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Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

syn@nt-rt.ru | <https://sonymed.nt-rt.ru>

LMD-3251MT

32" Full HD Medical Grade 3D Monitor



A New Dimension of Detail and Realism

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 eye shield.

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.

* Diagonal screen measurement.

Key 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 Eye Shield

Stereoscopic Full HD images can be viewed with a choice of passive 3D eye shield that require no power source and can be worn with minimum fatigue over extended periods of time. The CFV-E30SK (supplied) is a 3D eye shield kit that includes one frame (CFV-B100) and three disposable 3D eye shields. The frame and each eye shield provide eye protection to health professionals in the operating room as they view 3D images on LMD-3251MT. Each 3D circular polarizing eye shield fits into the shield frame, which is light and comfortable to wear for extended periods of time and can be worn over healthcare professionals' eye-glasses without any stress. Wearing the eye shield and frame, healthcare professionals are protected from blood splashes and other bodily fluids in the operating room during clinical procedures.

3D Eye shield with Shield frame



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" a-Si Active Matrix TFT widescreen display panel that minimizes color 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 Color Reproduction

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

ChromaTRU™ Color Matching for Accurate, Dependable Colors



The LMD-3251MT ensures that colors 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 color reproduction across multiple monitors. Further calibration maintains white balance at a uniform color temperature throughout all grayscale levels.

Color Temperature and Gamma Curve Selection

Display color temperature can be selected with three preset color 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.

Display Mode Examples



SBS (normal)



SBS (V-full scan)



POP (V-full scan)

* Simulated images

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.



Normal image



Mirror image

* Simulated images

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.

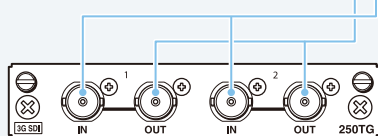
Black Bezel for Optimized 3D Viewing

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

Optional Accessories

BKM-250TGM, 3G/HD/SD-SDI Input Adaptor*

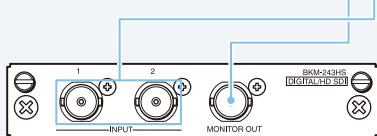
3G/HD/SD-SDI signal input (x2)
3G/HD/SD-SDI monitor output (x2)



* 3G-SDI, HD-SDI and SD-SDI signals are detected automatically

BKM-243HSM, HD-SDI/SD-SDI Input Adaptor*

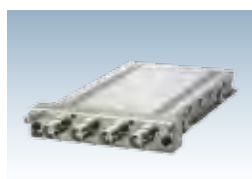
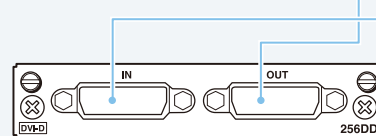
HD-SDI/SD-SDI signal input (x2)
HD-SDI/SD-SDI monitor output (x1)



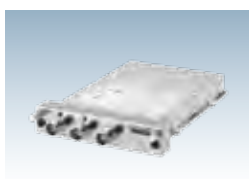
* HD-SDI and SD-SDI signals are detected automatically

