ZX2020

ZX81 Composite Video Mod

NOW with ZX-WESPI support

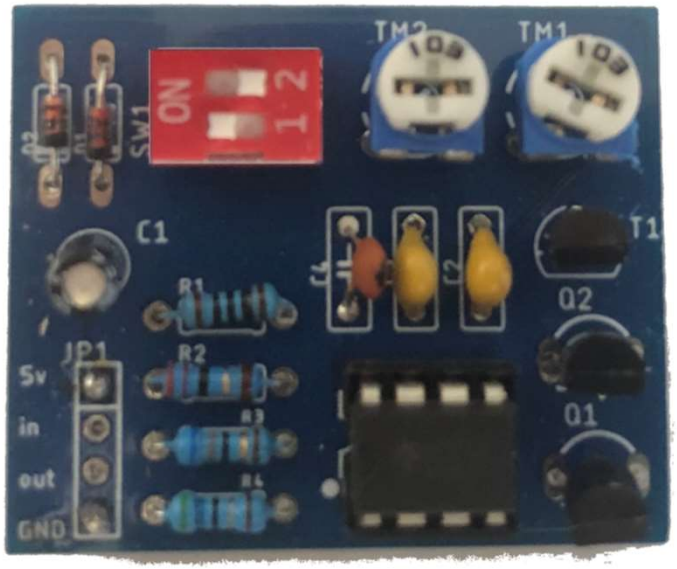
ZX2020

The ZX2020 is a composite video mod for the Sinclair ZX81 computer. The idea is to bypass the existing RF module and change the RCA port on the RF module into a composite video out so the ZX81 can be used on more modern TVs that have either a SCART socket or a Composite Video socket. Usually denoted with a Yellow RCA socket.

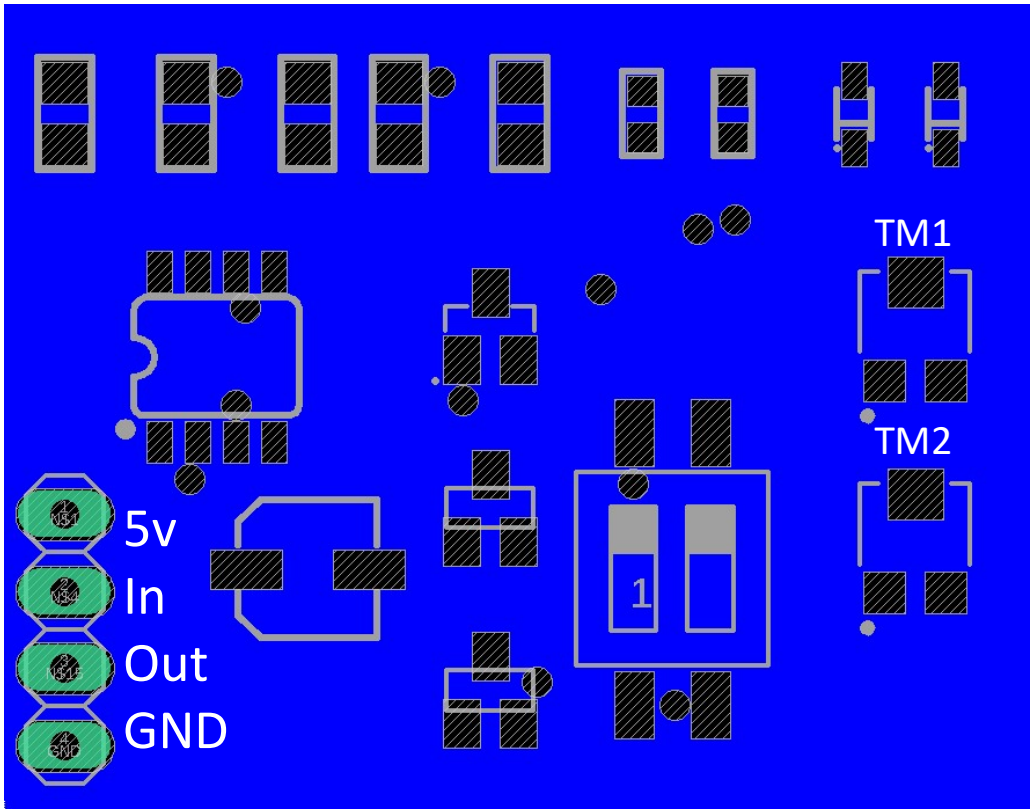
WARNING: TO INSTALL THIS MOD YOU HAVE TO SOLDER AND DESOLDER COMPONENTS ON YOUR ZX81 AND IF NOT HANDLED WITH DUE CARE YOU COULD DAMAGE YOUR COMPUTER. ONLY INSTALL THIS MOD IF YOU ARE PROFICIENT AT DOING SUCH MODIFICATIONS. WE WILL NOT BE HELD LIABLE FOR ANY DAMAGES OCCURS WHILE THIS MODULE IS INSTALLED.

