

# LCD Monitor

## Operating Instructions

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

LMD-941W

**HDMI™**  
HIGH-DEFINITION MULTIMEDIA INTERFACE


## 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. \_\_\_\_\_

### Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.  When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

## 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.**

**WARNING**  
**THIS APPARATUS MUST BE EARTHED.**

### 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.

### Attention-when the product is installed in Rack:

#### 1. Prevention against overloading of branch circuit

When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

#### 2. Providing protective earth

When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

#### 3. Internal air ambient temperature of the rack

When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

#### 4. Prevention against achieving hazardous condition due to uneven mechanical loading

When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

#### 5. Install the equipment while taking the operating temperature of the equipment into consideration

For the operating temperature of the equipment, refer to the specifications of the Operation Manual.

#### 6. When performing the installation, keep the following space away from walls in order to obtain proper exhaust and radiation of heat.

**Upper : 4.4 cm (1 3/4 inches) or more**  
**Lower (when not using the stand) : 1.7 cm (11/16 inches) or more**  
**Rear : 10.0 cm (4 inches) or more**

**CAUTION**

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

**CAUTION**

The unit is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the unit itself has been turned off.

**WARNING**

Excessive sound pressure from earphones and headphones can cause hearing loss.

In order to use this product safely, avoid prolonged listening at excessive sound pressure levels.

Consult with Sony qualified personnel for wall mount or rack mount installation.

**For the customers in the U.S.A.****WARNING:**

Using this unit at a voltage other than 120 V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

**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**

This Class A digital apparatus complies with Canadian ICES-003.

**For the customers in Europe**

This product with the CE marking complies with the EMC Directive issued by the Commission of the European Community.

Compliance with this directive implies conformity to the following European standards:

- EN55103-1 : Electromagnetic Interference(Emission)
- EN55103-2 : Electromagnetic Susceptibility(Immunity)

This product is intended for use in the following Electromagnetic Environments: E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors), E4 (controlled EMC environment, ex. TV studio).

**For the customers in Europe**

This product has been manufactured by or on behalf of Sony Corporation, 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan. Inquiries related to product compliance based on European Union legislation shall be addressed to the authorized representative, Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Germany. For any service or guarantee matters, please refer to the addresses provided in the separate service or guarantee documents.

**For kundene i Norge**

Dette utstyret kan kobles til et IT-strømfordelingssystem.

Apparatet må tilkoples jordet stikkontakt

**Suomessa asuville asiakkaille**

Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan

**För kunderna i Sverige**

Apparaten skall anslutas till jordat uttag

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# Precaution

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## On Safety

- Operate the unit only with a power source as specified in the “Specifications” section.
- A nameplate indicating operating voltage, etc., is located on the rear and bottom.
- 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.
- Do not drop or place heavy objects on the power cord. If the power cord is damaged, turn off the power immediately. It is dangerous to use the unit with a damaged power cord.
- Unplug the unit from the wall outlet if it is not to be used for several days or more.
- Disconnect the power cord from the AC outlet by grasping the plug, not by pulling the cord.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.
- Do not carry the monitor by holding the stand.
- Do not carry the monitor by holding the AC adaptor.

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## On Installation

- Allow adequate air circulation to prevent internal heat build-up.  
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 in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.

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## Handling the LCD Screen

- 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, horizontal lines or 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.

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## 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 viewfinder is not to be used for a prolonged period of time.

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## 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.

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## On Cleaning

### Before cleaning

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

### On cleaning the monitor screen

The monitor screen surface is especially treated to reduce reflection of light.

As incorrect maintenance may impair the performance of the monitor, take care with respect to the following:

- Wipe the screen gently with a soft cloth such as a cleaning cloth or glass cleaning cloth.
- Stubborn stains may be removed with a soft cloth such as a cleaning cloth or glass cleaning cloth lightly dampened with water.
- Never use solvent such as alcohol, benzene or thinner, or acid, alkaline or abrasive detergent, or chemical cleaning cloth, as they will damage the screen surface.

### On cleaning the cabinet

- Clean the cabinet gently with a soft dry cloth. Stubborn stains may be removed with a cloth lightly dampened with mild detergent solution, followed by wiping with a soft dry cloth.
- Use of alcohol, benzene, thinner or insecticide may damage the finish of the cabinet or remove the indications on the cabinet. Do not use these chemicals.
- If you rub on the cabinet with a stained cloth, the cabinet may be scratched.
- If the cabinet is in contact with a rubber or vinyl resin product for a long period of time, the finish of the cabinet may deteriorate or the coating may come off.

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## On Dew Condensation

If the viewfinder is moved suddenly from a cold place to a warm place, or used in a room with high humidity, water droplets may form on the interior of the product. This phenomenon is known as dew condensation.

This product does not come with a feature that warns users of dew condensation. If water droplets are found on the casing, turn off the power, and wait until the condensation disappears before using.

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## On Repacking

Do not throw away the carton and packing materials. They make an ideal container which to transport the unit.

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## On Mounting on a Rack

Leave 1U space empty above and below the monitor to ensure adequate air circulation or install a fan to maintain the monitor's performance.

If you have any questions about this unit, contact your authorized Sony dealer.

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## Disposal of the Unit


Do not dispose of the unit with general waste.

Do not include the monitor with household waste.

When you dispose of the monitor, you must obey the law in the relative area or country.

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## On Fan Error

The fan for cooling the unit is built in. When the fan stops and the  (standby) switch indicator on the front panel flashes in green and amber for fan error indication, turn off the power and contact an authorized Sony dealer.

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## On AC Adaptor Terminal

The AC adaptor terminal of this unit (the connector for AC adaptors) is a consumable part.

The unit may not operate properly if the pins of the AC adaptor terminal are bent or deformed by shock or vibrations, or if they become corroded due to prolonged outdoor use.

Periodic inspections are recommended to keep the unit working properly and to prolong its usable lifetime.

Contact your dealer or a Sony service representative for more information about inspections.

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# Features

The LMD-941W (9 type) is equipped with a Full HD (1920 × 1080) LCD panel providing precise image and high performance in multiple formats, suitable for broadcast or business use. It supports both digital or analog main broadcast signal and HDMI <sup>1)</sup> input. It is also equipped with functions to adjust for various objects or use.

<sup>1)</sup> The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

## High brightness Full HD (1920 × 1080) LCD panel

Because of precise image, wide viewing angle technology, real color images can be reproduced. Use the light intercepting hood, connector protector and carrying handle (optional Sony VF-510 Monitor ENG Kit) for outdoor use.

## Color space function

Sony's "ChromaTRU" technology brings to you broadcast standard (ITU-R BT.709/EBU/SMPTE-C) color space settings. You can contrast the images of the monitors placed on monitor wall mount or rack mount.

## Strong, slim and lightweight

The strong, slim, and lightweight design of the aluminum die-cast chassis makes the monitor suitable for use with rack mounts or as a portable monitor. This reduces the weight burden on an outdoor broadcasting van, and allows for a wider working space.

## I/P mode select

The desired I/P mode for interlace signal can be selected for your purpose.

*For more information, see "SYSTEM SETTING" on page 23.*

## Select marker/scan display

Various items for broadcast use can be displayed. The center marker, aspect marker or display size (scan), etc are displayed by selecting according to use.

*For more information, see "MARKER SETTING" on page 24 and SCAN of "FUNCTION BUTTON SETTING" on page 28.*

## Input signal waveform, audio level, and vectorscope display

The input signal waveform, the audio level (embedded audio only), or the vectorscope can be displayed.

*For more information, see "WFM/ALM/VECTOR (waveform monitor, audio level meter, and vectorscope) SETTING" on page 26.*

## Timecode display

Timecode superimposed on SDI signals is displayed on the screen.

*For more information, see "T/C (time code) DISPLAY SETTING" on page 24.*

## Camera focus

This function sharpens the edges of the image more than the amount set by the upper limit of the aperture value in the USER CONTROL menu.

This is convenient for focusing with the camera. This function also colors the focused part of an image, providing fast and exact focusing.

## Scan setting/native display

When video signals are input, you can set the display size to 0% scan (normal) or 5% over scan (over).

A native display function that maps the pixel of the signal to the panel in one-to-one mode is also equipped. With this, scaling to correct the screen aspect ratio is done to the horizontal direction of SD signals with non-square pixels (number of horizontal pixels of the signal system is 720 or 1440) or 640 × 480 SD signal of HDMI video.

## External remote function

The input signal is selected or various items are adjusted by use of the serial (Ethernet) remote function. Up to 32 monitors and control units (max. 4) can be connected by the Ethernet (10BASE-T/100BASE-TX) connection and controlled remotely on the network. You can control individual monitors or monitor groups simply by entering the monitor ID or group ID number. You can also execute the same operation on all connected monitors, or put all connected monitors into the same setup and adjustment state.

*For more information, see SERIAL REMOTE of REMOTE menu on page 31.*

*Refer to the Operation Manual of the BKM-15R or BKM-16R Monitor Control Unit (optional).*

## Closed caption

EIA/CEA-608 and EIA/CEA-708 standard closed caption signals superimposed on an SDI signal can be displayed. Closed caption signals superimposed on an NTSC signal can also be displayed.

## IMD (in-monitor display)

With the external remote function, image source names and tally information are displayed on the screen.

*For more information, see IMD (in-monitor display) SETTING on page 25.*

**Illuminated control panel**

The characters that represent the names of the buttons on the control panel can be illuminated, so it is visible in the dark. The brightness of the LED has two levels, and varies according to the ambient light.

**Key inhibit function**

You can inhibit a key function to prevent misoperation.

**Monaural speaker**

The monitor has a monaural speaker to reproduce sound.

**Two power systems**

This unit can also be operated by DC 12V or its exclusive AC adaptor. The AC adaptor can be mounted on the rear of the monitor for easy use.

**Silent mode**

You can stop the built-in cooling fan. This function is convenient for stopping the noise of the fan rotation.

**Rack mount monitors**

Using the optional MB-531 Mounting Bracket, up to two monitors may be mounted on the EIA-standard 19-inch rack. A height of 4U space-saving design allows more equipment to be installed in tight space, such as an outdoor broadcasting van.

**Carrying handle**

A carrying handle is included.

**Tripod socket holes**

Tripod socket holes are provided on the bottom of the unit.

With the supplied arm mount bracket installed on the unit, you can use the same screw holes on the upper side.

**Removable screen's protection plate**

You can attach and detach the screen's protection plate easily with the four screws.

**Monitor stand**

You can set the monitor display in 15° by using the stand.

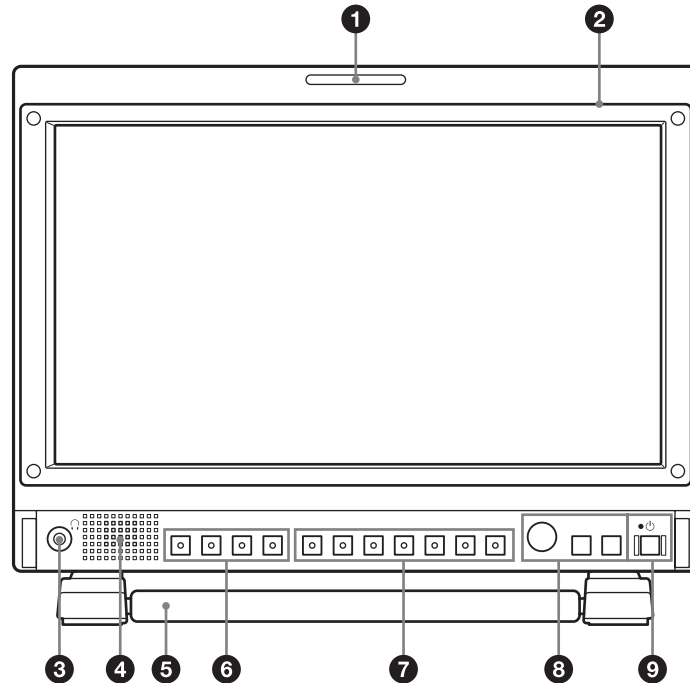
**Monitor ENG Kit**

You can use the light intercepting hood, connector protector and carrying handle (optional Sony VF-510 Monitor ENG Kit) for outdoor use.



