

SHEET INDEX

[illegible]

SUPPORTING INFORMATION

1. WHEN CHANGES ARE MADE IN THIS DRAWING, ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
2. THIS SHEET INDEX WILL BE REISSUED AND BROUGHT UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED.
3. THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE SHEET INDEX.
4. SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
5. THE LAST ISSUE NUMBER OF THE SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.

CONTROLLING INFORMATION		
G.	CATEGORY	NO.
ET	EQUIPMENT DRAWING	
	MANUFACTURING TESTING REQUIREMENTS	X-18227

1M99

POWER SYSTEMS

DC TO DC CONVERTER

1848 POWER UNIT

-48V INPUT

+130V, 0.25 AMP AND -130V, 0.25 AMP OUTPUT

BELL TELEPHONE LABORATORIES
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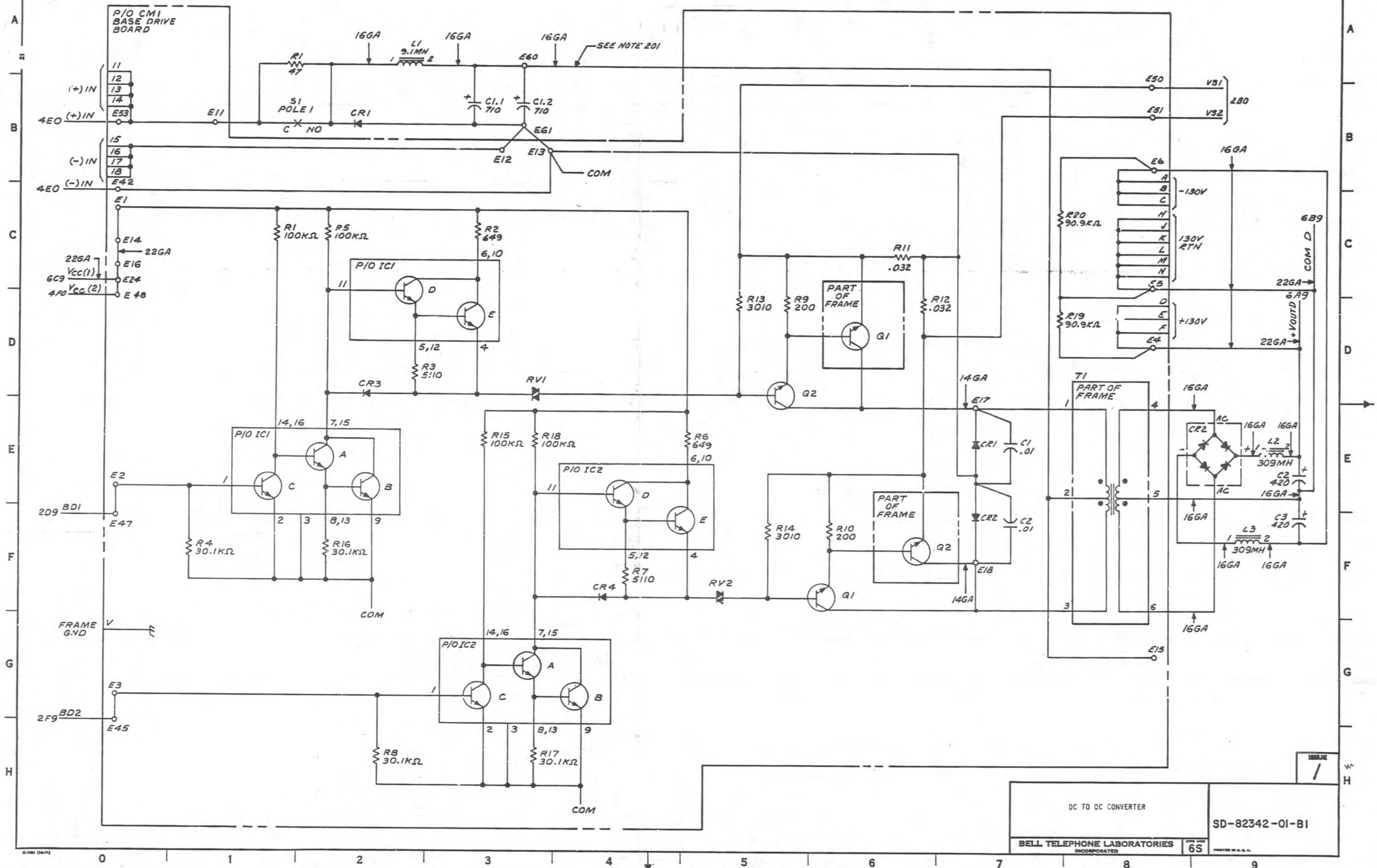
C

