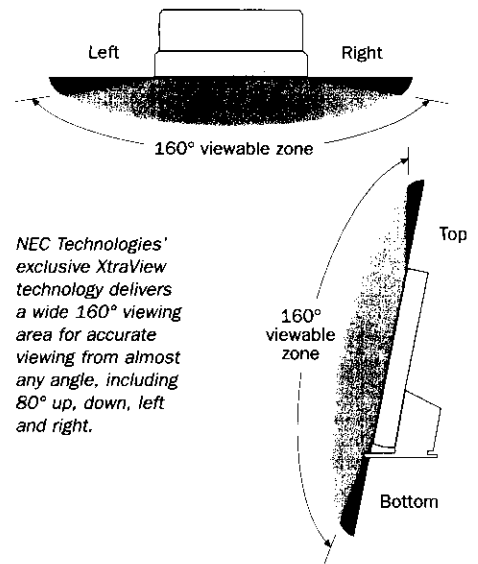


NEC Technologies' True Color LCD Monitors

MultiSync® LCD400™ and MultiSync® LCD2000

LCD2000 monitors enable the display of unlimited colors in a continuous spectrum, providing a truer representation of color. In addition, these LCD monitors display a continuous gray scale and do not require the use of dithering techniques—a mainstay of digital LCD panels—to approximate intermediate shades of gray. The high-contrast LCDs enhance color vibrancy and improve focus with no geometric distortion. Flicker-free images reduce eyestrain for more comfortable viewing. And, their high brightness makes the MultiSync LCD400 and MultiSync LCD2000 monitors much brighter than notebook LCDs and some CRTs.



XtraView™ technology gives a clear view from any direction. The MultiSync LCD monitors feature XtraView technology, which delivers a 160-degree viewing area for clear, accurate viewing of the screen from 80 degrees up, down, left and right. As a result, viewers can see the image accurately without having to be seated directly in front of the display—important when multiple persons are viewing the screen or if the display is wall-mounted.

Wide compatibility offers versatility and ease of use. Like their CRT counterparts, the MultiSync LCD400 and MultiSync LCD2000 monitors support multiple resolutions. The MultiSync LCD400 monitor offers support for resolutions from 640×480 to 1024×768 (1024×768 optimal).* The MultiSync LCD2000 monitor supports resolutions from 640×480 to 1280×1024 (1280×1024 optimal).* And, because they are completely analog, these monitors accept RGB input directly. There's no need to purchase and install special analog-to-digital graphics or interface cards.

For users who need superior image quality in a small space, MultiSync® LCD monitors deliver bright, sharp screen performance in a slim, lightweight package.

Created for today's most demanding user environments, NEC Technologies' newest line of LCD monitors offers an ideal choice for users with space and weight constraints who require the superior image quality and flexibility previously provided only by CRT monitors. The MultiSync LCD400™ and MultiSync LCD2000™ monitors are well-suited for industries such as:

- **Financial**—Financial-industry applications such as trading floors benefit from the lower power consumption and reduced footprint of LCD monitors. With less space consumed by equipment, more people can work on the floor, resulting in greater profit potential.
- **Medical**—Because LCD monitors emit almost no magnetic fields, they can be placed next to sensitive diagnostic equipment such as MRI and X-Ray machines. In addition, their reduced footprint saves space in nurses' stations, diagnostic push-carts, and other areas where space is at a premium. And, their high-resolution capabilities and superior image quality ensure that critical data and images are displayed accurately.
- **Manufacturing**—Manufacturing facilities can benefit from the small footprint and flexible mounting capabilities of LCD

monitors. They are ideal for situations where information displays are needed, but there is no room for heavy, bulky monitors, such as on a manufacturing line. In addition, LCD monitors are perfect for clean-room situations because they do not attract dust.

- **Transportation**—LCD monitors are preferred for transportation applications such as mobile diagnostic trailers, where the reduced footprint and reduced power consumption are key.

The latest offering from NEC Technologies in LCD monitors includes the 14.1" MultiSync LCD400 monitor and the 20.1" MultiSync LCD2000 monitor. Both incorporate NEC's own True Color Active Matrix TFT LCDs with XtraView™ technology.

