

# Presenter Owner's Guide

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# Introduction

Congratulations on purchasing the Presenter, Silicon Graphics' 1024 x 768 full-color, flat-panel monitor with stereo speakers and overhead projection capability.

This guide assumes that the hardware adapter board for the Presenter is installed in your workstation. If it is not, install it first, following the instructions in the manual that comes with the adapter board.

Chapter 1 explains how to set up the Presenter as a monitor for your workstation and how to use it on the Silicon Graphics® customized Dukane® overhead projector. You can use the Presenter with either the Dukane 28A681 or 28A682 projectors.

Chapter 2 contains troubleshooting and product support information. It also explains how to clean the Presenter, and how to pack it for shipping.

Chapter 3 provides technical specifications and regulatory information.

Appendix A provides technical information on liquid crystal display technology.



## Setting Up and Using the Presenter Monitor

This chapter explains how to set up Presenter as a monitor for your workstation, and how to use it on the customized Dukane overhead projector to project images on a screen.

Before using Presenter, make sure the Presenter adapter board has been installed in your workstation.

**Caution:** Your Presenter monitor is designed to function at maximum performance and reliability with the Dukane Overhead Projector. If you use another projector, cooling of the display, stable mounting, and brightness of the projected image will all be compromised. *A bright overhead projector without proper cooling of the display may cause permanent damage to Presenter.*

### Setting Up the Presenter Monitor

To set up Presenter with the workstation, follow these steps.

1. Unpack the Presenter monitor.

**Note:** Don't be concerned that the name on the Presenter monitor is "Indy Presenter." With the Presenter adapter board installed, the Indy Presenter works on other workstations.

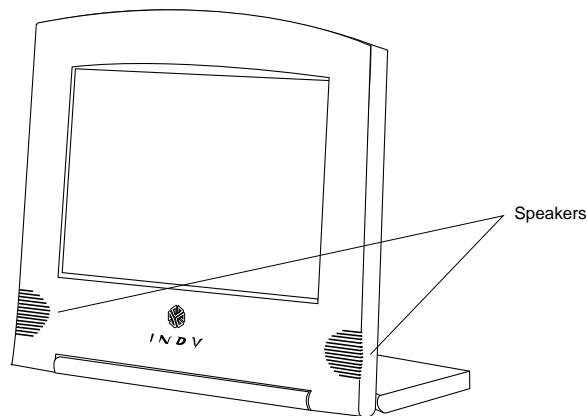
- Lift the Presenter monitor and the external cables from the box. It's a good idea to save the original shipping materials in the event that you need to return it for service.
- Remove Presenter from the plastic bag.

2. Remove the protective film from the screen, being careful not to get fingerprints on the coated-glass surface.

The display is made of glass, coated with optical films and is the most expensive component in the Presenter. A sharp instrument such as a pen can scratch the surface. Striking the surface with a hard object can break the glass.

3. Tilt the base of the Presenter to form a stand, as shown in Figure 1-1, and place it on a flat surface.

**Note:** You can leave your CRT monitor connected to the workstation while using the Presenter.



**Figure 1-1** Front View of the Presenter

You are now ready to connect the Presenter monitor's external cables.

## Connecting the Cables

If the Presenter board is not already installed in your workstation, install it now, referring to the installation manual that comes with it.

To use the Presenter monitor, you must connect two cables:

- the interface cable (the one with identical flat connectors at each end)
- the power cable

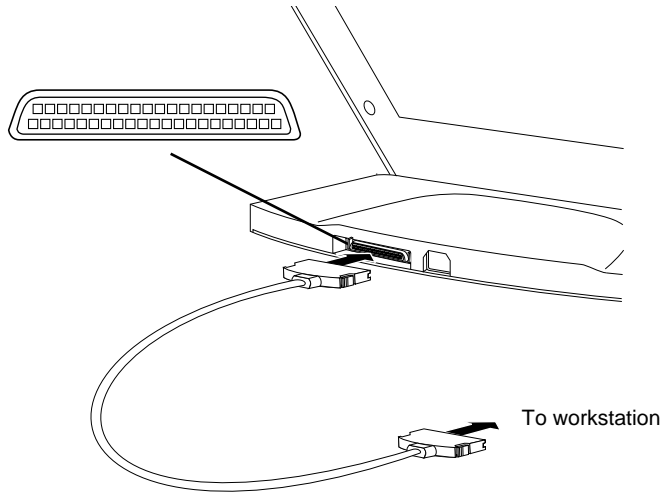
**Note:** You do not need to turn off the workstation before connecting the cables.

Follow these steps to connect the cables.

1. Connect the interface cable to the Presenter. It's important that you connect the interface cable *before* the power cable.

The connectors on the cable and on the Presenter have an elongated "D" shape. Make sure the "D" shapes match each other.

- Connect either end of the interface cable to the connector on base of the Presenter, as shown in Figure 1-2.
- Connect the other end of the interface cable to the Presenter adapter I/O port on your workstation. If necessary, refer to the installation manual that comes with the Presenter board.

