SONY

LCD Monitor

Instructions for Use

Before operating the unit, please read this manual thoroughly
and retain it for future reference.

LMD-2735MD
LMD-2435MD

CE

Indications for Use/Intended Use

The Sony LMD-2735MD/2435MD LCD Monitor are intended to provide 2D color video displays of images from surgical endoscopic/laparoscopic camera systems and other compatible medical imaging systems.
The LMD-2735MD/2435MD monitor are a widescreen, high-definition, medical grade monitor for real-time use during minimally invasive surgical procedures and are suitable for use in hospital operating rooms, surgical centers, clinics, doctors' offices and similar medical environments.

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

No modification of this equipment is allowed.

WARNING

To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

Symbols on the products

Safety sign
Follow the warnings in the instructions for use for parts of the unit on which this mark appears.
NOTE Background color: Blue
         Symbol: White

Consult the Instructions for Use
Follow the directions in the Instructions for Use for parts of the unit on which this mark appears.

This symbol indicates the manufacturer, and appears next to the manufacturer's name and address.

EC|REP This symbol indicates the European Community representative, and appears next to the European Community representative's name and address.

SN This symbol indicates the serial number.

REF This symbol indicates the version of the accompanying document.

This symbol indicates the date of manufacture.

This symbol indicates the equipotential terminal which brings the various parts of a system to the same potential.

Storage and transport temperature
This symbol indicates the acceptable temperature range for storage and transport environments.

Storage and transport humidity
This symbol indicates the acceptable humidity range for storage and transport environments.

Storage and transport pressure
This symbol indicates the acceptable atmospheric pressure range for storage and transport environments.

Warning
This unit has no power switch.
To disconnect the main power, unplug the power plug. When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, or connect the power plug to an easily accessible socket-outlet near the unit.
Do not position the ME equipment where it is difficult to unplug the power plug.
If a fault should occur during operation of the unit, operate the disconnect device to switch the power supply off, or unplug the power plug.

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of part 15 of FCC Rules.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For the customers in Canada
CAN ICES-3 (A)/NMB-3(A)

This unit has been certified according to Standard CAN/CSA-C22.2 No.60601-1.

Important safeguards/notices for use in the medical environments

1. All the equipments connected to this unit shall be certified according to Standard IEC 60601-1, IEC 60950-1, IEC 60065 or other IEC/ISO Standards applicable to the equipments.

2. Furthermore all configurations shall comply with the system standard IEC 60601-1. Everybody who connects additional equipment to the signal input part or signal output part configures a medical system, and is therefore, responsible that the system complies with the requirements of the system standard IEC 60601-1.
If in doubt, consult the qualified service personnel.

3. The leakage current could increase when connected to other equipment.

4. For this particular equipment, all accessory equipment connected as noted above, must be connected to mains via an additional isolation transformer conforming with the construction requirements of IEC 60601-1 and providing at least Basic Insulation.

5. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference to other equipment. If this unit causes interference (which can be determined by unplugging the power cord from the unit), try these measures: Relocate the unit with respect to the susceptible equipment. Plug this unit and the susceptible equipment into different branch circuit.

Consult your dealer. (According to standard IEC 60601-1-2 and CISPR11, Class B, Group 1)

Important EMC notices for use in the medical environments

- The LMD-2735MD/2435MD needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the instructions for use.
- The portable and mobile RF communications equipment such as cellular phones can affect the LMD-2735MD/2435MD.

Warning
The use of accessories and cables other than those specified, with the exception of replacement parts sold by Sony Corporation, may result in increased emissions or decreased immunity of the LMD-2735MD/2435MD.

Guidance and manufacturer's declaration-electromagnetic emissions		
The LMD-2735MD/2435MD is intended for use in the electromagnetic environment specified below. The customer or the user of the LMD-2735MD/2435MD should assure that it is used in such an environment.		
Emission test	Compliance	Electromagnetic environment-guidance
RF emissions CISPR 11	Group 1	The LMD-2735MD/2435MD uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The LMD-2735MD/2435MD is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class D (AC input) Not applicable (DC input)	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies (AC input) Not applicable (DC input)	

Warning
If the LMD-2735MD/2435MD should be used adjacent to or stacked with other equipment, it should be observed to verify normal operation in the configuration in which it will be used.

Guidance and manufacturer's declaration - electromagnetic immunity

The LMD-2735MD/2435MD is intended for use in the electromagnetic environment specified below. The customer or the user of the LMD-2735MD/2435MD should assure that it is used in such as environment.

Immunity test	IEC 60601 test level	Compliance level		Electromagnetic environment-guidance
		AC input	DC input	
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	 ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV differential mode ±2 kV common mode	Not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5% U_T (> 95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (> 95% dip in U_T) for 5 sec	< 5% U_T (> 95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (> 95% dip in U_T) for 5 sec	Not applicable	Mains power quality should be that of a typical commercial or hospital environment. If the user of the LMD-2735MD/2435MD requires continued operation during power mains interruptions, it is recommended that the LMD-2735MD/2435MD be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE: U_T is the a.c. mains voltage prior to application of the test level.

Guidance and manufacturer's declaration - electromagnetic immunity			
The LMD-2735MD/2435MD is intended for use in the electromagnetic environment specified below. The customer or the user of the LMD-2735MD/2435MD should assure that it is used in such as environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the LMD-2735MD/2435MD, including cables, than the recommended separation distance calculated from the equation appliance to the frequency of the transmitter. **Recommended separation distance**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	$d = 1.2\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with following symbol: $((\cdot))$
NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the LMD-2735MD/2435MD is used exceeds the applicable RF compliance level above, the LMD-2735MD/2435MD should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the LMD-2735MD/2435MD.			
b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

Recommended separation distances between portable and mobile RF communications equipment and the LMD-2735MD/ 2435MD			
The LMD-2735MD/2435MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the LMD-2735MD/2435MD can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the LMD-2735MD/2435MD as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Caution

When you dispose of the unit or accessories, you must obey the laws in the relative area or country and the regulations in the relative hospital regarding environmental pollution.

Warning on power connection

Use a proper power cord for your local power supply.
1. Use the approved Power Cord (3-core mains lead) / Appliance Connector / Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
2. Use the Power Cord (3-core mains lead) / Appliance Connector / Plug conforming to the proper ratings (Voltage, Ampere).
   If you have questions on the use of the above Power Cord / Appliance Connector / Plug, please consult a qualified service personnel.

For the customers in U.S.A. and Canada
Warning on power connection for medical use

Please use the following power supply cord. With connectors (plug or female) and cord types other than those indicated in this table, use the power supply cord that is approved for use in your area.

	United States and Canada
Plug Type	HOSPITAL GRADE*
Cord Type	Min. Type SJT Min. 18 AWG
Minimum Rating for Plug and Appliance Couplers	10A/125V
Safety Approval	UL Listed and CSA

*Note: Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked 'Hospital Only' or 'Hospital Grade'.

Caution

When installing, the installation space must be secured in consideration of the ventilation and service operation. Leave a space 10 cm (4 inches) or more behind, 10 cm (4 inches) or more from the left and right sides of, 8 cm (3 $1/4$ inches) or more from the bottom side of, and 30 cm (11 $7/8$ inches) or more above the unit.

For the customers in the U.S.A.
Caution

Rx ONLY

Federal law (United States of America) restricts this device to sale by or on the order of a licensed healthcare practitioner.

Warning

The apparatus shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.

Warning

To prevent injury, this apparatus must be securely attached to the mounting arm/wall in accordance with the instructions for use.

Consult with Sony qualified personnel for mounting arm/wall mount installation.

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Precaution

On Safety

- Operate the unit only with a power source as specified in the "Specifications" section.
- The nameplate indicating operating voltage, etc. is located on the rear panel of monitor and the AC adaptor.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for several days or more.
- To disconnect the AC power cord, pull it out by grasping the plug. Never pull the cord itself.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.

On Installation

- Prevent internal heat build-up allowing adequate air circulation.
  Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Do not place the monitor near equipment which generates magnetism, such as a transformer or high voltage power lines.

Precautions for using this unit safely

- Some people may experience discomfort (such as eye strain, fatigue, or nausea) while watching video images. Sony recommends that all viewers take regular breaks while watching video images. The length and frequency of necessary breaks will vary from person to person. You must decide what works best. If you experience any discomfort, you should stop watching the video images until the discomfort ends; consult a doctor if you believe necessary.
- Avoid watching the display in environments where your head may shake, or while you are walking or performing exercise, because there is a higher possibility that you experience discomfort.

Precautions for connecting this unit with other medical devices

- Before you utilize this device and/or connect this device to any other medical device, please be aware of and abide by the following precautions:
  (a) Before actually using this device for medical practice, please check and confirm that you do not experience any discomfort in your use that could be disruptive or impeditive in conducting your intended activity or medical practice.
  (b) If you experience or are likely to experience such discomfort, please refrain from using this device.
  (c) Generally, discomfort (such as eye strain, fatigue, nausea, or motion sickness) can be provoked by such factors as quick movements or shakiness of video picture, focal position of video pictures, distance between objects and image capturing modules, user's point of gaze in video pictures, other varying conditions of video pictures to be input to this device, and individual user's health conditions.
- Before you utilize this unit, check if the image of the connected medical device is displayed properly on the screen of this unit.

