

Radio Shack®

Service Manual

26-1211

TRS-80®

**NETWORK 2
CONTROLLER**

CATALOG NUMBER 26-1211

CUSTOM MANUFACTURED IN U.S.A. BY RADIO SHACK  A DIVISION OF TANDY CORPORATION

THEORY OF OPERATION

POWER SUPPLY

The Network 2 uses a standard TRS-80 Model I power pack as input power source. The AC voltage (6.75 volts rms) present at pins 1 and 3 is full-wave rectified by CR18 and CR19, and filtered by C1. A three terminal regulator, VR2, is used to deliver +5 volts DC \pm 5% to the Network 2 circuitry. The supply is decoupled at Z1 via C4.

INPUT SELECT AND BUFFERING

S1 selects the slave computer (1 - 16) which may transfer data to the host computer at any one time. Cassette signals from the selected slave unit are filtered by R41 and C8 and are directed to U1a pin 3, the comparator's positive input. The reference at U1a pin 2 is set to 0.6 volts DC by R2 and R3 for 500 baud operation. For 1500 baud, R39 is added to the divider circuit via S4, to shift the pin 2 reference to 0.5 volts DC. The output at U1a pin 1 is buffered by Q1, AC coupled by C3, and level-shifted by R11 and the 220 ohm input resistor in the host computer, to assure zero-crossing for Model III and Color Computer operation.

OUTPUT BUFFERING

The cassette output from the host computer is filtered by R38 and C7, and directed to U1b pin 5, the positive input to the comparator. The reference at U1b pin 6 is set to 0.6 volts DC by R13 and R14 for 500 baud operation, and R40 is added to the divider to shift the reference to 0.5 volts DC for 1500 baud. The output at pin 7 is buffered by Q2 and Q3 and is AC coupled out to all slave units. This allows mass data transfer to the slave computers.

MODE SELECTION

The Network 2 provides for normal cassette I/O via the CASS/MPLX switch on the front panel (S2). The baud rate is selectable via the 500/1500 switch also on the front panel (S4).

ACTIVE UNIT INDICATION

LED's on the front panel of the Network 2 indicate which slave computer is interacting with the host computer. The LED's are activated when the slave computers enter a CLOAD or CSAVE command. The LED's are provided +5 volts DC by the Network 2 and the ground switching to activate them is provided by the slave CPU's motor relay contacts. Each LED is provided current limiting by a 330 ohm resistor.

