

MPPT

Solar Charge Controller

96V 100



User Manual

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Warning

This is A class inverter. It might cause slightly radio interference in daily life. And practical measure is required to take under this condition.

1、Description and Product Features

Thank you for choosing MPPT solar charge controller. Based on advanced MPPT algorithm design, the controller adopts graphical LCD dynamic display to present its running status.

With the MPPT algorithm, the controller can quickly track the maximum power point of the PV array; promptly acquire the maximum energy of solar modules to improve power generation. Users are access to extended application with the adoption of standard Modbus RS485 communication port.

Product Features:

- Using DSP digital control technology
- Advanced MPPT tracking technology
- Temperature compensation for battery;
- Life of battery is greatly prolonged by scientific battery management and three-stage charging: fast charge, constant charge, and float charge
- Through the LCD display, users can timely and intuitively know about the operation of solar system and battery.
- Every component and fuse is preventing from damage or burn through series of protection(overcharge, overvoltage over-temperature protection, electronic short circuit protection and anti-reverse protection).
- Display and set through LCD screen, complete all settings through one button, intuitive and easy to use.

2、Description of System

The controller is designed for solar DC power supply system, solar DC street lamp system, and small solar power plant system by adopting special-purpose microprocessor to achieve intelligent control.

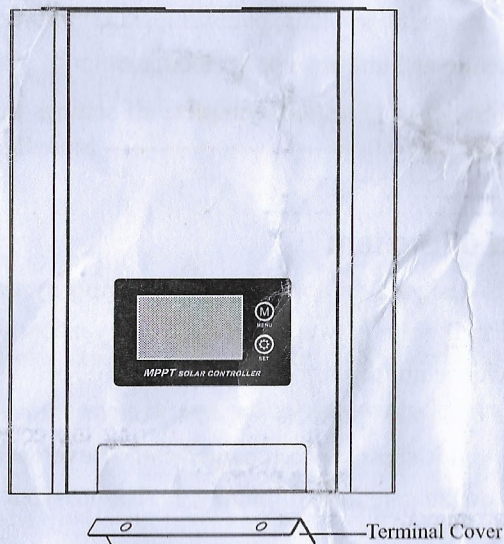
In addition, the controller protects systems from reverse connection. And it shuts down (charged-full or overcharged) and recovers automatically based on the condition of battery. It also provides detailed indication

of charging and errors, and shows the state of battery. It realizes the control of battery by collecting and calculating data of battery and PV array voltage, charging current as well as temperature of environment. Life of battery is greatly prolonged by three-stage charging control, which makes sure of the best working state of battery.

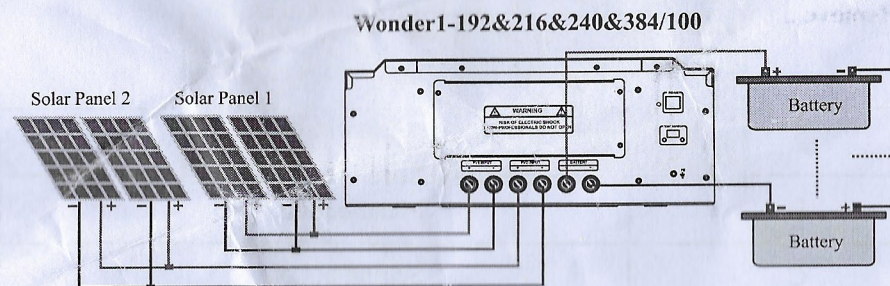
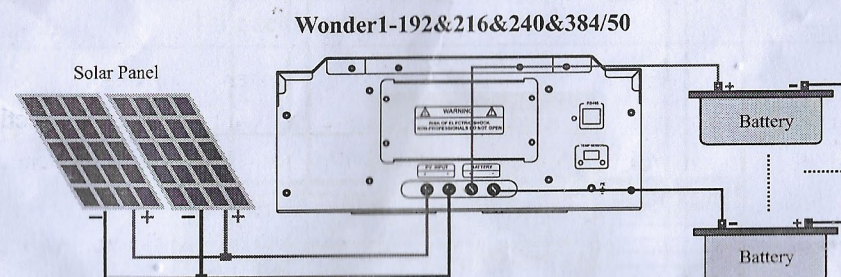
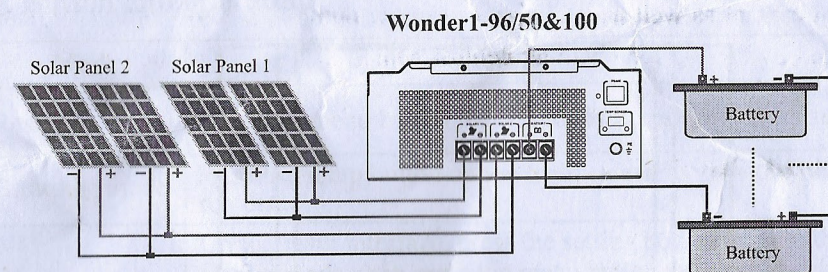
3、 Connection and Application

