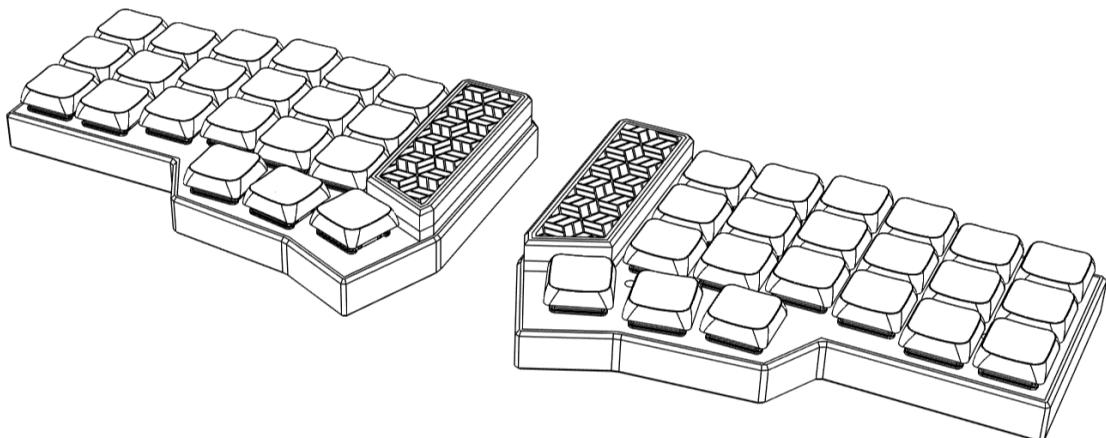


Baikal Split Keyboard Handwired Corne

Build instructions



- Handwired 42 key Split keyboard
- Wireless, ZMK and ZMK Studio Support
- Classical Corne layout
- Cheap and Easy to build

List of materials:

Assuming you have solder, solder iron, and some [wires](#)

Item	Link	Amount
Mechanical Cherry switches <i>OR</i> Kailh choc switches	Link Link	42
Pro micro NRF52840 controller (Nice!Nano v2 clone)	Link	2
Controller feet pins	Comes with controller	4
Diodes 1N4148	Link	42
M2, 6mm screw	Link	10
M2, 6mm stand offs	Link	6
M2(OD3.2mm) Length 3mm heat inserts	Link	4
Kapton tape	Link	1
Copper wire	Link	1
801350 3.7V Li-Po Batteries	Link	2

Build instructions

Step 1: Prepare everything

Get all the materials, print all the parts

Step 2: Insert heat inserts into the MCU cover

- 2 in each MCU cover part



Step 3: Insert the controller pins into the slot on the plate and wire the controller

Short pins face upward; long pins go into the plate cavity.

When the pins are in the plate, I added a few drops of superglue to secure it.

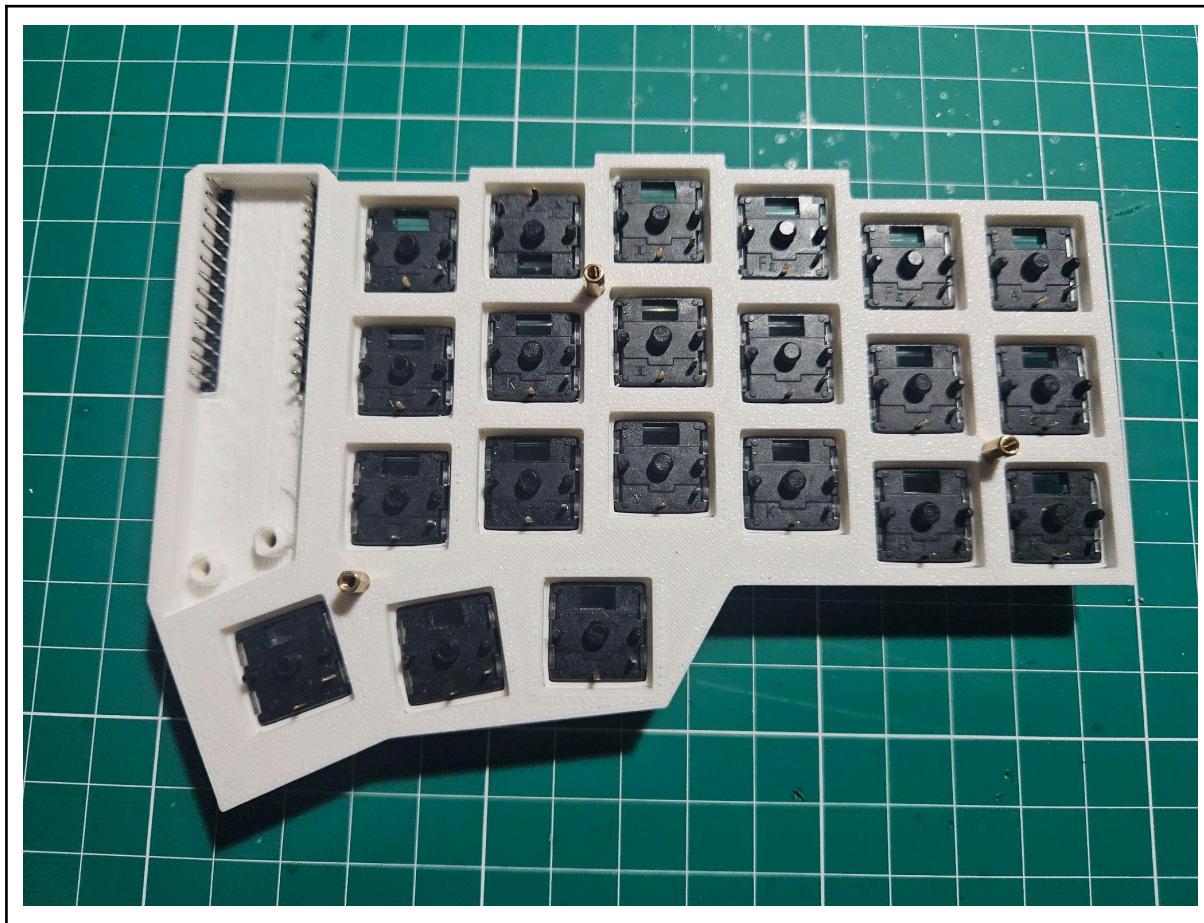
Then solder the controller so it sits on top of the pins, usb-c facing top of the keyboard