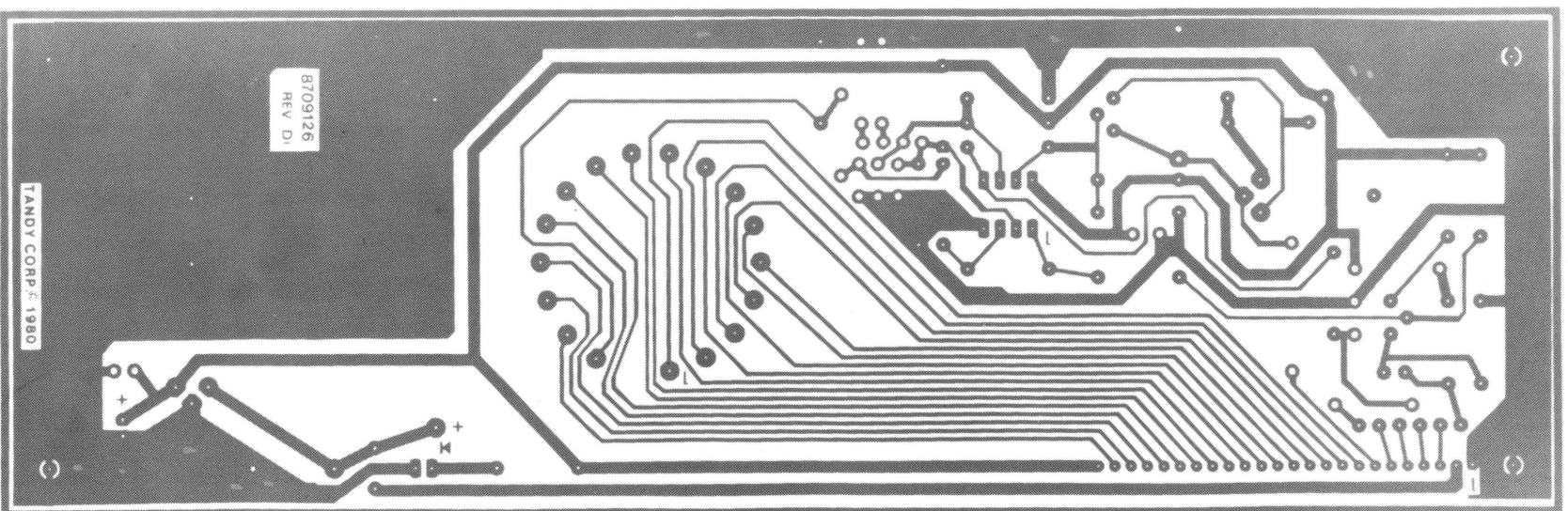
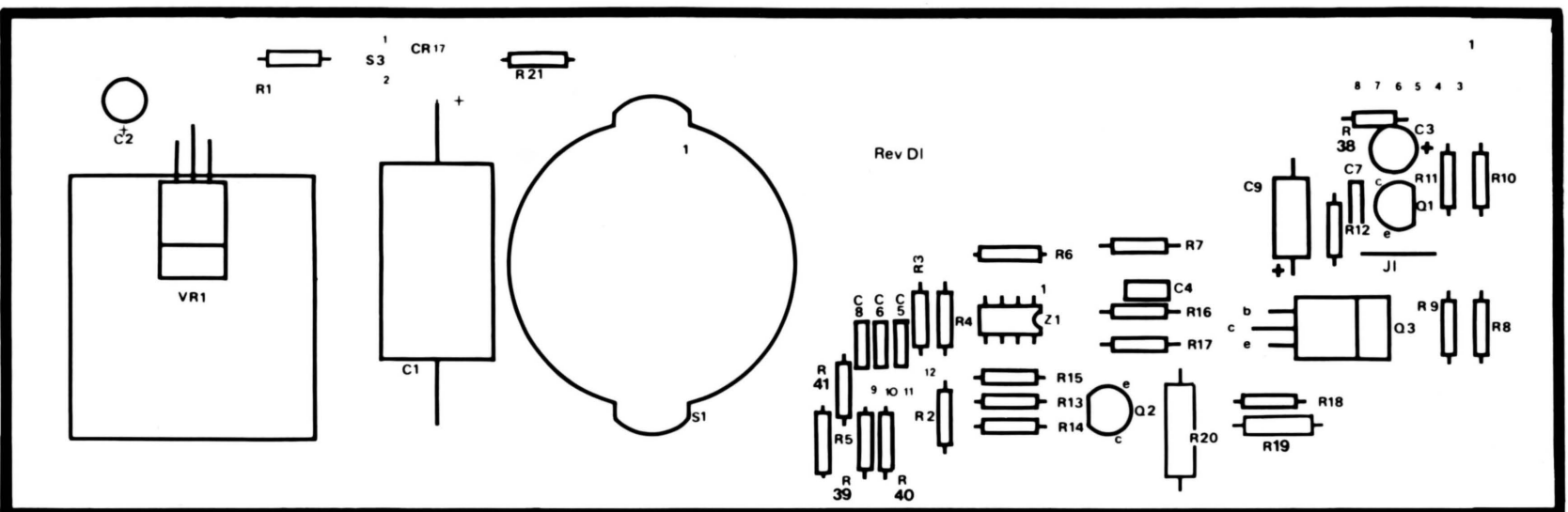


FIGURE 1. MAIN PRINTED CIRCUIT BOARD – COMPONENT AND CIRCUIT SIDES.

