

基于红外通信的无线传感节点在漏缆检测中的应用

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摘要：

为了解决漏泄电缆检测过程中射频通信对实验有干扰的问题，本文设计了一种基于红外的通信节点。首先，根据漏泄电缆辐射场检测需求，采用可编程片上系统作为处理器，利用其内置的模拟及数字资源配合TFDU红外通信芯片构成通信节点，加入485总线构成通信网络，缩小体积，降低成本，提高可靠性。然后，详细介绍了红外通信方案及其实现方法。最后，结合漏泄电缆检测上位机软件对通信网络进行评测。实验数据表明，磁区通信性能良好。目前已运用于上海电缆研究所漏泄电缆自动检测系统。

关键词：漏泄电缆；可编程片上系统；485总线；红外通信；上位机软件

Wireless Sensor Node Based on Infrared Communication In Leaky Cable Detection

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Abstract:

In order to reduce the mutual interference between communication and leaky cable detection, this paper proposes an infrared communication node which can combine with 485 Bus to build communication net. First, based on requirements in the process of radiation field test, use PSoC as its main controller. Using MCU's analog and digital resources, combine with infrared module and 485 Bus to build communication net. Finally, through PC software to evaluates its communication quality. Experimental data show that, under 115200bps communication baud rate, Bit Error Rate less than 1.5%. The standby current of communication node is below 1uA. These vital characters basically meet requirements of system, such as Stable, reliable, low power consumption and anti-interference ability.

Keywords: Leaky Cable; PSoC; 485 bus; Infrared communication; PC software

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