OOYCYOO EC60A

OOYCYOO 60A MPPT Solar Charge Controller User Manual

Model: EC60A

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the OOYCYOO 60A MPPT Solar Charge Controller, Model EC60A. This device is designed to efficiently manage power flow from solar panels to various battery types, including 12V, 24V, 36V, and 48V systems.

Please read this manual thoroughly before installation and operation to ensure proper function and safety.

2. Key Features

- **60A MPPT Charging:** Utilizes Maximum Power Point Tracking technology for efficient solar energy conversion.
- **Multi-Stage Charging:** Features a 4-stage battery charging algorithm (Bulk Charge, Boost Charge, Float Charge, Equalization) for optimal battery health.
- **Wide Voltage Support:** Automatically detects and supports 12V, 24V, 36V, and 48V battery systems.
- **High PV Input:** Supports solar panel open circuit voltage up to 160VDC and input power up to 2800W (for 48V systems).
- **Battery Compatibility:** Compatible with various battery types including AGM, Gel, Flooded, and Lithium (LFP), with pre-set and user-defined charging parameters.
- **High Efficiency:** Tracking efficiency not less than 98.1% and peak conversion efficiency up to 98%.
- **Advanced Protection:** Includes PV over current/power, PV short circuit, PV reverse polarity, night reverse charging, battery reverse polarity, over voltage, over discharge, overheating, lithium battery low temperature, load short circuit, load overload, and TVS high voltage transients.
- **LCD Display:** Integrated blacklight LCD for monitoring system status, including KWH charge amount.
- **Efficient Cooling:** Die-cast aluminum construction with built-in cooling fan for effective heat dissipation.

3. Safety Instructions

Please observe the following safety precautions during installation and operation:

- Ensure all connections are correct and secure before applying power.
- Always connect the battery first, then the solar panel, and finally the load. Disconnect in reverse order.

- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- Wear appropriate personal protective equipment (PPE) when working with electrical systems.
- Ensure the system voltage does not exceed the controller's maximum input voltage (160VDC).

4. Product Overview

The OOYCYOO 60A MPPT Solar Charge Controller features a robust design with an intuitive LCD display and clearly labeled terminals for easy connection.

Figure 4.1: Front view of the OOYCYOO 60A MPPT Solar Charge Controller, showing the LCD display, control buttons, and terminal connections.

Figure 4.2: Detailed view of the controller highlighting the LCD display, control buttons (SET, A, B, C, D), 5-second reset function, and clearly marked Solar Panel, Battery, and Load terminals.

4.1. Components and Interface

- **LCD Display:** Shows real-time system parameters such as PV input voltage, battery voltage, load output, and charging status.
- **Control Buttons (A, B, C, D, SET):** Used for navigating menus, adjusting settings, and confirming selections.
- **Solar Panel Terminals:** Connect positive and negative leads from the solar array.
- **Battery Terminals:** Connect positive and negative leads to the battery bank.
- **Load Terminals:** Connect positive and negative leads to DC loads.

5. Installation and Setup

5.1. Mounting the Controller

Mount the controller vertically on a wall or a stable surface in a dry, well-ventilated indoor location. Ensure adequate clearance around the unit for proper airflow and heat dissipation. Avoid direct sunlight, high temperatures, and humid environments.

Figure 5.1: Dimensions of the OOYCYOO 60A MPPT Solar Charge Controller, showing approximate measurements of 14cm (5.5in) width, 5.5cm (2.2in) depth, and 23cm (9.1in) length.

5.2. Wiring Sequence

Follow this wiring sequence carefully to prevent damage to the controller or other components:

1. **Connect the Battery:** Connect the positive and negative terminals of the battery to the corresponding battery terminals on the controller. Ensure correct polarity. The controller will automatically detect the battery voltage (12V/24V/36V/48V).
2. **Connect the Solar Panel:** Connect the positive and negative leads from the solar panel array to the corresponding PV input terminals on the controller. Ensure correct polarity.
3. **Connect the DC Load (Optional):** Connect the positive and negative leads of your DC load to the corresponding load terminals on the controller.

Important: Always connect the battery first and disconnect the solar panel first when disassembling the system.

Figure 5.2: Illustrative wiring diagram showing connections from solar panels to the controller, then to the battery, and finally to DC and AC loads via an inverter. This diagram also shows the possibility of connecting two 60A controllers in parallel for increased capacity.

