

光纤技术

## 分布式光纤温度传感技术在隧道监测中的应用

蒋奇

山东大学控制科学与工程学院, 山东济南250061

收稿日期 修回日期 网络版发布日期 2007-3-14 接受日期

摘要

介绍了分布式光纤温度传感检测原理及采用拉曼散射型分布式光纤温度传感器并将其与高速采集处理电路集成的检测方式。分析了分布式光纤温度传感技术应用于隧道火情监控的优越性。结合计算机及现场Modbus网络构建了隧道监测网络,同时还介绍了开发隧道监测网络的硬件设计过程。现场实验表明,分布式光纤温度传感技术具有良好的应用前景和较高的推广价值。

关键词 [分布式光纤](#) [温度传感](#) [监测网络](#)

分类号

### Application of Fiber-Optic Distributed Temperature Sensor to Tunnel Monitoring System

JIANG Qi

School of Control Science and Engineering, Shandong University, Jinan 250061, China

**Abstract** The superiority of fiber optic distributed temperature sensor for tunnel monitoring is analyzed. The principle of distributed temperature measurement is introduced. Raman distributed temperature sensor and the high speed sampling circuit are employed and connected to the temperature measuring system. Tunnel monitoring network is designed via the industrial computer and Modbus. The design process of hardware and software for the tunnel monitoring network is stated in detail. The application prospect of the monitoring system including the fiber optic distributed temperature sensor will be brilliant in the future.

**Key words** [distributed fiber-optic](#) [temperature sensor](#) [monitoring network](#)

DOI:

通讯作者

扩展功能
本文信息
▶ <a href="#">Supporting info</a>
▶ <a href="#">PDF(179KB)</a>
▶ <a href="#">HTML全文(0KB)</a>
▶ <a href="#">参考文献</a>
服务与反馈
▶ <a href="#">把本文推荐给朋友</a>
▶ <a href="#">加入我的书架</a>
▶ <a href="#">加入引用管理器</a>
▶ <a href="#">复制索引</a>
▶ <a href="#">Email Alert</a>
▶ <a href="#">文章反馈</a>
▶ <a href="#">浏览反馈信息</a>
相关信息
▶ <a href="#">本期中 包含“分布式光纤”的 相关文章</a>
▶ <a href="#">本文作者相关文章</a>
· <a href="#">蒋奇</a>