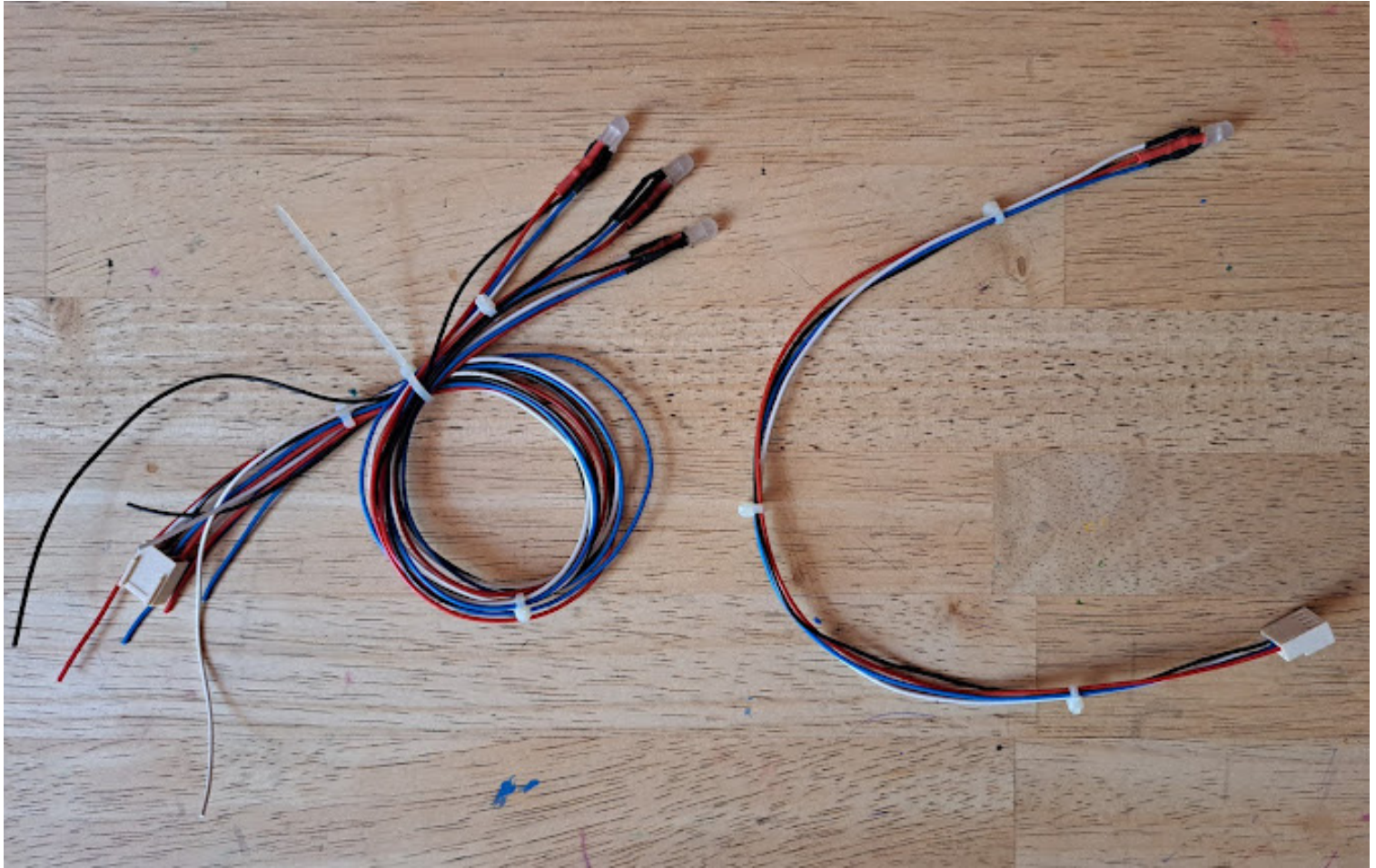
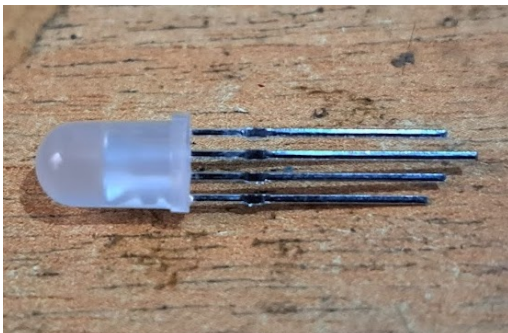


