

# Silicon Graphics® MultiLink Owner's Guide

Document Number 007-4113-001

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## Record of Revision

<b>Version</b>	<b>Description</b>
001	May 2000 Intial Rev



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## About This Guide

The Silicon Graphics MultiLink lets you to use the Silicon Graphics 1600SW flat panel display with any video adapter card that provides:

- Digital Video Interface (DVI)
- Digital Flat Panel (DFP) interface
- HD15 (VGA) analog interface
- Industry-standard timing modes

The Silicon Graphics MultiLink also provides hardware control over various display settings such as brightness, image size, and display modes.



This guide contains the following chapters:

- Chapter 1, "Setting Up the Silicon Graphics MultiLink," explains how to connect the product to your computer.

- Chapter 2, “Using the Silicon Graphics MultiLink,” describes how to use the buttons on the top of the MultiLink with the on-screen display to change various display settings.
- Chapter 3, “Troubleshooting,” provides steps to diagnose problems and correct them.
- Appendix A, “Specifications and Statements of Compliance,” contains technical specifications for the Silicon Graphics MultiLink as well as regulatory and compliance information.

## Related Publication

The following documentation contains additional information that may be helpful:

- *Silicon Graphics 1600SW Owner's Guide*
- Your video card's documentation

## Obtaining Publications

To obtain SGI documentation, go to the SGI Technical Publications Library at <http://techpubs.sgi.com>.

## Reader Comments

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## Setting Up the Silicon Graphics MultiLink

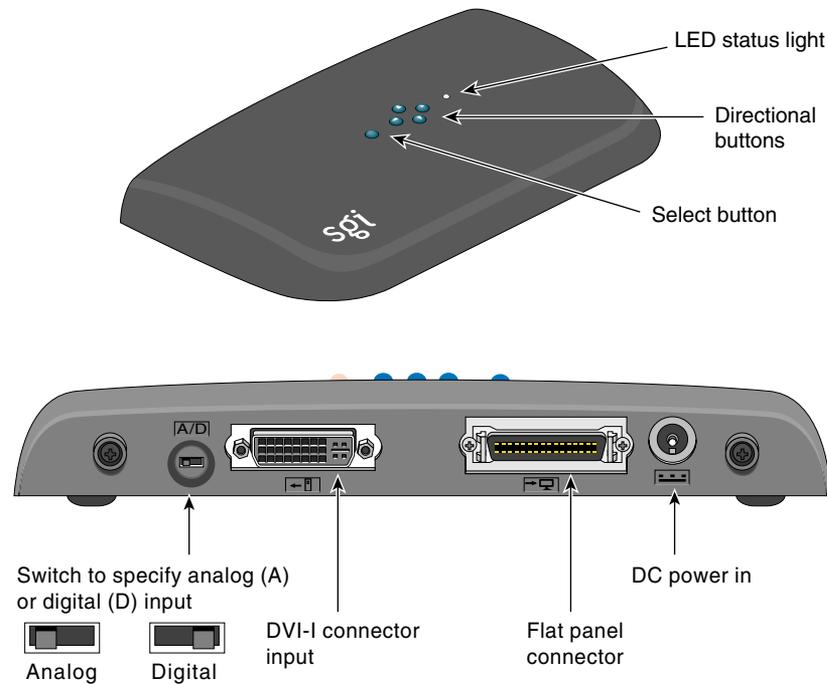
This chapter explains how to attach the Silicon Graphics MultiLink to the flat panel display. See the following sections:

- “About the Silicon Graphics MultiLink” on page 2
- “Before Connecting the MultiLink” on page 3
- “Connecting the Cables” on page 3
- “Turning On the Silicon Graphics MultiLink” on page 6
- “Turning Off the Silicon Graphics MultiLink” on page 6

For information regarding the flat panel display or your video card, see the instructions that accompanied those devices.

## About the Silicon Graphics MultiLink

Figure 1-1 on page 2 shows all of the connectors, switches, and buttons on the Silicon Graphics MultiLink.



**Figure 1-1** Silicon Graphics MultiLink

The names of the parts shown in Figure 1-1 are used throughout this manual.

## Before Connecting the MultiLink

If your computer is attached to another display, before detaching it make sure the refresh frequency of your video card is set to 60 Hz (except in special situations for legacy BIOS mode compatibility). If your video card is set to a different frequency, the flat panel display will be black and the error message, “Unsupported Mode” will appear.

To check or change the refresh frequency of your video card, consult the manual for your video card.

## Connecting the Cables

To connect the flat panel display and the Silicon Graphics MultiLink, use the following steps:

1. Turn off your computer.

For your computer to recognize the flat panel display, you must connect the MultiLink and the display before turning on your computer.

2. Select the correct position for the analog or digital (A/D) input switch, shown in Figure 1-1 on page 2.

The correct position is determined by the output of your video card: either analog or digital.

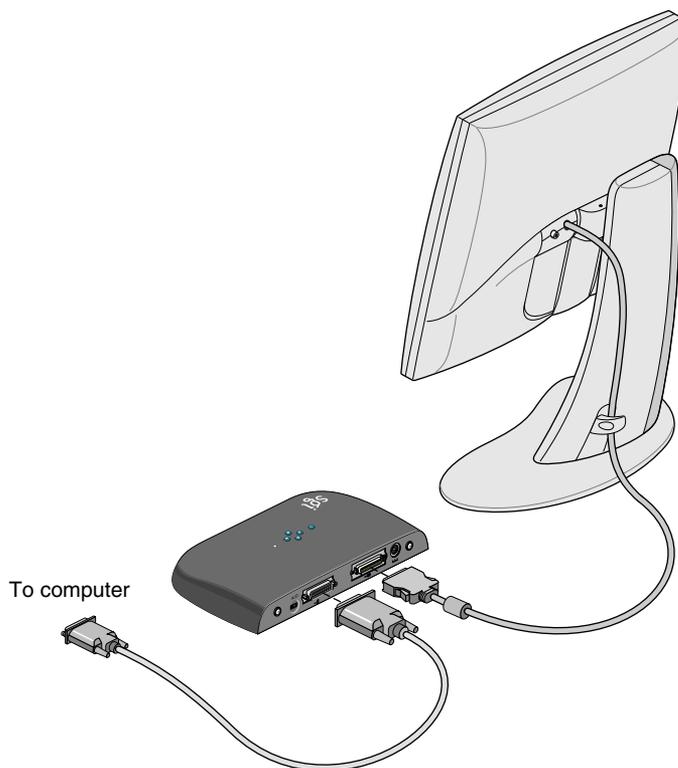
3. Using Figure A-1 on page 32 as a guide, select the appropriate interface cable from the cables supplied. Connect one end of the cable to the video card in the computer and the other end to the DVI connector on the MultiLink, as shown in Figure 1-2.