# Location and Function of Parts and Controls

## Front Panel



### 1 Tally lamp

You can check the status of the monitor by the color of the tally lamp.

The tally lamp lights in red, green or amber according to the setting of PARALLEL REMOTE in the REMOTE menu.

### 2 Protection plate

You can detach the protection plate by removing the four screws.

### 3 (headphones) jack

The audio signal which is selected by the input select button is output in stereo sound.

### 4 Speaker

The audio signal which is selected by the input select button is output in monaural sound (L + R).

When SDI signals are input, the audio which is selected in AUDIO SETTING of the USER CONFIG menu is output (see page 30).

The audio signals from the speaker are output from the AUDIO OUT connector on the rear (see page 12).

Audio signals will not be output when headphones are connected to the (headphones) jack.

### 5 Stand

Pull the stand toward you to tilt the monitor screen by 15°. When using the optional VF-510 Monitor ENG Kit, set the stand at positions B and C (see “Using the stand” on page 10).

### 6 Input select buttons

Press to monitor the signal input to each connector. If a temperature increase occurs inside the unit when using the unit in a high temperature environment, or in SILENT MODE, the LED flashes.

**SDI 1 button:** to monitor the signal through the SDI 1 input connector

**SDI 2 button:** to monitor the signal through the SDI 2 input connector

**HDMI button:** to monitor the signal through the HDMI connector

**COMPOSITE button:** to monitor the signal through the COMPOSITE IN connector

### 7 Function buttons

You can turn the assigned function on or off. The factory setting is as follows;

**F1 button:** BRIGHTNESS

**F2 button:** CONTRAST

**F3 button:** CHROMA

**F4 button:** SCAN

**F5 button:** H/V DELAY

**F6 button:** VOLUME

**F7 button:** I/P MODE

You can assign various functions in FUNCTION BUTTON SETTING of the USER CONFIG menu. Press the button BRIGHTNESS, CONTRAST, CHROMA, VOLUME, PHASE, or APERTURE function assigned to display the adjustment screen. Press the same button again, and the adjustment screen disappears, but you can adjust the value without the setting value display.

*For details of the function assigned to the function button, see page 28.*

## 8 Menu operation buttons

Displays or sets the on-screen menu.

### Menu selection control

When the menu is displayed, turn the control to select a menu item or setting value, and then press the control to confirm the setting.

If the menu is not displayed and the menu selection control is pressed, the characters that represent the names of the buttons light up, then disappear after a specified time. Also, the names of the functions selected in FUNCTION BUTTON SETTING of the USER CONFIG menu appear on the screen, then disappear after a specified time.

Alternatively, if the menu is not displayed and the menu selection control is pressed for more than two seconds, the signal format is displayed on the screen.

### RETURN button

When the menu is displayed, press the button to reset the value of an item to the previous value (except some items).

When the menu is not displayed, press the button to display the name of the function selected in FUNCTION BUTTON SETTING of the USER CONFIG menu.

### MENU button

Press to display the on-screen menu.

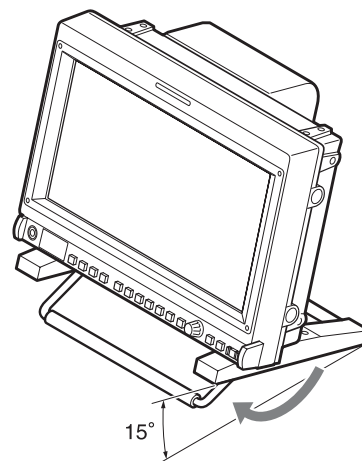
Press again to clear the menu.

## 9 (standby) switch and indicator

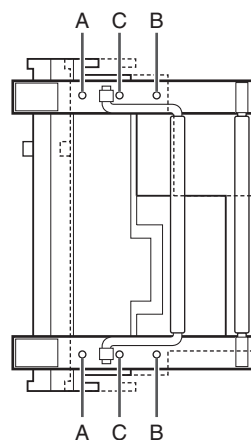
Press to turn on the power when this unit is in standby mode. The indicator lights in green. Press the switch again to set the monitor in standby mode. The indicator goes out. When a fan error occurs, the indicator flashes in green and amber alternately. In power saving mode, it lights in amber.

## Using the stand

Pull the stand toward you to tilt the monitor screen by 15°.



The mounting position of the stand can be changed. Move the mounting screws on the underside of the stand to positions A and C, or positions B and C.



**A and C:** Sets the stand towards the back.

**B and C:** Sets the stand towards the front.

When using the optional VF-510 Monitor ENG Kit, set the stand at positions B and C.

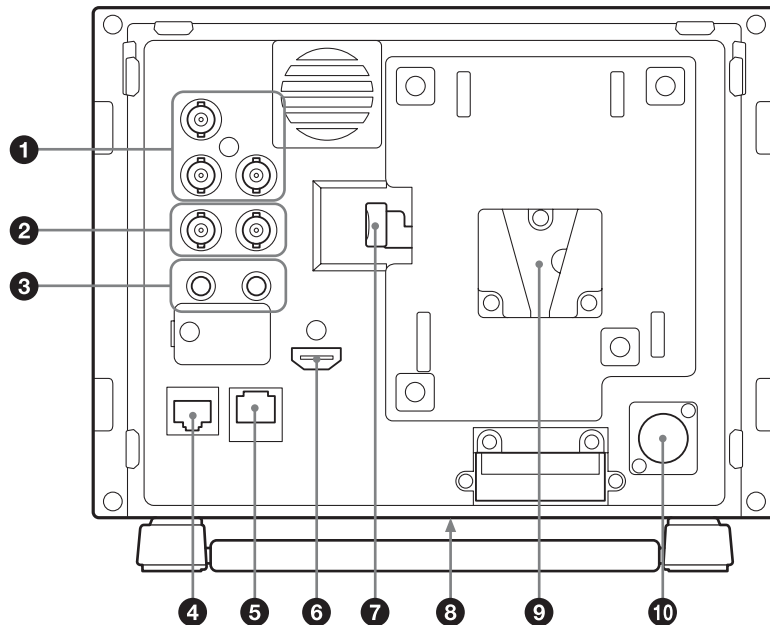
## Input Signals and Adjustable/Setting Items

Item	Input signal						
	Video	B & W	SDI			HDMI	
			SD	HD	3G	SD	HD
CONTRAST*1	○	○	○	○	○	○	○
BRIGHTNESS*1	○	○	○	○	○	○	○
CHROMA*1	○	×	○	○	○	○	○
PHASE*1	○ (NTSC)	×	×	×	×	×	×
APERTURE	○	○	○	○	○	○	○
COLOR TEMP	○	○	○	○	○	○	○
COLOR SPACE	○	○	○	○	○	○	○
AUTO CHROMA/PHASE	○	×	×	×	×	×	×
ACC	○	×	×	×	×	×	×
CTI	○	×	×	×	×	×	×
V SHARPNESS	○	○	○	×	×	○	×
NTSC SETUP	○ (NTSC)	○ (480/60I)	×	×	×	×	×
SCAN	○	○	○	○	○	○	○
ASPECT	○	○	○	×	×	○	×
MARKER	○	○	○	○	○	○	○
BLUE ONLY	○	×	○	○	○	○	○
MONO	○	×	○	○	○	○	○
H/V DELAY*6	○	○	○	○	○	×	×
SHIFT	○	○	○	○	○	○	○
POWER SAVING	○	○	○	○	○	○	○
I/P MODE*2	○	○	○	○	○	○	○
WFM/ALM/VECTOR	○	○	○*5	○*5	○*5	○*5	○*5
CAMERA FOCUS	○	○	○	○	○	○	○
RGB RANGE*3	×	×	×	×	×	○	○
SILENT MODE	○	○	○	○	○	○	○
T/C	×	×	○	○	○	×	×
IMD	○	○	○	○	○	○	○
SD PIXEL MAPPING	○	○	×	×	×	×	×
CLOSED CAPTION*4	○*7 (NTSC)	○*7 (480/60I)	○	○	×	×	×

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

- \*1 Adjustment of SUB CONTROL is the same.
- \*2 Only the interlace signal is input.
- \*3 Adjustable when RGB format of HDMI signals are input.
- \*4 When the marker display is set to ON, or NATIVE is selected in the scan mode, closed captions cannot be displayed.
- \*5 When RGB format signal is input, VECTOR cannot be displayed.
- \*6 When the WFM/ALM/VECTOR display is set to ON, this does not function.
- \*7 Some characters may be misplaced, cropped or missing.

## Rear/Bottom Panel



### 1 SDI (3G/HD/SD) input and output connectors (BNC)

#### 1 (input) connector, 2 (input) connector

Input connector for serial digital component signals. SDI 1 and SDI 2 inputs are available.

#### OUT connector

Output connector for serial digital component signals.

#### Note

- The signal from the OUT connector does not satisfy the ON-LINE signal specifications.
- Output is only activated when the power is on. No output in standby mode.

### 2 COMPOSITE input and output connectors (BNC)

#### IN connector

Input connector for composite video signals.

#### OUT connector

Loop-through output connector.

#### Note

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

### 3 AUDIO input and output connectors (stereo mini jack)

#### IN connector

Connect to the audio outputs of external equipment such as a VCR.

#### OUT connector

Outputs the audio signal which is selected by the input select button on the front panel.

When SDI signal is selected, either the audio signal of the channel which is selected in AUDIO SETTING of the USER CONFIG menu or the audio signal from the AUDIO IN connector is output.

### 4 PARALLEL REMOTE connector (modular connector, 8-pin)

Forms a parallel switch and controls the monitor externally.

*For details on the pin assignment and factory setting function assigned to each pin, see page 34.*

#### 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.

### 5 SERIAL REMOTE connector (RJ-45)

Connect to the network or Sony BKM-15R/16R Monitor Control Unit by using a 10BASE-T/100BASE-TX LAN cable (shielded type, optional).

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

### 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.
- When you connect the LAN cable of the unit to peripheral device, use a shielded-type cable to prevent malfunction due to radiation noise.
- 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.

### 6 HDMI input connector

Input connector for HDMI signals.

HDMI (High-Definition Multimedia Interface) is an interface that supports both video and audio on a single digital connection, allowing you to enjoy high quality digital picture and sound. The HDMI specification supports HDCP (High-bandwidth Digital Content Protection), a copy protection technology that incorporates coding technology for digital video signals.

### Note

Use HDMI compliant cable (optional) with HDMI logo.

### 7 EJECT button

While sliding this button, remove the AC adaptor.

### 8 Tripod socket hole (1/4-20UNC, 3/8-16UNC)

When using a tripod, secure it to the monitor with this hole.

### 9 AC adaptor attachment

The monitor can also be operated with AC power by attaching the AC adaptor.

### CAUTION

For safety, use only the Sony AC adaptor listed below.

