

# LMD-1951MD

Medical LCD Monitor

# SONY



For over 20 years, Sony has been a trusted and reliable source for surgeons, offering high-quality monitors with exceptional picture quality for a variety of medical applications. Now, Sony is proud to introduce the LMD-1951MD - a 19-inch (viewable area, measured diagonally) SXGA medical LCD monitor - to its comprehensive medical grade display line-up.

The LMD-1951MD is designed to be used in both SD (Standard Definition) and HD (High Definition) systems that generate 4:3 aspect ratio signal output. The LMD-1951MD inherits an array of great characteristics and features from the popular LMD-2451MD, including ChromaTRU™ color processing for excellent picture reproduction, a full 10-bit digital signal processor to produce accurate and lifelike images, and enhanced viewing modes such as Picture-in-Picture and Mirror Image. In addition, thanks to newly employed LED backlight technology, the monitor can reproduce brighter images than previous models.

The LMD-1951MD is equipped with a full range of inputs including Composite, Y/C, RGB/Component, HD15, and DVI-D inputs. Furthermore, the built-in option ports accept a variety of option boards to offer ultimate flexibility including a 3G-SDI input signal capability, and a DVI input/output capability to accept up to two DVI-D inputs and one DVI loop-through output allowing users to easily expand, select, and change input/output configuration.

Its compact design and input flexibility allow this monitor to be smoothly integrated into an endoscope system or virtually any medical environment such as an operating room, examination room, or training lab. Easy integration makes it the ideal choice for today's demanding medical applications.

# FEATURES

## Excellent Picture Reproduction

### ● ChromaTRU™ Color Processing

For the highest level of color-reproduction accuracy, every LCD panel used in the LMD-1951MD is precisely color calibrated at the factory, providing consistent characteristics. This technology offers color consistency among other monitors for critical observations.



### ● Excellent Brightness and Contrast

The LMD-1951MD offers highly bright high-contrast images thanks to a combination of newly employed LED backlight technology along with a high-quality SXGA LCD panel. Furthermore, its robust anti-reflective (AR)-coated protection panel minimizes reflection from ambient light and protects its surface from scratches.

### ● Natural Gradation and Accurate Color Reproduction (10-bit DSP)

The LMD-1951MD adopts an advanced full 10-bit digital video signal processor to produce accurate and lifelike images with smooth and natural gradation.

## Medical-friendly Designs

### ● Liquids resistant

The LMD-1951MD achieves the IPX1 standard, which indicates a higher level of protection from drips, leaks, and spills than ordinary products. Also, to maintain cleanliness, the connector cover protects the busy connector area from dust accumulation.



### ● Flat Surface

The LMD-1951MD employs flat-sheet switches with a smooth transition to the LCD panel. This allows the user to easily wipe liquids or gels off the control panel and LCD panel, for cleanliness and disinfection.

## Variety of Scan/Display Modes

There are various image scan modes - such as NORMAL/OVER scan, UNDER scan, FULL, ZOOM and NATIVE, allowing users to select the most suitable scan size depending on the requirements. Furthermore, the LMD-1951MD provides a variety of display modes including Mirror Image, and Picture-in-Picture which allows users to view two images at a time.

### Mirror Image



Normal image

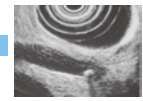
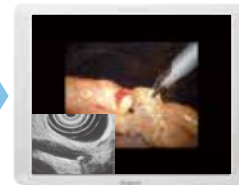


Mirror image

### Picture-in-Picture



Main



Sub

\* Simulated Images.

## Operational Convenience

### ● Gamma Curve Selection

Users can choose from variety of gamma settings - 2.0, 2.2, 2.4, 2.6, and DICOM - depending on requirements.

### ● Direct Input Selection

Direct Input Selection allows users to switch image sources when they need to monitor multiple images during an operation. They simply press input select buttons on the front panel.

### ● Key-inhibit

Users can activate/deactivate control panel buttons with just one touch of the CONTROL button. Deactivation helps prevent inadvertent operation of the control panel in a busy environment. Furthermore, if the menu item KEY-INHIBIT is set to ON, the control panel buttons cannot be used - this prevents unauthorized alteration of the settings.

### ● VESA-mounting Compatibility

The LMD-1951MD complies with the 100-mm hole spacing VESA-mounting standard, making it ideal for use with variety of medical equipment arms.

### ● AC and DC Operation

The LMD-1951MD can be operated with both AC and DC power sources depending on installation requirements. With the optional AC-110MD AC adapter, the monitor can be deployed wherever AC is supplied.

