



LMD-3250MD 32" Full HD Widescreen Medical LCD Monitor

The LMD-3250MD monitor is the latest edition to Sony's comprehensive range of medical grade LCD displays. This 32" widescreen monitor* offers a 10-bit panel driver, 10-bit signal processing and Sony ChromaTRU™ color balance technology for ultra high performance. The LMD-3250MD displays a 1920 x 1080 full HD signal pixel-to-pixel enabling the pure reproduction of images captured by today's HD surgical cameras.

- Designed to be mounted on surgical carts, boom arms, walls or at a table top workstation
- Built-in HD-SDI, DVI-D, HD15, RGB, Y/C, composite and SD-SDI inputs for integration into virtually any system environment
- Enhanced side-by-side functions for multi-modality performance
- Full 10-bit panel delivers an expanded color gamut for outstanding image quality

*Viewable area measured diagonal

With Sony's Advanced Image Processing Technology, the LMD-3250MD Reproduces Accurate High-Definition Images for Critical Surgical Applications.

Safety Listing and Compliance

The LMD-3250MD 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-3250MD 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-3250MD solves this problem by precisely calibrating each LCD panel's light output so that the RGB 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. The LMD-3250MD also provides high-brightness and high contrast images by utilizing super-wide aperture LCD panels.

Natural Gradation of Color Reproduction (10-Bit DSP)

The LMD-3250MD incorporates an advanced 10-bit digital video signal processor to produce accurate and lifelike images with smooth and natural gradation.

Sophisticated I/P (Interlace to Progressive) Conversion

The LMD-3250MD uses an advanced technology to perform sophisticated I/P conversion. I/P conversion is essential, enabling an interlaced video signal to display on the LCD progressive panel. Typically during this process, a second process – scaling – also occurs. Scaling adjusts the pixel count, but it can also degrade picture quality. With its sophisticated I/P conversion technology, the LMD-3250MD does not need a scaling process to deliver essential high-level accuracy when monitoring detailed images from full HD video sources.

Features:

- 1920 x1080 Full HD Resolution and 10-Bit panel driven and Signal Processing
- Sony ChromaTRU Color Balance
- 16:9 Widescreen Aspect Ratio
- Multi-Picture Display: picture-outside-picture (POP), and side-by-side with full scan for flexible multi-image viewing
- Built-in HD-SDI and DVI-D: for connections to most of today's HD surgical cameras
- Touch-activated Picture Controls
- One Optional Input Slot: to enable additional signal input
- Multiple Preset Signal Configurations: designed to match various endoscopic camera system specifications for convenient and easy setup
- 20 User Memory settings: programmable to user preferences
- Selectable Color Temperature, Gamma and Scan Settings
- Key Lock Control Button: helps prevent unintentional setting changes from occurring during procedures
- Vesa™ Mounting: for standard compatibility with stands and mounting brackets
- Flat Surface LCD and Hooded Ventilation Holes for easy cleaning
- 7 Language On Screen Display
- Serial RS232C or Ethernet Remote
- 24V DC Operation Capability

Full HD Panel with 10-Bit Driver

The LMD-3250 incorporates a 1920 x 1080 pixel, full HD panel with no requirement for scaling process when monitoring full HD video sources. At the same time, the 10-bit panel driver can achieve full-scale image reproduction of the video data processed by the 10-bit DSP engine. This 10-bit panel driver enables the LMD-3250MD to deliver extremely accurate image reproduction.

Variety of Display Modes for Medical Applications

The LMD-3250MD incorporates multiple display modes such as Picture-outside-Picture (POP), and Side-by-Side for flexible multi-image viewing with full scan capability. The full scan improvement increases image size/viewing distance and provides a more efficient use of screen real estate.



New Full Scan Picture-out-Picture



New Full Scan Side-by-Side Pictures

Mirror Image Feature

This convenient feature of the LMD-3250MD is ideal for procedures where two surgeons work at opposite points of orientation to the patient. With this feature surgeons no longer have to stand side by side and share a single display as in a conventional operating room.

