

User Interface Design - TSV

ECE 492 - Spring 2015

Abstract

This document describes the necessary user interface for the TSV system. The TSV system, by design, requires minimal user interactions. Under normal operating circumstances, the user will not need to interact with the battery packs at all. However, the simple user interface on the battery pack allows for quick status check and troubleshooting.

Revision 1.0.0
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Inputs

External Reset Button

There is a reset button located on the outside of the pack for the user to press and reset the PacMan computer and all the AMS boards in case this is needed. Press the button and wait for the system to reboot. When the reboot is complete, the LCD will start displaying information again and any errors will be reported. If no critical errors exist, the pack will be ready for operation.

Outputs

The LCD Display

A 20x4 character LCD display is visible from outside of the pack and is controlled by the PacMan computer directly to show the user information about the pack. It cycles through 4 screens with the following information:

1. "PacMan 2015": name of the program running and the names of the TSV team members.
2. "Pack Status: (Dis)charging. SoC:XX% C: XX, V: XX.XX": overall pack information including the state of charge, current and voltage output.
3. "Cell SoC: [1]:XX% [2]:XX% [3]:XX% [4]:XX% [5]:XX% [6]:XX% [7]:XX%": individual cell state of charge information.
4. "EXX: (error message)": any error message about the pack or individual cells.

LED Indicator Lights

Pack Terminal 20V Voltage Present Light

This LED will light up whenever there is voltage over 20V present across the output terminals of the pack. This light does not rely on programmable logic and works in case of PacMan or AMS failures.