5.3. System Voltage and Power Configuration

The controller automatically identifies the battery system voltage. Ensure your solar panel array's open circuit voltage (Voc) and maximum input power are within the specified limits for your battery system:

Battery System	Max. PV Open Circuit Voltage (Voc)	Max. PV Input Power
12V	≤72V	720W
24V	≤108V	1440W
36V	≤144V	2100W
48V	≤160V	2800W

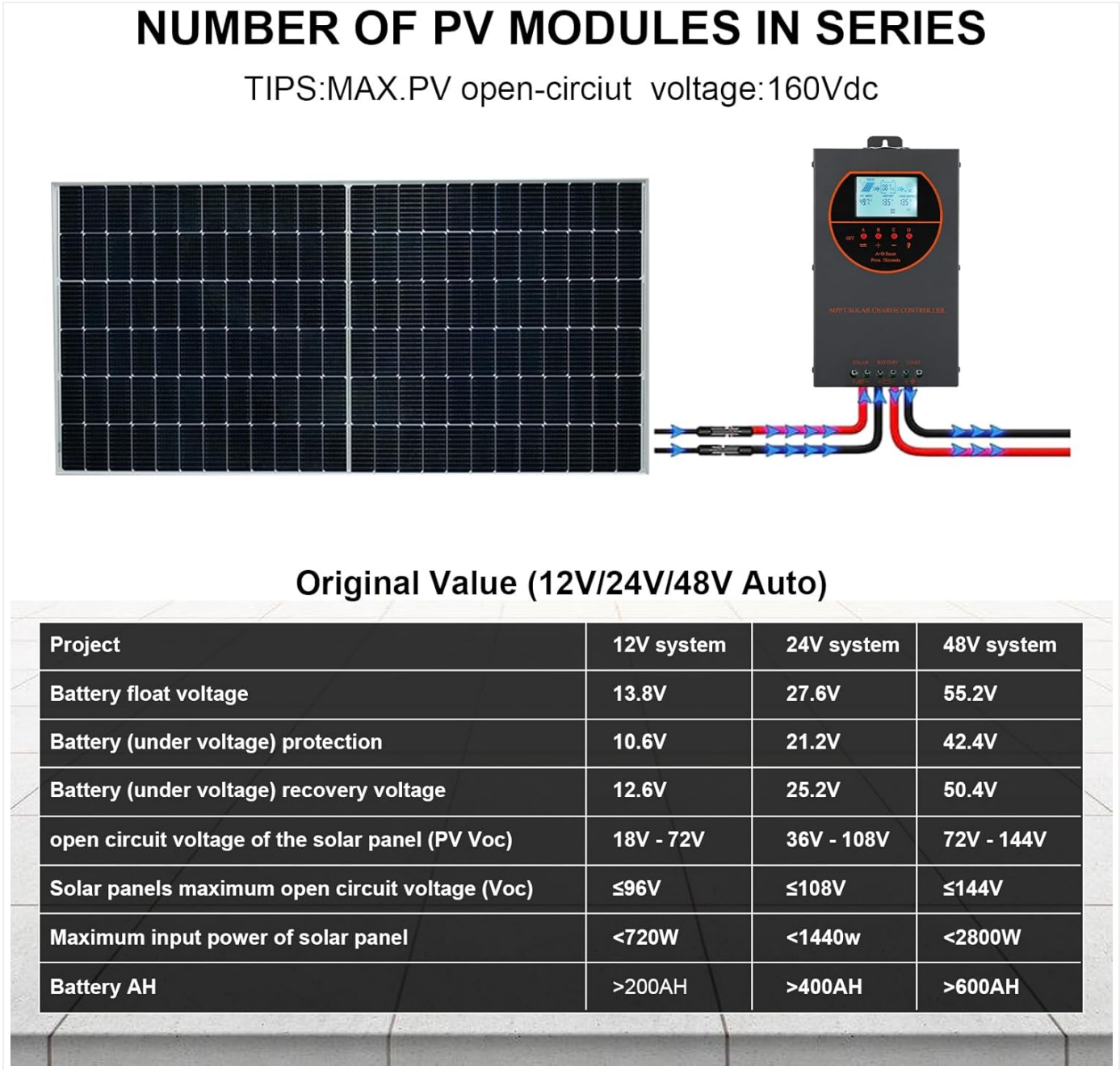

Figure 5.3: Diagram illustrating the connection of multiple PV modules in series to the controller, with a table detailing recommended system parameters for 12V, 24V, and 48V systems, including battery float voltage, under voltage protection, recovery voltage, and maximum input power.

