



# Studio Display User's Manual

17-inch CRT  
(16-inch diagonal viewable image size)

 **Apple Computer, Inc.**

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## **Communications Regulation Information**

### **FCC statement**

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. See instructions if interference to radio or television reception is suspected.

### **Radio and television interference**

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple’s instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

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

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

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

**Important** Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

### **IC statement**

*IC Class B Compliance* This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Department of Communications.

*Observation des normes—Classe B* Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur : “Appareils Numériques”, NMB-003 édictée par le ministre des Communications.

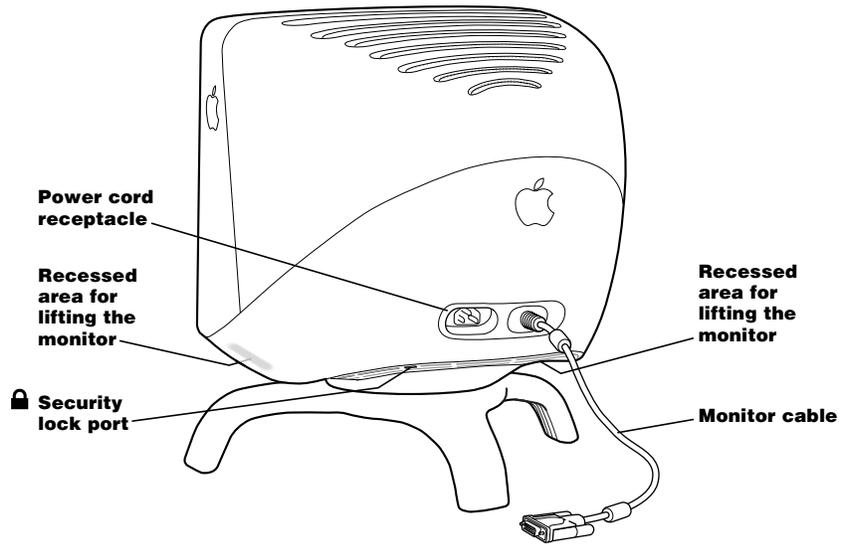
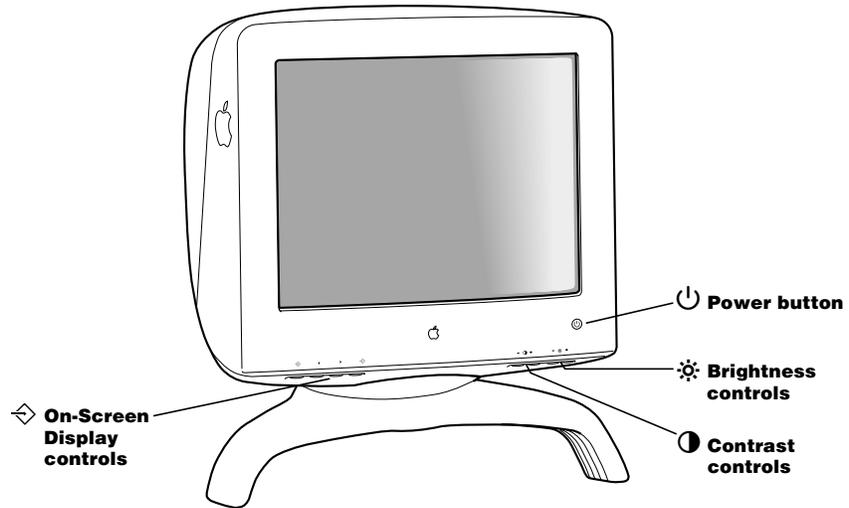
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取扱説明書に従って正しい取り扱いをしてください。



## Your Display at a Glance



# Setting Up

Read this chapter to learn how to set up and connect the Studio Display to your computer. This chapter also contains important safety information and troubleshooting tips.

## Getting Ready to Set Up

Before you unpack the carton, choose an appropriate location to place your display.

Here are some key factors to consider when determining where to place your monitor:

- Be sure that the desk or table can support the display's weight—48 pounds (21.8 kg).
- Make sure that the monitor video cable reaches your computer. The cable should be unobstructed when you swivel and tilt the monitor.
- Allow at least 6 inches (15 cm) of clearance in the back. If you don't allow enough clearance, the monitor connector might be damaged when the cable hits an obstruction.

Before you connect your monitor, read the following section to determine if you need any additional items.

## Do You Need a Graphics Card?

Your monitor works with any Mac OS–based PowerPC™ computer, except the PowerBook Duo 2300, with either a built-in monitor port adapter or a compatible graphics card.

If you're not sure whether your computer or graphics card will work with the monitor, check whether its video circuitry operates within the ranges specified here.

Your monitor works with video circuitry that operates within these ranges:

- horizontal scan rate of 30–85 kilohertz
- vertical refresh rate of 48–160 hertz

If no image appears on your monitor after you have set it up following the instructions in this chapter, your graphics card may not be compatible with display. You may need to purchase a compatible graphics card. Your Apple-authorized dealer can help you select a compatible graphics card.

### Ranges of supported modes

Resolution	Vertical Refresh Rate <sup>1</sup> (Hertz)
640 x 480	60–85
800 x 600	60–85
832 x 624	75
1024 x 768	60–85
1152 x 870	75
1280 x 1024	75
1600 x 1200	60

<sup>1</sup> These are ranges only; the actual resolutions and vertical refresh rates that are available to you depend on your computer or graphics card. See the manual that came with your computer or graphics card for more information.

