

LOGIC

PIN NO.	IC U100	PIN NO.	IC U100	PIN NO.	IC U102	IC U103	IC U104	IC U105	IC U106	IC U107	IC U108	IC U109
1	P	21	P	1	L	L	L	L	L	L	L	L
2	P	22	P	2	P	P	P	P	P	P	P	P
3	P	23	P	3	H	H	H	H	H	H	H	H
4	P	24	P	4	P	P	P	P	P	P	P	P
5	P	25	P	5	P	P	P	P	P	P	P	P
6	P	26	P	6	P	P	P	P	P	P	P	P
7	P	27	P	7	P	P	P	P	P	P	P	P
8	P	28	P	8	H	H	H	H	H	H	H	H
9	P	29	P	9	H	H	H	H	H	H	H	H
10	P	30	P	10	P	P	P	P	P	P	P	P
11	H	31	P	11	P	P	P	P	P	P	P	P
12	L	32	P	12	P	P	P	P	P	P	P	P
13	P	33	H	13	P	P	P	P	P	P	P	P
14	H	34	H	14	P	P	P	P	P	P	P	P
15	P	35	H	15	P	P	P	P	P	P	P	P
16	P	36	P	16	L	L	L	L	L	L	L	L
17	P	37	P	17								
18	P	38	P	18								
19	P	39	P	19								
20	P	40	P	20								

PIN NO.	IC U300	PIN NO.	IC U300	PIN NO.	IC U302	IC U500	IC U501	IC U502	IC U503	IC U504	IC U505	IC U506
1	H	21	P	1	P	P	P	P	L	L	P	P
2	P	22	P	2	L	P	P	P	P	L	P	P
3	P	23	H	3	P	P	P	P	P	P	P	P
4	P	24	P	4	P	P	P	P	P	P	P	P
5	P	25	P	5	H	P	P	P	P	L	P	P
6	H(2)	26	P	6	P	P	P	P	P	H	P	P
7	H(3)	27	L	7	P	P	P	P	P	H	P	L
8	H(4)	28	*(10)	8	L	P	P	P	L	L	L	L
9	H(5)	29	H	9	P	H	H	H	P	H	P	H
10	P	30	L(11)	10	P	P	P	P	P	H	H	H
11	P	31	H(6)	11	P	P	P	P	P	P	H	P
12	P	32	H(7)	12	P	P	P	P	P	H	H	P
13	H	33	H(8)	13	P	P	P	P	P	H	P	P
14	P	34	H(9)	14	L	L	L	L	P	H	H	H
15	P	35	P	15	P	P	P	P	L	P	H	H
16	L	36	P	16	H	L	L	L	H	H	H	
17	H	37	*	17								
18	P	38	L	18								
19	H	39	P	19								
20	H	40	H	20								

NOTE: Logic probe readings taken with computer in Power Up mode (Main title screen displayed) unless otherwise noted.

Logic Probe Display

L = Low

H = High

P = Pulse

* = Open (no light on)

(2) Probe will show P when the 6 key is pressed.

(3) Probe will show P when the Y key is pressed.

(4) Probe will show P when the H key is pressed.

(5) Probe will show P when the N key is pressed.

(6) Probe will show P when the Z key is pressed.

(7) Probe will show P when the Q key is pressed.

(8) Probe will show P when the A key is pressed.

(9) Probe will show P when the 2 key is pressed.

(10) Probe will show P when saving program to tape.

(11) Probe will show P when loading program from tape.

JOYSTICKS

Type in and run the following program if the keys on the keyboard function but the joysticks do not. Check for the waveform shown in Figure 5 at the emitters of Joystick Control 1 and 2 Transistors (Q300 and Q301).

```

1 CALL JOYST (1, X, Y)
2 CALL JOYST (2, X, Y)
3 CALL KEY (1, X, Y)
4 CALL KEY (2, X, Y)
5 GOTO 1
    
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The waveform shown in Figure 6 should appear at the emitters of Transistors Q300 and Q301 when the fire button is pressed. Transistor Q300 controls Joystick 1 and Transistor Q301 controls Joystick 2. If either waveform is absent, check the voltages and components associated with the transistor with the missing waveform.

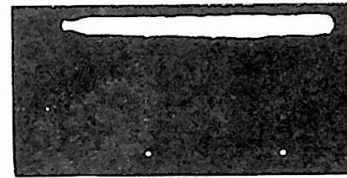


Figure 5

5V
20ms
0V
DC
Reference

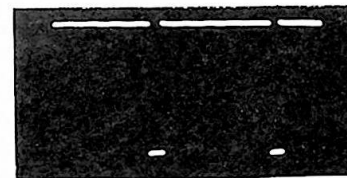


Figure 6

5V
20ms
0V
DC
Reference

CASSETTE RECORDER

NOTE: Verify the recorder used can be turned On and Off by a computer in good working order. CS1 is the recorder connected to the three plug cassette cable. CS2 is the recorder connected to the two plug cassette cable.

The computer will not turn On CS1. Check the voltages and components associated with the Control Output Transistor (Q401), LED Driver Transistor (Q402) and Opto-isolator U401.

The computer will not turn Off CS1. Check for .02V at pin 19 of IC U300 when the recorder should be Off. If the voltage is good, check Transistor Q401, Transistor Q402 and Opto-isolator U401.

The computer will not turn On CS2. Check the voltages and components associated with the Control Output Transistor (Q403), LED Driver Transistor (Q404) and Opto-isolator U402.

The computer will not turn Off CS2. Check for .02V at pin 23 of IC U300 when the recorder should be Off. If the voltage is good, check Transistors Q403 and Q404 and Optoisolator U402.

The computer will not load a program. Check the waveforms at pin 8 of Jack J400, pin 7 of IC U400 and pin 30 of IC U300 while loading a program. NOTE: The amplitude of the waveforms depends on the volume control setting of the recorder. If the waveform at pin 8 of J400 is absent, check Capacitor C402 and check for possible shorts to ground. If the waveform at pin 7 of IC U400 is absent, check the voltages and components associated with pins 4, 6, 7 and 8 of IC U400. If the waveform at pin 30 of IC U300 is absent, check the voltages and components associated with pins 1, 2, 3, 4 and 8 of IC U400.

The computer will not save a program. Check the waveform at pin 28 of IC U300 while saving a program. If the waveform is good, check Capacitors C400, C403 and C407 and Resistors R400, R401 and R402.

RF MODULATOR

Verify the RF Modulator is getting the proper voltages and signals by checking for 11.78V at the red wire from the cable, 1.95V at the yellow wire and .54V at the clear wire. The clear wire should also have a 1V p-p video signal.

ADJUSTMENT

10.7 MHz OSCILLATOR

Connect the input of a frequency counter to pin 39 of IC U100 and adjust Coil L100 for a frequency of 10.738635 MHz.