



Apple Multiple Scan 14 Display

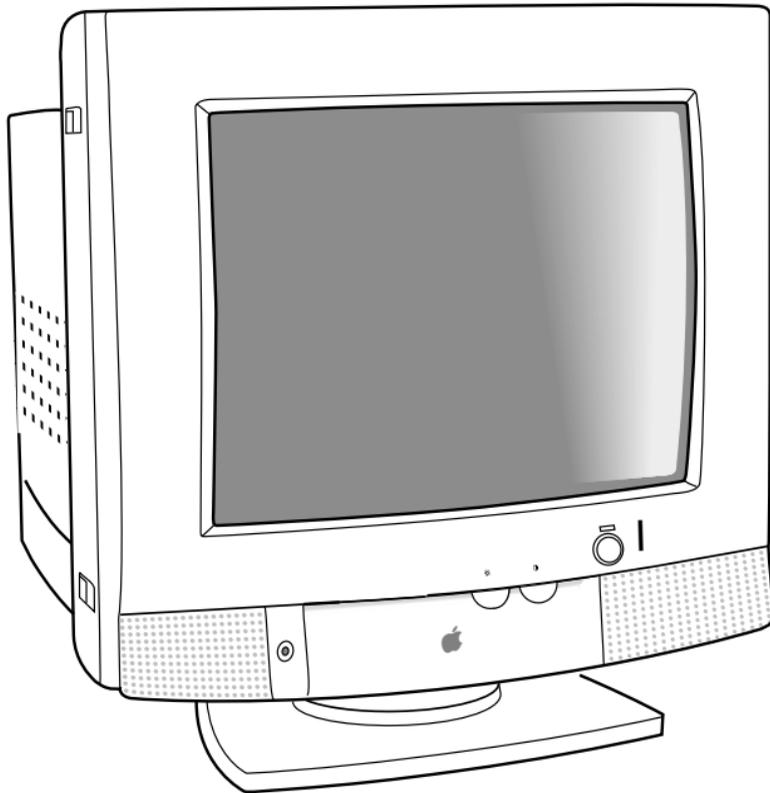




Basics

Apple Multiple Scan 14 Display





Overview

The Apple Multiple Scan 14 Display is a color monitor that supports a variety of resolutions, and has a built-in amplifier and stereo speakers for producing sounds and music.

The Apple Multiple Scan 14 Display has a diagonal viewable image size of 12.4 inches.





The Apple Multiple Scan 14 Display features

- Optimized screen resolutions (832x624, 800x600, and two at 640x480)
- A tilt/swivel base that allows the monitor to be positioned for optimal viewing comfort
- Energy Star Power Conservation compliance





Repair Issues: 832x624 Resolution

On some Apple Multiple Scan 14 displays, when the 832x624 screen resolution is selected from the Monitors control panel, the raster shifts to the right and cannot be adjusted back to the center until the resolution is changed back to 640x480.

Display model M3935LL/A does not support the 832x624 screen resolution. It supports only 640x480 and on some computers, 800x600.

In November of 1995, Apple introduced an upgrade program to update qualified monitors to the Revision B display that supports the 832x624 resolution. Refer to the following section to determine eligibility for upgrade.





Determining Upgrade Eligibility

You can determine whether or not a display qualifies for this upgrade by the type of computer it is used with. Refer to the following table:

Computer	Used with Rev. A Display	Used with Rev. B Display
LC 475 Perf 475 Perf 476 Perf 6100 PMac 6100 PMac 7100 PMac 7200 PMac 7500 PMac 8100 PMac 8500 PMac 9500	Cannot properly center the display image. Upgrade to Rev. B.	Select 832x624 in the Monitors or Sound & Display control panel.





Computer	Used with Rev. A Display	Used with Rev. B Display
Mac II series LC, LC II, LC III LC 520, LC 575 LC 580, LC 5200 Mac TV Perf 400 series (except 475,476) Perf 550, 560, 575, 577, 578 Perf 5200 series All models of PBook PBook 200 and 2300 series (used with an Apple Duo Dock, Duo Dock II, Duo Dock Plus, or MiniDock)	Cannot be upgraded because the computer supports 640x480 only.	Cannot be upgraded because the computer supports 640x480 only.