AT&TCO
STANDARD

SD-82342-OI-AI

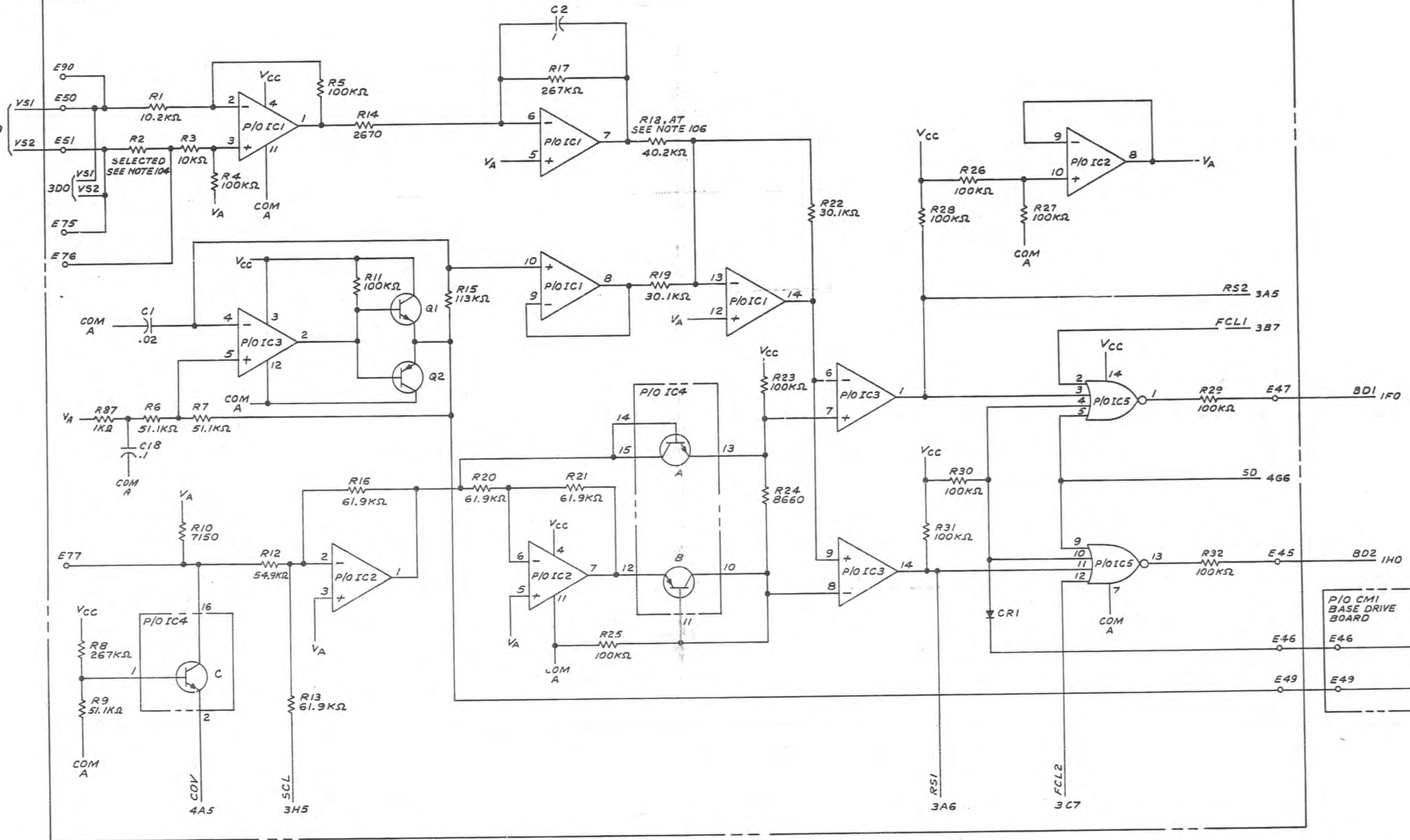
12 SHEETS

PART OF FS 1

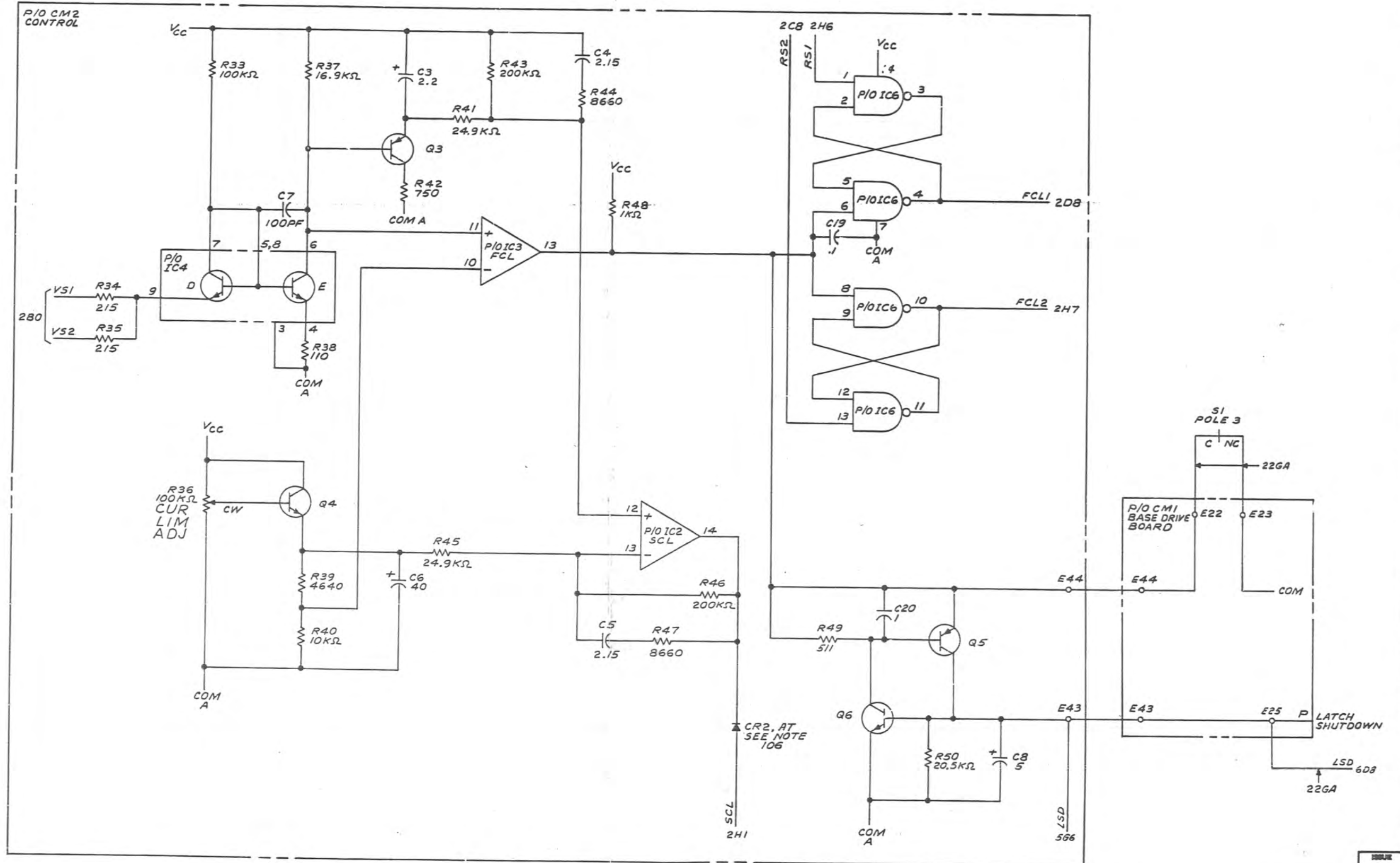


PART OF FSI

P/O CM2