---

**Note:** In some cases, the cables are not reversible and the cable endings can not be interchanged. See your video card documentation for more information.

---

4. Attach the flat panel display’s interface cable to the flat panel connector on the MultiLink, and tuck the display cable behind the clip on the base of the flat panel display, also shown in Figure 1-2.



**Figure 1-2** Attaching Interface Cables

5. Connect the DC power cable from the provided MultiLink AC adapter to the DC input power (DC power in) connector on the back of the Silicon Graphics MultiLink, as shown in Figure 1-3 on page 5. Attach the flat panel DC power cable and AC adapter as described in the *Silicon Graphics 1600SW Owner's Guide*.

---

**Note:** The MultiLink and 1600SW flat panel use the same AC adapter.

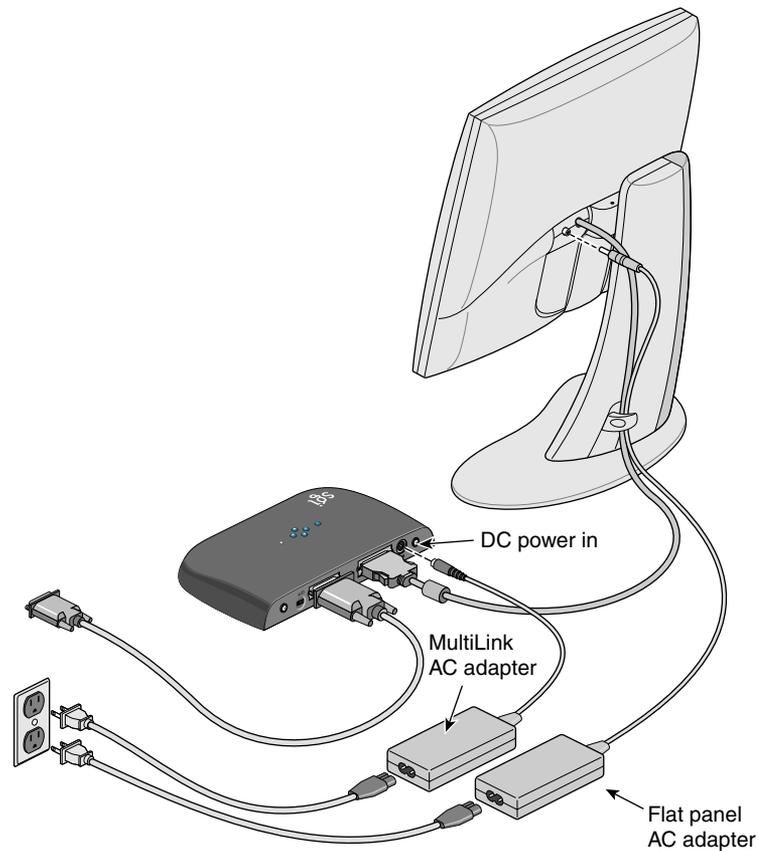
---

6. Connect one end of the AC power cord to the MultiLink AC adapter and the other end of the AC power cord to a grounded electrical wall outlet or power strip. (The illustration shows the AC adapter and cord for the U.S.A. The power cord for your country may look different.) Repeat this procedure for the flat panel AC adapter connected to your flat panel display.

---

**Note:** The AC adapter is auto-ranging, which means that it automatically adjusts for different AC voltages from almost any power source (50-60 Hz, 110-220 VAC) without using an additional transformer.

---



**Figure 1-3** Connecting Power

## Turning On the Silicon Graphics MultiLink

Once you plug in the AC adapter, the MultiLink is turned on; there is no separate power switch. The Status LED on top of the MultiLink should light.

If the Status LED does not light, check to insure that your power cable is connected securely. For an explanation of all Status LEDs, see Table 3-1 on page 24 for instructions.

If you are still having trouble with your MultiLink, see Chapter 3, “Troubleshooting.”

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**Note:** You must also turn on the flat panel display using its power button. If the LED on the flat panel display does not light, please consult the *Silicon Graphics 1600SW Owner's Guide*.

---

Once the MultiLink supplies video signals to the flat panel display, the LED on the bottom left of the flat panel display turns green. If the flat panel display does not light up, or if the LED on the flat panel display is blinking yellow, check that its cables are firmly attached to their correct connectors. For additional information about the meaning of the flat panel display's LED colors, See the *Silicon Graphics 1600SW Owner's Guide*.

## Turning Off the Silicon Graphics MultiLink

The Silicon Graphics MultiLink is designed to remain on indefinitely; it does not have a power switch.

---

**Note:** The MultiLink is capable of “power saving” the flat panel display so powering off the panel is not necessary. However, this power saving feature must be enabled using the host computer's screen saver/power saver software.

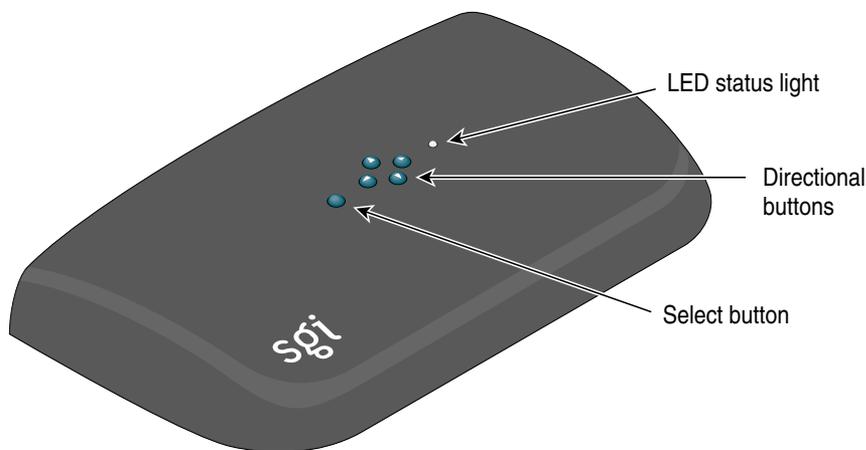
---

## **Using the Silicon Graphics MultiLink**

This chapter describes how to use the features of the Silicon Graphics MultiLink. The on-screen display provides access to the flat panel display controls.

## Understanding the Buttons

The five buttons on top of the MultiLink, shown in Figure 2-1, interact with the on-screen display.



