# 48V 100A Solar Controller Specification

Product description

The controller applies to the solar net division system (independent system). It can control the electrical charge and discharge process automatically. The discharge process of the storage battery has been optimized thus it can increase the lifetime of the storage battery and improve the function of the system. The thorough electronic protection function can keep the controller away from damage when the users install it error or the system is in bug.

Function:

1. MCU design with high speed and excellent performance

2. Nice heat dissipation and electromagnetism compat design

3. PWM charging main circuit and MCT charging mode which increased the power using time thus leads to the longer lifetime of the system

4. The controller adopted the LCD liquid crystal display and doubles key human-computer interface, the integrated menu display and operation.

5. Humanized browse interface makes the operation more convenient.

6. Use the MOSFET switch, without any machinery switch.

7. Using high performance adc converter, with high resolution, to maintain system control precision

8. The SEAL、GEL、FLOOD、SELF SET, four kinds of optional battery charging procedure.

9. The temperature conductor is installed outside which has the high precision temperature compensation.

10. Electrical leakage storage function, without the repeated set which makes the usage convenient.

11. The visual LED and charging current display which can let the user get to know the conditions of solar energy and the load.

12. The overcharge, discharge and overload protection; electronic circuit protection and the battery fraud connection protection.
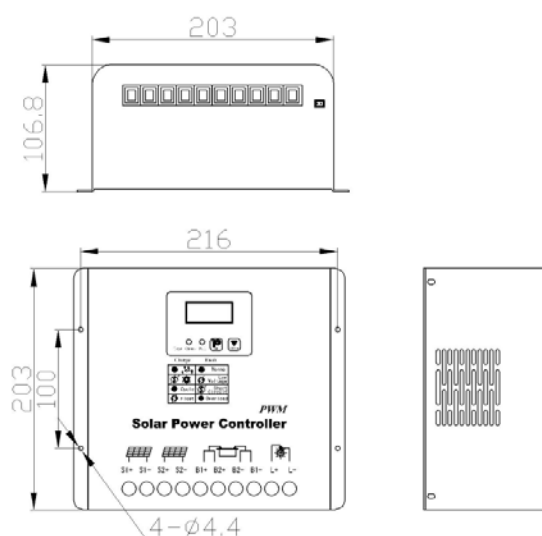
13. Lightning protection.

The controller panel figure:
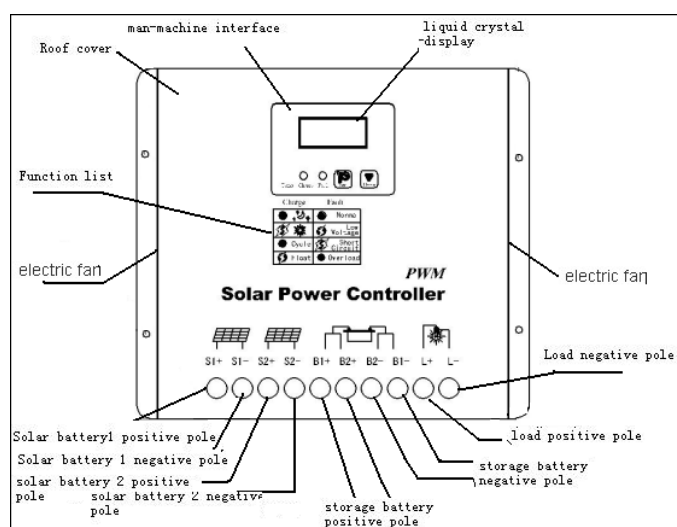
Wiring figure:
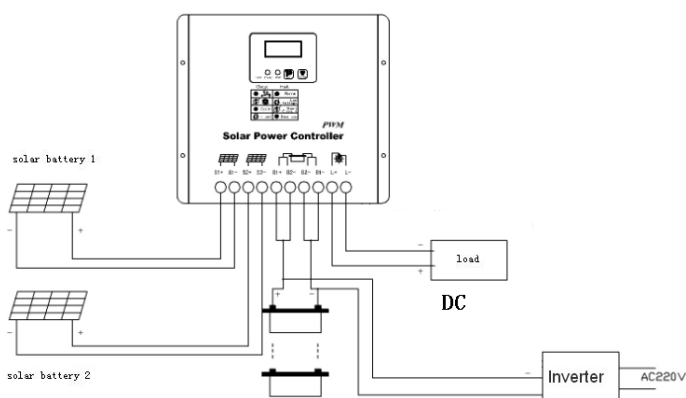
Controller installing and use:

1. The controller should be installed firmly, the sizes are as follows:

Outline size and installing size figure:

2. Wire preparation: ensure the wire length firstly; try to minimize the wire length as much as possible to reduce the electricity loss after ensuring the install location.

