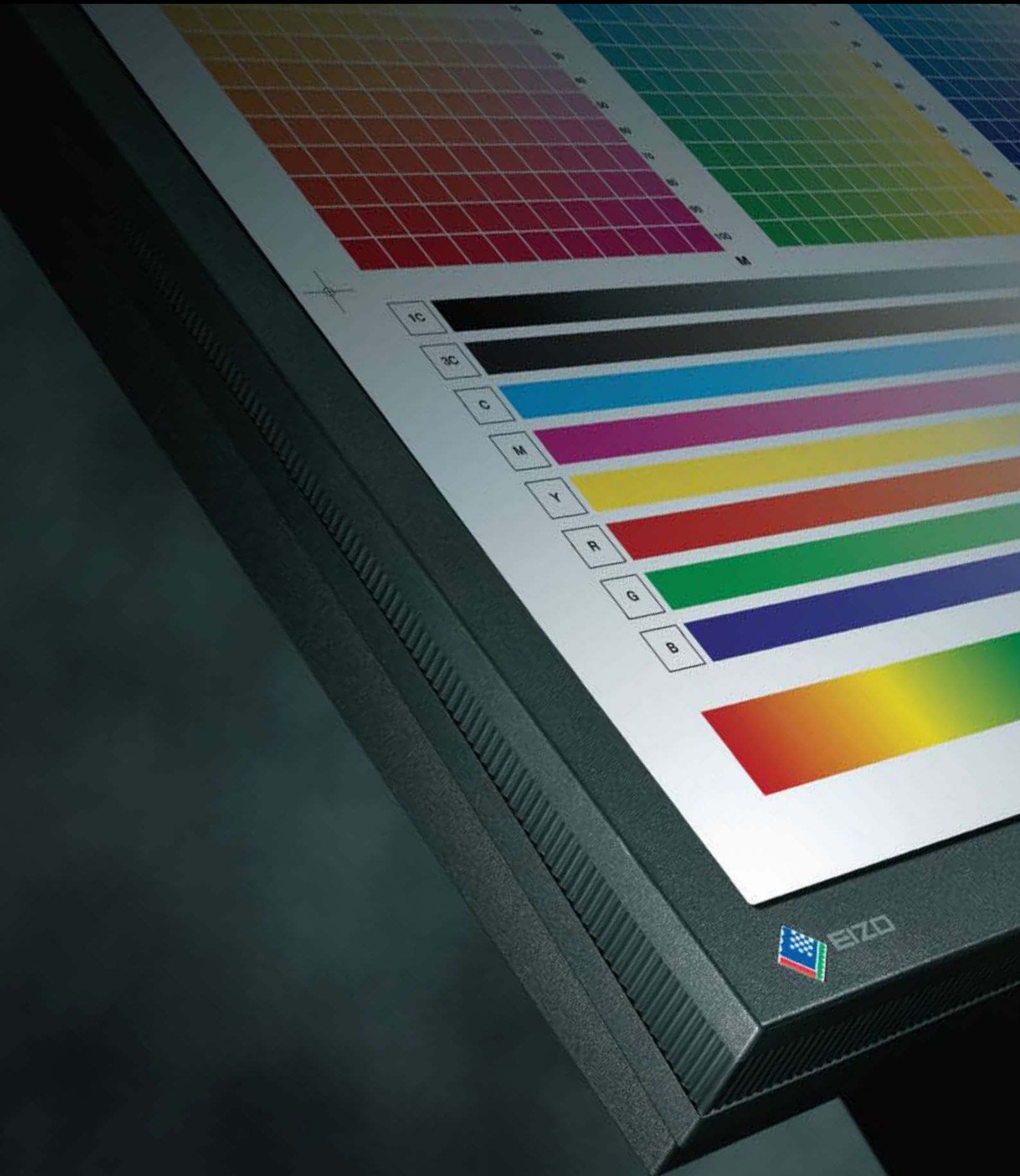




# ColorEdge

Color Calibration LCD Monitors



*Color as it's meant to be*

## *ColorEdge — perfect color results for your digital workflow*

### Choosing the right monitors for a color management system

#### The importance of color management

In today's digital production environment, there are many opportunities for discrepancies in color to arise along the path from the computer to the printer. This is because input devices (cameras, scanners, etc.), display devices (monitors) and output devices (various kinds of printers) may all be set to different color spaces. Such discrepancies can be avoided by employing a color management system that ensures every device in the production chain is set to a common color space.

