

FIELD
ENGINEERING
BULLETIN

MODEL ADO-2000
BULLETIN NO. 61138 SHEET 1 OF 12
DATE 11/86 BK-8607-09C

SUPERSEDES F.E.B. 61120

* Revised for P/N Change

MENU MONITOR RAM TIMING CORRECTION

I. APPLICABILITY

*This FEB is part of V 8.1 Update
Completed 6 Feb 87 G.W.J.*

All ADO's 2000 equipped with I/O Part Number 1420471, all dash versions.

II. PURPOSE

The purpose of these modifications is to correct read/write timing errors in the Menu Monitor CRT Control Logic and improve the external video gain. These changes are not mandatory but are recommended.

III. DISCUSSION

A timing error existed in the CTR Controller Logic which caused the Menu Monitor to flash every time the Menu is refreshed. This is very distracting to the operator.

The following modification corrects this error and it renders the monitor display free from video spikes. (commonly referred as the angry bee effect).

Additionally, a small modification is also included in this F.E.B. which changes the Video Output Level to the external monitor. The gain of the Video Driver is changed by adding a resistor and changing another.

III. PARTS REQUIRED

Parts required for this update may be purchased through Ampex. Installation assistance may be obtained through your local Ampex Regional Office at current Ampex Field Engineering rates.

MODEL	ADO-2000	
BULLETIN NO.	61138	SHEET 2 OF 12
DATE	11/86	BK-8607-09C

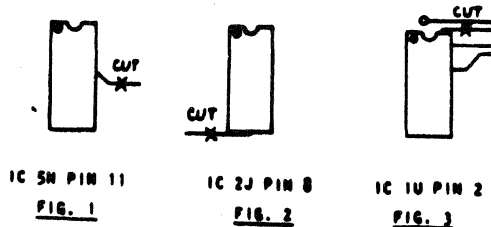
SUPERCEDES F.E.B. 61120

MENU MONITOR RAM TIMING CORRECTION

<u>Ampex Part Number</u>	<u>Description</u>	<u>Quantity</u>
066-815	Resistor, C.F., 300 Ohm, 1/4, 5%	1
066-835	Resistor, C.F. 82 Ohms, 1/4, 5%	1
* 1464644	Prom Assembly Firmware	1
615-095	Kynar Wire 30 Awg.	4 Ft.

IV. PROCEDURE

1. Disassemble the monitor housing for access to I/O PWA.
2. Cut the traces on the circuit side on the I/O PWA tying the following IC pins.
 - a. 5P-28
 - b. 2T-2
 - c. 1U-2
3. Cut the component side traces connected to the following IC pins:
 - a. 5N-11 See Figure 1
 - b. 2J-8 See Figure 2
 - c. 1U-2 See Figure 3



4. Remove the Prom Assembly from location 5T and replace with Prom Assembly Part Number 1464644-01.

MODEL	ADO-2000	SHEET 3 OF 12
BULLETIN NO.	61138	
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SUPERCEDES F.E.B. 61120

MENU MONITORING RAM TIMING CORRECTION

IV. PROCEDURE: continued

5. Lift the following IC pins from their sockets:
 - a. 5T-1
 - b. 5N-2

6. Using the supplied Kynar wire make the following circuit side connections:

	FROM	TO
a.	3T-4	6T-14
b.	6T-13	5T-9
c.	1U-2	1U-7
d.	1T-12	1N-9
e.	6S-13	5M-5
f.	5M-9	5P-28
g.	5N-3	2T-2
h.	5T-2 Lifted Pin	5L-1
i.	5N-2 Lifted Pin	4R-1

7. This completes the Ram Timing changes.

V. EXTERNAL VIDEO GAIN CHANGES: (See Figure 4)

1. Remove Resistor R28 (180 Ohms) and replace with an 82 ohm, Part Number 066-835.

2. On the circuit side of the I/O PWA, add a 300 ohm resistor Part Number 066-815 as follows:
 - a. Connect one side of the resistor to the trace connected to the base of transistor Q1.

