



55806 Experimental Set Up has been designed specifically for the Measurement of Electron Mobility in Semiconductor (Drift velocity of the charge carrier acquired per unit electric field) and Hall Co-efficient. The set-up consists of Electromagnet, Constant Current Power supply, Digital Gauss Meter, Hall Effect Board, Hall Probe (Ge crystal n-type) with stand.

The set up is complete in all respect and requires no other apparatus. Practical experience on this set up carries great educative value for Science and Engineering Students.

OBJECT

- 01 To measure Electron Mobility in Semiconductor (Drift velocity of the charge carrier acquired per unit electric field).
- 02 To measure Hall Co-efficient .

FEATURES

The complete Experimental Set-up consists of the following :

- 01 ELECTROMAGNET : The electromagnet have the most widely used 'U' shaped soft iron yoke. The soft iron is of a special quality, structurally uniform, well machined and finished to meet the rigid standards.

SPECIFICATIONS

- Field intensity : 7.5 KG at 10mm air-gap which flat pole pieces.
- Pole pieces : 50mm diameter.
- Energising coils : Two, each a resistance of about 3.0 ohm.
- Power requirement : 0-30V DC, 4A, its coils are connected in series.

- 02 CONSTANT CURRENT POWER SUPPLY Load regulation : Current range : 0 - 4 Amp. Better than 0.5% of the highest specified output current. (No Load to Full Load)
- Line regulation : Better than $\pm 2\%$ of the specified output current. (For $\pm 10\%$ Mains Variation) Metering : 3 ½ digit 7 segment LED DPM.

- 03 DIGITALGAUSS METER : Operates on the principle of Hall Effect in semiconductor. The small WITH HALLPROBE Hall Voltage is amplified through a high stability amplifier so that a millivoltmeter connected at the output of the amplifier can be calibrated directly in Magnetic field unit (gauss).

SPECIFICATIONS

- Range : 0-2 KG & 0-20 KG.
- Resolution : 1G at 0-2 KG range
- Accuracy : $\pm 0.5\%$.
- Special Feature : Indicate the direction of the magnetic field.

- 04 HALLEFFECTBOARD : It consists of a digital meter to read Hall voltage (0-200mV) and probe current (0-20mA) (DIGITAL) selectable by a switch .It also provide constant current power supply. Variation in current is achieved by a potentiometer provided.

- SPECIFICATIONS : AMMETER Range 0-20mA Resolution 10uA.
- : VOLTMETER Range 0-200mV Resolution 0.1mV.

- 05 HALL PROBE : Germanium Single Crystal N-type with four spring type pressure contact is mounted on a sun-mica bake-lite strip.

TECHNICAL DETAILS

- Material : Ge single crystal n-type.
- Resistivity : 8-10 ohm.cm.
- Contacts : Spring type (solid silver)
- Zero-field potential : < 1mV (adjustable)
- Hall Voltage : 25-35mV/8mA/KG

- 06 HALLPROBE STAND : Wooden

- 07 Strongly supported by detailed Operating Instructions, giving details of Object, Theory, Design procedures, Report Suggestions and Book References.

Note: Specifications are subject to change.

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