DIGITAL PROJECTION

A Delta Associate Company

E-Vision 9100 Series

High Brightness Digital Video Projector

INSTALLATION & QUICK START GUIDE
CONNECTION GUIDE
OPERATING GUIDE
REFERENCE GUIDE

Introduction

Congratulations on your purchase of this Digital Projection product. Your projector has the following key features:

- WUXGA native resolution delivering 8,600 ISO lumens.
- 7-point colour correction for accurate colour matching.
- HDR Support
- Support for Frame Sequential 3D.
- DICOM simulation mode.
- HDBaseT® for transmission of uncompressed High Definition Video up to 100 m from the source.
- Cornerstone, Vertical & Horizontal Keystone geometry correction.
- Control via LAN HDBaseT and RS232.
- Motorised lens mount with Shift, Zoom and Focus using compatible lenses.
- Constant brightness mode maintains light output at selected levels.

A serial number is located on the side of the projector. Please record it here for future reference:

Follow the instructions in this manual carefully to ensure safe and long-lasting use of the projector.

Notes

About this document

Symbols used in this document

Many pages in this document have a dedicated area for notes. The information in that area is accompanied by the following symbols:

⚠ **LASER WARNING: this symbol indicates that there is a potential hazard of eye exposure to laser radiation unless the instructions are closely followed.**

⚠ **ELECTRICAL WARNING: this symbol indicates that there is a danger of electrical shock unless the instructions are closely followed.**

⚠ **WARNING: this symbol indicates that there is a danger of physical injury to yourself and/or damage to the equipment unless the instructions are closely followed.**

☞ *NOTE: this symbol indicates that there is some important information that you should read.*

Product revision

Because we at Digital Projection continually strive to improve our products, we may change specifications and designs, and add new features without prior notice.

Additional Documentation

Updates to this manual may be available online.

Please use the QR code (also located on the projector) to access the latest E-Vision projector user guides and other documentation via the Digital Projection website.

Or visit the products specification page on the Digital Projection website to download the latest user guide and other documentation.

Legal notice

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Notes

Electrical and Physical Specifications

Mains Voltage	100-240VAC 50/60Hz single phase 9.0A
Operating Temperature	0°C to 40°C (32°F to 104°F) 35°C to 40°C (95°F to 104°F) with reduced ECO mode light output
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Operating Humidity	10% to 85% non-condensing
Storage Humidity	5% to 95% non-condensing
Dimensions	L:598mm (23.5in) X W: 500mm (19.7in) X H 218mm (8.6in)
Weight	27.5Kg (60.62lb) without lens
Power Consumption	at 110VAC: 792W typical (normal mode) at 240VAC: 755W typical (normal mode)
Standby Power	0.5W typical (Normal Mode) 0.9W typical (On By LAN mode) 3.7W typical (On By HDBaseT mode)
Thermal Dissipation	at 110VAC: 2704 BTU/Hour typical (Normal mode) at 240VAC: 2579 BTU/Hour typical (Normal mode)
Fan Noise	40dBA Max, 38 dBA typical (Normal Mode)

☞ *Specifications are subject to change without notice.*

Laser Parameters

Wavelength	449-461nm (Blue)
Mode of operation	Pulsed, due to frame rate
Pulse duration	1.34ms
Pulse repetition rate	120Hz
Maximum pulse energy	0.698mJ

Compliance with International Standards

RF Interference

FCC

The Federal Communications Commission does not allow any modifications or changes to the unit EXCEPT those specified by Digital Projection in this manual. Failure to comply with this government regulation could void your right to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference.

Noise

GSGV Acoustic Noise Information Ordinance

The sound pressure level is less than 40 dB (A) at normal operating mode according to ISO 3744 or ISO 7779.

European Waste Electrical and Electronic Equipment (WEEE) Directive

Digital Projection Ltd is fully committed to minimising Waste Electrical and Electronic Equipment. Our products are designed with reuse, recycling and recovery of all components in mind. To this end, at end of life, your projector may be returned to Digital Projection Ltd or its agent so that the environmental impact can be minimised.

Contents

Notes

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High Brightness Digital Video Projector

INSTALLATION & QUICK START GUIDE

General Precautions

⚠ **Warning! Death or Serious Injury could occur if the following precautions are ignored**

☢ **Eye Hazard! Do not look directly into the lens when the light source is on. The high brightness can cause permanent eye damage**

⚠ **Fire Hazard! Keep any combustible material away from hot surfaces and the projected beam. Ensure cables do not contact hot surfaces**

⚡ **Shock Hazard! Use only authorised components, tools, accessories and replacement parts specified by the manufacturer**

⚠ **Trip Hazard! Locate cables where they cannot be pulled, tripped over or damaged by persons or objects**

Operate the product in the specified operating environment and conditions

Product should be powered off and disconnected from the mains before any service or maintenance operation

Keep body parts, hair, clothing and jewellery away from moving parts in the product.

Do not operate the product without a lens installed

Use a lens plug when installing or moving the product

⚡ **The unit is never to be operated if the unit is defective or the cover or seal is damaged.**

⚠ **No maintenance allowed by end user.**

Do not open the cabinet. There are no user serviceable parts inside.

No service is allowed except by authorized personnel.

Use only the power cable provided.

⚡ **Ensure that the power outlet includes a Ground connection, as this equipment MUST be earthed.**

⚠ **Take care to prevent small objects such as paper or wire from falling into the projector. If this does happen, switch off immediately, and have the objects removed by authorised service personnel.**

⚡ **Do not expose the projector to rain or moisture, and do not place any liquids on top of the projector.**

Unplug before cleaning, and use a damp, not wet, cloth.

Do not touch the power plug with wet hands.

Do not touch the power plug during a thunder storm.

Handle the power cable carefully and avoid sharp bends. Do not use a damaged power cable.

⚠ **Do not touch the ventilation outlets, as they will become hot in use.**

Do not cover or obstruct the ventilation outlets or inlets.

Do not cover the lens whilst the projector is switched on. This could cause a fire.

Always allow the projector to cool for 5 minutes before disconnecting the power or moving the projector.

Never use strong detergents or solvents such as alcohol or thinners to clean the projector and lens.

Notes

What's in the box?

Make sure your box contains everything listed. If any pieces are missing, contact your dealer.

Only one remote is supplied with the projector.

Save and store the original box and packing materials, in case you ever need to ship your projector.

The projector is shipped without a lens.
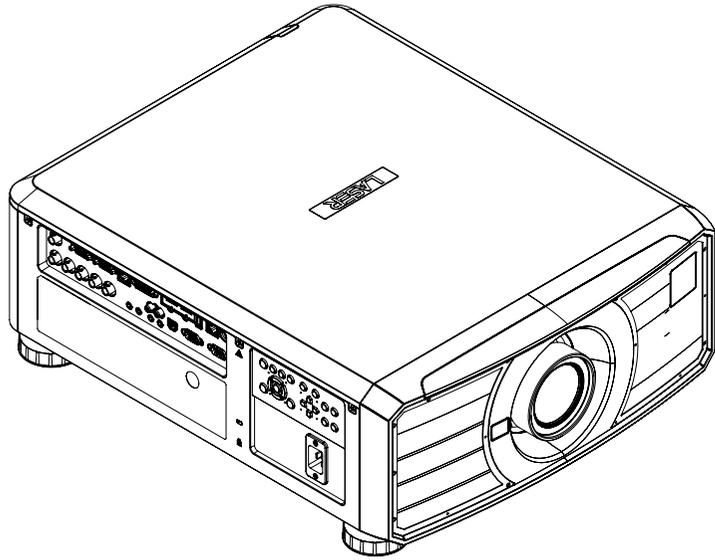
Only the appropriate cable for destination territory is supplied with the projector
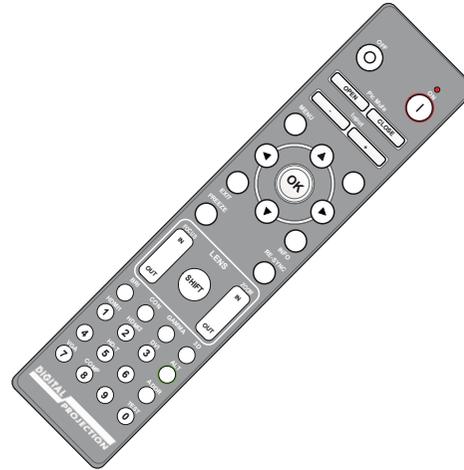
Remote Control

Batteries (2xAAA)

Projector
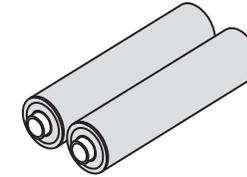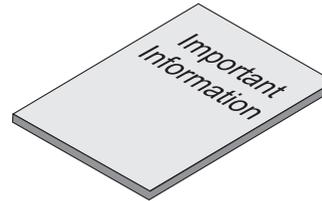
Important Information Book
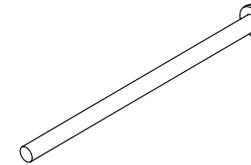
Security Screw
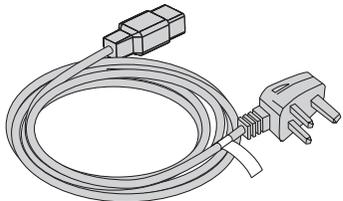
Power Cable, UK
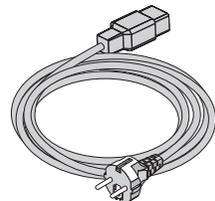
Power Cable, Europe
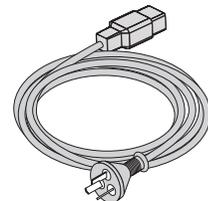
Power Cable, China
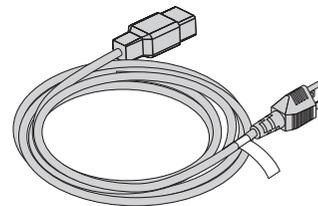
NEMA 5-15P - C19 Power Cable, North America

NEMA 6-15P - C19 Power Cable, North America
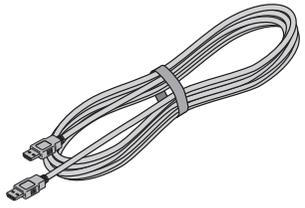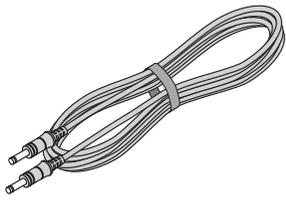
HDMI Cable   **Remote Control Cable**   **VGA Cable**
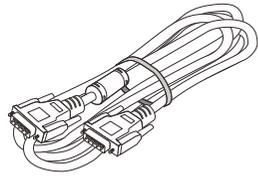
Notes

Projector overview

1. Air inlet
2. Front infrared window
3. Lens mount
4. Air inlet
5. Rear infrared window
6. Air outlet
7. Connections panel
8. Control panel
9. Adjustable feet
10. Mains socket
11. Air inlets
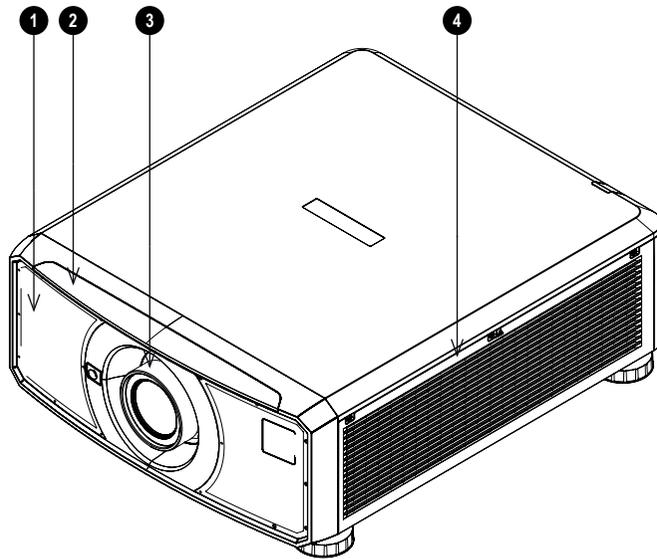
Front View
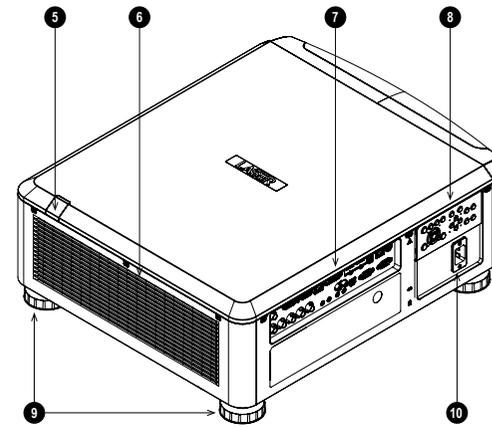
Rear View
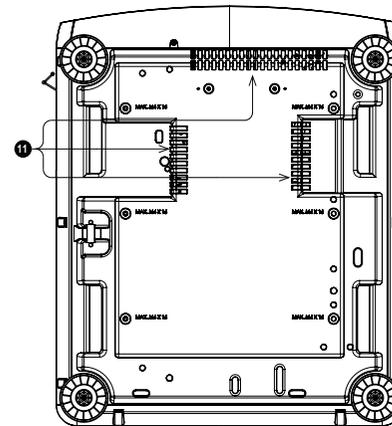
Bottom View

Notes

Location of Laser Aperture

1. The laser aperture is located as indicated below.

⚠️ **Be careful not to expose the eye to direct laser light.**
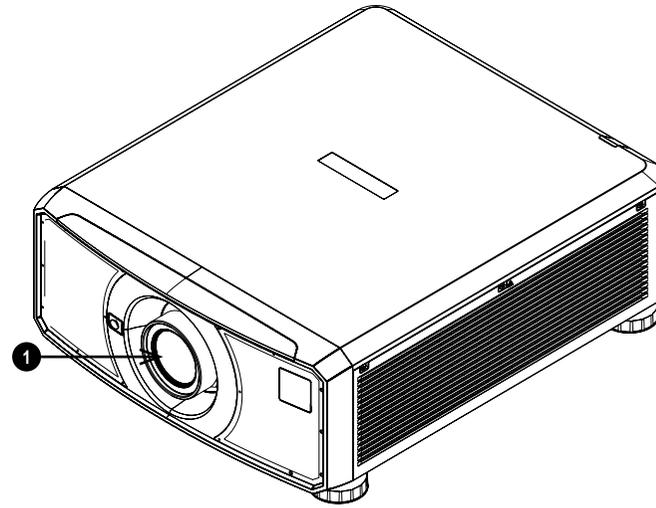
Interlock Switches

Interlock switches are installed at the main frame, inside the cover. These will power-off the system individually when activated.

1. Will be activated when the projection lens is removed or misplaced.
2. Will be activated when the top cover is removed.
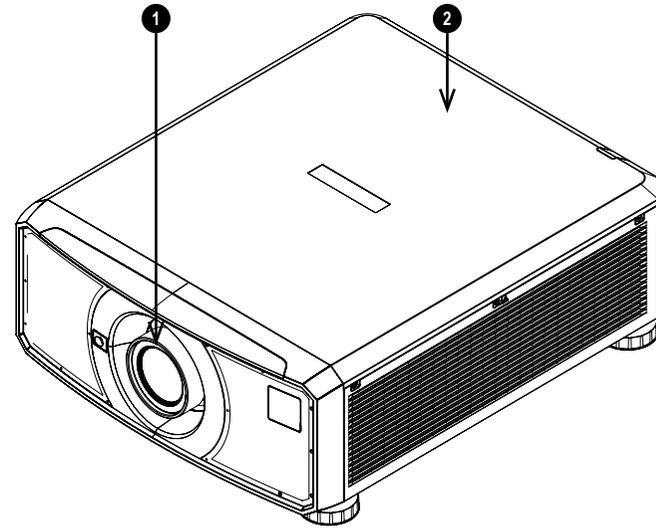
Notes

Installation Precautions

| | Notes |

⚠ **The projector must be installed only by suitably qualified personnel, in accordance with local building codes.**

The projector is heavy. Use safe handling techniques when lifting the projector.

Do not drop or knock the projector.

Do not install the projector close to anything that might be affected by its operational heat, for instance, polystyrene ceiling tiles, curtains etc.
Place the projector in a dry area away from sources of dust, moisture, steam, smoke, sunlight or heat.

Ensure that the intake vents do not recycle hot air from the exhaust vent.
When operating the projector in an enclosed space, ensure that the surrounding air temperature within the enclosure does not exceed operation temperature while the projector is running, and the air intake and exhaust vents are unobstructed.

All enclosures should pass a certified thermal evaluation to ensure that the projector does not recycle exhaust air, as this may cause the device to shutdown even if the enclosure temperature is with the acceptable operation temperature range.

Avoid installing at high temperature, insufficient cooling and heavy dust locations.
Keep your product away from fluorescent lamps (>1 Meter) to avoid malfunction caused by IR interference.

Avoid installing near an air conditioner duct or a subwoofer.

The projector should be installed as close to the power outlet as possible.

The power connection should be easily accessible, so that it can be disconnected in an emergency.

Please pay attention to projector installation with respect to other staging laser light equipment set-up. These systems can cause permanent damage to the DMD imaging devices used in our projectors. This damage is not covered by our warranty.

When using projectors in environments with third party high power laser systems avoid direct laser beams pointing towards the projection lens. This may cause incident light to converge into the optical engine and cause damage to the DLP DMD.

⚠ **Before installation, make sure that the surface, ceiling or rigging that is to support the projector is capable of supporting the combined weight of the projector and lens.**

Backup safety chains or wires should always be used with ceiling mount installations.

When installing a ceiling mount, make sure the weight limit is not exceeded and the projector is firmly secured.

The projector can be operated any position, as shown in the diagram:

360°   **360°**

Tilt (Left) and Roll (Right)
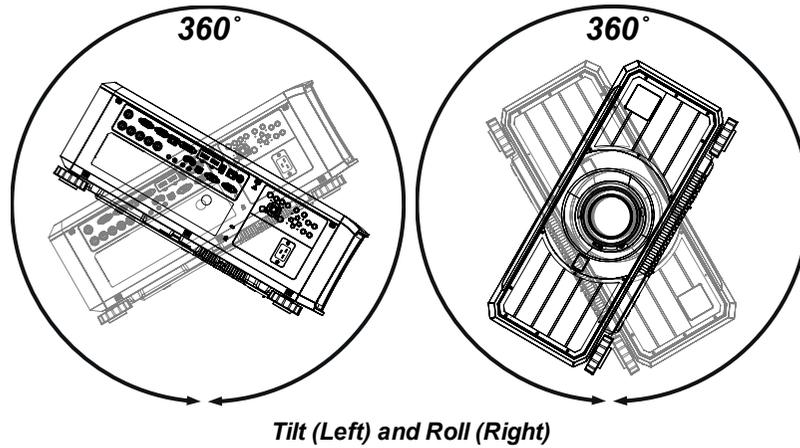
⚠ **The following positions are to be avoided as they can reduce motor life:**
Lens facing down
Inputs and outputs facing up

Allow at least 50cm (19.7in) of space between the ventilation outlets and any wall, and 30cm (11.8in) on all other sides.

Minimum 500mm (19.69in)   *Minimum 500mm (19.69in)*   *Minimum 500mm (19.69in)*

Minimum 100mm (3.94in)

Minimum 500mm (19.69in)   *Minimum 300mm (11.81in)*
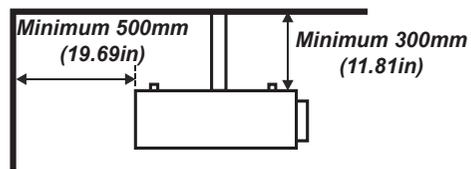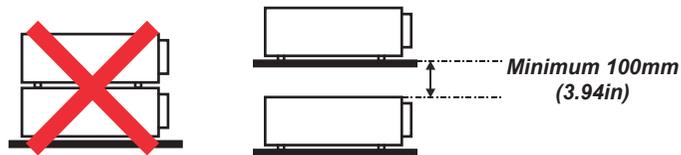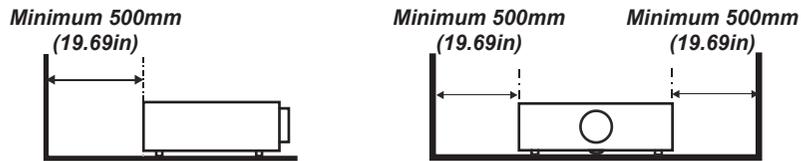
Example Positioning

⚠ **Make sure the lens cap is removed from the lens before operating the projector. Light energy levels have been known to cause damage to both the lens and projector optics. This damage is not covered by our warranty.**

Make sure the lens cap is removed from the rear of the lens before it is inserted into the projector.

Connect the LAN cable only to a computer LAN connection. Other similar connectors may have a dangerously high voltage source.

A VGA IN connector should be used to connect to the VGA IN port on the projector. It should be inserted tightly, with the screws on both sides securely fastened to ensure proper connection of the signal wire for achieving optimal display effect.

An AUDIO IN connector should be used to connect to the AUDIO IN port on the projector.

The power cord and signal cable should be connected before the projector is powered on. During startup and operation, DO NOT insert or remove the signal cable or the power cord to avoid damaging the projector.

Turn on High Fan Speed Mode when located in high altitude areas.

⚠ **The projector generates heat during use. The internal fans dissipate the heat of the projector when shutting down, which could continue for a certain period. After the projector enters STANDBY MODE, remove the power cord. DO NOT remove the power cord during shutdown as it may cause damage to the projector and may affect the service life of the projector.**

Do not place heavy objects on top of the projector chassis.

Notes

Laser Safety Precautions

Warning! Death or Serious Injury could occur if the following precautions are ignored

Permanent/Temporary Blindness Hazard

CLASS 3R LASER PRODUCT
This Laser Product is designated as Class 3R during all procedures of operation.

LASER LIGHT - AVOID DIRECT EYE EXPOSURE.
Do not point laser or allow laser light to be directed or reflected toward other people or reflective objects.

Direct or scattered light can be hazardous to eyes and skin.

There is a potential hazard of eye exposure to laser radiation if the included instructions are not followed.

Caution – use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Non-laser emission. There remains non-laser emission from the projection lens. This portion of emission has been tested per IEC/EN 62471-5:2015 to be Risk Group 2 (low risk).

RISK GROUP 2 CAUTION. Possibly hazardous optical radiation emitted from this product. Do not stare at operating light source. May be harmful to the eyes.

Fitting a lens

Inserting a new lens

1. Remove the lens aperture cap or lens from the projector. See Removing the lens on the next page for guidance on removing a lens.

2. Remove the front and rear lens caps from the lens.

3. Position the lens so that the labels are at the top, and gently insert it all the way into the lens mount.

4. Push the lens in firmly and turn it clockwise until it clicks into place.
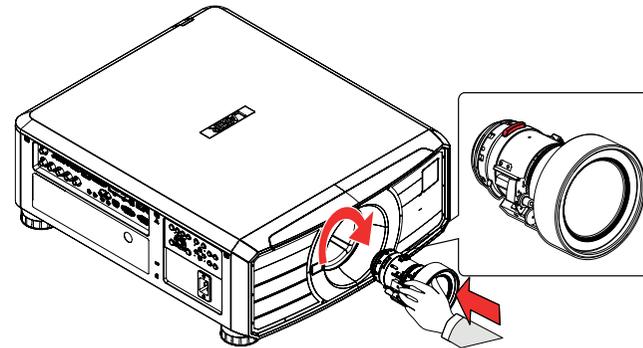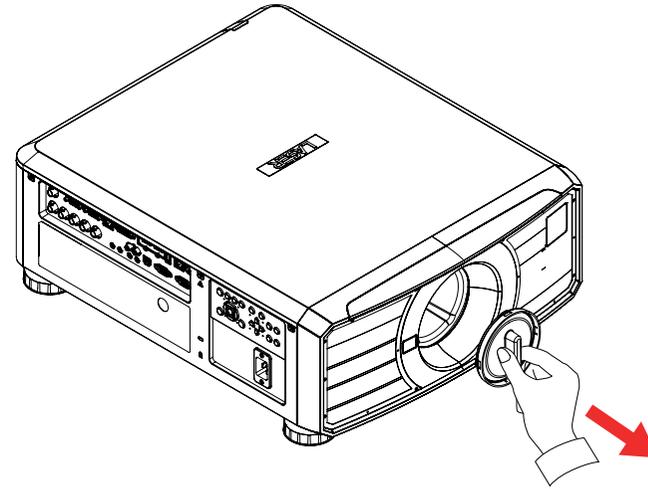
Notes

The projector must be fully turned off prior to attempting a lens change.

When changing the lens, avoid using excessive force as this may damage the equipment.

