

## APPENDIX A

### COMPUTER COMMUNICATION

Computer generated control signals, transmitted by an IR Remote keypad (remote control infrared transmitter), can be used to remotely control the projector. The control signals must meet the following specifications:

- No-signal voltage level = 5 to 12V DC.
- Signal voltage level = 0V.
- A signal must start with two "Start Instruction Codes" (hex 1F). The start instruction codes must be followed by one or more "Key Instruction Codes", e.g., CONT (hex 19). See Table A-1.

- Control signals must be terminated with two "End Instruction Codes" (hex 1F). Reference Figure A-1.
- Projectors can be programmed via the built-in or a wired keypad to respond to Protocol 1 or Protocol 2. See Table A-2.
- A control signal must be transmitted at least 4 times.
- The control line must be connected to the REMOTE SENSOR jack on the projector.

All signals are encoded by a bi-phase encoder. See Figure A-2.

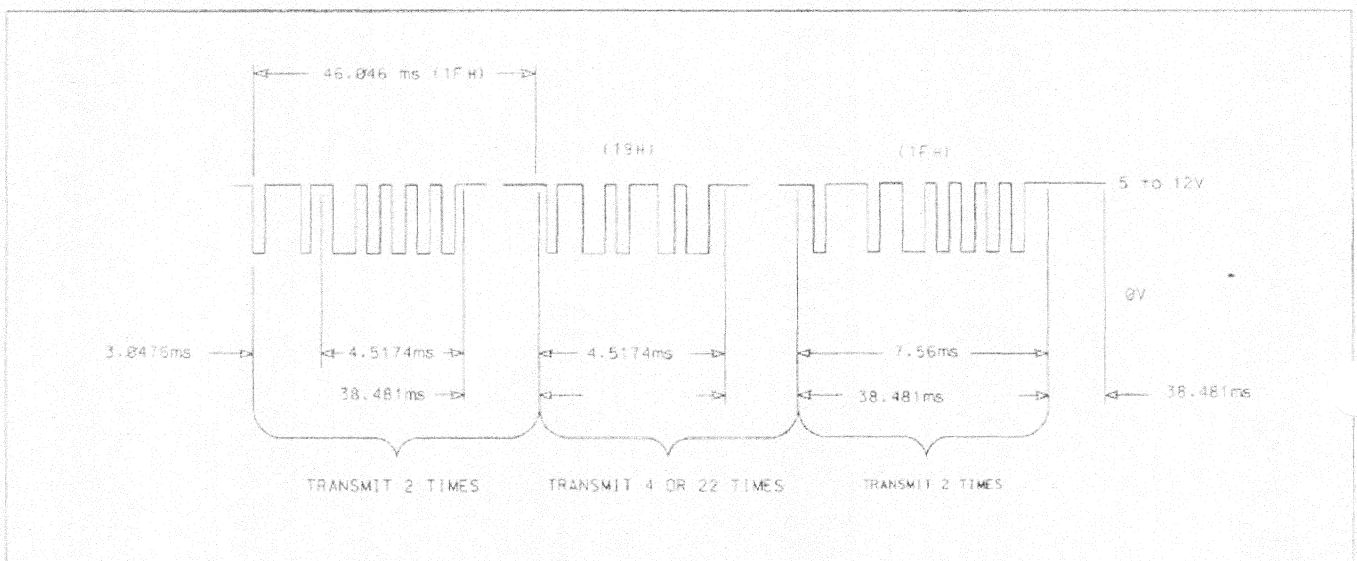


FIGURE A-1. Start and End Codes for Protocol 1 and 2

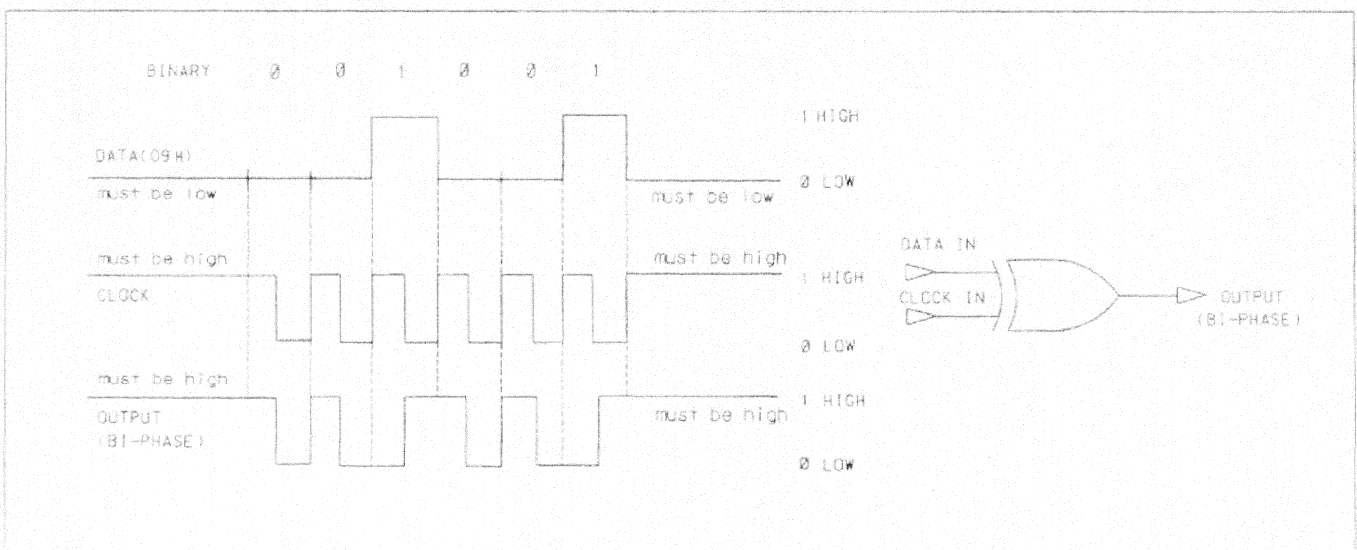


FIGURE A-2. The Bi-phase Encoder

TABLE A-1. IR (Infrared) Key Instruction Codes

Keypad Function	Hex Code	Binary Code	Minimum Number of Times Transmitted
#	00	000000	4 times
EXIT	02	000010	4 times
HELP	03	000011	4 times
SIZE	04	000100	4 times
4	05	000101	4 times
POWER	07	000111	22 times
FAST/SLOW SYNC	08	001000	4 times
SOURCE	09	001001	4 times
KEY	0C	001100	4 times
7	0D	001101	4 times
TINT	10	010000	4 times
2	13	010011	4 times
H HOLD	14	010100	4 times
6	15	010101	4 times
VOL	17	010111	4 times
*	18	011000	4 times
CONT	19	011001	4 times
U	1A	011010	2 times
FOCUS	1C	011100	4 times
9	1D	011101	4 times
D	1E	011110	2 times
START/STOP	1F	011111	4 times
DETAIL	20	100000	4 times
3	23	100011	4 times
V HOLD	24	100100	4 times
5	25	100101	4 times
R	26	100110	2 times
