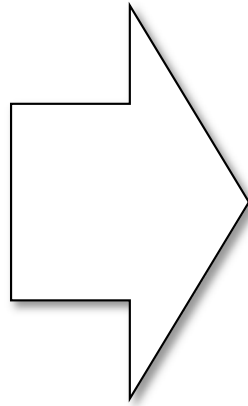
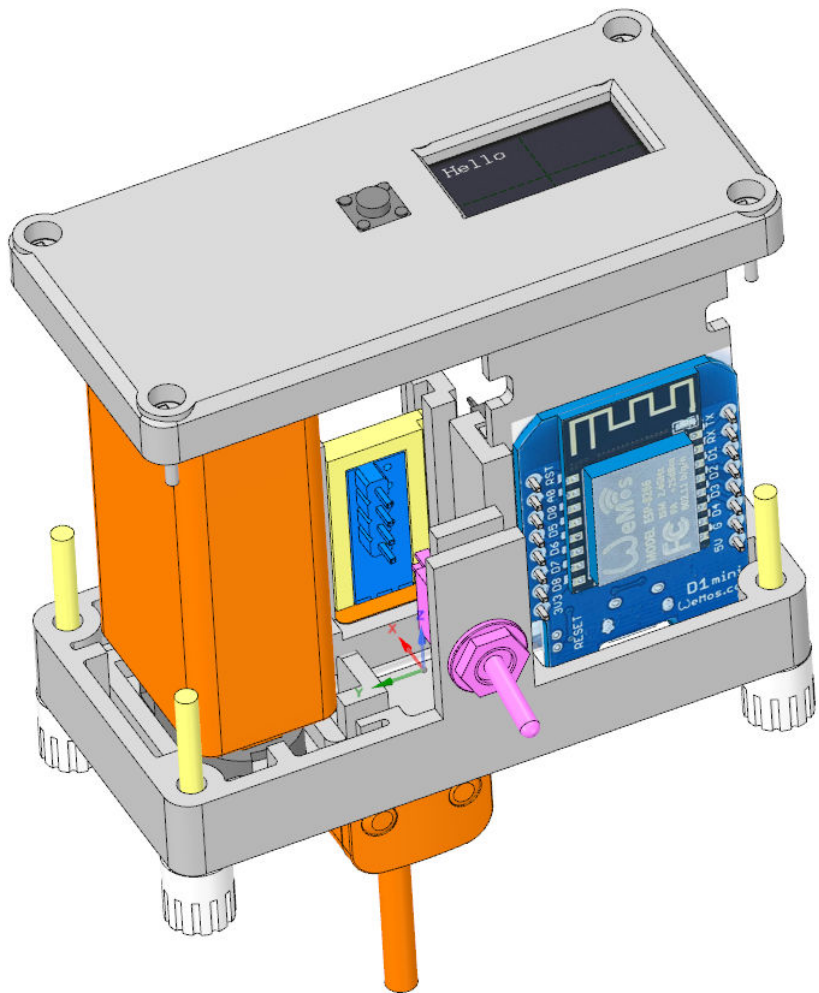


