

Parameter Description

rated charge current	10A	20A	30A
Rated load current	10A	20A	30A
Work Voltage	12V / 24V Auto sensing / auto switch		
Over-load and Short circuit protection	Over-load protection: when the current of controller is 1.25 times of the rated current, the controller works for 30 seconds; 1.5 times of rated current, works for 5 seconds Short circuit protection: when the current of controller is more than or equal to 3 times of rated current, the protection starts.		
NO load losses current	5mA — 20mA (only when digital LEDs be lighted)		
Charging and Load circuit voltage drop	Charging: $\leq 0.26V$ & load: $\leq 0.15V$		
Over voltage protection	14.8V ; *2/24V		
boost charge voltage	14.6V ; *2/24V (time of duration : 10minutes)		
Direct charge voltage	14.4V ; *2/24V (time of duration : 10minutes)		
Float charge voltage	13.6V ; *2/24V		
Charge recover voltage	13.2V ; *2/24V		
Over discharge recover voltage	12.6V ; *2/24V		
Lower voltage indication	12V ; *2/24V		
Over discharge voltage	11.1V ; *2/24V (no load) real-time modified voltage by the discharge rate		
Temperature compensation	-5mV/°C/2V(boost voltage direct charge, float charge and charge return voltage compensation)		
Control method	PWM Pulse-duration modulation charge mode		

FAQ

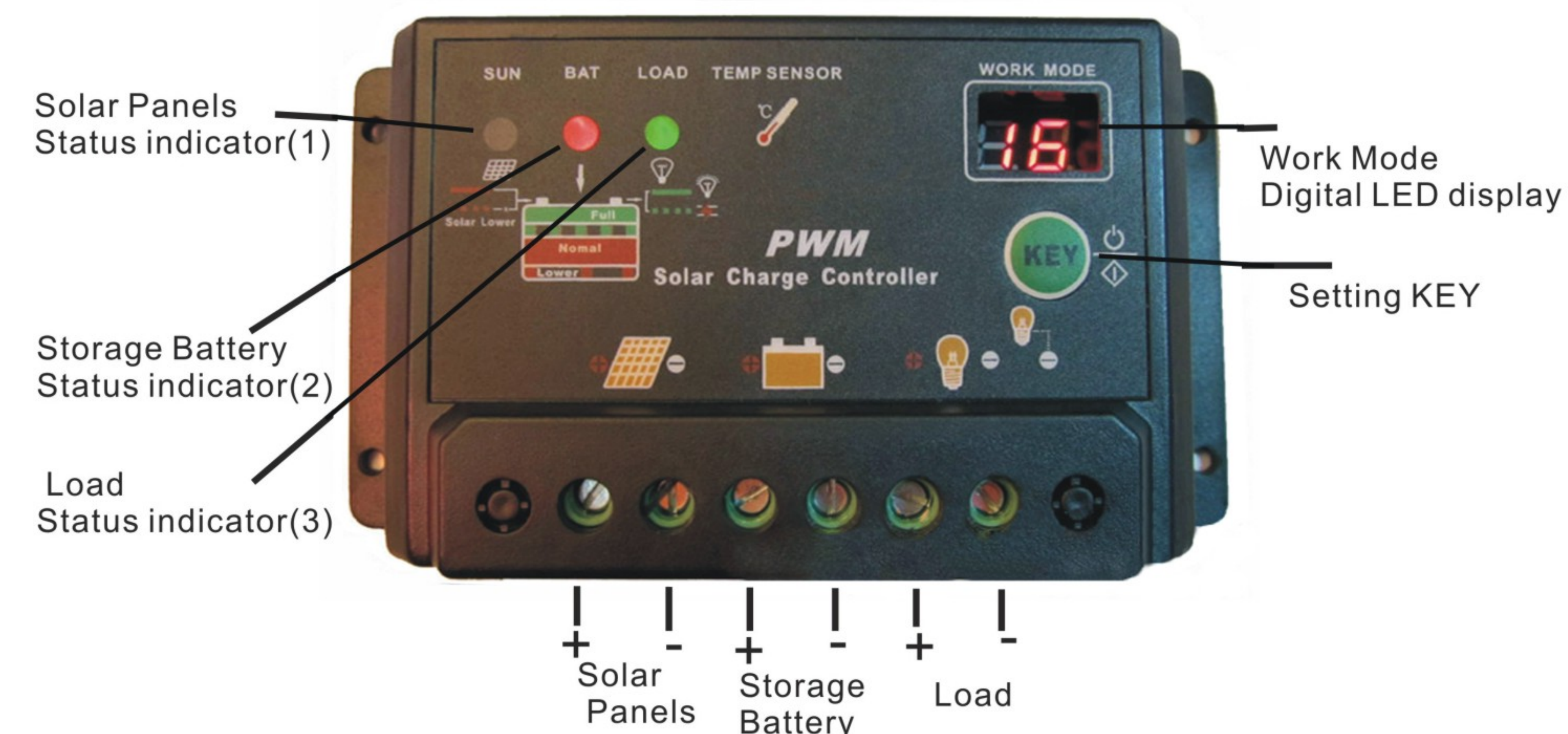
phenomenon	solution
Under the sunshine, the indicator light (NO.1) of solar panel is off	Please check the line connected to photocell and make sure the proper connection
The indicator light (NO.2) of storage battery is off	Please check whether the storage battery is well connected
The indicator light (NO.2) of storage battery Red flashes slowly without output	The storage battery is over-discharged. low voltage protection of battery starts
The indicator light (NO.3) of load flashes without output	The load power is higher than the rated power or load is short circuit and need to be adjusted. Then press wait 30 seconds , it will restart to work
The indicator light (NO.3) is on continually without output	Please check whether the equipment which consumes power is well connected
Others	Please check the connection ,

