

# Introduction to Robotics

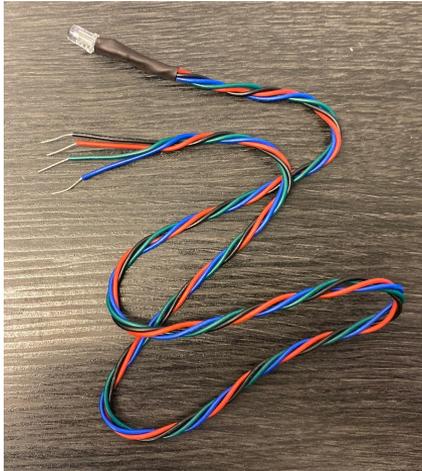
I can program an LED to turn on



# LEDs

An LED is a light emitting diode. More simply, it's a light!

An LED looks like:



# Servo Motors

A servo motor is a robot part that moves in a circular motion. These motions are precise.

A servo motor looks like:



# Sensors

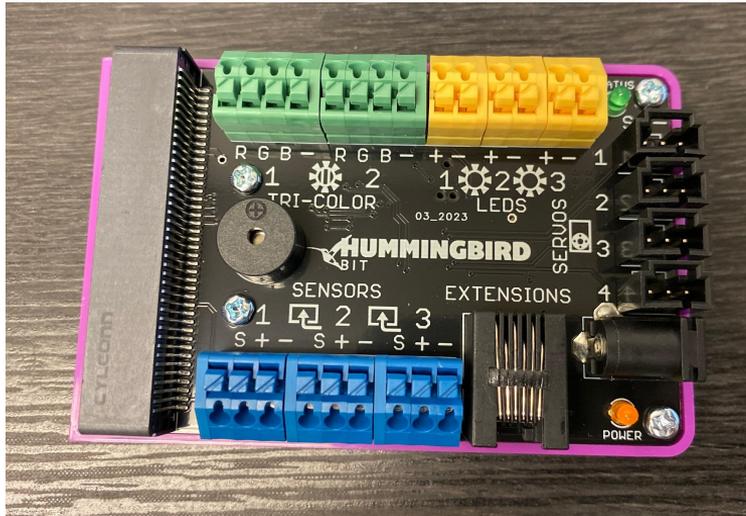
A sensor is a robot part that takes input from the environment. It acts like the robot's eyes, ears, or skin.

