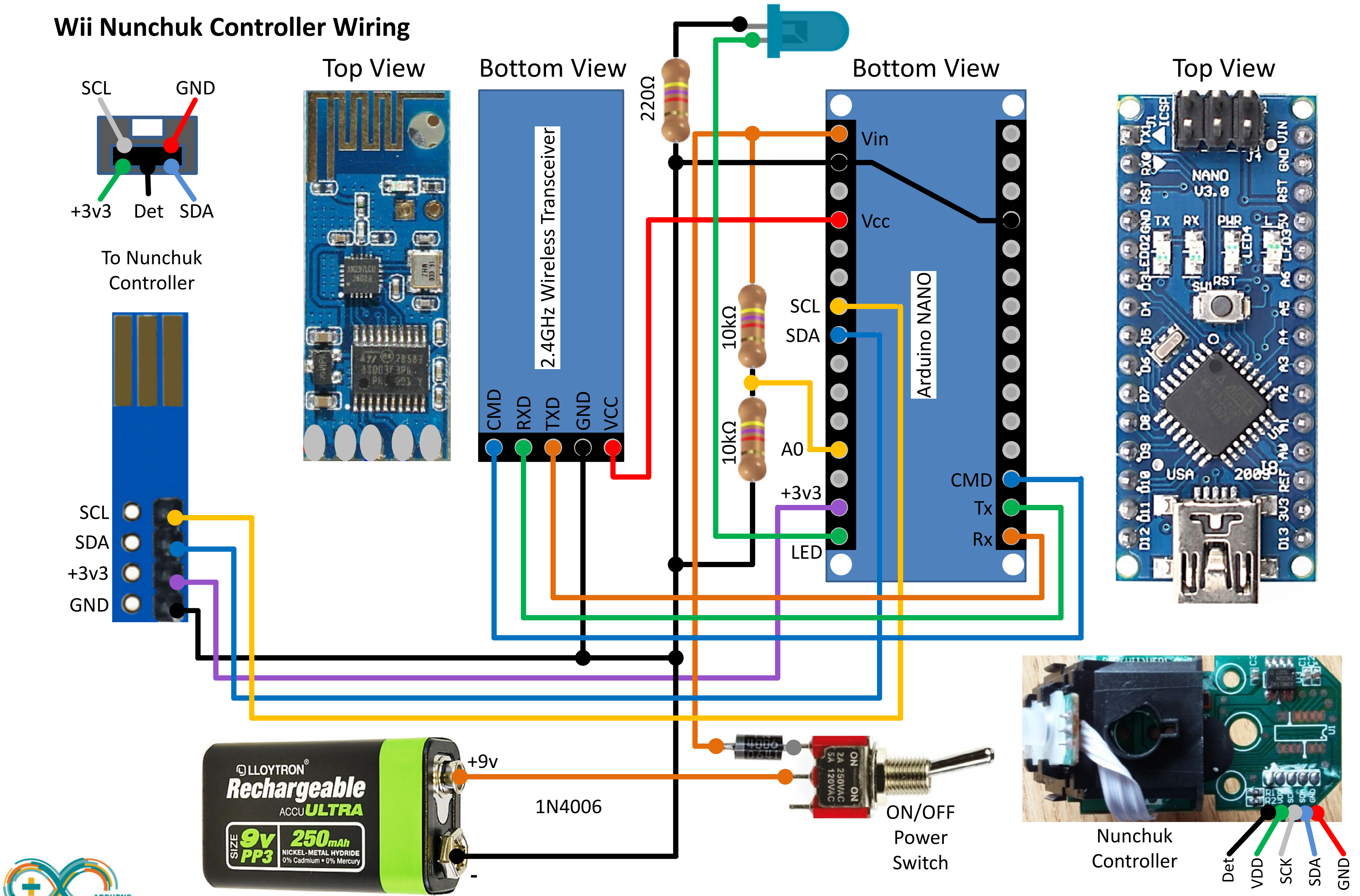
Wii Nunchuk Transceiver

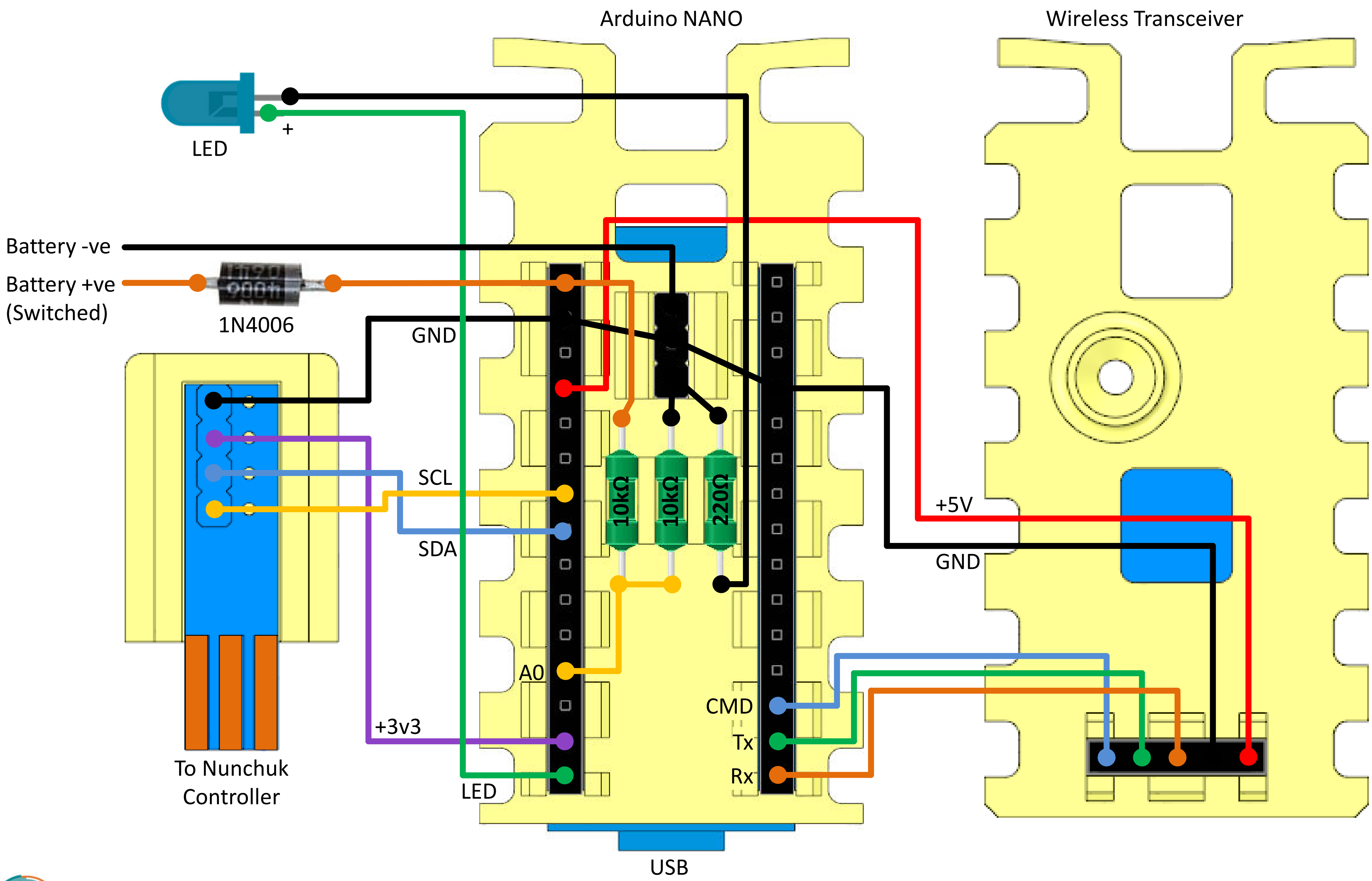
Wiring Diagrams

Wii Nunchuk Controller Wiring



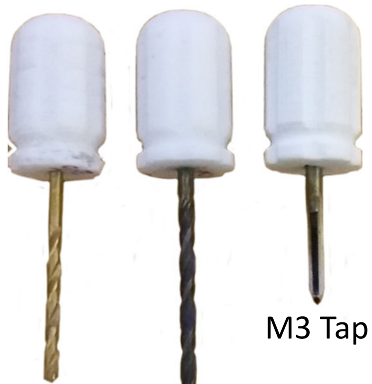
Released: 31/01/2019 TechKnowTone

Wii Nunchuk Controller Physical Wiring



...Contents...

