Mapúa University

School of Electrical, Electronics and Computer Engineering

Introduction to Embedded Systems

COE185P/ E01

PhotoCell

Experiment No.7

Submitted By:
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Submitted To:
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I. Introduction

In this lab, it explores the different functions of photocell. Photocell is a semiconductor device that detects light. Its resistance is dependent on the amount of light being received. Photocells are light-sensitive, variable resistors. As more light shines of the sensor's head, the resistance between its two terminals decreases. They're easy-to-use, and an essential component in projects that require ambient-light sensing.

II. Objectives

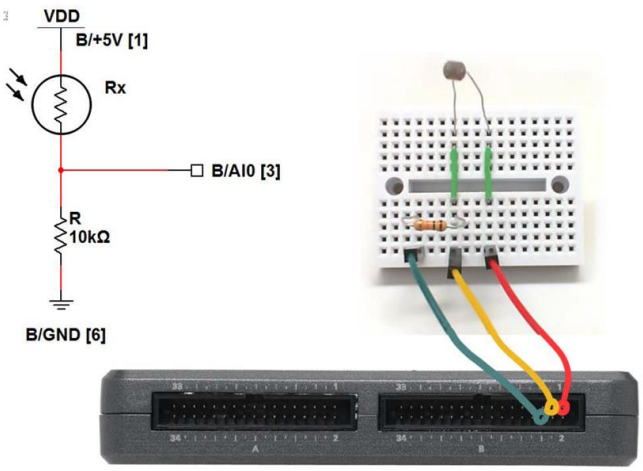
1. Describe the photocell principles of operation,
2. Measure the photocell resistance with a voltage divider and analog input, and
3. Size the voltage-divider resistor for the best measurement sensitivity and range.

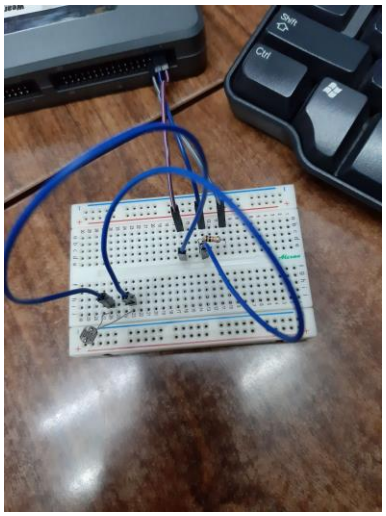
III. Materials and Components

- Photocell, API PDV-P9203,
- Resistor, 10 k
- Breadboard
- Jumper wires, M-F (3_)

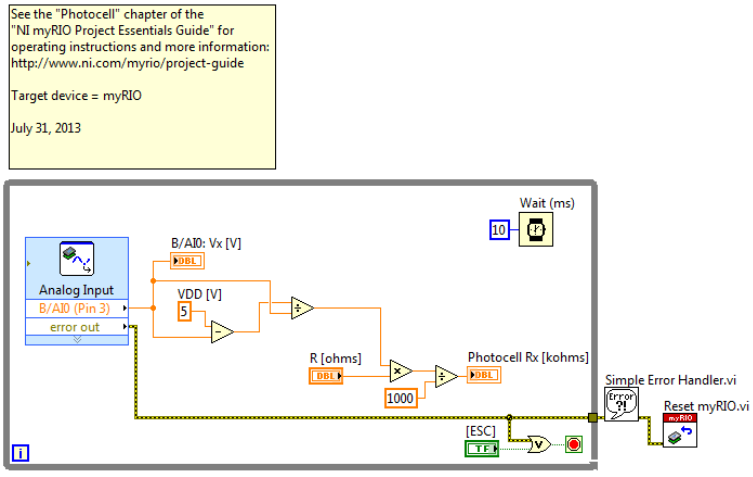
IV. PROCEDURE

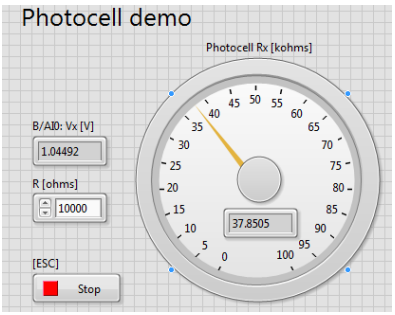
Step 1. Follow the diagram and connect all the parts.





Step 2. Open LabView then run the demo

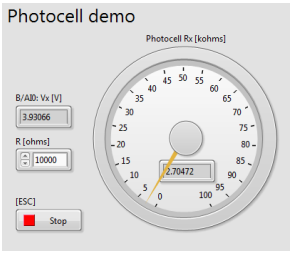




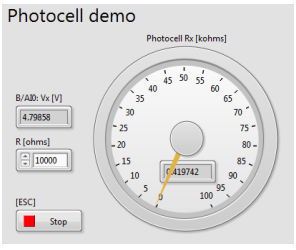
V. Results and Discussion

In this experiment, I didn't use all the provided materials like the myRio Expansion port because it didn't work so I manually connected it in the NI myRio kit. This will control whether to perform the upper part or lower part of the block diagram. When it was turned on, it will perform the upper part. The first thing I do is to set-up the circuit diagram provided. When the demo was run, the demo displayed the measured resistance of the photocell, and it was on the range of 2.70472Ω when at normal light, 0.419742 when I focused a flashlight, then at 16.1225 when I covered the photocell

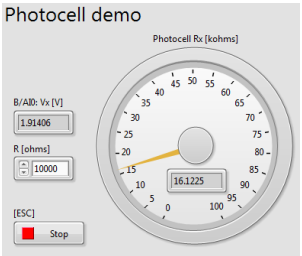
Normal:



Flash Light:



Covered:



VI. Conclusion

The purpose of this lab was to learn about the basic modification of photocell. Photocells act as light sensors. Unlike infrared sensors that are good for line followers or detecting the presence of an object, photocells are good when you just want to detect light. We also learned how to measure the photocell resistance in analog. The photocell resistance was measured with the use of a voltage divider. In operation, a photocell acts like a light-sensitive resistor with a high resistance when dark and a low resistance when in the light. Photocell properties vary widely from model to model so you may have to do a lot of experimenting. You can test sensitivity to light by measuring the photocell resistance as you subject it to light and dark.