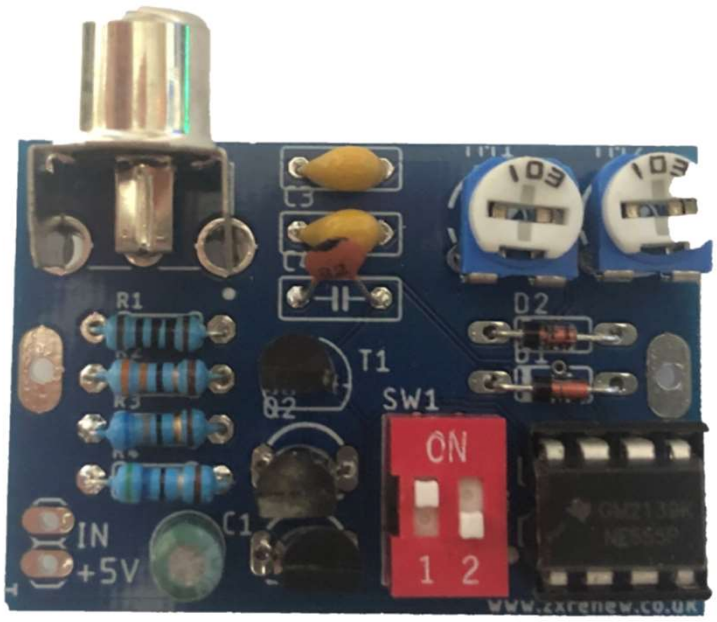
Add-on Module

Kit



SMD Version

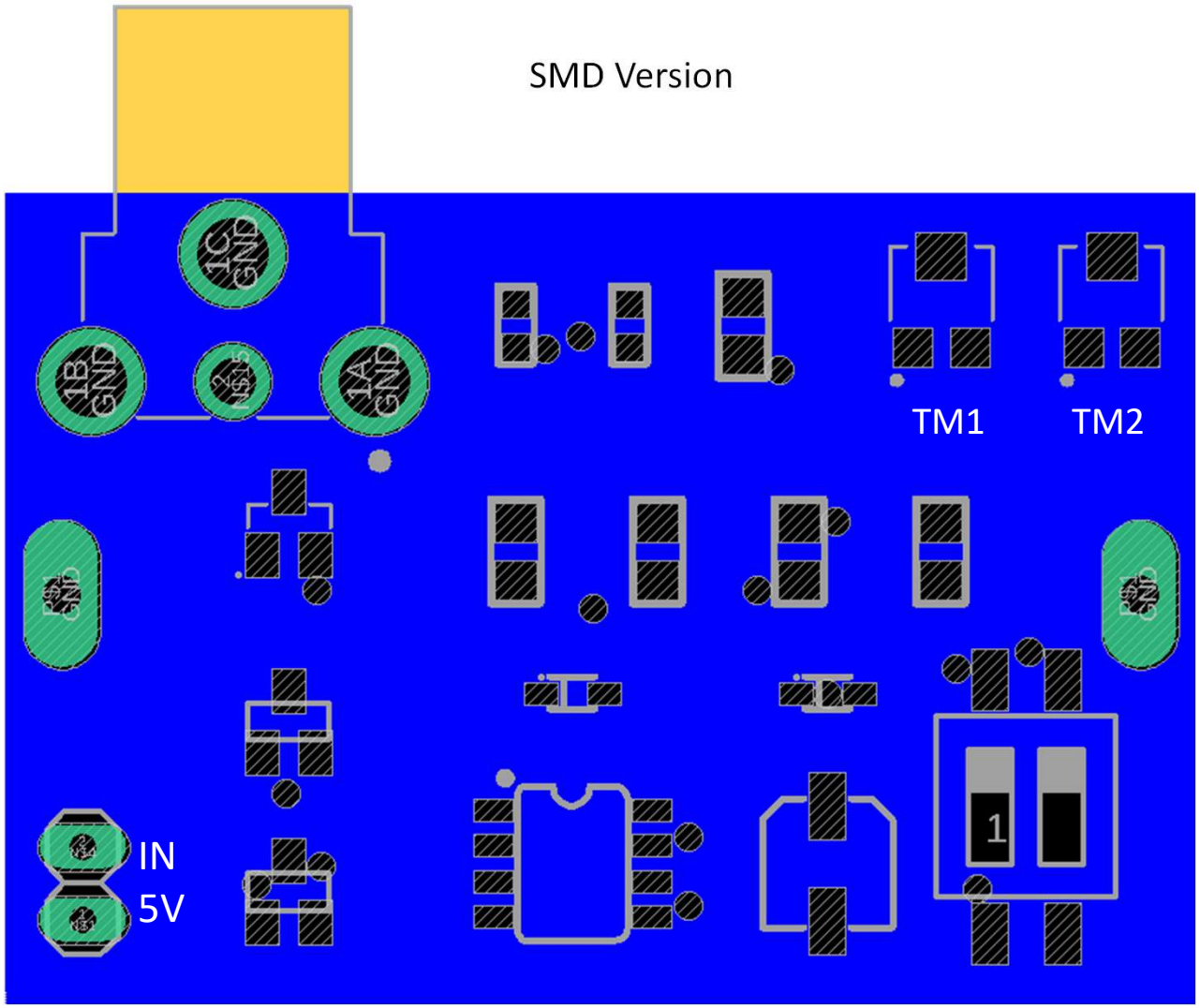




RF Box Replacement

Kit

SMD Version



Installation

Option1: Add-on module

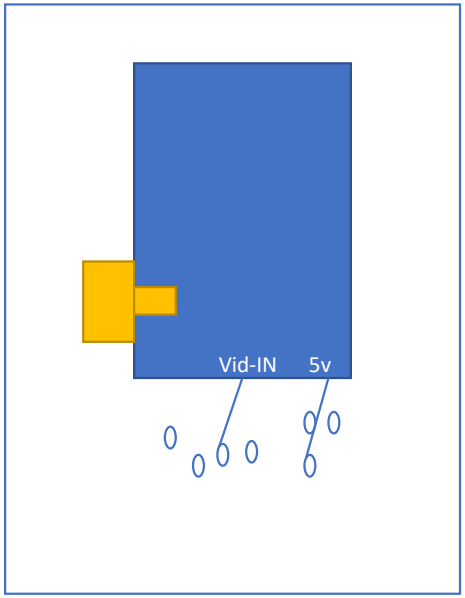
RF box stays in place

Installing the mod

- Step 1. Carefully remove the lid of the RF module and detach(or desolder) the resistor that is connected to the inner pin of the RCA socket.

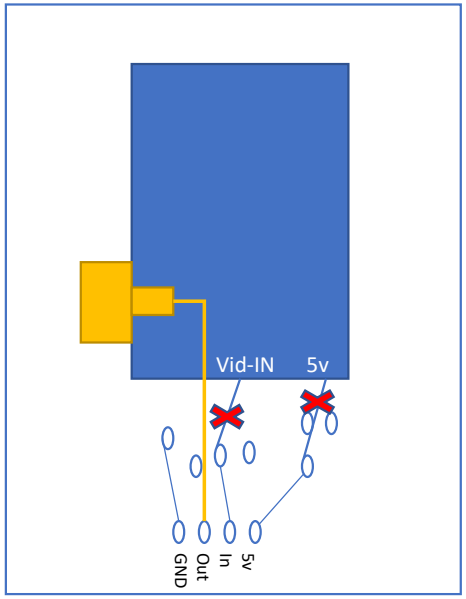
Installing the mod

- Step 2. The existing RF module has 2 wires going into it and takes a ground(GND) from the bottom of the board. The 2 wires are video-in which enters around the middle of the RF box and 5v which enters the RF box in the right bottom corner. These need to be detached from the RF box, but remember where they came from because we need them to feed the new mod.

