HIGHLITE

5000gv

The HIGHlite display range of

SUPER-HIGH-BRIGHTNESS DIGITAL VIDEO PROJECTORS

HIGHlite 5000GV

USER MANUAL

Revision A - 01/02/2000

DIGITAL **PROJECTION**

Declaration of Conformity

Directives covered by this Declaration
89/336/EEC Electromagnetic Compatibility Directive, amended by 92/31/EEC & 93/68/EEC.
73/23/EEC Low Voltage Equipment Directive, amended by 93/68/EEC.

Products covered by this Directive
Large Screen Projector type **HIGHlite 5000GV**.

Basis on which Conformity is being declared
The products identified above comply with the protection requirements of the above EU directives, and the manufacturer has applied the following standards:-

EN 55022:1995 - Limits and Methods of Measurements of Radio Disturbance Characteristics Information Technology Equipment.

EN 55024:1998 - Limits and Methods of Immunity Characteristics of Information Technology Equipment.

EN 61000-3.2:1995 - Harmonic Current Emissions.

EN 61000-3.3:1995 - Immunity to Voltage Fluctuations and Flicker.

Conformance with the Low Voltage Directive is to EN 60950:1992 +A1 +A2 +A3 +A4 +A11 and is covered by TUV certificate No. S1 20500 13 dated January 6, 2000 and a copy of which is available for inspection by the relevant enforcement authorities. The CE mark was first applied in 2000.

Signed:

Authority: D.J. Quinn, Product Development Director

Date: 29th January 2000

Attention!
The attention of the specifier, purchaser, installer, or user is drawn to special measures and limitations to use which must be observed when these products are taken into service to maintain compliance with the above directives. Details of these special measures are available on request, and are also contained in the product manuals.

The technical documentation required to demonstrate that the products met the requirements of the Low Voltage Directive has been compiled by the signatory below and is available for inspection by the relevant enforcement authorities. The CE mark was first applied in 2000.

Supplier's Declaration of Conformity

Declaration of Conformity with Electromagnetic Compatibility Standards as required under the Radiocommunications Act.

We, Digital Projection Limited of Greenside Way, Middleton, Manchester, UK, M24 1XX declare under our sole responsibility that the product:

DLP projector model - **HIGHlite 5000GV**

to which this declaration relates is in conformity with the following standards:

Title	*Number*	*Date of Issue*
Limits and methods of measurement of radio	AS/NZS 3548	1995
disturbance characteristics of information	Amdt 1/2	1997
technology equipment Class B.		

Disturbance Characteristics of
Information Technology Equipment

Class A

Signed: _____

Authority: D.J. Quinn, Product Development Director

Date: 29th January 2000

Revision Record

From time to time revisions will be issued to this manual. To maintain a correct and up to date copy of the manual it is important that the instructions given in revision notices are carried out.

The person carrying out the revision should complete the table below.

Revision No	Revision Details	Date Revised

Introduction

The **HIGHLite 5000GV** is one of the finest, most technically advanced projectors available today. The **HIGHLite 5000GV** enables you to project exceptionally bright, precise images up to 500 inches across (measured diagonally) from your PC or Macintosh computer, VCR, document camera, laser disc player, DVD player and even an HD VCR or HD laser disc player.

Please read the following before proceeding

This initial release (Revision A) of the **HIGHLite 5000GV** User Manual has been designed to provide basic information on the configuration and use of the projector. A complete version of this manual will be available from Digital Projection in the near future. Digital Projection disclaims any direct or indirect damages resulting from the use of any information in this initial release.

An Outline of Contents is given overleaf which provides an overview of the five sections, A to E, in this manual and lists all the major topics covered along with their location. This outline allows the user to direct themselves to the appropriate section of this manual where a detailed contents page will provide the exact location of the topic required. Section identifiers are also provided on the outside edge of the pages to allow the quick location of individual sections.

The user is strongly recommended to read Section A: Overview before unpacking or switching on the projector, paying particular attention to the safety warnings provided.

Disclaimer Digital Projection makes a sincere effort to ensure accuracy and quality of it's published materials; however, no warranty, expressed or implied, is provided. Digital Projection disclaims any direct or indirect damages resulting from the use of any information in this manual.

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Outline of Contents

INTRODUCTION

Section A: Overview

OVERVIEW

Packaging

Projector Packaging

The following components should be contained within the projector packaging. Should any of the components be absent, please contact the dealer who supplied the projector, or Digital Projection Limited (Digital Projection Inc. if in North America) immediately.

1 x **HIGHlite 5000GV** Projector
1 x Remote Control Unit with Remote Cable (wireless/wired)
1 x AC Power Cable
1 x AC Power Cable Stopper
1 x DFP Cable
2 x AAA Batteries
1 x User Manual
1 x Foam Dust Cap

All packaging should be retained to provide maximum protection during future shipping of the projector.

Lens Packaging

Lenses are supplied as individual items and the packaging may differ depending on the version ordered. Please refer to the instructions supplied with your lens.

Safety Advice

The safety instructions provided in this manual are to ensure the long life of your projector and to prevent fire and shock. Please read them carefully and heed all warnings.

Fire and Shock Precautions

Ensure that there is sufficient ventilation and that vents are unobstructed to prevent potentially dangerous concentrations of ozone and the build-up of heat inside your projector. Allow at least 20cm (8") of space between your projector and a wall. Allow at least 50cm (20") of space between the ventilation duct outlet and object.

Ensure that nothing can be spilled on, or dropped inside the projector. If this does happen, switch off and unplug the mains supply immediately. Do not operate the projector again until it has been checked by qualified service personnel.

Do not insert any metal objects such as a wire or screwdriver into your projector.

Lamp Precautions

Due to the lamp being sealed in a pressurised environment, there is a small risk of explosion, if not operated correctly. There is minimal risk involved, if the unit is in proper working order, but if damaged or operated beyond the recommended 1500 hours, the risk of explosion increases.

The projector has a warning system that displays the following message when you reach 1500 hours of operation - Lamp Running Time is Over 1500 Hours!!. When you see this message please contact your Digital Projection dealer for a replacement lamp.

OVERVIEW

gas, and will not cause harm if kept out of your eyes. If your eyes have been exposed to this gas, please flush your eyes out with water immediately and seek immediate medical attention. Do not rub your eyes as this could cause serious injury.

WARNING: Do not look into the lens while the projector is on. Serious damage to your eyes could result.

CAUTION: The high pressure lamp may explode if improperly handled. Refer all servicing to qualified service personnel.

Power Supply

The projector is designed to operate on a power supply of 1.0kW 100-120VAC / 1.5kW 200-240VAC 50/60Hz. Ensure that your power supply fits this requirement before attempting to use your projector.

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

Running the power cord and the RGB cable close to each other can cause beat noise. If this happens, keep the two separated so that beat noise is not generated.

If the projector is not be used for an extended period of time, disconnect the plug from the power outlet. Do not unplug the power cable from the wall outlet under the following circumstances, doing so may cause damage to the projector:

a) Immediately after the power cable is plugged into the wall outlet (the POWER indicator has not changed to a steady amber glow).

b) Immediately after the lamp has been switched off. After the projector is turned off with the POWER OFF button the cooling fan continues to operate for 3 minutes while the Two Digit INDICATOR "--" flashes.

c) While the hour glass icon or the message 'Please wait a litttle' is being displayed.

Installation Advice

The projector should be placed on a flat, level surface and in a dry area free from dust and moisture. Do not place the projector in direct sunlight, near heaters or heat radiating appliances. Exposure to direct sunlight, smoke or steam could harm internal components.

The projector should always be handled with care. Dropping or jarring the projector could damage internal components.

If you wish to have the projector installed on the ceiling do not attempt to install the projector yourself. The projector must be installed in accordance with any local building codes by qualified technicians in order to ensure proper operation and reduce the risk of bodily injury.

Initial Preparation

Pre-Installation Check

Before mounting the projector in its intended location, the following pre-installation routine must be performed:

1. Install the AC Power Lead

2. Install the projector lens.

2. Ensure all the air flow inlet and outlet ducts are clear from obstruction.

3. Switch on the projector and wait for approximately 30 seconds.

4. Insert batteries into the remote control unit (see overleaf).

5. With the screen or a wall illuminated, confirm the Menu System is operational by pressing MENU on remote control.

6. Power down the projector and disconnect from the mains supply.

7. Continue with the system installation.
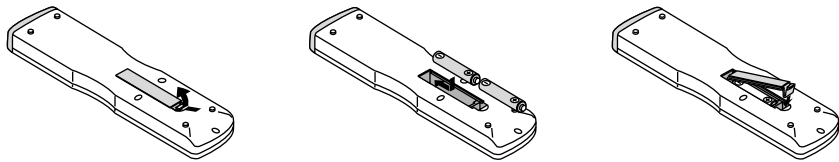
OVERVIEW

OVERVIEW

Remote Control Unit - Battery Installation

The remote control unit can either be hard wired to the projector or powered by 2 AAA (HP16/RO3/LR03) alkaline batteries.

The battery compartment is located on the back of the remote control. To remove the compartment cover press and open as shown below.
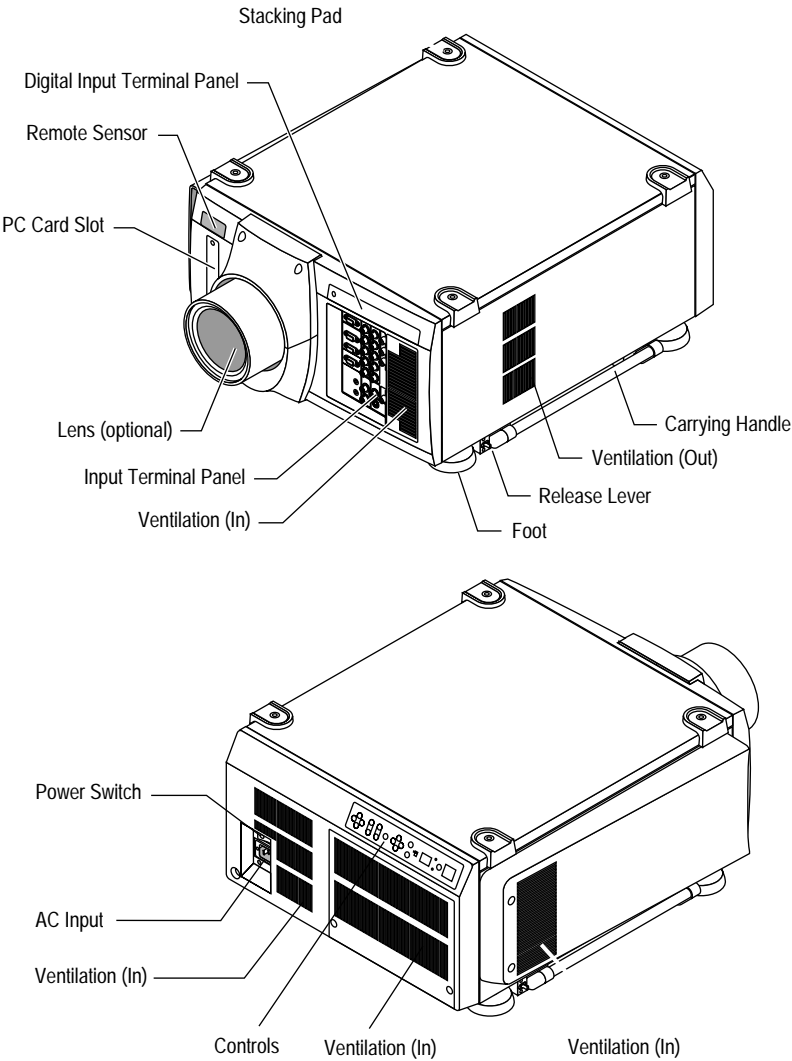
Insert the first battery into the compartment according to the (+) and (-) indications inside the case and it to the back of the compartment. Insert the second battery by pivoting it against the first and pushing down into place.

When the batteries are securely in place, replace the battery compartment cover.

Components

Part Names

Stacking Pad

Digital Input Terminal Panel

Remote Sensor

PC Card Slot

Lens (optional)

Input Terminal Panel

Ventilation (In)

Carrying Handle

Ventilation (Out)

Release Lever

Foot

Power Switch

AC Input

Ventilation (In)

Controls

Ventilation (In)

Ventilation (In)

Control Panel

The control panel at the rear of the projector provides all the main controls necessary to operate the projector.
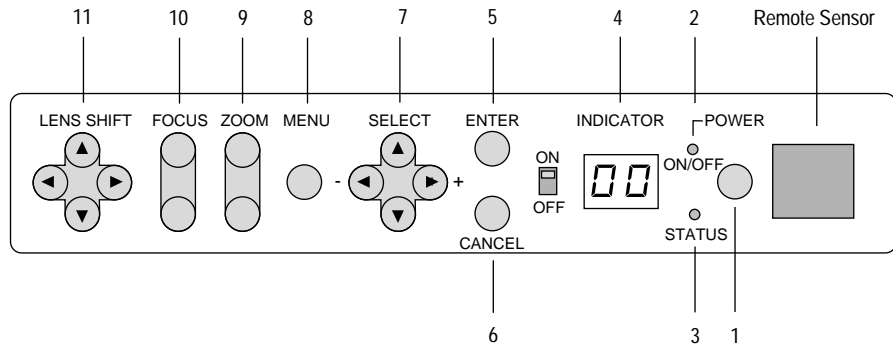
1 - Power Button
Press to turn the projector on when the projector is in the standby condition (Main Power switch must be on and the POWER indicator lit amber). Press and hold for 2 seconds to turn off the projector.