1. The controller should be installed firmly as close as possible to the battery.
2. Cable: please use cables matching with the charging current. Calculate the length and strip about 5mm length of insulated leather and connect the wire to the controller. The cable is supposed to be as short as it can to make sure of less wastage. The system cable is selected for the density of current ($\leq 5A/mm$).
3. Connection of battery: if the negative and positive poles are connected correctly, relative specification will be present in the LCD display, otherwise, please check the connection.
4. Connection of solar panel: if there is sunshine, relative specification will be present in the LCD display, otherwise, please check the connection.
5. Controller entry and exit line illustration:

- 1) Remove the terminal cover



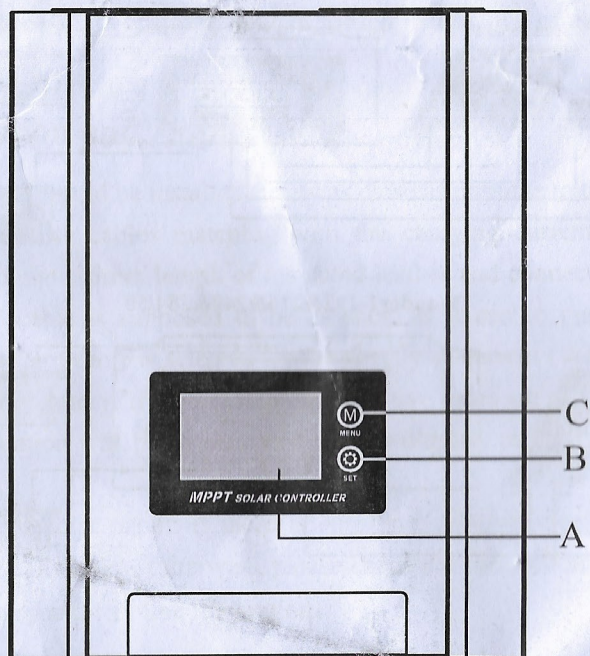
- 2) Connect solar panels, batteries and DC loads in the order indicated above



Note:

- The installation of the solar system components should be followed by: battery- PV array
- Please do not open the air switch or fuse during the connection, and make sure that the positive and negative poles of the parts are connected correctly;
- Sequence of disconnection is as follow: PV array-- battery;

4、Description of panel



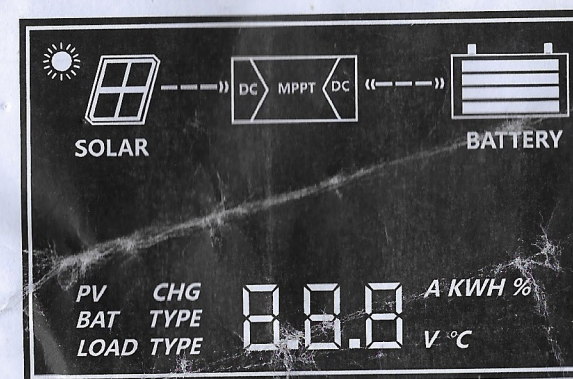
A	LCD Display
B	Menu button
C	Setting button

5、Application Instruction

1). Button and operation

Mode	Note
Reset	Press the menu button for 5 seconds to restore factory settings
Browsing mode	Press the setup button on the main screen to view the relevant run data.
Set the mode	On the main interface, press the setting button to enter the setting mode, then press the menu button to select the item to be modified. After setting, press the setting button to exit the setting mode.