MUTE	27	100111	22 times
PIN	28	101000	4 times
BRITE	29	101001	4 times
VBANK	2C	101100	4 times
8	2D	101101	4 times
0	30	110000	4 times
CONVERGE	32	110010	4 times
1	33	110011	4 times
BOW	34	110100	4 times
STANDBY	35	110101	22 times
L	36	110110	2 times
RESET	37	110111	22 times
PROJ	38	111000	4 times
COLOR	39	111001	4 times
MOVE	3C	111100	4 times
RECALL	3D	111101	4 times

TABLE A-2. Wired Keypad Instruction Codes

Keypad Function	Hex Code	Binary Code	Minimum Number of Times Transmitted
#	00	000000	4 times
EXIT	02	000010	4 times
HELP	03	000011	4 times
SIZE	04	000100	4 times
8	05	000101	4 times
POWER	07	000111	22 times
FAST/SLOW SYNC	08	001000	4 times
SOURCE	09	001001	4 times
KEY	0C	001100	4 times
9	0D	001101	4 times
TINT	10	010000	4 times
4	13	010011	4 times
H HOLD	14	010100	4 times
2	15	010101	4 times
VOL	17	010111	4 times
*	18	011000	4 times
CONT	19	011001	4 times
L	1A	011010	2 times
FOCUS	1C	011100	4 times
3	1D	011101	4 times
R	1E	011110	2 times
DETAIL	20	100000	4 times
start	21	100001	4 times
stop	22	100010	4 times
1	23	100011	4 times
V HOLD	24	100100	4 times
5	25	100101	4 times
U	26	100110	2 times
MUTE	27	100111	22 times
PIN	28	101000	4 times
BRITE	29	101001	4 times
mute ON	2A	101010	22 times
mute OFF	2B	101011	22 times
VBANK	2C	101100	4 times
6	2D	101101	4 times
standby ON	2E	101110	22 times
standby OFF	2F	101111	22 times
0	30	110000	4 times
CONVERGE	32	110010	4 times
7	33	110011	4 times
BOW	34	110100	4 times
STANDBY	35	110101	22 times
D	36	110110	2 times
RESET	37	110111	22 times
PROJ	38	111000	4 times
COLOR	39	111001	4 times
MOVE	3C	111100	4 times
RECALL	3D	111101	4 times

## APPENDIX B

### REVERSE SCAN INSTALLATION

This appendix provides instructions for installing the projector from normal to reverse scan installation.

#### WARNING

The reverse scan procedure **MUST** be performed by a qualified service technician.

