

ABSTRACT

Blood oxygen saturation meter is a tool used to monitor the state of oxygen saturation in the blood and also the patient's heart rate (BPM) and to assist in the physical assessment of the patient without going through blood gas analysis. Oxygen saturation measuring devices usually use the difference in the wavelengths of red and infrared LED light that will be captured by the photodiode. The purpose of this research is to make a pulse oximeter equipped with a display of SPO₂, BPM values and an additional SP0₂ signal. The design of this measuring instrument uses the MAX30100 sensor, the minimum system circuit of Arduino ATmega328p and OLED (Organic Light-Emitting Diode). Data from the MAX30100 sensor enters the I2C pin on the minimum Arduino system, then the microcontroller is processed to produce the percentage of SPO₂ value, BPM value, and SPO₂ signal which is then displayed on the OLED. The test is done by comparing the module with standard measuring instruments which produces the largest % error of 0.81% for SpO₂ and 0.87% for BPM. The error presentation is obtained from factor measurements, if there is finger movement it will cause a large error. From the results obtained, the tool is still feasible to use because in the "Guidelines for Testing and Calibrating Medical Devices" Ministry of Health RI 2001, the maximum limit in the pulse oximeter error tolerance is for SpO₂ 1% and BPM 5%.

Keywords: Pulse Oximeter, Oxygen Saturation, Arduino, BPM, OLED