CONTROL



PART OF FSI



DC TO DC CONVERTER

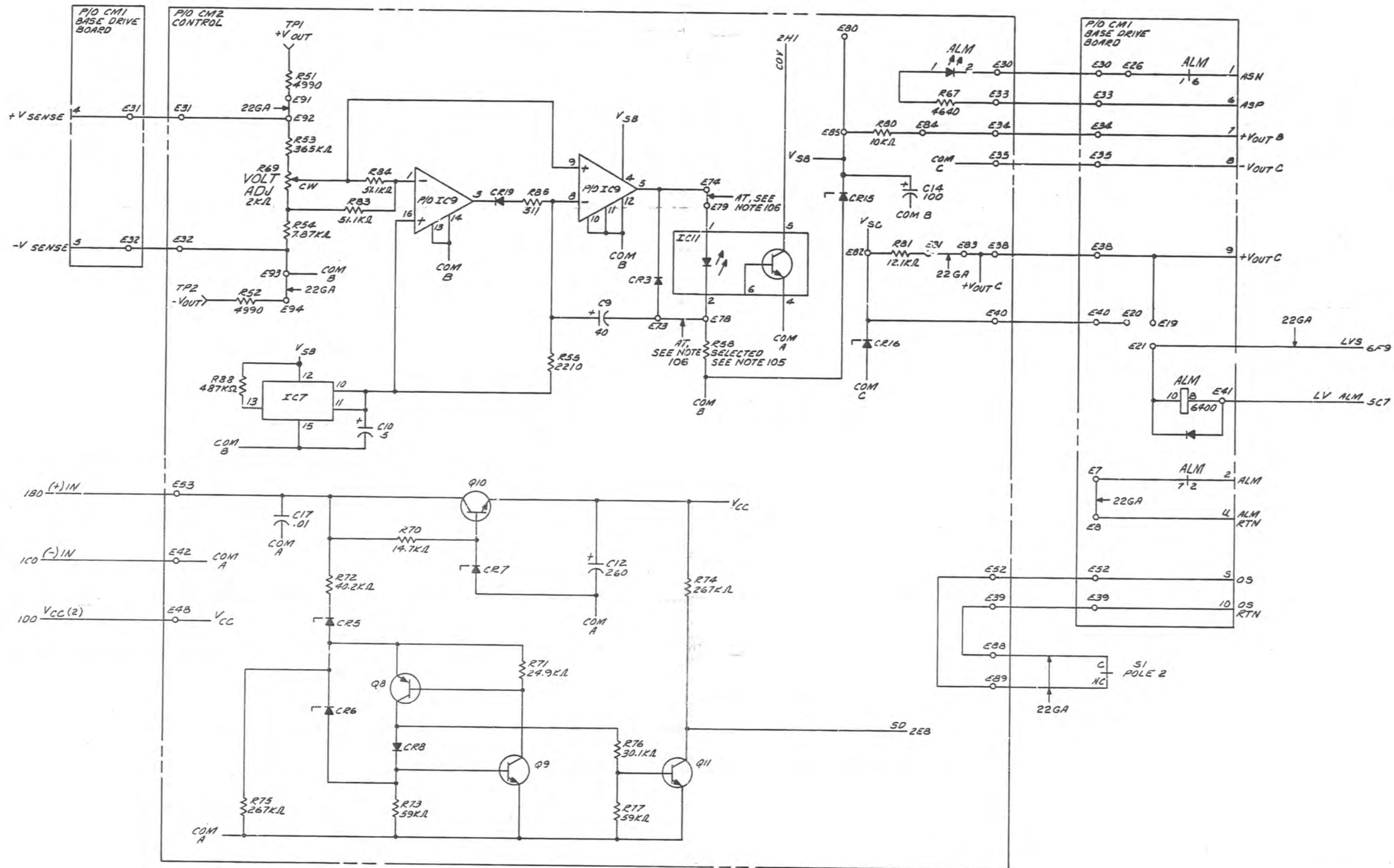
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PART OF FS 1



