

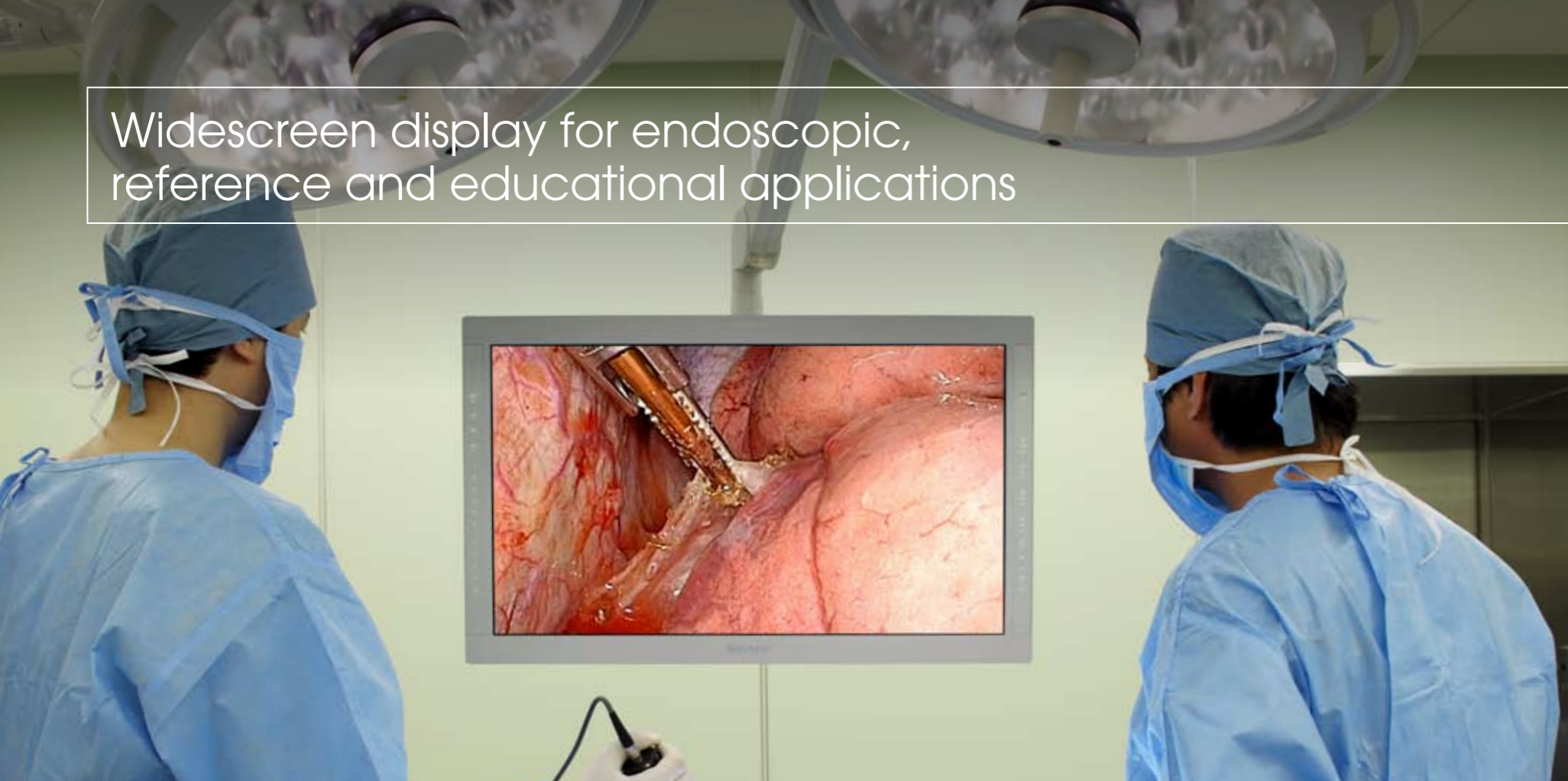
See more in total clarity

The LMD-3250MD 32-inch full HD
medical grade monitor

SONY



Widescreen display for endoscopic, reference and educational applications



Full HD with a range of advanced features



Meeting stringent medical safety and EMC standards and requirements, our 32-inch¹ LCD professional medical monitor gives you outstanding image clarity across a large viewing area.

