

Getting to Know the Parallax Board of Education

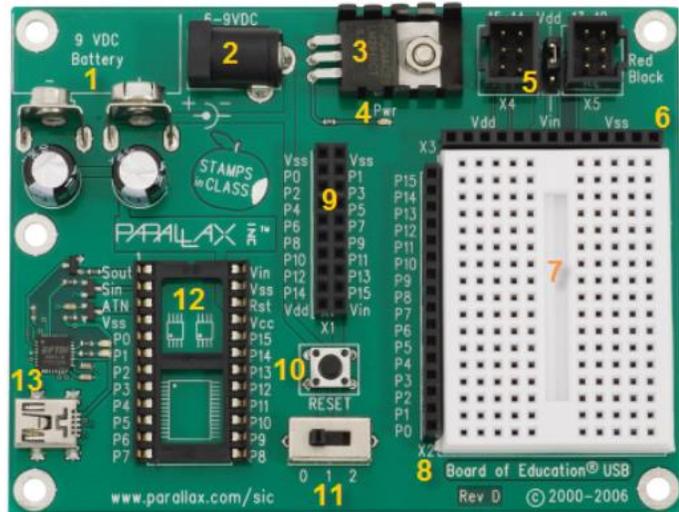
1. Make sure the jumper to the right of #5 is set to Vdd and NOT Vin. Vin means voltage input and supplies the board and servos with full battery voltage. This will burn up the servos when using the 9V battery. The Vdd connection sends regulated battery voltage to everything. I already set this up for you.
2. **The BOE will not power up from the USB cable. You must use a 9V battery or AA batteries in a holder with a barrel connector as shown below.**

I prefer the 9V battery because it lasts longer and attaches directly to the board.

3. **DO NOT USE WALL ADAPTERS UNLESS YOU PURCHASED THEM FROM PARALLAX!**
4. The 3-position slide switch (#11) manages power:
 - a. 0 turns board/servos off
 - b. 1 turns on power and allows us to program the board via USB.
 - c. 2 powers the board AND enables the servos.
5. So, use position 1 to program and position 2 to run your device with the servos.
6. The **X5 connector** is for your servos. Plug the LEFT servo into connector 13 and the RIGHT servo into connector 12. Be sure the connector is oriented as shown on the board with to respect to wire color!
7. Any time your device begins to act “funny” and not respond like it has been, you probably need to replace the battery!

Board of Education - USB

✓ Take a look at your board to get familiar with its parts.



1. [9V Battery Clip](#)
2. [Barrel Jack](#)
3. [Voltage regulator](#)
4. [Power Indicator LED](#)
5. [Servo headers \(X4 and X5\) and Power Select Jumper](#)
6. [Breadboard](#)
7. [I/O Pin Access Header \(X2\)](#)
8. [AppMod header \(X1\)](#)
9. [Reset Button](#)
10. [3-Position Power Switch](#)
11. [Socket for BASIC Stamp](#)
12. [USB Programming Connector](#)
13. [USB Programming Connector](#)

Figure 1: Overview of Components



Figure 2: Battery Holder for 4-AA batteries

Here is what your project would look like when wired and with the servos connected. Take note of the servo connectors because they can be installed backwards. The black wire is closest to the board itself. I mounted the IR sensor so it is facing towards the back of my robot.

