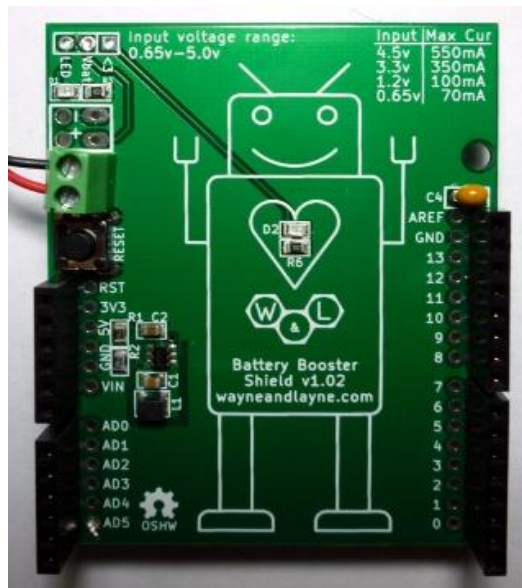


# BATTERY BOOSTER SHIELD



## Introduction

The Battery Booster Shield is an add-on for the Arduino that efficiently boosts a lower input voltage (0.65V to 4.5V) up to 5V. It powers the Arduino and peripherals through the 5V pin. The current limit is determined by the input voltage, and ranges from 70mA for 0.65V up to 550mA for 4.5V.

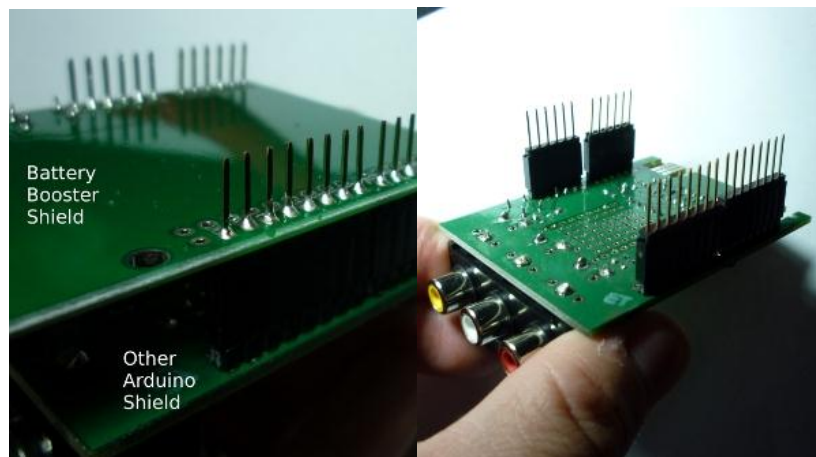
## Features

- **High Efficiency Power Conversion** means that your batteries last longer, and deliver more useful power to your circuit. Traditional “drop-down” linear regulators waste excess power as heat, reducing your battery lifetime.
- **Easy to assemble kit** only requires basic soldering of a few simple components. Most of the parts are pre-soldered.

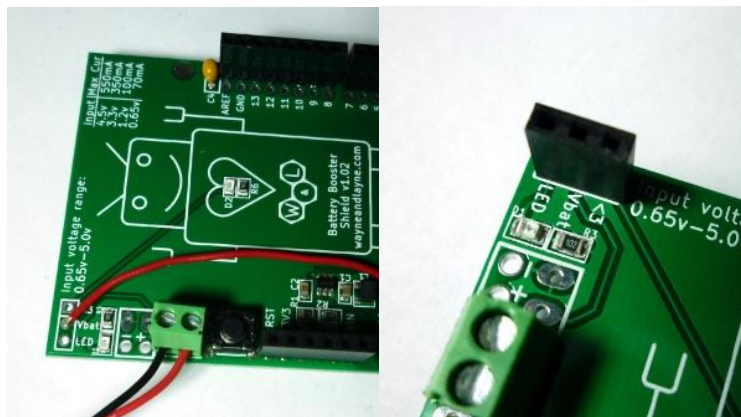
- **Fully open-source design** means that everything is freely available and ready to be hacked, including the circuit schematic, circuit board layout, parts list, and Arduino sketches.
- **Custom, professionally-made PCB** provides easy connections to all buttons and the Arduino Mega, and has been specially designed to work in two configurations, either normal or upside-down.

## PCB Assembly

Most of the soldering is already finished for the Battery Booster Shield, but you will need a soldering iron and solder to finish soldering the kit. The header pins to connect the shield to the Arduino need to be soldered in. To do this, grab any Arduino shield, and stick the included long header pins to the pins on the spare shield. This will allow us to make sure the header pins are nice and straight. Slide the Battery Booster Shield onto the long header pins, making sure the components are facing away from the exposed pins. Solder the pins to the shield.

