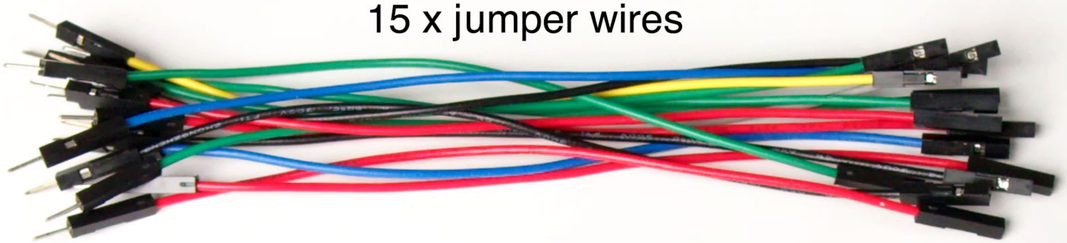
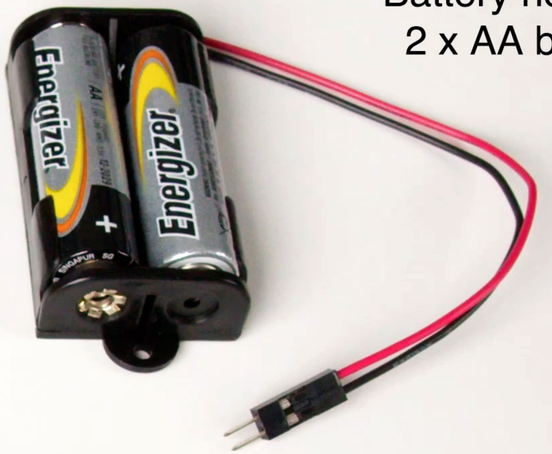
1) Check that you have all the parts