 - b. Connect the other side of the resistor to IC pin 20 (5V).

3. Install the monitor housing in the reverse order on removal.

MODEL ADO-2000
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SUPERCEDES F.E.B. 61120

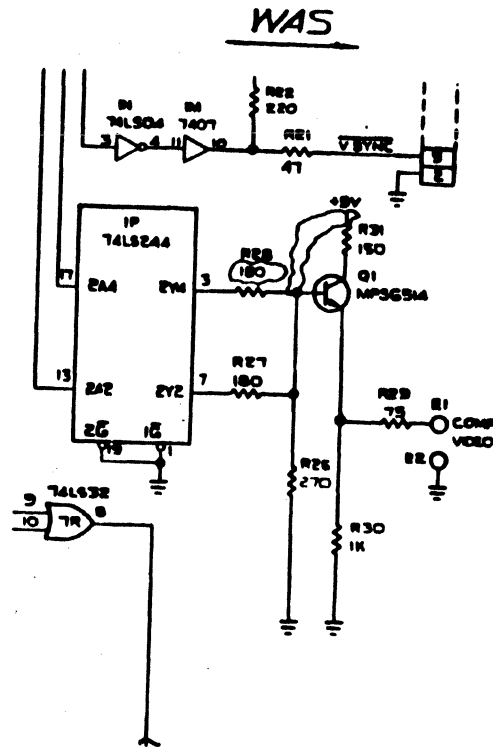
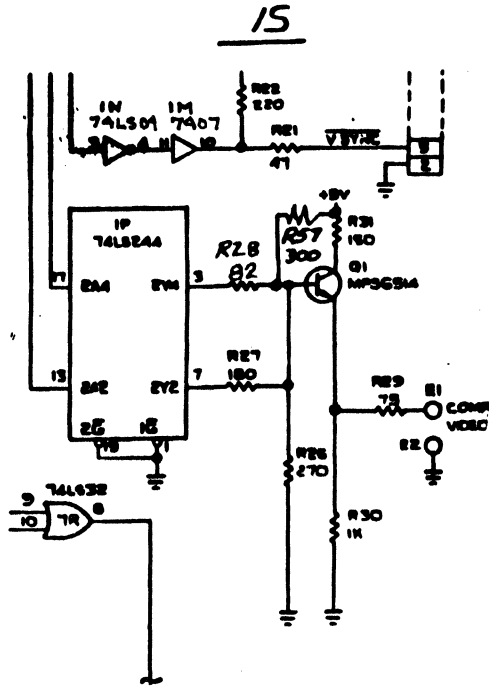


