

***ANALYSIS AND DESIGN OF NODEMCU-BASED SINGLE-
PHASE AC MOTOR SPEED CONTROL AND MONITORING
DEVICES VIA SMARTPHONE***

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ABSTRACT

An electric motor is a device for converting electrical energy into motion (mechanical) energy. Induction motors are currently very widely used in the industrial world and in everyday life, especially in the household. This is because induction motors have several advantages such as being tougher, more efficient, and cheaper in maintenance costs. In the provisions of the induction motor is operated at a constant (fixed) speed. Therefore we need an innovative tool that is right for adjusting the rotation of the motor and connecting from a long distance. To make this speed setting the easiest and most effective in this study using a dimmer circuit by adjusting the input voltage to the motor using a potentiometer and monitoring remotely using the NodeMCU ESP8266 microcontroller via a smartphone. The purpose of this study is to vary the voltage on the motor which aims to get the motor rotation that can be changed according to needs and can be connected remotely. In the control system using a dimmer circuit, different voltage variations are obtained at each scale used. On scale 1 the voltage value on the motor is 106 V with a motor speed of 1320 RPM and on scale 5 the voltage value on the motor is 211V and the motor speed is 1450 RPM. From testing the voltage, current and speed errors, the average error is obtained at a voltage of 0.57% while at a current of 8.28% and a speed of 1.82%.

Keywords: Induction motor, dimmer, NodeMCU