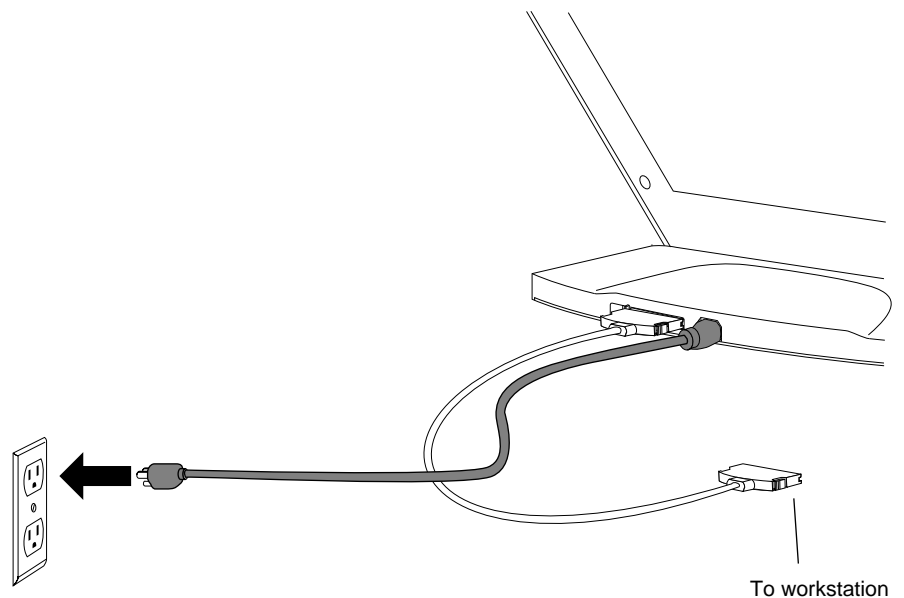


**Figure 1-2** Connecting the Interface Cable to the Presenter



2. Connect the power cable to the Presenter and then to an electrical outlet, as shown in Figure 1-3. (Figure 1-3 shows the power cable for the U.S.A. The power cable for your country may look different.)
  - Connect the socket end to the power connector on the base of the Presenter.
  - Connect the other end to a three-pronged grounded electrical wall outlet or power strip.

**Note:** The power supply for the Presenter is auto-ranging. With the appropriate power cable or adapter for your country, you can plug the Presenter into almost any power source (50-60 Hz, 110/220 VAC).



**Figure 1-3** Connecting the Power Cable

You are now ready to use the Presenter monitor.

## Turning on the Presenter

The Presenter has no power switch. If your workstation and CRT monitor are on when you connect the Presenter, you start the Presenter from the Monitor Control Panel. See “Starting Presenter With the Monitor Control Panel” below.

If your workstation is off when you connect Presenter, turning on the workstation automatically turns on Presenter. The display takes about a minute to warm up, so the image may appear dim at first.

If there is no image on the Presenter, make sure the external cables are connected correctly, as described in “Connecting the Cables” on page 3. Then go to Chapter 2, “Troubleshooting” for help in solving the problem.

**Note:** If you have a high resolution (1280 x1024 pixels) CRT monitor connected to the workstation and you connect the Presenter, the CRT monitor is set to 1024 x 768 pixels. Therefore icons at the extreme edges of your screen may not be visible. To remedy this, move the icons away from the edges of the screen before turning on the Presenter. If you disconnect the Presenter and wish to return your CRT monitor to its default resolution, type the following from a UNIX shell:

```
su  
/etc/killall xsgi
```

If the workstation is on and Presenter is disconnected, see “Restarting the Presenter Monitor” on page 7.

## Starting Presenter With the Monitor Control Panel

If your workstation and CRT monitor were already on when you connected Presenter, follow these steps to start it:

1. On the CRT monitor, open the Monitor Panel in either of the following ways:
  - From the Find menu in the Toolchest, choose “Control Panels,” and double-click the monpanel icon.

- From a UNIX shell, enter:

```
monpanel
```

2. When the Monitor Control Panel appears, click *Turn on Presenter* or *Restart Presenter*.

If you have a root password set, enter it when prompted, and click the *OK* button.

If your CRT monitor is 1024 x 768 pixels, you see a message that turning on the Presenter stops all running applications. Close any applications for which you may lose data.

3. When you are ready for applications to be stopped, click *Continue* to turn on Presenter.

For more information on using the Monitor Control Panel for the Presenter, see the reference page (man page). From a shell window, type:

```
man monpanel
```

## Restarting the Presenter Monitor

If the workstation is on and Presenter is disconnected, you can reconnect it and restart it from the Monitor Control Panel on the CRT monitor. See the steps below. Note that restarting the Presenter resets the backlight and bit mode to their original settings, that is, nearly full backlight and 12-bit mode.

If you have no CRT monitor attached there are two ways you can restart Presenter:

- Reconnect Presenter and restart the workstation.
- If you are on a network, use the Monitor Control Panel to restart the Presenter. From another system on the network, log in to your system remotely, and type **monpanel -restart** at the shell prompt.

Follow these steps to restart Presenter:

1. Open the Monitor Panel in either of the following ways:
  - From the Find menu in the Toolchest, choose “Control Panels” and double-click the **monpanel** icon.

- From a UNIX shell, enter:  
`monpanel`
2. When the Monitor Control Panel appears, click *Restart Presenter*.

## Turning Off the Presenter

The Presenter turns off automatically when you turn off the workstation.

If you have a CRT monitor connected to your workstation, you can disconnect the Presenter's interface and power cables instead of powering off the workstation. To restart the Presenter, connect the interface cable and then the power cable. Then open the Monitor Control Panel on the CRT monitor by choosing "Control Panels" from the Find menu in the Toolchest and double-click the monpanel icon. Then click *Restart Presenter*.

**Note:** It's important when you reconnect the Presenter's cables that you connect the interface cable first and then the power cable. Connecting them in the reverse order results in a distorted image.

If no CRT monitor is connected to the workstation, you can disconnect the Presenter's interface and power cables instead of powering off the workstation. To restart the Presenter, reboot your workstation after connecting the interface cable and the power cable.

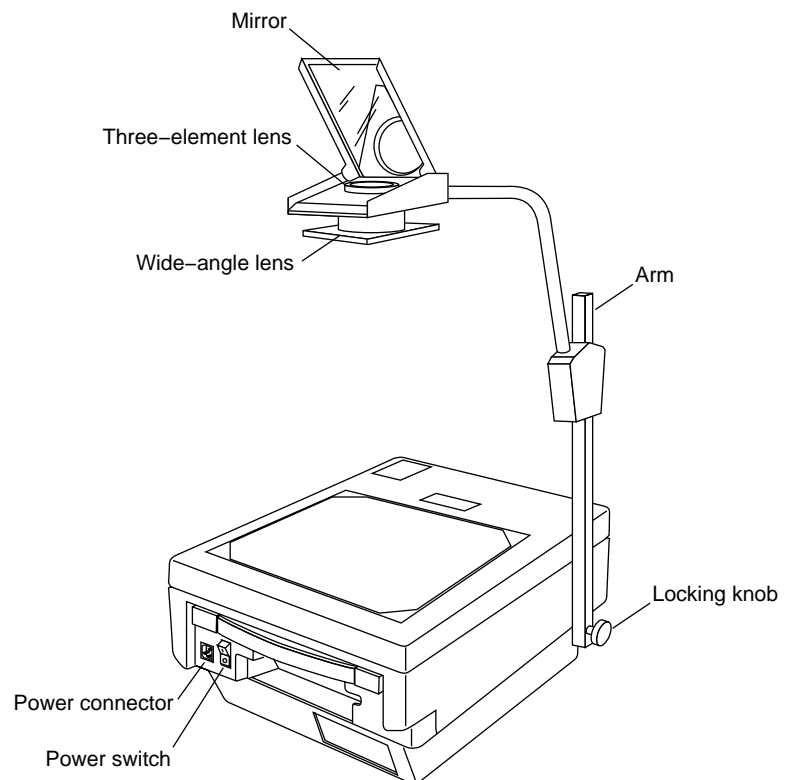
If you are not planning to use the Presenter for a few hours, it's a good idea to disconnect it. Leaving the display on for long periods of time shortens the life of the display's backlight.