Hand Tools & Consumables

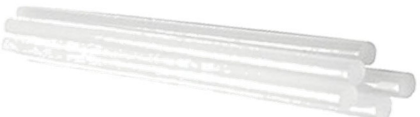


Ø2.5mm

Ø3mm

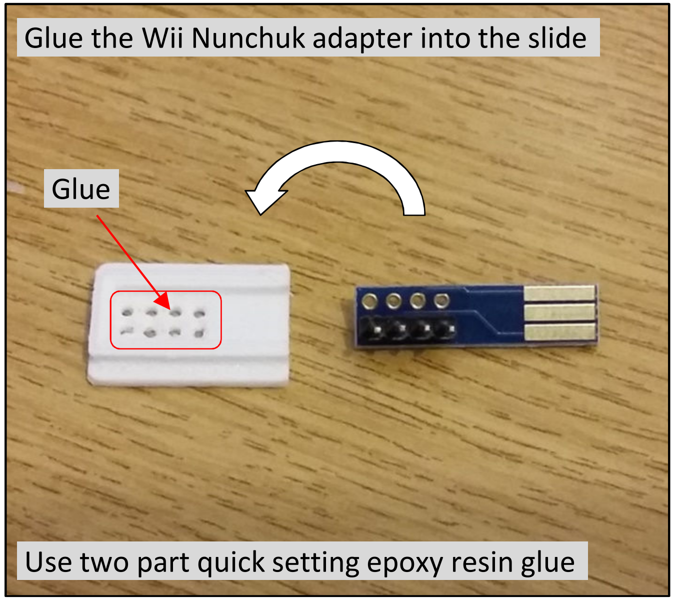
M3 Tap

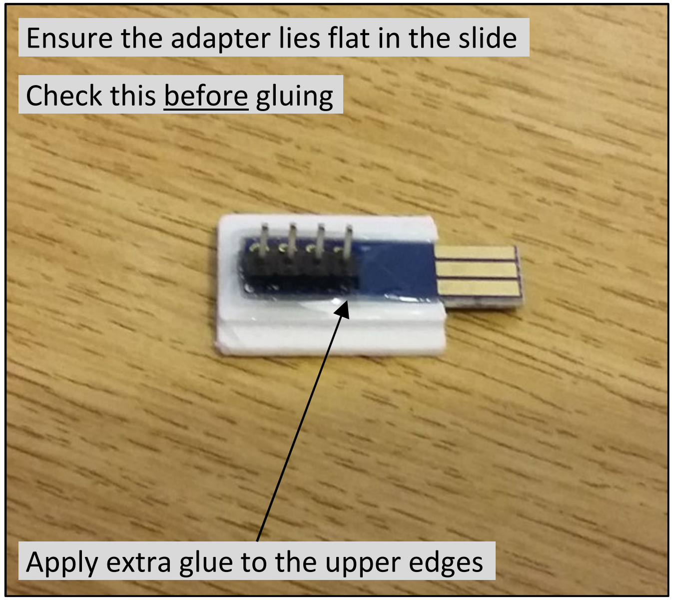
All colours not shown

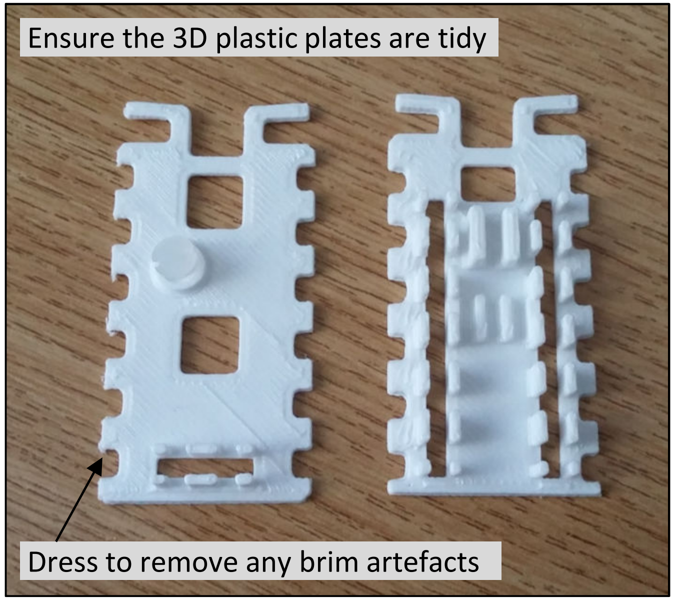


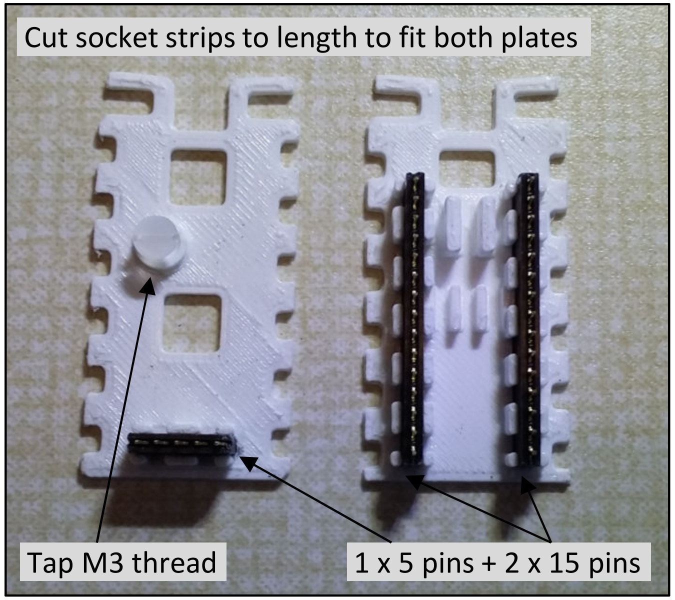
I extrude thin glue rods. which I later use with an iron set to 250°, to apply the glue in a more precise manner fusing it into the PLA plastic.

