16K Ram

PolyMorphic
Systems

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This manual is PolyMorphic Systems part no. 810119.

Card
Revision C

The PolyMorphic Systems 16K RAM card provides 16,384 bytes of read/write storage. The card uses proven 4K dynamic RAM chips and provides "transparent" refresh circuitry onboard (no wait states). Each card has been tested for 72 hours before shipment. This includes 48 hours of GALPAT and checkerboard testing at high temperatures with no errors. This card should provide years of trouble-free service in your 8080-based S-100 system.

THEORY OF OPERATION

Refresh cycles are inserted during the T4 state of the M1 cycle of the 8080 central processor or during a hold or halt state of more than 15 cycles. Memory read cycles are initiated by the coincidence of the phase 1 clock, PSYNC, and DO7 (MREAD staus). Write cycles are initiated by the leading edge of MWRITE. If the card is used with systems using DMA (Direct Memory Access), the DMA controller must provide the proper status bits on the DO bus during SYNC time. The bus timing must match that of an 8080 processor. Contact the manufacturer or distributor of the DMA controller before attempting to use the 16K RAM card with a DMA device.

ADDRESSING

Consult the user's manual for your computer to determine the correct address for this memory card. For POLY 88 or System 88 computers, the card should be addressed just above the present top of memory. If your system uses only 16K cards, the first card should be addressed at 2000H, the second card at 6000H, and the third card at A000H.

The 16K RAM card may be addressed to any 4K boundary within the 64K address space of the S-100 bus and will occupy the next 16K bytes of storage space. (If addressed at 2000H, the RAM will occupy 2000-5FFFH.) The address switches are located in the lower left corner of the card. Up to seven switches may be present, but only the top four are used. These switches are numbered 1 through 4 from the top of the card. The switch settings for various addresses are given below. Rocker switches are ON when the on or plus side of the rocker switch is pressed down. For purposes of reference, note the numbers down one side of the card and across the top. These numbers indicate the addresses of the memory chips within the 16K block. Numbers down the side indicate byte address; row 0 on the card is addressed in the first 4K of the block, row 1 in the next, and so on. Numbers across the top correspond to the bits in each byte. Column 0 contains the first bit in every byte, column 1 the second, etc.

Switch Settings
(X=on, blank=off)

Address	1	2	3	4
0000				
1000	X			
2000		X		
3000	X	X		
4000			X	
5000	X		X	
6000		X	X	
7000	X	X	X	
8000				X
9000	X			X
A000		X		X
B000	X	X		X
C000			X	X
D000	X		X	X
E000		X	X	X
F000	X	X	X	X

If addressed higher than C000H, the memory above FFFFH will appear in the lower end of the address space. (If set at E000 it will appear at E000-FFFFH and 0000-1FFFH.)

