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侵彻过程中弹头表面瞬态温度测量系统(PDF)

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Title: The Measurement System for Transient Temperature of Warhead Surface during Penetration

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摘要: 介绍了一种瞬态温度测量系统,用于测量与记录侵彻过程中弹体表面瞬态温度变化信号。该系统选用薄膜热电偶直接测量弹头侵彻温度,以C8051F340高速单片机为微控制器,控制温度数据的采集及存储。利用打火机内焰瞬态温升信号对系统进行静态测试,结果表明系统采样频率最高为300kHz,测量误差<1.5%,数据存储速率为800Kbps,可以满足后续射击实验的要求。

Abstract: A system for measuring and recording surface transient temperature signals during penetration was introduced. The device employs thin film thermocouple as temperature transducer to measure penetration projectile temperature, which is based on C8051F340 microcontroller for managing data acquisition and storage. According to the static test of lighter inner flame temperature, the consequence shows that sampling frequency of this system has been up to 300 kHz, measurement error is less than 1.5%, data storage rate is 800Kbps, and it could meet the demand of the following firing test.

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