



## **MPPT Solar Charge Controller User Manual**

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MADE IN CHINA

# MPPT Solar Charge Controller User Manual

## Dear Customers

Thanks for choosing our solar charge controller, please read carefully all the instructions and warnings in the manual before installation, it will help you to make full use of advantages about the controller, can promote performance of your solar system

This series MPPT have such advantages:

- ※ All the Various Real-time data show on one display ,Convenient user to check
- ※ The Solar Panel input voltage up to 96V, suitable for various specifications of solar panel
- ※ The power supply uses ultra low power chip ,reducing static standby power consumption ,reduce energy loss
- ※ USB 5V Output for phone charging
- ※ Support Remote Display

## 1. General Information

### 1.1 Overview

MPPT series solar charge controller is based on an advanced maximum power point tracking (MPPT) technology developed, dedicated to the solar system, the charge controller conversion efficiency up to 98%.

### Features

- \* Advanced Maximum Power Point Tracking (MPPT) technology, with efficiency no less than 99.5%.
- \* High quality components, perfecting system performance, with maximum conversion efficiency of 98%.
- \* Ultra-fast tracking speed and guaranteed tracking efficiency.

- \* Wide MPP operating voltage range.
- \* 12/24VDC automatically identifying system voltage.
- \* LCD panel display design, dynamically displaying tool"s operating data and working condition.
- \* Support 3 charging lead-acid battery options: Sealed, Gel, Flooded.
- \* Charge mode: three stages (constant current, constant voltage, floating charge), it prolongs service life of the batteries.
- \* Battery temperature compensation function.
- \* Multiple load work modes
- \* This solar charge controller with three time function.  
A: time (night working) B: period (pause) C: time slot (dawn working)

## **1.2 General Safety Information**

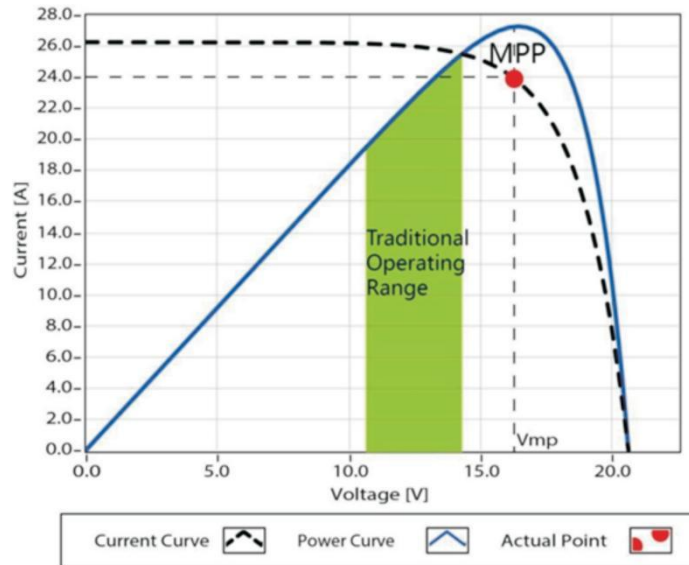
- \* Mount the controller indoors. Prevent exposure to the elements and do not allow water to enter the controller.
- \* Power connections must remain tight to avoid excessive heating from a loose connection.
- \* It is suggested to install appropriate external fuses/breakers.
- \* If the system needs to connect the inverter, please connect the inverter directly to the battery, and do not connect with the load terminal of the controller.
- \* If the display is not displayed for the first time, please cut off the fuse or circuit breaker immediately and check whether the line is connected correctly.

## **1.3 Maximum Power Point Tracking Technology**

This is a MPPT charge and discharge controller, With MPPT control algorithm, in any situation, products of this series can fast and accurately track out the best maximum power point (MPP) of photovoltaic array, in order to obtain the

maximum solar energy in time, which remarkably improves energy efficiency the maximum conversion efficiency can reach 99.5%; the maximum power point tracking is automatically traced, the charging efficiency is increased by 10% to 30% (compared with the controller without maximum power point tracking), with high efficiency / energy efficiency / intelligence.

