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SUNER POWER BC-50W-M PRO

SUNER POWER 12V 50W Solar Battery Charger Maintainer User Manual

Model: BC-50W-M PRO

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your SUNER POWER 12V 50W Solar Battery Charger Maintainer. Please read these instructions carefully before installation and use. This device is designed to charge and maintain 12-volt batteries using solar power, featuring an Ultra-Smart MPPT controller for optimized performance.

2. PACKAGE CONTENTS

Verify that all components are present in the package:

- 1 x 50W Solar Panel with Built-in UltraSmart MPPT Charge Controller
- 1 x Adjustable Mounting Brackets
- 1 x SAE-Alligator Clip Cable
- 1 x SAE-Battery Eyelet Cable

3. SAFETY INFORMATION

Always observe the following safety precautions to prevent injury or damage to the product:

- Do not attempt to disassemble or modify the solar panel or controller.
- Ensure proper polarity when connecting to a battery. Reverse polarity can cause damage.

- Keep the solar panel clean and free from obstructions to ensure optimal performance.
- Avoid direct contact with the solar panel's electrical components.
- The product is waterproof (IP65 rated), but avoid submerging it in water.



Figure 3.1: MPPT Charge Controller Safety Protections. The controller provides comprehensive protection against common electrical faults.

4. SETUP AND INSTALLATION

4.1 Mounting the Solar Panel

The adjustable mounting brackets allow for flexible installation on various surfaces, such as walls or on the ground. For optimal performance, position the panel to receive maximum direct sunlight throughout the day.

1. Attach the adjustable mounting brackets to the solar panel using the provided hardware.
2. Secure the brackets to your desired surface (wall or ground) ensuring stability.

3. Adjust the angle of the solar panel to optimize sun exposure. Angles between 0-60 degrees are typically supported.



Figure 4.1: Adjustable Mounting Bracket and Wall Installation. The bracket allows for angle adjustment to maximize solar gain.

4.2 Connecting to the Battery

The solar charger is compatible with various 12V battery types. Ensure the battery is clean and terminals are free of corrosion before connecting.

1. Connect the appropriate cable (SAE-Alligator Clip or SAE-Battery Eyelet) to the battery terminals. Ensure correct polarity: red to positive (+), black to negative (-).
2. Connect the SAE connector from the cable to the SAE connector on the solar panel's MPPT charge controller.
3. The MPPT controller will automatically detect the battery and begin the charging process.

Compatible with Multiple 12V Batteries

CHEMISTRIES

Flooded, GEL, Maintenance-free, AGM, Seal-Lead Acid and Lithium Batteries

TYPES

Starter, Deep-cycle, Marine, Powersport, Car, RV, Trailer and more



Figure 4.2: Battery Compatibility. The charger supports multiple 12V battery chemistries.

5. OPERATION

5.1 MPPT Charge Controller

The built-in Ultra-Smart MPPT controller optimizes solar power conversion, achieving up to 99% tracking efficiency and 98% peak conversion efficiency. This ensures your battery charges effectively and quickly.

SMART 3-STAGES CHARGING



99% High tracking efficiency up to



98% Peak conversion efficiency of



Figure 5.1: MPPT Charge Controller. The controller manages the charging process for optimal battery health.

5.2 Charging Modes

The controller features three selectable charging modes for different 12V battery types:

- **12V:** Standard mode for most lead-acid batteries (Flooded, SLA, VRLA).
- **12V AGM:** Optimized for Absorbed Glass Mat (AGM) batteries.
- **12V Lithium:** Specifically for LiFePO4 lithium batteries.

Press the "MODE" button on the controller to cycle through these options. The selected mode will be indicated by an LED.

5.3 3-Stage Charging Process

The charger utilizes an improved 3-stage charging algorithm to ensure effective and safe battery charging, extending battery life:

1. **Bulk:** Rapidly charges the battery to approximately 80% capacity.
2. **Absorption:** Charges the battery to 100% at a slower rate to prevent overcharging.