# Wii WEMOS D1 Transceiver

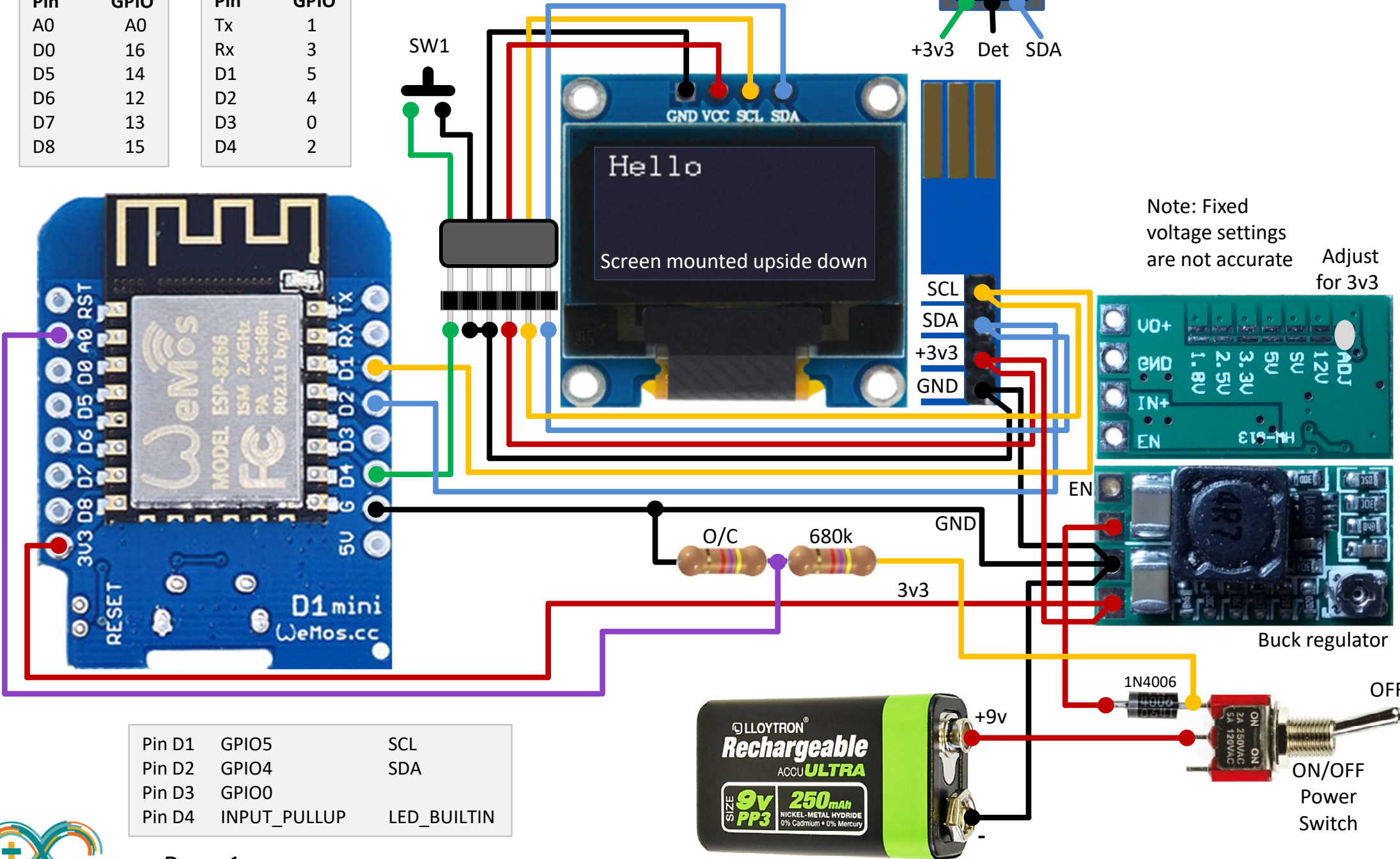
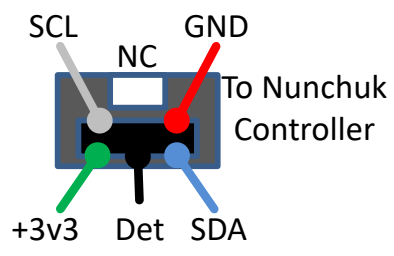
## Circuits & Wiring



# Wii WEMOS D1 Transceiver Wiring

Pin	GPIO	Pin	GPIO
A0	A0	Tx	1
D0	16	Rx	3
D5	14	D1	5
D6	12	D2	4
D7	13	D3	0
D8	15	D4	2

Display connections can vary, ensure power Vcc and GND are of correct polarity!