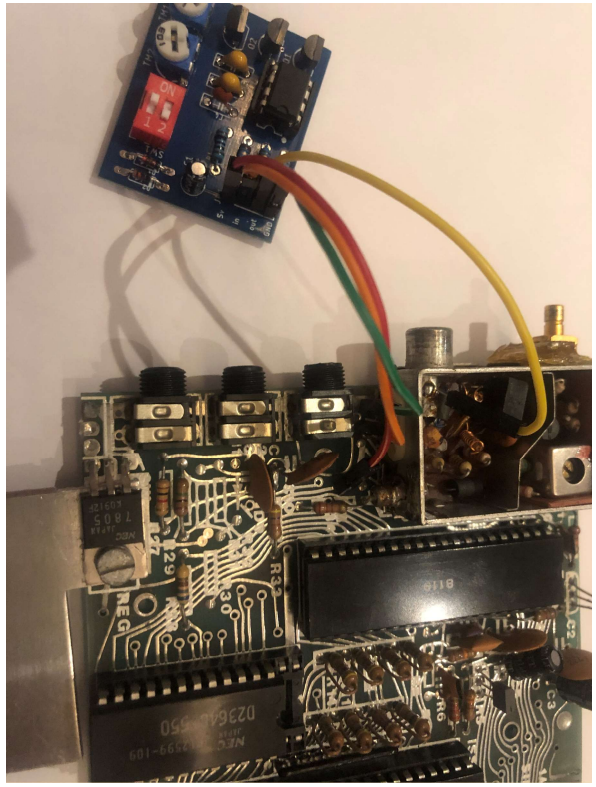


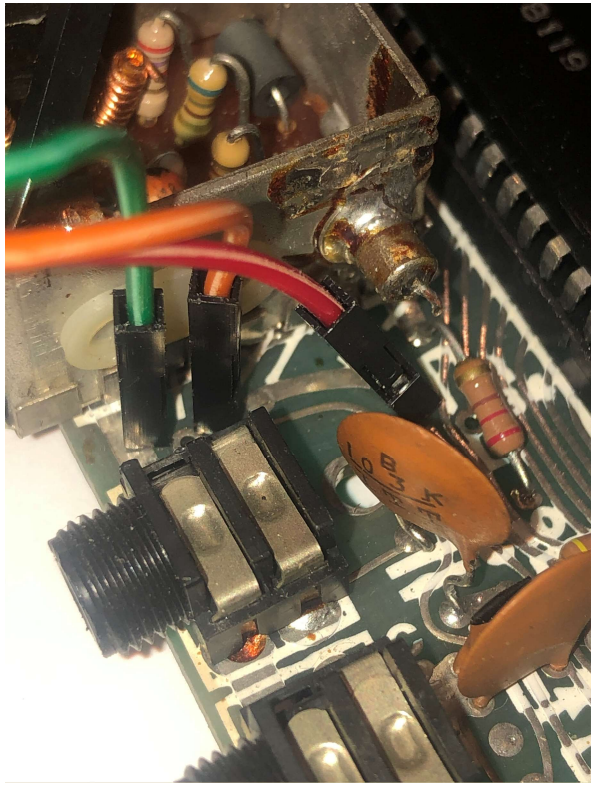
Installing the mod

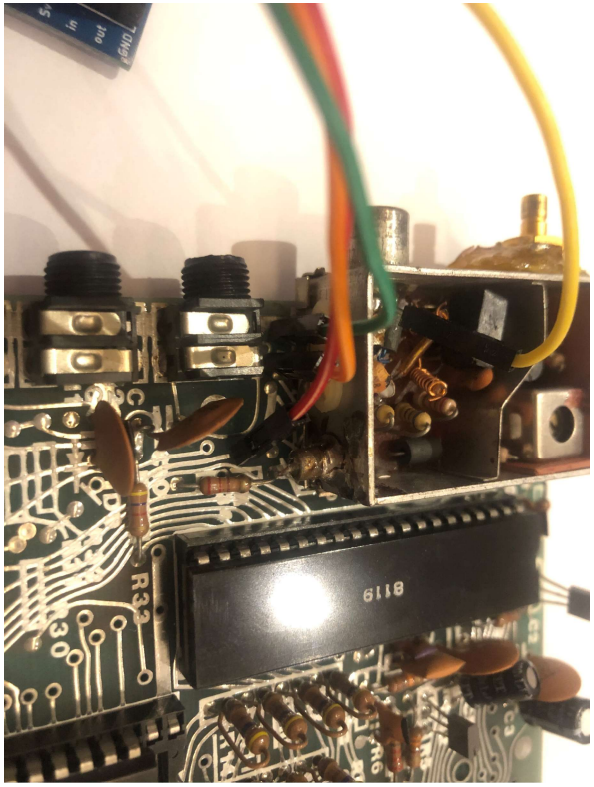
- Step 3. You will notice 4 pins on the new mod labelled (5v, in, out, GND). The 5v pin needs to be connected (by soldering) to where the 5v line was before. IN needs to be connected where the video in was connected before. Out needs be connected to the inner pin on the RCA socket where we detached the resistor in Step 1 . You can take a ground(GND) from where it shows in the diagram or by soldering it to the RF box itself as its grounded.



