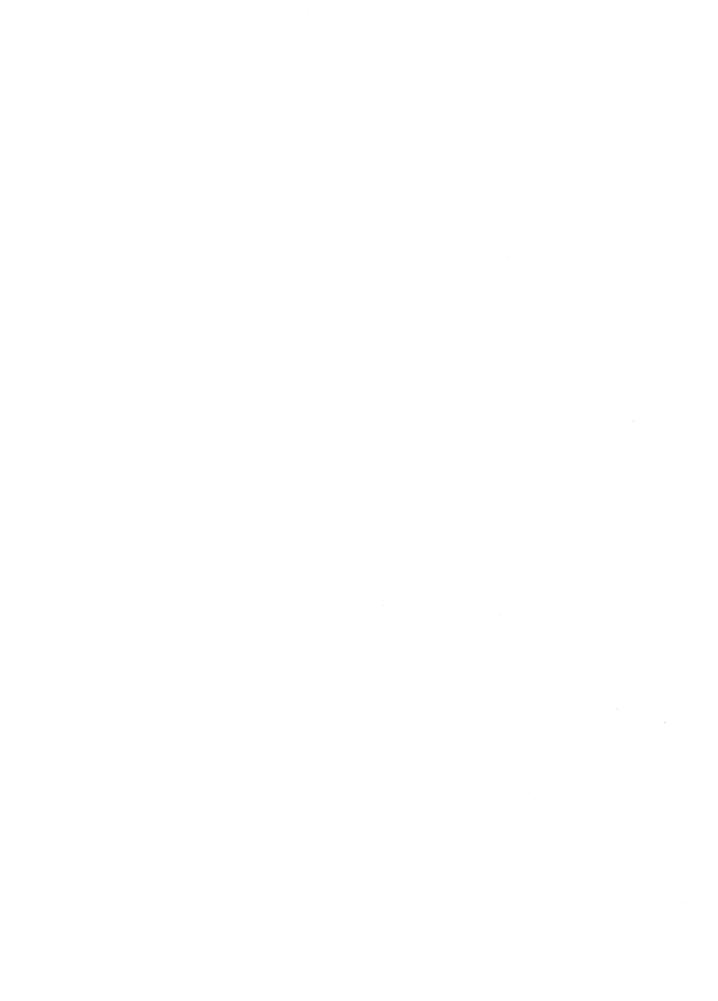
OPERATORS MANUAL

SI-5320E SYSTEM INTERFACE





INTRODUCTION

Before operating System Interface, please read this manual carefully and completely. This manual will provide you with a full understanding of the many features, and the necessary instructions for adjustment and operation of the equipment. Procedures which require the opening of equipment and contact with electrical components should be performed by service personnel. For continued safe and reliable operation, use only cables supplied by the manufacturer for power and video connections. Adhere to all notes and warnings.

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WARNING: THIS APPARATUS MUST BE EARTHED.

IMPORTANT

Mains Supply

The wire in the mains lead are coloured in accordance with the following code:



If these colours do not correspond with the terminal identifications of your plug connect as follows:

Blue wire to terminal coded N (Neutral) or coloured Black, Brown wire to terminal coded E (Live) or coloured Red. Green-and-Yellow wire to terminal coded E (Earth), the safety earth symbol $\frac{1}{3}$ or to the terminal coloured green or green-and-yellow

■ Wherever mentioned in this manual, *denotes Registered trademarks of the International Business Machines Corporation.

IMPORTANT SAFEGUARDS

The following are important safety instructions designed to ensure the long life of your System Interface and to prevent fire and shock hazards. Be sure to read these safety instructions carefully and follow all warnings given below.

Installation

Place the System Interface on a smooth, stable, level surface in an area free from dust and moisture. Do not place the equipment in direct sunlight, near stoves or other heat radiating appliances. Smoke, steam and exposure to direct sunlight could adversely affect the internal components. Avoid rough handling when moving your equipment as a strong shock could damage its internal components. If installing rack mountings, use only parts recommended or supplied by the manufacturer. Observe all instructions and warnings.