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#### 1.4 Copper Coil



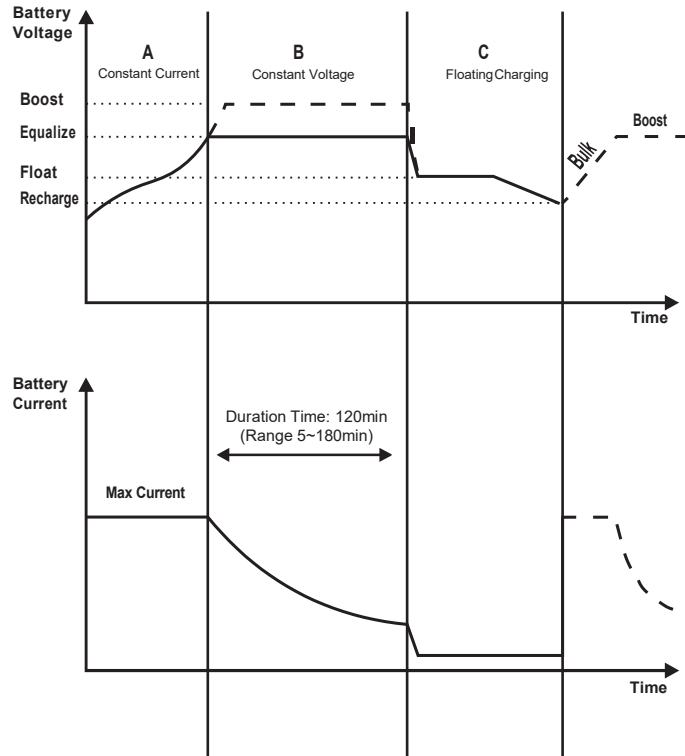
48 circles/2



72 circles/3

#### 1.5 Battery Charging Stage

The controller have 3 stages charge mode, Constant Current Charging, Constant Voltage Charging and Floating Charging for rapid, efficient, and safe battery charging.



Battery Changing Stage Curve

### **a) Constant Current Charging (Bulk Charging)**

In this stage, the battery voltage has not yet reached constant voltage (Equalize or Boost Voltage), the controller operates in constant current mode, delivering its maximum current to the batteries (MPPT Charging).

### **b) Constant Voltage Charging( Equalize and Boost Charging)**

When the battery voltage reaches the constant voltage set point, the controller will start to operate in constant voltage charging mode, this process the charging current will drop gradually. The Constant Charging has 2 stages, equalize and boost. These two stages are not carried out constantly in a full charge process, and its boost charging is start at 25<sup>th</sup> of each month.

### **c) Floating Charging**

After the constant voltage stage, the controller will reduce charging current to maintaining the battery voltage on the Floating Voltage set point. Charging the battery with a smaller current and voltage on Floating Voltage stage, while maintaining full battery storage capacity.

In Floating charging stage, loads are able to obtain almost all power from solar panel.

If loads exceed the power, the controller will no longer be able to maintain battery voltage in Floating charging stage. If the battery voltage remains below the Recharge Voltage, the system will leave Floating charging stage and return to Bulk charging stage.

## **1.6 Application Scenario**

Household system, monitoring system, base station, street lighting system, small power stations, etc.

## 1. Product Introduction

"P" series of an intelligent, multi-purpose solar charge controller

LCD screen display	Battery reverse discharge protection
Simple (and more time control) operation	Battery reverse polarity protection
MPPT charging mode	Battery under voltage protection
Parameter user can reset	Overload, short-circuit protection
A key to open and close the load	Automatic temperature compensation function
A key to restore the factory settings	USB5V charge 2.4A

## 2. Installation Instructions

Installing wires, first loosen the screw counter clockwise

\* Prepare complete installation tools, materials and cable. Please matching suitable cable.

\* ensure that the current density  $<4A/mm^2$  This will help reduce the line pressure drop.