## Setting Up the Presenter on the Dukane Customized Projector

**Caution:** The Presenter is designed to function at maximum performance and reliability with the Dukane Overhead Projector. If you use it with another projector, cooling of the display, stable mounting, and brightness of the projected image will all be compromised. *A bright overhead projector without proper cooling of the display may cause permanent damage to the Presenter.*

Follow these steps to set up the Presenter with the Silicon Graphics customized Dukane Overhead Projector. You can use the Presenter with either the Dukane 28A681 or 28A682 projector. However the audio capability on the Dukane 28A682 is not supported on the Presenter.

1. Remove the overhead projector from its carrying case.
2. Raise the arm to its upright position, using the illustration on the overhead projector as a guide.
3. Lock the arm in place with the locking knob. See Figure 1-4.
4. Rotate the lens mechanism and raise the mirror, as shown in Figure 1-4.



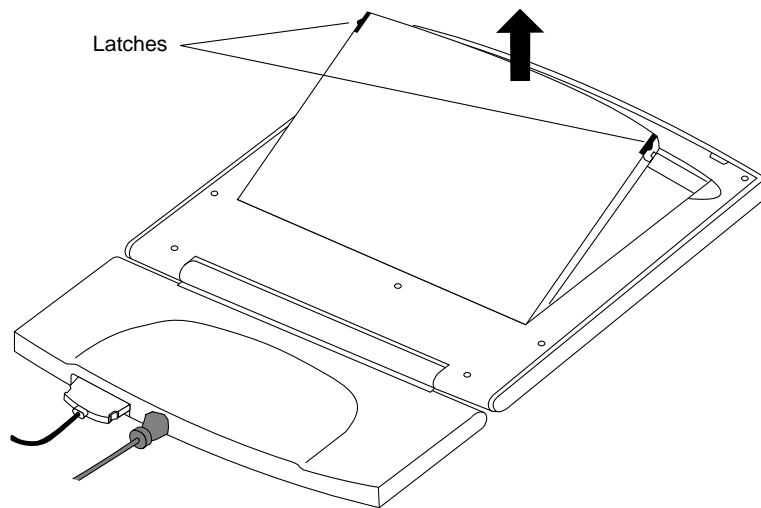
**Figure 1-4** Setting Up the Dukane Overhead Projector.

5. Turn on the overhead projector. Note that it takes about a minute to warm up. An initial bright flash followed by a dark interval before the brightness increases is normal.
6. Choose the projector lens appropriate for your task.
  - If you are projecting over a distance of more than 6 feet, you probably won't want to use the projector's wide-angle lens with Presenter. Rotate the wide-angle lens away from the standard lens.
  - If you are projecting a larger image from a short distance, use the wide-angle lens.
7. If the power cable and interface cable are not already attached to Presenter 1280 and to your workstation, connect them now. (See "Connecting the Cables" on page 3 if necessary.)
8. If Presenter is not already on, turn it on or restart it in either of the following ways:
  - If you have a CRT monitor attached, open the Monitor Control Panel. From the Find menu in the Toolchest, choose "Control Panels" and double-click the monpanel icon. Click *Turn On* or *Restart*.
  - Or press and release the power button on the front of the workstation to turn on the Presenter and the workstation.

9. Remove the backlight panel from Presenter.

- Place it face down on a flat surface.
- Press in the latches on either side of the panel and tilt it up and remove it. See Figure 1-5. This automatically turns off the Presenter's backlight.

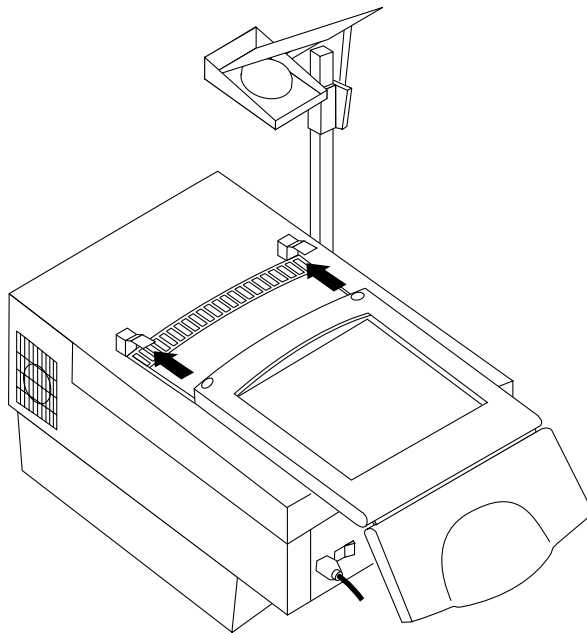
**Caution:** Do not place Presenter with the backlight panel attached on an overhead projector that is turned on. This causes overheating, and will damage Presenter.



**Figure 1-5** Removing the Backlight Panel

10. Carefully place the backlight panel on a surface where it will not get damaged or scratched. Scratches will not affect performance, but if they are large enough, you will see them through the display. Do not touch the coated-glass surface of the display with your hands or with any instrument. Even a pen tip can scratch the surface.

11. Place the Presenter *face down* on the surface of the overhead projector so that only the back of the Presenter is visible, and slide it under the two clips on the projector to secure it. See Figure 1-6. *Make sure the backlight panel has been removed first.*
  - Slide the Presenter under the two clips on the projector.
  - Rotate the base of the Presenter down so it is out of your way.



