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LMD-2451MD Medical LCD Monitor

High quality and versatility with Full HD large screen

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The large
screen full HD
monitor for
demanding
medical
applications

The successor to our highly successful LMD-2450MD, the Sony LMD-2451MD full HD medical monitor meets the growing need for high quality, large screen monitors across demanding medical applications.

With its unique built-in option slots and easy-to-install body design, the LMD-2451MD can be smoothly integrated into any environment – from operating theatre to conference room to teaching facilities.

LMD-2451MD

Superb picture reproduction

ChromaTRU Colour Processing

For enhanced colour reproduction accuracy, every LCD panel used in the LMD-2451MD is precisely colour-calibrated to ensure consistent characteristics. The colourimetry of an LCD display can, by nature, exhibit inaccurate colour characteristics and gamma curves, which can make precise colour matching between multiple monitors a challenge. The LMD-2451MD solves this problem by precisely calibrating each LCD panel's light output so that the RGB colour co-ordinates are consistent for every monitor. A second calibration is also applied to ensure 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 theatres and monitoring rooms.

Outstanding brightness and contrast

The LMD-2451MD provides high-brightness and high-contrast images by utilising super-wide aperture WUXGA LCD panels (1900 x 1200 pixels).

Built-in option slots for ultimate flexibility

The LMD-2451MD features two unique built-in option slots that enable users to easily expand, select, and change input/output signals, depending on the modality application. These built-in option slots are designed to support a variety of option boards such as the BKM-250TG, which allow the monitor to accept a 3G-SDI input signal and transfer a 1080/60p signal via a single SDI cable. Use of the optional BKM-256DD board increases the monitor's DVI input/output capability to accept up to two DVI-D inputs and one DVI loop-through output.

- | | | |
|-------------------------|----------------------|--------------------------|
| ❶ Tally lamp | ❺ CONTRAST buttons | ❾ Menu operation buttons |
| ❷ Power indicator | ❻ PHASE buttons | ❿ Input select buttons |
| ❸ Key inhibit indicator | ❼ CHROMA buttons | ⓫ Function buttons |
| ❹ CONTROL button | ❽ BRIGHTNESS buttons | ⓬ MEMORY button |



Natural gradation and accurate colour reproduction (10-Bit DSP)

The LMD-2451MD 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-2451MD 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.

Operational convenience

Safety listing and compliance

The LMD-2452MD 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.

Gamma curve selection

Users can choose from two gamma curves. One is 2.2, which is close to CRT live like image reproduction. The other is DICOM, which is close to Radiographic Grey Scale Imaging.

Selectable scan size/ aspect ratio

Either a 20% overscan mode or a normal 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.

Mounting flexibility

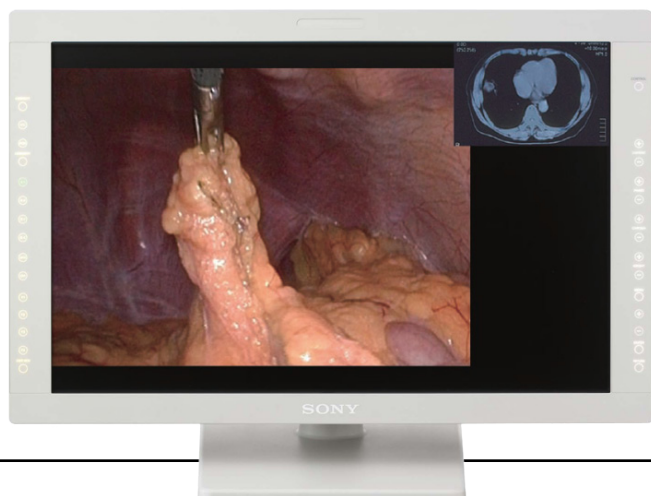
The LMD-2451MD complies with the 100 mm hole spacing VESA mounting standard making it ideal for use with surgical equipment arms.

Mirror function

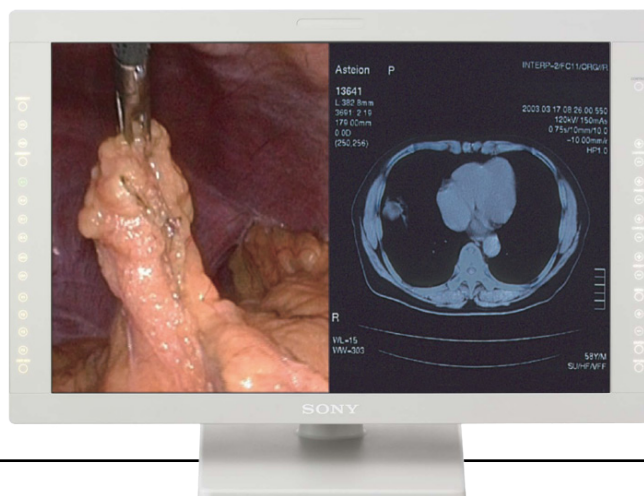
The LMD-2451MD can reproduce a full-screen size, reverse image. This feature is ideal for procedures where two surgeons work at opposite points of orientation to the patient in applications such as thoracoscopic surgery, laparoscopic surgery, and more.



Picture out picture



Side-by-side picture



Multiple display modes

The LMD-2451 incorporates multiple display modes such as Picture and Picture (includes 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 a more comprehensive overview of the surgical procedure.

Input versatility (multi format signal support)

The LMD-2451MD 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, six different optional input adaptors are offered for use in two expansion slots. This flexibility allows images from a variety of medical equipment sources, including endoscopes, to be monitored. The LMD-2451MD also provides parallel and serial control (including via Ethernet) as standard.

