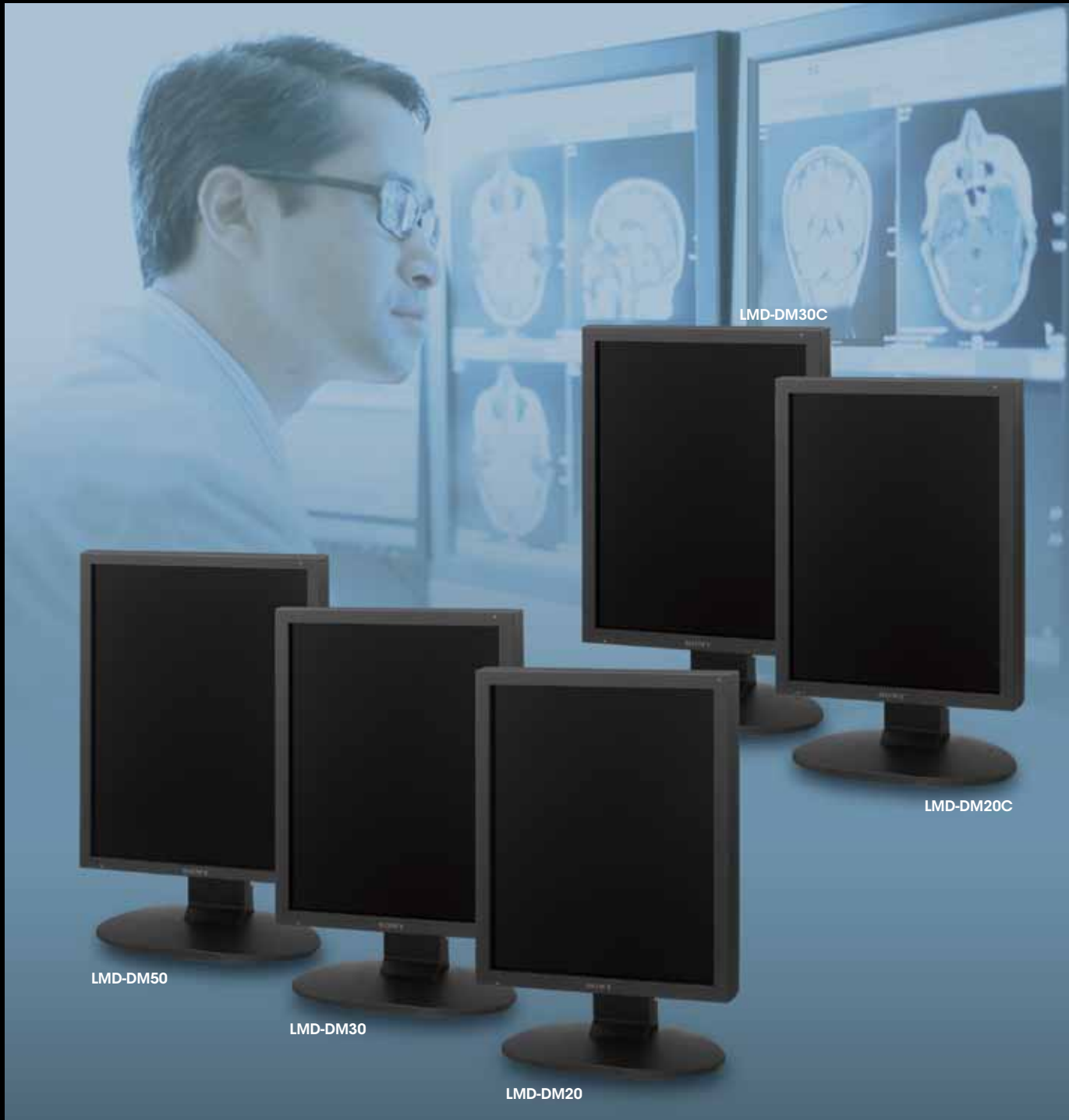


# LMD-DM Series

LCD Displays

**SONY**  
make.believe



**LMD-DM50** (5MP, Monochrome)

**LMD-DM30** (3MP, Monochrome)

**LMD-DM20** (2MP, Monochrome)

**LMD-DM30C** (3MP, Color)

**LMD-DM20C** (2MP, Color)

# High-quality Diagnostic Displays with Reliability

The Sony LMD-DM Series of diagnostic displays, with their high-luminance and high-contrast capabilities, offer clear images to display and view medical images such as MRI, X-ray and digital mammography images.

