

# LMD-1951MD

Medical LCD Monitor

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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

## Medical Compliances

The LMD-1951MD is UL60601-1 listed and complies with CSA22.2 No.60601 and EN60601-1 safety regulations. It is therefore suitable for use in professional medical applications.

## 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

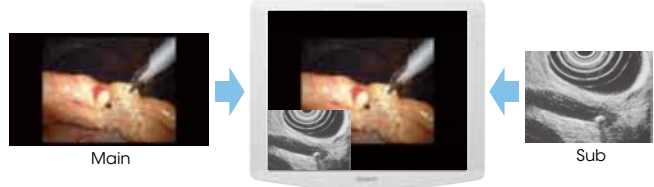


Normal image



Mirror image

### Picture-in-Picture



## 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

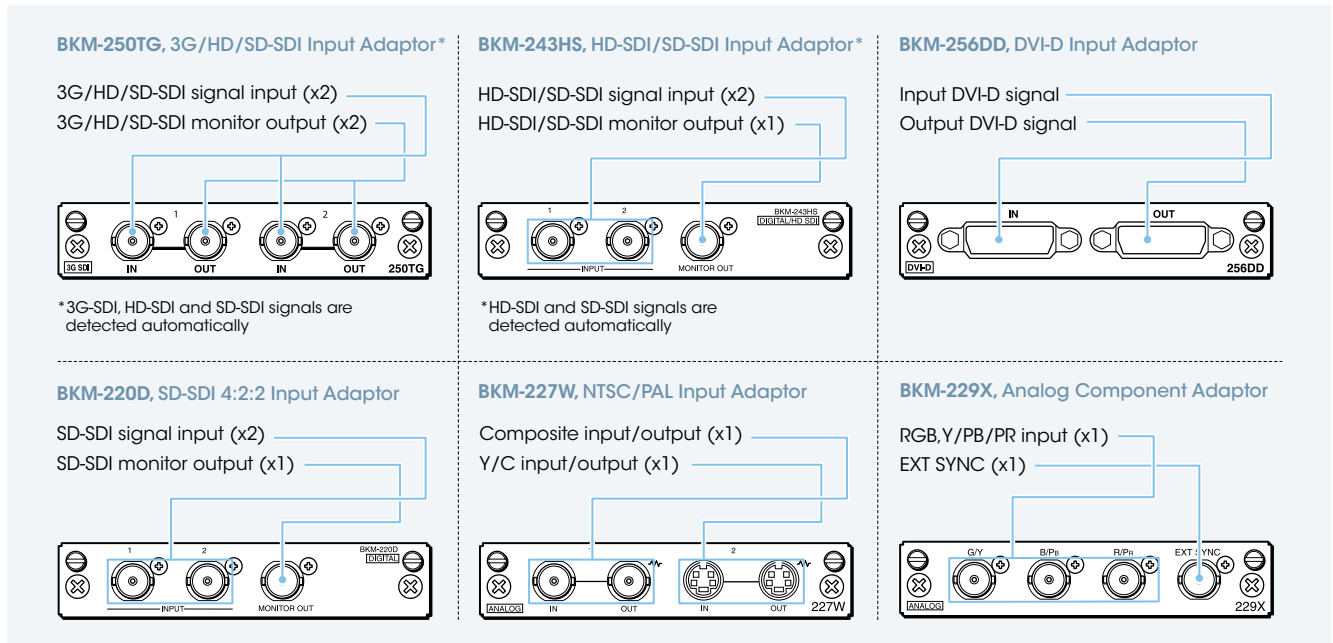
The LMD-1951MD is equipped with variety of inputs including Composite, Y/C, RGB/Component, HD15, and DVI-D as standard. Furthermore, two built-in option ports greatly expand the input signals this monitor can accept. These ports allow users to easily select and change input/output signals for ultimate 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-250TG Board**

The optional BKM-250TG 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 x 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-250TG 3G/HD/SD-SDI input adaptor.

