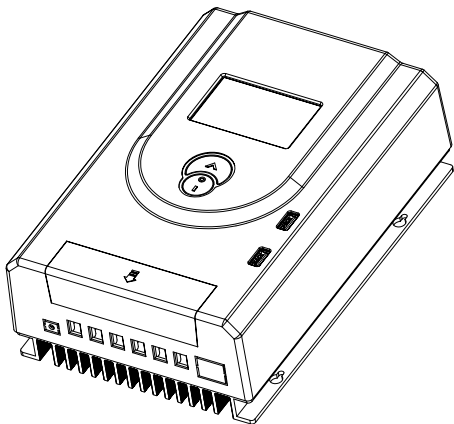


MPPT Solar Charge Controller

user's manual



※ Thank you for selecting this series solar charge controller, please read this specification before using the product.

※ Please keep this specification for the further reference.

1. Overview:

Thank you for selecting MPJ series solar charge controller with the most advanced MPPT control algorithm and the maximum power point of the pv array can be quickly tracked in any environment so that it can get the maximum energy from the solar panel and significantly improve the utilization of energy in solar system. The machine has the dual display function of LCD and Remote meter (optional) and standard communication interface, convenient for user extension application and satisfy different monitoring needs to the maximum extent. It can be used in communication base station, home power supply system, traffic light, solar street lamp, courtyard lamp system, etc. The features are listed below:

- Advanced MPPT maximum power point tracking technology, the tracking efficiency is no less than 99.5%.
- High quality components are used to improve the system performance, and the maximum conversion efficiency can reach 97%.
- Super fast maximum power tracking speed while ensuring tracking efficiency.
- Accurate identification and tracking of the maximum power point of multi-wave peak.
- Reliable maximum input power of pv array to ensure the safety of equipment.
- Wide PV array maximum power point operating voltage range.
- 12/24V automatic voltage identification
- The LCD is designed to dynamically display the operation data and working status of the equipment.
- Various load control modes: general mode, light control mode, dual time mode, pure charger mode .
- Seal, GEL, Flooded, LifePO4 and Li(NiCoMn)O2 battery types are available.
- The function of battery temperature compensation.
- Power statistics recording function.
- Use the Rs485 methods to maximize the communication needs of different occasions.
- Support PC monitor, external display unit and other peripherals, realize real-time data view and parameter setting function.

2. Product Appearance

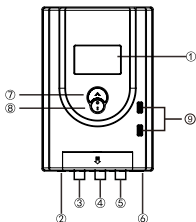


Photo 1 Appearance

| | |
|---|------------------------------|
| ① | LCD screen |
| ② | Temperature sensor interface |
| ③ | Photovoltaic array terminals |
| ④ | Battery terminals |
| ⑤ | Load terminals |
| ⑥ | RJ45 communication interface |
| ⑦ | Button |
| ⑧ | Button |
| ⑨ | USB OUTPUT |

⚠ NOTICE: In the case of the remote temperature sensor not connected, the controller will compensate the charging parameters by 25°C for the battery temperature.

3. Wiring

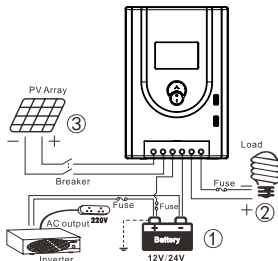


Photo 2 Connection diagram

Order of connection:

①Connect battery
Notice: The battery terminal shall be installed with insurance, and the installation distance shall not exceed 50mm.

②Connected Load

③Connect pv array

④Controller is powered on

Connect the battery, identify the voltage of the control system and observe whether the display screen is lighted. If it doesn't work or the display is abnormal.

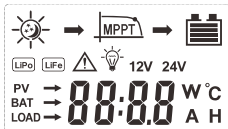
⚠ NOTICE: This series of MPPT is a common positive controller, pv array, battery and load of the positive pole can be grounded at the same time.

