Hyperion

Hyperion
MRI Digital Projection System
PST-100984

Operator Manual

Hyperion
MRI Digital Projection System Manual
PST-101052
Rev 7

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If you have any questions or comments regarding this manual, or require installation assistance, please contact Psychology Software Tools, Inc. Product Service and Support Department at:

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Trademark

This manual describes the installation procedure for the Hyperion MRI Digital Projection System. Please review the manual completely and thoroughly before unpacking and installation of the system. The Hyperion is designed to collect responses via any computer system equipped with a 2.0 operating system. Proper performance of this system is guaranteed only while the system is used in accordance to the enclosed instructions and safety guidelines.

The Hyperion MRI Digital Projection System (PST-100984) is for research and educational purposes only.

Table of Contents

Chapter 1: **Safety**

1.1 Safety Symbol   The following symbol will be used throughout this manual and as a means
to alert you to potential safety hazards on the accompanying equipment.

Attention! Consult Accompanying Documents

Chapter 1: **Safety**

Please read all **WARNINGS** <u>carefully</u> and <u>completely</u> before continuing with the use of your Hyperion.

⚠ **DO NOT** power up the projector unit until you are instructed to do so.

⚠ The Hyperion must be kept away from the magnet bore. The projector unit contains ferromagnetic components and may become a projectile in the presence of a strong magnetic field. Failure to properly secure the projector unit may result in serious or fatal injury.

⚠ The projector unit contains no field serviceable components.
To avoid the risk of shock or device failure, the projector unit must not be opened. Opening the projector unit may result in serious or fatal injury and/or invalidation of the warranty.

⚠ The projector unit must not project directly into the eyes.
Be sure the projection screen or other obstruction is in place to block direct eye exposure to the lens before turning the unit on. Looking directly into the lens may result in serious damage to the eyes.

⚠ Service to be performed by qualified service personnel only. Opening the device by non qualified personnel may invalidate the warranty. See product documentation for proper procedures.

Chapter 1: **Safety**

Please read all **WARNINGS** <u>carefully</u> and <u>completely</u> before continuing with the use of your Hyperion.

⚠️ **DO NOT** attempt bulb replacement with the projector unit inside the Magnet Room. The bulb contains ferromagnetic components and may become a projectile in the presence of a strong magnetic field. Replacing the bulb inside the magnet room may result in serious or fatal injury. The bulb should be replaced somewhere other than the Magnet Room.

⚠️ The projector unit must stay outside of the 100 gauss field or personal injury and/or damage to the unit may result.

⚠️ The projection screen must be in position between the projector beam and the participant's line of sight before projecting to a participant.

⚠️ To prevent fire or shock, **DO NOT** expose this unit to rain or moisture.

⚠️ **DO NOT** use this unit's grounded plug with an extension cord or in an outlet unless all three prongs can be fully inserted.

⚠️ For proper ventilation you must keep at least 3" free on all sides of the projector unit.

⚠️ **DO NOT** touch cooling fan vents, they may be extremely hot and injury may result.

Chapter 1: **Safety**

Please read all **WARNINGS** <u>carefully</u> and <u>completely</u> before continuing with the use of your Hyperion.

⚠ **DO NOT** Open the projector unit housing. There are high-voltage components inside. All servicing should be done by qualified service personnel.

⚠ Exposure to direct sunlight, smoke or steam can harm the projector unit's internal components.

⚠ Handle the projector unit carefully. Dropping or jarring can damage internal components.

⚠ **DO NOT** take the Control Room Console or Control Room Console Power Supply into the magnet room. These components of the projector unit contain ferromagnetic parts that could pose serious threat of harm or personal injury.

⚠ Repeated power interruptions may shorten the bulb and/or projector life.

Chapter 1: **Safety**

Please read all **WARNINGS** <u>carefully</u> and <u>completely</u> before continuing with the use of your Hyperion.

⚠️ **Fire and Shock Precautions**
Ensure there is sufficient ventilation and that projector unit's vents are unobstructed to prevent the build-up of heat inside your unit resulting in a subsequent fire or electrical malfunction.

⚠️ Prevent foreign objects such as paper clips and bits of paper from falling into the projector unit. **DO NOT** attempt to retrieve any objects that might have fallen into your projector unit. **DO NOT** insert any metal objects such as wires or tools into your projector unit. If something should fall into your projector unit, disconnect it immediately and have the object removed by qualified service personnel.

⚠️ **DO NOT** place any liquids on top of your projector unit.

⚠️ **DO NOT** look into the lens while the projector unit is on. Serious damage to your eyes could result.

⚠️ Keep any items such as magnifying glass out of the light path of the projector unit. The light being projected from the lens is extensive, therefore any kind of abnormal objects that can redirect light coming out of the lens, can cause unpredictable outcome such as fire or injury to the eyes.

⚠️ **DO NOT** cover the lens with a lens cap or equivalent while the projector unit is on. Doing so can lead to melting of the cap and possibly burning your hands due to the heat emitted from the light output.

⚠️ If the projector unit is not to be used for an extended period of time, make sure the unit is turned off, then disconnect the plug from the power outlet.

Chapter 1: **Safety**

Please read all **WARNINGS** <u>carefully</u> and <u>completely</u> before continuing with the use of your Hyperion.

⚠️ **DO NOT** unplug the power cable from the wall outlet or do not turn off the main power while the projected image still indicates that it is on, doing so can cause damage to the projector unit.

⚠️ **DO NOT** unplug the power cable from the wall outlet or do not turn off the main power while the message "Please wait a moment." appears, doing so can cause damage to the unit. This message will be displayed after the projector unit is turned off.

⚠️ **DO NOT** unplug the power cable from the wall outlet or do not turn off the main power while the cooling fans are running. (The cooling fans continue to work for 90 seconds after the unit is turned off), doing so can cause damage to the unit.
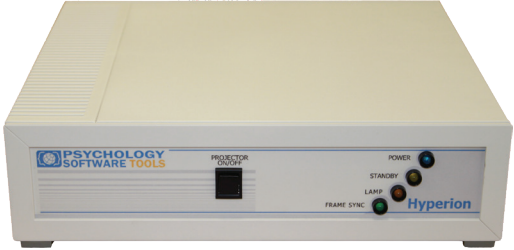
⚠️ **SEIZURE WARNING** Some people (about 1 in 4000) may have seizures or blackouts triggered by light flashes or patterns even if they have never had a seizure before. Risk of seizure may also increase in participants with epilepsy, those with a history of seizures, or in participants with a recognized risk for seizure (such as head trauma, metabolic disorders, alcohol and drug withdrawal, CNS infections).

Chapter 2: **Components and Technical Specifications**

2.1 Control Room Components

Hyperion is shipped with all of the following:

Control Room Console PST-101054	
Control Room Console Power Supply PST-101042 **AC Power Cable**	
Fiber Optic Cable PST-100048	
DVI-I Cable Assembly PST-100085	

Chapter 2: **Components and Technical Specifications**

2.2 Magnet Room Components

Hyperion is shipped with all of the following:

Projector Unit PST-101055	
AC Power Cable	
MR Safe Remote Control PST-101056	
DVI-D Male/Male Single Link Cable PST-101072	

Chapter 2: **Components and Technical Specifications**

2.2 Magnet Room Components
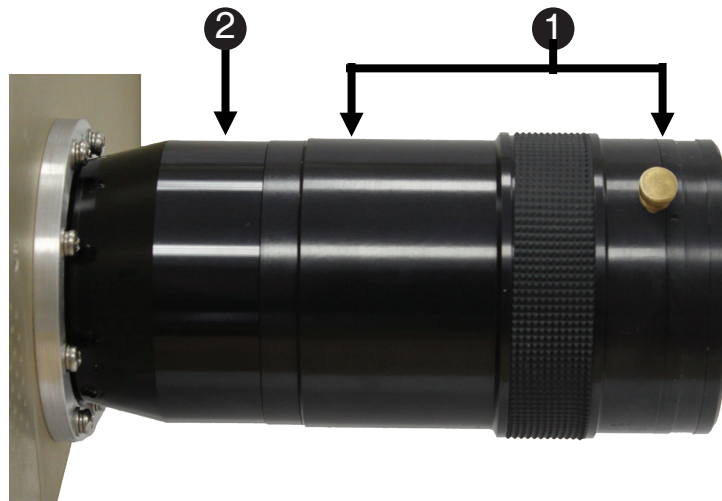
Long Throw Lens Option
See range chart on page 48.

Projector Unit Lens Components:
1) Zoom lens
2) Lens barrel

⚠️**NOTE:** The lens barrel will be screwed completely into the projector unit housing upon unpacking.

Short Throw Lens Option
See range chart on page 49.

Chapter 3: **Hardware Setup**

3.1 Fiber Optic Cable Assembly

⚠️**NOTE:** Please use caution while handling the Fiber Optic Cable.
Failure to exercise caution may result in damage to the Fiber Optic Cable, Fiber Optic Cable Connectors or invalidation of warranty.

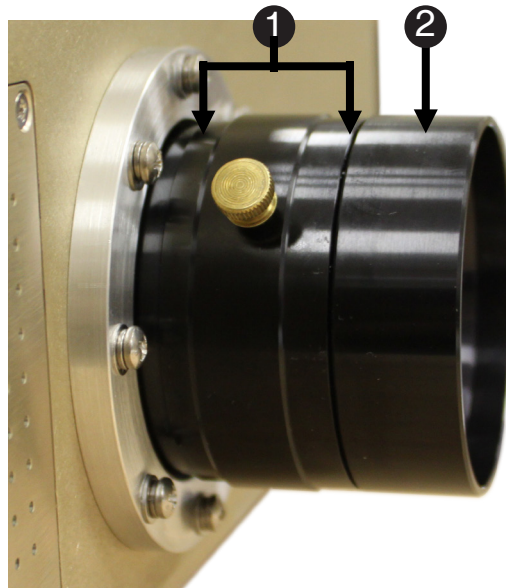**To connect** - Remove the dust cap. Hold the black rubber boot section of the connector (See below), making sure it is keyed correctly, and push in until the connector clicks into place.
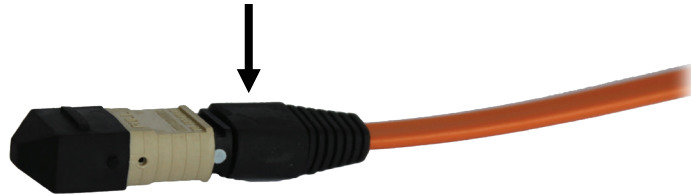
To disconnect - Grab the beige colored release sleeve on the connector (shown below) and pull to release the cable. Cover immediately with the dust cap.

⚠️**NOTE:** Directions are imprinted on the connector sections.

⚠️**NOTE:** Never touch, rub or scratch the fiber optic connector ends.
DO NOT place excessive stress on the fiber cable, the fiber cable ends or fiber cable connectors leading into the Projector or the Control Room Console.

Chapter 3: **Hardware Setup**

3.2 Control Room Components

Necessary components:
   1) Control Room Console
   2) Control Room Console Power Supply
   3) AC Power Cable
   4) Stimulus presentation computer with DVI output video card (*Not Supplied*)

⚠️ **NOTE:** Be certain that the PC's power is removed from the Control Room Console.
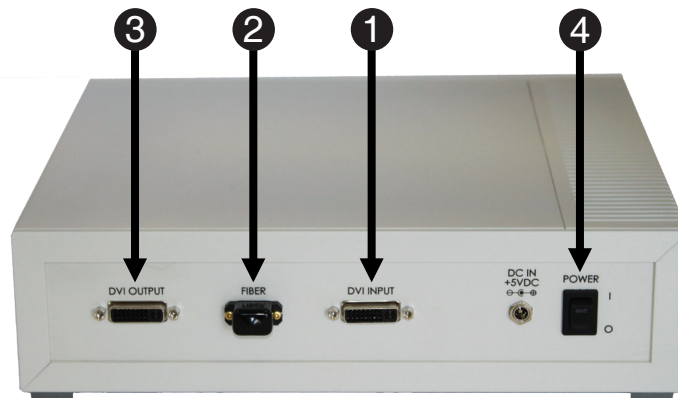
The Control Room Console rear:
1) Connect the stimulus presentation PC to the DVI Input.
2) Insert the Fiber Optic cable into the Fiber connector.
3) Connect a secondary display to the DVI Output port to view the same graphics information
   being sent to the projector.
4) Connect the Control Room Console Power Supply and plug in the power supply to a suitable
   power outlet.

⚠️ **WARNING:** *Be sure secondary monitor can support the same video settings **(resolutions and refresh rate)** being sent to the projector.*

Chapter 3: **Hardware Setup**

3.3 Magnet Room Assembly

The following instruction assumes that a proper place has been created in the magnet room that can support the projector unit (a 50 lb. consideration). We recommend that the unit is set-up for rear projection, and that the screen be placed at the back of the bore behind the participant's head. This configuration is optimal for the safety of the participant and safeguarding the equipment. Reconfiguration of projector and accompanying accessories should not be conducted while a participant is in the bore. Repeated rearrangement may cause damage to equipment, and should only be performed by authorized MR personnel.

