

ECO-WORTHY L03APDMPPT15ADZ-1

ECO-WORTHY MPPT 15A Solar Charge Controller User Manual

Model: L03APDMPPT15ADZ-1

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your ECO-WORTHY MPPT 15A Solar Charge Controller. This device is designed to optimize power harvesting from your solar panels to efficiently charge various battery types in 12V or 24V systems. It features high tracking and conversion efficiency, multi-battery compatibility, and integrated Bluetooth and RS485 communication for remote monitoring.

2. SAFETY INSTRUCTIONS

- Ensure all wiring is correctly connected and securely fastened to prevent loose connections, which can cause excessive heat.
- Always connect the battery to the charge controller first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- Wear appropriate personal protective equipment, including eye protection, when working with batteries and electrical systems.
- Ensure the system voltage does not exceed the controller's maximum input voltage.

3. PACKAGE CONTENTS

Verify that all items are present in your package:

- 1x ECO-WORTHY MPPT 15A Solar Charge Controller

- 1x 1.5m Temperature Sensor
- 1x Bluetooth Module (Version 2.0)
- 5x M4 x 30mm Screws
- 5x M6 x 30mm Expansion Screws
- 1x User Manual (English/German)

4. PRODUCT OVERVIEW

Familiarize yourself with the components and interfaces of your MPPT solar charge controller.

