

R A M A M P C O M P U T E R S

BRIEF DISCRIPTION OF RAM-ROM EXTENSION BOARD

The RAMAMP RAM-ROM BOARD is capable of accepting 6 extra language ROMS and 2*16K of dynamic RAM that is addressed from &3000 to &BFFF. This can enable one to write software that is ultimatly to live in this area and test it before burning your software into an EPROM. The OMS are addressed from right to left &8,&9,&B,&C,&E and &F. The sideways RAM is at &A and &D.

Only 6 extra ROM slots were chosen rather than 10 or more as in other models to keep the power supply loading to a minimum, and for a cooler BBC and to save some power for those who own DISC units that use the BBC as it's power source.

RAM-ROM BOARD FITTING INSTRUCTIONS

WARNING. To fit anything within the BBC Computer requires skills from either one whose job is actively employed in electronics or a competent person who fully understands the BBC in its hardware sense. One who 'knows' the BBC in its software sense with due respects should riot attempt or be 'allowed' to fit any add on board or peripheral for your own computers sake. If you are confident enough to delve inside the BBC then read on...

- 1). Switch off your BBC.
- 2). Disconnect all peripherals from your BBC. Viz. Disc, Tape, Printer etc. Don,t forget to unplug from the mains!
- 7). Remove lid and keyboard.
- 4). Remove the O.S. ROM. This is identified by that ROM that is marked "HN613123B04" or "B04" It is the ROM that is in the 5th ROM slot from the right.
- 5). Plug the O.S. ROM in the SOCKET on the RAM-ROM board to the extreme right. The board is marked with arrows showing the way! See fig 1 and 2.
- 6)• One can now insert any extra ROMS that you may have in the RAM-ROM extension board. Do take care to insert your ROMS the correct way round, "indentation" to the north, and check to see that there are no pins of that ROM are bent underneath or hanging over the side of the SOCKET on the main board. One may find it better to fit the BASIC ROM in the RAM/ROM board in the extreme left hand SOCKET.
- 7). There is a flat 4 conductor ribbon cable connected to the RAM-ROM extension board. Find the 2 pin connector that has an ORANGE and a YELLOW wire connected to it. Remove the shorting SOCKET on the main BBC board marked "S21" and replace it with this connector. (see fig 3) Ensure that the ORANGE wire goes to the left, and YELLOW to the right. S21 should be inserted in an east-west position. On the RAM/ROM board, extreme left hand side (top) there is a 2 pin plug sticking out of the board. Put the shorting link that you removed from "S21" onto this plug. You MUST do 'this. No damage will result if you do not, but the RAM

section will not work if you forget to transpose this shorting link from "S21" on the main board to the RAM/ROM board. Now find the other 2 pin connector that has a BROWN and a RED wire connected to it. Thread this wire out of the BBC Computer where the 40 way 'TUBE' connector is (see fig 4) and plug it into the most right hand bottom row pins of the 'TUBE'. The RED wire should be to the far right.

- 3). Plug the RAM-ROM extension board into the 0.S. SOCKET.
DO PEEK UNDERNEATH THE RAM-ROM EXTENSION BOARD TO SEE THAT...
 - a). There are no vacant holes "left over" in the 0.S. SOCKET at either end of the SOCKET.
 - b). There are no "left over" pins hanging over the end of the SOCKET.
- 9). Replace keyboard and switch on and see that your computer responds with =

BBC Computer 32K

ACORN DFS

BASIC

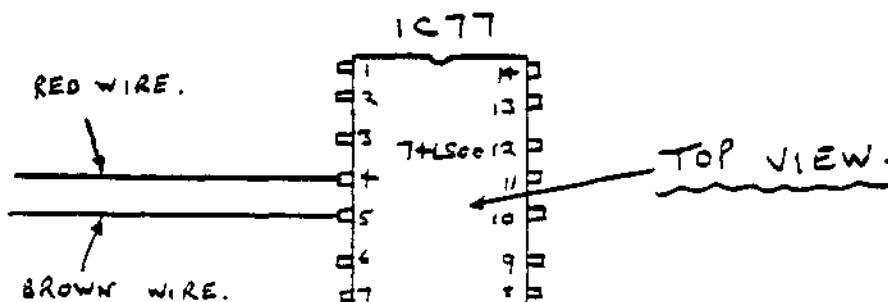
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Type in "*HELP" (RETURN) and the computer will respond with all the language ROMS both on the main extension board and on the main BBC board.