A sensor looks like

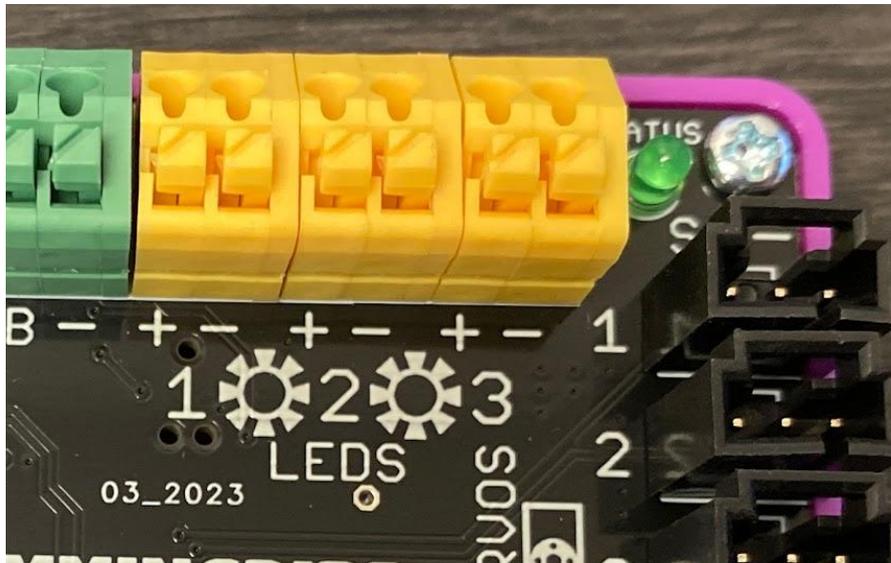


# The Hummingbird Board - Circuit Board

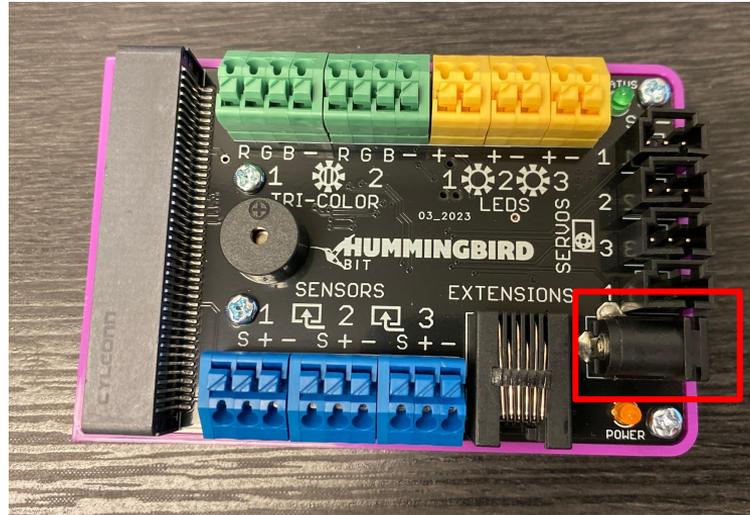
Negative(-) is black



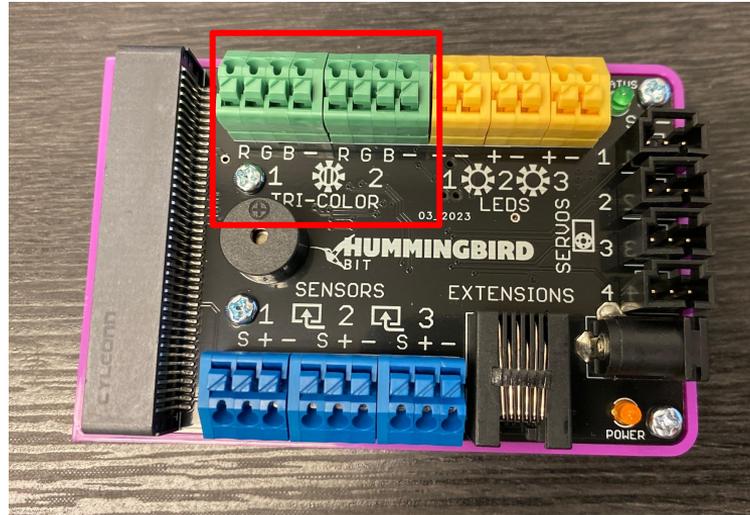
