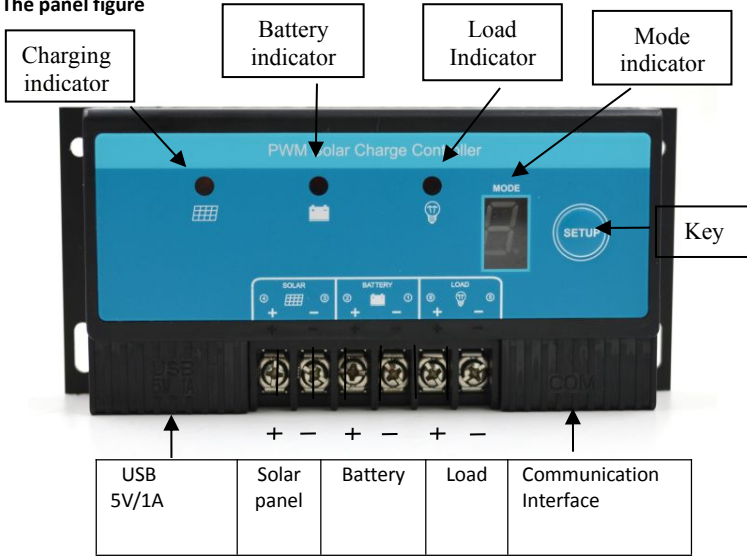


**CR2420 Solar Power Intelligent Charging Controller User Manual**

**Main features**

1. Auto identify 12V/24V system.
2. LED digital display and single key operations which makes operate simple and convenient.
3. Adopting ternary form charging algorithm, charge the storage battery in equalizing charge mode once a week .It can prevent battery from imbalance and vulcanization effectively, also battery service life will be extended.
4. Five working modes which made it convenient to use in all kinds of street lamps and monitoring devices.
5. It can be used in a variety of environments by Level of industrial design.
6. Has the electricity protection data function .Parameter can be stored when the power system failure. No need to setting again. It is very simple and convenient to use.
7. Various status indications.
8. Over charging protection, over discharging protection, over load, short circuit protection, reverse polarity protection
9. Standard communication interface RJ12 that can match with our LCD Screen(RM-1 or RM-3 ) , which makes the display more convenient.
10. TVS lightning protection.

**The panel figure**



**Status indication**

LED light	Indications	Status	Indication
	Charging indication	Long-term Off	No voltage on solar panel
		Fast twinkling	Equalizing charge
		Slow twinkling	Boosting charge
		Single twinkling	Floating charge
	Storage Battery	Long-term On	Battery works normally
		Long-term Off	Battery is not connected
		Fast twinkling	Battery is over voltage
		Slow twinkling	Battery is discharged
	Load	Long-term On	Load is on
		Long-term Off	Load is off
		Fast twinkling	Overload protection or Short circuit protection

**Introduction of modes and table of settings**

CR2420 controller has five working modes, setting table is as below.

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 delay 10 minutes. Load will be open according to the set parameters. 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 10 minutes and the load will stop working.
2. Light-operated + time-controlled (1~4.): Starting process is same to that of pure light control. The load will automatically close when it works to the preset time. Time can be set from 1-14 hours.
3. Manual mode (5.): Under this mode, users can control the load-on and load-off by key-press no matter day or night. This mode is suitable to occasions in need of special loads or for debugging.
4. Debug mode (6.): Used for system debugging. The solar panel less than 6V that the load will be off, more than 5V the load will be open. It's convenient when check the correctness of the system installation.(this mode is default value).
5. Long-term On mode (7.): If being powered on, the load will be under the output status all the time. This mode is suitable for loads in need of 24-hour power supply.

LED display	mode	LED display	mode
0	Purely light-operated	9	Light-operated + time-controlled for 9hours
1	Light-operated + time-controlled for 1 hour	0 . (0 point)	Light-operated + time-controlled for 10hours
2	Light-operated + time-controlled for 2hour	1 . (1point)	Light-operated + time-controlled for 11hours
3	Light-operated + time-controlled for 3 hour	2 . (2 point)	Light-operated + time-controlled for 12hours
4	Light-operated + time-controlled for 4hour	3 . (3 point)	Light-operated + time-controlled for 13hours
5	Light-operated + time-controlled for 5hour	4 . (4 point)	Light-operated + time-controlled for 14hours
6	Light-operated + time-controlled for 6 hour	5 . (5 point)	Manual mode
7	Light-operated + time-controlled for 7 hour	6 . (6 point)	Debug mode (the default)
8	Light-operated + time-controlled for 8 hour	7 . (7 point)	Long-term On mode

**Setting Methods**

Setting mode: Press a key for more than 2s, the LED tube will start to twinkle and the system will enter into debug mode. Release the key and then press the key again, figures of LED tube will change one digit each time until digits showed on the LED tube match the digits corresponding to the mode the user' request. Wait until the LED stop twinkling or press the key again for more than 2s to finish the setting process.