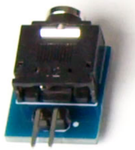
15 x jumper wires

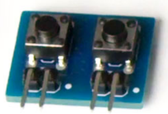


Battery holder and
2 x AA batteries

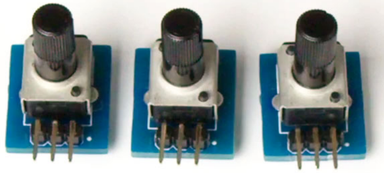


Audio Jack PCB

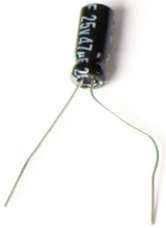




Switch PCB

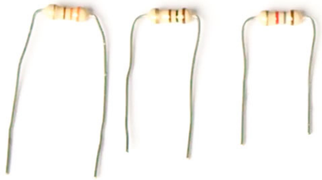


3 x Potentiometers



Electrolytic
Capacitor

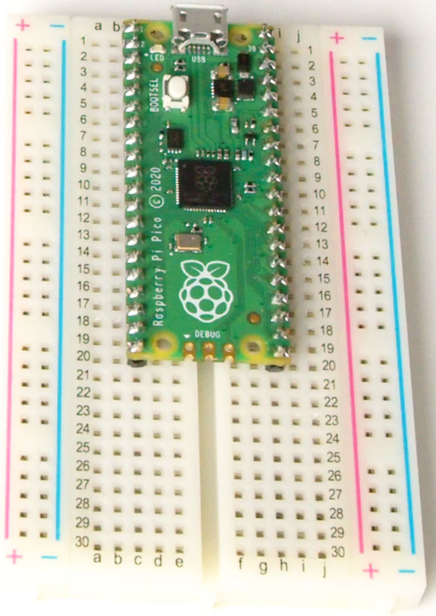
Ceramic
Capacitor



3 x Resistors

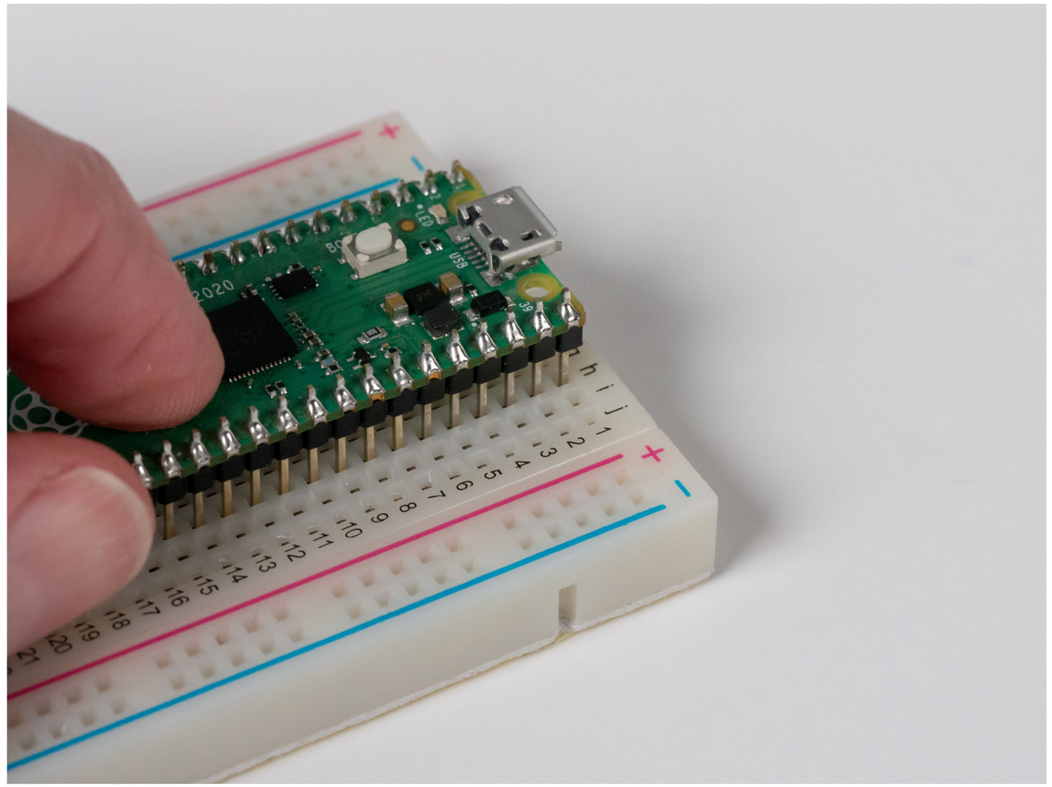
2 x small black wires

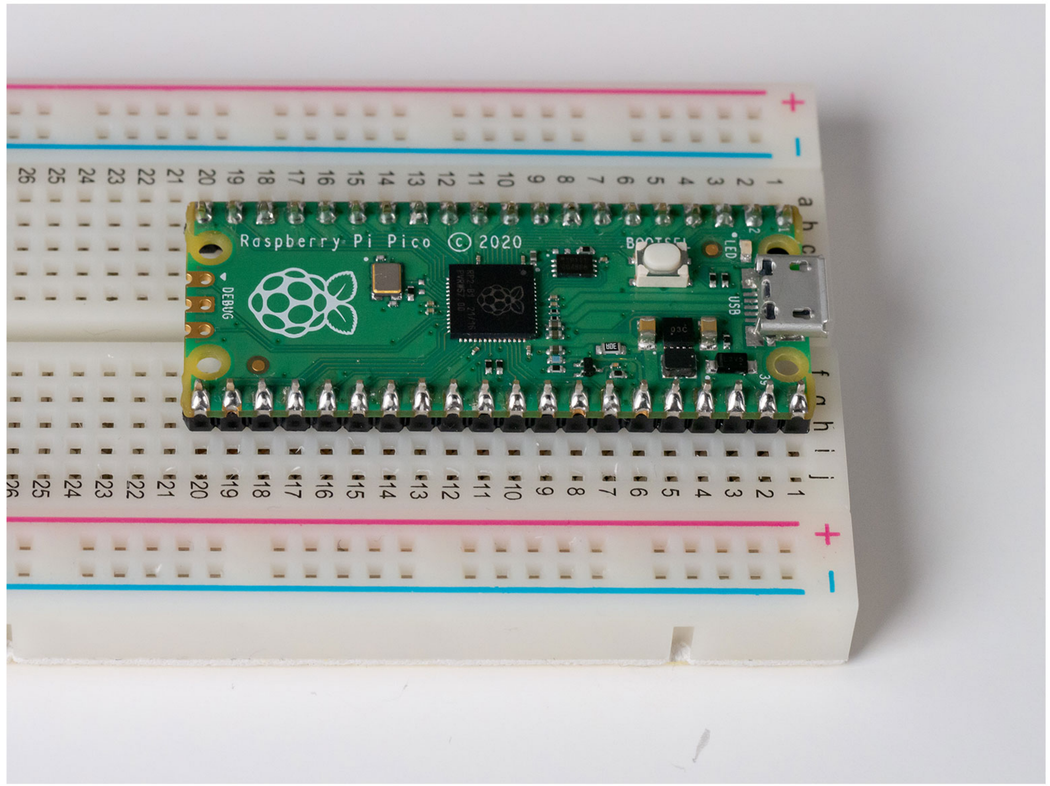
1 x small red wire



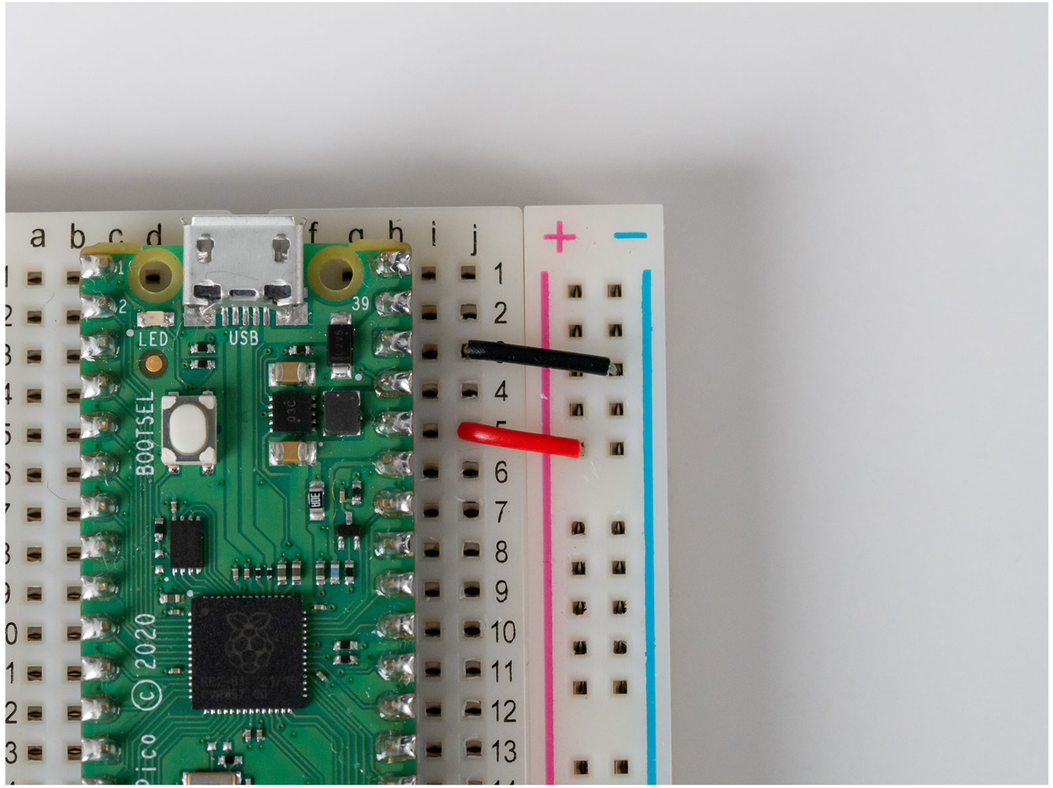
Raspberry Pi Pico
on
Prototype Board
(”Breadboard”)

2) If the Raspberry Pi Pico hasn’t been inserted into the Breadboard, or if it has been removed, align the top of the Raspberry Pi Pico (the side with the USB connector) with row 1 and carefully press down.



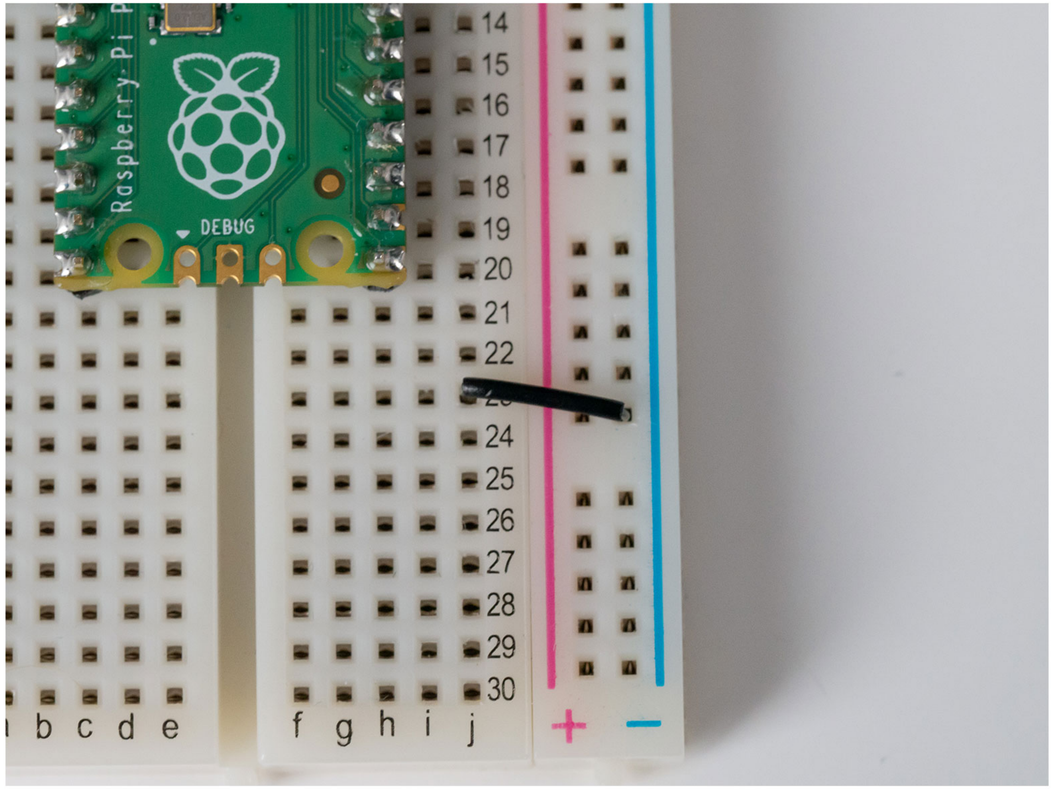


3) Insert the 3 small wires: 2 x black and 1 x red as shown below:



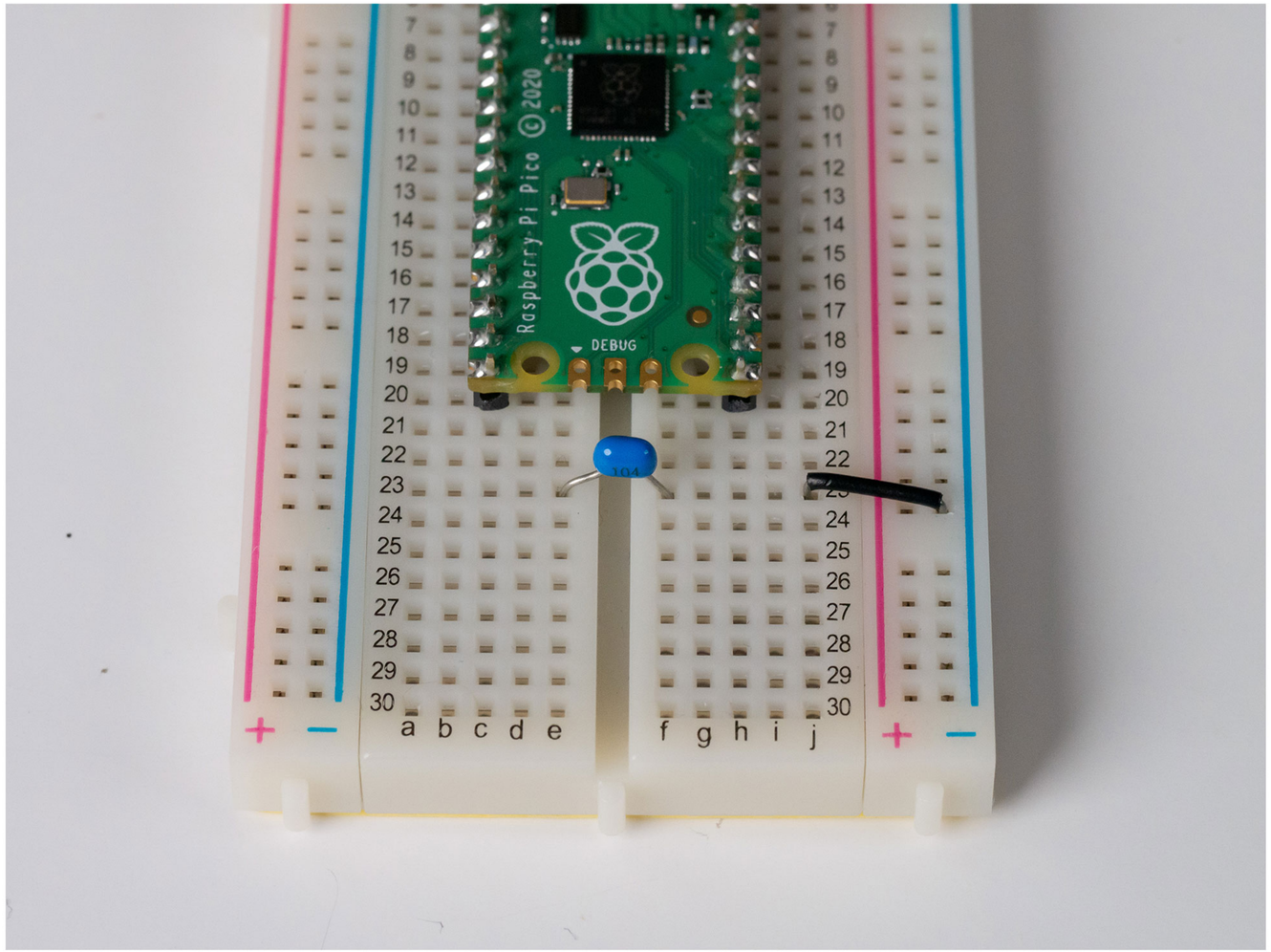
The first small black wire is connected from
row 3, column “j” on the right of the Raspberry Pi Pico
to the negative (-) vertical rail.

The small red wire is connected from
row 5, column “j” on the right of the Raspberry Pi Pico
to the negative (+) vertical rail.



The second small black wire is connected from
row 23, column “j” on the right of the Raspberry Pi Pico
to the negative (-) vertical rail.

