

MPPT

solar charging controller

Product manual

Product Overview

Thank you for choosing the GD series MPPT controller. The new generation MPPT controller produced by our company is a product developed based on the latest technology, representing the latest level of photovoltaic technology development. This product has many excellent performances:

- Excellent heat dissipation design and intelligent control cooling fan
- Innovative maximum power point tracking technology can significantly improve the energy utilization efficiency of solar energy systems, with a conversion efficiency of up to 97%
- Quickly scan the entire I-V curve and track the maximum power point in just a few seconds
- There are three types of lead-acid batteries and lithium battery series charging programs available: sealed, colloidal, and open type.
- The controller has automatic protection functions for overcharging, overdischarging, overload, and short circuit.
- RS485 communication interface, capable of multi-machine communication, with a communication distance of up to 1km, can communicate with the upper computer, making it convenient to view the operating parameters of the controller

Characteristics of Maximum Power Point Tracking Technology

The GD series MPPT controller utilizes maximum power point tracking technology to extract the maximum power from the solar array for battery charging. The maximum power point tracking method is fully automatic and does not require user adjustment. When the maximum power point of the array changes with environmental conditions, the controller automatically tracks the maximum power point of the array to ensure obtaining the maximum energy of the day from the solar array.

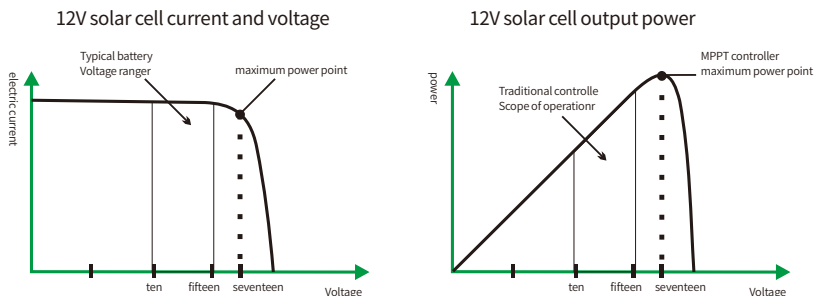
- Increase current

If the maximum power point voltage V_{mp} of the solar array is greater than the battery voltage, the charging current of the battery must be proportionally greater than the output current of the solar array, so that the input and output power can be balanced. The greater the difference between V_{mp} voltage and battery voltage, the greater the current enhancement. Current enhancement is extremely important in systems because the maximum power point voltage V_{mp} of solar panels in solar power generation systems is usually higher than the battery voltage.

- Advantages compared to traditional controllers

During charging, traditional controllers directly connect the solar array to the battery. This requires solar arrays to operate within a voltage range typically below V_{mp} . Taking a 12V system as an example, the voltage range of the battery is usually 11-15V, but the V_{mp} voltage of the solar array is usually around 16 or 17V.

The following figure shows the current voltage and output power curves of a typical off grid solar cell with a nominal rated voltage of 12V.



Nominal 12V solar cell I-V curve and output power diagram

● Factors limiting the efficiency of maximum power point tracking controllers

The Vmp of solar photovoltaic arrays will decrease as the temperature of the array increases. In hot weather, Vmp may be close to or even lower than the battery voltage. In this case, compared to traditional controllers, MPPT controllers will have little or almost no energy acquisition. However, as long as the nominal voltage of the photovoltaic modules in the system is higher than the voltage of the battery pack, the Vmp of the photovoltaic modules will always be higher than the voltage of the battery. In addition, by reducing the current of the solar array, the wiring is saved, which gives the MPPT controller a significant advantage even in hot weather.

1. Precautions

This manual introduces the relevant operations of MPPT solar charging controller.

1.1 Validity

This manual is applicable to all models of MPPT solar charging controllers from our company.

1.2 Target audience

This manual is applicable to installers and operators.

1.3 Before installing and operating the controller, please read and keep it properly for easy reference.

2. Safety instructions

2.1 Safety precautions

	Warning! ● The input voltage range of this controller is large, please operate with caution, otherwise it may cause personal injury; ● All work on the charging controller must be carried out by technical personnel; ● This device cannot be operated by children or individuals who lack physical sensory abilities, have poor psychological abilities, or lack experience and knowledge; ● Keep away from children and ensure that they do not come into contact with them. Warning!High temperature shell components.
	Warning! High temperature shell components. ● Please install in an environment with good heat dissipation and ventilation.
	Warning! Radiation can harm health. ● Do not stay near solar charging controllers that are less than 20 centimeters away for a long time.

2.3 Safety Instructions

● When using this device, please remember the following information to avoid fire, lightning, or other personal

	Warning! Ensure that the input DC voltage is ≤ the specified maximum voltage. If the voltage is too high, it may cause permanent damage to the solar controller, and the above situation will not be included in the warranty period. This chapter contains important safety and operating instructions. Read and keep this operation manual for future reference.
	Warning! If technicians want to maintain or clean solar controllers or connect them to circuits, they must first follow the relevant steps.

