SONY

Professional LCD Monitor

LUMA Family Catalog 2006

LUMA

Sony Professional LCD Monitor

A Comprehensive Line of True – the Sony LUMA Series

Combining decades of expertise in professional A/V technology with today's stunning advancements in LCD panel technology, Sony now offers a comprehensive range of LUMA™ Professional LCD monitors – each model developed to meet the quality-critical needs of professional picture monitoring.

Unlike typical LCD monitors, the LUMA Series places maximum emphasis on monitoring video images. The superb-quality LCD panel chosen for each monitor provides an extremely high level of brightness, contrast, and color depth – as well as a wide viewing angle. At the same time, they also offer the slim and lightweight LCD advantages for easy installation and flexibility.

Four product ranges are available to suit the many different professional monitoring needs.
The separate type models offer the highest-quality LCD video monitoring, consisting of high-grade LCD panels and a dedicated MEU interface unit. These models are SD and HD compatible and accommodate almost any signal input. The one-piece type studio models are the choice for pursuing the best quality per cost balance for SD-exclusive monitoring applications. And finally, the handheld type and multi-display monitors are DC operable and provide utmost convenience and flexibility in space-limited and mobile applications.

With such a wide variety of choices, and with the features and functionality that only Sony monitors provide, the LUMA Professional LCD monitors present a new realm of quality and convenience for professional video monitoring.

Professional LCD Monitors

Separate Type

The separate type LUMA monitors represent the pinnacle of the LUMA Series. Consisting of high-grade LCD panels used together with a dedicated MEU-WX2 signal-processing unit – which provides a rich set of interfaces – they offer SD and HD multi-format capability as well as PC input capability. These monitors are furnished with the features and quality to replace CRT monitors at the Sony PVM-L5 and PVM-L4 range.

LMD-322W

LMD-232W

LMD-212

LMD-172W

LMD-152

Flexible Choice of LCD Display Panels

Five LCD display sizes are available. Each LCD display uses one MEU-WX2 signal-processing unit for parameter control and signal interface.

Panel Types

	Panel Aspect Ratio	Panel Size*	Desk-top Stand	Mounting	
				19-inch Rack	Mounting Holes (MM)
LMD-322W	Wide	31.6-inch	SU-559	Not applicable	330 x 330 hooks
LMD-232W	Wide	23-inch	SU-558	Not applicable	VESA™ 75 x 75
LMD-212	4:3	21.2-inch	SU-558	Optional MB-523	VESA 75 x 75
LMD-172W	Wide	16.7-inch	SU-558	Optional MB-522A	VESA 75 x 75
LMD-152	4:3	15.1-inch	SU-558	Optional MB-524	VESA 75 x 75

* Viewable area measured diagonally.

Flat LCD Panel with Separate Signal-processing Unit

The separate type LUMA monitors consist of extremely thin and lightweight LCD displays, and a highly advanced signal-processing unit (MEU-WX2 Multiformat Engine Unit). This 'separate unit' design offers two significant benefits – it allows the LCD display to be made as thin and as lightweight as possible, and enables flexible placement of display controls and interface connectors. The LCD display and Multiformat Engine Unit are connected via a single multi-pin cable*, up to 10 meters long (optional), which avoids having multiple cables hanging from the LCD displays themselves. The optional SU-558 monitor stand has a biaxial joint in its neck assembly, allowing the LCD displays to be positioned at various heights and tilt angles.

* The LMD-232W, LMD-212, LMD-172W, and LMD-152 are supplied with one 1.8-meter cable, and the LMD-322W with one 3.0-meter cable.

Input Versatility

Multi-format Signal Support

The MEU-WX2 Multiformat Engine Unit of the separate type LUMA monitors can accept almost any SD or HD video format, both analog and digital. These include composite NTSC and PAL, component 480/60i and 575/50i, progressive 480/60P and 576/50P, and high-definition 1080/60i, 1080/50i, and 720/60P. It can also accept 1080/24PsF and 1080/25PsF.
Standard interfaces include analog composite (NTSC/PAL), 525i/625i component and RGB, and Y/C*1. Digital interfaces are offered as optional boards to meet budgetary and user needs.
To keep the unit compact (1RU high), the analog inputs share the same four BNC connectors, each with loop-through capability.
The MEU-WX2 also accepts various types of analog computer signals. With its high-performance scan converter, it can display PC signals from VGA to SXGA*2.

*1 Y/C signals must be input via the BNC connectors of the MEU-WX2 using an S-Video-to-BNC conversion connector.

*2 SXGA images are down-converted for display.

Input Signals/Input Adaptors

System	Input Signal			Interface				
	Total Line	Active Line	Aspect Ratio	Composite/ Y/C	RGB/ Component	SD-SDI	SD-SDI/ HD-SDI	DV
				Standard		Optional BKM-220D	Optional BKM-243HS	Optional BKM-255DV
575/50i	625	575	16:9/4:3	O	O	O	O	O
480/60i*	525	483	16:9/4:3	O	O	O	O	O
576/50P	625	576	16:9/4:3	—	O	—	—	—
480/60P	525	483	16:9/4:3	—	O	—	—	—
1080/24PsF	1125	1080	16:9	—	O	—	O	—
1080/50i	1125	1080	16:9	—	O	—	O	—
1035/60i*	1125	1035	16:9	—	O	—	O	—
1080/60i*	1125	1080	16:9	—	O	—	O	—
720/50P	750	720	16:9	—	O	—	O	—
720/60P	750	720	16:9	—	O	—	O	—

* Also accepts 59.94 Hz field rate.

Signal-interface Options

The MEU-WX2 can accept HD-SDI, SD-SDI, or DV signals via the following optional input adaptors.

BKM-220D, SD-SDI 4:2:2 Input Adaptor*1
- SD-SDI signal input (x2) • SD-SDI monitor output (x1)
- Power consumption: 1.5 W

BKM-243HS, HD-SDI/SD-SDI Input Adaptor*1
- HD-SDI/SD-SDI signal input (x2) • HD-SDI/SD-SDI monitor output (x1)
- Power consumption: 2 W
- HD-SDI and SD-SDI signals are automatically detected.

BKM-255DV*, DV Input Adaptor*1,*2
- DV signal port (x 2) • Power consumption: 4 W

*1 Embedded audio is supported.

*2 The full command set of the AV/C (Audio/Video and Control) protocol is not supported.

Preset Computer Input Frequencies

The MEU-WX2 is factory preset to accept 19 typical computer input signal frequencies.

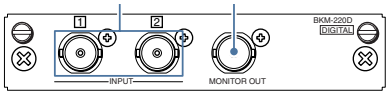
Preset Input Frequencies

No.	Preset Signal		fH [kHz]	fV [Hz]	Dot Clock [MHz]	Sync. polarity	
						Horizontal	Vertical
P01	640 x 480	VGA mode 3	31.469	59.940	25.175	Negative	Negative
P02		VGA VESA 75 Hz	37.500	75.000	31.500	Negative	Negative
P03		VGA VESA 85 Hz	43.269	85.008	36.000	Negative	Negative
P04		VGA (non-CRT)	29.531	59.780	23.625	Positive	Negative
P05	800 x 600	SVGA VESA 60 Hz	37.879	60.317	40.000	Positive	Positive
P06		SVGA VESA 75 Hz	46.875	75.000	49.500	Positive	Positive
P07		SVGA VESA 85 Hz	53.674	85.061	56.250	Positive	Positive
P08		SVGA (non-CRT)	36.979	59.837	35.500	Positive	Negative
P09	1024 x 768	XGA VESA 60 Hz	48.363	60.004	65.000	Negative	Negative
P10		XGA VESA 75 Hz	60.023	75.029	78.750	Positive	Positive
P11		XGA VESA 85 Hz	68.677	84.997	94.500	Positive	Positive
P12	1280 x 768	WXGA* (CRT 60 Hz)	47.693	59.992	80.125	Negative	Positive
P13		WXGA* (non-CRT)	47.396	59.995	68.250	Positive	Negative
P14	1280 x 1024	SXGA* VESA 60 Hz	63.981	60.020	108.000	Positive	Positive
P15		SXGA*(non-CRT)	63.194	59.957	91.000	Positive	Negative
P16	720 x 400	VGA TEXT	31.469	70.087	28.322	Negative	Positive
P17	1024 x 768	VGA (non-CRT)	47.297	59.870	56.000	Positive	Negative
P18	1280 x 768	WXGA* (CRT 75 Hz)	60.091	74.926	102.875	Negative	Positive
P19	1280 x 800	WXGA	48.935	59.969	68.900	Negative	Negative

* SXGA and WXGA images are down-converted for display.