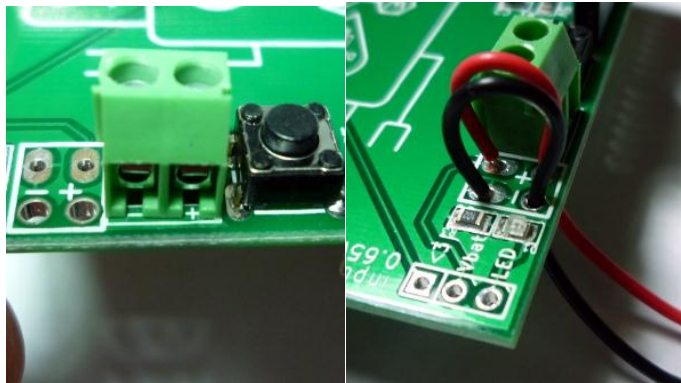


The Battery Booster Shield includes a mini expansion header with three connections, located in the lower-left corner of the shield. The bottom pin is a connection for the LED next to it, the middle pin is a direct connection to the battery voltage, and the upper pin is for the “heart LED” in the center of the shield. You can use a little piece of wire to connect the LED pins to any arduino pin you want, and control the LEDs in software. You might use one led as a power indicator, or perhaps a blinking “low battery” alert. The center pin connects to the battery voltage, and you can connect this pin to any of the analog input pins to be able to monitor your current battery voltage. If you want to use any of these three connections, you can either solder wires directly into the holes, or you can install the included 3-pin female header pins, to allow you to reconfigure the connections.

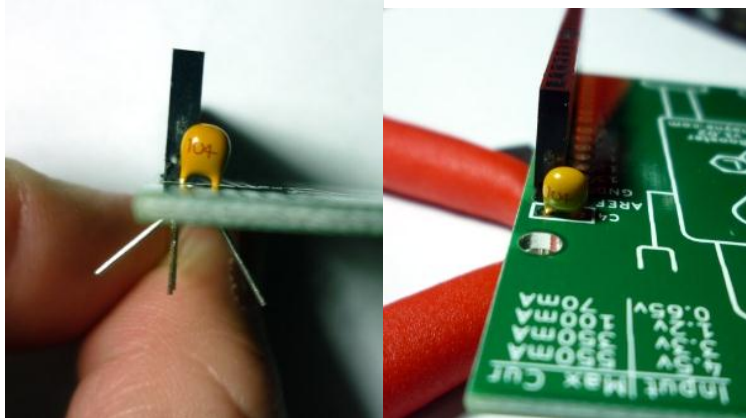


To supply the input voltage to the Battery Booster Shield, there are two options. If you want a more permanent connection from your batteries to the shield, you can solder the battery leads to the provided pads as shown below in the image on the left.

Pass the wires through the strain-relief holes and then back down into the actual holes, and solder them in place. For a less permanent connection, you can use the screw-down terminal block between the solder holes and the reset button. Simply observe the positive and negative signs below each terminal, unscrew the terminal to open it up, insert your wire, and screw it down to secure the wire.

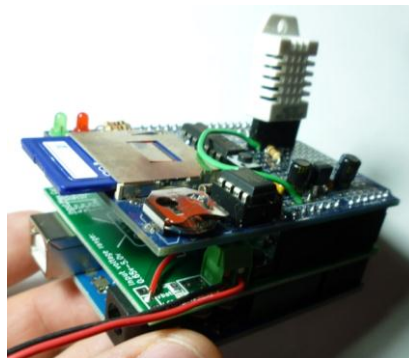


If you are going to use the Vbatt connection with an analog pin to measure the battery voltage, for example to shut down your circuit before you damage your rechargeable batteries, you probably want to add the small capacitor included with the kit. This capacitor is located next to the Aref pin on the top side of the shield, and is labeled C4. This capacitor helps the Arduino's analog-to-digital converter (ADC) make more-accurate measurements of the voltage using an analog pin. To install it, simply insert the capacitor into the labeled holes, bend the holes slightly to keep it from falling out, solder down the pins, and trim the excess wires.



## Demonstration Use Cases

**Low-Power Data Logger** – Being a very efficient voltage booster, the Battery Booster Shield works very well for long-term and low-power data logging applications. Using special commands to set the Arduino to sleep for a few seconds at a time, we can really save a lot of power and make the batteries last for a long time. This would be very useful for a low-power remote sensor node or data logging device.



LoL Shield Power Supply – TODO

Source: <https://www.wayneandlayne.com/projects/battery-booster-shield/>