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

# SPECIFICATIONS

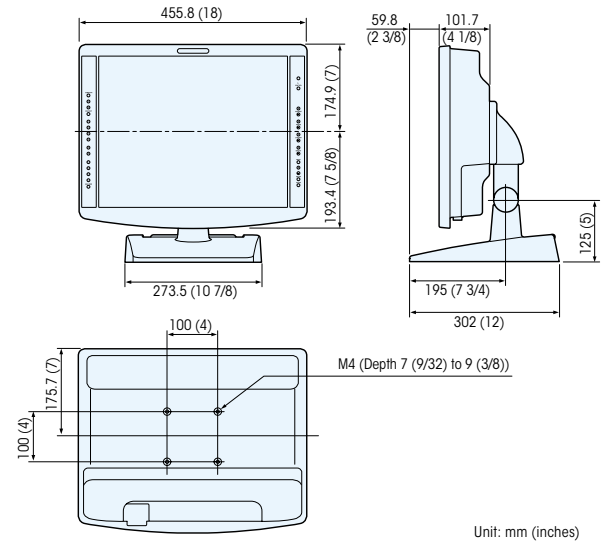
| LMD-1951MD                             |  |
|--|--|
| <b>Picture Performance</b>             |  |
| Panel                                  | a-Si TFT Active Matrix LCD   |
| Picture size (diagonal)                | 481.84 mm (19.0 inches)  |
| Effective Picture size (H x V)         | Approx. 376 x 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)<br>Y: 1 Vp-p ± 3 dB sync negative<br>C: 0.286 Vp-p ± 3 dB (NTSC burst signal level)<br>0.3 Vp-p ± 3 dB (PAL burst signal level)  |
| RGB/component input connectors         | BNC type (x3)<br>RGB: 0.7 Vp-p ± 3 dB (Sync On Green, 0.3 Vp-p sync negative)<br>Component: 0.7 Vp-p ± 3 dB (75% chrominance standard color bar signal)  |
| External synchronized input connector  | BNC type (x1)<br>0.3 Vp-p to 4.0 Vp-p ± bipolarity ternary or negative polarity binary   |
| HD15 input connector                   | D-sub 15-pin (x1),<br>R/G/B: 0.7 Vp-p sync positive (Sync On Green, 0.3 Vp-p sync negative)<br>Sync: TTL level (polarity free, H/V separate sync)<br>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)<br>RJ-45 modular connector (ETHERNET) (x1)  |
| Optional input port                    | 2 ports<br>Signal format:<br>H: 15 kHz to 45 kHz<br>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)<br>Loop-through, with 75 ohms automatic terminal function  |
| Y/C output connector                   | 4-pin mini-DIN (x1)<br>Loop-through, with 75 ohms automatic terminal function  |
| RGB/component output connectors        | BNC type (x3)<br>Loop-through, with 75 ohms automatic terminal function  |
| External synchronized output connector | BNC type (x3)<br>Loop-through, with 75 ohms automatic terminal function  |
| <b>General</b>                         |  |
| Power                                  | LCD monitor (LMD-1951MD)<br>AC 100-240 V, 50/60 Hz, 0.92 A-0.40 A<br>DC IN: 24 V 3.5 A 5 V 0.030 A (Supplied from AC adaptor)<br>AC Adaptor (Sony, AC-110MD) (optional)<br>AC IN: 100 V-240 V, 50/60 Hz, 1.53 A-0.58 A<br>DC OUT: 24 V 5.0 A 5 V 0.060 A |
| Power consumption                      | Maximum: approx. 85 W (when two BKM-229X 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)<br>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)<br>7.1 kg (15 lb 10 oz) (when the optional stand is not installed and two BKM-229X are installed)   |
| Accessories supplied                   | AC power cord (1), AC plug holder (2), Instructions for Use (1), CD-ROM (1), Using the CD-ROM Manual (1), Quick Reference(1), When you First Use the Monitor (1), Sales Companies Guide (1)  |

# OPTIONAL ACCESSORIES

- BKM-220D** SDI 4:2:2 Input Adaptor
- BKM-243HS** HD/D1-SDI input adaptor
- BKM-227W** NTSC/PAL input adaptor
- BKM-229X** Analog component input adaptor
- BKM-250TG** 3G/HD/SD-SDI input adaptor
- BKM-256DD** DVI-D input adaptor
- AC-110MD** AC adaptor
- SU-560** Monitor stand

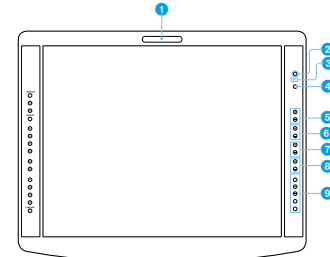
# DIMENSIONS

When an optional stand SU-560 is attached



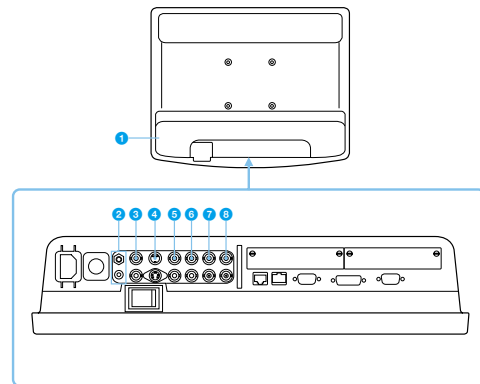
Unit: mm (inches)

# 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

# REAR PANEL



- 1 Rear cover
- 2 ⚡ / ⚭ (Equipotential/Function Earth) terminal
- 3 COMPOSITE IN connector (BNC)
- 4 Y/C IN connector (4-pin mini-DIN)
- 5 G/Y IN connector (BNC)
- 6 B/Ps IN connector (BNC)
- 7 R/Ps IN connector (BNC)
- 8 EXT SYNC IN (external sync input) connector (BNC)

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