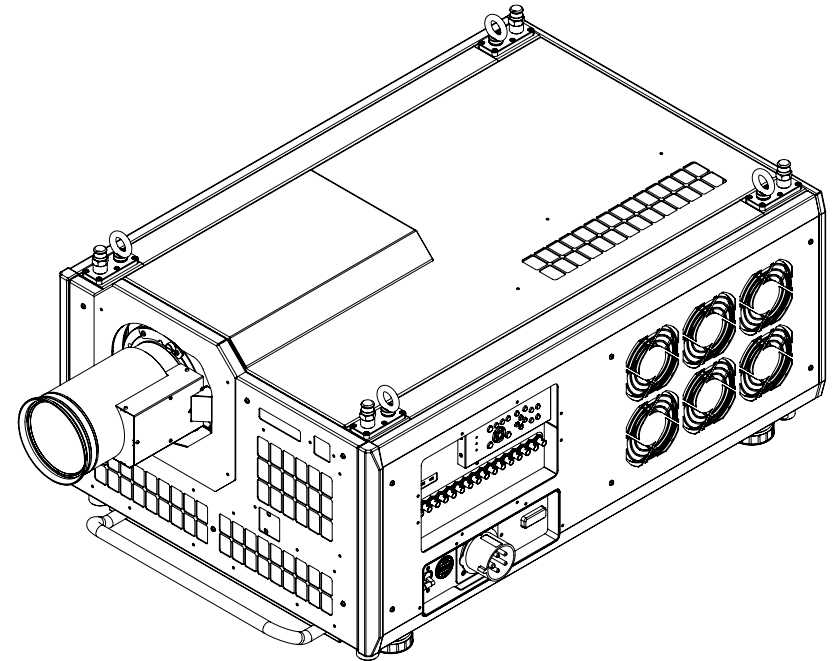


## ***INSIGHT Laser 8K Series*** High Brightness Digital Video Projector

- ▶ INSTALLATION AND QUICK-START GUIDE
- ▶ CONNECTION GUIDE
- ▶ OPERATING GUIDE
- ▶ REFERENCE GUIDE



## About This Document

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

### Symbols used in this manual

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



**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.



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



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



**LIGHT HAZARD WARNING:** this symbol indicates that there is a danger of exposure to intensive light that may result in personal injury 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.

### Legal notice

Trademarks and trade names mentioned in this document remain the property of their respective owners. Digital Projection disclaims any proprietary interest in trademarks and trade names other than its own.

### Notes

# Laser Information

**DIGITAL PROJECTION**

Model / Modèle  
型号/型號

Part No. / Numéro de pièce  
零部件号/零部件號

Serial No. / Numéro de série.  
序号/序號

Power / Puissance  
电源/電源

200-240VAC 50/60Hz 20A  
Not for China / 非中國使用 / 非中國型號

电源 : 200-230VAC 50/60Hz 20A  
Only for China/僅限中國/仅限中国

警告: 此为A 级产品, 在室内环境中, 该产品可能会造成无线电干扰, 在这种情况下, 可能要求用户对干扰采取切实可行的措施。  
警告使用本, 避免早期的电源线, 在居住的环境中使用时, 可能会造成干扰, 在这种情况下, 使用本會要求採取某些適當的措施。

**WARNING** Isolate mains before removing cover.  
**ATTENTION** Isoler les conductes avant d'enlever le couvercle.  
注意/注意 打开前必须先切断电源/打開前必须先切斷主電源

To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.  
Pour réduire le risque d'incendie ou d'électrocution, n'exposez pas cet équipement à la pluie ou à l'humidité.  
降低火災或電擊的風險, 不要在雨中或潮濕環境中使用此設備。  
降低火災或電擊的風險, 不要在雨中或潮濕環境中使用此設備。

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. (2) This device must accept any interference received, including interference that may cause undesired operation.  
CAN ICES-3(A)/NMB-3(A)

Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser notice No.50, Dated June 24, 2007  
Class 1 Laser Product  
IEC EN 60825-1:2014

**Laser Radiation**  
Avoid direct eye exposure  
Class 1B Laser product  
Wave length: 400-450nm  
Max output: 330mW  
IEC EN 60825-1:2007  
IEC EN 60825-1:2014

**Rayonnement Laser**  
Évitez d'exposer directement les yeux  
Produit laser de classe 1B  
Longueur d'onde: 400-450nm  
Sortie maximale: 330mW  
IEC EN 60825-1:2007  
IEC / EN 60825-1:2014

激光辐射  
避免直视光束  
Class 1B Laser Product  
波長: 400-450nm  
最大輸出: 330mW  
IEC 60825-1:2007 / GB 7247.1-2002  
第一類激光產品  
IEC / EN 60825-1:2014

雷射輻射  
請勿直接照射  
Class 1B Laser Product  
波長: 400-450nm  
最大輸出: 330mW  
IEC / EN 60825-1:2007  
第一類雷射產品  
IEC / EN 60825-1:2014

Risk Group: 3  
Warning!  
Do not look into the beam.  
No direct eye exposure to the beam is permitted.  
RG3 IEC EN 62471-S2015  
Hazard Distance : Refer to Manual

Groupe de Risque 3  
Attention!  
Ne pas regarder dans le faisceau.  
Pas d'exposition directe des yeux au faisceau est autorisée.  
RG3 IEC EN 62471-S2015  
Distance de danger : Se reporter au manuel

Digital Projection Limited  
英国律佳有限公司  
英國律佳有限公司

Greenside Way, Middleton Manchester, UK, M24 1JX  
英國 曼徹斯特 格林賽德路  
英國 曼徹斯特 格林賽德路

Made in China  
Fabriqué en Chine  
中國製造  
中國製造

Name of Product: DLP Projector  
Nom du produit: DLP Projecteur  
产品名称: 数字投影机  
產品名稱: 數位投影機

For Office Use  
Pour utilisation au bureau  
仅供办公室使用  
仅供办公室使用

User Guide  
Follow link for Projector Documentation  
Suivez le lien pour accéder à la documentation du projecteur  
Product documentation finden Sie unter dem Link:  
この二次元QR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  
請扫描条码索取投影机文档  
프로그래밍 설명서를 보려면 QR코드를 스캔하십시오

WJ 1010  
2248110

The outlined section of the product label above provides information about the laser light sources used within the projector.

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

**Notes**

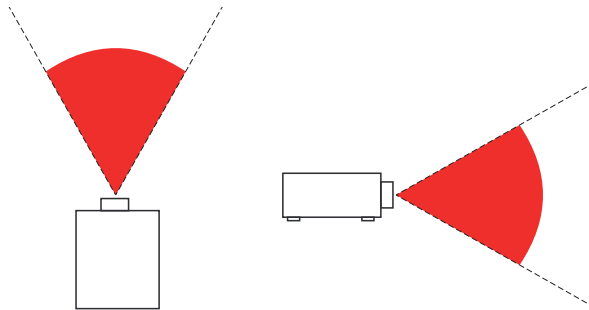
## Risk Group 3 Information

### Light hazard warning



Failure to comply with the following may result in serious injury:

- No direct exposure to the beam is permitted, RG3 IEC 62471-5:2015.
- Operators control access to the beam within the hazard distance or install the projector at sufficient height to prevent exposures of spectators' eyes within the hazard distance.



**Fig. 1: hazard distance**

The hazard distance (**Fig. 1**) is the distance measured from the projection lens at which the intensity or energy per unit of surface is lower than the applicable exposure limit on the cornea or skin. If the person is within the hazard distance, the beam is considered unsafe for exposure.

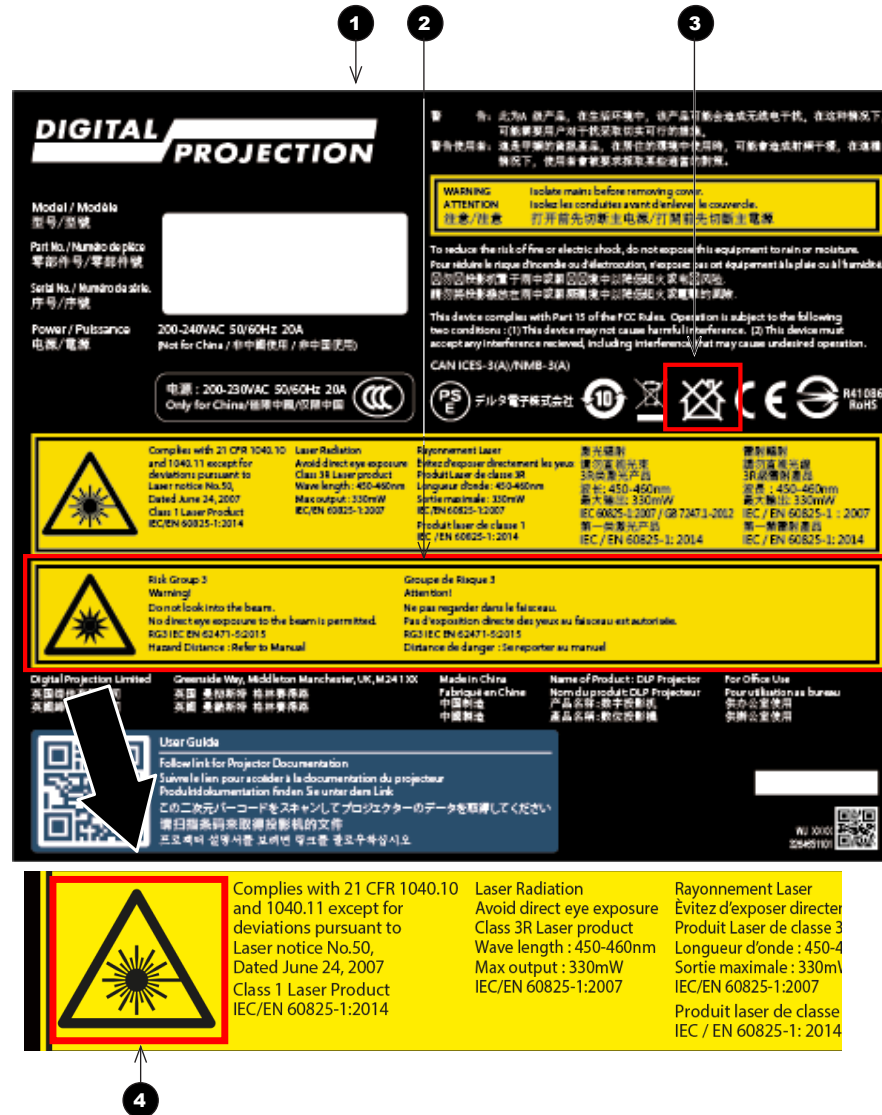
**The hazard distance for this projector is 12m.**

Notes

### Light hazard labels on the body of the projector

Light hazard labelling is part of the product label.

- 1 Product label
- 2 Risk Group 3 label
- 3 Not For Home Use logo
- 4 Hazard Warning symbol



**Notes**

## Introduction

**Congratulations on your purchase of this Digital Projection product.**

Your projector has the following key features:

- 8K (7680 x 4320) resolution up to 60 fps.
- Dual laser light source for long-life low-maintenance operation.
- 16x3G-SDI or 4x12G-SDI input capability.
- Colour management includes Colourmax.
- HDR and HLG management.
- Blanking control for custom input window sizing.
- Built-in web served control application.
- Control via LAN and RS232.
- Motorised lens mount.

A serial number is located on the product label. Record it here:

**Notes**

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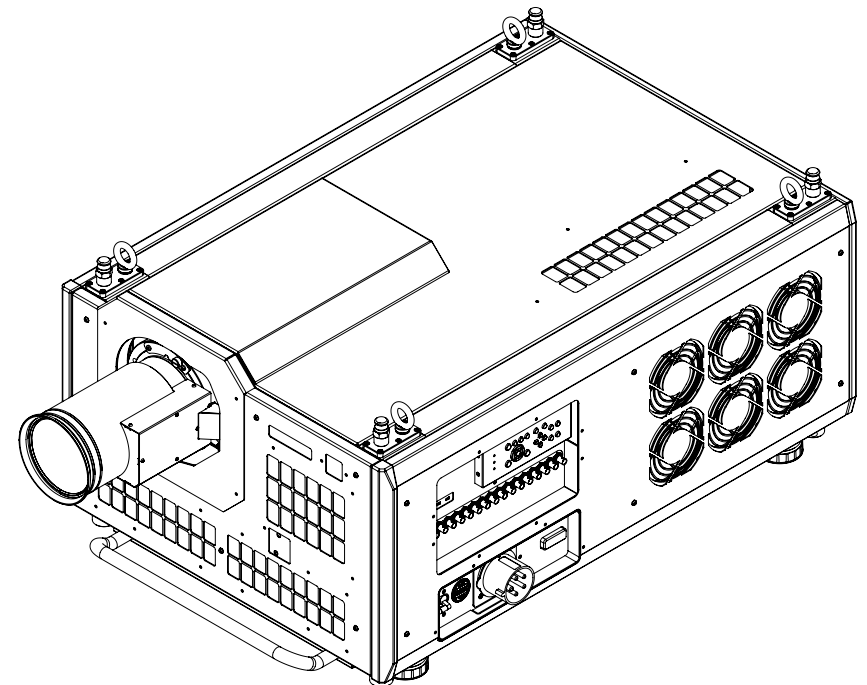
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***INSIGHT Laser 8K Series***  
High Brightness Digital Video Projector

▶ INSTALLATION AND QUICK-START GUIDE



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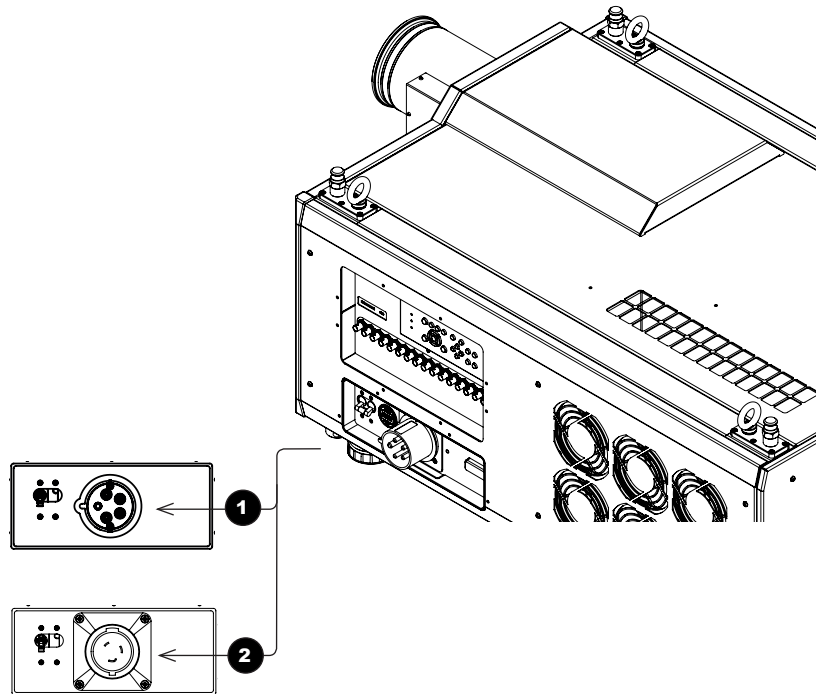
## Connecting The Power Supply

Rest of the world:




- 1 Firmly push the mains connector into the socket.

