

PLC121 LAB 1.4: VOLTAGE DIVIDERS AND CAPACITORS

Student Name: _____

Student ID: _____

LAB OUTCOMES:

Upon completion of this lab procedure, the student should be able to:

1. Explain the purpose of a voltage divider in a DC circuit
2. Wire a voltage divider circuit with two resistors
3. Calculate the voltage drop on each resistor in a voltage divider circuit
4. Measure the voltage drop on each resistor in a voltage divider circuit
5. Wire a voltage divider circuit with a resistor and a potentiometer
6. Explain the purpose of capacitors and inductors in a DC circuit
7. Wire a capacitor together with a resistor in a DC circuit
8. Measure the voltage drop on the resistor in a DC circuit

LAB PROCESS:

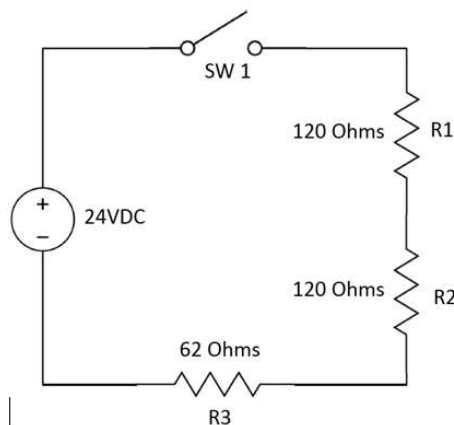
Open the AC/DC Training Unit. Setup the unit on its base, or lay flat on the work table.

Make sure all fault switches are in the 0 position.

Connect the power cord and turn off the power input switch to make sure the unit is not powered.

Part 1

Wire the following circuit on the AC/DC training system:



1. Calculate the total resistance in the circuit.
2. Measure the total resistance in the circuit.
3. Calculate the voltage drop across each resistor, if the switch is closed.

VR1 = _____

VR2 = _____

VR3 = _____

4. Measure the voltage drop across each resistor when the switch is closed.

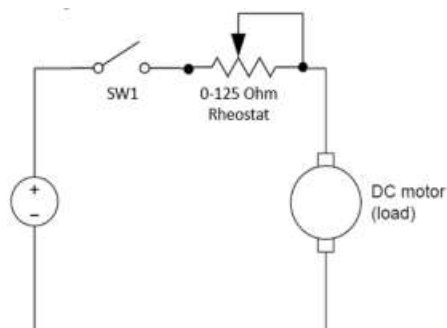
VR1 = _____

VR2 = _____

VR3 = _____

Part 2

Wire a rheostat in series with a switch and DC motor, as shown below:

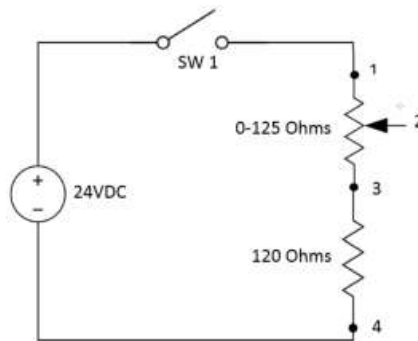


1. Explain why the motor changes speed when the rheostat is varied.

2. Measure and explain the voltage drops on the rheostat and DC motor as it correlates to the speed change.

Part 3

Wire a voltage divider circuit with a potentiometer as shown below:



1. Calculate the voltage drops across the potentiometer and the 120 Ohm resistor
2. Measure the voltage drops across all the devices.
3. Measure and explain the voltage measured from points 1 to 2, and 3 to 4 and explain the correlation between these measurements and the position of the potentiometer knob.

The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: _____

Faculty Signature: _____ Date: _____

DOL DISCLAIMER:

This product was funded by a grant awarded by the U.S. Department of Labor's Employment and Training Administration. The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).