
基于 CAN 总线的全向 AGV 控制系统设计

摘 要

本设计目的是改良全向移动 AGV 的整车控制单元 VCU。从需求来看，AGV 应用于车间，作为重型器械的移动平台，工作环境比较复杂，信号噪声干扰大，采用双绞线结构的 CAN 通信方式，有效的抗干扰降噪，而舵轮这种动力转向合一的复合动力轮则能够实现全向移动的要求，能满足车间应用需求。根据器件选型和元件布局及布线规则以完成本毕业设计。本整车控制器 VCU 的原理图分为两部分：一是对各个模块元件选型说明；二是对部分模块的电路器件进行原理分析。PCB 图主要讲解如何绘制的过程。通过参考现有的汽车控制板和 AGV 电路板的选型、电路及布局，对现有的 VCU 优化改良。

关键词：AGV；全向；VCU；CAN

ABSTRACT

The purpose of this design is to improve the vehicle control unit VCU of the omnidirectional mobile AGV. From the perspective of demand, AGV is used in the workshop. As a mobile platform for heavy equipment, the working environment is relatively complex and the signal noise interference is large. The CAN communication method with twisted pair structure is used to effectively prevent interference and reduce noise. The integrated composite power wheel can realize the requirements of omnidirectional movement and can meet the needs of workshop applications. Complete the graduation design based on device selection and component layout and wiring rules. The schematic diagram of the vehicle controller VCU is divided into two parts: one is the description of the selection of each module component; the other is the principle analysis of the circuit devices of some modules. The PCB diagram mainly explains how to draw. By referring to the selection, circuit and layout of the existing car control board and AGV circuit board, the existing VCU is optimized and improved.

Key words: AGV; Omnidirectional; VCU; CAN

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