

LCD Monitor

Instructions for Use



LMD-1950MD

Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the spaces provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____

Serial No. _____

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.

THIS APPARATUS MUST BE EARTHED.

To disconnect the main power, unplug the AC plug.

WARNING

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. If a fault should occur during operation of the unit, operate the disconnect device to switch the power supply off, or disconnect the power plug.

In the event of a malfunction or when maintenance is necessary, consult an authorized Sony dealer.

This unit contains substances which can pollute the environment if disposed carelessly. Please contact our nearest representative office or your local environmental office in case of disposal of this unit.

For the customers in Canada

This unit has been certified according to Standard CSA C22.2 NO.601.1.

FOR THE CUSTOMERS IN THE USA

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.

Lamp in this product contains mercury. Disposal of these materials may be regulated due to environmental considerations. For disposal or recycling information, please contact your local authorities or the Electronic Industries Alliance (www.eiae.org).

For the customers in the U.S.A. and Canada

When you use this product connected to 240 V single phase, be sure to connect this product to a center tapped circuit.

Important safeguards/notices for use in the medical environments

1. All the equipments connected to this unit shall be certified according to Standard IEC60601-1, IEC60950-1, IEC60065 or other IEC/ISO Standards applicable to the equipments.
2. Furthermore all configurations shall comply with the system standard IEC60601-1-1. 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 IEC60601-1-1. If in doubt, consult the qualified service personnel.
3. The leakage current could increase when connected to other equipment.
4. 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 EN60601-1-2 and CISPR11, Class B, Group 1)

Caution

When you dispose of the unit or accessories, you must obey the law in the relative area or country and the regulation in the relative hospital.

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 main 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.








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'.

Symbols on the unit

Symbol	Location	This symbol indicates
	Bottom	Power switch. Press to turn the monitor on.
	Bottom	Power switch. Press to turn the monitor off.
	Bottom	The equipotential terminal which brings the various parts of a system to the same potential.
	Bottom	Functional earth terminal
	Front	Brightness control
	Front	Contrast control
	Front	Key inhibit The settings are locked so that they cannot be changed.

Important EMC notices for use in the medical environments

- The LMD-1950MD needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in this instructions for use.
- The portable and mobile RF communications equipment such as cellular phones can affect the LMD-1950MD.

List of cables used for EMC tests	
Type of cable	Specifications
AC Cable	1.8 m and 2.3 m, Non-shielded
DC Cable	0.5 m and 2.0 m, Shielded
Earth Cable	3.0 m, Non-shielded
BNC Cable	1.5 m, Shielded
Y/C out Cable	1.6 m, Shielded
Y/C in Cable	1.6 m, Shielded
DVI Cable	1.8 m and 0.2 m, Shielded
RGB Cable	1.8 m and 0.2 m, Shielded
Parallel remote Cable	0.6 m, Non-shielded
Serial Cable	3.0 m, Shielded
Keyboard Cable	1.5 m, Shielded
Mouse Cable	1.8 m, Shielded

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-1950MD.

Guidance and manufacturer's declaration-electromagnetic emissions		
The LMD-1950MD is intended for use in the electromagnetic environment specified below. The customer or the user of the LMD-1950MD should assure that it is used in such an environment.		
Emission test	Compliance	Electromagnetic environment-guidance
RF emissions CISPR 11	Group 1	The LMD-1950MD 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	
Harmonic emissions IEC 61000-3-2	Class D	The LMD-1950MD 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.
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Warning

If the LMD-1950MD 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-1950MD is intended for use in the electromagnetic environment specified below. The customer or the user of the LMD-1950MD should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±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	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	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	Mains power quality should be that of a typical commercial or hospital environment. If the user of the LMD-1950MD requires continued operation during power mains interruptions, it is recommended that the LMD-1950MD be powered from an uninterruptible power supply or a battery.
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at least 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-1950MD is intended for use in the electromagnetic environment specified below. The customer or the user of the LMD-1950MD should assure that it is used in such as environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
<p>Conducted RF IEC 61000-4-6</p>	<p>3 Vrms 150 kHz to 80 MHz</p>	<p>3 Vrms</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the LMD-1950MD, including cables, than the recommended separation distance calculated from the equation appliance to the frequency of the transmitter.</p> <p>Recommended separation distance</p> <p>$d = 1.2 \sqrt{P}$</p> <p>$d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz</p> <p>$d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz</p> <p>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).</p> <p>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</p> <p>Interference may occur in the vicinity of equipment marked with following symbol:</p> 

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-1950MD is used exceeds the applicable RF compliance level above, the LMD-1950MD should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the LMD-1950MD.

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-1950MD

The LMD-1950MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the LMD-1950MD can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (Transmitters) and the LMD-1950MD 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.

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Precaution

On Safety

- Operate the unit on 100-240 V AC only.
- The nameplate indicating operating voltage, etc. is located on 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.

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 monitor’s screen. Do not place a heavy object on the LCD monitor’s 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.
- If a fixed picture such as a frame of a divided picture or time code, or a still picture is displayed for a long time, an image may remain on the screen and be superimposed as a ghosting image.
- The screen and the cabinet become warm during operation. This is not a malfunction.

About the Fluorescent Tube

- A specially designed fluorescent tube is installed as the lighting apparatus for this unit. If the LCD screen becomes dark, unstable or does not turn on, consult your Sony dealer.

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 especially 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.

Disposal of the Unit

- Do not dispose of the unit with general waste. Do not include the monitor with household waste.
- The fluorescent tube includes mercury. Dispose of the monitor in accordance with the regulations of your local sanitation authority.

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.

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.

On Fan Error

- The fan for cooling the unit is built in. When the "FAN ERROR" message is displayed, turn off the power and contact an authorized Sony dealer.

Features

Compliance with medical safety standards in America, Canada and Europe

UL60601-1 for America, CSA C22.2 No.601.1 for Canada and EN 60601-1 for 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.

Cabinet design with no heat vents

LMD-1950MD has been designed so that there are no air vents for expelling heat from the unit. This design prevents blood, chemical solutions, and dirt, which could cause a trouble, from entering the unit. No dirt accumulating in the main unit can come out.

Picture

Sophisticated I/P (Interlace to Progressive) Conversion

The LMD-1950MD provides sophisticated I/P conversion with Sony's original X-Algorithm technology. This technology combines the pixels above, below and in the diagonal direction of the moving picture part, and then inserts a natural pixel. The direct result is much smoother image reproduction for both moving and static picture areas.

Fully digital 10-bit signal processing circuit

As well as digital signals, all signals including analog signals are converted into digital signals. All signals are processed using a fully digital 10-bit processing circuit so that an image is produced in smooth gradation without any deterioration of quality.

Two color system available

The monitor can display NTSC and PAL signals by connecting this unit.

Auto chroma/phase function

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

High image-quality/high-resolution SXGA LCD panel

An SXGA high-resolution (1280 × 1024 dots) panel and high brightness/ultra-wide field of view technology enable you to use the monitor under various lighting conditions and in numerous ways (installing on wall, using several monitors to view an image, and so on.). Because a color filter with wide-color reproduction and LCD materials with high response speed are used, the motion picture of the video signal is displayed clearer. This monitor also performs sampling of signals at high frequencies and provides a high resolution of 700 TV scanning lines or more during the RGB/COMPONENT signal (480/60I, 575/50I) input.

Input

Accepts analog RGB input signals *1

Adopting the scan converter allows this monitor to detect VGA, SVGA, XGA and SXGA analog RGB signals input to the HD15 input connector.

Accepts DVI-D (digital) input signals *1

Adopting the scan converter allows this monitor to detect VGA, SVGA, XGA and SXGA digital computer signals input to the DVI input connector.

To view SXGA signals when the DVI input is selected, use the cable within 3 m (118 1/8 inches) in length.

*1 For acceptable formats, refer to “About the preset signal” on pages 34 and 35.

Optional slot for the video signal

Two optional input adaptors can be attached. The composite, Y/C, component, analog RGB or SDI signal can be input depending on the input connectors of the board to be used.

Multi-format *2

NTSC or PAL color system or DTV format, such as 720P, 1080I, etc. can be selected automatically.

*2 For acceptable formats, refer to “Video signal formats” on page 33.

External sync input

The unit can be operated on the sync signal supplied from an external sync generator.

Functions

APA (Auto Pixel Alignment) function

You can display pictures from the HD 15 input connector in the appropriate picture by simply pressing the APA key.

Automatic termination (connector with mark only)

The input connector is terminated internally at 75 ohms when nothing has been connected to the output connector. If a cable is connected to the output connector, the internal terminal is automatically released and the signals input to the input connector are output to the output connector (loop-through).

Select color temperature and gamma mode

You can select the color temperature from among four (HIGH, LOW, LOW2, LOW3) settings and gamma mode from among five settings. You can also adjust the color temperature to the appropriate setting in “USER”.

Aspect setting

You can set the monitor to 4:3 or 16:9 display mode according to the input signal.

Scan function

You can select the display from among “NORMAL”, “UNDER”, “OVER”, “FULL”, “ZOOM” and “NATIVE” (1080I and 720P only)” except the HD 15 and DVI input signals.