Some NuBus™ graphics cards and some third-party PCI cards are not fully compatible with your monitor.

**Note:** This monitor is preadjusted at common resolution and vertical refresh rate settings (see “Factory Adjusted Video Modes” on page 35). If you don’t use a preadjusted resolution, you’ll need to adjust the screen geometry; to learn how to adjust the screen geometry, see “Using Manual Controls and the On-Screen Display” in *Setting Up Your Studio Display*.

### Using More Than One Monitor

If your computer has expansion slots, you can connect multiple monitors (including this display) to your computer. You may need a graphics card for each additional monitor you are using. See the manual that came with your computer for information on working with multiple monitors.

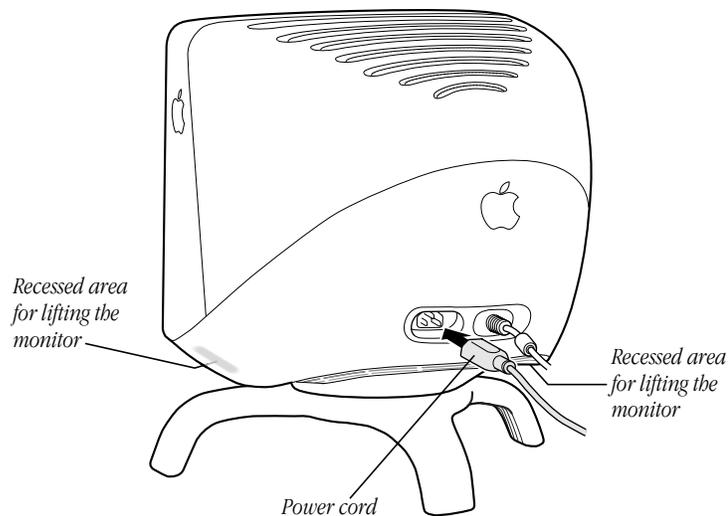
## Connecting the Display to Your Computer

**Warning** This equipment is intended to be electrically grounded. This is a safety feature. Ensure that the computer you are connecting to is grounded. If you use a power cord with a plug, be sure to connect it only to a grounded outlet. If the outlet is not grounded, contact a licensed electrician to replace it with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

**Important** Before you connect any cords or cables, make sure that your computer is turned off and unplugged.

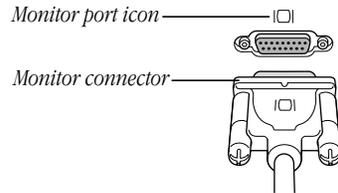
The monitor weighs approximately 48 pounds. To move the monitor, make sure that the monitor is facing you. Then lift the monitor by placing your hands on the recessed areas on the bottom of the monitor.

- 1 Connect the socket end of the monitor power cord to the power cord receptacle on the back of the display.



- 2 Plug the other end of the monitor power cord into the power socket on your computer.

- 3 Insert the monitor connector into the monitor port (marked with ) on the back of the computer and tighten the thumbscrews.

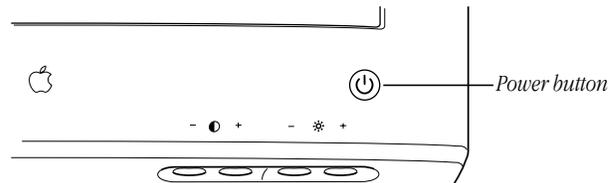


If you installed a graphics card in your computer, connect the display cable to the graphics card's port instead. For information about installing graphics cards, see the manual that came with your computer or graphics card.

### Turning the Display On

To turn on the monitor for the first time:

- 1 Plug your computer's power cord in the power outlet.
- 2 Press the power button on the front-right side of the display. Then start up your computer.



The monitor's green power indicator light goes on. (It may turn amber until your computer comes on.) If the green light does not go on, press the monitor's power button again. If this doesn't work, shut down and unplug your computer and make sure you've connected the monitor to your computer properly (see "Connecting the Display to Your Computer" on page 11).

**Note:** When you start up your computer or when your system wakes up from sleep, you may notice a shimmering effect on the screen for a few moments. This is normal. Your monitor automatically degausses (magnetically adjusts) the screen when it turns itself on.

**Important** If you are using any of the following computer models or graphics cards, you will need to turn off the DDC (Data Display Channel) control to make the maximum number of resolution settings available.

- Power Macintosh 6100, 7100, and 8100 series
- PowerBook 1400 and 5300
- Power Macintosh 9500, 6200, 6300, and 6400 series
- Some third-party video cards

For instance, if you are using any of the above computer models, or a third-party video card, and you are able to access only the 640 x 480 resolution setting, you will need to turn off the DDC control to access the rest of the resolution settings.

For instructions on turning off the DDC control, see the table “ETC” and “Accessing and Adjusting the On-Screen Display Controls” in *Setting Up Your Studio Display*.

If you are *not* using any of the computer models or graphics cards listed here, you do *not* need to reset the DDC control. You are finished setting up your display.

### **Installing the Apple Displays Software**

This section explains how to install the Apple Displays Software on your Mac OS–based computer.