Step 4: Put switches in the plate and screw on standoffs

To make wiring easier later, orient all switches the same way.

We are screwing standoffs now, so we can account for them when wiring and know how much space we have (Top of the standoff is where case will be)



Step 5: Wiring

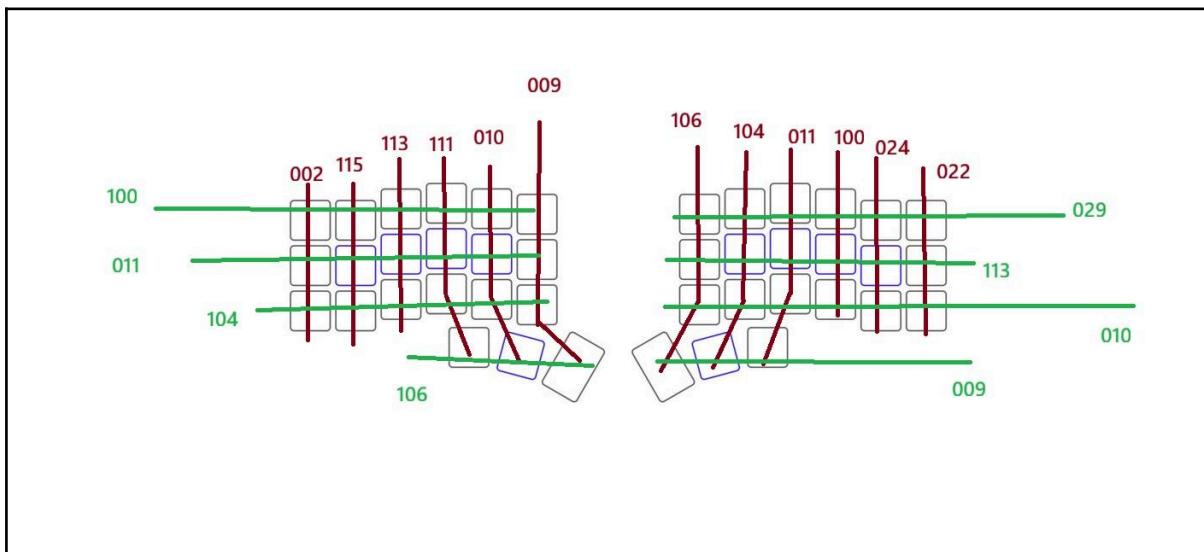
Wire rows and columns according to this diagram

This is the top view (typing orientation). Keep that in mind when wiring rows/columns from the backside.

You must wire each row and column to these pins (and do same rows and columns as in instruction) if you want to use ready made firmware

Otherwise, feel free to take the source code from firmware and edit the pins

For the wiring, i recommend [this video](#) to get more familiar with how this is done

