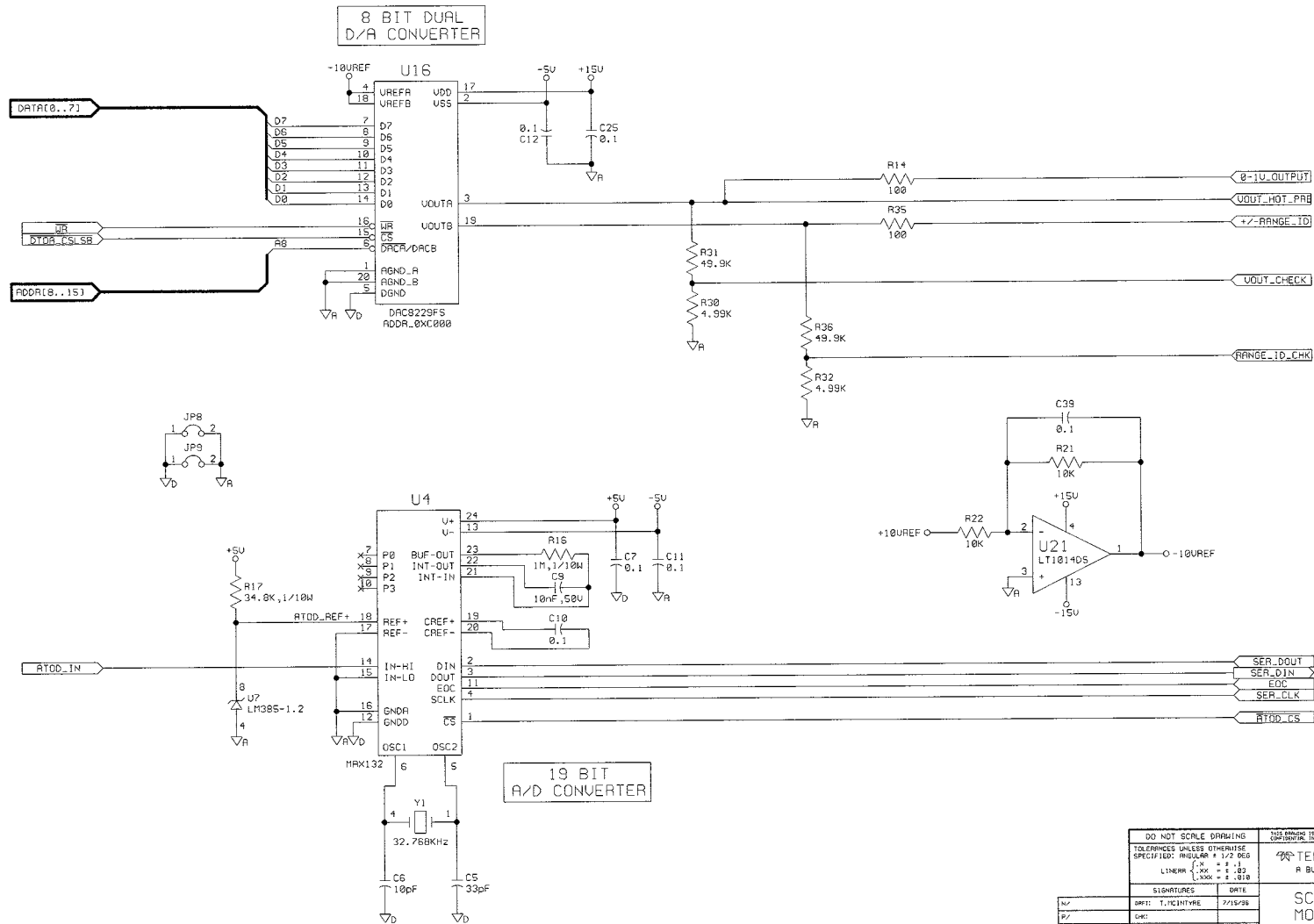


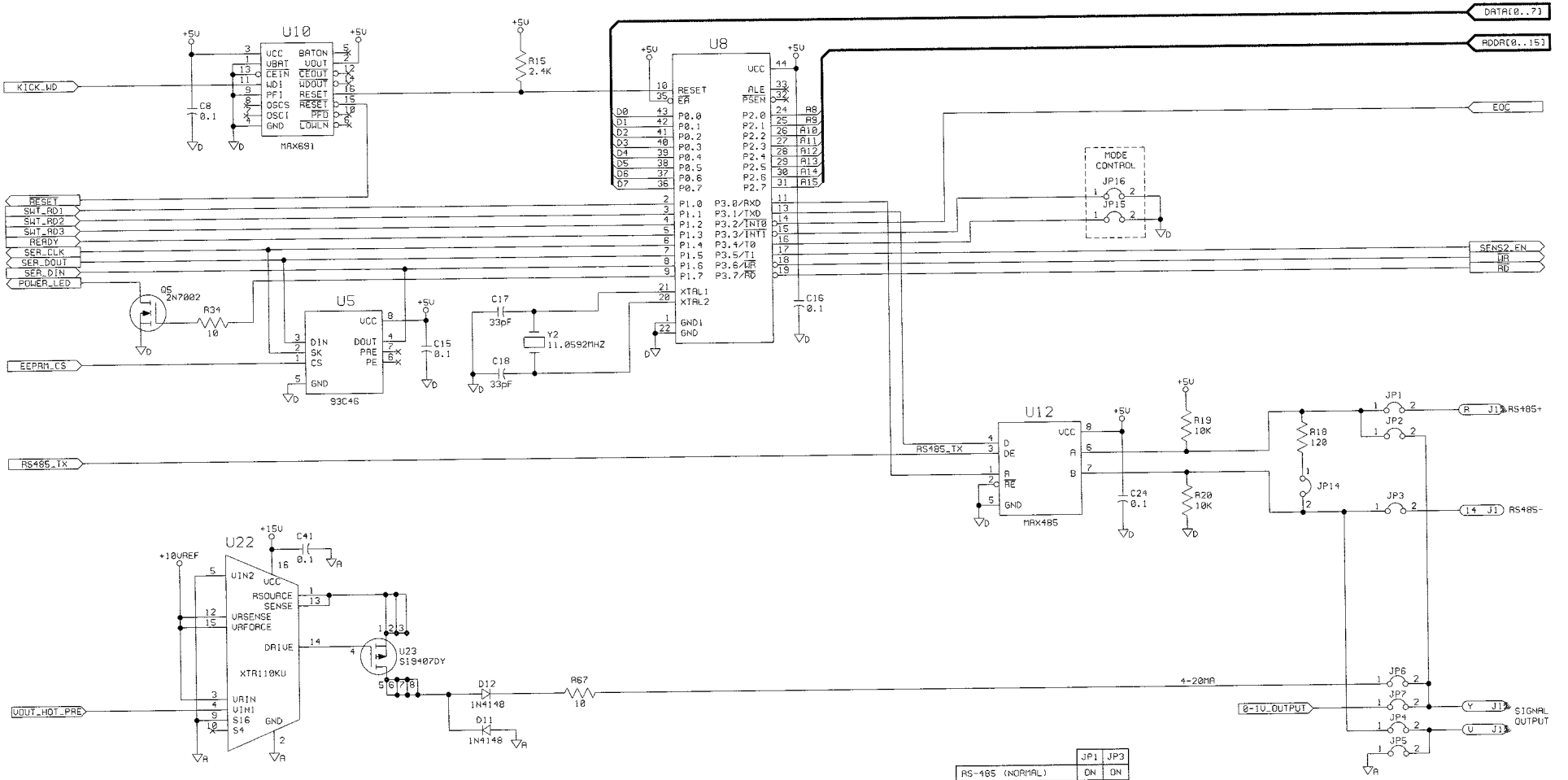
NOTES: UNLESS OTHERWISE SPECIFIED

1. PREPARED IAW DOCUMENTS LISTED:  
 GRAPHIC SYMBOLS: ANSI Y32.2  
 REFERENCE DESIGNATORS: ANSI Y32.16  
 DEFINITIONS OF ENGR DWGS: ANSI Y14.15
2. FOR ASSEMBLY SEE D65443.
3. RESISTANCE VALUES ARE IN OHMS, 1/8W, +/- 1%.
4. CAPACITANCE VALUES ARE IN MICROFARADS, 50V, +/-10%.

REV	DESCRIPTION	DATE	APP	REV
0	INITIAL RELEASE ECO 97-0304	5/9/87	THC	THC
1	INC ECO 08-0448	10/22/00	KFP	UP
2	INC ECO 08-0531	1/22/01	A.A.	THC

