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DWG NO.	CD	DATE	DWG BY	APPRO
94ESQJ0705	1	05-27-94	JDT	MAJ
94ESQJ0705	1	07-08-94	JDT	MAJ
94ESQJ0934	3M	07-28-94	JDT	MAJ
94ESQJ1178	4B	12-02-94	JDT	MAJ

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APP OR WBS	DATED ON ISSUE	REF NOTES	LOCATION
Z			SH. B3
Y			SH. B3
X			SH. B1, B3
W			
R			SH. B1, B3

SUPPORTING INFORMATION	
CATEGORY	NO.
EQUIPMENT DWS	J86334E
MANUF. TESTING REQUIREMENTS	MTR-83191--01
PRODUCT DEV.	J86334

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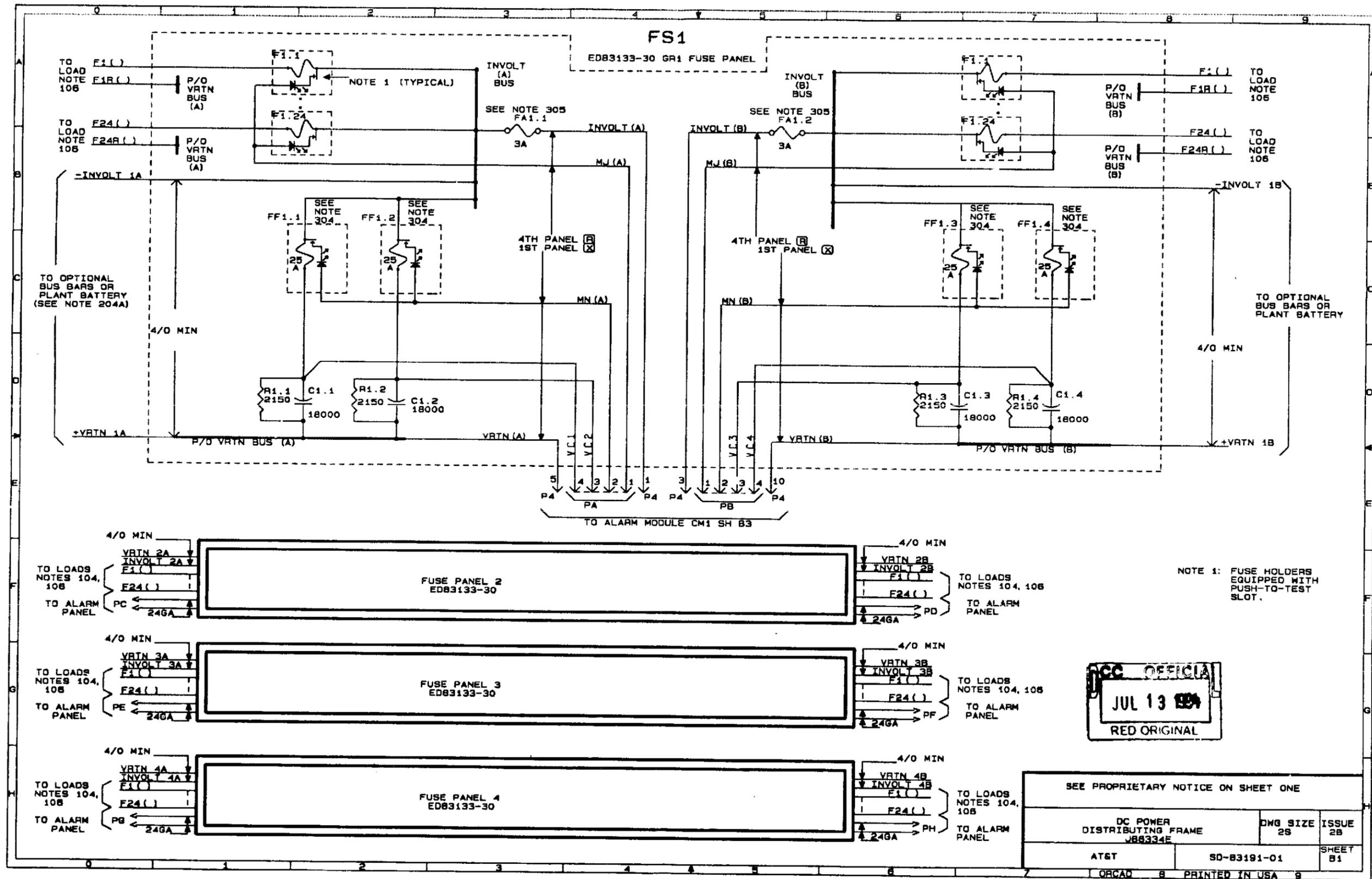
POWER SYSTEMS
DC POWER
DISTRIBUTING FRAME
J86334E-1

