Dual-Channel MPPT Wind/Solar Hybrid Solar Charge Controller

Product Manual



Dear customer, thank you for choosing to use our company's products. Please read the following instructions carefully before using this product:

Please keep this manual for future reference.

Catalog

I Safety instructions.....错误！未定义书签。
1.1、Safety signs .....- 2 -
1.2、Safety Tips .....- 2 -
II Product Features .....- 3 -
1、 Overview .....错误！未定义书签。
2、 Features .....错误！未定义书签。
3、 Appearance .....错误！未定义书签。
4、 Unloading resistor type .....错误！未定义书签。
III Installation Notes .....- 8 -
1、 Installation Precautions .....- 8 -
2、 Installation Notes .....- 8 -
3、 Unloading resistor installation ..... -8 -
4、 Wiring .....- 10 -
5、 Photovoltaic array requirements .....- 11 -
6、 Fan terminal voltage requirements .....- 11 -
7、 Cable selection requirements .....- 11 -
8、 Communication port ..... -- 11 -
IV Instructions .....错误！未定义书签。
4.1、Indicator light function ..... - 12 -
4.2、Button .....- 13 -
4.3、LCD Display .....错误！未定义书签。
4.4、Set Operation .....- 15 -
V Device parameters .....- 17 -
5.1、 Protective function .....- 17 -
5.2、 Troubleshooting ..... - 17 -
5.3、 System maintenance .....- 18 -
VI Warranty Commitment .....错误！未定义书签。
VII Device parameters .....错误！未定义书签。
1、 Model Description： .....错误！未定义书签。
2、 System parameter table .....错误！未定义书签。
3、 Battery system and usage environment .....错误！未定义书签。
4、 Battery parameter reference table .....错误！未定义书签。
VIII Installation Dimensions .....错误！未定义书签。
8.1、 Controller installation dimensions： .....错误！未定义书签。
8.2、 Unloading resistor installation dimensions ..... - 22 -
IX Packing list and communication module accessories .....错误！未定义书签。

I. Safety instructions

1.1、 Safety signs

The following safety symbols may appear in this manual and their meanings are as follows:

Safety symbols	Significance
Danger	Indicates that if the safety warning is ignored, serious accidents that may cause personal injury may occur.
Warn	Indicates a danger that, if ignored, could result in serious injury, serious damage to equipment, or major business interruption.
Notice	Indicates that if the safety warning is ignored, it may cause moderate injury, moderate damage to equipment, or partial business interruption.
ıstrate	Indicates that the content is additional information to the main text.

For electrical and electronic equipment, safety involves the entire process of installation, commissioning, operation and maintenance. Therefore, improper use or misoperation will endanger the life and personal safety of the operator or third party and the safety of the equipment. In order to avoid casualties and damage to the equipment, all the following safety information tips such as dangers, warnings and precautions must be strictly observed during operation and maintenance.

1.2、 Safety Tips

Warn!

All installation operations of the controller must be completed by professional technicians. Professional technicians must undergo special training, read this manual in full, and master the relevant safety issues of operation.

If non-professionals perform installation operations and cause personal injury, the company will not bear the relevant responsibility.

If the controller is damaged due to failure to install and operate according to the instructions in this manual, it will not be covered by the company's warranty.

①Before Installation

Notice！

When you receive the product, you must first check whether the controller is damaged during transportation. If you find any problems, please contact our company or the transportation company immediately.

②installing

Before installing the controller, make sure that the controller has not been electrically connected or powered on.

Warn！

Damage to the controller or other losses caused by the following circumstances will not be covered by our company's warranty.

When configuring the photovoltaic array, ensure that the maximum short-circuit current on the DC side is within the allowable range of the controller, otherwise it may cause irreversible damage.

When configuring the photovoltaic array, be sure to ensure that the open-circuit voltage of each photovoltaic string does not exceed the maximum input range of the controller, otherwise it will cause

irreversible damage to the controller.

The selected controller charging current cannot be greater than 0.3 times the battery capacity. If it is greater, the battery will be damaged or the battery life will be reduced.

Improper selection of the controller installation environment will affect the performance of the machine and may cause damage to the machine.

Do not install the controller in flammable or explosive places or in places where flammable and explosive items are stored.

Do not install the controller in places with explosive hazards.

Do not install the controller in places where it may be struck by lightning.

Do not install the controller in places with a lot of salt mist.

When the controller is running, good ventilation must be ensured.

The controller must be installed upright and the air duct must be unobstructed.

 Warn！

Before all devices are fully connected, be sure to disconnect the circuit breaker (circuit breaker) or fuse at the photovoltaic array end, battery end, load end, etc.

Prevent water from entering the controller.

 Notice！

All electrical installations must comply with local and national electrical installation standards.

To ensure safe operation, proper grounding, the use of appropriate conductor sizes and necessary short-circuit protection are required.

The connecting cables must be of appropriate specifications, firmly connected and well insulated.

After installation, check that all line connections are tight to avoid dangerous heat accumulation due to loose connections.

③Running

 Danger！

Do not open the machine cover when the controller is powered!

④Repair

 Danger！

Repair work must be performed by professional repair technicians.

The machine needs to be powered off before maintenance, and the machine can be disassembled after waiting for 5 minutes.

II. Product Features

1、 Overview

Thank you for choosing the dual-channel MPPT wind-solar hybrid solar charge controller. This product uses advanced high-speed processors and MPPT control algorithms to ensure MPPT charging at low wind speeds, and has the characteristics of high response speed, high reliability and high industrial standards;

The controller adopts a LCD screen design, which displays more comprehensive information and a clearer display interface. The controller supports WIFI module and GPRS module expansion to realize APP cloud monitoring. This controller is suitable for solar off-grid systems, automatically controls charging and discharging, and can be used in

communication base stations, household systems, street lighting systems, field monitoring and other fields.

2、 Product Features

- The display screen adopts color screen design, which displays more comprehensive information, has a clearer display interface, and is more convenient for key human-machine interface and operation settings;
- The MPPT control algorithm used in wind turbine charging can ensure MPPT charging at low wind speeds;
- Photovoltaic charging uses advanced MPPT maximum power point tracking technology, with a tracking efficiency of no less than 99.5%. Compared with ordinary PWM algorithms, the efficiency is increased by 15-20%.
- RS485 communication, which can provide communication protocol to facilitate customers' unified integrated management and secondary development
- You can view and set the controller operating parameters through the mobile phone APP (optional)
- With comprehensive protection functions such as overcharge, over discharge and overload;
- Four battery types: lead-acid battery, ternary lithium battery, lithium iron phosphate, and custom charging methods are optional
- Various load control methods, output power and time can be set;
- Widely adaptable, self-adapting to day and night;
- The wind turbine charging has a battery activation function: When lithium batteries such as lithium iron phosphate or ternary lithium (must have BMS) are under voltage protection, they can be connected to the wind turbine/photovoltaic to activate the BMS battery pack to achieve normal charging.