FIGURE 4

AMPEX

Ampex Corporation
REDWOOD CITY, CALIFORNIA

LIST OF MATERIALS

F.E.B. 61138

BK-8607-09C

PRINTED WIRING ASSEMBLY
I/O BOARD
REVISION V

LIST OF MATERIALS NO.
1420471

ITEM NO.	PART NUMBER	DESCRIPTION	REF DESIG	QTY REQD PER DASH NUMBER								
				-01	-02	-03	-04	-05	-06	-07		
1	1420472	PRINTED WIRING BOARD		-01	-02	-03	-04	-05	-06	-07		
2												
3	1420473	SCHEMATIC		(-)	C	D	E	M	J	K		
4												
5												
6	064-313	CAPACITOR, CER., .68uF, 50V, ±5%	C21	1		1	1	1	1	1		
7	064-653	CAPACITOR, CER., .1uF, 50V, ±20%	C3-19,23-40, 42-59,60-70,73	65	65	65	65	65	65	65		
8												
9	034-961	CAPACITOR, MICA, 120pF, 500V, ±5%	C20	1		1	1	1	1	1		
10	034-222	CAPACITOR, MICA, 100pF, 500V, ±1%	C1	1		1	1	1	1	1		
11												
12	055-166	CAPACITOR, MYLAR, .001uF, 50V, ±5%	C2	1		1	1	1	1	1		
13												
14	037-790	CAPACITOR, TANT., 2.2uF, 20V, ±20%	C22	1		1	1	1	1	1		
15	037-812	10uF, 25V	C41	1		1	1	1	1	1		
16												
17	037-940	47uF, 35V	C72	1		1	1	1	1	1		
18	037-965	CAPACITOR, TANT., 120uF, 10V, ±20%	C71	1		1	1	1	1	1		
19												
20												
21	017-251	CRYSTAL, 12.5785 MHZ	Y1	1		1	1	1	1	1		
22	135-448	HEADER ASSY., 26 POSTS, RT. ANGLE	J1	-		1	1	1	1	1		
23	000-044	INTEGRATED CIRCUIT, WD1510-01	I	7		-	-	-	-	-		
24	000-045	CRT8002A-003	I	1		-	-	-	-	-		
25	000-047	AM9519-1	I	1		1	1	1	1	1		
26	001-965	WD2143-03	I	1		1	1	1	1	1		
27	000-049	FD1793-02	I	1		1	1	1	1	1		
28	000-050	WD1691	I	1		1	1	1	1	1		
29	000-045	CRT8002A	I			1	1	1	1	1		
30	000-132	7407	I	1		1	1	1	1	1		
31	589-853	7438	I	2	2	2	2	2	2	2		
32	589-837	74500	I	3	2	2	2	2	2	2		
33	589-843	74520	I	1	1	1	1	1	1	1		
34	590-544	7414	I	2	2	2	2	2	2	2		
35	589-823	74LS138	I	3	3	3	3	3	3	3		
36	587-387	74LS74	I	8		-	-	-	-	-		
37	590-845	INTEGRATED CIRCUIT, 74S32	I	1		1	1	1	1	1		


LM-1420471


ITEM NO	PART NUMBER	DESCRIPTION	REF DESIG	QTY REQD PER DASH NUMBER							
				-01	-02	-03	-04	-05	-06	-07	
38	589-813	INTEGRATED CIRCUIT, 74LS00	7F	1		1	1	1	1	1	
39	587-523	74LS32	3K,1L,5N,7R	4							
40	589-814	74LS04	1N,5M,7N,7S	4	4	4	4	4	4	4	
41	589-815	74LS08	3N,6R	2	2	2	2	2	2	2	
42	590-329	74LS123	4N,7T	2	2	2	2	2	2	2	
43	590-332	74LS02	5G,6F	2	2	2	2	2	2	2	
44	587-752	74LS54	6A,B,C,D,E	5	5	5	5	5	5	5	
45	589-825	INTEGRATED CIRCUIT, 74LS157	2R,2S,2T	3	3	3	3	3	3	3	
46	1464258-01	PROM ASSY I/O, REF: TBP14S1D	5T	1		1	1	1	1	1	
47	013-689	DIODE, SWITCHING	CRI			1	1	1	1	1	
48	001-973	INTEGRATED CIRCUIT, 74166	3S	1		1	1	1	1		
49	590-847	74LS245	1F,1G,3R,4R,4S,5L	6	6	6	6	6	6	6	
50	589-449	74LS244	1P,2F,2B,2D,3F,3J,4J	7							
51	590-586	74LS374	2G,7U	2	2	2	2	2	2	2	
52	589-752	74LS373	5F,4K	2							
53	589-838	74S04	2H,4H	2	2	2	2	2	2	2	
54	589-839	74S08	3T	1		1	1	1	1	1	
55	589-846	74S74	4T	1		1	1	1	1	1	
56	589-938	74S175	6T	1		1	1	1	1	1	
57	590-057	CRT5037	4P	1		1	1	1	1	1	
58	590-868	74S244	1H,1K,1R,1S,1J,7P	5	6	6	6	6	6	6	
59	590-193	9637A	1A,B,C,D,E	5	5	5	5	5	5	5	
60	001-042	DS3692	2A,C,E	3	3	3	3	3	3	3	
61	590-932	CDP1854A	4A,B,C,D,E	5	5	5	5	5	5	5	
62	590-443	74S02	1U	1		1	1	1	1	1	
63	590-547	74S124	2P	1		1	1	1	1	1	
64	590-983	TMM2016P	5S,5R	2	2	2	2	2	2	2	
65	001-897	INTEGRATED CIRCUIT, 74S162	6S	1		1	1	1	1	1	
66	000-044	INTEGRATED CIRCUIT, WD1510-01	5A,B,C,D,E		5	5	5	5	5	5	
67	589-820	INTEGRATED CIRCUIT, 74LS74	4F,4M,7A,B,C,D,E		7	7	7	7	7	7	
68	590-328	INTEGRATED CIRCUIT, 74LS32	1L,5H		3	3	3	3	3	2	
69	066-842	RESISTOR, C.F., 5.1K OHMS, 1/4W, 5%	R1,3,4,6,7,9,10,12,13,15	10	9	10	10	10	10	10	
70	066-619	180	R2,5,8,11,14	5	5	5	5	5	5	5	
71	066-663	220	R20,22-25	5	5	5	5	5	5	5	
72	066-665	1K	R30,50,51	3							
73	066-668	4.7K	R1,17,32,46,49,52,55	7							
74	066-677	68	R35	1		1	1	1	1	1	
75	066-717	47K	R36,39	2	2	2	2	2	2	2	
76	066-812	100	R26	1		1					
77	066-813	150	R31,42-45	5	5	5	5	5	5	5	
78	066-830	10K	R33,47,56	3	3						
79	066-938	47	R19,21	3	2	2	2	2	2	2	
80	076-004	RESISTOR, C.F., 180 OHMS, 1/4W, 5%	R27,28	2	2	2	2	2	2	2	
81	590-584	INTEGRATED CIRCUIT, 74LS244	1P,2F,2B,2D,3F,3J		6	6	6	6	6	6	
82	001-098	INTEGRATED CIRCUIT, 74LS373	5F		1	1	1	1	1	1	

