

基于ARM和DSP的双变量施肥控制系统设计与试验ARM and DSP-based Bivariable Fertilizing Control System Design and Implementation

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摘要: 设计了一种开度、转速双调节变量施肥机控制系统的嵌入式解决方案,该系统集GPS和GPRS于一体,开发了基于ARM和DSP双CPU架构的嵌入式系统平台。上位机利用ARM9和WinCE系统支持图形化人机界面和触摸操作,能够实现施肥生产过程的信息输入与作业状况的实时反映;下位机利用DSP/BIOS实时操作系统完成排肥口开度和施肥轴转速的电动机伺服控制。详细阐述了系统软硬件结构及总体设计方案。该系统软硬件具有良好的扩展性、实时性、灵活性。实际测试结果表明该系统能够快速准确实现肥料精准投送。 A bivariable control system that combined GPS and GPRS was designed as the variable rate fertilizer embedded solutions, and the information platform based on ARM and DSP dual-CPU architecture was developed. Based on ARM9 and WinCE support the graphical user interface and touch operation, the host system was able to achieve information input and reflect the real-time operating status of the fertilization and seed production process. Based on DSP/BIOS real-time operating system, the slave system could implement the opening and revolution motor servo control of fertilizing and seeding. The system hardware and software structure, which has good scalability and real-time flexibility, was depicted in detail. The test results showed that the system could achieve fast and accurate fertilizing and seeding precision delivery.

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