#### Tools & Equipment Required:

- Phillips screwdriver
- 1/4" hex socket driver

#### STEP 1 – DISCONNECT YOKE PLUGS

a) **Remove Top Covers of Projector.** Remove the projector's top covers to access the deflection yoke plugs. Reference Section 5.

b) **Remove Lower Case.** See Section 5.

c) **Locate the Yoke Plugs.** The horizontal and vertical yoke plugs are located at the top rear of the projector, slightly below the CRT necks. See Figure B-1 below.

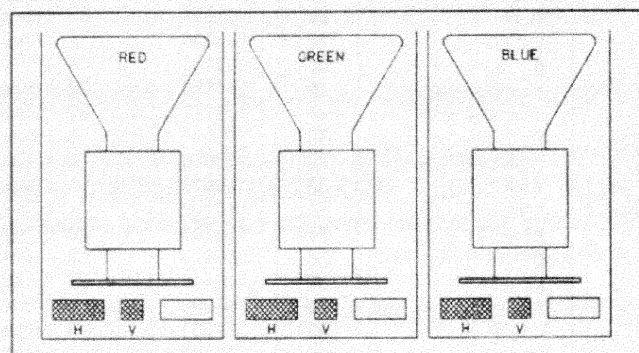


FIGURE B-1. Yoke Plug Locations

**NOTE:** When a deflection yoke plug is in the reverse position, the label "REVERSE SCAN", is visible on the plug. In the normal position, no marking is visible.

d) **Plug Removal.** Remove the horizontal (P6) and vertical (P8) deflection yoke plugs from each of the 3 deflection boards.

#### STEP 2 – CONNECT YOKE PLUGS ACCORDING TO INSTALLATION TYPE

There are four installation types:

- 1) front screen projection - floor mount (normal)
- 2) front screen projection - ceiling mount (inverted)
- 3) rear screen projection - floor mount
- 4) rear screen projection - ceiling mount (inverted)

The yoke plugs are connected differently for each installation type. Unless specified, the projector is shipped from the factory with the yoke plugs connected for a front screen projection - floor mount installation. To alter the yoke plug connections for other installation types, refer to Figures B-2 to B-4.

#### Rear Screen Projection – Floor Mount

Reverse the horizontal deflection plug, P6. Plug the vertical deflection yoke plug, P8, into its normal position. Plug orientation must be as shown below.

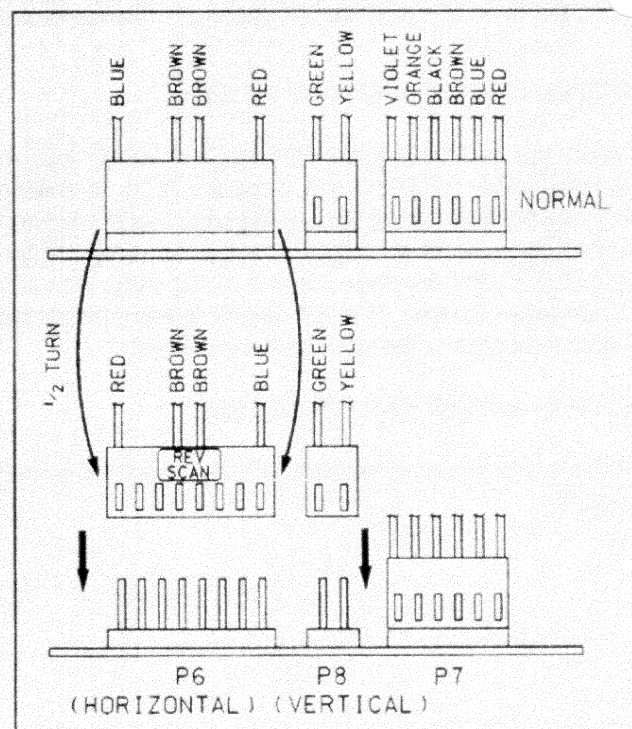
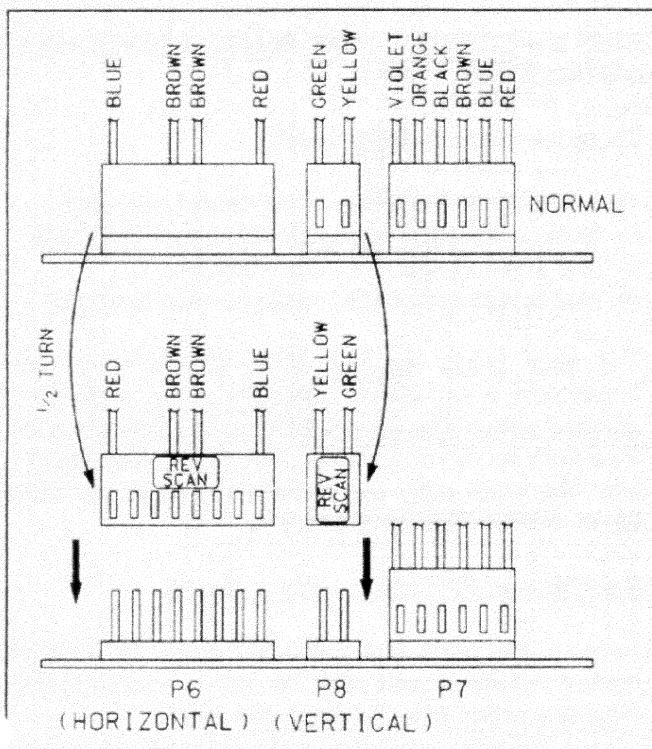


