PWM Solar Charge Controller

User manual

Read these instructions carefully before use and keep it safe for future reference.

1012 / 2024

Thank you for selecting the Vechline 1012/2024 series for PWM solar charge controller. Please read this manual carefully before using the product and pay attention to the safety information

1.GENERAL INFORMATION

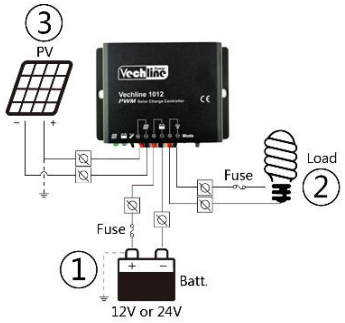
LS series solar charge controller adopts the most advanced digital technique and operates fully automatically. It is ideal for extreme environments with corrosion, dust, water etc and has various unique functions：

- Electronic protection: Over charging, over discharging, overload, short circuit and reverse protection of solar module
- High efficient Series PWM charging, increase the battery life time and improve the solar system performance
- Widely used, automatically recognize day/night
- Battery LED indicate battery status
- Industrial design, wide application range
- Digital tube menu, only one key solve all setting simply
- Intelligent timer function with 1～13 hours option
- IP67 protection

2. FEATURES AND MOUNTING

①	Charging Status LED indicator	⑥	Load Terminals
②	Battery Status LED indicator	⑦	Digital tube
③	Temperature Sensor	⑧	Key
④	Solar Module Terminals	⑨	Aluminum housing
⑤	Battery Terminals	⑩	Mounting holeΦ5

Mounting



1) Connect components to the charge controller in the sequence as shown above picture and pay much attention to the “+” and “-”. Always power the battery firstly.

2) After power the battery, check the battery indicator on the controller, it will be green. If it’s not green, please refer to chapter 4.

3) The battery fuse should be installed as close to battery as possible. The suggested distance is within 150mm.

3. INDICATORS, DESCRIPTIONS AND OPERATIONS

Indicator status and description.

Charging Status LED indicator	Green	On Solid	Normal
	Green	Fast Flashing	Over voltage
Battery Status LED indicator	Green	On Solid	Normal
	Green	Slowly Flashing	Full
	Orange	On Solid	Under voltage
	Red	On Solid	Over discharged
Radix Point of Digital tube (Load indicator)	Red	On Solid	Load ON
	Red	Slowly Flashing	Over Load
	Red	Fast Flashing	Short Circuit

Operation

The digital tube display the load work mode, please refer to the correspondencetable of Load Work Mode & LED digital tube value. Pressing the key to configurethe parameter, please refer to the below configurationmethod:

1) After Powering on, disconnect the PV or connect the PV (Voltage<5V) , the light of the digital tube point go on; Connect the PV(Voltage>6V) ,the light of the digital tube point go off.

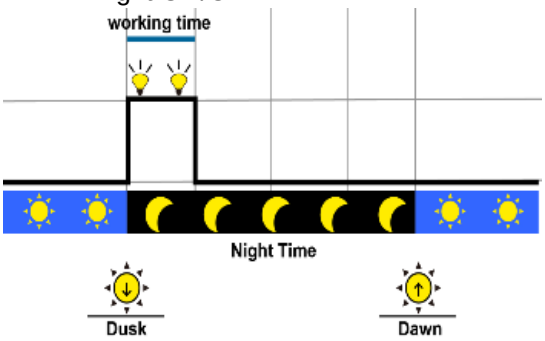
2)The keycanbeusedtooperateswitching on/off the load (Manual control) or clearing the faults

3) Keeping pressing the button over 5 seconds, it will go to the parameter in browsing mode whichcancyclethroughthe parameter item byclickingthe button, after the light of the digital tube point going on.

