SONY

5-019-497-**14**(1)

Professional Video Monitor

Operating Instructions

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

PVM-X3200/X2400/X1800

Software Version 2.0

TRIMASTER 4K HDMI®

Table of Contents

Precaution

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 panel.
- 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.

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.

When installing the installation space must be secured in consideration of the ventilation and service operation.

- Do not block the ventilation slots and vents of the fans.
- Leave a space around the unit for ventilation.
- Leave more than 30 cm of space in the rear of the unit to secure the operation area.

When the unit is installed on the desk or the like, leave at least 4.4 cm of space in the left and right sides, 4.4 cm or more of space above the unit.

On Wiring

- Do not forcibly wire cables and the AC power cord to the front of the monitor. Doing so may overload the contact point of a plug.
- When using headphones, do not bring the headphone cable close to the surface of the monitor. Depending on the headphones, noise may occur.

Connecting to Other Devices

When connecting this unit to other devices, turn off this unit and the other devices beforehand. Connecting while turned on may cause a malfunction to this unit and the other devices.

Handling the 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 screen facing the sun as it can damage the screen. Take care when you place the unit by a window.
- Do not push or scratch the monitor’s screen. Do not place a heavy object on the monitor’s screen. This may cause the screen to lose uniformity.
- Make sure to use the unit without the panel-guard plate during power distribution. Otherwise, panel failure may result due to temperature increase of the panel.
- The screen and the cabinet become warm during operation. This is not a malfunction.

On the Surface of the Unit

The surface of the unit becomes extremely hot. Do not touch the surface with your hand or body during power distribution. It may cause a burn.

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

- Still images in the HDR display
- 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
- On-screen displays such as center markers or area markers
- Images with a frame (including Multi-View displays)

For details on the HDR (High Dynamic Range) display, see “On High Brightness Display” (page 4).

To reduce the risk of burn-in

- Turn off the character and marker displays
  Press the MENU button to turn off the character displays. To turn off the character or marker displays of the connected equipment, operate the connected equipment accordingly. For details, refer to the operation manual of the connected equipment.
- Do not display static images that contain high brightness display, time codes, markers, or logos for extended periods. Consider applying a display method with low level signals of 100% or less.
- Do not display the images with a frame for a long time. Also, consider removing the frame during the Multi-View display, or displaying the signal level of the frame area by about 50% of the display area.
- Reduce the brightness
  Reduce the brightness as much as possible or reduce the input signal level when you do not use the display.
- Turn off the power when not in use
  Turn off the power if the monitor is not to be used for a prolonged period of time.

On Image Smearing

Due to an LCD’s panel structure and characteristics of materials in its design, continuously displaying signals or/and image patterns may cause image smearing or/and flicker on the monitor. If a problem like this occurs, display a white screen display or a video on the monitor for a while.

On a Long Period of Use

Due to an LCD’s panel structure and characteristics of materials in its design, 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, continually displaying an image smaller than the monitor screen, such as displaying an image in a different aspect ratio or displaying an image with a frame, may expedite the above issues.
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 to reduce the brightness slightly when the unit is in use, and to turn off the power whenever the unit is not in use.

On High Brightness Display

- Using the unit with the high brightness display for extended periods may cause eyestrain or reduction of eyesight. Be sure to take an occasional break when using.
- Follow RECOMMENDATION ITU-R BT.1702 “Guidance for the reduction of photosensitive epileptic seizures caused by television” or other guidelines when using.
- In the HDR display, the display surface may emit heat when high brightness images are output. Do not touch the surface.
- When “2.4(HDR),” “S-Log3,” “SMPTE ST 2084,” “ITU-R BT.2100(HLG),” or “S-Log3(Live HDR)” is selected for “EOTF” (page 23) of “Ch. Setting” in the “User Preset Setting” menu, HDR (High Dynamic Range) is displayed. In this manual, this status is referred to as “HDR display.”
- The HDR display is a method to faithfully display the brightness of signals defined of

100% or more level without compressing the brightness parts.
- You can check the bright portions exceeding the displayable brightness of the unit by decreasing the contrast.

On Fan Error

The unit has a built in fan for cooling. When the fan stops and the ⏻ (Power) switch indicator (page 9) blinks in red, turn off the power and contact an authorized Sony dealer.

On Dew Condensation

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

Notes on Security

- SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND RESULTING FROM A FAILURE TO IMPLEMENT PROPER SECURITY MEASURES ON TRANSMISSION DEVICES, UNAVOIDABLE DATA LEAKS RESULTING FROM TRANSMISSION SPECIFICATIONS, OR SECURITY PROBLEMS OF ANY KIND.
- This unit is equipped with a maintenance function performed via a network. Maintenance may be performed with your consent.
- This product is used with a leased line or intranet connection. Do not connect to an external network, as security issues may occur.

On Long Periods of Continuous Use

Using this unit for extended periods may cause eyestrain or reduction of eyesight.
As soon as you feel physical discomfort or pain, stop using this unit immediately and take a break.
If the physical discomfort or pain remains even after taking a break, consult a physician.

Handling and Maintenance of the Screen

The surface of the screen is specially coated to reduce image reflection. Make sure to observe the following points as improper maintenance procedures may impair the screen's performance. In addition, the screen is vulnerable to damage. Do not scratch or knock against it using a hard object.
- Be sure to disconnect the AC power cord from the AC outlet before performing maintenance.
- The surface of the screen is specially coated. Do not attach adhesive objects, such as stickers, on it.
- The surface of the screen is specially coated. Do not touch the screen directly.
- Wipe the screen surface gently with the supplied cleaning cloth or a soft dry cloth to remove dirt.
- Stubborn stains may be removed with the supplied cleaning cloth, or a soft cloth slightly dampened with a mild detergent solution.
- The screen may become scratched if the cleaning cloth is dusty.
- Never use strong solvents such as alcohol, benzene, thinner, acidic or alkaline detergent, detergent with abrasives, or chemical wipe as these may damage the screen.
- Use a blower to remove dust from the screen surface.

Transportation of the Unit

Do not subject the unit to severe vibration or high impact conditions during transportation. Doing so may result in deformation of the internal structure or exterior of the unit, damage of the screen, malfunction of the internal parts, or other damage.
Make sure not to expose the unit to strong vibration or high impact when you transport the unit as cargo by truck, ship, or air, or as luggage with a rolling luggage bag.
Avoid transporting or carrying the unit with the display facing up or down.
Also, pack the unit in the protective bag provided to prevent dust from entering the unit.

Caution
Use of the Protection Panel (sold separately) is recommended for panel protection when transporting the unit on its own.

Do not place this product close to medical devices

This product (including accessories) has magnet(s) which may interfere with pacemakers, programmable shunt valves for hydrocephalus treatment, or other medical devices. Do not place this product close to persons who use such medical devices. Consult your doctor before using this product if you use any such medical device.

Disposal of the Unit

- Do not dispose of the unit with general waste. Do not dispose of the unit with household waste.
- Dispose of the used products according to the laws and regulations of your country or region.

About this manual

This manual explains the following products:
- PVM-X3200
- PVM-X2400
- PVM-X1800

Illustrations of PVM-X2400 are used for the explanations. Differences in specifications between the monitors are mentioned separately where needed.

Notes
- 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.
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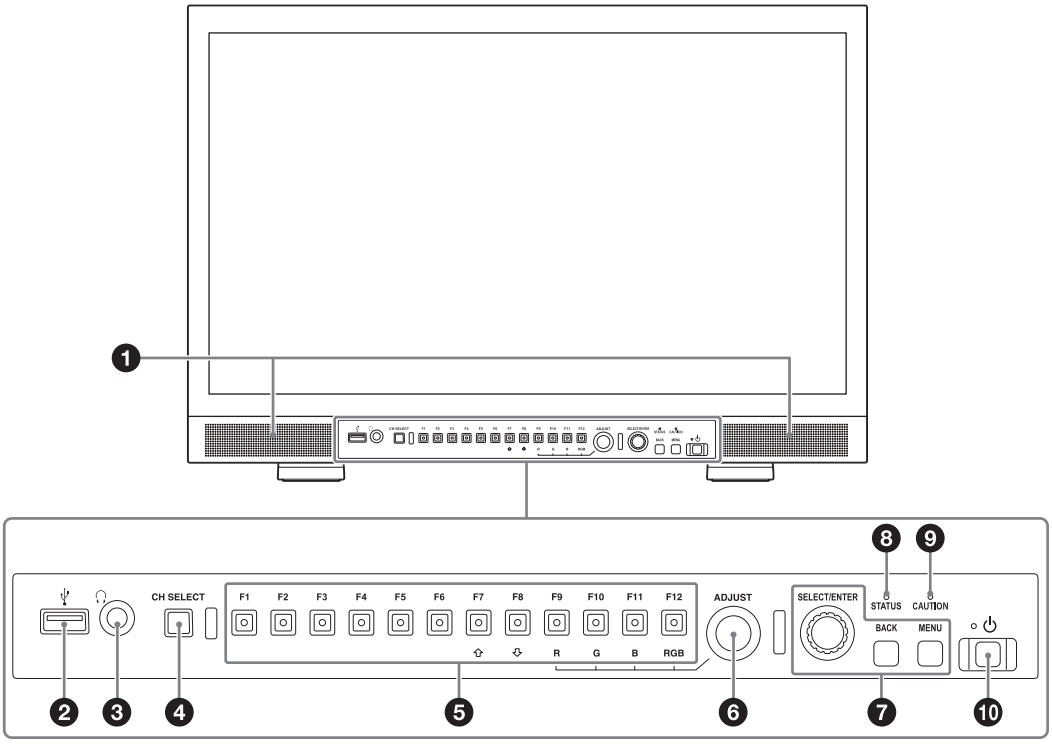
Location and Function of Parts and Controls

Front Panel



❶ Speakers
Stereo (L + R) audio of the currently selected input signal is output.
Output audio can be changed under “Audio Preset” (page 29) in the “User Preset Setting” menu.
Audio from the speaker is output from the AUDIO output connector on the rear panel (see page 14).
Audio is not output when headphones are connected to the ∩ (headphones) jack.

❷ ⏚ (USB) connector
Used for loading 3D LUT files, firmware updates, and activating optional licenses. For details, refer to “User LUT” (page 25), “Update” (page 44), and “License” (page 45).

Note

Do not use this connector for battery charge and/or other purposes other than those explained in this document.

❸ ∩ (headphones) jack
Stereo audio of the currently selected input signal is output.
Output audio can be changed under “Audio Preset” (page 29) in the “User Preset Setting” menu.

❹ CH SELECT button
Press to check the currently selected channel or select other channels. For details, refer to “Selecting a Channel” (page 18) and “Ch. Setting” (page 22) in the “User Preset Setting” menu.

❺ Function buttons
You can turn on/off the assigned function or switch the settings in a sequential order.
The factory default settings are following:

F1 button: Ch.1
F2 button: Ch.2
F3 button: Mono
F4 button: Quad View
F5 button: Marker
F6 button: Time Code
F7 button: WFM
F8 button: Chr./Bright./Cont.

F9 button: Volume
F10 button: Black Detail Mid.
F11 button: Black Detail High
F12 button: Dynamic Cont. Dr.

10 presets can be set for the function button. For details, refer to “F Key Setting menu” (page 40). You can assign the various functions under “Monitor” (page 40) in the “F Key Setting” menu. The “F Key Setting” menu can also be displayed by pressing and holding the function button. The function of the function button differs depending on the displayed screen or menu. For details, refer to the following table.

Displayed screen or menu	Button	Function
Character-entry screen	F7 button F8 button F11 button F12 button	Use to select a character or move the cursor. For details, refer to “How to Enter Characters” (page 20).
“Chr./Bright./Cont.” of “Ch. Setting” in the “User Preset Setting” menu	F9 to F12 buttons	Use to select the items to be adjusted. For details, refer to “Ch. Setting” (page 22).
“R/G/B Gain” adjustment screen or “R/G/B Bias” adjustment screen of “User Color Temp.” in the “User Preset Setting” menu	F9 to F12 buttons	Use to select the color to be adjusted. For details, refer to “User Color Temp.” (page 25).

❻ ADJUST knob

Adjust the selected color under “User Color Temp.” in the “User Preset Setting” menu. Press the corresponding button of the F9 to F12 buttons to select the color R/G/B/RGB for adjustment. Turning the knob clockwise increases the value while turning it counterclockwise decreases the value.
You can adjust “Chr./Bright./Cont.” under “Ch. Setting” in the “User Preset Setting” menu. Press the corresponding button of the F9 to F11 buttons to select “Chroma,” “Brightness,” or “Contrast” for adjustment. When “Chroma” is selected, turning the knob clockwise darkens the color while turning it counterclockwise lightens the color. When “Brightness” or “Contrast” is selected, turning the knob clockwise brightens the color while turning it counterclockwise darkens the color.
In addition, set "Position" of "Line Select" in "WFM/VS" under the "Monitoring Tool" menu (page 36).

❼ Menu operation buttons

Displays or sets the on-screen menu.

SELECT/ENTER 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 SELECT/ENTER control is pressed, the characters that represent the names of the buttons light up. Also, the names of the functions assigned to the function buttons appear on the screen. Press again to clear it.
Alternatively, if the menu is not displayed and the SELECT/ENTER control is pressed for more than two seconds, the signal format is displayed on the screen.

BACK button

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

MENU button

Press to display the on-screen menu.
Press again to clear the menu.

❽ STATUS indicator

Displays the unit status. Lights up in red during sleep mode and lights up in blue during HDR display.
For details on the HDR (High Dynamic Range) display, see “On High Brightness Display” (page 4).

❾ CAUTION indicator

Flashes in amber when the brightness decreases due to abnormal temperature.

❿ ⏻ (Power) switch and indicator

The ⏻ (Power) switch is available while the main power switch on the rear panel is ON. Press to turn on/off the monitor.
The indicator displays the power status as follows.

Power status	Indicator display
Off (main power is Off.)	Off
Off (main power is On.) Sleep (page 9)	Lights up in red (when the power status is Sleep, the STATUS indicator also lights up in red).
During power-up	Flashes in green
On	Lights up in green

Notes

- The ⏻ switch does not completely disconnect the power supply to the unit.

- If a no input-signal state continues for 60 minutes, the monitor is automatically turned off by the auto power-off function. To turn on the monitor, press the ⏻ (Power) switch. To change the settings, see “Auto Power Down” (page 46) of “System Setting” in the “System” menu.

About error/warning signals of the indicator

While the unit is in use, the ⏻ (Power) switch indicator or CAUTION indicator of the front panel may show error or warning signals.
If an error display appears, refer to Sony qualified service personnel.

Error display

CAUTION indicator	Power indicator	Symptom
–	Flashes in red (every second)	Power abnormality, circuit board abnormality, sensor abnormality
–	Flashes in red (every two seconds)	Fan abnormality, circuit board abnormality, backlight abnormality

Warning display

CAUTION indicator	Power indicator	Symptom
Flashes in amber (every second) 1)	–	Decreases the brightness to protect the panel from overheating

1) When using in the HDR display, regardless of the input signal, the screen brightness may decrease when the protective function for the LCD panel activates. Keep the temperature of the peripheral environment of the unit around 25 °C (77 °F) to avoid brightness decrease due to the protection function. For the installation environment of the unit, see “On Installation” (page 3).
For details on the HDR (High Dynamic Range) display, see “On High Brightness Display” (page 4).

About operations using the Sony monitor control unit (the controller)

When the optional controller (BKM-17R) is connected, the following operations are possible using the controller buttons.

Menu operation buttons

Button	Operations
MENU button	When the on-screen menu is not displayed, press the button to display the menu. Press again to clear the menu. When the menu is displayed, press the button to reset the value of an item to the previous value.
ENTER button	When the menu is displayed, press the button to confirm a menu item or setting value. However, displaying the signal format by pressing and holding the button is not available.
UP button DOWN button	When the menu is displayed, press the button to select a menu item or setting value.

Power button

Button	Operations
MONITOR | /⏻ switch	Switches the unit status. The unit enters sleep mode if this is pressed when the unit is in operating mode. The Power indicator and STATUS indicator on the front panel of the unit light up in red. Press the button for On mode when the unit is in sleep mode.

Rotary encoder/MANUAL buttons

Knob	Operations
CONTRAST knob	Adjusts the picture brightness under “Ch. Setting” (page 22) in the “User Preset Setting” menu. Adjusts all the RGB (red/green/blue) together under “User Color Temp.” (page 25) in the “User Preset Setting” menu.
BRIGHT knob	Adjusts the picture brightness under “Ch. Setting” (page 22) in the “User Preset Setting” menu. Adjusts the B (blue) under “User Color Temp.” (page 25) in the “User Preset Setting” menu.
CHROMA knob	Adjusts the color intensity under “Ch. Setting” (page 22) in the “User Preset Setting” menu. Adjusts the G (green) under “User Color Temp.” (page 25) in the “User Preset Setting” menu.
PHASE knob	Adjusts the R (red) under “User Color Temp.” (page 25) in the “User Preset Setting” menu.

Button	Operations
CONTRAST MANUAL button	Not available on this unit.
BRIGHT MANUAL button	Not available on this unit.
CHROMA MANUAL button	Not available on this unit.
PHASE MANUAL button	Not available on this unit.

Numeric buttons

Button	Operations
1 to 9 button	Turns on/off functions assigned to the numeric buttons from 1 to 9 on the controller, or switches the settings in a sequential order. The factory default settings are following: 1 button: Ch.1 2 button: Ch.2 3 button: Ch.3 4 button: Ch.4 5 button: WFM 6 button: Native Scan 7 button: Internal Signal 8 button: Int. Signal Pattern 9 button: Marker You can assign the various functions under “F/Num. Key Setting” (page 40) of “Controller” in the “F Key Setting” menu.
Ent button	Operates similar to the ENTER button on the controller.

Function buttons

Button	Operations
F1 to F16 button	Turns on or off functions assigned to the function buttons on the controller. The following functions are available. Mono, Blue Only, R Off, G Off, B Off, Native Scan, Pixel Zoom, Marker, Aspect Marker, Area Marker1, Area Marker2, Center Marker, Aspect Marker-Line, Asp. Blank.-Black, Asp. Blank.-Half, ALM, Time Code, Aperture, Side by Side

Note

Up to a total of three controller units can be simultaneously connected to this unit.

Input Signals and Adjustable/Setting Items

Item	Input signal					
	4K SDI		2K SDI		HDMI	
	YCbCr	RGB	YCbCr	RGB	YCbCr	RGB
CHROMA	○	○	○	○	○	○
BRIGHT	○	○	○	○	○	○
CONTRAST	○	○	○	○	○	○
APERTURE	○	○	○	○	○	○
RGB Range	×	○	×	○	×	○
YCC Range	○	×	○	×	○	×
EOTF	○	○	○	○	○	○
Color Space	○	○	○	○	○	○
Transfer Matrix	○	×	○	×	○	×
Color Temp.	○	○	○	○	○	○
User Color Temp. (manual adjustment)	○	○	○	○	○	○
User LUT	○	○	○	○	○	○
Marker	○	○	○	○	○	○
Volume	○	○	○	○	○	○
Audio Muting	○	○	○	○	○	○
WFM [1)]	○	○	○	○	○	○
Vector [1)]	○	○	○	○	○	○
ALM [1)]	○	○	○	○	○	○
Internal Signal	○	○	○	○	○	○
Int. Signal Pattern	○	○	○	○	○	○
Pixel Zoom [2)]	○	○	○	○	○	○
Time Code	○	○	○	○	×	×
Mono	○	○	○	○	○	○
Blue Only	○	○	○	○	○	○
R Off	○	○	○	○	○	○
G Off	○	○	○	○	○	○
B Off	○	○	○	○	○	○
Native Scan	○	○	○	○	○	○
Under Scan	○	○	○	○	○	○
Black Detail Mode	○	○	○	○	○	○
Dynamic Cont. Dr.	○	○	○	○	○	○
Tally [3)]	○	○	○	○	○	○
User LUT Range	○	○	○	○	○	○
Conversion [4)]	○	○	○	○	○	○
Enhanced Out. [4)]	○	○	○	○	×	×

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

1) Supports only when signals with a resolution greater than or equal to 1280 × 720 are input.
2) Supports only when signals with a resolution greater than or equal to 1920 × 1080 are input.
3) Available only for Parallel Remote.
4) This function is available by enabling the optional “PVML-HSX1” license (sold separately).

