

LEEI-38 Solenoid Magnetic Field Measurement Apparatus



- *Compact and sensitive integrated Hall element*
- *Easy to use, stable and reliable*
- *Affordable*

Using a Hall device to measure the magnetic field distribution of a powered solenoid is an important experiment in science and engineering physics education. This innovative solenoid magnetic field measurement instrument uses an integrated linear Hall device to measure weak magnetic fields with high accuracy. Hence, problems such as low sensitivity, voltage interference, and instability (due to solenoid temperature rising) existing in traditional instruments are eliminated.

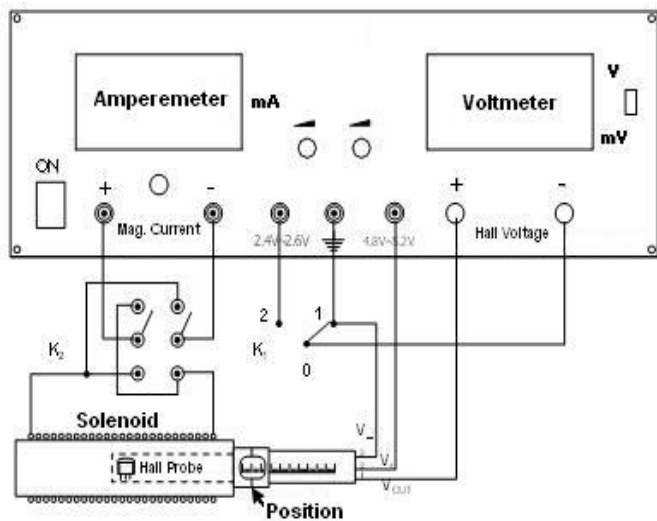
Using this apparatus, students can understand the principle of an integrated linear Hall element and learn how to use it to measure magnetic fields. With protective devices for power supply and sensor, this instrument is durable.

Experimental Contents

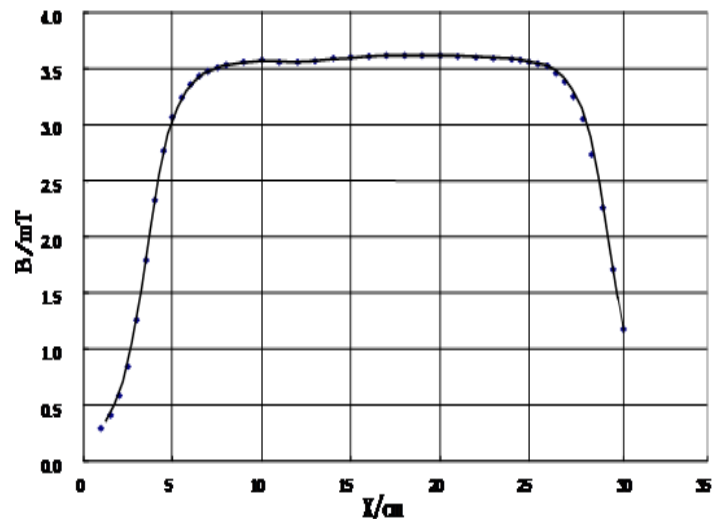
1. Measure sensitivity of a Hall sensor
2. Verify output voltage of a Hall sensor proportional to magnetic field intensity inside the solenoid
3. Acquire relationship between the magnetic field intensity and position inside the solenoid
4. Measure magnetic field intensity on edges
5. Apply compensation principle in magnetic field measurement
6. Measure horizontal component of the geomagnetic field (optional)

Parts & Specifications

Integrated Hall sensor	Magnetic field measure range: -67 ~+67 mT, sensitivity: 31.3 ± 1.3 V/T
Solenoid	length: 260 mm, inner diameter: 25 mm, outer diameter: 45 mm, 10 layers 3000 \pm 20 turns, length of uniform magnetic field in center: > 100 mm
Constant-current source	0 ~ 0.5 A
Current meter	3-1/2 digit, range: 0 ~ 0.5 A, resolution: 1 mA
Volt meter	4-1/2 digit, range: 0 ~ 20 V, resolution: 1 mV or 0 ~ 2 V, resolution: 0.1 mV



Schematic of experimental configuration



Measured magnetic field distribution

Note: above product information is subject to change without notice.