应用光学 2010, 31(2) 198-202 DOI: ISSN: 1002-2082 CN: 61-1171/O4

光电系统与工程

基于PLC和无线传感器网络的光电监测系统构建

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摘要：

为了克服传统监测系统的不足，构建一种基于PLC和无线传感器网络的光电监测系统。在分析光电监测系统的构成及工作原理的基础上，探讨了基于遥测技术的无线光电传感器网络实现方式，研究了ABB PLC软硬件实现及FameView的开发的可行性。采用ABB公司生产的AC500 PLC作为主要控制器件，通过Modbus协议按地址依次轮询无线传感器节点来采集数据，对其进行相应处理，并将最终结果传递给上位机。上位机将获得的数据通过FameView组态软件生成监控画面，实时监测现场的运行情况。监测灵活、高效，数据采集效率较高，具备良好的扩展性。这种新型光电监测系统在企业生产、战场环境等许多军民用领域中具有重要作用。

关键词： ABB PLC Modbus协议 光电监测 FameView软件 无线传感器网络

Electro-optical monitoring system based on PLC and wireless sensor networks

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Abstract:

An electro-optical monitoring system based on PLC and wireless sensor networks was built to overcome the deficiencies of traditional monitoring system. We analyzed the components of the optical monitoring system and its working principle，discussed the implementation of optical wireless sensor-networks based on remote sensing technology and investigated the feasibility of the software and hardware implementation of the ABB PLC as well as the development risk of Fame View software. This paper takes AC500 PLC produced by the ABB Company as the main control device, polling the wireless sensor nodes by the order address through the Modbus protocol to collect the data and dealing with the data accordingly, and the final result is passed to the host computer. The received data is used to generate monitor screen by FameView configuration software for real-time detection and monitoring of the operation site. The Monitoring is flexible and effective, and data collection is more efficient, and the system can be upgraded easily. The new optical monitoring system can find its application in production, the battlefield environment, and many other military and civilian fields.

Keywords: ABB PLC Modbus protocol optical monitoring FameView software wireless sensor networks

收稿日期 修回日期 网络版发布日期

DOI:

基金项目:

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