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PROJECTOR OWNER'S MANUAL

Boxlight

SP-55M

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Declaration of Conformity

Manufacturer: BOXLIGHT, 19332 Powder Hill Place, Poulsbo, Washington, USA
We declare under our sole responsibility that the SP-45m and XP-55mm projectors conform to the following directives and norms:

EMC Directive 89/336/EEC, Amended by 93/68/EEC
EMC: EN 55022
EN 55024
EN 61000-3-2
EN 61000-3-3
Low Voltage Directive 73/23/EEC, Amended by 93/68/EEC
Safety: EN 60950: 2000
September, 2002

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FCC Warning

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
--Reorient or relocate the receiving antenna.
--Increase the separation between the equipment and receiver.
--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
--Consult the dealer or an experienced radio/TV technician for help.

Canada

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Safety Certifications

UL, CUL, TÜV, NOM, IRAM, GOST

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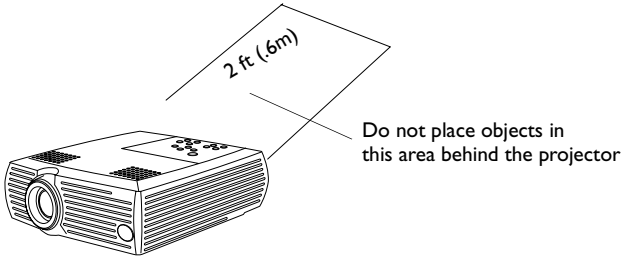
If you are experienced in setting up presentation systems, use the *Quick Setup* card that was included. For complete details on connecting and operating the projector, refer to this User's Guide.

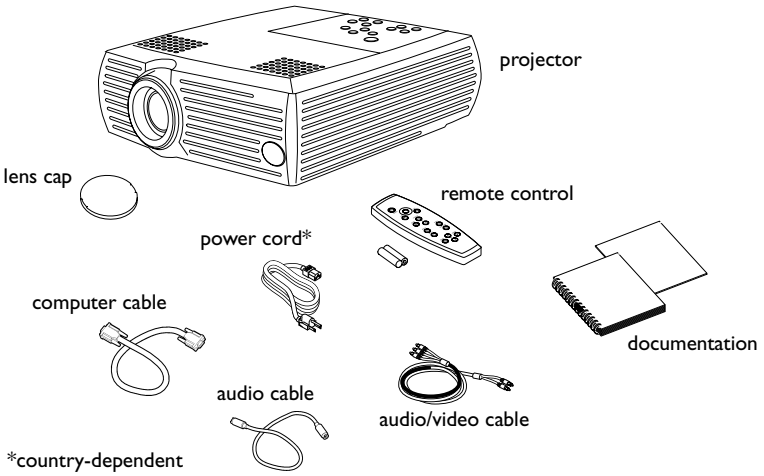
Important Operating Considerations

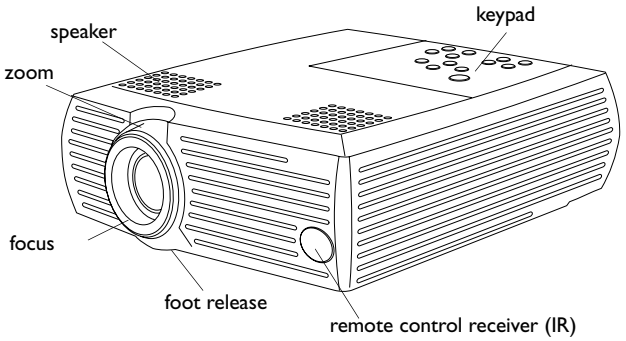
Do not place the projector on a tablecloth or other soft covering that may block the vents. Do not use a non-approved ceiling mount. In the unlikely event of the bulb rupturing, thoroughly clean the area behind the projector and discard any edible items placed in that area.

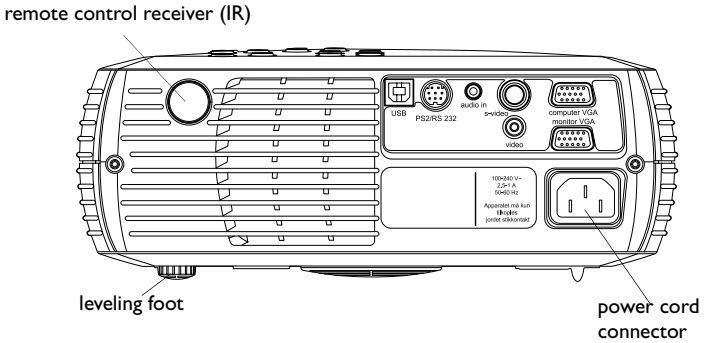


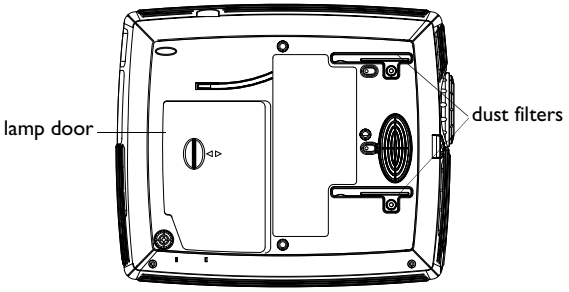
Introduction

Your new digital projector is easy to connect, easy to use, and easy to maintain. The SP-45m has native SVGA 800x600 resolution, the XP-55m has native XGA 1024x768 resolution.
The projector comes with the following accessories.





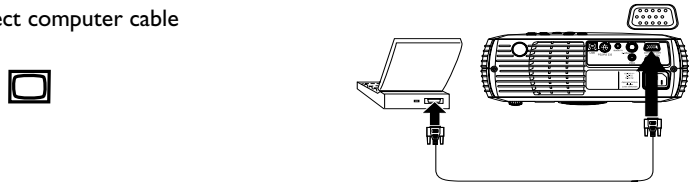




1 Required computer connections

Connect one end of the computer cable to the blue Computer In connector on the projector. Connect the other end to the video port on your computer.
If you are using a desktop computer, you will need to disconnect the monitor cable from the computer's video port first.

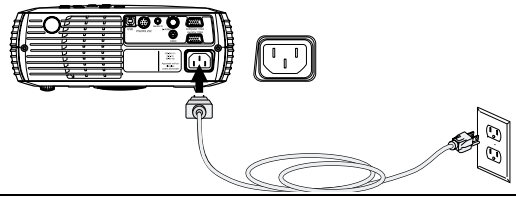
connect computer cable



Connect the black power cord to the connector on the back of the projector and to your electrical outlet.
The Power LED on the keypad lights green.

NOTE: Always use the power cord that shipped with the projector.

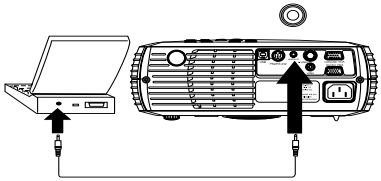
connect power cable



2 Optional computer connections

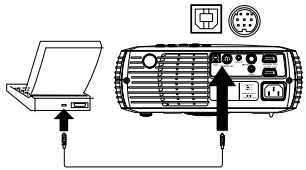
To have sound with your presentation, connect the audio cable to your computer and to the Audio In connector on the projector.

connect audio cable



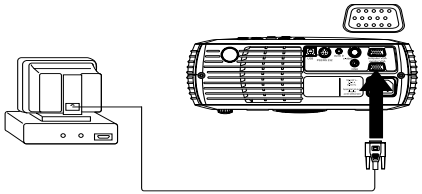
To control your computer's mouse using the projector's remote control, connect a USB or PS2 cable (ordered separately) to the projector and the computer. USB drivers must be installed to use the USB feature.

connect mouse cable



If you are using a desktop computer and want to see the image on your computer screen as well as on the projection screen, connect the monitor cable to the Monitor Out connector on the projector.

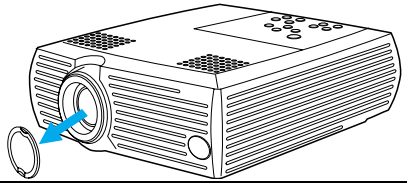
connect monitor cable



3 Displaying a computer image

Remove the lens cap.