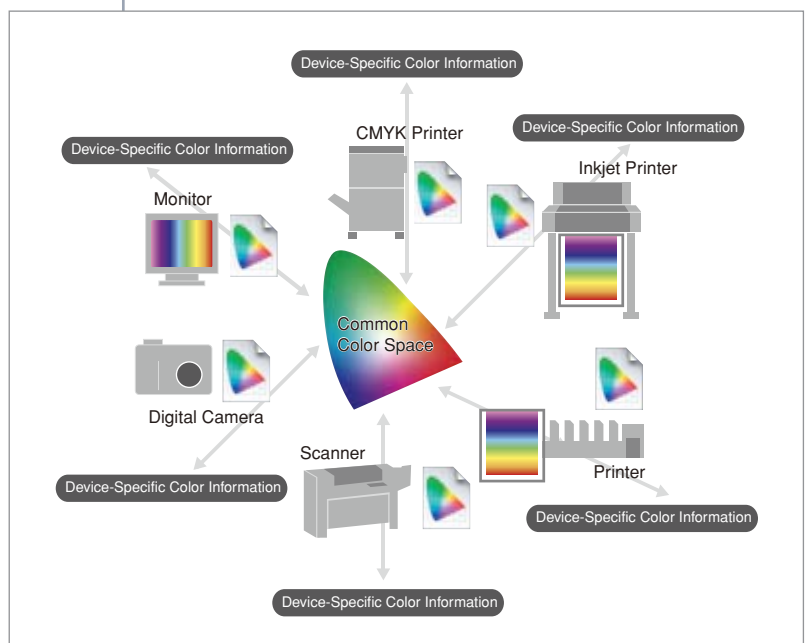
#### Color management begins with the monitor

The monitor is the core of any professional color management system. If color is displayed accurately on the monitor, and color matching has been done with the output device, then you no longer have to make multiple proofs just to correct for color discrepancies. You can proof with confidence right from the start, while lowering costs, increasing efficiency and improving quality control.

#### ColorEdge – the right monitors for color management

Effective color management requires monitors with accurate color reproduction and gradation characteristics. With ColorEdge monitors you get factory-adjusted gamma, extensive hardware calibration capabilities and an exceptionally wide color gamut. Their outstanding performance and

reliability make them ideal for a wide range of professional environments where color reproduction is critical, including photography, graphics, printing and publishing.





## Adobe RGB color space reproduction — connecting the photographer, designer, and printer

### Soft Proofing with Adobe RGB

The benefits of color management quickly become apparent once a system is put into place. When all devices share a common color space, colors match at every stage of production; knowing that color is being accurately displayed naturally improves efficiency. A wide-gamut ColorEdge monitor at the

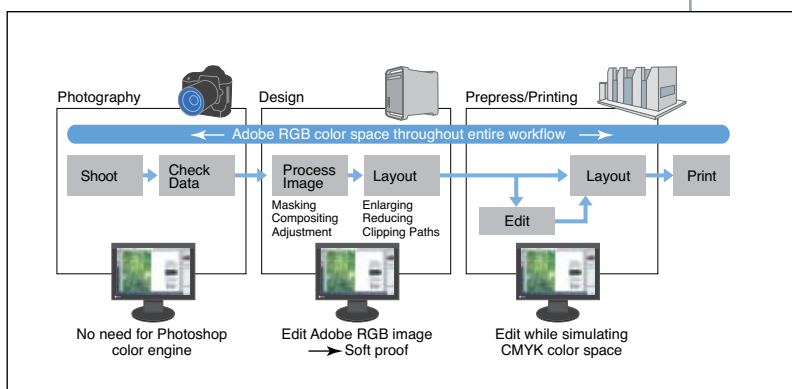
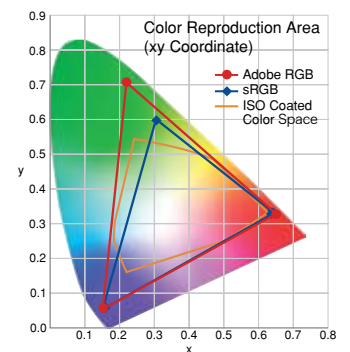
center of a system using Adobe RGB as the common color space is the ideal way to ensure accurate color reproduction across all digital platforms. Such a color management environment fully supports soft proofing at every step of production, from initial photography to final printing.

