ABSTRACT

Incubator analyzer is a calibration tool designed to measure conditions of temperature, humidity, noise, and air flow on baby incubator. The purpose of this research is to get better performance than previous research by Hidayah Nur Annisa. The contribution of this research is the results of temperature and noise measurements can be displayed on the device display and on applications installed on Android and can be stored in txt form. Based on previous research by Hidayah Nur Annisa, authors see that temperature and noise error results in the latest development are still more than 5%. Therefore, author wants to improve the performance of incubator analyzer by replacing DS18B20 sensor with LM35. Author choose LM35 because LM35 has an analog voltage output so that an appropriate amplification can be used to get better performance than the previous tool, as well as create a noise sensor circuit with better performance than the previous tool. The main design consists of Analog Signal Conditioning circuit and Arduino Mega Microcontroller. Based on the research that the author has done, the smallest error value of temperature is 0.0373954% at T1 setting temperature of 36ºC and the largest error is 2.6172488% at T4 setting temperature of 35ºC. On the noise sensor, the smallest error is -1.7273376% at 37oC settings and the largest is 5.254902% at 36ºC settings. Overall, it can be concluded that this tool has a better performance than the previous research by Hidayah Nur Annisa because it has smaller error.

Keywords: Incubator Analyzer, Temperature, Noise, Android