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› SOLPERK 10A Solar Charge Controller User Manual

SOLPERK HC-F10A

SOLPERK 10A Solar Charge Controller User Manual

Model: HC-F10A

1. INTRODUCTION

Thank you for choosing the SOLPERK 10A Solar Charge Controller. This device is designed to manage the power flow from your solar panel to your battery, ensuring efficient charging and protecting your battery from overcharge and over-discharge. It is suitable for various 12V/24V deep-cycle batteries and outdoor applications.

Scene application



Image: The SOLPERK 10A Solar Charge Controller shown in typical usage scenarios, including RVs, boats, and solar street lighting systems, highlighting its versatility for outdoor power management.

2. SAFETY INFORMATION

Please read all instructions and warnings carefully before installation and operation. Keep this manual for future reference.

- Ensure all connections are correct and secure before applying power.
- Do not disassemble or attempt to repair the controller yourself. Contact customer support if service is required.
- Install the controller in a well-ventilated area, away from flammable materials.
- The controller is waterproof (IP67), but avoid prolonged submersion.
- Always connect the battery first, then the solar panel, and finally the load. Disconnect in reverse order.
- Ensure correct polarity for all connections (positive to positive, negative to negative).

3. PRODUCT FEATURES

- **Waterproof Design:** IP67 rated, suitable for outdoor environments.
- **Automatic Voltage Identification:** Automatically detects 12V or 24V system voltage.
- **PWM Charging:** Intelligent 3-stage PWM charging for improved efficiency and extended battery life.
- **Multiple Battery Compatibility:** Compatible with AGM, GEL, and Flooded deep-cycle batteries.
- **Comprehensive Protections:** Includes battery under-voltage, over-voltage, output overload, short circuit, lightning, and reverse polarity protection.
- **LED Indicators:** Three indicators for monitoring load output, battery status, and solar panel charging.
- **Easy Installation:** SAE port for plug-and-play connectivity and pre-drilled mounting holes.