3、 Product appearance

3.1、 Product Appearance



Figure 2-1 Product appearance and dimensions

Table 2-1: Product quality dimensions

Parameter name	Quality Dimensions	
weight(kg)	2.8	for reference
Product Size L*D*H(mm)	218*201*77.8	For detailed installation dimensions, refer to item 8

3.2、 Interface Definition

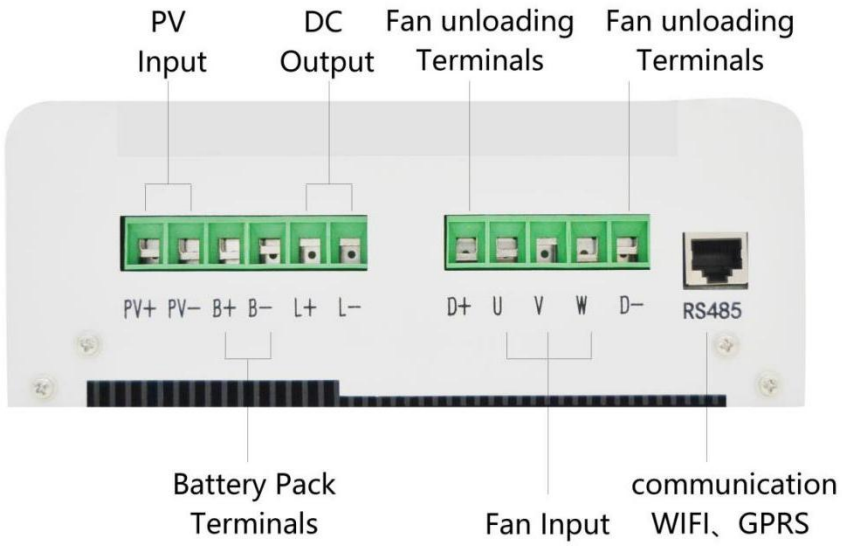


Figure 2-2 Product interface definition diagram

Table 2-2 Definition of the connectors on the bottom side of the JN series products (from left to right)

Serial number	Name	Function	Illustrate

1	PV+	Photovoltaic array positive electrode	Photovoltaic array input
2	PV-	Photovoltaic array negative pole	
3	BAT+	Battery positive terminal	Battery terminal
4	BAT-	Battery negative terminal	
5	LOAD+	DC load positive	DC load output
6	LOAD-	DC load negative pole	
7	D+	Fan unloading	Fan unloading terminal
8	U	Fan input 1	Fan input
9	V	Fan input 2	
10	W	Fan input 3	
11	D-	Fan unloading	Fan unloading terminal
12	RS485	Communication Port	Realize WIFI and GPRS communication monitoring

4. Unloading resistor type

4.1 Unloading resistor appearance

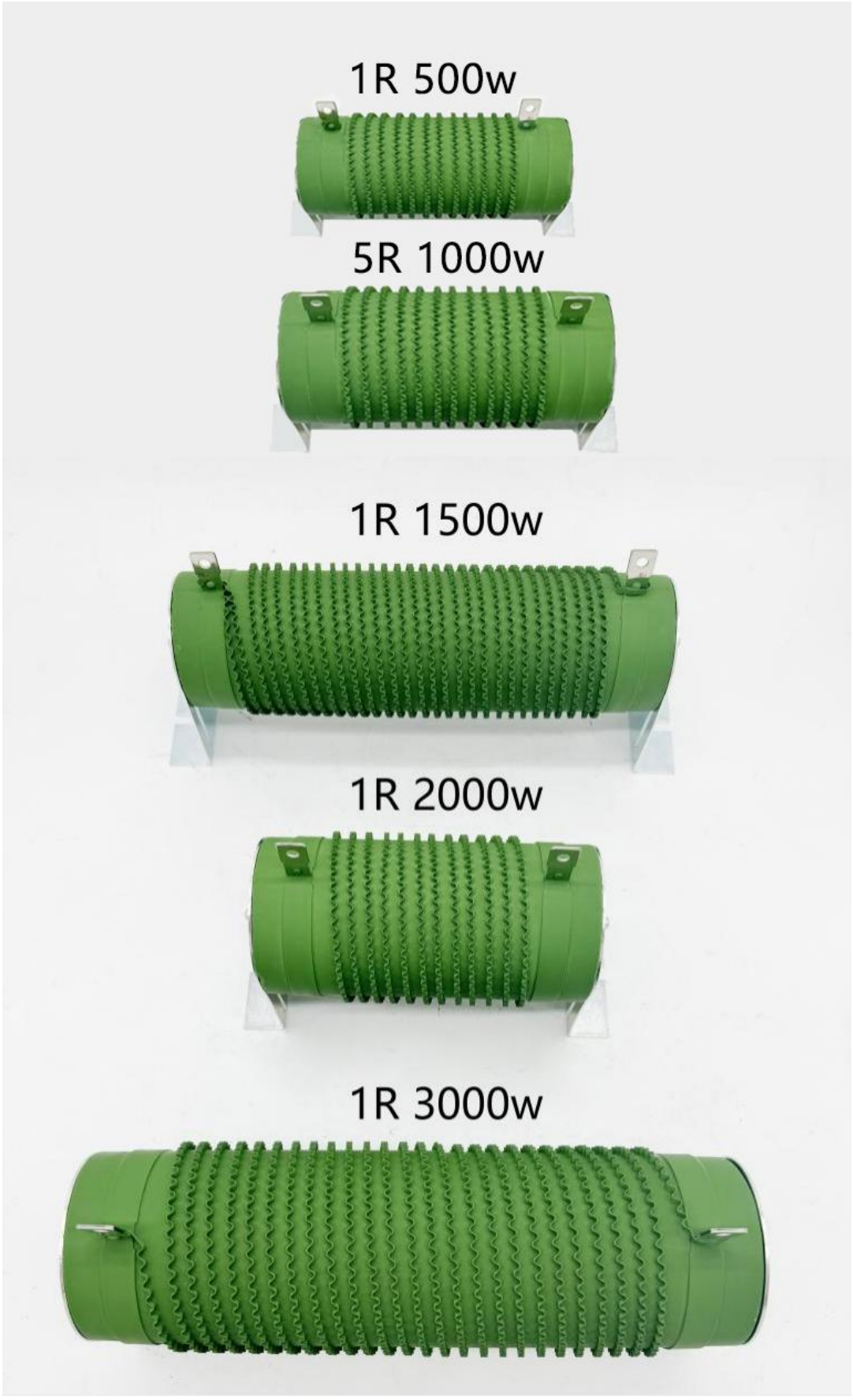


Figure 2-3 Unloading resistor

Table 2-3 Unloading resistor parameter table

Resistor Type	Resistor parameters		Applicable fan type
	Resistance	Power	
Ceramic tube corrugated resistor	1R	1500W	Fan power ≦1500W
Ceramic tube corrugated resistor	1R	2000W	Fan power ≦2000W
Ceramic tube corrugated resistor	1R	3000W	Fan power ≦3000W
Note: For detailed installation dimensions, refer to item 8;			

4.2 Fan unloading conditions

1、 When the charging current of the fan is greater than 30A, it starts to unload;

2、 When the battery voltage is greater than the current BCV+0.1V, the load starts to be unloaded;

3、 When the battery voltage is greater than the current Float + 0.1V, the load starts to be unloaded;

III. Installation Notes

1、Installation Precautions

(1) Before installation, you must read the entire installation chapter and be familiar with the installation steps.

(2) Be very careful when installing the battery. Wear protective glasses when installing open lead-acid batteries. Once you come into contact with battery acid, rinse it with clean water in time.