You need the following to be able to install and use the Apple Displays Software:

- a PowerPC–based Macintosh computer
- Mac OS version 8 or later

If you do not have Mac OS 8 or later, contact an Apple-authorized dealer or service provider.

**Important** Make sure you use the Installer to install the software. Do *not* install the software by dragging files. If you do, the software will not work.

To install the Apple Displays Software, follow these steps:

- 1** Insert the CD-ROM disc that came with your monitor into the computer’s CD-ROM drive.  
The CD-ROM disc icon appears on the desktop.
- 2** Double-click the CD-ROM disc icon.  
The Apple Displays Software window opens.
- 3** Double-click the folder that contains the language you want the software to use.

- 4 Double-click the Apple Displays Software folder.
- 5 Double-click the Apple Displays Software Read Me file and read the document that appears. The Read Me file contains important information about the files included with your software.
- 6 Choose Quit from the File menu when you're finished reading.
- 7 Double-click the Upgrader/Installer icon to start the Installer program.

A Welcome screen appears.

**Note:** If you are installing version 1.6.2 of the Apple Displays Software, the installation instructions are slightly different from steps 8–10 listed here. Follow the onscreen instructions and click Install to install the software. Then skip to step 11.

The Install Apple Displays Software dialog box appears.

- 8 Make sure the destination disk named is the startup disk of your computer. If it isn't, select it from the Destination Disk list.
- 9 Click Select.

The software license agreement dialog box appears.

**Important** Be sure you're acting within the terms of the software license agreement before you agree to install this software on your computer. The license agreement specifies how many copies of the program you can make for yourself and others.

Click Continue and then click Agree once you've read and agreed to the terms in the license agreement.

- 10 Click Start.

The Upgrader/Installer takes a few moments to calculate what needs to be done and then begins to copy files. If other applications are open, a message asks you to quit them. Click Continue to quit the applications and continue with the installation.

- 11 Follow the instructions on the screen until the installation is complete.

The Upgrader/Installer checks whether you have the system software you need to use the monitor. If anything is missing, a message tells you what you need. You won't be able to install the software until you correct the problem. If a message says you don't have the correct system software, you can purchase a new version from an Apple-authorized dealer.

After the installation, the Upgrader/Installer tells you to restart your computer.

- 12 Click Restart.

The software is now installed and the monitor is ready for use. (To adjust your monitor, use the Monitors & Sound control panel, available from the Control Panels folder in the Apple [🍏] menu.)

**Important** If you ever reinstall system software on your computer, you must also reinstall the Apple Displays Software.

## Safety Instructions

**Warning** Do not clean any part of your display with a cleaner that contains alcohol or acetone, and never spray cleaner directly onto the screen. For more information about cleaning your display, see “Cleaning Your Monitor” on page 31.

For your own safety and that of your equipment, always take the following precautions.

Disconnect the power plug (by pulling the plug, not the cord) if any of the following conditions exists:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your display is exposed to rain or any other excess moisture
- your display has been dropped or the case has been otherwise damaged
- you suspect that your display needs service or repair
- you want to clean the case or screen

**Important** The only way to disconnect power completely is to unplug the power cord from the main power supply. Make sure at least one end of the power cord is within easy reach so that you can unplug the display when you need to.

Be sure that you always follow these instructions:

- Keep your display away from sources of liquids and moisture.
- Don't set anything on top of the display.
- Keep the display's vents free from obstruction.
- Read all the installation instructions carefully before you plug your display into a power source.

**Warning** Never remove the case from the monitor! You could come in contact with hazardous voltage.

Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

## Troubleshooting

**Warning** If you have a problem with your monitor and nothing presented in this manual solves it, consult the service and support information that came with your monitor for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to repair the monitor yourself, any damage you cause to the monitor will not be covered by the limited warranty on your monitor. Contact an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

Solutions to common display problems are described here. Problems related to the computer are covered in the manuals that came with your computer.

**Note:** When you start up your computer or when your system wakes up from sleep, you may notice a shimmering effect on the screen for a few moments. This is normal. Your monitor automatically degausses (magnetically adjusts) the screen when it turns itself on.

### If the Screen Image Is Dim, Flickers, or Does Not Appear

First try these basic checks:

- Make sure that the power cord is plugged in properly.  
*If the monitor power cord is plugged into your computer,* make sure your computer is on and the computer's power cord is firmly plugged into the computer and an electric outlet or power strip. If you are using a power strip, make sure it is turned on.
- Make sure the monitor cable is properly plugged into your computer monitor port or graphics card.
- Make sure the thumbscrews on the monitor cable are tightened securely into the port connector.
- Make sure that your computer and monitor are turned on.

If you still have problems, look for your problem on the following pages and follow the instructions.

#### **No image appears on the screen, or the screen is dim, and the monitor's power indicator light is on.**

- The monitor may have gone to sleep, or a screen saver that darkens your screen may be activated. Move the mouse or press a key to restore the image.
- Make sure the brightness (☼) and contrast (●) controls are set correctly. The brightness and contrast controls are located on the underside of the front of the monitor.
- If the monitor cable is properly connected and the amber light is on, the monitor may not be compatible with your computer or graphics card. You may need to install a different graphics card in your computer or use an adapter. See "Do You Need a Graphics Card?" on page 9.