## Different Monitors for Different Modalities

LMD-DM Series displays are designed to be used in displaying and viewing medical images for diagnosis by trained medical practitioners. The LMD-DM50 and LMD-DM30\*1 can be used in digital mammography PACS, and modalities including FFDM (Full Field Digital Mammography). The LMD-DM30C, LMD-DM20C, and LMD-DM20 can be used in displaying and viewing medical images such as MRI and CT; these displays are not designed for digital mammography.

\*1 Requires sub-pixel driving technology (ISD) when using the LMD-DM30 for mammography.

## Products Overview

	Medical Diagnostic Display				
	Monochrome			Color	
	LMD-DM50	LMD-DM30	LMD-DM20	LMD-DM30C	LMD-DM20C
Resolution	<b>5MP</b> (2048 x 2560)	<b>3MP</b> (1536 x 2048)	<b>2MP</b> (1200 x 1600)	<b>3MP</b> (1536 x 2048)	<b>2MP</b> (1200 x 1600)
Panel Size (inches) *	21.3	20.8	21.3	21.3	21.3
Max. Luminance (cd/m <sup>2</sup> )	1100	1000	1800	800	950
Contrast Ratio	850:1	900:1	700:1	750:1	900:1
ISD (Independent Sub-pixel Drive)	●	●			
Calibration	●	●	●	●	●

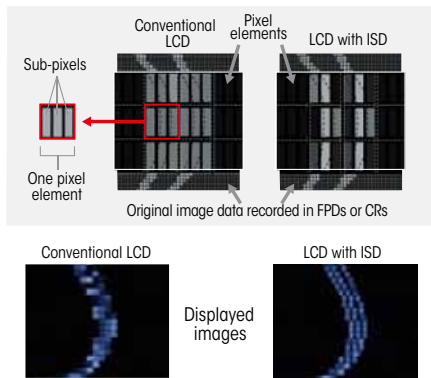
\* Viewable area, measured diagonally.

## Key Features

### ISD (Independent Sub-pixel Drive) Technology \*2

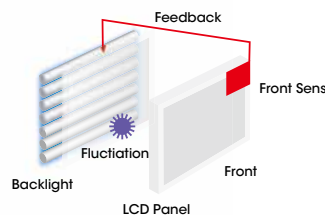
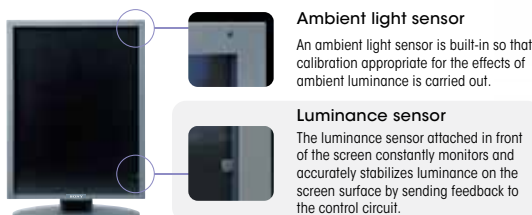
ISD technology achieves three-times resolution by driving each sub-pixel value corresponding to detailed information contained in an original image. Furthermore, 1,276 shades of gray are simultaneously displayed.

\*2 Applicable to the LMD-DM50 and LMD-DM30 only. To use the ISD function, special viewer software is required. For details, please contact your nearest Sony office or authorized dealer. ISD technology is the property of, and developed by, Totoku Electric Co., Ltd.



### Luminance Stabilization System

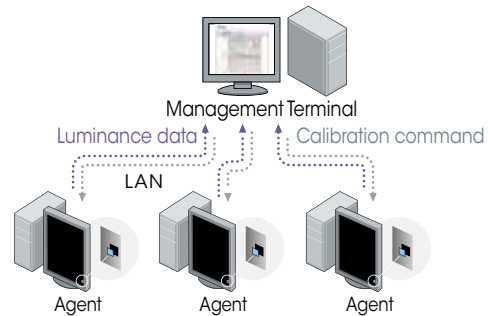
Each LMD-DM Series display is equipped with a luminance sensor, ambient light sensor, and a luminance control circuit. The luminance sensor that is directly facing the screen constantly monitors luminance and the control circuit, together with ambient light information. The control circuit controls the luminance of the backlight to eliminate fluctuation caused by the LCD module.