Avoid touching the surface of the lens as this may result in image impairment.

The lens is shipped separately.

Take care to preserve the original lens packaging and protective caps for future use.

The projector will not turn on the light source without a lens fitted

Removing the lens

1. Push the lens release button all the way in

2. Turn the lens anti-clockwise until it disengages

3. Slowly remove the lens

4. Fit lens caps to the front and rear of the lens

5. Fit a lens cap or a new lens to the projector. See Inserting a new lens on the previous page for guidance on inserting a lens.
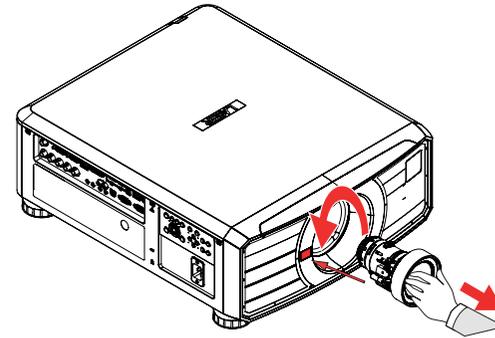
Positioning the screen and projector

1. Install the screen, ensuring that it is in the best position for viewing by your audience.

2. Mount the projector, ensuring that it is at a suitable distance from the screen for the image to fill the screen. Set the adjustable feet so that the projector is level, and perpendicular to the screen.

The drawing shows the positions of the feet for table mounting, and the fixing holes for ceiling mounting.

1. Four adjustable feet **1**.

2. **Six M4 holes for ceiling mount 2**. The screws should not penetrate more than 16 mm mm into the body of the projector.
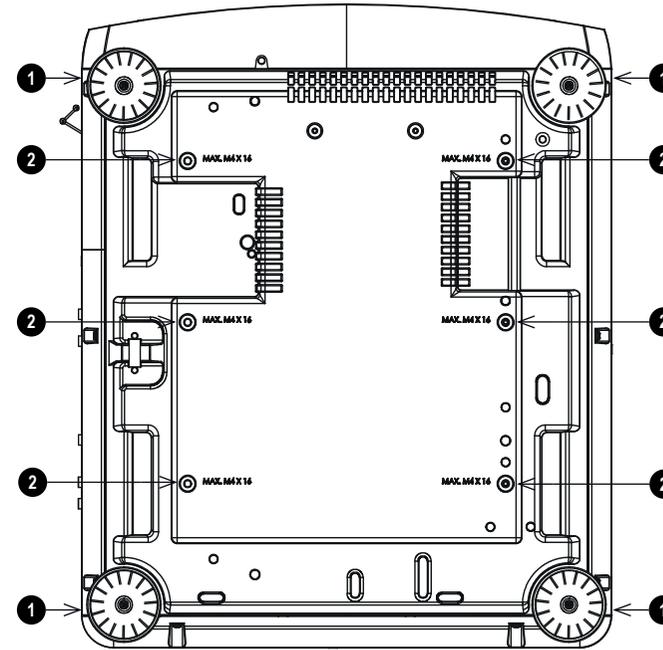
Notes

⚠ Always allow the projector to cool for 5 minutes before disconnecting the power or moving the projector.

⚠ Ensure that there is at least 50 cm (19.7 in) of space between the ventilation outlets and any wall, and 30 cm (11.8 in) on all other sides.

⚠ Do not use the threaded holes for the adjustable feet to hang or mount the projector.

Power Supply

AC Power Precautions

Warning! Death or Serious Injury could occur if the following precautions are ignored

Shock Hazard! Only use the AC power cord provided or recommended by the manufacturer

Fire & Shock Hazard! Do not operate the product unless the power cord, socket and plug meet local rating standards

Do not attempt operation if the AC supply is not within the specified parameters

The AC power cord must be inserted into a socket with grounding

Disconnect the product from the AC supply before installing, moving, servicing, cleaning or removing covers

Do not use an AC power cord that appears damaged

Do not overload power sockets or extension cords

Notes

Connecting the power supply

1. Firmly push the mains connector into the AC In socket **1**
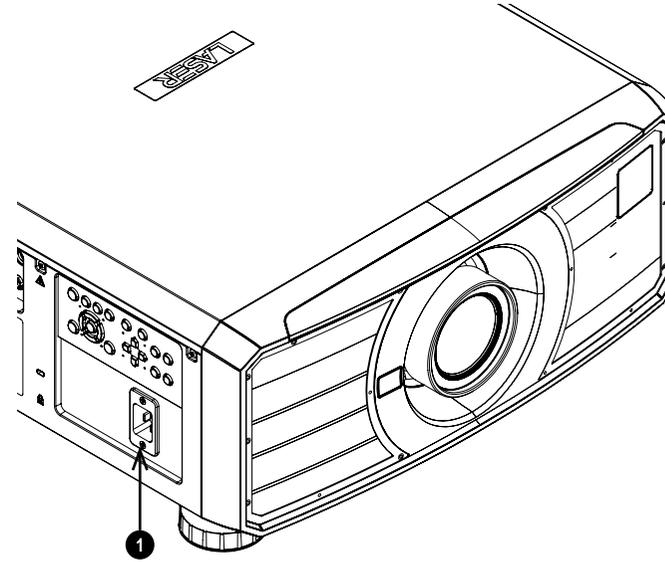
Operating the projector

Control panel

1. **POWER**
   Switches the projector on and off (STANDBY).

2. **INPUT**
   Displays the input selection menu.

3. **AUTO SYNC**
   Re-synchronises with the current input signal.

4. **ASPECT**
   Changes the aspect ratio.

5. **CENTER LENS**
   Centers the lens.

6. **PIC MUTE**
   Shows and hides the projected image. When muted, the light source is completely switched off and the screen is blank.

7. **MENU**
   Displays and exits the OSD.

8. **Arrow buttons & ENTER**
   Press an arrow button to open the keystone menu. Use the arrow buttons to adjust vertical and horizontal keystone. After opening the OSD, use the arrow buttons to highlight menu entries. Press **ENTER** to open or execute the highlighted menu entry.

9. **EXIT**
   Exits the current OSD page and enters the level above.

10. **LENS SHIFT**
    Arrow buttons move the lens in the specified direction.

11. **FOCUS**
    Plus and minus buttons move the focus in and out.

12. **ZOOM**
    Plus and minus buttons zoom in and out.

Control Panel

Projector indicators

- **TEMP.**
  Off = no problem
  On = temperature error
- **LIGHT**
  Off = no problem
  Flashing red = projector error
- **STATUS**
  Off = no problem
  Flashing red (cycles of six flashes) = fan error
  Flashing red (cycles of seven flashes) = cover error
- **POWER**
  Off = AC power is not present
  Flashing green = the projector is starting up or cooling down
  On, green = the projector is on or in standby mode
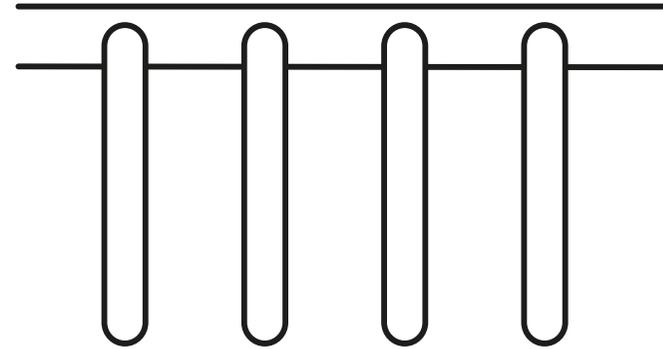
TEMP.   LIGHT   STATUS   POWER

Indicators

Notes

Remote control

1. **Power ON / OFF**
   Turns power on and off.
   To turn the projector off, press the OFF button twice within five seconds.

2. **Pic Mute OPEN / CLOSE**
   - Press CLOSE to hide the projected image. When closed, the light source is completely switched off and the screen is blank.
   - Press OPEN to display the hidden image.

3. **Input + / -**
   Cycles through the signal inputs

4. **MENU**
   Access the on screen display (OSD). If the OSD is open, press this button to go back to the previous menu.

5. **Navigation (arrows and OK)**
   Adjusts horizontal and vertical keystone.
   See **5** above. In menu mode, use the arrows to navigate through the menu, use **OK** to confirm your choice.
   See **10** below. In lens adjustment modes, use the arrows to shift, zoom or focus the lens, use **OK** to switch between modes: **Shift Adjustment** and **Zoom / Focus Adjustment**.

6. **EXIT**
   Go up one level in the OSD. When the top level is reached, press to close the OSD.

7. **INFO**
   Access information about the projector.
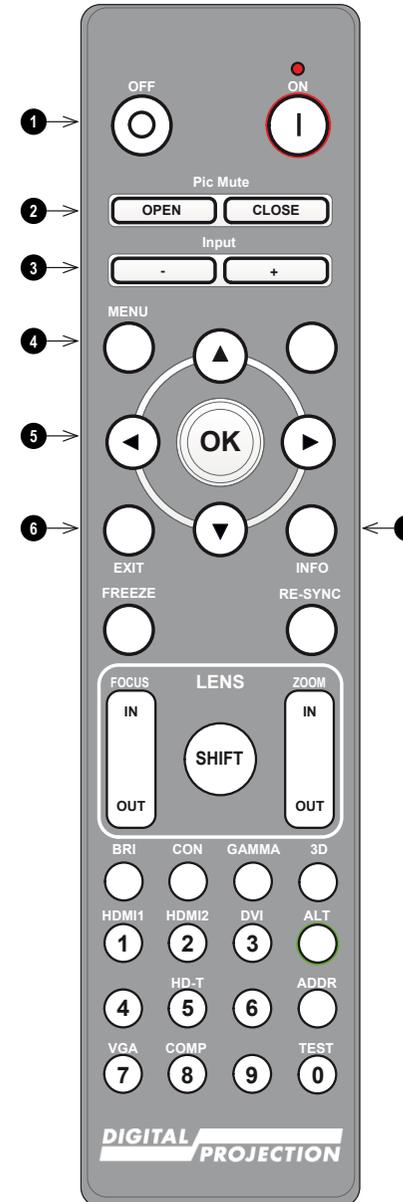
Remote Control

8. **FREEZE**
   Freeze the current frame.

9. **LENS adjustment**
   - **FOCUS IN / OUT**: adjust focus.
   - **SHIFT**: press and hold this button, then use the Navigation arrow buttons to move the lens.
   - **ZOOM IN / OUT**: adjust zoom.

10. **BRI**
    Set the brightness level.

11. **CON**
    Set the contrast level.

12. **HDMI 1 / numeric input 1**
    Select the HDMI 1 input.

13. **HDMI 2 / numeric input 2**
    Select the HDMI 2 input.

14. **RE-SYNC**
    Re-synchronise with the current input signal

15. **3D**
    Open the 3D Setting menu in the OSD.

16. **GAMMA**
    Set the gamma.

17. **ALT**
    Press and hold this button to access alternative functions for other buttons on the remote.

18. **DVI / numeric input 3**
    Select the DVI input.
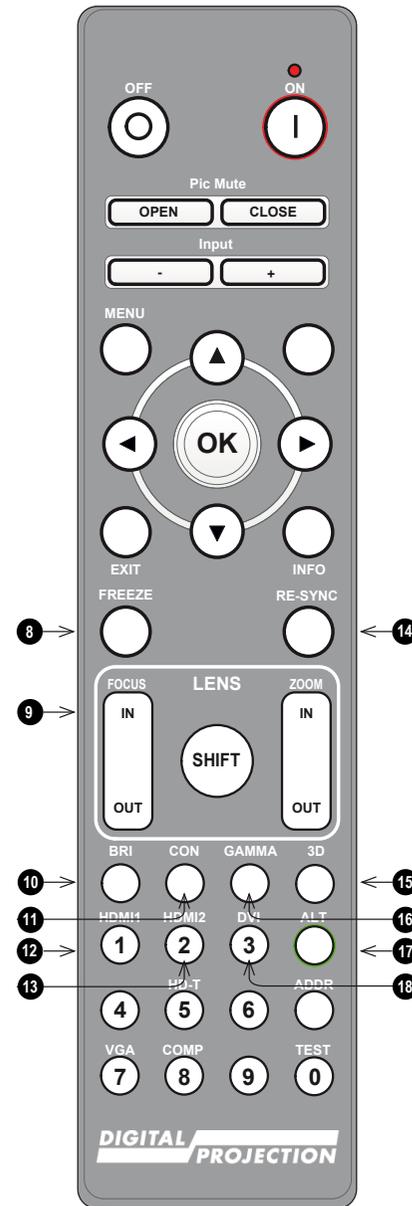
Remote Control

19. **numeric input 4**

20. **HD-T / numeric input 5**
    Select the HDBaseT input.

21. **ADDR (with red indicator at the top)**
    Assign and unassign an IR remote address.
    To assign an IR remote address:
    1. Press and hold this button until the red indicator starts flashing.
    2. Release this button and while the red indicator is still flashing, enter a two-digit address using the numeric input buttons. The indicator will flash three times quickly to confirm the change.
    To unassign an address and return to the default address 00:
    1. Press and hold ALT and this button simultaneously until the red indicator flashes to confirm the change.

22. **numeric input 6**
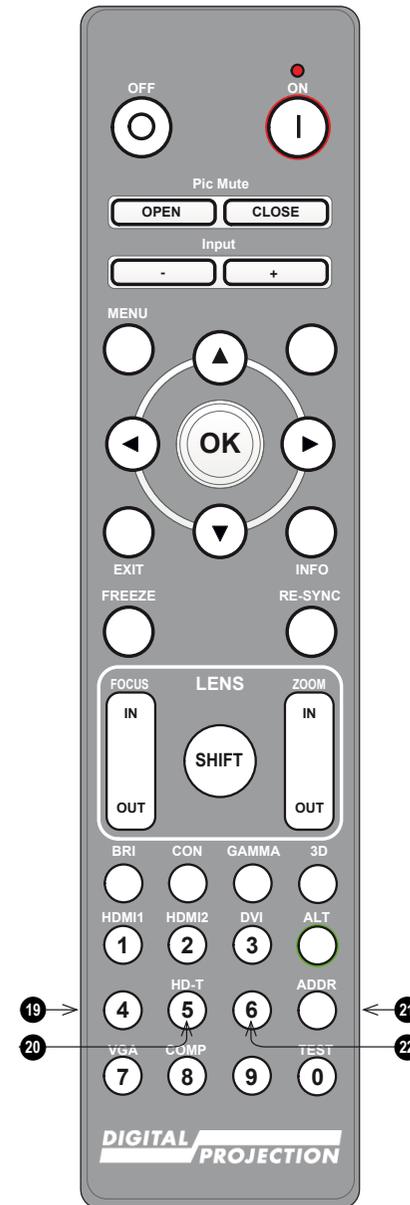
Remote Control

Notes

23. **VGA numeric input 7**
    Select the VGA input.

24. **COMP / numeric input 8**
    Select the Component input.

25. **TEST / numeric input 0**
    Show the Grid test pattern. Press again to exit.

26. **numeric input 9**
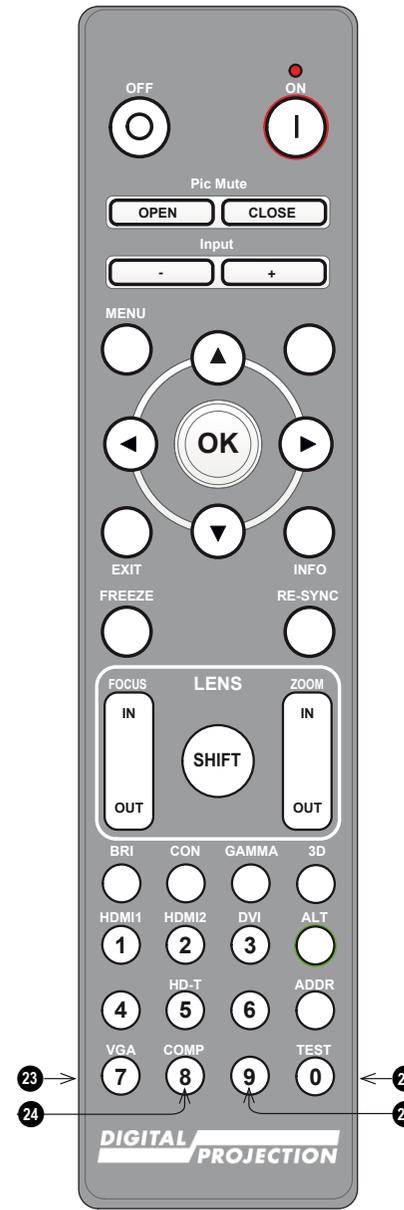
Remote Control

Infrared reception

The projector has infrared sensors at the front and rear.
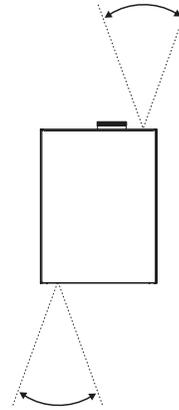
Switching the projector on

1. Ensure a lens is fitted. Connect the power cable between the mains supply and the projector.
2. Press one of the following buttons:
   - On the remote control, the **ON** button
   - On the projector control panel, the **POWER** button.

The **POWER** indicator begins flashing green and the fans begin working. When the flashing stops and the **POWER** indicator shows steady green, the projector is switched on.

Switching the projector off

1. Press **OFF** on the remote control or **POWER** on the control panel, then press again to confirm your choice.
   The **POWER** indicator on the control panel will start flashing green, the light source will go out and the cooling fans will run for a short time. The **POWER** indicator stops flashing green and changes to solid green when the projector enters Standby mode.
2. If you need to switch the projector off completely, wait until the projector enters Standby mode, then disconnect the AC power cable from the projector.

Interlock reset

In the event of the laser illumination turning off as a result of an Interlock break:

1. Make sure all interlocks are in place. See Interlock Switches on page 16
2. Turn ON the laser illumination as above

Selecting an input signal

1. Connect one or more image sources to the projector.

2. Select the input you want to display:
   - Press one of the input buttons, or one of the input + or - buttons on the remote control.
   - Press **MENU** on the remote control or control panel and navigate to the Source setting in the Settings 1 tab. Or press **INPUT** on the control panel. Use the **UP** and **DOWN** navigation buttons to select the input source in the **SOURCE** menu. Press **ENTER** to confirm your choice.

Selecting a test pattern

The following test patterns are available:RGB Ramps, Color Bars, Step Ramps, Check Board, Grid, Horizontal Lines, Vertical Lines, Diagonal Lines, Horizontal Ramp, Vertical Ramp, White, Red, Green, Blue, Black, *None.*

To display a test pattern:

1. Press **MENU** on the remote or control panel to open the OSD.
2. Use the **LEFT** and **RIGHT** arrow buttons to access the **Settings 1** menu.
3. Use the **UP**, **DOWN** and **RETURN** buttons to access the **Advanced 2** sub menu.
4. Highlight **Test Pattern** and select a test pattern using the **LEFT** and **RIGHT** arrow buttons.

To return to the main image, set the test pattern to none and exit the OSD by pressing **EXIT**.

Adjusting the lens

You can use the following options to adjust the lens:

- Control panel. See Control panel on page 26
- Remote control. See Remote control on page 28
- On screen display (OSD).

Adjusting the image

Orientation

This can be set from the **Settings 1** menu. See Settings 1 Menu on page 59 for guidance.

Highlight **Projection** and choose from **Desktop Front**, **Desktop Rear**, **Ceiling Front** and **Ceiling Rear**.

Geometry

Settings such as **Keystone** and **4 Corners** can be set from the **Settings 1** menu. See Settings 1 Menu on page 59 for guidance.

Picture

Settings such as **Display Modes**, **Brightness**, **Contrast**, **Computer**, **Auto Image**, **Color Manager** (**Hue**, **Saturation** and **Gain**), **Dynamic Black Settings**, **HDR Settings**, and **Advanced** (**Brilliant Color**, **Sharpness**, **Gamma**, **Color Temperature**, **Video Saturation**, **Video Tint** and **White Balance**.) can be set from the **Image** menu. See Image Menu on page 53 for guidance.

Notes

Keystone requires an external signal input to enable it to be set.

This product includes a DICOM simulation feature intended for training and other non-medical diagnosis purposes.

Adjusting the audio

The audio output can be adjusted using the remote control or OSD:

- Use the **Volume** button on the remote to open the volume bar. Use the LEFT and RIGHT arrow buttons to adjust the volume level.
- Use the **Mute** button on the remote to mute the audio.
- Press **MENU** on the remote or control panel to open the OSD. Navigate to the **Settings 1** menu and open the **Audio** sub menu to adjust the audio.

Notes

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DIGITAL PROJECTION

A Delta Associate Company

E-Vision 9100 Series

High Brightness Digital Video Projector

CONNECTION GUIDE

Signal inputs

Digital inputs and outputs

1. **HDBaseT**
   Receives digital signal from HDBaseT-compliant devices. Connect an HDBaseT cable.

2. **DVI-D**
   DVI-D 1.0 input. Supports HDCP. This input can receive digital signal from a compatible source. Connect a DVI-D cable to the connector.

3. **HDMI**
   HDMI 2.0 inputs supporting HDCP 2.2. Connect an **HDMI** cable to the connector.

4. **USB**
   USB 5V / 2A output. Connect a USB cable to supply power to an external device.

5. **Service**
   This port is for servicing purposes only.
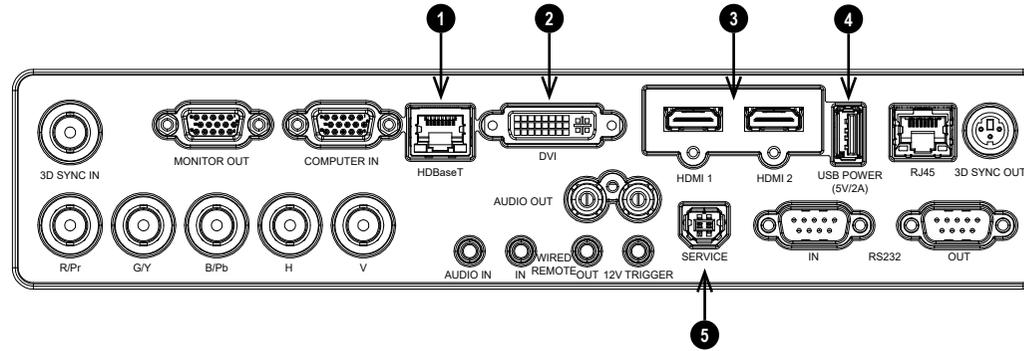
Notes

For simultaneous HDBaseT and LAN connectivity, a third-party distribution product can be utilised to combine HDBaseT video stream with LAN connection for delivery to the projector.

See 2D formats on page 94 for information about supported 2D signal input modes.

If you are using a computer graphics card or another source that obeys the EDID protocol, the source will automatically configure itself to suit the capability of the projector.

Otherwise refer to the documentation supplied with the source to manually set the resolution to the DMD™ resolution of the projector or the nearest suitable setting. Switch off the source, connect to the projector, then switch the source back on again.

Using HDMI / HDBaseT switchers with the projector

When using a DisplayPort/HDMI/HDBaseT source switcher with the projector, it is important to set the switcher so that it passes the projector EDID through to the source devices.

If this is not done, the projector may not be able to lock to the source or display the source correctly as its video output timings may not be compatible with those of the projector. Sometimes this is called transparent, pass-through or clone mode. See your switcher's manual for information on how to set this mode.

1. Sources
2. Switcher
3. Projector
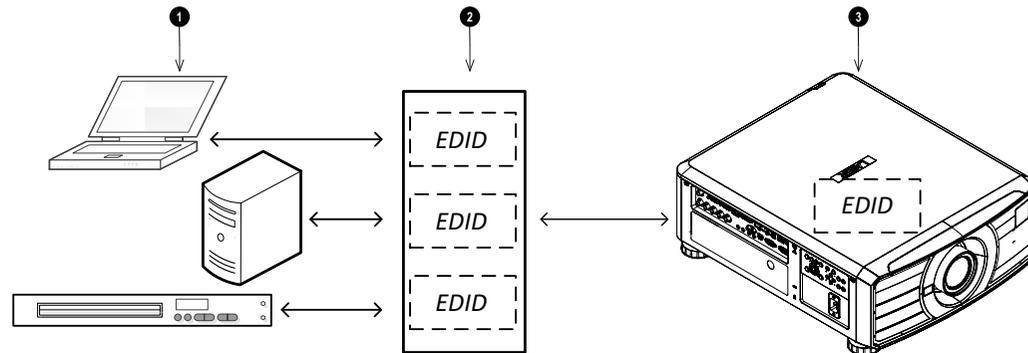
The EDIDs in the switcher should be the same as the one in the projector.