Select language display

You can select your language for the display from seven languages - English, German, French, Italian, Spanish, Japanese and Chinese.

Power saving function

The monitor enters into power saving mode to reduce the power consumption when no signal is input.

Key inhibit function

You can inhibit the key to prevent missing an operation.

User memory function

You can save the 20 picture settings with the name. The user memory data can be saved or loaded between the monitor and the equipment (PC, etc.) connected in serial remote mode.

Two kinds of ground terminals

Two kinds of ground terminals are built into the monitor to equal the electric potential.

External remote control function

You can directly select the input signal, aspect, etc. by operating the connected equipment.

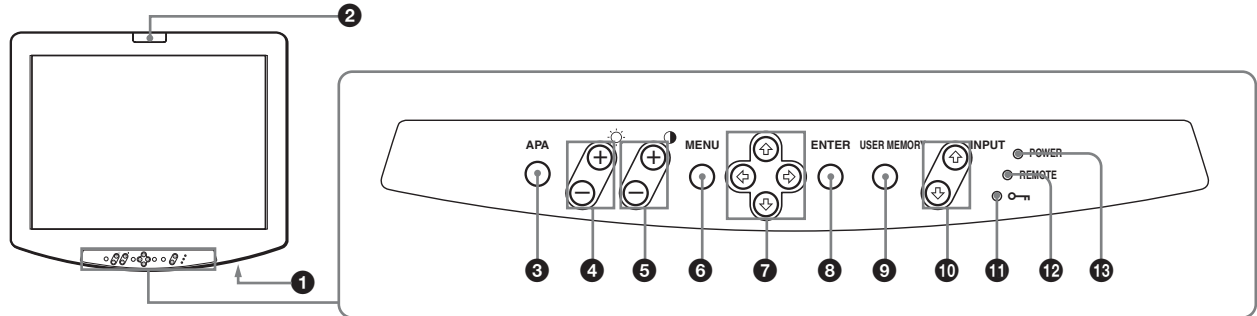
Other

Optional stand

It is more convenient to install the monitor on a desk by using the optional stand (SU-560).

Location and Function of Parts and Controls

Front Panel



1 (Power) switch

Press to turn on the power and to turn off the power. When the power is turned on, the POWER indicator lights.

2 Tally lamp

Turning this lamp on or off can be done with a Remote Control.

For details, refer to “Pin assignment” on page 32.

3 APA (Auto Pixel Alignment) key

Adjust a picture clearest automatically while a signal is input from the HD15 input connector. To adjust the picture further for finer picture though the picture is adjusted automatically, see the “DOT PHASE” (on page 26) and “PITCH” (on page 27).

Press the MENU key to stop the APA operation.

The APA function does not work when the menu is displayed.

4 (Brightness) +/- keys

+: press for more brightness.

-: press for less brightness.

The value is reset to the default setting by pressing the + and - keys simultaneously.

5 (Contrast) +/- keys

+: press to make the contrast stronger.

-: press to make the contrast weaker.

The value is reset to the default setting by pressing the + and - keys simultaneously.

6 MENU key

Press to display the on-screen menu.

Press again to clear the menu.

The USER SERVICE menu (on page 29) appears by keeping the MENU key pressed.

For menu operations, refer to “Using the Menu” on page 21.

7 Arrow keys (///)

Select the menu or to make various adjustments.

8 ENTER key

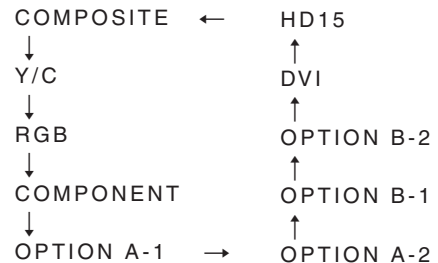
Press to decide a selected item in the menu.

9 USER MEMORY key

Press to load the picture settings saved in the USER MEMORY menu (on page 27).

10 INPUT / keys

Select the input signal. Each time you press the key, the input signal switches as follows. When the key is pressed, the input signal switches in reverse order.



Notes

- The signal set to “OFF” in the INPUT SELECT menu is not selected with the INPUT key and skipped. To select the signal, select “ON”.
- When an input adaptor is not attached, “OPTION” is skipped automatically.

11 (Key inhibit) indicator

When the key inhibit function works, the green indicator lights.

For the key inhibit function, refer to “REMOTE menu” on page 27 and “KEY INHIBIT menu” on page 29.

12 REMOTE indicator

When the serial remote (RS-232C) is operable, the green indicator lights.

For the remote function, refer to “REMOTE menu” on page 27.

13 POWER indicator

When the power is turned on, the indicator lights in amber and then in green.

This indicator lights in amber in power saving mode.

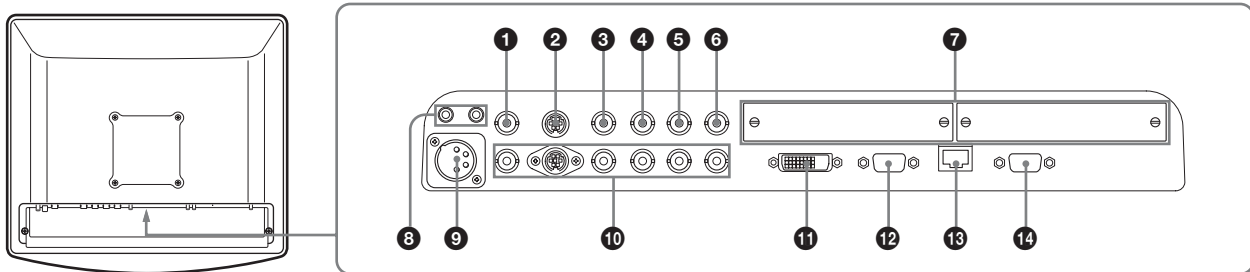
Input Signals and Adjustable/Setting Items

Item	Input signal									
	Video* ¹ , Y/C* ¹	B & W* ¹	Component* ²		RGB* ²		SDI		DVI	HD15
			SD	HD	SD	HD	D1* ³	HD* ⁴		
CONTRAST	○	○	○	○	○	○	○	○	○	○
BRIGHT	○	○	○	○	○	○	○	○	○	○
CHROMA	○	×	○	○	×	×	○	○	×	×
PHASE	○ (NTSC)	×	×	×	×	×	×	×	×	×
APERTURE	○	○	○	○	×	×	○	○	×	×
COLOR TEMP	○	○	○	○	○	○	○	○	○	○
AUTO CHROMA/ PHASE	○	×	○	○	×	×	○	○	×	×
COMP LEVEL	×	×	○ (480/60I)	×	×	×	×	×	×	×
NTSC SETUP	○ (NTSC)	○ (480/60I)	×	×	×	×	×	×	×	×
GAMMA	○	○	○	○	○	○	○	○	○	○
SCAN* ⁵	○	○	○	○	○	○	○	○	×	×
ASPECT	○	○	○	○* ⁶	○	○* ⁶	○	×	×	×
APA	×	×	×	×	×	×	×	×	×	○
SIZE	×	×	×	×	×	×	×	×	○	○
SHIFT	○	○	○	○	○	○	○	○	○	○
DOT PHASE	×	×	×	×	×	×	×	×	×	○
PITCH	×	×	×	×	×	×	×	×	×	○
POWER SAVING	○	○	○	○	○	○	○	○	○	○
PIC DELAY MIN* ⁷	○	○	○	○	○	○	○	○	×	×

○ : Adjustable/can be set
 × : Not adjustable/cannot be set

- *1 The signal can be input without an input adaptor. When a BKM-227W is attached, a number of the input is increased.
- *2 The signal can be input without an input adaptor. When a BKM-229X is attached, a number of the input is increased.
- *3 When a BKM-220D or BKM-243HS is attached, the signal can be input.
- *4 When a BKM-243HS is attached, the signal can be input.
- *5 You may not be able to set this item due to the input signal. For details, see “SCAN” on page 25.
- *6 The signal can be input with 480/60P or 576/50P format.
- *7 Available only interlace signal.

Bottom



❶ COMPOSITE input connector (BNC)

Input connector for composite signals.

❷ Y/C input connector (4-pin mini-DIN)

Input connector for Y/C signals.

❸ G/Y input connector (BNC)

Input connector for G of RGB and component Y (luminance) signals.

❹ B/Pb input connector (BNC)

Input connector for B of RGB signals and Pb (blue color difference) of component signals.

❺ R/Pr input connector (BNC)

Input connector for R of RGB signals and Pr (red color difference) of component signals.

❻ EXT SYNC (External sync) input connector (BNC)

When this unit operates on an external sync signal, connect the reference signal from a sync generator to this connector.

Select "EXT" in "SYNC" of the USER CONFIG menu (on page 26) to use the sync signal through this connector.

Note

When inputting a video signal with the jitters, etc. the picture may be disturbed. We recommend using the TBC (time base corrector).

❼ Optional input slots

An optional input adaptor can be attached according to your requirements. Press the INPUT key to select the signals.

❽ ∇/\equiv (Equipotential/Function Earth) terminal

∇ (equipotential) terminal

Connects the equipotential plug.

\equiv (function earth) terminal

Connects the earth cable.

❾ DC IN socket

Connect the supplied DC connector of the AC adaptor.

