

2. Connect AC plug to electrical safety analyzer as recommended by operating instructions.
3. Connect electrical safety analyzer leakage input lead to ground point on rear panel of monitor.
4. Verify analyzer indicates 100 microamps or less in on or standby operating modes for all of the following AC power configurations.

AC polarity	Ground wire
Normal	Normal
Reverse	Normal

Patient Source Current

1. Set electrical safety analyzer Function to Leakage and Range to Microamps.
2. Connect monitor AC plug to electrical safety analyzer as recommended by analyzer operating instructions for patient source current.
3. Connect electrical safety analyzer leakage input lead to monitor sensor input connector, using adapter one.

The analyzer leakage indication must not exceed 10 microamps for 120 V monitors and 50 microamps for 220 V monitors. These readings apply for all of the following AC power configurations when the monitor ON/STDBY switch is set to ON or STDBY.

AC polarity	Ground wire
Normal	Normal
Reverse	Normal
Reverse	Open
Normal	Open

Patient Sink Current

1. Set electrical safety analyzer Function to Leakage and Range to Microamps.
2. Connect monitor AC plug to electrical safety analyzer as recommended by analyzer operating instructions for patient sink current.
3. Connect electrical safety analyzer leakage input lead to monitor sensor input connector, using adapter one.

The analyzer leakage indication must not exceed 10 microamps for 120 V monitors and 50 microamps for 220 V monitors. These readings apply for all of the following AC power configurations when the monitor ON/STDBY switch is set to ON or STDBY.

AC polarity	Ground wire
Normal	Normal
Reverse	Normal
Reverse	Open
Normal	Open

SECTION 8: SPECIFICATIONS

Performance
Environmental Requirements
Electrical Characteristics
Physical Characteristics

PERFORMANCE

Range

Saturation
0–100%

Pulse Rate
20–250 bpm (beats per minute)

Accuracy

Saturation
(%SpO₂ ±1 standard deviation)

SpO₂		
Adults	70–100 %	±2 digits
	50–69 %	±3 digits
	0–49 %	unspecified

Neonates	70–95 %	±3 digits
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Pulse Rate
20–250 bpm ±3 bpm

Note: The monitor pulse oximeter is calibrated to read oxyhemoglobin saturation (%SpO₂) of functional hemoglobin. Significant levels of dysfunctional hemoglobins (for example) carboxyhemoglobin, methemoglobin) may affect the accuracy of the monitor. Indocyanine green, methylene blue, and other intra-vascular dyes, depending upon their concentrations, may interfere with the accuracy of the monitor. Instrument performance may also be compromised by excessive patient movement, electrosurgical interference, or intense environmental illumination.

ENVIRONMENTAL REQUIREMENTS

Temperature

Monitor

50-104° F (10-40°C) operating
32-122° F (0-50°C) storage

Sensor

Within physiologic range 82.4-107.6°F (28-42°C) for accurate measurement

Humidity

Any humidity/temperature combination without condensation

Altitude

0-10,000 ft (3,048 m)

ELECTRICAL CHARACTERISTICS

Protective Class

Class I

Mains-supplied unit using a protective ground

Degree of Protection

Type BF

Patient electrically isolated

Voltage

100-120 VAC $\pm 10\%$, 50-60 Hz
or 220-240 VAC $\pm 10\%$, 50-60 Hz

Power Consumption

Maximum rating: 25 VA

Battery

Type

Lead-acid battery pack, 1.9 AH

Battery Life

Typically 6 hours for a new, fully charged battery. Capacity decreases with age.

Recharge Period

14 hours minimum

Fuse (2 required)

0.16 amp for 120 V
2 required

0.10 amp for 120 V

PHYSICAL CHARACTERISTICS

Dimensions

2.875 in. high x 8.5 in. wide x 7 in. deep (73 x 216 x 178 mm)

Weight

6.6 lb (3 kg)

SECTION 9: SPARE PARTS

Introduction
Spare Parts Listings

INTRODUCTION

This section lists monitor spare parts. Order spare parts by part number. Contact Nellcor Technical Services for assistance in filling your order.

SPARE PARTS LISTINGS

Spare parts are listed in two tables. Both tables contain the same information, they are just organized differently for ease of reference. Table 9-1 lists spare parts by part number and item number order. Table 9-2 lists the parts alphabetically in description order.

If you have a part number or an item number and you want to know the description, refer to table 9-1. If you are looking for a part number and you know the part description, refer to table 9-2.

Table 9-1: Spare Parts Listed in Part Number Order

Description	Part #	Item #	Description	Part#	Item#
Battery Discharge Label Assy	021295	5	Equal Potential Terminal	057068	86
CPU PCB Assy, N180	022105	21	Mp-203 PCB	079590	84
Speaker Brackets, N180	022120	69	Conn, Hdr, R/A, 14 Pos, 2 Row	400114	14
CPU Ribbon Cable, N180	022151	22	Conn, Hdr, Str, 10 Pos, 2 Row	401110	16
Encoder Bracket	022153	29	Conn, Hdr, Str, 14 Pos, 2 Row	401114	17
Sensor Door Lock, N180	022156	67	Conn, Hsr, Srt, 34 Pos, 2 Row	401134	18
Knob, N180	022157	38	Conn, D-sub, 9	463102	13
Front Pnl Membrane Sw., N180	022158	45	Conn, 2 pos	491215	11
Front Panel, N180	022159	32	Conn, 4 pos	491216	12
Battery Bracket, N180	022161	3	Conn, Hdr, Str, 2 pos, 1Row	491234	15
Handle, N180	022168	37	Battery Clip, N180	491235	4
Rear Panel, Left, N180	022172	51	On/Off Switch, N180	631104	50
Top Cover, N180	022178	72	Switch, 01p, 8 pos	632101	71
Bottom Cover, N180	022182	9	Battery, 12v	640110	7
Rear Panel, Right, N180	022272	52	Fuse, N-180	691011	33
Transformer Bracket, N180	022273	73	Fuse Drawer, 1/4" X 1-1/4"	691191	34
Bail, N180	022342	2	Transistor	691212	76
Middle Shield Insulator	022346	46	Speaker Assy, N180	691222	68
Door Plate, H180	022661	26	Fuse, N-180E	691249	33
Grounding Lug, N180	022719	36	Transformer, N180E	691250	75
Bottom Chassis, Mylar, N180	022969	8	AC Inlet Assy, N180E	691251	1(A)
Speaker Standoff, N180	022976	70	Transformer, N180	691255	74
Lens, Front Panel	023004	89	Washer, Flat, Nylon	863903	85
Sensor Connector	023013	66	Scrw Plast, Pan, 4-20, 5/16	871031	60
Display PCB, N180	023014	25	Scrw Flat, N3, 14 mm, Ph, SS	880022	57
Front Panel PCB Set, N180	023026	31	Scrw Flat, M3, 14 mm, Ph, Znc	880023	56
Front Panel Assy, N180	023027	30	Washer, Flat, M6, SS	881012	79
Battery W/Clip, N180	023200	6	Washer, Flat, M3, Zinc	881013	78
Encoder Assy, N180	023210	28	Washer, Lock, Split, M6, Zinc	881014	81
Ground Cable Assy, H180	023214	35	Washer, Lock, Split, M3 Zinc	881015	80
Label, Serial Number, Bar Code	023655	40	Nut, Hex, M6, Zinc	882007	49
Middle Shield SOOM, N180	023666	47	Nut, Hex, M3, Zinc	882008	48
CPU Bottom Shield, N180	023668	20	Scrw Sems, Pan, M3x12, Split Loc	889001	65
LED Drive PCB	024105	42	Washer, Flat, M3, 55	889003	77
Cable, Midd, W/Conn LED/CPU	024567	10	Scrw Sems, Pan, M3 x 6, Split Loc	889007	62
Label, S/N, Rating 220/240 V	024570	87	Scrw Sems, Pan, M3 x 6, Split Loc	889008	63
CPU/SOOM Cable, N180	024668	24	Scrw Sems Pan, Ms3 x 14,	889010	61
CPU Bottom Shield, Mylar	024999	19	Rubber Feet, 15/16" Dia, Black	891319	55
LED PCB	026745	44	Edge Saddle, Nylon, Black	891320	27
LED Drive PCB Retention Clip	027094	43	Spacer, Collar Part	891321	82
CPU Top Shield, N180	027654	23	Spacer, Bush Part	891322	83
Label, S/N, N-180	027728	88	Scrw, Pan Hd, Ph, M3 x 6mm	891329	59
AC Inlet Assy, N180	027839	1	Scrw Pan Hd Ph, 6-32 x 1/4, Znc	891330	58
Label, U.L. Oximeter	051432	41	Scrw Sems, Pan, M3 x14	891331	64
Label, CSA (C.V)	051708	39	Retaining, Clip, 34 Pin Conn W/	891335	54
			Retaining, Clip, 14 Pin Conn W/	891336	53

