

Experiment No. 1	VERIFICATION OF OHM'S LAW
Date:	

Aim:

To verify Ohm's law, for the given circuit.

Apparatus: This kit consists of

1. Regulated power supplies
 - a. Variable power supply 0 to +15V ----- 2Nos
 - b. Fixed power supply 0 to +15V ----- 1No
2. Resistor Bank
3. Required circuitry for the experiments

Theory:

Ohm's Law:

“The ratio of potential difference (V) between any two points on a conductor to the current (I) flowing between them, is constant, provided the temperature of the conductor does not change.”

$$V = IR$$

Kirchhoff's laws:

1. Kirchhoff's Current law:

“In any circuit, the algebraic sum of the currents meeting at a point (or junction) is zero.”

$$\sum I = 0$$

2. Kirchhoff's Voltage law:

“The algebraic sum of the products of currents and resistances in each of the conductors in any closed path (or mesh) in a network plus the algebraic sum of the e.m.fs in a path is zero.”

$$\sum IR + \sum e.m.f = 0$$

Experimental procedure:

1. Connect the trainer to the mains and switch on the trainer.
2. Measure all the voltages i.e. variable and fixed.

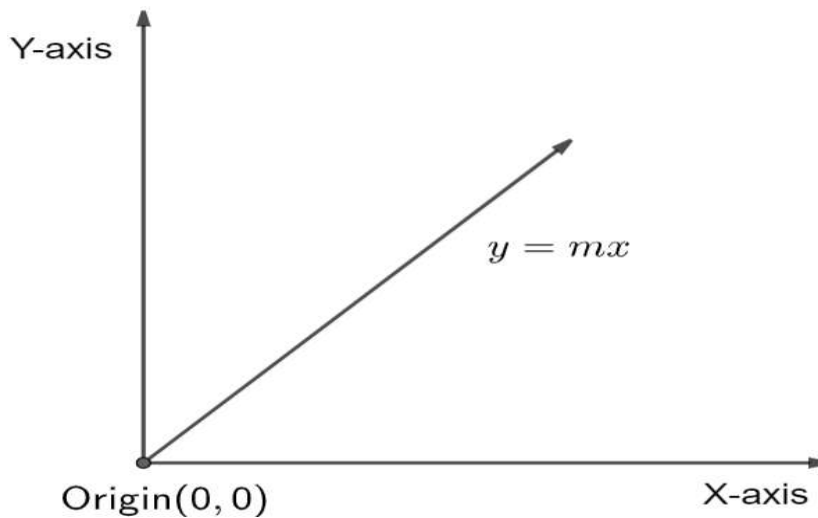
Ohm's Law:

1. Connect variable power supply 0 to +15 V either from CH1 or CH2 in the ohm's Law circuit between the points 1 & 2.
2. Connect an ammeter (0 – 200mA) between points 3 & 4 and a voltmeter (0 – 20V) between the points 7 & 8 with appropriate polarities.
3. Connect a resistor between the points 5 & 6 from the Resistor Bank provided onboard with the help of wires.
4. Now vary the input voltage slowly and note down the voltages across the resistor (V) and corresponding currents flowing through the resistor (I) in a tabular form.
5. Compare the practical value with the theoretical values obtained by the formula

$$V = IR$$
6. Repeat steps 3 to 4 for different value resistor provided on board.

Table

S.No	Voltage	Current

Model Graph:**Precautions:**

1. Readings should be taken without parallax error.
2. Meter connected to the circuit with proper polarities.
3. While changing/removing the connections on the kit supply to be turned off.

Result:

Thus Ohm's law, Kirchhoff's voltage law and Kirchhoff's current law Verified both theoretically and practically.

Viva QUESTIONS:

1. What is current?
2. What is voltage?
3. Define charge.
4. Define power.
5. What is the resistance?
6. What is ohm's law?
7. What is the range of ammeters and voltmeters you used in this experiment?

8. What are the limitations of ohm's law?
9. What is the condition of ohm's law?