



Hardware

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Raspberry Pi 3

Like all engineering projects, our group needed a computer to handle our needs. The Raspberry Pi 3 is a programmable micro-controller that is compatible with the MPU we've selected. The features covered by the Raspberry Pi are exactly what our team needs to begin

a prototype. Below one will find the features that attracted us the most :

- Cortex-A53 (ARMv8) 64-bit SoC
- Clock Speed: 1.4GHz
- 2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN, Bluetooth 4.2, BLE
- Gigabit Ethernet over USB 2.0 (maximum throughput 300 Mbps)
- Full-size HDMI
- 4 USB 2.0 ports
- Micro SD port for loading your operating system and storing data.



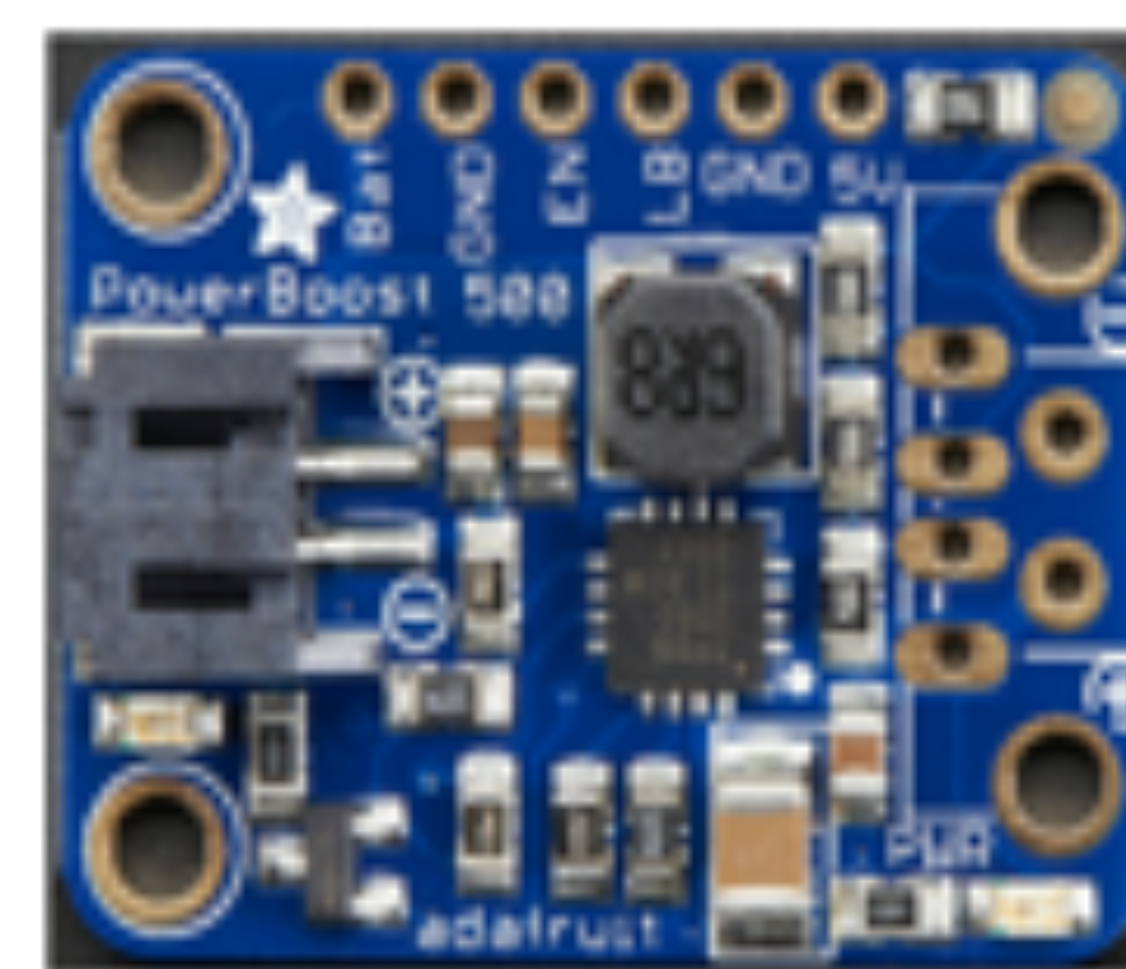
Raspberry Pi 3



Sparkfun IMU Breakout MPU-9250 Board

Motion Processor Unit

- An accelerometer will be needed to detect when a distress call should be signaled.
- Sparkfun IMU Breakout MPU-9250 used throughout this project featuring a 3-axis accelerometer.
- A change in acceleration of the waves then causes an applied force on the MPU.
- Sparkfun MPU also has an integrated 3-axis gyroscope.
- The gyroscope can be helpful by identifying a specific change in angular velocity.
- By configuring the MPU onto the Raspberry-Pi microcontroller, an effective motion detection device can be achieved.