❿ Loop-through output connectors

The signals input to the input connectors (❶, ❷, ❸, ❹, ❺ and ❻) are output here. Connect to the equipment according to the input signal.

When the cable is connected to this connector, the 75-ohm termination of the input automatically released, and the signal from the input connector is output from this connector.

⓫ DVI input connector (DVI-D)

DVI Rev.1.0 applicable digital RGB signal is input.

To view SXGA signals when the DVI input is selected, use the cable within 3 m (118 1/8 inches) in length.

⓬ HD15 input connector (HD D-Sub 15 pin)

An analog RGB video signal (0.7 Vp-p, positive polarity) and sync signal are input.

The Plug & Play function corresponds to DDC2B.

13 PARALLEL REMOTE terminal (modular connector, 8-pin)

Connects a parallel switch and controls the monitor externally.

For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this modular connector.

When the unit is shipped from the factory, a connector cover is attached to this terminal. Remove it before using the terminal.

For removing the connector cover, see page 18.

For details on the pin assignment and factory setting function assigned to each pin, see "Pin assignment" on page 32.

14 SERIAL REMOTE (RS-232C) terminal (D-Sub 9 pin)

Connects to the RS-232C control connector on external equipment connected to the monitor. The monitor can be operated according to control commands sent from external equipment connected to it.

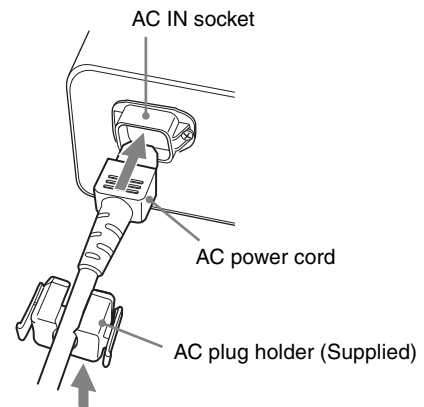
For details on the pin assignment and function assigned to each pin, see "Pin assignment" on page 32.

For details, refer to the Interface Manual for Programmers (saved in the supplied CD-ROM, Japanese and English only).

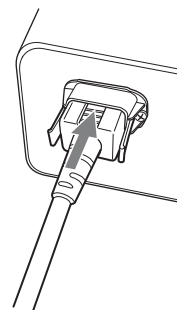
Connecting the AC Power Cord

Connect the supplied AC power cord as illustrated. Two kinds of AC plug holders are supplied with this unit. Use the AC plug holder that fits the AC power cord most securely.

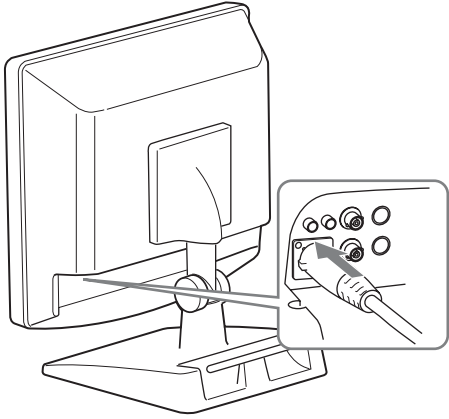
- 1 Plug the AC power cord into the AC IN socket on the AC adaptor. Then, attach the AC plug holder to the AC power cord.



- 2 Slide the AC plug holder over the cord until it locks.



- 3** Insert the DC IN connector into the DC IN socket on the bottom of this unit until it locks.



To remove the AC power cord

First, pull out the AC plug holder while pressing the lock levers.

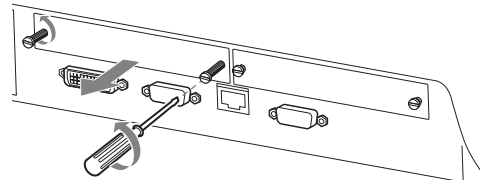
Next, pull out the DC IN connector from the DC IN socket while pressing the lock lever.

Attaching the Input Adaptor

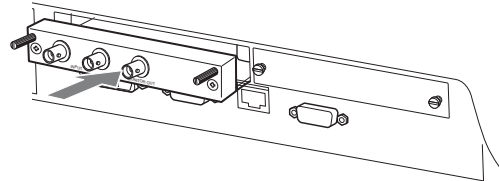
Before attaching the input adaptor, disconnect the power cord.

Attach the input adaptor to the optional input slot after removing the panel of the slot.

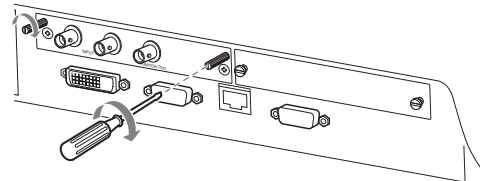
- 1** Remove the panel of the optional input slot.



- 2** Insert the input adaptor into the slot.



- 3** Tighten the screws.

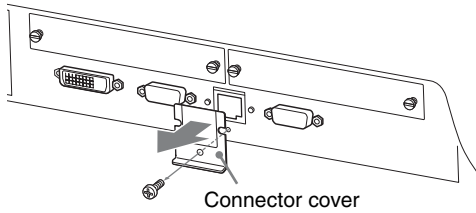


Removing the Connector Cover

When the unit is shipped from the factory, a connector cover is attached to the PARALLEL REMOTE terminal (connector).

To use the connector, remove the connector cover as follows.

Before removing the connector cover, disconnect the power cord.



- 1 Remove the screw of the connector cover.
- 2 Remove the connector cover.

Save the screw and cover, so that you can reattach the cover if necessary.

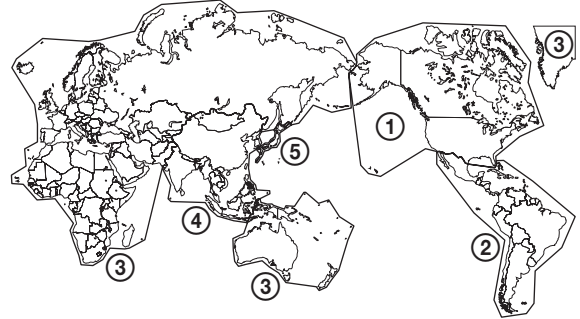
Caution

This connector is designed to allow direct contact with conductive circuits. Weak voltage may be present because of a failure in this unit. To prevent patients from touching this connector accidentally, attach the connector cover when the connector is not being used to connect to other devices.

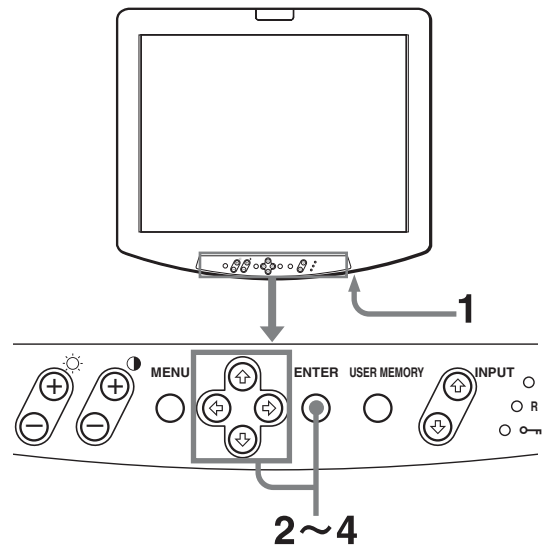
Selecting the Default Settings

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

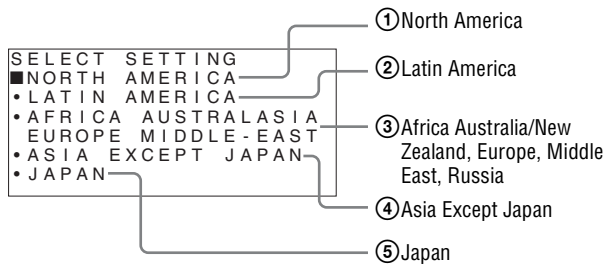
The default setting values for each area



		COLOR TEMP	COMP LEVEL	NTSC SETUP
① NORTH AMERICA		Low	BETA7.5	7.5
② LATIN AMERICA	ARGENTINA	Low	SMPTE	0
	PARAGUAY	Low	SMPTE	0
	URUGUAY	Low	SMPTE	0
	NTSC&PAL-M AREA	Low	BETA7.5	7.5
③ AFRICA AUSTRALASIA EUROPE MIDDLE-EAST		Low	SMPTE	0
④ ASIA EXCEPT JAPAN	NTSC AREA	Low	BETA7.5	7.5
	PAL AREA	Low	SMPTE	0
⑤ JAPAN		High	SMPTE	0



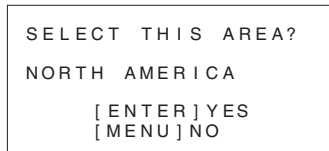
- 1 Press the POWER switch to turn on the unit.
The power is turned on and the SELECT SETTING screen appears.



- 2 Press the **↑** or **↓** key to select the area where you intend to use the unit and press the ENTER key.

If you select either ①, ③ or ⑤

The confirmation screen is displayed. Confirm the selected area. When the setting is wrong, press the MENU key to return to the previous screen.

