Developing the Controller Area Network Bus Apply to Vehicle ’s Safety Control System

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ABSTRACT

The design goal of vehicle safety control systems is to assist the driver to handle the vehicle comfortable and safe. The construction of a softwarized distributive control system is the main theme of this paper research. It applies the technologies of microprocessor, software methodology, and in-vehicle network to design and implement the embedded system hardware, distributed real-time operating system, and integrated development platform respectively. The embedded hardware systems are constructed on the microprocessors that possess the CAN Bus controllers and analog interfaces to complete a plug-and play hardware nodes for the distributed control system. The real-time distributive operating system is constructed to partition the related processing functions into proper hardware nodes to average the message stream for avoiding the bottleneck on vehicle network, and to respond to the system events in timing constraints. The integrated development platform is implemented on a database system that provides the capabilities of system planning, design, generation, and realization for research teams to maintain the system integration and completeness, and to share the system information.

Keywords : Softwarized distributive control system ; Embedded system ; Real-time operating system

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