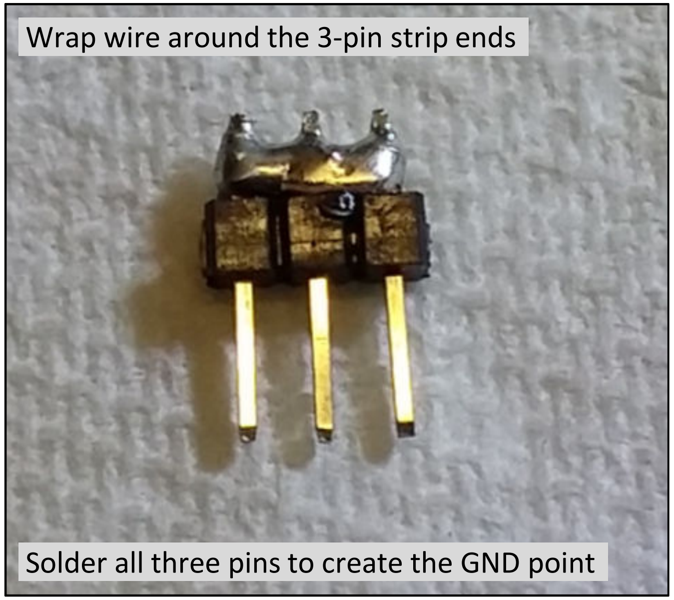
Wire wrapping is used as it allows you to quickly build your circuits, test them and easily modify them as needed. You can later solder the wrapped connections for extra security, once the circuit is proven.

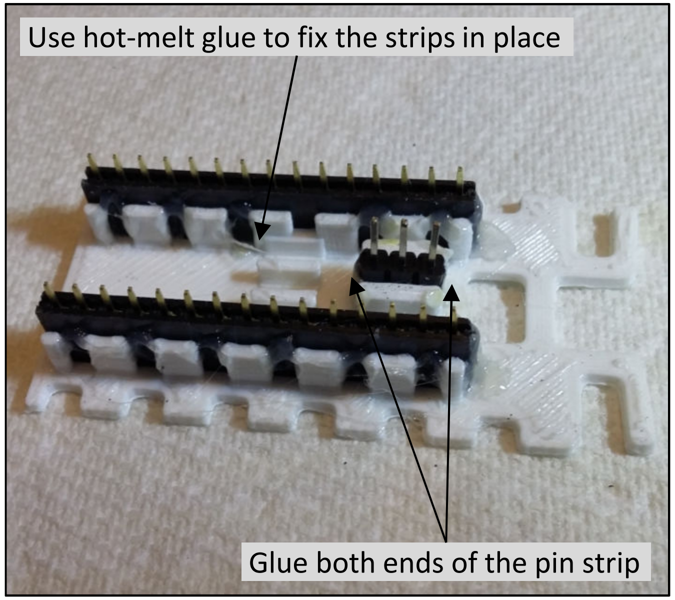

Glue the Wii Nunchuk adapter into the slide
Glue
Use two part quick setting epoxy resin glue