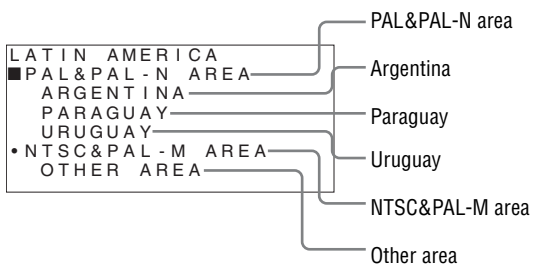


If you select either ② or ④

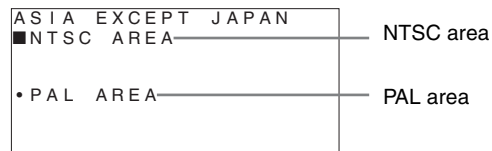
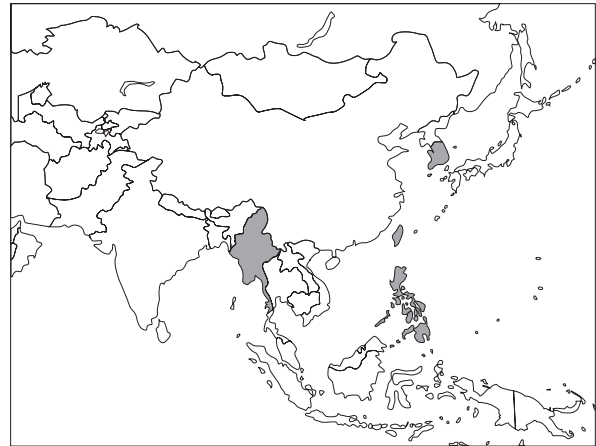
One of the following screens appears. Press the **↑** or **↓** key to narrow the area further and then press the ENTER key.

The confirmation screen is displayed. Confirm the selected area. When the setting is wrong, press the MENU key to return to the previous screen.

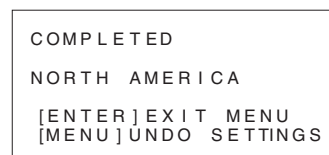
② If LATIN AMERICA is selected:



- ④ **If ASIA EXCEPT JAPAN is selected:**
Customers who will use this unit in the shaded areas shown in the map below should select NTSC AREA.
Other customers should select PAL AREA.



- 3 Press the ENTER key.
The area setting is executed and the COMPLETED screen is displayed.



Press the MENU key to return to previous screen and undo settings.

- 4 Press the ENTER key.
The COMPLETED screen is disappeared and the default setting is completed.

Note

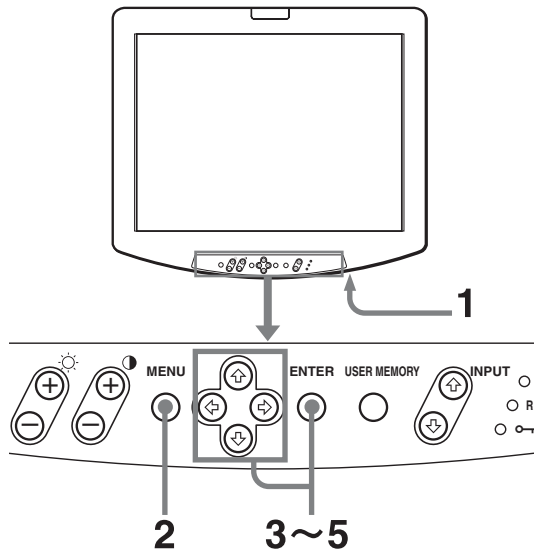
When you have selected the wrong area, set the following items using the menu.

- COLOR TEMP (on page 24)
- COMP LEVEL (on page 29)
- NTSC SETUP (on page 29)

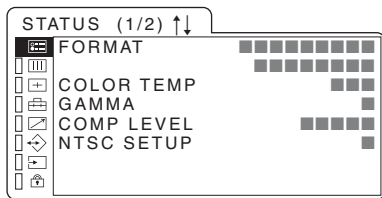
See “The default setting values for each area” (on page 18)

Selecting the Menu Language

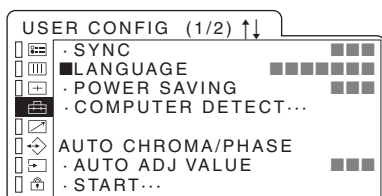
You can select one of seven languages (English, German, French, Italian, Spanish, Japanese, Chinese) for displaying the menu and other on-screen displays. “ENGLISH (English)” is selected in the default setting. The current settings are displayed in place of the ■ marks on the illustrations of the menu screen.



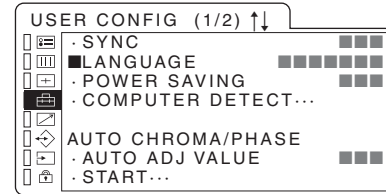
- 1 Press the POWER switch to turn on the unit.
- 2 Press the MENU key.
The menu appears.



- 3 Press the ↑ or ↓ key to select the USER CONFIG 1/2 (User Configuration 1/2) menu, then press the → or ENTER key.
The setting items (icons) in the selected menu are displayed in yellow.



- 4 Press the ↑ or ↓ key to select “LANGUAGE”, then press the → or ENTER key.
The selected item is displayed in yellow.
- 5 Press the ↑ or ↓ key to select a language, then press the ENTER key.
The menu changes to the selected language.



To clear the menu

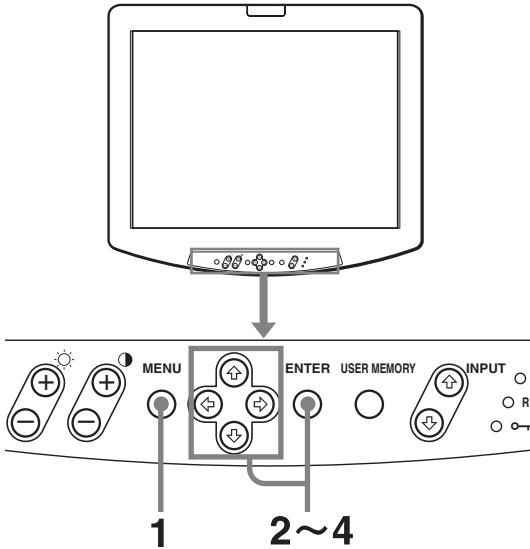
Press the MENU key.
The menu disappears automatically if a key is not pressed for one minute.

Using the Menu

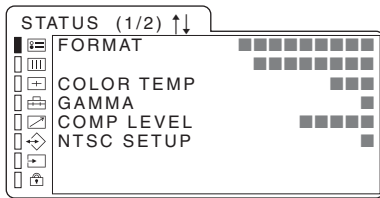
The unit is equipped with an on-screen menu for making various adjustments and settings such as picture control, input setting, set setting change, etc. You can also change the menu language displayed in the on-screen menu.

To change the menu language, see “Selecting the Menu Language” on page 20.

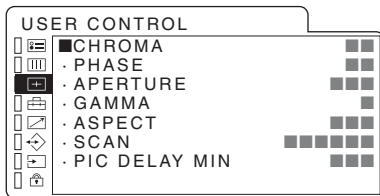
The current settings are displayed in place of the ■ marks on the illustrations of the menu screen.



- 1 Press the MENU key.
The menu appears.



- 2 Use the ↑ or ↓ key to select a menu, then press the → or ENTER key.
The menu icon presently selected is shown in yellow and setting items are displayed.



- 3 Select an item.
Use the ↑ or ↓ key to select the item, then press the → or ENTER key.
The item to be changed is displayed in yellow.

Note

If the menu consists of multiple pages, press ↑ or ↓ to go to the desired menu page.

- 4 Make the setting or adjustment on an item.
When changing the adjustment level:
To increase the number, press the ↑ key.
To decrease the number, press the ↓ key.
Press the ENTER key to confirm the number.

When changing the setting:
Press the ↑ or ↓ key to change the setting.
Press the ENTER key to confirm the setting.

Note

An item displayed in blue cannot be adjusted or set.

To clear the menu

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

About the memory of the settings

The settings are automatically stored in the monitor memory.

To reset items that have been adjusted

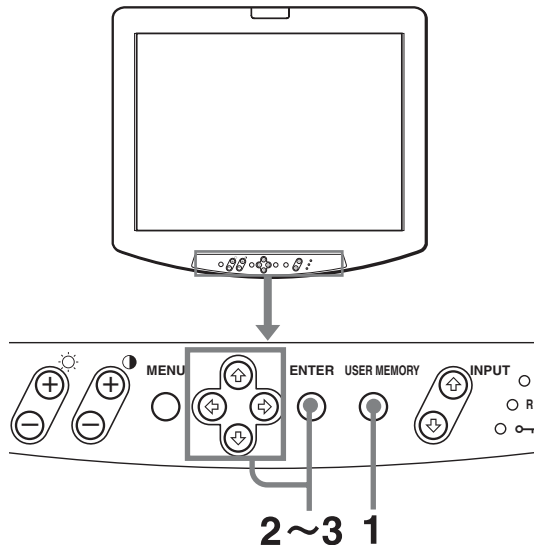
Pressing the ↑ and ↓ keys simultaneously while you are adjusting any of the menu items resets the menu item to the previous setting.

