

LMD-2140MD

21-inch medical flat panel monitor



The new LMD-2140MD is a medical-grade 21-inch LCD monitor, specifically designed for video endoscope applications for perfect observation. It meets the stringent medical safety and EMC requirements.

The LMD-2140MD incorporates a superb quality LCD panel that provides extremely high level of brightness, contrast and colour depth. The use of Sony's original X-Algorithm processing allows natural reproduction of still and moving video images that can be difficult to achieve with typical LCD monitors. Additionally, this monitor provides superior versatility with a variety of analogue and digital signal input capabilities both for today's standard and tomorrow's high definition format. Various analogue and digital computer formats complement the video format.

Finally, the user will also benefit from the User Memory functionality, which allows each user (20 different possible memory settings available) to have his own picture setting available in this monitor. All of these features together with a compact & lightweight design, allows the Sony LMD-2140MD to better serve in video endoscopy cart installations.

Features

Excellent picture reproduction (X Algorithm)

LMD-2140MD provides sophisticated I/P (interlace to progressive) conversion using X-Algorithm technology. This combines the pixels above, below and in the diagonal direction of the moving picture part, and then inserts a natural pixel to create the absent lines. The result is much smoother image reproduction for both moving and static picture areas.

Picture Delay minimum mode

LCD panel has certain level of the picture delay factor, due to the response time of LCD panel device itself and the data calculation time of the signal process such as I/P conversion. This is already well known as the basic nature of all LCD monitors. But the user may wish to obtain much lower picture delay rather than higher picture quality. To satisfy this demand the Picture delay minimum mode provides the option to trade picture quality against lower picture delay.

Excellent Brightness and Contrast

While conventional LCD monitors can tend to be dark, the LMD-2140MD provides high-brightness and high contrast images by use of super wide aperture LCD panels. In addition, the use of precisely manufactured RGB colour filters allow these monitors to reproduce colours with stunning depth and saturation – creating highly natural images.

Wide Viewing Angle

The LCD panel has a wide viewing angle of 170 degrees, horizontally and vertically, with minimal reduction in picture contrast, enabling images to be viewed from various positions and angles.

The User Memory

The User Memory functionality provides the capability of saving 20 patterns of memory settings. Doctors can easily set, save, and recall their preferred picture setting using an assigned user name. The following parameters can be memorized to user memory: Colour temperature, Brightness, Contrast, Chroma, Phase, Aperture, Gamma, Aspect, Scan, Picture Delay Minimum, User Memory Name, User Colour Temperature. In addition factory default settings can instantly be recalled by the touch of two buttons.

Auto chroma/phase function

The chroma and phase of the decoder are automatically adjusted with the auto chroma phase function.

Three Colour Tally

The tally lamp can be lit up via a parallel remote connector and the status identified by three colours, red, green or amber.

Parallel Remote (Modular 8-pin)

Parallel Remote Control and Tally can be controlled via a modular 8-pin connector, and the pin assignment can be set from the On-Screen Menu. Users can control the tally lamp, select Input and activate Underscan mode or Overscan mode.

Serial Remote

Via RS-232C interface, users can control the monitor determining the settings on video signals, activating various functions, setting menu items and user memory data exchange.

Colour temperature Adjustment

The colour temperatures can be selected among four preset data (HIGH, LOW, LOW2, LOW3) and the USER data can be set between 5000K and 10000K.

Smart APA

Perform an automatic adjustment to achieve the clearest picture while a signal is input from the HD15 input connector.

Versatile Scan Mode

The LMD-2140MD offers a wide choice of displaying images such as Overscan, normal scan, underscan and native picture reproduction. These various options allow doctors to decide what is the most suitable and convenient mode for them.

Key Inhibit

Possible to lock the setting so that they can not be changed by an unauthorized user.

Benefits

Unique design and advance technology

Provides surgeons and other clinicians with superior quality reproduction of still and especially moving images, plus a reduction in the need for manual picture adjustment as well as rugged construction to cope with the special demands of medical environments and lower total cost of ownership.

Versatile Video and Computer Inputs

The LMD-2140MD can accept a variety of video signals ranging from SD to HD, and VGA to SXGA computer signals via Analogue PC input and DVI-D input. In addition to the standard inputs, 5 types of input adaptors are offered as options for use in the 2 slots on the monitor. This allows many signal sources from a variety of equipment to be connected and monitored simply by selecting them with the input button on the front panel. Simultaneous accessibility to various inputs is a strong added value of Sony LMD monitors.

Easy Migration from SD to HD.

Reproducing high quality images in HD is not an issue for the LMD-2140MD. This monitor allows you to

enjoy today HD images through the analogue video inputs or prepare tomorrow for an easy migration by using the optional plug-in HD/SD-SDI digital video decoder board.

