ABSTRACT

Solar panels (photovoltaic) has begun to be widely used as a provider of electrical energy. By those solar cells the solar energy can be directly converted to another form of energy. As the implementation, the electrical energy which is generated by the solar cell will be affected by the light intensity and environment's temperature. It causes the power will fluctuate. Maximum Power Point Tracking (MPPT) is the system which is able to make the solar panel works efficiently. To reach the maximum power, required a hardware which can regulate the output power which is going to charge the accumulator with a constant voltage in 12 volts. In this experiment, there will be done a design and characterization of Buck-Boost Converter to track the maximum power point of the solar panel. Author will analyze the conversionratio of the voltage to the change of Duty Cycle which has 5% of resolution, the effect of inductance and resistance variation to the power output, the boundary layer of Discontinuous Conduction Mode (DCM) and Continuous Conduction Mode (CCM) with the variation of K values, and the output current improvement with the variation of inductance (L) and resistance (R) value.

Keywords: MPPT, *Buck-Boost, Photovoltaic, Duty Cycle*