The LMD-3250MD reproduces highly accurate, full HD images and colours using our unique ChromaTRU colour matching technology plus a newly-developed full HD (1920 x 1080 pixel) panel with a recently introduced 10-bit panel driver.

Broad input range for SD-HD migration and operational flexibility

Particularly useful for displaying full HD images from full HD endoscopes and other video sources, the monitor also accepts a wide variety of SD and HD video signal inputs, both analogue and digital. This broad input range enables you to make the migration from an SD system to a full HD system in a manageable, step-by-step way.

Providing multi-format signal support, the LMD-3250MD can accept almost any signal, including PC signals via its DVI-D and HD15 connectors. In addition to standard inputs, four different optional input adaptors are available for use in the monitor's expansion slot. This flexibility allows images to be monitored from a variety of medical equipment sources, including endoscopes. The LMD-3250MD also provides parallel and serial control (including via Ethernet) as standard.

Practical, supportive features

To support surgical operations, we have equipped the LMD-3250MD with a range of helpful features, including multiple display setting, mirror image mode, and key-inhibit function. Compliant with the VESA mounting standard², the monitor can easily be attached to a surgical mount arm for use in operating theatres. These advances, alongside the operational controls for which Sony medical monitors are already acclaimed,

combine to make the LMD-3250MD the ideal monitor solution for surgical endoscopy, reference and educational applications – today and tomorrow.

Safety listing and compliance

Ensuring complete suitability for use in professional medical applications, the LMD-3250MD is UL60601-1 listed and complies with the CSA C 22 .2 No. 60601 and EN60 601-1 safety regulations.

Natural gradation of colour reproduction (10-bit DSP)

Ensuring accurate and lifelike images with smooth and natural gradation, the LMD-3250MD incorporates an advanced 10-bit digital video signal processor.

Colour calibration



¹ 31 5/8 inches viewable area measured diagonally.
² 200 x 400 mm pitch (4 holes).

Extra accuracy with ChromaTRU colour matching

For an extra level of colour reproduction accuracy, every LCD panel used in the LMD-3250MD is precisely colour calibrated at the factory, providing faithful colour reproduction.

By the nature of its colourimetry, an LCD display can exhibit inconsistent colour characteristics and unique gamma curve characteristics. These can make it challenging to achieve precise colour matching between multiple LCD monitors and between multiple CRT monitors. The LMD-3250MD solves this problem by calibrating each LCD panel's light output so that the R, G, B colour coordinates are consistent for every monitor. Further, a second calibration is applied so that white balance is maintained at a consistent colour temperature throughout all grayscale levels. This ChromaTRU technology enables consistent colour reproduction among multiple monitors – particularly Sony medical monitors³ – and is invaluable for many applications such as simultaneous monitoring in different rooms.

Sophisticated I/P (interlace to progressive) conversion

The LMD-3250MD uses an advanced technology to perform sophisticated I/P conversion (three I/P conversion methods can be simply selected via the on-screen menu). I/P conversion is essential to enable the display of an interlaced video source on the LCD progressive panels. During this process, it is typical for a second process to also occur – known as scaling. Scaling adjusts the pixel counts of the video source to match the monitor panel's pixel count, but – crucially – 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. So this potential for loss of picture quality is avoided.

³ The Sony LMD-2450MD monitor also incorporates ChromaTRU technology.



LMD-3250MD

Excellent brightness and contrast

With its super-wide aperture LCD panels, the LMD-3250MD ensures images have both high brightness and high-contrast.