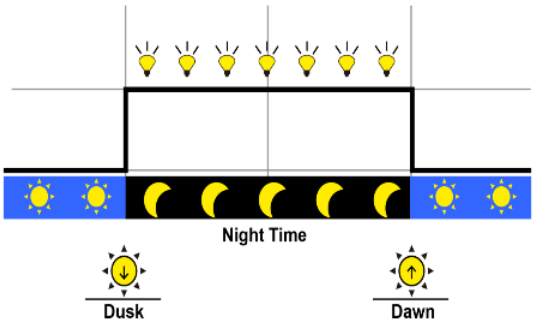
4) After the digital tube displaying the value what you want to configure, releasing the key and waiting 15S, Digital Tube stop flashing

Load mode

- Manual Control：Control the load via the button.
- Light ON/OFF:



LIGHT ON + TIMER:



Note: In the mode of Light ON/OFF and Light ON/Timer, the Load is turned on after 10 minutes delay.

- Test Mode (Default)：Test Mode is as same as Light Control Mode but no delay.

The correspondence table of Load Work Mode & LED digital tube value

Value	Working mode	Value	Working mode
0	Light ON/OFF	0.	Light ON + 8 hours
1	Light ON + 1 hours	1.	Light ON + 9 hours
2	Light ON + 2hours	2.	Light ON + 10 hours
3	Light ON + 3hours	3.	Light ON + 11 hours
4	Light ON + 4 hours	4.	Light ON + 12 hours
5	Light ON + 5 hours	5.	Light ON + 13 hours
6	Light ON + 6 hours	6.	Manual Control
7	Light ON + 7 hours	7.	Test Mode

4. TROUBLESHOOTING

Faults	Possible reasons	Troubleshooting
Charging LED indicator off during daytime when sunshine falls on PV	PV array disconnection	Check that PV and battery wire connections are correct and tight
Battery indicator green fast flashing	Battery voltage higher than over voltage disconnect	1. Disconnect the solar array and measure the battery voltage whether is too high; 2. Change the controller; 3. Change the battery
Battery LED indicators red color and loads not working	Battery over discharged	The controller cut off the output automatically. LED indicator will return to green automatically when fully

The radix point of digital tube fast flashing and load not working	Short circuit	Clear short circuit. It is reactivated after delayed 10 seconds for the first time, If over 1 time，press the key to clear error and the controller will resume to work after 3s or restart the controller
The radix point of digital tube slowly flashing and load not working	Over load	Please reduce the number of electric equipments. When load power reaches 1.25-1.5 times, 1.5-2 times and 2 times more than nominal value, controller will automatically close loads in 60 seconds, 5 seconds and 1 second, respectively. Please press the key to clear error and the controller will resume to work after 3s or restart the controller

5. TECHNICAL SPECIFICATIONS

Item	1012	2024
Nominal system voltage	12/24VDC Auto	12/24VDC Auto
Max. PV input voltage	50V	50V
Rated current	10A	20A
Equalize Voltage	14.8V(12V);29.6V(24V)	
Boost Voltage	14.4V(12V);28.8V(24V)	
Float Voltage	13.7V(12V);27.4V(24V)	
Low Voltage Reconnect Voltage	12.6V(12V);25.2V(24V)	
Low Voltage Disconnect Voltage	11.2V(12V);22.4V(24V)	
Self-consumption	12V：≤4.58mA；24V：≤6.01mA	
Temperature compensation coefficient	-5mV/℃/2V（25℃）	
Working temperature	-35℃～+50℃	
Enclosure	IP67	
Overall dimension	108.5mm×75mm×25.6mm	
Mounting dimension	100.5mm	
Mounting hole size	Φ5	
Power cable	PV/BAT/LOAD:4.0mm^2	PV/BAT/LOAD:6.0mm^2
Net weight	410g	435g

6. DISCLAIMER

This warranty does notapplyunderthefollowingconditions:
Damagefromimproperuse or use in anunsuitable environment.PV or load current, voltage or power exceedingtheratedvalue of controller.The controller' s workingtemperatureexceedthe limit working environment temperature.User disassembly or attemptedrepairthe controller without permission.The controller is damagedduetonaturalelementssuch as lighting.The controller is damagedduring transportation and shipment.

Vechline is powered by

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