USA only:

- 2 Firmly push the mains connector into the socket.  
Rotate the connector 20° clockwise to lock it in place



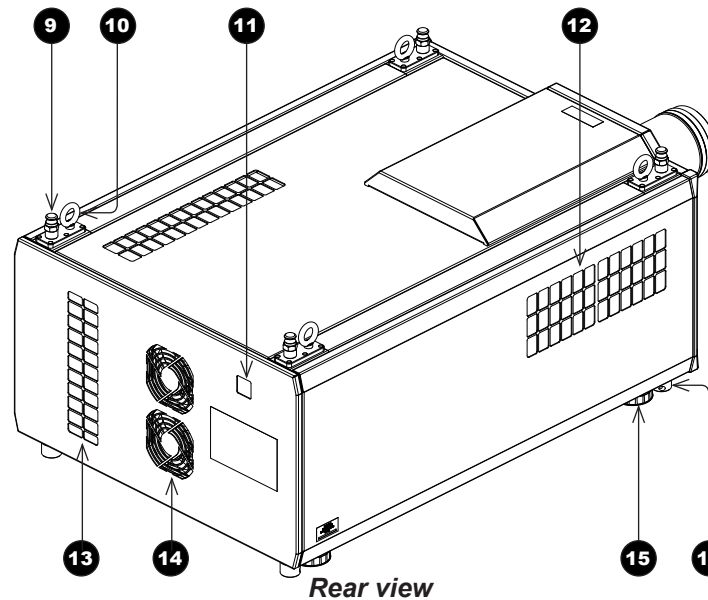
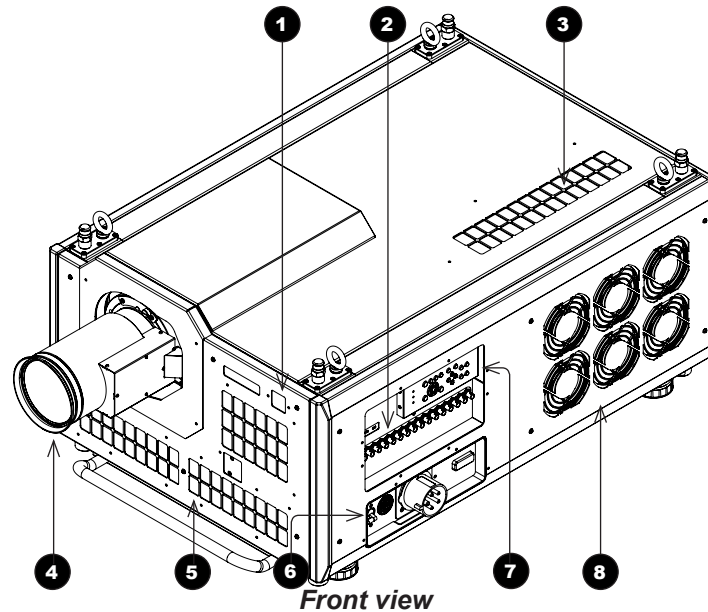
### Notes

-  Use only the power cable provided.
-  Ensure that the power outlet includes a ground connection as this equipment **MUST** be earthed.
-  Handle the power cable carefully and avoid sharp bends. Do not use a damaged power cable.


## Projector Overview

### Front and rear views

- 1** Front IR window
- 2** Inputs
- 3** Air inlet  
An identical air inlet is located at the bottom of the projector, right below this one.
- 4** Lens
- 5** Air inlets
- 6** Mains plug with switch and voltage meter
- 7** Keypad
- 8** Air outlet
- 9** Top stacking point  
There are four top stacking points: one in each corner.
- 10** Lifting ring  
There are four lifting rings: one in each corner.
- 11** Rear IR window
- 12** Air inlet
- 13** Air inlet
- 14** Air outlet
- 15** Adjustable foot  
There are four adjustable feet: one in each corner.
- 16** Bottom stacking point  
There are four bottom stacking points: one in each corner.



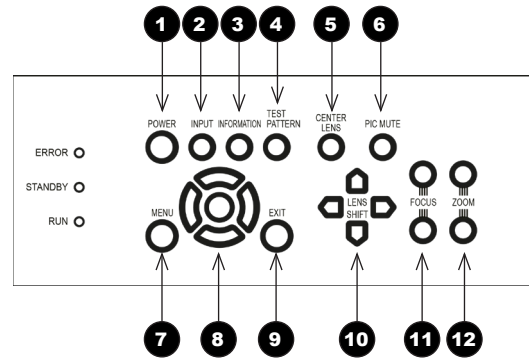
### Notes

 The air inlet at the bottom of the projector can be seen in the illustration at the beginning of [Positioning The Screen And Projector](#) further in this guide.

## Keypad

### Keypad references

- 1 POWER**  
Switches the projector on and off (STANDBY).
- 2 INPUT**  
Switches to the next input source.
- 3 INFORMATION**  
Displays .
- 4 TEST PATTERN**  
Cycles through the test patterns *...Off, White, Black, Red, Green, Blue, CheckerBoard, Grid, ColorBars, Cyan, Yellow, Magenta, Ramp...*
- 5 CENTER LENS**  
Centers the lens.
- 6 PIC MUTE**  
Switches the laser off/on.
- 7 MENU**  
Displays and exits the OSD.
- 8 Arrow buttons & ENTER**  
Navigation buttons used to highlight menu entries in the OSD. 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**  
Each of these buttons moves the lens in the specified direction.
- 11 FOCUS plus and minus buttons**  
Used to move the focus in and out.
- 12 ZOOM plus and minus buttons**  
Used to zoom in and out.



### Notes

**Keypad indicators**

**1**

**ERROR**

A red indicator that shows the following patterns:

Off = No Error

Single flash followed by a pause = Lamp abnormality

Double flash followed by a pause = Uncovered lamp cover

Triple flash followed by a pause = Fan abnormality

Four flashes followed by a pause = Overheat

A continuous light = System abnormality

**2**

**STANDBY**

A green indicator that shows a continuous light when standby mode is activated

**3**

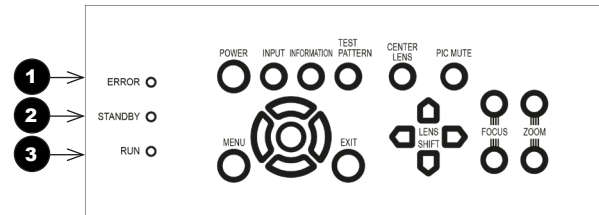
**RUN**

A blue indicator that shows the following patterns:

Off = Power is off

Flashing = Projector is cooling down during power off, or warming up during power on

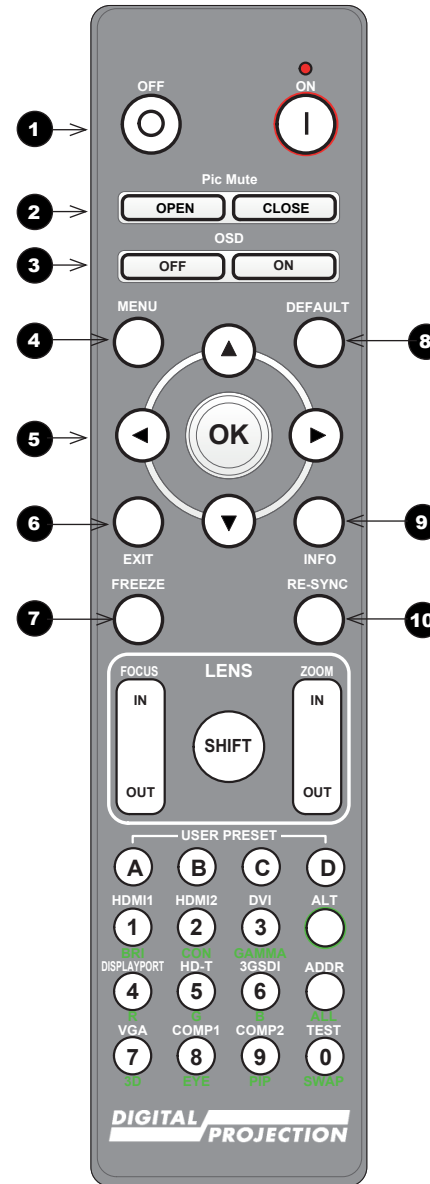
A continuous light = Power is on



**Notes**

### Remote control

- 1 Power ON/OFF**  
Turns the projector on and off.  
To turn the projector off, press the OFF button twice within five seconds.
- 2 Pic Mute OPEN / CLOSE**  
Shows and hides the projected image.
- 3 OSD ON / OFF**  
Enables and disables screen timeout messages and showing the OSD during projection.
- 4 MENU**  
Access the projector OSD (on-screen display). If the OSD is open, press this button to go back to the previous menu.
- 5 Navigation (arrows and OK)**  
Navigate through the menus with the arrows, confirm your choice with **OK**.  
In lens adjustment modes, the arrows are used to move, zoom or focus the lens. See **11** below.  
In lens adjustment modes, or when the OSD is not showing, the **OK** button switches between modes: **Shift Adjustment** and **Zoom / Focus Adjustment**.
- 6 EXIT**  
Close the current OSD page and return to the level above.
- 7 FREEZE**  
Freeze the current frame.
- 8 DEFAULT**  
Restore default settings.
- 9 INFO**  
Access information about the projector.
- 10 RE-SYNC**  
Re-synchronise with the current input signal.

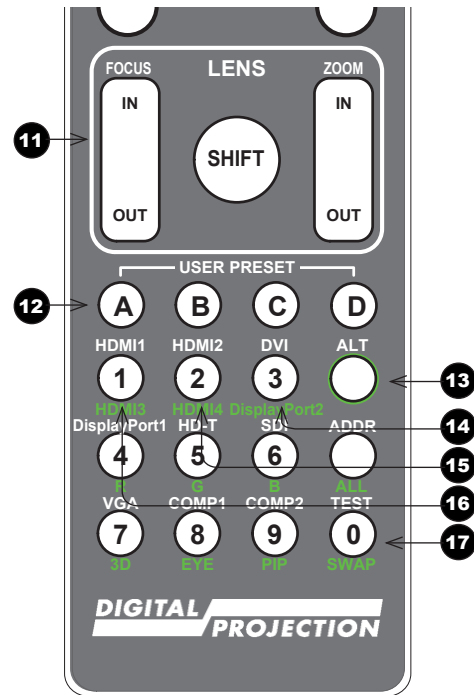


### Notes

- Not all keys are used on this projector.
- You can use the remote control with a standard TRS cable connected to the Wired Remote In connector.

*Remote control continued*

- 11 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.
- 12 USER PRESET A, B, C, D**  
 Load user presets.
- 13 ALT**  
 Press and hold this button to access alternative functions for all buttons with a green label.
- 14 DVI / DisplayPort2 / numeric input 3**  
 There is no DVI or DisplayPort2 input on this projector.
- 15 HDMI 2 / HDMI 4 / numeric input 2**  
 There is no HDMI 2 or HDMI 4 input on this projector.
- 16 HDMI 1 / HDMI 3 / numeric input 1**  
 There is no HDMI 1 or HDMI 3 input on this projector.
- 17 TEST / SWAP / numeric input 0**  
 Show a test pattern. Press again to show the next test pattern:  
*...Off, White, Black, Red, Green, Blue, CheckerBoard, Grid, ColorBars, Cyan, Yellow, Magenta, Ramp...*



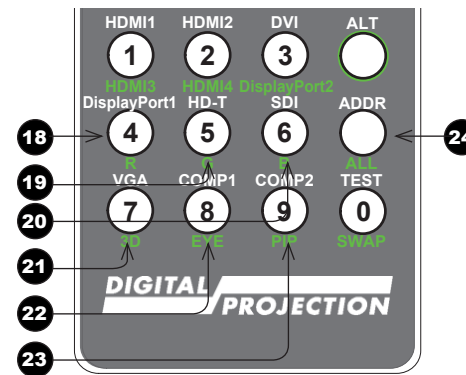
**Notes**

- Not all keys are used on this projector. The unused keys are grayed out.
- You can use the remote control wirelessly or with a standard TRS cable connected to the Wired Remote In connector.
- When adjusting focus or zoom, UP and LEFT will focus/zoom in, DOWN and RIGHT will zoom out. When adjusting shift, each arrow key moves the image in the corresponding direction.
- This projector does not use the following options on the remote:  
 HDMI1, HDMI2, HDMI3, HDMI4, DVI, DisplayPort2, DisplayPort1, HD-T, SDI, VGA, 3D, COMP 1, EYE and COMP 2.



**Remote control continued**

- 18 DisplayPort1 /R/ numeric input 4**  
There is no DisplayPort1 input on this projector.
- 19 HD-T /G/ numeric input 5**  
There is no HDBaseT input on this projector.
- 20 SDI /B/ numeric input 6**  
There is no SDI input on this projector.
- 21 VGA /3D/ numeric input 7**  
There is no VGA input on this projector.  
There is no 3D function on this projector.
- 22 COMP1 /EYE/ numeric input 8**  
There is no COMP1 input on this projector.  
There is no EYE function on this projector.
- 23 COMP2 /PIP/ numeric input 9**  
There is no COMP2 input on this projector.  
There is no PIP function on this projector.
- 24 ADDR / ALL**  
Assign and unassign an IR remote address.  
**To assign an address:**
  1. Press and hold this button until the indicator starts flashing.
  2. Release this button and while the 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,**
  - Press and hold **ALT** and this button simultaneously until the indicator flashes to confirm the change.



**Notes**

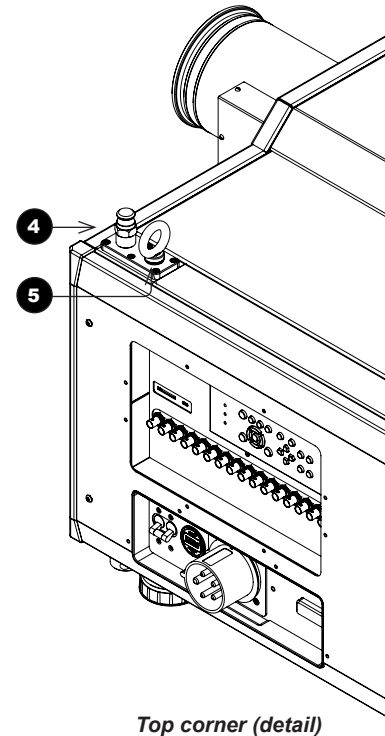
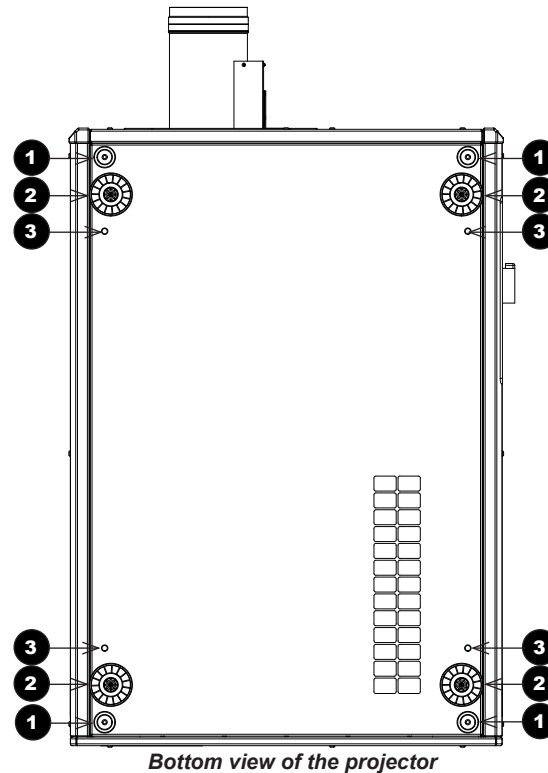
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*HDMI1, HDMI2, HDMI3, HDMI4, DVI, DisplayPort2, DisplayPort1, HD-T, SDI, VGA, 3D, COMP 1, EYE and COMP 2.*

## 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 drawings below shows the feet for table mounting, and the fixing holes for ceiling mounting. Also shown is one of four rings each located in the top corners. These can be used for lifting a single projector.

