NEC Medical Displays for Digital Mammography

MD211G5

Display Systems for Primary Diagnostics of Breast Imaging
LED BACKLIGHT

The MD211G5 display is equipped with a new generation IPS LCD and White Edge LED backlighting instead of the cold cathode fluorescent (CCFL) backlighting. LED backlights have a higher energy-efficiency than traditional CCFL lamps, resulting in higher luminance levels for enhanced diagnostic image quality at lower power consumption.

The total cost of ownership for the hospital is reduced as LED backlights produce less heat and require less cooling. In addition, LED backlights deteriorate more slowly which increases the lifetime of the displays. LED backlights are mercury free and produce less environmental pollution on disposal.

BACKLIGHT STABILISATION WITH RECALIBRATABLE FRONT SENSOR

The luminance of the LED backlight is controlled and adjusted via the integrated front sensor and feedback system. That system is not only measuring, but also permanently controlling and re-aligning these settings to maintain the factory calibration. Any fluctuation in luminance at start-up, due to temperature changes or over the display lifetime is corrected in real-time.

The MD211G5 displays are equipped with a state of the art front sensor, which is significantly smaller in size. Compared to traditional backlight sensors, which only measure the output of the backlight, NEC’s front sensor is located in front of the screen and detects all instabilities caused by the backlight and the liquid crystal display, because it measures the combined effect of both elements.

TRUE 10-BIT SIMULTANEOUS GRAYSCALE DISPLAY OUT OF 13.5-BIT LUT

The internally programmed DICOM GSDF curve optimises the display to human visual performance in compliance with the DICOM Part 14 standard, drastically improving the accuracy at which images can be interpreted. Measurements from a built-in ambient light sensor are taken into account during calibration of the monitor. 1024 (10-Bit) simultaneous shades of gray, out of a Look-Up Table of 12,277 (13.5-Bit), ensure best-of-class image quality for women’s health.

DUC switched OFF

DUC switched ON

DIGITAL UNIFORMITY CONTROL (DUC)

The Digital Uniformity Control (DUC) function provides optimum backlight luminance uniformity which is considered difficult to attain due to the LCD manufacturing process.

During the manufacturing of the display, the LCD panel characteristics are measured across the surface. A matrix is created and stored in the display. During normal operation of the display, these values are used to correct luminance uniformity of the LCD panel.

DUC switched OFF

DUC switched ON

ULTIMATE IMAGE PRECISION FOR MAMMOGRAPHY

The MD211G5 responds to the demand for higher performance in digital mammography, by offering a new generation of IPS LCD technology with long-lifetime LED backlight, resulting in high luminance and contrast ratio for unequaled image quality. When details are of vital importance, the high contrast ratio of 1200:1 brings out the subtle differences in similar shades of gray and provides crisper images. Taking into account the advanced feature set, NEC’s MD211G5 display brings unrivaled image precision and an increased degree of diagnostic confidence.

Before correction

After correction

White Edge LED

A new dimension in digital breast imaging
SPECIAL ANTI-REFLECTION (AR) COATING

Traditional Anti-Glare (AG) coatings can result in loss of focus due to diffused reflection and increased noise of diffused light overlapping with the displayed image. The development of an LCD surface treatment that provides proper focus and noise properties in combination with a reduction of specular reflection was desired. The MD211G5 is treated with a new special Anti-Reflection (AR) coating technology which reduces diffuse reflection and improves properties of noise, focus, contrast and viewing angle, achieving film-like black and accurate reproduction of images.

USER FRIENDLY AND ERGONOMIC DESIGN

Three preset User-selectable display configurations (luminance/gamma settings) are selectable according to the needs. The display’s current status can be checked easily in the On Screen Display (OSD) menu, such as display model, total operating time, actual luminance and calibration settings. The LED indicator informs the user about the display’s current operating status (stabilized – adjusted – power safe – error). The tilt and swivel stand gives best ergonomic support while reading medical images over a long period.

QUALITY ASSURANCE AND AUTOMATED DICOM ACCURACY

The MD211G5 display can be easily integrated into NEC’s GammaCompMD QA client or Network administration software for asset management, (remote) technical display management and reporting. You can use the internal front-sensor to schedule automated conformance tests for DICOM compliance.

The NEC GammaCompMD QA client and network administration software allows for high-grade Quality Assurance guaranteeing consistent image quality across the radiological imaging chain and is available in several variants. The NEC GammaCompMD QA software offers Quality Assurance routines according to the AAPM TG-18 (2005), ACR AAPM SIIM (2012), IEC 62563-1, DIN V 6868-57, new DIN 6868-157 and JESRA X-0093 test image and form standards. Acceptance tests, constancy tests and visual tests are stored in GammaCompMD QA accordingly and can be shown to the authorities once asked.

QUICK SCREEN QA

A DICOM conformance test can be easily performed as an OSD function of the display without installing QA software on the workstation.

DISPLAYPORT CONNECTIVITY

MD211G5 support various input signals, such as DisplayPort and DVI, for compatibility with a wide range of high-speed, high-performance display controllers resulting in maximum workflow efficiency. The VESA digital video interface standard DisplayPort offers better image quality with higher bit-depth support and higher bandwidth performance, giving a particular benefit when manipulating large image datasets.

MEDICAL STANDARDS

The MD211G5 display is certified under various medical safety and EMC emission standards, such as the US Food and Drug Administration (FDA) for digital mammography. The NEC MD211G5 obtained local authorizations for use within national mammography screening programs.

MATCHED PAIR

The MD211G5 monitors are screened in the factory for matching the same panel parameters. I.e. you match two units as a pair, displaying the same white point and allowing safe comparison of images on different displays.
Medical device registration plays an important role in complying with mandatory EU regulations on the medical vigilance system. In addition, product registration ensures you receive the best after-sales support and warranty conditions.

Please register your NEC medical device at http://medical.nec-display-solutions.com/medregistration

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