⚠ NOTICE: If the inverter or other starting current is loaded in the system, please connect the inverter directly to the battery. Do not connect with the controller's load terminal.

4. Interface Description

4.1 LCD Screen

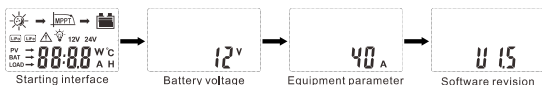
Status introduce



Tip: When returning to the main page from other pages, there will be flashing prompts on the screen

| Item | ICO | | Status | |
|----------|------|------|-------------------------|----------|
| PV array | | | Day | Night |
| | | | Charging | |
| Battery | | | Uncharged / Battery soc | |
| | LiPo | LiFe | Battery type | |
| Load | | | load on | load off |

4.2 BOOT screen



(1) **Starting interface:** it is normal to detect LCD when the system is powered on.

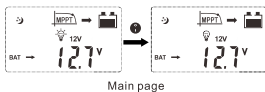
(2) **Battery voltage interface:** Battery voltage.

(3) **Equipment parameter:** Controller rated charging current.

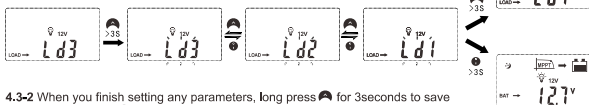
(4) **Software revision.**

Notice: At the first level browse interface long press button to enter the secondary browsing interface .It will automatically exit the secondary browsing interface without doing anything for 15 seconds.

4.3 Buttons

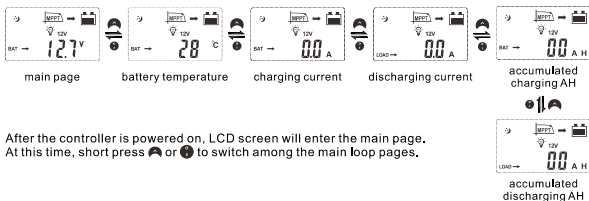


4.3-1 Short pressing button can turn on/off the load.



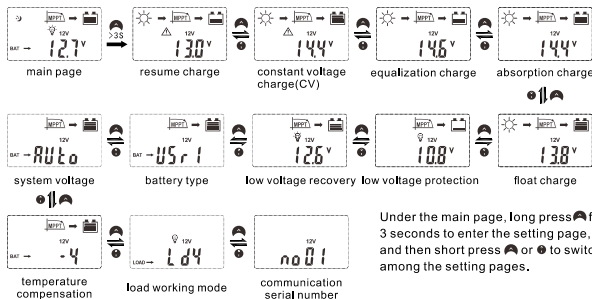
4.3-2 When you finish setting any parameters, long press for 3seconds to save the data, long press for 3seconds to not save and return to the main page.

4.4 Main loop pages



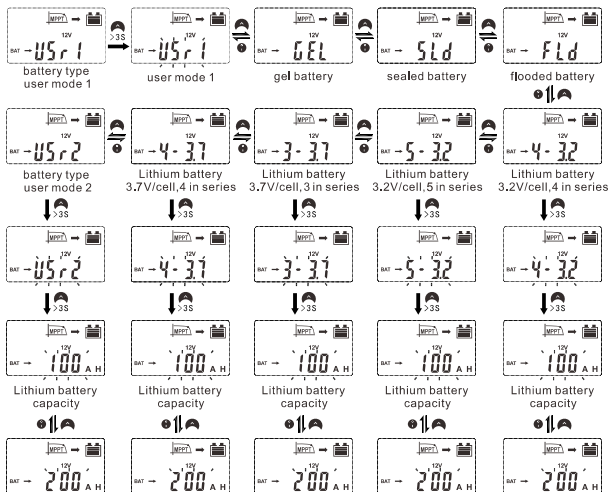
After the controller is powered on, LCD screen will enter the main page. At this time, short press or to switch among the main loop pages.

4.5 Setting pages







Under the main page, long press for 3 seconds to enter the setting page, and then short press or to switch among the setting pages.