(3) Avoid placing metal objects near the battery to prevent the battery from short circuiting.

(4) Acidic gas may be generated when the battery is charging. Ensure that there is good ventilation around the battery.

(5) Please install indoors; if installed outdoors, avoid direct sunlight and rain.

(6) Loose connection points and corroded wires may cause great heat to melt the insulation layer of the wires, ignite surrounding materials, and even cause fires. Therefore, it is necessary to ensure that the connectors are tightened. It is best to fix the wires with cable ties to prevent the wires from shaking during mobile use and causing the connectors to become loose.

(7) The installed battery pack must match the controller's charging voltage and recommended charging current range.



DANGER! Explosion hazard! Never install the controller and battery in the same confined space! Also do not install in a confined space where battery gas may accumulate.

2、Installation Notes

Step 1: Choose the installation location

Avoid installing the controller in places exposed to direct sunlight, high temperature or water, and ensure that there is good ventilation around the controller.

Step 2: Unpacking and Inspection

(1) Check whether the outer packaging is damaged or deformed;
(2) Unpacking inspection: one controller, one instruction manual, one set of accessories, etc.
(3) Check whether the appearance of the host and accessories are intact;

Step 3: Controller Fixing

Install the controller on the equipment platform or cabinet bracket through the mounting holes on both sides of the controller bottom shell, and reserve sufficient ventilation and heat dissipation space around the installation.

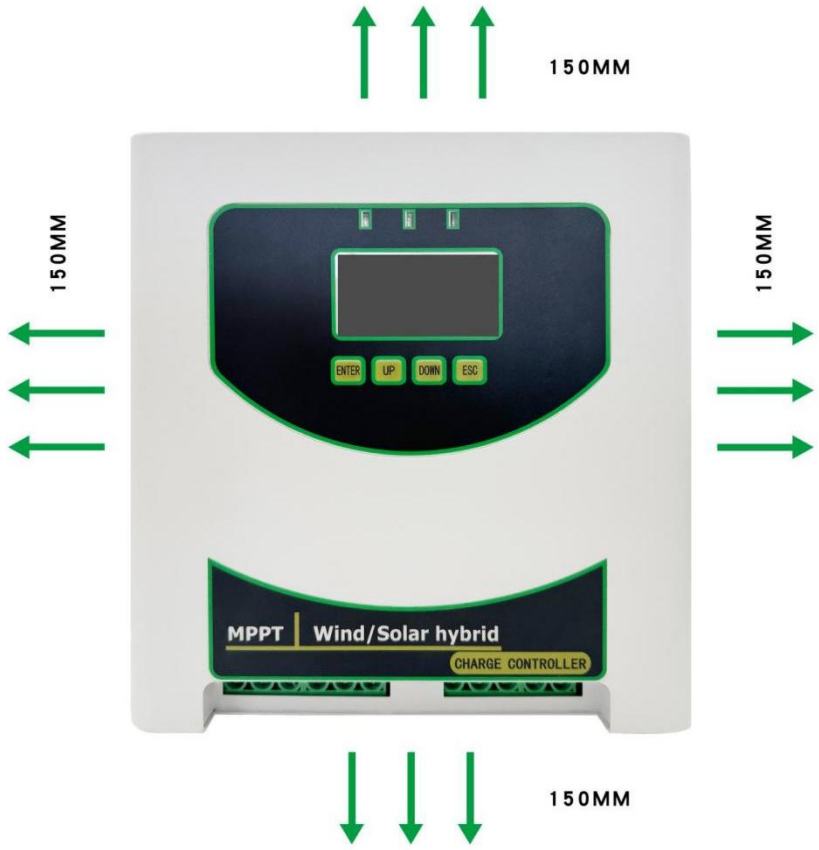


Figure 3-1 Space reserved around equipment installation

3、Installation environment of unloading resistor

（1）Safety: Avoid installing in places that are prone to rain and snow, or where there are corrosive chemicals, or inflammable or explosive places to avoid hazards.
（2）Temperature: Install it in a place with relatively stable and suitable temperature. Too high or too low temperature may affect its performance and life.
（3）Humidity: The ambient humidity should not be too high to prevent water vapor from corroding the resistors. Try to keep it relatively dry.
（4）Ventilation: Good ventilation conditions help dissipate heat and prevent problems with resistors due to overheating.
（5）Cleanliness: Install it in a relatively clean environment without a lot of dust and impurities to prevent dust from accumulating on the resistor and affecting its normal operation.
（6）Stability: The installation should be stable to avoid loose connection or damage of the resistor due to shaking or vibration.

4、Wiring

Note: For safe installation, we recommend a wiring sequence;

Warning: Do not connect electrical equipment with a surge power exceeding the controller to the load end to avoid damage to the controller!

Warning: When moving the device for use, make sure all the connections are fixed. Loose connection points may cause heat accumulation, which may cause a fire in serious cases.

Step 1: Connect batteries, photovoltaic panels, fans, loads, and monitoring backend;

Connect the battery, load, fan, photovoltaic module, and monitoring background (WIFI module/GPRS module) in sequence. Disconnect all switches during the wiring process. Pay attention to distinguish the positive and negative cable connections, and refer to the wiring diagram below;

Before connecting the battery, make sure the battery is in normal condition to ensure normal operation of the system.

Warning: Do not connect the photovoltaic panel to the battery terminal of the controller, otherwise the controller will be burned out.

It is strictly forbidden to connect the positive and negative terminals of the battery in reverse, which will damage the controller. Please operate with caution.

Strictly use ordinary network cables as communication cables, and refer to the instructions for use of specific communication methods when making communication cables.

Step 2: Wiring Diagram

Connect the corresponding external device cables to the terminals through the mounting holes on the lower side of the housing.

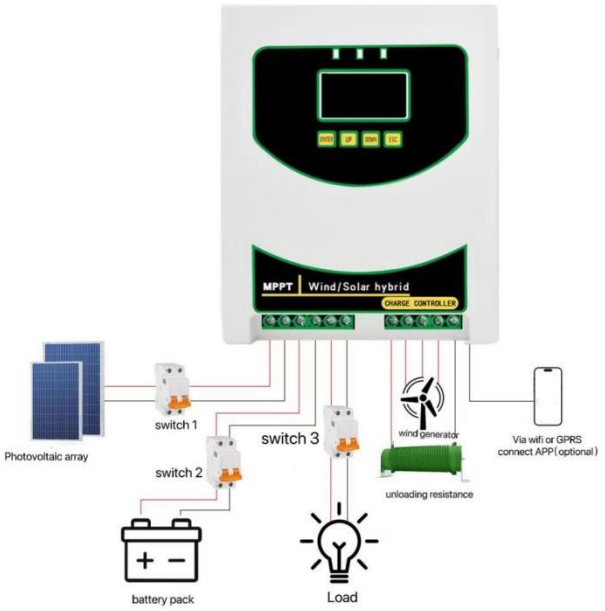


Figure 3-2 Controller wiring diagram

Note: Support WIFI module and GPRS module expansion to realize APP cloud monitoring (optional), see APP instruction manual for details.