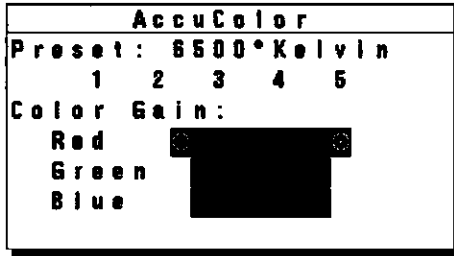
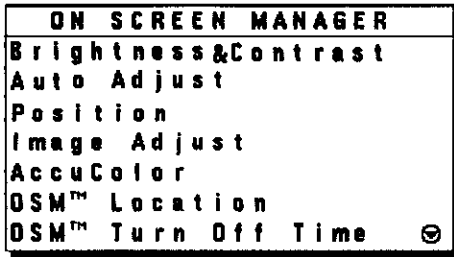
Slim footprint saves valuable space.

Weighing as little as 12 pounds and measuring less than 7" deep, the MultiSync LCD Series monitors consume 60% less space than comparable CRT monitors and offer a 70% reduction in weight for the ultimate in space saving and portability. And there's no need to sacrifice image quality or flexibility. The MultiSync LCD Series monitors were designed to perform every bit as well as their award-winning MultiSync CRT monitor counterparts, and in some areas outperform today's CRT monitors.

Superior image quality and surprising brightness. The true analog LCD modules of the MultiSync LCD400 and MultiSync

The slim, lightweight design of the MultiSync LCD monitors saves valuable desktop space and makes them the ideal choice for environments where space is at a premium.

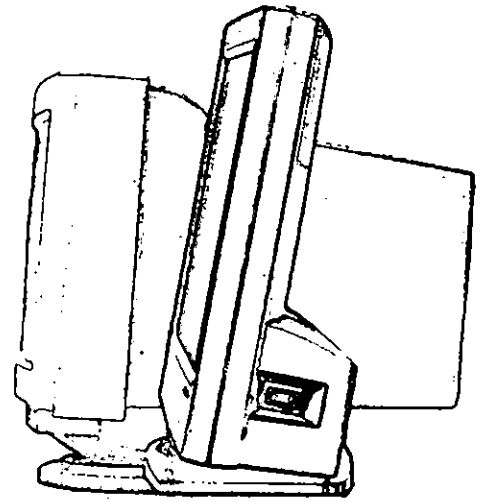
In addition, FullScan™ capability enables all supported resolutions to be shown full-screen, allowing you to use the entire screen area. And, the MultiSync LCD monitors are compatible with PC and Macintosh® computers as well as Sun® workstations, Silicon Graphics® workstations and additional workstations and x-terminals.



NEC Technologies' On-Screen Manager lets you control all elements of your screen image using easy to understand controls displayed on-screen.

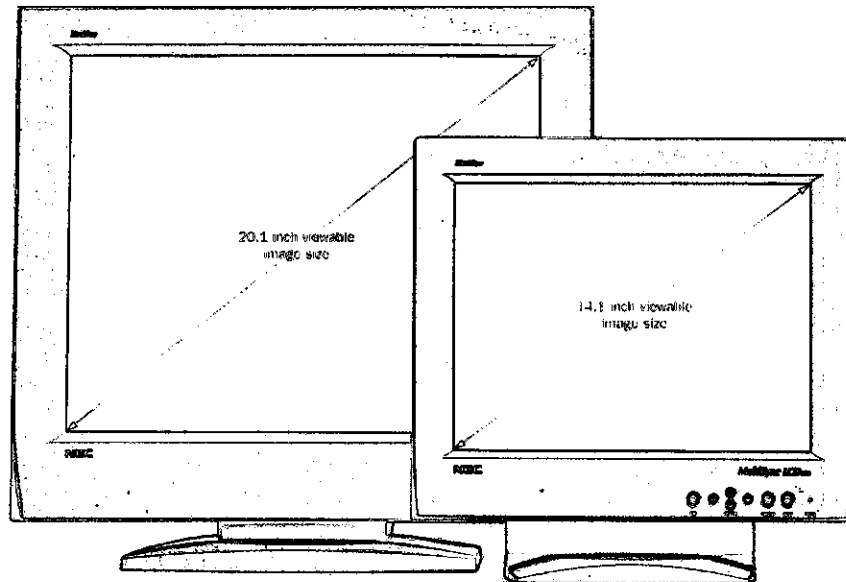
NEC Technologies' exclusive OSM™ (On-Screen Manager) controls offer fast, accurate control of your image. The MultiSync LCD monitors incorporate NEC Technologies' own OSM controls for quick, easy image adjustments including brightness, contrast, horizontal and vertical position. The auto-adjust feature enables one-button centering of the image—it makes horizontal and vertical adjustments at the same time to perfectly center the screen image. In addition, the OSM controls enable access to NEC Technologies' exclusive AccuColor® control system, which allows you to closely match your on-screen colors to printed output, color standards or personal preference.