### Wide Color Gamut Monitors

CG301W · CG242W · CG222W · CG221

With a wide color gamut that reproduces nearly 100% of the Adobe RGB color space,

these models not only cover the sRGB color space supported by many computer monitors, operating systems and digital cameras, but practically the entire ISO-coated and US web-coated CMYK color spaces used in printing as well.



# The Hardware: Consummate Performance and Functionality

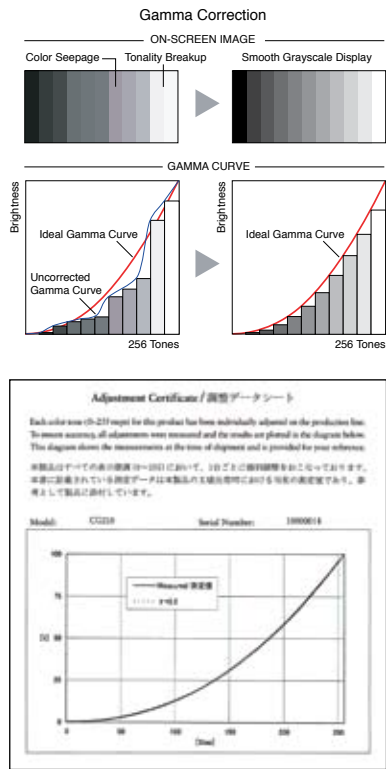
## Factory Adjustment of Gamma

The gamma level for each ColorEdge monitor is adjusted at the factory. This is accomplished by measuring the R, G, and B gamma values from 0 – 255, then using the monitor's 12-bit or 10-bit look-up table (LUT) to select the 256 most appropriate tones to achieve the desired value.



Each monitor adjusted individually at the factory. (For illustrative purposes only. Actual adjustment is performed in a darkroom.)

This is important because accurate, non-fluctuating gamma values are necessary for the proper display of color. If colors are not based on specific values and cannot be adjusted, images will be displayed differently by different monitors. ColorEdge monitors provide both precision and consistency, so graphics professionals can be sure that the final product will look exactly the way they want it to. In fact, each monitor comes with an adjustment certificate that certifies the measurement results of the gamma value.



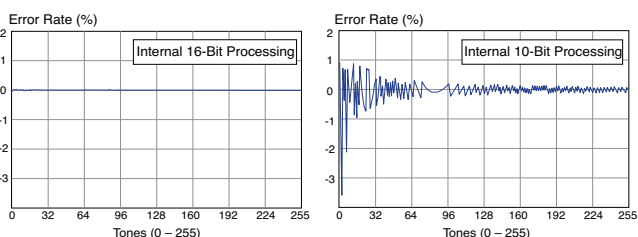
## 16-Bit Internal Processing

CG301W · CG242W · CG222W · CG221 · CG211



In any color-critical work, the monitor's ability to produce black is a great differentiator. With most LCD monitors, the darkest area of the screen — or black level — is usually too bright. This leads to banding and washing out of dark grays and dark colors. With 16-bit internal processing, these models not only come very close to producing a true black, but the lowest grayscale tones can be distinguished from one another for a greater level of detail in dark areas. (The CG19 has 10-bit internal processing.)

### 16-bit v. 10-bit processing

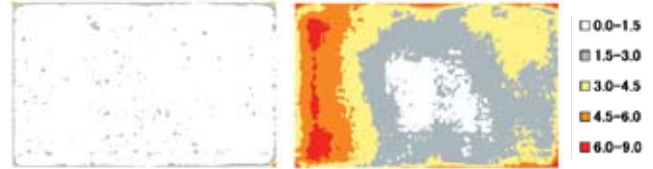


With 10-bit processing, the error rate is high in low tonal areas during calculation. With 16-bit processing, accuracy is significantly improved resulting in fewer conversion errors.