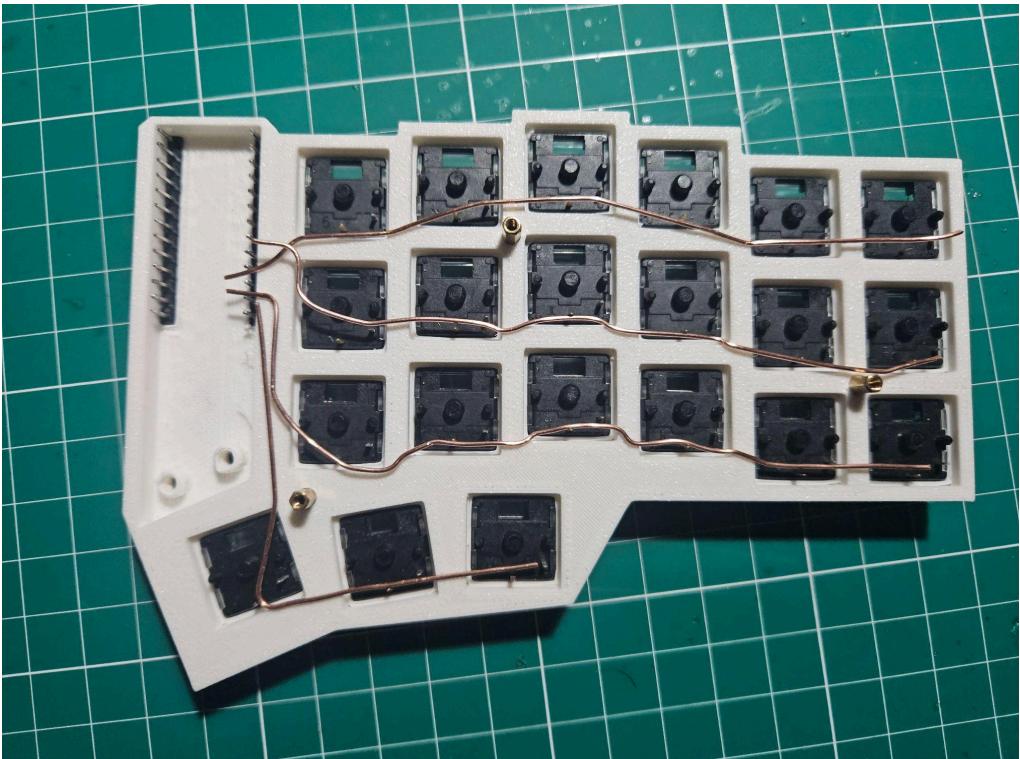


How to wire?