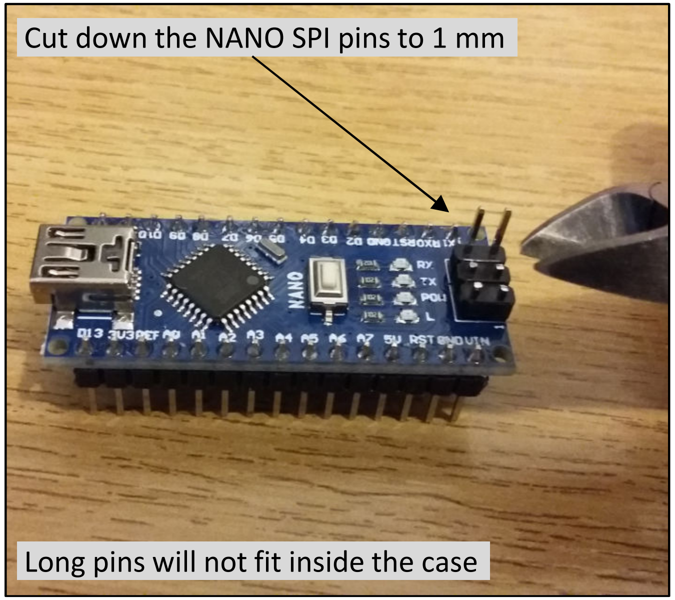

Ensure the adapter lies flat in the slide
Check this before gluing
Apply extra glue to the upper edges

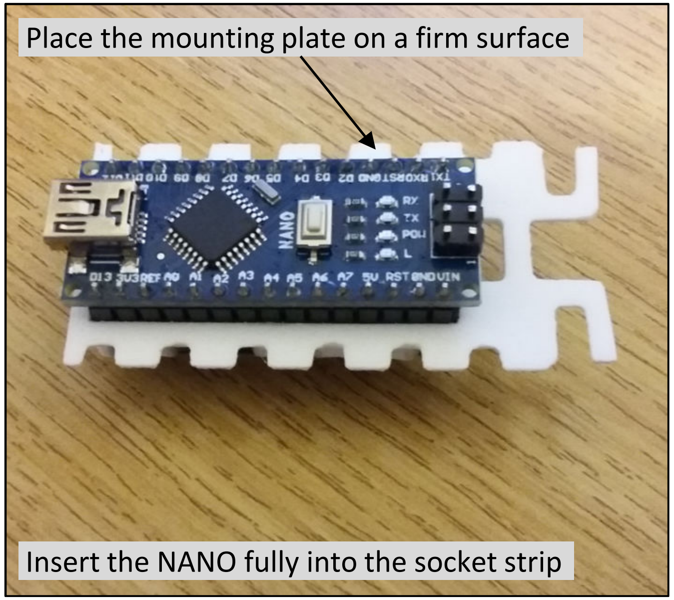

Ensure the 3D plastic plates are tidy
Dress to remove any brim artefacts

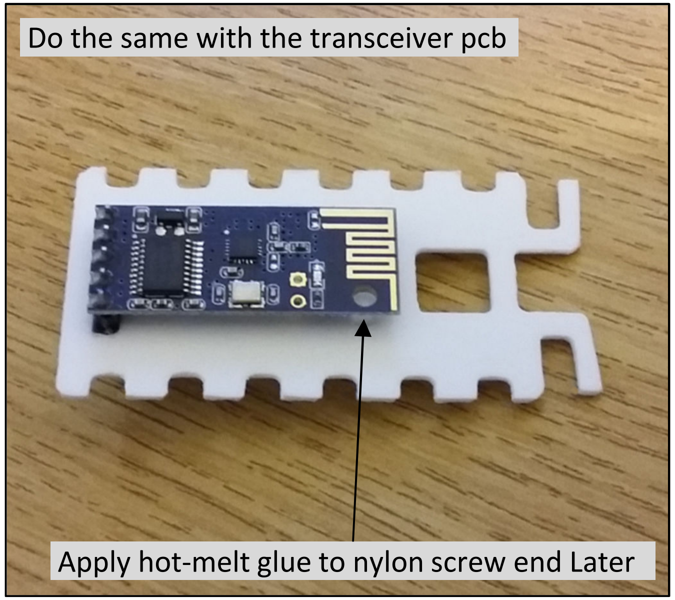

Cut socket strips to length to fit both plates
Tap M3 thread
1 x 5 pins + 2 x 15 pins

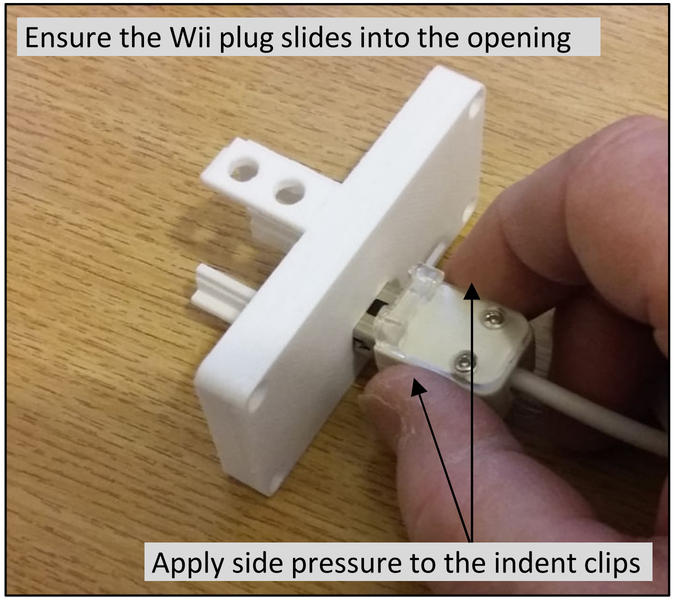

Wrap wire around the 3-pin strip ends
Solder all three pins to create the GND point

