



UNITED INTERNATIONAL UNIVERSITY

COURSE NO. CSE 124 (ELECTRONICS LABORATORY)

Exp. No. 1: Circuits, Meters and Measurements

Aim:

To understand:

- Basic electrical components and equipment
- Simple measurements
- Basic voltage and current laws
- Linear and non-linear components

Equipment

- Trainer Board
- Multimeters
- Ammeters
- Wires
- Resistors: 100 ohms, 120, 1K
- LED (Light Emitting Diode) – any colour

Two Terminal Devices

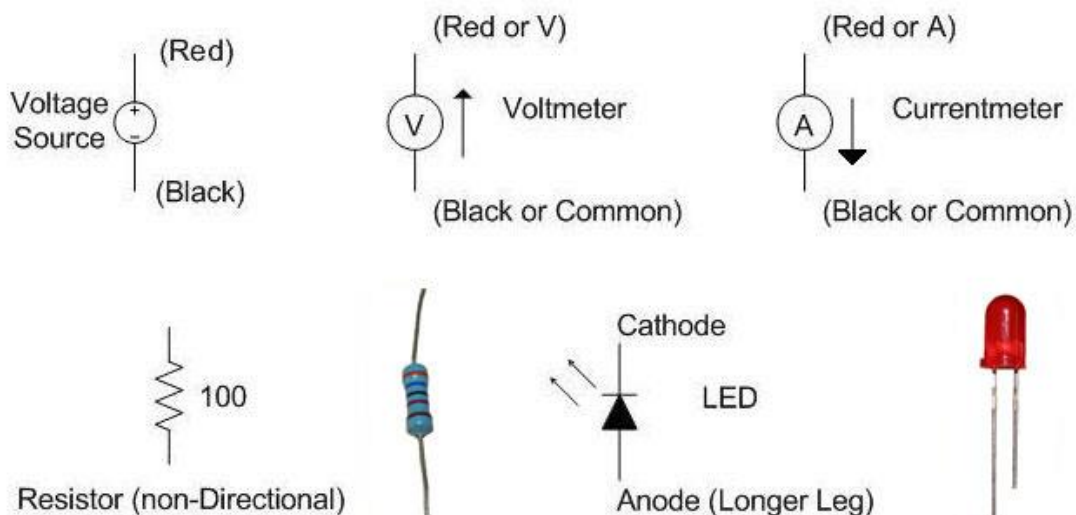


Figure 1. Symbols and pictures

Multimeter



Multimeter wired for OHMS
for DC Volts



Multimeter wired



Multimeter wired for mA



Multimeter wired for DC 20 Amps

range

Figure 2. Various multimeter connections

Prototyping board



Figure 3. Detail of white proto board

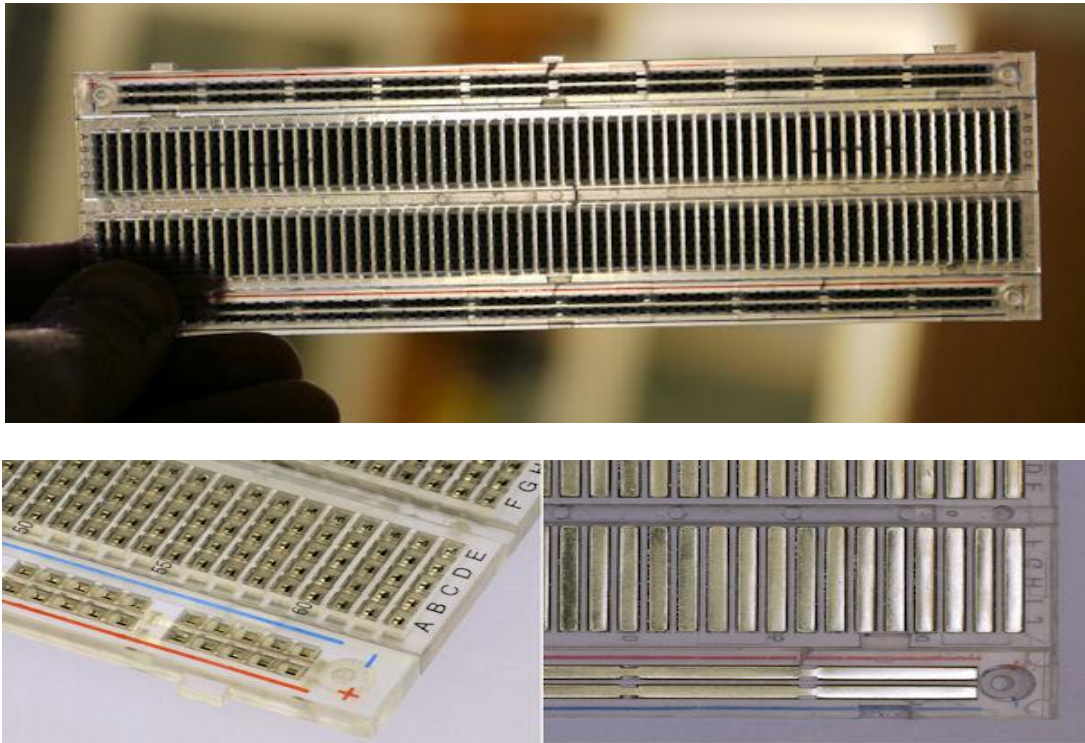


Figure 4 - View of insides of proto boards

Part A – Linear Components (Ohm's Law)

Activities:

To find the relationship between current and voltage in a resistor

Procedure:

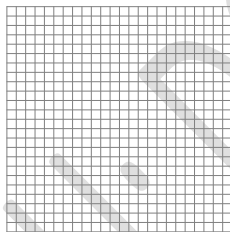
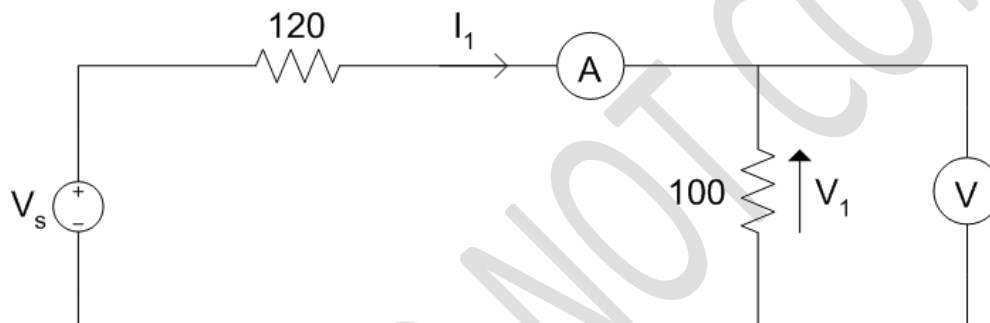
Vary the power supply so as to measure the voltage, V_1 , for the values of current given in the table.