- Before using the solar charging controller, all instructions and warning signs on the controller, as well as the corresponding chapters of this manual, should be read;
- Please use the components recommended or sold by our company
- To avoid the danger of fire and electric shock, ensure that the existing lines have good conditions and suitable wire sizes. Do not operate when the solar controller is damaged or the wiring is not qualified;
- Please do not disassemble the solar charging controller by yourself. Or attempting to repair the solar charging controller, which may result in further damage or accidents, and loss of warranty eligibility;
- Keep away from flammable and explosive materials to avoid fires;
- The installation location should be away from damp or corrosive substances;
- To avoid short circuits, technicians must use insulated tools to operate the equipment.

3. Controller installation

Installation must be completed by professional technicians

3.1 Selection of installation location

	danger: ● The charging controller chassis will become hot during operation. ● Do not install on flammable building materials; ● Do not install near highly flammable materials; ● Do not install in areas with potential explosion hazards; ● Do not install the charging controller in a place directly exposed to sunlight to avoid losses caused by overheating of the power		warn: ● Due to the built-in thermal storage module components. Please do not touch the controller with your hands after opening the casing during operation.
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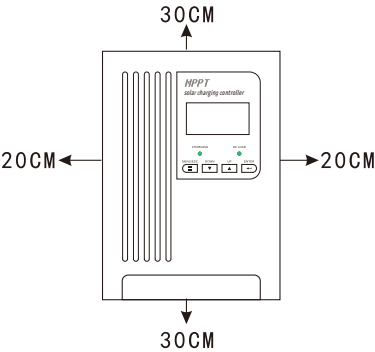
3.1.2 Environmental conditions

- Installed on a solid surface;
- The installation location must be accessible at all times;
- Install in a position that can be removed at any time;
- The ambient temperature should be between -20 ° C and 50 ° C to ensure the optimal working environment;
- Do not install the charging controller in direct sunlight to avoid power loss due to overheating.

3.1.3 Safety distance

Observe the following safety clearances to ensure that other devices or objects are not within this range, in order to ensure sufficient heat dissipation space.

describe	safe distance
side	20CM
tall	30CM
bottom	30CM



4. MPPT controller connection



dangerous!
If the high voltage input is not operated correctly, the solar charging controller may pose a life-threatening risk.

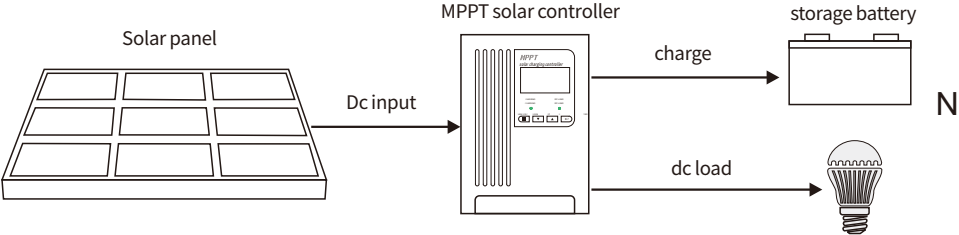
- To disconnect the solar panel array, a circuit breaker should be used and accidental activation of power should be avoided;
- Disconnect the circuit breaker and ensure that it cannot be reconnected;
- Ensure that there is no voltage present in the system.



warn:
Overvoltage can damage the system.

- Thunderstorms and lightning can increase the risk of damage to external overvoltage protection systems.

4.1 Composition of Solar Charging System

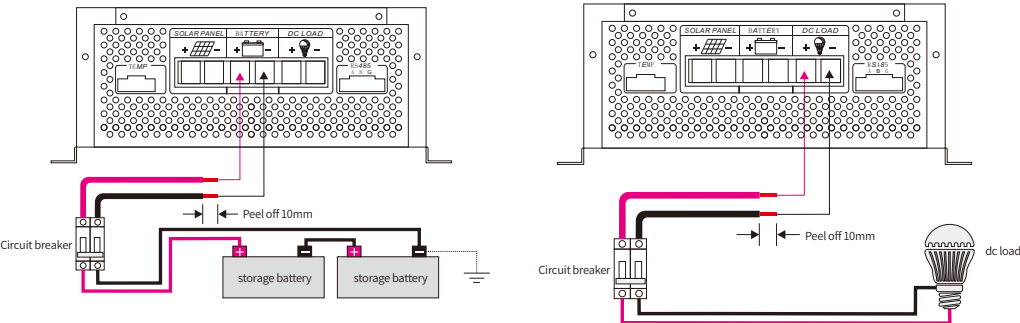


4.2 Wiring

4.2.1 Wiring steps



Warning: Short circuits between the positive and negative terminals of the battery and the wires connected to them can pose a risk of fire or explosion. Please handle with caution.



Attention: Connecting the battery pack must be done with the circuit breaker disconnected.

