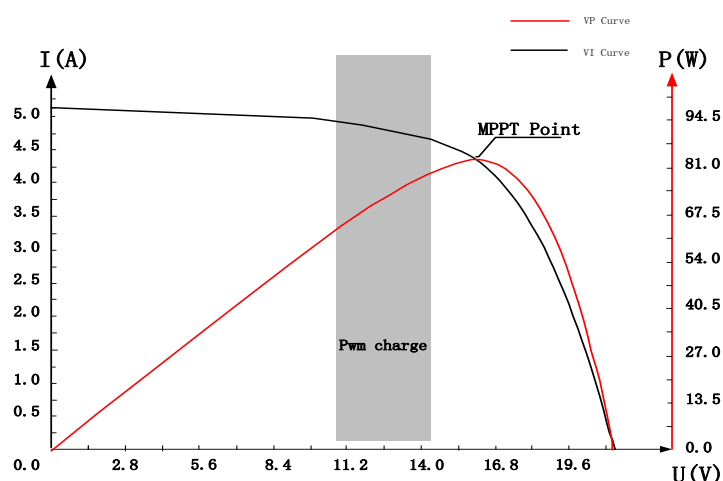
III.Charging introduction.

The full name of the MPPT is maximum power point tracking. It is an advanced charging way which could detect the real-time power of the solar panel and the maximum point of the I-V curve that make the highest battery charging efficiency. Contrast with the traditional PWM controller, MPPT controller could play a maximum power of the solar panel so that a larger charging current could be supplied. Generally speaking, the MPPT controller's energy utilization efficiency is 15%~20% higher than PWM controller.

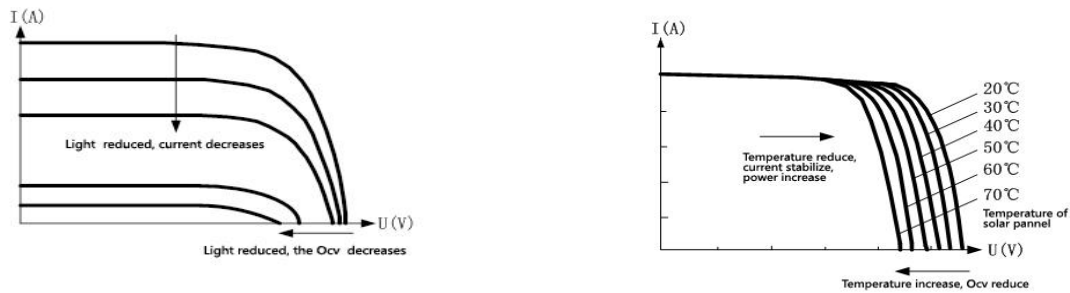
The voltage of the solar panel is about 12V when General controller is charging while the highest voltage of the solar panel is

about 17V, so it doesn't play the largest power of the solar panel. MPPT controller overcome this problem by adjusting the input current and voltage constantly to realize the largest input power.

Meanwhile, the maximum power point will change due to the surrounding temperature and sunshine condition. MPPT controller will adjust the parameter constantly according to different conditions to make the system working in the largest power point.