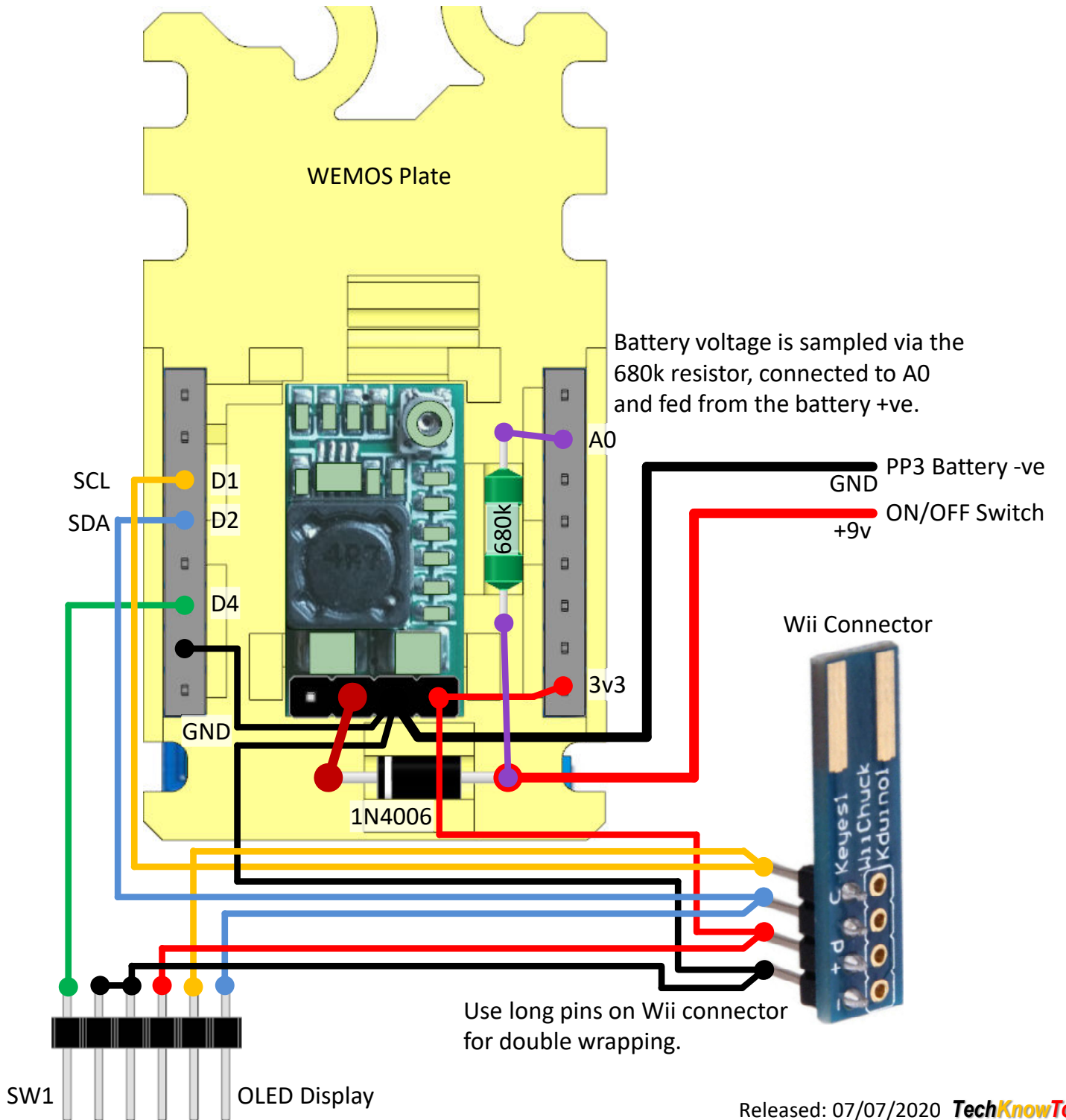
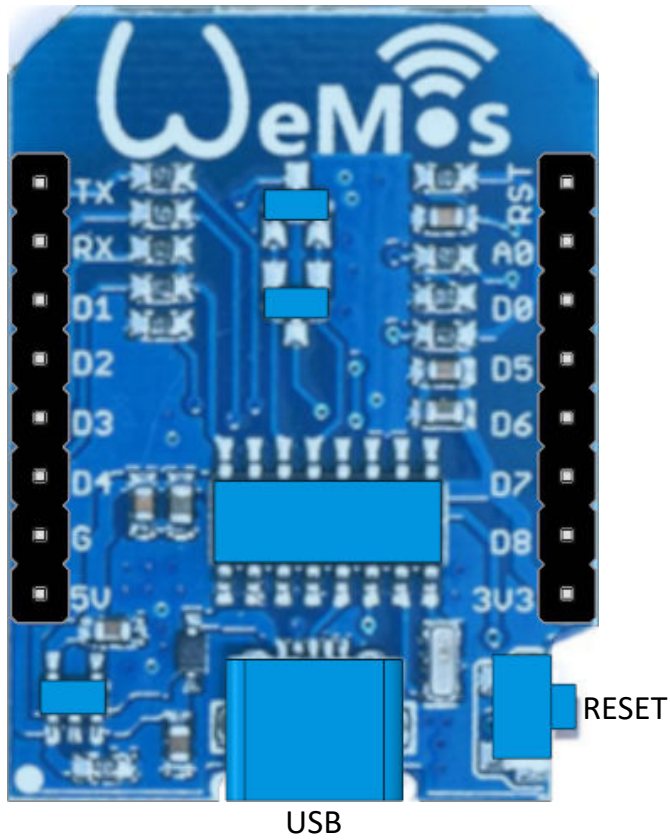