## Variety of Inputs and Expandability

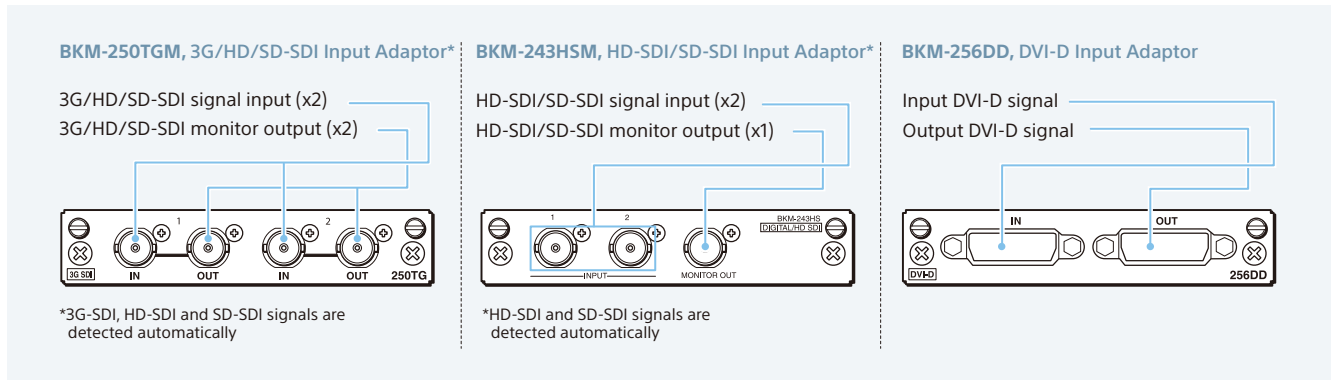
The LMD-1951MD is equipped with variety of inputs including Composite, Y/C, RGB/Component, HD15, and DVI-D as standard. Furthermore, two built-in option ports greatly expand the input signals this monitor can accept. These ports allow users to easily select and change input/output signals for ultimate flexibility via a variety of available option boards.

### ● BKM-256DD Board

The optional BKM-256DD board allows users to employ a maximum of two DVI inputs and one loop-through output in a standard configuration.

### ● BKM-250TGM Board

The optional BKM-250TGM board enables the monitor to accept a 3G-SDI input signal; this allows transfer of 1080/60p signals via a single SDI cable.



## Compatible with a Variety of Input Signal Formats

The LMD-1951MD supports a variety of video formats from 525i/50(NTSC), and 625i/60(PAL) up to 1080p/50, and 1080p/60\*1. In addition, it supports a variety of computer signal formats when HD15 and DVI-D input signals are used.

### For the single display\*2

#### ● Range of HD15 input signals (Preset 1)

##### VESA DMT

Resolution	Dot clock [MHz]	fH [kHz]	fV [Hz]	Sync. polarity	
				Horizontal	Vertical
640 x 480 60 Hz	25.175	31.469	59.940	Negative	Negative
800 x 600 56 Hz	36.000	35.156	56.250	Positive	Positive
800 x 600 60 Hz	40.000	37.879	60.317	Positive	Positive
800 x 600 72 Hz	50.000	48.077	72.188	Positive	Positive
800 x 600 75 Hz	49.500	46.875	75.000	Positive	Positive
800 x 600 85 Hz	56.250	53.674	85.061	Positive	Positive
1024 x 768 60 Hz	65.000	48.363	60.004	Negative	Negative
1024 x 768 70 Hz	75.000	56.476	70.069	Negative	Negative
1024 x 768 75 Hz	78.750	60.023	75.029	Positive	Positive
1024 x 768 85 Hz	94.500	68.677	84.997	Positive	Positive
1152 x 864 75 Hz	108.000	67.500	75.000	Positive	Positive
1280 x 960 60 Hz	108.000	60.000	60.000	Positive	Positive
1280 x 1024 60 Hz	108.000	63.981	60.020	Positive	Positive

##### Others

Resolution	Dot clock [MHz]	fH [kHz]	fV [Hz]	Sync. polarity	
				Horizontal	Vertical
720 x 400 70 Hz	28.322	31.469	70.087	Negative	Positive
1280 x 800 60 Hz	68.900	48.935	59.969	Negative	Negative

