

PLC120 LAB 3.2: WIRING & MEASURING PARALLEL CIRCUITS

Student Name: _____

Student ID: _____

LAB OUTCOMES:

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

1. Connect a parallel circuit and use an Ammeter to measure current.
2. Calculate and measure the resistance in a parallel resistive circuit.
3. Calculate and measure the current in a DC parallel circuit.

LAB PROCESS:

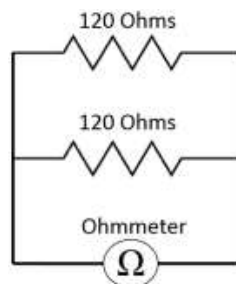
Open the AC/DC Training Unit. Setup the unit on its base, or lay flat on the work table.

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.

Circuit 1

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



1. Calculate the resistance of the two 120 Ohm resistors in parallel.

What is the calculated value? _____

2. Use the DMM as an Ohmmeter and measure the resistance of the two resistors in parallel.

What is the measured value? _____

3. Replace one 120 Ohm resistor with a 62 Ohm resistor.

- Calculate the resistance of the 62 Ohm and 120 Ohm resistors in parallel.

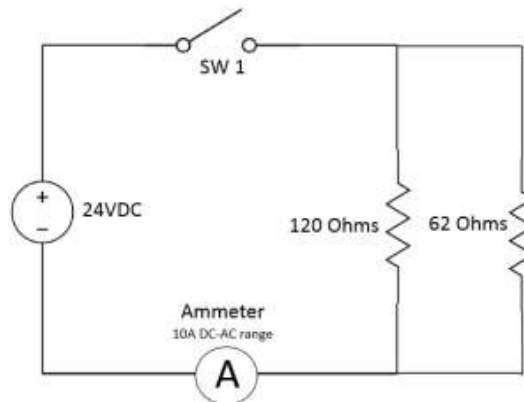
What is the calculated value? _____

- Use the DMM as an Ohmmeter and measure the resistance of the two resistors in parallel.

What is the measured value? _____

Circuit 2

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



- Calculate the current in this circuit, based on the resistance value measured in the previous section of this lab.

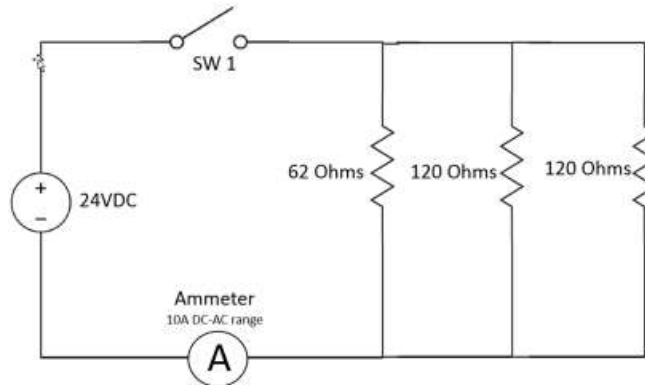
What is the calculated value? _____

- Power on the "Power Input" switch (lower right) to power the training unit.
- Close SW1 and measure the actual circuit current using the Ammeter. Make sure the range is on 10A DC-AC range, and make sure the leads are connected to the middle and left connector on the meter.

What is the measured value? _____

Circuit 3

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



1. Calculate the current that would flow through each resistor.

What is the calculated value for the 62 Ohm resistor? _____

What is the calculated value for the 120 Ohm resistor? _____

What is the calculated value for the 120 Ohm resistor? _____

2. Power on the “Power Input” switch (lower right) to power the training unit.
3. Close SW1, and measure the actual current through each resistor using the Ammeter (rotate it between the different resistors, by removing the wire from one side of each resistor and inserting the Ammeter). Make sure the range is on 10A DC-AC range, and make sure the leads are connected to the middle and left connector on the meter.

What is the measured value for the 62 Ohm resistor? _____

What is the measured value for the 120 Ohm resistor? _____

What is the measured value for the 120 Ohm resistor? _____

Questions

1. If two 150 ohm resistors were in parallel, what would be the equivalent resistance?
2. If the two resistors in question 1 had 24Vdc applied to them, what would be the total current in the circuit?

3. How much current would be flowing through each of the 150 ohm resistors?

4. Do the sum of these two currents equal the total current calculated in question #2?

5. If the following 3 resistors were connected in parallel, what would be the total resistance?
150 Ohm, 150 Ohm, 200 Ohm.

6. If the three paralleled resistors had a 24Vdc applied to it, what would be the total current in the circuit?

7. What would be the current flowing through each resistor?
 - a. 150 Ohms = _____ Amps
 - b. 150 Ohms = _____ Amps
 - c. 200 Ohms = _____ Amps

8. Does the total currents in questions #7, add up to the total current calculated in question #6?

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: _____

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