Analog inputs and outputs

1. **Monitor Out**
   Connect an analog monitor (VGA) cable to the 15-pin D-type to output the signal received on the VGA input.

2. **Computer In**
   This input receives analog signals from a computer. When using this input, it is best to use a fully wired VGA cable to connect the source to the projector. This will allow the source to determine the projector's capabilities via DDC and show an optimized image. Such cables can be identified as they have a blue connector shell.

3. **L & R Audio Out (L+R RCA)**
   Connect to the left and right RCA Audio Out outputs, to send audio out from the Projector inputs (e.g HDMI, HDBaseT, Audio In) to an external amplifier / speakers.

4. **Component**
   RGBHV, RGsB or RGBS
   The projector will accept these Component video formats via the BNC inputs using the given sync configurations.

5. **Audio In**
   Use this Audio In (3.5 mm stereo jack plug) to input audio when the DVI-D, VGA or Component (RGBHV, RGsB or RGBS) video input is selected.
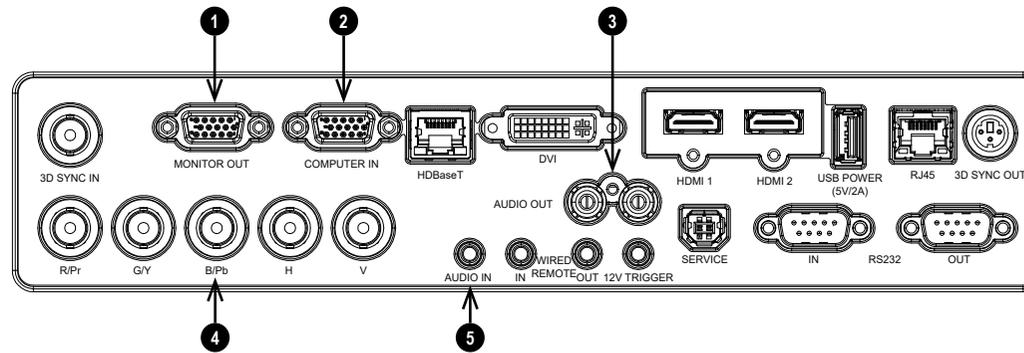
3D connections

1. **3D Sync In**
   3D sync input signal for sequential 3D formats. Use a BNC connector to connect the 3D sync from your graphics card or server.

2. **HDBaseT**
   Receives 3D signal from HDBaseT-compliant devices. Connect an HDBaseT cable.

3. **DVI-D**
   DVI-D 1.0 input. Supports HDCP. This input can receive digital signal from a compatible source. Connect a DVI-D cable to the connector.

4. **HDMI 1 / HDMI 2**
   HDMI 2.0 inputs supporting **Frame Sequential**, **Top and Bottom**, **Side By Side** and **Frame packing** 3D formats. Connect an **HDMI** cable to the connector.

5. **3D Sync Out**
   3D sync output signal. This is affected by settings in the 3D menu such as 3D Sync Out Delay and 3D Sync Output. Use a 3-pin DIN connector to connect this to an IR emitter or ZScreen.
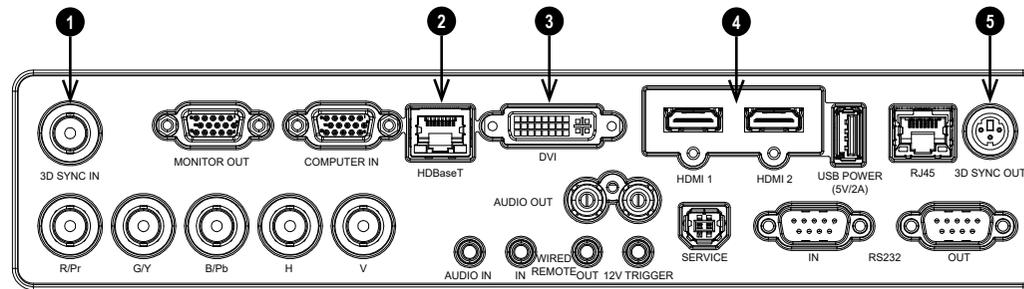
Notes

☞ *Set **3D Format** in the 3D setting menu to match the format of the incoming signal. See 3D Setting on page 65.*

☞ *See 3D formats on page 98 for information about supported 3D signal input modes.*

3D frame packed, side-by-side and top and bottom formats

1. Connect to one of the following inputs on the connection panel:
   - HDBaseT
2. Set the **3D Format** in the 3D setting menu to match the format of the incoming signal. Choose from:
   - **Frame Sequential**
   - **Top and Bottom**
   - **Side-by-Side (Half)**
   - **Frame Packing**
   - **Auto**

3D Sync

1. 3D Input
2. 3D Sync In
3. 3D Sync Out
4. IR emitter or Zscreen

Control connections

1. **HDBaseT**
   Provides LAN connectivity and Ethernet/RS232/IR control of the projectors features via HDBaseT control.

2. **RJ45**
   Dedicated LAN connection. Connect an Ethernet cable.

3. **Wired Remote**
   The remote control can be connected using a standard 3.5 mm mini jack cable (tip-ring-sleeve, or TRS).

4. **12V Trigger**

   The trigger output can be used to control an electrically operated screen. The screen will be automatically deployed when the projector starts up and retracted when the projector shuts down.

5. **RS232**

   - **RS232-IN**. All of the projector's features can be controlled via a serial connection, using commands described in the **Protocol Guide**. Use a crossover cable to connect directly to a computer.

   - **RS232-OUT**. Loop through for serial connection of RS-232C protocol commands to additional projectors.

LAN connection examples

The projector's features can be controlled via a LAN connection, using a terminal emulation program.

Un-crossed LAN cables

Un-crossed
LAN cable

RS232 connection example

All of the projector's features can be controlled via a serial connection, using commands described in the **Protocol Guide**.

Crossover cable

Computer to Projector

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DIGITAL PROJECTION

A Delta Associate Company

E-Vision 9100 Series

High Brightness Digital Video Projector

OPERATING GUIDE

Using the menus

Opening the Menu

Access the various menus using either the projector control panel or the remote control. On either device:

1. Press the **MENU** button. The on-screen display (OSD) opens showing the list of available menus
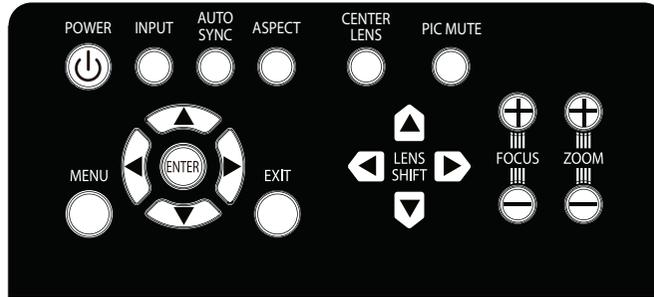
Projector control panel
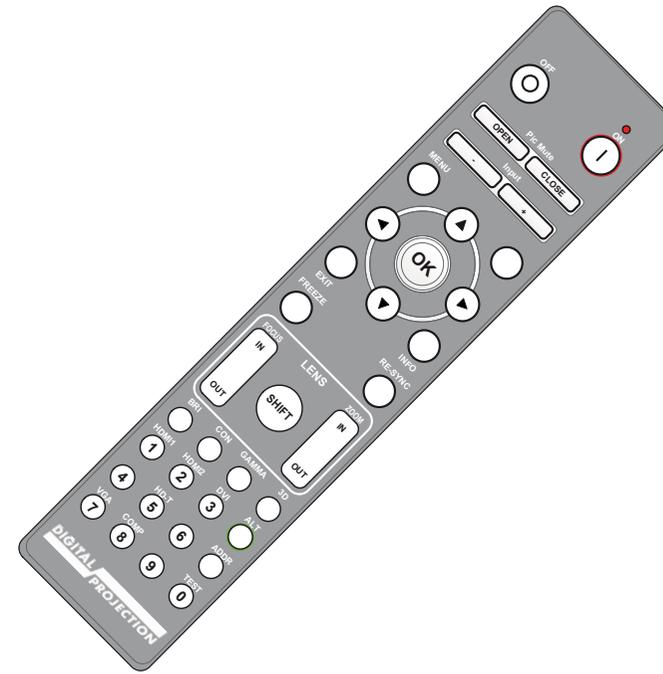
Remote control

Opening a submenu

Move up and down the list using the **UP** and **DOWN** arrow buttons.

To open a submenu:

1. Press **ENTER** on the control panel or **OK** on the remote control.

This guide refers to the above two buttons as **ENTER/OK**.

Exiting menus and closing the OSD

To go back to the previous page:

1. Press **EXIT**.

To close the OSD:

1. Press **MENU**.

Or:

1. Go back to the top level menu
2. Press **EXIT**.

Image	Settings 1	Settings 2

Display Mode	Presentation
Brightness	50
Contrast	50
Computer	↵/▶
Auto Image	↵/▶
Advanced	↵/▶
Color Manager	↵/▶
Dynamic Black Settings	↵/▶
HDR Settings	↵/▶

Menu = Exit	Menu Select ◀ ▶	Scroll ▲ ▼

On Screen Display (OSD): Top Level Menu
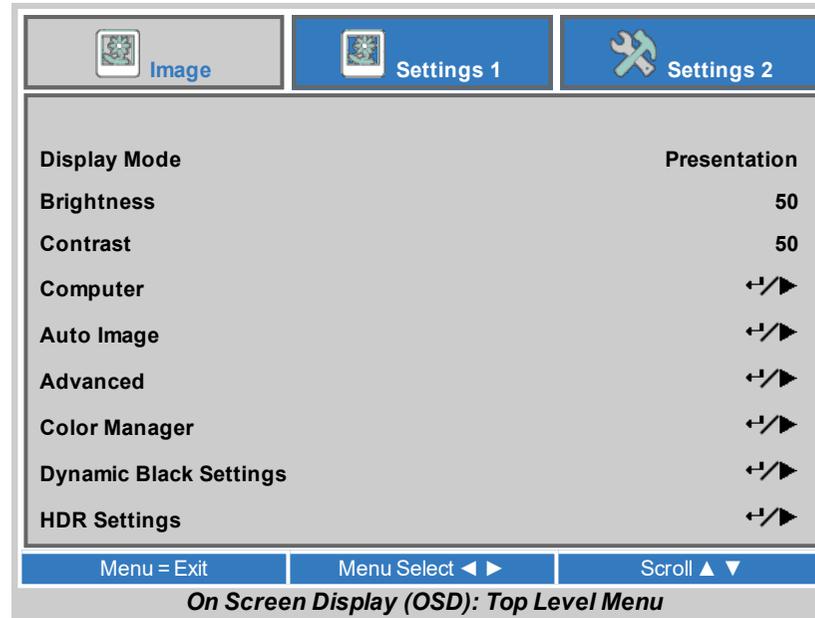
Inside the Menu

When you open the OSD, a menu is displayed. There are three main menus:

- Image
- Settings 1
- Settings 2

Each menu is displayed at the top of the OSD. Available menus are highlighted in blue. The menu you are currently viewing is highlighted in gray.

The contents of each menu consists of the following elements:

- The path to the current menu. This is displayed when you are accessing a submenu.
- Highlighted item
- Available and unavailable items. Unavailable items appear a pale gray color. Whether an item is available may depend on other settings.
- The text or symbol to the right of an item shows whether the item:
  - has a value that can be changed (the current value is shown)
  - opens a sub-menu (a return/right arrow button is displayed)

The bottom of the OSD shows instructions for navigating the OSD. The instructions are highlighted in blue and change for each menu and submenu.

Accessing sub menus

Use the **UP** and **DOWN** arrow buttons to highlight the sub-menu, then press **RETURN** or the **RIGHT ARROW** button.

Open Main Menu	Available Main Menu	Available Main Menu
Path (Main Menu ► Submenu)		
Item		Value
Highlighted Item		**Value**
Unavailable Item		
Item		Submenu ↵/▶
Item		Value Presentation
Item		Value 50
Instruction	Instruction	Instruction

Notes

Editing projector settings

If the highlighted menu item contains a list of values to choose from, you can change the value by doing the following:

1. Press the **UP** and **DOWN** arrow buttons to highlight the menu item.
2. Press the **LEFT** and **RIGHT** arrow buttons to change the value.

Menu	Menu	Menu
Item		Value
Highlighted Item		**Value**
Item		Value
Item		Value
Item		Value
Item		Value
Instruction	Instruction	Instruction

Executing commands

Some items are a command. Press **RETURN** or the **RIGHT ARROW** button.

You may be asked for confirmation. Use the **RETURN** or the **RIGHT ARROW** to confirm, or the **LEFT ARROW** to cancel.

Using a slider to set a value

Some parameters show a slider. To set such a parameter:

1. Press the **LEFT** or **RIGHT** arrow button, or **RETURN**. The arrow buttons will open the slider and adjust the value at the same time. **RETURN** will open the slider without altering the initial value.
2. Use the **LEFT** and **RIGHT** arrow buttons to move the slider.
3. When ready, press **RETURN** to exit the slider and return to the menu.

Menu	Menu	Menu
Item		Value
Highlighted Item		**Value**
Item		Value
Item		Value
Item		Value
Item		Value
Instruction	Instruction	Instruction

Editing numeric values

Some parameters take numeric values without using sliders - for example IP addresses.

1. Use the **UP** and **DOWN** arrow buttons to highlight the row containing the numeric field you wish to edit.
2. Press **RIGHT ARROW** button to enter edit mode. A numeric field in edit mode is white text on blue background
3. In edit mode:
    - Use the **UP** arrow button to increase the numeric value.
    - Use the **DOWN** arrow button to decrease the numeric value.
4. Use the **LEFT** and **RIGHT** arrow buttons to edit the next or previous numeric fields within the same row.
5. Once ready, press **RETURN** or the **LEFT ARROW** button to exit edit mode.

Menu	Menu	Menu
Item		255.255.255.255
Highlighted Item		**255.255.255.255**
Item		255.255.255.255
Item		255.255.255.255
Instruction	Instruction	Instruction

Notes

Using the projector

Image Menu

- Display Mode
Choose from **Presentation**, **Bright**, **Game**, **Movie**, **Vivid**, **TV**, **sRGB**, **DICOM SIM**, **User**, and **User 2**.
Use a different setting depending the type of input source.

- Brightness, Contrast
Use the slider to set the level as required.

- Computer
Access the submenu to edit the settings.

- Auto Image
Activate this option to automatically adjust the phase, tracking, size and position of the display.

- Advanced, Color Manager, Dynamic Black Settings, HDR Settings
Access the submenu to edit the settings.
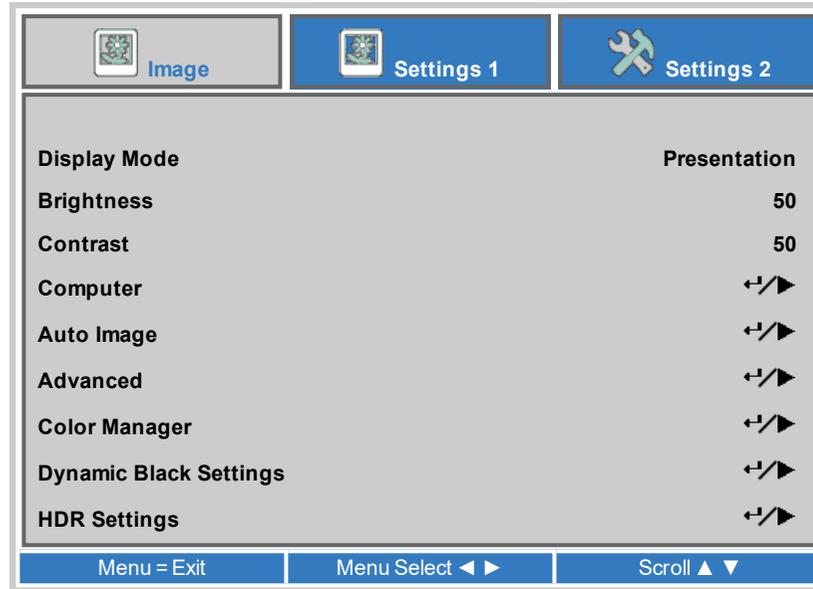
DICOM is a simulation mode and should only be used for training and other non-medical diagnosis purposes.

Image	Settings 1	Settings 2
Display Mode		Presentation
Brightness		50
Contrast		50
Computer		↵/▶
Auto Image		↵/▶
Advanced		↵/▶
Color Manager		↵/▶
Dynamic Black Settings		↵/▶
HDR Settings		↵/▶

Menu = Exit   Menu Select ◄ ►   Scroll ▲ ▼

Computer

- Horizontal Position, Vertical Position
  Adjusts the horizontal and vertical display position. Use the slider to set the level as required.
- Frequency
  Adjusts the phase of the pixel sampling clock relative to the incoming signal. Adjust the phase if noise is visible.
  Use the slider to set the level as required.
- Tracking
  Adjusts the frequency of the pixel sampling clock. Flicker or vertical banding indicate poor tracking.
  Use the slider to set the level as required.
- Auto Sync
  Adjusts the horizontal and vertical position of the display based on the input source. Select from **On** or **Off**.

Image	**Settings 1**	**Settings 2**

Image ► Computer

Horizontal Position	0
Vertical Position	0
Frequency	0
Tracking	0
Auto Sync	On

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼

Advanced

- Brilliant Color, Sharpness
  Use the slider to set the level as required.
- Gamma
  Choose a de-gamma curve from **1.8, 2.0, 2.2, 2.4, B&W, Linear**
  Used correctly, the **Gamma** setting can improve contrast while maintaining good details for blacks and whites.
  If excess ambient light washes out the image and it is difficult 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.
- Color Temperature
  Choose from **Warm**, **Normal**, **Cold**
- Video AGC
  Select **ON** to activate the automatic gain control for the video source.
- Video Saturation, Video Tint
  Adjust the saturation and hue for the video source.
- White Balance
  Access the submenu to edit the settings.

Image	**Settings 2**	**Settings 2**

Image ► Advanced

Brilliant Color	5
Sharpness	16
Gamma	1.8
Color Temperature	Normal
Video AGC	Off
Video Saturation	50
Video Tint	50
White Balance	↵/►

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼

Notes

Some of the settings within the Position and Phase sub-menu, Frequency, Tracking and Auto Sync, affect only VGA input source. These settings are not available if the projector is using a different source.

Adjust the Frequency after adjusting Tracking.

White Balance

- **R Gain, G Gain, B Gain**
  Adjust the bright part of the scale for red, green and blue colors.

- **R Offset, G Offset, B Offset**
  Adjust the black levels for red, green and blue colors.

Image	Settings 1	Settings 2

Image ► Advanced ► White Balance

R Gain	**100**
G Gain	**100**
B Gain	**100**
R Offset	**0**
G Offset	**0**
B Offset	**0**

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
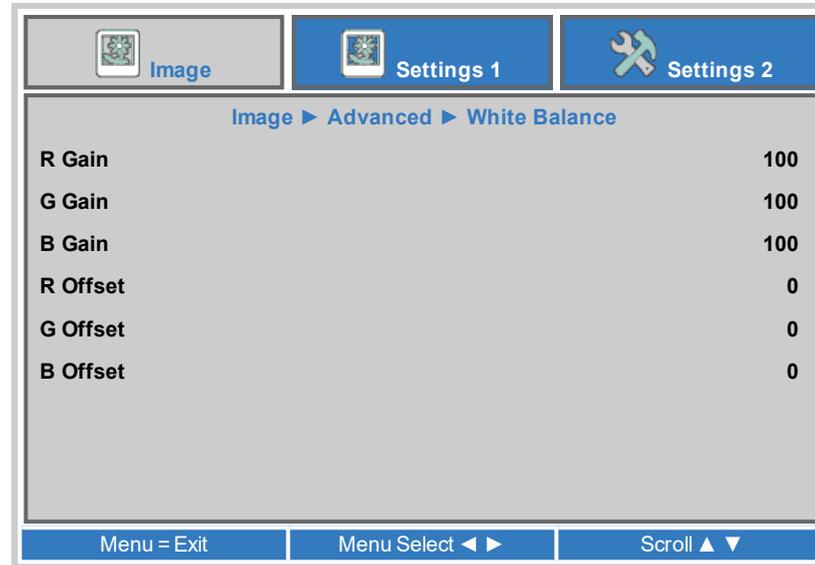
Color Manager

Access the submenu to edit the settings.

Adjust **Hue**, **Saturation** and **Gain** settings for each individual color to improve the color balance of the projected image.

Image	Settings 1	Settings 2

Image ► Color Manager

Red	↵/►
Green	↵/►
Blue	↵/►
Cyan	↵/►
Magenta	↵/►
Yellow	↵/►
White	↵/►

Menu = Exit		Scroll ▲ ▼

Notes
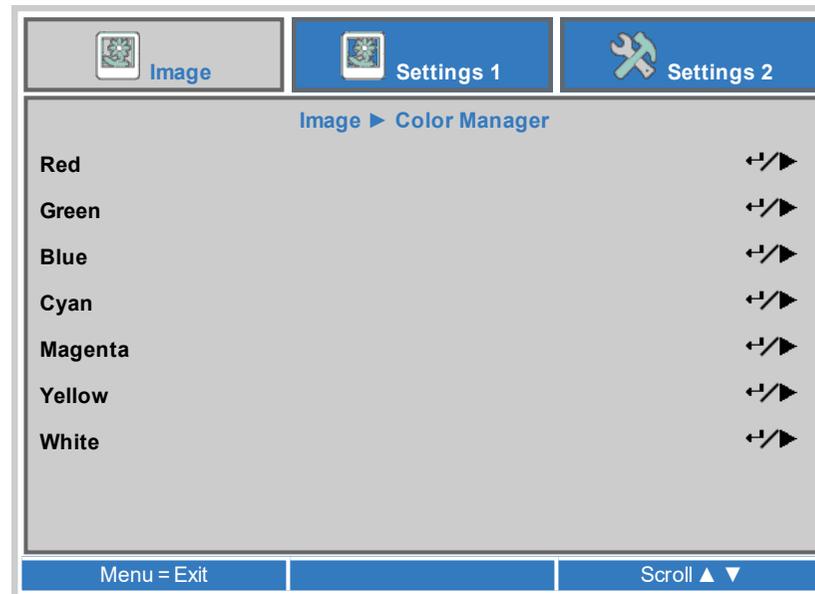
Color manager parameters explained

The levels of hue, saturation and gain in the Color Manager menu change the color values in the following ways:

1. **Hue** Specifies the position of each color (red, yellow, green, cyan, blue and magenta) relative to its neighboring colors.

2. **Saturation** Specifies the level of white in each color (i.e. how "pale" each color is).

3. **Gain** Controls the amount of light that goes into each color, i.e. the lowest gain would produce black.
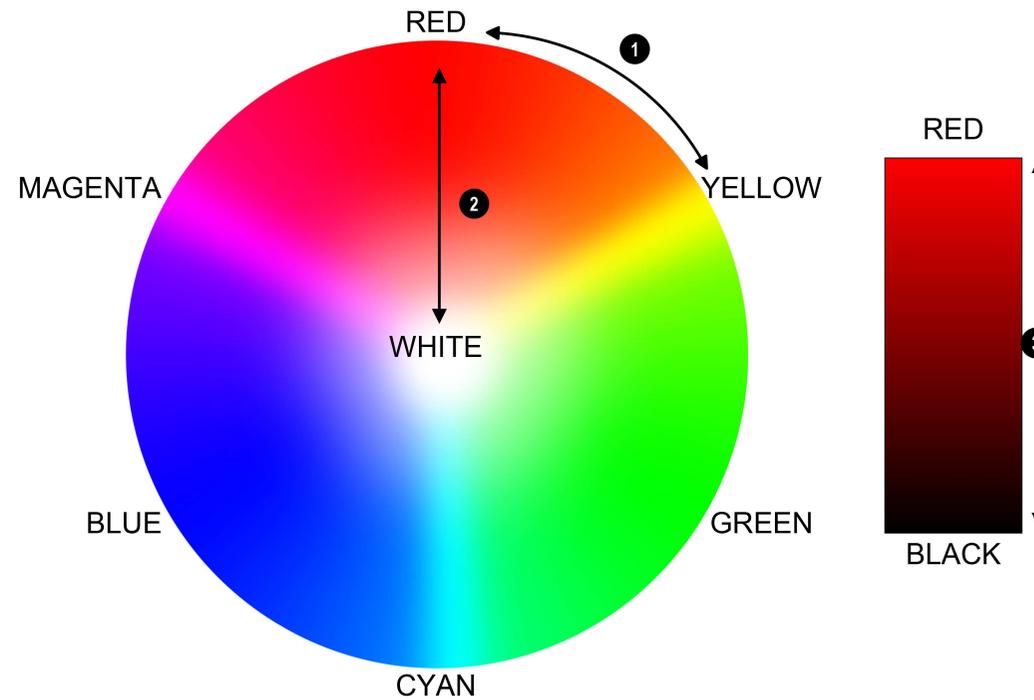
Dynamic Black Setting

- **Dynamic Black**
  Set to On to allow for increased contrast in darker scenes by modulating the light source.