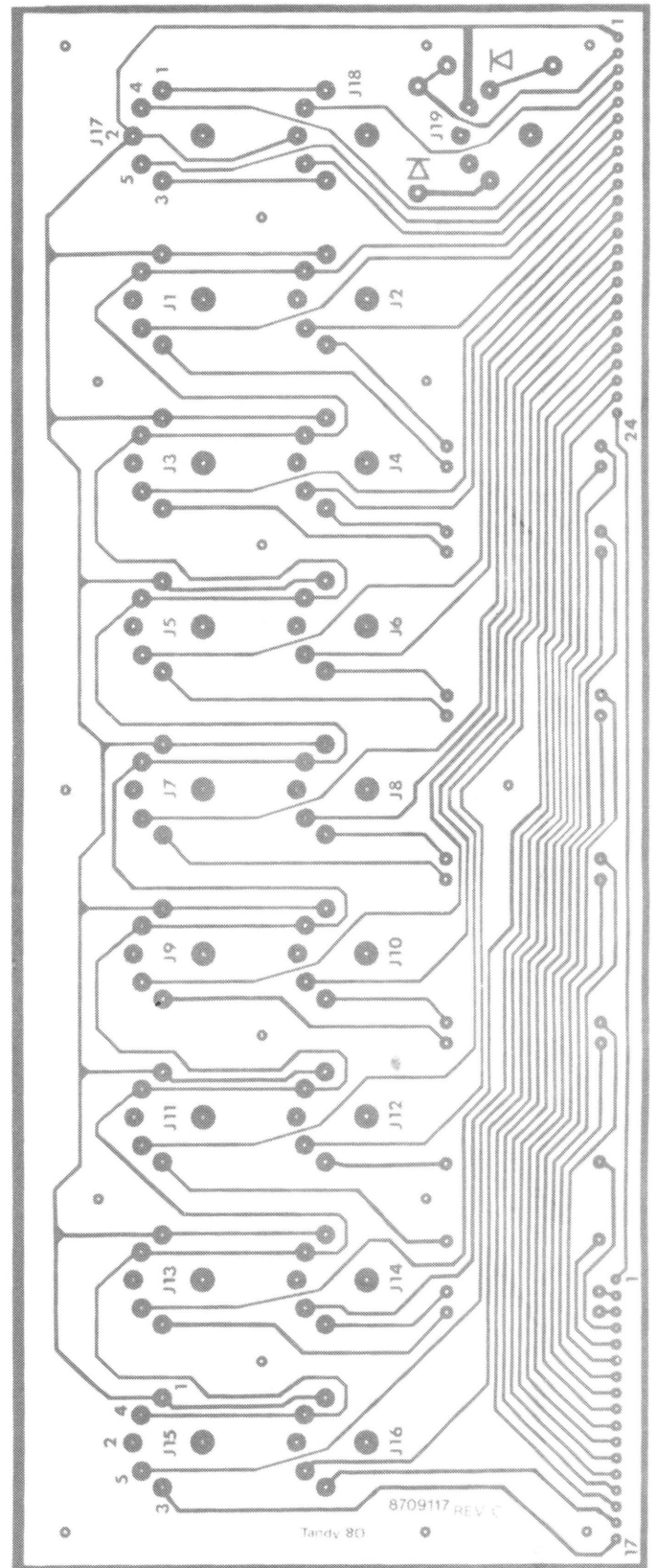
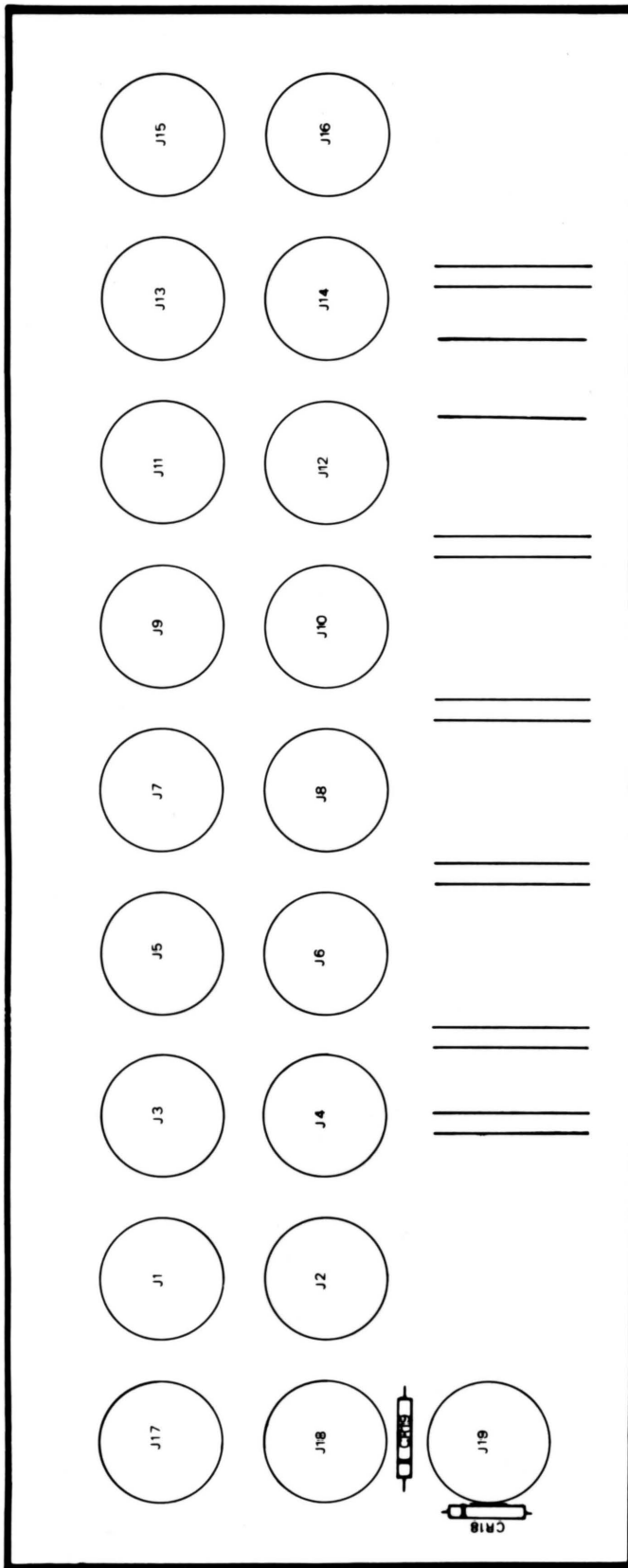


