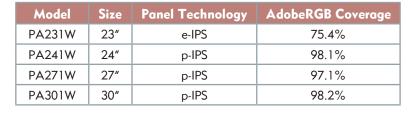
NEC MultiSync® PA Series with SpectraView_{||}™

Color calibration solution ideal for color-critical applications (23" - 30" widescreen professional LCD displays)

Designed with key features for the graphics and photography professional, NEC MultiSync PA Series displays are smart investments for your desktop. These models include the SpectraView_{II} Color Calibration Solution, which combines award-winning NEC LCD display technology with a color measurement sensor and sophisticated software. The result is a highly accurate, reliable, repeatable and feature-rich display calibration and profiling solution.

Color and brightness uniformity were paramount in the design of these high-performance displays, making them ideal for graphic arts, desktop publishing, photography and other color-critical environments. In addition to accurate color, the displays also feature Picture-in-Picture and Picture-by-Picture modes for a real-time preview of work in a second color space.

- Best-in-class 10-bit active matrix IPS LCD technology with wide viewing angle and wide color gamut* provides optimum performance for displaying color images
- XtraView+[™] technology provides for the widest viewing angles available (up to 178°) with minimal off-angle color shift
- Internal 14-bit programmable 3D lookup tables (LUTs) allow the display of 1.07 billion colors out of a palette of 4.3 trillion** for lossless color and smooth images and hardware calibration
- Free MultiProfiler software provides complete control over the five picture modes. This includes loading any ICC profile directly into the monitor for optimal color space matching.
- Built-in USB hub with DisplaySync Pro™ controls two computers with only one keyboard and mouse
- AmbiBright[™] ambient light sensor automatically adjusts the display's brightness based on lighting conditions
- Four-way ergonomic stand boasts pivot, swivel, tilt and height-adjustment up to 150mm to maximize your viewing comfort
- Color Vision Emulation allows a real-time preview of Type P/D/T color vision deficiencies in support of Color Universal Design
- * PA231W features an 8-bit IPS LCD and standard color gamut
- ** with 10-bit DisplayPort input. 16.7 million colors out of 65 billion with DVI-D input.



PA301W







PA271W



PA241W



PA231W







SpectraView, Color Calibration Solution Features and Benefits

Quick and easy measurements. The SpectraView_{II} system, available for Mac OS and Windows, uses an ultra-sensitive, custom-calibrated NEC/X-rite iOne Display 2 colorimeter to take color measurements of the display screen during calibration. The software analyzes these measurements and sends color adjustment commands directly to the display. This means that color adjustments are made in the display rather than in the video graphics adapter, resulting in full use of the number of colors available on the graphics adapter and a much brighter image with the maximum possible color gamut. With SpectraView_{II}, the video graphics adapter is not used at all to make any gamma or tone response curve corrections to the display, so the full color resolution and fidelity of the system is maintained.

Calibration with Internal Look Up Tables (LUTs) - Each LCD display supported by SpectraView $_{\rm II}$ features internal LUTs with resolutions at 14-bit 3D. These tables allow precise adjustments to be made to the display's tone response curve with minimal reduction to the number of displayable colors. Since the tone response curve correction is stored within the display and not on the host system's video graphics card LUT, the display can be calibrated on one machine and then used on another and still maintain calibration as long as a digital video signal is used.

Reliable and simple display communication - SpectraView_{II} communicates with the monitor using either DDC/CI or a USB connection. DDC/CI is a two-way communications link between the video graphics adapter and display using the standard video signal cable. No extra cables are necessary. All adjustments to the display settings are done automatically using this communications link. A standard USB connection can also be used for increased compatibility with systems that do not support DDC/CI.

Multiple calibration sets - Different display calibrations can be instantly loaded, allowing quick and easy switching between different calibration settings without the need to re-calibrate the display. Each time a calibration set is loaded, the necessary settings and ICC/ColorSync profiles are automatically updated.