The controller defaults to lead-acid batteries. If other types of batteries are connected, the corresponding battery type and number of series groups need to be set. For details, please refer to the relevant settings in the APP user manual.

arn!
1. Danger of electric shock! Do not touch the live parts of high-voltage photovoltaic modules with bare hands;
2. Please ensure that the solar array voltage in the system does not exceed the maximum input voltage range of the controller;
3.The system needs to be connected to an inverter. Please connect the inverter directly to the battery and never to the load end of the controller.

Step 3: Check the connection
Check whether all wiring polarities are correct and terminals are locked.

Step 4: Power-on sequence
Recommended power-on and power-off sequence: turn on the battery switch, photovoltaic switch, fan switch and load switch in sequence;
When shutting down, first turn off the photovoltaic, wind turbine and load switches, and then turn off the battery switch.

5、Photovoltaic array requirements

Table 3-1 Photovoltaic electrical parameters:

Photovoltaic electrical parameters				
System rated voltage/V	12	24	48	--
Maximum open circuit voltage of photovoltaic array/V	100	145	145	--
PV array maximum open circuit recovery voltage/V	90	135	135	--
Minimum operating voltage of photovoltaic array/V	20	40	80	--

6、Fan terminal voltage requirements

Table 3-2 Fan electrical parameters:

Fan electrical parameters				Remark
Battery system voltage level/V	12	24	48	--
Rated voltage level of fan/V	12	24	48	--
Maximum open circuit voltage of fan/V	25.6	51.2	102.4	--
Wind turbine power range/W	≦800	≦1500	≦3000	--

7、Cable selection requirements

The following table shows the copper wire diameters converted according to the current levels. The actual cable size to be used must be greater than or equal to the data in the table:

Table 3-3 Cable dimensions：

Cable Selection Table					
Current level/A	5	10	20	30	40
Wire diameter/mm2	1	1.5	2.5	4	6
AWG	16	14	11	9	8

8、Communication port description



Pins	Definition	Illustrate
1/2/3/4	null	null
5	RS485-A	RS485-A
6	RS485-B	RS485-B
7	+12VDC	12V/400mA
8	GND	Power Ground

IV. Instructions

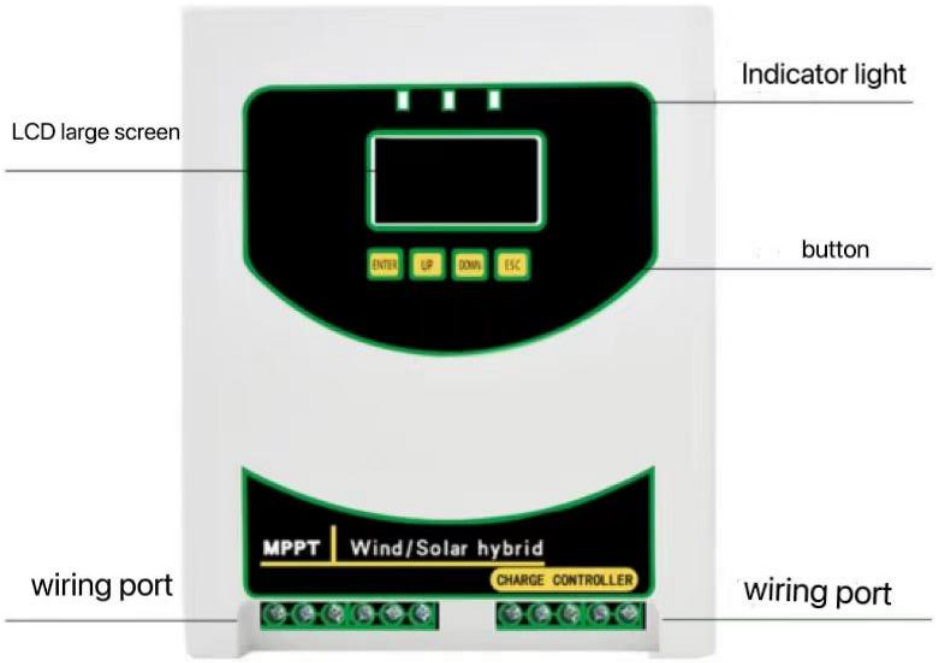


Figure 4-1 Controller panel image

4.1、Indicator light function

The LED indicators on the display panel are fault indicator (red), charging indicator (yellow), and load indicator (green). The function definitions are shown in the table below.

Table 4-1 Definition of indicator lights

Serial number	Indicator Lights	State	Definition	Remark
1	Fault indicator light (red)	Off	Working normally, no fault events	
2		On	There is a fault event	
3	Charging indicator light (yellow)	Off	No charging	
4		On	MPPT Charging	
5		Slow flashing	Float Charge	

6	Output indicator light (green)	Fast flashing	Boost charging	
7		ON	Output is normal	
8		Off	Output off	

4.2、Buttons

Table 4-2 Key functions

Button	Key Function	Remark
Enter	Function 1: Main menu key, Function 2: Parameter setting save key;	
Esc	Exit the setting interface key;	
UP	Function 1: Display parameter page up, Function 2: Parameter setting plus;	
DOWN	Function 1: Display parameter and turn the page down; Function 2: Parameter setting and minus;	
Note: To restore factory settings: In the main interface, press ESC first and then DOWN, then release DOWN first and then ESC;		

UP and DOWM buttons to switch between pages:

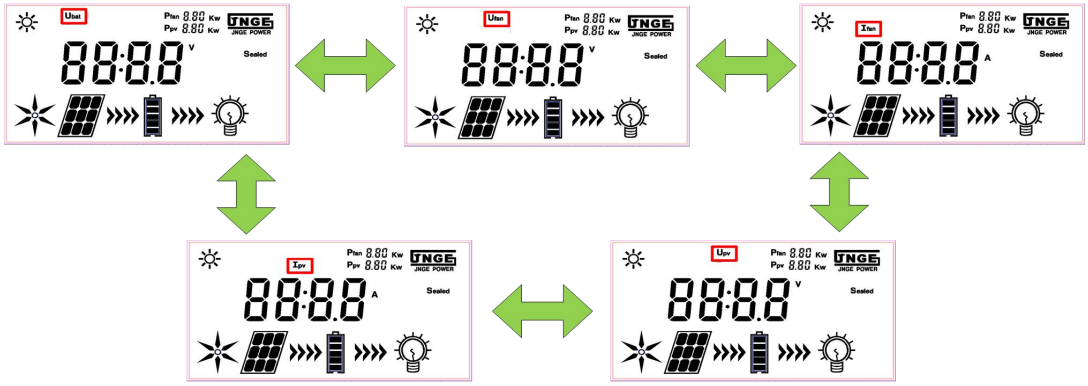


Figure 4-2 UP and DOWM button display interface switching diagram

4.3、 LCD display

The controller uses a segment code screen display, and the display layout is shown below:

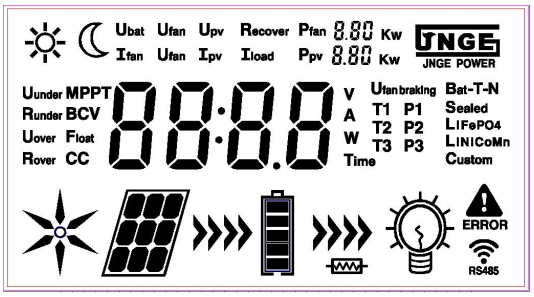


Figure 4-3 Display screen layout

Table 4-3 Icon function description

Icon Name	Definition	Function Description
	daytime	The icon lights up to indicate daytime
	night	The icon lights up to indicate night time.
	Fan	The icon lights up to indicate that the fan is connected and running.
	Photovoltaic panels	The icon lights up to indicate that the PV array has been connected.
	Battery power	The icon lights up to indicate battery connection, and the scale inside it indicates the battery level.
	Load	The load lights up to indicate that the load has output.
	Status Icon Night	Icons light up and scroll to indicate charging and discharging status respectively
	Fault Icon	The flashing icons indicate that a fault has occurred in the system.
	Communication Icons	The icon lights up to indicate that the communication connection is on.
	Unloading Icon	The icon lights up to indicate fan unloading

Table 4-4 Field function description

Field Name	Definition	Function Description
Ubat	Battery voltage	The field lights up and the current battery voltage value is displayed in the data display area
Ufan	Fan voltage	The field lights up and the current fan voltage value is displayed in the data display area.
Upv	Photovoltaic panel voltage	The field lights up and the current PV panel voltage value is displayed in the data display area
Ifan	Fan charging current	The field lights up and the current fan charging current value is displayed in the data display area
Ipv	Photovoltaic charging current	The field lights up and the current photovoltaic charging current value is displayed in the data display area
Pfan	Fan charging power	The field lights up, corresponding to the maximum power value applicable to the fan charging
Ppv	Photovoltaic charging power	The field lights up, corresponding to the maximum power value applicable to photovoltaic charging.
Uunder	Over discharge voltage	The field lights up to set the battery under-voltage voltage. The field flashes when the battery is under-voltage.
Runder	Over discharge return	The field lights up and the battery under-voltage return voltage can be set.
Uover	Overcharge voltage	The field lights up and you can set the battery over-voltage protection value. When the battery is over-voltage, the field flashes
Rover	Overcharge return	The field lights up and the battery over-voltage return voltage can be set.
MPPT	Fast charging	The field flashes, indicating that the wind turbine is currently in the MPPT fast charging state.
BCV	Boost charging	The field lights up and the battery boost charging voltage can be set. The field flashes during the boost charging stage.
Float	Float charge voltage	The field lights up to set the battery float charge voltage, and the field flashes during the float charge stage.
CC	Photovoltaic constant current	The field flashes, indicating that the photovoltaic is currently in the fast constant current charging state.
Ufanbraking	Fan unloading	The field lights up and the fan unloading voltage value can be set.
Time	Household and street light mode	The field lights up, and the street light and household mode can be set. "24H" is the household mode, and the load has output all the time. When other numbers are set, it means the street light mode. The numbers have no specific meaning and only indicate the street light mode. Its output is controlled by T1, T2, T3 and P1, P2, P3. The default value is "15H".
T1	Time control period 1	The field lights up, indicating that the lighting time of the first period of time control can be set in the street light mode, the default is 15 hours;
P1	Brightness of	The field lights up, indicating that the output power of the first period of time

	period 1	control can be set in street light mode, the default is 100;
T2	Time control period 2	The field lights up, indicating that the lighting time of the second period of time control can be set in the street light mode, the default is 00H;
P2	Period 2 brightness	The field lights up, indicating that the output power of the second time period of time control can be set in the street light mode, the default is 000;
T3	Time control period 3	The field lights up, indicating that the lighting time of the third time period can be set in the street light mode, the default is 00H;
P3	Period 3 brightness	The field lights up, indicating that the output power of the third time period of time control can be set in the street light mode, the default is 000;
Bat-T-N	Battery Type	The field lights up and you can set the battery type: 1 for lead-acid battery; 2 for lithium iron phosphate battery; 3 for ternary lithium battery; 4 for custom;
Sealed	Lead-acid batteries	field lights up, and the battery type is lead-acid type;
LiFePO4	Lithium iron phosphate battery	The field lights up and the battery type is lithium iron phosphate battery;
LiNiCoMn	Ternary lithium battery	The field lights up, and the battery type is a ternary lithium battery;
Custom	Custom settings	The field lights up, and the number of battery packs in series can be set according to the actual number of battery packs in series. The default battery type is lead-acid;

4.4、Set Operation

4.4.1、General parameter settings:

In standby mode, press the Set (Enter) button to enter the under-voltage setting interface. The setting process is shown in the figure below. Press the (Esc) button in any interface to exit the setting interface and return to the standby interface. Other general parameter settings are similar to the under-voltage settings.