FIGURE 2. DIN ARRAY PRINTED CIRCUIT BOARD – COMPONENT AND CIRCUIT SIDES.

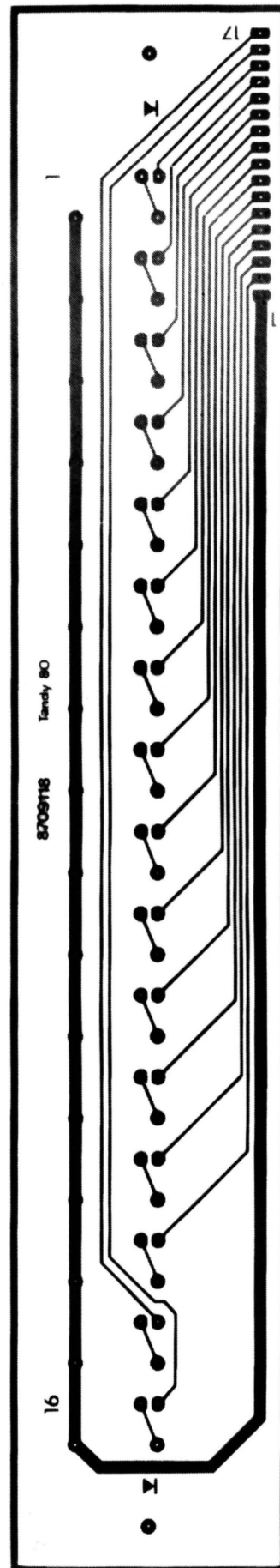
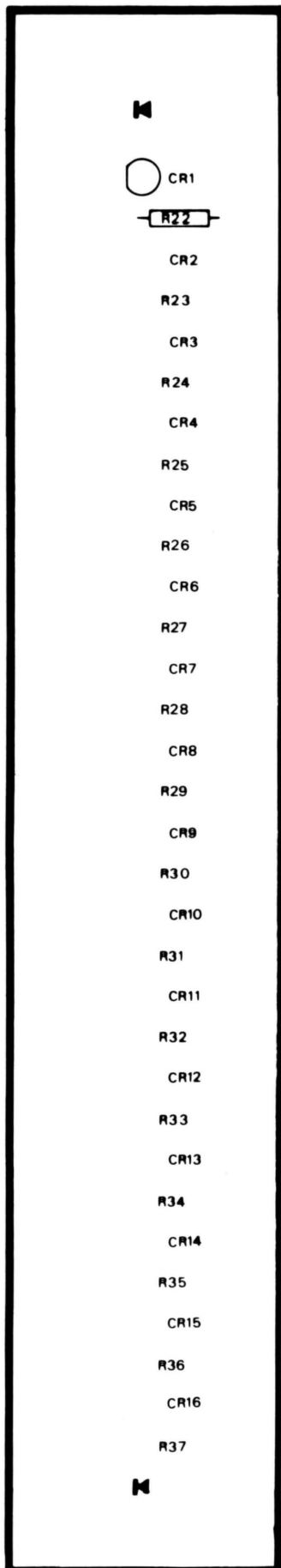