DIST CODE AM98

DWG SIZE 28 ISSUE 4B

14 SHEETS SHEET A1

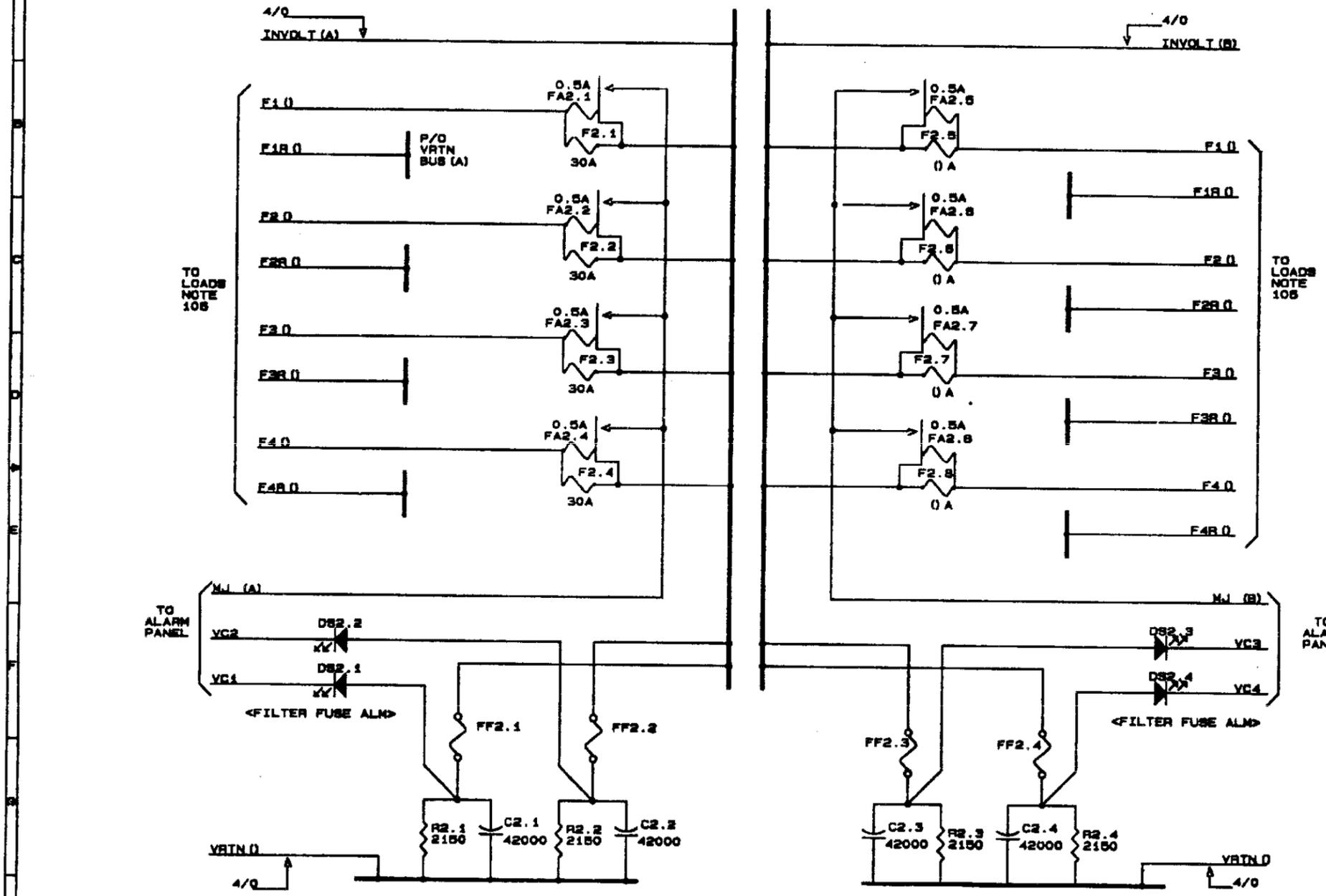
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FS2
HIGH CURRENT FUSE PANEL
ED-83133-30 GR.3