- 10). Switch off again and replace lid. If all is OK then tell your friends. If it isn't tell us.

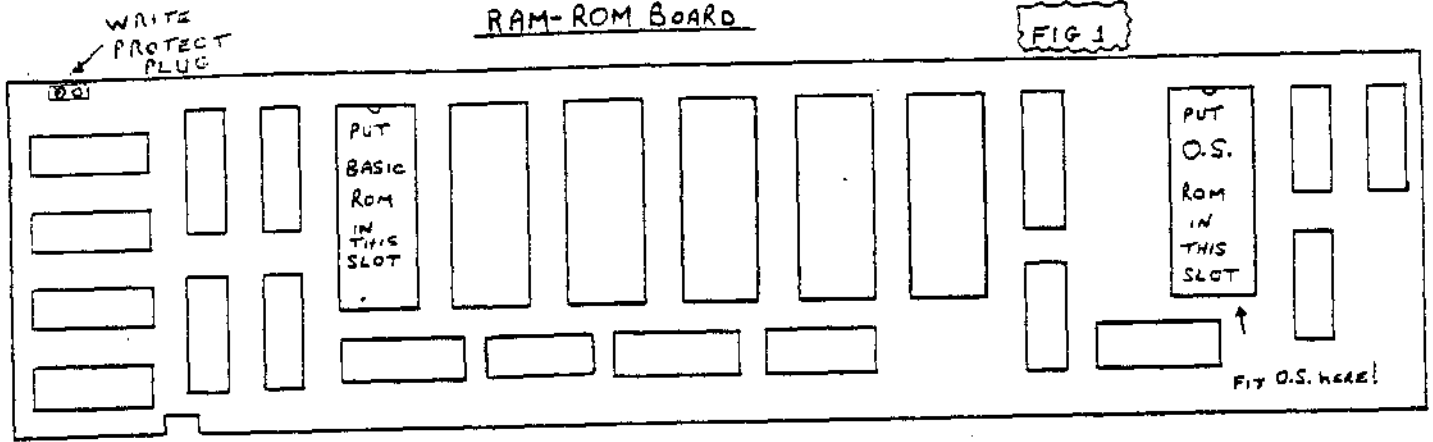
NOTE 1. To add a write protect switch, remove the shorting link from that 2 pin connector that is to the far top left of the RAM/ROM board and put it away for safe keeping. Then purchase a very small switch of a single pole single throw (S.P.S.T.) and connect it across this 2 pin plug. To operate ensure that the switch is closed BEFORE you load a utility in the sideways RAM, then BEFORE you press break or turn on the utility just throw the switch so that the 2 pin plug is now open. That is write protect.

NOTE 2. If you have a second processor or any other device that uses the TUBE then the RED and BROWN connector of the RAM/ROM board must be connected elsewhere. Therefore cut off the 2 pin black socket that has the RED and BROWN wires and extend these two wires by about 6", preferably with the same colour wires. Thread these wires back into the BBC. Do take care to ensure that the two wires are properly insulated from each other. Now find I.C.77. (74LS00) Solder the RED wire to pin 4 and the BROWN wire to pin 5. Do take care that there are no blobs of solder or whiskers of wire that may short out the pins of this chip. If you are not confident in doing this task then ask a friend who may help or take it to a dealer.



