

[Manuals.plus](#) /

> [SUNER POWER](#) /

> SUNER POWER 12V 30W Solar Panel Battery Charger Ultra (Model BC-30W-Ultra) Instruction Manual

SUNER POWER BC-30W-Ultra

SUNER POWER 12V 30W Solar Panel Battery Charger Ultra

Model: BC-30W-Ultra

1. INTRODUCTION

This manual provides instructions for the safe and efficient operation of your SUNER POWER 12V 30W Solar Panel Battery Charger Ultra. This device is designed to maintain and charge 12-volt batteries using solar energy, featuring an integrated UltraSmart MPPT charge controller for optimized performance. It is suitable for various 12V battery types, including AGM, Deep Cycle, Lead-Acid, and LiFePO4 batteries.



Image 1.1: The SUNER POWER 12V 30W Solar Panel Battery Charger Ultra, showing the solar panel, integrated MPPT controller, and included connection cables.

2. SAFETY INSTRUCTIONS

- Read all instructions before using the product.
- Do not disassemble or modify the solar panel or controller. Unauthorized modifications can lead to electric shock, fire, or product damage.
- Ensure proper polarity when connecting to a battery. Reverse polarity can damage the charger and battery.
- Avoid short-circuiting the output terminals.
- Keep the product away from flammable materials and explosive gases.
- Do not immerse the product in water, although it is waterproof, prolonged submersion is not recommended.
- Use only with 12V batteries. Do not attempt to charge other voltage batteries.
- Ensure adequate ventilation around the battery during charging.
- Disconnect the solar panel from the battery before performing any maintenance or cleaning.

FULL SAFETY PROTECTIONS



Image 2.1: The integrated MPPT charge controller features multiple safety protections, including over-temperature, over-voltage, over-current, short circuit, discharge, and over-charge protection.

3. PACKAGE CONTENTS

Verify that all items are present in the package:

- 1 x 30W Solar Panel with Built-in UltraSmart MPPT Controller
- 1 x SAE to Alligator Clip Cable
- 1 x SAE to Battery Eyelet Cable



Image 3.1: The included SAE to Alligator Clip Cable (left) and SAE to Battery Eyelet Cable (right) for versatile battery connection.

4. PRODUCT FEATURES

4.1 UltraSmart MPPT Technology

The integrated UltraSmart MPPT (Maximum Power Point Tracking) charge controller optimizes power extraction from the solar panel. This technology achieves up to 99% tracking efficiency and 98% peak conversion efficiency, enhancing the solar energy utilization rate by approximately 20%-30% compared to standard controllers.



Image 4.1: Illustration of the solar panel's construction, highlighting high efficiency (23.5% from A+ Grade Solar Cells), high transparency (91.5%), peak conversion efficiency (98%), and high tracking efficiency (99%).

4.2 Improved 3-Stage Charging Algorithm

The charger employs an advanced 3-stage charging algorithm: Bulk, Absorption, and Float. This process ensures efficient and safe charging, prolonging battery life and performance. Charging automatically stops when the battery is full and resumes when needed, providing maintenance-free operation.



Image 4.2: Visual representation of the MPPT controller and the three charging stages (Bulk, Absorption, Float) with corresponding voltage and amperage curves.

4.3 Full Safety Protections

The unit includes multiple built-in safety features to protect both the charger and the battery. These include protection against over-charge, over-discharge, over-voltage, over-current, overload, short circuit, reverse polarity, and over-temperature. The design is waterproof and spark-proof.

4.4 Wide Battery Compatibility

This charger supports various 12V battery types, including:

- **Lead-Acid:** Flooded, Gel, AGM, SLA, VRLA, and maintenance-free batteries.
- **Lithium:** LiFePO4 batteries.



Image 4.3: The solar panel charger is compatible with multiple 12V battery types, including Flooded, Gel, SLD, LI (Lithium), and AGM batteries.

4.5 Visual Charging Level Indicators

LED indicators provide a visual representation of the battery's charge status, showing levels at 25%, 50%, 75%, and 100%.

5. INSTALLATION

Follow these steps to install your solar panel battery charger:

1. **Choose a Location:** Select a location for the solar panel that receives maximum direct sunlight throughout the day, unobstructed by shadows.
2. **Mount the Panel:** Securely mount the solar panel. While mounting brackets are not included, common options include flat mounts or pole mounts (see images below for examples). Ensure the panel is stable and angled towards the sun for optimal performance.
3. **Connect to Battery:**
 - Identify the positive (+) and negative (-) terminals on your 12V battery.

- Select the appropriate connection cable: the SAE to Alligator Clip Cable for temporary connections or the SAE to Battery Eyelet Cable for more permanent installations.
- Connect the red (+) connector of the cable to the positive (+) terminal of the battery.
- Connect the black (-) connector of the cable to the negative (-) terminal of the battery.
- Connect the SAE plug from the solar panel to the SAE plug of the chosen battery cable. Ensure a secure connection.

