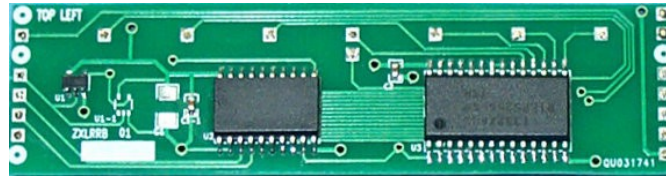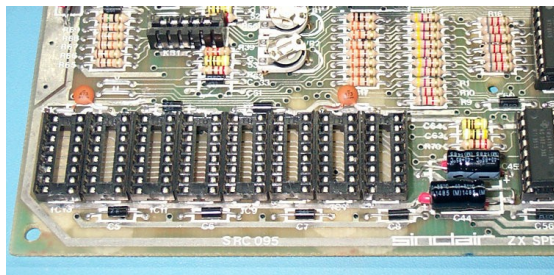# ZX Spectrum Lower RAM Replacement Module

WARNING: The module's mounting pins may be sharp on both sides; take care when handling it. Observe anti-static precautions while installing the module and store it in its static-shielding bag prior to installation.

This module can be used to replace the eight 4116 ICs that form the lower 16 kilobytes of RAM in a 16K or 48K ZX Spectrum computer.

After removing the 4116s and carefully checking the ZX Spectrum PCB for damage or short circuits caused during the removal, it is suggested standard 16 pin DIL sockets be fitted in their place. Note that the module cannot be properly plugged in to most turned-pin DIL sockets.

The connecting pins should be perfectly perpendicular to the lower surface of the module's circuit board. Use thin-nosed pliers to gently straighten any that have become bent during transportation or storage.

The module should be aligned squarely over the row of DIL sockets, using the TOP LEFT indicator to orientate it correctly when viewing the ZX Spectrum's PCB from above and the front. Then slowly and evenly press the module into the sockets until little or no space remains between the two. Press down on the module's circuit board rather than its components. For the leftmost and rightmost columns of socket contacts, the module has either a pin that should be inserted into the corresponding contact or it has a white circle on its upper face to indicate there is no pin in that position. When installing the module, take care to make sure that all its pins are properly inserted into the correct socket contacts.

Alternatively, the lower RAM replacement module can be soldered directly to the ZX Spectrum without the use of sockets. In this case, a gap of a few millimetres should be left between the module and the ZX Spectrum's circuit board.

The lower RAM replacement module uses only the ZX Spectrum's internal 5V power supply. However, you should make sure the ZX Spectrum's DC-DC converter circuit is working correctly as it is necessary for the ZX Spectrum to produce a proper video output.

Please visit **http://zx.zigg.net** if you have any questions about the ZX Spectrum lower RAM replacement module.