FIGURE B-2. Rear Screen Projection- Floor Mount

### Front Screen Projection – Ceiling Mount

Reverse the horizontal plug, P6. Reverse the vertical deflection yoke plug, P8. Plug orientation must be as shown below.



**FIGURE B-3. Front Screen Projection - Ceiling Mount**

### STEP 3 – INSTALL BUILT-IN KEYPAD

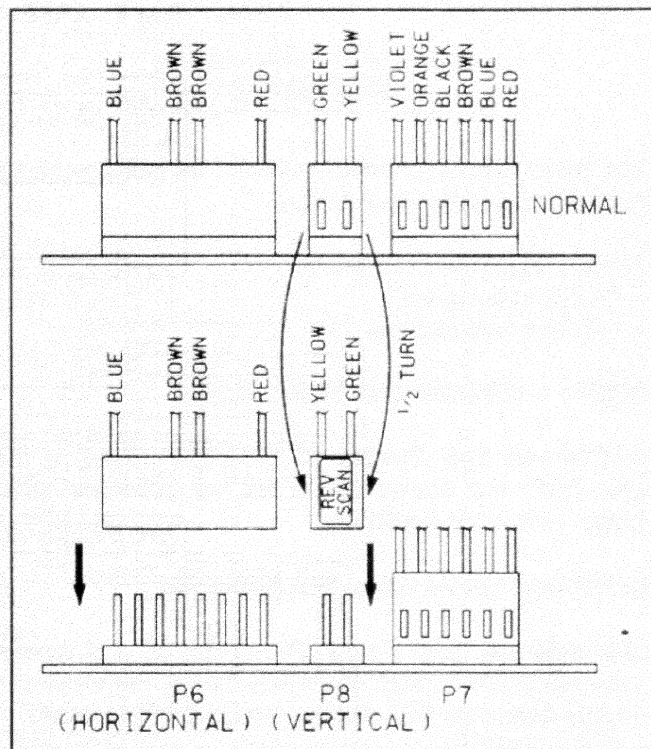
Install the built-in keypad following the STEP 1(b) in reverse order. NOTE: If the projector is to be ceiling mounted, install the built-in keypad such that the keypad sensor is next to the right side bracket (serviceman standing behind the projector and facing same direction as projector lenses). This will ensure the key labels are right side up once the projector is mounted.

### STEP 4 – MOUNT THE PROJECTOR

Refer to the mounting procedure in the System Owner's Manual.

### Rear Screen Projection – Ceiling Mount

Plug the horizontal deflection yoke plug, P6, into its normal position. Reverse the vertical deflection yoke plug, P8. Plug orientation must be as shown below.



**FIGURE B-4. Rear Screen Projection - Ceiling Mount**

### STEP 5 – ALIGN AND CONVERGE THE PROJECTOR

Set the internal mounting configuration settings using the HELP -UTILITIES -MOUNTING POSITIONS menu. Converge the system using the convergence procedure in the Owner's manual.

### STEP 6 – INSTALL PROJECTOR TOP COVERS

Follow STEP 1(a) in reverse order.