##### VESA CVT

Resolution	Dot clock [MHz]	fH [kHz]	fV [Hz]	Sync. polarity	
				Horizontal	Vertical
640 x 480 60 Hz	23.625	29.531	59.780	Positive	Negative
800 x 600 60 Hz	35.500	36.979	59.837	Positive	Negative
1024 x 768 60 Hz	56.000	47.297	59.870	Positive	Negative
1280 x 960 60 Hz	85.250	59.201	59.920	Positive	Negative
1360 x 768 50 Hz	69.500	39.489	49.922	Negative	Positive
1360 x 768 60 Hz	84.625	47.649	59.936	Negative	Positive
1360 x 768 60 Hz	72.000	47.368	59.960	Positive	Negative
1920 x 1080 50 Hz	141.375	55.572	49.975	Negative	Positive
1920 x 1080 60 Hz	138.625	66.647	59.988	Positive	Negative
1280 x 1024 60 Hz	91.000	63.194	59.957	Positive	Negative
1280 x 768 50 Hz	65.125	39.518	49.959	Negative	Positive
1280 x 768 60 Hz	80.125	47.693	59.992	Negative	Positive
1280 x 768 75 Hz	102.875	60.091	74.926	Negative	Positive
1280 x 768 60 Hz	68.250	47.396	59.995	Positive	Negative

#### ● Range of DVI-D input signals (Preset 1)

Max resolution: 1920 × 1080/60 Hz  
 Vertical frequency: 50.0 Hz to 85.1 Hz  
 Horizontal frequency: 31.5 kHz to 77.0 kHz  
 Dot clock: 25.175 MHz to 148.000 MHz

\*1: To support 1080p/50 and 1080p/60 other than input from DVI-D requires an optional BKM-250TGM 3G/HD/SD-SDI input adaptor.

\*2: Available input signal formats are different for Picture-in-Picture mode.

## SPECIFICATIONS

LMD-19S1MD	
<b>Picture Performance</b>	
Panel	a-Si TFT Active Matrix LCD
Picture size (diagonal)	481.84 mm (19.0 inches)
Effective Picture size (H x V)	Approx. 376 x 301 mm (14 7/8 x 11 7/8 inches)
Resolution (H x V)	1280 x 1024 pixels (SXGA)
Aspect	5:4
Pixel efficiency	99.99%
Colors	Approx. 16.7 million colors
Viewing angle (panel specification)	89°/89°/89°/89° (typical) (up/down/left/right contrast > 10:1)
<b>Input</b>	
Composite input (NTSC/PAL) connector	BNC type (x1), 1 Vp-p ± 3 dB sync negative
Y/C input connector	4-pin mini-DIN (x1) Y: 1 Vp-p ± 3 dB sync negative C: 0.286 Vp-p ± 3 dB (NTSC burst signal level) 0.3 Vp-p ± 3 dB (PAL burst signal level)
RGB/component input connectors	BNC type (x3) RGB: 0.7 Vp-p ± 3 dB (Sync On Green, 0.3 Vp-p sync negative) Component: 0.7 Vp-p ± 3 dB (75% chrominance standard color bar signal)
External synchronized input connector	BNC type (x1) 0.3 Vp-p to 4.0 Vp-p ± bipolarity ternary or negative polarity binary
HD15 input connector	D-sub 15-pin (x1) R/G/B: 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 DDC2B
DVI input connector	DVI-D (x1) TMDS single link
Parallel remote	Modular connector 8-pin (x1)
Serial remote (LAN)	D-sub 9-pin (RS-232C) (x1) RJ-45 modular connector (ETHERNET) (x1)
Optional input port	2 ports Signal format: H: 15 kHz to 45 kHz V: 48 Hz to 60 Hz
DC IN connector	DC5V/24V (output impedance 0.05 ohms or less)
<b>Output</b>	
Composite output connector	BNC type (x1) Loop-through, with 75 ohms automatic terminal function
Y/C output connector	4-pin mini-DIN (x1) Loop-through, with 75 ohms automatic terminal function
RGB/component output connectors	BNC type (x3) Loop-through, with 75 ohms automatic terminal function
External synchronized output connector	BNC type (x3) Loop-through, with 75 ohms automatic terminal function
<b>General</b>	
Power	LCD monitor (LMD-19S1MD) AC 100-240 V, 50/60 Hz, 0.92 A-0.40 A DC IN: 24 V 3.5 A 5 V 0.030 A (Supplied from AC adaptor) AC Adaptor (Sony, AC-110MD) (optional) AC IN: 100 V-240 V, 50/60 Hz, 1.53 A-0.58 A DC OUT: 24 V 5.0 A 5 V 0.060 A
Power consumption	Maximum: approx. 85 W (when two BKM-250TGM are installed)
<b>Operating conditions</b>	
Temperature	0 °C to 35 °C (32 °F to 95 °F)
Recommended temperature	20 °C to 30 °C (68 °F to 86 °F)
Humidity	30% to 85% (no condensation)
Pressure	700 hPa to 1060 hPa
Storage and transport temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Storage and transport humidity	0% to 90% (no condensation allowed)
Storage and transport pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	455.8 x 368.3 x 101.7 mm (18 x 14 5/8 x 4 1/8 inches) (without a stand) 455.8 x 435.7 x 302 mm (18 x 17 1/4 x 12 inches) (with SU-560 optional stand)
Mass	6.7 kg (14 lb 12 oz) (when the optional stand and the input adaptor are not installed) 7.1 kg (15 lb 10 oz) (when the optional stand is not installed and two BKM-250TGM are installed)
Accessories supplied	AC power cord (1), AC plug holder (2), Before Using This Unit (1), CD-ROM (including the Instructions for Use) (1), Service Contact List (1)

