Intelligent Solar Charging and discharging Controller
User's Manual

This is a compatible MPPT charge controller PWM intelligent / efficient / energy saving, he not only has efficient MPPT controller charging function to automatically track the maximum power point, 10% -30% higher than the ordinary controller charging efficiency, also has standby energy saving, more than 30% energy than ordinary controller, the standby power consumption of only 10mA-15mA.

1:Product introduction
Solar LCD series a kind of intelligent, multi-purpose solar charge and discharge controller

<table>
<thead>
<tr>
<th>LCD screen display</th>
<th>Battery reverse discharge protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy operation interface</td>
<td>Battery reverse polarity protection</td>
</tr>
<tr>
<td>MPPT+ PWM charging mode</td>
<td>Battery under voltage protection</td>
</tr>
<tr>
<td>Parameter user can reset</td>
<td>Overload, short-circuit protection</td>
</tr>
<tr>
<td>A key to open and close the load</td>
<td>Automatic temperature compensation function</td>
</tr>
<tr>
<td>A key to restore the factory settings</td>
<td>USB 5V charging (for 500mA) for mobile phone</td>
</tr>
</tbody>
</table>

2: Installation Instructions
Installation (installing wires, first loosen the screw counterclockwise)
① Ready Qi installation tools and materials, and cable. Please matching suitable cable
② ensure that the current density <4A/mm² This will help reduce the line pressure drop.
Check the installation site meets the relevant safety requirements, avoid damp, dusty, flammable, explosive and corrosive gases
③ Install the controller fixed to the vertical plane, see Section V mounting aperture and hole spacing.
In order to ensure a good controller cooling conditions, the controller on the bottom of each reserved 10cm space
④ As shown on the right wiring sequence: load, battery, solar
Battery plate is connected to the controller to be taken to ensure that the load, battery,
The polarity of the solar cell panel and controller
⑤ Before use: external temperature sensor probe into the left of the controller temperature probe interface probe placed in similar battery temperature. (Line extension must be built-in devices of the external temperature probe coextensive Otherwise, the controller will control parameters of the temperature compensation of the error
⑥ Warning: In order to prevent accidents from occurring, install: non-professionals can not be engaged in loading and unloading operations

3: LCD operating interface description
LOAD ON 1 H --- 23H  Load control (1 hour --- 23 hours can be set)
LOAD ON 24H  24 hour-is normally open state

0h-light control mode, power supply load after dark, closed after daybreak the load
24h-represents a normal mode, in the case of no fault, the load is always in the power supply state.
1h ~ 23h-light control delay mode, after dark began to power the load, and delay to set the time to close the load.

<table>
<thead>
<tr>
<th>Charging current</th>
<th>Discharge current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage charging station (can be set)</td>
<td>Undervoltage protection voltage (can be set)</td>
</tr>
<tr>
<td>Temperature display (around the probe)</td>
<td>Undervoltage recovery voltage (can be set)</td>
</tr>
</tbody>
</table>

Function keys:
- : Toggle key
  +" Set parameters: "plus"
  -" Set parameters: "Minus"
  Manual switch load

Long press and hold this button for 5 seconds to restore the factory settings

"x" error or system failure, click this button, you can troubleshoot or eliminate "x"

Parameter settings (≥ 5 seconds keystrokes, parameters are saved automatically)

PV OFF:88.8V---LOAD ON:24H---LOAD OFF:88.8V---LOAD ON:88.8V  (Set order (automatic cycle))
+ Parameters "+" setting  - Parameters "+" setting

This button can be "manually" open load or manually close the load.
Long press and hold this button for 5 seconds to restore the factory settings
"x" error or system failure, click this button, you can troubleshoot or eliminate "x"

4  Common fault with processing methods

- Battery under-voltage protection
- Battery normal power supply

a) Under voltage protection and handling: screen display as shown on the right indicates the battery voltage is below the under voltage protection voltage, the controller has entered under voltage
b) Retaining state, disconnect the load circuit. Using solar panels or charger to charge the battery when the accumulator
c) After the battery voltage reaches the undervoltage recovery voltage, the controller will restore power to the load, into normal working condition