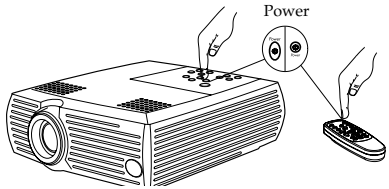
remove lens cap



Press the **power** button on the top of the projector.
The LED flashes green and the fans start to run. When the lamp comes on, the start up screen is displayed and the LED is steady green. It can take a minute for the image to achieve full brightness.

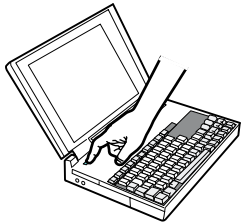
? No start up screen? Get help on page 11.

press Power



Turn on your computer.
The computer's image should appear on the projection screen. If it doesn't, press the **computer** button on the keypad.

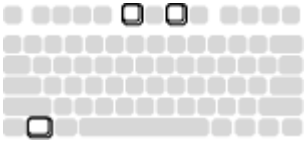
turn on computer



Make sure your laptop's external video port is active.
Many laptops do not automatically turn on their external video port when a projector is connected. Usually a key combination like FN + F5 is used to turn the external display on and off. Refer to your computer's documentation to learn your computer's key combination.

? No computer image? Try pressing the **auto image** button on the keypad. Get help on page 12.

activate laptop's external port



4 Using the projector with Windows 98 for the first time

The first time you connect a computer running Windows 98 to the projector, the computer recognizes the projector as “new hardware” and the Add New Hardware Wizard appears. Follow these instructions to use the Wizard to load the correct driver (which was installed with your Windows operating system).

If you are running Windows 2000 or Windows ME, skip these steps and go to “Adjusting the image” on page 7.

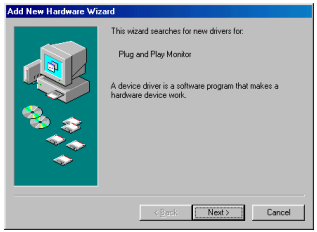
a Click Next to begin searching for the driver.

b Make sure “Search for the best driver” is selected, then click Next.

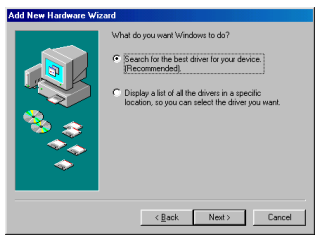
c Uncheck any checked boxes, then click Next. Windows automatically locates the driver. If this driver has been removed, reload the driver using your Windows operating system CD.

d When Windows finds the driver, you are ready to install it. Click Next.

a



b



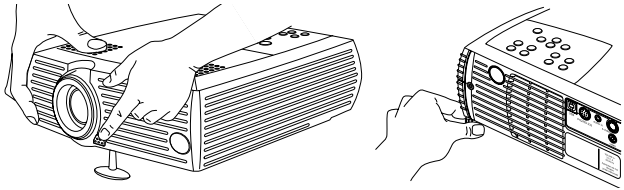
c

d

5 Adjusting the image

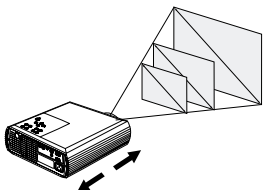
Adjust the height of the projector, if necessary, by pressing the release button to extend the foot.
Rotate the leveling foot, if necessary.

adjust height



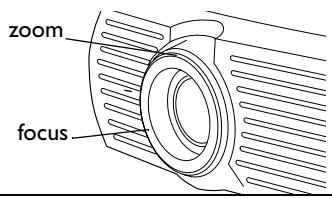
Position the projector the desired distance from the screen at a 90 degree angle to the screen.
See page 34 for a table listing screen sizes and distances.

adjust distance



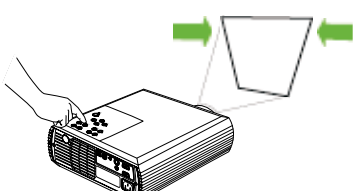
Adjust the zoom or focus.

adjust zoom and focus



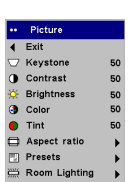
If the image is not square, adjust the keystone using the buttons on the keypad.
Press the top **keystone** button to reduce the upper part of the image, and press the bottom **keystone** button to reduce the lower part.

adjust keystone



Adjust the Contrast or Brightness in the Picture menu.
See page 23 for help with the menus.

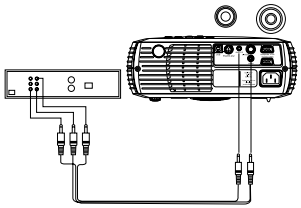
adjust Picture menu



1 Standard video connections

Plug the audio/video (A/V) cable's yellow connector into the video-out connector on your video device. Plug the other yellow connector into the yellow Video connector on the projector.
Plug the white connector into the left audio out connector on your video device; plug the red connector into the right audio out connector on the video device. Plug the blue connector into the Audio In connector on the projector.

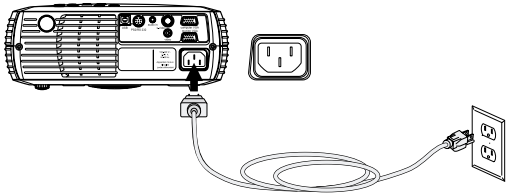
connect A/V cable



Connect the power cord to the connector on the back of the projector and to your electrical outlet.
The Power LED on the keypad lights green.

NOTE: Always use the power cord that shipped with the projector.

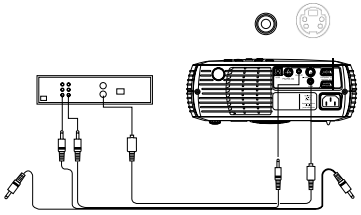
connect power cable



2 Optional video connections

If your video device uses a round, four-prong S-video connector, plug an S-video cable, sold separately, into the S-video connector on your video device and into the S-video connector on the projector.
Use the A/V cables audio connectors as described above (the yellow connectors on the A/V cable are not used).

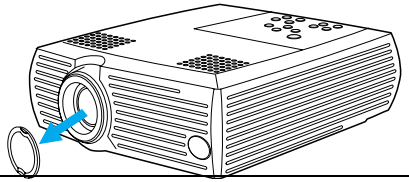
connect S-video and A/V cables



3 Displaying a video image

Remove the lens cap.

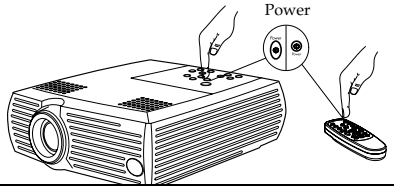
remove lens cap



Press the **power** button on the top of the projector.
The LED flashes green and the fans start to run. When the lamp comes on, the start up screen is displayed and the LED is steady green. It can take a minute for the image to achieve full brightness.

? No start up screen? Get help on page 11.

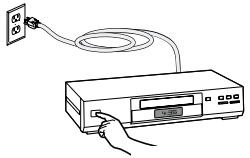
press power



Plug in and turn on your video device.
The video device's image should appear on the projection screen. If it doesn't, press the **video** button on the keypad.

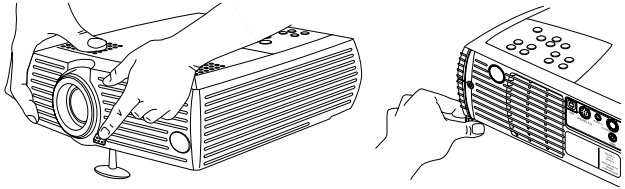
? No video image? Get help on page 15.

turn on video device



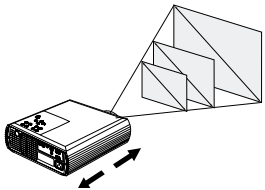
Adjust the height of the projector by pressing the release button to extend the foot. Rotate the leveling foot, if necessary.

adjust height



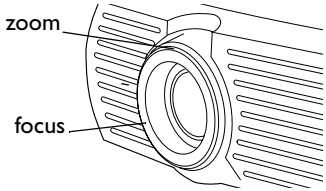
Position the projector the desired distance from the screen at a 90 degree angle to the screen.
See page 34 for a table listing screen sizes and distances to the screen.

adjust distance



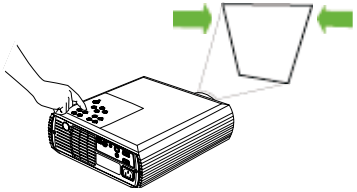
Adjust the zoom and focus.

adjust zoom and focus



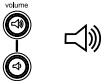
If the image is not square, adjust the keystone using the buttons on the keypad. Press the top **keystone** button to reduce the upper part of the image, and press the bottom **keystone** button to reduce the lower part.

