

Wii Nunchuck Adapter

by [dany32412](#) on July 14, 2009

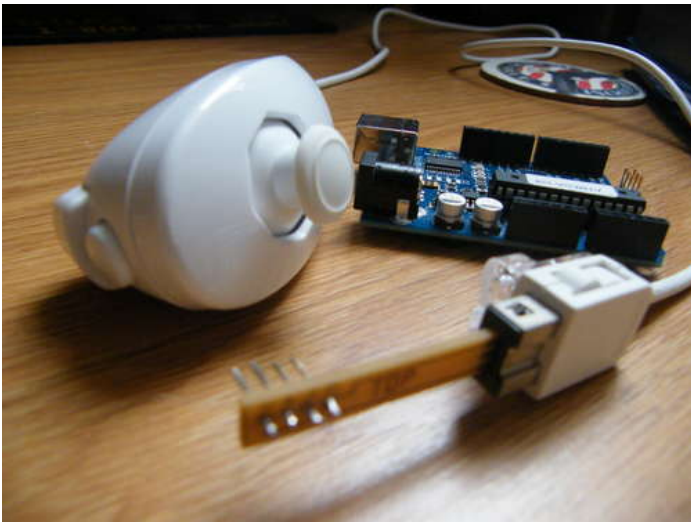
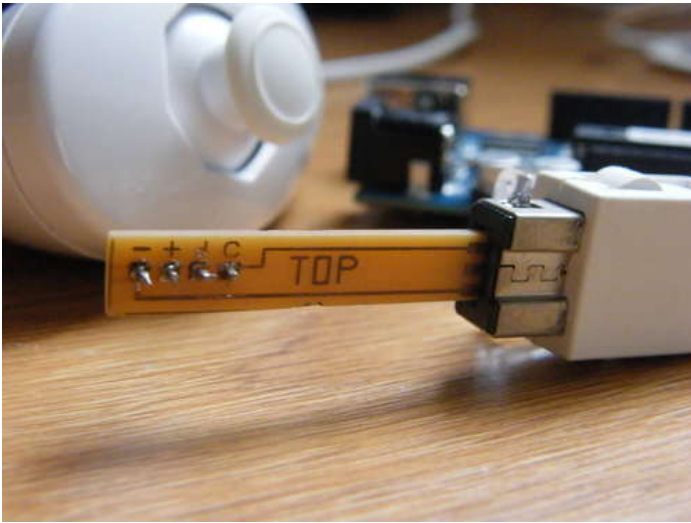
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Intro: Wii Nunchuck Adapter

This tutorial is for all those people who have an arduino and want to use there Wii nunchuck as an input device, but dont realy feel like cutting open the cord and ruining the nunchuck FOREVER!!!!!!!

well youve come to the right place!



Step 1: Supplies

These are the supplies you will need

most can be found at radioshack and at hardware stores.

if you cant find any etchant solution i made my own on STEP 6.

- + iron
- +scissors
- +tape
- +soft gloss photo paper
- +arduino
- +wii nunchuck
- +LED's
- +brake cleaner
- +etchant solution (is makeable, see step 6)
- +double sided PCB .062" thick (you do have a bit of lee way)
- +solder
- +hack saw

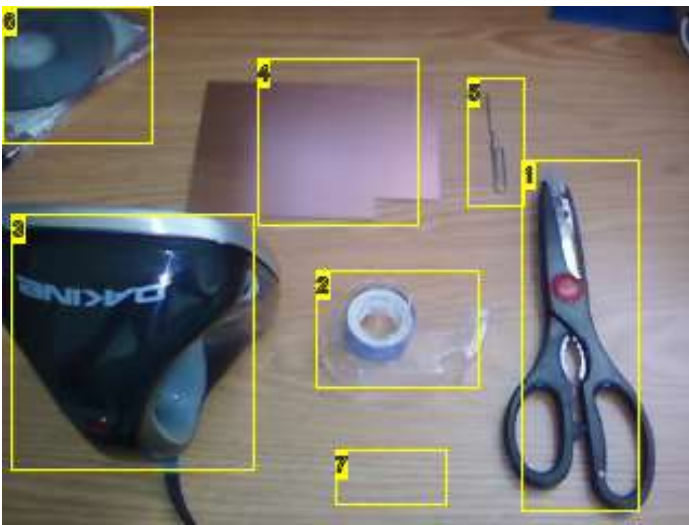


Image Notes

1. scissors found any ware
2. tape found any ware
3. an iron i used a ski waxing iron, but any iron will do
4. DOUBLE sided copper clad found at radioshack
5. paper clip any ware
6. CD yAy haha not used was just on my desk
7. and any laser printer. found at staples



Image Notes

1. etchant solution found at radioshack

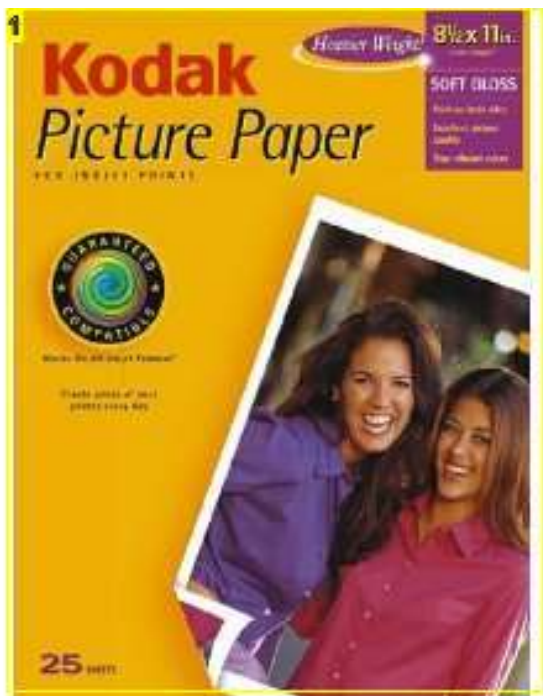


Image Notes

1. kodak soft gloss photo paper found at staples MUST BE SOFT GLOSS



Image Notes

1. brake cleaner. found at autozone or any other auto parts store.