- AC power using the AC-941W AC Adaptor

### 10 DC IN connector

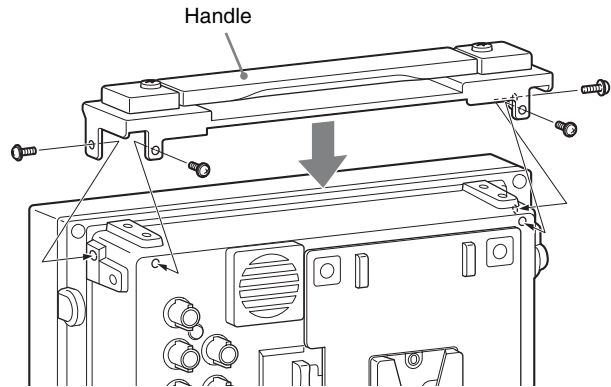
Connects the DC 12V external power source to use the monitor.

### CAUTION

Be sure to connect to a power supply of the specified voltage value.

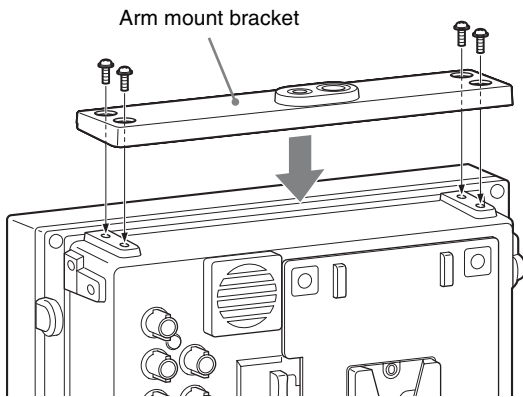
## Installing the Handle

You can install the supplied carrying handle to the unit, using the supplied four screws.



## Installing the Arm Mount Bracket

You can install the supplied arm mount bracket, using the supplied four screws.



## Installing to the Rack (Using MB-531)

You can attach up to two monitors to the rack by using the optional MB-531 Mounting Bracket.

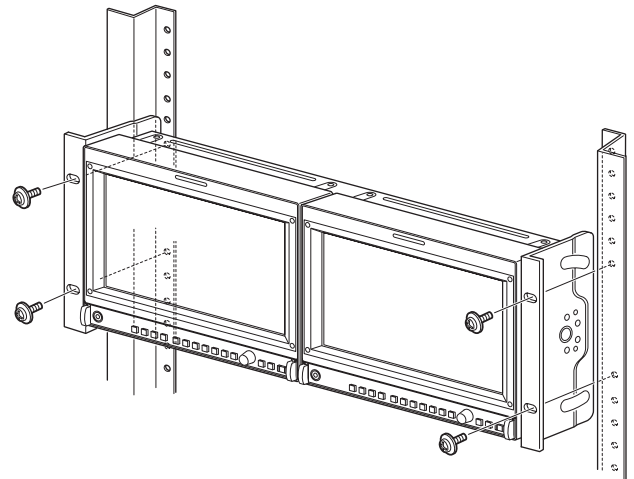
**1** Attach the mounting bracket to the monitor.

*For details on attaching the mounting bracket, refer to the Mounting Instructions of the MB-531.*

**2** Attach the unit to the rack with four screws.

### Note

The screws are not supplied. Prepare screws according to the rack.



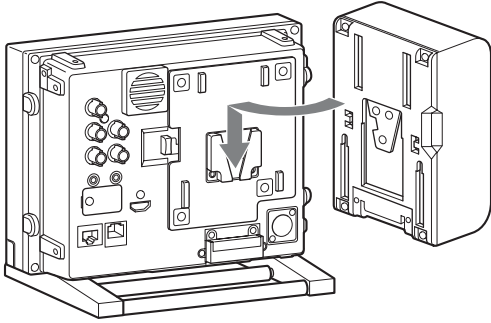
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# Power Supply

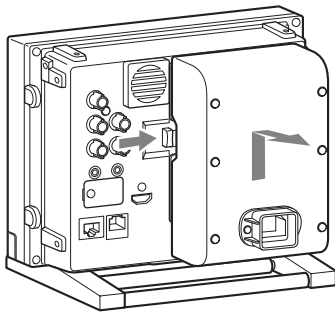
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## Attaching the AC Adaptor

### Attaching



### Removing



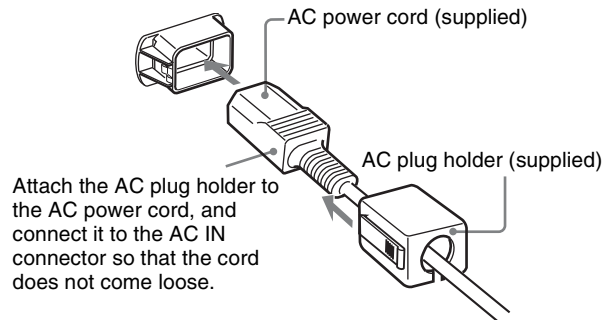
### CAUTION

- The AC adaptor can be used only with products specified by the manufacturer.
- To remove the AC adaptor, first unplug the AC power cord and then remove the AC adaptor.
- Do not carry the monitor by holding the AC adaptor.

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## Connecting the AC Power Cord

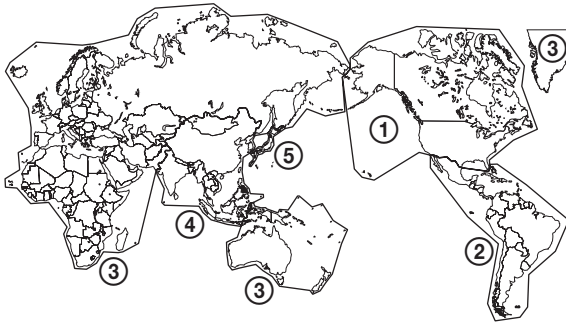
Attach the AC adaptor to the monitor, and then connect the supplied AC power cord.



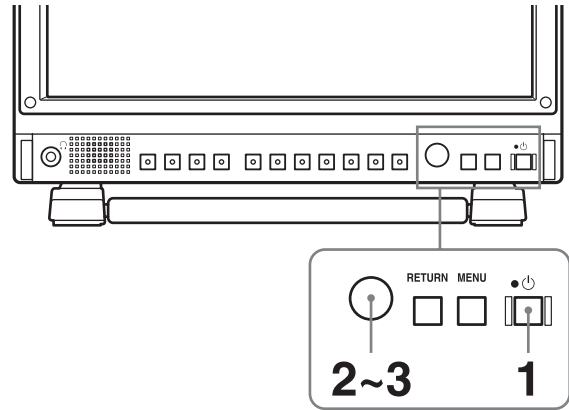
# Selecting the Default Settings

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

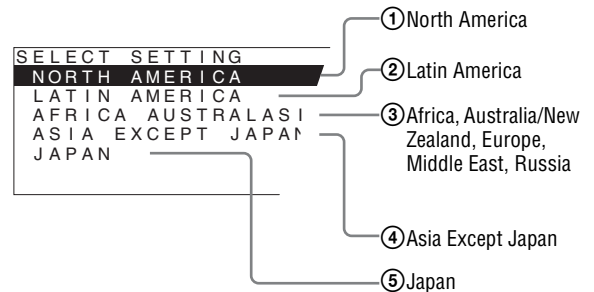


		COLOR TEMP	NTSC SETUP	COLOR SPACE
① NORTH AMERICA		D65	7.5	ITU-709
② LATIN AMERICA	ARGENTINA	D65	0	ITU-709
	PAL&PAL-N AREA PARAGUAY	D65	0	ITU-709
	URUGUAY	D65	0	ITU-709
	NTSC&PAL-M AREA OTHER AREA	D65	7.5	ITU-709
③ AFRICA AUSTRALASIA EUROPE MIDDLE-EAST		D65	0	ITU-709
④ ASIA EXCEPT JAPAN	NTSC AREA	D65	7.5	ITU-709
	PAL AREA	D65	0	ITU-709
⑤ JAPAN		D93	0	ITU-709



1 Press the (standby) switch.

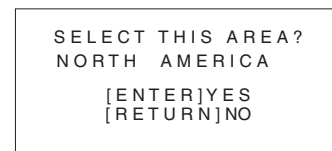
The unit is turned on and the SELECT SETTING screen appears.



2 Turn the menu selection control to select the area where you intend to use the unit and press the menu selection control.

**If you select either ①, ③ or ⑤**

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



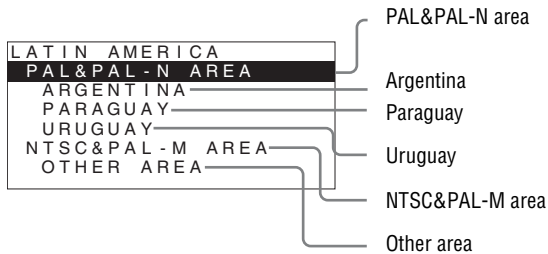
**If you select either ② or ④**

One of the following screens appears. Turn the menu selection control to narrow the area further and then press the menu selection control. The confirmation screen is displayed. Confirm the selected area.

If the setting is wrong, press the RETURN button to return to the previous screen.

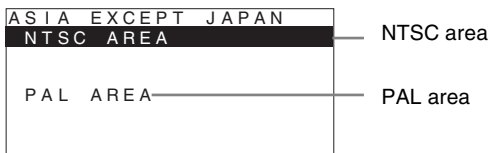
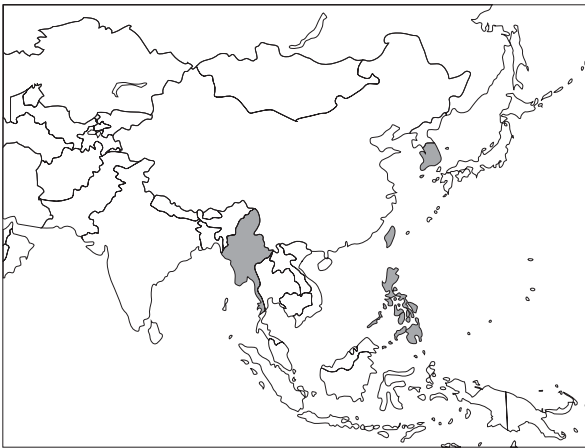


② If LATIN AMERICA is selected:



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 menu selection control.

The SELECT SETTING screen disappears and the menu item settings suitable for the selected area are applied.

**Note**

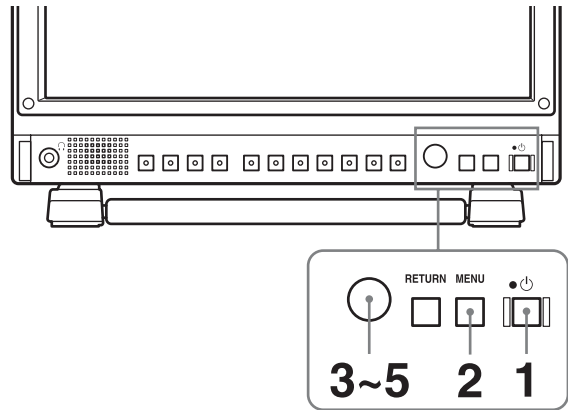
When you have selected the wrong area, set the following items using the menu.

- COLOR TEMP (on page 21)
- NTSC SETUP (on page 23)
- COLOR SPACE (on page 21)

See “The default setting values for each area” (page 16) on the setting value.

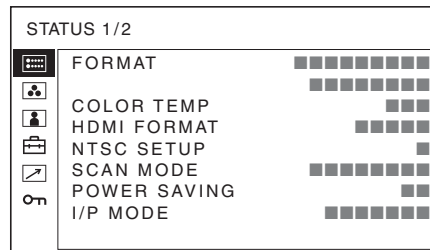
# Selecting the Menu Language

You can select one of seven languages (English, French, German, Spanish, Italian, 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.



