
基于单片机的照明节电系统设计

摘 要

随着我国科学技术的不断发展，电力资源消耗日益严重，急需照明节电系统的出现。本文基于单片机设计了一款手动模式与自动模式并存的照明节电系统，该系统主要由STC89C52单片机、A/D采样ADC0832、光照检测、按键模块、显示模块、人体热释红外模块组成。STC89C52单片机模块作为处理器控制整个系统，ADC0832主要是将采集到的模拟量转化为数字量，光照检测主要是采集外界环境中的光照强度，按键模块主要是选择模式为手动还是自动，显示模块主要有两行，一行为切换模式，一行为显示环境光照强度和设置的阈值，人体热释红外模块主要检测当前所处环境有没有人存在。通过测试确定系统总体方案设计以及系统程序方案设计，使得系统可以得到预期的结果，可人为设定阈值，当系统处于自动模式时，外界光照强度低于人为设定的阈值且当前环境有人员存在时，系统可点亮灯泡。此系统在照明节电的应用中有着广泛的影响。

关键词：照明节电；单片机；A/D采样；光照检测；阈值

Design of lighting power saving system based on MCU

Abstract

The continuous development of science and technology in our country has brought about the increasingly serious consumption of power resources. The emergence of lighting power-saving systems is urgently needed. Based on the single chip microcomputer, this paper designs a lighting power saving system with both manual mode and automatic mode. The system is mainly composed of STC89C52 single-chip microcomputer, A/D sampling ADC0832, light detection, key module, display module and human thermoluminescence infrared module. STC89C52 single-chip microcomputer module controls the whole system as a processor. ADC0832 mainly converts the collected analog quantity into digital quantity. The illumination detection mainly collects the illumination intensity in the external environment. The key module mainly selects whether the mode is manual or automatic. The display module mainly has two lines, one is the switch mode, the other is the ambient illumination intensity and the set threshold value. The bulk thermoluminescence infrared module mainly detects whether there is anyone in the current environment. After testing, the overall scheme design and system program scheme design of the system are determined, so that the system can obtain the expected results, and the threshold value can be set manually. When the system is in the automatic mode, the external light intensity is lower than the artificially set threshold value and the current environment has personnel, the system can light the bulb. This system has a wide influence in the application of lighting power saving.

Keywords: Lighting power saving; single chip microcomputer; A / D sampling; light detection; threshold.

目 录

第一章 绪论	1
1.1 研究背景及意义	1
1.2 国内外现状	1
1.2.1 国内现状	1
1.2.2 国外现状	2
1.3 研究内容及要求	2
第二章 方案设计	4
2.1 系统整体方案设计	4
2.2 硬件电路设计方案	5
2.3 软件电路设计方案	6
第三章 硬件电路设计	7
3.1 控制器设计	7
3.2 光照检测模块	8
3.2.1 A/D 转换器	8
3.2.2 光敏电阻	9
3.3 按键模块	9
3.4 显示模块	10
3.5 人体热释红外检测模块	11
3.6 高亮 LED 照明电路	12
3.7 电源电路模块	13
第四章 软件程序设计	14
4.1 主程序思路设计	14
4.2 按键电路程序思路设计	16
4.3 检测模块程序思路设计	16
4.4 显示模块程序思路设计	17
第五章 软件调试	19

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