# The Hummingbird Board - Circuit Board



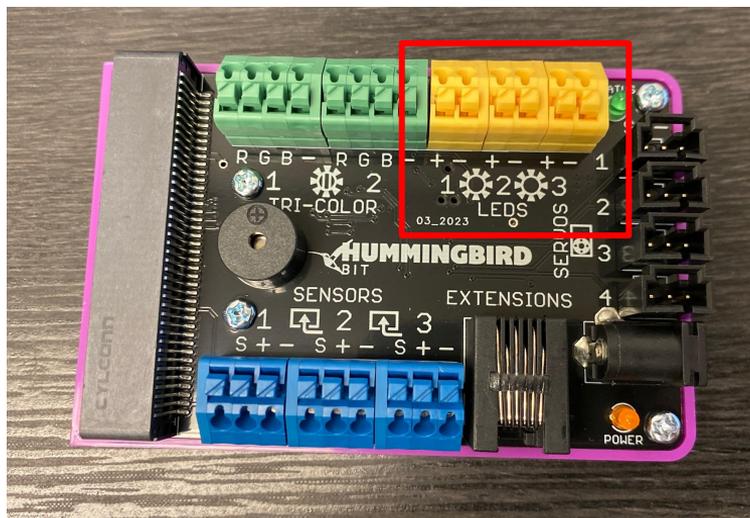
# Battery Connector



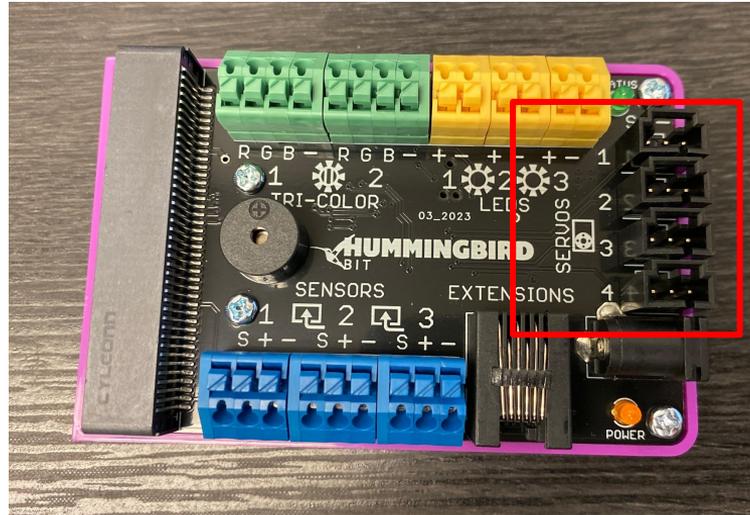
# Tri-Color LED Connectors



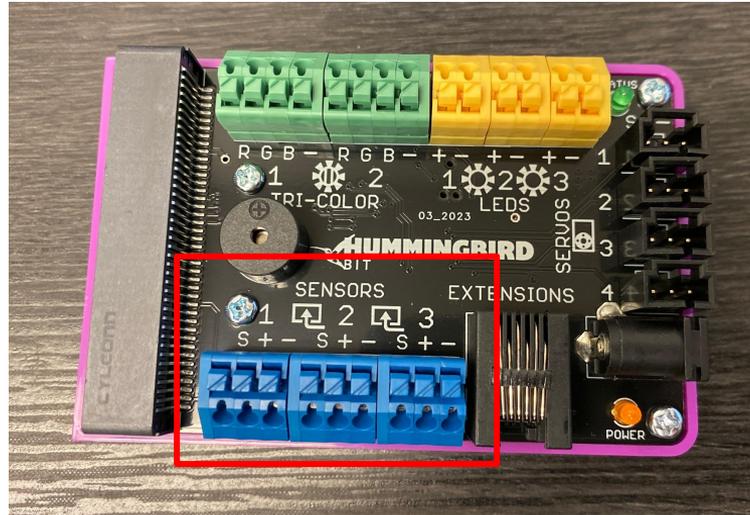