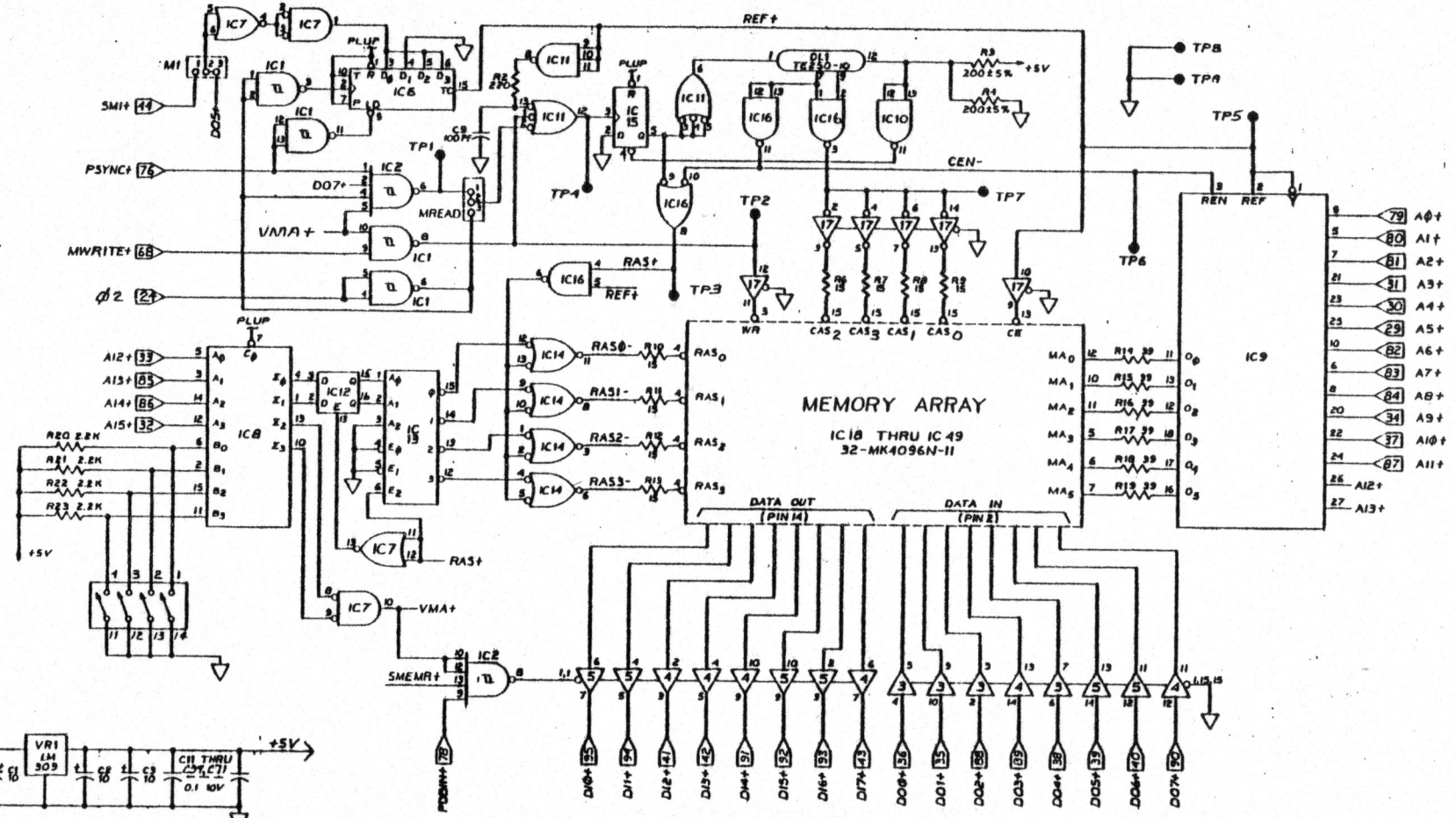
The RAM card may now be plugged into your system backplane. Consult the user's manual for your computer for card insertion instructions.

SPECIFICATIONS

Memory Size:	16,384 Bytes
Access Time:	375 nS (from 01)
Cycle Time:	525 nS
Wait States:	0
Power Consumption:	+16 to 20V @ 200 mA max. (active)
	+16 to 20V @ 90 mA max. (standby)
	+8 to 10V @ 600 mA max.
	-16 to 20V @ 24 mA max.
Card Size:	5.5" x 10"

105201 DRAWING NO. A REV.

REVISIONS			
REV.	DESCRIPTION	DATE	APP'D
A	DCR 100160, 100171	11-11-77	



UNLESS OTHERWISE SPECIFIED REFER TO DRAWING FOR AND THE DIMENSIONS ARE IN INCHES AND APPLY AFTER PLATING BREAK SHARP EDGES