## APPENDIX C

## HARNESS/WIRING DIAGRAM



FIGURE E-1. *Harness/Wiring Diagram*

## APPENDIX D

### TERMS/CONCEPTS/ABBREVIATIONS

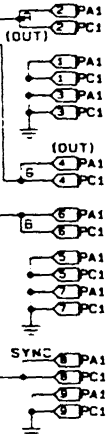
ALE	address line enable	PIN BOT	pincushion bottom control
A MUTEa	audio mute	PIN SIDE	pincushion side control
B GAIN	blue gain	PIN TOP	pincushion top control
BH CENT	blue horizontal centering	PIN WFM	pincushion waveform
BH CONV	blue horizontal convergence	PSEN	program store enable
BLK LEVEL	black level	PWR RELAY	power relay
BUCK LOW	a DC voltage proportional to BUCK OUT	<u>RD</u>	read
BUCK OUT	a DC voltage output from the horizontal regulator	RD	read (active low)
BV CENT	blue vertical centering	REVERSE SCAN	use of the projector in ceiling mounted or rear screen applications
BV CONV	blue vertical convergence	REV SCAN	reverse scan
CAB LIMIT	cabinet (temperature) limit switch	R GAIN	red gain
COMM A	communication line A	RGB	red, green, blue
COMM B	communication line B	RH CENT	red horizontal centering
DAC	digital to analog converter	RH CONV	red horizontal convergence
DACOUT1	digital to analog converter output #1	RV CENT	red vertical centering
DACOUT2	digital to analog converter output #2	RH CONV	red horizontal convergence
DYNFOCUS	dynamic focus	RXD	receive data
EHT	extra high tension (voltage)	SDA	serial data address
ELEC FOCUS	electronic focus	SEL	select
FBK V SIZE	vertical size feedback	SEL	select (active low)
G GAIN	green gain	SMPS	switch mode power supply
GH CENT	green horizontal centering	STBY	standby
GH CONV	green horizontal convergence	TTL	transistor-transistor logic
GND	earth ground	TXD	transmit data
GV CENT	green vertical centering	V A/M SW	vertical auto/manual switch
GV CONV	green vertical convergence	VAR DC DEFL	variable DC deflection
H A/M SW	horizontal auto/manual switch	VCR SW	video cassette recorder switch
H DELAY SW	horizontal delay switch	V DELAY SW	vertical delay switch
HDRIVE	horizontal drive pulse	VERT 1	vertical 1, a positive going vertical sync pulse
HFB	horizontal flyback	VFB	vertical flyback
H HOLD	horizontal hold	V HOLD	vertical hold
H PHASE	horizontal phase	V PHASE	vertical phase
HPLLCLK	horizontal phase locked loop clock	VPLLCLK	vertical phase locked loop clock
HRESET	horizontal reset	VRESET	vertical reset
H SIZE	horizontal size	V SIZE	vertical size
IR	infrared (or infrared sensor)	WFM	waveform
KEY WFM	keystone waveform	<u>WR</u>	write
PEM	power entry module	WR	write (active low)

## **APPENDIX E**

### **INTERFACE SCHEMATICS**

The following interface schematics are included within this appendix

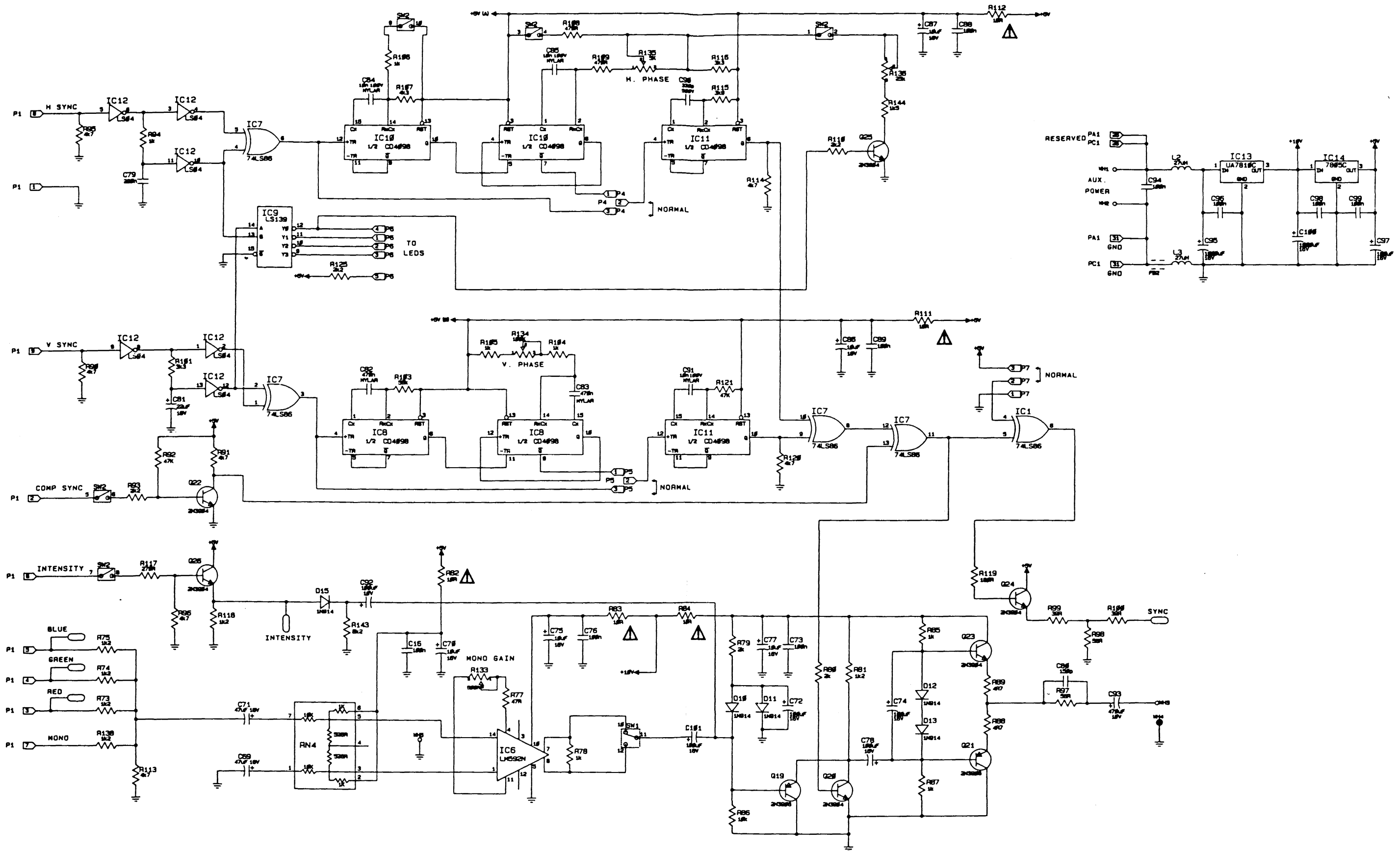
- Multi-standard Decoder
- PS/2-GP Analog Interface
- PC Enhanced Interface
- GP TTL Interface



