

Active Suspension System Test Platform

By

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Submitted To:

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Functional Description

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Introduction:

Building an active suspension system test platform has been the topic of at least two prior senior projects. This year the project will build upon prior research, and will ultimately use a 1/3 hp dc motor to drive the test platform. Prior year's projects have yielded designs with significantly less driving power.

Our control system will use the EMAC Inc. Micropac 535 Development board to obtain user input as well as to provide control signals and timing to the power electronics. The existing power electronics may or may not be able to drive the motor provided to us this year and thus everything will need to be examined in addition to creating an accurate model of the 1/3 hp motor.

EMAC Inc. Development Board Inputs:

Through the use of the keypad or signals applied to the board the type of output. Using the keypad will allow the user to select one of the internal pre-calculated output waveforms. If an external signal source is connected to the development board, specific waveforms and or a specific location for the output platform can be selected.

Power Electronic Outputs

The output of the EMAC Inc. development board will signal the power electronics. Appropriate power electronics that can handle 115v DC will need to be chosen to drive the motor. The ultimate output of the system will be the user selected movement of the test platform which will include Step, Sinusoidal, and Triangular waveforms. Prior years' overall block diagram as well as table of inputs/ outputs are shown as the overall goals have not changed.

System

INPUTS	OUTPUTS
Desired platform motion	Platform movement

EMAC Micropac 535 micro-controller

INPUTS	OUTPUTS
Keypad	Platform movement
Waveform Generator	LCD Display

Actuator

INPUTS	OUTPUTS
Error signal from controller	Platform movement

Figure 2-1: Overall Input / Output of system.

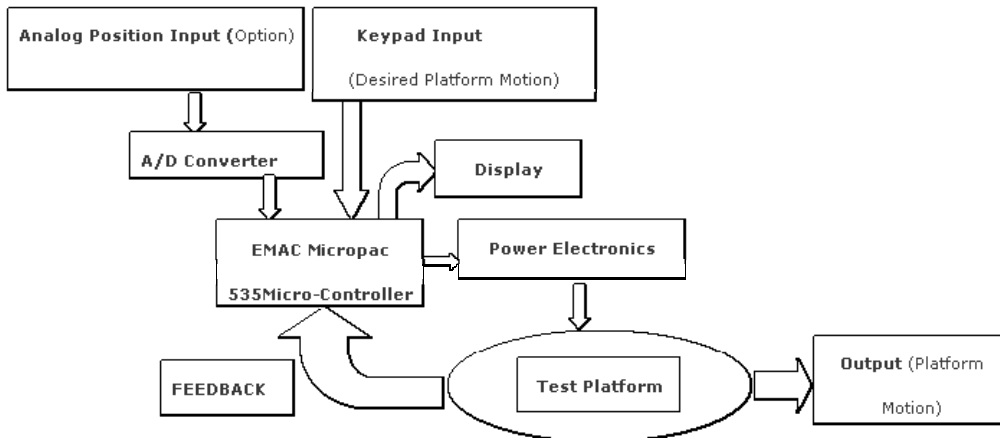


Figure 2-2: System Block Diagram