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17-inchers now pace the pack -- CRT monitors show advantages with size

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CRT monitors are getting bigger and better, with improvements that once commanded a premium now standard and new features being added every day to enhance multimedia appeal. Monitors now sport reduced dot pitch, increased brightness, simplified features, color matching, smaller footprints and lighter weight. Special multimedia-access attractions include built-in speakers and microphones. In the future, users can expect digital cameras and touch screens.

The CRT product mix is changing as 14-inch monitor sales slow and those of the mainstay 15-inch products begin to decline. On the upswing is the 17-inch size, the largest growth segment in the CRT-monitor market. Indeed, Lee Schugar, an industry analyst in Dataquest Inc.'s PC Technical Directions Program, says a 17-inch monitor may prove to be a better price/performance choice than any other size. It's also more productive, Schugar said, and just more fun to use.

Over the past couple of years, more players have entered the market, driving prices down. Korean and Taiwanese manufacturers have jumped in with 17-inch CRTs designed to compete with the performance of their Japanese counterparts. Prices for the lowest-end products are plummeting, while those for high-end CRT monitors are following the price-decline slopes typical for computers whenever newer technology comes onstream. Analysts expect street prices to be about 10 percent under manufacturers' suggested retail prices.

Even though cathode-ray-tube technology is 100 years old, CRT-monitor quality continues to improve. The two major technologies on the market-aperture grille and Invar shadow mask-both claim recent improvements in contrast, clarity and light transmission.

A new Trinitron CRT that's 40 percent to 50 percent flatter than its predecessor is being used in the 19-inch GDM-400 PS and 21-inch

G5DM-500 PS series of CRT monitors from Sony Electronics Inc. (San Jose, Calif.). Because larger CRTs require it, Sony has added enhanced elliptical correction, along with active signal correction to automatically size and center images on the screen when the monitor is first activated, a setup feature for standard VESA timing. For nonstandard timing, it engages with a push of a button.

Both the 19- and 21-inch monitors offer .25 to .27 aperture-grille pitch, a vertically flat, short-neck CRT design, 90 degrees deflection, D-sub and BNC inputs, AR film coating and TCO 95 compliance. The GDM-400 PS has an 18-inch viewable image and a maximum resolution of 1,600 x 1,200 pixels at 75 Hz. The GDM-500 PS has a 19.8-inch viewable image and Digital Multiscan Technology, which supports a maximum resolution for both PCs and Macs up to 1,600 x 1,200 at 85 Hz. Both monitors have a three-year warranty on parts, labor and CRT. The estimated street price of the 21-inch unit is $1,799; it will be available in December. The 19-incher will be available in January at an estimated price of $1,199.

The Digital Dynamic Convergence circuitry Sony has incorporated in its newly introduced GS line automatically improves image convergence in 13 areas of the screen, from the center to all four corners. This feature tightens the misconvergence specification across the entire screen rather than using multiple measurements for convergence in multiple screen zones.

A single mono speaker in the bottom of the display does not enlarge it or affect image quality. Other features include a new electron-gun technology and the Elliptical Correction System, which helps brightness, color uniformity and overall image clarity. A technique known as Graphic Picture Enhancement gives GS users the ability to optimize the brightness, sharpness and color quality based on three selectable levels: presentation, graphics and MPEG video.

The new 17-inch CPD-200-GS has a diagonal viewable-image size of 16 inches maximum, aperture-grille pitch of .25 mm, maximum resolution of 1,280 x 1,024 pixels at 75 Hz and a bevy of useful controls. Its estimated street price is $780.

Bulk becomes a concern on the desktop as screen size surpasses 17 inches. Newer short-length and mini-neck CRTs enable reductions in the physical dimensions of displays as deflection angles are reduced. These changes can slim down a monitor; a short-length 17-inch model will fit the same depth dimension as a traditional 15-inch monitor, and a short-length 19-incher is as deep as a traditional 17-inch monitor.

Dot pitch is increasing in 21-inch CRT monitors. Where a year ago the lowest dot pitch was .33 mm, today displays with .28- and .26-mm pitch aperture are available. That improves continuity of color and graphics and is easier on the eyes. Twenty-one-inch monitors also are becoming lighter in weight and have smaller footprints. On-screen displays have

become easier to use; enhanced color and contrast tubes are new additions.

For the most demanding monitor applications, Mitsubishi Electronics America Inc. (Cypress, Calif.) has introduced the Diamond Pro 1000, a 21-inch CRT monitor with Diamondtron aperture-grille technology and a 19.7-inch diagonal viewable image. The monitor is targeted at imaging, CAD/CAM, desktop publishing and prepress graphic design. A new dynamic-beam-forming gun provides the ultimate in resolution, refresh rate and screen performance. The unit features a 0.28-mm aperture-grille pitch, 1,800 x 1,440 refresh rate at 76 Hz, 30-to-115-kHz horizontal auto-scan range and 240-MHz video bandwidth. The monitor packs all the advanced performance of the Diamond Pro 700 and meets all major emission and power-management standards. The manufacturer's suggested retail price (MSRP) is $1,849.

The first color-calibrated system from Mitsubishi, just introduced, is its SpectraView 1000, a 21-inch CRT display for demanding color-critical applications including prepress, computer animation, digital photography, Web development, medical imaging, 3-D design and video editing. The system's 19.7-inch diagonal display uses the precise, high-speed SpectraSensor colorimeter and custom software for fast, accurate color measurements.

The SpectraView 1000 also features an enhanced 0.28-mm aperture-grille pitch, 180-MHz video bandwidth and smooth 9-bit stabilized color controls. The horizontal scanning range is 30 to 95 kHz, and the maximum resolution is 1,600 x 1,200 pixels at 75 Hz. The MSRP is $3,995.