# Single Colored LED Connectors



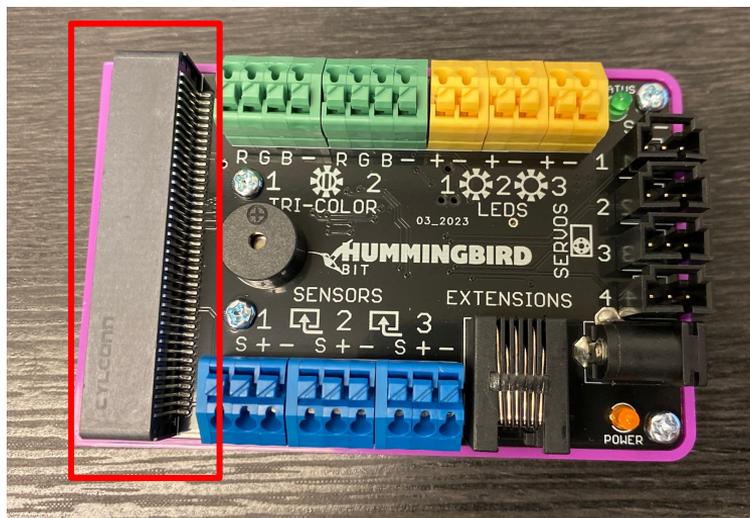
# Server Connectors



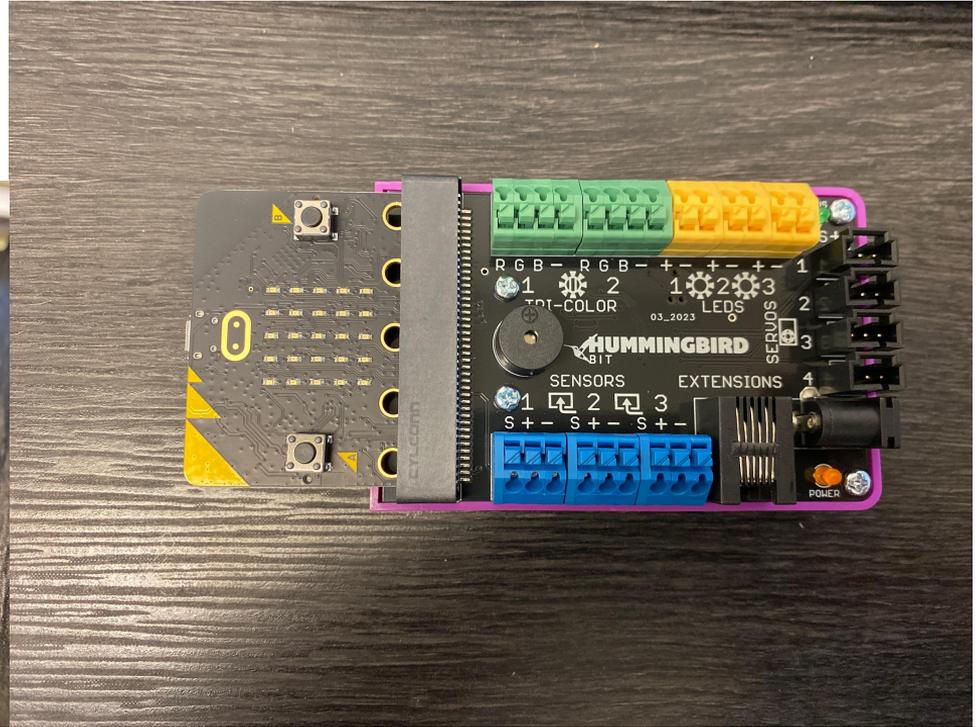
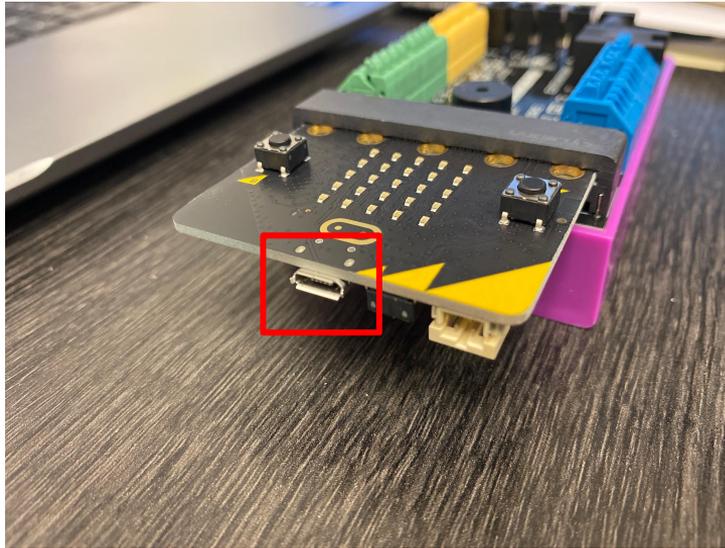
# Sensor Connectors