Video signal formats	Input signal				Interface							
	Total lines	Active lines	Aspect ratio	Frame rate ²	Composite Y/C	Component RGB	SDI 4:2:2	Composite Y/C	Component RGB	SD- SDI / HD-SDI	3G HD-SDI	
					Standard							Optional BKM-220D
575/50i (PAL)	625	575	16:9 & 4:3	25	●	●	●	●	●	●	●	
576/50p	625	576	16:9 & 4:3	50	-	●	-	-	●	-	-	
480/60i (NTSC)	525	483	16:9 & 4:3	30	●	●	●	●	●	●	●	
480/60p	525	483	16:9 & 4:3	60	-	●	-	-	●	-	-	
720/50p	750	720	16:9	50	-	● ¹	-	-	● ¹	●	●	
720/60p	750	720	16:9	60	-	●	-	-	●	●	●	
1080/24PsF	1125	1080	16:9	24	-	● ¹	-	-	● ¹	●	●	
1080/24p	1125	1080	16:9	24	-	● ¹	-	-	● ¹	●	●	
1080/25PsF	1125	1080	16:9	25	-	● 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	-	●	-	-	●	●	●	
1080/50p	1125	1080	16:9	50	-	-	-	-	-	-	●	
1080/60i	1125	1080	16:9	30	-	●	-	-	●	●	●	
1080/60p	1125	1080	16:9	60	-	-	-	-	-	-	●	

¹ Available with component input only.




² Also compatible with 1/1.001 frame rates.

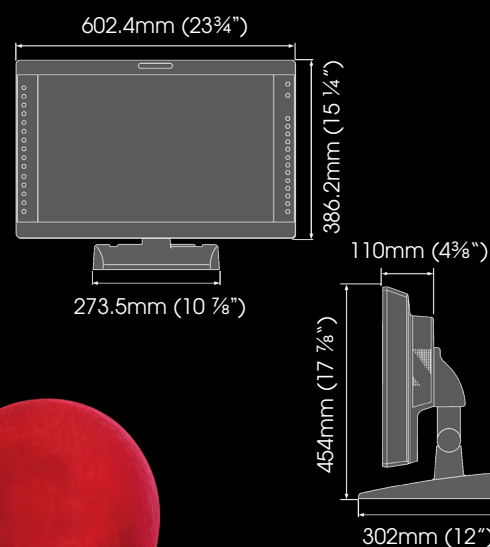
LMD-2451MD Specifications

Input/output	
Composite input	BNC (x1), 1.0 Vp-p \pm 3dB, sync negative
Y/C input	4pin Mini DIN (x1) Y: 1.0 Vp-p \pm 3dB, sync negative C: 0.286 Vp-p \pm 3dB (NTSC), 0.3 Vp-p \pm 3dB (PAL)
Component/RGB input	BNC (x3) Component: 0.7 Vp-p \pm 3dB (75% chrominance standard colour bar signal) RGB: 0.7 Vp-p \pm 3dB (Sync on green, 0.3 Vp-p, sync negative)
Ext. Sync input	BNC (x1), 0.3 to 4.0 Vp-p \pm bipolarity ternary or negative polarity binary
Computer input	DVI-D (x1): TMDS single link
HD15 input	D-sub 15pin (x1), 0.7 Vp-p, sync positive (Sync on green, 0.3 Vp-p, sync negative) Sync: TTL level (polarity free, H/V separate sync) Plus & Play function: corresponds to DDC-2B
Optional input slot	2 slots 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)
Parallel remote	Modular 8-pin (x1)
Serial remote	D-sub 9-pin (RS-232C) (x1) RJ-45 modular (ETHERNET) (x1)
Composite output	BNC (x1), Loop-through, 75 Ω automatic termination
Y/C output	4-pin mini-DIN (x1), Loop-through, 75 Ω automatic termination
Component/RGB output	BNC (x1), Loop-through, 75 Ω automatic termination
Ext. Sync output	BNC (x1), Loop-through, 75 Ω automatic termination

General	
Power consumption	Maximum: Approx. 115 W (with 2 x BKM-229X)
Power requirements	AC 100 to 240V, 50/60 Hz, 1.2~0.6 A, DC 24V 3.5 A, 5V 0.030 A
Operating temperature	0 to 35°C (32 to 95°F)
Operating humidity	30 to 85 % (no condensation)
Storage and transport temperature	-20 to 60°C (-4 to 140°F)
Storage and 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, <i>Instructions for Use</i> document, <i>CD-ROM Operating instructions</i> document, <i>Using the CD-ROM manual</i> , <i>Quick Reference</i> guide, <i>When You First Use The Monitor</i> booklet, Sales Company Guide, Warranty card

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 3/4 inches)
Aspect ratio	16:10
Colours	Approx. 16,770,000 colours
Viewing angle	89° / 89° / 89° / 89° (typical) (up/down/left/right contrast > 10:1)

Optional accessories	
	BKM-220D SD-SDI 4:2:2 input adaptor
	BKM-227W NTSC/PAL input adaptor
	BKM-229X Analogue component adaptor
	BKM-243HS HD-SDI/SD-SDI 4:2:2 input adaptor
	BKM-256DD DVI-D Digital in & out adaptor
	BKM-250TG 3G HD-SDI input adaptor
	SU-560 Monitor stand



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Features, design and specifications are subject to change without notice. All non-metric weights and measures are approximate.