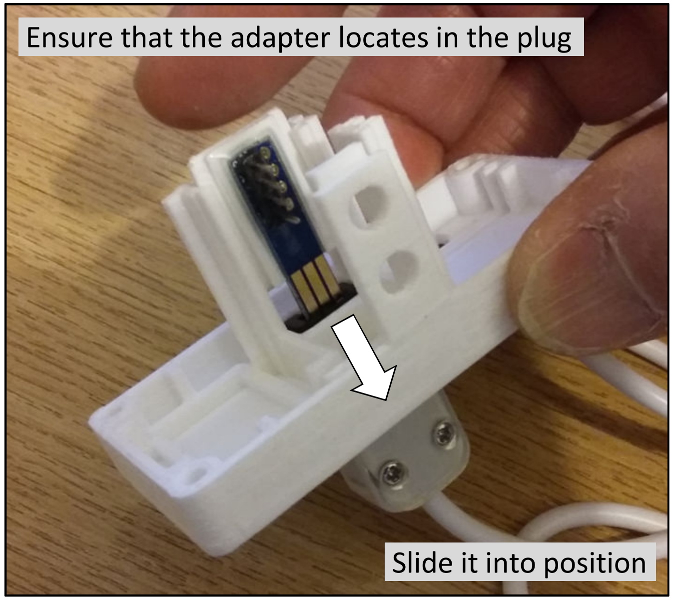

Use hot-melt glue to fix the strips in place
Glue both ends of the pin strip

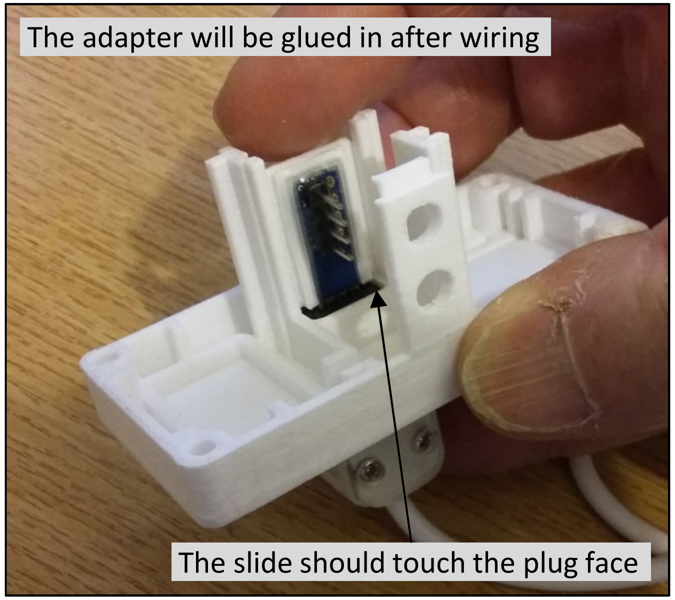

Cut down the NANO SPI pins to 1 mm
Long pins will not fit inside the case


Place the mounting plate on a firm surface
Insert the NANO fully into the socket strip

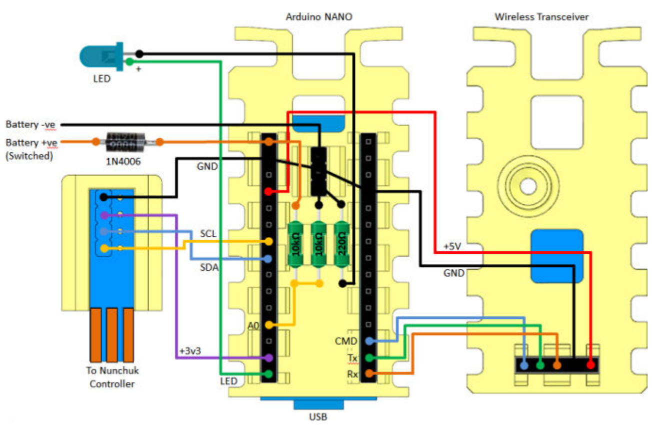

Do the same with the transceiver pcb
Apply hot-melt glue to nylon screw end Later


Ensure the Wii plug slides into the opening
Apply side pressure to the indent clips