TO LOADS
NOTE
108

TO LOADS
NOTE
108

TO ALARM
PANEL

TO ALARM
PANEL

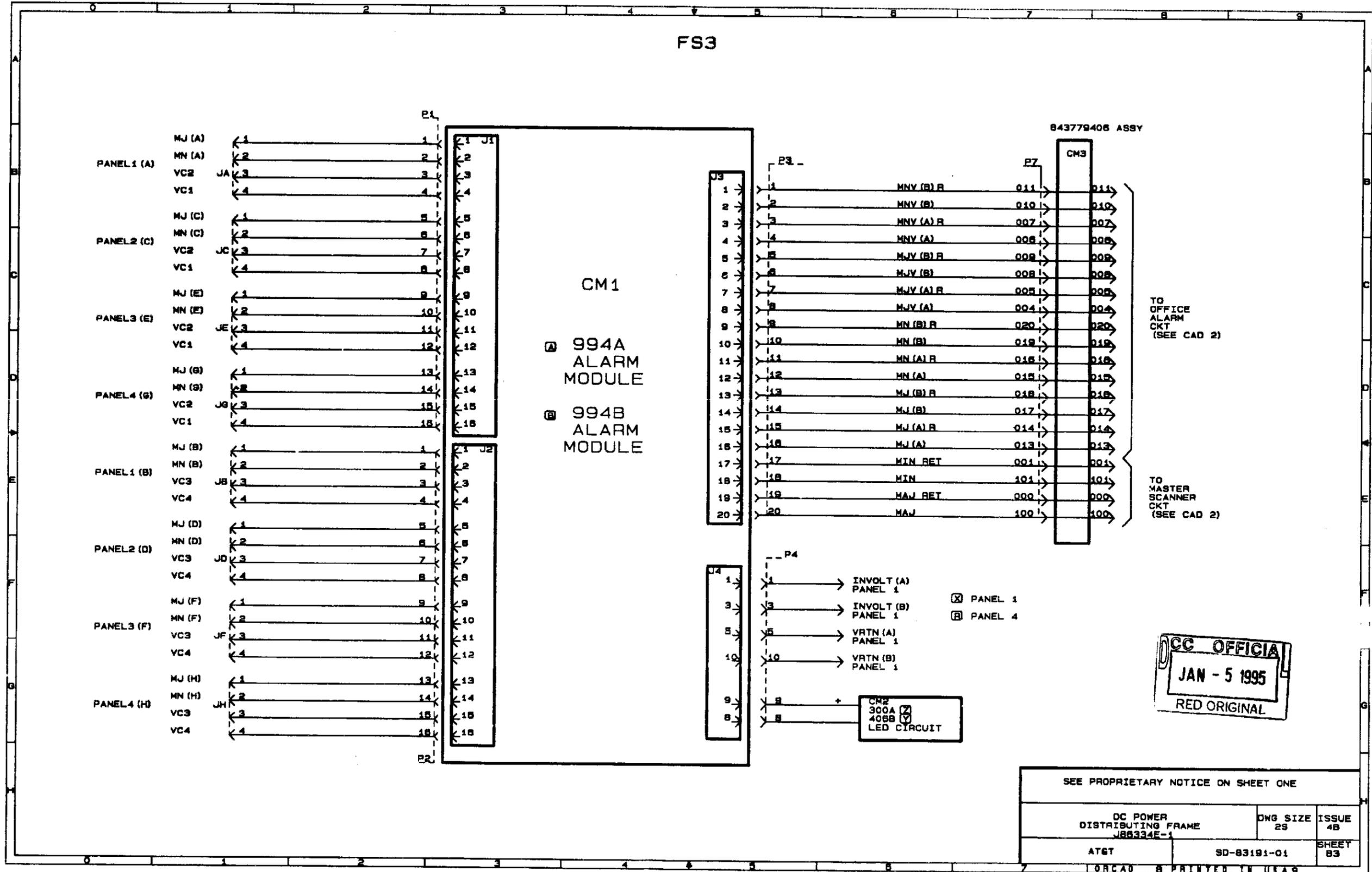
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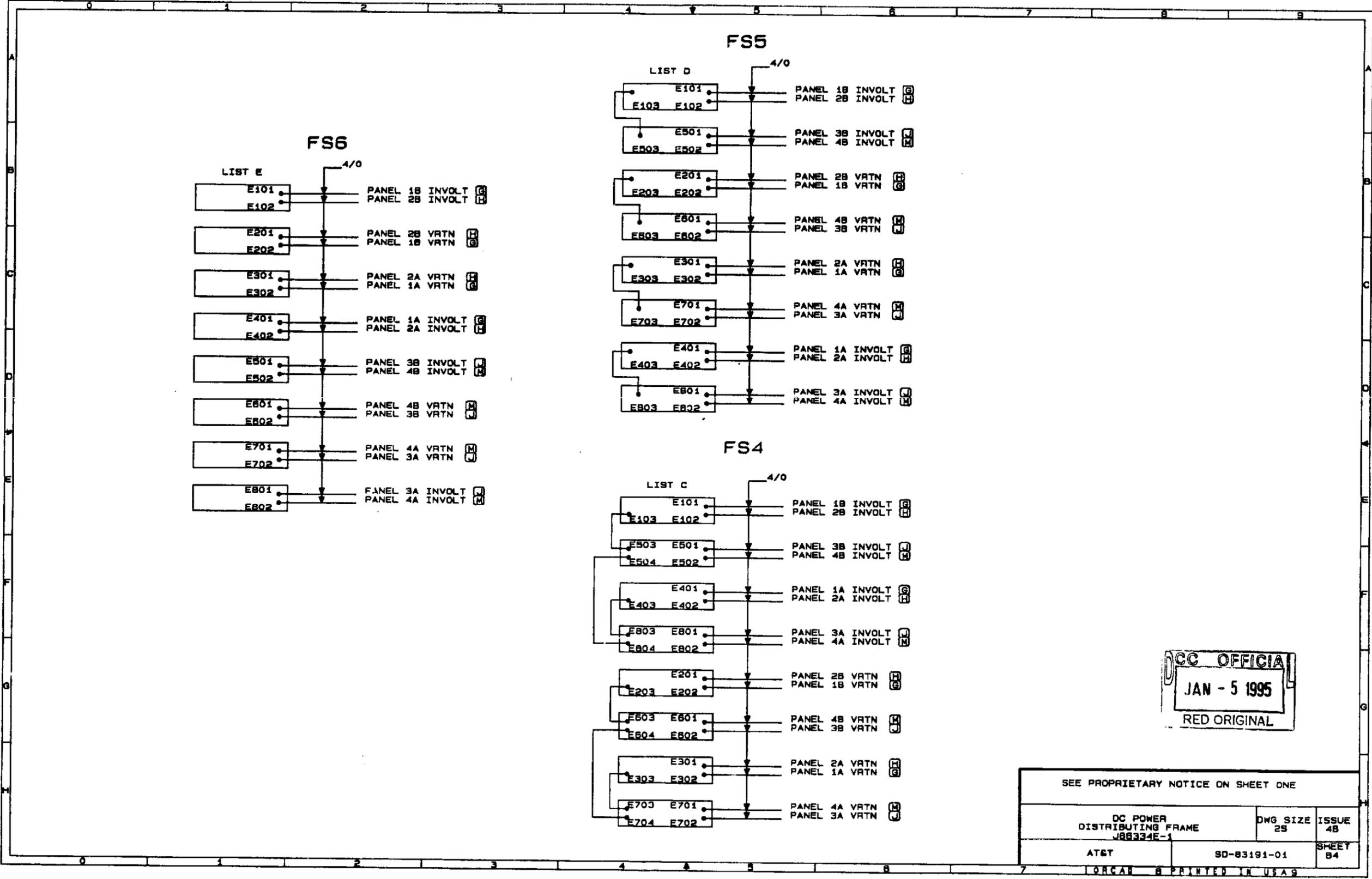
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APP. FIG. 1