**Safety suggestions**

1. When connecting 24V system, please mind the terminal voltage of battery panel may over the human body safety voltage. If operations are needed, insulating tools should be used and hands must be dry.
2. 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 equipment. Pay attention to avoid such things.
3. In 24V system, if one end of storage battery or solar battery panel is connected in reverse, controller may be damaged.
4. 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.
5. Storage battery may generate combustible gas and therefore should be far away from sparks.
6. Please make sure that children far away from the storage battery and the controller.
7. Please follow the safety suggestions given by the battery manufacturer.

**Parameters**

<b>System voltage</b>	12V/24V Auto
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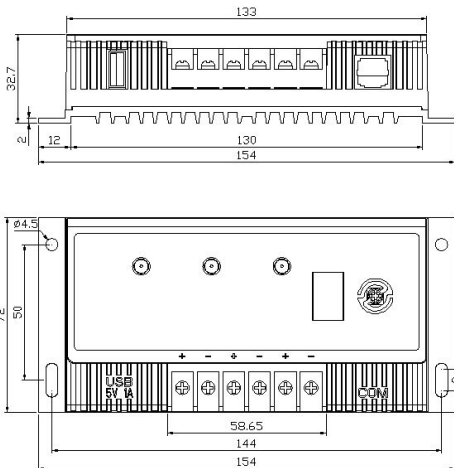
System current	20A
No-load loss	< 10mA/12V; 13mA/24V
Solar input voltage	< 55V
Over voltage protection	17.0V; ×2/24V
Equal charging voltage	14.6V; ×2/24V (25℃) , duration: 1h
Ascending charging voltage	14.4V; ×2/24V (25℃) , duration: 2h
Float charging voltage	13.8V; ×2/24V (25℃)
Charging recovery voltage	13.2V; ×2/24V (25℃)
Over-discharging recovery voltage	12.5V; ×2/24V
Over-discharging voltage	11.0V; ×2/24V
Temperature compensation	-3.0mV/℃/2V
Light-control voltage	Light-control open 5V; light-control close 6V
Light-control judging time	10min
USB output	5V/1A
Working temperature	-35℃ to +65℃;
Protection level	IP30
Weight	218g
Protection	reverse connection of the storage battery , reverse connection of the solar panel , counter-reverse charge at night. <b>(Notice 1)</b> overload、short circuit <b>(Notice 2)</b>
Dimensions	154.0×72.0×32.7 (mm) (L×W×H)
System voltage	12V/24V Auto

**Notice1:** If reverse connection of the storage battery, the controller would not be damage, but there is the negative voltage output from the load will lead to the load damage.

**Notice2:** Time delay function when overload, the protection time is related to the ambient temperature. When overload, the overload protection will running auto. The first time is 5 seconds, the second time is 10 seconds, the third time is 15seconds, the fourth time is20 seconds and the fifth time is 4hours or the second day it will recovery.

### Installation and wiring

1. Installation of controller should be stable and dimensions are as follows:  
Overall dimension: 154.0×72.0×32.7(mm)  
Installation dimension: 144.0×50.0 (mm)  
Installation hole diameter: 4.5(mm)



2. CR2420 series controller can work under 12V or 24V voltage. Please connect the storage battery at first, controller will work after recognize the battery volt automatically. If 12 V, the digital tube will shows "0".If 24V, the digital tube will shows "1".
3. First, connected to the storage battery: If connected well, the indicator light will be twink. Otherwise, please check the connection.
4. Second, connected to the solar panel: If connected well and have sunshine, panel volt will bigger than the battery volt slightly and then the indicator light will be on. Otherwise, please check the connection.
5. Third, connected to the load: connect the load lead with the load output end of controller, be care that the current must be less than the rated current of the solar controller.
6. Controller will become hot during running. Therefore, it is suggested to install

it in a ventilated environment.

7. Choose the cable with enough capacities for connection to avoid excessive consumption on circuit which may result in wrong judgment of controller.
8. Controller is designed with share positive poles. If grounding needs to be connected, please use the positive pole.
9. It is important to completely charge the storage battery, at least once a month. Otherwise, battery will suffer from permanent damage. Only when power that enters into the battery is more than that used by the load can the battery be fully charged. When configuring the system, please keep this point in mind.

### Faults and solutions

Faults	Solutions
There is sunlight but indicator lamp of solar panel is off.	Please check the wiring of photocell and the connection.
Charge indicator of the solar panel twinkles fast	Over voltage of the system; please check whether voltage of the storage battery is too high.
Indicator lamp of battery panel is off; voltage of battery is normal and there is no output	Wait for 10 minutes and the load will open automatically.
Indicator lamp of battery is off	Please check the connection of storage battery.
Indicator lamp of storage battery twinkles fast and there is no output	Storage battery is over discharged. Please charge the battery fully.
Indicator lamp of load twinkles fast and there is no output	Load power exceeds rated power or short circuit. Press the key once for a long time or wait until the next day, it will recover.
Indicator lamp of load is on and there is no output	Please check if the connection of electric appliance is right and reliable
Other faults	Check the reliability of wiring, or whether the system is 12V/24V auto identify.

**Without pre-notice if any amendment.**