4) Insert the ceramic capacitor

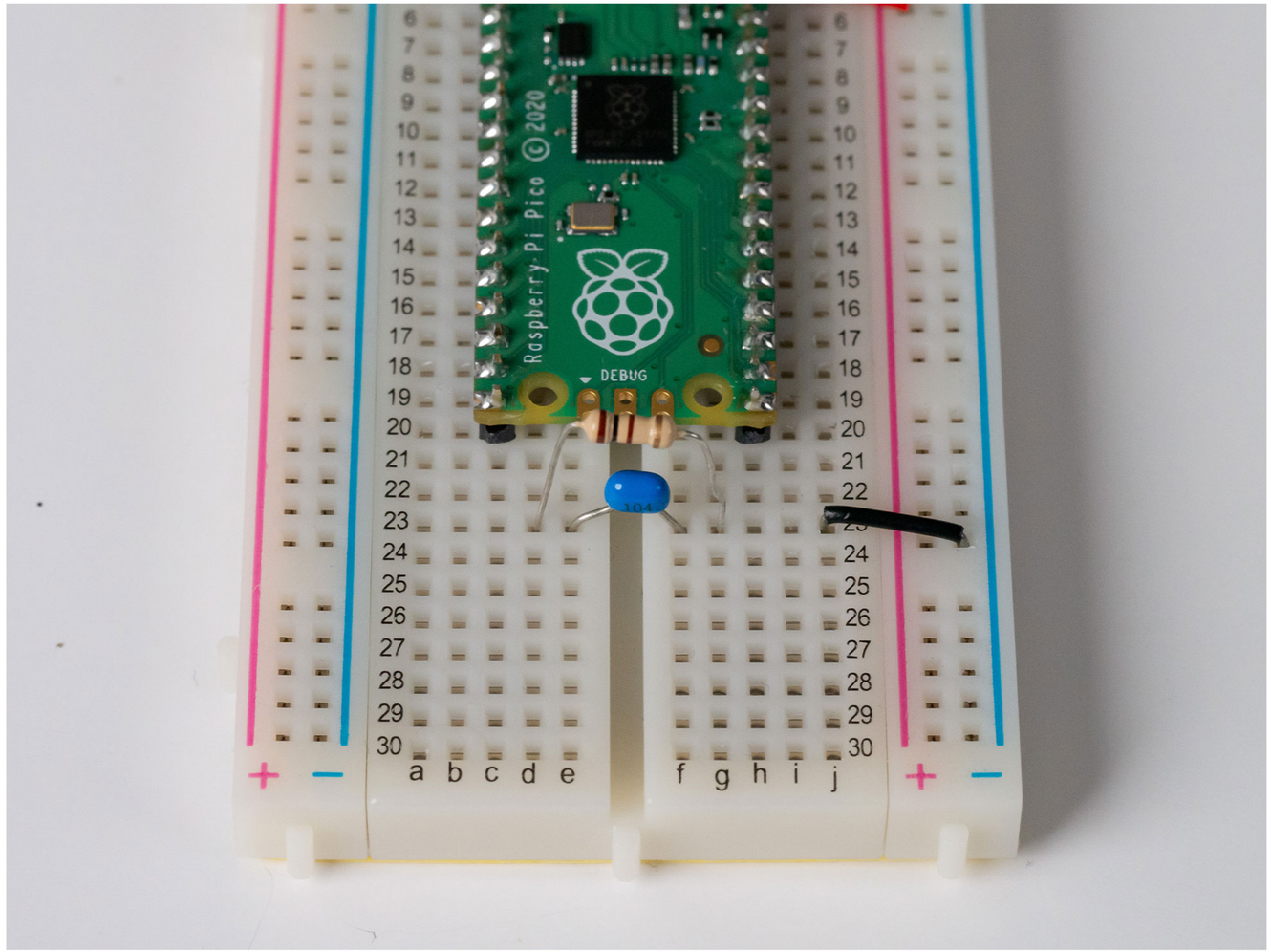


Insert across row 23 as shown, from row 23, column “e” to row 23, column “f”.

Your capacitor might be a different colour.

It doesn’t matter which way round it goes.

5) Insert the 100Ω resistor



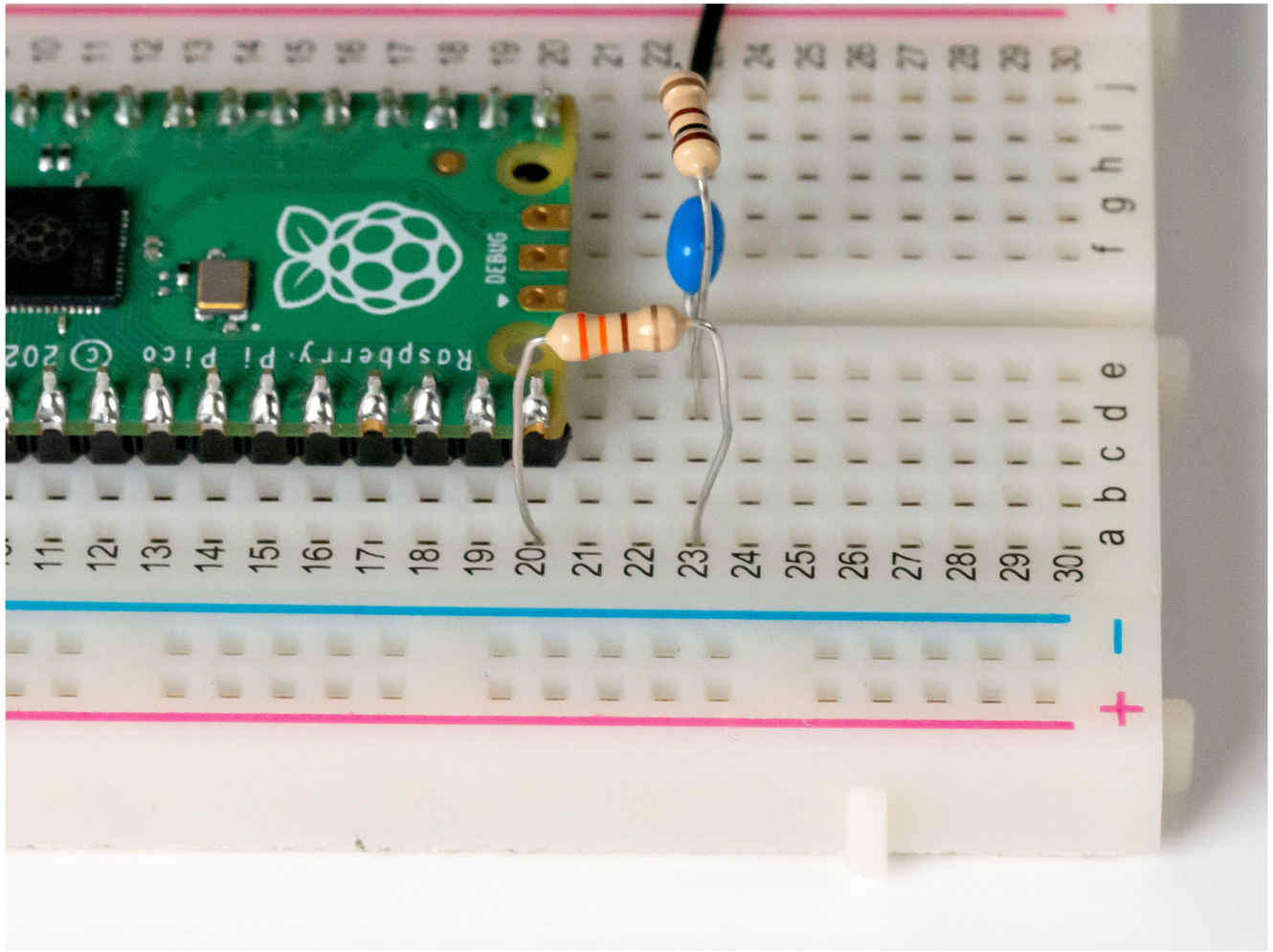
The 100Ω resistor is colour-coded with the following stripes:

brown, black, brown, gold

Insert across row 23 as shown, with one leg on each side of the ceramic capacitor.

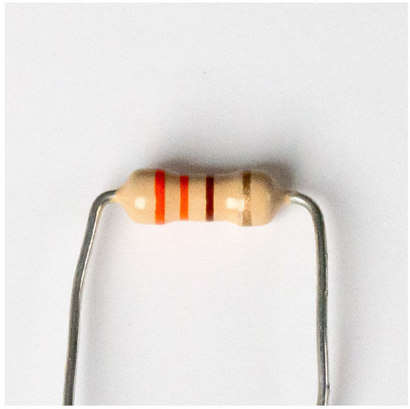
From row 23, column “d” to row 23, column “g”.

6) Insert the 330Ω resistor



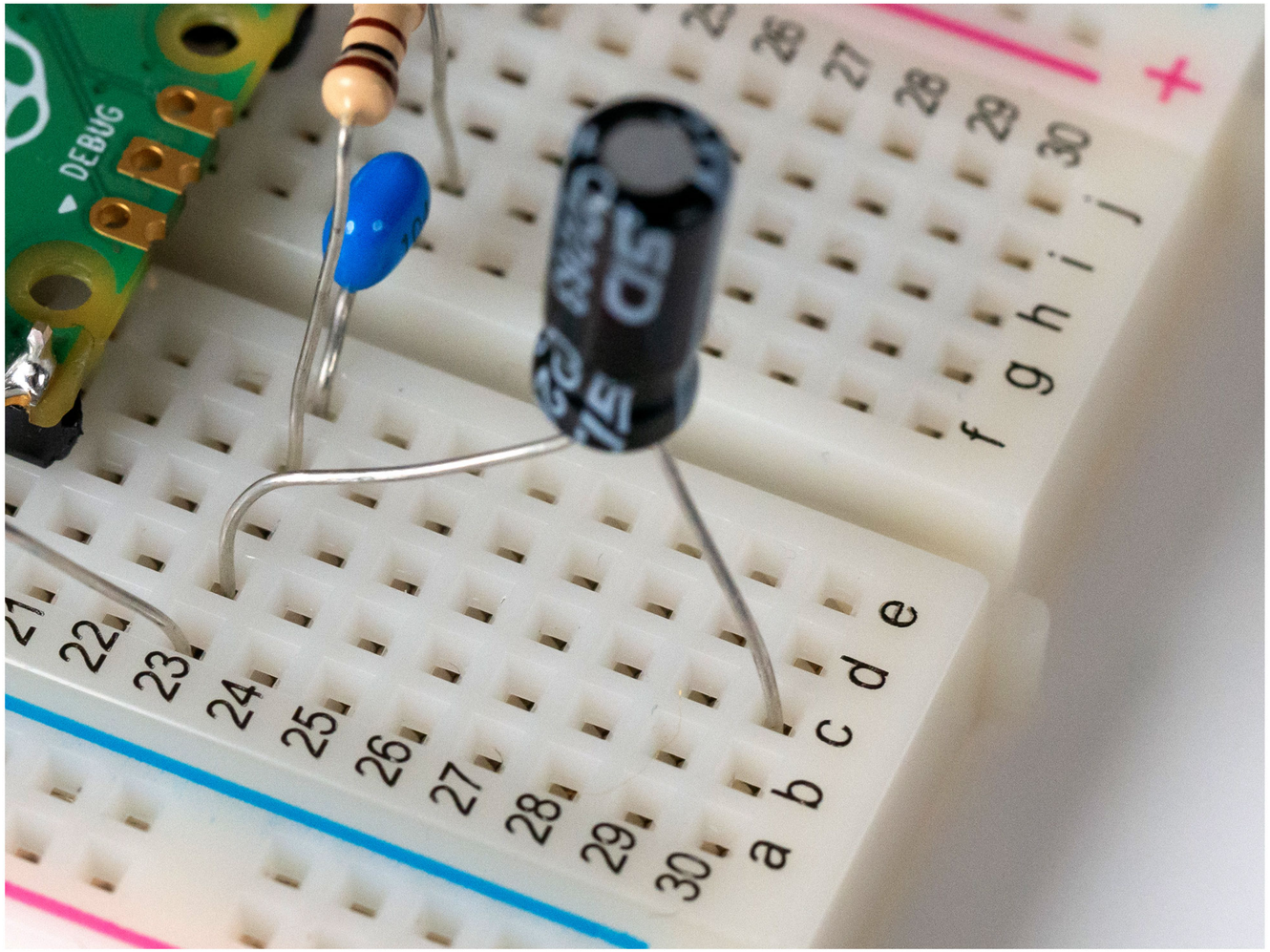
The 330Ω resistor is colour-coded with the following stripes:

