

Multimeter



Integral to any electronics project, the multimeter provides a series of tools designed for electrical measurement. Although there are virtually unlimited types and brands of multimeters, they almost all include a standard set of tools. Below lists the standard tools, as well as some unique to the type:

Standard	Unique
AC / DC Voltage	Capacitance
Current	Frequency
Resistance	Temperature
Diode	Inductance
Continuity	Transistor

Requirements (Check when complete):

This section focuses on establishing an understanding of the basic tools and functions provided by the common multimeter

Do EACH of the following and submit to your instructor:

- Identify and describe the tools your multimeter supports.
- Identify and describe the visible features. These should include:
 - Probe ports (typically banana jacks)
 - Capacitor port (if available)
 - Transistor ports (if available)
 - Fuses (there should be two, one for current, one for voltage)
- Identify and describe the following:
 - DC Voltage range and sensitivity
 - AC Voltage range and sensitivity
 - Current measurement range and sensitivity
 - Resistance range and sensitivity
 - Configuring the probes for proper measurement range
 - Polarity

This section focuses on the demonstrating the comprehension of the multimeter's basic functions

Do EACH of the following and submit to your instructor:

- Configure and use your multimeter to make a voltage measurement from a regulated DC power supply or battery. Record your results.
- Configure and use your multimeter to make a voltage measurement from a regulated AC power supply (do not use a wall outlet unless you are supervised by a qualified adult). Record your results.

Multimeter

Do the following:

- Configure and use your multimeter to measure 5 different resistors. Record your measurements and compare them to the resistor's color code values.

Do EACH of the following:

- Use Ohm's Law to predict the current flowing through a 1kOhm resistor at 5V.
- Configure and use your multimeter to make a current measurement from your DC power source or battery. Use the resistor supplied by your instructor to make your measurement, record your results, and compare them your predicted value.
 - What would account for the difference, if any?
- Configure and use your multimeter to take a measurement that requires more than 500mA. Properly attach your supplied motor and multimeter to your regulated DC supply, power on the supply and record your results.
 - Reflect on why you had to reconfigure your multimeter for high current measurement.

Do the following:

- Configure and use your multimeter to determine the anode and cathode of the supplied LED (light emitting diode.) When connected correctly, your meter should give you a voltage value correlating to the diode's voltage drop. Record your results and the status of your LED.

Do EACH the following:

- Configure and use your multimeter to test the continuity of the supplied wire. The value you see on your meter should be in Ohms, reflecting the wire's internal resistance. Record your results.
- Use your multimeter to check continuity between different components on the supplied PCB. Did you find any problems/errors? Record your results.

_____ has successfully completed the above requirements and demonstrated proficiency in a satisfactory manner as set by their instructor.

Student

Date

Instructor

Date