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> ELUSH 100A MPPT Solar Charge Controller User Manual

ELUSH 100A

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Model: 100A

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your ELUSH 100A MPPT Solar Charge Controller. This advanced controller is designed to efficiently manage power from your solar panels to your battery bank, ensuring optimal charging and system protection. It automatically recognizes 12V, 24V, 36V, and 48V systems and features dual USB 5V charging ports.



Figure 1.1: Front view of the ELUSH 100A MPPT Solar Charge Controller.

2. SAFETY INSTRUCTIONS

Please read all instructions carefully before installation and operation. Failure to follow these instructions may result in damage to the unit, personal injury, or property damage.

- Ensure all connections are secure and correct before powering on the system.
- 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.
- The controller provides comprehensive voltage protection, including safeguards against battery over-voltage, over-current, power failure, overcharge, deep discharge, reverse connection, and overheating.
- **Device Startup Reminder:** When connecting the equipment, first connect the rechargeable battery and ensure it has power. After successful startup, then connect the solar panel. This sequence ensures proper operation.

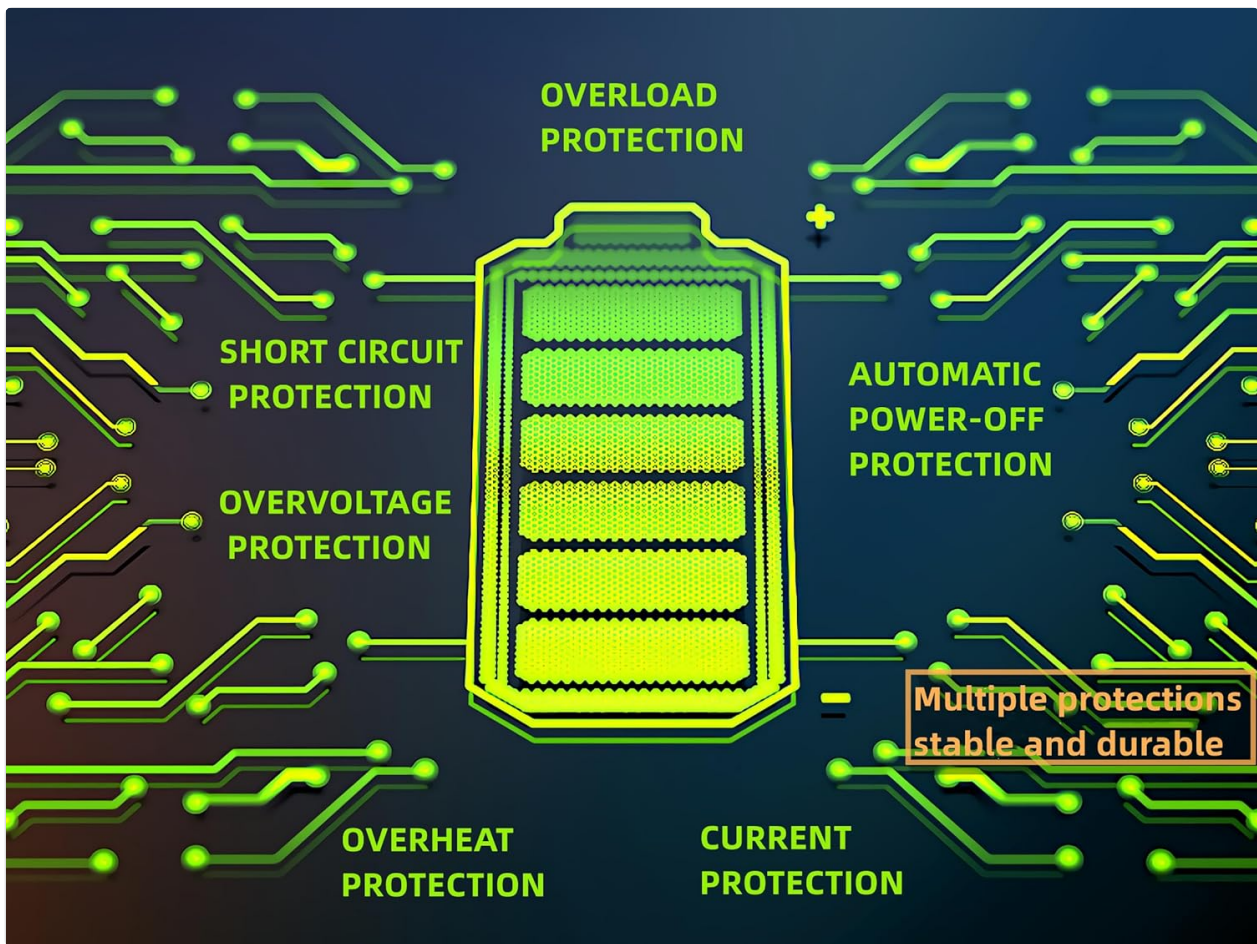


Figure 2.1: Built-in protection features for enhanced safety and durability.

3. PRODUCT FEATURES

The ELUSH MPPT Solar Charge Controller offers a range of features designed for efficient and reliable solar power management:

- **Superior MPPT Technology:** Equipped with an advanced Maximum Power Point Tracking algorithm, ensuring tracking efficiency of no less than 99.5% for enhanced energy utilization.
- **Automatic System Recognition:** Automatically recognizes 12V, 24V, 36V, and 48V battery systems.
- **Versatile Operating Modes:** Features seven operating modes including charging mode, light control mode, light control + time delay control mode, universal control mode, manual control mode, and timing control mode.
- **Multi-function LCD Display:** Dynamically displays operational data such as working mode, battery voltage, PV charging current, battery discharging current, product working temperature, and delay time.