Power Supply

Your equipment is designed to operate on $220-240 \,\mathrm{V} \sim 50\,\mathrm{Hz}$ power supply. Make sure your local power supply matches these requirements before operation. If not, consult with your dealer to arrange for the required modifications before operation.

Handle the power cord carefully and avoid excessive bending. A damaged cord may cause electric shock or fire.

If the System Interface is not to be used for an extended period, remove the plug from the wall outlet.

Cleaning

Disconnect AC power from the System Interface before cleaning.

Clean the cabinet and front panel periodically with a soft cloth. If heavily stained, use a mild detergent solution. Never use strong detergents or solvents such as alcohol or thinner to clean your unit.

Fire and Shock Precautions

Adequate ventilation must be provided to prevent heat build-up inside the equipment. Make sure the ventilation holes are unobstructed.

Keep the inside of the equipment free from foreign objects, such as hairpins, nails, paper, etc., and do not attempt to retrieve such objects yourself or insert metal objects such as wire and screw-drivers inside the unit. If a hazardous object falls inside the equipment, unplug it immediately and call a qualified electrical repairman for removal.

Do not set liquids on top of the equipment.

SPECIFICATIONS

SYSTEM INTERFACE

1. Input VIDEO 1 : NTSC, PAL, SECAM, NTSC 4.43 (BNC) 1.0 Vp-p 75Ω Positive with LOOP THRU

VIDEO 2 : NTSC, PAL, SECAM, NTSC 4.43 (BNC)

1.0 Vp-p 75Ω Positive

or (Switchable)

S-VIDEO Y 1.0 Vp-p 75Ω Positive C 0.28 Vp-p 75Ω (Burst level)

RGB 1 : * CGA, * EGA, * PGA, * VGA, * 8514A Adapter

9-Pin D

RGB 2, RGB 3 : R.G.B signal (BNC) 0.7-1.5 Vp-p 75Ω Positive

H.V sync 0.7-4.0 Vp-p 75Ω Negative or Positive

G. sync 0.3-0.6 Vp-p 75Ω Negative

AUDIO : $0.4 \text{ Vrms } 47\text{k}\Omega$ (Phono) STEREO

2 Channels for VIDEO 1, VIDEO 2 1 Channel for RGB (Selectable)

2. Output : R.G.B. signal 0.7 Vp-p 75Ω Positive (BNC)

H.V sync 1.0 Vp-p 75Ω Negative (BNC) AUDIO 0.4 Vrms $1k\Omega$ (Phono) STEREO

3. Control : INTENSITY (CGA, EGA ONLY)

Remote control : Power ON/OFF

Input signal select R.G.B.-Gain

Color, Tint, Sharpness

Serviceman control : Brightness, Contrast, Color, Tint, Sharpness

(Preset VIDEO only)

4. Text color : White, Red, Green, Blue, Yellow, Cyan, Magenta

(RGB 1, Digital input only)

5. Indicator : Power indicator

Signal select indicator

(VIDEO 1, VIDEO 2, RGB 1, RGB 2, RGB 3)

Video system indicator

(NTSC, PAL, SECAM, NTSC 4.43)

Function indicator

(R.G.B.-Gain, Color, Tint, Sharpness)

Control level indicator

6. EXTERNAL control : Power ON/OFF

Input signal select
Picture mute

7. Power consumption : 33W

8. Power supply : 220-240V~50Hz

9. Cabinet dimension : 430 (W) \times 350 (D) \times 84 (H) mm

16-15/16×13-13/16×3-5/16 inches

10. Weight : 6kg, 13.2lb

11. Supplied accessories : Coaxial cable 16m, 52'6"

Control cable 16m, 52'6"

