19- and 21-inch Flat Screen Trinitron Color Monitors

Just the Facts

Sun microsystems

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Positioning

Figure 1. Sun’s flat screen monitor

Sun Microsystems, a leading vendor of high-performance workstations and servers, is introducing 19- and 21-inch monitors with Sony’s latest Trinitron flat screen technology. These two display products provide advanced features and deliver outstanding image performance. Features include a significantly flatter screen surface than previous Sun™ monitors, high-contrast picture performance, and high-resolution rates. Flat screen Trinitron technology helps deliver a picture that is natural, detailed, and consistent, with colors that are bright, purer, and more accurate.

Why is a flat image so important? A flat display give the user optically accurate linearity. Lines in any direction appear perfectly straight. In addition, a flat display eliminates shape distortion.

The tube itself is not actually flat, but has the standard horizontal curve that all aperture grille monitors have. However, a layer of glass—essentially a lens—is added to the curved surface to optically correct the picture for a flat screen. Then a flat layer of glass is added. The result is a completely flat screen that, at first glance, appears almost concave. The other effect of having several extra layers of glass is an almost stereoscopic sense of depth to any image.

These two new monitors are ideal for use with all Sun systems, thin-client products, and graphics frame buffers. These monitors replace the two current 19- and 21-inch Premium color monitors in Sun’s monitor family.

Key Features

- Flat screen surface with a horizontal radius of 50,000 mm
- Super-fine aperture grille of 0.24 mm
- Active signal correction (ASC) circuitry for easy, instant image sizing and centering at the touch of a single button
- Dual inputs for mini HD15-pin and 13W3 connectors to connect two computers simultaneously
- Broad horizontal scan ranges: 30–107 kHz for the 19-inch and 30–121 kHz for the 21-inch monitor
- Digital color restoration
- TCO 99 compliance

Availability

The new 19- and 21-inch Flat Screen Trinitron color monitors will be announced on November 2, 1999 and General Availability is targeted for November 15, 1999.

Target Users and Markets

Because of the complexity of information being displayed, many technical and corporate computing users require high image quality and large screen sizes on the desktop. This flat screen Trinitron technology delivers a flat screen with excellent image quality, sharp text, and color uniformity across the entire display area, which dramatically improve the user's experience. The flat screen also minimizes distortion and reduces reflective glare, for increased user comfort.

These new flat screen Trinitron monitors are specifically targeted for graphic professionals, CAD users, and corporate professionals who require high-quality video display and additional screen real estate at a competitive price.

Selling Highlights

Market Value Proposition

The demand for larger screens and quality displays, is growing tremendously in both the commercial and technical markets. With the introduction of the 19- and 21-inch Flat Screen Trinitron monitors to the Sun monitor family, Sun now offers a complete range of state-of-the-art large screen displays suited to the varying needs of Sun's customers.

Sun's new Flat Screen Trinitron displays offer demanding graphic professionals outstanding performance. Both models offer significant advancements in flat CRT design, maximizing picture quality while minimizing valuable desktop real estate. A flatter CRT design also translates into reduced geometric distortion and glare, making it easier on the eyes to work in front of these displays. This is a a priority for Sun's information users who spend hours in front of a screen.

Compatibility

The new 19- and 21-inch Flat Screen Trinitron color monitors are designed to be fully backward and forward compatible with all Sun legacy, current, and future workstations and servers; frame buffer boards such as TurboGX Plus™ graphics, PGX32™ graphics, Sun Creator3D series, and Sun Elite3D graphics; as well as Sun's thin-client products, such as the Sun Ray 1 enterprise appliance.

These monitors are also compatible with Microsoft Windows NT and Windows 98/95 systems.

Enabling Technology

New CRT Design

Both the 19- and 21-inch flat screen models offer significant advancements in flat CRT design, maximizing picture quality while minimizing valuable desktop real estate. A flatter CRT design also translates into reduced geometric distortion and glare, making it easier on the eyes to work in front of these displays. This is a a priority for today's information workers who spend hours in front of a screen.

The following technologies are part of the new CRT design

- The newly designed CRT combines both **flatter screens** and **shorter measurement** from front to back. The outer curvature on these 19- and 21-inch models is 50,000 mm compared to the 2,000 mm curvature of a conventional Trinitron CRT.
- The **flat glass panel** uses advanced glass technology for the structural rigidity a flat screen requires, and minimizes glare. The fine-pitch aperture grille uses higher tension and thicker support members, which help focus the electrons for enhanced detail. The high-focus electron gun creates more accurate image reproduction by improving corner-to-corner focus by 20 percent compared to Sun's previous 20- and 21-inch premium color monitors. The high-precision deflection yoke keeps the electron beam spot consistent in size and shape, resulting in excellent image clarity from side-to-side and from top-to-bottom.
- **Anti-reflective (AR) coating** provides the 19- and 21-inch Flat Screen Trinitron monitors with optimal levels of focus, reflectivity, and contrast along the screen of the tube. The major advantage of this multi-level coating is a highly anti-reflective surface. Thus, the user experiences an outstanding picture quality with limited ambient light reflection, along with an increase in contrast and image clarity.
- Advanced technology, including Sony's **low-power small aperture grille** with impregnated cathode (L-SAGIC™) gun, is incorporated into these displays to improve the beam spot ratio, thereby reducing misconvergence and improving color uniformity and image quality across the display.

