车载 CAN 网络管理自动化测试系统开发

摘 要

随着汽车电子行业中产品开发周期的缩短和网络复杂度的日益提高，对自动化测试的需求也随之增长。本文设计了一种基于 CANoe 总线开发工具和 CAPL 语言的连续自动化测试系统，应用于车载控制器中网络管理功能的测试。分别设计了针对 OSEK 直接网络管理和 AUTOSAR 网络管理的两套自动测试系统，介绍了该测试系统的功能、系统软硬件设计方案、上位机软件开发流程、CAPL 模块设计，对测试中给出的测试用例进行了简单说明，呈现了系统的测试结果。该测试系统硬件结构简单，工程人员利用一般总线开发工具 CANoe 即可实现。经过对不同被测件进行测试验证，该自动测试系统运行稳定可靠、效率高、复用性好。

关键词：CAPL 语言，自动化测试，网络管理，OSEK/VDX，AUTOSAR

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Automatic Testing System for CAN-Bus Network Management

ABSTRACT

With the shortening of the development cycle time and the increasing in the complexity of network, the automotive electronics industry has more and more demands for automated testing. In this paper, a continuous automatic test system based on CANoe development tool and CAPL language automatic testing is designed, and it is applied to the testing of network management in vehicle controller. Besides, two sets of automatic testing systems for OSEK direct network management and AUTOSAR network management are designed respectively. Furthermore, the function of the testing system, the design plan of the software and hardware, the design process of host computer software, and the design of the CAPL module, are introduced. Apart from that, the testing cases are shortly explained, and the testing results are presented. To sum up, this testing system testing structure is explicit and engineers can easy to be applied by engineers using the general host development tool CANoe. After testing different specimens, the proposed system was proved to be stable, reliable, efficient and reusable.

Key words： CAPL language, automatic test, network management, OSEK/VDX，AUTOSAR