## Brightness and Color Uniformity with DUE

CG301W · CG242W · CG222W · CG221 · CG211

Fluctuations in brightness and chroma on different parts of the screen are a common trait of LCD monitors. To counteract this, EIZO incorporates a Digital Uniformity Equalizer (DUE). DUE utilizes the monitor's 12-bit look-up table (LUT) with an extensive palette of 4,081 grayscale tones for each R, G, and B, and internal calculation accuracy of 16 bits to ensure a Delta-E difference of 3 or less across the screen when the monitor leaves the factory.\*



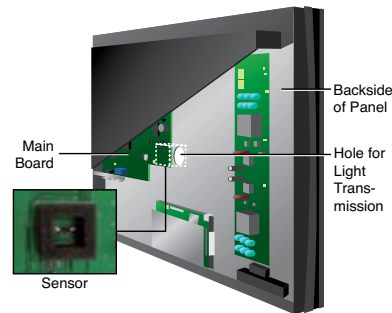
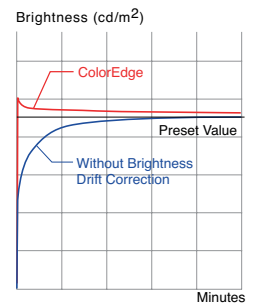
With Digital Uniformity Compensation Without Digital Uniformity Compensation

Color-separated image with Delta-E\*ab distribution across the screen of the ColorEdge CG221 (gray level 128 measured)

\*Delta-E difference for the CG301W is 5 or less along the screen perimeter.

## Short- and Long-Term Brightness Stabilization

Stable brightness is a key factor in achieving accurate color. However, fluctuations in backlight brightness normally occur from startup and can last for up to two hours. Furthermore, changes in ambient temperature can cause brightness levels to fluctuate, as can the inevitable deterioration of the backlight's fluorescent lamp over

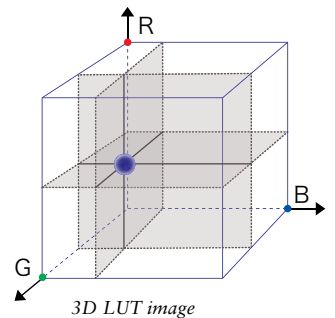


time. An EIZO patented backlight sensor incorporated in all ColorEdge monitors detects and counteracts these influences so brightness is always stable and product life is extended.

## 3D LUT for Better Additive Color Mixture

CG242W · CG222W

All ColorEdge models incorporate a look-up table (LUT) for accurate color and grayscale rendering, but the latest models, the ColorEdge CG242W and CG222W, utilize a new EIZO-developed 3D LUT. A typical 1D LUT adjusts color on separate tables for each red, green, and blue, a 3D LUT accomplishes this on a single, mixed-color cubic table. A 3D LUT improves the monitor's additive color mixture (combination of RGB), a key factor in its ability to display neutral gray tones.



# The Software: Extensive Calibration Capabilities

## Simple and Precise Calibration

The EIZO-developed ColorNavigator software makes calibration both simple and accurate. Instead of having to judge colors and do time-consuming inputting, or having a specialist do it for you, all you need to do is input target values for brightness, white point and gamma. ColorNavigator works with a wide range of measurement devices to directly utilize the 12- or 10-bit LUT of ColorEdge monitors for accurate and reliable calibration in minutes.

## Preset or User-Assigned Values

### Preset Values

Printing and Photography/Graphic Design settings are available with default values. Just select either one and ColorNavigator will begin calibrating. Ideal for users with limited color management knowledge, this takes the guesswork out of assigning values.

### User-Assigned Values

Experienced users can assign the desired values for brightness, white point, and gamma and then calibrate.



### Calibration Parameters

Brightness		30 cd/m <sup>2</sup> –200 cd/m <sup>2</sup> in 5 cd/m <sup>2</sup> increments. Setting to the monitor's minimum and maximum values is also possible.
	Black Level <sup>†</sup>	0.2 cd/m <sup>2</sup> – 3.5 cd/m <sup>2</sup> (0.1 cd/m <sup>2</sup> increments) Setting to the monitor's minimum value is also possible.
White Point	Color Temperature	4,000 K – 10,000 K in 100 K increments
	Color Coordinates	x Value, y Value
Gamma		1.0 – 2.6 in 0.1 increments and L* <sup>‡</sup>

<sup>†</sup> With the CG222W and CG221, it may not be possible to set the brightness to the maximum value (200 cd/m<sup>2</sup>) depending on LCD panel performance.

<sup>‡</sup> With the CG19, choosing 6-Color Adjustment after calibrating will disable the black level adjustment function, and gamma will only be adjustable from 1.8 to 2.6 in increments of 0.2.

## Paper White Measurement

ColorNavigator offers a paper white measurement function for color matching between the image on your monitor and the image on your printouts. By measuring the white of the paper to be used for printing, ColorNavigator will automatically set the target values for brightness and white point accordingly.



