DIGITAL PROJECTION

USER GUIDES

INSTALLATION AND QUICK-START GUIDE
CONNECTION GUIDE
OPERATING GUIDE
REMOTE COMMUNICATIONS GUIDE

M-Vision LED+IR series

High Brightness Digital Video Projector
16:10 widescreen display

Rev D July 2014

112-564D

DIGITAL PROJECTION

INSTALLATION AND QUICK-START GUIDE

M-Vision LED+IR series

High Brightness Digital Video Projector
16:10 widescreen display

Rev D July 2014

112-158D

CONTENTS

About this Guide

Please read this guide carefully before using the projector, and keep it 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.

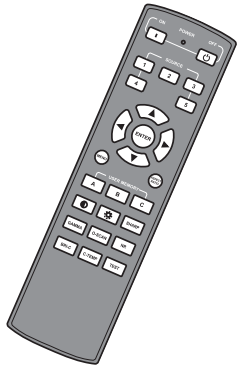
Notes

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

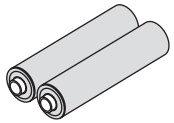
Product revision

Because we at Digital Projection continually strive to improve our products, we may change specifications and designs, and add new features without prior notice. Projectors built prior to this revision of the Operating Guide may therefore not include all the features described.

What's in the Box?

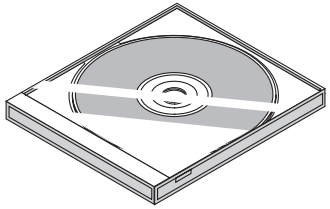


Remote control (109-685)

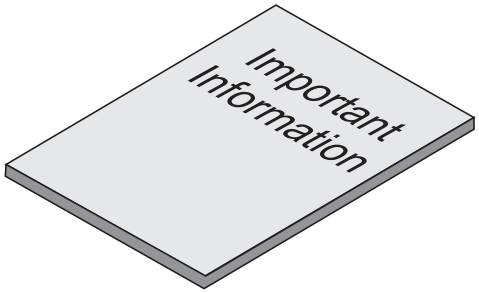


2x AAA batteries

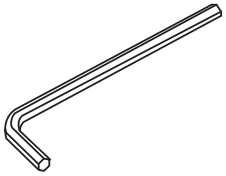
Projector



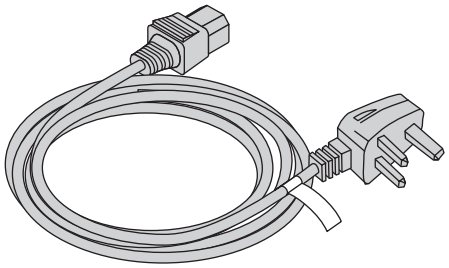
User Manual on disc (115-759)



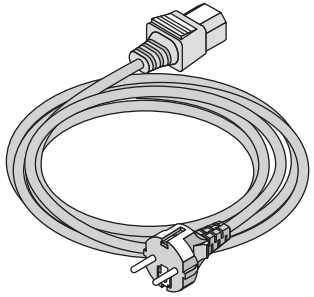
Important Information (110-287)



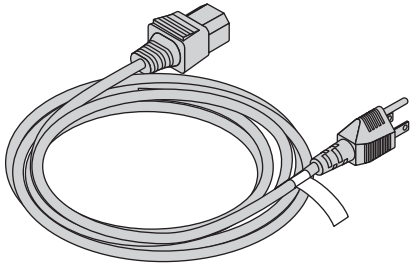
5mm Allen wrench



Power cable 10A, United Kingdom (102-180)



Power cable 10A, Europe (102-163)



Power cable 13A, North America (102-165)

Notes

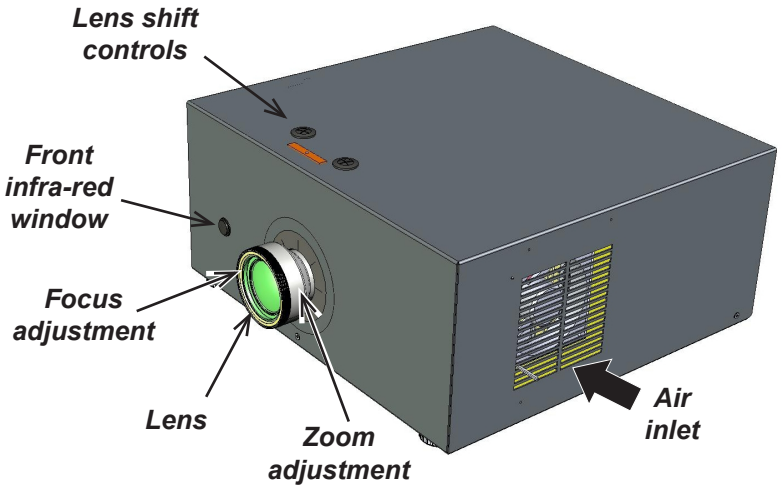
Make sure your box contains everything listed. If any pieces are missing, contact your dealer.

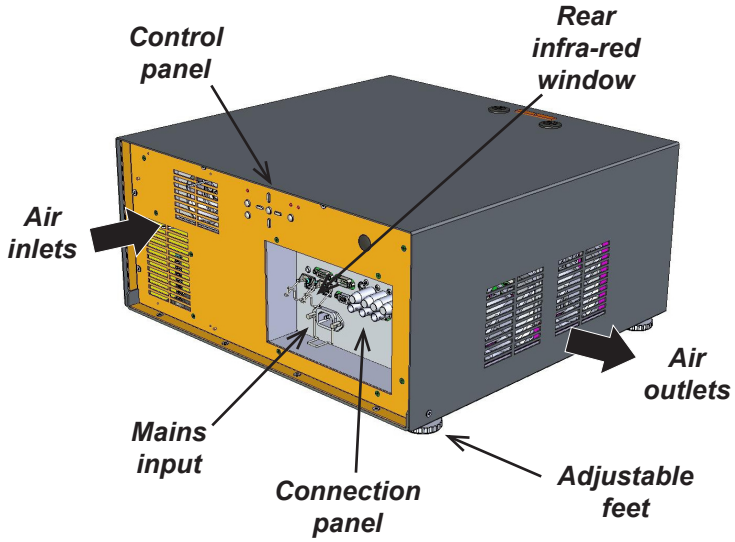
You should save the original box and packing materials, in case you ever need to ship your Projector.

Only one power cable - dependent on the destination territory - will be supplied with the projector.

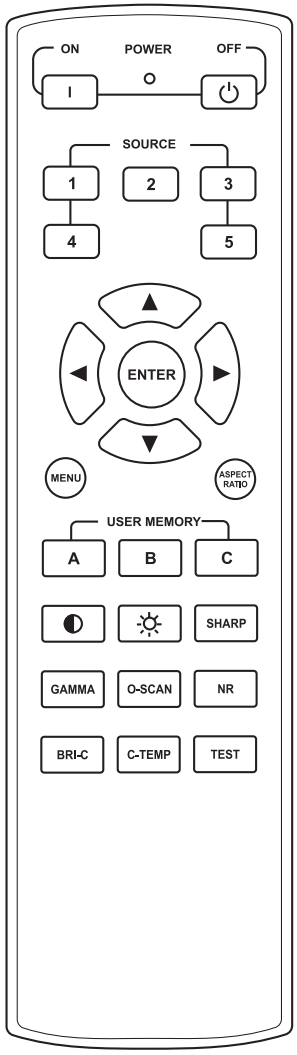
Getting to Know the Projector

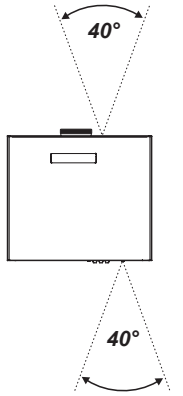
Front and rear views





Remote control





Infra-red reception

Notes

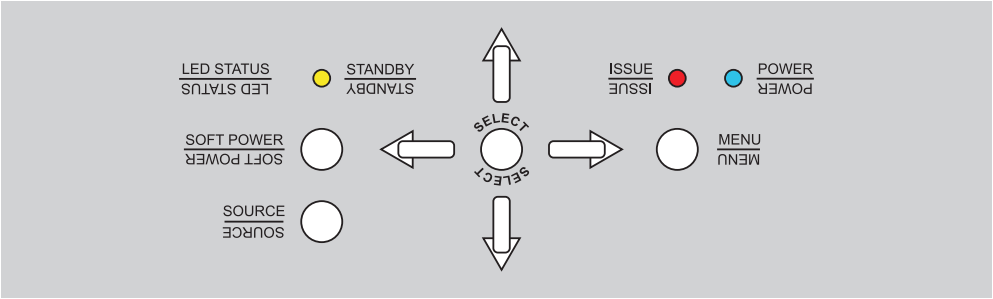
The projector uses the standard MVision series infra-red remote control.

Some of the controls are duplicated on the projector control panel, as shown on the next page.

*For full details of how to use the controls and the menu system, see the **Operating Guide**.*

Control panel and indicators

Some of the controls from the remote control are duplicated on the projector control panel, as shown here.

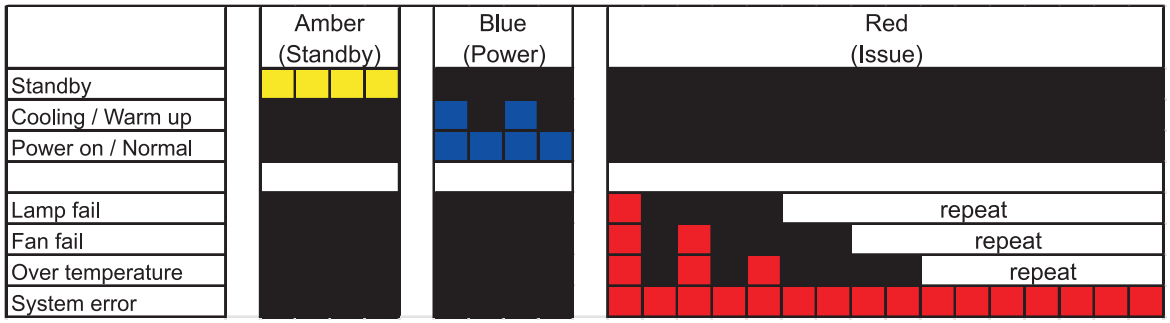


The yellow Standby indicator will light when the projector is in standby. The blue Power indicator will flash when the projector is cooling down or warming up. It will be steady when the projector is in normal running mode, as shown in the chart below.

Error codes

If the projector detects an error, the red Issue indicator will flash, as shown in the chart below.

For example, if the fan fails, the red indicator will flash twice followed by a pause, then the sequence will repeat until the error condition is corrected.