Ensure that the adapter locates in the plug
Slide it into position

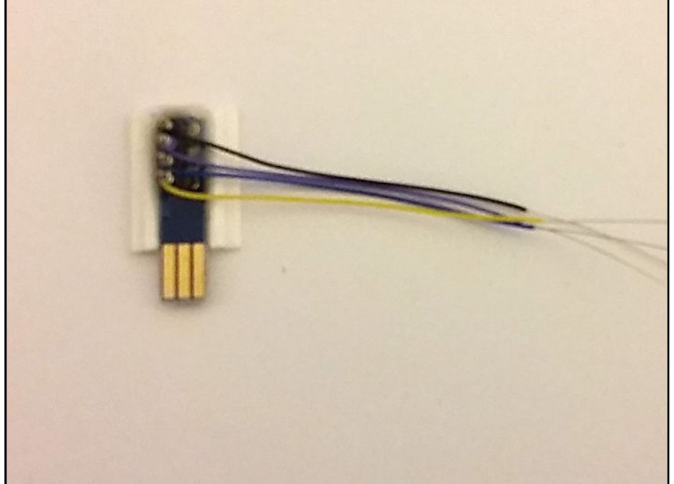

The adapter will be glued in after wiring
The slide should touch the plug face

Refer to the wiring diagram in the next steps



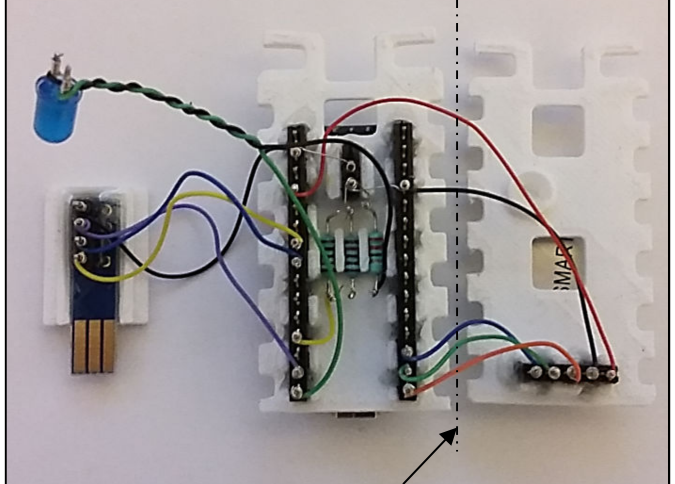
Position the 3 plates next to each other as shown

Attach wire wrap wire to the Wii adapter



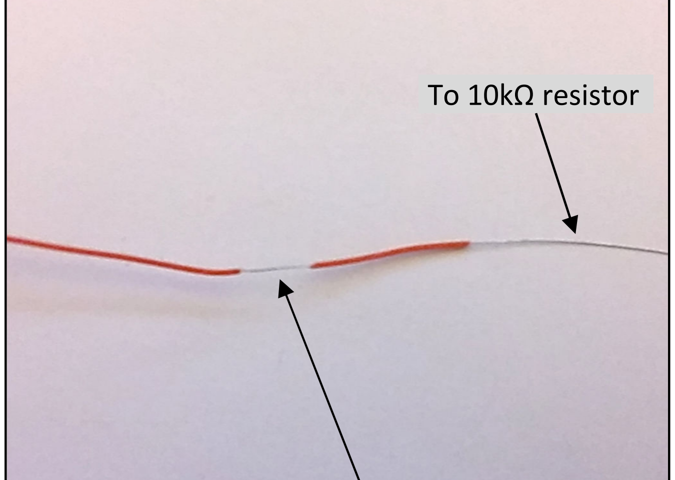
Ensure sufficient length to reach the NANO

Proceed to wire up the 3 boards



Note that wires will be folded along this line

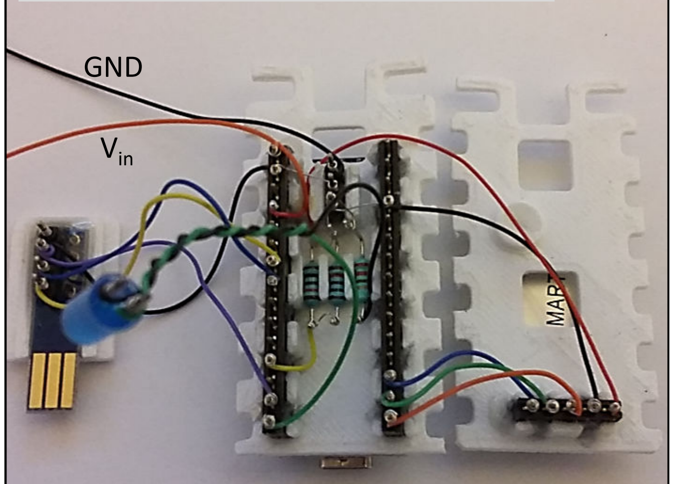
The V_{in} wire was stripped like this



To 10kΩ resistor

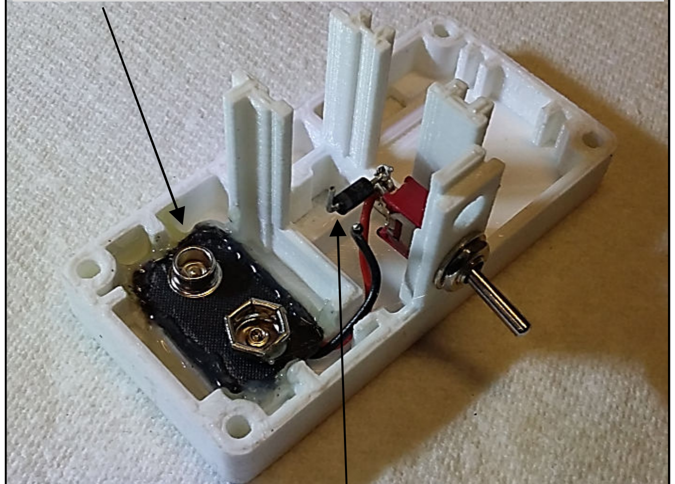
This part is wrapped around V_{in} pin by hand

