

ABSTRACT

Cardiac Monitor is a tool to monitor patients identified as having heart abnormalities. Cardiac abnormalities can be seen through the classification of heart signals (Electrocardiograph) and heart sound signals (Phonocardiograph). To monitor patients identified as having heart abnormalities, it can be seen from the first heart sound (S1) against heart signals. The purpose of this study is to display ECG and PCG signals simultaneously with carotid pulse signals to facilitate early detection of heart disease.

The heart signal is obtained from lead II which is tapped using an instrument amplifier circuit, high pass filter; $f_c = 3,21\text{Hz}$, low pass filter; $f_c = 102.6$ notch filter; $f_c = 49.8$, final amplifier (non-inverting) and adder circuit. While the heart sound signal is obtained from the mechanical activity of the heart which is tapped using a series of pre-amp mic-condensor stethoscope (inverting amplifier), high pass filter; $f_c = 20\text{Hz}$, low pass filter; $f_c = 500\text{Hz}$, and Summing Amplifier. Furthermore, the data will be sent and processed by the microcontroller to be displayed on the Personal Computer.

Based on the results of the study obtained from 10 respondents with measurements as much as 5 times each respondent, the largest error was $\pm 2.4\%$ and the smallest was $\pm 0.91\%$ from the results of the comparison of BPM with oximetry.

KeyWords: ECG, PCG, Microcontroller, PC