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PROJECTOR OWNER'S MANUAL

Digital Projection

M-VISION

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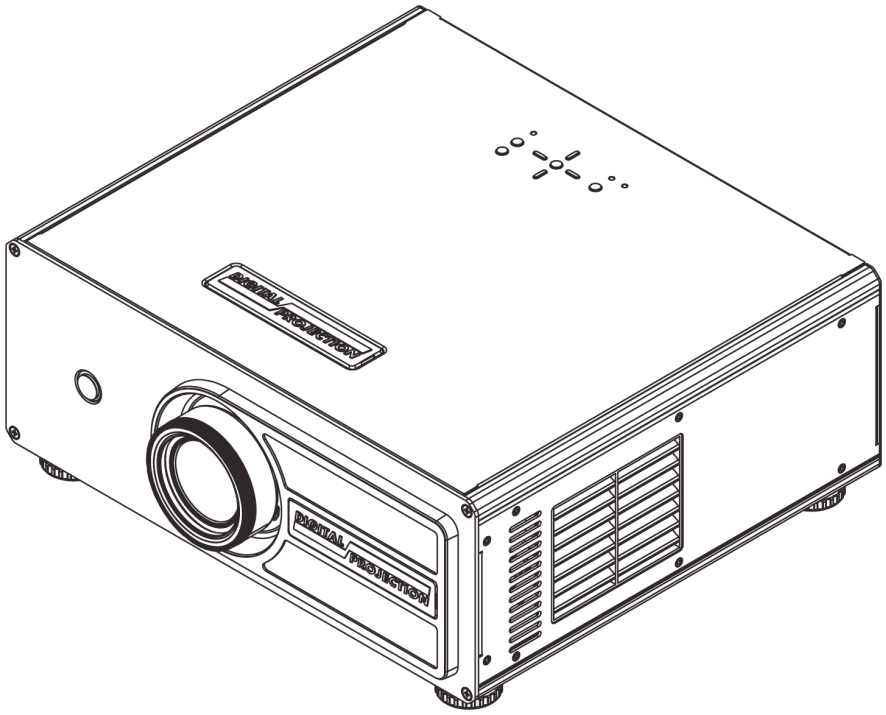
PRELIMINARY

M-Vision

Operation Manual



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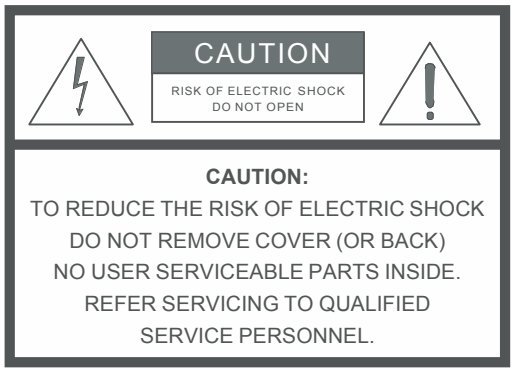
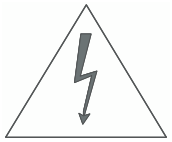
IMPORTANT SAFETY INSTRUCTIONS

Thank you for your purchase of this quality product! For best performance, please read this manual carefully as it is your guide through the menus and operation.





WARNING

This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. Read and keep this instruction.
2. Heed all warnings.
3. Follow all instructions.
4. Do not use this apparatus near water.
5. Clean only with a dry cloth.
6. Do not block any of the ventilation openings. Install in accordance with the manufacturer’s instructions.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for the replacement of the obsolete outlet.
9. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
10. Only use the attachments/accessories specified by The company.
11. Use only with a cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus to avoid injury from tip-over.

12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. The +12V trigger only outputs 12Vdc signal for triggering. Do not connect to any other power input or output. This could cause damage to this unit.
15. Keep the packing material in case the equipment should ever need to be shipped.
16. The lamp becomes extremely hot during operation. Allow the projector to cool down for approximately 45 minutes prior to removing the lamp assembly for replacement.
17. Do not operate lamps beyond the rated lamp life. Excessive operation of lamps beyond rated life could cause them to explode in rare occasions.
18. Never look directly into the lens when the lamp is on.

Compliance Information

DECLARATION OF CONFORMITY:

DPI hereby declares that

the M-Vision 260-1080p

conform with the provisions of:

Council Directive 2004/108/EC on Electromagnetic Compatibility;

EN 55022 “Limits and methods of measurements of radio interference characteristics of information technology equipment” 1998;

EN 55024 “Limits and methods of measurements of immunity characteristics of information technology equipment” 1998;

Including:

- EN 61000-4-2 “Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 2: Electrostatic discharge immunity test”
- EN 61000-4-3 “Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 3: Radiated, Radio-Frequency, Electromagnetic Field Immunity Test”
- EN 61000-4-4 “Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 4: Electrical fast transient/burst immunity test”
- EN 61000-4-5 “Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 5: Surge immunity test”
- EN 61000-4-6 “Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 6: Conducted disturbances induced by radio-frequency fields immunity test”
- EN 61000-4-8 “Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 8: Conducted disturbances induced by power frequency magnetic fields immunity test”
- EN 61000-4-11 “Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques Section 11: Voltage dips, short interruptions and voltage variations immunity tests”

Including:

- EN 61000-3-2 “Electromagnetic compatibility (EMC) Part 3, Section 2: Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)” 2000;
- EN 61000-3-3 “Electromagnetic compatibility (EMC) Part 3, Section 3: Limitations of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current up to and including 16 A and not subject to conditional connection” 1995;

Council Directive 2006/95/EC and amended by M1 and C1 on Low Voltage Equipment Safety;

EN 60950 “Safety of information technology equipment, including electrical business equipment”

Date of Declaration: October 2008

FCC PART 15:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

INDUSTRY CANADA (ICES-003):

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

IMPORTANT RECYCLE INSTRUCTIONS:

Lamp(s) inside this product contain mercury. This product may contain other electronic waste that can be hazardous if not disposed of properly. Recycle or dispose in accordance with local, state, or federal Laws.

For more information, contact the Electronic Industries Alliance at WWW.EIAE.ORG.

For lamp specific disposal information check WWW.LAMPRECYCLE.ORG.

DISPOSAL OF OLD ELECTRICAL AND ELECTRONIC EQUIPMENT

(Applicable throughout the European Union and other European countries with separate collection programs)

This symbol found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. This symbol is only valid in the European Union. If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

INTRODUCTION 1

1.1 About This Manual

This User's Manual describes how to install, set up and operate this 1080p projector.

Target Audience

This manual help installers and end users get the most out of this 1080p projector.

It has made every effort to ensure that this manual is accurate as of the date it was printed. However, because of on-going product improvements and customer feedback, it may require updating from time to time.

Textual and Graphic Conventions

Text Conventions: The following conventions are used in this manual, in order to clarify the information and instructions provided:

- Remote button identifiers are set in upper-case bold type; for example, "Press **EXIT** to return to the previous menu."
- Computer input (commands you type) and output (responses that appear on-screen) is shown in monospace (fixed-width) type; for example: "To change the aspect ratio to Letterbox, type op aspect = 1 **<Enter>**. "
- All keys with functional names are initial-capped, set in bold type and enclosed in angle brackets. These keys are the following: **<Enter>**, **<Spacebar>**, **<Control>**, **<Esc>** and **<Tab>**.
- **<Enter>** indicates that you may press either the **RETURN** or **ENTER** key on your keyboard if it has both keys.

In addition to these conventions, underlining, boldface and/or italics are occasionally used to highlight important information, as in this example:

A carriage return must be used after each command or string.

Graphic Conventions: These symbols appear in numerous places throughout the manual, to emphasize points that you must keep in mind to avoid problems with your equipment or injury:

TIPS highlight time-saving short cuts and helpful guidelines for using certain features.

NOTES emphasize text with unusual importance or special significance. They also provide supplemental information.

CAUTIONS alert users that a given action or omitted action can degrade performance or cause a malfunction.

WARNINGS appear when a given action or omitted action can result in damage to the equipment, or possible non-fatal injury to the user.

DANGER appears when a given action can cause severe injury or death.

1.2 Description, Features and Benefits

This projector has been engineered for the top quality 1080p picture performance and installation flexibility heretofore associated with projectors costing far more.

This Full-HD (1920 x 1080) native resolution DLP™ light engine projector features state-of-the-art technology for bright, pristine, high-definition images at today's highest available resolution.

This projector is equipped with a precision optics package offering zoom, focus and lens shift controls and a throw range of 1.85:1 to 2.40:1. For installations requiring shorter throw distances, This projector is optionally available with a lens that offers a throw range of 1.56:1 to 1.86:1 or a .73:1 fixed lens.

This projector incorporates proprietary de-interlacing technology that provides exceptional scaling and film-to-video (3:2 pull-down) conversion for the most artifact-free images possible.

Discrete infrared (IR) and RS-232 control make custom installation seamless, while discrete power on/off and source selection accommodate any automation control system.

Key Features and Benefits

This projector offers these key features and benefits:

- Native Resolution: 1920 x 1080 (16:9 Native Aspect Ratio)
- DLP system using high-performance Digital Micromirror Device (DMD)
- Customized color wheel produces wide dynamic range and rich grayscale
- Two (2), HDMI 1.3 Inputs with High-bandwidth Digital Content Protection (HDCP)
- HDTV Compatible

Parts List

Your projector is shipped with the following items. If any items are missing or damaged, please contact your dealer

- This 1080p DLP Projector
- Remote Control Unit and two (2), AA-size batteries
- One AC Power Cord (North America)
- Allen wrench (for image shift adjustment)

Optional Accessories

- Replacement lamp
- 0.8x zoom adaptor
- 1.25x zoom adaptor
- Replacement filter

2 CONTROLS AND FUNCTIONS

2.1 Projector at a Glance

Figure 2-1 and Figure 2-2 show the key projector components.

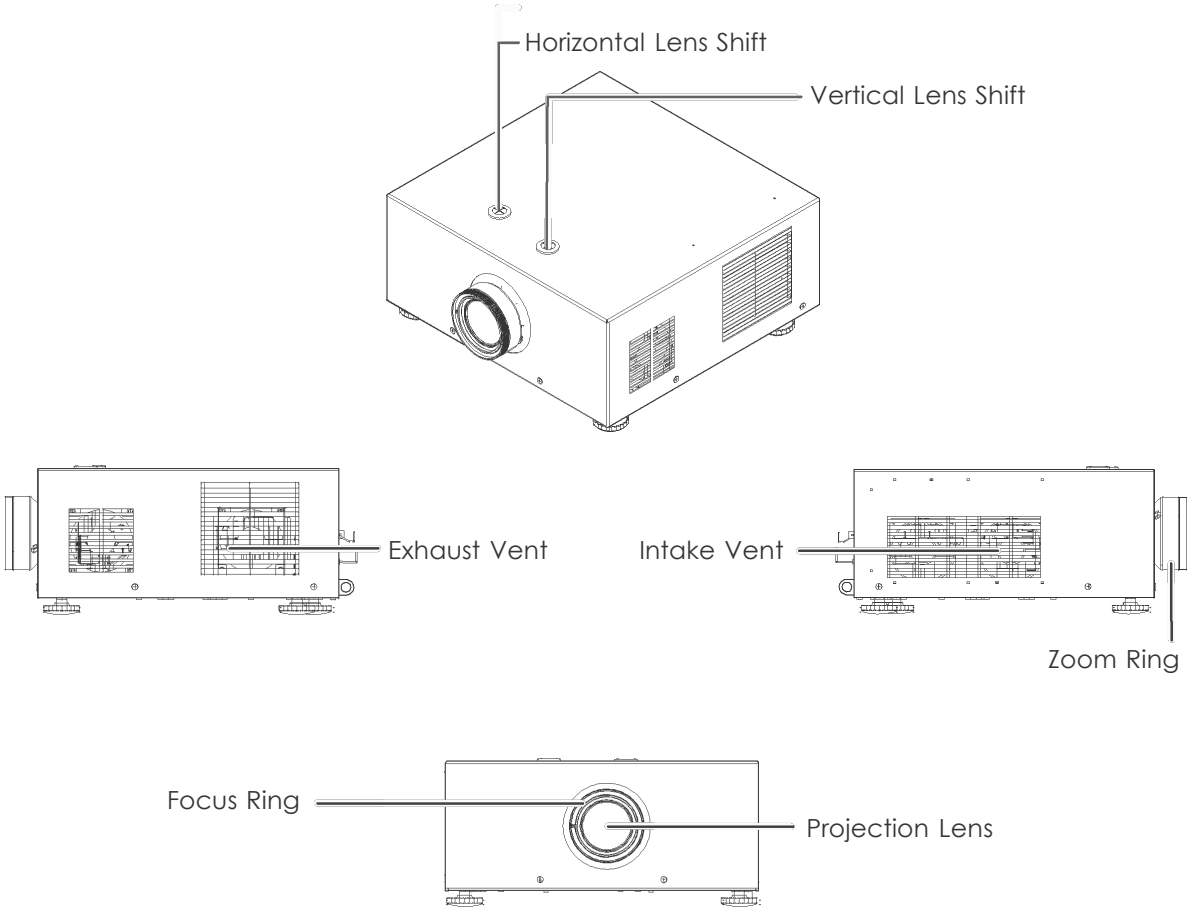
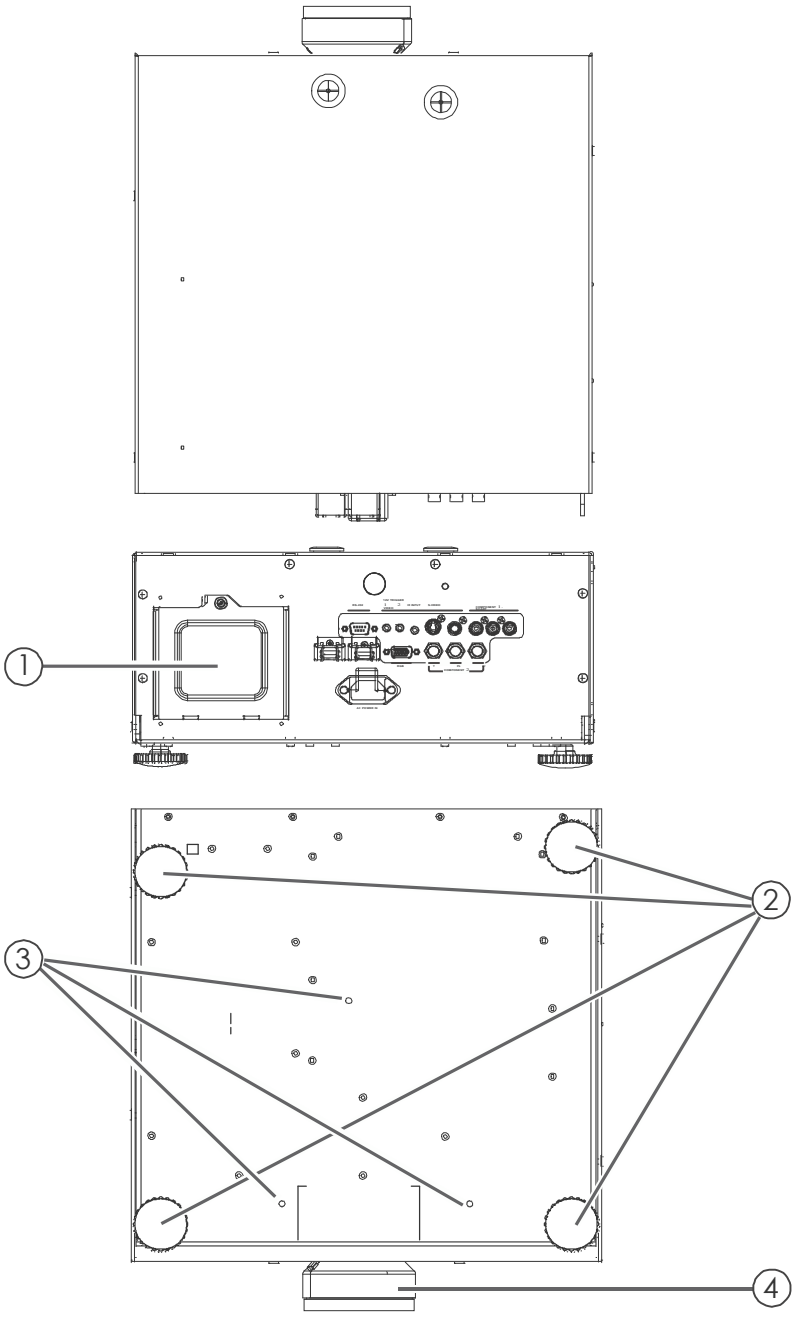


Figure 2-1: Projector Front/Side View

- EXHAUST VENT
  Warm air exits the projector through this vent. Ensure that it is not blocked.
- INTAKE VENT
  Internal fans draw cool air into the projector through this vent.
- ZOOM RING
  Rotate this to change the projected image size.
- FOCUS RING
  Rotate this to focus the projected image.
- PROJECTION LENS
  Available in two versions: standard throw range (1.85:1 to 2.40:1), short throw range (1.56:1 to 1.86:1) and .73 fixed.
- REAR IR SENSOR

Receives infrared signals from the remote control unit.



1. LAMP MODULE COVER
   Remove this cover to access the lamp compartment.
2. ADJUSTABLE FEET
   Use these when the projector is installed in a table-top configuration to level the image and/or adjust the projection angle.
3. BOLT MOUNTING PATTERN
   Mounting holes are provided to secure the projector to a table or mounting plate to prevent accidental movement. Below drawing is the mechanical dimension for you to design a mounting plate.

4. PROJECTION LENS
   The inside of the lens barrel is threaded to accommodate a standard, 72-mm lens filter. For example, with a smaller screen you can install a neutral-density filter to reduce the overall light output.

Figure 2-2: Projector Rear/Bottom/Top View

2.2 Projector Rear Panel

Figure 2-3 shows the projector rear panel.