On simultaneous use with an electrosurgical knife, etc.

If this unit is used together with an electrosurgical knife, etc., the picture may be disturbed, warped or otherwise abnormal as a result of strong radio waves or voltages from the device. This is not a malfunction.
When you use this unit simultaneously with a device from which strong radio waves or voltages are emitted, confirm the effect of this before using such devices, and install this unit in a way that minimizes the effect of radio wave interference.

Recommendation to Use more than One Unit

As problems can occasionally occur for the monitor, when the monitor is used for safety control of personnel, assets or stable picture, or for emergencies, we strongly recommend you use more than one unit or prepare a spare unit.

About the LCD Display Panel

- The LCD panel fitted to this unit is manufactured with high precision technology, giving a functioning pixel ratio of at least 99.99%. Thus a very small proportion

of pixels may be "stuck", either always off (black), always on (red, green, or blue), or flashing. In addition, over a long period of use, because of the physical characteristics of the liquid crystal display, such "stuck" pixels may appear spontaneously. These problems are not a malfunction.

- Do not leave the LCD screen facing the sun as it can damage the LCD screen. Take care when you place the unit by a window.
- Do not push or scratch the LCD screen. Do not place a heavy object on the LCD screen. This may cause the screen to lose uniformity.
- If the unit is used in a cold place, a residual image may appear on the screen. This is not a malfunction. When the monitor becomes warm, the screen returns to normal.
- The screen and the cabinet become warm during operation. This is not a malfunction.

On a Long Period of Use

Due to the characteristics of LCD panel, displaying static images for extended periods, or using the unit repeatedly in a high temperature/high humidity environments may cause image smearing, burn-in, areas of which brightness is permanently changed, lines, or a decrease in overall brightness.

In particular, continued display of an image smaller than the monitor screen, such as in a different aspect ratio, may shorten the life of the unit.
Avoid displaying a still image for an extended period, or using the unit repeatedly in a high temperature/high humidity environment such an airtight room, or around the outlet of an air conditioner.

To prevent any of the above issues, we recommend reducing brightness slightly, and to turn off the power whenever the unit is not in use.

On Burn-in

For LCD panel, permanent burn-in may occur if still images are displayed in the same position on the screen continuously, or repeatedly over extended periods.

Images that may cause burn-in
- Masked images with aspect ratios other than 16:9
- Color bars or images that remain static for a long time
- Character or message displays that indicate settings or the operating state

To reduce the risk of burn-in
- Turn off the character displays

Press the MENU button to turn off the character displays. To turn off the character displays of the connected equipment, operate the connected equipment accordingly. For details, refer to the operation manual of the connected equipment.
- Turn off the power when not in use
Turn off the power if the monitor is not to be used for a prolonged period of time.

On Temperature Error

When this unit is used in a high temperature environment and the internal temperature rises, a temperature error is displayed on the screen. When the temperature error is displayed, contact an authorized Sony dealer.

On Moisture Condensation

If the unit is suddenly taken from a cold to a warm location, or if ambient temperature suddenly rises, moisture may form on the outer surface of the unit and/or inside of the unit. This is known as condensation. If condensation occurs, turn off the unit and wait until the condensation clears before operating the unit. Operating the unit while condensation is present may damage the unit.

On Cleaning

Before cleaning
Be sure to disconnect the AC power cord from the AC outlet.

On cleaning the monitor
A material that withstands disinfection is used for the front protection plate of the medical use LCD monitor. The protection plate surface is specially treated to reduce reflection of light. When solvents such as benzene or thinner, or acid, alkaline or abrasive detergent, or chemical cleaning cloth are used for the protection plate surface/monitor surface, the performance of the monitor may be impaired or the finish of the surface may be damaged. Take care with respect to the following:
- Clean the protection plate surface/monitor surface with a 50 to 70 v/v% concentration of isopropyl alcohol or a 76.9 to 81.4 v/v% concentration of ethanol using a swab method. Wipe the protection plate surface gently (wipe using less than 1 N force).
- Stubborn stains may be removed with a soft cloth such as a cleaning cloth lightly dampened with mild detergent solution using a swab method and then clean using the above chemical solution.

Never use solvents such as benzene or thinner, or acid, alkaline or abrasive detergent, or chemical cleaning cloth for cleaning or disinfection, as they will damage the protection plate surface/monitor surface.
- Do not use unnecessary force to rub the protection plate surface/monitor surface with a stained cloth. The protection plate surface/monitor surface may be scratched.
- Do not keep the protection plate surface/monitor surface in contact with a rubber or vinyl resin product for a long period of time. The finish of the surface may deteriorate or the coating may come off.

On Repacking

Do not throw away the carton and packing materials. They make an ideal container which to transport the unit.
If you have any questions about this unit, contact your authorized Sony dealer.

Disposal of the Unit

Do not dispose of the unit with general waste.
Do not include the monitor with household waste.

About this manual

The instructions in this manual are for the following models:
- LMD-2735MD
- LMD-2435MD

The illustration of LMD-2735MD is used for the explanations. Any differences in specifications are clearly indicated in the text.

Features

Compliance with medical safety standards in U.S.A., Canada and Europe

IEC 60601-1 and product safety standards in the U.S.A., Canada and Europe have been obtained for this monitor. The monitor is designed for use in the medical treatment field, with the sheet switch, screen protect panel, etc.

High-resolution Full HD panel

A Full HD high-resolution (1920 × 1080) panel and wide field of view technology enables you to use the monitor under various lighting conditions and in numerous ways (installing on the ceiling, wall, using several monitors to view an image, etc.).

Control panel

Assigns functions frequently used during an operation to buttons on the front surface of the monitor. The panel provides an user interface superior in operability through navigation by luminescent colors and status of the buttons.

Location and Function of Parts and Controls

Front Panel
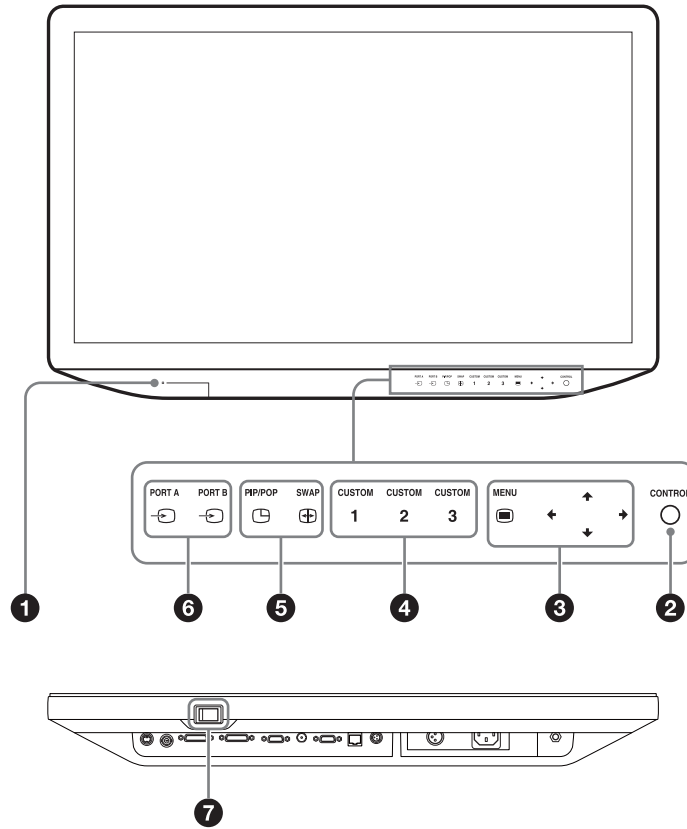
❶ **Power indicator**
When the power is turned on, the power indicator lights in green.
When the protection function is activated and the display brightness is reduced due to the rise in temperature, it flashes in green.
When the unit switches to the standby state, it lights in orange.

❷ ○ **CONTROL button**
Displays or clears the operating buttons on the front panel.
Selects the items depending on the menu types.

❸ **OSD menu operation buttons**
▣ **MENU button**
Press to display the on-screen menu.
Press again to clear the menu.
↑/↓/←/→ buttons
Press to select the items and setting values.

❹ **CUSTOM button**

Turns on or off the assigned function. You can adjust the assigned function by pressing the ←/→ buttons. (Refer to the custom buttons of the system configuration menu on page 24 and of the default setting on page 25.)
The following functions are assigned in the default setting.
CUSTOM 1: Brightness
CUSTOM 2: Contrast
CUSTOM 3: Flip

❺ **Multi-image display setting buttons**
▭ **PIP/POP:** For displaying the multi-image display or switching the multi-image display mode.
⊞ **SWAP:** For swapping between the main display and the sub display.

> **Note**
>
> If the combination of input assigned to each port is set to VIDEO and S VIDEO, the multi-image display is not displayed.