Necessary components:
1) Projector Unit
2) Power Cable
3) Remote Control

Be certain the projector unit's power switch is off before connecting the power cable. The switch is in the off position, when the (O) button is depressed.
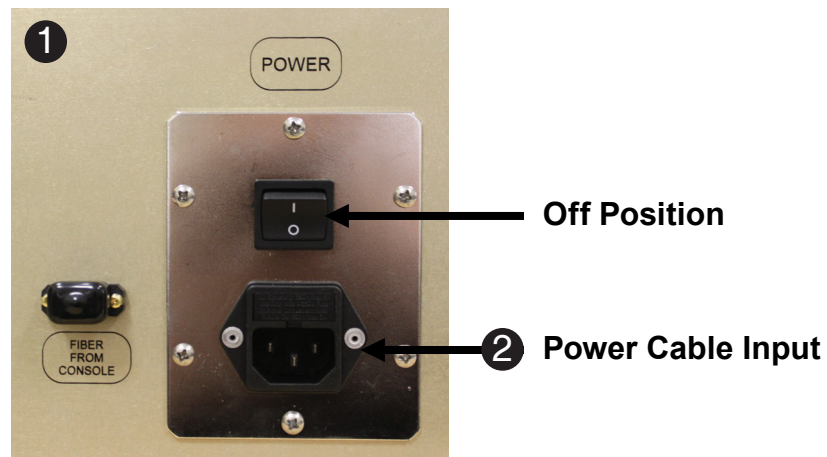
Run the Fiber Optic cable from the Control Room through a suitable wave guide. Then connect the end of the Fiber Optic cable that has been passed into the magnet room from the Control Room Console and connect it to the Fiber Cable input.
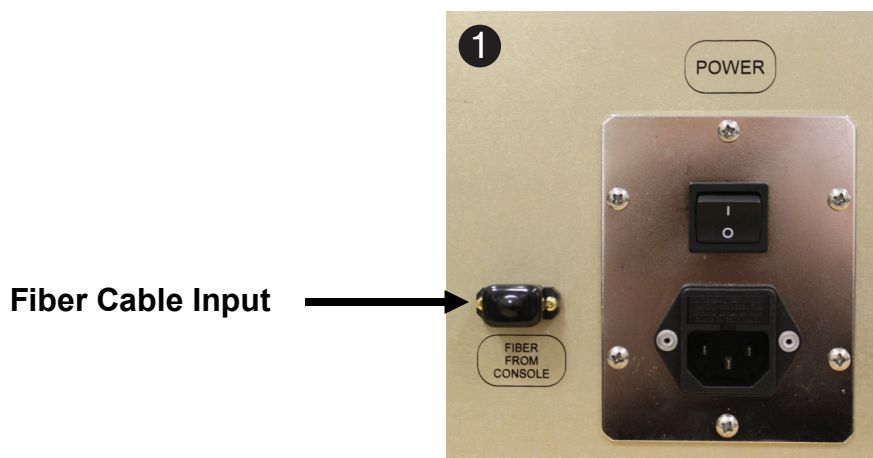
Chapter 4: **Operating Instructions**

4.1 Remote Control

Communication with the projector unit can be made through the use of the Remote Control (See 3 below) which plugs directly into the side or the Hyperion MRI Digital Projector through the Remote Control Power connector (See 1 below). The Remote Control must be pointed at the IR Signal Input LED (See 2 below) to operate the projector. It is recommended the remote control remain disconnected when not being used.
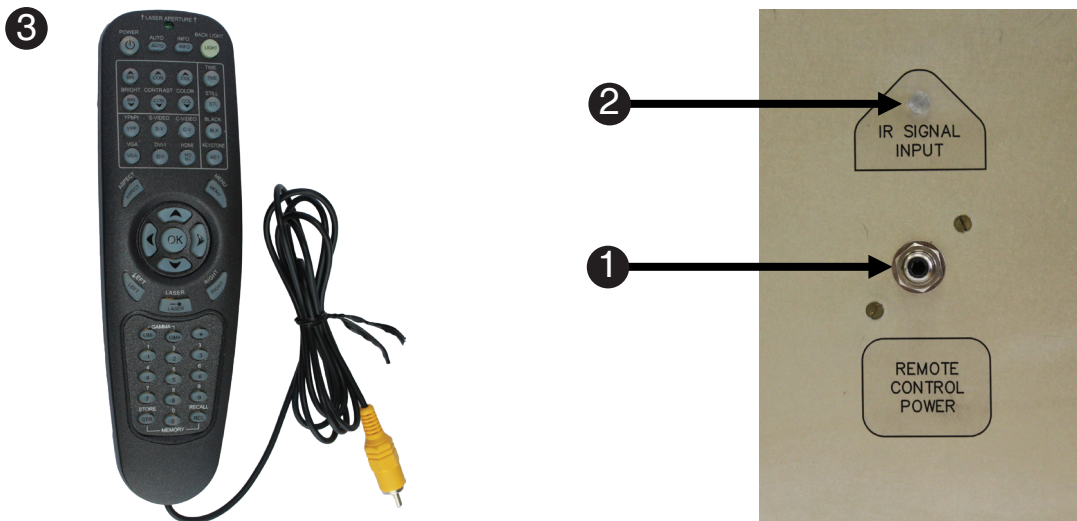
Chapter 4: **Operating Instructions**

4.2 Remote Control Button Guide
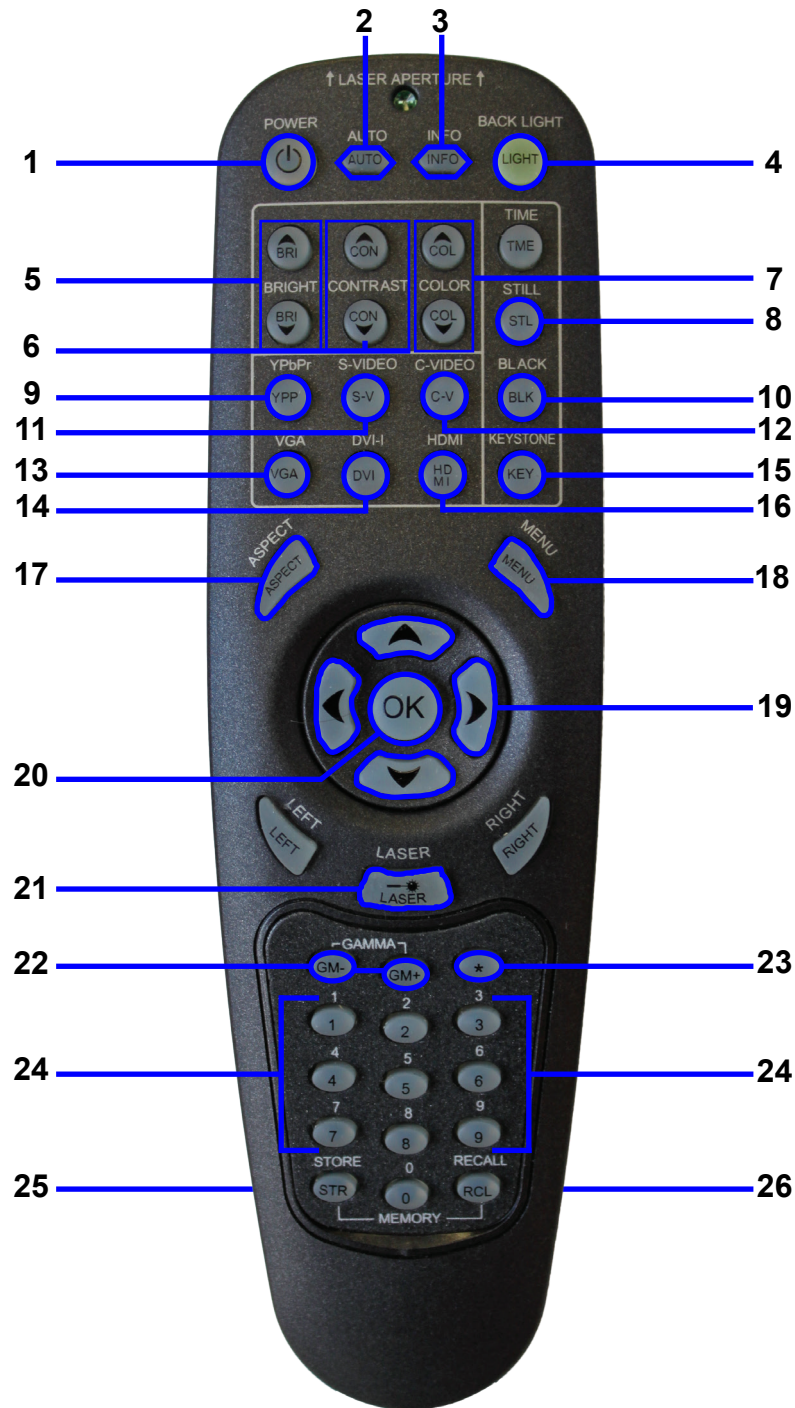
Chapter 4: **Operating Instructions**

4.2 Remote Control Button Guide

|	
1) POWER	Switches the projector between on and standby modes.
2) AUTO	Adjusting the projector to display a correct image, including position, width, height and overall stability.
3) INFO	Displays source and projector status on screen.
4) BACKLIGHT	Switches the backlight on and off. The backlight will switch off automatically after ten seconds.
5) BRIGHT	Adjusts image brightness.
6) CONTRAST	Adjusts image contrast.
7) COLOR	Adjusts color saturation of the image.
8) STILL	Toggle function, locking the projected image on and off.
9) YPbPr	Selects component video input.
10) BLACK	Toggles the projected image on and off. The lamp is not shut off.
11) S-VIDEO	Selects the super video input as signal source.
12) C-VIDEO	Selects the composite video input as signal source.
13) VGA	Selects the VGA input.
14) DVI-i	Selects the DVI-I input.
15) KEYSTONE	Press KEYSTONE to activate the electronic trapezoid correction, adjust with arrow keys.
16) HDMI	Selects the HDMI input.
17) ASPECT	Cycles through the aspect ratios available with the current source.
18) MENU	Toggles the menu system on and off, and navigates one step backward in the menu system.
19) ARROW KEYS	Use the arrow keys to navigate in the menu system and other adjustments.
20) OK	Press OK to confirm selected option in menu.
21) LASER	Activates the built-in laser pointer. CAUTION! Do not point laser beam at people. Do not stare into laser beam.
22) GAMMA	Press GM+ or GM- to select between gamma settings.
23) *(ASTERISK)	Used for RC ID control. See the explanation above.
24) 0-9	Used for various numeric functions such as PIN code and user memory.
25) STORE	Press STORE, then one digit 0-9, to store user setting in memory (only in custom profile mode).
26) RECALL	Press RECALL, then one digit 0-9, to recall user setting from memory (only in custom profile mode).

Chapter 4: **Operating Instructions**

4.3 Powering up the Projector Unit

When plugging in or unplugging the supplied power cable, be sure that the main power switch is pushed to the off (O) position.
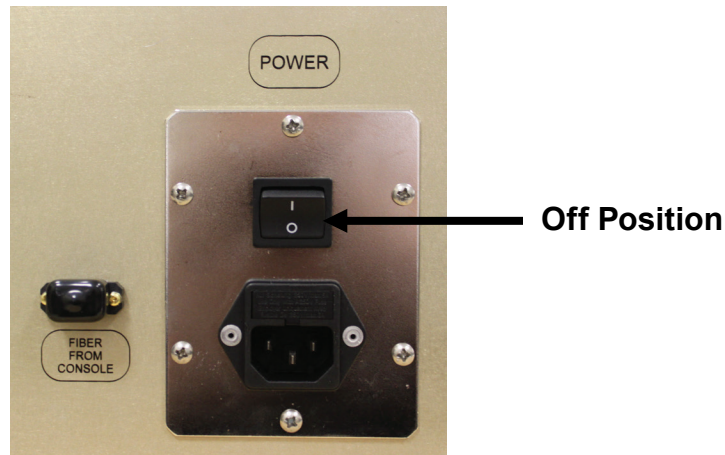
The unit has two power switches: the main power switch and POWER button on the remote control.

⚠️ **NOTE:** The unit cannot be powered up or powered down correctly without using a Remote Control or the power button on the Control Room Console.

To turn on the main power to the unit, press the main power switch to the ON position (I).

Before you turn on the unit, ensure that a proper video source is supplied and that any lens coverings are removed.

⚠️ **NOTE:** The power indicator will turn to green <u>only</u> after the POWER button is pressed on the remote control or on the front of the Control Room Console for a minimum of two seconds. At that time, the projector will become ready to use.
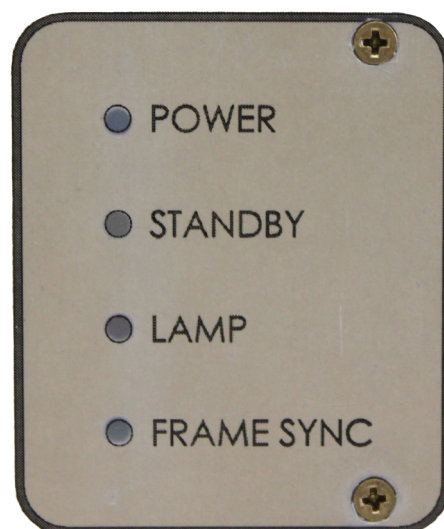
Chapter 4: **Operating Instructions**

4.3 Powering up the Projector

On the front the Control Room Console and the side of the projector unit there are four indicator lights:

- POWER
- STANDBY
- LAMP
- FRAME SYNC

These indicator lights provide valuable information about the operation of your projector unit.

The following table provides you with the meaning of the current state of the POWER indicator.

Indicator	Color	Blinking	Steady
Power	Blue	Unit warming up	Unit ready to project
Standby	Yellow	Unit cooling down	Unit is off
Lamp	Orange	Overheat	Replace Lamp
Frame sync	Green	NA	Syncing with the projector

⚠️**WARNING:** *DO NOT turn off the unit unless the indicator is a **steady yellow**.*
Turning off the unit could shorten the life of the lamp, resulting in costly repairs.

Chapter 4: **Operating Instructions**

4.3.1. About Frame Sync

Frame Sync indicates that the rotation of the DLP color wheel is precisely synchronized with the VSync from the DVI video source. If they are not synchronized, then it is possible that the projector may introduce visual artifacts, such as tearing in the video output, missing, or duplicated frames.

⚠️**NOTE:** The Vertical Refresh rate of the DVI video source must be between 50-60 Hz in order to synchronize. If the Frame Sync indicator is not illuminated, then the refresh rate may not be set correctly. Consult the video card manufacturer's documentation for details on changing the refresh rate. Additionally, ensure that any stimulus presentation software correctly sets the refresh rate to 50-60 Hz.

4.3.2. About Display Latency

The latency for a video output to be displayed on the screen is 25.6 ms +/- 0.4 ms. This latency is constant across the entire display because all pixels are updated simultaneously.

4.4 Menu System Guide

The menu system gives access to a multitude of image and system controls. The menu system is structured through a top menu and several sub menus.
⚠️**NOTE:** Many sub menu options are not available for use with Hyperion.
Press the MENU key and navigate using the arrow keys on the remote control.