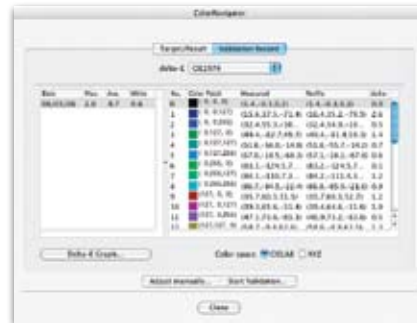
## Light Box Brightness Adjustment

With ColorNavigator and a measurement device, you can set your light box's\* brightness to the desired value. ColorNavigator can then take the resulting brightness level and set it as the monitor's target calibration value to ensure uniform brightness between your monitor and light box when color proofing.

\*Currently supports JUST Color Communicator 1 and 2 only.

## Profile Validation

This function measures the monitor's color patches to determine the difference between the Delta-E value of the monitor's profile and the actual displayed values of the monitor.



This allows for verifying the results of calibration or checking to see how much the monitor's colors have varied since it was last calibrated. ColorNavigator can also measure CMYK color patches (GRACoL 2006 Coated #1 and FOGRA39) and output them as Adobe Photoshop or Acrobat files.\* The measurement results of both the monitor and profile for each color patch are indicated in either CIELAB or XYZ values, and the difference between them expressed in Delta-E. The Delta-E variation can be shown in a graph and compared with previous results.

\*Photoshop CS/CS2/CS3/CS4 or Acrobat 7/8/9 Professional are required for Macintosh, and Photoshop CS3 or Acrobat 8/9 Professional are required for Windows.

## Post-Calibration Color Adjustment

Sometimes due to variations in output from different printers or the special requirements of a project, it is necessary to fine-tune an otherwise perfectly calibrated monitor to match target colors. ColorNavigator lets you easily adjust hue and saturation for all six primary and secondary colors (RGB and CMY), as well as white balance, brightness, black level and gamma, to achieve the closest possible visual match. For confirmation of calibration results or to achieve more accurate manual adjustments, a test pattern screen with a grayscale ramp, low tones, high tones and gamma values can be displayed.



## ColorNavigator Compatible Measurement Devices

- X-Rite: Eye-One Series, ColorMunki, DTP94, DTP94B
- DataColor: Spyder 2, Spyder 3
- EIZO: EX1

## ColorNavigator System Requirements

Compatible OSes*	Macintosh	Windows
	OS X 10.3.9 – 10.5	Vista (x64, x86) / XP (x64, x86)
Additional Requirements	Apple Macintosh system that fulfills Mac OS X requirements <ul style="list-style-type: none"> <li>128 MB minimum of available RAM</li> <li>Intel Mac (Mac Pro, Mac mini, MacBook, MacBook Pro, iMac)</li> <li>Power Macintosh G3 (Blue White) /G4/G4 Cube/G5/Mac mini</li> <li>PowerBook G3 (Bronze Keyboard or later)/G4</li> <li>eMac</li> </ul> Two or more available USB ports	

\* Mac OS X 9.2.2, 10.2 – 10.3.8, and Windows 2000 can only be run on previous versions of this software except with the CG301W, CG242W, and CG222W which only support the operating systems listed above.