Table 9-2: Spare Parts by Description and Item Order

Description	Part #	Item #	Description	Part#	Item#
AC Inlet Assy, N180	027839	1	Front Panel Membrane Sw., N180	022158	45
AC Inlet Assy, N180E	691251	1(A)	Middle Shield Insulator	022346	46
Bail, N180	022342	2	Middle Shield SOOM, N180	023666	47
Battery Bracket, N180	022161	3	Nut, Hex, M3, Zinc	882008	48
Battery Clip, N180	491235	4	Nut, Hex, M6, Zinc	882007	49
Battery Discharge Label Assy	021295	5	On/Off Switch, N180	631104	50
Battery W/Clip, N180	023200	6	Rear Panel, Left, N180	022172	51
Battery, 12v	640110	7	Rear Panel, Right, N180	022272	52
Bottom Chassis, Mylar, N180	022969	8	Retaining, Clip, 14 Pin Conn W/	891336	53
Bottom Cover, N180	022182	9	Retaining, Clip, 34 Pin Conn W/	891335	54
Cable, Mldd, W/Conn LED/CPU	024567	10	Rubber Feet, 15/16" Dia, Black	891319	55
Conn, 2 pos	491215	11	Scrw Flat, M3, 14 mm, Ph, Znc	880023	56
Conn, 4 pos	491216	12	Scrw Flat, N3, 14 mm, Ph, SS	880022	57
Conn, D-sub, 9	463102	13	Scrw Pan Hd Ph, 6-32 x 1/4, Znc	891330	58
Conn, Hdr, R/A, 14 Pos, 2 Row	400114	14	Scrw, Pan Hd, Ph, M3 x 6mm	891329	59
Conn, Hdr, Str, 2 pos, 1Row	491234	15	Scrw Plast, Pan, 4-20, 5/16	871031	60
Conn, Hdr, Str, 10 Pos, 2 Row	401110	16	Scrw Sems Pan, Ms3 x 14,	889010	61
Conn, Hdr, Str, 14 Pos, 2 Row	401114	17	Scrw Sems, Pan, M3 x 6, Split Loc	889007	62
Conn, Hsr, Srt, 34 Pos, 2 Row	401134	18	Scrw Sems, Pan, M3 x 6, Split Loc	889008	63
CPU Bottom Shield, Mylar	024999	19	Scrw Sems, Pan, M3 x14	891331	64
CPU Bottom Shield, N180	023668	20	Scrw Sems, Pan, M3x12, Split Loc	889001	65
CPU PCB Assy, N180	022105	21	Sensor Connector	023013	66
CPU Ribbon Cable, N180	022151	22	Sensor Door Lock, N180	022156	67
CPU Top Shield, N180	027654	23	Speaker Assy, N180	691222	68
CPU/SOOM Cable, N180	024668	24	Speaker Brackets, N180	022120	69
Display PCB, N180	023014	25	Speaker Standoff, N180	022976	70
Door Plate, H180	022661	26	Switch, 01p, 8 pos	632101	71
Edge Saddle, Nylon, Black	891320	27	Top Cover, N180	022178	72
Encoder Assy, N180	023210	28	Transformer Bracket, N180	022273	73
Encoder Bracket	022153	29	Transformer, N180	691255	74
Front Panel Assy, N180	023027	30	Transformer, N180E	691250	75
Front Panel PCB Set, N180	023026	31	Transistor	691212	76
Front Panel, N180	022159	32	Washer, Flat, M3, 55	889003	77
Fuse, N-180	691011	33	Washer, Flat, M3, Zinc	881013	78
Fuse, N-180E	691249	33	Washer, Flat, M6, SS	881012	79
Fuse Drawer, 1/4" X 1-1/4"	691191	34	Washer, Lock, Split, M3 Zinc	881015	80
Ground Cable Assy, H180	023214	35	Washer, Lock, Split, M6, Zinc	881014	81
Grounding Lug, N180	022719	36	Spacer, Collar Part	891321	82
Handle, N180	022168	37	Spacer, Bush Part	891322	83
Knob, N180	022157	38	Mp-203 PCB	079590	84
Label, CSA (C.V)	051708	39	Washer, Flat, Nylon	863903	85
Label, Serial Number, Bar Code	023655	40	Equal Potential Terminal	057068	86
Label, U.L. Oximeter	051432	41	Label, S/N, Rating 220/240 V	024570	87
LED Drive PCB	024105	42	Label, S/N, N-180	027728	88
LED Drive PCB Retention Clip	027094	43	Lens, Front Panel	023004	89
LED PCB	026745	44			

EC8 - 8' ext. cable
 EC4 - 4' ext. cable.

SECTION 10: SCHEMATIC DIAGRAMS

Introduction
Schematic List

INTRODUCTION

This section includes schematic diagrams for the monitor. These schematics are controlled engineering drawings created by Nelcor engineering support services. Accordingly, the number listed below is the engineering support services control number.

