基于ARM7嵌入式模糊PID温度控制系统

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**［摘要］**针对温度控制系统具有非线性、时变性和时间滞后性特性，以及传统PID控制方法自适应能力差、鲁棒性不强等问题，运用模糊控制与PID相结合的方法，设计了基于ARM7微处理器的温度控制系统，研究了系统的硬件电路构成和软件的设计流程，并搭建了系统的试验平台.试验结果表明，基于ARM7嵌入式模糊PID控制具有理想的系统稳态与动态响应特性，系统抗干扰能力强、鲁棒性好，在要求高精度、快速控制温度的场合具有良好的应用前景.

**[关键词]** ARM7；S3C44B0X；模糊PID；嵌入式系统

Fuzzy -PID Temperature Control System Based on ARM7

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**Abstract**:Due to the non-linear,time-varying,time-lag characteristics of temperature control system,week self-adaption and robustness for traditional PID control method,by combining fuzzy control and PID control,fuzzy-PID temperature control system was designed based on ARM7.The hardware circuits and software were given,and the testing experiment was established.The results of experiment indicated that this designed control system was of good stable and dynamic characteristics,inflexibility,and strong robustness.This control system was featured by application prospect in the necessity of high-precision rapid temperature control.

**Key words**:ARM7;S3C44B0X;fuzzy-PID;embedded system