4.2.2 Battery Connection

4.2.3 DC load connection

The load terminal of the controller "DC LOAD" can be connected to DC electrical equipment with the same rated working voltage as the rated voltage of the battery. The controller supplies power to the load based on the battery voltage.

4.2.4 Photovoltaic module connection

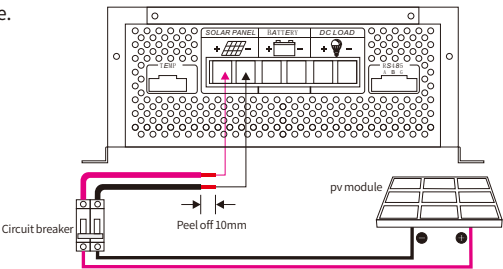


Warning: Electric shock hazard! Photovoltaic modules may generate high voltage, be careful to prevent electric shock when wiring.

The controller can be used for off grid solar modules of 12V, 24V, and 48V, as well as grid connected modules with an open circuit voltage not exceeding the specified maximum input voltage. The voltage of the solar modules in the system should not be lower than the system voltage.



Attention: Connecting photovoltaic modules must be done with the circuit breaker disconnected



5. MPPT controller connection

Specifications of cables and miniature circuit breakers:

model	GD-50A	GD-60A	GD-80A	GD-100A	GD-120A
Cable (copper)	10mm ²	16mm ²	16mm ²	25mm ²	25mm ²
Circuit breaker	63A	80A	100A	125A	125A

5.1 Temperature sensor and MPPT controller connected to PC

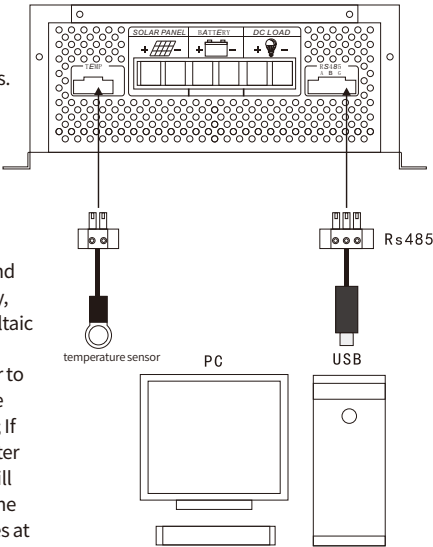
Rs485 communication cable is an optional component
If necessary, install the upper computer software (which needs to be purchased separately).
The accessories come with detailed usage and installation instructions.

5.2 Power on trial operation



Attention: Before powering on for trial operation, please check that all DC connection wires have their positive and negative poles fully connected correctly

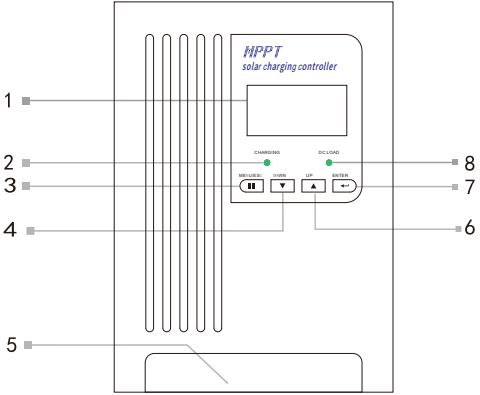
Follow the steps below for trial operation: 1. Check that the positive and negative terminals of the connecting wire are fully connected correctly, and at the same time measure the open circuit voltage of the photovoltaic module to ensure that it is within the working range of the female controller;2. First, turn on the circuit breaker connecting the controller to the battery;3. Open the circuit breaker connecting the controller to the solar panel again;4. Then the controller begins to enter self-test mode; If the system conditions are correct, the controller will automatically enter working mode: if the system conditions are incorrect, the controller will display a fault prompt and refer to the chapter to resolve the fault.5. The battery type controller defaults to maintenance free lead-acid batteries at the factory, refer to the battery type settings.



6. MPPT controller operation instructions

6.1 Panel Component Description

number	name	number	name
1	LCD display screen	5	Junction box cover plate
2	Charging indicator light	6	Flip up button
3	Function menu button	7	Confirm button
4	Flip down button	8	DC output indicator light

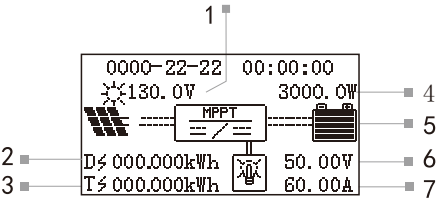


6.2 Indicator light status description

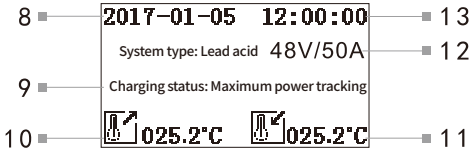
name	state	Status Description
charge indicator	flash mob	Charging in maximum power tracking mode
	Slow flashing	Floating charging mode charging
	extinguish	Stop charging
DC output indicator light	bright	Normal output
	dodge	Battery undervoltage prompt
	extinguish	Turn off output