Calibrated monitor information - At the end of each display calibration, an information window is displayed, which shows the results of the calibration and includes a wealth of information about the display such as the measured color gamut, grayscale color tracking, Delta-E and luminance values. Additional information about the display such as the model name, serial number and the total number of hours that it has been in use are also displayed.



Calibration status validation - SpectraView $_{\rm II}$ will query each calibrated display to see if any controls have changed since the last calibration. If anything has changed, the previous calibrated state can be restored automatically.

Application flexibility - SpectraView $_{\rm II}$ provides many features and options that make it flexible enough to be used in a large variety of applications, including full DICOM support for medical imaging. The display luminance can be adjusted to either a specific user-defined value or set to the maximum the display can achieve. In addition, custom target response curves can be created in addition to presets such as L* and SMPTE.

Network support (Windows only) - SpectraView_{II} integrates with the NEC NaViSet™ Administrator network software (available separately from your NEC representative) to provide remote network access and monitoring of displays. NaViSet™ Administrator is able to read, display and log the current calibration settings and status of displays on an existing network (LAN). This feature is particularly useful for large installations where central monitoring and asset management is needed.

Display locking - Once calibrated, the On Screen Display (OSD®) controls for the displays can be locked to prevent accidental or unauthorized adjustment, which may invalidate the calibrated state of the display.

Display profiling - After calibration, the display is automatically profiled and highly accurate ICC/ColorSync color profiles are generated and automatically registered with the color management system. These profiles use the Bradford Chromaticity Adaptation matrix.

Colorimeter function - The software features a colorimeter function, which allows direct measurements to be taken by the color sensor and the results displayed in a variety of different formats.



