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80196 Microcontrolled Linear Movement Table

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80196 MICROCONTROLLED
LINEAR MOVEMENT TABLE

Submitted to

Professor H. Broberg

Electrical Engineering Technology

Prepared by

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Abstract

The objective of this paper is to present a real-time microcontroller-based DC motor position control for a conveyor . An ultrasonic sensor is used to measure distance and forms a closed loop control system. The pulse width modulation (PWM) technique is used to drive the motor. The duty cycle of the PWM wave form is calculated by a proportional control law. Note that the duty cycle of PWM determines the average voltage applied on the DC motor. In this project, a position control system using an optical encoder as the position sensor is used as a reference. The comparison of dynamic performances is also made ultrasonic and optical encoder positioning and the result indicated, for this system, speed and accuracy were not markedly different. The response time of the motor versus the frequency of PWM is investigated. Features of this system are flexibility, high reliability, friendly user-interface, and economy.