**The screen flickers.**

- The flickering could be caused by interference from a nearby power line, a fluorescent light, or an electrical device—for example, a radio, a microwave oven, or other computer equipment. Try relocating nearby electrical devices, or moving your computer and monitor.
- If you have more than one monitor attached to your computer, the monitors might be interfering with one another. Move the monitors farther apart or set the monitors at an angle, so their screens are close and their back panels are farther apart. If you still see flickering after moving the monitors more than 16 inches apart, contact an Apple-authorized dealer or service provider.
- Your monitor may flicker if you have chosen a resolution with a refresh rate at 60 hertz or below. You may be able to change to a resolution with a higher refresh rate using the Monitors & Sound control panel.
- When you start up your computer or when your system wakes up from sleep, you may notice a shimmering effect on the screen for a few moments. This is normal. Your monitor automatically degausses (magnetically adjusts) the screen when it turns itself on.

**Problems With the Energy-Saving (Sleep) Mode**

Some computers and graphics cards do not support the Energy Saver feature. See the documentation that came with your computer and graphics card for more information.

**Problems With Picture Quality or Placement****No colors appear on the screen, or the colors don't look right.**

- Make sure that the number of colors is set correctly in the Monitors & Sound control panel or in the Control Strip. For more information, see “About the Monitors & Sound Control Panel” on page 22, Mac OS Help, or Monitors & Sound Help when the Monitors & Sound control panel is active.
- If you have already changed the number of colors displayed on the screen, try one of the following:
  - Quit the application you're using and start it again.
  - Go back to the number of colors you were using previously.

**The screen has colored patches and video jitters.**

- Move your display away from any external magnetic fields such as other monitors, video systems, printers, scanners, fluorescent lights, metal cabinets or desks, and electric clocks. The external fields may interfere with or disrupt the monitor's internal field, causing the screen image to jitter, distort, drift, or lose color quality.

**The screen image is off-center.**

- Try using one of the preset resolutions listed in the section “Factory Adjusted Video Modes” on page 35.
- Try changing to another resolution using the Monitors & Sound control panel or the Control Strip (see “About the Monitors & Sound Control Panel” on page 22).
- Adjust the vertical or horizontal position. See “Accessing and Adjusting the On-Screen Display Controls” in *Setting Up Your Studio Display*. (Keep in mind that you may have to adjust the picture again if you change resolutions.)

**The screen image is too large or too small.**

- Try changing to another resolution using the Monitors & Sound control panel or the Control Strip. (See “About the Monitors & Sound Control Panel” on page 22.)
- Adjust the horizontal or vertical size of the picture. See “Accessing and Adjusting the On-Screen Display Controls” in *Setting Up Your Studio Display*. (Keep in mind that you may have to adjust the picture again if you change resolutions.)

**The screen appears greenish, the screen image is unreadable, or there is “snow” on the screen.**

- Make sure the monitor cable is connected firmly to the monitor port or graphics card on the back of the computer.

**Problems With Changing the Resolution****After you change the screen resolution, a window is partly off the screen or missing, or you can't see the whole screen.**

If your window is missing:

- Quit the application whose window is missing and then open it again.
- Go back to the resolution you were using, close the window, change the resolution, and then reopen the window.

If you cannot see the whole screen:

- Try one of the preset resolutions.
- Adjust the vertical or horizontal position. See “Accessing and Adjusting the On-Screen Display Controls” in *Setting Up Your Studio Display*. (Keep in mind that you may have to adjust the picture again if you change resolutions.)

If you have problems with a particular application, contact the publisher of that application.

**After you change the screen resolution, icons move.**

Changing the screen resolution affects how information can be displayed on your screen. The display software may automatically reposition icons after you change the screen resolution.

**When you select a different resolution, the monitor goes blank, and the resolution does not change.**

Your monitor may go blank for 10 seconds if you select a resolution that does not work with your monitor. Try selecting another resolution.

**Problems Finding the Control Strip**

You may have hidden the Control Strip. Open the Control Strip control panel and click the button labeled “Show Control Strip.”

**Obtaining Online Support and Updated Apple Software**

Apple technical support information and software updates are available from online services. You can get troubleshooting and other important information by using these services. You can also get the latest versions of Apple software, including most printer drivers, system enablers, and updates to utilities and networking and communications software.

Support information and Apple software updates are available via Apple’s World Wide Web site:

- <http://www.info.apple.com>



## Using the Apple Displays Software

This chapter provides an overview of the features of the Apple Displays Software.

### What's Included in the Apple Displays Software?

The Apple Displays Software consists of several applications for adjusting basic picture, sound, and color settings. These applications include

- *Monitors & Sound control panel software*, which you use to adjust basic image and sound settings
- *Control Strip software*, which you use to easily change screen resolution and color depth
- *DigitalColor Meter*, which you use to magnify pixels and obtain RGB values
- *PANTONE® Color Picker*, which you use to specify PANTONE® values for colors
- *ColorSync*, which helps you synchronize on-screen color with print color

### Learning About the Apple Displays Software Using Mac OS Help

This section explains how to open Mac OS Help to get information about using the Apple Displays Software with your display.

