

2019 south ritchey street · santa ana, california 92705 · (714) 558-8211

CAL DATA  
SERIAL I/O CONTROLLER  
(P/N C81080330)

DRAWING PACKAGE  
C21518037-X3

DOCUMENT C21518037  
Revision X3  
October 1975

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california data processors

## REVISIONS

<u>Revision</u>	<u>Date</u>	<u>Approval</u>	<u>Description</u>
X0	8/74	<i>[Signature]</i>	Preliminary edition
X1	11/74	<i>[Signature]</i>	Release edition. Title change from CDP-SIO Serial I/O Controller to Cal Data SIO Serial S/O Controller. Added introduction material and proprietary notice.
X2	6/75	<i>[Signature]</i>	Title change from Cal Data SIO Serial I/O Controller to Cal Data Serial I/O Controller
X3	10/75	<i>[Signature]</i>	Format change



# INTRODUCTION

This volume contains engineering drawings for the Cal Data Serial I/O Controller, assembly number C81080330.

Table 1 lists the engineering drawings contained in this document. Material parts lists are included with each assembly drawing.

Components are identified, where applicable, by both the suggested manufacturer's part number and the Cal Data part number. In general, commercially available parts conform to specifications published by the manufacturer; however, Cal Data component specifications dictate the performance of all component parts used.

Schematics use industry standard designations where applicable (e.g., 7401, 2N5769). These designations are for convenience only and do not necessarily imply that these specific parts are used. The lists of material contain the accurate identification of individual parts.

Table 1. Drawings in this Document

Number	Title
C81080330	Board Assembly, Serial I/O Controller
C21080330	Board Schematic, Serial I/O Controller
C85300212 to C85300222	Header Assembly, Serial I/O Controller

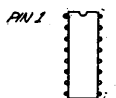




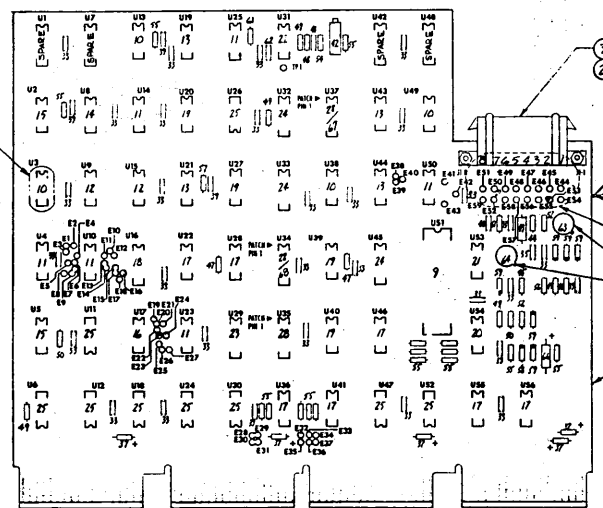
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RELEASE STATUS			REVISIONS					
RELEASE LEVEL	APPROVED	DATE	REV	ECO	DESCRIPTION	ORIG	DATE	APPD.
LABORATORY			X1	68	REL PER DEN D00001	CE	12-10-78	WJ
ENGINEERING			X2	68	REL PER DEN D00001	CK		SM
PRODUCTION			X3	68	DISCOU-01	SEE ECO		DM
			X4	68	DISCOU-01	SEE ECO		DM
			X5	68	DISCOU-01	SEE ECO		DM
			X6	68	DISCOU-01	SEE ECO		DM
			X7	68	DISCOU-01	SEE ECO		DM
			X8	68	DISCOU-01	SEE ECO		DM
			X9	68	DISCOU-01	SEE ECO		DM
			X10	68	DISCOU-01	SEE ECO		DM

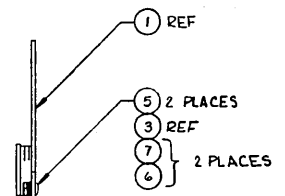
SEE VIEW A



VIEW A  
TYPICAL I.C. PIN ORIENTATION



COMPONENT SIDE



NUMBERING REVERSED

- △ REFERENCE NUMBERS SHOWN ON ITEM 3 ARE FOR ASSEMBLY AND ONLY AND DO NOT APPEAR ON CONNECTOR.
- 5. FOR SCHEMATIC SEE C21050330.
- 4. REFERENCE DOCUMENTS: PRODUCT SPECIFICATION: C2249016, TEST SPECIFICATION: C22410018
- 3. SERIAL NUMBER TO BE PREFIXED WITH A DIVISION CODE WHICH AGREES WITH PLACE OF MANUFACTURE: DS EQUAL - SANTA ANA, DE EQUAL - EDNA.
- 2. MARK ASSEMBLY LATEST REV LETTER TO WHICH IT WAS BUILT, AND SERIAL NUMBER AND EIA FOUR DIGIT DATE CODE, LOCATED APPROX. AS SHOWN
- 1. FABRICATE PER CAL DATA SPEC C21100010.

NOTES: UNLESS OTHERWISE SPECIFIED

- △ PUT ITEMS 69 & 70 IN PLASTIC BAG AND AFFIX TO BOARD WITH TAPE FOR FINAL SHIPMENT. DO NOT INSERT PINS IN CONNECTOR.
- △ ITEMS 67 AND 68 DEFINE THE STANDARD CAL DATA SIO HEADER ASSEMBLIES INSTALLED ON THIS BOARD. ALL OTHER CONFIGURATIONS WILL BE IDENTIFIED BY MARKETING ON THE SALES ORDER AND DOCUMENTED BY ENGINEERING USING THE STANDARD CAL DATA DRAWING DEPARTURE AUTHORIZATION (D.D.A.)

