

# Solar Charge Controller

## User Manual

### 1. Main characteristics:

1.1 Using the single-chip and special software on the basis of expert control system , realized the Intelligence Optimization SOC control .

1.2 Using External temperature transmitter to compensate temperature , much precise than internal temperature transmitter

1.3 Automatically protect against over charge , over discharge , electronic circuit , overload , these protections avoid any harm on the component or fuse wire .

1.4 Take series connection PWM charge as the main circuit , charging efficiency is 3%~6% higher than non-PWM charging .

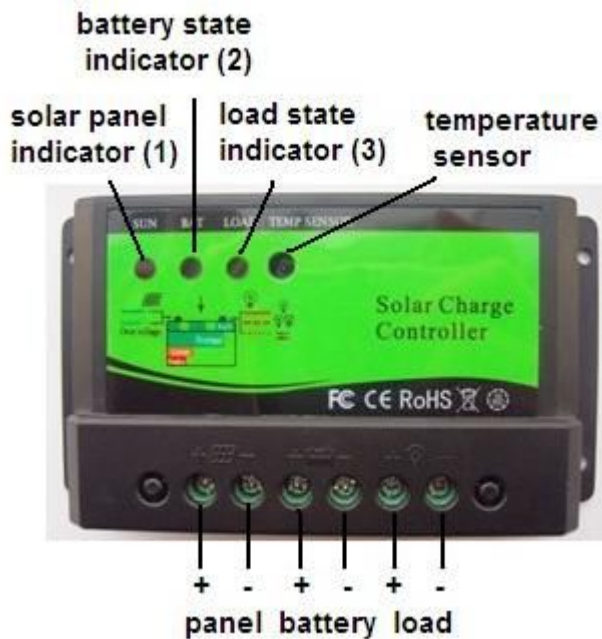
1.5 Indicators show the battery condition ,users can get the service state directly.

1.6 All the control adopt Industry-specific chip , can running free under any cold , hot , humid circumstance .

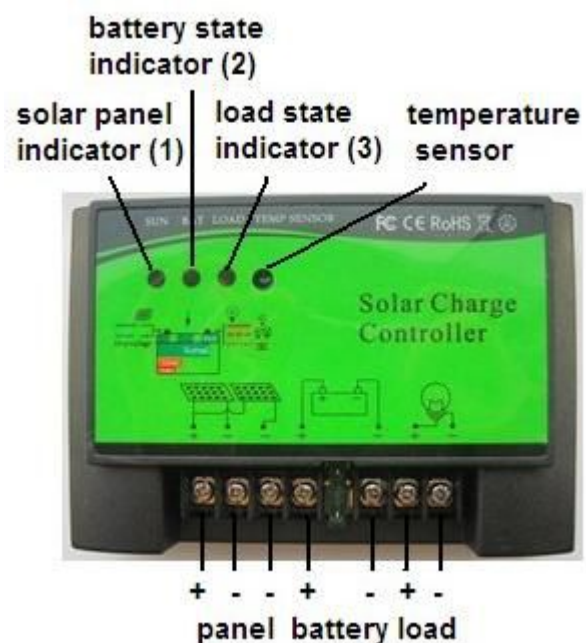
1.7 Making full use of the advanced power source technology , Greatly improved the effective power of unit area, much more compact structure .

1.8 The large diameter, big interval terminals, can install 6 mm<sup>2</sup> conducting wire , wire interval is 9.5 mm, can enhance the isolation and the installation reliability, wires hard to slip .

