Main features
1. Intelligent control is realized by using microprocessor and dedicated control calculation.
2. Four load working modes: Pure lighting control, lighting control & timing control, hand operation and debug mode.
3. Scientific management of battery: When it is overcharged, the battery will get booster tension charge. As a result inductive compensation is always 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.
4. Comparing with the charging loops using diodes, the one that adopts double MOS series circuit makes the voltage drop less by 50%. With the PWM fuzzy control in charging, the charging efficiency is improved a lot.
5. LED display 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.
6. Various protections include over-charge, over-discharge and over-load, as well as unique electron short circuit protection and connection-reverse protection. All the protections are harmless to any parts and fuse. TVS thunder proof protection is also available.

Technical 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.

Digital LED display and one button setup make the device easy to handle.

Working mode setting table

<table>
<thead>
<tr>
<th>Parameter Description</th>
<th>Model</th>
<th>rated charging current</th>
<th>Rated discharging current</th>
<th>Voltage</th>
<th>No load losses</th>
<th>Charging circuit voltage drop</th>
<th>Discharge circuit voltage drop</th>
<th>Over voltage protection</th>
<th>boost charge voltage</th>
<th>Float charge voltage</th>
<th>Lower voltage indication</th>
<th>Over discharge voltage</th>
<th>Temperature compensation</th>
<th>Control method</th>
<th>Working Temperature</th>
<th>Over-load and short circuit protection</th>
<th>Circuit protection</th>
<th>FAQs</th>
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operation procedure

A. Working state indication

1. **Charged state indication**: the solar indicator light is on, as the input voltage of solar battery panel reaches a certain point, as the storage battery is charging, as the system is under voltage.
2. **Storage battery induction**: when the battery is under voltage, the indicator light is yellow. Over-charged for more than 10 seconds, the indicator light is red and the load is off. In normal working state, the indicator light is green.
3. **Load indication**: when the load is in normal working state, indicator light is on continually. In over current, indicator light flashes slowly. In short circuit, the load is off and the indicator light flashes quickly. While the current is more than 1.25 times of rated current or more than 1.5 times for 5 seconds, the load of controller will be off.

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 until the LED stops to flash. Or just press the button for 3 seconds.

C. Modes description

1. **Lighting control**: without sunshine the light intensity decreases to start point. Then the controller recognizes the start signal after 10 minutes. Based on the parameter, the load is on. While under sunshine, the light intensity increases to start point, and then the controller recognizes the close signal. 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 or 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. **General 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 regulation. This mode is designed for system regulation. It is almost the same with pure optical mode except that the cancelation of 10 minutes 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.

FAQ

**phenomenon**

- Under the sunshine, the indicator light (NO.1) of solar panel is off.
  - The cell panel is charged, the indicator light (NO.1) flashes quickly.
  - The indicator light (NO.2) of storage battery is off.

**solution**

- Please check the line connected to photovoltaic and make sure the proper connection.
- Please check whether the storage battery is well connected, or its voltage is too high.
- Please check whether the storage battery is well connected.
- The storage battery is over-discharged.
- The load power is higher than the rated power. Please stop the operation of some equipment and charge the battery.
- The load is short circuit, please stop the work. Please press the key for a longer time or wait till the next day, it will restart to work.
- Please check whether the equipment which consumes power is well connected.