MPPT

SOLAR CHARGE CONTROLLER

MP-100A/MP-120A/MP-150A Series

Thank you very much for choosing MPPT controller.The new generation MPPT we produce,is the brand new product developed based on the newest technology which represents the newest high-level photovoltaic development.Excellent performances are listed as below:

· Excellent heat dissipation design and cooling fan of intelligent control;
· Creative maximum power point tracking technology can significantly increase the energy utilization rate of the solar system and can reach transfer efficiency of 97%;
· Quickly scan the entire I-V curve;track the maximum power point within several seconds;
· Three types of lead-acid batteries include sealing,colloid and open and lithium battery series charging program can be selected;
· Controller protection function:over charge,over discharge,over-load,short circuit self-protection;
· Rs485 communication interface realizes multi-machine communication with communication distance of 1km and communication with host computer which enables you to check operating parameters of controller conveniently.

The controller is used in solar off-grid system (independent system) which automatically switches to the mode of charge or discharge.MPPT controller has an advanced tracking algorithm to obtain the maximum power of the solar cell module so as to charge battery;at the same time,its low-voltage disconnect (LVD) function can prevent the damage caused by over-discharge of the battery.The charging process of MPPT controller's battery is optimized which can extend battery Life and improve system performance.Its comprehensive self-test function and electronic protection function can avoid damage caused by installation error and system fault.Although the TY-series MPPT controller is easy to operate and use,it would be better for you to take some time to learn the instructions and specification of this manual in order to use all the functions better improve your PV system.

The features of the maximum power point tracking technology

The MPPT controller utilizes maximum power point tracking technology to extract the maximum power from the solar array to charge the battery. The maximum power point tracking mode is fully automatic and does not require user to adjust. When the maximum power point of the array changes with ambient conditions, the controller automatically tracks the maximum power point of the array to ensure that the maximum energy of the day is obtained from the solar array.

· Increase current

In most cases, the maximum power point tracking technique will "increase" the charge current of the solar system.Assuming that a system may have 10 amps of current flowing from the solar array into the MPPT controller and 12 amps of current flowing from the MPPT controller into battery.

MPPT controller does not generate current! The energy input to the MPPT controller is equal to its output energy.Since the power is the product of voltage and current (volts x amperes), the following situations are true:

(1) MPPT controller input energy = MPPT controller output energy
(2) Input voltage x Input current = Output voltage x Output current

＊ Assume that the efficiency is 100% and ignore the power loss caused by wire and conversion.
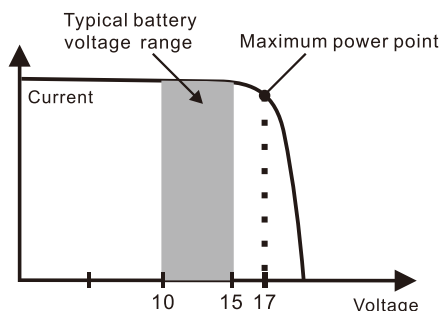
If the maximum power point voltage Vmp of the solar array is larger than the battery voltage, the battery charge current must be proportionally larger than the solar array output current so that the input and output power can be balanced.The greater the difference between the Vmp voltage and the battery voltage, the greater the current boost.Current boost is extremely important in the system because the maximum power point voltage Vmp voltage of the solar panel in the solar power system is usually higher than the battery voltage.

## · The advanced condition compared with traditional controller.

The traditional controller directly connects the solar array to the battery when charging.It requires the solar array to operate normally below the Vmp voltage range.Take 12V system as an example.The range of battery voltage is usually 11-15V, but the Vmp voltage of solar array is usually about 16 or 17V.

The diagram below shows curve of current, voltage and output power of off-grid solar battery of typical nominal rated voltage 12V .

Current and voltage of 12V solar battery   Output power of 12V solar battery
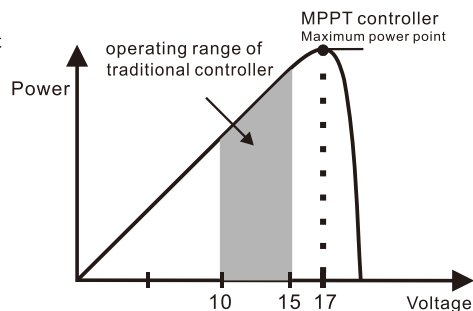
Nominal 12V solar cell I-V curve and output power diagram

Maximum power point voltage Vmp of solar PV array is the voltage of maximum output power (Amp x Volts), which is showed in the "knee" of the left diagram of above,the solar PV array I-V curve.

Since the conventional controller does not always operate in the solar PV array Vmp, the energy is wasted which originally can be used to charge battery and supply power to the system load.The greater the difference between the battery voltage and the Vmp of the solar PV array, the more energy will be wasted.The MPPT controller will always operate at the maximum power point which reduces energy waste compared with conventional controllers.

· The limitating factor of the maximum power point tracking controller:

The Vmp of the solar PV array 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, the MPPT controller will have little or no access to energy compared with conventional controllers.However, as long as the nominal voltage of the system PV module is higher than the battery voltage, the Vmp of the PV module will be always higher than the battery voltage.In addition, decrease of the current of the solar array saves wires which enables the MPPT controller also has obvious advantages even in hot weather.

Table of Contents

1. Precautions

This manual describes the operation related to the MPPT solar charge controller.

1.1 Effectiveness

   This manual is applicable to all models of MPPT solar charge controller of our company.

1.2 Target groups

   This manual applies to installers and operators

1.3 Before installing and operating the controller, please read this manual and keep it carefully.

1.4 Symbol Description

   The followings are descriptions of the type of logo that appears in this manual:

⚠	Warning ! If not avoided,it may cause a machine stoppage or accident
⚡	Danger ! If not avoided,it may cause a machine stoppage or accident
⚡	Attention ! In order to operate the equipment effectively,please read the equipment operation instructions carefully

1.1 Safety Precautions

⚠	Warning ! · Input voltage range of this controller is large.It will lead to personal injuries if it is not operated cautiously; · All work on the charge controller must be carried out by a technician; · The device can not be operated by children or people lack of body sensibility and those who are poor in their minds, lack of experience and knowledge of the operation; · Keep away from children and make sure children can not touch.
⚠	Warning ! High heat housing parts. · Please install in a well ventilated environment.
⚠	Warning ! Radiation is harmful to healty. · Do not stay near the solar charger controller within 20 cm for a long time.

1.2 Logo Description

This section shows all instructions displayed on all device labels.

Logo	Instruction
⚡	Risk of electric shock； The energy stored in the capacitor will remain afterfive minutes of disconnection, and after the break, do not touch internal components within 5 minutes.
⚠	There is not self-repair parts inside the machine, so do not try to remove the cover; only professional personnel can operate and maintain the equipment; please use the insulation tool to drop risk of harm during operation.
♨	Beware of high heat shell； The solar charger controller becomes hot during operation.Avoid contact during operation; It is forbidden to place any items on the equipment and to block the fan vents.