❻ **Input select buttons**

⮌ **PORT A:** Displays the input signal assigned to PORT A. When the input signal of PORT A is displayed, a menu which allows you to select the input signal to be assigned to PORT A is displayed.
⮌ **PORT B:** Displays the input signal assigned to PORT B. When the input signal of PORT B is displayed, a menu which allows you to select the input signal to be assigned to PORT B is displayed.

❼ | / ⏻ **(ON/STANDBY) switch**
Press the | side to turn the monitor on. Press the ⏻ side to switch the unit to standby state.

When the unit switches to the standby state, the power indicator lights in orange.

About the Status of the Power Indicator

Status	Operating State
Orange	Standby
Flashes in Orange	No image displayed (remote standby)
Green	Power on
Flashes in Green	Power on with image displayed (reduced backlight due to high temperature)

## Input Signals and Adjustable/Setting Items

Item	Input signal							
	VIDEO/S-VIDEO (See page 28.)		HD15			DVI-D		SDI (See page 28.)
	Video, Y/C	B & W	Video (See page 28.)		PC (See page 29.)	RGB video (See page 28.)	PC (See page 29.)	
			Component	RGB				
Contrast	○	○	○	○	○	○	○	○
Brightness	○	○	○	○	○	○	○	○
Chroma	○	× [5]	○	○	○	○	○	○
Phase	○	× [5]	○	○	○	○	○	○
Color Temperature	○	○	○	○	○	○	○	○
ACC	○	× [5]	×	×	×	×	×	×
CTI	○	× [5]	×	×	×	×	×	×
Sharpness V	○	○	○	○	○	○	○	○
Sharpness H	○	○	○	○	○	○	○	○
NTSC Setup	○ (NTSC)	○ (480/60I)	×	×	×	×	×	×
SD Scan Size	○	○	○ [1]	○ [1]	× [3]	○ [1]	× [3]	○ [1]
HD Scan Size	×	×	○ [2]	○ [2]	× [3]	○ [2]	× [3]	○ [2]
Gamma	○	○	○	○	○	○	○	○
SD Aspect	○	○	○ [1]	○ [1]	× [3]	○ [1]	× [3]	○ [1]
Mono	○	× [5]	○	○	○	○	○	○
APA	×	×	×	×	○	×	×	×
Shift H/Shift V	×	×	×	×	○	×	×	×
Dot Pitch	×	×	×	×	○	×	×	×
Dot Phase	×	×	×	×	○	×	×	×
Sync Detect	×	×	○	○	× [3]	×	×	×
RGB Range	×	×	×	×	×	○	○	×
Flip Pattern	○	○	○	○	○	○	○	○
RGB/YPbPr	×	×	○	○	○ [4]	×	×	×

○ : Can be adjusted/set
× : Cannot be adjusted/set

1) Reflected on the screen only when the SD signal is input.
2) Reflected on the screen only when the HD signal is input.

3) The setting value can be changed but is not applied to the screen when the PC signal is input.
4) Select RGB when the PC signal is input.
5) The setting value can be changed but is not applied to the screen when the B&W signal is input.

Rear/Bottom Panel
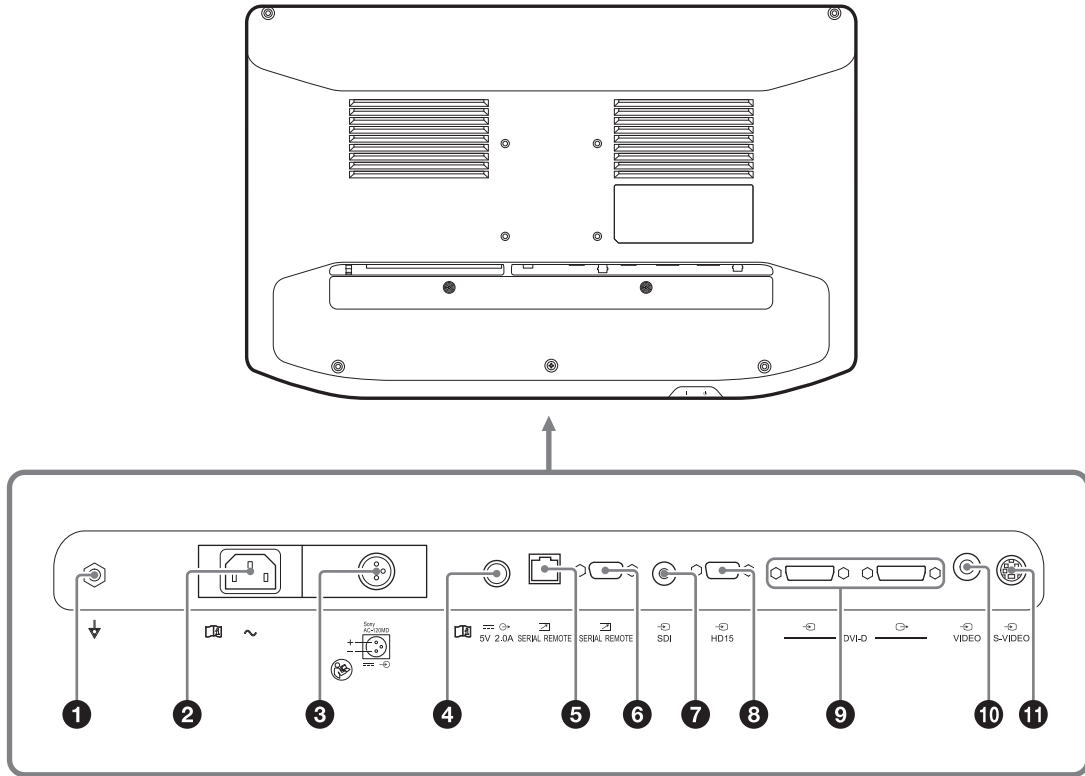
❶ ▽ **(Equipotential) terminal**
Connects the equipotential plug.

Slide the shutter and select an input terminal that you want to use.

❷ ∼ **(AC input) connector**
Connects the supplied AC power cord.

❸ **Sony AC-120MD ⎓ ⊸ (DC input) connector**
Connect the DC connector of the separately sold AC adaptor.

⚠ Caution

Connect the DC connector to the unit, then connect the power cord of the AC adaptor.
To remove the DC connector, remove the power cord of the AC adaptor, then remove the DC connector.

⚠ Warning

For the DC power supply, make sure to use the separately sold AC adaptor, AC-120MD. If another power supply is used, there is a risk of fire or electric shock.

❹ ⎓ ⊛ **5V 2.0A (DC output) connector**
Outputs 5 volts for connected external equipment.

❺ ⧉ **SERIAL REMOTE connector (RJ-45)**
The monitor can be operated according to control commands sent from connected external equipment. Connect to the network by using a 10BASE-T/100BASE-TX LAN cable (non-shielded type of 5 or more category, optional).

Caution

- For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port. Follow the instructions for this port.
- The connection speed may be affected by the network system. This unit does not guarantee the communication speed or quality of 10BASE-T/100BASE-TX.

❻ ⧉ **SERIAL REMOTE RS-232C connector (D-sub 9-pin, female)**
The monitor can be operated according to control commands sent from connected external equipment.

❼ ⊸ **SDI input connector (BNC type)**
Input connector for serial digital component signals.

❽ ⊸ **HD15 input connector (D-sub 15-pin, female)**
The Plug & Play function corresponds to DDC2B.

❾ **DVI-D input/output connector (DVI-D)**
⊸ **connector**

Input DVI Rev.1.0 applicable digital signal.

⊖→ **connector**

Active through output connector of the DVI digital signal.

Outputs the signal which inputs to the ⊖ connector. The signal protected by HDCP [1] is not output.

1) HDCP (High-bandwidth Digital Content Protection) is a copyright protection technology using encryption technology of digital video signals.

Note

A signal is output from the connector only when the monitor is turned on. When the monitor is turned off, the signal is not output from the connector.

❿ ⊖ VIDEO input connector (BNC type)

The input connector for composite signals.

⓫ ⊖ S-VIDEO input connector (4-pin mini-DIN)

The input connector for Y/C signals.

Caution

Do not come into contact with the terminals of the rear panel connectors and patients at the same time.

Doing so may result in a generation of voltage that can be harmful to patients if the unit is malfunctioning. Always disconnect the power cord before connecting and disconnecting connectors.

Warning

**Using this unit for medical purposes**

This equipment's connectors are not isolated.

Do not connect any device other than one which conforms to IEC 60601-1.

When an information technology device or AV device that uses an alternating current is connected, current leakage may result in an electric shock to the patient or operator.

