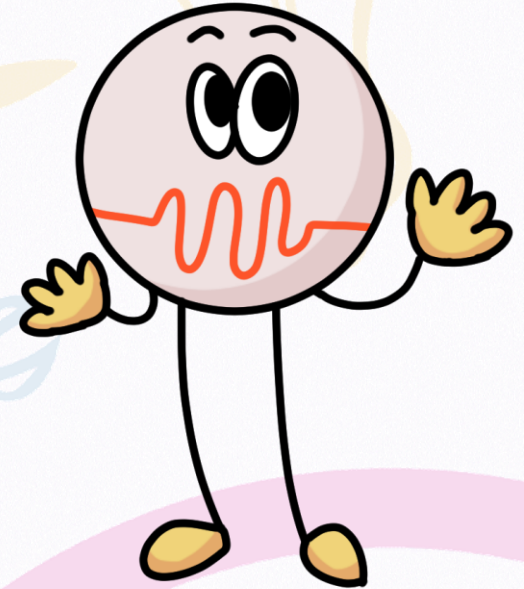


# How Resistors Work



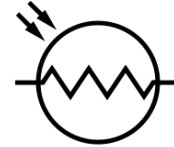
# Resistors in the Starter Circuit Kit



**Resistor**



**Potentiometer**



**Photoresistor**



These are the three resistors  
that are included in the  
SquareBrain Starter Circuit Kit.



# Fixed Value Resistor

470Ω Resistor



470Ω Resistor



270KΩ Resistor



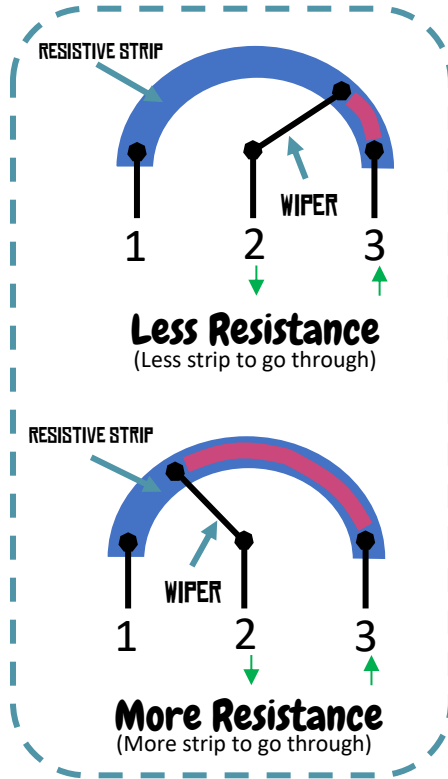
One of the most used electronic components, fixed value resistors, have a specific rated resistance value that is not adjustable. Colored bands (which have a corresponding numerical value) on the outside of the fixed resistor indicate the rated resistance value of the component and its tolerance.

The fixed value resistors included in the SquareBrain Starter Circuit Kit are called **carbon film resistors**. They are made by wrapping a thin layer of carbon film around a ceramic substrate. Resistance values are achieved by varying the thickness, width, and number of times the carbon film is wrapped around the insulating ceramic core.

Here is an example of a fixed resistor where the insulative material on the outside has been scraped away revealing the carbon film on the inside.



# Variable Resistors-Potentiometer (POT)



The amount of resistance in potentiometer is adjusted by turning the screw at the top of the POT which creates higher or lower resistance.



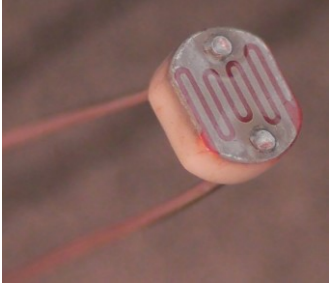
Inside the potentiometer, there's a wiper. The wiper moves along a resistive strip. Turning the screw at the top of the POT moves the wiper around the strip increasing or decreasing the amount of resistance.

Connections in this example are made between 2 and 3.

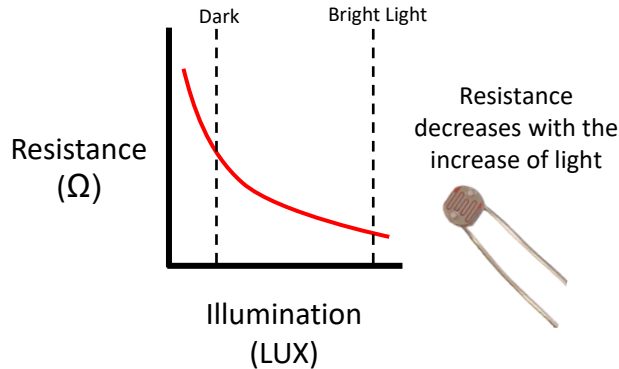
The range of resistance is different for different types of POTS.



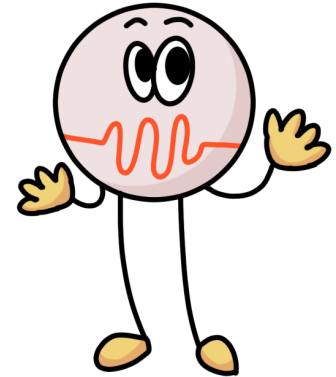
# Variable Resistors-Photoresistor



The amount of resistance in a photoresistor changes relative to the amount of light present. In low light or darkness, the component has a higher resistance value. In the presence of light, it has a lower resistance value!



To increase the conductivity of the photoresistor, place it in the light. To reduce the conductivity, place it in low light or darkness!



# SQUARE BRAIN

## How Resistors Work

