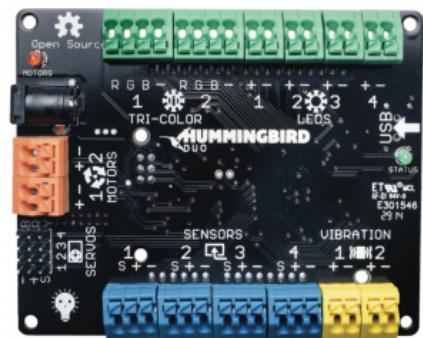


# HummingBird Robotics Kit Quickstart

The Hummingbird Kit contains everything you need to built super cool robots, complete with motors, light, and sensors out of recycled materials. The electronics just work when you plug components into the clearly labeled ports. There is no need to understand shields, resistors, or complex circuits.

Best of all, Hummingbird robots can be programmed with Scratch or Snap! Not only are these languages designed for learning computer science and embraced by children, but the screen and outside world may now join forces.

For example, control your robot from the screen or build a game controller via the Hummingbird. No tricky libraries are required. The software you know and love just gains new blocks. Both languages are dialects of Logo.

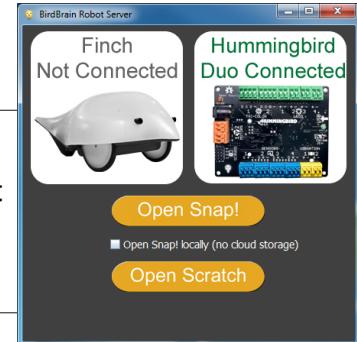


## More information here!

- Hummingbird Robot Kit web site - [hummingbirdkit.com](http://hummingbirdkit.com)
- Invent To Learn all-in-one Hummingbird page - [inventtolearn.com/hummingbird](http://inventtolearn.com/hummingbird)

### Step 1: Install the Birdbrain Robot Server

The Birdbrain Robot Server MUST be installed. This is a software control panel that launches the programming language of choice and installs the new functionality required for robotics control.



### Step 2: Choose your programming software

The best choices for students learning about physical computing with the Hummingbird are Scratch and Snap!. They are very similar and have similar learning curves and capabilities when used with the Hummingbird Kit. If your students already know Scratch, they can program in Snap!. *If you can, we recommend running Snap! because of the current issues and bugs in the Scratch application.*

#### **SNAP!**

Snap! is a browser-based version of Scratch with the addition of first-class objects and the ability to define new blocks. Snap! works almost exactly the same as Scratch when programming the Hummingbird. The only disadvantage of using Snap! is that it doesn't give students access to the 8+ million projects shared on the Scratch web site.

#### **SCRATCH**

If you wish to use Scratch with the Hummingbird kit, you cannot currently use the Web-based version. You will need to download the offline version of Scratch 2.0 and also install the free Adobe Air software.

Scratch and Snap! require that the Hummingbird be tethered to the computer at all times. There are other programming language choices that allow for untethered operation. However, in general, these languages are not as good as Scratch and Snap! for teaching basic programming. See the Hummingbird software comparison chart for more information <http://www.hummingbirdkit.com/learning/software>

### Step 3: Install and launch your programming software

Follow the installation instructions for your software and operating system found on the Hummingbird website.

**Snap!:** <http://www.hummingbirdkit.com/learning/snap-programming/>

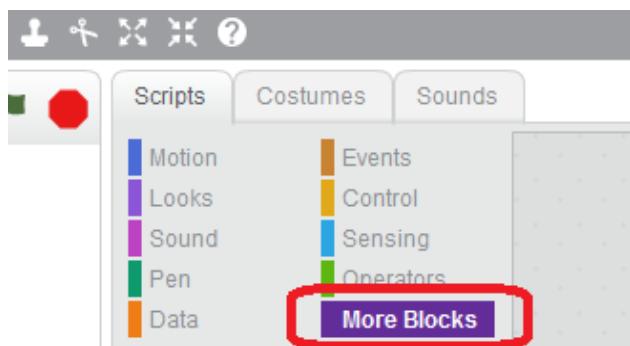
**Scratch:** <http://www.hummingbirdkit.com/learning/scratch-20-programming/>

#### **MAC MAVERICK OS ONLY**

Be sure to follow the installation directions to disable "App Nap" on the BirdBrain Robot Server or you may experience slow sensor readings.

# Where are the blocks I need to program the Hummingbird?

Scratch - under “More Blocks” menu



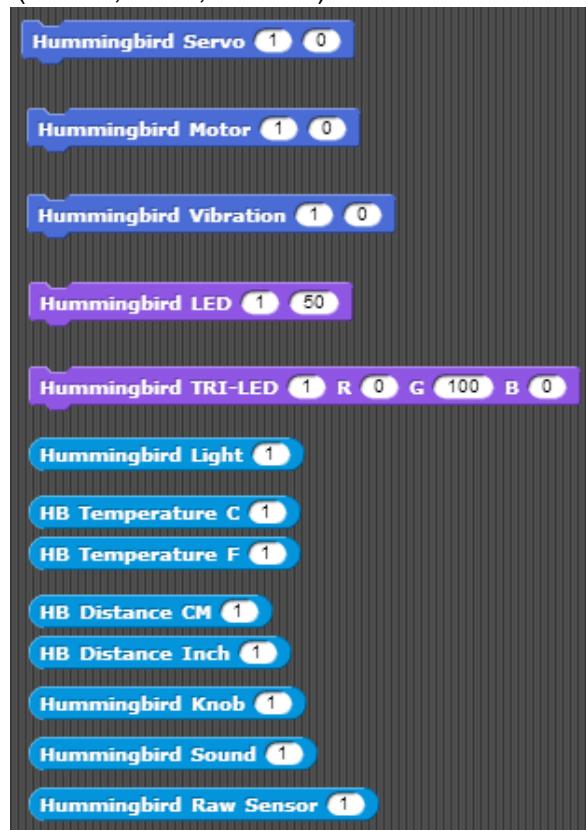
## SCRATCH ISSUES

Do not use the Green flag to start programs.  
Use “when space pressed” or “when sprite clicked” to start programs.

Loops with only Hummingbird command blocks do not work. Add a non-Hummingbird block into the loop to make the loop work (a good dummy block is a "Wait 0").

More issues here: <http://www.hummingbirdkit.com/learning/scratch-20-programming>

Snap! - at the bottom of several tool palettes (motion, looks, sensors)



## Hummingbird motors and sensors

### Motors



Servo



Gear motor



Vibration motor

### MOTORS

Servos move to a specified position and stay there until the next command

Gear motors spin at a specified speed until told to stop

Vibration motors vibrate at a specified intensity until told to stop

### Sensors



Sound



Temperature



Rotation



Light



Distance

### Wire Connections

Signal (S)

Power (+)

Ground (-)

Connect sensor leads by matching colors