Note: Fixed voltage settings are not accurate Adjust for 3v3

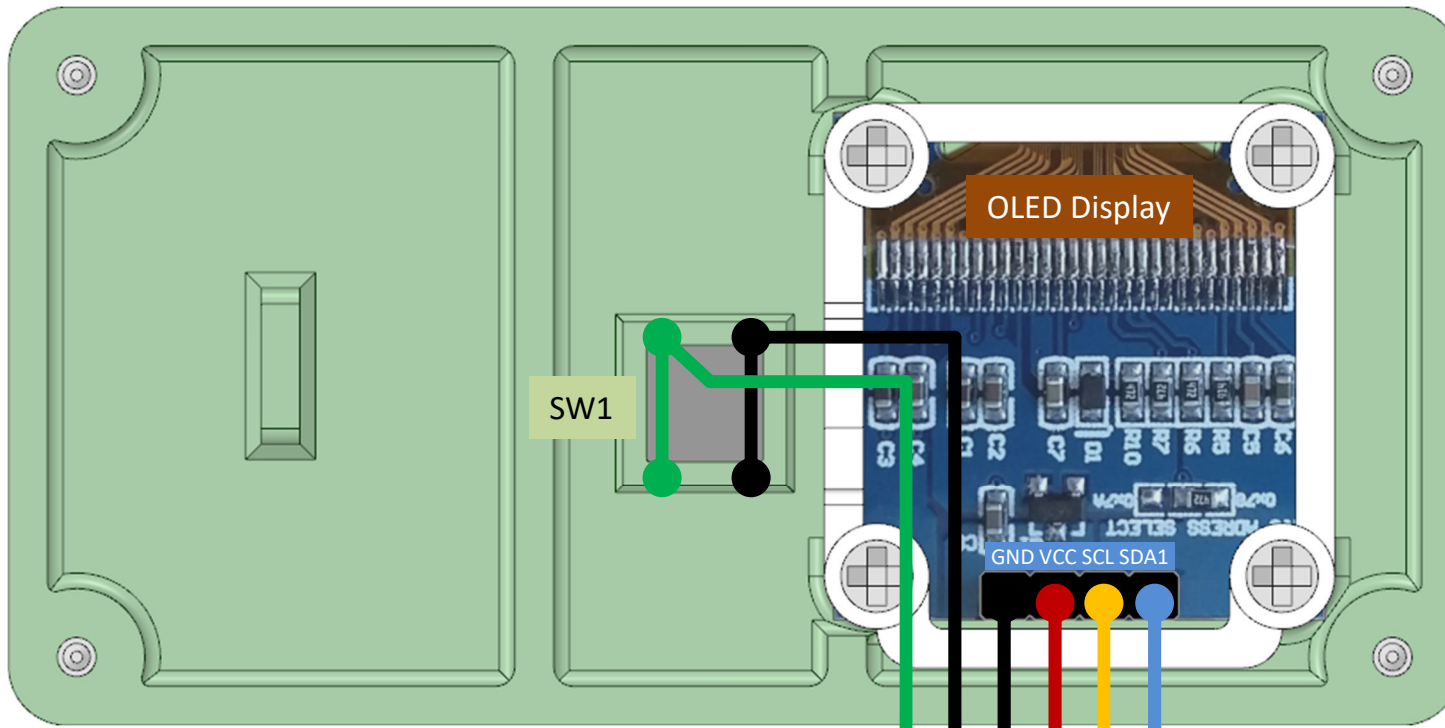
Pin D1	GPIO5	SCL
Pin D2	GPIO4	SDA
Pin D3	GPIO0	
Pin D4	INPUT_PULLUP	LED_BUILTIN

