

NOVAG INDUSTRIES LIMITED
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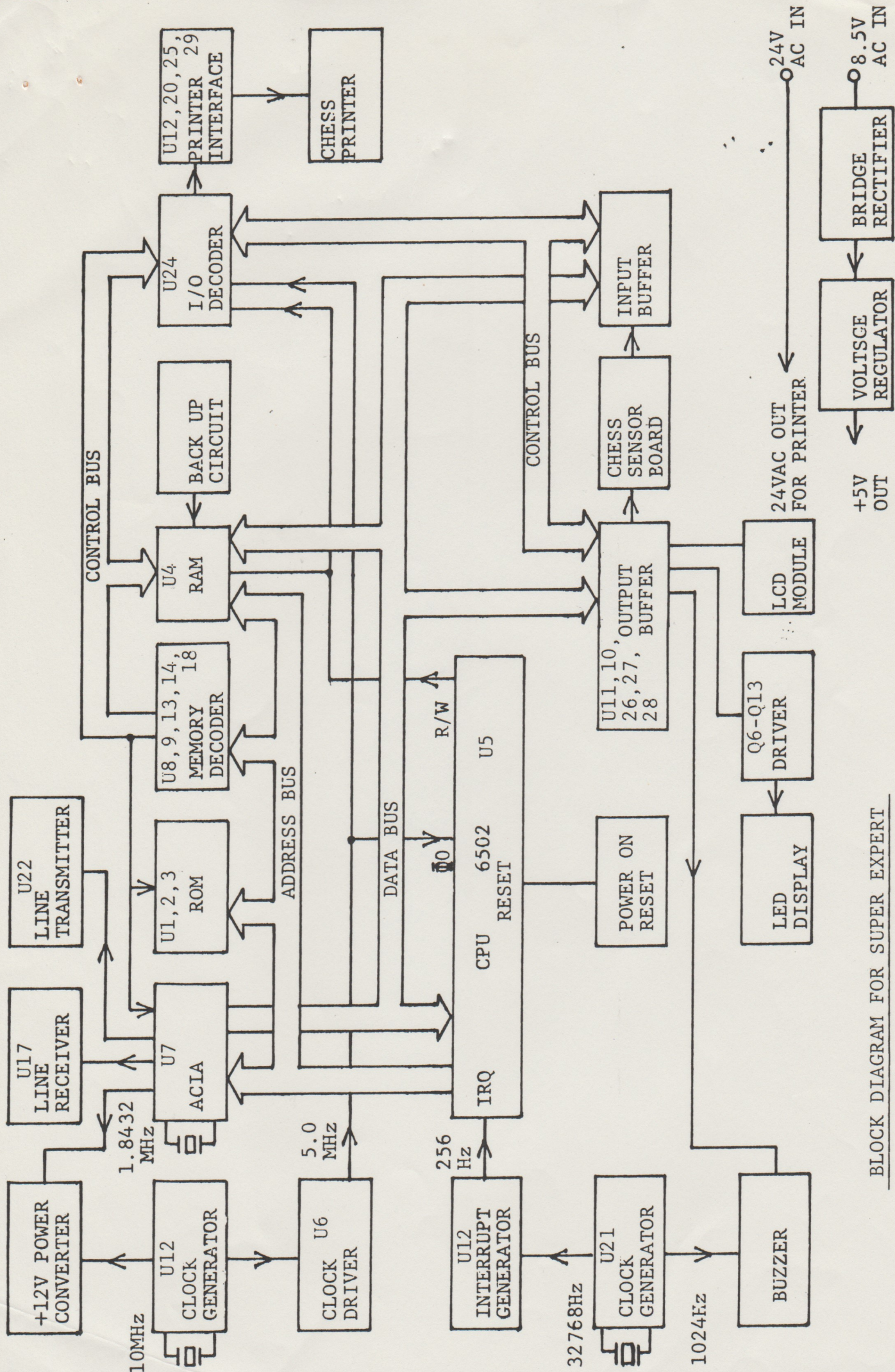
SUPER EXPERT (ART NO. 878)

