

基于NTRIP协议的虚拟差分GPS接收设备设计 Development of a GPS Receiver Based on NTRIP/VRS

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摘要: 在分析NTRIP (networked transport of RTCM via Internet protocol) 协议组成及特点的基础上, 针对低成本、低精度的GPS OEM板, 采用GPRS无线通信方式, 设计开发了手持式虚拟差分GPS接收设备, 并进行了试验验证。开发的接收设备是以ARM7为核心, 包括无线通信模块、GPS OEM板、液晶显示模块、优盘存储模块等, 能够完成GPS数据的接收、实时处理及显示, 还可通过USB接口或串口, 将完整的NMEA格式数据存储或发送给上位机, 以备后续的处理及使用。同时, 设备具有良好的人机界面, 能够完成数据接收模式、存储方式以及VRS连接参数的设置。试验结果表明: 此GPS OEM板经VRS差分后, 精度可达1.24m (95%), 能够为农田信息采集提供可靠的数据支持。The composition and implement of NTRIP (networked transport of RTCM via Internet protocol) are studied and discussed, a GPS receiver based on NTRIP/VRS are developed and experimented with the low-cost and low-accuracy GPS OEM board. The GPS receiver mainly includes a microprocessor, a wireless communication module, a GPS OEM board, a LCD module, an USB module, and so on. It can receive and process RTCM correction signals from VRS system via GPRS and GPS data. And then more accurate positioning data can be calculated and real-time displayed. The data can be also stored in the USB flash disk or sent to a PC for afterwards processing. The designed interface is friendly and easy to use so that it is convenient to change the parameters of storage, receiving and GPRS. Experiment results indicate that the accuracy of low-cost GPS receiver based on NTRIP/VRS is about 1.24m (95%), and can provide reliable GPS data resource for field information sampling.

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