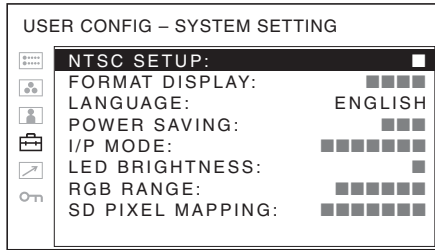
- 1 Turn on the unit.
- 2 Press the MENU button.

The menu appears. The menu presently selected is shown in yellow.



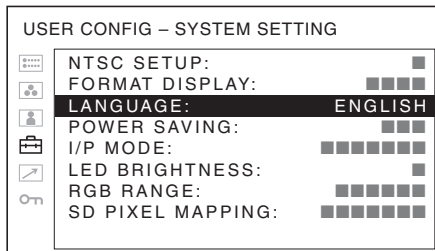
- 3 Turn the menu selection control to select SYSTEM SETTING of the USER CONFIG (user configuration) menu, then press the menu selection control.

The setting items (icons) in the selected menu are displayed in yellow.



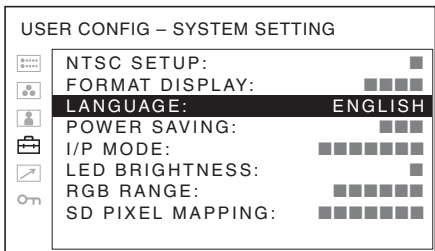
- Turn the menu selection control to select “LANGUAGE”, then press the menu selection control.

The selected item is displayed in yellow.



- Turn the menu selection control to select a language, then press the menu selection control.

The menu changes to the selected language.



### To clear the menu

Press the MENU button.

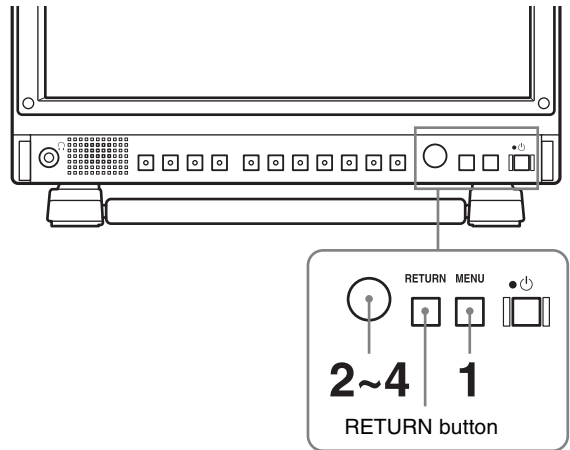
The menu disappears automatically if a button is not pressed for one minute.

## Using the Menu

The unit is equipped with an on-screen menu for making various adjustments and settings such as picture control, input setting, 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 17.

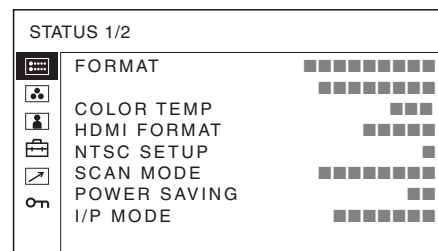
The current settings are displayed in place of the ■ marks on the illustrations of the menu screen.



- Press the MENU button.

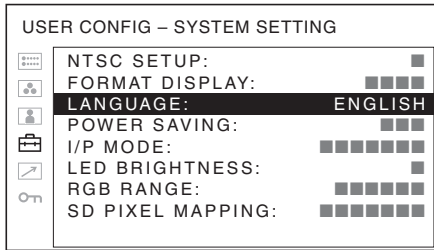
The menu appears.

The menu presently selected is shown in yellow.



- Turn the menu selection control to select a menu, then press the menu selection control.

The menu icon presently selected is shown in yellow and setting items are displayed.



The menu disappears automatically if a button is not pressed for one minute.

## About the memory of the settings

The settings are automatically stored in the monitor memory.

### 3 Select an item.

Turn the menu selection control to select the item, then press the menu selection control. The item to be changed is displayed in yellow. If the menu consists of multiple pages, turn the menu selection control 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, turn the menu selection control right.

To decrease the number, turn the menu selection control left.

Press the menu selection control to confirm the number, then restore the original screen.

#### **When changing the setting:**

Turn the menu selection control to change the setting, then press the menu selection control to confirm the setting.

#### **When returning the adjustment or setting to the previous value:**

Press the RETURN button before pressing the menu selection control.

#### **Notes**

- An item displayed in black cannot be accessed. You can access the item if it is displayed in white.
- If the key inhibit has been turned on, all items are displayed in black. To change any of the items, turn the key inhibit to OFF first.

*For details on the key inhibit, see page 32.*

## To return the display to the previous screen

Press the RETURN button.

## To clear the menu

Press the MENU button.

# Adjustment Using the Menus

## Items

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

### **STATUS (the items indicate the current settings.)**

- FORMAT
- COLOR TEMP
- HDMI FORMAT
- NTSC SETUP
- SCAN MODE
- POWER SAVING
- I/P MODE
- Model name and serial number

### **COLOR TEMP/SPACE**

- COLOR TEMP
- MANUAL ADJUSTMENT
- COLOR SPACE

### **USER CONTROL**

- SUB CONTROL
- AUTO CHROMA/PHASE
- PICTURE CONTROL
- INPUT SETTING

### **USER CONFIG**

- SYSTEM SETTING
- NTSC SETUP
- FORMAT DISPLAY
- LANGUAGE
- POWER SAVING
- I/P MODE
- LED BRIGHTNESS
- RGB RANGE
- SD PIXEL MAPPING
- MARKER SETTING
- MARKER ENABLE
- MARKER SELECT
- CENTER MARKER
- SAFETY AREA
- MARKER LEVEL
- MARKER MAT
- T/C DISPLAY SETTING
- T/C
- FORMAT

- POSITION
- TRANSPARENCY
- IMD SETTING
- IMD
- POSITION
- TRANSPARENCY
- TEXT COLOR
- TEXT BRIGHTNESS
- TALLY 1
- TALLY 2

WFM/ALM/VECTOR (waveform monitor, audio level meter, and vectorscope) SETTING

- DISPLAY
- WFM/ALM/VECTOR
- POSITION
- TRANSPARENCY
- COLOR
- INTENSITY
- ZOOM
- LINE SELECT
- LINE POSITION
- TARGET
- FOCUS SETTING
- FOCUS MODE
- COLOR
- FREQUENCY
- RANGE
- GAIN
- FUNCTION BUTTON SETTING
- F1 BUTTON
- F2 BUTTON
- F3 BUTTON
- F4 BUTTON
- F5 BUTTON
- F6 BUTTON
- F7 BUTTON
- CLOSED CAPTION SETTING
- CLOSED CAP.
- TYPE
- 708
- 608
- CAPTION LEVEL
- AUDIO SETTING
- SDI AUDIO SETTING

### **REMOTE**

- PARALLEL REMOTE
- SERIAL REMOTE

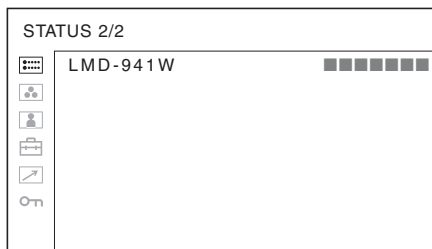
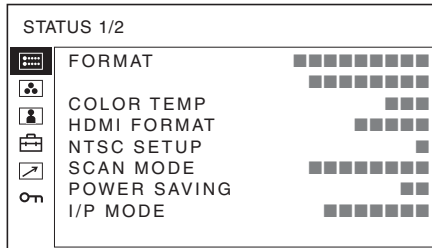
### **KEY INHIBIT**

- KEY INHIBIT

# 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:



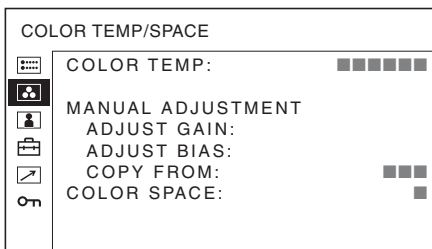
- Signal format
- Color temperature
- HDMI format
- NTSC setup
- Scan mode
- Power saving
- I/P mode
- Model name and serial number

## COLOR TEMP/SPACE menu

The COLOR TEMP/SPACE menu is used for adjusting the picture white balance or color space.

You need to use the measurement instrument to adjust the white balance.

Recommended: Konica Minolta color analyzer CA-210/CA-310



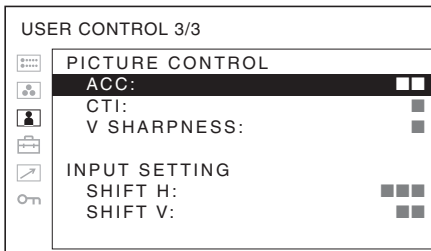
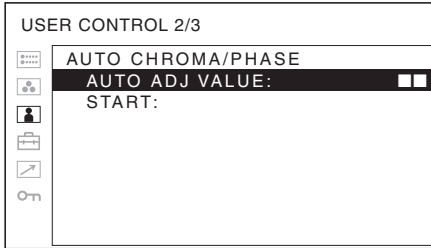
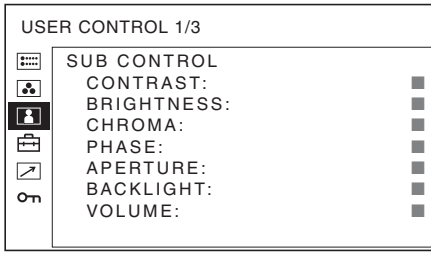
Submenu	Setting
COLOR TEMP	Selects the color temperature from among D65, D93 and USER setting.
MANUAL ADJUSTMENT	If you set the COLOR TEMP to USER setting, the item displayed is changed from black to white, which means you can adjust the color temperature. The set values are memorized. <ul style="list-style-type: none"> <li>• <b>ADJUST GAIN:</b> Adjusts the color balance (GAIN).</li> <li>• <b>ADJUST BIAS:</b> Adjusts the color balance (BIAS).</li> <li>• <b>COPY FROM:</b> If you select D65 or D93, the white balance data for the selected color temperature will be copied in the USER setting.</li> </ul>
COLOR SPACE	Selects the color space from among EBU, SMPTE-C, ITU-709 and OFF. OFF sets the color space to the original color reproduction of the panel.