3. **Float:** Maintains the battery at full charge, providing a trickle charge as needed. The charger automatically stops when full and resumes if discharge occurs.

5.4 Visual Charging Level Indicators

The controller provides visual feedback on the battery's charge level:

- **25% Charged:** Solid Green LED
- **50% Charged:** Solid Green LED
- **75% Charged:** Solid Green LED
- **100% Fully Charged:** All Green LEDs solid
- **Maintenance:** Slow pulsing Green LED indicates the battery is being maintained.

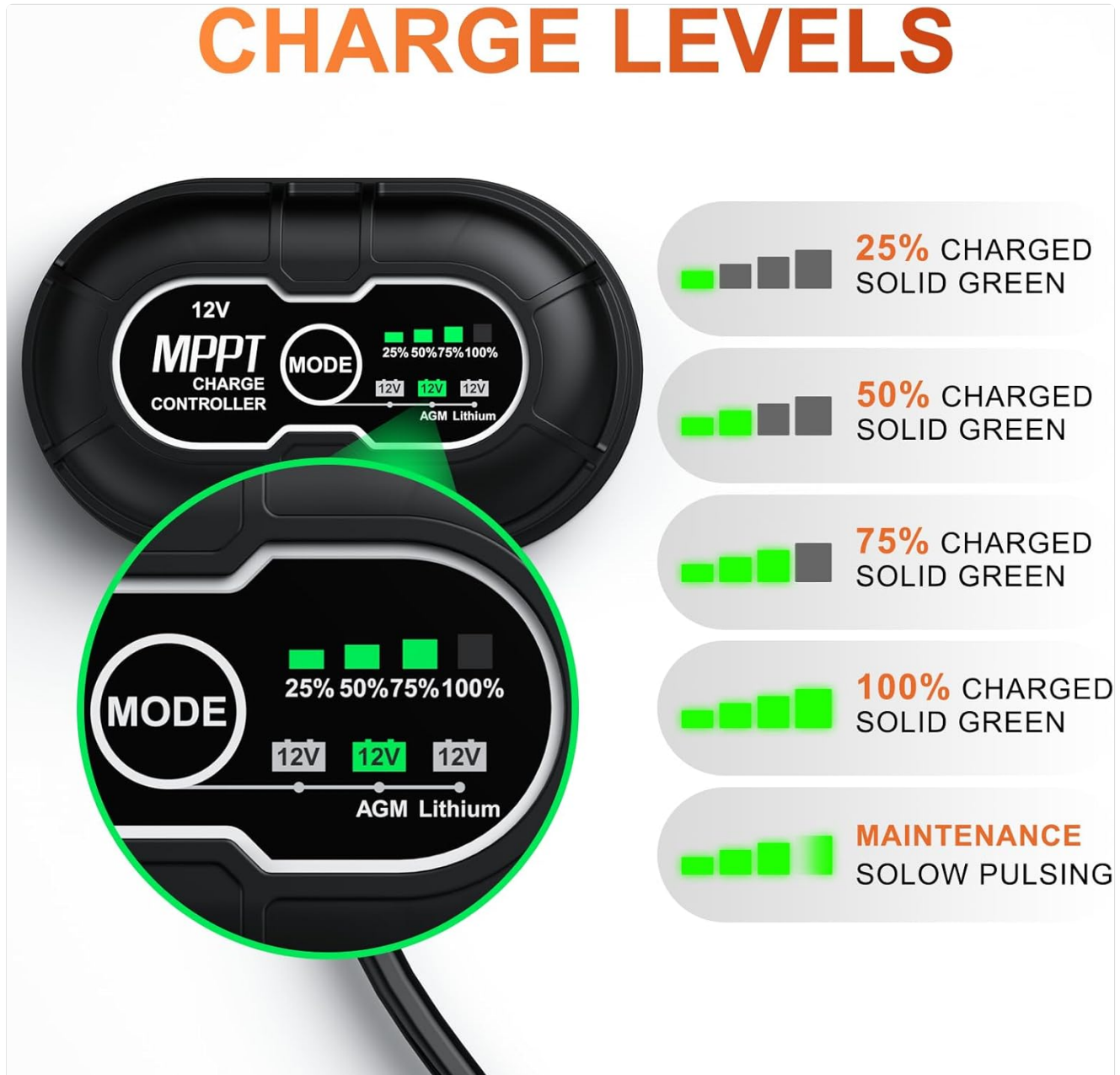


Figure 5.2: Charge Level Indicators. Monitor your battery's status at a glance.