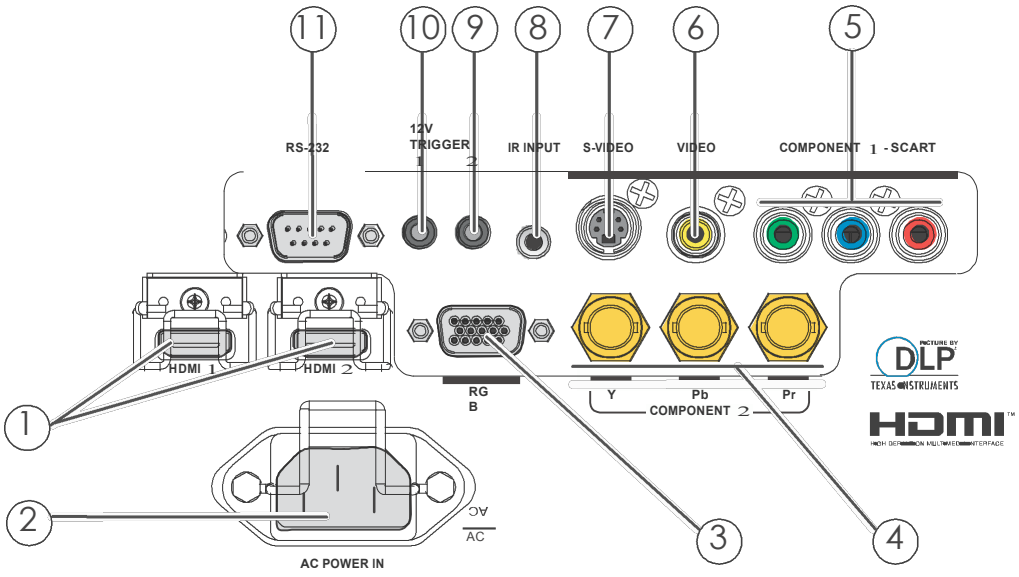
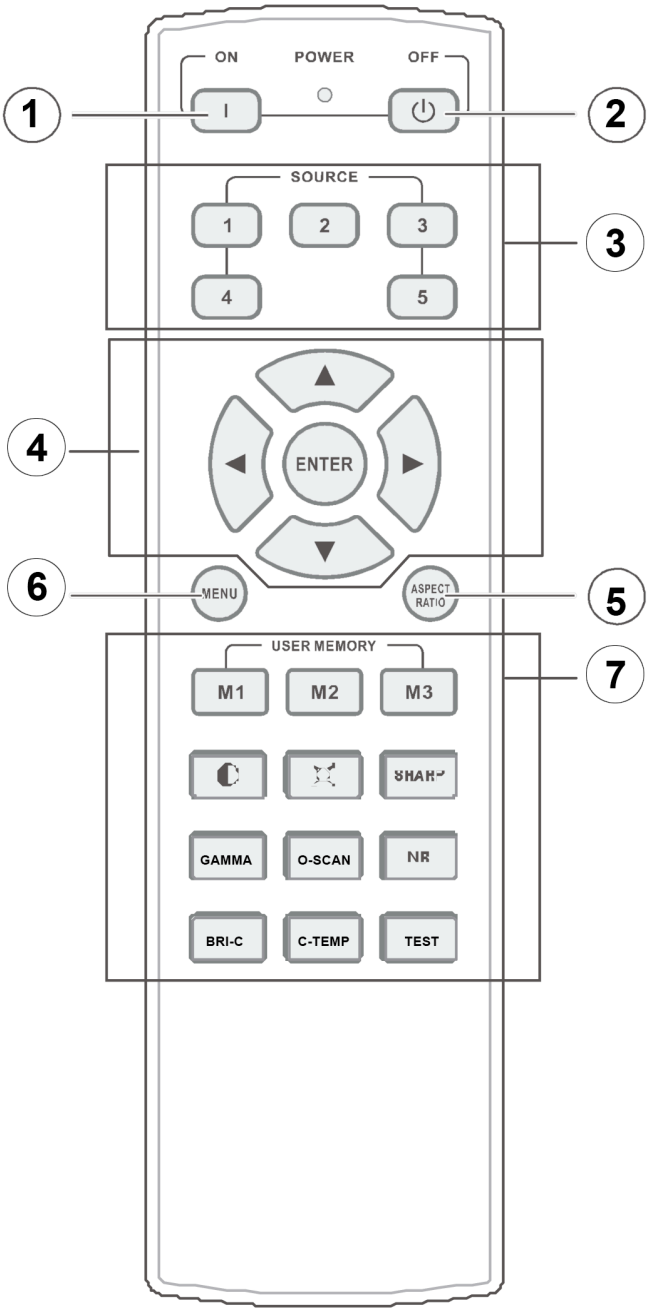


Figure 2-3: Projector Rear Panel

1. HDMI 1 (Digital)
   HDMI 2 (Digital)
   HDCP-compliant digital video inputs for connecting an HDMI or DVI source.
2. POWER INPUT (100 to 240 VAC)
   Use power cord to connect the projector and power.
3. RGB
   Provides a standard, 15-pin VGA-style connection to either an RGB or component high-definition source, or to a personal computer. This projector automatically detects the input signal resolution.
4. COMPONENT 2
   Three BNCs for connecting component (YPbPr) video sources.
5. COMPONENT 1/SCART (RCA connectors)
   Standard- or high-definition (480i/480p/576i/576p/720p/1080i/1080p) Component (YPrPb) input for connecting a DVD/HD-DVD/BD player, HD set-top box or other SD/HD source. Also provides RGB input for RGBS sources.
6. VIDEO
   Standard composite video input for connecting a VCR, laser disc player or other composite video source. Also provides composite sync input for RGBS sources.
7. S-VIDEO
   A standard S-Video input for connecting a DVD player, satellite receiver or Super VHS (S-VHS) VCR.
8. IR INPUT
   Wired input from a Niles- or Xantech-compatible, infrared (IR) repeater system.
9. TRIGGER 2 (3.5-mm, mini phono jack)
   Provides 12 (+/- 1.5) volt switched output for screen relays with 250mA current capacity and short protection.
10. TRIGGER 1
    Provides 12 (+/- 1.5) volt switched output for screen relays with 250mA current capacity and short protection.
11. RS-232
    A female, 9-pin D-sub connector for interfacing with a PC or home theater automation/control system.

2.3 Projector Remote Control

Figure 2-4 shows the projector remote control, and the paragraphs that follow describe its functionality.



1.**ON**
Use this button to turn the projector on.

2.**OFF**
Use this button to turn the projector off.

3.Source Selection Buttons **(1-5):**
Press to select a video source. By default, these buttons are assigned as follows:
1 = RGB; **2** = HDMI 1; **3** = HDMI 2;
4 = Component 1 ; **5** = S-Video. However, you can assign each button to any source you wish.

4.Cursor Keys **(►,▼ ,◄ ,▲)**
Use these buttons to select items or settings, adjust settings or switch display patterns.
ENTER
Press to select a highlighted menu item or confirm a changed setting.

5. **Aspect Ratio Selection Button**
Press this button repeatedly to select one of the following aspect ratios:

16 : 9: Default setting. For viewing 16:9 DVDs or HDTV programs in their native aspect ratio. **Letterbox:** For viewing LaserDisc movies or non- anamorphic DVDs on a 16:9 screen.

4 : 3: Scales the input signal to fit 4:3 sources in the center of the screen.

4:3 Narrow: Scales the input signal to fit 4:3 sources in the center of the screen when using an anamorphic lens.

Native: Displays source image in its native resolu- tion without re-sizing or overscan.

6.**MENU**
Press this button to show or hide the OSD controls.

7.These keys available with service code only.

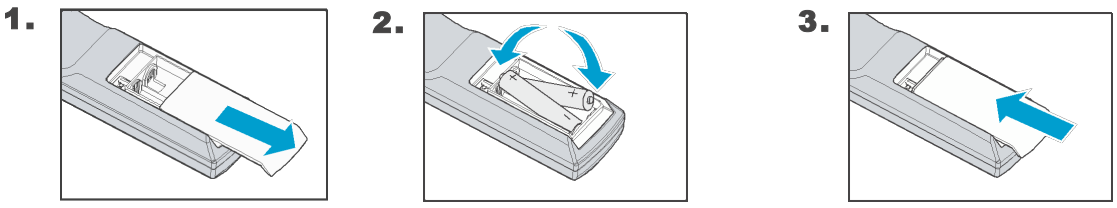
Figure 2-4: Projector Remote Control

3 INSTALLATION

3.1 Remote Control

To install batteries in the remote control:

1. Slide the battery compartment cover in the direction of the arrow to remove it.
2. Install two AA batteries with the correct polarity.
3. Replace the cover.



Notes on Batteries

- Make sure that the battery polarities are correct when installing the batteries.
- Do not mix an old battery with a new one or different types of batteries.
- If you will not use the remote control for a long time, remove the batteries to avoid damage from battery leakage.

Notes on Remote Control Operation

- In most situations, you can simply point the remote control at the screen which will reflect the IR signal from the remote back toward the IR receiver on the projector. In some cases, however, ambient conditions may prevent this. If so, point the remote control at the projector and try again.
- If the effective range of the remote control decreases, or it stops working, replace the batteries with new ones.
- The remote control may fail to operate if the infrared remote sensor is exposed to bright sunlight or fluorescent lighting.

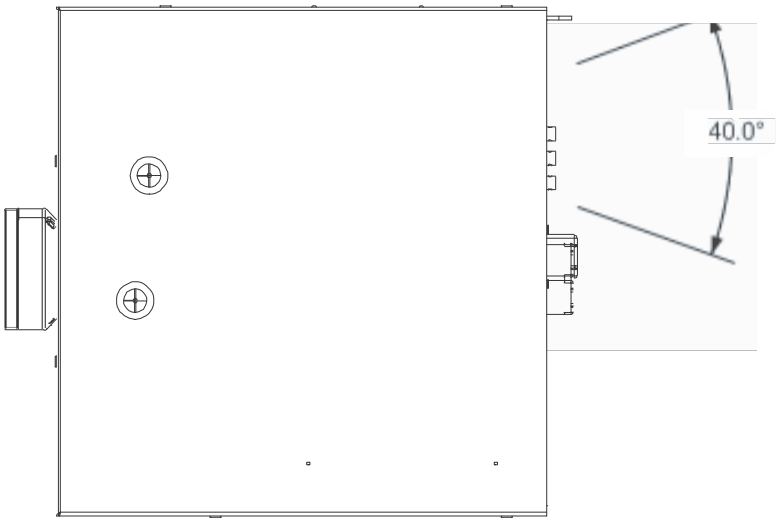


Figure 3-1: IR Reception Angles

3.2 Quick Setup

Table 3-1 gives a quick overview of the projector installation process. The sections following this one provide detailed instructions.

Installation should be performed by a qualified custom video installation specialist.

Step	Procedur	For Details, Refer to
1	Choose a location for the projector	17
2	Mount the projector	21
3	Connect signal sources to the Projector	22
4	Connect external controller to RS-232 port and/or IR repeater system (optional)	26
5	Apply power to the projector	28
6	Change the OSD Language (optional)	28
7	For rear-screen and/or ceiling-mount installations, select the proper picture orientation	29
8	Primary lens adjustments: projected image size (zoom), position (shift) and focus	18, 30
9	Projector calibration: adjust the following for each input; save settings when finished: Aspect ratio Brightness Contrast Color level Tint Input position	33

Table 3-1: Installation Overview

3.3 Installation Considerations

Proper installation of your projector will ensure the quality of your display. Whether you are installing a projector temporarily or permanently, you should take the following into account to ensure your projector performs optimally.

Installation Type

Choose the installation type that best suits your needs: front or rear screen, floor mount or inverted mount. Table 3-2 compares these various installation methods.

Advantages	Considerations
Front Screen, Floor Mount Installation	
• Easy to set up • Can be moved or changed quickly • Easy to access	• Shares floor space with audience
Rear Screen, Floor Mount Installation	
• Projector is completely hidden • Projector is easily accessed • Usually good ambient light rejection	• Requires separate room • Installation cost is usually higher
Rear Screen, Floor Mount with Mirror	
• Projector is completely hidden • Usually good ambient light rejection • Requires less space behind screen than other rear screen installations	• Requires separate room • Installation cost is usually higher

Table 3-2: Projector Installation Options

Ambient Light

In general, minimize or eliminate light sources directed at the screen. Contrast ratio in your images will be noticeably reduced if light directly strikes the screen, such as when a shaft of light from a window or floodlight falls on the image. Images may then appear washed out and less vibrant.

Throw Distance

Throw distance is the distance measured from the front of the projector to the screen. This is an important calculation in any projector installation as it determines whether or not you have enough room to install your projector with a desired screen size and if your image will be the right size for your screen.

You can quickly estimate the throw distance by taking the width of the screen and multiplying it by the lens throw ratio; see Figure 3-2. The result of this calculation tells you roughly how far back the projector should be positioned from the screen in order to project a focused image large enough to fill the screen.

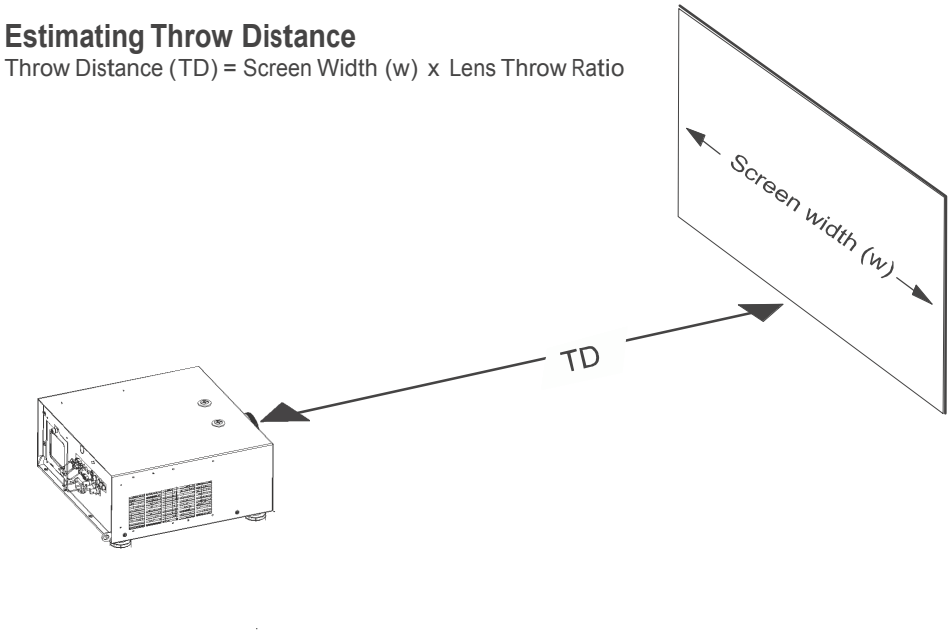


Figure 3-2: Estimating Throw Distance

Two models of the projector are available, one with 1.56-1.86:1 lens and the other with 1.85-2.40 lens With optional zoom adaptors throw ratios of 1.24 – 3.0 can be achieved.

The standard projector offers a throw ratio of between 1.85 and 2.40.

With the optional, short-throw accessory lens, the projector offers a throw ratio of between 1.56 and 1.86. A .73:1 fixed lens is also available.

Vertical and Horizontal Position

Proper placement of the projector relative to the screen will yield a rectangular, perfectly-centered image that completely fills the screen.

Ideally, the projector should be positioned perpendicular to the screen and in such a way that the lens center is aligned with either the top or bottom edge of the screen area, and centered horizontally. See Figure 3-3.

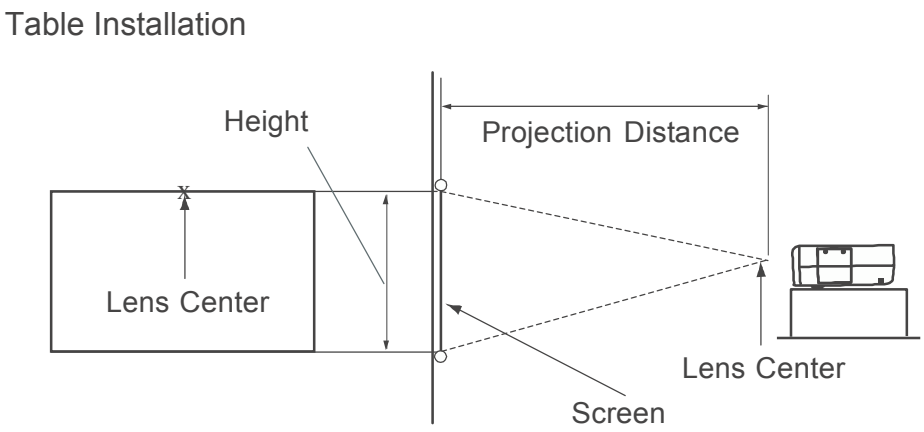
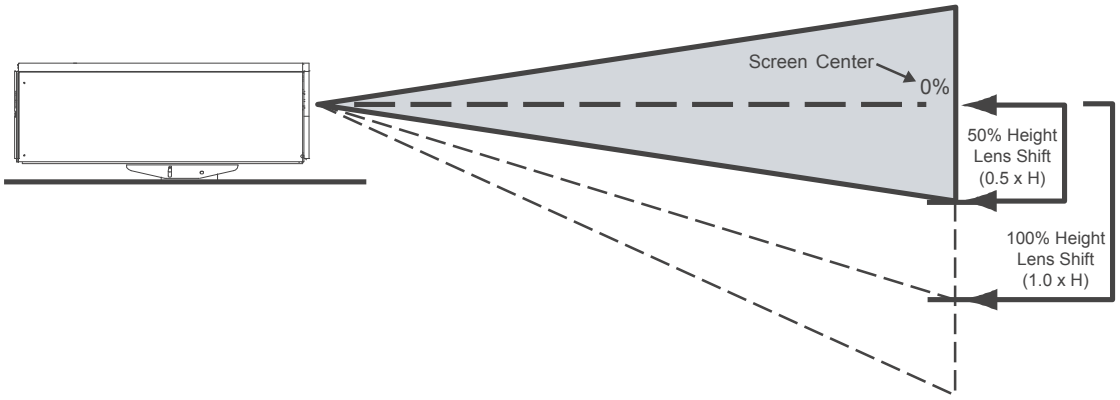


Figure 3-3: Projector Placement

Vertical Lens Shift

You can use the lens shift controls on the projector to center the image on the screen. Lens shift is generally expressed as a percentage of the screen height or width, as shown in Figure 3-4 and Figure 3-5.