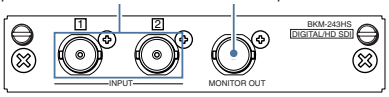
BKM-220D Connector Panel

SD-SDI Input (BNC x 2) SD-SDI Monitor Output (BNC x 1)



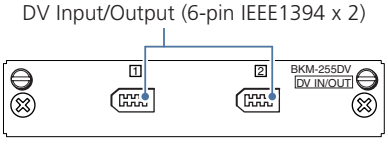
BKM-243HS Connector Panel

HD-SDI/SD-SDI Input (BNC x 2) HD-SDI/SD-SDI Monitor Output (BNC x 1)



BKM-255DV Connector Panel

DV Input/Output (6-pin IEEE1394 x 2)



MEU-WX2

Front Panel

Rear Panel

Separate Type

Superb Picture Performance

High Purity Color Filters

The separate type LUMA monitors use precisely manufactured RGB color filters, allowing the reproduction of colors with stunning depth and saturation – creating highly natural images.

Accurate Gamma and Stable White Balance - ChromaTRU Color Processing

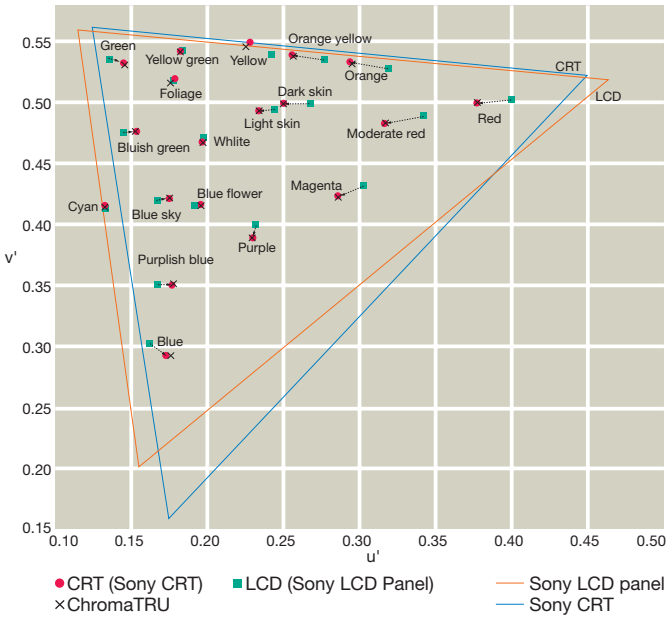
For an extra level of color reproduction accuracy, every LCD panel used in the separate type LUMA Series is precisely color calibrated at the factory, providing consistent characteristics extremely close to CRT displays.

The colorimetry of an LCD display, by nature, can exhibit inaccurate R, G, B color coordinates and unbalanced R, G, B gamma curves, which can make precise color matching between multiple monitors a challenge. These are also the primary reasons why LCD color tone can slightly differ from CRTs.

The separate type LUMA monitors solve this problem by precisely calibrating each LCD panel's light output so that the R, G, B color coordinates are extremely close to those of a CRT monitor. A second calibration is further applied so that white balance is maintained at a consistent color temperature throughout all grayscale levels.

The result of these precise calibrations is color reproduction reminiscent of Sony CRT displays.

CIE Color Coordinates



The CIE u' v' chart is used to evaluate the light output of display devices. In this diagram, the raw light output of a Sony LCD panel is compared with that of a Sony CRT. The triangular areas show their different color reproduction capabilities (Color Space). The green and red dots indicate the color of light output from a Sony LCD panel and that from a Sony CRT for certain RGB input signals. Note that the same light color is not obtained for the same video input. The ChromaTRU process, on the other hand, reproduces consistent light output extremely close to that of a CRT.

Sophisticated I/P Conversion using X-Algorithm*

All LCD monitors require two processes to map an interlace signal to the progressive LCD pixel array – I/P conversion and line scaling. The former converts the interlace signal to a progressive signal and the latter converts the input signal's line count to match the LCD pixel array. HD/SD-compatible monitors use LCD panels with resolutions higher than the SD signal. This means that the I/P process must be handled with great accuracy to keep its effect to a minimum after the line scaling.

Conventional LCD monitors conduct the I/P conversion simply by combining two adjacent picture fields into one picture frame. This method is effective for static areas of the image, but can often result in jagged shape noise along the oblique direction of fast-moving objects.

To avoid this, the separate type LUMA models incorporate Sony's original X-Algorithm technology, which uses a picture-adaptive Still Mode and Motion Mode for the I/P conversion. By examining the pixels in preceding fields, the I/P conversion will operate in either Still or Motion Mode. For pixels where motion is not detected, the I/P conversion will simply copy pixels from the preceding field to create the absent scanning line.

In contrast, when motion is detected, picture frames are created from the interlace signal on a field basis by interpolating the missing pixels of every other line. X-Algorithm intelligently examines a significant area surrounding the missing pixel and uses the most logical pixels above, below, or in the diagonal direction of the moving picture part to insert a natural scanning line.

The direct result of X-Algorithm – much smoother image reproduction for both still and moving areas of interlace SD signals.

* X-Algorithm is not used for HD signal input.

Excellent Brightness and Contrast

While conventional LCD monitors can tend to be dark, the separate type LUMA monitors provide high-brightness and high-contrast images by use of super-wide aperture LCD panels.

Extremely Wide Viewing Angle

The separate type LUMA monitors offer the most stable images within the LUMA Series when viewed from various angles. They offer a wide viewing angle of 170 degrees, horizontally and vertically, with virtually no reduction in picture contrast, color saturation, and hue shift. This allows precise images to be clearly viewed from various positions and angles – a critical requirement in professional video monitoring.

AR (Anti-Reflection) Coated Protection Panel
The LCD panels of the separate type LUMA models use a robust AR-coated protection layer, which minimizes the chance of the panel being scratched during transportation. The AR coating additionally has two unique characteristics: it provides a high transmission rate of the internal light source to keep the picture as bright as possible, and it keeps reflection from ambient light to a minimum. As a result, when used in bright lighting conditions, high contrast is still maintained even in dark areas of the picture – a clear benefit over CRT monitors.

Operational Convenience

Advanced Marker Settings
The separate type LUMA Series can display various area markers, including a center marker, aspect markers, and a safety zone marker. The brightness of these markers can be selected from three different levels, white, gray, and dark gray. What's more, users can select either a black or gray matte to fill the outer area of the aspect markers.
These flexible marker controls, together with the choice of many different aspect markers, make the separate type LUMA Series an extremely convenient display device for a variety of shooting scenarios – from standard video acquisition to digital cinematography.

Marker Variation

	16:9 Mode	4:3 Mode
Aspect Marker	4:3, 15:9, 14:9, 13:9, 1.85:1, 2.35:1, 1.85:1 & 4:3	16:9
Center Marker	O	
Safety Area	80%, 85%, 88%, 90%, 93%	

Color Temperature/Gamma Selection
High/low color temperatures or user preset can be selected. A variety of gamma modes can also be selected.

Selectable Scan Size for Video Input and Aspect Ratio
The screen size can be selected between 5% over-scan and 0% scan modes. The aspect ratio can be switched between 16:9 and 4:3 according to the input signal.

Three-color Tally
All separate type LUMA panels, excluding the LMD-322W, come equipped with a tally lamp that can be lit up via a parallel remote connector. The status of the signal displayed on the monitor can be identified by the tally color – 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.

Parallel Remote Control
The MEU-WX2 can be controlled remotely via its parallel remote connector. There are 31 functions in the remote menu (such as the ability to switch input signals), of which seven can be allocated to the connector.

Stereo Audio Monitoring
The MEU-WX2 is equipped with stereo speakers (0.5 W + 0.5 W), which enable the user to monitor audio.

Protected Controls
The key-inhibit function helps prevent inadvertent operations from the control panel.

Convenient Installation

By nature, the use of LCD technology in the LUMA Series eliminates many concerns inherent in CRT monitors. These include convergence alignments, geometric distortion, flicker, and image burn-in. The LUMA Series is also completely resistant to magnetic fields, making them easier to install than CRT monitors.

Mounting Flexibility

Mountable in a 19-inch EIA Standard Rack (LMD-212/LMD-172W/LMD152)
The LMD-172W (7U high) and LMD-152 (7U) can be mounted in a 19-inch EIA standard rack with the optional MB-522A and MB-524 Mounting Bracket, respectively. The MEU-WX2 (1U high) can be mounted in a 19-inch EIA standard rack with the supplied mounting bracket. Although wider than the 19-inch rack, the LMD-212 (10U high) can also be rack-mounted using the optional MB-523 Mounting Bracket.

Mounting the LMD-322W
The large screen LMD-322W can also be mounted on the optional SU-559 Floor Stand or on a wall using the mounting hooks (330 x 330 mm pitch) on the rear of the display.

