

SUNNYSKY MPPT-60AI

SUNNYSKY MPPT-60AI Solar Charge Controller User Manual

Model: MPPT-60AI

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your SUNNYSKY MPPT-60AI Solar Charge Controller. Please read it thoroughly before installation and use. This controller is designed to optimize power harvesting from solar panels to charge various battery types, including Sealed, Gel, Flooded, and Lithium batteries, across 12V, 24V, 36V, and 48V systems.



Figure 1.1: Front view of the SUNNYSKY MPPT-60AI Solar Charge Controller.

Video description: An overview of the SUNNYSKY MPPT Solar Charge Controller, highlighting its design and key features.

Video 1.1: Overview of the SUNNYSKY MPPT Solar Charge Controller.

2. IMPORTANT SAFETY INFORMATION

Observe the following safety precautions during installation and operation:

- PV reverse polarity protection
- PV short circuit protection
- PV over current alarm protection
- Battery overcharge protection
- Battery over discharge protection

- Battery reverse polarity protection
- Load short circuit protection
- Load overload protection
- Controller overheating protection

Always ensure proper wiring and adhere to local electrical codes to prevent damage or injury.

3. PRODUCT FEATURES

- **System Voltage Auto-Identification:** Automatically detects 12V/24V/48V system voltages.
- **High PV Input Voltage:** Supports a maximum PV input voltage of 170V.
- **Wide MPPT Working Range:** Optimal MPPT voltage ranges: DC18V-DC120V (12V system), DC30V-DC120V (24V system), DC65V-DC150V (48V system).
- **Battery Compatibility:** Compatible with Lead-acid (Sealed, AGM, Gel, Flooded) and Lithium batteries. Parameters can be set for specific lithium battery characteristics.
- **Efficient Tracking:** Maximum Power Point Tracking (MPPT) rate $\geq 99\%$, maximum conversion rate $> 98\%$.
- **Power & Current Limiting:** Auto control system limits charging power and current to prevent exceeding rated values.
- **Display & Monitoring:** Features an LCD display to show daily power generation and current curves.

4. PACKAGE CONTENTS

Upon opening the package, verify that all items are present and undamaged:

- SUNNYSKY MPPT-60AI Solar Charge Controller
- User Manual
- Mounting Brackets and Screws
- Temperature Sensor Cable
- Communication Cable (if included with specific model)



Figure 4.1: SUNNYSKY MPPT-60AI Solar Charge Controller and accessories.



Figure 4.2: Product packaging.

5. SETUP AND INSTALLATION

5.1. Mounting the Controller

Choose a suitable, well-ventilated location away from direct sunlight and high temperatures. Ensure adequate clearance around the unit for proper airflow. Use the provided mounting brackets and screws to

securely attach the controller to a vertical surface.

5.2. Wiring Connections

Follow the wiring sequence carefully to avoid damage:

1. Connect the battery cables to the controller first. Ensure correct polarity (positive to positive, negative to negative).
2. Connect the solar panel cables to the controller. Ensure correct polarity.
3. Connect any DC load devices to the load terminals.

Always connect the battery before the solar panels. Reverse polarity can damage the controller.



Figure 5.1: Connection terminals for solar, battery, and load.

Video description: Demonstrates the charging status page of the Sunnysky Solar MPPT Charge Controller, showing real-time data.

Video 5.1: Sunnysky Solar MPPT Charge Controller charging status page.

6. OPERATING INSTRUCTIONS

6.1. LCD Display and Navigation

The LCD display provides real-time information about your solar system. Use the MENU, UP, DOWN, and ENTER buttons to navigate through the display screens and adjust settings.

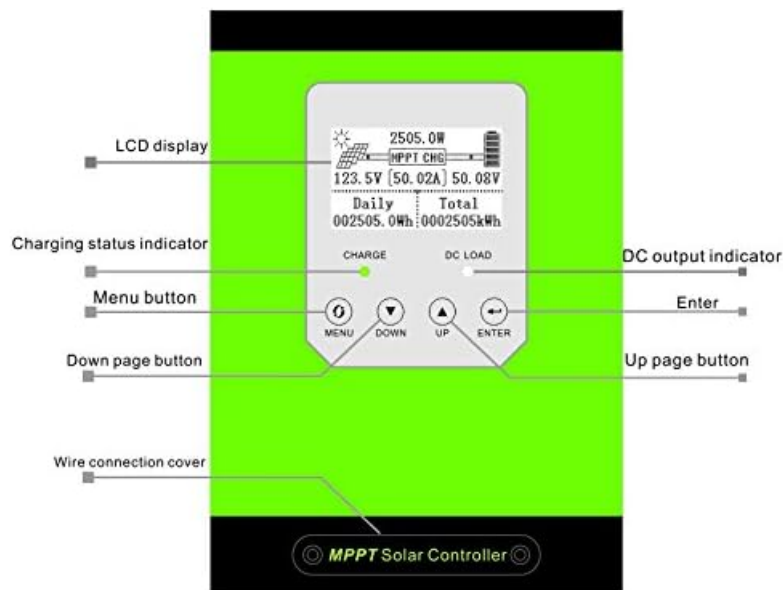


Figure 6.1: LCD display and button functions.

