**Experiment 05**: Current-Voltage Characteristics of a Resistor

(Edit this document as needed)

Partner 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part A*

Brief description of *Part A*:

Color code for a ‘randomly’ selected resistor

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

Determine the resistance value based on the color code. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part B*

Brief description of *Part B*:

Measure the voltage across a resistor and calculate the current to verify Ohm’s Law.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CH A Voltage (V)** | **Channel A voltage measured on Ain pin, V** | **Channel B voltage measured on CH B/Bin pin, V** | **Resistor R1 Voltage, V** | **Resistor Current, I** |
| 0 |  |  |  |  |
| 0.5 |  |  |  |  |
| 1 |  |  |  |  |
| 1.5 |  |  |  |  |
| 2 |  |  |  |  |
| 2.5 |  |  |  |  |
| 3 |  |  |  |  |

Plot of the current (x-axis) vs. voltage (y-axis). (You can use Excel or another plotting tool.)

Using the slope of the plot, determine the resistance. Is the value consistent with resistor used in the experiment?

*Part C*

Brief description of *Part C*:

Measure the voltage across a resistor and calculate the current to verify Ohm’s Law.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CH A Voltage (V)** | **R1 Voltage (measured)** | **R1 Current (calculated)** | **R2 Voltage (measured)** | **R2 current (calculated)** |
| 0 |  |  |  |  |
| 0.5 |  |  |  |  |
| 1 |  |  |  |  |
| 1.5 |  |  |  |  |
| 2 |  |  |  |  |
| 2.5 |  |  |  |  |
| 3 |  |  |  |  |

Plot of the current (x-axis) vs. voltage (y-axis) for both R1 and R2. (You can use Excel or another plotting tool.)

Using the slopes of the plot, determine the resistances. Are the values consistent with resistors used in the experiment?

Does the larger resistor have a steeper slope?

Due: February 3rd, 2022 at 11:59 pm eastern on Gradescope

One student submits on Gradescope and adds their partner using “add group members” option on Gradescope.