1.3 Safety Instructions

When using this equipment, please keep the following information in mind so as to avoid fire, lightning or other personal injuries :

⚡	Warning ! Make sure that the input DC voltage = the specified maximum voltage, the voltage is too high may cause permanent, Damage to the solar controller, the above situation will not be included in the warranty period.This chapter contains important safety and operating instructions.Read and keep this manual for future use.
⚠	Warning ! The technician if you want to maintain or clean the solar controller or connect to the circuit, must first follow the relevant steps.

· Before using the solar charge controller, read all instructions and warning signs on the solar charge controller and the corresponding sections of this manual;

· Please use the parts recommended or sold by our company;

· Make sure the existing lines are in good conditions and wire size are suitable in order to avoid the risk of fire and electric shock; do not operate when solar controller is damaged and wiring is qualified;

· Do not disassemble the solar charge controller by yourself.Attempts to repair a solar charge controller may result in further risk of damage or accident and loss of quality of warranty;

· Keep away from flammable and explosive materials in order to avoid fire;

· The installation location should be kept away from moisture or corrosive substances;

· In order to reduce the rate of short circuit, the technician must use the insulation tool to operate the equipment.

2. Inspection Of Equipment Opening Sealing

2.1 Accessories

Item	Quantity	Remark
Controller	1	
Temperature senor	1	
Operation Manual	1	

Please contact distributor when finding missing parts.

2.2 Check If It Is Damaged During Transportation

After receiving device, please do not rush to sign at first, please open the sealing and check whether there is damage or crack appearance, if there is, please refuse to sign and contact distributor.

2.3 Confirm Charging Controller

The label of charging controller is pasted on the side of case, If you find the device does not matched the one you purchase, please contact distributor.

3. Controller Installation

3.1 Selection Of Installation Position

Installation must be done by professional technician.

⚡	**Danger !** The case of charging controller will become hot during operation. · Do not install on the flammable building material; · Do not install nearby the highly flammable material; · Do not install in the potentially dangerous explosion area; · Do not install the charging controller in direct sunlight in order to avoid the loss caused by overheating.
⚠	**Warning !** The controller has built-in thermal storage module components. · Do not touch the controller while it is working and the case is open.

3.2 Safety Distance

Observe the following safety gap, make sure other equipment or object are not in this range and make sure there is enough room for heat dissipation.
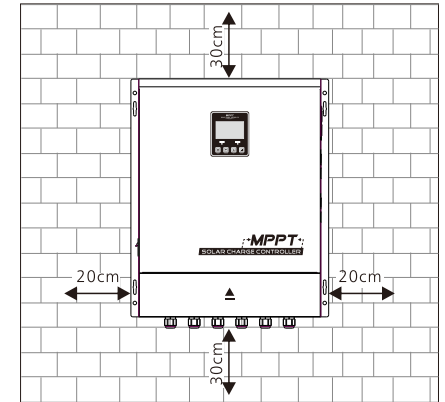
3.3 Environment Condition

· Install on solid surface;
· Installation position must be approachable anytime;
· Installation position can be removed anytime;
· Only temperature of -20°C~50°C can confirm the best working environment;
· Do not install the charging controller in direct sunlight in order to avoid power damage caused by overheating.

4. MPPT Controller Connection

4.1 Combination of Solar Charging System

Solar panel   MPPT Solar controller

4.2 Wiring Steps

Take off plate   Release wiring lock
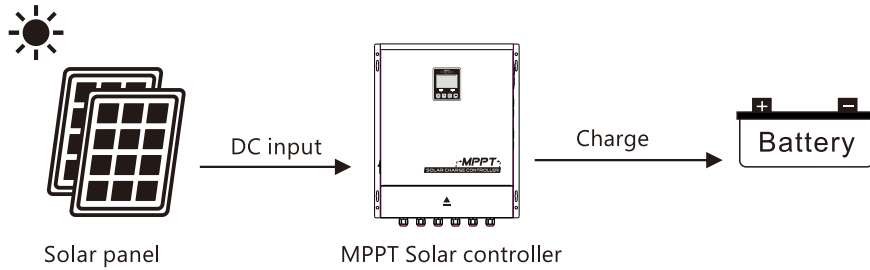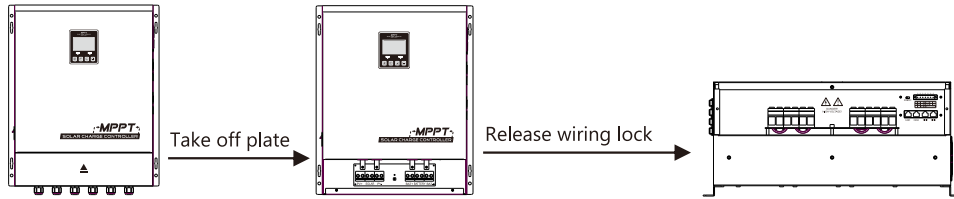
Specifications of cable and miniature circuit breaker:

Model	100A	120A	150A
Cable (copper)	25mm²	25mm²	30mm²
Circuit Breaker	150A	150A	200A

4.3 Battery Connection

⚡ Warning: Short circuit of battery's positive and negative terminals and wires of positive and negative electrode will lead to fire or risk of explosion.Please operate carefully.

240V System
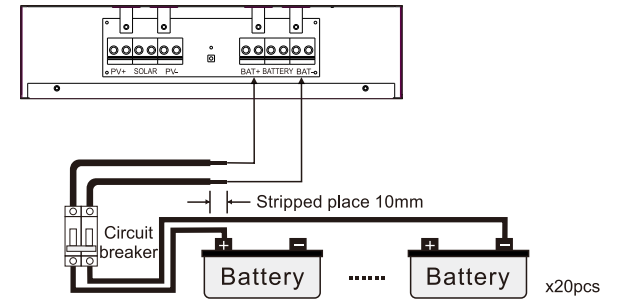
Attention: The operation of connecting batteries must be done under the situation that the circuit breaker is disconnected.

4.4 Photovoltaic Component Connection

Controller can match 196V, 216V, 240V off-grid system solar component, it's also can use a grid-connected component that open-circuit voltage does not exceed the specified maximum input voltage .The solar component voltage in the system must be not lowerthan the system voltage.
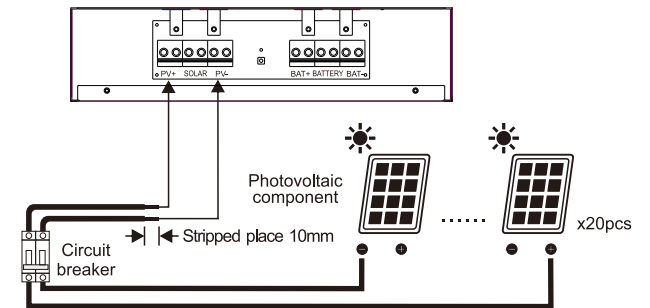
Attention: The operation of connecting photovoltaic component must be done under the situation that the circuit breaker is disconnected.