Some example pictures



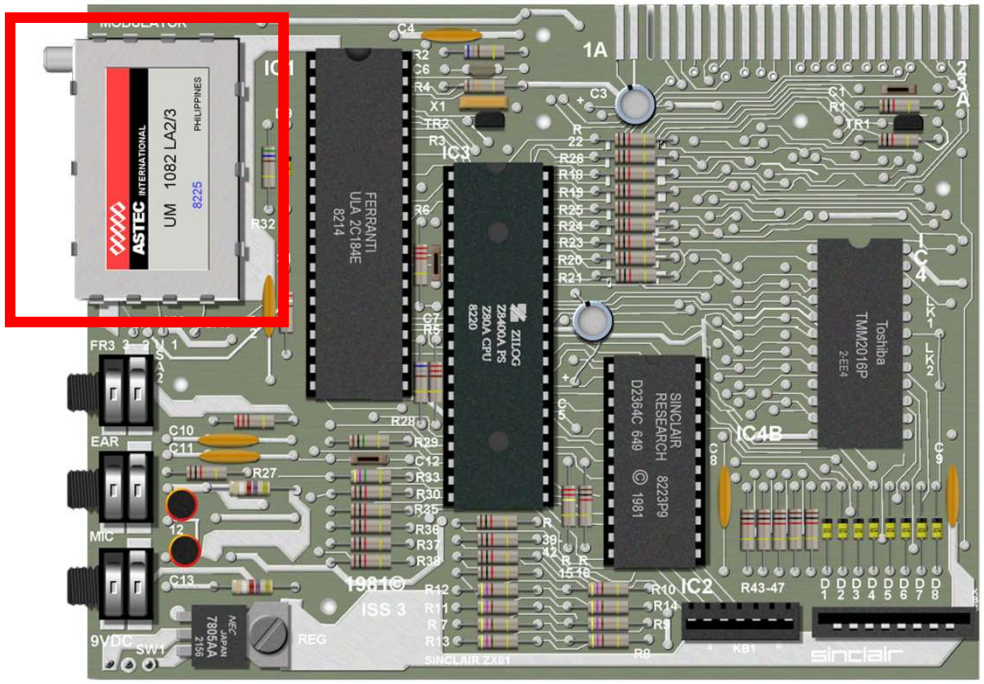




Option 2: RF Replacement mod

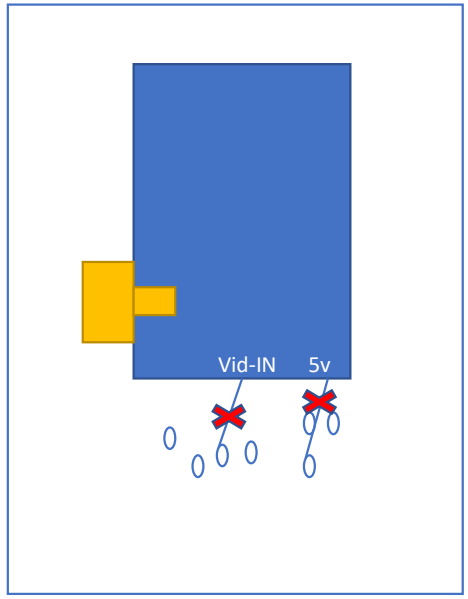
Remove the RF BOX

- With the RF Box replacement version you have to desolder the RF Modulator Box from the ZX81 motherboard



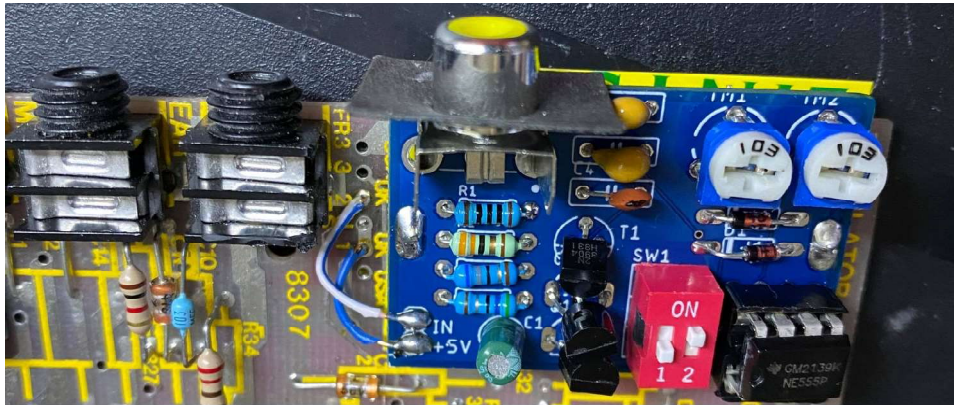
Desoldering

- Step 1. Underneath the Motherboard there is 2 GND pins that hold the RF box to the motherboard. You will need to desolder these. Step 2. There are 2 wires entering the RF box from the topside of the motherboard. One is the video and the other is the 5v line. Desolder these but make a note where they were as we'll use these 2 points to feed the new video mod.



