TITAN HD-600

High Brightness Digital Video Projector
16:9 widescreen display

User Manual
Declaration of Conformity

Directives covered by this Declaration

Products covered by this Declaration
- Large screen video projector type
- TITAN HD-600

The CE mark was first applied in: October 2007

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


The technical documentation required to demonstrate that the products meet the requirements of the Low Voltage directive has been compiled by the signatory below and is available for inspection by the relevant enforcement authorities.

Signed: [Signature]

Authority: D.J. Quinn, Product Development Director

Date: 15 October 2007

Attention!
The attention of the specifier, purchaser, installer, or user is drawn to special measures and limitations to use which must be observed when these products are taken into service to maintain compliance with the above directives. Details of these special measures are available on request, and are also contained in the product manuals.
Please read this user manual carefully before using the projector, and keep the manual handy for future reference.

A serial number is located on the side of the projector. Record it here:


Symbols used in this guide

Warnings

⚠️ 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.

Trademarks

- IBM is a registered trademark of International Business Machines Corporation.
- Macintosh and PowerBook are registered trademarks of Apple Computer, Inc.
- Other product and company names mentioned in this user’s manual may be the trademarks of their respective holders.

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. Projectors built prior to this revision of the User Manual may therefore not include all the features described.

Manual revision

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<td></td>
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General precautions

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

- 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.

⚠️ There are no user-serviceable parts inside the lamp module. The whole module should be replaced.

- Take care when removing the lamp module.
- NEVER touch the lamp or reflector.
- Take care not to touch the glass surface of the lamp module. If you do accidentally touch the glass, it should be cleaned before use. (see section 5. Maintenance.)
- Do not use the lamp for more than 2000 hours, as this may cause serious lamp failure, damage the lamp module and cause extra cost on replacement.
- HID lamps produce high intensity light. Do not look directly at the light coming from the lamp housing, or the lens, or allow items such as magnifying lenses to be placed in the light path. This could result in serious eye damage.
- 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, moving the projector or changing the lamp.
- Never use strong detergents or solvents such as alcohol or thinners to clean the projector and lens.
Installation precautions

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

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

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.

Ensure that there is at least 30cm (12in) of space between the ventilation outlets and any wall, and 10cm (4in) on all other sides.

Do not install the projector close to anything that might be affected by its operational heat, for instance, polystyrene ceiling tiles, curtains etc.

The projector weighs approximately 31 kg (68 lbs). Use safe handling techniques when lifting the projector.

When stacking projectors, the stack MUST be vertical, to ensure that the stresses are distributed to all frame couplings.

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 (see specification for exact weights).

Separate backup safety chains or wires should always be used for each projector.

Do not place heavy objects on top of the projector chassis. Only the chassis corners and the rigging frame are capable of withstanding the weight of another projector.

Do not stack more than 3 projectors.

Do not drop or jarr the projector.

Place the projector in a dry area away from sources of dust, moisture, steam, smoke, sunlight or heat.

Do not tilt the projector more than ±12° in either direction when in use, as this may cause serious lamp failure, damage the lamp module and cause extra cost on replacement.

Operation and configuration precautions

⚠️ Do not make changes to the networking configuration unless you understand what you are doing, or have taken advice from your Network Manager. If you make a mistake, it is possible that you will lose contact with the projector. Always double-check your settings before pressing the APPLY button. Always keep a written note of the original settings, and any changes you have made.

Software update should NOT be carried out except by, or with the supervision of, Digital Projection Service personnel.
Compliance with international standards

Noise

GSGV Acoustic Noise Information Ordinance
The sound pressure level is less than 70 dB (A) according to ISO 3744 or ISO 7779.

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 A 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.

This equipment contains an FCC approved RF transmitter module with FCC ID: R68WIPORT.

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.
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Titan HD-600 User Manual

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# 1. Introduction

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What’s in the box?

- Make sure your box contains everything listed. If any pieces are missing, contact your dealer.
- You should save the original box and packing materials, in case you ever need to ship your Projector.

Notes

- Lenses are optional. Order lenses from your Digital Projection dealer.
- For more detailed information about lenses, see Choosing a lens, in section 2. Installation.
- Only one power cable - dependent on the destination territory - will be supplied with the projector.

![Projector](107-693)

- Power cable 10A
  - Europe
  - United Kingdom

- Power cable 13A
  - North America

- Remote control
- 4x AAA batteries
- Remote cable 5m
- User manual on CD
- Important Information
Congratulations on your purchase of the Digital Projection Titan HD-600 projector.

Digital Projection International, Texas Instruments' first DLP™ partner and the original innovator of the 3-chip DLP™ projector, proudly introduces the Titan HD. Incredibly bright, high resolution and high in contrast, the Titan HD offers a radically new electronics configuration ideally suited for the staging and large-venue permanent installation markets.

The Titan HD harnesses the power of the Texas Instruments’ 1280 x 720 pixel HPO DMD’s™. Alongside the LIGHTNING and HIGHlite Pro, the Titan HD is to set new standards for Staging and is destined to be the first choice of professionals who stage prestigious events such as the Grammy® Awards and the Oscars®. With a contrast of 1800:1 and awe-inspiring brightness of 8000 lumens, the Titan HD is unmatched for applications as diverse as world class staged events, commercial entertainment, major outdoor venues, large-scale simulation, gaming, home theatre and houses of worship.

Key Features

- High resolution, large venue projector
- Applications: Large Screen; Fixed install and Rental
- 8000 ANSI lumens ±10%
- Contrast 1800:1 ±10%
- 1280 x 720 resolution
- Precision mechanical design ensuring maximum amount of light from lamp housing reaches optics, without any operator adjustment
- 850W single phase, 100-240VAC
- Compact size, light weight - approximately 31 kg (68 lbs)
- Motorised lens mount
- Optional Rigging frame with Quick-lock stack system- 3 point pitch & roll adjustment for accurate alignment
- Ruggedised robust metal case
- LAN & RS232 connection for network operation
- Six selectable Digital and Analogue Video inputs for display of the latest as well as legacy video standards.
- DVI, RGBHV, Component, S-Video, Composite all as standard
- Wi-fi connection wireless remote control
- IR/cable remote control for easy setup
- LAN operation using control codes or Integrated Userware
1. Introduction

Digital Projection TITAN HD-600 User Manual

Getting to know the projector

Front panel, – lens and power

For more detailed information about lenses, see section 2. Installation.

Rear panel – lamp and air filter

For information about how to change the lamp or the filter, see section 6. Maintenance.
1. Introduction

Side panel – connection and control

For information about how to connect the projector, see Connecting the projector in section 2. Installation, and Connections in section 7. Appendix.

For information about how to use the control panel, see section 4. Controlling the projector.

For information about how to mount and stack projectors, see section 2. Installation.
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Screen requirements

Aspect ratio

Fitting the image to the DMD
If the source image supplied to the projector is smaller than 1280 x 720 pixels, then the image will not fill the DMD. The following example shows how a number of common formats may be displayed.

Images displayed full width

![Diagram showing images displayed full width]

Images displayed full height

Notes

The images are shown here scaled automatically by the projector.

The image may be scaled differently if the Aspect Ratio is set differently in the Picture or Geometry menus.
Diagonal screen sizes
Screen sizes are sometimes specified by their diagonal size (D) in inches. 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 in inches into width and height, at various aspect ratios.

2.35:1 (Scope)
\[ W = D \times 0.92\text{in} \quad (D \times 0.023\text{m}) \]
\[ H = D \times 0.39\text{in} \quad (D \times 0.01\text{m}) \]

1.85:1
\[ W = D \times 0.88\text{in} \quad (D \times 0.022\text{m}) \]
\[ H = D \times 0.47\text{in} \quad (D \times 0.012\text{m}) \]

16:9 = 1.78:1 (native aspect ratio)
\[ W = D \times 0.87\text{in} \quad (D \times 0.022\text{m}) \]
\[ H = D \times 0.49\text{in} \quad (D \times 0.0125\text{m}) \]

1.66:1 (Vista)
\[ W = D \times 0.86\text{in} \quad (D \times 0.022\text{m}) \]
\[ H = D \times 0.52\text{in} \quad (D \times 0.013\text{m}) \]

4:3 = 1.33:1
\[ W = D \times 0.8\text{in} \quad (D \times 0.02\text{m}) \]
\[ H = D \times 0.6\text{in} \quad (D \times 0.015\text{m}) \]

5:4 = 1.25:1
\[ W = D \times 0.78\text{in} \quad (D \times 0.02\text{m}) \]
\[ H = D \times 0.625\text{in} \quad (D \times 0.016\text{m}) \]
2. Installation

**Fitting the image to the screen**

It is important that your screen is of sufficient height and width to display images at all the aspect ratios you are planning to use.

Use the conversion chart, or the sample calculations below to check that you are able to display the full image on your screen. If you have insufficient height or width, you will have to reduce the overall image size in order to display the full image on your screen.

![Conversion Chart](chart.png)

**Notes**

- **2.35:1 (Scope)**
  \[ W = H \times 2.35 \quad H = W \times 0.426 \]

- **1.85:1**
  \[ W = H \times 1.85 \quad H = W \times 0.54 \]

- **16:9 = 1.78:1 (native aspect ratio)**
  \[ W = H \times 1.78 \quad H = W \times 0.56 \]

- **1.66:1 (Vista)**
  \[ W = H \times 1.66 \quad H = W \times 0.6 \]

- **4:3 = 1.33:1**
  \[ W = H \times 1.33 \quad H = W \times 0.75 \]

- **5:4 = 1.25:1**
  \[ W = H \times 1.25 \quad H = W \times 0.8 \]
Positioning the screen and projector

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

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

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.

Ensure that there is at least 30cm (12in) of space between the ventilation outlets and any wall, and 10cm (4in) on all other sides.

Do not install the projector close to anything that might be affected by its operational heat, for instance, polystyrene ceiling tiles, curtains etc.

The image can be flipped for rear projection (see section 4. Using the menus, Image menu) and displayed without the need for extra mirrors or equipment.

However, you must ensure that there is sufficient distance behind the screen for the projector to be correctly located.

Rear installation is generally more complicated and advice should be sought from your local dealer before attempting it.
Choosing a lens

A number of lenses are available for use with the projector. Which lens you choose will depend on the screen size, image aspect ratio, projection distance and light output.

The lenses available and their part numbers are listed below:

- 0.63 : 1 fixed lens  001-734
- 0.96 : 1 fixed lens  001-735
- 1.2 - 1.44 : 1 zoom lens  001-736
- 1.44 - 1.8 : 1 zoom lens  001-737
- 1.8 - 2.4 : 1 zoom lens  001-738
- 2.4 - 3.6 : 1 zoom lens  001-739
- 3.6 - 5.6 : 1 zoom lens  001-740

If you are simply connecting the output of a camera or computer directly to the projector, then the image size (in pixels) may well be fixed. If, however, you are using commercially available image processing equipment, such as the Digital Projection VIP1000, you may be able to resize the image to fit the DMD.

If the image does not fill the full width of the DMD, this effectively increases the throw ratio of the lens. This can be corrected for by applying a Throw ratio factor.

Method one: using the lens charts

For the screen sizes listed below, use the charts on the following pages, to choose the most suitable lens.

Full width images, including:

- 2.35:1 (Scope)  1280 x 544 pixels
- 1.85:1  1280 x 691 pixels
- 16:9 = 1.78:1  1280 x 720 pixels (native resolution)

Full height images

A Throw ratio factor (TRF) has been applied to the following charts:

- 1.66:1 (Vista)  1195 x 720 pixels  TRF = 1.07
- 4:3 = 1.33:1  960 x 720 pixels  TRF = 1.33
- 5:4 = 1.25:1  900 x 720 pixels  TRF = 1.42

Method two: by calculation

See the calculations, on the page immediately following the lens chart.
Choosing a lens using the lens charts

Use the charts on this page and on the following pages to choose which lens best suits your application.

*Full width images, including 2.35:1, 1.85:1 and 16:9 (native resolution)*

**example**

- For a screen width of 6m at a distance of 13m, the 1.8 - 2.4:1 zoom lens would be best suited.
- For the same screen size at a distance of 18m, the 2.4 - 3.6:1 zoom lens would be best suited.

If you need to be more precise, then use the calculations on the page immediately following the lens charts.
2. Installation

_Lens charts continued_

**Full height image 1.66:1 (Vista)**

Use the chart below to choose which lens best suits your application.

if you need to be more precise, then use the calculations on the page immediately following the lens charts.

---

**Notes**

This chart has a TRF of 1.07, for use with the following images:

1.66:1 (Vista)
Lens charts continued

**Full height image 4:3**

Use the chart below to choose which lens best suits your application.

If you need to be more precise, then use the calculations on the page immediately following the lens charts.

---

**Notes**

This chart has a TRF of 1.33, for use with the following images:

4:3 = 1.33

---

<table>
<thead>
<tr>
<th>Screen width</th>
<th>Throw distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>10</td>
<td>33</td>
</tr>
<tr>
<td>15</td>
<td>49</td>
</tr>
<tr>
<td>20</td>
<td>66</td>
</tr>
<tr>
<td>25</td>
<td>82</td>
</tr>
<tr>
<td>30</td>
<td>98</td>
</tr>
</tbody>
</table>

**Throw distance**

- 0.96 : 1 fixed lens 001-735
- 0.64 : 1 fixed lens 001-734
- 1.2 - 1.44 : 1 zoom lens 001-736
- 1.44 - 1.8 : 1 zoom lens 001-737
- 1.8 - 2.4 : 1 zoom lens 001-738
- 2.4 - 3.6 : 1 zoom lens 001-739
- 13.6 - 5.6 : 1 zoom lens 001-740
2. Installation

**Lens charts continued**

**Full height image 5:4**
Use the chart below to choose which lens best suits your application.

if you need to be more precise, then use the calculations on the page immediately following the lens charts.

---

**Notes**

This chart has a TRF of 1.42, for use with the following images:

5:4 = 1.25

---

**Diagram**

[Diagram of lens charts with screen width and throw distance metrics, showing various lens options and their corresponding ratio values.]
Choosing a lens by calculation

For any screen size not listed above, or if you need to be more precise, then use the calculations below.

- Identify actual width of the image in pixels.
- Calculate the Throw Ratio Factor: \[ TRF = \frac{DMD \text{ width (1280)}}{\text{Image width in pixels}} \]
- Identify the screen width required.
- Identify the throw distance required.

*Throw distance calculations are based on the distance from the outer end of the lens, which will vary from lens to lens. Once a lens has been chosen, the figures can be checked using the lens extension values given on the next page.*

- Calculate the throw ratio required. \[ \text{Throw ratio} = \frac{\text{Throw distance}}{\text{Screen width \times TRF}} \]
- Choose a lens with the required throw ratio.