SCHEMATIC LIST

Use these schematics for reference when reading the circuit analysis section or troubleshooting equipment. The order they appear in this chapter follows the order the applicable circuits are described (in section 3).

<u>Title</u>	<u>Number</u>
MINI SOOM MP-203 Schematic (7 sheets)	009590
CPU PCB Schematic (4 sheets)	022104
LED Drive PCB Schematic	024094
LED PCB Schematic	026744

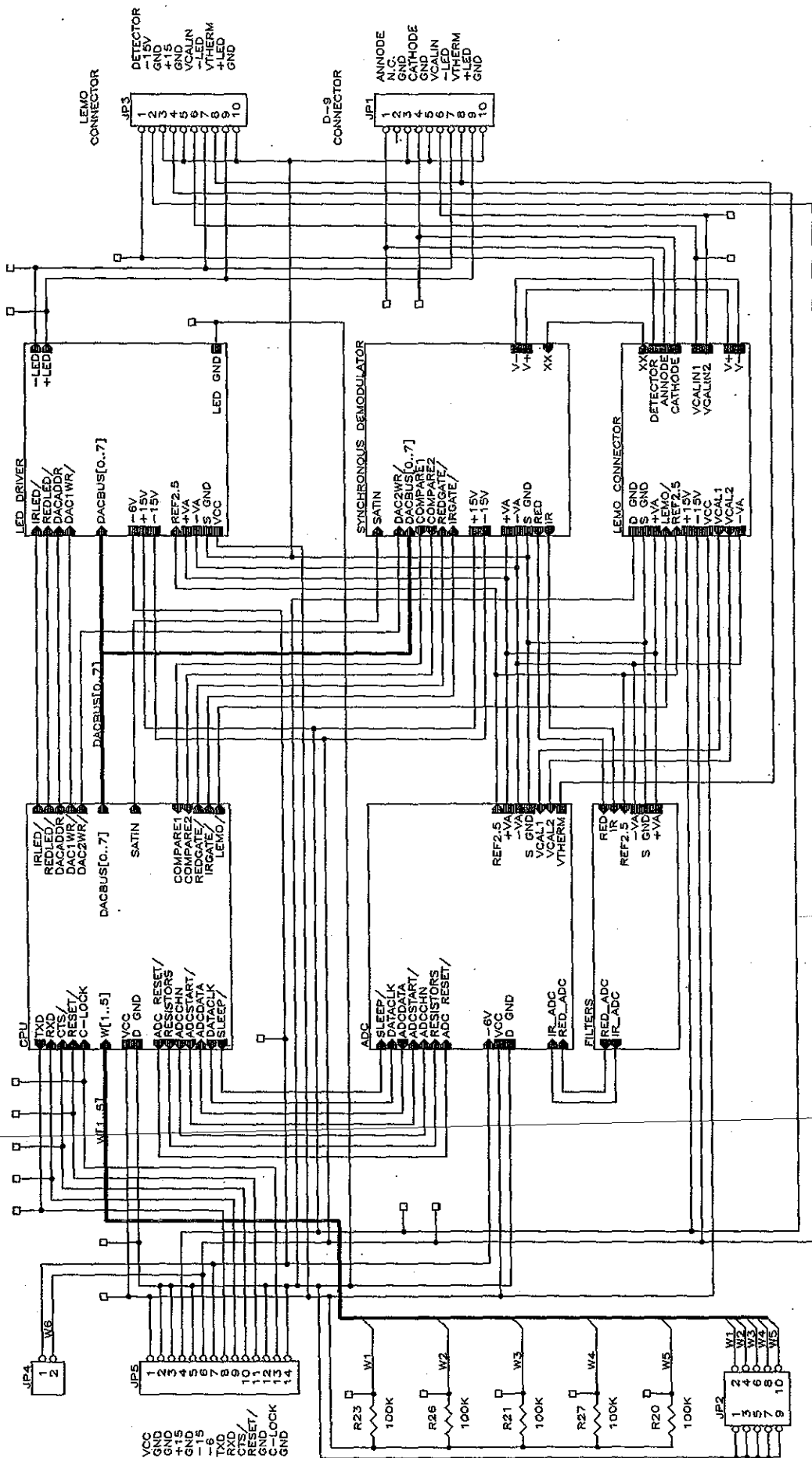
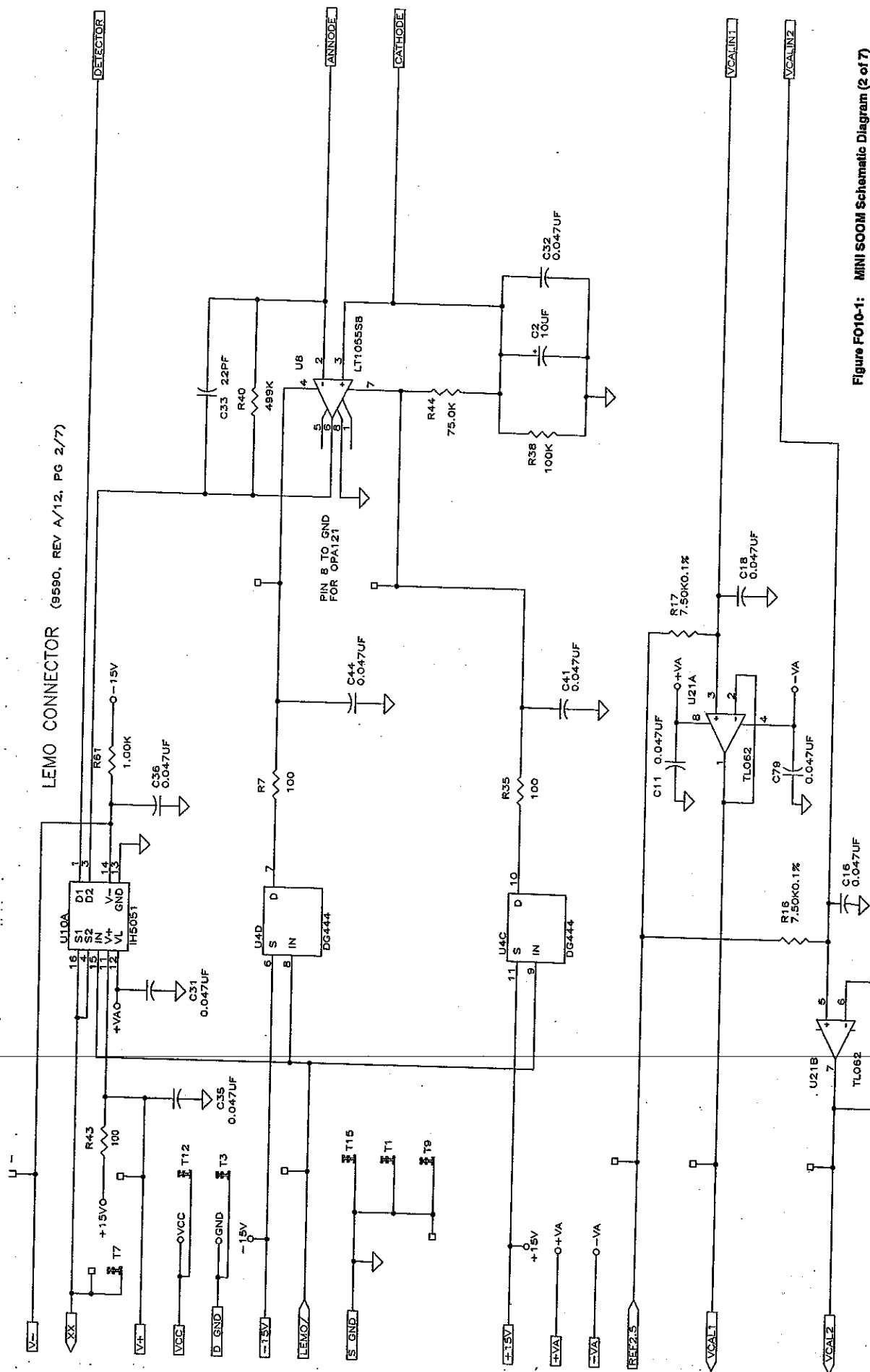