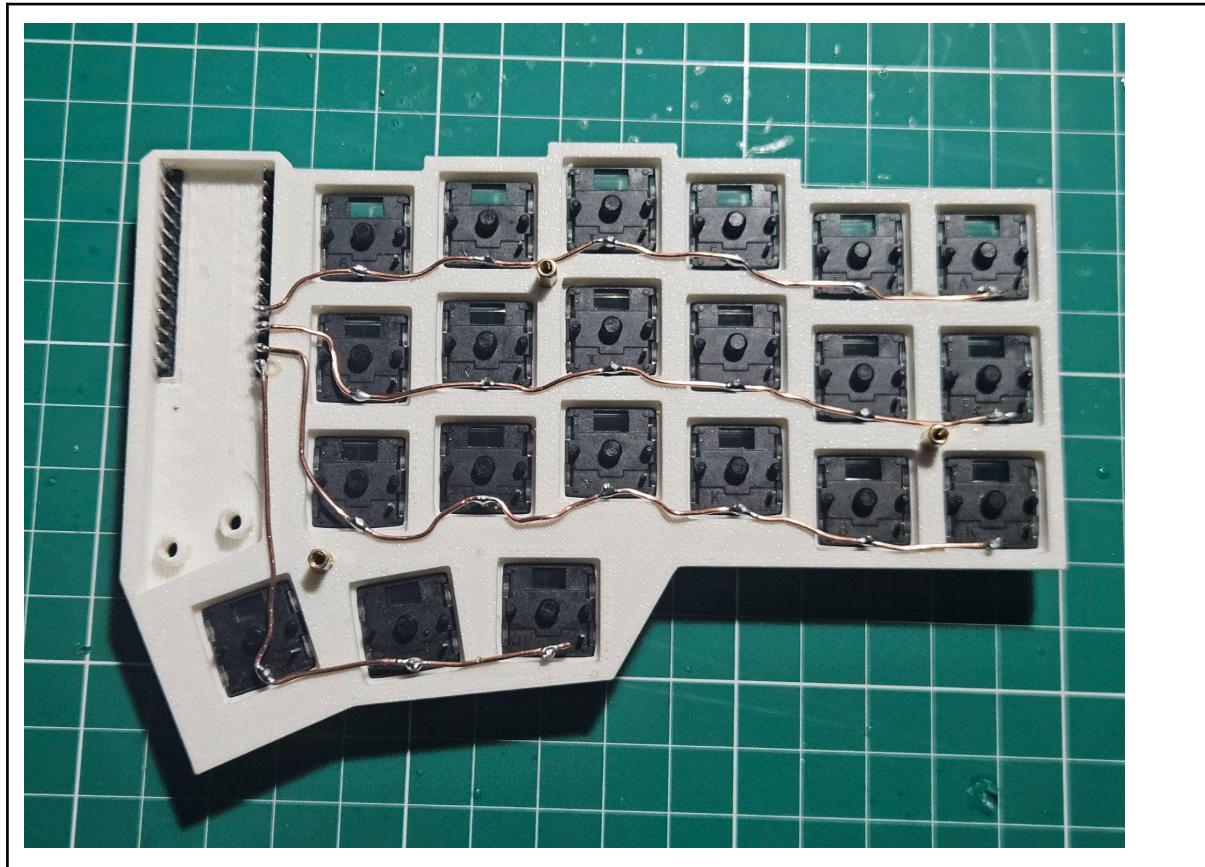
Step 1: Prep the wire

1. Use straightened copper wire and cut the wire to the size of the rows.

Here i also bent it a little to fit the contacts



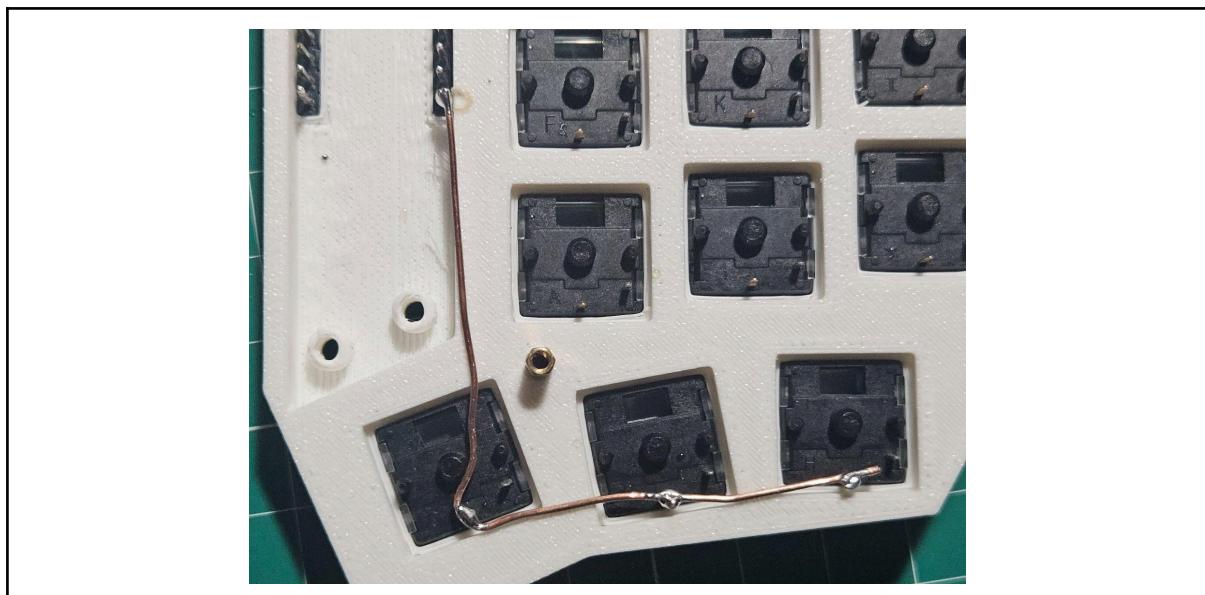
Step 2. Wire the rows



While wiring, make sure rows don't touch each other While wiring, keep in mind second contact of the switch (where we will wire columns), make sure your row wire is not too close to the contact

Here I immediately wired rows to Controller, so there is less wires in the final build

Here is close up picture of thumb cluster row



Step 3. Prep the diodes

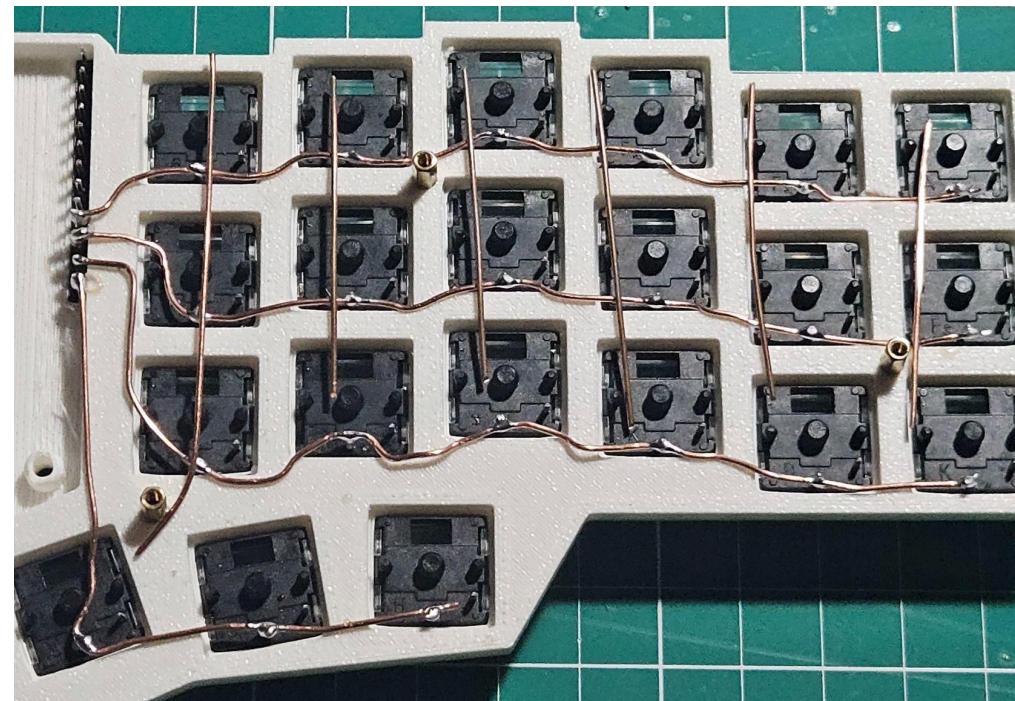
Cut the leg **OPPOSITE** the black band. Current flows toward the band