Full HD panel with 10-bit driver

As well as its 1920 x 1080 pixel, full HD panel (with no requirement for a scaling process when monitoring full HD video sources), the monitor features our recently introduced 10-bit panel driver. This can achieve full-scale image reproduction of the video data processed by the 10-bit DSP engine. All of which enables the LMD-3250MD to deliver faultlessly accurate image reproduction.

Seven-language on-screen display

You can choose between seven on-screen display languages: English, French, Spanish, German, Italian, Japanese, and Chinese.

Gamma curve selection

Depending on your needs, you can select either DICOM or CRT 2.2 gamma curves.

Time-saving user memory function

Depending on personal preferences, up to 20 different custom picture settings can be created – from contrast, brightness, chroma, phase and colour temp to adjust gain, adjust bias colour space, aperture, scan and gamma. This helps users save time as you do not have to adjust the picture setting every time. You can simply load your desired setting when you start to use the monitor.

Variety of display modes for medical applications

Multi-display setting
The LMD-3250MD incorporates multiple display modes (also known as "Picture-and-Picture"), including picture-out-picture and side-by-side split screen. Enabling zooming so that displayed

images fill the viewing area, these flexible display modes are convenient when viewing both live video and captured images simultaneously – allowing, for example, more comprehensive coverage of a surgical procedure.

Mirror image

The monitor can also reproduce a full-screen reverse image. This mirror image function is convenient when, for example, two display monitors are used in an operating room with one assigned to the surgeon and the other assigned to the surgeon's assistant, ensuring effective camera operation by the assistant. This capability plays an invaluable role in unique applications such as thoracoscopic surgery, endoscopic surgery of esophageal cancer, and laparoscopic surgery applications. Mirror image mode can be selected by simply pressing the designated 'function' button on the bezel.

Selectable scan size

A variety of scan size display modes are available by utilising the 1920 x 1080 full HD panel resolution. Depending on the input signal, you can select the desired scan size at the press of the designated 'function' button.

Picture-out-picture display



Side-by-side display



Protected controls

The key-inhibit function helps prevent inadvertent operation from the control panel. In addition, the buttons on the control panel become inoperative when the LED light is turned off. The 'CONTROL' button enables turn-on/turn off control of the LED light.

Mounting flexibility (VESA)

Making it ideal for use with surgical equipment arms and tabletop stands, the LMD-3250MD complies with the 200 x 400mm hole spacing VESA mounting standard.

Smooth surface design and fluid-resistant structure

With its thin, tactile buttons on the bezel and an AR (anti-reflection) layered protection panel over the LCD panel, the monitor has been specially designed for medical environments. The seamless surface design architecture makes the unit easy to clean, while the newly-designed ventilation holes make it more resistant to liquid and chemical spills and splashes. All of which ensures that the LMD-3250MD delivers a high level of hygiene and safety.

AC adaptor

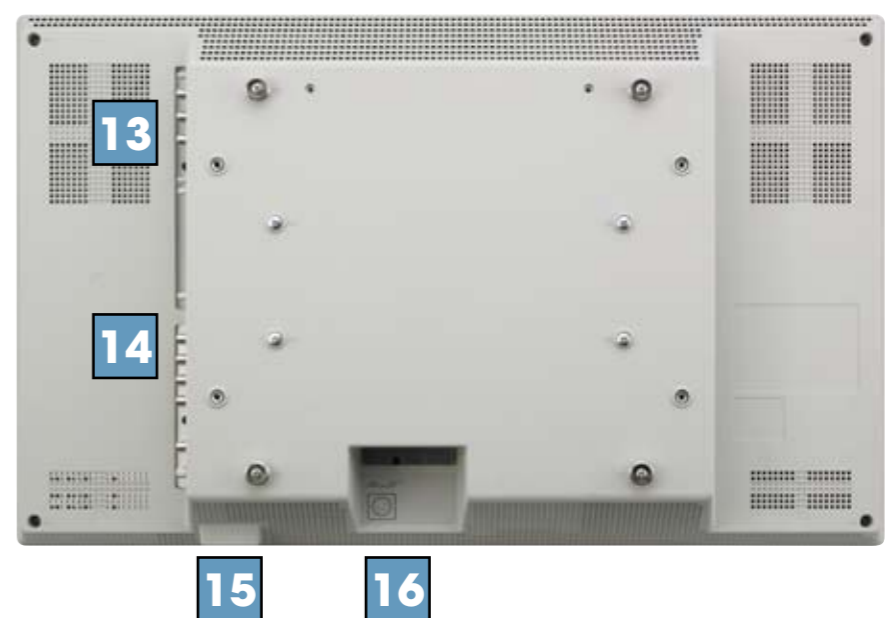
A small-sized AC adaptor enables easier installation where space is limited.

