

TITLE - Type-47 Lamp Resistance

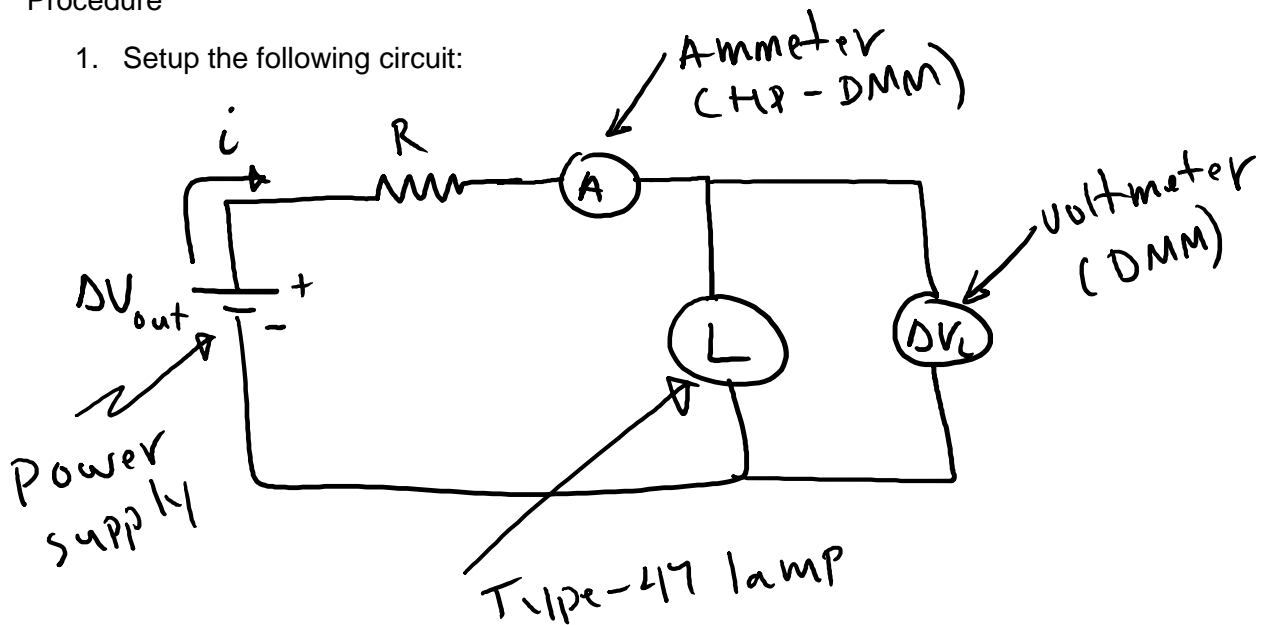
OBJECTIVE – To analyze the resistance of a type-47 lamp by using Ohm's Law.

EQUIPMENT

1. HP-DMM (used as an ammeter)
2. Hand-held DMM (used as a voltmeter)
3. Power Supply
4. 100 Ω resistor
5. Type-47 lamp
6. Leads and alligator clips

Procedure

1. Setup the following circuit:



$$\Delta V_L = i R_L$$

$$i = \left(\frac{1}{R_L} \right) \Delta V_L$$

2. Adjust ΔV_{out} to collect data for ΔV_L and i .
 - a) 10 data points (0V – 2V)
 - b) 10 data points (2V – 6V)
3. Make a graph on EXCEL of i vs. ΔV_L and obtain the equation of the best curve-fit.
4. If lamp resistance is ohmic, calculate the resistance R .
5. If the lamp is non-ohmic, use the equation of best curve-fit to find R at:
 $V = 0.4V, 1.0V, 1.5V, 2.3V, 3.5V, 4.2V, 5.6V$.
6. If R is not constant, explain why in the conclusion.