VESA Mounting
Complying with VESA standards, the LMD-232W, LMD-212, LMD-172W, and LMD-152W can easily be mounted (75 x 75 mm pitch) on a wall or a ceiling. Although large in screen size, these monitors are thin and lightweight because the signal-processing circuitry is contained in the separate MEU-WX2. In addition, the arm of the displays can be adjusted with more flexibility because only one cable is required to connect the display to the MEU-WX2.

Other Features

- H/V Delay Function
- ACC Off
- DC Operation (LMD-172W, LMD-152 via the MEU-WX2)*
- Setup Level for Analog Component and NTSC signal
- Sub Control on Contrast, Chroma, Phase, and Brightness
- Blue-Only Mode
- Monochrome Mode
- Auto Chroma/Phase Setup
- Power-saving Function (computer input only)
- DCC-2B Plug and Play (computer input only)

* SMF-600 Extension Cable cannot be used for DC operation.

One-piece Type

The one-piece type LUMA monitors offer the best quality-per-cost balance for SD signal monitoring. They are designed exclusively for SD video input and offer the most natural picture reproduction of such (525/60i and 625/50i) signals. With all signal processing and interfaces built into their slim panels, these monitors offer a variety of analog interfaces ranging from analog composite and Y/C to component video. In addition, SD-SDI input is offered on the higher-grade LMD-2020 and LMD-1420 models. These LUMA monitors are optimized to replace CRT monitors at the Sony PVM-L2 and PVM-L1 range.

LMD-2020

LMD-1420

LMD-2010

LMD-1410

Two Panel Sizes and Two Series

The one-piece type LUMA monitors are offered in two grades – the LMD-2010 and LMD-1410, which provide the basic features for professional picture monitoring, and the LMD-2020 and LMD-1420 for more advanced monitoring.

Model Types

	Panel Aspect Ratio	Panel Size*	Desktop Stand	Mounting Holes (mm)	
				19-inch Rack	VESA Mounting
LMD-2020	4:3	20.1-inch	Supplied	Optional MB-527	100 x 100 mm
LMD-1420	4:3	14-inch	Supplied	Optional MB-526	100 x 100 mm
LMD-2010	4:3	20.1-inch	Supplied	Optional MB-527	100 x 100 mm
LMD-1410	4:3	14-inch	Supplied	Optional MB-526	100 x 100 mm

* Viewable area measured diagonally.

Input Versatility

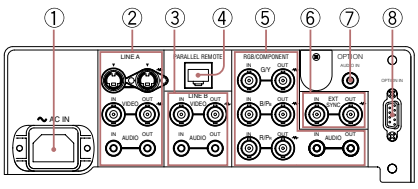
As standard, all one-piece type LUMA monitors come equipped with a full range of analog SD inputs including analog composite NTSC and PAL, Y/C (S-Video), and 525i/625i component and RGB.
The LMD-2020 and LMD-1420 add the further capability of SD-SDI input through the use of the optional BKM-320D SD-SDI input adaptor.

Signal Interfaces

	Input Signal			Interface			
	System	Total Line	Active Line	Composite	S-Video	Component/ RGB	SD-SDI The Optional BKM-320D
LMD-2020	480/60i*	525	483	O	O	O	O
LMD-1420	575/50i	625	575				
LMD-2010	480/60i*	525	483	O	O	O	—
LMD-1410	575/50i	625	575				

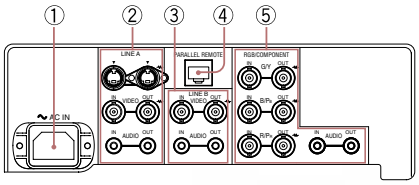
* Also accepts 59.94 Hz field rate.

Connector Panel for LMD-2020/LMD-1420



① AC In
② LINE A [composite (BNC), Y/C (4 pin mini-DIN), Audio (RCA pin)]
③ LINE B [composite (BNC), Audio (RCA pin)]
④ PARALLEL REMOTE (modular connector)
⑤ RGB/COMPONENT (BNC), Audio (RCA pin)
⑥ ENT SYNC In/Out (external sync) (BNC)
⑦ OPTION AUDIO In (RCA pin)
⑧ OPTION In connector for SD-SDI board (BKM-320D)

Connector Panel for LMD-2010/LMD-1410



① AC In
② LINE A [composite (BNC), Y/C (4 pin mini-DIN), Audio (RCA pin)]
③ LINE B [composite (BNC), Audio (RCA pin)]
④ PARALLEL REMOTE (modular connector)
⑤ RGB/COMPONENT (BNC), Audio (RCA pin)

High Picture Quality

Precise reproduction of interlace SD images
The one-piece type LUMA monitors incorporate VGA-type LCD panels with 640 x 480 pixel resolution for precise reproduction of interlace SD video images.
To display an interlace signal on a progressive LCD monitor, it must first be converted to a progressive signal (I/P conversion). In this process, the absent lines of the interlace field are interpolated using data from the previous field, or data from adjacent lines within the same field. A second process, called 'line scaling' is then executed to match the input signal's line count to the vertical resolution of the LCD display. However, since scaling involves duplication or removal of scanning lines, it can have a large effect on picture quality in image areas where I/P conversion is difficult to achieve. This effect can only be suppressed to a negligible level using highly sophisticated but costly I/P conversion technology.
To minimize this effect while maintaining best quality-per-cost value, the LMD-2020, LMD-1420, LMD-2010, and LMD-1410 use specially selected VGA (640 x 480 pixels) LCDs that allow moderate scaling to be used for the reproduction of 525 and 625 interlace signals. The result is extremely precise image reproduction of interlace SD signals, for any type of picture content – and without the use of expensive I/P conversion technology.

Excellent Brightness and Contrast
The one-piece type LUMA monitors provide high-brightness and high-contrast images by use of wide aperture LCD panels. In addition, the use of precisely manufactured RGB color filters allows these monitors to reproduce colors with stunning depth and saturation – creating highly natural images.

Wide Viewing Angle
The LCD panels used in the one-piece type LUMA monitors have a wide viewing angle of 170 degrees, both horizontally and vertically, with minimal reduction in picture contrast. This allows images to be viewed from various positions and angles.

AR (anti-reflection) Coated Protection Panel (LMD-2020/LMD-1420 only)
The LCD panels of the one-piece type LUMA models use a robust AR-coated protection layer, which minimizes the chance of the panel being scratched during transportation. The AR coating additionally has two unique characteristics: it provides a high transmission rate of the internal light source to keep the picture as bright as possible, and it keeps reflection from ambient light to a minimum. As a result, when used in bright lighting conditions, high contrast is still maintained even in dark areas of the picture – a clear benefit over CRT monitors.

Operational Convenience

4:3/16:9 Switchable Display
The scan aspect ratio can be switched between 4:3 and 16:9.

Selectable Scan Size
The scan size can be selected between 5% over-scan and -3% underscan modes.

Advanced Marker Settings (LMD-2020/LMD-1420 only)
The LMD-2020 and LMD-1420 can display various area markers, including a center marker, aspect markers, and a safety zone marker. The brightness of these markers can be selected from three different levels, white, gray, and dark gray. What's more, users can select either a black or gray matte to fill the outer area of the aspect markers. These flexible marker controls, together with the choice of many different aspect markers, make these monitors an extremely convenient display device for a variety of shooting scenarios.

	16:9 Mode	4:3 Mode
Aspect Marker	4:3, 15:9, 14:9, 13:9	16:9
Center Marker	O	
Safety Area	80%, 85%, 88%, 90%, 93%	

Color Temperature/Gamma Selection
High/low color temperatures or user preset can be selected. A variety of gamma modes can also be selected.

Three-color Tally (LMD-2020/LMD-1420 only)
The LMD-2020 and LMD-1420 come equipped with a tally lamp that can be lit up via a parallel remote connector. The status of the signal displayed on the monitor can be identified by the tally color – red, green, or amber.

Parallel Remote Control
The one-piece type LUMA monitors can be controlled remotely via a parallel remote connector. There are 25 functions in the remote menu (such as the ability to switch input signals), of which seven can be allocated to the connector.

Monaural Audio Monitoring
All one-piece type LUMA monitors are equipped with a speaker (0.5 W), which enables the user to monitor audio.

Protected Controls
The key-inhibit function helps prevent inadvertent operations from the control panel.

Convenient Installation

The one-piece type LUMA models, when compared to their PVM monitor equivalents, are 40% slimmer, 30-50 % lighter, and consume much less power. And, like all other LUMA monitors, they eliminate the many concerns inherent in CRT monitors, including convergence misalignments, geometric distortion, flicker, image burn-in, and the effect of magnetic fields.

