

# GAUSS METER

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## ABSTRACT

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In today's day world, we are surrounded by electromagnetic waves from different wireless instruments. While some of these waves are of great use to man, others are of higher risk leading to some hazardous disease. In order to detect these electromagnetic waves, different devices are being manufactured generally called Gauss-Meters. These Gauss-Meters are in different forms (i.e. flux-meter, search coils, Hall probes) existing in various shapes and sizes with each unique in its different modes of operations.

This project is proposed to build a stand-alone Gauss meter by applying the Hall Effect and Conducting coil method for comparison with a display to show the strength of a magnetic field.

The Hall Effect circuit is constructed with its main component, an Allegro Hall Effect Sensor A1301 sensor used for detection. This circuit, with a reference voltage,  $V_0$  of 2.5V helps in determining the polarity (North Pole  $< 2.5V$  and South Pole  $> 2.5V$ ) which is displayed on an LCD screen controlled using a PIC16F873A microcontroller with the strength of the magnetic field (magnetic flux) calculated using the voltage output result of each pole measured.

The conducting coil circuit works as a search coil using a 2.2mH Inductor coil as its sensor for detection of magnetic fields. The voltage measured produced by changing magnetic fields is displayed on the LCD screen also controlled by the PIC16F873 microcontroller with the output generated used for calculating the intensity of the magnetic field (magnetic flux density). The PIC16F873A microcontroller circuit provides the power house to this device. With it providing the supply voltage from a 9V battery and serving as an interface with the outputs produces from both circuits (Hall Effect and Conducting coil circuit) to be displayed on the LCD screen.

Due to the production of electromagnetic waves from different appliances, a more precise reading was unable to be measured limiting the coil circuit from functioning properly.

A sound or voice output could be integrated to both circuits for future enhancement so as to widen the use of this device even to the physically handicapped.

Overall the project outcome fits to the specified aims and objectives.

**KEYWORDS:** magnetic Flux, magnetic Field, reference voltage, polarity, Hall Effect