*Check from the lens charts or the specification (see section 7. Appendix), that the lens chosen has a sufficient throw range.*

**example**

- An image, 1024 x 768 pixels, screen width 6.5m, throw distance 18m from the outer end of the lens.

  - Throw Ratio Factor (TRF) = \[ \frac{1280}{1024} = 1.25 \]
  - Throw ratio required = \[ \frac{18}{6.5 \times 1.25} = 2.22 \]
  - Choose the 1.8 - 2.4 zoom lens.
### 2. Installation

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#### Useful lens calculations

The following lens calculations may be useful:

\[ \text{Throw ratio} = \frac{\text{Throw distance}}{\text{Screen width}} \]

\[ \text{Throw ratio factor (TRF)} = \frac{\text{DMD width in pixels}}{\text{image width in pixels}} = \frac{1280}{\text{image width in pixels}} \]

Therefore:

\[ \text{Screen width} = \frac{\text{Throw distance}}{\text{Throw ratio} \times \text{TRF}} \]

\[ \text{Throw distance} = \text{Screen width} \times \text{Throw ratio} \times \text{TRF} \]

#### Lens extension

The throw distance calculated above is to the outer end of the lens. For each lens, the nominal distance between the front of the projector and the outer end of the lens (lens extension) will be as listed below.

<table>
<thead>
<tr>
<th>Lens extension</th>
<th>Lens extension, measured from front of corner post</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.63 : 1 fixed lens 001-734</td>
<td>95 mm (3.7 in)</td>
</tr>
<tr>
<td>0.96 : 1 fixed lens 001-735</td>
<td>70 mm (2.8 in)</td>
</tr>
<tr>
<td>1.2 - 1.44 : 1 zoom lens 001-736</td>
<td>42 mm (1.6 in)</td>
</tr>
<tr>
<td>1.44 - 1.8 : 1 zoom lens 001-737</td>
<td>4 mm -0.1 in</td>
</tr>
<tr>
<td>1.8 - 2.4 : 1 zoom lens 001-738</td>
<td>0 mm (0.0 in)</td>
</tr>
<tr>
<td>2.4 - 3.6 : 1 zoom lens 001-739</td>
<td>0 mm (0.0 in)</td>
</tr>
<tr>
<td>3.6 - 5.6 : 1 zoom lens 001-740</td>
<td>7 mm (0.3 in)</td>
</tr>
</tbody>
</table>

---

#### Notes

- The Throw ratio for a particular lens is fixed, but assumes that the image fills the width of the DMD.

For images that do not fill the width of the DMD, the Throw ratio is effectively increased. To correct for this, a Throw Ratio Factor (TRF) is used.

- Lens extension is measured when the lens is focused at infinity, and fully extended. At other focus settings, the extension could be up to 10mm less.
Fitting the lens

- Remove the rear lens cap from the lens.
- Insert the lens into the lens mount with the connector to the right, taking care to line up the locating pin on the lens with the locating hole above the opening.
- Push the lens in firmly to engage the connector.
- Secure the lens using the three cross-head screws.

Notes

Make sure the rear lens cap is removed, before fitting the lens.

Make sure the front lens cap is removed, before switching on the projector.

Be careful not to scratch the lens surfaces. If you do accidentally touch a lens, then clean the surface using a lens paper.
2. Installation

Shifting 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 to maintain a geometrically correct image.

- Any single adjustment outside the ranges specified below 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 diagrams to the right.

The maximum range available with no distortion is dependent on which lens is used. The tables below show the maximum range for images that fill the DMD. For images which do not use the full height or width, extra shift will be possible, up to the limit of the lens mount movement.

<table>
<thead>
<tr>
<th>Fixed lenses</th>
<th>vertical (pixels)</th>
<th>horizontal (pixels)</th>
<th>vertical (vs DMD height)</th>
<th>horizontal (vs DMD width)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no shift possible</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zoom lenses</th>
<th>vertical (pixels)</th>
<th>horizontal (pixels)</th>
<th>vertical (vs DMD height)</th>
<th>horizontal (vs DMD width)</th>
</tr>
</thead>
<tbody>
<tr>
<td>360 up</td>
<td>128 left</td>
<td>0.5H up</td>
<td>0.1W left</td>
<td></td>
</tr>
<tr>
<td>115 down</td>
<td>128 right</td>
<td>0.16H down</td>
<td>0.1W right</td>
<td></td>
</tr>
</tbody>
</table>

It is physically possible to shift the lens further than this, however there will be some vignetting of the image beyond the ranges specified above.
Mounting the projector

The projector is designed to be used on a flat surface, but the optional rigging frame will allow it to be suspended from a lighting truss or rigging. The four adjustable feet under the chassis allow the projector to be lowered onto a flat surface without any danger of hands being trapped between the bottom frame and the surface.

Chassis adjustment

If the projector is to be operated from a flat surface such as a projector table, then adjustment of projector level should be made by turning the four feet under the chassis.

Fitting the optional rigging frame

- Before fitting the rigging frame to the projector:
  - remove the four feet;
  - discard the bracket supplied for use with Titan HD-500/250 projectors;
  - make sure that all the frame adjusters are set midway.

- Secure the rigging frame to the projector using the screws supplied, as shown in the pictures below. Three screws secure each of the adjuster brackets to its corner post.

Notes

⚠️ BEFORE INSTALLING THE PROJECTOR, READ ALL THE WARNINGS BELOW AND ALL THOSE IN IMPORTANT INFORMATION AT THE FRONT OF THIS MANUAL.

⚠️ The projector weighs approximately 31 kg (68 lbs). Use safe handling techniques when lifting the projector.

⚠️ 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 (see specification for weights).

⚠️ Backup safety chains or wires should always be used.

⚠️ Do not tilt the projector more than ±12° in either direction when in use, as this may cause serious lamp failure, damage the lamp module and cause extra cost on replacement.
Adjusting the rigging frame
Coarse adjustment of projector level should be made by adjusting the length of
the supporting wires or chains, or by adjusting the position of the truss or rigging.
Once the initial coarse adjustment has been made, fine adjustment can be made by
turning the frame adjusters on the rigging frame:

- To tilt the projector forwards and backwards (pitch adjustment),
turn either the front pair or the rear pair of vertical adjusters,
taking care to turn both adjusters by the same amount.

- To tilt the projector from side to side (roll adjustment), turn either
the left pair or the right pair of vertical adjusters, taking care to
turn both adjusters by the same amount.

- To rotate the projector around its vertical axis (yaw adjustment),
turn the single horizontal adjuster at the rear.

Notes

Before suspending the projector, make sure that all the frame adjusters are set midway.

Always make adjustments in pairs - never make a single adjustment - otherwise
the projector frame could become distorted.

Do not tilt the projector more than ±12° in either direction when in use, as this may
cause serious lamp failure, damage the lamp module and cause extra cost on
replacement.
Stacking projectors

The rigging frame is capable of supporting the weight of up to two other projectors, using the built-in frame couplings. The projectors can be stacked on top of each other, or suspended below each other.

- Carefully lower each projector down onto the top of the others, making sure that all four frame couplings engage fully.
- Fit a locking pin into each coupling. A ball in the end of the pin prevents the pin from falling out – to insert or remove a locking pin, press the button on the end of the pin to release the ball.

When stacking projectors, the stack MUST be vertical, to ensure that the stresses are distributed to all frame couplings.

Make sure that the surface, ceiling or rigging that is to support the projector is capable of supporting the combined weight of all the projectors and lenses (see specification for weights).

Do not place heavy objects on top of the projector chassis. Only the chassis corners and the rigging frame are capable of withstanding the weight of another projector.

Do not try to stack more than 3 projectors.

Separate backup safety chains or wires should always be used for each projector.

Align the images from the projectors, following the instructions on the previous page and those in section 3. Getting started, Adjusting the lens and Adjusting the projected image.
Connecting the projector

Signal Inputs
The following inputs are available:

**EDID handshaking on the DVI and RGB2 inputs**
If you are using a computer DVI card or other source that obeys the EDID handshaking protocol, then the card or source will automatically configure itself to suit the projector.

If not, then you should refer to the documentation supplied with the source to manually set the resolution to 1280 x 720 or the nearest suitable setting. Switch off the source, connect to the projector, then switch the source back on again.
Control connection examples

**LAN connection**
All of the projector's features can be controlled via a LAN connection, using a standard internet browser package such as Internet Explorer.

For more information about pin connections and control codes see section 7. Appendix.

For more information about using a browser to control the projector see section 4. Using the menus.

**RS232 connection**
2. Installation

Power connection
When mains power is first applied, the projector will perform a self-test, then go into Standby mode.

The Power indicator on the control panel will show amber until the \( \text{POWER} \) on the remote control or the keypad, is pressed for 3 seconds.

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.
# 3. Getting Started

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Switching the projector on

- Connect the power cable between the mains supply and the projector.

Wait until the self-test has completed and the power indicator on the control panel shows amber. The lamp will be off, the shutter closed, and the projector will be in STANDBY mode.

- Press POWER on the remote control or the keypad, and hold for about 3 seconds to switch the projector ON. The power indicator on the control panel will show green, the lamp will light and the shutter will open.

Selecting an input or test pattern

**Input**

- Press INPUT or INPUT to change to the next input up or down the following list:
  1. RGB1
  2. RGB2
  3. DVI
  4. (not used in this projector)
  5. Composite Video
  6. S-Video
  7. Component

- Or press the numbered keys 1–7 to change directly to the input:

![Input keys]

**Test pattern**

If you have no video source connected to the projector, then you can display a test pattern as follows:

- Press TEST on the remote control, to select a test pattern.
Adjusting the lens

Focus
- Press FOCUS followed by ▲ and ▼ to adjust the focus.
  When adjustment is finished, press EXIT.

Zoom
- Press ZOOM followed by ▲ and ▼ to adjust the zoom.
  When adjustment is finished, press EXIT.

Shift
- Press SHIFT followed by ▲, ▼, ◄ or ► to shift the lens up, down, left or right.
  When adjustment is finished, press EXIT.

Notes
For more detailed information about:
- using the control keys on the remote control or keypad,
- using the menus,
see the next section: Controlling the projector.

When any of the three Lens adjustment keys pressed, the blue Transmit indicator on the remote control will light for 10 seconds:
- after 10 seconds, if no adjustment has been made, the indicator will go out and the Lens adjustment key must be pressed again to resume adjustment.
- to end the adjustment before 10 seconds has elapsed, press the EXIT key.
- all other adjustments will be locked out until the Lens adjustment is ended.
3. Getting Started

Adjusting the projected image

**Picture settings**
- Press a key, followed by and to adjust these picture settings:
  - Brightness
  - Contrast
  - Saturation
  - Phase
  - Aspect ratio

**Geometry settings**
- Press Keystone followed by and to adjust the keystone correction.
- Press Position (for all inputs except DVI) followed by , , and to adjust the picture position, for images smaller than the DMD.

**Switching the projector off**
- Press POWER on the remote control or keypad, and hold for 3 seconds, to switch the projector OFF.

**Notes**
- The Saturation control is available for Composite, S-Video and Component inputs only.
- The Phase control is available for RGB inputs only.
- For more detailed information about:
  - using the control keys on the remote control or keypad,
  - using the menus,
  - see the next section: Controlling the projector.

- For all adjustments that require more than one key to be pressed:
  - after 10 seconds, if no adjustment has been made, the indicator will go out and the adjustment key must be pressed again.
  - to end the adjustment before 10 seconds has elapsed, press a different adjustment key, or press the Exit key.

- Always allow the lamp to cool for 5 minutes before:
  - disconnecting the power
  - moving the projector
  - changing the lamp
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4. Controlling the projector

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Overview

Controlling the projector

The projector can be controlled from:

- the remote control
- the keypad
- the RS232 input
- the Ethernet input

For more information about controlling the projector using the RS232 and Ethernet inputs, see Remote communications protocol in section 7. Appendix.

For information about how to connect the projector, see Connecting the projector in section 2. Installation, and Connections in section 7. Appendix.

- Many features are controlled from the menus using the menu navigation keys on the remote control or keypad.
  
  For more information about using the menus, see later in this section, Using the menus.

- Some of the menu features, for example brightness, contrast and input preset operations, can be accessed directly using the control keys at the bottom of the remote control.

- Other features, eg zoom and focus, are controlled using the control keys at the top of the remote control and keypad.

  For more information about using the control keys, see later in this section, Using the control keys.
Input modes and settings

**Input mode detection**
The projector can automatically detect the following parameters from the incoming video signal:

- line frequency
- frame rate
- interlace / progressive

From these parameters the projector can determine input mode, for example:

- input source horizontal vertical mode
- composite 15.73KHz 60.0Hz = NTSC
- RGB1 31.51KHz 60.0Hz = SDTV 480p
- DVI 64.02KHz 60.0Hz = SXGA 60

When you select a new input source, the green LED near the input connector will flash, and the searching message will be displayed.

When the input mode has been detected, the LED will show continuously and the auto detect message will be displayed, for example:

![RGB1 Auto Detect](image)

If the input mode cannot be detected, the LED will continue to flash, to show that the input is still selected. However, the following message will be displayed:

![Out of Range](image)

**Mode library and mode history**
Once an input mode has been successfully determined for the first time, a set of default modal settings (picture, geometry and colour), will be copied from the **mode library** to the **mode history**.

[Diagram showing mode library and mode history]

For a full list of supported input modes, see **Input modes supported, in section 7. Appendix.**
4. Controlling the projector

Any subsequent changes that you make to the modal settings will be saved in the mode history, with the input mode.

Input presets

It may be the case that you need to save more than one set of modal settings for the same input mode. For example, you may have more than one video player or a selection of films with different characteristics.

In that case, the current input source and modal settings can be saved to any one of 16 input presets, for recall when the same input source is used again.

Notes

- In normal use, there should be adequate memory to record all likely modal settings in the mode history.
  - However, in exceptional circumstances, the least used settings will be deleted, to allow a new mode to be added.

A preset can be applied only to the same mode for which it was created. If the detected input mode does not match, then settings from the mode history or mode library will be applied.
Indicators

Input status indicators

The indicator next to each input connector on the input panel will light as follows:

- **off** = input not selected
- **green** = input selected, signal detected and in range
- **flashing green** = input selected, but signal **not** detected or out of range

Notes

There are more indicators on the Control panel, and these are described on the next page.

Input 4. is not used on this projector.
4. Controlling the projector

The control panel

Keypad layout
The controls on the keypad are identical to those at the top of the remote control, and are described on the following pages.

