

## LMD-2451TD

24-inch 3D high grade LCD monitor



### Overview

#### **The optimum solution for 3D Monitoring applications**

The new LMD-2451TD is a 24-inch widescreen LCD monitor designed to satisfy the rapidly growing demand from 3D productions in the broadcast and professional field.

This professional monitor incorporates a micro-polarizer filter attached to the LCD panel, and is supplied with circular polarizer 3D glasses. Wearing these lightweight 3D glasses, users can enjoy smooth, uninterrupted viewing of multiple monitors.

The LMD-2451TD inherits the proven technology and features of the widely respected 2D LCD monitor, the high grade LMD-2451W. The LMD-2451TD can also display 2D pictures.

Key features of this monitor are Sony's highly acclaimed, unique ChromaTRU colour matching technology and a WUXGA (1920 x 1200) resolution professional LCD panel with an excellent wide viewing angle. Full digital 10-bit processing adds to the already impressive array of specifications, delivering smooth greyscale and colour transitions.

The LMD-2451TD can accept various source of 3D signal format such as 3D on 3G, Dual stream left and right, Field sequential and

side-by-side HD-SDI as well as DVI-D line interleave (line by line) mode. A new set of 3D features have also been added to the monitor to help the user to manage the 3D effects with efficiency. The BKM-250TG board is required to display these features.

Entirely at home in broadcast, OB, production, post-production and corporate environments, the LMD-2451TD accepts a wide variety of PC and analogue video formats and optional decoder boards are available for Standard and High Definition digital video display.

### **High-performance Picture Quality**

The LMD-2451TD incorporates a WUXGA (1920X1200) LCD panel to provide Full HD resolution images. It is equipped with a high purity colour filters to provide precise colours.

### **Stress-free 3D Monitoring**

The LMD-2451TD incorporates a micro-polarizer filter attached to the LCD panel, and is supplied with circular-polarizer 3D Sony glasses. Wearing these lightweight 3D glasses, users can enjoy smooth, uninterrupted viewing of multiple monitors and flicker-free 3D images. This image quality helps users to engage in 3D production operations with minimal stress.

### **Convenient 2D/3D Display functions**

There are a variety of convenient 3D production features– ideal for high-quality creative 3D production. These features are assignable to the function keys on the front panel of the LMD-2451TD, and can also be assigned to an external remote control unit. Channel 2D/3D mode can be selected from a function key for user convenience during 3D production work.

### **Dual 2D/3D functionality maximises ROI**

This model not only excels in 3D, but is equipped with the consistent quality, functionality, and operability – essential for a 2D professional monitors. In fact, its features are fully compatible

with those of current LMD-51W Series monitors.

## **Perfect for Group Viewing**

Sony 3D monitors have been optimised to provide a very wide viewing angle for group viewing.

## **Lifelike picture quality**

Ideal for BROADCAST (studio, office viewing, control room etc.), PRODUCTION (OB, monitor wall, VTR control, audio monitoring etc.), POST-PRODUCTION (mid-range multi-format editing consoles), CORPORATE (high-end multi-format use) and GRAPHIC DESIGN

## **Exceptionally Versatile**

Equally suited to AV or IT-based applications due to a broad range of inputs and multi-format signal capabilities.

## **Future Proof**

Multi-format and HD capability plus optional decoder boards will ensure that the LMD-2451TD remains current.

## **Indoor or Outdoor Operation**

Can be powered by AC or DC power supplies.

## Features

### **High Purity Colour Filters**

The LMD-2451TD uses precisely manufactured RGB colour filters, allowing the reproduction of colours with stunning depth and saturation to create highly natural images.

### **3D Circular-polarizer System**

The LMD-2451TD adopts a 3D micro polarizer filter attached to the LCD panel, and is supplied with circular-polarizer glasses. In this system, the right and left signals are sorted into odd lines and even lines respectively. The right and left images delivered from the LCD panel are circular polarized in different directions through the micro-polarizer filter and the patterned retarder. Each

right and left image can then be viewed by the corresponding right and left circular-polarizer filter glass.

### **Unique Lightweight Circular-polarizer 3D Glasses**

Sony BKM-30G circular-polarizer glasses are designed for the 3D production operator's convenience, and optimized for both LMD 3D monitors.

### **3D display feature – Horizontal Flip**

When a half-mirror type of rig is used, either the left or right signal may be reversed horizontally. The Flip H function turns the reversed image to the normal view. This is helpful because the user can refer directly to the rig camera, achieving a simple and cost-saving system.