Note

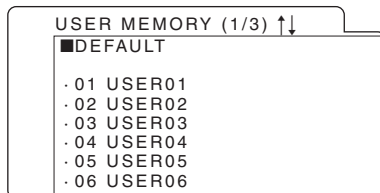
The operation may be different from the explanation above. Follow the explanation displayed at the lower part of the menu screen.

Loading USER MEMORY

You can load the picture settings saved in the USER MEMORY menu (on page 28).



- 1 Press the “USER MEMORY” key.
The USER MEMORY menu appears.



- 2 Select the memory number.
← or → key: to move the page
↑ or ↓ key: to select the memory number
- 3 Press the ENTER key.
After loading the picture settings from the selected memory, the menu disappears.

To stop selecting the memory

Press the USER MEMORY key.
The USER MEMORY menu disappears.

To reset the settings

Select “DEFAULT”, then press the ENTER key.

Adjustment Using the Menus

Items

STATUS (the items indicate the current settings.) (on page 23)

For the video input

FORMAT
COLOR TEMP
GAMMA
COMP LEVEL
NTSC SETUP
Model name and serial number
OPTION A and serial number
OPTION B and serial number

For the DVI/HD15 input

FORMAT
fH
fV
COLOR TEMP
GAMMA
Model name and serial number
OPTION A and serial number
OPTION B and serial number

COLOR TEMP (on page 24)

COLOR TEMP

USER CONTROL (on page 24)

CHROMA
PHASE
APERTURE
GAMMA
ASPECT
SCAN
PIC DELAY MIN

USER CONFIG (on page 26)

For the video input

SYNC
LANGUAGE
POWER SAVING
COMPUTER DETECT
AUTO CHROMA/PHASE
SHIFT H
SHIFT V
RESET

For the DVI/HD15 input

SYNC
LANGUAGE
POWER SAVING
COMPUTER DETECT
AUTO CHROMA/PHASE
SIZE H
SIZE V
SHIFT H
SHIFT V
DOT PHASE
PITCH
RESET

REMOTE (on page 27)

PARALLEL REMOTE
SERIAL REMOTE

USER MEMORY (on page 27)

01~20

INPUT SELECT (on page 29)

ALL RESET
STANDARD INPUT
OPTION

KEY INHIBIT (on page 29)

KEY INHIBIT

USER SERVICE (on page 29)

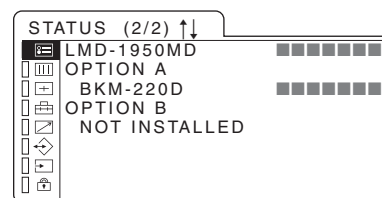
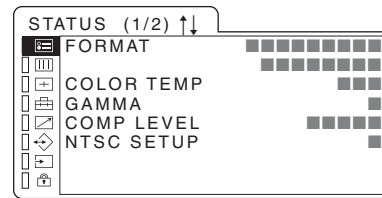
FORMAT DISP
COMP LEVEL
NTSC SETUP
USER COLOR TEMP

Adjusting and Changing the Settings

STATUS menu

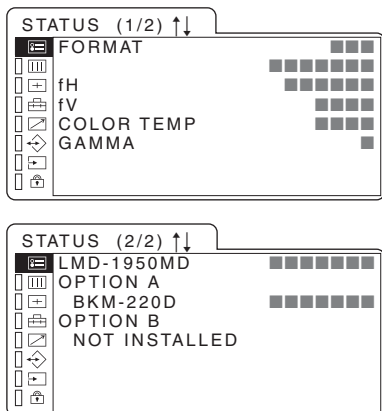
The STATUS menu is used to display the current status of the unit. The following items are displayed:

For the video input



- FORMAT
- COLOR TEMP
- GAMMA
- COMP LEVEL
- NTSC SETUP
- Model name and serial number
- OPTION A and serial number
- OPTION B and serial number

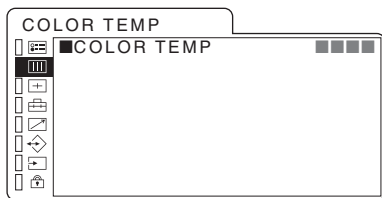
For the DVI/HD15 input



- FORMAT
- fH
- fV
- COLOR TEMP
- GAMMA
- Model name and serial number
- OPTION A and serial number
- OPTION B and serial number

COLOR TEMP menu

The COLOR TEMP menu is used for selecting the color temperature setting.

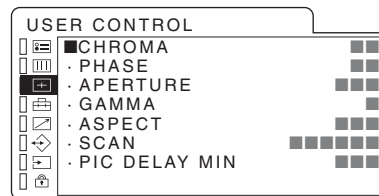


Submenu	Setting
COLOR TEMP	<p>Select the color temperature from among “HIGH”, “LOW”, “LOW2”, “LOW3” and “USER” settings.</p> <ul style="list-style-type: none"> • HIGH (D93 or equivalent) • LOW (D65 or equivalent) • LOW2 (D56 or equivalent) • LOW3 • USER: You can set to the color temperature adjusted in the USER SERVICE menu (on page 29). When the mode other than “USER” is selected, the color temperature cannot be adjusted in the USER SERVICE menu.

USER CONTROL menu

The USER CONTROL menu is used for adjusting the picture.

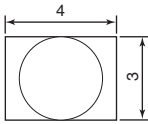
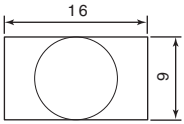
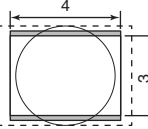
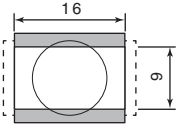
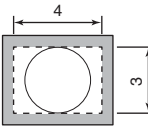
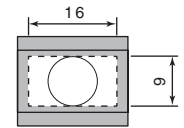
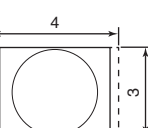
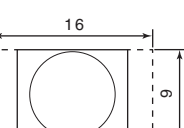
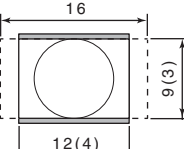
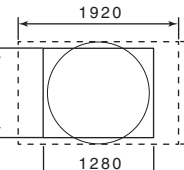
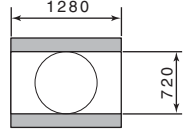
Items that cannot be adjusted depending on the input signal are displayed in blue.



Submenu	Setting
CHROMA	Adjusts color intensity. The higher the setting, the greater the intensity. The lower the setting, the lower the intensity.
PHASE	Adjusts color tones. The higher the setting, the more greenish the picture. The lower the setting, the more purplish the picture.
APERTURE	Adjusts the picture sharpness. The higher the setting, the sharper the picture.
GAMMA	<p>Selects the appropriate gamma mode. You can select from among 5 settings.</p> <ul style="list-style-type: none"> • 1 (2.6) • 2 (2.4) • 3 (2.2) • 4 (2.0) • 5 (DICOM) <p>When “3” is selected, the setting is roughly same as the gamma mode of the CRT.</p>
ASPECT	<p>Sets the aspect ratio of the picture. When inputting 16:9 (squeezed) signal from equipment such as a DVD player, set to 16:9.</p> <ul style="list-style-type: none"> • 4:3: When the picture with ratio 4:3 is input. • 16:9: When the picture with ratio 16:9 (squeezed) is input.

Submenu	Setting
SCAN	Sets the scan size of the picture. Select from among “NORMAL”, “UNDER”, “OVER”, “FULL”, “ZOOM” and “NATIVE (1080I and 720P only)” (see “Scan mode image” on page 25).
	<p>Note</p> <p>When inputting the 1035/60I signal, the signal format is displayed as 1080/60I on the screen. A slightly squashed picture is displayed at a little lower position, because the picture is displayed in 1035/1080 picture ratio on a 16:9 screen. Adjust the position to the center using the SHIFT V setting (on page 26).</p>
PIC DELAY MIN	<p>Selects to set the delay by the picture processing to the minimum level when the NTSC, PAL, 480/60I, 575/50I or 1080I signal is input.</p> <ul style="list-style-type: none"> • 0: Mode for giving precedence to the picture quality (recommended mode). This is a mode suitable for an animation and a still picture. It takes longer than “1” or “2” for processing the picture. • 1: The processing time is short and this is a mode suitable for an animation. • 2: The processing time is short and this is a mode suitable for a still picture.

Scan mode image

		Input	
			
Image displayed*1	NORMAL/ OVER SCAN*2		
	UNDER SCAN*3		
	FULL		
	ZOOM	-	
	NATIVE (1080I)	-	
	NATIVE (720P)	-	

*1 The image illustrated shows the input signal by broken line and the efficient picture size by the solid line.