Picture of the solar charge controller



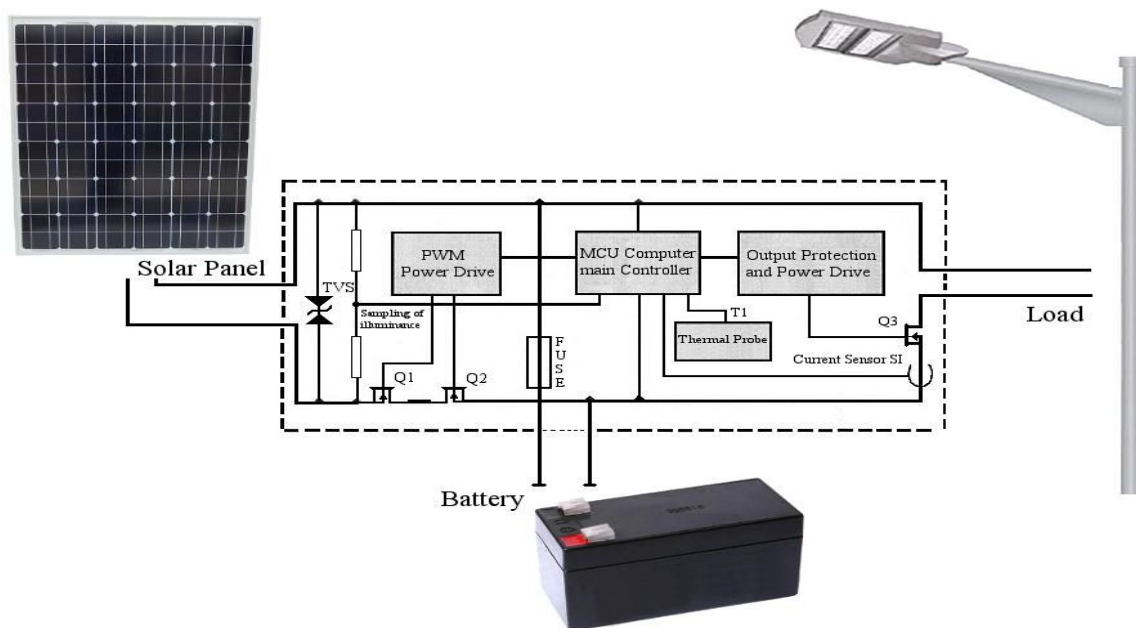
5A~10A



15A~30A

## 2. System specification

This controller designed for solar energy system. It can automatically shutoff and resume to protect against short circuit, overload, over charge , over discharge . With indicators showing the battery charging state, load and kinds of fault instructions. This controller takes parameters according to the battery voltage, current, environment temperature by the computer chip ,after special control calculation, it can realize the discharge rate conform to battery characteristics perfectly . Compensate temperature at very high efficiency and accuracy , used the high efficient PWM charging mode , ensure the battery working in the best state , greatly extend the service life of the battery.



## 3. Installation and application

### 3.1 Controller's fixation should be rigid

10A : pore overall dimension: 125\*50mm

pore size of installation: 4\*4mm

20A : pore overall dimension : 153\*60.5mm

pore size of installation : 5.5\*2.5mm

30A : pore overall dimension : 153\*60.5mm

pore size of installation : 5.5\*2.5mm

3.2 Preparing wire : we suggest using Multi-Strands Copper Core Insulated Wire . First determine the length of the wire,decrease the connection length as far as possible in order to reduce electrical loss. The current of copper wire need no more than 4A/mm<sup>2</sup>, and strip5mm insulation at the controller side .

3.3 First , connect the terminals with battery , Please note don't reverse the + - side, If the connection is right, the indicator (2) will light, which can be examined by pressing the button. If the connection is reverse, it won't burn the fuse or damage any component of the controller.

3.4 Connect the terminals with solar panel , Please note don't reverse the + - side, If there is sunlight, the solar panel indicator (1) will light.

3.5 Connect the load with the load terminals . Please note don't reverse the + - side , or may damage the electrical appliances.

## 4. Application instructions

4.1 Charging and overvoltage instructions: when the system is normally connected , and under the sunshine , charge indicator light (1) will display green and steady light , which means the charging system is normal; When charging indicator light (1) appear green but flashing rapidly ,that means the system is overvoltage , solutions please refer to the "Solutions to common problems "below . The charging process adopted PWM ways, if happen to over discharging, the charging state first need to improve to the promote charging voltage, and keep 30 minutes, then fall to straight charging voltage , keep 30 minutes, finally fall to float charging voltage , and keep the float charging voltage. The automatic control process will make the battery charge efficiently and extend its service life.

4.2 Battery state directions: when the battery voltage is in normal range, state indicator light (2) will display green and steady light ; After fully charged the light will display green and flash slowly ; When fall to under-voltage ,state indicator light turn to red , when the battery voltage continue to fall to over discharge voltage, the controller will automatically turn off the output, reminding users timely compensate the power. When the battery voltage return to the normal state, the controller will automatically start the output , state indicator light 2 change to green.