4.5 Power Trial Run

Attention: please make sure that all the positive and negative poles of the DC connection are connected correctly before the trial run

Proceed as the followings：

1.Make sure that the positive and negative terminals of the cable are fully connected and measure if the open circuit voltage of the PV module is within the operating range of the controller;
2.Turn on the circuit breaker connected with controller and battery;
3.Turn on the circuit breaker connected with controller and solar panel;
4.Then the controller starts to enter the self-test mode; if system conditions are correct, the controller automatically enter the working mode; If the system conditions are not correct, the controller will have fault indications, refer to the chapter of fault elimination.
5.Battery type: the factory setting defaults lead-acid maintenance-free battery, refer to the battery type settings.

5. Operating Instruction

5.1 Panel Part Specification
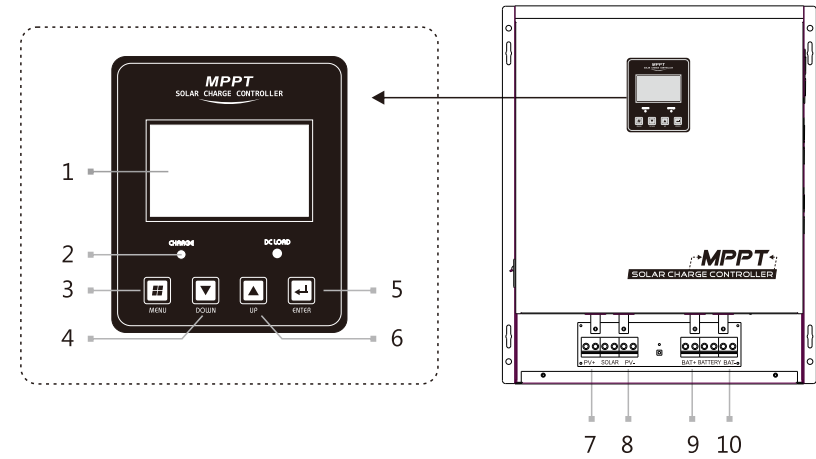
No	Name	No	Name
1	LCD Display	6	Up
2	Charging Indicator Light	7	PV Positive Electrode
3	Function Menu	8	PV Negative Electrode
4	Down	9	Battery Positive Electrode
5	Enter	10	Battery Negative Electrode

5.2 Communication Terminal
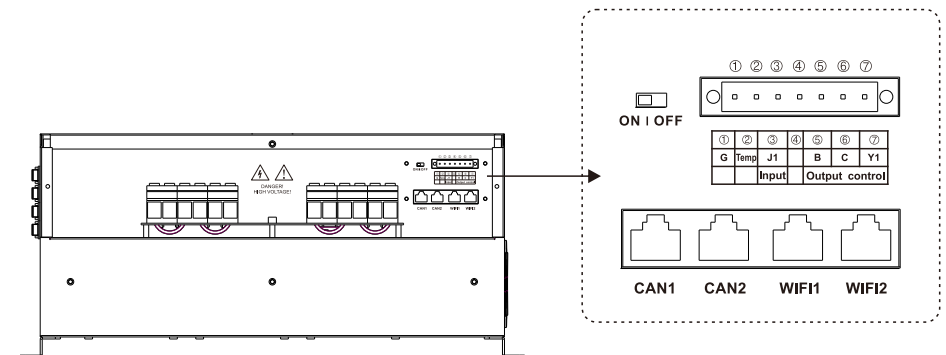
5.3 Main Interface Description

Main interface

Main interface 1
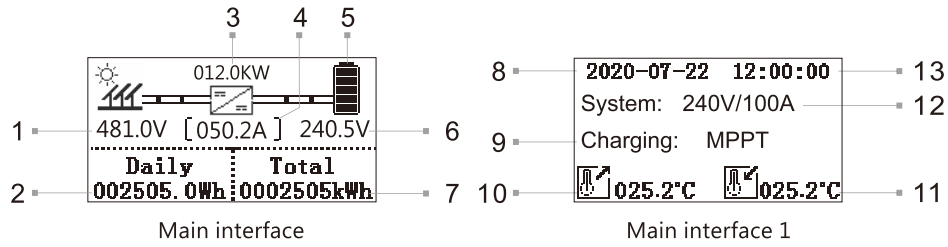
No	Decription	No	Decription
1	PV module voltage	8	Date
2	Daily power generation(charging volume)	9	Charging state:maximum power tracking, floating charge,stop ,charging.
3	Charging power		
4	Charging current	10	External temperature
5	Battery capacity indication	11	Internal temperature
6	Battery voltage	12	Battery type/System voltage current level
7	Total power generation(charging volume)	13	Real time

Main interface 2

Main interface 3
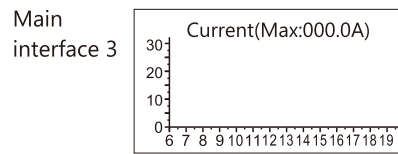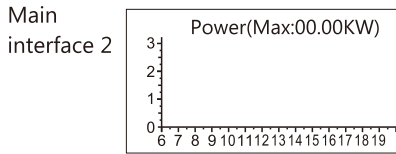
Name	Power Curve(Max:00.00KW)	Name	Current Curve(Max:000.0A)
X	Time (6:00-20:00)	X	Time (6:00-20:00)
Y	Power (Proportion:1:1000)	Y	Current (Proportion:1:1)
Max:00.00KW(Record the highest charging power value of the day)		Max:000.0A(Record the highest charging current value of the day)	

5.4 Check Main Interface

In the default main interface,press DOWN or UP to look through other interfaces.
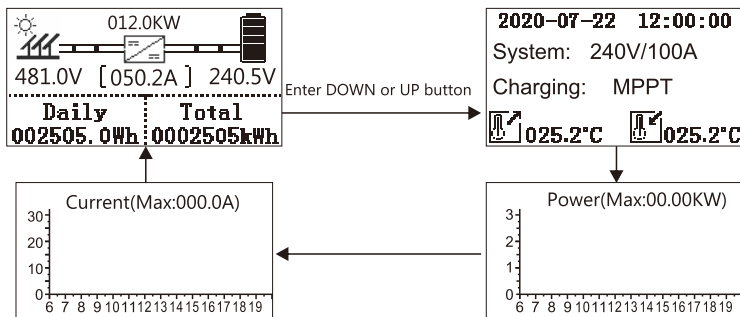
5.5 Main Menu

In the default main interface,press MENU to enter the main menu and press DOWN or UP to view the submenu.