*2 NORMAL: 7% over scan
OVER: 20% over scan

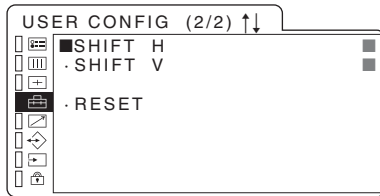
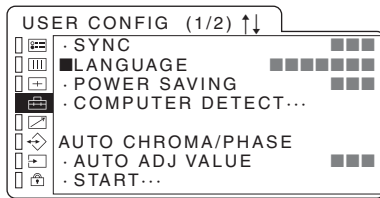
*3 -3% under scan

USER CONFIG menu

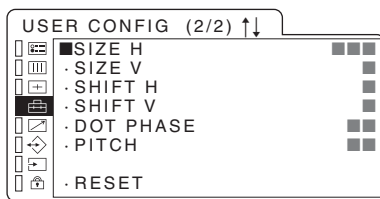
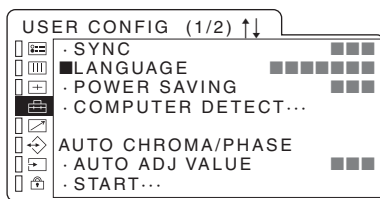
You can select a language, etc.

The item that cannot be accessed according to the input signal is displayed in blue.

For the video input



For the DVI/HD15 input

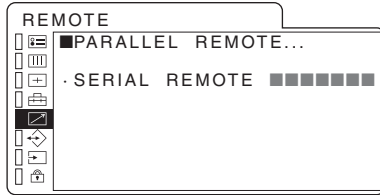


Submenu	Setting
SYNC	Select the sync signal. <ul style="list-style-type: none"> • EXT: Select to operate the unit on an external sync signal. When the RGB signal is input, "EXT" is the default setting. • INT: Select to operate the unit on the sync signal included in the monitored signal.
LANGUAGE	You can select the menu or message language from among seven languages. <ul style="list-style-type: none"> • ENGLISH: English • DEUTSCH: German • FRANÇAIS: French • ITALIANO: Italian • ESPAÑOL: Spanish • 日本語: Japanese • 中文: Chinese

Submenu	Setting
POWER SAVING	Sets the power saving mode "ON" or "OFF". When set to "ON", the monitor goes into power saving mode if no signal is input for about one minute.
COMPUTER DETECT	The appropriate preset memory is set for the signal from DVI and HD15 input connector. Select "PRESET1" for the standard PC signal. Select "PRESET2", "PRESET3", "PRESET4" or "PRESET5" when the PC signal is not standard (on page 34). The preset memory is set for each input connector of DVI and HD15.
AUTO CHROMA/PHASE	Adjusts color intensity (CHROMA) and tones (PHASE). <ul style="list-style-type: none"> • AUTO ADJ VALUE: Selects "ON" or "OFF" of the Auto adjustment. When set to "OFF", this parameter is reset to the factory setting. When set to "ON" the automatically adjusted value is enabled. • START: Display the color bar signals (Full/SMPTE/EIA) on the screen and press the ENTER key. The auto adjustment function starts. After the adjustment is done correctly, the AUTO ADJ VALUE is automatically set to ON. The auto adjustment is stopped by pressing the MENU key during the auto adjustment operation.
SIZE H	Adjusts the horizontal size of the picture. The higher the setting, the larger the width of the picture. The lower the setting, the narrower the width of the picture.
SIZE V	Adjusts the vertical size of the picture. The higher the setting, the larger the height of the picture. The lower the setting, the smaller the height of the picture.
SHIFT H	Adjusts the position of the picture. As the setting increases, the picture moves to the right, and as the setting decreases, the picture moves to the left.
SHIFT V	As the setting increases, the picture moves up, and as the setting decreases, the picture moves down.
DOT PHASE	Adjusts the dot phase. Adjust the picture further for a finer picture after the picture is adjusted by pressing the APA key.

Submenu	Setting
PITCH	Adjusts the horizontal size of the picture with the left side of the picture fixed. The higher the setting, the larger the width of the picture. The lower the setting, the narrower the width of the picture.
RESET	Resets the value of SIZE H, SIZE V, SHIFT H, SHIFT V, DOT PHASE and PITCH to the factory preset value.

REMOTE menu



Submenu	Setting
PARALLEL REMOTE	<p>Select the REMOTE connector pins for which you want to change the function. You can assign various functions to 1 to 4 pins and 6 to 8 pins. The following lists the functions you can assign to the pins.</p> <ul style="list-style-type: none"> ---- (“----”: No function is assigned.) COMPOSITE Y/C RGB COMPONENT DVI HD15 OPTION A-1 OPTION A-2 OPTION B-1 OPTION B-2 UNDERSCAN OVERSCAN FULL ZOOM NATIVE 4:3 16:9 TALLY EXT SYNC (External Sync)

Notes

- If you use the parallel remote function, you need to connect cables. For more details, see page 32.
- When “OFF” is selected in the INPUT SELECT menu and the function is assigned, the remote function does not work. Select “ON” to use the parallel remote function (on page 29).

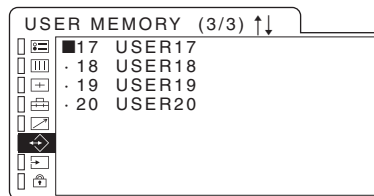
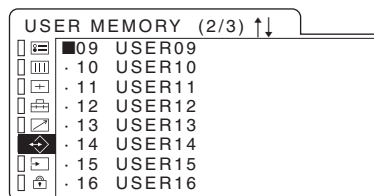
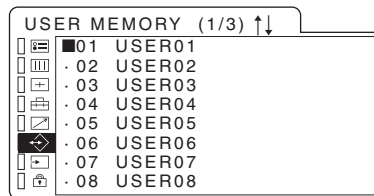
Submenu	Setting
SERIAL REMOTE	<p>Select one out of following three modes.</p> <ul style="list-style-type: none"> RMT OFF: You cannot use the serial remote. Adjust settings by the keys on the front panel. RMT ON: You can use the serial remote. You cannot use the keys except for the serial remote setting on the front panel. RMT & LCL: You can use both the serial remote and the keys on the front panel.

Notes

- When “RMT ON” is selected, the REMOTE and indicator on the front panel light.
- When “RMT & LCL” is selected, the REMOTE indicator lights.

For details, refer to the Interface Manual for Programmers (saved in the supplied CD-ROM, Japanese and English only).

USER MEMORY menu



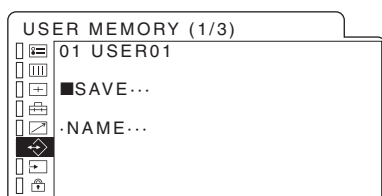
Submenu	Setting
01~20	<p>You can save the setting of the following functions.</p> <p>COLOR TEMP menu</p> <ul style="list-style-type: none"> • COLOR TEMP <p>USER CONTROL menu</p> <ul style="list-style-type: none"> • CHROMA • PHASE • APERTURE • GAMMA • ASPECT • SCAN • PIC DELAY MIN <p>USER SERVICE menu</p> <ul style="list-style-type: none"> • ADJUST GAIN • ADJUST BIAS <p>Front keys</p> <ul style="list-style-type: none"> • ☀ (Brightness) • ● (Contrast)

Saving the user memory

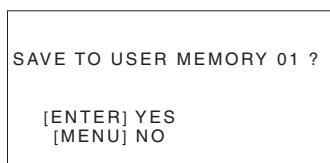
You can save the 20 picture settings with the name. To load the picture in the saved setting, see “Loading USER MEMORY” on page 22.

To save the picture setting

- 1 Press the **↑** or **↓** key to select the memory number in the USER MEMORY menu, then press the **➡** or ENTER key.
The USER MEMORY setting menu appears.



- 2 Select “SAVE”, then press the **➡** or ENTER key.
The menu for confirming the memory appears.



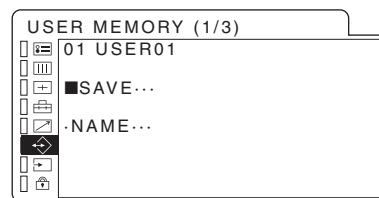
- 3 Press the ENTER key.
The current picture settings are saved and the USER MEMORY setting menu appears.

To close the menu without saving the setting

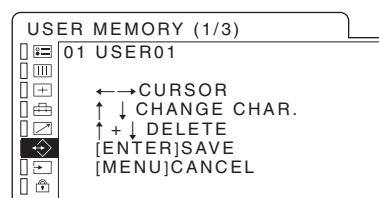
Press the **←** or MENU key.
The USER MEMORY setting menu appears.

To change the name

- 1 Press the **↑** or **↓** key to select the memory number in the USER MEMORY menu, then press the **➡** or ENTER key.
The USER MEMORY setting menu appears.



- 2 Press the **↓** key to select “NAME”, then press the **➡** or ENTER key.
The menu for setting the user name appears.



- 3 Change the user name.
 - Press the **←** or **➡** key to move the cursor to the character position to be changed.
 - Press the **↑** or **↓** key to change the character.
Usable characters: “A to Z”, “0 to 9”, “:”, “/”, “;”, “_”, “-”, “(space)”
 - Press the **↑** and **↓** keys simultaneously to clear the character.

