

## LMD-3251MT

32-inch Full HD 3D LCD medical monitor



### Overview

3D imaging is an increasingly important tool in today's operating rooms. It's a practical alternative to conventional 2D imaging, giving surgeons a stereoscopic view of high-resolution pictures captured with endoscopes and surgical microscopes.

3D offers an accurate, life-like visual experience, with improved depth perception and spatial orientation. This provides a more realistic visualisation of complex procedures.

The LMD-3251MT is a high-performance 32"\* Full HD monitor that's designed for use in medical environments. Connected to a 3D camera system, it displays smooth, high-resolution images that are viewed by surgeons and staff with the use of light, comfortable passive polarising glasses.

The monitor is fully compliant with medical safety standards for hospital operating room use. It's also ideal for other environments where high quality 3D viewing is desired, from consulting rooms and clinics to conference halls and training suites.

### Features

**See High-impact, Detail-packed 3D Images in Full HD 1920 x 1080 Resolution**

Add an extra dimension of detail and realism when viewing

images captured with today's 3D endoscopic and surgical microscopy camera systems. Advanced polarising filter technology delivers smooth, flicker-free, easy-on-the-eye stereoscopic images in Full HD that are viewed by surgeons and operating room staff wearing light, comfortable passive glasses.

### **View with Light, Easy to Wear 3D Glasses**

Stereoscopic Full HD images can be viewed with a choice of passive 3D glasses that require no power source and can be worn with minimum fatigue over extended periods of time. The BKM-30G comfortably fits most facial shapes, and features a specially designed nose pad and temple tips that hold the glasses securely in place. The super-lightweight BKM-31G 'clip-on' model attaches to normal glasses and features a convenient flip-up design.

### **Energy-efficient, Environmentally Friendly Panel with LED Backlight**

The panel's energy-efficient LED backlight offers high image brightness as well as lower power consumption than conventional CCFL designs. The mercury-free backlight also reduces potential environmental impact at end-of-life disposal.

### **3D/2D Switchable**

As well as high-resolution 3D images, the LMD-3251MT can also display images from conventional 2D surgical camera systems in Full HD resolution.

### **Clear Images with a Wide Viewing Angle**

The LMD-3251MT employs 32"  $\alpha$ -Si Active Matrix TFT widescreen display panel that minimises colour shift from all viewing angles. This helps to achieve consistent image viewing when used in surgical applications.

### **Coated Panel Reduces Light Reflection**

The AR coating reduces reflections from ambient light, ensuring high contrast even when used in bright lighting conditions.

## **Natural Gradation and Accurate Colour Reproduction**

An advanced 10-bit digital video signal processor delivers smooth, natural tonal gradations for extremely life-like, accurate image reproduction.

## **ChromaTRU™ Colour Matching for Accurate, Dependable Colours**

The LMD-3251MT ensures that colours seen by the surgeon are an accurate representation of the subject. Precise factory calibration of RGB co-ordinates for each panel ensures the highest levels of true, consistent colour reproduction across multiple monitors. Further calibration maintains white balance at a uniform colour temperature throughout all grayscale levels.

## **Colour Temperature and Gamma Curve Selection**

Display colour temperature can be selected with three preset colour temperate modes (D93, D65, D56) and five user-defined settings. There's also a choice of CRT 2.2 and DICOM gamma curve settings to meet the needs of different modalities.

## **Wide Range of Display Modes**

The LMD-3251MT supports a variety of 2D display modes, including Side-by-Side (SBS), Picture-out-Picture (POP) and Picture-in-Picture (PIP). It allows display of images from multiple sources on a single monitor. Adding the optional BKM-256DD DVI-D input adaptor supports display of images from two simultaneous DVI input signals.

## **Mirror Image for Convenient Side-by-side Working**

The monitor's mirror imaging function lets an assistant view a 'flipped' mirror image of the surgeon's own display. It is ideal for procedures where two surgeons are working at opposite orientation points to the patient. With this feature, surgeons no longer have to stand side-by-side, sharing a single display as they do in a conventional operating room.

### Protected Controls

Inadvertent operation of the control panel can be prevented by the display's key inhibit function. Pushing the Control button on the control panel turns off LED switch lights and overrides switch functions.

### Extensive 2D and 3D Input Capabilities

The monitor accepts a wide range of input signals as standard, including composite, Y/C, RGB/component, HD15 and DVI-D. Dual expansion slots for up to two optional input boards allow the LMD-3251MT to be used as a multi-format monitor, including support for 3G/HD-SDI.

### Black Bezel for Optimised 3D Viewing

The display's unique black bezel design provides an excellent viewing background and gives surgeons a clear, optimised view of 3D images that are being displayed.