Original Image

Mirror Image (reverse orientation)



Operational Convenience

The LMD-3250MD allows for multiple preset signal configurations designed to match various endoscope camera system specifications for convenient and easy setup. The User Memory Function allows the LMD-3250MD to file up to 20 types of picture settings such as contrast, brightness, and scan to accommodate various end-user preferences. The monitor also features a Key Lock Control button that helps prevent unintentional setting changes from occurring during procedures.

Smooth Surface Design and Fluid-resistant Structure

The LMD-3250MD is specially designed for medical environments. Touch activated tactile controls on the bezel and an AR (anti-reflection) layered protection panel over the LCD panel have together achieved a seamless surface design architecture, making the unit easy and convenient to clean. Also, the newly designed ventilation holes make the LMD-3250MD more resistant to liquid and chemical spills and splashes. As a result, the LMD-3250MD monitor provides a high level of hygiene and safety.

Input Versatility

The LMD-3250MD monitor can accept almost any signal ranging from SD to HD, as well as PC signals, via its DVI-D and HD 15 Connectors. In addition to standard inputs, four different optional input adapters are offered for use in the monitor's expansion slot.

Mounting Flexibility (VESA)

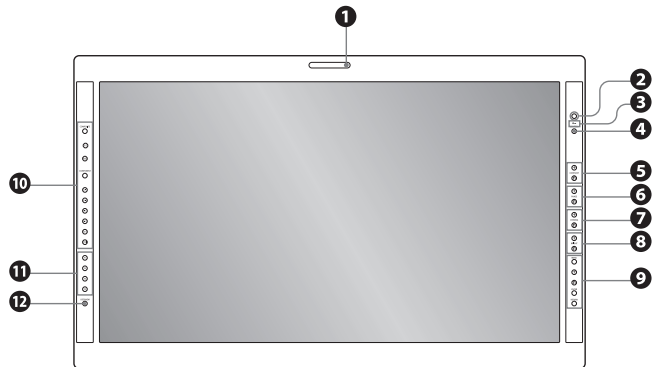
The LMD-3250MD complies with the 200 x 400 mm* hole spacing VESA mounting standard and also includes a 100 x 300 mm hole spacing pattern, making it ideal for use with surgical equipment arms and other medical applications.

*200 x 400 mm pitch (4 holes)

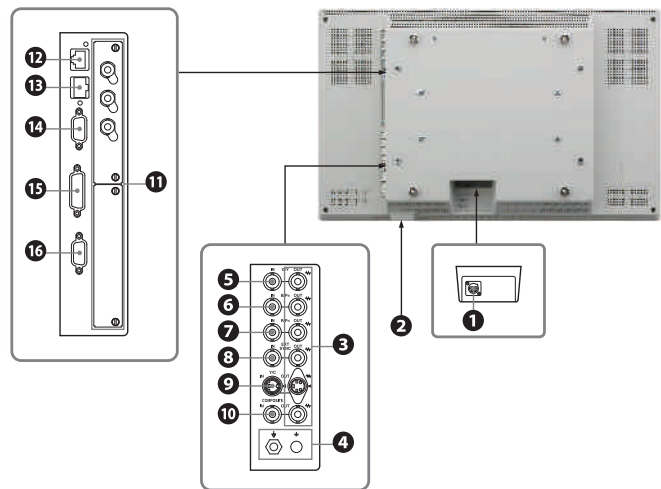
AC Adaptor

A small-sized AC adaptor enables easier installation of the LMD-3250MD where space is limited.

