NAU NORTHERN ARIZONA UNIVERSITY
School of Informatics, Computing, and Cyber Systems

Team Lithium Lumberjacks

Project Requirements

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Overview: The purpose of this document is to provide a list of requirements and constraints that will help guide the design of the Dataforth Battery Charger Project.

Engineering Requirements

1. Battery Charge Rate
    1.1. 1C minimum charge rate (rating 90-95% of charger)
2. Battery Charge Monitoring
    2.1. Monitor voltage drop across the battery
3. Temperature Control
    3.1 Temperture cannot exceed 70°C while discharging
    3.2 Temperature cannot exceed 45°C while charging
4. Cell Charge Balancing
    3.1 Monitor and regulate voltage drop across each cell
5. Data Processing and Control
    5.1. Process data from battery pack sensors
    5.2. Process data from on-board power circuits
    5.3. Acquire control and response data from Dataforth module
    5.4. Respond to user input
    5.5. Control the battery charger
        5.5.1. Use appropriate charging algorithm
    5.6. Control display

Constraints

1. Implement Dataforth product(s)
    1.1. Use Dataforth parts wherever possible / applicable
2. Interface with Dataforth MAQ20
    2.1. Have I/O terminal that easily connects to and interfaces with the MAQ20
3. Use TI MSP430 microcontroller

Marketing Requirements

1. LCD Display
2. User interface for controlling charge rate, battery chemistry
3. User settable alarms
    3.1 physical button or bluetooth