ECO-WORTHY

Version: 1.1.1

Controller

12V/24V 30A MANUAL

Solar Charge Controller

SUPPORT

If you are experiencing technical problems and cannot find a solution in this manual,please contact ECO-WORTHY for further assistance.

·Call:1-866-939-8222(US&CA)
+49 6175 6514 999(DE)
+44 7553 406988(UK)

·Web://www.eco-worthy.com/

·E-mail: customer.service@eco-worthy.com

Contents

Ⅰ. Basic Information

1.Information

Thank you for choosing our 12/24V 30A PWM Controller. This product is a highly efficient charging controller specifically designed for solar power systems and features many unique and advanced functions. The charging controller is suitable for intelligent charging management of 12V/24V AGM, GEL, and LiFePO4 batteries. It also integrates an LCD display, button control, Bluetooth communication, remote control via a mobile app, and a USB-Type A interface for output. Various parameters such as photovoltaic voltage, power generation, battery voltage, current, and temperature can be displayed. Users can select battery types and load modes, including all-day, automatic, and manual (load on/off) modes, and set parameters such as over-discharge protection, over-discharge recovery, and constant charging voltage.

2.Safety Instructions

*Before installing and using this product, please be sure to read this manual carefully to understand the performance, characteristics, usage methods and precautions of the product to ensure correct and safe use.

*Before installation, please check whether the models and specifications of the controller, solar panels, batteries and loads match to ensure that all devices are in good condition and have no damage or aging.

*Do not install this product in a wet, flammable or corrosive place.

* Avoid severe shock and vibration of the product.

*Do not disassemble or modify the internal structure of this product.

3.Product Features

· Supports automatic identification of 12V or 24V batteries, with a maximum input voltage of up to 50V.

· Automatically detects battery voltage or capacity to prevent over-charging and can maintain battery health.

· When paired with a mobile app, remote status monitoring and control can be achieved.

· Lithium battery activation can save battery life and performance.

· Features a memory function that records the last selected load mode.

· Provides protection against short circuits, reverse connections, overcharging, and over-voltage.

4.Packing List

Name	Qty.
Controller	1
Manual	1
Cross head Self-tapping Screws 430mm + M630 Plastic Tubular Anchors	4
SV5.5-5 Fork-type Terminal Connectors	6

Notes:

1. The battery type cannot be changed during charging.
2. The controller remembers the last parameter you selected and set.
3. The controller can only use 12/24V batteries, and using a larger battery will damage the controller.
4. The charger can be continuously connected with the battery to provide maintenance charging.
5. The corresponding battery should be selected and set the corresponding battery type and parameters, otherwise it may cause harm.
6. The default load switch mode of this product is set to C03 (manual mode off). After connecting the load, only double-clicking the button can turn on the load switch.
7. The default battery type of this product is B03 (12V lithium battery mode). If a 24V lithium battery or other types of batteries are connected, manual settings are required to switch to B04 (24V lithium battery mode) or the corresponding type.

II .Product Overview

1.Product Description

①LCD Display: Shows settings, parameters, and system status.

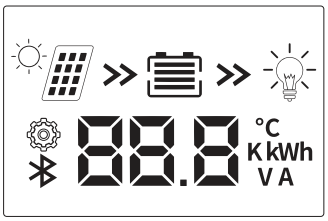
②Buttons: For setting and checking parameter operations.

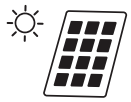
③Input and Output Ports: From left to right: PV+/PV-, BAT+/BAT-, LOAD+/LOAD-.

④Mounting Holes: For securing the controller.

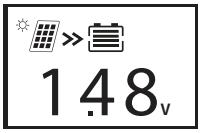
2. Icon Description

Home Page (Main Page)

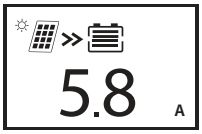


Icon	Name	Status	Description
	PV	Always On	It will display when photovoltaic voltage > 5V.
		Not displayed	Not connected to photovoltaic power, or photovoltaic voltage is too low.
	Battery Charging	Always On	Battery is charging, and photovoltaic current > 150mA
	Battery SOC	Flashing	Battery SOC flashes from 1 to 4 bars during charging
		Always On	Displays current battery SOC during non-charging process
	Battery Discharg-ing	Always On	Battery is discharg-ing, and discharge current > 150mA
	Load	Always On	DC load connected
		Not displayed	No load connected, or load output switch turned off.
	Settings	Dis-played	Enter settings page
	Bluetooth	Flashing	Bluetooth not connected
		Always On	Bluetooth connected
	Shows various parameters such as photovoltaic voltage, power generation, battery voltage, current, and temperature		

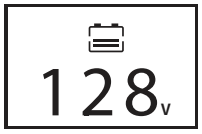
3. View Page Description



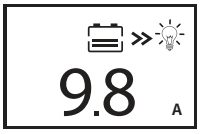
View Page 1 (Photovoltaic Voltage)