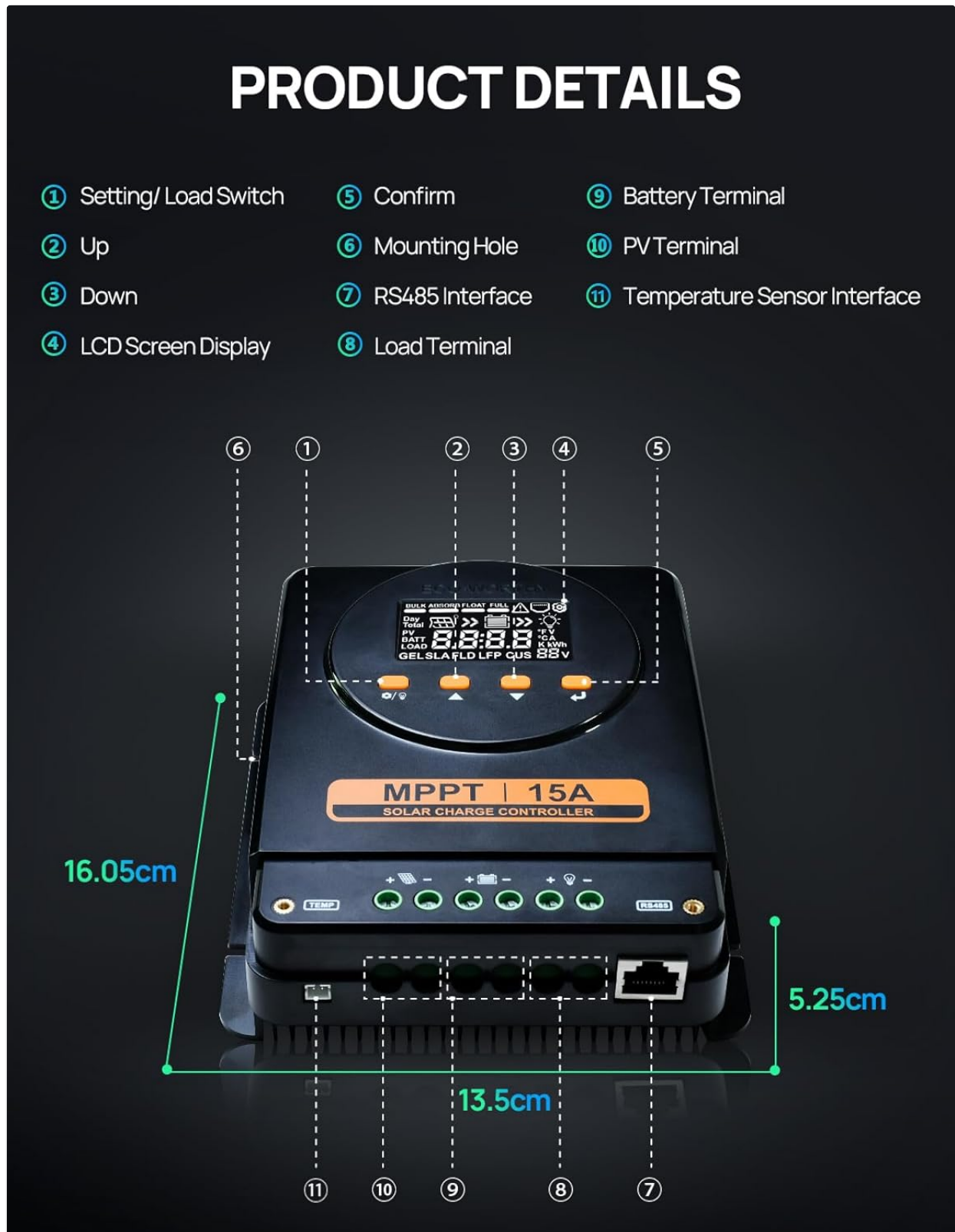


Figure 4.1: ECO-WORTHY MPPT 15A Solar Charge Controller with labeled parts and dimensions (16.05cm x 13.5cm x 5.25cm).

1. Setting/Load Switch Button
2. Up Button
3. Down Button
4. LCD Screen Display
5. Confirm Button
6. Mounting Hole
7. RS485 Interface
8. Load Terminal
9. Battery Terminal
10. PV Terminal (Solar Panel Input)
11. Temperature Sensor Interface

5. SETUP AND INSTALLATION

Follow these steps for a quick and correct installation of your solar charge controller. The controller automatically detects 12V or 24V system voltage.

