

## ABSTRACT

In the world of measurement, the accuracy of measuring results is a top priority, as in the measurement of the length of an irregular object expertise needed to achieve the most accurate results. The inaccuracy is affected by the limitations of the human eye in reading the data which is often called Parallax error. The error can occur due to the angle the tool so that the reading of the data on the data obtained measuring results are not in accordance with the data should be. In another case, today there are many kinds of measuring instruments that have accurate specification, but the operation requires special skill and requires full concentration of users. So many of the instruments that users are reluctant to use it. There needs to be an innovation to assist or facilitate users in the operation of measuring instruments and reading the data from the measuring results measuring instrument itself.

With the development of electronics and microcontroller technology , has created a digital vernier caliper to calculate how long the things we measure and is equipped with a display measuring results in a 7 segment in units of cm . This digital calipers can overcome problems that have been mentioned . The concept used is the change in potential difference is constant along the arm to be converted first by an external ADC module into digital data which is then processed by a microcontroller into a change in distance will be displayed in the 7 segment . Digital vernier caliper arm is made of a material that has a resistance whose value has steadily increased every change in the distance the tool arm .

From the results of measurements that have been made can be said that the length measurement tool has worked well with an average accuracy rate of 99.931 % and Error highest measurable amounts to 0.0377 cm with an average error that occurs at 0.0146 cm . From the data, can be concluded that the caliper has good quality for measuring. The instrument has cheaper price than the digital caliper price on electronic market.

**Keywords:** Calipers , potential difference , 7 segment , ADC and microcontroller.