Experiment 6: Complex Circuits

The Black Boxes

In this lab you are given two "black boxes", labeled A and B. The boxes have six contact ports (each a different color), where banana plug-jumper cables can be connected. Each box contains exactly 3 resistors connected in various ways to the ports. The difference between boxes A and B is that in box A there is only one resistor across each connection port (see Fig. 1), while in Box B the resistors can be in series and/or parallel across the connection ports. The resistors may be connected horizontally (along the long side of the box), vertically, or diagonally. For Box B, you are given two of the resistor values: $220\Omega \pm 5\%$ and 270Ω $\pm 5\%$. **Your task** to is figure out the configuration of the resistors with their corresponding values in each box using only an ammeter and a power supply. Since the resistors have 5% tolerance, it is advised you give an appropriate range for your unknown resistor values.

A full lab report is not necessary for this lab. Instead submit a clear and neat outline/schematic of the resistor configuration(s) and their corresponding values (show any calculations).

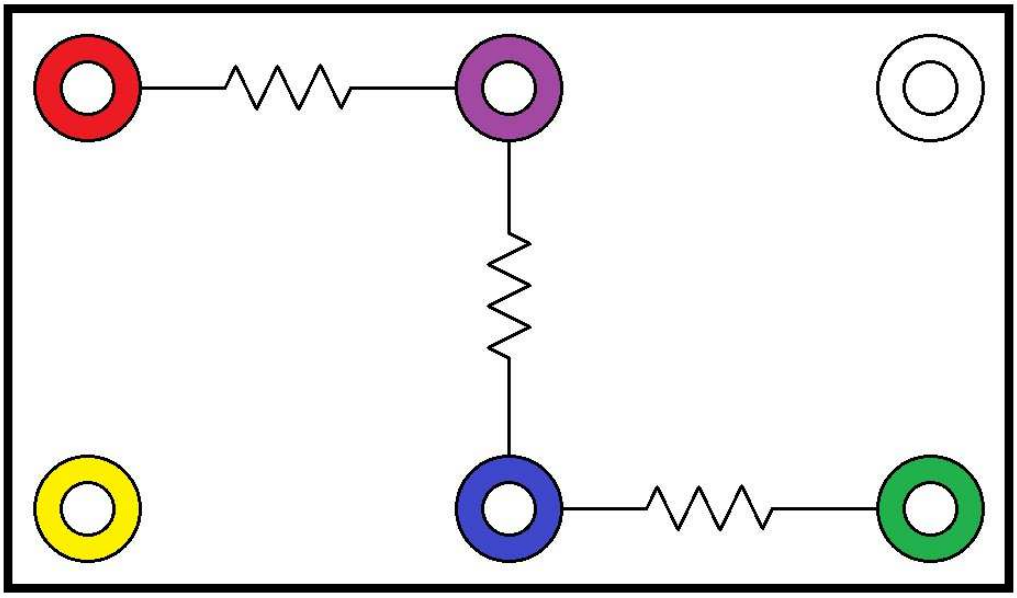

Figure 1: Sample configuration for box type A.

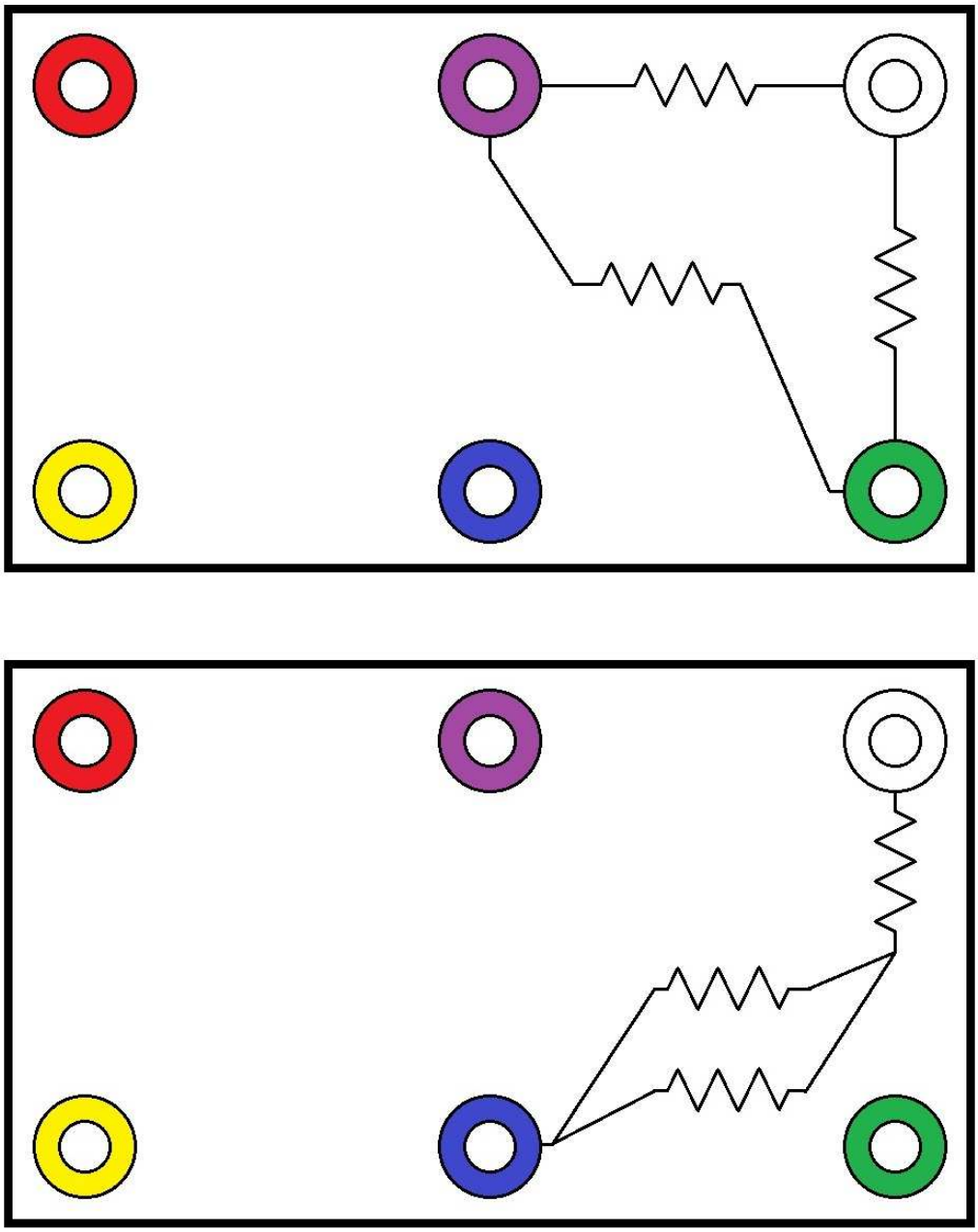

Figure 2: Sample configurations for box type B.