
基于物联网的空调节能控制器的设计与实现

摘要

本文基于全局温度的视角，利用无线通信技术对当前的空调温度控制系统进行了重新设计，设计后的系统通过设置空调的能耗限值，进而对空调电源进行控制，最大程度的避免能源的损耗。

本文在设计时，首先利用差分输入转换器以及滤波器将通过系统中的电流电压信号进行了转换，并在控制端使用率 MSP430 芯片，这一控制芯片在接收到转换后的信号时，会迅速对接收到的转化信号做出处理，并利用线通信收发模块将处理后的信息发送到 CC2530，最后发送到相应的客户终端。这样通过人为的对限值进行设置，当限值达到最大值后，继电器能够自动切断电源的过程，能够有效的实现空调温度的目标。与传统的空调温度系统相比，这一系统智能化水平更高，能够适应当前人们生活的需要。

最后，本文还对设计的空调系统进行了模拟测试，通过测试可知，新空调系统中的主芯片在对能耗信息进行测量时具有更高的精确度，且在传输数据时更迅速高效，继电器的工作效率也更高。

关键词：空调温度控制；MSP430；RS-485；继电器；无线通信；CC2530

Abstract

In this paper, based on the perspective of global energy saving, the current air-conditioning energy-saving control system is redesigned by using wireless communication technology. After the design of the system, the energy consumption limit of air-conditioning is set, and then the power supply of air-conditioning is controlled to avoid energy loss to the greatest extent.

In the design of this paper, firstly, the current and voltage signals in the system are converted by differential input converter and filter, and MSP430 chip is used at the control end. When receiving the converted signals, the control chip will quickly process the received converted signals, and send the processed information to cc2530 by using the line communication transceiver module, and finally send the processed information to cc2530 To the corresponding customer terminal. In this way, the limit value is set manually. When the limit value reaches the maximum value, the relay can automatically cut off the power supply, which can effectively achieve the goal of air conditioning energy saving. Compared with the traditional air-conditioning energy-saving system, the intelligent level of this system is higher, which can adapt to the needs of people's lives.

Finally, this paper also simulated the designed air-conditioning system. Through the test, it can be seen that the main chip of the new air-conditioning system has higher accuracy when measuring the energy consumption information, and it is faster and more efficient when transmitting data, and the working efficiency of the relay is higher.

Keywords: air-conditioning energy-saving control; MSP430; RS-485; relay; wireless communication;CC2530

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