If use of such a device is unavoidable, isolate its power supply by connecting an isolation transformer, or by connecting an isolator between the connecting cables. After implementing these measures, confirm that the reduced risk now conforms to IEC 60601-1.
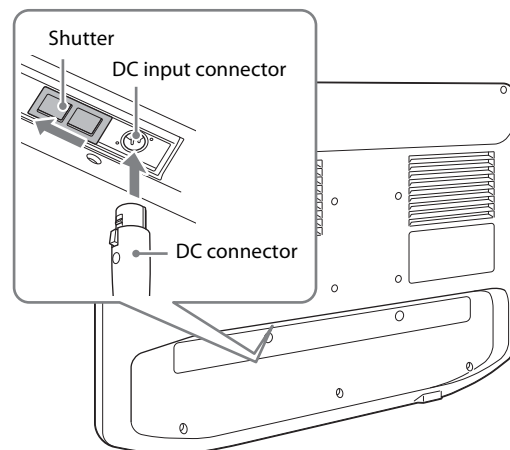
Connecting the Power Cord

To connect the power cord

1 Press the ⏻ side of the | /⏻ switch and switch the unit to the standby state.

2 Slide the shutter of the AC connector of the unit to the right, then insert the AC power cord into the AC input connector as illustrated.
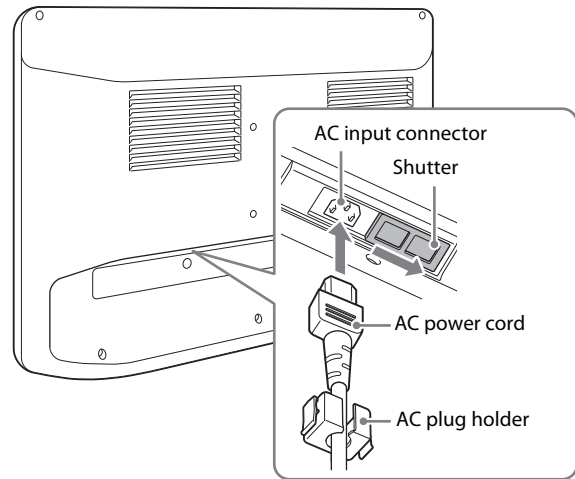
To use the AC adaptor (sold separately)

Switch the unit to the standby state by pressing the ⏻ side of the | /⏻ switch, slide the shutter of the power connector on the unit to the left, then insert the DC connector into the DC input connector until it locks. Next, insert the AC power cord into the separately sold AC adaptor.

To remove the power cord

Switch the unit to the standby state by pressing the ⏻ side of the | / ⏻ switch, then remove the AC power cord. When using the separately sold AC adaptor, switch the unit to the standby state, remove the AC power cord from the AC adaptor, then remove the DC connector from the unit.

Initial Setting

When you turn on the unit for the first time after purchasing it, select the area and language where you intend to use this unit from among the options.

To set the using area
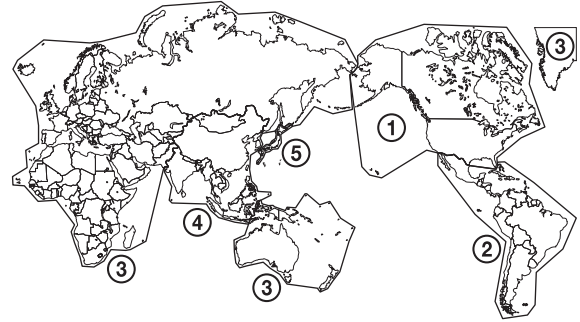
	Color Temperature	NTSC Setup
North America	D65	7.5%
Latin America - Argentina	D65	0%
Latin America - Paraguay	D65	0%
Latin America - Uruguay	D65	0%
Latin America - Other	D65	7.5%
Africa, Australasia Europe, Middle-East	D65	0%
Asia Except Japan - NTSC	D65	7.5%
Asia Except Japan - PAL	D65	0%
Japan	D93	0%

1 Turn on the unit.

The Area Setting screen appears.

2 Press the CONTROL button.

3 Press the ✦ or ✦ button to select the area where you intend to use the unit and press the ➡ button.

When the confirmation screen is displayed, press the ✦ or ➡ button to select Yes and press the CONTROL button.

④ **If you select Asia Except Japan**
Customers who will use this unit in the shaded areas shown in the map below except for Japan should select Asia Except Japan - NTSC.
Other customers should select Asia Except Japan - PAL.

4 The Area Setting screen disappears and the menu item settings suitable for the selected area are applied.

When you have selected the wrong area, set the following items using the menu.
• Color Temperature (on page 20)
• NTSC Setup (on page 21)
See "To set the using area" (page 16) on the setting value.

To set the using language

You can select one of eight languages (English, Chinese, Japanese, Italian, Spanish, German, French, and Russian) for display on the menu and other on-screen displays. The default menu language is set to "English."

1 Turn on the unit.

Select the area where you intend to use this unit on the Area Setting screen. (See page 16.)

2 The Language Setting screen is displayed.
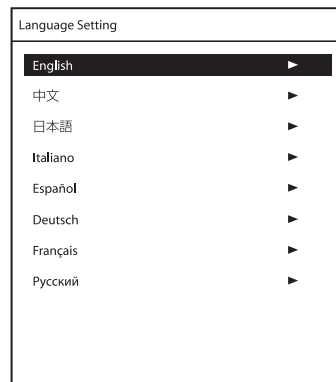
3 Press the ✦ or ✦ button to select the language and press the ➡ button.

When the confirmation screen is displayed, press ✦ or ➡ button to select Yes and press the CONTROL button.
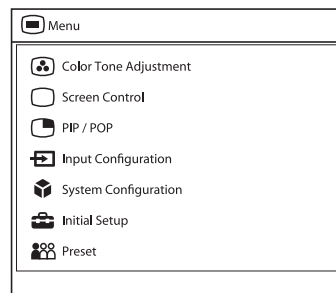
To change the menu language

Select the area and language which you use. See this section when you change the using language.

1 Press the MENU button.

The menu-selecting screen appears.
The menu presently selected is shown in blue.
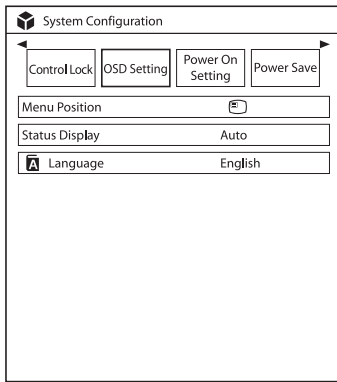

2 Press the ✦/✦ button to select "System Configuration."

The "System Configuration" menu appears.
The selected tab is displayed in blue.

3 Press the ✦/➡ button to select the "OSD Setting" tab.

The "OSD Setting" menu appears.

System Configuration

| Control Lock | OSD Setting | Power On Setting | Power Save |

Menu Position	🖵
Status Display	Auto
🅰 Language	English

4 Press the ⬆/⬇ button to select "Language."

The selected item is displayed in blue.

5 Press the ⬅/➡ button to select a language.

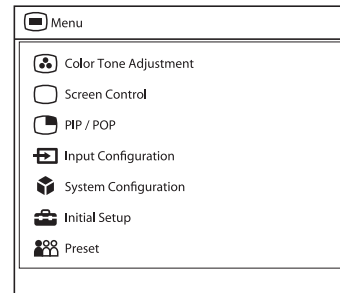The menu changes to the selected language.

To clear the menu

Press the MENU button.
The menu disappears automatically if a button is not pressed for one minute.
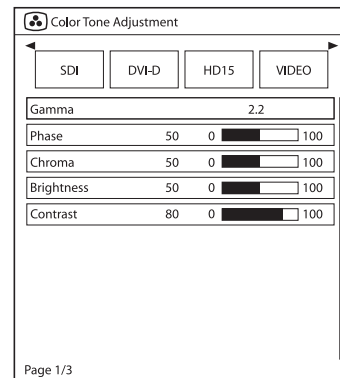
Using the Menu

The unit is equipped with an on-screen menu for making various adjustments and settings such as picture control, input setting, setting change, etc.
To change the menu language, refer to "To change the menu language" on page 17.

MENU   ⬆   CONTROL
⬅   ➡
⬇

2   3~6   1
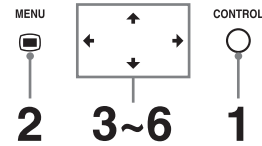
1 Press the CONTROL button.

The operation buttons are displayed.

2 Press the MENU button.

The menu-selecting screen appears.
The menu presently selected is shown in blue.

▣ Menu

- ⊛ Color Tone Adjustment
- ▢ Screen Control
- ▢ PIP / POP
- ⊟ Input Configuration
- ▧ System Configuration
- 🧰 Initial Setup
- 👥 Preset

3 Press the ⬆/⬇ button to select a menu.

When you press the ➡ or CONTROL button, the selected menu appears and setting items of the selected tab are displayed.

⊛ Color Tone Adjustment

| SDI | DVI-D | HD15 | VIDEO |

Gamma	2.2
Phase	50	0 ▮▮▮▮▮□ 100
Chroma	50	0 ▮▮▮▮▮□ 100
Brightness	50	0 ▮▮▮▮▮□ 100
Contrast	80	0 ▮▮▮▮▮▮□ 100

Page 1/3

4 Press the ⬅/➡ button to select the tab.

The selected tab is shown in blue, and setting items of the selected tab appear.

5 Select an item.

Press the ↑/↓ button to select the item.
The item to be changed is displayed in blue.