**Figure 2-1** Buttons on Top of the MultiLink

You use the five buttons on top of the MultiLink to:

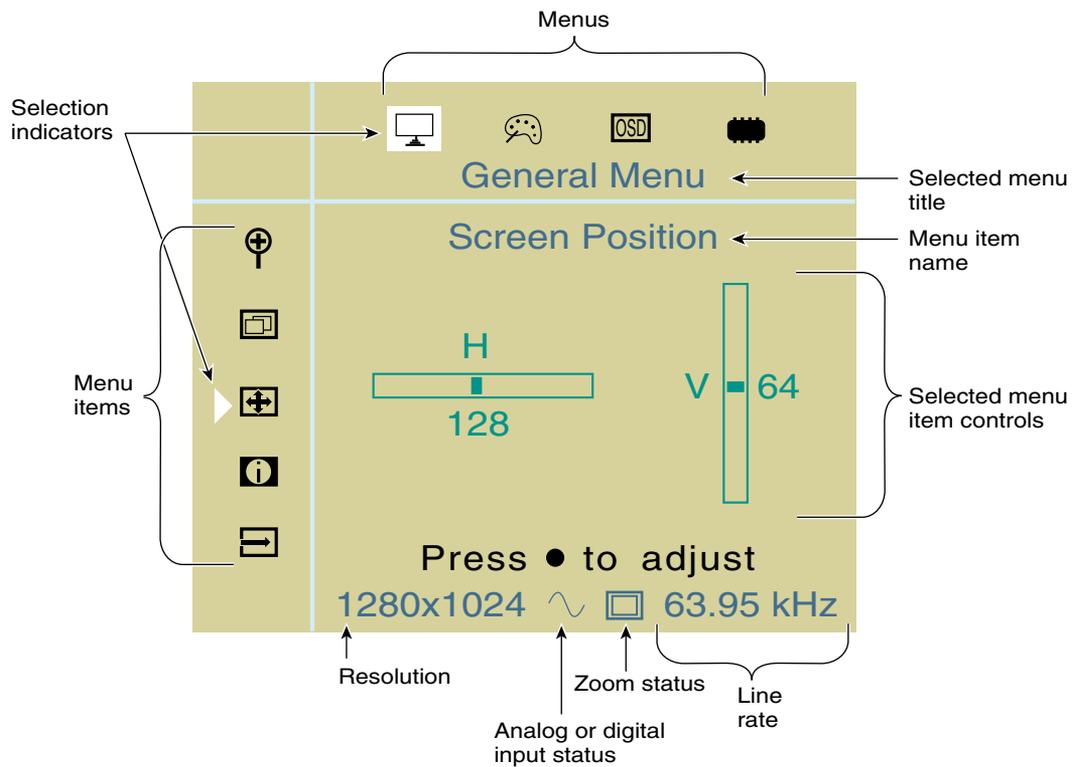
- Start and stop the display of the on-screen display (the select button)
- Choose a menu (right and left directional buttons)
- Choose a menu item (up and down directional buttons)
- Change the mode focus from selecting menu items to changing display settings (the select button)
- Change settings (directional buttons)
- Save settings and exit (the select button)

To display the on-screen display, press the select button.

## General Layout of the On-Screen Display

Figure 2-2 on page 9 shows that the layout of the on-screen display includes:

- Menus across the top
- Menu items for the selected menu in the left, vertical column
- Input for the selected menu item
- General information on the bottom



**Figure 2-2** On-Screen Display Layout

## How the On-Screen Display Works

The following scenario explains how to use the five buttons on top of the MultiLink with the on-screen display. Figure 2-3 on page 12 shows a flowchart of the actions described in the following steps.

1. To display the on-screen display, press the select button on top of the MultiLink.
2. To choose a menu, press the right or left directional button.

Notice that each time you press one of these buttons:

- The menu icon highlight moves left or right, corresponding to the directional button you push, showing which menu is selected.
- The title of the menu, located just under the menu icons, changes according to the menu selected.
- The menu items in the left vertical column change according to the menu selected

3. To choose a menu item in the selected menu, press the up or down directional button.

Notice that each time you press one of these buttons:

- The menu item selection indicator moves up or down to show you which menu item is selected.
- The name of the menu item, located just under the menu title, changes according to the menu item selected.
- The menu item controls in the center of the on-screen display, change according to the menu item selected.

4. To use the menu item controls of the selected menu item:

- Press the select button.

Notice that the menu icon highlight and the menu item selection indicator turn gray and the items in the center of the on-screen display turn white to indicate the current selection. Now the directional buttons interact with the menu item controls instead of navigating through menus and menu items.

- To change the menu item settings, press any of the directional buttons corresponding to the white arrows in the on-screen display window.

---

**Note:** The settings take effect immediately. Adjustments to the General Menu’s Zoom, Overlapped Modes, and Force Detect menu items and the Advanced Menu’s Factory Reset menu item will cause the screen to reset. Please refer to the descriptions of these menu items (which follow later in this chapter) for more details.

---

5. To end adjustment of the display controls, press the select button.

Notice that the menu icon highlight and the menu item selection indicator turn white while the menu item controls change color to indicate the current selection. The directional buttons now interact with the menu and menu item choices again.

6. You now have a choice for your next on-screen display action:

To use a different menu item or switch to another menu, use the directional buttons. Refer to steps 2 through 5 above.

Alternately, to exit the on-screen display immediately and save your settings, press the select button. You must press the select button before using any directional buttons or you will not exit the on-screen display.

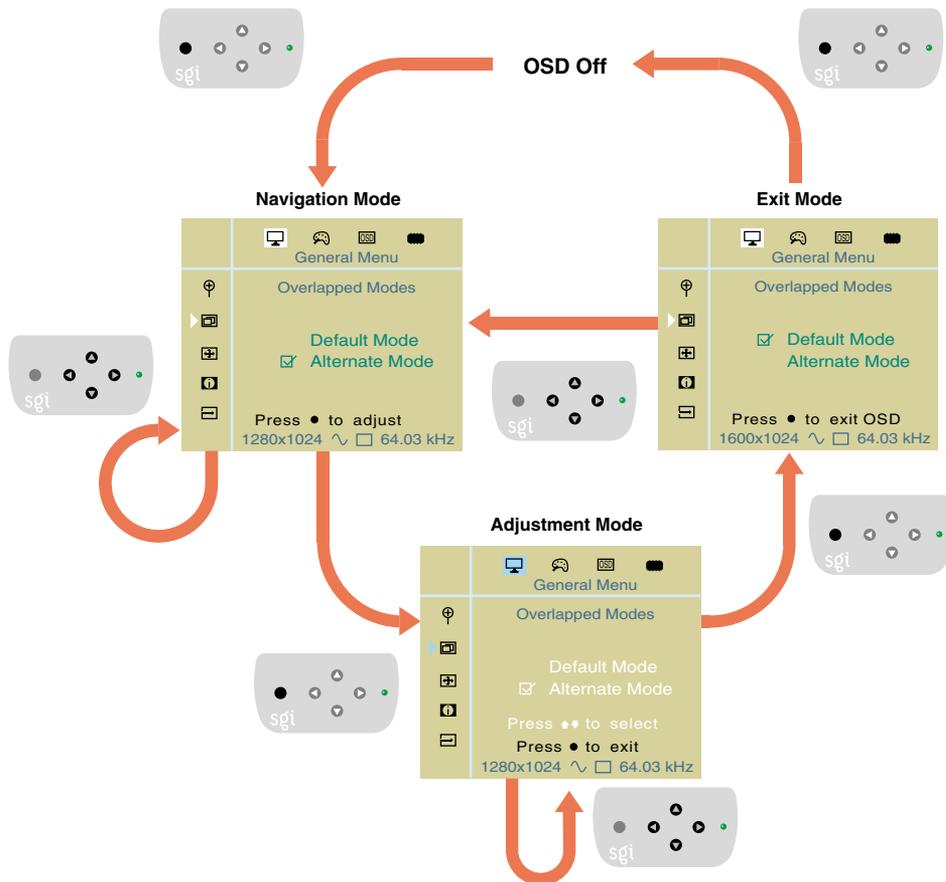
---

**Note:** The on-screen display will automatically exit and save your settings after a period of inactivity. See the OSD Timeout menu item at “On-Screen Display Menu” on page 20 for details.

