

# PV Generation Station System

## ***SOLAR CHARGE CONTROLLER***



## **User-Manual**

Model No.: **MPC48V100A05V**

*\*Specially designed for KFR18K048D Solar Air Conditioner System\**

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## No .1 General Description

The solar charge controller is the intelligent power with integration of controlling. It can store electrical power generated by the solar panels into the storage battery.

The controller not only has perfect appearance, LCD display and convenient operation, but also has over-charge protection, over-voltage protection; over-hot protection, under-voltage protection, pole-confusion protection for storage battery and automatic dump-load function. The controller is adopted the constant voltage charging mode-PWM, and it has high reliable and safe operation, high efficiency, long service life functions. What's more, it adopts the American origin Micro-controller as a control core component with reliable. And the power parts of an apparatus adopt the import component, too.

## No .2 Design characteristic.

- 1 **PWM mode off-overload:** When solar panels exceeds the needs of the battery and inverter output, the control system must let out the superfluous power by discharging. The ordinary way is connecting the whole discharging, but the battery perhaps is not full while the power deplete on discharging, so it costs much waste. Someone may discharge by stages .the more stages have, the higher efficiency is. But it is only five or six stages at most. The effect is also out of expectation. In our products, the control-inverter is adopted the constant voltage charging mode-PWM. it can achieve to thousands of stages. So we are sure to make the storage battery voltage be on the floating charge voltage all the time and make full use of the electrical power and prolong the service life of the battery.
- 2 **high Reliability:** Perfect protections, it contains over-charge protection, over- voltage protection, low-voltage protection, over-hot protection, short-circuit protection, over-discharge protection, reverse connection protection, over-voltage for automatic brake protection and PWM-mode discharge.
- 3 **LCD display the battery voltage and charge current:** You could look at magnitude of the solar panel charge current and storage battery state, then accommodate the magnitude and time of the user-load based on battery voltage. It makes the products possess of humanized design.
4. **LED of “system” is indicate device working status; LED of “battery” is indicate battery capacity whether be normal.**
5. **digital intelligent control:** The machine is adopted Microcomputer chip as its core component to ensures accurate control, which also makes the peripheral circuit structure simply. It has agile control way and control strategy with high function and reliability.

## No. 3 Functions

1. **Charging and control:** When the solar panels exceeds the needs of the battery and inverter output, the machine must let out the superfluous power with PWM control mode by discharging. we are sure to make the battery's voltage level off the floating charge voltage all

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the time and make full use of the electrical power and prolong the service life of the battery.

2. **Automatic regulate voltage:** The equipment output constant power and automatically when the voltage wave between low-voltage and over-voltage in the storage battery and the loads vary in the rated capacity.
3. **Over-voltage protection:** When the voltage is above the “over-voltage ”, the machine should proceed PWM dump load to solar panel so that down the voltage output automatically. And battery LED will lighting in red . If voltage down to normal range, the led will shutdown.
4. **Low-voltage protection:** When the voltage is above the “over-voltage ”, the machine should proceed PWM dump load to solar panel so that down the voltage output automatically. And battery LED will sharking in red . If voltage down to normal range, the led will shutdown.
5. **Short circuit protection:** If the DC output is short circuit, the machine will shut off by inner fuse automatically.
6. **Battery reverse connection protection:** The machine has Perfect battery reverse connection protection. If you connect the anode and cathode reverse, the Intestine fuse will burn out automatically to protect the storage battery and equipment away from destroyed. But it is forbidden to connect inversely.

## No. 4 Attention

We have considered some suddenness happened by accident when we design the machine. Though there are some protection measures, you couldn't rely on these measure for ever. That's bad for the machine. So you should read the notice earnestly before installing and using the machine for long service life.