Indicator RGB LED



Indicator LEDs mainly to show battery power level on my robots. Originally I was thinking about using them on my remote controllers as well but then decided to use OLED displays for that. The heart and soul of the indicator is the WS2812 5mm LED. preferably the diffused or milky type. I don't like the clear type since you can see the individual LEDs in the package instead of just the single output colour. On the other side of the wire harness is a 4 pin female 2510-AW-2.5 connector. In some of them (as can be seen in the left of the pic) I did not attach a connector incase there was too much wire for the application. in that case you just cut the length of wire that you need and then attach the connector. integrated in the assembly is a 470 ohm resistor it's covered with a red heat shrink and is on the VDD or the power pin. The input power for this device is 5 volts and the data sheet says to put a 100 ohm resistor on the power pin but I chose a 470 ohm one. I think having the power resistor integrated like this will save board space on the charging board. I don't know the wire's gauge but it is the thinnest wire I could get from my local supplier. The colours used are red, Blue, White, and Black. also I used the smallest cable ties I have to keep everything together as can be seen on the right in the pic.



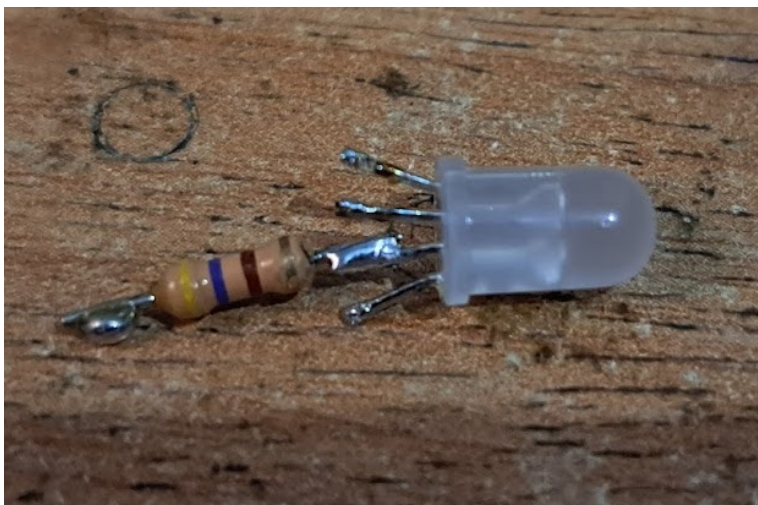
This is the WS2812 5mm LED. I got a hundred of them from AliExpress for very cheap.



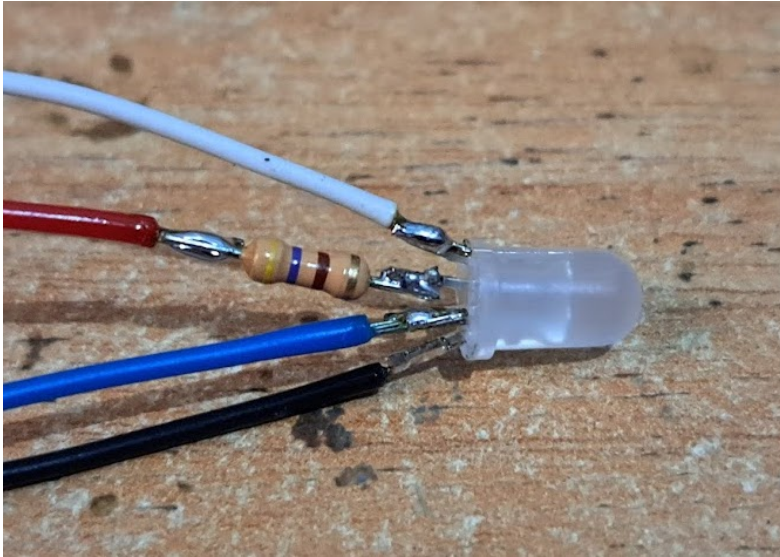
This is the LED's pinouts you can find more stuff on this product's Data Sheet.



