

# **CMWD Series**

## **Solar Charge Controller**

### **USER'S MANUAL**

**Model:**  
**CMWD-05A / CMWD-10A / CMWD-15A / CMWD-20A**

---

Thank you very much for selecting our product!  
This manual offers important information and suggestions with respect to installation, use and troubleshooting, etc. Please read this manual carefully before using the product and pay attention to the safety suggestions in it.

---

## I. Main features

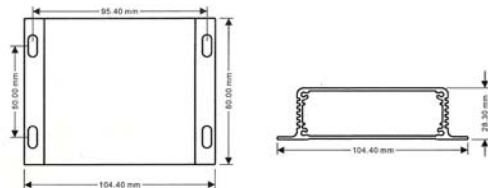
1. IP 68 waterproof level and aluminum outer shell is able to effectively prevent various different kinds of corrosion.
2. Automatic identification of 12V/24V system voltage.
3. LED digital display and waterproof key-operated operations, which makes use simple and convenient.
4. Ternary form charging algorithm to equally charge storage battery every week, which can effectively prevent battery from imbalance and vulcanization so that service life of battery can be prolonged.
5. Four working modes which make it convenient to use the product on various kinds of road lamps and monitoring devices.
6. Externally installed temperature sensor is capable of high-accurate temperature compensation.
7. Parameter settings can be stored if there is power failure. No need for repeated setting. It is simple and convenient to use.
8. Various kinds of status indication.
9. With over-charge, over-discharge, overload, short circuit and reverse connection protection.
10. With TVS lightning protection.

## II. System instructions

This solar controller is designed for solar DC power supply system, DC solar street light system. It has used the professional intelligent chip to control. There is only one button light touch switch to finish all the settings. The controller has many protective functions, for example, short circuit, over load, reverse polarity, over charge and over discharge protection. With detailed charging battery state, load, and breakdown signal LEDs. It can high precisely control cause of the chip can get battery data such as voltage, discharge current, environment temperature etc. It uses pulse width modulation battery charge mode, which can assure the battery at its best state and prolong its life span. It has many working modes and discharge choices, which can meet different users' needs.

## III. Installation and wiring

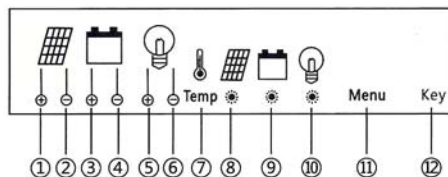
1. Installation of controller should be stable and the dimensions are as follows:  
Overall dimension: 104×80×28(mm)  
Installation dimension: 50×95.4(mm)  
Installation hole diameter: 5(mm)



## IV. Suggestions for use

1. Controller can identify voltage of storage battery when being powered on. Please connect storage battery at first and ensure the installation is reliable.
2. Controller will become hot during running. Therefore, it is suggested to install it in a ventilated environment.
3. Controller will test the ambient temperature and charge the storage battery. Therefore, try to place the storage battery and the controller in same environment.
4. Use cables with enough capacities for connection to avoid excessive consumption on circuits which may result in wrong judgment of controller.
5. Controller is designed with share positive poles. If grounding needs to be connected, please use positive pole.
6. It is important to fully charge the storage battery, at least once a month. Otherwise, battery will suffer from permanent damage. Only when power that enters into the batter is more than that used by the load can the battery be fully charged. When configuring the system, please keep that point in mind.

## V. Status indications and connection



- ① Solar Module positive (+) Terminal
- ② Solar Module negative (-) Terminal
- ③ Battery positive (+) Terminal
- ④ Battery negative (-) Terminal

- ⑤ Load positive (+) Terminal
- ⑦ External temperature compensation probe
- ⑨ Battery indicator
- ⑪ Digital tube display

- ⑥ Load negative (-) Terminal
- ⑧ PV charging status indicator
- ⑩ Load output indicator
- ⑫ Key

**Connection Order: battery cable → load cable → solar panel cable**

Pay attention to the positive (+) and negative (-) protect from contrary connecting, the battery indicator is the multi-colored indicator. When the battery indicator turns red, means the battery is under voltage, you need to charge it; when it turns green, means the voltage of the battery is normal, at this time the load can be started; when it turns orange, means the battery is near under voltage.

**VI. Introduction of modes and table of settings**

CMWD series controller has four working modes. Table of settings is as follows:

1. Purely light-operated (0): When there is no sunlight, the light intensity will fall to the starting point. The controller will affirm the starting signal after a delay of 3 seconds. Load will be opened as per set parameters to start working. When there is sunlight, the light intensity will rise up to the starting point. The controller will close output after confirming closing signal in a delay of 1 minutes and the load will stop working.
2. Light-operated + time-controlled (1~5): Starting process is same to that of pure light control. The load will automatically close when it works to the preset time. Set time will be 1 to 15 hours.
3. Manual mode (6): Under this mode the user can control the on and off of load by keys no matter it is day or night. This mode is suitable to occasions in need of special loads or for debugging.
4. Debug mode (7): It is used for system debug. If there is light signal, load will be closed. If there is no light signal, load will be opened. It is convenient for checking the correctness of the system during installation and debugging.