1. Check the whole work system regularly.  
It contains whether operate the machine and connect the wire of wind turbine, solar cells, and storage batteries are right or not.
2. You'd better check the voltage and the connection of the storage battery weekly. And remove the dirt in the anode and cathode in time. Because if there is something wrong with the battery, such as mendacious connection, destroyed etc. it will appear low-voltage, over-voltage and confusion system. And what's more it will damage the machine worsely.
3. The load power should increase step by step in order to keep safely and use it normally. But the total power is less more than rated capacity in the machine.
4. Because of the power is high on the moment of starting, you should turn off other equipments before starting. And forbid to start repeatedly.
5. Forbid to connect storage battery reversely.
6. Lay the machine out of reach and well ventilated place. And there is no flammable and explosive thing nearby. On the machine, there is no covering.

## No. 5 Installation

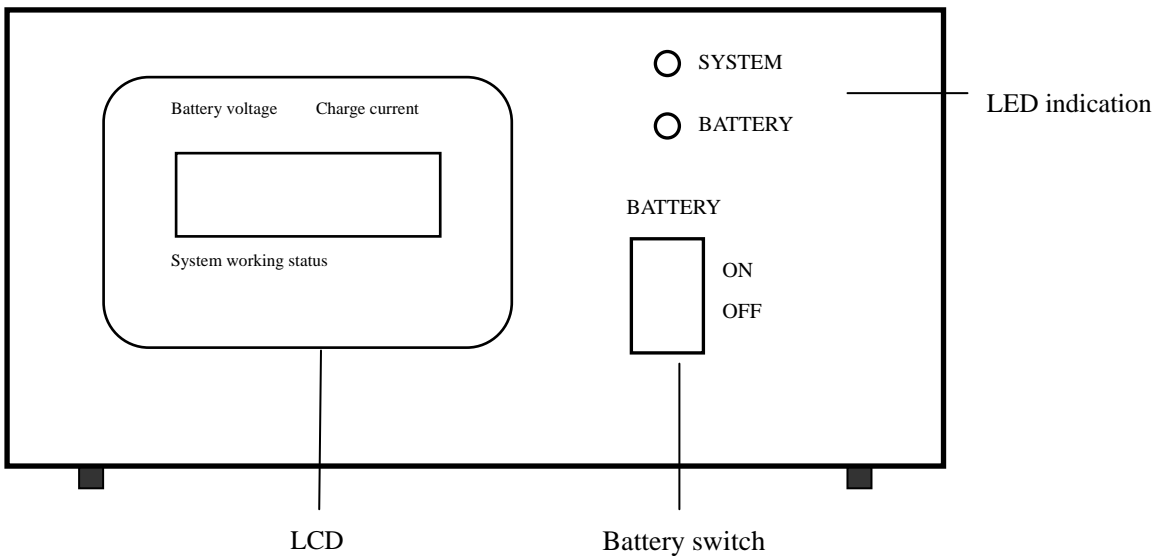
After the external circuitry installing, you'd better operation the machine with safety and

reliability. All connection must be followed up below step-by-step!