**Figure 1-6** Placing the Presenter on the Overhead Projector

12. Open the file for the image on the Presenter that you wish to project.

If the image does not project properly, check that the Presenter is face down on the projector's surface, and that the backlight panel has been removed. For additional help, go to Chapter 2, "Troubleshooting."

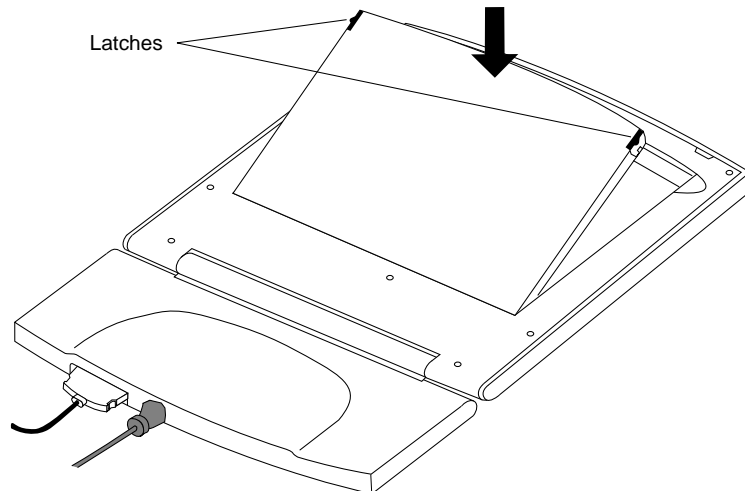
If you think the problem might be with the Dukane overhead projector, refer to its manual.
13. When you are finished with your presentation, turn off the overhead projector, and replace the backlight panel, as shown in Figure 1-7.



**Caution:** Make sure you turn the projector off before replacing the backlight panel. Having both light sources on at the same time can permanently damage the display.

- Tilt the backlight panel and insert the lower edge into the slots on the Presenter.
- Lower the panel over the Presenter, aligning the two catches.
- Press down lightly until you hear a click as the catches engage.

It takes a few minutes for the backlight to reach full brightness again.



**Figure 1-7** Replacing the Backlight Panel

14. Rotate the base up and slide Presenter out from under the two projector clips.

Presenter is now ready to be used as a desktop monitor.

## Adjusting the Brightness

You can control the brightness on Presenter with the Monitor Control Panel. Follow these steps:

1. Open the Monitor Panel in either of the following ways:
  - From the Find menu in the Toolchest, choose “Control Panels” and double-click the monpanel icon.
  - From a UNIX shell, enter:  
`monpanel`
2. To adjust the brightness of the display, move the slider.

**Note:** For more information on using the Monitor Control Panel for the Presenter, see the reference page (man page). From a shell window, enter:

```
man monpanel
```

## Switching to 15-Bit Color Mode

The default color mode on the Presenter is 12-bit. In this mode, some smooth shaded images appear banded. If you wish to decrease this banding, you can do so by switching to 15-bit mode. In that mode, however, some colors flicker. So you may want to switch back and forth, depending on the types of images you are viewing.

To switch between 12-bit and 15-bit mode, use the Monitor Control Panel. Follow these steps:

1. Open the Monitor Panel in either of the following ways:
  - From the Find menu in the Toolchest, choose “Control Panels” and double-click the monpanel icon.
  - From a UNIX shell, enter:  
`monpanel`
2. Click *15-bit mode*.

**Note:** The resolution of 1024 x 768 pixels is fixed and cannot be changed. Only the color resolution can be changed.

## Adjusting the Volume and Tone of the Speakers

The Presenter stereo speakers are designed to work with the standard speaker on your workstation. You adjust the volume and tone of the Presenter speakers through the Audio Panel and the Presenter Audio Panel under the Options menu of the Audio Panel.

Follow these steps to adjust the volume and tone:

1. Open the Audio Panel in either of the following ways:
  - From the Desktop menu in the Toolchest, choose “Audio Control.”
  - From a UNIX shell, enter:  
`apanel`
2. From the Options menu on the Audio Panel, choose “Presenter Audio.”
3. Adjust the tone and volume by using the Speaker controls on the Presenter Audio panel.

While the Presenter Audio panel is open, you can use the workstation’s front panel volume controls. Or you can adjust the volume of the Presenter speakers independently of the workstation speakers by selecting “Output Sliders Independent” from the Audio Panel Options menu.

4. To mute the Presenter speakers, click the *Mute* button on the Presenter Audio Panel.

For further information on the Audio Panel:

- Select “On-line Books” from the Help menu in the Toolchest. Choose *Media Tools User’s Guide* and search for “Audio Panel.”
- From a shell window, enter:

```
man apanel
```

to see the reference page (man page).

## Using Headphones

If you use headphones, you probably want to mute the Presenter stereo speakers temporarily. Follow these steps to do this:

1. Open the Audio Panel in either of the following ways:
  - From the Desktop menu in the Toolchest, choose “Audio Control.”
  - From a UNIX shell, enter:  
`apanel`
2. Select “Presenter Audio” from the Options menu.
3. Click *Mute* on the Presenter Audio panel to mute the Presenter speakers.

**Tip:** Note that clicking the Mute button on the main Audio Panel mutes only the workstation speakers, and not the Presenter speakers.

## Using a Screen Saver

Do not disable your workstation’s screen saver program when using the Presenter. As with any CRT monitor, leaving an image up without a screen saver for a long time may burn the image into the display.

If you are not planning to use the Presenter monitor for a few hours, it’s a good idea to disconnect it. Leaving the display on for a long time shortens the life of the display’s backlight lamps.

## Troubleshooting

This chapter contains information on solving problems that you may encounter when using Presenter.

If you think there may be a problem with your Presenter, read the following sections to help isolate and solve it. If the problem persists after following these suggestions, call your service provider.

### Problems with the Presenter Monitor

The suggestions in the following sections will help you isolate the problem.