△ WIRING CHART  
ADD NUMBER MARKS

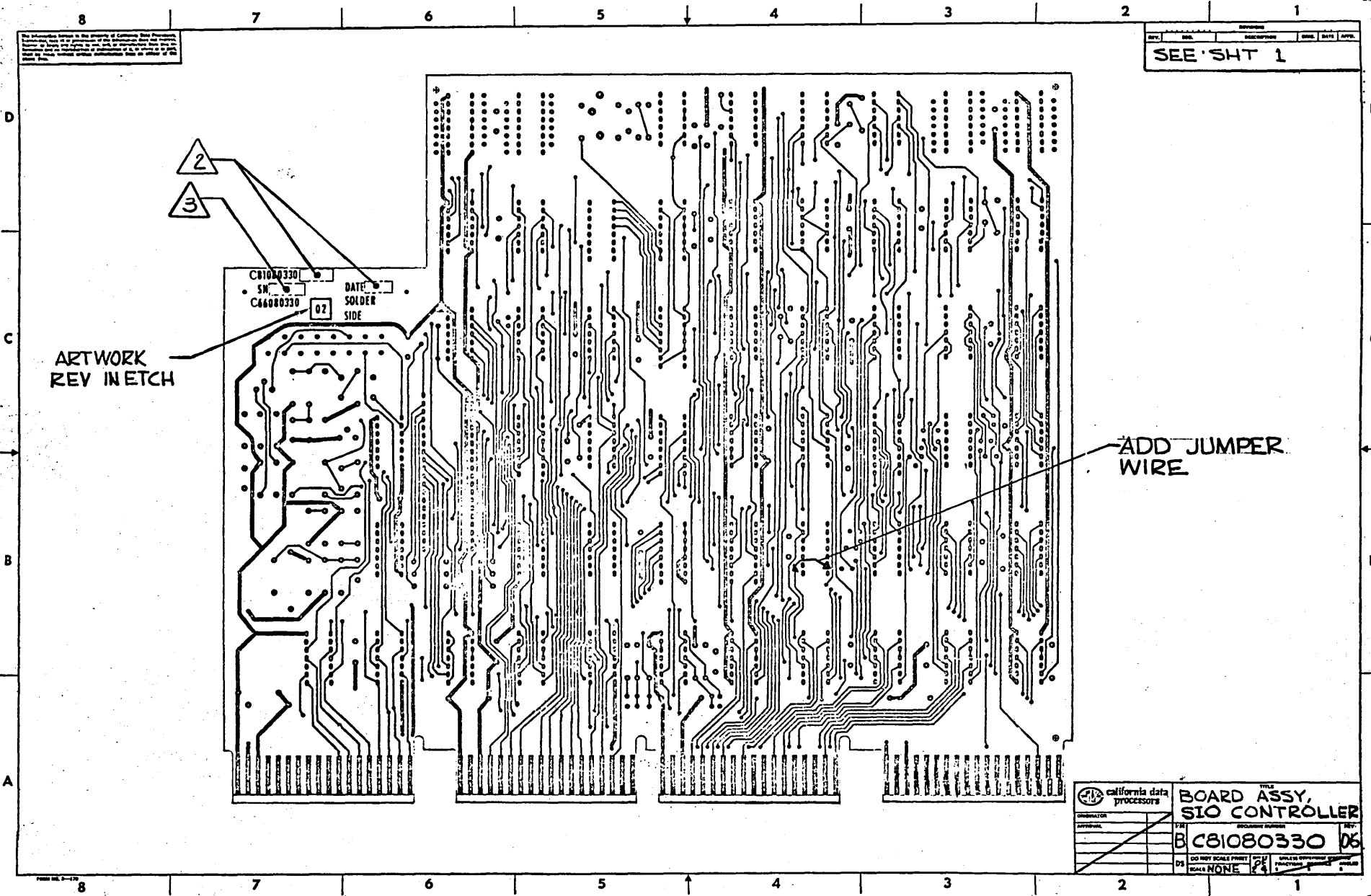
FROM	TO
J1-1	E44
J1-2	E45
J1-3	E46
J1-4	E47
J1-5	E48
J1-6	E49
J1-7	E50
J1-8	E51

FOR PARTS LIST SEE SHTS 31A

ITEM	PART NO.	QTY	DESCRIPTION
<b>BOARD ASSEMBLY SIO CONTROLLER</b>			
OPERATOR	DATE	REV	DOCUMENT NUMBER
APPROVED	DATE	REV	DOCUMENT NUMBER
C81080330		06	
DO NOT SCALE PRINT		SCALE	

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DATE: \_\_\_\_\_ DESIGNED BY: \_\_\_\_\_ DRAWN BY: \_\_\_\_\_ APPR: \_\_\_\_\_  
**SEE SHT 1**



ARTWORK  
REV INETCH

ADD JUMPER  
WIRE


C81080330  
 SN: C66080330  
 DATE: \_\_\_\_\_  
 SOLDER SIDE  
 02

california data processors  
**BOARD ASSY, SIO CONTROLLER**  
 C81080330 06  
 DO NOT SCALE PRINT  
 MAKE NONE