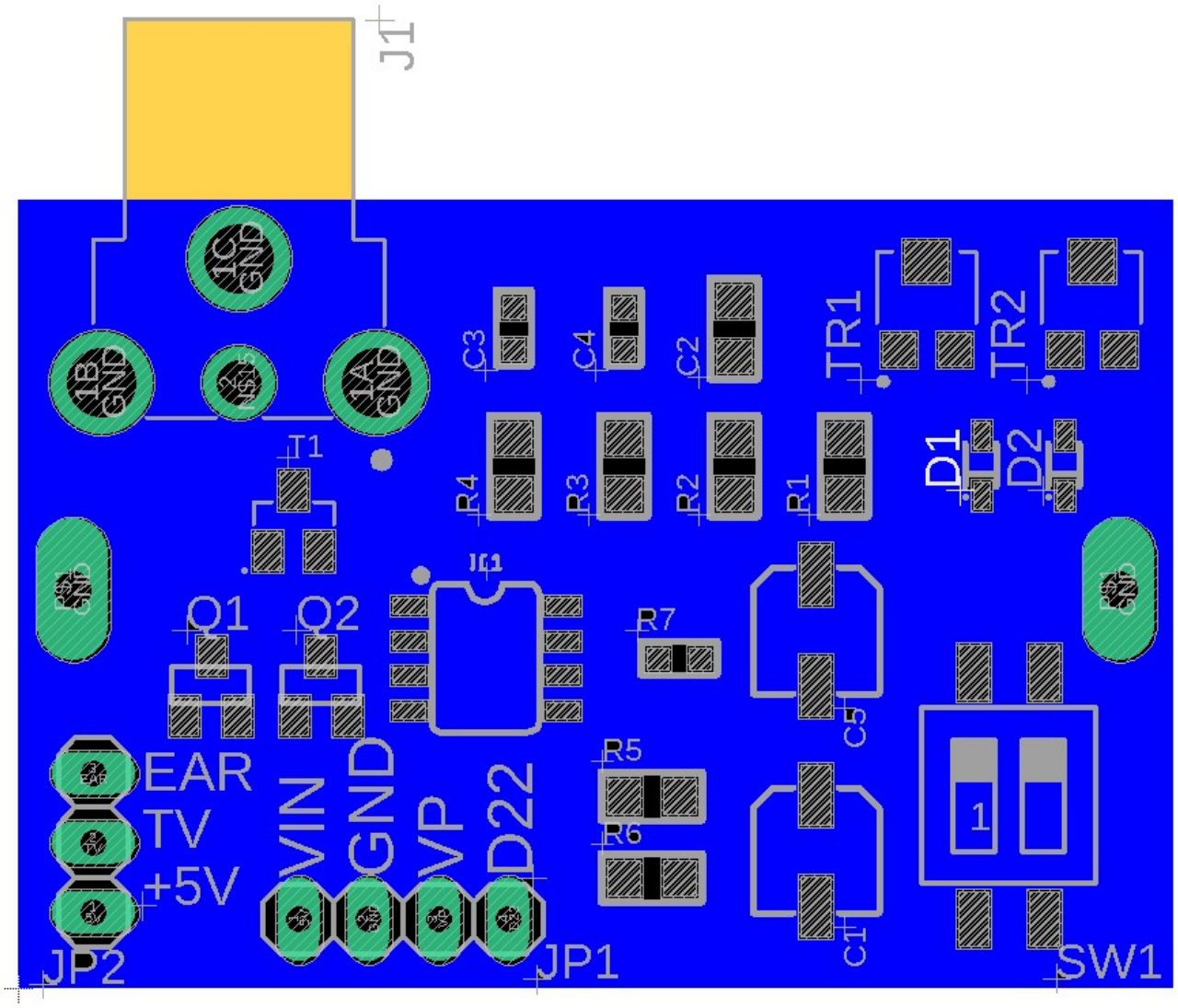
Soldering in the new video mod

- The new composite mod uses a printed off plastic shield which is placed between the PCB and the motherboard to mitigate short circuits. The new “solder in place” composite mod is designed replace the RF modulator.
- Step 3. Solder the 2 GND pins in where the old GND pins where on the back side of the motherboard.
- Step 4. Solder wires to where the video “in” and “5v” line where used before to the new mod.



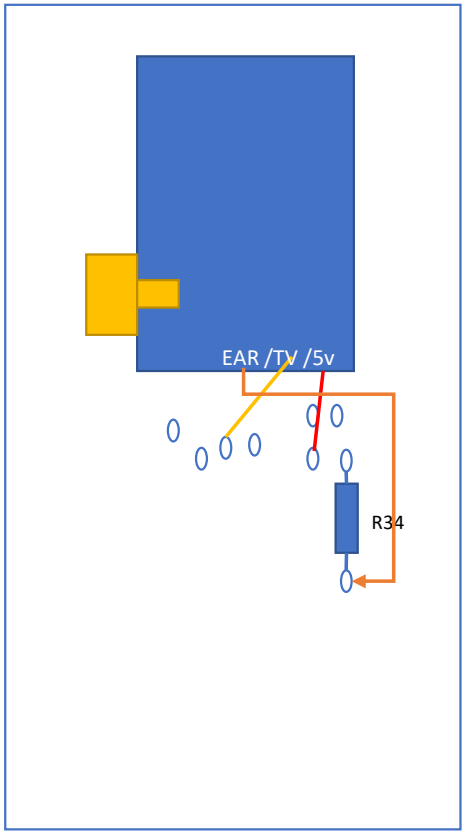
ZX-WESPI

Version



Addition ZX-WESPI Instructions

- Install using the same instructions as the RF Replacement
- However, there is an extra wire “EAR” to solder to the bottom contact of R34
- For ZX-WESPI to work, you will need a standard ESP32 board.