Note

This is a general example of lens shift. Lenses vary in their shift capabilities. No particular lens or projector is used in this example.

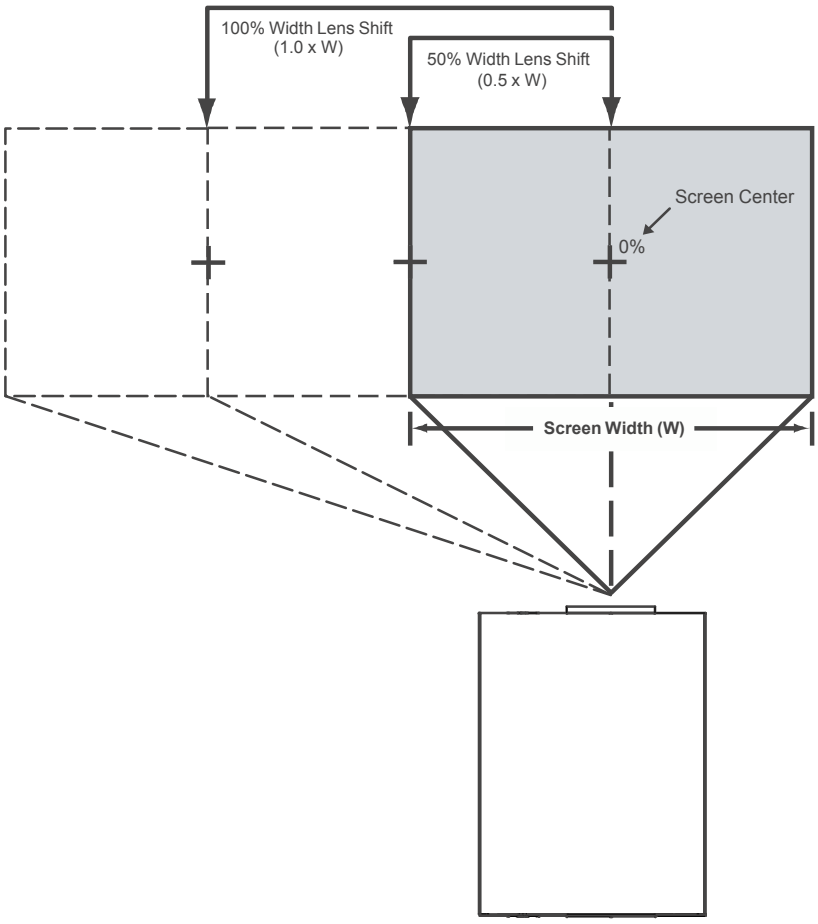
Figure 3-4: Vertical Lens Shift (Example Only)

Vertical Lens Shift:

The projector provides up to 120% of upward vertical lens shift and up to 120% of downward vertical lens shift. For example, with a 100 x 56 inch (1.78:1) screen, you can shift the image up to 14.00 inches (0.36 meters) above or 33.60 inches (0.85 meters) below the screen center.

Horizontal Lens Shift:

The projector provides ±30% of horizontal lens shift. For example, with a 100 x 56 inch (1.78:1) screen, you can shift the image up to 7.50 inches (0.19 meters) left or right of the screen center.



Note

This is a general example of lens shift. Lenses vary in their shift capabilities. No particular lens or projector is used in this example.

Figure 3-5: Horizontal Lens Shift (Example Only)

Note

1. With no vertical or horizontal lens shift, the lens center and screen center are aligned with each other.
2. Vertical shift limits are percentages of the screen height. Horizontal shift limits are percentages of the screen width.
3. Vertical lens shift figures are for ceiling mount configurations. For floor installations (where the projector is upright), reverse the up/down vertical lens shift percentages.

Folded Optics

In rear-screen applications where space behind the projector is limited, a mirror may be used to fold the optical path, as shown in Figure 3-6. The position of the projector and mirror must be accurately set. If you are considering this type of installation, contact your dealer for assistance.

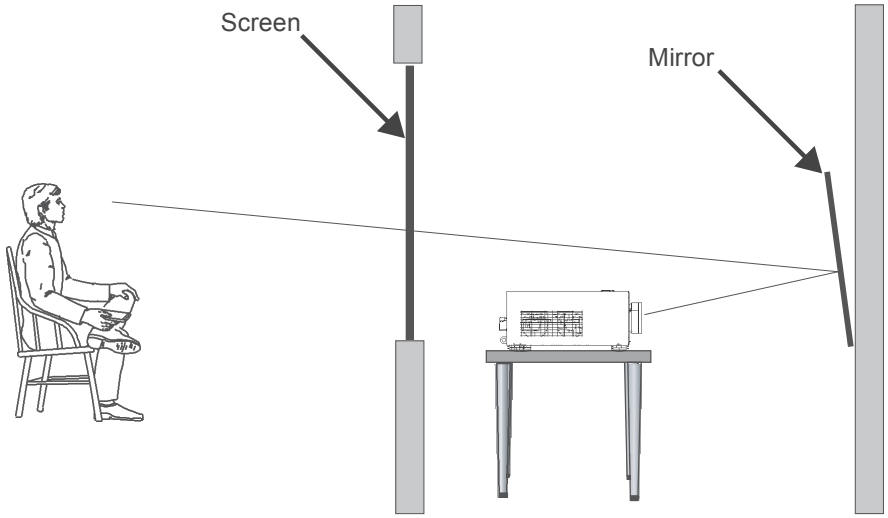


Figure 3-6: Folded Optics

Other Considerations

Other considerations and tips that can help improve your installation:

- Keep the ambient temperature constant and below 35°C (95°F). Keep the projector away from heating and/or air conditioning vents. Changes in temperature may cause drifts in the projector circuitry, which may affect performance.
- Keep the projector away from devices that radiate electromagnetic energy such as motors and transformers. Common sources of these include slide projectors, speakers, power amplifiers and elevators.
- Utilize optical offset prior to tilting or aiming projector at screen.
- Keep optics, lens and port glass clean for best performance and image quality.

3.4 Mounting the Projector

There are several methods for mounting the projector. Depending on your chosen installation, one method may be more suitable than another.

Floor Mounting (Upright)

In typical front and rear screen installations, the projector can be mounted to a secure and level surface such as a table or cart. Carts are useful when moving a projector during a presentation or from site to site. If possible, lock the wheels when it's in position to prevent it from being moved during a presentation.

Adjusting the Projection Angle

If the screen is significantly higher or lower than the projector, you can also tilt the projector at a slight angle. In a ceiling installation, you do this by adjusting the ceiling mount.

For a floor installation, turn the adjustable feet at the bottom of the projector to adjust the projection angle.

If you do this, you may need to vertically shift the image to compensate. For detailed instructions, refer to Lens Adjustments on page 30.

3.5 Connections to the projector

Proceed as follows to connect the projector to your video sources, external controller(s) - if present - and AC power.

When connecting your equipment:

- Use the correct signal cables for each source.
- Ensure that the cables are securely connected. Tighten the thumbscrews on connectors that have them.

Connecting Source Components to the projector

Connect your video sources to the projector as shown and described in the sections that follow.

HDMI/DVI Connections: See Figure 3-7.

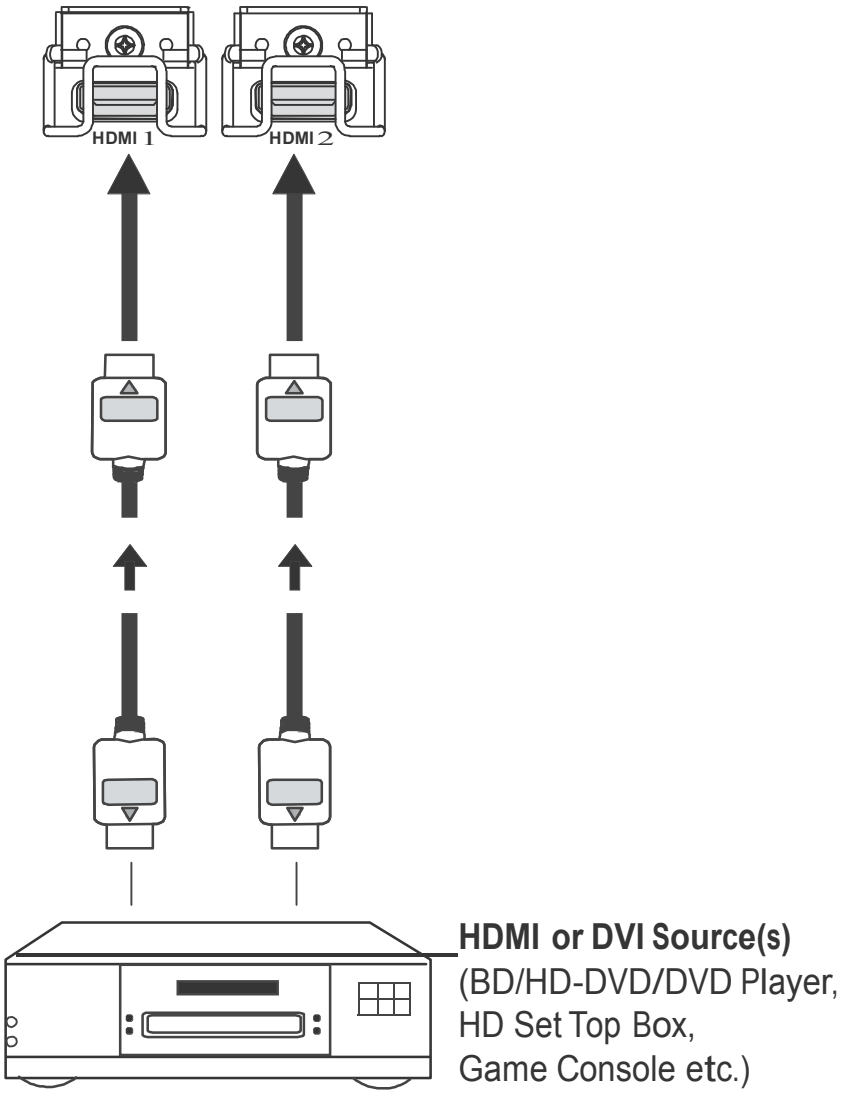


Figure 3-7: HDMI/DVI Source Connections

RGB Connections: Connect your personal computer or other RGB source to the RGB input.

Optionally, if the source outputs RGB with composite sync, connect the green, blue and red outputs to the Y, Pb and Pr terminals on the COMPONENT 1/SCART input and the sync output to the VIDEO input.

See Figure 3-8.

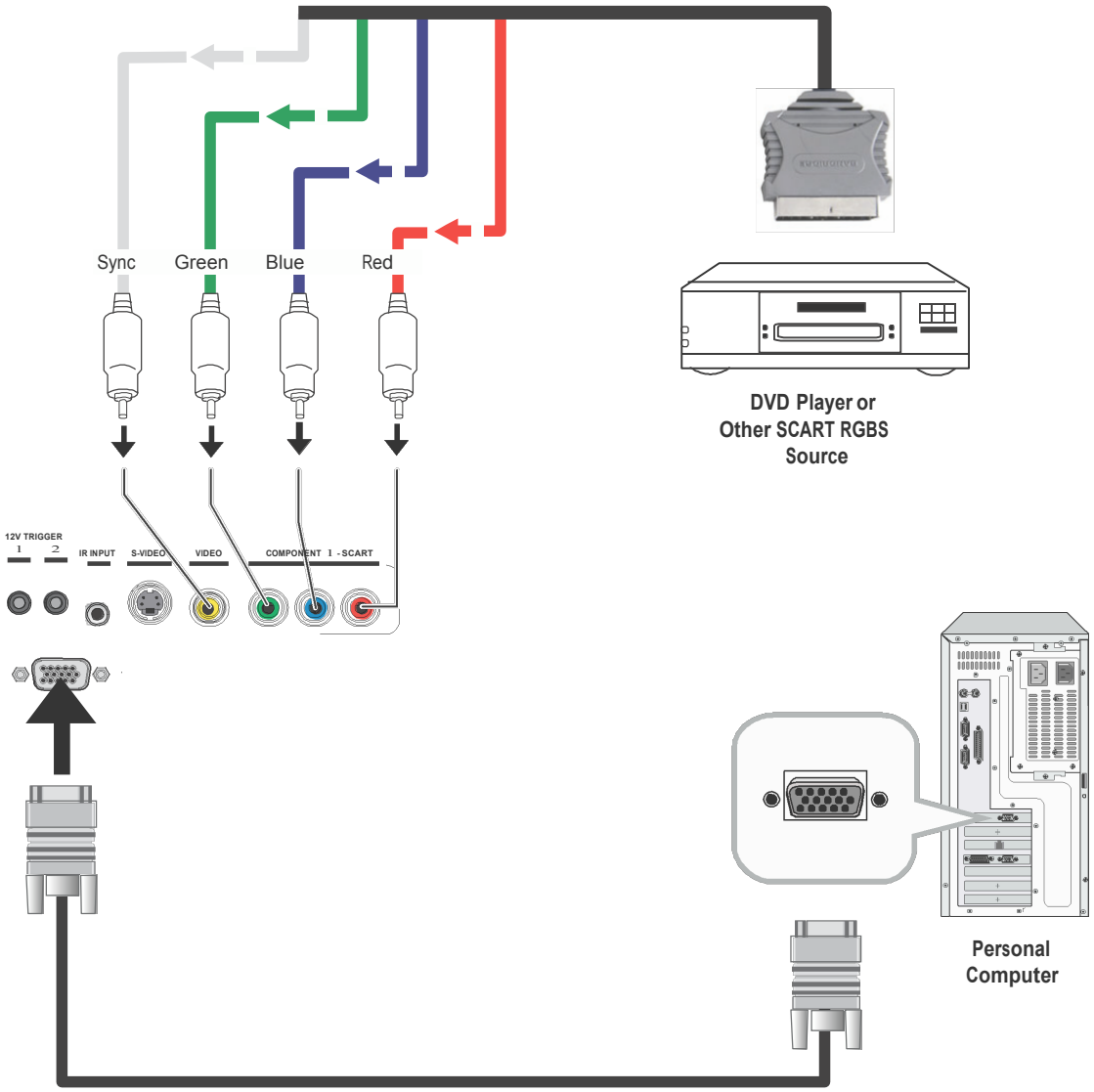


Figure 3-8: RGB Connections

Component Video Connections: Connect your component video sources to the COMPONENT 1/SCART, COMPONENT 2 or RGB inputs as shown in Figure 3-9.

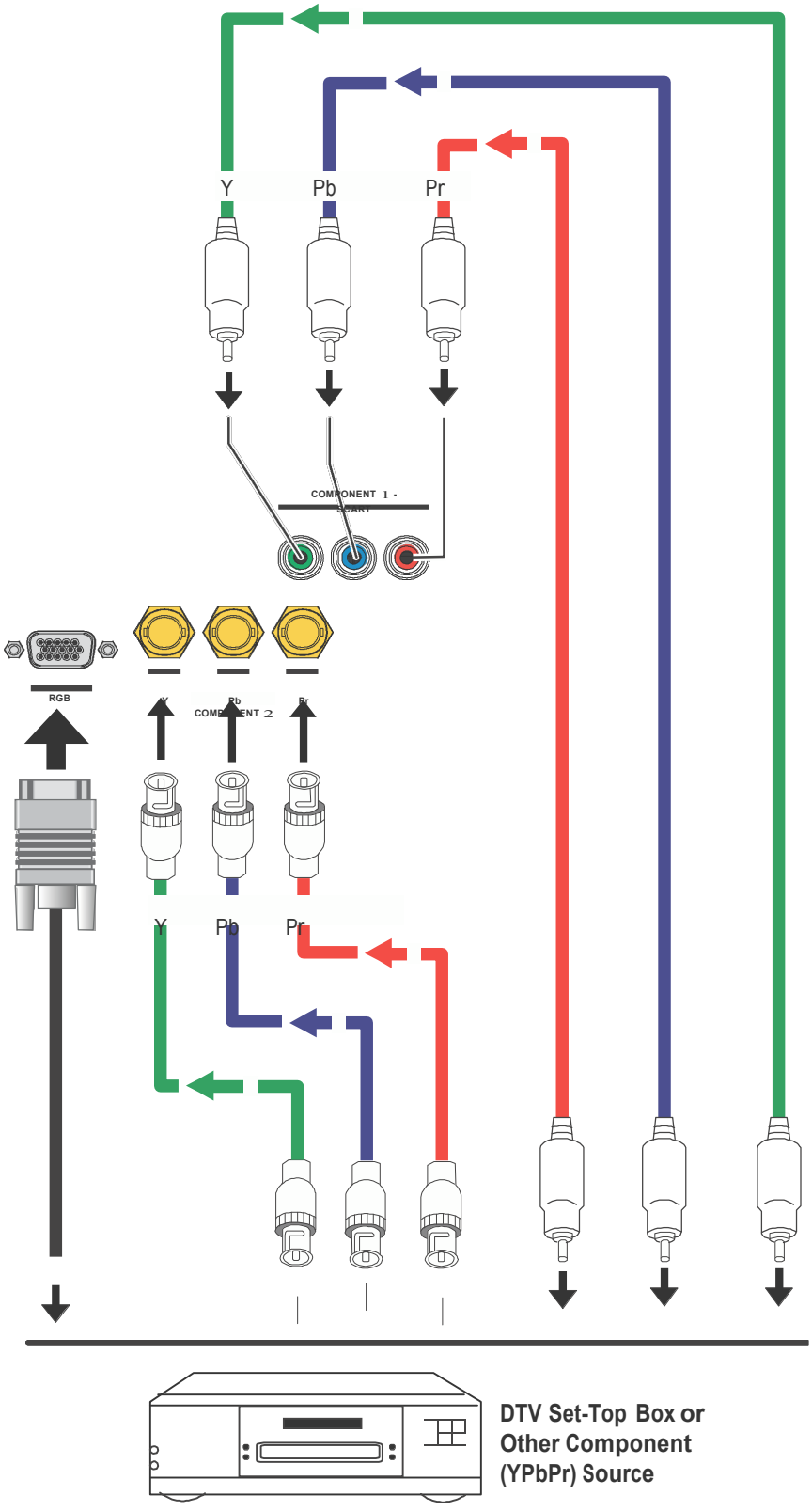


Figure 3-9: Component Video Connections

Composite/S-Video Connections: Connect your Composite and S-Video sources to the projector as shown in Figure 3-10.