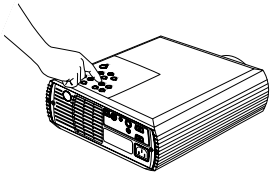
adjust keystone



Adjust the volume on the keypad or remote.

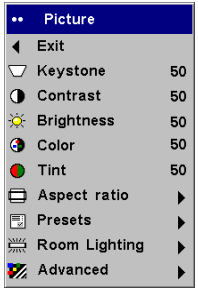
adjust volume





Adjust the Contrast, Brightness, Color, or Tint in the Picture menu. See page 23 for help with the menus.

adjust Picture menu



Shutting down the projector

The projector automatically displays a gray screen after no active source is detected for 30 minutes. This gray screen helps preserve the life of the projector. The image returns when an active source is detected or a remote or keypad button is pressed.
You can make the gray screen appear after 5 minutes by turning on the Screen Save feature in the Settings>System menu. See page 27.

The projector also has a Power Save feature that automatically turns the lamp off after no active sources are detected for 5 minutes. By default, this feature is off. See page 27.

To turn off the projector, press the **power** button and verify that you want to turn the projector off by pressing the power button again within 3 seconds. You can cancel the shutdown by not pressing the **power** button a second time. The lamp turns off and the LED blinks green for 1 minute while the fans continue to run to cool the lamp. When the lamp has cooled, the LED lights green and the fans stop. Unplug the power cable to power off the projector completely.

Troubleshooting your setup

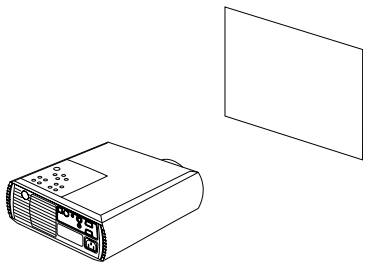
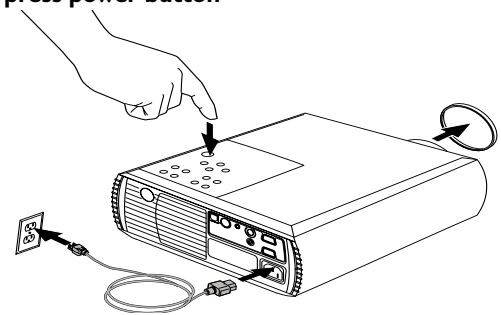
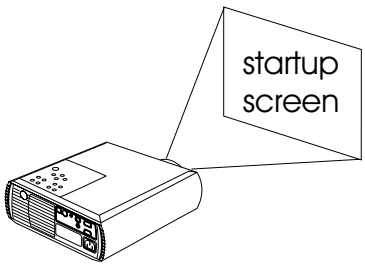
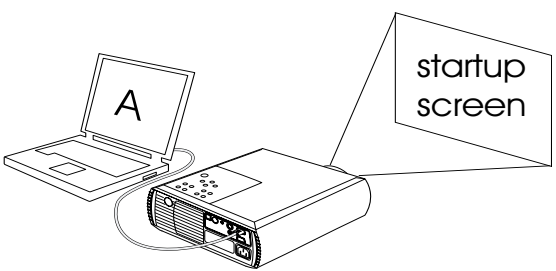
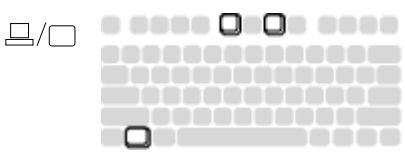
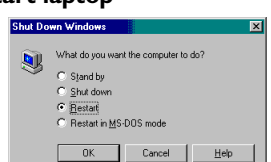
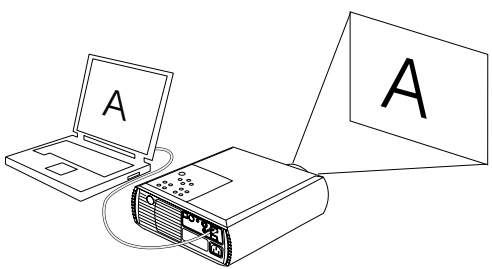
If your image appears correctly on the screen, skip to the next section. If it does not, troubleshoot the setup.
The LED on top of the projector indicates the state of the projector and can help you troubleshoot.

Table 1: LED behavior and meaning

LED color/behavior	Meaning
solid green	The projector is plugged in, or the projector has been turned on and the software has initialized. The projector has been turned off and the fans have stopped.
blinking green	The power button has been pressed and the software is initializing, or the projector is powering down and the fans are running to cool the lamp.
blinking red	A fan or lamp failure has occurred. Turn off the projector and wait one minute, then turn the projector on again. If the projector has been working for 2000 hours or more, replace the lamp and reset the lamp timer. Also check for a blocked vent or a stopped fan.
solid red	An unidentifiable error: please contact Technical Support.

The following tables show common problems. In some cases, more than one possible solution is provided. Try the solutions in the order they are presented. When the problem is solved, you can skip the additional solutions.

.

Problem	Solution	Result
no start up screen 	**plug power cord in** **remove lens cap** **press power button** 	**correct image** 
only start up screen appears 	**press the computer button** **activate laptop's external port**  **restart laptop** 	**computer image projected** 

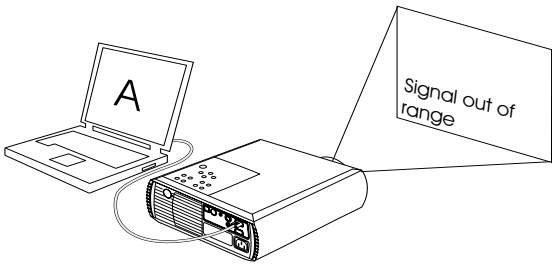
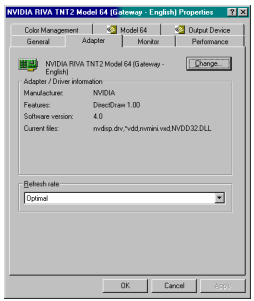
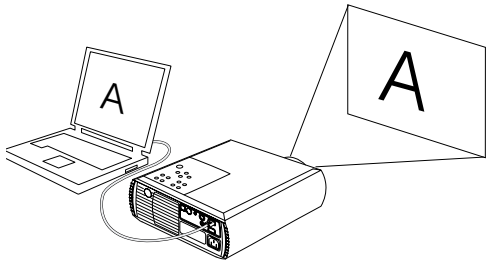
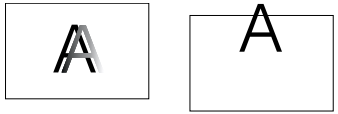
Problem	Solution	Result
no computer image, just the words “Signal out of range”  	**press the auto image button on keypad** **Adjust computer refresh rate in Control Panel>Display>Settings>Advanced>Adapter (location varies by operating system)**  **You may also need to set a different resolution on your computer, as shown in the following problem, “image fuzzy or cropped.”**	**computer image projected** 

image fuzzy or cropped



set your computer's display resolution to the native resolution of the projector (Start>Settings>Control Panel>Display>Settings tab, select 800x600 for the SP-45m, 1024x768 for XP-55m)