Step 2: Printing our transfers

Thanks to iccreamterror who made a pdf version of the pcb heres a link www.megaupload.com/

For those you who wan to do it old school style...

start by downloading DipTrace

<http://www.diptrace.com/download.php>

and the Wii Nunchuck layout

<http://www.megaupload.com/?d=0212FN11>

1. install diptrace by following all the on screen instructions
2. Start Diptrace
3. go to file>open and locate "wii_nun_chuck_adapter.dip" (image 2)
4. click open
5. go to view> click mirror (so it is checked)
6. now it should look like image 3

<http://www.instructables.com/id/Wii-Nunchuck-Adapter/>

7. Load a piece of photo soft gloss paper into your printer (image 4)
8. now go to file>print> and select your laser printer (image 5)
9. press PRINT.
10. now you should have a nice looking transfer. WOOU HOOOO we are almost there. sorta



Image Notes

1. download this one

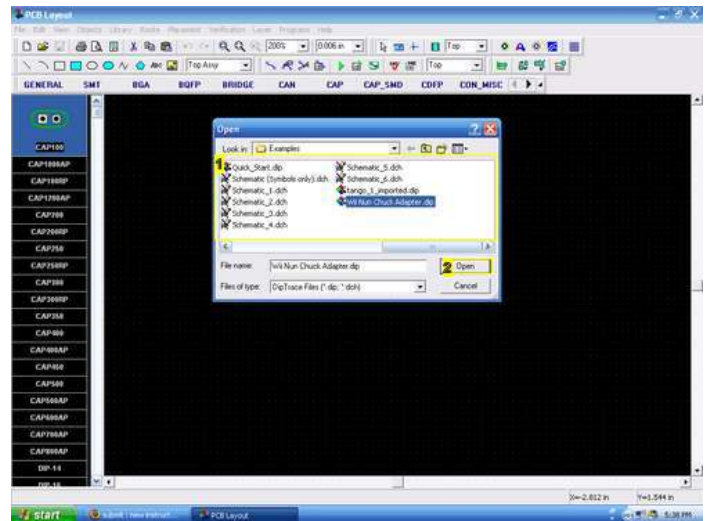


Image Notes

1. 1) locate the file where ever you saved it
2. 2) click OOOOPPEEENNN

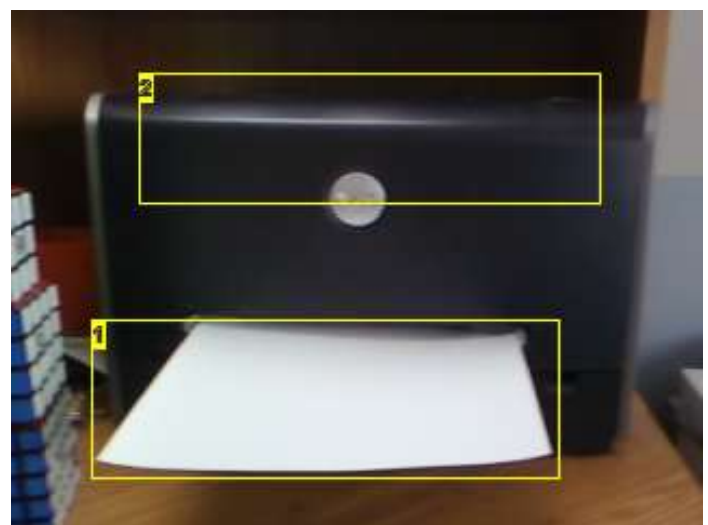
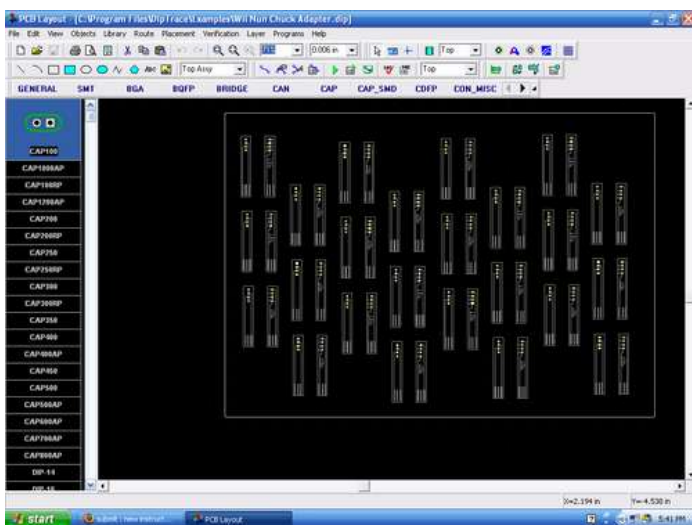


Image Notes

1. soft gloss
2. feed mee!

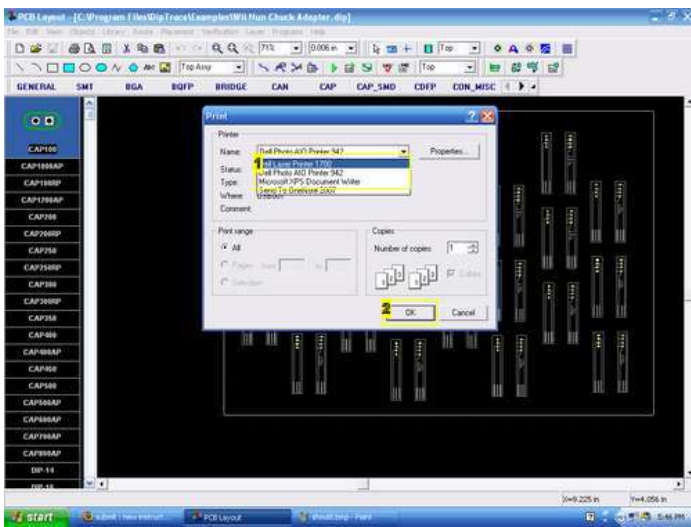


Image Notes

1. select laser printer
2. print that thing

Step 3: Preping the transfer

- 1) no that you have your printed sheet of PCB transfer. pick one and cut it out like i have in image 1.
 - 2) Now what we want to do is fold the paper so the two sides line up. you can use a light to help you look through the paper.
 - 3) once its lined up make a nice clean crease. (image 2)
 - 4) now we use some tape to make sort of a tube that the PCB will slide into. (image 3)
 - 5) the transfer is ready
- next step is to cut and prep the board.