FIGURE 3. LED ARRAY PRINTED CIRCUIT BOARD – COMPONENT AND CIRCUIT SIDES.

PARTS LISTS

ELECTRICAL

SYMBOL	DESCRIPTION	MANUFACTURER'S PART NUMBER	RADIO SHACK PART NUMBER
CAPACITORS			
C1	1000 μ F, 50V, electrolytic, axial	8318104	ACC108QFAP
C2	10 μ F, 16V, electrolytic, radial	8326101	ACC106QDAP
C3	10 μ F, 16V, electrolytic, radial	8326101	ACC106QDAP
C4	0.01 μ F, 50V, monolithic, ceramic	8383104	ACF2130
C5	0.1 μ F, 50V, mono, ceramic	8384104	ACC104QJAP
C6	0.1 μ F, 50V, mono, ceramic	8384104	ACC104QJAP
C7	0.001 μ F, 50V, polyester	8352104	ACC102KJGP
C8	0.001 μ F, 50V, polyester	8352104	ACC102KJGP
C9	100 μ F, 16V, electrolytic, axial	8317101	ACC107QDAA
CONNECTORS			
J1	5 pin, DIN	8509010	-----
J19	5 pin, DIN	8509010	-----
DIODES			
CR1	LED	8469001	-----
CR17	LED	8469001	-----
CR18	1N5392, 100V, 1.5A	8150392	-----
CR19	1N5392, 100V, 1.5A	8150392	-----
INTEGRATED CIRCUITS			
Z1	LM393, Comparator	8050393	-----
VR2	MC7805CT, 5V, regulator	8051805	-----
PCB ASSEMBLYS			
	DIN Array (Rev. B)	8894002	-----
	LED Array	8894003	-----
	Logic (Rev. D)	8894001	-----
RESISTORS			
R1	10K, $\frac{1}{4}$ W, 5%	8207310	AN0281EEC
R2	110K, $\frac{1}{4}$ W, 1%, MF	8200410	-----
R3	15K, $\frac{1}{4}$ W, 1%, MF	8200315	-----
R4	1K, $\frac{1}{4}$ W, 5%	8207210	AN0196EEC
R5	100K, $\frac{1}{4}$ W, 5%	8207410	AN0371EEC
R6	1M, $\frac{1}{4}$ W, 5%	8207510	AN0445EEC
R7	1K, $\frac{1}{4}$ W, 5%	8207210	AN0196EEC
R8	3.9K, $\frac{1}{4}$ W, 5%	8207239	AN0237EEC
R9	12 ohm, $\frac{1}{4}$ W, 5%	8207012	-----

ELECTRICAL (cont'd)

