

XXX 爆炸威力场远距离多参数数据采集系统

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摘要:

本文针对当前爆炸场测量中存在测试系统布设不便、存储测试系统数据需要回收的问题,综合运用数据采集技术、存储测试技术与无线和光纤通信技术,设计了一种用于爆炸场的远距离多参数数据采集系统。该系统是用来测试XXX爆炸威力场中压力、振动加速度、温度和爆炸时刻的多参数数据专用系统。该系统主要由 ZigBee和光纤模块对多个传感器节点进行参数设置(量程设置、采样频率设置、触发电平设置等),使用FPGA和AVR单片机为主控芯片,解决了特殊环境中多通道变参数数据采集问题。实际测试表明:这种新型测试系统可以得到爆炸场中多个参数的变化曲线,具有可无线遥控、低功耗、抗高冲击、抗干扰、工作稳定可靠等特点,适于恶劣环境下数据记录和传输。

关键词: 存储测试; 远距离多参数; 无线模块; 光纤模块; 多通道

The remote multiparameter's data acquisition system of XXX Explosion power field

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Abstract:

Aimed at the problem that the equipment layout of the test system is not convenient and the data of the memory test system need to be recovered, the remote multiparameter's data acquisition system of the explosion is designed, based on the data acquisition technology, the memory test technology and the wireless and optical fiber communication technology. The system is the special multiparameter testing system which test the pressure, the acceleration and the temperature of XXX Explosion power field. According to ZigBee and the optical fiber module setting the parameter (range, sampling frequency and trigger level) of multiple sensors' nodes, the system solves the problem of multichannel variable parameter dates acquisition in the hostile environment, using FPGA and AVR as the main control chip. The test result proves that the new test system can measure changing curves of Multiple parameters. It has characteristics of wireless controlled, low power, high impact resistance, anti-interference and working stable when the system Log and transfer the data in the hostile environment.

Keywords: memory testing; long-range and Multi-parameter; ZigBee; optical fiber module; Multi-channel

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