

## 基于IEEE802.15.4的温室无线监控系统的通信实现

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摘要: 针对传统温室有线信息采集监控系统存在成本较高、移动性差、安装维护困难等缺点,设计了一种基于IEEE802.15.4的无线温室监控系统,通过对传感器(控制)节点和移动式汇聚节点短距离动态组网形成自组织星型网络,以降低传感器(控制)节点能耗,延长网络寿命,汇聚节点以多跳方式与监控中心实现通信,合理高效的时槽设计确保了信息及时、安全、通畅地传送,以MSP430和CC2420芯片为核心,成功构建了温度、湿度、光照度、CO<sub>2</sub>浓度等温室环境因子的无线监控系统。In order to overcome the disadvantages of the traditional wired monitoring system in greenhouse, such as high cost, difficult movement, and difficult installation and maintenance, a wireless monitoring system in greenhouse was designed based on IEEE802.15.4. The self-organized star network was built by sensor (control) nodes and mobile sink nodes through dynamically constructing short-distance network. This design reduced the sensor (control) nodes energy consumption and prolonged the longevity of sensor network. The communication between monitoring center and sink nodes was accomplished by multiple steps. Information could be transmitted in time, safely and smoothly, which were guaranteed by the logical and effective time slot arrangement. The system, which has MSP430 and CC2420 hard-core parts, could intelligently monitor parameters in greenhouse wirelessly, such as temperature, humidity, light-intensity and so on.

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