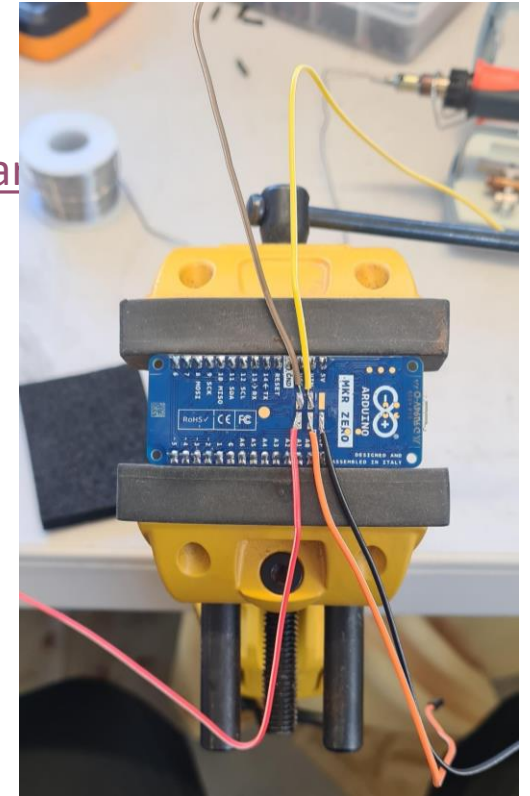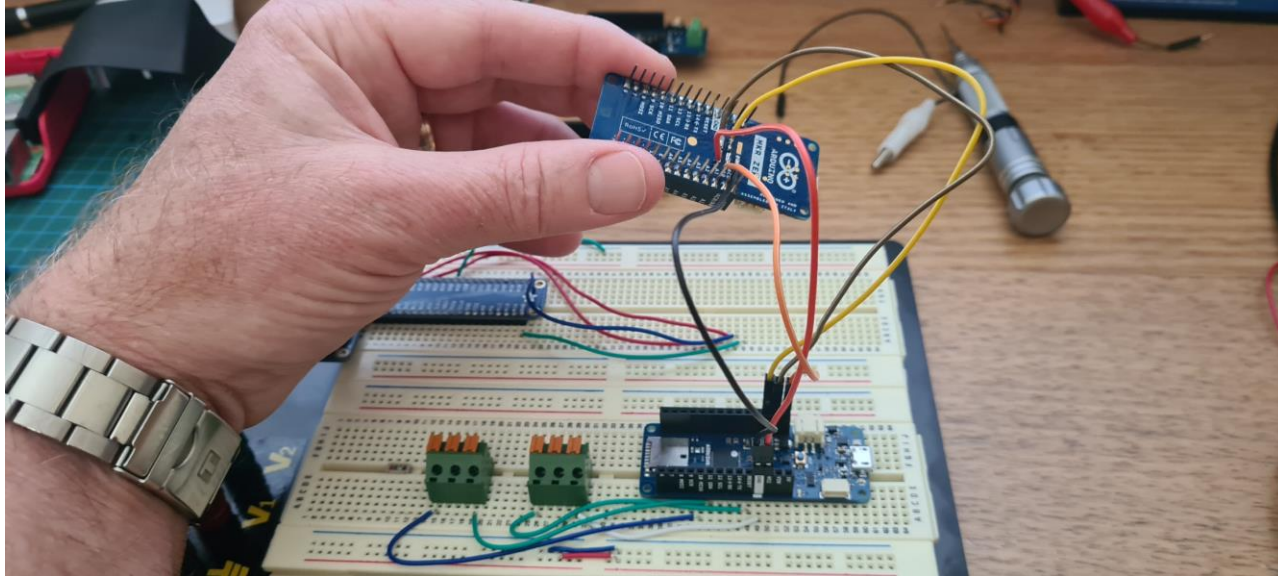# Bricking Background

- So far, I have bricked 3 x Arduino MKR Zero board. (I have just ordered another 2 x boards from core electronics so that I can continue working)

- 2 have been successfully recovered (using the procedure outlined below)

- 1 (the most recent) cannot be recovered

- I sometimes reprogram the MKR Zeros a dozen times per day or more if I'm refining code and debugging. Usually no issues. But very occasionally (3 times in the past month) I get a bricked MKR Zero.

- Reprogramming is done via micro USB connection to laptop computer where I'm running version 2.2.1 of the Arduino IDE

- Bricked means – I plug in micro USB plug from computer to MKR Zero. Green power light is on, but no "device found" audible signal on laptop. Arduino code doesn't run. Can't connect to Arduino and monitor serial port or reprogram it (computer doesn't recognise the device at all). Can't single or double press the result button = no result.

- Assumption is that the bootloader is corrupted

- What I'm aiming to do
  - Have a quick and reliable method for recovering the bricked MKR Zero
  - Understand the root cause of the bricking so that I can eliminate or mitigate it in the future.

Recovery Procedure

- To recover 2 of the 3 bricked MKR Zeros I followed the procedure outlined here (kindof...)