# Microbit Slot



# USB Connector



# Time to Explore

<https://makecode.microbit.org/>

The screenshot shows the Microsoft MakeCode Micro:bit website. At the top, there is a blue header with the Microsoft logo, the text "micro:bit", a settings gear icon, and a "Sign In" button. Below the header is a large banner image featuring a Micro:bit board, a USB cable, and a code editor snippet with blocks for "on shake" and "show leds". On the left side of the banner, the text "Introduction to the BBC micro:bit" is displayed above a "Show Instructions" button. Below the banner, the "My Projects" section is visible, including a "View All" link and an "Import" button. A prominent purple button with a white plus sign and the text "New Project" is centered in this section. The "Tutorials" section at the bottom features a row of six colorful icons with labels: "Flashing Heart" (with a "New? Start Here!" badge), "Name Tag", "Smiley Buttons", "Dice", "Love Meter", and "Micro Chat".

# Name Your Project

Create a Project 🤗🤗🤗 ✕

Give your project a name.

[> Code options](#)

**Create** ✓

Microsoft | micro:bit

Blocks JavaScript

Search...

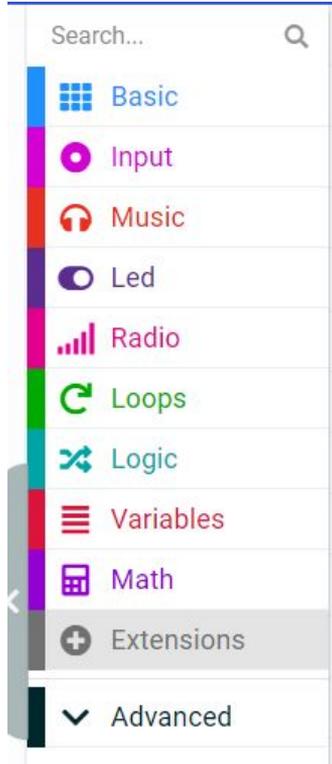
- Basic
- Input
- Music
- Led
- Radio
- Loops
- Logic
- Variables
- Math
- Extensions
- Advanced

on\_start forever

Download ...

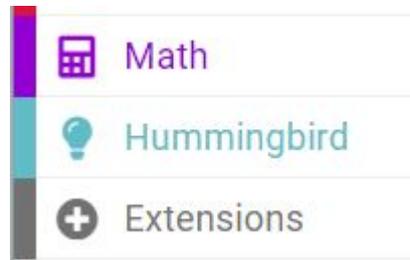
Animated Character

# Add the Hummingbird Kit



Search bird

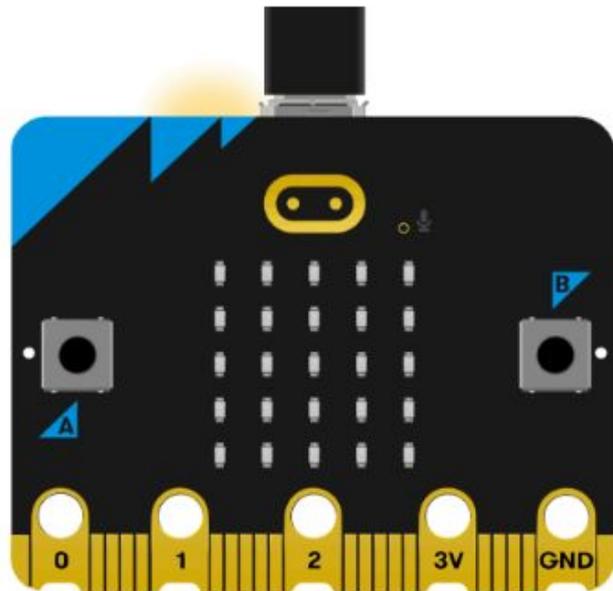
Click on the hummingbird-bit



**hummingbird-bit**  
A library for Hummingbird Bit in MakeCode

[Learn More](#)

# 1. Connect your micro:bit to your computer



 **Next**

## 2. Pair your micro:bit to your browser



Press the Pair button below.