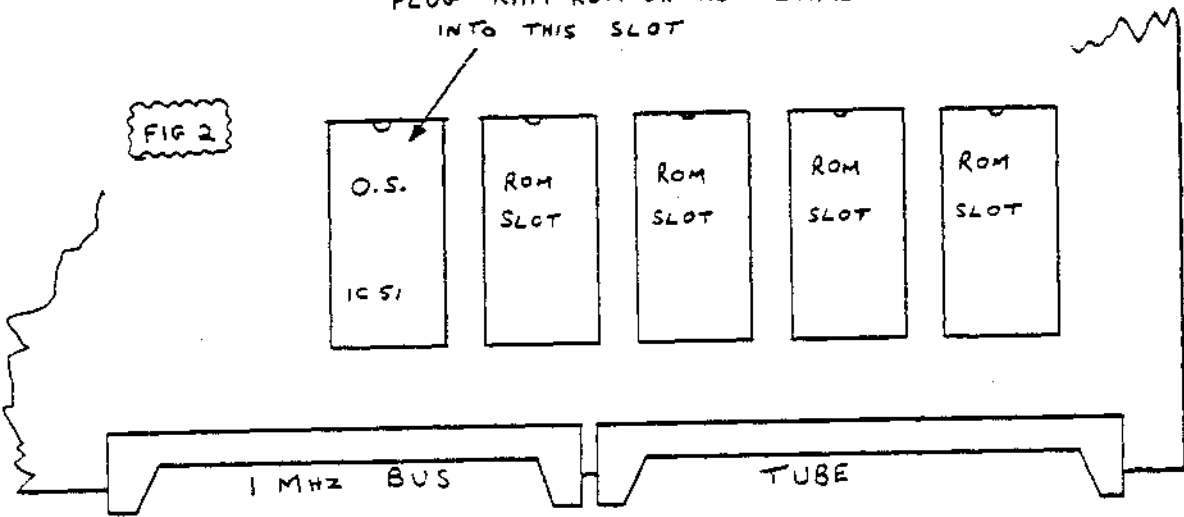
RAM-ROM BOARD

FIG 1

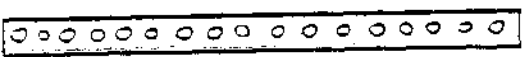


PLUG RAM-ROM OR ROM BOARD INTO THIS SLOT

FIG 2

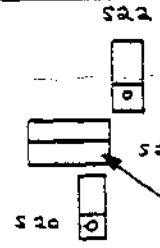
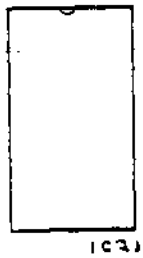


KEYBOARD CONNECTOR



PL13

FIG 3



REMOVE THIS LOWER LINK AND REPLACE IT WITH 2 PIN SOCKET ON LEAD FROM THE BOARD. COLOURS OF THE LEADS ARE GIVEN IN THE FITTING INSTRUCTIONS.

VIEWED FROM UNDERNEATH AND OUTSIDE THE BBC COMPUTER.

TUBE

4WAY CONNECTOR

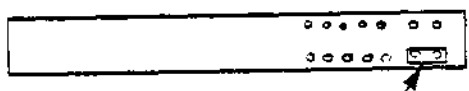


FIG 4

THE TWO PIN CONNECTOR SHOULD BE PLUGGED INTO THIS POSITION. BOTTOM ROW, EXTREME RIGHT COLOURS OF THE LEADS ARE GIVEN IN THE FITTING INSTRUCTIONS.

RAMAMP COMPUTERS

SOFTWARE DETAILS FOR RAM-ROM BOARD

NOTE! All of the supplied software for the RAMAMP RAM-ROM board is not software protected and is not copyright. Therefore any number of backup copies may be made, may be published or given away to friends and colleagues without prior or written permission from RAMAMP Computers.

- | | |
|--------------|------------------------|
| 1). RAMENY | 6). N15KBUF |
| 2). TMEN32K | 7). N7KBUF |
| 3). TOUTOF | 8). NRMP0.9 or NRMP1.2 |
| 4). RAMTEST | 9). EXTRA *FX CALLS |
| 5). FASTBACK | |

1). RAMENY controls all of the other files. Disc owners may find it better to create a !BOOT file.