- 1** Four stacking points
- 2** Four adjustable feet
- 3** Four M10 holes for ceiling mount  
The screws should not penetrate more than 18 mm into the body of the projector.
- 4** Stacking point at the top of the projector
- 5** Lifting ring (for handling a single projector)  
The rings can be removed to reveal M10 x 18 deep holes for ceiling mounting.



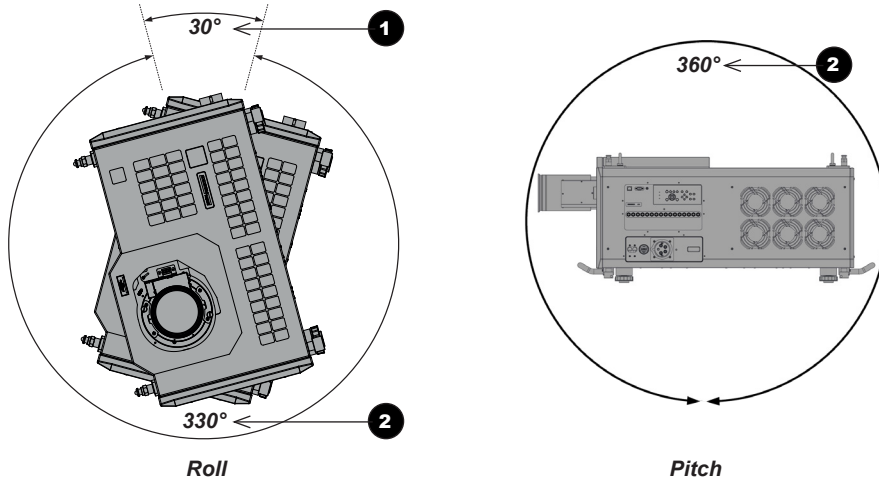
### Notes

-  Always allow the projector to cool for 5 minutes before disconnecting the power or moving the projector.
-  Ensure that there is at least 30 cm (12 in) of space between the ventilation outlets and any wall, and 10 cm (4 in) on all other sides.

**Tilt**

The projector can be operated in numerous positions.

It is recommended to position the projector in portrait mode with inputs facing upward, as shown in the diagram:



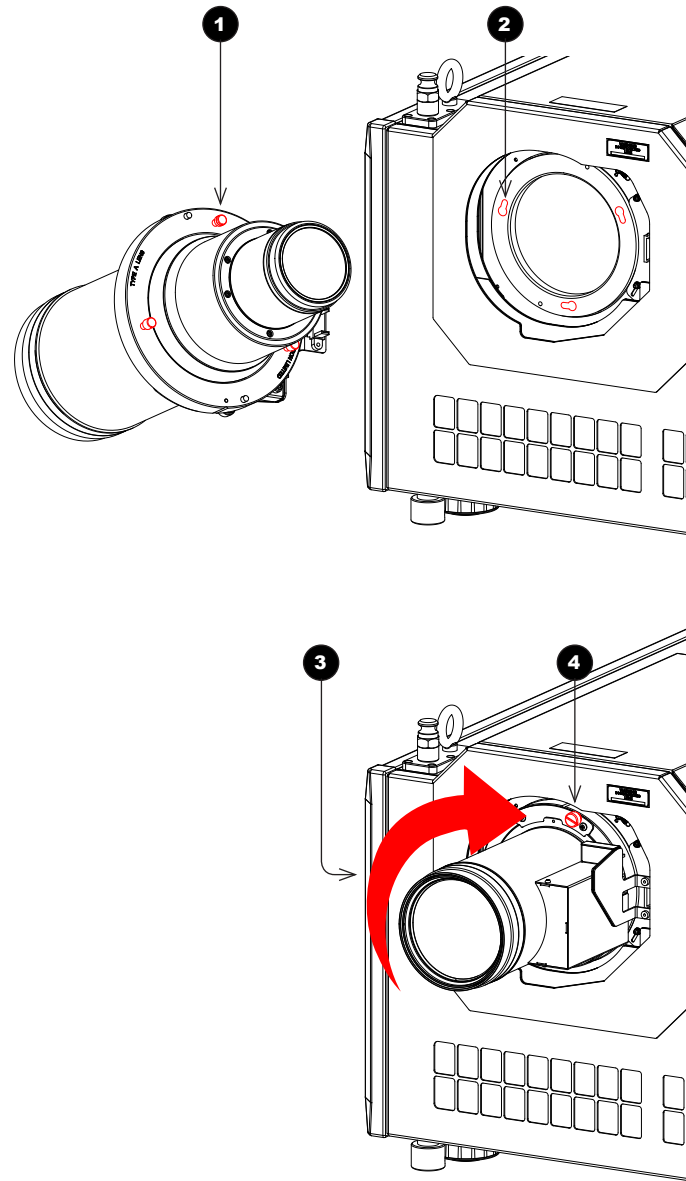
- 1** Recommended positions, inputs side up
- 2** Also possible

**Notes**

## Essential Maintenance







### Fitting the lens

1. Insert the lens into the mount.  
Engage the three **locating studs** **1** into the corresponding **slots** **2** on the mount.
2. **Rotate the lens clockwise** **3** until the studs slide all the way into the slots.
3. Tighten the two **fixing screws** **4** on the lens collar.



To remove the lens, reverse the above procedure.

### Notes

-  Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.
-  When changing the lens, avoid using excessive force as this may damage the equipment.
-  Take care to preserve the original lens packaging and protective caps for future use.
-  The projector will not power on without the lens fitted.
-  Before turning on the projector, please ensure the protective caps are removed from the front and rear of the lens.
-  The two fixing screws must be tightened to at least a torque of 0.5 N-m using a screwdriver. Loose screws might lead to the lens falling off.

## Fitting a lens hood

A lens hood must be fitted to the lens (P/N 115-632) for use in the USA.

1. **Place the adaptor ring to the rear of the lens case.**

① Use the guide pin to ensure it is located correctly.

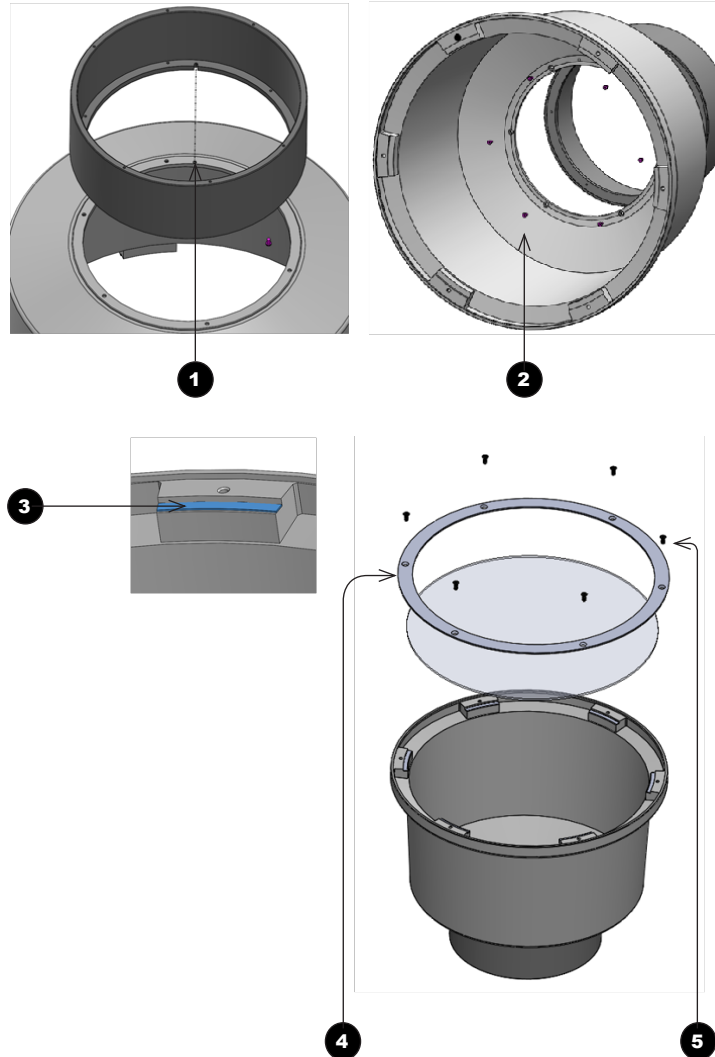
2. **Insert and tighten the six fixing screws** ② to secure the adaptor ring to the lens case.

3. **Place the glass lens over the lens case.**


③ Ensure the glass is located correctly.


4. **Place the plate over the glass lens.** ④


5. **Insert and tighten the six fixing screws** ⑤ to secure the plate and glass lens to the lens case.





### Notes


 **Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.**

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

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

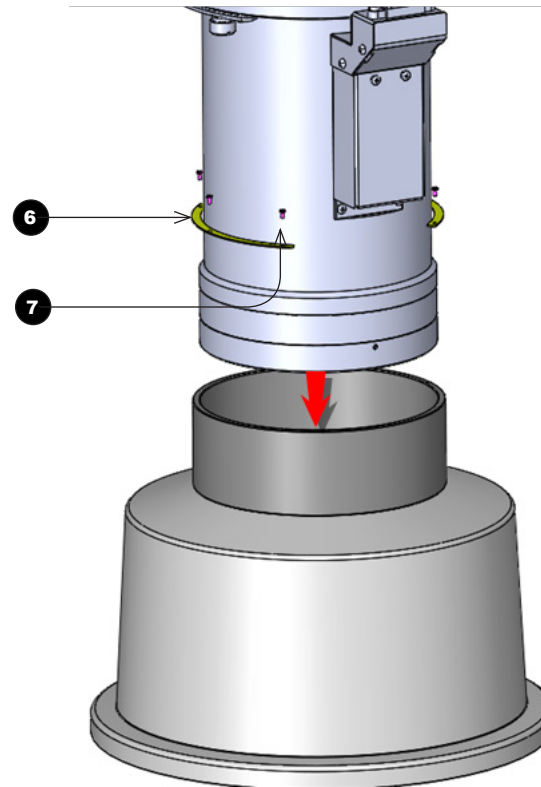
 *The projector will not power on without the lens fitted.*

 *Before turning on the projector, please ensure the protective caps are removed from the front and rear of the lens.*

 **The two fixing screws must be tightened to at least a torque of 0.5 N-m using a screwdriver. Loose screws might lead to the lens falling off.**

6. **Insert the lens into the adaptor ring.**

**6** Push-fit the lens until the plate ring is located against the adapter ring.

7. **Insert and tighten the six fixing screws **7**** to secure the lens and to the lens hood.**Notes**

**Before changing the lens, always make sure the projector is switched off and fully disconnected from its power supply.**



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



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



*The projector will not power on without the lens fitted.*



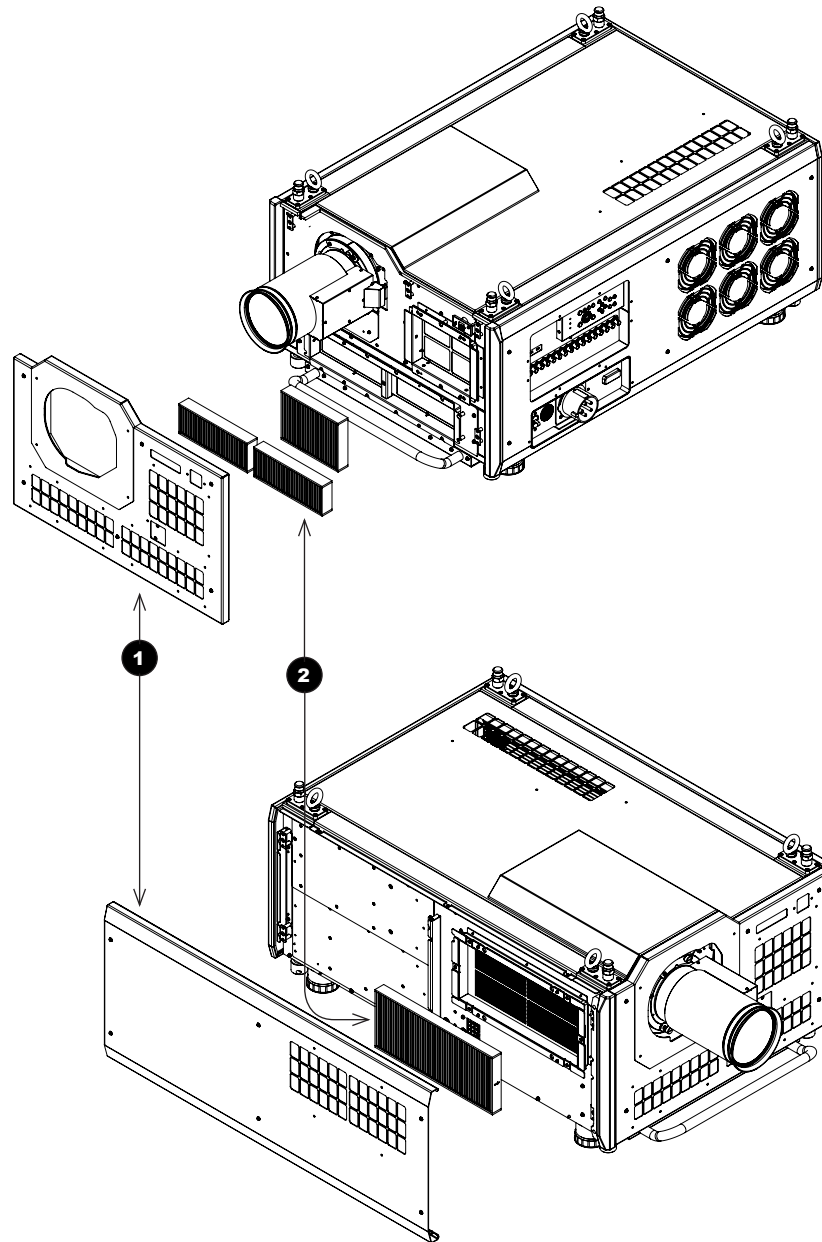
*Before turning on the projector, please ensure the protective caps are removed from the front and rear of the lens.*






**The two fixing screws must be tightened to at least a torque of 0.5 N-m using a screwdriver. Loose screws might lead to the lens falling off.**

## Replacing the filters

1. Loosen the six captive screws, then remove the front/side **panel 1**.
2. Replace the **filters 2**.
3. Reattach the panel and tighten the screws.



### Notes

-  Before changing the filters, always make sure the projector is switched off and fully disconnected from its power supply.
-  When changing the filters, avoid using excessive force as this may damage the equipment.
-  Filters should be replaced as necessary upon visual inspection and in accordance with operating environment.

## Operating The Projector

### Switching the projector on

1. Connect the power cable between the mains supply and the **socket 1**. Switch on at the **ON/OFF switch 2**.
2. Press **ON** on the remote control or the control panel to switch the projector ON. The run indicator on the control panel will flash blue until the projector has warmed up. The light source will light and the shutter will open. The run indicator will show a continuous blue light and the standby indicator will show green when the projector has warmed up.

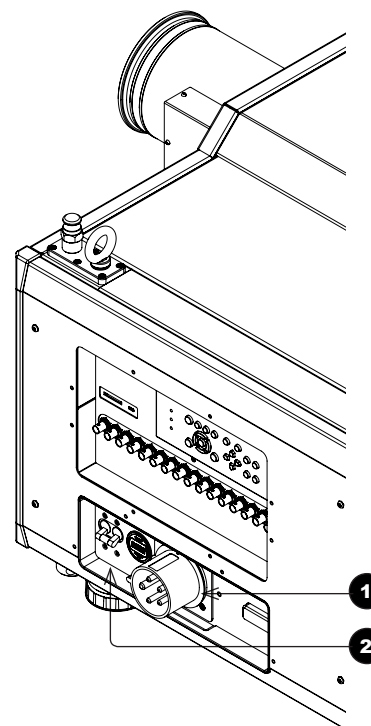
### Switching the projector off

1. Press **OFF** twice on the remote control or the keypad. The run indicator on the control panel will flash blue until the projector has cooled down. The cooling fans will run for a short time until the projector enters STANDBY mode. The run indicator will show a continuous blue light and the standby indicator will show green when the projector has cooled down.
2. If you need to switch the projector off completely, switch off at the mains power switch next to the power connector and then disconnect the power cable from the projector.

