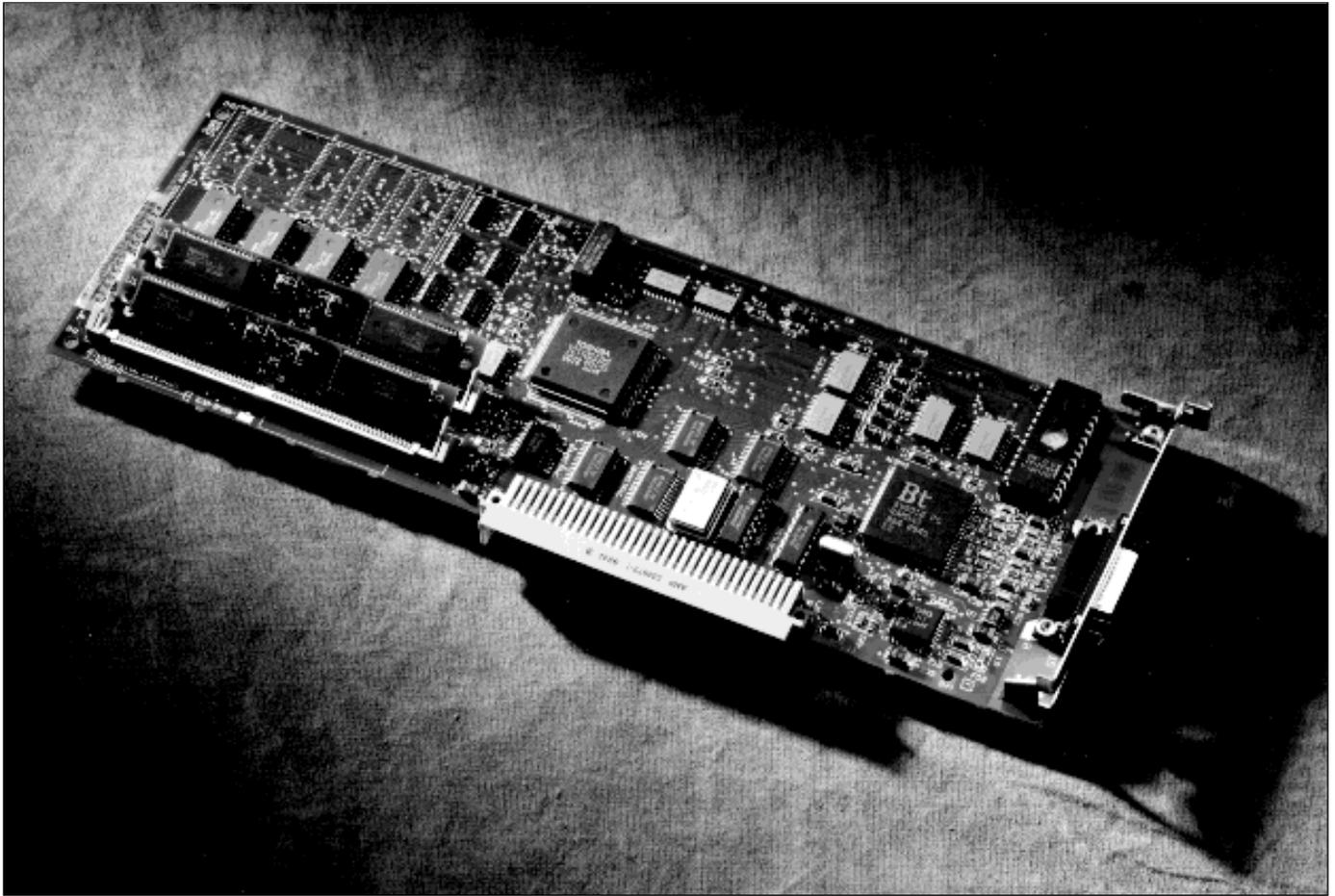# Macintosh Display Card 4•8 and 8•24

Overview

The Macintosh® Display Card 4•8 and Macintosh Display Card 8•24 provide the Apple® Macintosh II family of modular computers with a single interface to all Apple displays and a broad range of graphics capabilities.

The Macintosh Display Card 4•8 provides support for up to 256 colors or shades of gray on the Apple High-Resolution Monochrome Monitor and the Apple-Color™ High-Resolution RGB Monitor. In addition, it provides for up to 16 levels of gray on the Apple Macintosh Portrait Display and the Apple Two-Page Monochrome Monitor.

The Macintosh 8•24 Display Card supports all Apple displays to the maximum of their capabilities, including full 256-level true gray scale—all the shades of gray that the eye can perceive—on all

Apple displays. The card also supports full 24-bit true color on the AppleColor High-Resolution RGB Monitor, allowing you to generate images of photographic quality by displaying up to 16.7 million colors simultaneously. In addition to letting you display and work with photographic-quality images, true gray-scale and true color capabilities allow you to work with lifelike simulations, animations, and visual effects.

The Macintosh Display Card 4•8 can be upgraded to the Macintosh Display Card 8•24 by using the Macintosh Display Card VRAM Expansion Kit.

Both cards also support RS-170 standard timing, for compatibility with numerous interlaced video devices. In addition, the Macintosh Display Card 8•24 provides

the highest-possible-quality interlaced video through the use of Apple Convolution. A capability that is usually associated with much more expensive systems, Apple Convolution evaluates adjacent lines and pixels on interlaced video devices, then adjusts the image on the screen to provide smoother, more continuous images than could otherwise be generated.