Low energy consumption and reduced emissions reduce costs. The MultiSync LCD2000 monitor consumes 30% less power and the MultiSync LCD400 monitor consumes 50% less power than comparable CRT monitors. Plus, both emit less heat. This translates into lower energy costs by allowing users to conserve energy, as well as save on cooling costs. Plus, both monitors exceed Energy Star requirements for reduced power consumption. In addition, they have almost no emissions, making them suitable for a number of sensitive environments.



Less than 7" in depth, the MultiSync LCD monitors consume 60% less space and weigh 70% less than comparable CRT monitors.

ErgoDesign enhancements increase comfort, productivity and ease of use. The MultiSync LCD monitors, like all NEC Technologies products, are designed according to NEC Technologies' ErgoDesign® philosophy. ErgoDesign adapts technology to the way you work resulting in enhancements that increase comfort, ease of use and productivity.



ErgoDesign elements include:

- A sleek design and small footprint to enhance any working environment.
- Compatibility with a third party mounting arm for the MultiSync LCD2000, which allows users to mount the monitor to a wall or table, adding flexibility and saving valuable desktop space.
- A low-glare screen treatment.
- Easy-to-use digital controls that enable quick access to the OSM controls for fast, easy image adjustments.

The MultiSync LCD2000 can be used with a mounting arm for increased flexibility and space savings.

The quality and reliability you expect from NEC Technologies. The MultiSync LCD400 and LCD2000 monitors continue the tradition of quality and reliability established by NEC Technologies' award-winning CRT monitors. The MultiSync LCD monitors are covered by an industry-leading three-year limited warranty (one year backlight). And of course, every MultiSync monitor is backed by the responsive service and support of NEC Technologies.

Specifications	MultiSync® LCD400™ Model #LA1421JMW
Display:	14.1" (14.1" viewable image size), active matrix, thin film transistor (TFT), liquid crystal display (LCD); 0.28 mm dot pitch; XtraView technology; RGB vertical stripe color filter arrangement; 180 cd/m ² white luminance, typical; 100:1 contrast ratio, typical
Compatibility:	720×400: VGA text* 640×480: 60 Hz to 85 Hz* 800×600: 56 Hz to 75 Hz* 832×624: 75 Hz* 1024×768: 60 Hz to 75 Hz (optimal)
Display Resolution:	Horizontal: 1024 dots Vertical: 768 lines
Active Display Area:	Horizontal: 11.3" (286 mm) Vertical: 8.4" (214 mm)
Viewing Angles:	Typical: 160° Vertical (80° up/80° down) 160° Horizontal (80° left/80° right) Minimum: 120° Vertical (60° up/60° down) 120° Horizontal (60° left/60° right)
Input Signal:	Video: ANALOG RGB (Video 0.7 Vp-p) Input Impedance: 75 ohms Sync: Separate sync. TTL level Horizontal sync: positive/negative Vertical sync: positive/negative Composite sync: TTL level, positive/negative Composite sync. on green video: 0.3 Vp-p negative
Display Colors:	Analog input: unlimited colors (dependent on video card)
User Controls:	Power, brightness and contrast, horizontal position, vertical position, auto adjust, image adjust, AccuColor, OSM location, OSM lock out, display mode, language select, factory preset
Signal Cable:	15-pin mini D-sub male to 15-pin mini D-sub male
Power Supply:	AC 100 to 240 V worldwide input, 50/60 Hz
Power Consumption:	Typical: 50 Watts in ON mode, under 8 watts in power saving mode
Power Management:	IPM™ (Intelligent Power Manager) system, EPA Energy Star, meets NUTEK based on 2 power savings modes
Dimensions (W, H, D):	14.1×14.3×6.7 inches/357×362×168 mm
Weight:	Net: 11.5 lbs./5.2 kg; Gross: 15.7 lbs./7.1 kg
Tilt Rotation:	Up: 15°; Down: 5°
Environmental:	Operating temperature: 10°C to 30°C, 50°F to 86°F; humidity 80% maximum Storage temperature: -10°C to 60°C, 14°F to 140°F, humidity 85% maximum
Limited Warranty:	3 years, parts and labor; 1 year backlight
Regulatory Approvals:	UL 1950, C-UL, FCC Rules Part 15 Class B, Canadian DOC

