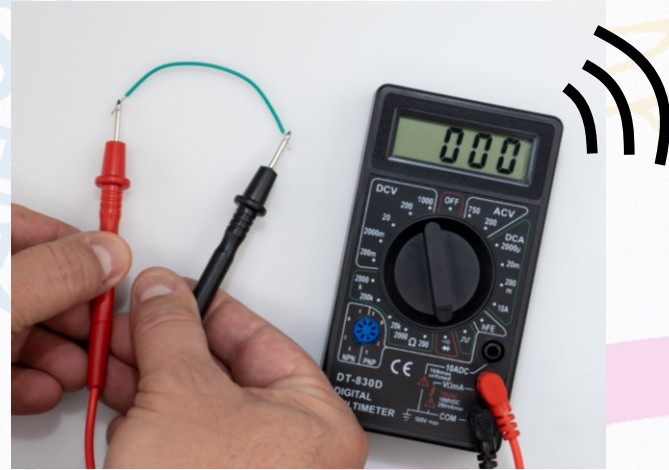
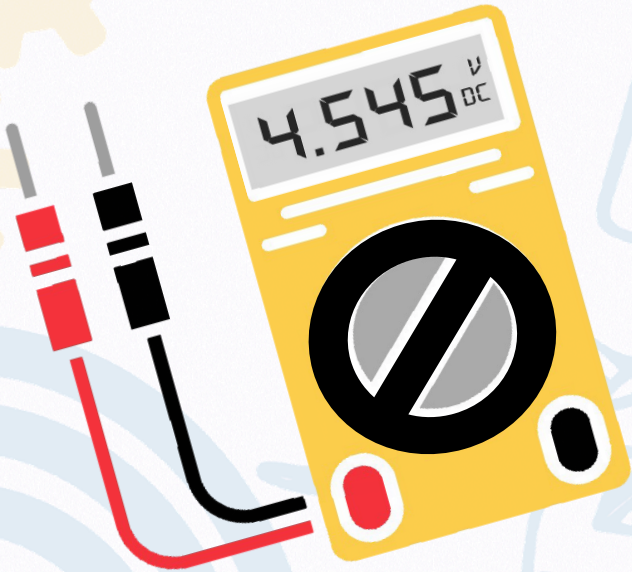


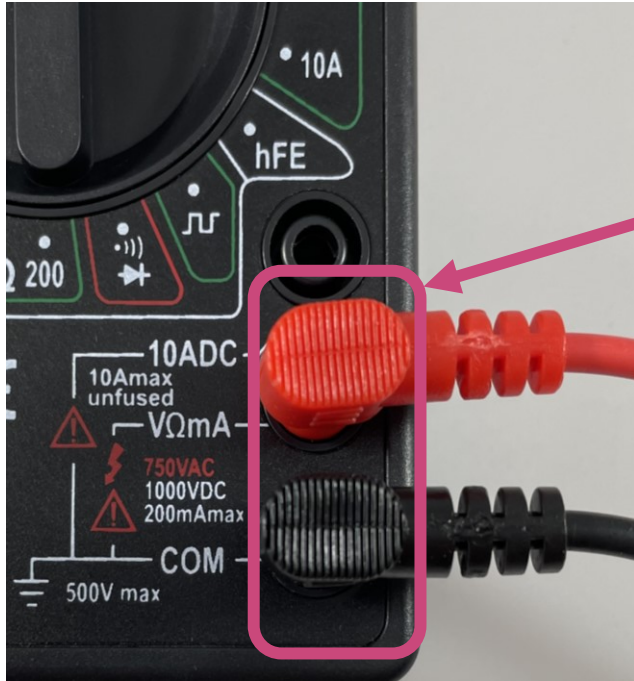
# Measuring DC Voltage & AC Voltage with a Multimeter



MEASURING CONTINUITY + RESISTANCE

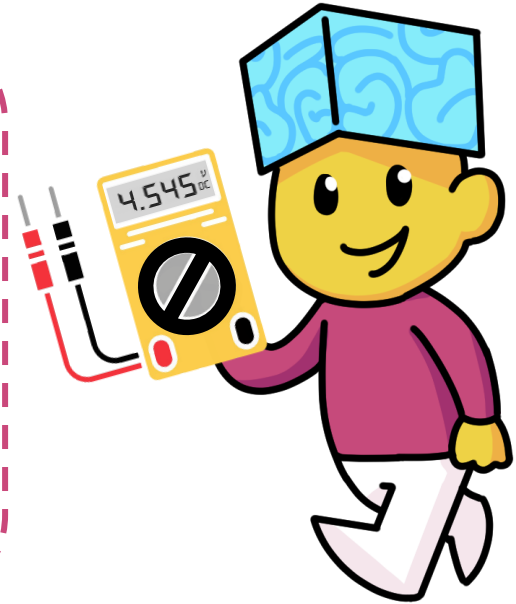


# Where are probes connected to measure Continuity & Resistance on a Multimeter?



Voltage, resistance, low current, and continuity, always have the probes plugged into these ports:

red probe → VΩmA port  
black probe → COM port



# Measuring Continuity

“Continuity” means two points are electrically connected.



This is the Continuity position

Touch the red probe and the black probe to two points on a circuit.