Multi View Functions and Adjustable/Setting Items

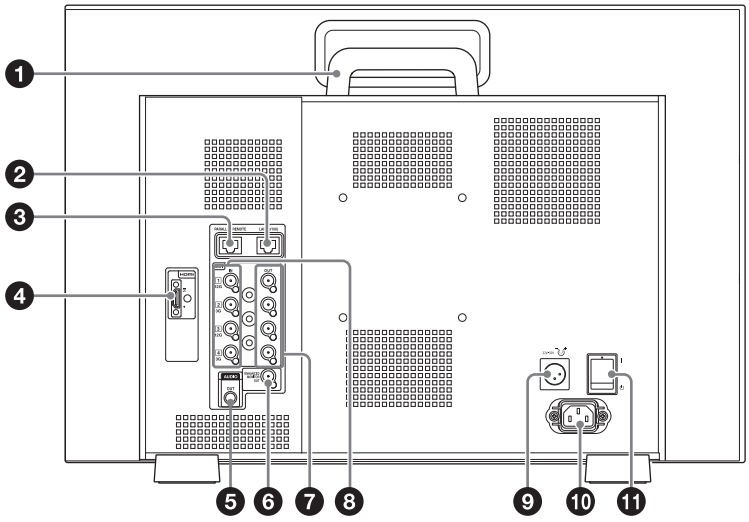
Item	Function			
	Quad View [1]		Side by Side	
	Common setting for four views	Individual setting for each view	Common setting for two views	Individual setting for each view
CHROMA	×	○ [2]	×	○ [2]
BRIGHT	×	○ [2]	×	○ [2]
CONTRAST	×	○ [2]	×	○ [2]
APERTURE	×	○ [2]	×	○ [2]
RGB Range	×	○ [2]	×	○ [2]
YCC Range	×	○ [2]	×	○ [2]
EOTF	×	○ [2]	×	○ [2]
Color Space	×	○ [2]	×	○ [2]
Transfer Matrix	×	○ [2]	×	○ [2]
Color Temp.	×	○ [2]	×	○ [2]
User Color Temp. (manual adjustment)	×	○ [2]	×	○ [2]
User LUT	×	○ [2]	×	○ [2] [8]
Marker	×	×	×	×
Volume	○ [3]	×	○ [3]	×
Audio Muting	○ [3]	×	○ [3]	×
WFM	×	○ [5]	×	○
Vector	×	○ [5]	×	○
ALM	×	×	×	×
Internal Signal	×	×	×	×
Int. Signal Pattern	×	×	×	×
Pixel Zoom	×	×	×	×
Time Code	○ [4]	×	○ [4]	×
Mono	○	×	○	×
Blue Only	○	×	○	×
R Off	○	×	○	×
G Off	○	×	○	×
B Off	○	×	○	×
Native Scan	×	×	×	×
Under Scan	×	×	×	×
Black Detail Mode	×	×	×	×
Dynamic Cont. Dr.	×	×	×	×
Tally	○	×	○	×
User LUT Range	×	○	×	○
Conversion [6]	×	×	×	○ [7]
Enhanced Out. [6]	×	○ [7]	×	○ [7]

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

1) The 4K equivalent signal cannot be displayed with Quad View.
2) To switch each setting individually, select the settings of each individual channel to the view of choice under “Ch. Setting” in the “User Preset Setting” menu, then set each individual channel to the view of choice under “Quad View,” “Side by Side” in the “Multi View” menu.
3) When viewing in Quad View and Side by Side, the audio signal input to Screen A is output.
4) When viewing in Quad View and Side by Side, only the time code of the signal input to Screen A is displayed.

5) This item can be displayed on two screens: Screen A and Screen B, C, or D.
6) This function is available by enabling the optional "PVML-HSX1" license (sold separately) .
7) For Screen A only.
8) If a 4K input signal is selected for either Screen A or Screen B, User LUT will not be applied to Screen B. However, if the same channel of 4K input signal is selected for both, the same User LUT will be applied to both Screen A and Screen B.

Rear Panel



❶ Handle

When using the handle on PVM-X1800, attach the supplied handle according to the steps on page 17.

❷ LAN (10/100) connector

Connect to the controller or an external device by using a 10BASE-T/100BASE-TX LAN cable (shielded type, optional).

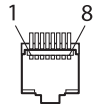
Note

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.

❸ PARALLEL REMOTE connector (RJ-45, 8-pin)

Forms a parallel control switch and controls this unit externally.

Pin assignment



Pin number	Functions
1	"Ch.1" is specified.
2	"Ch.2" is specified.
3	"Ch.3" is specified.
4	"Ch.4" is specified.
5	GND
6	All the markers set under "Marker Preset" in the "User Preset Setting" menu are all turned on at once.
7	Tally Green
8	Tally Red

Wiring required to use the Remote Control

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

❹ HDMI IN (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

To input the HDMI signal equivalent to 4K, use an HDMI cable bearing the Premium High Speed logo within a length of 3 meters (Sony product recommended).
To input other signals, we also recommend using a Premium High Speed HDMI cable within a length of 3 meters.

❺ AUDIO output connector (stereo mini jack)

The input audio signal set in the currently selected channel is output.

The output audio signal can be changed under “Audio Preset” (page 29) in the “User Preset Setting” menu.

❻ ENHANCED MONITOR OUT connector

This function is available by enabling the optional "PVML-HSX1" license (sold separately) (page 66).

❼ SDI OUT (SDI output) connectors (BNC)

Output connectors for serial digital signals. The signal input to the SDI IN connector corresponding to the 1 to 4 is output.

Notes

- SDI output is not activated when the unit is turned off or in sleep mode.
- If a 12G-SDI or 6G-SDI signal is output from the SDI OUT connector, a 12G-SDI cable (L-5.5CUHD manufactured by Canare Electric Co., Ltd. or an equivalent) is recommended.

❽ SDI IN (SDI input) connectors (BNC)

Input connectors for serial digital signals. For details, see “Connecting the SDI Signals” (page 15).

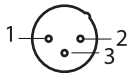
Note

If a 12G-SDI or 6G-SDI signal is input to the SDI IN connector, a 12G-SDI cable (L-5.5CUHD manufactured by Canare Electric Co., Ltd. or an equivalent) is recommended.

❾ DC IN 22 to 32 V (DC power input) connector (For PVM-X2400/X1800 only)

Connect to a DC 22 V to 32 V DC power supply.

Pin assignment (Rear of monitor)



Pin number	Functions
1	– (GND)
2	+ (DC 22 V to 32 V)
3	NC

❿ AC IN socket

Connect the supplied AC power cord.

⓫ Main power switch

Press **I** to turn on the unit.

Note

If a no input-signal state continues for 60 minutes, the monitor is automatically turned off by the auto power-off function. To turn on the monitor, press the ⏻ (Power) switch. To change the settings, see “Auto Power Down” (page 46) of “System Setting” in the “System” menu.

Connecting the SDI Signals

The following signals can be input to the SDI IN connectors of this unit.

Input signal			Connector	Maximum
Single Link	3G/HD-SDI	-	1 to 4	4 channels
	12G/6G-SDI	-	1, 3	2 channels
Dual Link	3G/HD-SDI	3G/HD-SDI Link 1	1	2 channels
		3G/HD-SDI Link 2	2	
		3G/HD-SDI Link 1	3	
		3G/HD-SDI Link 2	4	
Quad Link (2-sample interleave division)	3G/HD-SDI	3G-SDI Link 1	1	1 channel
		3G-SDI Link 2	2	
		3G-SDI Link 3	3	
		3G-SDI Link 4	4	
Quad Link (Square division)	3G/HD-SDI	Mapping signal of Sub image 1 (upper-left screen)	1	1 channel
		Mapping signal of Sub image 2 (upper-right screen)	2	
		Mapping signal of Sub image 3 (lower-left screen)	3	
		Mapping signal of Sub image 4 (lower-right screen)	4	

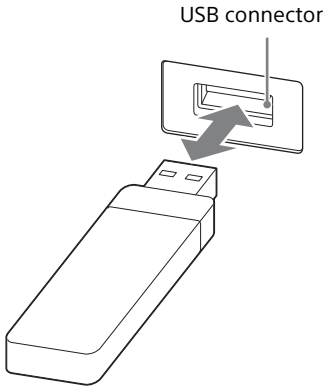
Handling a USB memory stick

This product has a USB connector. Proceed as illustrated to insert and eject a USB memory stick (sold separately).

Note

Do not eject the USB memory stick while data is being loaded.

To insert and eject the USB memory stick



Notes

- Make sure to insert the USB memory stick into the USB connector in the correct direction.
- When ejecting the USB memory stick, make sure that the unit is not accessing the USB memory stick.

Notes on USB memory sticks

The USB 3.0 memory sticks up to 8 GB have been tested with this product.

Note

This does not guarantee complete support of all USB memory sticks.

Note on data read speed

Data read speed may vary depending on the combination of the USB memory stick and the product that you use.

Notes

- Image data may be damaged in the following cases:
  – If you eject the USB memory stick, or turn the unit off while accessing the data
  – If you use a USB memory stick near static electricity or a magnetic field
- We recommend backing up important data.
- Do not touch the connector of the USB memory stick with anything, including your finger or metallic objects.
- Do not strike, bend, or drop the USB memory stick.
- Do not disassemble or modify the USB memory stick.
- Do not allow the USB memory stick to get wet.
- Do not use or store the USB memory stick in a location that is:
  – Extremely hot, such as in a car parked in the sun
  – Under direct sunlight
  – Very humid or subject to corrosive substances
- The USB connector of this unit is compatible with USB memory sticks. Do not insert other devices than USB memory sticks, such as USB conversion adaptors.
- You cannot use any other devices than USB memory sticks with the USB connector of this unit, such as USB hubs.
- Do not insert multiple USB memory sticks at the same time. This may cause damage to the product.
- When you use a USB memory stick with this product, be sure to insert it in the right direction. Inserting it in the wrong direction may cause damages to the product.
- The USB memory stick should be kept away from small children to prevent them from accidentally swallowing it.
- The USB memory stick must be formatted with the FAT32 file system. If you insert the USB memory stick which has been formatted with another file system, a format error occurs and the USB memory stick is not usable for this unit.

It is against the copyright law to use any audio or picture you recorded without prior consent of the copyright holder. Accordingly, USB memory sticks with content protected image or data can be only used within the law.

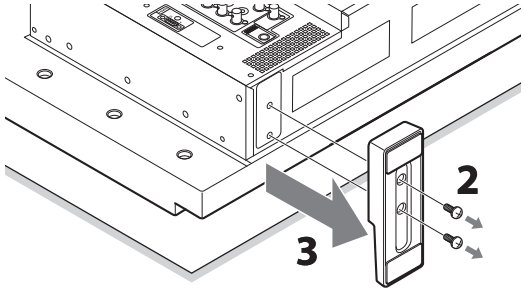
Removing the Stand (Included as Standard)

Remove the stand at the bottom of the monitor when you attach the monitor on a rack. (PVM-X2400/X1800 only)

1 Place the monitor face down on a soft cloth.

2 Remove the two screws.

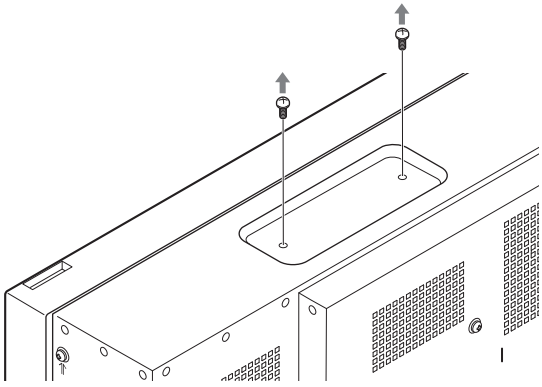
3 Remove the stand from the monitor.



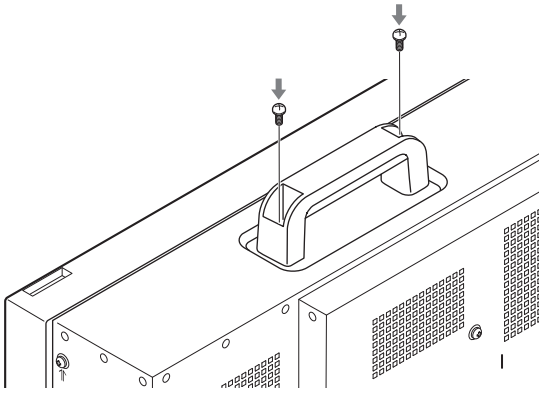
Attaching the Handle (For PVM-X1800 only)

To attach the supplied handle on the monitor, perform the following steps.

1 Remove the two screws at the top of the monitor.

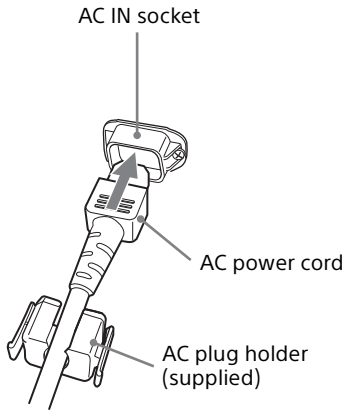


2 Attach the handle to the monitor with the screws removed in step 1.

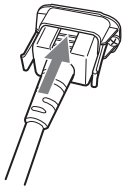


Connecting the AC Power Cord

1 Plug the AC power cord into the AC IN socket on the rear panel. Then, attach the AC plug holder (supplied) to the AC power cord.



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



To remove the AC power cord

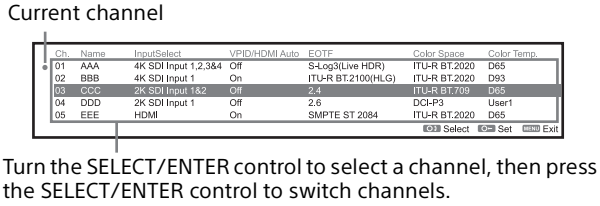
Pull out the AC plug holder while pressing the lock levers.

Selecting a Channel

With this monitor, you can assign settings like input signal and color temperature for each channel and easily view and switch channels with the CH SELECT button.

Viewing and switching channels

To view the channel that is currently selected, press the CH SELECT button on the front panel. When you press the CH SELECT button, the following screen is displayed.



You can also switch channels by doing one of the following:

- Select the channel from “Ch. Setting” (page 22) in the “User Preset Setting” menu.
- Select the channel by assigning a specific channel to the function button (page 40).

To change the settings of the selected channel, perform the following. Turn the SELECT/ENTER control to select a channel on the above screen, then press the SELECT/ENTER control for 2 seconds or longer to display “Ch. Setting” (page 22) in the “User Preset Setting” menu.

Managing the Setting Values

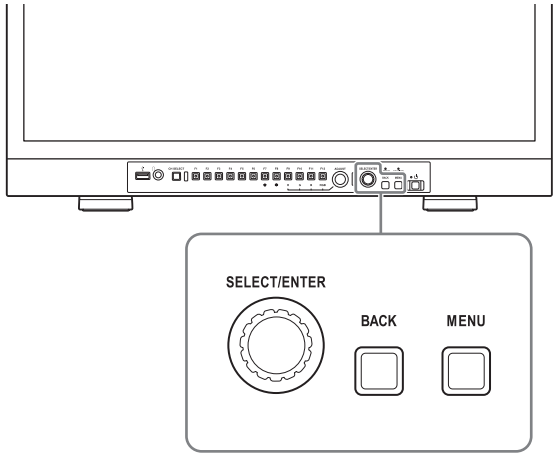
All the setting values set in the menu of this unit can be collectively backed up. This function can be regulated with a password. When you load all the backup setting values collectively, you are not required to enter the password.
For details, refer to “User Data” (page 44) in the “Administrator” menu.

About the Menu Screen

Using the Menu

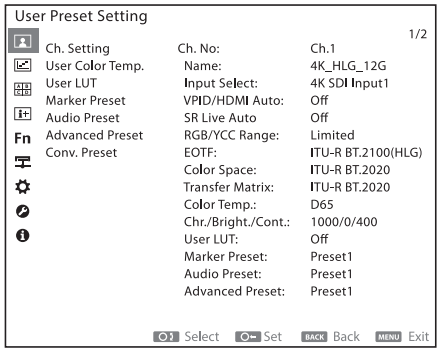
Various adjustments and settings, such as picture quality adjustment, input signals setting, and default setting change, are made on the menu screen of the unit.

Use the menu with the menu operation buttons on the front panel.



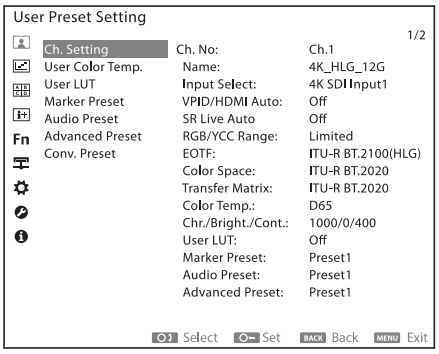
1 Press the MENU button.

The menu selecting screen appears.
The menu currently selected is shown in orange.



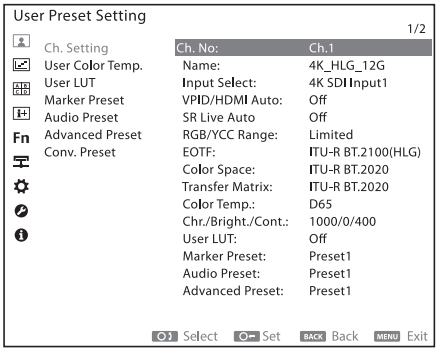
2 Turn the SELECT/ENTER control to select a menu, then press the SELECT/ENTER control.

The menu icon currently selected is shown in orange, and the setting groups and items are displayed.



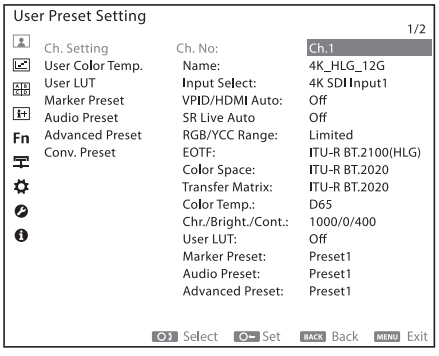
3 Turn the SELECT/ENTER control to select the group, then press the SELECT/ENTER control.

The setting items are displayed with the selected group displayed in orange.



4 Turn the SELECT/ENTER control to select the item, then press the SELECT/ENTER control.

The selected item is displayed in orange.
If the menu consists of multiple pages, turn the SELECT/ENTER control to go to the desired menu page.



5 Make the setting or adjustment on an item.

When changing the adjustment level:
To increase the value, turn the SELECT/ENTER control clockwise.
To decrease the value, turn the SELECT/ENTER control counterclockwise.
Press the SELECT/ENTER control to confirm the number, then restore the original screen.

When changing the setting:
Turn the SELECT/ENTER control to change the setting, then press the SELECT/ENTER control to confirm the setting.

When returning the adjustment or setting to the previous value:
Press the BACK button before pressing the SELECT/ENTER control.

Note

A setting group and item displayed in gray cannot be set and/or selected. The setting group and item can be set and/or selected if they are displayed in white.

To return to the previous menu

Press the BACK button.

To clear the menu screen

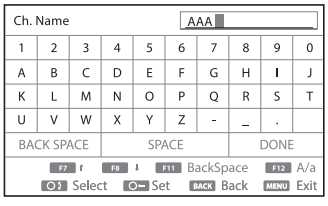
Press the MENU button.
The menu screen disappears automatically if a button is not pressed for one minute.

About the memory of the settings

The setting values are automatically stored in this unit.

How to Enter Characters

The following screen is displayed to enter characters. Turn the SELECT/ENTER control to select a character and press the SELECT/ENTER control to confirm.



The following can be operated on the character entry screen using the function buttons.

Button	Function
F7 button F8 button	The selection cursor moves up or down.

Button	Function
F11 button	An immediately preceding character is deleted.
F12 button	A character on the keyboard becomes uppercase or lowercase.

Menu Items

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

Status menu (page 47)

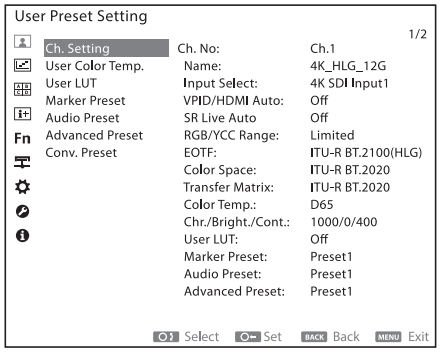
Signal Status (For Single View: page 47, For Quad View: page 48, For Side by Side: page 49)
Ch. Status (For Single View: page 47, For Quad View: page 48, For Side by Side: page 49)
VPID/HDMI Status (For Single View: page 47, For Quad View: page 48, For Side by Side: page 49)
SR Live Status (For Single View: page 48, For Quad View: page 49, For Side by Side: page 50)
Unit Status (For Single View: page 48, For Quad View: page 49, For Side by Side: page 50)

User Preset Setting menu

All channel settings can be configured or adjusted. You can also copy the setting values from one channel to apply them to another.