oranage, orange, brown, gold



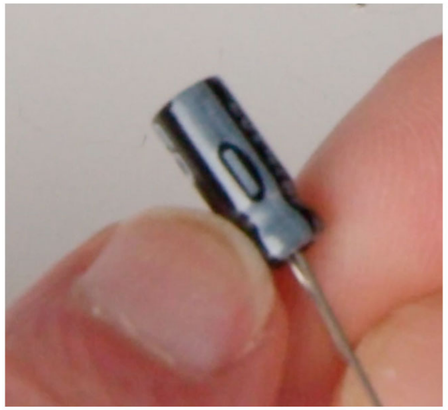
Insert from row 20, column “a” to row 23, column “a” as shown.

7) Insert the electrolytic capacitor



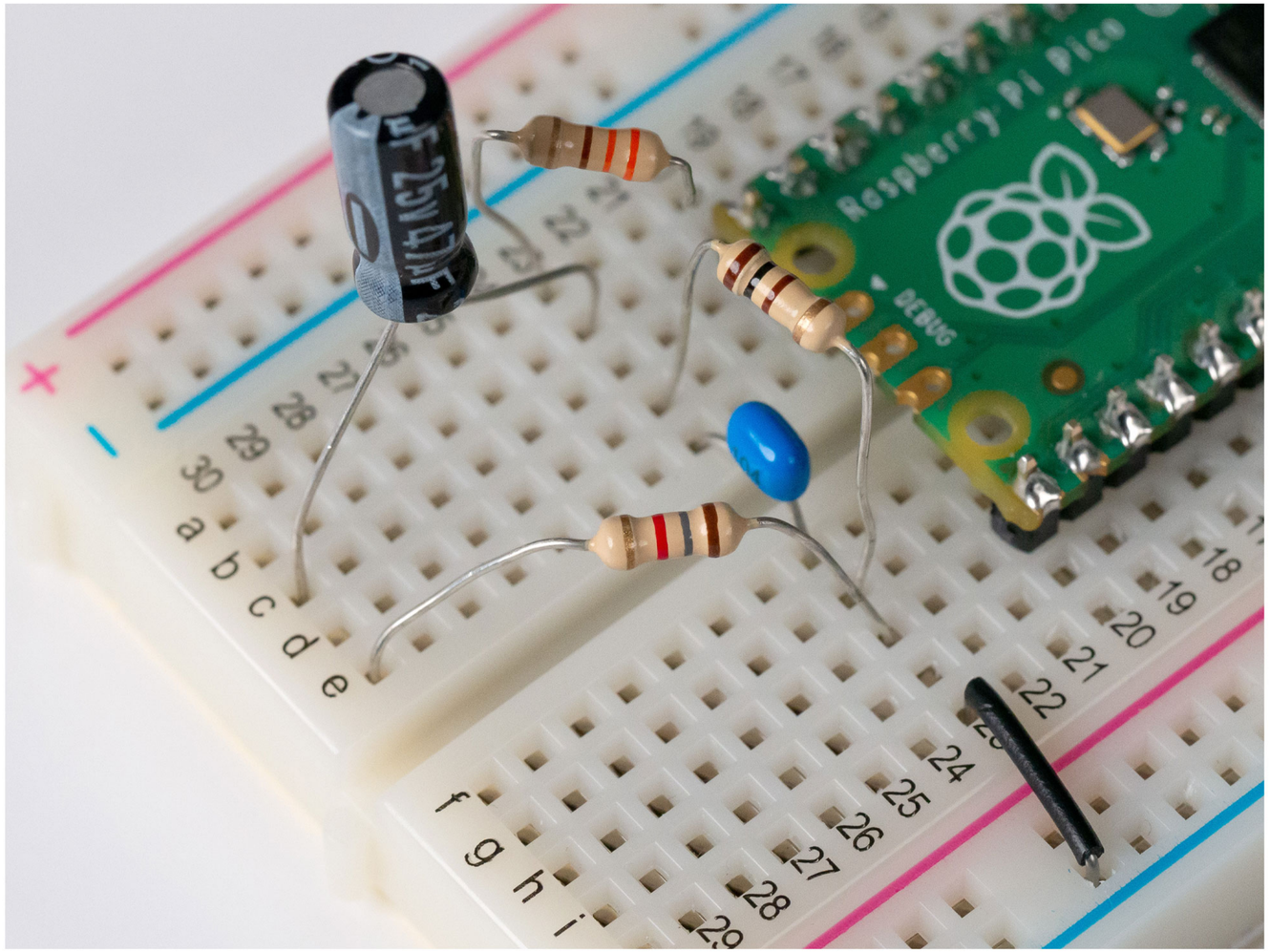
The electrolytic capacitor MUST be inserted the correct way round!

The negative leg is marked with a minus sign:



The positive leg goes into row 23, column “b”, the negative leg in row 30, column “c” as shown.

8) Insert the 1.8KΩ resistor



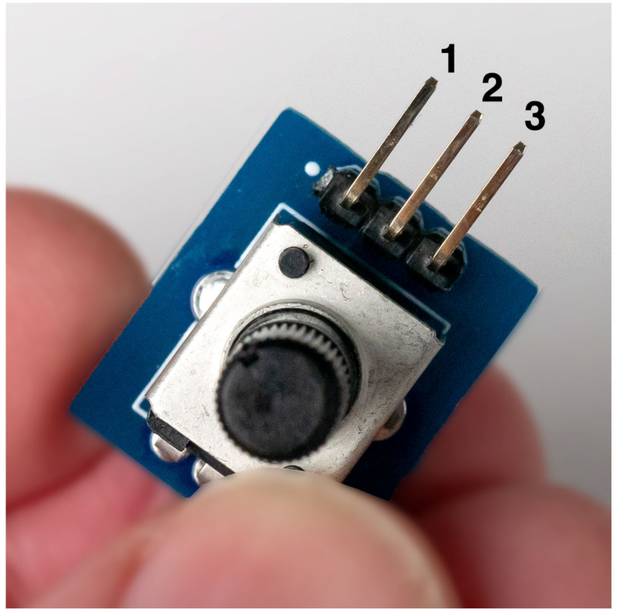
The 1.8KΩ resistor is colour-coded with the following stripes:

brown, grey, red, gold

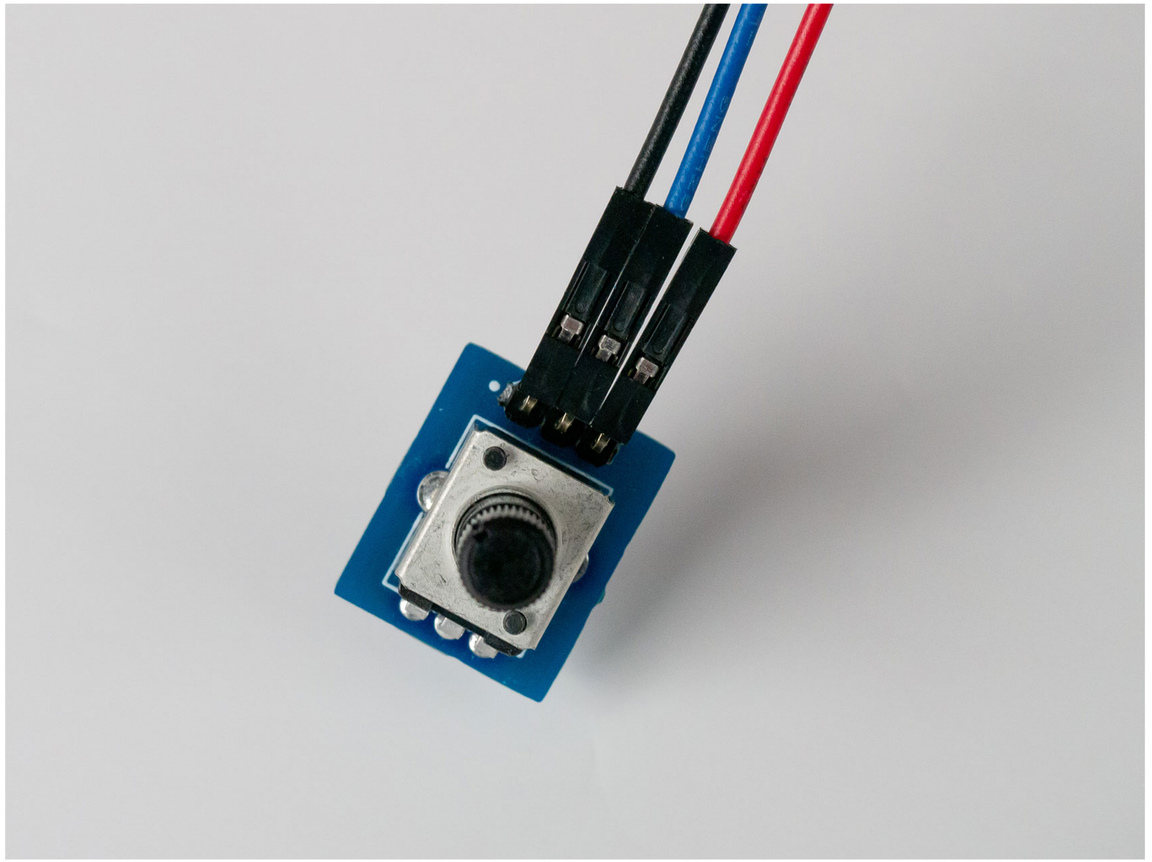
The 1.8KΩ resistor goes from row 23, column “h” to row 30, column “e”

(it doesn’t matter which way round it goes!)