AC line cable

9 pin-9 pin PC interface cable 1.8m, 6ft

9 pin-15 pin adapter Rack mount kit Operators manual

12. Environmental

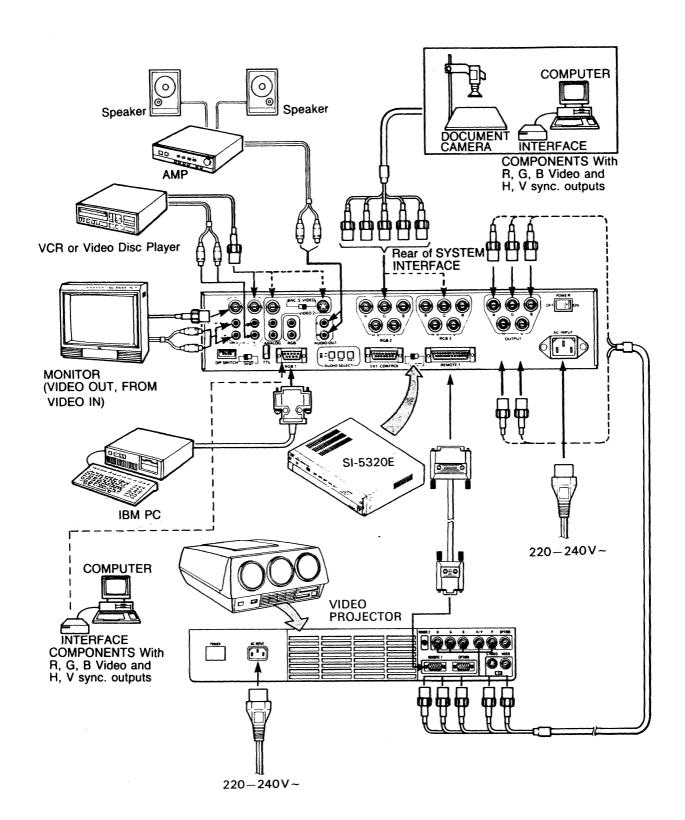
Temperature : 0 to 40 degrees C

Humidity : 0 to 90% non-condensing Storage : -10 to 50 degrees C

Specifications are subject to change without notice.

1. CONNECTION EXAMPLE

The diagram below shows examples of the various connections possible with the System Interface and video projector.

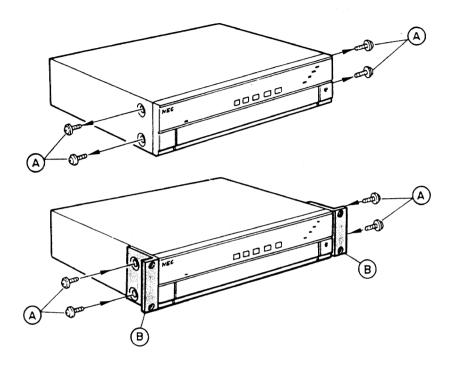


2. RACK INSTALLATION

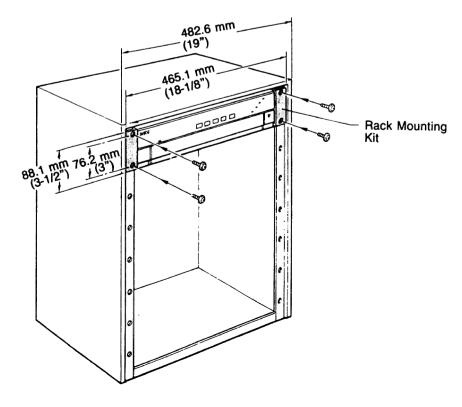
For safety, use only the supplied rack mounting kit when installing the bracket.

NOTE: Please follow EIA standards (2U) when using this rack.

- 1 Remove the 4 screws (A) from the System Interface.
- 2 Secure the rack mounting (B) to the System Interface with the screws (A) removed in step 1 above.