Ch. Setting

The input signal and video settings can be adjusted.



Submenu	Setting
Ch. No	Select the channel to be configured.
Name	Sets the channel name.
Input Select	Select the connector and signal from the following. • 4K SDI Input1,2,3&4 • 4K SDI Input1&2 • 4K SDI Input3&4 • 4K SDI Input1 • 4K SDI Input3 • 2K SDI Input1&2 • 2K SDI Input3&4 • 2K SDI Input1 • 2K SDI Input2 • 2K SDI Input3 • 2K SDI Input4 • HDMI
VPID/HDMI Auto	• **On:** “RGB/YCC Range,” “EOTF,” “Color Space,” and “Transfer Matrix” are automatically set as appropriate based on the Payload ID (VPID) signal information when the SDI signal is input, and set as appropriate based on the HDMI InfoFrame signal information when the HDMI signal is input. • **Off:** When "SR Live Auto" is "On," the setting conditions are followed. When "SR Live Auto" is "Off," the values set for “RGB/YCC Range,” “EOTF,” “Color Space,” and “Transfer Matrix” are used.

Submenu	Setting
SR Live Auto	• **On:** Automatically sets a group of items required for conversion settings from HDR signal to SDR signal of "EOTF," "Color Space," "Transfer Matrix" and "Conv. Preset." When SR Live Metadata is superimposed on the input SDI signal, the settings are configured based on the HDR SDR Relation Table (a group of items that need to be set to generate an SDR signal from the HDR signal). For items where SR Live Metadata is not superimposed or is invalid, the setting values of the corresponding items in the conversion preset data will be applied. When OETF of HDR SDR Relation Table is S-Log3, "EOTF" is automatically set to "S-Log3(Live HDR)." When both "SR Live Auto" and "VPID/HDMI Auto" are "On," the HDR SDR Relation Table information of "SR Live Auto" takes precedence over the settings of "EOTF," "Color Space" (Color Gamut) and "Transfer Matrix." • **Off:** When "VPID/HDMI Auto" is "On," the setting conditions are followed. When "VPID/HDMI Auto" is "Off," the values set in "EOTF," "Color Space," "Transfer Matrix" and "Conv. Preset" are used for a group of items required for the HDR signal to SDR signal conversion settings.

Note

When "VPID/HDMI Auto" and "SR Live Auto" are "On", the settings of this unit may be changed due to changes in Metadata, and the video may be interrupted during the settings. To avoid this, set to "Off". (PVM-X2400/X1800 only)

Submenu	Setting
RGB/YCC Range	Select from the following when "VPID/HDMI Auto" is set to "Off" and the RGB signal or YCbCr signal is input. • **Full:** 0 to 255 (8bit) / 0 to 1023 (10bit) / 0 to 4095 (12bit) • **Limited:** 16 to 235 (R/G/B/Y), 16 to 240 (Cb/Cr) (8bit) / 64 to 940 (R/G/B/Y), 64 to 960 (Cb/Cr) (10bit) / 256 to 3760 (R/G/B/Y), 256 to 3840 (Cb/Cr) (12bit) • **SDI Full** [1]**:** 4 to 1019 (10bit) / 16 to 4076 (12bit) 1) Available only when SDI input is selected. This manual regards the Full Range signals that are scaled to the quantized value except the inhibit code on the SDI standard as the SDI Full Range.
EOTF	Select the gamma from the following when "VPID/HDMI Auto" is set to "Off." • 2.2 • 2.4 • 2.6 • 2.4(HDR) • S-Log3 • SMPTE ST 2084 • ITU-R BT.2100(HLG) • S-Log3(Live HDR) [1] When "ITU-R BT.2100(HLG)" is selected • **System Gamma:** Sets the system gamma of the HLG. Set from 1.000 to 1.500. (Default value: 1.200) 1) "S-Log3(Live HDR)" is the setting for which this unit is used as the monitor in the S-Log3 Live HDR workflow which Sony advocates. Displays the S-Log3 input signal adding the system gamma. This system gamma is set so that the compatibility with the monitoring of the conventional (SDR) environment is valued and you can perform suitable picture expression without discomfort when adjusting the picture of the HDR camera. For details on S-Log3 Live HDR workflow which Sony advocates, refer to the description of What's HDR and the Live HDR workflow on the Sony website.

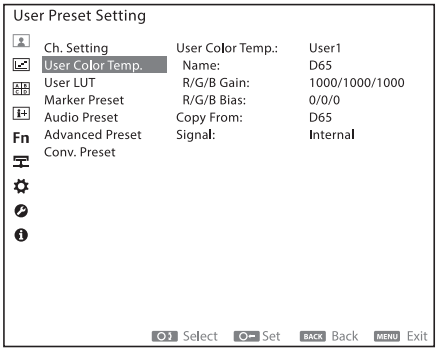
Submenu	Setting
Color Space	Select the color space from the following when “VPID/HDMI Auto” is set to “Off.” • ITU-R BT.709 • S-Gamut/S-Gamut3 • S-Gamut3.Cine • DCI-P3 • ITU-R BT.2020 **Note** Chromaticity points of S-Gamut/S-Gamut3, S-Gamut3.Cine, DCI-P3, and ITU-R BT.2020 cannot be fully included.
Transfer Matrix	Select the transfer matrix from the following when “VPID/HDMI Auto” is set to “Off.” • ITU-R BT.709 • ITU-R BT.2020 Set the following depending on the “Color Space” setting. When “ITU-R BT.2020” is selected: Select ITU-R BT.2020. When “ITU-R BT.709” is selected: Select ITU-R BT.709. When another item is selected: Select the transfer matrix setting of the device which outputs the signal.
Color Temp.	Select the color temperature to be used for the selected channel. • D65 [1)] • D93 [1)] • D60 [1)] • DCI • User1 to User10 [2) 3)] 1) Even though colors of different display devices, such as BVM-HX310, LCD, and OLED, are measured with a commonly used color analyzer based on CIE 1931, and are adjusted to the same xy chromaticity, the appearance may differ due to differences in the optical spectrum. To compensate for this difference, the “D65,” “D93,” and “D60” settings of the monitor are adjusted with a color matching-adjusted offset for BVM-HX310 and the monitor. (The offset value (x–0.006, y–0.011) is applied to the CIE 1931 (x, y) value.) 2) “User1” to “User5” and “User6” to “User10” indicate the chromaticity points of D65 and D93 without an offset as each default value. (The values (x=0.313, y=0.329) and (x=0.283, y=0.297) are indicated based on the CIE 1931 (x, y) value.) 3) Chromaticity point of D65 without an offset can be set by respectively setting the R (red)/G (green)/B (blue) gain value to 1000. (The value (x=0.313, y=0.329) can be set based on the CIE 1931 (x, y) value.)

Submenu	Setting
Chr./Bright./Cont.	Sets the chroma level, brightness, and contrast for the selected channel. (Default value: 1000/0/400) **Notes** • Press the function button to select the item for adjustment. Pressing the F9 button selects “Chroma,” F10 button selects “Brightness,” and F11 button selects “Contrast.” To set the value of the selected item to the median, press the F12 button. • The brightness adjustment of “ITU-R BT.2100(HLG)” supports the ITU-R BT.2100-2 standard. • The brightness adjustment of “SMPTE ST 2084” supports the ITU-R BT.814-4 standard. • The brightness-adjustment specifications of “S-Log3” and “S-Log3(Live HDR)” are the same as those of “SMPTE ST 2084.” • When "EOTF" is set to "2.2," "2.4," or "2.6," the contrast control method changes depending on the Quad View setting. When Quad View is On, the backlight brightness is fixed and the contrast is adjusted by signal levels. When Quad View is Off, the contrast is adjusted by changing the backlight brightness. Black levels fluctuate to change the backlight brightness.
User LUT	Select the 3D LUT file to apply to a picture. • Off • User LUT1 to User LUT30 **Notes** • To apply the 3D LUT file, you need to load the 3D LUT file to the monitor in advance. For details, see “Loading 3D LUT files to the monitor” (page 26). • Conversion processing (HDR-SDR conversion) can be performed on signals to which User LUT has been applied, but note that if the LUT for HDR-SDR conversion is set to User LUT, double conversion will be performed.
Marker Preset	Select the marker preset to be used for the selected channel. You can select a marker preset between “Preset1” and “Preset10.”
Audio Preset	Select the audio preset to be used for the selected channel. You can select an audio preset between “Preset1” and “Preset10.”
Advanced Preset	Select the advanced preset to be used for the selected channel. You can select an advanced preset between “Preset1” and “Preset10.”

Submenu	Setting
Conv. Preset	This setting is available with the optional “PVML-HSX1” license (sold separately). Select a conversion preset to be used for the selected channel. You can select from "Preset1" to "Preset10."
Copy From	Copy another channel’s data to the selected channel.

User Color Temp.

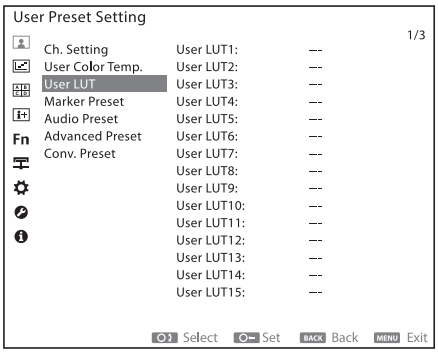
You can select and adjust the color temperature. When using a measurement instrument for color temperature adjustment, Konica Minolta Color Analyzer CA-310/410 is recommended.



Submenu	Setting
User Color Temp.	Select the color temperature setting to be adjusted.
Name	Sets the color temperature name.
R/G/B Gain	Adjusts the color balance (gain) of R (red)/G (green)/B (blue).
R/G/B Bias	Adjusts the color balance (bias) of R (red)/G (green)/B (blue). (Default value: 0) **Notes** • To select the color for adjustment, press the corresponding function button. Pressing the F9 button selects “R,” F10 button selects “G,” F11 button selects “B,” and F12 button selects “RGB.” • In consideration of the LCD characteristics, the internal signal level is set as follows for this unit when the color temperature is adjusted. When R/G/B Gain is adjusted: Equivalent to 100 cd/m^2 When R/G/B Bias is adjusted: Equivalent to 10 cd/m^2 (HDR), Equivalent to 2.7 cd/m^2 (SDR) When R/G/B Bias is adjusted, a high internal signal level may cause an error in the black level. Check the black level with the PLUGE signal, etc. after adjusting the color temperature, and adjust the black level under “Brightness” of “Chr./Bright./Cont.” in “Ch. Setting” as necessary.
Copy From	Select from the following items to copy the selected color temperature data. • D65 • D93 • D60 • DCI • User1 to User10 **Note** The color temperature data is used commonly regardless of the signal format or the EOTF setting. When the color temperature is adjusted under certain conditions, the adjusted result is reflected in all displays on which the same color temperature data is set.
Signal	Select the signal to adjust the color temperature. • **Internal:** Select to adjust the color temperature by using the internal signal. • **External:** Select to adjust the color temperature by using the signals input from an external device.

User LUT

3D LUT files (Cube files) created with the RAW Viewer software or color grading tool can be loaded from a USB memory.



Submenu	Setting
User LUT1 to User LUT30	Select the LUT data number to be adjusted. **Note** To apply the 3D LUT file, you need to load the 3D LUT file to the monitor in advance. For details, see “Loading 3D LUT files to the monitor” (page 26).
Load From USB	Loads 3D LUT files to the monitor. For details, refer to “Loading 3D LUT files to the monitor” (page 26).
Delete	Deletes the 3D LUT files loaded in the selected LUT data number.
Delete All	Deletes all of the 3D LUT files loaded to the monitor.

Loading 3D LUT files to the monitor

3D LUT files are loaded to the monitor.
To apply the loaded 3D LUT files to the input signals, you need to configure “User LUT” (page 24) of “Ch. Setting” in the “User Preset Setting” menu.

1 Save the desired 3D LUT files to the following folder in the USB memory.

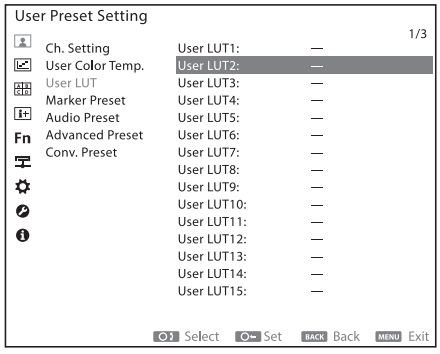
MSSONY/MONITOR/USER_LUT

Notes

- The USB memory is only FAT32 format-compatible.
- Cube files with the following conditions can be loaded.
  File format: Adobe .cube (Cube files do not support optional descriptions. Do not include an optional description in .cube file.)
  Number of lattice points: 17 or 33
- The loading 3D LUT file should be named up to a total of 20 alphanumeric characters (one-byte characters) including “-” and “_” (excluding extension).
- Up to 14 characters of the 3D LUT file name are displayed in the menu of the monitor.
- Up to 1,000 3D LUT files can be saved in the USB memory.

2 Connect the USB memory with the saved 3D LUT files to the USB connector on the monitor.

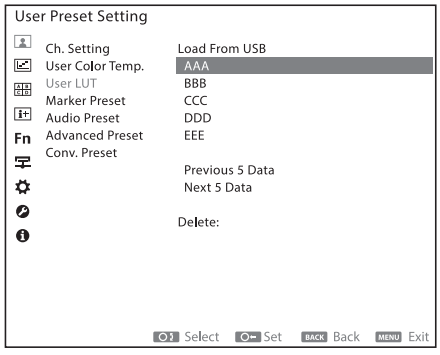
3 Select the LUT data number to be saved under “User LUT” in the “User Preset Setting” menu.



Note

If you select the LUT data number in use, the loaded 3D LUT file may disappear.

The “Load From USB” screen is displayed and files are loaded from the USB memory. The file list is displayed below “Load From USB.” “In Progress” is displayed while loading the files and LEDs on the function buttons light in order from F5 to F11.
When loading has completed, the 3D LUT files saved in the USB memory are listed on the screen of the selected LUT data number.

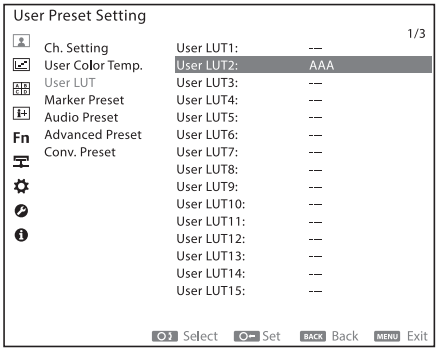


The files are displayed in numerical and alphabetical order. When more than 6 files are saved, selecting the “Previous 5 Data” or “Next 5 Data” displays other files.

4 Select the desired 3D LUT file.

5 When “Load This Data?” appears, select “Confirm.”

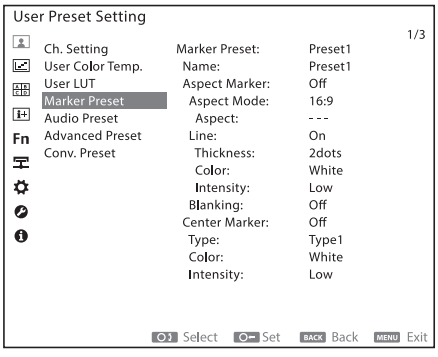
The 3D LUT file is loaded from the USB memory to the monitor. “In Progress” is displayed while loading the file and LEDs on the function buttons light in order from F5 to F11.
When loading has completed, the 3D LUT file name is displayed next to the selected LUT data number.



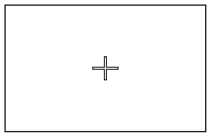
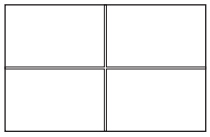
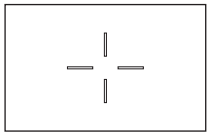
Note

If the 3D LUT file is not compatible with the file format that can be loaded to the monitor, the file name is not displayed next to the selected LUT data number and the loading terminates.

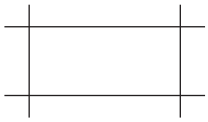
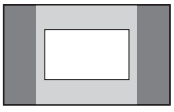
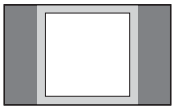
Marker Preset



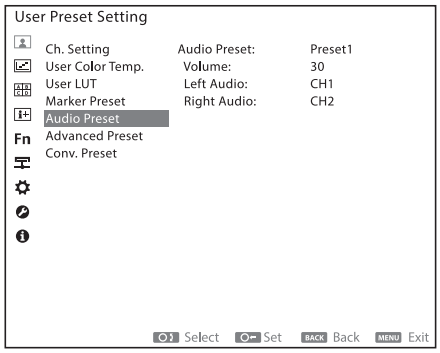
Submenu	Setting
Marker Preset	Select the marker preset data to be configured.
Name	Sets the marker preset name.
Aspect Marker	Sets whether to display the aspect marker (Off or On).
	• **Aspect Mode:** Sets the aspect ratio of the aspect marker when “On” is selected for “Aspect Marker.” • 16:9 • 15:9 • 14:9 • 13:9 • 4:3 • 2.39:1 • 2.35:1 • 1.85:1 • 1.66:1 • 1.896:1 • Variable
	• **Aspect:** Sets the aspect ratio of the aspect marker when “Variable” is selected in “Aspect Mode.”Set to 1.00:1 to 3.00:1.
	• **Line:** Sets whether to display (Off or On) the aspect marker lines when “On” is selected for “Aspect Marker.”
	• **Thickness:** Sets the aspect marker line thickness when “On” is selected for “Line.” You can set a thickness between “1 dot” and “5 dots.”
	• **Color:** Sets the color of the aspect marker. • White (white) • Red (red) • Green (green) • Blue (blue) • Yellow (yellow) • Cyan (cyan) • Magenta (magenta)
	• **Intensity:** Sets the luminance of the aspect marker. • High (bright) • Low (dark)
	• **Blanking:** Sets the blanking outside the area of the aspect marker. • Off: Blanking is released. • Black: Sets blanking. • Half: Sets half blanking.
Center Marker	Sets whether to display the center marker (Off or On).

Submenu	Setting
	• **Type:** Sets the type of the center marker. • Type1  • Type2  • Type3  • **Color:** Sets the color of the center marker. • White (white) • Red (red) • Green (green) • Blue (blue) • Yellow (yellow) • Cyan (cyan) • Magenta (magenta) • **Intensity:** Sets the luminance of the center marker. • High (bright) • Low (dark)
Area Marker1 Area Marker2	Sets whether to display (Off or On) area marker 1 and area marker 2. • **Area Mode:** Sets the type of the area marker. • Safe Area • Flexible Area • **Aspect Mode:** Sets the aspect ratio of area marker 1/2 when “Safe Area” is selected in “Area Mode.” • 16:9 • 15:9 • 14:9 • 13:9 • 4:3 • 2.39:1 • 2.35:1 • 1.85:1 • 1.66:1 • 1.896:1 • Variable

Submenu	Setting
	Note When “Variable(dots)” is selected in “Area Size,” the size of area marker 1/2 is set in the pixels of the input signal and the “Aspect Mode” setting becomes invalid. When “Variable” is selected in “Aspect Mode” • **Aspect:** Sets the aspect ratio of area marker 1/2. Set to 1.00:1 to 3.00:1. • **Area Size:** Sets the size of area marker 1/2 when “Safe Area” is selected in “Area Mode.” • 80% • 88% • 90% • 93% • Variable(%) • Variable(dots) When “Area Size” is set to “Variable(%)” or “Variable(dots)” • **Width:** Sets the width of area marker 1/2. Set to 050 to 100% when “Variable(%)” is selected. Set to 640 to 4096dots when “Variable(dots)” is selected. Set one digit each. • **Height:** Sets the height of area marker 1/2. Set to 050 to 100% when “Variable(%)” is selected. Set to 360 to 2160dots when “Variable(dots)” is selected. Set one digit each. • **H Position:** Sets the horizontal position of the marker at the top left corner of the image display area as the starting point when “Flexible Area” is selected in “Area Mode.” You can set to a position from 0 to 4095. • **V Position:** Sets the vertical position of the marker at the top left corner of the image display area as the starting point when “Flexible Area” is selected in “Area Mode.” You can set to a position from 0 to 2159. • **Width:** Sets the width of the marker when “Flexible Area” is selected in “Area Mode.” You can set to a position from 1 to 4096. • **Height:** Sets the height of the marker when “Flexible Area” is selected in “Area Mode.” You can set to a position from 1 to 2160.