6 Make the setting or adjustment on an item.

When changing the adjustment level:
To increase the number, press the ➡ button.
To decrease the number, press the ⬅ button.
When selecting the setting:
Press the ⬅/➡ button to select the setting.

> **Note**
>
> If the Control Lock is set to "On," the setting cannot be changed.
> For details about Control Lock, see page 23.

About the memory of the settings

The settings are automatically stored in the monitor memory.

About the control navigation

Depending on the state, the operating buttons of the unit light as shown below:
White light: Operable state.
Green light: Operating state.
Off: Unable to operate.

Adjustment Using the Menus

Items

The screen menu of this monitor consists of the following items.

⊙ Color Tone Adjustment

Gamma
Phase
Chroma
Brightness
Contrast
Color Temperature
Gain R Offset
Gain G Offset
Gain B Offset
Bias R Offset
Bias G Offset
Bias B Offset
Mono
Sharpness H
Sharpness V
RGB Range
RGB/YPbPr
Sync Detect
ACC
CTI
NTSC Setup

▭ Screen Control

HD Scan Size
SD Scan Size
Flip Pattern
SD Aspect
APA
Shift H
Shift V
Dot Phase
Dot Pitch

▣ PIP / POP

Clipping Size
Sub Screen Position
Pattern Skip

⊕ Input Configuration

Port A Input Select
Port B Input Select

Input Name
Power Supply
HDCP Setting
Auto Input Select

📦 System Configuration

Control Lock
OSD Setting
Power On Setting
Power Save
Serial Remote
Ethernet Setting
Custom Button
Panel Display
Monitor Information

🧰 Initial Setup

Language
Port A Input Select
Port B Input Select
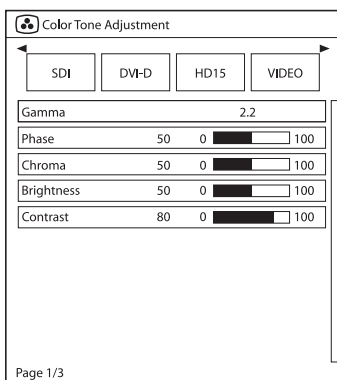Pattern Skip
PIP / POP
Custom Button
Auto Input Select

👥 Preset

Load User Setting
Save User Setting
User Name
Load Default

Adjusting and changing the settings

🎨 Color Tone Adjustment menu

The Color Tone Adjustment menu is used to adjust picture quality for each input.
You need to use the measurement instrument to adjust the color temperature.
Recommended: Konica Minolta color analyzer CA-310

Submenu	Setting
Gamma	Select the appropriate gamma mode from among "1.8," "2.0," "2.2," "2.4," "2.6," "DICOM." "DICOM" is for reference, not diagnostic, purposes only.
Phase	Adjusts color tones. The higher the setting, the more greenish the picture. The lower the setting, the more purplish the picture.
Chroma	Adjusts color intensity. The higher the setting, the greater the intensity. The lower the setting, the lower the intensity.
Brightness	Adjusts brightness.
Contrast	Adjusts contrast.
Color Temperature	Select the color temperature from among "D56," "D65," "D93." **Note** If the setting is changed, Gain R/G/B Offset and Bias R/G/B Offset are restored to 0 respectively.
Gain R Offset Gain G Offset Gain B Offset	Adjust color temperature in detail, and color balance (Gain).
Bias R Offset Bias G Offset Bias B Offset	Adjust color temperature in detail, and color balance (Bias).
Mono	Sets the display to a monochrome picture. Set to "On" for a monochrome picture, set to "Off" for a normal (chromatic) picture.
Sharpness H	Adjusts the horizontal sharpness. The higher the setting, the sharper the picture. The lower the setting, the softer the picture.
Sharpness V	Adjusts the vertical sharpness. The higher the setting, the sharper the picture. The lower the setting, the softer the picture.
RGB Range	Sets the RGB signal range. Select from among "Auto," "Limited," "Full." If you set to "Auto," this item is set to "Limited" when inputting video signal, and "Full" when inputting PC signals.
RGB/YPbPr	Sets the input signal of the HD15 connector. Select from among "RGB," "YPbPr." **Note** Select "RGB" to display PC signals.
Sync Detect	Sets detection of the sync signal of the input signal. Select from among "Auto," "Internal," "External." If you set to "Auto," external synchronization is prioritized. If there is no external synchronization, internal synchronization is set.

Color Tone Adjustment

| SDI | DVI-D | HD15 | VIDEO |

Gamma		2.2
Phase	50	0 ▬▬▢ 100
Chroma	50	0 ▬▬▢ 100
Brightness	50	0 ▬▬▢ 100
Contrast	80	0 ▬▬▢ 100

Page 1/3

Submenu	Setting
ACC	Sets the ACC (Auto Color Control) circuit to "On" or "Off."
CTI	Sets the CTI (Chroma Transient Improvement) circuit to "On" or "Off." When a low color resolution signal is input, a crisp image can be displayed.
NTSC Setup	Selects the NTSC setup level from among "0%," "7.5%."

⬭ Screen Control menu

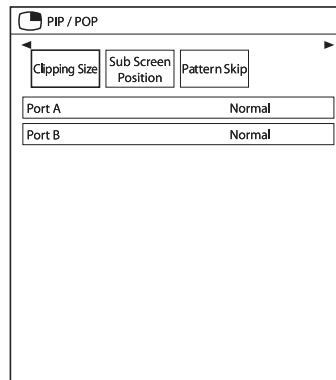The Screen Control menu is used to set the image display setting for each input.

Screen Control	
SDI	DVI-D	HD15	VIDEO
HD Scan Size	Off
SD Scan Size	Off
Flip Pattern	Off
SD Aspect	4:3
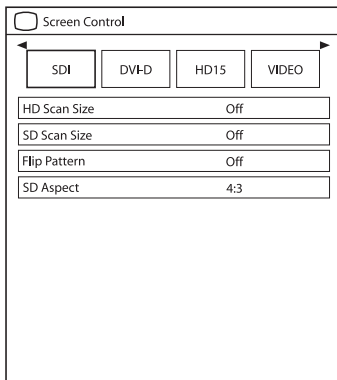
Submenu	Setting
HD Scan Size	Sets the scan size for the HD signal display. Select from among "Off," "Mode2," "Mode3."
SD Scan Size	Sets the scan size for the SD signal display. Select from among "Off," "Mode1."
Flip Pattern	Sets the flip pattern of the display. Select from among "Off," "Rotation," "Mirror."
SD Aspect	Sets the aspect ratio of the SD signal display. Select from among "4:3," "16:9."
APA	Select "On" to adjust the picture automatically to maximum clarity when an analog PC signal is displayed. If the APA operation does not finish correctly depending on the input signal, adjust from among "Dot Phase" and "Dot Pitch."
Shift H	Adjusts the horizontal position of the picture. A higher setting moves the picture to the right, and a lower setting moves the picture to the left when an analog PC signal is displayed.

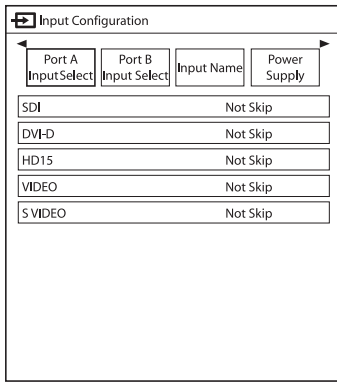| Submenu	Setting
Shift V	Adjusts the vertical position of the picture. A higher setting moves the picture up, and a lower setting moves the picture down when an analog PC signal is displayed.
Dot Phase	Adjusts the dot phase. Adjust the picture further for a finer picture after APA is adjusted when an analog PC signal is displayed.
Dot Pitch	Adjusts the horizontal size of the picture with the left side of the picture fixed. The higher the setting, the wider the picture. The lower the setting, the narrower the picture when an analog PC signal is displayed.

⬛ PIP / POP menu

The PIP / POP menu is used to set the display mode for the multi-image display and for each input.

PIP / POP	
Clipping Size	Sub Screen Position	Pattern Skip
Port A	Normal
Port B	Normal

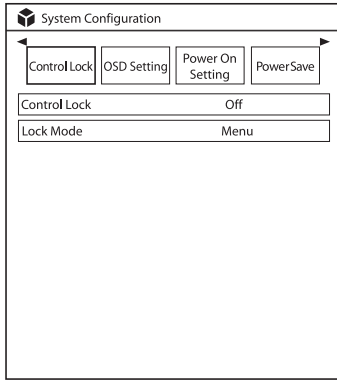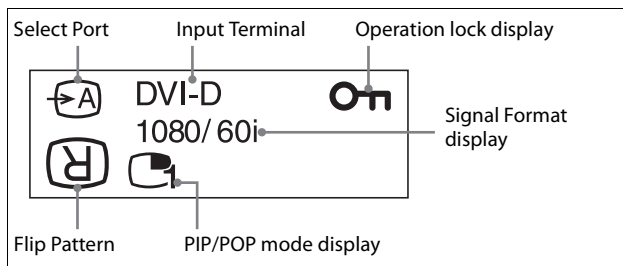| Submenu	Setting
Clipping Size	Sets the HD clipping size for each port when using multi-image display. Select from among "Normal," "4:3," "5:4."
Sub Screen Position	
PIP	Sets the sub screen position for the multi-image display (PIP). Set the position of the sub screen with the "Lower Left," "Upper Left," "Upper Right," and "Lower Right" icons.
POP	Sets the sub screen position for the multi-image display (POP). Set the position of the sub screen with the "Right" and "Left" icons.
Pattern Skip	Sets the pattern that is skipped when changing the displaying pattern by pressing the PIP/POP button on the front panel while displaying multi-image display. Set to "Not Skip" or "Skip" for the PIP1, PIP2, POP1, or POP2 pattern.