For a laptop, disable laptop monitor or turn-on dual-display mode

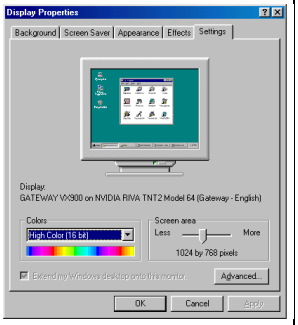
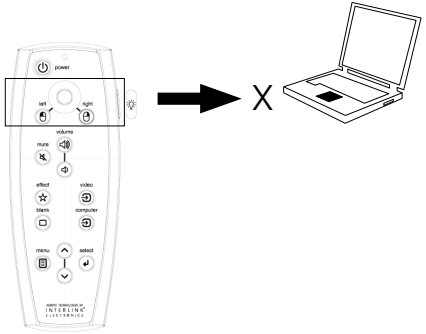
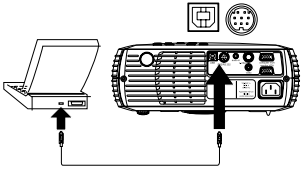


image clear and not cropped

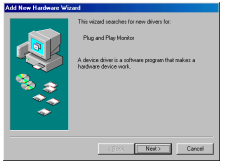
remote control not controlling my computer's mouse



connect optional mouse cable (page 4)



load USB drivers, if necessary (page 8)



see page 22 for more info on the remote

remote controls computer cursor (note that the mouse is not functional in zoom mode)

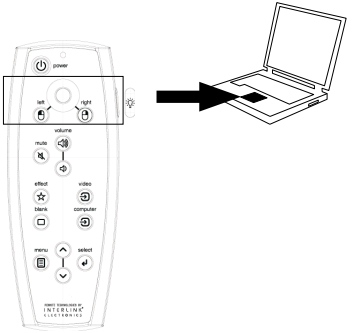
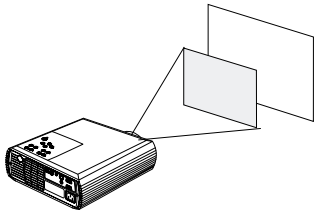
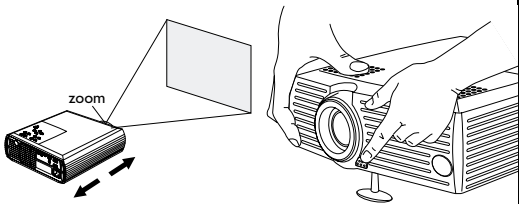


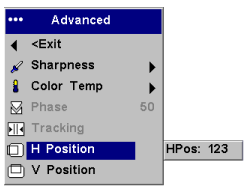
image not centered on screen



move projector, adjust zoom, adjust height



adjust horizontal or vertical position in Picture>Advanced menu



correct image

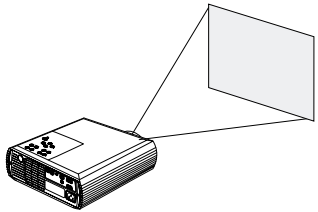
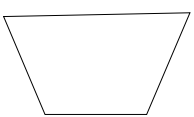
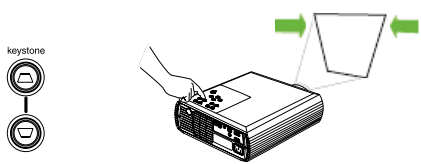


image not square



adjust keystone on keypad



square image

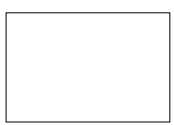


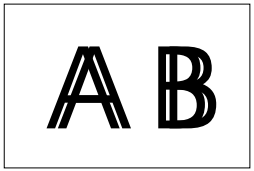
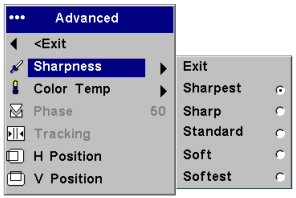
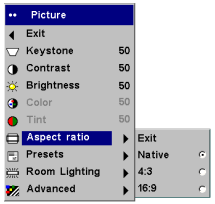
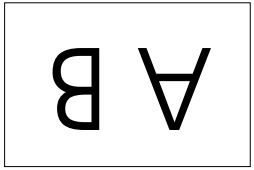
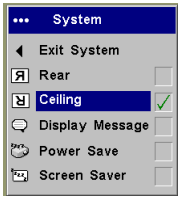
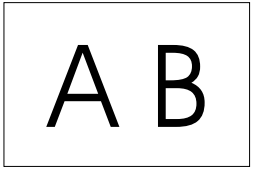
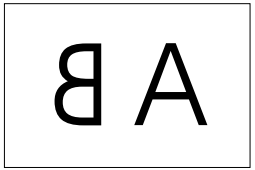
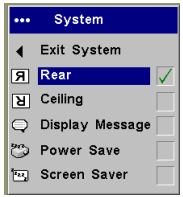
image not sharp 	**adjust Sharpness in the Picture>Advanced menu** 	**correct image**
image does not fit 16:9 screen 	**change aspect ratio to 16:9 in Picture>Aspect ratio menu** 	**correct image**
image upside down 	**turn off Ceiling in Settings>System menu** 	**correct image** 

image reversed left to right

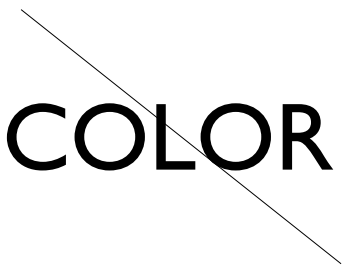


turn off Rear in Settings>System menu

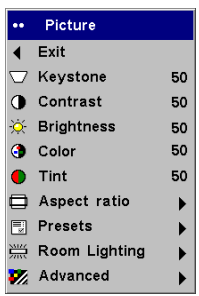


correct image

projected colors don't match source



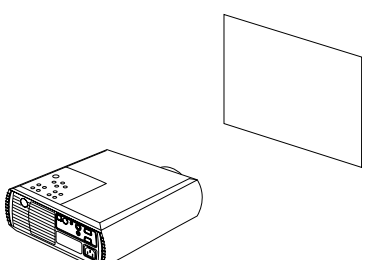
adjust color, tint, color temperature, brightness, contrast in the menus



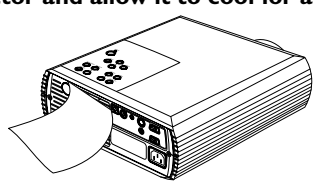
correct image

lamp won't turn on, LED blinking red

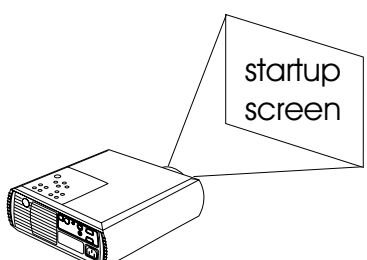
blinks red



make sure vents aren't blocked, turn off the projector and allow it to cool for a minute

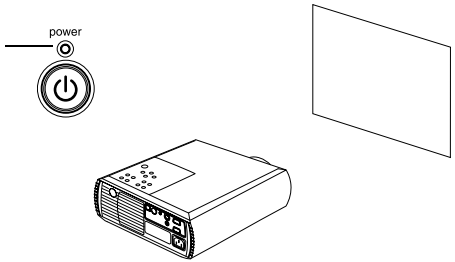


lamp turns on



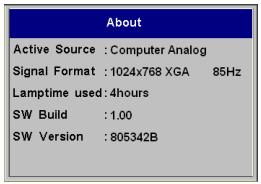
lamp won't turn on, LED blinking red, "Change lamp" message appears at startup

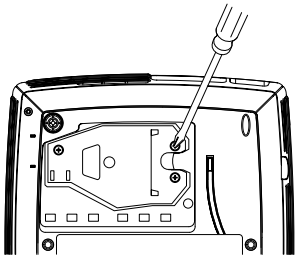
blinks red



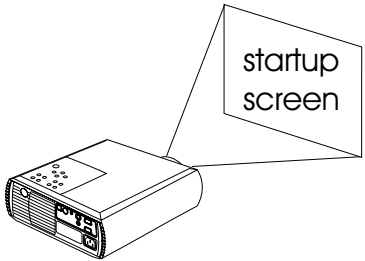
If lamp hours > 2000, lamp must be replaced. See page 31.

check lamp hours





lamp turns on



This product is backed by a limited two-year warranty. An extended warranty plan may be purchased from BOXLIGHT. When sending your projector in for repair, we recommend shipping the unit in its original packing material, or having a professional packaging company pack the unit for shipping. Please insure your shipment for its full value.