SYMBOL	DESCRIPTION	MANUFACTURER'S PART NUMBER	RADIO SHACK PART NUMBER
R10	220 ohm, ¼W, 5%	8207122	-----
R11	2K, ¼W, 5%	8207220	AN0213EEC
R12	1K, ¼W, 5%	8207210	AN0196EEC
R13	110K, ¼W, 1%, MF	8200410	-----
R14	15K, ¼W, 1%, MF	8200315	-----
R15	1M, ¼W, 5%	8207510	AN0445EEC
R16	330 ohm, ¼W, 5%	8207133	AN0159EEC
R17	560 ohm, ¼W, 5%	8207156	AN0176EEC
R18	1K, ¼W, 5%	8207210	AN0196EEC
R19	22 ohm, ¼W, 5%	8217022	-----
R20	15 ohm, 1W, 5%	8247015	-----
R21	330 ohm, ¼W, 5%	8207133	AN0159EEC
R22	330 ohm, ¼W, 5%	8207133	AN0159EEC
R37	330 ohm, ¼w, 5%	8207133	AN0159EEC
R38	10K, ¼W, 5%	8207310	AN0281EEC
R39	64.9K, ¼W, 1%, MF	8200365	-----
R40	64.9K, ¼W, 1%, MF	8200365	-----
R41	10K, ¼W, 5%	8207310	AN0281EEC
SWITCHES			
S1	16 position	8489023	-----
S2	DPDT, rocker with bezel	8489024	-----
S3	SPDT, rocker with bezel	8489025	-----
S4	DPDT, rocker with bezel	8489024	-----
TRANSISTORS			
Q1	MPS3906	8100906	AMX3584
Q2	MPS3904	8110904	AMX3583
Q3	MJE30 or TIP30	8100030	-----

MECHANICAL

DESCRIPTION	QUANTITY	MANUFACTURER'S PART NUMBER	RADIO SHACK PART NUMBER
Cable, 5-pin DIN Audio to DIN, 30"	6	8709121	-----
Cable, 5-pin DIN Audio to DIN, 21"	6	8709122	-----
Cable, 5-pin DIN Audio to DIN, 12"	4	8709123	-----
Cable, 5-pin DIN Audio to DIN, 2"	1	8709124	-----
Cable, 5-pin, DIN Audio to CASS	1	8709125	-----
Cable Ties	3	8590087	-----
Case Bottom	1	8729053	-----
Case Top	1	8729034	-----
Clip, 90° angle, threaded	2	8729034	-----
Feet, rubber	4	8589005	AHB7614
Knob, input select	1	8719093	-----
LED Mounting	16	8559001	ART1951
Nut, #6, zinc, hex	2	8579014	AHD7168
Screw, 4-40 x 1/4", phillips, PH	6	8569031	AHD1540
Screw, 4-40 x 1/4", phillips, PH, blk. oxide	6	8569104	-----
Screw, 6-32 x 0.375"	30	8569026	-----
Screw, 6-32 x 0.817", phillips, PH, blk. oxide	2	8569103	-----
Stand-off, 1/4" x 1", tapped, 4-40, hex	4	8589045	-----
Stand-off, 1/4" x 1/2", tapped, 4-40, hex	2	8579018	-----
Stand-off, 1/4" x 1/2", tapped, 6-32	14	8589054	-----
Washer, #6, lock	2	8589039	-----
Washer, #6, nylon	28	8589048	-----