2 - Power LED
The power indicator is a dual colour LED. When the projector is on the indicator is green. When the projector is in standby mode the indicator is amber.

After the projector is turned off, the indicator "--" flashes for three minutes to show that the cooling fan is working. Do not turn off the main power during that time. After "--" stops flashing, the POWER indicator will change to a steady amber glow and the projector will be in the stand-by mode. The main power can then be turned off.

3 - Status LED
When the projector is used with the ISS-6020 switcher on SW1 level or SW2 level mode, this indicator flashes when the projector is not connected with the switcher correctly or when the switcher is turned off.

4 - Indicator Display
During normal operation the current projector ID (address) is shown in this two digit display. In the event of an error, a projector error code will be displayed. The display can be turned off using the ON/OFF Switch to the left hand side.

5 - Enter Button

Executes your menu selection and activates items selected from the menu. When the slidebar or dialog box is displayed: Pressing this button confirms adjustments/ setting and returns to the previous menu display.

6 - Cancel Button

Press this button to exit the menu. Press this button to return the adjustments to the last condition while you are in the adjustment or setting menu.

7 - Select Cursor Buttons

The up & down cursor buttons are used to select the menu of the item you wish to adjust and the left & right cursors change the level of a selected menu item.

8 - Menu Button

Activates the main menu.

9 - Zoom Button

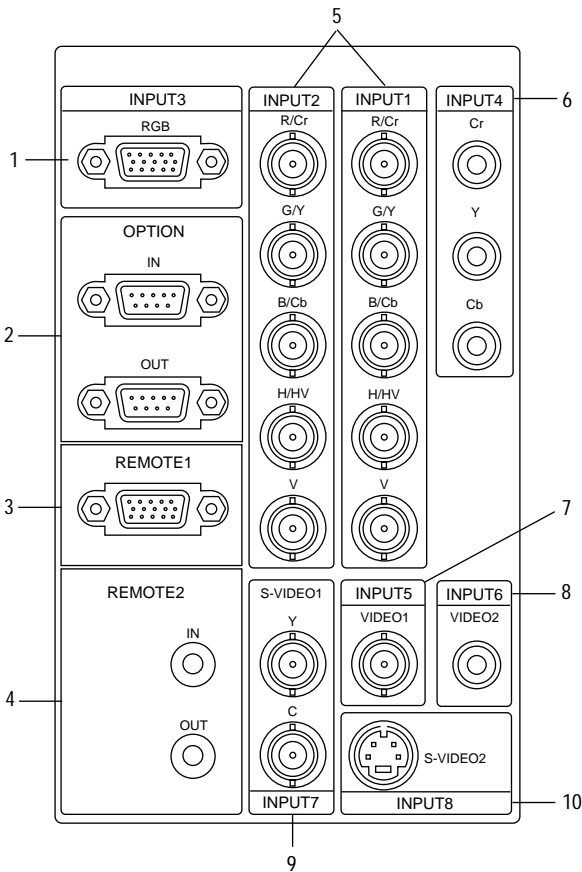Zoom the lens in and out.

10 - Focus Button

Adjust the lens focus.

11 - Lens Shift Cursor Buttons

Adjust the lens offset by shifting the projected image position horizontally and/or vertically.

OVERVIEW

Terminal Panel

The Terminal Panel located at the front of the projector provides all the required connections for video, computer and remote control.

1 - INPUT 3 (RGB3)
A Mini D-Sub 15 pin connector to allow connection of a PC or other analogue RGB equipment such as a high-definition document camera.

2 - OPTION IN/OUT
Two Mini D-Sub 9 pin connectors for system expansion such as PC-control. The IN

connection should be attached to the external equipment such as PC. The OUT connection provides for daisy-chaining multiple projectors and operating them with the same external equipment. To daisy-chain projectors, connect the IN terminal of the second projector to the OUT connection of the first projector. A third projector would be connected to the second projector in the same manner and the procedure would be repeated until all the projectors are connected.

3 - REMOTE 1

This Mini D-Sub 15 pin terminal allows external control of the projector from either an ISS-6020 switcher or from an external control source. When the switcher is used, connect to the REMOTE 1 terminal on the back of the switcher.

4 - REMOTE 2

The IN connector allows direct connection of the remote control unit. The OUT connector is used for daisy-chaining multiple projectors and operating them with the same remote control.

5 - INPUT 1 (RGB1) and INPUT 2 (RGB2)

Inputs with BNC terminals for connection of R, G, B, H and V outputs of external equipment such as a switcher. If using a source with combined sync output, connect it to the H/V terminal. The R, G, B terminals can also be used to connect component video outputs (Y/Cb/Cr) of external equipment.

6 - INPUT 4 (Component (YCrCb))

Inputs with RCA terminals for component video outputs (Y/Cb/Cr) of external equipment such as DVD player.

This input accepts component signals only.

7 - INPUT 5 (VIDEO 1)

BNC composite video connection for external equipment such as a VCR or laser disk player.

8 - INPUT 6 (VIDEO 2)
RCA composite video connection for external equipment such as a VCR or laser disk player.

9 - INPUT 7 (S-VIDEO 1)
BNC S-Video connection for use with external equipment such as a VCR or laser disk player that have separate Y and C video outputs.

10 - INPUT 8 (S-VIDEO 2)
Mini-DIN-4pin S-video connection for external equipment such as a VCR. This input allows switching between S2 and S1 VIDEO input modes. See the "S-Video Mode Select" section for more information.

RGB Digital Connectors & Optional SDI Board

There is a compartment above the terminal board on the front of the projector for RGB Digital connectors and the optional SDI board. The compartment is opened by pushing the left side of the panel.
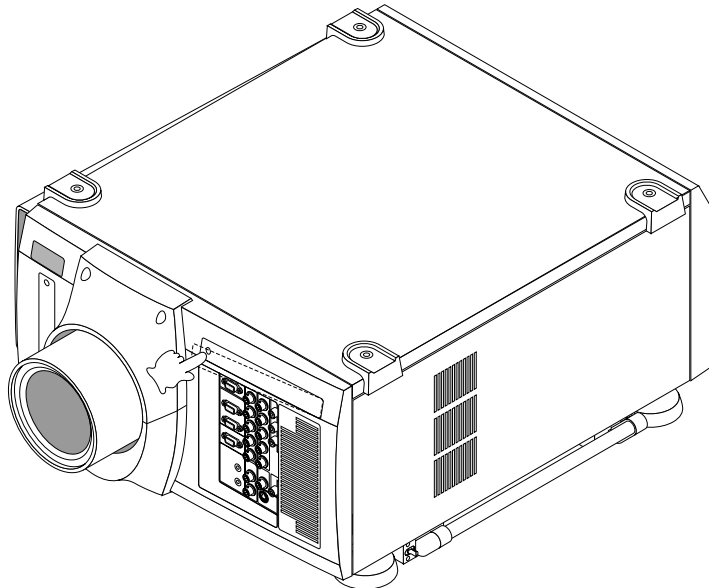
11 - INPUT 9 (RGB (Digital))

MDR 20 pin connectors for double or triple stacking. Use the supplied DFP cable to connect the OUTPUT terminal of the first projector to the second projector's INPUT until all the projectors are connected.

The DFP cable must not exceed 5 m (16.4 feet) in length.

These connectors can also be used to accept TMDS standard (Panel Link) digital signal output from a digital ready computer. When used in this manner some graphics cards may cause flickering noise on the screen. A list of recommended graphics cards is provided below.

Manufacturer	Product	Card I/F	Connector
I-O Data Devices, Inc.	GA-SS21P8/PCI	PCI	DFP 20P
I-O Data Devices, Inc.	GA-SM02P2/CB	PCMCIA	DFP 20P
ATI Technologies, Inc.	Expert LCD	AGP	DFP 20P

The connectors support a maximum resolution of 1024x768 (XGA).

12 - INPUT 0 (SDI)

BNC SDI connection for use with equipment such as commercial type digital VTR. Compatible with digital component signals complying with SMPTE 25GM-C standard.

For further information on installing the optional SDI board contact your Digital Projection Dealer.

OVERVIEW

Remote Control

All the functions of the **HIGHlite 5000GV** can be controlled using the remote control. The remote control can operate either by infra red or by a direct connection to the projector via a hard wire connection.

When using infra red operation the remote control has an effective range of about 7m (23 feet) and at an angle of 30° above, below, to the left and to the right of the remote control sensors located at the front and the rear of the projector. If the remote control is not going to be used for a long period the batteries should be removed.

Do not expose the remote control to heat, steam, water or other liquid. If the remote control gets wet, wipe it dry immediately.

When remote control buttons are pressed and held, main unit function keys may not operate.

You cannot operate the projector using the remote control if the remote ID is not set to [00] or the remote ID is not the same as the projector ID.

Very bright flourescent lighting or Infra Red translation systems may saturate the projectors' Infra Red receiver rendering the remote control inoperative.

Section B: System Installation

INSTALLATION

Installation Guidelines

This installation section explains how to install the projector for optimum results. To do this, it is necessary to determine the following:

1. The type of screen and whether front or rear projection is to be used.

2. The projector location and therefore the type of lens to be used.

3. The method of mounting for the projector.

4. The type of input source to be used with the projector.

Screen Requirements

As virtually all commercially available screens will give a pleasing image you should choose according to your individual requirements. However, to achieve optimum results we recommend a low gain (1.2 - 1.3), non-perforated screen for front projection, this will keep hot spotting and light loss to a minimum whilst providing wide viewing angles.

Regardless of the type of screen used, it is important that your screen is of sufficient height to display the images at the aspect ratios intended to be used. Use the following tables to check that you are able to display the full image on your screen. If you have insufficient height, you will have to reduce the overall image size in order to display the full image on your screen.

Screen Width	Screen Height (metres) Needed to Display Full Image with Aspect Ratio:				
(metres)	4 x 3	5 x 4	8 x 5	14 x 9	16 x 9
2.40	1.80	1.92	1.5	1.54	1.35
3.00	2.25	2.40	1.87	1.93	1.69
3.60	2.70	2.88	2.25	2.31	2.02
4.20	3.15	3.36	2.62	2.70	2.36
4.80	3.60	3.84	3.00	3.09	2.70
6.00	4.50	4.80	3.75	3.86	3.38
10.00	7.50	8.00	6.25	6.43	5.63

INSTALLATION

B—1

Screen Width	Screen Height (feet/inches) Needed to Display Full Image with Aspect Ratio:				
(feet)	4 x 3	5 x 4	8 x 5	14 x 9	16 x 9
8' 0"	6' 0"	6' 5"	5' 0"	5' 2"	4' 6"
10' 0"	7' 6"	8' 0"	6' 3"	6' 5"	5' 8"
12' 0"	9' 0"	9' 7"	7' 6"	7' 9"	6' 9"
14' 0"	10' 6"	11' 2"	8' 9"	9' 0"	7' 11"
16' 0"	12' 0"	12' 10"	10' 0"	10' 8"	9' 0"
20' 0"	15' 0"	16' 0"	12' 6"	12' 10"	11' 4"
30' 0"	22' 6"	24' 0"	18' 9"	19' 4"	16' 11

For optimum viewing, the screen should be a flat surface perpendicular to the floor. The bottom of the screen should be 1.2m (4 feet) above the floor and the front row of the audience should not have to look up more than 30° to see the top of the screen (see opposite).

The distance between the front row of the audience and the screen should be at least twice the screen height and the distance between the back row and the screen should be a maximum of 8 times the screen height. The screen viewing area should be within a 60° range from the face of the screen.

If you intend to use a rear projection screen you must ensure you have sufficient distance behind the screen for the projector to be correctly located Rear projection has the advantage that the projector cannot be seen and higher ambient light levels can be tolerated. Although the image can be flipped to rear projection and displayed without the need for extra mirrors or equipment, it makes the installation more complicated and advice should be sought from your local dealer before attempting an installation in this way.