Optional, but recommended: Coil the short end of the diode. I did it using small round nose pliers. Its done so the switch contact and diode have mechanical connection, for better solder joints



Step 4. Prep the Columns wire

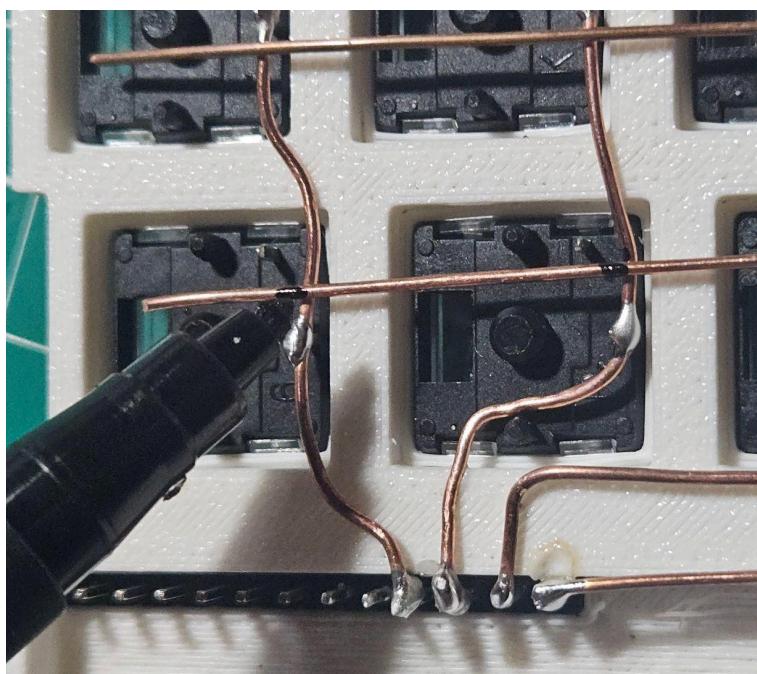
Using straightened copper wire, cut the pieces to the size of the columns



Note: for the second and third column from the left i cut the wire too short, just keep that in mind (it should also cross third row, which it doesn't)

Step 4.1

Then, using a sharpie, mark where each column wire crosses a row wire.



Step 4.2

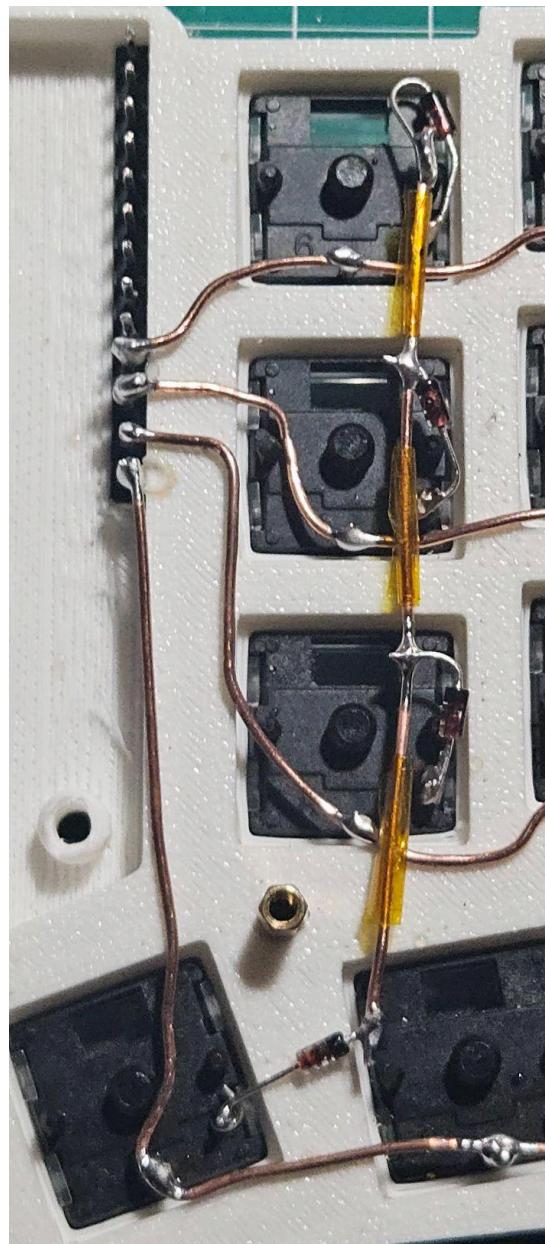
Using Kapton Tape, insulate parts of column wire where the markings are. Make sure the insulation covers every row/column intersection but leaves enough exposed wire for soldering diodes.