- https://forum.arduino.cc/t/updated-guide-to-easely-rebuild-the-bootloader-for-mkr-boar mkr-without-sd-card/890248

Recovery Procedure (cont.)

- Note however, that the flashing code didn't execute properly (see image RHS)

- However, with the Programmer board connected to the bricked board (like previous photo) and with a 5V power-only USB connected to the microUSB of the bricked board, I hit the Reset button twice. This worked! The board rebooted and I was able to connect to it via computer, upload a new sketch and the MKR Zero was recovered.

- The above procedure worked on 2 x separate bricked MKR Zero's (probably just through pure chance???)

- But it did not work the third time, so I now have 1 x bricked unit still.

```
GND pins should be connected between programmer and target boards
See https://gojimmypi.blogspot.com/2018/12/swd-debugging-arduino-mkr-wifi-1010.html

Connecting...
Adafruit Generic CMSIS-DAP Adapter 123456 v0.1 (S)
Enter Reset with Extension mode...
Target prepare...
invalid response writing to reg 0 (count = 0, value = 7)

This sketch is for updating Arduino MKR and some other ATSAMD21G18, 32-Bit ARM Cortex M0+ boards

The Arduino board should have these connections:
SWD pad SWDCLCK connected to programmer board pin 2
SWD pad SWDIO connected to programmer board pin 1
SWD pad SWDRESET or RESET header pin connected to programmer board pin 0
Vcc (3.3V) pins should be connected between programmer and target boards
GND pins should be connected between programmer and target boards
See https://gojimmypi.blogspot.com/2018/12/swd-debugging-arduino-mkr-wifi-1010.html

Connecting...
Adafruit Generic CMSIS-DAP Adapter 123456 v0.1 (S)
Enter Reset with Extension mode...
Target prepare...
invalid response writing to reg 0 (count = 0, value = 7)
```
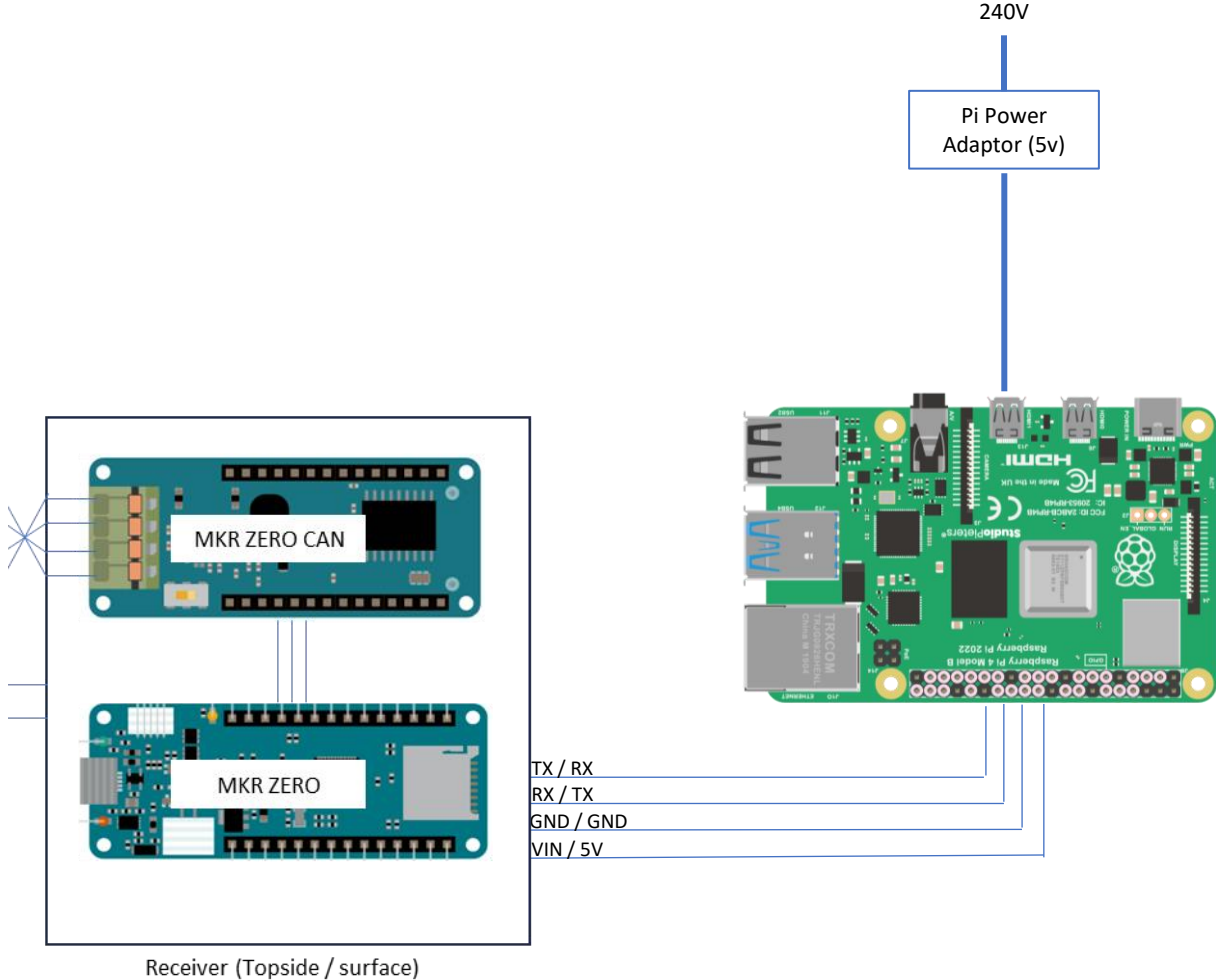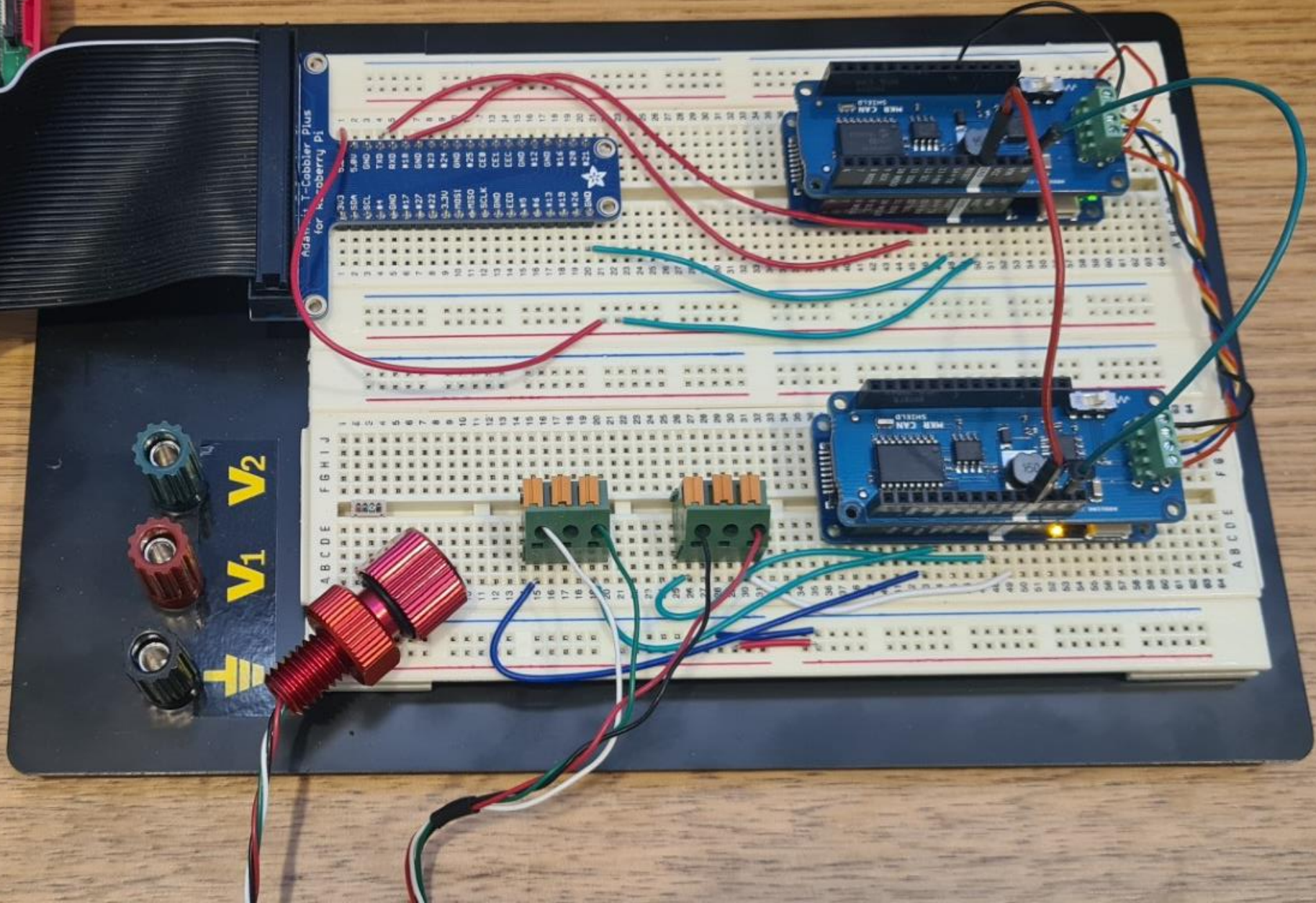
Additional Information (Appendix)

Receiver circuit

Tx and RX assemblies powered by 5V from Raspberry Pi

240V

Pi Power
Adaptor (5v)

MKR ZERO CAN

MKR ZERO

TX / RX
RX / TX
GND / GND
VIN / 5V

Receiver (Topside / surface)

Pi Power Configuration

- Works indefinitely – Very Reliable