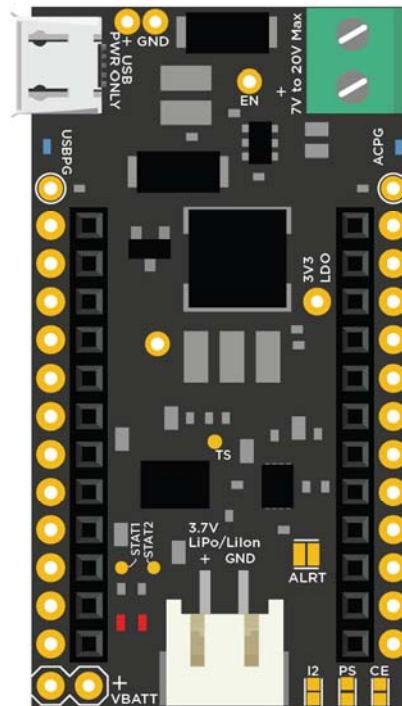


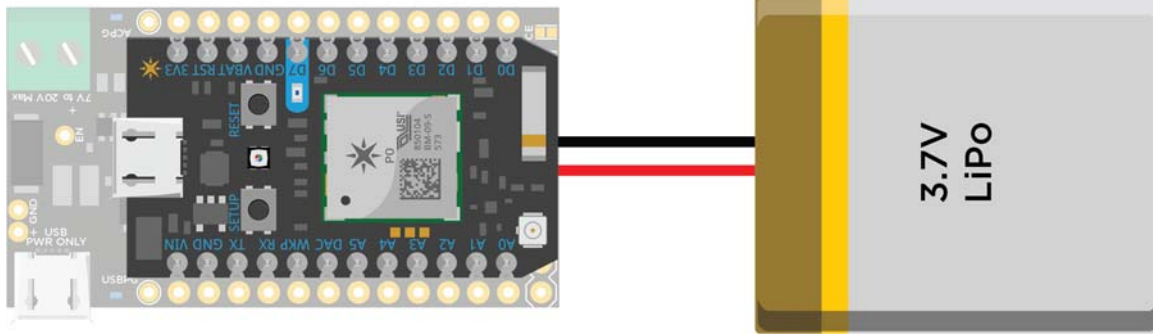


## Power Shield

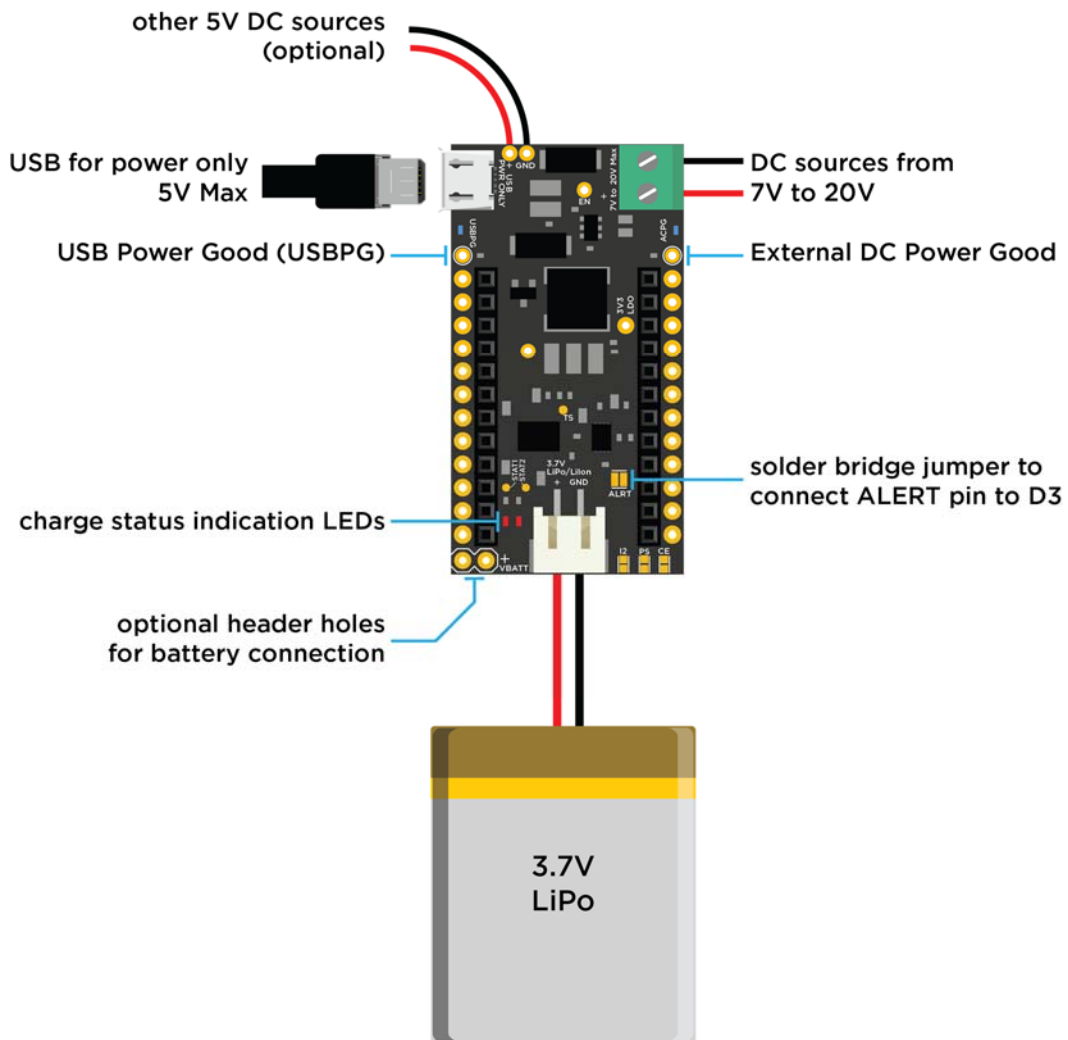
The Power Shield, as the name implies, allows the Particle device to be powered from different types of power sources. The shield has an intelligent battery charger and power management unit along with a wide input voltage regulator and an I2C based fuel-gauge. You can power a Particle device with either a USB plug or a DC supply of anywhere from 7 to 20VDC and charge a [3.7V LiPo battery](#) all at the same time.