- **Light Off Timer**
  When **Dynamic Black** is **On**, the **Light Off Timer** will define if laser light source will turn off after a period of time has passed. The options are: **Disable, 0.5 sec, 1 sec, 2 sec, 3 sec, 4 sec** (seconds).

Image	**Settings 1**	**Settings 2**

Image ► Dynamic Black Settings

Dynamic Black	**Off**
Light Off Timer	**Disabled**

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
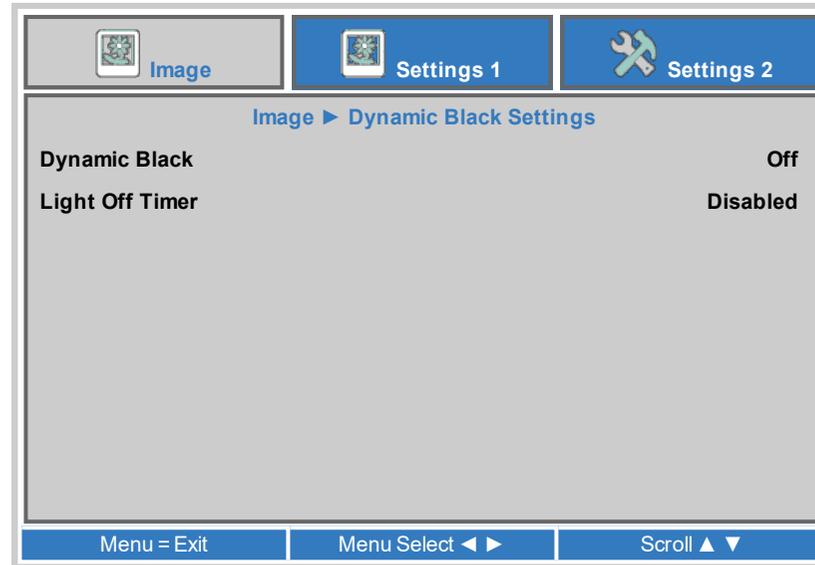
Notes

HDR Settings

- HDR Control
  Choose from **Off**, **Auto** and **On**.

- HDR Mode

HDR (High Dynamic Range) is a form of gamma developed to create more realistic experience when viewing images delivered using this format, such as scenes with bright sunlight. Unlike traditional gamma, HDR is not device or installation independent. HDR content will come with a recommended brightness regardless of screen size.
For best results, as a guideline, the following screens sizes are suggested.

HDR Screen sizes		Screen width (cm)			
Model	Lumens	300 NIT	400 NIT	500 NIT	600 NIT
EVL 9100	8,600	382cm	331cm	296cm	270cm

HDR options should only be used with media players and sources equipped with HDR capability and outputting HDR content.
Perceptual Quantizer (PQ) is the digitizing concept for capture and display and provides metadata to enable the display to understand the coding of the content.The NIT numbers relate to the brightness of the viewing conditions in NIT. NIT is the unit of brightness measurement for monitors and LED walls that emit light rather than reflect it such as a projection screen. However it is a reference to the brightness you would choose for a given environment.

Image	Settings 1	Settings 2

Image ► HDR Settings

HDR Control	**Off**
HDR Mode	**PQ-L300**

Menu = Exit		Scroll ▲ ▼
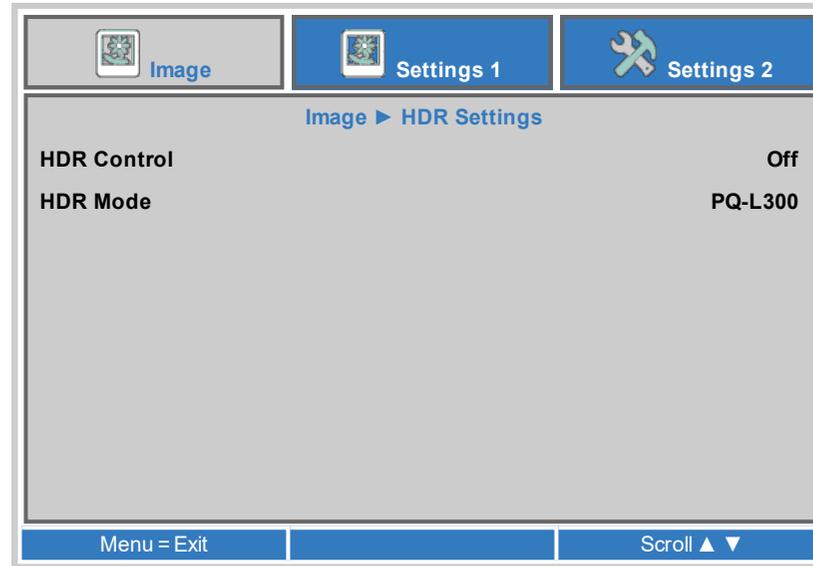
Notes

Settings 1 Menu

- Source
  Access the submenu to edit the settings.
- Projection
  Choose from **Desktop Front**, **Desktop Rear**, **Ceiling Front** and **Ceiling Rear**.
- Aspect Ratio
  Set the aspect ratio for the projected image. Choose from **Fill**, **4:3**, **16:9**, **Letter Box**, **Native**, **2.35:1**.
- Alignment
  Access the submenu to edit the settings.
- Digital Zoom
  Adjust to zoom into the center of the image. Use the slider to set the level as required.
- Audio, Advanced 1, Advanced 2
  Access the submenu to edit the settings.

Notes

Image	Settings 1	Settings 2
	Settings 1	
Source		↵/▶
Projection		P
Aspect Ratio		Fill
Alignment		↵/▶
Digital Zoom		0
Audio		↵/▶
Advanced 1		↵/▶
Advanced 2		↵/▶
Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
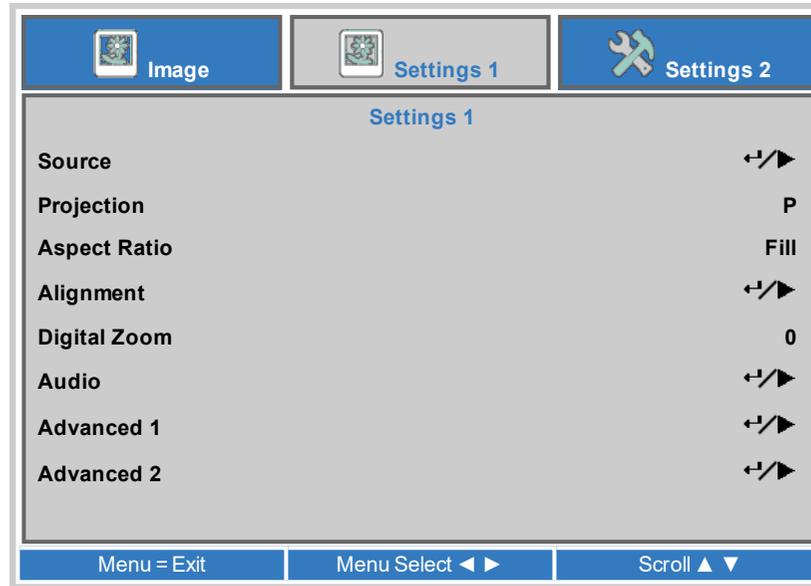
Alignment

- Lens Lock
  Set to **On** to disable Lens Control, Lens Type, Lens Memory and Center Lens options.
- Lens Control
  Access the submenu to edit the settings.
- Lens Type
  Choose from **UST** or **non-UST**.
- Lens Memory
  Access the submenu to edit the settings.
- Center Lens
  Center the lens
- Keystone, 4 Corner
  Access the submenu to edit the settings.

Image	Settings 1	Settings 2
	Settings 1 ► Alignment	
Lens Lock		Off
Lens Control		↵/▶
Lens Type		UST
Lens Memory		↵/▶
Center Lens		↵/▶
Keystone		↵/▶
4 Corner		↵/▶
Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
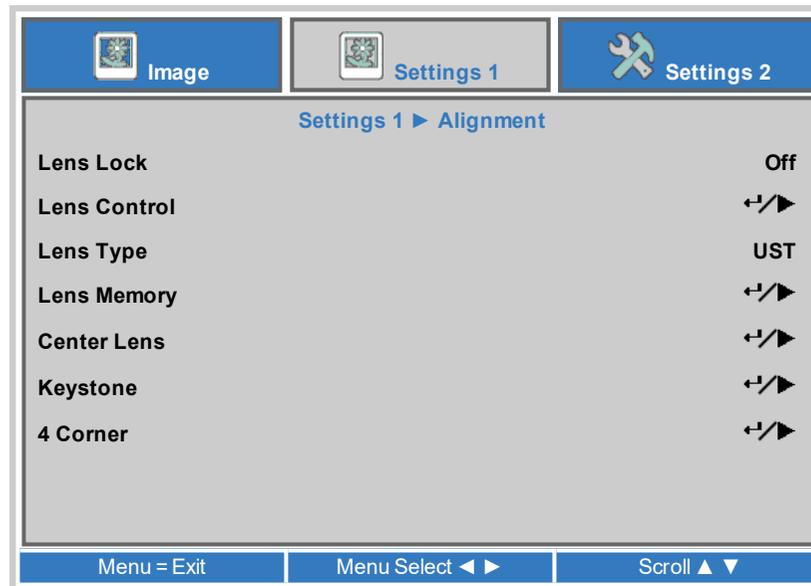
Lens control

Lens Control settings operate in **Zoom/Focus Adjustment** and **Shift Adjustment** mode. Press **ENTER/OK** to switch between modes.

When in **Zoom/Focus Adjustment** mode:

- Use the **UP** and **DOWN** arrow buttons to adjust **Zoom**.
- Use the **LEFT** and **RIGHT** arrow buttons to adjust **Focus**.

When in **Shift Adjustment** mode, use the arrow buttons to adjust **Shift**.

Lens Control
Zoom   ▼   ▲
Focus   ◄   ►
Adjust ▲ ▼ ◄ ► / ↵/►

Lens Control
Shift
▲
◄   ►
▼
Adjust ▲ ▼ ◄ ► / ↵/►
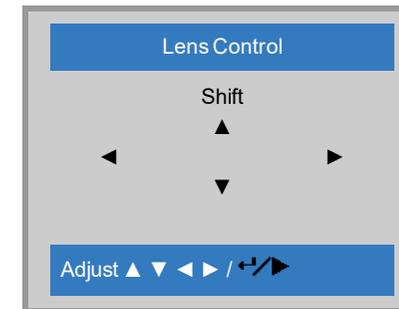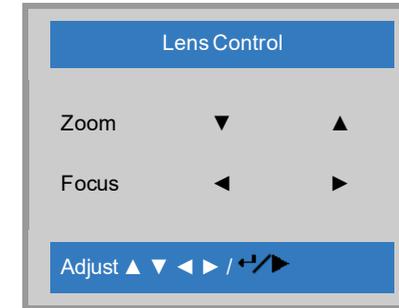
Notes

Lens memory

This menu allows you to load, save and clear up to eight lens position memories, containing zoom, focus and shift adjustment information.

Use **Clear Memory** to delete a memory preset if you need to save a new combination of lens settings in its place. Overwriting a saved memory preset is not possible.

Image   **Settings 1**   **Settings 2**

Settings 1 ► Alignment ► Lens Memory

Memory 1
Memory 2
Memory 3
Memory 4
Memory 5
Memory 6
Memory 7
Memory 8

Menu = Exit   Menu Select ◄ ►   Scroll ▲ ▼
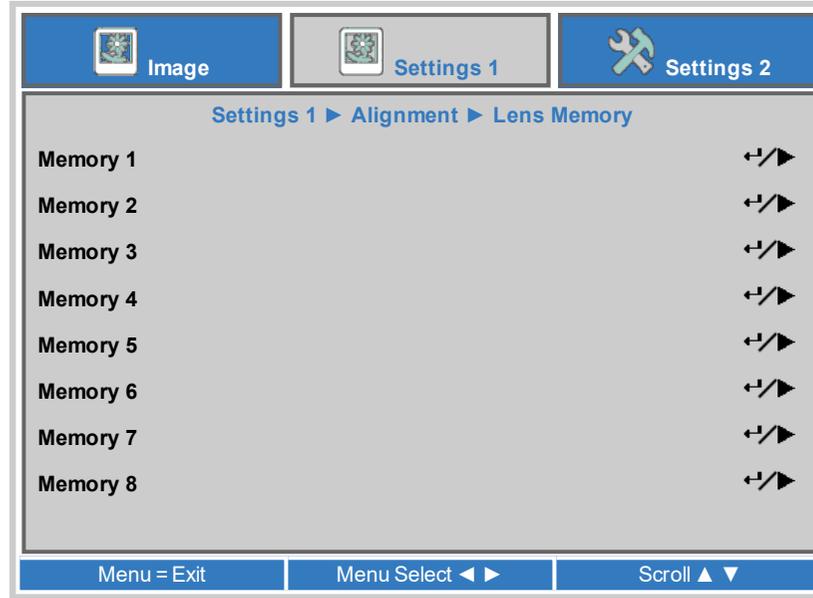
Keystone

Use this setting to compensate for any distortion caused by the projector being in a different horizontal or vertical plane to the screen.

H & V Keystone

H: 0   V: 0

Adjust ▲ ▼ ◄ ►

Menu = Exit
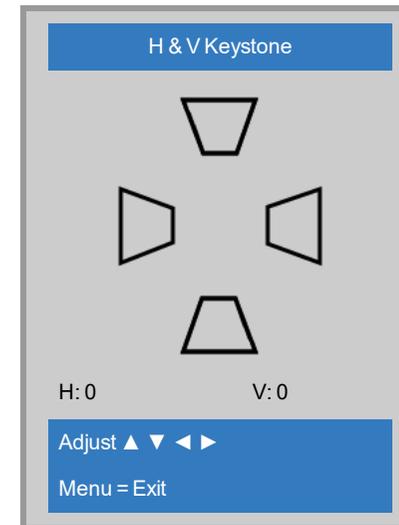
☞ *Keystone correction will reduce the resolution of the original image.*

1. **Projector to the left** The projector is positioned to the left of the screen. To correct, apply a positive **Horizontal Keystone** value using the **RIGHT** arrow button.
2. **Projector to the right** The projector is positioned to the right of the screen. To correct, apply a negative **Horizontal Keystone** value using the **LEFT** arrow button.
3. **Projector high** The projector is positioned above the screen at a downward angle. To correct, apply a negative **Vertical Keystone** value using the **DOWN** arrow button.
4. **Projector low** The projector is positioned below the screen at an upward angle. To correct, apply a positive **Vertical Keystone** value using the **UP** arrow button.
5. **Projector straight** The projector is directly opposite the screen at a right angle both horizontally and vertically. No correction is needed.
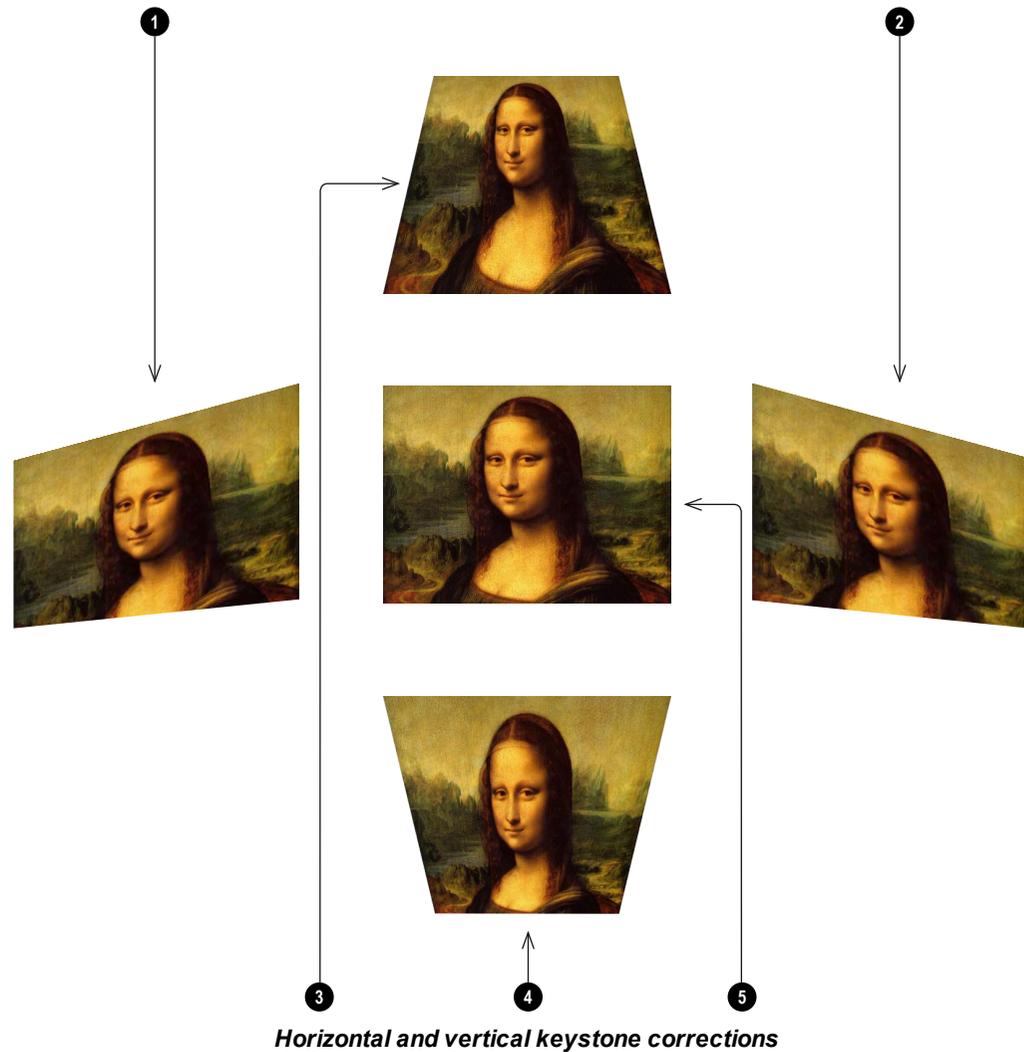
Horizontal and vertical keystone corrections

The projector is positioned at an angle   **The resulting image is distorted**   **The image is corrected when Keystone is applied**
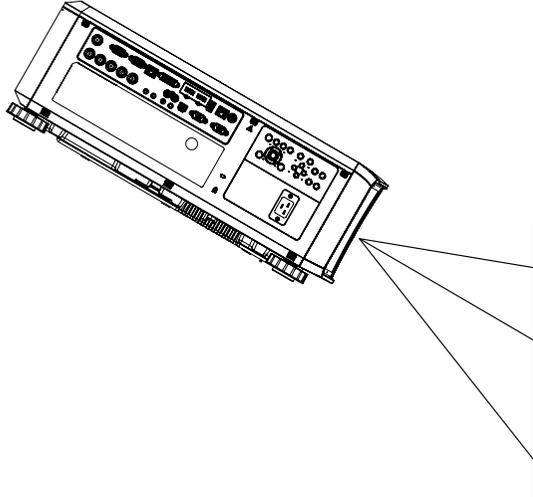
4 Corner

For each corner, apply horizontal and / or vertical correction as necessary to restore the rectangular shape of the image.

4 Corner

Adjust ▲ ▼

Enter ↵   Menu = Exit
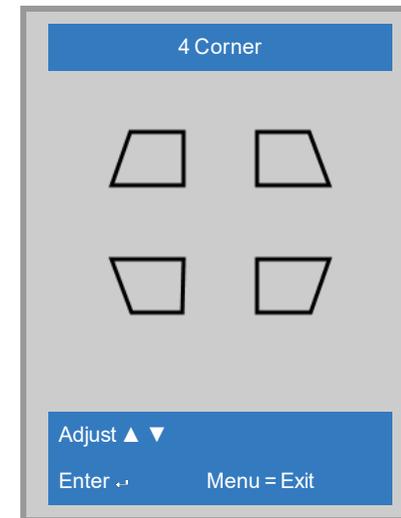
*Corner corrections provide a simple setup for awkward installations and irregular shaped screens that may distort the image. To apply a similar (but less flexible) correction, while preserving the original aspect ratio of the image, use the **Keystone** menu.*

Audio

- Volume
Adjusts the volume output from the L&R audio outputs. Use the slider to set the level as required.
- Mute
Mutes the audio output from the L&R audio outputs. Set to **On** or **Off**.

Image	Settings 1	Settings 2

Settings 1 ► Audio

Volume	4
Mute	Off

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼

Advanced 1

- Language
Choose a language for the OSD from a choice of 27 available OSD languages.
- Security Lock
Switches the security lock **On** or **Off**
- Blank Screen
Select a color for the blank screen function operated by the remote. Choose from **Blank**, **Red**, **Green**, **Blue** or **White**.
- Splash Logo
Select the splash logo to be displayed on startup. Choose from **Std**, **Black** or **Blue**.
- Keypad Lock
Locks the keypad buttons on the remote. Press the ▼ key on the remote for 5 seconds to re-enable the keypad buttons.
- 3D Setting
Access the submenu to edit the settings.

Image	Settings 1	Settings 2

Settings 1 ►Advanced 1

Language	English
Security Lock	Off
Blank Screen	Fill
Splash Logo	Std.
Keypad Lock	Off
3D Setting	↵/►

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
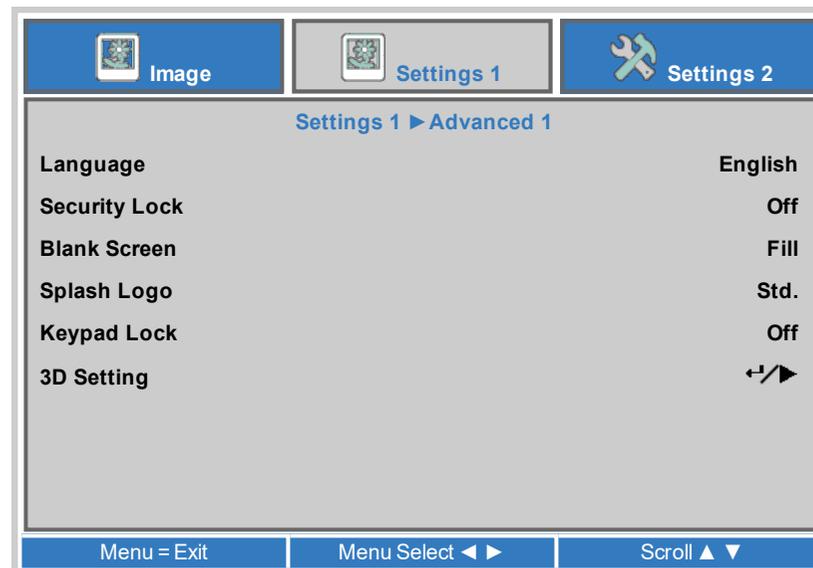
3D Setting

- 3D
  Choose **DLP-Link** when using 3D shutter glasses. Choose **IR** when using infrared 3D glasses.

- 3D Sync Invert
  Choose **On** to swap the left- and right-eye images, if they are displayed in the wrong order.

- 3D Format
  Choose the appropriate 3D format. Choose from **Frame Sequential**, **Top and Bottom**, **Side-by-Side (Half)**, **Frame Packing** and **Auto**.

- 3D Sync Out Delay
  Increase or decrease the 3D Sync Out Delay as required.

- 3D Sync Input
  Choose from **Internal** or **External**.

