ZX 16K RAM Pack – Instructions for use

This RAM Pack will expand the memory capacity of your Sinclair Personal Computer to 16K bytes (1K byte = 1024 units of storage, i.e. 1024 characters) – which is the maximum it can handle. The ZX 16K RAM is not expandable in stages and so is supplied with the 16K of memory built in. All you have to do is plug it onto the expansion edge connector at the back of your computer. It will take its power from the existing power supply.

IMPORTANT – Make sure that the computer is switched off before plugging or unplugging the memory. Otherwise you may damage the RAM pack or computer – also the computer's operation will be interrupted for a short while and it may get stuck in a 'non communicative' state. You will then need to switch off and on again anyway. Any program that was in the computer will certainly be lost; so if you think a particular program may need a lot of memory, it is wise to plug on the RAM pack before entering it. As a guide, the computer's internal memory can handle 30-60 lines of program, but things like large arrays or a lot of data can cut this down considerably.

A little mental arithmetic should show that the computer can theoretically handle up to 960 program lines when fitted with the expansion pack. In practice, no program is likely to need this much (no prizes for trying!) except programs with a lot of data. In fact, the only evidence the user sees of the RAM pack's operation – apart from almost never running out of memory – is that the inverse 'K' takes a little longer to appear after switching on. This is because the computer tests the memory after switch on to see how much there is. The results of the test aren't directly available, but a simple machine code program can be used to reassure the operator that he or she really has got the memory available:

MEMORY TEST PROGRAM

```
1 POKE 18000, 33
2 POKE 18001, 11
3 POKE 18002, 0
4 POKE 18003, 57
5 POKE 18004, 68
6 POKE 18005, 77
7 POKE 18006, 201
8 PRINT (USR (18000) − 16373)/1024; "K"
```

If run on your computer without the RAM pack the answer will be 1K – the amount of memory present in the system. With the 16K RAM pack, however, the answer will be 16K. Note that this program does not say how many bytes are free for a program, only how many are available to the computer, which will use some of them for the display file stack, etc.