6.3 LCD Display Screen Description

6.3.1 Main Interface Description

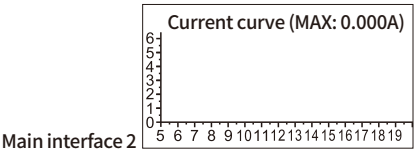


Default main interface

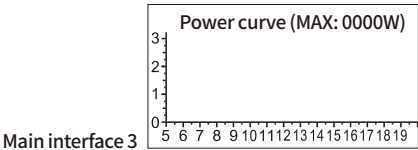


Main interface 1

number	describe	number	describe
1	Voltage of photovoltaic modules	8	date
2	Daily power generation (charging capacity)	9	Charging status: maximum power tracking, float charging, stop charging
3	Total power generation (charging capacity)		
4	charging power	10	external temperature
5	Battery capacity indication	11	internal temperature
6	battery voltage	12	Battery type/system voltage and current level
7	Charging current	13	Real time time



Main interface 2

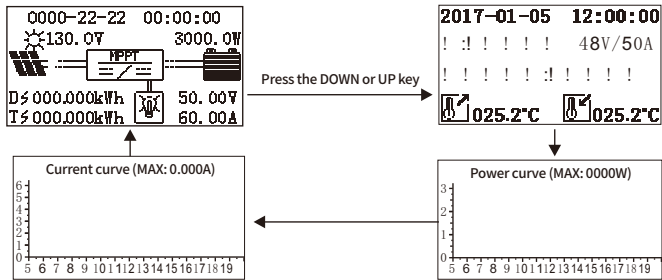


Main interface 3

name	Current curve (MAX: 0.000A)	name	Power curve (MAX: 0000W)
X	Time, (5:00-20:00)	X	Time, (5:00-20:00)
Y	Current (ratio: 1:10)	Y	Power (ratio: 1:1000)
MAX: 0.000A (record the highest charging current value of the day)		MAX: 0000W (record the highest charging power value of the day)	

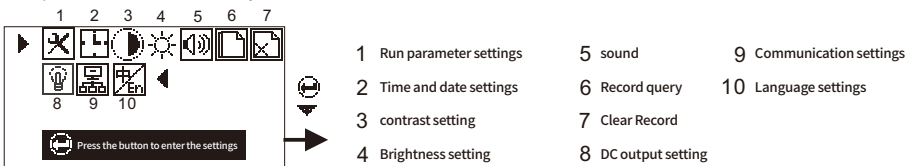
6.3.2 Viewing the main interface

In the default main interface, press the DOWN or UP key to scroll through the screen.



6.3.4 Main Menu

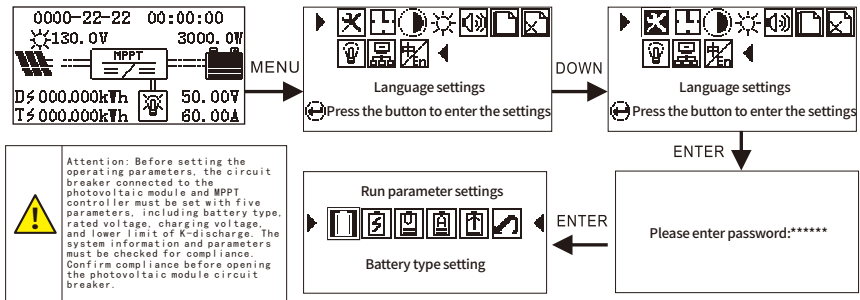
Press the MENU key in the default main interface to enter the main menu, and press the DOWN or UP key to view submenus.



6.4.1 Operating parameter settings

Attention: The setting of operating parameters must be operated by professional technicians. Incorrect operation may cause the MPPT controller to malfunction or damage the battery.

In the default main interface, press the MENU key to enter the main menu, press the DOWN key to select the running parameter settings, press the ENTER key to enter the password prompt interface, enter the password, and then press the ENTER key to enter the running parameter settings.



6.4.2 Time and Date Settings

In the default main interface, press the MENU key to enter the main menu, press the DOWN key to select time settings, press the ENT ER key to enter time settings, press the UP key to move the cursor, press the DOWN key to modify values, confirm the modified values, press the ENTER key to confirm, and after hearing continuous prompt sounds, press MENU to return to the main interface.

6.4.3 Contrast setting

In the default main interface, press the MENU key to enter the main menu, press the DOWN key to select contrast settings, press the ENTER key to enter contrast settings, press the DOWN key to reduce contrast, press the UP key to increase contrast, press the ENT ER key to confirm, and after hearing continuous prompt sounds, press the MENU key to return to the upper menu and main interface.