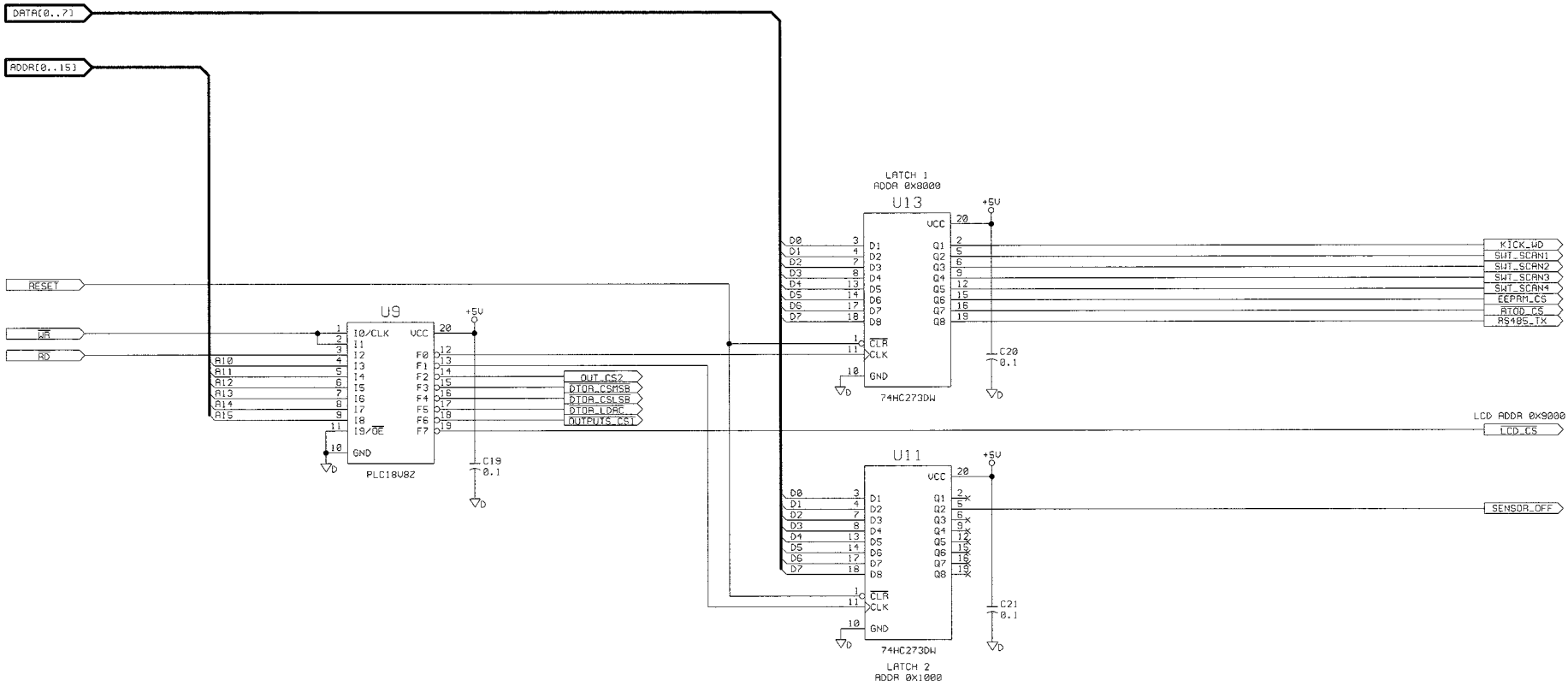


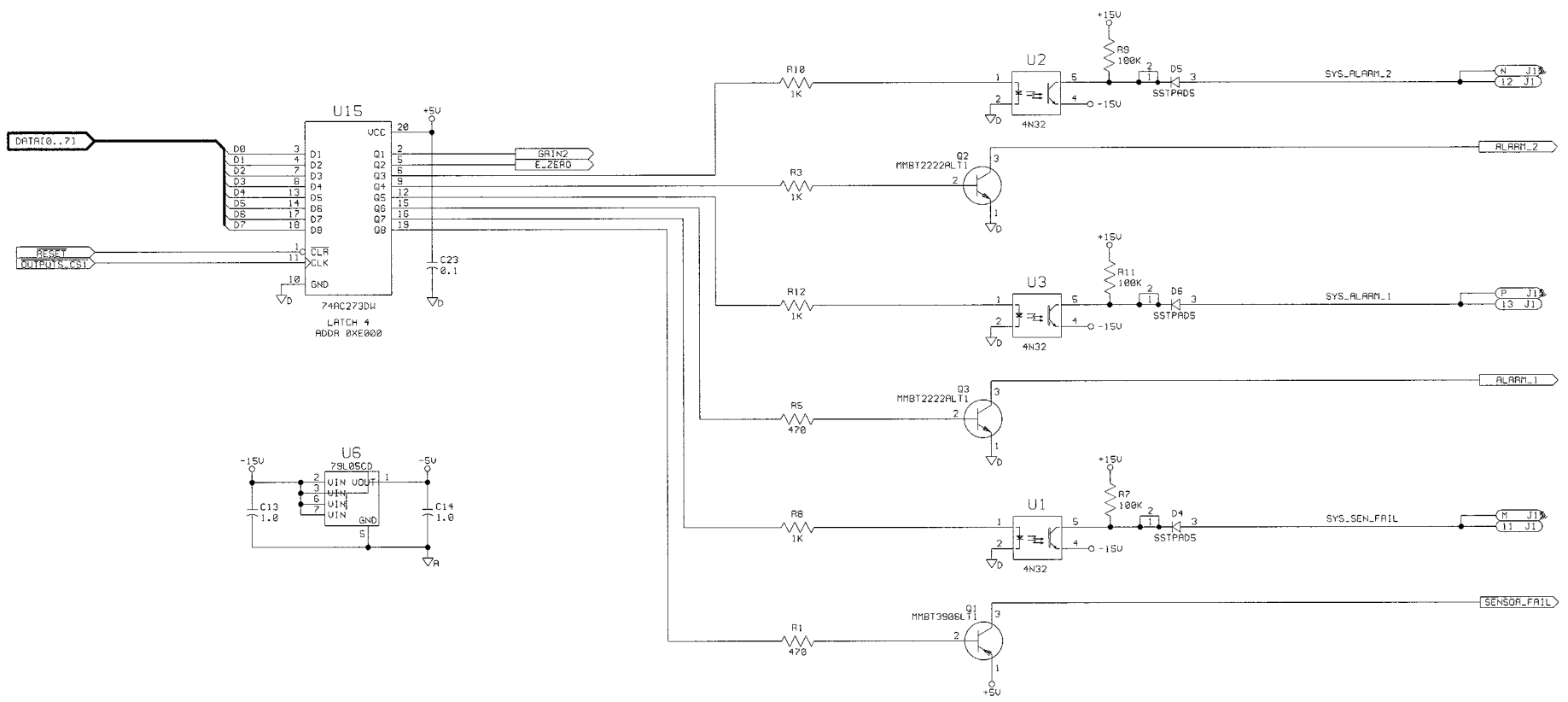
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TOLERANCES UNLESS OTHERWISE SPECIFIED: ANGULAR ± 1/2 DEG		TELEDYNE ANALYTICAL INSTRUMENTS A BUSINESS UNIT OF TELEDYNE ELECTRONIC TECHNOLOGIES	
LINEAR ± .005		SIGNATURES	
DATE		DATE	
DATE	DATE	SCALE NONE	
SHEET 1 OF 8		MODEL 1220 / 3220 MAIN BOARD	
REV 1		Dwg No. D-65442	