Mounting Flexibility

Mountable in a 19-Inch EIA Standard Rack
All one-piece type LUMA monitors can be mounted in a 19-inch EIA standard rack using optional mounting brackets. The 9U-high LMD-2020 and LMD-2010 use the MB-527 Mounting Brackets and the 7U-high LMD-1420 and LMD-1410 use the MB-526 Mounting Brackets.

VESA Mounting
Complying with VESA standards, the one-piece type LUMA monitors can easily be mounted (100 x 100 mm pitch) on a wall or a ceiling.

Other Features

- Setup Level for Analog Component and NTSC signal
- Blue-Only Mode (LMD-2020/LMD-1420 only)
- 4:3 Zoom
- External Sync In (LMD-2020/LMD-1420 only)

Handheld Type

The handheld type LUMA monitors bring a new level of monitoring convenience into the field and the studio. Three models are available – the LMD-9050 offering digital HD/SD multi-format capabilities, the LMD-9030 focused on SD-SDI video monitoring, and the LMD-9020 exclusively for analog video monitoring. Using a common chassis, all models can be AC, DC, or battery driven so that they can be hand-held, situated on a desk, or mounted in standard racks. Together with their high-grade LCD panels, this series of monitors offers a range of rear panel interfaces from analog SD input to digital HD-SDI.

LMD-9050

LMD-9030

LMD-9020

Panel Type

	Panel Aspect Ratio	Panel Size*	Acceptable Format
LMD-9050	4:3	8.4-inch	Analog, HD-SDI/SD-SDI
LMD-9030	4:3	8.4-inch	Analog, SD-SDI
LMD-9020	4:3	8.4-inch	Analog

* Viewable area measured diagonally.

Input Versatility

To keep their units simple and clean, the handheld type LUMA monitors provide all inputs built-in as standard, instead of using optional input modules. For typical SD video monitoring, all three monitors offer interfaces for analog composite (NTSC/PAL), analog component/RGB (525/60i and 625/50i) and analog Y/C (S-Video). The LMD-9030 additionally offers SD-SDI input capability. The top-of-the-line LMD-9050 further provides a variety of digital progressive SD and HD formats through its HD-SDI interface*. These include 480/60P and 576/50P, and high-definition 1080/60i, 1080/50i, 720/50P, 720/60P as well as 1080/24PsF.

* The SD-SDI and HD-SDI inputs share the same BNC connectors, which offer automatic signal-type detection.

Input Signals

Input Signal				Standard Interface			
System	Total Lines	Active Line	Aspect Ratio	Composite Y/C (x 1)	RGB Component (x 1)	SDI (x2) SD-SDI	SDI (x2) HD-SDI
Model				LMD-9050 LMD-9030 LMD-9020	LMD-9050 LMD-9030 LMD-9020	LMD-9050 LMD-9030	LMD-9050
575/50i	625	575	16:9/4:3	O	O	O	—
480/60i*	525	483	16:9/4:3	O	O	O	—
480/60P	525	483	16:9/4:3	—	O	—	—
576/50P	625	576	16:9/4:3	—	O	—	—
1080/24PsF	1125	1080	16:9	—	O	—	O
1080/50i	1125	1080	16:9	—	O	—	O
1035/60i*	1125	1035	16:9	—	O	—	O
1080/60i*	1125	1080	16:9	—	O	—	O
720/50P	750	1080	16:9	—	O	—	O
720/60P	750	720	16:9	—	O	—	O

* Also accepts 59.94 Hz field rate.

High Picture Quality

Excellent Brightness and Contrast

The handheld type LUMA monitors provide high-brightness and high-contrast images by using wide aperture LCD panels. In addition, the use of precisely manufactured RGB color filters allows these monitors to reproduce colors with stunning depth and saturation – creating highly natural images.

Wide Viewing Angle
The LCD panels used in the handheld type LUMA monitors have a wide viewing angle of 170 degrees, both horizontally and vertically, with minimal reduction in picture contrast.

AR (anti-reflection) Coated Protection Panel
The handheld type LUMA monitors use robust AR-coated protection layers, which minimize the chance of their panels being scratched during transportation – an extremely important criteria for use in the field or in any mobile application. The AR coating additionally has two unique characteristics: it provides a high transmission rate of the internal light source to keep the picture as bright as possible, and it keeps reflection from ambient light to a minimum. As a result, when used in bright lighting conditions, high contrast is still maintained even in dark areas of the picture.

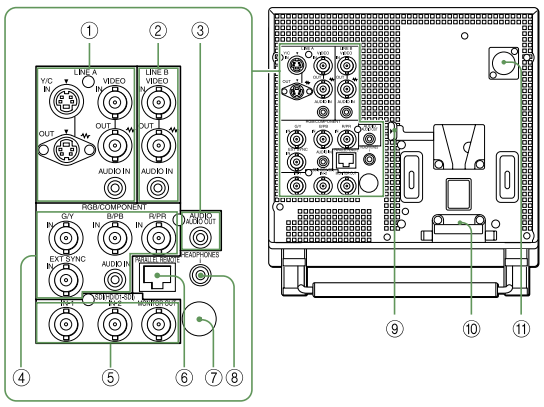
Operational Convenience

ENG Kit VF-509
The handheld type LUMA monitors are a strategic choice for use in ENG and EFP field operations. When compared to CRT displays, the picture contrast of these monitors is affected less by ambient light, allowing clear images to be viewed even under strong sunlight. For further protection, the optional VF-509 ENG kit provides a Viewing Hood, Carrying Handle, and Connector Protector.

4:3/16:9 Switchable Display
The scan aspect ratio can be switched between 4:3 and 16:9.

Selectable Scan Size
The scan size can be selected between 5% over-scan, 0%, and -3% underscan modes.

Connector Panel for LMD-9050, LMD-9030 and LMD-9020



① Line A
- Y/C In/Out (4-pin mini-DIN x 2)
- Composite In/Out (BNC x 2)
- Audio in (mini jack x 2)

② Line B
- Composite In/Out (BNC x 2)
- Audio In (mini jack)

③ Audio Out (mini jack)

④ RGB/Component
- G/Y, B/P_B, R/P_R In (BNC x 3)
- EXT Sync (BNC)
- Audio In (mini jack)

⑤ SDI In/Out
(LMD-9050 : HD-SDI/SD-SDI In/Out)
(LMD-9030 : SD-SDI In/Out)
- SDI-In (BNC x 2)
- Monitor Out (BNC)

⑥ Parallel Remote (modular 8-pin)

⑦ Service Terminal

⑧ Headphones Jack

⑨ AC Adaptor Eject

⑩ AC Adaptor Attachment place

⑪ DC 12V In (XLR-type 4-pin)

Advanced Marker Settings
The handheld type LUMA monitors can display various area markers, including a center marker and aspect markers. The brightness of these markers can be selected from three different levels, white, gray, and dark gray, and their widths can be selected from FINE, STANDARD, and BOLD. Users can also select either a black or gray matte to fill the outer area of the aspect markers. These flexible marker controls, together with the choice of many different aspect markers, make the handheld type LUMA monitors extremely convenient for a variety of shooting scenarios.

	16:9 Mode	4:3 Mode
Aspect Marker	4:3, 15:9, 14:9, 13:9, 1.85:1, 2.35:1, 1.85:1& 4:3	16:9
Center Marker	O	

Color Temperature/Gamma Selection
High/low color temperatures or user preset can be selected. A variety of gamma modes can also be selected.

Three-color Tally
All handheld type LUMA monitors come equipped with a tally lamp that can be lit up via a parallel remote connector. The status of the signal displayed on the monitor can be identified by the tally color – red, green, or amber.

Parallel Remote Control
The handheld type LUMA monitors can be controlled remotely via their parallel remote connectors. There are 27 functions in the remote menu (such as the ability to switch input signals), of which seven can be allocated to the connector.

Monaural Audio Monitoring
All handheld type LUMA monitors are equipped with a speaker (0.5 W), which enables the user to monitor audio.

Protected Controls
The key-inhibit function helps prevent inadvertent operations from the control panel.

Convenient Installation

As with all other LUMA monitors, handheld type LUMA monitors eliminate the many concerns inherent in CRT monitors, including convergence misalignments, geometric distortion, flicker, image burn-in, and the effect of magnetic fields.

Mounting Flexibility
The handheld type LUMA monitors are 5U high and half-rack wide. Using the optional MB-525 Mounting Bracket with a nine-step tilt capability, two units can be installed side-by-side in a 19-inch EIA standard rack.

