ABSTRACT

DESIGN OF MEASUREMENT INSTRUMENTATION DEVICE MAGNETIC FIELD STRENGH BY USING ATMEGA8535 MICROCONTROLLER

By

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The magnetic field is a conservative field that exist around the magnet. The existence of magnetic field and its impact can be see around us, for example a compass needle deflection due to earth magnetic field. To detect and measure the field strength require instrumentation tool designed for it.

Measurement instrumentation tool is made using a magnetic field detection sensor using hall effect principle and to process and display the signals obtained from the sensor used ATMega8535 microcontroller system. The output value of the sensor does not directly be input to the microcontroller but passed through a series of signal processing. To amplify the input signal IC LM324 is used in the differential circuit and a summing amplifier to sum the output of LM324 and voltage reference. To display the magnetic field value it is used 16x2 LCD. Power supply circuit is particularly designed for the instrumentation tool.

The measurement results obtained are in accordance with the measurement results with a Gauss meter standard that is also used as a means of calibration. Measurement error for the designed instrumentation tool is 18,18%.

Keywords: Effect hall, differential, summing amplifier, ATMega8535 microcontroller, power supply, sensors UGN3503