

Lab 11.1.8: Using a Digital Multimeter

Estimated Time: 30 Minutes

Objective

This lab will concentrate on your ability to identify and record power supply specifications and connector types. It will also, focus on the use of a multimeter to safely test and record voltage readings.

Equipment

The following equipment is required for this exercise:

- Personal computer (no peripherals will be needed)
- PC hand tool kit
- Multimeter

Scenario

You are an On-Call Help Desk Engineer for a small computer sales store. A client, who purchased a computer from your company, as well as an extended warranty, is having problems with his PC. Based on their description of the PC's behavior, you suspect it is the power supply.

Procedures

For this lab, you will need to compile power supply information as well as test procedures. Observe various types of power supply form factors and characteristics. If at any time you are unsure of the procedure, ask your instructor.

Note: This lab deals with electrical power supplies. Proper care should be taken whenever working with a power supply. Also, students should **not** wear a grounding strap when testing the power supply.

Step 1

Remove the cover of the computer and properly store the screws.

Step 2

Record the following power supply information (found on the power supply's label)

Manufacturer's Name
Model Number
Operating Range
Current at 115 V
Current at 230 V
Wattage Rating

Step 3

Sketch the power supply and identify the 4 main external components of a power supply by labeling them on your drawing.

Step 4

Name the specific type of Motherboard connector that your power supply is using.

Step 5

How many large drive connectors are available on your power supply? _____

Step 6

How many Small drive connectors are available on your power supply? _____

Step 7

Identify the large drive connector leads, and then measure their voltage values (ask your instructor, if you have any questions related to how to proceed with voltage measurements).

Lead Color	Expected Voltage	Actual Voltage
1.		
2.		
3.		
4.		

Step 8

Identify the small drive connector leads, and then measure their voltage values (ask your instructor, if you have any questions related to how to proceed with voltage measurements).

Lead Color	Expected Voltage	Actual Voltage
1.		
2.		
3.		
4.		

Step 9

Reflection: Why is it important for a technician to know the different colors and their values?

Step 10

With the multi-meter, measure the voltage on each colored wire of the motherboard connectors. Most motherboard connectors will have either two connectors or one long connector. Use the Table below to record the lead color and their measured voltage (Note: do not measure the black leads because they are ground.). Note meter lead polarity: Red is positive (+) and Black is negative (-).

1. Lead Color	Voltage Reading
2. Lead Color	Voltage Reading
3. Lead Color	Voltage Reading
4. Lead Color	Voltage Reading
5. Lead Color	Voltage Reading
6. Lead Color	Voltage Reading
7. Lead Color	Voltage Reading
8. Lead Color	Voltage Reading
9. Lead Color	Voltage Reading
10. Lead Color	Voltage Reading
11. Lead Color	Voltage Reading
12. Lead Color	Voltage Reading
13. Lead Color	Voltage Reading
14. Lead Color	Voltage Reading
15. Lead Color	Voltage Reading
16. Lead Color	Voltage Reading
17. Lead Color	Voltage Reading
18. Lead Color	Voltage Reading
19. Lead Color	Voltage Reading
20. Lead Color	Voltage Reading

Step 11

Check the continuity from the ground of the power cord socket to the metal base of the computer

Step 12

Check the continuity of all three conductors of a Power cord from the plug end to the female end.

1. Neutral _____
2. Hot _____
3. Ground _____

Step 13

Reflection Question: Why measure voltage when troubleshooting a Power Supply?

Troubleshooting

One way to determine if a power supply is not functioning properly is to compare the test results from what the connector should be reading. A malfunctioning power supply should not be opened. Replace the component with a new one of the same power capacity.

Reflection

What was learned from this lab that was not known before?

How can what you have learned here help you in the future?