⊷ Input Configuration menu

Input Configuration

| Port A Input Select | Port B Input Select | Input Name | Power Supply |

SDI	Not Skip
DVI-D	Not Skip
HD15	Not Skip
VIDEO	Not Skip
S VIDEO	Not Skip

Submenu	Setting
Port A Input Select	Sets the input connector that is skipped when changing the input signal by pressing the PORT A button. Set to "Not Skip" or "Skip" for the SDI, DVI-D, HD15, VIDEO, S-VIDEO input connector.
Port B Input Select	Sets the input connector that is skipped when changing the input signal by pressing the PORT B button. Set to "Not Skip" or "Skip" for the SDI, DVI-D, HD15, VIDEO, S-VIDEO input connector.
Input Name	Sets the name for each input connector. Set the name of the SDI, DVI-D, HD15, VIDEO, S-VIDEO input connector. • Endoscope • Laparoscope • Ultrasound • Recorder • Printer • PACS • C-arm • Room Camera • Surgical Camera • Microscope • Vital Device
Power Supply	When the 5 V output power of the DVI input connector is output, "On" is set. When the power is not output, "Off" is set.

Submenu	Setting
HDCP Setting	Sets the HDCP setting for signals input in the DVI-D ⊷ connector. • Enable: Sets to use the signals protected with HDCP. • Disable: Sets to use the signals not protected with HDCP. When "Disable" is set for the signals not protected with HDCP, signals are output from the DVI-D ⊸ connector. **Note** When "Disable" is set for the signals protected with HDCP [1], images are not displayed. 1) HDCP (High-bandwidth Digital Content Protection) is a copyright protection technology using encryption technology of digital video signals.
Auto Input Select	Sets the auto detection of the input signal. Select from among "Off," "On." • On: Inputting signals to the input connector automatically changes connectors. • Off: The Auto Input Select function does not operate. **Note** About Auto Input Select • When "Auto Input Select" is set to "On" and there is no input signal to any connector, inputting a signal to one of the connectors detects the signal and displays it on the screen. • When a signal is input to one of the connectors, the "Auto Input Select" function does not operate even if a signal is input to another connector. • When "Skip" is set for the signal input connector, the signal is displayed on the screen. • When using a multi-image display, the detected signal is displayed on the main display. • If a signal is detected while displaying the menu, the menu will be hidden.

📦 System Configuration menu

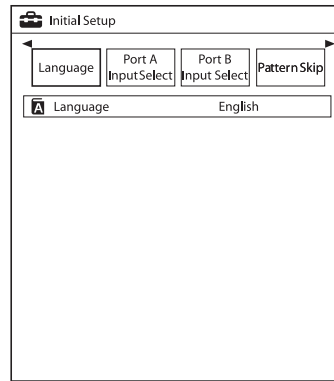| Submenu	Setting
Control Lock	
Control Lock	Set when you want to limit the operation of the control panel. Set to "Off" for no limit, "On" to limit.
Lock Mode	Sets the range to limit the operation of the control panel. This setting is available when "Control Lock" is set to "On." • Menu: Limits the menu operations other than the control lock setting. • Menu&Button: Limits all operations other than the control lock setting.
OSD Setting	
Menu Position	Sets the screen position for the OSD menu. Set the position of the OSD menu with the "Upper Left," "Upper Right," "Lower Right," "Lower Left," and "Center" icons.
Status Display	Port, Flip Pattern, input connector name, signal format, PIP/POP mode, and control lock are displayed.

Submenu	Setting
	• Auto: The format and scan mode are displayed for about 3 seconds when the content of Status Display is changed. • On: The format and scan mode are always displayed. • Off: The format and scan mode are not displayed.

Notes

• Even if the setting is set to "Auto" or "Off," the flip pattern is available.

• For details about the signal format, refer to no signal and incompatible signal displays.

Input	Signal format display
No signal	No Sync
Non compatible signal (except for DVI-D)	Unknown
Non compatible signal (DVI-D)	Out Of Range

Submenu	Setting
Language	You can select the menu or message language from the following languages. • English: English • 中文: Chinese • 日本語: Japanese • Italiano: Italian • Español: Spanish • Deutsch: German • Français: French • Русский: Russian
Power On Setting	
Power On Mode	Selects the setting when the monitor is turned on from the following settings. • Last: The setting when the monitor was last turned off. • Default Setting: The setting that is set in the default setting. • User1 to 20: The selected user setting.
Logo	Select the logo when the power turns on from among "On - 5sec," "On - 10sec," "On - 30sec," "On - 60sec," "On - 120sec," "Off."
Power Save	
Energy Saving Mode	Selects the energy saving mode. • Off: Turns the energy saving mode off. • On: Dims the backlight.

Submenu	Setting
Sleep Mode	Sets the sleep mode to on or off. When you set to "On," the monitor enters into power saving mode by turning off the backlight if there is no input signal from the selected connector for more than 1 minute.
Serial Remote	
Serial Remote	Selects the using mode. • Off: Disables the serial remote function. • RS-232C: Controls this unit via RS-232C command. • Ethernet: Controls this unit via Ethernet command.
Ethernet Setting	Sets the Ethernet. • IP Address: Sets the IP Address. • Subnet Mask: Sets the Subnet Mask. • Default Gateway: Sets "On" or "Off" of the Default Gateway. • Address: Sets the Default Gateway. • Save: Saves the confirmed setting. • Cancel: Returns to the previous setting from the confirmed setting.
Custom Button	Assigns the function to the CUSTOM 1, CUSTOM 2 or CUSTOM 3 button on the front panel, and can set the following functions to on or off. • No Setting • Scan Size • Flip • POP Sub Screen Position • APA • Gamma • Mono • Phase • Chroma • Brightness • Contrast
Panel Display	
Backlight	Adjusts the brightness of the display. A higher setting increases the brightness of the display, and a lower setting darkens the display.
Monitor Information	
Software Version	Displays the software version.

🧰 Initial Setup menu

The Initial Setup menu is used to set the default preset value.
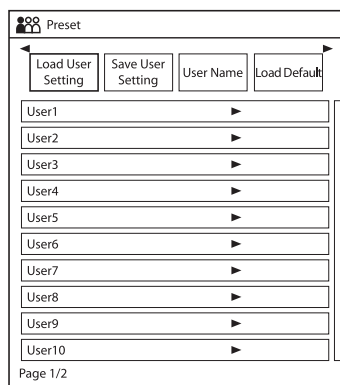

Submenu	Setting
Language	You can select the menu or message language from the following languages. • English: English • 中文: Chinese • 日本語: Japanese • Italiano: Italian • Español: Spanish • Deutsch: German • Français: French • Русский: Russian
Port A Input Select	Sets the input connector that is skipped when changing the input signal by pressing the PORT A button. Set to "Not Skip" or "Skip" for the SDI, DVI-D, HD15, VIDEO, S-VIDEO connector.
Port B Input Select	Sets the input connector that is skipped when changing the input signal by pressing the PORT B button. Set to "Not Skip" or "Skip" for the SDI, DVI-D, HD15, VIDEO, S-VIDEO connector.
Pattern Skip	Sets the pattern that is skipped when changing the displaying pattern by pressing the PIP/POP button on the front panel while using multi-image display. Set to "Not Skip" or "Skip" for the PIP1, PIP2, POP1, or POP2 pattern.
PIP / POP	
PIP Sub Screen Position	Sets the sub screen position for the multi-image display (PIP). Set the position of the sub screen with the "Lower Left," "Upper Left," "Upper Right," and "Lower Right" icons.
POP Sub Screen Position	Sets the sub screen position for the multi-image display (POP). Set the position of the sub screen with the "Right" and "Left" icons.
PORT A HD Clipping Size/ PORT B HD Clipping Size	Sets the HD clipping size for each port when displaying multi-image display. Select from among "Normal," "4:3," "5:4."

| Submenu	Setting
Custom Button	Assigns the function to the CUSTOM 1, CUSTOM 2 or CUSTOM 3 button on the front panel, and can set the following functions to on or off. • No Setting • Scan Size • Flip • POP Sub Screen Position • APA • Gamma • Mono • Phase • Chroma • Brightness • Contrast
Auto Input Select	• On: Inputting signals to the input connector automatically changes connectors. • Off: The Auto Input Select function does not operate. For details, see page 22.