6. MAINTENANCE

- **Cleaning:** Regularly clean the solar panel surface with a soft, damp cloth to remove dust, dirt, or debris that may reduce efficiency. Do not use abrasive cleaners.
- **Connections:** Periodically check all electrical connections to ensure they are secure and free from corrosion.
- **Inspection:** Inspect the panel and cables for any signs of physical damage.

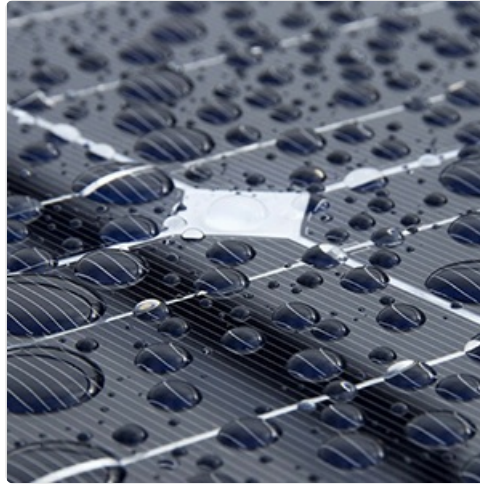


Figure 6.1: Waterproof Design. The IP65 rating ensures durability against environmental elements.

7. TROUBLESHOOTING

Problem	Possible Cause	Solution
No charging indication	<ul style="list-style-type: none"> Insufficient sunlight Incorrect battery connection Dirty solar panel surface Damaged cable or controller 	<ul style="list-style-type: none"> Relocate panel to direct sunlight. Verify correct polarity and secure connections. Clean the solar panel surface. Contact customer support if components are damaged.
Slow charging	<ul style="list-style-type: none"> Partial shading Suboptimal panel angle Low light conditions (cloudy days) 	<ul style="list-style-type: none"> Ensure panel is free from shade. Adjust panel angle for maximum sun exposure. Charging will be slower in low light; this is normal.
Controller LEDs not working	<ul style="list-style-type: none"> No power from solar panel Faulty controller 	<ul style="list-style-type: none"> Ensure panel is in direct sunlight and connected. Contact customer support.

8. SPECIFICATIONS

Feature	Detail
Model	BC-50W-M PRO

Feature	Detail
Maximum Power	50 Watts
Maximum Voltage	12 Volts (DC)
MPPT Tracking Efficiency	Up to 99%
Peak Conversion Efficiency	98%
Charging Stages	3-Stage (Bulk, Absorption, Float)
Supported Battery Types	12V Flooded, GEL, AGM, SLA, VRLA, LiFePO4
Material	A+ Grade Solar Cell, Aluminum Frame, Tempered Glass
Product Dimensions	22.8"L x 19.3"W x 1"H
Item Weight	5.67 Kilograms (12.47 pounds)
Waterproof Rating	IP65
Upper Temperature Rating	65 Degrees Celsius