For all other computers that are not listed in the table, try the following procedure to determine if the customer's configuration would benefit from the display upgrade:

- 1 Open the Monitors or the Sound & Displays control panel.
- 2 Locate the resolution area of the control panel.

If . . .	Then . . .
Only 640x480 is shown	The computer does not support either 800x600 or 832x624 and therefore would NOT benefit from the upgrade.
Both 640x480 and 832x624 are shown	The computer can support 800x600 resolutions but the system software may or may not make 800x600 available. Go to step 3.





If . . .	Then . . .
832x624 is shown	Go to step 3. If 800x600 cannot be accessed, upgrade to the Rev. B display.

- 3 Test the configuration as follows:
 - a Hold down the option key while clicking the Options button in the Monitors control panel.
 - b If 800x600 is now available, select it and then close the control panel.
 - c Restart to activate the new screen resolution. This configuration should NOT be upgraded since multiple screen resolutions are available.

832x624 is always shown as an option if the computer supports either 800x600 or 832x624 resolutions. However, system software may not always make the 800x600 resolution available.

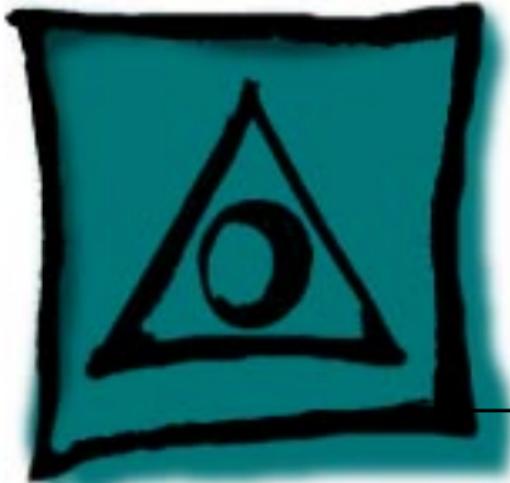




Other computer configurations that generally should not be upgraded are the 630 series, Power Mac 6200, Quadra 660, 800, 840, 900, and 950 (check by using the procedure in Step 3 above).

After completing the steps, if you determine a display is eligible for upgrade, contact Apple Technical Support at (800) 919-2775.





Specifications

Apple Multiple Scan 14 Display





Characteristics

Picture Tube

14-in. diagonal, spherical shadow mask CRT (12.4-in. viewable image)

Multiple scan

Polished surface treatment

Trio gun configuration

Phosphor (aluminized): P22 derivative

0.28-mm dot pitch

Screen Resolution

640x480 at 60 Hz in VGA mode

640x480 at 67.67 Hz in Macintosh mode

800x600 at 60 Hz in SVGA mode

832x624 at 75 Hz in Macintosh mode

Input Signals

Red, green, and blue signals; separate sync



**Scan Rates**

Vertical refresh rate: 60 - 72 Hz
Horizontal scan rate: 31.5 - 48 kHz
Macintosh, VGA, and SVGA compatible

Cable Connector

15-pin miniature D-type

System Requirements

Power Macintosh, Macintosh Centris, Macintosh Quadra, some Macintosh Performas, or any NuBus-compatible Macintosh with a Macintosh Display Card 24AC.

Macintosh II, IIci, IIx, IIcx, and IIfx with compatible display card, IIsi with display card and NuBus adapter, IIvi and IIvx with display card and display adapter for 640x480 mode.

Some PowerBooks, Duo Dock, Duo Dock II, and Mini Dock, Macintosh LC, LC II, LC III, LC 475, and LC 630, and Macintosh computers with Display Cards 4•8, 8•24, or 8•24GC installed support 640x480 mode. Other modes are possible with additional adapters.