SERVICE MANUAL

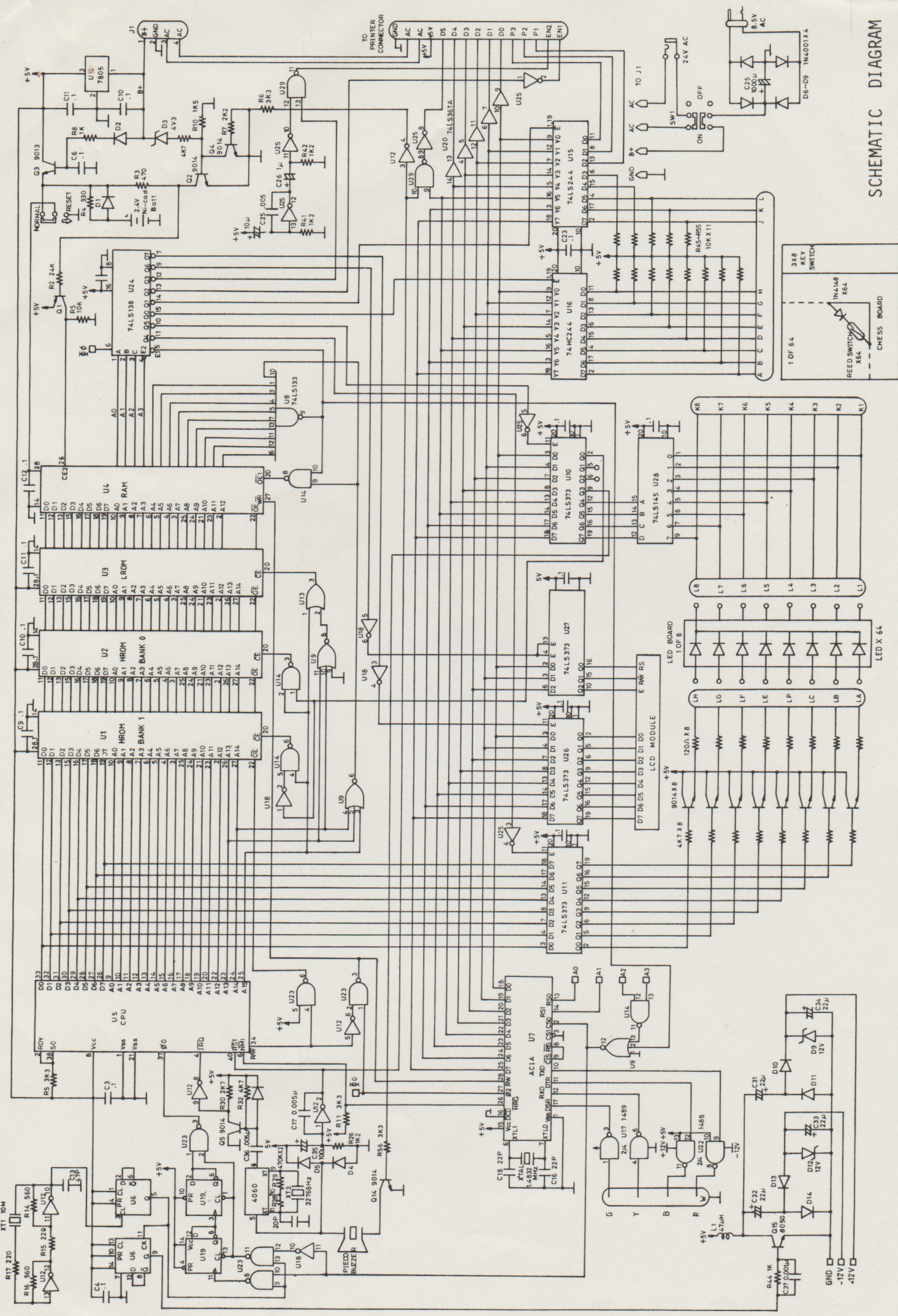
(Preliminary)

C O N T E N T S

1. BLOCK DIAGRAM
2. SCHEMATIC DIAGRAM
3. PCB LAYOUT - Main #100084
 (with components location)
4. PCB LAYOUT - Main #100084
 (soldering side)
5. PCB LAYOUT - Swith/Jack #100047
6. PCB LAYOUT - Reed Switch/
 LED Chessboard #100085
7. PARTS LIST