# WEMOS Plate Wiring

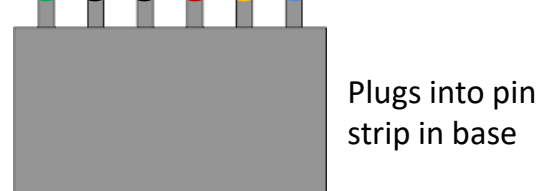
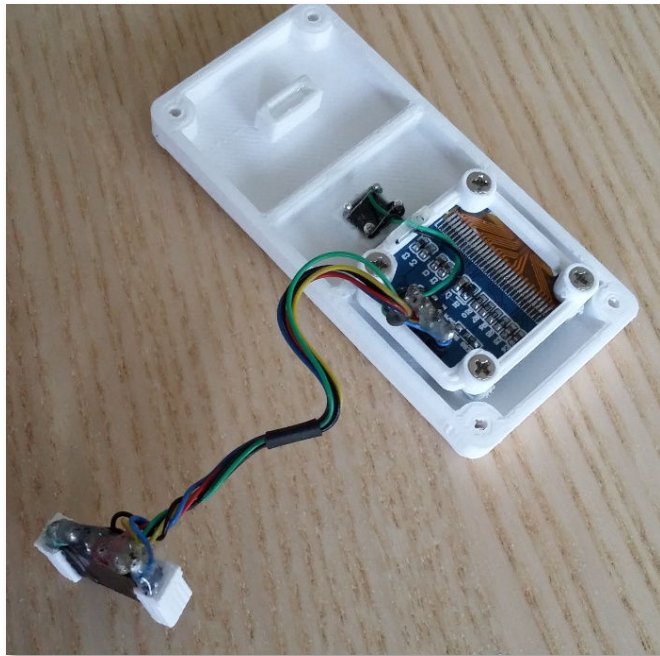
WEMOS D1 mini  
viewed from underneath



# Box Lid Wiring



Ensure sufficient length



Plugs into pin strip in base

Plug is removed from base to allow separation from body when charging PP3 battery.

## PP3 Battery Voltage Health Monitoring

See PP3 discharge curve obtained from the internet.

Assume new battery max PP3 voltage is  $V_{BM} = 10v$  max

I measured my rechargeable PP3 at 8.65v when connected and ON.

Set battery warning point at  $V_B = 7.17v$

Set battery critical point at  $V_{BC} = 6.97v$

WEMOS D1 is powered from buck converter at 3.3v

It has internal resistor network of 220k + 100k, so 3.2v at A0 pin gives 1.0v at  $V_{ADC} == 1023$  on 10-bit converter (1024 max).