## 6. Solutions to common problems :

Phenomenons	Solutions
Solar panel indicator (1) doesn't shine when the solar module be shone directly	Please check whether the wire is right on both ends of the power , contact is reliable or not
Solar panel indicator (1) twinkle rapidly	System overvoltage. check the connection of battery, or charging circuits damaged
Load indicator (3) shining, but no output	Please check if the electricity appliance be connected correctly
Load indicator (3) shining rapidly , and no output	Output is short circuit, please check the output circuit, remove all load, resume the system
Load indicator (3) shining slowly , and no output	Load power over the rated power , please reduce the load
Battery indicator (2) shining red lights, and no output	Battery over discharge, resume to service after fully charged

## 7 . Technic index

Model	NV12V005E	NV12V010E	NV12V015E	NV12V020E	NV12V025E	NV12V030E
Rated charge current	5A	10A	15A	20A	25A	30A
Rated load current	5A	10A	15A	20A	25A	30A
System voltage	12V/24V AUTO , 24V/48V AUTO					
Overload, short circuit protection	over the rated current 1.25 times for 60 seconds, or over the rated current 1.5 times for 5 seconds , or $\geq 3$ times rated current					
No-load loss	$\leq 6\text{mA}$					
Charging loop pressure drop	$\leq 0.26\text{V}$					
Discharge loop pressure drop	$\leq 0.15\text{V}$					
System voltage	12V/24V AUTO ; 24V/48V AUTO					
Overvoltage protection	17V , $\times 2/24\text{V}$ ; 34V , $\times 2/48\text{V}$					
Promote charging voltage	14.6V, $\times 2/24\text{V}$ ; 29V, $\times 2/48\text{V}$ (maintain time :30 min) (Only used for over discharge )					
Straight charging voltage	14.4V , $\times 2/24\text{V}$ ; 28.4V, $\times 2/48\text{V}$ (maintain time :30 min)					
Floating charging	13.6V ; $\times 2/24\text{V}$ ; 27.2V, $\times 2/48\text{V}$ (maintain time: until fall to the charging return voltage )					
overcharge return voltage	13.2V, $\times 2/24\text{V}$ ; 26.4V, $\times 2/48\text{V}$					
Under voltage	12.0V ; $\times 2/24\text{V}$ ; 24V , $\times 2/48\text{V}$					
Under voltage	12.0V ; $\times 2/24\text{V}$ ; 24V , $\times 2/48\text{V}$					
Over discharge return voltage	12.6V; $\times 2/24\text{V}$ ; 25.2V , $\times 2/48\text{V}$					
Working temperature	Industrial grade : $-35^{\circ}\text{C}\sim+55^{\circ}\text{C}$					
Temperature compensation	$-5\text{mv}/^{\circ}\text{C}/2\text{V}$ (promote , straight charging , charge return voltage compensation )					
Control method	PWM					

## **Warranty commitment**

1. Quality assurance should be carried out according to the following rules:
  - The product is guaranteed of replacement, returning and repairing within 7 days after Sale.
  - The product is guaranteed of replacement and repairing within 1 month after sale.
  - The product is guaranteed of repairing within 12 months after sale.
  
2. If it is not possible to identify the using date of the product, we would refer to the ex-work date, and prescribe 12 months as the warranty period. The product can be repaired for the whole life beyond warranty period at customers' own expense .
  
3. If the product is damaged by the following conditions , we need to charge even if it is in the guarantee period:
  - Do not operate according to the user's manual.
  - Use the product under conditions which is beyond using standard and technical requirements.
  - Repaired by yourself or reformed by yourself.
  - The inappropriate environmental condition which can cause breakdown and aging of the apparatus.
  - Improper carrying or storage.
  - Regarding to the service of replacement, returning and repairing, you need to return the product to our company, and we decide whether to replace or to repair after making it clear who should be responsible.

**All the stipulations are subject to our final explanation**

# WARRANTY TABLE

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## Owner information

Owner name:		
Company:		
Address:		
City:	State:	Zip code:
Country:	Phone:	
Email:		

## Dealer information

Owner name:		
Company:		
Address:		
City:	State:	Zip code:
Country:	Phone:	
Email:		

## Product information :

Model NO.: \_\_\_\_\_

Serial NO.: \_\_\_\_\_

**What is the main reason for selecting this product ? ( select only one )**

Performance <input type="checkbox"/>	Recommendation <input type="checkbox"/>	Warranty <input type="checkbox"/>	Price <input type="checkbox"/>
Features <input type="checkbox"/>	Size <input type="checkbox"/>	Appearance <input type="checkbox"/>	Other <input type="checkbox"/>