### Remote Calibration \*3

When an LMD-DM Series display is combined with the LMD-KT10 Calibration Kit and LMD-SN10 Display Network Manager, the user can perform a conformance test to DICOM GSDF and calibration from a remote location.

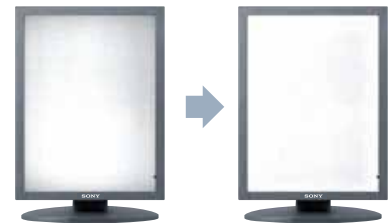
\*3 Requires optional software and an MS Windows PC, sold separately.



### Digital Uniformity Equalizer

The Digital Uniformity Equalizer is embedded to achieve highly accurate luminance and color uniformity\*4 across the screen.

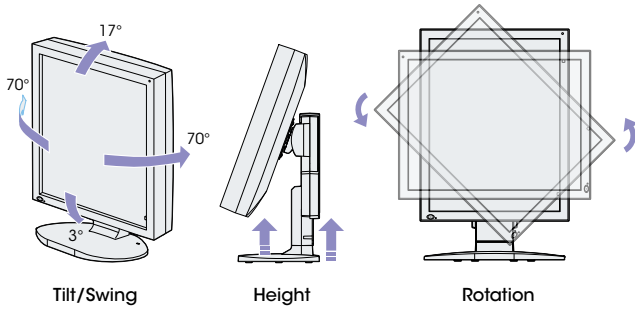
\*4 A color uniformity equalizer is embedded in the color models only.



\* Images shown are for illustrative purposes only.

## Flexible Display Positioning

The LCD panel can be flexibly adjusted to various positions for comfortable viewing. The embedded hardware pivot function enables faster image drawing when the LCD panel is rotated 90-degrees to view in portrait orientation.



## DisplayPort

Each LMD-DM Series medical display is equipped with the new-generation DisplayPort interface in addition to a DVI-D interface. When the DisplayPort is used, LMD-DM Series monitors offer smooth and accurate reproduction of subtle differences in the display image thanks to 1024 shades of gray (10-bit) processing\*5.

\*5 Requires customized viewer software and a graphics card to display 10-bit images.



## Luminance & Gamma Preset

LMD-DM Series displays are equipped with three sets of luminance and gamma presets. This feature enables the user to select optimum settings instantly, depending on the application.



Luminance: 410 cd/m<sup>2</sup>  
Gamma: DICOM GSDF



Luminance: 300 cd/m<sup>2</sup>  
Gamma: DICOM GSDF



Luminance: 300 cd/m<sup>2</sup>  
Gamma: Gamma 2.2

## On-screen Information Display

The display status is featured on the display, along with information including the actual measurement of luminance, calibration settings, total operation hours, and the serial number, all at the touch of a button.

```
LMD-DM50
SERIAL : 0000007
VSPU   : Rev. X X
MPU    : Rev. X
ACT TIME : 10H
LAST CALL : 2H
EDID   : Portrait
       : (Auto Selection)
DSP MODE : ISD (->)
```

```
PRESENT STATE
LUMINANCE : 410 cd
AMB LIGHT : 30 lx
INPUT     : DVI
CALIBRATION SETTING
CONFIG    : 1
LUMINANCE : 410 cd
GAMMA    : DICOM GSDF
```

## LED Indicator

The operating status of the display is provided by an LED indicator. Users can quickly know the current status by glancing at the color of the LED on the front of the unit.



Power off/Luminance is being stabilized



Luminance is under the stabilizing process; wait until the LED goes off



Calibration is in progress (Blink)



Stand-by

## Medical Compliances

The LMD-DM Series is listed and complies with various medical regulations\*6. It is therefore suitable for use in professional medical applications.