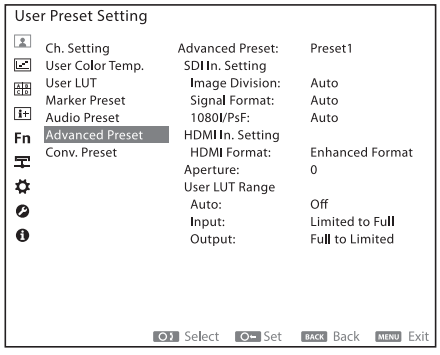
Submenu	Setting
	• **Shape:** Sets the shape of area marker 1/2. • Shape A  • Shape B  • Shape C  **Note** When “Safe Area” is selected in “Area Mode,” the size of the area differs depending on the “Aspect Mode” setting. 16:9 Video display / 4:3 Video display  80% Aspect Mode is set to 16:9  80% Aspect Mode is set to 4:3  80% Aspect Mode is set to 16:9  80% Aspect Mode is set to 4:3 • **Thickness:** Sets the thickness of the line of the area marker 1/2. You can set a thickness between “1 dot” and “5 dots.” • **Color:** Sets the color of the area marker 1/2. • White (white) • Red (red) • Green (green) • Blue (blue) • Yellow (yellow) • Cyan (cyan) • Magenta (magenta) • **Intensity:** Sets the luminance of the area marker 1/2. • High (bright) • Low (dark)
Copy From	Copy another marker’s preset data to the selected marker preset.

Audio Preset



Submenu	Setting
Audio Preset	Select the audio preset data to be configured.
Volume	Adjusts the volume of the selected audio preset.
Left Audio	Sets the audio channel when SDI signal is input. Select from channels “CH1” to “CH16.” You cannot select when HDMI is input as “CH1” is selected for Left Audio.
Right Audio	Sets the audio channel when SDI signal is input. Select from channels “CH1” to “CH16.” When a channel from “CH1” to “CH8” is selected in “Left Audio,” you cannot select a channel other than a channel from “CH1” to “CH8” (e.g.: CH9) in “Right Audio.” When a channel from “CH9” to “CH16” is selected in “Left Audio,” you cannot select a channel other than a channel from “CH9” to “CH16” (e.g.: CH1) in “Right Audio.” You cannot select when HDMI is input as “CH2” is selected for Right Audio.

Advanced Preset



Submenu	Setting
Advanced Preset	Select the User Preset data to be applied. Select from “Preset1” to “Preset10.”

Submenu	Setting

SDI In. Setting	• **Image Division:** Sets the image division of the SDI 4K signal.
	  • Auto: Select for the Auto setting.
	  • 2SI: Select to receive images of the 2 sample Interleave system.
	  • Square: Select to receive images of the Square system.
	• **Signal Format:** Select the format of the SDI signals.
	  • Auto
	  • 422 YCbCr 10bit
	  • 444 RGB 10bit
	  • 444 YCbCr 10bit
	  • 444 RGB 12bit
	  • 444 YCbCr 12bit
	• **1080I/PsF:** Sets how to display when 50I, 59.94I, 60I, 25PsF, 29.97PsF, or 30PsF SDI 2K signals are input.
	23.98 Hz and 24 Hz signals are processed as the PsF signal.
	  • Auto: When Payload ID is added to SDI signals, they are processed based on the ID data. They are processed as the interlace signals without the Payload ID.
	  • PsF: Processes as the PsF signal.
	  • Interlace: Processes as the interlace signal.

HDMI In. Setting	• **HDMI Format:** Change the setting to receive images in a high-resolution HDMI signal 1).
	  • Standard Format: Select to use for a standard HDMI format signal.
	  • Enhanced Format: Select to use for a high-resolution HDMI format signal 1).
	
	1) Signals in resolutions of 3840 × 2160 or 4096 × 2160 are listed below:
	4:4:4 RGB/YCbCr-50P/60P-8bit signals
	4:2:2 YCbCr-50P/60P-12bit signals
	4:4:4 RGB/YCbCr-24P/25P/30P-10/12bit signals
	
	Notes
	• Images and sounds may not be output correctly with “Enhanced Format.” In that case, select “Standard Format.”
	• To display the corresponding signal with “Enhanced Format,” use a Premium High-Speed HDMI cable within a length of 3 meters (Sony product recommended).

Aperture	Sets the aperture of the selected advanced preset.

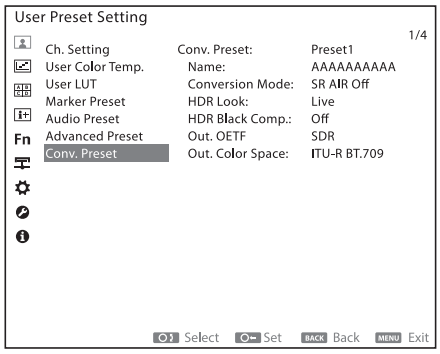
Submenu	Setting

User LUT Range	Select a scaling type between LUT range [0:1] (Full Range) and the Video Range (Limited Range, Full Range) of LUT input and output signals.
	• **Auto:** Select whether to automatically set up the input and output range settings for LUT data.
	  • On: Automatically sets up LUT data input and output range settings. See page 54.
	  • Off: Uses the value set in "Input" or "Output."
	• **Input:** Select a scaling type from the following, applied when scaling an input signal to an LUT input range.
	  • Limited to Full: Scales Limited Range input signals to the LUT input range [0:1]. Signals outside the signal level of 0 to 100% are clipped.
	  • No Scaling: The entire code value of Limited Range or Full Range input signals is assigned to the LUT input range [0:1] without scaling. For Limited Range input signals, signals with a signal level of -7 to 109% are processed.
	  • S-Log Range: The entire code value of S-Log3 signal input is assigned to the LUT input range [0:1] without scaling. This is used for S-Log3 input signals.
	
	Note
	If "S-Log Range" is selected while the User LUT function is On (User LUT data is applied in "User LUT" in "Ch. Setting"), the input signal is identified as an S-Log3 signal.
	When the input signal is an S-Log3 signal, note the following points.
	-When "VPID/HDMI Auto" is "On," the internal fixed value is applied to the RGB/YCC Range setting value.
	-When "VPID/HDMI Auto" is "Off," the internal fixed value is applied to "RGB/YCC Range" in "Ch. Setting" regardless of its setting value.

Submenu	Setting
	• **Output:** Select a scaling type from the following, applied when scaling an LUT output range to an output signal. • Full to Limited: Scales an LUT output range [0:1] to the Limited Range signal output. Signals outside the signal level of 0 to 100% are clipped. • No Scaling(Full): LUT output range [0:1] is assigned to output signals as Full Range without scaling. This function is used when the Video Range of an output signal is Full Range. • No Scaling(Limited): LUT output range [0:1] is assigned to output signals as Full Range without scaling. This function is used when the Video Range of an output signal is Limited Range (-7 to 109%), which includes signals outside the signal level of 0 to 100%. **Note** When the OETF specification of LUT signal output is S-Log3, note the following points. -When "SR Live Auto" is "On," the OETF (HDR SDR Relation Table information in SR Live Metadata) must be set to S-Log3. -When "SR Live Auto" is "Off," select "S-Log3(Live HDR)" or “S-Log3“ for "EOTF" in "Ch. Setting." With the above settings, when the User LUT function is On (when the User LUT data is applied in "User LUT" in "Ch. Setting"), the internal fixed value is applied to "Output" in "User LUT Range" regardless of its setting value.

Conv. Preset

This setting is available with the optional “PVML-HSX1” license (sold separately). You can configure a group of items necessary to generate an SDR signal from an HDR signal. Setting values can be copied from other presets.



Submenu	Setting
Conv. Preset	Select the conversion preset data to be configured. Conversion presets 1 to 10 are preassigned with the data. See page 59.
Name	Set up the conversion preset name.
Conversion Mode	Select the conversion mode from the following. • **SR AIR On:** Converts to reproduce the SDR Look as intended while maintaining the HDR-SDR conversion relation set by the SR Live workflow. • **SR AIR Off:** The conversion is performed faithfully according to the OETF (Optical Electro Transfer Function) set for input and output. • **Display Referred:** Converts HDR signals to SDR signals while maintaining the same video expression (appearance) when converting the video signal on the monitor. The "HDR Look" and "HDR Black Comp." settings become invalid. The image quality adjustment settings other than "Knee," "HDR SDR Gain" and "SDR White Clip" in "HDR SDR Setup" are fixed (not adjustable).
HDR Look	Select the video characteristics from "Live", "Mild", and "Natural" that determine how the video signal captured by cameras will be represented as an HDR image on the monitor. This function is available only when "SR AIR On" is selected in "Conversion Mode." Use the same settings as that for the HDR Look function on your camera. When the OETF of the input HDR is other than HLG and the HDR Look is Natural, "Conversion Mode" is processed as "SR AIR Off" regardless of its setting value. For "Live," "Mild," and "Natural," refer to “HDR-SDR Conversion” (page 56).

Submenu	Setting
HDR Black Comp.	Sets On/Off for the HDR Black Compression function (a function to submerge the black level of HDR images to match the black level of SDR images). Use the same settings as that for the HDR Black Compression function on your camera. If “Conversion Mode” is “Display Referred,” this parameter is fixed to “Off.”
Out. OETF	Displays the output signal OETF (SDR fixed). When the Conversion function is turned on, the unit automatically sets EOTF to 2.4(SDR) for the screen display.
Out. Color Space	Select the color gamut of the output signal between "ITU-R BT.709" and "ITU-R BT.2020." When the Conversion function is turned on, the unit automatically adjusts the color space to match the "Out. Color Space" setting for the screen display.

HDR SDR Setup	Configures the HDR to SDR conversion settings.
	• **Black Level:** Adjusts input and output black levels.
	  • Setting Mode: Selects whether or not the input video signal source is a Sony system camera from “Sony System Cam.” or “Others.”
	  • Master Black: Sets the master black value of an input video signal source. This setting is enabled when "Setting Mode" is set to "Sony System Cam."
	  • HDR Blk. Ofst.: Sets the HDR black offset value of an input video signal source. This setting is enabled when "Setting Mode" is set to "Sony System Cam."
	  • In. Black Level: Sets the black level value (HDR) of an input signal. This setting is enabled when “Setting Mode” is set to “Others.”
	  • Out. Blk. Lvl.: Sets the black level value (SDR) of an output signal. This setting is enabled when “Setting Mode” is set to “Others.”
	When "Conversion Mode" is "Display Referred," "Master Black," "HDR Blk. Ofst.," "In. Black Level" and "Out. Blk. Lvl." are fixed at "0.0."
	• **HDR SDR Gain:** Sets the gain amount for HDR to SDR conversion.
	  • HDR Contrast: Shows the percentage of HDR when converted to 100% of SDR with the gain amount set by HDR→SDR Gain.

Submenu	Setting

	• **Knee:** Sets the Knee (high brightness compression) function On/Off for HDR to SDR conversion. When "Gamma Table" is "Hyper," "Knee" is fixed to "Off" regardless of its setting value.
	  • Point: Sets the knee point position for the Knee function. Even if the set value is changed, the actual knee point position may not change.
	  • Slope: Sets the knee slope for the Knee function.
	• **Gamma Table:** Select the gamma curve type from "Standard" or "Hyper." If “Conversion Mode” is “Display Referred,” the internal fixed value is applied.
	  • Standard: Select a value from ”1" to "7."
	  • Hyper: Select a value from ”1" to "4."
	• **Gamma Step:** Sets the gamma intensity (step). When "Conversion Mode" is "Display Referred" or when "Gamma Table" is other than "Standard," this parameter will be invalid regardless of its setting value.
	• **Gamma Level:** Sets the gamma intensity (analog). When “Conversion Mode” is “Display Referred” or “Gamma Table” is other than “Standard,” this parameter will be fixed at “0” regardless of its setting value.
	• **SDR White Clip:** Sets the white clipping function On/Off for HDR to SDR conversion.
	  • Level: Sets the video level for white clipping.

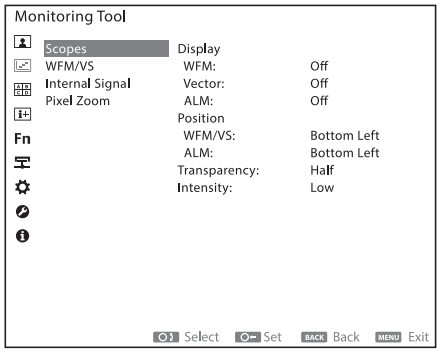
Additional Paint	Sets the additional painting (additional image quality adjustment) function On/Off. If "Additional Paint" is "Off," the image quality adjustment settings in this menu will be disabled.
	• **White Balance:** Sets the white balance adjustment function On/Off.
	  • R: Sets the R gain for white balance adjustment.
	  • B: Sets the B gain for white balance adjustment.
	• **Master Gain:** Sets the gain function On/Off.
	  • Level: Sets the gain amount.

Submenu	Setting
	• **Saturation:** Sets the saturation (saturation adjustment) function On/Off. • Level: Sets the level of saturation adjustment. "-99" makes the color achromatic, "99" doubles the saturation, and "0" leaves it unchanged.
Copy From	Copies other conversion preset data to the selected conversion preset. You can select from "Preset1" to "Preset10."

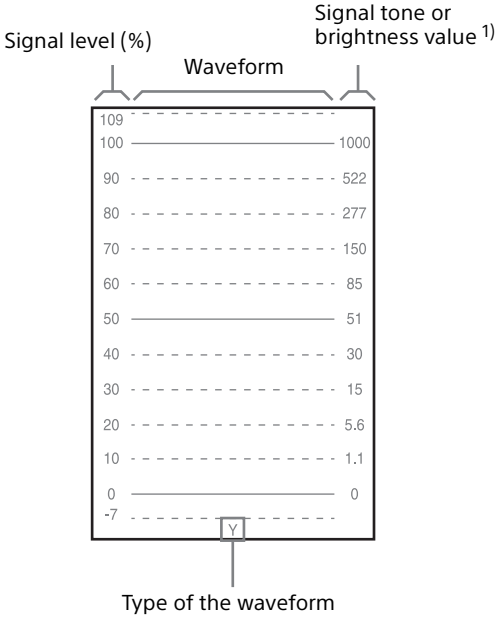
Monitoring Tool menu

The monitoring function for the input video signal and recording assistance function are configured.

Scopes

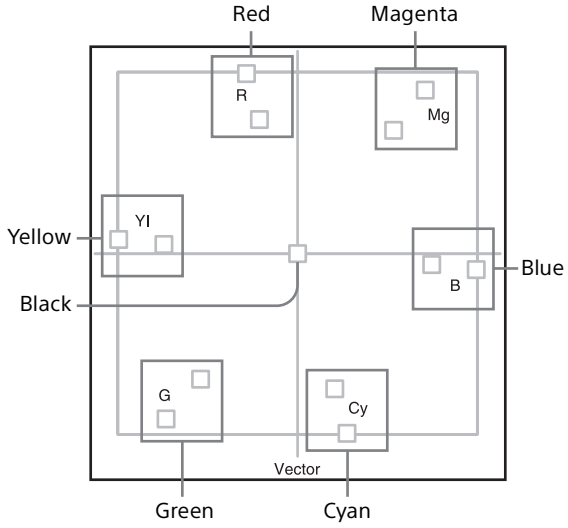


Submenu	Setting
Display	
WFM	Sets whether to display WFM (Wave Form Monitor). Select “On” to display the waveform.



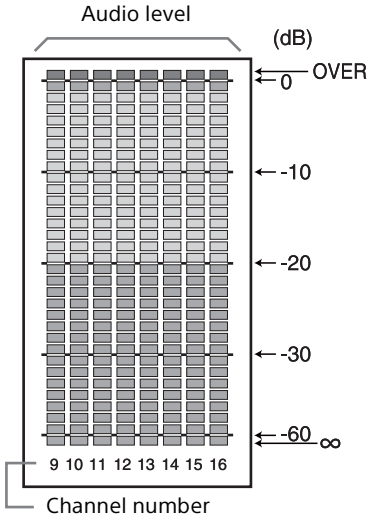
1) The signal tone is displayed when EOTF is set to 2.2, 2.4, 2.6, or 2.4(HDR). The brightness value of the input signal is displayed when EOTF is set to SMPTE ST 2084. When EOTF is set to ITU-R BT.2100(HLG), the brightness value of the input signal when the maximum brightness of the monitor is 1000 cd/m^2 is displayed. When EOTF is set to S-Log3 or S-Log3(Live HDR), the brightness value when the S-Log3 signal is displayed in HDR(Live) is displayed.

Submenu	Setting
Vector	Sets whether to display Vector (vector scope). Select “On” to display the color difference components of the video signal as vectors.



□ : Color target frame (The outer frame indicates 100 %, and the inner frame indicates 75 %.)

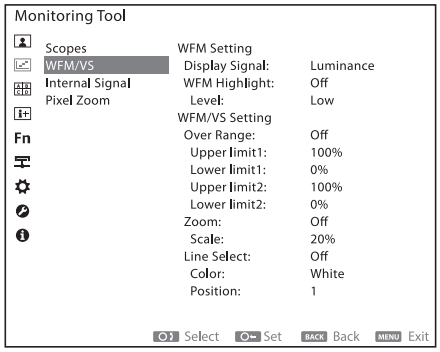
ALM	Sets whether to display the audio level meter. Selecting “On” displays the eight audio level channels. The eight channels set for “Left Audio” and “Right Audio” in “Audio Preset” are automatically set on the eight channels displayed.



Channel number
(The eight channels are displayed, including the channel which is selected. The selected channels are displayed in light blue.)

Submenu	Setting
	Note WFM, Vector, and ALM are displayed only when signals with a resolution greater than or equal to 1280 × 720 are input.
Position	
WFM/VS	Sets where the WFM (Wave Form Monitor) is to be displayed. • Top Left • Top Right • Bottom Left • Bottom Right
ALM	Sets where the audio level meter is to be displayed. • Top Left • Top Right • Bottom Left • Bottom Right
	Note WFM/VS and ALM can be set to the same display position. ALM is displayed above or below WFM/VS.
Transparency	Sets the background of the WFM (Wave Form Monitor), Vector (vector scope), and audio level meter screens. • **Black:** The background turns black. The displayed image is hidden behind the background. • **Half:** The background becomes translucent. The displayed image is visible from behind the WFM (Wave Form Monitor), Vector (vector scope), or the audio level meter screen.
Intensity	Sets the waveform intensity. • Low • Middle • High

WFM/VS

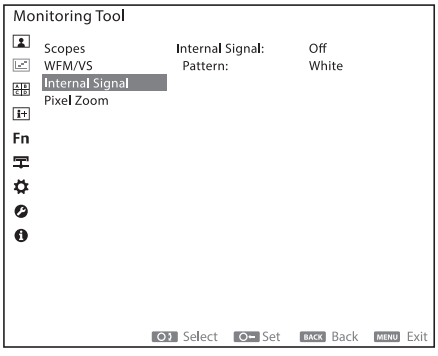


Submenu	Setting
WFM Setting	
Display Signal	Select the signal to be displayed on the waveform monitor. • Luminance • R • G • B • YCC • RGB parade • RGB overlay
WFM Highlight	• **On:** Highlights large frequency areas in white on the waveform monitor. • **Off:** Does not highlight large frequency areas. When “On” is selected • **Level:** Select the display level for the white highlight. • Low (Dark) • Middle (Medium) • High (Light)

Submenu	Setting
WFM/VS Setting	
Over Range	The area exceeding the upper/lower limit of the specified signal level is colored in magenta. • **Upper limit1:** Sets an upper limit on the signal level for Over Range. • **Lower limit1:** Sets a lower limit on the signal level for Over Range. • **Upper limit2:** Sets an upper limit on the signal level for Over Range. • **Lower limit2:** Sets a lower limit on the signal level for Over Range. **Notes** • When “RGB overlay” is selected for “Display Signal” in “WFM Setting,” magenta does not appear on the area exceeding the upper/lower limit though it is set in “Over Range.” • The "Upper limit1" and "Lower limit1" settings apply to the following. -WFM/VS for Single View -WFM/VS displayed in the lower left corner (Screen C) in Quad View -WFM/VS displayed in the lower left corner (Screen A) in Side by Side • The "Upper limit2" and "Lower limit2" settings apply to the following. -WFM/VS displayed in the lower right corner (Screen D) in Quad View -WFM/VS displayed in the lower right corner (Screen B) in Side by Side • WFM and VS are not displayed when an on-screen display such as the menu screen, channel selection screen or format display screen is displayed. • When "Format Display" is set to "Off", WFM and VS will not be hidden by the Format Display (page 46).
Zoom	When “On” is selected while the WFM (Wave Form Monitor) is displayed, the low gradation area is enlarged. When “On” is selected while the Vector (vector scope) is displayed, the black area is enlarged. • **Scale:** Select the enlargement scale for Zoom. Select 20% to enlarge a 0 to 20% area of the signal level and 30% to enlarge a 0 to 30% area of the signal level.