To use Mac OS Help, follow these steps:

- 1** Open the Help menu and choose Mac OS Help or Help (the name of the menu item depends on the system software you are using).
- 2** Select one of the topics.  
A list of subtopics opens in the right window.
- 3** Choose the subtopic about which you want information.

## About the Monitors & Sound Control Panel

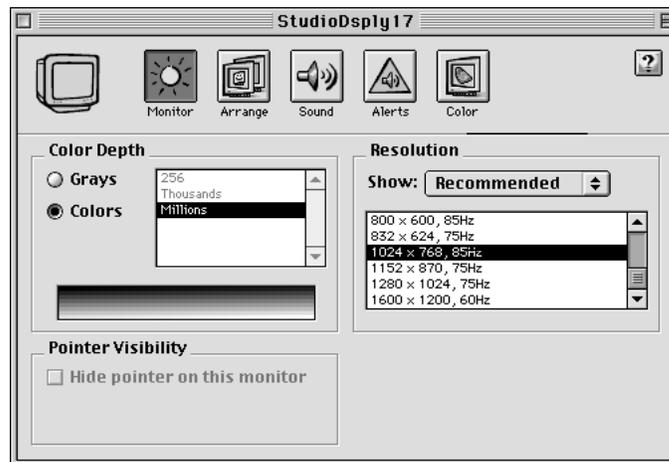
You use the Monitors & Sound control panel to change basic settings that affect the way your computer displays images and processes sound. Because computers' capabilities vary, Monitors & Sound automatically adjusts itself to the capabilities of the computer and monitor you're using. Therefore, the Monitors & Sound control panel shown in this manual may appear slightly different from the one on your computer.

If you have more than one monitor attached to your computer, a separate Monitors & Sound control panel appears on each screen when you open the control panel. You can customize your settings for each monitor separately.

To change or view settings using the Monitors & Sound control panel, follow these steps:

- 1 Choose Control Panels from the Apple () menu and open the Monitors & Sound control panel.

After a moment, the Monitors & Sound control panel appears on your screen.



*When you click the Monitor button, the settings*

*When you change resolutions, the screen goes dark*

- 2 Use the large buttons across the top of the Monitors & Sound control panel to select one of the options described below. See Mac OS Help for detailed information.
  - **Monitor**—Use this button to view color depth and resolution settings.
  - **Arrange**—Use this button to configure more than one monitor. This button appears on your screen if you have more than one video port on your computer.
  - **Sound**—Use this button to view your computer's sound settings. In this area, you can set the volume for speakers attached to your system, choose sound input devices such as a microphone or CD player, and select sound output quality.
  - **Alerts**—Use this button to view your system's alert sound.
  - **Color**—Use this button to select or create ColorSync profiles.

- 3 If necessary, change the desired settings.  
Changes you make take effect immediately.

**Important** When you change resolutions, the screen will go dark for a few seconds, then switch to the new resolution.

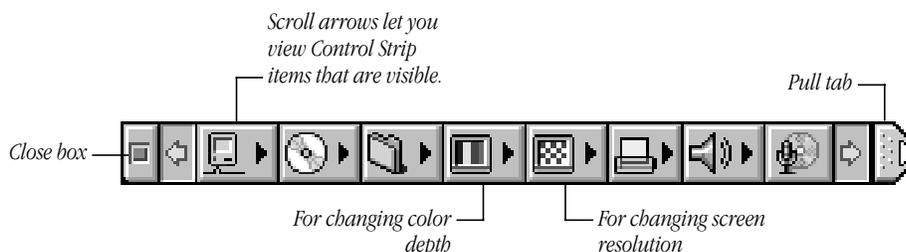
For additional help, open the Help menu and choose Help.

- 4 When you're finished, click the close box to close the Monitors & Sound control panel.

### Using the Control Strip

The Control Strip is a quick and easy way to adjust frequently used settings of the Monitors & Sound control panel.

When you turn on your monitor, the Control Strip appears in the lower-left corner of the screen. Click the pull tab once to open it.



The Control Strip may look slightly different on your computer, depending upon the Control Strip modules that are installed.

To change a setting, move the pointer over the item you want to use and hold down the mouse button. Choose a setting from the pop-up menu that appears.

If you want to change the position of the Control Strip on your desktop, hold down the Option key and drag the Control Strip. Release the Option key and mouse button when the Control Strip is located where you want it. (The Control Strip always snaps to the right or left edge of the display area.)

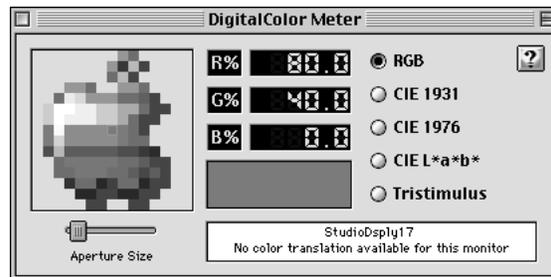
For more information on the Control Strip, see Mac OS Help.

### Using DigitalColor Meter

You can use DigitalColor Meter to obtain the RGB (red, green, and blue) values your computer uses to create colors, and to magnify the pixels on your screen.

To begin working with DigitalColor Meter, follow these steps:

- 1 Choose DigitalColor Meter from the Apple () menu.  
The DigitalColor Meter window opens.