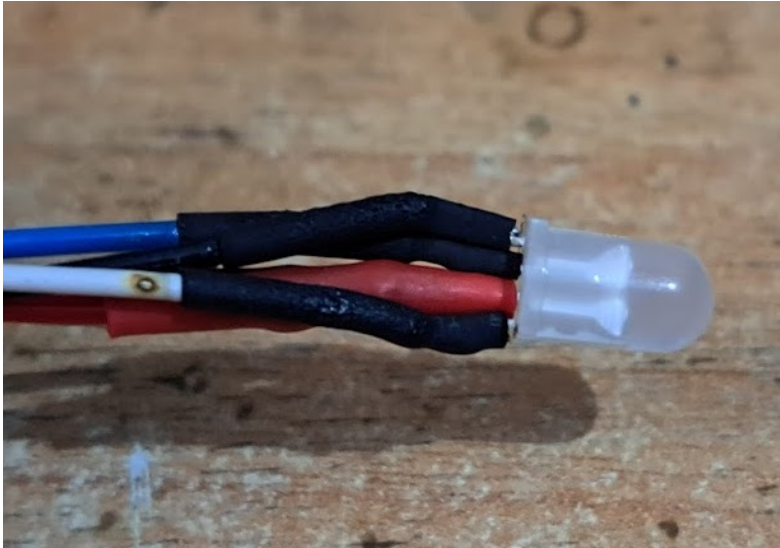
Cut the longe pins down to roughly 5mm and thin them. don't worry about losing the pinouts after cutting. You still have the LED flat part on the ring that will indicate the pin.



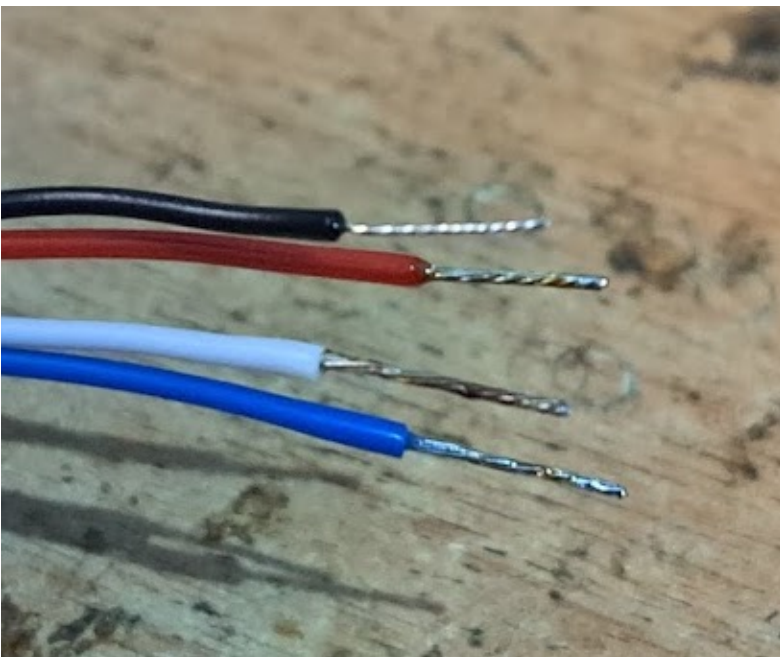
Cut the ends of the 470 ohm resistor down to 5mm, Tin them and solder it to the VDD pin which is 2 pins away from the flat bit.