6. Operation

6.1. LCD Display and Indicators

The LCD display provides real-time information about the solar charging system. Key indicators include:

- **PV Input:** Displays the current voltage and power from the solar panels.
- **Battery:** Shows the current battery voltage and charging status.
- **Load Output:** Indicates the status of the DC load output.
- **KWH:** Displays the total accumulated charge in kilowatt-hours.

6.2. Battery Type Selection

The controller is compatible with various battery types. You can select the appropriate battery type through the controller's settings menu to ensure optimal charging. Supported types include:

- GEL
- AGM
- USER (user-defined parameters)
- SEL (Sealed)
- FLD (Flooded)
- LI (Lithium)
- LiFePO4

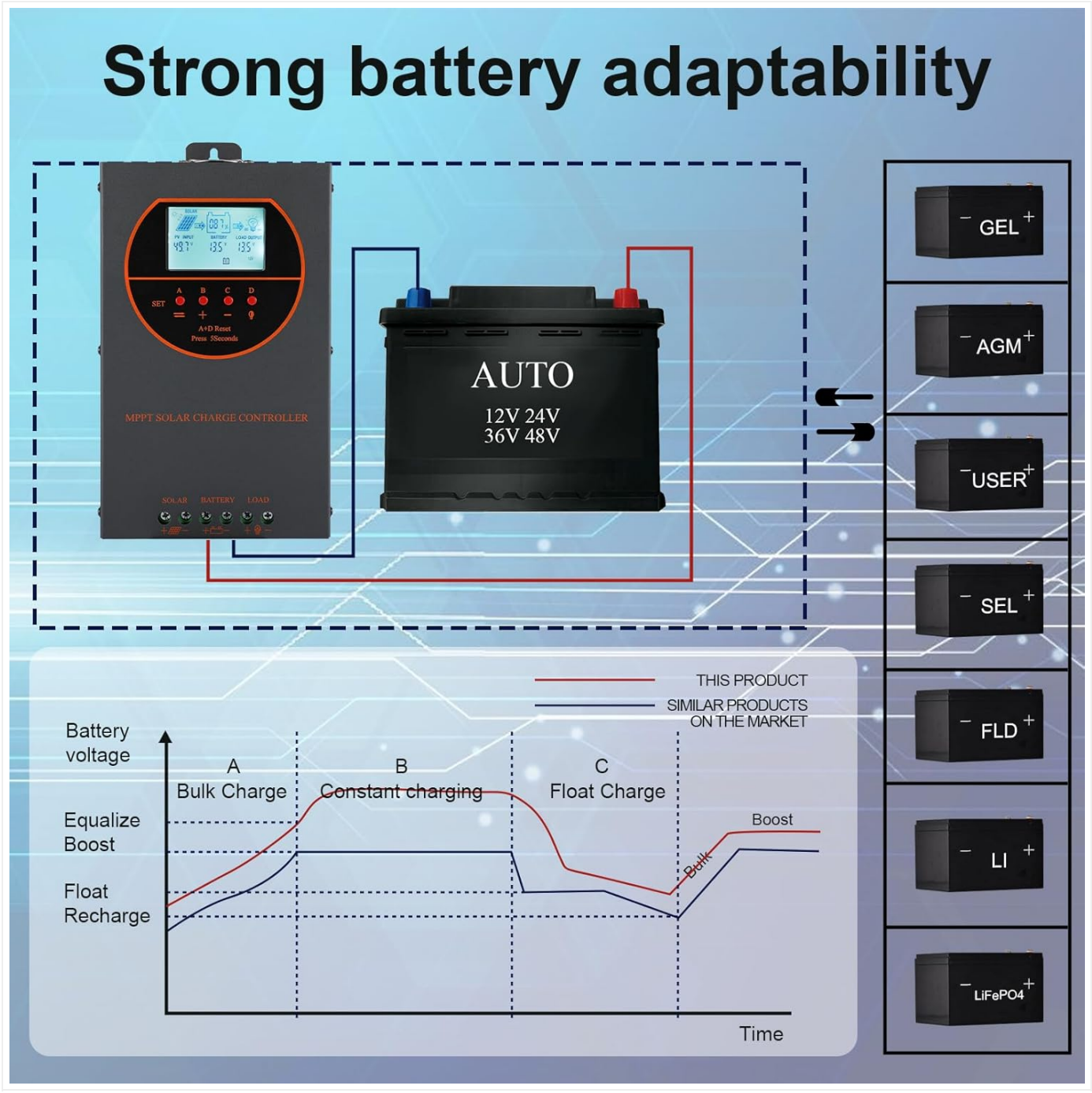

Figure 6.1: Diagram illustrating the controller's strong adaptability to various battery types (GEL, AGM, USER, SEL, FLD, LI, LiFePO4) and a graph showing the 4-stage charging process: Bulk Charge, Constant Charging (Boost), and Float Charge.