INSTALLATION

INSTALLATION
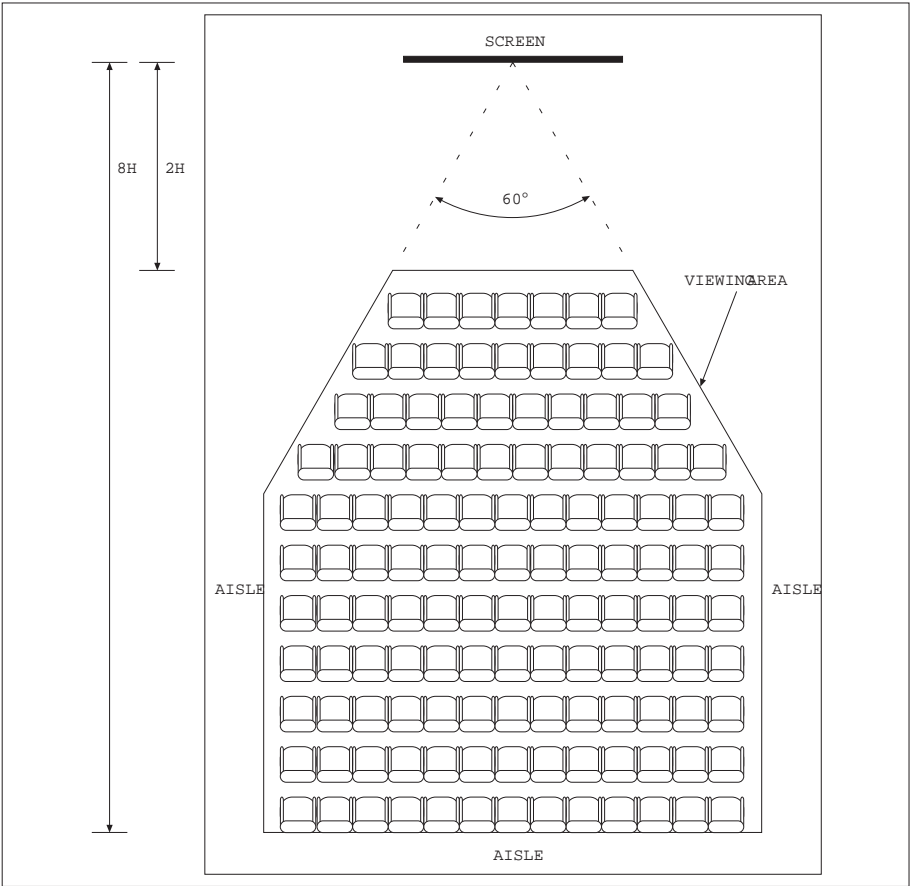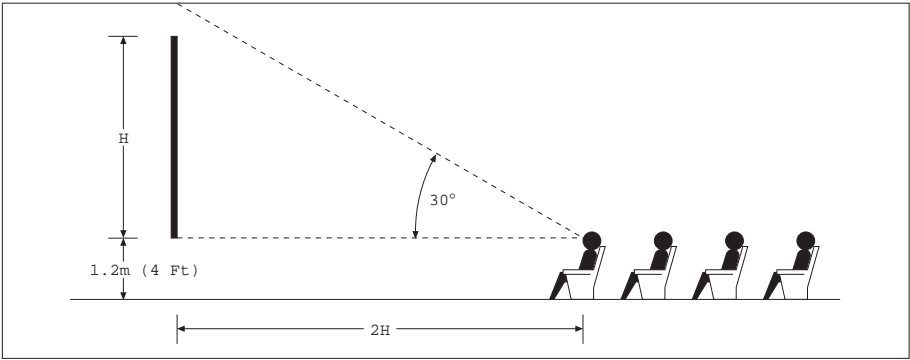
Positioning the Projector

Correct positioning of the projector is essential to achieve the best results. Before deciding on the final location of the projector please ensure you read the following information very carefully.

The projector must be situated in a clean, dry environment and away from direct sunlight or heat. Make sure you locate the projector so that the air inlets and outlets for the cooling system are not obstructed.

When positioning the projector always carry it by the retractable handles provided. The handles pull out from the bottom of the projector and click into place. To retract the handles, push the securing lever to unlock and push back (see below).
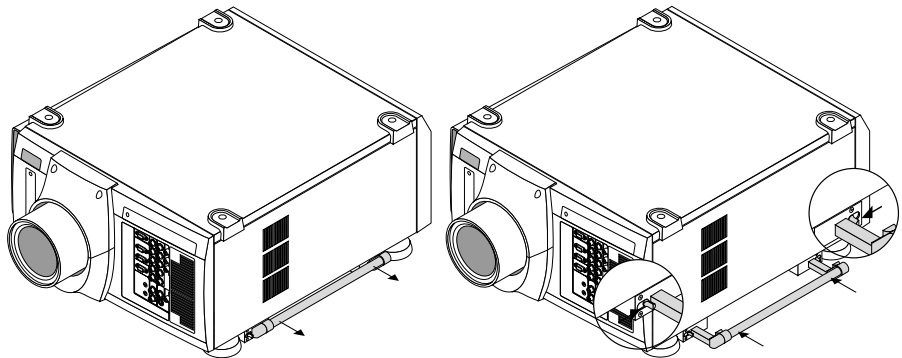
Ensure that the power cord and any other cables connecting to video sources are disconnected before moving the projector. When moving the projector or when it is not in use, cover the lens with the lens cap.

PROJECTOR THROW DISTANCE

The further the projector is positioned from the screen or wall, the larger the displayed image. The minimum projected image size is 2m (80") measured diagonally. The largest the image can be is 12.7m (500").

INSTALLATION
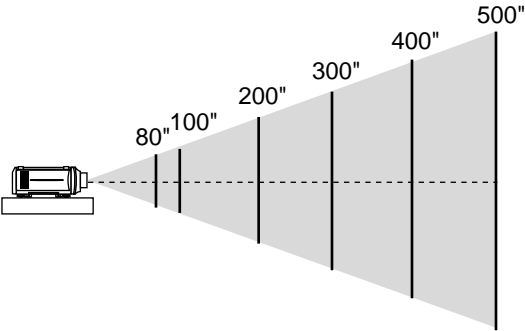
When using a zoom lens, exact positioning of the projector is not required as the image size can be adjusted. However, the projector must be located within the Throw Distance range imposed by the minimum and maximum lens throw ratios. To calculate the distance required between the screen and the projector select your lens type and screen size from the table below.

| Screen Size	Throw Distance required for Lens Model		
(Diagonal)	TL-1Z, 1.5-2.5	TL-2Z, 2.5-4.0	TL-4Z, 4.0-7.0
80"	2.5 - 4.0 (8.20 - 13.10)	4.1-6.5 (13.45-21.33)	6.6-11.3 (21.65-37.07)
100"	3.1 - 5.0 (10.17 - 16.40)	5.1 - 8.1 (16.73 - 26.57)	8.2 - 14.2 (26.90 - 46.59)
200"	6.1 - 10.1 (20.00 - 33.14)	10.2 - 16.2 (33.46 - 53.15)	16.3 - 28.4 (53.48 - 93.18)
300"	9.2 - 15.2 (30.18 - 49.87)	15.3 - 24.3 (59.20 - 79.72)	24.4 - 42.6 (80.05 - 139.76)
400"	12.2 - 20.3 (40.03 - 66.60)	20.04 - 35.5 (66.93 - 116.47)	32.6 - 56.8 (106.96 - 186.35)
500"	15.2 - 25.4 (49.87 - 83.34)	25.4 - 40.6 (83.33 - 133.20)	40.7 - 71.1 (133.53 - 233.27)

Throw distances measured in metres and (feet)

LENS SHIFT

The default height for positioning the projector is at the centre of your screen. However, you can set the projector above or below the centre and adjust the image using the 'Lens Shift' facility to maintain a geometrically correct image.

As with vertical positioning, the default horizontal position of the projector is at the centre of the screen. However, the projector can be mounted to the left or right of image centre and the 'Lens Shift' function used to centre the image on screen.
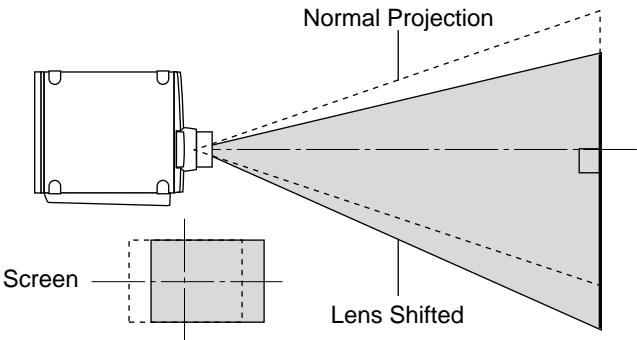
The lens can be shifted within the shaded area as shown overleaf using the normal projection position as a starting point.
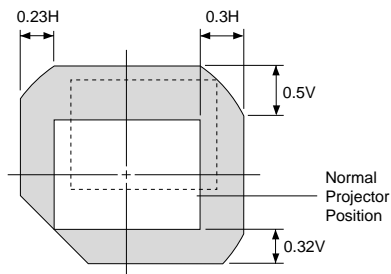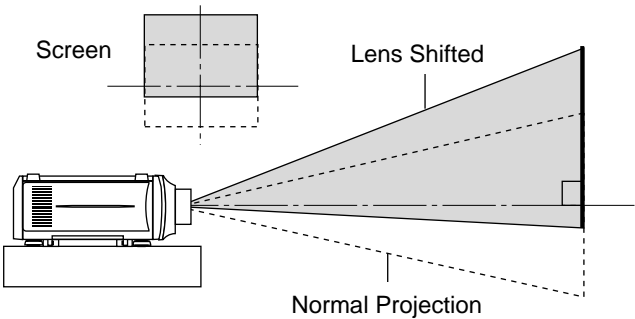
Screen Size	H	V
80"	1.6 (5.25)	1.2 (3.94)
100"	2.0 (6.56)	1.5 (4.92)
150"	3.0 (9.84)	2.3 (7.55)
200"	4.0 (13.12)	3.0 (9.84)
300"	6.1 (20.01)	4.6 (15.09)
400"	8.1 (26.57)	6.1 (20.01)
500"	10.2 (33.46)	7.6 (24.93)

H: width of projected image, V: height of projected image

0.23H   0.3H   0.5V   0.32V   Normal Projector Position

Top View

Normal Projection

Screen

Lens Shifted

Side View

Screen

Lens Shifted

Normal Projection

Installation

Attaching the Power Cable Stopper

The Power Cable Stopper is provided with the projector so that the cable cannot be accidentally unplugged from the AC IN.

1. Remove the two screws from under the AC IN and place to side - these screws will be required later.

2. Connect the Power Cable to the AC IN then attach the stopper.
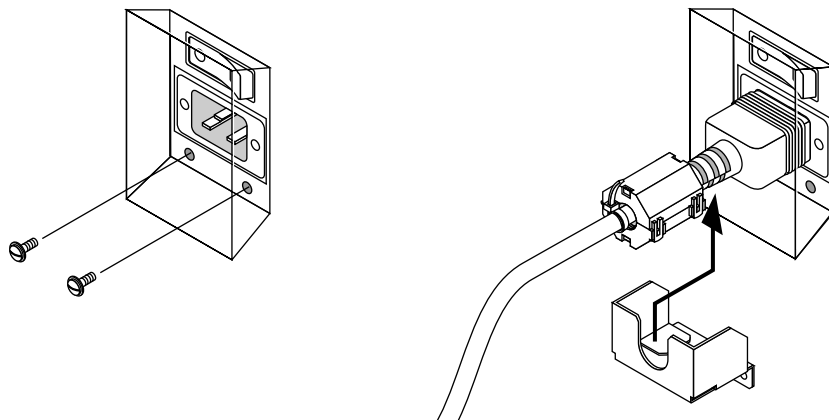
3. Secure the stopper using the two screws.
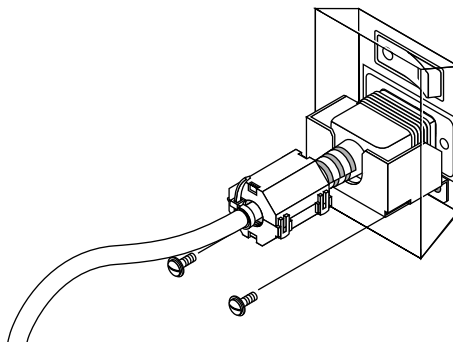
Lens Installation

There are three zoom lenses available for the HIGHLite 5000GV projector Model numbers TL-1Z, TL-2Z and the TL-4Z. These lenses have throw ratios of 1.5-2.5:1, 2.5-4.0:1 and 4.0-7.0:1 respectively. In addition to the zoom lenses a fixed lens is available with a throw ratio of 0.84:1.

Do not attempt to install a lens if the projector is turned on. If the projector is operating, turn off the power and wait for the cooling fan to stop. Next turn off the main power switch on the rear panel and wait for the projector to cool off.

INSTALLATION PROCEDURE

1. Remove the protective sponge from the lens hood.

2. Remove the two screws from the top of the upper lens hood.

3. Push the lower end to lift up and remove the upper lens hood.

4. Lift up the lower lens hood by 1 cm to release from the hook then remove the hood.
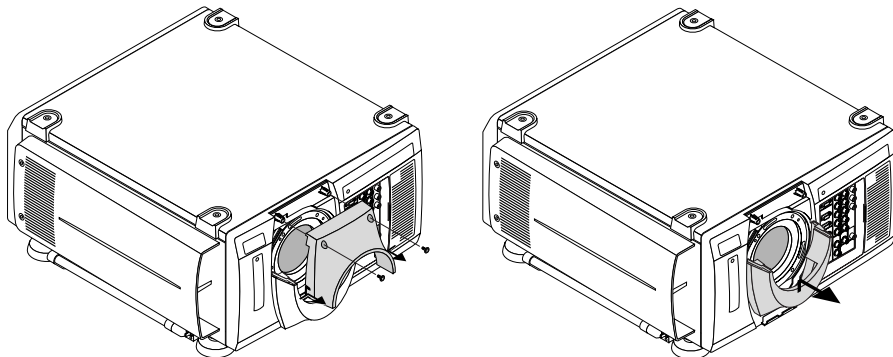
INSTALLATION

5. Remove the cap from the rear of the lens and insert the lens so that the three pins on the lens unit are properly lined up with the holes on the projector.