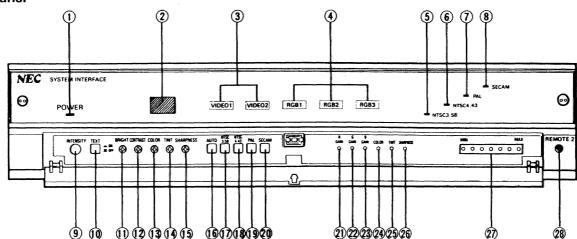


3 Attach the EIA standard rack to the System Interface and secure with the screws.



3. CONTROL POSITION AND FUNCTIONS

Front Panel



- POWER Indicator Lights green when the set is started up and lights red when the set is stand by.
- 2) Infrared receiver section....... Receives the signal from the wireless remote control.
- ③ VIDEO 1, VIDEO 2 Indicator...... The selected signal lights up: VIDEO 1 or VIDEO 2
- (4) RGB1, RGB 2, RGB 3 Indicator.... The selected signal lights up: RGB 1, RGB 2 or RGB 3
- ⑤ NTSC3.58 Indicator..... Lights up when an NTSC3.58 signal is received.

PAL
NTSC4,43

NTSC3,58

- 6 NTSC4.43 Indicator..... Lights up when an NTSC4.43 signal is received.
- 7) PAL Indicator...... Lights up when a PAL signal is received.
- ® SECAM Indicator..... Lights up when a SECAM signal is received.

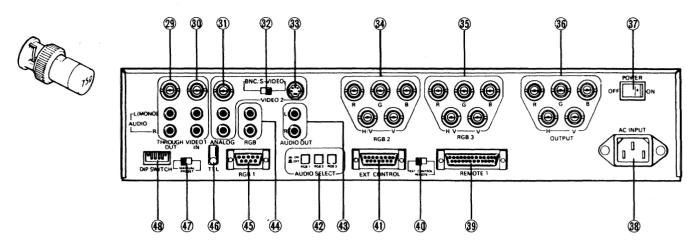
No. 2, 3 or 4 on the back of the system interface, regardless of the software program used. When this switch is OFF, the color of the software program is displayed. (See p.12 "Dip

Switches")

BRIGHT CONTRAST COLOR TINT SHARPNESS	
⊕ ⊕ ⊕ ⊕ ⊕ ① BRIGHT Control	inger to the second of the sec
(1) CONTRAST Control	
(13) COLOR Control	Items (1)+(15) are serviceman controls. They are preset at the factory and should not require any further adjustments
(1) TINT Control	
(6) AUTO Button	Press this button for automatic selection of NTSC3.58,
AUTO 358 443 PAL SECAM	NTSC4.43, PAL or SECAM signals connected to the VIDEO 1 (IN) or VIDEO 2 terminal on the rear panel.
	NOTE: When Search and Fast Forward are used on a VCR or video disk player with poor picture quality, select the signal to be input using the below buttons ① to ⑩.
① NTSC3.58 Button	Press when the NTSC3.58 signal is weak and the AUTO select button does not operate correctly.
(18) NTSC4.43 Button	Press when the NTSC4.43 signal is weak and the AUTO select button does not operate correctly.
19 PAL Button	Press when the PAL signal is weak and the AUTO select button does not operate correctly.
② SECAM Button	Press when the SECAM signal is weak and the AUTO select button does not operate correctly.
21 R.GAIN Indicator	Lights up when the R Gain adjustment is selected with remote control.
② G.GAIN Indicator	Lights up when the G Gain adjustment is selected with the remote control.
3 B.GAIN Indicator	Lights up when the B Gain adjustment is selected with the remote control.
② COLOR Indicator	Lights up when the Color adjustment is selected with the remote control or on back of the projector.
②5 TINT Indicator	Lights up when the Tint adjustment is selected with the remote control or on back of the projector.
® SHARPNESS Indicator	Lights up when the Sharpness adjustment is selected with the remote control or on back of the projector.
② Level Indicator	Displays adjustment level.
® REMOTE 2 Jack	The wired remote control plug is connected to this jack.

Rear Panel

75 Ohm terminator plug Connect to VIDEO 1 (OUT)



29 VIDEO 1 (OUT) Terminal

(BNC Type) An external monitor is connected to this terminal to output the VIDEO 1 (IN) signal. If it is not connected, be sure to insert the 75 ohm terminator plug.