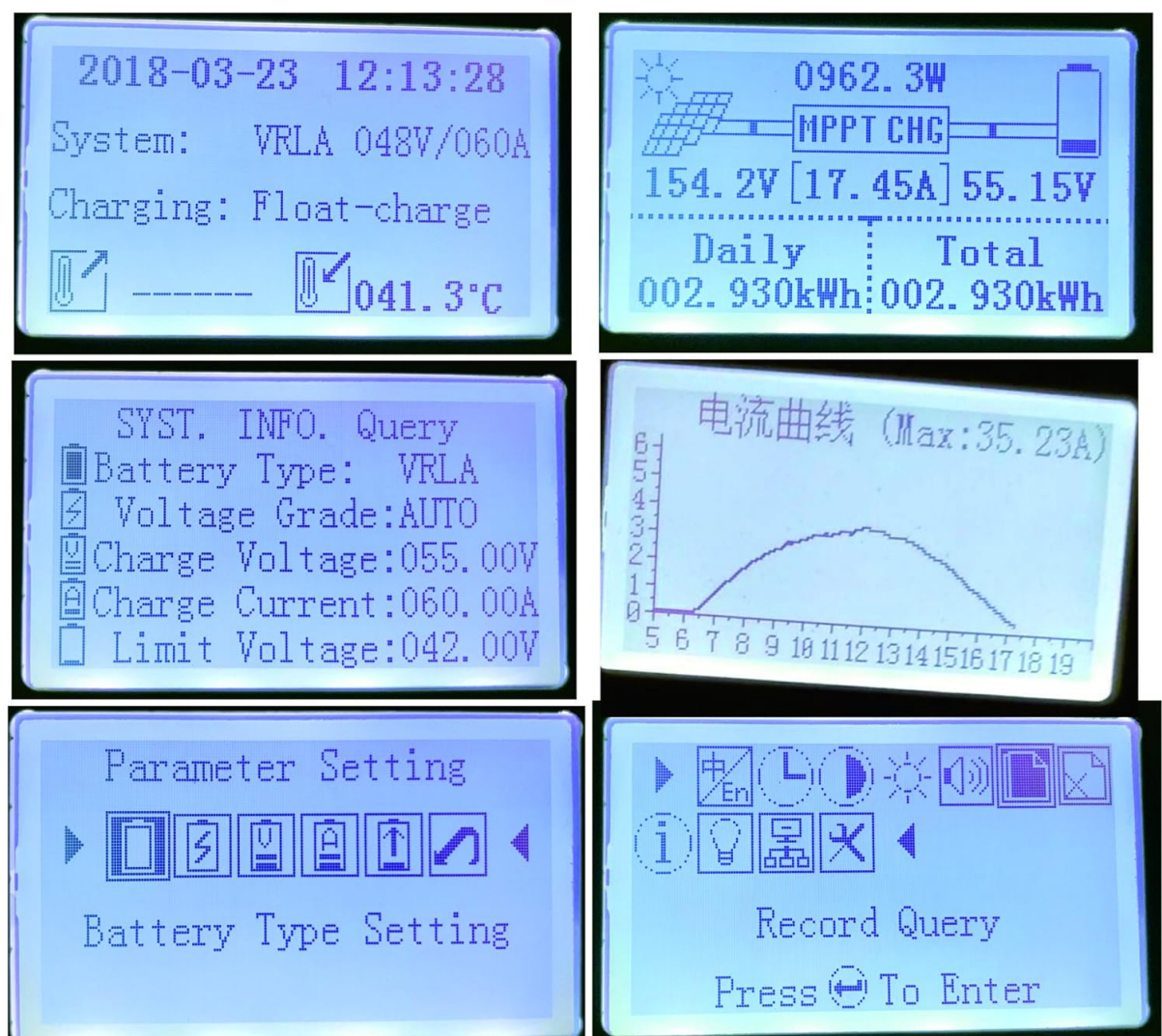


Figure 6.2: Examples of LCD display content.

Video description: A demonstration of the various display contents available on the Sunnysky Solar MPPT Solar Controller.

6.2. Battery Type Settings

The controller supports various battery types. It is crucial to select the correct battery type in the settings to ensure optimal charging and prolong battery life. For Lithium batteries, specific parameters can be adjusted.

6.3. Load Control

The controller features DC load output. You can manage the load settings through the display interface.