The power connections will look like this

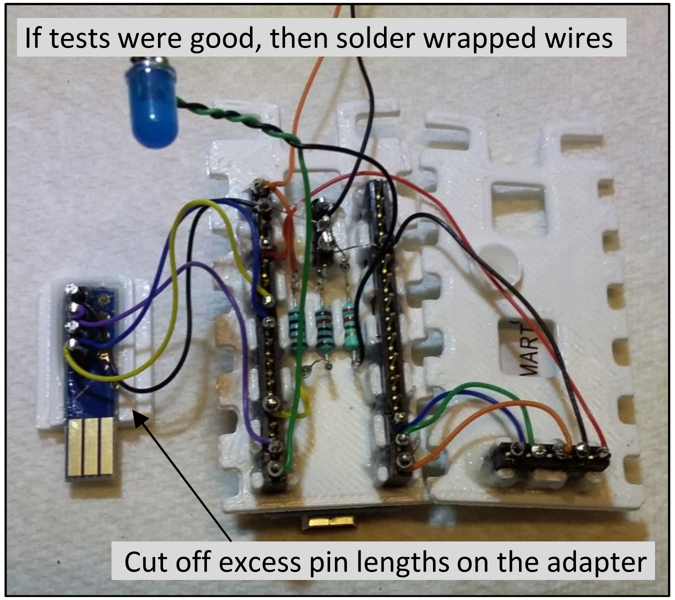


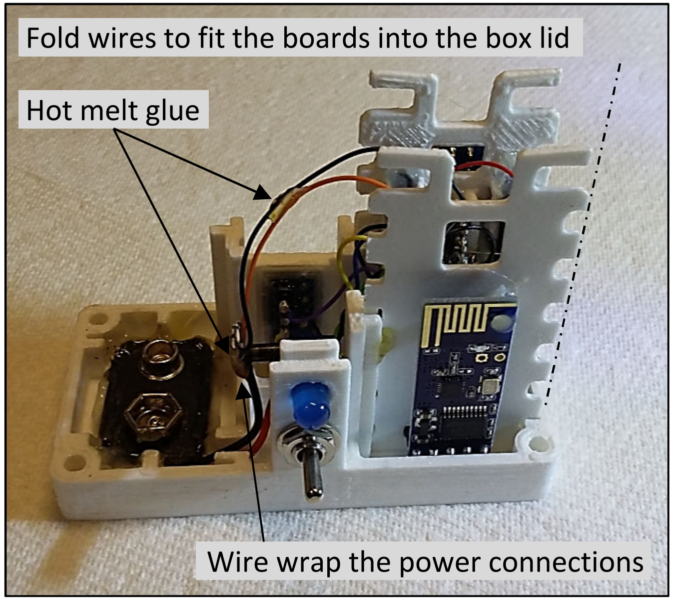
Put code in the NANO and test with Nunchuk

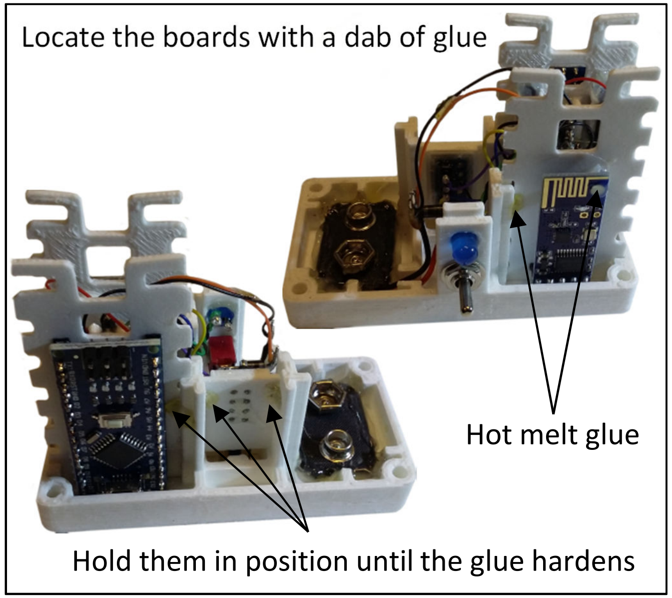
Attach wires to the battery connector and glue in