# LIST OF MATERIALS

ITEM NO.	QTY. REQD.	REFERENCE DESIGNATION	PART NUMBER	DESCRIPTION	NOTES	VENDOR	VENDOR PART NUMBER
1	1		C66080330	PRINTED WIRING BOARD			
2	8	REF J1	C56150683	CONTACT		AMP	60617-1
3	1	J1	C56150681	CONNECTOR		AMP	1-480459-0
4	A/R		C37203490	WIRE, 22 AWG, WHT STRANDED		ALPHA	3251 (WHT)
5	A/R		C61431059	SCREW 6-32 X 1/4 PAN HD.			
6	A/R		C61532008	NUT, HEX 6-32			
7	A/R		C61241110	WASHER INT TOOTH #6			
8							
9	1	U51	C51361000	I.C., XMTR/RECVR ASYN		WESTN. DIGITAL	TR1602
10	4	U3, 13, 38, U49	C51322000	QUAD 2-IN NAND GATE		TEX. INST.	SN7400N-00
11	6	U4, 10, 14, U23,25, 50	C51322004	HEX INVERTER			SN7404N-00
12	2	U9, 15	C51322005	HEX INVERTER W/OC			SN7405N-00
13	4	U19,21, 43, U44	C51322008	QUAD 2-IN AND GATE			SN7408N-00
14	1	U8	C51322010	TRIPLE 3-IN NAND GATE			SN7410N-00
15	2	U2, 5	C51322017	HEX BUFFER/DRIVER OC			SN7417N-00
16	1	U17	C51322020	DUAL 4-IN NAND GATE			SN7420N-00
17	7	U22,28, 36 U41,46, 55, U56	C51322038	QUAD 2-IN BUFFER W/OC			SN7438N-00
18	1	U16	C51322042	BCD TO DEC DECODER			SN7442N-00
19	4	U20,27,39,40	C51322074	DUAL D FLIP FLOP		TEX. INST.	SN7474N-00
20	1	U54	C51341488	QUAD LINE DRIVER		MOTOROLA	MC1488L
21	1	U53	C51341489	QUAD LINE RECVR.		MOTOROLA	MC1489L
22	1	U31	C51322121	MONOSTABLE MULTIVIBRATOR		TEX. INST.	SN74121N-00
23	1	U29	C51322153	DUAL 4 TO 1 DATA SEL MUX		TEX. INST.	SN74153N-00
24	3	U32,33, 45	C51322161	BINARY COUNTER		TEX. INST.	SN74161N-00
25	9	U6,11,12,18 U24,26, 30, U47,52,	C51388380	I.C., QUAD, BUS RECEIVER		SIGNETICS	8T380
26							
27							
28	3	U34,35, 37	C56148000	SOCKET I.C. 16 PIN		S.A.E.	CSA-3100-168
29							
30							
31							
32							
33	31	C1,3,4,5,6, C7, 10, 11, C12,13, 14, C16,17, 18, C19,22, 23, C24,25, 26, C27,28, 29, C31,33, 34, C35,36, 37 C39,41	C52252500	CAPACITOR .01 uf 100 V 10%		ERIE	805-024-Z5U .01uf- M -100V
34							


FORM NO. 3-172

ORIGINATOR <i>R. Standon</i>	<i>23 July 74</i>	 <b>california data processors</b>	TITLE	
APPROVAL <i>Bonnie M. ...</i>	<i>7-24-74</i>		BOARD ASSEMBLY, S10 CONTROLLER	
<i>...</i>	<i>7-24-74</i>	<b>SIZE</b> B	DOCUMENT NUMBER	
<i>...</i>	<i>7-25-74</i>		C81080330	
<i>...</i>	<i>7-25-74</i>	<b>DS</b>	REV. 06	
<i>...</i>	<i>7-25-74</i>		SHEET 3 OF 4 PAGE	

# LIST OF MATERIALS

ITEM NO.	QTY. REQD.	REFERENCE DESIGNATION	PART NUMBER	DESCRIPTION	NOTES	VENDOR	VENDOR PART NUMBER
35	1	C38	C52251688	CAPACITOR .47 uf 10% 100 V		ERIE	CK06BX474K
36							
37	5	C8, 20, 30, 42, 43	C52326001	CAPACITOR 4.7 uf 20% 20 V		CORNING	CCD-020-475-20
38							
39	3	C2, 9, 15	C52213370	CAPACITOR 220 pf 500 V 5%		CDE	CD15FD221J03
40	1	C32	C52213385	CAPACITOR 470 pf		CDE	CD15FD471J03
41	1	C21	C52213380	CAPACITOR 330 pf 5%		CDE	CD15FD331J03
42	1	R15	C54773670	RESISTOR POTENTIOMETER 10K		BOURNS	3006P-1-103
43	1	R28	C54400128	RESISTOR 68 $\Omega$ , 1/2 W 5%			RC20GF680J
44	1	R31	C54400259	82 $\Omega$ 1/4 W 5%			RC07GF820J
45	1	R29	C54400263	120 $\Omega$			RC07GF121J
46	1	R36	C54400265	150 $\Omega$			RC07GF151J
47	2	R17,37	C54400267	180 $\Omega$			RC07GF181J
48	1	R11	C54400270	240 $\Omega$			RC07GF241J
49	5	R3, 6, 9, R25,34	C54400275	390 $\Omega$			RC07GF391J
50	2	R2, 26	C54400277	470 $\Omega$			RC07GF471J
51	1	R24	C54400279	560 $\Omega$			RC07GF561J
52	2	R30,32	C54400282	750 $\Omega$			RC07GF751J
53							
54	1	R14	C54400477	6.8K			RC07GF682J
55	16	R1,4,7, 8, R10,12, 13, R18,19, 20, R21,22, 23, R27,35, 16	C54400285	1K			RC07GF102J
56	1	R33	C54400289	RESISTOR 1.5K 1/4 W 5%			RC07GF152J
57	1	R5	C54400473	RESISTOR 4.7K 1/4 W 5%			RC07GF472J
58	1	CR2	C51621308	DIODE ZENER, 5.1 V 5%		MOTOROLA	IN751A
59	6	CR1, 3, 4, CR5 6, 7	C51631010	DIODE, HS SW		FAIRCHILD	FDH600
60							
61	1	R38	C54400268	RESISTOR 200 $\Omega$ 1/4 W 5%			RC07GF201J
62	1	C44	C52213450	CAPACITOR 1000pf 5%		CDE	CD15FA102J03
63	1	Q1	C51162745	TRANSISTOR PNP		MOTOROLA	2N2905
64	1	Q2	C51122860	TRANSISTOR NPN		FAIRCHILD	2N3724
65	2		C61872160	TRANSISTOR PAD TO-5		DELBERT BLINN	404-200-N-W
66	1	C40	C52326003	CAPACITOR 47 $\mu$ f 20% 20V		CORNING	CCD-020-476-20
67	1	U37(S10-1)	C85300216	HEADER ASSY, S10-110-150 BAUD	7		
68	1	U34(S10-2)	C85300212	HEADER ASSY, S10-BR4-BG4	7		
69	1	PI(REF)	C56150682	CONNECTOR, 8 PIN	8	AMP	1-480460-0
70	8	PI(REF)	C56150684	CONTACT, PIN, 18-22 AWG	8	AMP	60618-1