Image Notes

1. nice crease

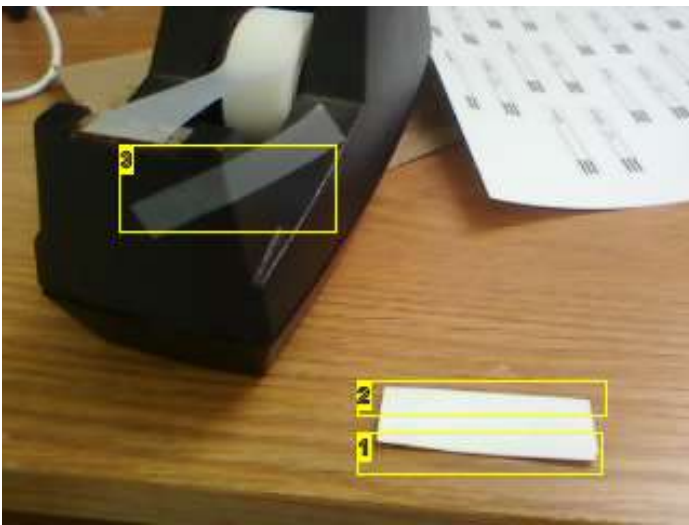


Image Notes

1. taped side
2. folded side side
3. peice of tape should be about that long and wide

Step 4: Cutting and preping the PCB

for this step i dont have very many pictures but its pretty much straight forrow

- 1) Remove your new board you just bought at radioshack from its bag
 - 2) I recomend cutting out one of the transfers and using it as a template to get the dimensions right
 - 3) place the transfer on the corner of the board and with a knife score around it
 - 4) Then i placed the board in my vice and used a hack saw to cut it or if you can get your hands on a band saw that would be much easier
 - 5) once the board is cut out. (image 1) take a peice of 800 grit sand paper and sand down the edges
 - 6) finaly clean of the board with some rubbing alchohal or water making sure to dry it good if used water
- next we will transfer the design onto the board

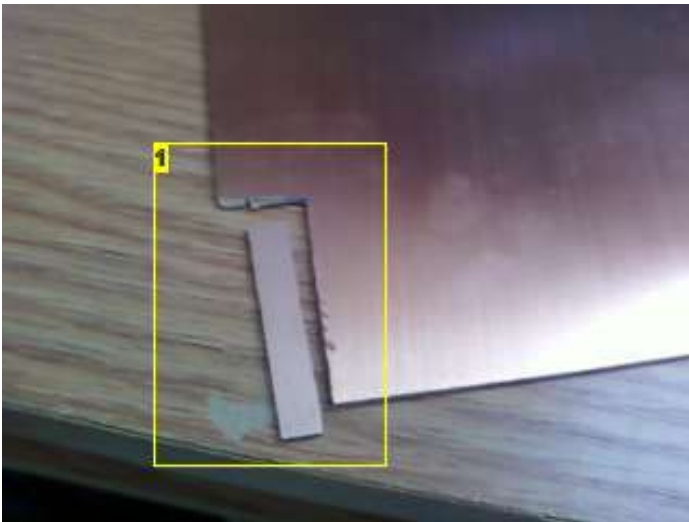


Image Notes

1. after one failed attempt.

Step 5: Transfering the design

So we have our tube like transfer and out cut to size board.

- 1) take your board and slowly slide it into the transfer
- 2) next use some object (i used a paper clip) to try to adjust the board so it lines up with the design
- 3) now place the transfer and board on some surface. i put a paper bag down so it wouldnt mess up my desk.
- 4) now what ever iron you are using turn it up to the HIGH POSSIBLE SETTING (image 4)
- 5) once the iron is warmed up take it and press down on the board with about 20lbs of force for 20 seconds. (image 5)
- 6) turn it over and press for another 20 seconds.
- 7) turn it over again and let it cool for 1 minute or so and press for another 10 seconds.
- 8) turn it over again and press for another 10 seconds.
- 9) let it sit for 2 minutes.
- 10) now you can cut the tape and peel off the paper. hopefully the toner adheared to the baord. (image 6)
- 11) now go to your sink and using a paper towel and scrub off the white paper until you can see your crispy black lines.
- 12) if not use the brake cleaner and clean off the PCB completely and start over :(

PS: if you are lost in any of these processes this is a good video showing you how to transfer your PCB design.

now we are almost done. WOOO HOOO!!!!!!

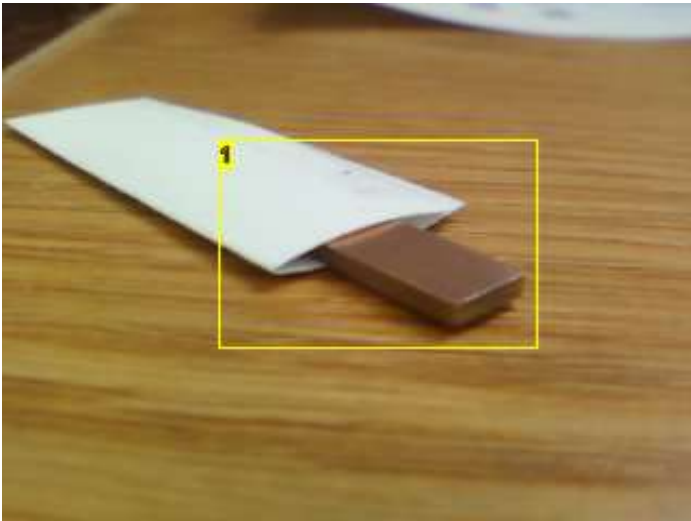


Image Notes

1. slide it in trying not to scratch the toner (very unlikely), this could cause a break in one of your traces.

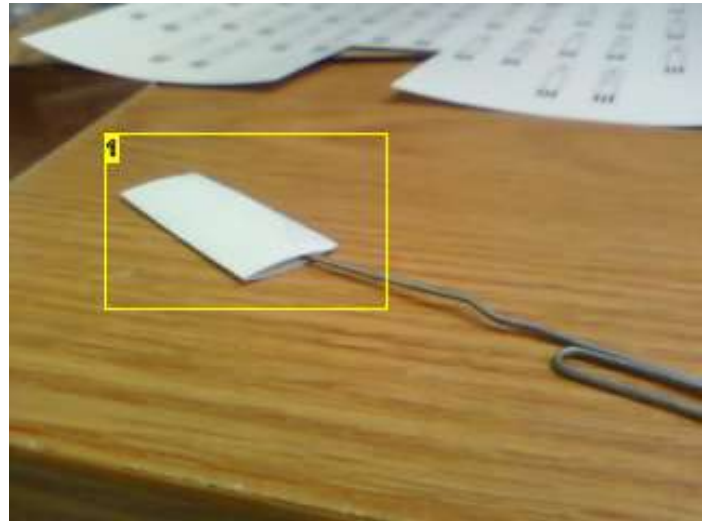


Image Notes

1. used to align the board with the design. have to kinda squint to see where it is.



