

ABSTRACT

Power supply has a function as a power provider by converting AC current into DC. To determine the performance of a power supply, a test tool is needed that is able to simulate the load to the maximum of the power supply's power capacity. Commonly used resistor loads have limitations, such as a fixed resistance value and potential damage due to overcurrent, where this is not effective. Therefore, there is a need for an electronic load system that is able to absorb power variably and controllably.

In this final project, an Arduino Mega 2560 microcontroller-based power supply test tool has been designed and built using a DC electronic load module. This tool has a voltage range of 5 - 50 VDC, a current of 0 - 60 A, and a maximum power of 300 Watts. The system is equipped with a rotary encoder as a current regulator (load), as well as a graphic display to display real-time voltage, current, and power parameters. Data communication uses RS485 serial protocol.

Based on the test results of 3 (three) different power supply units, the system is proven to be able to regulate and maintain the current (load) according to the desired input. The DC electronic load module can maintain the stability of the charged current, while the power supply still maintains its output voltage stably. The test covers the entire range of parameters designed, so the system is declared to have functioned properly and fulfills the need to test the performance of the power supply.

Keywords: *Power Supply, DC Electronic Load, Load Current, Voltage, Power*