3. Connect the storage battery first, note the positive and negative poles, and donot connect error. If connect error, the indict light of the controller do not have any signal. But it will not make any damage to the internal units of the controller. If connect right, the liquid crystal will have the initialized interface.

4. Connect the solar energy battery wire second, note the positive and negative poles, and do not connect error. If there exists light, the CHARGE light will light or blink after 10 seconds. If not, check the connection.

5. Connect the load at last, connect the LED light or DC load with the output positive and negative poles of the controller. Note the positive and negative poles, and do not connect error to prevent the equipment from been burnt. Need to connect the inventor, inventor can be directly connected on the battery. Using the relay controller signal that the controller output to control the inventor switch manually.

6. The controller terminal connection wire diameter scope biggest: 20~2 AWG（$0.5\,mm^2$~$33.6\,mm^2$）

LED light display and the function set

Man-computer interface panel figure:

The controller use the 0802 character display, LED and two film buttons as the Man-computer interface, as the figure above shows.

Button specification:

 Number setting button (fix the time; set the load model and storage battery model)

Note: if arrow displays. It means the page can be set.

 Turn page button

Menu specification:

LCD graphic symbol desciption:

 :Stopping power supply state

 :Stop charging the battery

 :No current to the load supply status

 ng of the battery at full speed

 :Load loop current

 ←→ :Floating in

 :Load

 :System work normal

 :System work exception

 :Solar panels

 :Night

 :Battery power

 :Time control

 :Battery

liquid crystal interface description:

1.   Main interface

As shown in the picture on the right, the main interface show charging status, Discharge condition, battery voltage and power. In any interface one minute is not operation Settings, will be back to the main interface display.

2.   Ambient temperature view interface

As shown in the picture on the right, this is Ambient temperature view interface, Used for battery charging temperature compensation, but in the working condition, it must be connected to the temperature Sensor, the temperature error precision plus or minus 2 degrees. If you do not install the temperature sensor, the Interface does not display the temperature value, but charge compensation parameters according to the ambient temperature of 25 degrees.

3.   Solar power current interface

As shown in the picture on the right, Shows the values for solar charging current.

4.   Load discharge current display

As shown in the picture on the right, display value of load discharge current.

5.   Solar accumulative generation AH value

As shown in the picture on the right, Shows the cumulative power generation number AH, the biggest displayAH, 999 more than the parameter value will be automatic clear zero, the cumulative parameters not when power supply dropSave, only for use in normal charging view

6.   Load cumulative number of discharge AH value

As shown in the picture on the right, Show the cumulative numberof discharge AH , show the biggest 999AH, morethan the parameter value will be automatic clear zero, the cumulative parameters not when power supply dropsave, to recharge to see normal use only, and load current is greater than 0.5 A, AH discharge total number.

7   Battery voltage under-voltage protection
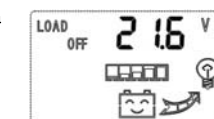
As shown in the picture on the right, Show the values for battery voltage under-voltage protection. When the battery voltage is lower than the under-voltage protection voltage controller will disconnect the load Circuit, prevent excessive battery discharge.

8   Battery undervoltage recovery voltage

As shown in the picture on the right, Shows the values for battery voltage recovery voltage, After the controller under-voltage protection, to restore the battery voltage is greater than the under-voltage restore Complex voltage, the controller will return through to load circuit.

9 Maintain charging time

As shown in the picture on the right, Show the values for charging time parameter. When a user setting for lead-acid battery types, colloid or open the battery charging. Using a three-stage charging, battery reaches equilibrium point or promotion parameters, After a certain charge after the time, and can enter floating. So the user can choose reasonable charge to maintain the time to let the battery charge more full. (since the setting parameter types, there is no charge to maintain time)

10 Battery type selection

As shown in the picture on the right, SEAL on behalf of the sealed lead acid battery

As shown in the picture on the right, GEL on behalf of the colloid storage battery

As shown in the picture on the right, FLoo are open storage battery

As shown in the picture on the right, the SELF set charging parameters

11 SELF set charging parameters

As shown in the picture on the right, show the values for the set voltage parameters, when the user set the battery type is the SELF, the charging protection voltage interface parameters will work.

12 Viewing and setting load patterns

As shown in the picture on the right, the numerical set for load patterns.