4.6 Battery type



Under the main page, long press for 3 seconds to enter the setting page, and then short press to switch to the battery type page (user mode 1).




After entering battery type page (user mode 1), long press for 3 seconds to enter battery type selection pages, short press or to switch among gel battery, sealed battery, flooded battery and lithium batteries.

under each lithium battery page, long press  for 3 seconds to enter a program of setting lithium battery's capacity, at this time the parameters on screen will start flashing, keep long pressing  for 3 seconds, the parameter will become to battery capacity, short press  or  to set the capacity of the currently connected lithium batteries.

After setting the parameters, save the data. Long press for  3 seconds to save.

4.7 System voltage setting



After entering setting pages, switch to the system voltage page, long press for  3 seconds until the "auto" starts to flash, then short press  or  to turn the system voltage 12V or 24V

4.8 Load working mode

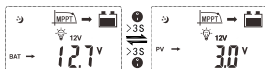
The controller default load working 24hours, and there are 4 load working modes for selection:

| code | Code explanation |
|-----------|----------------------------|
| Ld1 (LD1) | regular mode |
| Ld2 (LD2) | light control mode |
| Ld3 (LD3) | light & time control mode |
| Ld4 (LD4) | Reverse light control mode |






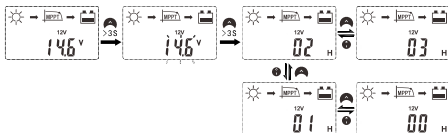
4.9 PV voltage page

Long press  for 3 seconds to switch between the main page and PV voltage page.






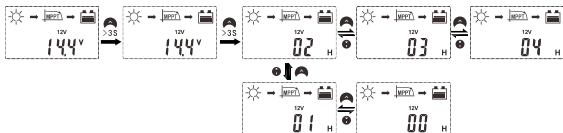
4.10 Setting of equalization charging duration

After switching to the equalization charge page from the main page, Long press  for 3 seconds when the parameter starts to flash, keep pressing it for 3 seconds to turn the page to equalization charging duration setting page, short press  or  to increase or decrease the time.

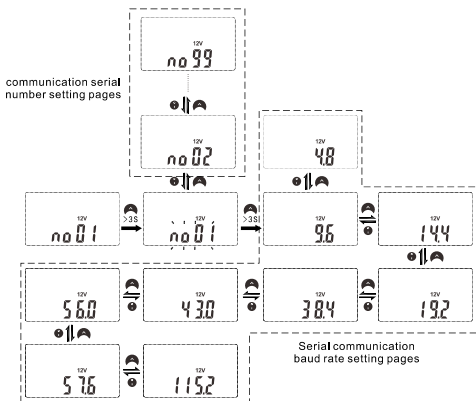


4.11 Setting of absorption charging duration




After switching to the absorption charge page from the main page, Long press  for 3 seconds when the parameter starts to flash, keep pressing it for 3 seconds to turn the page to absorption charging duration setting page, short press  or  to increase or decrease the time.






4.12 Communication setting



Communication serial number setting:

After entering setting pages, switch to the communication serial number page, long press  for 3 seconds until the parameter starts to flash, then press  or  to increase and decrease the serial numbers.

Serial communication baud rate setting:

After switching to the communication serial number page, Long press  for 3 seconds when the parameter starts to flash, keep pressing it for 3 seconds to turn the page to serial communication baud rate setting pages, short press  or  to switch among the relation pages.