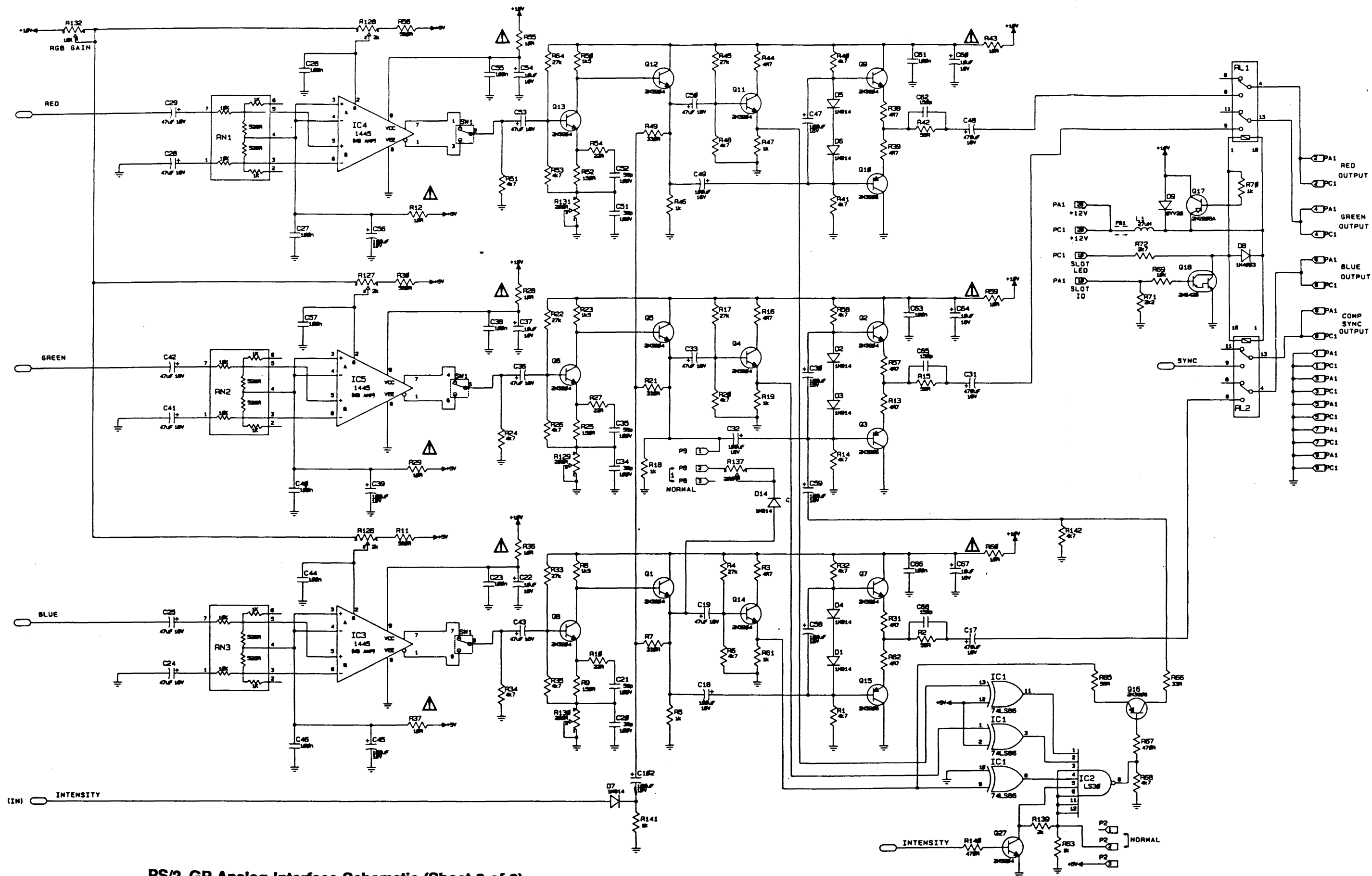
### Multi-standard Decoder Schematic (Sheet 1 of 2)