3-STEP CONNECTION

Setup in 5 Minutes

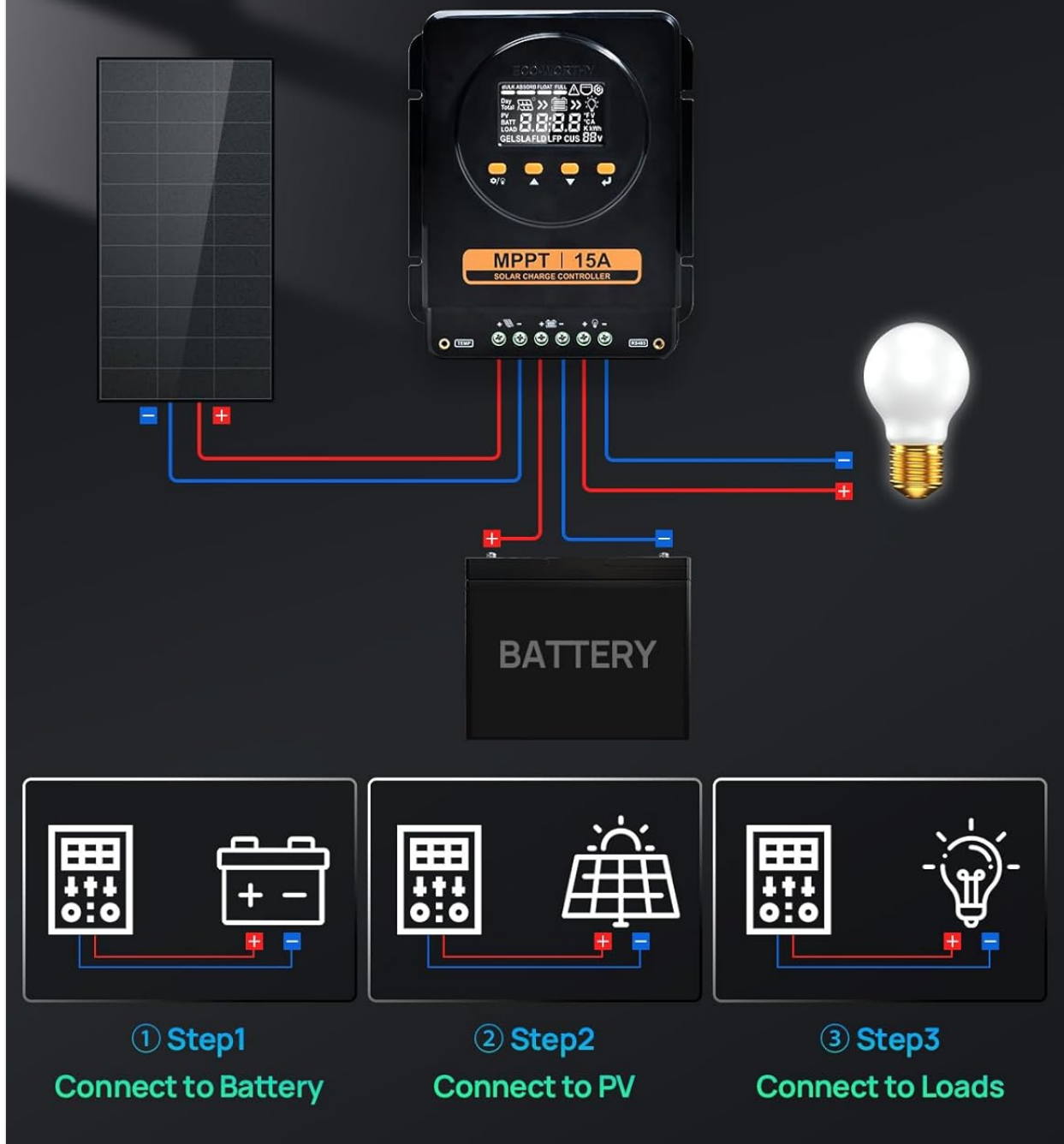


Figure 5.1: 3-Step Connection Process.

1. **Connect to Battery:** Connect the battery to the controller's battery terminals (9). Ensure correct polarity (+ to + and - to -). This step must be done first.
2. **Connect to PV (Solar Panel):** Connect the solar panel to the controller's PV terminals (10). Ensure correct polarity.
3. **Connect to Loads:** Connect your DC loads to the controller's load terminals (8). Ensure correct polarity.

Important Considerations:

- Mount the controller vertically on a wall or flat surface to ensure proper heat dissipation.
- Use appropriate wire gauges for all connections to minimize voltage drop and ensure safety.
- Connect the included temperature sensor (11) to the battery for accurate temperature compensation during charging.



Figure 5.2: Example of an off-grid system setup with the ECO-WORTHY MPPT controller.

6. OPERATING INSTRUCTIONS

6.1. LCD Display

The high-resolution LCD screen (4) provides real-time information about the system's status and any error messages.



Figure 6.1: LCD Display Information.

- **Operating Status:** Indicates current charging mode (Bulk, Absorb, Float, Full) and system activity.
- **Fault Information:** Displays error codes or warnings if any issues are detected.
- **Voltage Data:** Shows PV (solar panel) voltage, battery voltage, and load voltage.
- **Battery Type:** Indicates the currently selected battery type (GEL, SLA, FLD, LFP, CUS).
- **Other Data:** Includes Day/Total energy, current (A), and kilowatt-hours (KWh).

6.2. Button Functions

- **Setting/Load Switch (1):** Press to cycle through display screens or enter settings mode.
- **Up (2) / Down (3):** Navigate through menu options or adjust parameter values in settings mode.
- **Confirm (5):** Confirm selections or save settings.

6.3. Battery Type Selection

The controller is compatible with various battery types. It is crucial to select the correct battery type for optimal charging and battery longevity.



Figure 6.2: Multi-voltage and Multi-battery Compatibility.

To change the battery type:

1. Press the Setting/Load Switch button (1) until the battery type setting is displayed.
2. Use the Up (2) or Down (3) buttons to select your battery type: GEL, SLA (Sealed Lead Acid), FLD (Flooded), LFP (Lithium Iron Phosphate), or CUS (User-defined).
3. Press the Confirm button (5) to save your selection.