#### No Image

1. Check that the power cable is connected securely to the Presenter and to a working wall outlet or power strip.
2. Check that the interface cable is connected securely to the Presenter and to the correct connector on the rear of the workstation. (See “Connecting the Cables” on page 3.)
3. Make sure that the workstation is turned on. There is no On/Off switch on the Presenter. If the cables are connected correctly, the Presenter turns on automatically when you turn on the workstation. The Presenter takes about a minute to warm up to full brightness.
4. If you recently installed the Presenter board in your workstation, the board may not be installed correctly, or it may be installed in the wrong slot. Follow the instructions in the installation manual that came with the board to make sure the hardware is installed correctly.

5. If Presenter was not connected to the workstation via the interface cable when the workstation was turned on, connect the interface cable. Connect Presenter's power cable to a working wall outlet. Then, if you have a CRT monitor connected, use the Monitor Control Panel to restart the Presenter:
  - From the Find menu in the Toolchest, choose "Control Panels."
  - Double-click the monpanel icon.If you have no CRT attached, restart the workstation. Or if you are on a network, log in to your system remotely, and type `monpanel -restart` at the shell prompt.
6. If you are using Presenter as a desktop monitor, (that is, you are not using it on an overhead projector), check that the backlight panel is fully seated. Full contact is required to turn on the backlight.
7. Try restarting the workstation.

### **Image Is Too Light or Too Dark**

1. Flat panel displays take about a minute to warm up after being turned on. Until the Presenter has warmed up, the image may appear faded or dim.
2. Flat panel displays look different when viewed from different angles. If you view from above, the display appears dark. If you view from below, the display appears light.

The display is best viewed from slightly above straight on. Tilt the display base forward or back to find the best view.

### **Image Is Distorted**

When you connect the Presenter, if the image is distorted it may be because you connected the power cable before the interface cable. Remove the cables from the Presenter. Connect the interface cable first and then the power cable. Then reboot your workstation.

### **Backlight Stays on When Back Panel is Removed**

Occasionally, after you remove the backlight panel on the Presenter, the backlight stays on, and the image is reversed.

There is a magnetic reed switch located on the back side of the Presenter in the middle of the backlight slot. If this switch is stuck, tap it lightly to break it free.

### **Screen is White**

If the screen is white, the Presenter hardware needs to be reset. To do this, unplug the power cord from the Presenter while the workstation is on, and then plug it back in. If there is a CRT monitor connected to your workstation, restart the Presenter from the Monitor Control Panel. (See "Restarting the Presenter Monitor" on page 7.) Or if you are on a network, log in to your system remotely, and type `monpanel -restart` at the shell prompt.

### **Vertical Streaks Above or Below Edges of Windows**

If you have several windows open on the screen and you are using the Presenter as a desktop monitor, you may see faint vertical streaks above or below the left or right edges of a window. Or you may see a light band across the bottom edge of the screen below a window.

This is caused by crosstalk between transistors in the panel, and is normal in liquid crystal display technology. The faint streaks do not detract from the functionality of the display. You can minimize them by rearranging the windows, choosing a different background, or adjusting the brightness of the display to about 90% of maximum through the Monitor Control Panel.

If the streaks become so bright as to detract when using the Presenter on an overhead projector, contact your service provider about a solution to the problem.

### Icons at the Edges of the Screen Not Visible

When you switch from a high resolution (1280 x 1024 pixels) CRT monitor to the Presenter, icons that were on the upper and right edges of the screen may disappear. This is because the CRT monitor changes to 1024 x 768 pixels. There are two ways to fix this:

1. Move the icons away from the edges of the screen on your CRT monitor *before* connecting the Presenter.
2. Or unplug the Presenter power cable, and from a shell window on your CRT monitor, type the following:

```
su  
/etc/killall xsgi
```

This returns the CRT monitor to 1280 x 1024 pixels. Then move the icons away from the edges of the screen. Reconnect the Presenter's power cable, and restart the Presenter from the Monitor Control Panel. (See "Restarting the Presenter Monitor" on page 7.)

### No Sound From the Stereo Speakers

1. If the Presenter board kit for your workstation included a short, black, audio cable, check that the small, black audio cable is installed correctly. If necessary, see the manual that comes with the Presenter board for your workstation.
2. The stereo speakers may have been muted in order to use headphones. To turn on the speakers, choose "Control Panels" from the Find menu in the Toolchest and double-click the apanel icon. Select "Presenter Audio" from the Options menu. If the *Mute* button on the Presenter Audio panel is activated, click on it to turn on the speakers.



## Problems with the Dukane Overhead Projector

The suggestions in the following section will help you isolate the problem. For more information on the Dukane projector, see the manual that comes with it.

### No Image on the Overhead Projector or Image Is Reversed

1. Check that the overhead projector is turned on and glowing brightly. The overhead projector takes about a minute to warm up. (Refer to the manual that comes with the projector.)
2. Check that the Presenter is placed face down on the overhead projector.
3. Make sure that the Presenter's backlight panel has been removed.
4. The bulb in the Dukane overhead projector may be burned out. The bulb is a long-life bulb, but usually needs replacing after 750 hours of use.

**Caution:** Do not replace the bulb yourself.

To have the bulb replaced at a Dukane service center near you, call Dukane toll-free at the number listed under "Product Support: Dukane Overhead Projector" on page 22.

If you are instructed to return the projector, pack the projector in its carrying case. Then place the carrying case in the original shipping carton, and ship it as instructed by your Dukane service center.

## Diagnostics Tests for the Presenter

If, after following the suggestions in this chapter, you still believe there is a problem with the Presenter, run the Confidence Test from your CRT monitor. Follow these steps:

1. From the System toolchest, choose "Run Confidence Tests."  
You see the Confidence Tests form.
2. Select the *Presenter* icon and click *Open*, or double-click the icon.
3. Follow the instructions on each screen to test the display, speakers, and Presenter board.
4. To close the Confidence Test, press <Esc>.

If any of the tests indicate a failure, contact your service provider for further instructions.

## Product Support: Presenter

Silicon Graphics provides a comprehensive product support and maintenance program for its products. If you are in North America and would like support for your Silicon Graphics-supported products, contact the Technical Assistance Center toll-free at 1-800-800-4SGI, or your authorized service provider. If you are outside North America, contact the Silicon Graphics subsidiary or authorized distributor in your country.

## Product Support: Dukane Overhead Projector

For the Dukane service center near you, call Dukane toll-free at 1-800-676-2487 or 1-708-584-2300 extension 356 in the United States. Or send a fax to Dukane at 1-708-584-0984 in the United States. For Dukane international service, call 352-66-17-82 in Luxembourg, or send a fax to 352-67-64-60. The Dukane representatives will instruct you where to return the projector.