9) First Potentiometer (Modulation Depth)

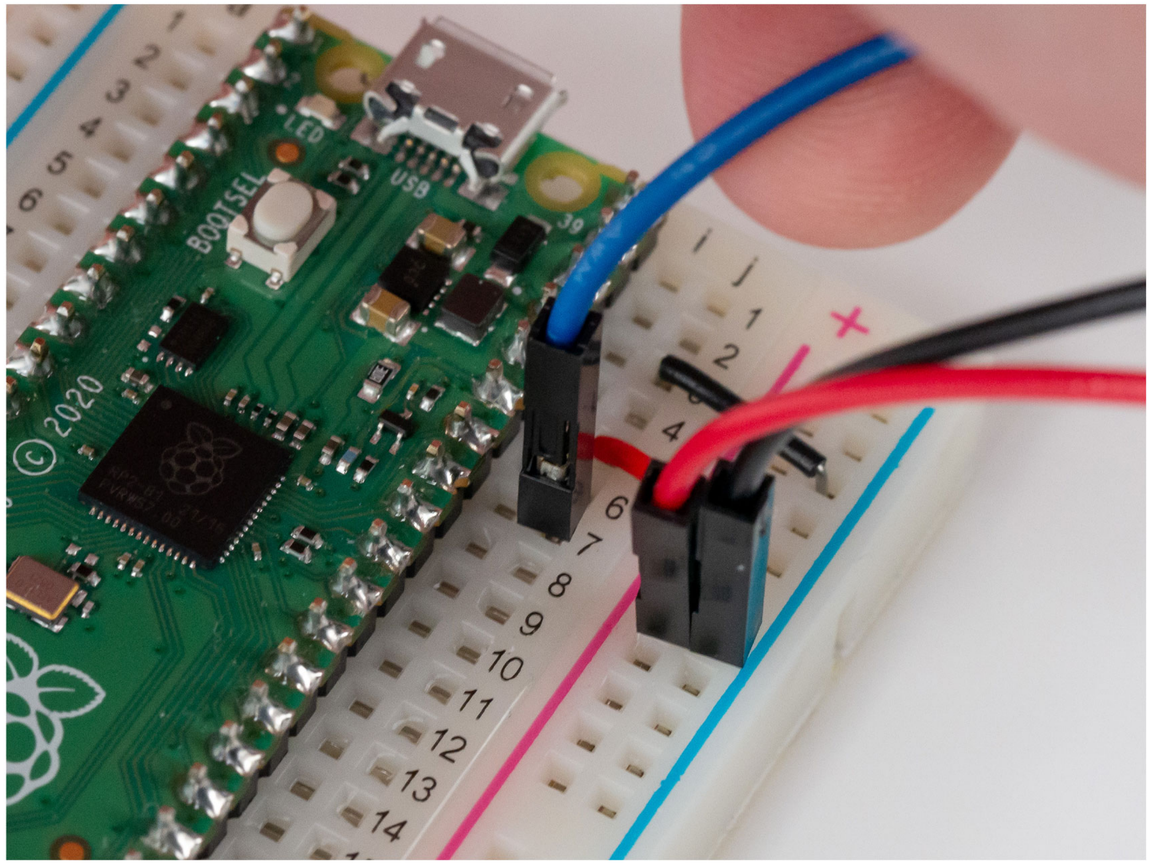


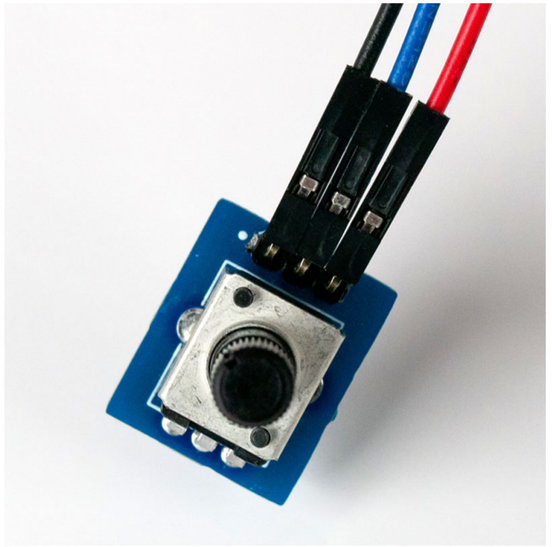
**On each potentiometer
pin 1 is marked with a small dot.**



**Connect three wires.
The colours don’t matter, but different colours make it easier to see what connects to where.**

10) First Potentiometer (Modulation Depth) continued



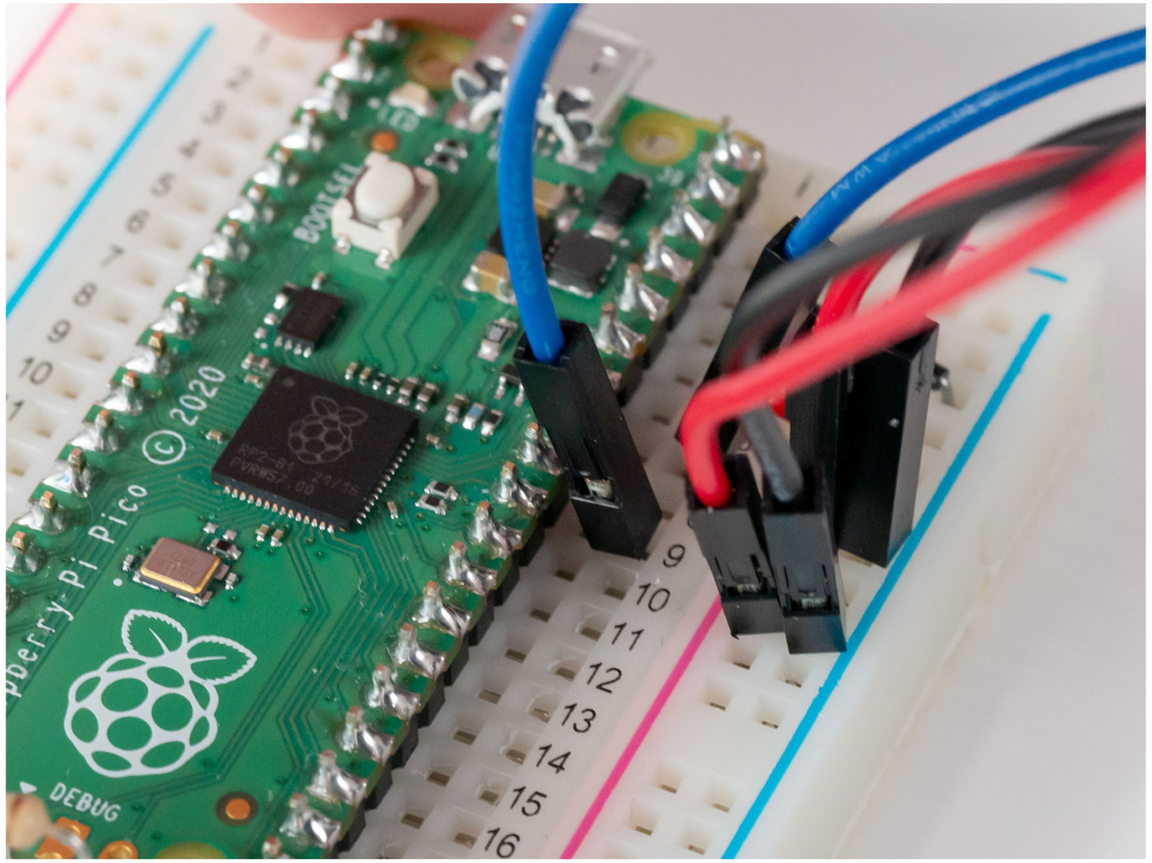


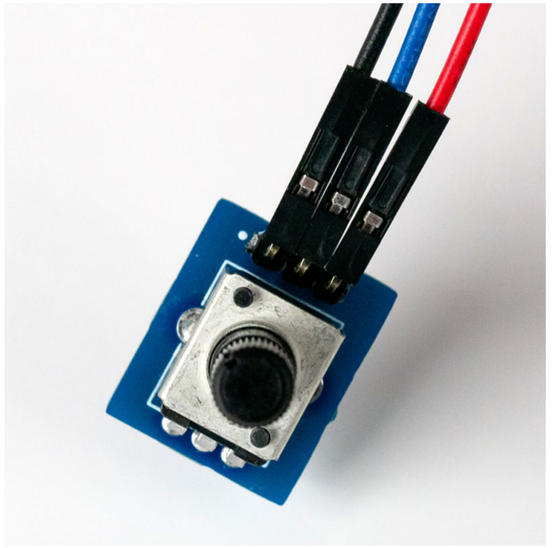
Pin 2 (middle pin) from the potentiometer goes to row 7, column “j” on the breadboard.

Pin 1 from the potentiometer goes to negative (-) rail on the side of the breadboard.

Pin 3 from the potentiometer goes to positive (+) rail on the side of the breadboard.

