

**SONY**

**LMD-2450MD**

Medical LCD Monitor

[www.sonybiz.net/healthcare](http://www.sonybiz.net/healthcare)

Innovation that displays every detail in perfect clarity.

Monitor resolution has come a long way since the pioneering physicist Karl Ferdinand Braun built the first cathode-ray tube in 1897.

Today, Sony's innovative LMD-2450MD with Advanced Image Processing Technology enables clinicians to see still and moving images with accurate, High Definition clarity and pinpoint precision – making it ideal for critical endoscopic applications.



## LMD-2450MD

### Excellent Picture Reproduction

#### ChromaTRU Colour Processing

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

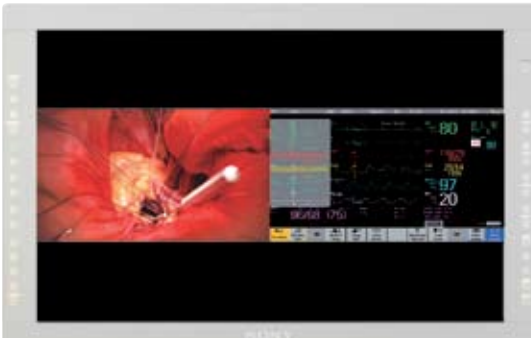
#### Excellent Brightness and Contrast (WUXGA Panel)

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

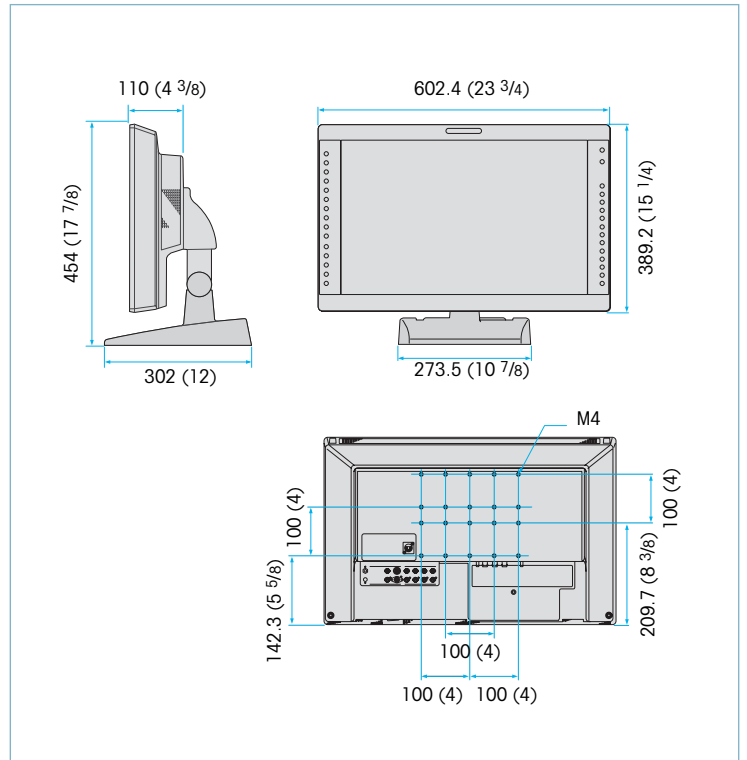
Picture-in-Picture Display Mode



Picture-and-Picture Display Mode



## Dimensions Unit: mm (inches)



### Natural Gradation and Accurate Colour 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.

### 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.

## Operational Convenience

### Gamma Curve Selection

Users 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.

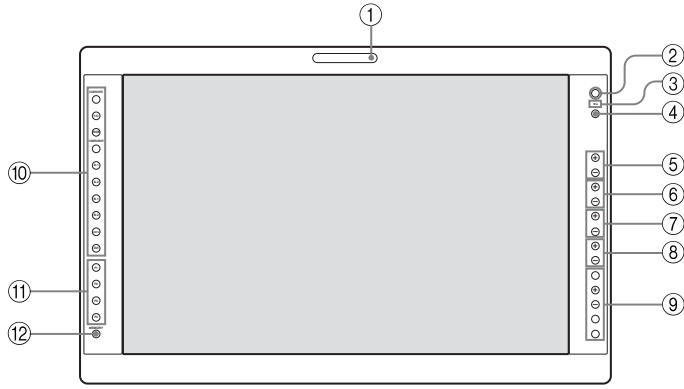
### Selectable Scan Size/Aspect Ratio

Either a 20% overscan mode or a 0% scan mode can be selected. 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 helps prevent inadvertent operation from the control panel.