FUSE PANEL
ED-83133-30, G1, 2

FUSES

DESIG	LOC	CODE
F1.1 - F1.24	1A1, 1B1	WP92955, L6
FA1.1 - FA1.2	1B3, 1B5	WP91768, L108
FF1.1 - FF1.4	1C2, 1C7	WP92955, L6

FUSE HOLDERS

DESIG	LOC	CODE
FH1 - FH24	1A1, 1B1	15900-4AT
FFH1 - FFH4	1C2, 1C7	15900-4AT1

RESISTORS

DESIG	LOC	CODE
R1.1 - R1.4	1D1, 1D2, 1D6, 1D7	KS14803L1AD, 2150

CAPACITORS

DESIG	LOC	CODE
C1.1-C1.4	1D1, 1D2, 1D6, 1D7	KS21033, 18000UF

CIRCUIT MODULES

DESIG	LOC	CODE
CM1	3D3	994B <input checked="" type="checkbox"/>
CM1	3D3	994A <input type="checkbox"/>
CM2	CA1	300A2 <input type="checkbox"/>
CM3	3B7	406B <input type="checkbox"/>
		843779406 <input type="checkbox"/>

CONNECTORS

DESIG	LOC	CODE
P1	2B2	P/O 847275385 WIRE SET
P2	2E2	P/O 847275385 WIRE SET
P3	2B4	P/O 847275385 WIRE SET
P4	2F3	P/O 847275377 WIRE SET
		P/O 847275369 WIRE SET <input checked="" type="checkbox"/>

APP. FIG. 2

FUSE PANEL
ED-83133-30, G3

FUSES

DESIG	LOC	CODE	FUSE HOLDER
F2.1 - F2.6		A13X50 GOULD SHAWMUT IR 13X50 RFA 50	KS16364, L6
FS2.1 - FA2.6		708, 0.5A	
FF1.1 - FF1.4		BUSS AFJ30	

RESISTORS

DESIG	LOC	CODE
R2.1 - R2.4		KS14803L1AD, 2150

CAPACITORS

DESIG	LOC	CODE
C2.1 - C2.4		KS20133 42000UF

LED

DESIG	LOC	CODE
DS2.1 - DS2.6		WP90164L10



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DC POWER
DISTRIBUTING FRAME
J86334E-1

DWG SIZE
28

ISSUE
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SO-83191-01

SHEET
C1

APP. FIG. 3

CM1

994A ALARM MODULE

THE COMPONENTS SHOWN ON SCHEMATIC SHEET J1 ARE FOR REFERENCE ONLY. THE PARTS LIST IS MAINTAINED AS THE PDT FILE ACM994A ON A FILE SERVER.

994B ALARM MODULE

SCHEMATIC IS SHOWN ON DRAWING A-CM/994B.

[10] DS-4M-DC48V (AROMAT)

DESIG	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
181 1 COIL	3D2	3D3	3D4	3D6	3E2	3E3	3E4	3E6	3E1	3E4
4 / 8 NO	3C1	3C1	3D1	3D1	3C6	3C6	3B6	3A6	3F1	
9 / 13 NO	3E6	3E7	3F0	3F0						
7 / 3 NO	3F2	3F3	3F4	3F5	3E6	3E6	3D6	3D6		
10 / 14 NO			3F6	3F7						
3 NC									3F4	
12 / 11 NC									3F5	3D7
12 / 14 NC										3B1
4 NC										3A7

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AT&T	SD-83191-01	SHEET C2

CIRCUIT NOTES:

101.

DESIG	POTENTIAL	ONE PER
INVOLT (A)	-48V	PANEL
INVOLT (B)	-48V	PANEL

BATTERY SYMBOL	VOLTAGE RANGE
INVOLT	-40.5 TO -57.0

102. THE WP92955 TYPE FILTER FUSE PANEL IS EQUIPPED WITH 48 FUSE AND INDICATOR LED POSITIONS (24 POSITIONS PER BUS).

103. THE MAXIMUM NUMBER OF PANELS THAT A POF CAN CONSIST OF IS 4 FUSE PANELS.

104. ALL RETURN FEEDERS SHALL BE GROUNDED IN ACCORDANCE WITH BSP 802-001-195 OR SPECIFIC SYSTEM GROUNDING CIRCUIT.

105. THE MAXIMUM INPUT CURRENT FOR EACH FUSE PANEL (BASED ON INTERNAL BUS BAR DIMENSIONS) IS:

ED-83133-30, G1 OR G2 (WP92955-TYPE):
480 AMPS PER BUS
ED-83133-30, G3 (HIGH-CURRENT):
180 AMPS PER BUS

ENGINEER MUST DETERMINE MAXIMUM LOAD CURRENT AND SIZE FEEDER CABLES APPROPRIATELY.

106. LOAD CURRENTS (LIST 2 DRAIN) SHALL NOT EXCEED 80% OF FUSE RATING.

107. THE FUSE BLOCK CAN DISSIPATE A MAXIMUM OF 8.4 WATTS (2.1 WATTS PER POSITION IN THIS APPLICATION). THIS FIGURE REFERS TO WATTS DISSIPATED AS HEAT AT THE FUSE BLOCK AND NOT AT THE LOAD. (SEE TABLE I)

TABLE II

108.

RESISTANCE OF WP92955 SERIES FUSES		
FUSE CODE	RATING (AMPS)	RESISTANCE (Ω)
LIST B	25	.0048 +/- 15%

109. PANEL DESIGNATIONS (1) THROUGH (4) ARE USED FOR ONLY REFERENCE ON THIS SCHEMATIC DRAWING.

EQUIPMENT NOTES:

201. ALL WIRING TO CM2 SHALL BE KS-22247.L4, 22 GA.

202. INVOLT () AND VRN () WIRING TO CM1 IS KS-22247L4, 16 GA.

203. ALL WIRING NOT SPECIFIED SHALL BE KS-22247.L4, 22 GA.

204. THE INPUT FEEDER INTO THE PDF SHALL BE AS FOLLOWS:

- A. 350 MCM AWG (150 MM2) MAX, TO THE WP-92955 TYPE FUSE PANEL.
- B. 4/0 AWG (100 MM2) MAX, TO THE HIGH-CURRENT FUSE PANEL.