View Page 2 (Photovoltaic Current/Battery Charging Current)

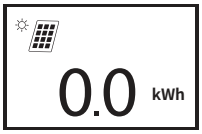


View Page 3 (Battery Voltage)



View Page 4 (Battery Discharge Current/Load Current)

View Page 5 (Internal Temperature)



View Page 6 (Total Photovoltaic Power Generation)

4. Fault Page Description

Fault Page

Fault Page	Description

Fault Page 1 (Battery Over-voltage)

Fault Page 2 (Battery Under-voltage)

Fault Page 3 (Photovoltaic Over-voltage)

Fault Page 4 (Photovoltaic Over-current)

Fault Page 5 (Output Over-current)

Fault Page 6 (Internal High Temperature)

Fault Page 7 (Load Short Circuit)

Fault Page 8 (Photovoltaic Short Circuit)

5. Sstting Page Description

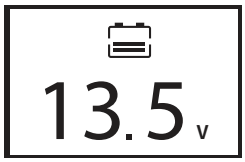
Setting Page

Settings Page 1
(Battery Type Setting)

Settings Page 2
(Load Switch Mode Setting)

Settings Page 3 (
Bulk Charge Voltage Setting)

Settings Page 4 (Battery Under-Voltage
Protection Point Setting)



Settings Page 5 (Battery Under-voltage Recovery Setting)

III.How to Setup

1.Page Switching

If the load mode is not manual control:

·Single click/double click the button → Switch from the home page to View Pages 1-6.

If the load mode is manual control:

·Single click → Switch from the home page to View Pages 1-6.

·Double click → Turn the load switch on or off.

Note: In any mode, the display will automatically return to the home page after 10S of inactivity.

2.Fault Handling

When a connected device triggers a fault, the display will automatically switch to the fault page. Other pages can still be viewed. Single-click the button to switch from the fault page to the home page and continue viewing. If no operation is performed for 10S on the view page, it will automatically return to the fault page.

3.Parameter Setting Operations

Long press the button for 3S: Enter the settings page.
Single click: Switch between Settings Pages 1-5.
Parameter modification steps:

①Long press the button for 3S: Enter the settings parameter.

②Single click: Adjust the setting options.

③Long press the button for 3S: Save the settings.
Note: If no operation is performed for 5S during setting, the display will automatically return to the home page/fault page.

4.Setting Description

4.1 Battery Type Setting Page：

*AGM and GEL battery voltage systems only support automatic identification. LiFePO4 can only be manually selected for 12V/24V voltage systems.

Setting Page1 Value	Description
b01	AGM
b02	GEL
b03	12V LiFePO4
b04	24V LiFePO4

4.2 Load Switch Mode Setting Page：

Setting Page2 Value	Description
c01	All-day Mode
c02	Automatic Mode
c03	Manual Mode

· All-day Mode: The load is on all day.

· Automatic Mode: The load will turn on when there is no PV input and automatically turn off when PV input starts (with a 3-minute delay).

· Manual Mode: Double-click the button to turn the load on/off.

4.3 Battery Voltage Setting

Battery Type	AGM	GEL	LiFePO4
Bulk Charge Voltage	14.5v	14.5v	14.5v (14.0 -14.6 v)
Under-voltage Protection Recovery Point	13.5v (12.8 -13.5 v)	13.5v (12.8 -13.5 v)	13.5v (12.8 -13.5 v)
Under-voltage Protection Threshold	11.5v (10.5 -12.5 v)	11.5v (10.5 -12.5 v)	11.5v (10.5 -12.5 v)

Note: The above settings apply to 12V batteries. When connecting a 24V battery, all values should be doubled.

4.4 Battery SOC Percentage

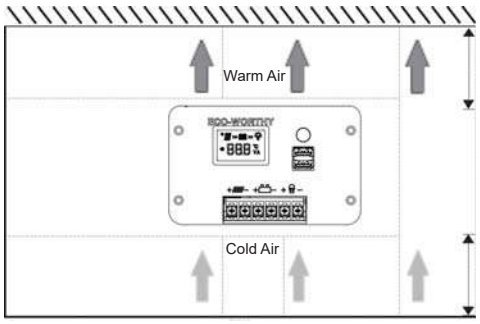
Default to 1 bar after power-on. The following logic applies:

Battery Type	AGM	GEL	LiFePO4
0 bars	Under-voltage Protection	Under-voltage Protection	Under-voltage Protection
1 bars	<12.2V	<12.2V	<13.2V
2 bars	12.2V≤ Vbat< <12.4V	≥12.2V≤ Vbat<12.5V	≥13.2V≤ Vbat<13.4V
3 bars	12.4V≤ Vbat< 12.7V	≥12.5V≤ Vbat<12.8V	≥13.4V≤ Vbat<14V
4 bars	≥12.7V	≥12.8V	≥14V

IV. Installation & Usage

1.Installation

Determine the installation location of the product. Measure and drill 4*6mm holes in the wall. Insert the M6×30 plastic expansion tube into the holes, ensuring that the expansion tube is fully embedded in the wall. From the front of the product, pass the M4×30 crosshead self-tapping screws through the mounting holes and use a screw-driver to tighten them into the plastic expansion tubes.