6.4. Smart 3-Stage Charging

The controller employs a 3-stage charging algorithm to extend battery life and optimize performance:



Figure 6.3: Battery Health Features.

- **Bulk Charge:** Charges the battery at maximum current until voltage rises to the absorption level.
- **Uniform Charge (Equalization):** Applies a controlled overcharge to flooded batteries to balance cell voltage and remove sulfation. (Not applicable to GEL/SLA/LFP).
- **Float Charge:** Maintains the battery at a full state of charge by providing a very low current.

6.5. Bluetooth Monitoring

The integrated Bluetooth module allows for remote monitoring and control via a smartphone application.

BLUETOOTH CONTROL & MONITOR



APP
Monitoring



APP
Control



Works up to 30-40m
away (Barrier-free)



MPPT | 15A
SOLAR CHARGE CONTROLLER



BW02
Bluetooth & Wifi Module



Note: No need to buy additional accessories, real-time data transmission

Figure 6.4: Bluetooth Control and Monitoring.

1. Download the ECO-WORTHY monitoring application from your smartphone's app store.

2. Ensure the Bluetooth module is connected to the controller's RS485 interface (7).
3. Open the app and search for available devices. Connect to your controller.
4. You can now monitor battery status, charging parameters, and adjust settings remotely within a 10-40 meter range.

7. MAINTENANCE

Regular maintenance ensures optimal performance and longevity of your solar charge controller.

- **Cleaning:** Periodically clean the controller's exterior with a dry cloth to remove dust and debris. Ensure ventilation openings are clear.
- **Connection Checks:** Annually inspect all wiring connections for tightness and corrosion. Re-tighten if necessary.
- **Performance Monitoring:** Regularly check the LCD display or use the Bluetooth app to monitor system performance. Note any unusual readings or error messages.
- **Battery Inspection:** Inspect batteries for any signs of damage, leakage, or corrosion. Ensure battery terminals are clean.

8. TROUBLESHOOTING

This section addresses common issues you might encounter with your solar charge controller.

Problem	Possible Cause	Solution
Controller display is off	No power from battery or solar panel; incorrect wiring.	Check battery and solar panel connections and polarity. Ensure battery voltage is above minimum operating voltage.
Battery not charging	Solar panel not connected; insufficient sunlight; faulty solar panel; incorrect battery type setting.	Verify solar panel connection. Check solar panel output voltage. Ensure adequate sunlight. Confirm correct battery type is selected.
Load not working	Load disconnected; overload; short circuit; low battery voltage.	Check load connections. Reduce load if overloaded. Inspect for short circuits. Allow battery to charge.
Error code displayed	Specific system fault (e.g., over-voltage, over-current, high temperature).	Refer to the detailed error code list in the full user manual (if provided) or contact customer support with the specific code.

9. SPECIFICATIONS

Technical specifications for the ECO-WORTHY MPPT 15A Solar Charge Controller:

