Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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PicoBoard

The PicoBoard allows you to create interactions with various sensors. Using the Scratch programming language, you can easily build simple interactive programs based on the sensors' input. The PicoBoard incorporates a light sensor, sound sensor, a button and a slider, as well as four additional inputs that can sense electrical resistance via included cables. The guts of the PicoBoard are identical to the Arduino Uno.

Designed for educators and beginners, the PicoBoard is a good way to get into the very basics of programming and reading sensors. Check out the PicoBoard product page for more information: **https://www.sparkfun.com/products/10311**

GETTING STARTED

1 Download Scratch: **http://scratch.mit.edu/**

INSTALL FTDI DRIVER: PART 1

1 Download FTDI Drivers. To do that, head over to the FTDI website (http://www.ftdichip.com/FTDrivers.htm). Click 'Drivers' on the left, and then click 'VCP Drivers.' This stands for Virtual Com Port. Windows and Mac users follow instructions below for your operating system. Linux users please refer to the FTDI website for more info.

Windows Instructions

Please note: These instructions are for Windows 7. However, the process should be very similar for other versions of Windows.

2 Now choose the 'setup executable' link under the 'Windows' row.

3 There is no need to save this file. Choose 'Run' once it is has finished downloading.

4 If everything was successful, you should see some nice green check marks, indicating success!

Mac Instructions

Please note: Most of the time, when you install PicoBoard on Mac OS X, the drivers are installed automatically.

2 Now we need to determine if you need the x86 or x64 bit version of the drivers. Click on the apple icon in the top left of the screen, and choose 'About this Mac.'

3 Check under 'Processor' to see which version you have. Follow the chart below to determine which drivers to download.

4 Download the files from the site by clicking on the link. Locate the .dmg file that was downloaded to your computer, and double click on it. If you are not sure which version of OS X you have, use the same process as before when finding the processor type. Click on the apple and choose 'About This Mac.' You will then see Version 10.X.Y – use the 10.X to determine your system version. Continue through the installation, and wait for it to finish. Then click 'Close.'

INSTALL FTDI DRIVER: PART 2

(1) Connect your Mini USB cable's **Mini-B** end (the smaller side of your USB cable) to your PicoBoard.

(2) Connect your Mini USB cable's **Type A** end (the other side) to a USB port on your computer.

(3) You may be prompted to install the driver for your PicoBoard once it has been plugged in. If so, follow the instructions on your screen to finish the installation. Some older versions of Windows may prompt you to do this twice.

INPUTS ON THE PICOBOARD
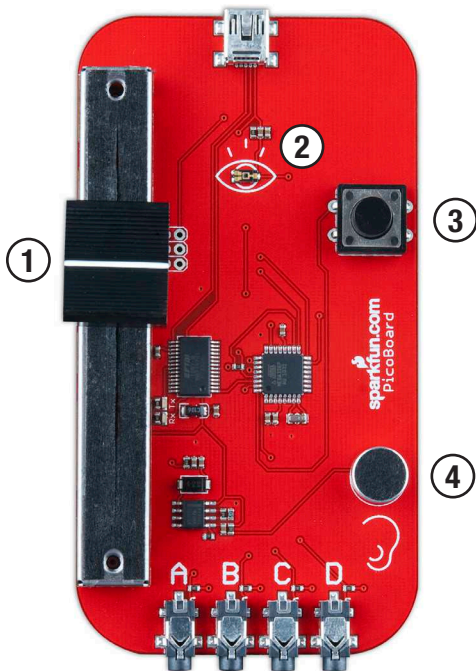
INPUT DESCRIPTIONS

(1) **Slider**

Change the values by sliding the knob back and forth.

(2) **Light Sensor**

Measures the amount of light hitting the sensor.

(3) **Button**

A button is digital input. It can be either "on" or "off."

(4) **Sound Sensor**

Measures how loud something is - use this sensor to move your sprite based on sound!