The Macintosh Display Card 4•8 and Macintosh Display Card 8•24 provide a wide range of graphics capabilities, which, when combined with the power of the Macintosh II family of computers, enable you to take advantage of sophisticated applications and produce powerful results.

Features	*Benefits*
► Support for all Apple displays	► Provides support for a wide range of display types, both color and monochrome. ► Enables you to upgrade to color displays or to larger displays without replacing the card. ► Allows managers of large installations to mix and match monitors and computers more easily.
► Two versions of the card	► Provides easier configuration and the ability to grow as your needs grow. ► With the Macintosh Display Card VRAM Expansion Kit, allows the Macintosh Display Card 4•8 to be upgraded to the Macintosh Display Card 8•24.
► 24-bit true color and 256-level true gray-scale support	► Supports up to full 24-bit true color on the AppleColor High-Resolution RGB Monitor, and full 256-level gray scale on all Apple displays. ► Offers a comprehensive range of colors and gray levels for enhancing graphics, presentation materials, and other documents.
► Auto-configuration and software-selectable display modes	► Streamlines operation by automatically determining which Apple display is attached and switching modes without user intervention. ► Lets you choose pixel depths to display 2, 4, 16, 256, or 16.7 million colors with a simple change on the computer's Control Panel.
► RS-170 timing and Apple Convolution	► Provides interlaced video output compatible with many types of video equipment. ► Apple Convolution improves the image quality on interlaced video devices; with the Macintosh Display Card 8•24, provides support for up to 256 colors (8 bits per pixel).
► NuBus™ compatible	► Plugs easily into any Macintosh II slot. ► Gives complete flexibility of internal card placement. ► Supports multiple video cards and displays. ► Supports NuBus slave block transfer modes for fast access by NuBus master cards.

System Requirements	To use the Macintosh Display Card 4•8 or Macintosh Display Card 8•24, you'll need: ► A personal computer in the Macintosh II family	with an available NuBus slot ► System Software Version 6.0.5 or later ► For Macintosh II, IIx, and IIcx: The 32-bit QuickDraw™ software is	needed to run 24-bit color applications. ► To take advantage of full 24-bit color, a minimum of 2 megabytes of RAM is recommended.
Technical Specifications	**Interface** ► NuBus; plugs into any Macintosh II slot ► NuBus slave block transfer modes supported **Connector** ► 15-pin D-style **Display modes** ► 1, 2, 4, 8, or 24 bits per pixel (2, 4, 16, 256, or 16.7 million colors) ► Software-selectable **Display resolution** ► Up to 1,152 pixels horizontally by 870 pixels vertically, depending on the resolution of the display ► Auto-configuring	**Apple Convolution** ► Convolution available for RS-170 interlaced video to up to 8 bits per pixel (256 colors) on the Macintosh Display Card 8•24 **Color lookup table** ► In 24-bit mode, provides direct access to 16.7 million colors, driving 8-bit DACs (digital-analog converters) for each of the three RGB channels ► In other modes, provides a palette of up to 256 colors out of 16.7 million **Output signals** ► Modes: RGB (analog) and gray scale	► Video: RS-343 standard. Supports RS-170 timing standard for interlaced video with overscan and underscan modes. ► Sync: Separate or composite depending on display resolution; negative-going; TTL **Raster rates** ► Variable raster rates under software control ► Vertical refresh: 66.7 or 75 hertz depending on display resolution ► Dot clock: 12.2727, 30.24, 57.2832, or 100 megahertz depending on display resolution **Power consumption** ► 7 watts

Display Modes Supported

Display	Macintosh Display Card 4•8	Macintosh Display Card 8•24
► Apple High-Resolution Monochrome Monitor	► 640 x 480 pixels ► 2, 4, 16, or 256 gray levels	► 640 x 480 pixels ► 2, 4, 16, or 256 gray levels
► AppleColor High-Resolution RGB Monitor	► 640 x 480 pixels ► 2, 4, 16, or 256 colors	► 640 x 480 pixels ► 2, 4, 16, 256, or 16.7 million colors
► Apple Macintosh Portrait Display	► 640 x 870 pixels ► 2, 4, or 16 gray levels	► 640 x 870 pixels ► 2, 4, 16, or 256 gray levels
► Apple Two-Page Monochrome Monitor	► 1,152 x 870 pixels ► 2, 4, or 16 gray levels	► 1,152 x 870 pixels ► 2, 4, 16, or 256 gray levels
► Interlaced video devices	► 640 x 480 pixels ► 2, 4, 16, or 256 colors	► 640 x 480 pixels ► 2, 4, 16, 256, or 16.7 million colors (Apple Convolution enabled up to 256 colors)

Macintosh Display Card 4•8 and 8•24

Ordering Information			
Macintosh Display Card 4•8	Order No. M0121PA/A	With your order, you'll receive: ▶ Macintosh Display Card 4•8 ▶ Limited warranty statement
Macintosh Display Card 8•24	Order No. M0507PA/A	With your order, you'll receive: ▶ Macintosh Display Card 8•24 ▶ Limited warranty statement
Macintosh Display Card VRAM Kit	Order No. M0412LL/A	With your order, you'll receive: ▶ Two VRAM upgrade SIMMs