## 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 black.

*For details of input signal and adjustable / setting items, see page 11.*



Submenu	Setting
SUB CONTROL	<p>Adjusts finely the adjustment range of the function buttons which CONTRAST, BRIGHTNESS, CHROMA and PHASE are assigned.</p> <ul style="list-style-type: none"> <li>• <b>CONTRAST:</b> Adjusts the picture contrast.</li> <li>• <b>BRIGHTNESS:</b> Adjusts the picture brightness.</li> <li>• <b>CHROMA:</b> Adjusts color intensity. The higher the setting, the greater the intensity. The lower the setting, the lower the intensity.</li> <li>• <b>PHASE:</b> Adjusts color tones. The higher the setting, the more greenish the picture. The lower the setting, the more purplish the picture.</li> <li>• <b>APERTURE:</b> Adjusts the picture sharpness. The higher the setting, the sharper the picture. The lower the setting, the softer the picture. APERTURE does not work when the camera focus function is activated.</li> <li>• <b>BACKLIGHT:</b> Adjusts the backlight. When the setting is changed, the brightness of the backlight is changed.</li> <li>• <b>VOLUME:</b> Adjusts the volume.</li> </ul>

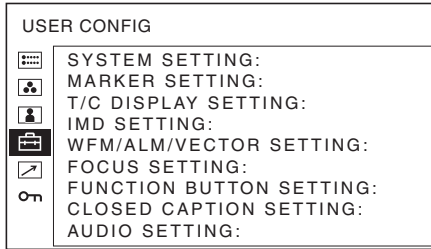
Submenu	Setting
AUTO CHROMA/PHASE	<p>Adjusts color intensity (CHROMA) and tones (PHASE).</p> <ul style="list-style-type: none"> <li>• <b>AUTO ADJ VALUE:</b> Selects ON or OFF of the auto adjustment. When you set to OFF, this parameter is reset to the factory setting. When you set to ON, the automatically adjusted value is enabled.</li> <li>• <b>START:</b> The auto adjustment starts when you display the color bar signals (Full/SMPTE/EIA) on the screen and press the menu selection control. After adjusting the color intensity, press the MENU button to clear the adjustment screen. After the adjustment is done correctly, the AUTO ADJ VALUE is automatically set to ON.</li> </ul>

PICTURE CONTROL	<p>Adjusts the picture.</p> <ul style="list-style-type: none"> <li>• <b>ACC (Auto Color Control):</b> Sets ACC circuit on or off. To check the fine adjustment, select OFF. Normally select ON.</li> <li>• <b>CTI (Chroma Transient Improvement):</b> When a low color resolution signal is input, a crisp image can be displayed. When the setting is higher, the picture becomes even more crisp.</li> <li>• <b>V SHARPNESS:</b> A crisp image can be displayed. When the setting is higher, the picture becomes even more crisp.</li> </ul>
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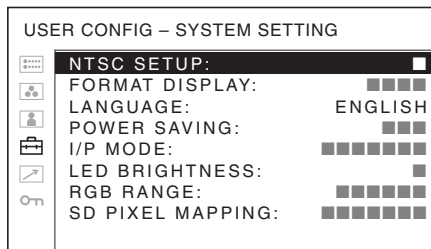
INPUT SETTING	<ul style="list-style-type: none"> <li>• <b>SHIFT H:</b> Adjusts the position of the picture. As the setting increases, the picture moves to the right, and as the setting decreases, the picture moves to the left.</li> <li>• <b>SHIFT V:</b> Adjusts the position of the picture. As the setting increases, the picture moves up, and as the setting decreases, the picture moves down.</li> </ul>
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## USER CONFIG menu

The USER CONFIG menu is used for setting the system, marker, T/C display, WFM/ALM/VECTOR, focus, function button, closed caption, and audio.



## SYSTEM SETTING

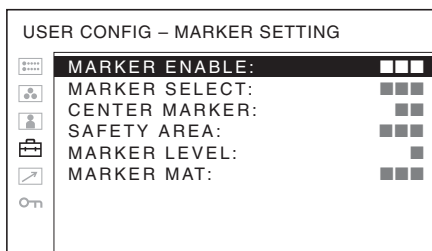


Submenu	Setting
NTSC SETUP	Selects the NTSC setup level from two modes. The 7.5 setup level is used mainly in North America. The 0 setup level is used mainly in Japan.
FORMAT DISPLAY	Selects the display mode of the signal format and scan mode. <ul style="list-style-type: none"> <li>• <b>ON</b>: The format and scan mode are always displayed.</li> <li>• <b>OFF</b>: The display is hidden.</li> <li>• <b>AUTO</b>: The format and scan mode are displayed for about 5 seconds when the input of the signal starts.</li> </ul>
LANGUAGE	Selects the menu or message language from among seven languages. <ul style="list-style-type: none"> <li>• <b>ENGLISH</b>: English</li> <li>• <b>FRANÇAIS</b>: French</li> <li>• <b>DEUTSCH</b>: German</li> <li>• <b>ESPAÑOL</b>: Spanish</li> <li>• <b>ITALIANO</b>: Italian</li> <li>• 日本語 : Japanese</li> <li>• 中文 : Chinese</li> </ul>
POWER SAVING	Sets the power saving mode on or off. When you set to ON, the monitor goes into power saving mode if no signal is input for about one minute.

Submenu	Setting
I/P MODE (picture delay minimum)	Selects to set the delay by the picture processing to the minimum level when the interlace signal is input. <ul style="list-style-type: none"> <li>• <b>INTER-FIELD*</b>: Mode for giving precedence to the picture quality. Performs interpolation depending on the movement of the images between the fields. It takes longer than the other setting modes to process the picture.</li> <li>• <b>FIELD MERGE</b>: The processing time is shorter. Combines the lines in the odd fields and even fields alternately regardless of the movement of images. Suitable for viewing still images.</li> <li>• <b>LINE DOUBLER</b>: The processing time is shorter. Performs interpolation by repeating each line in the data receiving sequence regardless of the field. As the line flicker is displayed in this mode, it is available for checking the line flicker of the telop work and so on.</li> <li>• <b>INTRA-FIELD</b>: INTRA-FIELD is only available for 1920 × 1080 SDI signal input. Mode to provide naturally reproduced image and quick picture processing. Performs interpolation within the fields. Suitable for 1920 × 1080 SDI signal input.</li> </ul> <p>* When DISPLAY in WFM/ALM/VECTOR SETTING is activated, INTER-FIELD cannot be selected.</p>
LED BRIGHTNESS	Sets the brightness of the LED of the buttons. <ul style="list-style-type: none"> <li>• <b>HIGH</b>: The LED becomes brighter.</li> <li>• <b>LOW</b>: The LED becomes darker.</li> </ul>
RGB RANGE	Sets the black level and white level for the RGB format of HDMI signals. <ul style="list-style-type: none"> <li>• <b>FULL</b>: 0 (black level) to 255 (white level)</li> <li>• <b>LIMITED</b>: 16 (black level) to 235 (white level)</li> </ul>

Submenu	Setting
SD PIXEL MAPPING	<p>Selects SD picture size (pixels) according to the input signal format from the COMPOSITE IN connector.</p> <p><b>When picture signals in the size of 720 × 576 (50i) (or 720 × 487 (60i)) are input</b>            Select 720 × 576 (or 720 × 487). This is the default setting.            When 702 × 576 (or 712 × 483) is selected, all sides of the input picture are cut off by several pixels.</p> <p><b>When picture signals in the size of 702 × 576 (50i) (or 712 × 483 (60i)) or equivalent are input</b>            Select 702 × 576 (or 712 × 483).            When 720 × 576 (or 720 × 487) is selected, a black border (of several pixels wide) appears around the input picture.</p>

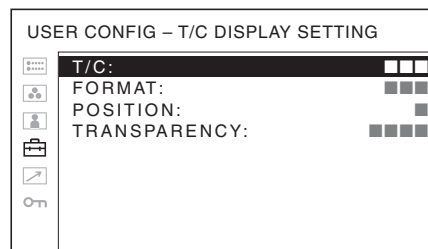
## MARKER SETTING



Submenu	Setting
MARKER ENABLE	<p>Selects ON to display the marker and OFF not to display.</p> <p><b>Note</b></p> <p>When NATIVE is selected in the SCAN setting, the marker is not displayed.            To display the marker, select a setting other than NATIVE.</p>
MARKER SELECT	<p>Selects the aspect ratio according to the film, when the frame of the film is displayed on the screen.</p> <p><b>When 16:9 aspect ratio is selected with the button which the aspect function is assigned</b>            You can select from among 4:3, 15:9, 14:9, 13:9, 1.85:1, 2.35:1, 1.85:1 &amp; 4:3 and OFF.</p> <p><b>When 4:3 aspect ratio is selected with the button which the aspect function is assigned</b>            You can select 16:9 or OFF.</p>

Submenu	Setting
CENTER MARKER	Selects ON to display the center mark of the picture and OFF not to display.
SAFETY AREA	Selects the safe area size for the aspect ratio determined by the button to which the aspect function is assigned. You can select from OFF, 80%, 85%, 88%, 90% and 93%. When the marker is displayed, the safe area for the marker is displayed.
MARKER LEVEL	Sets the luminance to display the MARKER SELECT, CENTER MARKER and SAFETY AREA. You can select 1, 2 or 3. When the setting is low, the marker appears dark.
MARKER MAT	<p>Selects whether you put mat on the outside of the marker display.</p> <ul style="list-style-type: none"> <li>• <b>OFF:</b> No mat is put.</li> <li>• <b>HALF:</b> Gray mat is put.</li> <li>• <b>BLACK:</b> Black mat is put.</li> </ul>

## T/C (time code) DISPLAY SETTING



Submenu	Setting
T/C	Selects ON to display the time code display and OFF not to display.
FORMAT	<p>Sets the time code format.</p> <ul style="list-style-type: none"> <li>• <b>VITC:</b> To display the time code in VITC format.</li> <li>• <b>LTC:</b> To display the time code in LTC format.</li> </ul>
POSITION	<p>Sets the position of the time code display. You can select between 1 and 2.</p> <ul style="list-style-type: none"> <li>• <b>1:</b> Top</li> <li>• <b>2:</b> Bottom</li> </ul>
TRANSPARENCY	<p>Selects BLACK or HALF (transparent) for the background of T/C display.</p> <ul style="list-style-type: none"> <li>• <b>BLACK:</b> The background becomes black. Displayed image is hidden behind the background.</li> <li>• <b>HALF:</b> The background becomes transparent. Displayed image appears under the T/C display.</li> </ul>



## IMD (in-monitor display) SETTING

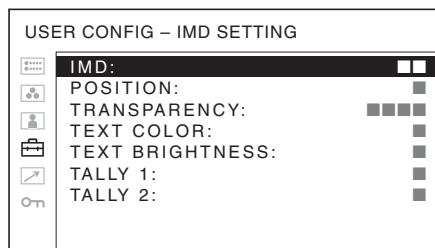
The monitor supports “TSL UMD Protocol - V5.00” provided by Television System LTD.

Tally 1 and tally 2 lamp colors, text colors and text display brightness can be set in the setting menu.



### Notes

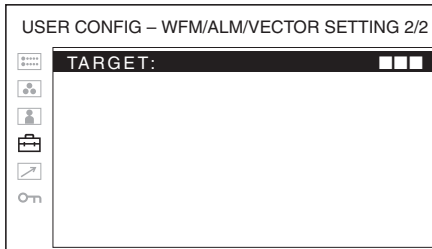
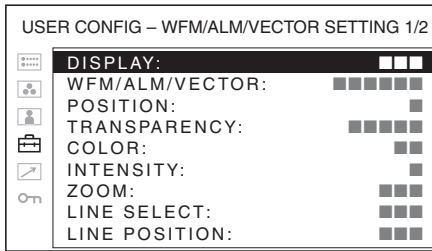
- Set values to “0x0000” in SCREEN and INDEX of TSL protocol setting before displaying IMD.
- The monitor displays English alphabet, numbers, symbolic codes and Japanese letters (i.e. Hiragana and Katakana). Certain symbols cannot be displayed.
- Up to 16 characters are displayed in English and Japanese. A voiced sound mark in Japanese is counted as one character.



