Tong Electronic

Beezer

INSTALLATION

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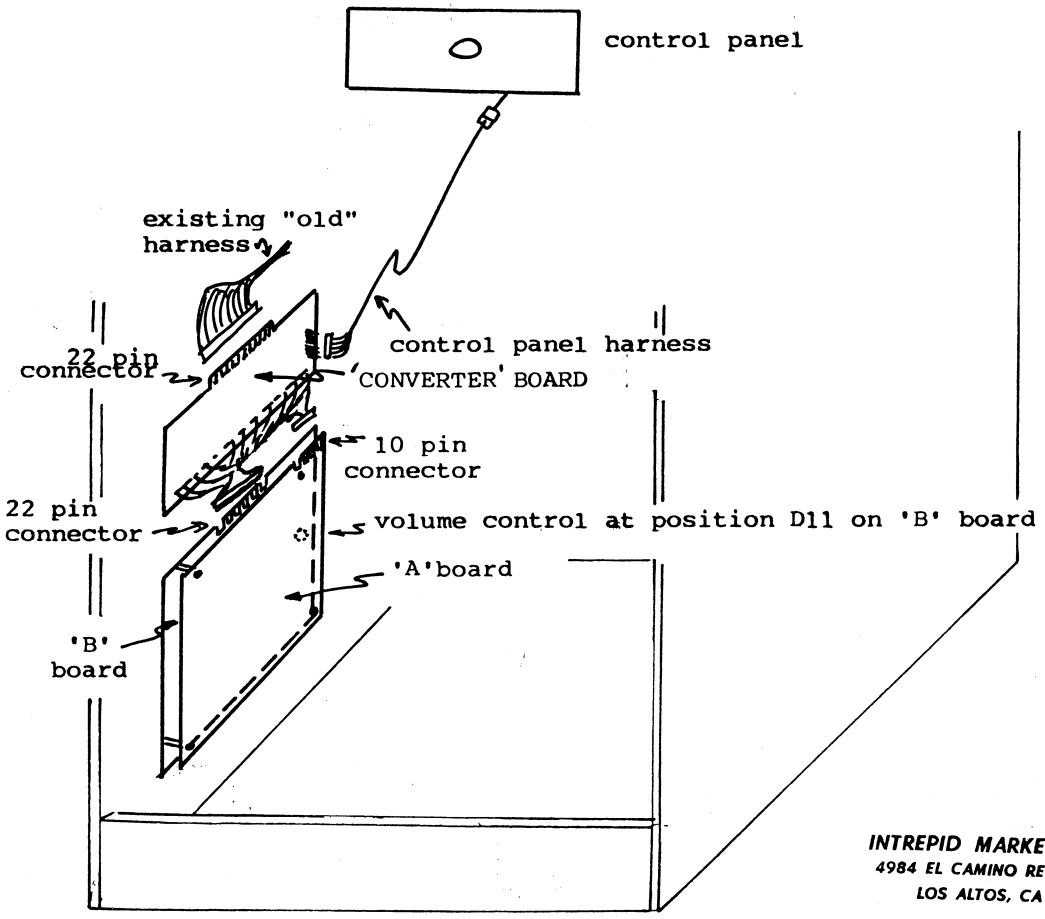
BEEZER

INSTALLING CIRCUIT BOARDS

1. Remove old circuit boards, save all mounting brackets.
2. Relocate upper brackets to fit larger boards.
3. Secure 'A' and 'B' boards to side of game.
4. Connect 'CONVERTER' board to 'A/B' boards as shown in diagram below.
5. Connect old main harness to 'CONVERTER' board as old set of boards you removed.
6. Assemble control panel and connect to 'CONVERTER' board at connector shown in diagram.

NOTE !!