Image Notes

1. yeah thats right. all me.
2. ahhh help meeeeeeee!



Image Notes

1. yeah to the max!!!!

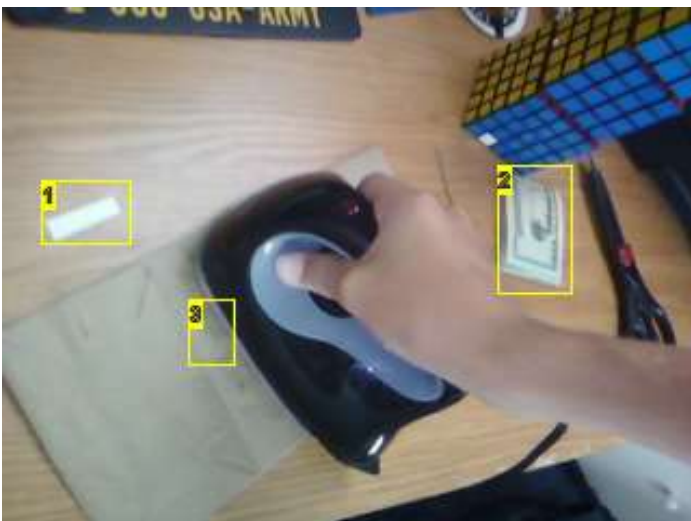


Image Notes

1. this is not the transfer it just a peice of paper.
2. dont even think about it
3. squish!!! ahhhh help!

Image Notes

1. the toner may or may not be white. the white is just the paper.

Step 6: Etching the PCB

now that we have our PCB transfered and ready for etching.... um lets etch it

MAKE YOUR OWN ETCHANT:

Supplies

+Muratic Acid (image 1)

+Hydrogen Peroxide (image 2)

+PLASTIC measuring spoon (CANT BE METAL CAUSE THE ACID WILL EAT IT!!!!) (image 3)

+and a PLATIC bowl (SAME REASONS)

1) Measure out 2 quantities of hydrogen peroxide and pour it in your bowl.

2) Measure out 1 quantity of muratic acid.

Ex. 2 tbls of hydrogen peroxide, and 1 tbls of muratic acid.

Keep in mind the 3 A's from high school chemistry class

Always

Add

Acid

always pour acid into water or what ever you mixing not water into acid!

3) Now you have your own etchant solution.

ETCHING THE PCB:

1) Go ahead and pour some etchant into a tuper ware bowl (if you made it you should already have it a bowl)

2) Use a plastic fork to slowly lower the PCB into your etchant solution. being careful not to splash.

3) Let it sit in the solution until you cannot see any more copper, ecationally lifting the board with the plastic fork just to get it all even.

4) Once you think its done remove the board and rinse it off with water.

5) get the brake cleaner and spray some on the board and scrub with a paper towel untill all the toner is off. Checking to make sure that all your traces are good and not broken.

yess we are so close to finishing this thing i can almost taste it.



Image Notes

1. found this at the pool section at home depot



Image Notes

1. regular dollar general stuff

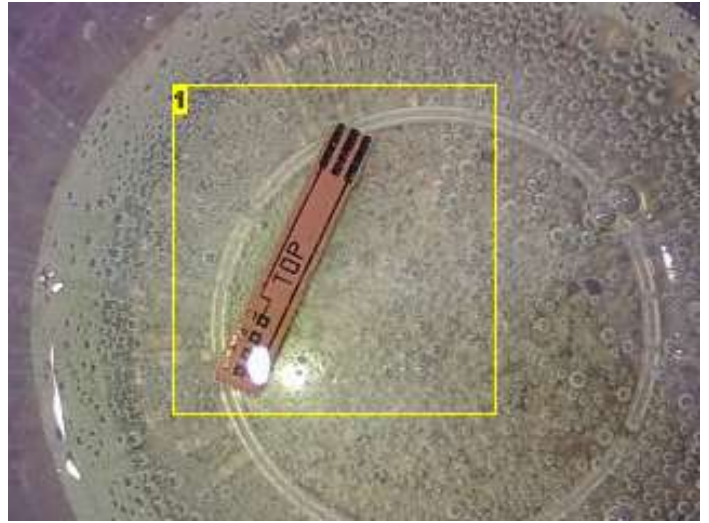
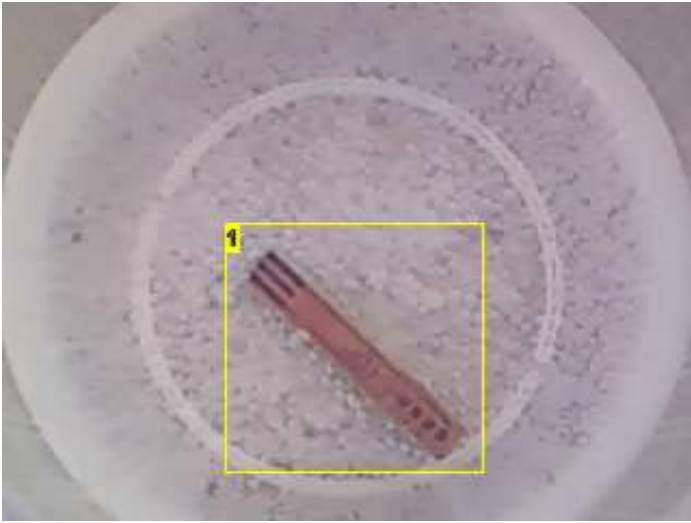


Image Notes
1. first 30 seconds

Image Notes
1. 1 minute 30 seconds into the process



Image Notes
1. done! after about 10 minutes

Step 7: Drilling holes

DRILLING HOLES:

this step is pretty self explanatory but...