NAVIGATING THE MENU SYSTEM
The menu system can be navigated via the remote control.
menu: Invokes the menu, or returns to the previous level, and exits the menu when at top level.
OK: Selects desired function, toggles check boxes, or enters sub menus. Pressing OK on a directly adjustable function such as "brightness" minimizes the menu system, and invokes a mini adjustment dialog box. Pressing OK again returns to the full menu system.
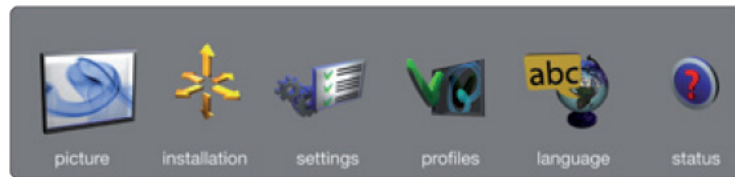**up/down arrows**: Navigates up or down in menu.
left/right arrows: Moves between top level menus. Changes, or toggles adjustable values. Enters or exits sub menus.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

TOP MENU
picture: Basic and advanced picture controls.
installation: System controls and information.
settings: Settings that affect how the projector behaves or interacts with third party devices, such as networks and control systems.
profiles: User defined settings.
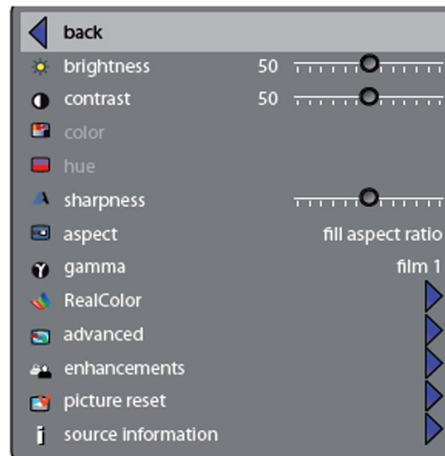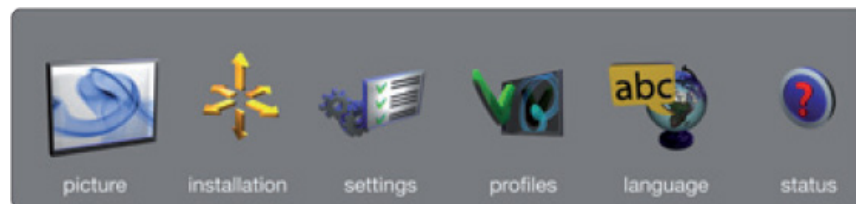**language**: Selects menu language.
status: System information.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

PICTURE MENU

The picture menu contains basic and advanced settings and adjustments for detailed picture enhancement control.

brightness: Adjusts the image brightness. A higher setting will increase the brightness, a lower setting will decrease the brightness of the image.

contrast: Controls the contrast of the image. A higher setting will yield a 'harder' image with larger difference between shades, while a low setting will produce a 'softer' image with less difference between shades.

color: Adjusts the color saturation. A higher setting will produce stronger coloring, while a lower setting will yield paler colors.

hue: (NOT AVAILABLE)

sharpness: Controls the image sharpness. A higher setting will yield a harder image, with less filtering. In video applications, this may produce more noise in the projected image. A lower setting will soften the image, looking more smeared out, and reducing the overall noise.

aspect: Selects image format. An image may be displayed in various aspect ratios. This function is used when displaying source formats that differ from the projectors native display format. Options include "fill aspect ratio" (default – follows the source input aspect ratio), "fill all" (stretches or compresses input aspect ratio to fill the projector resolution), "fill 16:9" (adapts the input aspect ratio to fill a 16:9 window), "letterbox to 16:9" (adapts the input to fill a center 16:9 box), and "letterbox subtitle to 16:9" (adapts the input aspect ratio to fill a 16:9 window, and moves it up to give room for subtitles), 4:3,1:1.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

PICTURE MENU

The picture menu contains basic and advanced settings and adjustments for detailed picture enhancement control.
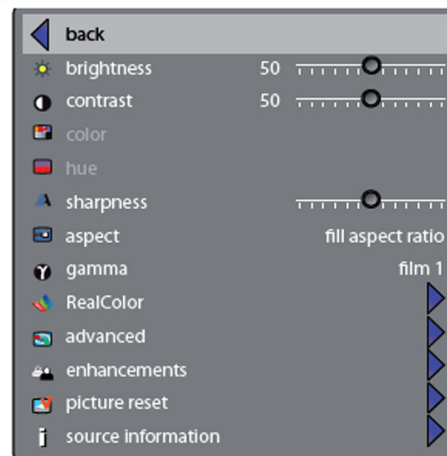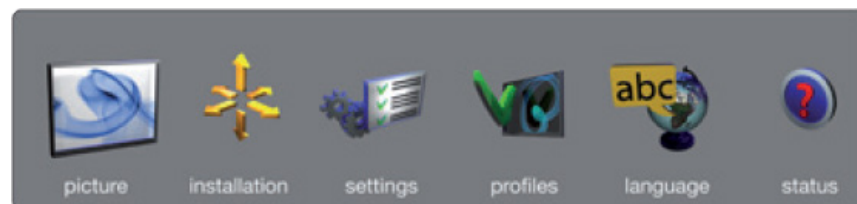
gamma: The source image is adapted to characteristics typical to certain applications. This enables an optimized display of images, depending on whether the source material is film based, video, computer etc.

RealColor: Accesses the color management sub menu, see the RealColor submenu for more information. (For details, see **Page 28-29**).

advanced: Enters the advanced settings sub menu. (For details, see **Page 30**).

enhancements: Enters the enhancement settings sub menu. (For details, see **Page 31**).

picture reset: Resets all source specific settings, such as brightness, contrast and format settings. Picture reset does not affect global settings such as installation specific values.

source information: Displays information about the source currently being displayed.
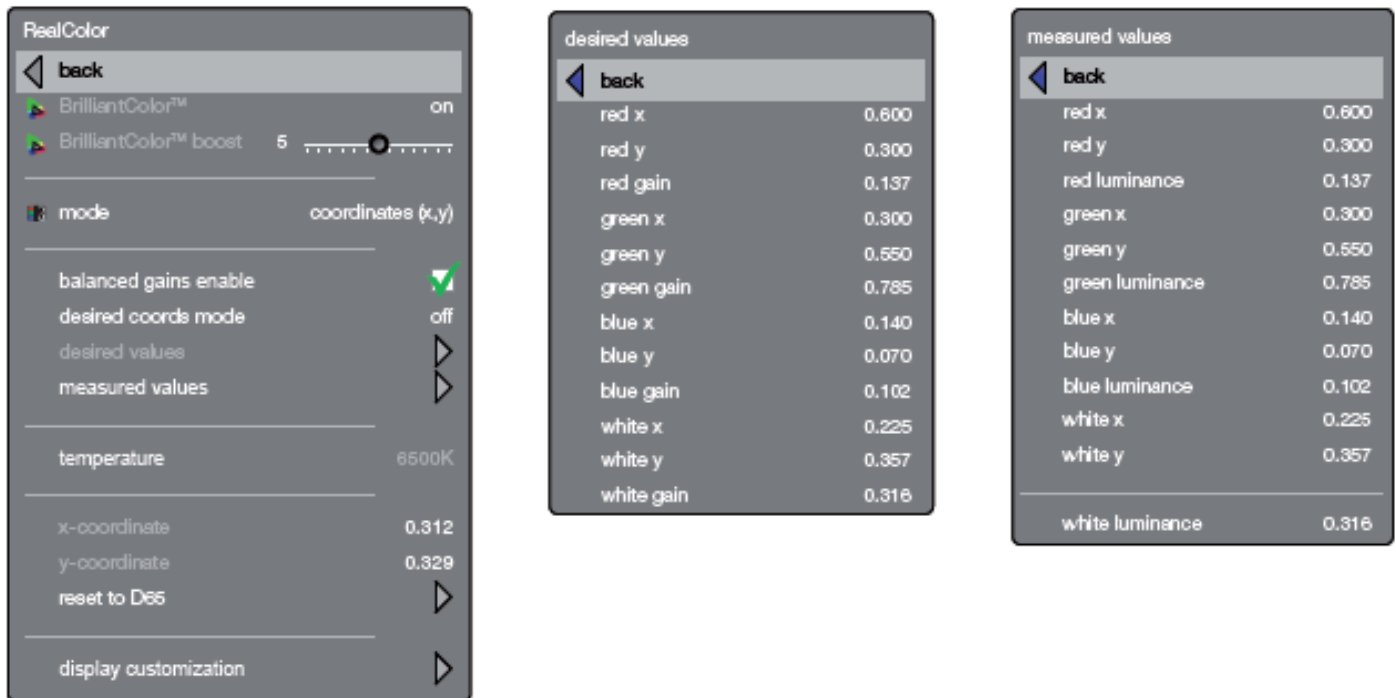
Chapter 4: **Operating Instructions**

4.4 Menu System Guide

REALCOLOR SUB MENU

The RealColor sub menu gives access easy-to-use tools to achieve perfect colors, greyscale, and color matching between projectors, and is incredibly powerful.

RealColor	
◁ back	
▶ BrilliantColor™	on
▶ BrilliantColor™ boost	5 ━━━●━━━
▦ mode	coordinates (x,y)
balanced gains enable	✔
desired coords mode	off
desired values	▷
measured values	▷
temperature	6500K
x-coordinate	0.312
y-coordinate	0.329
reset to D65	▷
display customization	▷

desired values	
◁ back	
red x	0.600
red y	0.300
red gain	0.137
green x	0.300
green y	0.550
green gain	0.785
blue x	0.140
blue y	0.070
blue gain	0.102
white x	0.225
white y	0.357
white gain	0.316

measured values	
◁ back	
red x	0.600
red y	0.300
red luminance	0.137
green x	0.300
green y	0.550
green luminance	0.785
blue x	0.140
blue y	0.070
blue luminance	0.102
white x	0.225
white y	0.357
white luminance	0.316

BrilliantColor™ preset: (NOT AVAILABLE)
BrilliantColor™ boost: (NOT AVAILABLE)
BrilliantColor™: Adjusts brilliant color sequence for best performance on current source material using the settings; computer balanced, video balanced, computer native, video native and off.
mode: Adjusts settings for white point. The alternatives are: Temperature, Coordinates and Not corrected.
balance gains enable: Automatically balances R, G, B, C, M, and Y intensity values so they are correct relative to white.
desired coords mode: Allows the user to set a desired output color gamut, used for color matching and accurate color display.
desired values: When desired coords mode is set to on, the desired output color coordinates can be set here.
measured values: The projector's measured color coordinates that are used to calculate the desired output coordinates. Custom measured values can be entered.
temperature: Sets projected image color temperature to a value between 3200 and 9300 degrees Kelvin when temperature is set under mode.
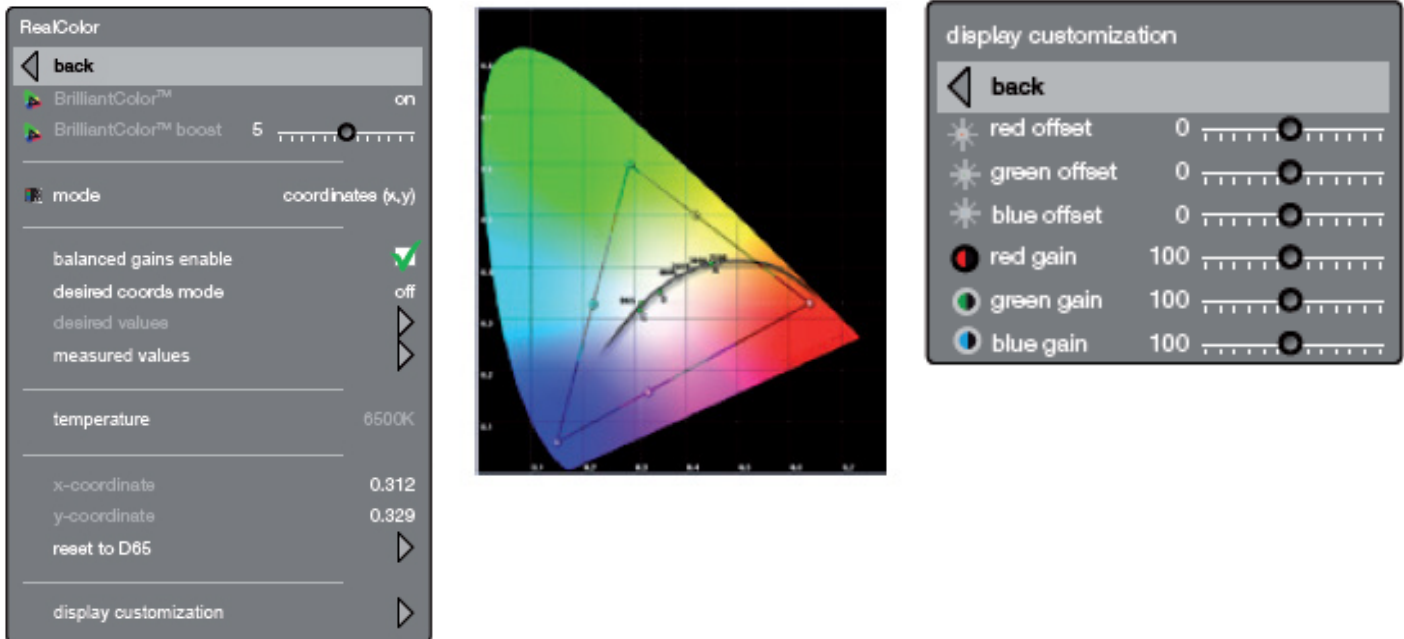
Chapter 4: **Operating Instructions**

4.4 Menu System Guide

REALCOLOR SUB MENU CONTINUED

The RealColor sub menu gives access easy-to-use tools to achieve perfect colors, greyscale, and color matching between projectors, and is incredibly powerful.

x-coordinate: Sets projected image white point x-coordinate when "coordinates" is set under mode.
y-coordinate: Sets projected image white point y-coordinate when "coordinates" is set under mode.
reset to D65: Resets the projected image white point to D65 (x=0.312,y=0.329) for true video white colors.
display customization: Changes the R, G, and B drive output from the display.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