Language setting
Press ⏎ to enter

Language setting

English ▼

Time & date
Press ⏎ to enter

Time & date
2020 / 07 / 24
00 : 00 : 00

Sounds setting
Press ⏎ to enter

Sounds setting
▶ Key sound   OFF▼
▶ Alarm sound   OFF▼

Records query
Press ⏎ to enter

Records query
Curve record query
Fault record query

Delete records
Press ⏎ to enter

Delete records
▶ Power generation   No▼
▶ Power curve   No▼
▶ Fault record   No▼

System information
Press ⏎ to enter

Sytem information
🔋 Battery type: VRLA
⚡ Voltage grade: 240V
Charge voltage: 276.0V
Charge current: 100.0A

Communication setting
Press ⏎ to enter

Communication setting
▶ Baud rate: 9600bps▼
▶ Address: 001

Parameter settings
Press ⏎ to enter

Password: ✳✳✳✳✳✳

Parameter settings
Press ⊕ to enter

⊕

Password: ******

Parameter settings
Battery type settings
Press ⊕ to enter

Parameter settings
Battery type settings
Press ⊕ to enter

Battery type settings
Battery type VRLA ▼

Parameter settings
Battery rated voltage
Press ⊕ to enter

Battery rated voltage
Rated voltage 240V ▼

Parameter settings
Charge voltage settings
Press ⊕ to enter

Charge voltage settings
▶ Floating charge: 276.0V
▶ Equalizing charge: 288.0V

Parameter settings
Charge current settings
Press ⊕ to enter

Parameter settings
Restore factory settings
Press ⊕ to enter

Charge current settings
▶ Maximum value: 100.0A
▶ Set limit value: 100.0A

Restore factory settings
Recovery No ▼

5.6 Language Setting

In the default main interface, press MENU to enter the main menu, press ENTER to enter the language setting, press UP to select the language and then press the ENTER key to confirm and press MENU to return to the main interface after hearing continuous indicative sound.

☀ 012.0KW
481.0V [050.2A] 240.5V
Daily Total
002505.0Wh 0002505kWh

Language setting
Press ⊕ to enter

Language setting
English ▼

Set successfully

Language setting
English ▼

Language setting
中文 ▼
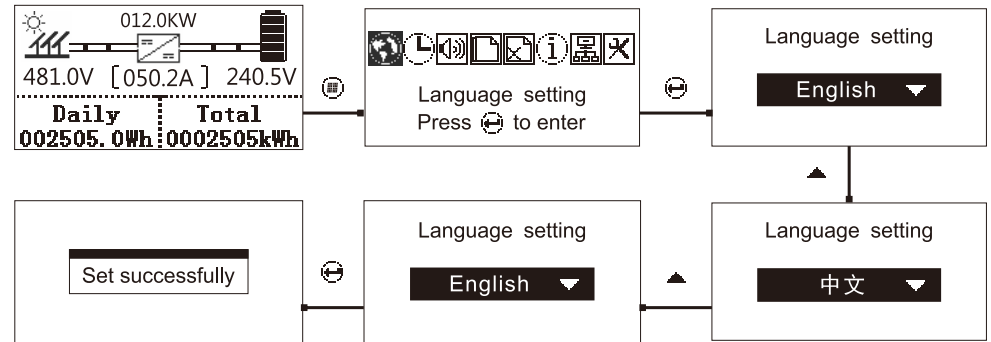
5.7 Time & Date

In the default main interface, press MENU to enter the main menu, press DOWN to select the time setting, press ENTER to enter time setting, press DOWN to move the cursor, press UP to modify the value, press ENTER after confirming the modified value and press MENU to return to the main interface after hearing continuous indicative sound.

☀ 012.0KW
481.0V [050.2A] 240.5V
Daily Total
002505.0Wh 0002505kWh

Language setting
Press ⊕ to enter

Time & date
Press ⊕ to enter

Set successfully

Time & date
2020 / 07 / 24
00 : 00 : 00

Time & date
2010 / 07 / 24
00 : 00 : 00
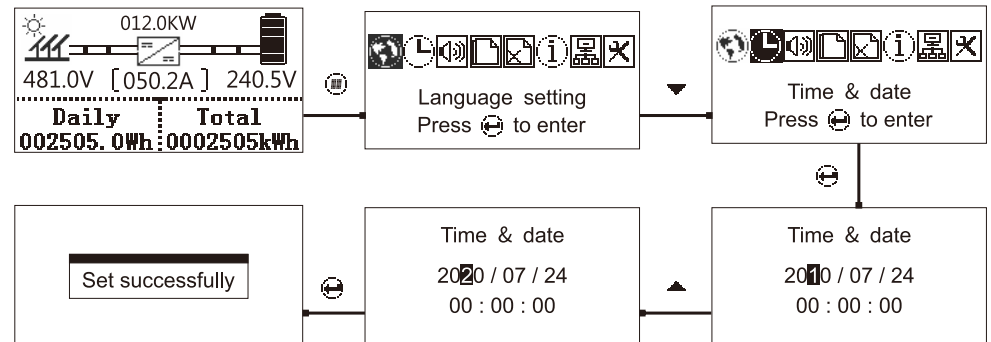
5.8 Sounds Setting

In the default main interface, press MENU to enter the main menu, press DOWN to select the sound setting, press ENTER to enter the sound setting, press UP to select the whether the key sound is on or off, press DOWN to move the cursor to select whether the alarm sound is on or off, press ENTER to confirm and press MENU to return to the main interface after hearing continuous indicative sound.

012.0KW
481.0V [050.2A] 240.5V
Daily **Total**
002505.0Wh **0002505kWh**

Language setting
Press ⊕ to enter

Sounds setting
Press ⊕ to enter

Set successfully

Sounds setting
▶ Key sound   ON ▼
▶ Alarm sound   OFF ▼

Sounds setting
▶ Key sound   OFF ▼
▶ Alarm sound   OFF ▼

5.9 Records Query

In the default main interface, press MENU to enter the main menu, press DOWN to select record query, press ENTER to enter record query, press DOWN or UP to select the curve record query or fault record query, press ENTER to enter the curve record query or fault record query, press DOWN or UP to check the record and there are 10 records totally.Press MENU to return to the upper and main interface.

012.0KW
481.0V [050.2A] 240.5V
Daily **Total**
002505.0Wh **0002505kWh**

Language setting
Press ⊕ to enter

Records query
Press ⊕ to enter

2020-07-25 000.0A 02

2020-07-25 00.00KW 01

Records query
Curve record query
Fault record query

Fault record 02 / 10

Battery over-discharge
protection

2020-07-25 00:00:00

Fault record 01 / 10

Battery over-discharge
protection

2020-07-25 00:00:00

Records query
Curve record query
Fault record query

5.10 Delete Record

In the default main interface, press MENU to enter the main menu, press DOWN to select the delete record, press ENTER to enter the delete record, press DOWN to move the cursor, press UP to select whether to delete, press ENTER to delete after selecting and press MENU to return to the upper menu and main interface after hearing continuous indicative sound.