Projector status indicators
The indicators on the control panel are as follows:

- **Power**
  - Off = NO POWER
  - Green = normal RUNNING mode
  - Amber = STANDBY mode

- **Shutter**
  - Yellow = CLOSED
  - Green = OPEN

- **Error**
  - Off = NO ERROR
  - Flashing = ERROR (temperature)
  - Steady = ERROR (voltage)

- **IR**
  - Blue Flash = Remote control command received

- **Lamp 1**
  - Off = OFF
  - Flashing Red = LAMP ERROR
  - Green = ON (100%)
  - Amber = (80 - 99%)
  - Flashing Green/Amber = LAMP COOL-DOWN or WARM-UP

- **Lamp 2**
  - Off = OFF
  - Flashing Red = LAMP ERROR
  - Green = ON (100%)
  - Amber = (80 - 99%)
  - Flashing Green/Amber = LAMP COOL-DOWN or WARM-UP

Notes

- Many features are controlled from the menus using the menu navigation keys on the remote control or keypad.
  
  For more information about using the menus, see later in this section, Using the menus.

- Some of the menu features, for example brightness, contrast and input preset operations, can be accessed directly using the control keys at the bottom of the remote control.

  Other features, eg zoom and focus, are controlled using the control keys at the top of the remote control and keypad.

  For more information about using the control keys, see later in this section, Using the control keys.
4. Controlling the projector

The remote control

Layout

Timeout

There is a 10 second timeout for the three Lens adjustment keys (see note on next page).

There is a separate, adjustable timeout for the On Screen Menus (see On Screen Display, in Setup Menu, later in this section).

Notes

Many features are controlled from the menus using the menu navigation keys on the remote control or keypad.

For more information about using the menus, see later in this section, Using the menus.

Some of the menu features, for example brightness, contrast and input preset operations, can be accessed directly using the control keys at the bottom of the remote control.

Other features, eg zoom and focus, are controlled using the control keys at the top of the remote control and keypad.

For more information about using the control keys, see later in this section, Using the control keys.

The following keys are NOT used on this projector:

CTRL
R P Y
FUNC
10+ (but N is used)
# (but R is used)

Note that plugging in the remote control cable will disable the infra-red.
4. Controlling the projector

Using the control keys

Power
- Press POWER ON and hold for 3 seconds, to switch the projector ON.
- Press POWER OFF and hold for 3 seconds, to switch the projector OFF.

Shutter
- Press SHUTTER OPEN to OPEN the shutter.
- Press SHUTTER CLOSE to CLOSE the shutter.

On-Screen-Display
- Press OSD OFF to switch the On-Screen-Display OFF.
  This includes ALL menus, controls and on-screen messages.
- Press OSD ON to switch the On-Screen-Display ON.

Focus
- Press FOCUS followed by ▲ and ▼ to adjust the focus.
  When adjustment is finished, press EXIT.

Zoom
- Press ZOOM followed by ▲ and ▼ to adjust the zoom.
  When adjustment is finished, press EXIT.

Shift
- Press SHIFT followed by ▲, ▼, ◀ or ▶ to shift the lens up, down, left or right.
  When adjustment is finished, press EXIT.

Notes

Closing the shutter produces a better black than simply removing the signal, as the light source will be completely blocked by the shutter blade.

When the OSD is OFF:
- all menu navigation keys are disabled.
- keys such as BRI (brightness) will still function, but the slider bars will not be visible on screen.

When any of the three Lens adjustment keys is pressed, the blue Transmit indicator on the remote control will light for 10 seconds:
- after 10 seconds, if no adjustment has been made, the indicator will go out and the Lens adjustment key must be pressed again to resume adjustment.
- to end the adjustment before 10 seconds has elapsed, press the EXIT key.
- all other adjustments will be locked out until the Lens adjustment is ended.

For more information about the amount of lens shift available, see section 2. Installation.
Auto-detect input mode
- Press AUTO to force the projector to re-detect the input mode (see Input modes and settings, earlier in this section).

Source information
- Press INFO to display the source information screen.

Input
- Press INPUT + or INPUT - to change to the next input up or down the following list:
  1. RGB1
  2. RGB2
  3. DVI
  4. (not used in this projector)
  5. Composite Video
  6. S-Video
  7. Component
- Or press the numbered keys 1–7 to change directly to the input:

Notes
For more information about input mode detection, see earlier in this section, Input modes and settings.

Input 4. is not used on this projector.
4. Controlling the projector

Input Presets

Recall

- To recall a set of modal settings that have been saved, press and hold \textbf{PRESET}, whilst pressing the lettered key \textbf{A – S}.
- The projector will switch to the saved input source, and redetect the input mode before applying the saved modal settings.

Save

- To save the current input source, mode and modal settings, press and hold \textbf{SAVE}, whilst pressing the lettered key \textbf{A – S}.

\textit{If this Preset has been used before, and the Input source has been changed, then the following message will be displayed.}

\begin{center}
\begin{tabular}{|c|}
\hline
\textbf{Overwrite Preset?} \\
\textbf{OK}  \hspace{1cm} \textbf{Cancel} \\
\hline
\end{tabular}
\end{center}

- Press \textit{\textdownarrow} and \textit{\textuparrow} to select either OK or Cancel.
- Press \textit{OK} to confirm your selection.
- The modal settings will be saved to the selected preset, and the following message will be displayed.

\begin{center}
\begin{tabular}{|c|}
\hline
\textbf{Preset Saved} \\
\hline
\end{tabular}
\end{center}
Red, Green and Blue

- Press [RED], [GREEN] or [BLUE] to switch the red, green or blue components OFF or ON.

Test pattern

- Press [TEST] to select a test pattern.

Picture settings

- Press a [ ] key, followed by [ ] and [ ] to adjust these picture settings:
  
  - Brightness [BRI]
  - Contrast [CON]
  - Saturation [SAT]
  - Phase [PHASE]
  - Aspect ratio [ASPECT]

Geometry settings

Keystone adjustment is used to correct for distortion caused by the projector being mounted higher or lower than the screen.

- Press Keystone [KEYST], followed by [ ] and [ ] to adjust the keystone correction:

- Press Position [POS], followed by [ ], [ ], [ ] and [ ] to adjust the picture position, for images smaller than the DMD:

Notes

- The red, green and blue keys are disabled when the OSD is switched OFF.

- The Saturation control is available for Composite, S-Video and Component inputs only.

- The Phase control is available for RGB inputs only.

- For all adjustments on this page that require more than one key to be pressed:
  - after 10 seconds, if no adjustment has been made, the [ ] key must be pressed again to resume adjustment.
  - to end the adjustment before 10 seconds has elapsed, press a different adjustment key, or press the [EXIT] key.

- When the OSD is OFF:
  - the [ ] keys will still function, but the controls will not be visible on screen.
4. Controlling the projector

Magnify and pan

- Press Magnify \( \text{MAGNIFY} \)
  followed by \( \uparrow \) and \( \downarrow \) to adjust the size of the picture.

- Press Pan \( \text{PAN} \)
  followed by \( \leftarrow, \rightarrow, \uparrow \) and \( \downarrow \) to adjust the position of the magnified image.

On-screen-display size

- Press Size \( \text{SIZE} \)
  to switch the size of the OSD between large and small.

Remote control address

The projector and the remote control need to be set to matching addresses. Read the note to the right on this page, and follow the instructions in the order shown below:

1. Set the projector address as shown in Setup menu, later in this section.
2. Set the remote control address:

   - Press and hold \( \text{ADDR} \)
     whilst pressing two numbered keys \( 0 – 9 \)
     to set the remote control address to any number between 00 and 99.
     (leading zeros must be used for numbers less than 10)

Remote control backlight

- Press \( \text{LIGHT} \) to switch the backlight on and off.

Notes

- The magnify feature utilises a digital zoom. Used with the pan control, this can be used to:
  - enlarge a section of the image
  - enable the use of multiple projectors to construct a large image from tiles.

- The pan control is available only when the image has been magnified.

- If the OSD moves off screen due to a change in image size, then pressing the size key will restore its readability.

- When fresh batteries are inserted in the remote control it will default to address 00. Remote control 00 is a master control, able to control all projectors.

  If two or more projectors are set to the same address, they can be controlled from one remote control, provided they are connected by cable or in range of the infra red.
Using the menus

Navigating menus and submenus
When the menus are in use and the OSD is ON, the **top level menu headings** are always visible to the left of the screen.

<table>
<thead>
<tr>
<th>Input</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. RGB1</td>
</tr>
<tr>
<td></td>
<td>2. RGB2</td>
</tr>
<tr>
<td></td>
<td>3. DVI</td>
</tr>
<tr>
<td></td>
<td>5. Composite Video</td>
</tr>
<tr>
<td></td>
<td>6. S-Video</td>
</tr>
<tr>
<td></td>
<td>7. Component</td>
</tr>
<tr>
<td></td>
<td>Presets</td>
</tr>
<tr>
<td>Picture</td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
</tbody>
</table>

Each **menu** item can lead to a number of **submenus**, which are displayed in the column to the right. The ▶ symbol indicates that a submenu is available.

Each **submenu** can lead to further submenus, up to a maximum of three levels.

- To display the menus, press **MENU** on the remote control or the keypad.

- The menus will always open at the same point they were last viewed. The example below shows the first menu display following power on – the item that is currently selected (the Input menu) is highlighted in blue.

To select a menu, press ▲ and ▼, for example the Setup menu:

<table>
<thead>
<tr>
<th>Input</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Projector</td>
</tr>
<tr>
<td></td>
<td>Global Colour Settings</td>
</tr>
<tr>
<td></td>
<td>Lamp</td>
</tr>
<tr>
<td></td>
<td>On Screen Display</td>
</tr>
<tr>
<td></td>
<td>Password</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>Restore Defaults</td>
</tr>
</tbody>
</table>

**Notes**

- Some menu controls can be accessed directly using the **control keys** (see earlier in this section).

- When the OSD is OFF, all menu navigation keys will be disabled.

- When the OSD is switched back ON, the menus will remain OFF until the **MENU** key is pressed again. The menus will then reopen at the same point they were last viewed.

- If a menu is opened, and no other key is pressed within the period set in the **OSD Timeout** menu, then the menus will disappear. When the **MENU** key is pressed again, the menus will reopen at the same point they were last viewed.

(see **On Screen Display** in **Setup Menu**, later in this section.)

**Main menu: Input**

**Input 4. is not used on this projector.**

**Main menu: Setup**
Press \(\Rightarrow\) to open the menu. The blue highlight moves to the first item in the menu, which may be submenu, for example the Projector Setup submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>Projector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Global Colourimetry</td>
</tr>
<tr>
<td>Geometry</td>
<td>Lamp</td>
</tr>
<tr>
<td>Colour</td>
<td>On Screen Display</td>
</tr>
<tr>
<td>Setup</td>
<td>Password</td>
</tr>
<tr>
<td>Information</td>
<td>Communication</td>
</tr>
</tbody>
</table>

- To select a submenu, press \(\uparrow\) and \(\downarrow\), for example the Lamp submenu. Press \(\Rightarrow\) to open the submenu. The submenu opens, with the title at the top.

<table>
<thead>
<tr>
<th>Input</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Current Setting [100%] Lamp1</td>
</tr>
<tr>
<td>Geometry</td>
<td>Change Lamp Setting</td>
</tr>
<tr>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
</tbody>
</table>

- To close the submenu and return to the previous level, press \(\text{EXIT}\).

<table>
<thead>
<tr>
<th>Input</th>
<th>Projector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Global Colourimetry</td>
</tr>
<tr>
<td>Geometry</td>
<td>Lamp</td>
</tr>
<tr>
<td>Colour</td>
<td>On Screen Display</td>
</tr>
<tr>
<td>Setup</td>
<td>Password</td>
</tr>
<tr>
<td>Information</td>
<td>Communication</td>
</tr>
</tbody>
</table>

- There may be up to three levels of submenu, so to return to the top level, you may have to press \(\text{EXIT}\) up to three times.

- To close the menu display completely, press \(\text{MENU}\).
Menu controls

Some menus have controls, as shown in the examples below.

<table>
<thead>
<tr>
<th>Input</th>
<th>Brightness</th>
<th>0</th>
<th>parametric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Contrast</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td>Saturation</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>Hue</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td>Gamma</td>
<td>parametric</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>Parametric Gamma</td>
<td>2.2</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Phase</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aspect Ratio</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sharpness</td>
<td>0</td>
<td>+</td>
</tr>
</tbody>
</table>

Slider bar

The highlighted slider bar shows which control is active currently.

To adjust the slider press<br>and <br>.

Parameter selection

To select from a number of parameters, (shown one at a time to the right), press<br>and <br>. These two items are greyed out and the values are blank, showing that they are not available, due to the effect of settings made in other menus, or due to the type of input signal.

Parameter list

To select from a list of parameters, press <br> and <br>.
Input menu

To return to the main menu, press \( \text{EXIT} \) up to three times.

From the main menu:

- Press \( \text{A} \) and \( \text{V} \) until Input is highlighted.

Press \( \text{ } \Rightarrow \) to open the Input menu. The blue highlight moves to the first item in the menu. The \( \text{ } \Rightarrow \) symbol shows which input is currently selected.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes

Some menu controls can be accessed directly using the control keys (see earlier in this section).

When using the menus, press \( \text{OSD OFF} \) or \( \text{OSD ON} \) to hide or reveal the On-Screen-Display.

For more information about the input connections, see section 2. Installation, and section 7. Appendix.

Input Source

- Press \( \text{A} \) and \( \text{V} \) to select from:
  1. RGB1
  2. RGB2
  3. DVI
  4. (not used in this projector)
  5. Composite Video
  6. S-Video
  7. Component

- Press \( \text{OK} \) to confirm your selection.

When an input has been selected, the projector will automatically detect input mode settings such as line rate and resolution etc.

To force the projector to re-detect the input mode settings, press \( \text{AUTO} \).
**Input menu continued**

**Presets**

Sixteen sets of parameters can be saved and recalled (A – S). The parameters saved for each Preset are:

- all settings from the Picture menu,
- all settings from the Input menu (1 – 7)
- all settings from the Geometry menu, except Keystone
- all settings from the Colour menu, except Global

- Press ▲ and ▼ to select Presets.
- Press ► to open the Presets submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>PRESETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Recall Preset ▶</td>
</tr>
<tr>
<td>Geometry</td>
<td>Save Preset ▶</td>
</tr>
<tr>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
</tbody>
</table>

**Recall Presets**

- Press ▲ and ▼ to select Recall Preset.
- Press ► to open the Recall Presets A ~ H submenu. Any presets that have been saved are indicated by their description, for example D: in this example.