Figure FO10-1: MINI SOOM Schematic Diagram (1 of 7)



SYNCHRONOUS DEMODULATOR

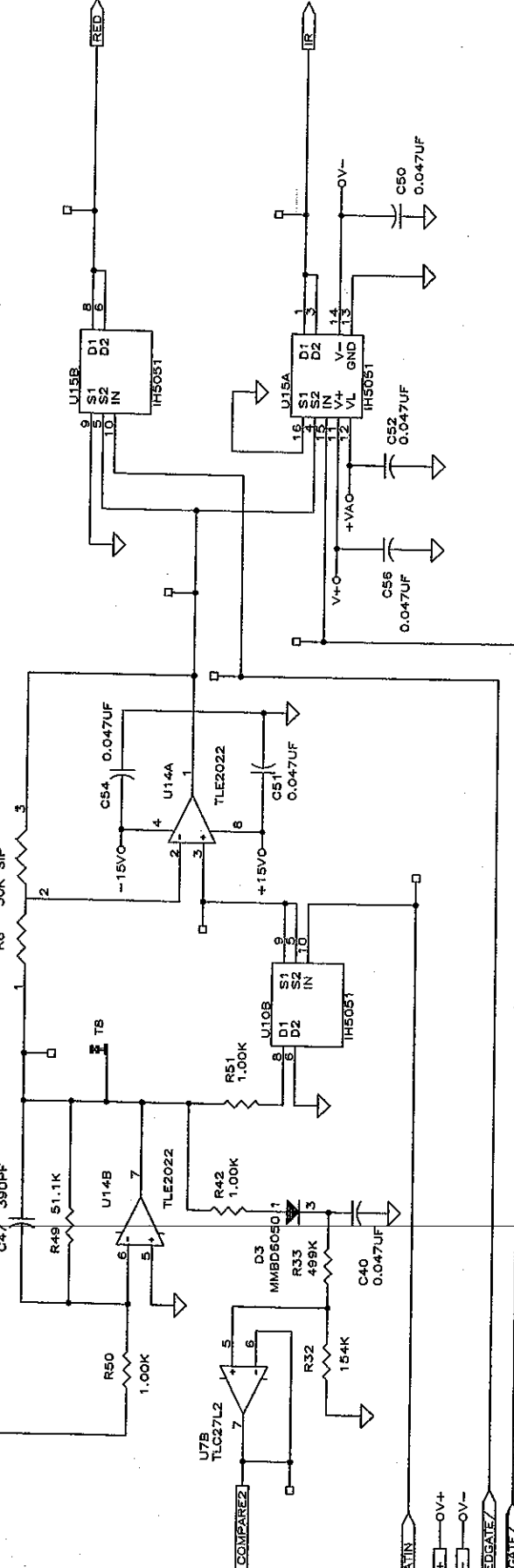
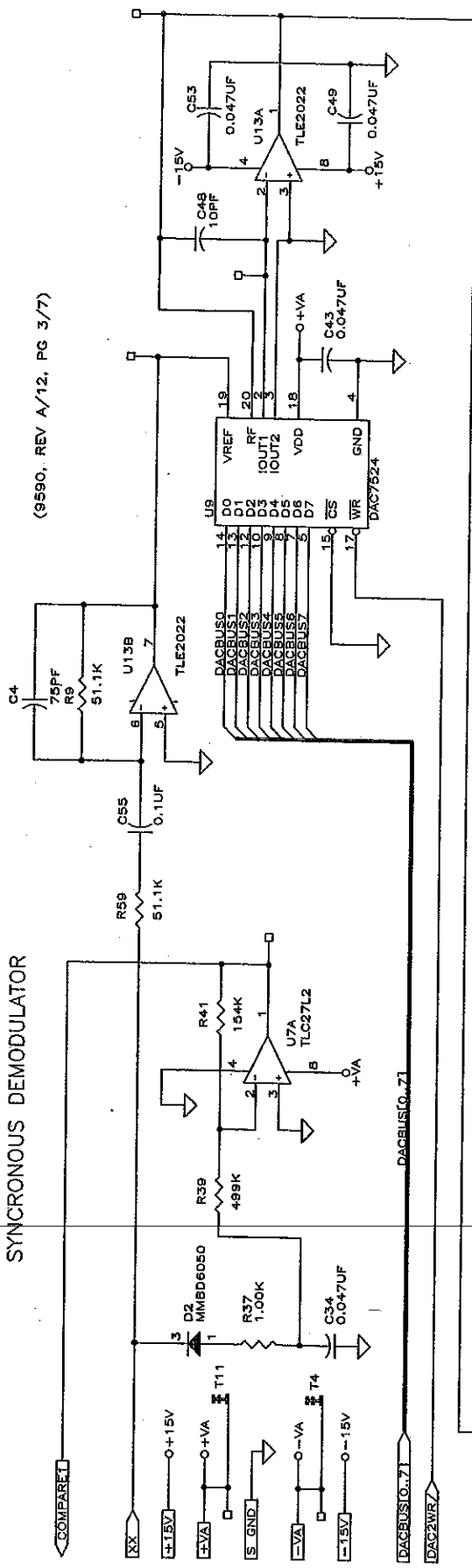


Figure FO10-1: MINI SOOM Schematic Diagram (3 of 7)

FILTERS (9590, REV A/12, PG 4/7)

