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**题    目： 基于 Labview 的步进电机设计**

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## 摘 要

步进电机的应用领域随着其控制方法的改变而发生变化,很长一段时间里步进电机基本上采用传统的控制方法进行控制。采用传统控制的方法,控制电路复杂,控制精度比较低。随着科技的进步与发展,虚拟仪器的概念诞生了,它的出现改变了步进电机的控制方法,同时也解决了传统控制系统中存在的很多问题。步进电机具有精确控制、无累积误差等优势,新的控制方法使步进电机在数控和工业控制等领域中发挥出了更大的作用。如今使用软件应用技术来实现步进电机的控制已经取代传统的控制系统成为了比较常用的控制方法,这种控制方法把重点工作放在软件的编程上。

本文首先介绍了课题的研究内容、选题的意义等。其次对步进电机的工作与控制的原理,步进电机的分类及步进电机的驱动芯片,LabVIEW数据采集卡等进行分析,接着对LabVIEW控制步进电机的前面板,程序框图以及程序的调试运行进行了设计说明。最后介绍虚拟仪器实验箱及使用LabVIEW控制步进电机的实验过程。本设计使用LabVIEW软件来编辑框图程序,结合硬件设备最终实现对步进电动机的控制。

关键词: 步进电动机, 虚拟仪器, LabVIEW

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## Abstract

Applications stepper motor control as to change its approach and to change for a long time, the stepping motor is basically controlled traditional control methods. Using the traditional method of control, the control circuit complexity, control precision is relatively low. With the advancement and development of technology, the concept of virtual instrumentation was born, it has changed the method of controlling a stepping motor, but also solve many problems that exist in traditional control systems. Stepper motor with precise control, no cumulative error and other advantages, the new control method for the stepping motor play out in NC and industrial control and other areas a greater role. Today, the use of software applications to achieve stepper motor control has replaced the traditional control systems have become more common method of controlling this control method to focus on programming software.

This paper introduces the research content, and other topics of the significance of the subject. Secondly, the principle of stepper motor operation and control of the stepper motor and stepper motor drivers classification chip, LabVIEW data acquisition card for analysis, and then to control the stepper motor LabVIEW front panel, block diagram and program debugging running of the design specification. Finally, the use of virtual instruments and experiment experimental box LabVIEW stepper motor control. This design uses LabVIEW software to edit a block diagram of the program, a combination of hardware devices and ultimately to a stepper motor control.

Keywords: Stepper motor, Virtual instrument, LabVIEW

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# 目 录

第一章 绪论.....	1
1.1 选题的目的和意义.....	1
1.2 课题的研究现状.....	1
1.3 设计（研究）主要内容及方案.....	2
1.3.1 研究内容.....	2
1.3.2 研究方案.....	2
第二章 硬件概述.....	4
2.1 步进电机介绍.....	4
2.1.1 步进电机分类.....	4
2.1.2 步进电机工作原理.....	5
2.1.3 步进电机的控制原理.....	5
2.1.4 步进电机的驱动.....	7
2.1.5 步进电机驱动芯片.....	7
2.1.6 步进电机主要参数.....	8
2.2 LabVIEW 数据采集卡.....	8
第三章 步进电机控制系统软件设计.....	9
3.1 Labview 软件简介.....	9
3.2 软件设计.....	9
3.2.1 Labview 前面板设计.....	9
3.2.2 程序框图编辑界面（后面板）.....	11
3.2.3 框图程序设计.....	11
3.2.4 框图程序的连接.....	13
3.3 程序调试.....	13
第四章 步进电机控制系统硬件调试.....	15
4.1 硬件的使用说明.....	15
4.2 硬件连接.....	16
总 结.....	17
参考文献.....	18
谢 辞.....	20

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