6.4.4 Brightness Settings

The brightness setting and contrast setting operations are the same.

6.4.5 Sound Settings

In the default main interface, press the MENU key to enter the main menu, press the DOWN key to select sound settings, press the ENTER key to enter sound settings, press the DOWN key to select button sound on or off, press the UP key to move the cursor to select alarm sound on or off, press the ENTER key to confirm, and press MENU to return to the main interface after hearing continuous prompt sounds.

6.4.6 Record Query

In the default main interface, press the MENU key to enter the main menu, press the DOWN key to select record query, press the ENTER key to enter record query, press the DOWN or UP key to select curve record query or fault record query, press the ENTER key to enter curve record query or fault record query, and then press the DOWN or UP key to query records. There are a total of 10 records. Press the MENU key to return to the upper layer and main interface.

6.4.7 Clearing Records

In the default main interface, press the MENU key to enter the main menu, press the DOWN key to select clear records, press the ENTER key to enter clear records, press the UP key to move the cursor, press the DOWN key to select whether to clear or not, and press the ENTER key to confirm clearing. After hearing a continuous prompt sound, press the MENU key to return to the upper menu and main interface.

6.4.8 DC Output Settings

In the default main interface, press the MENU key to enter the main menu, press the DOWN key to select DC output settings, press the ENTER key to enter DC output settings, and press the DOWN key to select off, automatic, time control, and light control. When selecting to turn off or automatic, press ENTER to confirm. When selecting time control, you need to set the time period to turn on and off the DC output. Press the DOWN key to select the time control, then press the UP key to move the cursor, and press the DOWN key to enter the time value. Press the ENTER key to confirm, and after hearing continuous prompts, press the MENU key to return to the upper layer and main interface.

Note: Off means directly turning off the DC output, while automatic means turning on the DC output after the MPPT controller is connected to the battery

Except for battery undervoltage, time control is to turn on and off the DC output according to the set time period.

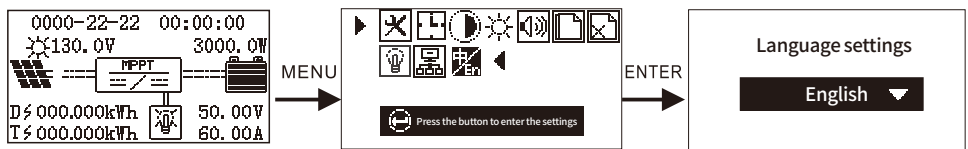
6.4.9 Communication Settings

In the default main interface, press the MENU key to enter the main menu, press the DOWN key to select communication settings, press the ENTER key to enter communication settings, press the UP key to select baud rate settings or local address settings, press the DOWN key to set baud rate and local address values, press the ENTER key to confirm, and after hearing continuous prompts, press the MENU key to return to the upper menu and main interface.

6.4 Parameter Settings

6.4.10 Language Settings

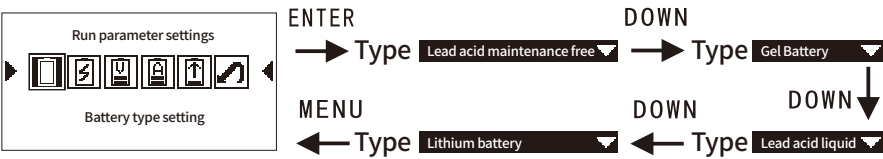
In the default main interface, press the MENU key to enter the main menu, press the ENTER key to enter language settings, press the DOWN key to select the language, and then press the ENTER key to confirm. After hearing continuous prompt sounds, press MENU to return to the main interface.



6.4.11.1 Battery Type Settings

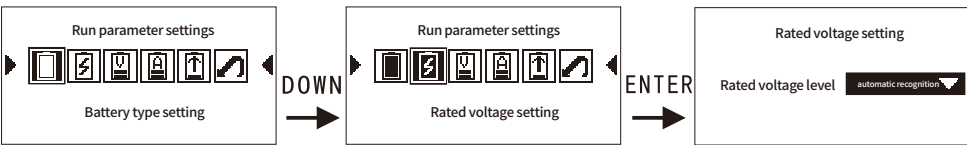
In the operation parameter interface, press the ENTER key to enter the battery type setting, press the DOWN key to select the battery type (lead-acid maintenance free, gel battery, liquid battery, lithium battery series), press the ENTER key to confirm, and after hearing a continuous prompt sound, press the MENU key to return to the upper layer.

i The factory default is maintenance free lead-acid batteries.



6.4.11.2 Rated battery voltage setting

In the operation parameter interface, press the DOWN key to select the rated voltage setting, then press the ENTER key to enter the rated voltage setting. Press the DOWN key to select the rated voltage level (automatic recognition, 12V, 24V, 36V, 48V...) and press the ENTER key to confirm. After hearing continuous prompt sounds, press the MENU key to return to the upper layer.



i The factory default is to automatically identify the rated voltage level. The automatic recognition of rated voltage level only recognizes lead-acid battery series, and lithium battery series are not included in the automatic recognition range. When automatically identifying voltage levels, it is not allowed to set charging voltage and discharge lower limit voltage. Setting the charging voltage and discharge lower limit voltage requires manually setting the voltage level before it can be set.

