

Senior Design 2019

Deliverable: Electrical Design Document

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Team: Notorious EMG

Team Members: Chris Anderson, Vi Tran

Electrical Block Diagram

Purpose: The Muscle Guide is a muscle-activity detection device for athletic training. To achieve detection, a Signal Conditioning Unit is required to amplify the signal and reduce the amount of noise reaching the PSoC6. There are four main routines completed by the Muscle Guide: analog-to-digital (ADC), Bluetooth pairing, data write, and a display routine. The Bluetooth pairing routine will establish a connection to the RTC box where a second PSoC6 will utilize a data-write routine to write the detected muscle activity to SD Card storage for analysis and review. The display routine will allow the user to analyze data graphically and in real time for the purpose of determining muscle force and subsequent muscle fatigue. Two boost converters are used to increase the magnitude of the supply voltage to the SCU which supplies the PSoC6 with a conditioned muscle signal. Finally, LED's will be included to indicate a successful paired connection between the wearable device and the RTC box. Battery-disconnect switches are included to preserve battery life when the device is not in use.

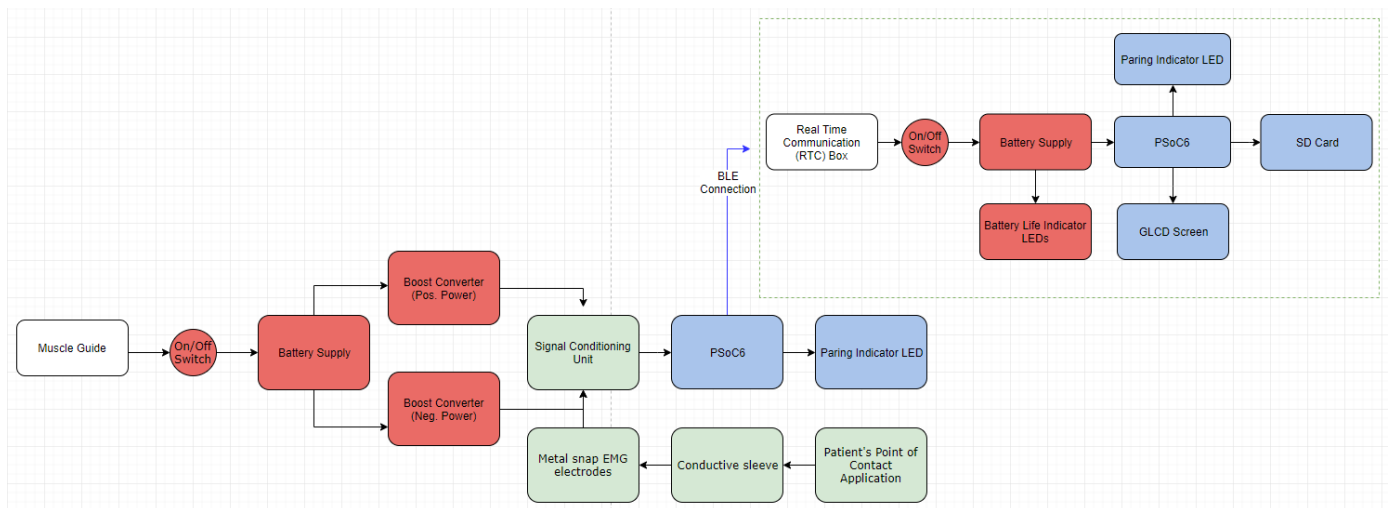


Figure 1 Electrical Block Diagram

Wiring Diagram

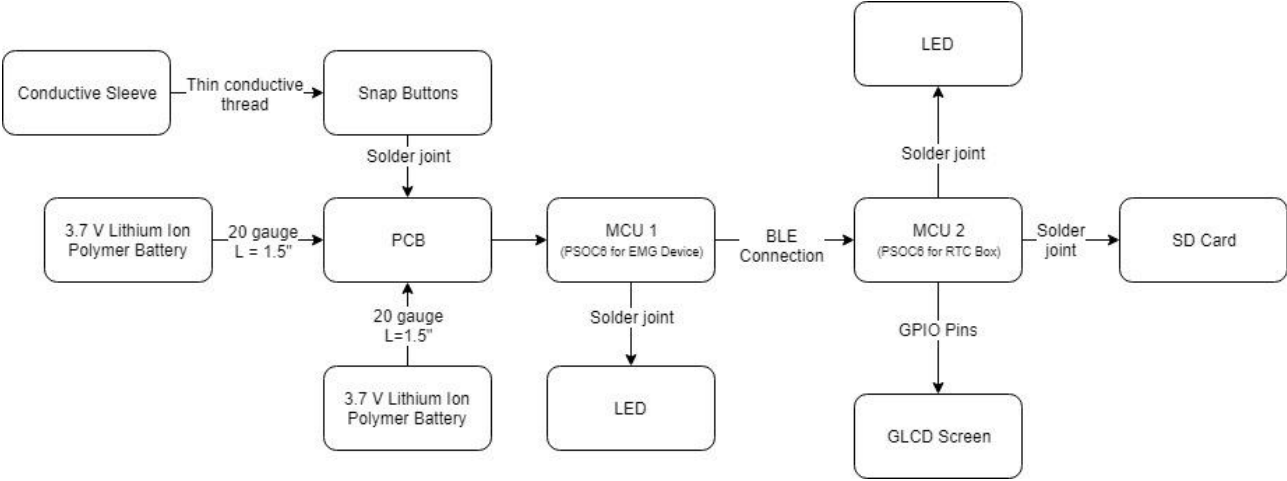


Figure 2 Wiring Diagram