

# Lab View Report

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## Purpose

To learn how to use lab view in unison with lab equipment for better evaluation of signal and other necessary data.

## Procedure

In this lab we assembled several circuits including a temperature and light sensor which we were provided the diagram for. We were as well given the procedure for creating the Lab View programs that would help aid in reading the signal from either of these devices and collect the empirical data from these devices for later evaluation. In particular a thousand samples were collected over one second for a small light bulb flashing at 10Hz so that an accurate evaluation of it's half life could later be made. Temperature readings were taken with an LM35 component on a DAQ board, voltage signal was processed through Lab View. The light sensor was created with a photo-diode and an LF411 op-amp, voltage signal was processed through Lab View.

## Lab View Windows

## Results

The equation used to curve fit this data is as followed,

$$(1) \quad a \cdot \text{Exp}[-cx] + b$$

where the constants a, b, and c were left as parameters to be fit. The final expression as evaluated by Mathematica is as followed.

$$(2) \quad 3.55925 \cdot \text{Exp}[-0.00940764x] + 1.88998$$

The average of this function evaluated at the start and end points of our data gives the value 3.677 making the half life of our bulb approximately  $73 \times 10^{-4}$  seconds. It also would appear that the light turns off and on at around the same rate.

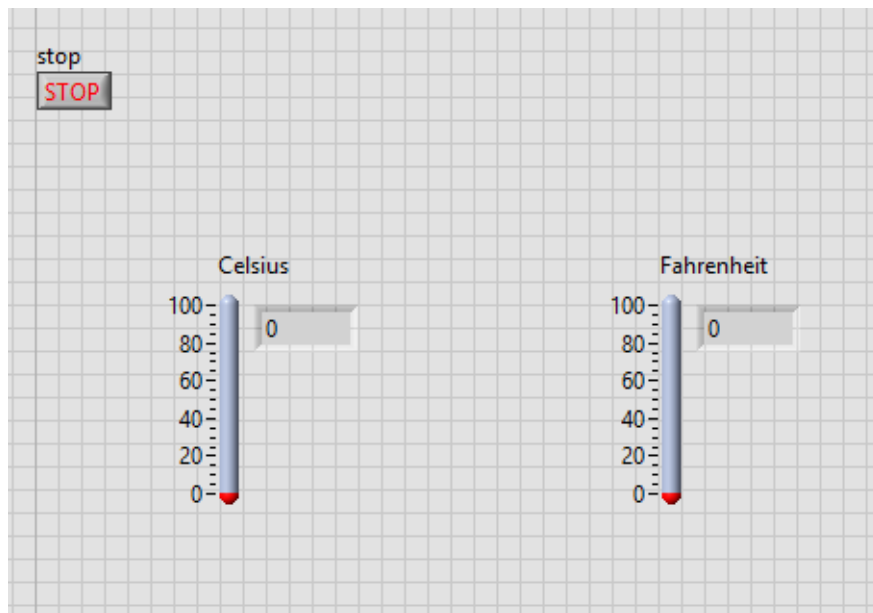


Figure 1: Temperature Sensor Front Window

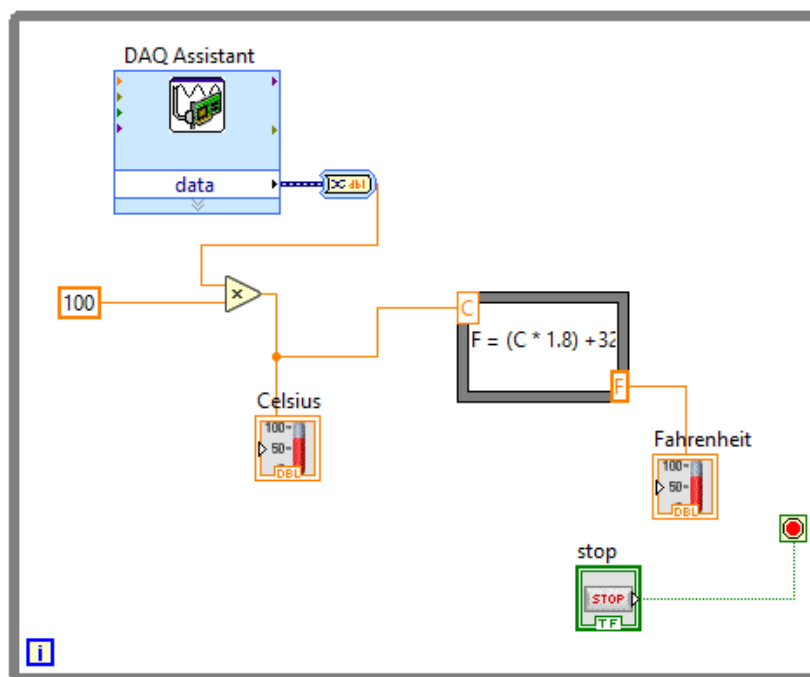


Figure 2: Temperature Sensor Block Diagram

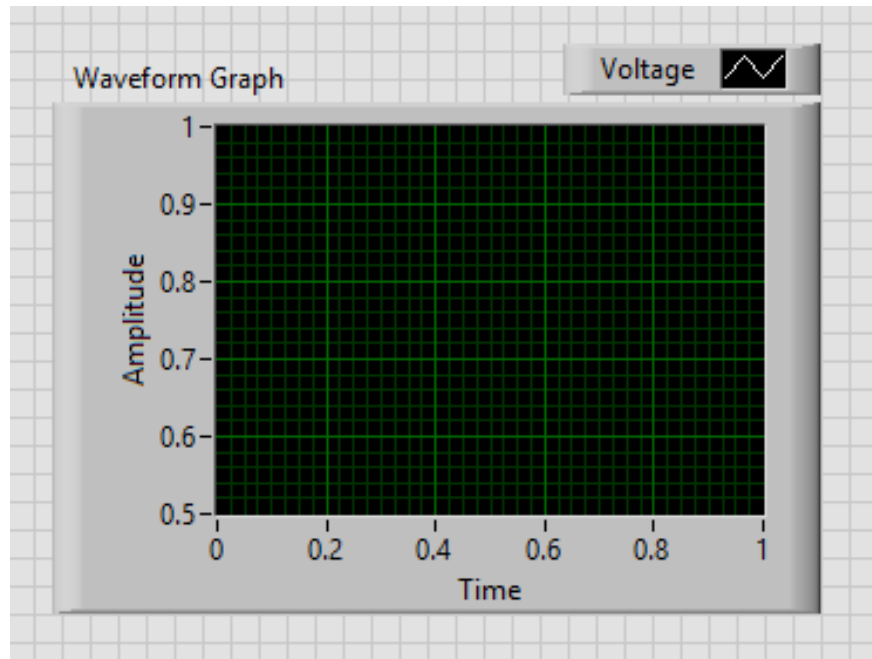


Figure 3: Light Sensor Front Window

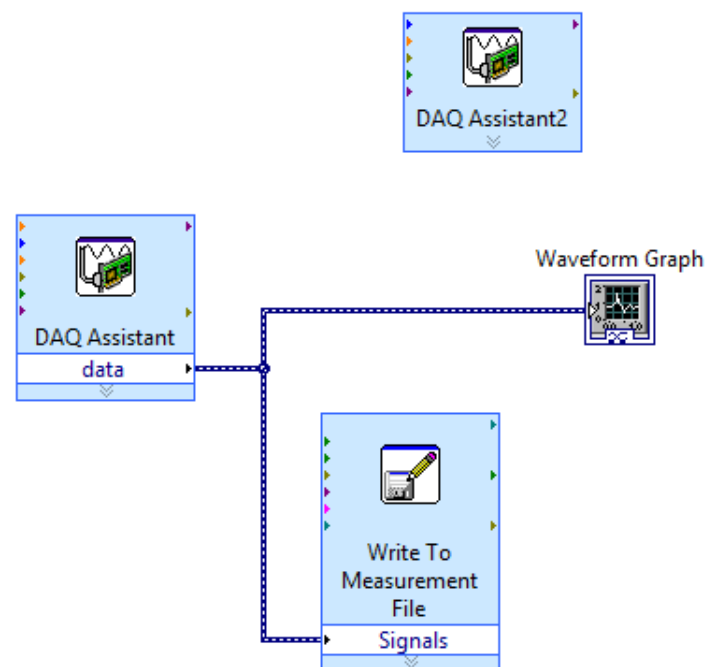


Figure 4: Light Sensor Block Diagram

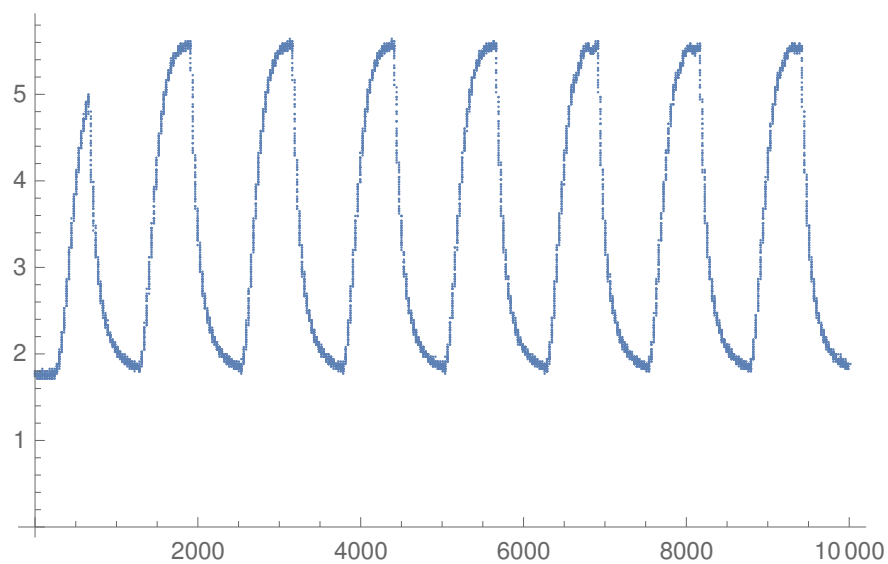


Figure 5: Time(  $10^{-4}s$  ) vs Voltage

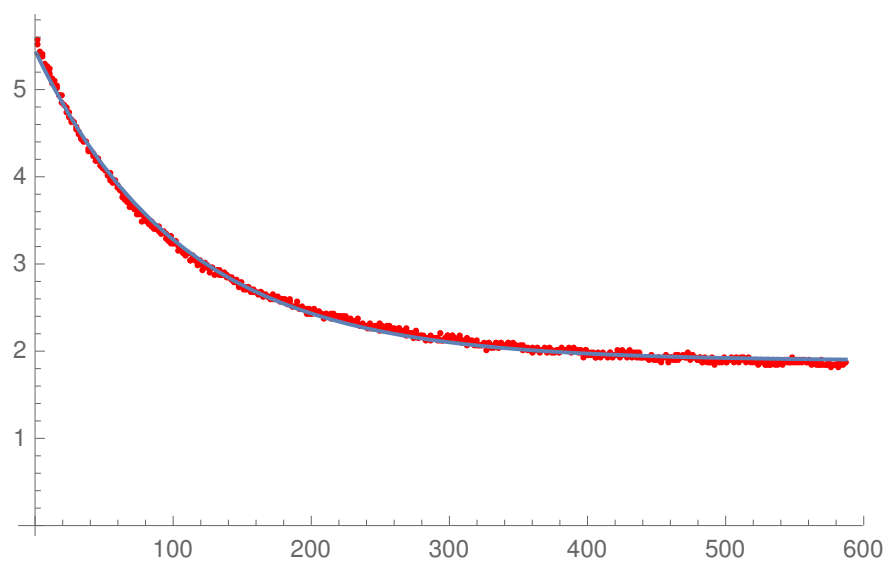


Figure 6: Data of last 587 points to preform best fit on