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Section 1 - INTRODUCTION

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

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

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

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 9-11,30-32,31-33,42-52. 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)

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	74LS08
IC 22	74LS00
IC 23-30	4164 *
IC 31	74LS86
IC 33	74LS30
IC 34-41	4164
IC 42,43	74157
IC 44,45,47,50	74LS244
IC 46	74LS273
IC 47	74LS138
IC 51	74LS04
IC 52	74S74

RESISTORS

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

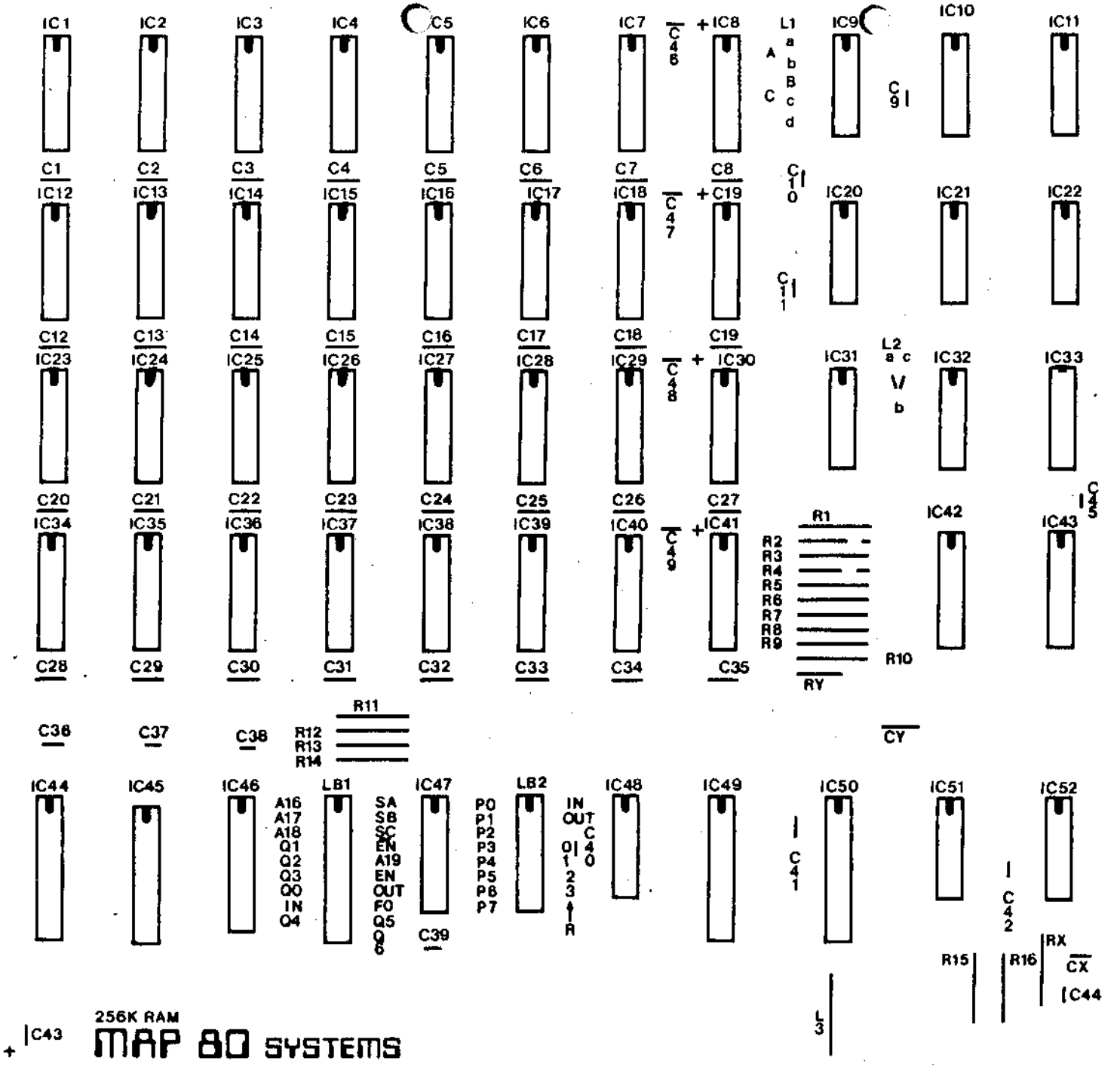
CAPACITORS

C1-8,12-27	0.01 uF DISC *
C9-11,28-42	0.01 uF DISC
C43	22uF TANTALUM BEAD
C44,45	0.01 uF DISC
C49	2.2 uF TANTALUM BEAD
C46-48	8.2 uF TANTULUM 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.


IC1
IC2
IC3
IC4
C5
IC6
IC7
C46
+IC8
L1
a
b
A
B
C
c
d
IC9
C9
IC10
IC11
C1
C2
C3
C4
C5
C6
C7
C8
IC12
IC13
IC14
IC15
IC16
IC17
IC18
C47
+C19
C10
C11
IC20
IC21
IC22
C12
C13
C14
C15
C16
C17
C18
C19
IC23
IC24
IC25
IC26
IC27
IC28
IC29
C48
+IC30
IC31
L2
a
c
V
b
IC32
IC33
C45
C20
C21
C22
C23
C24
C25
C26
C27
IC34
IC35
IC36
IC37
IC38
IC39
IC40
C49
+IC41
R1
R2
R3
R4
R5
R6
R7
R8
R9
RY
IC42
IC43
R10
C28
C29
C30
C31
C32
C33
C34
C35
CY
R11
R12
R13
R14
C36
C37
C38
IC44
IC45
IC46
LB1
IC47
LB2
IC48
IC49
IC50
IC51
IC52
A16
A17
A18
Q1
Q2
Q3
Q0
IN
Q4
SA
SB
SC
EN
A19
EN
OUT
F0
Q5
Q6
C39
P0
P1
P2
P3
P4
P5
P6
P7
IN
OUT
C40
0
1
2
3
R
C41
C42
RX
CX
C44
R15
R16
L3
IC43
256K RAM
MAP 80 SYSTEMS