

Understanding the Role of the Resistor in an LED Circuit

The Arduino's Power Supply

Your Arduino board typically has a 5V power supply. This means it can provide a voltage of 5 volts to your circuits.

LEDs and Current

LEDs are very sensitive to the amount of current flowing through them. If too much current flows, the LED can burn out. That's why we use a resistor to limit the current.

The Resistor's Role

A resistor is a component that opposes the flow of current. In an LED circuit, it acts as a current-limiting device. By placing a resistor in series with the LED, we can control the amount of current flowing through the LED.

The 220 Ohm Value

The value of 220 ohms is a common choice for resistors in LED circuits. It's a good compromise between brightness and longevity. A higher resistance would limit the current more, making the LED dimmer, while a lower resistance would allow more current to flow, potentially shortening the LED's lifespan.

How it Works

1. **Arduino Power Supply:** The Arduino provides a 5V supply to the circuit.
2. **Current Flow:** When you connect the LED to the Arduino's digital pin, current starts to flow.
3. **Resistor's Influence:** The 220-ohm resistor limits the current flowing through the LED.
4. **LED Illumination:** The LED lights up with a brightness that depends on the amount of current flowing through it.

In Summary

The 220-ohm resistor in your circuit plays a crucial role in protecting your LED from excessive current. It acts as a current-limiting device, ensuring that the LED receives a safe and appropriate amount of current for optimal performance and longevity.

Also watch this video: How do resistors work?

<https://www.youtube.com/watch?v=rcSOc bu6pDM&t>