☞ *Do not remove the front lens cap during lens installation. The lens cap helps minimise any damage to the front lens element and prevents touching of the lens surface which can degrade the optical performance.*
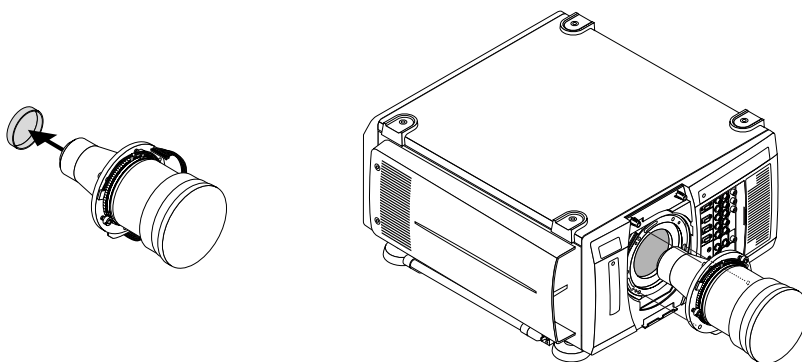
6. Rotate the lens barrel clockwise to fix the lens unit.

7. Secure the three screws on the lens holder.

8. Insert the connector of the lens unit into the socket of the extension cable attached to the projector.

B—9
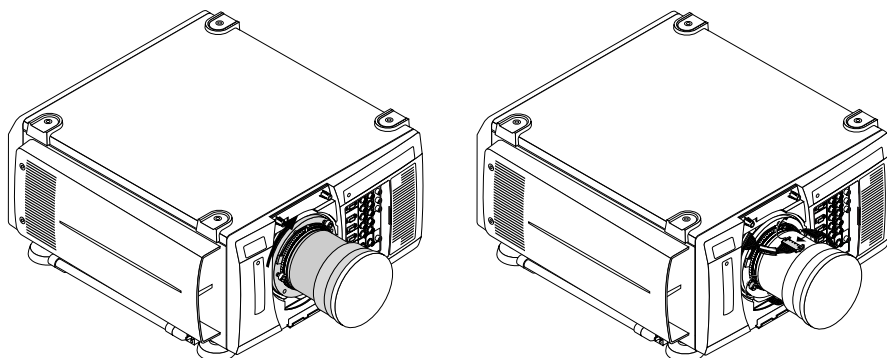
9. Insert the lower lens hood into the retaining hook and secure.

10. Re-attach the upper lens hood while pushing the left and right bottom.

11. Secure the upper lens hood with two screws through the top of the hood.
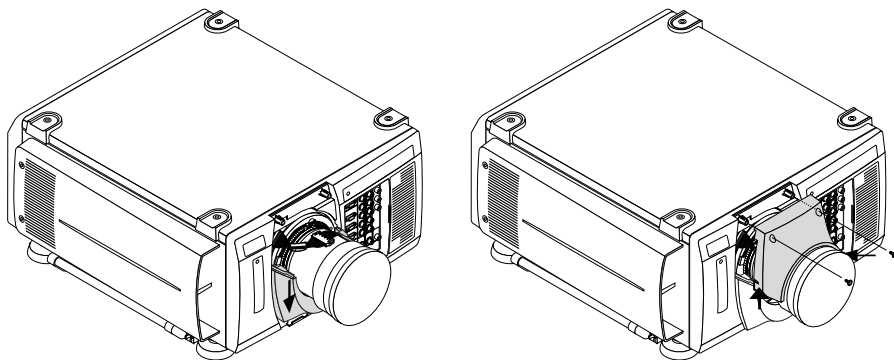
12. Attach the dust cap.
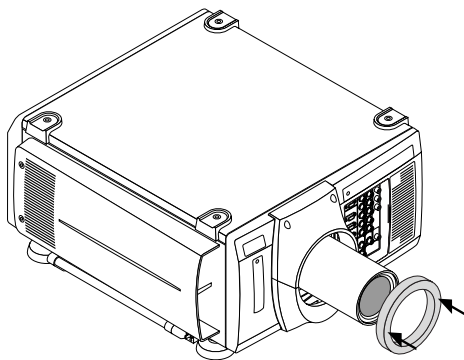
Setting Up the Projector

This section describes how to select a computer or video source, adjust the picture and sound, edit a signal and adjust all other settings and adjustments for correct projector set-up.

Before you turn on the projector ensure that the computer or video source is turned on and that the projector lens cap is removed.

Plug the supplied power cable into the AC outlet and turn on the projector with the main power switch on the rear panel of the projector. The projector will go into its standby mode and the POWER indicator will glow amber.

Press the 'POWER ON' button on the remote control or projector cabinet. The POWER light will turn to green and the projector will fully turn on.

The projector will display a black, blue image or logo if no input signal is present. To select the desired source press the 'INPUT' button on the remote control or press the MENU button and use the Source Select function.

Adjust the projector position so that it is square to the screen and the displayed image is horizontally centred. Next, adjust the vertical position of the projected image using the Lens Shift Control.

Adjustments to the displayed image can be made using the ADJUST PICTURE or ADJUST WHITE BAL buttons on the remote control or via the Adjustments option from the Main Menu.

If projecting an image with lower resolution than the projector's native resolution (1024x768), the image can be enlarged to fill the screen by selecting Native with Zoom in the Resolution window.

While pressing and holding CTL, press MAGNIFY or FOCUS on the remote control to zoom the lens or adjust the lens focus.

INSTALLATION

Reflecting the Displayed Image

Using a mirror to reflect your projector's image enables you to enjoy a much larger image in a much smaller space. If the image is inverted when using a mirror, it can be corrected using the Orientation feature under Setup in the Projector Options Sub-menu. For further details contact your dealer or Digital Projection.

You can use your **HIGHlite 5000GV** to project an image from the rear onto a transparent screen. The throw distance required for rear projections is the same as for front projection. If the image is inverted when projecting an image from the rear, it can be corrected using the Orientation feature under Setup in the Projector Options Sub-menu. For further details contact your dealer or Digital Projection.

Shutter Mechanism

The **HIGHlite 5000GV** projector is equipped with a 'Shutter' feature, which allows the user to shut off the light completely on the screen. To use the shutter function, hold down the CTL button, and press the MUTE PICTURE button on the remote control

Turning Off the Projector

In order to extend the life of the lamp the projector should be turned off as described below.

Press the POWER OFF button on the remote control or the projector cabinet and allow the fan to cool the projector for three minutes. After the cooling fan stops working the POWER indicator will change to a steady amber glow and the projector will be in the stand-by mode. The projector can now be turned off using the main power switch on the rear panel. If the projector is not going to be used for an extended period it should be disconnected from the mains supply.

Do not turn the projector off and then immediately back on. The Projector needs to cool down for three minutes before it is powered on again. If you want to turn off the image briefly (five minutes or less) use the MUTE PICTURE feature.

INSTALLATION

Connecting Signal Sources

CONNECTING A VIDEO RECORDER OR LASER DISC PLAYER

Video recorders and laser disc player connect to the **HIGHlite 5000GV** Projector using common RCA cables (not provided). To make these connections, simply:

1. Turn off the power to your projector and video recorder or laser disc player.

2. Connect one end of your RCA cable to the video output connector on the back of your video recorder or laser disc player and the other end to the Video input on your projector.

3. Turn on the projector and the VCR or laser disc player.

Refer to your VCR or laser disc player owner's manual for more information about your equipment's video output requirements.

CONNECTING A COMPUTER

Connecting your PC or Macintosh computer to the **HIGHlite 5000GV** Projector will enable you to project your computer's screen image for an impressive presentation. To connect to a computer:

1. Turn off the power to your projector and computer.

2. Use the signal cable supplied with the PC or Macintosh computer to connect to the projector.

3. Turn on the projector and the computer.

If the projector goes blank after a period of inactivity, it may be caused by a screen saver installed on the computer.

INSTALLATION

CONNECTING A DOCUMENT CAMERA

To connect the **HIGHlite 5000GV** Projector to a document camera simply:

1. Turn off the power to your projector and document camera.

2. Using a standard video cable, connect your document camera to the Video input (or INPUT3, RGB) on your projector.

3. Turn on the projector and the document camera.

Refer to your document camera's owner's manual for more information about your camera's video output requirements.

INSTALLATION

B—14

Section C: System Operation

OPERATION

Image Options (Cont.)

OPERATION

Remote Control Overview

All the functions of the **HIGHLite 5000GV** projector can be controlled by the remote control unit. The remote control can be directly connected to the projector via a control cable or to provide more flexibility send infra red signals which are detected by sensors located at the front and rear of the projector.

A description of all the remote control functions is provided overleaf.

OPERATION
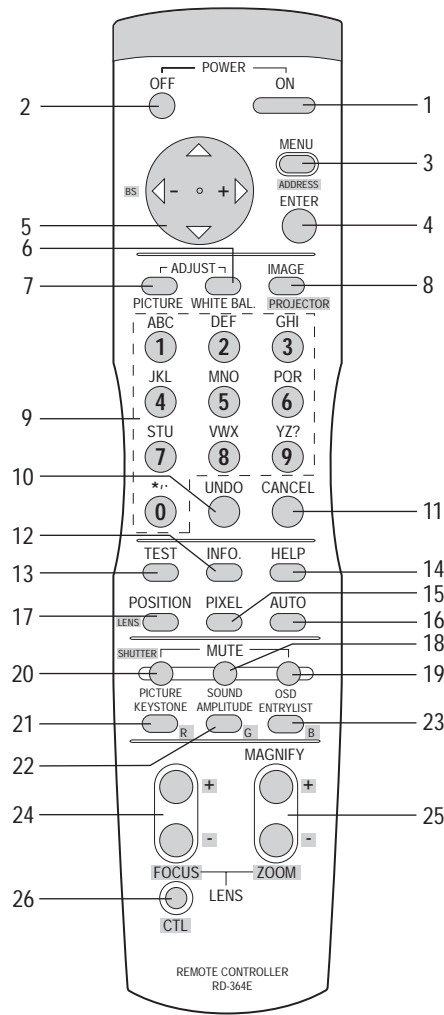
1 - POWER ON

Press to turn on the projector. The POWER indicator lights up green.

2 - POWER OFF

Press and hold this button for a minimum of two seconds to turn off the projector.

3 - MENU

Press to display the main menu. While pressing and holding CTL, press this button to display the Remote Control ID dialog box to specify the remote control ID.

4 - ENTER

Executes the menu selection and activates items selected from the menu. When the slidebar or dialog box is displayed, pressing this button confirms adjustments/setting and returns to the previous menu display.

5 - CURSOR BUTTONS

The cursor buttons are used to navigate the menu system. When pressed together, the CTL and left cursor buttons work as a Back Space key in the entry screen. Pressing and holding CTL, then this button moves the menu, slidebar or dialog box.

6 - ADJUST WHITE BAL

Displays the Colour adjustment screen. Pressing this button sequentially selects Colour Temperature, White Balance, Switcher RGB Gain and Ref.White Bal.

7 - ADJUST PICTURE

Displays the Picture adjustment screen. Pressing this button sequentially selects Brightness, Contrast, Colour, Hue, Sharpness and V-Aperture.

8 - IMAGE/PROJECTOR

Displays the Image Option screen. Pressing this button sequentially selects Image Mode, Video Mode and Signal Level. While pressing and holding CTL, pressing this button rotates Timer, Menu, Setup, Link Mode, Switcher Control, External Control and Passcode.

OPERATION

9 - INPUT
The alpha-numeric INPUT buttons are used to select an input, to name a signal, or to enter a passcode during input registration.

1--INPUT 1 for RGBHV/Y, Cb/Pb, Cr/Pr
2--INPUT 2 for RGBHV/Y, Cb/Pb, Cr/Pr
3--INPUT 3 for RGB
4--INPUT 4 for Y, Cb/Pb, Cr/Pr
5--INPUT 5 for VIDEO 1
6--INPUT 6 for VIDEO 2
7--INPUT 7 for S-VIDEO 1
8--INPUT 8 for S-VIDEO 2
9--INPUT 9 for RGB DIGITAL (Panel Link) input
0--INPUT 0 for SDI input on the optional SDI board

10 - UNDO
Returns the adjustments and settings to their previous condition. While pressing and holding CTL, UNDO clears all the menus or adjustment/setting screen. At this time the adjustments/settings are stored in memory.

11 - CANCEL
Press to exit the menu. When in the menu system, pressing this button with CTL returns to the previous menu allowing adjustment of several items concurrently.

12 - INFO
Displays the Source Information or Projector Information window. This button operates as a toggle between the two windows.

13 - TEST
Displays the projector test patterns. Pressing this button sequentially rotates through the nine available test patterns.

14 - HELP
Provides online help.

OPERATION

15 - PIXEL

Displays the Pixel Adjust screen to allow adjustment of the pixel clock and phase.

16 - AUTO

Adjusts the Horizontal/Vertical Position and Pixel Clock/Phase for an optimum picture.