The potentiometer on the 'CONVERTER' board is VOLTAGE ADJUSTMENT. PRE-SET AT FACTORY, TECHNICIAN ADJUST ONLY!!!
The potentiometer on 'B' board at D11 is VOLUME control



INTREPID MARKETING, INC.
4984 EL CAMINO REAL, STE. 217
LOS ALTOS, CA 94022

BEEZER

B. BOARD						A. BOARD					
SOLDERING SIDE					COMPONENT SIDE	SOLDERING SIDE					COMPONENT SIDE
+5V	(B1)	22	Z	(A1)	+5V	GND	(1)	10	L	(1)	GND
	(B2)	21	Y	(A2)		BLUE	(2)	9	K	(2)	
+12V	(B3)	20	X	(A3)		GREEN	(3)	8	J	(3)	
	(B4)	19	W	(A4)	GND	RED	(4)	7	H	(4)	
	(B5)	18	V	(A5)			(5)	6	F	(5)	
	(B6)	17	U	(A6)		SYNC	(6)	5	E	(6)	
-5V	(B7)	16	T	(A7)	-5V		(7)	4	D	(7)	
+12V	(B8)	15	S	(A8)	+12V	+12V	(8)	3	C	(8)	+12V
SPEAKER (+)	(B9)	14	R	(A9)		-5V	(9)	2	B	(9)	-5V
	(B10)	13	P	(A10)	SPEAKER (-)	+5V	(10)	1	A	(10)	+5V
GND	(B11)	12	N	(A11)	GND						
	(B12)	11	M	(A12)	-5V						
	(B13)	10	L	(A13)							
PLAY 1 (DO TEST)	(B14)	9	K	(A14)							
PLAY 2 (SELECT TEST)	(B15)	8	J	(A15)							
COIN	(B16)	7	H	(A16)							
SLAM	(B17)	6	F	(A17)							
Y_3	(B18)	5	E	(A18)	X_3						
Y_2	(B19)	4	D	(A19)	X_2						
Y_1	(B20)	3	C	(A20)	X_1						
Y_0	(B21)	2	B	(A21)	X_0						
GND	(B22)	1	A	(A22)	GND						

NITE:

1. (A4) is the audio enable ground, should connect to (A11) or (A22).

2. Board A., board B. & mini track ball board's ground should connect together.

3. Mini track ball board's X_0- X_3, Y_0- Y_3 connect to board B.'s X_0- X_3, Y_0- Y_3.

4. Mini track ball board's X_A,X_B,Y_A,Y_B should connect to track ball, X_A, X_B are horezontal control, Y_A, Y_B are vertical control.

5. The audio amplifier is bridge output. Do not connect speaker to ground.

6. Audio level potentiometer is at position D11.

GALAXIAN (TO BEEZER)

GND	22	Z	GND
GND	21	Y	GND
	20	X	AC 12V
	19	W	AC 12V
AUDIO (+)	18	V	AUDIO (-)
SYNC	17	U	BLUE
GREEN	16	T	RED
GND	15	S	GND
	14	R	
	13	P	
	12	N	
	11	M	
	10	L	
SERVICE SW.	9	K	
	8	J	COIN SW.
JUMPER TOGETHER	7	H	COIN METER (-)
	6	F	
	5	E	COIN METER (+) (12V)
	4	D	AC 7V
	3	C	AC 7V
GND	2	B	GND
GND	1	A	GND

CONVERT BOARD TO CONTROL PANEL

1.	GROUND (BLACK)	TO MINI TRACK BALL BLACK WIRE.
2.	X_A (GREEN)	TO WICO TRACK BALL GREEN WIRE.
3.	X_B (YELLOW)	TO WICO TRACK BALL YELLOW WIRE.
4.	Y_A (PURPLE)	TO WICO TRACK BALL PURPLE WIRE.
5.	Y_B (BLUE)	TO WICO TRACK BALL BULE WIRE.
6.	GROUND (BLACK)	TO 1P, 2P SWITCH COMMON.
7.	1 PLAY (WHITE)	TO 1P SWITCH.
8.	2 PLAY (BROWN)	TO 2P SWITCH.
9.	+5V OUT (RED)	TO WICO TRACK BALL RED WIRE.
10.	+5V OUT (RED)	TO WICO TRACK BALL RED WIRE.
11.	SPARE (GRAY)	NOT USED.
12.	SPARE (ORANGE)	NOT USED.

TRACKBALL INTERFACE & COUNTER DRIVER.