### **3D display feature – Disparity Simulation**

Either the left or right signal phase (or both phases) of a 3D image can be shifted horizontally. In this way, users can simulate the amount of 3D image parallax, and can judge whether the camera rig should be adjusted on location or whether it would be better to adjust the parallax later during the post-production process.

### **3D display feature – Horopter Check**

This function helps users to perceive the subtle difference of depth between different objects placed on the 3D screen surface.

### **3D display feature – Checker Board**

Left and right input signals are displayed in a grid pattern on screen – divided into 9 blocks vertically and 16 blocks horizontally. By comparing adjacent images, users can recognize a difference in brightness and colour setting of the left and right images, and thus easily adjust the camera's white balance and iris settings.

### **3D display feature – L/R Switch**

Left and right signals can be swapped in a moment without inserting black frames, simply by manually pushing a function

key. This instant-swap capability enables users to compare whole images and check for any sense of incongruity or for unnatural images.

### **3D display feature – Payload ID Display**

Channel-assign information about the payload ID data of input signals is displayed on the menu screen. This tells users how the left and right channels are assigned in the menu.

### **Accurate and Repeatable Colour Reproduction**

ChromaTRU technology ensures close CRT colour accuracy and gamma matching throughout the product's life and delivers consistent colour temperature across the entire greyscale range. Both control characteristics also assure extremely tight colour matching between different model samples. Three settings are available to simulate EBU, SMPTE and ITU-709 colour reproduction.

### **White Balance Calibration Function**

The LMD-2451TD employs software based white balance calibration function, which is called LMD\_AutoWhiteBalance. Combined with a PC and commercially available calibration tool - X-Rite i1Pro - this function enables precise and quick adjustment of the monitor's white balance.

### **Multi-Format Signal Support - up to 3G SDI Input**

LMD-2451TD can accept almost any SD or HD video format, both analogue and digital. Includes NTSC, PAL, component, RGB, Y/C, 480/60i, 575/50i, 480/60p, 576/50p, 1080/50i, 1080/60i, 1080/50p, 1080/60p, 720/50p, 720/60p, 1080/24psf, 1080/25psf, 1080/24p, 1080/25p, 1080/30p and PC signals from VGA to WUXGA.

### **Signal Interface Options**

The monitor can accept up to two optional video boards for additional video analogue or digital inputs (HD/SD SDI). Note that the new LMD-2451TD is compatible with current decoder

boards. For the variety of 3D display functions, the BKM-250TG is mandatory.

### **Computer Input Frequencies**

The LMD-2451TD monitor is factory preset to accept 32 typical computer input signal frequencies.

### **Quad Split functionality**

Harris QS-100HD board has been designed to fit inside the LMD-2451TD for space saving. It provides ultimate quad images with many functions associated.

### **New Video Waveform and Audio Level Meter**

A combined video waveform and Audio Level Meter is available on the On-screen display of the monitor.

### **Picture-In-Picture mode**

Side by side or Picture-in-Picture (PiP) mode allows users to check two 2D images on the same screen. Combination of video and computer images side by side is also available.

### **Selectable Scan Size and Aspect Ratio (2D Mode)**

Over-scan and Normal-scan as well as full scan is available, and aspect ratio can be switched between 16:9 and 4:3.

### **Multiple-Language On-Screen Display**

English, French, Spanish, German, Italian, Japanese and Chinese.

### **Advanced Video Markers**

The LMD-2451TD monitor can display various area markers, including a centre marker, aspect markers, and a safety zone marker. These flexible marker controls, together with the choice of many different aspect markers, make the LMD-2451TD monitor extremely convenient display devices for a variety of shooting scenarios - from standard video acquisition to digital cinematography.

## **Three Colour Tally**

The LMD-2451TD comes equipped with a tally lamp that can be lit via a parallel remote connector. The status of the signal displayed on the monitor can be identified by the tally colour - red, green, or amber.

## **Smart APA (Auto Pixel Alignment) for Computer Input**

The image size can be automatically adjusted to its optimal setting with the one-touch APA key

## **Remote Control Options**

Three connection methods are available -, parallel 8-pin, serial RJ45 Ethernet and serial RS232C links. The parallel connection allows up to 38 functions to be remotely controlled.

## **Centralised Monitor-Wall Control**

Via the serial RJ45 Ethernet connector using the BKM-16R control unit.