<table>
<thead>
<tr>
<th>Input</th>
<th>RECALL PRESET A ~ H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>A:</td>
</tr>
<tr>
<td>Geometry</td>
<td>B:</td>
</tr>
<tr>
<td>Colour</td>
<td>C:</td>
</tr>
<tr>
<td>Setup</td>
<td>D: VID PAL50/4.43: F</td>
</tr>
<tr>
<td>Information</td>
<td>F:</td>
</tr>
<tr>
<td></td>
<td>G:</td>
</tr>
<tr>
<td></td>
<td>H:</td>
</tr>
<tr>
<td></td>
<td>Recall Preset J ~ S ▶</td>
</tr>
</tbody>
</table>

- To recall a set of parameters that has been saved, press ▲ and ▼ to select one of the Presets.

  *For Presets J to S, select Recall Preset J ~ S then press ► to open the J~S submenu. Press ▲ and ▼ to select the Preset.*

- Press OK to confirm your selection.
- The Preset parameters will be loaded.

---

**Notes**

- Some menu controls can be accessed directly using the control keys (see earlier in this section).
- For more information about input modes and input presets, see earlier in this section, Input modes and settings.
Input menu continued

Save Presets

- Press ↑ and ↓ to select Save Preset.
  
  Press ► to open the Save Presets A ~ H submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>SAVE PRESET A ~ H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Save Preset A</td>
</tr>
<tr>
<td>Geometry</td>
<td>Save Preset B</td>
</tr>
<tr>
<td>Colour</td>
<td>Save Preset C</td>
</tr>
<tr>
<td>Setup</td>
<td>Save Preset D</td>
</tr>
<tr>
<td>Information</td>
<td>Save Preset E</td>
</tr>
<tr>
<td></td>
<td>Save Preset F</td>
</tr>
<tr>
<td></td>
<td>Save Preset G</td>
</tr>
<tr>
<td></td>
<td>Save Preset H</td>
</tr>
<tr>
<td></td>
<td>Save Preset J ~ S</td>
</tr>
</tbody>
</table>

- To save the current set of parameters, press ↑ and ↓ to select one of the Presets.

  For Presets J to S, select Save Preset J ~ S then press ► to open the J~S submenu. Press ↑ and ↓ to select the Preset.
  
  Press OK to confirm your selection.

  If this Preset has been used before, but only if the Input source has been changed, then the following message will be displayed.

  Overwrite Preset?
  OK  Cancel

  Press ◄ and ► to select either OK or Cancel.

  Press OK to confirm your selection.

  The parameters will be saved to the selected preset, and the following message will be displayed.

  Preset Saved

Notes

Some menu controls can be accessed directly using the control keys (see earlier in this section).
4. Controlling the projector

Picture menu

To return to the main menu, press \textbf{EXIT} up to three times.

From the main menu:

- Press \textbf{A} and \textbf{V} until Picture is highlighted.

Press \textbf{D} to open the Picture menu. The blue highlight moves to the first item in the menu.

<table>
<thead>
<tr>
<th>Input</th>
<th>Brightness</th>
<th>Contrast</th>
<th>Saturation</th>
<th>Hue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>0</td>
<td>0</td>
<td>127</td>
<td>127</td>
</tr>
<tr>
<td>Geometry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td>Gamma</td>
<td>parametric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>Parametric Gamma</td>
<td>2.2</td>
<td>127</td>
<td>1.85:1 (Flat)</td>
</tr>
<tr>
<td></td>
<td>Phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aspect Ratio</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sharpness</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes

Some menu controls can be accessed directly using the control keys (see earlier in this section).

When using the menus, press OSD \textbf{OFF} or \textbf{ON} to hide or reveal the On-Screen-Display.

Picture Menu

Some menu items may be greyed out - unavailable due to the effect of settings made in other menus, or due to the type of input signal.

Brightness

- Press \textbf{A} and \textbf{V} to select Brightness.

Press \textbf{<} and \textbf{>} to adjust the slider (-128 to +127).

Contrast

- Press \textbf{A} and \textbf{V} to select Contrast.

Press \textbf{<} and \textbf{>} to adjust the slider (-128 to +127).

Saturation

\textit{Adjusts the saturation at white peak levels.}

- Press \textbf{A} and \textbf{V} to select Saturation.

Press \textbf{<} and \textbf{>} to adjust the slider (0 to 255).

Hue

\textit{Adjusts the color balance from green to blue, using the red level as a reference.}

- Press \textbf{A} and \textbf{V} to select Hue.

Press \textbf{<} and \textbf{>} to adjust the slider (0 to 255).
4. Controlling the projector

Picture menu continued

Gamma Correction

Video recordings are often supplied with a gamma adjustment applied. The projector’s gamma adjustment can be used to correct for this.

- Press ▲ and ▼ to select Gamma.
- Press ◀ and ▶ to select from:
  - Parametric: Enables the gamma slider
  - User download: Applies the gamma settings made externally using the DP Userware on a personal computer. (default gamma of 2.2)
  - Graphics: Enhanced highlights and contrast
  - NTSC: NTSC colour space, with a gamma of 2.2
  - PAL: PAL colour space, with a gamma of 2.2
  - Linear: Gamma of 1.0
  - Punch: Enhanced brightness and increased colour saturation for high ambient environments.

Parametric Gamma

- Press ▲ and ▼ to select Parametric Gamma.
- Press ◀ and ▶ to adjust the slider (1.0 to 3.0 in 0.1 steps).

Phase

Phase should be set automatically by the projector, but can be adjusted manually to correct for shimmering or poor quality definition on, for example, fine text.

- Press ▲ and ▼ to select Phase.
- Press ◀ and ▶ to adjust the slider (0 to 31).

Notes

For more information about User gamma settings, see section 5. DP Userware.

Parametric Gamma adjustment is available only when Parametric is selected in Gamma selection, above.

Phase adjustment can be found in both the Picture and Geometry menus, and is available for RGB1 and RGB2 inputs only.
4. Controlling the projector

**Picture menu continued**

**Aspect Ratio**
- Press ▲ and ▼ to select Aspect Ratio.
  - Press ◄ and ► to select from:
    - **Fill**: This will best fit the incoming source to fill either the height or width without changing the aspect ratio of the source.
    - **User Aspect**
      - 1.33:1 (4:3)
      - 1.78:1 (16:9)
      - 2.35:1 (Scope)
      - 1.66:1 (Vista)
      - 1.85 (Flat)
    - **Theaterscope**: Use with the TheaterScope Anamorphic System only. The 2.35:1 source image is displayed using the full area of the 16:9 DMD. This is then stretched to 2.35:1 by the lens.
    - **Native**: The image will be displayed pixel for pixel. The image will be centred, with a black border if smaller than 1280 x 720 or cropped if larger.

**Sharpness**
- Press ▲ and ▼ to select Sharpness.
  - Press ◄ and ► to adjust the slider.

**Notes**
- Aspect Ratio selection can be found in both the Picture and Geometry menus.
- When User Aspect is selected, the Aspect Ratio settings are taken from the User H Aspect and V Aspect settings made in the Geometry menu.
- The Sharpness slider is available for Composite, S-Video and Component SD inputs only.
4. Controlling the projector

Geometry menu

To return to the main menu, press \( \text{EXIT} \) up to three times.

From the main menu:

- Press \( \uparrow \) and \( \downarrow \) until Geometry is highlighted.

Press \( \text{ } \leftarrow \) to open the Geometry menu. The blue highlight moves to the first item in the menu.

Input

<table>
<thead>
<tr>
<th>Input</th>
<th>H Position</th>
<th>128</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>V Position</td>
<td>64</td>
<td>+</td>
</tr>
<tr>
<td>Geometry</td>
<td>Aspect Ratio</td>
<td>1.85:1 (Flat)</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>User H Aspect</td>
<td>500</td>
<td>+</td>
</tr>
<tr>
<td>Setup</td>
<td>User V Aspect</td>
<td>500</td>
<td>+</td>
</tr>
<tr>
<td>Information</td>
<td>Keystone</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Phase</td>
<td>127</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Blanking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Horizontal Position

- Press \( \uparrow \) and \( \downarrow \) to select H Position.

Press \( \leftarrow \) and \( \rightarrow \) to adjust the slider.

Vertical Position

- Press \( \uparrow \) and \( \downarrow \) to select V Position.

Press \( \leftarrow \) and \( \rightarrow \) to adjust the slider.

Aspect Ratio

- Press \( \leftarrow \) and \( \rightarrow \) to select from:

  Fill  This will best fit the incoming source to fill either the height or width without changing the aspect ratio of the source.

  User Aspect

  1.33:1 (4:3)

  1.78:1 (16:9)

  2.35:1 (Scope)

  1.66:1 (Vista)

  1.85 (Flat)

  Theaterscope  Use with the TheaterScope Anamorphic System only. The 2.35:1 source image is displayed using the full area of the 16:9 DMD. This is then stretched to 2.35:1 by the lens.

  Native  The image will be displayed pixel for pixel. The image will be centred, with a black border if smaller than native resolution or cropped if larger.

Notes

Some menu controls can be accessed directly using the control keys (see earlier in this section).

When using the menus, press OSD \( \text{OFF} \) or \( \text{ON} \) to hide or reveal the On-Screen-Display.

Some menu items may be greyed out - unavailable due to the effect of settings made in other menus, or due to the type of input signal.

Aspect Ratio selection can be found in both the Picture and Geometry menus.

When User Aspect is selected, the Aspect Ratio settings are taken from the User H Aspect and V Aspect settings (see next page).
Geometry menu continued

User Horizontal Aspect Ratio
- Press ▲ and ▼ to select User H Aspect.
  Press ◀ and ► to adjust the slider (internal number – adjust to fit).

User Vertical Aspect Ratio
- Press ▲ and ▼ to select User V Aspect.
  Press ◀ and ► to adjust the slider (internal number – adjust to fit).

Keystone
Used to correct for distortion caused by the projector being mounted higher or lower than the screen.
- Press ▲ and ▼ to select Keystone.
  Press ◀ and ► to adjust the slider (-128 to +127).

Phase
Phase should be set automatically by the projector, but can be adjusted manually to correct for shimmering or poor quality definition on, for example, fine text.
- Press ▲ and ▼ to select Phase.
  Press ◀ and ► to adjust the slider (0 to 32).

Notes

Horizontal and Vertical Aspect Ratio adjustments are available only when User is selected in Aspect Ratio, (see previous page).

Keystone adjustment can be found in both the Geometry and Projector Setup menus.

Phase adjustment can be found in both the Picture and Geometry menus, and is available for graphics based RGB sources only.
**4. Controlling the projector**  

**Geometry menu continued**

**Resolution**

- Press ▲ and ▼ to select Resolution.

Press ► to open the Resolution submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>RESOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Input Detection</td>
</tr>
<tr>
<td>Geometry</td>
<td>Input Standard</td>
</tr>
<tr>
<td>Colour</td>
<td>Total H Samples</td>
</tr>
<tr>
<td>Setup</td>
<td>Active H Samples</td>
</tr>
<tr>
<td>Information</td>
<td>Active V Samples</td>
</tr>
<tr>
<td></td>
<td>V Offset</td>
</tr>
</tbody>
</table>

**Input Detection**

- Press ◄ and ► to select from:

  - **Automatic**: Allows the projector to automatically detect an appropriate input mode for the signal.
  - **Manual**: Allows the user to select an appropriate input mode from a list of common standards.
  - **Custom**: Allows the user to completely customise the settings to suit the incoming video signal.

When **Input Detection** is set to **Manual**:

- Press ▲ and ▼ to select Input Standard.

- Press ◄ and ► to select from:

  - 720p
  - XGA
  - XGA+
  - SXGA-
  - SXGA
  - SXGA+
  - 1080p
  - UXGA
  - VGA
  - NTSC
  - PAL
  - SVGA

**Notes**

- **Input Detection** should normally be set to **Automatic**. However, if the incoming video signal is non-standard, the projector may not be able to select an appropriate input mode.

  In this case, **Input Detection** should be set to **Manual** or **Custom**.

- **Input Standard** is available only if Input Detection is set to Manual.
Geometry menu continued

When Input Detection is set to Custom:

- Press ‹ and › to select one of the adjustment sliders.
- Press ‹ and › to adjust the slider to match the resolution of the incoming video signal.

<table>
<thead>
<tr>
<th>Input</th>
<th>RESOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Input Detection Custom</td>
</tr>
<tr>
<td>Geometry</td>
<td>Input Standard</td>
</tr>
<tr>
<td>Colour</td>
<td>Total H Samples 1300 - +</td>
</tr>
<tr>
<td>Setup</td>
<td>Active H Samples 1280 - +</td>
</tr>
<tr>
<td>Information</td>
<td>Active V Samples 720 - +</td>
</tr>
<tr>
<td></td>
<td>V Offset 31 - +</td>
</tr>
</tbody>
</table>

Blanking

Blanking curtains can be applied to each edge of the picture.

- Press ‹ and › to select Blanking.
- Press › to open the Blanking submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>BLANKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Blanking</td>
</tr>
<tr>
<td>Geometry</td>
<td>Left</td>
</tr>
<tr>
<td>Colour</td>
<td>Right</td>
</tr>
<tr>
<td>Setup</td>
<td>Top</td>
</tr>
<tr>
<td>Information</td>
<td>Bottom</td>
</tr>
</tbody>
</table>

Blanking On/Off

- Press ‹ and › to select from:
  - On
  - Off

Blanking adjust

- Press ‹ and › to select the edge to be Blanked.
- Press ‹ and › to adjust the slider (0 to 200).

Notes

- The adjustment sliders are available only if Input Detection is set to Custom.
- Total H Samples is available for RGB1 and RGB2 inputs only.
- V Offset is available for DVI input only.

Geometry Menu
Blanking

- The blanking curtains will not applied until Blanking is turned On.
- The On Screen Display will move to the centre of the DMD when Blanking is turned On.
- Set to zero for no blanking, eg the top edge in this example.
4. Controlling the projector

Colour menu

To return to the main menu, press EXIT up to three times.

From the main menu:

- Press ▲ and ▼ until Colour is highlighted.

Press ► to open the Colour menu. The blue highlight moves to the first item in the menu.

<table>
<thead>
<tr>
<th>Input</th>
<th>Colour Mode</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Temperature</td>
<td>6000K</td>
</tr>
<tr>
<td>Geometry</td>
<td>Red Lift</td>
<td>0</td>
</tr>
<tr>
<td>Colour</td>
<td>Green Lift</td>
<td>0</td>
</tr>
<tr>
<td>Setup</td>
<td>Blue Lift</td>
<td>0</td>
</tr>
<tr>
<td>Information</td>
<td>Red Gain</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Green Gain</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Blue Gain</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Component Type</td>
<td>RGB</td>
</tr>
<tr>
<td></td>
<td>Trim</td>
<td>►</td>
</tr>
</tbody>
</table>

Notes on Colour and Global Colourimetry

Global Colourimetry menu (see later in this section, in Setup menu)

After a calibration check on the projector or venue, a set of Global colour settings can be made in the Global Colourimetry menu. These settings are then available to be copied at any time using the Colour Mode setting in the Colour menu, or used as a starting point using the Trim feature in the Colour menu.