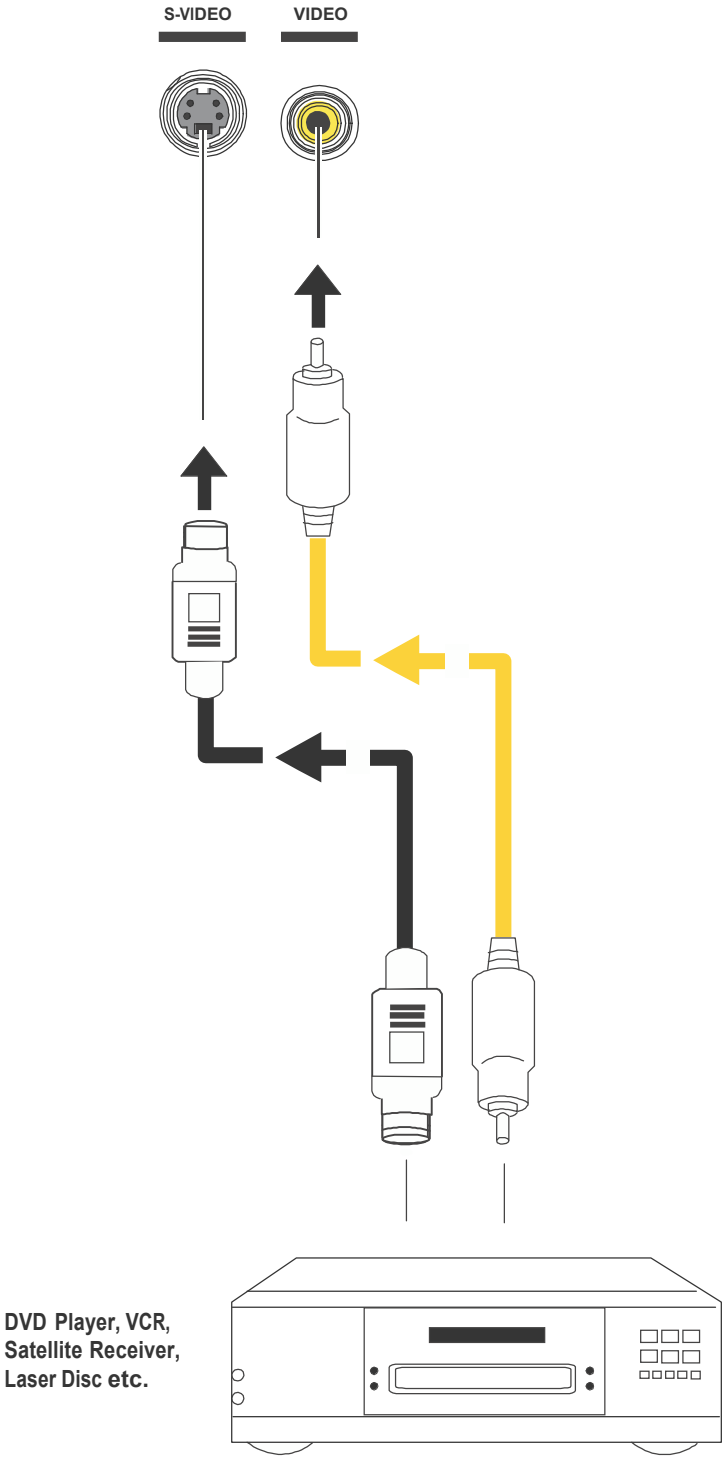


Figure 3-10: Composite and S-Video Connections

RS-232 Controller Connection

Connect a PC or home theater control/automation system (if present) to the RS-232 port on the projector; see Figure 3-11. Use a standard, 9-pin serial cable, wired straight-through.

For more information about using this connection, refer to Serial Communications on page 67.

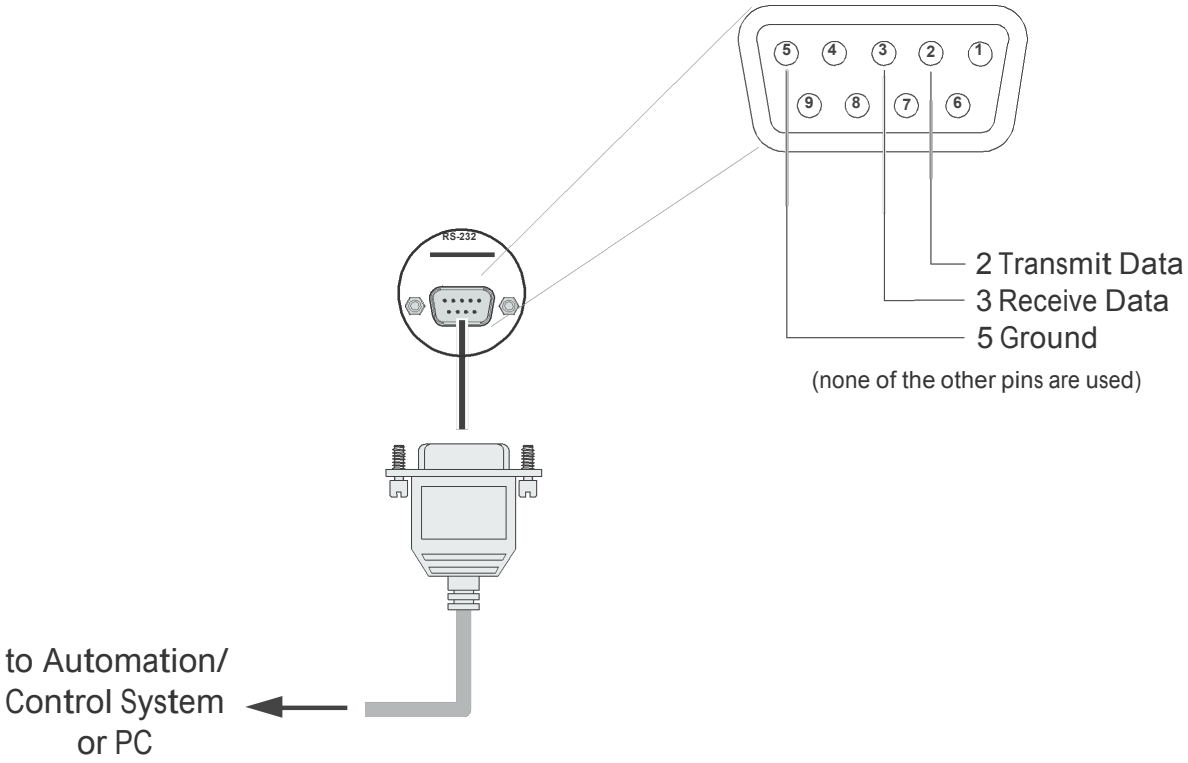


Figure 3-11: RS-232 Control System Connection

Connecting an External IR Receiver

If infrared signals from the remote control cannot reach the projector due to excessive distance or obstructions such as walls or cabinet doors, you can connect an external IR repeater system to the IR INPUT on the projector to extend the range of the remote control. See Figure 3-13.

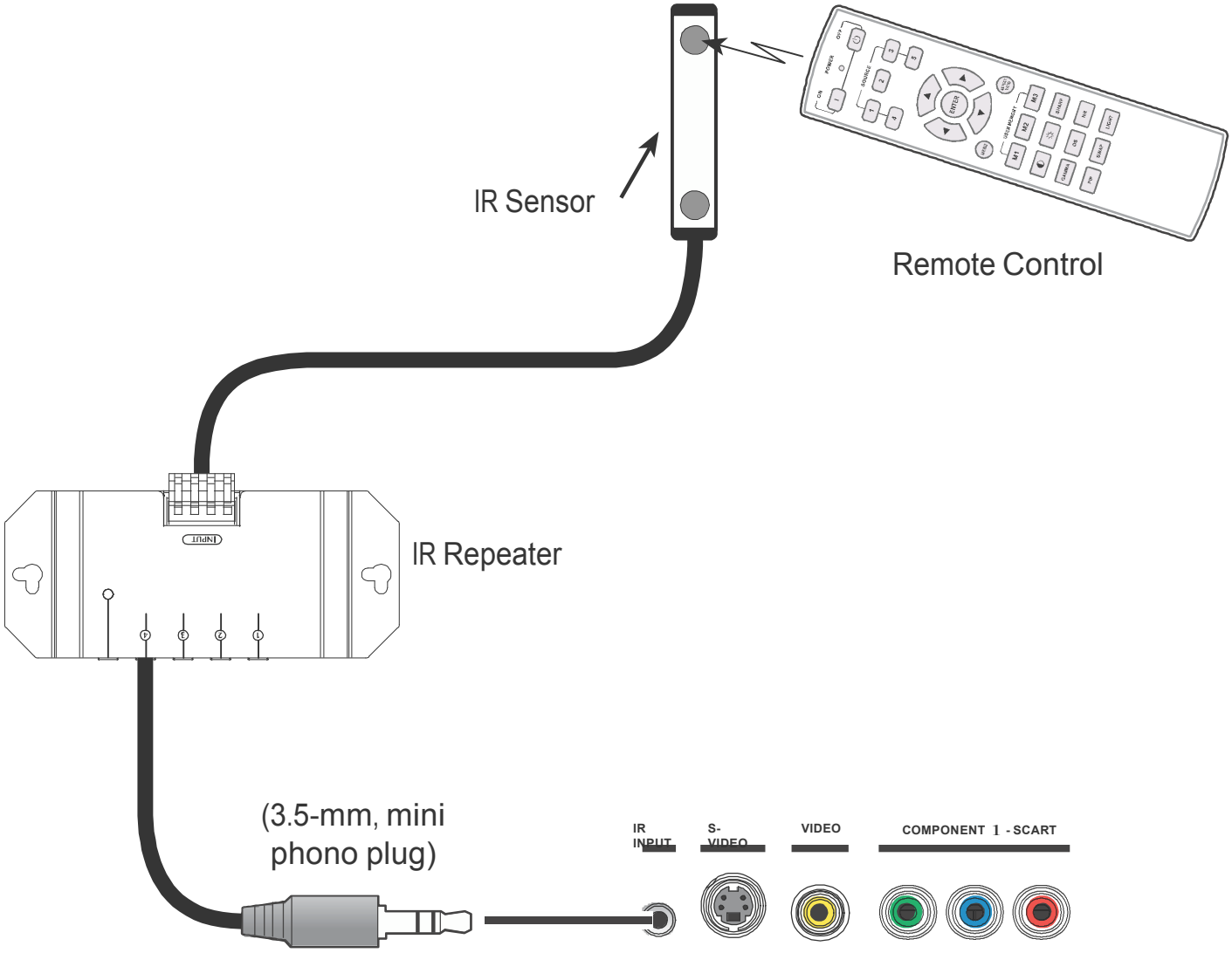


Figure 3-12: External IR Receiver Connection

Connecting to AC Power

The projector ships with one AC power cord. If you need a different cord, find one that is appropriate to your locate that has a IEC Female plug to interface to the projector side. Plug the female end of the power cord into the AC receptacle on the rear of the projector (AC 100V ~ 240V); see Figure 2-3. Then, connect the other end to your AC power source.

3.6 Turning on the Power

1. Turn on your source components.
2. Press the ON | button on the remote control to turn on the projector. The LED flashes green to indicate that it is warming up.
3. When the projector is ready for use, the LED turns off.

3.7 Changing the OSD Language

When you turn on the projector for the first time, the OSD Language Menu appears.

The projector can display the menus in English, French, German, Italian, Spanish, Swedish, Traditional Chinese, Simplified Chinese, Japanese, Korean, Portuguese or Russian.

Press ▲ or ▼ to select a language. Then, press ENTER to confirm your selection.

3.8 Adjusting the Picture Orientation

If the projector is installed behind the screen, you must change the picture orientation to match the installation method. To do this, press MENU on the remote control. Then, select System from the Main Menu.

Rear Projection

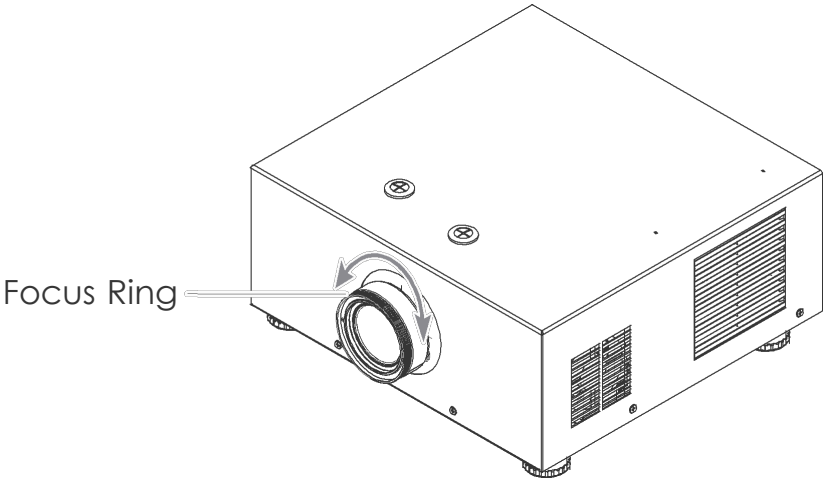
If the projector is used in a rear-projection application (see Figure 3-6), press ▼ repeatedly to select Rear Projection from the System Menu. Press ◀ or ▶ to set it to On.

3.9 Lens Adjustments

The projector gives you a great deal of control over the picture size, position and focus.

Focus

To focus the projected image, grasp the lens by the front ring and rotate it.



Zoom

To make the picture smaller (zoom out) or larger (zoom in), rotate the zoom ring in the appropriate direction..

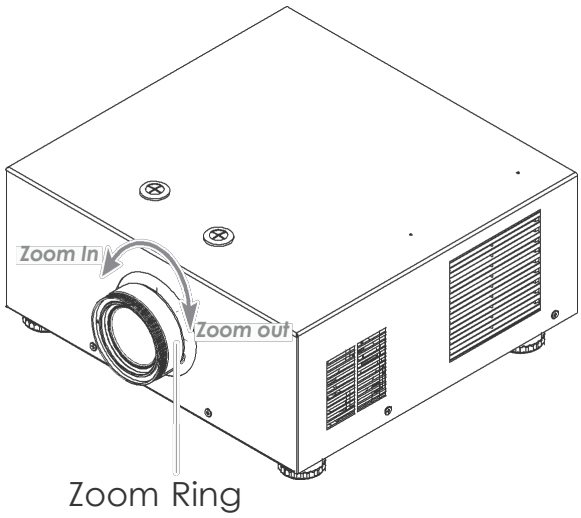
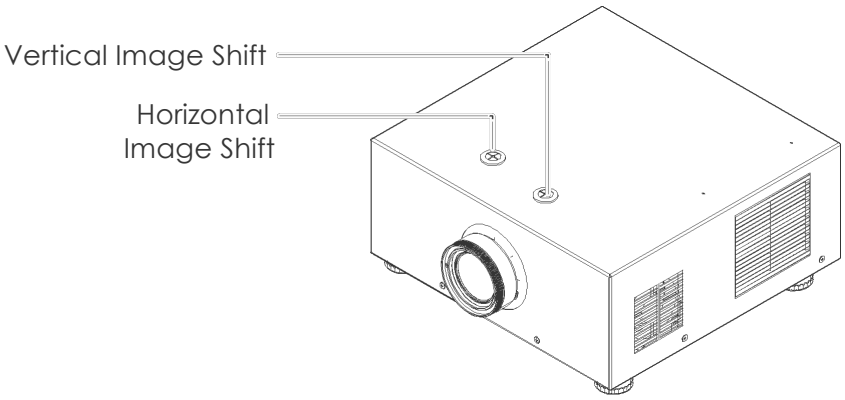


Image Shift

To Pull the badge out to adjust the image shift.



Vertical Image shift: To shift the projected image vertically, insert the provided Allen wrench

into the hole at the top of the projector

(directly above the lens). Then, turn the wrench to shift the lens in the desired direction.

Horizontal Image shift: To shift the projected
image horizontally, insert the provided Allen wrench
into the hole at the top of the projector.
Then, turn the wrench to shift the lens in the desired direction.

OPERATION 4

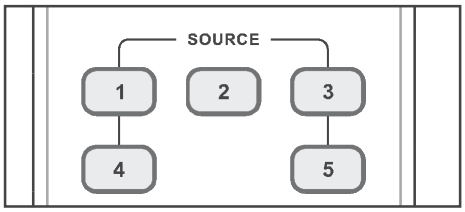
4.1 Selecting an Aspect Ratio

Press the aspect ratio (ASPECT RATIO) button to select the appropriate aspect ratio for the type of program material being viewed.

4.2 Selecting An Input Source

When you turn on the projector, it switches to the last selected input and looks for a valid signal.

Use these buttons on the remote control to select an input source directly. You can assign each of these five buttons to any input. The default assignments are:



1 = RGB (VGA, HD15)

2 = HDMI 1

3 = HDMI 2

4 = Component 1

5 = S-Video.

For more information, refer to 1 Key / 2 Key / 3 Key / 4 Key / 5 Key on page 56.

4.3 Using the On-Screen Menus

1. Press the MENU button on the remote control followed by the IR remote password: UP, DOWN, LEFT, RIGHT, LEFT to display the Main Menu.
2. There are six menus. Press ◀ or ▶ to select a sub-menu.
3. Press ▲ or ▼ to select a sub-menu item.
4. For each sub-menu item, the currently-selected value appears in white text or is otherwise highlighted. Press ◀ or ▶ to choose a setting for that item, or press ENTER to go to another sub-menu.
5. Press MENU to return to the previous menu.
6. From the Main Menu, press MENU to turn off the OSD menu.