LED Display	Mode	LED Display	Mode
0	Purely light-operated	9	Light-operated + time-controlled for 9 hour
1	Light-operated + time-controlled for 1 hour	0.	Light-operated + time-controlled for 10 hour
2	Light-operated + time-controlled for 2 hour	1.	Light-operated + time-controlled for 11 hour

3	Light-operated + time-controlled for 3 hours	2.	Light-operated + time-controlled for 12 hour
4	Light-operated + time-controlled for 4 hours	3.	Light-operated + time-controlled for 13 hour
5	Light-operated + time-controlled for 5 hours	4.	Light-operated + time-controlled for 14 hours
6	Light-operated + time-controlled for 6 hours	5.	Light-operated + time-controlled for 15 hours
7	Light-operated + time-controlled for 7 hours	6.	Manual mode
8	Light-operated + time-controlled for 8 hours	7.	Debug mode

**VII. Methods for setting**

Press a key for more than 5s, the digital tube will start to twinkle and the system will enter into debug mode. Release the key and then press the key again, figures of digital tube will change one digit each time until digits shown on the digital tube match the digits corresponding to the mode the user has selected. Wait until the digital tube twinkling again or press the key again for more than 3s to finish the setting process.

**VIII. Safety suggestions**

1. Please do not immerse the controller into corrosive liquid. Otherwise, controller may be damaged and harmful gas may be generated.
2. When connecting 24V system, terminal voltage of battery panel may surpass the human body safety voltage. If operations are needed, insulating tools should be used and hands must be dry.
3. If storage battery is connected in reverse, the controller would not be damaged. However, there may be output of negative voltage at the load end which may damage your load equipments. Pay attention to avoid such things.
4. In 24V system, if one end of storage battery or solar battery panel is connected in reverse, controller may very likely be damaged.
5. There is a great deal of power stored in the storage battery. Therefore, short circuit of storage battery must not happen in any case. We suggest tandem connection of fuses on storage battery.

- Storage battery may generate combustible gas and therefore should be far away from sparks.
- Please make sure that children are far away from the storage battery and the controller.
- Please follow the safety suggestions given by the battery manufacturer.

#### X. Instructions for parameters

Model	CMWD-5A	CMWD-10A	CMWD-15A	CMWD-20A
Rated Load Current	5A	10A	15A	20A
System voltage	12V/24V AUTO			
No-load loss	< 5mA			
Solar energy input voltage	< 55V			
Overvoltage protection	16.5V; ×2/24V			
Equal charging voltage	14.4V; ×2/24V(25℃)			
Boost charging voltage	14.6V; ×2/24V(25℃)			
Float charging voltage	13.8V; ×2/24V (25℃)			
Return voltage for over-discharging	12.2V; ×2/24V			
Over-discharging voltage	10.8V; ×2/24V			
Temperature compensation	- 4.0mv/℃/cell			
Light -control voltage	6V			
Light -control judgment time	10min			
Overload and short circuit protection	1.25 times of rated current: 30s; 1.5 times of rated current: 5s overload protection activity; ≥3 times of rated current: short circuit protection			
Working temperature	-35℃ to +65℃			
Protection level	IP68			
Weight	410g			
Dimensions	104*80*28(mm)(L×W×H)			

#### X . Common Breakdown Phenomena and Disposal:

When the following phenomenon happens, please check this method as follows:

Phenomena	Disposal
When there is sun light to PV, but the green charge LED-1 is not bright;	To check PV cable connection, maybe the connection is wrong or not well connected;
The charge LED-1 quick flashing;	The system voltage is too high, battery open circuit, to check the battery whether is well connected or not; or the charge circuit is destroyed;
The load LED-3 is ON, but there is no output;	To check the connection of electrical appliances whether is well connected or not;
The load LED-3 quick flashing, but there is no output;	To check the LED load whether short circuit or not; after troubleshooting, press the button, the controller will resume to work automatically;
The load LED-3 slow flashing, but there is no output;	The rated power is exceed the load power, please reduce the use of electrical equipment, press the button, the controller will resume to work automatically;
The battery LED-2 is red, but there is no output;	The battery is over discharge, it will auto work again after full charge;
The key cannot press or cannot rebound;	Push key around until the key is loose;

The above information is subject to change without prior notice.