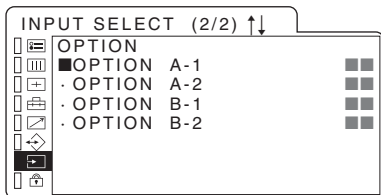
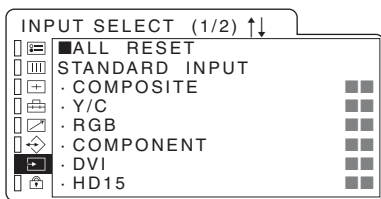
The maximum 18 characters are input for the user name.
- 4 Press the ENTER key.
The settings are saved and the USER MEMORY setting menu appears.

To close the menu without saving the setting

Press the MENU key.
The USER MEMORY setting menu appears.

➔ INPUT SELECT menu

The input signal set to “OFF” is skipped when the INPUT \uparrow/\downarrow key is pressed.



Submenu	Setting
ALL RESET	All settings are reset to the factory preset ones.
STANDARD INPUT	Sets the input setting of “COMPOSITE”, “Y/C”, “RGB”, “COMPONENT”, “DVI”, and “HD15” <ul style="list-style-type: none"> • ON: Input signal is selectable. • OFF: Input signal is not selectable.
Note	
You cannot set all input settings to “OFF”.	
OPTION	Sets the input setting of an input adaptor. <ul style="list-style-type: none"> • ON: Input signal is selectable. • OFF: Input signal is not selectable.

🔒 KEY INHIBIT menu



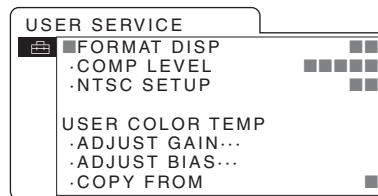
You can lock the setting so that they cannot be changed by an unauthorized user.
 Select “OFF” or “ON”.
 If you set to “ON”, all items are displayed in blue, indicating the items are locked.
 The keys only for setting the key inhibit to “OFF” work.
 When the key inhibit is set to “ON”, the $\text{Ⓞ} \rightarrow$ indicator on the front panel lights.

Note

When “RMT ON” is selected in the REMOTE menu (on page 27), the $\text{Ⓞ} \rightarrow$ indicator lights and the keys on the front panel do not work. However, “KEY INHIBIT” keeps set to “OFF”. When you want to operate the keys on the front panel, select “RMT OFF” or “RMT & LCL” in the REMOTE menu.

🔒 USER SERVICE menu

The USER SERVICE menu is provided for any adjustments or settings other than those listed above. To access the USER SERVICE menu, press and hold the MENU key when the menu is not displayed. The item that cannot be accessed according to the input signal is displayed in blue.



Submenu	Setting
FORMAT DISP	Select the display mode of the input signal and its format. <ul style="list-style-type: none"> • ON: Input signal and its format are always displayed. • OFF: Input signal and its format are not displayed. • AUTO: Input signal and its format are displayed for about 10 seconds, when the INPUT key is pressed, or the input of the signal begins.
COMP LEVEL	Select the component level from among three modes. <ul style="list-style-type: none"> • SMPTE for 100/0/100/0 signal • BETA 0 for 100/0/75/0 signal • BETA 7.5 for 100/7.5/75/7.5 signal
NTSC SETUP	Select the NTSC setup level from two modes. The 7.5 setup level is used mainly in North America. The 0 setup level is used mainly in Japan.
USER COLOR TEMP	Adjust the color temperature of “USER” which is selectable in the COLOR TEMP menu. When the color temperature other than “USER” is selected, this cannot be selected. You need to use the measurement instrument to adjust the white balance. Recommended: Konicaminolta color analyzer CA-210 <ul style="list-style-type: none"> • ADJUST GAIN: Adjusts the color balance (GAIN). • ADJUST BIAS: Adjusts the color balance (BIAS). • COPY FROM: If you select “HIGH”, “LOW”, “LOW2” or “LOW3”, the data for the selected color temperature will be copied in the user setting.

Troubleshooting

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

Symptom	Settlement
The display is colored in green or purple.	Select the correct input by pressing the INPUT key.
The black bars appear at the upper and lower positions of the picture.	When the signal aspect ratio is different from that of the LCD panel, the black bars appear. This is not a failure of the unit.
The key on the front panel do not work.	The key protection function works. The key inhibit function can be set in the KEY INHIBIT menu and REMOTE menu. Set as follows. When "KEY INHIBIT" is set to "ON": Set to "OFF". When "SERIAL REMOTE" is set to "RMT ON": Set to "RMT OFF" or "RMT & LCL". When "KEY INHIBIT" and "SERIAL REMOTE" are set to "ON": Set "KEY INHIBIT" to "OFF" and then "SERIAL REMOTE" to "RMT OFF" or "RMT & LCL".
The image is not displayed on the monitor.	After confirming the connections and the settings in the INPUT SELECT menu (on page 29), select the correct input by pressing the INPUT key.
The image is disturbed.	Select "EXT" or "INT" correctly in the "SYNC" setting of the USER CONFIG menu (on page 26).
The "FAN ERROR" message is displayed.	The fan for cooling the unit does not work. Turn off the power and contact an authorized Sony dealer.

Specifications

Picture performance

LCD panel	a-Si TFT Active Matrix
Pixel efficiency	99.99 %
Viewing angle	(up/down/left/right, contrast > 10:1) 89°/89°/89°/89° (typical)
Scan	Under scan -3 % Normal 7 % Over scan 20 %
Efficient picture size	Approx. 376 × 301, 482 mm (w/h, dia) (14 ⁷ / ₈ × 11 ⁷ / ₈ , 19 inches)
Resolution	H: max. 1,280 dots V: max. 1,024 lines
Aspect ratio	5:4

Input/output connectors

Input

Composite input connector	BNC type (1) 1 Vp-p ± 3dB sync negative
Y/C input connector	4-pin mini DIN (1) Y: 1 Vp-p ± 3dB sync negative C: 0.286 Vp-p ± 3dB (NTSC burst signal level) 0.3 Vp-p ± 3dB (PAL burst signal level)
RGB/Component connectors	BNC type (3) RGB input: 0.7 Vp-p ± 3dB (Sync On Green, 0.3 Vp-p sync negative) Component input: 0.7 Vp-p ± 3dB (75% chrominance standard color bar signal)
External Sync input connector	BNC type (1) 0.3 to 4 Vp-p ± bipolarity ternary or negative polarity binary
Remote input terminal	Parallel remote Modular connector 8-pin (1) RS-232C (serial remote) D-sub 9-pin (1)
HD15 input connector	HD D-sub 15-pin (1) R/G/B: 0.7 Vp-p, 75 ohms, sync positive (when G channel is sync negative, the internal sync can be used. 0.3 Vp-p)

Sync: TTL level, 2.2 kilohms, polarity free (H/V separate and composite sync)

Plug & Play function: corresponds to DDC2B

DVI input connector

DVI-D (1)

TMDS (Single link)

Output

Video output connectors

BNC type (4)

Loop-through, with 75 ohms automatic terminal function

4-pin mini DIN (1)

Loop-through, with 75 ohms automatic terminal function

External Sync output connector

BNC type (1)

Loop-through, with 75 ohms automatic terminal function

General

Power

LCD Monitor (LMD-1950MD)

DC IN: 24 V 2.8 A (Supplied from AC Adaptor)

AC Adaptor (AC-2450MD)

AC IN: 100-240 V 50/60 Hz 1.2-0.6 A

DC OUT: 24 V 3.5 A 5 V 0.030 A

Power consumption

Maximum: approx. 66 W (when two BKM-229X are attached)

Maximum: approx. 59 W (when no input adaptor is attached)

Operating conditions

Temperature 0 °C to 40 °C (32 °F to 104 °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 0 % to 90 % (no condensation)

Pressure 700 hPa to 1060 hPa

Accessories supplied

AC adaptor AC-2450MD (1)

AC power cord (1)

AC plug holder (2)

Instructions for Use (1)

CD-ROM (1)

Using the CD-ROM Manual (1)

Quick Reference (1)

When You First Use the Monitor (1)

Sales Companies Guide (1)

Warranty Card (1)

Optional accessories

SDI 4:2:2 input adaptor

BKM-220D (Serial number 2104660 and higher)

HD/D1-SDI input adaptor

BKM-243HS (Serial number 2107059 and higher)

NTSC/PAL input adaptor

BKM-227W

Analog Component input adaptor

BKM-229X (Serial number 2100011 and higher)

Monitor stand

SU-560

Medical Specifications

Protection against electric shock:

Class I

Protection against harmful ingress of water:

Ordinary

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.

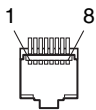
Note

Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.

Pin assignment

PARALLEL REMOTE terminal

Modular connector (8-pin)



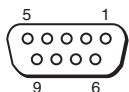
Pin No.	Signal
1	Designating Y/C input signal
2	Designating RGB input signal
3	Designating OPTION A-1 input signal
4	Designating OPTION A-2 input signal
5	GND
6	Tally lamp ON/OFF
7	Under scan
8	Over scan

You can allocate functions using the REMOTE menu (see page 27).

Connect the function you want to use with a Remote Control to the Ground (Pin 5).

SERIAL REMOTE (RS-232C) terminal

D-sub 9 pin, female



Pin No.	Signal
1	NC
2	RX
3	TX
4	NC
5	GND
6	NC
7	RTS
8	CTS
9	NC

Video signal formats

The unit is applicable to the following signal formats.