System software version 7.1 or later

Monitor Timings

640x480
Resolution @ 60 Hz

Horizontal Timing
1/H: 31.5 kHz
Back Porch: 48 dots
H SYNC: 96 dots
Front Porch: 16 dots
1 dot: 39.72 ns
1 H: 31.77 μ s
1/dot: 25.175 MHz

Vertical Timing
1 V: 16.67 ms
Back Porch: 33 H
V SYNC: 2 H
Front Porch: 10 H

640x480
Resolution @ 66.67 Hz

Horizontal Timing
1/H: 35.000 kHz
Back Porch: 96 dots
H SYNC: 64 dots
Front Porch: 64 dots
1 dot: 33.06878 ns
1 H: 28.5714 μ s
1/dot: 30.24 MHz

Vertical Timing
1 V: 15.000 ms
Back Porch: 39 H
V SYNC: 3 H
Front Porch: 3 H





Monitor Timings

800x600
Resolution @ 60 Hz

Horizontal Timing
1/H: 37.879 kHz
Back Porch: 88 dots
H SYNC: 128 dots
Front Porch: 40 dots
1 dot: 25.000 ns
1 H: 26.4 μ s
1/dot: 40.000 MHz

Vertical Timing
1 V: 16.58 ms
Back Porch: 23 H
V SYNC: 4 H
Front Porch: 1 H
1/V: 60.3165 Hz

800x600
Resolution @ 72 Hz

Horizontal Timing
1/H: 48.077 kHz
Back Porch: 64 dots
H SYNC: 120 dots
Front Porch: 56 dots
1 dot: 20.000 ns
1 H: 20.800 μ s
1/dot: 50.000 MHz

Vertical Timing
1 V: 13.853 ms
Back Porch: 23 H
V SYNC: 6 H
Front Porch: 37 H





Monitor Timings

832x624

Resolution @ 75 Hz

Horizontal Timing

Back Porch: 224 dots

H SYNC: 64 dots

Front Porch: 32 dots

1 dot: 17 ns

1 H: 20.1 μ s

1/dot: 57.2832 MHz

Vertical Timing

1 V: 13.3 ms

Back Porch: 39 H

V SYNC: 3 H

Front Porch: 3 H

1/H: 46.751 kHz

1 H: 20.1 μ s





Speakers

Audio input signal: 0.707 V RMS

Audio input impedance: minimum 10 k ohms

Audio output per speaker: minimum 500 mW with 0.707 V
RMS input

Frequency response: ± 3 db from 100 Hz to 20 kHz

Internal speaker muted when headphones are inserted into the
headphone port





Controls and Ports

User Controls

Front panel: power, brightness, and contrast

Control panel (behind the door): horizontal shift, vertical shift, horizontal size, and vertical size

Automatic degauss at power-on; manual degauss by turning power switch off, then on (capable of full degauss after monitor is turned off for 20 minutes or more)

I/O Ports

Headphone/Speaker: One input port and one pass-through output port





Physical and Electrical

Power Supply

Voltage: 90–132 VAC

Frequency: 47–63 Hz

Power: 80 W maximum

Size and Weight

Height: 14.7 in. (378 mm)

Width: 14.2 in. (365 mm)

Depth: 14.8 in. (380 mm)

Weight: 25 lb. (13 kg)

Monitor Stand

Removable, tilt-and-swivel





Environmental

Temperature

Operating: 50°F to 104°F (10°C to 40°C)

Shipping: -4°F to +149°F (-40°C to +65°C)

Storage: 32°F to 140°F (0°C to 60°C)

Humidity

Noncondensing, 20% to 95%

Altitude

Operating: 0 to 10,000 ft. (0 to 3,000 m)

Shipping: 0 to 15,000 ft. (0 to 4,500 m)

Power-Saving Feature

Conforms to the Energy Star program of the United States
Environmental Protection Agency





Troubleshooting

Apple Multiple Scan 14 Display





General

The Symptom Charts included in this chapter will help you diagnose specific symptoms related to your product. Because cures are listed on the charts in the order of most likely solution, try the first cure first. Verify whether or not the product continues to exhibit the symptom. If the symptom persists, try the next cure. (Note: If you have replaced a module, reinstall the original module before you proceed to the next cure.)

