

基于32位数字信号处理器和16位同步串行模数转换器的配用电监控终端设计

施 慧¹, 徐琳茜², 田世明³

1. 长春工程学院 电气与信息工程学院, 吉林省 长春市 130012; 2. 华北电力大学 计算机科学与技术学院, 北京市 昌平区 102206; 3. 中国电力科学研究院, 北京市 海淀区 100085

收稿日期 修回日期 网络版发布日期 接受日期

摘要

采用32位控制型数字信号处理器、32位嵌入式先进精简指令集处理器和具有16位精度的同步采样串行接口模数转换器, 设计并实现了全隔离的配用电监控终端。在设计中使用多重软硬件抗干扰措施, 提高了装置的可靠性; 应用软硬件缓冲技术和优化的历史数据查询算法提高了系统效率。采用GPRS作为通信手段, 并对其应用可靠性进行了深入研究和实践。在定点数字信号处理器中采用C语言编程, 提高了系统的可靠性和可维护性。

关键词 [配用电; 监控终端; 32位数字信号处理器; 嵌入式先进精简指令集处理器; 16位同步串行模数转换器; 抗干扰; 可靠性; 缓冲技术; 通用分组无线业务\(GPRS\)](#)

分类号 [TM734](#)

Design of Distribution and Utilization Monitoring Terminal Based on 32-bit Digital Signal Processor and 16-bit Synchronous Serial A/D Converter

SHI Hui¹, XU Lin-qian², TIAN Shi-ming³

1. School of Electrical and Information Engineering, Changchun Institute of Technology, Changchun 130012, Jilin Province, China; 2. School of Computer Science and Technology, North China Electric Power University, Changping District, Beijing 102206, China; 3. China Electric Power Research Institute, Haidian District, Beijing 100085, China

Abstract

By using of 32-bit digital signal processor (DSP), embedded Advanced RISC Machine (ARM) and 16-bit synchronous serial A/D converter, a full isolated distribution and utilization monitoring terminal is designed and implemented. In this design multiple anti-interference measures realized by hardware and software are adopted to improve the reliability of this device; the buffer technique based on hardware and software as well as the optimized query algorithm for historical data are applied to improve system efficiency. The General Packet Radio Service (GPRS) module is taken as communication means and the reliability of its application is further researched and practiced. For fixed-point DSP, the C language programming is adopted, thus both reliability and maintainability of the system are enhanced.

Key words [distribution and utilization; monitor and control unit; 32-bit DSP; embedded advanced RISC machine \(ARM\); 16-bit synchronous serial A/D; anti-interference; reliability; buffer technology; general packet radio service \(GPRS\)](#)

DOI:

通讯作者

作者个人主页 [施 慧¹; 徐琳茜²; 田世明³](#)

扩展功能
本文信息
▶ Supporting info
▶ PDF (212KB)
▶ [HTML全文](OKB)
▶ 参考文献[PDF]
▶ 参考文献
服务与反馈
▶ 把本文推荐给朋友
▶ 加入我的书架
▶ 加入引用管理器
▶ 复制索引
▶ Email Alert
▶ 文章反馈
▶ 浏览反馈信息
相关信息
▶ 本刊中 包含“配用电; 监控终端; 32位数字信号处理器; 嵌入式先进精简指令集处理器; 16位同步串行模数转换器; 抗干扰; 可靠性; 缓冲技术; 通用分组无线业务(GPRS)” 的相关文章
▶ 本文作者相关文章
<ul style="list-style-type: none"> • 施 慧 • 徐琳茜 • 田世明