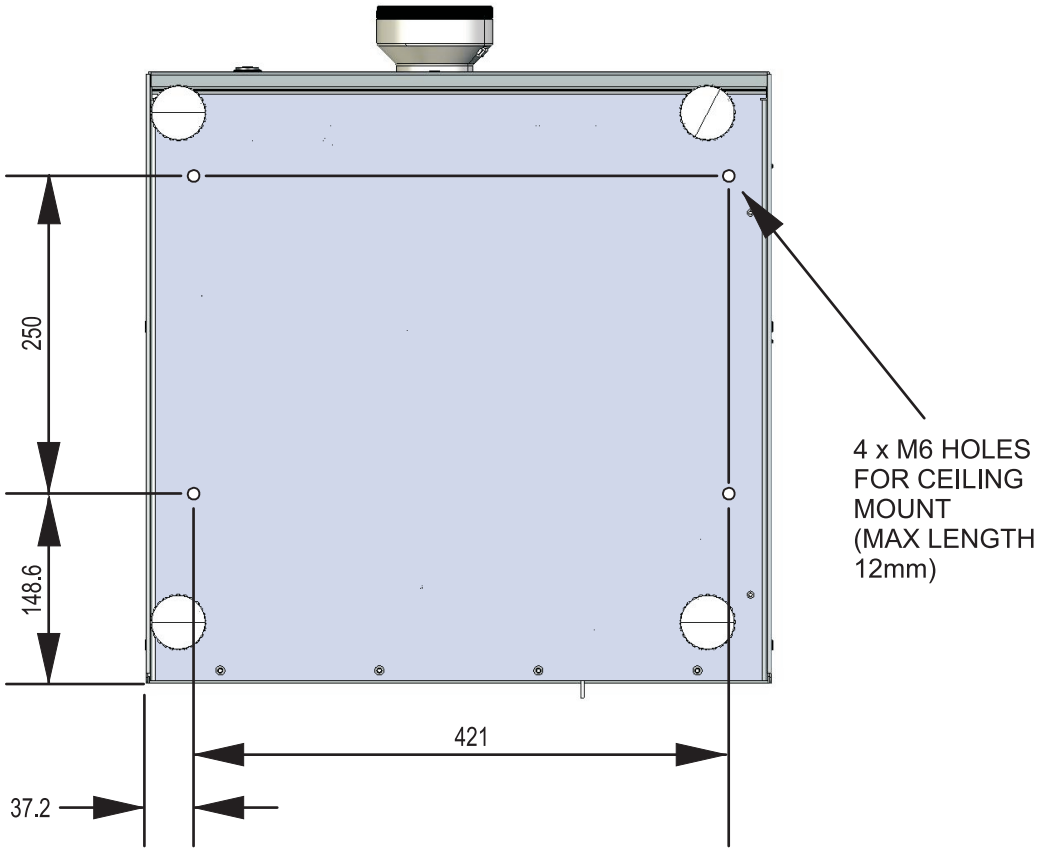


Notes

*For full details of how to use the controls and the menu system, see the **Operating Guide**.*

Positioning the Screen and Projector

- Install the screen, ensuring that it is in the best position for viewing by your audience.
- Mount the projector, ensuring that it is at a suitable distance from the screen for the image to fill the screen. Set the adjustable feet so that the projector is level, and perpendicular to the sceen.
- The dimension drawing below shows the positions of the feet for table mounting, and the fixing holes for ceiling mounting.



Notes

Always allow the lamp to cool for 5 minutes before:

- disconnecting the power
- moving the projector

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 stack more than 3 projectors.

Operating the Projector

Switching the Projector On

- Connect the power cable between the mains supply and the projector. Switch on at the switch next to the power connector.
- Wait until the self-test has completed and the ***Standby*** indicator on the projector control panel shows amber. The lamp will be off and the projector will be in ***STANDBY*** mode.
- Press **POWER** on the control panel or [I] on the remote control, and hold for 3 seconds.

  The ***Power*** indicator on the control panel will flash blue for a few seconds whilst the lamp comes up to full brightness. When the projector is ready for use, the ***Power*** indicator will show steady blue.

Selecting an Input Signal or Test Pattern

Input signal

- Connect an image source to the projector. The signal should be automatically detected by the projector, and should be displayed within a two or three seconds.
- If more than one signal is connected, then select the image you want to display:

  Select from five of the inputs using [1] to [5] on the remote control,

  or press **SOURCE** on the control panel to cycle through all the inputs.

  or use **Source Select** in the **General menu**.

Test pattern

If you have no image source connected to the projector, then you can display a test pattern instead:

Select a **Test Pattern** from the **General menu**.

Notes

Always allow the lamp to cool for 5 minutes before:

- disconnecting the power
- moving the projector

*For full details of how to connect an image source to the projector, see the **Connection Guide**.*

*For full details of how to use the controls and the menu system, see the **Operating Guide**.*

Adjusting the Lens

Zoom

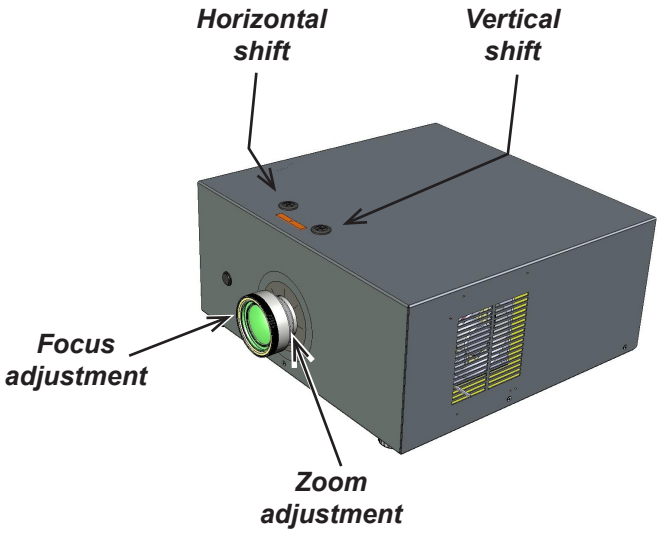
- Turn the smooth ring on the lens, closest to the case, to adjust the zoom so that the image fills the screen.

Focus

- Turn the knurled ring at the outer end of the lens, to adjust the focus until the image is sharp.

Shift

- Use the 5mm allen wrench to adjust the horizontal and vertical position of the image.



Notes

If the projector is fitted with the fixed 0.73:1 lens then there are no lens shift controls.

Adjusting the Image

Orientation

- Use the **Rear Projection** and **Ceiling Mode** settings, in the **Setup Menu**.

Aspect Ratio

- Press the ASPECT RATIO button on the remote control to cycle through all the available settings.

  or use the **Aspect Ratio** setting in the **Image Menu**.

Picture

- Press ☼ or ◐ on the remote control to set the **Brightness** and **Contrast**, using ◁ or ▷ to adjust the sliders.

  or use the **Brightness** or **Contrast** settings in the **Image Menu**.

Switching the Projector Off

- Press **POWER** on the control panel or ⏻ on the remote control, then press the button a second time to confirm your intention to switch off.

  The lamp will go off, the ***Standby*** indicator on the control panel will show amber and the projector will be in ***Standby*** mode.
- Switch off at the switch next to the power connector. Disconnect the power cable from the projector.

Notes

☞ *For full details of how to use the controls and the menu system, see the **Operating Guide**.*

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

- disconnecting the power
- moving the projector

DIGITAL PROJECTION

CONNECTION GUIDE

M-Vision LED+IR series

High Brightness Digital Video Projector
16:10 widescreen display

Rev D July 2014

112-159D

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Signal Inputs and Outputs

HDMI 1 and 2

- Connect to either of the 4-pin HDMI connectors.

RGB

- Set **Color Space** in the **Advanced** menu to **Auto**, or **RGB PC** if necessary.

S-Video

- Connect to the 4-pin mini-DIN connector.

Composite Video

- Connect to the single ***Video*** phono connector.

Component 1 and 2

YPbPr/YCbCr

- Connect to ***Component 1*** or ***Component 2.***
- Set **Color Space** in the **Advanced** menu to **Auto**, or **REC709** or **REC601** if necessary.

RGsB

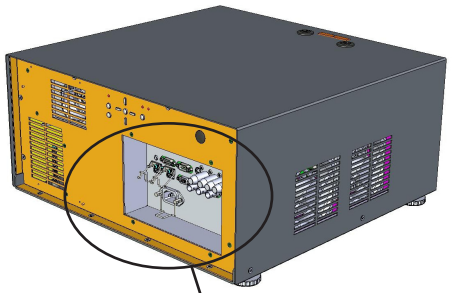
- Connect to ***Component 1*** or ***Component 2.***
- Set **Color Space** in the **Advanced** menu to **Auto**, or **RGB Video** if necessary.

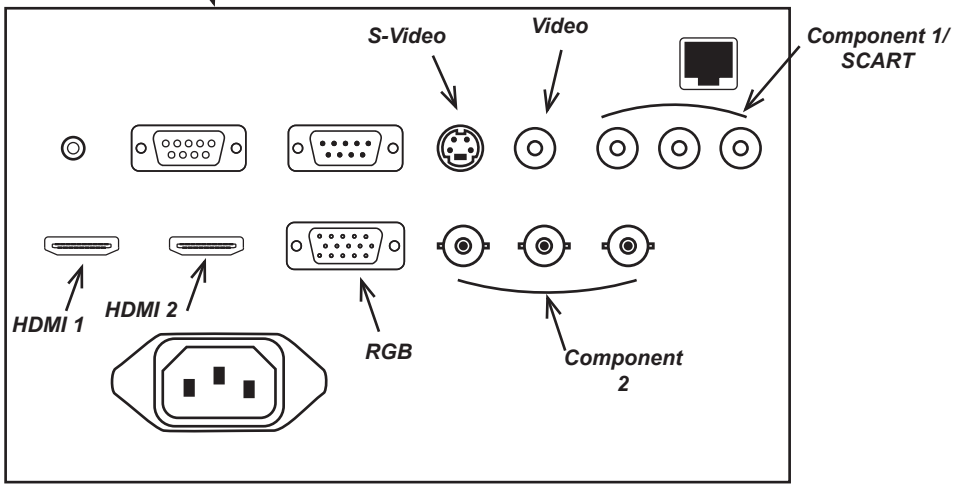
RGBS

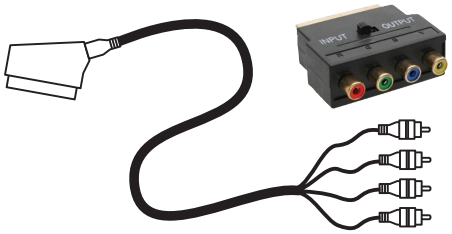
- Connect the ***RGB*** cables to ***Component 1***, and the ***Sync*** cable to ***Video.***
- Select **SCART** in the **Source Select** menu.

