The New Surgical Display Standard

NATIONAL DISPLAY SYSTEMS

Radiance™ 23 Hi-Definition Surgical Display

- Designed to support surgical procedures and PACS Imaging

- Ultra High Bright - High Contrast

- Image Lag Reduction™ Technology

- SDI/DVI Equipped

- Medical-Grade UL/IEC-60601-1

- 24 VDC Remote Power

- 5 programmable user/modality preferences

The Radiance series of displays are the first ever capable of performing double duty in the OR for both surgical and PACS requirements. These medical grade devices exceed the stringent performance and safety requirements necessary for use in a surgical environment, where superior image quality, true color reproduction, exceptional contrast, and high brightness are required. And with full gamma support for DICOM, they serve every PACS modality currently used in an OR environment. For mounting on light arms, the external 24Vdc power supply can be located up to 100 feet away from the display.

Surgical and Radiology Support in a Single Unit

The Radiance display supports eight different video formats, including SDI, DVI digital, VGA analog, RGBS, Component Video, (YPbPr), S-Video(Y/C), Composite, and Sync-On-Green (SOG). And with gamma correction included, the Radiance is a perfect solution for fluoroscopy, ultrasound, PACS, MR, DR, etc.

Picture-Perfect Technology™

PPT™ technology, invented and used by NDS in manufacturing Radiance displays, eliminates the jagged edges that appear when interlaced video signals are displayed on a progressive scan flat-panel device (LCD or Plasma). NDS PPT uses proprietary angle correlated vector interpolation algorithms to eliminate intra-field spatial interpolation (staircasing effect), and enhances the visual quality necessary for tying sutures, examining tissues and other delicate procedures.

General Purpose Input Connector

The General Purpose Input/Output (GPIO) connector allows customization to the Radiance display. It can be connected to a foot pedal to provide the surgeon with the ability to switch between different video sources, or be used to invoke the Tally-Lamp™ indicator.

The Intelligent Solution

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With 24Vdc power input, the Radiance is a perfect solution for boom arm mounting.

Image Lag Reduction (ILR) for Super Fast Video Imaging

Proprietary Image Lag Reduction technology (ILR), developed at NDS in conjunction with PPT, provides the fastest video imaging available in the market today. ILR technology anticipates the LCD drive required from one video frame to the next and modifies the LCD sub-pixel drive level to provide an industry-leading fast response time. These advanced interpolation and smoothing algorithms, result in images presented lag-free. Equipped with ILR technology, the Radiance display family delivers the fastest response time of any flat-panel display (between 10 and 16ms response time).

Remote Functionality Control for Switching Signals in Real-Time

Integrated Operating Rooms require that display adjustments and video image source switching occur in real-time, without the intervention of the surgeon in the sterile field. Radiance displays answer this requirement with Remote Functionality Control (RFC) technology. All Radiance displays deliver RFC via a serial communication port located on the display.

Medically Manufactured

The Radiance is a professional medical device designed specifically for the OR environment. Unlike many LCD manufacturers who fashion existing off the shelf displays into medical equipment, this flat-panel is designed from the ground up for extreme durability and safety. Membrane style buttons and a non dimpled enclosure ensures particles or other foreign matter won't accumulate into voids and possibly spread contaminants. The unit is designed to run without fans of any sort (internal or external) that could possibly make contaminants airborne and spread bacteria. Designed for safety, the low voltage input eliminates concerns with running mains power through a metal arm. In addition, the low voltage design allows the external power supply to be located up to 100 feet away from the display.

General

Viewing Area (Diagonal)

inches	23"	
mm	584	

Active Area

Inches	20 x 11.3
mm	508 x 287
Pixel pitch (mm)	0.3915
Native Resolution	1366 x 768 (WXGA)
Luminance (cd/m^2)	450
Contrast ratio	550:1
# of Colors	16.77 million

Color Gamut

(% SMPTE 296M, HD std.)	100
Viewing Angle (degrees)	±88
Response	10ms; gray — to — gray
Gamma:	1.8, 2.0, 2.2, 2.4, color corrected video gamma, & PACS
Display Technology	a-Si TFT

Power Requirements

Display	16 – 24 VDC
DC Power Supply	100 to 240 VAC ± 10%, 50/60 Hz
Power Consumption	80W

Dimensions

inches	22 x 14 x 3
mm	560 x 356 x 76
Weight (lbs.)	15 (6.8 Kg)

Inputs

(*for video input formats, see pg.4*)

Horiz Freq (kHz, max)	75
Vertical Freq (Hz, max)	85
Bandwidth (MHz, max)	165
SDI	BNC, 75 Ω terminated
S-video	BNC x 2 (Y & C), *and* DIN-4, 0.7 Vp-p ± 6db, 75 Ω terminated
RGBS, YPbPr	BNC x 5, *or* HD-15, 0.7 Vp-p ± 6db, 75 Ω terminated
Composite	BNC, 0.7 Vp-p ± 6db, 75 Ω terminated
Sync-On-Green (SOG)	BNC, 75 Ω terminated

Graphics Inputs

DVI	DVI-d
VGA	HD-15

Control Inputs

RS-232	DB-9
GPIO	RJH-4

Outputs

SDI	BNC
S-Video	DIN-4
RGBS (VGA)/YPbPr	BNC x 5, and HD-15
Composite/SOG	BNC

User Controls

OSD	R, G, B adjust, Hue, Saturation, Contrast, Brightness,
	Gamma select: 1.8-2.6, video, PACS
	Backlight Level , Horizontal & Vertical Position
	Overscan: Off / On (up to 25% overscan), Phase & Frequency
	5 programmable user/modality preferences