2.Power-On Instructions

*The battery must be connected before connecting the photovoltaic panel.

***If the battery is powered:** Open the orange transparent square cover. Connect the positive and negative terminals of the battery to ports ③ and ④ to power the controller. Do not connect the solar panels yet. Use the mobile app or buttons to set the battery type, specifications, and charging mode. If there is a load, connect the positive and negative terminals of the load to ports ⑤ and ⑥. Finally, connect the positive and negative terminals of the solar panels to ports ① and ②.

***If the battery is not powered:** Open the orange transparent square cover. Connect the solar panels to ports ① and ② to power the controller. Do not connect the battery or load yet. Use the mobile app or buttons to set the battery type, specifications, and charging mode. Then, disconnect ports ① and ② (the controller has a memory function and will remember the settings after power-off). Connect the positive and negative terminals of the battery to ports ③ and ④. If there is a load, connect the positive and negative terminals of the load to ports ⑤ and ⑥. Finally, connect the positive and negative terminals of the solar panels to ports ① and ②.

① ② ③ ④ ⑤ ⑥

3.Mobile App Operation

①Install the Mobile App:

You can search for and install the ECO-WORTHY app on the Apple App Store or Google Play Store, or scan the QR code below to download the app. With the app, you can use the Bluetooth connection function without logging in. For detailed operations, please scan the QR code below to obtain the app user manual.


(Download QR Code)

(App User Manual QR Code)

②Connect the Device:
When the Bluetooth icon in the lower left corner of the controller's main screen is flashing, it means the app is not yet connected. Open the app and click the "+" in the upper right corner of the main screen, then click "Add Device." Select the device named "BW0D_XXXX" from the Bluetooth list to connect. After a successful connection, the screen will automatically switch to the controller details page, and the Bluetooth icon in the lower left corner of the controller's main screen will remain constantly lit.

③App Page Introduction:
On the home page, you can conveniently view the basic data of the controller. For further operations, click the control option in the upper navigation bar to enter the control page for settings. To configure battery parameters, click the gear icon on the page, select the corresponding battery type, and set the specific parameters one by one to complete the configuration. The data page supports viewing monthly and annual photovoltaic power generation statistics. When a connected device triggers protection or a fault occurs, the system will automatically push notifications to the notification page. Click the arrow to the right of the issue item to quickly link to the corresponding product model and device source information, which helps in analyzing and solving the problem.

V .Technical Specifications

1.Basic Parameter

System Voltage	12/24V	
Battery Chemistry Type	AGM、GEL、LiFEPO4	
Max. PV Input Voltage	25V/50V	
Max. Charging Current	30A	
Bluetooth Communication Distance	⩽30m	
Dimension	136.5*85*18mm	
Weight	165g	
USB-Type A Port	Fast Charging Protocol	/
	Output Power	⩽10W±2W（2A@5V）
Accuracy	Photovoltaic Voltage	<±1500mV
	Battery Voltage	<±150mV
	Charging Current	10%
	Load Current	3%
Hardware Protection Function	Battery Reverse Connection Protection, PV Reverse Connection Protection, USB Output Overload Protection	
Power Consumption	Standby Power Consumption：<16mA	
Operating Environment	Environment Temperature：-20°C~75°C Environment Humidity：5%RH~90%RH	
Protection Class	IP32	

VI. Technical Support

1) Customer service email:

E-mail:customer. service@eco-worthy.com

2) Company address: USA/Germany

Address(US): 10920 W Sam Houston Pkwy N, Suite 700, Houston, TX77064

Address(DE): ECO-Worthy Europe GmbH Otto-Hahn-Str. 20 61381 Friedrichsdorf - Köppern Germany

3) Customer service telephone numbers:

Tel(US&CA): 1-866-939-8222

Tel(UE): +49 6175 6514 999

Tel(UK): +44 7553 406988

Note:

Customer Service Hours:

US: Mon-Fri 8:30 AM - 6:00 PM (CST)

UK: Mon-Fri 9 AM - 5 PM(GMT)

DE: Mon-Fri 9 AM - 5 PM(CET)

If you cannot get through by phone, please send us an email.

4) Official website address:

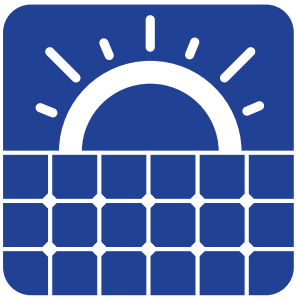
Web: https://www.eco-worthy.com/

5) Official social media:

Facebook: https://www.facebook.com/ecoworthy.store/

Youtube: @ecoworthy

Tiktok: https://www.tiktok.com/@eco_worthy



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FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm distance between the radiator and your body: Use only the supplied antenna.