

[Manuals.plus](#) /

› [SUNER POWER](#) /

› SUNER POWER BC-30W-PB Ultra 30W 12V Solar Battery Charger & Maintainer PRO Instruction Manual

SUNER POWER BC-30W-PB Ultra

SUNER POWER BC-30W-PB Ultra 30W 12V Solar Battery Charger & Maintainer PRO Instruction Manual

Model: BC-30W-PB Ultra

1. SAFETY INFORMATION

Please read and understand all safety instructions before installing or operating the SUNER POWER BC-30W-PB Ultra solar battery charger. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- Always wear eye protection and gloves when working with batteries.
- Ensure the solar panel is clean and free of obstructions for optimal performance.
- Do not attempt to disassemble or modify the charger or solar panel.
- Keep the charger and battery connections dry and clean.
- Connect the charger to a 12V battery system only.
- Ensure proper ventilation when charging lead-acid batteries to prevent gas accumulation.
- Disconnect the solar panel from the battery before performing any maintenance or cleaning.

The charger incorporates 8 safety protections: Reverse Charge, Over Temperature, Over Voltage, Over Current, Backflow, Short Circuit, Discharge, and Over Charge Protection. These features are designed to protect both the battery and the charger during operation.

8-Safety Protections



Image 1.1: The MPPT charge controller features 8 safety protections including reverse charge, over temperature, over voltage, over current, backflow, short circuit, discharge, and over charge protection to ensure safe and reliable operation.

2. PRODUCT OVERVIEW

The SUNER POWER BC-30W-PB Ultra is a 30W 12V solar battery charger and maintainer designed to keep your 12-volt batteries charged and optimized. It features Ultra-Smart MPPT (Maximum Power Point Tracking) technology for high efficiency and an improved 3-stage charging algorithm.



Image 2.1: The SUNER POWER BC-30W-PB Ultra solar panel and its connection accessories.

2.1 Key Features

- **Ultra-Smart MPPT Technology:** Achieves up to 99% tracking efficiency and 98% peak conversion efficiency, enhancing power utilization.
- **Improved 3-Stage Charging:** Bulk, Absorption, and Float stages ensure effective and safe charging, extending battery life.
- **Free Maintenance:** Automatically stops charging when the battery is full and resumes when discharge occurs.
- **Visual Charging Level Indicators:** LEDs display charge status (25%, 50%, 75%, 100%).
- **Three Battery Charging Modes:** Selectable modes for 12V, 12V AGM, and 12V Lithium batteries.
- **Wide Compatibility:** Suitable for various 12V lead-acid (flooded, gel, AGM, SLA, VRLA, maintenance-free) and LiFePO4 lithium batteries.