Other Features

- Setup Level for Analog Component and NTSC signal
- Sub Control on Contrast, Chroma, Phase, and Brightness
- Blue-only mode
- Power-saving Function
- Monochrome mode
- 4:3 Zoom

Multi-display Type

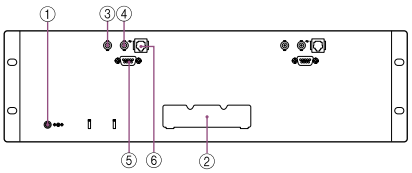
The multi-display type LUMA monitors integrate high-quality LCD panels into an extremely thin and lightweight, 19-inch rack-mountable chassis. They can be AC or DC powered. These monitors are particularly handy for viewing multiple SD signal sources in space-confined environments such as in OB vehicles, machine rooms, and desktops – or any general application where multiple pictures must be viewed.

LMD-7220W

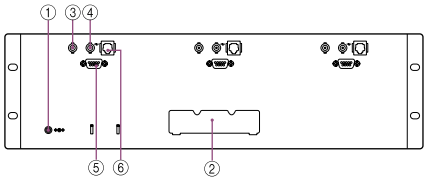
LMD-5320

LMD-4420

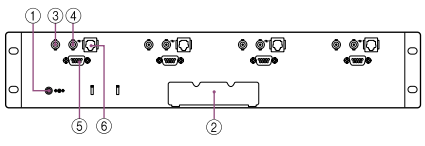
LMD-7220W Connector Panel



LMD-5320 Connector Panel



LMD-4420 Connector Panel



Panel Types

	Panel Aspect Ratio	Number of Displays	Display Size*1
LMD-4420	4:3	4	4-inch
LMD-5320	4:3	3	5.6-inch
LMD-7220W	16:9*2	2	7-inch

*1 Viewable area measured diagonally.

*2 HD signals must be externally down-converted for display.

Input Capability

All multi-display type LUMA monitors accept either composite or SDI signals. Each LCD panel is equipped with a composite connector as standard, while SDI input can be added simply by installing the optional BKM-320D*.

* One BKM-320D is required per screen.

High Picture Quality

Although small in size, the multi-display type LUMA monitors incorporate high-grade LCD panels with high brightness and high contrast. These LCD panels also offer a wide viewing angle, both vertically and horizontally.

Operational Convenience

Selectable Aspect Ratio (LMD-7220W only)

The scan aspect ratio of the displays on the LMD-7220W can be switched between 16:9 and 4:3 by pressing a button on the front panel.

Three-color Tally

The LMD-7220W, LMD-5320, and LMD-4420 come equipped with a tally lamp that can be lit up via a parallel remote connector. The status of the signal displayed on the monitor can be identified by the tally color – red, green, or amber.

Parallel Remote Control

The multi-display type LUMA monitors can be controlled remotely via their parallel remote connector. There are 5 functions (LMD-7220W)/4 functions (LMD-5320/LMD-4420) in the remote menu (such as the ability to switch input signals), which can be allocated to the connector.

Low Power Consumption

Compared to conventional CRT multiple monitors, multi-display type LUMA monitors offer drastic reductions in power consumption and room-cooling requirements. This is a huge bonus in applications where power consumption is critical, such as OB van installations.

Slim and Light

Thanks to their thin and lightweight designs, the multi-display type LUMA monitors are ideal for installations where space is limited.

Convenient Installation

All multi-display type LUMA monitors are mountable on a 19-inch EIA standard rack. For viewing convenience, the LMD-7220W and LMD-5320 offer a 5-step tilt mechanism, and the LMD-4420 offers a 3-step tilt mechanism.
And like all other LUMA monitors, they eliminate the many concerns inherent to CRT monitors, including convergence misalignments, geometric distortion, flicker, image burn-in, and the effect of magnetic fields.

Optional Accessories

- **BKM-220D**
  SD-SDI 4:2:2 Input Adaptor
  (for MEU-WX2)

- **BKM-243HS**
  HD-SDI/SD-SDI Input Adaptor
  (for MEU-WX2)

- **BKM-255DV**
  DV Input Adaptor
  (for MEU-WX2)

- **BKM-320D**
  SD-SDI Input Adaptor
  (for LMD-2020, LMD-1420, LMD-7220W, LMD-5320, and LMD-4420)

- **SMF-600**
  Display IF Cable (10 m)
  (for MEU-WX2)

- **SU-558**
  Monitor Stand
  (for LMD-232W, LMD-212, LMD-172W and LMD-152)

- **SU-559**
  Monitor Stand
  (for LMD-322W)

- **MB-522A**
  Mounting Bracket
  (for LMD-172W)

- **MB-523**
  Mounting Bracket
  (for LMD-212)

- **MB-524**
  Mounting Bracket
  (for LMD-152)

- **MB-526**
  Mounting Bracket
  (for LMD-1420, LMD-1410)

- **MB-527**
  Mounting Bracket
  (for LMD-2020, LMD-2010)

- **MB-525**
  Mounting Bracket
  (for LMD-9050, LMD-9030 and LMD-9020)

- **MB-528**
  Mounting Panel
  (for LMD-9050, LMD-9030 and LMD-9020)

- **VF-509**
  ENG Kit (Viewing Hood, Carrying Handle and Connector Protector) (for LMD-9050, LMD-9030 and LMD-9020)

- **BP-GL95/BP-GL65**
  Rechargeable Lithium-ion Battery Pack

- **BP-L60S**
  Lithium-ion Battery Pack

- **BC-L70**
  Lithium-ion Battery Charger

Specifications

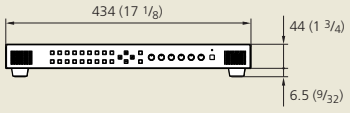
Multiformat Engine Unit

MEU-WX2

Input/Output			
Input	Connector/Slot		
	G/Y/Composite	B/PB/S-Y	R/PR/S-C
	BNC, Loop through, automatic 75 Ω termination (x1)		
Composite	1.0 Vp-p ±3 dB, sync negative		
Y/C		1.0 Vp-p ±3 dB, sync negative	0.286 Vp-p ±3 dB (NTSC) 0.3 Vp-p ±3 dB (PAL)
Component	0.7 Vp-p ±3 dB		
RGB	0.7 Vp-p ±3 dB Sync on G 0.3Vp-p	0.7 Vp-p ±3 dB	0.7 Vp-p ±3 dB
Audio in (for Video signals)	Stereo mini jack (x1) -5 dBu, more than 47 kΩ		
OPTION A-1	Option Slot (x1)		
OPTION A-2			
OPTION B-1	Option Slot (x1)		
OPTION B-2			
Ext. sync	BNC, Loop-through, automatic 75 Ω termination 0.3 ~ 4 Vp-p ±3 dB, sync negative, usable tri-level sync signal 0.6 Vp-p ±3 dB		
Computer	HD D-sub 15-pin (female) (x1), 0.7 Vp-p, 75 Ω, positive (R,G,B)		
Audio in (for computer signals)	Stereo mini jack (x1) -5 dBu, more than 47 kΩ		
DC IN*	XLR 4-pin (male) (x1), 12 V, output impedance 0.05 Ω or less		
Output			
Audio monitor out	Stereo mini jack (x1)		
Speaker Out	Stereo (0.5 W + 0.5 W)		
PARALLEL Remote	Modular 8-pin (Assignable)		
Display Signal Out	Exclusive connector (x1)		
Display DC Out**	XLR 4-pin (female) (x1), DC 16.5 V (when AC power is supplied) DC 12 V (when DC power is supplied)		
Video			
Horizontal Scanning Frequency	15 to 45 kHz		
Frame Scanning Frequency	48 to 60 Hz		
Computer			
Dot clock	110 MHz		
Horizontal Scanning Frequency	28 to 69 kHz		
Vertical Scanning Frequency (frame)	60 to 85 Hz		
Plug & Play	DDC-2B		
General			
Power consumption	Maximum: Approx. 92 W (with 2 x BKM-243HS and LMD-230W) Standard: Approx. 26 W (without optional input adaptor)		
Power requirement	AC 100 to 240 V±10%, 50/60 Hz, DC 12 V (LMD-170W only)		
Operating Temperature	0 to 35 °C (32 to 95 °F)		
Operating Humidity	30 to 85% (no codensation)		
Storage and Trans. Temperature	-10 to 40 °C (14 to 104 °F)		
Storage & Transport Humidity	0 to 90%		
Operating/Storage/Trans. Pressure	700 to 1060 hPa		
Dimensions (W x H x D) (excluding protrusions)	434 x 44 x 305 mm (17 1/8 x 1 3/4 x 12 1/8 inches)		
Mass	Approx. 4.5 Kg (9 lb 15 oz)***		
Supplied Accessories	AC cord, AC plug holder, Mounting bracket, Operating instructions, CD-ROM, Warranty card		

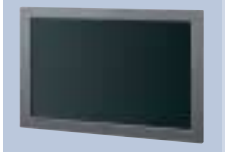
Dimensions

MEU-WX2



Unit: mm (inches)