Colour menu (see this section)

The settings made in the Colour menu will be automatically saved in the Mode History, or can be manually saved to one of the Input Presets (see Input modes and settings earlier in this section).

The selections available in Colour Mode in the Colour menu are:

- Global: Copies the settings made in the Global Colourimetry menu
- Temperature: Set the colour temperature using the slider
- User: Set the Red, Green and Blue Lift and Gain using the sliders
- Peak: Preset high brightness setting

Some menu items may be greyed out - unavailable due to the effect of settings made in other menus, or due to the type of input signal.

Read these notes on Colour and Global Colourimetry before making any settings in the Colour menus.
Colour menu continued

Colour Mode
- Press \( \uparrow \) and \( \downarrow \) to select Colour Mode.
  - Press \( \leftarrow \) and \( \rightarrow \) to select from:
    - Global
    - Temperature
    - User
    - Peak

Colour Temperature
- Press \( \uparrow \) and \( \downarrow \) to select Temperature.
  - Press \( \leftarrow \) and \( \rightarrow \) to adjust the slider (3,000K to 10,000K in 100 steps).

RGB Lift
- Press \( \uparrow \) and \( \downarrow \) to select the parameter to be adjusted.
  - Press \( \leftarrow \) and \( \rightarrow \) to adjust the slider.

RGB Gain
- Press \( \uparrow \) and \( \downarrow \) to select the parameter to be adjusted.
  - Press \( \leftarrow \) and \( \rightarrow \) to adjust the slider.

Component Type
- Press \( \uparrow \) and \( \downarrow \) to select Component Type.
  - Press \( \leftarrow \) and \( \rightarrow \) to select from:
    - RGB
    - YPrPb

Notes

⚠️ Read the notes on Colour and Global Colourimetry earlier in this section before making any settings in the Colour menus.

🚷 The Colour Temperature slider is available only if Temperature Mode is selected.

🚷 The RGB Lift and Gain sliders are available only if User Mode is selected.

🚷 The Component Type selection is available for RGB1, RGB2 and Component inputs only.
Colour menu continued

Trim

- Press ▲ and ▼ to select Trim.

  Press ► to open the Trim submenu.

Trim RGB Lift and Gain

<table>
<thead>
<tr>
<th>Input</th>
<th>TRIM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Red Lift 0 - +</td>
</tr>
<tr>
<td>Geometry</td>
<td>Green Lift 0 - +</td>
</tr>
<tr>
<td>Colour</td>
<td>Blue Lift 0 - +</td>
</tr>
<tr>
<td>Setup</td>
<td>Red Gain 0 - +</td>
</tr>
<tr>
<td>Information</td>
<td>Green Gain 0 - +</td>
</tr>
<tr>
<td></td>
<td>Blue Gain 0 - +</td>
</tr>
<tr>
<td></td>
<td>Global Colourimetry ►</td>
</tr>
</tbody>
</table>

- Press ▲ and ▼ to select the parameter to be adjusted.

  Press ◀ and ► to adjust the slider (-128 to +127).

Global Colourimetry

- This is a shortcut to the Global Colourimetry submenu, described later in this section, in Setup Menu.

  Press ▲ and ▼ to select Global Colourimetry.

  Press ► to open the Global Colourimetry submenu.

Notes

The Trim submenu is available only if Global Colour Mode is selected.

Read the notes on Colour and Global Colourimetry earlier in this section before making any settings in the Colour menus.
Setup menu

To return to the main menu, press \[\text{EXIT}\] up to three times.

From the main menu:

- Press \[\text{A}\] and \[\text{V}\] until Setup is highlighted.

Press \[\text{\rightarrow}\] to open the Setup menu. The blue highlight moves to the first item in the menu.

<table>
<thead>
<tr>
<th>Input</th>
<th>Projector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Global Colourimetry</td>
</tr>
<tr>
<td>Geometry</td>
<td>Lamp</td>
</tr>
<tr>
<td>Colour</td>
<td>On Screen Display</td>
</tr>
<tr>
<td>Setup</td>
<td>Password</td>
</tr>
<tr>
<td>Information</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>Network</td>
</tr>
<tr>
<td></td>
<td>Restore Defaults</td>
</tr>
</tbody>
</table>
4. Controlling the projector

Projector

- Press ▲ and ▼ to select Projector.
  - Press ► to open the Projector submenu.

Orientation

- Press ▲ and ▼ to select Orientation.
  - Press ◀ and ► to select from:
    - Desktop Front
    - Desktop Rear
    - Ceiling Front
    - Ceiling Rear

Control Panel Backlight

- Press ▲ and ▼ to select Backlight.
  - Press ◀ and ► to select from:
    - On
    - Off

Component Video Sync

- Press ▲ and ▼ to select Component Video Sync.
  - Press ◀ and ► to select from:
    - Sync On Green
    - Separate
Setup menu, Projector continued

Keystone

*Used to correct for distortion caused by the projector being mounted higher or lower than the screen.*

- Press ▲ and ▼ to select Keystone.
- Press ◀ and ▶ to adjust the slider (-128 to +127).

Test Pattern

- Press ▲ and ▼ to select Test Pattern.
- Press ▶ to open the Test Pattern submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>TEST PATTERN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Off</td>
</tr>
<tr>
<td>Geometry</td>
<td>Alignment Grid</td>
</tr>
<tr>
<td>Colour</td>
<td>Screen Layout</td>
</tr>
<tr>
<td>Setup</td>
<td>Chequerboard</td>
</tr>
<tr>
<td>Information</td>
<td>Colourbars</td>
</tr>
<tr>
<td></td>
<td>0% Field</td>
</tr>
<tr>
<td></td>
<td>20% Field</td>
</tr>
<tr>
<td></td>
<td>100% Field</td>
</tr>
<tr>
<td></td>
<td>100% Field (Peak White)</td>
</tr>
</tbody>
</table>

Press ◀ and ▶ to select from:

- Off
- Alignment Grid
- Screen Layout (shows outlines of various aspect ratios)
- Chequerboard
- Colour Bars
  - 0% Field (black)
  - 20% Field
  - 100% Field (white, affected by colour settings)
  - 100% Field (Peak White) (white, unaffected by colour settings)
Setup menu continued

Global Colourimetry

- Press ▲ and ▼ to select Global Colourimetry.
- Press ► to open the Global Colourimetry submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>GLOBAL COLOURIMETRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>Temperature</td>
</tr>
<tr>
<td>Geometry</td>
<td>6000K 6000K</td>
</tr>
<tr>
<td>Colour</td>
<td>Red Lift 0</td>
</tr>
<tr>
<td>Setup</td>
<td>Green Lift 0</td>
</tr>
<tr>
<td>Information</td>
<td>Blue Lift 0</td>
</tr>
<tr>
<td></td>
<td>Red Gain 0</td>
</tr>
<tr>
<td></td>
<td>Green Gain 0</td>
</tr>
<tr>
<td></td>
<td>Blue Gain 0</td>
</tr>
</tbody>
</table>

Notes on Colour and Global Colourimetry

Global Colourimetry menu (see this section)

After a calibration check on the projector or venue, a set of Global colour settings can be made in the Global Colourimetry menu. These settings are then available to be copied at any time using the Colour Mode setting in the Colour menu, or used as a starting point using the Trim feature in the Colour menu.

Colour menu (see earlier in this section).

The settings made in the Colour menu will be automatically saved in the Mode History, or can be manually saved to one of the Input Presets (see Input modes and settings earlier in this section).

The selections available in Colour Mode in the Colour menu are:

- Global: Copies the settings made in the Global Colourimetry menu
- Temperature: Set the colour temperature using the slider
- User: Set the Red, Green and Blue Lift and Gain using the sliders
- Peak: Preset high brightness setting

Some menu items may be greyed out - unavailable due to the effect of settings made in other menus, or due to the type of input signal.

Read these notes on Colour and Global Colourimetry before making any settings in the Colour menus.
4. Controlling the projector

Setup menu, Global Colourimetry continued

Colour Mode
- Press ▲ and ▼ to select Colour Mode.
  - Press ◄ and ► to select from:
    - Temperature
    - User
    - Peak

Colour Temperature
- Press ▲ and ▼ to select Temperature.
  - Press ◄ and ► to adjust the slider (3,000K to 10,000K in 100 steps).

RGB Lift
- Press ▲ and ▼ to select the parameter to be adjusted.
  - Press ◄ and ► to adjust the slider.

RGB Gain
- Press ▲ and ▼ to select the parameter to be adjusted.
  - Press ◄ and ► to adjust the slider.

Notes

⚠️ Read the notes on Colour and Global Colourimetry earlier in this section before making any settings in the Colour menus.

回暖 The Colour Temperature slider is available only if Temperature Mode is selected.

回暖 The RGB Lift and Gain sliders are available only if User Mode is selected.
Setup menu, continued

**Lamp**
- Press ▲ and ▼ to select Lamp.
  - Press ► to open the Lamp submenu.
  
  *The middle row shows the current lamp setting.*

<table>
<thead>
<tr>
<th>Input</th>
<th>LAMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Current Setting [100%] Lamp1</td>
</tr>
<tr>
<td>Geometry</td>
<td>Change Lamp Setting ►</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Change Lamp Setting**
- Press ▲ and ▼ to select Change Lamp Setting.
  - Press ► to open the Lamp Setting control box.

```
Change Lamp Setting
80%  Lamp 1  OK  Cancel
```

Notes

Setup Menu
- Lamp

continued
Setup menu, Lamp continued

### Lamp Power
- Press ▲ and ▼ to select the Lamp Power setting.
- Press ◀ and ▶ to adjust the Lamp Power from:
  - 80 to 100% in 1% steps

### Lamp Mode
- Press ▲ and ▼ to select Lamp Mode.
- Press ◀ and ▶ to select from:
  - **single lamp modes**
    - Lamp 1 lamp 1 only
    - Lamp 2 lamp 2 only
    - Alternate on power up, selects the lamp with the least hours used
  - **dual lamp mode**
    - Lamps 1 and 2 both lamps

### OK
- Press ▲ and ▼ to select OK.
- Press OK to apply the new settings.

### Cancel
- Press ▲ and ▼ to select Cancel.
- Press OK or EXIT to exit without applying the new settings.

**Notes**

- In single lamp modes:
  - if the running lamp fails, the other lamp will automatically be switched on.

- The selected lamp mode:
  - will not be applied until OK is selected
  - will be applied gradually over a period of 30 seconds
  - will not be applied until the end of any warm-up or cool-down period that has already started.

The indicators on the control panel will show as follows:

**Lamp 1**
- off = OFF
  - flashing red = LAMP ERROR
  - green = ON (100%) amber = (80 - 99%)
  - flashing green/amber = LAMP COOL-DOWN or WARM-UP

**Lamp 2**
- off = OFF
  - flashing red = LAMP ERROR
  - green = ON (100%) amber = (80 - 99%)
  - flashing green/amber = LAMP COOL-DOWN or WARM-UP
4. Controlling the projector

Setup menu continued

On Screen Display

- Press ▼ and ▲ to select On Screen Display.
- Press ► to open the On Screen Display submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>ON SCREEN DISPLAY</th>
</tr>
</thead>
<tbody>
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<td>Picture</td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td>OSD Position</td>
</tr>
<tr>
<td>Colour</td>
<td>Timeout</td>
</tr>
<tr>
<td>Setup</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
</tbody>
</table>

**OSD Position**

- Press ▼ and ▲ to select OSD Position
- Press ◀ and ► to select from:
  - Upper Left
  - Upper Centre
  - Upper Right
  - Middle Left
  - Middle Centre
  - Middle Right
  - Lower Left
  - Lower Centre
  - Lower Right

**OSD Size**

- Press ▼ and ▲ to select OSD Size.
- Press ◀ and ► to select from:
  - Large
  - Small

**OSD Timeout**

- Press ▼ and ▲ to select the length of the On Screen Display Timeout.
- Press ◀ and ► to select from:
  - 0 to 255 in 1 second steps (when set to zero, the OSD never times out)

Notes

- The On Screen Display will move to the centre of the DMD when Blanking is turned On.
  (see Geometry menu, earlier in this section).

- If a menu is opened, and no other key is pressed within the period set in the OSD Timeout menu, then the menus will disappear. When the key is pressed again, the menus will reopen at the same point they were last viewed.
Setup menu continued

Password

Entry to the password protected area is available to authorised service personnel only.

- Press ▲ and ▼ to select Password.
  - Press ▶ to open the Password control box.

```
Password
0 0 0 0 OK Cancel
```

- Press ▲ and ▼ to select each digit in turn.
  - Press ◀ and ▶ to adjust the digit from:

0 to 9
then move to the next digit.

- Use ◀ and ▶ to select from

OK

- Press OK to enter the password controlled area.
  
or Cancel

- Press OK or EXIT to exit without applying the password.
Setup menu continued

Communication

- Press ▲ and ▼ to select Communication.
- Press ► to open the Communication submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>COMMUNICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Projector Address</td>
</tr>
<tr>
<td>Geometry</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
</tbody>
</table>

Projector Address

The projector and the remote control need to be set to matching addresses. Read the note to the right on this page, and follow the instructions in the order shown below:

1. Set the projector address:
   - Press ► to open the Projector address control box.
   - Press ◄ and ► to select the address setting.
   - Press ▲ and ▼ to adjust the address from:
     - 00 to 99
   - Use ◄ and ► to select from
     - Apply
   - Press OK to apply the new Projector Address.
   - or Cancel
   - Press OK or EXIT to exit without making the change.

2. Set the remote control address as shown in Using the control keys, earlier in this section.

   When fresh batteries are inserted in the remote control, it will default to address 00. Remote control 00 is a master control, able to control all projectors.

   If two or more projectors are set to the same address, they can be controlled from one remote control, provided they are connected by cable or in range of the infra red.
Setup menu continued

Network

- Press ▲ and ▼ to select Network.
  - Press ► to open the Network submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>SETUP</th>
<th>NETWORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td></td>
<td>LAN MAC Address 31-FE-A5-81-20-83</td>
</tr>
<tr>
<td>Geometry</td>
<td></td>
<td>Connection Wired</td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td>DHCP On</td>
</tr>
<tr>
<td>Setup</td>
<td></td>
<td>LAN IP Address 192.168.3.6</td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td>LAN Subnet 255.255.0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LAN Gateway 192.168.9.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Channel 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSID TITAN</td>
</tr>
</tbody>
</table>

LAN MAC Address

- Projector’s unique ID - for information only - cannot be changed.