Aperture Grille Technology

There are fundamentally two types of masking systems for CRTs on the market today: shadow mask and aperture grille.

- Shadow mask technology is essentially a thin metal plate with holes punch throughout its surface. The electronic beam must focus through these small holes on the mask surface to strike the phosphor.
- Aperture grille consists of a series of unbroken vertical strips that are stretched from top to bottom of the CRT, with two fine damper wires that function as horizontal cross members.

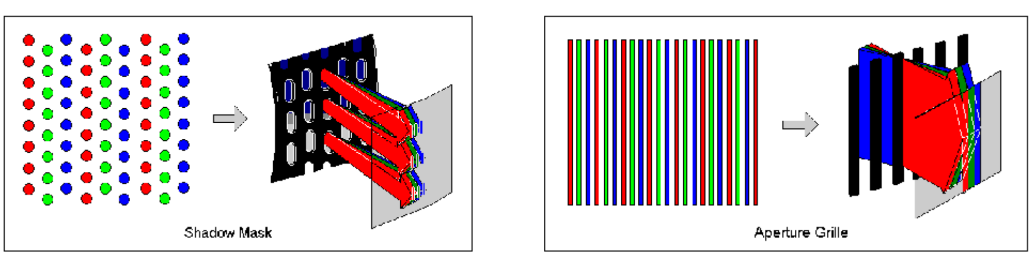

Figure 2. Design differences between shadow mask and aperture grille technologies

The aperture grille design creates a larger phosphor surface area for the electron beam to strike. The result is a brighter picture with richer, crisper colors. Other advantages of the aperture grille include resistance to moire patterns (a rainbow like pattern of conflicting colors on the CRT's image) and doming (warping that is caused when black text appears within a white background).

Specifications

	19-inch Flat Screen	21-inch Flat Screen
Screen Size **Viewable Area**	19 inches 18.0 inches	21 inches 19.8 inches
Stripe Pitch	0.24 mm	0.24 mm
Horizontal Scan	30–107 kHz	30–121 kHz
Sun Timings	1152 x 900 @ 66 Hz, 76 Hz 1280 x 1024 @ 66 Hz, 76 Hz 1600 x 1200 @ 75 Hz, 85 Hz	1152 x 900 @ 66 Hz, 76 Hz 1280 x 1024 @ 66 Hz, 76 Hz 1600 x 1200 @ 75 Hz, 85 Hz
Video Input Types	2-meter non-detachable HD15-pin cable	2-meter captive 13W3 video cable and HD15-pin connector
Power Consumption	140 W (typical)	160 W (typical)
Brightness	100–120 cd/m2	100–120 cd/m2
Dimensions • Height • Width • Depth	 • 463 mm • 449 mm • 463 mm	 • 495 mm • 499 mm • 500 mm
Weight	41.4 lbs./18.8 kg	71.6 lbs./32.5 kg
Dots Per Inch (dpi) • 1152 x 900 • 1280 x 1024 • 1600 x 1200	 • 83 dpi • 95 dpi • 112 dpi	 • 76 dpi • 69 dpi • 104 dpi

Note: *Both 19- and 21-inch flat screen color monitors also support other VESA PC timings. The new Sun 21-inch FD 121 kHz is also compatible with any industry-standard VESA timings and can also support the following new resolutions:*

– 1280 x1024 @ 112 Hz (new Sun stereo timing)

– 1792 x 1344 @ 60 Hz, 75 Hz (new VESA standard)

– 1856 x 1392 @ 60 Hz, 75 Hz (new VESA standard)

MTBF

- MTBF for the 19-inch Flat Screen Trinitron: 100,000 hours demonstrated
- MTBF for the 21-inch Flat Screen Trinitron: 100,000 hours demonstrated

Ordering Information

Monitor X-Options

Order Number	Description
X7135A	19-inch Standard
X7135A-O	19-inch Logoless
X7135A-STH	19-inch Southern Hemisphere
X7136A	21-inch Standard
X7136A-O	21-inch Logoless
X7136A-STH	21-inch Southern Hemisphere

Upgrade / Spares Ordering

Order Number	Description
UG-MON-7136A **UG-MON-7136A-STH** **UG-MON-7135A** **UG-MON-7135A-STH** **CU-MON-7136A** **CU-MON-7135A**	Upgrade to Sun 21-inch flat screen Upgrade to Sun 21-inch flat screen Upgrade to Sun 19-inch flat screen Upgrade to Sun 19-inch flat screen Non-Sun upgrade to Sun 21-inch flat screen Non-Sun upgrade to Sun 19-inch flat screen
#365-1399~ Std. **#365-1400 ~ logoless** **#365-1401~ SoHem** **#365-1403 ~ Std.** **#365-1404 ~ logoless** **#365-1405 ~ SoHem**	Monitor, 21-inch flat screen, standard Monitor, 21-inch flat screen, logoless Monitor, 21-inch flat screen, Southern Hemisphere Monitor, 19-inch flat screen, standard Monitor, 19-inch flat screen, logoless Monitor, 19-inch flat screen, Southern Hemisphere

Warranty

The Sun Flat Panel Trinitron monitors comes with a standard 15-month warranty.