012.0KW
481.0V [050.2A] 240.5V
Daily **Total**
002505.0Wh **0002505kWh**

Language setting
Press ⊕ to enter

Delete records
Press ⊕ to enter

Set successfully

Delete records
▶ Power generation Yes ▼
▶ Power curve   No ▼
▶ Fault record   No ▼

Delete records
▶ Power generation No ▼
▶ Power curve   No ▼
▶ Fault record   No ▼

Set successfully

Delete records
▶ Power generation No ▼
▶ Power curve   Yes ▼
▶ Fault record   No ▼

Delete records
▶ Power generation No ▼
▶ Power curve   No ▼
▶ Fault record   No ▼
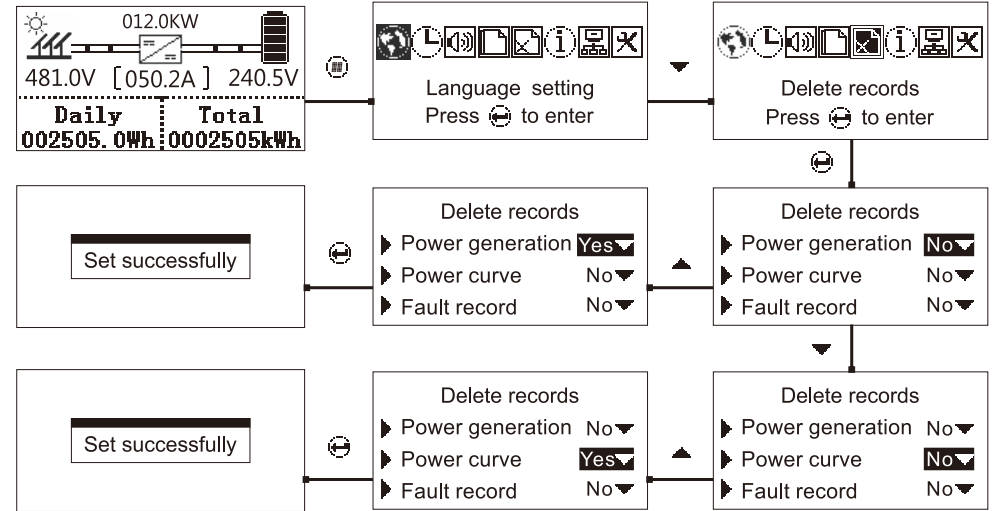
5.11 System Information

In the default main interface, press MENU to enter the main menu, press DOWN to select the system information, press ENTER to enter the system information, press MENU to return to the main interface.

012.0KW
481.0V [050.2A] 240.5V
Daily **Total**
002505.0Wh **0002505kWh**

Language setting
Press ⊕ to enter

System information
Press ⊕ to enter

Sytem information
▮ Battery type: VRLA
▯ Voltage grade: 240V
▯ Charge voltage: 276.0V
▯ Charge current: 100.0A
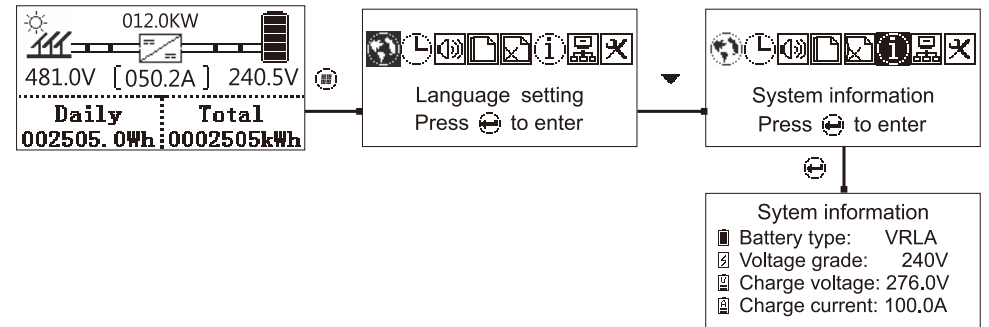
5.12 Communication Setting

In the default main interface, press MENU to enter the main menu, press DOWN to select the correspondence setting, press ENTER to enter the correspondence setting, press DOWN to select the baud rate setting or the local address setting, press UP to set Baud rate and the local address value, press ENTER to confirm and press MENU to return to the upper menu and main interface after hearing continuous indicative sound.
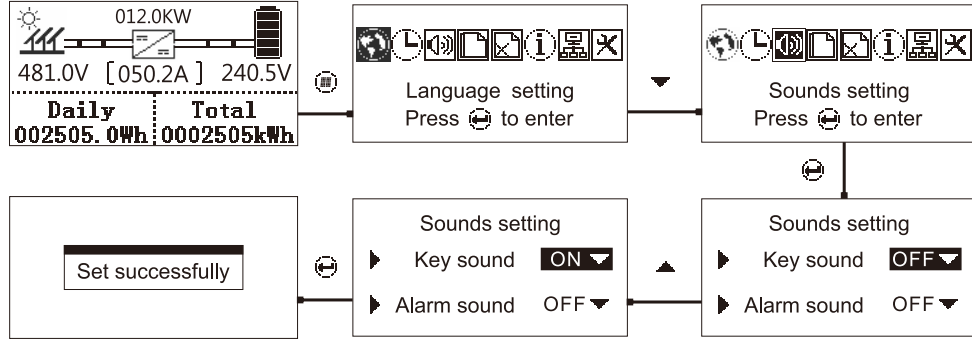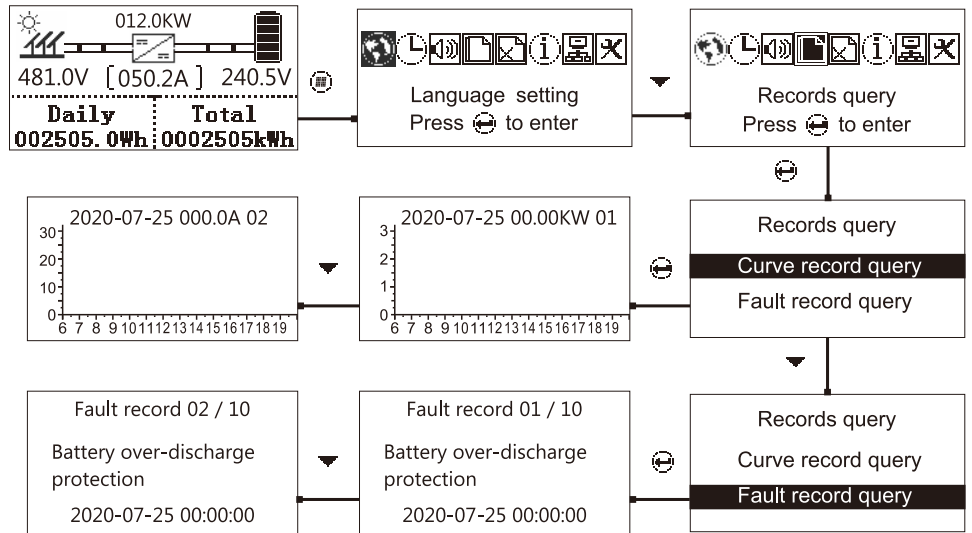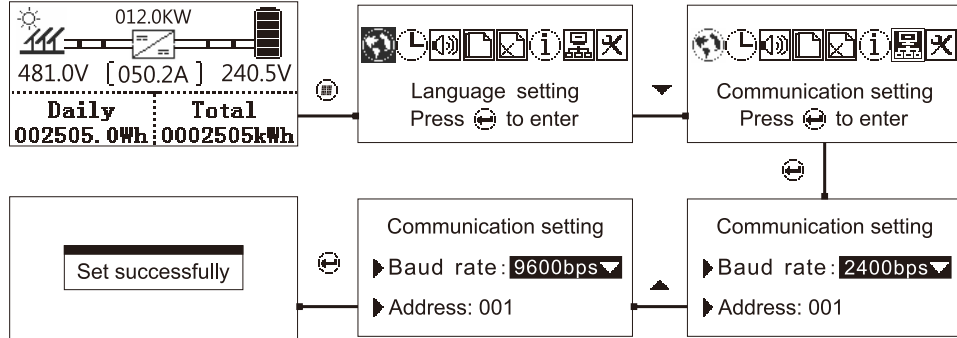