11) Second Potentiometer (Modulation Frequency)



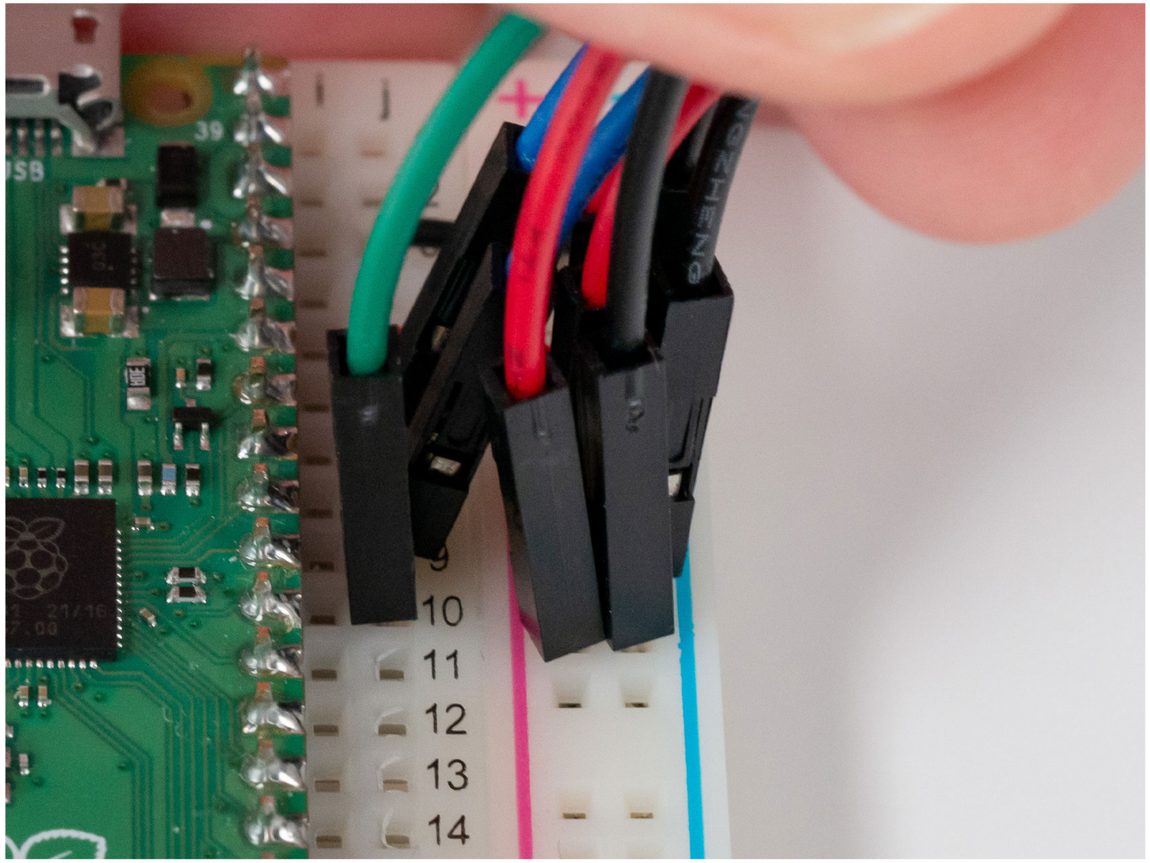


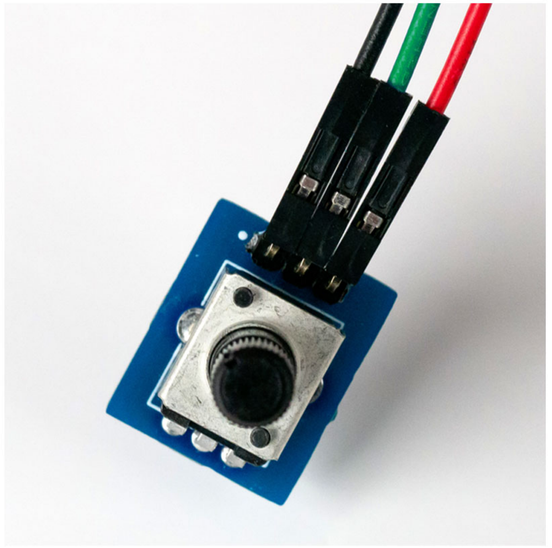
Pin 2 (middle pin) from the potentiometer goes to row 9, column “j” on the breadboard.

Pin 1 from the potentiometer goes to negative (-) rail on the side of the breadboard.

Pin 3 from the potentiometer goes to positive (+) rail on the side of the breadboard.

12) Third Potentiometer (Oscillator Frequency)



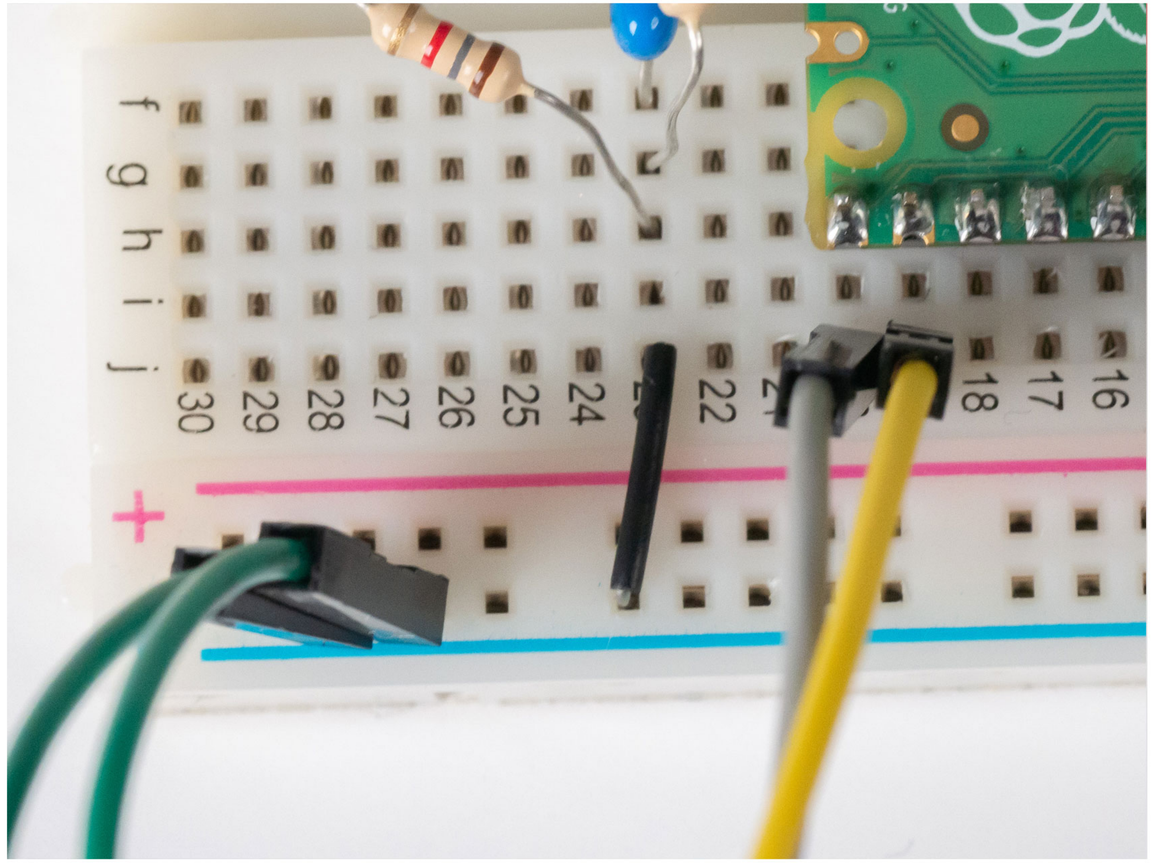


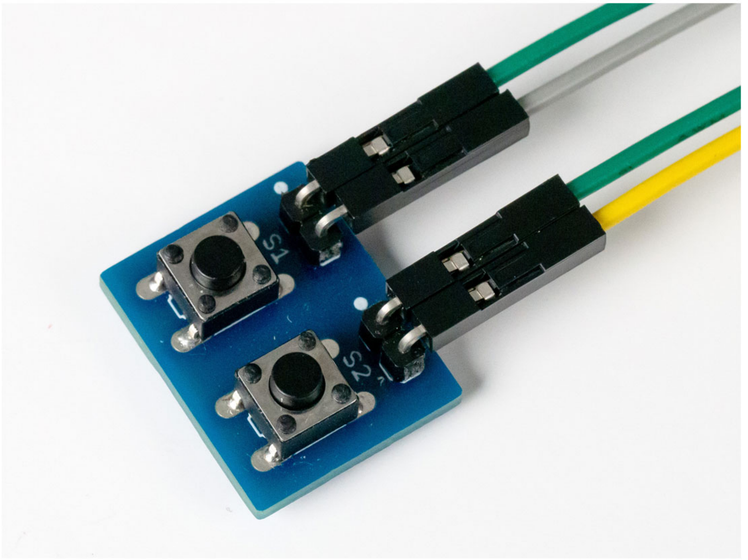
Pin 2 (middle pin) from the potentiometer goes to row 10, column “j” on the breadboard.

Pin 1 from the potentiometer goes to negative (-) rail on the side of the breadboard.

Pin 3 from the potentiometer goes to positive (+) rail on the side of the breadboard.