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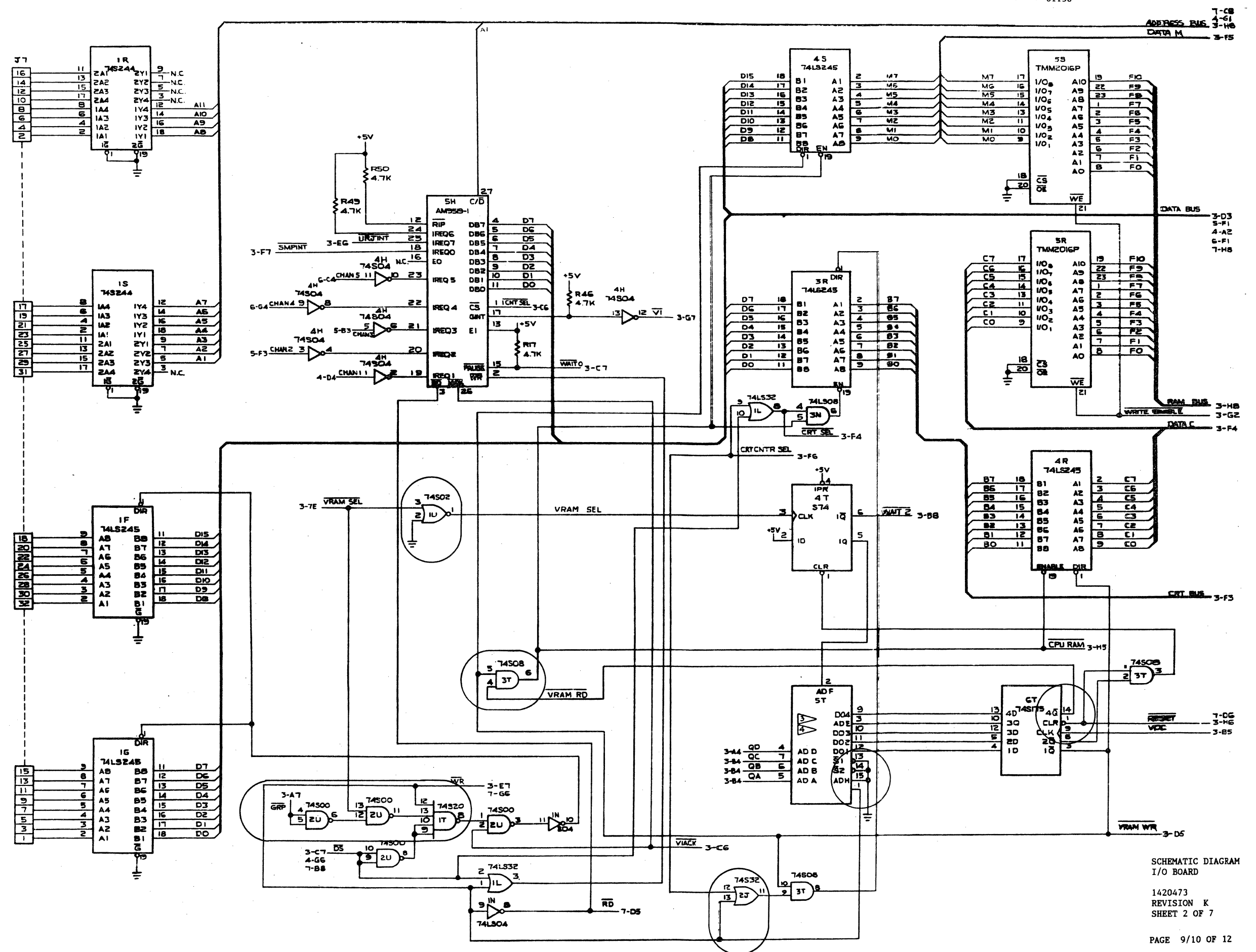
AMPEX		AmpeX Corporation REDWOOD CITY, CALIFORNIA		CODE IDENT NO 92739	LIST OF MATERIALS		F.E.B. 61138		BK-8607-09C	
ITEM NO	PART NUMBER	DESCRIPTION	REF DESIG	QTY REQD PER DASH NUMBER						
				-01	-02	-03	-04	-05	-06	-07
83	057-104	RESISTOR, M.F., 2.2K OHMS, 1/4W, 1%	R38			1	1		1	1
84	062-836	RESISTOR, M.F., 75 OHMS, 1/8W, 1%	R29	1			1		1	1
85	062-976	7.15K	R34	1						
86	066-012	40.2K	R40	1			1		1	1
87	066-016	66.5K	R48	1			1		1	1
88	066-025	249K	R53	1			1		1	1
89	066-389	RESISTOR, M.F., 90.9K OHMS, 1/8W, 1%	R41	1			1		1	1
90	066-665	RESISTOR, C.F., 1K OHMS, 1/4W, 5%	R30,51	-	2	2	2	2	2	2
91	066-668	RESISTOR, C.F., 4.7K OHMS, 1/4W, 5%	R16,17,32,46, 49,50,52,55	-	8	8	8	8	8	8
92	044-927	RESISTOR, VARIABLE, 500 OHMS	R18	1			1		1	1
93	058-611	RESISTOR, VARIABLE, 10K OHMS	R33	1			1		1	1
94	075-317	RESISTOR, VARIABLE, 50K OHMS	R37	1						
95	014-780	TRANSISTOR, MPS6514	Q1	1			1		1	1
96	075-010	RESISTOR, VARIABLE, 50K OHMS, 3292X	R37	-	1	-	-	-	-	-
97	058-539	RESISTOR, VARIABLE, 1K OHMS	R37		-	1	1	1	1	1
98	135-159	HEADER ASSY, 6 POST, RIGHT ANGLE	REF:J19	1	1	1	1	1	1	1
99	135-341	34 POS, STRAIGHT	REF:J16	1	1	1	1	1	1	1
100	135-424	6 PIN, RIGHT ANGLE	REF:J15	1	1	1	1	1	1	1