---

## On-Screen Display Flowchart

Figure 2-3 on page 12 shows in flowchart style how to use the select and menu buttons, as described in “How the On-Screen Display Works” on page 10. Darkened buttons on the keypad illustrations show how the state of the on-screen display changes according to user input. The Overlapped Modes menu item on the General Menu is shown as an example; all other menus and menu items also follow this flowchart.



**Figure 2-3** Flowchart of On-Screen Display Interaction

## Understanding the Icons on the Bottom of the On-Screen Display

On the bottom of the on-screen display shown in Figure 2-2 on page 9 are four settings:

- Resolution
- Analog or digital input status
- Zoom status
- Line rate

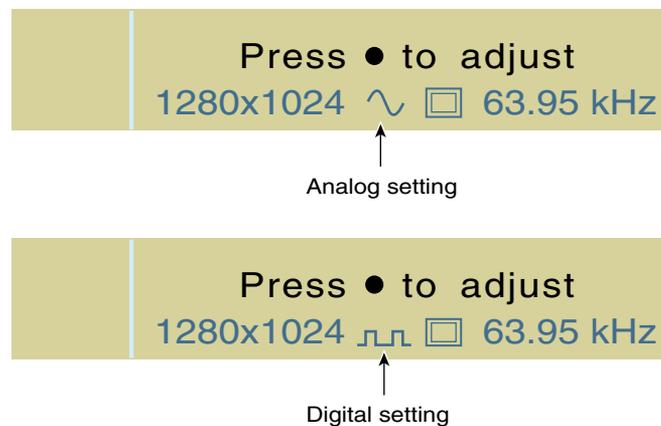
### Resolution

The resolution is expressed by the number of pixels drawn in the horizontal and vertical directions. For example, the highest resolution is 1600 X 1024, which means 1600 pixels are drawn on each horizontal line and 1024 horizontal lines are drawn.

Your video card sets the resolution. Consult your video card manual for instructions on changing the resolution.

### Analog or Digital Input Status

The input to the MultiLink can be either analog or digital, as shown in Figure 2-4.



**Figure 2-4** Analog and Digital Input Icons

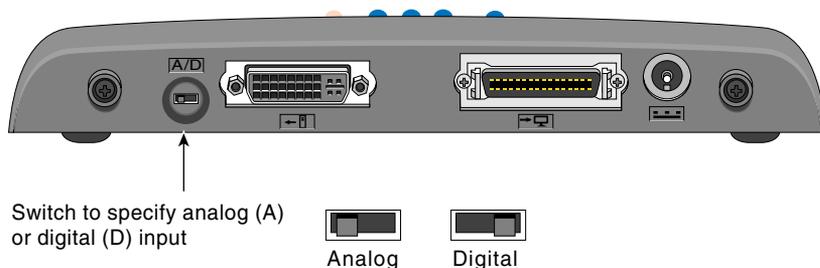
The sine wave icon shown in Figure 2-4 on page 13 represents an analog input, the square wave icon represents a digital input.

You specify the input by setting the analog and digital (A/D) input switch, shown in Figure 2-5, located on the back of the MultiLink.

---

**Note:** For best results, set the analog and digital input switch position before turning on your computer.

---



**Figure 2-5** Analog and Digital Input Switch

## Line Rate

Line rate indicates the speed with which horizontal lines are drawn out of your video card to the MultiLink. Although the numbers you see for line rate will be close to the numbers pictured in this manual, they may not match exactly.

The refresh rate on the MultiLink is fixed at 60 Hz (except in special situations for legacy BIOS mode compatibility). If the refresh rate on the video card is incompatible with the refresh rate of the MultiLink, the LED on top of the MultiLink flashes yellow.

---

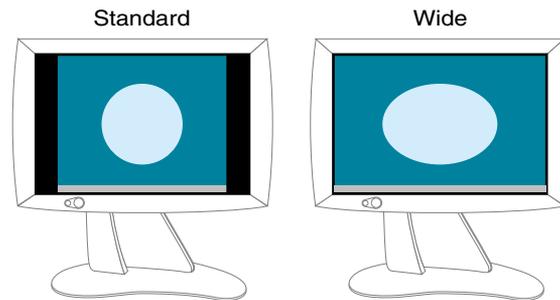
**Note:** You cannot change the MultiLink's refresh rate value.

---

## Zoom Status

The Zoom feature enables you to do the following (see Figure 2-6):

- Maintain the proper aspect ratio of the image, which leaves black borders to the left and right of the image (Standard View)
- Stretch the display so that the image fills the entire screen (Wide View)



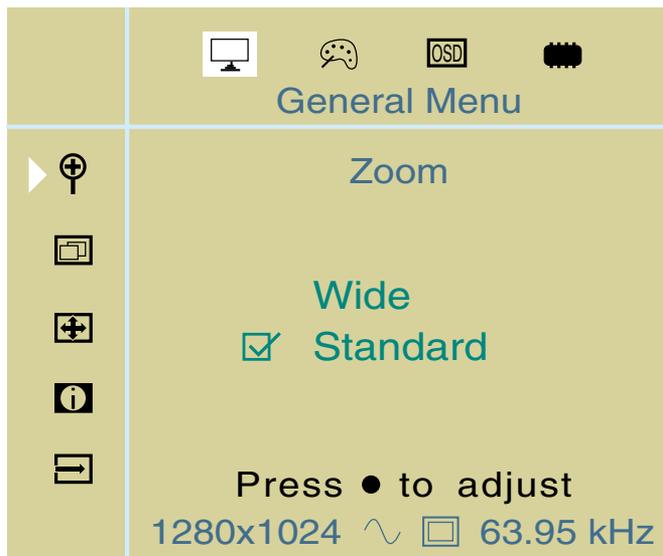
**Figure 2-6** Zoom Settings

Figure 2-7 shows the icons for the Standard and the Wide zoom settings, respectively, that are found toward the bottom of the on-screen display.