## Front Panel



- ① Tally lamp
- ② Power indicator
- ③ (key inhibit) indicator
- ④ CONTROL button
- ⑤ CONTRAST buttons
- ⑥ PHASE buttons
- ⑦ CHROMA buttons
- ⑧ BRIGHT (brightness) buttons
- ⑨ Menu operation buttons
- ⑩ Input select buttons
- ⑪ Function buttons
- ⑫ MEMORY button

## 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 @60Hz	50.000	48.077	72.188	P	P
800x600 @60Hz	49.500	46.875	75.000	P	P
800x600 @60Hz	56.250	53.674	85.061	P	P
1024x768 @60Hz	65.000	48.363	60.004	N	N
1024x768 @60Hz	75.000	56.476	70.069	N	N
1024x768 @60Hz	78.750	60.023	75.029	P	P
1024x768 @60Hz	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
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 @50Hz	138.625	66.647	59.988	P	N
1920x1080 @50Hz	158.000	61.719	49.975	N	P
1920x1080 @50Hz	154.125	74.099	59.999	P	N
1280x1024 @60Hz	91.000	63.194	59.957	P	N
1280x1024 @60Hz	65.125	39.518	49.959	N	P
1280x1024 @60Hz	80.125	47.693	59.992	N	P
1280x1024 @60Hz	102.875	60.091	74.926	N	P
1280x1024 @60Hz	68.250	47.396	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

### 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 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.

## Input Signals

Video Signal Formats	Input Signal				Interface						
	Total Lines	Active Lines	Aspect Ratio	Frame rate*2	Composite Y/C	Component RGB	SD-SDI	HD-SDI	SDI 4:2:2	Component Y/C	Component rRGB
					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	—	○*1	○	—	—	—	○*1
1080/25PsF	1125	1080	16:9	25	—	○*1	○	—	—	—	○*1
1080/24p	1125	1080	16:9	24	—	○*1	○	—	—	—	○*1
1080/25p	1125	1080	16:9	25	—	○*1	○	—	—	—	○*1
1080/30p	1125	1080	16:9	30	—	○*1	○	—	—	—	○*1
1080/50i	1125	1080	16:9	25	—	○	○	—	—	—	○
1080/60i	1125	1080	16:9	30	—	○	○	—	—	—	○
720/50p	750	720	16:9	50	—	○*1	○	—	—	—	○*1
720/60p	750	720	16:9	60	—	○	○	—	—	—	○

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



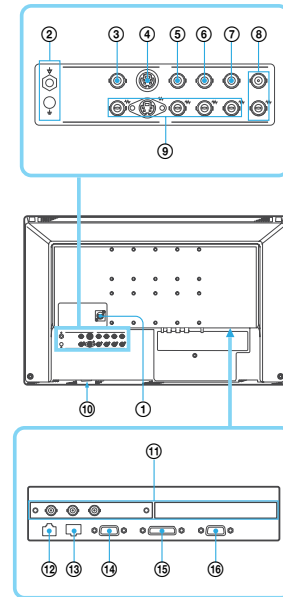
- **Exceptional, High Definition 24-inch\*<sup>1</sup> medical monitor** with class-leading resolution that displays the different colours of blood.
- **Utilises advanced Sony ChromaTRU colour processing technology,** providing consistent colour across multiple monitors to ensure accurate image reproduction.
- **Incorporates superb-quality WUXGA (1920 x 1200) panel,** delivering extremely high levels of brightness and high-contrast images to the surgical theatre.
- **Accepts almost any SD and HD video signal** in both analogue and digital, allowing doctors to view images from multiple sources.
- **Complies with the 100 mm VESA mounting standard** so the monitor can be attached to a surgical mount arm, making it ideal for use in operating theatres.
- **Flexible Display Modes**
- **Selectable Gamma Curves**
- **Key-inhibit function**

\*1 Viewable area measured diagonally.

## 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 324 mm (20 1/2 x 12 7/8 inches) Diagonal 609 mm (24 inches)
	Aspect	16:10
	Colours	Approx. 16,770,000 colours (8-bit)
	Viewing Angle	89°/89°/89°/89° (typical) (up/down/left/right contrast > 10:1)
Input / Output		
Input	Composite	BNC (x 1), 1.0 Vp-p ±3dB, sync negative
	Y/C	4pin Mini DIN (x 1) 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 colour 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 0.05Ω 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	Composite	BNC (x 1), Loop-through, 75Ω automatic termination
	Y/C	4-pin mini-DIN (x 1), Loop-through, 75Ω automatic termination
	Component/RGB	BNC (x 3), Loop-through, 75Ω automatic termination
	Ext. Sync	BNC (x 1), Loop-through, 75Ω 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) (including projections)	Approx. 602 x 386 x 110 mm (23 3/4 x 15 1/4 x 4 3/8 inches)	
Mass	Approx. 8.5 Kg (18lb 12oz) (with BKM-243HS pre-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	

## Connector Panel



- ① DC 5V/24V 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/PB IN connector (BNC)
- ⑦ R/PB 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)

## 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**  
Analogue Component Adaptor

**SU-560**  
Monitor Stand

\* The LMD-2450MD is equipped with all inputs on the BKM-243HS as standard.

Find out more  
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