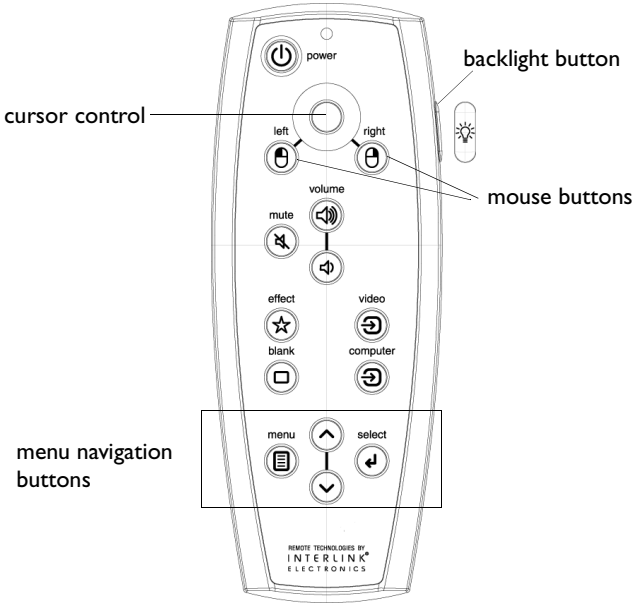
Using the remote control

To install the 2 AAA batteries, slide the cover off the back of the remote, align the + and – ends of the batteries and slide into place, then replace the cover.
Point the remote at the projection screen or at the front/rear of the projector (not at the computer). The range of optimum operation is about 30 feet (9.1m).
The remote has a cursor control and left and right mouse buttons. These buttons mimic the cursor movement and left and right mouse buttons on your computer. To use these buttons to control your computer's mouse, you must connect a USB or PS/2 mouse cable to the projector. See page 4. When you do this for the first time, the Add New Hardware wizard may appear.

Press the **menu** button to open the menus, use the up and down arrow buttons to navigate in the menus and the **select** button to select features and adjust values in the menus. See page 23 for more info on the menus.

The remote also has a **power** button to turn the projector on and off (see page 11 for shutdown info), **volume** and **mute** buttons to control the sound, and **video** and **computer** buttons to switch between sources.

Several presentation-specific features are also provided. Use the **blank** button to display a blank screen instead of the current image (you can choose which color is displayed, see page 28); use the **effect** button to invoke a user-definable action, such as freeze or zoom (see page 28 to learn to program this button). The remote also has a backlight button which illuminates the remote so you can see the buttons in a dark room. The light stays on for 10 seconds or until you press the backlight button again.



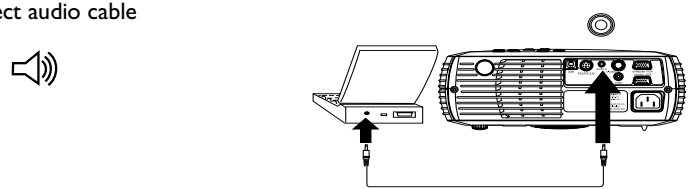
Troubleshooting the remote

Make sure the batteries are installed in the proper orientation and not dead. If the LED does not light when a button is pressed, the batteries are dead.
Make sure you're pointing the remote at the projector, not the computer, and are within the remote range of 30 feet (9.1m).
Make sure there are no obstacles between you and the projector.
If you are trying to control your computer's mouse, make sure the USB or PS/2 cable is connected. If using a USB cable, make sure the correct drivers are installed.

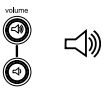
Using the audio

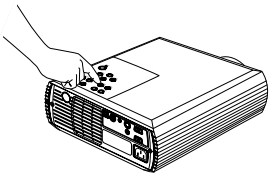
To use the projector's speaker, connect your source to the Audio In connector on the projector.
To adjust the volume, use the volume buttons on the keypad or remote.
To mute the sound, press the **mute** button on the remote.

connect audio cable



adjust volume



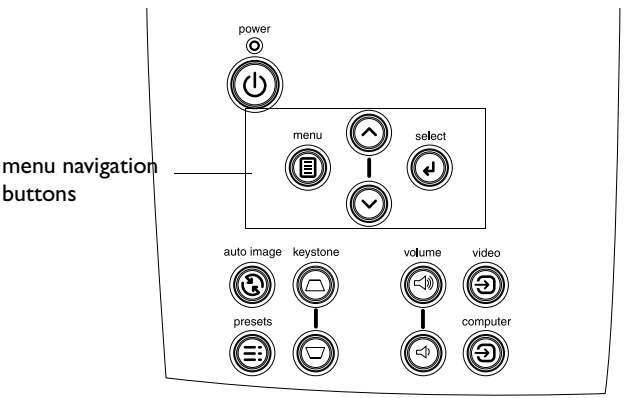


Troubleshooting Audio

If you aren't hearing the audio, check the following:
Make sure the audio cable is connected.
Make sure mute is not active (press the **mute** button on the remote).
Make sure the volume is turned up enough. Press the **volume** button on the keypad or remote.
Make sure the correct source is active.
Adjust the audio source.
If playing a video, make sure the playback has not been paused.

Using the keypad buttons

Most buttons are described in detail in other sections, but here is an overview of their functions:
power–turns the projector on (page 5) and off (page 11).
menu–opens the on-screen menus (page 23).
select–confirms choices made in the menus (page 23).
up/down arrows–navigates to and adjusts settings in the menus (page 23).
auto image–resets the projector to the source.
presets–cycles through the available preset settings (page 25).
keystone–adjusts squareness of the image (page 7).
volume–adjusts sound (page 20).
video and computer–changes the active source.



Optimizing computer images

After your computer is connected properly and the computer's image is on the screen, you can optimize the image using the onscreen menus. For general information on using the menus, see page 23.

- Adjust the Keystone, Contrast, or Brightness in the Picture menu (page 24).
- Change the Aspect ratio. Choose the option that best fits your input source (page 24).
- Adjust the sharpness or color temperature in the Advanced menu (page 26).
- Adjust the phase, tracking, or horizontal or vertical position in the Advanced menu (page 26).
- Adjust the Room Lighting. This allows you to adjust for a dark or light room. Select Dark if you are in a dark room, Light if in a bright room (page 25).
- Once you have optimized the image for a particular source, you can save the settings using Presets. This allows you to quickly recall these settings later (page 25).

Presentation features

Several features are provided to make giving presentation easier. Here is an overview, details are found in the menu section.

The **effect** button on the remote allows you to assign various features to the button. The default effect is About, which displays information about the projector and current source. You can select among blank, mute, aspect ratio, source, auto image, freeze, zoom, PIP (Picture in Picture), mask and about. See page 28 for details. The freeze effect allows you to freeze the displayed image. This is useful if you want to make changes on your computer without your audience seeing them. The mask effect allows you to cover part of the image with a black curtain.

The **blank** button on the remote allows you to display a blank screen instead of the active source (page 28).

The start up logo option lets you change the default start up screen to a black, white, or blue screen (page 28).

Two options, Power Save and Screen Save, are provided to automatically shut down the projector after several minutes of inactivity or display a gray screen. This helps preserve lamp life (page 27).

Optimizing video images

After your video device is connected properly and the image is on the screen, you can optimize the image using the onscreen menus. For general information on using the menus, see page 23.

- Adjust the Keystone, Contrast, Brightness, Color, or Tint in the Picture menu (page 24).
- Change the Aspect ratio. Choose the option that best fits your input source (page 24).
- Select a Sharpness setting (page 26).
- Adjust the Color Temperature. Select a listed value, or select User and individually adjust the intensity of the red, green, and blue color (page 26).
- Adjust the Room Lighting. Select Dark if you are in a dark room, Light if in a bright room (page 25).

Customizing the projector

You can customize the projector for your specific setup and needs. See page 27 to page 29 for details on these features.

- For rear projection, turn rear mode on in the Settings>System menu.
- For ceiling mounted projection, turn ceiling mode on in the Settings>System menu.
- Specify which source the projector checks first for active video during power-up.
- Specify the function of the **effect** button on the remote.
- Turn the projector's display messages on and off.
- Turn on power saving features.
- Specify blank screen colors and start up logos.
- Specify the menu language.
- Save settings for the active source as a preset.