- 1) I would rather use a fine drill bit but those are hard to find so I went to the hardware store and bought a dremel bit set for 5 bucks. (image 1)
- 2) Pick out the bit you want making sure that its not too big or too small, and put it in your drill press. (image 2)
- 3) I put a piece of wood under my PCB (not actually the PCB cause I forgot to take pictures) so that it will be on a flat surface.
- 4) Drill all the way through the tabs where we will put our header pins. DRILL DRILL AWAY. (image 4)

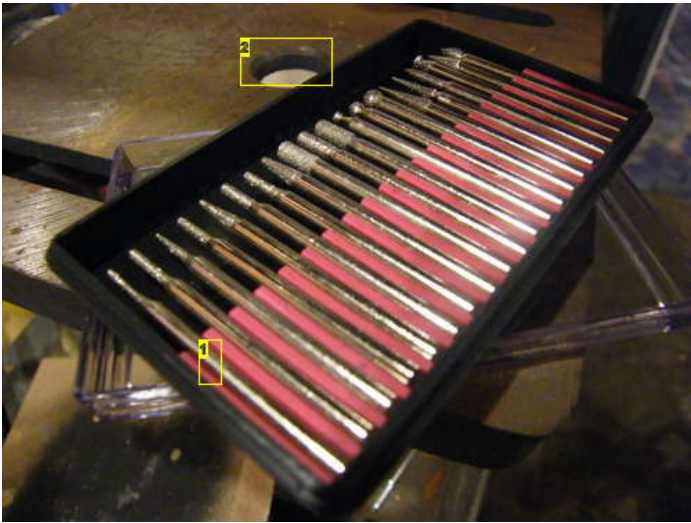


Image Notes

1. OUR VICTIM!!!! MWA HA HA HA HA!!!
2. this is the reason for the wood board so that we arnt bending the PCB when ever we go to drill though it.

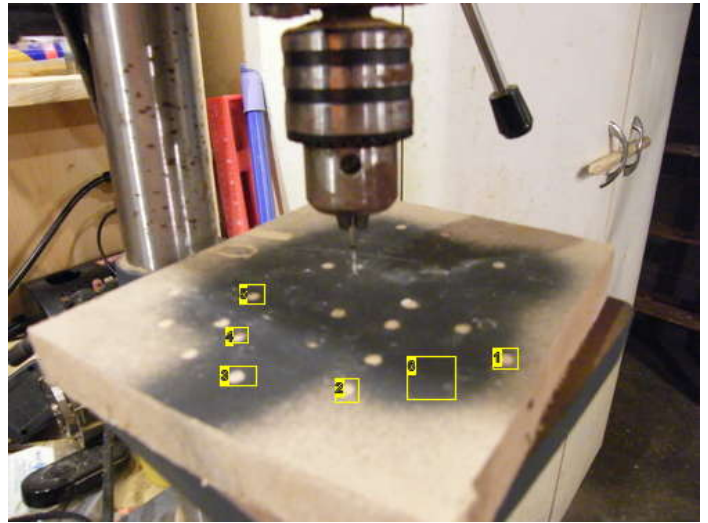


Image Notes

1. battle wounds
2. battle wounds
3. battle wounds
4. battle wounds
5. battle wounds
6. testing out some paint for my mame machine

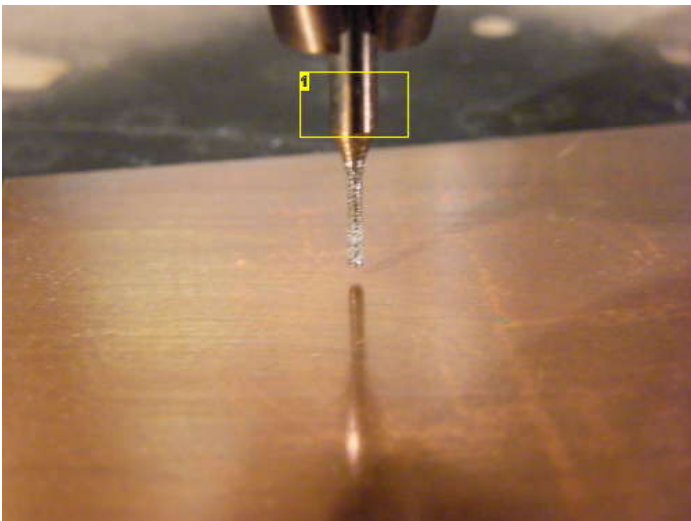


Image Notes

1. WOW whos that good lookin drill bit?

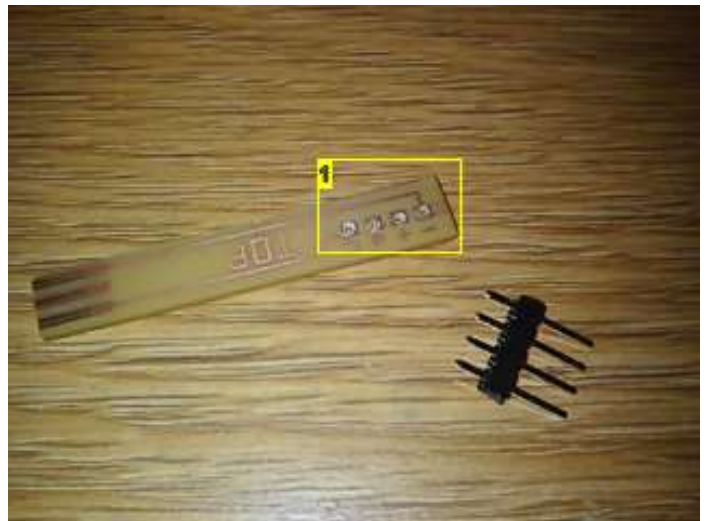


Image Notes

1. drill these

Step 8: Soldering on the header pins

SOLDERING ON THE HEADER PINS:

+header pins

+soldering iron

+electronic solder (with flux perferd)

this is kinda a pain cause we dont have the privilage of through hole soldering, so we have to solder on both sides of the PCB.

1) place your header pin in the board

2) Solder in each pin on the side that says "TOP"

3) let cool

4) turn the board over and remove the black plastic it should slide right off.

5) here comes the sort of hard part. solder the bottom of the pin and try to keep it relatively straight, or else it woulnt fit in the arduino. You must to this because we have a double sided pcb.

6) try inserting it into the arduino and if it doesnt fit heat up the solder and adjust the pins as needed.

