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車輛控制網路技術之研究及車上電瓶電量即時監控網路之研製(II)

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摘要

電動車或混合動力車電瓶殘電量之量測與指示常是行車安全重要指標之一。本研究是採用分散式系統的方法，使用控制區域網路來做資料的傳輸協定，並選用合適的感測器，設計製作負載之電流及電壓值量測電路，搭配微控制器、CAN 控制器及收發器，設計出一智慧型感測模組，針對車上電器負載及電瓶（控制網路中所稱呼之節點）進行電功率之測量，除可以即時管理監控當時車上的電量使用情況外，也可做為離線時車上電系維修檢測之用。未來將進一步加入發電機充電系統，並將電瓶殘電量計算法則納入，成為一完整之車上電瓶電量管理系統，不僅可以使用於汽油車上，更可進一步應用於電動車及混合動力車上。

關鍵字: 分散式網路系統; 控制區域網路; 智慧型感測模組

The Research of Controller Area Network Technology and the Construction of a Real-time Vehicle Battery Residual Power Monitoring Network System (II)

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Abstract

The measurement and indication of residual electrical power of pure electric vehicles or hybrid electric vehicles is an important index of vehicle safety. To implement such a system in a conventional vehicle, this study adopts a distributed network system and uses controller area network (CAN) as the data transmission protocol. An electric circuit for measuring the current and voltage of each vehicle electrical device and battery is constructed. A micro-controlled is programmed, and integrated with a CAN controller and a transceiver to form an intelligent transducer, to measure the power of electric loadings and battery (so called “node” in CAN systems) on the vehicle. The designed system can be used in on-board monitoring of electric power consumption. In addition, it can be used by automechanics when checking and repairing the vehicle electric system. In the future, the charging system and algorithm of calculating battery residual power will be added. By doing this, a full vehicle electric power management system can be completed.

Key words: Distributed Network System; Controller Area Network;
Intelligent Transducer