**Figure 2-7** Zoom Status Icons

To set the zoom, use the Zoom menu item in the General menu, as shown in Figure 2-8.



**Figure 2-8** Zoom Menu Item

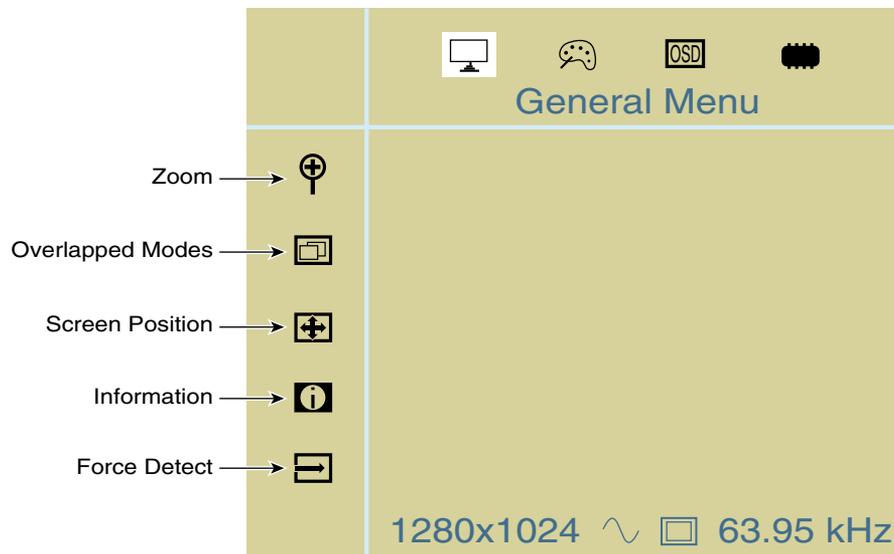
## On-Screen Display Menus

This section explains the menu items in each of the on-screen display menus in the following sections:

- “General Menu” on page 17
- “Image Menu” on page 18
- “On-Screen Display Menu” on page 20
- “Advanced Menu” on page 21

## General Menu

The General Menu, shown in Figure 2-9, adjusts common flat panel display settings and user preferences.



**Figure 2-9** General Menu Overview

The General Menu has the following menu items:

- **Zoom**—Changes the size of the displayed image, as described in “Zoom Status” on page 15, between Wide and Standard View.
- **Overlapped Modes**—Chooses the correct resolution for display in special situations. Certain combinations of timing modes are indecipherable to the MultiLink. In such cases, you may need to override the MultiLink’s settings through the Overlapped Modes menu item. Consult Table A-8 on page 35 for a listing of the affected timing modes.
- **Screen Position**—Changes the horizontal and vertical position of the entire image on the flat screen display.

---

**Tip:** This function is useful for fine-tuning image centering.

---

- Information—Provides general information about the MultiLink.
- Force Detect—Causes the MultiLink to redetect and optimize the current screen image.

---

**Tip:** Use this feature to improve image quality.

---

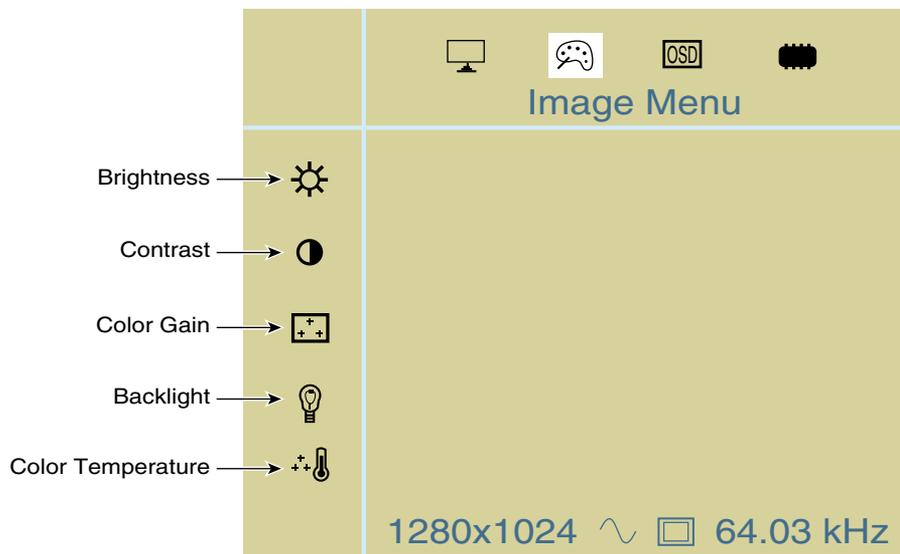
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**Note:** Some user settings (Screen Position, Clock, and Phase) may be automatically adjusted during a Force Detect.

---

## Image Menu

The Image Menu, shown in Figure 2-10, provides menu items that affect screen appearance parameters.



**Figure 2-10** Image Menu Overview

---

**Note:** The following menu items described as “analog only” appear in the on-screen display only when the MultiLink is set for analog input as described in “Analog or Digital Input Status” on page 13.

---

The Image Menu has the following menu items:

- **Brightness**—(Analog only) Adjusts the overall brightness of the whites and the blackness of the blacks in all three color channels (R, G, and B) simultaneously. Also known as offset adjustment.
- **Contrast**—(Analog only) Simultaneously adjusts the intensity of all three color channels (R, G, and B) in the image.

---

**Note:** Adjusting contrast will override color gain settings.

---

- **Color Gain**—(Analog only) Same as contrast adjustment except that red, green, and blue channels may be adjusted independently.
- **Backlight**—Controls the overall intensity of the 1600SW backlighting system.

---

**Note:** The Backlight setting is independent of Brightness, which uses the analog interface. While the Brightness controls also alter the luminance of the screen image, they do so at the expense of reduced dynamic range (pixel colors themselves are shifted when Brightness is changed). Backlight adjustments do not cause pixel colors to change.

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**Tip:** Backlight adjustment may be preferable to Brightness when consistency in black level and grayscale response are important to the viewer.

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**Note:** Adjusting the Backlight setting will override the Color Temperature setting.

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- **Color Temperature**—Adjusts the backlight white point from warm, reddish-white to cool, bluish-white.