Waterproof Controller



3-Stage Smart Charging
Clear LED Status Indication

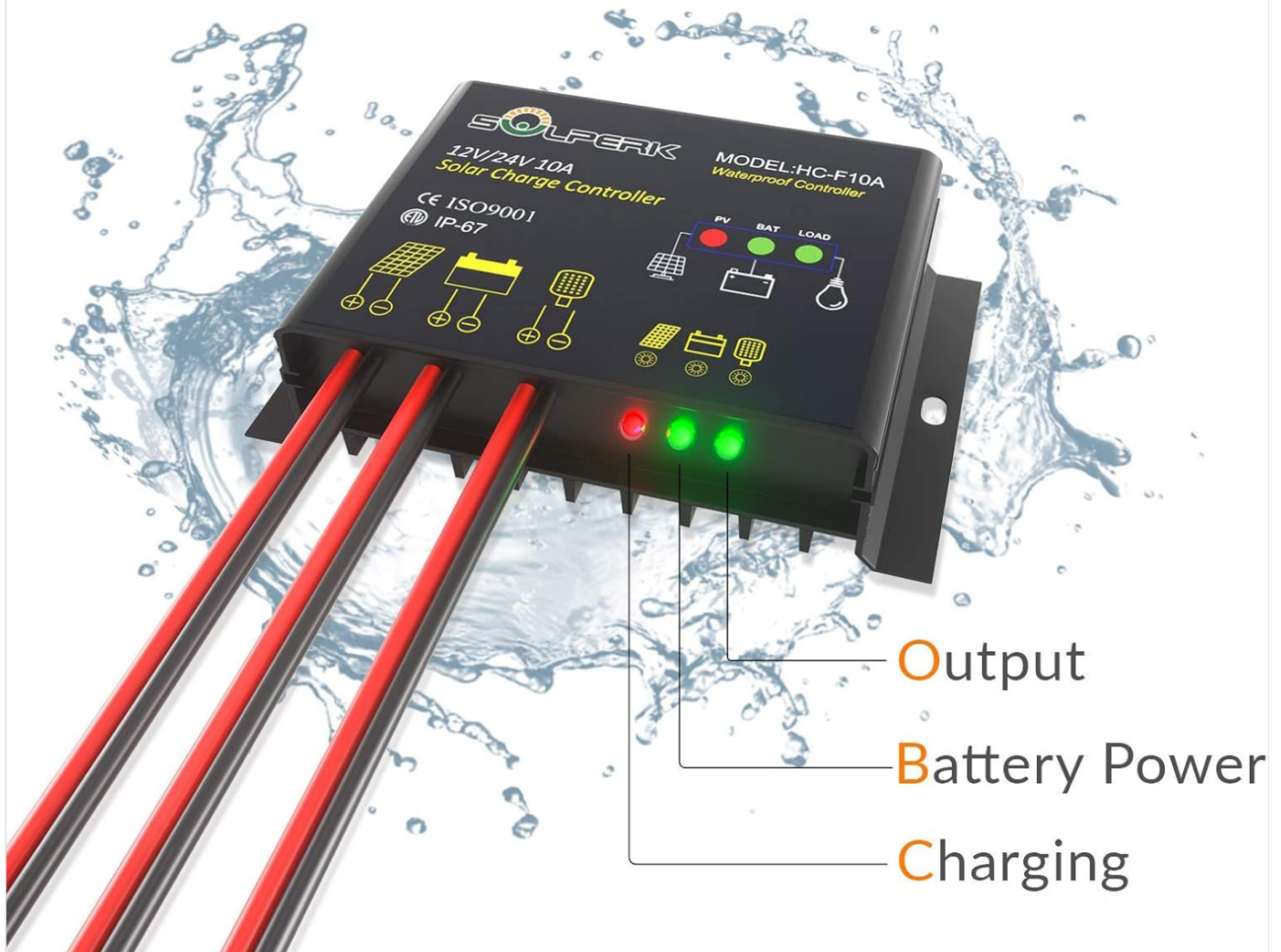


Image: The SOLPERK 10A Solar Charge Controller is shown with water droplets, emphasizing its IP67 waterproof rating. The image also highlights the three LED indicators for charging, battery, and load status.



Image: The SOLPERK 10A Solar Charge Controller is displayed alongside various battery types, including AGM, GEL, Flooded, and Lithium, illustrating its broad compatibility with different deep-cycle batteries.

4. PRODUCT OVERVIEW AND INDICATORS

The SOLPERK 10A Solar Charge Controller features a compact design with clear LED indicators to show its operational status.