101	135-441	HEADER ASSY, 40 POST, RIGHT ANGLE	REF:J7,8	2	2	2	2	2	2	2
102										
103	143-981	JACK, P.C. TIP	J2(A,B,C), J3(A, B,C), J4(A,B,C), J5(A,B,C), J6(A,B,C), J9 (A,B,C), J10(A,B,C), J11 (A,B), J12(A,B,C), J13 (A,B,C), J14(A,B), J17(A, B,C), J18(A,B,C)	38	38	38	38	38	37	37
104										
105	187-055	PIN, WIRE WRAP	E1,2	2	2	2	2	2	2	2
106										
107	582-139	SOCKET, I.C. MTG. HDW., 20 PIN	REF:1F,G,H,J,K,P,R,S,2B,D,F,G, L,3F,J,R,4J,K,R,S,5F,L, 7P,U	24						
108	582-280	24 PIN	REF:5R,S	2	2	2	2	2	2	2
109	582-281	28 PIN	REF:5A,B,C,D,E,H,J,K,P	9						
110	582-282	40 PIN	REF:4A,B,C,D,E,L,P	7	7	7	7	7	7	7
111	582-329	8 PIN	REF:1A,B,C,D,E	5	5	5	5	5	5	5
112	582-330	14 PIN	REF:1L,M,N,T,U,2H,J,K,U,3K, N,T,U,4F,G,H,M,T,U,5GM, N,U,6A,B,C,6D,E,F,R,U, 7A,B,C,D,E,F,N,R,S	10						
113	582-331	16 PIN	REF:2A,C,E,P,R,S,T,3G,H,S, 4N,5T,6P,S,T,7T	16	16	16	16	16	16	16
114	582-332	SOCKET, I.C. MTG. HDW., 18 PIN	REF:2M	1			1	1	1	1
115										
116	602-044	PLUG, SHORTING	REF:J2,3,4,5,6,9,10,11,12, 13,14,17,18	13	13	13	13	13	13	13
117										
118	280-130	SPACER, TRANSISTOR, T0-18	REF: Q1	1			1			
119	014-715	SPACER, TRANSISTOR, T0-18	REF: Q1					1	1	1
120	302-395	STRAP, HOUSETAIL	REF: Y1	1			1	1	1	1
121										
122										