THE OUTPUT FEEDERS FROM THE PDF SHALL BE AS FOLLOWS:

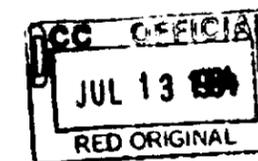
- A. 10 AWG (5 MM2) MAX, FOR WP92955 TYPE FUSE LOADS.
- B. 2 AWG (30 MM2) MAX, FOR HIGH-CURRENT FUSE PANEL LOADS.

REFER TO CABLE KS-SPEC (KS-5482, KS-20921 OR OTHER) FOR RESISTANCE VALUES AND MAXIMUM CURRENT CAPACITIES OF VARIOUS CABLES. TO CHANGE CABLE SIZES, USE SPLICE PLATES OR PARALLEL TAP CONNECTIONS OUTSIDE THE PDF.

205. THE MAXIMUM CURRENT FOR THE ENTIRE GPO FRAME WHEN EQUIPPED WITH LISTS C, D OR E IS AS FOLLOWS:

- LIST C: 830 AMPS TOTAL
- LIST D: 1260 AMPS TOTAL
- LIST E: 2520 AMPS TOTAL

THIS VALUE IS THE SAME REGARDLESS OF THE NUMBER OF FUSE PANELS EQUIPPED.



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AT&T	9D-83191-01	SHEET 01

INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS.
CAPACITANCE VALUES ARE IN MICROFARADS.
VALUES PRECEDED BY THE SYMBOL +(PLUS)
OR -(MINUS) ARE IN VOLTS.

FEATURE OR OPTION	FS	PROVIDE		QUANTITY
		APP FIG	APP OR WRG	
FUSE PANEL ED83133-30, G1 OR G2	1	1		AS REQUIRED NOTES 103 & 108
FUSE PANEL ED-83133-30, G3	2	2		AS REQUIRED NOTES 103 & 108
300A CM (FRAME LED CKT)	1	1	Z	1
408B CM (FRAME LED CKT)	1	1	Y	1
TOP-FEED	1, 3	1	X	1
BUS BAR FOR CONCENTRIC CABLES			W	AS REQUIRED PER LIST C, D, E
BOTTOM-FEED	1, 3	1	R	1
CABLING FOR PANEL 1	4, 5, 6		G	AS REQUIRED PER LIST C, D, E
CABLING FOR PANEL 2	4, 5, 6		H	
CABLING FOR PANEL 3	4, 5, 6		J	
CABLING FOR PANEL 4	4, 5, 6		M	
ALARM PANEL ED-83133-30, G4	3	1	B	1

306. ALARM FUNCTIONS

REASON FOR ALARM	ALARM INDICATORS	ALARM SIGNALS TRANSMITTED
LOAD FUSE OPERATED [F ()]	INDICATING LED LIGHTS, MJ ALARM PANEL LED AND FRAME ALM LED LIGHTS	MJ () MJV () S1 () } CONTACT CLOSURES
FILTER FUSE HAS OPERATED [FF ()]	FILTER FUSE LED AND MN ALARM PANEL LED LIGHTS AND FRAME ALM LED LIGHTS	MN () MNV () S2 () } CONTACT CLOSURES
FA1 OR FA2 TO ALARM PACK HAS OPERATED	ALARM PANEL LED AND FRAME ALM LED LIGHTS	MN () MNV () S2 () } CONTACT CLOSURES
POWER LOST ON BUS OR FILTER FUSES ABSENT	MN ALARM PANEL LED AND FRAME ALM LED LIGHTS	MN () MNV () S2 () } CONTACT CLOSURES

307. WHEN THE ACO (ALARM CUT-OFF) SWITCH IS PRESSED, THE ACO LED WILL LIGHT AND THE MJ () AND MN () SIGNALS WILL BE CANCELLED. THIS WILL SILENCE ANY AUDIBLE ALARMS. THE ACO LIGHT WILL REMAIN LIT UNTIL THE PROBLEM IS CORRECTED.

303. RECORD OF APP FIGURES, WIRING AND APPARATUS CHANGES

CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN	SEE NOTE	USE IN CIRCUIT		
				AVAIL	LA	DA

304. WHEN A FILTER FUSE FF () IS CLEARED OR REMOVED THE FILTER CAPACITOR MOUNTED ON THE FUSE PANEL WILL DISCHARGE TO 0 VOLTS AND A ALARM WILL BE ISSUED.

305. * WARNING: REMOVAL OF THE ALARM PANEL FA1 AND FA2 WILL INTERRUPT POWER TO THE ALARM CIRCUIT WHICH WILL DISABLE THE MINOR ALARM, ACO CIRCUIT, AND FRAME ALARM. A REMOTE MINOR ALARM WILL BE TRANSMITTED.

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AT&T	SD-83191-01	SHEET 02

Circuit Description

General

The J86334E is the -48V Global Power Distribution Frame (GPDF) which is intended to replace the J86334D PCFD. The GPDF provides for 192 fused circuits. Associated with each fuse is a LED which will illuminate if the fuse clears. Also equipped is an alarm panel which will provide dry normally open contacts for major and minor visual and audible alarm equipment.

Fuse Panel

Each E083133-30 panel may be equipped with forty-eight WP92955 type fuses. The panels are configured with an (A) and a (B) bus, each bus supplying twenty-four fuses. The fuses are a cartridge type rated up to 30 amperes. The fuses are snap-fitted in molded plastic holders which also contains the indicating LED. The holders are inserted in molded sockets to complete the circuits. The sockets are mounted to bus bars in groups of four. Installer wiring to the fuse sockets is accomplished using MSX10 bolts. Return wiring is tied directly to the VRTN() bus bars using MSX10 screws.

