

SOLAR CHARGEABLE PORTABLE BATTERY PACK

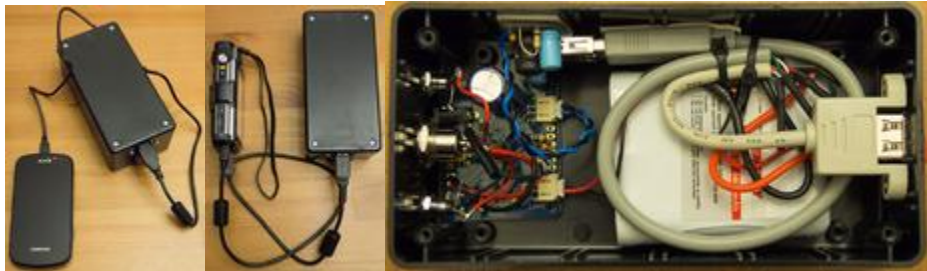


There are a lot of rechargeable lithium battery packs available. Some have a lot of capacity and others can be used with solar panels, however, I could never find one that fits my requirements. The solar models that I've seen generally don't have much capacity and use such small solar panels that they don't charge very fast.

Then I came across Adafruit's USB/Solar Lithium Ion Charger board and it solves all of my problems. This board has a lot of cool features: it can charge a battery via a solar panel or any other 5V input and it can deliver power to the MintyBoost from both the input and the battery simultaneously. In this way you could charge a device on a not so sunny day by drawing some power from the solar panel and the rest from the battery.

My main goal for this project is to have a versatile power pack for use when I go camping/backpacking.

I have a fair amount of devices that I typically bring with me that can be charged via USB: camera, headlamp, UV water purifier, cell phone, mp3 player, etc. The 6600mAh battery can charge any of these devices multiple times, providing many days of capacity before needing to be recharged. On sunny days the 3.4W solar panel can recharge the battery if I am away from power for a long period of time. At full power the solar panel will take about 12 hours to fully charge the battery. While this is a long time, for my use case this should be fine as I will most likely be topping off the battery with the solar panel not charging it from zero. I like this solar panel for its combination of size and capacity. A larger panel could charge the battery faster, but would be a lot less portable.



It explains how the charger board works and shows how to wire it to the other components. Basically the charger board is connected to both the battery and the MintyBoost and uses either a USB or solar panel input to provide input power when you want to charge the battery. The charger also has the option to output the charging status (charging, charging complete) to external LEDs.

For this project I used a red LED to indicate that the unit was charging and a green LED to indicate that the battery was fully charged. I also isolated the battery from the remainder of the system using a power switch. This prevents the small self drain inherent to the MintyBoost from discharging the battery when I am not using the unit. You just have to remember to turn it on when you want to charge the battery. In addition I used a coaxial power jack for the power input and modified both the solar panel and a USB cable with matching coaxial power plugs of the same size. The final piece was using a scavenged panel mount usb port for the MintyBoost's output.

I have to say that I really like this setup. I can charge all of my devices and when placed in the sun, the solar panel started charging the battery with no problem.

Source: <http://www.highonsolder.com/blog/2012/10/27/solar-chargeable-portable-battery-pack.html>