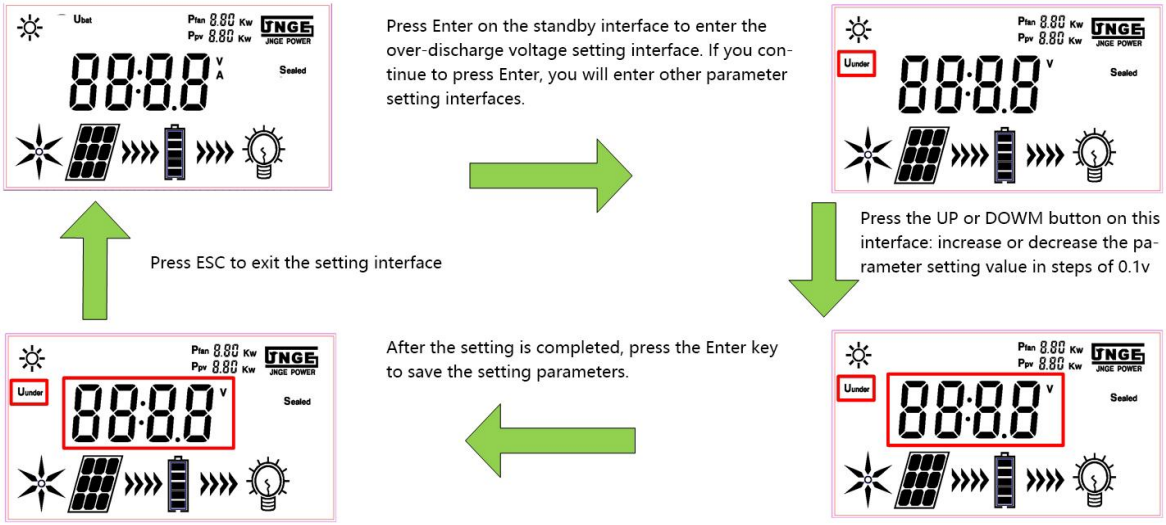


Figure 4-4 General parameter settings - over-discharge voltage point settings

4.4.2、Battery Type Setting

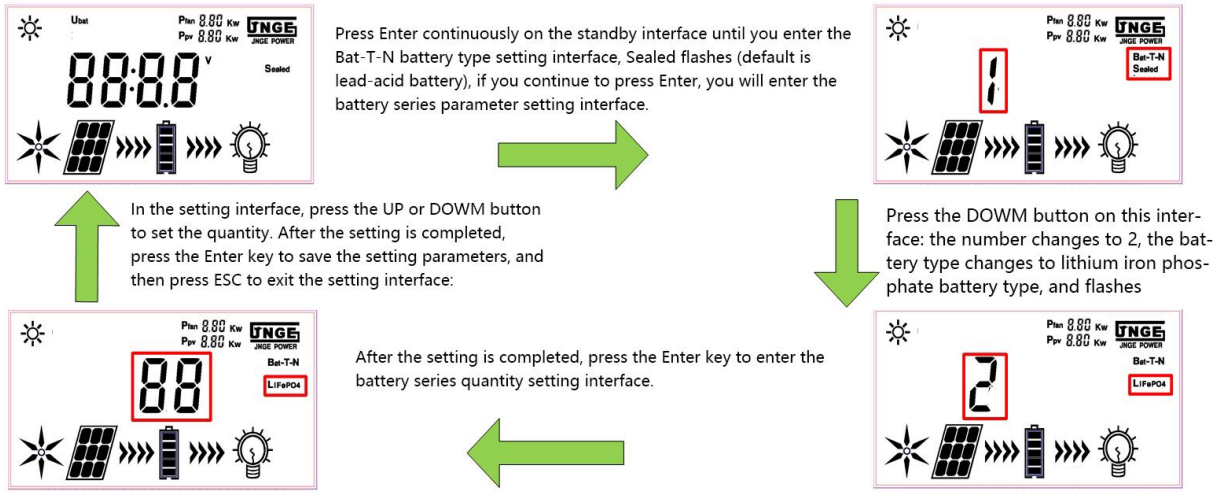


Figure 4-5 Battery type setting diagram

Similarly, you can use the same method as above to set other battery types and custom modes. The reference table of digital serial numbers and battery types is as follows:

Table 4-5 Battery setting reference table:

Number Types	Battery Type	Definition
1	Sealed	Lead-acid batteries
2	LiFePO4	Lithium iron phosphate battery
3	LiNiCoMn	Ternary lithium battery
4	Custom	Customize

4.4.3、 Timing parameter settings

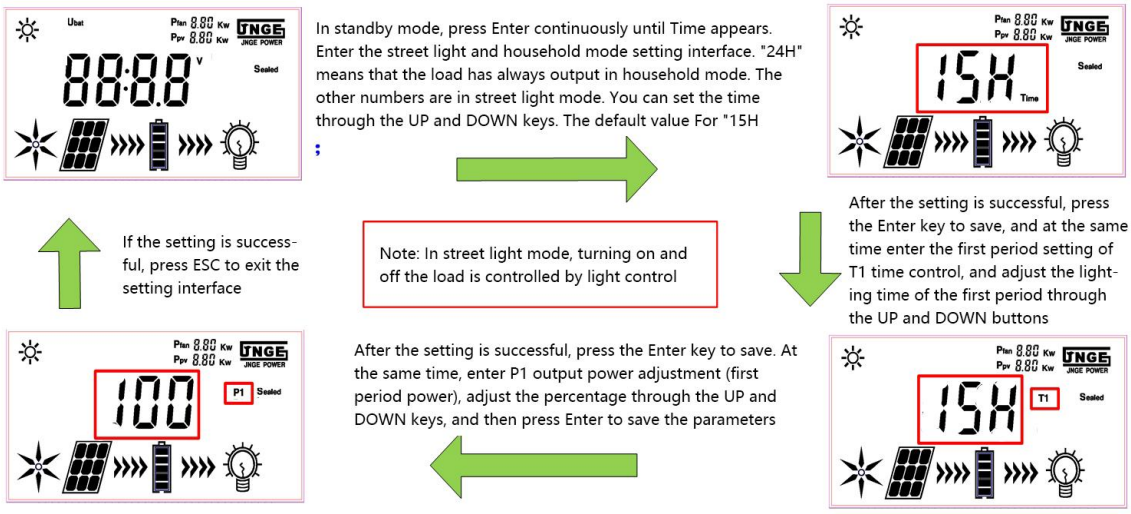


Figure 4-6 Timing parameter setting diagram

Note: The same method can be used to set the second time period T2, the second time period output power P2 percentage and the third time period T3, the third time period output power P3 percentage.

4.4.4、 For the setting method of connecting the device via APP (WIFI or GPRS mode), please refer to the corresponding APP manual.

Illustrate	APP (WIFI or GPRS mode) is an optional accessory. The device can only use one communication mode at a time and cannot use two communication modes at the same time!

V. Device parameters

5.1、Protective function

Table 5-1 Protection functions refer to the following table:

Protective function	Illustrate
Photovoltaic module polarity is reversed	When the polarity of the PV module is reversed, the controller will not charge. The PV over- and under-voltage alarms can be viewed through the APP. The controller will not be damaged. After rewiring correctly, the PV charging will resume normal operation.
PV under-voltage protection	When the PV array charging voltage is lower than the controller input voltage range, the controller stops charging the battery pack.
PV over-voltage protection	When the charging voltage of the PV array exceeds the input voltage range of the controller, the controller stops charging the battery pack and the PV over-voltage alarm fault can be viewed through the APP.
Photovoltaic charging over-current protection	When the charging current of the photovoltaic array exceeds the internal setting value, the display screen will flash IPV and ERROR, and charging will stop;
Fan under-voltage protection	When the fan charging voltage is lower than the controller input voltage range, the controller stops charging the battery pack.
Fan over-voltage protection	When the fan charging voltage exceeds the fan unloading voltage value, the controller turns on the unloading function and the unloading resistor icon on the display lights up.
Battery polarity is reversed	When the battery polarity is reversed, the controller will not work but will not be damaged. After correcting the wiring error, the controller will continue to work normally after restarting.
Battery under-voltage protection	When the battery voltage is lower than the set under-voltage value, the display will show Uunder and ERROR flashing alarm, and the load output will be automatically stopped to prevent the battery from being damaged due to excessive discharge.
Battery over-voltage protection	When the battery voltage reaches the over-voltage protection setting value, the display shows Uover and ERROR flashing alarm, and the battery charging stops automatically to prevent the battery from being damaged by overcharging.
Night anti-reverse protection	At night, since the battery voltage is greater than the PV panel voltage, automatic protection prevents the battery voltage from discharging through the PV panel;

5.2、troubleshooting

If the following faults occur, please check and troubleshoot according to the following methods:

Fault	Indicator status and warning icons	Possible Causes	Solution
Array over-voltage	ERROR Icon flashing	1. There are too many photovoltaic arrays in series 2. The battery and photovoltaic array are not matched；	Disconnect the PV array, reduce the number of PV array groups connected in series, and ensure that the open-circuit voltage of the PV array does not exceed the set value in "Table 3-1 Photovoltaic Electrical Parameters";

Battery over-voltage (overcharge)	ERROR UOVER and icon flashing	1. The controller over-voltage protection point is lower than the maximum value of the charging range; 2. The battery is aging or over-discharged; 3. The load is changing dynamically; 4. The number of batteries in series is set too small	1. Reset the battery over-voltage protection point through the device button or APP; 2. The battery needs to be replaced when it is aging; 3. Reduce large dynamic changes in load; 4. Reset the number of battery strings according to the actual number of batteries in series;
Battery under-voltage (over-discharge)	ERROR Under and icon flashing	The battery voltage is lower than the under-voltage protection setting value; The number of batteries connected in series is too large;	1. Reduce or disconnect the load. If the alarm is lifted and the battery voltage returns to normal, it means that the load power is too large or the battery voltage and capacity are too low. Heavy load may cause under-voltage protection. 2. If the controller still alarms after disconnecting the load, the battery voltage has not recovered to the over-discharge recovery setting value. The battery pack needs to be charged through photovoltaic or other means so that the battery pack voltage reaches the recovery point setting value before the fault can be lifted. 3. Reset the number of battery strings according to the actual number of batteries in series.
	All indicator lights are off and the display screen is blank	The battery voltage is lower than the equipment starting voltage	Use a multimeter to test whether the voltage at both ends of the battery is lower than 7V; It is necessary to charge the battery pack by other means to make its battery pack voltage reach above 8V;
Charging over-current	ERROR IPV field and icon flash	Photovoltaic charging over-current protection check current detection abnormality, malfunction	If the problem still cannot be solved after restarting the machine several times, it needs to be returned to the factory for repair;
Note: Except for the failure to start the machine due to battery under-voltage, the fault information of other faults can be viewed through the mobile phone APP;			

Table 5-2 Troubleshooting table

5.3、 System maintenance

In order to maintain the best long-term working performance, it is recommended to perform the following inspections twice a year.

