



COMPUTER  
VILLAGE

USER GUIDE  
COMPUTER VILLAGE  
MEMORY EXPANSTION BOARD  
CVK - 16

COMPUTER VILLAGE LTD

£46 + 15% VAT  
= £52.90p.

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COMPUTER VILLAGE  
MEMORY EXPANSION  
BOARD  
CVX - 16

## 1. INTRODUCTION

Thank you for purchasing one of Computer Villages' BBC microcomputer compatible peripherals. This product is built to the very highest standards and will greatly increase the versatility of your machine.

Before installing your memory expansion card, please read the following notes carefully. Should you envisage difficulty your dealer will be pleased to fit the unit for you.

## 2. INSTALLATION

- 2.1 Before installation examine the base of the unit and note the 4 lines of silver pins. These pins are specifically designed not to damage the sockets of your BBC microcomputer upon insertion and are, of necessity, moderately fragile.
- 2.2 Check that the pins are straight and vertical to the surface of the board.
- 2.3 Remove the lid from your BBC microcomputer and unscrew the keyboard securing pins. Disconnect the keyboard by carefully unplugging its ribbon connector.
- 2.4 Examine the circuit board of the computer and locate integrated circuit IC1, (marked 6502) and integrated circuit IC6 (usually fitted with a heat sink). Carefully remove these devices from their sockets and fit them to the two spare sockets on the memory card at positions UI and U33 respectively. Avoid touching the device pins.
- 2.5 Remove the BASIC ROM (marked HN613128PB05) from the original paged ROM sockets together with any paged ROM fitted. Leave O.S. ROM in position IC51.
- 2.6 Set the ROM card together with the BASIC ROM to one side, resting on a sheet of kitchen foil.
- 2.7 Before plugging the memory card into the vacated sockets on your microcomputer check the following points:

- 2.7.1 Make sure that any vertically mounted components that will lie beneath the memory card are gently moved to a horizontal or near horizontal position being careful not to use excess force. Normally R114 only, will need moving.
- 2.7.2 Locate red and black wires on the right hand side of the main board and carefully remove wires from their terminals. Bend the terminals approximately 2 mm from the surface avoiding undue strain and replace wires.
- 2.8 Carefully offer the memory card to the vacated integrated circuit sockets tilting the board slightly to enable the left hand row of sockets of U1 to be located first.
- 2.9 Insert the remaining pins rocking the board slightly to indicate correct location. Gently push the board into place.
- 2.10 Check fitting of ULA heatsink.
- 2.11 Re-connect the keyboard checking that ribbon cable is correctly inserted.
- 2.12 Place BASIC ROM (removed in 2.5) into location U10 on ROM card.
- 2.13 Switch on the computer and check normal operation.
- 2.13.1 Should the computer fail to operate check that ROM card pins have not been bent askew by removing the card for examination.
- 2.13.2 Further check that the board jumpers are fitted as in fig 1.

### 3. Operation of ROM card

3.1 The memory card may be operated in a number of configurations dependent upon the settings of the board jumpers.

3.2 Figure 1 through to figure 3 show the jumpers for each configuration.

#### 3.3 Configuration 1 - 16 paged ROMS

In this mode the board will **operate** as a 16 paged ROM expansion card. The page address of each socket is as follows:

SOCKET	PAGE ADDRESS	ROM FITTED
U2	&07	
U3	&06	
U4	&05	
U5	&04	
U6	&03	
U7	&02	
U8	&01	
U9	&00	
U10	&0F	
U11	&0E	
U12	&0D	
U13	&0C	
U14	• &0B	
U15	&0A	
U16	&09	
U17	&08	

3.4 Configuration 2 - 14 paged ROMS + 2 positions software switched.

ROM positions U16 and U17 can be switched by inputting:

```
>?&FCC0 = &00      SELECTS U17
```

```
>?&FCC0 = &FF      SELECTS U16
```

This facility allows switching between two ROMS of the same type; eg. alternative DFS ROMS.

3.5 Configuration 3 - 16k paged RAM, 8 paged ROM positions.

U2 to U9 inclusive may be fitted with 2k x 8 CMOS RAM type 6116, which must be lower justified in sockets.