The projector OSD menus are arranged hierarchically, as shown in Figure 4-1. Depending on the selected input source and signal characteristics, some menu options may not be available.

Main	Aspect Ratio	16:9, 4:3, Letterbox, 4:3 Narrow or Native
	Brightness	0 ... 50* ... 100
	Contrast	
	Color Saturation	
	Color Tint	
	Sharpness	Sharpness
		Sharpness Mode (Simple or Advanced)
		Horizontal Sharpness
		Vertical Sharpness
		Diagonal Sharpness
		Sharpness Overshoot
		Horizontal Texture
		Vertical Texture
		Diagonal Texture
		Texture Overshoot
		Noise Threshold
	Noise Reduction	Noise Reduction
		Noise Reduction Mode (Simple or Advanced)
		General Noise Reduction
		Block Artifact Reduction
		Mosquito Noise Reduction
	Overscan	Off, Crop or Zoom
	Source Select	HDMI 1, HDMI 2, RGB, Comp. 1, Comp. 2, Video, S-Video or SCART
	Resync	(press ENTER to execute)
Advanced	Color Space	Auto, REC709, REC601, RGB-PC or RGB-Video
	Video Standard	Auto, NTSC, PAL or SECAM
	Gamma	CRT, Film, Video, Bright or Graphics
	Color Temperature	This item has no function
	DLP Frame Rate	Auto, 48 Hz, 50 Hz or 60 Hz
	Color Gamut	Auto, REC709, SMPTE-C, EBU or Native
	Adaptive Contrast	On or Off
	RGB Adjust	Red / Green / Blue Offset
		Red / Green / Blue Gain
	Fine Sync	V. Position
		H. Position
		Phase

System	Source Enable	On or Off for each source
	PIP Position	NA
	Menu Position	Top Left, Top Right, Bottom Left, Bottom Right or Center
	Auto Power Off	On or Off
	Auto Power On	
	Rear Projection	
	Ceiling Mode	NA
Control	1 Key	HDMI 1, HDMI 2, RGB, Comp. 1, Comp. 2, Video, S-Video or SCART
	2 Key	
	3 Key	
	4 Key	
	5 Key	
	Auto Source	On or Off
Language	English, French, German, Italian, Spanish, Swedish, Traditional Chinese, Simplified Chinese, Japanese, Korean, Portuguese or Russian	
Service	Model Name	(read-only)
	Unit Serial Number	
	Software Version	
	Pixel Clock	
	Signal Format	
	H/V Refresh Rate	
	Lamp Hours	
	Factory Reset	Reset Everything? (Yes or No)
	Blue Only	On or Off
	Test Patterns	On or Off

Figure 4-1: Projector OSD Menu Structure

Main

The projector Main Menu, shown in Figure 4-2, provides access to the most commonly-used projector functions.

Note Image controls only operate on the active source.

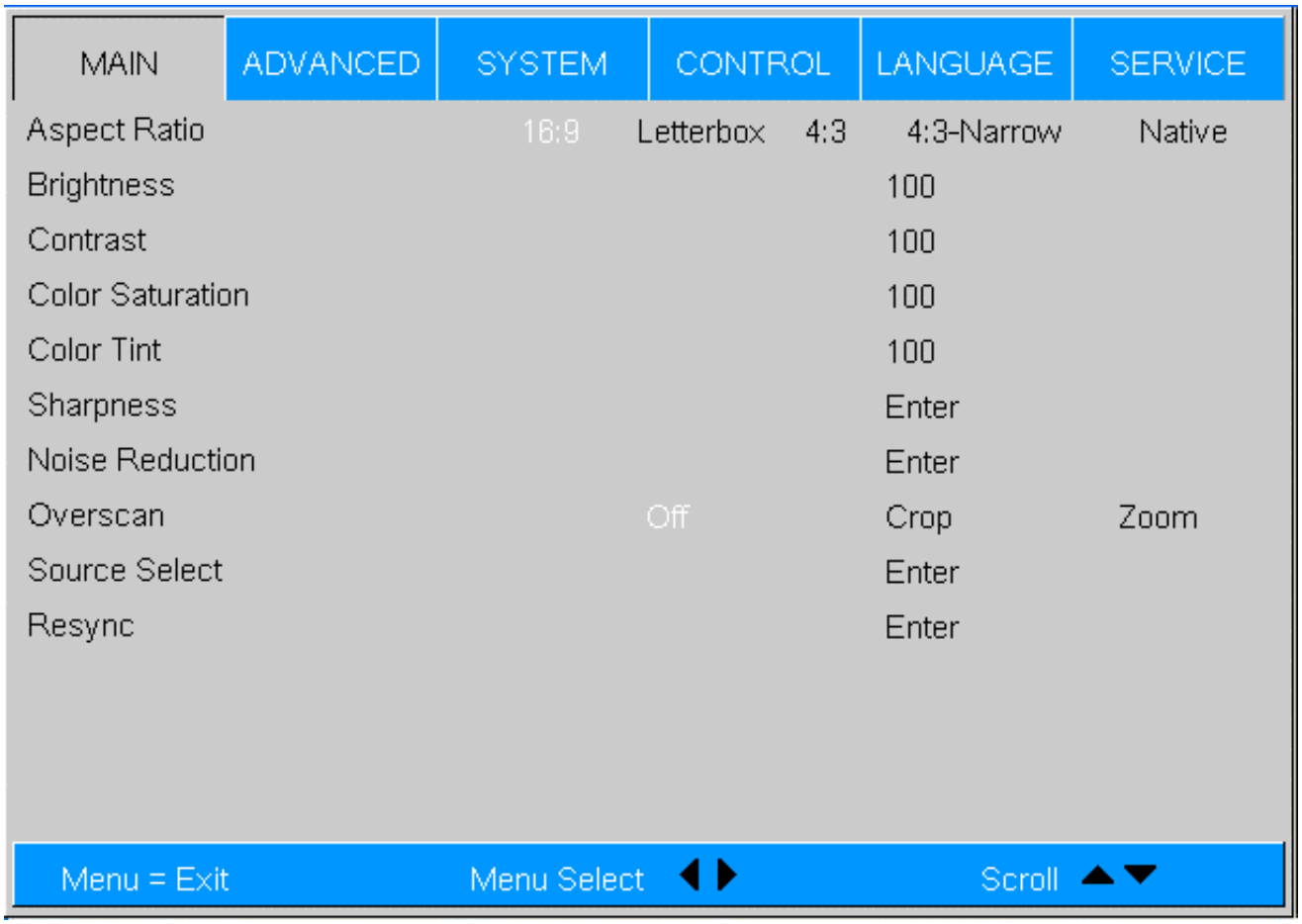


Figure 4-2: Projector Main Menu

Aspect Ratio: To change the aspect ratio (size and shape) of the projected image, press ▲ or ▼ to highlight Aspect Ratio. Use the ◀ or ▶ buttons to select the appropriate aspect ratio for your screen size, installed lens configuration and the type of program material being viewed, then press ENTER; refer to Table 4-2.

Memory: Select Memory from the Main menu, then press ENTER to recall image quality settings previously saved, or to save changed settings in any of four memory locations.

- Recall Memory: Select Recall Memory from the Memory menu to recall saved image quality settings. Unless you select Default (see below), this control affects all sources, not just the active source.
- User Memory 1 and User Memory 2 contain the factory default settings when the projector is initially turned on.
- Choose Default to restore the factory-default settings for the active source only. The other sources are unaffected.
- Save Settings: Select Save Settings from the Memory menu to save any image-related settings you have changed to User Memory 1 or User Memory 2.

The following items are saved (for all sources, not just the active source):

- Brightness / Contrast
- Color Saturation / Color Tint
- Sharpness (all settings in sub-menu)
- Noise Reduction (all settings in sub-menu)
- Color Space
- Video Standard
- Gamma
- DLP Frame Rate
- Color Gamut
- Adaptive Contrast
- RGB Adjust (all settings in sub-menu)

The settings that are saved are the same as those saved with the Save Settings command (see above).

Brightness: On your external test pattern source, select a PLUGE pattern. (PLUGE is an acronym for “Picture Line-Up Generation Equipment.”) Figure 4-3 shows a typical PLUGE pattern.

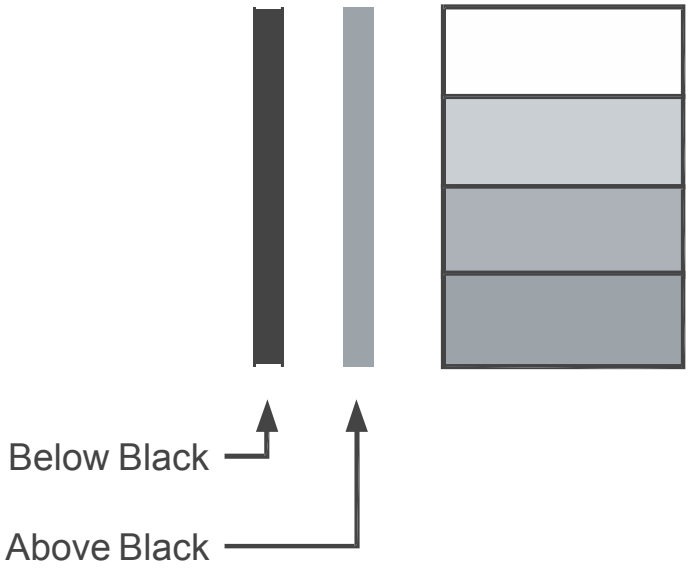


Figure 4-3: Typical PLUGE Pattern for Adjusting Brightness

PLUGE patterns vary but generally consist of some combination of black, white and gray areas against a black background. The example above includes two vertical bars and four shaded boxes.

Select Brightness from the Main menu. Use the ◀ or ▶ buttons to adjust the level so that:

The darkest black bars disappear into the background.

- The dark gray areas are barely visible.
- The lighter gray areas are clearly visible.
- The white areas are a comfortable level of true white.
- The image contains only black, gray and white (no color).

Contras: On your external test pattern source, select a stepped, gray-bar pattern like the one shown in Figure 4-4.

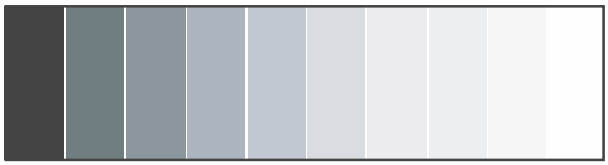


Figure 4-4: Typical Gray Bar Pattern for Adjusting Contrast

Select Contrast from the Main menu. Use the ◀ or ▶ buttons to adjust the contrast up until the top two bars become almost the same brightness, then down just until the brightness change between these bars is consistent with the other bars.

Note

Brightness and Contrast controls are interactive. A change to one may require a subtle change to the other in order to achieve the optimum setting.

Color Saturation:To adjust the overall color intensity, select Color Saturation from the Main menu. Decrease this setting if colors are overly saturated; increase it if colors appear muted or washed out.

Color Tint:Tint or “hue” is the ratio of red to green in the color portion of the image. To adjust the tint, select Color Tint from the Main menu. Decrease this setting to shift the hue toward red; increase it to shift the hue toward green.

Note

Like the Brightness and Contrast controls, the color and tint controls are interactive. A change to one may require a subtle change to the other in order to achieve the optimum setting.

Sharpness: “Sharpness” is the amount of high-frequency detail in the image. To adjust this, select Sharpness from the Main menu and press ENTER. On your external test pattern source, select a pattern like the one shown in Figure 4-5.

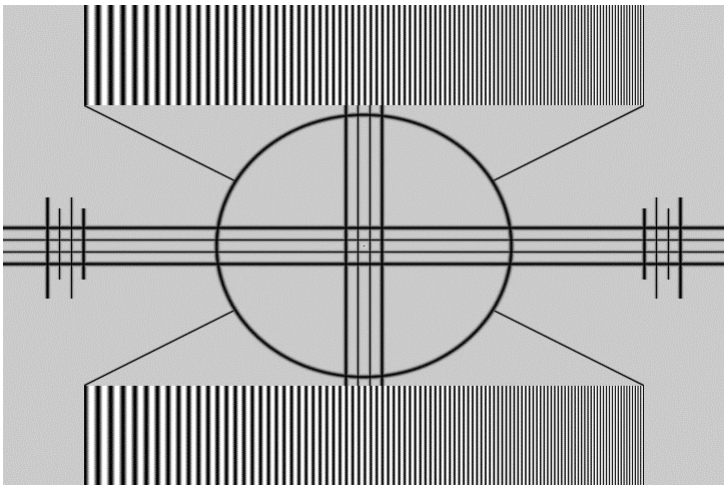


Figure 4-5: Typical Test Pattern for Adjusting Sharpness

- Sharpness (Simple Mode): Adjust as needed, looking for white edges around the transitions from black to gray and differently-sized lines in the “sweep” patterns at the top and bottom. Lower the sharpness setting to eliminate them.
- Sharpness Mode: Sharpness Mode allows or prevents access to the detailed sharpness controls in this menu.
- In most cases, Simple mode provides a sufficient level of control to produce the best picture from the most popular sources. In Simple mode, only the Sharpness (top-most) slider is adjustable; the others are grayed out.
- Choose Advanced mode if you need more precise control over sharpness. In Advanced mode, only the top slider is grayed out.
- Horizontal Sharpness / Vertical Sharpness / Diagonal Sharpness
- Use these controls to enhance image detail along horizontal, vertical and diagonal edges respectively.
- Sharpness Overshoot: Use the Sharpness Overshoot control to minimize or eliminate rings or shadows on dominant edges that cannot be removed using the “simple” Sharpness control.
- Horizontal Texture / Vertical Texture / Diagonal Texture / Texture Overshoot: Use these controls to remove artifacts from textured areas that cannot be removed using the “simple” Sharpness control.
- Noise Threshold: The Noise Threshold setting adjusts the frequency below which the Sharpness controls have an effect. Frequencies above the threshold are considered “noise.”

  Generally, the higher the setting, the more noticeable the effect of any adjustments will be.
- Noise Reduction: To apply noise reduction to the source signal, select Noise Reduction from the Main menu and press ENTER. Noise Reduction is useful for clearing up noisy images from interlaced SD sources.
- Noise Reduction (Simple Mode): Use the or button to adjust as desired, keeping in mind that reducing noise (which reduces high frequencies) may also soften the image.
- Noise Reduction Mode: Noise Reduction Mode allows or prevents access to the detailed noise reduction controls in this menu.

  In most cases, Simple mode provides a sufficient level of control to produce the best picture from the most popular sources. In Simple mode, only the Noise Reduction (top-most) slider is adjustable; the others are grayed out.

  Choose Advanced mode if you need more precise control over noise reduction. In Advanced mode, only the top slider is grayed out.
- General Noise Reduction: General Noise Reduction is temporal and spatial noise reduction for all types of inputs. The scene is analyzed for differences from frame to frame and reduces those differences that are not determined to be motion.
- Block Artifact Reduction: Use this control to reduce or eliminate so-called “block artifacts” in MPEG-compressed video signals (digital broadcasts or DVDs). Set it as needed to minimize distortion within horizontal and vertical block boundaries.
- Mosquito Noise Reduction: Use this control to reduce or eliminate so-called “mosquito noise” in MPEG-compressed video signals. Set it as needed to minimize distortion around the edges of moving objects, moving artifacts around edges and/or blotchy noise patterns superimposed over the objects.

Overscan: Some television programs are produced based on the assumption that older television sets may not display the outer edges of the broadcast picture area. Overscan effectively hides these inactive, outer edges of the image. Choose one of the following:

- Off: This setting leaves the image as-is.
- Crop: This setting adds a mask at the left and right edges of the source active image equal to 3% of the displayed horizontal resolution, and at the top and bottom edges equal to 3% of the displayed vertical resolution.
- Zoom: This setting adds a factor to the scaling of the source active image so that the vertical and horizontal resolutions are 106% of the size determined by the aspect ratio function. Anything outside of the original image area is removed.

When the Aspect Ratio is set to Native, set Overscan to Off or Crop.

Source Select: To select a video source, press or to highlight Source Select, then press ENTER. This displays the Source Select sub-menu, shown in Figure 4-7.

The default source selection is RGB (VGA, HD15). All sources that are not available per the source enable function (refer to Source Enable on page 54) are grayed out.