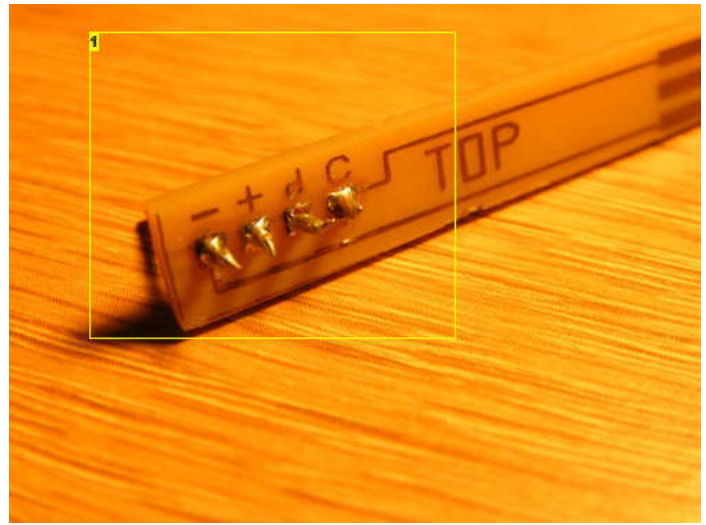


Image Notes

1. top solder job should look somewhat like this

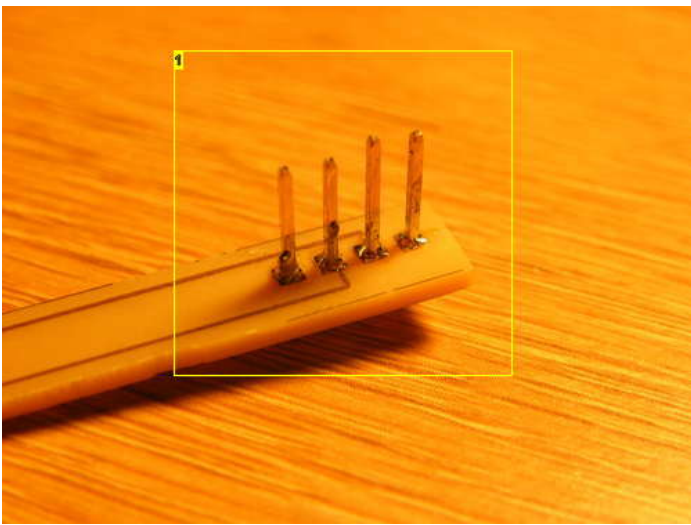


Image Notes

1. and bottom somewhat like this

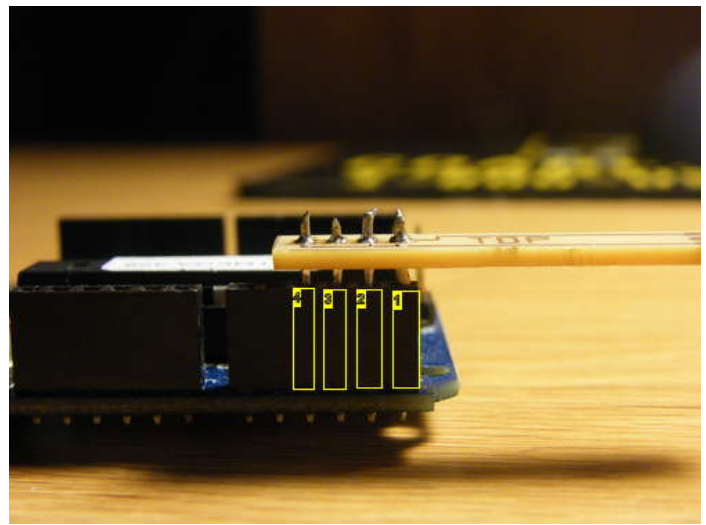


Image Notes

1. analog pin 5
 2. analog pin 4
 3. analog pin 3
 4. analog pin 2

Step 9: Testing The adapter

If you dont have the Arduino program installed yet then go to www.arduino.cc/en/Guide/HomePage and follow the arduino getting started tutorial.

Part I

- 1) DOWNLOAD these 2 files
www.megaupload.com/
www.megaupload.com/
- 2) Create a new folder called "WiiChuckDemo" without the quotes.
- 3) Place those 2 files in the folder
- 4) Open up arduino IDE and goto file> open> and open "WiichuckDemo.pde"
- 5) Upload that sketch to your arduino
- 6) we are done with part 1

Part II

- +various jumper wires
- +4 leds
- +the nunchuck adapter
- +bread board or protoshield
- +and a wii nunchuck

- 1) Plug in the adapter into analog pins 5,4,3, and 2 like image 1 shows.
- 2) Now were are going to put in all our ground jumpers, in a "daisy chain" style. (image 2)
- 3) Now put in all the wire going from the LED's positive legs to there corresponding pins on the arduino. (image 3)

- UP led= digital pin 4
- DOWN led= digital pin 5
- LEFT led= digital pin 2
- RIGHT led= digital pin 3

<http://www.instructables.com/id/Wii-Nunchuck-Adapter/>

- 4) Now its time to place our leds into the bread board making sure that the short leg or the flat side on the led is in the ground, and the long leg is in the positive (or the wire going to the arduino digital pins) (image 4)
- 5) plug in you wii nunchuck
- 6) power up your arduino
- 7) and hopfully it will work if now leave a comment and i will try my best to help you.
- 8) heres a demo video