Dukane service centers are listed in the manual that comes with the overhead projector.

## Returning the Presenter to Silicon Graphics

If diagnostic tests identify a problem with the Presenter, and your service provider instructs you to return it, follow these instructions.

1. Disconnect the Presenter's power cable and interface cable from the workstation.
2. Complete the Part Request Form from the last page of this manual.
3. Pack the Presenter and the completed Part Request Form in the original shipping carton.
4. Ship the carton to your service provider.



## Maintenance, Technical Specifications and Regulatory Information

This chapter provides information on taking care of your Presenter monitor, technical specifications, and regulatory information.

### Cleaning and General Care of the Presenter Monitor

Handle your Presenter monitor with care. A sharp instrument such as a pen can scratch the display's surface. Do not place objects on top of the glass surface.

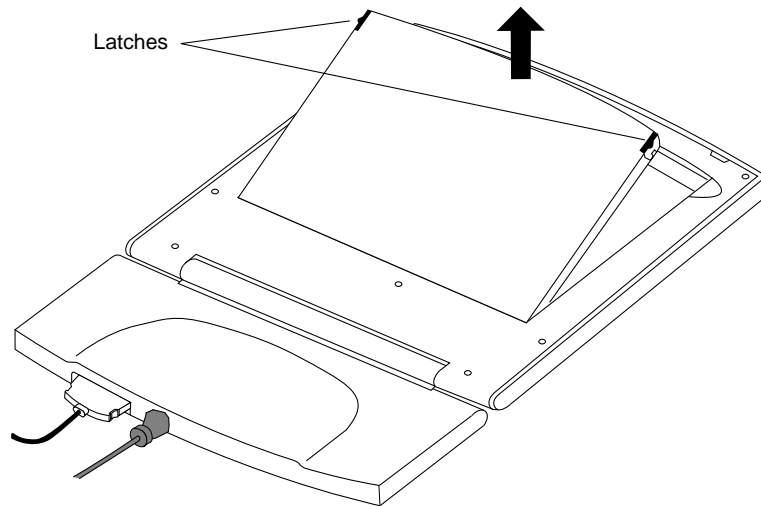
From time to time dust builds up on the surface of the display, and you need to clean it to get the best possible image. Follow the steps in this section to clean the display, using the cleaning kit provided with Presenter.

**Caution:** It's important that you use only the contents of the Cleaner Kit provided in this package to clean the display. Using other substances, abrasive cleaners, or cleaning pads to clean the unit will scratch or damage the display's surface.

There is no need to turn off Presenter or remove the external cables before cleaning, as long as you spray the cloth and not directly on Presenter's surface.

1. Spray the cleaning liquid lightly on the cloth provided in the Cleaner Kit. Do not spray directly on the coated-glass surface, as the liquid may drip inside the unit and damage the components.
2. Wipe the front coated-glass surface of display gently with the cloth.

3. Remove the backlight panel, if it's not already removed.
  - Place Presenter face down on a flat surface.
  - Press in the latches on either side of the backlight panel, and lift it up, as shown in Figure 3-1.



**Figure 3-1** Removing the BackLight Panel

4. Use the cloth to wipe the back coated-glass surface gently.
5. Replace the backlight panel.
  - Tilt the panel and insert the lower edge into the slots on the Presenter.
  - Lower the panel over the Presenter, aligning the two catches.

Press down lightly until you hear a click as the catches engage.

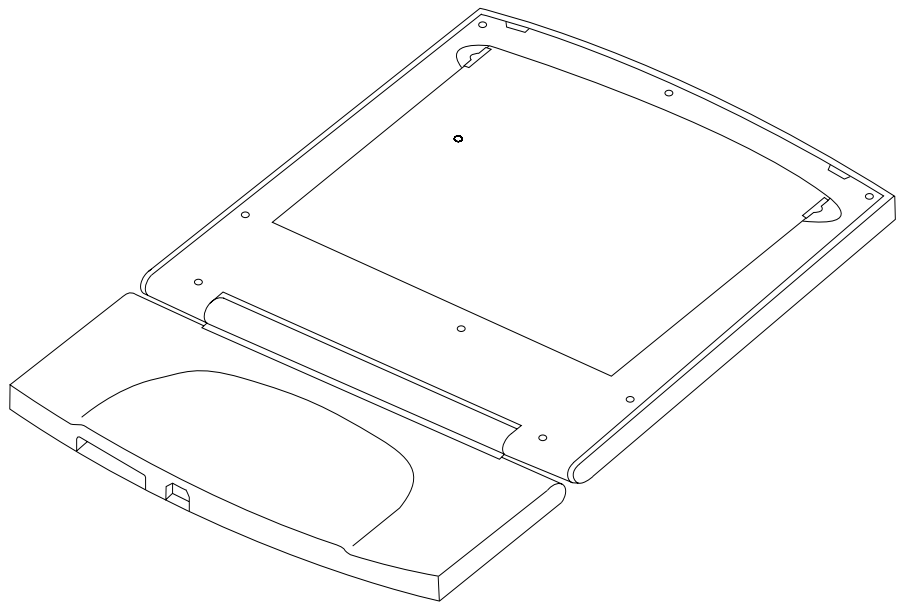
## Transporting the Presenter

For some workstations, Silicon Graphics offers a carrying case in which you can pack the Presenter. These carrying cases are soft-sided and *should not* be used to ship the Presenter, or to be checked in as baggage on an airline. The display is made of glass and may break if checked in as baggage.

See your service provider for information on the correct case. Do not use the carrying case if you have to return the Presenter to Silicon Graphics. Use the original cardboard container. See "Returning the Presenter to Silicon Graphics" on page 23.

To pack Presenter in the carrying case, follow these steps:

1. Disconnect the power cable from Presenter and from the wall outlet.
2. Disconnect the interface cable from Presenter and from the workstation.
3. Rotate the base so it is flush with the monitor, as shown in Figure 3-2.