17 - POSITION

Pressing this button once will display the Blanking screen, pressing it again will display the Position screen. While pressing and holding CTL, pressing Position displays the Lens Shift adjustment screen.

18 - MUTE SOUND

Mute Sound toggles the sound on and off when used in conjunction with the ISS-6020 or IPS4000.

19 - MUTE OSD

This button turns on and off the On Screen Display.

You can also toggle the on-screen display on and off by pressing and holding CTL and then pressing MUTE OSD. In this case any adjustment will still change the projector's memory settings. This mode is available even when an input is switched to another or the power is turned off using the POWER OFF button on the remote control.

20 - MUTE PICTURE

Pressing Mute Picture toggles the display between the incoming signal and a blank screen. Pressing and holding CTL and pressing this button activates the shutter and shuts off the light completely.

21 - KEYSTONE (R)

Display the Keystone Correction screen.

22 - AMPLITUDE (G)

For use by authorised service personnel only.

23 - ENTRY LIST (B)
Display the Entry List screen.

24 - FOCUS (+/-)
While pressing and holding CTL, pressing this button allows you to adjust the lens focus.

25 - MAGNIFY/ZOOM (+/-)
Magnifies the size of the targeted portion of the displayed image. When the image is magnified, pressing CTL and any one of the cursor buttons will display the magnifying glass icon. This icon can be moved around the screen using the cursor buttons to select the area to be magnified. Press CTL and a cursor button again to remove the icon.

While pressing and holding CTL, pressing this button allows you to zoom the lens in and out.

26 - CTL
The CTL button is used in conjunction with other buttons to provide alternative functions.
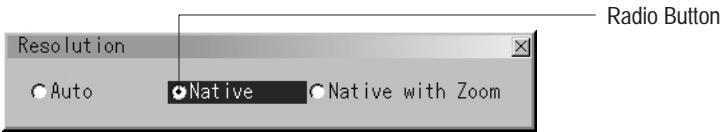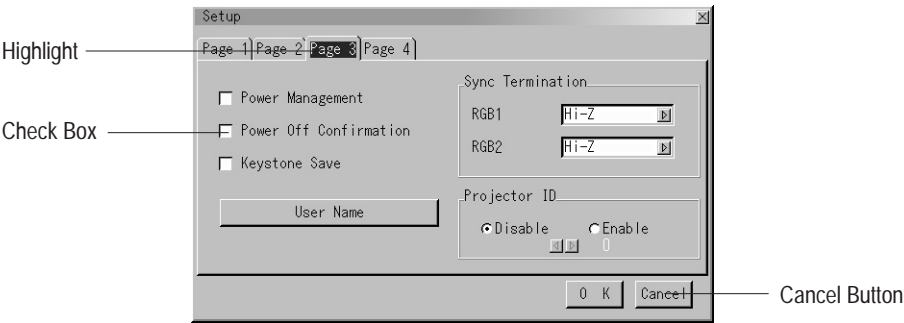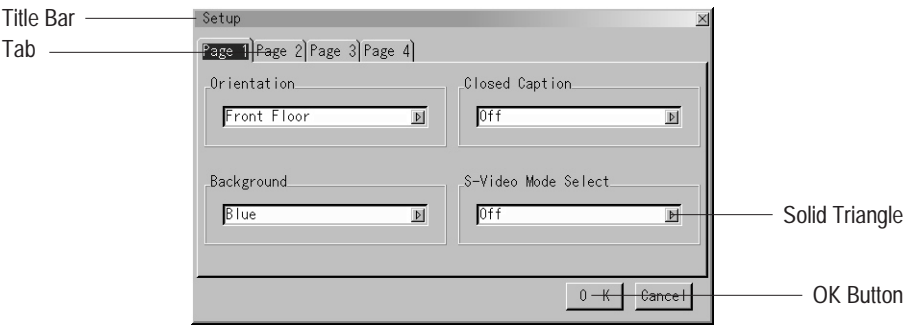
OPERATION

Direct Key Combinations

The CTL button can be used in conjunction with other remote control buttons to provide alternative functions. A list of these combinations is provided below.

KEY COMBINATION	ACTION
CTL + INPUT (1-10)	Switches to selected signal found in the Entry List. To enable this combination, you must first assign specific remote keys for direct input selection in the Entry Edit window.
CTL + ENTER	Displays the Entry Edit Command Window. Only available while displaying the Entry List window.
CTL + MUTE PICTURE (SHUTTER)	Blocks all projector light output.
CTL + CANCEL	Returns to previous menu without closing the slidebar or dialogue box.
CTL + UNDO	Clears all menus or adjustment/setting screens. Adjustments & settings are saved automatically.
CTL + Cursor Button	Moves the slidebar or dialogue box horizontally or vertically.
CTL + Cursor Button (while using zoom)	Displays the magnifying glass icon.
CTL + Left Cursor (BS)	Deletes one letter or numeral in the entry screen.
CTL + TEST	Displays the Passcode Entry screen.
CTL + MENU (ADDRESS)	Displays the Remote ID Entry window.
CTL + IMAGE (PROJECTOR)	Sequentially selects the Projector Options sub menus.
CTL + POSITION (LENS)	Displays the Lens Shift control window.
CTL + KEYSTONE (R)	Turns on Red. Only available when viewing Test Patterns.
CTL + AMPLITUDE (G)	Turn on Green. Only available when viewing Test Patterns.
CTL + ENTRY LIST (B)	Turns on Blue. Only available when viewing Test Patterns.
CTL + MAGNIFY (ZOOM)	Zooms the lens in and out.
CTL + (FOCUS)	Adjusts the lens focus.
CTL + INFO	Saves Lens Zoom and Focus position.

OPERATION

Menu System Overview

Menu windows or dialog box typically have the following elements:

Title Bar

Tab

Solid Triangle

OK Button

Highlight

Check Box

Cancel Button

Radio Button

Slide Bar

A description of all the menu system elements is provided overleaf.

Title bar - Indicates the menu title.

Highlight - Indicates the selected menu or item.

Solid triangle - Indicates further choices are available. A highlighted triangle indicates the item is active.

Tab - Indicates a group of features in a dialog box. Selecting any tab brings its page to the front.

Radio button - Use this round button to select an option in a dialog box.

Check box - Place a checkmark in the square box to turn the option On.

Slide bar - Indicates settings or the direction of adjustment.

OK button - Press to confirm your setting. You will return to the previous menu.

Cancel button - Press to cancel your setting. You will return to the previous menu.

OPERATION

Navigating the Menu System

Press the MENU button on the remote control to display the Main Menu. Next, use the up and down cursor buttons on the remote control to select the required sub menu and press ENTER.

Using the up and down cursor buttons to select the item to be modified from the sub menu and press ENTER to display the adjustment screen or dialog box.

A right-oriented delta symbol in the menu structure indicates that further choices are available by pressing the right cursor button.

Adjust the level or turn the selected item on or off using left or right cursor keys on the remote control. The on-screen slide bar will show you the amount of increase or decrease.

To exit, press CANCEL on the remote control.

The change is stored automatically when the on-screen disappears, the projector goes into standby mode or one input is switched to another.

OPERATION

Main Menu

The Main Menu can be accessed by pressing MENU on either the remote control or the control panel and provides access to sub-menus which allow you to control the projector and to view any system settings. Selection of sub menu options is made using the cursor keys and ENTER.

```
Main Menu
Source Select        ▶

Adjustments          ▶

Image Options        ▶

Projector Options ▶

PC Card Files

Help                 ▶

Test Pattern
```

Source Select

Source Select enables you to select an input source connected to the projector.
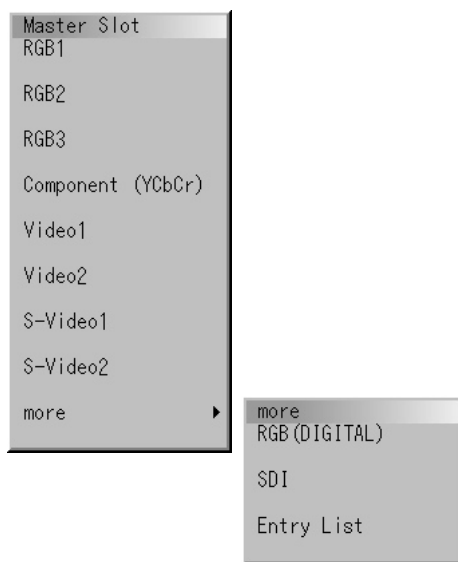
To select an input source use the up/down buttons on your remote control or the projector cabinet to highlight the desired input type and press Enter. Available options include: RGB1, RGB2, RGB3, Component (YCbCr), Video1, Video2, S-Video1, S-Video2, RGB Digital or SDI.

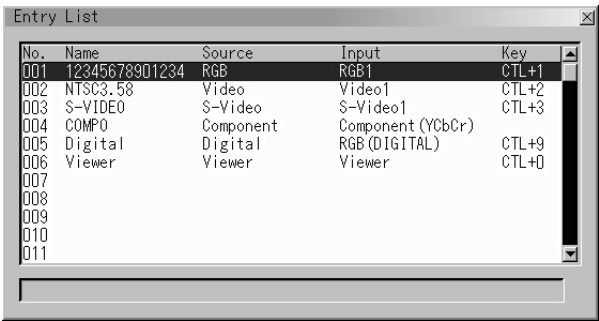Alternatively Entry List may be selected which contains a list of the entry signals. When in the Entry List window, use the up/down buttons on your remote control or the projector cabinet to select the desired signal and press the Enter button.

When switcher control is turned on selecting Source Select will provide you with options of selecting a Switcher input or selecting a signal from the Entry List.

OPERATION

C—11
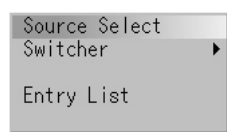
Entry List

The Entry List window contains a list of all current and previously connected input signals.

ENTRY EDIT COMMAND

The names and positions of the signals stored in the entry list can be modified using the Entry Edit Command. To display the Entry Edit Command window hold down CTL and press ENTER on the remote control. You can then Cut, Copy, Paste and Edit the entries.

Cut - allows you to remove a selected signal from the list. The selected signal is stored on the 'clipboard' in the projector.

Copy - copies the selected signal from the list and stores it on the 'clipboard'.

Paste - Enables you to paste the signal stored on the 'clip-board' to any other line of the list. To do this, select Paste and then select the line number you want to paste to and press ENTER.

Edit - allows you to change source name or assign the direct key.

```
Entry Edit                            ☒
   Entry No.                 002
  Source Name             NTSC3.58
   Signal Type              Video
  Input Terminal           Video1
  Direct Key               CTL + 2
                        O  K    Cancel
```
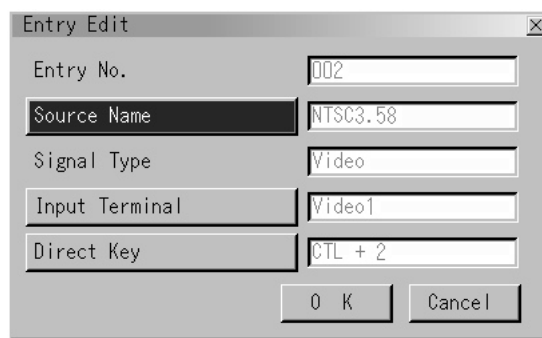
The source name and input terminals can be modified by selecting 'Source Name' and 'Input Terminal'. The appropriate Edit window will be displayed allowing you to make adjustments. This option is only available for sources which are not currently being displayed.

```
Source Name        ☒
   RGB1█
```
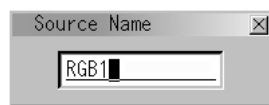
```
Input Terminal       ☒
RGB1                ▶
  O  K    Cancel
```

You can assign specific remote keys for direct signal input selection using the 'Direct Key' function. Select 'List' and press ENTER to display the direct Key assignment list.

```
Direct Key                    ☒
   CTL + 1 key              ▶
   List      O  K    Cancel
```

After assigning the desired remote keys, select 'OK' and press ENTER to save changes and close the window. After modifying an entry in the list using the Edit function select OK and press ENTER to save the new settings. To exit without storing setting, select Cancel.

To close the List window without making any changes press CANCEL on the remote control.

Adjustments

The Adjustments Menu provides access to the image controls. Use the up and down cursor buttons on your remote control or the projector cabinet to highlight the menu item you want to adjust.
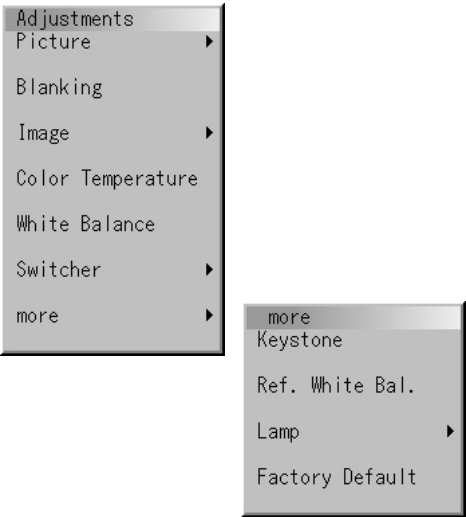
Picture

The Picture Menu provides access to the Brightness, Contrast, Colour, Hue. Sharpness and V-Aperture parameters of the displayed image. Each image parameter is controlled by a slide bar.