Power Intelligent Controller INSTRUCTION MANUAL

Main features

- Intelligent control is realized by using microprocessor and dedicated control calculation
- Four load working modes: Pure lighting control, lighting control & timing control ,hand operation and debug mode .
- Scientific management of battery: as it overcharged, the battery will get booster tension charge AS a result compulsory maintenance is available for the battery. in normal working state ,the direct charge and floating charge are both available . so that the battery life-span is increased. Besides, the adoption of high precision temperature compensation makes the charging more accurate.
- Comparing with the charging loops using diodes the one that adopts double MOS series circuit control makes the voltage loss dropped by 50%. With the PWM fuzzy control in charging, the charge efficiency is improved a lot.
- LED screen shows the working state of solar battery, storage battery and load LED shows the adjusted parameter; In this way, users can learn the operation state in real time. Besides there are various choices for parameter; users can select the proper working mode based on the different conditions .
- Various protections include over-charge, over-discharge and over-load, as well as unique electron short circuit protection and connection-reverso protection. All the protections are harmless to any parts and fuse. fuse only as the end protection of a controller itself to protect the amount of internal short circuit damage . Non wire jumpers design improves the reliability and durability of the products.
- Industrial-grade chips and precision components are adopted for all the controls. Therefore the Controller performs well in very low and high temperature, as well as humid environment. At the same time, with the use of crystal timing control, the timing function of controller is much more reliable.
- Using large-diameter wire terminal , can fix the wire which max size is 6mm²
- parameter is set to power-down save function . the system model and control parameters , and other important data are stored inside the chip , after power is not lost , to make the adjustment more convenient , more reliable system ,
- Using 2 digital LEDs display and settings , one-button operation to complete all of the settings , intuitive and easy to use ,

