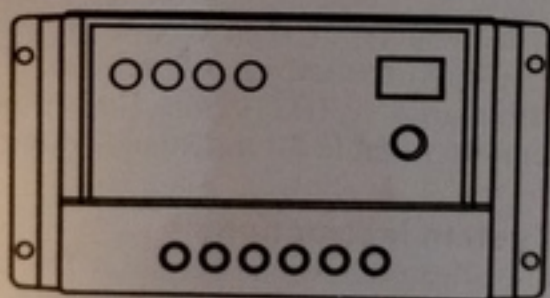


Solar Controller Instruction Manual

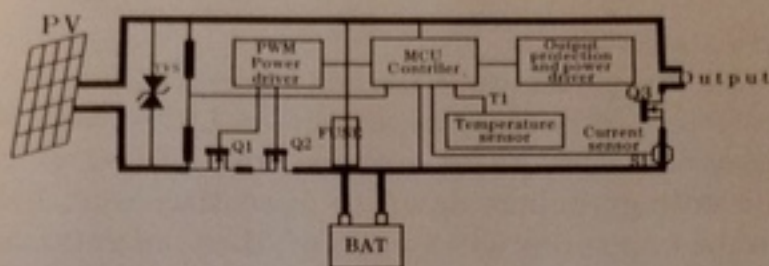


Part One, Main Features

- 1, intelligent control with single chip and professional software.
- 2, with precise battery discharge control by use of battery discharge features. Different discharge rated with different final voltage.
- 3, with over charge, over discharge, short circuit, over load, wrong connection auto protection. When the above mention functions work, it won't destroy any components of the controller, it won't burn the fuse.
- 4, to use series connection PWM circuit, it is 3%-6% more effective than non-PWM circuit when charging. To use float charging control mode to prolong the system life span; with high precision temperature compensation function.
- 5, with LED to show the battery state
- 6, to use industrial grade chip, it can work under environment such as cold, high temperature · humid : At the same time, it uses a crystal oscillator timing control, the timing control accurately.
- 7, to use LED display and settings, one button can carry out all settings.
- 8, to use Flash memory to keep record of all the working control point, to make the settings digitalized.
- 9, with DC discharge or IHZ strobe flash discharge mode which is especially suitable for traffic light control etc.

Part Two, System Instructions

The solar controller is designed for solar DC power supply system, DC solar street light system, to use professional intelligent chip to control it. To use one button light touch switch to finish all the manipulation and settings. The controller has many protective functions, for example, short circuit, over load, wrong connection, over charge, over discharge, auto cut, auto recovery etc. with detailed charging battery state, load, and breakdown signal LEDs. It can high precisely control cos of the chip can get battery data such as voltage, discharge current, environment temperature etc. It uses PWM battery charge mode, to assure the battery at its best state and prolong its life span. It has many working modes, discharge choices, to meet different users' needs.



Part Three, Installation and application

1, the cable: to advise to use the cable with many pcs copper strips, to assure the cable can meet the installation needs, than keep it as short as possible, so that to reduce extra power consumption. The cable should no bigger than 4A/MM², to strip 5MM for the controller side.

2, to connect the cable to the controller battery point first, than to connect the cable to the battery,

Pay attention to +/- pole, don't put wrong connection. If it is correct, the LED-2 will be bright, to press the button to check it. Otherwise, to check the cable connection. If it is incorrect, it won't destroy anything.

3, to connect the cable to the controller PV point, than to connect the cable to the PV., Pay attention to +/- pole, don't put wrong connection. If there is sunshine, The LED-1 will be bright, otherwise, to check the cable connection.

4, to connect the load cable to the controller load point, pay attention to +/- pole, don't put wrong connection. Otherwise, it may burn the load..

5, the cable to the controller side should make it a little curve, so that water won't come into controller.

Part Four, Operation instructions

1, Charge and over voltage signal:

When it is well connected, and there is sunshine to PV, the green LED-1 is always bright, to show the system is normal; When the LED-1 is quick flashing, it is over voltage, please refer to Part Eight; To use PWM mode to charge the battery, if it is over discharge, it need to increase the voltage to increase charge voltage, and to keep it for 10 min. then it comes to direct charge voltage, to keep it for 10min. to activate the battery and to avoid fulguration. It will come down to float charge voltage, and keep it. If there is no over discharge, there will be on increase charge mode, to avoid the battery lose wetter. All these auto control can assure the battery to get its best charging effect and prolong its life span.

2, Battery state signal.

When the battery voltage is normal, Green LED-2 is always bright; when is fully charged, the green LED-2 will be slow flashing; when it is under voltage, the LED-2 is orange; when the voltage comes down to over discharge, LED-2 is red, then the controller will switch off the load automatically, it needs to be recharged. When it comes to normal voltage, it will auto work again with Green LED-2.

3, Load signal

When the load is on, the load LED-3 is always bright, if the load current is 1.25 times by controller rated current for 60 seconds, or the load current is 1.5 times by controller rated current for 5 seconds, LED-3 is red with slow flashing, it is over load, controller will switch off output. When the load is short circuit, the controller will switch off output at once with LED-3 red and quick flashing. To check the load connection, to disconnect the short circuit part, to press the button one time, it will start to work again 30 in seconds later, or to work again next day normally.

Part Five, Working Mode Settings

1, setting methods:

To press the power switch for 5seconds, the MODE will show LED flashing number, to shop pressing, to press each time, there will be a number, till the number you needed, and the LED number stop flashing, setting finished. Every time you press it, the LED is No. bright.

