Sharp to Introduce AQUOS Quattron 3D LCD TVs – two Models in the LE925 Series

Four-Primary-Color Technology Enables Bright, Vivid 3D Images with Minimal Crosstalk[1].

Berlin, IFA 2010. Sharp will introduce two models in the new LE925 Series of 3D-compatible AQUOS Quattron[2] 3D LCD TVs with four-primary-color technology. Sharp's four-primary-color technology is based on its proprietary UV^{2}A technology[3]. This technology newly adds Y (yellow) to the three RBG (red, blue, green) primary colors, dramatically improving the ability to faithfully reproduce colors.

In addition to the four-primary-color technology incorporated in LE820 and LE810 series AQUOS Quattron LCD TV released this spring, Sharp has combined FRED technology[4] – Sharp's proprietary high-speed LCD drive technology and Side-mount Scanning LED Backlight[5]. Further, a significant improvement in a brightness of approximately 1.8 times greater[6] than the conventional three-primary-color LCD panels enables users to enjoy impressive 3D images with minimal crosstalk.

Along with LE925 series, Sharp will introduce LE924, LE824, LE814 AQUOS Quattron LCD TV series. These models feature the four-primary-color technology that render rich colors and deliver outstanding image for 2D pictures. LE924, LE824, and LE814 series also features network connection which offers wide range of internet services including video streaming and web browsing functions.

Sharp will strive to further expand the AQUOS Quattron LCD TV line-up, and continue to develop LCD TVs with high image quality and energy performance, and lead the way into a new era of color video.

Product name	3D-compatible LCD-TV	LCD-TV
Series name	LE925 Series	LE924/LE824/LE814 Series
Model name	LC-60LE925E, LC-46LE925E	LC-40LE924E, LC-46LE824E, LC-40LE824E LC-46LE814E, LC-40LE814E
Date of introduction	September, 2010	

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[1] Double vision in which the images for the right and left eyes overlap in a 3D display that uses separate images for the left eye and right eye to create the perception of a three-dimensional stereoscopic image.

[2] Quattron is a combination of the word "quattro" meaning "four" in Italian, and the word "electron" in English. The use of four primary colors is a concept designed for LCDs, and differs from the conventional three-primary-color concept of light and color.

[3] Abbreviation of Ultraviolet induced multi-domain Vertical Alignment. Photo-alignment technology that can precisely control the alignment of liquid crystal molecules using a manufacturing method based on UV light exposure.

[4] Abbreviation of "Frame Rate Enhanced Driving." LCD signal processing technology for 3D television.

[5] Technology to control crosstalk generation based on switching the backlight on and off at high speed, and dividing the LCD panel into a number of regions where the brightness of the backlight is independently controllable.

[6] Screen brightness when displaying 3D images compared to Sharp's previous technology (three-primary-color Advanced Super View LCD without FRED technology).

Major Features

1. Four-primary-color technology faithfully renders colors to provide vivid, high-quality images.

2. Impressive 3D images with screen brightness approximately 1.8 times*[6] higher than previous models (LE925 Series).

3. AQUOS NET+ allows user to easily view a wide variety of video contents and services on the internet.

4. Stylish models feature thin and seamless full-flat design just 3.9 cm thick[7] (LE925, LE924, LE824 Series).

5. Industry's leading class level high energy performance.

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You can find more information about Sharp's environmental activities on the Sharp Green Site at www.sharp.eu/green_site and the Environmental and Social Report at http://www.sharp-world.com/corporate/eco/index.html.

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[7] Thinnest part of the display, excluding protruding parts(In 60LE925, the thinnest part is 4.0cm).

Major Features

1. Four-primary-color technology faithfully renders colors to provide vivid, high-quality images

1) Four-primary-color technology faithfully reproduces colors

Sharp's four-primary-color technology utilizes four primary colors, adding a Y (yellow) subpixel to the three conventional subpixels of R (red), G (green), and B (blue).

This combination expands the color gamut and enables the display to vividly reproduce colors that have been previously impossible to portray, such as sparkling golds and sunflower yellows. In addition, the ability to render cyan is also enhanced, making it possible to vividly reproduce the sense of transparency of an emerald-green ocean.

2) Brighter images thanks to higher light utilization efficiency

High brightness and the energy efficiency are achieved by the yellow wavelength components contained in the LED backlight, which is the light source for the LCD panel, used with greater efficiency.

2. Impressive 3D images with screen brightness approximately 1.8 times higher than previous models (LE925 Series)

1) High-brightness, high-contrast 3D images with an exceptionally realistic sense of depth

Conventional 3D TVs have had a technical challenge in the screen not being sufficiently bright. Thanks to four-primary-color technology, these models achieve a screen brightness approximately 1.8 times higher than that of three-primary-color panels.

They reproduce bright, clear images even when viewed through special 3D glasses, enabling users to enjoy high-contrast 3D images with an exceptionally realistic sense of depth.