Connection

- Press ▲ and ▼ to select Connection
  - Press ► to open the Connection control box.

Press ◄ and ► to select from:

- Wired
- Wireless

Press OK to apply the new Connection setting.

Some items may be greyed out or not editable, due to the effect of other settings made in the Network submenu.

For example, if a Wired Connection is selected:

Wifi, Channel and SSID will be unavailable.
4. Controlling the projector  

**Digital Projection TITAN HD-600 User Manual**

**Setup menu, Network continued**

**DHCP**
- Press ▲ and ◀ to select DHCP
  - Press ► to open the DHCP control box.

![DHCP](image)

Press ◀ and ► to select:
- On
- Off

Press OK to apply the new DHCP setting.

**LAN IP Address**
- Press ▲ and ◀ to select LAN IP Address
  - Press ► to open the LAN IP Address control box.

![LAN IP Address](image)

Use ◀ and ► to select each number in turn.

Use ▲ and ◀ to adjust the number
then move to the next number.

Use ◀ and ► to select from
- Apply
- Cancel

Press OK or Cancel to apply the new LAN IP Address.

or Cancel

Press OK or EXIT to exit without making the change.

---

**Notes**

LAN IP Address cannot be changed if DHCP is set to ON.

DHCP will set the address, which will be displayed for information only.
Setup menu, Network continued
LAN Subnet Mask

- Press ▲ and ▼ to select LAN Subnet

Press ► to open the LAN Subnet control box.

<table>
<thead>
<tr>
<th>LAN Subnet Mask</th>
<th>Apply</th>
<th>Cancel</th>
</tr>
</thead>
<tbody>
<tr>
<td>255.255.255.254</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Press ◀ and ▶ to select from:

Automatic
or one of the following:

Class C Masks
- 255.255.255.254
- 255.255.255.252
- 255.255.255.248
- 255.255.255.240
- 255.255.255.224
- 255.255.255.192
- 255.255.255.128
- 255.255.255.0 (selected when setting is Automatic and IP class is C)

Class B Masks
- 255.255.254.0
- 255.255.252.0
- 255.255.248.0
- 255.255.240.0
- 255.255.224.0
- 255.255.192.0
- 255.255.128.0
- 255.255.0.0 (selected when setting is Automatic and IP class is B)

Class A Masks
- 255.254.0.0
- 255.252.0.0
- 255.248.0.0
- 255.240.0.0
- 255.224.0.0
- 255.192.0.0
- 255.128.0.0
- 255.0.0.0 (selected when setting is Automatic and IP class is A)

Use ◀ and ▶ to select from
Apply

Press OK to apply the new LAN Subnet Mask.
or Cancel

Press OK or EXIT to exit without making the change.

Notes

LAN IP Subnet cannot be changed if DHCP is set to ON.

DHCP will set the subnet mask, which will be displayed for information only.
4. Controlling the projector

**Setup menu, Network continued**

**LAN Gateway Mask**

- Press ▲ and ▼ to select **LAN Gateway**

  Press ► to open the **LAN IP Address** control box.

  ![](LAN Gateway mask.png)

  Use ◀ and ► to select each number in turn.

  Use ▲ and ▼ to adjust the number

  then move to the next number.

  Use ◀ and ► to select from

  **Apply**

  **Cancel**

  Press OK to apply the new LAN Gateway Mask, or to exit without making the change.

**Notes**

- **LAN IP Gateway** cannot be changed if **DHCP** is set to **ON**.

  DHCP will set the the gateway mask, which will be displayed for information only.
Setup menu, Network continued

**Channel**
- Press ▲ and ▼ to select Channel.
  - Press ► to open the Channel control box.

<table>
<thead>
<tr>
<th>Channel</th>
<th>0</th>
<th>Apply</th>
<th>Cancel</th>
</tr>
</thead>
</table>

Press ◀ and ► to select the channel number.
Use ▲ and ▼ to adjust the channel number from:

0 to 14

Use ◀ and ► to select from
Apply
Press OK to apply the new Channel number.

or Cancel

Press OK or EXIT to exit without making the change.

**SSID**
- Projector’s ID - for information only.

Notes

The Channel setting is not available if Connection is set to Wired.
Setup menu, continued

Restore Defaults

- Press ▲ and ▼ to select Restore Defaults.
  
  Press →.

  The following message will be displayed.

  ![Restore Defaults?]
  
  Press [Yes] or [No] to select from:

  Yes

  Press OK to confirm your that you really wish to restore all default settings.

  or No

  Press OK or EXIT to exit without making the change.

Notes

⚠️ Restore Defaults will restore all settings to factory defaults.

If you are not sure this is what you want to do, then either:

- make a record of all settings first
- select No, then press OK.

Following a restore to factory defaults, the projector will perform a self-test and enter Standby mode.

This process will take up to 10 seconds. During this time the projector will not respond to any commands.

When complete, all settings will be restored to factory condition and all user settings will be removed except for downloaded colour and gamma parameters.
4. Controlling the projector

Information menu

To return to the main menu, press EXIT up to three times.

From the main menu:

- Press ▲ and ▼ until Information is highlighted.
- Press ► to open the Information menu. The blue highlight moves to the first item in the menu.

<table>
<thead>
<tr>
<th>Input</th>
<th>Projector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Source</td>
</tr>
<tr>
<td>Geometry</td>
<td>Digital Projection</td>
</tr>
<tr>
<td>Colour</td>
<td>Setup</td>
</tr>
<tr>
<td>Setup</td>
<td>Information</td>
</tr>
</tbody>
</table>

Projector Information

- Press ▲ and ▼ to select Projector Information.
- Press ► to open the Projector Information submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>PROJECTOR INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Power On Time 11h:55m</td>
</tr>
<tr>
<td>Geometry</td>
<td>Lamp 1 Time 5h:11m Strikes 25</td>
</tr>
<tr>
<td>Colour</td>
<td>Lamp 2 Time 12h:43m Strikes 36</td>
</tr>
<tr>
<td>Setup</td>
<td>Electronics Version: m102684ai (F8)</td>
</tr>
<tr>
<td>Information</td>
<td>Software Version: 2.00 8-dec-2008</td>
</tr>
<tr>
<td></td>
<td>Projector Address: 00</td>
</tr>
<tr>
<td></td>
<td>Projector Model: Titan</td>
</tr>
<tr>
<td></td>
<td>Projector Serial Number: DP01234</td>
</tr>
<tr>
<td></td>
<td>Configuration: 01-000-01</td>
</tr>
</tbody>
</table>

Source Information

- Press ▲ and ▼ to select Source Information.
- Press ► to open the Source Information submenu.

<table>
<thead>
<tr>
<th>Input</th>
<th>SOURCE INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>Input: DVI</td>
</tr>
<tr>
<td>Geometry</td>
<td>Standard: 720p 60</td>
</tr>
<tr>
<td>Colour</td>
<td>Frequency V: 60Hz</td>
</tr>
<tr>
<td>Setup</td>
<td>H: 45.0kHz</td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
</tbody>
</table>
**Information menu continued**

**Digital Projection Information**
- Press ▲ and ▼ to select Digital Projection.
  Press ► to see the DP Information screen.

<table>
<thead>
<tr>
<th>Input</th>
<th>Digital Projection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture</td>
<td>precision displays for every venue</td>
</tr>
<tr>
<td>Geometry</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td>Setup</td>
<td><a href="http://www.digitalprojection.com">www.digitalprojection.com</a></td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
</tbody>
</table>
6. Maintenance

Contents

Changing the lamp module ................................................................. 6.2
Changing the air filter ...................................................................... 6.3
Cleaning ......................................................................................... 6.4
  Projector .................................................................................. 6.4
  Lens ....................................................................................... 6.4
  Lamp module .......................................................................... 6.4
Changing the lamp module

- Turn the power OFF and allow the lamp to cool for 5 minutes.
- Unscrew the four captive finger screws securing the rear door - the door is tethered, so cannot be removed completely.

- Disconnect the control cable from the rear of the lamp assembly.
- Unscrew the two captive finger screws securing the lamp assembly to the projector, and pull out the whole lamp assembly.
- Disconnect the timer cable from the lamp module to be changed.
- Unscrew the four screws securing the lamp module to the assembly.

- Fit a new lamp module, making sure that the plug on the top of the module mates properly with the power socket on the assembly.
- Tighten the four lamp module fixing screws.
- Reconnect the timer cable.
- Re-fit the lamp assembly, making sure that no cables are trapped.
- Reconnect the control cable.
- Re-fit the rear door, making sure that the door tether is not trapped, and tighten the four screws.

---

Notes

⚠ Always allow the lamp to cool for 5 minutes before:

- disconnecting the power
- moving the projector
- changing the lamp

⚠ There are no user-serviceable parts inside the lamp module. The whole module should be replaced.

⚠ At the end of life, the lamp will not strike, and the Lamp Indicator on the control panel will show red. (Typical lamp life is 2000 hours)

⚠ Do not use the lamp for more than 2000 hours, as this may cause serious lamp failure, damage the lamp module and cause extra cost on replacement.

⚠ Take care not to touch the glass surface of the lamp module. If you do accidentally touch the glass, it should be cleaned before use.

⚠ HID lamps produce high intensity light. Do not look directly at the light coming from the lamp housing or the lens.

⚠ The filter should be changed at the same time as the lamp is changed - see next page.

⚠ Opening the rear door will switch the projector OFF:

The projector cannot be operated until the door is fully closed.
Changing the air filter

- Turn the power OFF and allow the lamp to cool for 5 minutes.
- Unscrew the four captive finger screws securing the rear door - the door is tethered, so cannot be removed completely.
- Pull out both air filters.
- Fit two new air filters, making sure that they are each the correct way around, as shown below.
- Re-fit the rear door, making sure that the door tether is not trapped, and tighten the four screws.

Notes

Always allow the lamp to cool for 5 minutes before:
- disconnecting the power
- moving the projector
- changing the lamp

The air filter should be changed regularly:
- In a clean environment such as an office, change after 2000 hours, at the same time as the lamp is changed.
- In a dusty or smoky environment such as a theatre or public area, more frequent changes may be necessary.

Opening the rear door will switch the projector OFF.

The projector cannot be operated until the door is fully closed.
6. Maintenance


Cleaning

Turn the projector off before cleaning.

Projector

Clean the cabinet periodically with a damp cloth. If heavily soiled, use a mild detergent.

Lens

Use a blower or lens paper to clean the lens, taking care not to scratch the glass.

Lamp module

Use a blower or lens paper to clean ONLY the glass window, taking care not to scratch the glass.

Notes

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

Never touch the lamp or reflector.
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>The projector will not power up.</td>
<td>Check that the mains plug is plugged in and that the mains supply is switched on. Check any external fuses or breakers.</td>
</tr>
</tbody>
</table>
| The projector shuts down after it has been in use for some time. | The projector may be overheating. Check that the air inlets and outlets are clear of any obstruction. Check that the air filter is clean, and if it is dirty, fit a new one.  
   See section 1. Introduction, Getting to know the projector |
| No image is displayed.                                      | Check the lamp indicators on the control panel. If both indicators are red, then both lamps are faulty.  
   See section 5. Maintenance, Changing the lamp  
   Check that the input source is switched on and connected to the projector correctly.  
   Check that the correct image source is selected.  
   See section 4. Controlling the projector, Using the control keys and Input menu  
   Check that the brightness and contrast settings are set correctly.  
   See section 4. Controlling the projector, Picture menu  
   The projector may be overheating. Check that the air inlets and outlets are clear of any obstruction. Check that the air filter is clean, and if it is dirty, fit a new one. |
| The image does not fit the screen correctly.                 | Check that the correct lens is being used for the combination of screen size and projection distance, and that the zoom is adjusted correctly.  
   See section 2. Installation, Choosing a lens  
   Check the image size settings.  
   See section 4. Controlling the projector, Picture or Geometry menus |
| Uneven image quality.                                       | Check that the projector is parallel to the screen.  
   Check that the screen is flat, and securely mounted.  
<p>|</p>
<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible solutions</th>
</tr>
</thead>
</table>
| Projector does not respond to control commands from a computer. | Check that the LAN or serial cable is connected correctly.  
See this section 7. Appendix, Connections  
If using a LAN, check that the address setting is made correctly.  
See section 4. Controlling the projector, Network menu  
If using a serial cable, check that the baud rate is set correctly.  
See this section 7. Appendix, Connections  
Check that the correct control codes are being used.  
See Serial communications protocol (available from Digital Projection) |
| Projector does not respond to control commands from the remote control. | If you are using a cable, check that the cable is connected properly at both ends, that the cable is not damaged and that the cable is no longer than 50m (150ft).  
If you are not using a cable, check that the infra red windows at the front and rear of the projector are not obstructed. Check that the cable is disconnected from the projector, as this disables the infra red. Check that the batteries are in good condition.  
Check that the address setting on the remote control is set either to zero, or to the same as the projector.  
See section 4. Controlling the projector, Communication menu |
| | In the event that this troubleshooting guide has not solved the problem, then contact your Digital Projection dealer or service centre. |
## Specifications

### Part numbers
- Projector: 107-693
- Rigging frame: 107-956
- Power cable 10A, Europe: 102-163
- Power cable 13A, North America: 102-165
- Power cable 10A, United Kingdom: 102-180
- Remote control: 105-023
- 4x AAA batteries: 105-922
- Remote cable 5m: 102-162
- User manual on CD: 105-923
- Important Information: 108-467

### Replacement parts
- Single Lamp module + air filter: 107-694
- Two Lamps modules + air filters: 107-695

### Lenses
- 0.63 : 1 fixed lens: 001-734
- 0.96 : 1 fixed lens: 001-735
- 1.2 - 1.44 : 1 zoom lens: 001-736
- 1.44 - 1.8 : 1 zoom lens: 001-737
- 1.8 - 2.4 : 1 zoom lens: 001-738
- 2.4 - 3.6 : 1 zoom lens: 001-739
- 3.6 - 5.6 : 1 zoom lens: 001-740

### Optical
- **Digital Light Processor**: 3 x 0.8” Texas Instruments DMD™, resolution 1280 x 720 pixels
- **Contrast Ratio**: 1800:1 full field (±10%)
- **Pixel fill factor**: 90%
- **Lamp power**: 2 x 300W
- **Lamp life (typical)**: 2000 hours in dual lamp mode, 4000 in single lamp mode
- **Brightness**: 8000 ANSI lumens (±10%) in dual lamp mode
- **Colour temperature**: Native: 7500°K (±1000°K), White balance adjustment: 3000°K - 10000°K
Digital Projection *TITAN HD-600* User Manual