FORM NO. 3-172

ORIGINATOR		 <b>california data processors</b>	TITLE	
APPROVAL			BOARD ASSEMBLY, S10 CONTROLLER	
			SIZE	DOCUMENT NUMBER
			B	C 81080330
			DS	REV 06
			SHEET 4	OF 4 PAGE



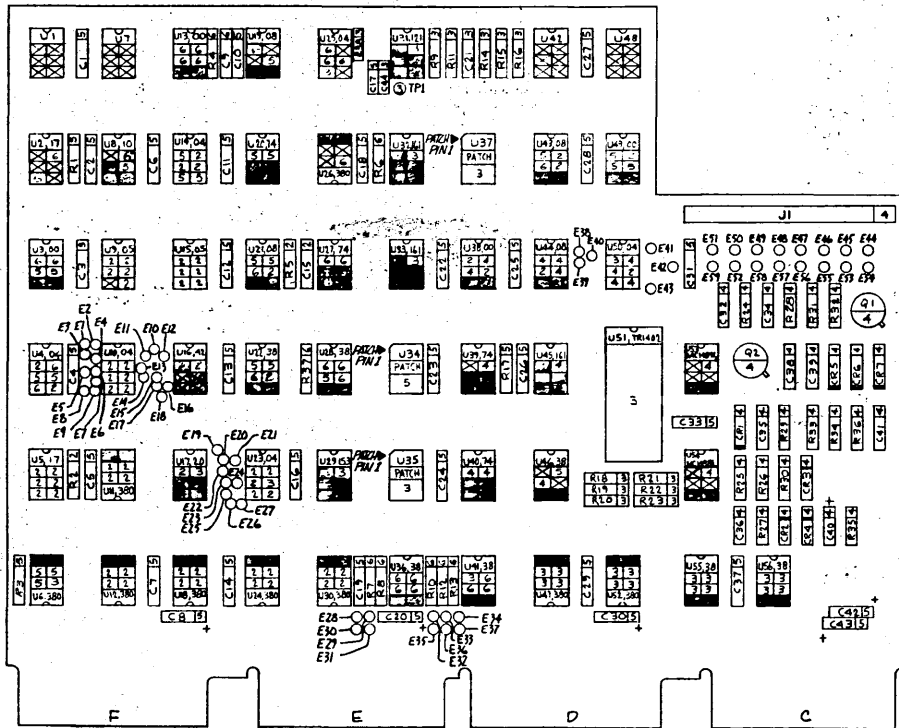
8 7 6 5 4 3 2 1

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RELEASE STATUS				APPROVALS			
RELEASE LEVEL	APPROVED	DATE	BY	DATE	BY	DATE	BY
DESIGN/CONSTRUCTION	<i>[Signature]</i>	6-27-74	01				
PRODUCTION							

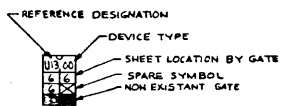
  

REV.	DATE	DESCRIPTION	BY	DATE	BY
01	6-27-74	REV. PRODN DISCOS	CE	11/27/74	CE
02	02/20/77-01	SEE ECO	PM	02/27/77	PM
03	03/00/76-01	SEE ECO	GM	10/27/76	GM
04	05/00/78-01	SEE ECO	GM	11/27/78	GM