## **Stereo Audio Monitoring**

The LMD-2451TD is equipped with stereo speakers. Up to 16 embedded digital audio channels can be decoded and routed to the speakers. Analogue audio inputs are also catered for.

## **Smart Function Key Lighting**

The key lighting contributes to the elegant design and enhances user functionality. And to increase flexibility, the lighting can be switched off to eliminate any visual disturbance when multiple displays are employed for tiling purposes.

## **Protected Controls**

A key-inhibit switch prevents inadvertent operation from the control panel.

## **VESA Mounting Standard**

Table, wall or ceiling mounting

## Specifications

### Picture Performance

Panel	a-Si TFT Active Matrix LCD
Picture Size (Diagonal)	613.2 mm 24 1/4 inches
Effective Picture Size (H x V)	518.4 x 324.0 mm 20 1/2 x 12 7/8 inches
Resolution (H x V)	1920 x 1200 pixels (WUXGA)
Aspect	16:10
Pixel Efficiency	0.9999
Backlight	CCFL
Colors	Approx.16.7 million colors
Viewing Angle (Panel Specification)	89°/89°/89°/89° (typical) (up/down/left/right contrast 10:1)
Vertical Viewing Angle (3D Mode)	54° at a viewing distance more than 320 mm crosstalk less than 7% (typical)
Normal Scan	0% scan
Over Scan	5% over scan

### Input



Composite Input	BNC (x1), 1 Vp-p $\pm$ 3dB sync negative
Y/C Input	Mini DIN 4-pin (x1) Y: 1 Vp-p $\pm$ 3dB sync negative C: 0.286 Vp-p $\pm$ 3dB (NTSC burst signal level), 0.3 Vp-p $\pm$ 3dB (PAL burst signal level)
RGB, Component Input	BNC (x3) RGB: 0.7 Vp-p $\pm$ 3dB (Sync On Green, 0.3 Vp-p sync negative) Component: 0.7 Vp-p $\pm$ 3dB (75% chrominance standard color bar signal)
DVI-D 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
Audio Input	Phono jack (x2) -5 dBu 47 k $\Omega$ or higher

External Sync Input	BNC (x1) 0.3 to 4.0 Vp-p $\pm$ 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 (x1) (Ethernet, 10BASE-T/100BASE- TX)
DC Input	XLR-type 4-pin (male) (x1), 24V DC (output impedance 0.05 $\Omega$ 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
	BNC (x1), Loop-through, with 75 $\Omega$

External Sync Output    automatic terminal function

Audio Monitor Output    Phono jack (x2)

Speaker (Built-in)  
Output                      1.0 W + 1.0 W (stereo)

## General

Power Requirements                      100 V to 240 V AC, 1.5 A to  
0.7 A, 50/60 Hz  
24 V DC, 5.7 A

Power Consumption                      Approx. 130 W (max.) (with 2  
x BKM-229X)

Inrush Current                              (1) Power ON, current  
probe method: 23 A (100 V),  
56 A (240 V)  
(2) Hot switching inrush  
current, measured in  
accordance with European  
standard EN55103-1: 55A  
(230 V)

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) [*1]	602.4 x 386.2 x 110.0 mm (without a stand) 602.4 x 497.9 x 269.9 mm (with a supplied stand) 23 3/4 x 15 1/4 x 4 3/8 inches (without a stand) 23 3/4 x 19 5/8 x 10 3/4 inches (with a supplied stand)
Mass (with options)	Approx. 11.5 kg (when 2x BKM-229X installed) Approx. 25 lb 6 oz (when 2x BKM-229X installed)
Mass	Approx. 11.0 kg (when no input adaptor installed) Approx. 24 lb 4 oz (when no input adaptor installed)

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## Supplied Accessories

AC power cord (1)  
AC plug holder (1)  
3D glasses (2)  
L/R labels (1)  
Operating Instructions (1)  
CD-ROM (1)  
Using the CD-ROM Manual  
(1)

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## 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-244CC HD/SD-SDI  
Closed Caption 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-30G 3D Glasses  
(glasses-type)

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## Notes

Note	[*1] The values for dimensions are approximate.
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Environmental notice for customers in the USA	Lamp in this product contains mercury. Disposal of these materials may be regulated due to environmental considerations. For disposal or recycling information, please contact your local authorities or see <a href="http://www.sony.com/mercury">www.sony.com/mercury</a> for additional information.
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## Gallery