DC TO DC CONVERTER

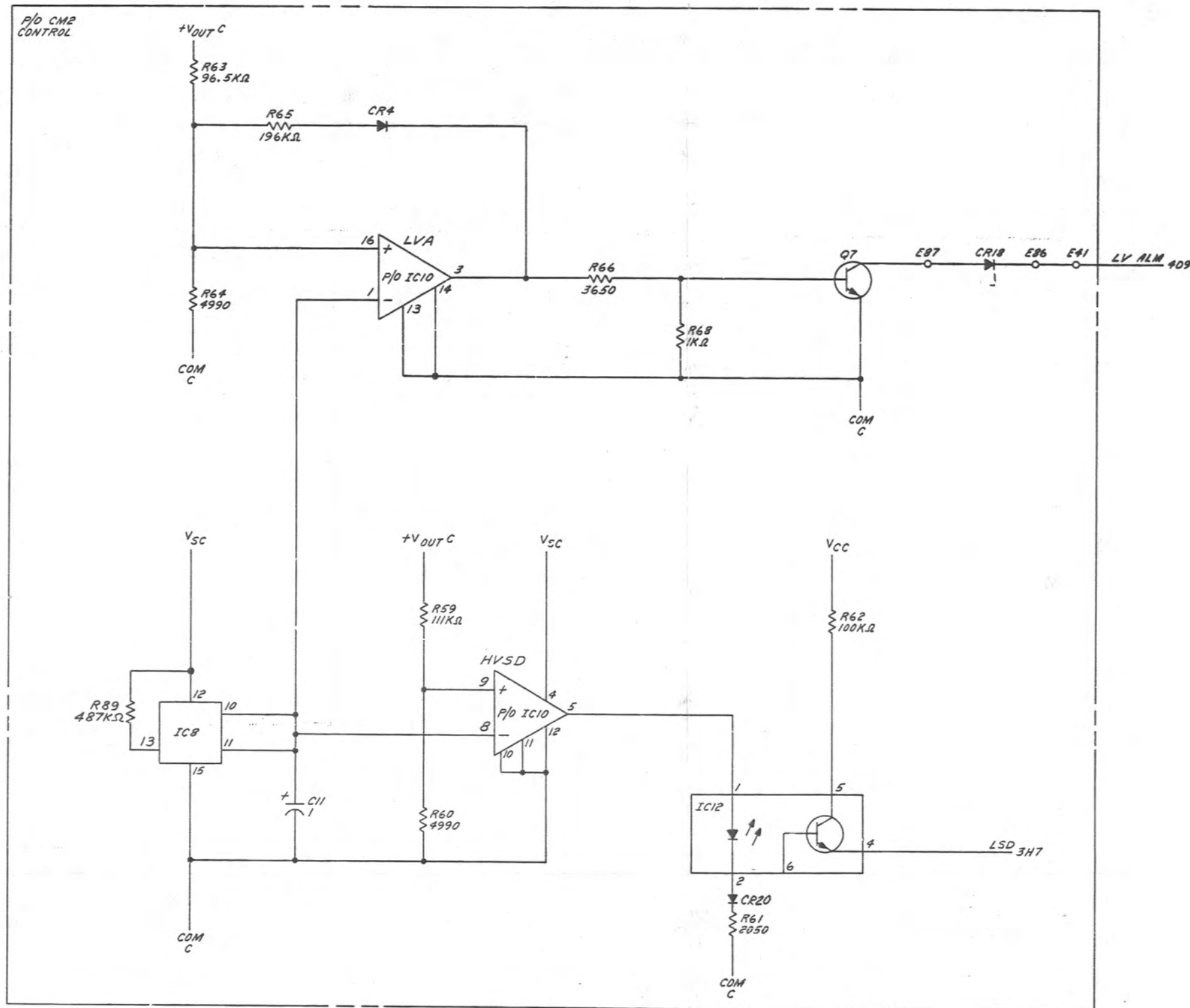
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DC TO DC CONVERTER