Model	MultiSync PA231W	MultiSync PA241W	MultiSync PA271W	MultiSync PA301W
Display Viewable Size Image Pixel Pitch Pixels Per Inch Brightness (typical) Contrast Ratio (typical) Viewing Angle (typical) Response Time (typical) Panel Bit Depth	23" 0.265mm 96 @ native resolution 270 cd/m² 1000:1 178° Vert., 178° Hor. (89U/89D/89L/89R) @ CR > 5 8ms Rapid Response" (Gray-to-Gray) 14-bit internal 3D LUTs, displays 1.07 billion colors out of 4.3 trillion (10-bit DisplayPort input); 16.7 million colors out of 1.05 billion color palette (DVI-D input)	24.1" 0.27mm 93 @ native resolution 360 cd/m² 1000:1 178° Vert., 178° Hor. (89U/89D/89L/89R) @ CR > 5 8ms Rapid Response" (Gray-to-Gray) 14-bit internal 3D LUTs, displays 1.07 billion colors out of 4.3 trillion (10-bit DisplayPort input); 16.7 million colors out of 1.05 billion color polette (DVI-D input)	27" 0.23mm 109 @ native resolution 300 cd/m² 1000:1 178° Vert, 178° Hor. (89U/89D/89L/89R) @ CR > 5 7ms Rapid Response" (Gray-to-Gray) 14-bit internal 3D LUTs, displays 1.07 billion colors our of 4.3 trillion (10-bit DisplayPort input); 16.7 million colors out of 1.05 billion color palette (DVI-D input)	29.8" 0.251 mm 101 @ native resolution 350 cd/m²(270 cd/m² portrait) 1000:1 178° Vert., 178° Hor. (89U/89D/89L/89R/ @ CR > 5 7ms Rapid Response" (Gray-to-Gray) 14-bit internal 3D LUTs, displays 1.07 billior colors out of 4.3 trillion (10-bit DisplayPort input); 16.7 million colors out of 1.05 billion color palette (DVI-D input)
Color Gamut* Adobe RGB** Coverage/Size NTSC Coverage/Size sRGB Coverage/Size	75.4% 75.8% 71.6% 72.4% 96.6% 102.2%	98.1% / 107% 93.2% / 102.2% 100% / 144.3%	97.1% / 107.2% 92.6% / 102.5% 100% / 144.7%	98.2% / 106.7% 93.3% / 102% 100% / 144%
Synchronization Range Horizontal Vertical	31.5 - 83/118.4 kHz (Analog/ Digital) 50 - 85 Hz	31.5 - 93.8/118.4 kHz (Analog) / 31.5 - 91.9/118.4 kHz (Digital) 50 - 85 Hz	31.5 - 93.9 KHz (Digital) 50 - 87 Hz	31.5 - 98.7 KHz (Digital) 30 - 87 Hz
Analog Input Signal Video Sync	Analog RGB 0.7 Vp-p/75 Ohms Separate sync: TTL Level (Positive/Negative) Composite sync: TTL Level (Positive/Negative) Composite sync on green: (0.3Vp-p negative 0.7Vp-p positive)	Analog RGB 0.7 Vp-p/75 Ohms Separate sync: TTL Level (Positive/Negative) Composite sync: TTL Level (Positive/Negative) Composite sync on green: (0.3Vp-p negative 0.7Vp-p positive)	NA	NA
Inputs	DisplayPort, DVI-D (2) & VGA 15-pin D-sub	DisplayPort, DVI-D (2) & VGA 15-pin D-sub	DisplayPort & DVI-D Dual Link (2)	DisplayPort (2) & DVI-D Dual Link (2)
Resolutions Supported (Analog/Digital	720 x 400 @ 70.45 Hz 640 x 480 @ 60.95 Hz 640 x 480 @ 60.95 Hz 832 x 624 @ 75 Hz 832 x 624 @ 75 Hz 1024 x 768 @ 60.85 Hz 1152 x 864 @ 70.85 Hz 1152 x 864 @ 70.85 Hz 1152 x 864 @ 70.85 Hz 1162 x 870 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 960 @ 60 Hz 1400 x 1050 @ 60.95 Hz 1600 x 900 @ 60.95 Hz 1600 x 900 @ 60.95 Hz 1600 x 900 @ 60 Hz 1024 x 1280 @ 60 Hz 720 x 480p @ 60 Hz 720 x 480p @ 60 Hz 1280 x 720p @ 50-60 Hz 1280 x 720p @ 50-60 Hz 1290 x 1080p @ 50-60 Hz 1290 x 1080p @ 50-60 Hz 1290 x 1080p @ 50-60 Hz	720) x 400 @ 70.85 Hz 640 x 480 @ 60.85 Hz 720 x 400 @ 70.85 Hz 800 x 600 @ 