SCART

- Using a SCART to RGBS adaptor, connect the ***RGB*** cables to ***Component 1***, and the ***Sync*** cable to ***Video.***
- Select **SCART** in the **Source Select** menu.







SCART adaptors

Notes

*For a complete listing of pin configurations for all signal and control connectors, see **Wiring Details** later in this Guide.*

*When the **SCART** input is enabled, the **Video** and **Component 1** inputs will be disabled.*

Supported Signal Input Modes

Signal	Resolution	Frame Rate (Hz)	VIDEO	S-VIDEO	SCART	COMPONENT	RGB (RGBHV)	RGB (RGsB)	HDMI RGB	HDMI YUV 8 bit	HDMI YUV 10 bit	HDMI YUV 12 bit
PC	640 x 480	59.94					✓		✓			
	640 x 480	74.99					✓		✓			
	640 x 480	85					✓		✓			
	800 x 600	60.32					✓	✓	✓			
	800 x 600	75					✓		✓			
	800 x 600	85.06					✓		✓			
	848 x 480	47.95					✓		✓			
	848 x 480	59.94					✓		✓			
	1024 x 768	60					✓		✓			
	1024 x 768	75.03					✓		✓			
	1024 x 768	85.03					✓		✓			
	1024 x 1024	59.92					✓	✓	✓			
	1024 x 1024	59.999					✓	✓				
	1024 x 1024	60					✓	✓				
	1280 x 720	47.95					✓		✓			
	1280 x 1024	60.02					✓	✓	✓			
	1280 x 1024	75.02					✓	✓	✓			
	1280 x 1024	85.02					✓		✓			
	1400 x 1050	60					✓	✓	✓			
	1600 x 900	60					✓	✓	✓			
	1600 x 1200	60					✓		✓			
	1920 x 1080	47.95					✓		✓			
	1680 x 1050	59.94					✓		✓			
	1920 x 1200	60					✓		✓			
Apple Mac	640 x 480	66.59					✓		✓			

continued on next page...

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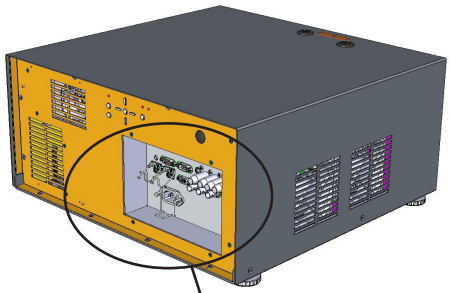
Signal	Resolution	Refresh Rate (Hz)	VIDEO	S-VIDEO	SCART	COMPONENT	RGB (RGBHV)	RGB (RGsB)	HDMI RGB	HDMI YUV 8 bit	HDMI YUV 10 bit	HDMI YUV 12 bit
NTSC	NTSC (M, 4.43)	59.94	✓	✓								
PAL	PAL (B,G,H,I)	50	✓	✓								
	PAL (N)	50	✓	✓								
	PAL (M)	59.94	✓	✓								
SECAM	SECAM (M)	50	✓	✓								
SDTV	RGBS	50			✓							
	480i	59.94				✓						
	576i	50				✓						
EDTV	480p	59.94				✓	✓	✓	✓	✓	✓	✓
	576p	50				✓	✓	✓	✓	✓	✓	✓
HDTV	1035i	60				✓	✓	✓	✓	✓	✓	✓
	1080i	50										
	1080i (Aus)	50				✓	✓	✓	✓	✓	✓	✓
	1080i	59.94				✓	✓	✓	✓	✓	✓	✓
	1080i	60				✓	✓	✓	✓	✓	✓	✓
	720p	50				✓	✓	✓	✓	✓	✓	✓
	720p	59.94										
	720p	60				✓	✓	✓	✓	✓	✓	✓
	1080p	23.98				✓	✓	✓	✓	✓	✓	✓
	1080p	24				✓	✓	✓	✓	✓	✓	✓
	1080p	25				✓	✓	✓	✓	✓	✓	✓
	1080p	29.97				✓	✓	✓	✓	✓	✓	✓
	1080p	30				✓	✓	✓	✓	✓	✓	✓
	1080p	50				✓	✓	✓	✓	✓	✓	✓
	1080p	59.94				✓	✓	✓	✓	✓	✓	✓
	1080p	60				✓	✓	✓	✓	✓	✓	✓

Control Connections

Wired Remote Control

- If infrared signals from the remote control cannot reach the projector due to excessive distance or obstructions such as walls or cabinet doors, you can connect an external IR repeater to the Remote control input, and position its IR sensor within range of the operator.

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



Notes

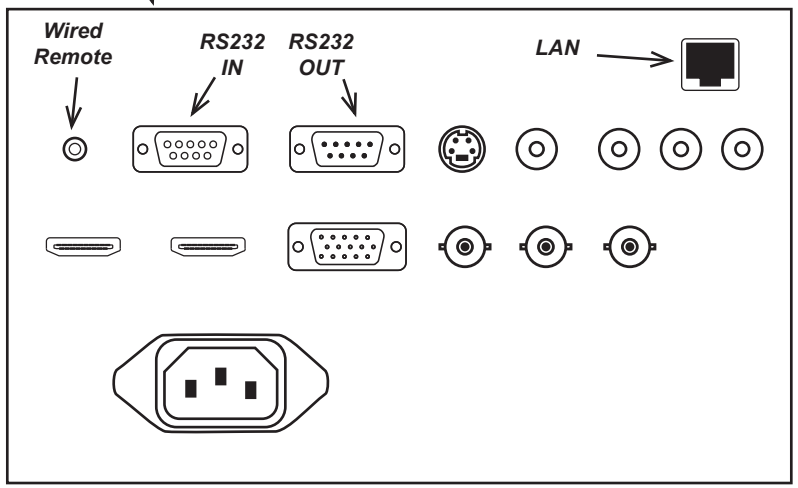
*For a complete listing of pin configurations for all signal and control connectors, see **Wiring Details** later in this Guide.*

Only one remote connection should be used at any one time.

LAN

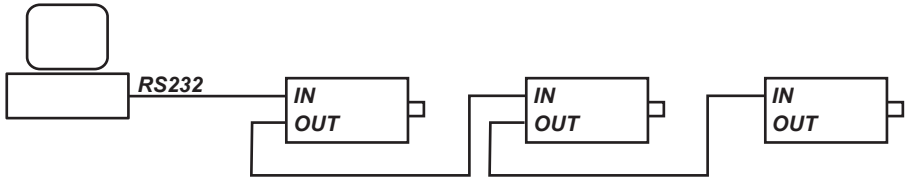
- All of the projector's features can be controlled via a LAN connection, using the text strings described in the ***Remote Communications Guide***.
- The default LAN IP address is 192.168.0.100. For information about how to change this, see ***Setting the LAN IP configuration***, later in this guide.

  Each projector can be given a unique ***System ID***, and this can be be used to control them individually or simultaneously. For more information about this, see the ***Remote Communications Guide***.



RS232

- All of the projector's features can be controlled via a serial connection, using the control strings described in the ***Remote Communications Guide***.
- Projectors can be connected in a daisy chain, connecting the ***RS232 OUT*** of one projector to the ***RS232 IN*** of the next. Each projector can be given a unique ***System ID***, and this can be be used to control them individually or simultaneously. For more information about this, see the ***Remote Communications Guide***.



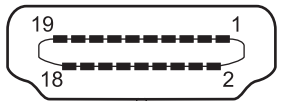
Wiring Details

Signal inputs

HDMI

19 way type A connector

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



pin view of panel connector

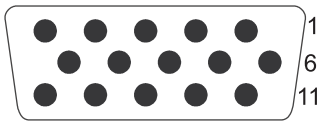
Notes

*For full details of all input settings, see the **Advanced menu** in the **Operating Guide**.*

RGB

15 way D-type connector

1	R
2	G
3	B
4	unused
5	Digital Ground (H Sync)
6	R Ground
7	B Ground
8	G Ground
9	+5v
10	Digital Ground (V Sync/DDC)
11	unused
12	SDA
13	H Sync
14	V Sync
15	SCL



pin view of female connector

S-Video

4 pin mini-DIN

1	Y Ground
2	C Ground
3	Luminance (Y)
4	Chrominance (C)

pin view of female connector

Composite Video

RCA Phono

Notes

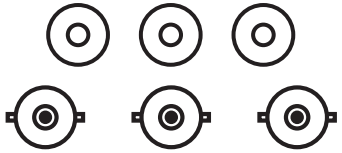
*For full details of all input settings, see the **Advanced menu** in the **Operating Guide**.*

Component 1

3 x RCA Phono connector

Component 2

3 x 75 ohm BNC



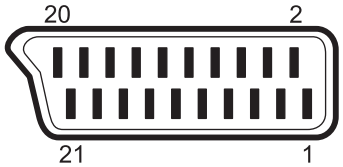
RGsB	YCbCr	YPbPr
R	Cr	Pr
G + Sync	Y	Y
B	Cb	Pb

RGBS

connect ***Sync*** to ***Video*** input

SCART

Using a SCART to RGBS adaptor, connect the RGB cables to ***Component 1***, and the Sync cable to ***Composite Video***.



pin view of female connector

5	Blue ground
7	Blue
9	Green ground
11	Green
13	Red ground
15	Red
17	Sync ground
20	Sync
21	Chassis ground

Notes

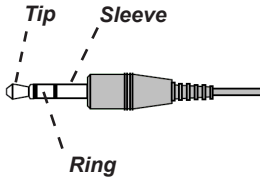
*For full details of all input settings, see the **Advanced menu** in the **Operating Guide**.*

Control connections

Wired Remote control connection

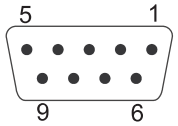
3.5mm mini jack

Tip	Signal
Ring	Not connected
Sleeve	Ground

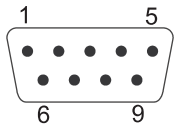


Serial control input and output

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



pin view of female connector (IN)



pin view of male connector (OUT)

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	38,400 bps
Data length	8 bits
Stop bits	one
Parity	none
Flow control	none

Notes

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

Only one remote connection should be used at any one time.

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.

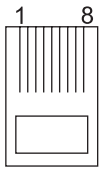
LAN connection

TCP Port number
5450

10BaseT Unshielded Twisted Pair cable

The standard wire colours as 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



top view of cable connector (clip is underneath)

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

Only one remote connection should be used at any one time.

For information about how to set the LAN IP configuration, see the next page.