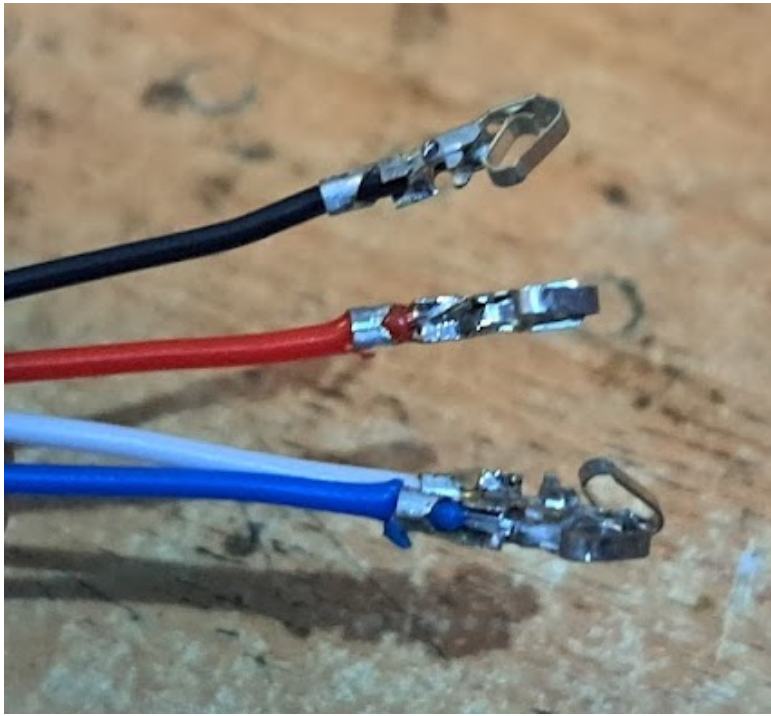
Cut 30cm lengths of the thin wires. Blue, Red, White, And Black. And attach them like they are in the pic. Red to the resistor, Blue to the GND, White to DOUT, and Black to DIN.



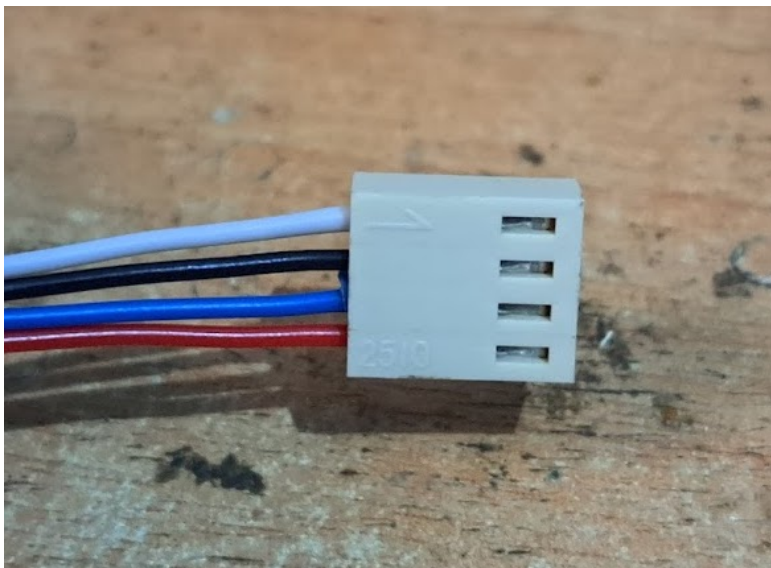
Cover the exposed conductive bits of the wire with heat shrink. I covered the resistor with red heat shrink. This is just a preference. I used a lighter to shrink them.