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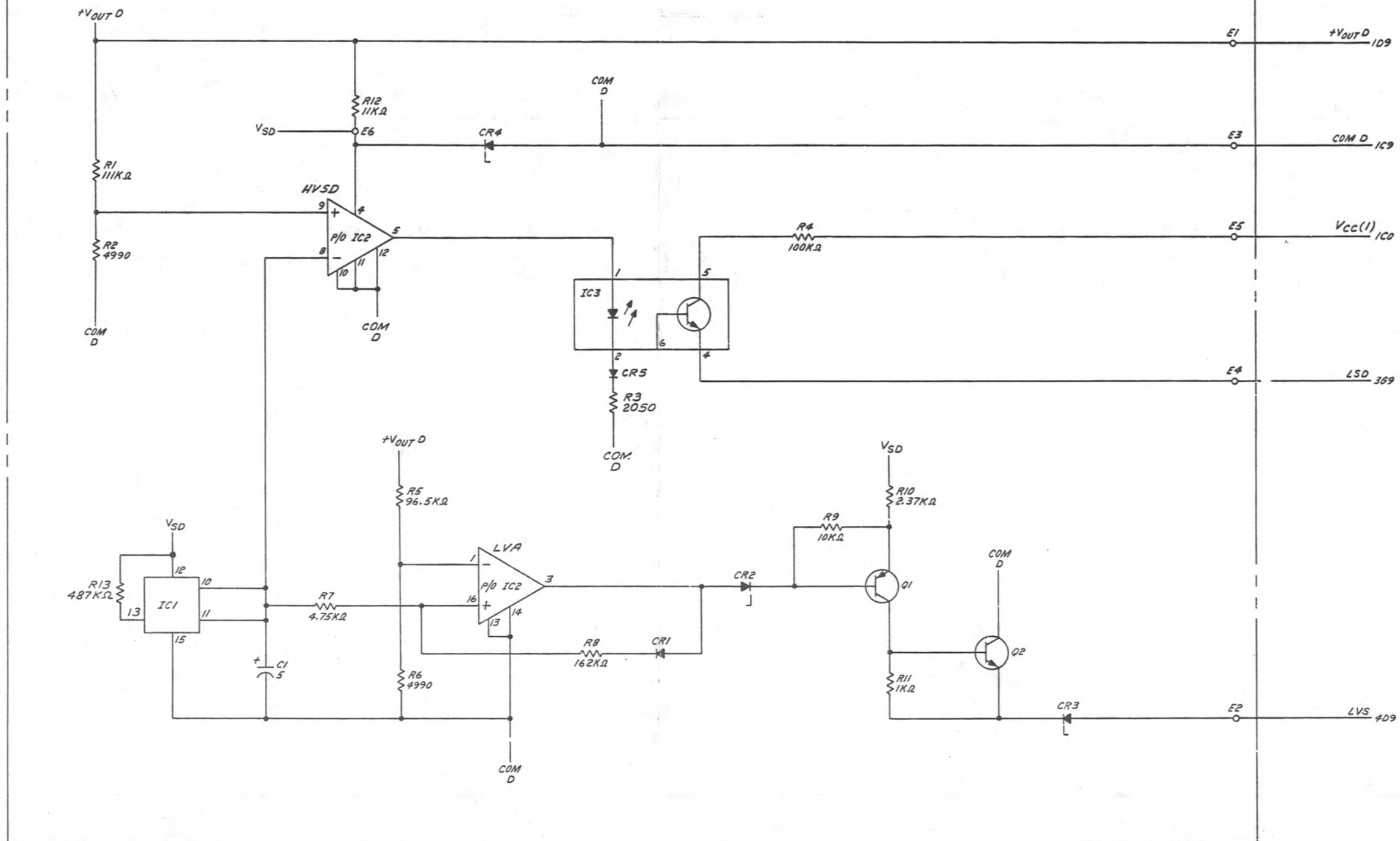
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CM3
ESS ALARM CIRCUIT



DC TO DC CONVERTER

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PART OF APP FIG 1

CAPACITOR

DESIG	LOC	CODE
C1.1	1B3	601D717G060GP4,710
C1.2	1B3	601D717G060GP4,710
C2	1E9	602D421G150AB2A,420
C3	1F9	602D421G150AB2A,420

SPRAGUE

CONNECTOR ON FRAME

SEE NOTE 303

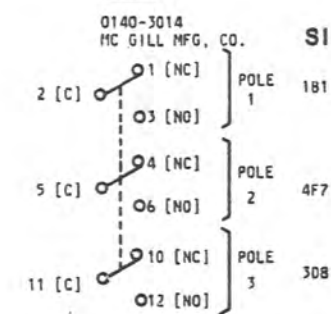
DIODE

DESIG	LOC	CODE
CR1	1B2	426A
CR2	1E9	MDA 952-6 (MOTOROLA)