**Figure 3-2** Rotating the Base for Packing the Presenter

## **Transporting the Dukane Overhead Projector**

Although the overhead projector's carrying case is designed to withstand normal shock and handling, if it is mishandled by the airlines, the projector may get damaged. To take the Dukane Overhead Projector with you when you travel, Silicon Graphics recommends that you place it in its carrying case, and pack the carrying case in the original shipping carton with the packing materials. Then check it in as baggage or ship it. Using the carrying case alone may result in damage.



## Technical Specifications

The table below lists the technical specifications for the Presenter liquid crystal display.

**Table 3-1** Technical Specifications for the Presenter

<b>Electro-Optical</b>	Pixel resolution	1024 H (x3 RGB stripe) x 768 V
	Color resolution	12-bit and 15-bit (12-bit True + 3-bit Frame Rate Modulation)
	Color gamut	Red: $x = 0.61, y = 0.36$ ; Green: $x = 0.27, y = 0.62$ ; Blue: $x = 0.13, y = 0.11$
	Contrast ratio	100:1 minimum
	Brightness	80 Cd/m <sup>2</sup> minimum
	Response time	≤50 ms maximum, rise + fall
	Viewing angle	Horizontal: ±45°; Vertical: +30°/-10° (optimized for 12:00)
	Display surface	Front: Anti-glare 3H hardcoat Rear: Clear 3H hardcoat
<b>Video</b>	Interface to workstation	Adapter board connects to the video connectors on the graphics board, generating 24-bit high-resolution digital video to drive the flat panel display.
<b>Audio</b>	Interface to workstation	Analog stereo
	Output	Stereo, .6 W per channel, 150 Hz to 18 KHz (used with workstation speaker)
	Control	I <sup>2</sup> C interface (Phillips bus structure) to control speaker volume, backlight brightness, tone, and stereo balance

**Table 3-1 (continued)** Technical Specifications for the Presenter

<b>Audio</b>	Master volume control	Audio control buttons on workstation control volume of Presenter speakers
<b>Power Requirements</b>	Power	30 watts AC plus 10 watts @ 5 VDC for Presenter adapter board
	Source	110/220 VAC 50-60 Hz
<b>Cabling</b>	Display	10-foot, shielded, 34 twisted-pair conductors; internal connector at display end with separate audio plug at system end
	Audio	Separate audio patch cord at system end
	Power	IEC socket with removable 10-foot cable to wall outlet
<b>Physical Characteristics</b>	Size	Display: 12 3/4"H x 12 1/2"W x 7/8"D. Base: 6 1/2H" x 12 1/2"W x 1 1/8"D. Total length folded flat: 18 1/2"
	Weight	7 lbs
	Color	Gray granite
	Hinge	Friction/clutch with 210° rotation
	Backlight	Removable light pipe assembly for use with Dukane Overhead Projector
	Desktop use	Integral base supports desktop use at 0° to -30° tilt
<b>Operating Conditions</b>	Temperature	+13°C to +35°C in direct view and overhead projector modes
	Relative humidity	10% to 80% RH, no condensation
<b>Non-Operating Conditions</b>	Temperature	-20°C to +60°C

**Table 3-1 (continued)** Technical Specifications for the Presenter

<b>Non-Operating Conditions</b>	Relative humidity	5% to 90% RH, no condensation
	Vibration	0.02", 5-19 Hz 35 G, 5-500 Hz
	Shock	20G, 11 ms, half sine wave direction: X, Y, Z

## Manufacturer's Regulatory Declarations

A "Manufacturer's Declaration of Conformity" is available on the World Wide Web. Look on the system (regulatory) label on the rear of your workstation to determine your CMN (model) number which you will need to identify your Declaration of Conformity.

To locate the information on the World Wide Web, enter the following in your Web browser location window:

<http://www.sgi.com/Products/compliance/index.html>

Locate and print or save your Declaration of Conformity. Make a note of your CMN number and the date on the Declaration of Conformity here for future reference.

---

## Regulatory Label

If you received a regulatory label with a graphics board upgrade, place the label below the logos and over the lower portion of the regulatory label on the rear of your workstation.

## Electromagnetic Emissions

This device complies with the Class A limits of Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

This device complies with Class A electromagnetic emissions limits of C.I.S.P.R. Publication 22, Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment, Germany's BZT Class A limits for Information Technology Equipment, and with Japan's VCCI Class 1 limits.

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取扱説明書に従って正しい取り扱いをして下さい。

**Figure 3-3** Japanese VCCI Class 1 Statement

## Radio and Television Interference

The equipment described in this guide generates and uses radio frequency energy. If it is not installed and used in accordance with the instructions in this guide, it can cause radio and television interference.

This equipment has been tested and complies with the limits for a Class A computing device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in an industrial or office installation. However, there is no guarantee that the interference will not occur in a particular installation. This system is not certified for home use.

You can determine whether your system is causing interference by turning it off. If the interference stops, it was probably caused by the workstation or one of the peripherals. To tell if the interference is caused by one of the peripherals, try disconnecting one peripheral at a time to see if the interference stops. If it does, that peripheral is the cause of the interference.

If your workstation does cause interference to radio or television reception, try to correct the interference by using one or more of the following suggestions:

- Turn the television or radio antenna until the interference stops.
- Move the workstation to one side or the other of the radio or television.
- Move the workstation farther away from the radio or television.
- Plug the workstation into an outlet that is on a different circuit from the radio or television. (That is, make certain the workstation and the radio or television are on circuits controlled by different circuit breakers or fuses.)

## Electrostatic Discharge

Silicon Graphics designs and tests its products to be immune to effects of electrostatic discharge (ESD). ESD is a source of electromagnetic interference and can cause problems ranging from data errors and lockups to permanent component damage.

It is important that while you are operating your workstation you keep all the covers and doors, including the plastics, in place. The shielded cables that came with the system and its peripherals should be installed correctly, with all thumbscrews fastened securely.

An ESD wrist strap is included with some products, such as memory and graphics upgrades. The wrist strap is used when installing these upgrades to prevent the flow of static electricity, and it should protect your system from ESD damage.

### **Shielded Cables**

The workstation is FCC-compliant under test conditions that include the use of shielded cables between the workstation and its peripherals. Your workstation and any peripherals you purchase from Silicon Graphics have shielded cables. Shielded cables reduce the possibility of interference with radio, television, and other devices. If you use any cables that are not from Silicon Graphics, make sure they are shielded. Telephone cables do not need to be shielded.