### Selecting an input signal


The last selected input remains active until a new input is selected. To select a new input:


1. Connect either a 3G-SDI or 12GSDI image source to the projector. Refer to the "Connection Guide"
2. Select the appropriate resolution:
  1. Press **MENU** to open the On-screen display (OSD).
  2. Use the **UP** and **DOWN** arrow buttons to highlight **Input** from the main menu and press **ENTER/OK**.
  3. Use the **UP** and **DOWN** arrow buttons to highlight **Format** from the input menu and press **ENTER/OK**.
  4. Use the **UP** and **DOWN** arrow buttons to highlight a setting. Choose from **Auto**, **8K**, **4K** or **HD**. Press **ENTER/OK** to confirm your choice.





### Notes

 See also [Connecting The Power Supply](#) earlier in this guide.

 Do not turn off the projector from the power switch or disconnect the power cord while the projector is working or cooling down.

 Use only the power cable provided.

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

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



## Adjusting the lens

The lens can be adjusted using the lens buttons on the keypad or remote control.

On either device, press **FOCUS**, **ZOOM** or **SHIFT**, then use the arrow keys to adjust the lens.

## Adjusting the image

### Orientation

Set the orientation setting from the **OSD** menu:

1. Press **MENU** to open the On-screen display (OSD).
2. Use the **UP** and **DOWN** arrow buttons to highlight **Setup** from the main menu and press **ENTER/OK**.
3. Use the **UP** and **DOWN** arrow buttons to highlight **Projection Mode** from the setup menu and press **ENTER/OK**.
4. Use the **UP** and **DOWN** arrow buttons to highlight a setting. Choose from **Front Desktop**, **Front Ceiling**, **Rear Desktop** or **Rear Ceiling**. Press **ENTER/OK** to confirm your choice.

### Picture

Settings such as **Gamma**, **Brightness** and **Contrast** can be set from the **Image** menu.

1. Press **MENU** to open the On-screen display (OSD).
2. Use the **UP** and **DOWN** arrow buttons to highlight **Image** from the main menu and press **ENTER/OK**.
3. Use the **UP** and **DOWN** arrow buttons to highlight a setting. Press **ENTER/OK** to access the setting menu or use the **RIGHT** and **LEFT** arrow buttons to adjust a setting.

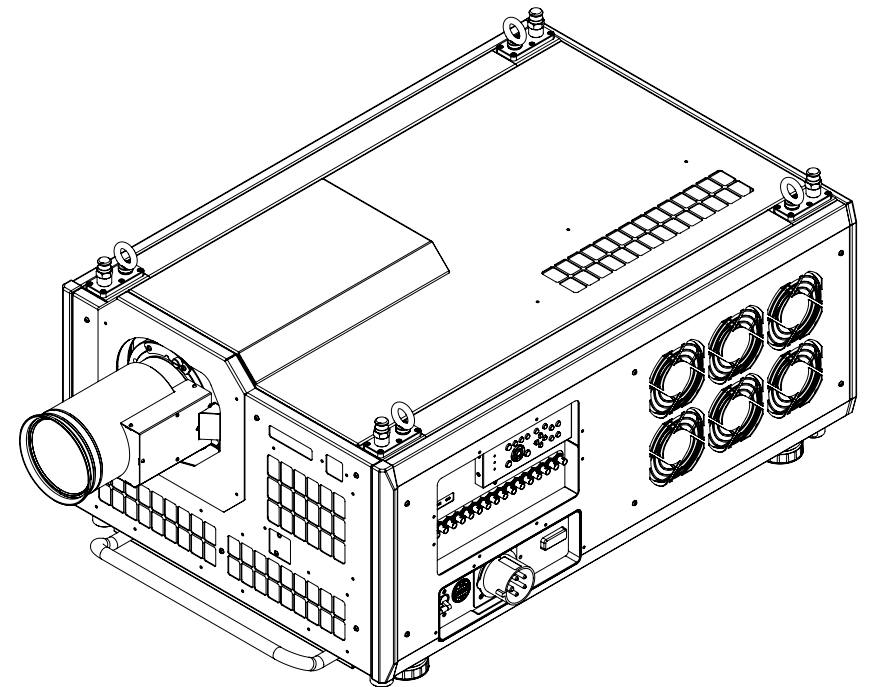
**Notes**



# *INSIGHT Laser 8K Series*

High Brightness Digital Video Projector

## ▶ CONNECTION GUIDE



**IN THIS GUIDE**

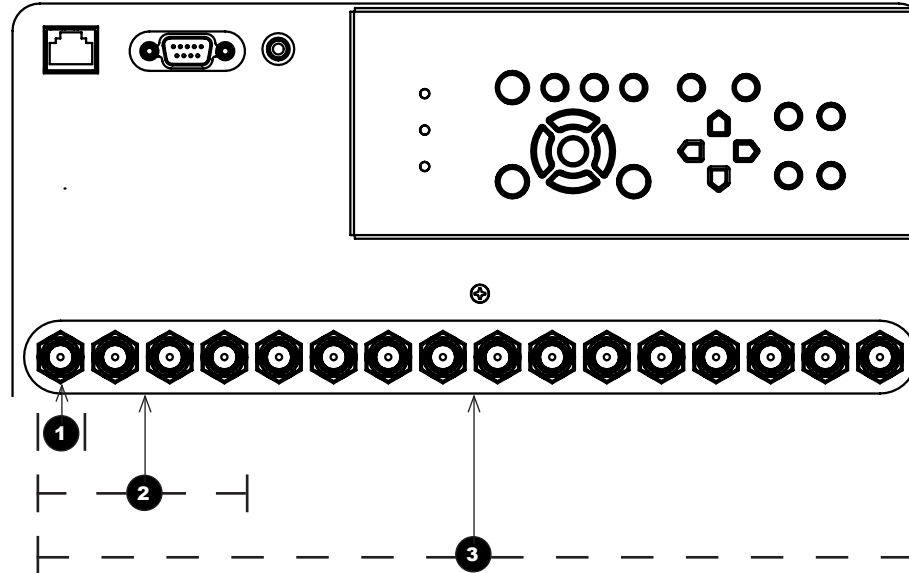
**Signal Inputs**..... 20

**Control Connections** ..... 21

## Signal Inputs

The following inputs are available on the connections panel:

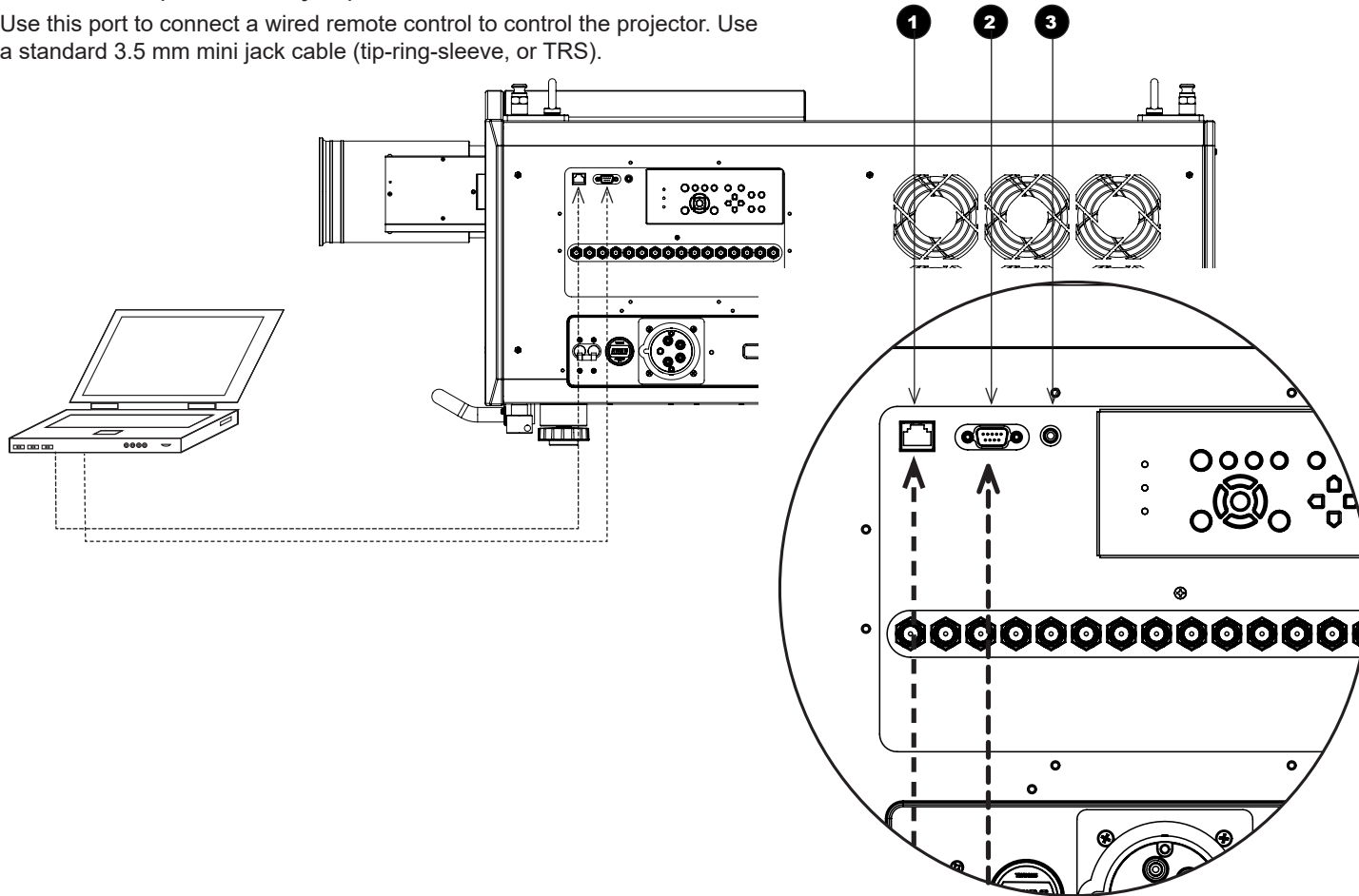
- 1 12G-SDI**  
Insert 1 12G-SDI connector for 4K
- 2 12G SDI or 3G-SDI**  
Insert 4 3G-SDI connectors for 4K  
Insert 4 12G-SDI connectors for 8K
- 3 3G-SDI**  
Insert 16 3G-SDI connectors for 8K



Notes

## Control Connections

- 1 LAN port (LAN)**  
Use this port when controlling the projector in LAN connection from a PC.
- 2 PC control terminal (RS-232)**  
Use this terminal when controlling the projector in serial connection from a PC.
- 2 Wired Remote (3.5 mm mini jack)**  
Use this port to connect a wired remote control to control the projector. Use a standard 3.5 mm mini jack cable (tip-ring-sleeve, or TRS).



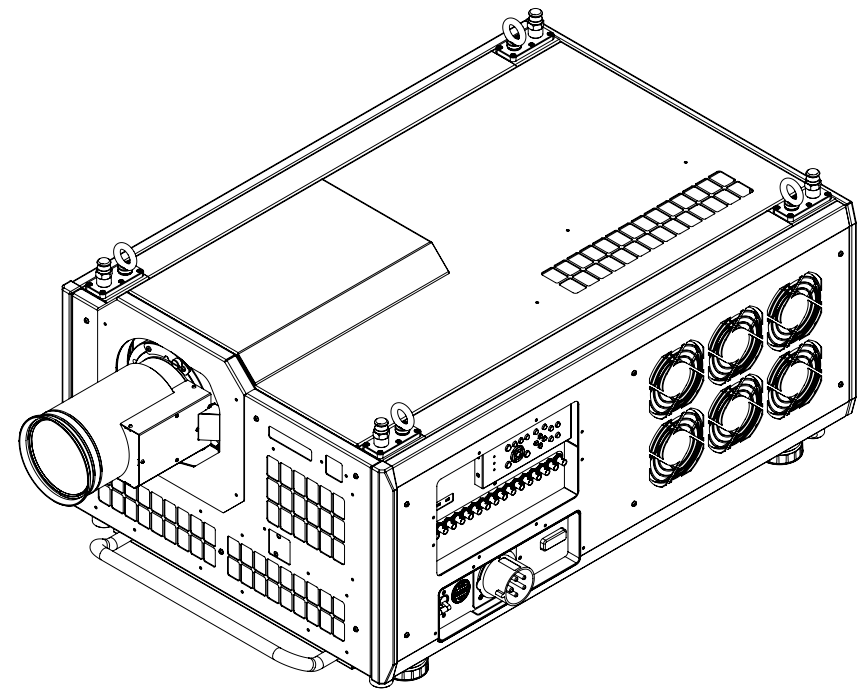
**Notes**

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**DIGITAL**   
**PROJECTION**

***INSIGHT Laser 8K Series***  
High Brightness Digital Video Projector

▶ OPERATING GUIDE



Rev A October 2018

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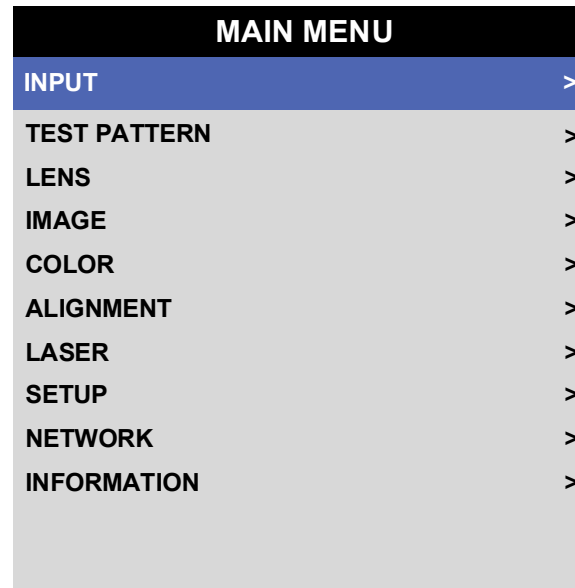
    System Status .....45

    Factory Reset .....45



## Main Menu

- **Input**  
Select an input source:
- **Test Pattern**  
Show a test pattern.
- **Lens**  
Adjust lens zoom and focus, use lens presets.
- **Image**  
Open these menus to access various picture and screen settings.
- **Colour**  
Open these menus to access various colour settings.
- **Alignment**  
Open these menus to access various picture alignment settings.
- **Laser**  
Set laser mode and adjust power.
- **Setup**  
Open these menus to access various projector operational settings.
- **Network**  
Access network settings.
- **Information**  
View your current configuration.