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ITEM NO	PART NUMBER	DESCRIPTION	REF DESIG	QTY REQD PER DASH NUMBER							
				-01	-02	-03	-04	-05	-06	-07	
123	582-333	SOCKET, I.C., MTG. HDW., 20 PIN	REF: 1F,G,H,J,K,P,R,S, 2B,D,F,G,L,3F,J,R, 4R,S,5F,L,7P,U	-	21	21	21	21	21	21	
124	582-281	SOCKET, I.C., MTG. HDW., 28 PIN	REF: 5A,B,C,D,E,H,P	-	7	7	7	7	7	7	
125	582-330	SOCKET, I.C., MTG. HDW., 14 PIN	REF: 1L,M,N,T,U,2H,J, 2U,3N,T,U,4F,G,H, M,T,U,5G,H,N,U,6A 6B,C,D,E,F,R,U,7A B,C,D,E,F,N,R,S	-	38	38	38	38	38	38	
126											
127	066-818	RESISTOR, C.F., 470 OHMS, 1/4W, 5%	R54	-		1	1	1	1	1	
128	066-830	RESISTOR, C.F., 10K OHMS, 1/4W, 5%	R47,56	-		2	2	2	2	2	
129	066-812	RESISTOR, C.F., 100 OHMS, 1/4W, ±5%	R34	-			2	2	1	1	
130	066-814	RESISTOR, C.F., 270 OHMS, 1/4W, ±5%	R26						1	1	
131	066-815	RESISTOR, C.F., 300 OHMS, 1/4W, ±5%	R57							1	
132	1464644-01	PROM ASSY, I/O BOARD	 5T								1