Specifications	MultiSync® LCD2000™ Model #LA2031JMW
Display:	20.1" (20.1" viewable image size), active matrix, thin film transistor (TFT), liquid crystal display (LCD); 0.31 mm dot pitch; XtraView technology; RGB vertical stripe color filter arrangement; 150 cd/m ² white luminance, typical; 100:1 contrast ratio, typical
Compatibility:	720×400: VGA text* 640×480: 60 Hz to 85 Hz* 800×600: 56 Hz to 75 Hz* 832×624: 75 Hz* 1024×768: 60 Hz to 85 Hz* 1280×960: 60 Hz to 75 Hz* 1280×1024: 60 Hz to 75 Hz (optimal)
Display Resolution:	Horizontal: 1280 dots Vertical: 1024 lines
Active Display Area:	Horizontal: 15.7" (399 mm) Vertical: 12.6" (319 mm)
Viewing Angles:	Typical: 160° Vertical (80° up/80° down) 160° Horizontal (80° left/80° right) Minimum: 120° Vertical (60° up/60° down) 120° Horizontal (60° left/60° right)
Input Signal:	Video: ANALOG RGB (Video 0.7 Vp-p) Input Impedance: 75 ohms Sync: Separate sync. TTL level Horizontal sync: positive/negative Vertical sync: positive/negative Composite sync: TTL level, positive/negative Composite sync. on green video: 0.3 Vp-p negative
Display Colors:	Analog input: unlimited colors (dependent on video card)
User Controls:	Power, brightness and contrast, horizontal position, vertical position, auto adjust, image adjust, AccuColor, OSM location, OSM lock out, display mode, language select, factory preset
Signal Cable:	15-pin mini D-sub male to 5 branched BNC male
Power Supply:	AC 100 to 240 V worldwide input, 50/60 Hz
Power Consumption:	Typical: 85 Watts in ON mode, under 15 watts in power saving mode
Power Management:	IPM™ (Intelligent Power Manager) system, EPA Energy Star, meets NUTEK based on 2 power savings modes
Dimensions (W, H, D):	19.7×19×8.7 inches/500×483×220 mm
Weight:	Net: 22.0 lbs./10 kg; Gross: 29.7 lbs./13.5 kg
Tilt Rotation:	Up: 10°; Down: 5°
Environmental:	Operating temperature: 10°C to 30°C, 50°F to 86°F; humidity 80% maximum Storage temperature: -10°C to 60°C, 14°F to 140°F, humidity 85% maximum
Limited Warranty:	3 years, parts and labor; 1 year backlight
Regulatory Approvals:	UL 1950, C-UL, FCC Rules Part 15 Class B, Canadian DOC, CE

For more information on NEC MultiSync LCD monitors, including how to purchase, call **1-800-NEC-INFO**.

To receive information immediately via fax, call NEC FastFacts™ at **1-800-366-0476** and request catalog #1.

To visit our World Wide Web home page, dial-in to the Internet at <http://www.nec.com>.

To speak to a technical support representative, call **1-800-632-4662** or dial-in to the Internet at tech-support@nec.com.

*Due to the interpolation necessary for operation of LCD panel resolutions at full screen, it is recommended that LCD monitors utilize the full resolution capability of the panel and are operated at their optimal or maximum resolution when text or fine lines are being viewed.

Note: All technical specifications are subject to change without notice. MultiSync, AccuColor and ErgoDesign are registered trademarks and LCD400, LCD2000, XtraView, OSM, IPM, FullScan, FastFacts and "Expect more. Experience more." mark and icon are trademarks of NEC Technologies, Inc. Apple, Mac and Macintosh are registered trademarks of Apple Computer Inc. Other brand product names are trademarks or registered trademarks of their respective holders.

Part #M-LCD400/2000-B

NEC Technologies, Inc. 1250 N. Arlington Heights Road, Suite 500, Itasca, Illinois 60143-1248


Expect more. Experience more.

