基于单片机的智能照明系统

中文摘要

随着我国国家综合实力的提高，在各方面的技术都有了明显的进步，特别是随着国家自动化技术及人工智能的不断发展，传统的照明系统已经不能满足人们的需求，于是诞生了智能照明系统，满足了人们追求便利、节约能源的要求。如今智能照明系统已经与人们的日常生活密不可分，应用于很多比较大型的场合，给其带来了良好的经济效益和社会效益。但由于其生产及安装成本较高，没有普及到小型场所，需要在提升技术的同时降低成本，让更多的人体验到智能照明系统的舒适性能。

本文阐述了智能照明系统的设计方法，包括硬件系统和软件系统两部分的设计。硬件系统是本设计的骨架，以单片机 STC89C52 为核心硬件，外加电源模块电路、复位电路、人体感应电路、光照控制电路、灯泡、继电器等组成，只有各硬件之间的合理连接配置才能实现所需的功能。软件系统则是本设计的核心，用 C 语言作为编程语言，实现了只有在室内光照弱或没有光照，探测到人体信号的情况下才接通电灯，在室内光照强时无论有没有人都不会接通电灯。当人离开其探测范围后，电灯会在接通二分钟后自动断开，完成了智能照明系统的控制。

关键词：STC89C52，智能照明，光信号，人体信号

Abstract

With the improvement of China's national comprehensive strength, in all aspects of the technology has made obvious progress, especially with the continuous development of automation technology and artificial intelligence, the traditional lighting system already can't satisfy people's needs, so was born the intelligent lighting system, meet the requirements of the people pursuit is convenient, save energy. Nowadays, intelligent lighting system has been inseparable from People's Daily life, and has been applied in many large-scale occasions, bringing good economic and social benefits. However, due to its high production and installation costs, it has not been popularized to small places. Therefore, it is necessary to reduce the cost while improving the technology so that more people can experience the comfortable performance of the intelligent lighting system.

This paper expounds the design method of intelligent lighting system, including hardware system and software system. The hardware system is the framework of this design, with the single-chip microcomputer STC89C52 as the core hardware, plus the power module circuit, reset circuit, human body induction circuit, lighting control circuit, bulb, relay and other components, only the reasonable connection between the hardware configuration can achieve the required function. The software system is the core of the design, using C language as the programming language, to achieve only in the indoor light weak or no light, detect the human body signal to turn on the light, in the indoor light when there is no one will not turn on the light. When a person leaves its detection range, the light will be switched off automatically two minute after being connected,The control of intelligent lighting system is completed.

Keywords: STC89C52, Intelligent lighting, Optical signal，The human body signals

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