Outside view of the controller



System description

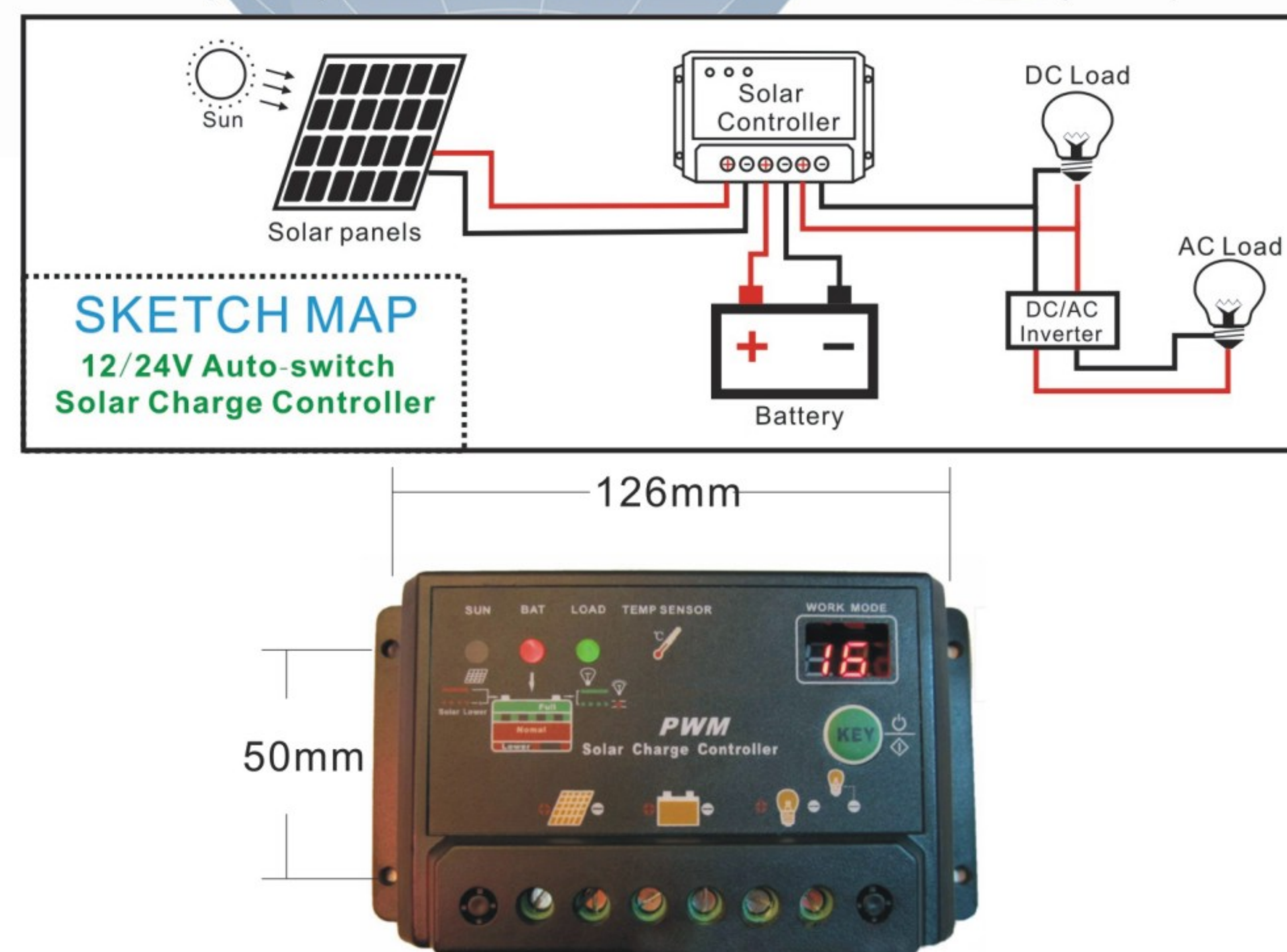
Our controllers are specially designed for solar power DC supply system, solar power DC street lamp system and mini solar power station system. Intelligent control is realized by using dedicated computer chips. The controllers can be used in hard environment, since its adoption of technical grade chips. To the controllers with 12V/24V automatic identification function, 12V and 24V Battery Auto sensing.

The short circuit, Over-load, connection-reverse protection, as well as over-charge, over-discharge protection are available. Besides, the complete indications are usable, including indications for states of charge, storage battery and faults.

Through the computer chips, the controllers take samples from the parameters of storage battery voltage, photo battery, discharge current and environment temperature, and then use the dedicated control mode calculation to control the discharge rate and make it matched with the characters of storage battery, realize the high accurate temperature compensation. PWM fuzzy charge mode and 7 phase voltage control are available for the storage battery, so that storage battery is always in the perfect working state. The various working modes of controllers can meet customers, different requirements

Installment and use

1. The controller must be well fixed. The dimension of the controller is as following: Outside dimension: 133X70X25 (mm); installation dimension: 126X50 (mm)



2. Wire preparation: It is recommended to use multi-strand insulated copper wire. Firstly, make sure the length of the cord, secondly, ensure the installation location in the circumstances, thirdly, try to minimize the connection length to reduce power consumption. According to not more than $4A/mm^2$ in accordance with the current density of selected cross-sectional area of copper wire, the controller side of the first strip 5mm of insulation should be shucked off.