4. **Verify Connection:** Once connected, the MPPT controller's indicator lights will activate, showing the charging status.



Image 5.1: The solar panel dimensions are approximately 24.015 inches (length) by 13.189 inches (width). Examples of mounting options include flat mount brackets and pole mount brackets (not included).



Image 5.2: Example of a flat mount installation for the solar panel.



Image 5.3: Example of a pole mount installation for the solar panel.

6. OPERATION

Once properly installed and connected to a 12V battery, the SUNER POWER Solar Panel Battery Charger Ultra operates automatically. The integrated MPPT controller will detect sunlight and begin the charging process, optimizing power delivery to the battery. It will automatically switch between charging stages (Bulk, Absorption, Float) and enter maintenance mode once the battery is fully charged, preventing overcharge.

7. BATTERY CHARGING MODES

The MPPT controller features selectable charging modes for different 12V battery chemistries. Press the 'MODE' button on the controller to cycle through the available options:

- **12V:** Standard mode for most 12V lead-acid batteries (Flooded, SLA, VRLA, maintenance-free).
- **12V AGM:** Optimized mode for 12V Absorbed Glass Mat (AGM) batteries.
- **12V Lithium:** Specific mode for 12V LiFePO₄ (Lithium Iron Phosphate) batteries.

Ensure the correct mode is selected for your battery type to ensure safe and effective charging.

8. CHARGE LEVEL INDICATORS

The MPPT charge controller features LED indicators to display the battery's charge status:

- **25% Charged:** One solid green LED segment.
- **50% Charged:** Two solid green LED segments.
- **75% Charged:** Three solid green LED segments.
- **100% Charged:** All four solid green LED segments.
- **Maintenance Mode:** After reaching 100% charge, the LEDs may show a slow pulsing green, indicating the charger is maintaining the battery.



Image 8.1: The MPPT controller's LED display clearly indicates the battery's charge level from 25% to 100% and when it is in maintenance mode.

9. MAINTENANCE

To ensure optimal performance and longevity of your solar panel battery charger:

- **Clean the Solar Panel:** Regularly clean the surface of the solar panel with a soft, damp cloth to remove dust, dirt, and debris. A clean panel ensures maximum sunlight absorption.
- **Inspect Connections:** Periodically check all electrical connections (SAE plugs, alligator clips, eyelets) to ensure they are secure and free from corrosion.
- **Check for Damage:** Inspect the solar panel and cables for any physical damage. If damage is found, discontinue use and contact customer support.
- **Battery Health:** Ensure the battery connected is in good working condition. The solar charger is a maintainer and charger, not a battery repair device.

10. TROUBLESHOOTING

If you encounter issues with your solar panel battery charger, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No charging indication (LEDs off)	No sunlight; Panel obstructed; Loose connection; Faulty battery.	Ensure panel is in direct sunlight; Clear obstructions; Check all connections; Test battery condition.
Slow charging	Insufficient sunlight; Dirty panel; Incorrect battery mode; Battery deeply discharged.	Relocate panel for better sun exposure; Clean panel surface; Select correct battery type; Allow more time for charging.
Battery not reaching 100%	Insufficient sunlight duration; Battery capacity too large for panel; Battery degradation.	Ensure prolonged sun exposure; Consider a higher wattage panel for larger batteries; Have battery tested.
Controller feels warm	Normal operation during charging.	This is generally normal. Ensure adequate ventilation around the controller. If excessively hot, disconnect and contact support.

11. SPECIFICATIONS

Feature	Detail
Brand	SUNER POWER
Model Number	BC-30W-Ultra
Maximum Power	30 Watts

Feature	Detail
Product Dimensions (L x W x H)	24" x 13.2" x 0.7"
Material	A+ Grade Solar Cell, Aluminum Frame, Tempered Glass
Efficiency	High Efficiency (Up to 99% tracking, 98% conversion)
Special Features	UltraSmart MPPT Technology, 3-Stage Charging, Multiple Safety Protections
Connector Type	Plug & Play SAE Harness
Included Components	30W Solar Panel with MPPT Controller, SAE to Alligator Cable, SAE to Battery Eyelet Cable

12. WARRANTY INFORMATION

For specific warranty details regarding your SUNER POWER 12V 30W Solar Panel Battery Charger Ultra, please refer to the warranty card included with your product or visit the official SUNER POWER website. Typically, products are covered against defects in materials and workmanship for a specified period from the date of purchase.

13. CUSTOMER SUPPORT

If you have any questions, require technical assistance, or need to report an issue, please contact SUNER POWER customer support through the following channels:

- **Website:** Visit the official SUNER POWER website for FAQs, support resources, and contact forms.
- **Email:** Refer to your product packaging or warranty card for the customer support email address.
- **Phone:** Check the SUNER POWER website for available phone support numbers.

Please have your product model number (BC-30W-Ultra) and purchase date ready when contacting support.