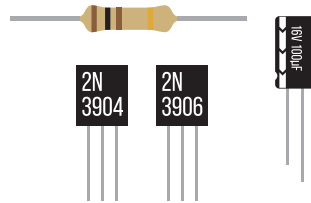
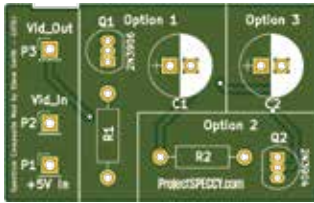


ZX Spectrum Composite Mod. Instructions



The ProjectSPECCEY Composite Mod. PCB is intended to replace the original Spectrum modulator PCB inside the metal modulator can. Fitting can be a little tricky, but with a slow methodical approach, there is no reason why a fairly experienced constructor can't fit one. If you have any doubts in your ability, it is recommended that you find a more confident fitter. Fitting is entirely at your own risk and ProjectSPECCEY will not take responsibility for any damage caused in the process of fitting the Composite Mod. PCB.

Extracting the Modulator Can

The first step is to remove the original modulator from the Spectrum's PCB. This is required because the original modulator's PCB is held within the can by solder joints underneath. Remove the two leads feeding into the modulator at the Spectrum's PCB. Then carefully desolder the two large tabs on the under side of the board holding the modulator in. This will require a fairly high wattage soldering iron, say 40W or so, and a clean de-soldering tool.

Once the modulator has been removed, carefully prise off the top and bottom. Be careful not to bend any of the metal fingers since this hampers refitting. Before removing the original PCB, snip the component lead going to the RCA port on the back and desolder or clip the two leads going through the side of the modulator case.

The PCB and screen can now be removed. The screen can be held either on the board or on one or both sides of the modulator can. Again, use a fairly high wattage iron to remove this, holding the screen with pliers or something else to avoid burns!

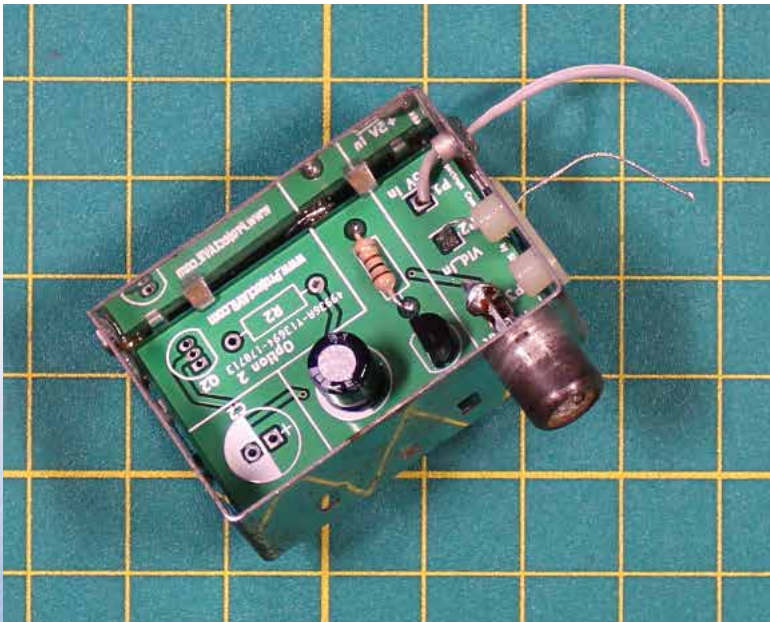
The PCB is held in at several points on the underside. A desoldering station is very useful in this instance but with perseverance, a standard solder sucker can be used. Clear all the solder around the sides of the board and then carefully extract it. This should leave a clear modulator shell. At this point, you can remove the 5v wire from the soldered connection through the side of the can.

Building the new PCB

There are three options on the Composite Mod. PCB. This gives you a choice of what type of mod works best with your monitor. Choose one option. Select the one that works best. Most monitors work well with Option 1, the Inverted Emitter Follower design. To build this, use the 2N3906 transistor along with the capacitor and resistor. Pay particular attention to the orientation of the Transistor and Capacitor. The shape of the transistor has been silkscreened on the PCB along with the positive and negative of the capacitor to aid fitting. In the capacitors case, the shorter lead and white stripe down the body indicate the negative lead. The positive lead is the longer one.

Once you have built your required choice, solder wires into the Vid_Out, Vid_In and +5v in connections respectively. For safety, use an insulated wire for the +5v line. Make the Vid_Out wire about 30mm long and both the Vid_In and +5v in wires about 50mm. Then carefully insert the Composite PCB into the can, feeding the +5v In and Vid_In leads through the side of the can at the nearest holes.

Once you have seated the PCB, solder at the points where the original PCB was fixed using the silver tabs on the sides of the board. The final step is to solder the Vid_Out lead to the back of the RCA connector and the +5v In and Vid_In leads to the Spectrum's board. Trim the leads appropriately beforehand.

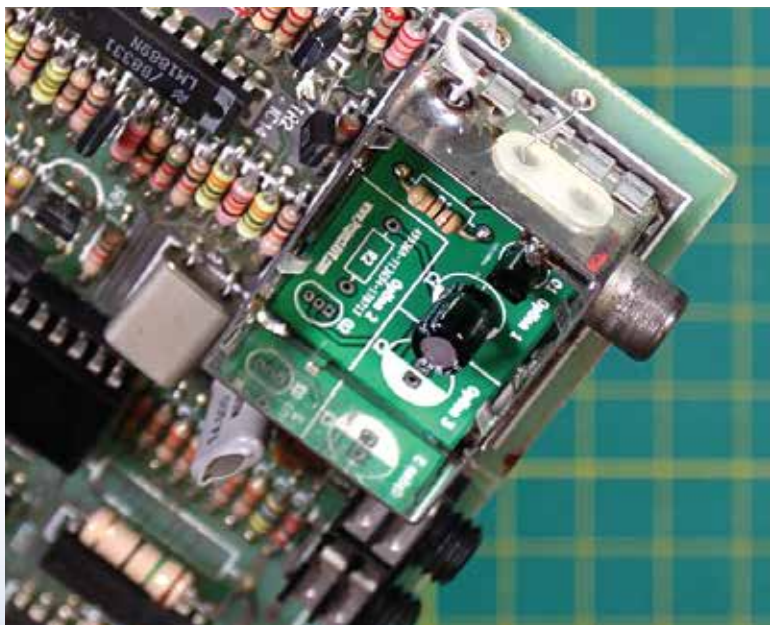


PCB successfully fitted to screening can.

Refitting the Modulator Can

You can now replace the bottom cover on the screening can and mount it, with the RCA connector at the back of the Spectrum's PCB. This is a good time to try it out. Lay the Spectrum's board back in the lower half of it's case and connect your composite monitor to the rear RCA connector on the newly modded Spectrum. Then connect power as normal. The Spectrum will suffer no ill effects from having the keyboard disconnected whilst running and will allow you to check the Composite Mod. has worked. If you don't see an image, remove power and check all your work thoroughly. It is useful to have a known working signal to compare against.

There are Composite Monitors that don't work well with the Spectrum's video output. Please do your best to check whether this is the case before you build and fit your Composite Mod. Kit.



Composite Mod. PCB mounted on Spectrum's PCB

Upon a successful test, you can replace the top of the modulator can and rebuild your Spectrum.

NOTES:

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