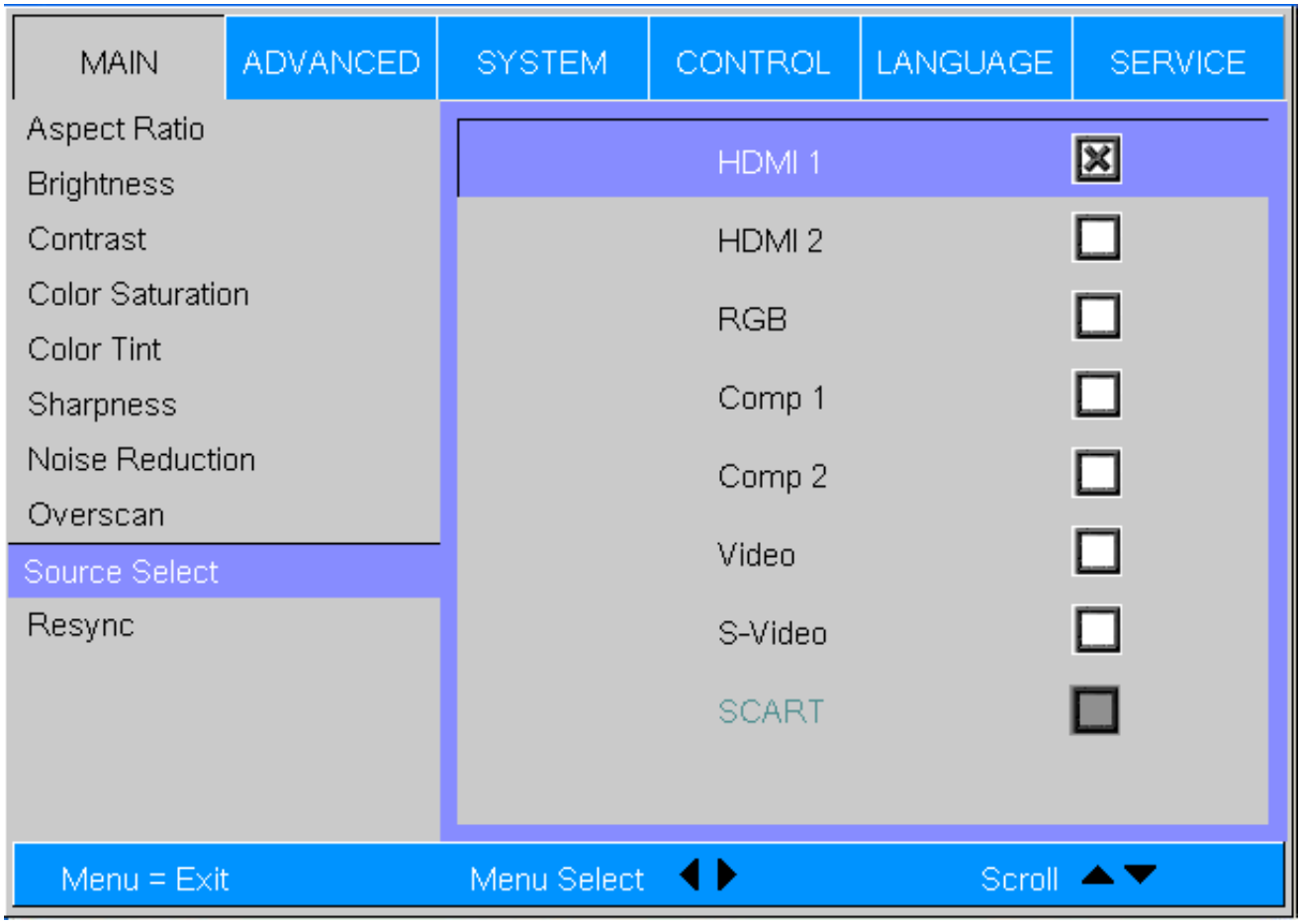


Figure 4-7: Source Select Sub-Menu

All sources that are not available per the source enable function (refer to Source Enable on page 54) are grayed out.

Resync: If the projected image becomes unstable or degraded, press ▲ or ▼ to highlight Resync, then press ENTER.

Advanced

Use the controls in the Advanced menu, shown in Figure 4-8, to perform advanced image adjustments.

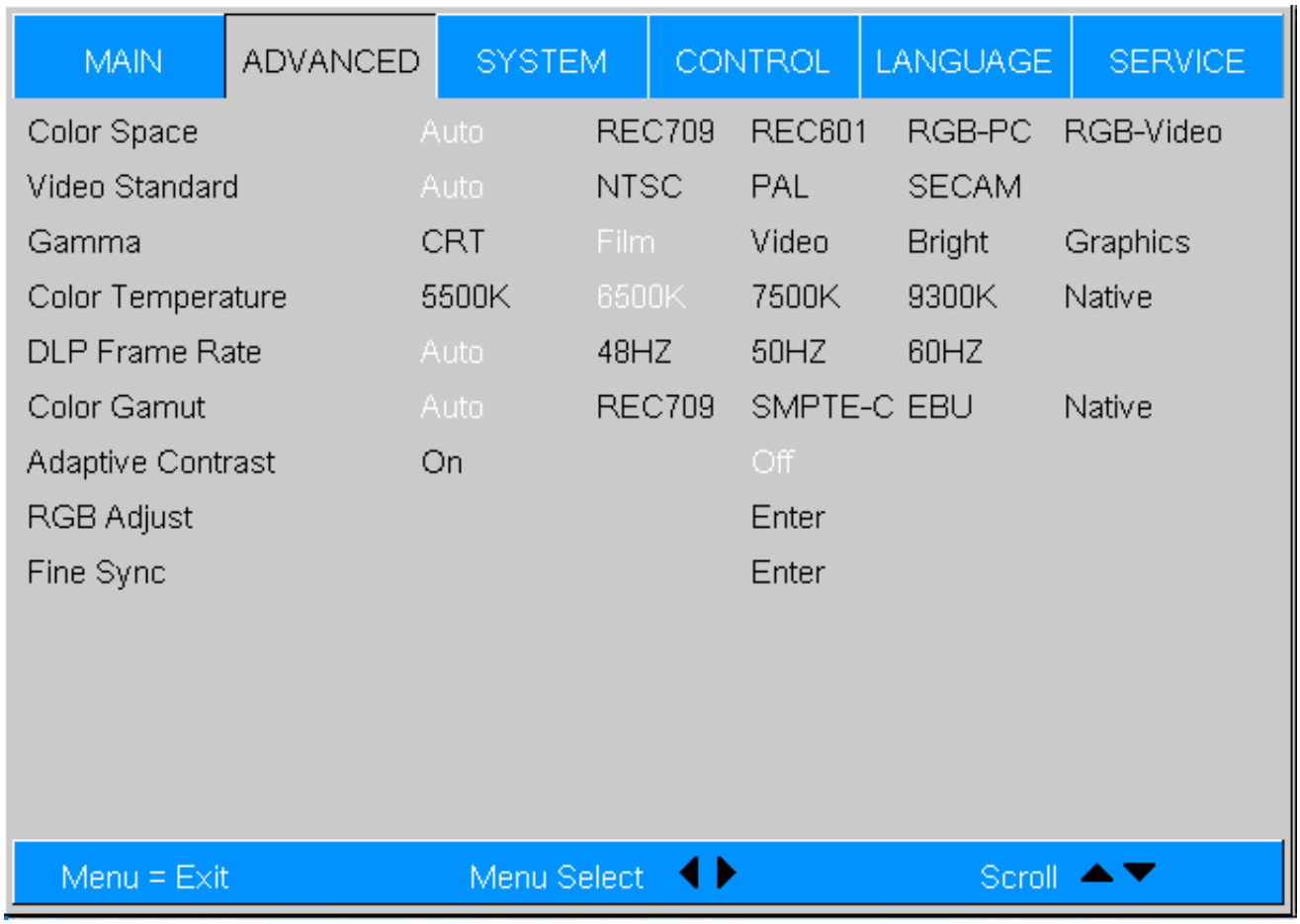


Figure 4-8: Projector Advanced Menu

Color Space: Select Color Space from the Advanced menu to choose the color space of the source signal for HDMI, RGB, and component connections.

- The default setting, Auto, functions as follows:
  - HDMI: If the Auxiliary Video Information (AVI) infoframe contains color space and/or range data, the projector uses that information. Otherwise, for RGB sources, the projector uses the RGB-Video color space. For component SDTV and EDTV resolutions, REC601 is used. For other component video resolutions, REC709 is used.
  - RGB: If Hsync or Vsync signals are present, the projector uses the RGB-PC color space. Otherwise, REC601 is used for SDTV and EDTV sources, and REC709 for all other sources.
  - Component: For SDTV and EDTV resolutions, the projector uses the REC601 color space. For all other resolutions REC709 is used.

In most cases, the Auto setting determines the correct color space to use. If it does not, you can force the projector to use a specific color space. Choose one of the following:

- REC709 sets the color space matrix to that defined in ITU-R BT.709.
- REC601 sets the color space matrix to that defined in ITU-R BT.601.
- RGB-PC uses RGB color space and sets black at 0,0,0 RGB and white at 255,255,255 RGB, assuming an 8-bit image.
- RGB-Video uses RGB color space and sets black at 16,16,16 RGB and white at 235,235,235, assuming an 8-bit image, to correspond to the luminance values defined in digital component standards.

Video Standard: Select Video Standard from the Advanced menu to specify the color system for composite video or S-Video input signals.

Different countries use different formats for video signals. Select the appropriate Video Standard for your region:

- Auto: The color systems are automatically identified and the format is set accordingly.
- PAL: This is the standard used in Europe, Australia and many other parts of the world, typically with a 50Hz frame rate.
- SECAM: This is a standard format used mainly in France and Russia.
- NTSC: This is the standard format used mainly in the United States and Japan.

Gamma: Select Gamma from the Advanced menu to choose a DLP de-gamma curve. Used correctly, the Gamma control can improve contrast while maintaining good details for blacks and whites.

If excess ambient light washes out the image and it becomes difficult or impossible to see details in dark areas, lower the gamma setting to compensate. This improves contrast while maintaining good details for blacks. Conversely, if the image is washed out and unnatural, with excessive detail in black areas, increase the setting.

- CRT sets the gamma to 2.5.
- Film sets the gamma to 2.2.
- Video is similar to Film gamma but differs in dark areas of the image to correspond to the function that video cameras use to create images.
- Bright sets the gamma to 2.0.
- Graphics should only be used for computer presentations that require increased brightness at the cost of grayscale accuracy.

DLP Frame Rate: Select DLP Frame Rate from the Advanced menu to choose the output frame rate. You can have the projector automatically determine the optimum frame rate, or you can force it to use a specific frame rate.

- The default setting, Auto, frame locks to the main source if it has a vertical refresh rate of between 48 and 62Hz. Vertical refresh rates of from 24 to 31Hz are doubled. Frame rates between 31 and 48Hz and greater than 62Hz are converted to 60Hz.
- Select 48Hz to force the output frame rate to 48Hz. Use this setting to eliminate 2:3 pull-down judder with 60Hz film-based sources.
- 50Hz and 60Hz force the output frame rate to 50Hz and 60Hz respectively.

Color Gamut: Select Color Gamut from the Advanced menu to select a color gamut (range) that may be different from the default color gamut.

Each setting defines the precise hue of each primary (red, green and blue) and secondary (yellow, cyan and magenta) color component used to generate the millions of colors produced in displays. Changing either or both of these numbers changes the hue of the color and relocates the “triangle” for possible colors. For example, changing the x/y coordinates for red moves the color closer to either orange or violet, which in turn affects all displayed colors having a red component.

- Auto automatically chooses the appropriate color gamut:
  - SMPTE C for NTSC, 480i and 480p sources.
  - EBU for PAL, SECAM, 576i and 576p sources.
  - REC709 for all other sources.
- REC709 chooses the REC709 color gamut.
- Select SMPTE-C to choose the SMPTE-C color gamut.
- Select EBU to choose the EBU color gamut.
- Select Native to use REC709 for cyan, magenta, and yellow and uncorrected values for red, green, and blue.

Table 4-3 lists the x- and y-coordinates for each primary and secondary color component.

Primary Color	Color Gamut Settings and Associated x/y Values					
	REC70		SMPTE "C"		EBU	
	x	y	x	y	x	y
Red	0.640	0.330	0.635	0.340	0.640	0.330
Yellow	0.419	0.505	0.421	0.506	0.418	0.502
Green	0.300	0.600	0.305	0.595	0.290	0.600
Cyan	0.225	0.329	0.228	0.326	0.220	0.329
Blue	0.150	0.060	0.155	0.070	0.150	0.060
Magenta	0.321	0.154	0.318	0.162	0.328	0.158

Table 4-3: x/y Color Gamut Values

Adaptive Contrast: Adaptive Contrast enhancement expands the light and dark portions of an output image according to the mean luminance of the input image.

RGB Adjust: To remove any trace of color from the white areas of the projected image, choose RGB Adjust from the Advanced menu and press ENTER. This displays the RGB Adjust sub-menu, shown in Figure 4-9.

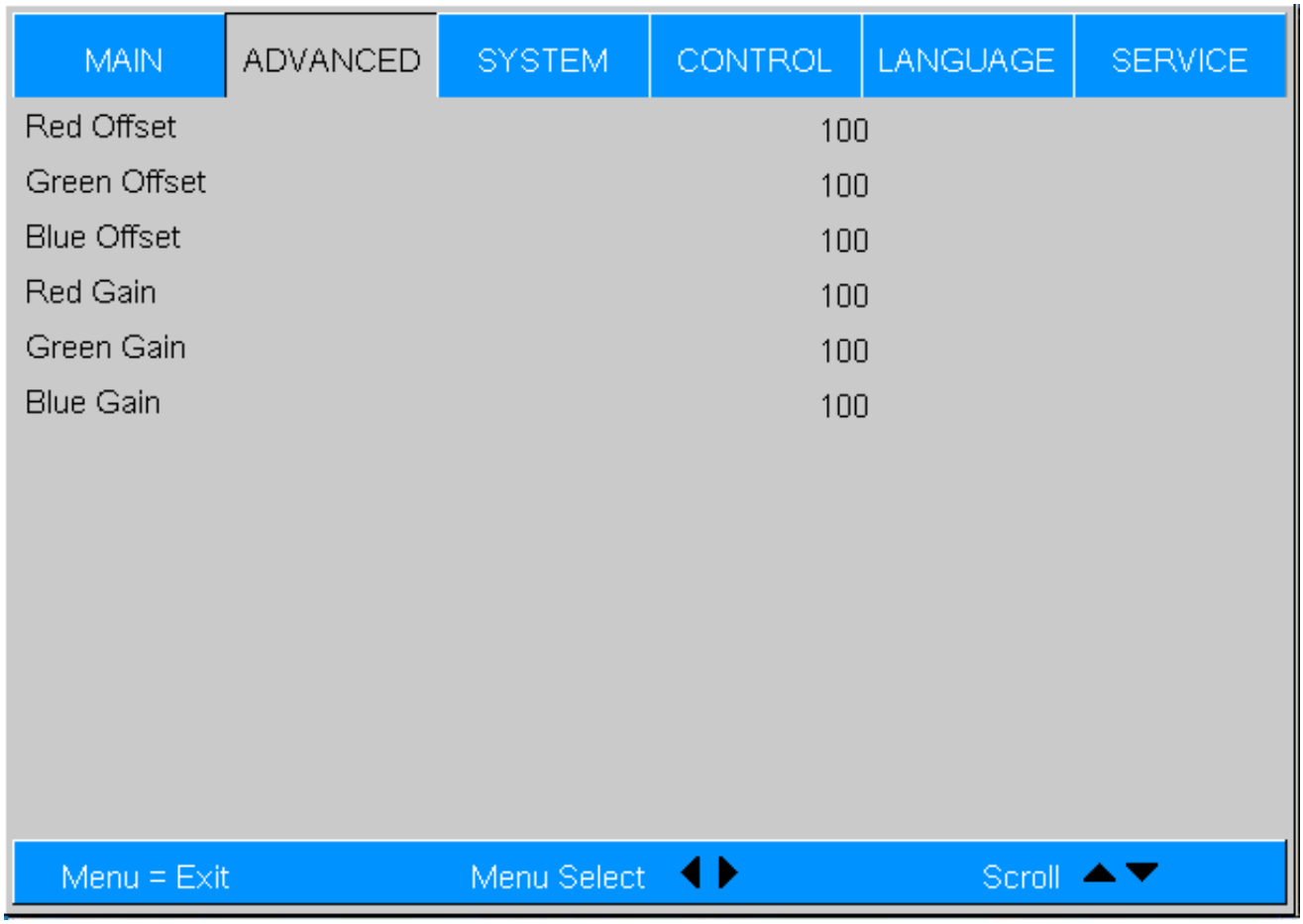


Figure 4-9: RGB Adjust Sub-Menu

- Gain: Use the Gain controls to correct color imbalances in the bright areas of the image. A good way to do this is to use a test pattern consisting mostly of solid white areas, such as an 80 IRE “window” pattern. If the white areas contain traces of red, green or blue, decrease the Gain for that color.
- Offset: Use the Offset controls in the RGB Adjust sub-menu to correct color imbalances in the dark areas of the image. A good way to do this is to use a test pattern consisting mostly of dark gray areas, such as a 30 IRE “window” pattern. If the gray areas contain traces of red, green or blue, decrease the Offset for that color.

The Gain controls increase or decrease the full-scale input range; the Offset controls shift the entire range, resulting in a change in brightness.

Note

Generally, higher Gain settings reduce the image contrast; higher Offset settings reduce the image brightness.

Fine Sync: To fine-tune the position and other image attributes, choose Fine Sync from the Advanced menu and press ENTER. This displays the Fine Sync sub-menu, shown in Figure 4-10.