ADVANCED SUB MENU

The advanced sub menu contains less used, and more specific picture adjustment settings.
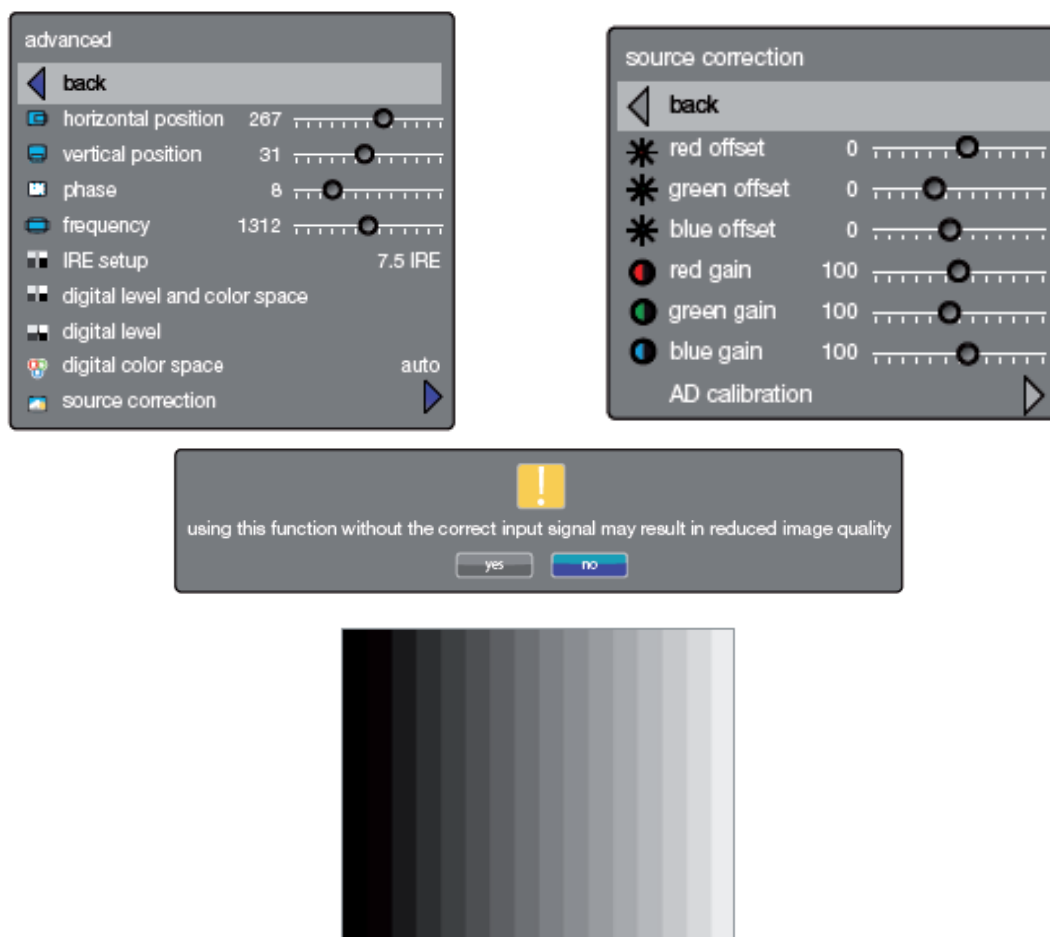
horizontal position: (NOT AVAILABLE)
vertical position: (NOT AVAILABLE)
phase: (NOT AVAILABLE)
frequency: Adjust image width. An incorrect setting may produce vertical, unstable bands in the image, and parts of the image may not be displayed on screen. Push the AUTO button to find a correct setting, or manually adjust the frequency until the vertical bands disappear. Frequency adjusts the pixel clock sampling frequency.
IRE setup: (NOT AVAILABLE)
digital level: Sets the dynamic range for the digital inputs to video or range; 16 – 235 or 0 – 255.
digital color space: Sets digital color space to RGB or YUV.
source correction: (NOT AVAILABLE)

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

ENHANCEMENTS SUB MENU

The enhancements sub menu contains a range of picture enhancement settings for video displays.
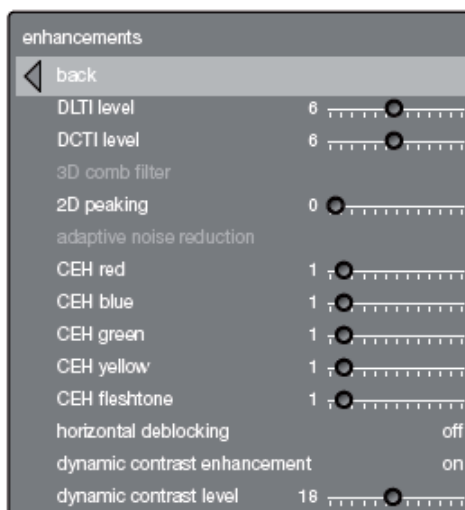
DLTI (Digital Luminance Transient Improvement) level: Use this function to increase visible image sharpness for video.

DCTI (Digital Chroma Transient Improvement) level: Use this function to increase visible color sharpness in video images.

3D comb filter: This filter reduces dot crawl in composite video signals.

2D peaking: A collection of built-in filters provided to enhance detail display in edges and blocks.

adaptive noise reduction: This filter adapts to the source material, and reduces noise in motion video.

CEH (Color Enhancement) red, blue, green, yellow, fleshtone: The Color Enhancement filters enhance individual colors by analyzing the image, and allowing gain (contrast) to the color selected. Fleshtone adjustment enhances the gain setting for a range of colors that are typical flesh tones.

horizontal deblocking: A 2D filter that analyzes each frame for blocking, and reduces so called MPEG blocking artifacts typical with DVD and other compressed video formats.

dynamic contrast enhancement: Dynamically adjusts and adapts image contrast.
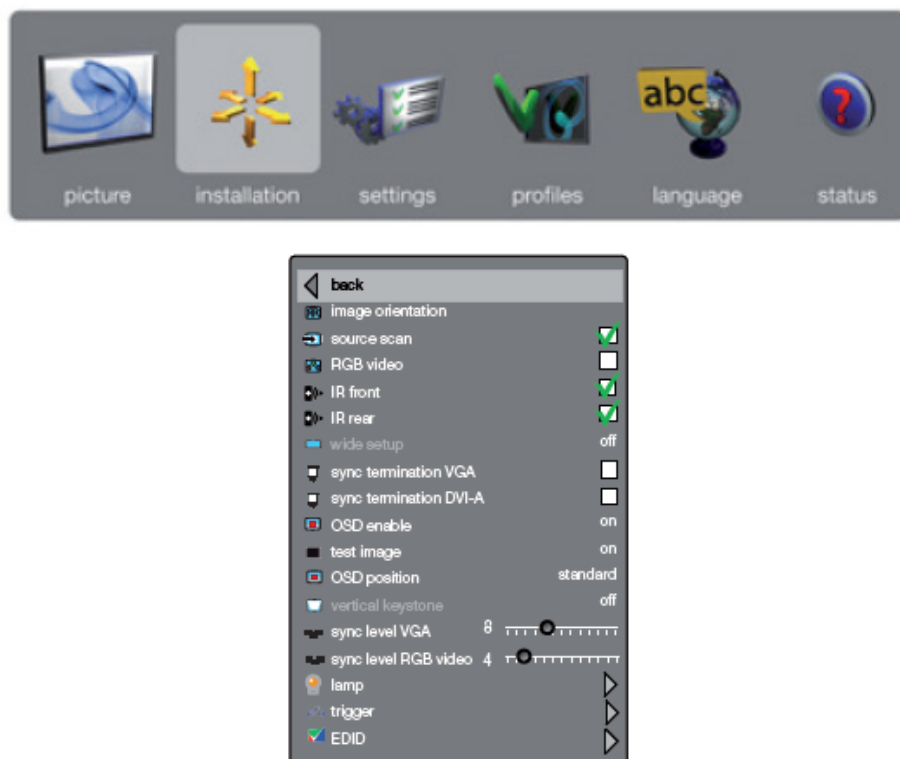
dynamic contrast level: Dynamically adjusts and adapts image contrast level.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

INSTALLATION MENU

The installation sub menu provides easy access to global system settings, including front and rear projection settings.

image orientation: Set the image orientation to reflect the installation setting. Select between "desktop front", "desktop rear", "ceiling front" and "ceiling rear" modes. The image will be flipped and reversed accordingly.

source scan: When enabled, the projector automatically searches for available sources on all input terminals, and displays the image from the first one available with a valid input signal. Source scan is on by default.

RGB video: (NOT AVAILABLE)

IR front/rear: (NOT AVAILABLE)

wide setup: Wide setup gives manual control to correctly displaying sources that are wide aspect ratio of standard resolutions, such as 1680x1050 (SXGA+), 1280x768 (WXGA), and similar.

sync termination VGA: (NOT AVAILABLE)

sync termination DVI-A: (NOT AVAILABLE)

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

INSTALLATION MENU CONTINUED

The installation sub menu provides easy access to global system settings, including front and rear projection settings.
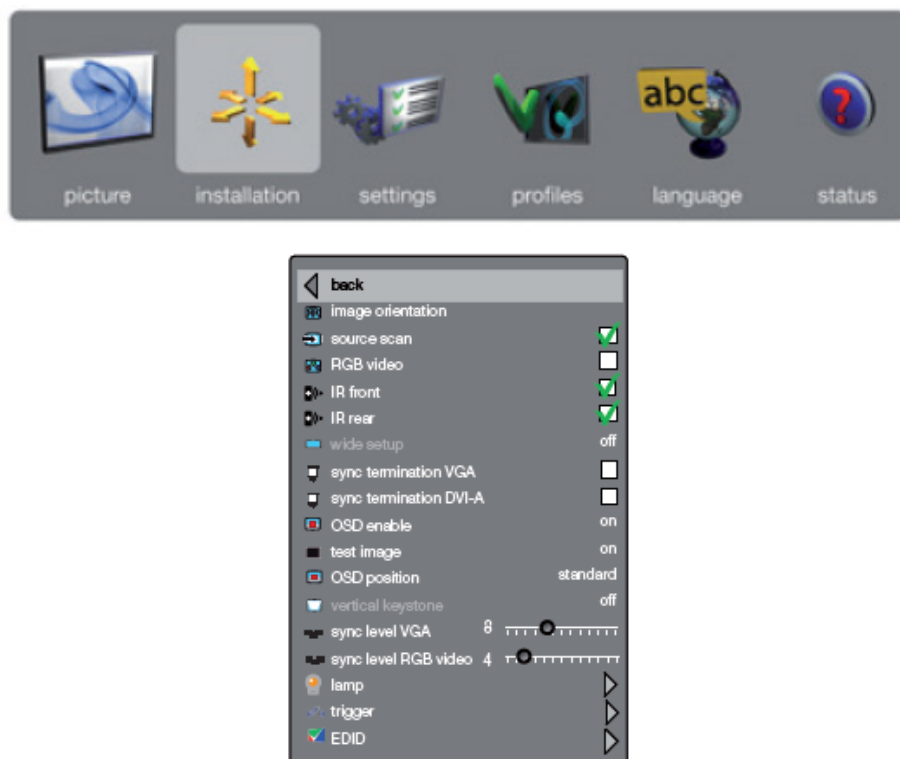
OSD enable: Enables or disables the OSD (On Screen Display) dialogues. Possible settings include "on", "off", or "only warnings". The latter will display system warnings, such as overheating, lamp life expiry, other critical information. "off" disables all warnings and messages. OSD enable is set to "on" by default.

OSD position: Gives you a choice between standard and anamorph aspect ratio settings. Anamorph setting repositions the OSD to be visible with the anamorph aspect ratio. Usually set to standard. ⚠**NOTE:** FUNCTION DOES NOT APPLY FOR THIS PRODUCT.

test image: Displays a test image frame that is easy to use when setting up and determining screen size, and position. Options include 4:3, 5:4, 16:9, 16:10, 1.85:1, 2.35:1 and a combination of all of the above.

vertical keystone: vertical keystone correction electronically compensates for the trapezoidal image created when the projector is tilted, and is no longer perpendicular to the wall or screen surface.

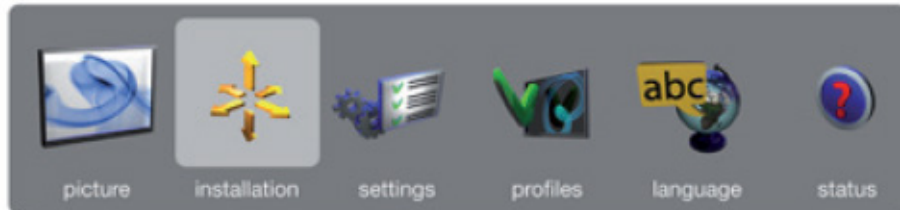**sync level VGA/BNC**: (NOT AVAILABLE)

sync level RGB: (NOT AVAILABLE)

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

INSTALLATION MENU CONTINUED

The installation sub menu provides easy access to global system settings, including front and rear projection settings.
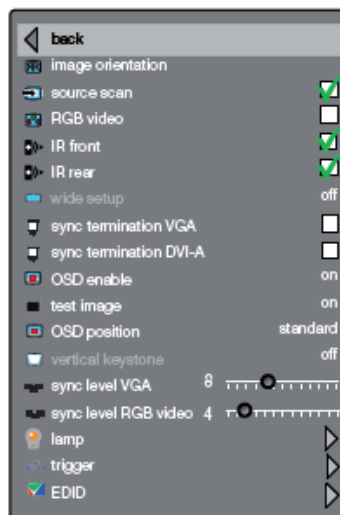
lamp: Enters the lamp management sub menu. (For details, see **Page 35**).
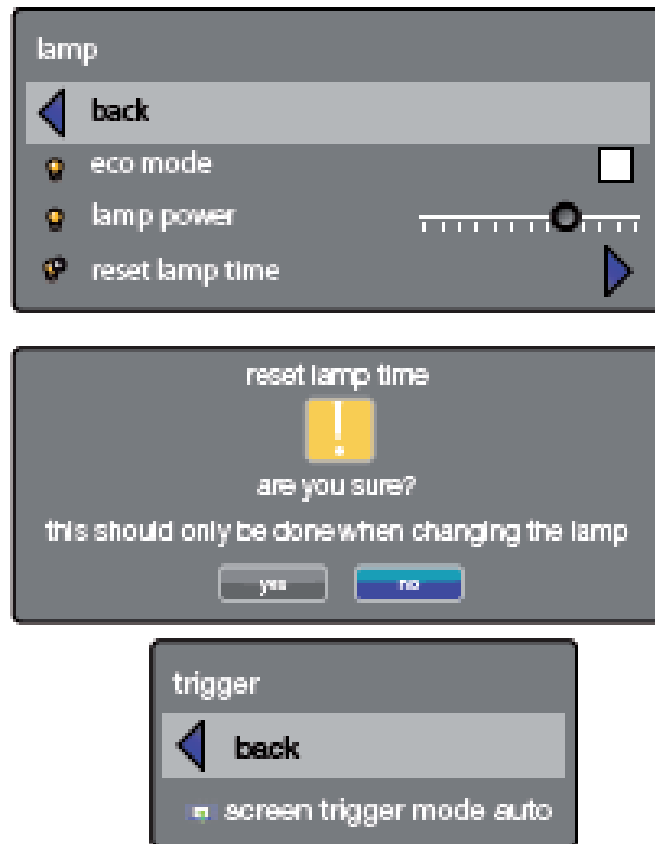**trigger**: (NOT AVAILABLE)
EDID: (NOT AVAILABLE)

Chapter 4: **Operating Instructions**

4.4 Menu System Guide
LAMP SUB MENU

eco mode: Switch eco mode (low power and long life) on or off. When on, lamp power may not be adjusted. When off, lamp power may be adjusted.
lamp power: Adjust lamp power when not in eco mode.
reset lamp timer: For resetting the lamp timer when changing lamp.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