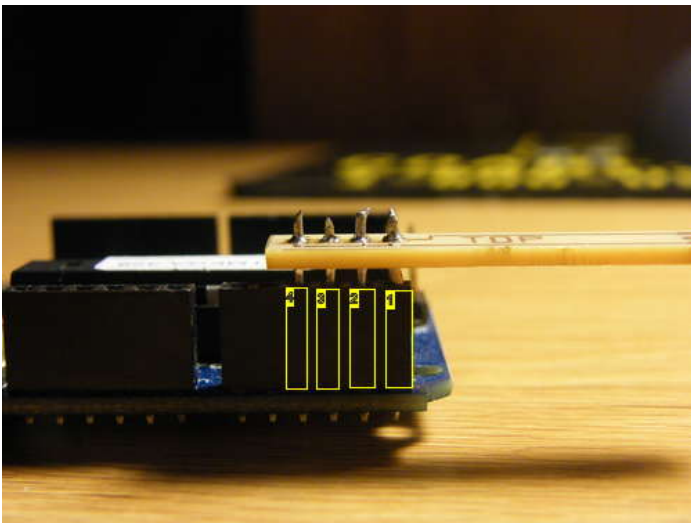


Image Notes

1. analog pin 5
2. analog pin 4
3. analog pin 3
4. analog pin 2

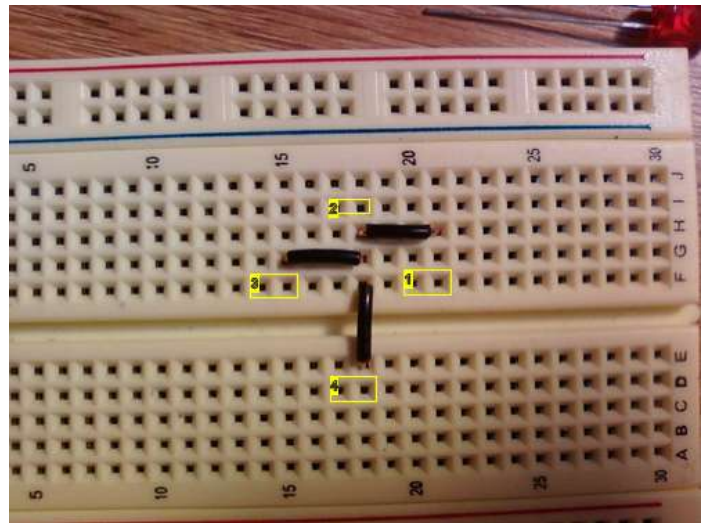


Image Notes

1. right led here
2. up led here
3. left led here
4. down led here

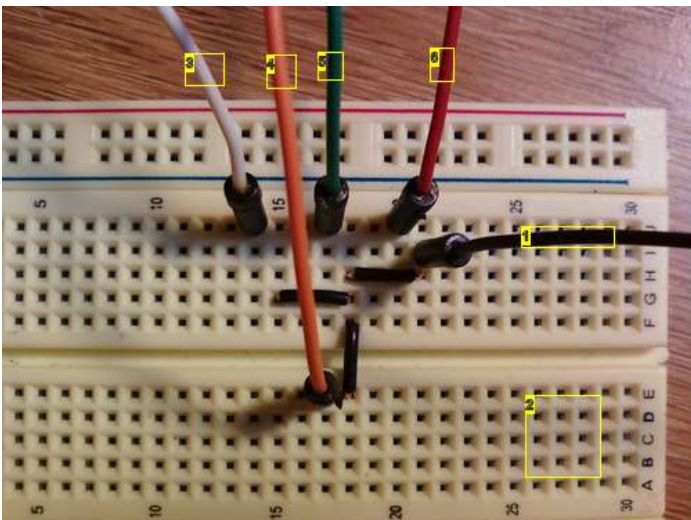


Image Notes

1. connected to ground pin on arduino
2. i will flip this upside down when i connect it to the arduino so everything is kinda flipped

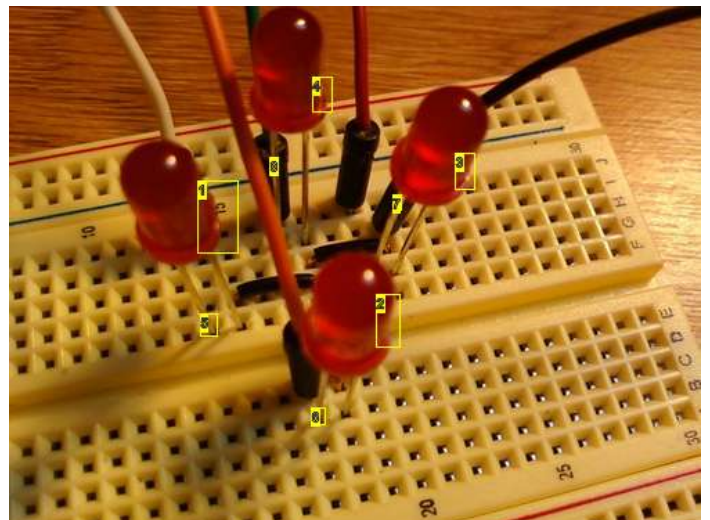


Image Notes

1. flat edge
2. flat edge
3. flat edge

- 3. digital pin 3
- 4. digital pin 4
- 5. digital pin 5
- 6. digital pin 2

- 4. flat edge
- 5. long leg
- 6. long leg
- 7. long leg
- 8. long leg

Related Instructables



Using WiiChuck Adapter with Arduino by josestude



Wireless Wii Nunchuck controlled Arduino by XenonJohn



Mario Bros. costumes with sound effects by RobHopeless



Wii Nunchuk Controlled Model Train by aspro648



Control Your Robot Using a Wii Nunchuck (and an Arduino) by oomlout



Wii Nunchuck as general purpose controller via Arduino board by XenonJohn

Comments

34 comments

Add Comment



wfelix says:

maybe it is a dumb question... I tested, works fine(only with original nunchuck... a spare chinese one fails-works on wii)... I understand how its works :D

Feb 23, 2011. 1:36 PM [REPLY](#)

understand joyy, joyx, accy and accx... but I can't understand accz... what kind of move change accz value? I shake the nunchuk, the value changes, but i cant understand exactly which move change this value

thanks



s8jljohnson says:

so what exactly does this thing do

Nov 18, 2010. 6:50 PM [REPLY](#)



salmones says:

what is an arduino?

Oct 13, 2010. 11:12 AM [REPLY](#)



sko56 says:

It's a programmable IC board with digital I/O and analog I/O. for more information check this out.<http://www.arduino.cc/>

Oct 28, 2010. 11:46 AM [REPLY](#)



Solarbotics says:

These are cool - our intern Jerome developed a version too. It has notches for the locking tabs, and a pass through so we can play with our BlinkM at the same time on the same port.

Nov 27, 2009. 4:38 PM [REPLY](#)

http://www.hvwtech.com/products_view.asp?ProductID=1081



matthewbeckler says:

Solarbotics: Any chance you could open source the layout for your design? I'd like to re-use your awesome connector including the locking tabs in a larger open-source hardware project, but couldn't track down your layout files. Thanks!

Jun 21, 2010. 7:46 PM [REPLY](#)



Solarbotics says:

Can do - gimme a few to compile and upload them to the website.

Jun 22, 2010. 10:38 AM [REPLY](#)



keler says:

Thank you!
(your sense of humor highly appreciated :)

Apr 29, 2010. 1:36 PM [REPLY](#)



Jonas412 says:

Nov 28, 2009. 11:14 AM [REPLY](#)

A similar and cheaper way of doing this would be to plug in wire into the little notches at the end of the connector. The connector pins are like this. Look for wiichuck they have a library. Nc and Att are not used.