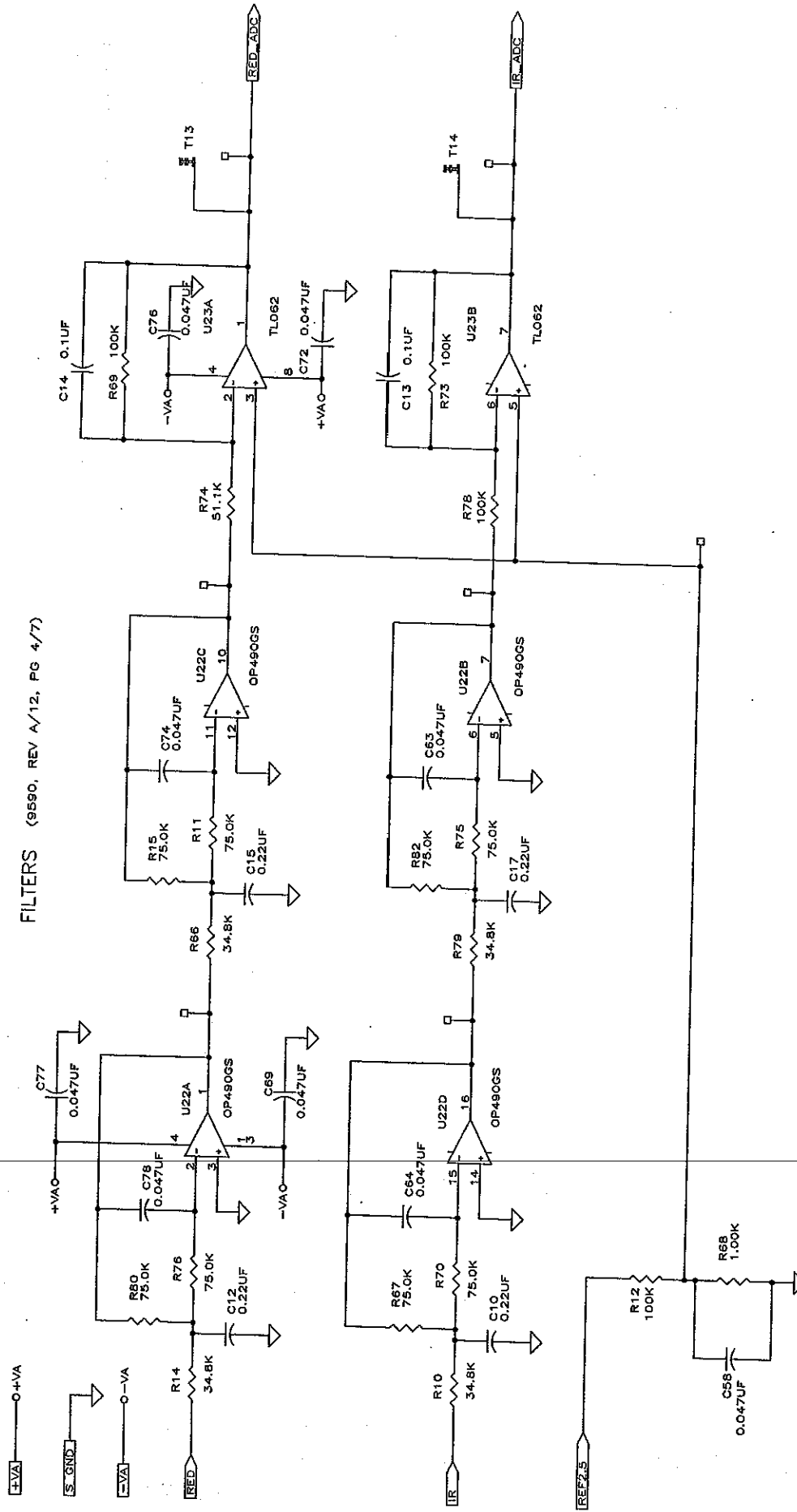


Figure FO10-1: MINI SOOM Schematic Diagram (4 of 7)
10-9

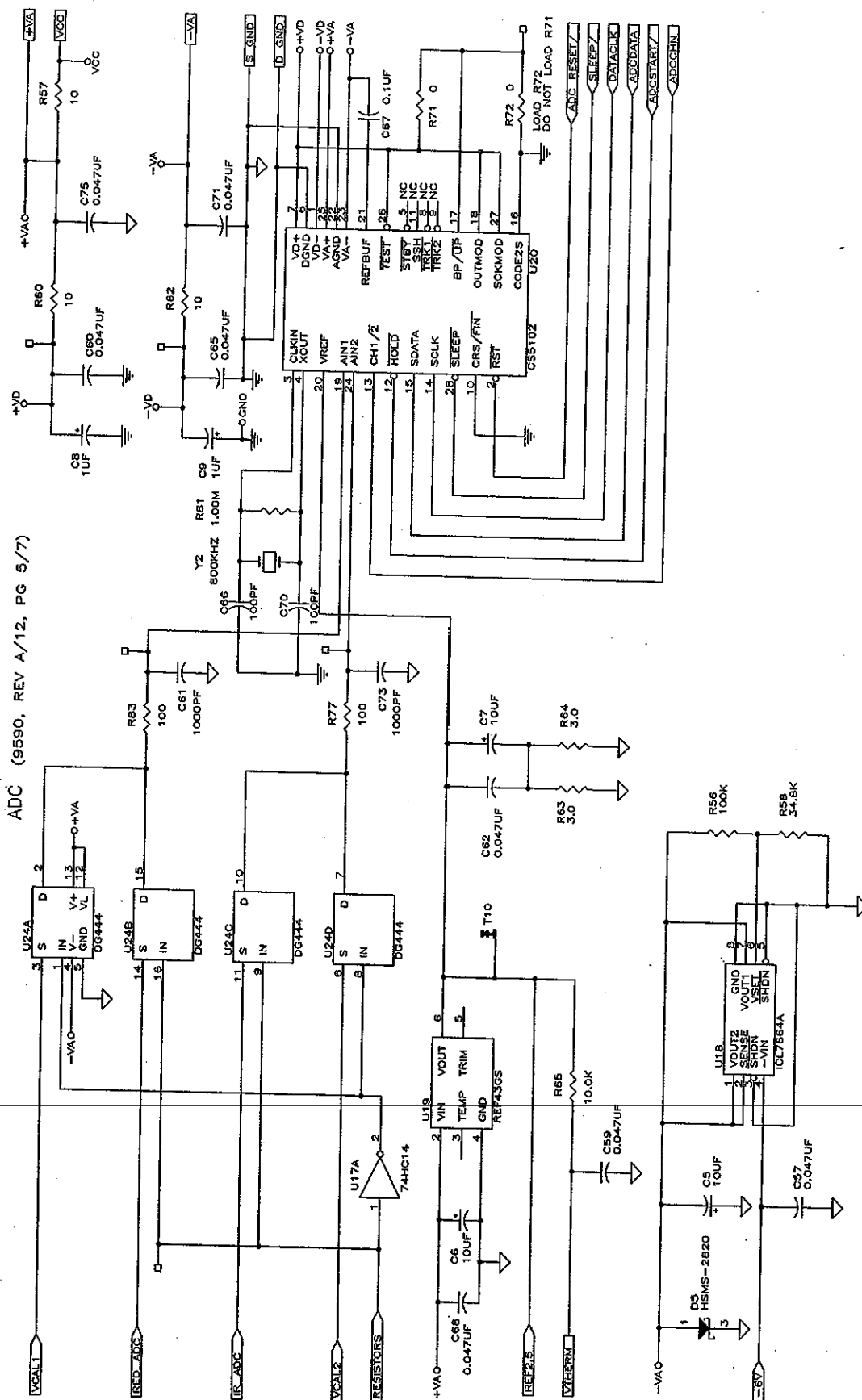