Each half-panel is equipped with a major (MJ) and a minor (MN) alarm lead. The MJ lead will be connected to -48V should any of the twenty-four fuses associated with the half panel clear. The MN lead will be connected to -48V should either of the capacitor fuses clear. The MJ and MN wires are energy limited by the LED's. These LED's will always open should the wires be inadvertently shorted to ground. The MJ and MN leads are connected to the 994A alarm pack. The 994A circuit pack is powered by both the A and B bus from the first equipped fuse panel. These power wires are protected by panel fuses FA1 and FA2.

The half-panels are equipped with two 18000 microfarad capacitors. These capacitors provide a local source of energy to insure clearing the load

fuses should a load fault occur. The capacitors are fused with 30 ampere fuses. Resistors are connected across the capacitors to discharge the capacitors if the capacitor fuses are removed or power to the panel is removed.

Input power to the panels is connected to bus bars using two 350 MCM cables (one for the A-bus and one for the B-bus) for power and two for the return bus bars.

Alarm Panel

The alarm panel is equipped with the 994A alarm circuit pack. All wiring to the alarm pack is through four connectors. The MJ and MN alarm inputs and the filter capacitor voltages are supplied through P1 for bus A and through P2 for bus B. Office alarm outputs are connected from P3 to the 843779474 PWB. Installer wiring will connect via cable to the PWB. A and B bus power and return is provided to the 994A pack through P4. The frame alarm LED is also connected to P4.

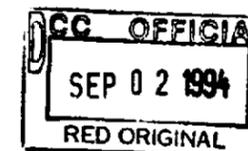
A and B bus power is OR-ed by diodes CR10 and CR11. As long as either Bus A or bus B is supplying power, relay K10 will be operated. Should both bus A and bus B power be lost, or if both panel fuses FA1 and FA2 clear, relay K10 will release and through contacts 4-6 send the MNV(B) alarm, contacts 3-5 will send the MNV(A) alarm, contacts 12-14 will send the MN(B) alarm and contacts 11-23 will send the MN(A) alarm. The frame alarm LED will not illuminate because power for the LED is supplied by the 994A pack. If panel fuse FA1 or FA2 clears, solid state relay IC1 and IC27 or IC2 and IC28 will release and IC1 or IC2 contacts 4, 6 will operate relay K3 (MN(A)) or K4 (MN(B)) thus sending all minor (A) or minor (B) alarms. When IC27 or IC28 contacts 7-8 close, LED's DS2 or DS19 will illuminate, indicating A or B power loss. If instead of a blown fuse on panels A or B, power is lost, the same alarm and LED's will activate, and in addition when the capacitors on the

panel which lost power discharge to approximately 12 volts, the panel minor alarm DS11 or DS15 will illuminate. The frame alarm will illuminate through contacts 4-8 of K3 or K4 for any minor alarm. Should a fuse clear on the A bus on panel 1, -48V power is applied to P1-1. Current then flows through IC19. IC19 will operate and close contacts 5, 8 which will operate K1 indicating a MJ alarm on panel 1. IC19 contacts 7, 8 will close, illuminating DS3. Operation of K1 will apply VRTN to J5 through contacts 4-8, lighting the frame alarm. K1 contact 9-13 will close, providing a major alarm to connector P3-19, 20. Contacts 3-7 of K1 will close, operating K5. K5 provides additional major alarm closures to P3-7, 8 and P3-3 - 7, indicating a major alarm on bus A. Load fuse clearing on bus A for panels 2 through 4 will be applied through P1 - 5, 9, 13, illuminating DS4, DS5 or DS6. K2 and K6 will be operated as described above. Load fuse clearing on bus B will be applied to P2-1, 5, 9, 13, illuminating DS(7-10) and operating relays K2 and K6. These relays will send contact closures to the major alarm leads for bus B.

Clearing of a capacitor fuse on the panels will cause a minor alarm for either bus A or bus B. -48V will be supplied by the cleared fuse to connector P1-2, 6, 10, 14 for bus A or P2-2, 6, 10, 14 for bus B. This voltage is routed through IC11-IC14 for bus A and IC15-IC18 for bus B. Assuming voltage is supplied by a cleared fuse to P1-2, IC11 will operate. Contacts 7, 8 will close illuminating DS11 and contacts 5, 6 will close, operating K3. K3 will operate, sending Bus A minor alarms. When the panel fuse clears the capacitor will be discharged by the 2150 ohm resistor across the capacitor. The capacitor voltage is applied to P1-3, 4 for panel 1A. When this voltage discharges to approximately 30 volts, the voltage applied across zener diode CR29 will reach 15 volts, causing the diode to conduct through solid state relay IC3, R4, and CR21 or CR22.

IC3 will close contacts 7-8, applying voltage to DS11, and contacts 5-6 will apply voltage to K3. K3 contacts 4-8 will illuminate the frame alarm LED, and contacts 10-14 will send a MIN alarm on connector P3-17, 18. K3 contacts 3 - 7 will close and through K9 contacts 3-5 will operate relay K7. K7 contacts 4-8 will close for alarm MNV(A) and contacts 3 - 7 will close for alarm MN(A). These two alarms MNV(A), visual, and MN(A), audible, may be released by the Alarm Cutoff (AC) switch S1. Depressing S1 will operate K9. K9 will latch if a minor alarm exists through K9 contacts 4-8 and either K3 or K4 contacts 9-13. K9 contacts 3 - 5 will release K7 and/or K9 contacts 11-13 will release relay K8, opening the Audible and Visual alarms. The ACO LED DS1 will be illuminated as long as K9 is operated. K9 will release when the minor alarm relays K3 and/or K4 are released by clearing the fault.

Normal current drain for the Alarm circuit is 10 milliamperes when no alarm exists to a maximum of 100 milliamperes for all alarms. Normal operating voltage range is -42 to -80 volts DC.