👥 Preset menu

The Preset menu is used to set the User1 to 20 preset setting.

```
👥 Preset
◄                                              ►
┌──────────┬──────────┬──────────┬──────────┐
│Load User │Save User │User Name │Load Default│
│ Setting  │ Setting  │          │          │
├──────────┴──────────┴─────┬────┴──────────┤
│ User1                      ►               │
├────────────────────────────────────────────┤
│ User2                      ►               │
├────────────────────────────────────────────┤
│ User3                      ►               │
├────────────────────────────────────────────┤
│ User4                      ►               │
├────────────────────────────────────────────┤
│ User5                      ►               │
├────────────────────────────────────────────┤
│ User6                      ►               │
├────────────────────────────────────────────┤
│ User7                      ►               │
├────────────────────────────────────────────┤
│ User8                      ►               │
├────────────────────────────────────────────┤
│ User9                      ►               │
├────────────────────────────────────────────┤
│ User10                     ►               │
├────────────────────────────────────────────┤
│ Page 1/2                                   │
└────────────────────────────────────────────┘
```

Submenu	Setting
Load User Setting	Loads the settings that are stored User1 to 20.
Save User Setting	Stores the current settings to User1 to 20.
User Name	Registers the user names to User1 to 20.
Load Default	Loads the default settings.

Troubleshooting

This section may help you isolate the cause of a problem and as a result, eliminate the need to contact technical support.

- **The display is colored in green or purple** → When HD15 is selected, perform the RGB/YPbPr selection correctly.
- **The unit cannot be operated** → The key protection function is enabled. Set the Control Lock setting to Off in the Control Lock menu.
- **The black bars appear at the upper and lower positions of the display** → When the signal aspect ratio is different from that of the panel, the black bars appear. This is not a failure of the unit.
- **Video images are not displayed on the screen.** → If the PC signal is input to HD15, select RGB in RGB/YPbPr.
- **The DVI-D signal image is not displayed.** → When inputting the signal protected with HDCP in the DVI-D ↩ connector and the HDCP Setting is set to "Disable," the image is not displayed on the screen. Set the HDCP Setting to "Enable."
- **While the logo is displayed, the operation buttons do not operate when pushed.** → While the logo is displayed, the operation buttons do not operate. After the logo disappears, the operation buttons can be operated. The logo display time can be set in the menu. For details, see page 23.

Error Messages

When the following messages appear on the screen, turn off the power and contact an authorized Sony dealer.

Messages	Description
Temperature Error	The temperature of this unit has increased.

Specifications

Picture performance

LCD panel   a-Si TFT Active Matrix
Pixel efficiency   99.99%
Viewing angle (panel specification)
     89°/89°/89°/89° (typical) (up/down/
       left/right, contrast > 10:1)
Efficient picture size
     LMD-2735MD:
       597.9 × 336.3, 686.0 mm (w/h, dia)
       (23 $^5/_8$ × 13 $^1/_4$, 27 $^1/_8$ inches)
     LMD-2435MD:
       527.0 × 296.5, 604.7 mm (w/h, dia)
       (20 $^3/_4$ × 11 $^3/_4$, 23 $^7/_8$ inches)
Resolution   H 1,920 dots, V 1,080 lines
Aspect ratio   16:9

Input

VIDEO input (NTSC/PAL) connector
     BNC type (1)
     1 Vp-p ± 3 dB sync negative
S-VIDEO input connector
     4-pin mini-DIN (1)
     Y: 1 Vp-p ± 3 dB sync negative
     C: 0.286 Vp-p ± 3 dB (NTSC burst
       signal level)
     0.3 Vp-p ± 3 dB (PAL burst signal
       level)
HD15 input connector
     D-sub 15-pin (1)
     R/G/B: 0.7 Vp-p, sync positive
       (Sync On Green, 0.3 Vp-p sync
       negative)
     Sync: 0.3 Vp-p - 4.0 Vp-p
       (polarity free, H/V separate sync)
     Plug & Play function: corresponds to
       DDC2B
DVI-D input connector
     DVI-D connector (1)
     TMDS single link
SDI input connector
     BNC type (1)
Remote input connector
  Serial remote
     D-sub 9-pin (RS-232C) (1)
     RJ-45 modular connector
       (ETHERNET) (1)
AC input connector
     100 V to 240 V, 50/60 Hz
DC input connector
     DC 24 V

Output

DVI-D output connector
　　　　　DVI-D connector (1)
　　　　　　　Active through
DC 5V output connector
　　　　　Round type pin (female) (1)

General

Power　　　　AC IN: 100 V - 240 V, 50/60 Hz, 0.6 A -
　　　　　　　0.3 A
　　　　　　DC IN: 24 V, 2.2 A (Supplied from AC
　　　　　　　adaptor)
Power consumption
　　　　　Maximum: approx. 57 W
Operating conditions
　　Temperature
　　　　　　0 °C to 35 °C (32 °F to 95 °F)
　　Recommended temperature
　　　　　　20 °C to 30 °C (68 °F to 86 °F)
　　Humidity　30% to 85% (no condensation)
　　Pressure　700 hPa to 1060 hPa
Storage and transport conditions
　　Temperature
　　　　　　−20 °C to +60 °C (−4 °F to +140 °F)
　　Humidity　20% to 90%
　　Pressure　700 hPa to 1060 hPa
Accessories supplied
　　　　　AC plug holder (2)
　　　　　Before Using This Unit (1)
　　　　　CD-ROM (including the Instructions
　　　　　　for Use) (1)
　　　　　Service Contact List (1)
　　　　　European Representative (1)
Optional accessories
　　　　　Monitor stand
　　　　　　SU-600MD
　　　　　Signal cable
　　　　　　SMF-405
　　　　　AC adaptor
　　　　　　AC-120MD

Medical Specifications

Protection against electric shock:
　Class I
Protection against harmful ingress of water:
　IPX1 (only when used vertically)
Degree of safety in the presence of a flammable
anesthetic mixture with air or with oxygen or nitrous
oxide:
　Not suitable for use in the presence of a flammable
　anesthetic mixture with air or with oxygen or nitrous
　oxide
Mode of operation:
　Continuous

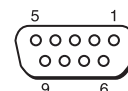Design and specifications are subject to change without
notice.

Pin assignment

SERIAL REMOTE (RS-232C) connector
D-sub 9-pin, female

Pin number	Signal
1	NC
2	RX
3	TX
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

5V 2.0A (DC output) connector
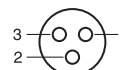
Pin number	Signal
1	5 V
2	NC
3	GND

Available signal formats

Analog signal

Signal format	Input connector			
	VIDEO	S-VIDEO	HD15	
			COMPONENT	RGB
NTSC	○	○	–	–
PAL	○	○	–	–
480/59.94i	–	–	○	○
480/60i	–	–	○	○
480/60p	–	–	○	○
576/50i	–	–	○	○
576/50p	–	–	○	○
720/59.94p	–	–	○	○
720/60p	–	–	○	○
720/50p	–	–	○	○
1080/59.94i	–	–	○	○
1080/60i	–	–	○	○
1080/50i	–	–	○	○

Digital signal

Signal format	Input connector	
	SDI	DVI-D
480/59.94i	○	–
480/60p	–	○
575/50i	○	–
576/50p	–	○
720/59.94p	○	○
720/60p	○	○
720/50p	○	○
1080/59.94i	○	○
1080/60i	○	○
1080/50i	○	○
1080/59.94p	–	○
1080/60p	–	○
1080/50p	–	○

Analog PC signal

VESA DMT

Resolution	Dot clock [MHz]	fH [kHz]	fV [Hz]	Sync. polarity	
				Horizontal	Vertical
640 × 480 60 Hz	25.175	31.469	59.940	Negative	Negative
800 × 600 56 Hz	36.000	35.156	56.250	Positive	Positive
800 × 600 60 Hz	40.000	37.879	60.317	Positive	Positive
800 × 600 72 Hz	50.000	48.077	72.188	Positive	Positive
800 × 600 75 Hz	49.500	46.875	75.000	Positive	Positive
800 × 600 85 Hz	56.250	53.674	85.061	Positive	Positive
1024 × 768 60 Hz	65.000	48.363	60.004	Negative	Negative
1024 × 768 70 Hz	75.000	56.476	70.069	Negative	Negative
1024 × 768 75 Hz	78.750	60.023	75.029	Positive	Positive
1024 × 768 85 Hz	94.500	68.677	84.997	Positive	Positive
1152 × 864 75 Hz	108.000	67.500	75.000	Positive	Positive
1280 × 960 60 Hz	108.000	60.000	60.000	Positive	Positive
1280 × 1024 60 Hz	108.000	63.981	60.020	Positive	Positive
1600 × 1200 60 Hz	162.000	75.000	60.000	Positive	Positive