Using the menus

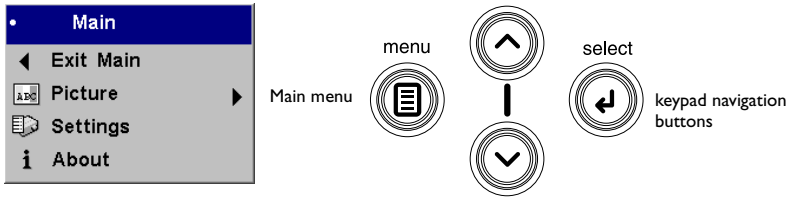
To open the menus, press the **menu** button on the keypad or remote. (The menus automatically close after 60 seconds if no buttons are pressed.) The Main menu appears. Use the arrow buttons to move up and down to highlight the desired submenu, then press the **select** button.

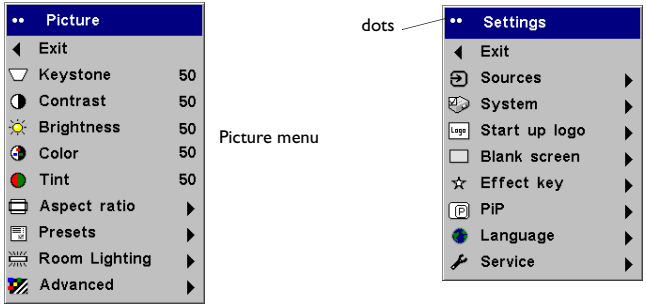
To change a menu setting, highlight it, press select, then use the up and down arrow buttons to adjust the value, select an option using radio buttons, or turn the feature on or off using check boxes. Press select to confirm your changes. Use the arrows to navigate to another setting. When your adjustments are complete, navigate to Exit, then press Select to go to the previous menu; press the **menu** button at any time to close the menus.

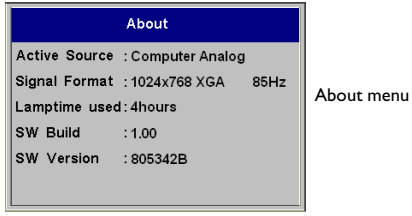
Dots appears before the menu name. The number of dots indicate menu's level, ranging from 1 (the Main menu) to 4 (the most nested menus).

The menus are grouped by usage. The Picture menu provides image adjustments; the Settings menu provides set-up type adjustments that are not changed often, and the About menu provides a read-only display of information about the projector and source.

Certain menu items may be grayed out until a particular source is connected. For example, Sharpness is only available for video sources and will be grayed out when a computer source is active.







Picture menu

To adjust the following five settings, highlight the setting, press select, use the up and down arrows to adjust the values, then press select to confirm the changes.

Keystone: adjusts the image vertically and makes a squarer image. You can also adjust keystone from the keypad.

Contrast: controls the degree of difference between the lightest and darkest parts of the picture and changes the amount of black and white in the image.

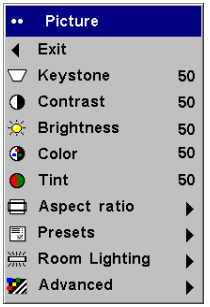
Brightness: changes the intensity of the image.

Color: adjusts a video image from black and white to fully saturated color.

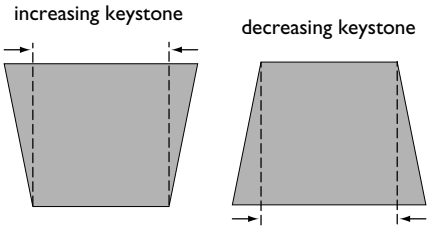
NOTE: The color setting applies to video sources only. The tint setting applies to NTSC video sources only.

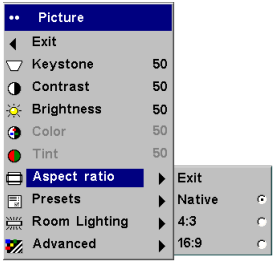
Tint: adjusts the red-green color balance in the image of NTSC video images.

Aspect Ratio: Aspect ratio is the ratio of the image width to image height. Computers and TV screens are usually 1.33:1, also known as 4:3. HDTV and most DVDs are 1.78:1, or 16:9. The default is 4:3. Select Native to see the unmodified input with no resizing by the projector.
Select 16:9 to watch enhanced widescreen DVDs.



Picture menu



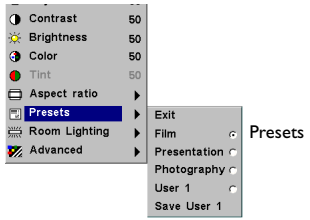


Aspect ratio

Presets: Presets are provided that optimize the projector for displaying computer presentations, photographs, film images, and video images. (Film input is material originally captured on a film camera, like a movie; video input is material originally captured on a video camera, like a TV show or sporting event.) You can use the preset as a starting point, then further customize the settings for each source. The settings you customize are saved in the preset for each source. To restore the factory default settings, choose Factory Reset in the Settings>Service menu (page 29).

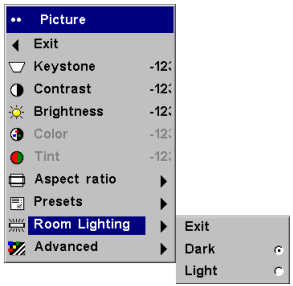
There is also a user-definable preset. To set a preset for the current source, adjust the image, select Save User in the Presets menu, then select Yes. You can recall these settings in the future by selecting the User 1 preset.

Room Lighting: This features optimizes the projector for your room's lighting conditions. Select Dark if you are in a dark room, Light if in a bright room. Choosing Light maximizes the light output from the projector.



Presets

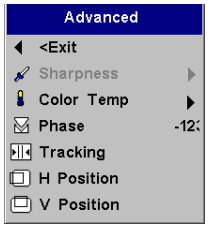
Save User Settings



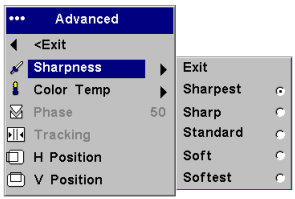
Room lighting

Advanced menu

Sharpness: (video sources only) changes the clarity of the edges of a video image. Select a sharpness setting.

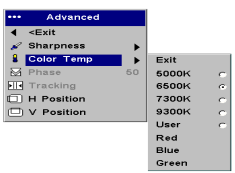


Advanced menu



Sharpness

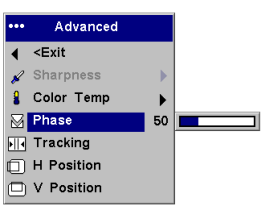
Color Temperature: changes the intensity of the colors. Select a listed value, or select User and individually adjust the intensity of the red, green, and blue color.



Color Temperature

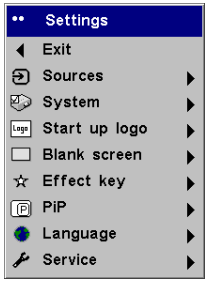
The following 4 options are for computer sources only.

Phase: adjusts the horizontal phase of a computer source.
Tracking: adjusts the vertical scan of a computer source.
Horizontal/Vertical Position: adjusts the position of a computer source.

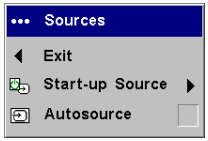


Settings menu

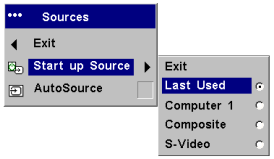
Sources>Start up Source: this determines which source the projector checks first for active video during power-up.
Autosource: When this feature is On, the projector automatically finds the active source, checking the Start up Source first. When this feature is Off, the projector defaults to the source selected in Start up Source. To display another source, you must manually select one by pressing the **computer** or **video** button on the remote or keypad.



Settings menu

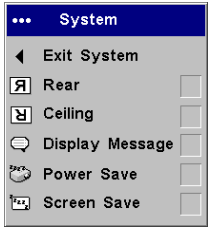


Sources



Start up Source

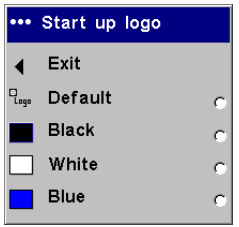
System>Rear: reverses the image so you can project from behind a translucent screen.
Ceiling: turns the image upside down for ceiling-mounted projection.
Display Messages: displays status messages (such as “Searching” or “Mute”) in the lower-left corner of the screen.
Power Save: automatically turns the lamp off after no active sources are detected for 5 minutes. The LED blinks green for one minute while the fans continue to run to cool the lamp. If an active signal is received before the projector powers down, the image will be displayed. You must press the **power** button to display an image after 10 minutes have passed. This feature also makes the projector go into the startup state after it is powered on, which allows control of ceiling mounted projectors with a wall power switch. When Power Save is enabled, Screen Save is disabled.
Screen Save: the projector automatically blanks the screen with a gray color after no signals are detected for 30 minutes to preserve lamp life. The image returns when an active source is detected or a remote or keypad button is pressed. If you turn Screen Save on, the gray screen appears after 5 minutes.