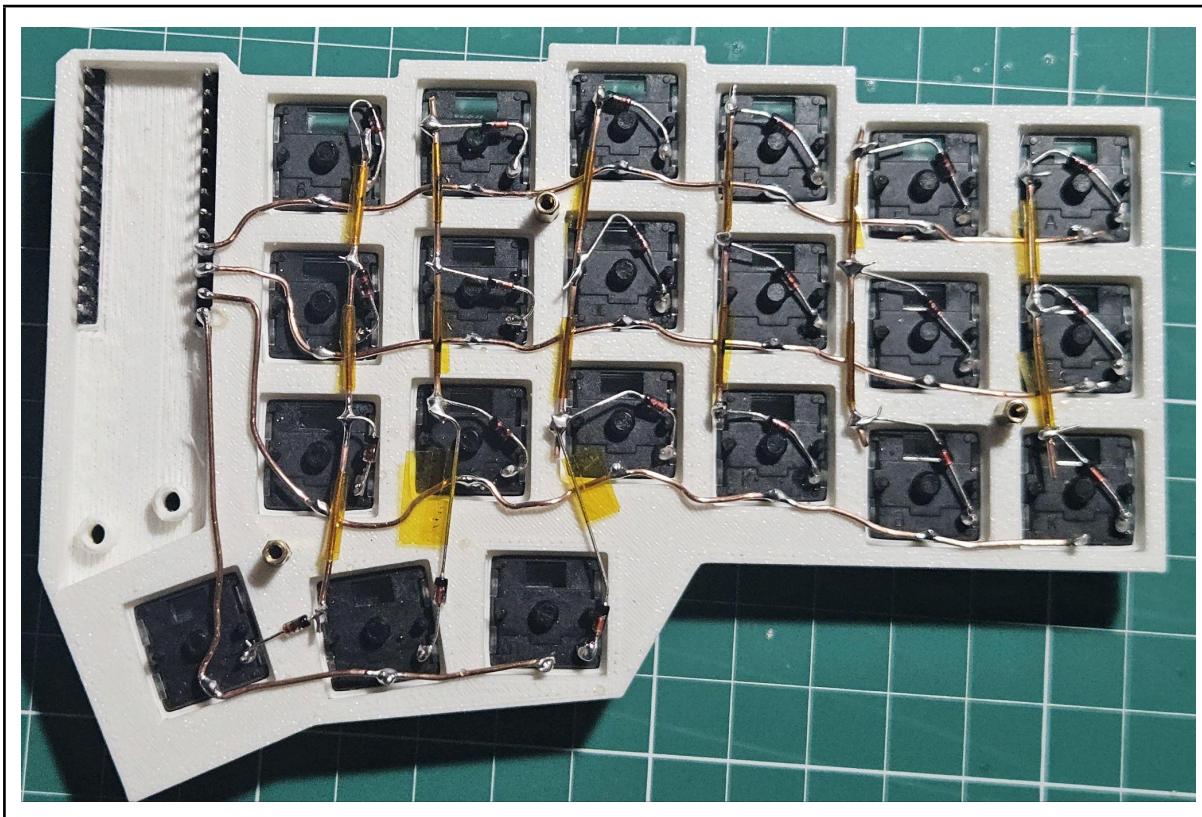
Step 5. Soldering diodes and columns

I found the most comfortable way is to do it one by one. Here is general process:

1. Place coiled short end of the diode to the switch and solder it
2. Place the insulated column wire on top of longer leg of the diode
3. Bend the long diode leg so it holds the column wire
4. Solder longer leg to the column wire and cut the excess of the diode