6.3. Charging Algorithm

The controller employs a 4-stage charging algorithm to maximize battery life and performance:

1. **Bulk Charge:** Delivers maximum current to rapidly charge the battery to approximately 80% capacity.

2. **Boost Charge:** Charges the battery at a higher voltage to ensure full charge and equalization.
3. **Float Charge:** Maintains the battery at a safe voltage to prevent self-discharge and overcharging.
4. **Equalization:** Periodically overcharges flooded batteries to balance cell voltages and prevent sulfation. (Applicable to flooded batteries only, if enabled).

7. Maintenance

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

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion.
- **Clean Controller:** Keep the controller clean and free from dust. Use a dry cloth to wipe the exterior. Ensure ventilation openings are not obstructed.
- **Monitor Performance:** Regularly check the LCD display for normal operating parameters. Note any unusual readings.
- **Battery Inspection:** Inspect batteries for any signs of damage, leakage, or corrosion. Clean battery terminals as needed.

8. Troubleshooting

This section addresses common issues you might encounter with the OOYCYOO 60A MPPT Solar Charge Controller.

8.1. Common Issues and Solutions

Problem	Possible Cause	Solution
No display/Controller not powering on	Battery not connected or low voltage; reverse polarity.	Check battery connections and voltage. Ensure correct polarity. Charge battery if voltage is too low.
No solar charging	Solar panel not connected; reverse polarity; low sunlight; PV over-voltage/current.	Check solar panel connections and polarity. Ensure sufficient sunlight. Verify PV voltage and current are within limits.
Load not working	Load not connected; load short circuit; overload; battery low voltage.	Check load connections. Inspect for short circuits or overloads. Ensure battery has sufficient charge.
Controller overheating	Poor ventilation; excessive load/PV input.	Ensure adequate airflow around the controller. Reduce load or PV input if consistently overheating.

8.2. Protection Functions

The controller includes multiple protection features to safeguard the system:

- PV Over Current/Power
- PV Short Circuit
- PV Reverse Polarity
- Night Reverse Charging
- Battery Reverse Polarity
- Battery Over Voltage
- Battery Over Discharge
- Battery Overheating, Controller Overheating

- Lithium Battery Low Temperature
- Load Short Circuit
- Load Overload
- TVS High Voltage Transients

Figure 8.3: Visual representation of the multiple protection features integrated into the controller, including low voltage, overheat, short circuit, reverse protection, overload, and overcurrent protection.