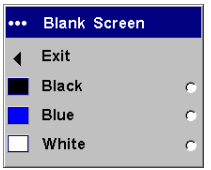
System menu

Start up logo: allows you to display a blank black, white, or blue screen instead of the default screen at startup and when no source is detected.

Blank Screen: determines what color is displayed when you press the **blank** button on the remote.

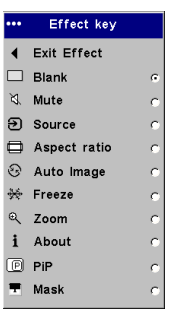


Start up logo



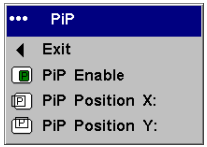
Blank screen

Effect: allows you to assign a different function to the **effect** button on the remote, allowing you to quickly and easily use the effect. The default effect is About, which opens a window with projector and source information. Highlight an effect and press **select** to choose a different one.
Aspect ratio toggles among 4:3, 16:9, and Native (page 24).
Auto image resets the projector to the source (page 20).
Freeze allows you to freeze the displayed image. This is useful if you want to make changes on your computer without your audience seeing them.
Zoom allows you to magnify part of the image. Press **effect**, then press the left mouse button to zoom the image. Use the cursor control to pan the image while it is zoomed. Press the right mouse button to decrease the magnification. Press the **effect** button to cancel zoom and return to normal magnification.
Mask allows you to cover part of the image with a black curtain. Press the up and down arrows to raise or lower the curtain on the image.

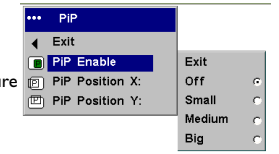


Effect

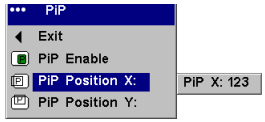
PiP (Picture in Picture) allows you to display a window showing the video source in the larger computer source window if you have both a computer and video source connected. You can't show a computer image in the smaller PIP window, only a video image. You can select a small, medium, or large window. You can also move the PIP window on the screen using the PIP Position X and Y options in the menu. Press the up and down arrows to change the position.



Picture in Picture



PIP size

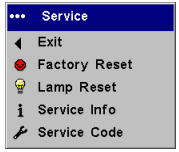


PIP Position

Language: allows you to select a language for the onscreen display.

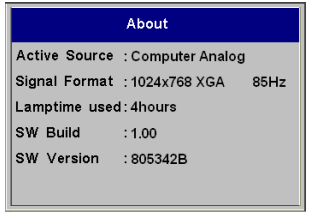
Language

Service:
To use these features, highlight them and press Select.
Factory Reset: restores all settings to their default.
Reset Lamp: resets the lamp hours used counter in the About menu to zero. Do this only after changing the lamp.
Service Info: provides information about the projector's software version and the active source.
Service Code: only used by authorized service personnel.



Service menu

About: provides information about the projector and the active source. Showing the About box is the default action assigned to the **effect** button.

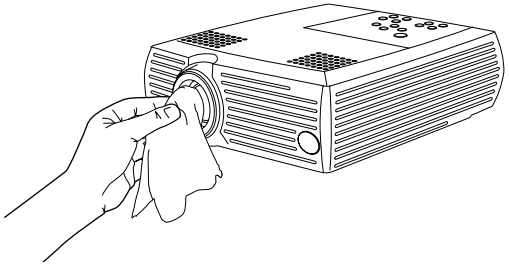


About menu

Maintenance

Cleaning the Lens

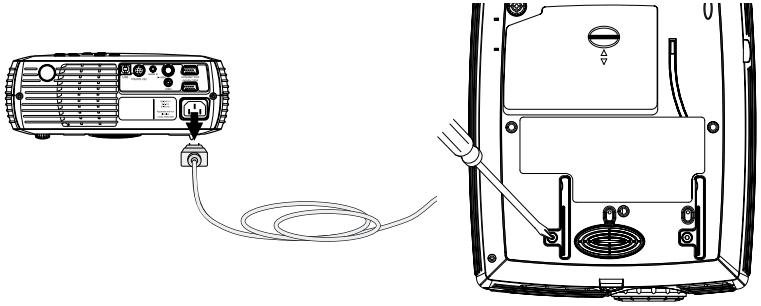
1. Apply a non-abrasive camera lens cleaner to a soft, dry cloth.
   - Avoid using an excessive amount of cleaner, and don't apply the cleaner directly to the lens. Abrasive cleaners, solvents or other harsh chemicals might scratch the lens.
2. Lightly wipe the cleaning cloth over the lens in a circular motion. If you don't intend to use the projector immediately, replace the lens cap.



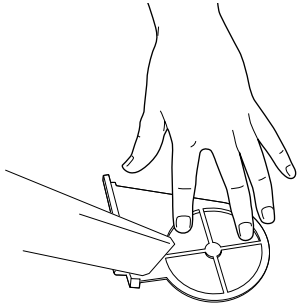
Cleaning the Dust Filter

The dust filter catches dust and other particles in the air. If the filter becomes clogged, the projector does not cool properly and may malfunction.

1. Turn off the projector and unplug the power cord.
2. Turn the projector upside down, loosen the screw on the filter, then gently pry the filter up.

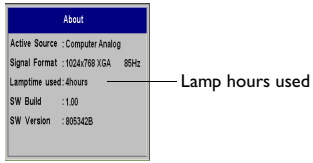


3. Clean the filter using a vacuum cleaner on low power.
4. Replace the filter and tighten the screw.



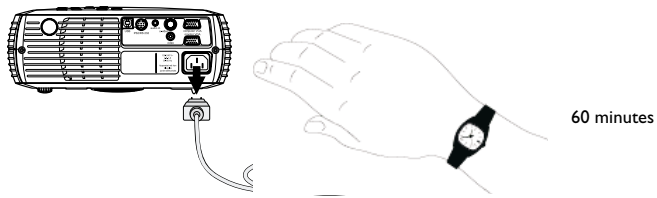
Replacing the Projection Lamp

The lamp hours used timer in the About menu counts the number of hours the lamp has been in use. After 1980 hours, the message "Change lamp" appears on the screen at startup. When the timer reaches 2000 hours, the lamp will no longer light. You can order new lamp housings from BOXLIGHT. See "Accessories" on page 33 for information.



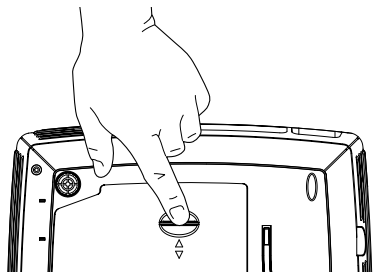
NOTE: Use only a replacement lamp with the same type and rating as the original lamp.

1. Turn off the projector and unplug the power cord.



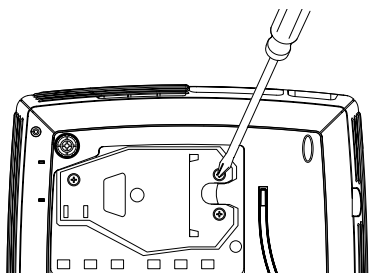
2. Wait 60 minutes to allow the projector to cool thoroughly.

3. Turn the projector upside down and remove the lamp door by pushing the tab forward (toward the lens).

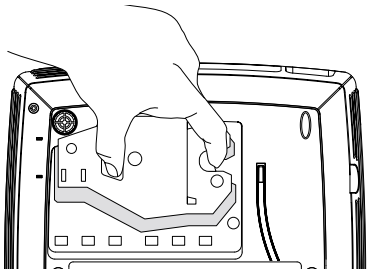


CAUTION: Never operate the projector with the lamp door removed. This disrupts the air flow and causes the projector to overheat.