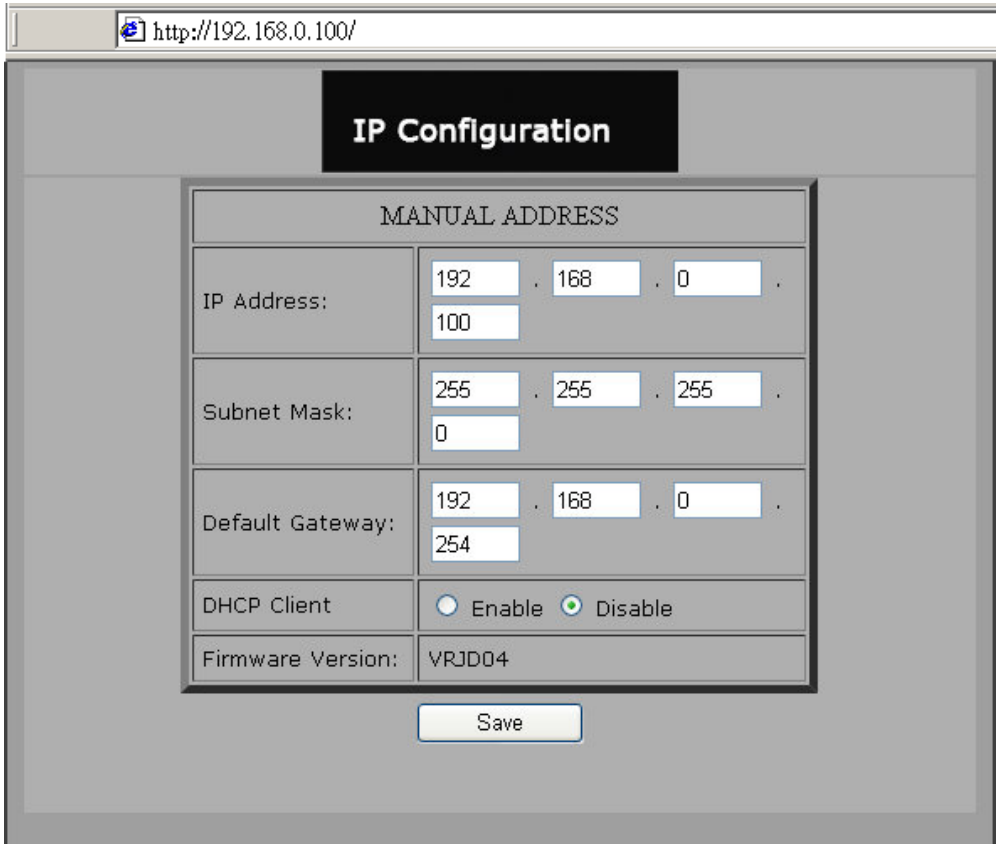
Use:

a straight cable to connect to a hub or network, or

a crossed cable as shown here to connect ONLY to a computer directly.

Setting the LAN IP configuration

- Point your browser at the projector by typing its ***LAN IP Address*** into the address bar, then press the ***Enter*** key.
- The embedded IP Configuration webpage should appear.



- Edit the settings as required, then click on ***Save***.

Notes

The default LAN IP address is 192.168.0.100

DO NOT change this unless it is absolutely necessary.

Make sure you make a note of the new address when you have done so.

DIGITAL PROJECTION

OPERATING GUIDE

M-Vision LED+IR series

High Brightness Digital Video Projector
16:10 widescreen display

Rev D July 2014

112-160D

CONTENTS

About this Guide

Please read this guide carefully before using the projector, and keep it 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.

Notes

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

Product revision

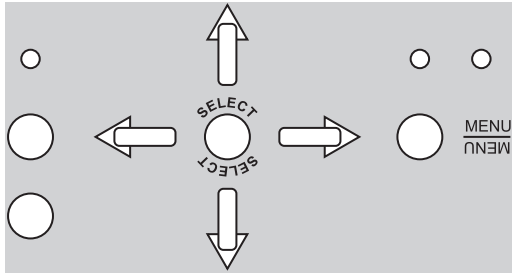
Because we at Digital Projection continually strive to improve our products, we may change specifications and designs, and add new features without prior notice. Projectors built prior to this revision of the Operating Guide may therefore not include all the features described.

Using the Menus

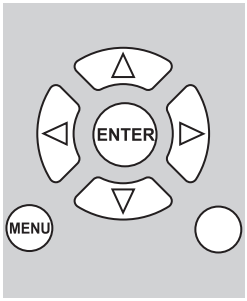
Use the buttons on the projector control panel or on the remote control, to access the menu system.

- To open or close the on-screen display (OSD), press **MENU**.

  (When closing the OSD, you may need to press **MENU** more than once if any sub-menus are open.)



Projector control panel



Remote control

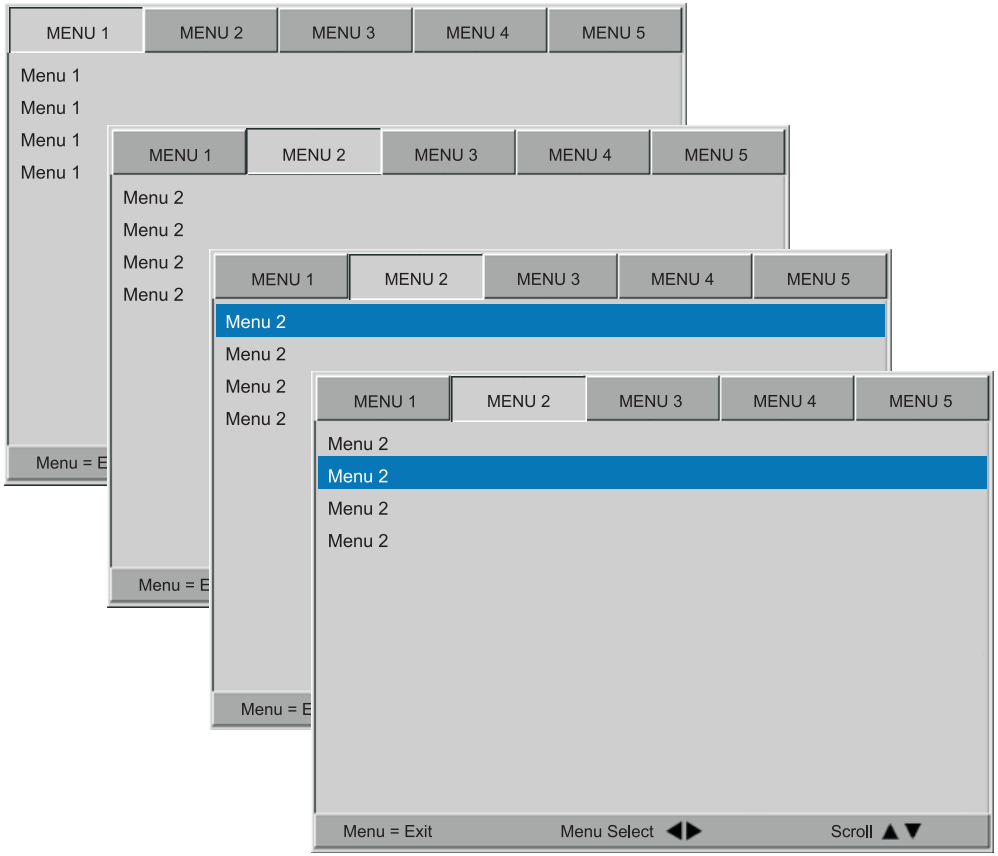
Navigating the menus

- Select a menu using

  ◁ and ▷,

- then open the menu by pressing **ENTER**/**SELECT**.

  The first item in the menu is highlighted.



- Select an item in the menu using

  △ and ▽.

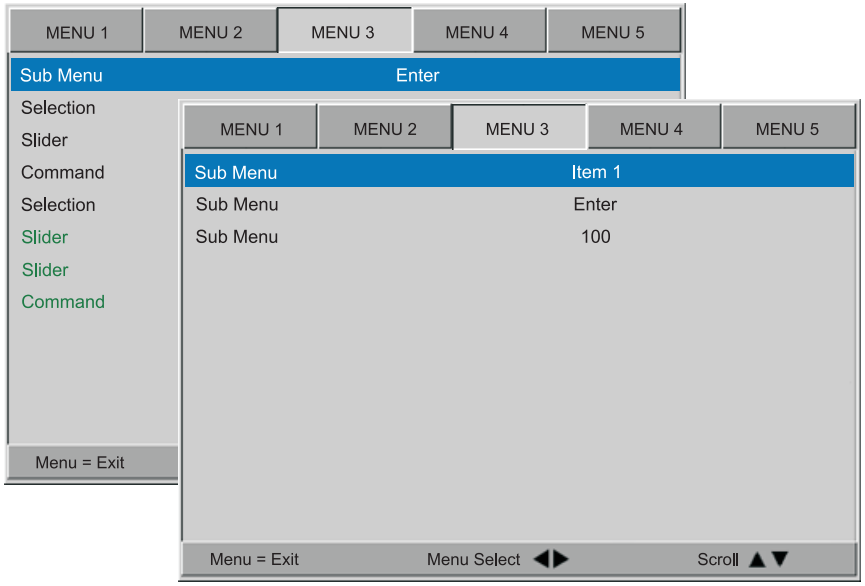
- To open another menu, first close the current menu by pressing **MENU**.

Notes

Some menu options and controls may not be available due to settings in other menus. These will be shaded green on the actual menu.

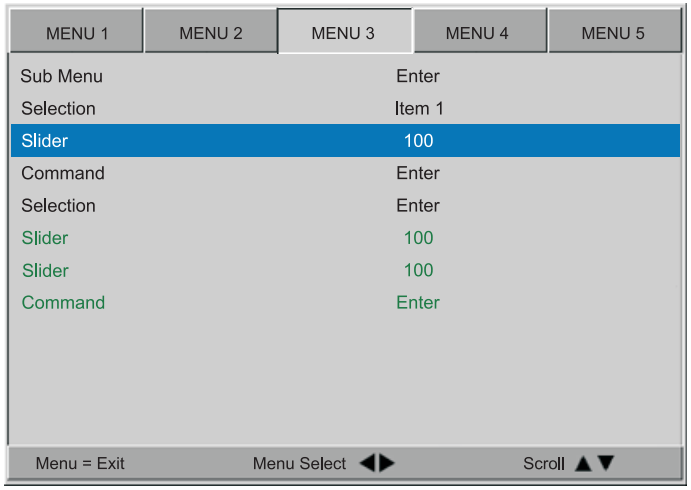
Submenus

- Select a submenu using △ and ▽.
- then press **ENTER/SELECT**.
- The submenu opens, with the first item highlighted.
- To close the submenu, press **MENU**.