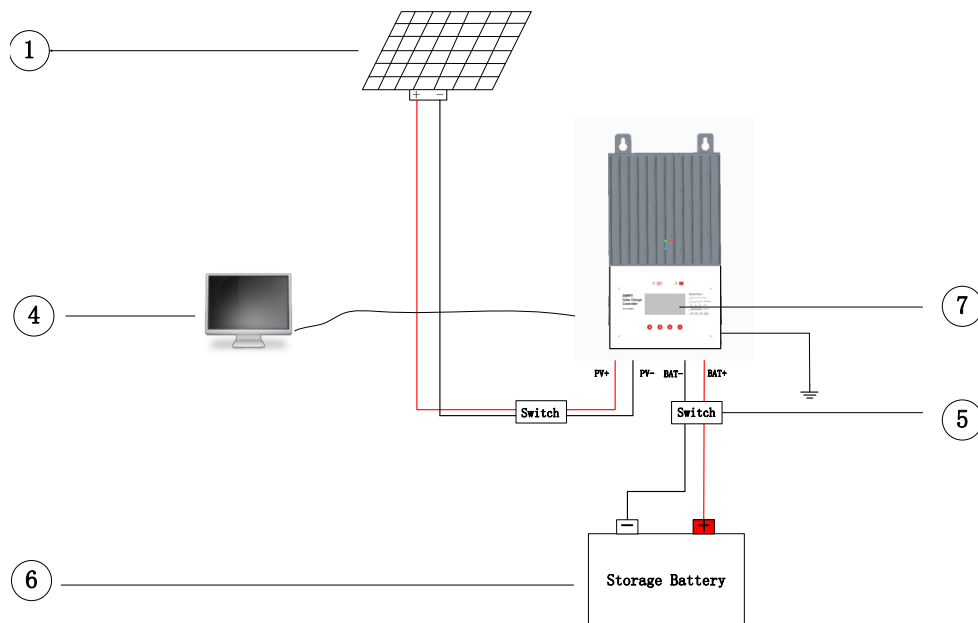


MPPT controller will adjust the parameters constantly according to different conditions to make the system working in the largest power point.



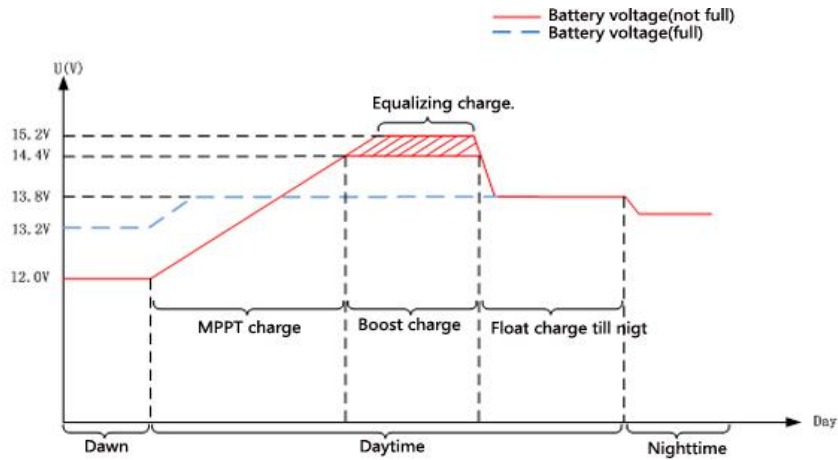
As a charging stage, MPPT charging can't work alone, it should combine with boost charging, float charging and equalizing charging. When the controller works, it will identify the battery voltage, if the voltage exceeds $13.2(\times 2 / 24V)V$, it will enter float charging directly without equalizing charging or boost charging. If the battery charging voltage is lower than $13.2V(\times 2 /$

$24V)$, the charging process is: MPPT(equalizing charging)—boost charging—float charging, the equalizing charging time is 1h, boost charging time is 2h, equalizing charging interval is 30 days, the charging curve is as follows:

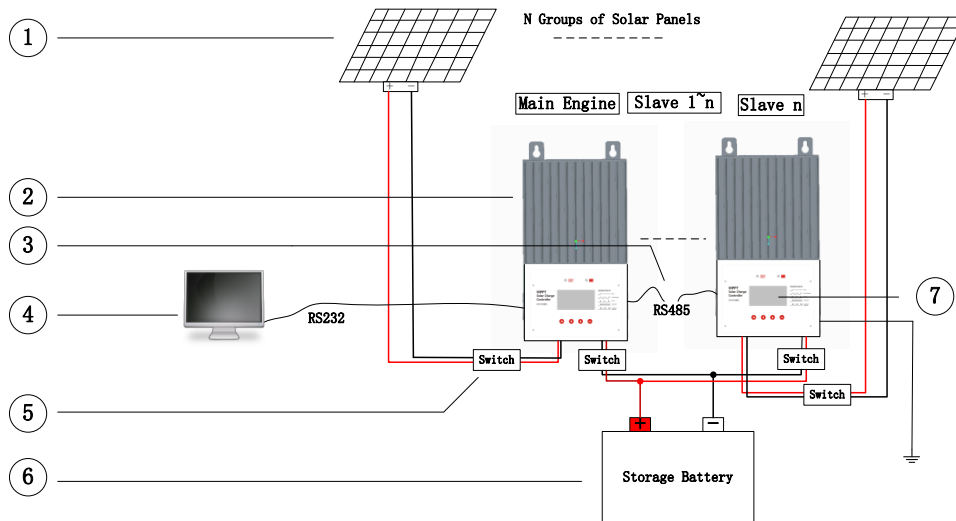


V.Connection.