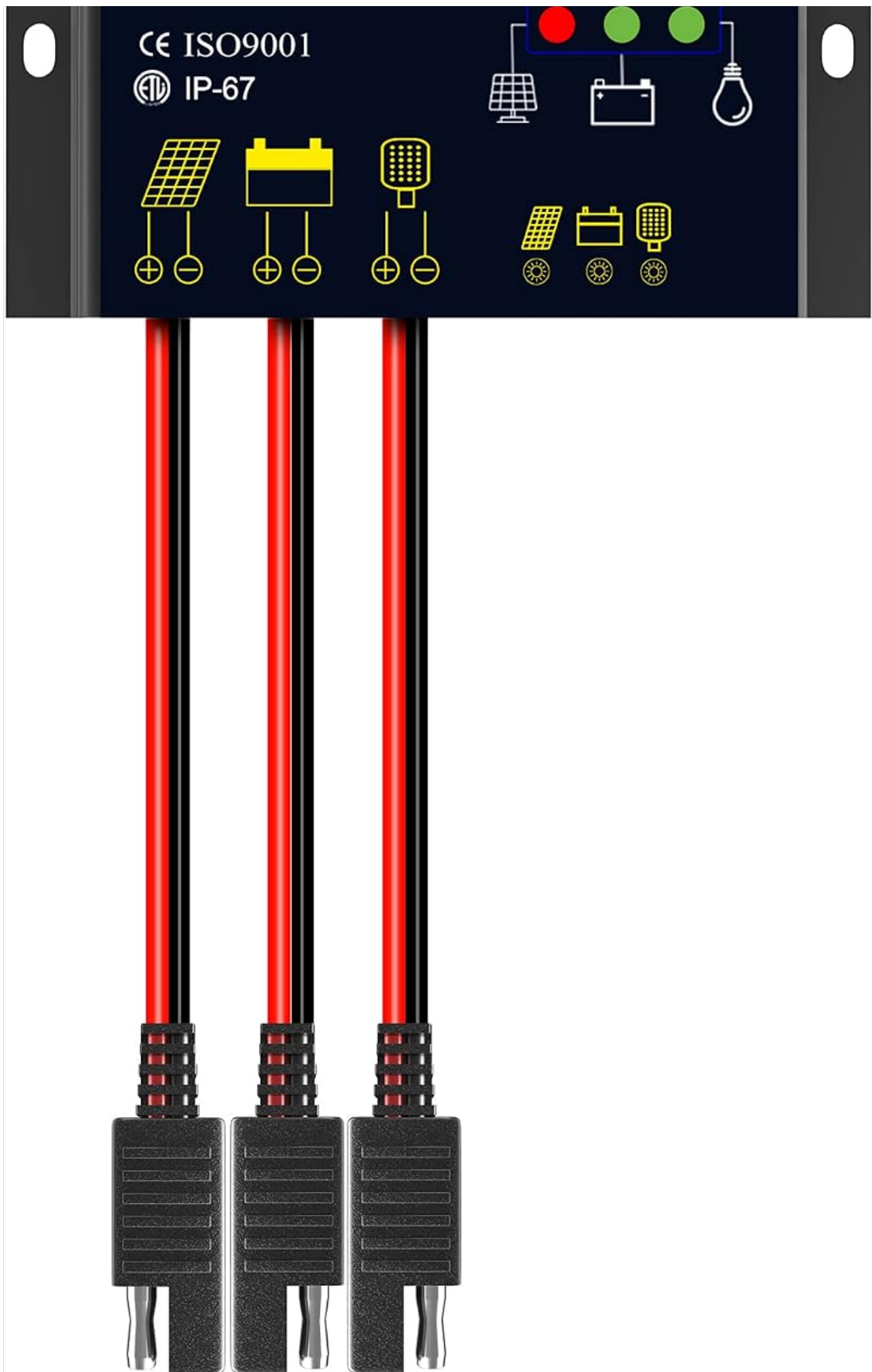


Image: A detailed view of the SOLPERK 10A Solar Charge Controller, illustrating its main body, input/output cables, and the three LED

indicators labeled PV (Solar Panel), BAT (Battery), and LOAD.

LED Indicator Meanings:

- **PV (Solar Panel) Indicator (Red Light):**
 - **Solid Red:** Solar panel is charging the battery.
 - **Off:** No solar input or charging is complete.
- **BAT (Battery) Indicator (Green Light):**
 - **Solid Green:** Battery is normal.
 - **Flashing Green:** Battery is low.
 - **Solid Red:** Battery is critically low or over-discharged.
- **LOAD Indicator (Green Light):**
 - **Solid Green:** Load output is active.
 - **Off:** Load output is off.

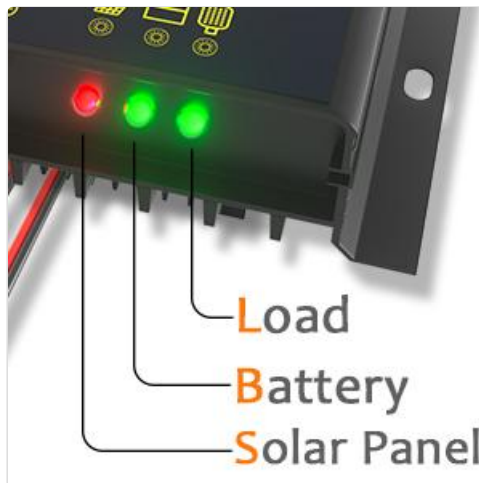


Image: A close-up view of the controller's LED indicators, clearly showing the labels for "Output" (Load), "Battery Power" (Battery), and "Charging" (Solar Panel), and their corresponding light colors.

5. INSTALLATION GUIDE

Follow these steps carefully to ensure proper and safe installation of your solar charge controller.

5.1 Mounting the Controller

The controller has pre-drilled holes for easy mounting. Choose a dry, well-ventilated location, protected from direct sunlight and excessive heat. Ensure sufficient space around the controller for air circulation.

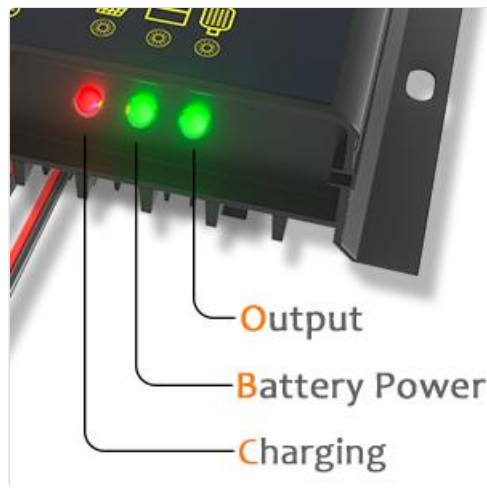


Image: A close-up view of the SOLPERK 10A Solar Charge Controller highlighting the pre-drilled mounting holes on its casing, indicating ease of installation.