13) Switches PCB (S1 and S2)





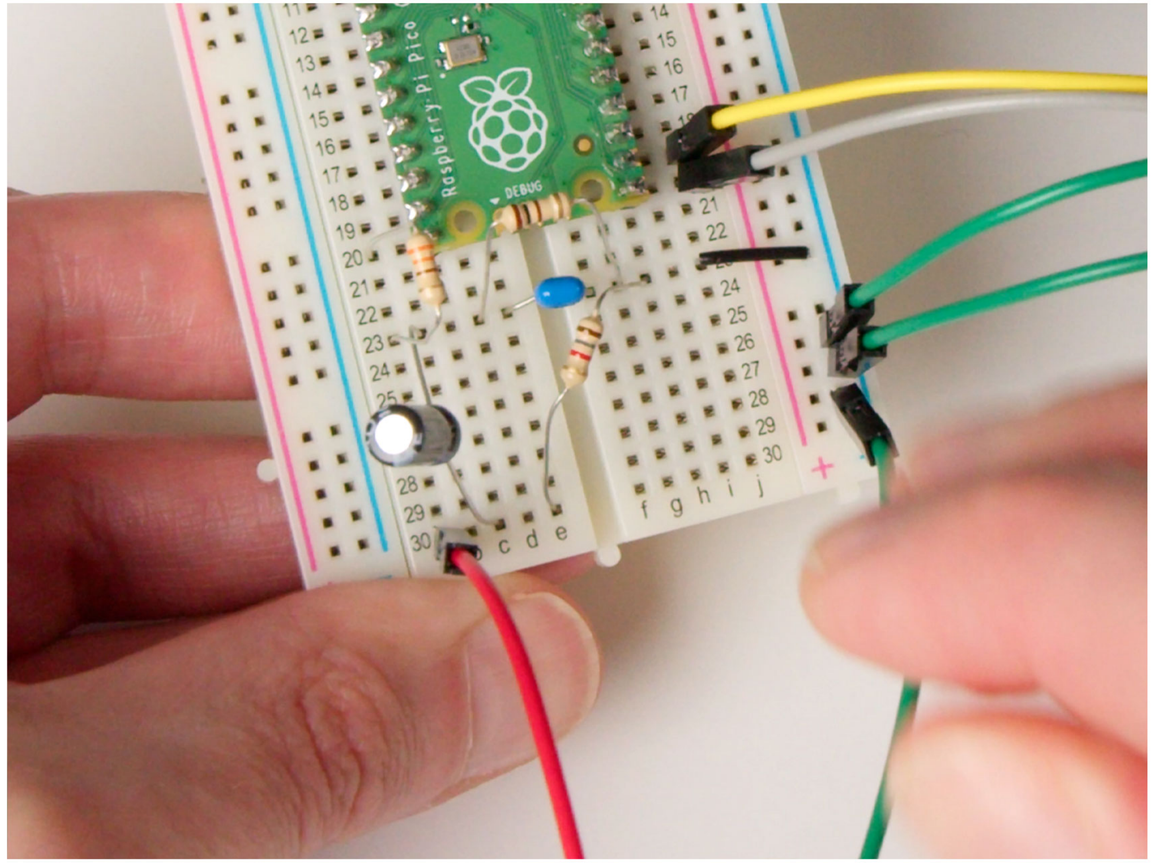
Switch 1 (S1) Pin 1 marked with a dot goes to the negative (-) rail on the right side of the breadboard.

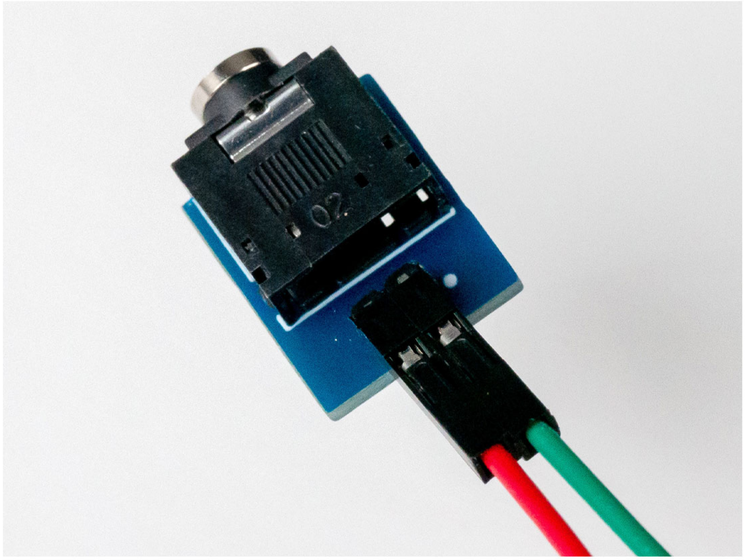
Switch 1 (S1) Pin 2 goes to row 20 column “j”.

Switch 2 (S2) Pin 1 marked with a dot goes to the negative (-) rail on the right side of the breadboard.

Switch 2 (S2) Pin 2 goes to row 19 column “j”.

14) Audio Socket PCB

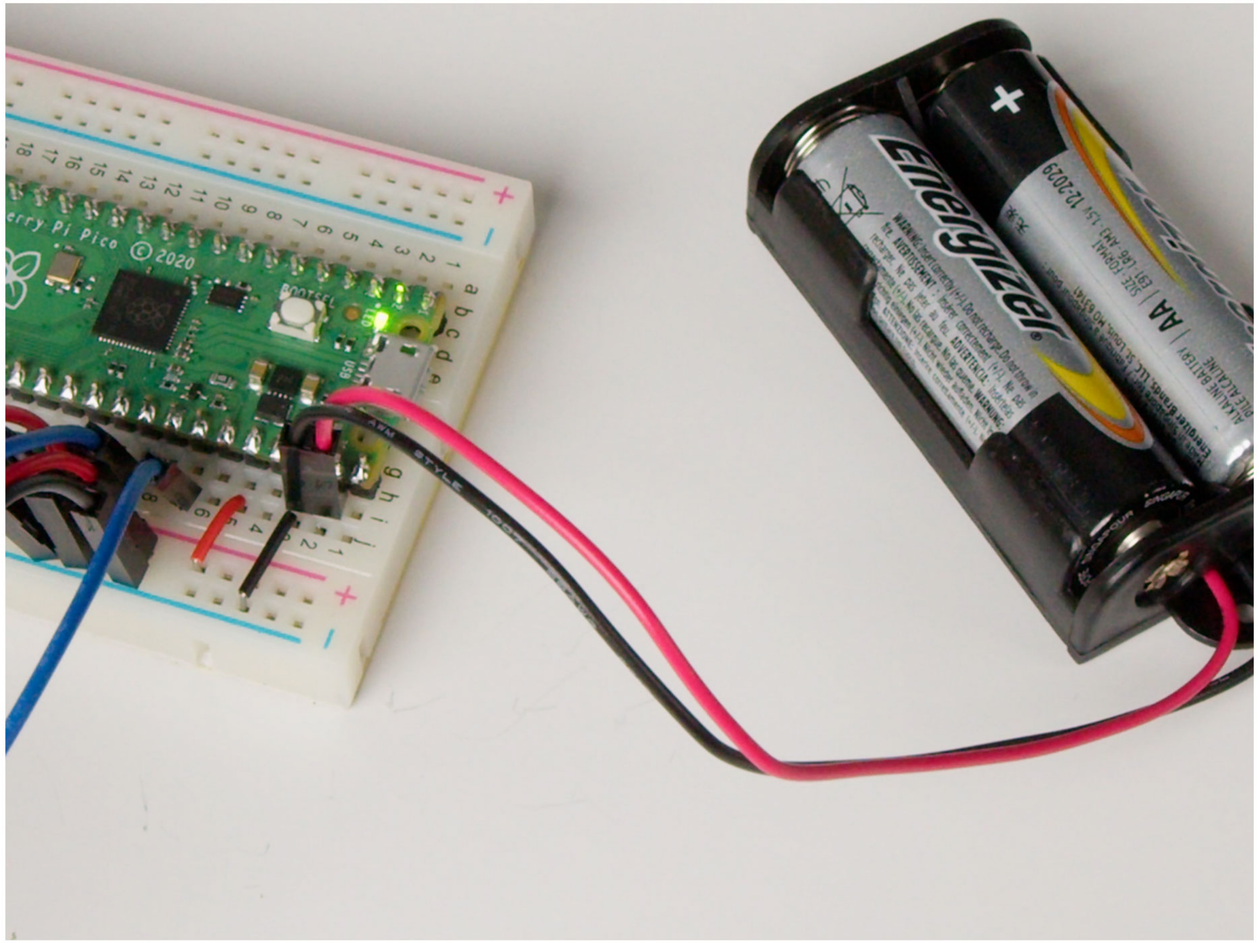


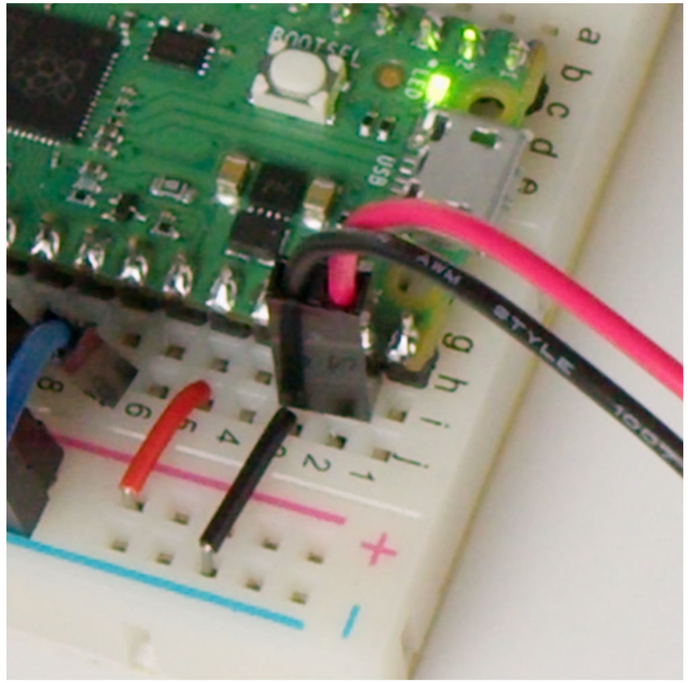


Pin 1 marked with a dot goes to
the negative (-) rail on the right side of the breadboard.

Pin 2 goes to
row 30 column “a” on the breadboard.

