

PLC120 LAB 3.1: WIRING & MEASURING SERIES CIRCUITS

Student Name: _____

Student ID: _____

LAB OUTCOMES:

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

1. Connect a series circuit using an Ammeter.
2. Measure the resistance and voltage used in a DC series circuit.
3. Calculate and measure the current in a DC series circuit.
4. Calculate and measure the current in a series circuit with 2 resistors.

LAB PROCESS:

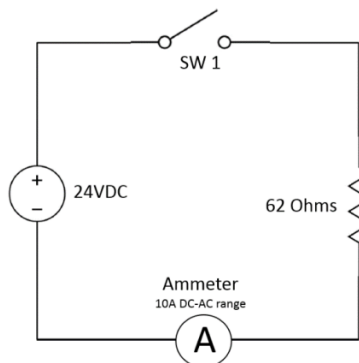
Open the AC/DC Training Unit. Setup the unit on its base, or lay flat on the work table.

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. Pull the wires off the 62 Ohm resistor and measure the actual resistance with the meter.

What is the measured value? _____

2. Power on the "Power Input" switch (lower right) to power the training unit.
3. Measure the actual voltage coming out of the DC power supply.

What is the measured value? _____

4. Calculate what the current should be in the circuit after the switch is closed.

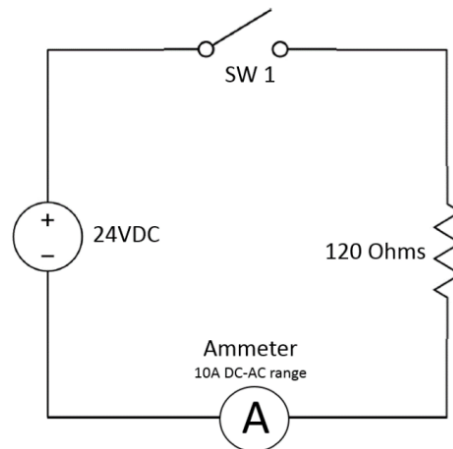
What is the calculated value? _____

5. Close SW1 and measure the actual circuit current using the Ammeter. Make sure the range is on 10A DC-AC range, and that the leads are connected to the middle and left connector on the meter.

What is the measured value? _____

Circuit 2

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



1. Pull the wires off the 120 Ohm resistor and measure the actual resistance with the meter.

What is the measured value? _____

2. Power on the "Power Input" switch (lower right) to power the training unit.
3. Measure the actual voltage coming out of the DC power supply.

What is the measured value? _____

- Calculate what the current should be in the circuit after the switch is closed.

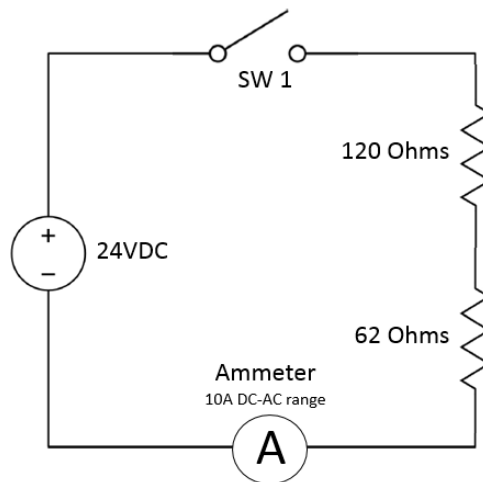
What is the calculated value? _____

- Close SW1 and measure the actual 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:



- Calculate the total resistance based on the measured values of the resistors.

What is the calculated value? _____

- Power on the "Power Input" switch (lower right) to power the training unit.
- Calculate what the current should be in the circuit after the switch is closed.

What is the calculated value? _____

- 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? _____

Questions

1. An Ohmmeter is connected in _____ with what it is measuring.
 - a. Series
 - b. Parallel
2. An Ammeter is connected in _____ to measure current through the load.
 - a. Series
 - b. Parallel
3. If a 120 ohm, another 120 ohm, and a 62 ohm resistor were all connected in series, what would the total resistance be?
4. If the three series connected resistors had a 48Vdc power supply connected to them, what would be the total current in the circuit?

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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