VESA CVT

Resolution	Dot clock [MHz]	fH [kHz]	fV [Hz]	Sync. polarity	
				Horizontal	Vertical
640 × 480 60 Hz	23.625	29.531	59.780	Positive	Negative
800 × 600 60 Hz	35.500	36.979	59.837	Positive	Negative
1024 × 768 60 Hz	56.000	47.297	59.870	Positive	Negative
1280 × 960 60 Hz	85.250	59.201	59.920	Positive	Negative
1600 × 1200 50 Hz	132.375	61.742	49.994	Negative	Positive
1600 × 1200 60 Hz	130.375	74.077	59.981	Positive	Negative
1360 × 768 50 Hz	69.500	39.489	49.922	Negative	Positive
1360 × 768 60 Hz	84.625	47.649	59.936	Negative	Positive
1360 × 768 60 Hz	72.000	47.368	59.960	Positive	Negative
1920 × 1080 50 Hz	141.375	55.572	49.975	Negative	Positive
1920 × 1080 60 Hz	138.625	66.647	59.988	Positive	Negative
1920 × 1200 50 Hz	158.000	61.719	49.975	Negative	Positive
1920 × 1200 60 Hz	154.125	74.099	59.999	Positive	Negative
1280 × 1024 60 Hz	91.000	63.194	59.957	Positive	Negative
1280 × 768 50 Hz	65.125	39.518	49.959	Negative	Positive
1280 × 768 60 Hz	80.125	47.693	59.992	Negative	Positive

Resolution	Dot clock [MHz]	fH [kHz]	fV [Hz]	Sync. polarity	
				Horizontal	Vertical
1280 × 768 75 Hz	102.875	60.091	74.926	Negative	Positive
1280 × 768 60 Hz	68.250	47.396	59.995	Positive	Negative

DVI

Range of DVI input signal
Vertical frequency: 50.0 Hz to 85.1 Hz
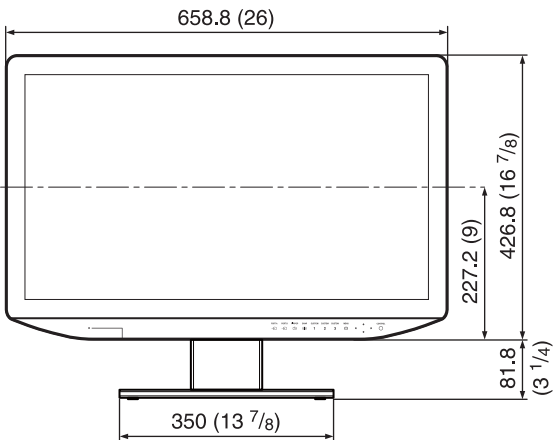Horizontal frequency: 31.5 kHz to 75.0 kHz
Dot clock: 25.175 MHz to 148.5 MHz
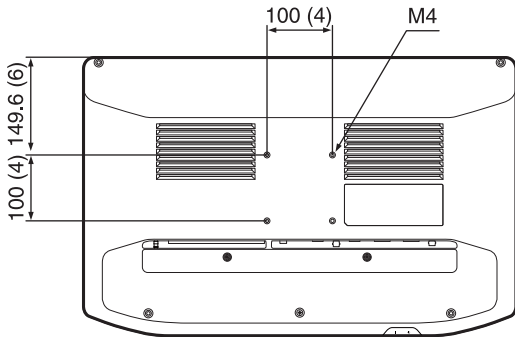Picture size, phase: automatic discrimination by the DE (Data Enable) signal

Dimensions

LMD-2735MD

Front

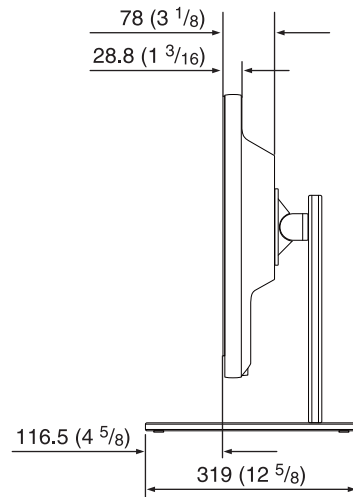**When an optional stand SU-600MD is attached**

658.8 (26)

426.8 (16 $^7/_8$)

227.2 (9)

81.8 (3 $^1/_4$)

350 (13 $^7/_8$)

Rear (VESA Mount Instruction)

100 (4)   M4

149.6 (6)

100 (4)

* Length of M4 screws (4)

Monitor cabinet   Attached object

M4 screw

6 ($^1/_4$) to 9 ($^3/_8$)

Side

When an optional stand SU-600MD is attached

78 (3 $^1/_8$)

28.8 (1 $^3/_{16}$)

116.5 (4 $^5/_8$)

319 (12 $^5/_8$)
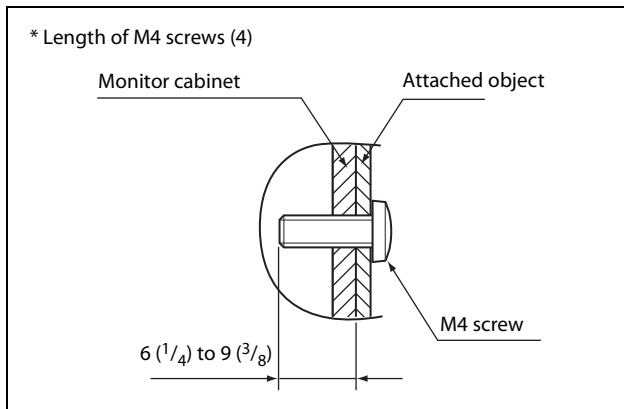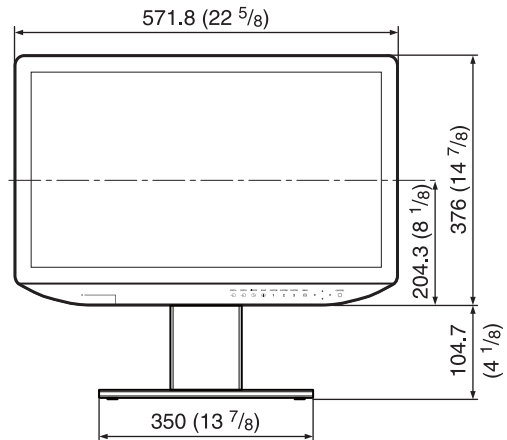
Unit: mm (inches)

Mass:
    Approx. 8.7 kg (19 lb 2.9 oz) (when the optional stand
        is not installed)

LMD-2435MD

Front

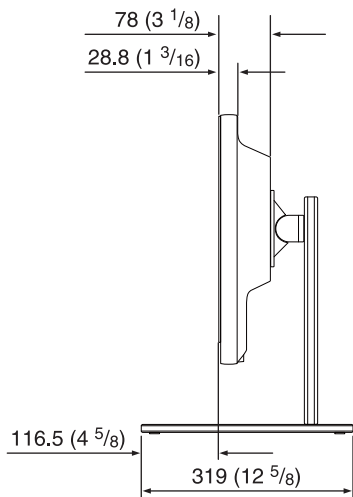**When an optional stand SU-600MD is attached**

571.8 (22 $^5/_8$)

376 (14 $^7/_8$)

204.3 (8 $^1/_8$)

104.7 (4 $^1/_8$)

350 (13 $^7/_8$)

Rear (VESA Mount Instruction)

100 (4) M4

121.7 (4 7/8)

100 (4)

* Length of M4 screws (4)

Monitor cabinet   Attached object

M4 screw

6 (1/4) to 9 (3/8)

Side

When an optional stand SU-600MD is attached

78 (3 1/8)

28.8 (1 3/16)

116.5 (4 5/8)

319 (12 5/8)
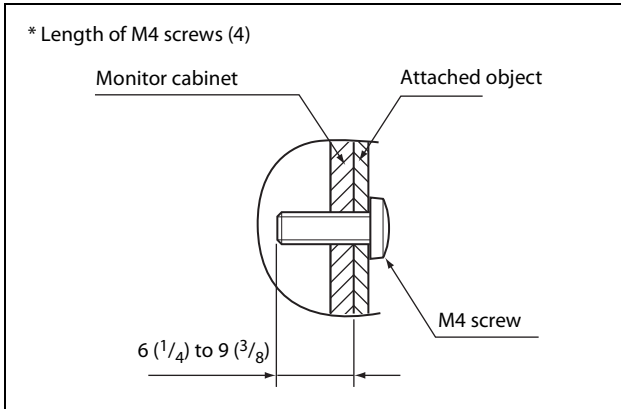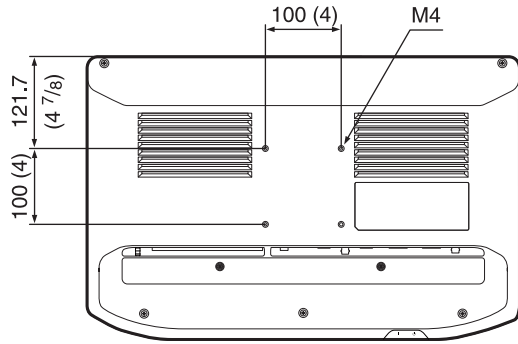
Unit: mm (inches)

Mass:
    Approx. 6.7 kg (14 lb 12 oz) (when the optional stand
      is not installed)

http://www.sony.net/