ABSTRACT

Electromyogram (EMG) is an electrodiagnostic tool used to detect and analyze contractions in muscle signals. The purpose of this study is to analyze muscle signals with 2-channel EMG Instrumentation using AD620 IC, on the bandpass filter frequency band 20 - 700 Hz with 50 Hz notch filter using IC TL074 and power supply from Sony VTC4 batteries to analyze the EMG signal frequency spectrum pattern basic hand movements (Hand Open, Hand Close, Wrist Extensions, and Wrist Flexion). The electrodes were placed on the Extensor Digitorum Superficialis and Flexor Carpi Ulnaris muscles as (the main point) and shifted the tapping point 1cm to the right (+1 point) and 1cm to the left (point -1) so that there were 3 measuring points in this study. The electrical signal produced by the muscles then through the EMG signal conditioner to be filtered and strengthened so that it can be read by Analog to Digital Converter (ADC) on the Arduino Nano Microcontroller which is then recorded in csv format and displayed to a PC, then the EMG signal recording results are processed using the Bank method Filter with the Matlab application. Based on the research results obtained on the pattern of the movement of the Hand Open and Wrist Dominant extension on the Extensor Digitorum Super Ficialis muscle while the dominant Hand Close and Wrist flexion in the Flexor Carpi Ulnaris muscle with a frequency range of 100 - 150 Hz at point -1 will get frequent frequencies appeared for Hand Open 120.8 Hz, Hand Close 122.27 Hz, Wrist Extension 117.91 Hz and Wrist Flex 127.26 Hz with average power 0.00054 - 0.00111 watt.

Keyword — Elektromiogram; AD620; Bandpass Filter; Hand Movement