ABSTRACT

Measurement of biosignals such as electrocardiograph has the interpretation of noise from other signals. The noise can interfere with the measurement of the heart signal and make the measurement inaccurate, so the purpose of this study is to make a 6-Lead Electrocardiogram module with an Arduino-Based Digital Filter. By using a digital filter. The contribution of this research is the use of digital filters to eliminate noise in electrocardiograph signals. This research uses Infinite Impulse Filter digital filters such as Butterworth, Chebyshev I, Chebyshev II, and Elliptic in order 2, 4, 6, 8, and 10. The study was conducted by providing input from the Function Generator on Arduino which has been applied digital filters with Frequency with 0.5Hz – 100Hz cut-off. The instrument is compared with a factory electrocardiograph. Filter measurements using 460 input data. Butterworth filter with the greatest emphasis on order 8 frequency 0.5Hz produces an emphasis of -5.74298158 dB and a frequency of 100Hz produces an emphasis of -5.93529424 dB. The Chebyshev I filter has the greatest emphasis on order 6 frequency 0.5Hz producing an emphasis of -3.27104076 dB and on order 8 frequency 100Hz producing an emphasis of -5.08730424 dB. Chebyshev II filter the biggest emphasis on the order of frequency 0.5Hz produces a suppression of -44,66011104 dB and 80Hz frequency produces a suppression of -37,3653957 dB. Elliptic filters the greatest emphasis on order 6 frequency 0.5Hz produces an emphasis on -1.55429354 dB and 100Hz frequency on order 8 produces an emphasis on -2.2849115 dB. The results showed that what was appropriate with the cut-off frequency was the Butterworth order 8 filter which was suitable for the application of the Electrocardiograph signal filter because it had bandwidth that suppressed the signal outside the cut-off frequency. The results of this study can be implemented on a 6-Lead ECG module to eliminate noise or interference when tapping ECG signals.

Keywords: Electrocardiograph, Digital Filter, Infinite Impulse Filter