- 3D Sync Output
  Choose from **Internal** or **Bypass**
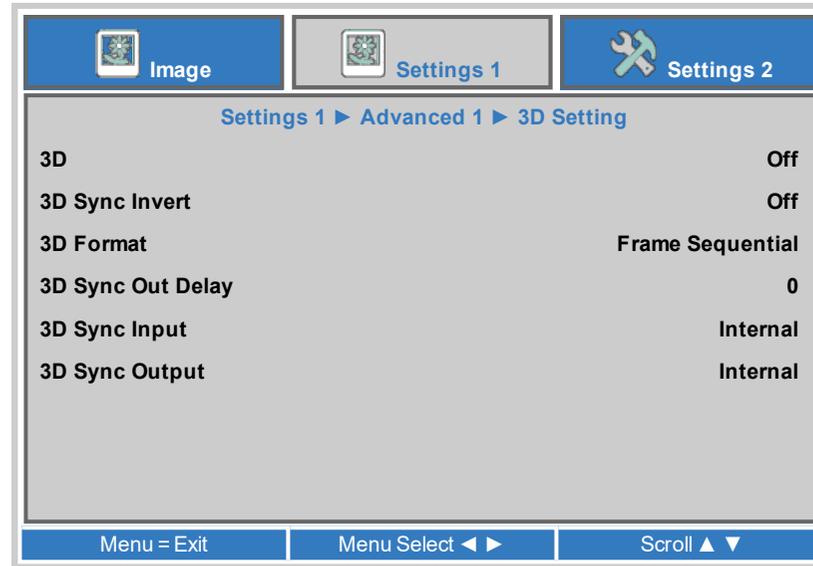
	Image		Settings 1		Settings 2

Settings 1 ► Advanced 1 ► 3D Setting

3D	**Off**
3D Sync Invert	**Off**
3D Format	**Frame Sequential**
3D Sync Out Delay	**0**
3D Sync Input	**Internal**
3D Sync Output	**Internal**

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼

3D types

To display a 3D image it is first necessary to select the 3D format of the source:

- **Frame Packing**
- **Side-By-Side**
- **Top/Bottom**

3D Sync Out Delay needs to be set only once, to optimize the image for the glasses in use.

3D Sync Invert

The outgoing 3D frames are in pairs - the dominant frame being presented first. You can determine which frame should be the dominant one.

By convention the default setting is **Left**.

| LEFT 1 | RIGHT 1 | LEFT 2 | RIGHT 2 | LEFT 3 | RIGHT 3 |

Dominance Left

| RIGHT 1 | LEFT 1 | RIGHT 2 | LEFT 2 | RIGHT 3 | LEFT 3 |

Dominance Right
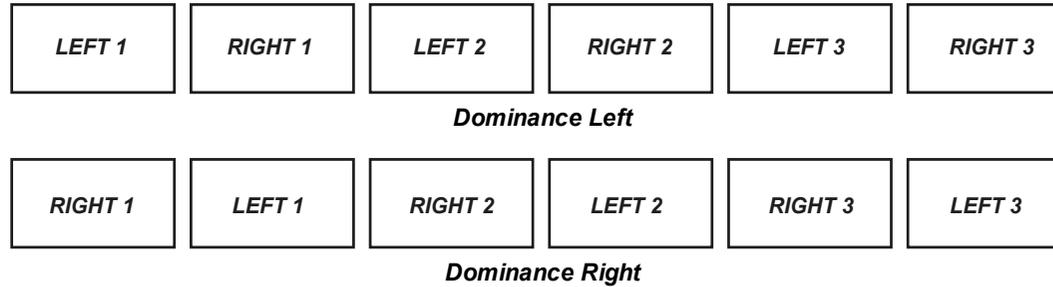
3D Sync Out Delay

The sync signal from the 3D server will be in phase with the frames generated by its graphics card. However, to compensate for switching delays in the glasses or ZScreen, **3D Sync Out Delay** is used to adjust the sync output signal sent to the ZScreen or 3D glasses to minimise overlapping (ghosting in the image when viewed through the 3D glasses).
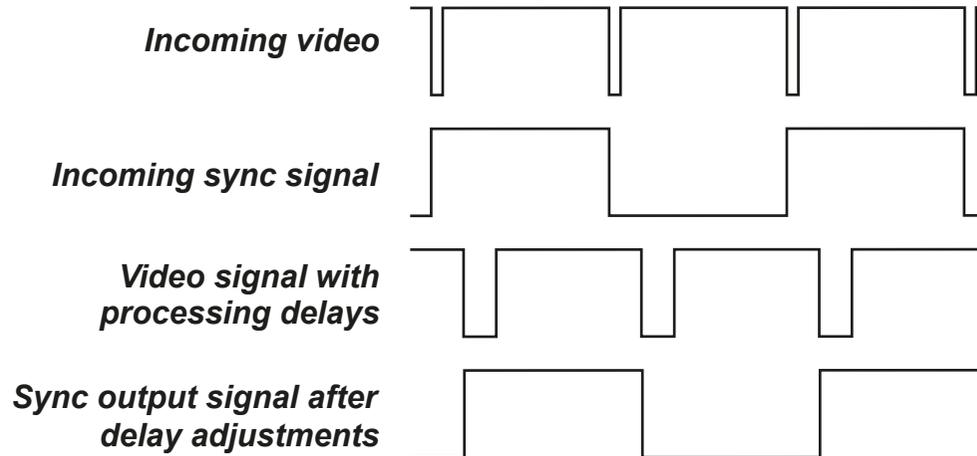
Incoming video

Incoming sync signal

Video signal with processing delays

Sync output signal after delay adjustments

Advanced 2

- Test Pattern
  Select a test pattern to display. Choose from: None, RGB Ramps, Color Bars, Step Ramps, Check Board, Grid, Horizontal Lines, Vertical Lines, Diagonal Lines, Horizontal Ramp, Vertical Ramp, White, Red, Green, Blue, Black.

- H Image Shift
  Use the slider to set the level as required.

- V Image Shift
  Use the slider to set the level as required.

Image	Settings 1	Settings 2

Settings 1 ▶ Advanced 2

Test Pattern	**None**
H Image Shift	**0**
V Image Shift	**0**

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
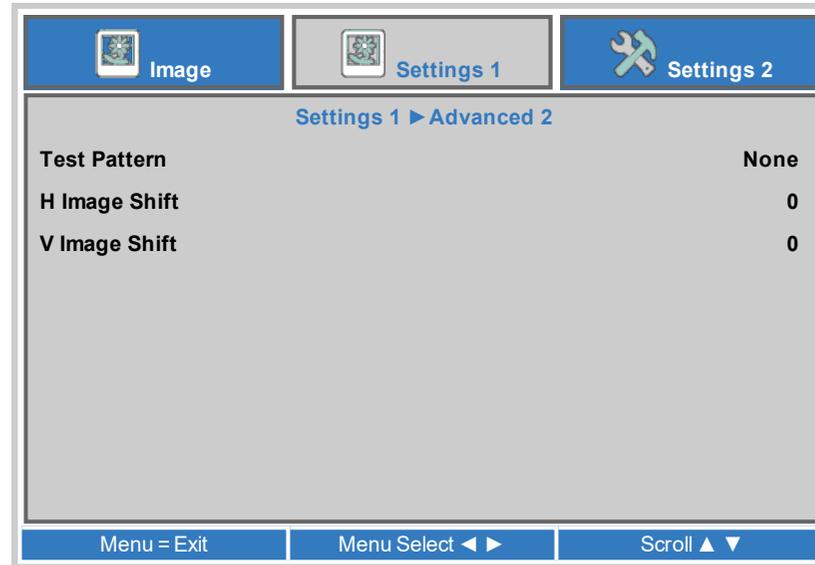
Notes

Settings 2 Menu

- Auto Source
  If this setting is **On**, the projector will automatically search for an active input source.

- No Signal Power Off (min)
  Set a duration to wait (0 to 180 mins) before switching the light source off when there is no input signal.

- Auto Power On
  Set to **On** to automatically power the projector on when the power cable is inserted. When set to **Off**, use the power button on the control panel or the on and off buttons on the remote to switch the projector on or off.

- Light Setting
  Access the submenu to edit the settings.

- Reset All
  Press ↵/▶ to reset all settings to the factory defaults.

- Status. Advanced 1, Advanced 2
  Access the submenu to edit the settings.

- Environment Status
  Displays Projector temperatures and fan speeds for diagnostic purposes.

Image	Settings 1	Settings 2

Auto Source	**Off**
No Signal Power Off (min)	**0**
Auto Power On	**Off**
Light Setting	↵/▶
Reset All	↵/▶
Status	↵/▶
Advanced 1	↵/▶
Advanced 2	↵/▶
Environment Status	↵/▶

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
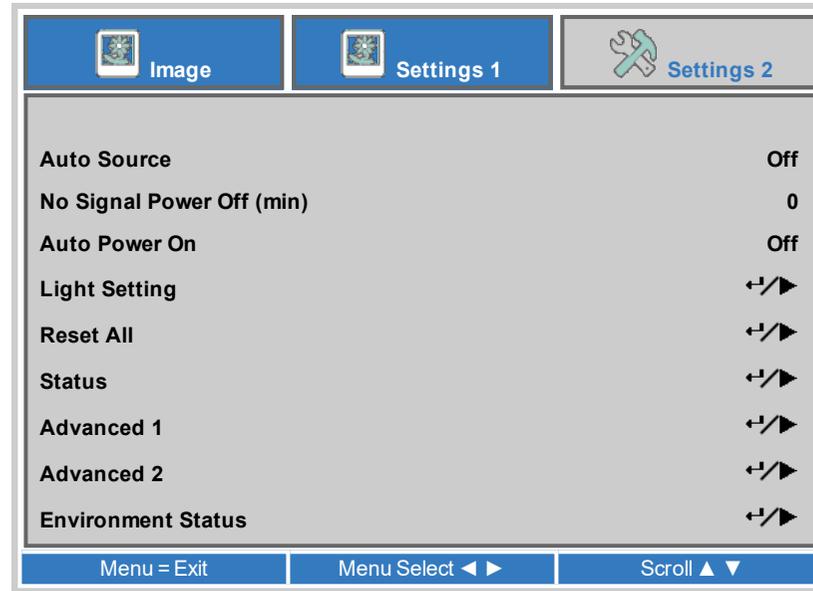
Notes

Light Setting

- Light Mode
    - **Normal** will set the power to 100%.
    - **Eco** will automatically set the laser power to 80%.
    - **ECO Plus**
    - **Dimming**
    - **Extreme Dimming**
    - **Custom Light** will activate the custom light and constant brightness settings.
- Custom Light
  This setting is only available if **Light Mode** is set to **Custom Light**.
  Choose a value between 50 and 200, ranging from 25% to 100% laser power.
- Constant Brightness
  Once the **Light Mode** has been set to **Custom Light**, then Constant Brightness can be turned **ON**.
  The Constant Brightness setting will maintain the projectors set brightness until the maximum laser power has been reached (this maximum laser power will decrease overtime). Hence, the lower the set Constant Brightness power level the longer the set brightness output will be maintained.

Image	Settings 1	Settings 2

Settings 2 ► Light Setting

Light Mode	**Normal**
Custom Light	**75**
Constant Brightness	**Off**

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
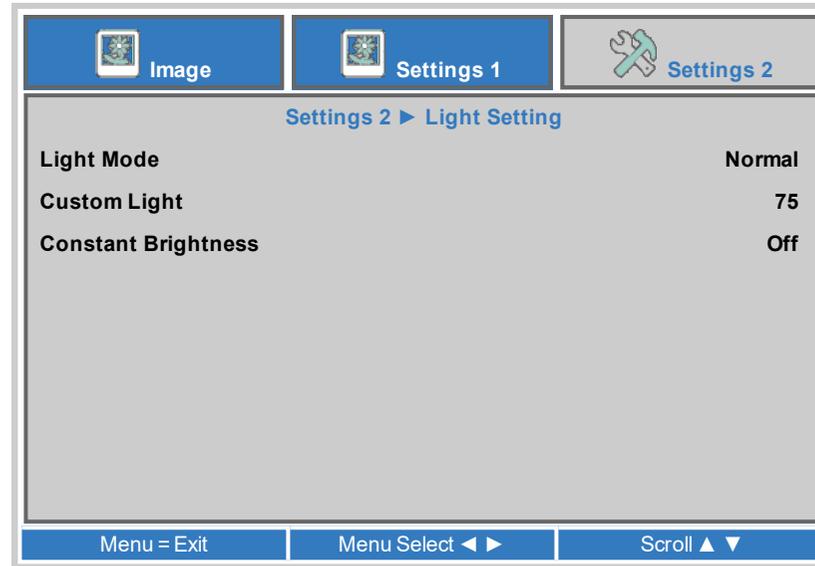
Notes

Status

This menu gives information about the active input and its signal format, total laser operating hours, projector software version, remote ID number and the serial number for this projector.

Image	Settings 1	Settings 2

Settings 2 ► Status

Active Source	Analog RGB
Video Information	1024 x 768 @ 60 Hz
Light Hour	
Software Version	
Remote ID	Default
Serial Number	

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
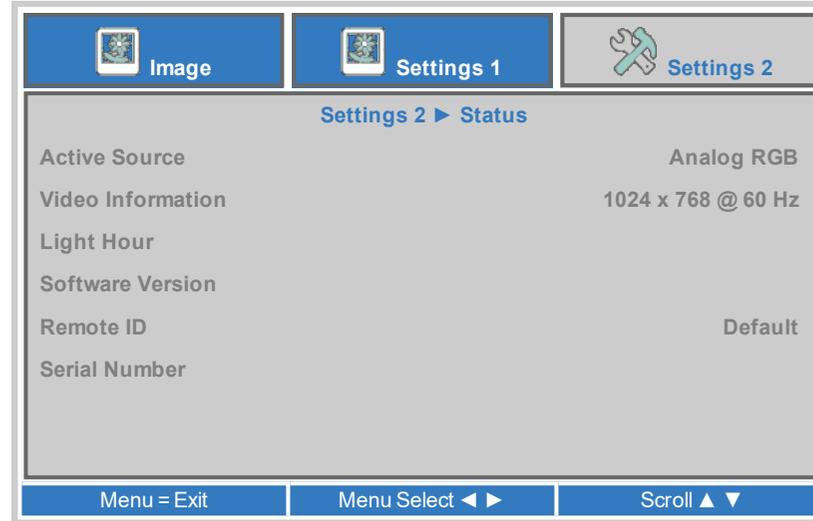
Air Filter Hours is not applicable to this model. There are no filters on this projector.

Advanced 1

- Menu Position
  Choose a position for the menu on the display.
- Translucent Menu
  Choose the level of translucency for the menu. Choose from **0%**, **25%**, **50%**, **75%**, **100%**.
- Low Power Mode
    - Choose **On** to disable power on by LAN when the projector is in low power mode.
    - Choose **On By LAN** to allow power on by LAN when the projector is in low power mode.
    - Choose **On By HDBase-T** to allow power on by HDBase-T when the projector is in low power mode.
- Fan Speed
  Choose from **Normal** or **High**.
- Light Info
  Access the submenu to view the number of light hours used by each light mode.
- Remote ID
  Choose from **Default** or a value from **0** to **99**.
- Network, HDBaseT-IR/RS232
  Access the submenu to edit the settings.

🖼 **Image**	❄ **Settings 1**	⚒ **Settings 2**

Settings 2 ► Advanced 1

Menu Position	⊡
Translucent Menu	0 %
Low Power Mode	On
Fan Speed	Normal
Light Info	↵/▶
Remote ID	Default
Network	↵/▶
HDBaseT-IR/RS232	↵/▶

Menu = Exit	Menu Select ◄ ►	Scroll ▲ ▼
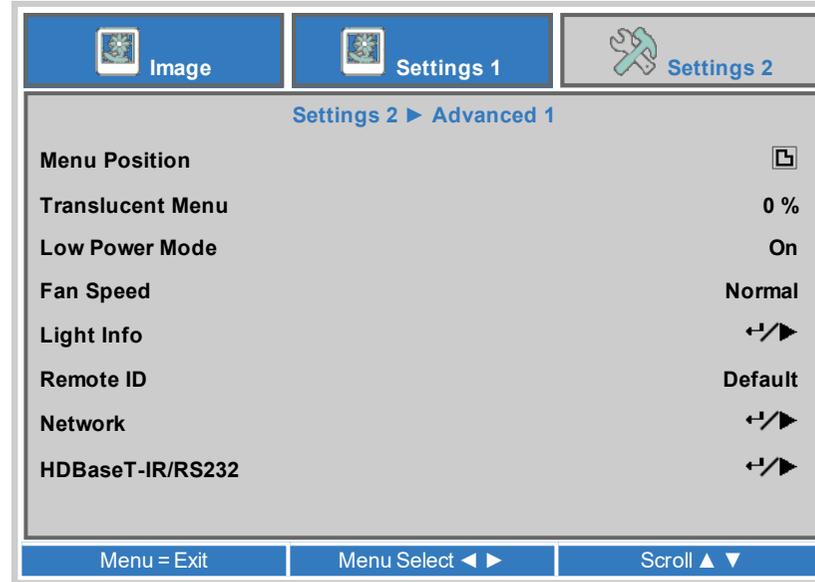
Notes

☞ *High fan speed is recommended when the projector is located in high temperature, high humidity, or high altitude areas*

☞ *Low Power Mode is set to on by HDBase-T when HDBase-T-IR/RS232 Setting is set to on. See HDBaseT-IR/RS232 on page 73*

Network

- Network State
  Displays the current network status.

- DHCP, IP Address, Subnet Mask, Gateway, DNS
  Set **DHCP** to **On** if the IP address is to be assigned by a DHCP server, **or** Off if it is to be set here.
  If **DHCP** is On, it will not be possible to edit **IP Address, Subnet Mask, Gateway** or **DNS**.
  If **DHCP** is set to **Off**, edit **IP Address, Subnet Mask, Gateway** and **DNS** as required.

- Apply
  Select to apply any changes to the network setup.

Image	Settings 1	Settings 2

Settings 2 ► Advanced 1 ► Network

Network State	Connect
DHCP	Off
IP Address	255.255.255.255
Subnet Mask	255.255.255.255
Gateway	255.255.255.255
DNS	255.255.255.255
Apply	↵/▶

Menu = Exit		Scroll ▲ ▼
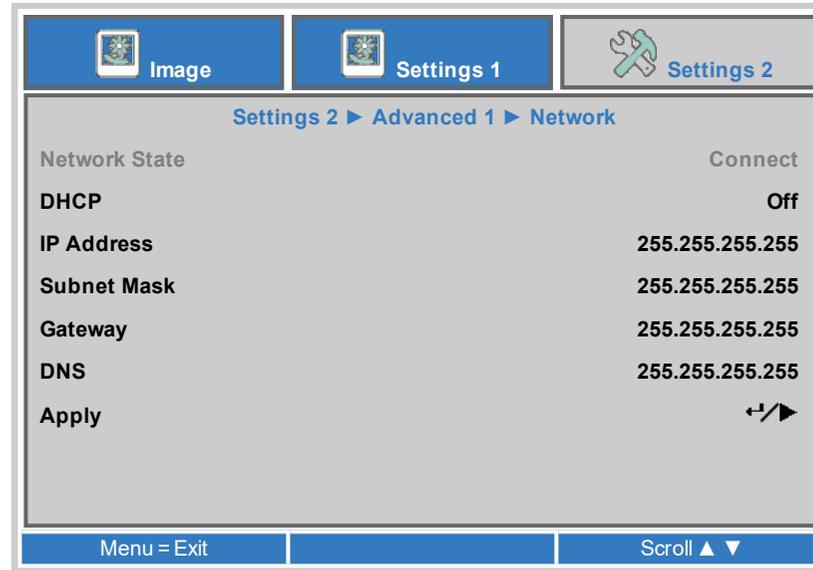
Notes

HDBaseT-IR/RS232

- HDBaseT-IR/RS232
  Set to **On** to enable HDBaseT controls
- Front IR, Rear IR
  Set to **On** to enable, or to Off to disable the infrared remote control sensors, located at the front or the rear of the projector.

🖼 Image	🖼 Settings 1	🛠 Settings 2

Settings 2 ► Advanced 1 ► HDBaseT-IR/RS232

HDBaseT-IR/RS232	**Off**
Front IR	**On**
Rear IR	**On**

Menu = Exit		Scroll ▲ ▼

Advanced 2

- Sleep Timer (min)
  Turns the projector off after a period of time. Set the number of minutes for the timer. The range is from 0 to 600 minutes in 5 minute increments.

- Source Filter
  Allows you to enable or disable individual input source connections. Access the submenu to edit the settings.

- Air Filter Timer
  Access the submenu to edit the settings.

- Color Space
  Choose from: **Auto**, **RGB**, **YUV**.

- Quantization Range
  Choose from:

  - **Auto**

  - Select **Full** to use a Monitor based range from 0-255. There is no data below 0 or above 255 so an 8-bit video signal has only 256 potential values.

  - Select **Limited** to use a TV based video range from 16-235. Levels below 16 are to be black, and information above 235 is white.

- HDMI EDID
  Choose from:

  - Select **Enhanced** to receive high quality signal formats from compatible HDMI sources, i.e. 4k 60p 4:4:4, 4:2:2, and 4:2:0 10 bit formats.

  - Select **Standard** for backwards compatibility with older HDMI sources.

Image	Settings 1	Settings 2

Settings 2 ► Advanced 2

Sleep Timer (min)	0
Source Filter	↵/►

Menu = Exit   Scroll ▲ ▼

Notes

☞ *Air Filter Timer is set to off. There are no filters on this projector.*

☞ *Use the Quantization Range setting for RGB material viewed via the HDMI or Displayports. The colours can look washed out and the blacks can look grey when the Quantization Range does not match the format of the source.*

☞ *The display may show abnormal colour or format issues when the incorrect HDMI EDID setting is used.*

Served web pages

The served web pages allow you to control the projector remotely via LAN.

The default IP address is **192.168.0.100**.

Model Name	EV9100_WU
System	
System Status	Power On
Display Source	HDMI1
Lamp Hours	29
Display Mode	User
Error Status	No Error
LAN Status	
IP address	192.168.0.100
Subnet mask	255.255.255.0
Default gateway	0.0.0.0
DNS Server	0.0.0.0
MAC address	00:18:23:55:65:E4
Version	
LAN Version	MHP04b_UL
F/W Version	V09

Projector Info

Alert Mail Settings

Crestron

Notes

Send E-Mail

Enter the appropriate settings in the fields below:
(Your SMTP server may not require a user name or password.)

Projector Info
Alert Mail Settings
Crestron

SMTP Server:	[ ] Port: [25]
User Name:	[ ]
Password:	[ ]

Mail Server Apply

From:	[ ]
To:	[ ]
CC:	[ ]

Mail Address Apply

E-mail Alert Options:

Fan lock :	☑	Over_Heat:	☑
Case Open:	☑	Lamp Fail:	☑
Lamp Hours Over:	☑	Filter Hours Over:	☑
Other Error:	☑	Weekly Report:	☐

Alert Option Apply

Send Test Mail

Tools   Info   Contact IT Help

DIGITAL PROJECTION

| Power | Vol - | Mute | Vol + |

Interface 2.7.2.6

Source List

HDMI1

HDMI2

DVI

VGA

BNC

Menu	▲	Auto
◄	Enter	►
AV Mute	▼	Source

| Freeze | Contrast | Brightness | Sharpness |

CRESTRON

Expansion Options

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DIGITAL PROJECTION

A Delta Associate Company

E-Vision 9100 Series

High Brightness Digital Video Projector

REFERENCE GUIDE

Appendix A: Product labels

Projector

DIGITAL PROJECTION
DLP Projector / Projecteur DLP (數位投影機/数字投影机)
Model/Modèle/(型號/型号) : E-Vision 9100 WU

AC INPUT/Entrée CA(輸入/输入) : ～ 100-240V 50/60Hz 9.0A

This device complies with part 15 of the FCC rules.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.
CAN ICES-003(B) / NMB-003(B)

Caution: Do not open. No user serviceable parts inside.
警告：請勿打開外殼，設備內無使用者維修的元件。
警告：请勿打开外壳，设备内无使用者维修的元件。
Cuidado: no abra la tapa. Niguna parte interna es reparable por Usuario.
Avertissement : ne pas ouvrir le couvercle. Le produit ne contient aucune
pièce interne réparable par l'utilisateur.

Part No.: 120-976A

Code 39 or 128 (Serial No.)

XXXXXXXXXXXX
MANUFACTURED YYYY.MM.DD

製造商:Digital Projection Limited
Greenside Way Middleton Manchester, M24 1XX UK
(製造商:中國福建省晉江) Made in China / 3264667001 WU XXXX

E-Vision User Guides
Follow link for Projector Documentation
Suivre le lien pour accéder à la documentation du projecteur
Produktdokumentation finden Sie unter dem Link
この二次元バーコードをスキャンしてプロジェクターのデータを取得してください
请扫描条码来取得投影机的文件
프로젝터 설명서를 보려면 링크를 팔로우하십시오

Manufacturers ID Label

Complies with FDA performance standards
for laser products except for deviations
pursuant to Laser Notice No. 50, dated
June 24, 2007

326XXXXXXX

LASER RADIATION   AVOID DIRECT EYE EXPOSURE
CLASS 3R LASER PRODUCT
Emitted wavelength : 449-461 nm
Max. Pulse energy: 0.698 mJ, Pulse duration: 1.34 ms

激光辐射 避免眼睛受到直接照射 3R类激光产品
波长: 449-461 nm
最大脉冲能量: 0.698 mJ, 脉冲时间: 1.34 ms

RAYONNEMENT LASER
EXPOSITION DIRECTE DANGEREUSE POUR LES
YEUX APPAREIL À LASER DE CLASSE 3R
longueur d'onde : 449-461 nm
maximum énergie de impulsion : 0.698 mJ,
durée de impulsion : 1.34 ms

雷射輻射 避免眼睛受到直接照射 3R類雷射產品
波長: 449-461 nm
最大脈衝能量: 0.698 mJ, 脈衝時間: 1.34 ms

GB 7247.1-2012 / IEC/EN 60825-1:2007

CLASS 1 LASER PRODUCT   IEC/EN 60825-1:2014
PRODUIT LASER DE CLASSE 1   IEC/EN 60825-1:2014

Explanatory Label

3262162601

LASER APERTURE
雷射輻射之孔徑
激光辐射窗口
OUVERTURE LASER

Laser Aperture Label

E-Vision User Guides
Follow link for Projector Documentation
Suivre le lien pour accéder à la documentation du projecteur
Produktdokumentation finden Sie unter dem Link
この二次元バーコードをスキャンしてプロジェクターのデータを取得してください
请扫描条码来取得投影机的文件
프로젝터 설명서를 보려면 링크를 팔로우하십시오

User Guides Label

DO NOT let a laser beam directly enter the projector lens.