If we use a 680k resistor feeding A0 we get 10.0v == 1023

Using a Multimeter I determined the conversion factor to be 1030

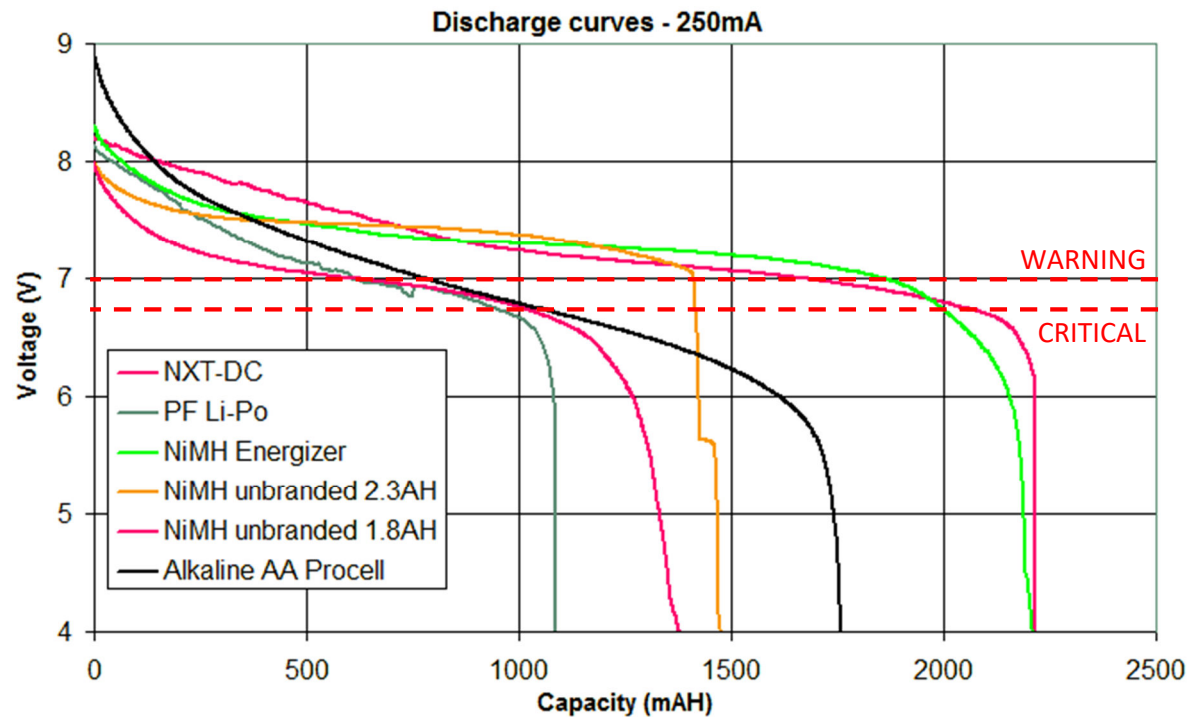
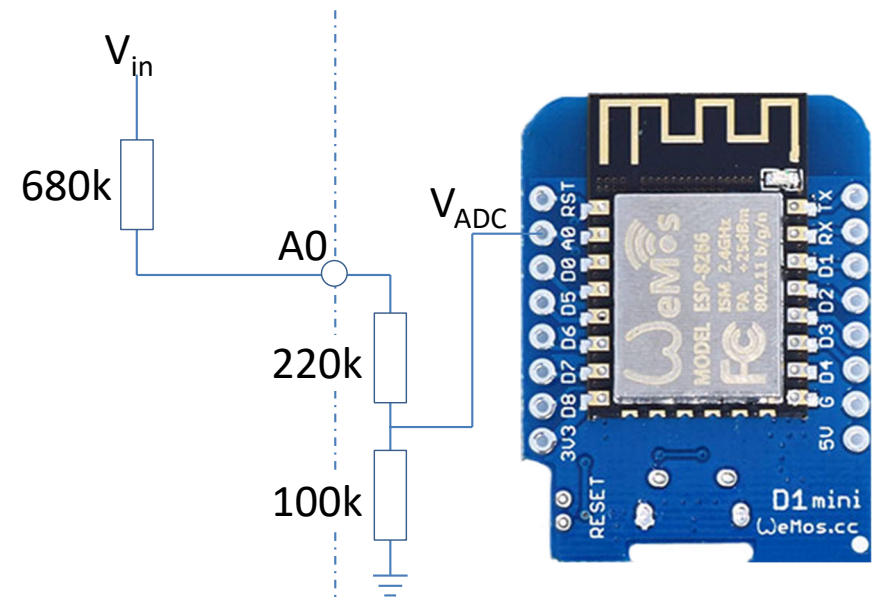
WARNING:  $V_B = 7.0v$ , gives A0 = 721 on ADC ( $V_B * 103.0$ )

CRITICAL:  $V_{BC} = 6.8v$ , gives A0 = 700 on ADC ( $V_{BC} * 102.3$ )

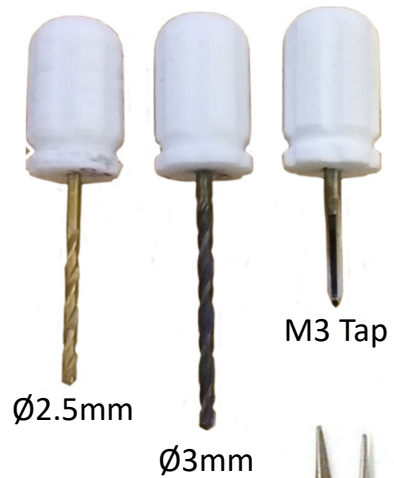
The code will sample the battery voltage on power-up to ensure it is sufficient, then at every 40ms interval, calculating an average (1/20) to remove noise.

Given the relatively light current drawn I have assumed a linear discharge curve ranging from 9.5v (100%) to 6.8v (0%) capacity. The rate of discharge is monitored and used to actively predict the life of the battery in use.

Note: If connected to USB port with internal battery switched OFF the ADC will read a value approximately 0 volts. So if the micro is running with such a low reading it knows that it is on USB power.