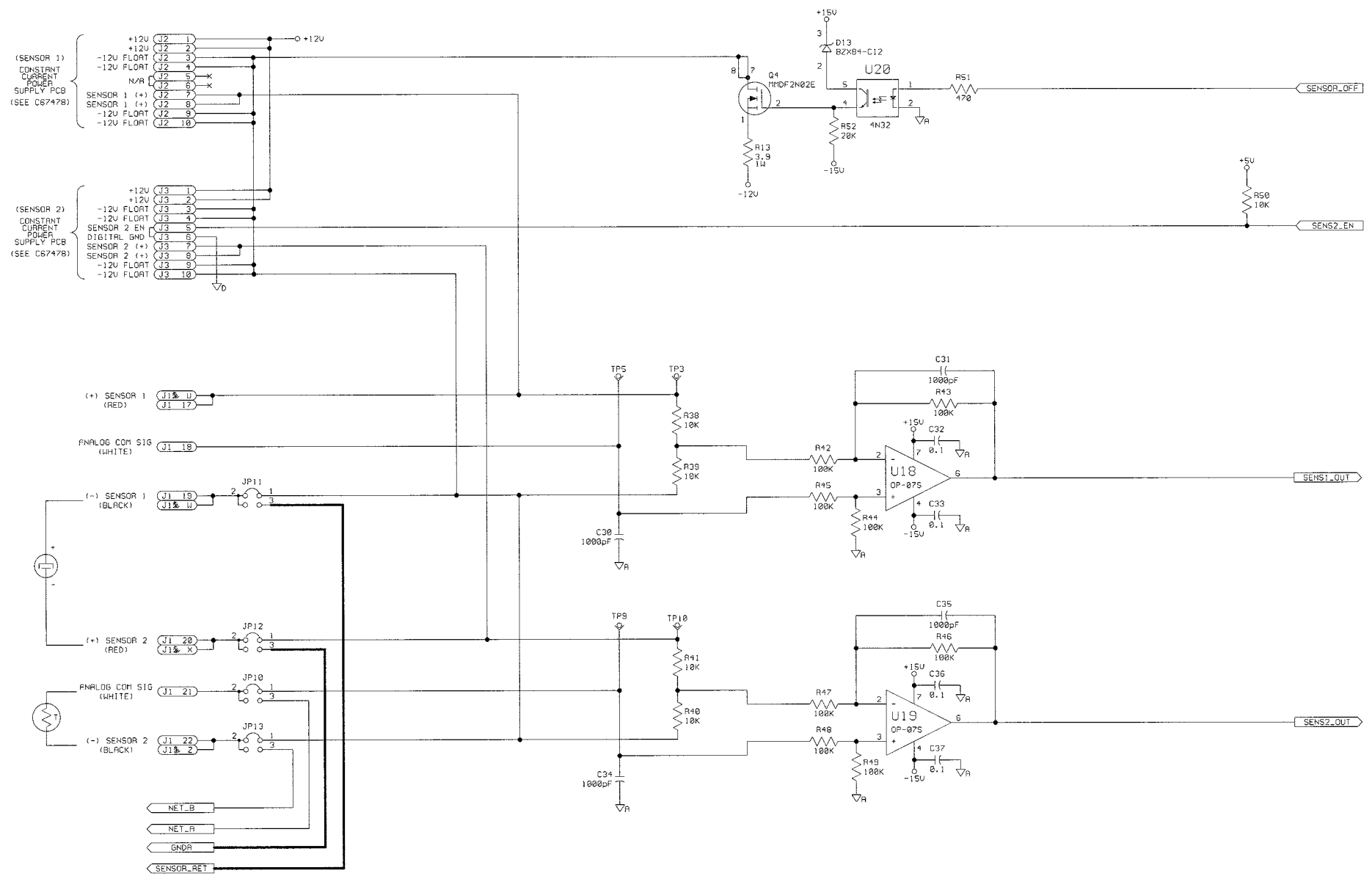


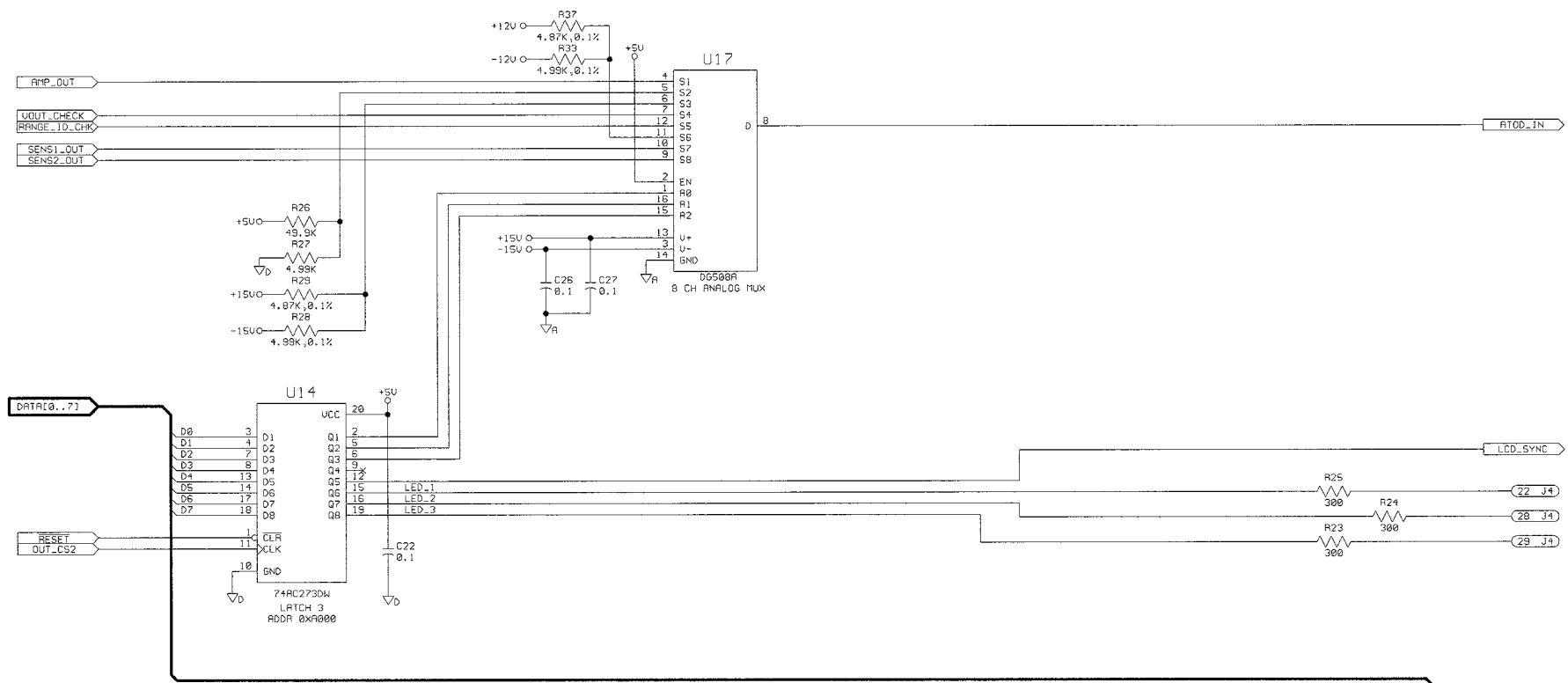
	JP1	JP3
RS-485 (NORMAL)	ON	ON
USE WITH MODEL 122 WITH COMMON METER	OFF	OFF

	JP2	JP4	JP5	JP6	JP7
SIGNAL OUTPUT	OFF	OFF	ON	OFF	ON
0-10V OUTPUT (NORMAL)	OFF	OFF	ON	ON	OFF
4-20mA OUTPUT	OFF	OFF	ON	ON	OFF
RS485 OUTPUT	ON	ON	OFF	OFF	OFF