- 2 Click the question mark (?) icon in the upper-right corner of the window for information on how to use DigitalColor Meter.

### Specifying Colors Using the PANTONE Color Picker

In some application programs, you can use PANTONE® Color Picker to specify PANTONE® colors, often used in producing professionally printed documents. In these applications, PANTONE® Color Picker is automatically launched when a new color needs to be specified.

When PANTONE® Color Picker is launched, you select a color by clicking a PANTONE® color, or typing a PANTONE® number in the text box, and clicking OK.

### Using ColorSync

ColorSync is Apple's unique color-matching software that ensures the most accurate color possible from input (scanner or camera) to display, and display to output (printer).

See Mac OS Help for information about color accuracy and ColorSync.

## Conserving Energy

You can use the Energy Saver control panel to set the monitor to conserve energy after a specified period of inactivity.

**Note:** You can save even more energy by turning the monitor off if you won't be using it for a while—for example, overnight or over the weekend.

You can use Energy Saver with any Apple monitor that complies with the United States Environmental Protection Agency's ENERGY STAR program. (Look for the EPA ENERGY STAR logo on the monitor box.)

For more information about power-saving and environmental features, see “Power-Saving and Environmental Features” on page 33 of this manual and the document named “TCO 95 Information” on the CD that came with your monitor.

## What Happens After You Turn On the Energy-Saving Feature?

When Energy Saver detects that you're not using the computer, it darkens the monitor screen and reduces the amount of energy it consumes. While the monitor is darkened, your computer is still working, but to avoid accidental changes, Energy Saver won't let any typing or mouse movement affect any of your work. To “wake up” the monitor, press any key on the keyboard. Your computer may beep while the monitor is waking up. You can begin work as soon as the computer stops beeping. (The beep volume cannot be adjusted.)

**Important** If you use Energy Saver, make sure you turn it off when you're doing disk-intensive tasks such as copying a large number of files, downloading large files from an online service, or printing a very large file. If Energy Saver is activated during such a task, the task may stop prematurely and you may need to recopy or reprint a file.

## Setting Up Energy Saver

For instructions about setting up Energy Saver, see Mac OS Help.

## Using Energy Saver With a Screen Saver

Screen savers are applications you can purchase that put moving patterns on your monitor when you're not using your mouse or keyboard. Screen savers and Energy Saver both help prevent screen “burn-in” (a problem in which ghost images remain on the monitor screen if it displays the same image for a long period of time). Energy Saver also conserves energy.



# Health, Safety, and Maintenance

For your own safety and that of your equipment, follow all the instructions in this chapter. Keep these instructions available for reference.

## Health-Related Information About Computer Use

Muscle soreness, eye fatigue, and other discomforts and injuries sometimes associated with using computers can occur from performing any number of activities. In fact, misuse of the same muscles during multiple activities can create a problem that might not otherwise exist. For example, if you engage in non-work activities that involve repetitive stress on the wrist—such as bicycling—and also use your computer’s keyboard improperly, you may increase your likelihood of developing wrist problems. Some individuals are at greater risk of developing these problems because of their health, physiology, lifestyle, and general exposure to stress. Work organization and conditions, such as workstation setup and lighting, also play a part in your overall health and comfort. Preventing health problems is a multifaceted task that requires careful attention to the way you use your body every hour of every day.

The most common health effects associated with using a computer are musculoskeletal discomfort and eye fatigue. We’ll discuss each area of concern.

## Musculoskeletal Discomfort

As with any activity that involves sitting for long periods of time, using a computer can make your muscles sore and stiff. To minimize these effects, set up your work environment carefully, using the guidelines that follow, and take frequent breaks to rest tired muscles. To make working with your computer more comfortable, allow enough space in your work area so that you can change position frequently and maintain a relaxed posture.

Another type of musculoskeletal concern is repetitive stress injuries (RSIs), also known as cumulative trauma disorders (CTDs). These problems can occur when a certain muscle or tendon is repeatedly overused and forced into an unnatural position. The exact causes of RSIs are not totally understood, but in addition to awkward posture, such factors as the amount of repetition, the force used in the activity, the individual's physiology, workplace stress level, and lifestyle may affect the likelihood of experiencing an RSI.

RSIs did not suddenly arise when computers were invented; tennis elbow and writer's cramp, for example, are two RSIs that have been with us for a long time. Although less common than other RSIs, one serious RSI discussed more often today is a wrist problem called carpal tunnel syndrome, which may be aggravated by improper use of computer keyboards. This nerve disorder results from excessive pressure on the median nerve as it passes through the wrist to the hand.

This section offers advice on setting up your work area to enhance your comfort while you use your computer. Since the effects of repetitive movements associated with using a computer can be compounded by those of other work and leisure activities to produce or aggravate physical problems, proper use of your computer system must be considered as just one element of a healthy lifestyle.

No one, of course, can guarantee that you won't have problems even when you follow the most expert advice on using computer equipment. You should always check with a qualified health specialist if muscle, joint, or eye problems occur.

### **Eye Fatigue**

Eye fatigue can occur whenever the eyes are focused on a nearby object for a long time. This problem occurs because the eye muscles must work harder to view an object that's closer than about 20 feet (6 meters). Improper lighting can hasten the development of eye fatigue. Although eye fatigue is annoying, there's no evidence that it leads to permanent damage.