30 VIDEO 1 (IN) Terminal



(BNC Type) External video equipment is connected to this terminal. When the equipment is connected, be sure to insert the 75 ohm terminator plug to the VIDEO 1 (OUT) terminal (29) or connect an outside monitor.

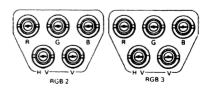
(3) VIDEO 2 Terminal (BNC Type) External video equipment is connected to this terminal.

3 BNC/S-VIDEO Switch...... Set to BNC when VIDEO 2 input is connected to the BNC terminal (31). Set to S-VIDEO when VIDEO 2 input is connected to S-VIDEO connector 33.

33 VIDEO 2 Terminal

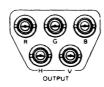


(S-VIDEO Type) Connect external video equipment with S-VIDEO output to this terminal.



(3) RGB 2 Terminal (BNC Type) This is an Analog RGB input terminal. External equipment with R, G, B, H and V output are connected to these terminals. Connect the RGB connection cable to the correct corresponding terminal. If using equipment with a combined Horizontal and Vertical sync output, connect it to the H/V terminal. Connect the horizontal sync signal to H/V and the vertical sync signal to the V terminal, when HV separate sync equipment is used.

(35) RGB 3 Terminal (BNC Type) This is an analog RGB input terminal. It should be connected the same as RGB 2 34.



③ OUTPUT Terminal (BNC Type) These terminals are connected to the R, G, B, H and V input terminals of the projector with the supplied RGB cable. Verify that the R, G, B, H and V terminals of the projector are connected to the corresponding R, G, B, H and V terminals of the System Interface.

(3) POWER Switch...... This is the main power switch for the System Interface. 3 AC Input...... The supplied power cord is connected to this terminal. ③ REMOTE 1 Terminal...... Attach the connector plug from the supplied 15 pin to 25 pin. remote cable and secure it with the 2 screws. Install the 15 pin plug on the other side of the cable onto the projector in the same way. 40 EXT CONTROL/ REMOTE Switch...... When an outside control is used, this switch should be set to the EXT CONTROL side. When the supplied remote control for the projector is used, Set to the REMOTE side. Turn the POWER switch OFF when setting this switch. 4) EXT CONTROL Terminal This terminal is used, when power ON/OFF, input selection and PICTURE MUTE are operated externally (by external control). Select either external control or remote control by setting the EXT/REMOTE Switch @ in the correct position. The connection of each terminal is as follows: NOTE: Please be aware that ON/OFF, input selection and crafting PICTURE MUTE by the projector's remote control remains cap not be used at such times. Pin Assignment for **EXT CONTROL Terminal** 10, 11, 12, 13, 14 and 15 are ground. D-SUB Type 15PIN 8 7 6 5 4 3 2 1 (5 (A) (1) (1) (1) (1) (1) FUNGTION NO. (1) and (2) POWER ON SHORT POWER OFF **OPEN** FUNCTION Plot No. 3 and 1) (1) and (2) (5) and (3) VIDEO1 OPEN OPEN OPEN VIDEO2 SHORT OPEN OPEN RGB1 OPEN

RGB2

RGB3

FUNCTION Pin No.

PICTURE MUTE ON

PICTURE MUTE OFF

OPEN

SHORT

SHORT

6 and 60 34

SHORT

OPEN

OPEN

SHORT

SHORT

OPEN

OPEN



(4) AUDIO SELECT Button...... This is the switch for selecting the audio signal connected to the RGB AUDIO IN 44. When the RGB 1 Button is pressed and switched to RGB 1, the RGB AUDIO IN (44) audio signal is output to AUDIO OUT (3). When OFF, nothing is output. RGB 2 and RGB 3 are also operated in this manner.

43 AUDIO OUT Terminal Connects to an external audio amplifier.



44 RGB AUDIO IN Terminal Connects to the audio output from an RGB source when audio is desired with either RGB 1, 2 or 3.



patible with the *IBM PC, *PC/XT, *PC/AT, *PS-2 or other IBM compatible computers. (See p.16 on 9 Pin RGB Signals.)