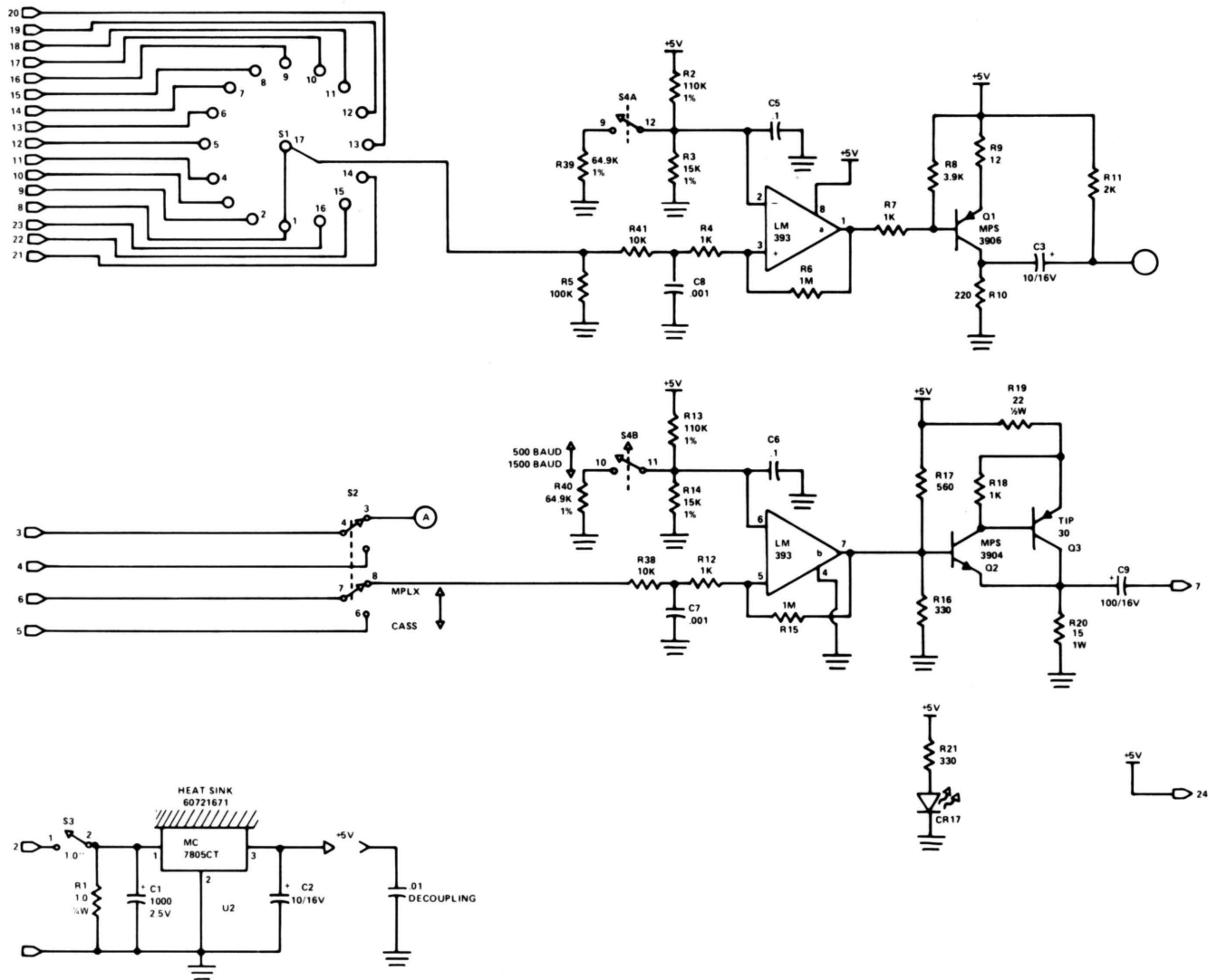


FIGURE 4. MAIN PC BOARD SCHEMATIC DIAGRAM.