REFERENCE DESIGNATIONS	
LAST USED	NOT USED
C44	
R8B	R16
U5C	
CR7	
Q2	
J1	
E59	E54
TPI	

NUMBERING REVERSED

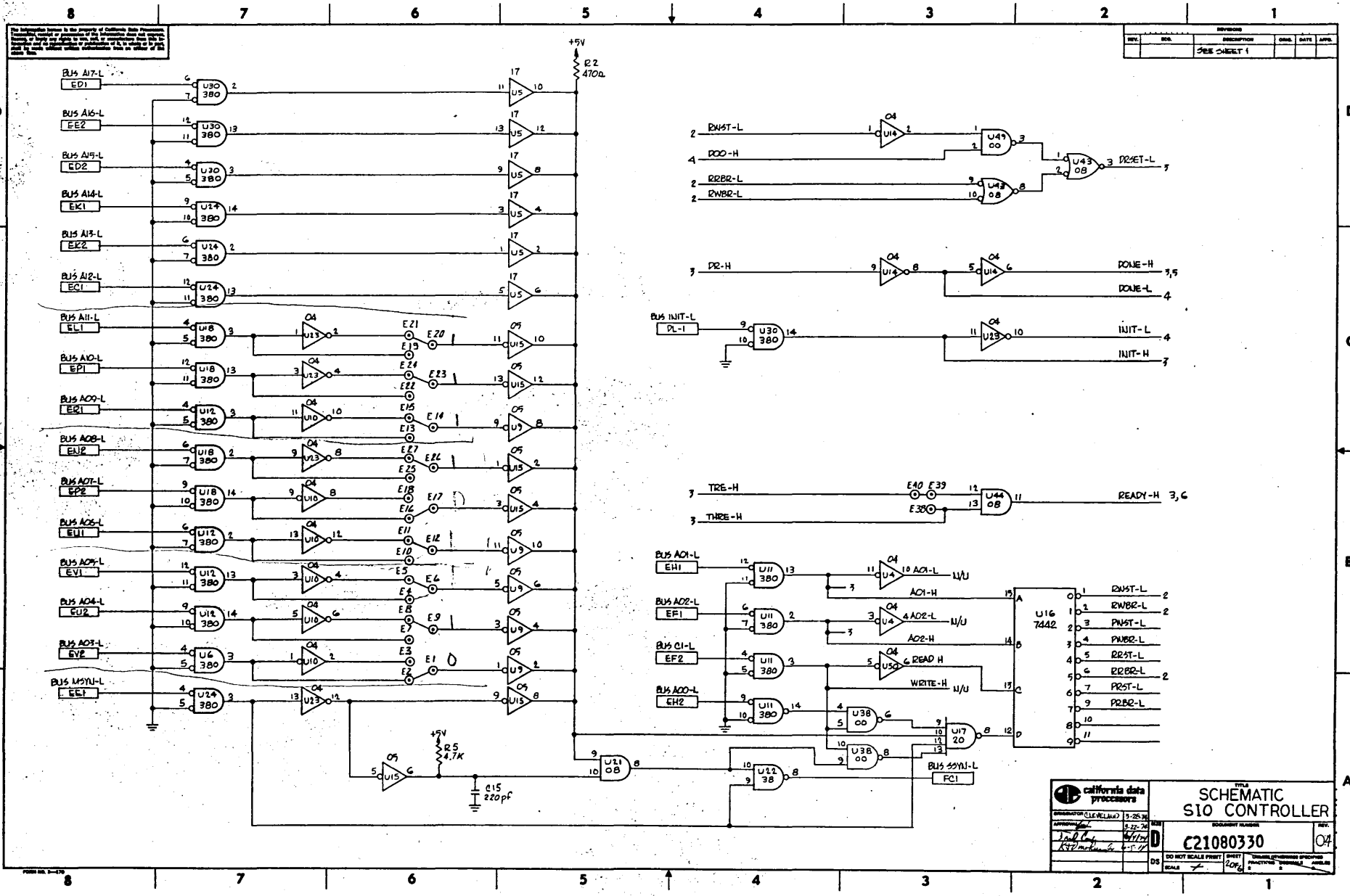


2. ALL DIODES ARE FDN400  
 1. ALL RESISTORS ARE 1/4W, 5%  
 NOTES: UNLESS OTHERWISE SPECIFIED

FORM NO. 2-100

8 7 6 5 4 3 2 1

ITEM	PART NO.	QTY.	DESCRIPTION	REV.
	California data processors		SIO SCHEMATIC CONTROLLER	04
	ORIGINATOR	DATE	DOCUMENT NUMBER	
	APPROVED	DATE	C21080330	
	SCALE	DO NOT SCALE PRINT	SHEET	
	SCALE	SCALE	FRONT	



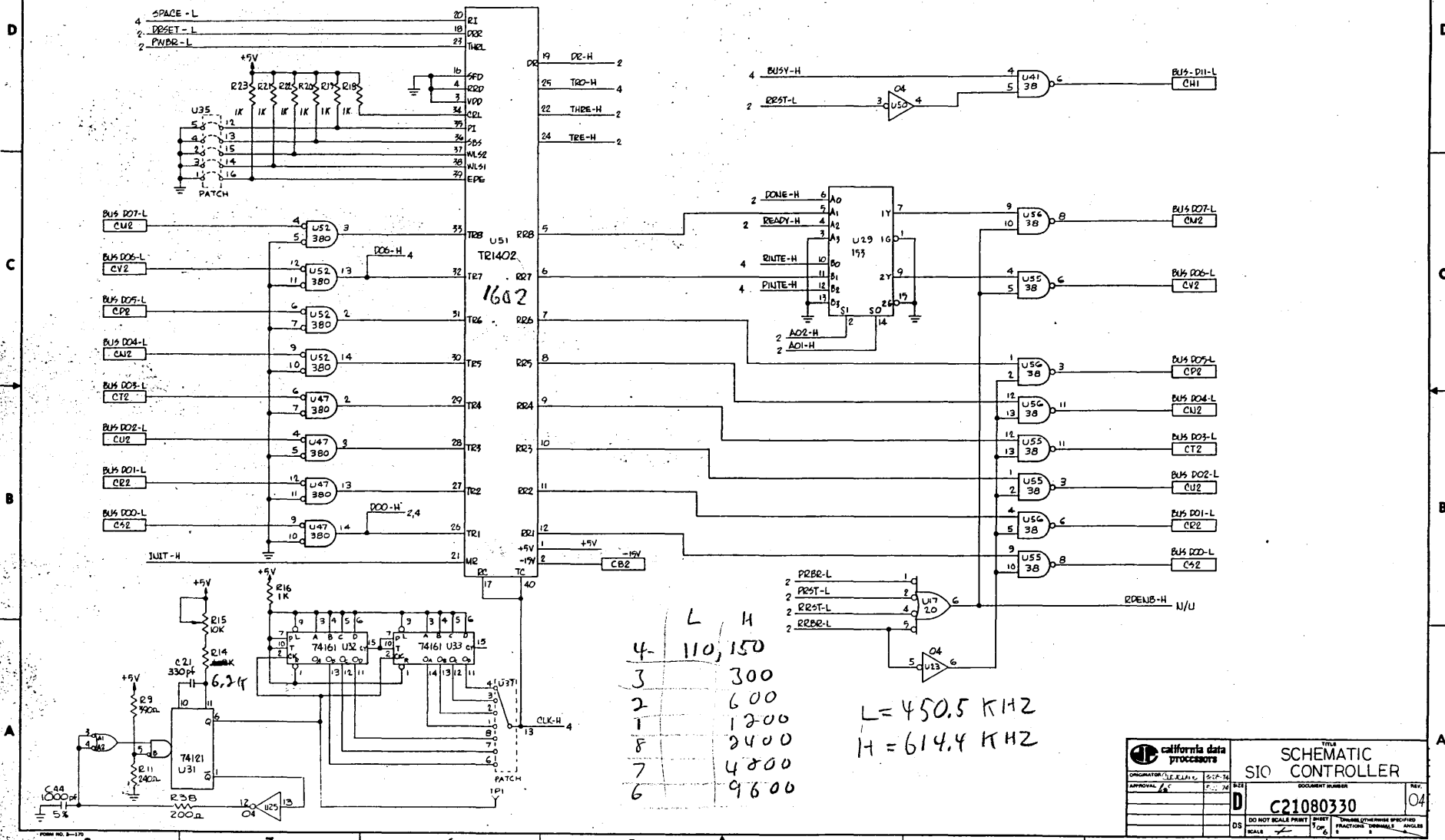
REV.	BY	DESCRIPTION	DATE	APP.
		SEE SHEET 1		