HOW TO ADD THE ADVANCED SENSORS IN YOUR KIT TO YOUR PICOBOARD

(1) Plug an alligator clip into one of the PicoBoard end connectors. There are four end connectors. They are A, B, C, or D.
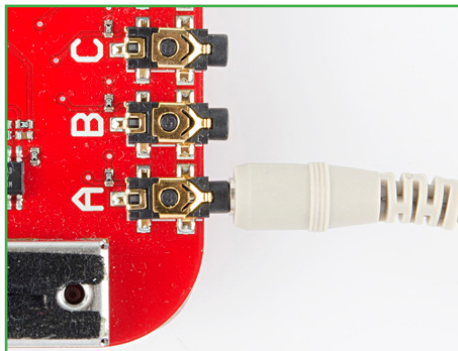

CORRECT: Plugged in all the way
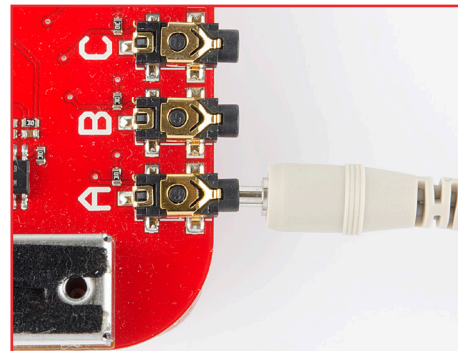

INCORRECT: Not plugged in all the way

2 On the other side of the alligator clip, there are two wires that have a clip at the end. Grab a jumper wire; notice one side has a pin sticking out? That is called a male connector. The other side, which doesn't have a pin sticking out, is the female side. Connect the alligator clips to the male sides of two different jumper wires.
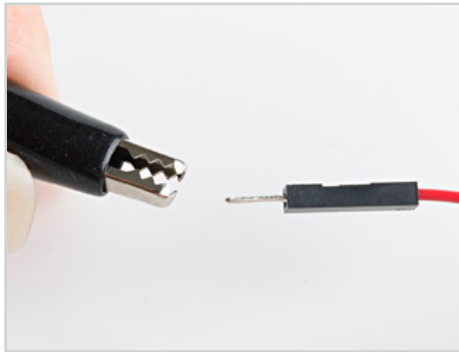
3 In your kit, you should have a flex sensor, force sensor and trimpot. When the flex sensor is bent in any direction, the sensor's values changes. When pressure is applied to the force sensor, the sensor's value changes. When you rotate the trimpot's knob left or right, the values changes.

To add the flex or force sensor:

Both sensors have two male pins at the end. Choose one sensor you want to work with, and plug each of the sensor's male pins into a female end of two different jumper wire.
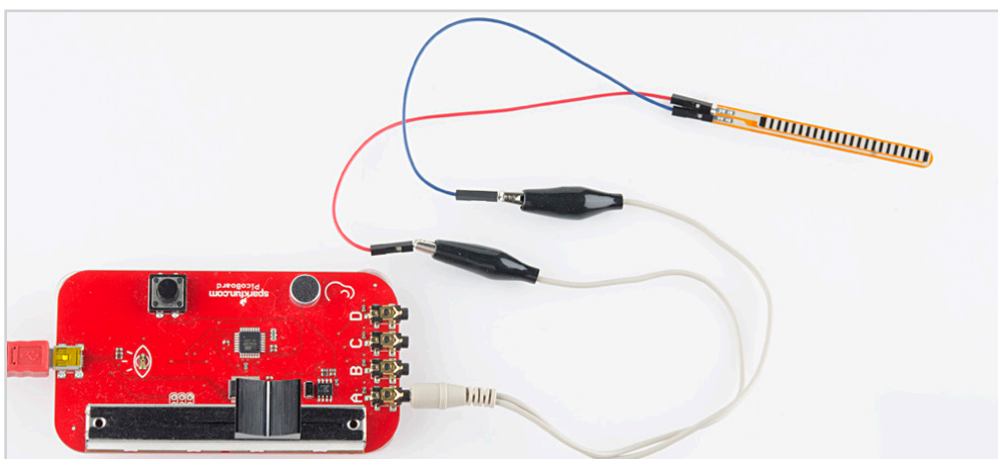
To add the trimpot:

