

# Characteristics of Photo Devices

PD-01

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- LDR, Photodiode, Phototransistor and Solar Cell studies
- Variable intensity white light source
- Four range current meter
- I-V and P-V characteristics of Solar Cell. Fill factor evaluation



## Introduction

A transducer is a device that converts variations in a physical quantity, such as pressure, temperature, position, speed, etc., into an electrical signal or vice versa. Optical transducers, also known as photoelectric transducers, specifically convert light into an electrical quantity, such as current or voltage. They can be further classified into three types: photo emissive, photoconductive, and photovoltaic transducers.

In Study of Characteristics of Photo Devices, we present an experiment that involves studying the characteristics of four different sensors: LDR (Light Dependent Resistor), photodiode, phototransistor, and a small solar panel. These sensors are used to measure and respond to light intensity. To provide variable intensity light for the sensors, a 3W white LED is utilized as the light source.

One of the key features of the experiment is the automatic selection of circuit configurations from a panel for each chosen experiment. This eliminates the need for users to make any external connections, allowing them to focus solely on conducting the experiment. The experiment entails operating the photo devices at various light intensity levels and recording their performance characteristics. These characteristics are then subjected to detailed analysis.

By conducting this experiment, users can gain valuable insights into the behavior and performance of different optical sensors in response to varying light intensities. This information can be beneficial for various applications in fields such as electronics, automation, and measurement systems.

## Features and Specifications

- The sensors are enclosed inside a protective box located on top of the instrument, ensuring that ambient light does not interfere with the measurements. This design feature enhances the accuracy of the experiment.
- Eliminates the requirement of a dark room for conducting the experiment, providing convenience and flexibility in experimental setup.
- The lower section of the unit contains all the necessary circuits for measuring current and voltage in the experiment. Refer to photograph of the instrument above for a comprehensive panel diagram illustrating the various controls and meters used.
- Equipped with IC regulated power supplies, ensuring stable and reliable power output for the sensors and circuits.
- Includes a detailed manual providing comprehensive instructions and guidelines for conducting the experiment. The manual assists users in understanding the setup, operation, and analysis of the experiment.