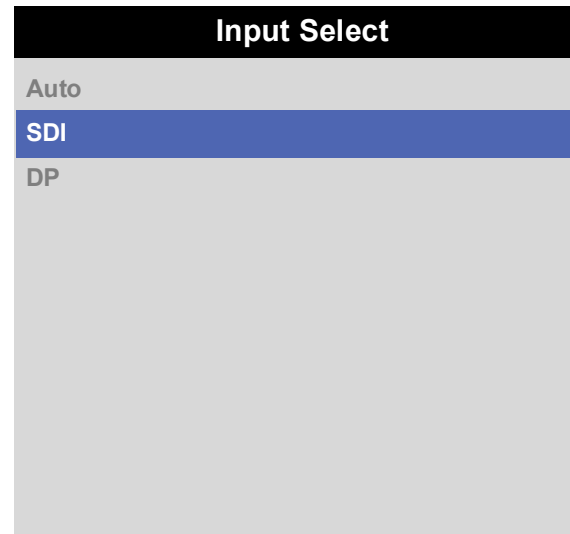
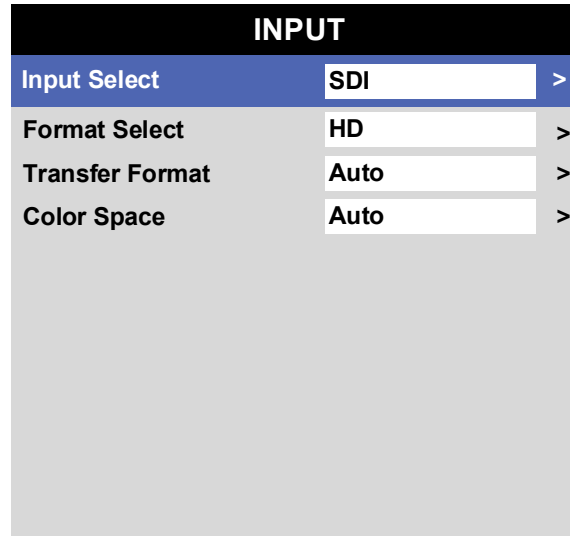
*Notes*

## Input Menu

- **Input Select**  
Open this submenu to select the input type.
- **Format Select**  
Open this submenu to select the resolution for the input.
- **Transfer Format**  
Open this submenu to select the SDI data format.
- **Colour Space**  
Open this submenu to select the input colour space.

### Input Select

This machine can use 3G-SDI or 12G-SDI inputs only. The setting for this menu is SDI.



### Format Select

This machine can project at different resolutions. These appropriate resolution is related to the current SDI connections. See "Connection Guide" to determine the appropriate setting.

Choose from **Auto**, **8K**, **4K** or **HD**

Format Select
Auto
8K
4K
<b>HD</b>
8K 120Hz

### Transfer Format

Choose from **Auto**, **2-SI** or **SQD**

Transfer Format
<b>Auto</b>
2-SI
SQD

### Notes

### Colour Space

In most cases, the **Auto** setting determines the correct colorspace to use. If it does not, you can choose a specific colorspace:

Choose from **Auto**, **Rec.709** or **Rec.2020**

Color Space
Auto
Rec.709
Rec.2020

### Notes



*The optical colour space is limited to Rec.709. Rec.2020 will be simulated to show a relative colour spce within Rec.709 when selected.*

## Test Pattern

Press OK to show a test pattern

Choose from..**Off, White, Black, Red, Green, Blue, CheckerBoard, Grid, ColorBars, Cyan, Yellow, Magenta, Ramp...**



**Notes**

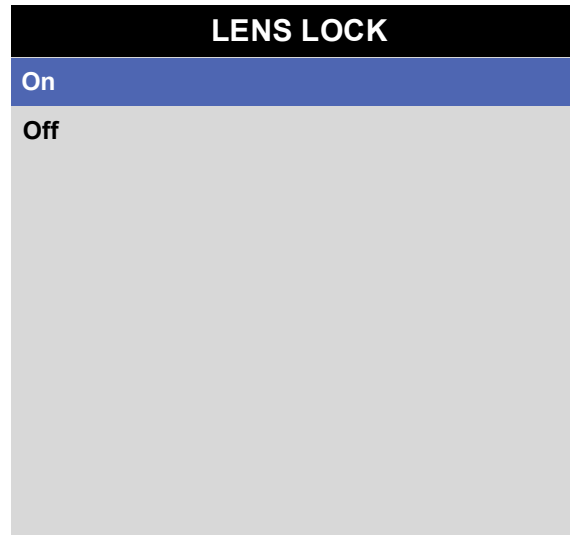
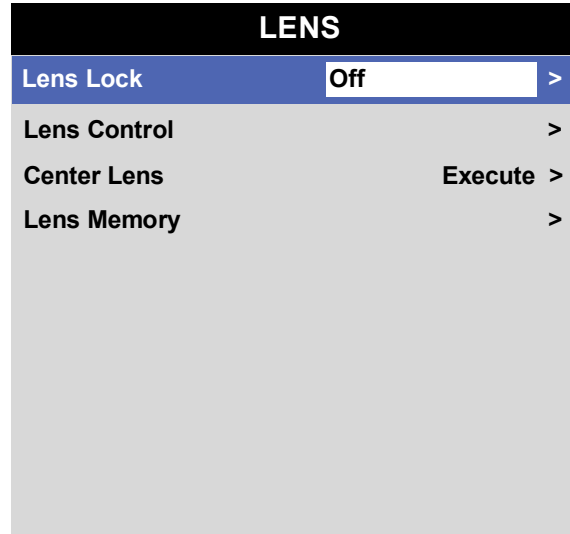
## Lens Menu

- **Lens Lock**  
Select to lock or unlock the lens.
- **Lens Control**  
Select to access Zoom/Focus and Shift controls.
- **Center Lens**  
Select to center the lens.
- **Lens Memory**  
Select to save and load lens settings, or clear the lens settings memory.

### Lens Lock

This menu allows you to switch the lens lock on or off.

Switch the lens lock on to prevent changes to the lens shift, zoom and focus settings



### Notes

## Lens Memory

This menu allows you to recall and save up to ten lens presets, containing position, zoom, focus and shift adjustment information.

For example, if using different screen sizes and aspect ratios, you can save zoom, focus and positioning for each screen size and aspect ratio in a dedicated preset

- **Load Memory**

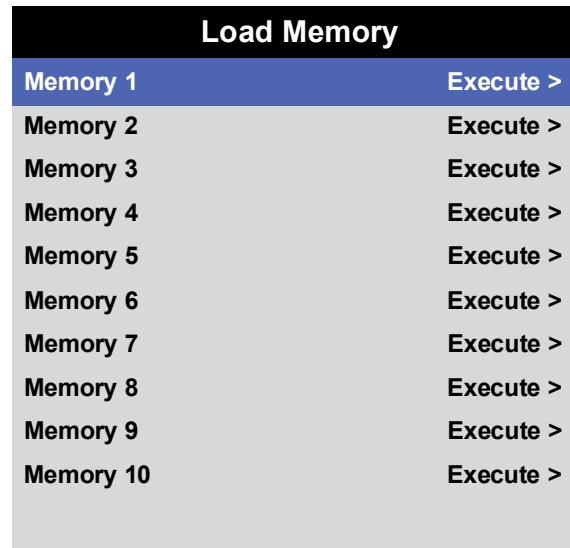
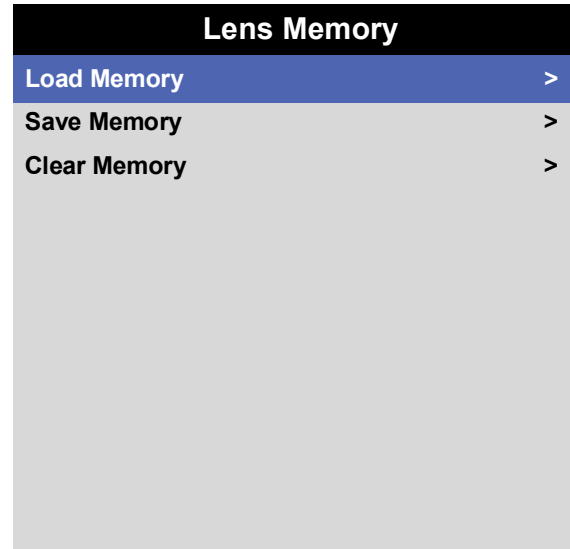
Select to load a lens preset that has been saved in the load memory menu. The load memory menu is displayed. Select the memory preset to load. The lens will be adjusted to match the settings stored in the memory slot.

- **Save Memory**

Select to save the current lens settings to a memory slot. The save memory menu is displayed. Select a memory slot to overwrite with the current lens settings.

- **Clear Memory**

Select to clear the current lens settings that are stored in a memory slot. The clear memory menu is displayed. Select a memory slot to clear.



### Notes



*Saving a preset overwrites all data previously saved within the same slot.*

## Image Menu

- Gamma SDR / HDR**  
 Select to access Gamma controls..
- Brightness, Contrast, Saturation, Hue, Sharpness**  
 Set the slider as required to improve the quality of the image.
- Gain and Lift**  
 Select to access Gain and Lift controls.

### Gamma SDR / HDR

The **Gamma** setting can improve contrast while maintaining good details for blacks and whites.

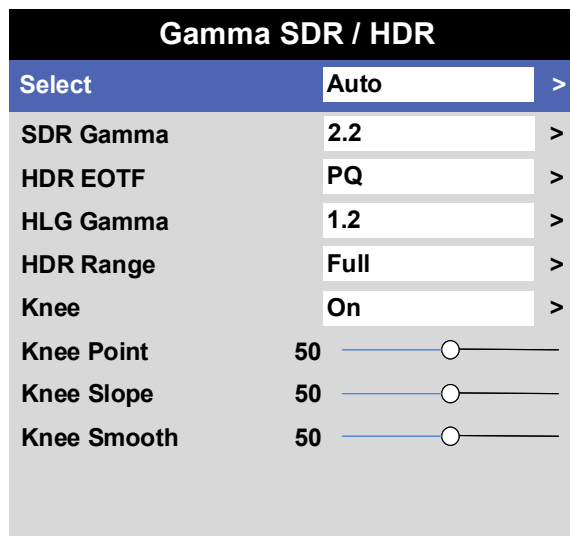
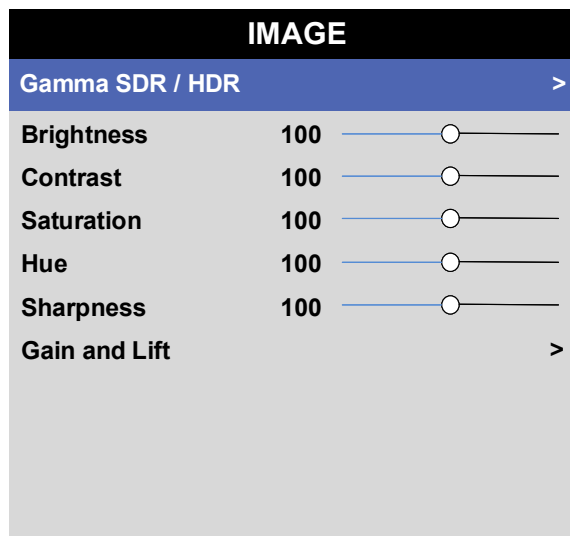
If excess ambient light washes out the image and it is difficult to see details in dark areas, lower the **Gamma** setting to compensate. This improves contrast while maintaining good details for blacks. Conversely, if the image is washed out and unnatural, with excessive detail in black areas, increase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

Choose a de-gamma setting from **AUTO**, **SDR** (Standard Dynamic Range) or **HDR** (High Dynamic Range)

For SDR Gamma, choose a de-gamma curve from **2.2 - 2.8**

HDR (High Dynamic Range) is a new form of gamma developed to create more realistic experience when viewing images delivered using this format, such as scenes with bright sunlight. 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 options should only be used with media players and sources equipped with HDR and HDR content.



Notes



**Gamma SDR / HDR continued**

For HDR Gamma, choose a HDR EOTF of **HLG** or **PQ**

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.

Hybrid Log Gamma (HLG) is a broadcast version of HDR or live TV and events

For HDR-HLG Gamma, choose a de-gamma curve from **1.0 - 1.5** and choose the HDR Range of **Auto, Narrow** or **Full**

- **Knee**

Select to turn Knee on or off for HDR Gamma

- **Knee Point, Knee Slope, Knee Smooth**

Set the slider as required to improve the brightness of the image when using HDR Gamma.

**Gain and Lift**

- **Red Lift, Green Lift, Blue Lift**

Set the slider as required to adjust the black levels of individual colors.

- **Red Gain, Green Gain, Blue Gain**

Set the slider as required to adjust the brightness of the scale for individual colors.

- **Reet**

Select to reset the Gain and Lift settings.

Gamma SDR / HDR	
Select	Auto >
SDR Gamma	2.2 >
HDR EOTF	PQ >
HLG Gamma	1.2 >
HDR Range	Full >
Knee	On >
Knee Point	50
Knee Slope	50
Knee Smooth	50

Gain and Lift	
Red Lift	100
Green Lift	100
Blue Lift	100
Red Gain	100
Green Gain	100
Blue Gain	100
Reset	Execute >

**Notes**

## Color Menu

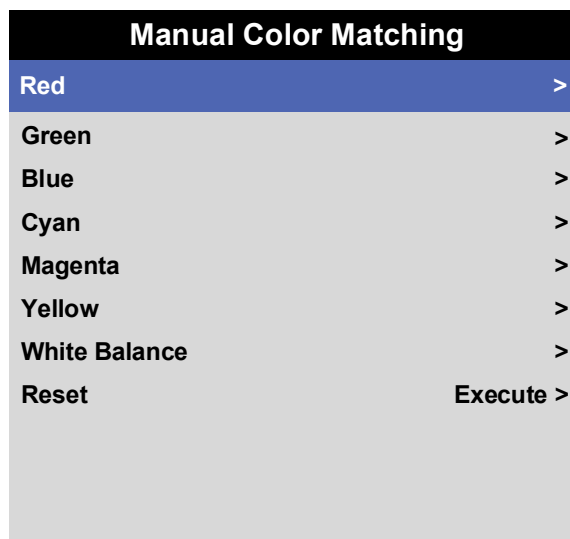
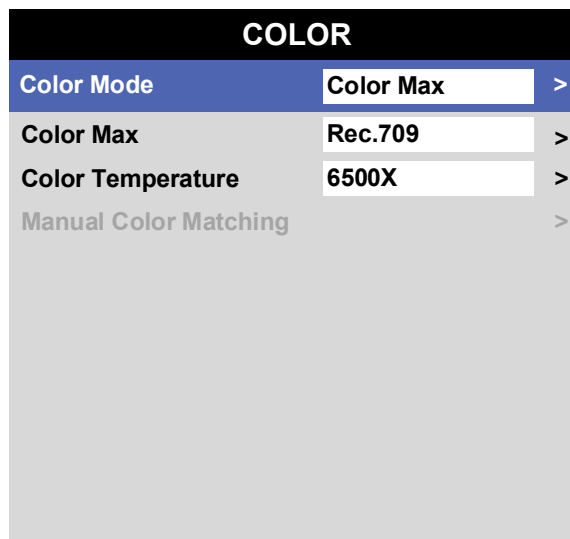
- Color Mode**  
 Select the color mode setting. Choose from ColorMax or Manual Color.
- Color Max and Color Temperature**  
 These features are enabled for ColorMax
- Manual Color Matching**  
 This feature is enabled for Manual Color

### ColorMax

- Set **Color Mode** to **ColorMax**
- Set the **ColorMax** setting. Choose from **Rec.709**, **Rec.2020**, **DCI-P3**, **Native**, **User1**, **User2**.  
**User 1** and **User 2** are user-defined color gamuts set via the **Setup > ColorMax** menu
- Set the Color Temperature. Choose a value between **3200K** (warmer) and **9300K** (cooler), or **Native** (no correction).

### Manual Color Matching

- Set **Color Mode** to **Manual Color**.
- Access the **Manual Color Matching** submenu.  
 Here you can do the following:
  - Adjust **Hue**, **Saturation** and **Gain** settings for each individual color to improve the color balance of the projected image.
  - Adjust white balance RGB values.
  - Reset all values.