C—14

Brightness - Adjusts the brightness level or the back raster intensity.

Contrast - Adjusts the intensity of the image according to the incoming signal.

Color - Increases or decreases the color saturation level (not available for RGB).

Hue - Varies the color level from +/- green to +/-blue. The red level is used as reference. This adjustment is only valid for Video and Component inputs (Not available for RGB).

Sharpness - Controls the detail of the image for Video (Not available for RGB and Component).

V-Aperture - Adjusts edge enhancement in the vertical direction. (Not available for RGB).

Blanking

The Blanking feature allows you to mask any unwanted area of the screen image.

OPERATION
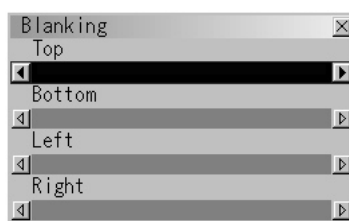
Image

The Image Menu provides access to the Auto Adjust, Position, Pixel Adjust, Resolution and Video Filter features of the projector.

```
Image
Auto Adjust

Position

Pixel Adjust

Resolution

Video Filter
```

AUTO ADJUST

When Auto Adjust is turned On, the projector automatically determines the best resolution for the current RGB input signal and adjusts the Horizontal Position, Vertical Position and Pixel Adjust settings to give an optimum image. When turned Off, the user can adjust the image display functions manually.

```
Auto Adjust          ⊠
   ○On      ⦿Off
```

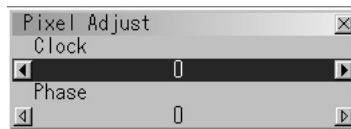### POSITION

When Auto Adjust is off, Position adjusts the image location fromhorizontally and vertically. This adjustment is made automatically when the Auto Adjust is on.

```
Position                ⊠
 Horizontal
◀▮█            ▶
 Vertical
◁▯            ▷
```

PIXEL ADJUST

When Auto Adjust is off, Pixel Adjust allows you to manually modify the Pixel Clock and Phase settings.

Pixel Adjust
Clock
◀   0   ▶
Phase
◀   0   ▶

Clock - Used to fine tune the computer image or to remove any vertical banding that might appear.

Phase - Adjusts the clock phase or used to reduce video noise, dot interference or cross talk. (this is evident when part of your image appears to be shimmering). The Phase should only be adjusted after the Clock parameter has been defined.

RESOLUTION

When Auto Adjust is turned off, Resolution allows you to activate or deactivate the Imaging Resizing feature . There are three possible settings - Auto, Native and Native with Zoom.

Resolution
○ Auto   ● Native   ○ Native with Zoom

Auto - Turns on the Imaging Resizing feature. The projector automatically reduces or enlarges the current image to fit the full screen.

Native - Turns off the Imaging Resizing feature. The projector displays the current image in its true resolution.

If you are displaying an image with higher resolution than the projector's native resolution, even in Native mode, the image is displayed full screen using the Advanced AccuBlend feature.

Native with Zoom - Zooms the image to fill the screen in the Native mode.

When using Native with Zoom, unless the projector is used at 0° of lens offset the image may require re-positioning.

OPERATION

VIDEO FILTER

This feature reduces video noise. Video filtering is controlled by a slide bar with adjustments made using the cursor buttons on the remote control. When the bar is set at 0, video filtering is Off. High filtering is applied when the bar is set to 1/3rd. When the bar is at 2/3rds, medium filtering is applied and when set to full, low filtering is applied. The appropriate filter value should be selected to give the best image for your input signal.

Color Temperature

This feature allows adjustment the color temperature using a slide bar.

White Balance

This feature adjusts the white balance for each input signal.
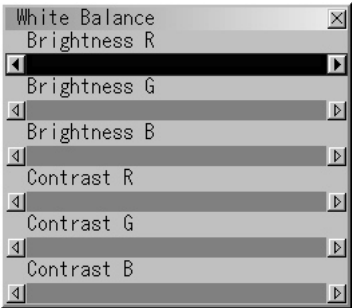
For Video/RGB signals the brightness for each color (RGB) is used to adjust the black level of the screen and the contrast for each color adjusts the white level of the screen.
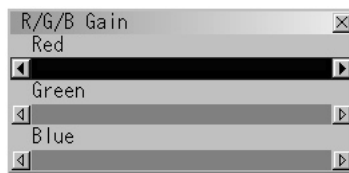
For Y/Cb/Cr the brightness for each color (Y/Cb/Cr) is used to adjust the white level of the screen and the contrast for each color is used to adjust the black level of the screen.

Switcher

This feature is only available when used with ISS-6020.

R/G/B GAIN
This feature adjusts the red, green and blue input levels of the signal.

VOLUME
This feature adjusts the volume of the audio output. Adjust the sound corresponding to the appropriate slot.

Keystone

Keystone is the distortion of a projected image that usually creates a wider top than bottom. Aiming a projector upward on a wall rather than straight at a wall creates this distortion. Use slide bar to correct this keystone (trapezoidal) distortion.

With the projector aimed directly at the screen the maximum keystone angle that can be corrected is ±15 degrees.

Reference White Balance

Reference White Balance is only available when viewing test patterns and adjusts the white balance that is used as a reference.

Any adjustment will affect the displayed image for all input sources.

OPERATION

C—19

Lamp

LAMP MODE
Lamp Mode allows the lamp power supply to operate under the following settings:

Auto - This setting keeps the projector's original light output level for a certain period of time.

High-Bright - This setting consumes maximum current from the AC input and results in the most light output.

The High Bright mode shortens the lamp life. Be sure to use this mode at temperatures of 95°*F (35*°*C) or less.*

Variable - This setting allows the lamp power supply to draw a variable amount of current from the AC input source and allows for maximum power consumption and variable light output. When selecting Variable, use the Lamp Output slidebar to set the desired projector light output.

LAMP OUTPUT
Defines the projector light output when Lamp Mode is set to Variable.

Factory Default

Returns all adjustments and image settings (with the exception of Keystone and Lamp Output) to the factory preset level. There are three options available:

All Data - Resets the settings for all signals to the factory preset levels.

Including Entry List - Resets the adjustments and image settings for all signals and deletes all signals in the Entry List.

Current Signal - Resets the adjustments and image options for the current signal to the factory preset levels.
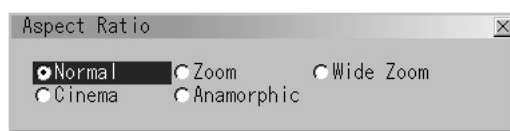
Image Options

The Image Options menu provides optional controls such as gamma correction, component signal selection, wide screen and video noise reduction features.

Image Mode

The Image Mode menu allows you to adjust the Aspect Ratio, VD Delay and Clamp Timing

ASPECT RATIO
This feature allows you to define the correct proportions for displayed image.

Normal - Displays normal video picture with a 4 : 3 aspect ratio as is.

Zoom - Displays a video picture with a 16 : 9 aspect ratio expanded in the horizontal and vertical direction, maintaining the original proportion.

**Wide Zoom** - Displays a squeezed video picture with a 16 : 9 aspect ratio expanded in the horizontal direction, converted to 4 : 3 aspect ratio.

Cinema - Displays a squeezed video picture with a 16 : 9 aspect ratio compressed in the vertical direction, maintaining the 16 : 9 aspect ratio.

Anamorphic - For use with an anamorphic lens. This mode will change the aspect ratio according to the lens.

OPERATION

C—21

CLAMP TIMING

This function sets the standard black level position of the displayed image. Select one of the three options:
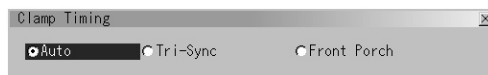
Auto - Normal setting.

Tri-Sync - Setting for HDTV signal.

Front Porch - For other settings than above.

Video Mode

The Video Mode menu provides access to the Gamma, Noise Reduction, VD Delay, Motion Select, Motion Level, YTR Adjustment, CTR Adjustment and Telecine features of the projector.

GAMMA

This option corrects the degree of contrast to provide an optimum image. This should be set according to the input signal type:

NTSC - Setting for NTSC signals.

Graphics - Setting for Computer Graphics.

Graphics/NTSC - Setting for both Computer Graphics and NTSC signals.

PAL/SECAM 2.8 - Setting for PAL and SECAM signals at the gamma value of 2.8

PAL/SECAM - Setting for PAL and SECAM signals.

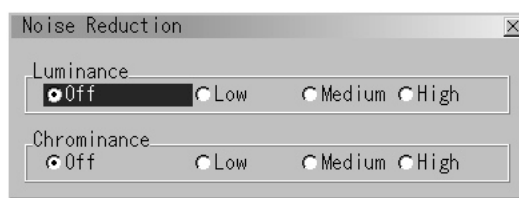**Natural 1** - Setting for Video and S-Video signals.

Natural 2 - Setting for component signals.

NOISE REDUCTION

This feature is used to reduce video noise. Select Low, Medium or High to give the optimum image.
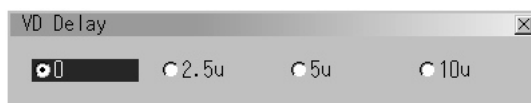
✍ *The lower the Noise Reduction level, the better the image quality. Increasing Noise Reduction lowers video bandwidth.*
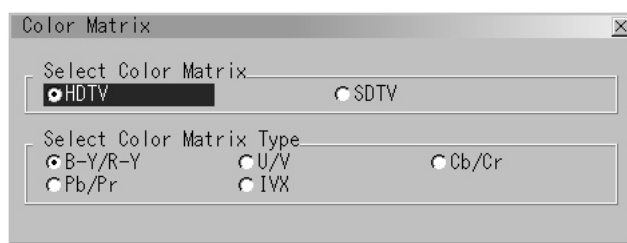
```
Noise Reduction                                        ☒
 ┌Luminance─────────────────────────────────────────────
 │ ●Off            ○Low        ○Medium ○High
 ┌Chrominance───────────────────────────────────────────
 │ ●Off            ○Low        ○Medium ○High
```

VD DELAY

This feature is used to correct vertical jitter of non-standard inter-laced signal. Select one of the three VD delay levels.

```
VD Delay                                               ☒
 ●0               ○2.5u        ○5u           ○10u
```

COLOR MATRIX

The Color Matrix feature is only available for component video signals. To use this feature first select an appropriate color matrix for your input signal, either HDTV or SDTV. Next, select an appropriate matrix type.

```
Color Matrix                                           ☒
 ┌Select Color Matrix───────────────────────────────────
 │ ●HDTV                        ○SDTV
 ┌Select Color Matrix Type──────────────────────────────
 │ ●B-Y/R-Y         ○U/V              ○Cb/Cr
 │ ○Pb/Pr           ○IVX
```

Y/C Delay - Adjusts Y/C delay level.

OPERATION

C—23

Motion Select - Sets the interpolation method. Select Still for non moving images such as a document camera and Adaptor for all motion video.

Motion Level - Adjusts level of motion detection when Motion Select is defined as Adaptive.

YTR Adjustment - Adjusts the Luminance Transient Time.

CTR Adjustment - Adjusts the Chroma Transient Time.

TELECINE
Telecine uses 3:2 pull down correction to eliminate jitter and artifacts in video. Select either Auto for a film source such as a DVD player or Off for signals other than film sources.

Signal Level

This Signal Level features are only active when multiple projectors are in use.

AUTO CONTROL
Select OK to execute Auto Control.

WHITE
Adjusts the saturation at the white peak.

R/G/B, Y/CB/CR & Y/PB/PR GAIN
To adjust the RGB, Component & HDTV Gain to match multiple projector color uniformity.

Projector Options

The Projector Options Menu enables you to set projector preferences and other operating options.

Timer

This feature enables you to turn on or off your projector automatically at a specified time. There are two timer functions are available: On/Off Timer and Sleep Timer.

ON/OFF TIMER

The On/Off Timer enables you to schedule up to eight on and off times in 12 or 24 hour format. Before setting the On/Off Timer the current date and time must be defined using the Date, Time Pre-set feature. When the On/Off Timer has been set it is still possible to turn the projector on or off with the remote control.
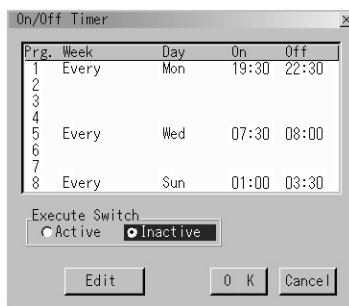
To schedule an On and Off Time:

1. Open the On/OFF Timer window.

2. Select EDIT and press ENTER on the remote control to open the EDIT window.

3. Set the Week, Day, On-Time and Off-Time using the CURSOR buttons and INPUT buttons (1 through 10). To cancel the on-time or off time, use Delete.

OPERATION

4. Select Set and press ENTER on the remote control to complete the setting. To close, select Close.

5. To enable your setting, select Active on the Execute Switch.

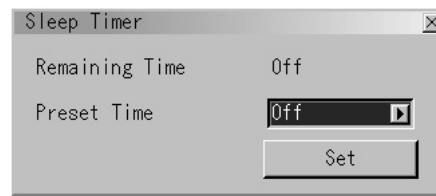6. Select OK and press ENTER on the remote control to complete the setting.