Check the installation site meets the relevant safety requirements, avoid damp, dusty, flammable, explosive and corrosive gases

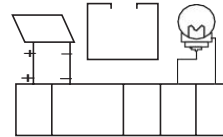
\* Install the controller fixed to the vertical plane, see Section V mounting aperture and hole spacing. In order to ensure a good controller cooling conditions, the controller on the bottom of each reserved 10cm space

\* As shown on the right wiring sequence: load, battery, solar.

Battery plate is connected to the controller to be taken to ensure that the load, battery.

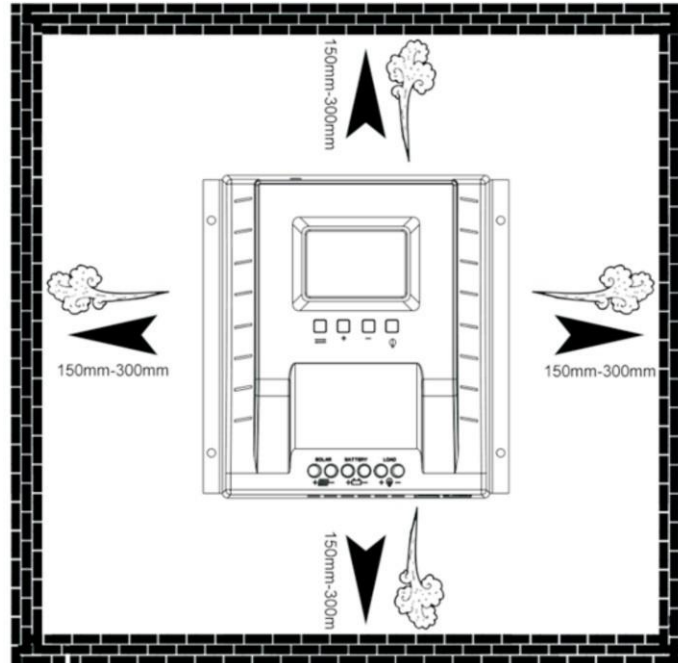
The polarity of the solar cell panel and controller.

\* Warning: to prevent accidents (high pressure or high temperature), non professionals can not engage in loading and unloading operations.

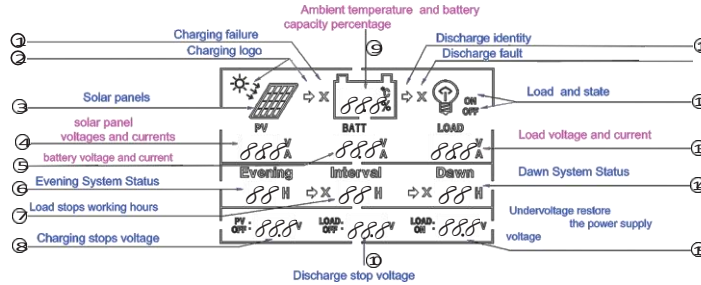




- \* Be very careful when installing the batteries, especially flooded lead-acid battery. Please wear eye protection, and have fresh water available to wash and clean any contact with battery acid.
- \* Keep the battery away from any metal objects, which may cause short circuit of the battery.
- \* The controller requires at least 150mm to 300mm of clearance above and below for proper air flow, ventilation heat dissipation fan is highly recommended if mounted in a sealed enclosure.



### 3. LCD operating Interface Description



**Note:** The cumulative power generation KWH of the solar power system is shown in position ⑨. After the battery is disconnected, the power generation KWH is cleared.

Charging	Charging Fault	Is discharging	Discharge failure
000A	00°C	000A	00%
Solar charging current	Ambient temperature	Load current	Battery capacity
PV OFF 000 V	Load OFF 000 V	Load ON 000V	
Stop battery is fully charged voltage (can be set)	Battery under voltage stop the supply voltage (can be set)	Under voltage battery Load voltage is switched on again	

Evening 00 H	Load output state is set: Set to 00H, said that under the light control mode, after dark (dusk) open load; after dawn (Dawn) load to stop working. Set to: 24H represents the load has been open until the battery voltage protection automatically disconnects the load; Setting time: 01h to 23 hours, indicating the working hours corresponding to the optical control mode of the load opening
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Interval 00 H	An interval of time setting (set this time, Dawn to Evening; to stop working load time) Set to: 00H indicates Evening to Dawn without the interval or intervals of 0H Set to: 01H to 24H represents Evening to Dawn stopping power load time (corresponding to the numbers indicate the length of time delay).
Dawn 00 H	Load output state is set: the length of the second opening hours or workload; Set to: 00H means no load open or the length of time the load power 0H; Set: 01H24H said opening a load length of time; (numbers indicate the length of time corresponding to the open load).





