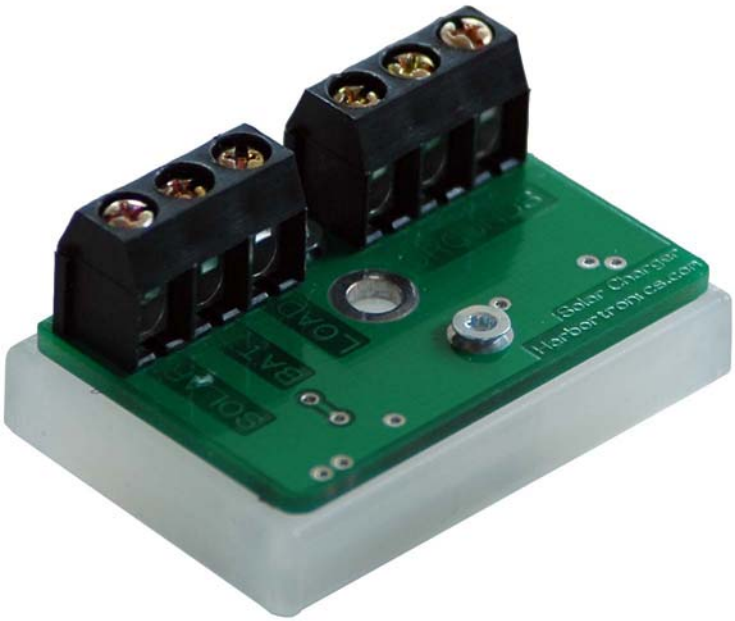
Harbortronics Solar Charger

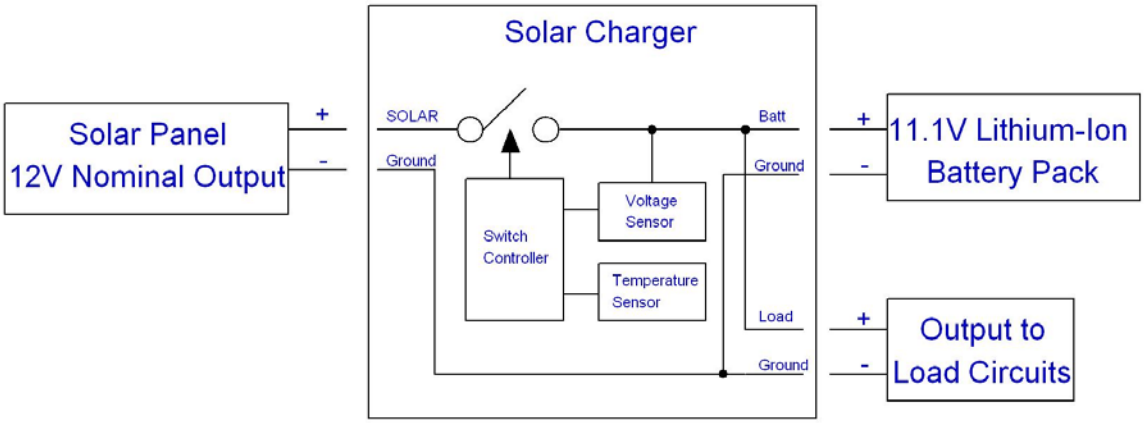
The Harbortronics Solar Charger is designed to interface between a standard solar panel and an 11.1V lithium-ion battery pack.



Typical solar panels are designed to output a nominal 12 volts, which is useful for keeping a 12V battery pack charged up in the field. In reality, the voltage from a solar panel varies dramatically with the amount of sunshine and the amount of current drawn from the panel. Lithium ion battery packs can be damaged if overcharged, or if charged at temperature extremes, so some sort of charge controller is needed between a solar panel and the battery pack. The Solar Charger circuit was designed for this exact purpose.

The operation of the circuit is as follows.

- If the battery voltage drops below about 11.5V, the solar charger will connect the solar panel output to the battery pack.
- When the voltage on the battery pack rises above 12.1V, the solar panel is disconnected. This voltage point is calibrated in production.
- If the temperature is greater than 45 degrees C, or less than 0C, then the solar panel is disconnected as well.



The Solar Charger has two terminal blocks, with each terminal labeled with it's function. Refer to the block diagram above for more detail on the connections. The circuit board is mounted to a custom plastic mount. A single through-hole is located in the center of the assembly for use with a #6 mounting screw.

The circuitry is powered from the solar panel voltage, and a series diode is used to prevent battery drain by the circuitry or the solar panel.

Specifications:

Size:	1.6” x 1.1” x 0.72” high
Weight:	12 grams
Maximum Charge Current:	2 amps (not limited by circuitry)
Price:	$50