AR-Coated Protection Panel

The LMD-2140MD incorporates an extremely bright 21-inch LCD panel with a 4:3 aspect ratio and a robust multi-layer AR-coated protection layer, which minimises the damaged caused by scratching the panel. The AR coating also reduces the reflection from ambient light to a minimum. As a result when used in bright lighting conditions, high contrast is maintained even in dark areas of the picture.

Compact and Lightweight

Thanks to the thin and lightweight LCD panel, LCD-2140MD is much shorter in depth and lighter in weight than a conventional CRT monitor. It results in greater operational flexibility for surgical applications.

Operational Convenience

The User Memory functionality provides the capability of saving 20 patterns of memory settings, what provides doctors to easily set, save, and recall their preferred picture setting using an assigned user name. Instant access to most of these controls is available from the buttons on the front bezel as well as the OSD menu, which is provided in 7 languages.

VESA Mounting

LMD-2140MD can be used under various lighting conditions and in numerous ways. It can easily be mounted on a wall, ceiling or an extended arm as well as put on a cart by using its stand foot, what makes its use even more convenient for surgeons and other clinicians.

Silver Support Pack

In addition to revolutionary technologies, excellent features, easy in handling, extra services are also included to make it simpler, quicker and even more convenient for the customer.

- 2 years warranty support
- Operational Phone Call Centre
- Advice on obtaining the best performance as well as warrenty support
- Collection Anywhere & Repair within 7 days
- Collection of the faulty unit directly from, and delivery of the prepared unit directly to, the customer's location anywhere in mainland EU, Norway, or Switzerland within 7 days.

Technical Specifications

--- Picture Performance ---	
LCD Panel Type	a-Si TFT Active Matrix LCD with an AR-coated protection panel
Resolution	1024 x 768 dots
Picture Size (H x W)	Approx. 430 x 322 mm (17 x 12 3/4 inches) Diagonal 21 1/4 inches (537 mm)
Aspect	4:3
Colors	16,770,000 colors
Viewing Angle	85°/85°/85°/85°(typical) (up/down/left/right contrast>10:1)

--- Input / Output ---	
Input	Composite BNC (x 1) 1.0 Vp-p ±3 dB, sync negative Y/C 4pin Mini DIN (x 1) Y: 1.0 Vp-p ±3dB, sync negative C: 0.286 Vp-p ±3dB (NTSC) / 0.3 Vp-p ±3dB (PAL) Component/RGB BNC (x 3) Component: Y: 1.0 Vp-p ±3 dB; Pb, Pr: 0.7 Vp-p ±3 dB RGB: G: 0.7 Vp-p ±3 dB, Sync on G 0.3 Vp-p; B: 0.7 Vp-p ±3 dB; R: 0.7 Vp-p ±3 dB Ext. Sync BNC (x1) 0.3 ~ 4 Vp-p ±bipolarity ternary or negative polarity binary Computer DVI-D: TMDS (Single Link); Analog RGB: HD D-sub15pin (female); 0.7 Vp-p, 75 Ω sync positive (R, G, B)
Remote	Parallel Modular 8 pin (Assignable) Serial RS-232C (serial remote), D-sub 9-pin
Output	Composite BNC (x 1), Loop-through, automatic 75 Ω termination Y/C 4pin Mini DIN (x 1), Loop-through, automatic 75 Ω termination Component/RGB BNC (x 3), Loop-through,

	automatic 75 Ω termination Ext. Sync BNC (x 1), Loop-through, automatic 75 Ω termination
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--- General ---	
Power Consumption	Maximum: Approx. 100 W (with 2 x BKM-255DV) Standard: Approx. 92 W (without optional input adaptor)
Power Requirement	AC 100 to 240 V ±10%, 50/60 Hz
Operating Temperature	0 to 40°C (32 to 104°F)
Operating Humidity	30 to 85 % (no condensation)
Storage & Transport Temperature	-10 to 40°C (14 to 104°F)
Storage & Transport Humidity	0 to 90% (no condensation)
Operating / Storage / Trans. Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D) (inches)	505 x 444 x 119 (20 x 17 3/8 x 4 3/4)
Mass Approx.	9.8Kg (with 2 x BKM-255DV) 21 lb 10 oz
Supplied Accessories	AC Power Cord (1), AC plug holder (2), Operating Instructions (1), CD-ROM (1), Warranty Card (1), Using the CD-ROM Manual (1), Interface Manual for Programmers (1), Quick Reference (1), When you first use the monitor (1), Sales Companies Guide (1)

Supplied Accessories	
	AC Plug Holder
	AC Cord
	Interface Manual
	Operation Manual CD-ROM
	Operation Manual

Accessories

Option Boards

**BKM-227W**

NTSC / PAL input adaptor for LMD monitors

**BKM-255DV**

DV Input Adaptor

**BKM-229X**

Analogue component input adaptor for LMD monitors

Monitors

**BKM-220D**

4:2:2 Sdi Input Adaptor

**BKM-243HS**

HDSDI/4:2:2 SDI Input Adaptor