Lens Safety Label

Label Locations

1. Location of Hazard Warning Symbol and Laser Aperture Label on the body of the projector.

2. Location of Lens Safety Label on the body of the projector.

3. Location of Laser Hazard Label on the body of the projector.

4. Location of Manufacturer's ID Label, User Guides Label and Explanatory Label with Certification Statement and Risk Statement on the body of the projector.
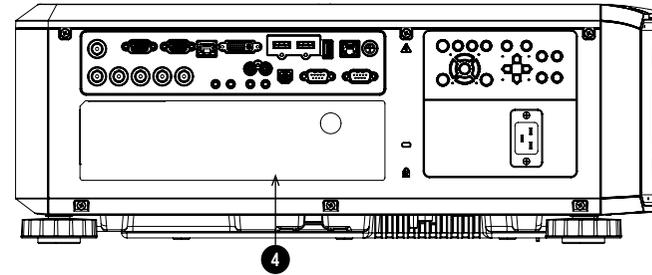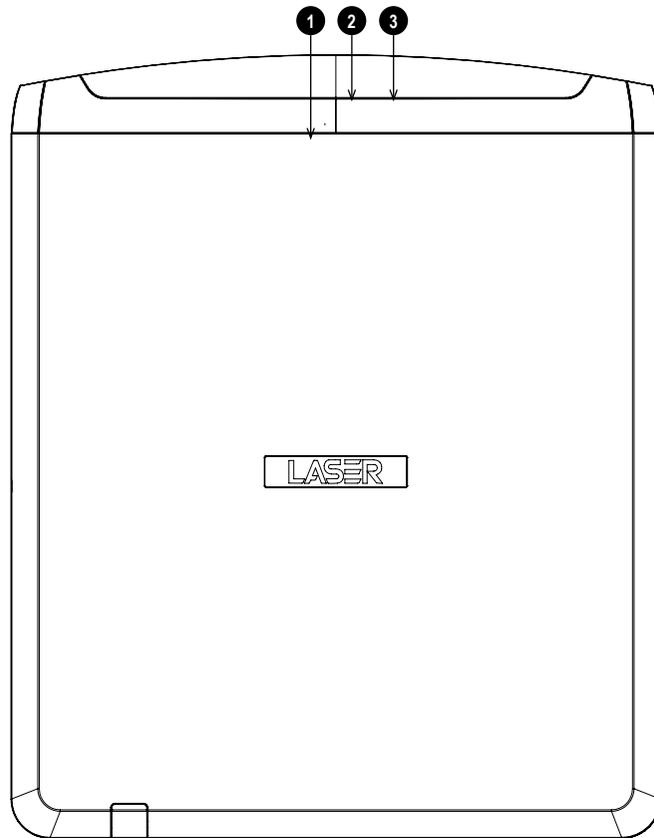
Notes

Appendix B: Choosing a lens

A number of lenses are available. Which lens you choose depends on the screen size, image aspect ratio, throw distance and light output.

The following table shows all available lenses in order of their throw ratios:

Throw Ratio	Focus Range	Lens Shift	Part Number
0.377 : 1 fixed (UST)	0.82 m - 2.71 m	Depends on image size, see **UST Lens Installation Guide** (separate document)	117-341
0.75 - 0.93 : 1 zoom	1.02 m - 12.7 m	V: 0.5 (U) 0.3 (D) frame H: 0.1 (L) 0.2 (R) frame	115-339
0.76 : 1 fixed	0.81 m - 5.08 m	none	112-499
1.25 - 1.79 : 1 zoom	1.33 m - 11.73 m	V: 0.5 (U) 0.3 (D) frame H: 0.1 (L) 0.2 (R) frame	112-500
1.73 - 2.27 : 1 zoom	1.83 m - 14.9 m	V: 0.5 (U) 0.3 (D) frame H: 0.1 (L) 0.2 (R) frame	112-501
2.22 - 3.67 : 1 zoom	2.36 m - 24.2 m	V: 0.5 (U) 0.3 (D) frame H: 0.1 (L) 0.2 (R) frame	112-502
3.58 - 5.38 : 1 zoom	3.8 m - 35.35 m	V: 0.5 (U) 0.3 (D) frame H: 0.1 (L) 0.2 (R) frame	112-503
5.31 - 8.26 : 1 zoom	5.59 m - 54.8 m	V: 0.5 (U) 0.3 (D) frame H: 0.1 (L) 0.2 (R) frame	112-504

To choose a lens, calculate the *throw ratio* required. Allow a tolerance of +/- 3% in the throw ratio calculation.

Notes

Throw distance calculations are based on the distance from the outer end of the lens, which varies from lens to lens.
The lens extension is the distance between the front of the projector chassis and the outer end of the lens when it is fully extended.

Refer to the projector CAD drawings for individual lens extension figures.

*The **0.377 : 1 fixed lens** has no adjustable shift value. However, the lens has an inherent offset depending on image size. See the UST documentation published separately on the Digital Projection website.*

*The **0.75 - 0.93 : 1 zoom lens** has a feature that permits focus correction for curved screens. The front ring of the lens is a manual control that provides focus curvature adjustment to correct for the different focal distances between center and corner.*

Basic calculation

Identify the required lens by calculating the **throw ratio**.

A **throw ratio** is the ratio of the throw distance ❷ to the screen width ❶:

$$ThrowRatio = ThrowDistance/ScreenWidth$$

1. Use the formula above to obtain the required throw ratio.

2. Allow a tolerance of +/- 3% in the throw ratio calculation and match the throw ratio with a lens from the table below:

Throw ratios	Focus range
0.377 : 1 fixed (UST)	0.82 m - 2.71 m
0.75 - 0.93 : 1 zoom	1.02 m - 12.7 m
0.76 : 1 fixed	0.81 m - 5.08 m
1.25 - 1.79 : 1 zoom	1.33 m - 11.73 m
1.73 - 2.27 : 1 zoom	1.83 m - 14.9 m
2.22 - 3.67 : 1 zoom	2.36 m - 24.2 m
3.58 - 5.38 : 1 zoom	3.8 m - 35.35 m
5.31 - 8.26 : 1 zoom	5.59 m - 54.8 m

3. Ensure the required throw distance is within the range covered by the lens.
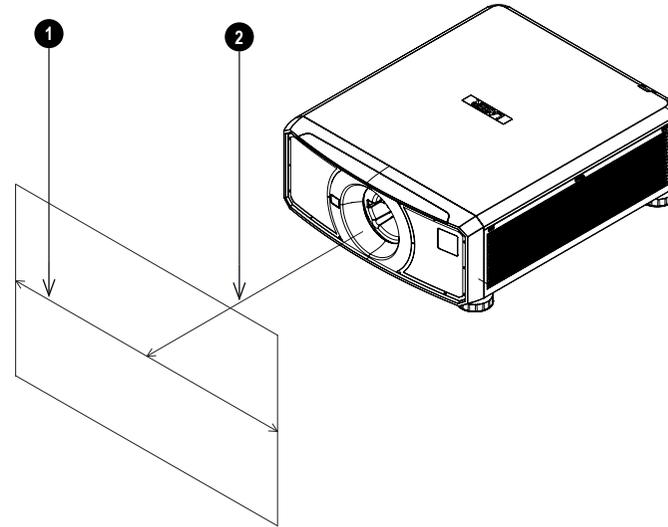
Notes

The basic calculation on this page does not take into consideration DMD™ and image size, which could affect the throw ratio. See Full lens calculation on page 85 for a more complex and realistic calculation.

When calculating the throw ratio, be sure to use identical measurement units for both the throw distance and the screen width.

See Choosing a lens on the previous page for information about individual lens part numbers

Basic calculation example

1. Calculate the throw ratio using the formula.
   Your screen is **4.5m** wide and you wish to place the projector approximately **11m** from the screen. The throw ratio will then be
   *11 ÷ 4.5= **2.44***

2. Match the result with the lens table.
   The lens matching a throw ratio of 2.44 is the **2.22 - 3.67 : 1 zoom lens** .

3. **Check whether the lens covers the required throw distance.**
   The focus range quoted for the 2.22 - 3.67 : 1 zoom lens is **2.36 - 24.2m**.The required distance of 11m is within the range.

INFORMATION YOU NEED FOR THIS CALCULATION

The throw ratio formula:

$$ThrowRatio = ThrowDistance/ScreenWidth$$

Allow a tolerance of +/- 3% in the throw ratio calculation.

The lens table:

Throw ratios	Focus range
0.377 : 1 fixed (UST)	0.82 m - 2.71 m
0.75 - 0.93 : 1 zoom	1.02 m - 12.7 m
0.76 : 1 fixed	0.81 m - 5.08 m
1.25 - 1.79 : 1 zoom	1.33 m - 11.73 m
1.73 - 2.27 : 1 zoom	1.83 m - 14.9 m
2.22 - 3.67 : 1 zoom	2.36 m - 24.2 m
3.58 - 5.38 : 1 zoom	3.8 m - 35.35 m
5.31 - 8.26 : 1 zoom	5.59 m - 54.8 m

Notes

The basic calculation on this page does not take into consideration DMD™ and image size, which could affect the throw ratio. See Full lens calculation on the facing page for a more complex and realistic calculation.

Full lens calculation

Introducing TRC

The choice of lens will affect the image size and will address discrepancies between the DMD™ resolution and the source.

When an image fills the height of the DMD™ but not the width, it uses less than 100% of the DMD™ surface. A lens chosen using the basic formula may produce an image that is considerably smaller than the actual screen.

To compensate for loss of screen space in such situations, you need to increase the throw ratio using a **Throw Ratio Correction (TRC)**.

Example

Fig. 1 illustrates a 4:3 image within a 16:9 display

When a 16:9 projector is used for a 4:3 image, the image does not fill the width of the DMD™, creating a **pillarboxing** effect - blank spaces to the left and right.

Fig. 2 shows the same image projected on a 4:3 screen using a standard lens (chosen with the basic calculation).

The DMD™ accurately fills the width of the screen; however, the pillarboxing is now part of the projected image and is transferred to the screen.

The DMD™ does not fill the height of the screen, which has caused **letterboxing** - further blank spaces at the top and bottom of the screen.

The image is now surrounded by blank space, which can be removed if the throw ratio is increased.

Fig. 3 shows the image projected on the same screen with a lens chosen using TRC. The increased throw ratio has allowed the 4:3 image to fill the 4:3 screen seamlessly

Fig 1
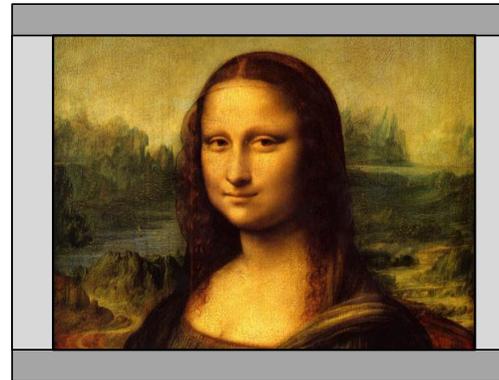
Fig 2

Fig 3

Notes

☞ *TRC can only be applied if greater than 1. If TRC is 1 or less, disregard it and calculate the throw ratio using the basic formula.*

Calculating TRC

To calculate TRC, use the following formula:

$$TRC = 1.6(DMD^{™} \, Aspect\,Ratio)/Source\,Aspect\,Ratio.$$

TRC table

Alternatively, you can save time by referencing the following table, which shows the TRC value for some popular image formats:

2.35:1 (Scope)	1920 x 817 pixels	TRC < 1, not used
1.85:1 (Flat)	1920 x 1037 pixels	TRC < 1, not used
1.78:1 (16:9)	1920 x 1080 pixels	TRC < 1, not used
1.6:1 (16:10)	1920 x 1200 pixels	TRC < 1, not used (native aspect ratio)
1.33:1 (4:3)	1596 x 1200 pixels	TRC = 1.2
1.25:1 (5:4)	1500 x 1200 pixels	TRC = 1.28

Calculating the throw ratio with TRC

1. For TRC > 1, amend the basic throw ratio formula as follows:

   $$Throw\,Ratio = Throw\,Distance/Screen\,Width * TRC$$

   Allow a tolerance of +/- 3% in the throw ratio calculation.

2. Once a throw ratio is established, identify the matching lens from the table:

Throw ratios	Focus range
0.377 : 1 fixed (UST)	0.82 m - 2.71 m
0.75 - 0.93 : 1 zoom	1.02 m - 12.7 m
0.76 : 1 fixed	0.81 m - 5.08 m
1.25 - 1.79 : 1 zoom	1.33 m - 11.73 m
1.73 - 2.27 : 1 zoom	1.83 m - 14.9 m
2.22 - 3.67 : 1 zoom	2.36 m - 24.2 m
3.58 - 5.38 : 1 zoom	3.8 m - 35.35 m
5.31 - 8.26 : 1 zoom	5.59 m - 54.8 m

3. Ensure the required throw distance is within the range of the matching lens.

Notes

☞ *TRC can only be applied if greater than 1. If TRC is 1 or less, disregard it and calculate the throw ratio using the basic formula.*

☞ *TRC can only be applied if greater than 1. If TRC is 1 or less, disregard it and calculate the throw ratio using the basic formula*

Full lens calculation example

Your screen is **4.5m** wide; you wish to place the projector approximately **11m** from the screen. The source is **4:3**.

1. Calculate TRC as follows:
   TRC = 1.6 / 1.33 = 1.2.

2. Calculate the throw ratio:
   Throw ratio = 11 / 4.5 x 1.2 = **2.04**

3. Allow a tolerance of +/- 3% in the throw ratio calculation and find a match in the lens table.

   The table shows that the matching lens is **the 1.73 - 2.27 : 1 zoom lens**.

4. Check whether the lens covers the required throw distance.

   The focus range quoted for the 1.73 - 2.27 : 1 zoom lens is **1.83m - 14.9m**. The required distance of 11 m is within the range.

INFORMATION YOU NEED FOR THESE CALCULATIONS

The TRC formula

$$TRC = DMD^{\text{TM}}\ Aspect Ratio / Source Aspect Ratio$$

The TRC table (to use instead of the formula)

2.35:1 (Scope)	TRC < 1, not used
1.85:1 (Flat)	TRC < 1, not used
1.78:1 (16:9)	TRC < 1, not used
1.6:1 (16:10)	TRC < 1, not used (native aspect ratio)
1.33:1 (4:3)	TRC = 1.2
1.25:1 (5:4)	TRC = 1.28

The throw ratio formula

$$Throw Ratio = Throw Distance / Screen Width * TRC$$

Allow a tolerance of +/- 3% in the throw ratio calculation.

The lens table:

Throw ratios	Focus range
0.377 : 1 fixed (UST)	0.82 m - 2.71 m
0.75 - 0.93 : 1 zoom	1.02 m - 12.7 m
0.76 : 1 fixed	0.81 m - 5.08 m
1.25 - 1.79 : 1 zoom	1.33 m - 11.73 m
1.73 - 2.27 : 1 zoom	1.83 m - 14.9 m
2.22 - 3.67 : 1 zoom	2.36 m - 24.2 m
3.58 - 5.38 : 1 zoom	3.8 m - 35.35 m
5.31 - 8.26 : 1 zoom	5.59 m - 54.8 m

Notes

Appendix C: Screen requirements

Fitting the image to the display

If the source image supplied to the projector is smaller than the WUXGA resolution, the image will not fill the display. The following examples show how a number of common formats may be displayed, depending on your DMD™ resolution.

WUXGA images displayed full width

2.35:1 (Scope) = 817 pixels

16:9 1.78:1 = 1080 pixels

16:10 (full height) = 1200 pixels

full width = 1920 pixels
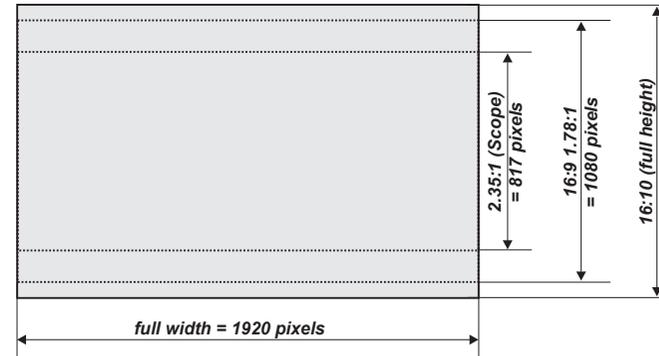
WUXGA images displayed with a height of 1200 pixels

full height = 1200 pixels

4:3 = 1.33:1 = 1596 pixels

16:10 = 1.6:1 = 1920 pixels

full width = 1920 pixels
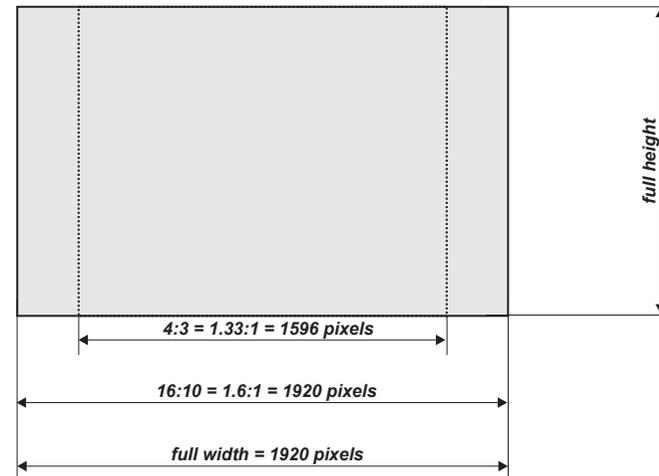
WUXGA images displayed full height

full height = 1200 pixels

4:3 = 1.33:1 = 1596 pixels
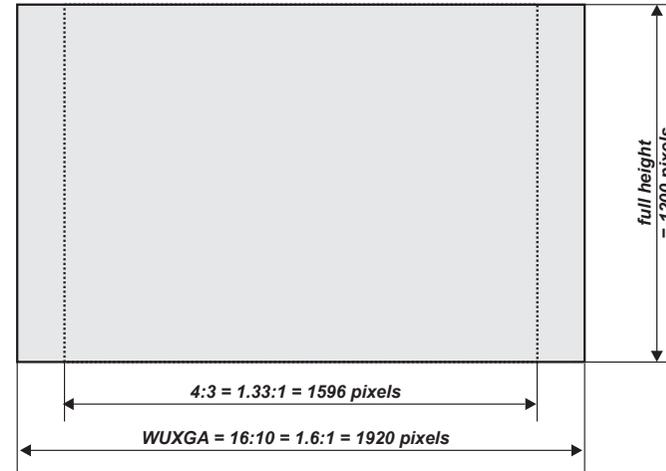
WUXGA = 16:10 = 1.6:1 = 1920 pixels

Diagonal screen sizes

Screen sizes are sometimes specified by their diagonal size (D). When dealing with large screens and projection distances at different aspect ratios, it is more convenient to measure screen width (W) and height (H).

The example calculations below show how to convert diagonal sizes into width and height, at various aspect ratios.

2.35:1 (Scope)
W = D x 0.92 H = D x 0.39

1.85:1
W = D x 0.88 H = D x 0.47

16:9 = 1.78:1
W = D x 0.87 H = D x 0.49

16:10 = 1.6:1 (native aspect ratio for WUXGA projectors)
W = D x 0.85 H = D x 0.53

W = width

H = height

D = diagonal
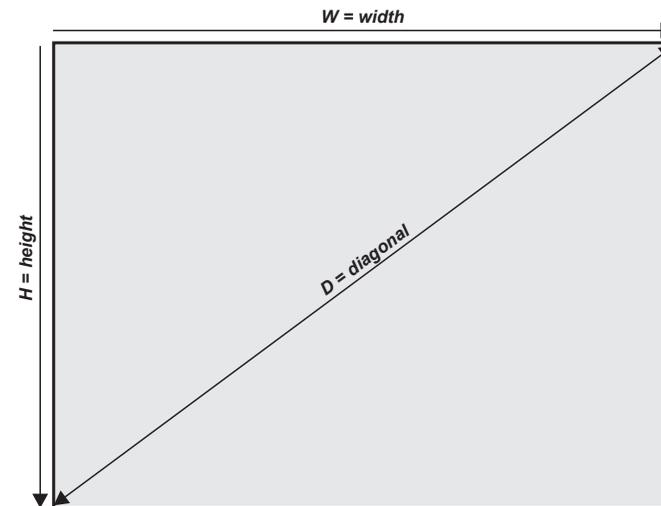
Appendix D: Positioning the image

The normal position for the projector is at the centre of the screen. However, you can set the projector above or below the centre, or to one side, and adjust the image using the **Lens shift** feature (known as **rising and falling front**) to maintain a geometrically correct image.

Any single adjustment outside the ranges specified on the following page may result in an unacceptable level of distortion, particularly at the corners of the image, due to the image passing through the periphery of the lens optics.

If the lens is to be shifted in two directions combined, the maximum range without distortion will be somewhat less, as can be seen in the illustrations.
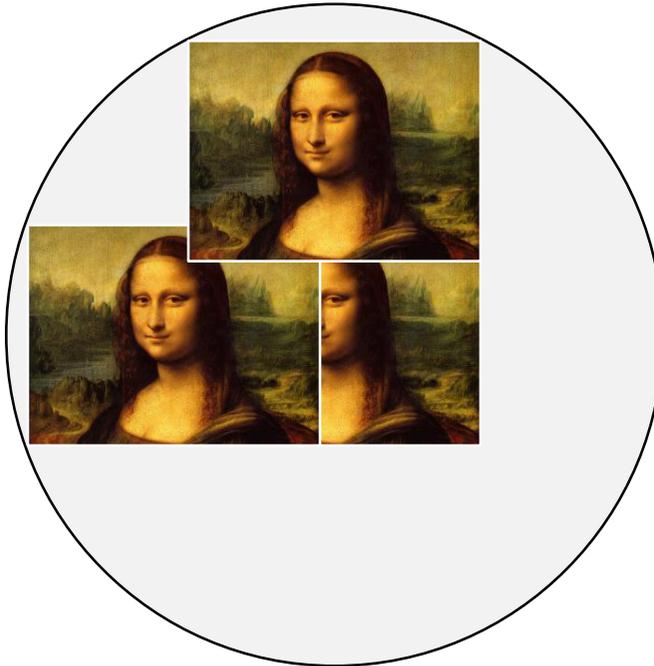
Full horizontal or vertical shift
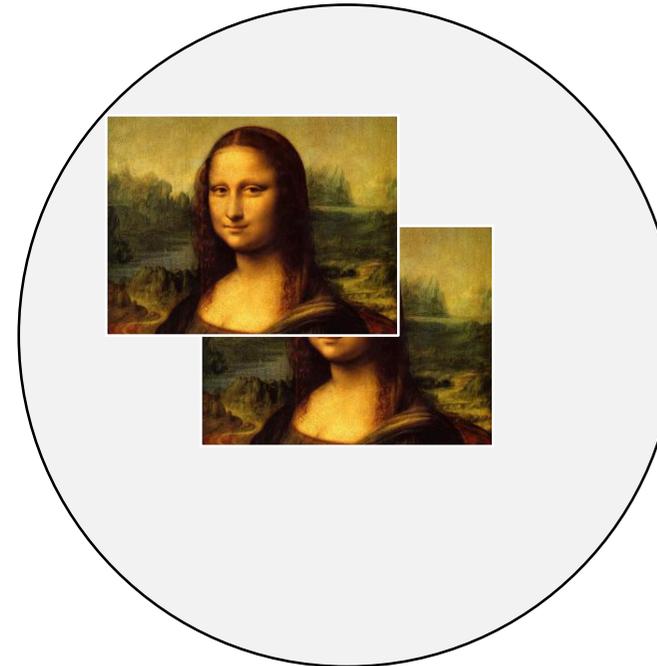
Combined shift is reduced

Appendix E: Aspect ratios explained

The appearance of a projected image on the screen depends on a combination of the following:

- The display resolution is **WUXGA** with a 1200 x 1920 resolution, corresponding to an aspect ratio of 16:10
- The aspect ratio of the input signal: usually **4:3**, **16:9** or **16:10**
- The value of the **Aspect Ratio** setting of the projector:
    - **16:9**, **4:3**, **16:10** and **5:4** stretch the image to the selected aspect ratio. **16:9** leaves black bars at the top and bottom of the screen (letterboxing effect); **4:3** and **5:4** leave black bars at the sides of the screen (pillarboxing).
    - **Native** shows the image with its original aspect ratio, if this does not match the native aspect ratio of the DMD^{TM}, then the image will be scaled to either fit the full width or height of the display.