5.2 Connection Steps (SAE Plug-and-Play)

The controller uses SAE ports for simplified plug-and-play connections. Always connect in the following order:

1. **Connect the Load:** Connect your DC load (e.g., DC lights) to the LOAD port of the controller. Ensure the load is within the controller's rated current.
2. **Connect the Battery:** Connect the battery to the BATTERY port. The controller will automatically detect the battery voltage (12V or 24V). Ensure correct polarity: **red line "+" to positive pole** and **black line "-" to negative pole**.
3. **Connect the Solar Panel:** Connect the solar panel to the PV port. Ensure correct polarity. The controller will begin charging the battery.

To disconnect the system, follow the reverse order: first disconnect the solar panel, then the load, and finally the battery.

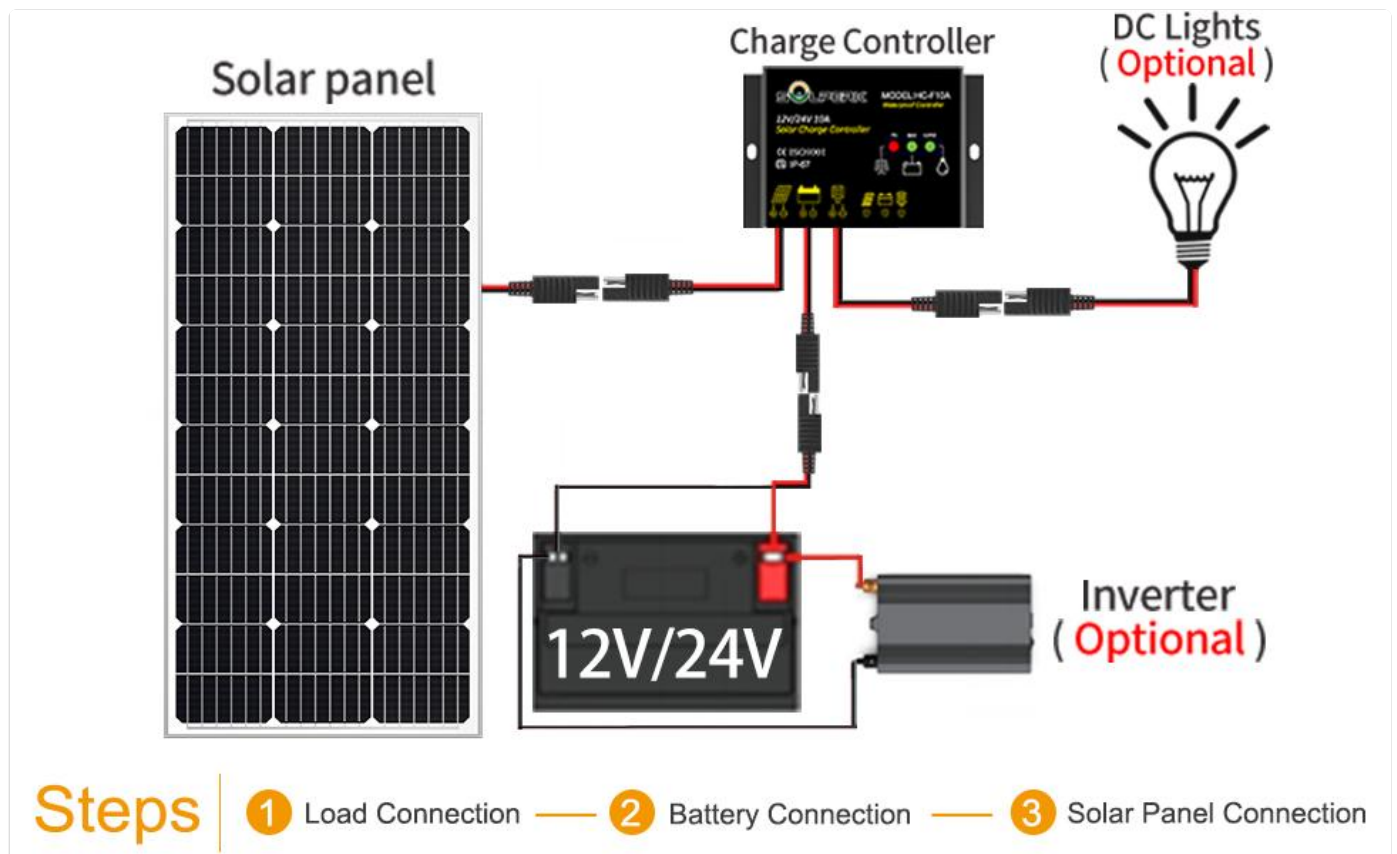


Image: A comprehensive wiring diagram illustrating the correct connection sequence: Load Connection, Battery Connection, and Solar Panel Connection. It shows a solar panel connected to the charge controller, which then connects to a 12V/24V battery, and optionally to DC lights and an inverter.