✎ *When On Timer is set and the projector is in the standby mode, the "00" display on the INDICATOR flashes to show that On Timer program is active.*

The projector must be in stand-by mode at the time of turning on. The preset power-on time will be void if the cooling fan is working or an error occurs.

SLEEP TIMER
The Sleep Timer allows you to set the projector to automatically turn itself off after a predefined time period.

```
Sleep Timer                          ×

Remaining Time        Off

Preset Time           Off      ▶

                           Set
```
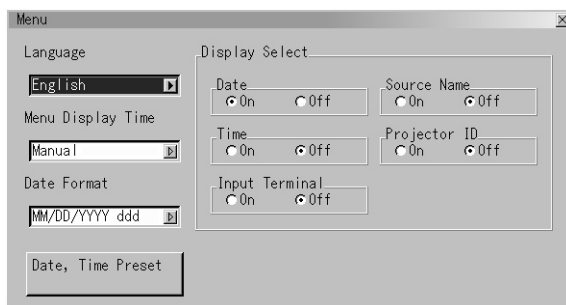
To activate the Sleep Timer:

1. Select your desired time between 30 minutes and 2 hours in 30 minutes.

2. Select Set and press the ENTER button on the remote control.

3. The remaining time starts counting down.

4. The projector will turn off after the countdown is complete.

Menu

The Menu window allows you to set preferences for the on-screen menu system.

Language - Up to seven languages are available for the on screen instructions. The options are: English, German, French, Italian, Spanish, Swedish and Japanese.

Menu Display Time - The on screen menu display appears when the buttons on the remote control, or the controls on the rear panel are pressed. The display can be set to automatically turn off at a pre-selected time between 3 and 30 seconds after the last menu action or set to manual operation. When set to manual, the display will be turned on and off whenever the MUTE OSD button is pressed. If no button operation is made for 20 minutes or more, the on-screen message will automatically turn off.

Display Select - defines the status information displayed on the screen each time you switch between input sources.

Date Format - defines the format of the date displayed in the upper left corner of the screen.

Date, Time Preset - The projector has a built-in clock allowing the current year, month, date and time to be displayed in the top of the screen. The clock will keep working for about 3 days after the main power is turned off. If the main power is off for 3 days or more, the built-in clock will be reset and the date and time will have to be re-defined. The built-in clock will not reset while in the standby condition.

OPERATION

To set the Date and Time:

1. Select Date, Time Preset from the Menu window. The Date, Time Preset window will open.
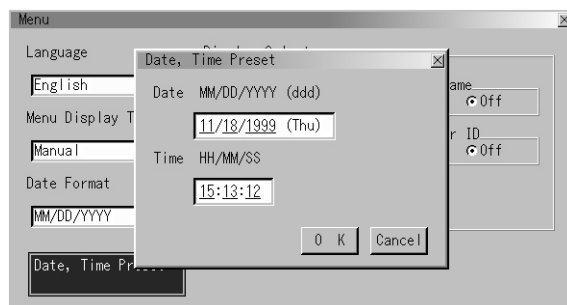

2. Type in the current month, date and year using the input buttons on the remote control. The month and date must be entered in two digit format.

3. Enter the current time in 24-hour format.

4. Select OK and press ENTER. The clock will start when the window closes.

Setup

The Setup window is used to define the operating options for the projector. There are four pages to the

SETUP PAGE 1
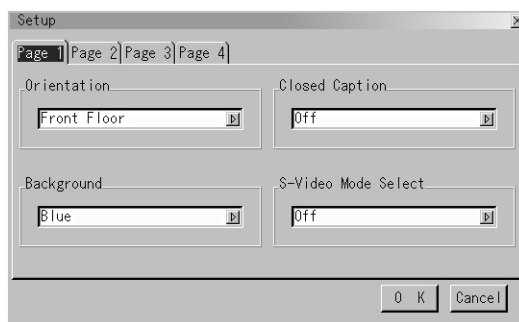
Orientation - The projector can be set for floor projection, rear ceiling projection, rear floor projection and front ceiling projection.

Background - The projector can be set to display a black, blue screen or logo when no input signal is present.

Closed Caption - Provides a list of nine text and captioning choices for use with NTSC3.58 input sources. Select the most appropriate option for the captioning format used.

S-Video Mode Select - Defines the S-Video signal detection mode to allow the identification of S-Video signals with different aspect ratios. When set to S1, zoom signals (16:9) will be identified. When set to S2, zoom signals and wide zoom signals (4:3) will be identified.

SETUP PAGE 2
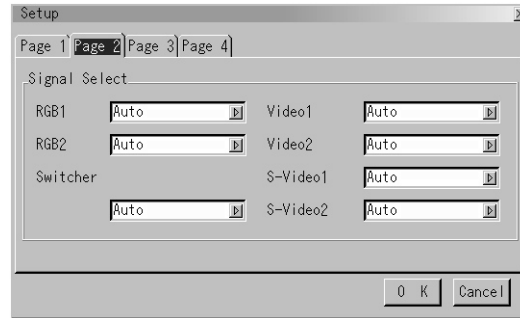
RGB 1/2 - Allows the RGB1 and RGB2 inputs to be defined as either RGB, Component or Auto. When set to Auto the projector attempts to automatically detect the signal type. However, certain component signals may not be detectable.

Switcher - Defines the switcher mode (Auto, SW Level 1 or SW Level 2) for video and S-Video inputs.

Video 1/2 - Allows the manual selection of composite video standards for the Video 1 and Video 2 inputs.

S-Video 1/2 - Allows the manual selection of composite video standards for the S-Video 1 and S-Video 2 inputs.

SETUP PAGE 3
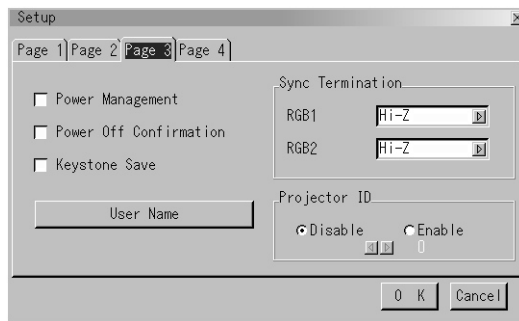
Power Management - This feature automatically turns the projector off if there is no RGB input for over five minutes. Power Management is not active for video signals.

Power Off Confirmation - Determines whether a confirmation dialogue is displayed when turning the projector off.

Keystone Save - Enables the current keystone settings to be saved. The keystone setting is global and affects all sources if it is saved when the projector is switched off.

User Name - An 18 character user name may be assigned to the projector using the alpha-numeric INPUT keys on the remote control. The cursor keys allow movement through the character entry field. To save the name, press the ENTER button.

Sync Termination - Defines the impedance of the sync signal for the RGB1 and RGB2 inputs. The default setting for normal use is 75Ω. Hi-Z should be selected when using a TTL signal.

Projector ID - Each projector requires a unique address when used in serial communication mode. Up to 64 addresses are available by selecting Enable and then using the right cursor to increase the ID number. To save the setting, select OK.

SETUP PAGE 4
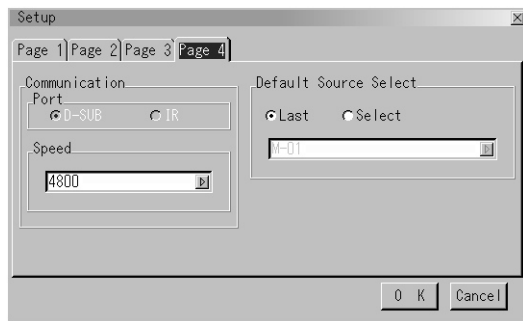
Communication/Port - Not used.

Speed - Defines the baud rate of the OPTION IN connector. Select the appropriate rate between 4800 and 38400 according to the type of equipment connected. The default rate is 38400bps.

Default Source Select - The projector can be configured to display either the last input used or a preset input whenever it is turned on.

Section D: Advanced User Information

ADVANCED

Screen Illuminance

The projector's arc lamp emits a *luminous flux* measured in **lumens**. This flux is directed at the screen and illuminates it, the *illuminance* (E) can be measured in **Lux** (lumens/m2) or **Foot Candles** (lumens/ft^2). The *illuminance* of the screen is calculated by dividing the incident flux by the illuminated screen area.

The brightness of the screen, known as the screen *luminance* (B) is determined by the amount of light reflected from it (or transmitted through it if using a rear projection screen). If the screen is diffuse, the incident light is reflected into a hemisphere. If the screen has a *reflectivity* (R), the screen *luminance* in candela/m^2 is given by (R x E) / π, where E is measured in Lux. If E is measured in Foot-Candles, the screen *luminance* is in Foot-Lamberts, and is given by R x E.

Examples:

1) A 6' x 4' 6" diffuse screen, with a reflectivity of 0.8 is illuminated by a projector emitting 3000 lumens.

The screen illuminance (E) = F / A = 3000 / 27 = <u>111 Foot-Candles</u>

The screen luminance (B) = R x E = 0.8 x 111 = <u>89 Foot Lamberts</u>

2) A 4m x 3m screen with a reflectivity of 0.85 is illuminated by a projector emitting 3500 lumens.

The screen illuminance (E) = F / A = 3500 / 12 = <u>292 Lux</u>

The screen luminance (B) = (R x E) / π = (0.85 x 292) / π = <u>79 Candela/m^2</u>

ADVANCED

DMD™ Operation and Usage

A DMD™ (Digital Micromirror Device™) is a true digital light modulator and utilises 786,432 moving aluminium mirrors, with each one representing a pixel in the final projected image. Each mirror is suspended over address electrodes by a torsion hinge between two posts. Depending on the voltage polarity applied, each mirror will either tilt to left or to the right. When light is applied to the complete DMD™, only the light redirected from a mirror tilting to the left is projected.
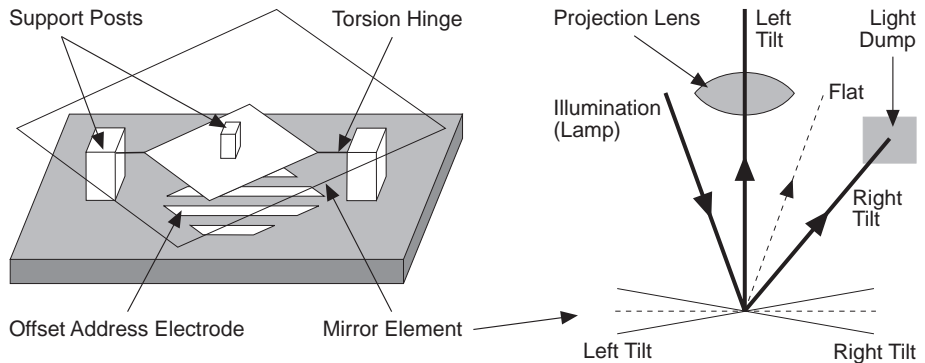
The projector optically filters white light from the lamp into its constituent red, green and blue. Each colour illuminates a separate DMD™ whose modulated output is then recombined with the other two to form the projected full colour image.
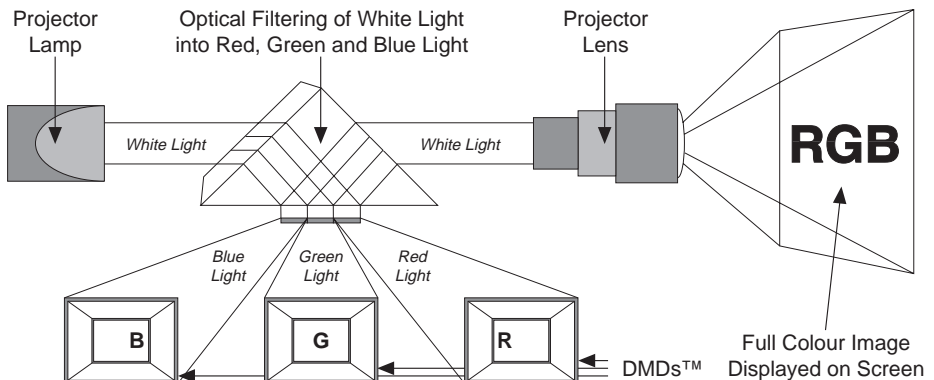
The mirrors in the DMD™ are arranged in a 1024 x 768 array allowing images of all aspect ratios to be displayed. However, the proportion of DMD™ effectively used will differ depending on the aspect ratio of the image e.g. a 5 x 4 aspect ratio would only require the use of 960 x 768 mirrors. The diagrams below show the DMD™ usage for each aspect ratio (4 x 3, 5 x 4, 8 x 5, 14 x 9 and 16 x 9) with the shaded areas representing redundant mirrors.