5.13 Parameter Settings

In the default main interface, press MENU to enter the main menu, press DOWN to select the operating parameter setting, press ENTER to enter the password prompt interface, enter the password and then press ENTER to enter the operating parameter setting.
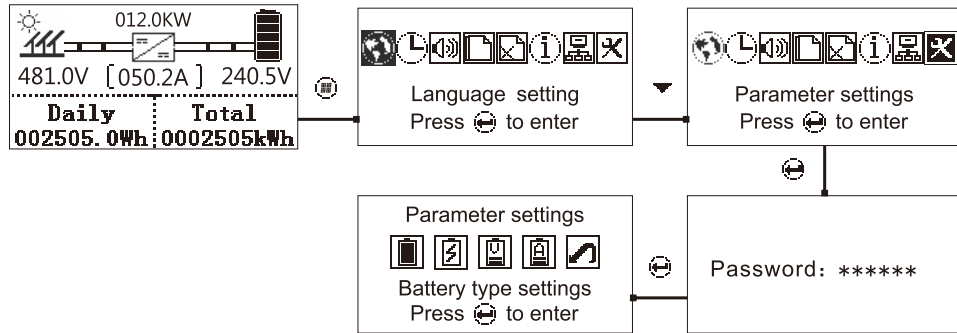
ⓘ **Note 1**　Before setting the operating parameters, you must disconnect the circuit breaker which connects the PV module with the MPPT controller, set 5 parameters: battery type, rated voltage setting, charging voltage setting, charging current setting, discharging lower limit setting, check if parameters displayed on the system information are corresponding and then turned on the PV module circuit breaker

　　Note 2　The operating parameter setting must be operated by qualified technicians.The MPPT controller will not work or suffer from damage of battery due to wrong operation.

5.14 Battery type setting

In the operating parameters interface, press ENTER to enter the battery type setting, press UP to select battery type (Maintenance-free lead acid battery, colloidal battery, liquid battery, lithium series battery), press ENTER to confirm and press MENU to return to upper menu after hearing continuous indicative sound.

ⓘ　**Note**　Factory setting defaults to maintenance-free lead acid.
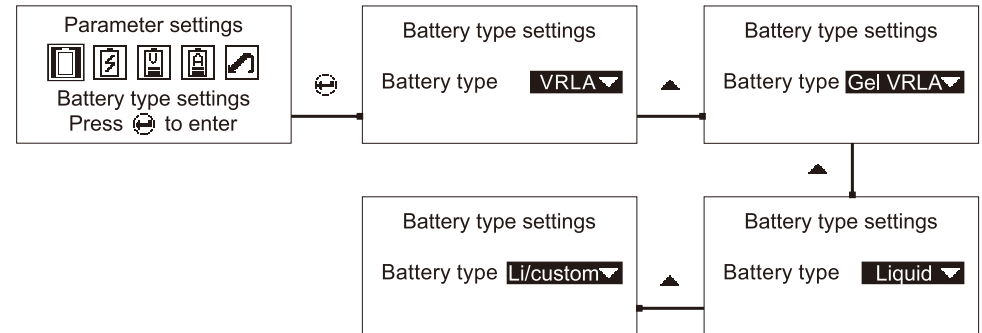
5.15 Battery Rated Voltage

In the operating parameters interface, press DOWN to select rated voltage setting, press ENTER to enter rated voltage setting interface, press UP to select voltage level(Adjustable, 192V, 216V, 240V), press ENTER to confirm and press MENU to return to upper menu after hearing continuous indicative sound.
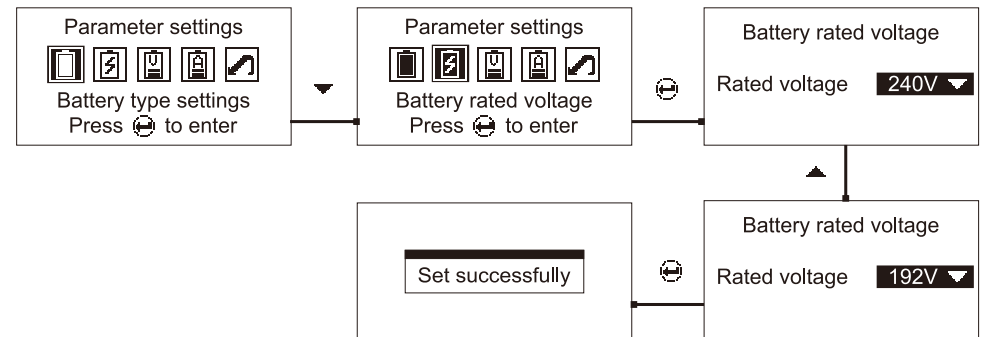
ⓘ　Factory setting defaults to automatically identify the level of rated voltage which can only identify lead acid battery but lithium series battery are not included.When automatically identify the level of rated voltage, charging voltage and discharging lower limit voltage setting are not available.Charging voltage and discharging lower limit voltage setting are only available for manual setting.