# Specifications



ColorEdge CG301W



ColorEdge CG242W



ColorEdge CG222W

<b>Panel Size and Type</b>		76 cm (29.8") TFT color LCD panel	61 cm (24.1") TFT color LCD panel	56 cm (22") TFT color LCD panel
<b>Viewing Angles (H, V)</b>		178°, 178° (at contrast ratio of 10:1)	178°, 178° (at contrast ratio of 10:1)	178°, 178° (at contrast ratio of 10:1)
<b>Brightness</b>		260 cd/m <sup>2</sup> (maximum) 120 cd/m <sup>2</sup> or less (recommended <sup>1</sup> )	270 cd/m <sup>2</sup> (maximum) 120 cd/m <sup>2</sup> or less (recommended <sup>1</sup> )	200 cd/m <sup>2</sup> (maximum) 80 cd/m <sup>2</sup> or less (recommended <sup>1</sup> )
<b>Contrast</b>		850:1	1100:1 (typical)	800:1
<b>On/Off Response Time</b>		12 ms (typical)	12 ms (typical)	16 ms (typical)
<b>Midtone Response Time<sup>2</sup></b>		6 ms (typical)	6 ms (typical)	8 ms (typical)
<b>Native Resolution</b>		2560 × 1600	1920 × 1200	1680 × 1050
<b>Active Display Size (H × V)</b>		641.3 × 400.8 mm	518.4 × 324 mm	473.8 × 296.1 mm
<b>Viewable Image Size</b>		Diagonal: 756 mm	Diagonal: 611 mm	Diagonal: 558 mm
<b>Pixel Pitch</b>		0.2505 × 0.2505 mm	0.270 × 0.270 mm	0.282 × 0.282 mm
<b>Gamut Coverage</b>	sRGB	99%	99%	97%
	Adobe RGB	97%	97%	92%
<b>Display Colors</b>		16.77 million from a palette of 68 billion	16.77 million from a palette of 68 billion	16.77 million from a palette of 68 billion
<b>Look-Up Table</b>		12 bits per color	12-bits per color	12 bits per color
<b>Internal Processing</b>		16 bits per color	16-bits per color	16 bits per color
<b>Screen Uniformity<sup>3</sup></b>		Center: ΔE≤3, Perimeter: ΔE≤5	Entire Screen: ΔE≤3	Entire Screen: ΔE≤3
<b>Available Cabinet Colors</b>		Black	Black	Black
<b>Dot Clock</b>		269 MHz	Analog: 204 MHz, Digital: 164.5 MHz	Analog: 150 MHz, Digital: 120 MHz
<b>Scanning Frequency (H, V)</b>	Analog	–	24 – 130 kHz, 47.5 – 120 Hz	24 – 82 kHz, 47.5 – 86 Hz
	Digital	31 – 100 kHz, 29.5 – 30.5 Hz/59 – 61 Hz (VGA Text: 69 – 71 Hz)	26 – 78 kHz, 23.75 – 63 Hz (VGA Text: 69 – 71 Hz)	31 – 65 kHz, 47.5 – 61 Hz (VGA Text: 69 – 71 Hz)
<b>Input Terminals</b>		DVI-D 24 pin × 2 (dual link × 1, single link [HDCP supported <sup>4</sup> ] × 1)	DVI-I 29 pin × 1 / DisplayPort <sup>5</sup> × 1 (switchable)	DVI-I 29 pin × 2 (switchable), HDCP supported <sup>4</sup>
<b>USB Port</b>		1 up, 2 down	1 up, 2 down	1 up, 2 down
<b>Power Requirements</b>		AC 100 – 120 V, 200 – 240 V: 50 / 60 Hz	AC 100 – 120 V, 200 – 240 V: 50 / 60 Hz	AC 100 – 120 V, 200 – 240 V: 50 / 60 Hz
<b>Power Consumption</b>		170 W (maximum)	105 W (maximum)	75 W (maximum)
<b>Power Save Mode</b>		Less than 2 W	Less than 1.5 W	Less than 2 W
<b>Height Adjustment Range</b>		118 mm	82 mm	82 mm
<b>Tilt / Swivel / Pivot</b>		40° Up, 0° Down / 35° Right, 35° Left / 90°	40° Up, 0° Down / 35° Right, 35° Left / 90°	40° Up, 0° Down / 35° Right, 35° Left / 90°
<b>Dimensions (W × H × D)</b>		With Stand: 689 × 511.5 – 629.5 × 254.7 mm Without Stand: 689 × 450 × 90 mm	With Stand: 566 × 456 – 538 × 230 mm Without Stand: 566 × 367 × 85 mm	With Stand: 507 × 439 – 521 × 230 mm Without Stand: 507 × 333 × 74 mm
<b>Net Weight</b>		With Stand: 15.7 kg Without Stand: 11.2 kg	With Stand: 10.7 kg Without Stand: 7.1 kg	With Stand: 12 kg Without Stand: 7.7 kg
<b>Display Mode Options</b>		Fine Contrast (Custom, sRGB, Calibration, Emulation)	Fine Contrast (Custom, sRGB, Calibration, Emulation)	Fine Contrast (Custom, sRGB, Calibration, Emulation)
<b>Supplied Accessories</b>		AC power cord, signal cables (DVI-D – DVI-D, DVI-D – DVI-D [dual link supported]), USB cable, setup guide, EIZO LCD Utility Disk (ColorNavigator software, PDF user's manual, ICC Profile), adjustment certificate, ScreenCleaner, monitor hood, quick reference, 4 screws for mount option, warranty card	AC power cord, signal cables (DVI-D – DVI-D, DVI-I – D-Sub mini 15 pin), USB cable, setup guide, EIZO LCD Utility Disk (ColorNavigator software, PDF user's manual, ICC Profile), adjustment certificate, ScreenCleaner, monitor hood, quick reference, 4 screws for mount option, warranty card	AC power cord, signal cables (DVI-D – DVI-D, DVI-I – D-Sub mini 15 pin), USB cable, setup guide, EIZO LCD Utility Disk (ColorNavigator software, PDF user's manual, ICC Profile), adjustment certificate, ScreenCleaner, monitor hood, quick reference, 4 screws for mount option, warranty card
<b>Warranty</b>		Five Years <sup>1</sup>	Five Years <sup>1</sup>	Five Years <sup>1</sup>