SETTINGS MENU
The settings sub menu contains settings that are system specific, and source independent, such as networking, and third party equipment interaction, display power management, PIN code and security settings.
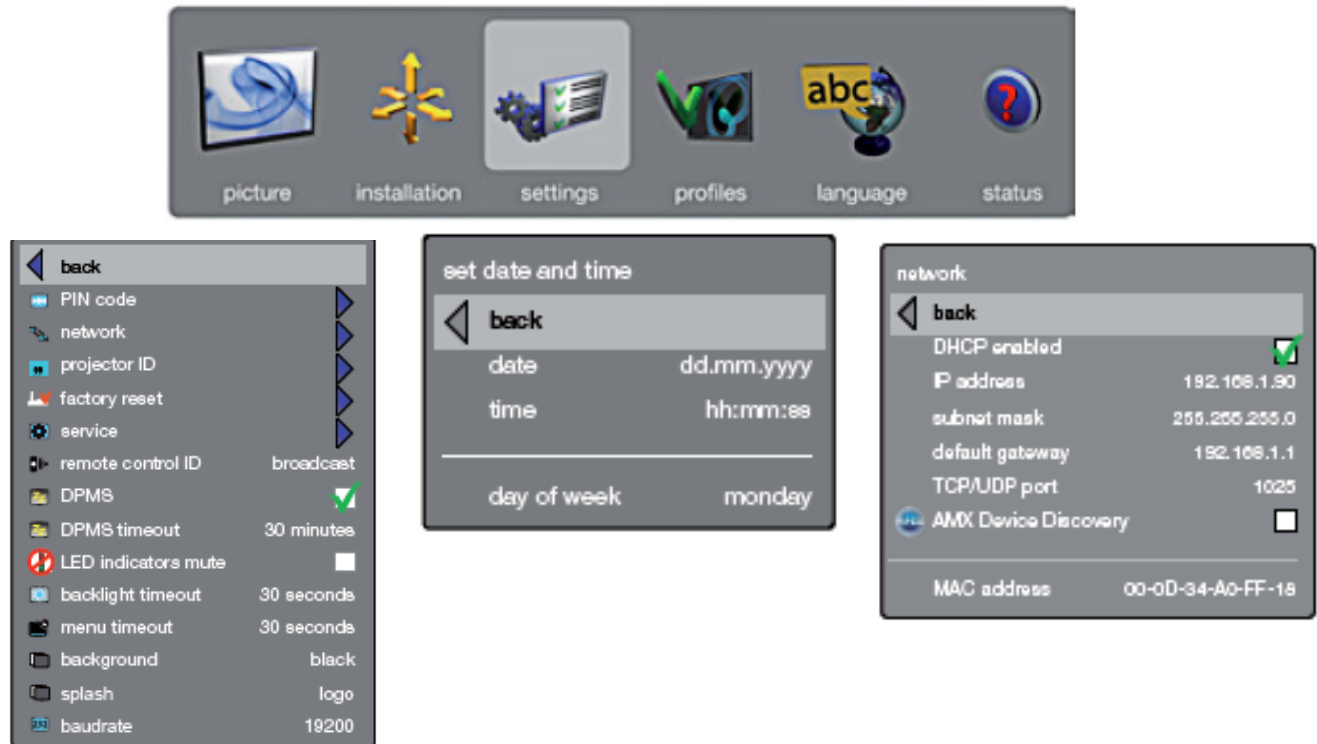
PIN code: The projector can be secured and locked with a four-digit PIN (Personal Identification Number) code (1234), similarly to mobile phones and other electronic equipment. To enable PIN code protection, a valid, four-digit code must be entered. Press "OK" to select the code, enter new PIN code via the remote control. Please note that entered numbers are masked. To disable PIN code, or change it, follow the same procedure as above. When PIN code is enabled, the user is prompted to enter the code when powering up the projector. The user has three attempts. See PIN code security on **Page 42** for more information.

network: (NOT AVAILABLE)

projector ID: The user can give the projector a name (to be used to identify the projector). The projector name is shown in the status and info menus and can be edited in the "projector ID" sub-menu under the Settings menu.

factory reset: Factory reset erases all memorized source and system settings, and sets all back to default values.

service: Service enters the service menu. This is available to authorized service personnel only. Entering the service menu without proper knowledge may permanently damage the projector.
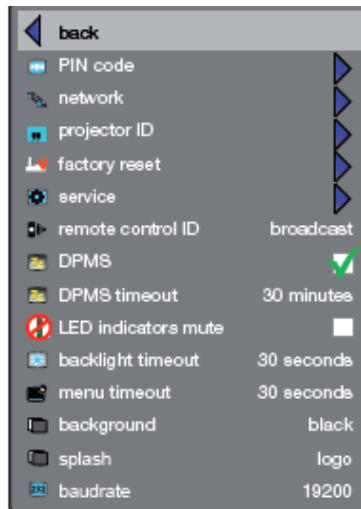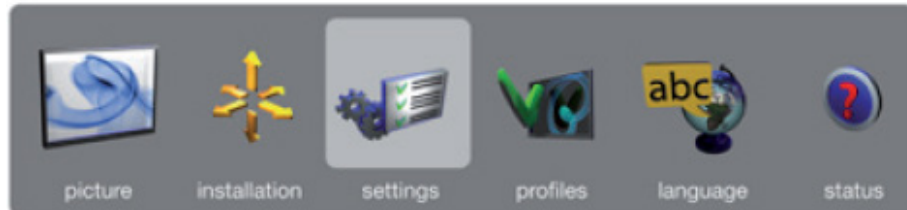
Chapter 4: **Operating Instructions**

4.4 Menu System Guide

SETTINGS MENU CONTINUED

The settings sub menu contains settings that are system specific, and source independent, such as networking, and third party equipment interaction, display power management, PIN code and security settings.

remote control ID: (NOT AVAILABLE)

DPMS: Enable or disable the DPMS (Display Power Management Signalling). When enabled, the projector will automatically switch to standby mode after a specified time if there is no valid source present at its inputs. When a valid source is reconnected, the projector will start up again. DPMS timeout DPMS can be set from 1 – 180 minutes. Default is 30 minutes.

menu timeout: Set the amount of time before the menu automatically goes away if not used. Default is 30 seconds.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

SETTINGS MENU CONTINUED

The settings sub menu contains settings that are system specific, and source independent, such as networking, and third party equipment interaction, display power management, PIN code and security settings.
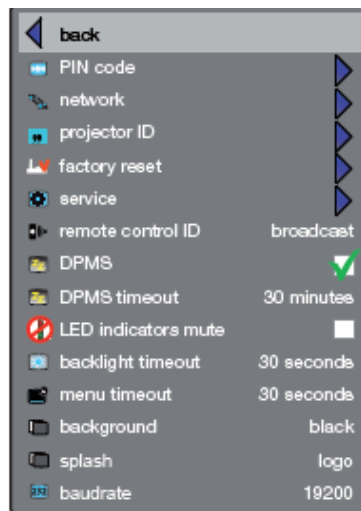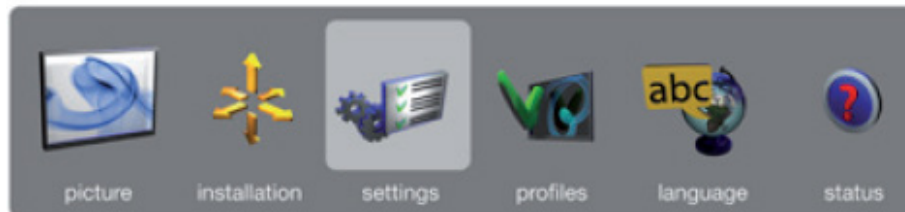
background: Select the background screen to be displayed if no valid source is connected. Options include black, grey and white.

splash: Select the splash screen to be displayed at startup while searching for a valid source. Options include black and logo.

baud rate: (NOT AVAILABLE)

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

PROFILES MENU

The profiles sub menu contains predefined and user saved projector setup profiles, so that a specific setting or desired projection mode quickly can be reinstated.
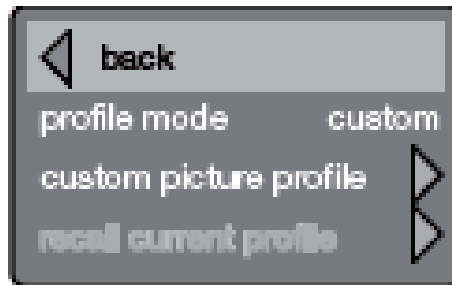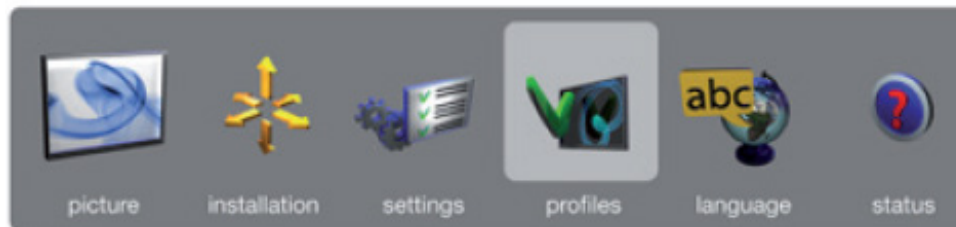
profile mode: Presents a choice between "auto" and "custom". "auto" mode will hold one profile per known source (combination of connector and input signal).

custom picture profile: This mode will hold 10 programmable profiles; Each of them can be enabled, stored, renamed, erased and recalled.

recall current profile: Takes you back to the latest saved profile before changing the setup. Only applicable if the new settings have not been stored.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide
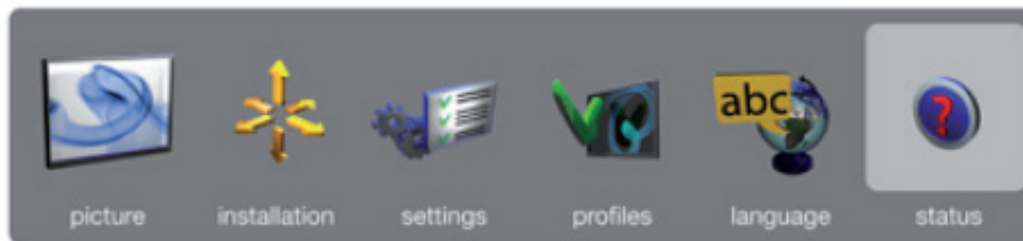
LANGUAGES MENU
Selects menu language.
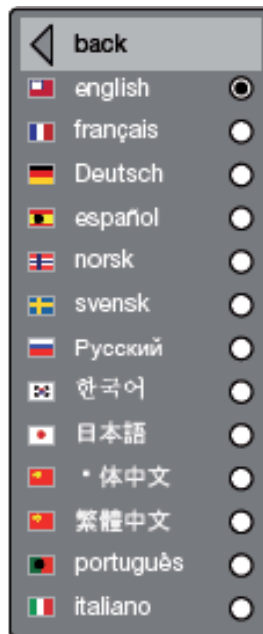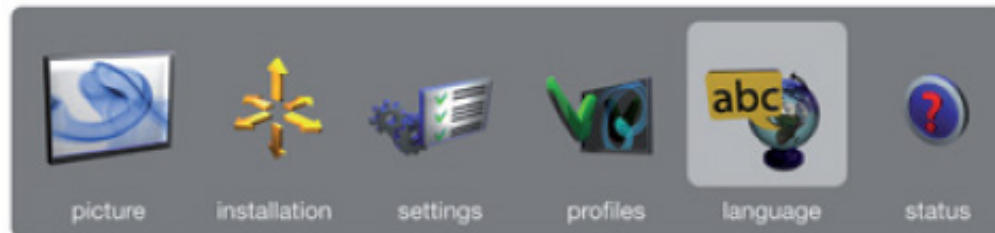
Chapter 4: **Operating Instructions**

4.4 Menu System Guide

STATUS MENU

The status sub menu can be invoked through the menu system, or directly from the "INFO" key on the remote control. It gives direct, and easy to understand information on system and connected source status. In particular, the "source information" setting can be used to verify the current resolution and refresh rate. This is extremely useful for identifying if there are any discrepancies between the video card settings and what the projector sees at its input.

Chapter 4: **Operating Instructions**

4.4 Menu System Guide

PIN CODE

The projector may be controlled by a PIN (Personal Identity Number) code. The PIN code is four-digits, and if the PIN code is activated, you must enter the correct code to unlock the projector.

To activate the PIN code, see the SETTINGS > PIN CODE sub menu.
If the PIN-code is activated, entering the PIN code is only required if the projector power cable has been disconnected and reconnected.

If an incorrect PIN code is entered, you may try again two times. If you fail three times in a row, a PUK (unlock) code is needed.

The PUK code is supplied with the product.
⚠**WARNING:** *ENTERING THE PUK CODE CORRECTLY IS THE CUSTOMERS RESPONSIBILITY.*

If you also fail three times with the PUK code, the projector locks up permanently, and can only be unlocked by a special service unlock code. To access this code, you will need to contact Psychology Software Tools.
The service unlock code will be generated based on a secure, encrypted number that is produced by the projector itself. The projector will produce a new number every time.
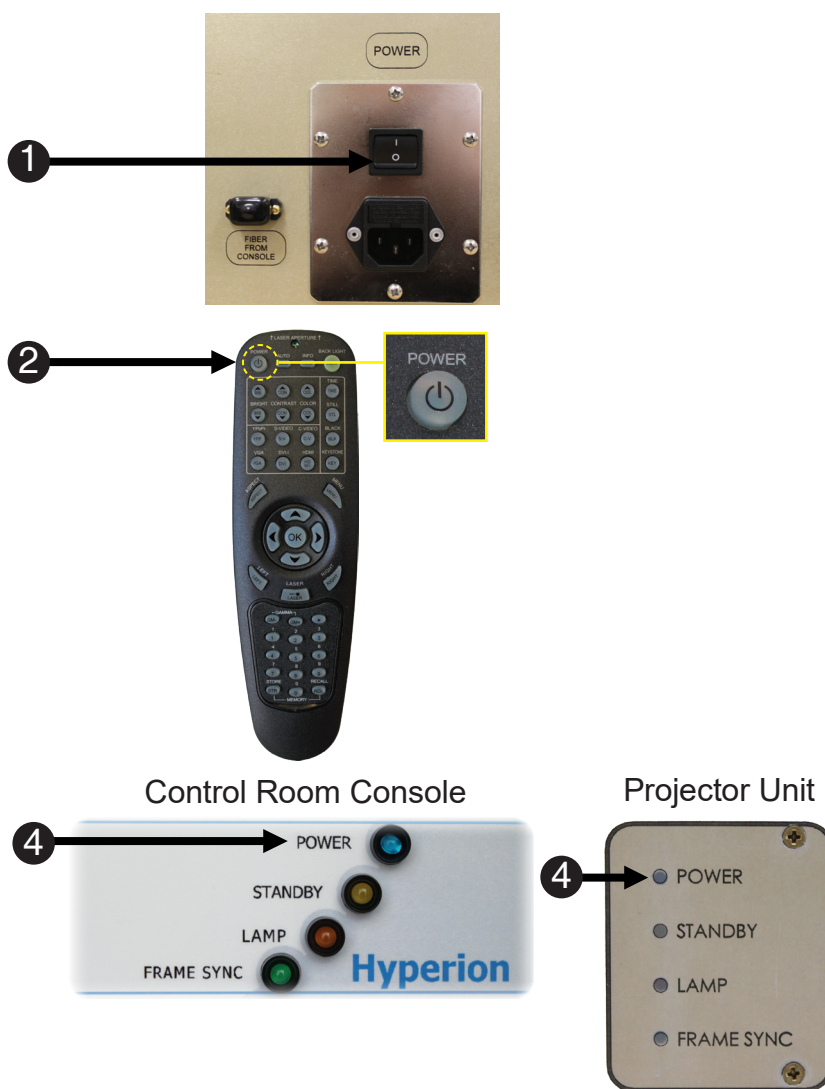
Chapter 4: **Operating Instructions**

4.5 Focusing the Projector Unit

Before you attempt to focus the projector unit, insure the unit is at the proper distance away from the display screen to achieve the desired image size. Use the chart provided in **Appendix A: Screen Width/Zoom Lens Range Chart, Page 49** of this manual to approximate the distance needed between the unit and display screen for desired image size. You may be forced to adjust the screen size due to the location of the MR scanner's 100 gauss line. The projector unit must be placed outside of the 100 gauss field.

