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Section 1 - INTRODUCTION

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This manual is the assembly guide for the construction of the MAP 80 Ram card. It should be used in conjunction with the Instruction Manual, layout diagrams, link options, power supply (PSU) requirements and notes on component identification.

Obviously this manual will be used by people from many varied backgrounds and for this reason it has been written with the needs of the novice constructor in mind.

In general you are advised to :-

Read these notes carefully

Double check everything you do

Take your time

Section 2 - NOTES FOR CONSTRUCTORS

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1. Do not start yet. Read through all the notes at least twice before starting in order to ensure that no errors are made that could be expensive.
2. Do not leave MOS integrated circuits out of their antistatic packing. If in doubt leave all ICs in their tubes at present.
3. Keep the box in which the MAP 80 Ram card was delivered in case it should have to be returned.
4. Take great care when soldering as a single dry or unsoldered joint or short circuit can prevent the board from working and can be difficult to find.
5. Be careful to fit all components on the correct side of the board (the side with the printed information) and to solder them on the other side.
6. Be certain to fit all integrated circuits, and tantalum bead capacitors in the correct locations and the correct way round. Do not hurry over this. Cross check each time between the component lists and the layout drawing.
7. Be certain to connect the power supplies the right way round and with the correct voltages (otherwise all ICs could be damaged).
8. Do not attempt to remove or plug in integrated circuits or perform any soldering with the supplies to the Ram board switched on.

9. If any difficulty is experienced when plugging an IC into its socket do not use excessive force. If in doubt remove the IC and check that the pins are parallel and straight and try again. An IC insertion tool may be useful. All ICs are manufactured with the leads spread apart by a few degrees to suit mechanised handling equipment. They can be bent parallel by using small pliers or by pressing one row at a time down sideways with care on a flat surface. There should be no bend in the leads at the point where they narrow down - the full 90 degree bend should occur beside the body of the IC. With care there should be no difficulty.

10. Before switching on the power supply, hold the board up against a powerful lamp and inspect both sides closely with a magnifying glass for strands of wire, solder splashes, excess solder causing short circuits to nearby tracks, unsoldered joints, incorrectly placed components and bent IC pins.

Section 3 - TOOLS NEEDED

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1. Long nose pliers.
2. Side cutters.
3. Soldering iron. The maximum bit size advisable for use on the integrated circuits is 1/16" although a 1/8" bit could be used on the component leads. If possible use a thermostatically controlled iron with a tapering bit.
4. A damp sponge or cloth - to keep soldering iron bit clean.
5. A powerful light.
6. A magnifying glass.
7. A multimeter. Useful to check component values and correct polarity of power supplies, etc.

Section 4 - PRELIMINARY

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1. Unpack the kit and check the components against the parts list. Return all MOS integrated circuits to their anti-static packing directly after checking.
2. Inspect the PCB for any sign of damage. If any damage is found then the PCB should be returned for replacement BEFORE any construction work is started.
3. All resistors and capacitors (apart from the tantalum beads), may be inserted either way round. The positioning of all the

the correct way round - observe the polarity signs.

11) Insert capacitors C28-C35.

12) Connect link blocks LB1 and LB2 as required and plug into the appropriate sockets. See the Instruction Manual for details.

13) Plug in IC's 9-11,20-22,31-33,42-52. NOTE these IC's must be inserted the correct way round - the notch or dot on the IC must correspond to the mark on the Printed Circuit Board. (With the board facing you so that it can be read normally the notch or dot should be at the top).

14) Plug in IC's 34-41. NOTE these IC's must also be inserted the correct way round as above. CAUTION these IC's are MOS devices and should be handled as detailed in Appendix A.

15) Link L3 is NASIO, and is only used with a Nascom system when no other Nascom board is generating NASIO. (Ensure that the Nascom CPU board is set to EXT IO).

16) CY, RX, CX, normally have no connection but if use at the end of a very long bus is required then RX and CX may need to be inserted - see parts list for values. If this is the case then the track under RX must be broken on the component side of the board.

17) A Link must be added to the back of the board between IC 10 pin 10, and IC 11 pin 11. This is to ensure operation with the Nascom AVC card and future MAP 80 products. A short piece of blue wire is supplied.



Appendix B - PARTS LIST (64k Version)

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INTEGRATED CIRCUITS

| | |
|---------------------------|--------------------|
| IC 1-8 | 4164 * |
| IC 9,48 | 74LS14 |
| IC 10 | 74LS20 |
| IC 11 | 74LS11 |
| IC 12-19 | 4164 * |
| IC 20,32 | 74LS32 |
| IC 21 | 74LS02 |
| IC 22 | 74LS00 |
| IC 23-30 | 4164 * |
| IC 31 | 74LS86 |
| IC 33 | 74LS30 |
| IC 34-41 | 4164 |
| IC 42,43 | 74LS7 |
| IC 44,45,48,50 | 74LS244 |
| IC 46 | 74LS273 |
| IC 47 | 74LS138 |
| IC 51 | 74LS04 |
| IC 52 | 74LS74 |

RESISTORS

| | |
|-----------|-----------------------------|
| R1-10, RX | 33R (ORANGE, ORANGE, BLACK) |
| R11-14 | 1K (BROWN, BLACK, RED) |
| R15, 16 | 4K7 (YELLOW, VIOLET, RED) |

