ABSTRACT

Incubator analyzer is a calibration equipment to measure conditions of temperature, humidity, noise, and air flow on a baby incubator. The purpose of this research is to get better performance than previous research by Vina Nadhirotul Azkiyak. The contribution of this research is that the results of airflow and humidity measurements can be displayed on the device display and on applications installed on Android, data can be stored in txt form. Based on previous research by Vina Nadhirotul Azkiyak, author saw that the results of air flow and humidity errors in last development were still more than 5%. Therefore, author wants to develop an Incubator analyzer by replacing the HC-SR04 Ultrasound sensor with MPX5010DP differential pressure sensor that utilizes the orifice plate principle to detect air flow. Author chose the MPX5010DP because it has an analog voltage output so that an appropriate amplification can be used to get air flow value, and make a humidity sensor circuit with best possible error. The main design consists of an Analog Signal Conditioning circuit and Arduino Mega Microcontroller. Based on the research that the author has done, it can be obtained error data that is compared with INCU II. In humidity parameter the smallest error is -0.1068091% at 35^{o}C and the largest error is 1.5380151% at 36^{o}C. Meanwhile, air flow parameter gets an error of 2.7100271% when treated with a fan. Overall this equipment has a better performance than previous tool by Vina Nadhirotul Azkiyak because it has a smaller error.

Keywords: Incubator Analyzer, Air Flow, Humidity, Android