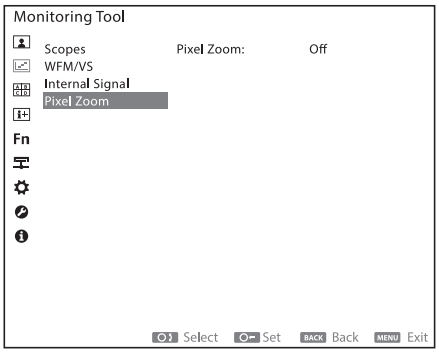
Submenu	Setting
Line Select	• **On:** Displays the waveform of the line specified for “Position” as described below in WFM (Wave Form Monitor) and Vector (vector scope). • **Off:** Displays the normal waveform. When “On” is selected • **Color:** Select the display color of the line. • **Position:** Set where the line is to be displayed. Turn the ADJUST knob to set the position. Increasing the value moves the line downwards and decreasing the value moves it upwards. **Notes** • If “Line Select” is “On,” the line is displayed even when “WFM” is set to “Off” under “Display” of “Scopes.” • For Quad View and Side by Side displays, set the position of Screen A. Since Screen B is set to the same line on the screen display as Screen A, the value of "Position” and the position of the waveform line on the display may not match.

Internal Signal



Submenu	Setting
Internal Signal	Turns the internal signal display On/Off. • **On:** The internal signal is displayed. • **Off:** The internal signal is not displayed. **Note** While the internal signal is displayed, Auto Power Down is not available.
Pattern	Select the pattern of the internal signal. • Gray • White • Color Bars

Pixel Zoom

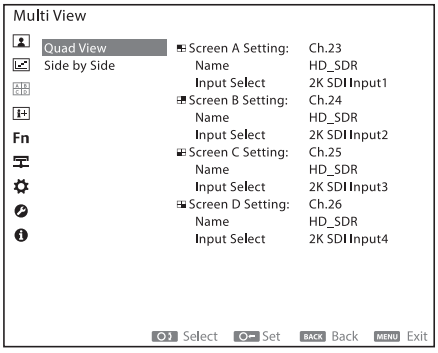


Submenu	Setting
Pixel Zoom	Sets whether to use the pixel zoom. When using the pixel zoom, the center part of the signal is doubled without scaling interpolation processing. More sensitive areas of the signal can be enlarged for examination. **Notes** • The pixel zoom can be used only when signals with a resolution greater than or equal to 1920 × 1080 are input. • Turning the Pixel Zoom to “On” automatically activates Native Scan.

Multi View menu

Video display is set to multiple views.

Quad View



Submenu	Setting
Screen A Setting to Screen D Setting	Select the channel to be displayed in each view. For Screen C and Screen D, you can also select Scope as well as Channel. Screen C can be selected from the Scope of Screen A, Screen B and Screen D. Screen D can be selected from the Scope of Screen A, Screen B and Screen C. • **Name:** The selected channel name is displayed. • **Input Select:** The input signal set for the selected channel is displayed. • 4K SDI Input1,2,3&4 • 4K SDI Input1&2 • 4K SDI Input3&4 • 4K SDI Input1 • 4K SDI Input3 • 2K SDI Input1&2 • 2K SDI Input3&4 • 2K SDI Input1 • 2K SDI Input2 • 2K SDI Input3 • 2K SDI Input4 • HDMI

About the Quad View setting

When Quad View is set to On using the function button, the four HD resolution input signals are displayed on Screen A to Screen D.

Screen A	Screen B
Screen C	Screen D

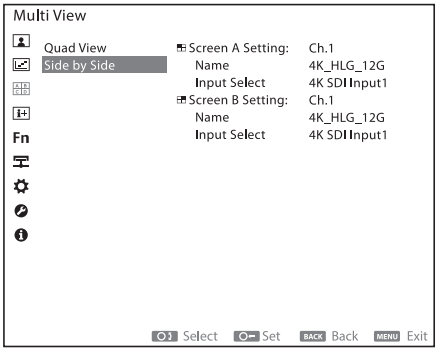
Notes

- The 4K equivalent signal cannot be displayed with Quad View.
- Only one channel per input terminal can be displayed simultaneously.
  Example: If “Ch.1” and “Ch.2” is set to the same SDI input connector 1, they cannot be displayed at same time. To compare the same image, input the image of input connector 1 to the other connector and set “Ch.2” to the input connector.
  When a combination which cannot be displayed simultaneously is set, the screen which can be displayed is displayed in order from Screen A.
  If the screen cannot be displayed, it turns black and the “Invalid Input Combination” message is displayed.
- Time code is displayed on only the SDI signal that is input to Screen A.
- The audio signal input to Screen A is output from the speaker, headphones jack, or AUDIO output connector.
- The drive frequency of the panel changes to the same as Screen A.
- “Native Scan” and “Under Scan” are automatically set to “Off.”
- The following restrictions develop in Quad View if the Conversion (HDR SDR conversion) function and Enhanced Monitor Out function that work when the paid option license "PVML-HSX1" is activated.
  -Conversion cannot be enabled.
  -Conversion cannot be applied to the signal output from the ENHANCED MONITOR OUT connector.

The following settings are available with an assignment by channel.

Screen A SDI INPUT1, HDR (D65, BT.2020, S-Log3)	Screen B HDMI, SDR (D65, BT709, 2.4)
Screen C SDI INPUT3, SDR (D65, BT.2020, 2.4)	Screen D SDI INPUT4, HDR (D65, BT.2020, ST 2084)

Side by Side



Submenu	Setting
Screen A Setting Screen B Setting	Select the channel to be displayed on each screen. The same channel can be selected for Screen A and Screen B, and they can be displayed in comparison including 4K signals. • **Name:** Displays the selected channel name. • **Input Select:** Displays the input signal set for the selected channel. • 4K SDI Input1,2,3&4 • 4K SDI Input1&2 • 4K SDI Input3&4 • 4K SDI Input1 • 4K SDI Input3 • 2K SDI Input1&2 • 2K SDI Input3&4 • 2K SDI Input1 • 2K SDI Input2 • 2K SDI Input3 • 2K SDI Input4 • HDMI

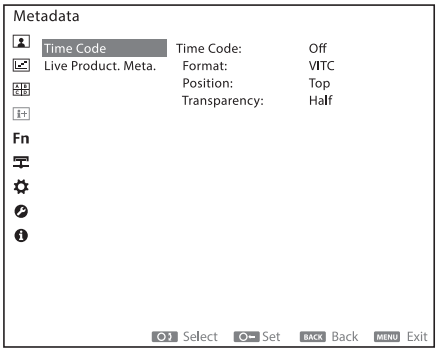
Notes

- Only one channel can be displayed at a time for each input terminal. For example, if you set the same SDI input connector for “Ch.1” and “Ch.2,” they cannot be displayed at the same time. To compare the same image with different channel settings, use another connector for the input of connector 1 image and set the same input connector for “Ch.2.” If a combination is determined invalid for simultaneous display, Screen A will show available images to display. In this case, Screen B turns black and shows an “Invalid Input Combination” message.
- A combination of 4K SDI and 4K SDI, or 4K SDI and 2K SDI cannot be displayed at the same time even if using different input connectors. For example, setting "4K SDI Input1" for "Ch.1" and "4K SDI Input3" for "Ch.2" does not allow simultaneous display. Display of two SDI systems is only available for a combination of 2K SDI and 2K SDI.
- If a 4K input signal is selected for either Screen A or Screen B, User LUT will not be applied to Screen B. However, if the same channel of 4K input signal is selected for both, the same User LUT will be applied to both Screen A and Screen B.
- Only the time code of the SDI signal that is input to Screen A is displayed.
- The audio signal input to Screen A is output from the speakers, headphones jack, or AUDIO output connector.
- The drive frequency of the panel will be the same as Screen A.
- “Native Scan” and “Under Scan” are automatically set to “Off.”
- Conversion can be enabled only on Screen A.

Metadata menu

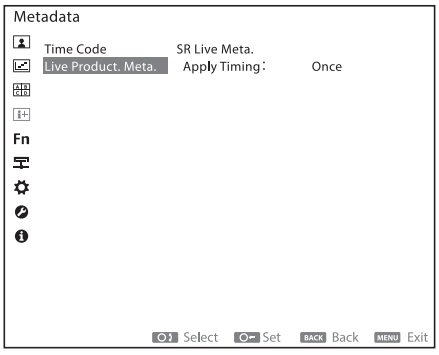
The display of information added to the input signal is configured.

Time Code



Submenu	Setting
Time Code	Turns the time code display On/Off. • **On:** The time code is displayed. • **Off:** The time code is not displayed. **Note** The time code is displayed when SDI input is selected.
Format	Sets the time code format. • **VITC:** To display the time code in VITC format. • **LTC:** To display the time code in LTC format.
Position	Sets the position of the time code display. • Top • Bottom
Transparency	Sets the background transparency of the time code display. • **Black:** The background becomes black. • **Half:** The background becomes translucent.

Live Product. Meta.



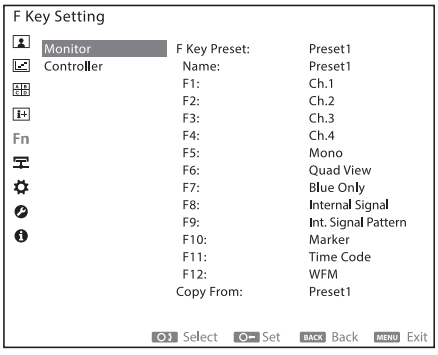
Submenu	Setting
SR Live Meta.	The SR Live Metadata (HDR SDR Relation Table) superimposed on the input SDI signal is reflected in the setting values of "EOTF," "Color Space" and "Transfer Matrix," and also the setting value of a group of items required for conversion settings from HDR signal to SDR signal of "Conv. Preset."
Apply Timing	Select from the following two modes. • Once: Assign "SR Live apply" to the function button to use. The SR Live Metadata is reflected in the setting values only when the assigned function button is pressed. • Continuously: Continuously reflects the SR Live Metadata in the setting values.

Fn F Key Setting menu

The functions of the function buttons on the unit and controller are configured.

Monitor

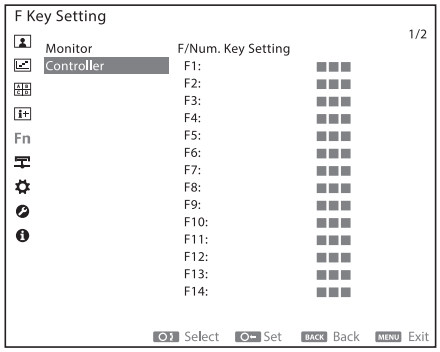
Configure the functions of the function buttons on the front panel of the monitor. This configuration menu can also be displayed by pressing and holding the function button.



Submenu	Setting
F Key Preset	Select the preset number you want to set for the function key.
Name	Sets a preset name for the function key selected.
F1 to F12	Assign a function to one of the F1 to F12 buttons on the front panel for the selected function key preset.
Copy From	Copy another function key's preset data to the selected function key preset.

Controller

Set the functions of the function buttons and numeric buttons on the controller. This menu is available when the menu is displayed from the connected controller.



Submenu	Setting
F/Num. Key Setting	
F1 to F16 Numeric1 to Numeric9	Assigns functions to the F1 to F16 buttons or buttons 1 to 9 on the controller. For the functions available for the function buttons on the controller, see page 10. For the functions available for the buttons 1 to 9 on the controller, see "About functions that can be assigned to the function buttons on this unit and the buttons 1 to 9 on the controller" (page 40).

About functions that can be assigned to the function buttons on this unit and the buttons 1 to 9 on the controller

"Preset1" to "Preset10" in "F Key Preset" are assigned with the function in the table below.

	Preset1	Preset2	Preset3	Preset4	Preset5	Preset6	Preset7 to Preset10
	Default	Ver.1.0_Preset	BD_H_M_L	HDR-SDR_Conv.	Display_Func.	Markers	Preset7 to Preset10
F1	CH1	CH1	CH1	CH1	CH1	CH1	CH1
F2	CH2	CH2	CH2	CH2	CH2	CH2	CH2
F3	Mono	CH3	Quad View	WFM	Mono	CH3	Mono
F4	Quad View	CH4	Marker	Vector	Blue Only	CH4	Quad View
F5	Marker	Mono	Time Code	Pixel Zoom	R Off	Marker	Marker
F6	Time Code	Quad View	WFM	Quad View	G Off	Area Marker1	Time Code
F7	WFM	Blue Only	Chr./Bright./ Cont.	Side by Side	B Off	Area Marker2	WFM

	Preset1	Preset2	Preset3	Preset4	Preset5	Preset6	Preset7 to Preset10
	Default	Ver.1.0_Preset	BD_H_M_L	HDR-SDR_Conv.	Display_Func.	Markers	Preset7 to Preset10
F8	Chr./Bright./ Cont.	Internal Signal	Volume	Chr./Bright./ Cont.	Native Scan	Center Marker	Chr./Bright./ Cont.
F9	Volume	Int. Signal Pattern	Black Detail Low	Volume	Under Scan	Aspect Marker	Volume
F10	Black Detail Mid.	Marker	Black Detail Mid.	Audio Muting	Pixel Zoom	Aspect Marker-Line	Black Detail Mid.
F11	Black Detail High	Time Code	Black Detail High	Conversion	Marker	Asp. Blank.-Half	Black Detail High
F12	Dynamic Cont. Dr.	WFM	Dynamic Cont. Dr.	SR Live apply	Chr./Bright./ Cont.	Asp. Blank.-Black	Dynamic Cont. Dr.

Mono (black and white)
Press the button to display a monochrome picture.

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

Native Scan
Press the button to switch between the image with the scaling display (Off) and the image displayed directly from pixels (On).

Notes

- When Native Scan (On) is selected, 2K resolution signals are displayed while enlarged horizontally and vertically with the following proportion (repeating pixel values).
  – 1280 × 720 signal: × 3
  – Others: × 2
- 640 × 480/60P, 720 × 480/60P, and 720 × 576/50P signals for HDMI are not enlarged up to the end of the display.
- When “Native Scan” is set to “On,” “Under Scan” is set to “Off.”

Audio Muting
Press to mute audio output.

R Off
Press the button to turn off the R (red) signal.

G Off
Press the button to turn off the G (green) signal.

B Off
Press the button to turn off the B (blue) signal.

Internal Signal
Press the button to display the internal signal.

Int. Signal Pattern
Press the button to change the pattern of the internal signal when the internal signal is displayed. With every press of the button, the picture switches to “Gray,” “White,” and “Color Bars,” in this order.

Ch.1 to Ch.30
Press to switch to the assigned channel.

Note

In Quad View, a channel selected in the “Multi View” menu is displayed regardless of the operation and setting of the function buttons and numeric buttons on the controller.

Marker
Press the button to display the aspect marker, area marker 1, area marker 2, and/or center marker with On selected.

Aspect Marker
Press the button to display the aspect marker.

Area Marker1
Press the button to display area marker 1.

Area Marker2
Press the button to display area marker 2.

Center Marker
Press the button to display the center marker.

Aspect Marker-Line
Press the button to display the line of the aspect marker.

Asp. Blank.-Half
Press the button to set the aspect blanking to half.

Asp. Blank.-Black
Press the button to set the aspect blanking to black.

Note

The “Marker” to “Asp. Blank.-Black” settings are not available in the following cases:
- When the input signal is No Sync signal
- When the internal signal is displayed
- When displayed in Quad View

Time Code
Press the button to display the time code. You can set the time code under “Time Code” (page 39).

Quad View
Press the button to display four inputs on the screen.

WFM
Press the button to display WFM (Wave Form Monitor).

Vector
Press the button to display Vector (vector scope).

ALM
Press the button to display the audio level meter.

Pixel Zoom
Press the button to use the pixel zoom.

Black Detail High
Press the button to accurately display dark scenes. Use this when setting a higher range for the brightness of the display.

Black Detail Mid.
Press the button to accurately display dark scenes.

Black Detail Low
Press the button to accurately display dark scenes. Use this when setting a lower range for the brightness of the display.

Dynamic Cont. Dr.
Press the button to check the balance between bright and dark scenes.

Under Scan
Press the button to display an image 3% smaller than the image displayed with scaling (Native Scan Off).

Notes

- The “Black Detail High” to “Black Detail Low” functions and “Dynamic Cont. Dr.” cannot be used simultaneously.
- When “Under Scan” is set to “On,” “Native Scan” is set to “Off.”

Chr./Bright./Cont.
Press the button to display the Chroma Level, Brightness, and Contrast adjustment menus.

Aperture
Press the button to display the aperture adjustment menu.

Volume
Press the button to display the volume control menu.

Side by Side
Press the button to display two screens.

Conversion
Press the button to enable the conversion function.

SR Live apply
Press the button when "Apply Timing" in "SR Live Meta." is set to "Once."

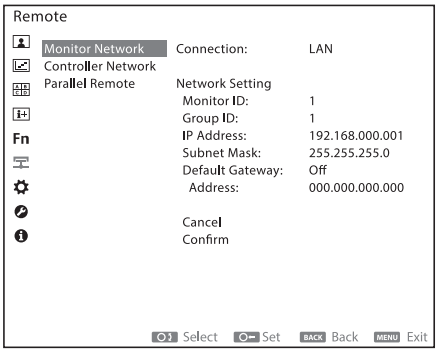
Note

Some functions are not available in Quad View. For details, refer to “Multi View Functions and Adjustable/Setting Items” (page 12).

Remote menu

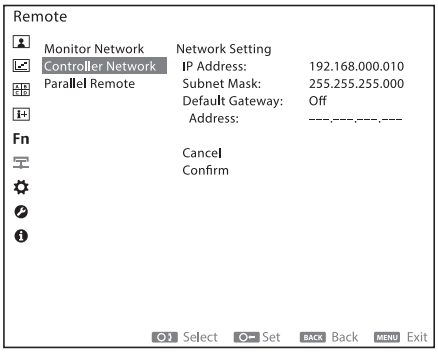
You can configure the settings for connecting to an external device that controls the monitor remotely.

Monitor Network



Submenu	Setting
Connection	Set the connection to an external device. • **Off:** Set to Off when this unit is not controlled remotely. • **Peer to Peer:** for one to one connection • **LAN:** for connection via a network
Network Setting	
Monitor ID	Sets the ID of this unit.
Group ID	Sets the group ID of this unit.
IP Address	Sets the IP address.
Subnet Mask	Sets the subnet mask.
Default Gateway	Sets the default gateway On or Off. • **Address:** Sets the default gateway.
Cancel	Selects to cancel the setting.
Confirm	Selects to save the setting.

Controller Network

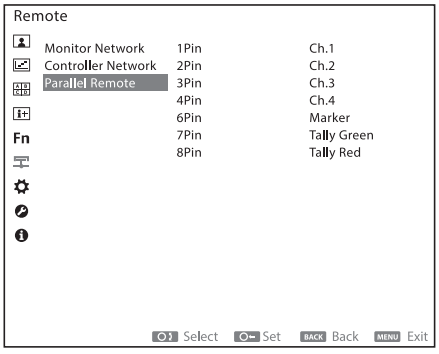


Note

"Controller Network" is available when the menu is displayed via the controller. (Only when the controller is connected with the Peer to Peer connection or Single connection.)

Submenu	Setting
Network Setting	
IP Address	Sets the IP address.
Subnet Mask	Sets the subnet mask.
Default Gateway	Sets the default gateway On or Off. • **Address:** Sets the default gateway.
Cancel	Selects to cancel the setting.
Confirm	Selects to save the setting.

Parallel Remote

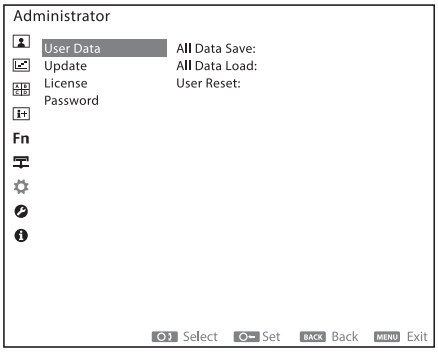


Submenu	Setting
1Pin to 8Pin	You can check the function assigned to each pin on the PARALLEL REMOTE connector. For details on the function assigned to each pin, refer to page 14. **Note** The function assigned to each pin is fixed. You cannot change the setting.