### US/Canada

Safety: UL 60601-1, CAN/CSA C22.2 No.601.1

EMC: FCC Part 15 Subpart-B Class B personal computers and peripherals, ICES-003 Class B Digital Apparatus

FDA: Class II Medical Device

### Europe

Safety: EN 60601-1

EMC: EN 60601-1-2

EC Directive: MDD Class I

### Australia

EMC: EN55011 Class B

### Japan

EMC: VCCI Class B, JIS C 161000-3-2

CB Certification: IEC 60601-1, IEC 60950-1

\*6 Please contact your nearest Sony office or authorized dealer for more information.

## Optional Accessories

### LMD-KT10 Calibration Kit

The LMD-KT10 is a software and sensor kit which serves to support display quality control which is mandatory in a diagnostic display. The kit consists of the following items:

**Display Calibrator:** Provides accurate calibration easily with the use of a calibration sensor.

**Display Quality Controller:** Provides acceptance and a consistency test for the display according to AAPM, DIN, and the JESRA quality assurance guideline.

**Display Utility Software:** Enables the system administrator to control and manage a variety of information centrally.

**Calibration Sensor:** Luminance measurement sensor

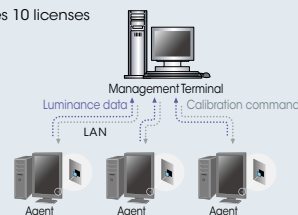


### LMD-SN10 Display Network Manager

#### Display Network Manager

The LMD-SN10 is software which monitors multiple diagnostic displays via a hospital network. It enables management of diagnostic displays including the following:

- Notice of local display malfunction
- Display profiles
  - Model name
  - Serial number
  - Error code/log
- Workstation configuration in network
- Maintenance/consistency test & report
- Includes 10 licenses