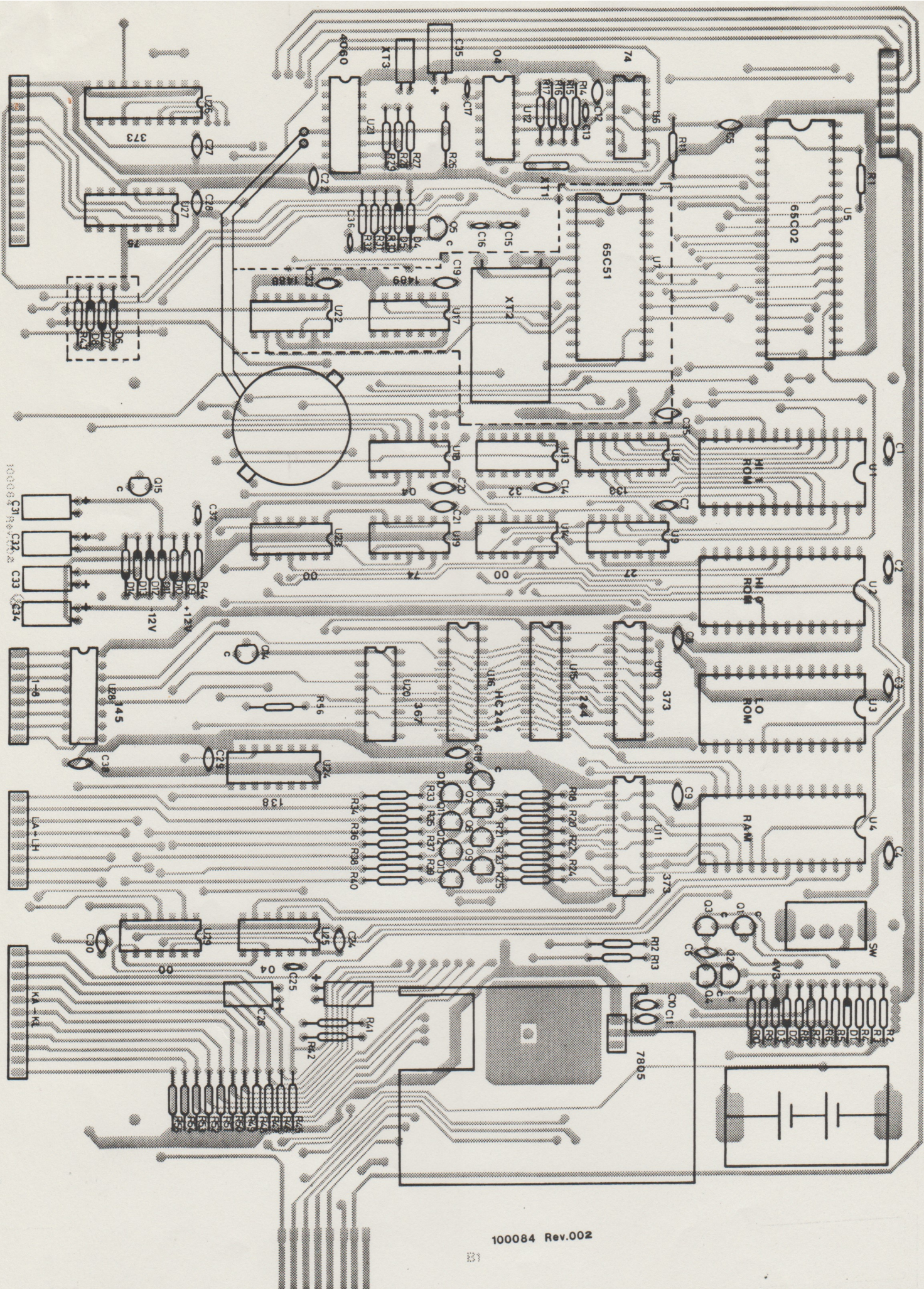


BLOCK DIAGRAM FOR SUPER EXPERT



SCHEMATIC DIAGRAM

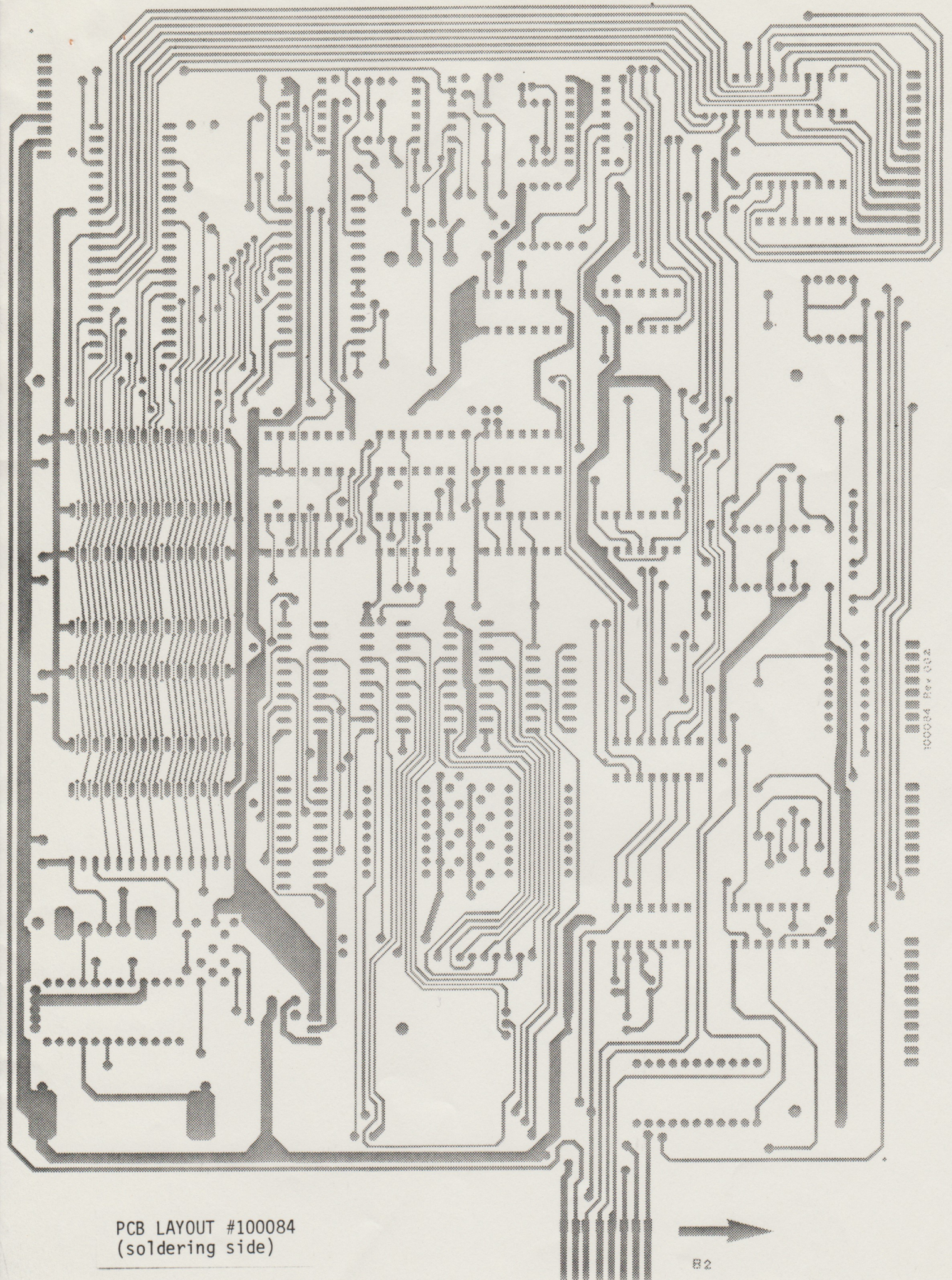
#878



100084 Rev.002

B1

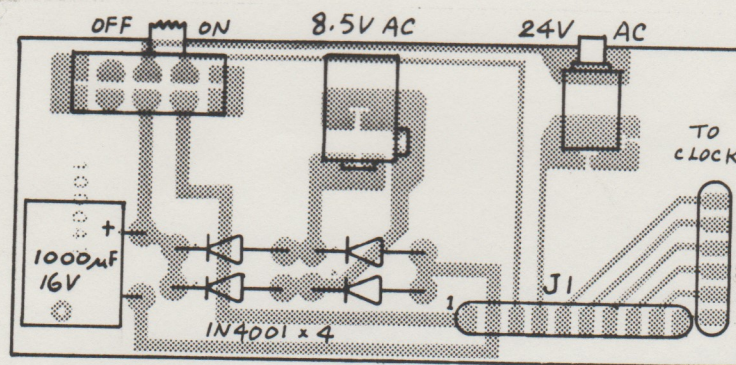
PCB LAYOUT #100084 component side with component location