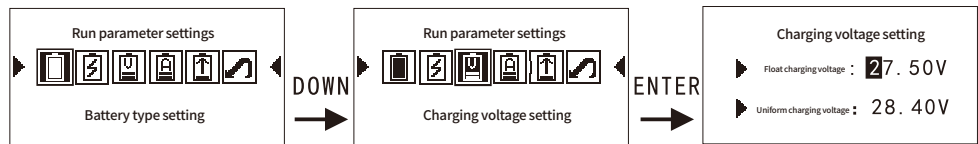
6.4.11.3 Charging voltage setting

Steps for setting charging voltage:

- 1. Choose the type of battery you are using (lead-acid battery series or lithium battery series)
- 2. Set the rated battery voltage level (levels include 12V, 24V, 36V, 48V, 72V, 96V...). Please refer to the rated battery voltage setting for details (the default battery type at the factory is lead-acid maintenance free battery, and the battery voltage level is automatically recognized).
- 3. Fully understand the charging parameters of the battery you are using, and you must follow the charging parameters recommended by the battery manufacturer.

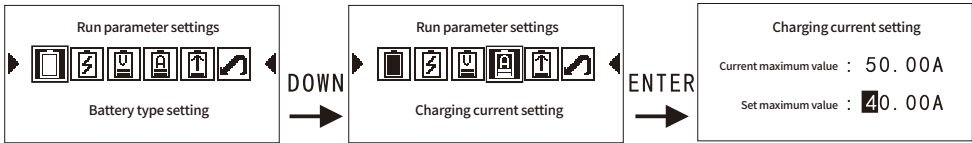
i The lithium battery series only has float charging (constant voltage) charging mode, and the even charging mode is only used in the lead-acid battery series.

In the operation parameter interface, press the DOWN key to select the charging voltage setting, then press the ENTER key to enter the charging voltage setting. Press the UP key to move the cursor, press the DOWN key to enter the value, press the ENTER key to confirm and save. After hearing continuous prompt sounds, press the MENU key to return to the upper interface.



6.4.11.4 Charging current setting

In the operation parameter interface, press the DOWN key to select the charging current setting, then press the ENTER key to enter the charging current setting. Press the UP key to move the cursor, press the DOWN key to enter the value, press the ENTER key to confirm and save. After hearing continuous prompt sounds, press the MENU key to return to the upper interface.

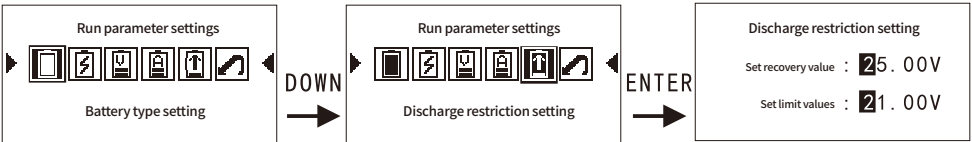


i Charging current setting, the set value cannot exceed the current maximum value.

6.4.11.5 Discharge limit setting

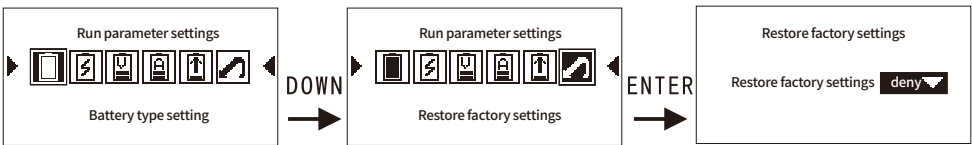
i The discharge limit setting is to set the cut-off voltage and resumption voltage of the DC output

In the operation parameter interface, press the DOWN key to select the discharge limit setting, then press the ENTER key to enter the discharge limit setting. Press the UP key to move the cursor, press the DOWN key to enter the value, press the ENTER key to confirm and save. After hearing continuous prompt sounds, press the MENU key to return to the upper interface.



6.4.11.6 Factory reset

In the operation parameter interface, press the DOWN key to select the factory settings to be restored, then press the ENTER key to enter the factory settings to be restored. Press the DOWN key to select whether to restore the factory settings, press the ENTER key to confirm saving, and after hearing continuous prompts, press the MENU key to return to the upper interface.



i When the MPPT controller cannot operate normally due to incorrect parameter settings, the operating parameters can be restored to the factory settings.