2, Only Light control Mode, "0"

When there is no sunshine, the light grade comes down to starting point, the controller will switch on the load in 10 min after have confirmed the signal. When there is sunshine, the light grade comes up to stopping point, the controller will switch off the load in 10 min after have confirmed the signal.

3, Light control+time delay mode ("1"-"15")

Starting process is the same as the above mentioned, when the load works till the fixed time, it will be switched off. Time setting, please refer the following table. Light control enjoys priority.

4, General Control Mode "16"

This Mode cancel the light control, time control function, output delay and related function, to keep all the other functions, to take as a common general use controller.

5, Setting ways "17"

To use for system setting, it is the same as the only light

control mode, to cancel the 10 min delay function, all the others are the same. When there is sunshine, the load is switched on, when there is no sunshine, the load is switched off, and it is convenient to check the system when doing installation and setting.

6, Output Mode Instruction

When the LED shows the setting mode figure, is "1"- "15", it is only DC output.

Part Six, Working Mode Setting Table

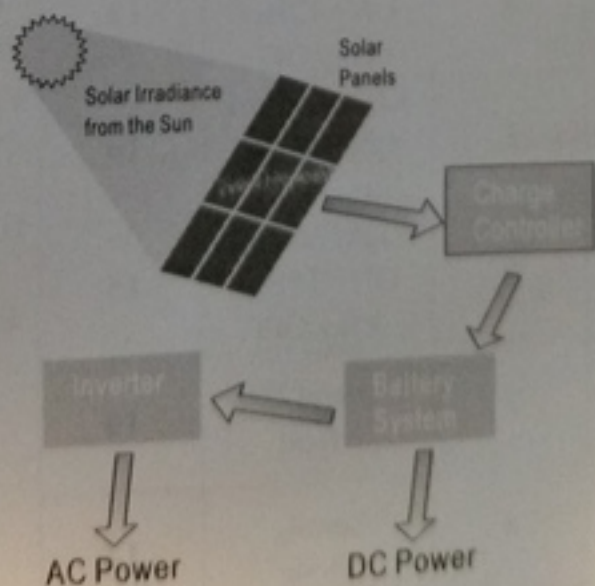
(Note: when choosing LED shows decimal mode, the decimal point will be will be always bright, it doesn't affect the controller functions, only for differentiation.)

Mode	LED No.	Mode	LED No.	Setting Methods
Light control ON+ light control OFF	0	Light control ON+9 Hrs delay OFF	9	To press the power switch for 5seconds, the MODE will show LED flashing number, to shop pressing, to press each time, there will be a number, till the number you needed, and the LED number stop flashing, setting finished. Every time you press it, the LED is No. bright.
Light control ON+ 1 Hr delay OFF	1	Light control ON+ 10Hrs delay OFF	10	
Light control ON+ 2 Hrs delay OFF	2	Light control ON+ 11Hrs delay OFF	11	
Light control ON+ 3 Hrs delay OFF	3	Light control ON+ 12Hrs delay OFF	12	
Light control ON+ 4 Hrs delay OFF	4	Light control ON+ 13Hrs delay OFF	13	
Light control ON+ 5Hrs delay OFF	5	Light control ON+ 14Hrs delay OFF	14	
Light control ON+ 6 Hr delay OFF	6	Light control ON+ 15Hrs delay OFF	15	
Light control ON+ 7 Hr delay OFF	7	General Use Mode	16	
Light control ON+ 8 Hrs delay OFF	8	Setting Mode	17	

Part Seven, Some Common Breakdown Phenomenon and Disposal Methods

When the following phenomenon happens, please check as follows,

Phenomena	Disposal Methods
When there is sun light to PV, but the green LED-1 is not bright	To check PV cable connection-- may be with wrong connection, 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 bright, but no output	To check the load cable whether well connected or not
The load LED-3 is quick flashing but no output	The discharge short circuit, to check the discharge cable, to remove all the loads, to press the switch button, the controller will discharge again 30 seconds later.
The load LED-3 is slow flashing and no output	The load power is more than the rated power, to reduce loads, to press the switch button: the controller will discharge again 30 seconds later.
The state LED-2 is red, no output	The battery is over discharge, to charge it, it will auto work again.



Part Eight, Tech Data

Model	5A	10A	15A	20A	30A
Rated charge Current	5A	10A	15A	20A	30A
Rated Load Current	5A	10A	15A	20A	30A
System Voltage	12V/24V AUTO				
Over load, short circuit protection	1.25 times by rated current, 60 seconds, 1.5 times by rated current, 5 seconds— overload protection: ≥ 3 times by rated current— short circuit protection				
Empty load consumption	$\leq 6\text{mA}$				
Charge Circuit Voltage Drop	$\leq 0.26\text{V}$				
Discharge Circuit Voltage Drop	$\leq 0.15\text{V}$				
Over Voltage Protection	17V/34V				
Working Temperature	Industrial Grade: -35°C — $+55^{\circ}\text{C}$ (Suffix I)				
Increase Charge Voltage	14.6V/29.2V (10 min when discharging)				
Direct Charge Voltage	14.4V/28.8V (10 min)				
Float Charging	13.6V/27.2V (till come down to charging recovery voltage)				
Charge Recovery Voltage	13.2V/26.4V				
Temperature Compensation	$-5\text{mv}/^{\circ}\text{C}$ — $-10\text{mv}/^{\circ}\text{C}$				
Under Voltage	12.0V/24.0V				
Over discharge Voltage	11.1V/22.2V				
Over Discharge Recovery Voltage	12.6V/25.2V				
Control Mode	PWM				

Note: we keep right to make changes without notice.