BKM-256DD, DVI-D Input Adaptor

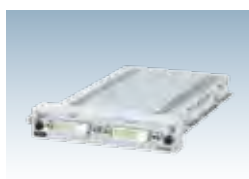
DVI-D signal input
DVI-D signal output



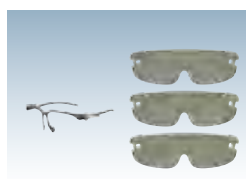
BKM-250TGM
3G/HD/SD-SDI Input Adaptor



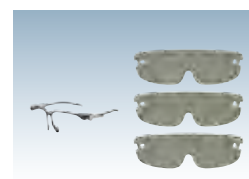
BKM-243HSM
HD/SD-SDI Input Adaptor



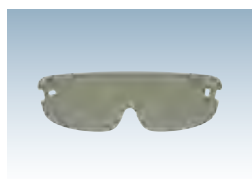
BKM-256DD
DVI-D Input Adaptor



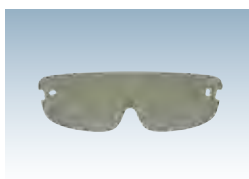
CFV-E30SK
3D Eye Shield Kit



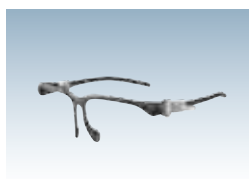
CFV-E20SK
2D Eye Shield Kit



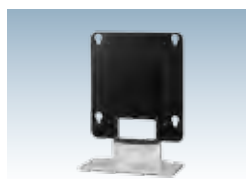
CFV-E30D
3D Eye Shield



CFV-E20D
2D Eye Shield



CFV-B100
Shield Frame



SU-32FW
Monitor Stand

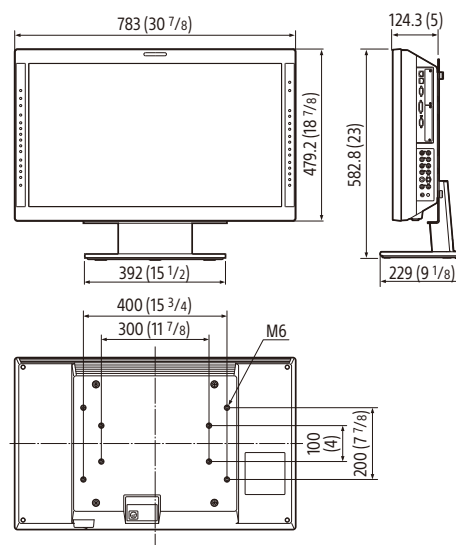
Specifications

Picture Performance	
Panel	a-Si TFT Active Matrix LCD
Picture Size (Diagonal)	801.3 mm 31 5/8 inches
Effective Picture Size (H x V)	698.4 x 392.9 mm 27 1/2 x 15 1/2 inches
Resolution (H x V)	1920 x 1080 pixels (Full HD)
Aspect	16:9
Pixel Efficiency	0.9999
Backlight	LED
Viewing Angle (Panel Specification)	89°/89°/89°/89° (typical) (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), Y: 1 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 Input	BNC (x3), 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)
DVI Input	DVI-D (x1), TMDS single link
HD15 Input	D-sub 15-pin (x1), 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
External Sync Input	BNC (x1), 0.3 to 4.0 Vp-p ±bipolarity ternary or negative polarity binary
Option Port	Two (2) ports, Signal format: H: 15 kHz to 45 kHz, V: 48 Hz to 60 Hz
Parallel Remote	Modular connector 8-pin (x1) (Pin-assignable)
Serial Remote (LAN)	D-sub 9-pin (RS-232C) (x1), RJ-45 modular connector (ETHERNET) (x1)
DC Input	5V/24V DC (output impedance 0.05 ohms or less)
Output	
Composite Output	BNC (x1), Loop-through, with 75 Ω automatic terminal function
Y/C Output	Mini-DIN 4-pin (x1), Loop-through, with 75 Ω automatic terminal function
RGB, Component Output	BNC (x3), Loop-through, with 75 Ω automatic terminal function
External Sync Output	BNC (x1), Loop-through, with 75 Ω automatic terminal function
General	
Power Requirements	LCD monitor (LMD-3251MT): - DC Input: 24 V 5.0 A 5 V 0.060 A (Supplied from AC adaptor) AC adaptor (Sony, AC-110MD): - AC Input: 100 V - 240 V AC, 50/60 Hz, 1.53 A - 0.58 A - DC Output: 24 V 5.0 A 5 V 0.060 A
Power Consumption	Approx. 100 W (max.) (with 2 x BKM-250TGM)
Operating Temperature	0°C to 35°C (Recommended: 20°C to 30°C) 32°F to 95°F (Recommended: 68°F to 86°F)
Operating Humidity	30% to 85% (no condensation)
Storage / Transport Temperature	-20°C to +60°C -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)	783 x 479.2 x 124.3 mm (including the projection parts) 30 7/8 x 18 7/8 x 5 inches (including the projection parts) 783 x 582.8 x 229 mm (with SU-32FW optional stand) 30 7/8 x 23 x 9 1/8 inches (with SU-32FW optional stand)
Mass	13.3 kg (when no input adaptor installed) 29 lb 5 oz (when no input adaptor installed)
Mass (with options)	13.8 kg (when 2x BKM-250TGM installed) 30 lb 7 oz (when 2x BKM-250TGM installed)
Supplied Accessories	AC adaptor (AC-110MD) (1), AC power cord (1), AC plug holder (2), 3D Eye Shield Kit (CFV-E30SK) (1) (Incl. Frame (1) and 3D shield (3)), Instructions for Use of the 3D Eye Shield Kit (1), L/R labels (1), Before Using This Unit (1), CD-ROM (including the Instructions for Use) (1), Service Contact List (1)

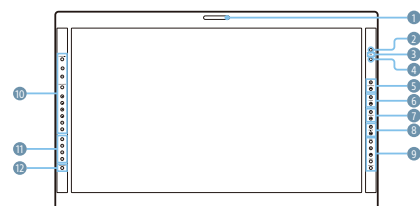
LMD-3251MT is distributed to US and EU as a medical device. It satisfies product safety standards (e.g. IEC 60601-1*).

* For more details, please contact your nearest Sony sales office or an authorized dealer.

Dimensions

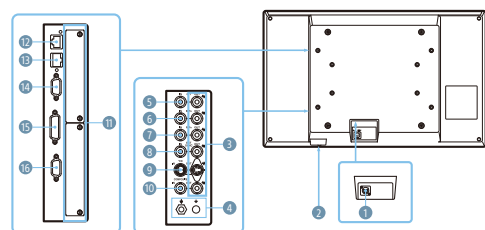


Front Panel



- 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
- ⑩ Input select buttons
- ⑪ Function buttons
- ⑫ USER MEM (user memory) button

Connector Panel



- ① DC 5V/24V IN connector
- ② Power switch
- ③ Loop-through output connectors
- ④ Equipotential/Function Earth terminal
- 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)
- ⑨ Y/C IN connector (4-pin mini-DIN)
- ⑩ COMPOSITE IN connector (BNC)
- ⑪ Optional input port
- ⑫ PARALLEL REMOTE connector (modular connector, 8-pin)
- ⑬ SERIAL REMOTE connector (RJ-45)
- ⑭ SERIAL REMOTE RS-232C connector (D-sub 9-pin, female)
- ⑮ DVI-D input connector (DVI-D)
- ⑯ HD15 input connector (D-sub 15-pin, female)



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