



LMD-2450MD 24" Full HD Widescreen Medical LCD Monitor

Sony introduces an exceptional High Definition 24-inch*¹ widescreen medical grade monitor – the LMD-2450MD. Incorporating a superb quality WUXGA (1920x1200) LCD panel, this monitor delivers extremely bright and high-contrast images to the operating room. The 10-bit signal processing and Sony ChromaTRU™ color balance technology provide outstanding image quality and consistently accurate colors. The LMD-2450MD displays a 1920x1080P full HD signal pixel-to-pixel enabling the purest reproduction of images captured by today's HD surgical cameras. In addition, the LMD-2450MD accepts almost any standard definition and high definition video signal in both analog and digital, allowing doctors to view images from multiple sources. Incorporating industry-leading Sony HD technology and design, the LMD-2450MD is the perfect addition to today's HD operating rooms. End users can now experience the full benefit of their HD surgical cameras.

- Widescreen Full HD 1920x1200 Resolution
- WUXGA Panel Delivers Excellent Brightness and Contrast
- 10-Bit DSP Provides Natural Gradation and Accurate Color Reproduction
- ChromaTRU Color Balance Technology for Color Consistency
- Versatile Multi-Format Signal Support
- Touch-Activated Backlit Controls on Front Bezel
- Picture in Picture and Side by Side Display Modes

*¹ Viewable area measured diagonally.



LMD-2450MD with optional SU-560 Monitor Stand

With Sony Advanced Image Processing Technology, the LMD-2450MD Reproduces Accurate High-Definition Images for Critical Endoscopic Applications

Safety Listing and Compliance

The LMD-2450MD monitor is UL60601-1 listed and complies with CSA C 22.2 No. 60601 and EN60 601-1 safety regulations, making it suitable for use in professional medical applications.

Excellent Picture Reproduction

ChromaTRU Color Processing

For an extra level of color reproduction accuracy, every LCD panel used in the LMD-2450MD is precisely color calibrated at the factory, providing consistent characteristics. The colorimetry of an LCD display, by nature, can exhibit inaccurate color characteristics and gamma curves, which can make precise color matching between multiple monitors a challenge. The LMD-2450MD solves this problem by precisely calibrating each LCD panel's light output so that the R, G, B color coordinates are consistent for every monitor. A second calibration is further applied so that white balance is maintained at a consistent color temperature throughout all grayscale levels. This technology is invaluable for applications such as simultaneous monitoring in operating rooms and monitoring rooms.

Excellent Brightness and Contrast (WUXGA Panel)

The LMD-2450MD provides high-brightness and high contrast images by utilizing super-wide aperture WUXGA LCD panels.

Natural Gradation and Accurate Color Reproduction (10-Bit DSP)

The LMD-2450MD adopts an advanced full 10-bit digital video signal processor to produce accurate, lifelike images with smooth and natural gradation.

Sophisticated I/P (Interlace to Progressive) Conversion

The LMD-2450MD uses an advanced technology to perform sophisticated I/P conversion. This method combines the pixels above, below, and in the diagonal direction of the image in areas where there is movement, and then inserts a natural pixel to create the absent lines. The result is very smooth image reproduction for both moving and static picture areas.

Input Versatility (Multi-format Signal Support)

The LMD-2450MD monitor can accept almost any signal ranging from SD to HD video, as well as PC signals via its DVI-D or HD15 connectors. In addition to its standard inputs, four different optional input adapters are offered for use in its expansion slot. This flexibility allows images from a variety of medical equipment sources, including endoscopes, to be monitored. The LMD-2450MD also provides parallel and serial control (including via Ethernet) as standard.

Operational Convenience

Gamma Curve Selection

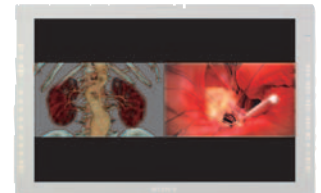
Users of the LMD-2450MD can choose from two gamma curves, DICOM or CRT 2.2, whichever is more appropriate for the image being monitored.

Multiple Display Modes

The LMD-2450MD incorporates multiple display modes such as Picture-in-Picture, and Picture-and-Picture (including a side-by-side split screen). These flexible display modes can be used for special applications such as to view both live video and captured images simultaneously for more comprehensive coverage of the surgical procedure.



Picture-in-Picture



Picture-in-Picture
(side-by-side split screen)

Selectable Scan Size/Aspect Ratio

Either a 20% overscan mode or a 0% scan mode can be selected on the LMD-2450MD. Also, the aspect ratio can be set to either 16:9 or 4:3 to match the input signal.

Protected Controls

The key-inhibit function of the LMD-2450MD helps prevent inadvertent operation from the control panel.

Mounting Flexibility (VESA™)

The LMD-2450MD complies with the 100-mm hole spacing VESA mounting standard making it ideal for use with surgical equipment arms.