1) Overload protection and processing methods:
The screen shown at right load circuit current is greater than the rated current or load short-circuit, overload state controller has entered. Reduce the load troubleshooting, press the button, restore power to the load

System fault or Fault has ruled out

2) To charging failure handling method
a) Solar energy to battery charging, if there is no correct configuration solar panels of power or exceed rated charging current, voltage, will appear charge fault, the checking and debugging, press the button, recoverability work.k

Charge fault Fault has ruled out

3) Solar panels fault and processing:
a) 24 hours in the case of sun light, the controller is not charging, the solar energy is not connected or not connected correctly, check the solar panel to the connecting cable of the controller is open, troubleshooting, recoverability work.

No solar charge Are charging

5: Parameter table
### Parameters / Model

<table>
<thead>
<tr>
<th>Parameters</th>
<th>MPPT10</th>
<th>MPPT20</th>
<th>MPPT30</th>
<th>MPPT40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum power current</td>
<td>12A</td>
<td>20A</td>
<td>30A</td>
<td>40A</td>
</tr>
<tr>
<td>Installation Lin (mm²)</td>
<td>4mm²</td>
<td>8mm²</td>
<td>10mm²</td>
<td>12mm²</td>
</tr>
<tr>
<td>Installation Line (AWG)</td>
<td>10(AWG)</td>
<td>8(AWG)</td>
<td>7(AWG)</td>
<td>6(AWG)</td>
</tr>
<tr>
<td>Weight</td>
<td>280g</td>
<td>300g</td>
<td>475g</td>
<td>480g</td>
</tr>
<tr>
<td>Dimensions</td>
<td>143×89×48 (mm)</td>
<td>187×97×61 (mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System load loss</td>
<td>≤13mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loop Buck</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### System Load Loss

- Battery float voltage: 13.8V (12V system) / 27.6V (24V system)
- Battery (under voltage) protection: 10.6V (12V system) / 21.2V (24V system)
- Battery (under voltage) recovery voltage: 12.6V (12V system) / 25.2V (24V system)
- Charge mode: MPPT+PWM MODE
- Operating Temperature: -10°C ~ 60°C
- Storage Temperature: -30°C ~ 70°C
- Humidity requirements: ≤90%, No condensation
- Temperature Compensation: -4mV/Cell/°C
- Temperature Probe (built components): NTC 100K thermostats
- Maximum open circuit voltage of the solar panel: 18V-24V (12V system) / 36V-48V (24V system)
- Solar panels maximum open circuit voltage (V): ≤48V

### 6: (Cases) 12V System Standard Configuration

<table>
<thead>
<tr>
<th>The peak voltage of the solar cell panel (Maximum power voltage (V)):</th>
<th>18V-25V</th>
<th>18V-25V</th>
<th>18V-25V</th>
<th>18V-25V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak power of solar cell panel</td>
<td>50W-130W</td>
<td>100W-260W</td>
<td>200W-380W</td>
<td>≤500W</td>
</tr>
<tr>
<td>Model</td>
<td>MPPT10</td>
<td>MPPT20</td>
<td>MPPT30</td>
<td>MPPT40</td>
</tr>
<tr>
<td>Battery standard voltage</td>
<td>12V</td>
<td>12V</td>
<td>12V</td>
<td>12V</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>≥1000AH</td>
<td>≥2000AH</td>
<td>≥3000AH</td>
<td>≥4000AH</td>
</tr>
<tr>
<td>Installation Lin (mm²)</td>
<td>4mm²</td>
<td>8mm²</td>
<td>10mm²</td>
<td>12mm²</td>
</tr>
<tr>
<td>Installation Line (AWG)</td>
<td>10(AWG)</td>
<td>8(AWG)</td>
<td>7(AWG)</td>
<td>6(AWG)</td>
</tr>
</tbody>
</table>

Add: No. 30 XinFeng Road, Potoubei Village, Ailian Town, Longgang Dist, Shenzhen 51872, P.R. China