60.85 Hz 800 x 600 @ 60.85 Hz 162 x 624 @ 75 Hz 1152 x 864 @ 70.85 Hz 1152 x 864 @ 70.85 Hz 1152 x 864 @ 70.85 Hz 1280 x 960 @ 60 Hz 1280 x 1024 x 60.85 Hz 1152 x 864 @ 70.85 Hz 1152 x 864 @ 70.85 Hz 1152 x 864 @ 60.85 Hz 1152 x 864 @ 60.85 Hz 1162 x 640 x 60.85 Hz 1162 x 640 x 60.85 Hz 1162 x 640 @ 60.85 Hz 1160 x 1200 @ 60.95 Hz 1200 x 1200 @ 60.95 Hz 1220 x 1200 @ 60.95 Hz 1200 x 1200 w	DIGITAL ONLY 640 × 400 @70-85 Hz 720 × 400 @ 70-85 Hz 800 × 600 @ 60-85 Hz 800 × 600 @ 56-85 Hz 812 × 624 @75 Hz 1152 × 864 @ 70-85 Hz 1152 × 864 @ 70-85 Hz 1152 × 870 @ 75 Hz 1280 × 960 @ 60 Hz 1280 × 1024 @ 60-85 Hz 1400 × 1050 @ 60-75 Hz 1400 × 1050 @ 60-75 Hz 1400 × 1000 @ 60-85 Hz 1600 × 1200 @ 60 Hz 1250 × 1020 @ 60 Hz 1220 × 1020 @ 50-60 Hz 1920 × 1080 p @ 50-60 Hz	DIGITAL ONLY 720 x 350 @70-85 Hz 720 x 400 @ 70-85 Hz 40 x 480 @ 60-85 Hz 800 x 600 @ 56-85 Hz 832 x 624 @75 Hz 1024 x 768 @ 60-85 Hz 1152 x 864 @ 70-85 Hz 1152 x 870 @ 75 Hz 1280 x 960 @ 60 Hz 1280 x 1024 @ 60-85 Hz 1400 x 1050 @ 60-75 Hz 1400 x 1050 @ 60-75 Hz 1400 x 1050 @ 60 Hz 1200 x 1200 @ 60 Hz 1200 x 1200 @ 60 Hz 1201 x 1200 @ 60 Hz 1201 x 1200 @ 60 Hz 1202 x 1200 @ 60 Hz 1202 x 1200 @ 60 Hz 1202 x 1200 @ 60 Hz 1203 x 1200 @ 50 Hz 1250 x 1200 @ 60 Hz
Native Resolution	1920 x 1080	1920 x 1200	2560 x 1440	2560 x 1600
Additional Features	USB hub (2 up/3 down) with DisplaySync Pro, Picture-in-Picture, Picture-by-Picture, ICC Profile Emulation, Color Vision Emulation, 14-bit 3D LUTs, Adobe RGB, DICOM, ColorComp, overdrive, ECO Mode, cable management, touch-enabled, tilt, swivel, pivot, 150mm height-adjustable stand with locking base, No Touch Auto Adjust, quick release stand, VESA Mount, TCO 5.0, ENERGY STAR 5.0	USB hub (2 up/3 down) with DisplaySync Pro, Picture-in-Picture, Picture-by-Picture, ICC Profile Emulation, Color Vision Emulation, 14-bit 3D LUTs, Adobe RGB, DICOM, ColorComp, overdrive, ECO Mode, cable management, touch-enabled, tilt, swivel, pivot, 150mm height-adjustable stand with locking base, No Touch Auto Adjust, quick release stand, VESA Mount, TCO 5.0	USB hub (2 up/3 down) with DisplaySync Pro, Picture-in-Picture, Picture-by-Picture Pro, Picture-in-Picture, Picture-by-Picture, ICC Profile Emulation, Color Vision Emulation, 14-bit 3D LUTs, Adobe RGB, DICOM, ColorComp, overdrive, ECO Mode, cable management, tilt, swivel, pivot, 150mm height-adjustable stand with locking base, quick release stand, VESA Mount, TCO '03, ISO9241-307 (Class 1) Certification	USB hub (2 up/3 down) with DisplaySync Pro, Picture-in-Picture, Picture-by-Picture, ICC Profile Emulation, Color Vision Emulation, 14-bit 3D LUTs, Adobe RGB, DICOV Color-Comp, overdrive, ECO Mode, coble management, tilt, swivel, pivot, 150mm height-adjustable stand with locking base quick release stand, VESA Mount, TCO '03, ISO9241-307 (Class 1) certification, standalone hardware calibration
Touch-Capable	Designed for integration	Designed for integration	No	No
Voltage Rating	AC 100-120V / AC 220-240V	AC 100-120V / AC 220-240V	AC 100-120V / AC 220-240V	AC 100-120V / AC 220-240V