2) Bright 3D images thanks to the combination of Sharp UV^{2}A and FRED technologies

UV^{2}A optical alignment processing technology and four-primary-color technology combine to increase the utilization efficiency of light in the LCD panel, enabling viewers to enjoy bright 3D images.

In addition, in displaying 3D images, conventional displays drive the LCD at high speeds using two signal lines. But these AQUOS models use Sharp's proprietary FRED technology, which drives the LCD panel at high speed using only one signal line. The result is less wiring and fewer components in the LCD panel, as well as even greater improvements in light utilization efficiency[8].

3) High-quality 3D images with extremely low crosstalk

In 3D images, separate images intended for the left eye and right eye are displayed alternately. This system, however, tends to cause crosstalk (undesirable double-contour "ghost" images), in which the images for the left eye and right overlap. AQUOS Quattron 3D models use UV^2A technology with superb high-speed response and proprietary FRED technology to display the images for the left and right eyes at double the speed (total 4X speed). This results in extremely low crosstalk.

When displaying 3D images, Side-mount Scanning LED Backlight technology divides the screen into a number of horizontal bands and turns the LED backlight on and off in those areas at high speed in synchronization with pixel illumination on the screen. This minimizes crosstalk by reducing the visual perception of image lag.

4) Compatible with a wide range of 3D video signal formats—from Blu-ray Disc titles to broadcast programming

By connecting to an AQUOS Blu-ray Player[9] via an HDMI cable[10], viewers can enjoy Blu-ray Disc titles recorded in 3D with full HD resolution.

These AQUOS models also support 3D video signals input from external sources[11] such as 3D digital broadcast programming and peripheral devices.

5) 2D to 3D conversion

In addition to 2D TV programs, Blu-ray and DVD video contents, viewers can comfortably enjoy images created in 2D format as 3D images, including images taken using an HD video camera or digital camera.

Pushing the 3D button on the remote control while viewing 2D images causes the TV to analyze the image stream and display pseudo-3D images[12].

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[8] Comparing light utilization efficiency with Sharp's previous technology (which does not incorporate FRED technology).
[9] for example BD-HP90S
[10] Compatible with 3D video signals that conform to HDMI standards.
[11] Supports HDMI input (side-by-side/top-and-bottom).
[12] The perceived 3D effect will vary from image to image as well as person to person.

6) Industry's first 3D glasses equipped with a 3D to 2D conversion function

These models come bundled with a pair of special 3D glasses that are comfortable to wear and feature a 3D to 2D conversion function, an industry first[13].

Simply pushing a button on the glasses while enjoying 3D images enables the individual wearing the glasses to see the images in 2D. This convenient function means that any individual can choose to see the images in either 3D or 2D. They also feature an Auto Power Off function[14].

7) Precautions when viewing 3D stereo images

• Avoid viewing in 3D if you are ill or not in good health.

• Discontinue viewing immediately if you feel any change in physical condition while viewing in 3D.

• The perceived 3D effect will vary from person to person.

3. AQUOS NET+ allows user to easily view a wide variety of video contents and services on the internet.

AQUOS NET+ powered by NET-TV system delivers content to a high-precision large-screen TV in your living room over the rapidly expanding Internet.

This new system of TV entertainment provides unprecedented new functionality that allows you to easily view programming that you missed. In addition, a wide variety of convenient services, such as for weather news and traffic information, can be selected and registered for easy checking whenever desired.

4. Stylish models feature thin and seamless full-flat design just 3.9 cm thick*[7] (LE925, LE924, LE824 Series)

These models feature an edge-lit LED backlight system to achieve a slim profile only 3.9 cm thick in the main unit. In addition, the thin and seamless full-flat design provides an uninterrupted transition between the screen and the frame, creating an elegant form while maintaining a subtle simplicity of design.

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[13] For active shutter 3D glasses for 3D-compatible digital high-definition TVs; as of September 2, 2010.
[14] Power for the glasses is automatically turned off when no signal has been received from the 3D transmitter in the TV set for a specified period of time.

5. Industry's leading class leading class level high energy performance

The combination of UV^{2}A technology with high light utilization efficiency and four-primary-color technology adding a Y sub pixel enables high energy performance with lower power consumption. The Side-mount Scanning Backlight technology that divides the screen into a number of horizontal bands and turns the LED backlight on and off at high speed in synchronization with pixel illumination on the screen, and FRED technology that drives the LCD panel at high speed using only one signal line enables high energy performance during 3D viewing time. High quality video and energy performance can be achieved even in large screen models.

(FRED technology is used only in LE925 series. Side-mount Scanning LED Backlight is used only in LE925 and LE924 series.)

Options

1) Special 3D Glasses

These AN-3DG10 3D Glasses[15] are comfortable to wear and attractively designed. Available in three colors.

Product name	Model	Suggested retail price (including tax)	Compatible models
3D Glasses	AN-3DG10-S (silver)	Open	LC-60LE925E LC-46LE925E
	AN-3DG10-R (red)		
	AN-3DG10-A (blue)		

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[15] These glasses have the same specifications as the 3D glasses bundled with the LE925 Series (one silver-colored pair is included with the LE925 Series).

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