

4.1 Designing of an Economical Computer Interfaced Current Source

S. R. D. Kalingamudali¹, N. Y. J. B. Nikapitiya²

Department of Physics, University of Kelaniya,

ABSTRACT

An economical current source which can be controlled by a computer using the parallel port is designed. The Switch Mode Power Supply (SMPS) technique is used to construct the power supply unit of the current source. The output voltage of the SMPS is regulated by controlling the duty cycle of the Pulse Width Modulator circuit, and thereby constant load current is achieved. The current source is capable of producing constant currents up to 2 A with an accuracy of 96%. This was tested under various load conditions and accuracy is compared using digital multimeters. The compared results of the interfaced current source suggest that the output current regulation values under different loads are very accurate, and noise filtering techniques were used to filter noises. The best operating temperature range will be 20-70° C. In addition, all the components used in the construction are economical and commercially available in the open market.