MAXIMUM YOUR ENERGY UTILIZATION

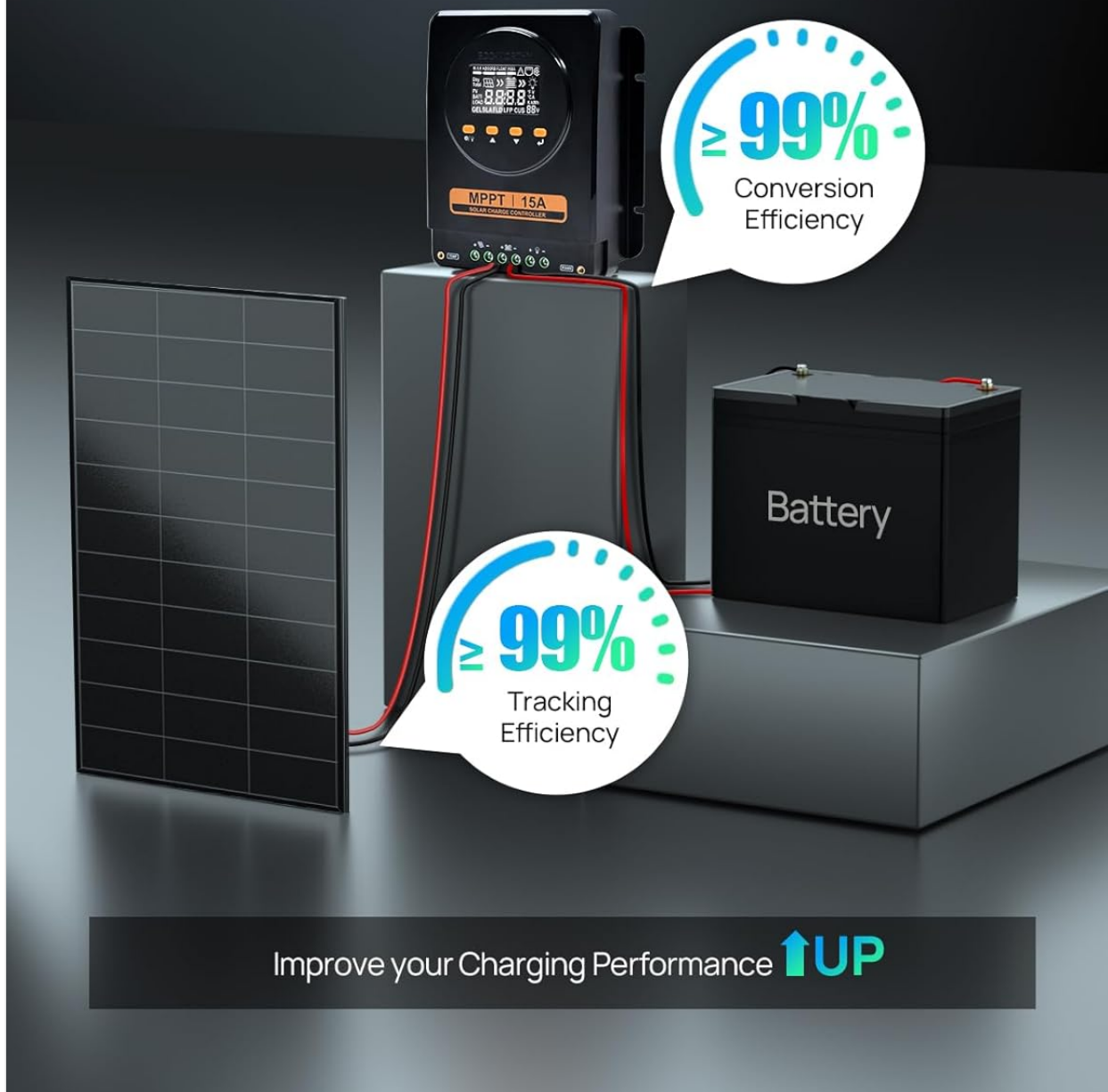


Figure 9.1: High Efficiency Performance.

- **Model:** L03APDMPPT15ADZ-1
- **Rated Charge Current:** 15A
- **System Voltage:** 12V/24V Auto-detection
- **MPPT Tracking Efficiency:** $\geq 99\%$
- **Peak Conversion Efficiency:** $\geq 99\%$
- **Battery Compatibility:** GEL, SLA (Sealed Lead Acid), FLD (Flooded), LFP (Lithium Iron Phosphate), CUS (User-defined)

- **Display Type:** LCD
- **Communication Interfaces:** Bluetooth (integrated), RS485 (integrated)
- **Dimensions (L x W x H):** 16.05 x 13.5 x 5.25 cm
- **Manufacturer:** ECO-WORTHY
- **UPC:** 810198850901

10. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please contact ECO-WORTHY customer service through their official website or the retailer where the product was purchased. Please have your model number (L03APDMPPT15ADZ-1) and purchase details ready when contacting support.