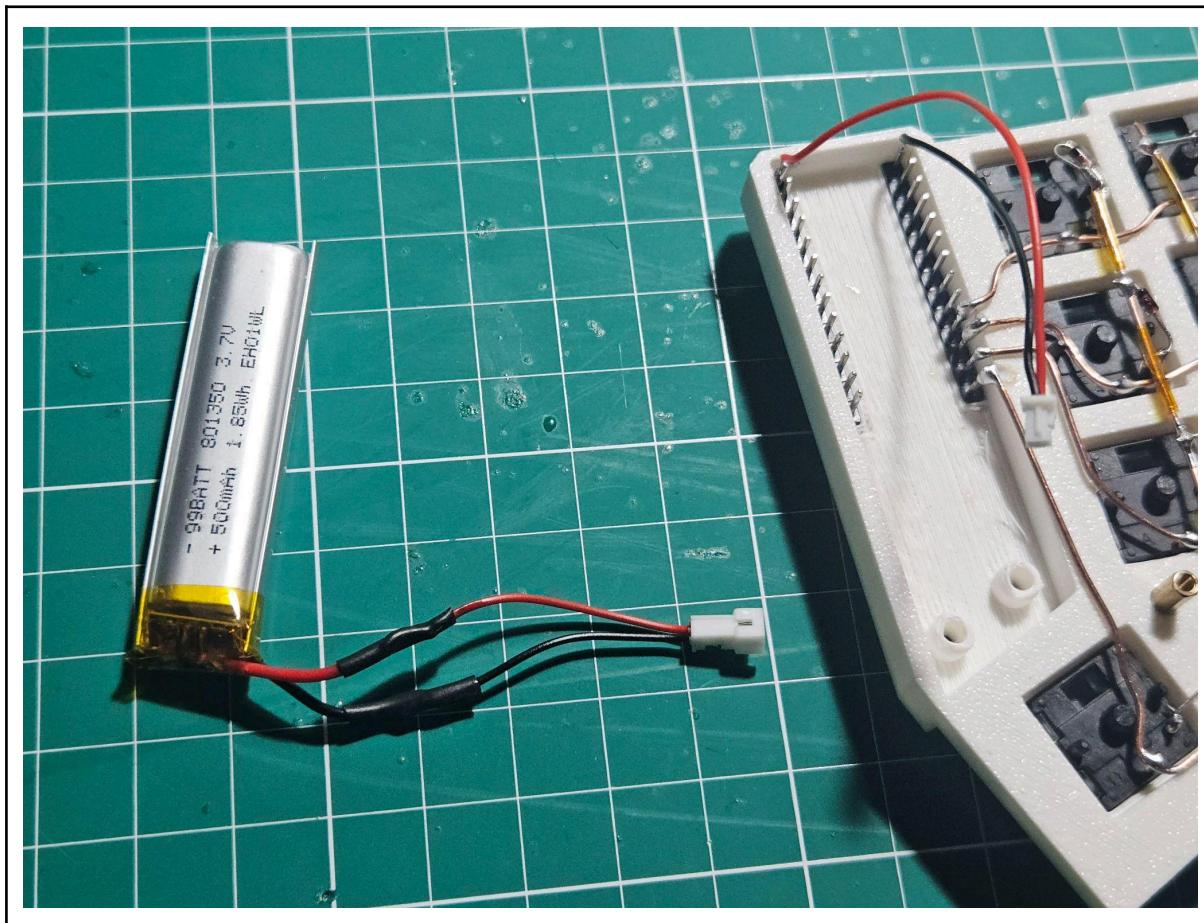
Here how final matrix with all rows and columns looks like



**On the left side I cut the second and third column from the left too short, so I just insulated the longer leg of the diode on the two thumb cluster keys. When you do it, just make sure the column wire is long enough*

Step 6. Soldering the battery

Pretty straightforward: wire positive battery wire (usually red) to the positive pad on the controller (B+) and negative battery wire (usually black) to the negative pad on the controller (B-)



In the image i added simple jst connector so i can easily swap or disconnect the battery but this step is optional and you can just wire it directly

