ABSTRACT

Sensor calibration is very necessary to be carried out in measuring a quantity so that the value issued by the measuring instrument or sensor is accurate and in accordance with the standard. This research relates to the tools and methods used to calibrate a sensor in a measuring instrument. The calibration process generally only adjusts the initial value and linearizes it. Where the linearization process is limited and tied to a particular sensor work area and can be influenced by the condition of the sensor sensing element that can change. Therefore, this study provides a calibration process solution that can be used for various types of sensors based on electrical output, accommodates a non-linear relationship between the measured quantities and the actual sensor output quantities, and provides convenience for calibration through communication with a PC/Laptop as a processing device. data and with the aim of producing a curve fit and forming an equation model that fits the sensor data pattern. In addition, the existence of a non-linear equation model also aims to reduce dependence if the data pattern is different from the new data pattern, due to changes in sensor performance conditions. In this study, a calibration tool was designed using two sensor samples, namely the LM35 temperature sensor and the LDR light sensor, the results showed the LM35 temperature sensor and LDR light sensor obtained the best curve, namely the exponential curve with the smallest error value of **0.9-2%** for LM35 temperature sensor.

Keywords: Calibration, measuring instrument, measurement, sensor, equation model