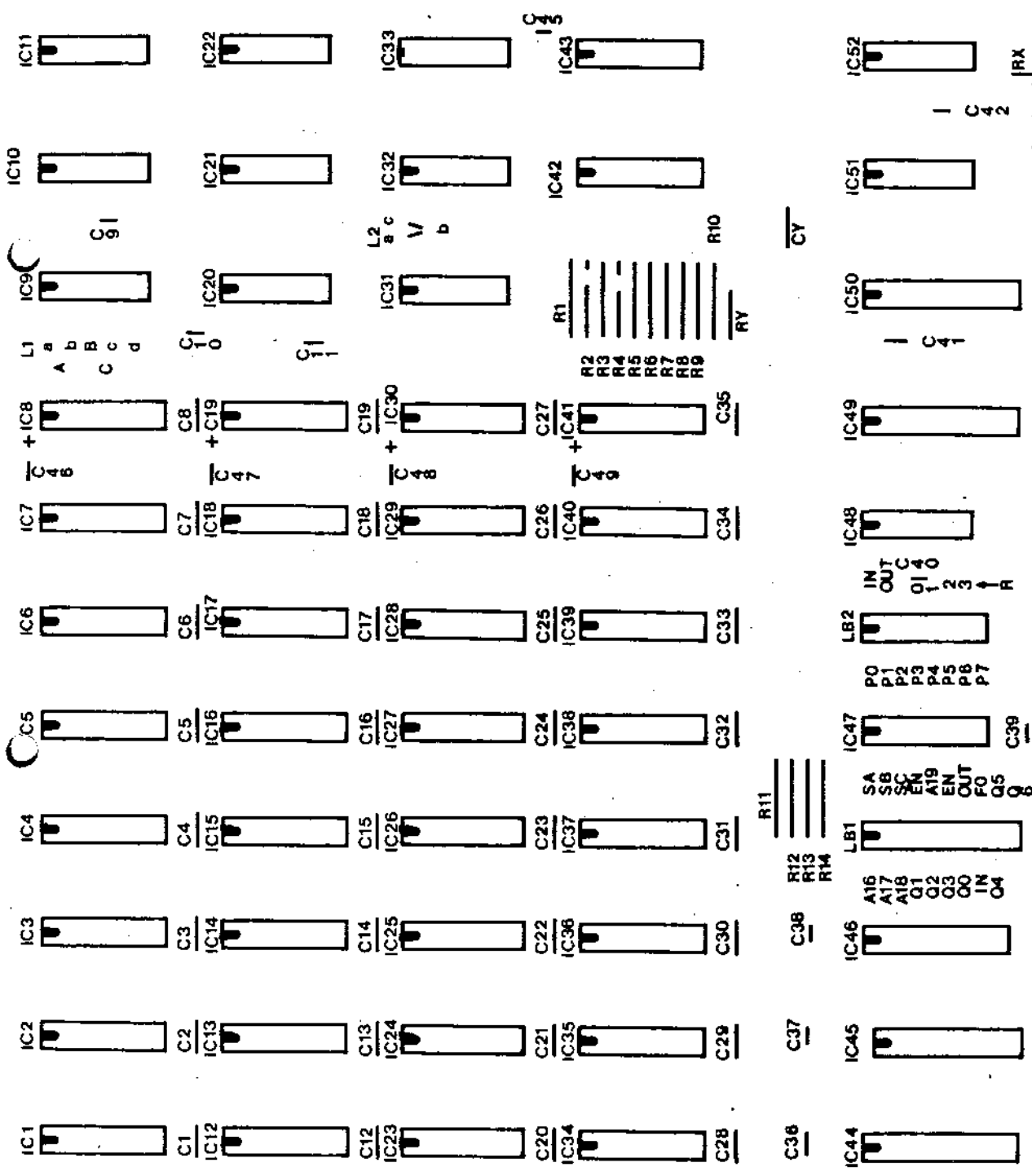
CAPACITORS

| | |
|-------------------|--|
| C1-8, 12-27 | 0.01 μ F DISC * |
| C9-11, 28-42 | 0.01 μ F DISC |
| C43 | 22 μ F TANTALUM BEAD |
| C44, 45 | 0.01 μ F DISC |
| C49 | 2.2 μ F TANTALUM BEAD |
| C46-48 | 3.2 μF TANTALUM BEAD * |
| CX | 100 pF DISC |

MISC.

- ✓ 1 OFF PRINTED CIRCUIT BOARD
- ~~12 OFF 14 PIN DIL SOCKETS~~
- ~~12 OFF 16 PIN DIL SOCKETS~~
- ~~6 OFF 20 PIN DIL SOCKETS~~
- ~~24 OFF 16 PIN DIL SOCKETS *~~
- ~~1 OFF 16 PIN HEADER PLUG~~
- 1 OFF 20 PIN HEADER PLUG
- 1 LENGTH TINNED COPPER WIRE
- 1 LENGTH INSULATED WIRE

* THESE ITEMS ARE NOT SUPPLIED WITH A 64K KIT.



256K RAM
MAP 80 SYSTEMS

+ IC43