Figure FO10-1: MINI SOOM Schematic Diagram (5 of 7)
10-11

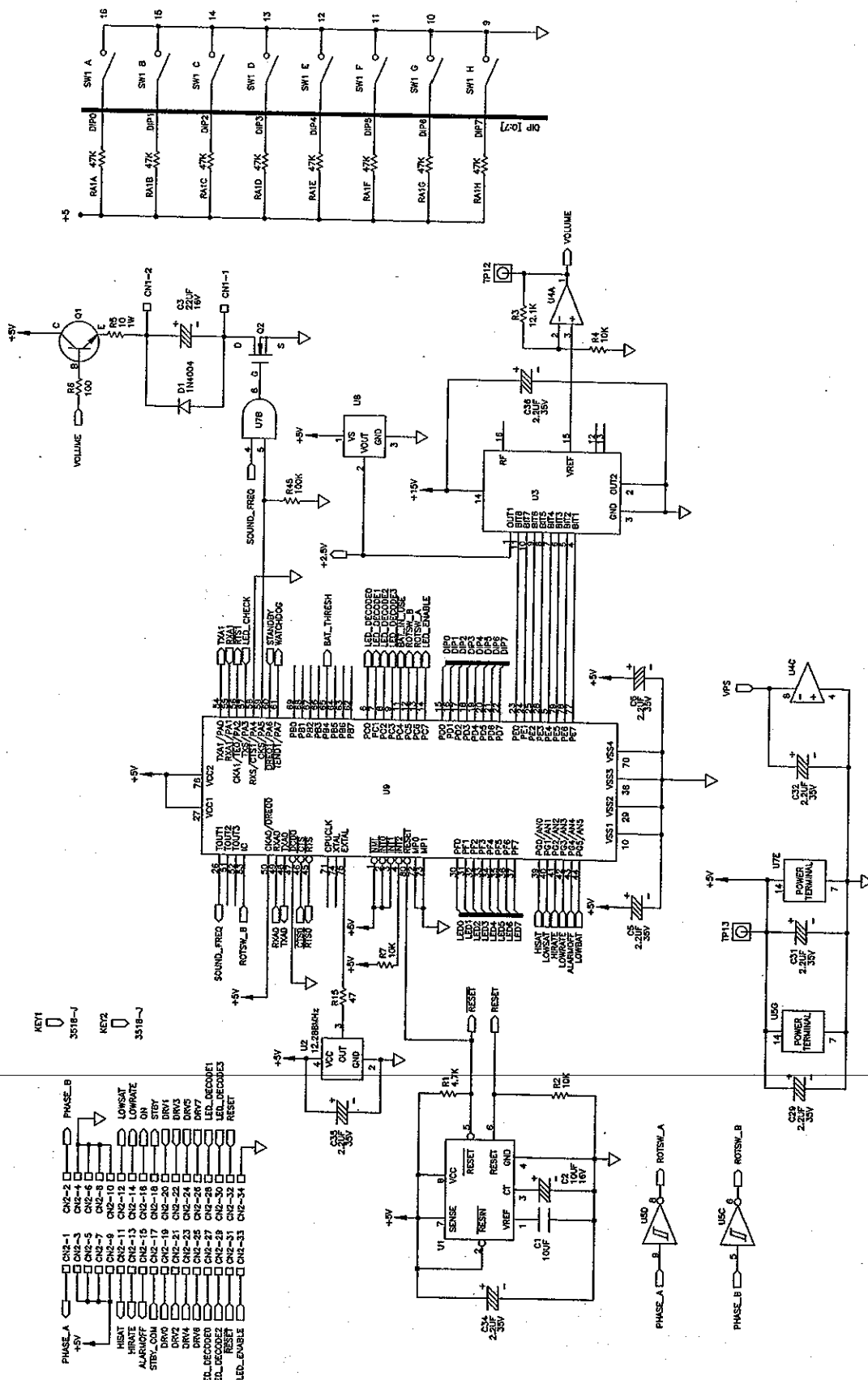


Figure FO10-2: CPU PCB Schematic Diagram (1 of 4)