MATERIAL

FINISH

DRAWN	L. ARAKI 7-7-77
CHECK	
ENGR	
APPR	7-21-77
NEXT ASSY	USED ON

POLYMORPHIC SYSTEMS

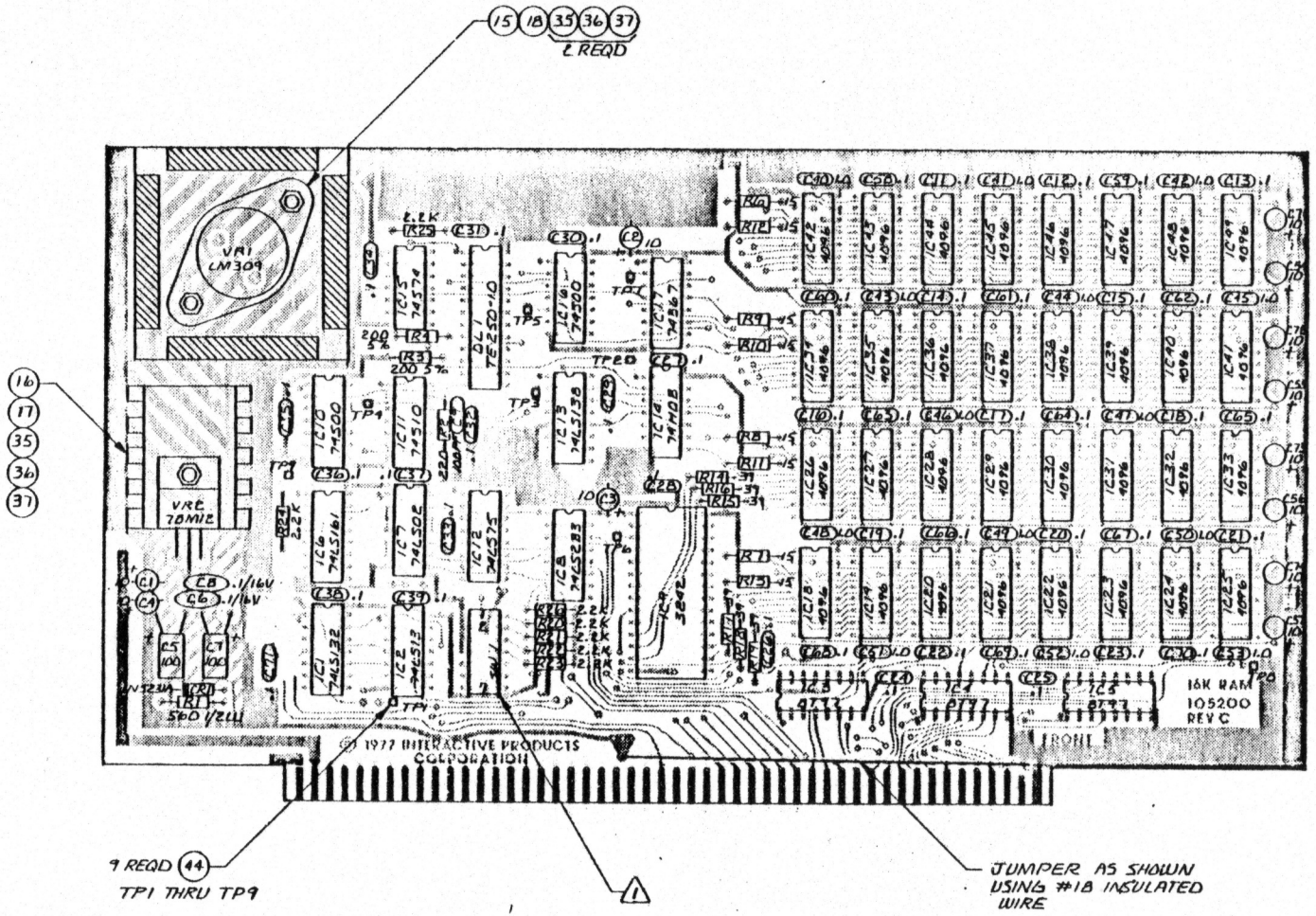
SCHEMATIC - 16K RAM

SIZE	DRAWING NUMBER	REV
D	105201	A

SCALE SHEET OF

005200 | B

REVISIONS			
REV.	DESCRIPTION	DATE	APP'D
—	RELEASED DCR 100042	7-1877	—
A	DCR 100134	10-677	
B	DCR 100160	11-1177	



2. MODIFY PER DWG 104140.

1 TO BE INSTALLED AFTER FLOW SOLDER OPERATION.

NOTES: UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED INTERPRET DRAWING PER ANSI Y14.5 DIMENSIONS ARE IN INCHES AND APPLY AFTER PLATING BREAK SHARP EDGES	DRAWN R. Sanchez	DATE 7/18/77	POLYMORPHIC SYSTEMS
	CHECK		
	ENG APPR		
	MFG APPR	DATE 7-27-77	ASSY-16K RAM
MATERIAL	NEXT ASSY	USED ON	
FINISH	THIS DOCUMENT CONTAINS CORPORATE INFORMATION. IT MAY NOT BE REPRODUCED OR TRANSFERRED TO OTHERS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION.	SIZE D	DRAWING NUMBER 005200 REV B
		SCALE 2/1	SHEET OF