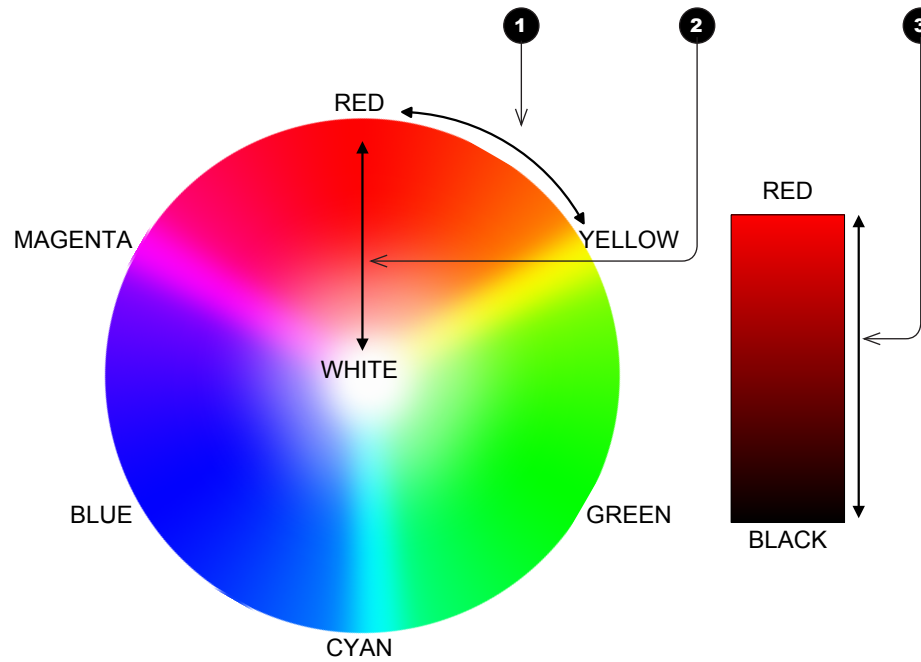
**Notes**

---

**Color matching parameters explained**

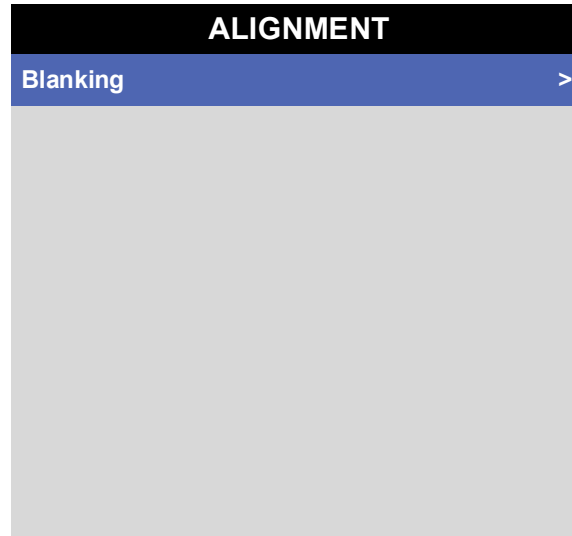
The levels of hue, saturation and gain in the **Manual Color Matching** menu change the color values in the following ways:

- 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.



**Notes**

## Alignment Menu



**Notes**

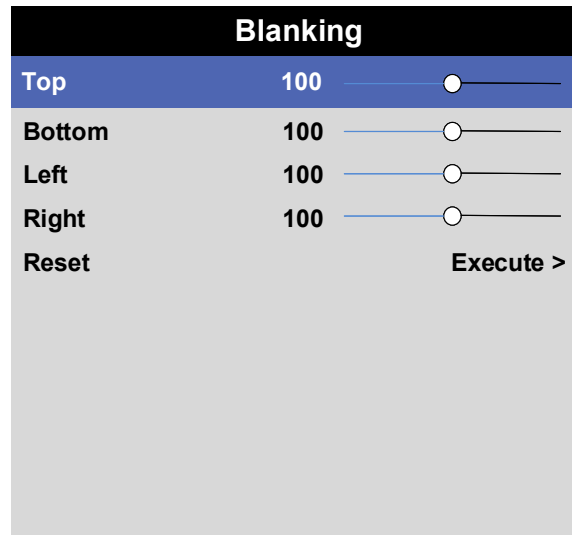
### Blanking

Use this feature to:

- fit an odd-sized screen;
- cut off timecode dots in the top line of a picture;
- cut off subtitles, etc.

Select the edge you wish to blank and use the **LEFT** ◀ and **RIGHT** ▶ arrow buttons to determine the amount of correction.

Use the **Reset** command to restore blanked edges

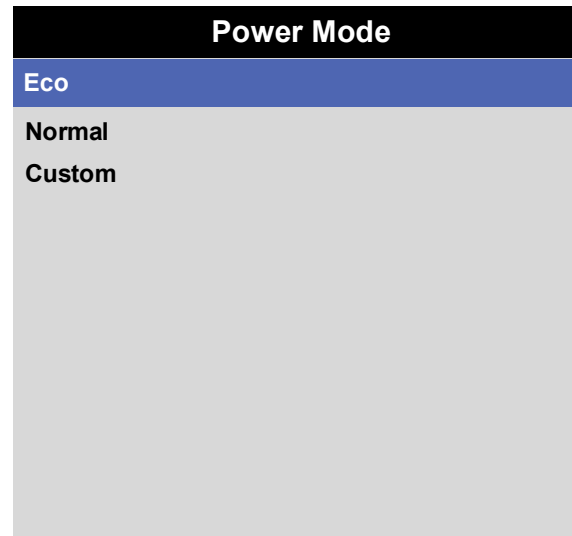
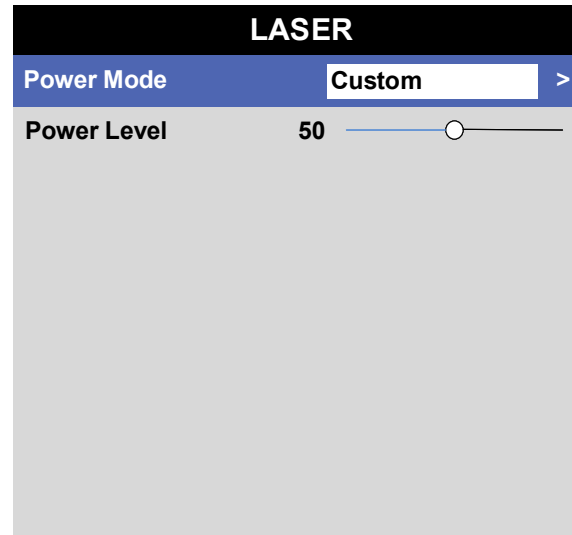


## Laser Menu

- **Power Mode**  
Select this submenu to access the power mode setting.
- **Power Level**  
This feature is activated for **Custom Power Mode**  
Use the slider to set a value between 30 and 100%.

### Power Mode

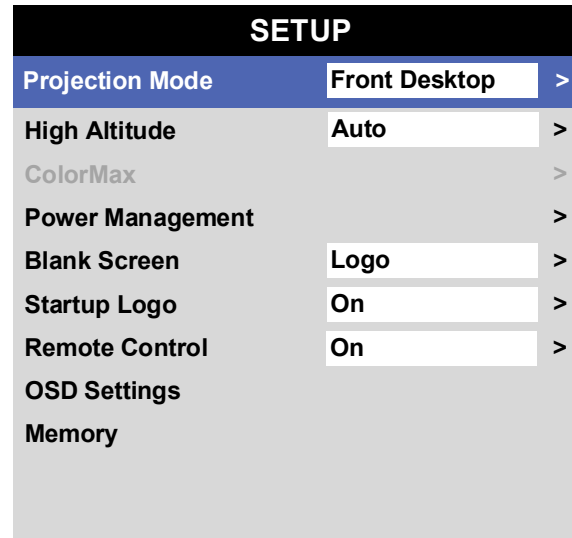
- **Eco** will automatically set the laser power to 80%.
- **Normal** will set the power to 100%.
- Select **Custom** to adjust the power manually.



### Notes

## Setup menu

- Projection Mode**  
 Choose from **Front Desktop**, **Front Ceiling**, **Rear Desktop**, and **Rear Ceiling**
- High Altitude**  
 Choose from **On**, or **Auto**.
- ColorMax**  
 Set up user-defined color gamut values.
- Power Management**  
 Choose from **Auto Power Off** and **Auto Power On**.
- Blank Screen**  
 Choose from **Logo**, **Black**, **Blue** and **White**.
- Startup Logo**  
 Set this to **On** if you want the DP logo to show when the projector is first switched on.
- Remote Control**  
 Set this to **On** o activate the remote control.
- OSD Settings**  
 Access this submenu to adjust the appearance and position of the on-screen display.
- Memory**  
 Access this submenu to save up to four presets containing custom combinations of image settings, or to recall a saved preset.



### Notes

Setup menu continued from previous page

**ColorMax**

**ColorMax** permits seven point color matching of red, green, blue, yellow, cyan, magenta and white.

You can enter your own gamut values here, or edit values you have imported using the **Projector Controller** software.

Defining your own colorspace with individual x and y coordinates for each color enables you to match not only the whites but each individual color as well.

Highlight the submenu you wish to open and press **ENTER/OK** to confirm your choice.

**Measured Data / Target Data**


1. Use the **UP ▲** and **DOWN ▼** arrow buttons to highlight a color, then use the **LEFT ◀** and **RIGHT ▶** arrow buttons to navigate to the **x** or **y** coordinate.
2. Use the **UP ▲** and **DOWN ▼** arrow buttons to increase and decrease the value, respectively.
3. Exit edit mode:
  - press **ENTER/OK**, if you want to save the edited values.
  - press **EXIT**, if you do not wish to save the edited values
4. If necessary, highlight another color and repeat the procedure.


COLOR	
Color Mode	Color Max >
Color Max	Rec.709 >
Color Temperature	6500X >
Manual Color Matching	>

ColorMax	
Measured Data	>
Target Data – User 1	>
Target Data – User 2	>

Target Data – User 1		
Red	x: 0.640	y: 0.390
Green	x: 0.300	y: 0.600
Blue	x: 0.015	y: 0.060
Yellow	x: 0.419	y: 0.505
Cyan	x: 0.225	y: 0.329
Magenta	x: 0.321	y: 0.154
White	x: 0.285	y: 0.302

**Notes**

 The **Projector Controller** software is available for download from the **Digital Projection** website, free of charge.

 This tool is best used in conjunction with a specialized light meter (a photo spectrometer) to measure color parameters within a particular installation. However, the preloaded generic factory default data set is designed to give more than satisfactory results.

*Setup menu continued from previous page*

**Power On/Off**

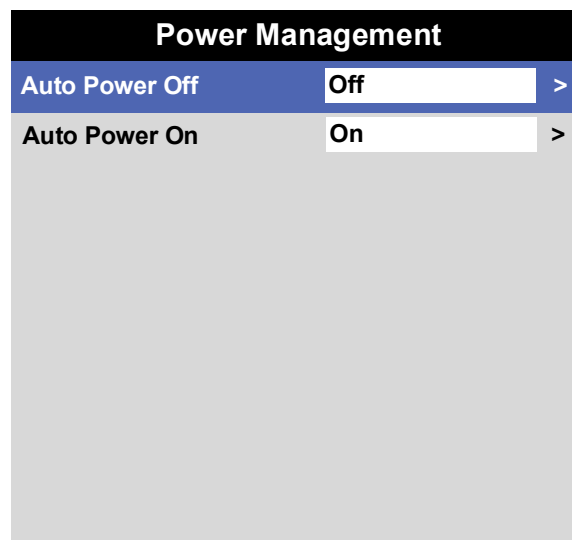
- **Auto Power Off**

Set this to On if you want the projector to go into STANDBY mode when no input source is detected for 20 minutes.

- **Auto Power On**

Set this to **On** if you want the projector to start up immediately when the mains is connected.

Set this to **Off** if you want the projector to go into STANDBY mode when the mains is connected. In this case, the projector will not start up until the **POWER** button is pressed on the control panel or the **ON** button is pressed on the remote control.



**OSD Settings**

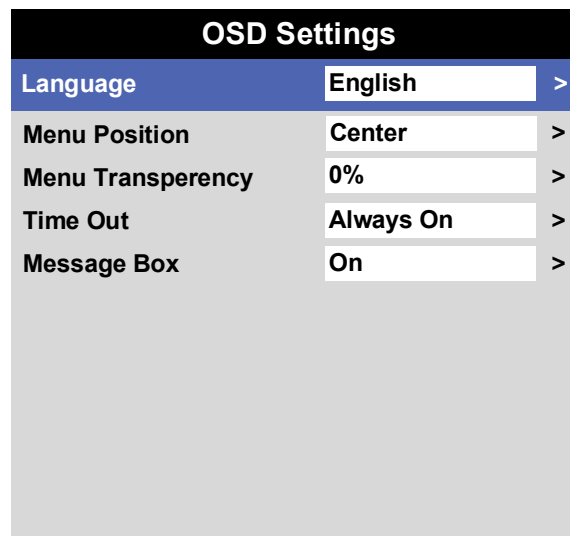
- **Language** sets the OSD language.

- **Menu Position** determines where the OSD should appear on the screen when activated.

- **Menu Transparency** sets OSD transparency between **0%** (no transparency), **25%**, **50%** and **75%**.

- **Time Out** determines how long the OSD should remain on screen if no buttons are pressed. Choose **Always On** to disable this feature.

- **Message Box** determines whether projector status messages should appear on the screen



**Notes**



**Setup menu continued from previous page**

**Memory**

The current image settings can be saved as a preset, which you can recall later. The default settings can be recalled at any time as well.

Up to four custom presets can be stored for each input.

The following settings are saved in a preset:

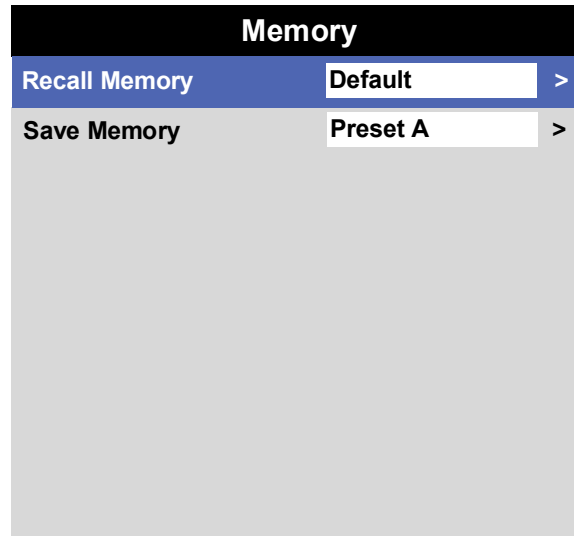
- From the **Image** menu — **Smooth Picture, Gamma, Brightness, Contrast, Saturation, Hue, Sharpness**
- From the **Color** menu — **Color Space, Color Mode, ColorMax, Color Temperature, RGB Lift and RGB Gain**

**To recall a saved preset:**

- Select **Recall Memory** and press **ENTER/OK**, then select a preset from **Preset A** to **Preset D**. Select **Default** to load factory default values.

**To save a preset:**

- Select **Save Memory** and press **ENTER/OK**, then choose from **Preset A, Preset B, Preset C** and **Preset D**.



**Notes**

## Network Menu

- **DHCP, IP, 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.

- **MAC**

This field is read-only.

- **AMX**

Switch on or off.

NETWORK	
DHCP	Off >
IP Address	192.168.0.100 >
Subnet Mask	255.255.255.0 >
Gateway	192.168.0.254 >
DNS Server	192.168.0.1 >
MAC Address	CO:AB:00:01:00:00 >

Notes

## Information Menu

This menu gives information about laser operating times, network configuration, OSD software and hardware, system information such as model name and firmware version, and video configuration.

Open a submenu to see related information.