If you are not sure what the problem is, or if the Symptom Charts do not resolve the problem, refer to the Flowchart for the product family.

For additional assistance, contact Apple Technical Support.





Symptom Charts

No Raster

No raster, LED off

- 1 Check power cord connection.
- 2 Check monitor cable connection, and tighten connector thumbscrews at monitor port, if loose.
- 3 Replace power cord.
- 4 Return monitor to Apple.

No raster, LED on

- 1 Adjust brightness and contrast controls. See Adjustments chapter.
- 2 Check monitor cable connection, and tighten connector thumbscrews at monitor port, if loose.
- 3 If monitor cable is properly connected, but power LED is yellow, you might need to install a video card in the computer. Refer to monitor's user's guide.
- 4 Return monitor to Apple.





Geometry

Raster too short, tall,
narrow, or wide

- 1 Adjust vertical and horizontal size. See Adjustments chapter.
- 2 Change to another screen resolution in Monitors control panel.
- 3 Return monitor to Apple.

Raster not centered

- 1 Check that distortion is not due to environmental conditions. Move monitor to another location and rotate display.
- 2 Adjust vertical and horizontal shift controls. See Adjustments chapter.
- 3 Return monitor to Apple.





Video

Screen dark or appears dim

- 1 Adjust brightness. See Adjustments chapter.
- 2 Energy Saver option may be activated. Move mouse or press any key to reactivate monitor.
- 3 Return monitor to Apple.

Screen flickers

- 1 Check that distortion is not due to environmental conditions. Move monitor.
- 2 Move monitors at least 16 inches apart, if using more than one monitor on CPU.
- 3 Return monitor to Apple.

No colors appear on screen

- 1 Check to make sure that color and number of colors are set correctly on Monitors control panel.
- 2 Return monitor to Apple.





Video (Continued)

Screen appears greenish; screen is unreadable

- 1 Check monitor cable connection. If you have a video card, install monitor cable into video card port. If you do not have a video card, install monitor cable into monitor port.
- 2 Return monitor to Apple.

In 832x624 screen resolution, screen is off center, has no raster, flickers, or appears distorted

- 1 Some models don't support 832x624 screen resolution. See the Repair Issues topic in the Basics chapter.
- 2 Select 800x600 or 640x480 screen resolution from Monitors control panel.





Adjustments

Apple Multiple Scan 14 Display





Brightness and Contrast

To locate the brightness and contrast controls, turn the monitor so the front faces you. The brightness and contrast controls are the knobs to the right of the Apple logo.



Brightness and
Contrast Controls





Brightness Control

Contrast Control

Move the brightness control to increase or decrease brightness.

Move the contrast control to increase or decrease contrast.





