

研发、设计、测试

AMT在线诊断仪的设计与研究

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摘要 为了及时、准确地检测并诊断出机械式自动变速器(AMT)系统的故障,依据AMT电控系统各部分的工作原理及控制要求,设计了一种基于单片机控制的AMT在线诊断仪。该仪器通过CAN总线实时地与AMT电控单元(ECU)通信获取ECU中的故障码和数据,以得到当前AMT电控系统外围设备的状态参数,实现在线诊断。阐述了仪器在线诊断的原理,给出了系统电路设计框图和软件设计的程序流程图。实验表明,该诊断仪具有实时、准确、检测成本低、抗干扰性强、使用简单方便的特点,在其故障诊断范围内准确率可达到100%,具有很好的实用价值。

关键词 [机械式自动变速器\(AMT\)](#) [诊断仪](#) [电子控制系统](#)

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Design and research of AMT online diagnosis instrument

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Abstract

In order to detect and diagnose system failure of Automated Mechanical Transmission (AMT) in time and accurately, a microcontroller-based AMT online diagnosis instrument is designed according to working principle and control requirements of AMT electronic control system. The instrument communicates with AMT Electronic Control Unit (ECU) real time to get fault codes and data through CAN bus, so current state parameters of AMT ECU peripheral equipments are obtained to realize online diagnosis. The principles of online diagnosis instrument, block diagram of hardware circuit and software flow chat are described. The experimental results demonstrate that the diagnosis instrument is real time and accurate with features of low detection cost, strong anti-interference and easy to use. The accuracy is 100% within the range of faults, so the instrument is of much practical utility.

Key words [Automated Mechanical Transmission \(AMT\)](#) [diagnosis instrument](#) [electronic control system](#)

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