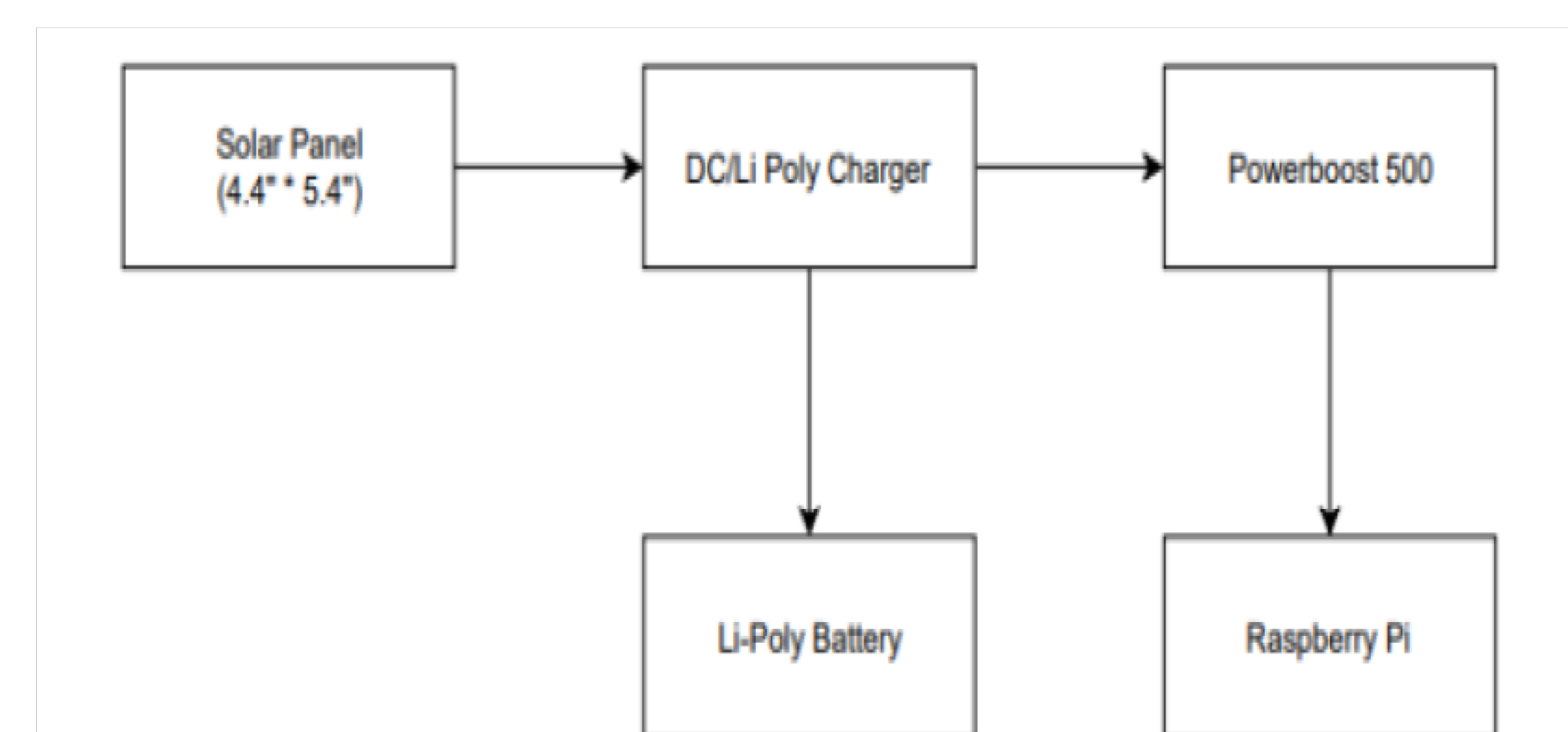
Powerboost 500



DC/Li Poly Charger

Powering The Device

- The Li/Poly charger would connect to the 2W, 6V solar panel.
- The Charger is connected to a Li/Poly battery. This battery has a capacity of 2500mAh for a total of about 10 Wh, and the output ranges from 4.2V when completely charged to 3.7V.
- One of the outlets of the charger will be connected to the Powerboost 500 component. This little DC/DC boost converter module can be powered by any 3.7V LiIon/LiPoly battery, and convert the battery output to 5.2V DC, to run the Raspberry Pi.



Wiring For Powering The Device