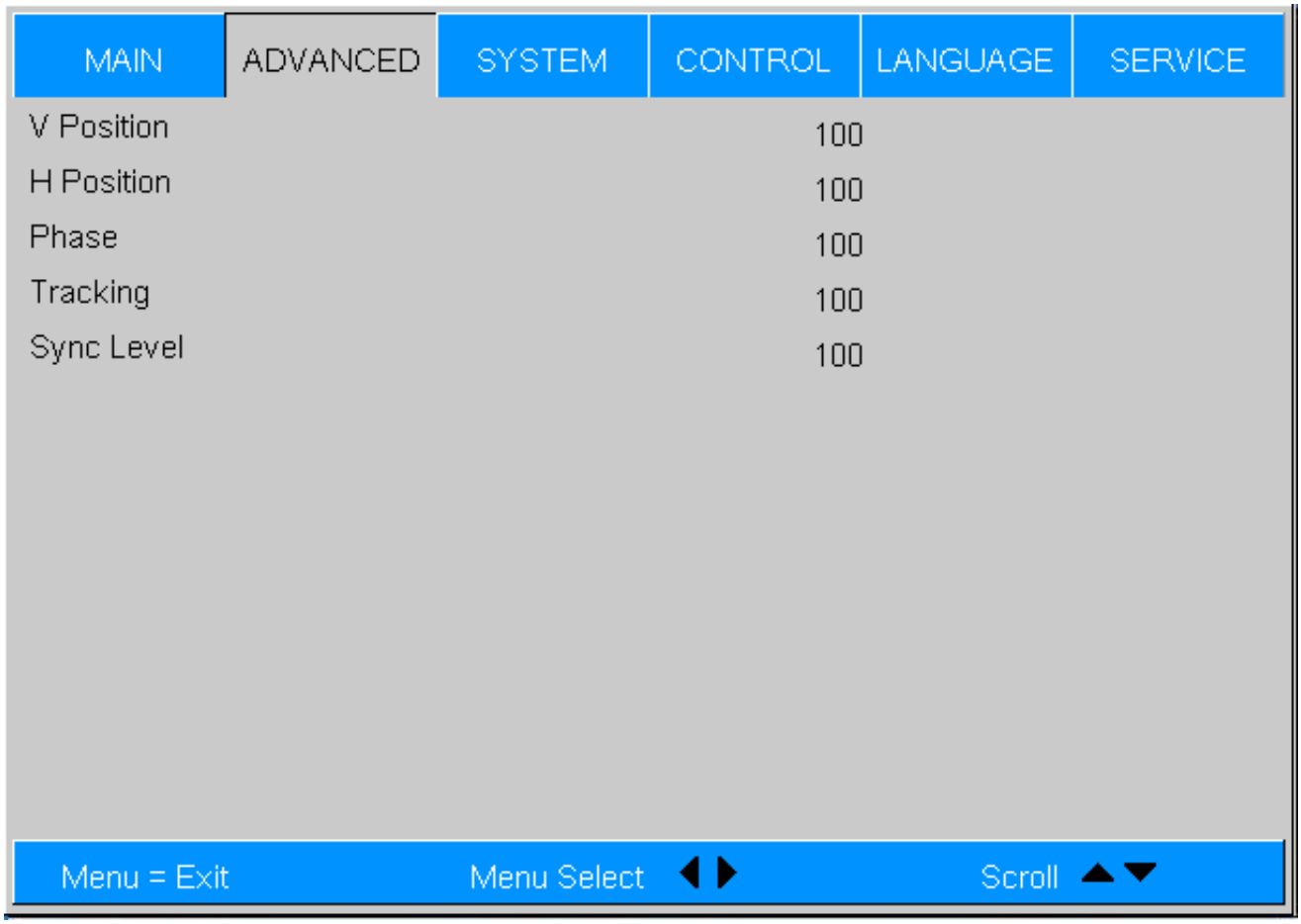


Figure 4-10: Fine Sync Sub-Menu

- V Position: This control adjusts the vertical position of the image within the designated image area, up to 25 per cent of the image height up or down.
- H Position:
- This control adjusts the horizontal position of the image within the designated image area, up to 25 per cent of the image width left or right.
- Phase (RGB or Component sources): This control adjusts the phase of the pixel sampling clock relative to the incoming signal. Adjust the phase when an RGB or Component image still shows shimmer or “noise” after Tracking has been optimized.

Adjust the Phase after adjusting Tracking (see below). If some shimmer from a video or HDTV source persists, use the Noise Reduction controls (described on page 44) to remove high-frequency noise from the signal.

For best results, use a good test pattern such as a smooth gray consisting of a clear pattern of black and white pixels, or a similar “half on, half off” graphic image. Adjust the slidebar until the image stabilizes and each pixel is clearly defined. You may notice that you can stabilize the image at more than one point. Use either setting in such cases.

- Tracking (RGB or Component sources): Tracking determines the frequency of the pixel sampling clock, indicated by the number of incoming pixels per line, so that all pixels generated by a particular source are sampled.
- Steady flickering or several soft vertical stripes or bands across the entire image indicates poor pixel tracking. Proper pixel tracking helps ensure that the image quality is consistent across the screen, that aspect ratio is maintained and that pixel phase (see above) can be optimized.
- Sync Level (Component sources only): Select Sync Level to adjust the voltage level of the Projector Sync signal detection circuitry.
- Sync Level adjustment is occasionally necessary when a DVD player or HDTV source signal drops “below black” (for example, during scenes with explosions or when subtitles are present) and causes the projector to temporarily lose sync. If the Sync Level from the source is persistently too low, the projector won’t sync with the source at all.

  The range is from 50 to 256 millivolts (mV) inclusive. The default setting is 240 mV and should rarely require adjustment.

System

Use the controls in the System menu, shown in Figure 4-11, to adjust the lamp, change the display orientation and perform other, common installation tasks.

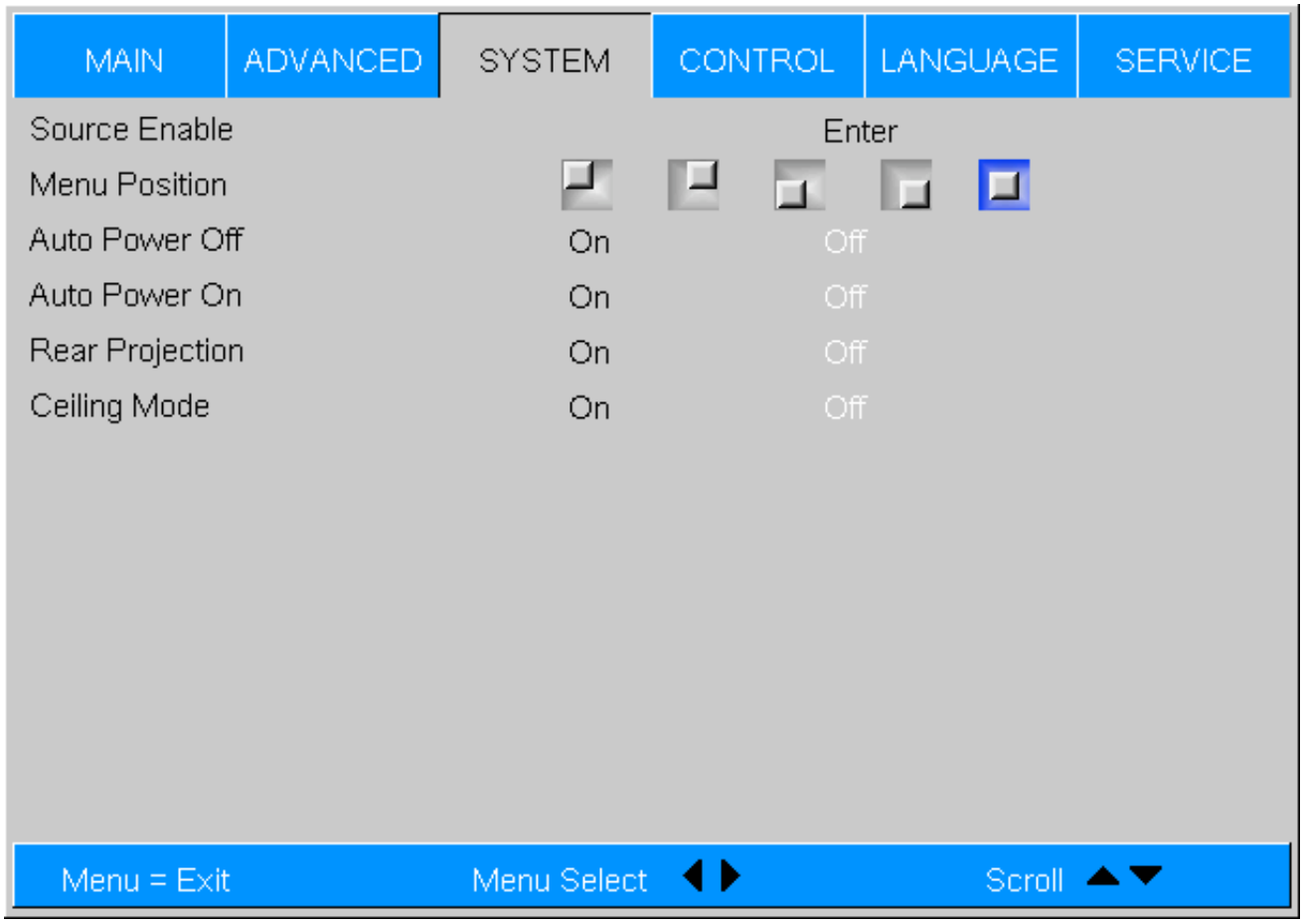


Figure 4-11: Projector System Menu

Source Enable: To enable or disable selection of a source, choose Source Enable from the System menu and press ENTER. This displays the Source Enable sub-menu, shown in Figure 4-12.

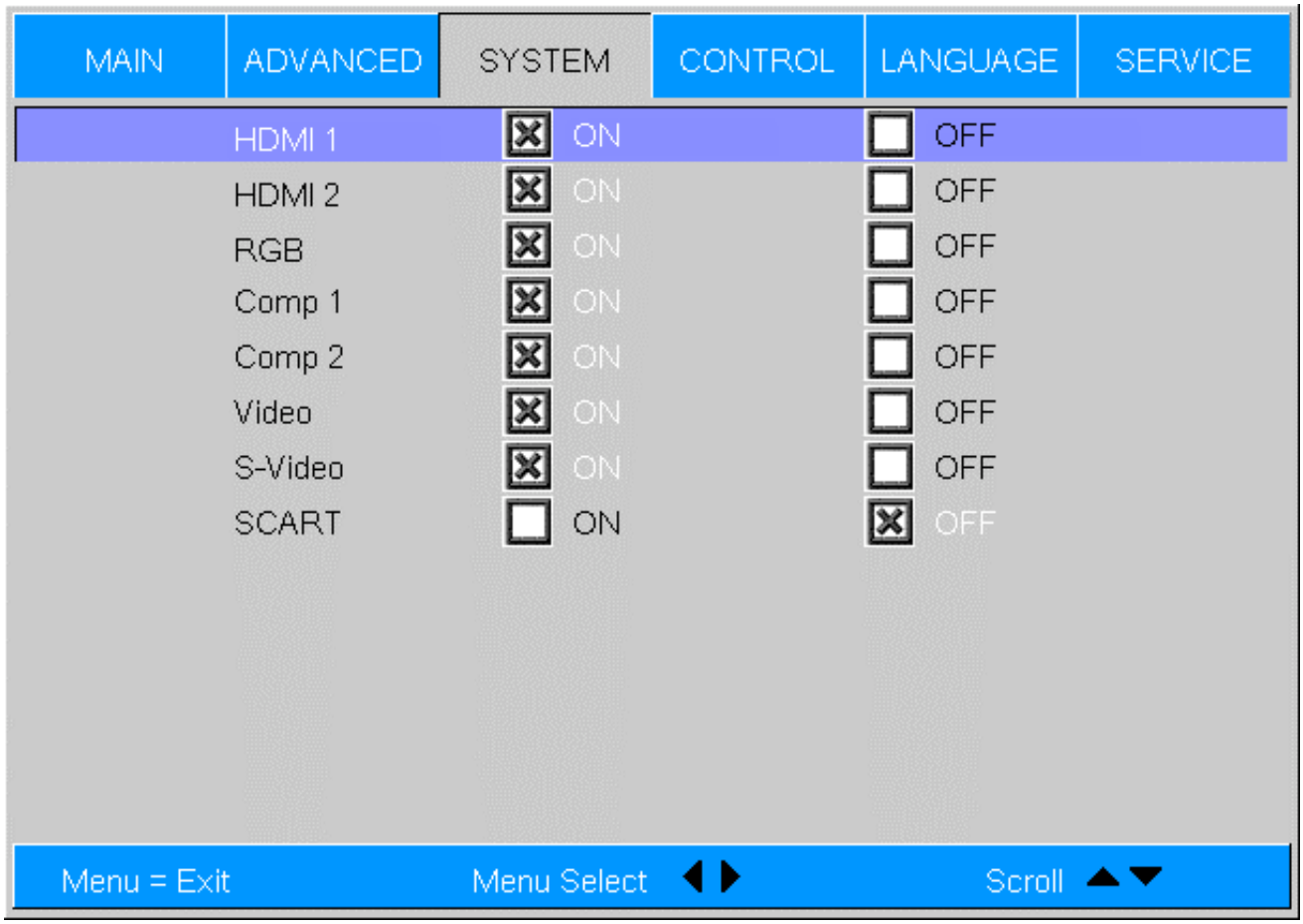


Figure 4-12: Source Enable Sub-Menu

- HDMI 1/HDMI 2: Enables or disables the HDMI 1 and HDMI 2 sources.
- RGB: Enables or disables the RGB source.
- Comp 1/Comp 2: Enables or disables the Component 1 and Component 2 sources.
- Video: Enables or disables the Composite video source.

Note

If either Component 1 or Video is enabled, SCART must be disabled.

- S-Video: Enables or disables the S-Video source.
- SCART: Enables or disables the SCART RGBS source.

Note

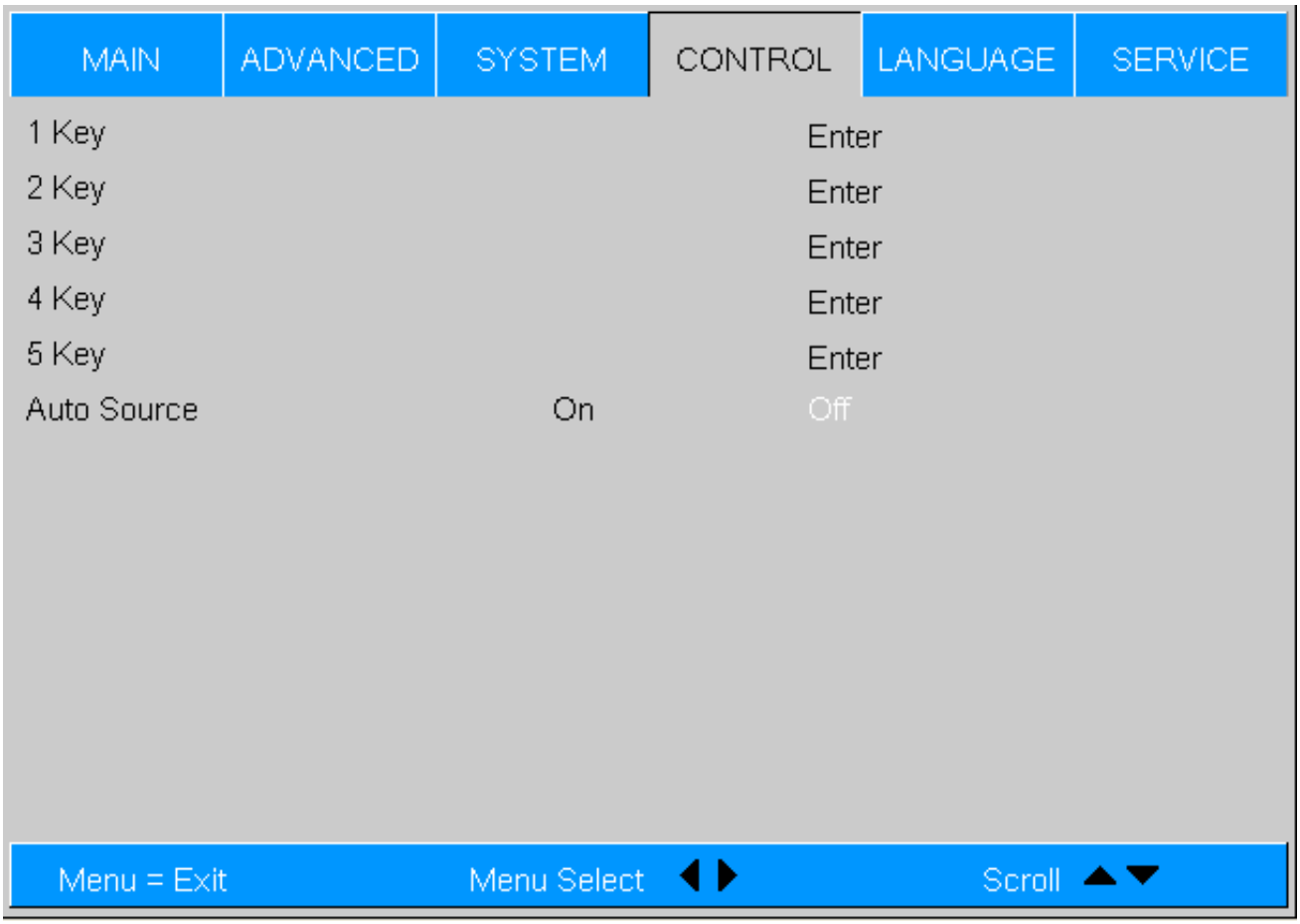
If SCART is enabled, both Component 1 and Video must be disabled.

Auto Power On:Setting Auto Power On to On causes the projector to automatically power up when AC power is present. If the projector is plugged into a switched AC outlet, this allows the projector to be turned on using a wall switch instead of the remote control unit. If you do not need this capability, set Auto Power On to Off (this is the default setting).

Rear Projection: This control reverses all images and menus, and is necessary when the projector is used in rear-projection applications. The default is Off.

Control

Select Control from the Main Menu to set various options related to control of the projector.



1 Key / 2 Key / 3 Key / 4 Key / 5 Key: These menu items assign the function of the keys numbered 1 through 5 on the remote.

There are eight sources corresponding to the eight connections to the projector. When you assign a source to a num-

bered key, the projector immediately goes to that source when the key assigned to it is pressed.
If the chosen source is disabled via the Source Enable menu (refer to page 54), this setting has no effect.

Auto Source: This control chooses whether or not to scan for other active sources if the current source is not available.
The default setting is off.

Language

Select Language from the Main Menu to change the OSD Language.

The projector can display the menus in English, French, German, Italian, Spanish, Swedish, Traditional Chinese, Simplified Chinese, Japanese, Korean, Portuguese or Russian.

Press ▲ or ▼ to select a language. Then, press ENTER to confirm your selection.

Service

Access the Service Menu, shown in Figure 4-15, to view information that uniquely identifies your projector and indicates its current operational status:

- Model Name
- Unit Serial Number
- Software Version
- Active Source
- Pixel Clock
- Signal Format
- H/V Refresh Rate
- Lamp Hours (number of lamp hours elapsed since the last reset)

Should you ever need to contact Technical Support, this information will help them answer your questions and/or resolve product performance issues.