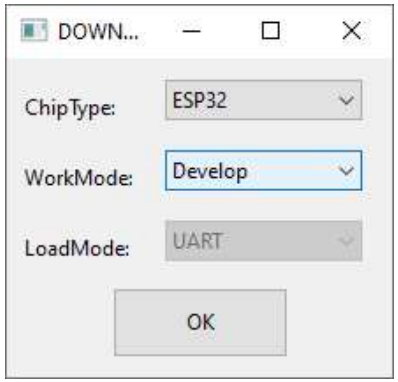


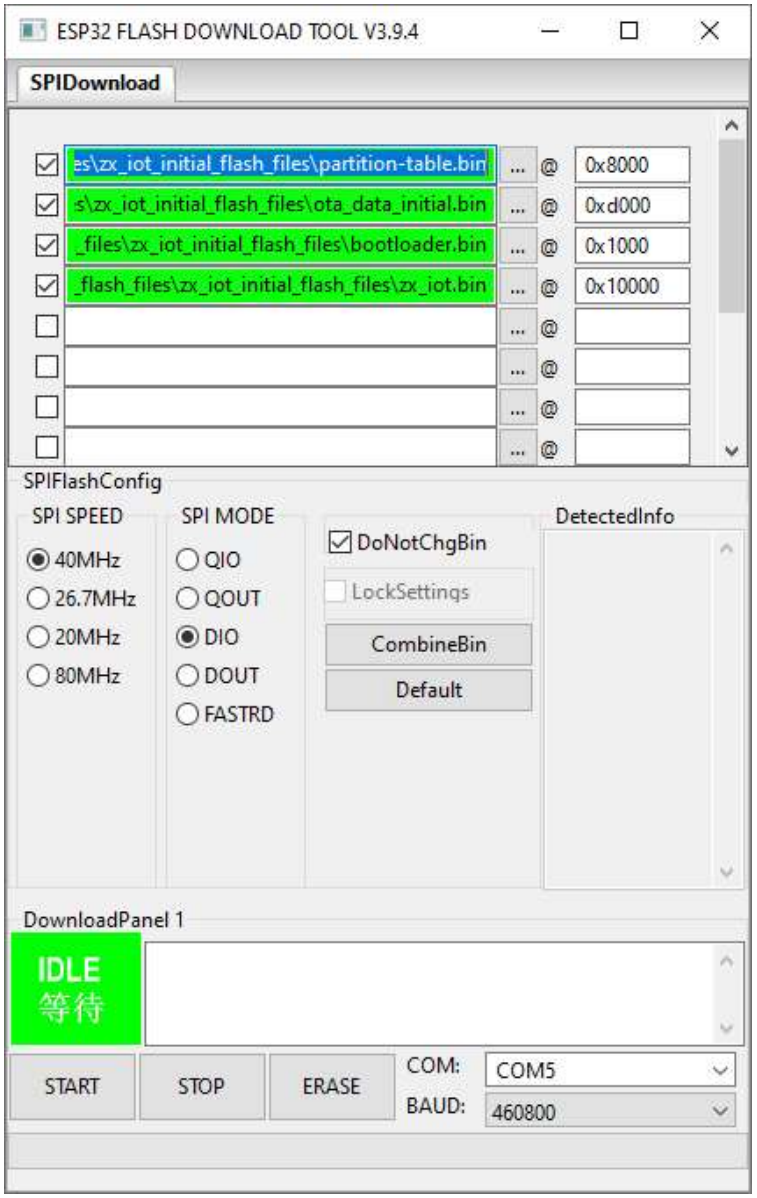
FLASHING the ESP32

- If you prefer, I will have a stock of flashed ESP32 boards.
- If you prefer to have a go:
- Download the Flash Download Tool HERE
- Download the ZX-WESPI files HERE

FLASHING the ESP32

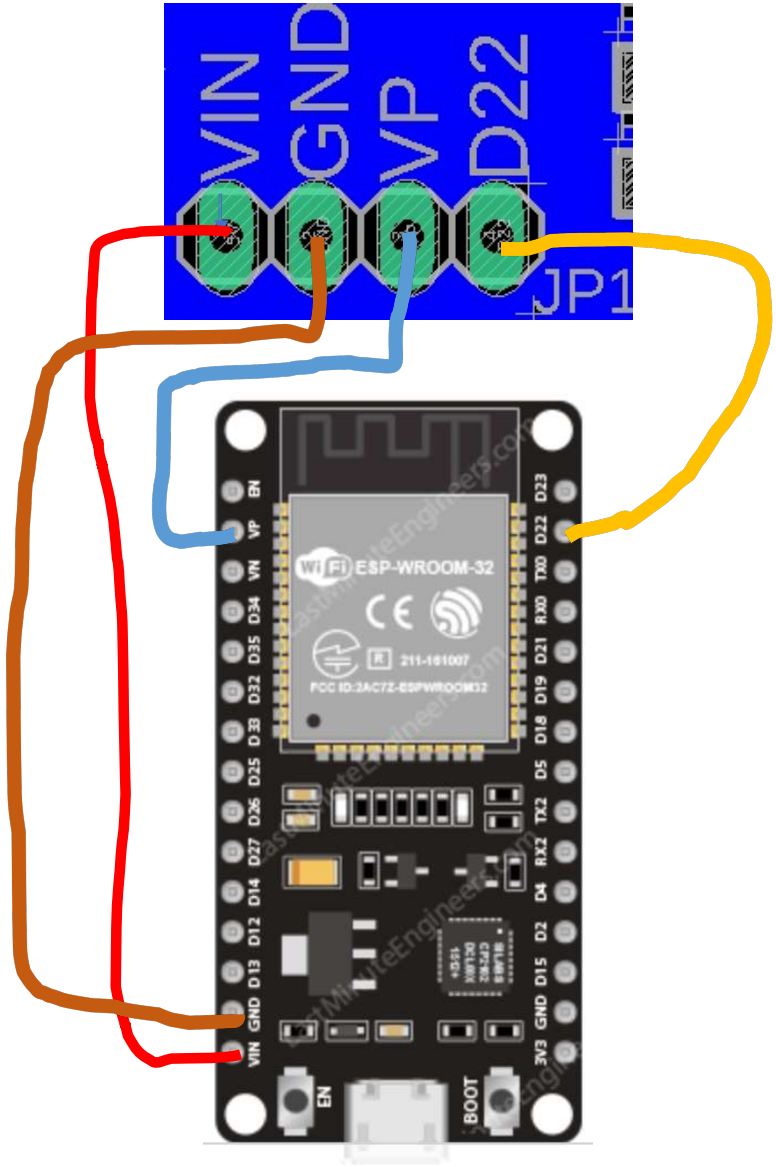
- Use the setting in the screenshots then click start.
- If the ESP32 does not connect automatically, try holding the BOOT knob and/or EN(reset)