<sup>1</sup> The usage time is limited to 30,000 hours and the warranty period of the LCD panel is limited to three years from the date of purchase for all monitors in this brochure. For the CG19, the warranty period of the backlight is limited to three years from the date of purchase, but brightness deterioration is not covered. The warranty period of the backlight is warranted only if the monitors are used within the recommended brightness of up to and including 80 cd/m<sup>2</sup> for the CG222W; 100 cd/m<sup>2</sup> for the CG221 and CG211; 120 cd/m<sup>2</sup> for the CG301W and CG242W with the color temperature between 5,000 K–6,500 K and limited to three years from the date of purchase subject to the usage time being less than or equal to 10,000 hours. <sup>2</sup> Average response time measured between each grayscale level of 31, 63, 95, 127, 159, 191, and 223. <sup>3</sup> Measured at gray level 128 and color temperature of 5000 K. <sup>4</sup> Display with audio/video devices is not supported. <sup>5</sup> For information about graphics card compatibility with the DisplayPort terminal, please visit <http://www.eizo.com/support/compatibility/index.asp>. With current LCD technology, a panel may contain a limited number of missing or flickering pixels.

## Accessories

### Monitor Hoods

EIZO's monitor hoods reduce screen glare and include a sliding top cover so they can remain in place when the monitor is calibrated. Sold separately for the and CG19 and bundled with all other models.



### Panel Protectors

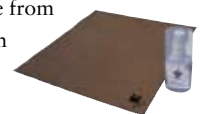
CG242W · CG222W · CG211 · CG19

These protection sheets are easy to place over the screen surface, allow a minimum of 87% light transmission, and prevent dust and scratches. (Sold separately.)



### Screen Cleaner Kit

Keep your screen free from dust and fingerprints with this screen cleaner kit. Includes pump spray and cloth. Sold separately for the CG19 and bundled with all other models.