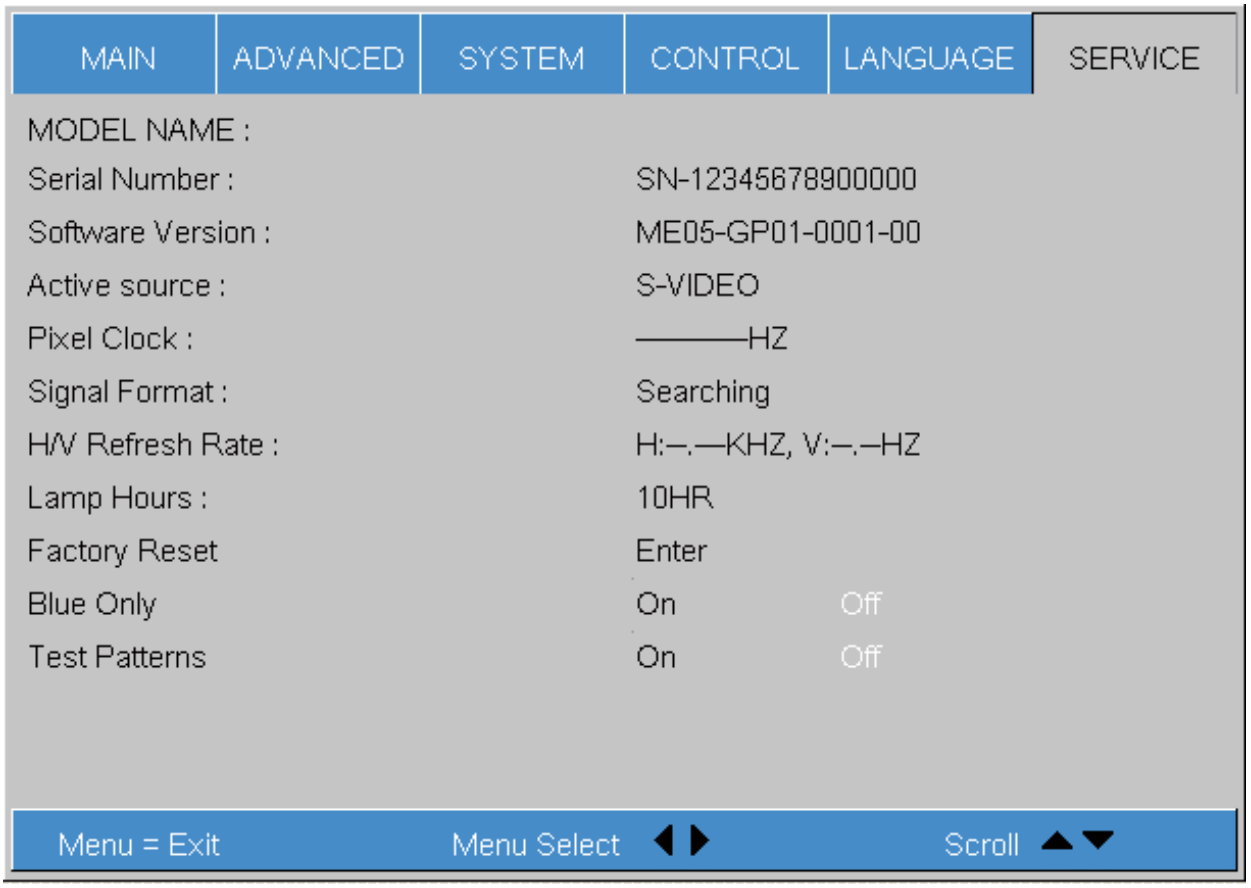


Figure 4-14: Projector Service Menu

There is no user intervention required to reset the lamp counter subsequent to replacing the lamp module. The lamp module has a lamp timer memory built into it.

Do not exceed the recommended lamp life. An old lamp becomes increasingly fragile and prone to sudden failure.

Factory Reset: Select Factory Reset from the Service menu to restore all projector settings - except those listed below - to their factory-default values:

- Lamp Hours
- Model Name / Serial Number
- Language

Blue Only: This feature removes all red and green color information from the image, and is useful for color-calibrating the projector or other video components.

Test Patterns: The projector has numerous internal test patterns that are useful to technicians for advanced calibration, measurement and fault isolation purposes. To access them, select Test Patterns from the Service menu and set it to On.

The available test patterns are:

- White
- Black
- Red
- Green
- Blue
- Cyan
- Magenta
- Yellow
- ANSI Checkerboard
- Horizontal Gray Ramp
- Focus Grid

Press ◀ or ▶ on the remote control unit to cycle through the test patterns.

The OSD menus are not available when in “test pattern” mode.

To turn test patterns off, press any key other than ◀ or ▶ on the remote control unit.

Altitude: Select Altitude from the Service Menu to control the operation of the projector’s cooling fan.

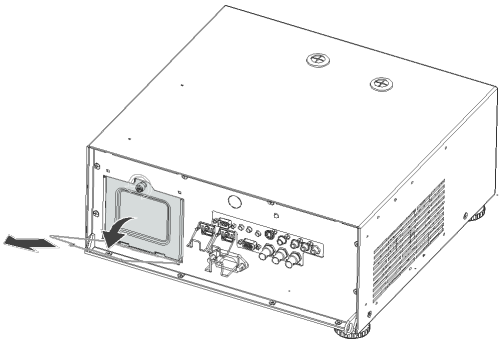
In most cases, the default setting (Auto) will maintain the correct operating temperature. If the lamp frequently turns off due to overheating, or in certain high-altitude operating environments, you may need to change this setting to High.

MAINTENANCE AND TROUBLESHOOTING 5

5.1 Lamp Replacement

The lamp should be replaced when it reaches the end of its life (typically 2000 hours depending on the Lamp Power setting), or sooner if a noticeable degradation in brightness occurs. Contact your dealer to obtain a replacement lamp.

1. Turn off the projector and unplug the power cord. Allow the projector to cool down for approximately 60 minutes prior to removing the lamp assembly for replacement.

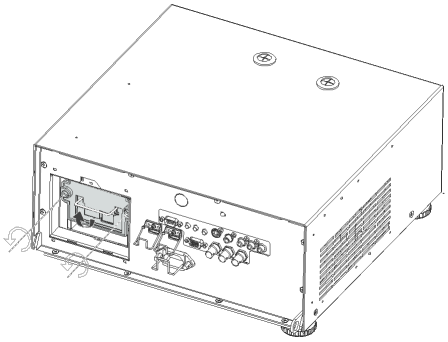


2. Using a flat-blade screwdriver, loosen the two screws holding the rear compartment cover in place.

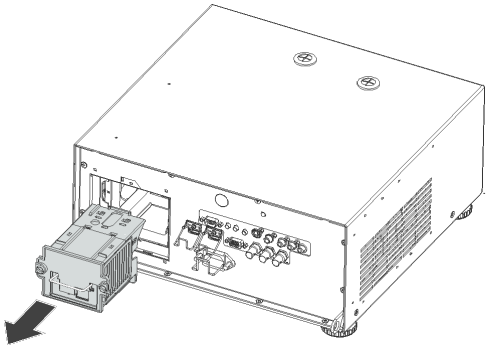
3. Remove the rear compartment cover by tilting it upward.

4. Loosen the screw on the lamp cover and pull the lamp cover out.

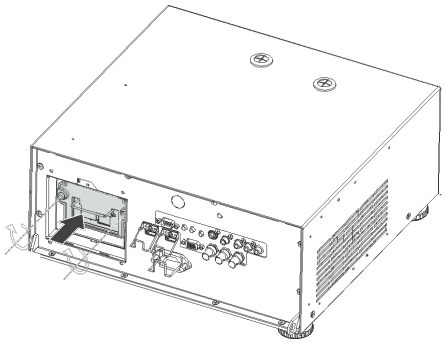
5. Loosen the two screws on the lamp module.



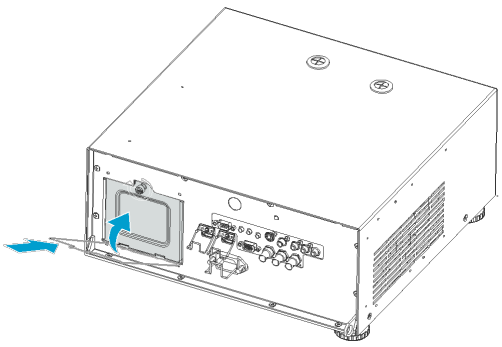
6. Pull the lamp module handle firmly to remove the lamp module.



7. Perform Steps 6 through 2 (in reverse order) to install the new lamp module.



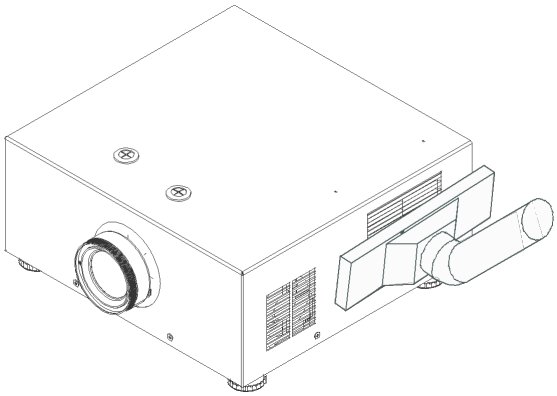
8. Turn on the power and reset the lamp timer.

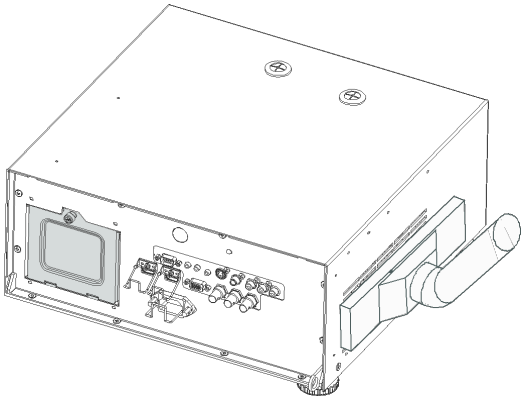


5.2 Cleaning the filters

Cleaning the fans

The projector uses the filter to keep the fans free of dust and other particles, and should be cleaned every 500 hours of operation. In dustier environments, it is recommended to clean the filter more frequently. If the filter is dirty or clogged, your projector may overheat.





5.3 Troubleshooting Tips

Table 5-1 provides some general guidelines for troubleshooting problems you may encounter with the projector. If the suggested solutions fail to resolve the problem or if you encounter an issue not described here, please contact Technical Support.

Symptoms	Possible Cause(s)	Solution
The projector does not turn on.	• The Projector is not plugged in or the AC outlet is not active. • Lamp cover is not securely attached.	• Ensure that the Projector is plugged in and that the AC outlet is active. • Securely attach the lamp cover.
The projector does not turn back on after it was powered off.	• The projector will not turn on for two minutes after power-off, to protect the lamp.	• Wait until the Projector completes its cool-down (POWER LED lights solid green).
The remote control does not work correctly.	• The batteries have run out. • IR code set mismatch between remote control unit and projector.	• Replace the batteries. • Press and hold the LIGHT and ENTER remote control buttons simultaneously until the remote control back-lighting “blinks” (approximately five seconds). Then, try again.
The projector is on and OSD menus appear, but there is no video image on-screen.	• Incorrect source selection. • Source component is not turned on. • Source component is connected incorrectly or not at all.	• Select the correct source. • Turn on the source. • Check cable connection from source component to projector.
A projected image from a DVD is split or otherwise scrambled.	• DVD player is connected to the Component input and set to progressive scan mode.	• Turn off progressive scan on the DVD player.
Image is blurred.	• The lens is not correctly focused.	• Adjust the focus with the remote control.
Image is too bright and/or lacks definition in the bright areas of the image.	• Contrast is set too high.	• Lower the contrast setting.
Image appears “washed out” and/or dark areas appear too bright.	• Brightness is set too high.	• Lower the brightness setting.
Colors in the image are swapped; for example, reds appear blue or vice versa.	• The Red/Pr, Green/Y or Blue/Pb outputs from the source are connected to the wrong inputs on the Projector.	• Ensure that the source outputs are connected to the correct Projector input.
LED is flashing alternating green and red.	• The lamp cover is open. • The lamp has failed or exceeded its usage life.	• Close the lamp cover. • Replace the lamp with a new one.
LED is flashing red.	• Projector internal temperature is too high.	• Power off the Projector and allow it to cool down. Ensure that the intake and exhaust vents are not blocked. Turn the projector back on. If the problem persists, please contact your local dealer Support for assistance.
LED lights solid red.	• Fans are not working properly or power-on self-test has failed.	• Please contact your local dealer Support for assistance.

Table 5-1: Troubleshooting Chart

RS-232 Documentation

Full documentation can be downloaded as a separate .pdf document in the M-Vision document library on www.digitalprojection.com.

SPECIFICATIONS

7.1 Projector Specifications

Table 7-1 lists the Projector specifications.

Optics			
Brightness	• 3500 lumens typical • 3000 lumens minimum		
Contrast	• 2000:1 typical • 1500:1 minimum		
Uniformity	• 85% typical • 70% minimum		
Color		x	y
	White	0.312	0.357
	Red	0.634	0.358
	Green	0.310	0.580 (Meet REC709)
	Blue	0.140	0.085
	Note: Color tolerance x,y = ± 0.03 for R, G; ± 0.15 for B		
Resolution	TI" DMD, 0.95" X 1, 12 degree, DC2		
Driver Technology	Dual 3021's		
Color Wheel	5-segment, RYGWB (2X)		
Color Temperature	6500K ± 1500K		
Lamp	1 x 260W lamp		
Projection Lens	Short throw lens = 1.46 to 1.86:1 or Medium throw ratio = 1.85 to 2.5:1 Fixed lens = .73:1 Note: Values for 1080p w 0.95"		
Projection Lens Image Offsets	• Vertical ± 120% V • Horizontal ± 30% H		
Image width range	8ft to 30 ft (see screen size table)		
Prism/DMD Optics	DMD gasketed to prevent dust settling on panel - filter free optics		
Electrical			
I/O - Video Input	• DB15 pin RGB - primary input • 2 x HDMI • Component 1 - RCA • Component 2 - BNC • S-Video		

Electrical	
I/O - Control and Status	9-Pin, 2-Way RS232
I/O - Power Input	IEC-320-C14receptacle
Projector Control	• Hard wired via RS-232 w Sanyo emulation • IR Remote - for set up only
Zoom/Focus/Offsets	Manually lens shift, Manual zoom/focus
Projection Modes	Front/ Rear
Video Modes	PC modes
System Software	Includes Sanyo emulation
Ballast	UART control , synchronized
Power	100V - 240V, 50/60Hz; 350W max, <2W Standby
Safety	UL 60950 -1, RoHS compatible
EMI	FCC Class A
Software	
Basic User Command List	See User Manual
Fault Tolerant Ballast Control	Standard ballast control
Mechanical	
Engine weight	20 lbs.
Dimensions	351(W) x 394(D) x 165(H) mm (14.2 x 15.5 x 6.5 inches)
Enclosure	Table or rack mounted (open rack only)
Adjustable feet	2” max travel
Reliability	
Operating Temperature	10°C to 35°C ambient
Storage	-20°C to 60°C, 90% RH
Lamp Life	2000 hours Normal
Lamp Module	User replaceable
Electronics	Modular replaceable

Table 7-1: Projector Specifications

7.2 Supported Timings

Table 7-2 lists the signal types supported by each input on the Projector.

Format	Resolution	Refresh Rate (Hz)	Horizontal Frequency (kHz)	Pixel Frequency (MHz)	Supported? (? = Yes, - = No)			
					RGB	Component 1 Component 2	HDMI 1 HDMI 2	Composite S-Video
640x480	640x480	60.00	31.469	25.175	ü	-	ü	-
		66.59	35.892	29.862	ü	-	ü	-
		75.00	37.500	31.500	ü	-	ü	-
		85.00	43.269	36.000	ü	-	ü	-
800x600	800x600	60.00	37.879	40.000	ü	-	ü	-
		75.00	46.875	49.500	ü	-	ü	-
		85.00	53.674	56.250	ü	-	ü	-
832x624	832x624	74.54	52.849	60.036	ü	-	ü	-
848x480	848x480	48.00	25.270	27.089	ü	-	ü	-
		60.00	31.020	33.750	ü	-	ü	-
1024x768	1024x768	60.00	48.363	65.000	ü	-	ü	-
		75.00	60.023	78.750	ü	-	ü	-
		85.00	68.677	94.500	ü	-	ü	-
1280x720	1280x720	47.95	37.833	64.769	ü	-	ü	-
1280x1024	1280x1024	60.00	63.981	108.000	ü	-	ü	-
		75.00	79.976	135.000	ü	-	ü	-
		85.00	91.146	157.500	ü	-	ü	-
1600x1200	1600x1200	60.00	75.000	162.000	ü	-	ü	-
1680x1050	1680x1050	59.94	69.830	164.240	ü	-	ü	-
1920x1080	1920x1080	47.95	56.821	150.007	ü	-	ü	-
480/60i	720x487	59.94	15.734	13.500	-	ü	ü	ü
480/60p	720x483	59.94	31.469	27.000	ü	ü	ü	-
576/50i	720x576	50.00	15.625	14.750	-	ü	ü	ü
576/50p	720x576	50.00	31.250	29.000	ü	ü	ü	-
720/50p	1280x720	50.00	37.500	75.250	ü	ü	ü	-
720/60p	1280x720	60.00	45.000	74.250	ü	ü	ü	-
1080/50i	1920x1080	50.00	28.125/31.250	74.250/72.000	ü	ü	ü	-
1080/60i	1920x1080	59.94/60.00	33.716/33.750	74.175/74.250	ü	ü	ü	-
1080/24p	1920x1080	23.98/24.00	26.978/27.000	74.175/74.250	ü	ü	ü	-
1080/50p	1920x1080	50.00	56.250	148.500	ü	ü	ü	-
1080/60p	1920x1080	59.94/60.00	67.433/67.500	148.350/148.500	ü	ü	ü	-
NTSC 3.58	-	59.94/60.00	15.734/15.750	3.580	-	-	-	ü
NTSC 4.43	-	59.94/60.00	15.734/15.750	4.430	-	-	-	ü
PAL-B/G	-	50.00	15.625	4.430	-	-	-	ü
PAL-M	-	59.94/60.00	15.734/15.750	3.580	-	-	-	ü
PAL-N	-	50.00	15.625	3.580	-	-	-	ü
PAL-60	-	59.94/60.00	15.734/15.750	4.430	-	-	-	ü
SECAM	-	50.00	13.500	4.250/4.410	-	-	-	ü

Table 7-2: Supported Signal Timings by Input