SOLDERING SIDE B		A	COMPONENT SIDE
+ 5V	10	L	+ 5V
GND	9	K	GND
COIN METER	8	J	COIN OUT (CONNECT TO B BOARD B16)
(CONNECT TO B BOARD B18) Y_3	7	H	X_3 (CONNECT TO B BOARD A18)
(CONNECT TO B BOARD B19) Y_2	6	F	X_2 (CONNECT TO B BOARD A19)
(CONNECT TO B BOARD B20) Y_1	5	E	X_1 (CONNECT TO B BOARD A20)
(CONNECT TO B BOARD B21) Y_0	4	D	X_0 (CONNECT TO B BOARD A21)
SERVICE	3	C	COIN IN
DOWN (FROM TRACKBALL) Y_B	2	B	X_B (FROM TRACKBALL) RIGHT
UP (FROM TRACKBALL) Y_A	1	A	X_A (FROM TRACKBALL) LEFT

* Voltage control potentiometer is preset-do not adjust!

ADJUSTMENT SWITCHES

A SET OF DIP SWITCHES ARE LOCATED ON THE GAME LOGIC BOARD TO ADJUST FOR COINS.

* NOTE: MAKE SURE POWER IS OFF BEFORE MAKING THESE ADJUSTMENTS.

SWITCH SETTING:

SWITCH B:

	1	2	3	4	5	6	7	8
1 COIN 1 CREDIT	OFF	OFF						
2 COIN 1 CREDIT	ON	OFF						
FREE PLAY	ON	ON						
3 BEEZER START			OFF					
4 BEEZER START			ON					
ATTRACT MODE SOUND ON				OFF				
ATTRACT MODE SOUND OFF				ON				
NO BONUS					OFF	OFF		
BONUS AT 90,000 POINTS					ON	ON		
BONUS AT 60,000 POINTS					OFF	ON		
BONUS AT 30,000 POINTS					ON	OFF		
EASY							OFF	OFF
MEDIUM EASY							ON	OFF
HARD							ON	ON
MEDIUM HARD							OFF	ON

SWITCH A:

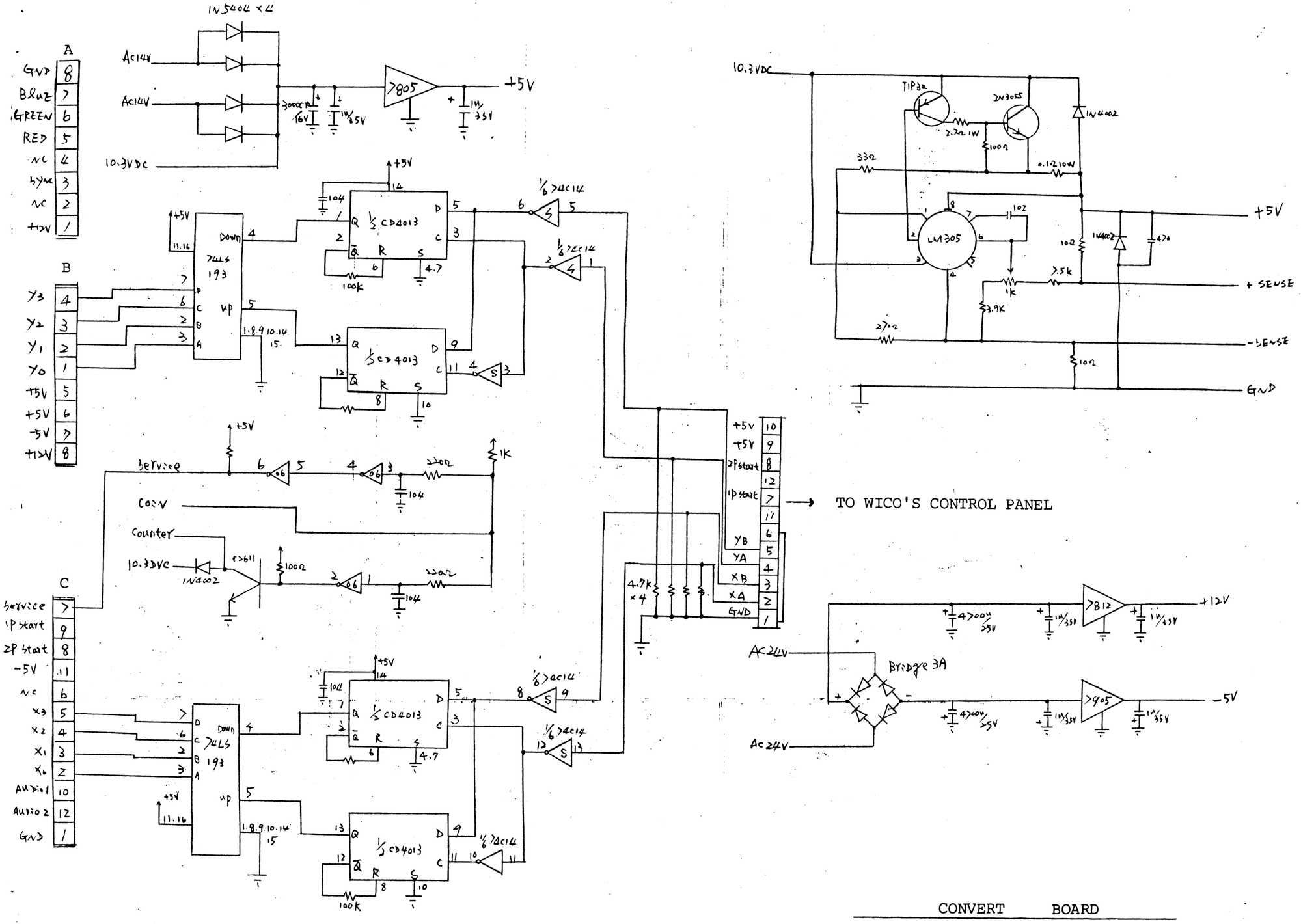
NOT USED

INSTRUCTION FOR TEST MODE:

(1) To enter test mode:
- (a) Power down
- (b) Turn on while holding down 1P / 2P start switches

(2) Now in test mode. If not, repeat (1)(a) and (1)(b).

(3) Test manuel on screen:
- (a) cycle to required item using 1P button
- (b) enter specific test using 2P button
- (c) cycle next test using 1P button
- (d) leave test by cycling to start or turn off/on.


1N5404 x4
AC14V
AC14V
10.3VDC
7805
+5V
1N4002
TIP32
2N3055
2.2Ω 1W
100Ω
33Ω
0.1Ω 10W
LM305
10Ω
1K
3.9K
2.5K
270Ω
470
+5V
+ SENSE
- SENSE
GND
A
GND 8
BLUE 7
GREEN 6
RED 5
NC 4
SYNC 3
NC 2
+12V 1
B
Y3 4
Y2 3
Y1 2
Y0 1
+5V 5
+5V 6
-5V 7
+12V 8
CD4013
74LS 193
DOWN
UP
100K
4.7
service
COIN
Counter
10.3VDC
1N4002
100Ω
1K
104
+5V 10
+5V 9
2P start 8
1P start 12
7
11
YB 6
YA 5
XB 4
XA 3
GND 2
1 → TO WICO'S CONTROL PANEL
4.7K x4
C
service 7
1P start 9
2P start 8
-5V 11
NC 6
X3 5
X2 4
X1 3
X0 2
AUDIO 1 10
AUDIO 2 12
GND 1
10.3VDC
TIP32
2N3055
1N4002
LM305
+12V
-5V
AC24V
AC24V
Bridge 3A
7812
7905
4700uF 35V
1uF/35V
CONVERT BOARD