2). Main Interface










3). Description of State

Item	Icon	State
PV allay		Day/sunshine
		Night/no sunshine
Battery		Power and voltage
		Over-discharge


4).Interface

Press the Setup key on the main screen to view the relevant operating data.

Display	Description
	Voltage of battery
	PV input voltage
	Charging current
	Percentage of battery capacity
	Working temperature of battery
	Power generated by PV
	Type of battery

5). Setting battery type

Support Pb, Gel, OP-LEAD


Setting: Long press the set button, BAT TYPE words will flash, and then press the menu button to select a battery type , then long press the set button to save and exit. Setting will be effective after re-powered on. Code for different battery type:

Code	Battery type
000	Pb
001	Gel
002	Open-lead

Note: When the battery type is modified, the custom charging parameter is invalid. This state for 10 seconds without button operation, then automatically returned to the battery type browsing interface, this parameter settings invalid

6). Set the Charging Parameter

Setting: Long press the set button , BAT TYPE words will flash, and then press the menu button to select the constant charging voltage for the

battery , for example: if the charging voltage is 14.6V, then press the menu button to set the value, then long press the set button to save and exit. Setting will be effective after re-powered on.

Note: Max voltage can only be set to 14.8V (single battery voltage). This state for 10 seconds without button operation, then automatically returned to the battery voltage browsing interface, this parameter settings invalid.

6、Specification

产品型号: Wonder1	96/50	96/100	192/50, 216/50, 240/50,384/50	192/100, 216/100, 240/100,384/100
Rated current	50A	100A	50A	100A
Rated System Voltage	96V		192V/216V /240V	384V
Max PV input voltage (at 25℃)	300V(96V system); 450V(192V/216Vsystem); 500V(240Vsystem); 800V(384Vsystem)			
PV array Max power	5.6KW	5.6KW *2	11.2KW/12.6KW/ 14KW/22.4KW	11.2KW*2/12.6KW*2/ 14KW*2/22.4KW*2
MPPT Tracking Voltage Range	Battery voltage~240V (96V system) / Battery voltage~360V (192V/216Vsystem) / Battery voltage~400V (240V system) / Battery voltage~640V (384Vsystem)			
MPPT route number	1	2	1	2
Recommended operating voltage range	120V-160V(96Vsystem); 240V-320V(192Vsystem); 270V-320V(216Vsystem); 300V-350V(240Vsystem); 480V-560V(384Vsystem)			
Battery type	Lead acid battery/deep cycle battery/gel battery etc(Battery type base on user charge sepecification)			
Floating voltage	110.4V/220.8V/248.4V/276V/441.6V			
Charge voltage	113.6V/227.2V/255.6V/284V/454.4V			
Charging protection voltage	120V/240V/270V/300V/480V			
Promote recovery voltage	105.6V/211.2V/237.6V/264V/422.2V			
Temperature compensation	-3mv/℃/2V(25℃is baseline)(Optional)			
Charging mode	MPPT maximum power point tracking			
Charging method	Three stages: constant current(MPPT), constant voltage, floating charge			
Protection	Over-voltage/under-voltage/over-temperature/PV&Battery anti-reverse protection			
Conversion Efficiency	>98%			
MPPT efficiency	>99%			
Machine dimension(L*W*Hmm)	315*250*108		460*330*140	530*410*162
Package dimension(L*W*Hmm)	365*310*164		509*405*215	598*487*239
N.W.(kg)	4.5	5.6	13.5	15
G.W.(kg)	5.2	6.3	15	16.3
System Parameter				
Display	LCD			
Thermal method	Cooling fan in intelligent control			
Protection level	IP20			
Operating temperature	-10℃~+50℃			
Storage temperature	-20℃~+60℃			
Elevation	<5000m(Derating above 2000m)			
Humidity	5%~95%, No condensation			
Communication	RS485(Optional)			

Note: All specification is subject to change without prior notice

7、Protection and troubleshooting

7-1: Protection

【PV array over-current】

If it exceeds the rated power of the controller, the controller will charge at rated power. Therefore when the PV array does not match the parameters, it may not work on the maximum power.

【PV array polarity reversal】

When the polarity of the PV array is reversed, the controller will not be damaged and the controller still works properly after wiring properly.

【Battery over-voltage】

When battery voltage reaches the over-voltage, the controller will automatically stop charging the battery to prevent the battery from overcharging and damage.