The trimpot has three pins. Connect the female end of one of the jumper wires to one of the outer trimpot pins - it doesn't matter which outer pin you choose. Take the other jumper wire and connect the female end to the middle pin.
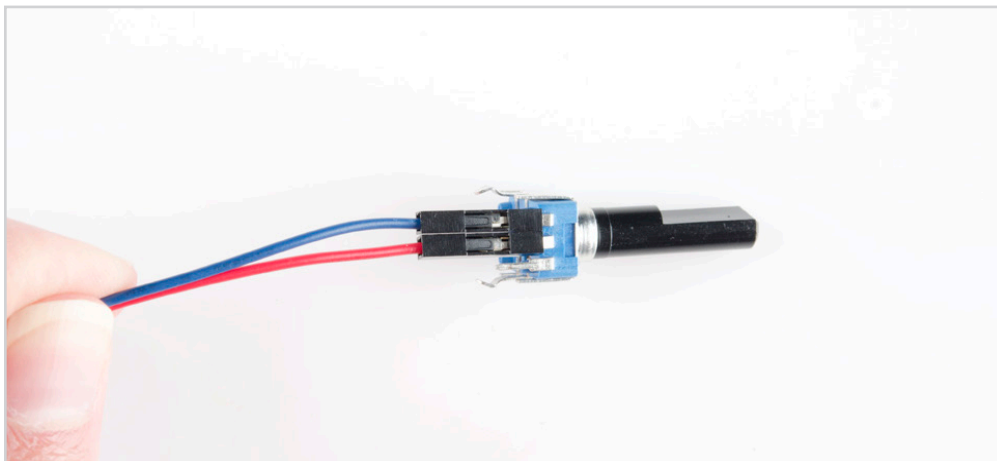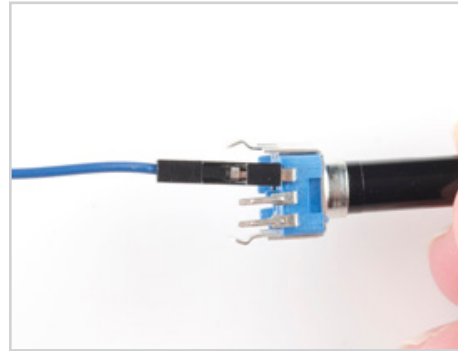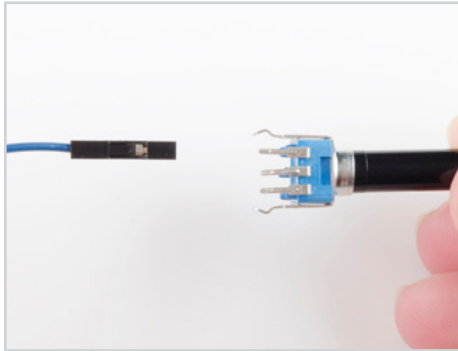
YOU'RE PROTOTYPING!

Since you are prototyping, please keep in mind that the jumper wires might become loose or disconnect from the sensor if you move the parts around. If that happens, you will need to reconnect the jumper wires to the sensor again.

Remember that the PicoBoard has four end connectors - A, B, C, and D - so this means you can have up to four extra sensors connected to the PicoBoard at the same time! You will see different values for the advanced sensors depending on which sensors you use.

Trimpot: 0 - 50

**Flex sensor: 70 - 100**

Force sensor: 100 - 0

Seeing different values is a nice feature, since teachers can use it to start talking about sensor range, sensor calibration, algebraic range shifting and Measurement and Data correlation.

