ABSTRACT

Capacitance measuring devices are widely used in capacitive sensor-based measurements. There are various methods used to find out capacitance that use quasistatic, impedance and others. Generally capacitance measuring devices can only measure values with the magnitude of the picofarad to millifarads, even though a lot of measuring capacitance on an object requires a measurement system that can measure values below the order of picofarads. In this study, a simple measurement system will be designed that can measure the capacitance value of capacitors under the magnitude of picofarad, using a feedback charge method consisting of an op-amp with a fixed value reference capacitor and also a varying value of the capacitor to be measured. The designed system consists of inverting amplifier circuit, precision rectifier circuit, ARDUINO UNO-based microcontroller, and LCD (Liquid Crystal Display) as display value of the measured capacitor.

Key word: Capacitance System, C-V Converter, Rectifier, Op-Amp.