Whenever you're engaged in an activity that involves close-up work—such as reading a magazine, doing craft work, or using a computer—be sure to have sufficient glare-free lighting and give your eyes frequent rest breaks by looking up and focusing on distant objects. Remember to have your eyes examined regularly.

To prevent discomfort and eye fatigue:

- Arrange your work space so that the furniture is properly adjusted for you and doesn't contribute to an awkward working posture.
- Take frequent short breaks to give your muscles and eyes a chance to rest.

### **Avoiding Fatigue**

- Change your seated position, stand up, or stretch whenever you start to feel tired. Frequent short breaks are helpful in reducing fatigue.
- Use a light touch when typing or using a mouse and keep your hands and fingers relaxed.

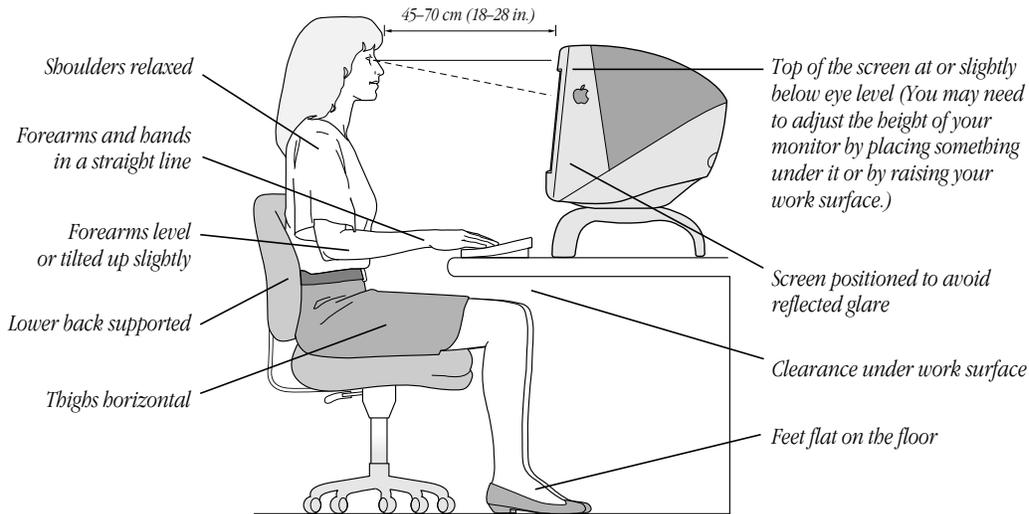
- Some computer users may develop discomfort in their hands, wrists, or arms after intensive work without breaks. If you begin to develop chronic pain or discomfort in your hands, wrists, or arms, consult a qualified health specialist.
- Allow adequate workspace so that you can use your keyboard and mouse comfortably. Place papers or other items so you can view them easily while using your computer. A document stand may make reading papers more comfortable.
- Eye muscles must work harder to focus on nearby objects. Occasionally focus your eyes on a distant object, and blink often while you work.
- Clean your screen regularly. Keeping the screen clean helps reduce unwanted reflections.

### **Arranging Your Office**

Here are some guidelines for adjusting the furniture in your office to accommodate your physical size and shape.

- An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are horizontal and your feet flat on the floor.  
The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.
- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an approximate right angle, with your wrist and hand in roughly a straight line.  
You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you may lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.
- Position the mouse at the same height as your keyboard. Allow adequate space to use the mouse comfortably.

- Position the monitor so that when you use it, no bright light is behind the monitor or reflected on the screen. Your eyes should be about level with the top edge of the screen and between 18 and 28 inches (45 to 70 cm) away. Take occasional breaks to focus your eyes on a distant object



### **What About Electromagnetic Emissions?**

There has been recent public discussion of the possible health effects of prolonged exposure to extremely low frequency (ELF) and very low frequency (VLF) electromagnetic fields. Such fields are associated with electromagnetic sources such as television sets, electrical wiring, and some household appliances—as well as computer monitors.

Apple has reviewed scientific reports and sought the counsel of government regulatory agencies and respected health organizations. Based on the prevailing evidence and opinions, Apple believes that the electric and magnetic fields produced by computer monitors do not pose a health risk.

In response to those customers who wish to reduce their exposure to electromagnetic fields, Apple has lowered the emission levels of our products. We are also actively encouraging further scientific research so we can continue to promote the health and safety of our customers and employees.

## Maintaining and Cleaning Your Monitor

### Maintaining Your Monitor

Follow these procedures for maintaining your monitor:

- Turn down the screen brightness control if you leave the computer turned on for extended periods. If the brightness is not turned down, the image on the screen could “burn in” and damage the screen.

You can also use a “screen saver” program, which dims or varies the image on the screen when the computer has been idle for a specified period of time. These programs are available from independent suppliers and user groups.

- If there is interference on the monitor’s screen or on a television or radio near your computer, move the affected equipment farther away.
- Make sure the vents on the computer are clear and unobstructed.
- Do not let liquid get on or into the monitor.

### Cleaning Your Monitor

#### Cleaning the Case

- 1 Turn your computer and monitor off.
- 2 Disconnect the monitor power cord from the back of the monitor. (Pull the plug, not the cord.)
- 3 Wipe the surfaces lightly with a clean, soft cloth dampened with water.