Separate Type
(Studio Type)



LMD-322W

LMD-232W
with the optional SU-558 monitor stand

LMD-212
with the optional SU-558 monitor stand

LMD-172W
with the optional SU-558 monitor stand

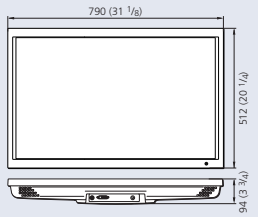
LMD-152
with the optional SU-558 monitor stand

Picture Performance										
Type		a-Si TFT Active Matrix LCD with a multi-layer AR-coated protection panel								
Resolution		1280 x 768 dots				1024 x 768 dots		1280 x 768 dots		1024 x 768 dots
Pixel efficiency		99.99%								
Dot pitch		0.537 x 0.537 mm		0.3915 x 0.3915 mm		0.420 x 0.420 mm		0.284 x 0.284 mm		0.297 x 0.297 mm
Picture Size (H x W) (Diagonal)		Approx. 687 x 412 mm (27 1/8 x 16 1/5 inches) 802 mm (31 5/8 inches)		Approx. 501 x 301 mm (19 3/4 x 11 7/8 inches) 584 mm (23 inches)		Approx. 430 x 323 mm (17 x 12 3/4 inches) 538 mm (21 1/4 inches)		Approx. 364 x 218 mm (14 3/8 x 8 5/8 inches) 424 mm (16 3/4 inches)		Approx. 304 x 228 mm (12 x 9 inches) 380 mm (15 inches)
Aspect		15:9				4:3		15:9		4:3
Colors		16,770,000 colors								
Viewing Angle		85°/85°/85°/85° (typical) (up/down/left/right contrast>10:1)								
Input										
Display Input connector										
Digital input		DVI-D								
Dot clock		25.175 MHz	68.250 MHz	25.175 MHz	68.250 MHz	25.175 MHz	65.000 MHz	25.175 MHz	68.250 MHz	25.175 MHz	65.000 MHz
Scanning Frequency	Horizontal	31.469 kHz	47.396 kHz	31.469 kHz	47.396 kHz	31.469 kHz	48.363 kHz	31.469 kHz	47.396 kHz	31.469 kHz	48.363 kHz
	Vertical	59.940 Hz	59.995 Hz	59.940 Hz	59.995 Hz	59.940 Hz	60.004 Hz	59.941 Hz	59.995 Hz	59.941 Hz	60.004 Hz
General										
Power Consumption		Approx. 120 W		Approx. 65 W		Approx. 84 W		Approx. 53 W		Approx. 29 W
Power requirement		AC 100 to 240 V ±10%, 50/60 Hz		DC 16.5 V		DC 16.5 V		DC 16.5 V/12V		DC 16.5 V/12 V
Operating Temperature		0 to 35 °C (32 to 95 °F)								
Operating Humidity		30 to 80% (no condensation)								
Storage & Transport Temperature		-10 to 40 °C (14 to 104 °F)								
Storage & Transport Humidity		0 to 80%								
Operating/Storage/Trans. Pressure		700 to 1060 hPa								
Dimensions (W x H x D)		790 x 512 x 94 mm * (31 1/8 x 20 1/4 x 3 3/4 inches) *		563 x 372 x 78 mm * (22 1/4 x 14 3/4 x 3 1/8 inches) *		515 x 409 x 81 mm * (20 3/8 x 16 1/8 x 3 1/4 inches) *		441 x 294 x 76 mm * (17 3/8 x 11 5/8 x 3 inches) *		379 x 297x 70 mm * (15 x 11 5/8 x 2 7/8 inches) *
Mass		Approx. 17.6 Kg (Approx. 38 lb 13 oz)** Approx. 49.6 Kg (Approx. 108 lb 22 oz)***		Approx. 6.4 Kg (Approx. 14 lb 2 oz)** Approx. 11.6 Kg (Approx. 25 lb 9 oz)***		Approx.6.7 Kg (Approx. 15 lb 7 oz)** Approx. 11.9 Kg (Approx. 26 lb 4 oz)***		Approx. 4.8 Kg (Approx. 10 lb 9 oz)** Approx. 10.0 Kg (Approx. 21 lb 1 oz)***		Approx. 4.0 Kg (Approx. 8 lb 13oz)** Approx. 9.2 Kg (Approx. 20 lb 4oz)***
Supplied Accessories		AC cord, AC plug holder, Display interface cable, Warranty card, Operating instructions		Display interface cable, Warranty card, Operating instructions						

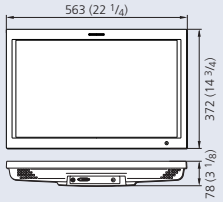
* without the optional monitor stand and not including the projection parts ** without the optional SU-558 monitor stand, SU-559 for LMD-322W *** with the optional SU-558 monitor stand, SU-559 for LMD-322W

Dimensions

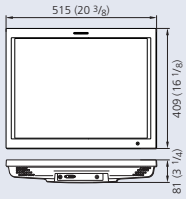
LMD-322W



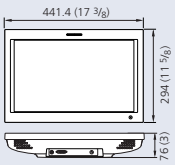
LMD-232W



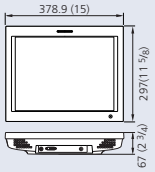
LMD-212



LMD-172W



LMD-152



Unit: mm (inches)

Specifications

One-piece Type

LMD-2020

LMD-1420

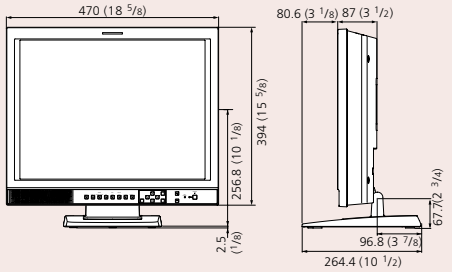
LMD-2010

LMD-1410

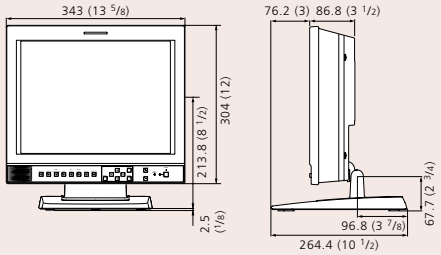
Picture Performance					
Type		A-Si TFT Active Matrix LCD with a multi-layer AR-coated protection panel		A-Si TFT Active Matrix LCD	
ResolutionResolution		640 x 480 dots			
Pixel efficiency		99.99%			
Dot pitch		0.213 x 0.638 mm	0.443 x 0.443 mm	0.213 x 0.638 mm	0.443 x 0.443 mm
Picture Size (H x W) (Viewable area) (Diagonal)		Approx. 408 x 306mm (Approx. 16 1/8 x 12 1/8 inches) 510 mm (20.1-inch)	Approx. 283 x 212 mm (Approx. 11 1/4 x 8 3/8 inches) 354 mm (14-inch)	Approx. 408 x 306mm (Approx. 16 1/8 x 12 1/8 inches) 510 mm (20.1-inch)	Approx. 283 x 212 mm (Approx. 11 1/4 x 8 3/8 inches) 354 mm (14-inch)
Aspect		4:3			
Colors		Approx. 16,700,000 colors	Approx. 16,200,000 colors	Approx. 16,700,000 colors	Approx. 16,200,000 colors
Viewing Angle		85°/85°/85°/85° (typical) (up/down/left/right contrast>10:1)			
Input					
Line A	Composite	BNC x 1, 1.0 Vp-p ±3dB 75 Ω termination, sync 0.3 Vp-p negative			
	Y/C	DIN 4 pin x 1 Y: 1. 0Vp-p ±3 dB, 75 Ω termination C: 0.286 Vp-p ±3 dB (NTSC), 0.3 Vp-p ±3 dB (PAL), 75 Ω termination, sync 0.3 Vp-p negative			
	Audio in	RCA pin x 1, -5 dBu 47 Ω or higher			
Line B	Composite	BNC x 1, 1.0 Vp-p ±3dB 75 Ω termination, sync 0.3 Vp-p negative			
	Audio in	RCA pin x 1, -5 dBu 47 Ω or higher			
RGB/Component					
	RGB/Component	BNC x 3, 0.7 Vp-p ±3 dB 75 Ω termination, Sync on Green 0. 3Vp-p, negative			
	Audio in	RCA pin x 1, -5 dBu 47 Ω or higher			
Option	D1-SDI	D-sub 9-pin x 1		–	
	Audio in	RCA pin x 1 -5 dBu 47 Ω or higher		–	
Exernal Sync		BNC x 1		–	
Remote	Parallel remote	Moduler 8-pin (Assignable)			
Output					
Line A	Composite	BNC x 1, Loop-through, with 75 Ω automatic termination			
	Y/C	DIN 4 pin x 1, Loop-through, with 75 Ω automatic termination			
	Audio out	RCA pin x 1			
Line B	Composite	BNC x 1, Loop-through, with 75 Ω automatic termination			
	Audio out	RCA pin x 1, Loop-through			
RGB/Component					
	RGB/Component	BNC x 3, Loop-through, with 75 Ω automatic termination			
	Audio out	RCA pin x 1, Loop-through			
Exernal Sync		BNC x 1 Loop-through with 75 Ω automatic termination		–	
General					
Power Consumption		Approx. 87 W	Approx. 51 W	Approx. 84 W	Approx. 48 W
Power requirement		AC 100 to 240 V, 50/60 Hz			
Operating Temperature		0 to 35 °C			
Operating Humidity		30 to 85% (No condensation)			
Storage & Transport Temperature		-10 to 40 °C			
Storage & Transport Humidity		0 to 90 %			
Operating/Storage/Trans. Pressure		700 to 1060 hPa			
Dimensions (W x H x D)					
	Dimension	Approx. 470 x 441 x 264 mm (18 5/8 x 17 3/8 x 10 1/2 inch)	Approx. 343 x 354 x 264 mm (13 5/8 x 14 x 10 1/2 inch)	Approx. 470 x 441 x 264 mm (18 5/8 x 17 3/8 x 10 1/2 inch)	Approx. 343 x 354 x 264 mm (13 5/8 x 14 x 10 1/2 inch)
	Dimension without stand	Approx. 470 x 394 x 87mm (18 5/8 x 15 5/8 x 3 1/2 inch)	Approx. 343 x 304 x 87mm (13 5/8 x 12 x 3 1/2 inch)	Approx. 470 x 394 x 87mm (18 5/8 x 15 5/8 x 3 1/2 inch)	Approx. 343 x 304 x 87mm (13 5/8 x 123 1/2 inch)
Mass	Panel & Stand	Approx. 9.2 kg (20 lb 5 oz)	Approx. 6.8 kg (14 lb 16 oz)	Approx. 8.7 Kg (19 lb 3 oz)	Approx. 6.5 Kg (14 lb 5 oz)
	Panel only	Approx. 7.5 kg (16 lb 9 oz)	Approx. 5.1 kg (11 lb 4 oz)	Approx. 7.0 kg (15 lb 7 oz)	Approx. 4.8 kg (10 lb 9 oz)
Supplied Accessories		AC power code, AC plug holder, Operating Instructions, CD-ROM, Using the CD-ROM Manual, Warranty card			