A window will appear in the top of your browser.

Select the micro:bit device and click Connect.



Download as File



Pair

makecode.microbit.org wants to connect

BBC micro:bit CMSIS-DAP



Connect

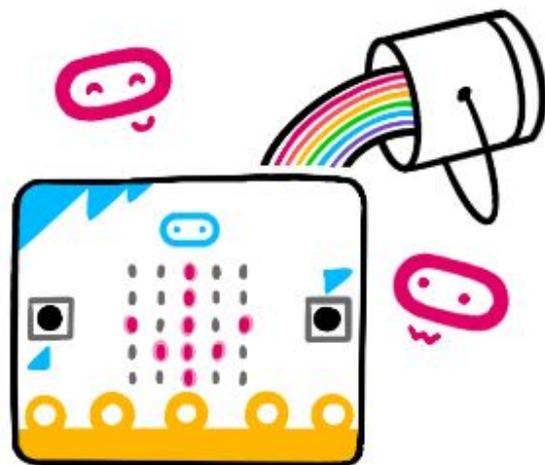
Cancel

Connect.

✓ Connected to micro:bit



Your micro:bit is connected! Pressing 'Download' will now automatically copy your code to your micro:bit.



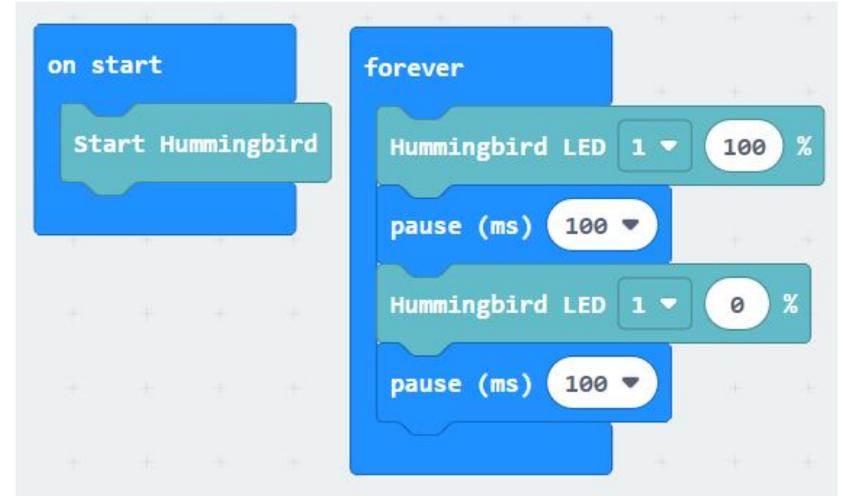
Download

# Sample Code



Scratch code snippet 1:

- on start** block containing a **Start Hummingbird** block.
- forever** loop containing a **Hummingbird LED 1** block with a value of **100 %**.



Scratch code snippet 2:

- on start** block containing a **Start Hummingbird** block.
- forever** loop containing:
  - Hummingbird LED 1** block with a value of **100 %**.
  - pause (ms)** block with a value of **100**.
  - Hummingbird LED 1** block with a value of **0 %**.
  - pause (ms)** block with a value of **100**.



Scratch code snippet 3:

- on start** block containing a **Start Hummingbird** block.
- forever** loop containing:
  - Hummingbird LED 1** block with a value of **100 %**.
  - Hummingbird LED 2** block with a value of **0 %**.
  - pause (ms)** block with a value of **100**.
  - Hummingbird LED 1** block with a value of **0 %**.
  - Hummingbird LED 2** block with a value of **100 %**.
  - pause (ms)** block with a value of **100**.

# Clean Up

