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## Sunforce 60120

# Sunforce 60120 8.5 Amp Pro Series Solar Charge Controller User Manual

Model: 60120

## 1. INTRODUCTION AND OVERVIEW

The Sunforce 8.5 Amp Pro Series Charge Controller is designed to protect your 12-volt batteries from overcharging by solar panels. It is suitable for small solar systems where a load disconnect is not required, such as those found in yachts and recreational vehicles (RVs). This compact controller features integrated temperature compensation and utilizes Pulse Width Modulation (PWM) and boost charging for efficient solar power management. It can handle up to 127.50 watts of solar power.

## 2. KEY FEATURES

- Prevents overcharging of 12-volt batteries, safeguarding both solar panels and batteries.
- Controls battery voltage to maintain optimal charge levels.
- Designed for small solar systems without a load disconnect requirement, ideal for marine and RV applications.
- Incorporates safety features including voltage drop compensation, reverse polarity protection, and integrated temperature compensation for reliable operation across various temperatures.
- Utilizes Pulse Width Modulation (PWM) technology to extend battery life.

## 3. SAFETY INFORMATION

Please read and understand all safety instructions before installing or operating the Sunforce 60120 Solar Charge Controller. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- Always disconnect the solar panel and battery before making or breaking connections to the charge controller.
- Ensure all wiring is correctly polarized. Incorrect wiring can damage the controller, battery, or solar panel.
- Install the controller in a dry, well-ventilated area, away from flammable materials and corrosive gases.
- Do not disassemble or attempt to repair the controller. Refer all servicing to qualified personnel.

- Wear appropriate personal protective equipment, including eye protection, when working with batteries and electrical systems.
- Batteries can produce explosive gases; ensure adequate ventilation when charging.

## 4. SETUP AND INSTALLATION

The Sunforce 60120 charge controller is designed for straightforward installation. Follow these steps carefully:

1. **Mounting:** Choose a suitable location for mounting the controller. It should be protected from direct sunlight, moisture, and extreme temperatures. Ensure there is adequate airflow around the unit for cooling.
2. **Wiring Sequence:** It is crucial to connect the components in the correct order to prevent damage.
  - **Step 1: Connect the Battery:** Connect the positive (+) terminal of the battery to the battery positive (+) terminal on the charge controller. Then, connect the negative (-) terminal of the battery to the battery negative (-) terminal on the charge controller. The controller should power on, indicated by an LED if present.
  - **Step 2: Connect the Solar Panel:** Connect the positive (+) terminal of the solar panel to the solar panel positive (+) terminal on the charge controller. Then, connect the negative (-) terminal of the solar panel to the solar panel negative (-) terminal on the charge controller.
3. **Verify Connections:** Double-check all connections to ensure they are secure and correctly polarized. The controller features reverse polarity protection, but correct wiring is always recommended.



Figure 1: Front view of the Sunforce 60120 Solar Charge Controller, showing the terminal connections for solar panel and battery.



Figure 2: Sunforce 60120 Solar Charge Controller held in hand, illustrating its compact size and approximate dimensions (3.6 inches / 9 cm).

## 5. OPERATING INSTRUCTIONS

Once properly installed, the Sunforce 60120 Solar Charge Controller operates automatically. It continuously monitors the battery voltage and the output from the solar panel to ensure optimal charging and prevent overcharging.

- **Automatic Charging:** The controller will automatically begin charging the battery when the solar panel generates sufficient power.
- **Overcharge Protection:** When the battery reaches its full charge voltage, the controller will reduce or stop the charging current to prevent overcharging, which can damage the battery.
- **PWM Technology:** The Pulse Width Modulation (PWM) charging algorithm helps to maintain the battery in a healthy state, improving its overall lifespan and performance.
- **Temperature Compensation:** The integrated temperature compensation function adjusts charging parameters based on ambient temperature, ensuring accurate charging in varying environmental conditions.

## 6. MAINTENANCE

The Sunforce 60120 Solar Charge Controller requires minimal maintenance to ensure long-term performance.

- **Regular Inspection:** Periodically inspect the controller and all wiring connections for any signs of damage, corrosion, or loose terminals. Tighten any loose connections.
- **Cleaning:** Keep the controller clean and free from dust, dirt, and debris. Use a dry, soft cloth to wipe the surface. Do not use liquid cleaners or solvents.
- **Ventilation:** Ensure that the ventilation fins (if present) are not obstructed to allow for proper heat dissipation.