We recommend that two people are present to focus the unit, especially if the projected image needs to be reflected off a mirror onto the screen. This will allow one person to focus the lens, while the other person verifies the image on the screen is in focus. We also recommend that before you attempt to focus the projector you connect the unit to a computer or other external device that has the ability to display an image.

1) **Plug in** the **unit** and **turn** it on. *If the unit is plugged in to the wall socket and still is not getting power, check the power switch located by the power cable input, and confirm the switch is in the on position with the (I) symbol depressed.*

2) Once the unit is running, connect the remote control (or use the ON/OFF button on the console) and **hold in** the **POWER button**.

3) There are **four indicator lights** located on the **control room console** and the **projector unit**.

4) The **POWER indicator** will **blink blue** indicating the unit is **turning on**, after you press the power button on the remote.

5) Once the unit has **initialized**, the **POWER indicator** will be **steady blue**.

6) **Disconnect** Remote Control.

Control Room Console   Projector Unit
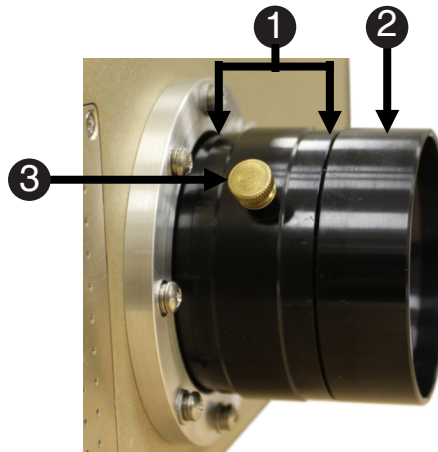
Chapter 4: **Operating Instructions**

4.5 Focusing the Projector Unit

Please take the time to review the components of the projector unit lens, as the directions refer to these parts extensively. The three major components of the projector unit lens are:
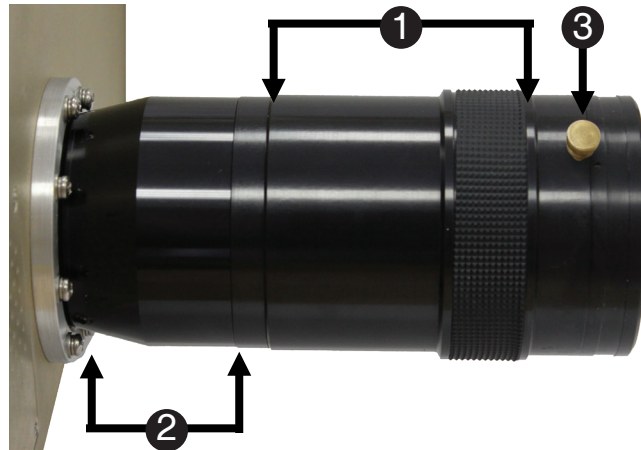
Long Throw Lens Option

1. **Zoom Lens:**   The zoom lens is used to increase or decrease the size of the projected image. It can be used to adjust the focus slightly but it's main function is to adjust image size.

2. **Lens Barrel:**   The lens barrel is used to focus the projected image. When focusing the image, be careful not to completely unscrew the lens from the projector unit. Be sure to grasp only the Lens Barrel when adjusting focus to avoid inadvertently turning the zoom adjustment.

3. **Thumb Screw:**   The thumb screw is tightened to lock the zoom lens in place, and must be loosened to adjust the zoom.


Short Throw Lens Option

Chapter 4: **Operating Instructions**

4.5 Focusing the Projector Unit

Now we will go through the steps necessary to zoom the image. Be sure an active video signal with the desired image to focus is being supplied to the projector unit. Keep in mind that while the Long Throw Lens focusing procedures are shown in the photos below, the steps are identical for the Short Throw Lens.

1) *Locate* the **projector unit lens**.

2) *Locate* the **brass thumbscrew** on the **zoom lens** and *loosen* it.
   The thumbscrew may not be located in the same place as shown in the picture.

3) *Adjust* **the zoom** until the desired **projected image size** is achieved.
   When facing the projected image, turn the zoom lens to the left, to increase the image size and to the right to decrease the image size.

4) *Tighten* the **thumbscrew** to *prevent* the **zoom lens** from *moving* once after the **desired image size** is achieved.

5) *Focus* the **image** by *turning* the *lens barrel* as described on page 43.
   Focusing the image may change the image size. The operator may have to toggle between zoom and focus operations to fine tune the image.
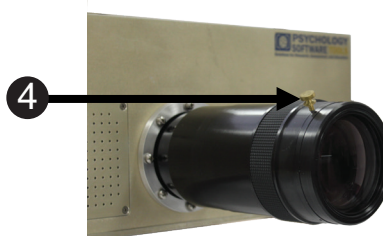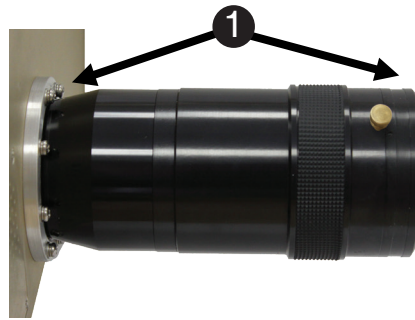
⚠ **NOTE:** *If you <u>cannot</u> get a clear image:*
Check that the unit is at an appropriate distance from the screen for the desired image size.

*If you need further assistance, please refer to **Appendix A**, or contact <u>info@pstnet.com</u>.*

Chapter 5: **Care and Maintenance**

5.1 Lamp Replacement

Make certain the power cable is disconnected and the lamp has had adequate time, about an hour, to cool down. To ensure safety, before proceeding, be sure to remove the unit from the magnet room.

⚠️**NOTE:** All unit maintenance should be performed outside of the magnet room.

⚠️**NOTE:** Replacement lamps can be purchased from PST.
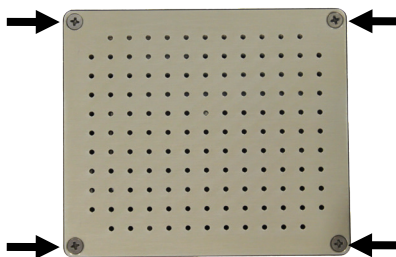　　　PST-101576

⚠️**NOTE:** Use of an aftermarket lamp will invalidate the warranty.

⚠️**NOTE:** The lamp timer **MUST** be reset after changing the lamp.

The lamp is located behind the small panel to the left of the lens. (See below)

The lamp panel is easily removed by loosening the four screws with a Phillips head screwdriver.

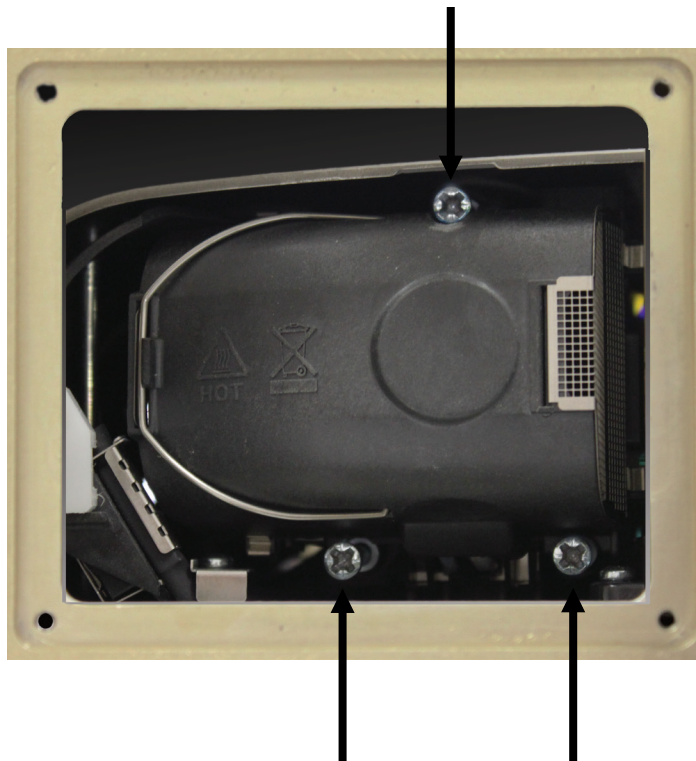Inside you will see the lamp housing.
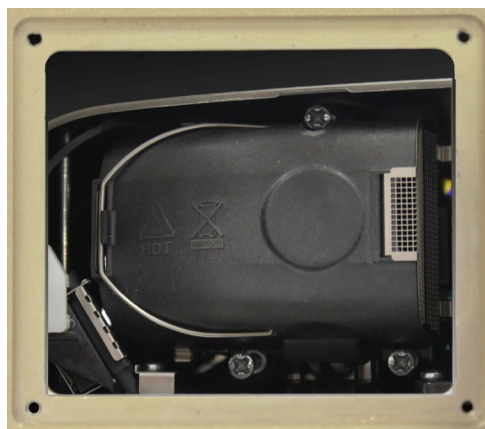
Chapter 5: **Care and Maintenance**

5.1 Lamp Replacement

The actual lamp removal requires loosening the three screws pictured below.
(The screws are captive and will not come completely out.)

Pull the silver handle towards you and the lamp should slide out easily. *(See below)*
This is the entire lamp unit, there is no further disassembly necessary.

Now insert the new lamp, tighten the attached screws, re-fit the Lamp Panel and replace the lamp panel screws, and you are finished.

⚠ **WARNING:** *Be careful not to touch the protective glass when replacing the lamp house, this may cause the protective glass to overheat and break while in use.*

Chapter 5: **Care and Maintenance**

5.2 Lens Care and Cleaning

Use forced air or lens paper to clean the lens. Be careful to avoid scratching or marring the lens. Isopropyl alcohol pads, like those used to clean the fiber optic connectors may also be used.

5.3 Fiber Optic Cable Care and Maintenance

To avoid damaging the fiber optic cable, do not kink the fiber.

Always replace dust caps on projector and fiber cable when fiber cable is not connected to the projector or the Control Room Console.

⚠️**NOTE:** Please use caution while handling the Fiber Optic Cable. Failure to exercise caution may result in damage to the Fiber Optic Cable, Fiber Optic Cable Connectors or invalidation of warranty.

Appendix A: **Screen Width/Zoom Lens Range Chart**

Long Throw Lens

The following chart allows you to derive all of the screen sizes possible at various distances that the projector unit can produce.

Hyperion Image Size vs. Projection Distance - Long Throw Lens
(Image width assumes a 16:9 aspect ratio. Image Height = Image Width x 0.5625)
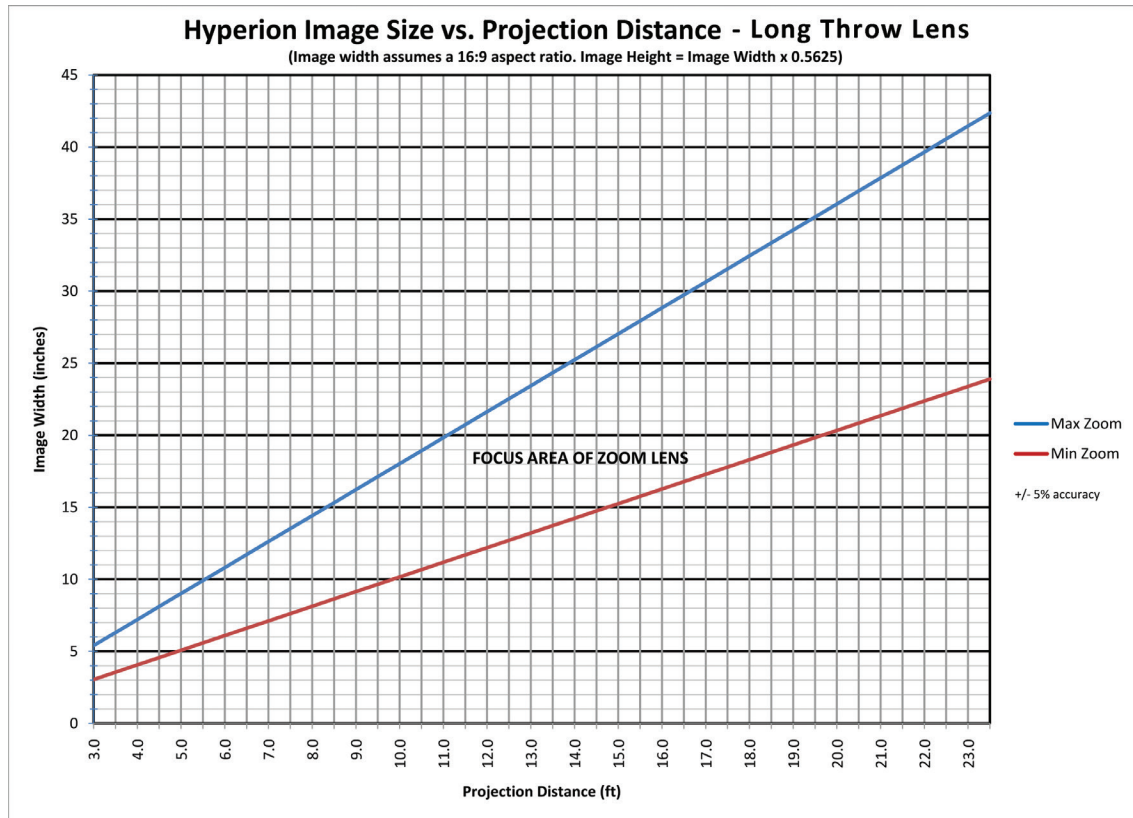
Screen Width (inches) —   The length of the projected image within inches.