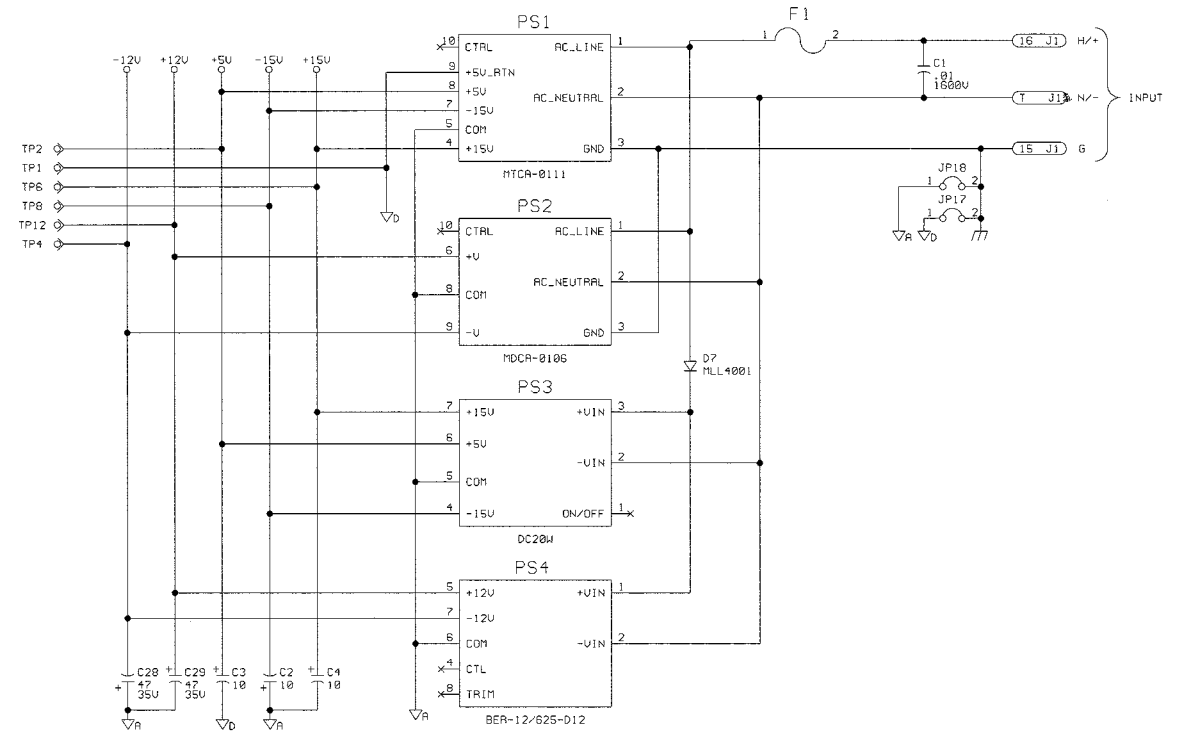
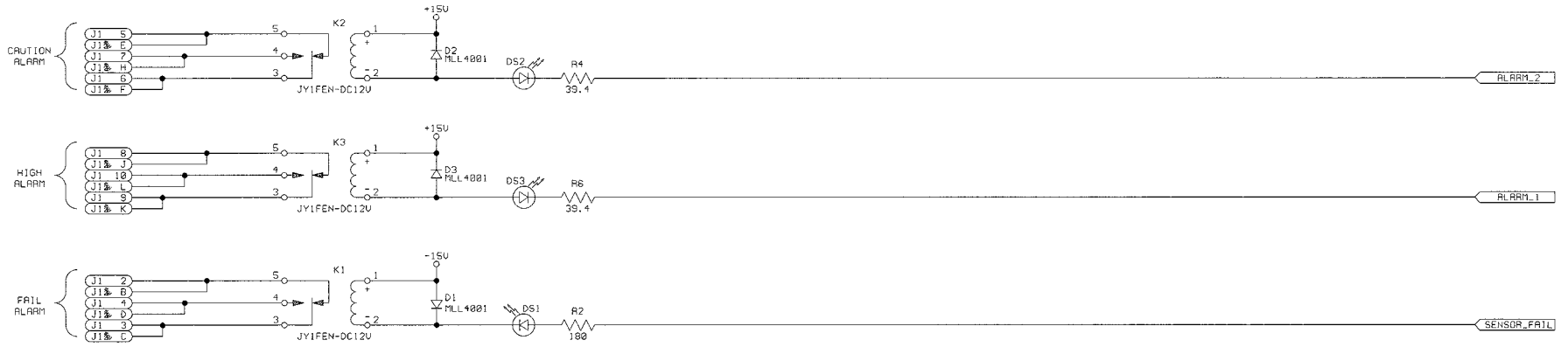




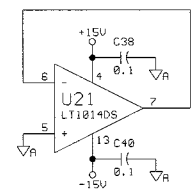
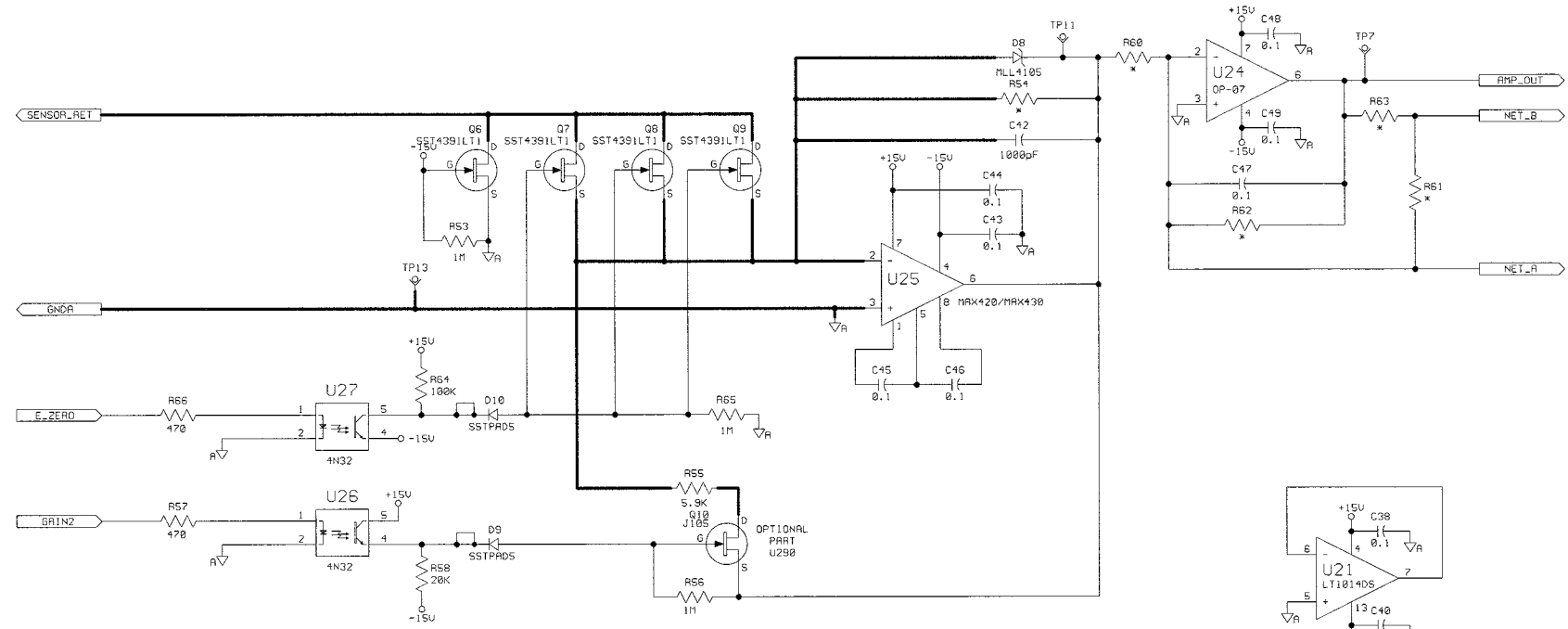
- D0 (14 J4)
- D1 (12 J4)
- D2 (10 J4)
- D3 (8 J4)
- D4 (7 J4)
- D5 (9 J4)
- D6 (11 J4)
- D7 (16 J4)