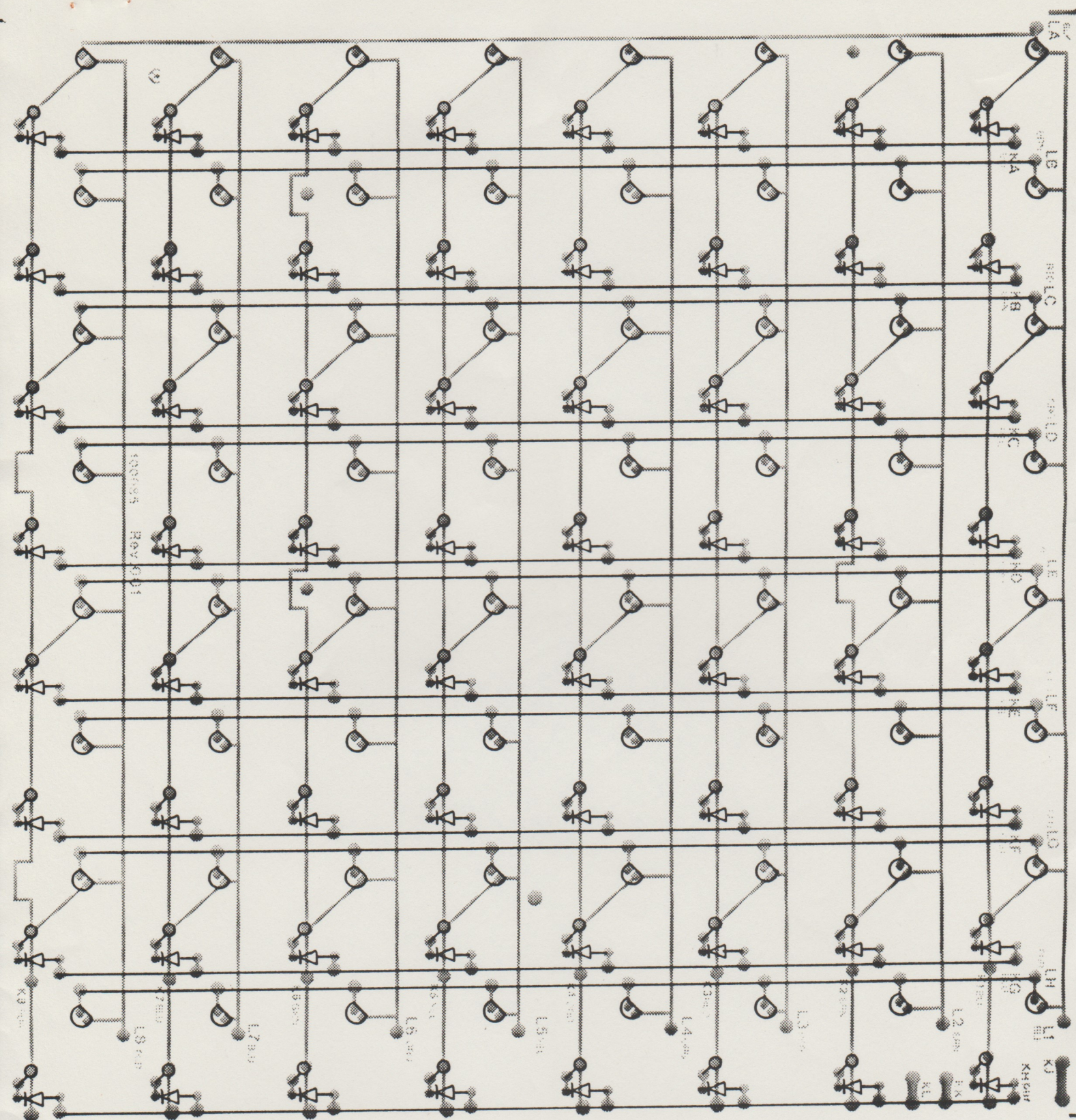
100084 Rev. 002

PCB LAYOUT #100084
(soldering side)