Japanese manufacturers are actively introducing 19-inch products to the market, some with Invar shadow-mask technology and flat, square CRTs that are new in this size class. Others use aperture-grille technology, which is said to be more costly but provides better image performance. The flat, square CRTs are reportedly less expensive to manufacture and are able to activate more of the CRT area. Thus, users have the full range of choices at the 19-inch level.

Targeted for business and graphics applications, the G790 from ViewSonic Corp. (Walnut, Calif.) is a 19-inch model (18 inches viewable) with a flat, square display, advanced Invar shadow mask and a SuperContrast screen that ensures well-defined pixels for bright colors. The monitor has a .26-mm true dot pitch, displays 1,280 x 1,024 at 88-Hz refresh rates and offers a maximum resolution of 1,600 x 1,200 at 76 Hz. The vertical scan rate is 180 Hz.

Other features include OnView controls for easy adjustment, ViewMatch color controls for both color temperature and intensity to match screen and print colors, an antireflection, antiglare screen treatment and TCO 95 compliance. The monitor is backed by a three-year limited warranty on CRT parts and labor. Its MSRP is $999.

Universal Serial Bus (USB) hubs are becoming a desirable feature, even though users must wait for the introduction of Windows 98 to tap into the full benefits of this feature, which will make it possible to directly plug in USB-compatible digital cameras, scanners, joysticks, mice and keyboards. The industry-wide plug-and-play spec ensures compatibility between like features on monitors and peripherals and helps to eliminate the rat's nest of cabling dangling from the back of the computer.

A 19-inch CRT monitor, the FlexScanR FX-D7 from EZIO Nanao Technologies Inc. (Cypress, Calif.), features an integrated USB hub with five ports. Aimed at the professional user, this monitor has a flat, square CRT offering high resolution, a high-contrast Invar shadow-mask scheme and easy-to-use on-screen controls. The diagonal viewable image size is 17.8 inches, dot pitch is 0.26 mm and scanning frequency is 30 to 96 Hz. Recommended resolution is 1,280 x 1,024 at 89 Hz; maximum resolution is 1,600 x 1,200 at 76 Hz. Both D-sub and BNC connectors are provided for maximum flexibility, and an input-priority switch allows users to select priority on either output terminal. Parts, labor and CRT are covered under a three-year warranty.

A 19-inch digital CRT monitor with multimedia features and a USB hub has been added to the product line of ADI Systems Inc. (San Jose). The MicroScan 6P features a built-in microphone, optional stereo speakers that attach to the sides of the monitor and a built-in USB hub with four access ports. The unit has an 18-inch viewable image and high-contrast capability for applications in CAD/CAM/CAE and advanced graphics design. Part of ADI's Professional Series, it provides PC and Mac users with a super-high-contrast .22 horizontal dot pitch and a flat-screen tube. Horizontal scanning frequency is up to 95 kHz, enabling flicker-free resolutions up to 1,600 x 1,200 pixels at 75 Hz.

Mitsubishi has released a high-performance 17-inch CRT monitor, the Diamond ProR 700, with an aperture-grille pitch of .25 mm, a 16-inch diagonal viewable image and a high-contrast optical-quality coating. The Diamondtron hybrid CRT incorporates a cylindrical, vertically flat, square-cornered faceplate with an aperture-grille mask design and Mitsubishi's proprietary NX-DBF electron gun for exceptional center-to-corner and edge-to-edge focus. The refresh rate is 1,600 x 1,200 at 75 Hz, the microprocessor-based horizontal auto-scan range is 30 to 95 kHz and the video bandwidth is 150 MHz. The display features dual CPU connections with switchable D-sub and BNC input connectors for maximum flexibility and cross-platform compatibility with IBM, Apple and Unix workstation graphics standards. The MSRP is $899.

CTX International (Industry, Calif.) has added 17- and 21-inch CRT monitors to its Executive Series targeted to meet the demands of graphic artists, desktop publishers and other professional users. The 21-inch EX 910U offers a 20-inch viewing area and a high-contrast flat, square tube with a 0.26-mm dot pitch. It sports a five-port USB hub on the back of the monitor. The horizontal scan range is 30 to 95 kHz, and the vertical

refresh rate is 50 to 160 Hz. When operated at the recommended resolution of 1,280 x 1,024, the monitor provides an 85-Hz refresh rate; at the maximum resolution of 1,600 x 1,200, the refresh rate is 75 Hz. The monitor meets TCO emission standards and comes with dual BNC connectors and VGA inputs. The standard display geometry and color adjustments are digitally controlled, with memory-saving functions. The MSRP is $1,499.

Ergonomic features in CRT monitors are the latest direction for Princeton Graphic Systems in a new line of monitors with sleek, furniture-like styling. They have built-in USB with two access ports on each side and TCO92 compliance. Adjustments automatically size and position the monitor viewing areas.

The new series also boasts a reduced footprint. The use of integrated circuits on a newly designed, more compact pc board made it possible to slim down the 17-inch monitor to the size of a standard 15-incher and the 19-inch model to a standard 17-inch size, according to the company.

The EO 710U is due for release in December. It has a 15.95-inch viewable screen, high-contrast FST with a precision electron gun, low-expansion Invar shadow mask and advanced antireflection coating. Dot pitch is 0.26 mm, and maximum resolution is 1,280 x 1,024 at 85 Hz. It measures 16.1 x 16.1 x 17.7 inches and weighs 34.8 pounds.

Adjustment of screen size, position and geometry requires only the touch of one button. The EO 710U also features an on-screen display for ease of adjustment and a color-temperature control system. Its MSRP is $649. A 19-inch model is due out in January.

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