

双核架构在无线传感器网络节点设计中的应用

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摘 要:

研究了采用超低功耗监控微控制器和高性能微处理器相结合的双核架构的无线传感器网络节点的实现。通过选用合适的芯片,从硬件上构建了基于双核架构节点的无线传感器网,基于APTEEN网络路由协议,根据实验环境将层次结构简化为平面结构,并进行了性能测试,将测试结果与现有的基于单核架构节点的无线传感器网进行比较。结果表明双核架构在低功耗和高性能之间取得了平衡点,相对于单核结构具有以更低的功耗获取更高性能的优势。

关键词: 无线传感器网络; 双核架构; 低功耗; ZigBee

The Application of Duo-Core Architecture in Wireless Sensor Network Nodes

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Abstract:

In this paper, the ultra-low power monitoring microcontroller and high performance microprocessor are used to realize a duo-core architecture in wireless sensor network nodes, and APTEEN network routing protocol is modified from the hierarchical structure to the plane structure under given experimental conditions. The wireless sensor network is built up and tested. The results show that compared with the existing single-core architecture in wireless sensor network nodes the new dual-core architecture nodes can easily realize fast data sampling and transmitting, therefore the sleep cycle of the entire wireless sensor network is greatly increased and power consumption greatly reduced.

Keywords: wireless sensor network (WSN); duo-core architecture; low power consumption; ZigBee

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