- LCD\_CS (30 J4)
- WR (13 J4)
- RD (17 J4)
- READY (26 J4)
- LCD\_SYNC (15 J4)
- POWER\_LED (27 J4)
- SWT\_RD3 (24 J4)
- SWT\_RD2 (20 J4)
- SWT\_RD1 (18 J4)
- SWT\_SCAN4 (25 J4)
- SWT\_SCAN3 (23 J4)
- SWT\_SCAN2 (21 J4)
- SWT\_SCAN1 (19 J4)

- +5V (5 J4)
- (6 J4)
- (3 J4)
- (4 J4)
- (1 J4)
- (2 J4)



THIS SECTION USED FOR MODEL 3220



SENSOR TYPE	RESISTORS (OHMS)					THERMISTOR	
	R60	R61	R62	R63	R54	VALUE	P/N
B1	5.9K	13K	49.9K	499	5.9K	1.5K	T305
B1	49.9K	243K	162K	4.87K	5.9K	16K	T366
RS	4.89K	11.3K	1.2K	42	14.7K	1.5K	T305
B1	18K	162K	180K	2K	14.7K	16K	T366



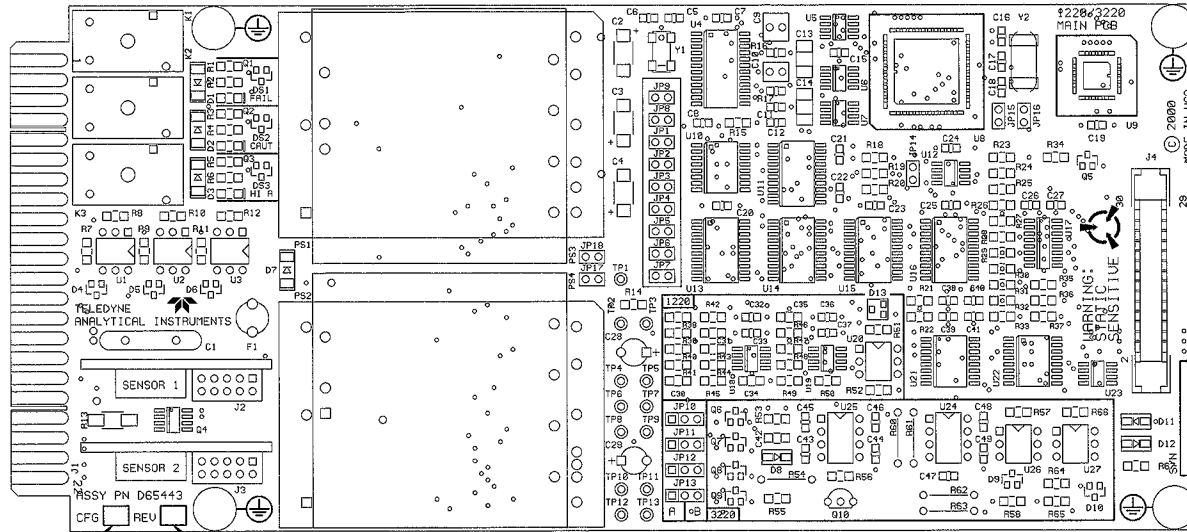
NOTES: UNLESS OTHERWISE SPECIFIED.

1. INTERPRET DIMENSIONS AND TOLERANCES IAW ANSI Y14.5.
2. FOR SCHEMATIC DIAGRAM SEE D65442.
3. SOLDER IAW CONTRACT REQUIREMENTS.

△ MARK REVISION AND SERIAL NUMBER PERMANENT AND LEGIBLE IN AREA INDICATED.

△ MARK CONFIGURATION "A", "B" OR "C" PERMANENT AND LEGIBLE, A= 1220 (P/N D65443A), B= 3220P (P/N D65443B) OR C= 3220T (P/N D65443C) IN AREA INDICATED.

REVISIONS				
REV.	DESCRIPTION	DATE	APP.	REV. BY
1	INITIAL RELEASE ESD 37-6384			TRC
2	INC ESD 98-8123	5/25/88	AR	UF
3	INC ESD 98-8446	10/31/88	KFP	UF
4	INC ESD 98-8591	1/12/91	AR	TRC
5	INC ESD 01-6276	10-07-01	A.A.	UF



6. INSTALL JUMPERS IN THE FOLLOWING CONFIGURATIONS SHOWN IN THE TABLES BELOW.

NON-CONFIGURABLE JUMPER SETTINGS (FACTORY PRESET)

JP8	ON (ANALOG/DIGITAL GND)
JP9	ON (ANALOG/DIGITAL GND)
JP10	PINS 1&2 "A" (MODEL SELECT)
JP11	PINS 1&2 "A" (MODEL SELECT)
JP12	PINS 1&2 "A" (MODEL SELECT)
JP13	PINS 1&2 "A" (MODEL SELECT)
JP15	ON (MODE CONTROL)
JP16	ON (MODE CONTROL)
JP17	ON (CHASSIS/DIGITAL GND)
JP18	ON (CHASSIS/ANALOG GND)

	RS485 (NORMAL)	USED WITH COMMON METER
JP1	ON	OFF
JP3	ON	OFF

	0-10U (STD) OUTPUT	1-20 mU OUTPUT	RS485 OUTPUT
JP2	OFF	OFF	ON
JP4	OFF	OFF	ON
JP6	ON	ON	OFF
JP6	OFF	ON	OFF
JP7	ON	OFF	OFF
JP14	OFF	OFF	ON