Dimensions

LMD-2020
LMD-2010



LMD-1420
LMD-1410



Unit: mm (inches)

Handheld Type

LMD-9050

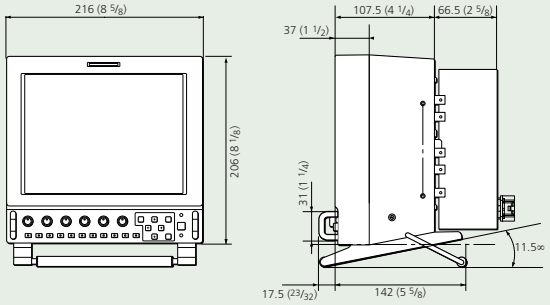
LMD-9030

LMD-9020

Picture Performance				
Type		a-Si TFT Active Matrix LCD with a multi-layer AR-coated protection panel		
Resolution		1024 x 768 dots	640 x 680 dots	
Pixel efficiency		99.99%		
Picture Size (H x W), (Viewable area) (Diagonal)		Approx. 170.5 x 127.9 mm, (Approx. 6 3/4 x 5 1/8 inches) 213 mm (8.4-inch)	Approx. 170.9 x 128.2 mm, (Approx. 6 3/4 x 5 1/8 inches) 213.6 mm (8.4-inch)	
Aspect		4:3		
Colors		16,770,000 colors		
Viewing Angle		85°/85°/85°/85° (typical) (up/down/left/right contrast>10:1)		
Input				
Line A	Composite	BNC x 1, 1.0 Vp-p +3dB, -6 dB sync negative		
	Y/C	4-pin mini-DIN x 1 Y : 1.0 Vp-p + 3dB, -6 dB sync negative C : 0.286 Vp-p ±3 dB (NTSC), 0.3 Vp-p ±3 dB (PAL)		
	Audio	Mini jack x 1, -5 dBu 47 kΩ or higher		
Line B	Composite	BNC x 1, 1.0 Vp-p +3 dB, -6 dB sync negative		
	Audio	Mini jack x 1, -5 dBu 47 kΩ or higher		
RGB/Component	RGB/Component	BNC x 3, RGB input : 0.7 Vp-p +3 dB, -6 dB (Sync On Green, 0.3 Vp-p sync negative) Component input : 0.7 Vp-p +3 dB, -6 dB (75% chrominance standard color bar signal)		
	Audio	Mini jack x 1, -5 dBu 47 kΩ or higher		
Ext.sync		BNC x 1, 0.3 to 4 Vp-p ± bipolarity ternary or negative polarity binary		
SDI		HD-SDI/D1-SDI: BNC x 2 (HD and D1 are automatically detected) Sampling frequency D1-SDI:Y/R-Y/B-Y 13.5 MHz, HD-SDI:Y/PB/PR 74.25 MHz Quantization 10 bits/sample	D1-SDI: BNC x 2, Sampling frequency :Y/R-Y/B-Y 13.5 MHz, Quantization 10 bits/sample	—
Remote	Parallel remote	Modular connector 8-pin x 1(Assignable)		
Output				
Line A	Composite	BNC x 1, Loop-through, with 75 Ω automatic termination		
	Y/C	4-pin mini-DIN x 1, Loop-through, with 75 Ω automatic termination		
Line B	Composite	BNC x 1, Loop-through, with 75 Ω automatic termination		
Monitor output		HD-SDI/D1-SDI: BNC x 1, Output signal : amplitude 800 mVp-p ±10%, Output impedance : 75 Ω umbalanced	D1-SDI: BNC x 1, Output signal amplitude : 800 mVp-p ±10%, Output impedance : 75 Ω umbalanced	—
Audio output		Mini jack x 1, Loop-through		
Headphones output		Mini jack x 1(Monaural), Loop-through		
Speaker output		0.5 W (Monaural)		
General				
Power Consumption		Monitor : Approx. 24 W, With AC Adaptor : Approx. 28 W	Approx. 16 W, With AC Adaptor : Approx. 22 W	Approx. 15 W, With AC Adaptor : Approx. 20 W
Power requirement		AC 100 to 240 V, 50/60 Hz, 0.82 A, DC 12 V 2.2 A, Rechargeable Battery Pack	AC 100 to 240 V, 50/60 Hz, 0.82 to 0.42 A, DC 12 V 1.6 A, Rechargeable Battery Pack	AC 100 to 240 V, 50/60 Hz, 0.82 to 0.42 A, DC 12 V 1.5 A, Rechargeable Battery Pack
Operating Temparature		0 to 40 °C		
Operating Humidity		30 to 85 % (No condensation)		
Operating/Storage/Trans. Pressure		700 to 1060 hPa		
Storage & Transport Temperature		-20 to 60 °C		
Storage & Transport Humidity		0 to 90 %		
Dimensions (W x H x D)		Approx. 216 x 206 x 136.1 mm (8 5/8 x 8 1/8 x 5 3/8 inches)		
	Dimension with the supplied stand	Approx. 216 x 230 x 159.5 mm (8 5/8 x 9 1/8 x 6 3/8 inches)		
	Dimension with the supplied stand and AC adaptor	Approx. 216 x 230 x 210 mm (8 5/8 x 9 1/8 x 8 3/8 inches)		
Mass		Approx. 3.0 Kg (6 lb 10 oz)	Approx. 2.9 Kg (6 lb 6 oz)	Approx. 2.8 Kg (6 lb 3 oz)
	With the supplied stand	Approx. 3.2 Kg (7 lb 1 oz)	Approx. 3.1 Kg (6 lb 13 oz)	Approx. 3.0 Kg (6 lb 10 oz)
	With the supplied stand and AC adaptor	Approx. 3.9 Kg (8 lb 10 oz)	Approx. 3.8 Kg (8 lb 6 oz)	Approx. 3.7 Kg (8 lb 3 oz)
Supplied Accessories		AC adaptor (1), AC Cord (1), AC plug holder (1), Operating instructions (1), CD-ROM (1), Warranty card (1), Using the CD-ROM Manual (1)		

Handheld Type

LMD-9050
LMD-9030
LMD-9020



Unit: mm (inches)