15) Connect the Battery





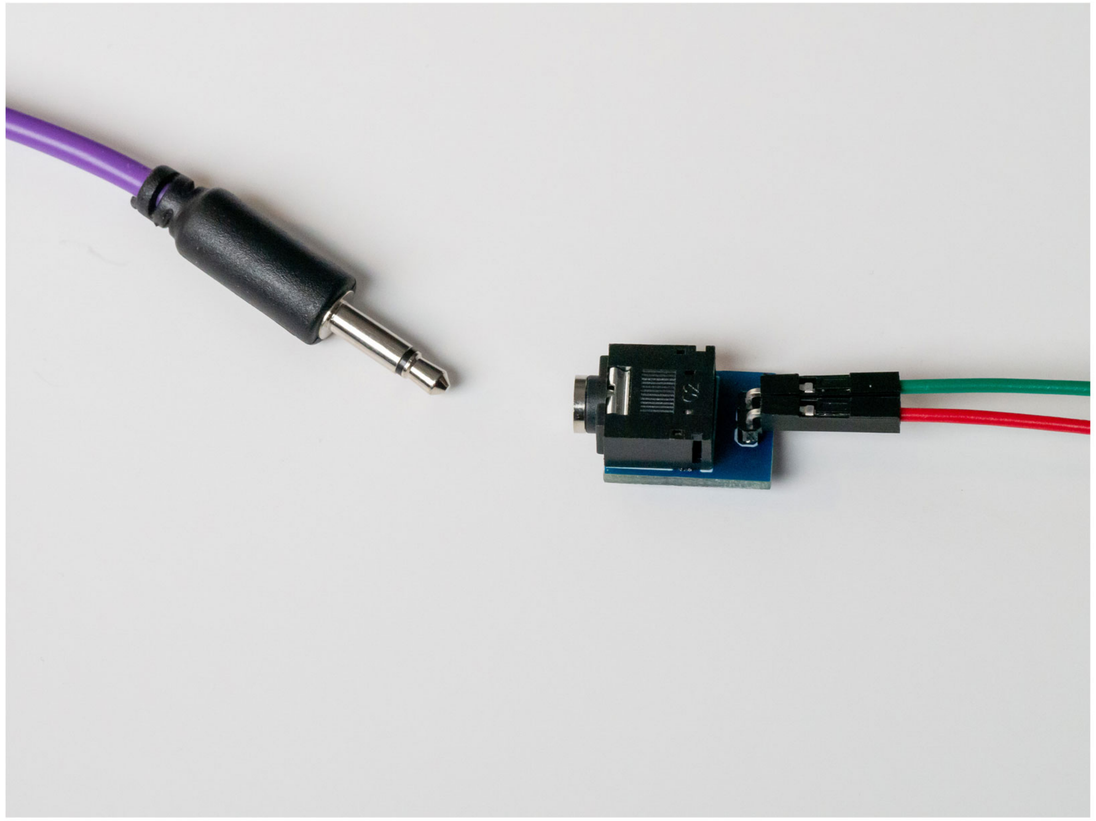
The red pin goes to row 2 column “i” on the breadboard.

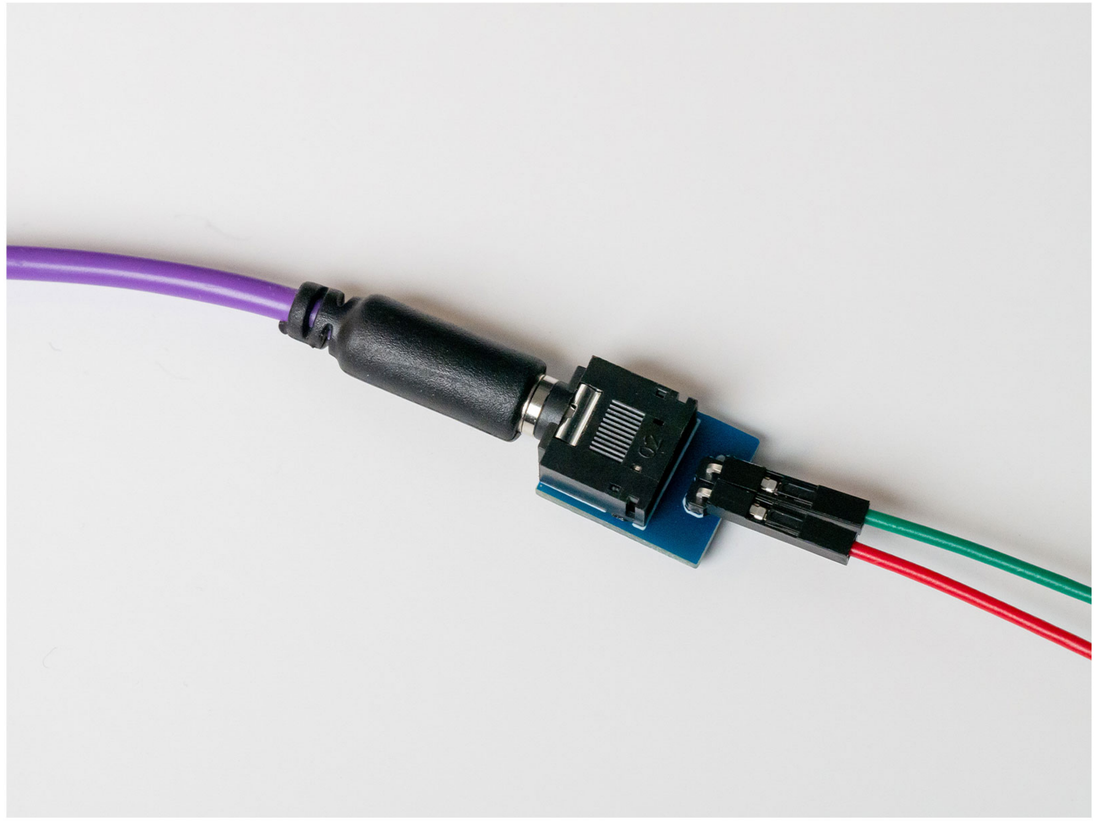
The black pin goes to row 3 column “i” on the breadboard.

The green light on the Raspberry Pi Pico should light up!

16) Connect to powered speaker

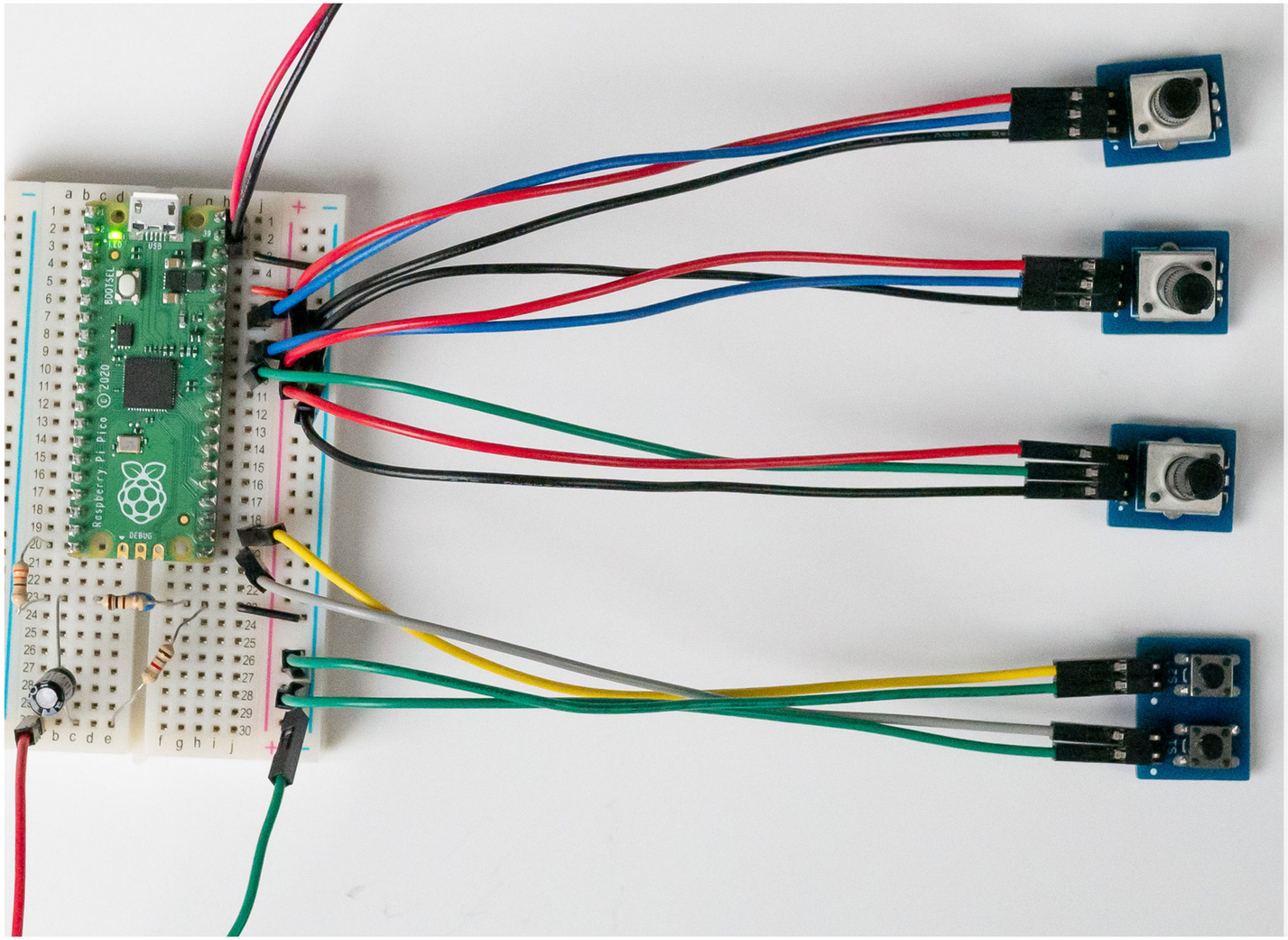
Connect to a powered speaker using a 3.5mm mono cable (not included).





You’re done. You should now hear sound!

17) Controls



MODULATION DEPTH

Depth of the oscillator “wobble”

MODULATION FREQUENCY

Speed of the oscillator “wobble”

OSCILLATOR FREQUENCY

The frequency or note of the oscillator

RANGE

1) 3 Octave
2) Full Range (Good for sound effects!)

WAVEFORM

1) Sine
2) Square
3) Sawtooth