

ABSTRACT

Electrocardiograph (ECG) is one of the diagnostic sciences that is often studied in modern medicine, one of which is to diagnose and treat diseases caused by the heart. Therefore, it is necessary to check the function of the ECG recorder tool, namely by carrying out the tool calibration procedure using Phantom ECG. The purpose of this research is to design a Phantom ECG for a 12 channel ECG device which includes lead I, lead II, lead III, aVR, aVL, aVF, V1, V2, V3, V4, V5, and V6 and completes it with a sensitivity selector. The contribution of this research is that the tool can be used as a calibration tool for the ECG Recorder and can be used as a learning medium in the world of health. In order to design a signal that matches the original, this tool uses a heart signal formation method using a DAC type MCP4921 with an ATMEGA2560 microcontroller and for display settings using a 2.4 inch TFT Nextion Display. The MCP4921 type DAC converts the digital signal data into analog data which will then be forwarded to the resistor network circuit as a signal formation for each lead. In the measurement results, the error in measurements with sensitivity of 0.5 mV, 1.0 mV, and 2.0 mV using an ECG Recorder at BPM 30 is 0.00%, BPM 60 is 0.00%, BPM 120 is 0.00%, and BPM 180 is 0.56%. The results showed that the biggest error was found in BPM 180, which was 0.56%.

Keyword : BPM, Sensitivity, Phantom ECG