RESISTOR

DESIG	LOC	CODE
R1	1A1	383E47R00J,47, SPRAGUE

SWITCH



TRANSFORMER

DESIG	LOC	CODE
T1	1D8	31848

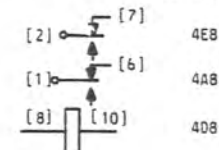
TRANSISTOR

DESIG	LOC	CODE
Q1	1D6	2N1773
Q2	1F6	2N3773

CIRCUIT MODULE

DESIG	LOC	CODE
CM1	1A0,2F9,3E8 4A0,4A7	841058993

RELAY

STRUTHERS-DUNN ALM
MRRK2B102

CAPACITOR

DESIG	LOC	CODE
C1	1E7	KS-16048,L4,.01
C2	1F7	KS-16048,L4,.01

INTEGRATED CIRCUIT

DESIG	LOC	CODE
IC1	1C2,1E1	502G
IC2	1E4,1G3	502G

RESISTOR (CONT)

DESIG	LOC	CODE
R13	1D5	KS-20616,L1A,3010
R14	1F5	KS-20616,L1A,3010
R15	1E3	KS-20616,L1A,100KΩ
R16	1F2	KS-20616,L1A,30.1KΩ
R17	1H3	KS-20616,L1A,30.1KΩ
R18	1E3	KS-20616,L1A,100KΩ
R19	1D8	KS-20810,L1A,90.9KΩ
R20	1C8	KS-20810,L1A,90.9KΩ

TRANSISTOR

DESIG	LOC	CODE
Q1	1F6	KS-20838,L1
Q2	1D5	KS-20838,L1

VARISTOR

DESIG	LOC	CODE
RV1	1D3	100A
RV2	1F5	100A

DIODE

DESIG	LOC	CODE
CR1	1E7	426A
CR2	1F7	426A
CR3	1D2	458A
CR4	1F4	458A
ALM	4D8	458A

RESISTOR

DESIG	LOC	CODE
R1	1C1	KS-20616,L1A,100KΩ
R2	1C3	KS-20289,L6C,649
R3	1D2	KS-20616,L1A,5110
R4	1F1	KS-20616,L1A,30.1KΩ
R5	1C2	KS-20616,L1A,100KΩ
R6	1E5	KS-20289,L6C,649
R7	1F4	KS-20616,L1A,5110
R8	1H2	KS-20616,L1A,30.1KΩ
R9	1D5	KS-20616,L1A,200
R10	1F6	KS-20616,L1A,200
R11	1C6	SPR-676-19,.032 DALE
R12	1D6	SPR-676-19,.032 ELECTRONICS

CIRCUIT MODULE

DESIG	LOC	CODE
P/O CM2	2A0,3A0, 4A1	841718604

CAPACITOR

DESIG	LOC	CODE
C1	2D1	577A,.02
C2	2A3	KS-20736,L1,1
C3	3A3	605G,2.2
C4	3A4	701C,2.15
C5	3F4	701C,2.15
C6	3F3	602A,40
C7	3B2	KS-20676,L1,100PF
C8	3G7	601A,5
C9	4C4	602A,40
C10	4D2	600B,5
C11	5F2	600A,1
C12	4E4	KS-16390,L25,260
C14	4B6	KS-20362,L2,100
C17	4E2	KS-19774,L1,.01
C18	2E0	KS-20736,L1,.1
C19	3C6	KS-20736,L1,.1
C20	3F6	KS-20736,L1,1

DIODE

DESIG	LOC	CODE
CR1	2F6	458A
CR2	3G5	458A
CR3	4C4	458A
CR4	5B2	458A
CR5	4F2	459AJ
CR6	4G2	459B
CR7	4E3	459AA
CR8	4G2	458A
CR15	4B5	426P
CR16	4D6	426P
CR18	5C6	426AK
CR19	4B3	458A
CR20	5G4	458A
ALM	4A6	531G(LED)

INTEGRATED CIRCUIT

DESIG	LOC	CODE
IC1	2B1,2B3,2C3,2C5	LM324N
IC2	2F2,2F3,2B7,3E4	LM324N
IC3	2D1,2D5,2F5,3C3	LM339N
IC4	2F1,2D4,3C1	502E
IC5	2D7,2F7	CD4002AE
IC6	3B6,3C6,3D6	CD4011AE
IC7	4D2	502BP
IC8	5F1	502BP
IC9	4B3,4B4	502F
IC10	5C2,5F3	502F
IC11	4C4	TIL-111
IC12	5F4	TIL-111

JACK (TEST POINT)

DESIG	LOC	CODE
TP1	4A1	026-4006-000-2019
TP2	4C1	026-4006-000-2019

SEAELECTRO

POTENTIOMETER

DESIG	LOC	CODE
R36	3E1	KS-19646,L3A,100KΩ
R69	4B1	KS-19055,L10,2KΩ

DC TO DC CONVERTER

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PART OF APP FIG. 1

CIRCUIT MODULE (CONT.)