6.4.11.7 Password

Press the DOWN key 3 times, then press the UP key 3 times, and ***** press the ENTER key to enter the running parameter settings

7. Technical Parameters

Model: GD-50/60/80/100/120 column			50A	60A	80A	100A	120A
charge mode		MPPT automatic maximum power point tracking					
Charging method		Three stages: constant current (MPPT), balanced charging, and float charging					
System type		12V-24V/12V-48V			Automatic recognition/manual setting		
System identification voltage range		12V system			DC9V-DC15V		
		24V system			DC18V-DC30V		
		48V system			DC36V-DC60V		
Soft start time		12V/24V/48V			≤10s		
Dynamic response recovery time		12V/24V/48V			≤500us		
Static power consumption		12V/24V/48V			≤2W		
Efficiency		12V/24V/48V			≥ 96 .5%		
Utilization rate of photovoltaic modules		12V/24V/48V			≤99.97%		
Input characteristics							
MPPT operating voltage range		12V system		DC18V-DC 100V			
		24V system		DC34V-DC 100V			
		48V system		DC65V-DC150V			
Input low voltage protection point		12V system		DC16V			
		24V system		DC30V			
		48V system		DC60V			
Input low voltage recovery point		12V system		DC18V			
		24V system		DC34V			
		48V system		DC65V			
Extreme input voltage		12V/24V/48V		DC170V (40A:95V)			
Input overvoltage protection point		12V/24V/48V		DC175V (40A:100V)			
Input overvoltage recovery point		12V/24V/48V		DC170V (40A:95V)			
Maximum solar panel Input power		12V system	600W	720W	960W	1200W	1440W
		24V system	1200W	1440W	1920W	2400W	2880W
		48V system	2400W	2880W	3840W	4800W	5760W
		96V system	4800W	5760W	7680W	9600W	11520W
output characteristic		(Same as battery voltage) 96V system without DC output					
Optional battery types (Default is maintenance free lead-acid battery)		1 2V / 24V/48 V		Lead acid maintenance free batteries, colloidal batteries, liquid batteries, lithium batteries (It can also be customized to charge other types of batteries)			

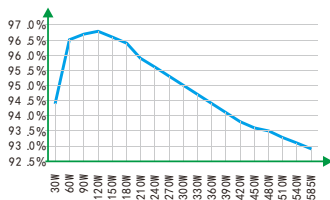
Technical Parameter

Model: GD-50/60/80/100/120 column		50A	60A	80A	100A	120A
Floating voltage (lead-acid battery)	12V system		13.8V (customizable float charging voltage)			
	24V system		24V system 27.60V (customizable float charging voltage)			
	48V system		48V system 55.20V (customizable float charging voltage)			
Uniform charging voltage (lead-acid battery)	12V system		14.5V (customizable equalization voltage)			
	24V system		29V (customizable equalization voltage)			
	48V system		58V (customizable equalization voltage)			
Rated current	12V/24V/48V	50A	60A	80A	100A	120A
Current limiting protection	12V/24V/48V	52A	62A	82A	102A	122A
temperature coefficient	12V/24V/48V	± 0.02 %/				
Automatic temperature compensation	12V/24V/48V	14.2V - (maximum temperature -25 °C) * 0.3				
Output voltage stabilization accuracy	12V/24V/48V	≤ ±1.5%				
lcd display		Please refer to the LCD display instructions for details				
led display		Charging indicator, DC output switch status indicator				
PC upper computer (communication port)		Rs485 (optional)				
protect						
Input low voltage protection		Refer to input characteristics				
Input high voltage protection		Refer to input characteristics				
Input polarity reversal protection		Capable of polarity reversal protection				
Output polarity reverse protection		Capable of polarity reversal protection				
Short circuit protection		After 5 trial starts, it enters the protection state and recovers from the start				
temperature protection						
Temperature rise protection						
OTHERS						
Audio noise		≤50dB				
Heat dissipation method		Forced air cooling, the fan speed is adjusted by temperature, and when the internal temperature is low, the fan runs slowly or stops running; When the controller stops working, the fan stops running;				
element		Imported materials that comply with EU standards, all electrolytic capacitors selected for temperature rating not less than 105 °C				
odor		No odor or harmful to health				
environmental requirements		Meets 2002/95/EC; No cadmium, hydrides, and fluorides				

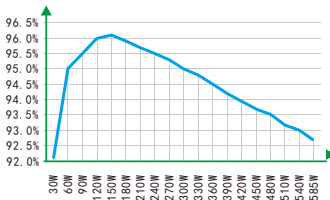
Model: GD-50/60/80/100/120 column	50A	60A	80A	100A	120A
attribute					
size		Please refer to the random label paper for details			
Gross weight (kg)		Please refer to the random label paper for details			
Net weight (kg)		Please refer to the random label paper for details			
Mechanical protection type		IP 2 1			
Environmental requirements					
humidity		0~90% RH (no condensation)			
altitude		0~3000m			
ambient temperature		-20℃ ~ +40℃			
storage temperature		-40℃ ~ +70℃			
atmospheric pressure		70~106kPa			
Photovoltaic module configuration					
System voltage (battery voltage)		Photovoltaic module load voltage (recommended value)			
12V system		18V~60V (30V component * 1 string, 36V component * 1 string)			
24V system		36V~72V (2 strings of 30V components, 2 strings of 36V components)			
48V system		72V~144V (5 strings of 30V components, 4 strings of 36V components)			
60V system		72V~144V (5 strings of 30V components, 4 strings of 36V components)			
72V system		144V~180V (5 strings of 30V components, 4 strings of 36V components)			
96V system		144V~180V (6 strings of 30V components, 5 strings of 36V components)			