Projection Distance (feet) —   The length the projector screen must be from the end of the
                                   projector lens in feet to achieve the corresponding screen width.

Focus Area of Zoom Lens —   The minimum and maximum range the zoom lens can project the
                                screen width at the given throw distance.

Appendix A (continued): **Screen Width/Zoom Lens Range Chart**

Short Throw Lens

The following chart allows you to derive all of the screen sizes possible at various distances that the projector unit can produce.

Hyperion Image Size vs. Projection Distance - Short Throw Lens
(Image width assumes a 16:9 aspect ratio. Image Height = Image Width x 0.5625)

FOCUS AREA OF ZOOM LENS

— Max Zoom
— Min Zoom

+/- 5% accuracy

Revision 1
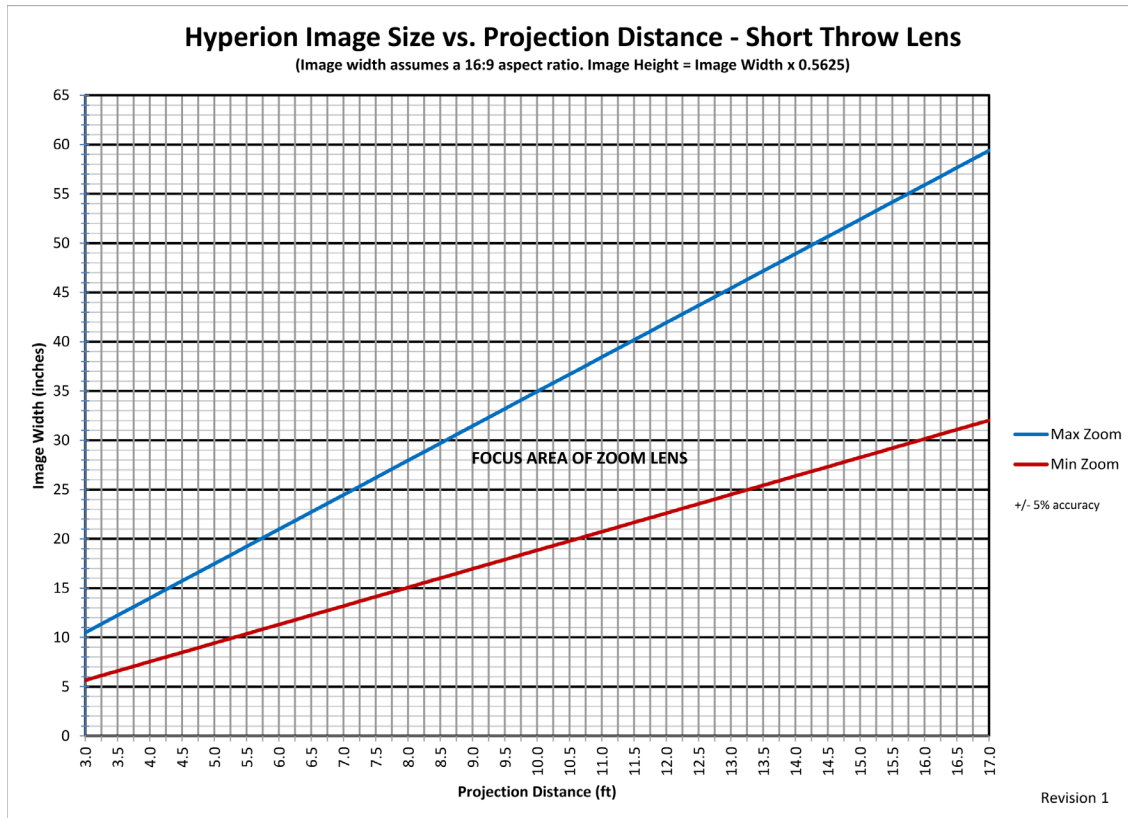
Screen Width (inches) — The length of the projected image within inches.

Projection Distance (feet) — The length the projector screen must be from the end of the projector lens in feet to achieve the corresponding screen width.

Focus Area of Zoom Lens — The minimum and maximum range the zoom lens can project the screen width at the given throw distance.

Appendix B: **Accessories**

⚠️ **NOTE:** *The tools needed for the assembly of the accessory stands are **NOT** magnet safe. Any assembly of these items must be done outside of the magnet room.*

1.1 Projector Stand Assembly

Instructions on the assembly of the Hyperion Projector Stand

Parts
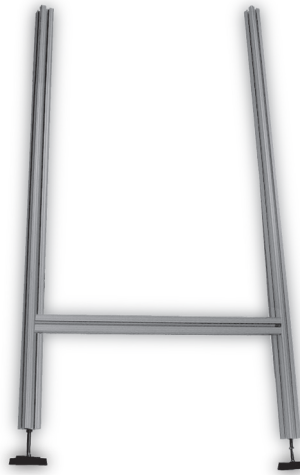The Projector stand is shipped as shown below:
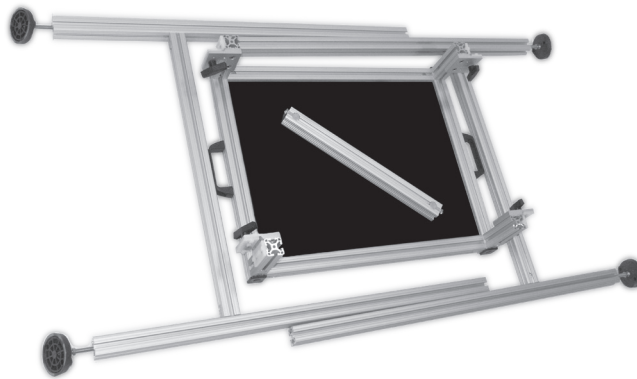
The Main Parts include:
Adjustable Platform with T-Handle Bearing Brakes *(circled below)*
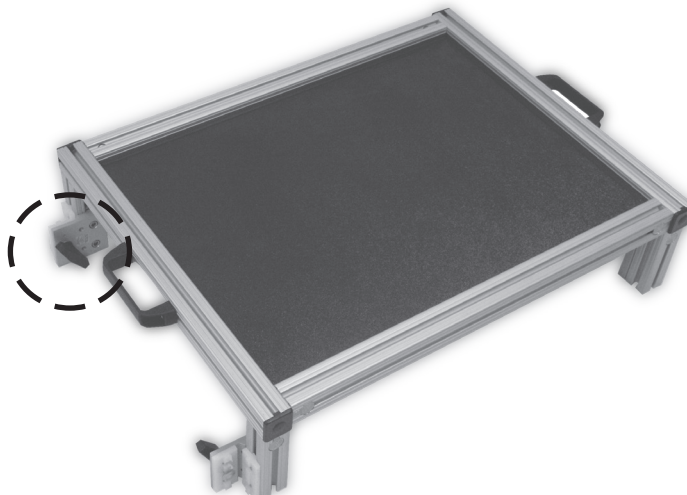
Appendix B: **Accessories**

Two (2) - Preassembled T-slotted legs with Leveling Feet

One (1) - T-slotted extrusions with Carriage bolts

Additional components for assembly (shown below)
Four (4) - End caps
Four (4) - Push in fastener
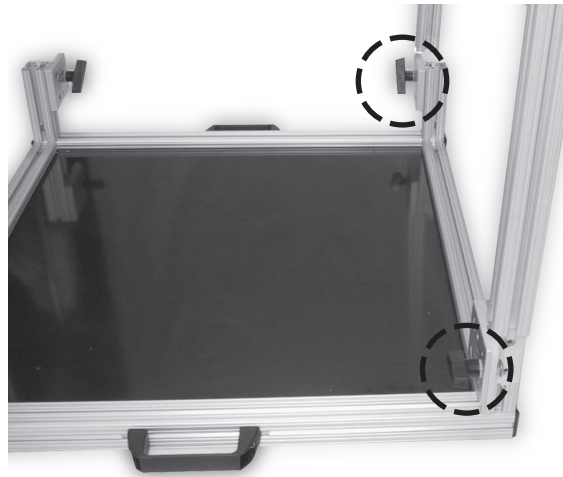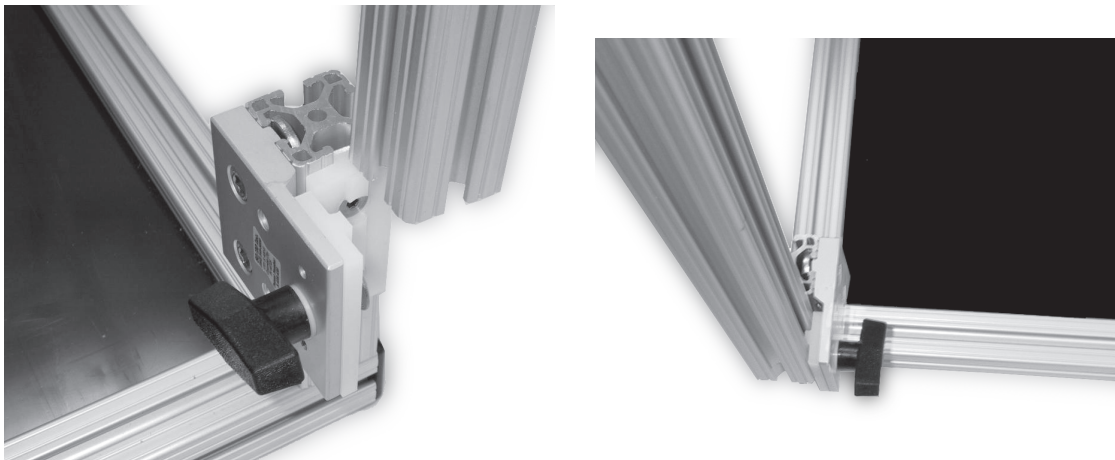One (1) - Hex wrench
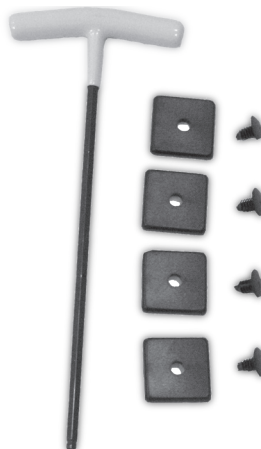
Appendix B: **Accessories**

Assembly:

Place the Adjustable Platform face down so that the T-Handle Bearing Brakes are pointing up.
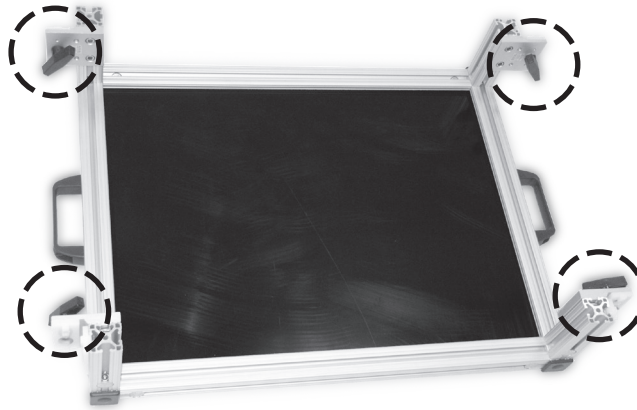
Take one of the Preassembled T-slotted legs and guide it onto the Adjustable Platform Brakes shown below.

Be sure to get the T-slotted extrusions fitted correctly over the T-Nut.

Appendix B: **Accessories**

Assembly:

Tighten the T- Handle Bearing Brakes.

Take the other Preassembled T-slotted leg with Leveling Feet and guide it into the Adjustable Platform Brake as shown below. And tighten the T- Handle Bearing Brakes.

The Stand should appear as follows.

Appendix B: **Accessories**

Assembly:

Find the T-slotted extrusions support with Carriage bolts.

Slide it between the two Preassembled T-slotted legs.

Move the T-slotted extrusions support with Carriage bolts down until it is equal with the supports on the two Preassembled T-slotted legs *(see below)*.
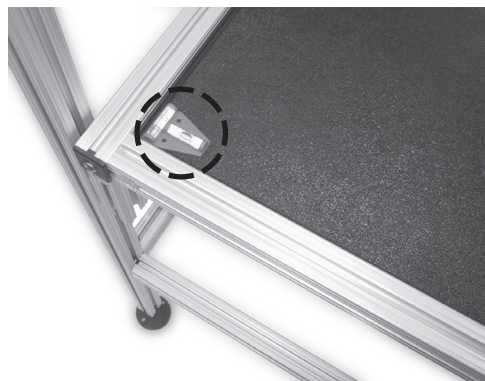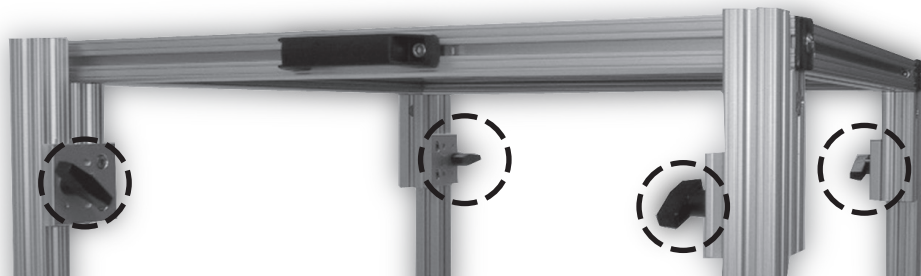
Appendix B: **Accessories**

Assembly:

Now tighten the Carriage bolts on both ends of T slotted extrusions support with the Hex Wrench *(provided).*

Now turn the projector stand over. Now you may place the Adjustable Platform at your desired height by loosening and moving the T-Handle Bearing Brakes and using the provided Bubble levels to make sure that the platform is level. Some adjustments of the Leveling Feet on the Preassembled T-slotted legs may be necessary.