WARNING: ANTISTATIC HANDLING PROCEDURES ARE REQUIRED IN ASSEMBLY OF THIS PCB. REF. A29573

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LINEAR: .005 ± .001 HOLE: .005 ± .001		SIGNATURES DATE TITLE	
N/	DATE: 1/21/91	TITLE: PCB ASSEMBLY MODEL 1220 / 3220 02 ANALYZER MAIN BD.	
P/	CHK:	SHEET 1 OF 1	
I/	APP:	REV: 5	
F/	ENGR:	PART: SEE SEPARATE PARTS LIST	
Q/	S.O.:	Dwg No. D-65443	
REFERENCE: C46 10 D65444-1.PCB	PART: SEE SEPARATE PARTS LIST		REV: 5

TELEDYNE ELECTRONIC TECHNOLOGIES <i>Analytical Instruments</i>										PARTS LIST			DATABASE FILENAME P65443-5.XLS	DRAWING NO. D65443	PAGE 1 OF 3
MODEL / SERIES:		1220 / 3220			A- 1220 AC VERSION B- 3220P AC VERSION C- 3220T AC VERSION D- 1220 DC VERSION		E- 3220P DC VERSION F- 3220T DC VERSION		DATE 10-04-01	REVISION NO. 5 <i>AA</i> INC ECO NO. 01-0276					
DRAWING TITLE:		1220/3220 MAIN PCB													
ITEM NO	QUANTITY									TBE PART NUMBER	REF./PCB LOCATION	ITEM DESCRIPTION	REMARKS		
	A	B	C	D	E	F	G	H							
1	1	1	1							A67805	U9	IC, PROGRAMMED PAL	PLCC20		
2	1	1	1							I432	U10	IC, MAX691ACWE	MAXIM (SO-16 WIDE)		
3	1	1	1							I418	U4	IC, MAX132CWG	MAXIM (SO-24 WIDE)		
4	1	1	1							I445	U16	IC, DAC8229FS	ANALOG DEVICES (SO-20 WIDE)		
5	0	1	1							A246	U25	IC, MAX430CPA	Substitute MAX420CPA (P/N A214)		
6	1	1	1							I465	U17	IC, DG508ADY	SILICONIX (SO-16 SMALL)		
7	3	3	3							I233	U1-U3	IC, 4N32	MOTOROLA		
8	1	0	0							I233	U20 (SEE NOTE 6)	IC, 4N32	MOTOROLA		
9	0	1	1							I233	U27	IC, 4N32	MOTOROLA		
10	0	1	1							I233	U26	IC, 4N32	MOTOROLA		
11	1	1	1							I421	U6	IC, MC79L05ACD	MOTOROLA MC79L05ACD (SO-8 SMALL)		
12	1	1	1							I435	U21	IC, LT1014DS	LINEAR TECHNOLOGY (SO-16 WIDE)		
13	1	1	1							I436	U7	IC, LM385M1.2	NATIONAL (SO-8 SMALL)		
14	2	0	0							I437	U18, U19	IC, OP-07CS	ANALOG DEVICES (SO-8 SMALL)		
15	0	1	0							A108	U24	IC, OP-07CP	ANALOG DEVICES (SO-8 SMALL)		
16	1	1	1							I438	U22	IC, XTR110KU	BURR-BROWN (SO-16 WIDE)		
17	1	1	1							I439	U5	IC, NM93C46M8	NATIONAL NM93C46M8 (SO-8 SMALL)		
18	2	2	2							I415	U14, U15	IC, MC74AC273DW	MOTOROLA MC74AC273DW (SO-20 WIDE)		
19	2	2	2							I425	U11, U13	IC, 74HC273DW	MOTOROLA MC74HC273ADW (SO-20 WIDE)		
20	1	1	1							I466	U12	IC, MAX485CSA	MAXIM MAX485CSA (SO-8 SMALL)		
21	1	0	0							T1208	Q4	MOSFET, DUAL N-CHANNEL, MMDF2N02E	SILICONIX (SO-8 SMALL)		
22	1	1	1							T1209	Q1	MOSFET, MMBT3908LT1	SILICONIX (SOT-23)		
23	0	4	4							T1190	Q6-Q9	XSTR, SST4391	SILICONIX (SOT-23)		
24	2	2	2							T1191	Q2, Q3	XSTR, MMBT2222ALT1	MOTOROLA (SOT-23) SUB NATIONAL-MMBT2222A		
25	0	1	1							T1192	Q10	XSTR, J105	SILICONIX (TO-92)		
26	1	1	1							T1193	U23	XSTR, Si9407DY	SILICONIX (SO-8 SMALL) Sub IRF7205		
27	1	1	0							T1210	Q5	TRANSISTOR, 2N7002	SOT-23		
28	3	3	3							D461	D4-D6	DIODE, SSTPAD5	SILICONIX (SOT-23)		
29	0	1	1							D461	D9	DIODE, SSTPAD5	SILICONIX (SOT-23)		
30	0	1	1							D461	D10	DIODE, SSTPAD5	SILICONIX (SOT-23)		
31	2	2	2							D462	D11, D12	DIODE, FDLL4148.TR	NATIONAL (MLL-34)		
32	0	1	1							D463	D8	DIODE, DL4105	MICROSEMI (MLL-34) SUB DL4104		
33	4	4	4							D475	D1, D2, D3, D7	DIODE, MLL4001			
34	1	1	1							CP1751	Y1	XTAL,RSM-200-32.768 KHZ	RALTRON-RSM-200-32.768KHZ)		
35	1	1	1							CP1752	Y2	XTAL,11.05 MHZ, ECS-110.5-20-5P	ECS INTERNATIONAL, INC. (ASTM-49)		
36	19	19	19							CP1753	C7,8,11,12,15,16, C19-27, C38-41	CAP, 0.1 UF, 50V, 10%, X7R, CERAMIC	KEMET C0805C104K5RAC (CC-0805)		
37	4	0	0							CP1753	C32, 33, 36, 37	CAP, 0.1 UF, 50V, 10%, X7R, CERAMIC	KEMET C0805C104K5RAC (CC-0805)		
38	0	3	3							CP1753	C43, C44, C47	CAP, 0.1 UF, 50V, 10%, X7R, CERAMIC	KEMET C0805C104K5RAC (CC-0805)		
39	0	4	2							CP1753	C45, C46, C48, C49	CAP, 0.1 UF, 50V, 10%, X7R, CERAMIC	KEMET C0805C104K5RAC (CC-0805)		