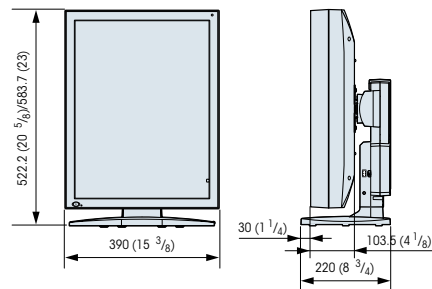


## Specifications

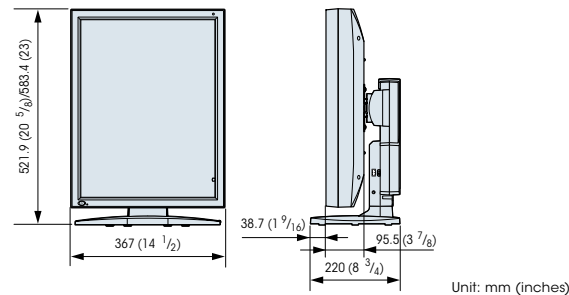
	LMD-DM50	LMD-DM30	LMD-DM20	LMD-DM30C	LMD-DM20C
<b>Picture Performance</b>					
Panel	a-Si TFT Active Matrix LCD (Monochrome)	a-Si TFT Active Matrix LCD (Monochrome)	a-Si TFT Active Matrix LCD (Monochrome)	a-Si TFT Active Matrix LCD	a-Si TFT Active Matrix LCD
Picture size (diagonal)	21.3-inch	20.8-inch	21.3-inch	21.3-inch	21.3-inch
Effective Picture size (H x V)	422.4 x 337.9 mm (16 3/4 x 13 3/8 inches)	423.9 x 318.0 mm (16 3/4 x 12 5/8 inches)	432.0 x 324.0 mm (17 1/8 x 12 7/8 inches)	433.2 x 324.9 mm (17 1/8 x 12 7/8 inches)	433.2 x 324.9 mm (17 1/8 x 12 7/8 inches)
Resolution (H x V)	Landscape 2560 x 2048 pixels (QXGA) Portrait 2048 x 2560	Landscape 2048 x 1536 (QXGA) Portrait 1536 x 2048	Landscape 1600 x 1200 pixels (UXGA) Portrait 1200 x 1600 pixels	Landscape 2048 x 1536 pixels (QXGA) Portrait 1536 x 2048 pixels	Landscape 1600 x 1200 pixels (UXGA) Portrait 1200 x 1600 pixels
Aspect	Landscape 5:4 Portrait 4:5	Landscape 4:3 Portrait 3:4	Landscape 4:3 Portrait 3:4	Landscape 4:3 Portrait 3:4	Landscape 4:3 Portrait 3:4
Pixel efficiency	99.99%	99.99%	99.99%	99.99%	99.99%
Colors				Approx. 16.77 million colors out of 68 billion color Approx. 1.0643 billion colors (DisplayPort 10 bit input)	Approx. 16.77 million colors out of 68 billion color Approx. 1.0643 billion colors (DisplayPort 10 bit input)
Viewing angle (panel specification)	85°/85°/85°/85° (typical) (up/down/left/right contrast > 20:1)	85°/85°/85°/85° (typical) (up/down/left/right contrast > 10:1)	85°/85°/85°/85° (typical) (up/down/left/right contrast > 10:1)	85°/85°/85°/85° (typical) (up/down/left/right contrast > 10:1)	85°/85°/85°/85° (typical) (up/down/left/right contrast > 10:1)
Luminance	Panel: 1100 cd/m <sup>2</sup> typ 410/500 cd/m <sup>2</sup> (calibrated to 410 cd/m <sup>2</sup> by factory default) Contrast Ratio 850:1 typ	Panel: 1000 cd/m <sup>2</sup> typ 410/500 cd/m <sup>2</sup> (calibrated to 410 cd/m <sup>2</sup> by factory default) Contrast Ratio 900:1 typ	Panel: 1800 cd/m <sup>2</sup> typ 410/500 cd/m <sup>2</sup> (calibrated to 410 cd/m <sup>2</sup> by factory default) Contrast Ratio 700:1 typ	Panel: 800 cd/m <sup>2</sup> typ 410/300 cd/m <sup>2</sup> (calibrated to 410 cd/m <sup>2</sup> by factory default) Contrast Ratio 750:1 typ	Panel: 950 cd/m <sup>2</sup> typ 410/300 cd/m <sup>2</sup> (calibrated to 410 cd/m <sup>2</sup> by factory default) Contrast Ratio 900:1 typ
<b>Input</b>					
DVI-D	DVI-D (x1) TMDS Dual link	DVI-D (x1) TMDS Dual link	DVI-D (x1) TMDS Single link	DVI-D (x1) TMDS Dual link	DVI-D (x1) TMDS Single link
DisplayPort	DisplayPort connector (x1)	DisplayPort connector (x1)	DisplayPort connector (x1)	DisplayPort connector (x1)	DisplayPort connector (x1)
<b>General</b>					
Power Requirements	AC 100 V to 240 V, 50/60 Hz, 1.5 A to 0.6 A	AC 100 V to 240 V, 50/60 Hz, 1.5 A to 0.6 A	AC 100 V to 240 V, 50/60 Hz, 1.5 A to 0.6 A	AC 100 V to 240 V, 50/60 Hz, 1.5 A to 0.6 A	AC 100 V to 240 V, 50/60 Hz, 1.5 A to 0.6 A
Power consumption	90 W typ	90 W typ	85 W typ	120 W typ	120 W typ
Operating temperature	5 °C to 40 °C (41 °F to 104 °F)	5 °C to 40 °C (41 °F to 104 °F)	5 °C to 40 °C (41 °F to 104 °F)	5 °C to 40 °C (41 °F to 104 °F)	5 °C to 40 °C (41 °F to 104 °F)
