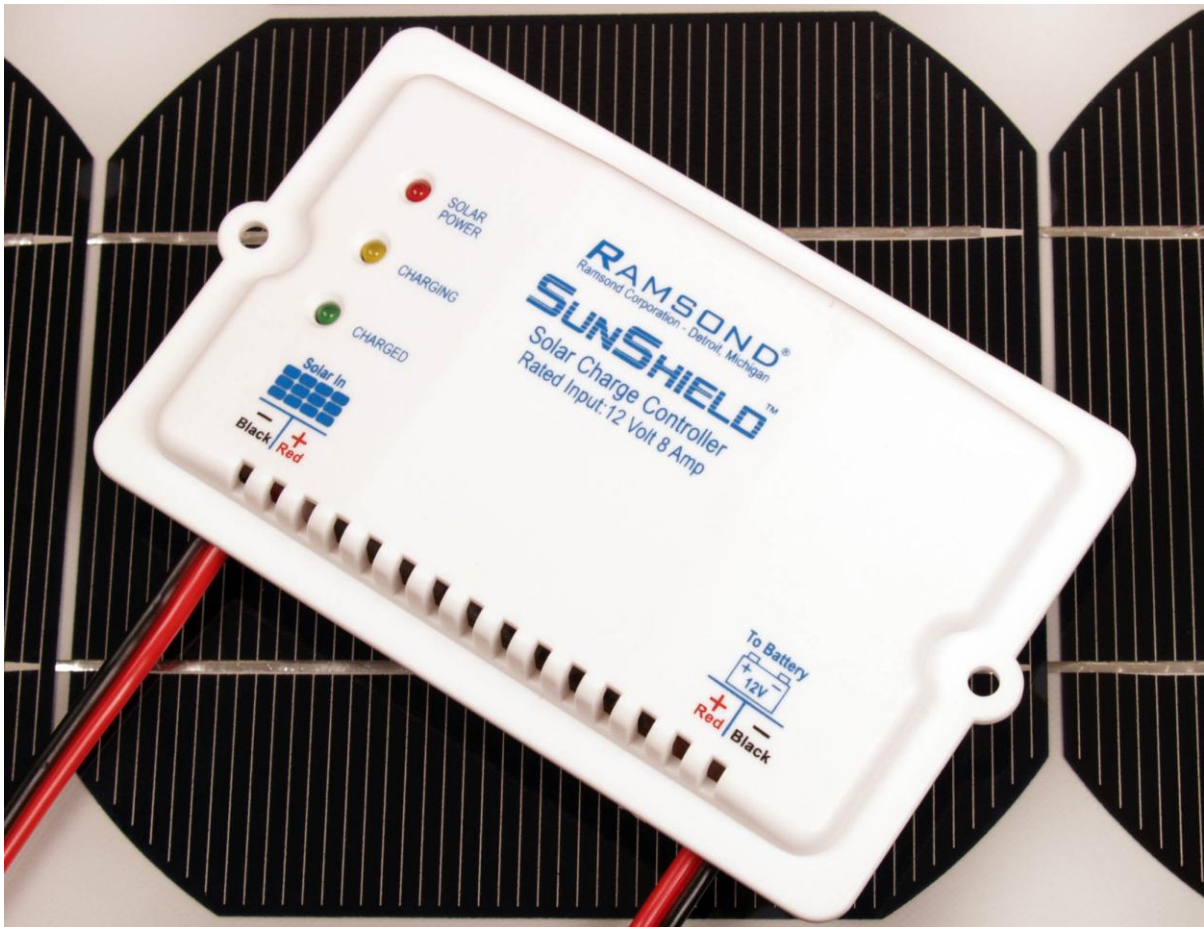


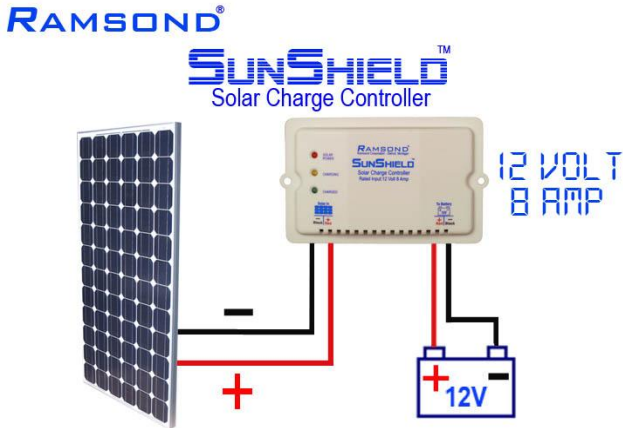
RAMSOND[®]
Ramsond Corporation - Detroit, Michigan

SUNSHIELD[™]
Solar Charge Controller

INSTRUCTION MANUAL



Installation



I. Connection to a battery

Attach the charge controller positive (+) wire to the positive (+) battery terminal. Then connect the charge controller negative (-) wire to the negative (-) battery terminal. **WARNING:** The connection **MUST** be placed onto the battery in the aforementioned order—wrong connection may cause sparking or explosion.

II. Connect to Solar Panel

Connect positive (+) wire of solar panel to positive (+) wire of charge controller and negative (-) to negative (-). Ensure the connections are secure.