Administrator menu

Data management on this unit is configured and updates are performed.

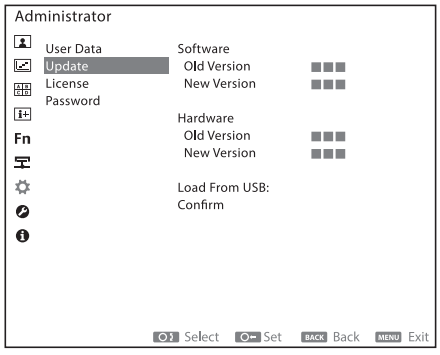
User Data



Submenu	Setting
All Data Save	Backs up all the current settings. • **Cancel:** Cancels the backup. • **Confirm:** Backs up the settings. When "All Data Save" (page 45) in "Password" is set to "On," the password entry screen is displayed. Enter the correct password and select "DONE." When "All Data Save" in "Password" is set to "Off," the password entry screen is not displayed. **Note** The data from User LUT1 to User LUT30 loaded under "User LUT" in the "User Preset Setting" menu are not backed up.
All Data Load	Loads and applies the backup settings. • **Cancel:** Cancels the application. • **Confirm:** Applies the settings.
User Reset	Returns to factory default settings except for the password. • **Cancel:** Cancels the reset. • **Confirm:** The password setting screen is displayed. Enter the password and select "DONE" to reset the settings. **Note** The following settings are not reset even when User Reset is performed. • The settings saved using All Data Save • The data from User LUT1 to User LUT30 loaded under "User LUT" in the "User Preset Setting" menu If you want to clear the data from User LUT1 to User LUT30, refer to "User LUT" (page 25) in the "User Preset Setting" menu.

Update

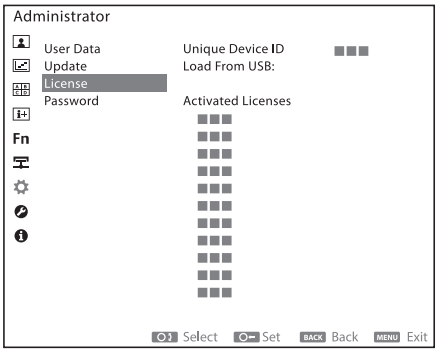
This menu is used when the unit firmware is updated via a USB memory. Download an update file from the Sony website, extract the file, then store the files in the root folder of a USB memory.



Submenu	Setting
Software	
Old Version	Displays the current software version.
New Version	Displays the version the software will be updated to via a USB memory.
Hardware	
Old Version	Displays the current hardware version.
New Version	Displays the version the hardware will be updated to via a USB memory.
Load From USB	Check the connection destination of the USB memory containing the update files. If the target update files exist, the target version is displayed under "New Version" in "Software" or "Hardware."

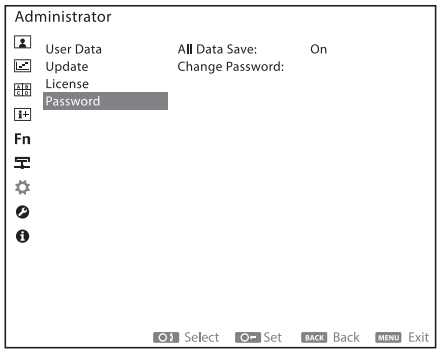
Submenu	Setting
Confirm	Performs an update. **Notes** • Do not turn off this unit while the firmware is updating. If the unit is turned off during an update, run the update again. • During the update, the LEDs on the function buttons will blink in sequence from F5 to F11 as the update progresses. When the update is complete, all the function buttons light up. When updating both "Software" and "Hardware," the updates will be performed in the order of "Software" and "Hardware," and all the function buttons light up at the end of each update. Be careful not to turn off the unit even after the "Software" update is finished. Updating both takes about an hour. When all the function buttons are lit for more than 5 minutes, the update is complete. • Restart the unit by turning off and on the power after the completion of the update.

License



Submenu	Setting
Unique Device ID	Displays the Unique Device ID.
Load From USB	Checks the destination where the USB memory containing the optional license is connected to.
License List	If there is a valid license, the license will be displayed.
Activation	Select to run or cancel the activation of the license. • **Cancel:** Cancels the activation of the license. • **Confirm:** Activates the selected license and restarts the unit.
Activated Licenses	Displays the name of the license that has been activated.

Password

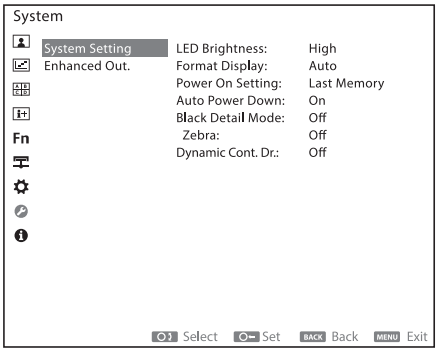


Submenu	Setting
All Data Save	Select whether a password will be needed to perform an All Data Save.
Change Password	Changes the password. **Note** The default password is “0000.” Change the default before using “All Data Save.”

System menu

System settings of this unit and common drive function are configured.

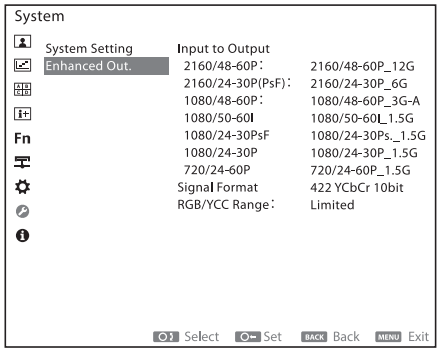
System Setting



Submenu	Setting
LED Brightness	Selects the brightness of the indicator's LED of the buttons, power switch, etc. • **High:** The level of the LED brightness becomes high. • **Middle:** The level of the LED brightness becomes medium. The level of the character's brightness which shows the button name is "High" or "Low." When "Middle" is selected, the brightness is set to the same as "Low." • **Low:** The level of the LED brightness becomes low.
Format Display	Displays the current channel name, input connector, input signal format, and colorimetry. • **Auto:** The format is displayed for about seven seconds when the input of the signal starts. • **Off:** The display is hidden.
Power On Setting	Set this unit's setting status after the unit is turned on. • Last Memory • Ch.1 to Ch.30
Auto Power Down	When "On" is selected, if a no input-signal state continues for 60 minutes, the monitor is automatically turned off. To cancel the settings, select "Off." (Default value: On) **Note** While the internal signal is displayed, Auto Power Down is not available.
Black Detail Mode	Faithfully reproduces dark scenes with a dark brightness. Clipping occurs for bright gradation. In this mode, there are three settings (High/Middle/Low) with different levels of backlight brightness. On "Low," the lowest black levels and the lowest clipped gradation values are used.
Zebra	When set to "Black Detail Mode," set whether to display the zebra pattern on the clipped areas with a bright gradation.
Dynamic Cont. Dr.	Changes the backlight brightness according to the scene. Use this setting when you want to check the overall balance for everything from dark scenes to bright scenes. **Note** When the menu is displayed while "Dynamic Cont. Dr." is "On," "Dynamic Cont. Dr." turns "Off" and the black level changes.

Enhanced Out.

This setting is available with the optional "PVML-HSX1" license (sold separately). This function enables the output of SDI signals, synchronized with input SDI signals, from the ENHANCED MONITOR OUT terminal.



Submenu	Setting
Input to Output	Select a signal system and SDI interface output signal that can be output for each signal system input. When the signal system input is "1080/50-60I," "1080/24-30PsF," "1080/24-30P," or "720/24-60P," the signal format output is fixed as indicated.
2160/48-60P	Select a signal format output when the signal system input is "2160/48-60P." • 2160/48-60P_12G • 1080/48-60P_3G-A • 1080/50-60I_1.5G

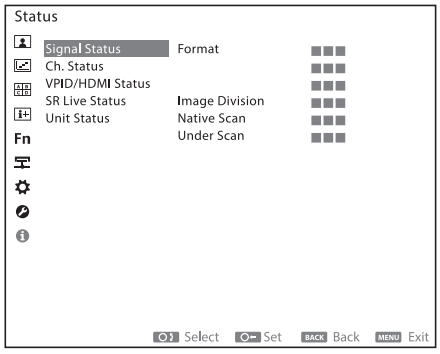
Submenu	Setting
2160/24-30P(PsF)	Select a signal format output when the signal system input is “2160/24-30P(PsF).” • 2160/24-30P_6G • 1080/24-30P_1.5G
1080/48-60P	Select a signal format output when the signal system input is “1080/48-60P.” • 1080/48-60P_3G-A • 1080/50-60I_1.5G
1080/50-60I	1080/50-60I_1.5G (Fixed)
1080/24-30PsF	1080/24-30Ps._1.5G (Fixed)
1080/24-30P	1080/24-30P_1.5G (Fixed)
720/24-60P	720/24-60P_1.5G (Fixed)
Signal Format	The output signal sampling structure is displayed. 4:2:2YCbCr is fixed.
RGB/YCC Range	Select a Video Range for signal output. • Limited • Full **Note** When an S-Log3 signal is output, the internal fixed value is applied regardless of the setting value.

Status menu

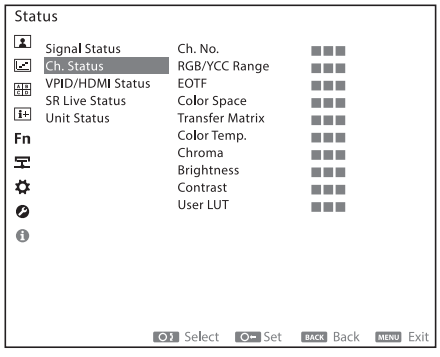
The status menu displays the current status of the unit. The items displayed vary depending on the input signal type and display mode.

For Single View

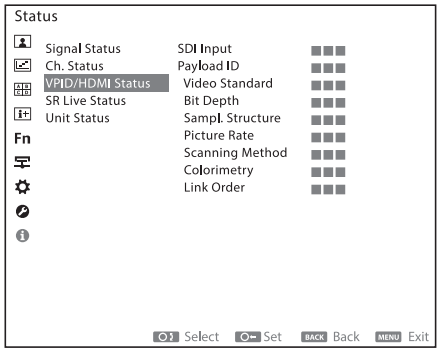
Signal Status



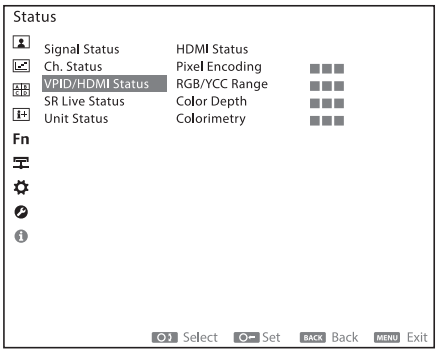
Ch. Status



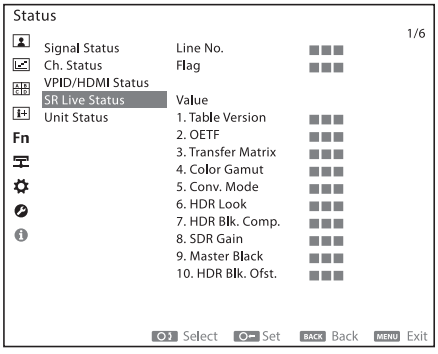
VPID/HDMI Status (for the SDI signal input)



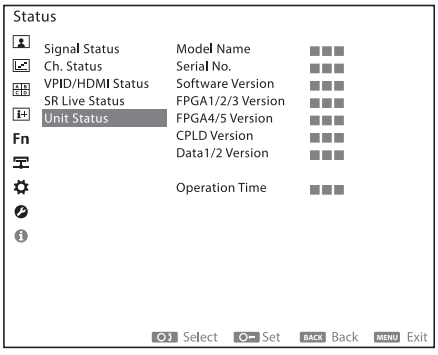
VPID/HDMI Status (for the HDMI signal input)



SR Live Status

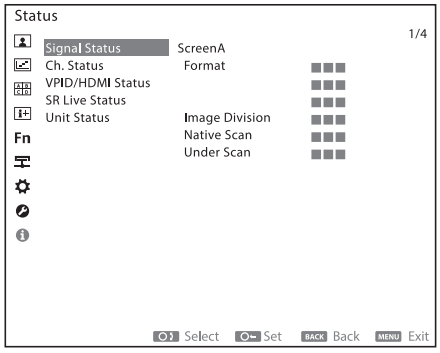


Unit Status

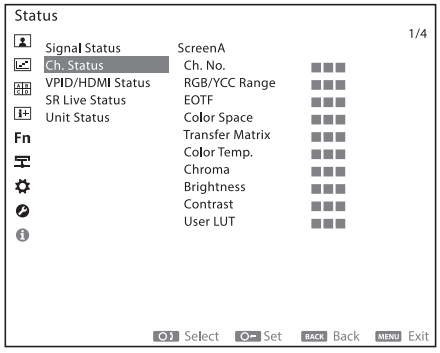


For Quad View

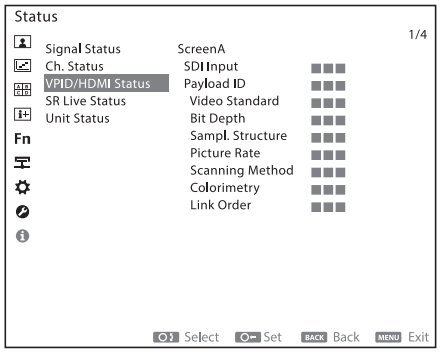
Signal Status



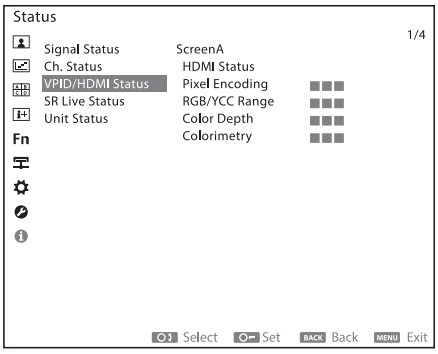
Ch. Status



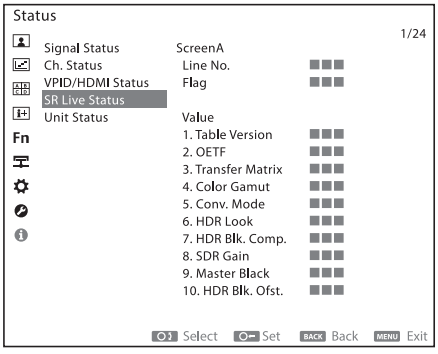
VPID/HDMI Status (for the SDI signal input)



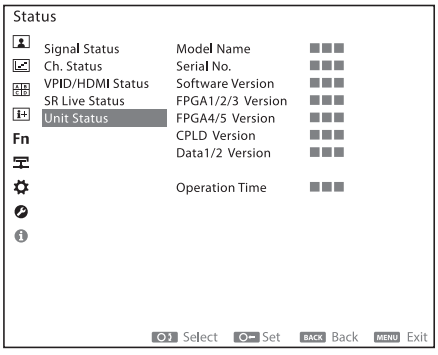
VPID/HDMI Status (for the HDMI signal input)



SR Live Status

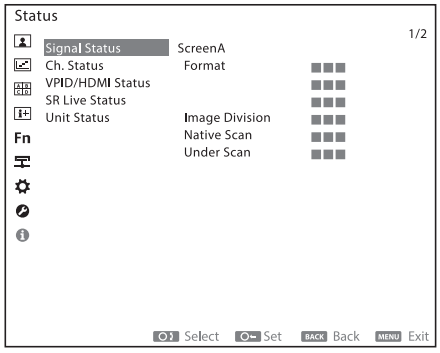


Unit Status

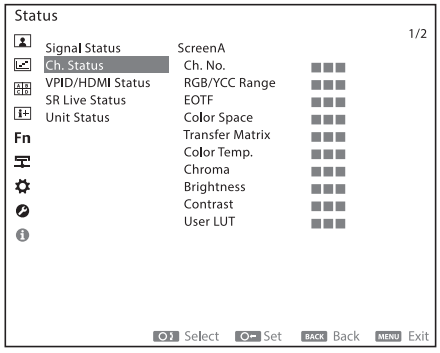


For Side by Side

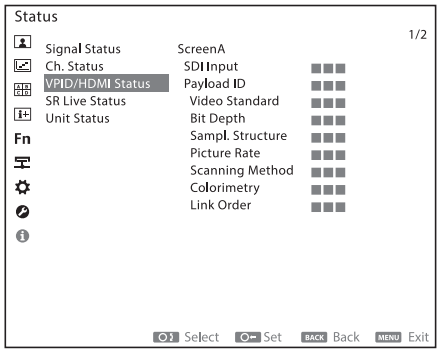
Signal Status



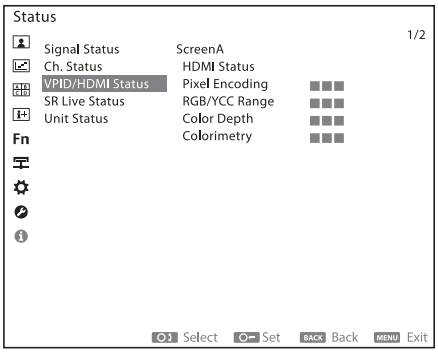
Ch. Status



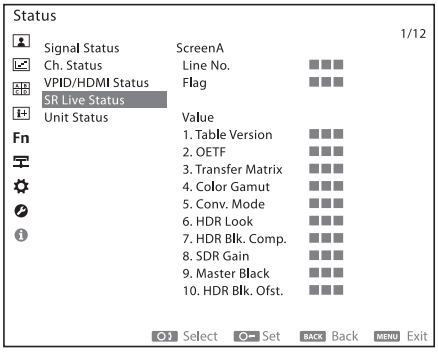
VPID/HDMI Status (for the SDI signal input)



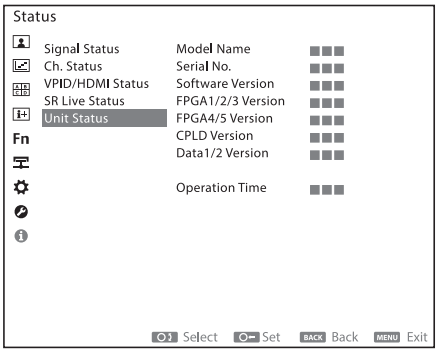
VPID/HDMI Status (for the HDMI signal input)



SR Live Status



Unit Status



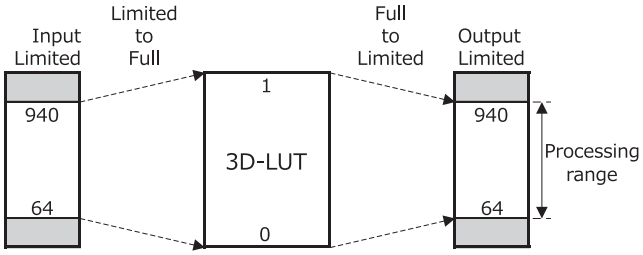
User LUT

You can apply LUT data to the signal input to display on the screen, or output it as an SDI signal from the ENHANCED MONITOR OUT connector with the optional “PVML-HSX1” license (sold separately).
The supported LUT types and input/output Video Range are shown below.
The LUT diagrams are referenced from "HDR Production: Choosing Format Conversion Look-Up Tables” published by BBC Research & Development.
https://www.bbc.co.uk/rd/blog/2020-06-lut-format-conversion-hdr-video-production

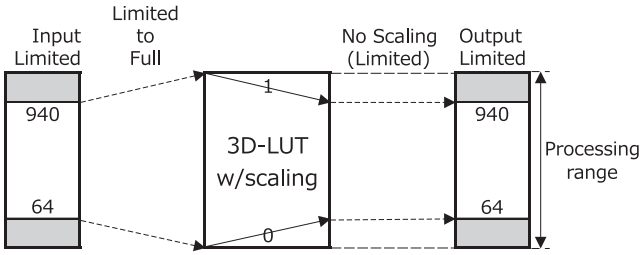
Supported LUT types and input/output Video Range

Input/output Video Range with the S-Log3 (Full Range) signal added are shown. The values in the input and output signal sections are code values for 10-bit signals, and the values in the 3D-LUT sections are the LUT range [0: 1]. Also, w/scaling notations indicate a 3D-LUT to which the input and output Video Ranges are converted.