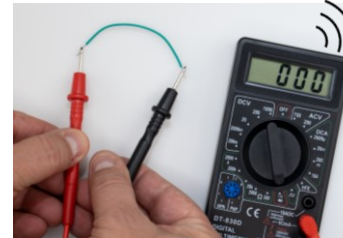
A continuous beep indicates the two points have "continuity". If you don't hear a continuous beep, there is no electrical connection.

You can test this mode by touching the red and black probes together.

Uses for Continuity Test



Check if a wall switch is on or off.



Check whether a wire is good.



Test connections on a printed circuit board.





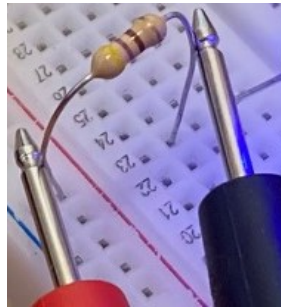
# Measuring Resistance



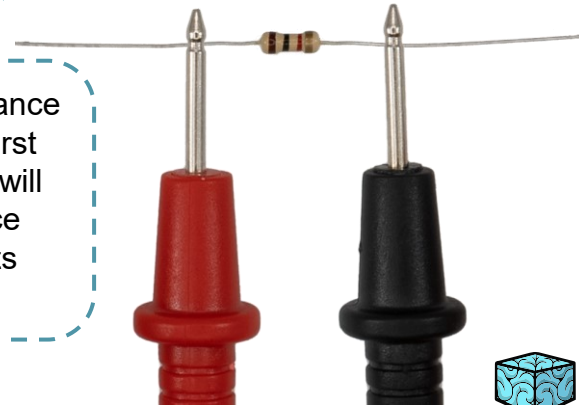
Set the dial to the resistance ( $\Omega$ ) position.

Touch the red (+) and black (-) probes of the multimeter to either end of a resistor to measure and show its value on the **LCD** or display.

It doesn't matter what ends of the resistor you place the probes on because the resistor has no **polarity**.



**Note:** To measure resistance in a circuit, be sure to first turn off the power. This will measure the resistance between the two points **in the circuit!**

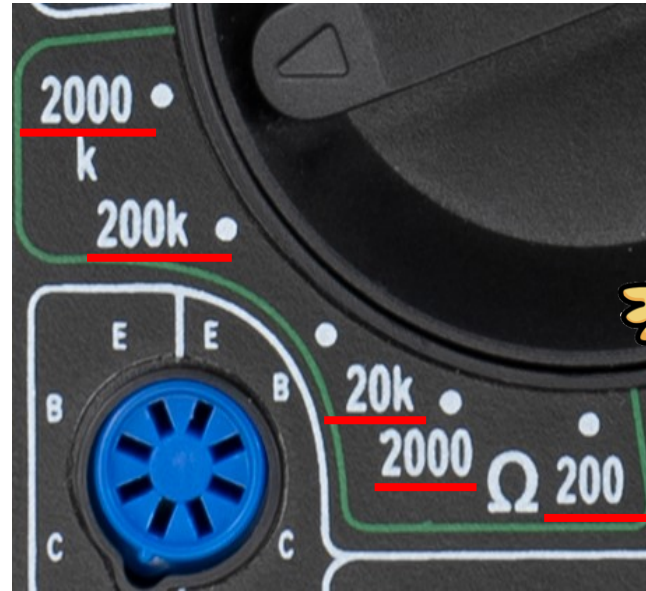


# Best Dial Position to Measure Resistance

In total, there are *five ranges* on the  $\Omega$  (**Ohms** or **resistance**) section of the dial of the multimeter:

- 2000K** - Measure up to 2,000,000  $\Omega$   
Multiply display value by 1K
- 200K** - Measure up to 200,000  $\Omega$   
Multiply display value by 1K
- 20K** - Measure up to 20,000  $\Omega$   
Multiply display value by 1K
- 2000** - Measure up to 2000  $\Omega$   
Resistor value shows on display
- 200** - Measure up to 200  $\Omega$   
Resistor value shows on display

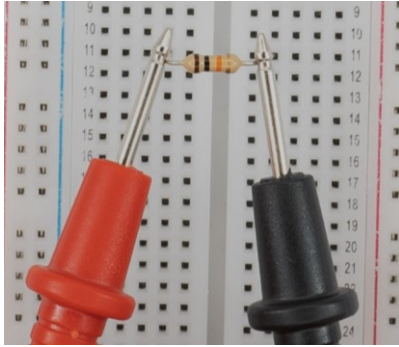
**Note:**  $\Omega$  is pronounced “ohm” and is the unit used to measure **resistance**. Zero ohms means a wire has “**continuity**” and is directly connected.



# Measuring Resistance Example



Let's see what this looks like with a 10K  $\Omega$  resistor. First set the dial to the highest range value and work our way down.



Notice each time the dial is move to a lower range value, the accuracy increases until we reach a range value that is too low (2000  $\Omega$ ).

Also note for a 10K $\Omega$  resistor, we measure only 9.74K $\Omega$ . This is low, but in the range for a resistor with 5% tolerance!

The multimeter shows 9000  $\Omega$



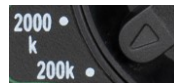
2000K  $\Omega$



The multimeter shows 9700  $\Omega$



200K  $\Omega$



The multimeter shows 9740  $\Omega$



20K  $\Omega$



Resistor too big to measure on selected setting



2000  $\Omega$



200  $\Omega$



# SQUARE BRAIN

Measuring Continuity  
& Resistance