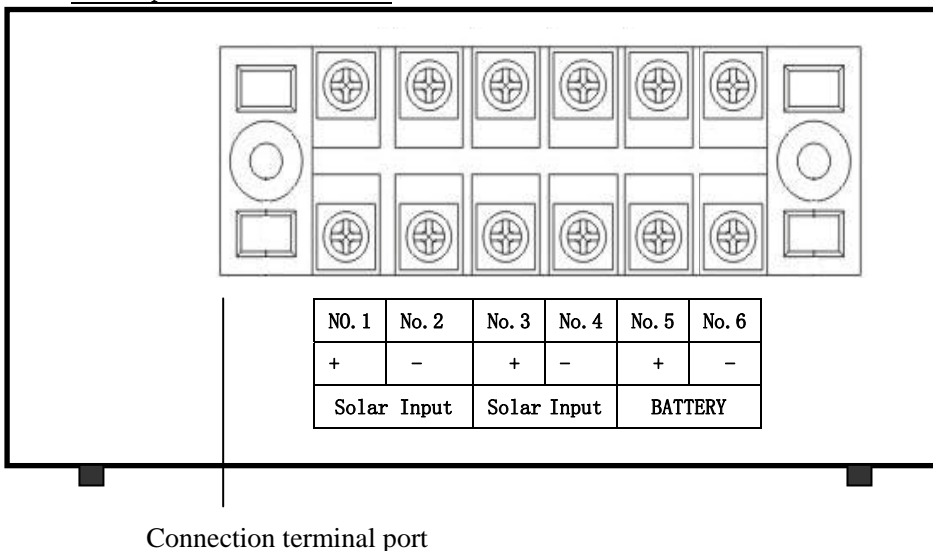
1. Open the packaging to check the machine whether be destroyed or not.
2. Make sure that battery switch (which be front of machine) on “OFF” position.
- ⚠ 3.** Connect battery bank wire to BATTERY TERMINAL rear of machine using the cuprum cable which is less than 1 meter long and more than 10 square millimeter cross section. **Although the machine has reverse connection protection, but connection of polarity reversely is prohibited !**
- ⚠ 4.** Please connect the wire to “SOLAR INPUT” terminal back of device. **Although the machine has reverse connection protection, but connection of polarity reversely is prohibited !**
5. After re-check that connection are all correct , please turn on the battery switch (which be front of machine) on “ON” position.
6. Machine will start to work normally. LCD will show “system initial, Please wait...” and display batter voltage and charging current . You can accommodate the magnitude and time of the loads according to storage battery’s voltage.

### Connection Diagram


#### Front panel of device



#### Rear panel of device



## No. 6 Use Environment

- 1 Let the machine work in the dry, clean and well ventilated environment.
- 2 Keep away from the point-blank, insolation, drench, humidity and acid mist environment.
- 3 Avoid from dust environment when used.
- 4 The distance should be above 0.5m between the machine and the battery .
- 5  It is not allow to use it in the flammable and easy blast environment, be care of blaze and scintilla.
- 6 Environment temperature:  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ .
- 7 The max humidity is under 85%. ( $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ).
- 8 If you use it over 2000m altitude, the output power will decrease 5% while the altitude increases each 1000m.

## No. 7 Analysis Malfunction

Malfunction phenomena	Analyse malfunction	Solution
The LCD does not display.	<ol style="list-style-type: none"> <li>1. check whether the battery contact is well or not.</li> <li>2. check whether the charge battery is destroyed or not.</li> <li>3. the voltage of the storage battery is low 50% compared with the rated voltage.</li> </ol>	<ol style="list-style-type: none"> <li>1. connect the storage battery wire well.</li> <li>2. use a new storage battery for instead.</li> <li>3. charge up immediately.</li> </ol>
RED-LED twinkling	The battery voltage will lower to normal point	Wait until the battery voltage is lift to normal point, the red LED is light-off automatically.
RED LED lighting	The battery voltage is below “low-battery”.	Wait until the battery voltage is lift to normal point, the red LED is light-off automatically.
Green LED lighting-off	System connection may be not correctly	Please to check all related connection and device working status
Intestine fuse burn out.	<ol style="list-style-type: none"> <li>1.battery reverse</li> <li>2.the charge current is special high in the wind turbine.</li> <li>3 there are components destroyed in the machine.</li> </ol>	<ol style="list-style-type: none"> <li>1. be sure to connect the anode and cathode of the battery correctly.</li> <li>2. wait until the wind speed becomes low</li> <li>3. telephone the manufacture</li> </ol>

## No. 8 Technology Parameter

<b>Model no.</b>	<b>MPC48V100A05V</b>
Max PV power	5KW
PV array Input Control Line	1 OR 2
Max. current of each PV array line	≤150A
Rated current of each PV array	100A
Battery over-charge voltage	57.6V
Over-charge recovery voltage	52.0V
Free-load current	≤100mA
operating ambient temperature	-20℃-- +50℃
Working height above sea level	≤5000m
protection type	reverse current protection at night, Solar cell reverse connection protection, battery over-charge and over discharge protection, battery anti-reverse connection
level of protection	IP20
Dimension (L * W * H)	420mm X 200mm X 160mm
Net weight	8.5KG