

# PLC120 LAB 3.3: WIRING & MEASURING SERIES & PARALLEL CIRCUITS

Student Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

## LAB OUTCOMES:

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

1. Wire a series circuit with a switch and two resistors.
2. Wire a parallel circuit with a switch and two resistors.
3. Calculate the total resistance, voltage drop, and current in a series circuit.
4. Calculate the total resistance, voltage drop, and current in a parallel circuit.
5. Measure the voltage drop and current in each resistor with a DMM.

## LAB PROCESS:

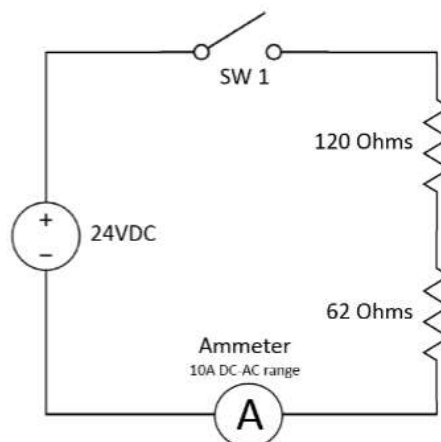
Open the AC/DC Training Unit. Setup the unit on its base, or lay flat on the work table.

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.

### Circuit 1

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

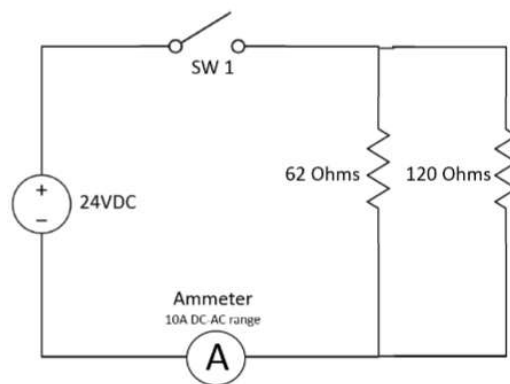


1. Calculate the total resistance in the circuit. What is the calculated value?

2. Measure the total resistance in the circuit. What is the measured value?
3. Calculate the total current that will flow when the switch is closed. What is the value?
4. Close SW1 and measure the total current flowing when the switch is closed. What is the value?

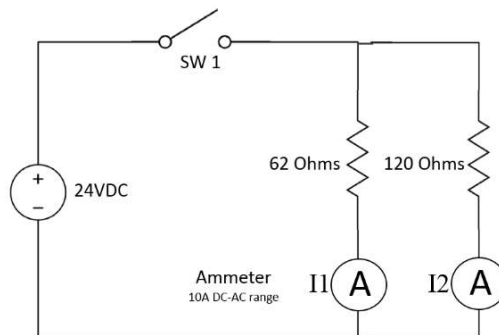
### Circuit 2

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



1. Calculate the total resistance of the circuit. What is the calculated value?
2. Measure the total resistance of the circuit. What is the value?
3. Calculate the total current of the circuit. What is the value?
4. Measure the total current of the circuit. What is the value?

5. Measure the current in each resistor with an Ammeter. Show that the individual resistor currents add up to the total current.



*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/).