Power Consumption (typical) On Power Savings Mode	46W (without USB active) / 57W (with USB active) 0.2W (without USB active) / 15W (with USB active)	95W (without USB active) / 114W (with USB active) 1W (without USB active) / 15W (with USB active)	117W (without USB active) / 131W (with USB active) 1.4W (without USB active) / 11W (with USB active)	155W (without USB active) / 161W (with USB active) 1.7W (without USB active) / 12W (with USB active)
Dimensions (WxHxD) Net (with stand) Net (without stand)	21.4 x 13.3-19.2 x 9 in. / 543.6 x 337.8-487.7 x 228.6mm 21.4 x 12.7 x 2.9 in. / 543.6 x 322.6 x 73.7mm	21.9 x 14.9-20.8 x 9 in. / 556.8 x 378-528 x 227.6mm 21.9 x 14.3 x 3.3 in. / 556.8 x 362.4 x 85mm	25.2 x 15.6-21.5 x 9.3 in. / 640.4 x 396.2-546.2 x 235.5mm 25.2 x 14.9 x 3.3 in. / 640.4 x 378.6 x 85mm	27.1 x 18.4-24.3 x 11.9 in. / 688.3 x 467.4-617.2 x 302.3mm 27.1 x 17.6 x 4.9 in. / 688.3 x 447 x 124.5mm
Net Weight (with stand) (without stand)	22.5 lbs. / 10.2 kg 15.4 lbs. / 7 kg	23.4 lbs. / 10.6 kg 16.3 lbs. / 7.4 kg	30 lbs. / 13.6 kg 21.2 lbs. / 9.6 kg	41.5 lbs. / 18.8 kg 27.6 lbs. / 12.5 kg
VESA Hole Configuration Specification	100 x 100mm	100 x 100mm	100 x 100mm, 200 x 100mm	100 x 100mm, 200 x 100mm
Environmental Conditions Operating Temperature Operating Humidity Operating Altitude Storage Temperature Storage Humidity Storage Altitude	5-35°C / 41-95°F 30-80% 2000m / 6562 ft. -10-60°C / 14-140°F 10-85% 12,192m / 40,000 ft.	5-35°C / 41-95°F 30-80% 2000m / 6562 ft. -10-60°C / 14-140°F 10-85% 12,192m / 40,000 ft.	5.35°C / 41.95°F 30.80% 3048m / 10,000 ft. -10-60°C / 14-140°F 10.85% 12,192m / 40,000 ft.	5.35°C / 41.95°F 30.80% 3048m / 10,000 ft. -10-60°C / 14-140°F 10.85% 12,192m / 40,000 ft.
Safety Standards	UL / C-UL, CE, Gost/PCT, PSB, CCC, NOM, TUV GS, FCC Class B/Canadian DOC, C-tick, MPR III, VCCI (class 2)	UL / C-UL, CE, Gost/PCT, PSB, CCC, NOM, TUV GS, FCC Class B/Canadian DOC, C- tick, MPR III, VCCI (class 2)	UL / C-UL, CE, Gost/PCT, PSB, CCC, NOM, TUV GS, FCC Class B/Canadian DOC, C-tick, MPR III, VCCI (class 2)	UL / C-UL, CE, Gost/PCT, PSB, CCC, NOM, TUV GS, FCC Class B/Canadian DOC, C-tick, MPR III, VCCI (class 2)
Limited Warranty	4 years parts and labor, including backlight	4 years parts and labor, including backlight	4 years parts and labor, including backlight	4 years parts and labor, including backlight
Technical Support				

Color gamut size and coverage calculated as 2-D gamut area in CIE 1931 xy colorspace. Size is the total relative display gamut area and includes any colors outside the reference gamut. Coverage is the relative display gamut area contained inside the reference gamut. NTSC values provided for comparison purposes - modern broadcast video uses SMPTE-C, ITU-R BT, 709-5/sRGB or EBU primatries.

Spectra View, Software Requirements
Apple Mac OS X v10.3.9 or higher. Microsoft Windows 2000, Windows XP (Home and Professional editions), Windows XP x64, Windows Vista 32 bit and x64 versions, and Windows 7 32 bit and x64 versions. Suse Enterprise Desktop 10 and higher. At least one available USB port for MDSVSENSOR2 color sensor.
Visit www.necdisplay.com for the latest requirements.









^{**} AdobeRGB is a standard defined by Adobe Systems Incorporated.

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