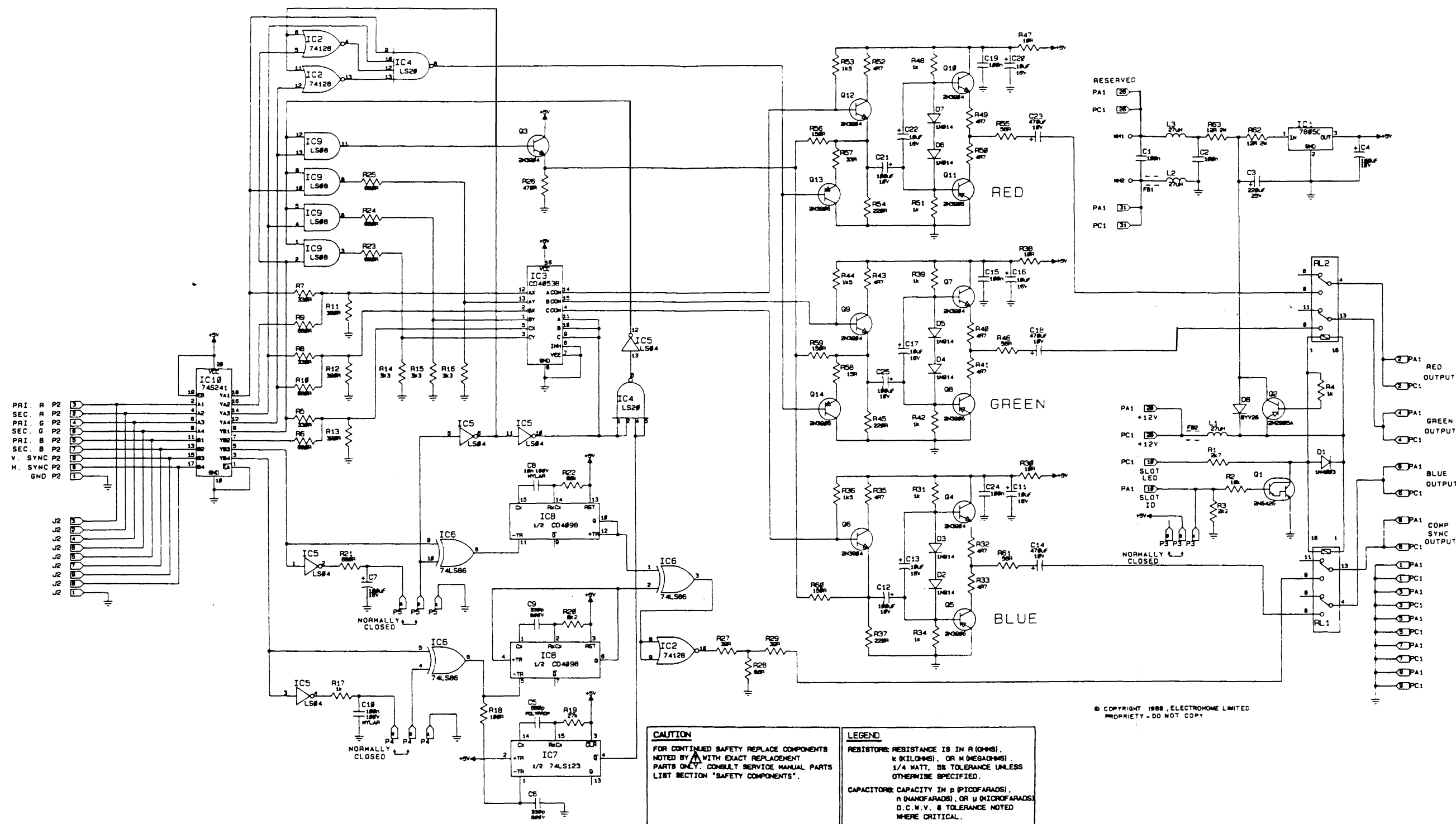




PS/2-GP Analog Interface Schematic (Sheet 1 of 2)