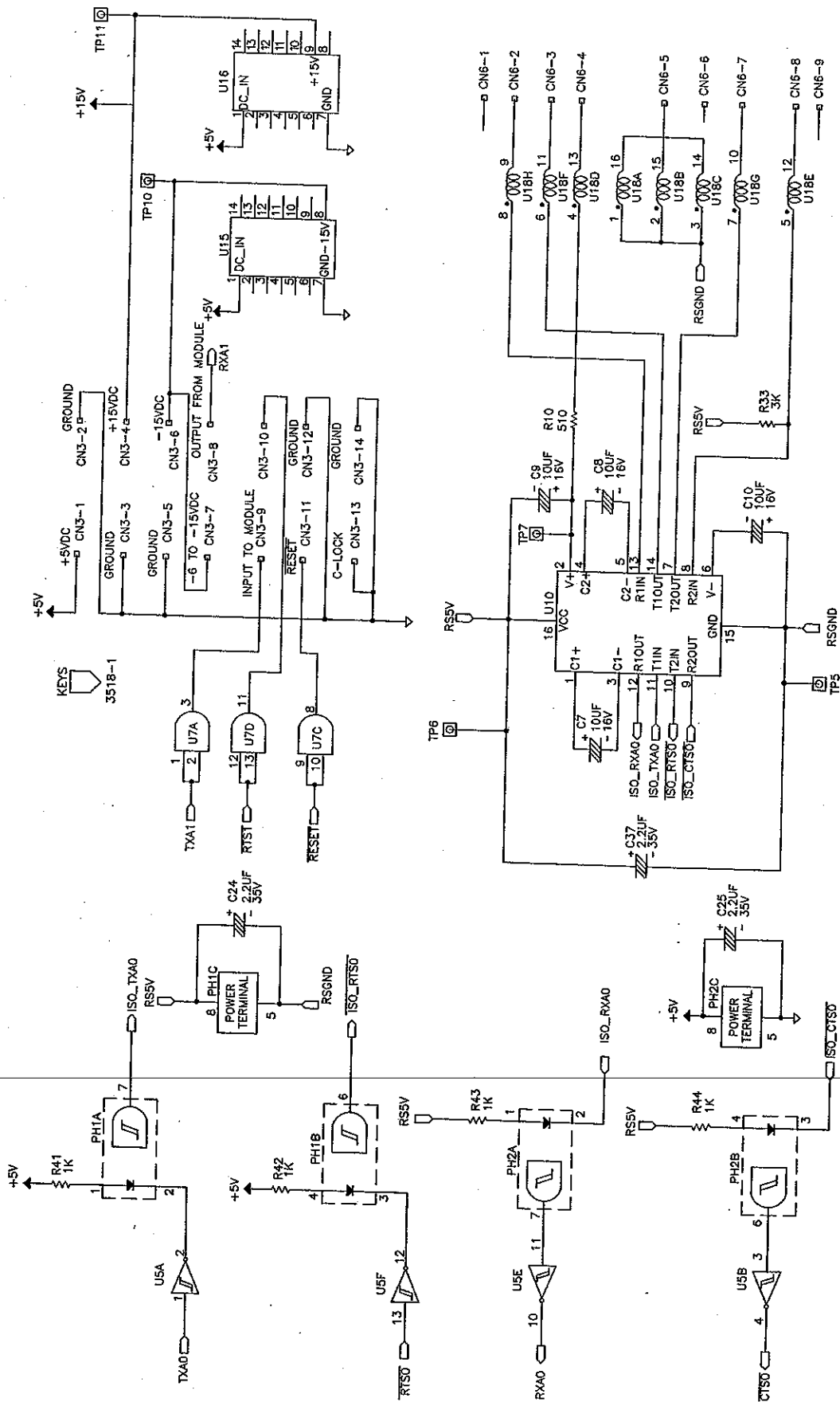


Figure FO10-2: CPU PCB Schematic Diagram (3 of 4)
10-21

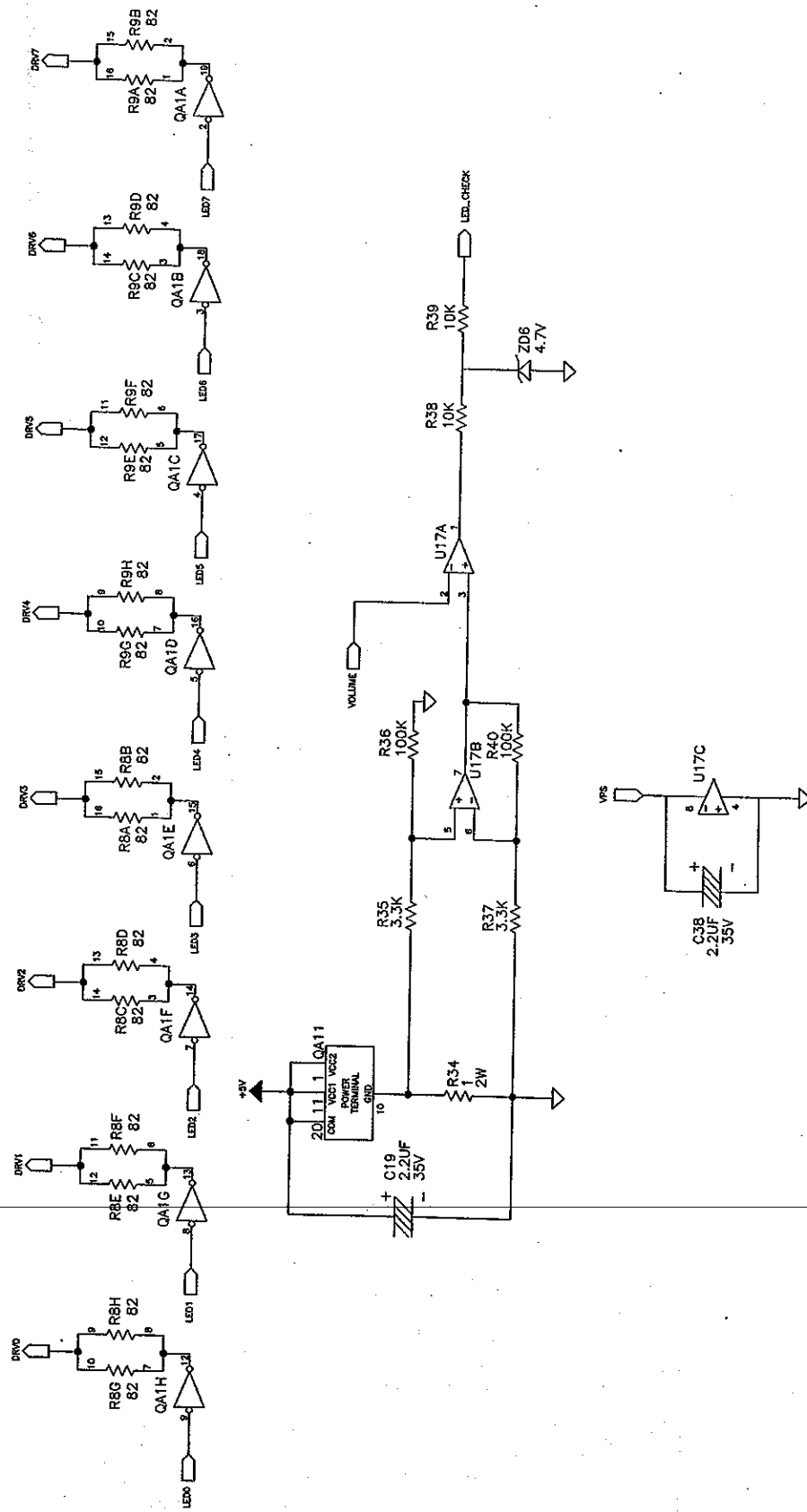


Figure FO10-2: CPU PCB Schematic Diagram (4 of 4)
10-23