【Battery over discharge】

When the battery voltage reaches the low voltage, the controller will automatically stop the battery discharge, to prevent the battery over discharge and damage.

【Battery over-temperature】

The controller detects the battery temperature through an external temperature sensor. When the battery temperature exceeds 65 ℃ will stop working, less than 55 ℃ to resume work.

【Controller over-temperature】

The controller detects the internal temperature of the controller through the internal sensor. When the internal temperature exceeds 85 ℃ will stop working, less than 75 ℃ to resume work.

【Temperature sensor damage】

When the temperature sensor is short-circuited or damaged or is not connected, the controller will charge or discharge at 25 ° C by default to prevent overcharging or over-discharge of the battery.

【High voltage surge protection】



This product can protect high-voltage surges with low energy. In areas with frequent lightning, it is recommended to install large-capacity lightning arresters on the PV input terminals.

7-2: Troubleshooting

Code for alarm

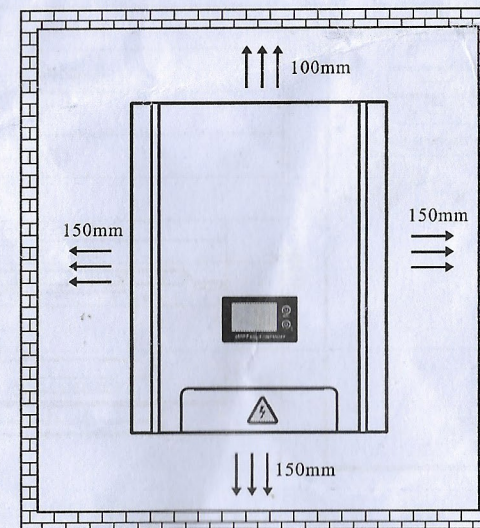
Code for alarm	Reason	Solution
A01	Overheat protection	Please check whether overload and reduce load
A02	Battery high voltage protection	Please disconnect the PV module
A03	Internal saving data error	Internal saving data error
A04	Internal reference voltage error	Please contact the supplier
A14	Battery low voltage protection	Please turn off the load, recharge the battery and reboot inverter
A15	PV input high voltage	Please check if the PV module voltage exceeds the controller specifications
A16	NTC fault	Please contact the supplier
A17	Battery high voltage fault	Please contact the supplier

Common troubleshooting

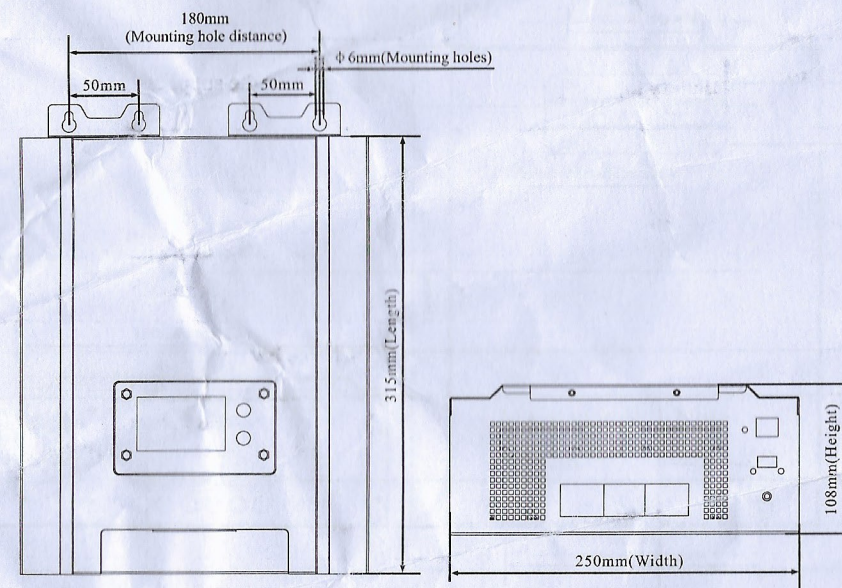
Problem	Possible cause	Solutions
Normal wiring but LCD is off	Battery voltage too low	Charge battery
 A02	Battery over-voltage	Disconnect solar arrays and use multi-meter to check battery voltage
 A14	Battery over-discharged	Controller turn off the output automatically and restore