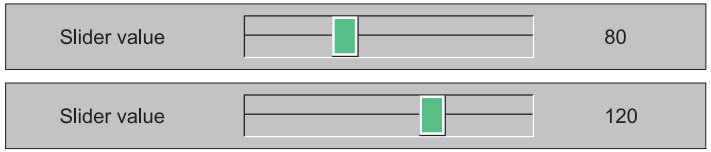


Sliders

- Activate the slider by pressing ◁ or ▷.



- Use ◁ or ▷ to adjust the value.
- Press **MENU** or **ENTER/SELECT** to accept the value.



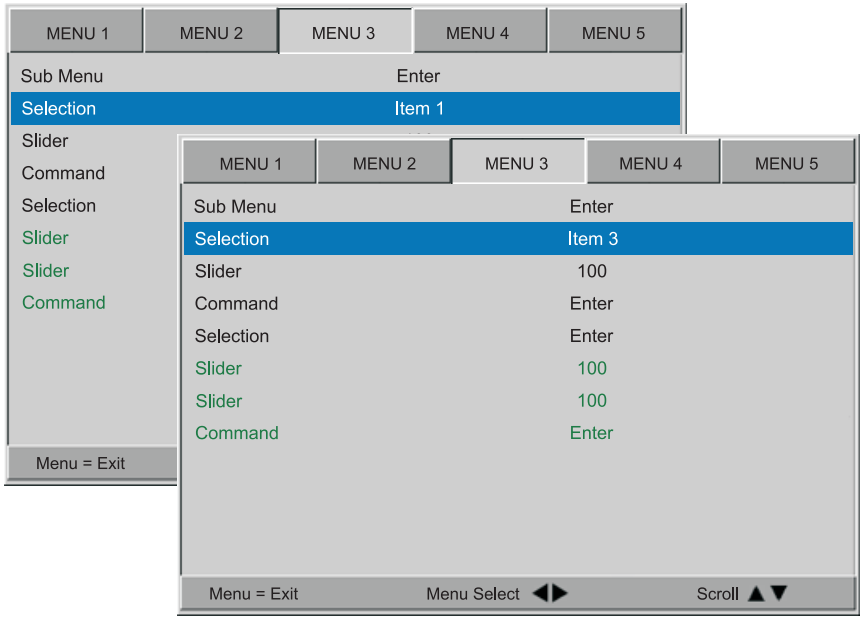
Notes

Some menu options and controls may not be available due to settings in other menus. These will be shaded green on the actual menu.

Selecting parameters

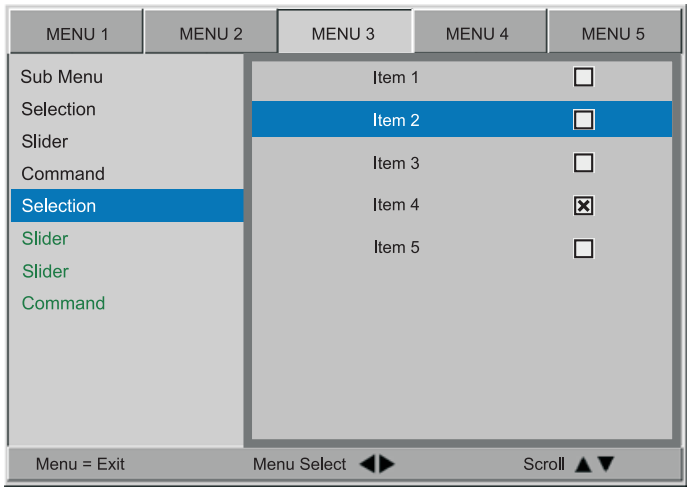
Most parameters are changed by selecting from a list:

- Select from the list using ◁ and ▷.
- The change will be made immediately.



Some parameters are changed by selecting from a submenu.

- Press **ENTER/SELECT** to open the submenu.
- The item that is currently selected is highlighted with a cross ☒.
- Select from the list using △ and ▽.
- The change will be made when you press **ENTER/SELECT** to confirm the selection.

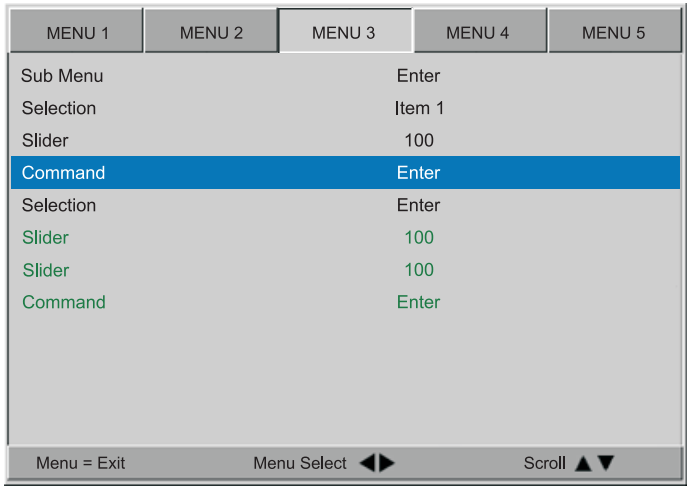


Notes

Some menu options and controls may not be available due to settings in other menus. These will be shaded green on the actual menu.

Commands

- To use a command, press **ENTER/SELECT**.



- In this example,

  use ◁ or ▷ to select **YES** or **NO**,

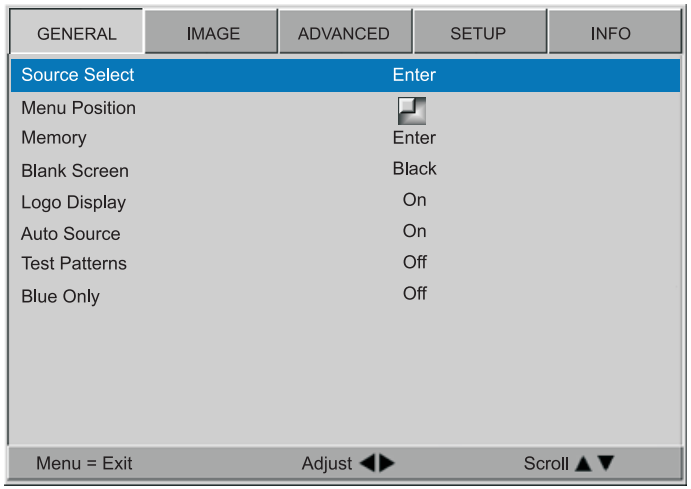
  then press **ENTER/SELECT** to confirm your selection.

Notes

Some menu options and controls may not be available due to settings in other menus. These will be shaded green on the actual menu.

A Tour of the Menus

General Menu



Source Select

- Select which input source to display.

Menu Position

- Set this to determine the position of the menus on the screen.

Memory

- The current image settings can be saved to one of two Presets. Either of the two Presets or the Default settings, can be recalled later.
- The following settings are saved:

  From the **Image** menu:

  Aspect Ratio *Brightness* *Contrast* *Saturation* *Tint*
  Sharpness *Noise Reduction* *Overscan* *HSG*

  From the **Advanced** menu:

  Color Space *Video Standard* *Gamma* *Colour Temperature* *DLP Frame Rate*
  Color Gamut *Brilliant Color* *Adaptive Contrast* *RGB Offsets* *RGB Gains*

Notes

*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

The input source that is currently selected is highlighted with a cross ☒.

*To use the **SCART** input, you will need an adaptor. See the **Connection Guide** for more information.*

***User-1** and **User-2** can also be recalled using the **USER MEMORY A** and **B** keys on the remote control.*

*Note: Buttons **C** and **D** on the remote control are not used.*

*When **Save Presets** is selected, the image settings for **ONLY** the selected input are saved.*

General Menu *continued*

Blank Screen

- Set this to determine what appears on screen when the projector is searching for a valid input source.

Logo Display

- Set this to determine whether the Digital Projection logo appears when the projector is switching from Stanby to On.

Auto-Source

- When this is set to **On**, the projector will search for an alternative input source when the current input source is disconnected
- When this is set to **Off**, the projector will show a 'blank' screen when the current input source is disconnected.

Test Patterns

- Select from a range of test patterns.
- Press **MENU** to return to the menu, or **ENTER/SELECT** to return to the currently selected input signal.

Blue Only

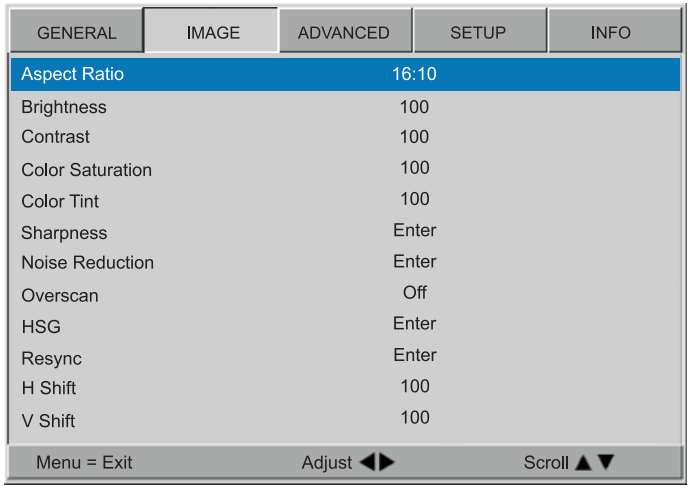
- Set this to **On** to display only the blue component of the input signal, for calibration or test purposes.

Notes

*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

*To set what a 'blank' screen looks like, use the **Blank Screen** setting in the **System menu**.*

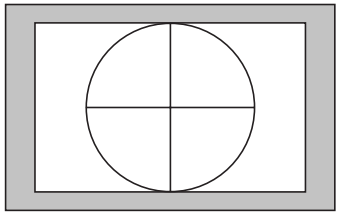
Image Menu



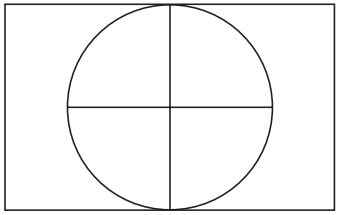
Aspect Ratio

- Select from **16:10**, **16:9**, **Letterbox**, **4:3**, **4:3 Narrow**, **Square** and **Native**.