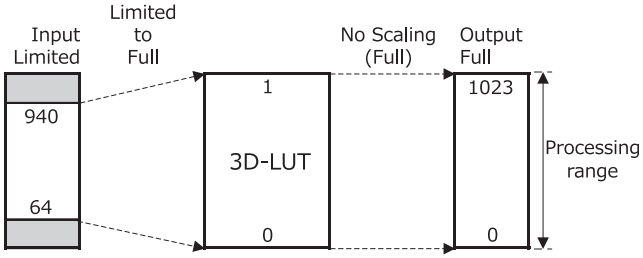
No.1



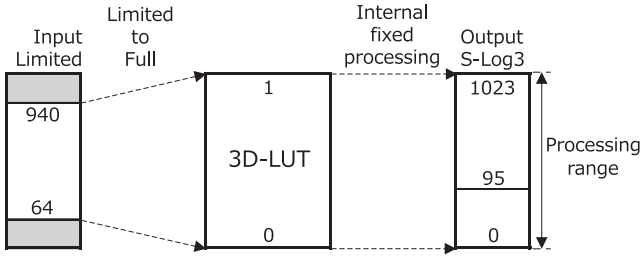
No.2



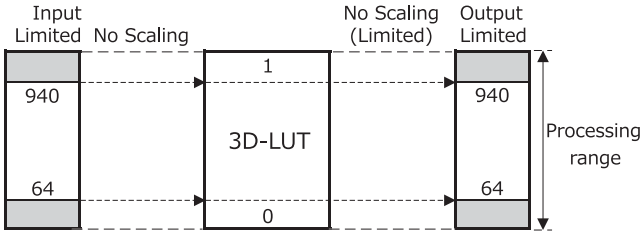
No.3



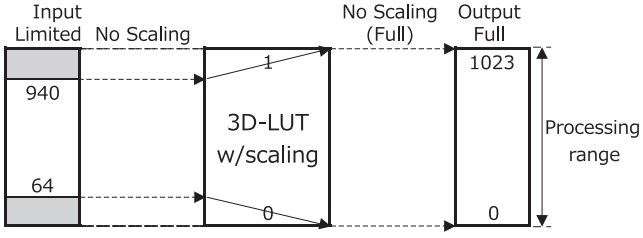
No.4



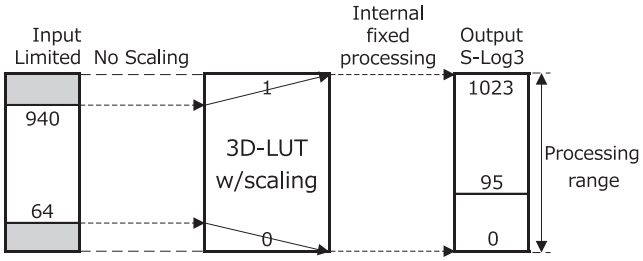
No.5



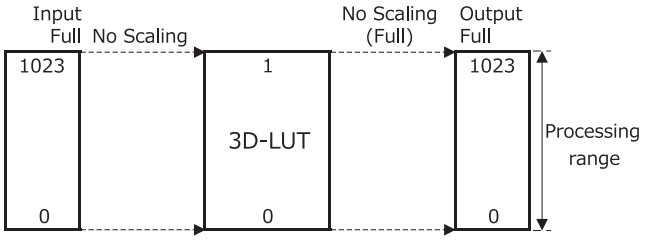
No.6



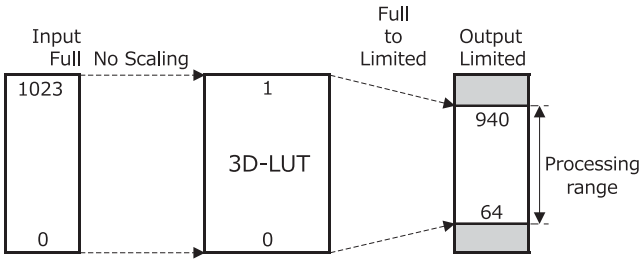
No.7



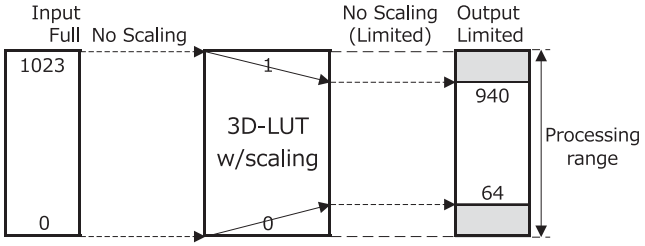
No.8



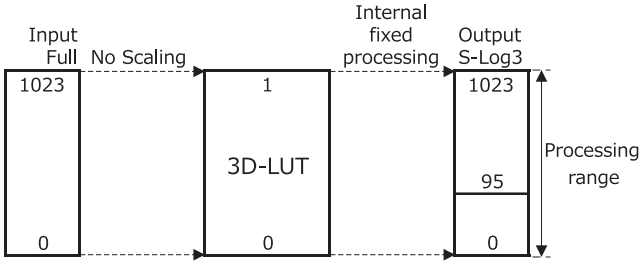
No.9



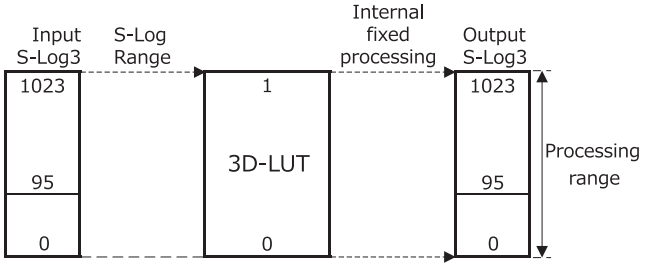
No.10



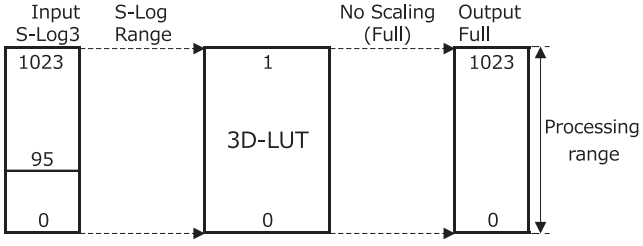
No.11



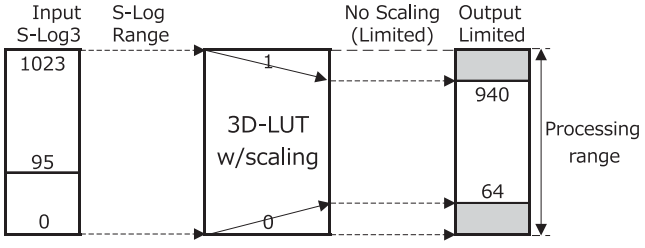
No.12



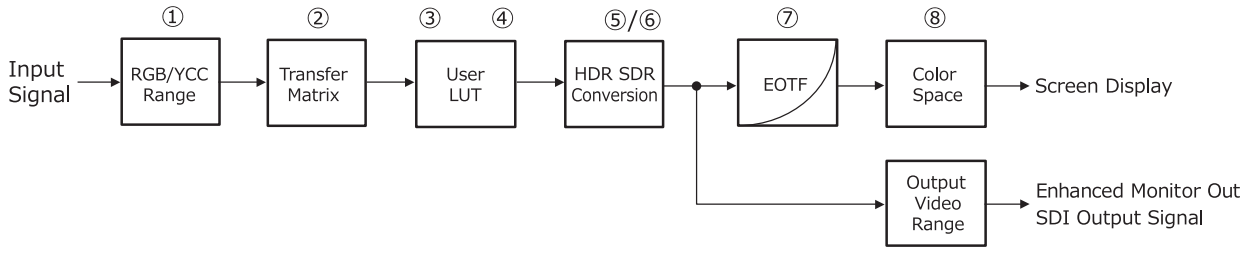
No.13



No.14



Setup procedure



LUT input settings
"**Ch. Setting**"
①"RGB/YCC Range": Set the Video Range of input signals.
②"Transfer Matrix": Set the YCbCr to RGB transfer matrix for YCbCr input.
"User LUT Range"
③"Input": Set this parameter according to Video Range and LUT input specifications.

- When "VPID/HDMI Auto" or "SR Live Auto" is "On," ① and ② will be automatically set based on the input signal information.
- When "S-Log Range" is selected in "Input" (③), "RGB/YCC Range" (①) is set to the internal fixed value regardless of its setting value.

LUT output settings
"**Ch. Setting**"
⑦"EOTF": Set this parameter according to the LUT output OETF.
⑧"Color Space": Set this parameter according to the LUT output color space.
"User LUT Range"
④"Output": Set this parameter according to the LUT output specification.

- When "VPID/HDMI Auto" or "SR Live Auto" is "On," ⑦ and ⑧ will be automatically set based on the input signal information. If ⑦ and ⑧ differ in input signals and LUT output, turn off the Auto setting and set ⑦ and ⑧ to match the LUT output setting in "Ch. Setting" as shown above.
- When "S-Log3(Live HDR)" or "S-Log3" is selected in "EOTF" (⑦), "Output" (④) is set to the internal fixed value regardless of its setting value.

Follow the steps below to apply User LUT to display it on the screen. This procedure assumes that the "VPID/HDMI Auto" and "SR Live Auto" are "Off."

1 Select the 3D LUT file loaded from the USB memory (page 25).

2 Under "RGB/YCC Range" and "Transfer Matrix" in "Ch. Status," check the Video Range and Transfer Matrix of the signal displayed on the screen to which the LUT is applied.

For Side by Side displays, LUT is applied to the signal input to screen A.

3 Under "Transfer Matrix" in "Ch. Setting," configure the YCbCr to RGB conversion matrix for YCbCr input.

4 Configure the "Input" and "Output" settings of "User LUT Range" according to Video Range ("RGB/YCC Range") and LUT data specifications.

Notes

- Configure the Input settings in "User LUT Range" by considering SDI Full Range input signals as Full Range input signals. However, LUT output signals are not compatible with SDI Full Range.
- When "Auto" is set to "On" in "User LUT Range," the settings will be as shown in the table below in accordance with the Video Range of input signals.

Input signal (Video Range)	Input Range settings	Output Range settings	LUT type
Limited Range	Limited to Full	Full to Limited	No.1
Full Range	No Scaling	No Scaling(Full)	No.8
S-Log3 signal	S-Log Range	Internal fixed value	No.12

When “Auto” is set to “On” and “EOTF” in “Ch. Setting” is set to “S-Log3(Live HDR)” or “S-Log3,“ LUT input and output are identified as S-Log3 signals, and ③ Input is set to “S-Log Range.” Both ① RGB/YCC Range and ④ Output are set to internal fixed values regardless of the settings.

5 Set “EOTF” and “Color Space” values in “Ch. Setting” according to the OETF and color space (gamut) specifications for LUT output.

The signal to which the LUT data has been applied is displayed on the screen. With the optional “PVML-HSX1” license (sold separately), LUT-applied signals can be output as SDI signals from the ENHANCED MONITOR OUT connector.

LUT type settings (Type I / Type II / Type III)

The setting values for each LUT type are shown below. The LUT types, Type I/Type II/Type III, are referenced from “BBC_HDRTV_HLG_LUT_Implementation_Guide.pdf” published by BBC Research & Development.
The following setting procedure assumes that “VPID/HDMI Auto” and “SR Live Auto” are “Off.” Also, for the settings ③ “Input” and ④ “Output” below, set “Auto” of “User LUT Range” to “Off”.

Type I

-For Limited Range input signals
Equivalent to supported LUT type No. 1. Set up as follows.
①“RGB/YCC Range”: “Limited”
②“Transfer Matrix”: Set the YCbCr to RGB transfer matrix for YCbCr input
③“Input”: “Limited to Full”
④“Output”: “Full to Limited”
⑦“EOTF”: Set this parameter according to the OETF specifications for LUT output
⑧“Color Space”: Set this parameter according to the color space (color gamut) specifications for LUT output.

-For Full Range input signals
Equivalent to supported LUT type No. 8. Set up as follows.
①“RGB/YCC Range”: “Full”
②“Transfer Matrix”: Set the YCbCr to RGB transfer matrix for YCbCr input
③“Input”: “No Scaling”
④“Output”: “No Scaling(Full)”
⑦“EOTF”: Set this parameter according to the OETF specifications for LUT output
⑧“Color Space”: Set this parameter according to the color space (color gamut) specifications for LUT output.

-For S-Log3 (Full Range) input signals
Equivalent to supported LUT type No. 12. Set up as follows.
①“RGB/YCC Range”: Internal fixed value
②“Transfer Matrix”: When inputting YCbCr, set the matrix for YCbCr to RGB conversion.
③“Input”: “S-Log Range”
④“Output”: Internal fixed value
⑦“EOTF”: “S-Log3(Live HDR)” or “S-Log3“
⑧“Color Space”: Set this parameter according to the color space (color gamut) specifications for LUT output.

Note

For Type I mentioned above, the Input/Output setting of “User LUT Range” is the same as the setting when “Auto” of “User LUT Range” is “On.”

Type II

-For Full Range input signals

Equivalent to supported LUT type No. 10. Set up as follows.

①“RGB/YCC Range”: “Full”

②“Transfer Matrix”: Set the YCbCr to RGB transfer matrix for YCbCr input

③“Input”: “No Scaling”

④“Output”: “No Scaling(Full)”

⑦“EOTF”: Set this parameter according to the OETF specifications for LUT output

⑧“Color Space”: Set this parameter according to the color space (color gamut) specifications for LUT output.

-For S-Log3 (Full Range) input signals

Equivalent to supported LUT type No. 14. Set up as follows.

①“RGB/YCC Range”: Internal fixed value

②“Transfer Matrix”: Set the YCbCr to RGB transfer matrix for YCbCr input

③“Input”: “S-Log Range”

④“Output”: “No Scaling(Full)”

⑦“EOTF”: Set this parameter according to the OETF specifications for LUT output

⑧“Color Space”: Set this parameter according to the color space (color gamut) specifications for LUT output.

Type III

Equivalent to supported LUT type No. 5. Set up as follows.

①“RGB/YCC Range”: “Limited”

②“Transfer Matrix”: Set the YCbCr to RGB transfer matrix for YCbCr input

③“Input”: “No Scaling”

④“Output”: “No Scaling(Full)”

⑦“EOTF”: Set this parameter according to the OETF specifications for LUT output

⑧“Color Space”: Set this parameter according to the color space (color gamut) specifications for LUT output.

HDR-SDR Conversion

This function is available with the optional “PVML-HSX1” license (sold separately). HDR signals displayed on the screen can be converted to SDR signals with dynamic range conversion. It also supports color space (color gamut) conversion for ITU-R BT.2020 and ITU-R BT.709.

AIR Matching (Artistic Intent Render Matching) function

Performs OETF mutual conversion on HDR signals while maintaining the same image representation (appearance) on the monitor.

When the AIR Matching function is ON, the HDR signal is converted so that the image on the monitor connected to the input side and the image on the monitor connected to the output side look the same. Even in the mutual conversion of HDR and SDR signals, the AIR Matching function can maintain the same conversion characteristics between the appearance of HDR images and the appearance of SDR images regardless of the OETF of the HDR signal. Because of these characteristics, the "SR Live workflow" uses the AIR Matching function for mutual conversion between HDR and SDR signals. When using "SR Live workflow," set the AIR Matching function to ON.

When the AIR Matching function is OFF, the conversion is performed faithfully to the OETF (Optical Electro Transfer Function) set for input and output. Whether or not the image representation on the monitor will be the same is not taken into account.

Display Referred conversion

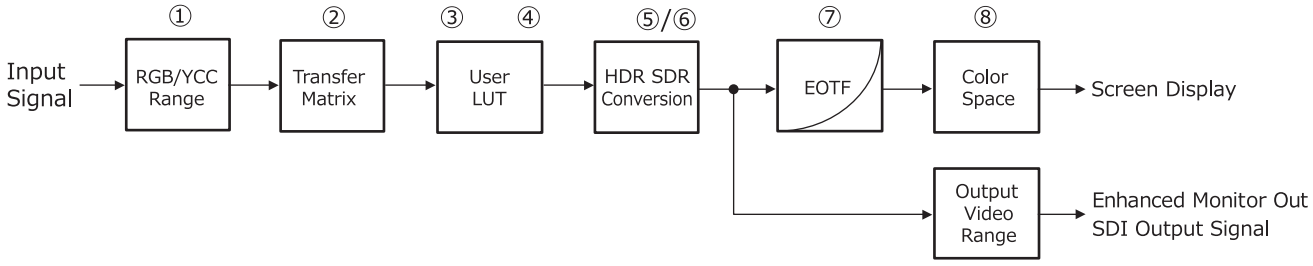
Converts HDR signals to SDR signals while maintaining the same image representation (appearance) on the monitor (However, signals with an SDR output level exceeding 109% will be clipped to 109%, causing highlight clipping, etc.). The image quality adjustment settings other than “Knee,” “HDR SDR Gain,” “SDR White Clip” are fixed (e.g. Off, 0.0).

HDR Look function

HDR Look is a setting that determines the basic Look (appearance) of an HDR image. This fundamental setting that determines how the image captured by cameras is represented on the monitor as an HDR image, and can be selected from “Live,” “Mild,” and “Natural.”

- Live
  This characteristic is based on the Traditional Look derived from current SDR images. It offers a strong sense of contrast and high color rendering, resulting in powerful images. The D-Range of the actual image brightness is wide, so that high brightness is not easily crushed by imaging.
- Mild
  This is similar to the characteristic of Live, but has a milder image characteristic overall than Live.
- Natural
  This is the original Look of HLG and has milder colors. The actual sensitivity setting is reduced, but it is advantageous for S/N(available only when the OETF setting for HDR input is ITU-R BT.2100 (HLG)).

Setup procedure



HDR signal setting before conversion (Conversion Off)

"Ch. Setting"

⑦"EOTF": Sets the OETF for HDR signals before conversion.
⑧"Color Space": Sets the color space for HDR signals before conversion.

- When "VPID/HDMI Auto" or "SR Live Auto" is "On," ⑦ and ⑧ will be automatically set based on the input signal information. If User LUT is applied while ⑦ and ⑧ differ in input signals and LUT output, turn Off the Auto setting and set ⑦ and ⑧ to match the LUT output setting in "Ch. Setting" as shown above.
- Performs HDR-SDR conversion on signals displayed on the screen.
- When performing HDR-SDR conversion on a User LUT-applied signal, set "EOTF" (⑦) and "Color Space" (⑧) according to the LUT output specifications.

SDR signal setting after conversion (Conversion On)

"Conv. Preset"

⑤"Out. OETF": OETF setting for SDR signal after conversion (SDR fixed)
⑥"Out. Color Space": Color space setting for converted SDR signals
When Conversion is set to On, the setting values in ⑦ and ⑧ will be internally processed and automatically changed to match the setting values of ⑤ and ⑥.

Example:
Pre-conversion settings
⑦"EOTF": "ITU-R BT.2100(HLG)"
⑧"Color Space": "ITU-R BT.2020"
⑤"Out. OETF": "SDR" (2.4)
⑥"Out. Color Space": "ITU-R BT.709"
Post-conversion settings
⑦"EOTF": "2.4"
⑧"Color Space": "ITU-R BT.709"

Follow the steps below to perform HDR-SDR conversion. This procedure assumes that "VPID/HDMI Auto" and "SR Live Auto" are "Off."

1 Assign "Conversion" to the function button.

2 Under "EOTF" and "Color Space" in "Ch. Setting," check the OETF and color space of the pre-conversion HDR signal displayed on the screen.

For Side by Side, the HDR signal input to Screen A will be converted.

3 In "Ch. Setting," select the conversion preset data for the conversion settings.

4 Set each item of the conversion preset data.

Notes

- "Preset1" to "Preset10" of "Conv. Preset" are preassigned with data. See page 59.
- When "SR Live Auto" is set to "On" in "Ch. Setting," the relevant items in the HDR SDR Relation Table will be automatically set up if SR Live Metadata (HDR SDR Relation Table) is superimposed on the SDI input signal. For items where SR Live Metadata is not superimposed or is invalid, the setting value of the corresponding items in the conversion preset data will be applied. When "SR

Live Auto” and “VPID/HDMI Auto” are both set to “On,” the settings of “Transfer Matrix,” “OETF,” and “Color Space(Color Gamut)” in HDR SDR Relation Table take precedence.