2). TMEN32K is the file that moves ROM utilities from Disc into sideways RAM. When you first use the file you will be asked if you have a single or double sided Disc drive Yes or No. (NOT TO BE CONFUSED WITH DOUBLE DENSITY:) If you move this file to another Discette then again you will be asked this question. Don't worry about it as it is the way the file TMEN32K handles ROM files. You will notice that a file 'DRIVE' appears on the Disc. Leave it there but do not transfer it to another Disc. If you give TMEN32K away to friends then do not pass on this file DRIVE. The program will generate another. A display of those ROM's are shown and from a single key can be loaded into sideways RAM. There is a complete check of the slot to confirm that the ROM utility has arrived in that RAM slot, if it has not then the program reboots for 10 more attempts, after which a check of the BBC Computer or the RAM-ROM board is advised. TMEN32K uses BBC RAM from &3000 to &7000 as work space, so do ensure that you do not have any programs in BBC memory when you first use the RAM/ROM board. If you have then make a save. If this is not acceptable then one may *LOAD your ROM direct with the command *RSLOT D FILENAM where D is the RAM slot providing that you have one of the 3 printer buffers in sideways RAM first as described elsewhere in this document. Then PRESS BREAK. You must do this. No harm will come to your computer if you do not press break.

3). The file 'TOUTOF' shows a display from 0 to F and the file name of those ROM's within your BBC Computer. Where there are no file names this denotes that the ROM slot is empty. One or two of the ROM slots you will notice are flashing, this denotes that these slots are RAM slots. To get a ROM from it's slot and onto Disc just press the key for that number or letter, a message will then appear at the bottom of the screen which asks for a file name of not greater than 7 letters, compose it then press RETURN. The ROM is now on Disc.

4). RAMTEST tests the RAM-ROM board. It determines that the board is capable of storing and retaining data or not. To use just CHAIN"RAMTEST" or from RAMENY. One will see the word "TEST" and a number incrementing. Let the program reach 2 or 3 tests. Press escape, wait a few moments then press f0. Further tests confirms beyond doubt that the board is working. NOTE! Each TEST has tested the whole of the 16K: or 32K RAM!

5). FASTBACK offers a much quicker *BACKUP of Discs using sideways RAM. It is only available for 32K RAM owners. A 40 TRACK Disc that is backed up needs the Disc to be swopped 8 times. With FASTBACK the Disc is swopped twice!

6). N15KBUF is a 15K printer buffer. For 16K owners this utility will be put into slot 'D' in the usual way. (32K owners put it in either slot) To get a BASIC print out first switch on printer, type CTRL 'B' then list. The program will list with the printer printing as usual. As soon as listing has stopped type CTRL 'C'. One can now LOAD or SAVE or change another program even with the printer still operating. There is an extra *FX command, *FX22. This will flush the printer buffer. When the buffer is empty then opposite the LOGO 'BBC Computer 32K' will be a message, viz. +15K printer buffer. If this appears in white then the buffer is empty, if in red then the buffer is full. *FX22 will of course make it white. Did you get all that!

7). N7KBUF is a 7K printer buffer- It lives in the top half of any 8K ROM utility. It is loaded into sideways RAM from within the file TMEN32K. A message appears offering this printer buffer option, but only if the ROM utility you have selected is 8K in length- If a 16K utility is selected the option is not provided.

8). These files 'NRMP0.9' (or NRMP1.2) should be loaded with '*R.NRMP0.9' (or *R.RMP1.2) or from RAMENY. It can ONLY be used with an ACORN DFS of version 0.90. or 1.2. It automatically finds ACORN DFS and moves it into RAM slot 'D'. The ACORN DFS MUST be in a slot below &8. We recommend that you put it into the fourth slot from the right on the main BBC board. PAGE is reset to 8E00, thereby gaining another 2.8K of memory- Contained within these RAMAMP DFS's is the 4K printer buffer and all of the *COMMANDS below. *FX24,13 turns on the printer buffer, *FX24,13,1 turns it off. Press <RETURN:: then BREAK to initialize.

9). EXTRA COMMANDS.... NOTE! One must have any one of the 3 printer buffer options in sideways RAM first!

a)- *RSLOT. One can *LOAD a file direct into sideways RAM without using TMEN32K and does not use main memory- Syntax- *LOAD A 'FILE'. where 'A' is the slot.

b). *FX23,1 This command disables all filing systems below the RAM slot that contains 'N7KBUF' or 'N15KBUF'.

c). *FX23,0 This command restores all filing systems below the RAM slot. So too will a 'BREAK'.

d). *FX24,n,1 This command disables ROM slot n- *FX24,n,0 restores- See also paragraph 8 which describes the 4K printer buffer option.