NEC
NEC Technologies

XtraView™ Technology

NEC Technologies XtraView™ wide angle viewing technology is a revolution in LCD monitors, providing CRT-like viewing functionality in a space-saving LCD monitor.

The use of liquid crystal display (LCD) monitors has historically been limited by their poor viewing angles. Trying to view the screen from top or bottom, left or right resulted in color changes and image distortion. Unless viewed head-on, the LCD screen image seemed to be "washed out" or had the appearance of a negative image.

NEC Technologies has solved this problem with XtraView technology, featured in their MultiSync® LCD400 and the MultiSync LCD2000 monitors. Conventional active-matrix LCD technology limits viewing angles to 30 degrees from center to left and right (60 degrees total) and 20 degrees from center up and down (40 degrees total). Compensation films, an additional film layer sometimes used to try to overcome limited viewing angles, increase angles from left to right only (approximately 70 degrees total).

XtraView technology creates an ultra-wide viewing angle of 160 degrees vertically and horizontally (80 degrees from center in all four directions) This revolutionary technology makes possible the widest viewing angles in the industry.

The increased viewing angles delivered by XtraView technology enable users to share information among several users and view the display from a variety of angles. These increased angles will also be essential to portrait and landscape orientation monitors as they hit the market.

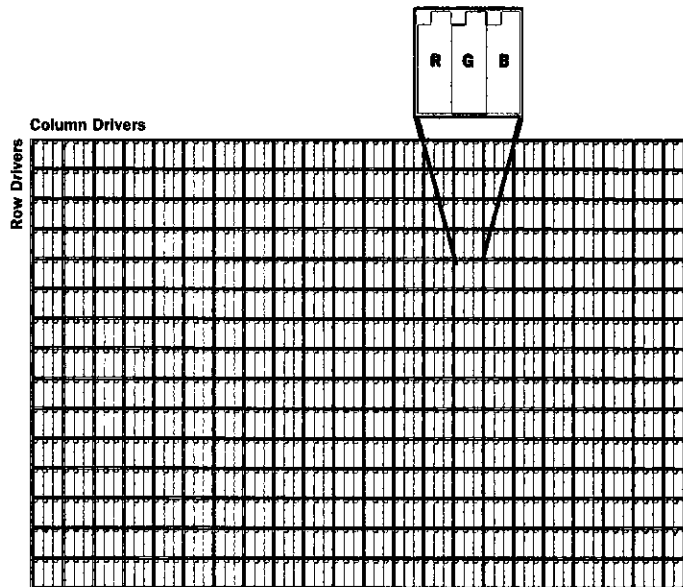


Fig. 1 Active Matrix (TFT) Liquid Crystal Displays

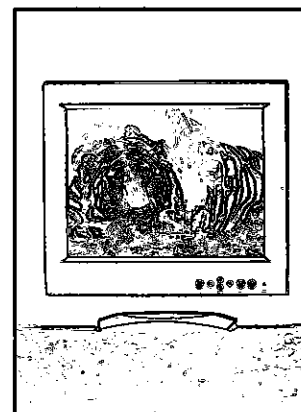
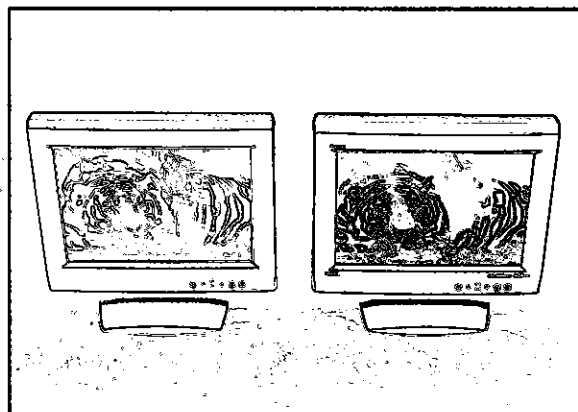
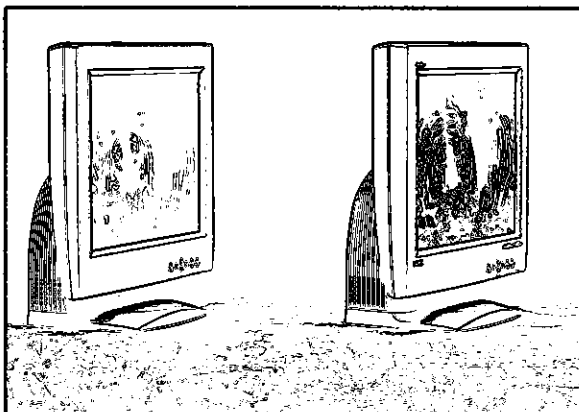
The active matrix, thin film transistor (TFT) LCD panels used in MultiSync LCD Series monitors use tiny transistors to help generate an image. Having a transistor at each pixel (actually one each for red green and blue at each pixel) helps to control the crystals very precisely. Each pixel can be either "on" or "off."

