

# Microprocessor based speed control of a chopper-fed d.c. drive

## - - Microprocessor Based Control of PMSE



Description: -

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### Control of Armature and Field Current of a Chopper

The output signal from frequency generator 38 is presented to pulse width modulator 40 at U8-9.

### Stepper Motor Interfacing with 8051 Microcontroller

Both lines 16 and 18 are connected to a user interface console not shown so that a user may activate a switch on the console indicating either a desire to increase or decrease the speed of the treadmill belt. The microprocessor TMU uses a control loop to control the speed change of the D. If a fixed voltage is provided to the motor, as the voltage drop across the windings increases, the voltage supplied to the operation of the motor decreases.

### Chopper Fed DC Motor Drive

A first pulley 4 is connected to a drive motor 2 through an input shaft 3 so that rotation of the drive motor 2 rotates this first pulley 4.

### Stepper Motor Interfacing with 8051 Microcontroller

The control of motor speed is achieved by a completely digital technique, which does not require any analog-to-digital or digital-to-analog converters. Of course, the voltage from frequency voltage to filter 26 at the belt stop position will always be +12 V regardless of the type of treadmill.

### Microprocessor

R117 is manually adjusted so that when the treadmill belt is operating at its maximum speed, the voltage presented to resistor R89 is +10 V.

### Power Electronics and Motor Drives

The output of the optical tachometer is provided to the tachometer frequency to voltage converter 22 in the embodiment of FIG. .

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