Appendix B: **Accessories**

Assembly:

Until it looks like the finished Stand pictured below:

Appendix B: **Accessories**

⚠️ **NOTE:** *The tools needed for the assembly of the accessory stands are **NOT** magnet safe. Any assembly of these items must be done outside of the magnet room.*

1.2 Screen and Mirror Stand Assembly

Instructions on the assembly of the Hyperion Screen and Mirror Stands

|	
Screen and Mirror	
Pre-assembled Vertical Framework	
Base with (4) Pre-Installed Leveling Feet	
Two-Arm Black Knob	
(4) 1/4"-20 X 1/2 inch Socket Button Head Cap Screws **(2) 5/16"-18 X 1-1/2 inch Socket Head Cap Screws** **(1) Flat Metal Washer for 5/16" screw** **(1) Flat Nylon Washer for 5/16" screw**	
(1) Cross Check Level **(1) Bulls Eye Level**	
(2) T-Handled Allen Wrenches (1/4" and 5/32")	

Appendix B: **Accessories**

Assembly:

Lay the stand upright on a flat surface prior to the assembly. The two-arm knob location is circled below.
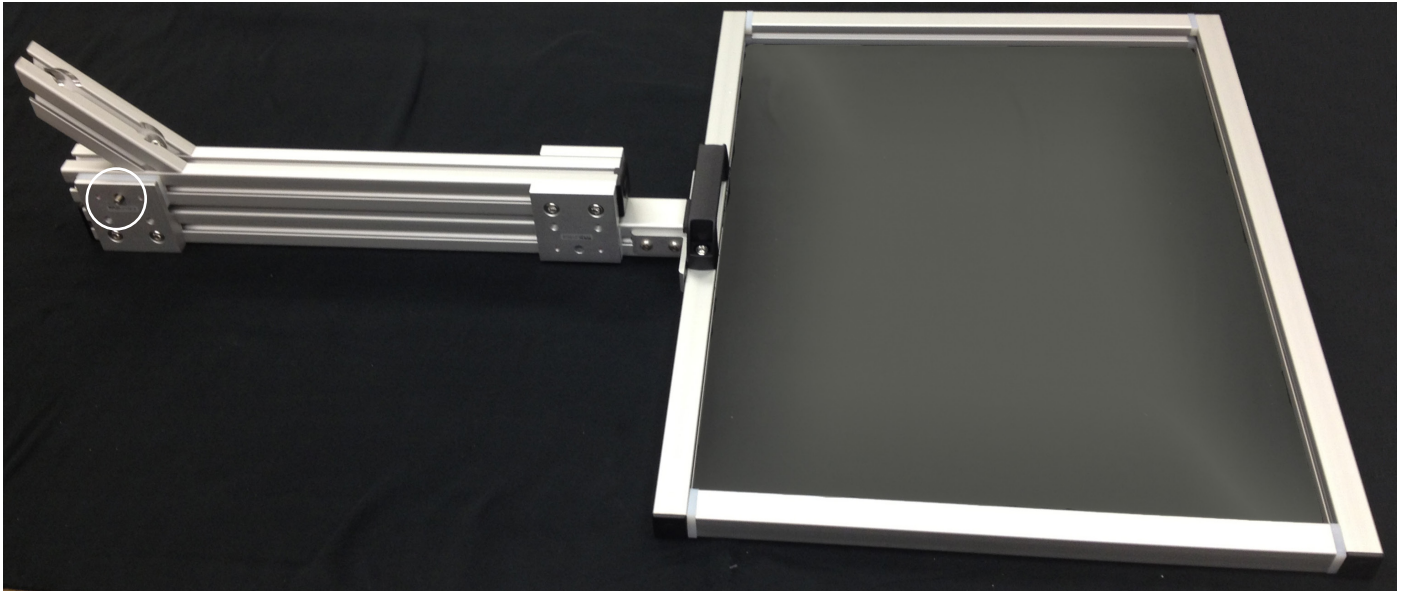
Using the 1/4" T-Handle Allen wrench and the four Socket Button Head Cap screws, attach the screen/mirror to the Vertical Framework as shown below.
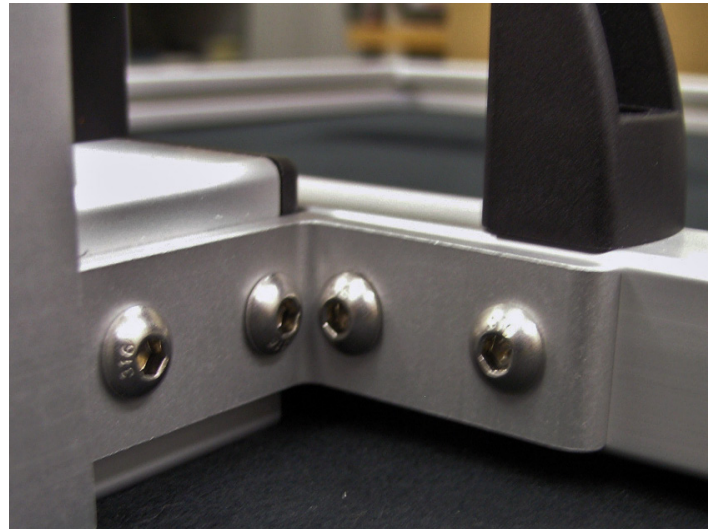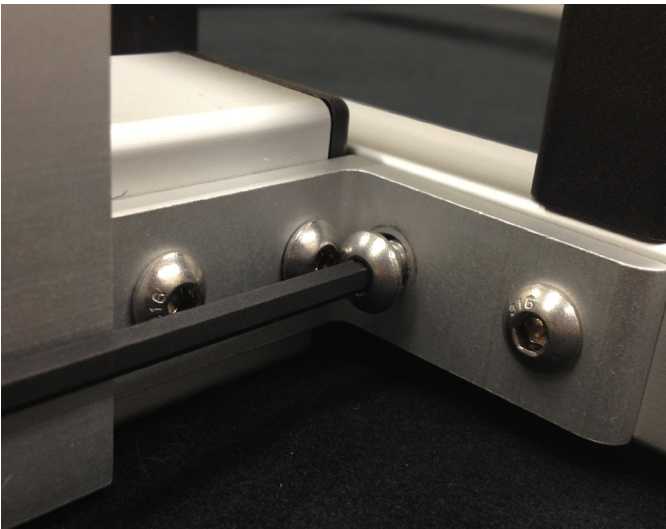
A screw protrudes from the side of the Pre-Assembled Vertical Framework, see image at top of the page for location. Place the Nylon Washer onto the screw then thread the black two-arm knob over the screw until the knob becomes tight against the Nylon Washer.
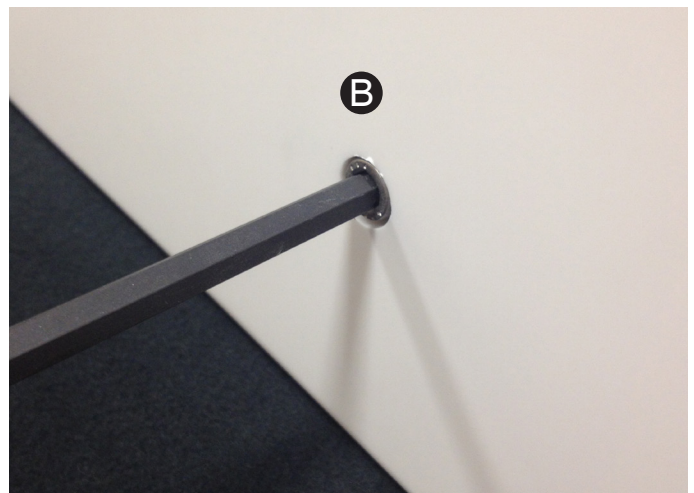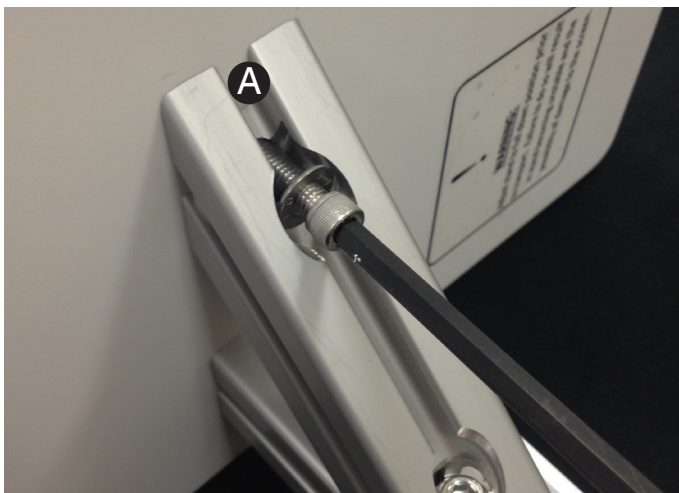
Appendix B: **Accessories**

 Assembly:

Stand base vertically, as shown. Attach base to the vertical framework using the 5/32" T-handled Allen wrench and the supplied Socket Cap screws. Screw **A** (with the metal washer) is inserted into the top hole of the angle brace then tightened securely to the base with the supplied T-handle wrench. Screw **B** is installed through the bottom of the base into the threaded vertical framework and then tightened securely.
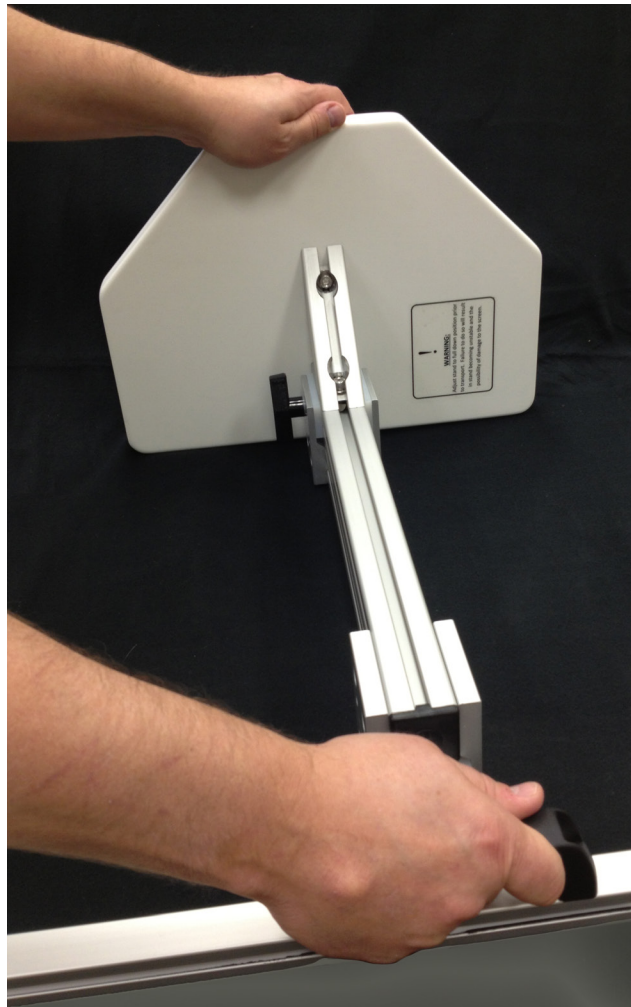
Appendix B: **Accessories**

Assembly:

⚠️**NOTE:** The black two-arm knob on the stand upright must be tightened securely before the assembled stand is placed into an upright position.

Place one hand on the black handle and one hand on the base as shown, to bring the assembled stand into an upright position.

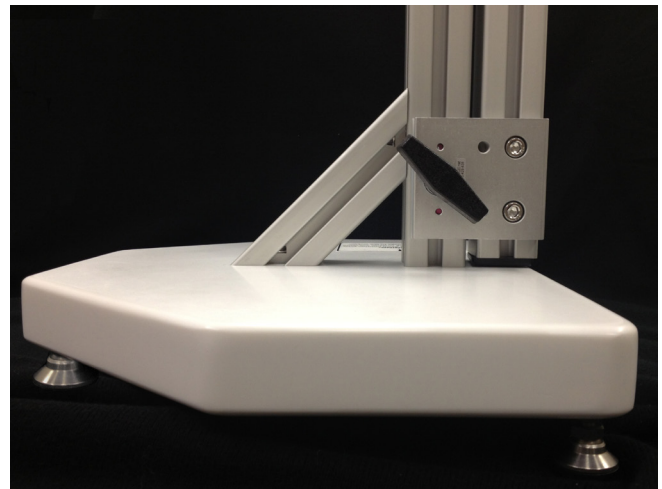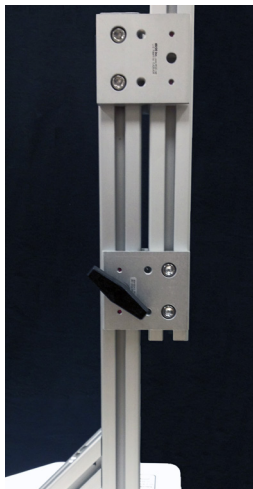# Appendix B: **Accessories**

Assembly:

The assembled screen or mirror stand should look like the images below.
The assembled stands should be placed at the rear of the bore.

⚠️ **NOTE:** Only clean the screen with a soft dry cloth. Cleaning with any liquid or other material will damage the screen.

To adjust the height of the stand first grip the black handle securely with one hand then loosen the black two-arm knob shown below with the other hand. Position the stand at the desired height location and before removing your hand from the black handle tighten the black two-arm knob securely.

⚠️ **NOTE:** If the assembly is transported, the assembled stand must be in a down position. Before making any height adjustments you must first grasp the black handle securely in one hand before loosening the black two-arm knob with the other.

Appendix B: **Accessories**

1.3 Vision Correction Glasses

Instructions on the assembly of the Hyperion System Vision Correction Glasses.

Parts
The Vision Correction Glasses are shipped with:
Two (2) - Frames
Two (2) - Headbands
Forty-Four (44) - lenses (from +/- 2 to 7 diopters in 1/2 diopter increments)
One (1) - binder to hold all of the above

Appendix C: **Electrical Information**

Hyperion Unit

Input Voltage: 100-240VAC, 50/60Hz
Input Current: 4A(100-120VAC)/2A(200-240VAC)
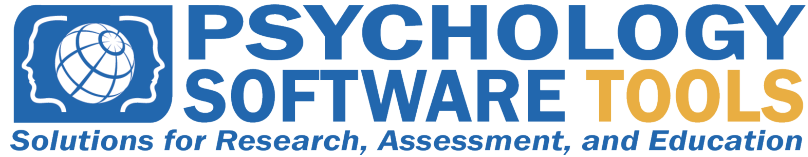**Fuse:** 250V, 4A

Hyperion Control Room Console

Input Voltage: 9 VDC
Input Current: 2000mA

Appendix D: **Contact Information**

For additional information or support

Contact us at

Psychology Software Tools, Inc
311 23rd Street Extension, Suite 200
Sharpsburg, PA 15215-2821
Phone: 412-449-0078
Fax: 412-449-0079
www.pstnet.com

For Product Service and Support:
Please visit us at https://support.pstnet.com