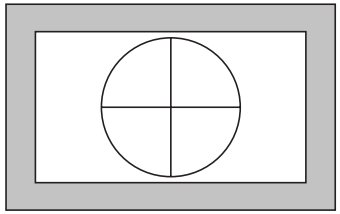
Examples



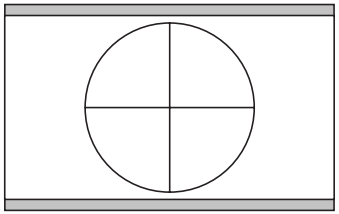
16:10 image using ***Native*** *setting*



16:10 image using ***16:10*** *setting*



16:9 image using ***Native*** *setting*



16:9 image using ***16:9*** *setting*

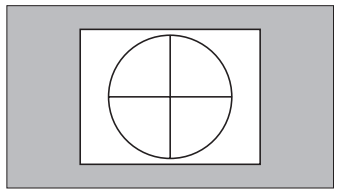
Notes

See also ***Using the Menus****, earlier in this guide and* ***Menu Map****, later in this guide.*

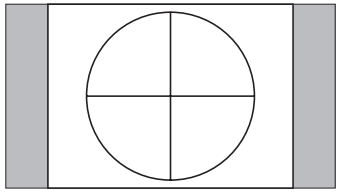
The Native image examples shown here have far fewer pixels than the 1920 x 1200 of the DMD. Your image may be different.

When displaying a 16:10 or 16:9 image, DO NOT use an anamorphic lens.

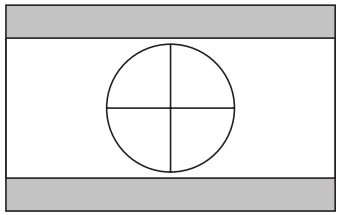
Image Menu, Aspect Ratio examples *continued*



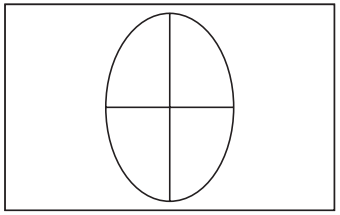
4:3 image using **Native** *setting*



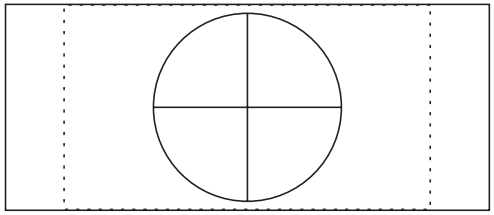
4:3 image using **4:3** *setting*



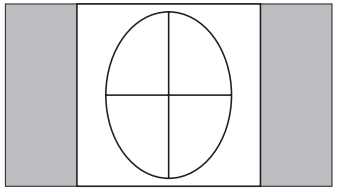
2.35:1 image using **16:9** *setting* ***without*** *anamorphic lens*



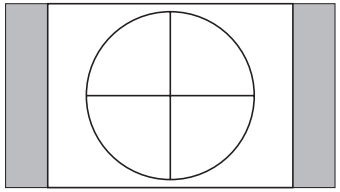
2.35:1 image using **Letterbox** *setting* ***without*** *anamorphic lens*



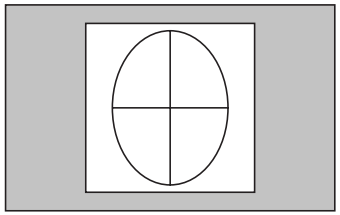
2.35:1 image using **Letterbox** *setting* ***with*** *anamorphic lens*



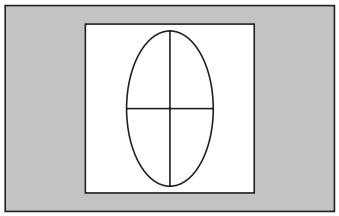
4:3 image using **4:3 Narrow** *setting* ***without*** *anamorphic lens*



4:3 image using **4:3 Narrow** *setting* ***with*** *anamorphic lens*



4:3 image using **Square** *setting*



16:9 image using **Square** *setting*

Notes

The Native image examples shown here have far fewer pixels than the 1920 x 1200 of the DMD. Your image may be different.

An ***anamorphic*** *lens is used with the* **Letterbox** *setting, to ensure that for a 2.35:1 image, the maximum area of the DMD is used, giving maximum image brightness.*

When displaying a 16:10 or 16:9 image, DO NOT use an anamorphic lens.

The **4:3 Narrow** *setting is used to compensate for the distortion that an anamorphic lens would cause to a 4:3 image.*

Use the **Square** *setting when projecting onto a square screen, and ONLY in applications where the aspect ratio is not critical.*

Image Menu *continued*

Brightness, Contrast, Color Saturation, Color Tint

- Adjust the sliders for these settings.

Sharpness

- Press **ENTER/SELECT** to open the Shapness sub-menu.

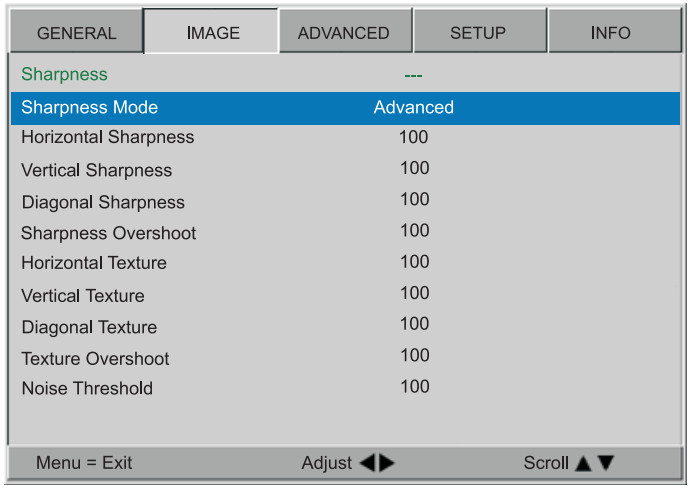


Image Menu
Sharpness submenu

- In **Simple mode**, adjust the single **Sharpness** slider at the top of the menu, as required.
- If the simple mode adjustment is not effective then select **Advanced mode**, and adjust the advanced sliders as required:
  - The **Horizontal**, **Vertical** and **Diagonal Sharpness** controls can be used to enhance image detail along edges.
  - The **Sharpness Overshoot** control can be used to minimize or eliminate rings or shadows on dominant edges.
  - The **Horizontal**, **Vertical** and **Diagonal Texture**, and **Texture Overshoot** controls can be used to remove artifacts from textured areas.
  - The **Noise Threshold** control can be used to adjust the noise threshold frequency. Frequencies above the threshold are considered to be 'noise', and will not be sharpened.

Notes

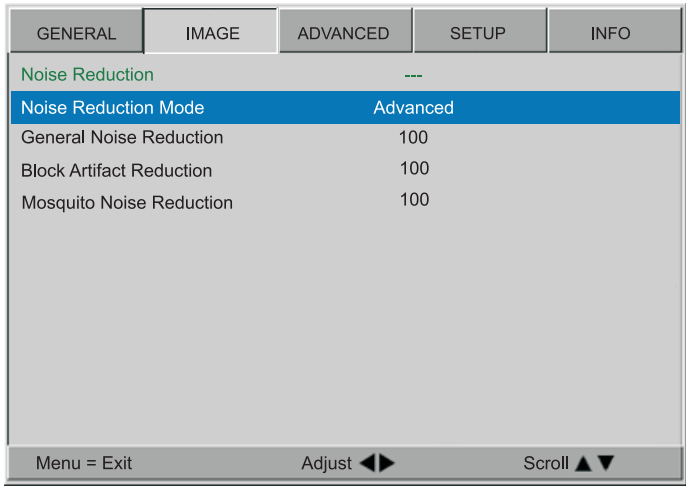
*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

*The **Advanced sliders** will not be available unless **Advanced Mode** is chosen.*

Image Menu *continued*

Noise Reduction

- Press **ENTER/SELECT** to open the Noise Reduction sub-menu.



- In **Simple mode**, adjust the single **Noise Reduction** slider at the top of the menu, as required.
- If the simple mode adjustment is not effective then select **Advanced mode**, and adjust the advanced sliders as required:
  - **General Noise Reduction** can be used to detect differences from frame to frame, reducing those differences that are not determined to be motion.
  - **Block Artifact Reduction** can be used to reduce or eliminate distortion within horizontal and vertical block boundaries, particularly in MPEG-compressed video signals.
  - **Mosquito Noise Reduction** can be used to reduce or eliminate distortion around the edges of moving objects, moving artifacts around edges and/or blotchy noise patterns superimposed over the objects, particularly in MPEG-compressed video signals.

Overscan

- Select from **Off**, **Crop** or **Zoom**.

Notes

*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

Image Menu
Noise Reduction submenu

Overscan *is used to compensate for noisy or badly defined image edges, by either:*

- cropping the edges from the image

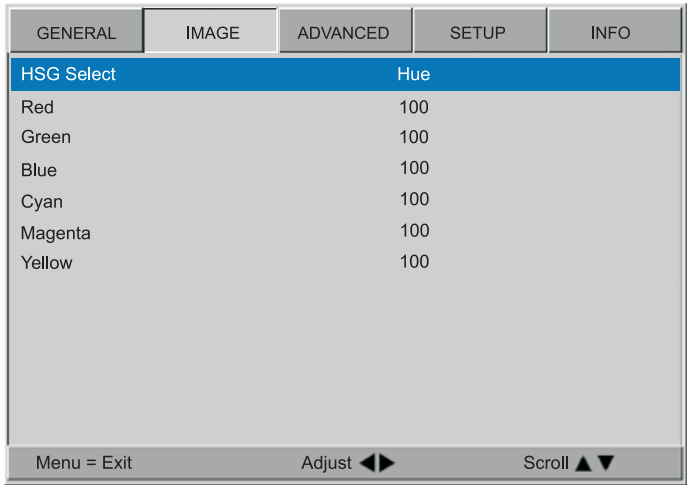
or

- increasing the size of the image, to force the edges off-screen.

Image Menu *continued*

Hue/Saturation/Gain

- Press **ENTER/SELECT** to open the Hue/Saturation/Gain sub-menu.



- Use the **HSG Select** control to select from **Hue**, **Saturation** and **Gain**.

  Use the sliders to adjust the hue, saturation or gain of each colour as required.

Resync

- Press **ENTER/SELECT** to force the projector to re-synchronise with the current input signal.

Horizontal and Vertical Shift

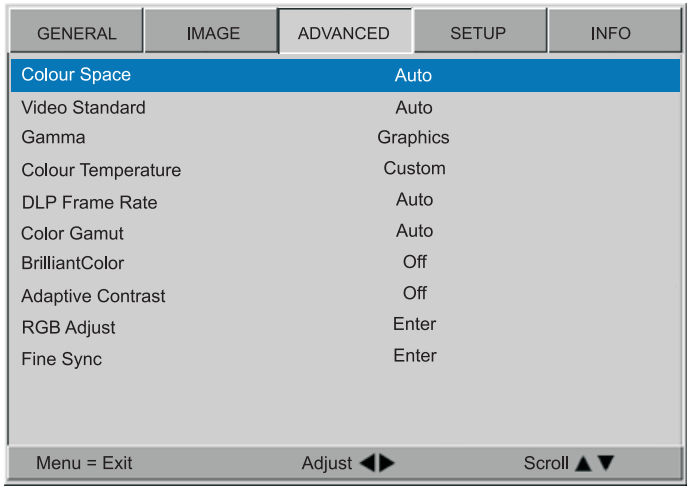
- Use the sliders to adjust the image position as required.