INFORMATION	
<b>Model Name</b>	<b>Insight 8k</b>
<b>Serial Number</b>	
<b>Software Version 1</b>	<b>PE59_S17_LD-4-2-2_MM</b>
<b>Software Version 2</b>	<b>M00.77-i00.33-s00.26</b>
<b>Software Version 3</b>	<b>B08.04-fr06.03-fg06.03</b>
<b>Laser Hours</b>	<b>9</b>
<b>Input Status</b>	<b>&gt;</b>
<b>Thermal Status</b>	<b>&gt;</b>
<b>System Status</b>	<b>&gt;</b>
<b>Factory Reset</b>	<b>Execute &gt;</b>

### Notes

### Input Status

Input Status	
Format	3G-SDI Level A / HD(1920x1080) 60p / YCbCr4:2:2 / 10 bit
Channel Status	
Ch1	3G-SDI Level A / PID:89, CB, 00, 01
Ch2	No Signal
Ch3	No Signal
Ch4	No Signal
Ch5	No Signal
Ch6	No Signal
Ch7	No Signal
Ch8	No Signal
Ch9	No Signal
Ch10	No Signal
Ch11	No Signal
Ch12	No Signal
Ch13	No Signal
Ch14	No Signal
Ch15	No Signal
Ch16	No Signal

Notes

### Thermal Status

Thermal Status	
Inlet Temp	196
DMD Temp	46
LD Temp	42/44/43/42/38/38 – 41/43/43/42/38/38
Fan 1 – 4 Speed	2857/2997/4915/4915
Fan 5 – 8 Speed	3233/3150/3233/3231
Fan 9 – 12 Speed	2997/3150/3233/3840
Fan 13 – 16 Speed	2730/2671/0/3233
Fan 17 – 20 Speed	3072/4096/4096/0
Fan 21 – 24 Speed	3072/4096/4096/0
Fan 25 – 28 Speed	3150/3172/3614/3614
Fan 29 – 32 Speed	3963/4096/3233/3150
Water Pump	3180/3260/3220/3240/0

Notes

### System Status

System Status	
Wheel Speed	0/0
Atmospheric Pressure	0kPs
Altitude Mode	Auto
Laser Power	100
Filter Hours	9

### Factory Reset

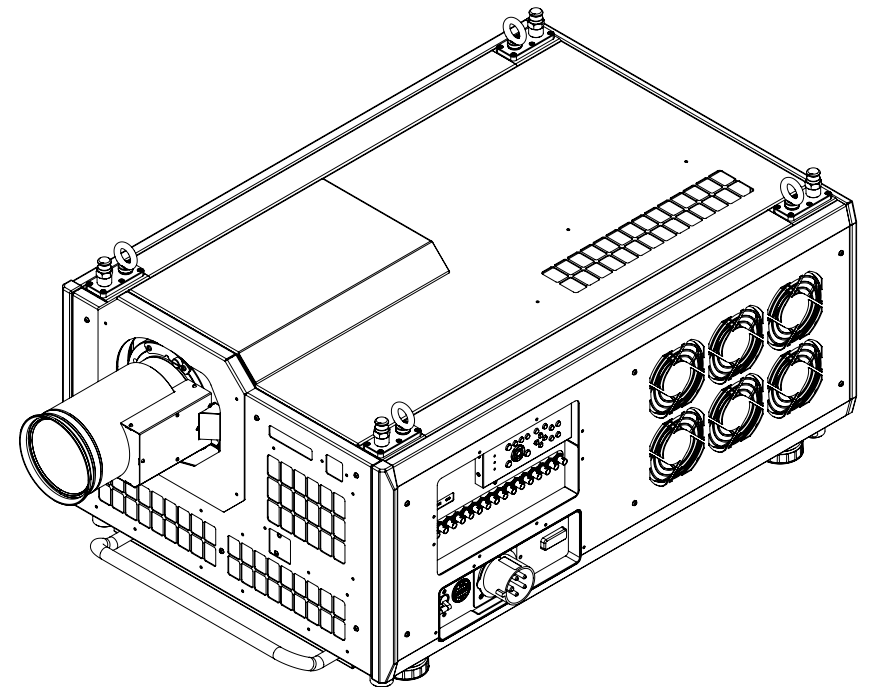
**Factory Reset**  
**WARNING**  
The Projector Will Return to Factory Setting  
Press OK to confirm  
Press EXIT to cancel

### Notes

**DIGITAL**   
**PROJECTION**

***INSIGHT Laser 8K Series***  
High Brightness Digital Video Projector

▶ REFERENCE GUIDE



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## 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.

### Throw Ratios for 8K or 4K-UHD

The following table shows all available lenses in order of their **throw ratios** when using 8K (7680 x 4320) or 4K-UHD (3840 x 2160):

Throw ratios	Lens extension (±2%)	Throw distance range
1.21 - 1.83 : 1 zoom lens	225 mm (8.9 in)	2.5 m - 40+ m (8.2 ft - 130+ ft) at 1.13:1 0.5 m - 40+ m (1.6 ft - 130+ ft) at 1.72:1
1.76 - 2.77 : 1 zoom lens	195 mm (7.7 in)	3.5 m - 40+ m (11.5 ft - 130+ ft) at 1.65:1 1.0 m - 40+ m (3.3 ft - 130+ ft) at 2.60:1
2.70 - 5.31 : 1 zoom lens	195 mm (7.7 in)	1.5 m - 40+ m (4.9 ft - 130+ ft) at 2.53:1 4.5 m - 40+ m (14.8 ft - 130+ ft) at 4.98:1

### Throw Ratios for 4K

The following table shows all available lenses in order of their **throw ratios** when using 4K (4096 x 2160):

Throw ratios	Lens extension (±2%)	Throw distance range
1.13 - 1.72 : 1 zoom lens	225 mm (8.9 in)	2.5 m - 40+ m (8.2 ft - 130+ ft) at 1.13:1 0.5 m - 40+ m (1.6 ft - 130+ ft) at 1.72:1
1.65 - 2.60 : 1 zoom lens	195 mm (7.7 in)	3.5 m - 40+ m (11.5 ft - 130+ ft) at 1.65:1 1.0 m - 40+ m (3.3 ft - 130+ ft) at 2.60:1
2.53 - 4.98 : 1 zoom lens	195 mm (7.7 in)	1.5 m - 40+ m (4.9 ft - 130+ ft) at 2.53:1 4.5 m - 40+ m (14.8 ft - 130+ ft) at 4.98:1

### Notes



*INSIGHT 8K zoom lenses are capable of covering throw distances greater than forty metres.*



*The minimum throw of the zoom lenses changes depending on the throw ratio used.*



*For information about individual lens part numbers, see [Appendix A](#) at the end of this document.*

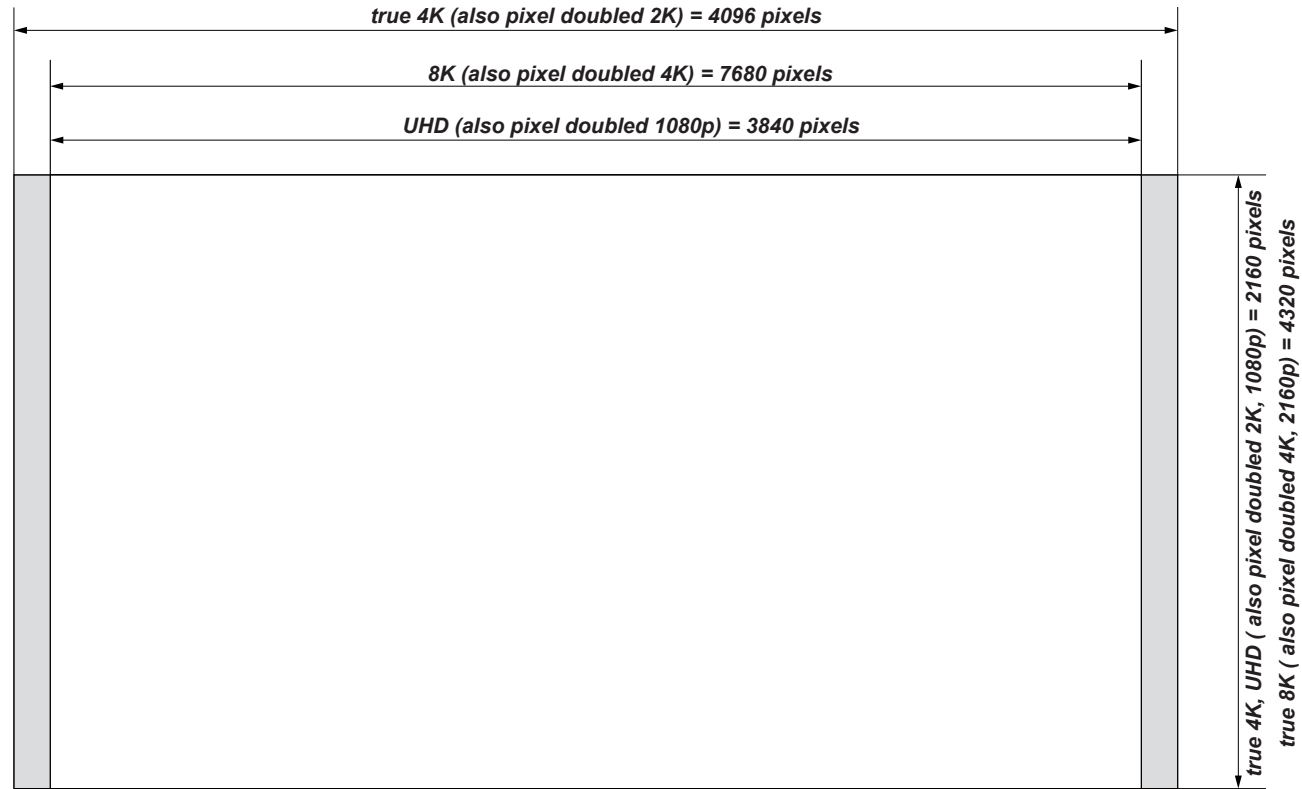


## Screen Requirements

### Fitting the image to the DMD™

The projector supports 8K, 4K and Ultra HD formats and is able to achieve 2K and 1080p via frame doubling.

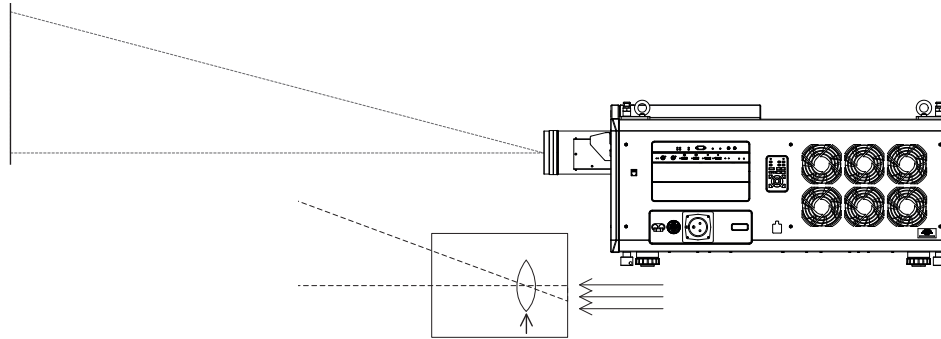
2K and frame doubled 1080p will not utilize the full width of the DMD™, resulting in pillarboxing, as shown in the illustration.



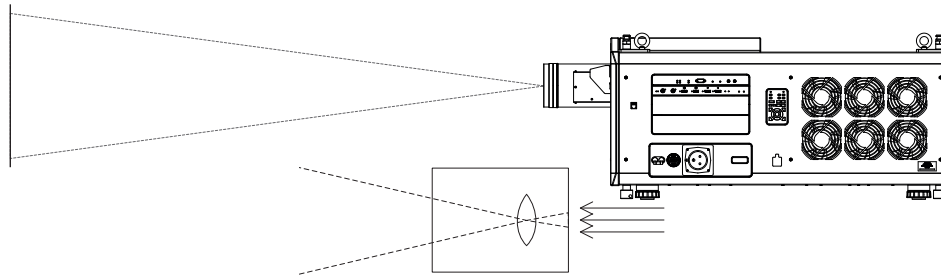
Notes

## Positioning The Image

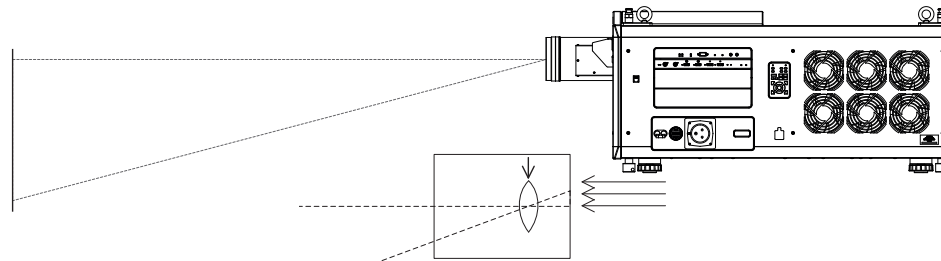
The normal position for the projector is at the centre of the screen. However, you can set the projector above or below the centre, or to one side, and adjust the image using the **Lens shift** feature (known as **rising and falling front**) to maintain a geometrically correct image.



**Shifting the lens up (rising front)**




**Centered lens**



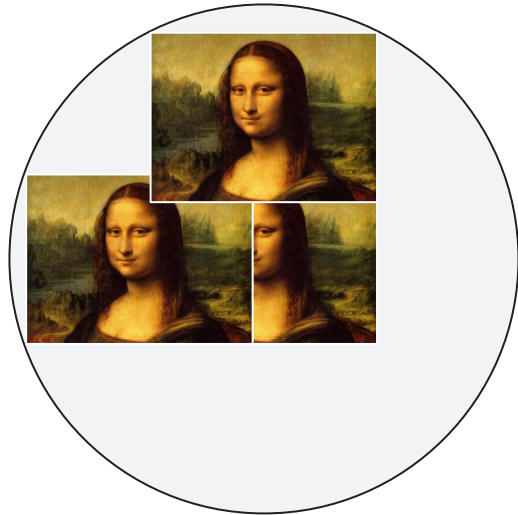
**Shifting the lens down (falling front)**

### Notes

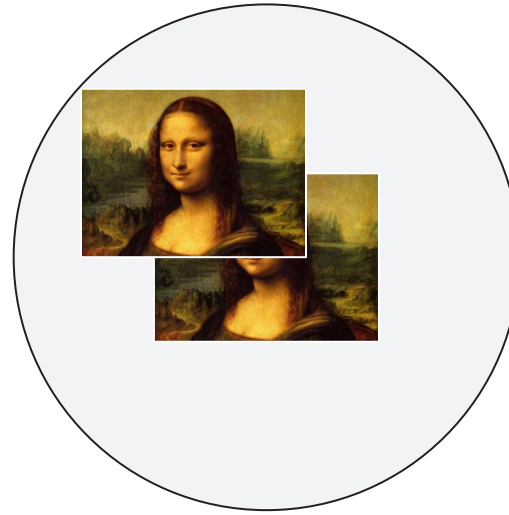
 Whenever possible, position the projector so that the lens is centered for the highest quality image.

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 below.



**Full horizontal or vertical shift**



**Combined shift is reduced**

**Notes**



For more information on shifting the lens, see [Lens control](#) in the **Operating Guide**.

## Maximum offset range

The maximum offset range available is dependent on which lens and resolution is used. Shifting the lens beyond its undistorted limits may be physically possible, however you may experience excessive vignetting or distortion.