5. Protection Function

| Protection | Condition | Status |
|------------------------|---|-------------------------------|
| Solar panel reversed | Solar panel can be reversed if battery is not connected | Controller isn't broken |
| Battery is reversed | Battery can be reserved if PV is unconnected | |
| Battery over-voltage | Battery voltage reaches the over-voltage point | Stop charging and discharging |
| Battery over-discharge | Battery voltage drops the under-voltage point | Stop discharging |
| Over-load | The load current is over the rated current | Turn off the output |

6. Fault Management

| Error code | Cause | Correction |
|---|--|--|
| PV array indicator is off when sunlight is enough | Solar panel is disconnected | Check whether PV array connection is proper |
| No sign on the LCD when connection is right | 1. Battery voltage is less than 8v 2. Voltage of solar panel is less than battery voltage | 1. Check battery voltage (at least 8v to activate the controller) 2. The voltage of PV must be higher than battery voltage. |
| E 1 (Ex1) | Battery over discharge | The load will stop automatically and recover when battery voltage reaches 12.6V(LVR) |
| E 2 (Ex2) | Battery over voltage | Make sure the settled value of high voltage disconnection voltage (LVD) is over battery voltage and reconnect PV array. |
| E 3 (Ex3) | Over load | Reduce load or check load connection |
| E 5 (Ex5) | Controller overheating | The controller will restart after it cools down |
| E 6 (Ex6) | Input voltage of solar panel is too high | Check voltage of solar panel and reduce quantities of solar panel in series. |
| E 7 (Ex7) | Controller will restart after setting system voltage | No operation |

7. Technical Data

| Rated charge current | 10A | 20A | 30A | 40A | 50A | 60A |
|--|--|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|
| Input | | | | | | |
| Max open voltage of solar panel | 100V (at the lowest temperature) 92V (at a standard temperature of 25°C) | | | | | |
| System rated voltage | 12/24V Auto recognized | | | | | |
| Maximum battery voltage | 8V-32V | | | | | |
| Maximum input power | 130W (12V) 260W (24V) | 260W (12V) 520W (24V) | 390W (12V) 780W (24V) | 520W (12V) 1040W (24V) | 650W (12V) 1300W (24V) | 780W (12V) 1560W (24V) |
| Output | | | | | | |
| Battery type | User default, Sealed, Flooded, GEL, LiFePO4, Li(NiCoMn)O2. | | | | | |
| Equalized charging voltage ✕ | Maintenance-free lead-acid battery : 14.6V, GEL:No;Lead-acid Flooded battery: 14.8V | | | | Duration: 2hours | |
| Absorption charging voltage ✕ | Maintenance-free lead-acid battery : 14.4V, GEL:14.2V ;Lead-acid Flooded battery: 14.6V | | | | Duration: 2hours | |
| Float charging voltage ✕ | Maintenance-free lead-acid battery, GEL, lead-acid Flooded battery : 13.8V | | | | | |
| LVR ✕ | Maintenance-free lead-acid battery, GEL, lead-acid Flooded battery : 12.6V | | | | | |
| LVD ✕ | Maintenance-free lead-acid battery, GEL, lead-acid Flooded battery : 10.8V | | | | | |
| Static loss | ≤ 50mA | | | | | |
| HVD | Lead acid battery 16V | | | | | |
| Light control voltage | 5V/10V/15V/20V | | | | | |
| Temperature compensation coefficient | -4mV/°C/2V(25°C) | | | | | |
| Discharge loop voltage drop | ≤0.2V | | | | | |
| LCD temperature | -20°C ~ +70 °C | | | | | |
| Operating temperature | -20°C ~ +55 °C | | | | | |
| Storage temperature | -30 ~ +80 °C | | | | | |
| Working humidity | ≤90%, No condensation | | | | | |
| Protection class | IP30 | | | | | |
| Grounded type | Positive grounded | | | | | |
| Dimension | 175mm*120mm*47mm | | 215mm*145mm*75mm | | 261mm*191mm*84mm | |
| Hole size for installation | 120mm*108mm | | 133mm*130mm | | 180mm*214mm | |
| Aperture for installation | Φ5mm | | | | | |
| Terminal wiring | 10mm ² /7AWG | | 16mm ² /5AWG | | 25mm ² /3AWG | |
| Optional function | RS485/RJ45 port | | | | | |
| ✕ Above the parameters are in 12V system at 25°C, twice in 24V system. | | | | | | |