7. Appendix

**Electrical**

**Inputs**  
RGB1, RGB2, DVI, Composite Video, S-Video, Component

**Pixel clock**  
up to 165MHz

**Control inputs**  
1 x LAN  
1 x wifi LAN  
1 x RS232 serial: 19200 baud, 8 bits, 1 stop bit, no parity  
1 x remote control

**Indicators**  
Input, Power, Shutter, Error, IR, Lamp 1, Lamp 2

**Mains voltage**  
100-240 VAC ±10%, 48-62Hz (single phase)

**Power consumption**  
850W

**International Regulations**  
Meets FCC Class A requirements  
Meets EMC Directives (EN 50081-1, EN 50082-1, EN 55022)  
Meets Low Voltage Directive (EN60950)

**Physical**

**Operating Temperature**  
0 to 40°C

**Storage Temperature**  
-10 to 50°C

**Thermal Dissipation**  
2900 BTU/hr

**Operating Humidity**  
20% to 80% non-condensing

**Weight**  
approximately 31 kg (68 lbs)

---

FCC WIFI ID  
R68WIPORT

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### Lens Data

<table>
<thead>
<tr>
<th></th>
<th>001-734</th>
<th>001-735</th>
<th>001-736</th>
<th>001-737</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Optical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>throw ratio</strong></td>
<td>0.64 : 1 fixed</td>
<td>0.96 : 1 fixed</td>
<td>1.2 - 1.44 : 1 zoom</td>
<td>1.44 - 1.8 : 1 zoom</td>
</tr>
<tr>
<td><strong>full DMD image width</strong></td>
<td>0.64 : 1</td>
<td>0.96 : 1</td>
<td>1.2 : 1</td>
<td>1.44 : 1</td>
</tr>
<tr>
<td></td>
<td>1.56 - 3.59m (5.1 - 11.8ft)</td>
<td>1.46 - 8.96m (4.8 - 29.4ft)</td>
<td>1.42 - 4.5m (4.7 - 14.8ft)</td>
<td>1.39 - 5.56m (4.6 - 18.2ft)</td>
</tr>
<tr>
<td><strong>throw distance</strong></td>
<td>0.64 : 1</td>
<td>0.96 : 1</td>
<td>1.2 : 1</td>
<td>1.44 : 1</td>
</tr>
<tr>
<td></td>
<td>1 - 2.3m (3.3 - 7.5ft)</td>
<td>1.4 - 8.6m (4.6 - 28.2ft)</td>
<td>1.7 - 5.4m (5.6 - 17.7ft)</td>
<td>2 - 8m (6.6 - 26.2ft)</td>
</tr>
<tr>
<td></td>
<td>0.64 : 1</td>
<td>0.96 : 1</td>
<td>1.2 : 1</td>
<td>1.44 : 1</td>
</tr>
<tr>
<td></td>
<td>1.4 - 8.6m (4.6 - 28.2ft)</td>
<td>1.7 - 5.4m (5.6 - 17.7ft)</td>
<td>2 - 6.5m (6.6 - 21.3ft)</td>
<td>2.4 - 10m (7.9 - 32.8ft)</td>
</tr>
<tr>
<td>lens shift vertical in pixels* (vs DMD height)</td>
<td>none</td>
<td>none</td>
<td>+ 360, - 115 (+ 0.5, -0.16H)</td>
<td>+ 360, - 115 (+ 0.5, -0.16H)</td>
</tr>
<tr>
<td>lens shift horizontal in pixels* (vs DMD width)</td>
<td>none</td>
<td>none</td>
<td>± 128 (± 0.1W)</td>
<td>± 128 (± 0.1W)</td>
</tr>
<tr>
<td>Aperture</td>
<td>F/2.5</td>
<td>F/2.5</td>
<td>F/2.5</td>
<td>F/2.5</td>
</tr>
<tr>
<td>Max object field size</td>
<td>20.1mm (0.79in) to be confirmed</td>
<td>26.36mm (1.04in)</td>
<td>26.36mm (1.04in)</td>
<td></td>
</tr>
<tr>
<td>Effective focal length</td>
<td>to be confirmed to be confirmed</td>
<td>21.2 - 25.8mm (0.83 - 1.02in)</td>
<td>25.5 - 32 mm (1.0 - 1.26in)</td>
<td></td>
</tr>
<tr>
<td>Distortion</td>
<td>&lt; 0.3 %</td>
<td>&lt; 0.3 %</td>
<td>&lt; 0.5 %</td>
<td>&lt; 0.5 %</td>
</tr>
<tr>
<td>Transmission</td>
<td>&gt; 85 %</td>
<td>&gt; 85 %</td>
<td>&gt; 85 %</td>
<td>&gt; 85 %</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lens extension**</td>
<td>95 mm (3.7 in)</td>
<td>70 mm (2.8 in)</td>
<td>42 mm (1.6 in)</td>
<td>-4 mm (-0.1 in)</td>
</tr>
<tr>
<td>Length</td>
<td>276 (10.9 in)</td>
<td>246 (9.7 in)</td>
<td>219 (8.6 in)</td>
<td>178 (7.0 in)</td>
</tr>
<tr>
<td>Maximum diameter</td>
<td>to be confirmed</td>
<td>to be confirmed</td>
<td>to be confirmed</td>
<td>to be confirmed</td>
</tr>
<tr>
<td>Weight</td>
<td>to be confirmed</td>
<td>to be confirmed</td>
<td>to be confirmed</td>
<td>to be confirmed</td>
</tr>
</tbody>
</table>

* Actual available lens shift is reduced when the lens is to be shifted in two directions combined (see **Shifting the image**, in section **2. Installation**).

** Lens extension is the distance from the outer end of the lens to the front of the projector. It is measured when the lens is focussed at infinity and fully extended. At other focus settings, the extension could be up to 10mm less. It is important for calculating throw distance accurately (see **Useful lens calculations**, in section **2. Installation**).
## Optical Table

<table>
<thead>
<tr>
<th></th>
<th>001-738</th>
<th>001-739</th>
<th>001-740</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>throw ratio</strong></td>
<td>1.8 - 2.4 : 1 zoom</td>
<td>2.4 - 3.6 : 1 zoom</td>
<td>3.6 - 5.6 : 1 zoom</td>
</tr>
<tr>
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<td>1.33 - 6.67m</td>
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<td>(15.7 - 78.7ft)</td>
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<td><strong>lens shift vertical in pixels</strong></td>
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<td>(vs DMD height)</td>
<td>+ 360, - 115 (+ 0.5, - 0.16H)</td>
<td>+ 360, - 115 (+ 0.5, - 0.16H)</td>
<td>+ 360, - 115 (+ 0.5, - 0.16H)</td>
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<td><strong>lens shift horizontal in pixels</strong></td>
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<td>(vs DMD width)</td>
<td>± 128 (± 0.1W)</td>
<td>± 128 (± 0.1W)</td>
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<td><strong>Effective focal length</strong></td>
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<td>62.1 - 97.8mm (2.44 - 3.85in)</td>
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<td>&lt; 0.5 %</td>
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<td><strong>Transmission</strong></td>
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### Mechanical Table

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<td>0 mm (0.0 in)</td>
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<td><strong>Length</strong></td>
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<td><strong>Maximum diameter</strong></td>
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<td><strong>Weight</strong></td>
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<td>to be confirmed</td>
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</table>

---

* Actual available lens shift is reduced when the lens is to be shifted in two directions combined (see **Shifting the image**, in **section 2. Installation**).

** Lens extension is the distance from the outer end of the lens to the front of the projector. It is measured when the lens is focussed at infinity and fully extended. At other focus settings, the extension could be up to 10mm less. It is important for calculating throw distance accurately (see **Useful lens calculations**, in **section 2. Installation**).
Dimensions

All dimensions in mm unless otherwise stated
# Input modes supported

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<th>Signal</th>
<th>Resolution</th>
<th>Refresh Rate (Hz)</th>
<th>Total number of lines</th>
<th>Horizontal Frequency (KHz)</th>
<th>COMPOSITE</th>
<th>S-VIDEO</th>
<th>COMPONENT</th>
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<th>RGB2</th>
<th>DVI</th>
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</table>

* RGB colourspace only
## Input connections

### 1. RGB1 input

*5 x 75 ohm BNC*

Used for computer, progressive video and analog HD video.

<table>
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<tr>
<th>RGsB</th>
<th>RGBS</th>
<th>RGBHV</th>
<th>YCrCb</th>
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<td>R</td>
<td>Pr/Cr</td>
</tr>
<tr>
<td>G + Sync</td>
<td>G</td>
<td>G</td>
<td>Y</td>
</tr>
<tr>
<td>B</td>
<td>B</td>
<td>B</td>
<td>Pb/Cb</td>
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<tr>
<td>Sync</td>
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<td>H Sync</td>
<td>V Sync</td>
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### 2. RGB2 input

*15 way D-type connector*

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<th>Description</th>
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<td>R</td>
</tr>
<tr>
<td>2</td>
<td>G</td>
</tr>
<tr>
<td>3</td>
<td>B</td>
</tr>
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<tr>
<td>6</td>
<td>R Ground</td>
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<tr>
<td>7</td>
<td>B Ground</td>
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<td>8</td>
<td>G Ground</td>
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<td>SDA</td>
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<td>13</td>
<td>H Sync</td>
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<td>14</td>
<td>V Sync</td>
</tr>
<tr>
<td>15</td>
<td>SCL</td>
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3. DVI-D input
24 way D-type connector

1  TMDS Data 2-
2  TMDS Data 2+
3  TMDS Data 2 Shield
4  unused
5  unused
6  DDC Clock
7  DDC Data
8  unused
9  TMDS Data 1-
10 TMDS Data 1+
11 TMDS Data 1 Shield
12 unused
13 unused
14  +5 V Power
15  Ground
16 Hot Plug Detect*
17 TMDS Data 0-
18 TMDS Data 0+
19 TMDS Data 0+
20 TMDS Data 0 Shield
21 unused
22 unused
23 TMDS Clock Shield
24 TMDS Clock+

* Hot plug detect (HPD) is fully DVI compliant. DVI sources detect the presence of a display device by providing +5V on pin 14 and looking for +5V on pin 16. Whenever the projector is operational, and 5V is present on pin 14, pin 16 will be held at +5V.

EDID is available even when the projector is switched off.

Operational means that the projector is powered up. Non operational states are powered down and some self test and reprogramming modes.
7. Appendix  

4. (not used in this projector)

5. Composite video input  
1 x 75 ohm BNC  
PAL or NTSC video

6. S-Video input  
4 pin mini-DIN  
1 L Ground  
2 C Ground  
3 Lumunance (Y)  
4 Chrominance (C)

7. Component video input  
4 x 75 ohm BNC  
Used for standard definition interlaced signals only

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<tr>
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<th>RGBS</th>
<th>YCrCb</th>
</tr>
</thead>
<tbody>
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<tr>
<td>G + Sync</td>
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<tr>
<td>B</td>
<td>B</td>
<td>Cb</td>
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<tr>
<td>Sync</td>
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</tbody>
</table>
Control connections

Wired remote control connection

3.5mm mini jack

Tip  Power
Ring  Signal
Sleeve  Ground

LAN connection

TCP Port number
10001

Wireless
802.11b/g

10BaseT Unshielded Twisted Pair cable

The standard wire colours as follows:

1  White / Orange stripe
2  Orange
3  White / Green stripe
4  Blue
5  White / Blue stripe
6  Green
7  White / Brown stripe
8  Brown

Crossed cable

(used to connect directly to a computer with no hub or network.)
(Note that only the green and orange pairs are crossed)

1  White / Orange stripe  White / Green stripe  1
2  Orange  Green  2
3  White / Green stripe  White / Orange stripe  3
4  Blue  Blue  4
5  White / Blue stripe  White / Blue stripe  5
6  Green  Orange  6
7  White / Brown stripe  White / Brown stripe  7
8  Brown  Brown  8

Notes

Note that plugging in the remote control cable will disable the infra-red.

Use:
- a straight cable to connect to a hub or network, or
- a crossed cable as shown here to connect ONLY to a computer directly.

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

Serial control input

1. unused
2. Received Data (RX)
3. Transmitted Data (TX)
4. unused
5. Signal Ground
6. unused
7. unused
8. unused
9. unused

Null-modem cable

(used to connect the projector to a computer)

RX  2  ---  3  TX
TX  3  ---  2  RX
GND 5  ---  5  GND

Serial port settings

- Baud rate  19,200 bps
- Data length  8 bits
- Stop bits  one
- Parity  none
- Flow control  none

Notes

The projector is a DTE, so use:
- a straight cable to connect to a modem, or
- a null-modem cable as shown here to connect to another DTE such as a computer.

Only one remote connection (RS232, LAN or Wireless LAN) should be used at any one time.
Remote communications protocol

Version: Revision C 02/01/07

Introduction
This protocol document covers all projectors in the Titan series and also the Lightning 30/40ixs+ and 30/40-1080p.

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

Following the transmission of a command, the control system must wait to receive the complete reply before sending a new command.

It should be noted that this protocol is a point to point protocol, and any addressing commands relate to the projector’s hand held remote control only.

Message Structure
The data type for all data is raw hexadecimal, and all data larger than 1 byte is formatted little endian i.e. LSB first. There are currently two supported message types:

**Operation Messages** (message type 03h)
*normal projector operations, fixed length message*

**Enhanced Messages** (message type 10h)
*projector special functions, variable length message*

**Responses** to all commands start with 1Eh

Notes

- Details of how to connect to the projector, using the serial control input or via a LAN, can be found earlier in this section.

- The following pages contain an overview of the message structure and examples of some basic Operation commands.