Image: A close-up of the SAE connectors, clearly indicating the importance of connecting positive to positive and negative to negative terminals to maintain correct polarity during installation.

6. OPERATING THE CONTROLLER

Once installed, the SOLPERK 10A Solar Charge Controller operates automatically. Monitor the LED indicators to understand the system's status.

6.1 Automatic Voltage Recognition

The controller automatically identifies whether the connected battery system is 12V or 24V upon initial connection. No manual setting is required.

6.2 Charging Process

The controller employs a 3-stage PWM charging algorithm:

1. **Bulk Charge:** Delivers maximum current to rapidly charge the battery.
2. **Absorption Charge:** Maintains a constant voltage to fully charge the battery, reducing current as the battery approaches full capacity.
3. **Float Charge:** Reduces voltage to a lower level to maintain the battery at full charge, compensating for self-discharge.



Image: The SOLPERK 10A Solar Charge Controller is shown with an overlay indicating "3 stage charging," representing its advanced PWM charging algorithm for optimal battery health.

7. PROTECTION FUNCTIONS

The SOLPERK 10A Solar Charge Controller is equipped with multiple intelligent protection features to safeguard your system components and ensure reliable operation.

- **Short Circuit Protection:** Prevents damage from short circuits in the solar panel, battery, or load circuits.
- **Overload Protection:** Protects the load circuit from excessive current draw.
- **Battery Under-voltage Protection:** Disconnects the load when battery voltage drops below a safe level to prevent deep discharge.
- **Battery Over-voltage Protection:** Stops charging when battery voltage reaches its maximum safe level to prevent overcharge.
- **Lightning Protection:** Offers protection against lightning strikes.
- **Reverse Polarity Protection:** Prevents damage if the solar panel or battery are connected with incorrect polarity.