8、Installation

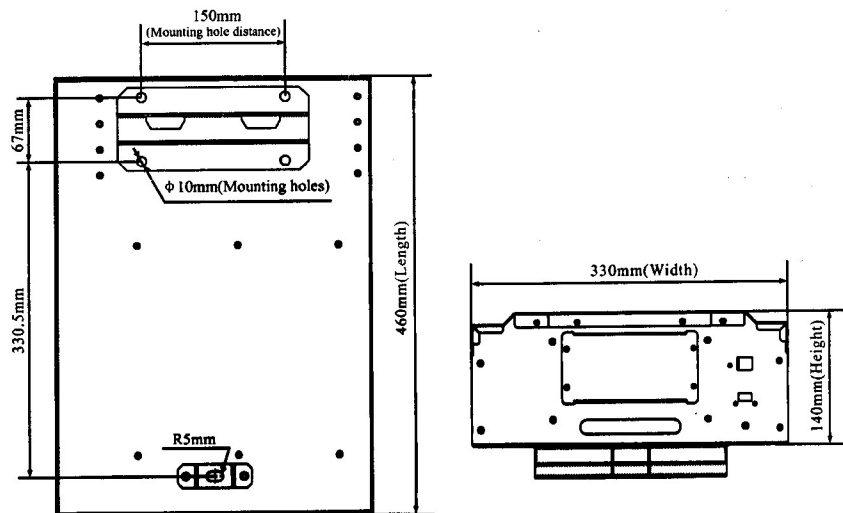
1. Allow 150mm space around the equipment to make the air circulating.



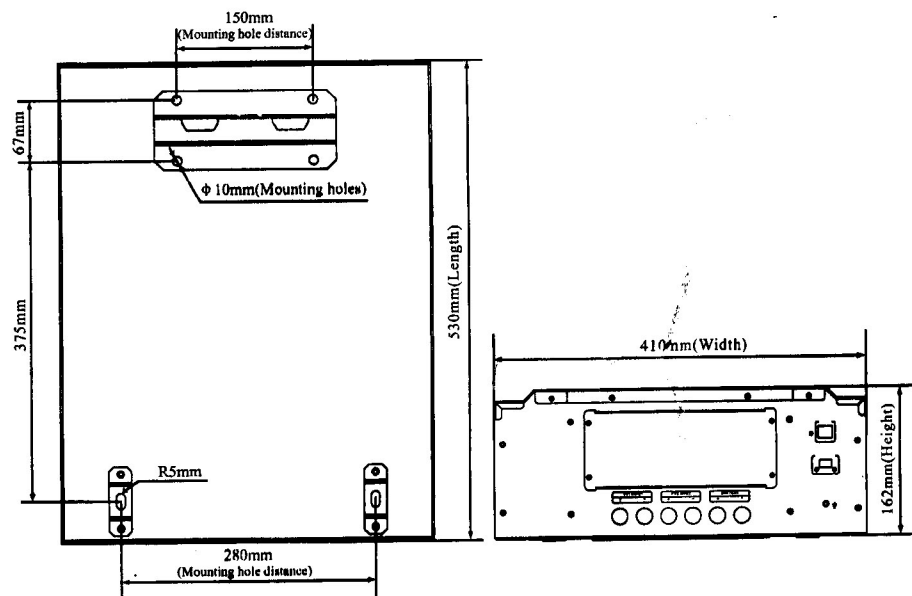
2. 控制器尺寸及安装尺寸图



Wonder1-96/50&100



Wonder1-192&216&240&384/50

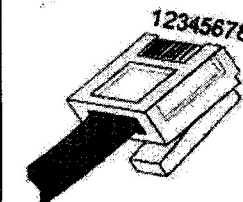


Wonder1-192&216&240&384/100

9、Appendix--485 Communication Port (Optional)

Definition of pin:

PIN1-----	RS485-A
PIN2-----	RS485-B
PIN3-----	NC
PIN4-----	GND
PIN5-----	NC
PIN6-----	NC
PIN7-----	NC
PIN8-----	NC



Note: refer to as not connect.

10、Maintenance Record

Dear user, thank you for selecting our product. Please fill in and keep the warranty card for better services.

Attn: _____ Product number: _____

Tel: _____ Fax: _____

Purchase date: _____

Address: _____

Maintenance Record			
Date of repair	Content	Maintenance personnel	Note