5.16 Charge Voltage Settings

In the operating parameters interface, press DOWN to select charging voltage setting, press ENTER to enter rated voltage setting interface, press DOWN to move cursor, press UP to input numeral, press ENTER to confirm and save and press MENU to return to upper menu after hearing continuous indicative sound.

```
┌─────────────────────┐        ┌─────────────────────┐        ┌─────────────────────────┐
│ Parameter settings  │        │ Parameter settings  │        │ Charge voltage settings │
│                     │        │                     │        │                         │
│  □  ∮  □  🔋  ∿    │   ▼    │  ■  ∮  □  🔋  ∿    │   ↺   │ ▶ Floating charge: 276.0V│
│                     │───────▶│                     │───────▶│                         │
│ Battery type settings│        │Charge voltage settings│      │ ▶ Equalizing charge: 288.0V│
│   Press ↺ to enter  │        │   Press ↺ to enter  │        │                         │
└─────────────────────┘        └─────────────────────┘        └─────────────────────────┘
                                                                          ▲
                               ┌─────────────────────┐        ┌─────────────────────────┐
                               │                     │        │ Charge voltage settings │
                               │                     │   ↺    │                         │
                               │  ┌───────────────┐  │◀───────│ ▶ Floating charge: 277.0V│
                               │  │Set successfully│  │        │                         │
                               │  └───────────────┘  │        │ ▶ Equalizing charge: 288.0V│
                               │                     │        │                         │
                               └─────────────────────┘        └─────────────────────────┘
```

ⓘ   Lithium battery series only have float (constant voltage) charging mode.Equalized charging mode can be only used for lead acid battery.

5.17 Charge Current Settings

In the operating parameters interface, press DOWN to select charging current setting, press ENTER to enter charging current setting interface, press DOWN to move cursor, press UP to input value, press ENTER to confirm and save and press MENU to return to upper menu after hearing continuous indicative sound.

```
┌─────────────────────┐        ┌─────────────────────┐        ┌─────────────────────────┐
│ Parameter settings  │        │ Parameter settings  │        │ Charge current settings │
│                     │        │                     │        │                         │
│  □  ∮  □  🔋  ∿    │   ▼    │  ■  ∮  □  🔋  ∿    │   ↺   │ ▶ Maximum value: 100.0A │
│                     │───────▶│                     │───────▶│                         │
│ Battery type settings│        │Charge current settings│      │ ▶ Set limit value: 080.0A│
│   Press ↺ to enter  │        │   Press ↺ to enter  │        │                         │
└─────────────────────┘        └─────────────────────┘        └─────────────────────────┘
                                                                          ▲
                               ┌─────────────────────┐        ┌─────────────────────────┐
                               │                     │        │ Charge current settings │
                               │                     │   ↺    │                         │
                               │  ┌───────────────┐  │◀───────│ ▶ Maximum value: 100.0A │
                               │  │Set successfully│  │        │                         │
                               │  └───────────────┘  │        │ ▶ Set limit value: 090.0A│
                               │                     │        │                         │
                               └─────────────────────┘        └─────────────────────────┘
```
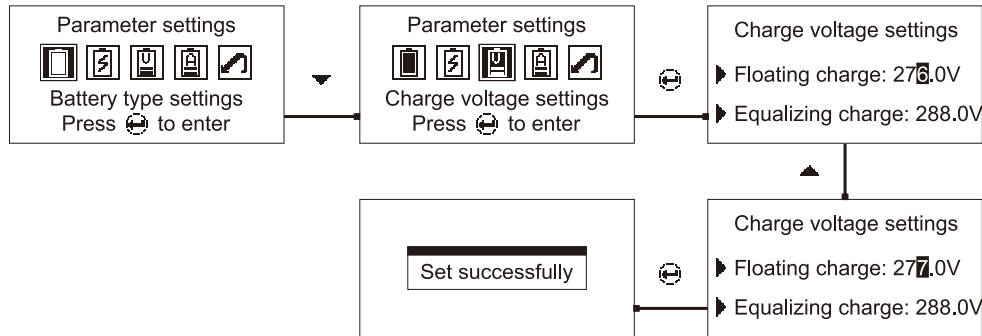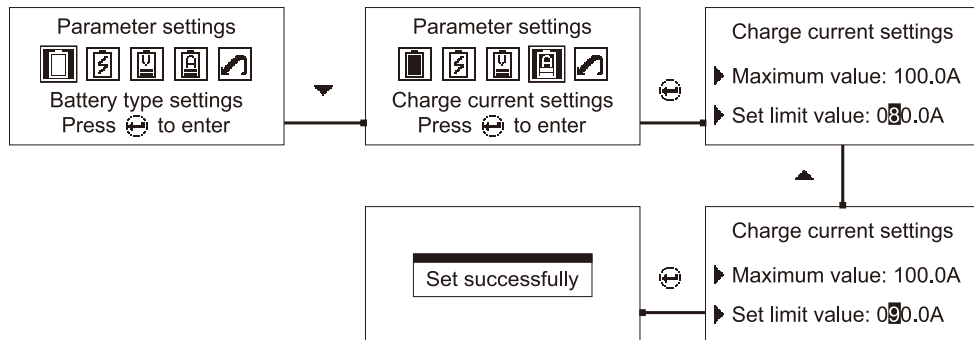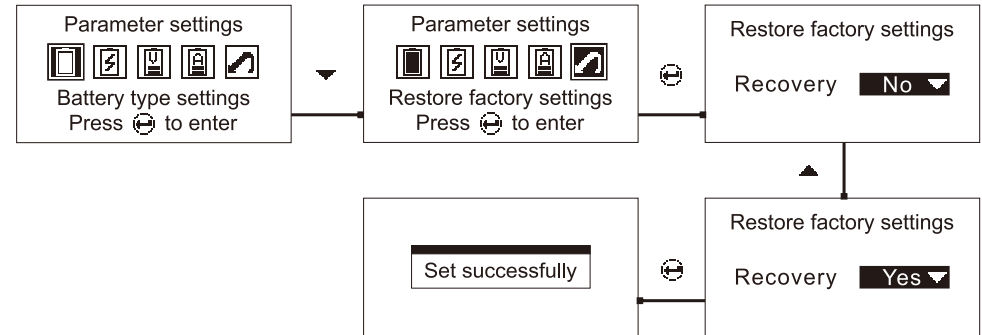
ⓘ   The set point can not be greater than the current maximum.

5.18 Restore factory settings

In the operating parameters interface, press DOWN to select factory reset, press ENTER to enter factory reset interface, press UP to select whether to restore factory setting,press ENTER to confirm and save and press MENU to return toupper menu after hearing continuous indicative sound.

```
┌─────────────────────┐        ┌─────────────────────┐        ┌─────────────────────────┐
│ Parameter settings  │        │ Parameter settings  │        │ Restore factory settings│
│                     │        │                     │        │                         │
│  □  ∮  □  🔋  ∿    │   ▼    │  ■  ∮  □  🔋  ∿    │   ↺   │ Recovery    No ▼        │
│                     │───────▶│                     │───────▶│                         │
│ Battery type settings│        │Restore factory settings│    │                         │
│   Press ↺ to enter  │        │   Press ↺ to enter  │        │                         │
└─────────────────────┘        └─────────────────────┘        └─────────────────────────┘
                                                                          ▲
                               ┌─────────────────────┐        ┌─────────────────────────┐
                               │                     │        │ Restore factory settings│
                               │                     │   ↺    │                         │
                               │  ┌───────────────┐  │◀───────│ Recovery    Yes ▼       │
                               │  │Set successfully│  │        │                         │
                               │  └───────────────┘  │        │                         │
                               │                     │        │                         │
                               └─────────────────────┘        └─────────────────────────┘
```

ⓘ   When MPPT solar controller can not operate normally due to fault of operating parameter setting,please restore the operating parameters to factory setting.