Photovoltaic power conversion efficiency curve

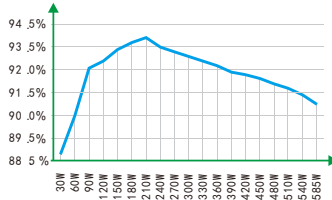
(1) The maximum power point voltage of photovoltaic modules is 17V/system voltage is 12V



(2) The maximum power point voltage of photovoltaic modules is 34V/system voltage is 12V



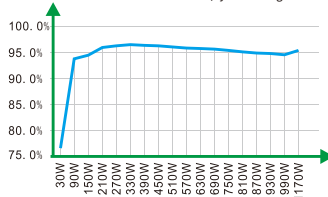
(3) Maximum power point voltage of photovoltaic module 68V/system voltage 12V



(4) The maximum power point voltage of photovoltaic modules is 34V/system voltage is 24V



(5) The maximum power point voltage of photovoltaic modules is 68V/system voltage is 24V



8. Troubleshooting

When the controller encounters an abnormality, please check the following items in the table before contacting the customer service representative

Abnormal phenomenon of malfunction	Relieve the malfunction
MPPT controller is powered on for the first time, and the fault prompt is: battery voltage exceeds the normal recognition range.	1. Check if the battery voltage is within the system voltage recognition range. (See technical parameter system voltage identification range) 2. Manually set the rated battery voltage level. (See the rated battery voltage setting in the operating parameter settings for details)
Fault prompt: Over temperature protection	1. Check if the cooling fan is damaged and if the ventilation holes are blocked by debris. The MPPT controller should be installed in a well ventilated environment. 2. Reasonable configuration of photovoltaic modules can improve conversion efficiency and reduce temperature rise (see technical parameters for photovoltaic module configuration)
Fault prompt: Battery overdischarge protection	The battery has run out of energy
Fault prompt: No external temperature sensor detected	
The charging indicator light is not on and there is no charging current or charging power display	1. Is the voltage of the photovoltaic module within the MPPT operating voltage range. 2. Check if the charging voltage parameters displayed in the system information are correct. 3. Correct the charging voltage parameters or restore the factory settings and restart the MPPT controller. 4. Check if the fuse is blown and if the circuit breaker is disconnected.
The charging indicator light lights up briefly and then goes out quickly, and the charging current is sometimes intermittent	This situation usually occurs on cloudy days or in the evening when there is insufficient sunlight, which is a normal phenomenon
No power curve and current curve display	Check if the time and date displayed on the MPPT controller are correct. (See time and date settings)

If the problem still persists after following the above table, please contact customer service personnel: Please provide the following information: equipment information: model, order number, serial number (labeled on the back panel); Detailed description of the problem (such as system type used, occasional or frequent occurrence of the problem, indicator lights, display status, etc.).

9. Maintenance and Cleaning

9.1 Replacing fuses

Due to high temperature or other malfunctions causing the fuse to burn out, it is necessary to replace the fuse correctly; Remove the broken fuse from the interface, install a new fuse, check if it is connected correctly, and then install the device. The fuse is located near the wiring junction

9.2 Cleaning ventilation vents and heat sinks

Regularly clean the fan vents and internal heat sinks, wiping them with a dry or slightly damp cloth; Attention: Do not use detergent or corrosive solvents for cleaning, do not allow liquid to flow into the machine, and ensure that the ventilation holes of the equipment are not blocked.

10. Quality Assurance

Products that malfunction during the quality assurance period will be repaired or replaced with new products free of charge by our company

evidence

During the warranty period, our company requires customers to provide invoices and dates for purchasing products. At the same time, the trademark on the product should be clearly visible, otherwise there is a right not to provide quality assurance.

condition

- The replacement of non-conforming products should be handled by our company
- Customers should reserve reasonable maintenance time for our company to repair equipment that has malfunctioned

immunity

In the following situations, our company has the right not to provide quality assurance:

- The whole machine and components have exceeded the free warranty period
- Transport damage
- Incorrect installation or modification for use
- Operating in extremely harsh environments beyond those described in this manual
- Machine malfunctions or damages caused by non company service agencies, repairs, modifications, or dismantling
- Damage caused by abnormal natural environment

If the product malfunction is caused by the above situation, the customer requests repair services. After being determined by our service agency, we can provide paid maintenance services.



describe

The size and parameters of the product may change based on the latest information provided by our company without prior notice.