Don’t use aerosol sprays, solvents, alcohol or abrasives that might damage the finish on the case.

#### Cleaning the Screen

- 1 Turn your computer and monitor off.
- 2 Disconnect the monitor’s power cord from the back of the monitor. (Pull the plug, not the cord.)
- 3 Use a mild, non-abrasive cleaner on a soft cloth and wipe the screen.

**Warning** Never spray cleaner directly onto the screen. Liquid could drip inside the monitor and cause electrical shock.

To avoid damage to the screen, do not clean it with a cleaner that contains alcohol or acetone.

### **Protecting Your Monitor From Theft**

The slot on the back of the monitor is for connecting a security lock. It lets you attach a narrow, flexible cable that you can use to secure your monitor (and the rest of your computer system) to prevent theft. Security locks are available from an Apple-authorized dealer or service provider.

# Technical Information

## Specifications

### Picture Tube

- 17-inch diagonal flat square CRT, 16.0-inch diagonal viewable image size
- Anti-static, anti-glare surface treatment
- 0.25 millimeter (mm) aperture grille pitch

### Input Signals

- Red, green, and blue signals; separate horizontal and vertical sync

### Power-Saving and Environmental Features

This monitor is equipped with energy-saving features that allow the monitor to conserve energy when the computer is not in use. The color of the power indicator light on the front of the monitor indicates the operating mode.

DPMS mode	Mac OS Energy Saver mode	Power consumption	Power indicator
On	Normal	<110 watts (W)	Green
Stand by/Suspend	Monitor sleep	<15 W / <15 W	Amber
Off	System sleep	<5 W	Amber

For instructions on adjusting the system and monitor sleep settings and additional energy-conservation information, see “Conserving Energy” on page 25. You can also see Mac OS Help.

- *TCO 95/NUTEK Compliant:* This product has been certified by TCO (the Swedish confederation of Professional Employees) to meet standards for ergonomics, energy efficiency (NUTEK), emissions, and ecology.
- *MPR II compliant:* This product meets the strict limits for reduced electromagnetic and electrostatic emissions.
- *ENERGY STAR compliant:* As an ENERGY STAR Partner, Apple Computer has determined that this product meets the ENERGY STAR guidelines for energy efficiency. The United States Environmental Protection Agency’s ENERGY STAR program is a partnership with office product equipment manufacturers to promote energy-efficiency. Reducing energy consumption of office products saves money and reduces pollution by eliminating wasted energy.
- *DPMS compliant:* This product’s power-saving features comply with the Video Electronics Standards Association’s (VESA) Display Power Management Standard (DPMS). (The computer must also be VESA DPMS compliant to use DPMS features.)

### **User Controls**

- Power on button
- Automatic degauss at power-up; manual degauss with the Degauss control in the On-Screen Display
- Buttons and controls: On-Screen Display Enter and Exit, Left and Right Arrows, Brightness, Contrast
- Additional picture controls available in the On-Screen Display

### Factory Adjusted Video Modes

- Adjusted at the factory for the following standard modes:

Resolution	Vertical refresh rate (hertz)	Horizontal scan rate (kilohertz)
640 x 480	60	31.469
640 x 480	66.7	35.0
640 x 480	85	43.269
800 x 600	72	48.077
800 x 600	85	53.674
832 x 624	75	49.725
1024 x 768	60	48.363
1024 x 768	75	60.023
1024 x 768	85	68.677
1152 x 870	75	68.681
1280 x 1024	75	79.976
1600 x 1200	60	75.000

### **Input Electrical Requirements**

- *Voltage:* 90–264 volts (V) AC
- *Frequency:* 47–63 hertz (Hz)
- *Amperage:* 2.0
- *Power:* 120 watts (W) maximum

### **Weight**

- 48 pounds (21.8 kilograms)

### **Dimensions**

- *Height:* 18.9 inches (in.)  $\pm$  0.2 in.; 480 mm  $\pm$  0.2 mm
- *Width:* 16.5 in.  $\pm$  0.2 in.; 420 mm  $\pm$  5 mm
- *Depth:* 16.9 in.  $\pm$  0.2 in.; 430 mm  $\pm$  5 mm

### **Temperature**

- *Operating:* 50° to 104° F (10° to 40° C)
- *Storage:* 32° to 140° F (0° to 60° C)
- *Shipping:* –40° to 149° F (–40° to 65° C)

### **Humidity (Noncondensing)**

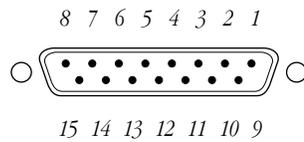
- *Operating:* 20% to 95%

### **Altitude**

- *Operating:* 0 to 10,000 feet (ft.); 0 to 3,048 meters (m)
- *Shipping:* 0 to 15,000 (ft.); 0 to 4,572 (m)

### Display Cable Specifications

- 15-pin miniature D-type connector



Pin	Output signal
1	Red video ground
2	Red video
3	Not used
4	ID 1
5	Green video
6	Green video ground
7	ID 2 (SCL)
8	Not used
9	Blue video
10	ID 3 (SDA)
11	Not used
12	V Sync
13	Blue video ground
14	Sync return
15	H Sync
Shell	Shield ground