B2 →



#100047 Switch & Jack PCB



BILL OF MATERIALS

MODEL : SUPER EXPERT (878)

A) ASSEMBLY : 1) MAIN PCB

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
1	030001	74LS00	3	0.50
2	030003	74LS04	3	0.50
3	030004	74LS74	2	0.80
4	030005	74LS75	1	0.80
5	030008	74LS138	1	0.56
6	030009	74LS244	1	1.50
7	030029	74LS367	1	0.50
8	030035	74LS373	3	0.80
9	030042	CMOS 4060	1	1.00
10	030051	74LS145	1	0.85
11	030053	74HC244	1	2.50
12	030054	74LS32	1	0.35
13	030059	74LS27	1	0.35
14	030060	74LS133	1	0.70
15	070050	CMOS RAM CXK5864AP	1	5.00
16	100084	Logic P.C.Board	1	19.00
17	130013	Push Slide Switch (Reset)	1	0.10
18	180005	Crystal 32768 Hz	1	0.80
19	180008	Crystal 10.0 Mhz	1	1.40
20	180012	Crystal 1.8432 Mhz	1	0.80
21	400024	IC Socket 40 Pin	1	0.40
22	400035	IC Socket 14 Pin	2	0.30
23	400038	IC Socket 28 Pin	4	0.40

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SUPER EXPERT (878)

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A) ASSEMBLY : 1) MAIN PCB

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
24	400043	Connector 9 Pin RT	1	0.40
25	400044	Connector 8 Pin RT	2	0.40
26	400055	Connector 11 Pin RT	1	0.40
27	400056	Connector 14 Pin RT	1	0.45
28	450035	Nicad Battery 2.4V	1	2.30
29		Foam Pad 10x10 mm	2	0.02
30		Transistor 9013	1	0.10
31		Transistor 8050	1	0.10
32		Transistor 8550	1	0.10
33		Transistor 9014 C	12	0.10
34		Switching Diode 1N4148	10	0.02
35		Zener Diode 4.3V 1/2W	1	0.02
36		Zener Diode 12V 1/2W	2	0.05
37		E. Cap 100 MFD 10V +80 -20	1	0.10
38		E. Cap 22 MFD 25V +80 -20	4	0.05
39		E. Cap 10 MFD 10V +80 -20	1	0.05
40		E. Cap 1 MFD 10V +80 -20	1	0.05
41		Cer. Cap 30 PF 50V	2	0.05
42		Cer. Cap 47 PF 50V	1	0.05
43		Cer. Cap 100 PF 50V	1	0.05
44		Cer. Cap 0.001 UF 50V	1	0.05
45		Cer. Cap 0.005 UF 50V	3	0.05
46		Cer. Cap 0.1 UF 12V	22	0.05
47		Coil 47 UH	1	0.40

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SUPER EXPERT (878)

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A) ASSEMBLY : 1) MAIN PCB

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
48		Resistor 120 Ohm 1/4W	8	0.01
49		Resistor 220 Ohm 1/4W	4	0.01
50		Resistor 330 Ohm 1/4W	1	0.01
51		Resistor 470 Ohm 1/4W	1	0.01
52		Resistor 560 Ohm 1/4W	2	0.01
53		Resistor 1.2 K Ohm 1/4W	2	0.01
54		Resistor 1.5 K Ohm 1/4W	2	0.01
55		Resistor 1.8 K Ohm 1/4W	1	0.01
56		Resistor 2.2 K Ohm 1/4W	1	0.01
57		Resistor 3.3 K Ohm 1/4W	3	0.01
58		Resistor 4.7 K Ohm 1/4W	11	0.01
59		Resistor 10 K Ohm 1/4W	14	0.01
60		Resistor 240 K Ohm 1/4W	1	0.01
61		Resistor 470 K Ohm 1/4W	2	0.01
62		Resistor 1 M Ohm 1/4W	1	0.01