1. For one machine operation:



2. For parallel operation:



1. Solar panel.

The power for battery charging.

2---Controller.

Central nervous of the system which controls the overall system.

3---RS485 Telecommunication cable.

Communication line of the controller which is necessary for parallel operation.

4---PC.

It can realize info exchange with the controller by RS232 and can monitor the system timely.

5---Open space.

It can insure the safety of operators.(the switching element is optional).

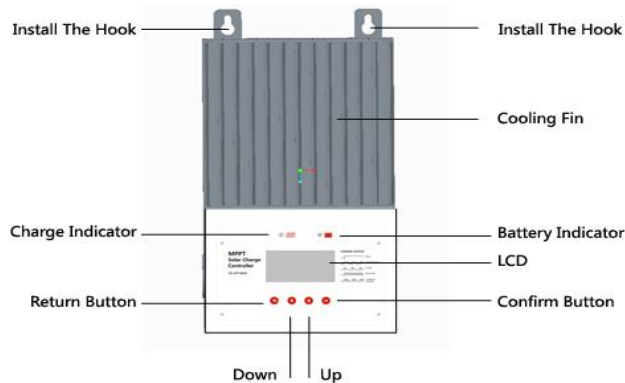
6---Battery.

A battery pack which compose of battery in series or in parallel.

7---LCD display.

The LCD can display the system status, parameters, records and the set value. (a LCD or a PC can realize the operation).

IV. Panel introduction.

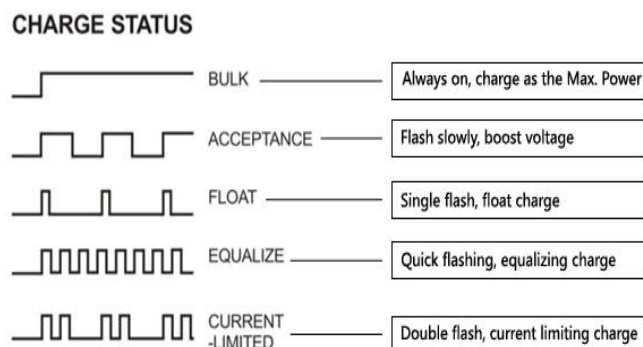


1. Fix the

hooks.

Used for the installation of the controller.

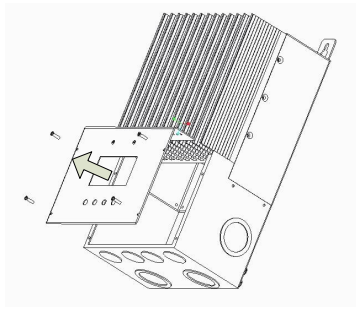
2. Charging indication.



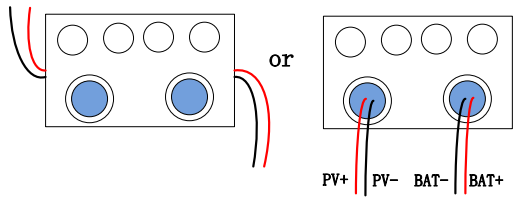
Serial number	Status	Charging stage
1	Normally on.	Charging at Max. Power.
2	Slow flash. (light for 1s, off for 1s, the cycle is 2s)	Boost charging.
3	Single flash. (light for 0.1s, off for 1.9s, the cycle is 2s)	Float charging.
4	Fast flash. (light for 0.1s, off for 0.1s, the cycle is 0.2s)	Equalizing charge.
5	Double flash. (light for 0.1s, off for 0.1s, reopen for 0.1s, reclose for 1.7s, the cycle is 2s)	Current limited charging.
6	Off	Night

