A SMART CURRENT AND VOLTAGE ACQUISITION SYSTEM WITH HIGH ACCURACY FOR EV APPLICATIONS

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Abstract- Energy management is one of the most important tasks of the electric vehicles (EV) and is totally different with the management in the traditional internal combustion vehicles (ICV). To implement a pleasing management, the system should know the working current and terminal voltage of the traction battery systems very accurately. This paper presents a design of a smart current and voltage acquisition system with high accuracy for EV applications. The detailed structure and components, the simulation and error analysis of the system are introduced. And to enhance the accuracy, a smart error correction is designed as well. Several tests are applied to evaluate the proposed system, and testing results indicate a good performance of the system, the maximum current error is less than 0.05A and the maximum voltage error is less than 0.02V.

Index terms: Electric vehicles, current and voltage acquisition, simulation and analysis, error correction.