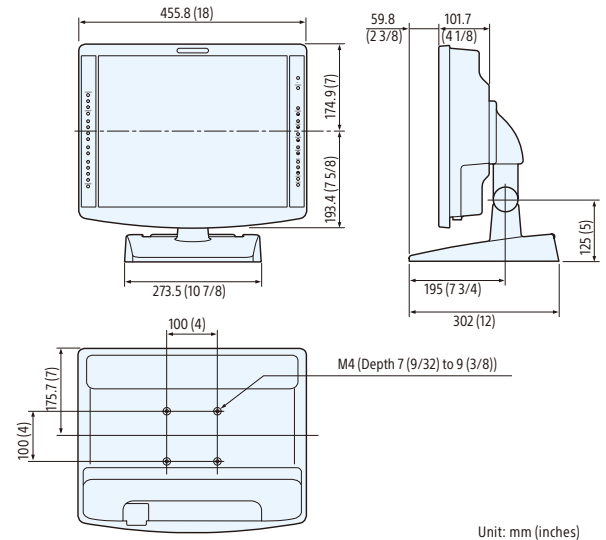
This product is distributed to US and EU as a medical device. It satisfies product safety standards (e.g. IEC 60601-1). For more details, please contact your nearest Sony sales office or an authorized dealer.

## OPTIONAL ACCESSORIES

<b>BKM-250TGM</b>	3G/HD/SD-SDI Input Adaptor
<b>BKM-243HSM</b>	HD/SD-SDI Input Adaptor
<b>BKM-256DD</b>	DVI-D Input Adaptor
<b>AC-110MD</b>	AC Adaptor
<b>SU-560</b>	Display Stand

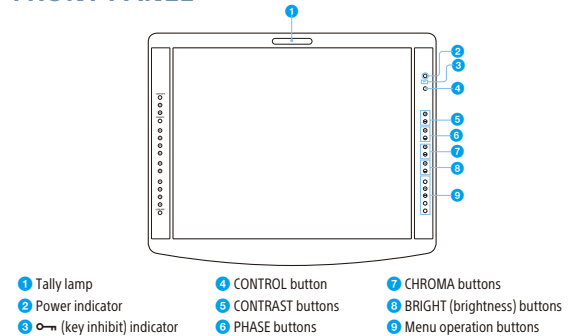
## DIMENSIONS

When an optional stand SU-560 is attached

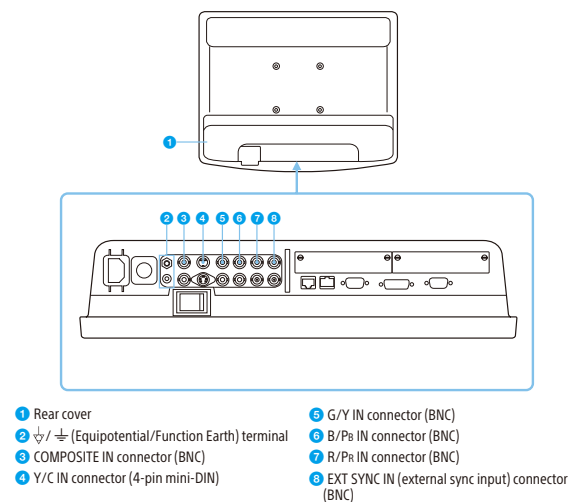


Unit: mm (inches)

## FRONT PANEL



## REAR PANEL



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