

PowerFilm, Inc. Limited Product Warranty

PowerFilm, Inc. warrants that this PowerFilm® Solar product is free from defects in materials and workmanship that impact performance for a period of two (2) years. The duration of the Limited Warranty is from the date of initial purchase. To obtain warranty, from purchases made from our dealer/distributor network a purchase receipt must be sent in with the product. The foregoing warranty does not apply to any defect, failure or damage caused by improper use, unauthorized modifications, neglect, improper testing, attempt to repair, inadequate maintenance, or damage from accident, fire, abuse or other hazard. PowerFilm's sole obligation and liability for products failing to comply with this warranty shall be, at PowerFilm's choice, either to repair the products or replace the defective product with a new or re-manufactured equivalent at no charge, provided that the warranty procedures have been followed. To obtain service under this warranty, customers must return a failed unit to PowerFilm with the return authorization number, original proof of purchase, description of the failure, contact information, and a return shipping address. PowerFilm will return repaired or replacement product at PowerFilm's cost.



Operation

The LightSaver is designed to collect energy from the sun when convenient, storing it in the internal battery. That energy is then available to recharge a cell phone or other USB device. There is no need to leave your USB device out in the sun plugged into the LightSaver while it is being charged.

When a USB device is plugged in, the LightSaver will charge the device until fully charged or the LightSaver is fully discharged. The LightSaver is on automatically and no button push is required. If the LightSaver is fully discharged, the output will remain off until its battery has been recharged to at least 10%. This protects against draining a cell phone battery by turning it on and off which is common in many other solar chargers.

The LightSaver is not designed to directly charge a device from the solar cell. Rather, the solar cell charges the internal lithium battery which, once charged, is available to provide USB power to other devices.

Charge Indicator

The LightSaver's charge indicator turns on when there is current flowing from either the solar module or the micro USB input, turning off at all other times to conserve battery. The indicator shows solid red if the battery charge is less than 10% of capacity. It changes to flashing red when the charge is between 10% and 50% is reached. From 50% to 90%, the indicator flashes green. Once 90% is reached, the indicator goes solid green. The LightSaver will continue to charge until it reaches 100%.



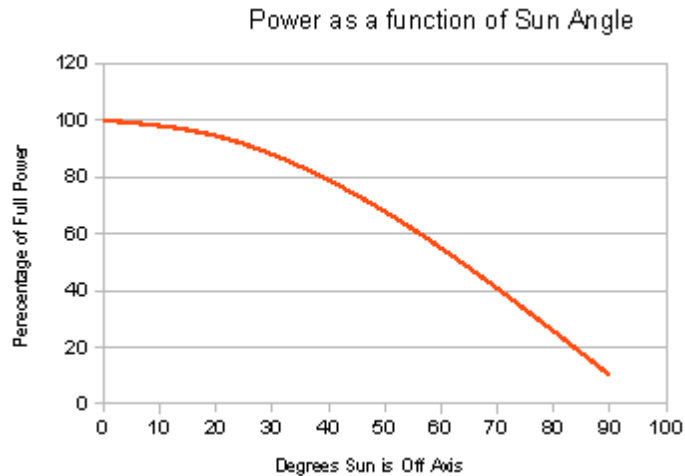
Mounting

The LightSaver features four attachment points which allow it to be mounted securely on a backpack, bike rack, the deck of a boat, or other surfaces. Keep in mind the expected direction of the sun when choosing where to mount the LightSaver. The easiest and most effective approach is usually to mount horizontally (ex. On a rear bike rack) Mounting on the top of a backpack rather than the back of the pack would be optimum unless you are planning on walking directly away from the sun most of the day. The LightSaver solar module is far more tolerant to shading than most solar devices, but any shade will reduce the amount of light collected. If you are mounting the LightSaver on the top or side of a tent, choose a location which will face the sun for the largest portion of the day.

Maximizing Use of the Sun

Facing the module directly toward the sun gives the maximum amount of energy collected. As the module is angled farther away from the sun, the amount of energy collected decreases. Six hours of good sun on a bright summer day will fully charge the LightSaver. In practice, this level of the sun is uncommon, but a day's worth of exposure on a mostly sunny day while laying on a horizontal surface should also give you a full charge. For those who like to have the details, the chart below shows relative light collected is a function of the angle to the sun.

Clouds and haze reduce direct sunlight reaching the module. Windows reflect a portion of sunlight, so a LightSaver sitting on a windowsill will take longer to charge than if it were sitting outside at the same angle. Car windows, particularly windshields, block a significant amount of light.



Graph showing the relative power collected by a solar module as a function of the angle relative to the sun. Facing directly toward the sun (0 degrees) is taken as 100% of possible power. Note that a module perpendicular to the sun (90 degree) receives only reflected light which is about 10% of maximum.

Care of the Device



Avoid Physical Damage

The LightSaver is thin, light and durable, but creasing or puncturing will reduce efficiency. Reasonable care in handling will assure a long life.

Avoid High Temperatures

Avoid leaving the LightSaver on the dash of a hot car or in other similarly hot environments as the heat may damage the battery.

Keep Water Out of the Device.

A little water on the LightSaver is not a problem, but allowing significant water inside the unit may corrode components. Saltwater is particularly corrosive and should be kept out of the device.

If submerged in freshwater take the following steps:

1. Remove the LightSaver from water, disconnect any cables and keep the solar module rolled up.
2. Set it on end so any water inside the barrel can drain out.
3. If you have access to compressed air, blow it into the USB connector at one end to help drive water out.
4. Allow it a day or two to dry before plugging in again.

If submerged in saltwater

Salt is very corrosive, so the unit must be washed with care taken to remove all salt. Use the following procedure:

1. Remove the LightSaver from water, disconnect any cables and keep the solar module rolled up.
2. Remove the Philips screws holding each end cap in place and remove the end caps. Place the end caps and screws in a safe place so they do not get lost.
3. Flush the inside of the barrel with large amounts of clean, fresh water. Flush from both ends to ensure all salt is removed.
4. Unroll the module, rinse with clean water, pat dry and roll it back up.
5. Rinse the end caps and screws in freshwater.
6. Leave the LightSaver for a day with end caps removed to allow full drying.
7. Replace end caps and screws.

Light Saver Specifications

- Dimension Rolled: 7 ¾" x 1 5/8"
- Dimension Unrolled: 7 ¾" 18 ½"(with flap) 11" (solar only)
- Weight: 4.9 oz.
- Battery Chemistry: Li-Ion (3.2Ah)
- USB Output: 1A at 5V
- Charge time full sun: 6h
- Typical Charge time: One mostly sunny day
- Charge time micro USB: 3h

The Lifesaver should give you many years of excellent service with just a little care and caution. It is covered by a 2 yr warranty. If problems arise follow warranty instructions.