		<b>SCHEMATIC</b> <b>SIO CONTROLLER</b>	
<small>DESIGNATOR (LEVEL)</small> 3-25-74 <small>DATE</small> 3-22-74 <small>BY</small> J.P.L. <small>CHKD</small> K.P.M.		<small>DOCUMENT NUMBER</small> <b>C21080330</b>	<small>REV.</small> <b>04</b>
<small>DO NOT SCALE PRINT</small> <small>SCALE</small> 1:1		<small>UNITED STATES PATENT OFFICE</small> <small>REGISTERED PATENT</small>	<small>ANALOG</small>

GI-AY-6-1013

REV	DATE	BY	CHKD	APPD

SEE SHEET 1



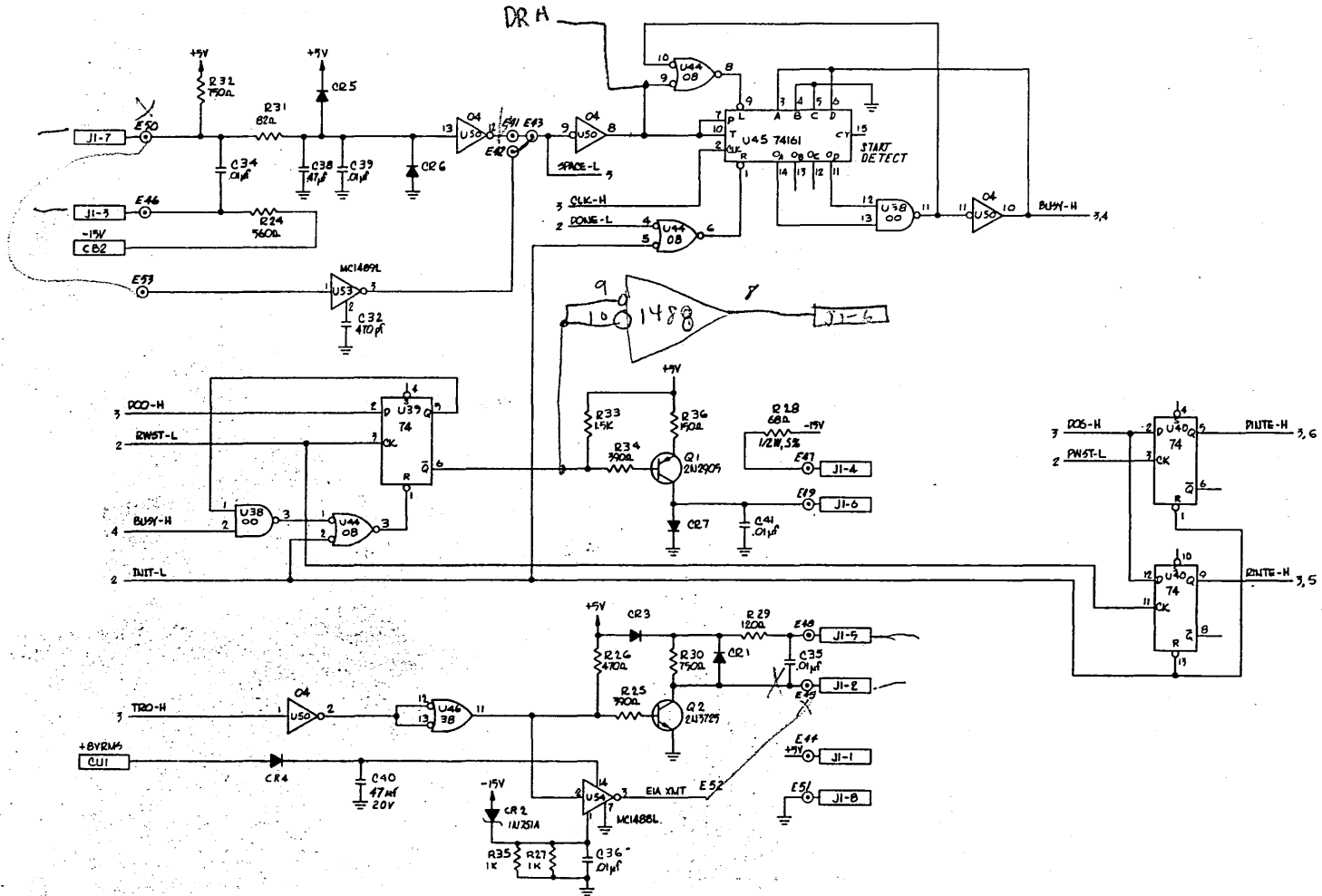
L	H
4	110, 150
3	300
2	600
1	1200
8	2400
7	4800
6	9600

L = 450.5 KHZ  
H = 614.4 KHZ

		TITLE <b>SIO CONTROLLER</b>	
ORIGINATOR APPROVAL	DATE 10/1/68	SHEET 04	DOCUMENT NUMBER <b>C21080330</b>
DO NOT SCALE PRINT		DIMENSIONS ARE SPECIFIED UNLESS OTHERWISE INDICATED	