Combined with the space-saving benefits of LCD monitors, this new technology makes MultiSync LCD Series monitors an even more attractive alternative to CRT monitors in demanding working environments with space and weight constraints.

Understanding active matrix (TFT) technology. Because XtraView is only available on active matrix (TFT) LCDs, it is helpful to know how the TFT (thin film transistor) technology LCD panel works in MultiSync LCD Series monitors. TFT technology uses tiny transistors to help generate an image (Fig. 1). Having a transistor at each pixel helps to control the liquid crystals very

precisely. The transistors do not generate light or color, but rather control the orientation of the liquid crystals, allowing them to pass or not pass light from the back-light (a light source behind the LCD panel).

Liquid crystals tend to twist in a helix-like pattern. In conventional active matrix technology (without XtraView), when a voltage is applied to the transistors, the crystals untwist from their naturally twisted state (Fig. 2). This "untwisting" prevents light from passing through the rear glass substrate to the front glass substrate and results in a dark dot or pixel. Because electrodes are placed on both the front



NEC Technologies exclusive XtraView technology delivers a wide 160 degree viewing area including 80 degrees up, down, left, right. (Compare a conventional LCD monitor (left) to NEC Technologies MultiSync LCD400 (right)).

and rear glass substrates, the liquid crystals stand on end when they are untwisted. The viewer must look down the long axis of the liquid crystal, resulting in a loss of viewing angle. In addition, the crystals themselves actually block some of the light that they are passing. When the charge is removed, the liquid crystals twist back to their original state, allowing light to pass from one glass substrate through the other.

XtraView technology maximizes the efficiency of liquid crystals for greater light dispersion (Fig. 3). With XtraView technology, the electrodes are placed on the same glass substrate, allowing the crystals to remain horizontal to the glass substrates in on and off states. Aligning the crystals in this way improves the viewing angle because the light passes through the crystals at their most efficient orientation, so that light is dispersed more efficiently.

XtraView is not available in passive matrix display LCD monitors. Passive matrix is an alternative, less-expensive LCD technology. To reduce cost, passive matrix displays do not have a transistor at each pixel and are designed differently than active matrix displays. Because they do not provide precise control over individual pixels with transistors, they cannot achieve the wide viewing angles possible with active matrix XtraView technology. Passive matrix technology also is inferior to active matrix technology in the areas of response time, ghosting and contrast ratios.