1A f-3

RESET
S1
CR1
555 IC U20
100K R1
10K R3
C1
WCHD
Q5 2N2907
100K R2
100uf C2
U14
RESET
+5
U1, U2, U3 1A, 1B, 1C 74LS367 <3>
ADDRESS BUS
50 pin header J1
ADDRESS BUS
E
U13 LS00 2C
U13 LS00 2A
U13 LS00 2B
2B U11 MC6809
IRQ
FIRQ
R5 220
R4 1.5K
12MHZ
R6 220
R7 560
Y1
U19
HI-B
R8 2.2K
R9 ALL 10K
R10 470
+5
RESET
HALT
NMI
DMA
MRDY
BS
EXT
XTL
R11 470
R/W
D0-D7
A0-A15
BA
BS
U7 74LS245 1G
U17 74LS04
U18 74LS08
U6 LS139 1F
256x4 ROM U5 9342 1E
256x4 ROM U4 9342 1D
S BUS
W BUS
DATA BUS
RAS
RD BUS
U8 74LS374 1H
U9 74LS374 1K
U10 74LS374 1L
U11 74LS74 2A
U12 74LS74 2B
U15 74LS08 2E
U16 74LS32 1F
U21 LS107 3A
U22 74LS74 3C
U23 LS74 3D
U24 LS244 3E
U25 LS10 3F
U26 LS11 3G
U27 LS04 3H
U28 LS244 3E
U29 LS244 3E
U30 LS244 3E
U31 LS244 3E
U32 LS244 3E
U33 LS244 3E
U34 LS244 3E
U35 LS04 3H
6MHZ EN
IOSPACE
SHIFT1
SHIFT2
MWEN
CAS
RSELA
RSELB
4MHZ
HI-A
HI-B
HI-C
HI-D
MAP ACC
MAP WRITE
BLANKING
TRISP
RDISP
WCHD
R/W
NWEN
IOSPACE
RESET
E
IRQ
FIRQ
D7A
D6A
D5A
D4A
D3A
D2A
D1A
D0A
RD7
RD6
RD5
RD4
RD3
RD2
RD1
RD0

6MHZEN
4MH2
HI-C
74LS21 U33 4F
BLANKING
RDLINE
LS367 U34 4A
Data Bus
address BUS
S BUS
WBUS
WO
RD BUS → 24 Lines Wide
RSelB
RSelA
4A LS161 U38
5A LS161 U36
6A LS161 U46
7A LS161 U56
LS74 4D U31
Reset
E
DISP
74LS04 U17
4B U39
5B U37
6B U47
7B U57
74153
RA1
RA3
RA4
RA5
RA6
RA7
RA0
RA1
RA2
RA3
RA4
RA5
RA6
RA7
RAS
CAS
WE
WI
WR
RD0
RD1
RD2
RD3
RD4
RD5
RD6
RD7
D0A
D1A
D2A
D3A
D4A
D5A
D6A
D7A
U58 6C 4116
U59 6D 4116
U60 6E 4116
U61 6F 4116
U62 6H 4116
U63 6J 4116
U64 6K 4116
U65 6L 4116
U48 6C 4116
U49 6D 4116
U50 6E 4116
U51 6F 4116
U52 6H 4116
U53 6J 4116
U54 6K 4116
U55 6L 4116
U38 5C 4116
U39 5D 4116
U40 5E 4116
U41 5F 4116
U42 5H 4116
U43 5J 4116
U44 5K 4116
U45 5L 4116
+5
+12
-5
74LS11 U32 4E
74LS08 U15 2E
74LS10 4C U30
74LS00 U35 4H
74LS02 U27 3H
74LS21 U33 4F
Video EN
HSYNC
EDGE CONNECTOR
.001 C4
681 C5