Input						
System	Total lines	Active lines	Frame rate* ²	Scanning format	Aspect ratio	Signal standard
575/50I (PAL)	625	575	25	2:1 interlace	16:9/4:3	EBU N10 (PAL: ITU-R BT.624)
480/60I (NTSC)	525	483	30	2:1 interlace	16:9/4:3	SMPTE 253M (NTSC: SMPTE 170M)
576/50P	625	576	50	Progressive	16:9/4:3	ITU-R BT.1358
480/60P	525	483	60	Progressive	16:9/4:3	SMPTE 293M
1080/50I	1125	1080	25	2:1 interlace	16:9	SMPTE 274M
1035/60I * ¹	1125	1035	30	2:1 interlace	16:9	SMPTE 260M/BTA S-001B
1080/60I	1125	1080	30	2:1 interlace	16:9	SMPTE 274M/BTA S-001B
720/60P	750	720	60	Progressive	16:9	SMPTE 296M

Output			
System	Effective picture size	Frame rate* ²	Scanning format
575/50I (PAL)	1280 × 720/1280 × 960	50	Progressive
480/60I (NTSC)	1280 × 720/1280 × 960	60	Progressive
576/50P	1280 × 720/1280 × 960	50	Progressive
480/60P	1280 × 720/1280 × 960	60	Progressive
1080/50I	1280 × 720	50	Progressive
1035/60I * ¹	1280 × 720	60	Progressive
1080/60I	1280 × 720	60	Progressive
720/60P	1280 × 720	60	Progressive

*1 The signal format is displayed as 1080/60I on the screen.

A slightly squashed picture is displayed at a little lower position, because the picture is displayed in 1035/1080 picture ratio on a 16:9 screen. Adjust the position to the center using the SHIFT V setting (on page 26).

*2 The frame rate is also compatible with 1/1.001.

When an optional input adaptor is installed

The unit is applicable to the following signal formats.

When BKM-220D/243HS is installed

Input			
System	Signal standard	BKM-220D	BKM-243HS
575/50I	ITU-R BT.656	○	○
480/60I	SMPTE 259M	○	○
1080/50I	SMPTE 292M	×	○
1035/60I *	SMPTE 292M	×	○
1080/60I	SMPTE 292M	×	○
720/60P	SMPTE 292M	×	○

When BKM-227W/229X is installed

Input			
System	Signal standard	BKM-227W	BKM-229X
575/50I	EBU N10	×	○
PAL	ITU-R BT.624	○	×
480/60I	SMPTE 253M	×	○
NTSC	SMPTE 170M	○	×
576/50P	ITU-R BT.1358	×	○
480/60P	SMPTE 293M	×	○
1080/50I	SMPTE 274M	×	○
1035/60I *	SMPTE 260M/BTA S-001B	×	○
1080/60I	SMPTE 274M/BTA S-001B	×	○
720/60P	SMPTE 296M	×	○

* A slightly squashed picture is displayed at a little lower position, because the picture is displayed in 1035/1080 picture ratio on a 16:9 screen. Adjust the position to the center using the SHIFT V setting (on page 26).

About the preset signal

This unit has a preset memory for signals connected to the DVI and HD15 input terminals (the preset memory). When a preset signal is input, the unit automatically detects the signal type and recalls the data for the signal from the preset memory to adjust it to an optimum picture.

This unit is applicable to the following preset signals.

PRESET1

		Preset signal	fH [kHz]	fV [Hz]
HD15	640×480	VGA mode 3	31.5	60
		VGA VESA 72Hz	37.9	72
		VGA VESA 75Hz	37.5	75
		VGA VESA 85Hz	43.3	85
		VGA Non-CRT	29.5	60
	800×600	SVGA VESA 56Hz	35.2	56
		SVGA VESA 60Hz	37.9	60
		SVGA VESA 72Hz	48.1	72
		SVGA VESA 75Hz	46.9	75
		SVGA VESA 85Hz	53.7	85
		SVGA Non-CRT	37.0	60
	1024×768	XGA VESA 60Hz	48.4	60
		XGA VESA 70Hz	56.5	70
		XGA VESA 75Hz	60.0	75
		XGA VESA 85Hz	68.7	85
		XGA Non-CRT	47.3	60
	1152×864	VESA 75Hz	67.5	75
	1280×960	VESA 60Hz	60.0	60
		VESA Non-CRT	59.2	60
	1280×1024	SXGA VESA 60Hz	64.0	60
SXGA VESA 75Hz		80.0	75	
SXGA CRT 50Hz		52.7	50	
SXGA Non-CRT		63.2	60	
720×400	VGA TEXT	31.5	70	

The DVI signal is automatically distinguished within the range of the following input signal.

Range of DVI input signal

Horizontal frequency: 31.5-64.0 kHz

Vertical frequency: 50.0-85.1 Hz

Dot clock: 25.0-108.0 MHz

VGA, SVGA, XGA, and SXGA are registered trademarks of International Business Machines Corporation, U.S.A.

PRESET2

	Preset signal	fH [kHz]	fV [Hz]
HD15	1514×483*	31.5	60
	1476×576*	31.3	50
DVI	1280×483	31.5	60
	1280×576	31.3	50
	1920×1080	33.75	60
	1920×1080	28.0	50

* Down convert display.

PRESET3

	Preset signal	fH [kHz]	fV [Hz]
HD15	720×483	31.5	60
	720×576	31.3	50
	1280×720	45.0	60
	1280×720	37.5	50
DVI	720×483	31.5	60
	720×576	31.3	50
	1280×720	45.0	60
	1280×720	37.5	50

PRESET4

	Preset signal	fH [kHz]	fV [Hz]
HD15	640×480	31.5	60
	1024×768	48.4	60
	1280×960	60.0	60
DVI	1024×768	48.4	60
	1280×960	60.0	60

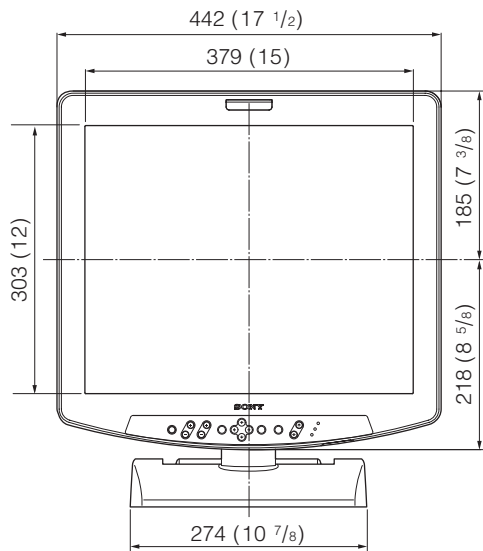
PRESET5

	Preset signal	fH [kHz]	fV [Hz]
HD15	640×480	31.5	60
	800×600	31.3	50
DVI	800×600	46.9	75

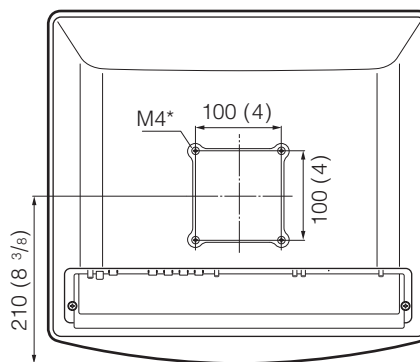
Dimensions/Mass

Front

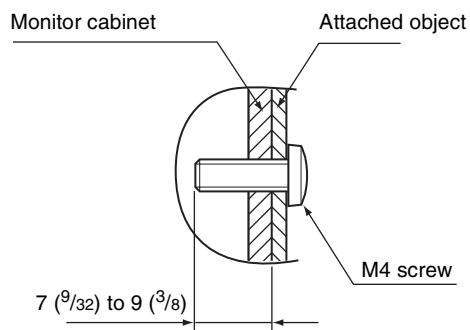
When an optional stand SU-560 is attached



Top

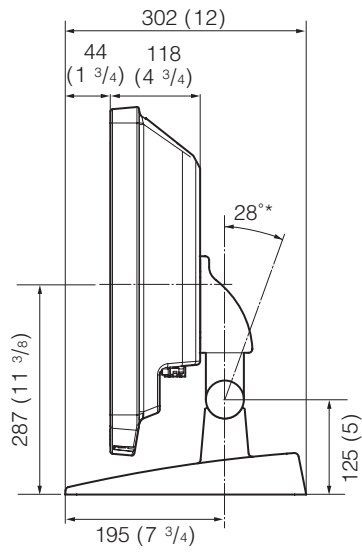


* Length of M4 screws (4)



Side

When an optional stand SU-560 is attached



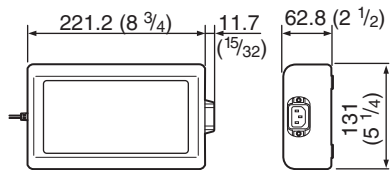
*Tilt angle

Mass

Approx. 8.9 kg (19 lb 10 oz)
(When no input adaptor is attached)

Approx. 9.4 kg (20 lb 12 oz)
(When two BKM-229X are attached)

AC adaptor



Unit: mm (inches)

Mass

Approx. 1.3kg (2 lb 14 oz)