TELEDYNE ELECTRONIC TECHNOLOGIES Analytical Instruments										PARTS LIST			DATABASE FILENAME P65443-4.XLS	DRAWING NO. D65443	PAGE 2 OF 3
MODEL / SERIES: 1220 / 3220										A- 1220 AC VERSION		E- 3220P DC VERSION		REVISION NO. 5 INC ECO NO. 01-0276	
DRAWING TITLE: 1220/3220 MAIN PCB										B- 3220P AC VERSION		F- 3220T DC VERSION			
ITEM NO										TBE PART NUMBER	REF./PCB LOCATION	ITEM DESCRIPTION	REMARKS		
	A	B	C	D	E	F	G	H							
40	2	2	2							CP1754	C13, C14	CAP, 1.0 UF, 50V, 20%, Z5U, CERAMIC	JOHANSON 500S43Z105MV4 (CC-1812)		
41	3	3	3							CP1755	C5, C17, C18	CAP, 33 pF, 50V, 20%, NPO, CERAMIC	KEM C0805C330M5RAC (CC-0805)C0805C104K5GAC		
42	1	1	1							CP1767	C10	CAP, .01UF, 63V, 5%, POLYCARBONATE	WIMA MKC02/0.1/63/2.5		
43	3	3	3							CP1789	C2-C4	CAP, CC7343, 10 UF, 35V, 10%, TANT	KEMET T491D106K035AS		
44	1	1	1							CP1768	C9	CAP, .01UF, 63V, 5%, POLYPROPYLENE	WIMA FKP02/01/63/2.5		
45	4	0	0							CP1758	C30, C31, C34, C35	CAP, 1000 pF, 50V, 10%, X7R, CERAMIC	KEMET C1206C102K5GAC (CC-1206)		
46	0	1	0							CP1758	C42	CAP, 1000 pF, 50V, 10%, X7R, CERAMIC	KEMET C1206C102K5GAC (CC-1206)		
47	2	2	2							CP1890	C28, C29	CAP, 47 UF, 35V, TANT			
48	0	0	1							CP1782	C42	CAP, 4.7 UF, 16V, 10%, CERAMIC			
49	1	1	1							CP1793	C6	CAP, CC0805, 10 pF, CERAMIC			
50	1	1	1							C340	C1	CAP, 0.01 UF, 1600V, DISC			
51	3	3	3							R2133	R23-R25	RES,300 OHMS, 1/8W, 5%, 200 PPM	DALE CRCW1206301J, 200PPM		
52	1	1	1							R2120	R16	RES,1M, 1/10W, 5%, 200 PPM	DALE CRCW0805105J, 200PPM		
52	1	1	1							R2121	R17	RES, 34.8K, 1/10W, 1%, 100 PPM	DALE CRCW08053481F, 100PPM		
54	0	2	2							R2130	R53, R65	RES, 1M, 1/8W, 5%, 200 PPM	DALE CRCW1206105J, 200PPM		
55	0	1	1							R2130	R56	RES, 1M, 1/8W, 5%, 200 PPM	DALE CRCW1206105J, 200PPM		
56	3	3	3							R2129	R7, R9, R11	RES, 100K, 1/8W, 1%, 100 PPM	DALE CRCW12061003F, 100PPM		
57	9	0	0							R2129	R42 - R49	RES, 100K, 1/8W, 1%, 100 PPM	DALE CRCW12061003F, 100PPM		
58	0	1	2							R2129	R64	RES, 100K, 1/8W, 1%, 100 PPM	DALE CRCW12061003F, 100PPM		
59	3	3	3							R2205	R8, R10, R12	RES, 1K, 1%, 1/8W, 200 PPM	RC1206		
60	5	0	0							R2179	R38-41, 50	RES, 10K, 0.1%, 1/8W, 25 PPM	DALE TNPW12061002BT9, 25PPM		
61	4	4	4							R2179	R19-R22	RES, 10K, 0.1%, 1/8W, 25 PPM	DALE TNPW12061002BT9, 25PPM		
62	0	1	1							R383	R60	RES, 5.9K, 1/8W, 1%, 100 PPM	DALE CRCW12061273F, 100PPM		
63	0	0	1							R2136	R59	RES, 6.65K, 1/8W, 1%, 100 PPM	DALE CRCW12066651F, 100PPM		
64	0	1	1							R441	R63	RES,499 OHMS, 1/8W, 1%	DALE CRCW12061500F, 100PPM		
65	0	1	1							R558	R61	RES, 13K, 1/8W, 1%	ROEDERSTEIN D25		
66	0	1	0							R 343	R54	RES, 6.04K, 1/8W, 1% 100PPM	DALE CRCW12068252F, 100PPM		
67	0	0	1							R2191	R54	RES, 1.5M, 1/8W, 1%, 100 PPM	MERITEK CR08-1504F, 100PPM		
68	3	3	3							R2127	R1, R3, R5	RES, 470 OHMS, 1/8W, 5%, 200 PPM	DALE CRCW1206471J, 200PPM		
69	1	0	0							R2127	R51	RES, 470 OHMS, 1/8W, 5%, 200 PPM	DALE CRCW1206471J, 200PPM		
70	0	1	1							R2127	R57	RES, 470 OHMS, 1/8W, 5%, 200 PPM	DALE CRCW1206471J, 200PPM		
71	0	1	1							R2127	R66	RES, 470 OHMS, 1/8W, 5%, 200 PPM	DALE CRCW1206471J, 200PPM		
72	2	2	2							R2206	R34, R67	RES, 10 OHMS, 1/8W, 1%, 100 PPM	RC1206		
73	1	1	1							R2132	R15	RES, 2.4K, 1/8W, 5%, 200 PPM	DALE CRCW1206242J, 200PPM		
74	2	2	2							R2135	R14, R35	RES, 100 OHMS, 1/8W,5%, 200 PPM	DALE CRCW1206101J, 200PPM		
75	0	1	1							R 399	R55	RES, 2.00K, 1/8W, 1%	DALE CRCW1206592F, 100PPM		
76	1	0	0							R2128	R52	RES, 20K, 1/8W, 5%, 200 PPM	DALE CRCW1206203J, 200PPM		
77	0	1	1							R2128	R58	RES, 20K, 1/8W, 5%, 200 PPM	DALE CRCW1206203J, 200PPM		
78	1	1	1							R2245	R2	RES, RC1206, 180 OHMS, 1/8W, 5%, 200 PPM			
79	2	2	2							R2246	R4, R6	RES, RC1206, 39 OHMS, 1/8W, 5%, 200 PPM			