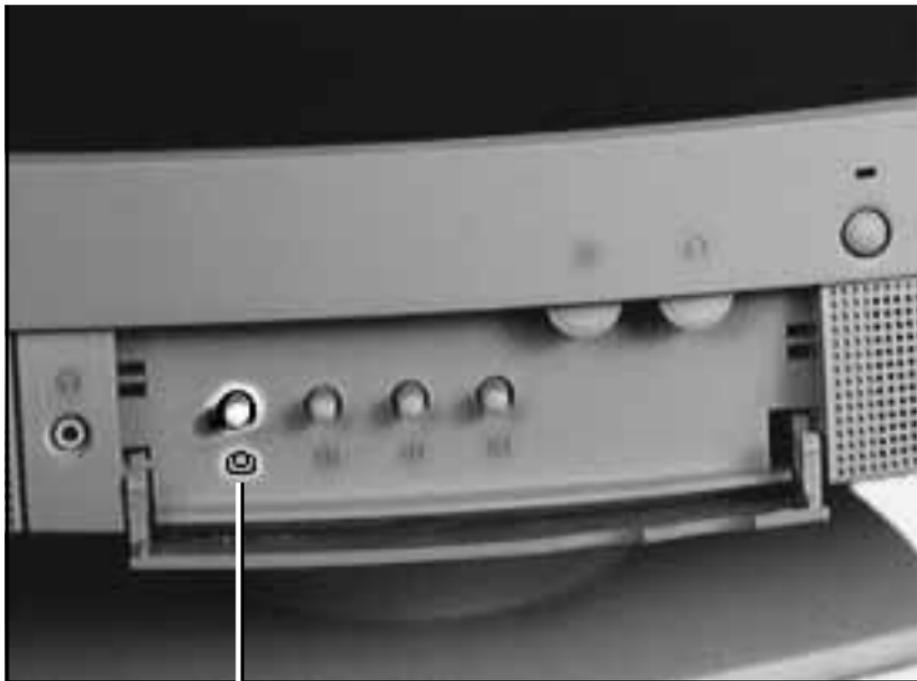
Geometry

To locate the control panel, turn the monitor so the front faces you. The control panel is behind the door with the Apple logo on it.



Control Panel





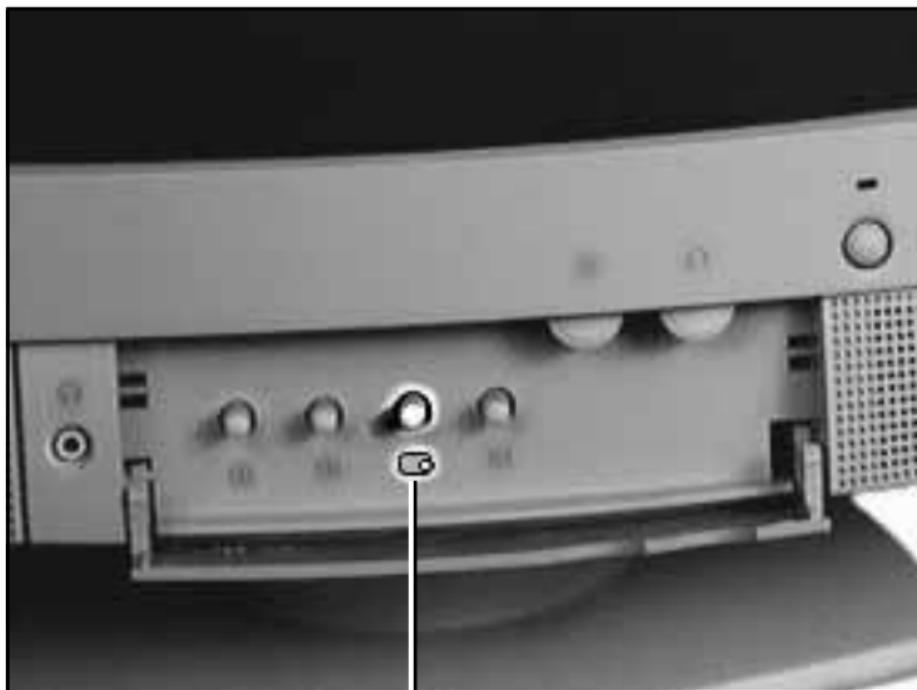
Vertical Shift

Vertical Shift

Turn the vertical shift knob counterclockwise to move the center of the picture down.

Turn the vertical shift knob clockwise to move the center of the picture up.