The default password is : Press DOWN for 3 times and then UP for 3 times.

6. Technical Parameter

Model		100A	120A	150A
Charging Mode	MPPT automatic maximum power point tracking			
Charging Method	Three stages: Constant current charging(MPPT),Equalizing charging, float charging			
System Type	192V/216V/240V	Optional		
System Identification Voltage Range	192V System	DC160V-DC240V		
	216V System	DC180V-DC270V		
	240V System	DC200V-DC300V		
Quiescent Dissipation	192V/216V/240V	≤5W		
Overall Unit Efficiency	192V/216V/240V	≥96.5%		
Photovoltaic Module Utilization Ratio	192V/216V/240V	≤99%		
Input Characteristics				
Mppt Working Voltage Range	192V System	DC240V-DC600V		
	216V System	DC270V-DC600V		
	240V System	DC300V-DC600V		
Maximum Solar Input Power	192V System	17920W	22400W	26880W	33600W
	216V System	20160W	25200W	30240W	37800W
	240V System	22400W	28000W	33600W	42000W

Model		100A	120A	150A
Output Characteristics				
Optional Battery Type	192V/216V/240V	Lead-acid battery, lithium battery, gel battery or user-defined		
Floating Charging Voltage (lead Acid Battery)	192V System	221V		
	216V System	248.5V		
	240V System	276V		
Average Charge Voltage (lead Acid Battery)	192V System	227V		
	216V System	255.6V		
	240V System	284V		
Floating Charging Voltage (Gel Battery)	192V System	220V		
	216V System	247.5V		
	240V System	275V		
Average Charge Voltage (Gel Battery)	192V System	230.5V		
	216V System	259V		
	240V System	288V		
Floating Charging Voltage(SLA)	192V System	232V		
	216V System	261V		
	240V System	290V		
Average Charge Voltage(SLA)	192V System	240V		
	216V System	261V		
	240V System	300V		
Floating Charging Voltage	Custom	192V-300V(Adjustable)		

ℹ Note:The above data is for reference,if there is any change,the actual product shall prevail.

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Model		100A	120A	150A
Rated Current	192V/216V/240V	100A	120A	150A
Current-limiting Protection	192V/216V/240V	105A	125A	155A
Temperature Coefficient	192V/216V/240V	±0.02%/℃		
Auto Temperature Compensation	192V/216V/240V	-4mV℃		
Display				
LCD Display		LCD panel indicating solar power, load level, battery voltage/capacity, charging current, and fault conditions		
LED Display		Charge Indication, Fault Indication		
PC Uppon Computer (Communication port)		RS-485		
Protection				
Input Open Circuit Voltage		≤650V		
Input Low Voltage Protection		Reference Input Attribute		
Input High Voltage Protection		Reference Input Attribute		
Input Polarity Reverse Protection		Yes		
Output Polarity Reverse Protection		Yes		
High Temperature Protection		≥85℃		
Audible Noise		≤45dB		
Heat Dissipation Mode		Intelligent Air Cooling		

Model	100A	120A	150A
Product Specification Package			
Product Size (L*W*H) mm	630x500x221		
Net Weight (kg)	28.3		
Type Of Mechanical Protection	IP32		
Environmental Requirements			
Humidity	0~90%RH (No Dew)		
Height Above Sea Level	0~3500m		
Ambient Temperature	−20℃~+50℃		
Storage Temperature	−40℃~+70℃		
Photovoltaic Module Configuration			
System Voltage (battery Voltage)	Photovoltaic Module Load Voltage (recommended Data)		
192V System	550V		
216V System			
240V System			

ⓘ Note:The above data is for reference,if there is any change,the actual product shall prevail.

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7. Fault Elimination

When the controller works abnormally,please check conditions listed as below

Fault Situation	Fault Elimination
When controller is electrified for the first time, fault prompts: battery voltage is out of normal range	1.Check whether the battery voltage is in the range of system voltage identification (See technical parameters for system voltage identification range) 2.Manually set rated battery voltage level (See the rated battery voltage setting in the operating parameters setting)
Fault indication: over temperature protection	1 .Check whether the cooling fan is damaged and ventilation vents are blocked by debris; MPPT controller should be installed in a ventilated environment 2.Reasonable PV module configuration can improve conversion efficiency and reduce temperature rise (technical parameters PV module configuration)
Fault indication: battery over discharging protection	The battery is out of power
Fault indication: can not test external temperature sensor	1 Check whether it is connected to the external temperature sensor 2 check whether the sensor contact is bad
Charging indicative light and displays of charging current and charging power are off and on	1 Check whether PV module voltage is in the MPPT operating voltage range. 2 Check whether the charging voltage parameters shown on system are correct. 3 Correct the charging voltage parameters or restore the factory settings to restart dynamic MPPT controller. 4 Check whether the fuse is broken and the circuit breaker is disconnected.
Charging indicative light is off and on alternatively; charging current appears alternatively	This situation generally appears in cloudy day or evening when the light is insufficient which is a normal phenomenon
No power curve and current curve display	Check whether the time and date of the MPPT controller are consistent with the time you are in.(see time and date set)

If the problem is still on the table, please contact customer service personnel : Please provide the following information: equipment: type, order number, serial number (the label on the back plate); a detailed description of the problem (such as the use of the type system, problems occurred occasionally orfrequently, indicating light, display etc.).

8. Maintenance And Cleaning

8.1 Fuse Replacement

Fuse blown due to excessively high temperature or other faults needs correct replacement: pull out the broken fuse from the joint, install new fuse, check if it is connected correctly and then install equipment.(Fuse is nearthe connecting box)

8.2 Clean Fan Vent & Heat Sink

Please regularly clean fan vent and internal heat sink with dry or slightly wet cloth.Please pay attention that washing liquid or corrosive solvent are banned for cleaning and liquid is not allowed to flow into machine to make sure that the air vents are not blocked.

9. Quality Assurance

During the warranty period, our company will repair for free or replace with new products

Evidence

In the quality assurance period, our company requires customers to provide invoices and date of purchased products.
At the same time the trademark on the product should be clearly visible, otherwise we have the right not to guarantee quality.

Condition

The rejected products shall be disposed of by our company
The customer shall allow reasonable time to repair the faulty equipment

Exemption from liability

In the following cases,our company will be not responsible for repair:

The whole machine or spare parts are beyond the warranty period
Transport damage
Incorrect installation or modification
Operating in a very harsh environment described beyond this manual
Failure or damage to the machine caused by the service,repair,alteration or removal of our company
Abnormal natural environmental damage

If customers ask for amendment service due to problems caused by faults listed above,our company can provide compensable amendment service after judgment of our service constitute.

ⓘ NOTE

The charge of product size and parameter is subject to the newest materials of our company without further notice.