### Compliance with medical standards

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

## Specifications

### Picture Performance

|                         |                            |
|-------------------------|----------------------------|
| Panel                   | a-Si TFT Active Matrix LCD |
| Black and White / Color | Color                      |
| Picture Size (Diagonal) | 801.3 mm<br>31 5/8 inches  |

|                                     |  |
|-------------------------------------|--|
| Effective Picture Size (H x V)      | 698.4 x 392.9 mm<br>27 1/2 x 15 1/2 inches                                   |
| Pixel pitch                         | 363.75um   |
| Resolution (H x V)                  | 1920 x 1080 pixels (Full HD)   |
| Aspect                              | 16:09  |
| Pixel Efficiency                    | 0,9999   |
| Backlight                           | LED  |
| Viewing Angle (Panel Specification) | 89°/89°/89°/89° (typical)<br>(up/down/left/right contrast > 10:1)            |
| Vertical Viewing Angle (3D Mode)    | 35° at a viewing distance more than 620 mm, crosstalk less than 7% (typical) |

## Input

|                 |  |
|-----------------|--|
| Composite Input | BNC (x1), 1 Vp-p ±3dB sync negative  |
| Y/C Input       | Mini-DIN 4-pin (x1)<br>Y: 1 Vp-p ± 3dB sync negative<br>C: 0.286 Vp-p ± 3dB (NTSC burst signal level), 0.3 Vp-p ± 3dB (PAL burst signal level) |

|                      |   |
|----------------------|---|
| RGB, Component Input | BNC (x3)<br>RGB: 0.7 Vp-p $\pm$ 3dB (Sync On Green, 0.3 Vp-p sync negative)<br>Component: 0.7 Vp-p $\pm$ 3dB (75% chrominance standard color bar signal)  |
| DVI-D Input          | DVI-D (x1)<br>TMDS single link  |
| HD15 Input           | 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 : Total level (polarity free, H/V separate sync)<br>Plug & Play function : corresponds to DDC2B |
| External Sync Input  | BNC (x1)<br>0.3 to 4.0 Vp-p $\pm$ bipolarity ternary or negative polarity binary  |
| Option Port          | Two (2) ports<br>Signal format: H: 15 kHz to 45 kHz,<br>V: 48 Hz to 60 Hz   |
| Parallel Remote      | Modular connector 8-pin (x1)<br>(Pin-assignable)  |
| Serial Remote (LAN)  | D-sub 9-pin (RS-232C) (x1), RJ-45 (x1) (Ethernet, 10BASE-T/100BASE-   |

|          |  |
|----------|--|
|          | TX)  |
| DC Input | XLR-type 4-pin (male) (x1), 5V/24V DC (output impedance 0.05 ohms or less) |

## Output

|                       |   |
|-----------------------|---|
| Composite Output      | BNC (x1), Loop-through, with 75 $\Omega$ automatic terminal function            |
| Y/C Output            | Mini-DIN 4-pin (x1), Loop-through, with 75 $\Omega$ automatic terminal function |
| RGB, Component Output | BNC (x3), Loop-through, with 75 $\Omega$ automatic terminal function            |
| External Sync Output  | BNC (x1), Loop-through, with 75 $\Omega$ automatic terminal function            |

## General

|                    |   |
|--------------------|---|
| Power Requirements | LCD monitor (LMD-3251MT):<br>- DC Input: 24V 5.0 A 5V 0.060A(Supplied from AC adaptor),<br>AC adaptor (Sony, AC-110MD): |
|--------------------|---|

|                                      |   |
|--------------------------------------|---|
|                                      | <ul style="list-style-type: none"> <li>- AC Input:100 V - 240 V AC, 50/60 Hz, 1.53 A - 0.58 A</li> <li>- DC Output:24V 5.0A 5V 0.060A</li> </ul>                |
| Power Consumption                    | Approx. 100 W (max.) (with 2 x BKM-229X)  |
| Operating Temperature                | 0°C to 35°C<br>(Recommended: 20°C to 30°C)<br>32°F to 95°F<br>(Recommended: 68°F to 86°F)   |
| Operating Humidity                   | 30% to 85% (no condensation)  |
| Storage/Transport Temperature        | -20°C to +60°C<br>-4°F to +140°F  |
| Storage/Transport Humidity           | 0% to 90%   |
| Operating/Storage/Transport Pressure | 700 hPa to 1060 hPa   |
| Dimensions (W x H x D) *1            | 783 x 479.2 x 124.3 mm<br>783 x 582.8 x 229 mm (with SU-32FW optional stand)<br>30 7/8 x 18 7/8 x 5 inches<br>30 7/8 x 23 x 9 1/8 inches (with SU-32FW optional |



|                      |   |
|----------------------|---|
|                      | stand)  |
| Mass (with options)  | <p>Approx. 13.8 kg (when 2x BKM-229X installed)</p> <p>Approx. 30 lb 7 oz (when 2x BKM-229X installed)</p>  |
| Mass                 | <p>Approx. 13.3 kg (when no input adaptor installed)</p> <p>Approx. 29 lb 5 oz (when no input adaptor installed)</p>  |
| Supplied Accessories | <p>AC adaptor (AC-110MD) (1)</p> <p>AC power cord (1)</p> <p>AC plug holder (2)</p> <p>3D glasses (glasses-type) (1)</p> <p>3D glasses (clip-on-type) (1)</p> <p>L/R labels (1)</p> <p>Instructions for Use (1)</p> <p>CD-ROM (1)</p> <p>Using the CD-ROM Manual (1)</p> <p>Quick Reference(1)</p> <p>When you First Use the Monitor (1)</p> <p>Sales Companies Guide(1)</p> <p>Warranty book (1)</p> |
|                      | BKM-220D SDI 4:2:2 Input Adaptor  |

## Optional Accessories

- 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 (Install a BKM-250TG that has a serial number 7100001 or later, when displaying 3D images using HD-SDI signal inputs)
- BKM-256DD DVI-D input/output adaptor
- SU-32FW Monitor stand
- BKM-30G 3D Glasses (glasses-type)
- BKM-31G 3D Glasses (clip-on-type)

## Notes

Note \* The values for dimensions are approximate.

## Gallery