DESIG	LOC	CODE
P/O CM2	2A0,3A0,4A1	841718604

F/W

RESISTOR

DESIG	LOC	CODE
R1	2B1	KS-20616, L1A, 10.2KΩ
R2	2B0	KS-20616, L1A, SEE NOTE 104
R3	2B1	KS-20616, L1A, 100KΩ
R4	2B1	KS-20616, L1A, 100KΩ
R5	2B2	KS-20616, L1A, 100KΩ
R6	2D1	KS-20616, L1A, 51.1KΩ
R7	2D1	KS-20616, L1A, 51.1KΩ
R8	2F0	KS-20616, L1A, 267KΩ
R9	2G0	KS-20616, L1A, 51.1KΩ
R10	2E1	KS-20616, L1A, 715Ω
R11	2C2	KS-20616, L1A, 100KΩ
R12	2E1	KS-20616, L1A, 54.9KΩ
R13	2G2	KS-20616, L1A, 61.9KΩ
R14	2B2	KS-20616, L1A, 267Ω
R15	2C3	KS-20616, L1A, 113KΩ
R16	2E2	KS-20616, L1A, 61.9KΩ
R17	2B3	KS-20616, L1A, 267KΩ
R18	2B4	KS-20616, L1A, 40.2KΩ
R19	2C4	KS-20616, L1A, 30.1KΩ
R20	2E3	KS-20616, L1A, 61.9KΩ
R21	2E3	KS-20616, L1A, 61.9KΩ
R22	2C5	KS-20616, L1A, 30.1KΩ
R23	2D5	KS-20616, L1A, 100KΩ
R24	2E5	KS-20616, L1A, 866Ω
R25	2F4	KS-20616, L1A, 100KΩ
R26	2B6	KS-20616, L1A, 100KΩ
R27	2C7	KS-20616, L1A, 100KΩ
R28	2C6	KS-20616, L1A, 100KΩ

RESISTOR (CONT.)

DESIG	LOC	CODE
R29	2D8	KS-20616, L1A, 100KΩ
R30	2E6	KS-20616, L1A, 100KΩ
R31	2E6	KS-20616, L1A, 100KΩ
R32	2F8	KS-20616, L1A, 100KΩ
R33	3A1	KS-20616, L1A, 100KΩ
R34	3C1	KS-20616, L1A, 215
R35	3D1	KS-20616, L1A, 215
R37	3A2	KS-20616, L1A, 16.9KΩ
R38	3D2	KS-20616, L1A, 110
R39	3F2	KS-20616, L1A, 464Ω
R40	3F2	KS-20616, L1A, 10KΩ
R41	3B3	KS-20616, L1A, 24.9KΩ
R42	3B3	KS-20616, L1A, 75Ω
R43	3A3	KS-20616, L1A, 200KΩ
R44	3B4	KS-20616, L1A, 866Ω
R45	3E3	KS-20616, L1A, 24.9KΩ
R46	3F5	KS-20616, L1A, 200KΩ
R47	3F4	KS-20616, L1A, 866Ω
R48	3C4	KS-20616, L1A, 1KΩ
R49	3F6	KS-20616, L1A, 511
R50	3G6	KS-20616, L1A, 20.5KΩ
R51	4A2	KS-20616, L1A, 499Ω
R52	4C1	KS-20616, L1A, 4°90
R53	4B2	KS-20616, L1A, 365KΩ
R54	4C2	KS-20616, L1A, 7.87KΩ
R55	4D3	KS-20616, L1A, 221Ω
R58	4D4	KS-20616, L1A, SEE NOTE 105
R59	5E3	KS-16764, L1F, 111KΩ

RESISTOR (CONT.)

DESIG	LOC	CODE
R60	5F3	KS-16764, L1F, 499Ω
R61	5G4	KS-20616, L1A, 205Ω
R62	5E5	KS-20616, L1A, 100KΩ
R63	5A1	KS-16764, L1F, 96.5KΩ
R64	5C1	KS-16764, L1F, 499Ω
R65	5B2	KS-20616, L1A, 196KΩ
R66	5C4	KS-20616, L1A, 365Ω
R67	4B6	KS-20289, L6C, 464Ω
R68	5C4	KS-20616, L1A, 1KΩ
R70	4E2	KS-20616, L1A, 14.7KΩ
R71	4F3	KS-20616, L1A, 24.9KΩ
R72	4F2	KS-20616, L1A, 40.2KΩ
R73	4G2	KS-20616, L1A, 59KΩ
R74	4F4	KS-20616, L1A, 267KΩ
R75	4G1	KS-20616, L1A, 267KΩ
R76	4G4	KS-20616, L1A, 30.1KΩ
R77	4G4	KS-20616, L1A, 59KΩ
R80	4B6	KS-20289, L6C, 10KΩ
R81	4C6	KS-20289, L6C, 12.1KΩ
R83	4B2	KS-20616, L1A, 51.1KΩ
R84	4B2	KS-20616, L1A, 51.1KΩ
R85	4B3	KS-20616, L1A, 511
R87	2D0	KS-20616, L1A, 1KΩ
R88	4D1	KS-20616, L1A, 487KΩ
R89	5F1	KS-20616, L1A, 487KΩ

TRANSISTOR

DESIG	LOC	CODE
Q1	2C2	66J
Q2	2D2	51A
Q3	3B3	51A
Q4	3E2	66J
Q5	3F7	51A
Q6	3G6	66J
Q7	5C5	66U
Q8	4F2	51A
Q9	4G3	66R
Q10	4E3	KS-20838, L1
Q11	4G4	66R