(1) Make sure the controller is securely installed in a clean and dry environment.
(2) Make sure the controller is securely installed in a clean and dry environment.
(3) Check all exposed wires to see if their insulation is damaged due to sunlight, friction with surrounding objects, rot, damage by insects or rodents, etc. If necessary, repair or replace the wires.
(4) Tighten the screws of all electrical connection terminals as recommended
(5) Check the grounding of all system components and verify that all ground wires are securely and properly connected to ground.
(6) Check all wiring terminals for signs of corrosion, insulation damage, high temperature or burning, or discoloration, and tighten the terminal screws.
(7) Check for dirt, nesting insects and corrosion, and clean as required.
(8) If the lightning arrester has failed, replace it in time to prevent lightning damage to the controller or even other user equipment.

Caution: Danger of electric shock!
When performing the above operations, make sure that all power supplies to the controller are disconnected before performing the corresponding inspection or operation!

VI. Warranty Commitment

The controller has a 1-year free warranty period, which starts from the date of sale.

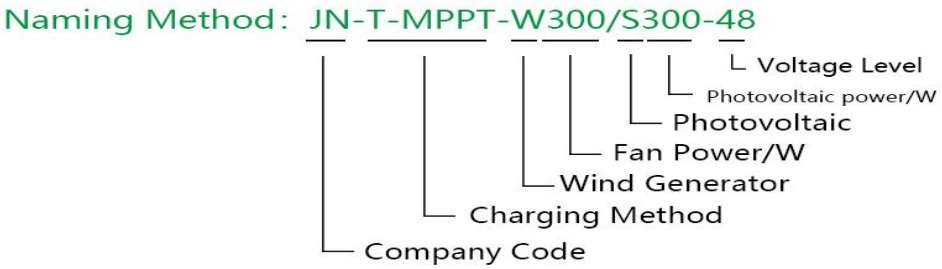
Repair procedure: Before requesting repair, check the user manual to confirm that there is indeed a problem with the controller. If it cannot be solved, you can contact our technical customer service for help. If it still cannot be solved, you can send the problematic controller back to our company, freight prepaid, and provide the date and place information related to the purchase. In order to enjoy the fast return warranty service, the returned product must be marked with the model, serial number and detailed cause of the failure, as well as the type and related parameters of the components in the system, the battery and the system load; this information is very important for quickly resolving your repair requirements.

If the controller is damaged due to improper use by the customer or failure to follow this manual, our company will not be responsible! The repair procedure is carried out in accordance with the above process, and only the repair cost is charged.

Statement: Our company reserves the right to change products and will not notify you of product updates.

VII. Device Parameters

1. Model description:



2. System parameter table

System parameter table								
parameter name	Product number							
	JN-T-MPPT-W500/S800-12	JN-T-MPPT-W800/S800-12	JN-T-MPPT-W800/S1000-24	JN-T-MPPT-W1000/S1000-24	JN-T-MPPT-W1500/S1500-24	JN-T-MPPT-W1500/S2000-48	JN-T-MPPT-W2000/S2000-48	JN-T-MPPT-W3000/S1500-48
Battery system voltage level(V)	12		24			48		
Maximum open circuit voltage of photovoltaic array(V)	100		145			145		

PV array maximum open circuit recovery voltage(V)	90		135			135		
Minimum operating voltage of photovoltaic array(V)	20		40			80		
Photovoltaic rated current level(A)	40	40	40	40	40	40	40	40
Photovoltaic module power(W)	≦800	≦800	≦1000	≦1000	≦1500	≦2000	≦2000	≦1500
Rated voltage level of fan(V)	12		24			48		
Maximum open circuit voltage of fan(V)	25.6		51.2			102.4		
Rated current of fan(A)	25	30	30	30	30	30	30	30
Wind turbine power(W)	≦500	≦800	≦800	≦1000	≦1500	≦1500	≦2000	≦3000
Charging limit voltage(V)	Vbat>BCV+0.4V		Vbat>BCV+0.4V			Vbat>BCV+0.4V		
DC load output rated current(A)	≦25		≦25			≦25		

Note: 12V battery system: maximum power of fan 800W, maximum power of photovoltaic 800W;

24V battery system: maximum power of fan 1500W, maximum power of photovoltaic 1500W;

48V battery system: maximum power of fan 3000W, maximum power of photovoltaic 1500W; or maximum power of fan 1500W, maximum power of photovoltaic 3000W;

The machine is factory defaulted to 12V/24V/48V automatic identification, please do not exceed the corresponding maximum power;

3.Battery system and usage environment

Battery system identification voltage range(V)	12V system	DC9V-DC16V
	24V system	DC18V-DC32V
	48V system	DC42V-DC60V
Conversion efficiency	> 98%	
Operating mode	The default is street light mode	

Working environment parameters	
Working temperature	-20℃ ～50℃
Storage temperature	-30℃ ～70℃
Humidity (℃)	10% to 90% non-condensing
Protection level	IP20

4.Battery parameter reference table

Lead-acid battery (single 12V)				
System rated voltage (V)	12V system （1string）	24V system （2string）	48V system （4string）	12V default value
Over voltage (overcharge)(V)	13--17	26--34	52--68	15.5
Over voltage return(V)	13--17	26--34	52--68	15
Increase charging voltage(V)	9--15	18--30	36--60	14.4
Float charge voltage(V)	9--15	18--30	36--60	13.8
Under voltage(V)	7--13	14--26	28--52	10
Under voltage return voltage(V)	9--15	18--30	36--52	13.1
Ternary lithium battery (single cell 3.7V)				
System rated voltage	12V system（Default 3 strings）	24V system（Default 6 strings）	48V system（Default 14 strings）	3 strings of default values
Over-voltage (overcharge）(V)	10.5～15V	21～30V	49～70V	13.5V
Over-voltage return(V)	10.5～15V	21～30V	49～70V	12.6V
Increase charging voltage(V)	10.5～15V	21～30V	49～70V	12.4V
Float charge voltage(V)	6～13.5V	12～27V	28～63V	12.0V
Under-voltage(V)	6～13.5V	12～27V	28～63V	9.3V
Under-voltage return voltage(V)	6～13.5V	12～27V	28～63V	10.5V
String number range	3～4	6～8	14～18	3
Lithium Iron Phosphate（Single Section 3.2V）				
System rated voltage	12V system (default 3 strings)	24V system (default 6 strings)	48V system (default 14 strings)	3 strings of default values
Over-voltage (overcharge)(V)	9～12V	18～24V	42～56V	11.7V
Over-voltage return(V)	9～12V	18～24V	42～56V	11.1V
Increase charging voltage(V)	9～12V	18～24V	42～56V	10.8V
Float charge voltage(V)	9～12V	18～24V	42～56V	10.2V
Under-voltage(V)	6～12V	12～24V	28～56V	8.4V
Under-voltage return voltage(V)	6～12V	12～24V	28～56V	9.6V
String number range	3～4	6～8	14～18	3