Input Signals

Video Signal Formats	Input Signal				Interface					
	Total Lines	Active Lines	Aspect Ratio	Frame Rate*3	Composite Y/C	Composite RGB	SD-SDI HD-SDI	SDI 4:2:2	Composite Y/C	Composite RGB
					Standard			Optional BKM-220D	Optional BKM-227W	Optional BKM-229X
575/50i (PAL)	625	575	16:9 & 4:3	25	●	●	●	●	●	●
480/60i (NTSC)	525	483	16:9 & 4:3	30	●	●	●	●	●	●
576/50p	625	576	16:9 & 4:3	50	-	●	-	-	-	●
480/60p	525	483	16:9 & 4:3	60	-	●	-	-	-	●
1080/24PsF	1125	1080	16:9	24	-	●*2	●	-	-	●*2
1080/25PsF	1125	1080	16:9	25	-	●*2	●	-	-	●*2
1080/24P	1125	1080	16:9	24	-	●*2	●	-	-	●*2
1080/25P	1125	1080	16:9	25	-	●*2	●	-	-	●*2
1080/30P	1125	1080	16:9	30	-	●*2	●	-	-	●*2
1080/50i	1125	1080	16:9	25	-	●	●	-	-	●
1080/60i	1125	1080	16:9	30	-	●	●	-	-	●
720/50p	750	720	16:9	50	-	●*2	●	-	-	●*2
720/60p	750	720	16:9	60	-	●	●	-	-	●

*2 Available with component input only *3 Also compatible with 1/1.001 frame rates

HD15 Input Signal Format

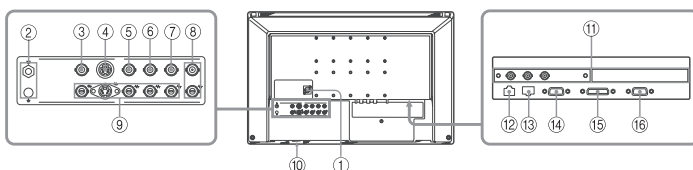
Resolution	Dot Clock (MHz)	fH (kHz)	fV (Hz)	Sync Polarity	
				Horizontal	Vertical
640x480 @60Hz	25.175	31.469	59.940	N	N
800x600 @56Hz	36.000	35.156	56.250	P	P
800x600 @60Hz	40.000	37.879	60.317	P	P
800x600 @72Hz	50.000	48.077	72.188	P	P
800x600 @75Hz	49.500	46.875	75.000	P	P
800x600 @85Hz	56.250	53.674	85.061	P	P
1024x768 @60Hz	65.000	48.363	60.004	N	N
1024x768 @70Hz	75.000	56.476	70.069	N	N
1024x768 @75Hz	78.750	60.023	75.029	P	P
1024x768 @85Hz	94.500	68.677	84.997	P	P
1152x864 @75Hz	108.000	67.500	75.000	P	P
1280x960 @60Hz	108.000	60.000	60.000	P	P
1280x1024 @60Hz	108.000	63.981	60.020	P	P
1600x1200 @60Hz	162.000	75.000	60.000	P	P
640x480 @60Hz	23.625	29.531	59.780	P	N
800x600 @60Hz	35.500	36.979	59.837	P	N
1024x768 @60Hz	56.000	47.297	59.870	P	N
1280x960 @60Hz	85.250	59.201	59.920	P	N

Resolution	Dot Clock (MHz)	fH (kHz)	fV (Hz)	Sync Polarity	
				Horizontal	Vertical
1600x1200 @50Hz	132.375	61.742	49.994	N	P
1600x1200 @60Hz	130.375	74.077	59.981	P	N
1360x768 @50Hz	69.500	39.489	49.922	N	P
1360x768 @60Hz	84.625	47.649	59.936	N	P
1360x768 @60Hz	72.000	47.368	59.960	P	N
1920x1080 @50Hz	141.375	55.572	49.975	N	P
1920x1080 @60Hz	138.625	66.647	59.988	P	N
1920x1200 @50Hz	158.000	61.719	49.975	N	P
1920x1200 @60Hz	154.125	74.099	59.999	P	N
1280x1024 @60Hz	91.000	63.194	59.957	P	N
1280x768 @50Hz	65.125	39.518	49.959	N	P
1280x768 @60Hz	80.125	47.693	59.992	N	P
1280x768 @75Hz	102.875	60.091	74.926	N	P
1280x768 @60Hz	68.250	47.369	59.995	P	N
720x400 @70Hz	28.322	31.469	70.087	N	P
1280x800 @60Hz	68.900	48.935	59.969	N	N
1920x1200 @60Hz	154.000	74.642	59.935	P	P

N = Negative

P = Positive

Connector Panel



- ① DC 5V/24 IN connector
- ② ⚡ (Equipotential/Ground) terminal
- ③ COMPOSITE IN connector (BNC)
- ④ Y/C IN connector (4-pin mini-DIN)
- ⑤ G/Y IN connector (BNC)
- ⑥ B/P_r IN connector (BNC)
- ⑦ R/P_r IN connector (BNC)
- ⑧ EXT SYNC IN/OUT (external sync) connectors (BNC)
- ⑨ Loop-through output connectors