6

PROTECTION

1. Short Circuit
2. Overload
3. Undervoltage
4. Lightning
5. Overcharge
6. Reverse Polarity

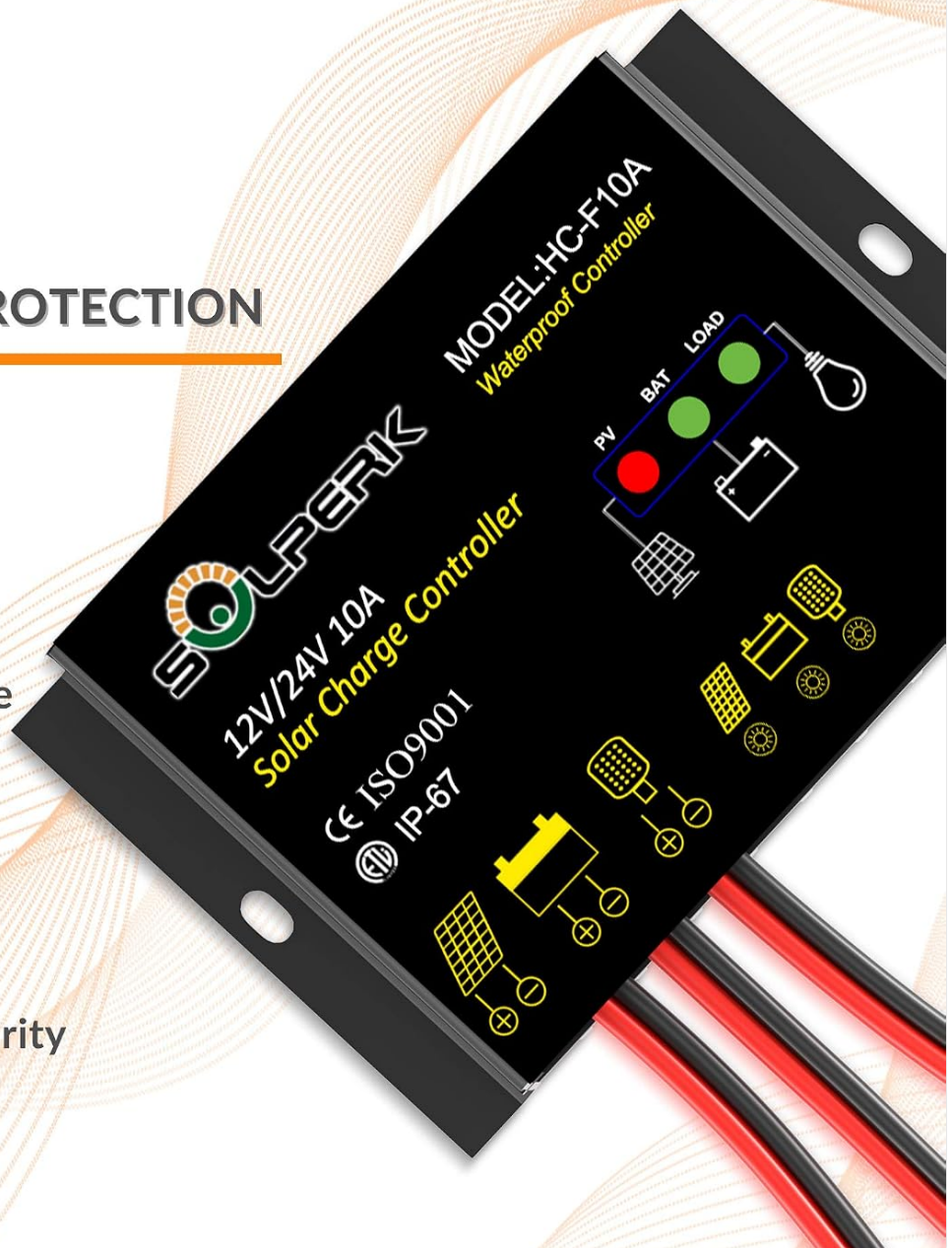


Image: The SOLPERK 10A Solar Charge Controller is depicted with a clear list of its six integrated protection features: Short Circuit, Overload, Undervoltage, Lightning, Overcharge, and Reverse Polarity, ensuring system safety.

8. MAINTENANCE

The SOLPERK 10A Solar Charge Controller requires minimal maintenance. Regular checks can help ensure optimal performance and longevity.

- **Inspect Connections:** Periodically check all wiring connections for tightness and corrosion.
- **Clean Controller:** Keep the controller clean and free from dust and debris. Use a dry cloth for cleaning.
- **Monitor Indicators:** Regularly observe the LED indicators to ensure normal operation.
- **Battery Health:** Ensure your battery is properly maintained according to its manufacturer's guidelines.

9. TROUBLESHOOTING

If you encounter issues with your SOLPERK 10A Solar Charge Controller, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
PV Indicator Off	No sunlight, solar panel disconnected, or reverse polarity.	Check solar panel exposure. Verify solar panel connections and polarity.
BAT Indicator Flashing Green/Solid Red	Battery low or critically low, battery disconnected, or reverse polarity.	Charge battery. Check battery connections and polarity.
LOAD Indicator Off (when load should be on)	Load disconnected, battery voltage too low, or overload protection activated.	Check load connections. Charge battery. Reduce load or check for short circuit in load.
Controller Not Charging	Incorrect wiring, faulty solar panel/battery, or controller malfunction.	Review installation steps. Test solar panel and battery independently. Contact support if issues persist.

If the problem persists after attempting these solutions, please contact SOLPERK customer support.

10. SPECIFICATIONS

Parameter	Value
Model	HC-F10A
Rated Charge Current	10A
System Voltage	12V/24V Auto-identification
Max Solar Panel Power (12V)	150W
Max Solar Panel Power (24V)	300W
Waterproof Rating	IP67
Charging Type	PWM 3-stage
Compatible Battery Types	AGM, GEL, Flooded (Deep-cycle)
Product Dimensions	1.97 x 3.19 x 0.83 inches
Item Weight	8.1 ounces (0.23 Kilograms)

11. WARRANTY AND SUPPORT

SOLPERK provides an extended 12-month warranty for this product. If you have any questions, require technical assistance, or need to claim warranty service, please contact SOLPERK customer support directly.

Customer Service: Refer to the contact information provided with your purchase or visit the official SOLPERK website for support details.

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ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page’s manual context to help answer it.

Name

Anonymous

Email

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After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question