CIRCUIT MODULE

DESIG	LOC	CODE
CM3	6A0	841058910

E/W

CAPACITOR

DESIG	LOC	CODE
C1	6F2	601A, 5

DIODE

DESIG	LOC	CODE
CR1	6F4	458A
CR2	6E5	459B
CR3	6F7	426AK
CR4	6B3	426P
CR5	6D4	458A

INTEGRATED CIRCUIT

DESIG	LOC	CODE
IC1	6F1	5028P
IC2	6C2, 6E2	502F
IC3	6C4	TIL-111, TEXAS INSTRUMENT

RESISTOR

DESIG	LOC	CODE
R1	6B1	KS-16764, L1F, 111KΩ
R2	6C1	KS-16764, L1F, 499Ω
R3	6D4	KS-20616, L1A, 205Ω
R4	6C5	KS-20616, L1A, 100KΩ
R5	6E3	KS-16764, L1F, 96.5KΩ
R6	6F3	KS-16764, L1F, 499Ω
R7	6F2	KS-20616, L1A, 475Ω
R8	6F4	KS-20616, L1A, 16.2KΩ
R9	6E5	KS-20616, L1A, 10KΩ
R10	6E5	KS-20616, L1A, 2.37KΩ
R11	6F5	KS-20616, L1A, 1KΩ
R12	6B2	KS-20289, L6C, 11KΩ
R13	6F1	KS-20616, L1A, 487KΩ

TRANSISTOR

DESIG	LOC	CODE
Q1	6E5	51H
Q2	6F6	66U

ISSUE

/

DC TO DC CONVERTER

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6S

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CIRCUIT NOTES

DESIG	FUSE AMP	POTENTIAL	ONE PER
	6	-48	
BATTERY SYMBOL		VOLTAGE RANGE	
-48V		-42.75 TO -52.5	

FEATURE OR OPTION	PROVIDE		
	APP FIG	APP OR WRG	QUANTITY

103. 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		
				STD	A & M	MD

CIRCUIT NOTES (CONT.)

104. RESISTOR (R2) SELECTED AT TEST. OBTAIN THE FOLLOWING VALUES:
10.0, 19.6, 30.1, 40.2, 51.1, 60.4, 69.8, 80.6, 90.9, 100, 110, 121, 130, 140, 150, 162, 169, 182, 191, 200, 210, 221, 232, 243, 249, 261, 267, 280, 287, 301, 309, 324, 332, 340, 348, 357, 374, 383, 392, 402.
105. RESISTOR (R58) SELECTED AT TEST. OBTAIN THE FOLLOWING VALUES:
294, 432, 549, 768, 1270, 1780, 2490.
106. COMPONENTS AND STRAPS DESIGNATED "AT" ARE TO BE INSERTED AT TEST.
107. THE CURRENT DRAINS ARE:
LIST 1 = $1.0 + 150 \left(\frac{I_{OUT}}{48} \right)$
LIST 2 = $1.11 + 150 \left(\frac{I_{OUT}}{42.75} \right)$
(I_{OUT} AND LISTS 1 AND 2 ARE IN AMPERES;
 $I_{OUT} = I_{TOTAL OUT}$)
108. RELAY (ALH) CONTACTS ARE RATED AT: 500 MILLIAMPERES MAXIMUM, 200 VOLTS MAXIMUM, BUT, THE PRODUCT (VOLTS X AMPS) OF THE TWO MUST NOT EXCEED 10 VA.

EQUIPMENT NOTES:

201. THE WIRE CONNECTING (+) C1.2 AND TERMINAL 2 OF T1 IS HARD WIRED TO THE CONNECTOR BLOCK ON T1.
202. UNLESS OTHERWISE SPECIFIED ALL WIRE SHALL BE KS-19195, L1, 12GA STRANDED.
203. CONNECTIONS MADE BETWEEN CM1 AND CM2 BY MEANS OF A FST-22A-24 PRINTED CIRCUIT BOARD JIMPER, MANUFACTURED BY ANSLEY MANUFACTURING CORP.
204. ALL THE CONNECTOR STRAPPING, SHOWN IN CAD 1, MUST BE EQUIVALENT TO NO.18 AWG.

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.
302. INFORMATION SHOWN IN [] IS FOR REFERENCE ONLY.
303. CONNECTOR ON FRAME IS KS-21244, L1.
304. THE TERMINAL NUMBER ASSIGNMENT OF THE KS-20838, L1 TRANSISTOR IS:
-
305. THE TERMINAL NUMBER ASSIGNMENT OF THE 51A, 51H, 66J, 66R AND 66U TRANSISTORS IS:
-
306. THE TERMINAL NUMBER ASSIGNMENT OF THE 2N3773 TRANSISTOR IS:
-
307. THE TERMINAL ARRANGEMENT OF THE 531G(LED) DIODE IS:
-

308. HIGHEST CAP., DIODE, RES, TRANSISTOR USED ON THIS DRAWING				
FRAME MOUNTED	C3	CR2	R1	Q2
	NOT USED			
CM1	C2	CR4	R20	Q2
	NOT USED			
CM2	C20	CR20	R87	Q11
	NOT USED			
	C13, C15, C16	CR9-14	R56, R57, R78	
CM3	C1	CR5	R12	Q2
	NOT USED			

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CAD 1 (FOR APP FIG. 1)