### Offset for 8K or 4K-UHD

		vertical (frame)	horizontal (frame)
1.21 - 1.83 : 1 zoom	at 1.21:1	0.340 U 0.190 D	0.085 L 0.100 R
	at 1.83:1	0.500 U 0.190 D	0.150 L 0.180 R
1.76 - 2.77 : 1 zoom	at 1.76:1	0.400 U 0.210 D	0.130 L 0.130 R
	at 2.77:1	0.500 U 0.200 D	0.150 L 0.190 R
2.70 - 5.31 : 1 zoom	at 2.70:1	0.375 U 0.200 D	0.130 L 0.130 R
	at 5.31:1	0.500 U 0.195 D	0.165 L 0.165 R

### Offset for 4K

		vertical (frame)	horizontal (frame)
1.13 - 1.72 : 1 zoom	at 1.13:1	0.340 U 0.190 D	0.085 L 0.100 R
	at 1.72:1	0.500 U 0.190 D	0.150 L 0.180 R
1.65 - 2.60 : 1 zoom	at 1.65:1	0.400 U 0.210 D	0.130 L 0.130 R
	at 2.60:1	0.500 U 0.200 D	0.150 L 0.190 R
2.53-4.98 : 1 zoom	at 2.53:1	0.375 U 0.200 D	0.130 L 0.130 R
	at 4.98:1	0.500 U 0.195 D	0.165 L 0.165 R

## Notes



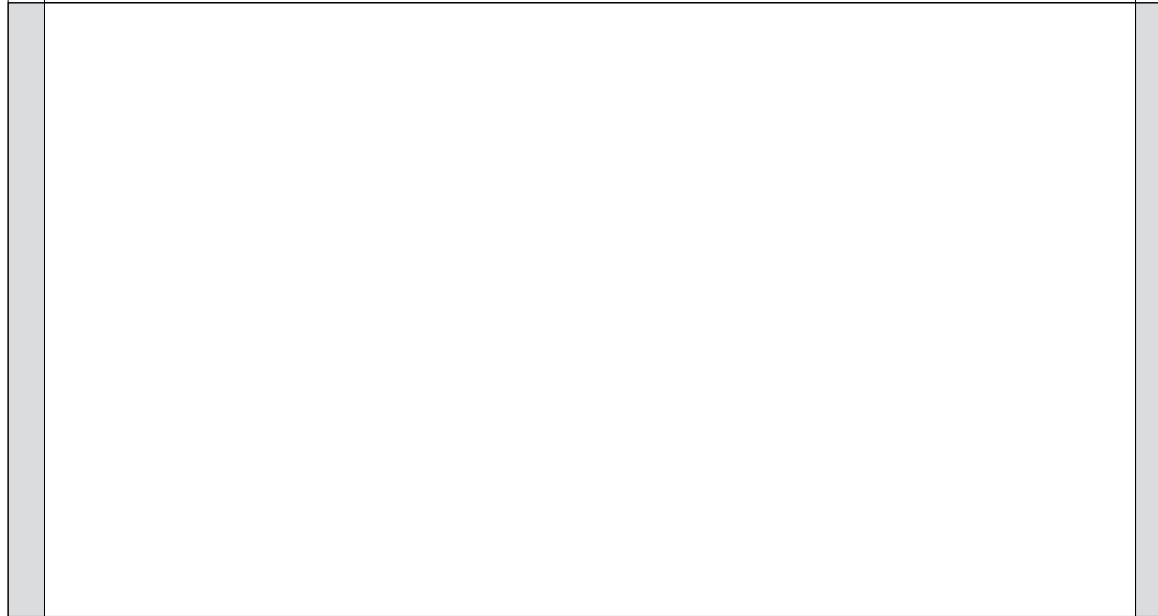
For more information on shifting the lens, see [Lens control](#) in the [Operating Guide](#).

## Aspect Ratios Explained

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

- the DMD™ resolution, which is **4K** with a 4096 x 2160 resolution, corresponding to an aspect ratio of approximately 1.9:1.
- the aspect ratio of the input signal, which is **1.9:1** for 4K and 2K images, or **1.78:1** for 8K, 4K-UHD or 1080p images.

The 4K and 2K resolutions have a slightly wider aspect ratio. 8K, 4K-UHD and scaled 1080p do not fill the width of the DMD™, so they appear centered, with pillarboxing at the sides, as shown in the illustration.



*Pillarboxing on UHD and 1080p images*

### Notes

## Appendix A: Lens Part Numbers

### Lens Parts for 8K or 4K-UHD

Lens	Part No.	Focus Range	Lens Shift	Lens extension
1.21 - 1.83:1 zoom	115-627	<i>At 1.13:1 zoom:</i> 2.5 m - 100+ m	<i>At 1.13:1 zoom:</i> Vert: 0.340 (U) 0.190 (D) frame, Hor: 0.09 (L) 0.09 (R) frame	225 mm
		<i>At 1.72:1 zoom:</i> 0.5 m - 100+ m	<i>At 1.72:1 zoom:</i> Vert: 0.500 (U) 0.190 (D) frame, Hor: 0.16 (L) 0.16 (R) frame	
1.76 - 2.77:1 zoom	115-630	<i>At 1.65:1 zoom:</i> 3.5 m - 100+ m	<i>At 1.65:1 zoom:</i> Vert: 0.400 (U) 0.200 (D) frame, Hor: 0.13 (L) 0.13 (R) frame	195 mm
		<i>At 2.60:1 zoom:</i> 1.0 m - 100+ m	<i>At 2.60:1 zoom:</i> Vert: 0.500 (U) 0.200 (D) frame, Hor: 0.17 (L) 0.17 (R) frame	
2.70 - 5.31:1 zoom (EU-EA)	115-632	<i>At 2.53:1 zoom:</i> 1.5 m - 100+ m	<i>At 2.53:1 zoom:</i> Vert: 0.375 (U) 0.200 (D) frame, Hor: 0.13 (L) 0.13 (R) frame	195 mm
		<i>At 4.98:1 zoom:</i> 4.5 m - 100+ m	<i>At 4.98:1 zoom:</i> Vert: 0.500 (U) 0.195 (D) frame, Hor: 0.16 (L) 0.16 (R) frame	
2.70 - 5.31:1 zoom with Hood (USA)	115-632	<i>At 2.53:1 zoom:</i> 1.5 m - 100+ m	<i>At 2.53:1 zoom:</i> Vert: 0.375 (U) 0.200 (D) frame, Hor: 0.13 (L) 0.13 (R) frame	195 mm
		<i>At 4.98:1 zoom:</i> 4.5 m - 100+ m	<i>At 4.98:1 zoom:</i> Vert: 0.500 (U) 0.195 (D) frame, Hor: 0.16 (L) 0.16 (R) frame	

**Notes**

**Lens Parts for 4K**

Lens	Part No.	Focus Range	Lens Shift	Lens extension
1.13 - 1.72:1 zoom	115-627	<i>At 1.13:1 zoom:</i> 2.5 m - 100+ m	<i>At 1.13:1 zoom:</i> Vert: 0.340 (U) 0.190 (D) frame, Hor: 0.09 (L) 0.09 (R) frame	225 mm
		<i>At 1.72:1 zoom:</i> 0.5 m - 100+ m	<i>At 1.72:1 zoom:</i> Vert: 0.500 (U) 0.190 (D) frame, Hor: 0.16 (L) 0.16 (R) frame	
1.65 - 2.60:1 zoom	115-630	<i>At 1.65:1 zoom:</i> 3.5 m - 100+ m	<i>At 1.65:1 zoom:</i> Vert: 0.400 (U) 0.200 (D) frame, Hor: 0.13 (L) 0.13 (R) frame	195 mm
		<i>At 2.60:1 zoom:</i> 1.0 m - 100+ m	<i>At 2.60:1 zoom:</i> Vert: 0.500 (U) 0.200 (D) frame, Hor: 0.17 (L) 0.17 (R) frame	
2.53 - 4.98:1 zoom (EU-EA)	115-632	<i>At 2.53:1 zoom:</i> 1.5 m - 100+ m	<i>At 2.53:1 zoom:</i> Vert: 0.375 (U) 0.200 (D) frame, Hor: 0.13 (L) 0.13 (R) frame	195 mm
		<i>At 4.98:1 zoom:</i> 4.5 m - 100+ m	<i>At 4.98:1 zoom:</i> Vert: 0.500 (U) 0.195 (D) frame, Hor: 0.16 (L) 0.16 (R) frame	
2.53 - 4.98:1 zoom with Hood (USA)	119-662	<i>At 2.53:1 zoom:</i> 1.5 m - 100+ m	<i>At 2.53:1 zoom:</i> Vert: 0.375 (U) 0.200 (D) frame, Hor: 0.13 (L) 0.13 (R) frame	195 mm
		<i>At 4.98:1 zoom:</i> 4.5 m - 100+ m	<i>At 4.98:1 zoom:</i> Vert: 0.500 (U) 0.195 (D) frame, Hor: 0.16 (L) 0.16 (R) frame	

**Notes**

## Appendix C: Supported Signal Input Modes

Input Timing	Format No.	3G-SDI	12G-SDI	Note
8K(7680 x 4320) YCbCr 4:2:2 10bit 59.94p	0x82	V(x16, 16div)	V(x4, 2SI/SQD)	
8K(7680 x 4320) YCbCr 4:2:2 10bit 60p	0x83	V(x16, 16div)	V(x4, 2SI/SQD)	
8K(7680 x 4320) YCbCr 4:2:2 10bit 50p	0x84	V(x16, tile)	V(x4, 2SI/SQD)	
8K(7680 x 4320) YCbCr 4:2:2 10bit 25p	0x86	V(4*(x2(LevB-DS), SQD))	V(x2(DL), 2SI)	
8K(7680 x 4320) YCbCr 4:2:2 10bit 23.97p	0x87	V(4*(x2(LevB-DS), SQD))	V(x2(DL), 2SI)	
8K(7680 x 4320) YCbCr 4:2:2 10bit 24p	0x88	V(4*(x2(LevB-DS), SQD))	V(x2(DL), 2SI)	
8K(7680 x 4320) YCbCr 4:2:2 10bit 29.97p	0x89	V(4*(x2(LevB-DS), SQD))	V(x2(DL), 2SI)	
8K(7680 x 4320) YCbCr 4:2:2 10bit 30p	0x8A	V(4*(x2(LevB-DS), SQD))	V(x2(DL), 2SI)	
4K(3840 x 2160) YCbCr 4:2:2 10bit 59.94p	0x94	V(x4, 2SI/SQD)	V(x1, 2SI)	
4K(3840 x 2160) YCbCr 4:2:2 10bit 60p	0x95	V(x4, 2SI/SQD)	V(x1, 2SI)	
4K(3840 x 2160) YCbCr 4:2:2 10bit 50p	0x96	V(x4, 2SI/SQD)	V(x1, 2SI)	
4K(4096 x 2160) YCbCr 4:2:2 10bit 59.94p	0xA4	V(x4, 2SI/SQD)	V(x1, 2SI)	
4K(4096 x 2160) YCbCr 4:2:2 10bit 60p	0xA5	V(x4, 2SI/SQD)	V(x1, 2SI)	
4K(4096 x 2160) YCbCr 4:2:2 10bit 50p	0xA6	V(x4, 2SI/SQD)	V(x1, 2SI)	
HD(1920 x 1080) YCbCr 4:2:2 10bit 59.94p	0xB0	V(x1)		up scaling to (4K)
HD(1920 x 1080) YCbCr 4:2:2 10bit 60p	0xB1	V(x1)		up scaling to (4K)
HD(1920 x 1080) YCbCr 4:2:2 10bit 50p	0xB2	V(x1)		up scaling to (4K)

### Notes



24, 30, 50 and 60 Hz are nominal: the projector also accepts at least 23.98, 25, 48 and 59.94 Hz.



## Appendix D: Wiring Details

### Signal inputs

#### 3G-SDI or 12G-SDI In, 3G-SDI or 12G-SDI Out

75 ohm BNC

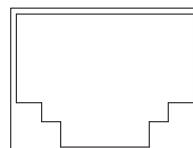


3G-SDI connector

### Control connections

#### LAN

RJ45 socket

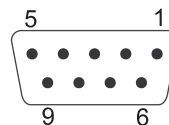


Update port

#### RS232


9 way D-type connector

Pin No.	RS-232C Signal Name	Functions as RS-232C	Projector Connector Operation
1	CD	Carrier detection	Not used (N.C.)
2	RXD	Reception data	Data transmission to an external device
3	TXD	Transmission data	Data reception from an external device
4	DTR	Data Terminal ready (Note)	Connection to 6 pins
5	GND	Signal GND	Signal GND
6	DSR	Data set ready (Note)	Connection to 4 pins
7	RTS	Transmission request	SYSTEM: Hi-Z (Not used) CINEMA: Hi-Z (Used)
8	CTS	Transmission available	SYSTEM: Fixed at -6.5 V (Not used) CINEMA: ±10.5 V (Used: Depends on communication status)
9	RI	Ring indicator	Not used (N.C.)




RS232:  
pin view of female connector

### Notes

 3G-SDI and 12G-SDI signals are very high speed digital signals which require better quality coaxial cable than conventional analogue video. The data rate is 3 Gigabits per second.

In choosing cable length and connectors for any installation the frequency response loss in decibels should be proportional to  $\sqrt{f}$ , from 1 MHz, to 3 GHz.

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

## Appendix E: Glossary Of Terms

Below is a general glossary of terms. Some terms may not be applicable to this projector.

### 1080p

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

### 4K

A [4K resolution](#) which corresponds to 4096 x 2160 [pixels](#) (a widescreen [aspect ratio](#) of 1.89:1).

### 4K-UHD

A [4K-UHD resolution](#) which corresponds to 3840 x 2160 [pixels](#) (a widescreen [aspect ratio](#) of 16:9).

### 8K

A [8K resolution](#) which corresponds to 7860 x 4320 [pixels](#) (a widescreen [aspect ratio](#) of 16:9).

### 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](#).

### 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.

### Notes

**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](#).

**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](#)).

**Brightness (optical)**

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

**Notes**

**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).

**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.

**1 Throw distance****2 Screen width****Contrast (optical)**

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

**Crop**

Remove part of the projected image.

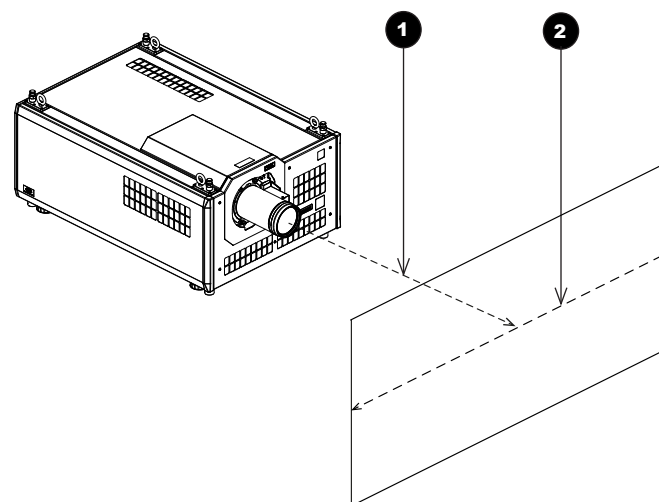
Alternatively, fit an image into a frame with a different **aspect ratio** by removing part of the image. The image is resized so that either its length or its width equals the length or width of the frame, while the other dimension has moved outside the frame; the excess area is then cut out.

**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.

**Notes**

**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.

**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](#).

**Notes**

**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.

**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.

**HDCP (High-bandwidth Digital Content Protection)**

An encryption scheme used to protect video content.

**Notes**

**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](#).

**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.

**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](#).

**Notes**

**Lumen**

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

**Noise**

Electrical interference displayed on the screen.

**Overlapping region**

See [blend region](#).

**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.

**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](#).

**Notes**



**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.

**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.

**Scope**

An [aspect ratio](#) of 2.35:1.

**Smooth Picture**

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

**Synchronization**

A timing signal used to coordinate an action.

**Test pattern**

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

**Throw distance**

The distance between the screen and the projector.

**Throw ratio**

The ratio of the [throw distance](#) to the screen width.

**Notes**

**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:

$$TRC = \frac{DMD^{\text{TM}} \text{ aspect ratio}}{\text{Source aspect ratio}}$$

TRC is only used in calculations if it is greater than 1.

**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.

**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.

Further information about lens offsets can be found in [Positioning The Image > Maximum offset range](#).

**Notes**

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