

## **PRACTICAL: 2**

**AIM:** Program using Light Sensitive Sensors.

### **Objective:**

The objective of this experiment is to study the behavior of an Ambient Light Sensor (Phototransistor) by measuring its resistance using a Resistance Multimeter and analyzing how its resistance varies with different light intensities.

### **Key Learning Outcomes:**

- Understand the working principle of a Phototransistor and its role as an Ambient Light Sensor.
- Observe how resistance changes with varying light intensity.
- Learn how to measure resistance using a Resistance Multimeter.
- Analyze the relationship between light intensity and electrical properties in a circuit.

### **Components Required:**

- Ambient Light Sensor (Phototransistor)
- 1k $\Omega$  Resistor
- 3  $\times$  AAA 1.5V Batteries (providing 4.5V in series)
- Battery Holder
- Resistance Multimeter
- Connecting Wires

### **Connections:**

1. **Prepare the Power Source:**
  - Insert **three AAA batteries** into the battery holder to create a 4.5V supply.
  - Identify the **positive (+)** and **negative (-)** terminals of the battery pack.
2. **Connect the Phototransistor:**
  - The phototransistor has **two terminals: Collector (C) and Emitter (E)**.
  - Connect the **collector (C)** of the phototransistor to the **positive terminal (+)** of the battery pack.
3. **Attach the Resistor:**
  - Connect a **1k $\Omega$  resistor** between the **emitter (E)** of the phototransistor and the **negative terminal (-)** of the battery pack.

#### 4. Connect the Resistance Multimeter:

- Set the **multimeter** to the **resistance ( $\Omega$ ) mode** to measure the resistance of the phototransistor.
- Connect the **positive (red) probe** of the multimeter to the **collector** of the phototransistor.
- Connect the **negative (black) probe** to the **emitter** of the phototransistor.

#### 5. Observe the Readings:

- The resistance of the phototransistor changes based on the amount of ambient light it receives.
- In **bright light**, the resistance decreases, allowing more current to flow.
- In **low light or darkness**, the resistance increases, reducing the current flow.

### DAIGRAM