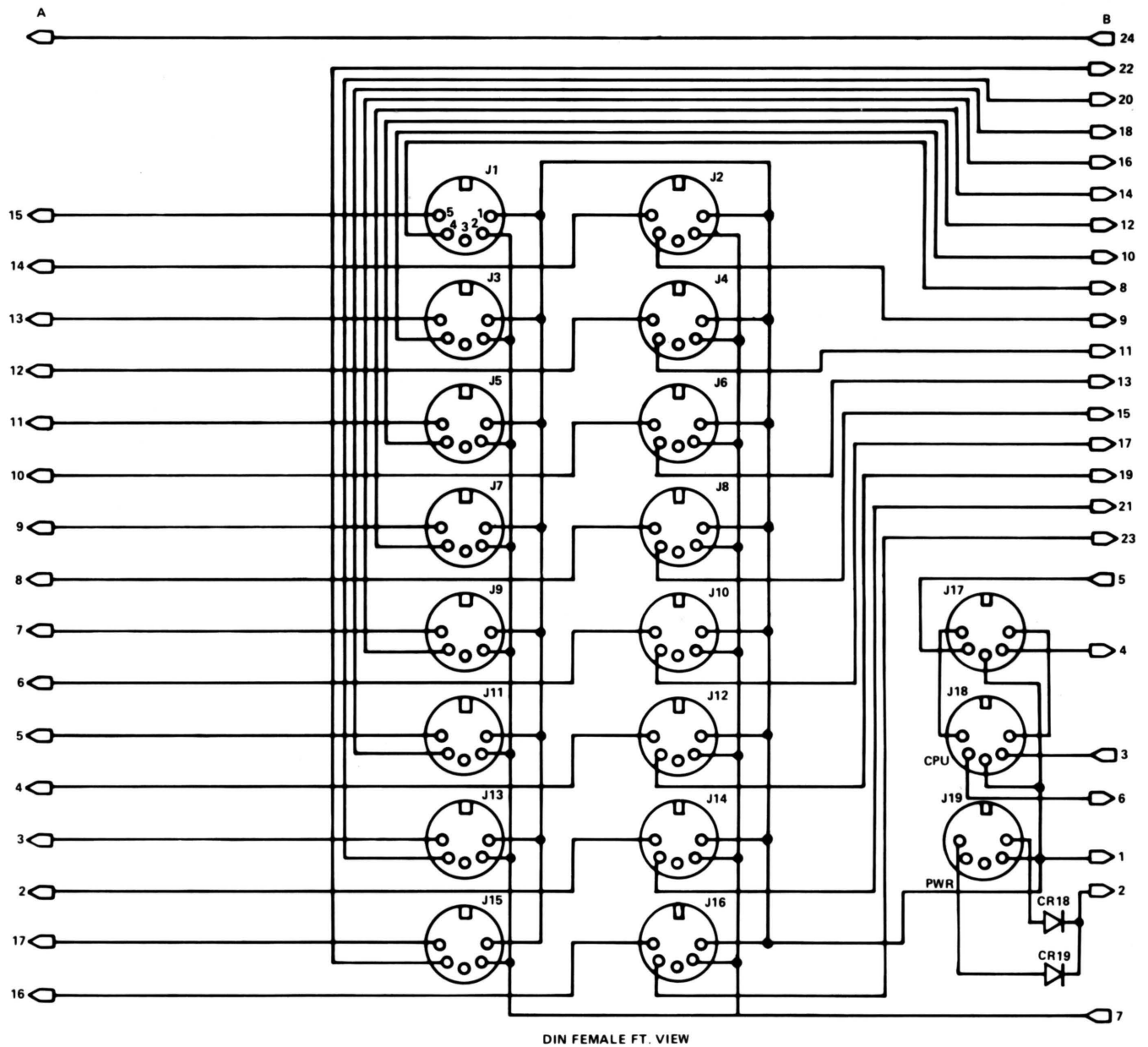


FIGURE 5. DIN ARRAY PC BOARD SCHEMATIC DIAGRAM.

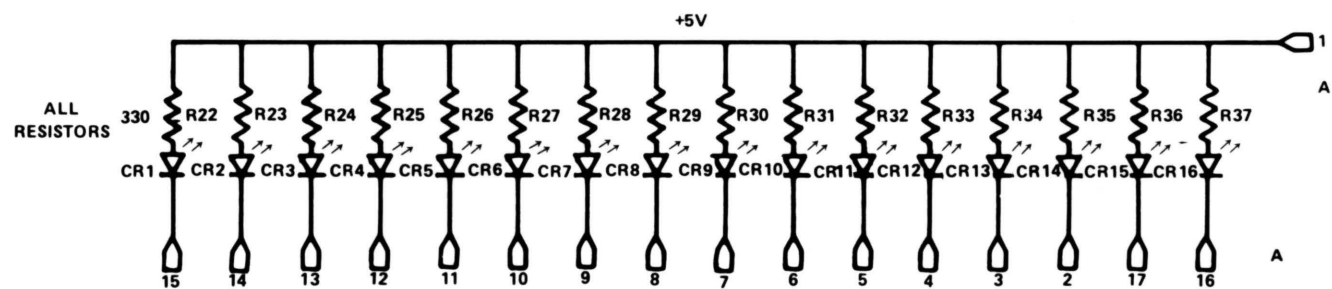


FIGURE 6. LED ARRAY PC BOARD SCHEMATIC DIAGRAM.

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