1A 2-3

ALL CONNECTIONS
TO EDGE CONNETOR

RD BUS

ADDRESS BUS

Map write

Map write

Video EN

+5

+12

1000uF

C9 1000µF

C7

GND

74165 8G U69

74165 8H U70

74165 8K U71

74165 8L U72

LS257 8F U68

7489 8D U66

7489 8E U67

LS74 2A

HI-B

4MHZ

SHFT-4

SHFT-2

Data Bus

8,15

8,2

200PF C6

Q1 2N2907

Q2 Q3 Q4 ALL 2N2907

R21 470

R22 150

R23 68

R24 150

R25 68

R26 150

R27 68

R28 680

R29 680

R30 680

R31 150

R1 1k

R2 1.2k

R3 560

R4 330

R5 1.2k

R6 560

R7 330

R8 680

R9 330

CR2 CR3 CR4 CR5 CR6 CR7 CR8 CR9

1 GND

2 Video Out

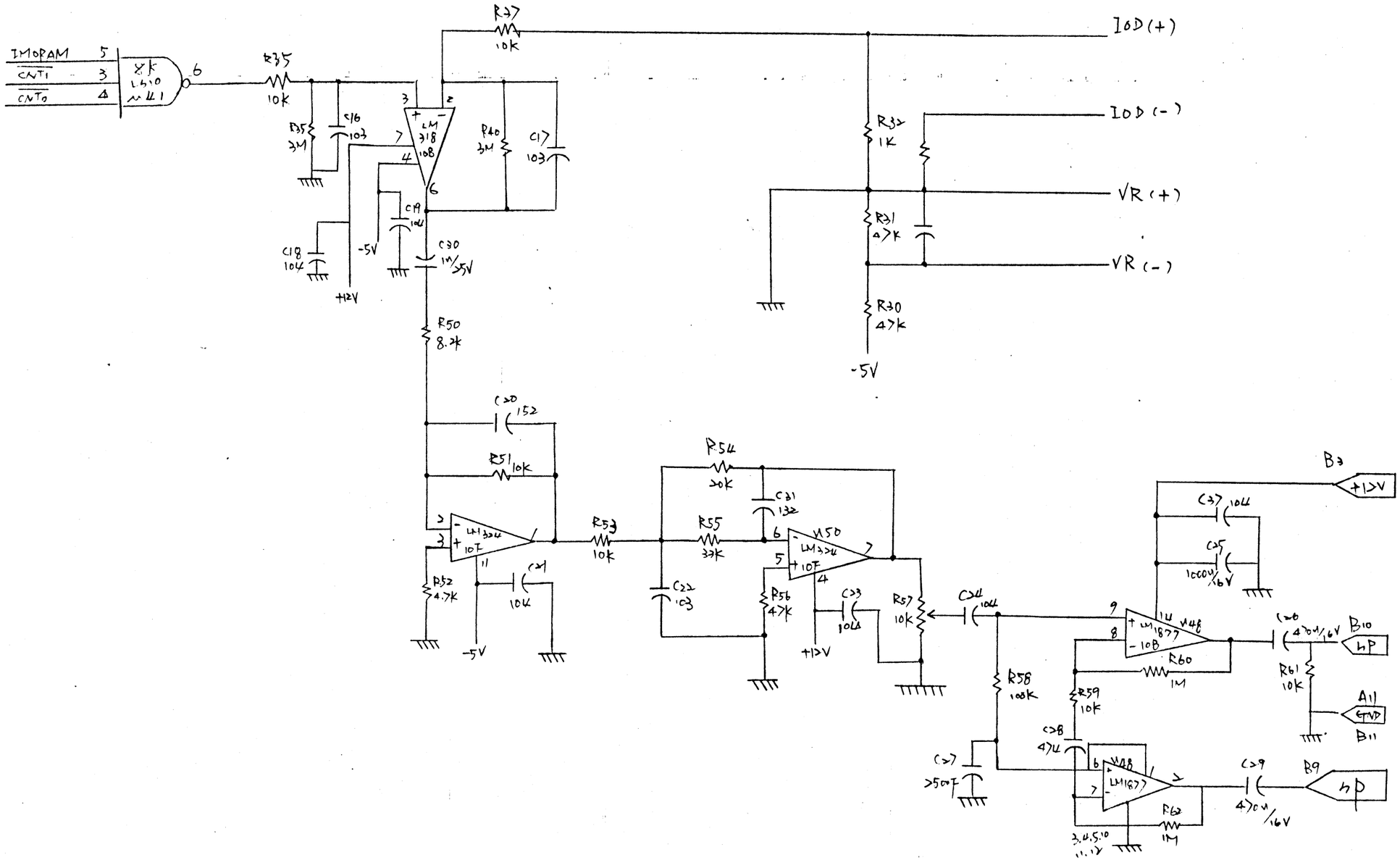
3 Green

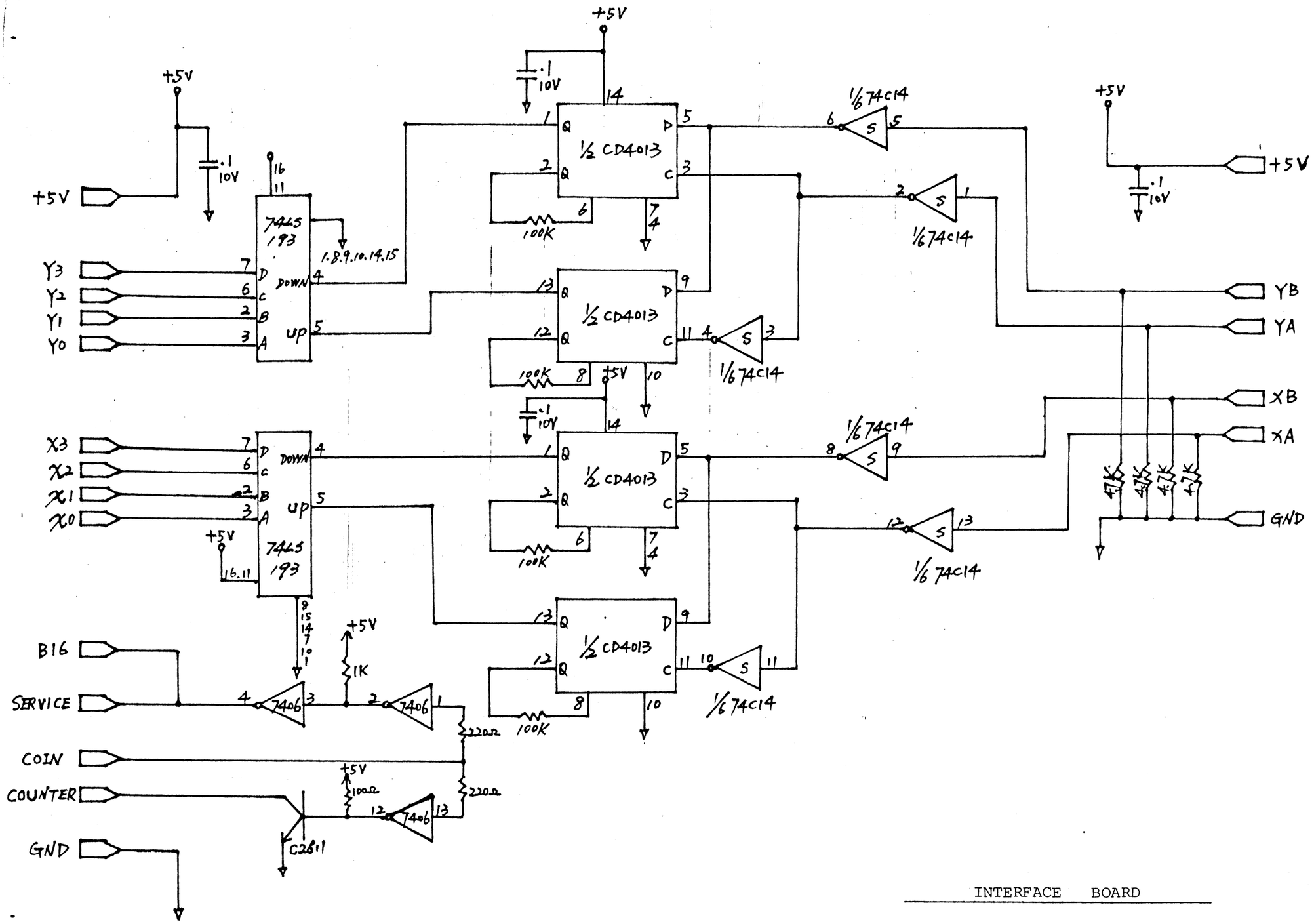
4 Red

DIPSWA
DIPSWB
RN1
RN2
RN3
RN4
10K
2B LS244
1B LS244
3B LS244
5B LS244
P1
P BUS TO Audio
+5V
+12V
-5V
A12
A8 B8
A1 B1
A22 B22
A7 B7
C33 C34
1C U6 PPCNP74
2H LS139
3H LS138
3K LS138 A
4H LS174
5.8
LS04
LS32
LS00
RESET
CE00~C7FF
C600~C7FF
WCHD
IOSPACE
HI-A
CB00~C9FF
CA00~CBFF
ADDRESS BUS A
X, Y, Z
LA12
DATA BUS A
ROM OE
>7324 OR >764 F7
>7326 OR >764 F5
>7328 OR >764 E5
>732A OR >764 E3
>732C OR >764 E1
>732E OR >764 F3
>764 T11
>732 DXXX SPACE G1
>732 EXXX SPACE G3
>732 FXXX SPACE G5
A15A
A14A
A13A
A12A
D7A
D6A
D5A
D4A
D3A
D2A
D1A
D0A
B/W
E
IRQ
4MHZ
MWEN
RESET
FIRQ
MAP WRT
BLANKING
MAP ACCESS
TDISP
RDLINE