The system switches in between the different power sources automatically, reducing the charge and discharge cycle stress on the battery. The fuel gauge allows you to monitor the battery's state-of-charge (SOC), allowing it to notify the user remotely and take preemptive actions when necessary.



The shield is setup so that when powered from the USB port as well as from a DC supply, it chooses the DC source over USB. The charge current is set to 500mA when charging from USB and set to 1A when charging from a DC source.

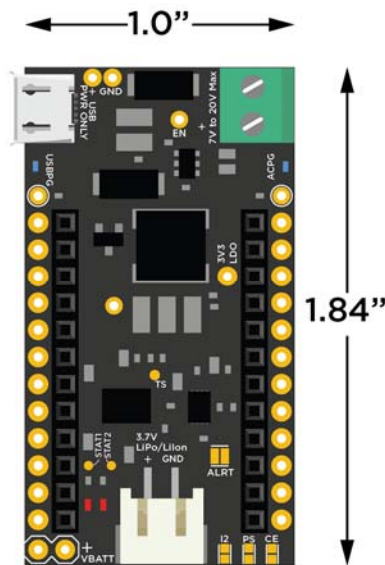


There are two status LEDs located on the left of the JST battery connector labeled STAT1 and STAT2. Here is a table of the LED behavior depending on which state the battery charger is in:

STAT1 (Blue)	STAT2 (Red)	Charge State
ON	ON	Precharge in progress
ON	OFF	Fast charge in progress
OFF	ON	Charge done
OFF	OFF	Charge suspend (temperature), timer fault, and sleep mode

## Power Shield - Specifications

- Operating voltage: USB or External DC of 7 to 20V
- Current consumption: 500mA max (USB) & 1.2A max (other DC sources)
- Dimensions: 1" x 1.84"



**NOTE:** There is a known issue on the v2.1.0 of the Power Shield where the shield will fail to power up the Photon when the battery is inserted for the first time or reinserted after a long time (>60mins). The user will need to unplug and plug the battery back again for the shield to power up. The issue arises by the fact that on startup, the battery charger confuses the Photon booting up to there being a short circuit and powers off to save the device. If you are feeling adventurous, you can fix this issue by soldering a 10nF capacitor across the DPPM pin and GND. This delays the short-circuit protection at startup and lets the Photon bootup without any issues.