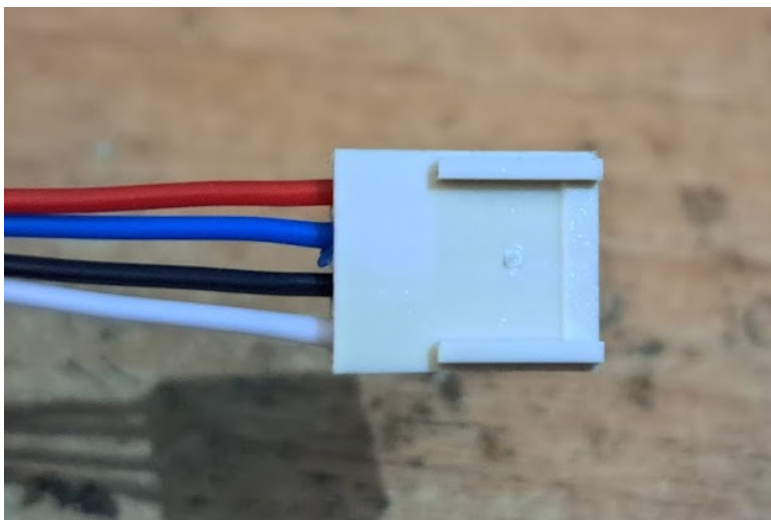
On the other side of the wires. Strip them, twist them. and tin them. then you are going to cut those tinned bits to roughly 2.5mm so that you can fit in the 2510-AW-2.5 connector pins.



Solder and crimp the wires to the 2510-AW-2.5 connector pins.



Put the pins in the 2510-AW-2.5 connector in this order, There is a small lech on the back of the pins that should click in the slots of the connector preventing the pins from coming back out.

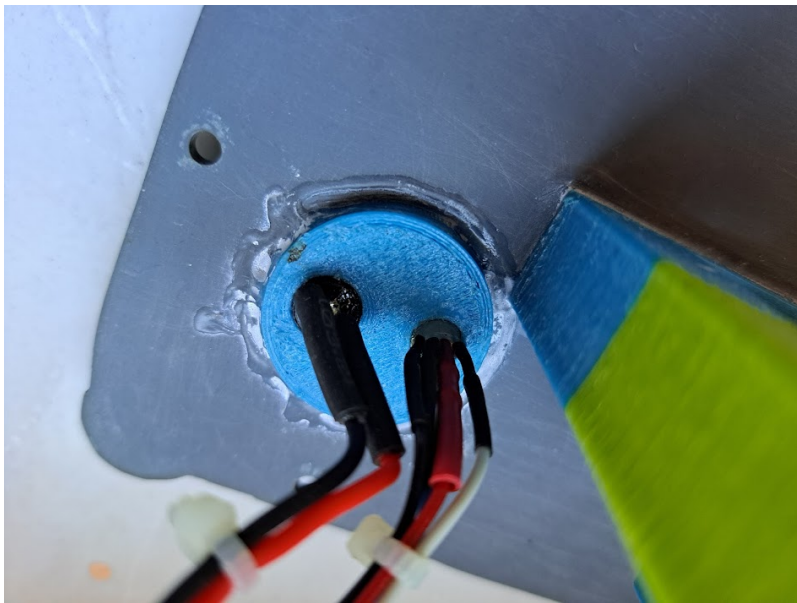


This is the same connector from the other side.



So the question then is 'How do you mount these indicators to a panel?' I glue them I use a hi viscosity super glue or gel like (so that it doesn't run everywhere) and I just stick it in the smaller hole with the recess. The recess just prevents the indicator from going strait through. I then fill the other side with the viscose super glue. The other hole is for a barrel jack for the charger. The STL files for this part can be found on my GitHub:

https://github.com/ap-tech/18650-Battery-pack/blob/main/Miscellaneous3D%20Prints/24v_DC_Plug.stl



This is what the part looks like with indicator and barrel jack attached and it being attached to a panel. you can also see the dried super glue around the part. The part was designed so the you can cut a hole in the panel that you are mounting this too with a 28mm or a 17/64" hole saw.



This is the part from the other side with the indicator in action glowing green meaning the battery is full.

Written By: Anthony Pirotta.

For: AP tech Robots, Hand held devices, And other products.

Date: Tuesday, 26 May 2025

Revised:

Notes:

Disclaimer: AP tech and Anthony Pirotta are not responsible for any fires, explosions, damage or death occurring after someone uses these instructions. Making lithium batteries is a risky activity and one that you and only you are responsible for. Also before following these instructions it is best to have prior electrical, electronics, And soldering knowledge and experience.