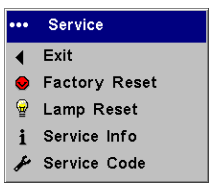
4. Loosen the three captive screws on the lamp housing.



WARNING: To avoid burns, allow the projector to cool for at least 60 minutes before you replace the lamp.
WARNING: Do not drop the lamp module or touch the glass bulb! The glass may shatter and cause injury.
WARNING: Be extremely careful when removing the lamp housing. In the unlikely event that the bulb ruptures, small glass fragments may be generated. The lamp module is designed to contain these fragments, but use caution when removing the lamp module.



5. Carefully remove the lamp housing. Dispose of the lamp in an environmentally proper manner.
6. Install the new lamp housing and tighten the screws.
7. Replace the lamp door.
8. Plug in the power cord, press the **power** button to turn the projector back on.
9. To reset the lamp hour timer, navigate to the Settings>Service menu and select Reset Lamp. See page 29 for details.



Service menu

Cleaning the Lamp Housing Screens

In dirty or dusty environments, the dust filter screens in the lamp housing area in the XP-55m can become clogged, causing high temperatures and premature lamp failure (these screens are not present on the SP-45m). Routine maintenance to remove dust from the screens lowers the lamp operating temperature and prolongs lamp life. To maximize lamp life you may want to clean the screen every 250 hours.

1. Remove the lamp module.
2. Examine the dust filter screens in the lamp housing area. If necessary, use a vacuum cleaner set on low power to clean the screens. Be careful not to disturb any internal components when cleaning the screens.
3. Replace the lamp module and lamp door.

Appendix

Specifications

Temperature Operating	41 to 95° F (5 to 35° C) at sea level 41 to 86° F (5 to 30° C) at 10,000 feet
Non-operating	-4 to 140° F (-20 to 60° C)
Altitude Operating	0 to 10,000 feet (3,048 meters)
Non-operating	0 to 20,000 feet (6,096 meters)
Humidity Operating	20% to 80% relative humidity, non-condensing
Non-operating	10% to 90% relative humidity, non-condensing
Dimensions	12 x 10 x 3.7" (305 x 255 x 95 mm)
Weight	5.7 lbs. (2.6 kg) unpacked
Optics Focus Range	4.9 - 29 feet (1.5 - 8.9 m)
Lamp type	132-watt UHP lamp for SP-45m 150-watt UHP lamp for XP-55m
Input Power Requirements	100-240V 2.5-1 A, 50-60 Hz
Ceiling Mount	UL tested/listed ceiling mount with minimum capacity of 23 lbs (10.4 kg)

Accessories

Standard Accessories (ship with the projector)
Soft Case
Shipping Box (with packaging)
Computer Cable 6 ft (1.8 m)
Audio/Video Cable 6 ft (1.8 m)
Power Cord (country-dependent)
Remote
Projection Lamp Module (included in projector)
Lens Cap
Quick Setup card
User's Guide
Safety card

NOTE: Use only approved accessories.

Optional Accessories
Shipping Case (ATA approved)
Soft Carry Case with Laptop Pocket
VGA Extension Cables
Projector Ceiling Mount
False Ceiling Plate
Mounting Extension Arm
Projector Security Cable
50" Diagonal Screen (portable)
60" Diagonal Screen (portable)
Various Wall/Ceiling Mounted Screens
Portable Projector Stand
Replacement Lamp Module for SP-45m
Replacement Lamp Module for XP-55m
Presentation Remote

Projected image size

Table 2:
Range of distance to the screen for a given screen size for SP-45m

		Distance to screen	
Diagonal Screen Size (inches/m)	**Image Width (inches/m)**	**Maximum distance (feet/m)**	**Minimum Distance (feet/m)**
40/1	32/0.8	5.8/1.8	4.8/1.5
50/1.3	40/1	7.3/2.2	6/1.8
60/1.5	48/1.2	8.8/2.7	7.2/2.2
100/2.5	80/2	14.6/4.5	12/3.7
150/3.8	120/3.1	21.9/6.7	18/5.5
200/5.1	160/4.1	29.2/8.9	24/7.3

Table 3:
Range of distance to the screen for a given screen size for XP-55m

		Distance to screen	
Diagonal Screen Size (inches/m)	**Image Width (inches/m)**	**Maximum distance (feet/m)**	**Minimum Distance (feet/m)**
40/1	32/0.8	5.7/1.7	4.8/1.5
50/1.3	40/1	7.2/2.2	6/1.8
60/1.5	48/1.2	8.7/2.7	7.2/2.2
100/2.5	80/2	14.5/4.4	12.1/3.7
150/3.8	120/3.1	21.8/6.6	18.1/5.5
200/5.1	160/4.1	29/8.8	24.2/7.4

LIMITED WARRANTY

BOXLIGHT ("BOXLIGHT") warrants that each XP-55m and each SP-45m ("the Product") sold hereunder will conform to and function in accordance with the written specifications of BOXLIGHT. Said limited warranty shall apply only to the first person or entity that purchases the Product for personal or business use and not for the purpose of distribution or resale. Said warranty shall continue for a period of two (2) years from the date of such purchase. The standard limited warranty excludes the lamps in projectors after 120 days and the accessories after one year. BOXLIGHT does not warrant that the Product will meet the specific requirements of the first person or entity that purchases the Product for personal or business use. BOXLIGHT's liability for the breach of the foregoing limited warranty is limited to the repair or replacement of the Product or refund of the purchase price of the Product, at BOXLIGHT's sole option. Replacement Product may be re-furbished in "like-new" condition, at BOXLIGHT's sole discretion. To exercise the Purchaser's rights under the foregoing warranty, the Product must be returned at the Purchaser's sole cost and expense, to BOXLIGHT or to any authorized BOXLIGHT service center provided, and the Product must be accompanied by a written letter explaining the problem and which includes (i) proof of date of purchase; (ii) the dealer's name; and (iii) the model and serial number of the Product. When sending your unit in for repair, please ship your unit in its original packing material or a BOXLIGHT approved ATA Shipping Case, or have a professional packaging company pack the unit. Please insure your shipment for its full value**. A return authorization number, issued by the BOXLIGHT customer service department, must also be clearly displayed on the outside of the shipping carton containing the Product.**

WARRANTY LIMITATION AND EXCLUSION

BOXLIGHT shall have no further obligation under the foregoing limited warranty if the Product has been damaged due to abuse, misuse, neglect, accident, unusual physical or electrical stress (unusual physical and electrical stress includes unusually long operation, exposure to smoke and other airborne contaminants), unauthorized modifications, tampering, alterations, or service other than by BOXLIGHT or its authorized agents, causes other than from ordinary use or failure to properly use the Product in the application for which said Product is intended.

DISCLAIMER OF UNSTATED WARRANTIES

THE WARRANTY PRINTED ABOVE IS THE ONLY WARRANTY APPLICABLE TO THIS PURCHASE. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MER-CHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE FACE HEREOF AND THE FOREGOING WARRANTY SHALL NOT BE EXTENDED, ALTERED OR VARIED EXCEPT BY WRITTEN INSTRUMENT SIGNED BY BOXLIGHT. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY MAY LAST, SO SUCH LIMITATIONS MAY NOT APPLY TO YOU.

LIMITATION OF LIABILITY

IT IS UNDERSTOOD AND AGREED THAT BOXLIGHT'S LIABILITY WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, IN NEGLIGENCE OR OTHERWISE SHALL NOT EXCEED THE RETURN OF THE AMOUNT OF THE PURCHASE PRICE PAID BY PURCHASER AND UNDER NO CIRCUMSTANCES SHALL BOXLIGHT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOST PROFITS, LOST REVENUES OR LOST SAVINGS. THE PRICE STATED FOR THE PRODUCT IS A CONSIDERATION IN LIMITING BOXLIGHT'S LIABIL-ITY. NO ACTION, REGARDLESS OF FORM, ARISING OUT OF THE AGREEMENT TO PURCHASE THE PRODUCT MAY BE BROUGHT BY PURCHASER MORE THAN ONE YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAM-AGES SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.