For full details of all the Operation commands and Enhanced commands, contact Digital Projection at one of the addresses printed near the front of this manual, and ask for a copy of the *Titan Projector Series External Control Protocol*. 
Operation Messages

Operation messages are constructed using the following format:

<table>
<thead>
<tr>
<th>Header</th>
<th>Type</th>
<th>Size</th>
<th>CRC</th>
<th>Oper’n type</th>
<th>Operation</th>
<th>Reserved</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 bytes</td>
<td>1 byte</td>
<td>2 bytes</td>
<td>2 bytes</td>
<td>1 byte</td>
<td>2 bytes</td>
<td>2 bytes</td>
</tr>
<tr>
<td>Data</td>
<td>BE</td>
<td>EF</td>
<td>03</td>
<td>19</td>
<td>00</td>
<td>58</td>
</tr>
<tr>
<td>Byte #</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operation Target</th>
<th>Operation Value</th>
<th>Reserved</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 bytes</td>
<td>4 bytes</td>
<td>4 bytes</td>
</tr>
<tr>
<td>Data</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>Byte #</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reserved</th>
<th>Reserved</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 bytes</td>
<td>4 bytes</td>
</tr>
<tr>
<td>Data</td>
<td>00</td>
</tr>
<tr>
<td>Byte #</td>
<td>25</td>
</tr>
</tbody>
</table>

Header is always **EFBEh** (byte 1 = **BEh** and byte 2 = **EFh**)

Type is always **03h** for Operation Messages

Size is always **0019h** (byte 4 = **19h** and byte 5 = **00h**) i.e. 25 bytes after CRC

CRC can be set to **5858h** if you want the CRC to be ignored. However, the CRC should ideally be calculated, as described in the Titan Projector Series External Control Protocol.

Operation type is one of the following:

- **Set**: **01h**
- **Get**: **02h**
- **Increment**: **03h**
- **Decrement**: **04h**
- **Execute**: **05h**

**Set** writes a value to the projector.

**Get** reads a value from the projector.

**Increment** and **decrement** increase or decrease a value by one unit.

**Execute** executes the current operation (specific commands only).

*Spaces in the example messages are for visual clarity and should not be sent as part of the message.*

Notes

The following pages contain examples of some basic Operation commands.

For full details of all the full details of all the Operation commands and Enhanced commands, contact Digital Projection and ask for a copy of the Titan Projector Series External Control Protocol.
Enhanced Messages

Enhanced messages are constructed using the following format:

<table>
<thead>
<tr>
<th></th>
<th>Header</th>
<th>Type</th>
<th>Size</th>
<th>CRC</th>
<th>Data type</th>
<th>Data length (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>BE EF</td>
<td>10</td>
<td>XX XX</td>
<td>58 58</td>
<td>00 00</td>
<td>00 00</td>
</tr>
<tr>
<td>Byte #</td>
<td>1 2</td>
<td>3</td>
<td>4 5</td>
<td>6 7</td>
<td>8 9</td>
<td>10 11</td>
</tr>
</tbody>
</table>

Header is always **EFBE**h (byte 0 = **BE**h and byte 1 = **EF**h)

Type is always **10**h for Enhanced Messages

CRC can be set to **5858**h if you want the CRC to be ignored. However, the CRC should ideally be calculated, as described in the Titan Projector Series External Control Protocol.

Size is always Data Length + 4 (4 bytes after CRC and before data)
Operation Command examples
All operation commands are located at bytes 9 &10.
All values are located at bytes 17 & 18 unless otherwise indicated

**Power (0102)**

**Projector On or Standby**

<table>
<thead>
<tr>
<th>Value</th>
<th>00h</th>
<th>04h</th>
</tr>
</thead>
</table>

Examples

**Set Projector (On)**

BEEF 03 1900 5858 01 0102 0000 00000000 00000000 00000000 00000000

Response

1E BEEF 03 1900 5858 01 0102 0000 00000000 00000000 00000000 00000000

**Set Projector (Standby)**

BEEF 03 1900 5858 01 0102 0000 00000000 04000000 00000000 00000000 00000000 00000000 00000000

Response

1E BEEF 03 1900 5858 01 0102 0000 00000000 04000000 00000000 00000000 00000000

**Get Projector Power**

BEEF 03 1900 5858 02 0102 0000 00000000 00000000 00000000 00000000 00000000

Response (Projector in Standby)

1E BEEF 03 1900 5858 02 0102 0000 00000000 04000000 00000000 00000000 00000000

**Notes**

Spaces in example messages are for visual clarity and should not be sent as part of the message.

In the example messages the CRC is set to 5858h. This value will be ignored. However, the CRC should ideally be calculated, as described in the Titan Projector Series External Control Protocol.
## Source (3702)

### Projector source select

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGB1</td>
</tr>
<tr>
<td>RGB2</td>
</tr>
<tr>
<td>DVI</td>
</tr>
<tr>
<td>SDI</td>
</tr>
<tr>
<td>Composite</td>
</tr>
<tr>
<td>SVideo</td>
</tr>
<tr>
<td>Component</td>
</tr>
</tbody>
</table>

### Examples

**Set Source (DVI)**

```
BEEF 03 1900 5858 01 3702 0000 00000000 02000000 00000000 00000000
```

**Response**

```
1E BEEF 03 1900 5858 01 3702 0000 00000000 02000000 00000000 00000000
```

**Set Source (SVideo)**

```
BEEF 03 1900 5858 01 3702 0000 00000000 05000000 00000000 00000000 00000000
```

**Response**

```
1E BEEF 03 1900 5858 01 3702 0000 00000000 05000000 00000000 00000000 00000000
```

**Get Source**

```
BEEF 03 1900 5858 02 3702 0000 00000000 00000000 00000000 00000000 00000000
```

**Response (SVideo)**

```
1E BEEF 03 1900 5858 02 3702 0000 00000000 05000000 00000000 00000000 00000000
```

### Notes

Spaces in example messages are for visual clarity and should not be sent as part of the message.

In the example messages the CRC is set to 5858h. This value will be ignored. However, the CRC should ideally be calculated, as described in the Titan Projector Series External Control Protocol.
7. Appendix

Brightness (E502)

Adjusts Brightness
Range: -128 — +127 (00h - FFh)
Centre (0): 128 (80h)

Examples

Set Brightness 97 \((128 + 97 = 225 = \text{E1h})\)
BEEF 03 1900 5858 01 E502 0000 00000000 E1000000 00000000 00000000
Response
1E BEEF 03 1900 5858 01 E502 0000 00000000 E1000000 00000000 00000000

Get Brightness
BEEF 03 1900 5858 02 E502 0000 00000000 00000000 00000000 00000000
Response (97)
1E BEEF 03 1900 5858 02 E502 0000 00000000 E1000000 00000000 00000000 00000000

Increment Brightness
BEEF 03 1900 5858 03 E502 0000 00000000 00000000 00000000 00000000 00000000
Response
1E BEEF 03 1900 5858 03 E502 0000 00000000 00000000 00000000 00000000 00000000

Decrement Brightness
BEEF 03 1900 5858 04 E502 0000 00000000 00000000 00000000 00000000 00000000
Response
1E BEEF 03 1900 5858 04 E502 0000 00000000 00000000 00000000 00000000 00000000

Notes

Spaces in example messages are for visual clarity and should not be sent as part of the message.

In the example messages the CRC is set to 5858h. This value will be ignored. However, the CRC should ideally be calculated, as described in the Titan Projector Series External Control Protocol.
**Contrast (E602)**

*Adjusts Contrast*

Range: \(-128 \rightarrow +127\) (\(00h - FFh\))

Centre (0): 128 (\(80h\))

**Examples**

*Set Contrast* 97 \((128 + 97 = 225 = E1h)\)

BEEF 03 1900 5858 01 E602 0000 00000000 E1000000 00000000 00000000 00000000

Response

1E BEEF 03 1900 5858 01 E602 0000 00000000 E1000000 00000000 00000000 00000000

*Get Contrast*

BEEF 03 1900 5858 02 E602 0000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

Response (97)

1E BEEF 03 1900 5858 02 E602 0000 00000000 E1000000 00000000 00000000 00000000 00000000

*Increment Contrast*

BEEF 03 1900 5858 03 E602 0000 00000000 00000000 00000000 00000000 00000000 00000000

Response

1E BEEF 03 1900 5858 03 E602 0000 00000000 00000000 00000000 00000000 00000000 00000000

*Decrement Contrast*

BEEF 03 1900 5858 04 E602 0000 00000000 00000000 00000000 00000000 00000000

Response

1E BEEF 03 1900 5858 04 E602 0000 00000000 00000000 00000000 00000000 00000000

**Notes**

Spaces in example messages are for visual clarity and should not be sent as part of the message.

In the example messages the CRC is set to 5858h. This value will be ignored. However, the CRC should ideally be calculated, as described in the Titan Projector Series External Control Protocol.

**Shutter (CF02)**

*Closes and opens shutter*

<table>
<thead>
<tr>
<th>Target (Set)</th>
<th>Value (Get)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shutter Close</td>
<td>00h</td>
</tr>
<tr>
<td>Shutter Open</td>
<td>01h</td>
</tr>
</tbody>
</table>

**Examples**

Set Shutter (Close)

BEEF 03 1900 5858 01 CF02 0000 00000000 00000000 00000000 00000000 00000000

Response

1E BEEF 03 1900 5858 01 CF02 0000 00000000 00000000 00000000 00000000 00000000

Set Shutter (Open)

BEEF 03 1900 5858 01 CF02 0000 01000000 00000000 00000000 00000000 00000000

Response

1E BEEF 03 1900 5858 01 CF02 0000 01000000 00000000 00000000 00000000 00000000

**Caution:** The Set and Get parameters are different:

Get Shutter

BEEF 03 1900 5858 02 CF02 0000 00000000 00000000 00000000 00000000 00000000

Response (Closed)

1E BEEF 03 1900 5858 02 CF02 0000 00000000 01000000 00000000 00000000 00000000

Response (Open)

1E BEEF 03 1900 5858 02 CF02 0000 00000000 00000000 00000000 00000000 00000000

**Notes**

- Spaces in example messages are for visual clarity and should not be sent as part of the message.
- In the example messages the CRC is set to 5858h. This value will be ignored. However, the CRC should ideally be calculated, as described in the Titan Projector Series External Control Protocol.
<table>
<thead>
<tr>
<th>COMMAND</th>
<th>HEX DATA</th>
<th>MESSAGE LENGTH</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Projector On</td>
<td>03 19 00 58 58</td>
<td>01 01 02</td>
<td></td>
</tr>
<tr>
<td>Switch Projector to Standby</td>
<td>03 19 00 58 58</td>
<td>01 01 02</td>
<td></td>
</tr>
<tr>
<td>Select RGB1 input</td>
<td>03 19 00 58 58</td>
<td>01 37 02</td>
<td>not used on this projector</td>
</tr>
<tr>
<td>Select RGB2 input</td>
<td>03 19 00 58 58</td>
<td>01 37 02</td>
<td></td>
</tr>
<tr>
<td>Select DVI input</td>
<td>03 19 00 58 58</td>
<td>01 37 02</td>
<td></td>
</tr>
<tr>
<td>Select SDI input</td>
<td>03 19 00 58 58</td>
<td>01 37 02</td>
<td></td>
</tr>
<tr>
<td>Select Composite input</td>
<td>03 19 00 58 58</td>
<td>01 37 02</td>
<td></td>
</tr>
<tr>
<td>Select SVideo input</td>
<td>03 19 00 58 58</td>
<td>01 37 02</td>
<td></td>
</tr>
<tr>
<td>Select Component input</td>
<td>03 19 00 58 58</td>
<td>01 37 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to Native</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to Fill</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to USER</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to 1.33:1</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to 1.25:1</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to 1.78:1</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to 2.35:1</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to 1.66:1</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Set aspect ratio to 1.85:1</td>
<td>03 19 00 58 58</td>
<td>01 7A 02</td>
<td></td>
</tr>
<tr>
<td>Select 0% field test pattern</td>
<td>03 19 00 58 58</td>
<td>01 7D 02</td>
<td></td>
</tr>
<tr>
<td>Select 20% field test pattern</td>
<td>03 19 00 58 58</td>
<td>01 7D 02</td>
<td></td>
</tr>
<tr>
<td>Select 80% field test pattern</td>
<td>03 19 00 58 58</td>
<td>01 7D 02</td>
<td></td>
</tr>
<tr>
<td>Select 100% field test pattern</td>
<td>03 19 00 58 58</td>
<td>01 7D 02</td>
<td></td>
</tr>
<tr>
<td>Select chequered test pattern</td>
<td>03 19 00 58 58</td>
<td>01 7D 02</td>
<td></td>
</tr>
<tr>
<td>Select colour bars test pattern</td>
<td>03 19 00 58 58</td>
<td>01 7D 02</td>
<td></td>
</tr>
<tr>
<td>Select grid test pattern</td>
<td>03 19 00 58 58</td>
<td>01 7D 02</td>
<td></td>
</tr>
<tr>
<td>Select screen layout test pattern</td>
<td>03 19 00 58 58</td>
<td>01 7D 02</td>
<td></td>
</tr>
<tr>
<td>Turn test patterns off</td>
<td>03 19 00 58 58</td>
<td>05 8F 02</td>
<td></td>
</tr>
<tr>
<td>Unblank display</td>
<td>03 19 00 58 58</td>
<td>01 87 02</td>
<td></td>
</tr>
<tr>
<td>Set Brightness</td>
<td>03 19 00 58 58</td>
<td>01 E5 02</td>
<td>XX = required brightness. 00h = -128, 80h = 0, FFh = +127</td>
</tr>
<tr>
<td>Increment Brightness</td>
<td>03 19 00 58 58</td>
<td>03 E5 02</td>
<td>XX = required brightness. 00h = -128, 80h = 0, FFh = +127</td>
</tr>
<tr>
<td>Decrement Brightness</td>
<td>03 19 00 58 58</td>
<td>04 E5 02</td>
<td></td>
</tr>
<tr>
<td>Set Contrast</td>
<td>03 19 00 58 58</td>
<td>01 E6 02</td>
<td>XX = required contrast. 00h = -128, 80h = 0, FFh = +127</td>
</tr>
<tr>
<td>Increment Contrast</td>
<td>03 19 00 58 58</td>
<td>03 E6 02</td>
<td></td>
</tr>
<tr>
<td>Decrement Contrast</td>
<td>03 19 00 58 58</td>
<td>04 E6 02</td>
<td>Closes optical shutter</td>
</tr>
<tr>
<td>Shutter close</td>
<td>03 19 00 58 58</td>
<td>01 CF 02</td>
<td>Opens optical shutter</td>
</tr>
<tr>
<td>Shutter open</td>
<td>03 19 00 58 58</td>
<td>01 CF 02</td>
<td></td>
</tr>
<tr>
<td>Set lamp mode to Dual</td>
<td>03 19 00 58 58</td>
<td>01 C5 02</td>
<td></td>
</tr>
<tr>
<td>Set lamp mode to Alternate</td>
<td>03 19 00 58 58</td>
<td>01 C5 02</td>
<td></td>
</tr>
<tr>
<td>Set lamp mode to Single 1</td>
<td>03 19 00 58 58</td>
<td>01 C5 02</td>
<td></td>
</tr>
<tr>
<td>Set lamp mode to Single 2</td>
<td>03 19 00 58 58</td>
<td>01 C5 02</td>
<td></td>
</tr>
</tbody>
</table>