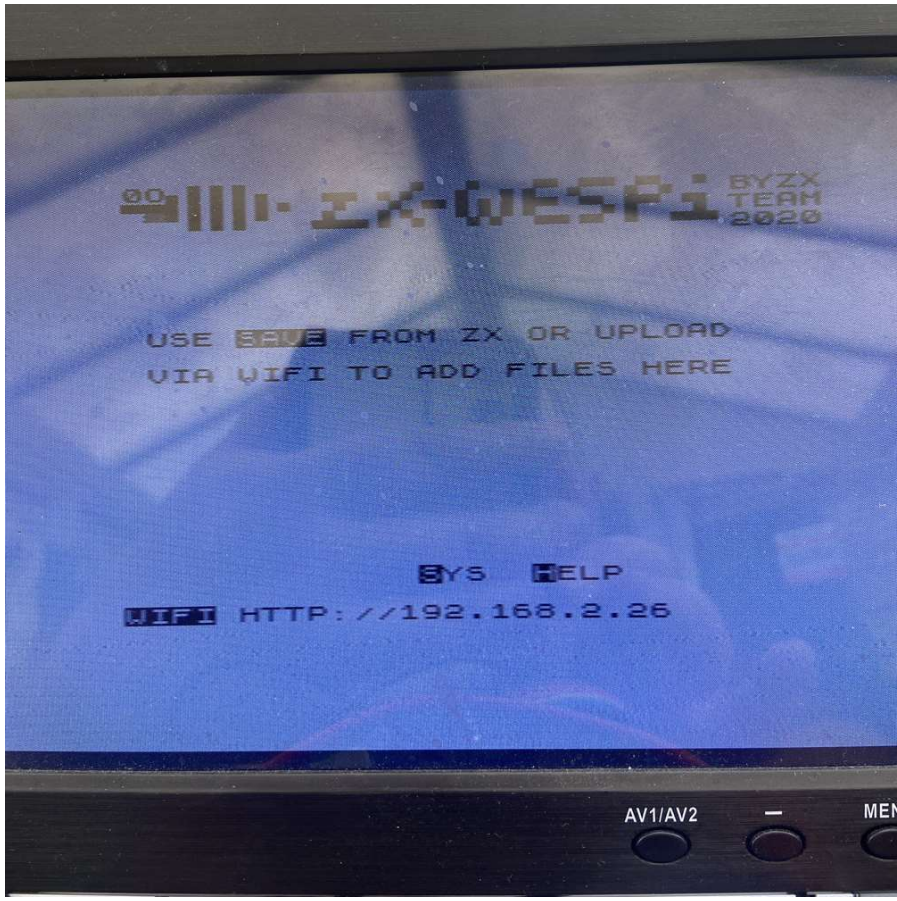
ZX-WESPI

- There are four Pins labelled JP1 on the ZX2020 correspond to the same pins VIN/GND/VP/D22 on your ESP32 board. Wire these up how you see fit.
- All other components needed for ZX-WESPI are on the zx2020 board..
- That’s why mine is the best.



ZX-WESPI

- From this point, you are on your own.
- ZX-WESPI is not my project, and you find more details on Google and GitHub [HERE]



Operations

Operating the mod

- The mod offers 2 options for use:
  - ZX81 that requires a back porch function. With this option you can tweak the picture with the 2 trim pots TM1 and TM2
  - ZX81 that doesn't require a back porch function
- Choose which option you want by selecting them using the switches
  - 1on / 2off = back porch
  - 1off / 2on = no back porch

NOTE: THE MOD WILL NOT OPERATE IF BOTH SWITCHES ARE ON OR BOTH SWITCHES ARE OFF.

Final Note

- We cannot guarantee it will always work due to the age of the ZX81 machines but we have observed it operational with several units and people testing it on social media groups.
- The Mod is a hybrid of a 2 composite mods, and one of them is from the original zx.zigg.net work. Both mods have been extensively used for many years and we have brought them together in one module.

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