3. Battery indication.

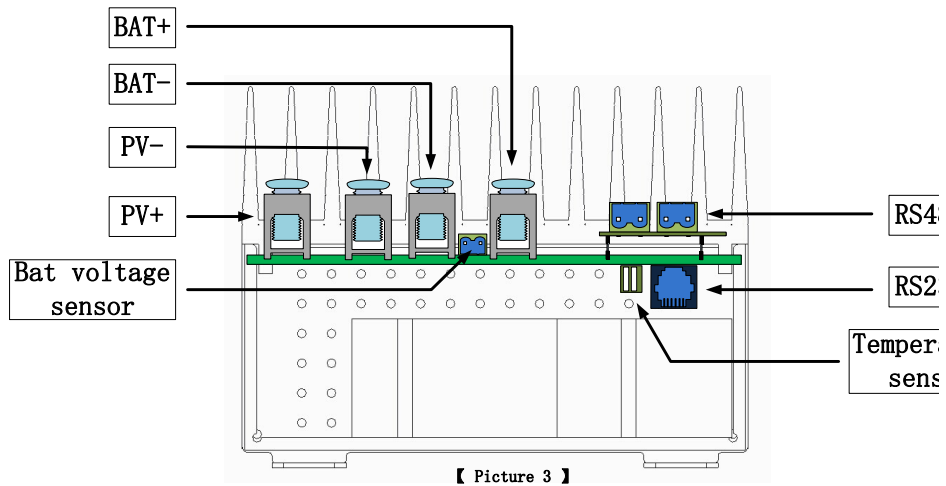
Indication	Battery status
Normally on	The voltage is normal.
Slow flash (light for 1s , off for 1s , the span is 2s)	It is over discharge.
Fast flash. (light for 0.1s, off for 0.1s, the cycle is 0.2s)	It is over voltage.



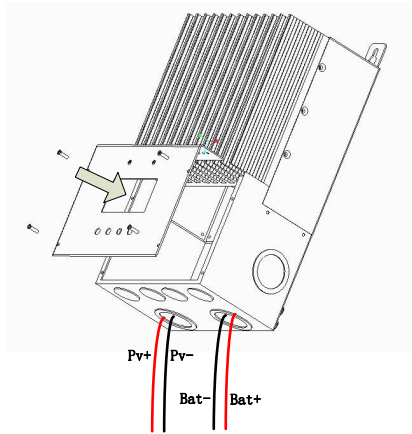
【 Picture 1 】



【 Picture 2 】



【 Picture 3 】



Parameters	Value		Adjustable	Default value
System voltage	12V/24V/36V/48V Auto			
No-load loss	0.7 W~1.5W			
Max. Input voltage	<150V			
Rated charging current	60A	45A		
Max. Input power	800W/12V 1600W/24V 2400W/36V 3200W/48V	600W/12V 1200W/24V 1800W/36V 2400W/48V		
Transfer efficiency	≤98%			
MPPT tracing efficiency	>99%			
Over voltage protection	16V~17.0V; ×nV		√	16.0V
Limited charge voltage	15.5V~16V; ×nV		√	15.5V
Equalizing charge voltage	15.0~15.5V; ×nV (25℃)		√	15.2V
Equalizing charge interval	3~30 day		√	30day
Boost charge voltage	14.0V~15.0V; ×nV (25℃)		√	14.4V
Boost charge return voltage	12.3V~13.5V; ×nV (25℃)		√	13.2V
Float charge voltage	13.2V~14.0V; ×nV (25℃)		√	13.8V
Over discharge return voltage	12.0V ~ 13.0V; ×nV		√	12.6V
Over discharge voltage	9.8V ~ 11.8V; ×nV		√	11.0V
Boost charge time	1H ~ 3H		√	2H
Equalizing charge time	1H ~ 3H		√	1H
Temperature compensation	-2.0 ~ -5.0 mV/℃/2V		√	-3.0
Over temperature protection	Yes			
Light controlled open voltage	5V			
Light controlled delay time	5min			
Device address	1 ~ 16		√	2(slave)
Working temperature	-35℃ ~ +45℃			
Protection level	IP32			
Weight	4.8 Kg	4.2 Kg		
Max. Wiring dimension	25 mm ²			
Altitude	≤ 3000 m			
Product dimension				
Mounting dimension	289*170*128 (mm)	259*170*128 (mm)		