The monitor cable supplied with your system uses additional filtering molded into the cable jacket to reduce radio frequency interference. Always use the cable supplied with your system. If your monitor cable becomes damaged, a replacement cable should be obtained from Silicon Graphics.

### **Product Safety**

**Caution:** The power cord is used as a disconnect device. The socket outlet must be installed near the equipment and must be easily accessible.

**Achtung:** Die Netzzuleitung dient als Trennvorrichtung. Die Steckdose sollte sich nahe am Gerät befinden und leicht zugänglich sein.

## Liquid Crystal Display (LCD) Technology

This section contains technical information on liquid crystal display technology.

### Display

The key component in the Indy Presenter is the active matrix display module. It is composed of twisted nematic liquid crystal material, sandwiched between two sheets of glass, activated by electronic switches deposited on the inner surface of the glass. The electronic switches vary the voltage applied to the liquid crystal and thus change its transparency.

Vertical stripes of alternating red (R), green (G), and blue (B) colored filters made of organic dyes are located on the front glass plate, under a transparent indium tin oxide electrode. The intersection of each of these colored stripes with an active electronic element forms a subpixel of that color.

The electronic switches on the back glass are known as thin film transistors (TFTs) and are addressed in an x-y matrix from integrated circuit drivers. These drivers, bonded to flexible circuits by tape automated bonding (TAB) techniques, are located around the display edges in the plane of the glass package. Conductive thermoplastic adhesive strips connect the TAB tapes and the electrodes on the TFT glass panel. The assembly is held together by a stamped metal bezel.

A backlight assembly behind the display glass consists of an acrylic light pipe, plastic diffuser, and cold cathode fluorescent (CCF) tubes. Four tubes, two at the top and two along the bottom, produce a bright image with high color saturation.

In Silicon Graphics, Inc.'s implementation, the acrylic light pipe is attached to a rear door that is removable by the user, so the display can be used with

an overhead projector. When the door is removed, a switch opens that disables the CCF tubes and reverses the data stream to the display, causing the image to be flipped right to left. The display can therefore be placed face down, instead of back down, on the projector stage. This is important because it places the color filter layer between the powerful projector beam and the somewhat light-sensitive TFT plate.

In operation, the TFT devices activate subpixel elements in the display by causing a voltage potential across selected portions of the liquid crystal material. These elements are used as variable shutters to control the intensity of white light coming from the CCF panel and reaching the red, green, or blue filters. Combinations of these subpixel elements produce a full pixel (RGB triad) of the proper hue, saturation, and brightness much like a cathode ray tube (CRT).

### **Differences Between LCD and CRT Technology**

If you are accustomed to using a CRT monitor, you will notice that the Presenter's flat panel display is remarkably different.

One of the most noticeable differences is the crispness of text. A CRT pixel is formed by a beam of electrons that scans across the screen. Thus pixels "bloom" at the fuzzy edge of the electron beam and smear into each other as the beam moves. The Presenter's pixels are formed by a combination of light valve and color filter that produces an extremely crisp edge for each subpixel. You can actually see these red, green and blue subpixels when using the Presenter in Overhead Projector mode if you stand very close to the projector screen.

Another difference is the lack of distortion in the image displayed by the Presenter. There are two reasons a CRT cannot achieve this: the physics of creating glass tubes makes it almost impossible to make them flat, and the magnetics of controlling an electron beam makes it almost impossible to get straight lines everywhere on the CRT.

A third difference is the lack of flicker on the Presenter's flat panel. CRTs flicker because the electron beam can only be in one place at a time. Thus each pixel on a CRT is being driven only about a millionth of the time. The phosphor has a "persistence" that causes it to emit light over a little longer period, but it still flickers. In the Presenter's flat panel, all pixels are being



driven all the time. Thus the pixels that are not changing in value look perfectly stable.

A fourth difference, which actually works in the CRT's favor, is the electrical phenomenon of crosstalk between the pixels on a flat panel. In a flat panel, whole columns of pixels are powered from the same electronic source. That source bus is a very thin line that hides in the space between the pixels. The result is that with some displayed images, the pixels above or below the image do not receive enough electrons and thus appear lighter than they should. In the worst case, you may see faint vertical streaks on the display. You will probably see them only if you have a solid background and are using the Presenter as a desktop monitor. The streaks are normal in LCD technology. If they become so bright as to always detract from the display's performance, however, contact your service provider about a solution to the problem.

## Quality

The resolution of the Indy Presenter is 1024 x 768 pixels. Therefore your display has 1024 x RGB x 768, or 2,259,296, subpixels — all in an area equivalent to 2.5 times that of a 6-inch silicon wafer. Current technology is not capable of producing a 100% defect-free active matrix display at reasonable costs, although yields are improving steadily. Your Presenter may exhibit a small number of isolated subpixel dropouts, which have been individually screened to make certain they are in unobtrusive locations.

## Backlight Brightness

The output of a fluorescent lamp strongly depends on the minimum bulb wall temperature, because this temperature determines the mercury vapor pressure inside the lamp. The colder the temperature, the more mercury condenses on the inside of the bulb, resulting in decreased light output. At 25°C, the light output is at approximately 80% of its optimum temperature, but at 10°C, the light output could easily degrade to 30% of its maximum. Therefore it takes about one minute for the lamps to warm up to full brightness from a cold start.



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# Part Request Form

RMA#
Closed _/_/_/

Company Name
Street Address
City/State/Zip Code
Contact
Phone
Fax
Purchase Order Number

Call ID #	Model Type	Warranty Y N	System Serial # (as found on back panel)
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## System Configuration Information:

System S/W Version _____	Type of failure: <input type="checkbox"/> Solid <input type="checkbox"/> Intermittent	Peripherals: <input type="checkbox"/> DAT <input type="checkbox"/> CD-ROM <input type="checkbox"/> Floptical <input type="checkbox"/> Other_____	Voltage: <input type="checkbox"/> 110 <input type="checkbox"/> 220	Disk (MB/GB) _____	Memory (MB): _____
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Problem description (please describe symptoms, error messages and actions taken):

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Date \_\_\_\_\_

## Failed part information:

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