Premium Materials



Ultra
Lightweight



Ultra Thin



Double Fiberglass
Protect X2 Tough



Better sunlight capture,
increase 2-3% conversion

30%

ETFE

EVA Film

High Efficiency
Solar Cell

EVA Film

TPT Backsheet

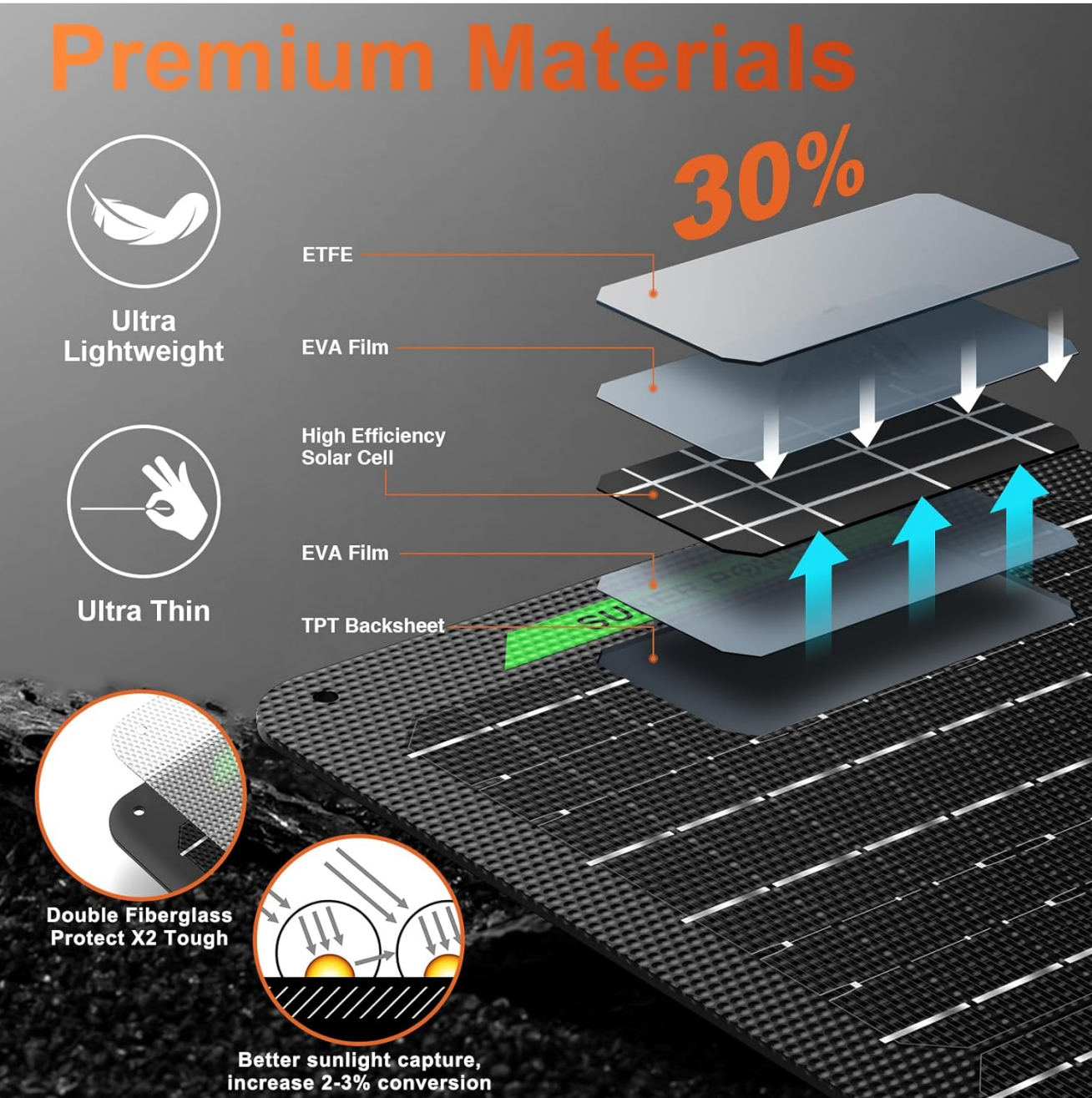


Image 2.2: The solar panel is constructed with premium materials including ETFE and double fiberglass for durability and enhanced sunlight capture.

Compatible with Multiple 12V Batteries

CHEMISTRIES

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

TYPES

Starter, Deep-cycle, Boat, Marine, RV, Trailer, Car/Truck, Tractor, Lawnmower, Powersport and more



Image 2.3: The charger is compatible with multiple 12V battery chemistries and types, including those found in automotive, marine, and RV applications.

Video 2.1: An overview of the SUNER POWER 30W 12V Solar Battery Charger & Maintainer PRO, demonstrating its features and functionality.

3. SETUP AND INSTALLATION

Follow these steps to set up your solar battery charger.

3.1 Package Contents

- 1 x 30W Solar Panel Battery Charger
- 1 x SAE-Alligator Clip Cable
- 1 x SAE-Bare End Cable
- 1 x SAE-Cigarette Lighter Cable
- 4 x Suction Cups

3.2 Connecting the Charger

1. **Choose Connection Method:** Select the appropriate cable for your battery connection:

- **Alligator Clips:** For direct connection to battery terminals.
- **Cigarette Lighter Cable:** For charging through a vehicle's 12V outlet (ensure the outlet is active when the vehicle is off).
- **Bare End Cable:** For custom wiring or permanent installations.