- ⑩ ⏻ (power) switch
- ⑪ Optional input slot
- ⑫ PARALLEL REMOTE connector (modular connector, 8-pin)
- ⑬ SERIAL REMOTE connector (RJ-45)
- ⑭ SERIAL REMOTE RS-232C connector (D-sub 9-pin, female)
- ⑮ DVI-D input connector (DVI-D)
- ⑯ HD15 input connector (D-sub 15-pin, female)

Specifications

Picture Performance

LCD Panel Type	a-Si TFT Active Matrix
Resolution	WUXGA (1920 x 1200)
Effective Picture Size (W x H)	Approx. 518 x 324mm (20.5 x 12.875 inches) Diagonal 609mm (24 inches)
Aspect	16:10
Colors	Approx. 16,770,000 colors (8-bit)
Viewing Angle	89°/89°/89°/89° (typical) (up/down/left/right contrast > 10:1)

Input / Output

Input	HD-SDI/SD-SDI	SMPTE 259M/292M, BNC (x2)
	Composite	BNC (x1), 1.0Vp-p ±3dB, sync negative
Y/C		4pin Mini DIN (x1) Y: 1.0 Vp-p ±3dB sync negative C: 0.286 Vp-p ±3dB (NTSC), 0.3 Vp-p ±3dB (PAL)
	Component/RGB	BNC (x 3) Component: 0.7 Vp-p ±3dB (75% chrominance standard color bar signal) RGB: 0.7 Vp-p ±3dB (Sync On Green, 0.3 Vp-p, sync negative)
Ext. Sync	BNC (x 1)	0.3 to 4.0 Vp-p ±bipolarity ternary or negative polarity binary
Computer	DVI-D (x 1): TMDS single link	
HD15		D-sub 15pin (x 1) 0.7 Vp-p, sync positive (Sync On Green, 0.3 Vp-p, sync negative) Sync: TTL level (polarity free, H/V separate sync) Plug & Play function: corresponds to DDC-2B
	Optional	1 slot Signal format: H 15 to 45 kHz, V 48 to 60 Hz
DC IN		DC 5 V/24 V (output impedance 0.05 Ω or less)
	Remote	Parallel: Modular 8-pin (x 1) Serial: D-sub 9-pin (RS-232C) (x 1) RJ-45 modular (ETHERNET) (x 1)
Output	HD-SDI/SD-SDI	SMPTE 259M/292M, BNC (x1)
	Composite	BNC (x 1), Loop-through, 75 Ω automatic termination
	Y/C	4-pin mini-DIN (x 1), Loop-through, 75 Ω automatic termination
	Component/RGB	BNC (x 3), Loop-through, 75 Ω automatic termination
Ext. Sync	BNC (x 1), Loop-through, 75 Ω automatic termination	

General

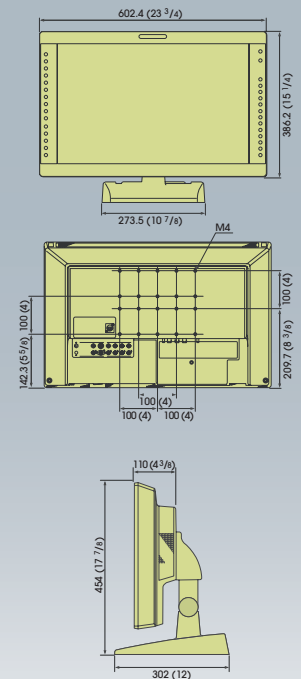
Power Consumption	Maximum: Approx. 115 W (with 2 x BKM-229X)
Power Requirements	AC 100 to 240 V, 50/60 Hz, 1.2-0.6 A, DC 24 V 3.5 A, 5 V 0.030 A
Operating Temperature	0 to 35 °C (32 to 95 °F), Recommended: 20 to 30 °C (68 to 86 °F)
Operating Humidity	30 to 85 % (no condensation)
Storage & Transport Temperature	-20 to 60 °C (-4 to 140 °F)
Storage & Transport Humidity	0 to 90 % (no condensation)
Operating, Storage, and Transport Pressure	700 to 1060 hPa
Dimensions (W x H x D)	Approx. 602 x 386 x 110 mm (23 3/4 x 15 1/4 x 4 3/8 inches) (including projections)
Mass	Approx 10 kg (22 lb) (without optional board)
Supplied Accessories	AC adaptor, AC power cord, AC plug holder, Instructions for Use, CD-ROM (Operating instructions), Using the CD-ROM manual, Quick Reference, When You First Use The Monitor booklet, Sales Company Guide, Warranty card

Optional Accessories

- BKM-220D
SD-SDI 4:2:2 Input Adaptor
- BKM-243HS
HD-SDI/SD-SDI Input Adaptor
- BKM-227W
NTSC/PAL Input Adaptor
- BKM-229X
Analog Component Adaptor
- SU-560
Monitor Stand

Dimensions

Unit: mm (inches)



SONY

Sony Electronics Inc.
1 Sony Drive
Park Ridge, NJ 07656

sony.com/medical