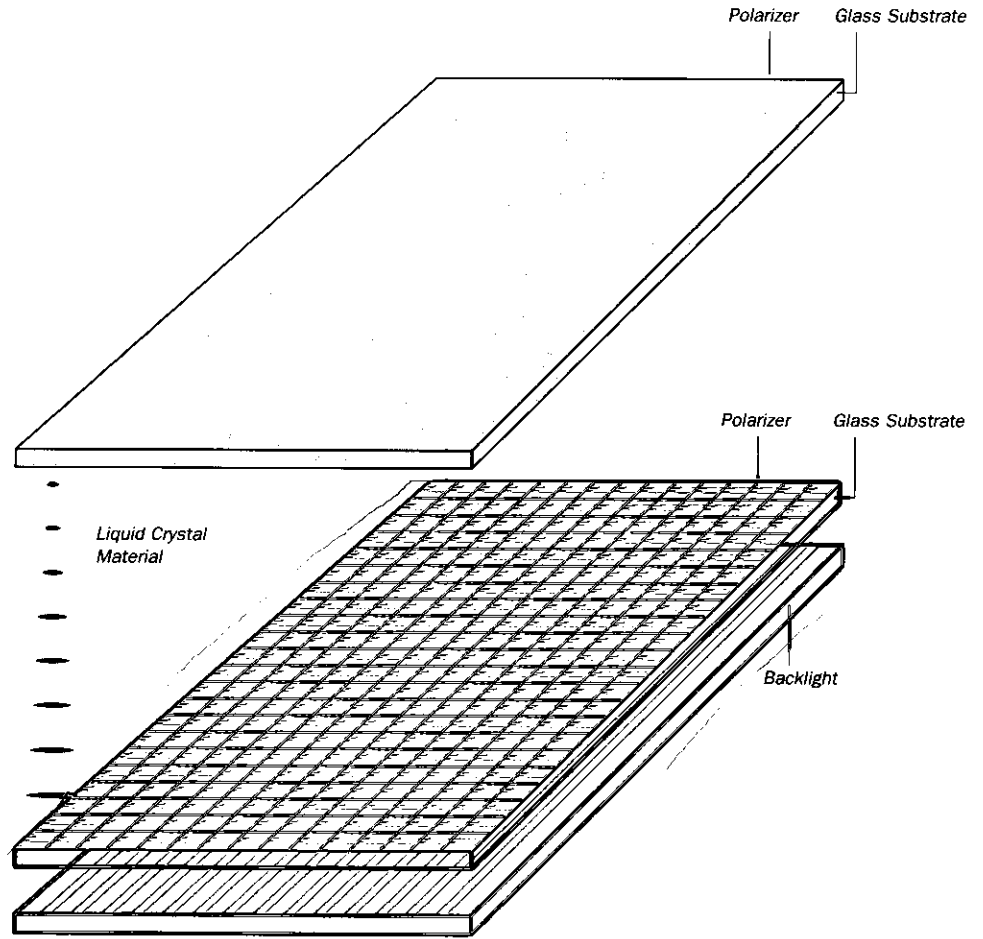
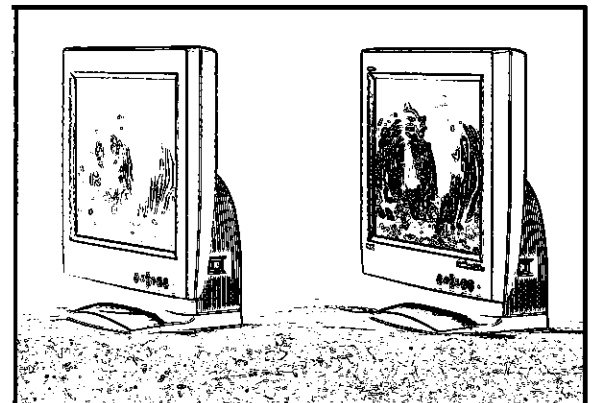
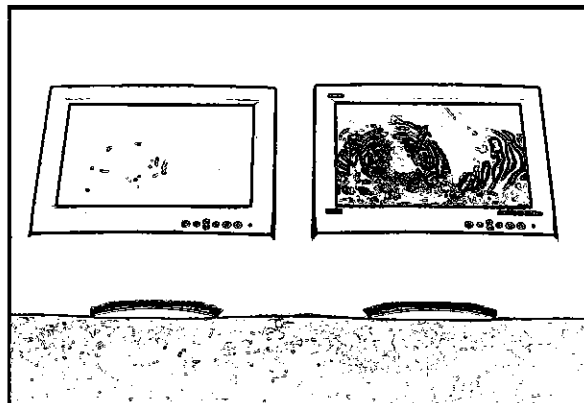
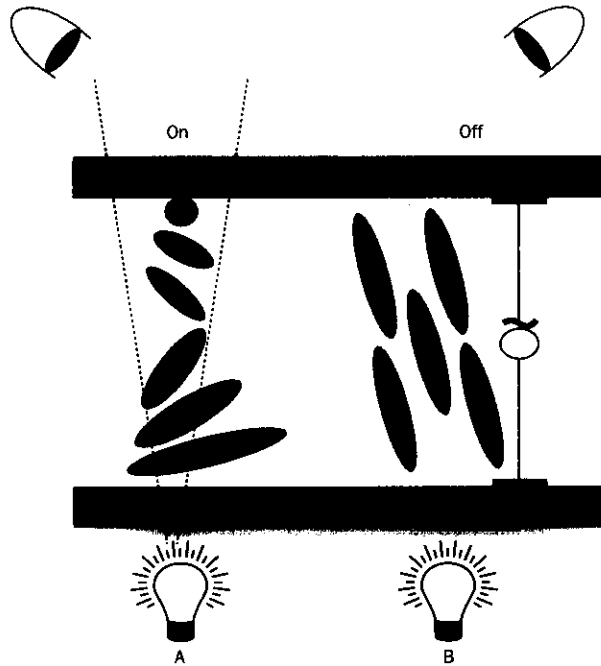