Clk NC Gnd

--- ---
--- ---
Pwr Att Dat



AlexCendejas says:

Nov 4, 2009. 2:36 PM [REPLY](#)

Hey guys, I have a little problem, I guess someone may be able to help me. I followed all the instructions and used the same code, but when I try it, the LED's connected to the digital output pins barely light on... It doesn't happen with any other programs,, any ideas?



todbot says:

Nov 9, 2009. 6:33 PM [REPLY](#)

dany32412's sketch doesn't set the pinMode of the LED pins, which sounds like the problem you're seeing. Add:
pinMode(Lledpin, OUTPUT);
pinMode(Rledpin, OUTPUT);
pinMode(Uledpin, OUTPUT);
pinMode(Dledpin, OUTPUT);
anywhere in the "setup()" function and see if it makes a difference.

Also, I see no current-limiting resistors in his circuit. Some LEDs work fine without them in certain situations, but most will burn out or have greatly reduced life. (and you might damage your Arduino too) Be sure to add a 220 ohm resistor in series with each LED.

And thank you RazorConcepts and JohnPark for the clarifications. FunGizmos.com does indeed stock my Wiichuck adapter for \$4, and that includes the 4-pos pin header needed and free domestic shipping.



AlexCendejas says:

Nov 14, 2009. 8:57 PM [REPLY](#)

I hadn't logged in to instructables until right now and this morning I realized what you say about the 'pinMode's. Didn't try it because I was in a rush, but I did use the resistors since the beginning... I'll try setting the pins as outputs right now, because I already tried using a different power supply for the nunchuck and it didn't make a difference. Thanks!



AlexCendejas says:

Nov 14, 2009. 10:20 PM [REPLY](#)

I tried it and it actually worked, sounds logic... So the code needs to set the pinMode for every output in order to work fine...

Right now I'm working on a project for school, I'm making a Nunchuck/Arduino controlled mechanic arm, it has 3 DC motors for moving the base and 2 parts of the arm and 1 step motor to control the gripper. I might upload my own code, along with a video and pictures of the arm itself, maybe even write an instructable about the whole thing. The code was based on this one but more complex. This is my first time using Arduino and I liked it, I'll see what else comes to mind.

Thanks to everyone! :D We'll be in touch.



dany32412 says:

Nov 15, 2009. 10:33 AM [REPLY](#)

great im happy that worked out for you. that would awesome if you could post a video.



dany32412 says:

Nov 6, 2009. 7:24 PM [REPLY](#)

are they dim or are they not turning on, cause so do mine im thinking it has something to do with the circuitry in the nunchuck.



AlexCendejas says:

Nov 7, 2009. 1:43 PM [REPLY](#)

They are really really dim, I have to turn off the lights and look at them from above in order to see the difference between being on and off... I can see them turning on and off when I tilt the nunchuck but they're too dim. Have you found any solution? have you tried maybe powering the nunchuck with an external power source? I'll try it and see if it makes any difference.



dany32412 says:

Nov 7, 2009. 6:24 PM [REPLY](#)

yeah probably powering it with an external source would be the answer, no more than 5 volts from what i understand thats pushing it. try plugging it into a bread board and connect the 2 data cables the same way but connect 3v to power and gnd to gnd. not sure if that will make a difference cause im not sure of what voltage they have the power set at when it connected directly ontop of the analog header. tell me how that works out



windrago says:

Nov 13, 2009. 11:35 PM [REPLY](#)

super!
and I loved the comments on the pixes :-))



RazorConcepts says:

Oct 23, 2009. 2:57 AM [REPLY](#)

Original idea:
<http://todbot.com/blog/2008/02/18/wiichuck-wii-nunchuck-adapter-available/>

You can pick one up for like 3 bucks, they work nicely.



dany32412 says:

yeah, but this is for the people who dont want to pay 10 dollars shipping just for a little tiny pcb board, and it was kinda a learning experience for me and now i make all kinds of pcbs

Oct 23, 2009. 11:41 AM [REPLY](#)



JohnPark says:

Also check out Fungizmos, they ship them for free, so it's just \$4. http://store.fungizmos.com/index.php?main_page=product_info&products_id=212 (full disclosure, I'm friends with both Tod of ThingM and Will from Fungizmos). I believe in both making your own and buying one; whichever works better for you!

Nov 9, 2009. 11:41 AM [REPLY](#)



RazorConcepts says:

True that, the only reason I even bought one because I was already making an order at SparkFun!

Oct 24, 2009. 9:23 PM [REPLY](#)



fagnelli says:

Nice and detailed post. I was wondering whether you could post the PCB traces in some sort of image file (pdf, jpeg or similar)? It would be a lot easier than installing a whole PCB design suite I won't use again.

Oct 22, 2009. 12:50 AM [REPLY](#)

Thanks



icecreamterror says:

I Have Put a PDF copy on my blog <http://icecreamterror.wordpress.com/>

Oct 27, 2009. 11:26 PM [REPLY](#)



dany32412 says:

how thanks that was awesome of you ill add it to the instructables

Oct 28, 2009. 1:51 PM [REPLY](#)



dany32412 says:

hmm i suppose but then it would be hard to print it all to scale with what ever program you choose to use, which is why you use diptrace. it does it all for you!
thanks for the positive comment

Oct 22, 2009. 12:02 PM [REPLY](#)



matstermind says:

the download link doesn' work for me, is there any chance you could pst the file in the instructable?

Oct 25, 2009. 12:34 PM [REPLY](#)



matstermind says:

NM

Oct 25, 2009. 12:45 PM [REPLY](#)



icecreamterror says:

Any chance of the PCB layout in a image form like PDF, for all the Mac users?

Oct 24, 2009. 8:45 AM [REPLY](#)

Just a scan of your A4 print out would do the job, as then the scale is kept at A4.

But really nice work (no way id pay \$13 for a tiny PCB, the best thing about arduino is that is OPEN source.)



dany32412 says:

i guess that could work ill look into that.

Oct 25, 2009. 7:04 PM [REPLY](#)



LuminousObject says:

Cool, but how thick is the board that you used? I don't want to buy a board and then find out that its too thick or too thin.

Oct 21, 2009. 12:19 PM [REPLY](#)



dany32412 says:

good point i added that to the instructable. but its basicly the standard 0.062".
thanks

Oct 21, 2009. 2:34 PM [REPLY](#)



LuminousObject says:

Allright, cool.

Oct 21, 2009. 4:02 PM [REPLY](#)



copycat42 says:

Oct 20, 2009. 8:12 PM **REPLY**

on one hand, i really care little about the "arduino " projects. i recognize them as being fun for someone who is into that sort of thing, but not really my bag. on the other hand...

HOLY CRAP! that's awesome! a way to have fun with at your hobby without permanently damaging the equipment for it's original use. kudos!