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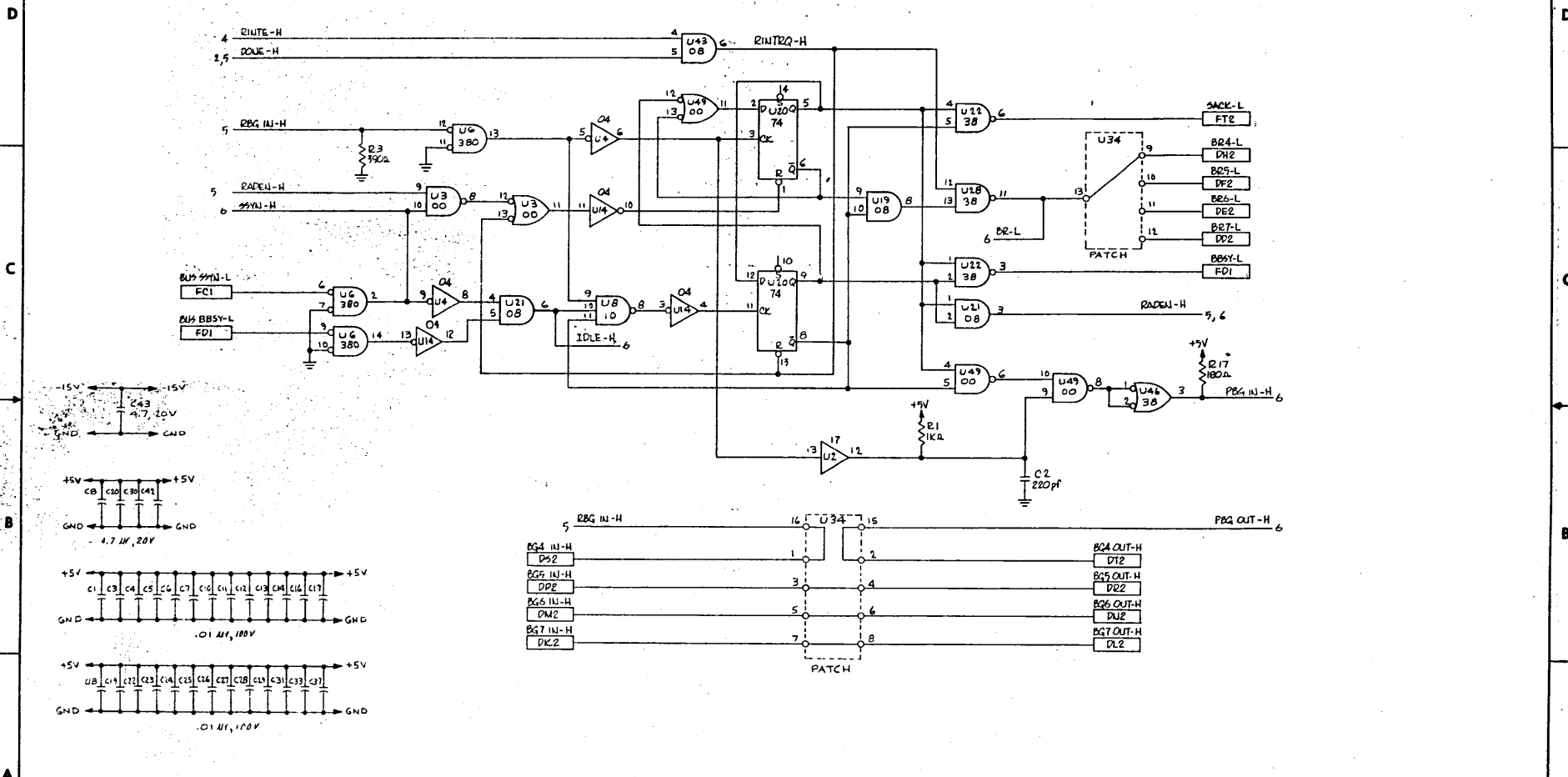
REVISIONS				
REV.	BY	DESCRIPTION	DATE	APP.
1		SCHEMATIC SHEET 1		



	TITLE <b>SCHEMATIC</b> <b>SIO CONTROLLER</b>		REV. 04
	OPERATOR: LUNELAU 5-28-72	DOCUMENT NUMBER <b>C21080330</b>	
APPROVED: [Signature]	DO NOT SCALE PRINT: [X]		TYPED (ORIGINATOR'S OFFICE) PRACTICED (NORMAL)
DESIGNED: [Signature]	CHECKED: [Signature]	DRAWN: [Signature]	INCHES: [Signature]

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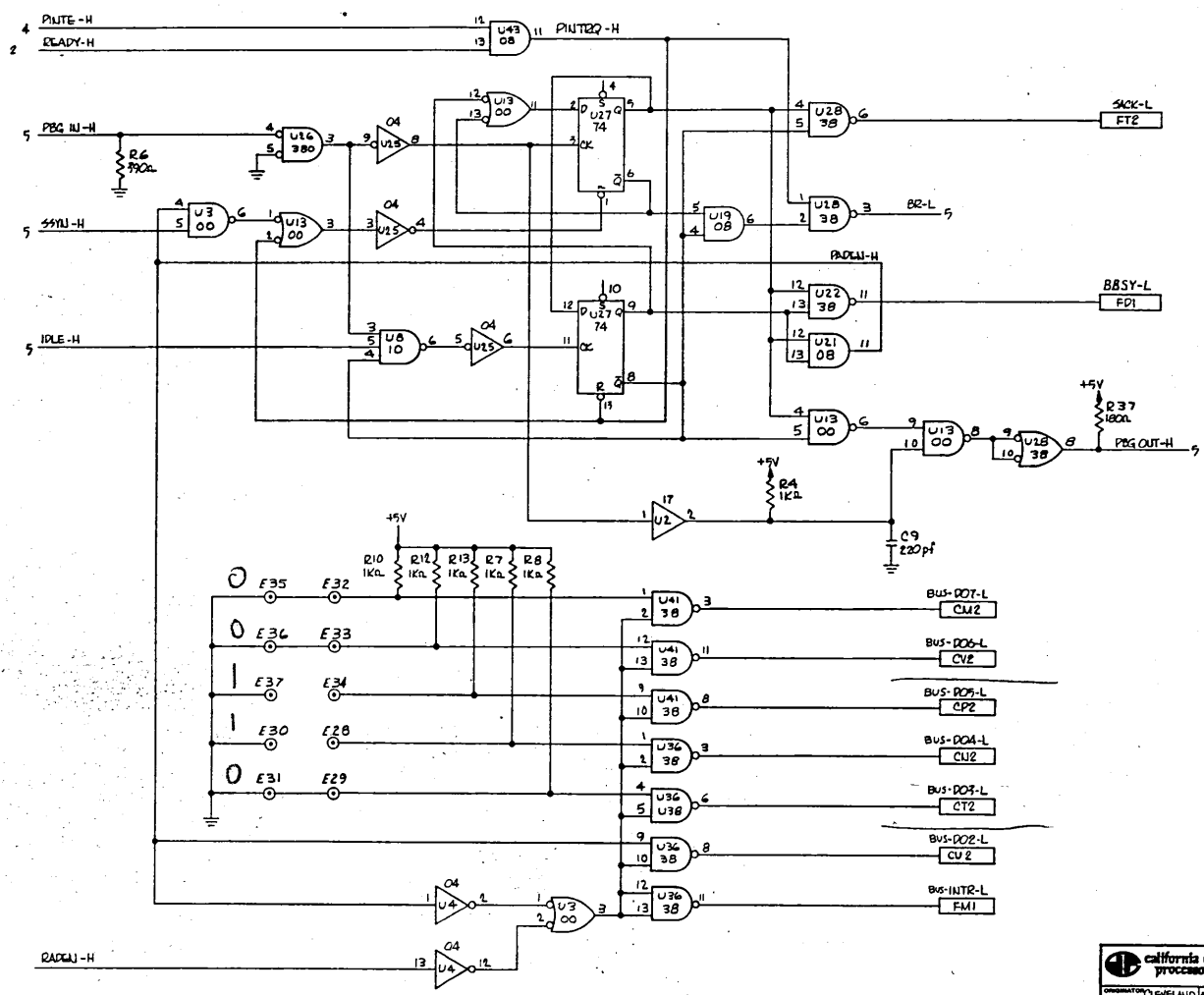
REVISION					
REV.	DATE	DESCRIPTION	BY	DATE	APP.
		SEE SHEET 1			