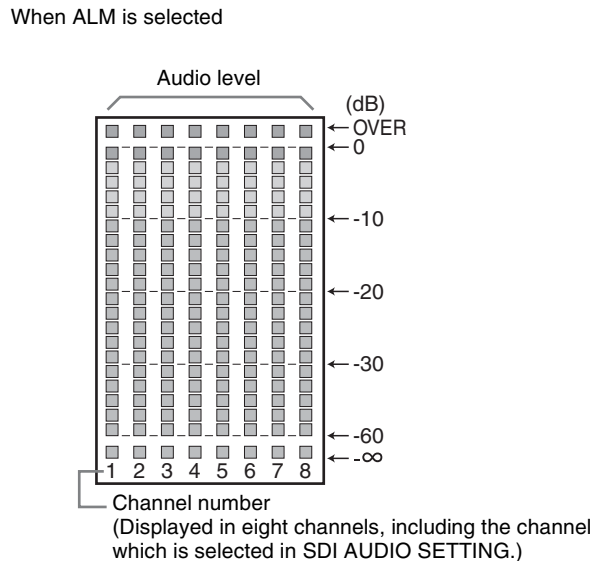
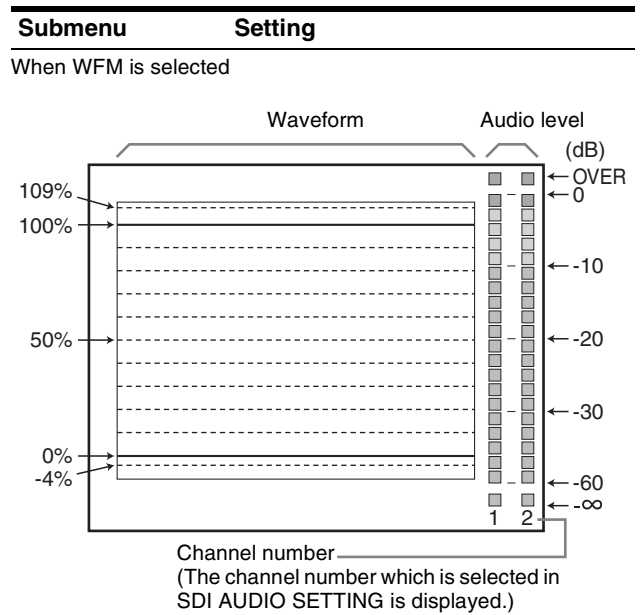
Submenu	Setting
IMD	Selects ON to activate IMD and OFF to turn it off.
POSITION	Sets the position of IMD. You can select between 1 and 2. <ul style="list-style-type: none"> <li>• 1: Top</li> <li>• 2: Bottom</li> </ul>
TRANSPARENCY	Selects BLACK or HALF for the background of IMD. <ul style="list-style-type: none"> <li>• <b>BLACK:</b> The background is black. Displayed image is hidden behind the background.</li> <li>• <b>HALF:</b> The background is transparent. Displayed image can be seen indistinctly behind the IMD display.</li> </ul>

Submenu	Setting
TEXT COLOR	Selects the color of text displayed in IMD. Selecting “0 (commanded color)” sets the same color as set in TSL command. Selecting from 1 and 8 sets the following colors, regardless of the command setting. <ul style="list-style-type: none"> <li>• 0: Commanded color</li> <li>• 1: White</li> <li>• 2: Red</li> <li>• 3: Green</li> <li>• 4: Blue</li> <li>• 5: Yellow</li> <li>• 6: Cyan</li> <li>• 7: Magenta</li> <li>• 8: Amber</li> </ul>
TEXT BRIGHTNESS	Selects brightness of text displayed in IMD. Selecting “0 (commanded brightness)” sets the brightness same as set in TSL command. Selecting from between 1 and 3 sets the following brightness, regardless of the command setting. <ul style="list-style-type: none"> <li>• 0: Commanded brightness</li> <li>• 1: 100%</li> <li>• 2: 50%</li> <li>• 3: 14%</li> </ul>
TALLY 1	Selects the color of tally 1 lamp displayed in IMD. Selecting “0 (commanded color)” sets the same color as set in TSL command. Selecting from 1 and 8 sets the following colors, regardless of the command setting. <ul style="list-style-type: none"> <li>• 0: Commanded color</li> <li>• 1: White</li> <li>• 2: Red</li> <li>• 3: Green</li> <li>• 4: Blue</li> <li>• 5: Yellow</li> <li>• 6: Cyan</li> <li>• 7: Magenta</li> <li>• 8: Amber</li> </ul>
TALLY 2	Selects the color of tally 2 lamp displayed in IMD. Selecting “0 (commanded color)” sets the same color as set in TSL command. Selecting from 1 and 8 sets the following colors, regardless of the command setting. <ul style="list-style-type: none"> <li>• 0: Commanded color</li> <li>• 1: White</li> <li>• 2: Red</li> <li>• 3: Green</li> <li>• 4: Blue</li> <li>• 5: Yellow</li> <li>• 6: Cyan</li> <li>• 7: Magenta</li> <li>• 8: Amber</li> </ul>

# WFM/ALM/VECTOR (waveform monitor, audio level meter, and vectorscope) SETTING

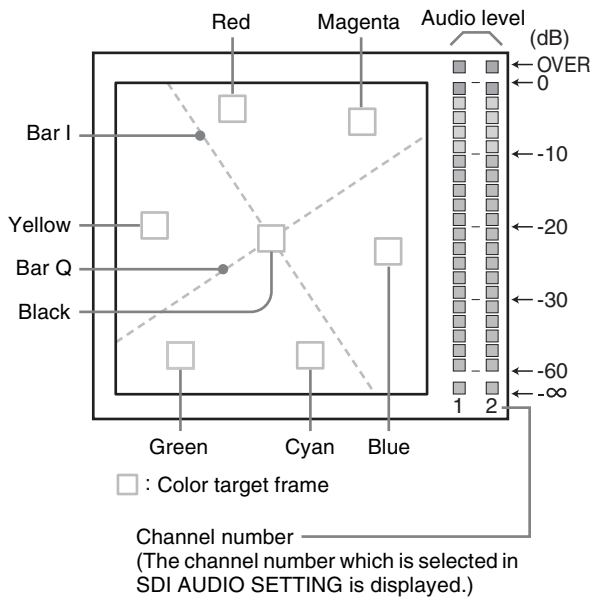


Submenu	Setting
DISPLAY	Select ON to display the WFM (waveform monitor), ALM (audio level meter), or VECTOR (Vectorscope) or OFF not to display.
WFM/ALM/VECTOR	<p>Sets the display settings for WFM/ALM/vectorcope.</p> <ul style="list-style-type: none"> <li>• <b>WFM:</b> Displays the wave form monitor.</li> <li>• <b>ALM:</b> Displays the audio level meter.</li> <li>• <b>VECTOR:</b> Displays the vectorscope.</li> </ul> <p>When WFM is selected, the waveform and audio level are displayed. When ALM is selected, the audio level is displayed in eight channels. When VECTOR is selected, the color component of the image signal and the audio levels are displayed. When SDI signal is input, the audio levels for channels selected in SDI AUDIO SETTING are displayed.</p> <p>Each display type is illustrated below. (The waveform percentage and audio level units/values do not appear on the display.)</p>



Submenu	Setting
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When VECTOR is selected

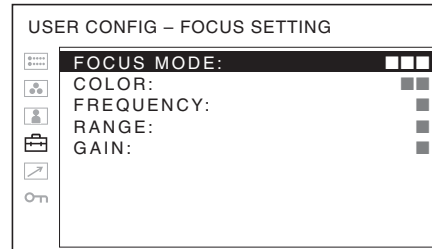


POSITION	<p>Sets the position of the WFM/ALM/VECTOR display. You can select from among 1 to 4.</p> <ul style="list-style-type: none"> <li>• 1: Bottom left</li> <li>• 2: Bottom right</li> <li>• 3: Top right</li> <li>• 4: Top left</li> </ul>
TRANSPARENCY	<p>Selects from black and half (transparent) for the background of the WFM/ALM/VECTOR display.</p> <ul style="list-style-type: none"> <li>• <b>BLACK:</b> The background is black. Displayed image is hidden behind the background.</li> <li>• <b>HALF:</b> The background is transparent. Displayed image can be seen indistinctly behind the WFM/ALM/VECTOR display.</li> </ul>
COLOR	<p>Selects the displayed line color from white (W), red (R), green (G), blue (B) and yellow (YL), when WFM is selected.</p>
INTENSITY	<p>Sets the brightness of the waveform, etc. The larger the value, the brighter the waveform.</p>
ZOOM	<p>When ON is set, 0-20 IRE areas will be zoomed when WFM is selected, or black areas will be zoomed when VECTOR is selected.</p>
LINE SELECT	<p>Select ON to display the wave form of the line assigned in LINE POSITION below, when WFM is selected.</p>
LINE POSITION	<p>Sets the line position when WFM is selected. When the numerical value is increased, the line will move down; when decreased, the line will move up.</p>

Submenu	Setting
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TARGET	Select 75 or 100. Switches the vectorscope target between 75% and 100%.
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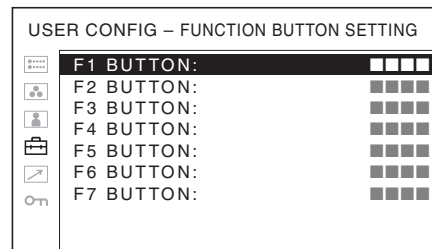
## FOCUS SETTING



Submenu	Setting
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FOCUS MODE	<p>Switches the focus mode.</p> <ul style="list-style-type: none"> <li>• <b>STD:</b> An image with sharpened edges is displayed.</li> <li>• <b>COLOR:</b> Displays the intensified areas of images with color selected in COLOR below.</li> <li>• <b>OFF:</b> FOCUS MODE is deactivated.</li> </ul>
COLOR	<p>Selects the displayed intensified color from white (W), red (R), green (G), blue (B), and yellow (YL).</p>
FREQUENCY	<p>Sets the center frequency of the edge sharpening signal. You can select from L, M, MH, H.</p>
RANGE	<p>Sets the amount by which the level of edge sharpening may vary. You can set from 1 to 3.</p>
GAIN	<p>Sets the level of edge sharpening. You can select from 0 to 100.</p>

## FUNCTION BUTTON SETTING



Submenu	Setting
F1 BUTTON to F7 BUTTON	<p>Assigns the function to the function buttons of the front panel and turns the function on or off.</p> <p>You can assign the function from among SCAN, ASPECT, BLUE ONLY, MONO, MARKER, I/P MODE, etc.</p> <p><b>Factory setting</b></p> <ul style="list-style-type: none"> <li>• <b>F1 button:</b> BRIGHTNESS</li> <li>• <b>F2 button:</b> CONTRAST</li> <li>• <b>F3 button:</b> CHROMA</li> <li>• <b>F4 button:</b> SCAN</li> <li>• <b>F5 button:</b> H/V DELAY</li> <li>• <b>F6 button:</b> VOLUME</li> <li>• <b>F7 button:</b> I/P MODE</li> </ul>

## About the function assigned to the function button

### SCAN

Press the button to change the scan size of the picture. With every press of the button, the picture switches in the sequence NORMAL scan → OVER scan → NATIVE (see “Scan mode image” on page 29).

### ASPECT

Press the button to set the aspect ratio of the picture, 4:3 or 16:9.

### BLUE ONLY

Press the button to eliminate the red and green signals. Only blue signal is displayed as an apparent monochrome picture on the screen. This facilitates “chroma” and “phase” adjustments and observation of signal noise.

### MONO

Press the button to display a monochrome picture. When the buttons is pressed again, the monitor switches automatically to color mode.

### MARKER

Press the button to display the marker. Set the aspect marker in the MARKER SETTING menu (see page 24).

### H/V DELAY

Press the button to observe the horizontal and vertical sync signals at the same time.

### CLOSED CAP.

Press the button to display the closed caption. Set the closed caption setting in the CLOSED CAPTION SETTING menu (see page 29).

### WFM/ALM/VS (WFM/ALM/VECTOR)

Press the button to display the WFM/ALM/vectorscope display. Set the WFM/ALM/vectorscope display setting in the WFM/ALM/VECTOR SETTING menu (see page 26).