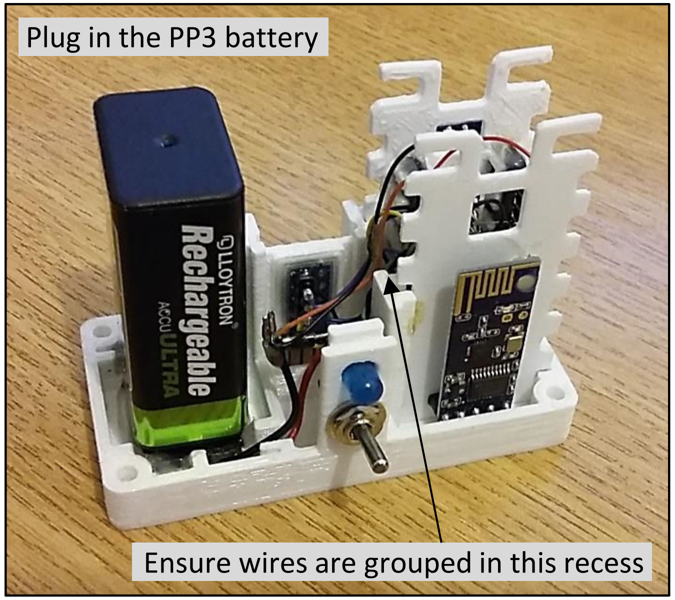


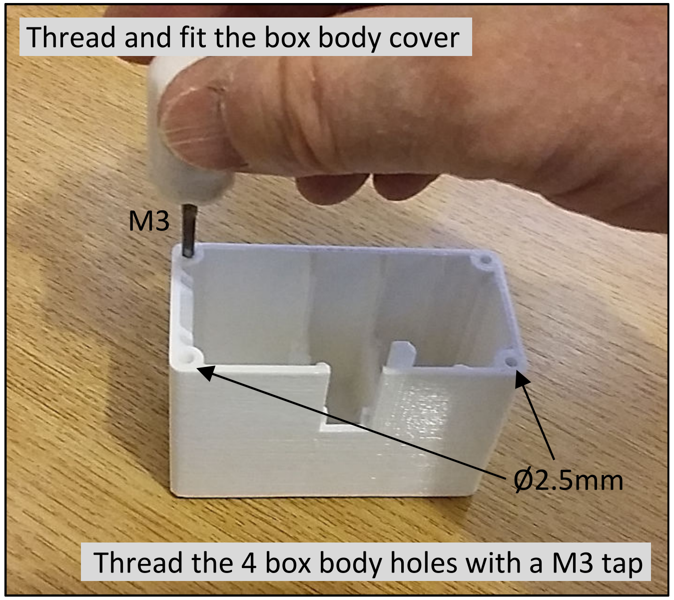
Connect the 1N4006 diode to the switch


If tests were good, then solder wrapped wires
Cut off excess pin lengths on the adapter


Fold wires to fit the boards into the box lid
Hot melt glue
Wire wrap the power connections


Locate the boards with a dab of glue
Hot melt glue
Hold them in position until the glue hardens


Plug in the PP3 battery
LLOYTRON
Rechargeable
ACCU ULTRA
Ensure wires are grouped in this recess


Thread and fit the box body cover
M3
Ø2.5mm
Thread the 4 box body holes with a M3 tap


Tap the nuts with an M3 thread
M3
UniBond
NO MORE NAILS
All types of WOOD, Plastic, Metal, Stone
Work in a drop of glue and tighten nylon screws

PP3 Battery Voltage Health Monitoring

See PP3 discharge curve obtained from the internet.
Assume new battery max PP3 voltage is V_{BM} = 10v
I measured my rechargeable PP3 at 8.65v when connected and ON.
Voltage drop across 1N4006 protection diode is V_D = 0.77v
Assume V_{in} max = $V_{BM} - V_D$ = 9.23v
Set battery warning point at V_B = 7.17v (V_{in} = 6.4v)
Set battery critical point at V_{BC} = 6.97v (V_{in} = 6.2v)
Arduino voltage regulator works well down to 6.2v

At max battery voltage, A0 input must be <= 5v. Hence resistor divider network values will be set as equal.

So V_{in} max at 10v, A0 == 4.615v, which is 944 on 10-bit ADC

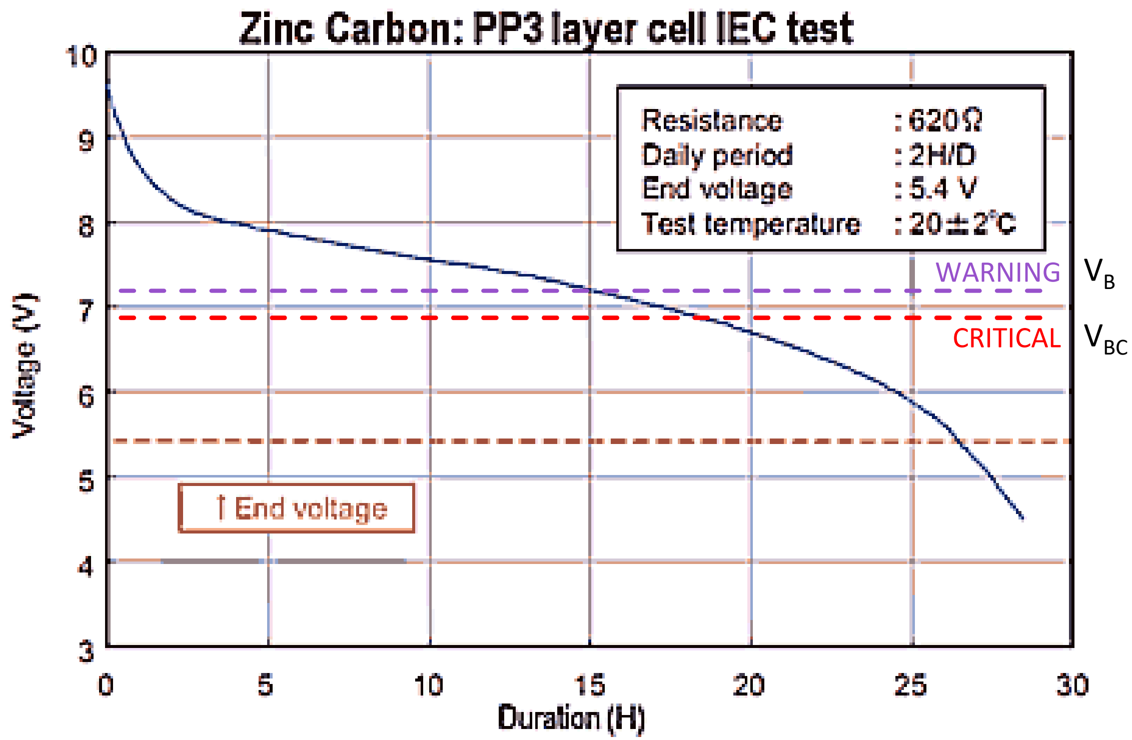
WARNING: V_{in} = 6.4v, gives A0 = 3.2v, which is 655 on ADC

CRITICAL: V_{in} = 6.2v, gives A0 = 3.1v, which is 634 on ADC

The Arduino code will sample the battery voltage on power-up to ensure it is sufficient, then at every 100ms interval, calculating a one second average (/10) to remove noise.

Resistor values are equal and suggested to be in the range 10k – 50kΩ, to reduce wasted power consumption. I used 10kΩ.

Note: If connected to USB port with internal battery not switched on the ADC will read a value approximately half that of the USB voltage, specified as 5v +0.25/-0.60 ==



Released: 31/01/2019 TechKnowTone