Connector Panel



- | | |
|-------------------------|---|
| 1 Tally lamp | 7 CHROMA |
| 2 Power indicator | 8 BRIGHTNESS |
| 3 Key inhibit indicator | 9 Menu (+/-, ENTER, RETURN) |
| 4 CONTROL | 10 Input Select (Composite, Y/C, RGB, COMPONENT, HD15, DVI, etc.) |
| 5 CONTRAST | 11 Function |
| 6 PHASE | 12 USER Memory |



- | | |
|--------------------------------|---|
| 1 DC 5V/24V IN | 10 COMPOSITE (BNC) |
| 2 Power switch | 11 Optional Interface Board Slot* (x 2) |
| 3 Loop-through output | 12 PARALLEL REMOTE (8-pin) |
| 4 Equipotential/Function Earth | 13 SERIAL REMOTE (RJ-45) |
| 5 G/Y IN (BNC) | 14 SERIAL REMOTE RS-232C (D-sub 9-pin female) |
| 6 B/P IN (BNC) | 15 DVI-I input |
| 7 P/Pr IN (BNC) | 16 HD-15 input (D-sub 15-pin, female) |
| 8 EXT SYNC (BNC) | |
| 9 Y/C IN (4-pin mini-DIN) | |

* BKM-243HS (HD-SDI/SD-SHI Input Adaptor) is supplied.

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
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
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
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

Specifications

Picture Performance

LCD Panel Type	A-Si TFT Active Matrix
Resolution	Full HD (1920 x 1080)
Effective Picture Size (W x H)	Approx. 27 1/2 x 15 1/2 inches (698mm x 392mm) Diagonal 31 5/8 inches (802mm)
Aspect	16:9
Colors	Approx. 1,073,700,000 colors (10-bits)
Viewing Angle	178°/178° (typical, 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):	TMD5 single link
HD15		D-sub 15pin (x 1) 0.7 Vp-p0nc 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

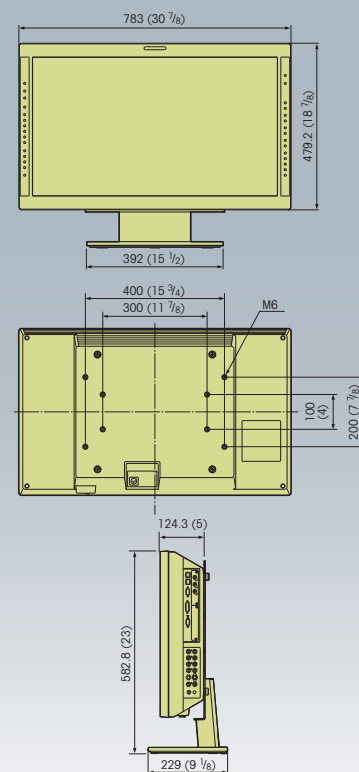
General

Power Consumption	Maximum: Approx. 136 W (with 2 x BKM-229X)
Power Requirements	AC 100 to 240 V, 50/60 Hz, 1.53 A, DC 24 V 5.0 A, 5 V 0.060 A
Operating Temperature	32 to 95° F (0 to 35° C), Recommended: 68 to 86° F (20 to 30° C)
Operating Humidity	30 to 85 % (no condensation)
Storage & Transport Temperature	-4 to 140° F- (20 to 60° C)
Storage & Transport Humidity	0 to 90 % (no condensation)
Operating, Storage, and Transport Pressure	700 to 1060 hPa
Dimensions (W x H x D)	Approx. 30 7/8 x 18 7/8 x 5 inches (783 x 480 x 125mm) (w/h/d) (including projections)
Weight	Approx 13.3 kg (29 lb. 5 oz) (when one BKM-243HS installed)
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

- SU-32FW/S – Desktop Stand for LMD-3250MD
- BKM-220D – SDI 4:2:2 Input Adapter for LMD Series Monitors
- BKM-243HS* – HD/D1-SDI Input Adapter for LMD Series Monitors
- BKM-227W – NTSC/PAL Input Adapter for LMD Series Monitors
- BKM-229X – Analog Component Input Adapter for LMD Series Monitors

*One BKM-243HS comes standard with the LMD-3250MD



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Caution: Federal (USA) law restricts this device to sale by or on the order of a physician or other appropriately licensed medical professional. Caution: See product labeling for indications, contraindications, warnings, cautions and directions for use.

ME-LMD3250MD