Skateboard Smart Power Management System - David Hickox

Team Members

- David Hickox (dhickox2)

Abstract

In the industry there are many complete battery management systems for small Electronics like phones, as well as large electronics like cars. There are no midsize all in one smart power management systems for RC or anything that uses medium hobby size lipo battery packs. Most of the time they are just charged and balanced on separate system in the use case of an RC car or aircraft where they can be removed and charged outside of their use case. More and more often though these mid size batteries are being permanently integrated into anything from electric bicycles to backpack laptop chargers, to skateboards. These are use cases where the batteries are not easy to remove and have external hardware handle balancing, charging, and monitoring. They are also situations where some level of smart awareness is necessary, for example ebikes and eskateboards today just stop functioning when the batteries die but that is extremely unsafe for the rider. This is especially evident in the case of the electric skateboard where the motor is also the only means of slowing down. The system has to be smart enough to automatically take control of the esc and slow down the skateboard before the battery voltages drops out and the rider is potentially left in danger.

Battery management systems this complex and useful really only exist in the large electronics world. The goal of my project is to design, build and test one that will be both useful for a range of applications but also modular with end intent to make it useful for several of my own projects as well as potentially a viable product for the mid size battery industry.

Project Goals

First Demonstration:
Have a board designed and have begun final review of PCB, almost ready to have the board fabed.

Second Demonstration:
Have the Board Completely built and starting on programming.

Final Demonstration:
Have a working Battery management system.

Tentative Schedule

Sunday 5-8pm
Monday 2-8pm

Final Report and Project Files
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