

基于ISO 11783的拖拉机导航控制系统设计与试验 Automatic Navigation Control System for Tractor Based on ISO 11783

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关键词: 拖拉机 自动导航 控制系统 设计 试验

摘要: 基于ISO 11783标准构建了拖拉机自动导航控制系统, 系统包括5个电子控制单元(ECU), 其中转向ECU节点可以根据从总线上接收到的转向指令来控制前轮转向。对自动导航控制系统的网络服务性能进行了分析, 并进行了使用该系统的拖拉机直线路径跟踪试验。试验表明, 基于ISO 11783的拖拉机自动导航控制系统能满足实时性要求, 并能较好地实现路线跟踪, 直线跟踪最大横向偏差为11cm。According to the specifications of ISO 11783 standard, an automatic navigation control system was built. In the system, there were five ECUs, and the hardware and software design of steering control ECU were described in detail. At last the network service performance of the navigation control system was analyzed, and line path experiments were finished with the designed navigation control system. Experiments indicated that tractor navigation control system can satisfy the need of real time and could realize line path tracking. The lateral error is less than 11cm tractor tracking line path at a speed of 1m/s.

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