ColorEdge CG221

ColorEdge CG211

ColorEdge CG19

56.4 cm (22.2") TFT color LCD panel	54 cm (21.3") TFT color LCD panel	48 cm (19") TFT color LCD panel
170°, 170° (at contrast ratio of 10:1)	170°, 170° (at contrast ratio of 10:1)	170°, 170° (at contrast ratio of 10:1)
200 cd/m <sup>2</sup> (maximum) 100 cd/m <sup>2</sup> or less (recommended <sup>1</sup> )	225 cd/m <sup>2</sup> (maximum) 100 cd/m <sup>2</sup> or less (recommended <sup>1</sup> )	280 cd/m <sup>2</sup>
400:1	500:1	450:1
30 ms (typical)	30 ms (typical)	20 ms (typical)
-	-	-
1920 × 1200	1600 × 1200	1280 × 1024
478 × 299 mm	432 × 324 mm	376 × 301 mm
Diagonal: 563 mm	Diagonal: 540 mm	Diagonal: 481 mm
0.249 × 0.249 mm	0.270 × 0.270 mm	0.294 × 0.294 mm
98%	99%	92%
98%	78%	75%
16.77 million from a palette of 68 billion	16.77 million from a palette of 68 billion	16.77 million from a palette of 1.06 billion
12 bits per color	12 bits per color	10 bits per color
16 bits per color	16 bits per color	10 bits per color
Entire Screen: ΔE≤3	Entire Screen: ΔE≤3	-
Black	Gray, Black	Gray, Black
Analog: 202.5 MHz, Digital: 162 MHz	Analog: 202.5 MHz, Digital: 162 MHz	Analog: 135 MHz, Digital: 108 MHz
31 – 94 kHz, 49 – 86 Hz	24 – 100 kHz, 49 – 86 Hz	30 – 82 kHz, 49 – 86 Hz
31 – 76 kHz, 59 – 61 Hz (VGA Text: 69 – 71 Hz)	31 – 100 kHz, 59 – 61 Hz (VGA Text: 69 – 71 Hz)	30 – 65 kHz, 59 – 61 Hz (VGA Text: 69 – 71 Hz)
DVI-I 29 pin × 2 (switchable)	DVI-I 29 pin × 2 (switchable)	DVI-I 29 pin × 2 (switchable)
1 up, 2 down	1 up, 2 down	1 up, 2 down
AC 100 – 120 V, 200 – 240 V: 50 / 60 Hz	AC 100 – 120 V, 200 – 240 V: 50 / 60 Hz	AC 100 – 120 V, 200 – 240 V: 50 / 60 Hz
100 W (maximum)	75 W (maximum)	60 W (maximum)
Less than 2 W	Less than 2 W	Less than 3 W
100 mm	82 mm	100 mm
30° Up, 3° Down / 35° Right, 35° Left / -	40° Up, 0° Down / 35° Right, 35° Left / 90°	40° Up, 1° Down / 35° Right, 35° Left / 90°
With Stand: 565 × 452.5 – 552.5 × 272 mm Without Stand: 565 × 394.5 × 101 mm	With Stand: 472 × 459 – 541 × 208.5 mm Without Stand: 472 × 373 × 69 mm	With Stand: 414 × 409.5 – 509.5 × 202.7 mm Without Stand: 414 × 340 × 64 mm
With Stand: 14.5 kg, Without Stand: 10.4 kg	With Stand: 10.2 kg, Without Stand: 7.0 kg	With Stand: 8.1 kg, Without Stand: 5.8 kg
Fine Contrast (Custom, sRGB, Calibration, Emulation)	Fine Contrast (sRGB, Custom, Calibration)	Fine Contrast (sRGB, Custom, Calibration)
AC power cord, signal cables (DVI-D – DVI-D, DVI-I – D-Sub mini 15 pin), USB cable, setup guide, EIZO LCD Utility Disk (ColorNavigator software, HTML user's manual, ICC Profile), adjustment certificate, ScreenCleaner, monitor hood, quick reference, warranty card	AC power cord, signal cables (DVI-D – DVI-D, DVI-I – D-Sub mini 15 pin), USB cable, setup guide, EIZO LCD Utility Disk (ColorNavigator software, HTML user's manual, ICC Profile), adjustment certificate, ScreenCleaner, monitor hood, quick reference, warranty card	AC power cord, signal cables (DVI-D – DVI-D, DVI-I – D-Sub mini 15 pin), USB cable, setup guide, EIZO LCD Utility Disk (ColorNavigator software, HTML user's manual, ICC Profile), adjustment certificate, quick reference, warranty card
Five Years <sup>1</sup>	Five Years <sup>1</sup>	Five Years <sup>1</sup>

## Color Universal Design Feature

### Color Vision Deficiency Simulation

CG301W · CG242W · CG222W

To accommodate the more than 200 million people worldwide with a color vision deficiency, care must be taken when choosing color schemes, otherwise important details may not be discernible. These models instantly



Original mode



Deuteranope mode

simulate how still and moving images appear to people with red-green color vision deficiency (protanopia and deuteranopia) through internal hardware conversion and EIZO proprietary software. (Compatible with Windows Vista and XP, and with Macintosh OS X 10.3.9 or later.)

## Warranty

### Brightness and Color Warranty

EIZO offers a five-year warranty for all ColorEdge monitors. For most models, the backlight is warranted for three years at a brightness of up to a specific figure and color temperature from 5,000 – 6,500 K with the usage time a maximum of 10,000 hours. (See footnote 1 on page 6 for brightness figures.)



Copyright© 2008 Eizo Nanao Corporation.

All rights reserved. All product names are trademarks or registered trademarks of their respective companies. ColorEdge and EIZO are registered trademarks of Eizo Nanao Corporation.

Specifications are subject to change without notice.

Published on chlorine-free paper.

(060907f) Printed in Japan, 12,2008, 4K



## EIZO NANAO CORPORATION

153 Shimokashiwano, Hakusan, Ishikawa 924-8566 Japan

Phone +81-76-277-6792 Fax: +81-76-277-6793

[www.eizo.com](http://www.eizo.com)