2. **Connect to Solar Panel:** Plug the chosen cable into the SAE connector on the solar panel.

3. **Connect to Battery:**

- For alligator clips, connect the red clip to the positive (+) battery terminal and the black clip to the negative (-) battery terminal.
- For the cigarette lighter cable, insert it into the vehicle's 12V accessory socket.
- For the bare end cable, ensure correct polarity when connecting to your system.

4. **Position the Solar Panel:** Place the solar panel in a location where it receives maximum direct sunlight. The included suction cups can be used to mount the panel on a windshield or other smooth surfaces.


	<h1>VS</h1>	<h1>Other</h1>
23.50%	Solar Panel Efficiency	21.80%
MPPT	Charge Controller	PWM
✓	Improved Charge Algorithm	✗
Max 99%	Charge Efficiency	Max 60-80%
8-Safety Protections	Potections	4-Safety Protections
25%-50%-75%-100%	State-of-Charge Bars	/
12V-12V AGM-12V Lithium	Battery Type	12V
0.15 Inch	Ultra Thin	0.06 Inch
✓	Double Fiberglass Protect, X2 Tough (increase impact resistance, no crack)	✗
ETFE (Better sunlight capture, increase 2-3% performance, No delamination)	Premium Materials	PET (Delaminate after long-term use)
Solar Panel (No discharge at night)	Charge Controller Power Source	Battery (Discharge battery at night)

Image 3.1: The solar panel offers multiple connection methods for versatile use.

4. OPERATING INSTRUCTIONS

Once connected, the charger operates automatically. The integrated MPPT charge controller manages the charging process efficiently.

4.1 MPPT Technology

The Ultra-Smart MPPT controller continuously tracks the maximum power point of the solar panel to extract the most power possible, even under varying light conditions. This results in faster and more efficient charging compared to traditional PWM controllers.