It *is* recommended that 8 devices are fitted giving 16k of RAM. For WRITE operations the RAM appears at location 8000<sub>16</sub> - BFFF<sub>16</sub> and may be addressed from BASIC or ASSEMBLER.

Note that once loaded the RAM appears as sideways ROM at paged ROM location 07<sub>16</sub> thus programs in machine code or BASIC must conform to Acorn format for paged ROMS.

If you use disc storage you may keep your paged ROMS on disc and load into RAM as required. Appendix A indicates how this may be achieved.

3.6 The memory card may be fitted with a 3.6v 100mAH battery to enable the CMOS RAM to retain data on power down. You are advised to request your dealer to fit this for you. Alternatively the card may be returned to Computer Village for modification.

SUITABLE BATTERIES ARE:

EVER READY 'MEMTEC' 3.6v 100mAH

BEREC 3.6v 100mAH

- 3.7 The pin marked "E" reflects the status of U16 and U17 and is used with the Computer Village KDD1 double density disc operating system which incorporates provision for switching between disc controllers.
- 3.8 Paged RAM may be WRITE PROTECTED by inputting;
- ```
>?&FCC0 = &FF WRITE PROTECT  
>?&FCC0 = &00 WRITE ENABLE
```

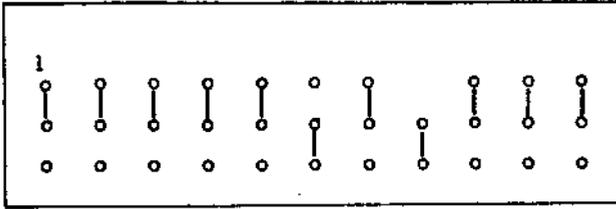


FIG 1 CONFIGURATION 1

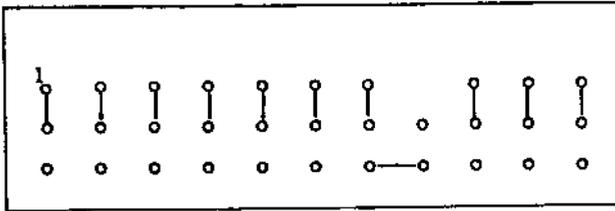


FIG 2 CONFIGURATION 2

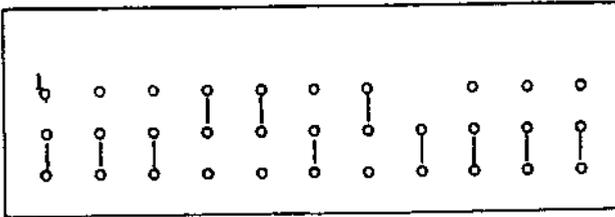


FIG 3 CONFIGURATION 3

BOARD CONFIGURATION JUMPERS

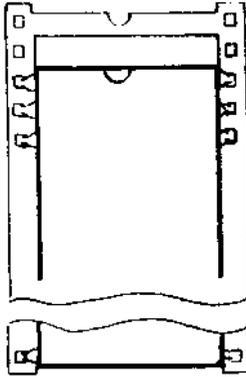


FIG 4. Lower justification of 6116 RAM chips sockets U2 to U9 inclusive.

APPENDIX 'A'.

UTILISING PAGED RAM USING BEEBUG EXMON.

We recommend the use of the BEEBUG EXMON MONITOR program for loading and manipulating data in paged RAM.

A.1. MOVE CONTENTS OF PAGED ROM TO PAGED RAM.

```
?! 0A                SELECT U15 LOAD SOCKET
?M 8000 0000, 2000   MOVE CONTENTS OF ROM TO USER RAM.
?M 2000 6000, 8000   MOVE USER RAM TO PAGED RAM.
```

A.2 DISPLAY CONTENTS OF PAGED RAM.

```
?! 07
?L 8000, 0000
```

A.3 SAVE CONTENTS OF LOAD SOCKET ON DISC.

```
?!_0A                SELECT U15 WAD SOCKET
?M 8000 0000, 2000
*SAVE "FILENAME" 2000 6000 8000 8000
```

A.4 LOAD DISC TO PAGED RAM.

```
*LOAD "FILENAME"
```

NOTES :-

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