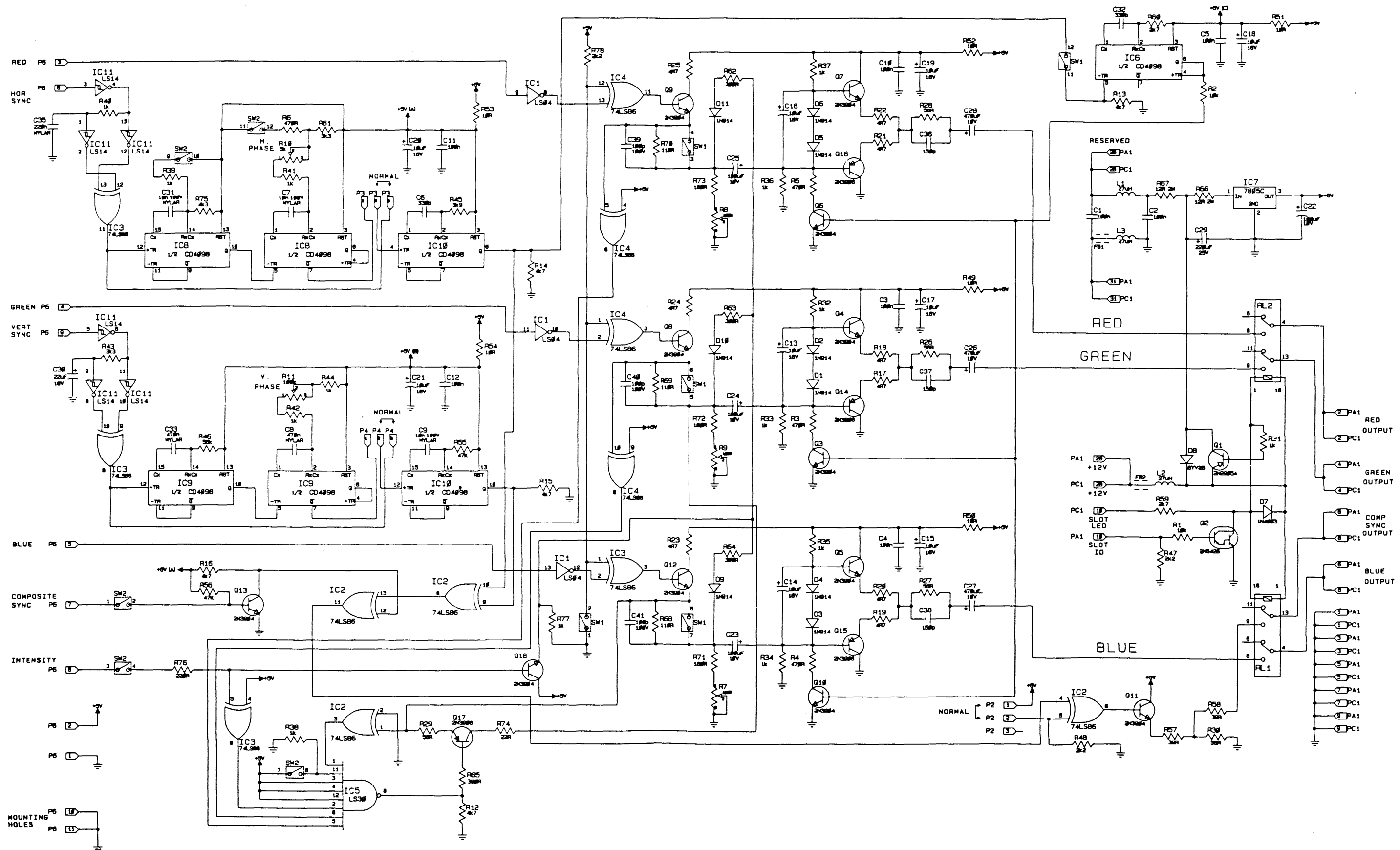
PS/2-GP Analog Interface Schematic (Sheet 2 of 2)



© COPYRIGHT 1988, ELECTROHOME LIMITED  
PROPRIETY - DO NOT COPY

PC Enhanced Interface Schematic





GP TTL Interface Schematic

# ELECTROHOME

Visionary Thinking™

**Electrohome Limited**  
809 Wellington Street North  
Kitchener, Ontario  
Canada N2G 4J6  
Telephone (519) 744-7111  
1-800-266-2171  
Fax (519) 749-3136

**Electrohome USA (1989), Inc.**  
9216 Bally Court  
Rancho Cucamonga  
California  
91730-5835  
Telephone (909) 466-3816  
Fax (909) 466-3824

**Electrohome USA (1989), Inc.  
Service Branch**  
181 Cooper Avenue  
Suite 100  
Tonawanda, New York  
14150  
Telephone (716) 874-3630  
Fax (716) 874-4309

**Electrohome Europe Limited**  
ImagePoint  
58 Suttons Park Avenue  
Reading, Berkshire  
RG6 1AZ  
United Kingdom  
Telephone +44 1734 266300  
Fax +44 1734 266322

**Electrohome Asia**  
80 Marine Parade Road  
#21-06 Parkway Parade  
Singapore 449269  
Telephone 65-346-5515  
Fax 65-346-5304