Aspect ratios examples

1. Unused screen areas

Source: 4:3

Aspect Ratio: Source / 4:3

Aspect Ratio 16:10

Source: 16:9

Aspect Ratio: Source / 16:9

Aspect Ratio 16:10

Source: 16:10 (native)

Aspect Ratio: Source / 16:10
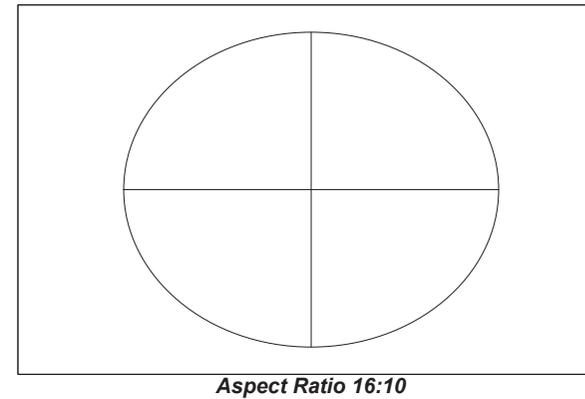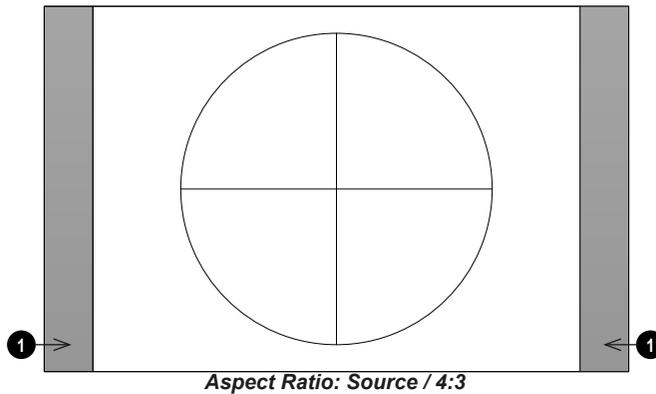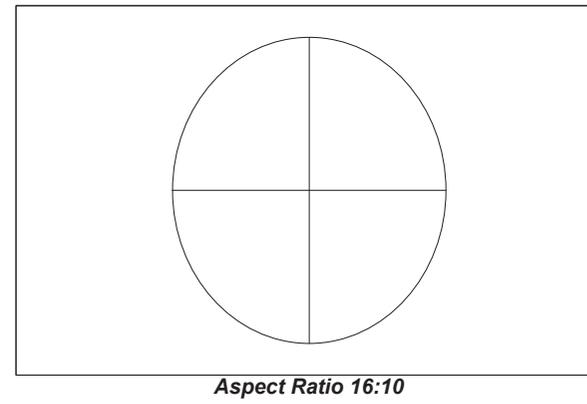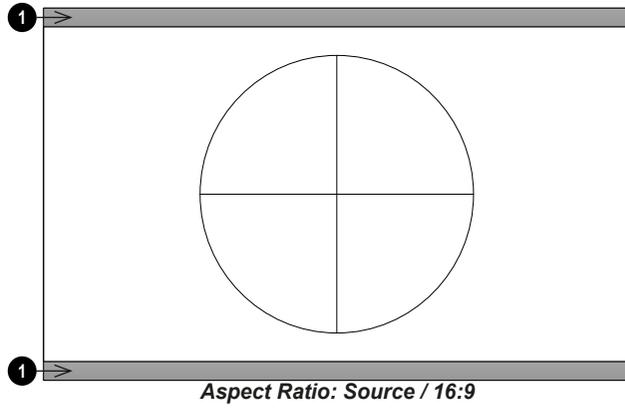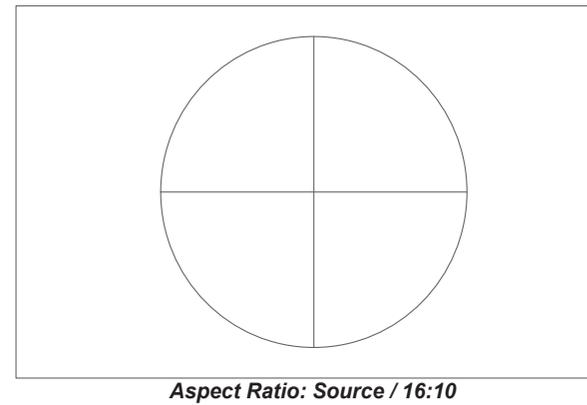
Notes

Appendix F: Projector indicator messages

Power LED	Status LED	Light LED	Temp LED	System Status
ON	OFF	OFF	OFF	Lamp Ready
Flashing	OFF	OFF	OFF	Start
Flashing	OFF	OFF	OFF	Cooling
OFF	OFF	1 blinks	ON	Over Temperature T1
OFF	OFF	2 blinks	ON	Over Temperature T2
OFF	OFF	3 blinks	ON	Over Temperature T3
OFF	OFF	4 blinks	ON	Over Temperature T4
OFF	OFF	5 blinks	ON	Over Temperature T5
OFF	4 blinks	OFF	OFF	Thermal Break Sensor error
OFF	6 blinks	1 blinks	OFF	FAN1 error
OFF	6 blinks	2 blinks	OFF	FAN2 error
OFF	6 blinks	3 blinks	OFF	FAN3 error
OFF	6 blinks	4 blinks	OFF	FAN4 error
OFF	6 blinks	5 blinks	OFF	FAN5 error
OFF	6 blinks	6 blinks	OFF	FAN6 error
OFF	6 blinks	7 blinks	OFF	FAN7 error
OFF	6 blinks	8 blinks	OFF	FAN8 error
OFF	6 blinks	9 blinks	OFF	FAN9 error
OFF	6 blinks	10 blinks	OFF	FAN10 error
OFF	6 blinks	11 blinks	OFF	FAN11 error
OFF	6 blinks	12 blinks	OFF	FAN12 error
OFF	6 blinks	13 blinks	OFF	FAN13 error
OFF	2 blinks	OFF	OFF	1W MCU detects scaler stops working
OFF	7 blinks	OFF	OFF	Case Open
OFF	7 blinks	1 blinks	OFF	Lens Open
OFF	8 blinks	OFF	OFF	DMD error
OFF	9 blinks	OFF	OFF	Color wheel error
OFF	9 blinks	1 blinks	OFF	Phosphor wheel error
OFF	4 blinks	2 blinks	OFF	Laser Driver board Color wheel speed too low
OFF	4 blinks	3 blinks	OFF	Laser Driver board Phosphor wheel speed too low
OFF	4 blinks	4 blinks	OFF	Laser Driver board 54V error
OFF	4 blinks	5 blinks	OFF	Laser Driver board over temp
OFF	4 blinks	6 blinks	OFF	Laser Driver board SCI error
OFF	4 blinks	7 blinks	OFF	Laser Driver board initial fail

Notes

In the event of an error, please disconnect the AC power cord and wait for one (1) minute before restarting the projector.

☞ *If the Power or Light source LEDs are still flashing or the Over Temp LED is lit, Please contact your regional Digital Projection Ltd service center.*

Appendix G: Supported signal input modes

2D formats

Signal Format	Resolution	H-Sync (KHz)	V-Sync (Hz)	Component (Analog)	VGA/BNC (Analog)	DVI-D (Digital)	HDMI (Digital)	HDBase-T (Digital)	Remarks
PAL/SECAM	720 x 400	31.5	70.1		✓	✓	✓	✓	
	640 x 480	31.5	60		✓	✓	✓	✓	
	640 x 480	35	66.667		MAC13	MAC13	MAC13	MAC13	
	640 x 480	37.86	72.8			✓	✓	✓	
	640 x 480	37.5	75		✓	✓	✓	✓	
	640 x 480	43.3	85		✓	✓	✓	✓	
	640 x 480	61.9	119.5		✓	✓	✓	✓	
	800 x 600	37.9	60.3		✓	✓	✓	✓	
	800 x 600	46.9	75		✓	✓	✓	✓	
	800 x 600	48.1	72.2		✓	✓	✓	✓	
	800 x 600	53.7	85.1		✓	✓	✓	✓	
	800 x 600	76.3	120		✓	✓	✓	✓	
	832 x 624	49.722	74.546		✓	MAC16	MAC16	MAC16	
	1024 x 768	48.4	60		✓	✓	✓	✓	
	1024 x 768	56.5	70.1		✓	✓	✓	✓	
	1024 x 768	60.241	75.02		MAC19	MAC19	MAC19	MAC19	
	1024 x 768	60	75		✓	✓	✓	✓	
	1024 x 768	68.7	85		✓	✓	✓	✓	
	1024 x 768	97.6	120		✓	✓	✓	✓	
	1152 x 870	68.68	75.06		MAC21	MAC21	MAC21	MAC21	

Signal Format	Resolution	H-Sync (KHz)	V-Sync (Hz)	Component (Analog)	VGA/BNC (Analog)	DVI-D (Digital)	HDMI (Digital)	HDBase-T (Digital)	Remarks
PAL/SECAM	1280 x 720	45	60		✓	✓	✓	✓	
	1280 x 720	90	120		✓	✓	✓	✓	
	1280 x 768	47.4	60*		✓	✓	✓	✓	*Reduced Blanking
	1280 x 768	47.8	59.9		✓	✓	✓	✓	
	1280 x 800	49.7	59.8		✓	✓	✓	✓	
	1280 x 800	62.8	74.9		✓	✓	✓	✓	
	1280 x 800	71.6	84.9		✓	✓	✓	✓	
	1280 x 800	101.6	119.9		✓	✓	✓	✓	
	1280 x 1024	64	60		✓	✓	✓	✓	
	1280 x 1024	80	75		✓	✓	✓	✓	
	1280 x 1024	91.1	85		✓	✓	✓	✓	
	1280 x 960	60	60		✓	✓	✓	✓	
	1280 x 960	85.9	85		✓	✓	✓	✓	
	1400 x 1050	65.3	60		✓	✓	✓	✓	
	1440 x 900	55.9	59.9		✓	✓	✓	✓	
	1600 x1200	75	60		✓	✓	✓	✓	
	1680 x1050	64.67	59.88*		✓	✓	✓	✓	*Reduced Blanking
	1680 x1050	65.29	59.95		✓	✓	✓	✓	
	1920 x 1080	67.5	60		✓	✓	✓	✓	

Notes

Signal Format	Resolution	H-Sync (KHz)	V-Sync (Hz)	Component (Analog)	VGA/BNC (Analog)	DVI-D (Digital)	HDMI (Digital)	HDBase-T (Digital)	Remarks
PAL/SECAM	1280 x 1024	130	120*				✓		*Reduced Blanking
	1400 x 1050	93.9	85				✓		
	1400 x 1050	133.3	120*				✓		*Reduced Blanking
	1440 x 900	114.2	120*				✓		*Reduced Blanking
	1600 x 1200	87.5	70				✓		
	1600 x 1200	93.8	75				✓		
	1600 x 1200	106.3	85				✓		
	1600 x 1200	152.4	120*				✓		*Reduced Blanking
	1680 x 1050	82.3	75				✓		
	1680 x 1050	93.9	85				✓		
	1680 x 1050	133.4	120*				✓		*Reduced Blanking
	1920 x 1200	74.038	59.95*		✓	✓	✓	✓	*Reduced Blanking
	1920 x 1200	74.6	60				✓		
	1920 x 1200	94	75				✓		
	1920 x 1200	107.2	85				✓		
	3840 x 2160	53,946	23.976				✓	✓	
	3840 x 2160	54	24				✓	✓	
	3840 x 2160	56.25	25				✓	✓	
	3840 x 2160	67.5	30				✓	✓	
	3840 x 2160	112.5	50				✓	✓	
	3840 x 2160	135	60				✓	✓	
	4096 x 2160	54	24				✓		
	4096 x 2160	56.25	25				✓		
	4096 x 2160	67.5	30				✓		
	4096 x 2160	112.5	50				✓		
	4096 x 2160	135	60				✓		
SDTV	480i	15.734	60	✓		✓	✓	✓	
	576i	15.625	50	✓					
EDTV	576p	31.3	50	✓					
	480p	31.5	60	✓					

Notes

Signal Format	Resolution	H-Sync (KHz)	V-Sync (Hz)	Component (Analog)	VGA/BNC (Analog)	DVI-D (Digital)	HDMI (Digital)	HDBase-T (Digital)	Remarks
HDTV	720p	37.5	50	✓		✓	✓	✓	
	720p	45	60	✓		✓	✓	✓	
	1080i	33.8	60	✓		✓	✓	✓	
	1080i	28.1	50	✓		✓	✓	✓	
	1080p	27	24	✓		✓	✓	✓	
	1080p	28	25	✓			✓	✓	
	1080p	33.7	30	✓			✓	✓	
	1080p	56.3	50	✓			✓	✓	
	1080p	67.5	60	✓			✓	✓	
	1080p	112.5	100				✓		
	1080p	135	120				✓		

Notes

3D formats

Signal Format	Resolution	H-Sync (KHz)	V-Sync (Hz)	VGA/BNC (Analog)	DVI-D (Digital)	HDMI (Digital)	HDBase-T (Digital)	Remarks
PAL/SECAM	640 x 480	31.5	60		✓	✓	✓	Frame Sequential, Top / Bottom, Side-by-side (Half)
	800 x 600	37.9	60.3		✓	✓	✓	Frame Sequential, Top / Bottom, Side-by-side (Half)
	800 x 600	76.3	120		✓	✓	✓	Frame Sequential
	1024 x 768	48.4	60		✓	✓	✓	Frame Sequential, Top / Bottom, Side-by-side (Half)
	1024 x 768	97.6	120		✓	✓	✓	Frame Sequential
	1280 x 720	45	60		✓	✓	✓	Frame Sequential, Top / Bottom, Side-by-side (Half)
	1280 x 720	90	120		✓	✓	✓	Frame Sequential
	1280 x 768*	47.4	60		✓	✓	✓	*Reduce Blanking - Frame Sequential, Top / Bottom, Side-by-side (Half)
	1280 x 768	47.8	59.9		✓	✓	✓	Frame Sequential, Top / Bottom, Side-by-side (Half)
	1280 x 800	49.7	59.8		✓	✓	✓	Frame Sequential, Top / Bottom, Side-by-side (Half)
	1280 x 800	101.6	119.9		✓	✓	✓	Frame Sequential
	1280 x 1024	64	60		✓	✓	✓	Top / Bottom, Side-by-side (Half)
	1280 x 960	60	60		✓	✓	✓	Top / Bottom, Side-by-side (Half)
	1400 x 1050	65.3	60		✓	✓	✓	Top / Bottom, Side-by-side (Half)
	1440 x 900	55.9	59.9		✓	✓	✓	Top / Bottom, Side-by-side (Half)
	1600 x 1200	75	60		✓	✓	✓	Top / Bottom, Side-by-side (Half)
	1680 x 1050*	64.67	59.88		✓	✓	✓	*Reduced Blanking - Top / Bottom, Side-by-side (Half)
	1680 x 1050	65.29	59.95		✓	✓	✓	Top / Bottom, Side-by-side (Half)
	1920 x 1200*	74.038	59.95		✓	✓	✓	*Reduced Blanking - Frame Sequential, Top / Bottom, Side-by-side (Half)
	1920 x 1200*	152.4	120			✓		*Reduced Blanking - Frame Sequential
SDTV	480i	15.734	60		✓	✓	✓	HQFS (Frame Sequential)

Notes

Signal Format	Resolution	H-Sync (KHz)	V-Sync (Hz)	VGA/BNC (Analog)	DVI-D (Digital)	HDMI (Digital)	HDBase-T (Digital)	Remarks
HDTV	720p50	37.5	50		✓	✓	✓	Frame Packing, Top / Bottom
	720p59	44.96	59.94			✓	✓	Frame Packing, Top / Bottom
	720p60	45	60		✓	✓	✓	Frame Packing, Top / Bottom
	1080i50	56.25	50		✓	✓	✓	Side-by-side (Half)
	1080i59	67.43	59.94		✓	✓	✓	Side-by-side (Half)
	1080i60	67.50	60		✓	✓	✓	Side-by-side (Half)
	1080p23	26.97	23.98			✓	✓	Top / Bottom
	1080p24	27	24		✓	✓	✓	Frame Packing, Top / Bottom
	1080p50	56.25	50	✓	✓	✓	✓	Frame Sequential
	1080p59	67.43	59.94	✓	✓	✓	✓	Frame Sequential
	1080p60	67.50	60	✓	✓	✓	✓	Frame Sequential
	1080p100	112.5	100			✓		Frame Sequential, Top / Bottom, Side-by-side (Half)
	1080p120	135	120			✓		Frame Sequential, Top / Bottom, Side-by-side (Half)

Notes

Appendix H: Wiring details

Signal inputs and outputs

HDMI

19 way type A connector

1. TMDS Data 2+
2. TMDS Data 2 Shield (Ground)
3. TMDS Data 2-
4. TMDS Data 1+
5. TMDS Data 1 Shield (Ground)
6. TMDS Data 1-
7. TMDS Data 0+
8. TMDS Data 0 Shield (Ground)
9. TMDS Data 0-
10. TMDS Clock+
11. TMDS Clock Shield (Ground)
12. TMDS Clock-
13. CEC
14. not connected
15. SCL (DDC Clock)
16. SCA (DDC Data)
17. DDC/CEC Shield (Ground)
18. +5 V Power
19. Hot Plug Detect
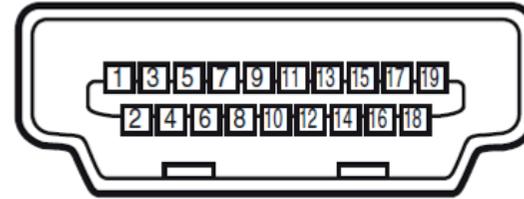
HDMI: pin view of panel connector

Notes

DisplayPort

DisplayPort 1.2

Pin 1	ML_Lane 0 (p)	Lane 0 (positive)
Pin 2	GND	Ground
Pin 3	ML_Lane 0 (n)	Lane 0 (negative)
Pin 4	ML_Lane 1 (p)	Lane 1 (positive)
Pin 5	GND	Ground
Pin 6	ML_Lane 1 (n)	Lane 1 (negative)
Pin 7	ML_Lane 2 (p)	Lane 2 (positive)
Pin 8	GND	Ground
Pin 9	ML_Lane 2 (n)	Lane 2 (negative)
Pin 10	ML_Lane 3 (p)	Lane 3 (positive)
Pin 11	GND	Ground
Pin 12	ML_Lane 3 (n)	Lane 3 (negative)
Pin 13	CONFIG1	Connected to Ground1
Pin 14	CONFIG2	Connected to Ground1
Pin 15	AUX CH (p)	Auxiliary Channel (positive)
Pin 16	GND	Ground
Pin 17	AUX CH (n)	Auxiliary Channel (negative)
Pin 18	Hot Plug	Hot Plug Detect
Pin 19	Return	Return for Power
Pin 20	DP_PWR	Power for connector (3.3 V 500 mA)

DisplayPort: pin view of panel connector

HDBaseT input

RJ45 socket.

1. DATA 0+
2. DATA 0-
3. DATA 1+
4. DATA 2+
5. DATA 2-
6. DATA 1-
7. DATA 3+
8. DATA 3-

HDBase-T

DVI-D input

1. TMDS Data 2+
2. TMDS Data 2-
3. Ground
4. not connected
5. not connected
6. SCL
7. SDA
8. not connected
9. TMDS Data 1-
10. TMDS Data 1+
11. Ground
12. not connected
13. not connected
14. +5 V Power
15. Ground
16. HPD
17. TMDS Data 0-
18. TMDS Data 0+
19. Ground
20. not connected
21. not connected
22. Ground
23. TMDS Clock+
24. TMDS Clock-
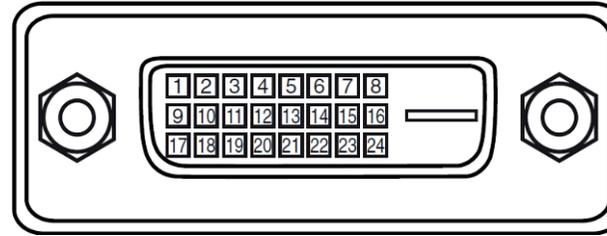
DVI-D: pin view of panel connector

Notes

VGA input

1. Red input
2. Green input
3. Blue input
4. not connected
5. not connected
6. Ground
7. Ground
8. Ground
9. +5 V Power
10. Ground
11. Ground
12. VGA_SDA
13. H-Sync
14. V-Sync
15. VGA_SCL
16. Ground

Control connections

LAN

RJ45 socket

1. TX+
2. TX-
3. TXC
4. Ground
5. Ground
6. RXC
7. RX+
8. RX-
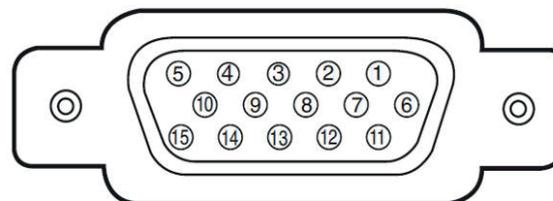
VGA: pin view of panel connector
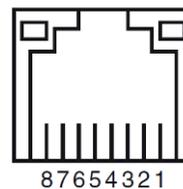
LAN: pin view of panel connector

Only one remote connection (RS232 or LAN) should be used at any one time.

RS232

9 way D-type connector

1. not connected
2. Received Data (RX)
3. Transmitted Data (TX)
4. not connected
5. Ground
6. not connected
7. Short with pin8
8. Short with pin7
9. not connected

Trigger

3.5 mm mini jack, Output: 12V, 350 mA max

- **Tip** Signal
- **Sleeve** Ground
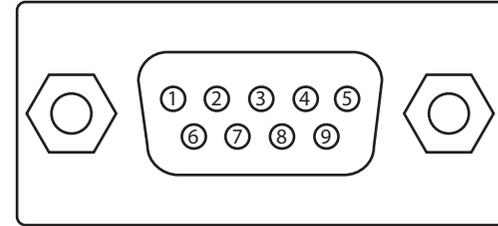
RS232: pin view of panel male connector
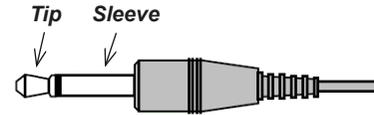
Notes

Appendix I: Communication parameter setup and Control Protocol

You can use the serial control command to input commands for projector control or retrieve its operational data through Windows client terminal software.

Item	Parameter
Bit per Second	9600 bps
Data Bit	8-bit
Parity	None
Stop Bit	1
Flow Control	None

Operation commands

Operation command syntax:

An operation command is prefixed by character "op", followed by control commands and settings separated by space blank [SP], and ended by carriage return pair "CR" and "ASCII hex 0D". Syntax of serial control commands:

op[SP]<operation command>[SP]<Setting Value>[CR]

- **op**. A constant indicating this is an operation command.
- **[SP]**. Indicate one blank space.
- **[CR]**. Indicate the command ending carriage return pair "CR" and "ASCII hex 0D".
- **Setting value**. Settings of operation command

Types of setup strings	Characters of settings	Description
Query current setup	?	Question mark "?" indicates querying current setup
Setup	= <settings>	Syntax: Symbol "=" suffixed with setup values
Increase setup order of adjustment items	+	Some settings are changed in steps. Symbol "+" indicates changing one step up
Decrease setup order of adjustment items	-	Some settings are changed in steps. Symbol "-" indicates changing one step down
Execute operation command	None	Certain operation commands execute after input without further setting or regulators.