DMD™ Size
(1024 x 768 Mirrors)

4 x 3 Aspect Ratio
(1024 x 768 Mirrors used)

5 x 4 Aspect Ratio
(960 x 768 Mirrors used)

8 x 5 Aspect Ratio
(1024 x 640 Mirrors used)

14 x 9 Aspect Ratio
(1024 x 658 Mirrors used)

16 x 9 Aspect Ratio
(1024 x 576 Mirrors used)

ADVANCED
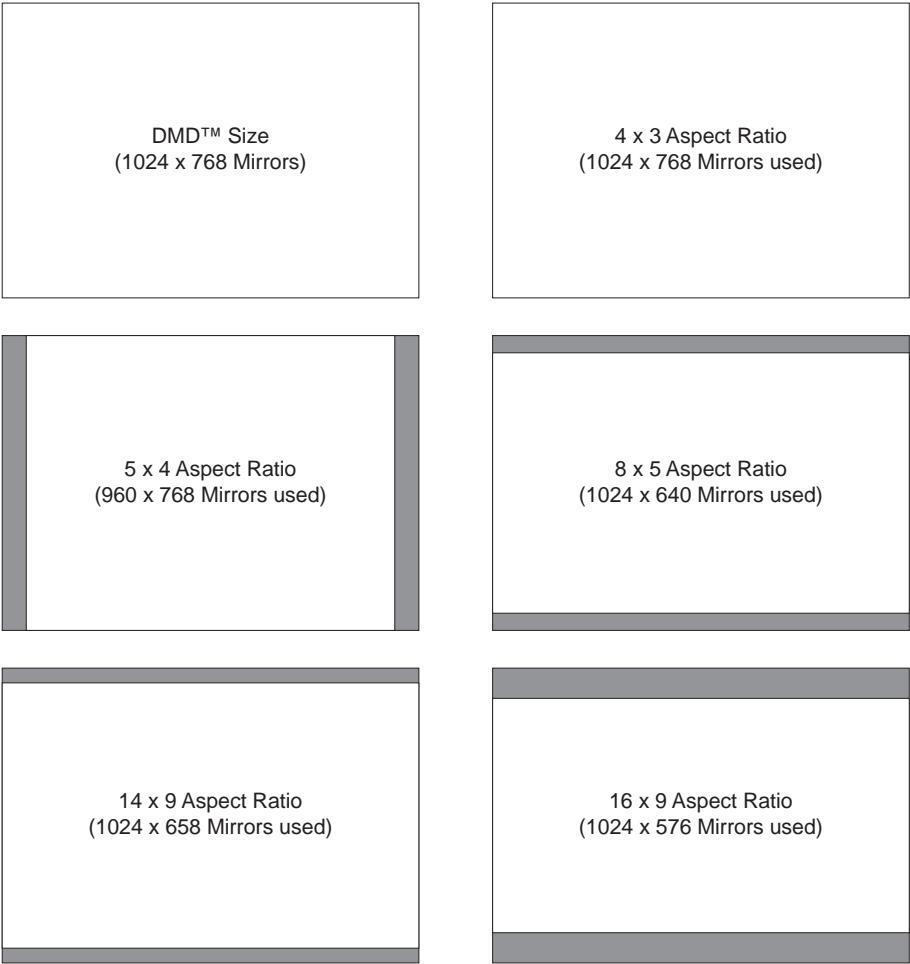
Multiple Projection

Up to three **HIGHlite 5000GV** projectors can be stacked without any additional framing (gravity stacking). One unit can be stacked on top of the other up to three units. Make sure that each foot is securely seated on the stacking pad.
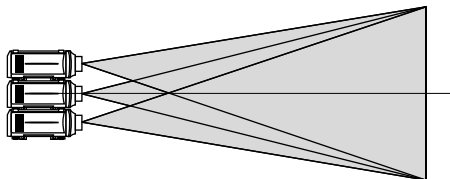
Stacking Instructions

To connect multiple projectors connect the supplied DFP cable to the RGB DIGITAL output (INPUT 9) of the master projector to the RGB DIGITAL input of the slave projector (the second and third stack) until all the projectors are connected.

Next, using a commercially available, bi-directional RS-232C cable connect the OPTION OUT terminal of the master projector to the OPTION IN terminal of the slave projector(s) until all the projectors are connected.

OPTICAL AND MECHANICAL ADJUSTMENT

Place the projectors at the proper height for best screen to projector relationship and ensure that all projectors have the same display orientation. Next, turn on all the projectors and display the internal crosshatch test pattern using a different single colour for each projector e.g. turn on green for the master projector, red for the first slave projector and blue of the other second slave projector.

ADVANCED

SETTING UP FOR DOUBLE OR TRIPLE STACKING IN LINK MODE

Adjust the lens shift, zoom and focus to clearly display all three projected patterns.

If the vertical alignment of the projector(s) is incorrect, adjust the height of the feet. If there is any keystone distortion, use Keystone adjustment to correct and save the settings on each projector.

SIGNAL DATA PREPARATION

When stacking multiple projectors each projector should be configured to display the input image in exactly the same manner. This requires configuring the master projector for each input signal type, adjusting the image and copying it to the slave projectors using a PC card as follows:

1. Choose one projector to be the master projector and turn it on.

2. Display all the desired input signals adjusting each signal to provide an optimum image and place the master projector in standby mode.

3. Remove the PC Card slot decorative panel and insert a PC card into the slot .

4. Press and hold CANCEL, then press POWER on the rear panel of the master projector. The POWER indicator will change to steady green and the PC Card Access indicator will start flashing. The data will be automatically stored on the PC card and the POWER indicator will change to amber.

5. Remove the PC card from the slot of the master projector and insert it into the slot of a slave projector.

Since data in the slave projectors will be lost at this time, make backup copies of them before proceeding.

6. Press and hold ENTER, then press MENU on the rear panel of the slave projector. The POWER indicator will change to steady green and the PC Card Access indicator will start flashing to indicate that the data is being copied from the PC card to the slave projector. After copying data to the slave projector, the POWER indicator will change to amber.

7. If you are triple stacking the projectors copy the data stored on the PC card to the third projector.

LINK MODE SETTING

1. Select Projector ID from the Projector Options sub-menu on each projector and assign a unique ID for each projector.

2. Define the same communication speed (4800 - 38400) for each projector.

3. Select Link Mode from the Projector Options sub-menu on each projector and define one projector as the master and the rest as slaves.

4. Display an image onto the screen using all projectors and check that the image is displayed correctly while the projectors are in link mode.

5. When a new input source is applied, adjustments to the image from the slave projector(s) may be required (e.g. position, brightness etc.) in order to match those of the Master projector. In order to make any adjustments first change the Master projector from Master to Standalone mode. Next, on the slave projector, select the same signal from the Entry List as that of the master projector. Adjust the displayed image on the slave projectors as required and set the master projector back to Master mode to activate the Link Mode.

6. The Link Mode adjustment procedure is now complete and the desired source can be displayed.

Technical Specification

Lamp Type	Short Arc Xenon Bubble Lamp
Brightness	4500 (±10%) ANSI Lumens - Lamp High
	4000 (±10%) ANSI Lumens - Variable
Brightness Linearity	>80% Edge to Centre
Contrast Ratio	250:1 ANSI, 400:1 Full Field

Display Type	3 x DMD (one per R, G & B)
DMD Specification	1024 x 768 Pixels
	16.3μm x 16.3μm Pixel size
	17μm x 17μm Pixel pitch
	17.4mm x 13.1 DMD size
Fill Factor	92% Pixel fill factor

Source Compatibility	NTSC, PAL, SECAM, HDTV 1080i, 720p, 480p,
	VGA,SVGA, XGA, SXGA, MAC & DFP
Inputs	RGB/YCr/Pr, Cb/PB (2 x BNC)
	RGB H/V, HV (1 x D-sub 15 pin)
	YPbPr/YCrCb (1 x RCA)
	Video (1 x BNC, 1 x RCA)
	S-Video (1 x S-Video terminal)
	Y/C (1 x BNC)
Digital I/O	RGB Digital (1) MDR 20 pin
	DPF Specification (Max resolution: XGA)
	(1) Process out 20 pin
	Serial Digital Input (1) BNC (optional)
	SMPTE 259M Level C, 4:2:2
	525/625 Component (1) BNC loop through
PC Card	PCMCIA Data back-up
Video Processing	ASIC automatic resizing
Sync Formats	Separate Sync/Composite Sync/Sync on Green
Remote Control	Addressable remote control (wired/wireless)
Automation	RS232 9 pin D type contact closure
Switcher	Video Switcher in/out via 15 pin D type

ADVANCED

Mounting	Floor Mount (standard), Flying Frame (optional)
	Rigging Frame (optional), Stacking Frame (optional)

Lens Options	0.84:1 Fixed
	1.5 - 2.5:1 Power Zoom/Focus
	2.5 - 4.0:1 Power Zoom/Focus
	4.0 - 7.0:1 Power Zoom/Focus

Power Requirements	100 - 120 / 200 - 240VAC 50 - 60Hz
Input Current	11A (100 - 120V) 7.3A (200 - 240V)
Power Consumption	1kW (100 - 120V) 1.5kW (200 - 240V)

Physical Dimensions	308mm (12.2") height
	560mm (22.0") width
	682mm (26.9" length
Weight (chassis only)	45 Kg (95lbs)

ADVANCED

Section E: Maintenance

MAINTENANCE

Lamp Replacement

Before removing the lamphousing, switch off the lamp and allow the cooling fans to run for three minutes. When the projector is in standby mode (power indicator glows amber) disconnect from the mains supply and wait at least 10 minutes for the projector to cool down.

If the lamp has exceeded 1600 hours and the message "LP" is displayed on the 7 segment display, it will be necessary to reset the projectors internal running time by pressing the Help key or Power Off key on the remote control for 10 seconds, then turn on the mains switch.

1. Remove the two screws from the lamp housing cover at the rear of the projector and remove cover.

2. Locate the Timer PCB at top right of lamp housing and disconnect connector POXP.

3. Unscrew the two captive screws at the bottom left and right corners of the lamp housing.

4. Gently pull the lamp out of the projector using the handle on the lamp housing.

The lamp housing must be handled with care. If it is dropped from just 10cm the lamp will be defective.

To install a new lamp simply reverse the above procedure.

New lamps are supplied with a fine mesh filter. This filter needs to be fit under the filter lid at the front of the projector to the right of the input terminals.

MAINTENANCE

Routine Cleaning

1. Unplug the projector before cleaning.

2. Clean the cabinet periodically with a damp cloth. If heavily soiled, use a mild detergent. Never use strong detergents or solvents such as alcohol or thinner.

3. Use a blower or lens paper to clean the lens, and be careful not to scratch or mark the lens.

MAINTENANCE

Appendix

Glossary

Arc Lamp
The xenon arc lamp has a sapphire lens and a ceramic cover over the anode and cathode. It operates at high temperatures and the beam contains high levels of ultra-violet and infrared radiation. It is contained in a housing which acts as a heat sink.

Aspect Ratio
This is the ratio of picture width to picture height (the standard television aspect ratio is 4x3).

Black body
An ideal body or surface that completely absorbs all light falling upon it with no reflection.

Brightness
The light intensity of the displayed image.

Cold Mirror
This type of mirror filters infrared light, so that only 'cold' light is reflected. In the projector it is used to reflect the beam from the lamp into the condenser.

Colour Temperature
The Colour Temperature is the position along the black body curve of the chromaticity diagram - but takes into account the preset values for colour balance in the service set-up to take up the variations in the prism.. The projector allows you to adjust this temperature (i.e. adjust the picture colour) in steps of 100°K from 3000° to 9900°.

Composite Signal
A signal line that carries information relating to the entire signal, also incorporating sync pulses.

Contrast
The difference between the dark and light areas of the screen.

DMD™

A Digital Micromirror Device™ is a true digital light modulator. See D—2, DMD™ Usage and Operation for further explanation.

Field

A space on a menu screen for data to be entered.

Horizontal Scan Rate

This is the rate at which the DMD is scanning the horizontal lines on the screen. The rate is set by the horizontal sync from the source and measured in Hertz.

Hs + Vs

This stands for Horizontal and Vertical sync.

Hue

The graduation (red/green balance) of colour (applicable to NTSC).

Hz - Hertz

Hertz is a measurement of frequency, where one hertz is one cycle per second.

Interlacing

An interlaced image is displayed by alternatively updating two fields of horizontal display lines to produce a constant image. Field 1 (the odd lines) is updated, then field 2 (the even lines) is updated.

LED

A Light Emitting Diode is an electronic component that emits light.

Lumen

The measurement of luminous flux.

Luminance

Also known as 'Y' this is the part of an S-Video signal which affects the brightness, i.e. the black and white part.

APPENDIX

Noise
Electrical interference displayed on the screen.

NTSC- National Television Standards Committee
The United States standard for television - 525 lines of resolution transmitted at 60 interlaced frames per second.

PAL - Phase Alternate Line
The television system used in the UK, Australia and other countries - 625 lines of resolution transmitted at 50 interlaced frames per second.

Pr, Pb
These are Chrominance (Chroma) signals and are used with Y for S-Video inputs. They provide information about the signal colour.

Resolution
This is expressed as the number of horizontal pixels by the number of vertical lines, e.g. 680 x 400 means 400 lines with 680 pixels per line.

RGB
The Red, Green and Blue inputs from an RGB source.

S-Video
A video signal which has separate Y and C signals.

Throw Distance
The required distance between the screen and the projector.

Y
This is the luminance input (brightness) from an S-Video or component video signal.

APPENDIX