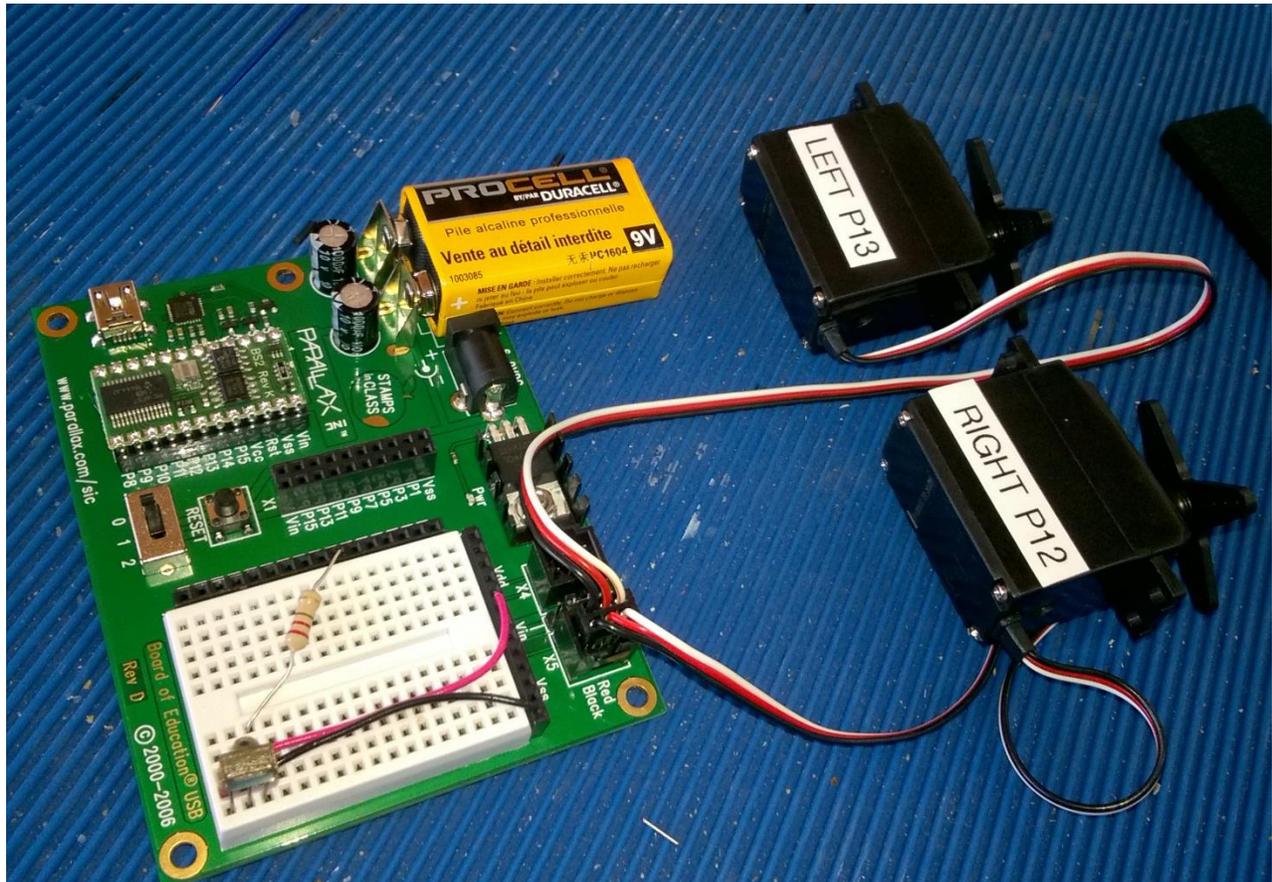


Figure 3: Closeup of the Board and Servo connections

Here is a closeup of the IR sensor wiring. Orient the bulging glass side towards you as shown. From left to right:

1. The **LEFT LEG** is the sensor OUTPUT and the resistor is connected from this leg to P9 on the board. BE CAREFUL WHERE YOU INSERT THE RESISTOR. THE LABELS ON THE BOARD ARE OFF JUST A TAD. So, count the pin numbers yourself!! The resistor I used is a 220 ohm (RED-RED-BROWN) $\frac{1}{4}$ watt version.
2. The **BLACK CENTER LEG** is ground (black wire) and connects to the X3 **VSS** power header (#6 in Figure 1) on the edge of the board.
3. The **RED RIGHT** side wire is the B+ or power connection and goes to a X3 **VDD** pin (#6 in Figure 1). *DO NOT CONNECT ANYTHING TO VIN!*