Examples:

Control items	Input command row	Projector return message
Execute command	reset.all[CR]	RESET.ALL
Query current brightness	op bright ?[CR]	OP BRIGHT = 50
Set up brightness	op bright = 100[CR]	OP BRIGHT = 100
Brightness value + 1	op bright +[CR]	OP BRIGHT = "new value"
Brightness value - 1	op bright -[CR]	OP BRIGHT = "new value"
Out of range or no support	op bright = 200[CR]	OP BRIGHT = NA
Illegal command	op abright = 100[CR]	*Illegal format#

Function	Operation	Set	Get	Inc	Dec	EXE	Values
Auto Source	auto.src	V	V				0 : Off 1 : On
HDMI Color Space	color.space	V	V				0 : Auto 1 : RGB 2 : YUV
HDMI Range	hdmi.range	V	V				0 : Auto 1 : Full 2 : Limited
Video Saturation	video.saturation	V	V	V	V		0 ~ 100
Video Tint	video.tint	V	V	V	V		0 ~ 100
H Position	h.pos	V	V	V	V		-5 ~ +5 -100 ~ +100 (Auto Sync Off)
V Position	v.pos	V	V	V	V		-5 ~ +5 -100 ~ +100 (Auto Sync Off)
Phase	phase	V	V	V	V		0 ~ 31
clock	clock	V	V	V	V		-5 ~ +5
Auto Sync	auto.sync	V	V				0 : Off 1 : On
HDBaseT Control	hdbaset	V	V				0 : Off 1 : On
3D	threed	V	V				0 : Off 1 : DLP-Link 2 : IR
3D Sync Invert	threed.syncinvert	V	V				0 : Off 1 : On
3D Format	threed.format	V	V				0 : Frame Sequential 1 : Top / Bottom 2 : Side by side 3 : Frame Packing 4 : Auto (Auto detect FS)
3D Sync Out Delay	threed.syncdelay	V	V				0 ~ 359

Notes

Function	Operation	Set	Get	Inc	Dec	EXE	Values
3D Sync Input	threed.syncinput		V				0 : Internal 1 : External
3D Sync Output	threed.syncoutput	V	V				0 : Internal 1 : Bypass
Picture Mode	pic.mode	V	V				0 : Presentation 1 : Bright 2 : Game 3 : Movie 4 : Vivid 5 : TV 6 : sRGB 7 : DICOM SIM 8 : User 9 : User 2
Brightness	bright	V	V	V	V		0 ~ 100
Contrast	contrast	V	V	V	V		0 ~ 100
HDR Control	hdr.control	V	V				0 : Off 1 : Auto 2 : On
HDR Mode	hdr.mode	V	V				0 : PQ-L300 1 : PQ-L400 2 : PQ-L500 3 : PQ-L600
Dynamic Black	dblack	V	V				0 : Off 1 : On

Notes

Function	Operation	Set	Get	Inc	Dec	EXE	Values
Projector Light (Light Off Timer)	projector.light	V	V				0 : Disable 1 : 0.5 sec 2 : 1 Sec 3 : 2 Sec 4 : 3 Sec 5 : 4 Sec
HSG/Red Gain	hsg.r.gain	V	V	V	V		0 ~ 100
HSG/Green Gain	hsg.g.gain	V	V	V	V		0 ~ 100
HSG/Blue Gain	Hsg.b.gain	V	V	V	V		0 ~ 100
HSG/Cyan Gain	hsg.c.gain	V	V	V	V		0 ~ 100
HSG/Magenta Gain	hsg.m.gain	V	V	V	V		0 ~ 100
HSG/Yellow Gain	hsg.y.gain	V	V	V	V		0 ~ 100
HSG/Red/Saturation	hsg.r.sat	V	V	V	V		0 ~ 100
HSG/Green/Saturation	hsg.g.sat	V	V	V	V		0 ~ 100
HSG/Blue/Saturation	Hsg.b.sat	V	V	V	V		0 ~ 100
HSG/Cyan/Saturation	hsg.c.sat	V	V	V	V		0 ~ 100
HSG/Magenta/Saturation	hsg.m.sat	V	V	V	V		0 ~ 100
HSG/Yellow/Saturation	Hsg.y.sat	V	V	V	V		0 ~ 100
HSG/Red/Hue	hsg.r.hue	V	V	V	V		0 ~ 100
HSG/Green/Hue	hsg.g.hue	V	V	V	V		0 ~ 100
HSG/Blue/Hue	Hsg.b. hue	V	V	V	V		0 ~ 100
HSG/Cyan/Hue	hsg.c. hue	V	V	V	V		0 ~ 100
HSG/Magenta/Hue	hsg.m. hue	V	V	V	V		0 ~ 100
HSG/Yellow/Hue	Hsg.y. hue	V	V	V	V		0 ~ 100
HSG/White/Red Gain	hsg.wr.gain	V	V	V	V		0 ~ 100
HSG/White/Green Gain	hsg.wg.gain	V	V	V	V		0 ~ 100
HSG/White/Blue Gain	Hsg.wb.gain	V	V	V	V		0 ~ 100
Brilliant Color	bri.color	V	V	V	V		0 ~ 10
Sharpness	sharp	V	V	V	V		0 ~ 31

Notes

Function	Operation	Set	Get	Inc	Dec	EXE	Values	Notes
Gamma	gamma	V	V				0 : 1.8 1 : 2.0 2 : 2.2 3 : 2.4 4 : B&W 5 : Linear	
Color Temperature	color.temp	V	V				0 : Warm 1 : Normal 2 : Cold	
White Balance /Red Offset	red.offset	V	V	V	V		-100 ~ +100	
White Balance /Green Offset	green.offset	V	V	V	V		-100 ~ +100	
White Balance /Blue Offset	blue.offset	V	V	V	V		-100 ~ +100	
White Balance /Red Gain	red.gain	V	V	V	V		0 ~ 200	
White Balance /Green Gain	green.gain	V	V	V	V		0 ~ 200	
White Balance /Blue Gain	blue.gain	V	V	V	V		0 ~ 200	
Aspect Ratio	aspect	V	V				0 : Fill 1 : 4:3 2 : 16:9 3 : LetterBox 4 : Native 5 : 2.35:1	
Digital Zoom	zoom	V	V	V	V		-10 ~ +10	
V Keystone	v.keystone	V	V	V	V		-30 ~ +30	
H Keystone	h.keystone	V	V	V	V		-30 ~ +30	
H Image Shift	img.hshift	V	V	V	V		-50 ~ +50	
V Image Shift	img.vshift	V	V	V	V		-50 ~ +50	
4 Corner Top Left X	4corner.tlx	V	V	V	V		0 ~ +60	
4 Corner Top Left Y	4corner.tly	V	V	V	V		0 ~ +60	
4 Corner Top Right X	4corner.trx	V	V	V	V		0 ~ +60	
4 Corner Top Right Y	4corner.try	V	V	V	V		0 ~ +60	
4 Corner Bottom Left X	4corner.blx	V	V	V	V		0 ~ +60	
4 Corner Bottom Left Y	4corner.bly	V	V	V	V		0 ~ +60	

Function	Operation	Set	Get	Inc	Dec	EXE	Values
4 Corner Bottom Right X	4corner.brx	V	V	V	V		0 ~ +60
4 Corner Bottom Right y	4corner.bry	V	V	V	V		0 ~ +60
4 Corner Reset	4corner.reset					V	
Projection	projection	V	V				0 : Front 1 : Rear 2 : Ceiling 3 : Rear + Ceiling
Direct Power On (Auto power on)	direct.poweron	V	V				0 : Off 1 : On
Light Mode	light.mode	V	V				0 : Normal (100%) 1 : Eco (80%) 2 : Eco Plus 3 : Dimming 4 : Extreme Dimming 5 : Custom Light
Custom Light	custom.light	V	V	V	V		50 ~ 200
Fan Speed	fanspeed	V	V				0 : Normal 1 : High
IR Control	ir.control	V					0 : Both IR On 1 : Front IR On 2 : Rear IR On
Remote ID	remote.id	V	V				0 ~ 99
NetWork Status	net.status		V				0 : Disconnect 1 : Connected
NetWork / DHCP	net.dhcp	V	V				0 : Off 1 : On
NetWork / IP Address	net.ipaddr	V	V				<string>
NetWork / Subnet	net.subnet	V	V				<string>
NetWork / Gateway	net.gateway	V	V				<string>
NetWork / DNS	net.dns	V	V				<string>

Notes

Function	Operation	Set	Get	Inc	Dec	EXE	Values	Notes
NetWork Apply	net.apply	V					0 : Cancel 1 : OK	
Standby Power	standby.power	V	V				1 : On (0.5W) 2 : On by Lan 3 : On by HDBaseT	
No Signal Power Off	nosignal.poweroff	V	V				0 ~ 36	
Sleep Timer	sleep.timer	V	V				0 ~ 120	
Volume	volume	V	V	V	V		0 ~ 10	
Air Filter Hours	airfilter.hours		V				<string>	
Air Filter Hour Reset	airfilter.reset					V		
Blank Screen Color	blankscreen.color	V	V				0 : Black 1 : Red 2 : Green 3 : Blue 4 : White	
Logo	logo	V	V				0 : Std. 1 : Black 2 : Blue	
MENU Position	menu.position	V	V				0 : Left 1 : Right 2 : Center 3 : Down 4 : Up	
MENU Translucent	menu.trans	V	V				0 : Off 1 : 25% 2 : 50% 3 : 75% 4 : 100%	
Keypad Lock	keypad.lock	V	V				0 : Off 1 : On	

Function	Operation	Set	Get	Inc	Dec	EXE	Values
Security Lock	security.lock	V	V				1 : Up 2 : Down 3 : Left 4 : Right
Security Unlock	security.unlock	V					1 : Up 2 : Down 3 : Left 4 : Right

Notes

Function	Operation	Set	Get	Inc	Dec	EXE	Values		Notes
Language	lang	V	V				0 : English		
							1 : French		
							2 : German		
							3 : Spanish		
							4 : Portuguese		
							5 : Simplified Chinese		
							6 : Traditional Chinese		
							7 : Italian		
							8 : Norwegian		
							9 : Swedish		
							10 : Dutch		
							11 : Russian		
							12 : Polish		
							13 : Finnish		
							14 : Greek		
							15 : Korean		
							16 : Hungarian		
							17 : Czech		
							18 : Arabic		
							19 : Turkish		
							20 : Vietnamese		
							21 : Japanese		
							22 : Thai		
							23 : Farsi		
							24 : Hebrew		
							25 : Danish		
							26 : French Canadian		

Function	Operation	Set	Get	Inc	Dec	EXE	Values
Reset All	reset.all					V	
Source Info	source.info		V				<string>
Light Hours 1	light1.hours		V				<string>
Light Hours 1 Reset	light1.reset					V	
Software Version	sw.ver		V				<string>
Serial Number	ser.no		V				<string>
Auto Image	auto.img					V	
Light 1 Status	light1.stat		V				0 : Off 1 : On
Model	model		V				<string>
Pixel Clock	pixel.clock		V				<string>
H Refresh Rate	h.refresh		V				<string>
V Refresh Rate	v.refresh		V				<string>
Blank	blank	V	V				0 : Off 1 : On
Power On	power.on					V	
Power Off	power.off					V	
Projector Status	status		V				0 : Reset 1 : Standby 2 : Active 3 : Cooling
Mute	mute	V	V				0 : Off 1 : On
Freeze	freeze	V	V				0 : Off 1 : On

Notes

Function	Operation	Set	Get	Inc	Dec	EXE	Values
Input Select	input.sel	V	V				1 : VGA 2 : RGB2 (NOT APPLICABLE) 3 : DVI 4 : Video (NOT APPLICABLE) 5 : S-Video (NOT APPLICABLE) 6 : HDMI 1 7 : BNC 8 : Component (NOT APPLICABLE) 9 : HDMI 2 15 : HDBaseT

Lens related functions:

Function	Operation	Set	Get	Inc	Dec	EXE	Values
Lens Lock	lens.lock	V	V				0 : Off 1 : On
Lens zoom in	zoom.in					V	
Lens zoom in 2	zoom.in.2					V	
Lens zoom in 3	zoom.in.3					V	
Lens zoom out	zoom.out					V	
Lens zoom out 2	zoom.out.2					V	
Lens zoom out 3	zoom.out.3					V	
Lens focus near	focus.near					V	
Lens focus near 2	focus.near.2					V	
Lens focus near 3	focus.near.3					V	
Lens focus far	focus.far					V	
Lens focus far 2	focus.far.2					V	
Lens focus far 3	focus.far.3					V	
Lens up	lens.up					V	
Lens up 2	lens.up.2					V	
Lens up 3	lens.up.3					V	
Lens down	lens.down					V	
Lens down 2	lens.down.2					V	
Lens down 3	lens.down.3					V	

Notes

Function	Operation	Set	Get	Inc	Dec	EXE	Values
Lens left	lens.left					V	
Lens left 2	lens.left.2					V	
Lens left 3	lens.left.3					V	
Lens right	lens.right					V	
Lens right 2	lens.right.2					V	
Lens right 3	lens.right.3					V	
Lens center	lens.center					V	
Lens type	lens.type	V	V				0 : Non-UST 1 : UST
Lens load	lens.load	V					1~8
Lens save	lens.save	V					1~8
Lens clear	lens.clear	V					1~8

Notes

Appendix J: Glossary of terms

1

1080p
> An HDTV resolution which corresponds to 1920 x 1080 pixels (a widescreen aspect ratio of 16:9).

3

3D active glasses
> Wireless battery-powered glasses with LCD shutters. Synchronization information is communicated to the glasses by means of an infrared (IR) or radio frequency (RF) emitter which is connected to the Sync Out terminal on the projector. IR or RF pulses are transmitted by the emitter to signal when the left eye and right eye images are being displayed. The glasses incorporate a sensor which detects the emitter's signal and synchronises the left and right eye shutters with the projected image.

3D passive glasses
> Passive glasses do not require a power source to work. Light with left-hand polarisation can pass through the left lens and light with right hand polarisation can pass through the right-hand lens. These glasses are used in conjunction with another device which polarizes the image, such as a ZScreen.

4

4K-UHD
> The 4K-UHD resolution of 3840 × 2160 is the dominant 4K resolution used in the consumer media and display industries. This resolution has an aspect ratio of 16 :9, with 8,294,400 total pixels.

A

Adjust lines
> A pattern applied to the image where its edge is to be blended with another image. Adjust lines are used to position the projectors in the array during the edge blend process.

Anamorphic lens
> A special lens which, when used with the TheaterScope aspect ratio, allows watching 2.35:1 content packed in a 16:9 source.

Aperture
> The opening of the lens that determines the angle through which light travels to come into focus.

Aspect ratio

The proportional relationship between the width and the height of the projected image. It is represented by two numbers separated by a colon, indicating the ratio of image width and height respectively: for example, 16:9 or 2.35:1. Not to be confused with resolution.

B

Blanking (projection)

The ability to intentionally turn off, that is, set to black, areas around the edges of the projected image. It is sometimes referred to as "curtains" since it can be used to blank an area of image that literally falls on the curtains at the side of the screen in a movie theater. Usually no image resizing or geometric correction takes place and the "blanked" part of the image is lost. Not to be confused with horizontal and vertical blanking (video signal).

Blanking (video signal)

The section of the video signal where there is no active video data. Not to be confused with blanking (projection).

Blend region

The area of the image that is to overlap with another image in an edge blend setup. Sometimes called overlapping region.

Brightness (electronic control)

A control which adds a fixed intensity value to every pixel in the display, moving the entire range of displayed intensities up or down, and is used to set the black point in the image (see Contrast). In Component Video signals, brightness is the same as luminance.

Brightness (optical)

Describes how 'bright' an image that is projected onto a screen appears to an observer.

C

C

Also known as 'Chrominance', this is the component, or pair of components, of a Component Video signal which describes color difference information.

Chrominance

Also known as 'C', this is the component, or pair of components, of a Component Video signal which describes color difference information.

Color difference

In Component Video signals, the difference between specified colors and the luminance component. Color difference is zero for monochrome images.

Color gamut

The spectrum of color available to be displayed.

Color temperature

The position along the black body curve on the chromaticity diagram, normally quoted in Kelvin. It takes into account the preset values for color 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 color temperature).

Notes

Notes

Component video

A three-wire or four-wire video interface that carries the signal split into its basic RGB components or luminance (brightness) and two-color difference signals (YUV) and synchronization signals.

Contrast (electronic control)

The adjustment of the white point of the image without affecting the black point. This increases the intensity range of the displayed image.

Contrast (optical)

The intensity difference between the darkest and lightest areas of the screen.

Cr, Cb

Color difference signals used with 'Y' for digital Component Video inputs. They provide information about the signal color. Not to be confused with Pr, Pb.

Crop

Remove part of the projected image. Alternatively, fit an image into a frame with a different aspect ratio by removing part of the image. The image is resized so that either its length or its width equals the length or width of the frame, while the other dimension has moved outside the frame; the excess area is then cut out.

D

Dark time

The time inserted between frames when using 3D active glasses, to avoid ghosting caused by switching time between left and right eye.

DDC (Display Data Channel)

A communications link between the source and projector. DDC is used on the HDMI, DVI and VGA inputs. The link is used by the source to read the EDID stored in the projector.

Deinterlacing

The process of converting interlaced video signals into progressive ones.

DHCP (Dynamic Host Configuration Protocol)

A network protocol that is used to configure network devices so that they can communicate on an IP network, for example by allocating an IP address.

DMD™ (Digital Micromirror Device™)

The optical tool that transforms the electronic signal from the input source into an optical image projected on the screen. The DMD™ of a projector has a fixed resolution, which affects the aspect ratio of the projected image. A Digital Micromirror Device™ (DMD™) consists of moving microscopic mirrors. Each mirror, which acts as a pixel, is suspended between two posts by a thin torsion hinge. It can be tilted to produce either a bright or dark pixel.

E

Edge blend

A method of creating a combined image by blending the adjoining edges of two or more individual images.

Edge tear

An artifact observed in interlaced video where the screen appears to be split horizontally. Edge tears appear when the video feed is out of sync with the refresh rate of the display device.

EDID (Extended Display Identification Data)

Information stored in the projector that can be read by the source. EDID is used on the HDMI, DVI and VGA inputs, allowing the source to automatically configure to the optimum display settings.

EDTV (Enhanced Definition Television)

A progressive digital television system with a lower resolution than HDTV.

F

Field

In interlaced video, a part of the image frame that is scanned separately. A field is a collection of either all the odd lines or all the even lines within the frame.

Frame

One of the many still images displayed in a sequence to create a moving picture. A frame is made of horizontal lines of pixels. For example, a 1920x1080 frame consists of 1080 lines, each containing 1920 pixels. In analog video frames are scanned one at a time (progressive scanning) or split into fields for each field to be scanned separately (interlaced video).

Frame rate

The number of frames shown per second (fps). In TV and video, a frame rate is the rate at which the display device scans the screen to "draw" the frame.

Frame rate multiplication

To stop low frame rate 3D images from flickering, frame rate multiplication can be used, which increases the displayed frame rate by two or three times

G

Gamma

A nonlinear operation used to code and decode luminance. It originates from the Cathode Ray Tube technology used in legacy television sets.

Ghosting

An artifact in 3D image viewing. Ghosting occurs when an image intended for one eye is partially seen by the other eye. Ghosting can be removed by optimizing the dark time and sync delay.

Notes

H

HDCP (High-bandwidth Digital Content Protection)
　　An encryption scheme used to protect video content.

HDTV (High Definition Television)
　　A television system with a higher resolution than SDTV and EDTV. It can be transmitted in various formats, notably 1080p and 720p.

Hertz (Hz)
　　Cycles per second.

Horizontal Scan Rate
　　The rate at which the lines of the incoming signal are refreshed. The rate is set by the horizontal synchronization from the source and measured in Hertz.

Hs + Vs
　　Horizontal and vertical synchronization.

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

I

Interlacing
　　A method of updating the image. The screen is divided in two fields, one containing every odd horizontal line, the other one containing the even lines. The fields are then alternately updated. In analog TV interlacing was commonly used as a way of doubling the refresh rate without consuming extra bandwidth.

Interleaving
　　The alternation between left and right eye images when displaying 3D.

L

LED (Light Emitting Diode)
　　An electronic component that emits light.

Letterboxing
　　Black margins at the top and bottom of the image. Letterboxing appears when a wider image is packed into a narrower frame without changing the original aspect ratio.

Lumen

A photometric unit of radiant power. For projectors, it is normally used to specify the total amount of emitted visible light.

Luminance

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

N

Noise

Electrical interference displayed on the screen.

NTSC (National Television Standards Committee)

The United States standard for television - 525 lines transmitted at 60 interlaced fields per second

O

OSD (on-screen display)

The projector menus allowing you to adjust various settings.

Overlapping region

The area of the image that is to overlap with another image in an edge blend setup. Sometimes called overlapping region.

P

PAL (Phase Alternate Line)

The television system used in the UK, Australia and other countries - 625 lines transmitted at 50 interlaced fields per second.

Pillarboxing

Black margins at the left and right of the image. Pillarboxing appears when a narrower image is packed into a wider frame without changing the aspect ratio.

Pixel

Short for Picture Element. The most basic unit of an image. Pixels are arranged in lines and columns. Each pixel corresponds to a micromirror within the DMD™; resolutions reflect the number of pixels per line by the number of lines. For example, a 1080p projector contains 1080 lines, each consisting of 1920 pixels.

Pond of mirrors

Area around the periphery of the DMD™ containing inactive mirrors. The pond of mirrors may cause artifacts, for example during the edge blending process.

Pr, Pb
Color difference signals used with 'Y' for analog Component Video inputs. They provide information about the signal color. Not to be confused with Cr, Cb.

Primary colors
Three colors any two of which cannot be mixed to produce the third. In additive color television systems the primary colors are red, green and blue.

Progressive scanning
A method of updating the image in which the lines of each frame are drawn in a sequence, without interlacing.

Pulldown
The process of converting a 24 fps film footage to a video frame rate (25 fps for PAL/SECAM, 30 fps for NTSC) by adding extra frames. DP projectors automatically carry out reverse pulldown whenever possible.

R

Resolution
The number of pixels in an image, usually represented by the number of pixels per line and the number of lines (for example, 1920 x 1200).

RGB (Red, Green and Blue)
An uncompressed Component Video standard.

S

Saturation
The amount of color in an image.

Scope
An aspect ratio of 2.35:1.

SDTV (Standard Definition Television)
An interlaced television system with a lower resolution than HDTV. For PAL and SECAM signals, the resolution is 576i; for NTSC it is 480i.

SECAM (Sequential Color with Memory)
The television system used in France, Russia and some other countries - 625 lines transmitted at 50 interlaced fields per second.

Smooth picture
A feature that can display a higher resolution source than the native resolution of the projector without loosing any pixel data.

SX+
A display resolution of 1400 x 1050 pixels with a 4:3 screen aspect ratio. (Shortened from SXGA+, stands for Super Extended Graphics Array Plus.)

Synchronization

A timing signal used to coordinate an action.

T

Test pattern

A still image specially prepared for testing a projection system. It may contain various combinations of colors, lines and geometric shapes.

TheaterScope

An aspect ratio used in conjunction with a special anamorphic lens to display 2.35:1 images packed into a 16:9 frame.

Throw distance

The distance between the screen and the projector.

Throw ratio

The ratio of the throw distance to the screen width.

TRC (Throw ratio correction)

A special number used in calculating throw distances and throw ratios when the image does not fill the width of the DMD™. TRC is the ratio of the DMD™ aspect ratio to the image source aspect ratio: TRC = DMD™ aspect ratio / Source aspect ratio TRC is only used in calculations if it is greater than 1.

U

UXGA

A display resolution of 1600 x 1200 pixels with a 4:3 screen aspect ratio. (Stands for Ultra Extended Graphics Array.)

V

Vertical Scan Rate

The rate at which the frames of the incoming signal are refreshed. The rate is set by the vertical synchronization from the source and measured in Hertz.

Vignetting

Optical cropping of the image caused by the components in the projection lens. This can happen if too much offset is applied when positioning the image using the lens mount.

Vista

An aspect ratio of 1.66:1.

W

WUXGA

A display resolution of 1920 x 1200 pixels with a 16:10 screen aspect ratio. (Stands for Widescreen Ultra Extended Graphics Array.)

Y

Y

This is the luminance input (brightness) from a Component Video signal.

YUV

Color difference signals used with 'Y' for analog Component Video inputs. They provide information about the signal color. Not to be confused with Cr, Cb.

Z

ZScreen

A special kind of light modulator which polarizes the projected image for 3D viewing. It normally requires that images are projected onto a silver screen. The ZScreen is placed between the projector lens and screen. It changes the polarization of the projected light and switches between left- and right-handed circularly polarized light at the field rate.

DIGITAL PROJECTION

A Delta Associate Company