Plot V_1 versus I_1 .

You should get a straight line through the origin as this is a Linear component.

The slope of the line should be the resistance.

V_s							
Voltage V₁							
Current I₁							



Part B – Non-linear component.

Activities:

To find the relationship between current and voltage in a diode (LED)

Procedure:

Vary the power supply so as to measure the voltage, V_1 , for the values of current given in the table.

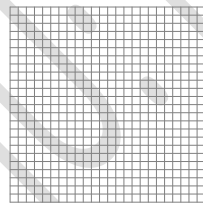
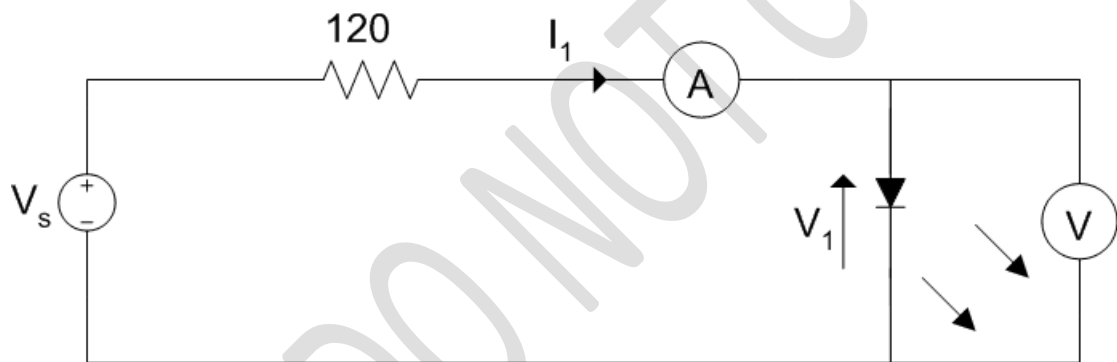
Plot V_1 versus I_1 .

This is a Non-Linear component.

The slope of the line should be the resistance.

V_s							
Voltage V_1							
Current I_1							

The shorter LED lead is the cathode, which is connected to the negative supply.



Report:

- Objectives
- Apparatus
- Part A: Linear Components
 - Circuit Diagram
 - Data Table
 - I~V curve of resistor (use graph paper)
- Part B: Non-linear Components
 - Circuit Diagram
 - Data Table
 - I~V curve of diode (use graph paper)
- Q/A:
 - Why is ammeter connected in series whereas voltmeter connected in parallel?