

ABSTRACT

Electronic devices is now almost become primary need. Many electronic devices can help humans in terms of offices and households now. For example, computer, air conditioner, refrigerator, lights, TV, etc. The electronic equipment can be classified as non-linear loads that require large power and stable so that the equipment is not damaged. Non-linear load which causes the flow of the grid system becomes non-sinusoidal distorted or have a Total Harmonic Distortion (THD) is very high. To determine the value of THD at an electrical installation is needed measuring instruments harmonics is Harmonic Analyzer. But that harmonic measurement has still more expensive.

This final project had designed and implemented how to determine the voltage value, current value, power apparent value, and power quality through THD value on an electrical installation. This system used the voltage sensor, current sensor and the Discrete Fourier Transform analysis on the signal voltage. This voltage signal was processed into a digital signal with the microcontroller and has display to the LCD display.

Based on the design and test results, the design of the measuring instrument can measure AC voltage with an accuracy rate of 99.68% and can measure the AC current in the load with an accuracy rate of 99.97%. To measure the value of Total Harmonic Distortion (THD) with different loads, design of measuring instruments coined the accuracy rate of 95.75%, while the value of Total Harmonic Distortion measurement (THD) at different time, the design of the measuring instrument has an accuracy rate of 99.88%.

Keywords: Harmonics, Total Harmonic Distortion, Microcontroller