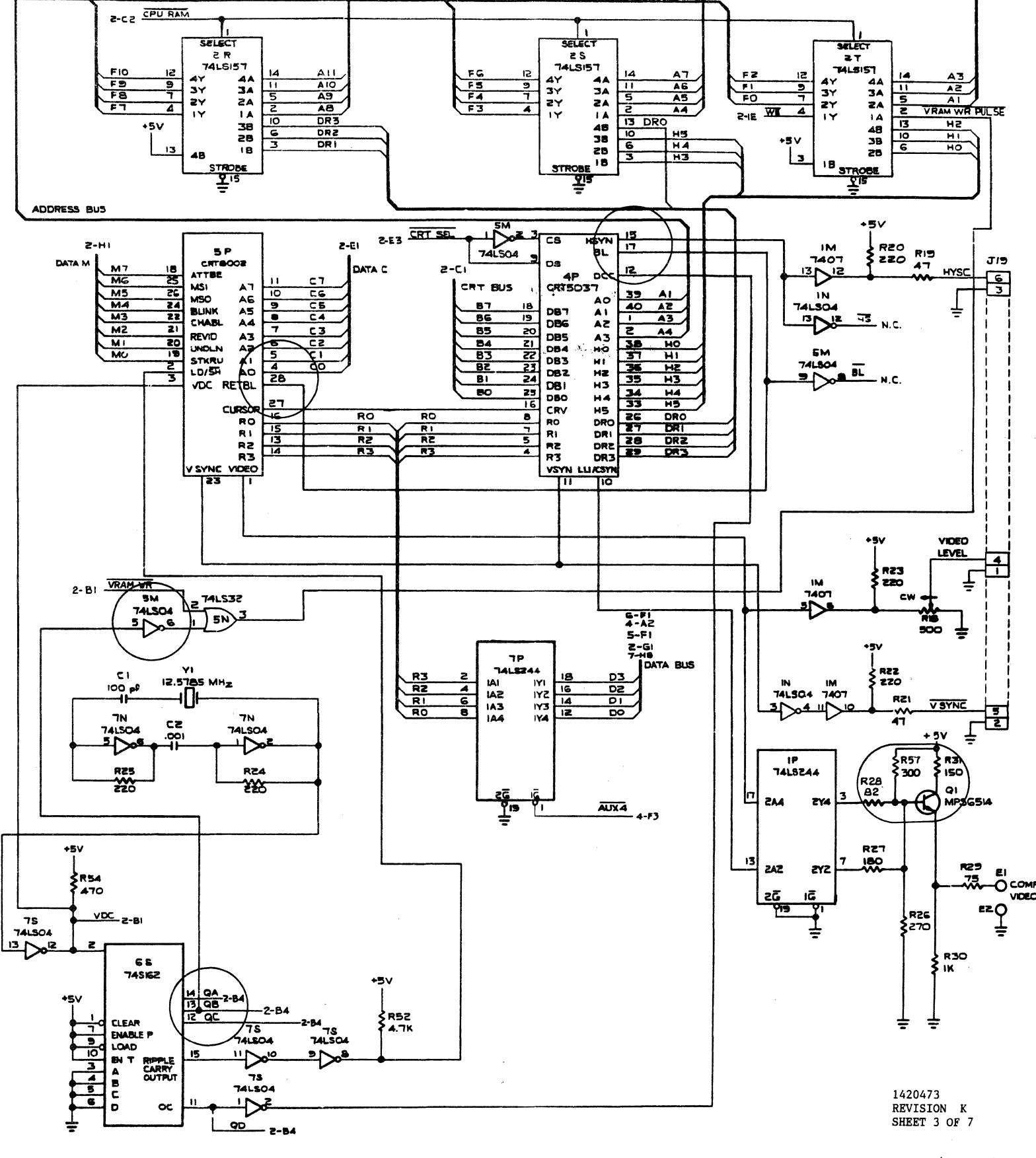
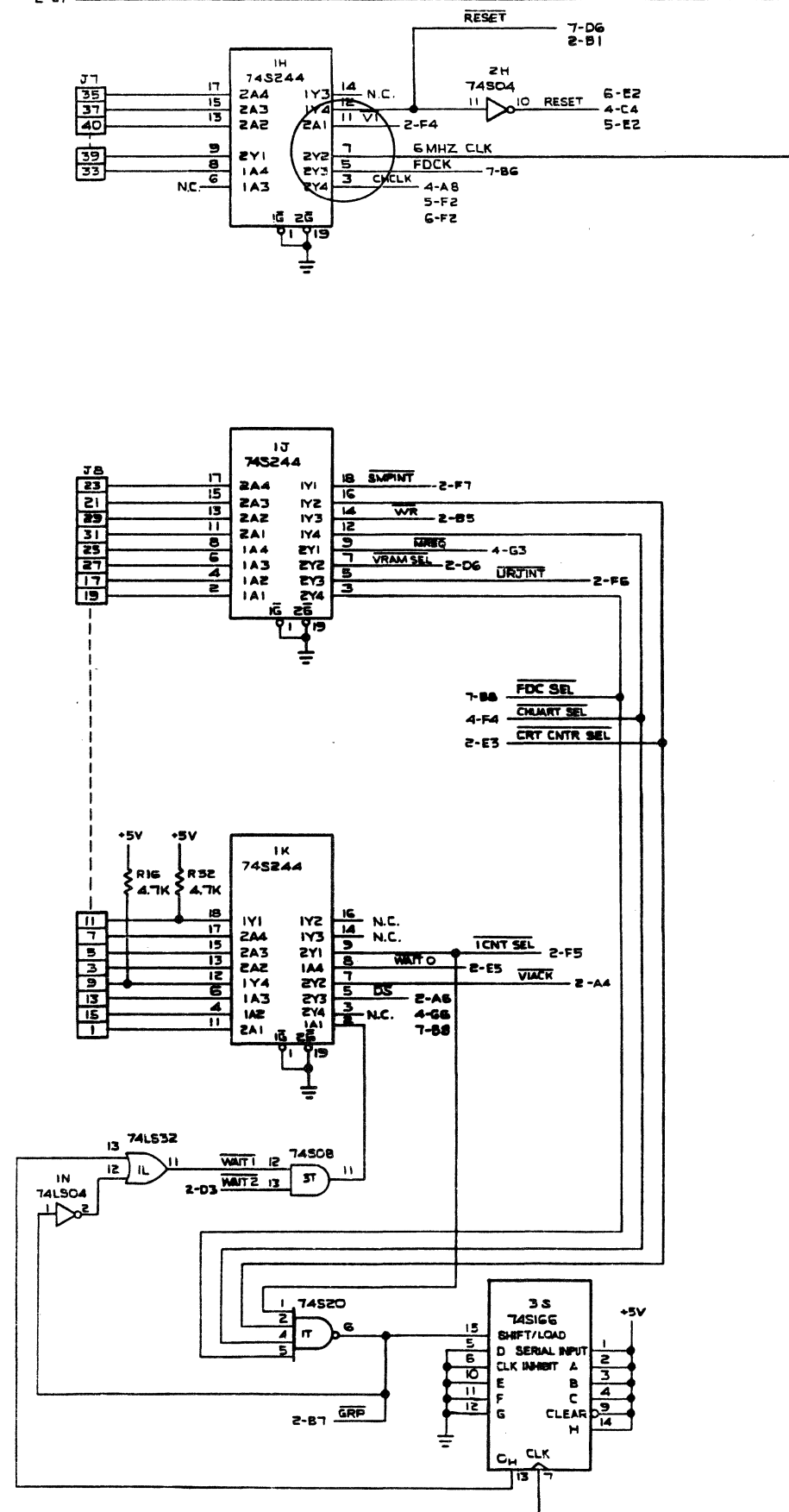
NOTES:
 STATIC SENSITIVE SPECIAL
 HANDLING REQUIRED PER
 AMPEX STD. HE1-1.

LM-1420471



SCHEMATIC DIAGRAM
I/O BOARD
1420473
REVISION K
SHEET 2 OF 7

7-C8 ADDRESS BUS
4-G1 RAM BUS
2-H1 RAM BUS



1420473
REVISION K
SHEET 3 OF 7

AMPEX