When LINE SELECT is set to ON and WFM is selected, each time you press the button, the settings change in the sequence WFM display activated → Line position setting → WFM display deactivated. Turn the menu selection control to move the line, when the line position is selected.

When LINE SELECT is set to OFF, the WFM display switches between activated and deactivated.

### ZOOM

Press the button to zoom in the WFM/ALM/vectorscope display. Set the ZOOM setting in the WFM/ALM/VECTOR SETTING menu (see page 27).

### BRIGHTNESS

Press the button to adjust the picture brightness. Press the button to display the adjustment screen and adjust the picture brightness. Press again to hide the adjustment screen. However, the picture brightness remains adjustable. Turn the menu selection control right to increase the brightness and turn left to decrease it.

### CONTRAST

Press the button to adjust the picture contrast. Press the button to display the adjustment screen and adjust the picture contrast. Press again to hide the adjustment screen. However, the picture contrast remains adjustable. Turn the menu selection control right to increase the contrast and turn left to decrease it.

### CHROMA

Press the button to adjust the color intensity. Press the button to display the adjustment screen and adjust the color intensity. Press again to hide the adjustment screen. However, the color intensity remains adjustable. Turn the menu selection control right to increase the intensity and turn left to decrease it.

### VOLUME

Press the button to adjust the volume. Press the button to display the adjustment screen and adjust the volume. Press again to hide the adjustment screen. However, the volume remains adjustable. Turn the menu selection control right to increase the volume and turn left to decrease it.

### I/P MODE

Press the button to set the delay by the picture processing to the minimum level when interlace signal is input. The mode switches in the sequence INTER-FIELD → FIELD MERGE → LINE DOUBLER → INTRA-FIELD with every press of the button (see “I/P MODE” on page 23).

### PHASE

Press the button to adjust the color tones. Press the button to display the adjustment screen and adjust the color tones. Press again to hide the adjustment screen. However, the color tones remain adjustable. Turn the

menu selection control right to increase the green tone and turn left to increase the purple tone.

### APERTURE

Press the button to adjust the picture sharpness. Press the button to display the adjustment screen and adjust the picture sharpness. Press again to hide the adjustment screen. However, the picture sharpness remains adjustable. Turn the menu selection control right to make the picture sharper and turn left to make the picture softer.

### FOCUS

Press the button to confirm the camera focus. An image with sharpened edges is displayed.

### T/C

Press the button to display the time code display. Adjust the settings for the time code display in T/C DISPLAY SETTING (see page 24).

### IMD

Press the button to display IMD. Adjust the settings for the IMD display in IMD SETTING (see page 25).

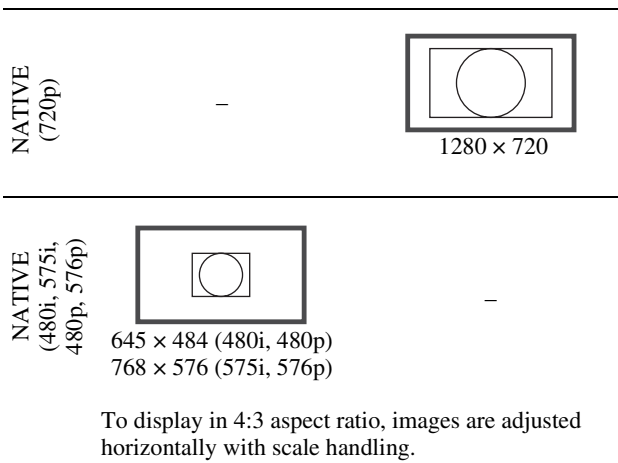
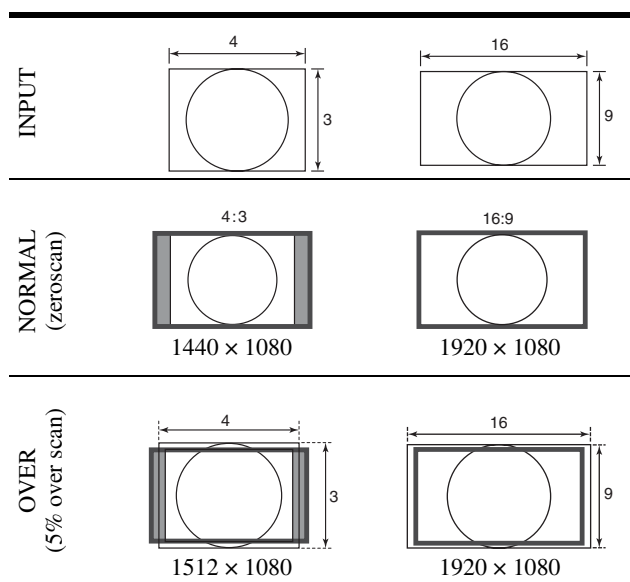
### SILENT MODE

Press the button to stop the built-in cooling fan.

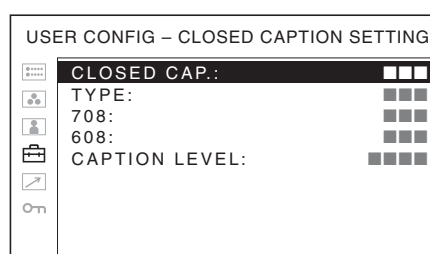
#### Note

Stopping the fan will result in a temperature increase inside the unit, possibly shortening the life of the unit. When you use SILENT MODE, the display may become dark to protect the interior circuit, and the Input select button LED may flash. This is not a malfunction.

### Scan mode image



### CLOSED CAPTION SETTING



Submenu	Setting
CLOSED CAP.	Select ON to display closed caption and OFF not to display.

Submenu	Setting
TYPE	<p>Sets the closed caption display type.</p> <ul style="list-style-type: none"> <li>• <b>AUTO1</b>: Select this to display automatically 608(VBI)*<sup>3</sup> when SD-SDI signal is input, or to display automatically 708*<sup>1</sup> when HD-SDI signal is input.</li> <li>• <b>AUTO2</b>: Select this to display automatically 608(VBI)*<sup>3</sup> when SD-SDI signal is input, or to display automatically 608(708)*<sup>2</sup> when HD-SDI signal is input.</li> <li>• <b>708</b>: Select this to display 708*<sup>1</sup> when HD-SDI signal is input.</li> <li>• <b>608(708)</b>: Select this to display 608(708)*<sup>2</sup> when HD-SDI signal is input.</li> <li>• <b>608(VBI)</b>: Select this to display 608(VBI)*<sup>3</sup> when SD-SDI signal is input.</li> </ul> <p>*1 708 is a closed caption signal conforming to the EIA/CEA-708 standard.</p> <p>*2 608(708) is a closed caption signal conforming to the EIA/CEA-608 standard, and which is transmitted as EIA/CEA-708 standard.</p> <p>*3 608(VBI) is a closed caption signal conforming to the EIA/CEA-608 standards, and which is transmitted as Line 21.</p>

708	Sets the closed caption type for 708. Select from SERVICE1 to SERVICE6.
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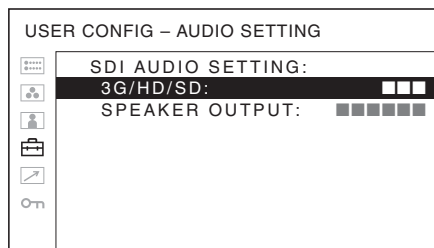
608	Sets the closed caption type for 608(708) and 608(VBI). Select from CC1, CC2, CC3, CC4, TEXT1, TEXT2, TEXT3 and TEXT4.
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CAPTION LEVEL	Sets the luminance of the displayed characters. Select LOW or HIGH.
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**Note**

You can change the setting only when SDI signal is input.

## AUDIO SETTING

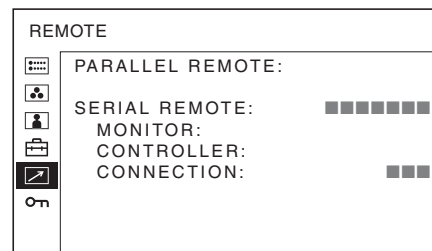


Submenu	Setting
SDI AUDIO SETTING	<p>Sets the audio channel when SDI signal is input.</p> <ul style="list-style-type: none"> <li>• <b>3G/HD/SD</b>: Selects from among channels CH1 to CH16, odd channel + even channel (CH1+CH2, CH3+CH4...CH15+CH16) and OFF.</li> </ul> <p>You can display the L/R audio levels of the selected channels. (see “WFM/ALM/VECTOR (waveform monitor, audio level meter, and vectorscope) SETTING” on page 26).</p> <ul style="list-style-type: none"> <li>• <b>SPEAKER OUTPUT</b>: Select an audio format to output from speakers, headphone jack, and AUDIO OUT connector.</li> </ul> <p><b>EMBEDDED</b>: Outputs an audio signal embedded in SDI.</p> <p><b>ANALOG</b>: Outputs an audio signal that comes from the AUDIO IN connector.</p>

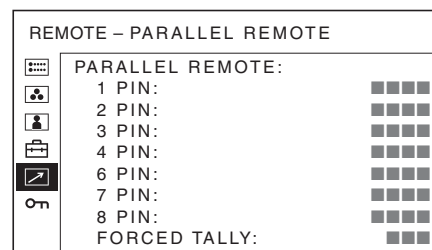
**Note**

The SDI audio signal is compatible only with 24 bit.

## REMOTE menu



## PARALLEL REMOTE



Submenu	Setting
PARALLEL REMOTE	<p>Selects the PARALLEL 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"> <li>---- (“----”): No function is assigned.)</li> <li>• COMPOSITE</li> <li>• HDMI</li> <li>• SDI 1</li> <li>• SDI 2</li> <li>• WFM/ALM/VS</li> <li>• OVERSCAN</li> <li>• NORMAL</li> <li>• NATIVE</li> <li>• 4:3</li> <li>• 16:9</li> <li>• TALLY R</li> <li>• TALLY G</li> <li>• BLUE ONLY</li> <li>• MONO</li> <li>• H/V DELAY</li> <li>• 16:9 MARKER</li> <li>• 15:9 MARKER</li> <li>• 14:9 MARKER</li> <li>• 13:9 MARKER</li> <li>• 1.85:1 MARKER</li> <li>• 2.35:1 MARKER</li> <li>• 1.85:1 &amp; 4:3 MARKER</li> <li>• 4:3 MARKER</li> <li>• CENTER MARKER</li> <li>• MARKER MAT HALF</li> <li>• MARKER MAT BLACK</li> <li>• SAFE AREA 80%</li> <li>• SAFE AREA 85%</li> <li>• SAFE AREA 88%</li> <li>• SAFE AREA 90%</li> <li>• SAFE AREA 93%</li> </ul>

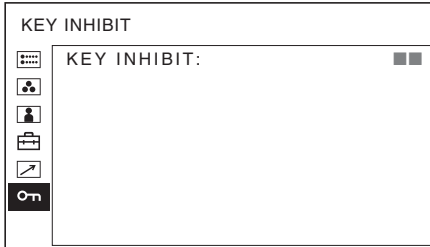
#### Notes

- If you use the PARALLEL REMOTE function, you need to connect cables. For more details, see page 34.
- Set MARKER ENABLE (page 24) to ON to control the aspect marker and center marker.