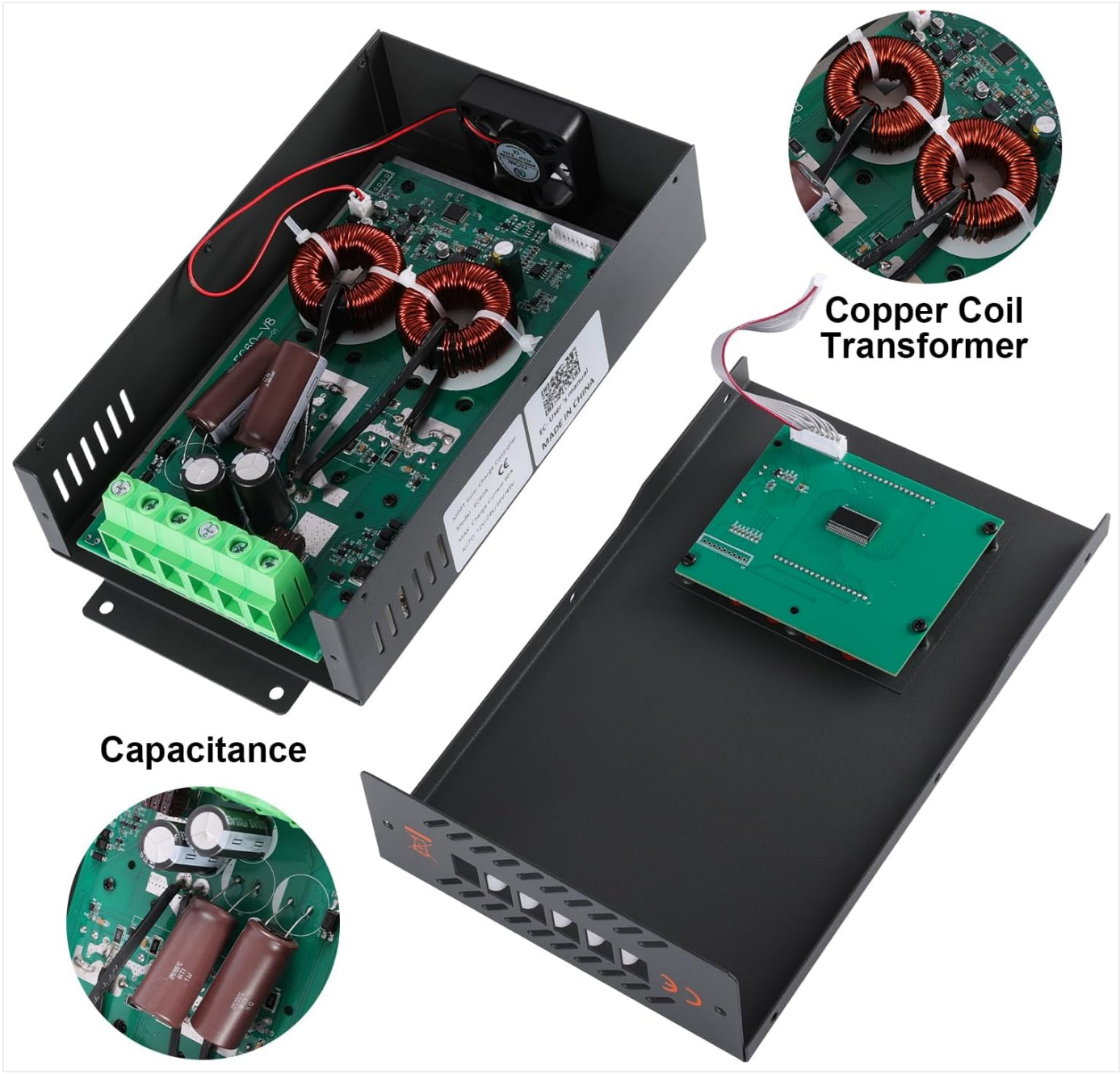

Figure 8.4: Internal view of the controller, highlighting key components such as copper coil transformers and capacitors, which contribute to its robust performance and protection features.

9. Technical Specifications

Parameter	Specification
Rated Charge Current	60A
System Nominal Voltage	12V/24V/36V/48V DC Auto Identifying
Battery Voltage Range	9V~55V
Max. PV Open Circuit Voltage	160VDC
Max. PV Input Power (12V System)	720W
Max. PV Input Power (24V System)	1440W

Parameter	Specification
Max. PV Input Power (36V System)	2100W
Max. PV Input Power (48V System)	2800W
Power Terminal	6-12 AWG
Dimensions (L*W*H)	11 x 6 x 2.5 inches (approx. 27.9 x 15.2 x 6.3 cm)
Weight	4.07 pounds (approx. 1.8 kg)
Tracking Efficiency	≥98.1%
Peak Conversion Efficiency	Up to 98%
Cooling	Die-cast aluminum housing, built-in cooling fan
Battery Types Supported	AGM, Gel, Flooded, Lithium (LFP), Sealed, User-defined
Material	Aluminum
Item Model Number	EC60A
UPC	750864834470

10. Support and Contact

For technical support, warranty claims, or further assistance, please contact OOYCYOO customer service through the retailer where the product was purchased or visit the official OOYCYOO store on Amazon:

OOYCYOO Amazon Store

Related Documents - EC60A

OOYCYOO™ MPPT Solar power generation system controller	OOYCYOO MPPT Solar Power Generation System Controller User Manual This document provides comprehensive instructions and technical specifications for the OOYCYOO MPPT Solar Power Generation System Controller. Learn about installation, parameter settings, protection features, and system wiring for optimal solar energy utilization.

	[Ooycyoo MPPT 'P' Series 40A/60A Solar Charge Controller User Manual](#) Explore the Ooycyoo MPPT 'P' Series 40A/60A Solar Charge Controller. This user manual details advanced MPPT technology, features like real-time display, USB charging, and multi-stage battery charging, along with essential safety and installation guidance for solar energy systems.