ENHANCED PERFORMANCE

23.5%

High Efficiency
of Grade A+ Solar Cells

91.5%

High Transparency

98%

Peak Conversion
Efficiency

99%

High Tracking
Efficiency

30%

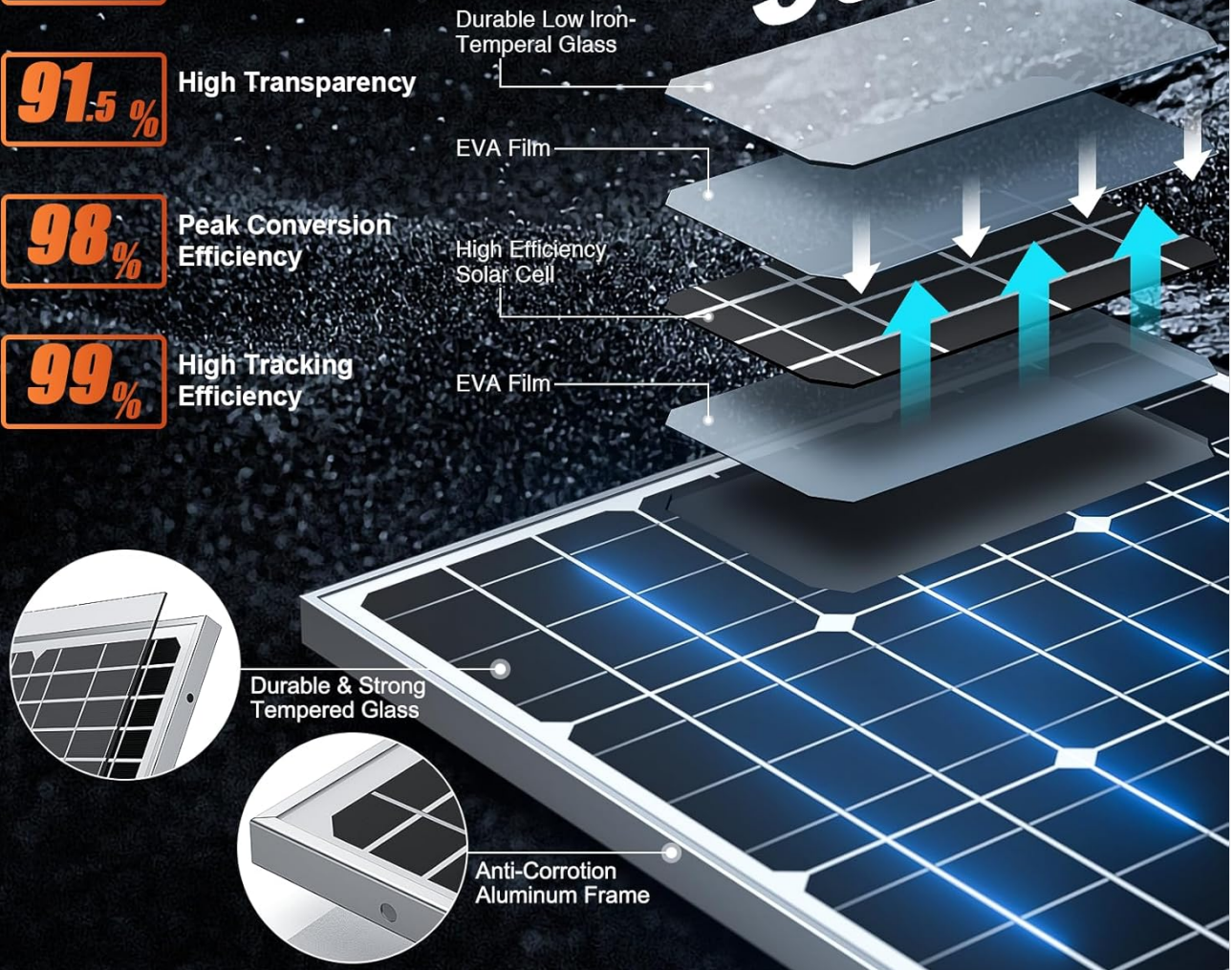


Figure 8.1: Solar Panel Construction. High-quality materials ensure durability and performance.

9. VIDEO GUIDE

Watch the official product video for a visual guide on setup and features:

Your browser does not support the video tag.

Video 9.1: SUNER POWER 50W 12V Solar Panel Battery Charger. This video demonstrates the product's features, installation, and operation.

10. WARRANTY AND SUPPORT

For warranty information or technical support, please refer to the contact details provided with your purchase or visit the official SUNER POWER website. Keep your purchase receipt for warranty claims.

Online Support: [Visit the SUNER POWER Store on Amazon](#)