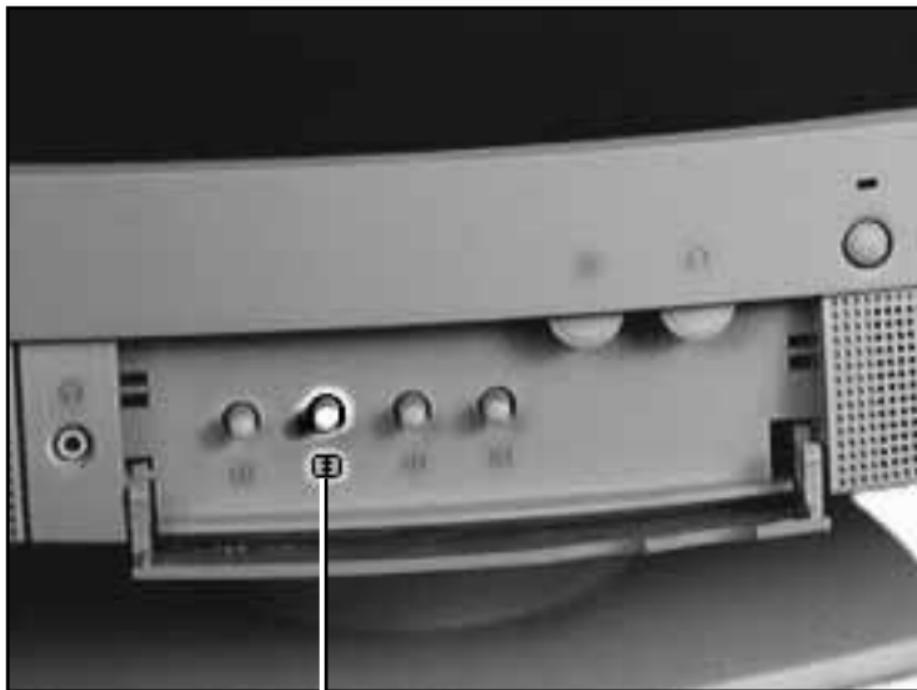
Horizontal Shift

Horizontal Shift

Turn the horizontal shift knob counterclockwise to move the center of the picture to the left.

Turn the horizontal shift knob clockwise to move the center of the picture to the right.





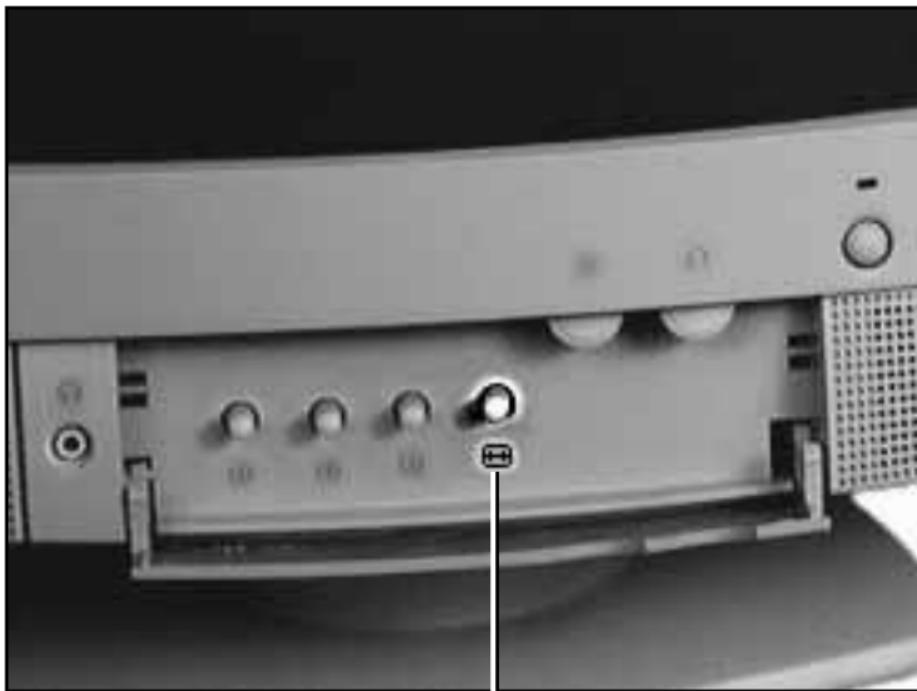
Vertical Size

Vertical Size

Turn the vertical size knob counterclockwise to reduce the height of the picture.

Turn the vertical size knob clockwise to increase the height of the picture.





Horizontal Size

Horizontal Size

Turn the horizontal size knob counterclockwise to reduce the width of the picture.

Turn the horizontal size knob clockwise to increase the width of the picture.