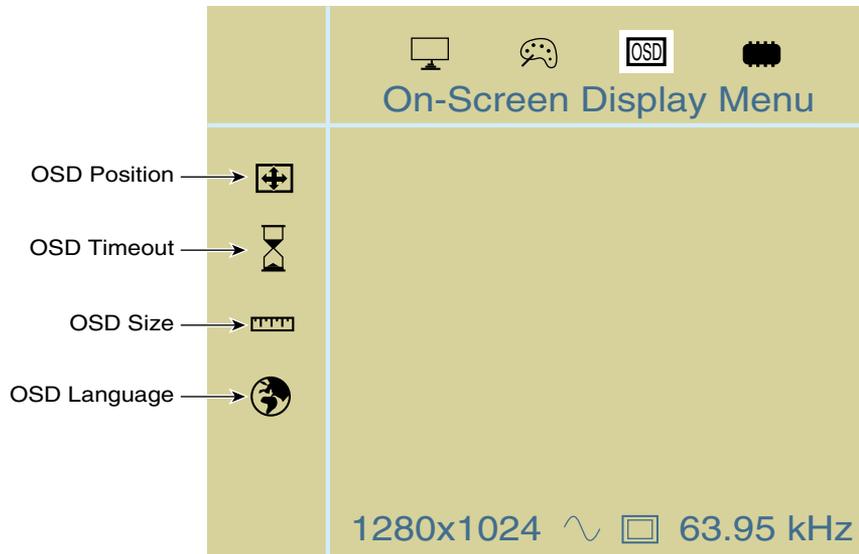
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**Note:** Adjusting the Color Temperature resets the Backlight setting to a 50% level.

---

## On-Screen Display Menu

The On-Screen Display Menu, shown in Figure 2-11, affects the position, time-out setting, size, and language of the on-screen display.



**Figure 2-11** On-Screen Display Menu Overview

The On-Screen Display (OSD) Menu has the following menu items:

- OSD Position—Moves the on-screen display vertically and horizontally.

---

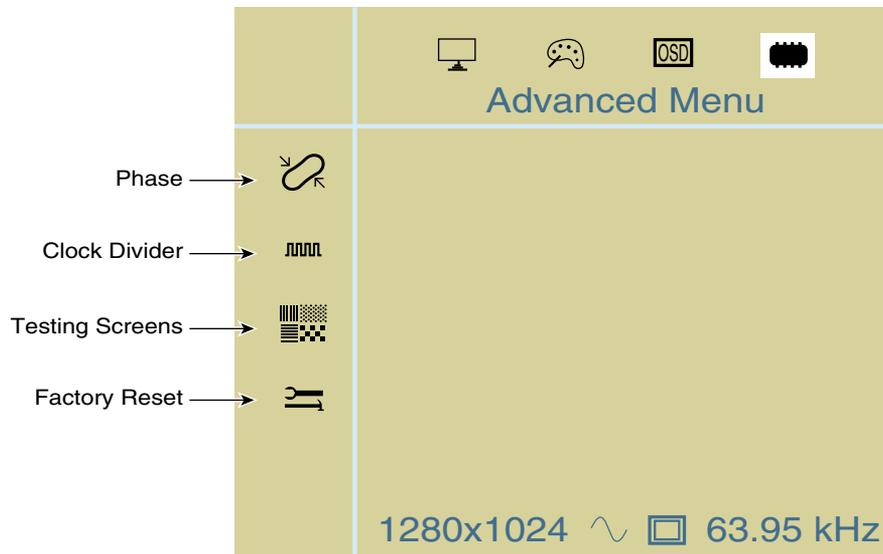
**Note:** The on-screen display cannot be moved over to the left edge of the screen due to hardware limitations.

---

- OSD Timeout—Adjusts the time-out value between 5 and 30 seconds. Whenever the specified amount of time passes without any user interaction, the on-screen display disappears. To make it reappear, press the select button.
- OSD Size—Adjusts the vertical size of the on-screen display box.
- OSD Language—Toggles between English and Japanese prompts.

## Advanced Menu

The Advanced Menu, shown in Figure 2-12, enables you to change settings that are less frequently adjusted.



**Figure 2-12** Advanced Menu Overview

---

**Note:** The following menu items described as “analog only” appear in the on-screen display only when the MultiLink is set for analog input as described in “Analog or Digital Input Status” on page 13.

---

The Advanced Menu has the following menu items:

- **Phase**—(Analog only) Alters the phase setting used in the analog to digital conversion process. The MultiLink automatically adjusts clock phase upon detecting a new analog video mode. However, you may find that adjustments can improve image quality.
- **Clock Divider**—(Analog only) Changes the clock divider setting used by the analog to digital conversion process. This parameter also influences image quality.

---

**Tip:** Clock Divider and Phase adjustments can be best performed by using a checkerboard or pinstripe background. If the clock divider is not correctly adjusted, vertical noise bars may appear. Adjust the clock divider setting until no noise bars are visible. Once the clock divider is correct, adjust the phase until you maximize image quality.

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**Tip:** If you cannot restore image quality after a Clock Divider or Phase adjustment, perform a Force Detect (General Menu) operation.

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**Note:** The auto adjustment process may not function correctly if a black, checkerboard, pinstripe, or similar background is used. For best results, select a solid background before performing a Force Detect.

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- Testing screens—Provides three alternate test patterns (horizontal lines, white field, and black field).

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**Note:** This parameter resets to the “off” state whenever you exit the on-screen display or allow the on-screen display to timeout.

---

- Factory reset—Reverts all on-screen display settings for all video modes to their factory preset values. All user settings will be erased.

## Troubleshooting

This chapter contains solutions to problems you might be having with the Silicon Graphics MultiLink, in the following sections:

- “LED States” on page 24
- “Troubleshooting Tips” on page 25
- “Returning the Silicon Graphics MultiLink” on page 30

## LED States

The LED on the top of the Silicon Graphics MultiLink indicates the state of the device. Table 3-1 explains the meaning of the LED colors.

**Table 3-1** Explanation of LED Colors

<b>LED</b>	<b>Possible Causes and Solutions</b>
No LED	No power. Check the power cord.
Solid red	Silicon Graphics MultiLink fails power-on diagnostics. Return the unit for service.
Blinking yellow	The Silicon Graphics MultiLink cannot support the current timing mode. Choose a different timing mode on your video card. (See Table A-3 through Table A-8)
Solid yellow	The video card has put the MultiLink into power save mode; wake up the CPU. Alternatively, the MultiLink may lack an input signal (no cable).
Solid green	Normal operation.

## Troubleshooting Tips

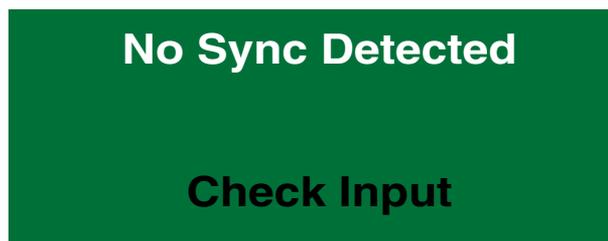
The following are messages that may appear on your display when using the Silicon Graphics MultiLink:

- You will see the message shown in Figure 3-1 whenever MultiLink adjusts display parameters automatically.