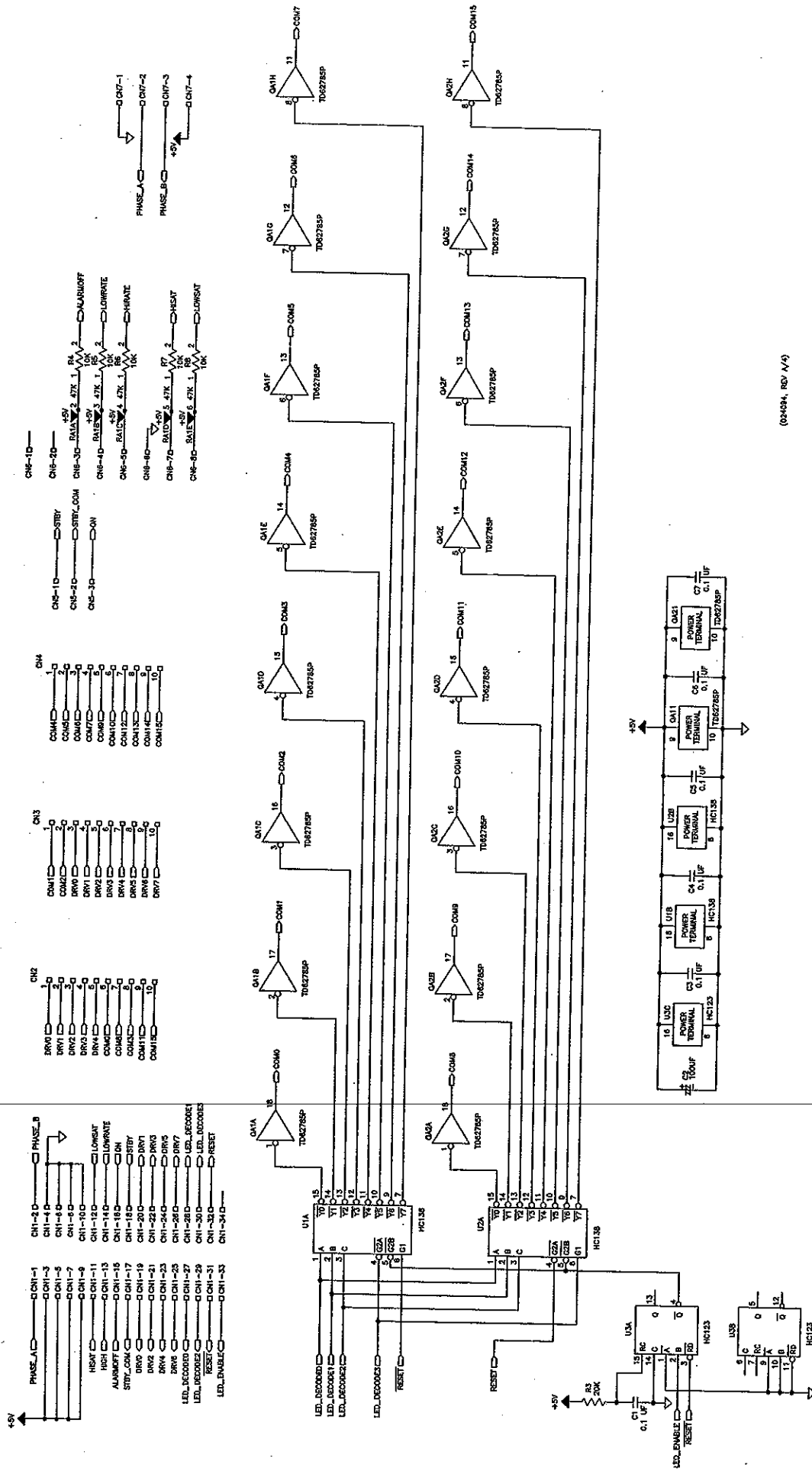
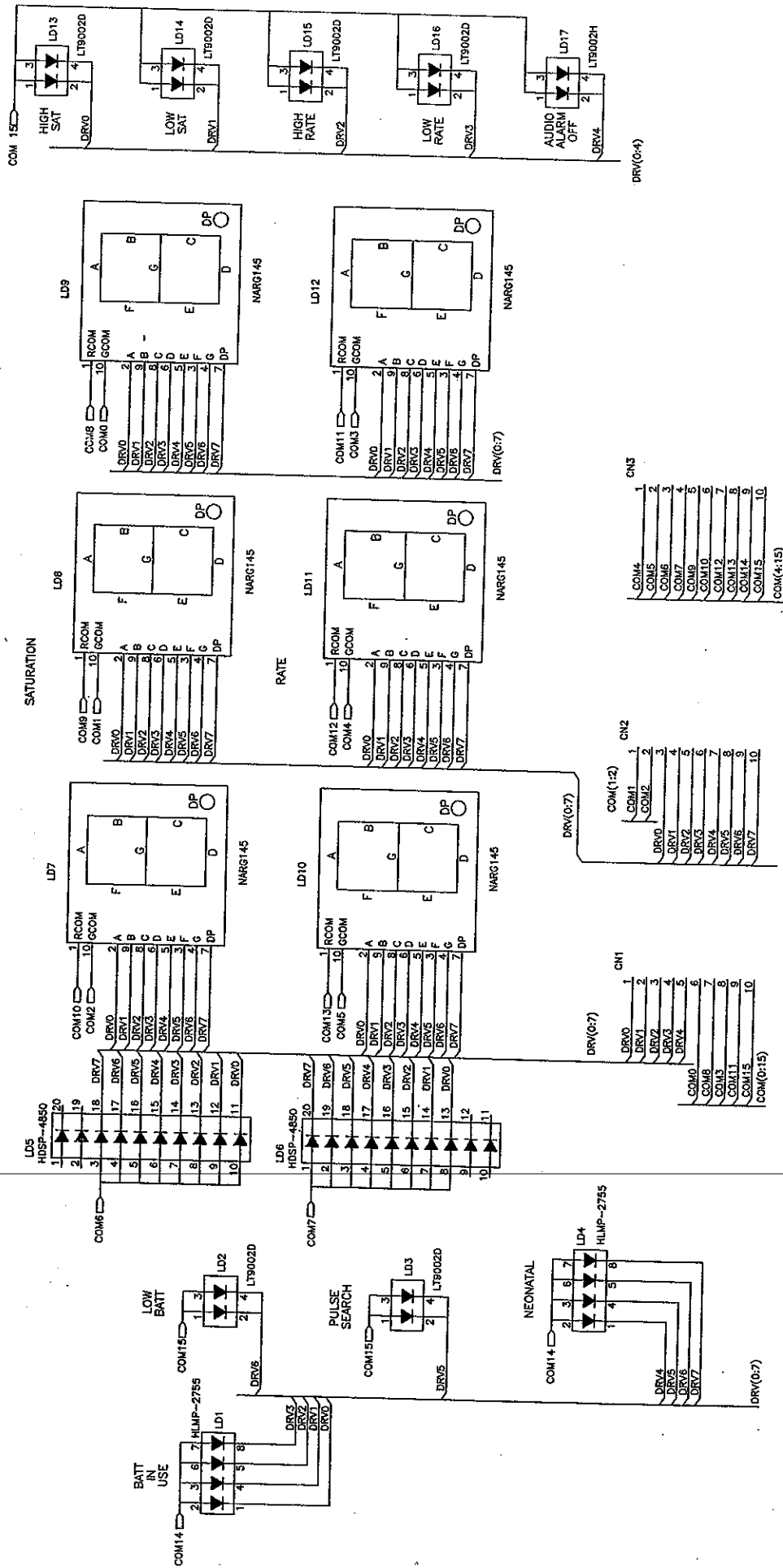


Figure FO10-3: N-185 LED Drive PCB Schematic Diagram
10-25



(026744, rev A/1)

Figure FO10-4: N-180 LED PCB Schematic Diagram
10-27