1 Identify which COM port your PicoBoard is on.

⚠️ **Need Help Finding COM Port in Windows?**

First, go to Control Panel. Then click on **System**. After that, click on your **Device Manager**. To expand and see what ports are being used, click on the down arrow next to **Ports**. If you are still having trouble with which COM port the PicoBoard is on, you can unplug the USB cable from your computer and see what COM port disappears. Plug the USB back into your computer and the COM port should reappear. This is the COM port your Picoboard is on.
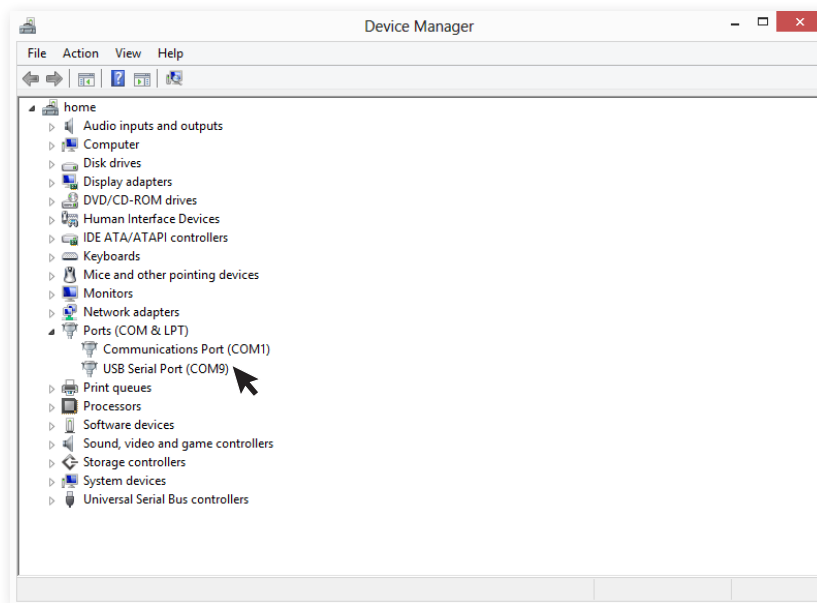
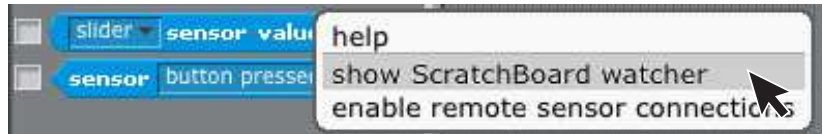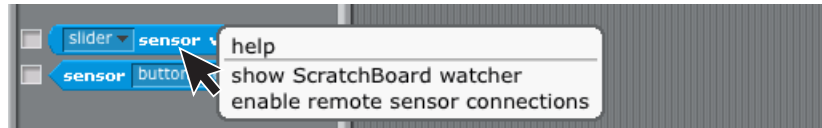For the example above, you can see that the PicoBoard is on COM9.

2 Open the downloaded Scratch program.

Tip: Look for the Scratch Cat logo and double click to open.

**3** On the top left corner, click on **Sensing**.

④ Right click on **slider - sensor value** or **sensor - button pressed**. Then click on **show ScratchBoard watcher**.


⑤ Right click the **off** on the **ScratchBoard watcher**. You will want to click **select serial/USB port**. Then click the COM port your PicoBoard is on. If you are running Mac OS X, choose the port that says /dev/tty.usbmodem###### or /dev/tty.usbserial-A#######. If you are running Windows choose the COM port you indentified earlier. You should see now sensor values in the **ScratchBoard watcher**!
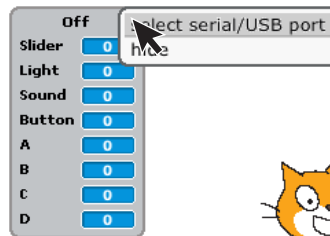
Windows
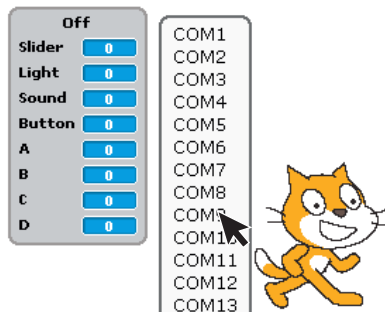
Mac OS X
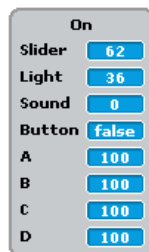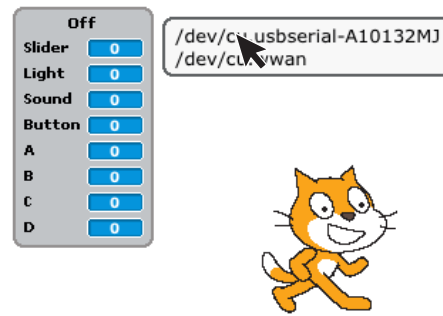
HAVE FUN PROGRAMMING

You are now set up and ready to do programming in Scratch! In Scratch, more PicoBoard examples can be found by going to File -> Open -> Examples -> Sensors and Motors. When you are done, you can share your project or view other projects on the Scratch website at: **http://scratch.mit.edu/**