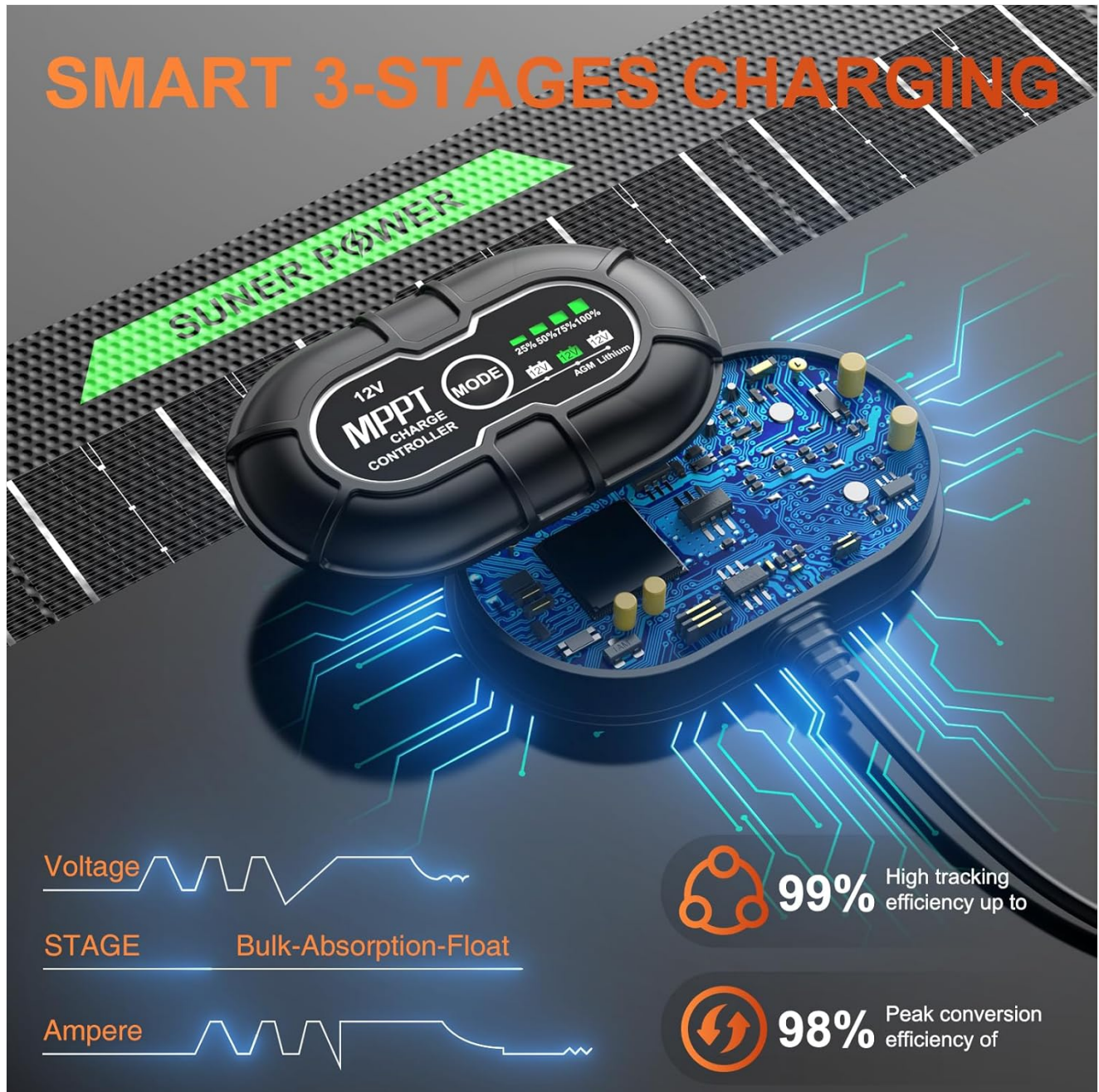


Image 4.1: The MPPT controller's internal workings and efficiency metrics.

4.2 3-Stage Charging Algorithm

The charger utilizes an improved 3-stage charging algorithm to optimize battery health and longevity:

- **Bulk Stage:** Delivers maximum current to rapidly bring the battery to approximately 80% charge.
- **Absorption Stage:** Charges at a constant voltage, gradually reducing current as the battery approaches full charge.
- **Float Stage:** Maintains the battery at a safe voltage, compensating for self-discharge and keeping it fully charged without overcharging.

4.3 Battery Type Selection

The charger supports three battery types. Press the 'MODE' button on the controller to cycle through the options:

- **12V:** Standard lead-acid batteries (Flooded, GEL, SLA, VRLA, Maintenance-Free).
- **12V AGM:** Absorbed Glass Mat batteries.
- **12V Lithium:** LiFePO4 lithium batteries.

Ensure the correct battery type is selected for optimal charging and battery health.

4.4 Charge Level Indicators

The LED indicators on the charge controller provide visual feedback on the battery's charge status:

- **Pulsing Green (Below 75%):** The battery is less than 75% charged.
- **Solid Green (Above 75%):** The battery is above 75% charged.
- **Solid Green (100%):** The 100% LED will be solid green when the battery is fully charged.
- **Pulsing Green (Maintenance Mode):** After the battery is fully charged, the controller will continue monitoring the battery and provide ongoing maintenance and optimization.

CHARGE LEVELS



Image 4.2: Interpretation of the charge level LED indicators.

5. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your solar battery charger.

- **Clean the Solar Panel:** Periodically wipe the surface of the solar panel with a soft, damp cloth to remove dust, dirt, or debris. A clean panel ensures maximum sunlight absorption.
- **Check Connections:** Ensure all cable connections (SAE, alligator clips, cigarette lighter, bare end) are secure and free from corrosion. Loose connections can reduce charging efficiency.
- **Inspect Cables:** Check cables for any signs of damage, fraying, or wear. Replace damaged cables immediately.
- **Environmental Protection:** The solar panel is IP65 waterproof, meaning it is protected against dust and low-pressure water jets. While it can withstand rain, avoid submerging it in water.