- **Dual USB Ports:** Includes dual USB 5V charging ports for convenient device charging.
- **Broad Battery Compatibility:** Compatible with various battery types, including Sealed, GEL, Flooded, and LifePO4.



LCD display



Smart charge



Intelligent light control



Adjustable parameters



Double USB Output 5V



Energy-saving and environmentally friendly



Solar charge controller



Solar light Control Mode Sunset-Sunrise

Manual Mode

Solar Light Time Control

Sunset on
Sunset off

24H

Sunset discharge
Sunrise charging

Figure 3.1: Key features of the ELUSH Solar Charge Controller.



Figure 3.2: Detailed view of connection ports and heat dissipation design.

4. SETUP AND INSTALLATION

Follow these steps for proper installation of your solar charge controller:

1. **Prepare the Mounting Location:** Choose a dry, well-ventilated area, protected from direct sunlight and moisture. Ensure there is enough space around the controller for proper heat dissipation.
2. **Connect the Battery:** First, connect the positive and negative terminals of your battery to the corresponding battery terminals on the controller. Ensure the battery has sufficient charge to power the controller's display.
3. **Connect the Solar Panels:** Next, connect the positive and negative terminals of your solar panel array to the corresponding solar panel terminals on the controller.
4. **Connect the Load (Optional):** If you are connecting a DC load directly to the controller, connect its positive and negative terminals to the load terminals on the controller.
5. **Verify Connections:** Double-check all connections to ensure they are secure and correctly polarized.



Figure 4.1: Typical connection diagram for the solar charge controller.



Figure 4.2: Product dimensions for installation planning.

5. OPERATING INSTRUCTIONS

The controller's LCD display provides real-time information and allows for configuration of various settings.

5.1 LCD Display and Buttons

The LCD dynamically displays operational data. Use the buttons below the screen to navigate menus and adjust settings:

- **RESET:** Resets certain parameters or enters settings mode.
- **MENU:** Navigates through different display screens and settings.
- **UP/DOWN Arrows:** Adjust values or select options within menus.
- **ON/OFF:** Controls the DC load output.