## 7. TROUBLESHOOTING

If you encounter issues with your Sunforce 60120 Solar Charge Controller, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Controller not powering on / No charging indication	<ul style="list-style-type: none"><li>◦ Battery not connected or low voltage</li><li>◦ Reverse polarity on battery connection</li><li>◦ Loose wiring connections</li></ul>	<ul style="list-style-type: none"><li>◦ Ensure battery is connected first and has sufficient voltage (above 8V for 12V systems).</li><li>◦ Check battery wiring for correct polarity (+ to + and - to -).</li><li>◦ Tighten all battery connections.</li></ul>

Problem	Possible Cause	Solution
Battery not charging from solar panel	<ul style="list-style-type: none"> <li>◦ Solar panel not connected or insufficient sunlight</li> <li>◦ Reverse polarity on solar panel connection</li> <li>◦ Damaged solar panel or wiring</li> </ul>	<ul style="list-style-type: none"> <li>◦ Ensure solar panel is connected and receiving adequate sunlight.</li> <li>◦ Check solar panel wiring for correct polarity.</li> <li>◦ Inspect solar panel and wiring for physical damage. Test solar panel voltage if possible.</li> </ul>
Battery overcharging	<ul style="list-style-type: none"> <li>◦ Controller malfunction</li> </ul>	<ul style="list-style-type: none"> <li>◦ Verify battery voltage with a multimeter. If it consistently exceeds safe charging levels (e.g., above 14.5V for a 12V battery), the controller may be faulty. Disconnect and seek professional assistance.</li> </ul>

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

## 8. SPECIFICATIONS

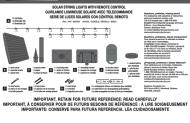
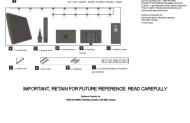
Specification	Value
Model Number	60120
Brand	Sunforce
Voltage	12 Volts
Maximum Solar Power Input	127.50 Watts (for 8.5 Amp controller)
Item Weight	204 g
Package Dimensions	25.91 x 16.51 x 3.56 cm
Features	PWM, Boost Charging, Temperature Compensation, Reverse Polarity Protection, Voltage Drop Compensation

## 9. WARRANTY AND SUPPORT

For specific warranty information regarding your Sunforce 60120 Solar Charge Controller, please refer to the documentation included with your purchase or visit the official Sunforce website. If you require technical assistance, troubleshooting beyond this manual, or have questions about warranty claims, please contact Sunforce customer support directly. Contact details are typically available on the product packaging or the manufacturer's website.

*Note: Always provide your product model number (60120) and purchase date when contacting support.*

## Related Documents - 60120

	<p><a href="#">Sunforce 15 Watt Solar 12 Volt Battery Charger Kit User Manual</a> User manual for the Sunforce 15 Watt Solar 12 Volt Battery Charger Kit with 7 Amp Charge Controller. Covers installation, operation, specifications, troubleshooting, and warranty information for charging 12V batteries.</p>
	<p><a href="#">Sunforce Solar String Lights with Remote Control Assembly and Installation Guide</a> This guide provides assembly and installation instructions for Sunforce Solar String Lights with Remote Control. It covers product features, pre-installation steps, mounting options for the solar panel, installation of the string lights, operation, battery replacement, and frequently asked questions. The lights are powered by a solar panel and include a remote control for operation.</p>
	<p><a href="#">Sunforce Solar String Lights with Remote Control - Assembly and Installation Guide</a> This guide provides comprehensive instructions for assembling, installing, operating, and maintaining the Sunforce Solar String Lights with Remote Control (Model 80033). It covers product features, safety precautions, battery replacement, troubleshooting, and FAQs.</p>
	<p><a href="#">Sunforce Solar String Lights with Remote Control Assembly and Installation Guide</a> Comprehensive guide for assembling, installing, and operating Sunforce Solar String Lights with Remote Control. Includes safety information, product features, mounting instructions, operation details, battery replacement, bulb replacement, and FAQs.</p>
	<p><a href="#">Sunforce 100 LED Solar Motion Activated Light: Assembly and Installation Guide</a> Comprehensive assembly and installation guide for the Sunforce 100 LED Solar Motion Activated Light, covering safety, features, maintenance, warranty, and installation steps.</p>
	<p><a href="#">Sunforce Solar Motion Activated Security Light Installation and User Manual</a> Comprehensive guide for installing and operating the Sunforce Solar Motion Activated Security Light (Model 82193). Includes safety, maintenance, features, installation steps, and FAQs.</p>

Documents - Sunforce – 60120



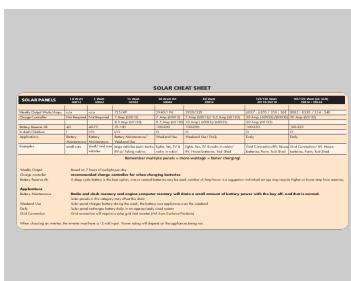
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SunforceSolarCheatsheet sunforceproducts Support Section Solar Panel Charge Controllers |||

SOLAR CHEAT SHEET SOLAR PANELS 1.8 Watt 50012 5 Watt 50022 15 Watt

50032 60 Watt Kit 50044 80 ... 2940/196 3920/229 Not Required Not Required 7 Amp

60012 7 Amp 60012 7 Amp 60012 / 8.5 Amp **60120** 8.5

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