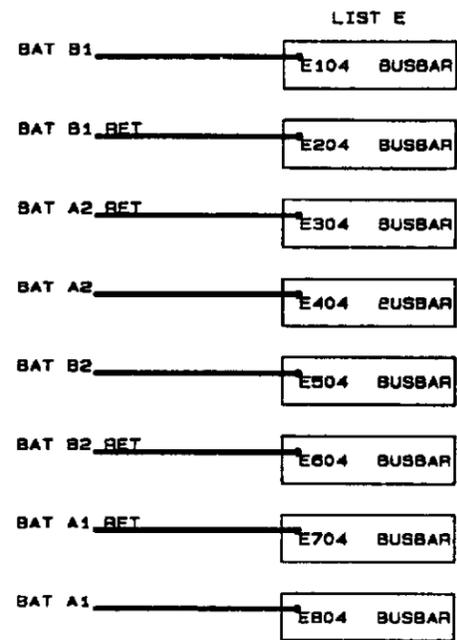


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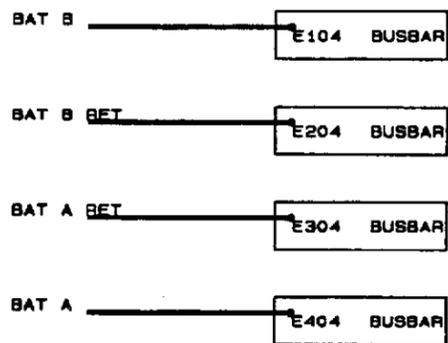
DC POWER DISTRIBUTING FRAME J86334E-1	DWG SIZE 25	ISSUE 3M
AT&T	SD-83191-01	SHEET E1

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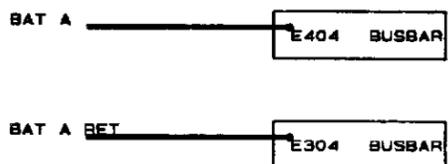
DC INPUT WIRING OPTIONS