1B 2-3

AUDIO RESET
+5V
RES
6809
6C
U30
RESET
E
Q
R/W
DS
BA
FIRQ
IRQ
HALT
DMA/BREQ
MRDY
NMI
EXTAL
XTAL
Vcc
4MHZ
Y1
30PF C6
30PF C7
.01uF C5
R13 100
R14 10K
R15 10K
R16 10K
U38
U46
E1
Q
R/W Φ
FIRQB
IRQB
NMI
D7B D6B D5B D4B D3B D2B D1B DΦB
A15B A14B A13B A12B A11B A10B A9B A8B A7B A6B A5B A4B A3B A2B A1B AΦB
Nc
.1uF
6522
U18
3C
CA1 CA2 PA7 PA6 PA5 PA4 PA3 PA2 PA1 PA0 CB1 CB2 PB7 PB6 PB5 PB4 PB3 PB2 PB1 PB0
D7B D6B D5B D4B D3B D2B D1B DΦB
RS3 RS2 RS1 RS0 CS1 CS2 R/W IRQ RES E1
AMS2
AMS1
PBUS
DMOD CLR
DMOD DATA
TIMER1 OUT
NOISE
27K
R17 R18 R19 R20 R21
DMOD DISABLE
FM OR AM
AM
FM SEL
FMSEL1
R/W
U41
LS10
Q
R/W Φ
2K U16
4K U4
LS32
RAM
ROM
A11B
6D U31 2716 OR 2732 OR 2764 28pin ROM
4D U21 ROM
2D U11 ROM/RAM
ΦD U1 RAM
A12B A10B A9B A8B A7B A6B A5B A4B A3B A2B A1B AΦB
CE OE
E0/P0 C0/D0
ΦD.E
E1
A15B
LS139
U37
7H
A14B A13B
E0/P0 C0/D0 A0/B0 Φ0/Φ0
ΦΦ.E
DATA BUS B
ADDRESS BUS B
AΦB A1B A2B
CNTΦ CNT1 +5V CH SIGN
74LS670
U28 5H
U29 5K
WA WB WE
U35 6H LS04
DAC-76
6K
U36
VR(+)
VR(-)
IODL(-)
IODL(+)
E/5
VLC
.1uF
6840
U32
6E
D7B D6B D5B D4B D3B D2B D1B DΦB
D7 D6 D5 D4 D3 D2 D1 DΦ
C1 G1 O1 C2 G2 O2 C3 G3 O3 Vss Vcc CS2 CS1 CS0 IRQ RES
RS0 RS1 RS2
1Φ
IRQB
RES
HI-B
NOISE
TIMER1 OUT
U47 LS74 9K
LS153
U52
CH SIGN
CNTΦ
CNT1
1ΦK
VCO CLK
U40 8H LS393
QA QB QC QD CLR
Nc
+12V
MM5837
U39
R22 47K
R63 100K
Q2 2N2222
2N5504
U38
U46
HI-B


IMOPAM
CNT1
CNT0
R35
10k
C16
10n
R36
3M
C18
104
+12V
-5V
C19
1n
C30
1n/25V
R50
8.2k
LM
318
10B
R40
3M
C17
103
R37
10k
IOD(+)
IOD(-)
VR(+)
VR(-)
R32
1K
R31
47K
R30
47K
-5V
C20
152
R51
10k
R52
4.7K
C21
10n
R53
10k
R54
20k
C31
133
R55
33K
C22
103
R56
47K
C23
10u
R57
10k
C24
10u
R58
100K
C27
10u
C25
1000u/16V
B3
+12V
LM1877
R60
1M
C26
470u/16V
B10
HP
R61
10K
A11
GND
B11
R59
10K
C28
47u
C29
470u/16V
B9
HP
R62
1M
3,4,5,10
11,12



INTERFACE BOARD