Operating humidity	30% to 80% (no condensation)	30% to 80% (no condensation)	30% to 80% (no condensation)	30% to 80% (no condensation)	30% to 80% (no condensation)
Storage / transport temperature	-20 °C to +60 °C (-4 °F to +140 °F)	-20 °C to +60 °C (-4 °F to +140 °F)	-20 °C to +60 °C (-4 °F to +140 °F)	-20 °C to +60 °C (-4 °F to +140 °F)	-20 °C to +60 °C (-4 °F to +140 °F)
Storage / transport humidity	10% to 85%	10% to 85%	10% to 85%	10% to 85%	10% to 85%
Operating / storage / transport pressure	700hPa to 1060hPa (Operating) 266hPa to 1060hPa (Storage)	700hPa to 1060hPa (Operating) 266hPa to 1060hPa (Storage)	700hPa to 1060hPa (Operating) 266hPa to 1060hPa (Storage)	700hPa to 1060hPa (Operating) 266hPa to 1060hPa (Storage)	700hPa to 1060hPa (Operating) 266hPa to 1060hPa (Storage)
Dimensions (W x H x D)	Landscape 474.5 x 479.9/541.4 x 220 mm (18 3/4 x 19 1/2/21 3/8 x 8 3/4 inches) Portrait 390 x 522.2/583.7 x 220 mm (15 3/8 x 20 5/8/23 x 8 3/4 inches)	Landscape 474.0 x 468.4/529.9 x 220 mm (18 3/4 x 18 1/2/20 7/8 x 8 3/4 inches) Portrait 367 x 521.9/583.4 x 220 mm (14 1/2 x 20 5/8/23 x 8 3/4 inches)	Landscape 474.0 x 468.4/529.9 x 220 mm (18 3/4 x 18 1/2/20 7/8 x 8 3/4 inches) Portrait 367 x 521.9/583.4 x 220 mm (14 1/2 x 20 5/8/23 x 8 3/4 inches)	Landscape 474.0 x 468.4/529.9 x 220 mm (18 3/4 x 18 1/2/20 7/8 x 8 3/4 inches) Portrait 367 x 521.9/583.4 x 220 mm (14 1/2 x 20 5/8/23 x 8 3/4 inches)	Landscape 474.0 x 468.4/529.9 x 220 mm (18 3/4 x 18 1/2/20 7/8 x 8 3/4 inches) Portrait 367 x 521.9/583.4 x 220 mm (14 1/2 x 20 5/8/23 x 8 3/4 inches)
Mass	12.3 kg (27 lb 1.9 oz) including tilt stand of 4.2 kg (9 lb 4.2 oz)	11.6 kg (25 lb 9.2 oz) including tilt stand of 4.2 kg (9 lb 4.2 oz)	12.0 kg (26 lb 7.3 oz) including tilt stand of 4.2 kg (9 lb 4.2 oz)	12.3 Kg (27 lb 1.9 oz) including tilt stand of 4.2 kg (9 lb 4.2 oz)	12.3 kg (27 lb 1.9 oz) including tilt stand of 4.2 kg (9 lb 4.2 oz)
Supplied accessories	AC power cord (1) DVI cable(Dual Link)(1) USB cable(1) CD-ROM(1) Before Using this Display (1) Sales Companies Guide	AC power cord (1) DVI cable(Dual Link)(1) USB cable(1) CD-ROM(1) Before Using this Display (1) Sales Companies Guide	AC power cord (1) DVI cable(single Link)(1) USB cable(1) CD-ROM(1) Before Using this Display (1) Sales Companies Guide	AC power cord (1) DVI cable(Dual Link)(1) USB cable(1) CD-ROM(1) Before Using this Display (1) Sales Companies Guide	AC power cord (1) DVI cable(single Link)(1) USB cable(1) CD-ROM(1) Before Using this Display (1) Sales Companies Guide
Optional accessories	Calibration Kit LMD-KT10 Display Network Manager LMD-SN10	Calibration Kit LMD-KT10 Display Network Manager LMD-SN10	Calibration Kit LMD-KT10 Display Network Manager LMD-SN10	Calibration Kit LMD-KT10 Display Network Manager LMD-SN10	Calibration Kit LMD-KT10 Display Network Manager LMD-SN10

## Dimensions

### LMD-DM50



### LMD-DM30/LMD-DM20/LMD-DM30C/LMD-DM20C



Unit: mm (inches)

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The LMD-KT10 and LMD-SN10 are designed for use with an MS Windows® operating system (OS).  
 U.S. export control regulations may require an export license for export/re-export of the Windows OS (for details, contact Microsoft Corporation).