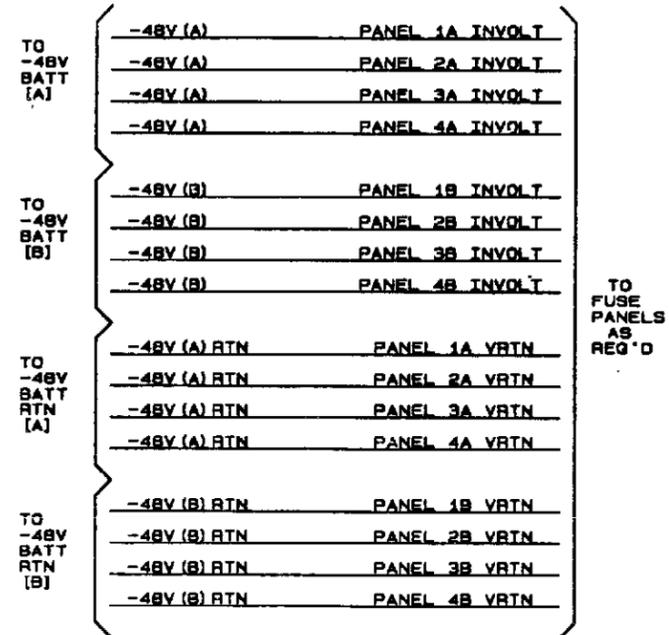
LIST D



LIST C

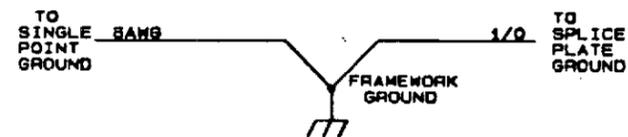


NO BUS BARS



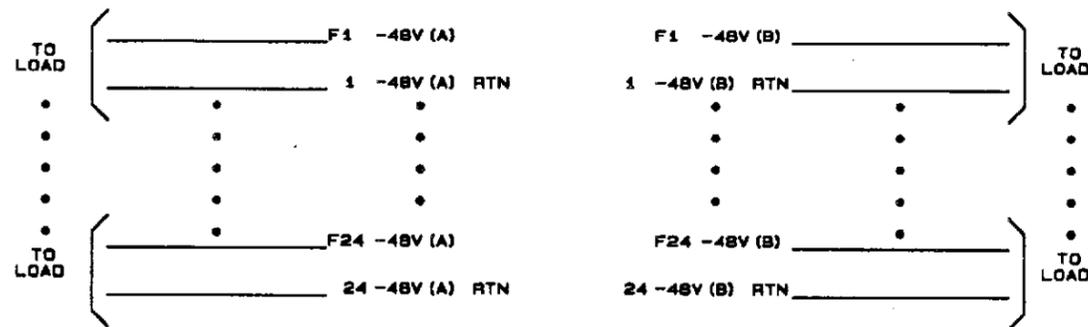
CAD 3

FRAME GROUNDING



CAD 4

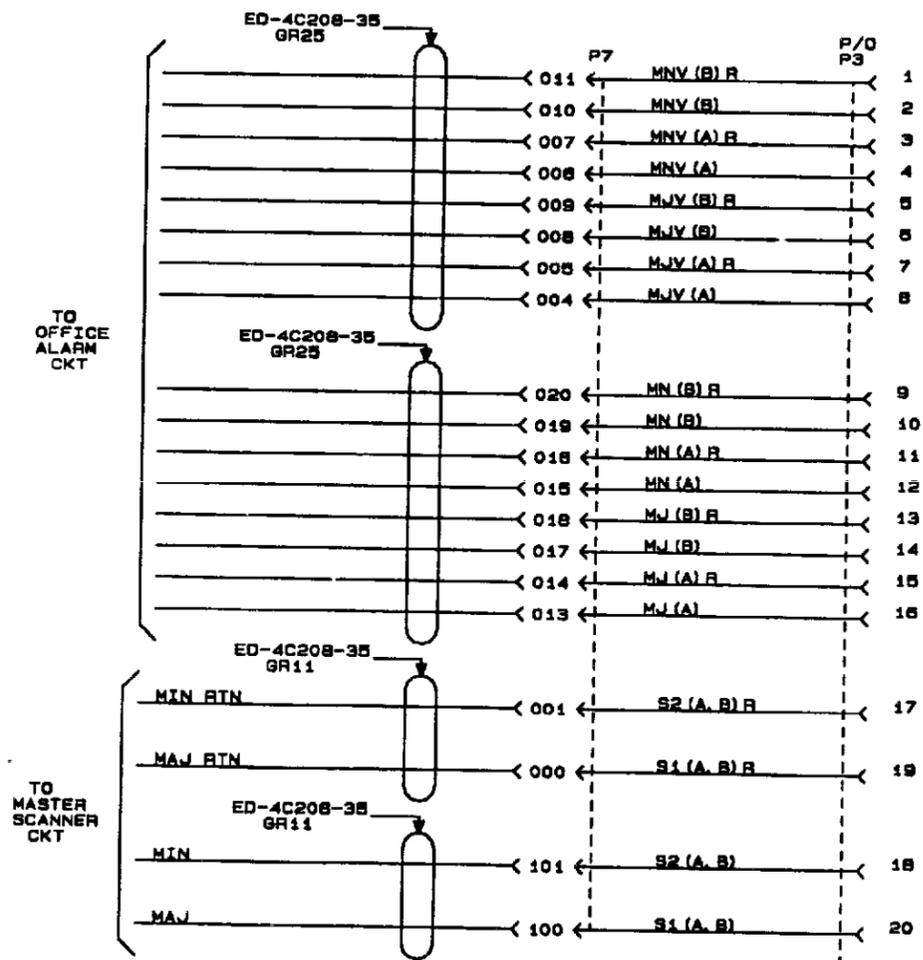
LOAD WIRING



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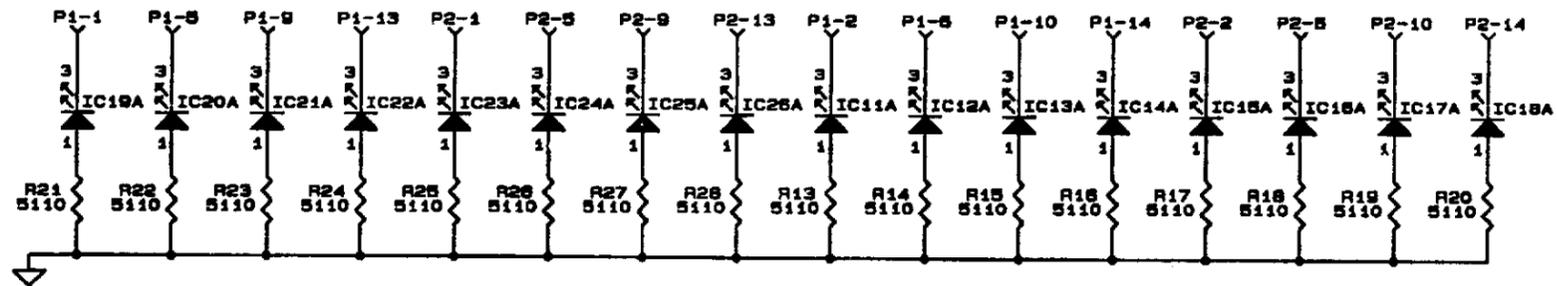
CAD 2



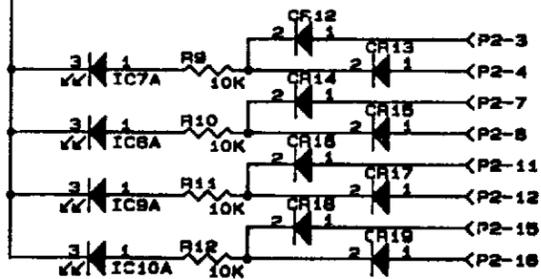
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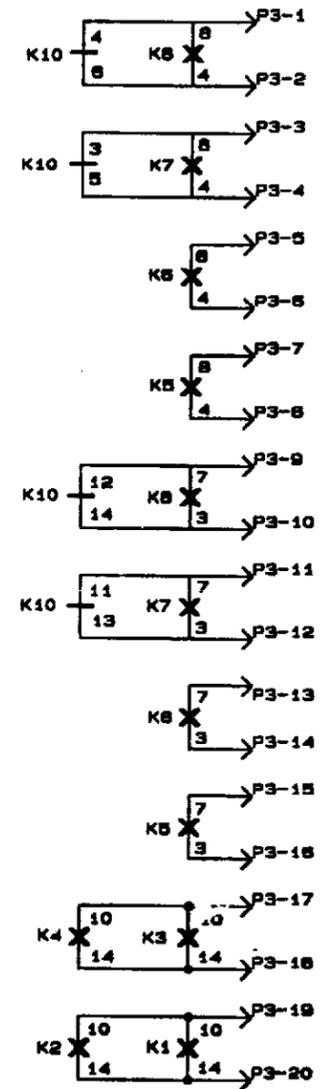
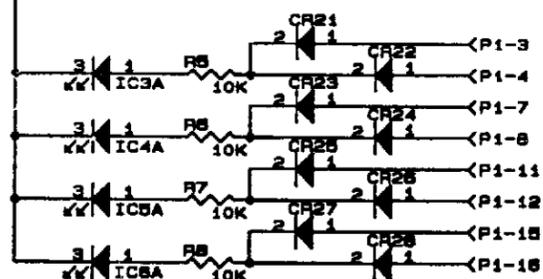
P/O CM1
994A ALARM MODULE



FROM -48V J1/G3



FROM -48V J1/G5



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