Specifications

Multi-display Type

LMD-7220W

LMD-5320

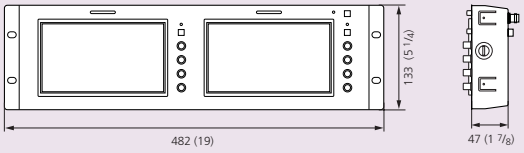
LMD-4420

Picture Performance			
Type	a-Si TFT Active Matrix		
Resolution	480 x 234 dots	320 x 234 dots	480 x 234 dots
Pixel efficiency	99.99%		
Picture Size (H x W) (Viewable area) (Diagonal)	Approx. 154.1 x 86.6 mm (Approx. 6 1/8 x 3 1/2 inches) 7 inches (176.7 mm)	Approx. 113.3 x 84.7 mm (Approx. 4 1/2 x 3 3/8 inches) 5 5/8 inches (141.5 mm)	Approx. 82.1 x 61.8 mm (Approx. 3 1/4 x 2 1/2 inches) 4 1/8 ihches (102.8mm)s
Aspect	16:9	4:3	
Colors	Full color		
Viewing Angle	40°/65°/65°/65° (typical) (up/down/left/right contrast>10:1)	50°/30°/50°/50° (typical) (up/down/left/right contrast>10:1)	
Input/Output			
Composite			
Input	BNC (x 2), 1.0 Vp-p ±2 dB, sync negative	BNC (x 3), 1.0 Vp-p ±2 dB, sync negative	BNC (x 4), 1.0 Vp-p ±2 dB, sync negative
Output	BNC (x2), Loop through, Automatic 75 Ω termination	BNC (x 3), Loop through, Automatic 75 Ω termination	BNC (x 4), Loop through, Automatic 75 Ω termination
OPTION IN	D-sub 9pin (x2)	D-sub 9pin (x3)	D-sub 9pin (x4)
Remote			
Parallel	Modular 8 pin (x2)	Modular 8 pin (x3)	Modular 8 pin (x4)
General			
Power Consumption	Maximum: Approx. 26 W (with 2 x BKM-320D) Standard: Approx. 23 W (without optional input adaptor)	Maximum: Approx. 28 W (with 3 x BKM-320D) Standard: Approx. 22 W (without optional input adaptor)	Maximum: Approx. 26 W (with 4 x BKM-320D) Standard: Approx. 18 W (without optional input adaptor)
Power requirement	12V DC (with the supplied AC power adaptor), AC power adaptor:AC 100 to 240 V, 50/60 Hz		
Peak inrush current	(1) Power on, current probe method:57A (230V)	(1) Power on, current probe method:55A (230V)	(1) Power on, current probe method:53A (230V)
	(2) Hot switching inrush current, measured in accordance with European standard EN55103-1:8A (230V)		
Operating Temperature	0 to 35°C (32 to 95°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 %		
Operating / Storage / Trans. Pressure	700 hPa to 1060 hPa		
Dimensions (W x H x D)	482 x 133 x 47 mm (19 x 5 1/4 x 1 7/8 inches)*	482 x 133 x 47 mm (19 x 5 1/4 x 1 7/8 inches)*	482 x 88.1 x 47 mm (19 x 3 1/2 x 1 7/8 inches)*
Dimension including AC adaptor and BKM-320D	482 x 133 x 116 mm (19 x 5 1/4 x 4 5/8 inches)	482 x 133 x 116 mm (19 x 5 1/4 x 4 5/8 inches)	482 x 88.1 x 116 mm (19 x 3 1/2 x 4 5/8 inches)
Mass	Approx. 2.3Kg (Approx. 5 lb 1 oz)**	Approx. 2.3Kg (Approx. 5 lb 1 oz)**	Approx. 1.9Kg (Approx. 4 lb 3 oz)**
Supplied Accessories	AC power adaptor (1), AC Power Cord (1), AC plug holder (1), Screws for AC adaptor holder (2), Operating Instructions (1), Warranty Card (1)		

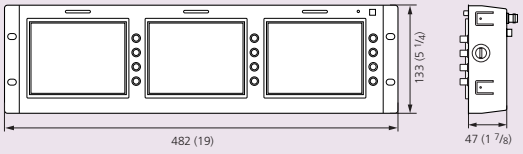
* without the projection parts ** Excluding supplied accessories.

Multi-display Type

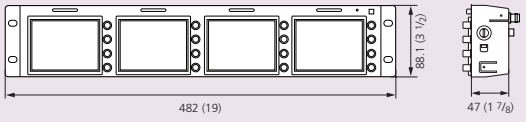
LMD-7220W



LMD-5320



LMD-4420



Unit: mm (inches)

Feature Comparison

	Studio Type					One-piece Type			
Monitor System	LMD-322W MEU-WX2	LMD-232W MEU-WX2	LMD-212 MEU-WX2	LMD-172W MEU-WX2	LMD-152 MEU-WX2	LMD-2020	LMD-1420	LMD-2010	LMD-1410
Picture Resolution	1280x 768dots	1024 x 768dots	1024 x 768dots	1280 x 768 dots	1024 x 768 dots	640 x 480 dots			
Picture Size	31.6-inch	23-inch	21.2-inch	16.7-inch	15-inch	20.1-inch	14-inch	20.1-inch	14-inch
LCD Panel	a-Si TFT Active Matrix					a-Si TFT Active Matrix			
Acceptable computer system	VGA to WXGA					No			
Panel aspect Ratio	15:9		4:3	15:9	4:3	4:3			
Protection Panel/AR Coating	Yes					Yes		No	
16:9 Capability	Yes					Yes			
HD or SD	HD/SD					SD only			
Composite Video Input/Output	1x					2x			
Y/C Input/Output	1x					1x			
Component (Y,R-Y,B-Y)/RGB Input	1x					1x			
SD-SDI video input	2x (with BKM-220D or BKM-243HS)					1x (with BKM-320D)		No	
HD-SDI video input	2x (with BKM-243HS)					No			
SDI with Audio decoding	Yes					No			
Computer Input	Yes					No			
I.Link video input	2x (with BKM-255DV)					No			
Audio Input/Output	Yes					Yes			
External Sync Input/Output	Yes					Yes		No	
EIA 19-inch Rack Mounting	No		MB-523	MB-522A	MB-524	MB-527	MB-526	MB-527	MB-526
VESA Mounting	Not Applicable	75 x 75 holes				100 x 100 holes			
Desk-top Stand	Floor Srand SU-559	SU-558				Stand supplied			
Overscan	Yes					Yes			
Color Temperature	Selectable					Selectable			
Blue Only	Yes					Yes		No	
H/V delay	Yes					No			
Tally	No	3-Color				3-Color		No	
Area Marker	Yes					Yes		No	
Li-Ion battery Operation	No					No			
DC Operation	LMD-322W:No MEU+LMD-322W:No	LMD-232W:Yes MEU+LMD-232W:No	LMD-212:Yes MEU+LMD-212:No	LMD-172W:Yes MEU+LMD-172W:Yes	LMD-152:Yes MEU+LMD-152:Yes	No			

	Handheld Type			Multi-display Type		
Monitor System	LMD-9050	LMD-9030	LMD-9020	LMD-7220W	LMD-5320	LMD-4420
Picture Resolution	1024 x 768 dots	640 x 480 dots		480 x 234 dots	320 x 234 dots	480 x 234 dots
Picture Size	8.4-inch			2x7-inch	3x5.6-inch	4x4-inch
LCD Panel	a-Si TFT Active Matrix			a-Si TFT Active Matrix		
Acceptable computer system	No			No		
Panel Aspect Ratio	4:3			16:9	4:3	
Protection Panel/AR Coating	Yes			No		
16:9 Capability	Yes			Yes	No	
HD or SD	HD/SD	SD only	No	SD only		
Composite Video Input/Output	2x			1x		
Y/C Input/Output	1x			No		
Component (Y,R-Y,B-Y)/RGB Input	1x			No		
SD-SDI Video Input	2xHD or SD Auto detective	1x	No	1x (with BKM-320D)		
HD-SDI Video Input		No		No		
SDI with Audio decoding	Yes		No	No		
Computer Input	No			No		
i.Link Video Input	No			No		
Audio Input/Output	Yes			No		
External Sync Input/Output	Yes			No		
EIA 19-inch Rack Mounting	MB-525			Supplied		
VESA Mounting	Not Applicable			Not Applicable		
Desk-top Stand	Stand supplied			Not Applicable		
Overscan	Yes			No		
Color Temperature	Selectable			Selectable		
Blue Only	Yes			No		
H/V delay	No			No		
Tally	3-Color			3-Color		
Area Marker	Yes			No		
Li-Ion Battery Operation	Yes			No		
DC Operation	Yes			Yes		

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