Fig. 2 Active Matrix Liquid Crystal Display cutout
The liquid crystal lies between two glass substrates. In conventional active matrix TFT technology, electrodes are placed on both the front and rear glass substrates. With XtraView technology, electrodes are placed on only one glass substrate.



Conventional
Vertical Orientation



XtraView Technology
Horizontal Orientation

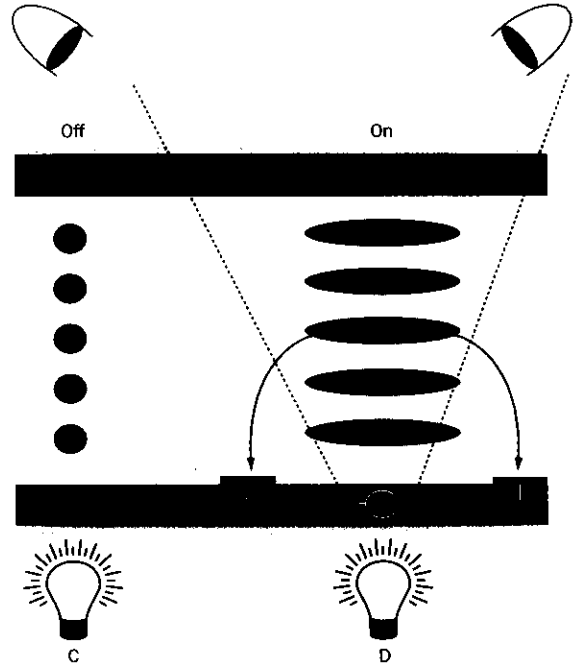
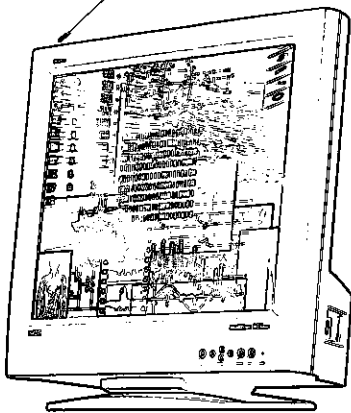


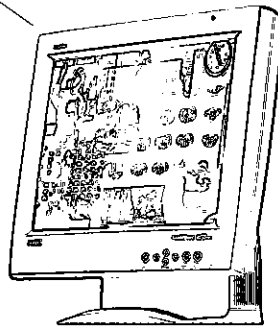
Fig. 3 Conventional v. XtraView Orientation of Liquid Crystals

In conventional active matrix technology (without XtraView), the liquid crystals stand on end. The viewer must look down the long axis of the liquid crystal, resulting in a loss of viewing angle. In addition, the crystals themselves actually block some of the light that they are passing. With XtraView technology, the crystals remain horizontal, which dramatically improves the viewing angle because the light passes through the crystals at their most efficient orientation.

XtraView Look for "XtraView™" on the bezel



MultiSync LCD2000 with XtraView Technology



MultiSync LCD400 with XtraView Technology

For more information on NEC Technologies MultiSync LCD monitors call **1-800-NEC-INFO**.

To receive information immediately via fax, call NEC FastFacts™ at **1-800-366-0476** and request catalog #1.

to visit our World Wide Web home page, dial-in to the Internet at <http://www.nec.com>.

To speak to a technical support representative, call **1-800-632-4662** or dial-in to the Internet at tech-support@nec.com.

Note: All technical specifications are subject to change without notice. MultiSync is a registered trademark and LCD400, LCD2000, XtraView, FastFacts, "Expect more. Experience more." and the NEC Technologies icon are trademarks of NEC Technologies, Inc. Other brand or product names are trademarks or registered trademarks of their respective holders.


Expect more. Experience more.

NEC
NEC Technologies