Notes

*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

Image Menu
HSG submenu

Advanced Menu



Color Space

- Set this to **Auto**, except when the projector has problems selecting between **REC709**, **REC601**, **REC601**, **RGB-PC** and **RGB-Video.**

Video Standard and DLP Frame Rate

- Set this to **Auto**, except when the projector has problems recognising the video parameters.

Gamma, Color Temperature and Color Gamut

- Set this to suit the specification of the input source, or to improve the appearance of the projected image.

Brilliant Color® and Adaptive Contrast

- Set these to suit your brightness and contrast requirements.

Notes

*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

Brilliant Color® *allows for increased projector brightness and improved color saturation by enabling the yellow segments on the colour wheel.*

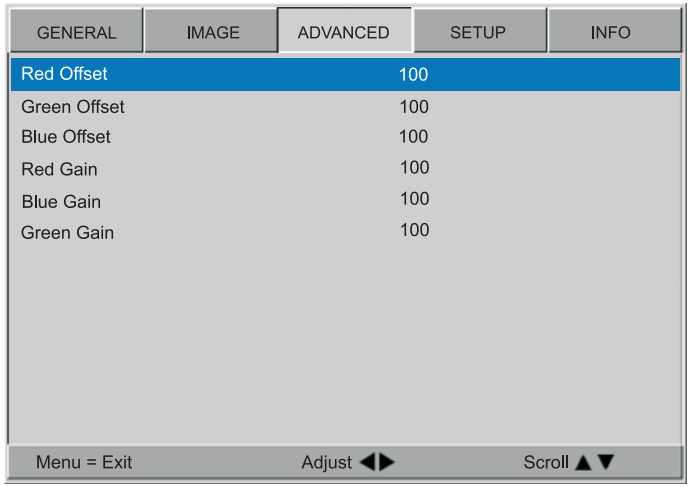
Adaptive Contrast *expands the light and dark portions of the contrast curve of the image, depending on the mean luminance of the image.*

Setting either of these two parameters to **On** *will affect any image quality settings made in other menus.*

Advanced Menu *continued*

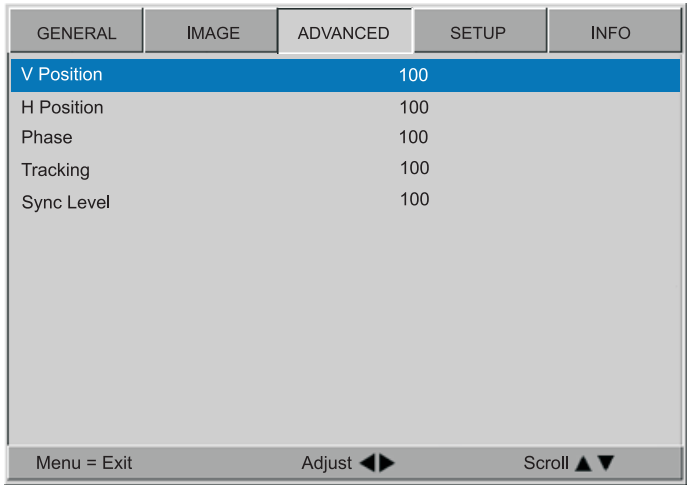
RGB Adjust

- Adjust the RGB offset and gain settings to improve the colour balance of the projected image.



Fine Sync

- Adjust these settings to suit the configuration of the input signal.



Notes

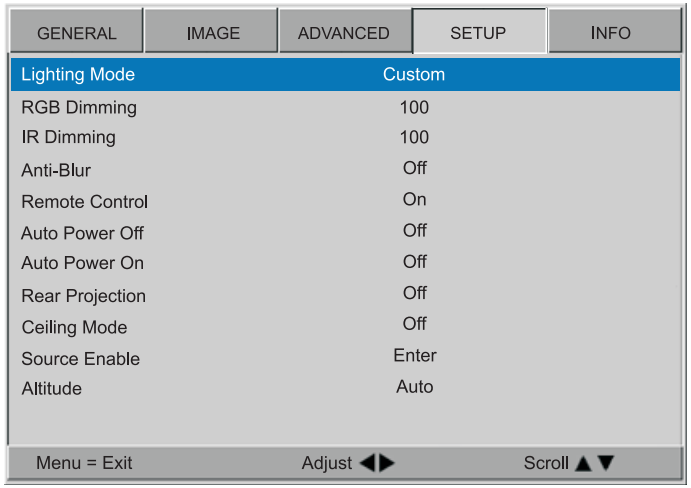
*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

Image Menu
RGB Adjust submenu

RGB Adjust *and* **Fine Sync** *affect only RGB input sources.*

Image Menu
Fine Sync submenu

Setup Menu



Lighting Mode

- Set this to **Daylight** to set the projected output to ***RGB*** only.
- Set this to **Night** to set the projected output to ***Infra-Red*** only.
- Set this to **Custom** to enable the **RGB Dimming** and **IR Dimming controls**, for a combination of the two outputs.

Anti-Blur

- Select from **Off**, **10mS** and **8mS**.

Auto Power Off

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

Auto Power On

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

Notes

*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

*The **Lighting Mode** will not change until the menu has been turned off.*

***Anti-Blur** will increase the black time between frames, to reduce any blurring effect from fast moving images.*

***Note**: This will decrease the perceived brightness of the image.*

Advanced Menu *continued*

Rear Projection

- Set this to **On** to reverse the image from left to right, for use in Rear Projection Mode.

Ceiling Mode

- Set this to **On** to reverse the image from top to bottom, for use in Ceiling Mode.

Source Enable

- Press **ENTER/SELECT** to open the Source Enable sub-menu.

  Use this to enable or disable any of the source inputs.

Altitude

- When this is set to **Auto**, the internal fan will operate at **Low** speed, and rise to **High** speed automatically if the internal temperature rises.
- When this is set to **High**, the fan will operate at **High** speed continuously, for use at high altitude locations.

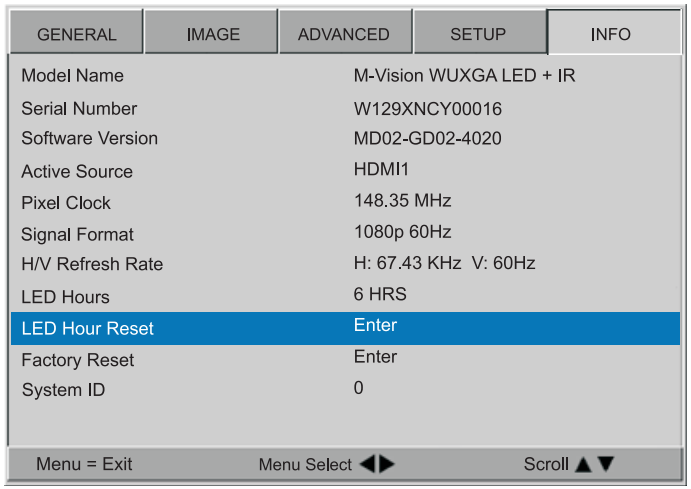
Notes

*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

*When the **SCART** input is enabled, the **Video** and **Component 1** inputs will be disabled.*

*To use the **SCART** input, you will need an adaptor. See the **Connection Guide** for more information.*

Info Menu



Information

- The menu shows information about the projector and the currently selected input source.
- The System ID can be set to any number between 0 and 255.

LED Hour Reset

- Press **ENTER/SELECT** to reset the LED hour counter to zero.

Factory Reset

- Press **ENTER/SELECT** to restore all settings to their factory defaults.
- When the warning message appears, use ◁ or ▷ to select **YES** or **NO**, then press **ENTER/SELECT** to confirm your selection.

Notes

*See also **Using the Menus**, earlier in this guide and **Menu Map**, later in this guide.*

To set the System ID:

*- connect one projector at a time and set each to a different number using the **op sysid** command.*

*For more information about this, see the **Connections Guide** and the **Remote Communications Guide**.*

Do NOT do this unless you are sure that you want to set the LED hour counter to zero, eg if a new LED module has been installed.

Do NOT do this unless you are sure that you want to restore ALL the current settings to their factory defaults.

Menu Map

Menu | ***Sub Menus and Controls***

GENERAL

Source Select *HDMI1, HDMI2, RGB, Component 1, Component 2, Video, S-Video, SCART*

Menu Position *Top Left, Top Right, Bottom Left, Bottom Right, Centre*

Memory

Recall *User 1, User 2, Default*

Save *User 1, User 2*

Blank Screen *Logo, Black, Blue, White*

Logo Display *On, Off*

Auto Source *On, Off*

Test Patterns *Off, White, Black, Red, Green, Blue, Cyan, Magenta, Yellow, Checkerboard, Vertical Burst, Horizontal Burst*

Blue Only *Off, On*

IMAGE

Aspect Ratio *16:10, 16:9, Letterbox, 4:3, 4:3 Narrow, Square, Native*

Brightness

Contrast

Color Saturation

Colour Tint

Sharpness *Simple, Advanced*

Advanced *Horizontal, Vertical Diagonal Sharpness, Sharpness Overshoot, Horizontal, Vertical Diagonal Texture, Texture Overshoot, Noise Threshold*

Noise Reduction *Simple, Advanced*

Advanced *General, Block Artifact, Mosquito*

Overscan *Off, Crop, Zoom*

HSG

Hue, Saturation, Gain: *Red, Green, Blue, Cyan, Magenta, Yellow*

Resync *Projector will re-synchronise with the current input signal*

Horizontal Shift

Vertical Shift

Notes

Some of the information in this menu map is summarised. See the actual menu on the projector for full detail.

Some menu options and controls may not be available due to settings in other menus. These will be shaded green on the actual menu.

Where it would be helpful, some menu options are described in more detail earlier in this operating guide.