(6) ANALOG/TTL Switch...... Switch to match the output signal of the computer connected to RGB 1.





(4) MANUAL/PRESET Switch....... When set to PRESET, the automatic sync function works in the *IBM mode and adjusts itself to the scanning frequency and color requirements of the IBM compatible graphics adapter being used. When this switch is set to MANUAL, select the number of colors (8/16/64) required for the computer by using the dip switches 5 and 6 (See Table 1).

DIP SWITCH COLOR MODE No.5 No.6 8 colors ON OFF ON ON 16 colors **OFF** ON 64 colors UNUSED **OFF OFF**

TABLE 1

When computers are used that do not provide compatibility with *IBM, the maximum 64 color mode can be set by using dip switches Nos. 5 and 6 as shown on Table 1 at the left.

NOTE: These switches must be correctly set in relation to the computer signal being used. Refer to the computer operators manual for information on how many colors the adapter can display.

TABLE 2 TEXT SWITCH COLOR SELECTION

TEXT	DIP SWITCH			
COLOR	No.2	No.3	No.4	
COLOR	R	G	В	
RED	OFF	ON	ON	
GREEN	ON	OFF	ON	
BLUE	ON	ON	OFF	
YELLOW	OFF	OFF	ON	
CYAN	ON	OFF	OFF	
MAGENTA	OFF	ON	OFF	
WHITE	OFF	OFF	OFF	

Nos. 2, 3 and 4

When the TEXT button (10) is turned ON, the color selected on dip switches 2, 3 and 4 will be displayed regardless of the software used. Refer to Table 2 at the left for the setting of Nos. 2, 3 and 4.

NOTE: This function is valid only in the RGB 1 and TTL modes.

No. 1

The RGB 1 mode can be selected for *PC/AT or *PS-2 using this switch. (See Table 3.)

TABLE 3
PC/PS-2 SELECTION

IBM * SELECT	No.1
IBM PC/AT	ON
PS-2	OFF

NOTE: When *IBM PC/AT or compatible equipment is connected to the RGB 1 terminal, set switch No. 1 to ON. When *IBM PS-2 or compatible equipment is connected to the RGB 1 terminal, set switch No. 1 to OFF.

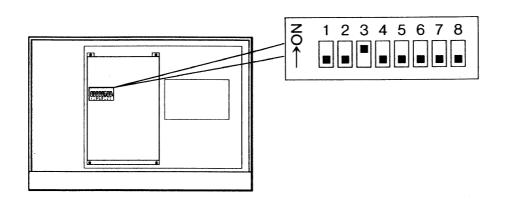


This illustrates the DIP switch setting at the time of factory shipment.

No. 1	When No. 1 is in the ON position with the main power ON, the adjustment data returns to the initial condition.
No. 2	Not used.
No. 3	Set to ON when using with Projector.
	Set to OFF when using the System
	Interface alone.
Nos. 4, 5, 6, 7	These are service controls.
and 8	Set them to OFF constantly.

PIN No.	i ON	OFF	Setting at the time of Factory shipment
11.	Initialize	Normal condition	OFF
2 ,	Not	used	OFF
3	When used with Projector	When used alone	ON
4,5,6, 7,8	ŀ	controls	OFF

Internal control PWB



4. CHANGING THE RGB INPUT SIGNAL

When the Projector is shipped from the factory, the inputs are adjusted to accept the signals as shown on Operators Manual for projector. If inputting a different signal, it is necessary to adjust in the following order.

(1) To Change RGB 2, 3 Input Signal

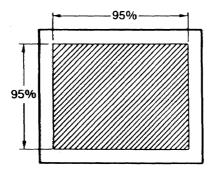
The RGB 2, 3 inputs have been adjusted at the factory.

If different signals are used, follow the steps outlined below.

- 1. Cancel the recorded signal and register a new signal. (See Operators Manual for projector")
- 2. R GAIN, G GAIN, B GAIN
 - a) Press the PICTURE FUNCTION key while pressing the CTL key on the remote control to select the desired color gain and light R, G or B GAIN indicator on the System Interface. The "R, G or B GAIN" message will be displayed on the screen.