Three time periods set (cases)

Warning: If (night) setting (00H) or (24H), (time interval and dawn) would prohibit these two time periods set

Evening 00H	Interval --H	Dawn --H
After dark (night) open workload until dawn (dawn) load stops working,		
Evening 24H	Interval --H	Dawn --H
Normally open mode, the load has been working until the battery (under voltage) automatic protection, load stop working;		
Evening 01H	Interval 00H	Dawn 00H
Interval and Dawn are set to 00H, after dark 1H off load after load of work ( can set )		
Evening 23H	Interval 00H	Dawn 00H
Interval and Dawn are set to 00H, after dark 23H off load after load of work ( can set )		
Evening 05H	Interval 07H	Dawn 03H
(Evening) work load 5H, (interval) to stop supplying the load 7H, (Dawn) work load 3H ( can set )		

Time Status	Evening 00 H	Interval 00 H	Dawn 00 H
Set	00H(Light control mode)	Setting prohibited	Setting prohibited
Set	24H(Normally open mode)	Setting prohibited	Setting prohibited
Set	01H---23H(Any value)	00H--24H (can set0-24)	00H--24H (can set0-24)
Set	01H---23H(Any value)	00H (No time interval; direct execution of dawn working time	00H (Load operating time 0H)
Set	01H---23H(Any value)	01H---23H (Stop halfway load hours (H))	01H---23H(Open the load again working hours (H))

#### 4.Function Keys: Set And Save ≥ 5 Sec Auto Save And Restart

 :Toggle key	“+” Set parameters: "plus"	“-” Set parameters: "Minus"	 Manual switch load
 PV OFF→LOAD OFF→LOAD ON →Evening → Interval→ Dawn (Set order (automatic cycle))			
 This button can be "manually" open load or manually close the load. Long press and hold this button for 5 seconds to restore the factory settings "x" error or system failure, click this button, you can troubleshoot or eliminate "x"			
Network Line Interface (RS485) Indicator: Green light represents the battery, green light flashes, indicating that the load is working properly; yellow light indicates solar energy; yellow light flashes, indicating solar energy charging; The network interface is reserved for the interface and can be connected to a dedicated display (additional purchase).			

#### 5. Parameter Table

Model	K100 PRO
Maximum power current	100A
Load output current	40A
Installation Lin (mm <sup>2</sup> )	20
Installation Line(AWG)	4#
Weight	2300g
Peak power of solar cell panel ( Max Wp)	≤1300
Battery capacity configuration	≥800AH
Dimensions	300*200*100(mm)

### 6. Original Value

Battery float voltage	13.8V(12V system) / 27.6V(24V system)
Battery (under voltage) protection	10.6V(12V system) / 21.2V(24V system)
Battery (under voltage) recovery voltage	12.6V(12V system) / 25.2V(24V system)
System load loss: ≤13mA	Loop Buck: ≤100mV
Operating Temperature: -10℃~60℃	Storage Temperature: -30℃~70℃
Humidity requirements: ≤90%, No condensation	Temperature compensation: -4mV/Cell/℃
Maximum open circuit voltage of the solar panel	18V-48V(12V system)/36V-96V (24V system)
Solar panels maximum open circuit voltage (V)	≤96V

### 7.Installation and Execution Standards

System	Solar panel		MAX.PV input power
Battery voltage	Open circuit voltage	Max. Power. voltage	100A
12V system	≤48V (Voc)	≤36V (Vmp)	1300W
24V system	≤96V (Voc)	≤72V(Vmp)	2600W

### 8. Content Included

1X MPPT Solar Charge Controller  
1X English User Manual