Submenu	Setting
FORCED TALLY	<p>The tally lamp function is forcibly assigned to 7 pin and 8 pin of the PARALLEL REMOTE connector. Selecting ON assigns tally lamp green to 7 pin and tally lamp red to 8 pin.</p> <p><b>ON:</b> Forcibly assigns the tally lamp function.  <b>OFF:</b> The tally lamp function is not forcibly assigned.</p>
<b>Note</b>	
<p>When OFF is selected, any listed functions can be assigned to 7 and 8 pins. Selecting ON with any function other than the tally lamp assigned to 7 and 8 pins will ignore this setting, and the tally lamp is forcibly assigned to 7 and 8 pins instead.</p>	
SERIAL REMOTE	<p>Selects the mode to be used.</p> <ul style="list-style-type: none"> <li>• <b>OFF:</b> SERIAL REMOTE does not function.</li> <li>• <b>ETHERNET:</b> The monitor is controlled by the command of Ethernet.</li> <li>• <b>BKM-15R/16R:</b> Sets BKM-15R or BKM-16R.</li> </ul>
MONITOR	<p>Sets the monitor setting.</p> <p><b>MONITOR ID:</b> Sets the ID of the monitor.  <b>GROUP ID:</b> Sets the group ID of the monitor.  <b>IP ADDRESS:</b> Sets the IP address.  <b>SUBNET MASK:</b> Sets the subnet mask.  (255.255.255.000)  <b>DEFAULT GATEWAY:</b>  Sets the default gateway on or off.  <b>ADDRESS:</b> Sets the default gateway.  <b>CANCEL:</b> Selects to cancel the setting.  <b>CONFIRM:</b> Selects to save the setting.</p>
CONTROLLER	<p>Sets the address of the remote controller.</p> <p><b>IP ADDRESS:</b> Sets the IP address.  <b>SUBNET MASK:</b> Sets the subnet mask.  (255.255.255.000)  <b>DEFAULT GATEWAY:</b>  Sets the default gateway on or off.  <b>ADDRESS:</b> Sets the default gateway.  <b>CANCEL:</b> Selects to cancel the setting.  <b>CONFIRM:</b> Selects to save the setting.</p>

Submenu	Setting
CONNECTION	Sets the connection of the monitor and the controller. <b>PEER TO PEER:</b> for one to one connection <b>LAN:</b> for connection via a network

## 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 black, indicating the items are locked.

# Troubleshooting

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

- **The unit cannot be operated** → The key protection function works. Set the KEY INHIBIT setting to OFF in the KEY INHIBIT menu.  
Or, a function that does not work is assigned. Press the RETURN button to check the assigned functions.
- **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.
- **Adjustments and settings cannot be made** → Adjustments and settings may not be possible depending on the input signals and the status of the unit. See “Input Signals and Adjustable/Setting Items” (page 11).



# Specifications

## Picture performance

Panel	a-Si TFT Active Matrix LCD
Picture size (diagonal)	228.0 mm (9 inches)
Effective picture size (H × V)	198.7 × 111.8 mm (7 <sup>7</sup> / <sub>8</sub> × 4 <sup>1</sup> / <sub>2</sub> inches)
Resolution (H × V)	1920 × 1080 pixels
Aspect	16:9
Pixel efficiency	99.99%
Viewing angle (Panel specification)	89°/89°/89°/89° (up/down/left/right, contrast > 10:1)
Normal scan	0%
Over scan	5%

## Input

Composite input (NTSC/PAL)	BNC type (× 1) 1 Vp-p ± 3 dB sync negative
SDI input	BNC type (× 2)
HDMI input	HDMI (× 1) (HDCP correspondence)
Audio input	Stereo mini jack (× 1) -5 dBu 47 kilohms or higher
Parallel remote	Modular connector 8-pin (× 1) (Pin-assignable)
Serial remote (LAN)	RJ-45 (× 1) (Ethernet, 10BASE-T/ 100BASE-TX)
DC IN	XLR-type 4-pin (male) (× 1), 12 V DC (output impedance 0.05 ohms or less)

## Output

Composite output	BNC type (× 1) Loop-through, with 75 ohms automatic termination
SDI (3G/HD/SD) output	BNC type (× 1) Output signal amplitude: 800 mVp-p ±10% Output impedance: 75 ohms unbalanced
Audio monitor output	Stereo mini jack (× 1)
Built-in speaker output	0.5 W Monaural
Headphones output connector	Stereo mini jack (× 1)

## General

Power	100 V to 240 V AC, 0.7 A to 0.4 A, 50/60 Hz 12 V DC, 2.5 A
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Power consumption	Approx. 36 W (max.)
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Inrush current	(1) Maximum possible inrush current at initial switch-on (Voltage changes caused by manual switching): 51 A peak, 7 A r.m.s. (240V AC) (2) Inrush current after a mains interruption of five seconds (Voltage changes caused at zero-crossing): 17 A peak, 2 A r.m.s. (240V AC)
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## Operating conditions

Temperature	0 °C to 40 °C (32 °F to 104 °F)
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Recommended temperature	20 °C to 30 °C (68 °F to 86 °F)
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Humidity	30% to 85% (no condensation)
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Pressure	700 hPa to 1060 hPa
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## Storage and transport conditions

Temperature	-20 °C to +60 °C (-4 °F to +140 °F)
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Humidity	0% to 90%
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Pressure	700 hPa to 1060 hPa
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## Accessories supplied

AC power cord (1)
AC plug holder (1)
AC adaptor (1)
Handle (1)
Arm mount bracket (1)
Screws (4)
Operating Instructions (1)
CD-ROM (1)
Using the CD-ROM Manual (1)

## Optional accessories

Mounting bracket MB-531
Mounting panel MB-532
Monitor ENG kit VF-510

Design and specifications are subject to change without notice.

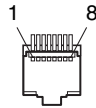
#### Note

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 connector

Modular connector  
(8-pin)



Pin number	Functions
1	Designating SDI 1 input signal
2	Designating HDMI input signal
3	Designating composite input signal
4	Setting tally lamp green ON/OFF
5	GND
6	Setting tally lamp red ON/OFF
7	Selecting over scan
8	Selecting normal scan

You can allocate functions using the REMOTE menu (see page 30).

#### Note

Switching functions continuously allows at least 200 msec to do so. Otherwise, it may not switch correctly.

### Wiring required to use the Remote Control

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

## Available signal formats

The unit is applicable to the following signal formats.

System	Compo site	SD/HD	3G	HDMI
575/50i (PAL)	○	○	–	○
480/60i (NTSC)*1	○	○	–	○
576/50p	–	–	–	○
480/60p*1	–	–	–	○
640 × 480/60p*1	–	–	–	○
1080/24PsF*1*2	–	○	○*3	–
1080/25PsF*2	–	○	○*3	–
1080/30PsF*1*2	–	–	○*3	–
1080/24p*1	–	○	○*3	○
1080/25p	–	○	○*3	○
1080/30p*1	–	○	○*3	○
1080/50i	–	○	○*3	○
1080/60i*1	–	○	○*3	○
1080/50p	–	–	○*4	○
1080/60p*1	–	–	○*4	○
720/24p*1	–	–	○*5	–
720/25p	–	–	○*5	–
720/30p*1	–	–	○*5	–
720/50p	–	○	○*3	○
720/60p*1	–	○	○*3	○

○ : Adjustable/can be set

– : Not adjustable/cannot be set

\*1 Compatible with 1/1.001 frame rates.

\*2 1080/24PsF, 25PsF, and 30PsF are displayed as 1080/48i, 50i, and 60i on the screen, respectively.

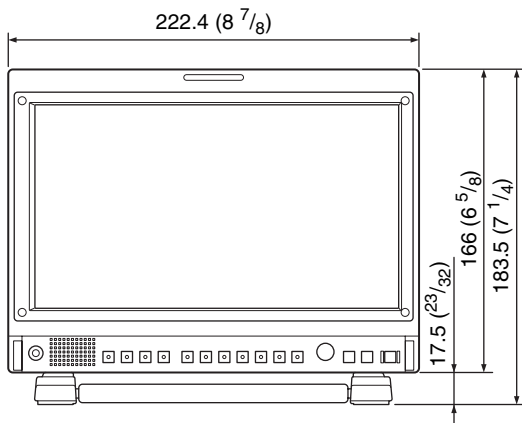
\*3 10-bit 4:4:4 Y/Cb/Cr and 4:4:4 RGB of 3G-SDI signals are supported.

\*4 10-bit 4:2:2 Y/Cb/Cr of 3G-SDI signal is supported.

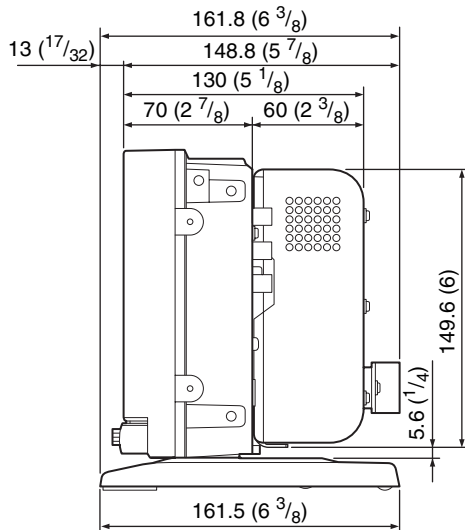
\*5 10-bit 4:4:4 Y/Cb/Cr of 3G-SDI signal is supported.

# Dimensions

## Front

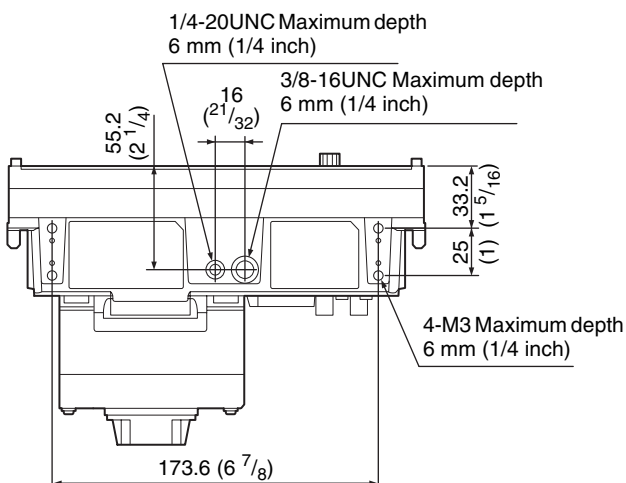


## Side

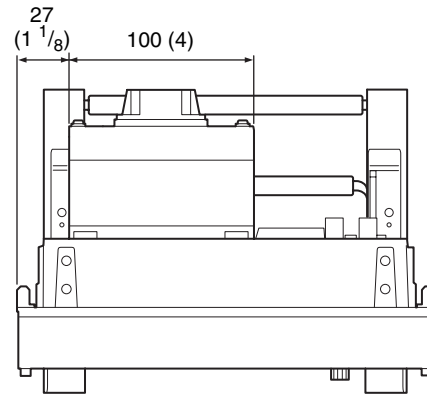


## Bottom

(Without the stand)

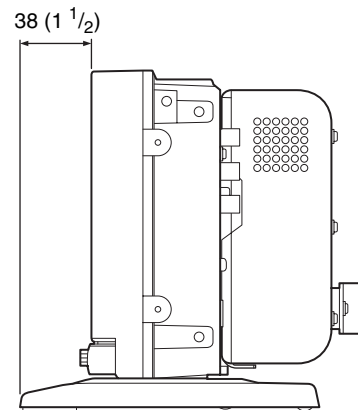


## Top



## Side

(When setting the stand using positions B and C for the mounting screws)



Unit: mm (inches)

## Mass:

Approx. 2.0 kg (4 lb 6.5 oz)

Approx. 2.6 kg (5 lb 12 oz) (when AC adaptor is installed)

## Top

(With the arm mount bracket)

