# vLA1
Sinclair Interface 1 ULA replacement
Installation Guide

As the vLA1 is static sensitive, please follow precautions when handling. The vLA1 is shipped in a protective antistatic bag but once removed the device will not be protected from static discharges.

To install the vLA1, first remove the Sinclair Interface 1 PCB from its case.

You will notice that there is a transistor modification (Q11 on the service manual schematic) attached to the existing ULA. This can usually be removed as it is not needed by the vLA1. If you do intend to install an original ULA in the future then best to keep the modification in place.
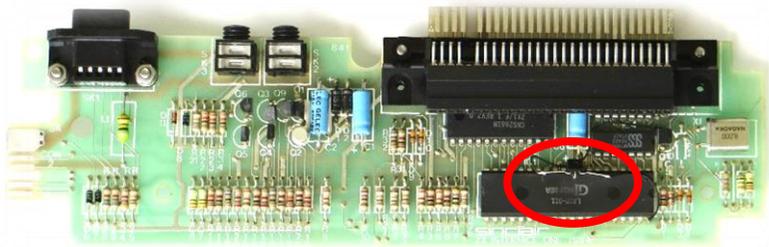
The next task is to remove the existing ULA without damaging the PCB. The tracks are very narrow and excess heat or trying to remove the IC before the pins are free of solder will guarantee that the tracks will lift. If the existing ULA is known to be faulty then the IC pins can be snipped close to the IC body and each pin removed separately. If the existing ULA is still OK then proceed with caution and make sure all pins are free before attempting removal!

Hint: Before desoldering, retinning each pin with new solder will greatly aid with pin removal.

Once the existing ULA has been removed then simply drop the vLA1 in place. The orientation is as shown below (soldering it in the wrong way will mean yet another difficult desoldering job!).
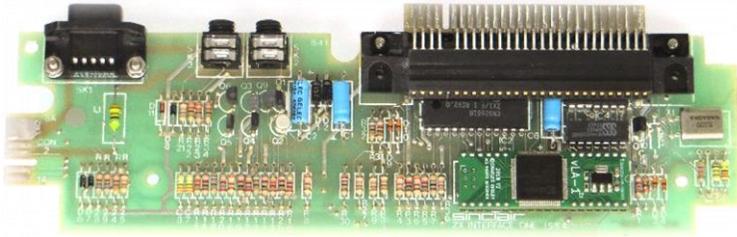
Simply reassemble and you're now ready to test. Without a Microdrive attached, try CAT 1 and you should get the 'Microdrive not present, 0:1' error. If so, then the IF1 ROM is being paged in and the vLA1 is working as expected (see the troubleshooting section if you strike performance problems).

Troubleshooting

If you only get CAT ?1 then the IF1 ROM is not being paged in. Try cleaning the edge connector on the Spectrum and try again. If, after this, the IF1 ROM is still not being paged in then a likely suspect is the M1 line being held permanently high on the Spectrum Z80 CPU.

If you experience poor Microdrive performance then the M1 line is likely held permanently low. In normal Spectrum operation, without any interfaces attached, there is no symptom of this fault as M1 is not used internally. The Interface 1 will appear to work with a Spectrum even if the Z80 CPU has the M1 line held low (if M1 is held high then the Interface 1 will not work). Reading files seems to work fine (if maybe a little slower than usual) but for those interfaces with a version 2 ROM, the save and format performance is extremely poor (with real Microdrives, the reported format capacity is much reduced. For the vDrive, format will probably fail).The Interface 1 v1 ROM has problems, but they are more subtle.

The only cure for a faulty M1 is to replace the Z80 CPU.

For a quick check, if you have another interface such as the DivMMC or DivIDE then see if that works OK. If these interfaces do not work as expected then replacing the Z80 in the Spectrum should get everything back up and running again.

If you have problems and are unable to resolve the issue then please contact me at **vdrivezx@gmail.com**

Have fun!

Charlie