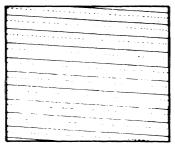
NOTE: You must have a picture displayed on the screen - not the test pattern.

- b) Connect an oscilloscope to selected color TEST point R-GAIN (TP607), G-GAIN (TP608), and B-GAIN (TP609).
- c) Adjust the remote control cursor keys to obtain a value of 1.4 Vp-p on the oscilloscope.
- 3. H POSITION (Phase Adjustment)
 - a) Press the H POSITION key on the remote control to display "H POSITION" on the screen.
 - b) Press the remote control cursor keys to position the picture in the center of the screen.
- 4. H WIDTH, V HEIGHT (Amplitude Adjustment)
 - a) Press the H WIDTH key on the remote control to display "H WIDTH" on the screen.
 - b) Press the remote control cursor keys to obtain a scan of 95% in proportion to the screen.
 - c) In the same manner, adjust the V HEIGHT.

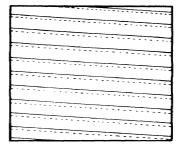


Picture area

- 5. V HOLD (Vertical Sync Fine Adjustment)
 - a) Press the V HOLD key on the remote control to display "V HOLD" on the screen.
 - b) Press the remote control cursor keys to obtain a picture without pairing.



Normal Condition



Pairing Occurs

NOTE: Store the adjustment data in the memory by pressing the STORE key twice after the above adjustments have been completed.

- 6. Convergence and Focus Adjustment
 Carry out convergence and focus. (See Operators Manual for projector.).
- (2) To Change RGB 1 Input from *IBM PC/AT to *PS-2
 - 1. Set No. 1 pin of DIP switch on the rear panel of the System Interface to OFF to select PS-2 mode.
 - 2. Connect the input signal. There are 4 modes for *IBM PS-2 as in table 4, therefore, carry out the adjustment for each mode.

Adjust using the same procedures as in (1), steps 1-6 above.

TABLE 4

Sync.	VGA Mode	
Herist	eran Vive	VGA Mode AByvirine
Positive	Negative	350 line
Negative	Positive	400 line
Negative	Negative	480 line
Positive	Positive	8514 A

5. 9 PIN RGB 1 TERMINAL

Switching pin No. 1 of the DIP switch selects either *IBM PC/AT or PS-2 for RGB 1. (See page 13.)

- (1) When selecting *IBM PC/AT
 - 1. Horizontal frequencies: Automatically scanning

15-20 kHz

*CGA mode

20-26 kHz

*EGA mode

Over 26 kHz

*PGA 480 mode

You can adjust the Bright, Contrast, R, G, B GAIN, H POSITION, H WIDTH, V HEIGHT, V HOLD, focus and convergence for these 3 modes.

2. ANALOG/TTL Switching

The ANALOG/TTL switch selects either TTL or ANALOG of the computer. (See page 12 46.)

- 3. Color Mode (When the MANUAL/PRESET switch is PRESET.)
 - V Negative

64 colors

V Positive

16 colors

4. Connecting *IBM PC, *PC/XT and *PC/AT

Select the IBM mode by setting the MANUAL/PRESET switch to PRESET. This terminal adjusts itself to the scanning frequencies for 3 modes (*CGA, *EGA and *PGA480 mode), *PGA480/400, and color requirements of the IBM compatible computer to be used.

(2) When selecting *IBM PS-2

The multi-sync function automatically adjusts itself to the 4 modes as Table4 above.

When using non-IBM computers, set the MANUAL/PRESET switch to MANUAL and select the number of colors by setting pins 5 and 6 of DIP switch when the input signal of the computer being used is TTL. (See page 12.)