III. Operation

The SunShield charge controller is equipped with three LED lights.

RED LIGHT - indicates that solar panels are producing voltage.

YELLOW LIGHT - indicates a battery that is being charged. When the battery voltage drops to 13 volts or lower, the charge controller will cut-in and begin charging the battery.

GREEN LIGHT - indicates fully-charged battery. When the battery reaches 14.2 volts the green light will come on will cut-out voltage to battery, thereby ensuring that the battery is not overcharged.

Notes

- It is normal for both green and yellow lights to alternate on and off during normal operation.
- The charge controller should be placed within 5 feet of the battery **in a dry, well-ventilated area.**
- This battery charge controller can generally support up to a maximum of 8 Amp of solar array current.
- This charge controller **IS NOT** waterproof or water resistant. Exposure to moisture or water will damage the controller and render the Limited Warranty void.

- It is common to have 12V battery problems such as dead cells or non-rechargeable battery issues. If your batteries are dead or have very low charge, the charge controller will not initiate the charging process.

Installation of Multiple Panels

You may use multiple 12V nominal solar panels, so long as they are connected in parallel and the maximum output current of the connected solar panels does not exceed 8 Amps.

General Testing Protocol

Always test under optimal sunlight conditions.

A. Test Solar Panels for Voltage

Connect voltmeter to each individual panel separately and observe Open Voltage. Open Voltage can range from 16 Volts to 24 Volts. Once all panels test for voltage, proceed to step B.

B. Test Batteries for Voltage

Prior to connecting the charge controller to the batteries, test the static battery voltage using voltmeter. Make note of voltage. Your battery voltage should read between 10-14 Volts. Make sure, prior to connecting the solar charge controller to your batteries, the batteries have at least 10 Volts of charge. If the batteries have no charge or very low charge, the solar controller will not operate as it detects that it is not connected to any battery.

C. Connect charge controller to battery

Connect charge controller to battery. Always connect charge controller to battery first and remove last. Observe correct polarity; positive to positive and negative to negative.

D. Connect Solar Panels to Charge Controller

Now connect solar panel(s) to charge controller. If battery voltage is 14.2 or higher, the GREEN light should be on. If battery voltage is 13 or lower, the YELLOW LED should be on.

NOTE: if the battery has no voltage or extremely low charge, the solar panel will not work. Please ensure that your battery voltage, at first use is between 10-14 Volts.

LIMITED WARRANTY

Product: **RAMSOND Sunshield 12V 8A Solar Charge Controllers**

Ramsond Corporation warrant the above referenced product to be free from defect or workmanship for a period of 1 year from the date of purchase, subject to the limitations contained herein. In the event of product failure or malfunction, return the product in person or by courier to:

Ramsond Corporation
WPC Service Department
4051 Haggerty Road
West Bloomfield Michigan 48323. Telephone: (248) 363-8302.

You must include the following to receive warranty service:

1. Proof of purchase.
2. Detailed description of the fault or problem
3. Visible Serial Number of the unit
4. \$10.00 Handling fee (check, money order)
5. Return Shipping Label (prepaid) for returning to you the repaired/replaced product.

The faulty/defective product will then be repaired or replaced (at our option). The repaired/replaced component/product shall then be returned to the purchaser. The purchaser shall be responsible for all shipping and handling costs of sending the defective/faulty item to us, as well as all shipping and handling costs of returning the repaired/replaced to the customer. Any import/export costs associated with shipping of repaired product outside the United States, such as brokerage fees, taxes, customs or duties are the responsibility of the customer. Certain items which are subject to normal wear and tear are specifically excluded from this warranty. Please allow up to 30 days from date that we receive the unit for repair/replacement. In the event that we are not able to repair the product, we will replace the product with same or similar unit. In the event that the model is not available, we will replace the machine with an existing model with same or superior characteristics, functionality and quality. We reserve the right to replace a defective unit with an identical refurbished unit that has been subjected to testing, which will similarly be warranted against defect or workmanship. Faulty installation, operation or maintenance of the product or attempted repair and maintenance by persons not expressly certified by Ramsond shall render the limited warranty void. Damage resulting from failure to use the product in a manner consistent with our recommendations shall render this limited warranty void. **THIS PRODUCT IS NOT WATERPROOF OR WATER-RESISTANT.** Damage resulting from exposure of this product to moisture, water, rain, salt, chemical agents and/or harsh environmental conditions will render this warranty void. This limited warranty specifically excludes any consequential and/or incidental damages. Although we may provide technical assistance via telephone or email to the customer, it is virtually impossible to troubleshoot all matters via telephone or remote assistance. As such, the offering by us of any technical assistance is made without any warranty or guarantee and provided on "as is" basis. It is the responsibility of each purchaser to determine whether any particular product is compliant with and permissible for use pursuant to the applicable rules, codes and/or regulations, if any, and suitable for particular use and operation. We make no representations or warranties whatsoever concerning the suitability of any merchandise for a particular use or purpose and any such warranty is expressly excluded from the terms of this limited warranty. We reserve the right to make slight modifications necessary to the merchandise for product improvement. This limited warranty shall be subject the laws of the State of Michigan and any claiming arising therefrom shall be interpreted in accordance to the laws of the State of Michigan and subject to the exclusive jurisdiction of the Courts of State of Michigan.