A) ASSEMBLY : 2) SWITCH PCB

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
1	100047	Switch P.C.Board	1	0.50
2	130010	On/Off Switch 2P2T	1	0.16
3	350006	Earphone Socket 2.5mm	1	0.20
4	350007	Female Socket 2x5	1	0.13
5	400027	Telephone Socket 6 Pin	1	2.00
6	410040	Cable Ass'y 9 Pin	1	0.50

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SUPER EXPERT (878)

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A) ASSEMBLY : 2) SWITCH PCB

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
7	600273	Frame - Jack & Switch	1	0.20
8		Screw WH 3x8 TA	2	0.01
9		Rectifier Diode 1N4001	4	0.02
10		E. Cap 1000 MFD/16V	1	0.50
11		Switch Felt	1	0.10

A) ASSEMBLY : 3) REED SWITCH PCB

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
1	050008	LED 3mm RED	64	0.10
2	100085	Reed Switch P.C.Board	1	11.00
3	120009	Reed Switch RD-17BL	64	0.50
4	410038	Cable Ass'y 8 Pin	2	0.60
5	410041	Cable Ass'y 11 Pin	1	0.65
6	530035	Brass Spacer	4	0.05
7	600147	Reed / LED Mtg Frame	16	0.20
8		Jumper Bridge	15	0.20
9		Switching Diode 1N4148	64	0.02
10		Nut M3x0.5	4	0.01
11		Screw 2.6x8 KT	32	0.01
12		Cable Tie 3"	5	0.10

B) ASSEMBLY : HOUSING

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
1	020017	CPU R65C02P4	1	12.00
2	030022	Regulator 7805	1	0.76

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SUPER EXPERT (878)

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B) ASSEMBLY : 2) HOUSING

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
3	060009	LCD Module	1	22.00
4	070048	Eprom 27c256AD H0	1	10.00
5	070048	Eprom 27c256AD H1	1	10.00
6	070048	Eprom 27c256AD L	1	10.00
7	100081	Keyboard P.C.Board	1	1.50
8	410042	Cable Ass'y 14 Pin	1	0.90
9	510022	Rubber Feet	4	0.10
10	510029	Rubber Keypad	4	0.40
11	520043	Fiber Paper - For P.C.Board	1	0.30
12	530047	Heat Sink	1	0.25
13	530139	LCD Mtg Metal Plate	1	0.40
14	600240	Frame - LCD & Keyboard	1	0.80
15	900001	Wooden Cae	1	40.00
16	900014	Bottom Cover	1	5.00
17		Buzzer 27mm	1	0.40
18		Buzzer Case & Cover	1	0.20
19		Jumper Wire 110mm	2	0.10
20		Screw M3x8x0.5	1	0.01
21		Nut	1	0.01
22		Screw WH 3x8 TA	17	0.01
23		Screw WH 3x12 TA	4	0.01
24		Screw P3x22 T	2	0.01

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B) ASSEMBLY : 2) HOUSING

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
25		Screw M3x4x0.5	4	0.01
26		Anti-Dust Felt	2	0.10
27		Foam Pad 20x20mm	1	0.05
28		Band Switch Felt	1	0.10
29		Bare Wire 12mm	14	0.05
30		Jumper Wire 110mm	11	0.10

C) ASSEMBLY : PACKING

<u>ITEM</u>	<u>NVG P/N</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT PRC</u> <u>(US\$)</u>
1	410028	Printer Cable Ass'y	1	2.50
2	700016	Polyfoam Cover	1	0.50
3	700017	Polyfoam Tray	1	1.50
4	850001	Blister - For Chess Pcs Set	1	0.40
5	900002-13	Wooden Chess Pcs Set	1	8.00
6	970188	Instruction Manual	1	0.30
7	990122	Gift Box	1	2.00
8		Card Sleeve - For Chess Pcs Set	1	0.25
9		Polybag - Unit	1	0.05
10		Polybag - Manual	1	0.05
11		Polybag - Printer Cable Ass'y	1	0.05
12		Rating Label (Serial No.)	1	0.10
13		Inner Carton	1	1.50
14		Shipping Carton	1/3	3.00
