**Experiment 2**

**Series Connection of Resistors**

**Objectives:**

To study the characteristics of series connection of resistors

**Theory:**

When we connect resistors in series, the total equivalent resistor of the connection will equal to the summation of the values of the resistors. That is:

RT = R1 + R2 + … + Rn

The total current will be equal to the current of each resistor in series connection. That is:

IT = I1 = I2 = … = In

The total voltage will be equal to the summation of voltages developed across each resistor. Which means that the total voltage will be divided between the resistors. That is:

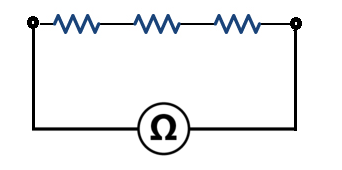
VT = V1 + V2 + … + Vn

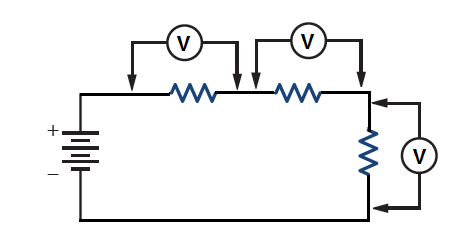
The resistor with the highest value will develop a higher voltage than the resistor with the lowest value. According to Ohm's law:

V = I∙R

**Procedure:**

1- Connect the circuit as shown in figure below and measure the total resistance:

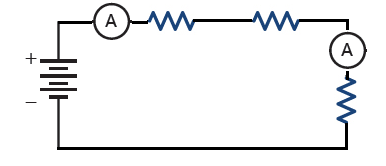
 1KΩ 1KΩ 2KΩ

2- Connect the circuit as shown in figure below and measure the voltage across each resistor:

1KΩ 1KΩ

Vin=10V 2KΩ

3- Connect the circuit as shown in figure below and measure the total current of the circuit and the current through 2KΩ resistor:

 1KΩ 1KΩ

Vin=10V

2KΩ

**Discussion:**

1- From the measured values in the procedure, calculate the consumed power in each resister.

2- For the circuit in procedure, calculate theoretically the current and voltage for each resistor.

3- For the circuit in procedure, if we replace the 2KΩ resistor with 1KΩ, how does the values of current and voltage across the resistors affected.