

TO: LFEV-ESCM Team
FROM: Ben Richards
DATE: 17 February 2014
SUBJECT: Current Sensor Placement

ABSTRACT:

The Pack Manager (PM) monitors an individual battery pack and controls the charging process of the pack. An important parameter in determining pack performance and state-of-charge is the DC current flow. This memo details the reasons behind the decision to move the current sensor from the BMS board to the PM interface board.

TECHNICAL FINDINGS:

In the previous design, there existed only one PCB with battery management functionality. This was the Battery Management System (BMS) board designed by Anthony Lorence. With the addition of a new pack manager to the accumulator pack, there now exists another location for sensors to measure parameters at the pack level. Since current is a pack-level parameter (i.e. there is only one current path), it makes more sense to monitor this at the pack level rather than the cell level. This has the additional benefit of freeing up space on the BMS boards by removing the two sets of components formerly used for current sensing there.

The necked bar connecting two cells will still be used as the current shunt. This conductive component has the simplest geometry and it is easiest to control the resistance of this component without affecting the geometry or overall pack layout.

RECOMMENDATIONS AND DECISIONS:

The current will be measured by instrumentation on the Pack Manager interface board. The current sensing components will be removed from the BMS board. Sense wires (protected by resistors per EV3.6.4) will be used to connect the existing necked bar with the PM interface board.

ATTACHED DOCUMENTS AND USEFUL INFORMATION:

None.