

Thesis Title	Portable Vibration Analyzer
Thesis Credits	12
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### Abstract

This thesis deals with the design and construction of a portable vibration analyzer using the domestic-obtained devices. The microprocessor 68000 was used to process the signals received from velocity pickup sensor. The processed signals passed an adjustable gain-controlled amplifier to a low pass filter circuit, then was digital converted at sampling rate 2.56 times of baseband. User is able to select resolution of display following a suitable baseband. The display can be shown in two domains 1) In time domain, it displayed voltage respect to time with maximum  $\pm 3$  V and 2) In frequency domain, it displayed magnitude and phase spectrum respect to frequency. The computation spectrum using FFT algorithm can be displayed in both linear and log scales of magnitude spectrum. The results can be shown on the LCD display, or on a computer display, or by a printer serial port RS 232C. The working function was operated by a command key. The experimental results show top 5 magnitude values and corresponding frequencies consecutively for convenient analysis and the user is able to choose number of iteration to compute average value as required. The main power supply was used in  $\pm 5$  V and  $\pm 12$  V batteries and one adapter. Experimental results compared with commercially available product shows that, its accuracy and performance of the prototype is satisfactory.

**Keywords :** Vibration / Discrete Time Signals / Spectrum Analysis