To: LFEVY42016 Team
From: Geoff Nudge
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Subject: QAR001c - Displays and Indicators

Abstract

This QA test involved checking that the required menus are available on the I2C/TWI LCD2004 Module LCD screen of an accumulator and in the test stand.

Technical Findings

PacMan software v0.14 has an implementation of all screens that display measurands. The screens are a top level (with overall pack voltage, pack current, pack state, SOC, uptime, software version, and safety loop state), and 7 screens, one for each cell, displaying cell temp and voltage.

Calibration factors are not displayed, nor can they be modified. Also CAN addresses are not available or able to be modified.

The pack alive indicator light (red LED) blinks while AIRs voltage is present, as desired.

Also, the implemented menus slowly tick up to the top level menu while the AIRs are closed. This is likely due to an EMI issue related to voltage spikes on inputs to the Atmel AT90CAN128 AVR microcontroller.

Recommendations and Conclusions

ATP lists the follow with regards to displays and indicators:

QAR001c - Displays and Indicators
1. Test all desired displays in test stand, in all states.
2. Test all desired displays in Accumulator with LiFePO4 cells, in all states.

All menus that have been implemented display properly in the test stand and the accumulator. However, because there are menus that were not implemented, and existing menus are not stable in a high current scenario, the current system fails acceptance tests.

Future iterations should add menus to modify CAN addresses and display calibration factors, as well as solve the EMI issue, as it also results in resetting the microcontroller.