Menu	*Sub Menus and Controls*
ADVANCED	
	Color Space *Auto, REC709, REC601, RGB PC, RGB Video*
	Video Standard *Auto, NTSC, PAL, SECAM*
	Gamma *Film, Cinema, Bright, Graphics, CRT*
	Color Temperature *Custom, 6500K*
	DLP Frame Rate *Auto, 48Hz, 50Hz, 60Hz*
	Color Gamut *(not available)*
	BrilliantColor *On, Off*
	Adaptive Contrast *On, Off*
	RGB Adjust *RGB Offset and Gain*
	Fine Sync *V Position, H Position, Phase, Tracking, Sync Level*
SETUP	
	Lighting Mode *Daylight, Night, Custom*
	Custom *RGB Dimming, IR Dimming*
	Anti-Blur *Off, 10mS, 8mS*
	Remote Control *On, Off*
	Auto Power Off *On, Off*
	Auto Power On *On, Off*
	Rear Projection *Off, On*
	Ceiling Mode *Off, On*
	Source Enable *all available inputs*
	Altitude *Auto, High Altitude*
INFORMATION	
	Information *Model Name, Serial Number, Software Version, Active Source, Pixel Clock, Signal Format, H/V Refresh Rate, LED Hours*
	LED Hours reset *Projector will ask for confirmation before the LED hour counter to zero*
	Factory Reset *Projector will ask for confirmation before restoring all settings to factory defaults*
	Information *System ID*

Notes

Some of the information in this menu map is summarised. See the actual menu on the projector for full detail.

Some menu options and controls may not be available due to settings in other menus. These will be shaded green on the actual menu.

Where it would be helpful, some menu options are described in more detail earlier in this operating guide.

DIGITAL PROJECTION

REMOTE COMMUNICATIONS GUIDE

M-Vision LED+IR series

High Brightness Digital Video Projector
16:10 widescreen display

Rev D July 2014

112-161D

CONTENTS

About this Guide

Please read this guide carefully before using the projector, and keep it 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.

Notes

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

Product revision

Because we at Digital Projection continually strive to improve our products, we may change specifications and designs, and add new features without prior notice. Projectors built prior to this revision of the Operating Guide may therefore not include all the features described.

Introduction

The projector can be controlled by using an external control system or a computer via a LAN or an RS232 serial interface, using a terminal-emulation program, such as HyperTerminal.

Projectors can be connected in a daisy chain, connecting the ***RS232 OUT*** of one projector to the ***RS232 IN*** of the next. Each projector can be given a unique ***System ID***, and they can be controlled individually or simultaneously via a single computer.

Command format

There are 2 types of command, ***Key commands*** and ***Operation commands***. The individual commands are described later in this guide. All commands consist of ascii text strings ending with an ascii carriage return character. If a number of projectors are connected in a daisy chain, then each command should be preceded by a prefix code. For a single projector, a prefix code should NOT be used.

- Key commands: <prefix code> ky <keyname> [CR]
- Operation commands: <prefix code> op <operation> <command> [CR]

Prefix code

The prefix code, if used, comprises the first four bytes of the command, and is made up of the following bytes (in hex):

byte 0	DE (an unprintable character)
byte 1	C0 (an unprintable character)
byte 2	ID1 (ASCI character representing the first half of the projector's ***System ID*** in hex)
byte 3	ID2 (ASCI character representing the second half of the projector's ***System ID*** in hex)

Examples

System ID 10 (0A in hex)

Prefix code DE C0 30 41

System ID 28 (1C in hex)

Prefix code DE C0 31 43

*Using the System ID ** will send the command to ALL projectors.*

System ID **

Prefix code DE C0 2A 2A

Notes

*Details of how to connect to the projector, using the LAN or RS232 input, can be found in the **Connections Guide**.*

The prefix code should NOT be used unless a number of projectors are connected in a daisy chain.

To set the System ID:

*- connect one projector at a time and set each to a different number using the **op sysid** command.*

*The System ID ** will work ONLY on projectors that are running. Therefore:*

*use the **pow.on** command with no prefix code to turn on **ALL** the projectors.*

*then use the **pow.off** command with the appropriate prefix code to turn off all or individual projectors.*

The Key Commands

- Key commands are used to simulate remote control key presses, and consist of ascii text strings starting with a prefix code, then the letters 'ky', and ending with a carriage return character:

  <prefix code> ky <keyname> [CR]

Examples

<prefix code> ky menu [CR] simulates the MENU key being pressed.

<prefix code> ky enter [CR] simulates the ENTER key being pressed.

IR Hex Code	<keyname>		Description
01	pow.on	I	Turn power on.
09	pow.off	⏻	Turn power off.
15	menu	MENU	Bring up or cancel menu display.
17	enter	ENTER	Keypad enter.
18	cur.down	▼	Keypad down arrow.
1A	cur.up	▲	Keypad up arrow.
1D	cur.left	◀	Keypad left arrow.
1F	cur.righ	▶	Keypad right arrow.
80	bright	☼	Bring up or cancel brightness slider.
81	contrast	◐	Bring up or cancel contrast slider.
82	sharp	SHARP	Bring up or cancel sharpness slider.

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Notes

*Details of how to connect to the projector, using the LAN or RS232 input, can be found in the **Connections Guide**.*

*For information about the **prefix code**, see earlier in this guide.*

The prefix code should NOT be used unless a number of projectors are connected in a daisy chain.

Note: spaces in the commands are necessary.

eg ky menu
NOT kymenu

in hex:
6B 79 20 6D 65 6E 75 0D
k y m e n u CR

*The System ID ** will work ONLY on projectors that are running. Therefore:*

*use the **pow.on** command with no prefix code to turn on **ALL** the projectors.*

*then use the **pow.off** command with the appropriate prefix code to turn off all or individual projectors.*

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IR Hex Code	<keyname>		Description
83	nr	NR	Bring up or cancel noise reduction slider.
85	gam.sw	GAMMA	Switch to the next gamma.
8B	src.1	1	Switch the active source to source 1.
8C	src.2	2	Switch the active source to source 2.
8D	src.3	3	Switch the active source to source 3.
8E	src.4	4	Switch the active source to source 4.
8F	src.5	5	Switch the active source to source 5.
93	osc.sw	O-SCAN	Switch to the next Overscan mode.
98	mem.1		Recall user memory associated with the M1 key.
99	mem.2		Recall user memory associated with the M2 key.
9D	asp.sw	ASPECT RATIO	Switch to the next aspect ratio.

Notes

The Operation Commands

- Operation commands are used to simulate menu operations and determine the settings of the projector, and consist of ascii text strings starting with a prefix code, then the letters 'op', and ending with a carriage return character:

  <prefix code> op <operation> <command> [CR]

- The <operation> string depends on the operation, and these are listed on the following pages.
- The <command> string can take one of the following formats:

	<command>	**Description**
Set	= <value>	Makes the setting take that value.
Get	?	Asks what the current value is. The value is returned as an ascii text string. Get commands do not work when projectors are connected in a daisy chain
Increment	+	Adds 1 to the current value.
Decrement	–	Subtracts 1 from the current value.
Execute	(none)	Performs an action.

Examples

<prefix code> op aspect = 1 [CR] sets the aspect ratio to 16:9

<prefix code> op aspect ? [CR] asks what is the current aspect ratio

<prefix code> op brightness + [CR] increments the brightness setting

<prefix code> op contrast – [CR] decrements the contrast setting

<prefix code> op resync [CR] commands the projector to attempt to re-synchronise to the current input source

Notes

*Details of how to connect to the projector, using the LAN or RS232 input, can be found in the **Connections Guide**.*

*For information about the **prefix code**, see earlier in this guide.*

The prefix code should NOT be used unless a number of projectors are connected in a daisy chain.

Get ? commands do not work when projectors are connected in a daisy chain.

Note: spaces in the commands are necessary.

eg op aspect = 1
NOT opaspect=1

in hex:
6F 70 20 61 73 70 65 63 74 20 3D 20 31 0D
o p a s p e c t = 1 CR

<operation>	<command>	<values>	Notes
General menu			
source.sel	= ?	0 = HDMI 1 1 = HDMI 2 2 = RGB 3 = Component 1 4 = Component 2 5 = S-Video 6 = Video 7 = SCART	
auto.source	= ?	0 = Off 1 = On	
pattern	=	0 = White 1 = Black 2 = Red 3 = Green 4 = Blue 5 = Cyan 6 = Magenta 7 = Yellow 8 = ANSI Checkerboard 9 = Vertical Burst 10 = Horizontal Burst 11 = Off	
Image menu			
aspect	= ?	0 = 16:10 1 = 16:9 2 = Letterbox 3 = 4:3 4 = 4:3 Narrow 5 = Square 6 = Native	
bright	= ? + -	0 - 200	
contrast	= ? + -	0 - 200	
saturat	= ? + -	0 - 200	
tint	= ? + -	0 - 200	

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Notes

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<operation>	<command>	<values>	Notes
overscan	= ?	0 = Off 1 = Crop 2 = Zoom	
resync	(execute)		Re-synchronise with the current input signal
Advanced menu			
color.space	= ?	0 = Auto 1 = REC709 2 = REC601 3 = RGB-PC 4 = RGB-Video	
video.stand	= ?	0 = Auto 1 = NTSC 2 = PAL 3 = SECAM	
gamma	= ?	0 = CRT 1 = Film 2 = Video 3 = Bright 4 = Graphics	
color.temp	= ?	0 = 6500K 1 = custom	
dlp.frame	= ?	0 = Auto 2 = 48 Hz 3 = 50 Hz 4 = 60 Hz	
red.off	= ? + -	0-200	
green.off	= ? + -	0-200	
blue.off	= ? + -	0-200	
red.gain	= ? + -	0-200	
green.gain	= ? + -	0-200	
blue.gain	= ? + -	0-200	
phase	= ? + -	0-200	
tracking	= ? + -	0-200	
sync.level	= ? + -	0-200	

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Notes

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<operation>	<command>	<values>	Notes
Setup menu			
lighting.mode		0 = Daylight (RGB on, IR off) 1 = Night (RGB off, IR on) 2 = Custom	
ir.dimming	= ?	0-255	Only possible when lighting.mode = 2
rgb.dimming	= ?	0-255	Only possible when lighting.mode = 2
rc	= ?	0 = Disable 1 = Enable	Enable/disable remote control.
rear.proj	= ?	0 = Off 1 = On	
ceil.mode	= ?	0 = Off 1 = On	
Information menu			
model.name	?	<string>	
ser.number	?	<string>	
soft.version	?	<string>	
act.source	?	0 = HDMI 1 1 = HDMI 2 2 = RGB 3 = Component 1 4 = Component 2 5 = S-Video 6 = Video 7 = SCART	Active Source
pixel.clock	?	<number>	MHz
signal	?	<string>	
h.refresh	?	<number>	KHz
v.refresh	?	<number>	Hz
lamp.hours	?	<number>	
fact.reset	(execute)		Reset to factory defaults
sysid	= ?	0-255	

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Notes

To set the System ID:

- connect one projector at a time and set each to a different number using the **op sysid** *command.*

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<operation>	<command>	<values>	Notes
Miscellaneous commands			
status.check	?	0 = standby 1 = warm up 2 = imaging 3 = cooling 4 = error	
osd	= ?	0 = Disable 1 = Enable	Enable/disable all on-screen menus and messages, except for Factory Reset warning and Shipment/Power Off confirmation message.
environment	?	<string>	Temperatures

Notes