**Figure 3-1** Screen Adjustment

- For solutions to the problem indicated by the “No Sync Detected” message shown in Figure 3-2, see “No Image on the Flat Panel Display” on page 26.



**Figure 3-2** No Sync Detected

- For solutions to the problem indicated by the “Unsupported Mode” message shown in Figure 3-3, see “Unsupported Mode Error” on page 27.



**Figure 3-3** Unsupported Mode

- If your screen image is distorted, see “Images Appear Distorted” on page 29.

If the problems persist after using the following suggestions, call your service provider.

### **No Image on the Flat Panel Display**

1. Make sure the DC power cables are connected securely between the AC adapter, the Silicon Graphics MultiLink, and the display.
2. Make sure the correct AC power cable is connected securely to the AC adapter and the AC adapter is plugged into a working wall outlet. (See “Connecting the Cables” on page 3.)
3. Make sure the video cables are connected securely between the computer, the Silicon Graphics MultiLink, and the flat panel display. (See “Connecting the Cables” on page 3.)
4. Make sure the analog and digital input (A/D) switch is in the correct position (see Figure 2-5 on page 14). The switch should be in the A position (left) for analog mode (VGA cable), and in the D position (right) for digital mode (DFP or DVI-D cable).
5. Check to see if the flat panel display and computer are turned on. (Press the power button on the front of the display.) The flat panel display takes about a minute to warm up to full brightness.

6. Make certain that all MultiLink cable connections were in place when your computer was turned on. If not, recheck your setup and then reboot.

---

**Note:** When there is no signal from your video card, a “No Sync Detected” message appears and the LED turns solid amber when any MultiLink button is pressed. This could occur during normal video card power-saving mode.

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7. Check the color of the LED on the Silicon Graphics MultiLink and refer to Table 3-1 on page 24.
8. Make sure the video card in your computer is seated correctly.  
You may want to reseal the video card in the computer to make sure it is making proper electrical contact.
9. If the video card has associated software, make sure the software is installed correctly. Refer to your video card instruction manual for more information.

## Unsupported Mode Error

When you press the Select button on the MultiLink and an error box displays the message, “Unsupported Mode,” you must change the refresh frequency of your video card to 60 Hz (except in special situations for legacy BIOS mode compatibility).

To check or change the refresh frequency, consult the manual for your video card.

## Unsatisfactory Image Quality

### Analog

To correct unsatisfactory image quality when the MultiLink is set to analog, perform a Clock Divider and Phase adjustment.

Clock Divider and Phase adjustments can be best performed by using a checkerboard or pinstripe background. If the clock divider is not correctly adjusted, vertical noise bars may appear. Adjust the clock divider setting until no noise bars are visible. Once the clock divider is correct, adjust the phase until you maximize image quality.

## Analog or Digital

To correct unsatisfactory image quality when the MultiLink is set to analog or digital, perform or check the following:

1. Perform a Force Detect or Factory Reset.
2. Change the Overlapped Modes setting if applicable (see Table A-8 on page 35).
3. Center the screen manually. For more information on screen positioning, see “General Menu” on page 17.
4. Check/Adjust the Color Temperature and Backlight settings. For detailed information, see “Image Menu” on page 18.
5. Check to make sure that only the cables supplied with your MultiLink have been used in cable connections. Do not substitute third-party cables.
6. Ensure all cables are properly seated without bent pins.
7. Unshielded electronic devices can cause interference, which appears as horizontal lines, with the flat panel display. If this is the case, increase the distance between the flat panel display and the electronic device.

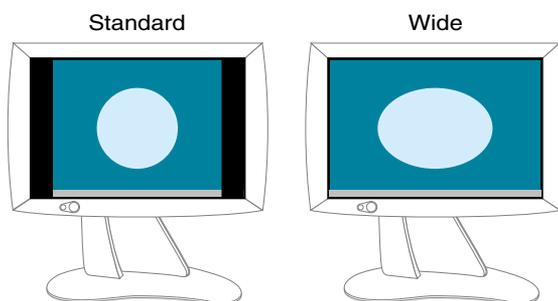
## Images Appear Distorted

When the Zoom setting is Wide, the MultiLink stretches the image to fill the screen. A circle in Standard View appears as a horizontally-stretched oval in Wide View. To counteract this effect, change the Zoom setting, the first menu item in the General menu, to Standard. (See Figure 3-4.)

---

**Note:** Zoom menu functions are not available for all timing modes.

---



**Figure 3-4** The Zoom Feature

## Returning the Silicon Graphics MultiLink

If your service provider instructs you to return the Silicon Graphics MultiLink, use the following instructions:

1. Turn off your computer.
2. Disconnect the power cables from the rear of the flat panel display and the Silicon Graphics MultiLink.
3. Disconnect the video cables from the Silicon Graphics MultiLink.

If you receive a replacement Silicon Graphics MultiLink, use its shipping carton and packing materials to return the defective MultiLink, or use the Silicon Graphics MultiLink's original shipping carton and packing materials.

---

**Note:** If you are instructed to return the Silicon Graphics MultiLink along with the flat panel display, check in the documentation that came with the flat panel display for return instructions.

---

## Specifications and Statements of Compliance

The following sections provide technical specifications for the Silicon Graphics MultiLink and contain information about how the MultiLink complies with various regulatory agency rules.

### Technical Specifications

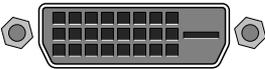
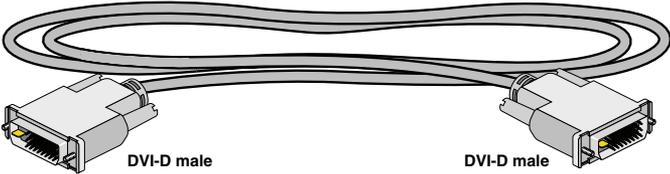
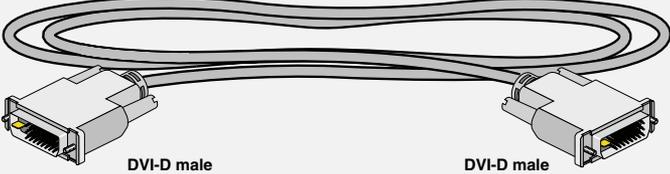
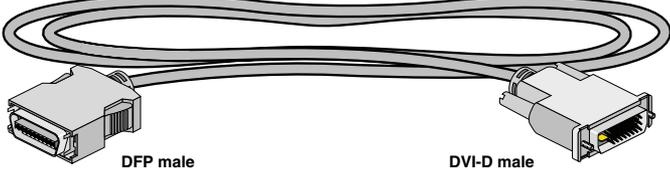
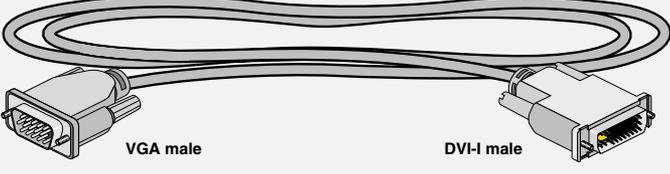
This section lists various technical specifications for the Silicon Graphics MultiLink.

