Introduction

What is a Meter?

**Meter** – any device built to accurately detect and display an electrical quantity in a form readable by a human being.

– are designed to accurately measure the basic quantities of voltage, current, resistance.
Introduction

Basic Types of Meter:

1. **Analog Meter** – uses a movable pointer to indicate the value of a quantity being tested (using some kind of pointer device to show quantity of measurement)

   *D’Arsonval Movement*
   - a movement consist of coil of wire wound on a bearing mounted assembly that is placed between the poles of permanent magnets. A pointer is attached to the moving assembly

2. **Digital Meter** – provides a digital readout of a being measured. Digital in design, meaning that their readable display is in the form of numerical digits.
Measurement of Currents

- **Ammeter** – measures electrical current.
  Unit of measurement is *ampere* (A)

- **Galvanometer** – measures small electrical current

  How to measure current?

1. It must be in series in the circuit where the current is to be measured

2. It must be connected in the correct polarity

  *note: An Ammeter should have a very low resistance*
Measurement of Voltage

*Voltmeter* — an instrument used for measuring voltage potential between two points in an electrical circuit

Unit of measurement is *volt* (V)

How to measure voltage?

1. It must be connected in parallel for which the voltage is to be found
2. It must be connected in the correct polarity

*note: A voltmeter must have a very high resistance*
Measurement of Resistance

- **Ohmmeter** – to measure the resistance placed between its leads. Contains internal source voltage to supply power in taking measurements. Unit of measurement is ohm (Ω).

- **Megger (Megaohmmeter)** – used to measure very high resistance (thousands of mega ohms).

**Note:**

1. Never used an ohmmeter in an energized circuit.
2. At least one lead of the resistor is disconnected.
Other Meters

- **Wattmeter** – an instrument used for measuring power of electrical circuit (DC & AC)

- **Electrodynamometer** – basic element of a wattmeter

- **Wheatstone Bridge** – used to measure an unknown electrical resistance by balancing two legs of a bridge circuit, one leg of which includes the unknown compound. Measure resistance values from 0.01 to 10 MΩ

  - invented by *Samuel Hunter Christie* and popularized by *Sir Charles Wheatstone*
Thank You!