3. Firstly, connect battery termination to the controller, and then connect to the other ends of the battery. Pay attention to +, -, do not be reverse. If the connection is correct, (BAT) indicator light should be lighted, according to buttons to check. Otherwise the need to check the connection

4. Photovoltaic cells, wires connected, connect solar panels termination to the controller, and then the other ends Connected to solar panels. Pay attention to +, -, do not be reverse If it is a sunny day, (SUN) indicator light should be bright. otherwise. there is need to check the connection.

5. Load connected: connect the wire of load to the controller output, pay attention to +, -, do not be reverse. Otherwise, it would burn appliances out

6. **NOTE:** Connecting photovoltaic cells and the load wires as following: remain a curvature a long the wire to prevent the controller from rain water.

WARNING: The combination of different error conditions may cause damage to the controller. Do not use any other power supply instead of the solar panels, otherwise may cause damage to the controller

Operation procedure

A. Working state indication:

① **Solar panel state indication:** the solar indicator light is flashes, as the input voltage of solar battery panel reaches a certain point. The indicator light is on continually, as sunny and can charge the storage battery The indicator light is off, as disconnected solar cells or without enough sun, charge off;

② **Storage battery stat. and charge indication:** when the storage battery is charging in progress, indicator light is on Green flash; when the storage battery is fully charged, indicator light is on Green continually; when the battery power is in the middle, indicator light is on red continually; when the storage battery is over-discharged, the indicator light red flash slowly and the load is off. In normal working state, the indicator light is be bright.

③ **Load indication:** when the load is in normal working state. indicator light is on continually. when the load is off state, indicator light is off continually In over current or short circuit. the load is off at once and the indicator light flash. Then need to be adjusted. Then press wait 30 seconds. it will restart to work.

B. Setting methods:

TO press the button for 3 seconds, the LED flashes and the system of the device is under mode of regulation. After releasing the key the data in the LED changes along with every key-press till matches with the model designated by customers. To finish the setting, please wait 30 seconds until the LED is OFF or just press the button for 3 seconds

Check mode and output: when the LEDs is OFF, press the key for a Shorter time, the LEDs be lighted and output is on,

Working mode setting table

C. Mode description

① **Lighting control:** without sunshine the light intensity decreases to start point. Then the controller recognizes the start signal after 30 seconds. Based on the parameter, the load is on. While under sunshine, the light intensity increase to start point, and then the controller recognizes the close signal after 30 seconds. The load is off.

② **Time control:** The starting procedure is the same with that of pure lighting control. Timing control is dual period control; hence the double load can be regulated respectively. The load-on and load-off are alternated till the load is off in daytime. The time for the load-on and load-off can be adjusted to realize the different control effect. If the time for load-on is zero, the load will be off at night till the time for load-off is past. If the time for load-off is zero, the control effect will be the same with that of pure lighting control.

③ **manual mode:** Regardless of the daytime or night, users can control the load-on and load-off by key-press under this mode. This mode is used for some special load or Load ON all times (24hours).

NOTE: when the storage battery is over-discharged and Load trouble, the load of controller will be off.

④ **Test mode:** this mode is designed for system regulation. It is almost the same with pure optical mode except that the cancelation of 30 seconds delay (Please refer to pure lighting control). The load is on with optical signal. In reverse, without optical signal, the load is off. This feature makes it easier to check the system installation.

LED DISPLAY		Work Mode	
00	Dusk-to-Dawn, Light is on all light	09	9 hours light is turn on after sundown
01	1 hours light is turn on after sundown	10	10 hours light is turn on after sundown
02	2 hours light is turn on after sundown	11	11 hours light is turn on after sundown
03	3 hours light is turn on after sundown	12	12 hours light is turn on after sundown
04	4 hours light is turn on after sundown	13	13 hours light is turn on after sundown
05	5 hours light is turn on after sundown	14	14 hours light is turn on after sundown
06	6 hours light is turn on after sundown	15	15 hours light is turn on after sundown
07	7 hours light is turn on after sundown	16	Manual mode
08	8 hours light is turn on after sundown	17	Test mode, after switch 5 time is automatically adjusted to 00