The feature-rich LMD-3250MD



1	Input select
2	Function buttons
3	User memory
4	Tally lamp
5	Power indicator
6	Key inhibit indicator
7	Control
8	Contrast
9	Phase
10	Chroma
11	Brightness
12	Menu buttons

13	2 x Optional Interface Board Slot (BKM-243HS HD-SDI/SD-SHI input adaptor supplied)	14	G/Y IN (BNC)
	Parallel remote (8-pin)		B/P IN (BNC)
			Serial remote (RJ-45)
	Serial remote RS-232C (D-sub 9-pin female)		EXT SYNC (BNC)
			DVI-input
	HD-15 input (D-sub 15-pin, female)		
15	Power switch	16	DC 5V/24V IN



Input signals

Video signal formats	Interface						
	Composite Y/C	RGB Component	HD-SDI SD-SDI	HD-SDI SD-SDI	SD-SDI	RGB Component	Composite Y/C
	Standard			Option			
			BKM-243HS	BKM-243HS	BKM-220D	BKM-229X	BKM-227W
575/50i (PAL)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
480/60i (NTSC) *1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
576/50p	NA	<input type="radio"/>	NA	NA	NA	<input type="radio"/>	NA
480/60p	NA	<input type="radio"/>	NA	NA	NA	<input type="radio"/>	NA
1080/24PsF *1	NA	<input type="radio"/> *2	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/> *2	NA
1080/25PsF	NA	<input type="radio"/> *2	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/> *2	NA
1080/24p *1	NA	<input type="radio"/> *2	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/> *2	NA
1080/25PsF	NA	<input type="radio"/> *2	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/> *2	NA
1080/30p *1	NA	<input type="radio"/> *2	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/> *2	NA
1080/50i	NA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/>	NA
1080/60i *1	NA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/>	NA
720/50p	NA	<input type="radio"/> *2	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/> *2	NA
720/60p *1	NA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	NA	<input type="radio"/>	NA

*1 Compatible with 1/1.001
 *2 For component input only



HD15 input signal format

In addition to typical signal formats, the LMD-3250MD supports a variety of video signal formats qualified by endoscopic manufacturers. The LMD-3250MD includes a table of seven types of presets to accommodate these video signal formats. You can easily select from the OSD menu your preferred monitor setting for each format.






	Resolution	Dot clock (MHz)	fH (KHz)	fV (Hz)	Sync polarity (N = negative, P = positive)	
					Horizontal	Vertical
DMT	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
	CVT	640x480 @60Hz	23.625	29.531	59.780	P
800x600 @60Hz		35.500	36.979	59.837	P	N
1024x768 @60Hz		56.000	47.297	59.870	P	N
1280x768 @50Hz		65.125	39.518	49.959	N	P
1280x768 @60Hz		80.125	47.693	59.992	N	P
1280x768 @60Hz		68.250	47.396	59.995	P	N
1280x768 @75Hz		102.875	60.091	74.926	N	P
1280x960 @60Hz		85.250	59.201	59.920	P	N
1280x1024 @60Hz		91.000	63.194	59.957	P	N
1360x768 @50Hz		69.500	39.489	49.922	N	P
1360x768 @60Hz		84.625	47.649	59.936	N	P
1360x768 @50Hz		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
Others	720x400 @70Hz	28.322	31.469	70.087	N	P
	1280x800 @60Hz	68.900	48.935	59.969	N	N