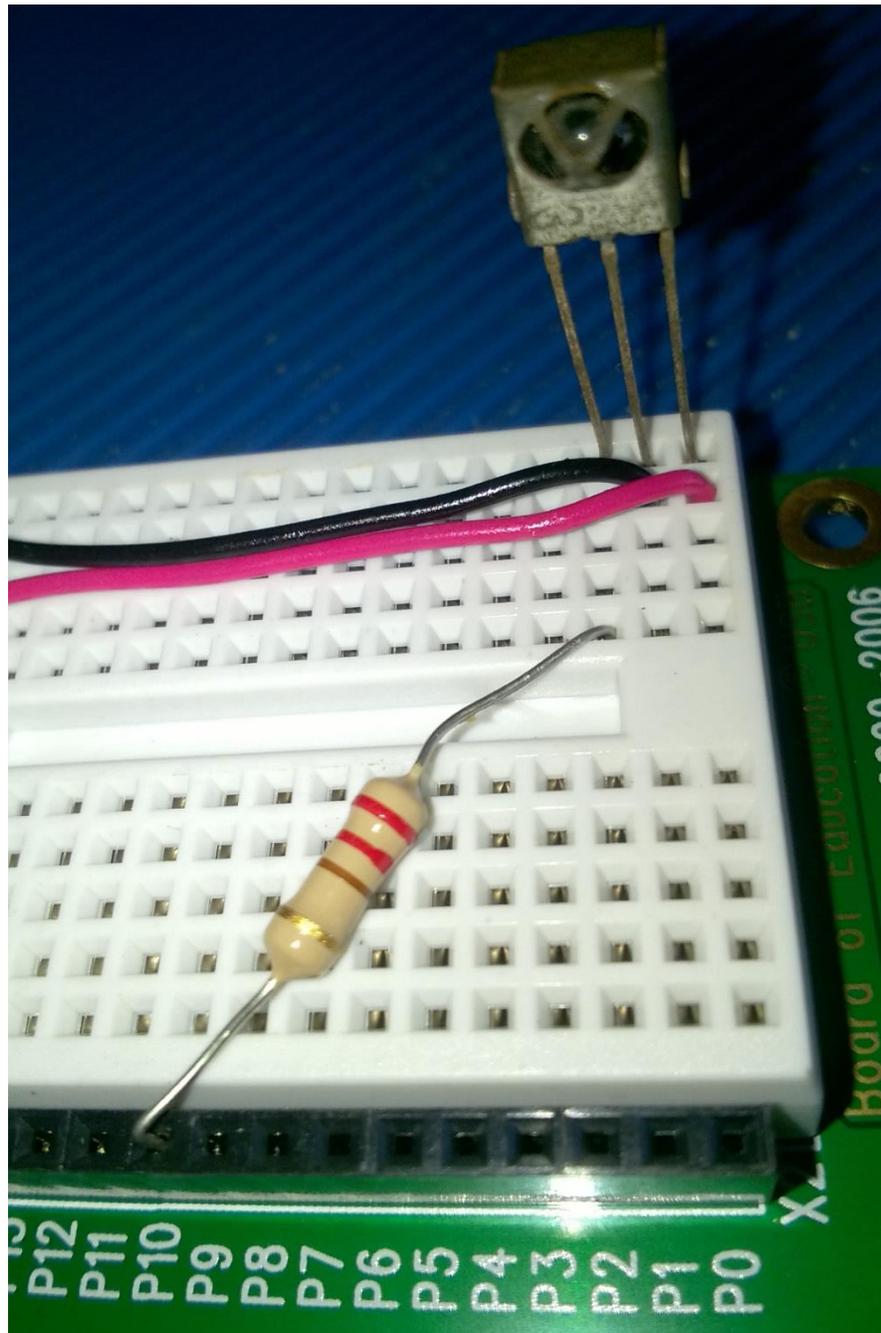


Figure 4: Closeup of the IR Sensor Wiring & 220 ohm (Ω) resistor