5.2 Charging Modes

The controller supports a rapid, efficient, and safe battery charging algorithm with four stages:

- **Bulk Charge:** Initial stage where the battery receives maximum current.

- **Boost Charge:** Charges the battery to a higher voltage to ensure full charge.
- **Float Charge:** Maintains the battery at a constant voltage to prevent overcharging.
- **Equalization Charge:** Periodically overcharges the battery to balance cell voltages (for certain battery types).

Battery Voltage	12V/24V/36V/48V Auto
Charging Current	80A
Max Solar input(Voc)	15-25V(12V Battery);30-50V(24V Battery);45-75V(36V Battery);60-100V(48v Battery)
Maximum PV Input Power	960W(12V Battery);1920W(24V Battery);2880W(36V Battery);3840W(48V Battery)
USB Port	DC 5V/1.5A x 2 USB
Operating temperature	-25°C~55°C

Figure 5.1: Four-stage battery charging process.

5.3 Battery Type Selection

The controller is compatible with Sealed, GEL, Flooded, and LifePO4 batteries. Ensure you select the correct battery type in the settings for optimal charging and battery longevity.



Figure 5.2: Compatible battery types.

5.4 Application Scenarios

The ELUSH MPPT Solar Charge Controller is suitable for various applications, including:

- Residential solar power systems
- RV and marine solar setups
- Off-grid cabins and remote power solutions
- Portable solar power kits



Figure 5.3: Diverse application scenarios for the solar charge controller.

6. MAINTENANCE

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

- **Cleanliness:** Keep the controller clean and free from dust and debris. Use a dry, soft cloth for cleaning.
- **Connections:** Periodically check all wiring connections to ensure they are tight and free from corrosion. Loose connections can lead to power loss or overheating.
- **Ventilation:** Ensure the installation area remains well-ventilated to prevent overheating, especially during peak operation.

- **Firmware Updates:** Check the manufacturer's website for any available firmware updates to ensure your controller has the latest features and bug fixes.

7. TROUBLESHOOTING

If you encounter issues with your solar charge controller, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Controller not powering on / No display	Battery not connected or insufficient battery voltage.	Ensure battery is connected first and has adequate charge (minimum 9V for 12V systems). Charge battery externally if completely depleted.
No solar charging current	Solar panels not connected, insufficient sunlight, or panel issues.	Check solar panel connections. Ensure panels are receiving direct sunlight. Verify panel voltage.
Battery not fully charging	Incorrect battery type setting, insufficient solar input, or battery degradation.	Verify battery type setting on the controller. Increase solar panel capacity if needed. Test battery health.
Load not working	Load output disabled, overload, or low battery voltage.	Check load output setting (ON/OFF button). Reduce load if overloaded. Charge battery.
Overheating	Poor ventilation or excessive load/charging current.	Ensure adequate airflow around the controller. Reduce load or check for short circuits.

8. SPECIFICATIONS

Detailed technical specifications for the ELUSH 100A MPPT Solar Charge Controller:

Parameter	Value
Battery Voltage	12V/24V/36V/48V Auto
Charging Current	100A
Max Solar Input (Voc)	15-25V (12V Battery); 30-50V (24V Battery); 45-75V (36V Battery); 60-100V (48V Battery)
Maximum PV Input Power	1200W (12V Battery); 2400W (24V Battery); 3600W (36V Battery); 4800W (48V Battery)
USB Port	DC 5V/1.5A x 2 USB
Operating Temperature	-25°C ~ 55°C
Manufacturer	ELUSH
Item Weight	1.79 pounds

Parameter	Value
Package Dimensions	8.11 x 8.03 x 2.91 inches



Figure 8.1: Detailed specifications of the 100A model.

9. WARRANTY AND SUPPORT

ELUSH offers a 1-year warranty for this product. For technical support or any issues you may encounter, please feel free to contact our team. Our engineers are available to provide advice and solutions. For more information and products, visit the [ELUSH Store](#).