Operating Conditions

Temperature

Operating	0 to +40 ˚C
Storage	-20 to +60 ˚C

Humidity

Operating	20 – 85 %RH
Storage	5 – 85 %RH
Mounting	100 mm VESA

Video Input Formats

Format	Input Digital	Analog	Horiz. Freq (kHz)	Interlace / Progressive	Aspect	Standard Digital/Analog
576/50i (PAL)	SDI	Comp, S-video, RGB, YP_BP_R	15.625	Int	16:9 / 4:3	SMPTE 259M/C ITU 601
480/60i (NTSC)	SDI	Comp, S-video, RGB, YP_BP_R	15.734	Int	16:9 / 4:3	SMPTE 259M/C ITU 601
576/50p		RGB, YP_BP_R, SOG	31.250	Prog	16:9 / 4:3	- -
480/60p		RGB, YP_BP_R, SOG	31.469	Prog	16:9 / 4:3	- SMPTE 293M
720/50p		RGB, YP_BP_R	37.500	Prog	16:9	- SMPTE 296M
720/60p		RGB, YP_BP_R	45.000	Prog	16:9	- SMPTE 296M
1080/50i		RGB, YP_BP_R	28.125	Int	16:9	- SMPTE 274M
1080/60i		RGB, YP_BP_R	33.750	Int	16:9	- SMPTE 274M
Up to 1024/60p		SOG	64.0, max	Prog	-	- -
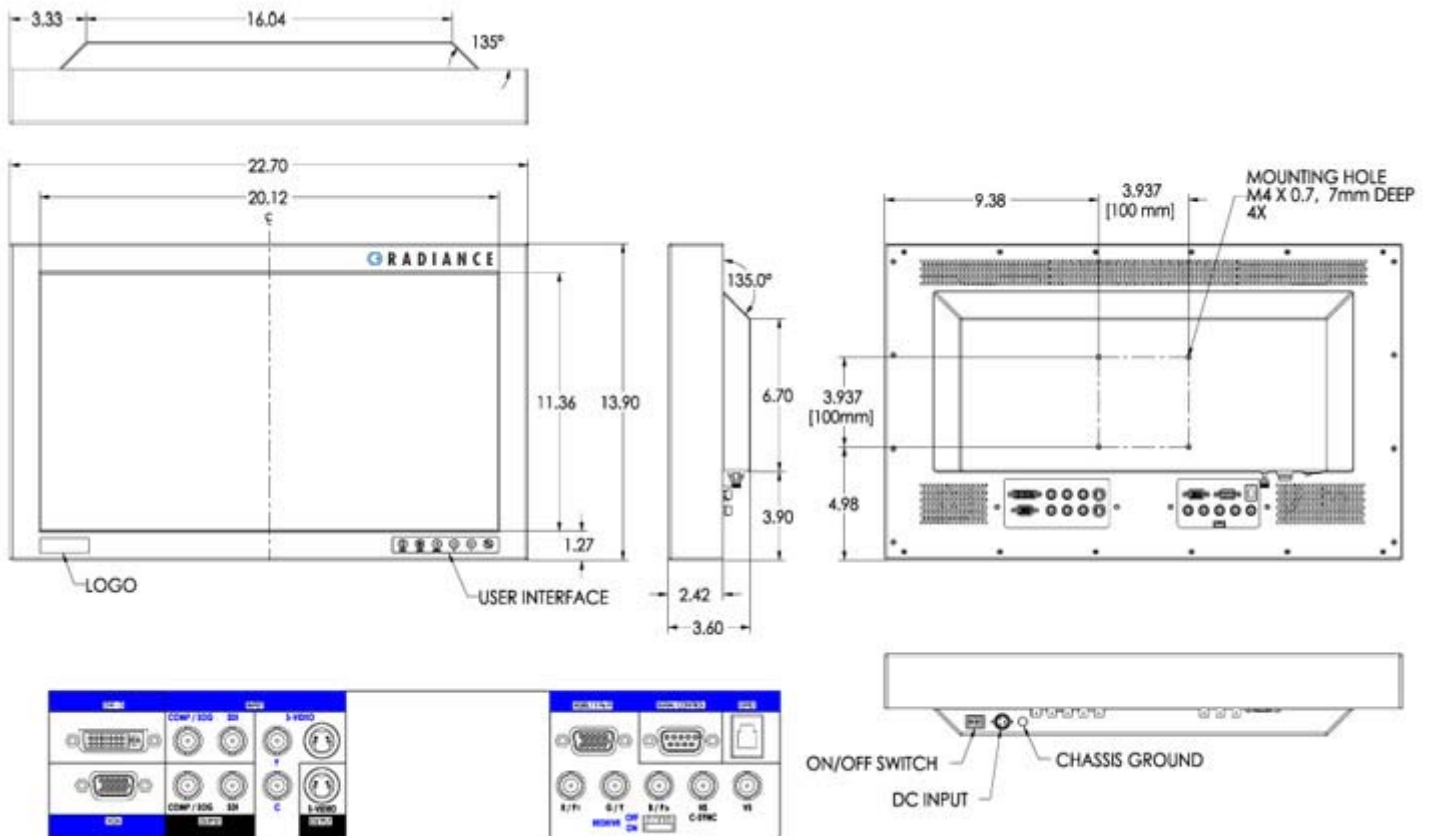
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