		<b>TITLE</b> SCHEMATIC SIO CONTROLLER	
ORIGINATOR CALIFORNIA DATA PROCESSORS	DATE 5-28-74	DOCUMENT NUMBER <b>C21080330</b>	REV. <b>04</b>
APPROVAL 	DESIGNED 	CHECKED 	DRAWN 
DO NOT SCALE PRINT SCALE		SHEET OF 6	

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REVISIONS				
REV.	DATE	DESCRIPTION	BY	APP.
1		SEE SHEET 1		



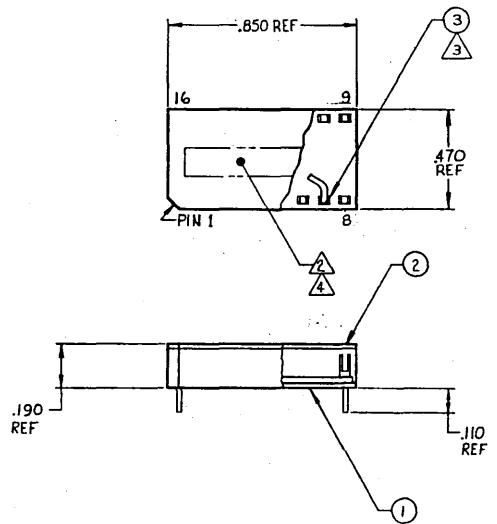
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	DOCUMENT NUMBER <b>C21080330</b>	DATE 3-11-74	
APPROVED BY DS	DO NOT SCALE PRINT SCALE	CHECKED BY DS	TOLERANCE DIMENSIONS SPECIFIED FRACTIONS DECIMALS ANGLES

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CAL DATA PART NO.	HEADER DESCRIPTION	JUMPER LOCATIONS												REFERENCE IDENTIFICATION NUMBER
		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	
C85300212	BR4 - BG4	1	16	2	15	3	4	5	6	7	8	9	13	SIO-2
C85300213	BR5 - BG5	1	2	3	16	4	15	5	6	7	8	10	13	SIO-3
C85300214	BR6 - BG6	1	2	3	4	5	16	6	15	7	8	11	13	SIO-4
C85300215	BR7 - BG7	1	2	3	4	5	6	7	16	8	15	12	13	SIO-5
C85300216	BAR 110 & 50	4	13											SIO-1
C85300217	300	3	13											SIO-6
C85300218	600	2	13											SIO-7
C85300219	1200	1	13											SIO-8
C85300220	2400	8	13											SIO-9
C85300221	4800	7	13											SIO-10
C85300222	9600	6	13											SIO-11

STANDARD PART  
STANDARD PART

RELEASE STATUS				REVISIONS			
RELEASE LEVEL	APPROVER	DATE	REV.	NO.	DESCRIPTION	CHK.	DATE
EXPERIMENTAL			01		REL PER DRN1200MS CK	CK	10/17/74
ENGINEERING							
PRODUCTION							



- ⚠ MARK HEADER REFERENCE IDENTIFICATION NUMBER NEARSIDE.
- ⚠ FOR WIRE LOCATION SEE STRAPPING CHART
- ⚠ LETTERING TO BE .12 HIGH WHITE EPOXY PAINT VERTICAL GOTHIC AND LOCATED APPROX AS SHOWN.
- 1. FABRICATE PER CAL DATA SPEC C2227D100.

NOTES: UNLESS OTHERWISE SPECIFIED

3	C3761108	AW	WIRE, BUSS 24 AWG
2	C52144002	I	16 PIN HEADER COVER
1	C56144001	I	16 PIN HEADER
ITEM	PART NO.	QTY	DESCRIPTION
ORIGINATOR: <i>[Signature]</i> 10-18-74 APPROVED: <i>[Signature]</i> 11-13-74 CHECKED: <i>[Signature]</i> 11-13-74 DRAWN: <i>[Signature]</i> 11-13-74 DESIGNED: <i>[Signature]</i> 11-13-74		TITLE: HEADER ASSEMBLIES SERIAL I/O PART NO.: C85300212 REV.: 01	
DS	DO NOT SCALE PRINT	SCALE: 4/1	1 OF 1