ENHANCED PERFORMANCE

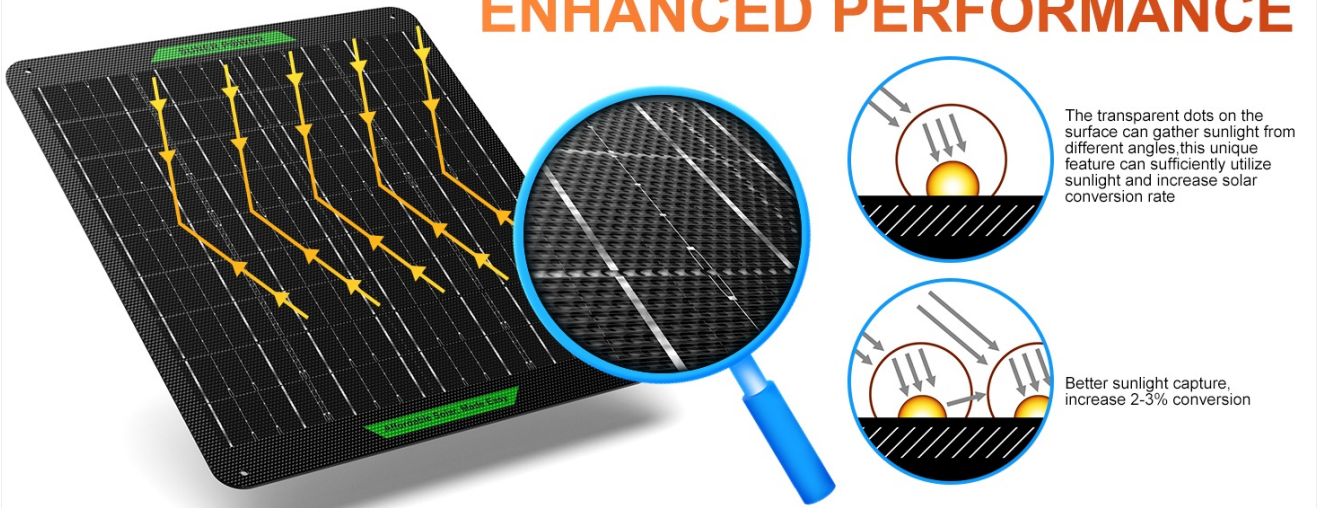


Image 5.1: The IP65 waterproof rating ensures durability in various weather conditions.

6. TROUBLESHOOTING

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

Problem	Possible Cause	Solution
No charging indication (LEDs off)	No sunlight; Loose connection; Faulty battery; Damaged panel/controller.	Ensure direct sunlight; Check all connections; Test battery; Contact support if unit is damaged.
Slow charging	Insufficient sunlight; Dirty panel; Incorrect battery type selected; Battery deeply discharged.	Relocate panel to direct sunlight; Clean panel surface; Verify battery type setting; Allow more time for deeply discharged batteries.
LEDs flashing erratically	Insufficient sunlight causing controller boot cycle; Connection issue.	Ensure adequate sunlight; Check connections. If problem persists, contact support.
Charger not maintaining charge	Battery issue; Excessive parasitic drain on battery.	Test battery health; Identify and address parasitic drains on the vehicle/system.

If the problem persists after attempting these solutions, please contact SUNER POWER customer support for further assistance.

7. SPECIFICATIONS

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

Feature	Specification
Output Voltage	12V
Charge Controller	Ultra-Smart MPPT
Tracking Efficiency	Up to 99%
Conversion Efficiency	Peak 98%
Charging Stages	3-Stages (Bulk, Absorption, Float)
Battery Compatibility	12V Lead-Acid (Flooded, GEL, AGM, SLA, VRLA, Maintenance-Free), 12V LiFePO4 Lithium
Material	A+ Grade Solar Cell, Premium ETFE, Double Fiberglass
Product Dimensions	18.9"L x 15.3"W x 0.15"H
Item Weight	3.99 pounds (1.81 Kilograms)
Included Components	Solar Panel, SAE-Alligator Clip Cable, SAE-Bare End Cable, SAE-Cigarette Lighter Cable

8. WARRANTY AND SUPPORT

SUNER POWER products are designed for reliability and performance. 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 as proof of purchase for warranty claims.