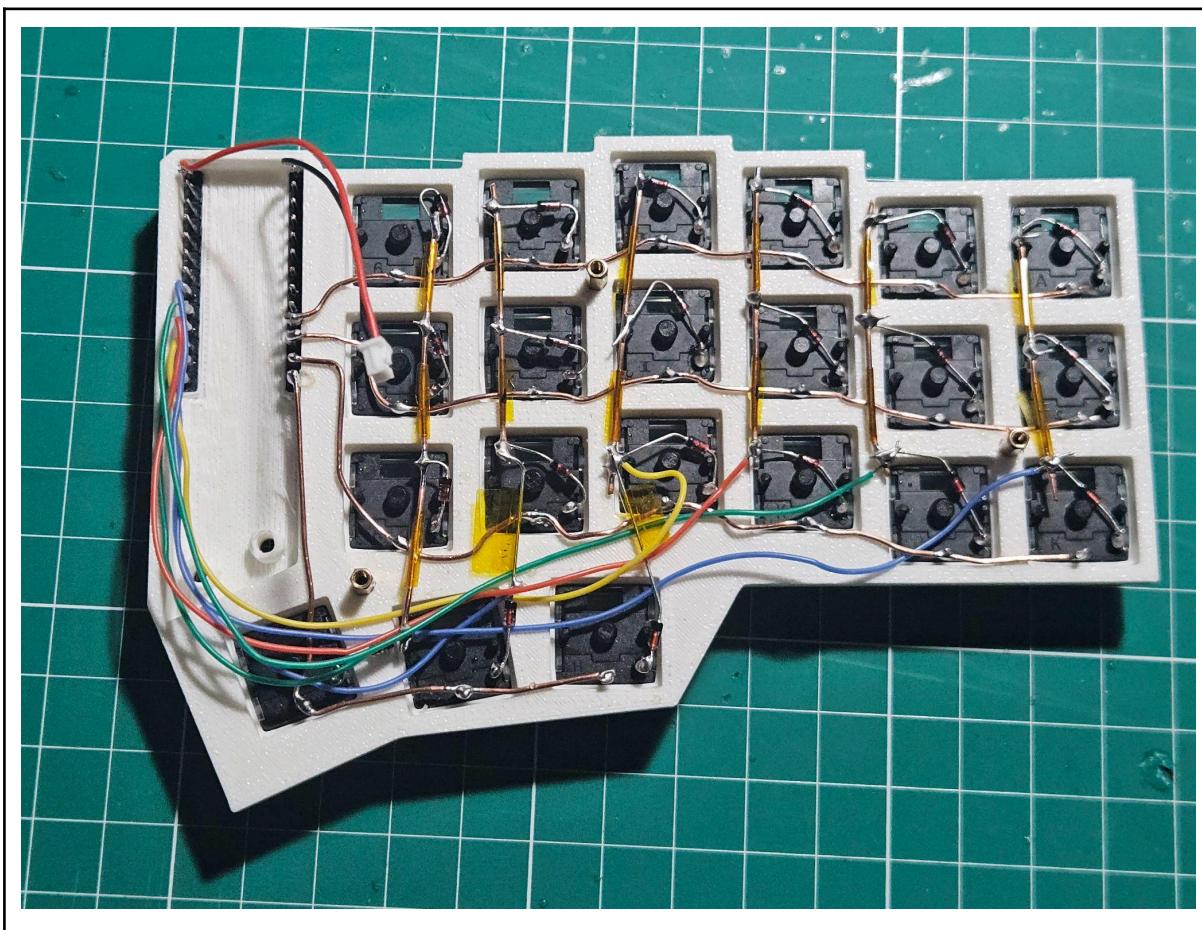
Step 7. Wiring matrix to the controller

Wire each row (if not already) and column according to the [pinout](#)

Here i used smaller gauge wire so it doesn't overcrowd the case

Important: Look how i path the wires, making sure i have enough place to put the battery

You don't need to connect the wire to the end of column/row copper wire, you can also do it in the middle or anywhere (just make sure its above black marking of a diode)



Step 6: Flashing firmware

If you wired pins according to the diagram, you can flash ready made firmware

1. Short pins RESET and GND two times in a row (emulating double press) while the controller is connected to the PC via USB cable
On the pc controller will appear as a Removable drive (like D:/NICE NANO)
2. Drag the files into the drive, it will reset and will be ready to use.

Flash the left firmware to the left half and the right firmware to the right.

In the firmware you also have “Settings reset” firmware. If you used controller for something else before, flash this before flashing actual software. If its brand new controller, feel free to ignore it

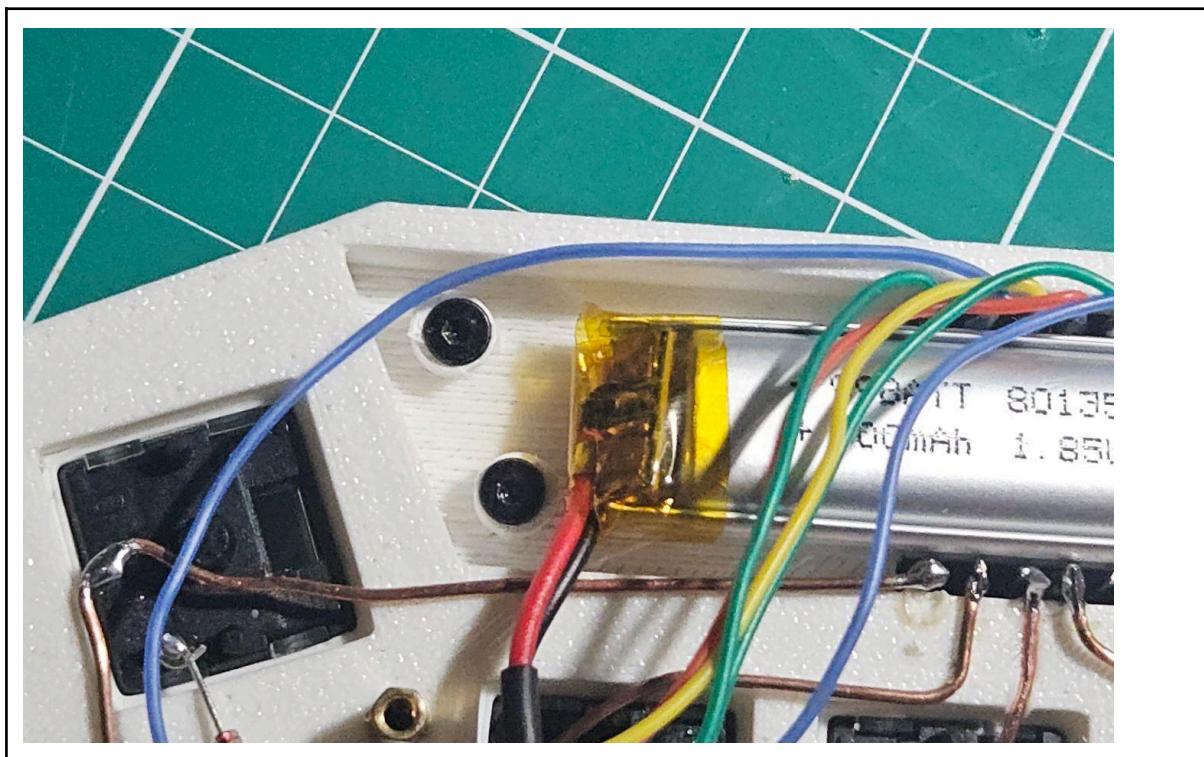
To use keyboard in wired mode, just connect left side to the computer

To connect via bluetooth just search for “Baikal” in bluetooth devices and connect

Note that right side wont work by itself, if the left side is not connected

Step 7: Assembling the case

1. Screw the MCU cover to the plate, using two screw holes near the battery



2. Screw on the case and add keycaps if not already