VIII. Installation Dimensions

8.1 Controller installation dimensions:

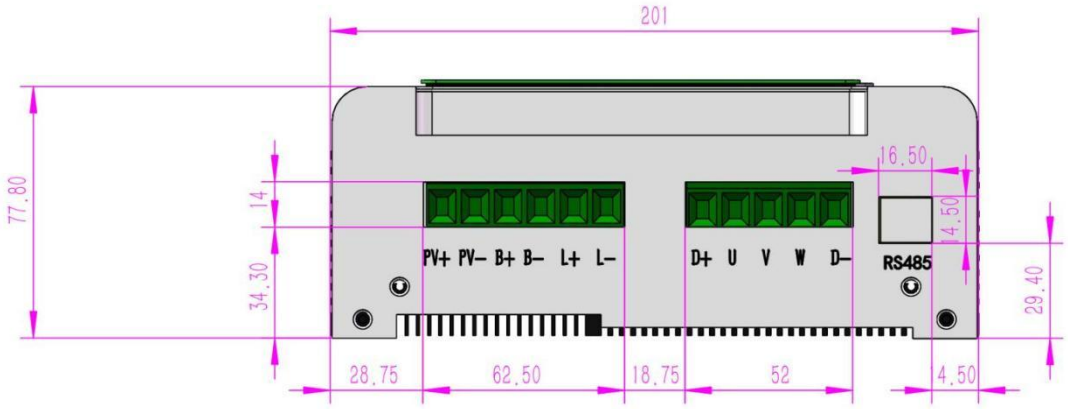


Figure 8-1 Controller installation dimensions 1 (Unit: mm)

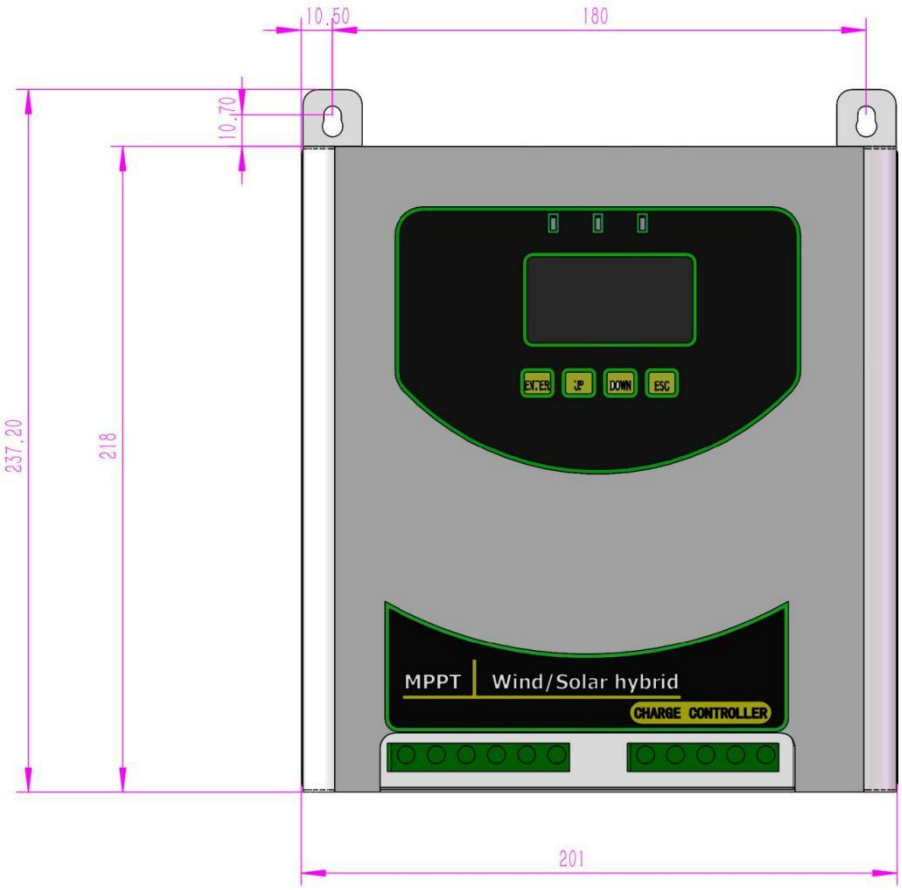


Figure 8-2 Controller installation dimensions (unit: mm)

8.2 Unloading resistor installation dimensions

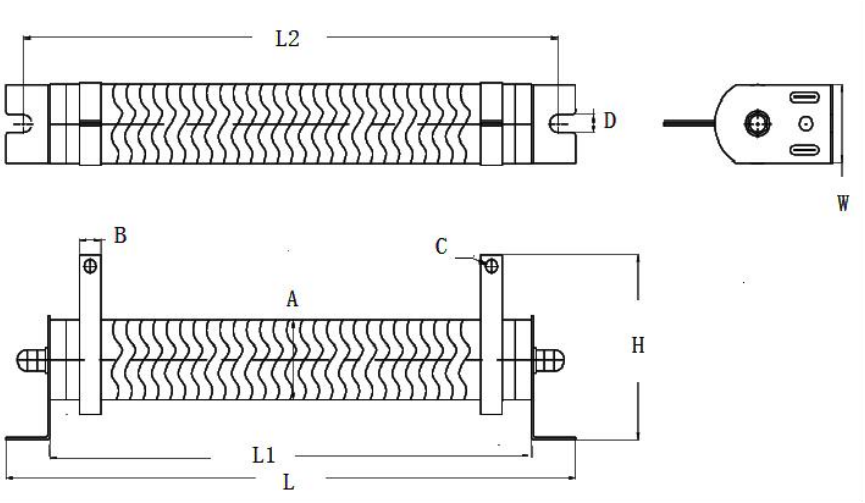


Figure 8-3 Unloading resistor dimensions

Table 8-1 Unloading resistor size table

Power	L±5	L1±5	L2±5	A±5	B±1	C+0.5	D±1	H Max	W±1
1500W	360	300	330	85	15	6	8	145	80
2000W	240	180	210	95	15	6	8	155	90
3000W	360	300	330	95	15	6	8	155	90
Unit：mm.									

IX. Packing list and communication module accessories

Serial number	Name	Quantity	Remark
1	Controller	1 Set	
2	Product Manual	1 Pieces	
3	Unloading resistor	1 Pieces	Select according to fan capacity
4	RJ45 to WIFI module	1 Pieces	Communication options
5	Dedicated network cable	1 Pieces	
6	APP Operation Manual	1 Pieces	
7	RJ45 to GPRS Module	1 Pieces	Communication options
8	Dedicated network cable	1 Pieces	
9	APP Operation Manual	1 Pieces	