9 Pin RGB Signal Composition

9 pin Interface Cable's Pin Assignments and Signal Levels for 9 Pin RGB

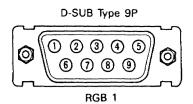


Table 1 pin assignment of IBM graphics adapter

IBM Adapters Pin Assignment	Color Graphics TTL 16 Colors	Enhanced Graphics TTL 64/16 Colors	Professional Graphics Analog	Video Graphics Analog
1	Ground	Ground	*RED	▲RED
2	Ground	Secondary RED	*GREEN	▲GREEN
3	RED	Primary RED	*BLUE	▲BLUE
4	GREEN	Primary GREEN	Composite Sync.	Horizontal Sync.
5	BLUE	Primary BLUE	Mode Control	Vertical Sync.
6	Intensity	Secondary GREEN/Intensity	RED Ground	RED Ground
7	Non-Connection	Secondary BLUE	Green Ground	GREEN Ground
8	Horizontal Sync.	Horizontal Sync.	BLUE Ground	BLUE Ground
9 7 7	Vertical Sync.	Vertical Sync.	Ground	Ground

Table 2 pin assignment of other computers

Signal		TIL			ANALOG	
Pin Assignment	8 Colors	16 Colors	64 Colors	Separate Sync.	Composite Sync.	Sync. on Green
1		Ground		▲RED		
2	_	_	Secondary RED	A CARPEN		GREEN OH/V Sync.
3	RED		Primary RED		▲BLUE	
4	GRI	EEN	Primary GREEN	H. Sync.	H/V Sync.	_
5	BLUE		Primary BLUE	V. Sync.	-	_
6	- Intensity Secondary GREEN					
			Secondary BLUE	Ground		
8	H. Sync./H/V S		ync.			
9	V. Sync.					

[&]quot;-" means GROUND or NON-CONNECTION

SIGNAL LEVEL

All signal levels, except for those listed below, are TTL.

[&]quot;*" means 0.6 Vp-p (VIDEO)

[&]quot;O" means 0.7 Vp-p (VIDEO), 0.3 Vp-p (SYNC.)

[&]quot;▲" means 0.7 Vp-p (VIDEO)

TROUBLESHOOTING

Problem	Check/Solution
No power	 Is the projector plugged into an active AC outlet and the power switch ON? Is the STAND-BY indicator on the projector lighted? If it goes on and off, make sure that the System Interface and the remote cable are securely connected. Is the POWER indicator on the System Interface lighted in red? Is the System Interface plugged into an active AC outlet and the power switch ON? Is the remote cord between the System Interface and projector connected and properly secured? Is the remote control unit plugged in (wired) and the power button ON? Is the remote control unit (wireless) within the effective operating distance when the power button is pressed?
No picture	 Are the R, G, B, H and V leads correctly connected between the System Interface output terminals and the projector input terminals? (page 6) Is the correct video or RGB input selected? Is the external component properly connected? (page 6) Is the external component plugged into an active AC outlet and power ON? If using an *IBM personal computer, is the TTL, ANALOG switch in the correct position? (page 12) Is the test mode selected without any beam turned ON? Is BEAM "OFF" selected on the external control?
Picture is not clear	 After inputting a new signal, carry out electrical focus adjustments. Is the installation of the projector set correctly? Is level of a signal normal? Be sure to adjust the RGB gain control of the System Interface to obtain a value of 0.7Vp-p. Is adjusting convergence correct?
No color	 Is the correct system button on the System Interface depressed? If using an *IBM computer, confirm the correct setting of the TEXT button and the DIP switch on the System Interface (page 8, 12)

Problem	Check/Solution
Color unusual	 Are the R, G, B, H and V leads correctly connected between the System Interface output terminals and the projector input terminals? (page 6) Are the controls in the control compartment of the System Interface correctly set for the R, G, B input signal? If not using an IBM computer confirm that the signal is compatible.
No operation from remote control	 Is the wired remote control plugged into the System Interface or the projector? If using the remote control unit as the wireless confirm you are within the effective operating range. Is the remote lead between the System Interface and the video projector connected correctly? (page 6) Is the EXT CONTROL/Remote switch on the rear panel of the System Interface in the correct position?