24H: The power supply load for 24 hours

OH: Pure electric load power supply

1H~23H:Light + time control mode, the parameter value represents the load time

## 13. Display voltage error parameter calibration

Because of the influence of temperature,
 it is inevitable that the value of the
voltage parameters and the actual. Parameters display is not accurate, this interface is calibrated by adjusting the value of the quasi compensation. Range is: +2V~-2V. As shown on the right interface:

14. fault state query interface
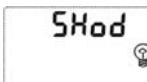
Normal working state interface:
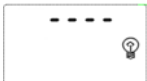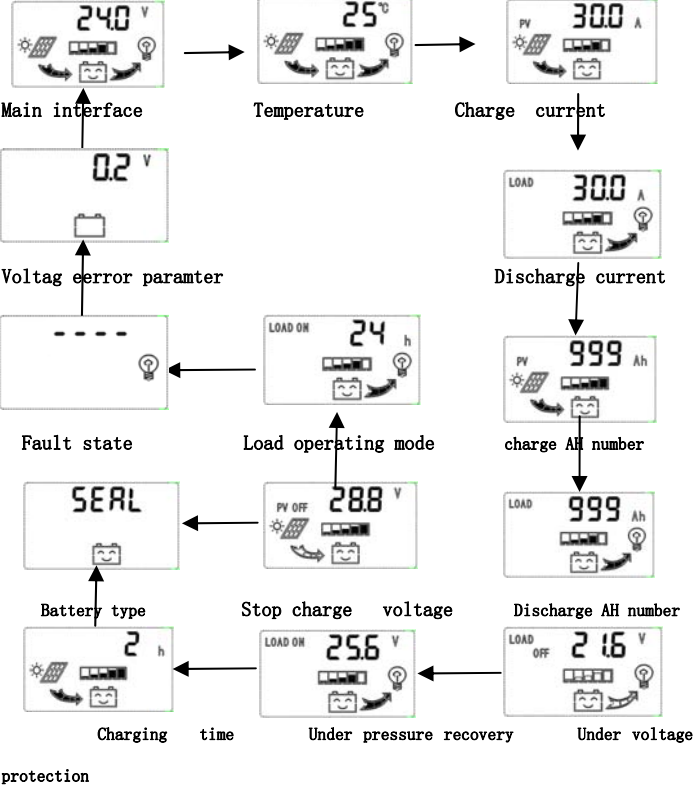

Low voltage protection state interface:
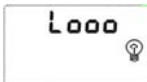
Overload protection state interface:

Short-circuit protection state interface:

15 All interface setting sequence：

Main interface	Temperature	Charge current

Voltag error paramter / Discharge current

Fault state / Load operating mode / charge AH number

Battery type / Stop charge voltage / Discharge AH number

Charging   time / Under pressure recovery / Under voltage protection

SELF SET battery charging parameter setting

Battery type with SEL SET pattern, Press page select the SELF SET menu to SET this parameter. Setting battery charging range: 13.5V~15.5V(12V parameter 、24V parameter*2,and so on),system adjustment step 0.1 V to 12V, 0.2V to 24V.

	Seal battery maintenance-free	Gel battery	Flood battery
advancing	14.6V (48V*4)	14.2V (48V*4)	14.8V (48V*4)
balanced	14.4V (48V*4)	14.2V (48V*4)	14.6V (48V*4)
floating	13.8V (48V*4)	13.8V (48V*4)	13.8V (48V*4)

LED light specification:

LED	Model	Function	Figure
CHARGE	off	At night or battery is failed to connect	(1)
	light normally	Normal charge	(3)
	slow flash	Float charge	(4)
	double flash	Daytime (no charge)	(1)
PRORECTION	Red lamp in slow flash	Load line in under voltage or high voltage protection	(7)
	Red lamp in double flash	Load line short circuit protection	(6)
	Red lamp lights for long time	Load line over load protection	(5)
	off	normal work	(8)
	Dot light loop	The voltage of electric automatic identifying battery in the controller in medium	

LCD light control specification

Press the button to turn on the light. The light will turn off if no button has been pressed within 60s to save the electricity. Press the button for over 4s, the LCD will turn off. Press the button for 4s again, the LCD will turn on.

Technology standard

System voltage	48V
System current	100A
DCloaddischarging	60A
No-load loss	<30mA
Solar energy input voltage	<=100V
Over voltage protection	66.0V±1%
Over voltage recovery	60.0V±1%

Balancecharge voltage	58.4V±1%（adjustable）
Increase charge voltage	57.6V±1%
Float charge voltage	55.2V±1%
Charging return voltage	53.2V±1%
Over discharge protection voltage	44.4V±1%(adjustable)
Over discharge return voltage	51.2V±1%(adjustable)
Night identification voltage	12.0V±1%
Daytime identification voltage	28.0V±1%
Temperature compensation	-4.0mv/℃/2V
Over-load, short circuit protection	2 times rated current of the protection
Work temperature	-25℃~+60℃
The cooling way	Air cooling
Protection degree	IP30
Outline size	216mm*203mm*106.8mm
weight	3.2KG