# Hand Tools & Consumables



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.

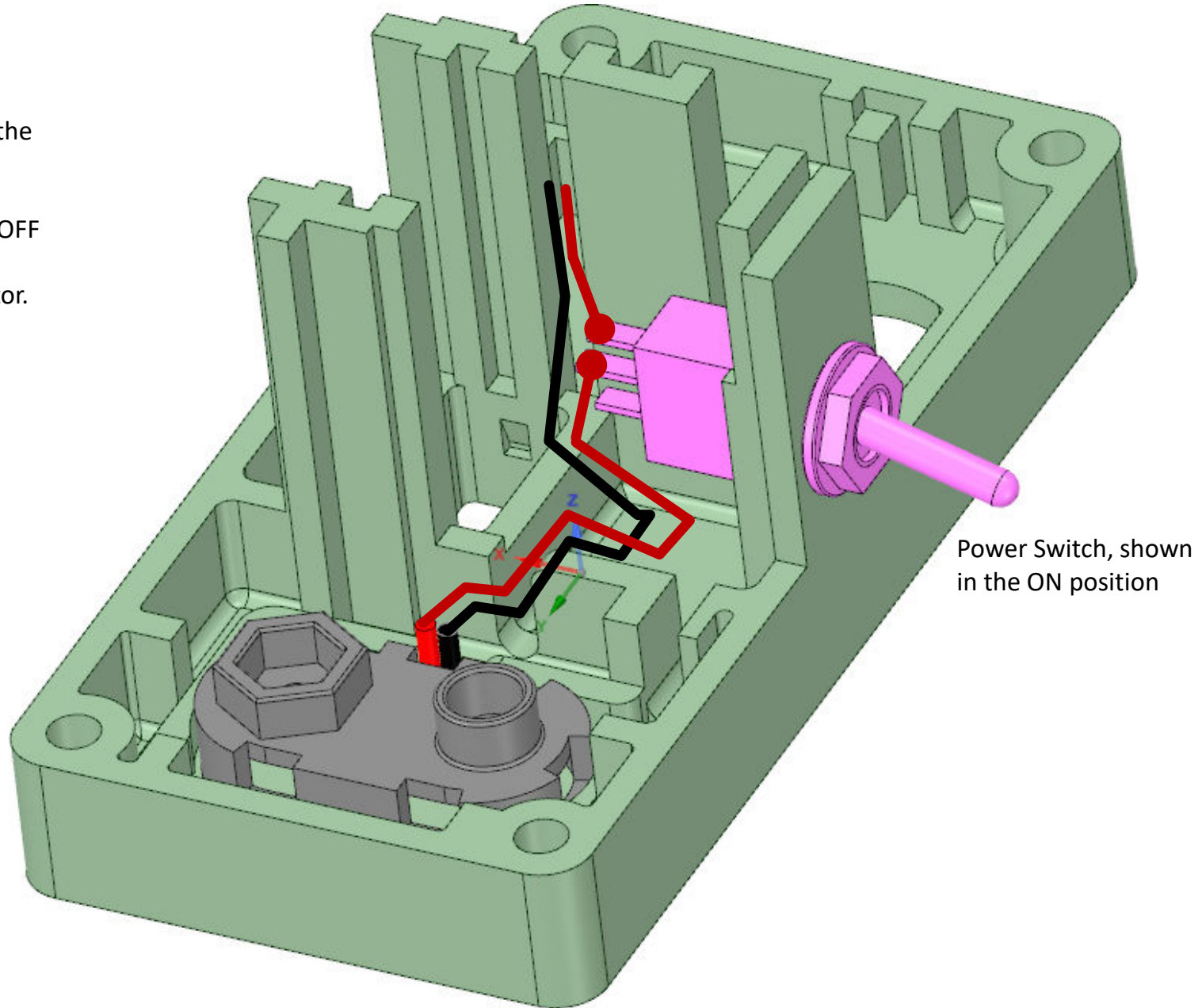


Wire wrapping is used as it allows you to quickly build your circuits, test them and easily modify them as needed. You can later solder the wrapped connections for extra security, once the circuit is proven.

## PP3 Battery Clip Wiring

Battery -ve goes directly to the buck regulator.

Battery +ve goes to the ON/OFF switch, then to the 1N4006 diode, then the buck regulator.



Power Switch, shown in the ON position