Video description: Illustrates the current and power curve of the MPPT solar controller during operation.

Video 6.2: MPPT solar controller current and power curve.

7. MAINTENANCE

- Regularly inspect all wiring connections for tightness and corrosion.
- Keep the controller clean and free from dust and debris.
- Ensure proper ventilation around the unit to prevent overheating, especially during high power operation.
- Monitor the LCD display for any error codes or unusual readings.

8. TROUBLESHOOTING

If you encounter issues, refer to the following common problems and solutions:

- **LCD does not light up:** Check battery connections and ensure the battery voltage is within the operating range.
- **No charging:** Verify solar panel connections, ensure sufficient sunlight, and check for any PV over-current or reverse polarity warnings.
- **Load not working:** Check load connections, ensure the load is not overloaded, and verify load settings on the controller.
- **Overheating:** Ensure adequate ventilation and clear any obstructions around the cooling fins.

Video description: A comparison video highlighting differences between the SUNNYSKY controller and other controllers, potentially useful for understanding performance characteristics.

Video 8.1: Comparison of SUNNYSKY controller and other controllers.

9. SPECIFICATIONS

Feature	Value
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Model Number	MPPT-60AI
Brand	SUNNYSKY
Current Rating	60A
System Voltage	12V/24V/36V/48V Auto
Max PV Input Voltage	170V
MPPT Best Working Voltage Range (12V)	DC18V-DC120V
MPPT Best Working Voltage Range (24V)	DC30V-DC120V
MPPT Best Working Voltage Range (48V)	DC65V-DC150V
Max PV Input Power (12V)	840W
Max PV Input Power (24V)	1700W
Max PV Input Power (36V)	2500W
Max PV Input Power (48V)	3400W
Battery Types Supported	Sealed, AGM, Gel, Flooded, Lithium
Display Type	LCD
Operating Temperature	25 Degrees Celsius (optimal)
Product Dimensions	9.84 x 2.95 x 7.09 inches
Item Weight	5.72 pounds (2.6 Kilograms)
Material	Plastic And Metal

10. WARRANTY AND SUPPORT

For warranty information and customer support, please refer to the official SUNNYSKY store or contact their customer service directly. Keep your purchase receipt for warranty claims.


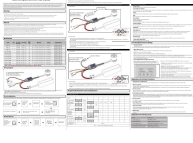
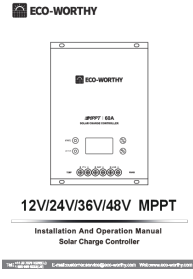
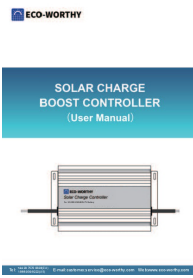

Visit the official SUNNYSKY Store: [SUNNYSKY Solar Store](#)

Related Documents - MPPT-60AI



[SunnySky 50A Lite V2 and 50A Pro V2 ESC Instruction Manual](#)

Instruction manual for SunnySky 50A Lite V2 and 50A Pro V2 Electric Speed Controllers (ESCs). Covers features, specifications, operation, calibration, troubleshooting, and contact information for UAV applications.

	<p>SUNNYSKY Brushless ESC User Manual</p> <p>Comprehensive user manual for SUNNYSKY Brushless Electronic Speed Controllers (ESCs), detailing features, specifications, connection diagrams, setup procedures, parameter settings, and protection functions for both fixed-wing and helicopter applications. Learn how to calibrate, configure, and maintain your ESC for optimal performance.</p>
	<p>SUNNYSKY Electronic Speed Controller (ESC) User Manual</p> <p>User manual for SUNNYSKY Electronic Speed Controllers (ESC), detailing features, specifications, programming, calibration, and protection functions for RC aircraft.</p>
	<p>ECO-WORTHY 60A MPPT Solar Charge Controller Installation and Operation Manual</p> <p>This manual provides comprehensive instructions for the installation, operation, and maintenance of the ECO-WORTHY 60A MPPT Solar Charge Controller. It covers safety precautions, product features, installation steps, working principles, troubleshooting, and specifications for 12V, 24V, 36V, and 48V systems.</p>
	<p>ECO-WORTHY Solar Charge Boost Controller User Manual</p> <p>User manual for the ECO-WORTHY Solar Charge Boost Controller, detailing features, technical specifications, settings, installation, and troubleshooting for 24V/36V/48V/60V/72V battery systems, suitable for golf carts and off-grid power.</p>
	<p>PowMr POW-M60-PRO MPPT Solar Charge Controller User Manual</p> <p>This user manual provides comprehensive instructions for the PowMr POW-M60-PRO MPPT Solar Charge Controller, covering safety guidelines, installation procedures, operational modes, charging characteristics, protection features, troubleshooting, and detailed technical specifications for optimal solar energy system management.</p>