Table A-1 lists the power requirements and specifications of the MultiLink.

**Table A-1** Power Specifications of the Silicon Graphics MultiLink

<b>Specification</b>	<b>Value</b>
Input	12VDC +- 10%
Output	12VDC +- 10% at 3.3 A maximum
Power consumption	6 Watts

Figure A-1 describes the cables used to connect the video card in your computer with the MultiLink.

Video card connector	Cable used	Interface support
 <p><b>DVI-D (female)</b></p>	 <p>DVI-D male                      DVI-D male</p>	<p><b>Digital only</b></p>
 <p><b>DVI-I (female)</b></p>	 <p>DVI-D male                      DVI-D male</p>	<p><b>Digital only</b></p>
 <p><b>DFP (female)</b></p>	 <p>DFP male                      DVI-D male</p>	<p><b>Digital only</b></p>
 <p><b>VGA (female)</b></p>	 <p>VGA male                      DVI-I male</p>	<p><b>Analog only</b></p>

**Figure A-1** Cables Used with the MultiLink

Table A-2 lists the MultiLink’s physical and environmental specifications.

**Table A-2** Physical and Environmental Specifications for the Silicon Graphics MultiLink

Specification	Value
Size	1.2 in. H x 8.7 in. W x 5.2 in D (30 mm x 220.4 mm x 131.4 mm)
Weight	1.5 lbs (.7 kg)
Color	Gray/Blue
Temperature	
Operating	+10° C to +35° C
Non-operating	-40° C to +65° C
Relative humidity	
Operating	10% to 80%, no condensation
Non-operating	5% to 95%, no condensation
Vibration	
Operating	.02 in., 5-19 Hz sinusoidal wave .35g (3.4 m/s <sup>2</sup> ), 19-500 Hz sinusoidal wave
Non-operating	.1 in., 5-12 Hz sinusoidal wave .75g (7.4 m/s <sup>2</sup> ), 12-500 Hz sinusoidal wave
Shock	
Operating	
Horizontal	5g (49 m/s <sup>2</sup> ), 15 ms half-sinusoidal wave
Vertical	10g (98 m/s <sup>2</sup> ), 10 ms half-sinusoidal wave
Non-operating	20g (196 m/s <sup>2</sup> ), 10 ms half-sinusoidal wave
Altitude	
Operating	10,000 feet (3,048 m)
Non-operating	40,000 feet (12,200 m)

## Supported Video Signal Resolutions and Timings

The Silicon Graphics MultiLink accepts video signals using the resolutions and timings shown in the tables in this section.

The MultiLink supports only the video modes listed in Table A-3 through Table A-8. Other modes are not supported.

**Table A-3** VESA Operating Modes

Resolution	Frequency	Total Horiz. x Vert.
640 x 480	60 Hz	800 x 525
800 x 600	60 Hz	1056 x 628
1024 x 768	60 Hz	1344 x 806
1280 x 960	60 Hz	1800 x 1000
1280 x 1024	60 Hz	1688 x 1066

**Table A-4** Legacy DOS Operating Modes

Resolution	Frequency	Total Horiz. x Vert.
640 x 350	70 Hz	800 x 449
640 x 400	70 Hz	800 x 449
720 x 350	70 Hz	900 x 449
720 x 400	70 Hz	900 x 449

**Table A-5** Macintosh Specific Operating Mode

Resolution	Frequency	Total Horiz. x Vert.
1024 x 768	60 Hz	1312 x 813

**Table A-6** 720P Operating Mode (SMPTE 296M)

Resolution	Frequency	Total Horiz. x Vert.
1280 x 720	60 Hz	1650 x 750

**Table A-7** SGI Operating Mode

Resolution	Frequency	Total Horiz. x Vert.
1600 x 1024	60 Hz	1704 x 1056

**Table A-8** Resolutions Affected by Overlapped Modes Menu Item<sup>a</sup>

Default Mode (Automatically Detected)	Alternate Mode
640 x 400 @ 70 Hz	640 x 350 @ 70Hz
720 x 400 @ 70 Hz	720 x 350 @ 70 Hz
1024 x 768 @ 60 Hz (VESA)	1024 x 768 @ 60 Hz (Macintosh)
1280 x 1024 @ 60 Hz	1600 x 1024 @ 60 Hz
1600 x 1024 @ 60 Hz	1280 x 1024 @ 60 Hz

a. Unlisted modes are not affected by the Overlapped Modes setting.

## Manufacturer's Regulatory Declarations

This product conforms to several national and international specifications and European Directives listed on the "Manufacturer's Declaration of Conformity." The CE insignia displayed on each device is an indication of conformity to the European requirements

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**Caution:** This product has several governmental and third-party approvals, licenses, and permits. Do not modify this product in any way that is not expressly approved by SGI. If you do, you may lose these approvals and your governmental agency authority to operate this device.

---

## Shielded Cables

The Silicon Graphics MultiLink is FCC-compliant under test conditions that include the use of shielded cables. Shielded cables reduce the possibility of interference with radio, television, and other devices. If you use any cables that are not from SGI, make sure they are shielded.

Three cables that fit SGI specifications are shipped with each MultiLink.

The cable that attaches the MultiLink to your host computer or adapter board uses additional filtering molded into the cable jacket to reduce radio frequency interference. If your display cable becomes damaged, contact your service provider.

## Electrostatic Discharge

SGI designs and tests its products to be immune to the 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.

The shielded cable that attaches the MultiLink to your host system or adapter board should be correctly installed and in good condition.

## FCC Class B Conformance

The following information is provided about the device covered in this manual in compliance with FCC regulations.

**Table A-9**

---

Trade Name	SGI
Product	Silicon Graphics MultiLink
Model Number	CMNB025B
Date of Conformance	April, 2000
Responsible Party	Silicon Graphics, Inc.
Address	1600 Amphitheater parkway Mountain View, CA 94043
Telephone	650-933-3405

---

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

## **Industry Canada Notice (Canada Only)**

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

Cet appareil numérique n'émet pas de perturbations radioélectriques dépassant les normes applicables aux appareils numériques de Classe A prescrites dans le Règlement sur les interférences radioélectriques établi par le Ministère des Communications du Canada.

## **Electromagnetic Emissions**

This device complies with Class B electromagnetic emissions limits of C.I.S.P.R. Publication 22, Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.

## VCCI Notice (Japan Only)

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

## CE Notice

Marking by the “CE” symbol indicates compliance of the device to directives of the European Community. A “Declaration of Conformity” in accordance with the above standards has been made and is available from SGI upon request.



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