DVI input signal format

Range of DVI Input Signal (available to 1920 x 1080 / 60 Hz) Vertical frequency: 50.0 to 85.1 Hz Horizontal frequency: 31.5 to 148.0 kHz Dot clock: 5.15 to 148.000 MHz

LMD-3250MD Specifications

System	
Panel type	A-Si TFT active matrix LCD
Aspect	16:9
Resolution	1920 x 1080 pixels (Full HD)
Colours	Approx. 1,073,700,000 colours (10 bits)
Viewing angles	89° / 89° / 89° / 89° (typical) (up/down/left/right contrast > 10:1)
Standard input	
Composite (PAL/NTSC)	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 burst signal level), 0.3 Vp-p ± 3dB (PAL burst signal level)
RGB, component	BNC x 3 RGB : 0.7 Vp-p ± 3dB (Sync On Green, 0.3 Vp-p sync negative) Component : 0.7 Vp-p ± 3dB (75% chrominance standard color bar signal)
External sync	BNC x 1 0.3 to 4.0 Vp-p ± bipolarity ternary or negative polarity binary
HD15	D-sub 15 pin x 1, R/G/B: 0.7 Vp-p sync positive (Sync On Green, 0.3 Vp-p sync negative) Sync : Total level (polarity free, H/V separate sync) Plug & Play function : corresponds to DDC2B
DVI-D	TMDS signal link
Parallel remote	Modular connector 8 pin x 1
Serial remote (LAN)	D-sub 9-pin (RS232C) x 1, RJ-45 modular connector (ETHERNET) x 1
Optional input	
Input slot	2 slots (Signal format: H: 15 to 45 kHz, V: 48 to 60 Hz) A BKM-423HS board is supplied.
Standard output	
Composite	BNC x 1, Loop-though, with 75 automatic termination
Y/C	4pin mini DIN x 1 Loop-though, with 75 automatic termination
RGB, component	BNC x 3, Loop-though, with with 75 automatic termination
Measurements	
Dimensions	Approx. 783 (W) x 480 (H) x 125 (D) mm (30 7/8 x 18 7/8 x 5 inches) (including the projection parts)
Mass	With supplied board approx. 13.3 kg (29 lb 5 oz) with BKM-243HS x1 With two option boards approx. 13.5 kg (34 lb 2 oz) with BKM-229X x2

Power	
Requirements	DC IN: 24 V 5.0 A, 5 V 0.060 A (Supplied from AC adaptor) AC Adaptor (Sony, AC-3250MD) AC IN: 100 V to 240 V, 50/60Hz
Input current	1.53 to 0.58 A
Operating conditions	
Temperature	20°C to 30°C (68°F to 86°F)
Humidity	30% to 85% (no condensation allowed)
Pressure	700 hPa to 1,060 hPa
Storage/Transporting conditions	
Temperature	-20°C to +60°C (-4°F to +140°F)
Humidity	0% to 90% (no condensation allowed)
Pressure	700 hPa to 1,060 hPa
Supplied accessories	
	AC adaptor AC-3250MD, AC power cord, AC plug holder, Instructions for Use, CD-ROM, Using the CD-ROM Manual, Quick Reference, When You First Use the Monitor, Sales Companies Guide, Warranty book
Optional accessories	
	BKM-243HS: HD-SDI/SD-SDI input adaptor
	BKM-220D: SD-SDI 4:2:2 input adaptor
	BKM-229X: Analog component adaptor
	BKM-227W: NTSC/PAL input adaptor
	SU-32FWS: Monitor stand