- The two modes are available for reflecting the HDR SDR Relation Table. See page 39.
- This unit does not support the following functions of HDR SDR Relation Table.
  No.17 Knee Saturation
  No.18 Knee Saturation Level
  No.19 Soft Knee
  No.20 Knee Radius
  No.23 HDR Knee
  No.24 HDR Knee Point
  No.25 HDR Knee Slope
- The OETF and color space (color gamut) of pre-conversion HDR signals that support SDR conversion are as follows. If an unsupported OETF or color space (color gamut) is selected, the HDR-SDR conversion function will not be enabled.
  OETF
  S-Log3(Live HDR)
  ITU-R BT.2100(HLG)
  SMPTE ST 2084(PQ)
  S-Log3

  Color Space
  ITU-R BT.2020
  ITU-R BT.709
- When the OETF of the input HDR is other than ITU-R BT.2100 (HLG) and the HDR Look is Natural, "Conversion Mode" is processed as "SR AIR Off" regardless of its setting value.

5 Press the function button to which you assigned “Conversion” in step 1.

This unit automatically sets EOTF to 2.4(SDR) and color space (color gamut) to match “Out. Color Space” of “Conv. Preset,” then displays the SDR converted signal on the screen. When the optional “PVML-HSX1” license (sold separately) is activated, the SDR conversion signal is output as an SDI signal from the ENHANCED MONITOR OUT connector.

Conversion Presets

This function is available with the optional “PVML-HSX1” license (sold separately). Select a conversion preset to be used for the selected channel. You can select from “Preset1” to “Preset10.”
Conversion presets 1 to 10 are assigned with the setting data in the table below. The data can be modified as needed. For details, see “Conv. Preset” (page 31).

Preset Number	Preset Name	Conversion Settings			
		Input to Target	HDR Look	Mode	Sony System Camera Gamma Table number
Preset1	HLG-SDR_Default	HLG to SDR conversion	Mild		Standard 5
Preset2	HLG-SDR_L_STD5	HLG to SDR conversion	Live		Standard 5
Preset3	HLG-SDR_M_STD5	HLG to SDR conversion	Mild		Standard 5
Preset4	HLG-SDR_N_STD5	HLG to SDR conversion	Natural		Standard 5
Preset5	HLG-SDR_B_STD5	HLG to SDR conversion	Mild	Bright	Standard 5
Preset6	HLG-SDR_L_STD3	HLG to SDR conversion	Live		Standard 3
Preset7	HLG-SDR_M_STD3	HLG to SDR conversion	Mild		Standard 3
Preset8	HLG-SDR_N_STD3	HLG to SDR conversion	Natural		Standard 3
Preset9	HLG-SDR_B_STD3	HLG to SDR conversion	Mild	Bright	Standard 3
Preset10	SL3-SDR_L_STD5	S-Log3 to SDR conversion	Live		Standard 5

Conv. Preset	Preset1	Preset2	Preset3	Preset4	Preset5
Name	HLG-SDR_Default	HLG-SDR_L_STD5	HLG-SDR_M_STD5	HLG-SDR_N_STD5	HLG-SDR_B_STD5
Conversion Mode	SR AIR On	SR AIR On	SR AIR On	SR AIR On	SR AIR On
HDR Look	Mild	Live	Mild	Natural	Mild
HDR Black Comp.	On	On	On	On	On
Out. OETF	SDR	SDR	SDR	SDR	SDR
Out. Color Space	ITU-R BT.709	ITU-R BT.709	ITU-R BT.709	ITU-R BT.709	ITU-R BT.709
HDR SDR Setup	-	-	-	-	-
Black Level	-	-	-	-	-
Setting Mode	Sony System Cam.	Sony System Cam.	Sony System Cam.	Sony System Cam.	Sony System Cam.
Master Black	3.0	3.0	3.0	3.0	3.0
HDR Blk. Ofst.	0.0	0.0	0.0	0.0	0.0
In. Black Level	3.0	3.0	3.0	3.0	3.0
Out. Blk. Lvl.	3.0	3.0	3.0	3.0	3.0
HDR SDR Gain	-5.6	-5.2	-5.6	-10.1	-6.6
HDR Contrast	191	182	191	321	214
Knee	On	On	On	On	On
Point	-15	-10	-10	-10	-10
Slope	32	-60	-60	-60	-60
Gamma Table	Standard	Standard	Standard	Standard	Standard
Standard	5	5	5	5	5
Hyper	1	1	1	1	1
Gamma Step	0.45	0.45	0.45	0.45	0.45
Gamma Level	0	0	0	0	0
SDR White Clip	On	Off	Off	Off	Off

Conv. Preset	Preset1	Preset2	Preset3	Preset4	Preset5
Level	-78	-78	-78	-78	-78
Additional Paint	Off	Off	Off	Off	Off
White Balance	Off	Off	Off	Off	Off
R	0	0	0	0	0
B	0	0	0	0	0
Master Gain	Off	Off	Off	Off	Off
Level	0.0	0.0	0.0	0.0	0.0
Saturation	Off	Off	Off	Off	Off
Level	0	0	0	0	0
Copy From	Preset1	Preset1	Preset1	Preset1	Preset1

Conv. Preset	Preset6	Preset7	Preset8	Preset9	Preset10
Name	HLG-SDR_L_STD3	HLG-SDR_M_STD3	HLG-SDR_N_STD3	HLG-SDR_B_STD3	SL3-SDR_L_STD5
Conversion Mode	SR AIR On	SR AIR On	SR AIR On	SR AIR On	SR AIR On
HDR Look	Live	Mild	Natural	Mild	Live
HDR Black Comp.	On	On	On	On	On
Out. OETF	SDR	SDR	SDR	SDR	SDR
Out. Color Space	ITU-R BT.709	ITU-R BT.709	ITU-R BT.709	ITU-R BT.709	ITU-R BT.709
HDR SDR Setup	-	-	-	-	-
Black Level	-	-	-	-	-
Setting Mode	Sony System Cam.	Sony System Cam.	Sony System Cam.	Sony System Cam.	Sony System Cam.
Master Black	3.0	3.0	3.0	3.0	3.0
HDR Blk. Ofst.	0.0	0.0	0.0	0.0	0.0
In. Black Level	3.0	3.0	3.0	3.0	3.0
Out. Blk. Lvl.	3.0	3.0	3.0	3.0	3.0
HDR SDR Gain	-5.2	-5.6	-10.1	-6.6	-5.2
HDR Contrast	182	191	321	214	182
Knee	On	On	On	On	On
Point	-10	-10	-10	-10	-10
Slope	-60	-60	-60	-60	60
Gamma Table	Standard	Standard	Standard	Standard	Standard
Standard	3	3	3	3	5
Hyper	1	1	1	1	1
Gamma Step	0.45	0.45	0.45	0.45	0.45
Gamma Level	0	0	0	0	0
SDR White Clip	Off	Off	Off	Off	Off
Level	-78	-78	-78	-78	-78
Additional Paint	Off	Off	Off	Off	Off
White Balance	Off	Off	Off	Off	Off
R	0	0	0	0	0
B	0	0	0	0	0
Master Gain	Off	Off	Off	Off	Off
Level	0.0	0.0	0.0	0.0	0.0
Saturation	Off	Off	Off	Off	Off
Level	0	0	0	0	0
Copy From	Preset1	Preset1	Preset1	Preset1	Preset1

SR Live Metadata Input

By superimposing the items that need to be set to generate an SDR signal from an HDR signal (HDR SDR Relation Table) on the VANC area of SDI signals, the settings can be displayed and automatically reflected in the HDR to SDR conversion settings. See page 70 for the supported signal formats for receiving SR Live Metadata.

Notes

- For 12G/6G/3G/HD-SDI Single Link input signals, SR Live Metadata receivable input terminals are limited to Input1 and Input3.
- SR Live Metadata output (transmission) is not supported.

HDR SDR Relation Table

The superimposed line number of the received data, flag information and the items in the table below are received as SR Live Metadata. Displays the status of received data for each input terminal.

- Line No: Displays the superimposed line number of the received value.
- Flag: Displays the flag information (hexadecimal display).
  -B7 - B0: Used by system (for internal processing)
- The items of No.1 to 26 in the HDR SDR Relation Table below are displayed. The absolute display (Ctrl[Abs]) of the value converted to the setting value on the control panel of the Sony system camera is also displayed.

No.	Item	Description
1	Table Version	Table format version information
2	OETF	OETF format applied to superimposed video signals (SDR, PQ, HLG, S-Log3)
3	Transfer Matrix	Transfer matrix applied to superimposed video signals (ITU-R BT.709, ITU-R BT.2020)
4	Color Gamut	Color gamut applied to superimposed video signals (ITU-R BT.709, WIDE-BC, WIDE-F, S-Gamut3, S-Gamut3.Cine)
5	Conversion Mode	Select a conversion mode to apply for video conversion (SR AIR OFF, SR AIR ON, Display Referred)
6	HDR Look	Look settings of the HDR video (Live, Mild, Natural)
7	HDR Black Compression	ON/OFF setting of the dark area compression function for HDR video
8	SDR Gain	Gain difference setting between HDR and SDR images
9	SDR Master Black	Black level setting for SDR video
10	HDR Black Offset	HDR Black level offset when converted from SDR video
11	Gamma Table	Gamma curve type and number for SDR video (STANDARD, HYPER, FILM, USER)
12	Gamma Step	Gamma intensity for SDR video (discrete value)
13	Gamma Level	Gamma intensity for SDR video (continuous value)
14	Knee	ON/OFF setting of high-brightness compression function for SDR video
15	Knee Point	Knee point level of high-brightness compression function for SDR video
16	Knee Slope	Knee slope of high-brightness compression function for SDR video
17	Knee Saturation	ON/OFF setting of the Knee Saturation function (to increase the saturation of areas compressed by high brightness compression function) for SDR video
18	Knee Saturation Level	Strength of Knee Saturation function for SDR video
19	Soft Knee	Not in use
20	Knee Radius	Not in use
21	SDR White Clip	ON/OFF setting of white clipping for SDR video
22	SDR White Clip Level	Level of white clipping for SDR video
23	HDR Knee	ON/OFF setting of HDR Knee function (high brightness compression in HDR) for HDR video

No.	Item	Description
24	HDR Knee Point	Knee point level of HDR Knee function for HDR video
25	HDR Knee Slope	Knee slope of HDR Knee function for HDR video
26	HDR Target White	Display what the brightness value of white, which is 100 [cd/m^2] in SDR video, will be in HDR video

Enhanced Monitor Out

This function is available with the optional “PVML-HSX1” license (sold separately). The video signal being displayed on the screen is output as an SDI signal from the ENHANCED MONITOR OUT connector in sync with the input SDI signal. It enables 3G/HD-SDI Multi-Link to 12G/6G-SDI Single-Link conversion and 4K/UHD to 2K/HD signal conversion as well as selecting Video Range (Full Range/Limited Range) for output. It also allows the output of User LUT-applied signals and HDR-SDR converted signals. See page 79 for the correspondence table between input and output SDI signal formats.

Notes

- HDMI input signals cannot be output.
- The signal structure is fixed at 4:2:2 YCbCr 10bit.
- The output (transmission) of Metadata such as Embeded Audio data, Time Code data, and SR Live Metadata, which are Ancillary Data of SDI input signals, is not supported.
- In Quad View, the Conversion (HDR SDR conversion) function cannot be applied to the output signal.
- In Quad View and Side by Side, the signal displayed on Screen A is output. However, it is not output when Screen A is an HDMI signal.

The following shows the specifications of OETF, color space (gamut), and Transfer Matrix (transfer matrix) output from the ENHANCED MONITOR OUT connector when the User LUT function and HDR-SDR conversion function are ON/OFF.
The state in which the User LUT data is applied in “User LUT” in “Ch. Setting” is referred to as User LUT function ON.

User LUT function	HDR SDR Conversion function	OETF	Color Space	Transfer Matrix
OFF	OFF	Retains input signal specifications [1)]	Retains input signal specifications	Matrix of PID Byte3 Colorimetry values for input SDI signals • ITU-R BT.709 • ITU-R BT.2020 However, if it is a matrix other than ITU-R BT.709/ITU-R BT.2020, ITU-R BT.709 matrix will be applied.
ON	OFF	Retains OETF specifications for LUT output [1)]	Retains color space specifications for LUT output	Matrix of the color space setting values in the “VPID/HDMI Auto” and “SR Live Auto” settings or the “Color Space” in “Ch. Setting.” • ITU-R BT.709 • ITU-R BT.2020 However, if it is a matrix other than ITU-R BT.709/ITU-R BT.2020, ITU-R BT.709 matrix will be applied.
OFF	ON	SDR	Setting values of “Out. Color Space” in “Conv. Preset” • ITU-R BT.709 • ITU-R BT.2020	Matrix for setting values of “Out. Color Space” in “Conv. Preset” • ITU-R BT.709 • ITU-R BT.2020
ON				

1) When OETF (HDR SDR Relation Table information of SR Live Metadata) is S-Log3 while “SR Live Auto“ is “On,“ or when “EOTF“ in “Ch. Setting“ is set to “S-Log3“ or “S-Log3(Live HDR)“ while “SR Live Auto“ is “Off,“ the OETF of the output SDI signal is identified as S-Log3.

PID specifications

This unit superimposes PID on SDI signals output from the ENHANCED MONITOR OUT connector according to the output signal format. The following shows the Transfer Characteristics, Colorimetry, and Bit Depth of PID when the User LUT function and HDR-SDR conversion function are ON/OFF.

User LUT function	HDR-SDR Conversion function	Output SDI Interface	Transfer Characteristics Processing	
OFF	OFF	12G/6G/3G-SDI	Input signal Byte2: Retains bit [5: 4] However, when an S-Log3 signal is output, Byte2:bit[5:4] will be 3h(Unspecified).	
		HD-SDI 1080-line		
		HD-SDI 720-line	Not applicable	
ON	OFF	12G/6G/3G-SDI HD-SDI 1080-line	Replaced by the EOTF setting value in "VPID/HDMI Auto," "SR Live Auto" or "EOTF" in "Ch. Setting."	
			EOTF setting value	Transfer characteristics Byte2: bit [5:4]
			2.2	SDR-TV
			2.4	SDR-TV
			2.6	SDR-TV
			2.4(HDR)	Unspecified
			S-Log3	Unspecified
			SMPTE ST 2084(PQ)	PQ
			ITU-R BT.2100(HLG)	HLG
			S-Log3(Live HDR)	Unspecified
		HD-SDI 720-line	Not applicable	
OFF	ON	12G/6G/3G-SDI HD-SDI 1080-line	Replaced to the setting value of "Out. OETF" in "Conv. Preset." (The following are fixed values.)	
			Out. OETF setting value	Transfer characteristics Byte2: bit [5:4]
ON			2.4	SDR-TV
		HD-SDI 720-line	Not applicable	

User LUT function	HDR-SDR Conversion function	Output SDI Interface	Colorimetry processing
OFF	OFF	12G/6G/3G-SDI	Input signal Byte3: Retains bit [5: 4]
		HD-SDI 1080-line	Input signal Byte3: Retains bit [7] and bit [4]
		HD-SDI 720-line	Not applicable

User LUT function	HDR-SDR Conversion function	Output SDI Interface	Colorimetry processing	
ON	OFF	12G/6G/3G-SDI	Replaced by the color space setting value in "VPID/ HDMI Auto," "SR Live Auto," or "Color Space" in "Ch. Setting."	
			Color Space setting value	Colorimetry Byte3: bit [5:4]
			ITU-R BT.709	Rec 709 (ITU-R BT.709)
			ITU-R BT.2020	UHDTV (ITU-R BT.2020)
			S-Gamut/S-Gamut3	Unknown
			S-Gamut3.Cine	Unknown
			DCI-P3	Unknown
		HD-SDI 1080-line	Replaced by the color space setting value of "VPID/ HDMI Auto," "SR Live Auto," or the setting of "Color Space" in "Ch. Setting."	
			Color Space setting value	Colorimetry Byte3: bit [7] and bit [4]
			ITU-R BT.709	Rec 709 (ITU-R BT.709)
			ITU-R BT.2020	UHDTV (ITU-R BT.2020)
			S-Gamut/S-Gamut3	Unknown
			S-Gamut3.Cine	Unknown
			DCI-P3	Unknown
		HD-SDI 720-line	Not applicable	
OFF	ON	12G/6G/3G-SDI	Replaced to the setting value of "Out. Color Space" in "Conv. Preset."	
			Out. Color Space setting value	Colorimetry Byte3: bit [5:4]
			ITU-R BT.709	Rec 709 (ITU-R BT.709)
			ITU-R BT.2020	UHDTV (ITU-R BT.2020)
		HD-SDI 1080-line	Replaced to the setting value of "Out. Color Space" in "Conv. Preset."	
ON			Out. Color Space setting value	Colorimetry Byte3: bit [7] and bit [4]
			ITU-R BT.709	Rec 709 (ITU-R BT.709)
			ITU-R BT.2020	UHDTV (ITU-R BT.2020)
		HD-SDI 720-line	Not applicable	

Output SDI Interface	Bit Depth Processing	
12G/6G/3G-SDI HD-SDI 1080-line	Replaced by the setting value of "RGB/YCC Range" in "Enhanced Out." in the "System" menu.	
	Enhanced Out. RGB/YCC Range	Bit Depth Byte4: bit [1:0]
	Limited	10-bit
	Full	10-bit Full Range
	When an S-Log3 signal is output, the setting is fixed at 10-bit Full Range regardless of its setting value of "RGB/YCC Range" in "Enhanced Out."	
HD-SDI 720-line	Byte4: Bit[0] is fixed at 10-bit.	

Expanding Monitor Functions with an Optional License

With the optional “PVML-HSX1” license (sold separately) , the following features can be enabled.
- Conversion (HDR-SDR conversion)
- Enhanced Monitor Out

Purchasing an optional license

You can purchase an optional license and obtain the Installation Key file by following the steps below.

1 Check the Unique Device ID under “License” in “Administrator” menu.

The 12-digit string in the “Unique Device ID” field is the Unique Device ID.

2 Go to the Upgrade and License Management Suite (ULMS) page below, enter your Purchase Key and Device Unique ID, and download the Installation Key of the optional license.

https://ulms.sony.net/portal/purchaseandinstallationprocess

For details on how to obtain the Installation Key file, refer to the above web page.

Activating an optional license

1 Save the installation key file to the following folder on the USB memory.

For PVM-X3200
MSSONY/MONITOR/LICENSE/PVM_X3200/

For PVM-X2400
MSSONY/MONITOR/LICENSE/PVM_X2400/

For PVM-X1800
MSSONY/MONITOR/LICENSE/PVM_X1800/

Notes

- The USB memory is only FAT32 format compatible.
- Do not save any files other than the installation key file to the above folder.
- Do not change the contents of the installation key file.

2 Connect the USB memory that contains the installation key file to the USB connector on the monitor.

3 Select “License” in the “Administrator” menu.

4 Select “Load From USB Memory.”

A list of licenses that can be activated will be displayed.

5 Check the contents and select “Confirm.”

The monitor will restart after the license is activated. You can check if the license has been activated correctly by selecting “License” in the “Administrator” menu after restarting. If the license has been properly activated, the license name will be added to “Activated Licenses” in “License.”

Notes

- Do not remove the USB memory while the unit is restarting.
- Do not turn off the monitor while the unit is restarting.
- Do not perform any other operations other than the above, such as menu operations while the unit is restarting.
- If you get an error message when using DC input, do not perform activation using the installation key file.
- After restarting the unit, check that there are no error or warning messages on the front indicators.
- If an HDMI EDID error occurs, disconnect the HDMI cable from the monitor and turn the power off and on.

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** → A function that does not work is assigned to a function button. When the menu is not displayed, press the SELECT/ENTER control (page 8) to confirm the functions assigned to function buttons.
- **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).
- **The screen becomes dark and the unit turns off** → If the internal temperature of the unit increases, the screen may become dark and the unit may turn off.
  Check if the ventilation slots or vents are blocked with something such as dust.
  In this case, refer to Sony qualified service personnel.
  Or, if a no input-signal state continues for 60 minutes, the monitor is automatically turned off by the auto power-off function. To turn on the monitor, press the ⏻ (Power) switch. To change the settings, see “Auto Power Down” (page 46) of “System Setting” in the “System” menu.
- **Color is not displayed correctly** → Check whether the “RGB/YCC Range” (page 23), “EOTF” (page 23), “Color Space” (page 24), and “Transfer Matrix” (page 24) settings under “Ch. Setting” are set according to the input signal.
- **Image smearing and/or flicker occur(s)** → These may occur if a signal is input in which a black image and white image are alternately and repeatedly displayed in every frame on all or part of the screen, or static patterns are displayed for long periods of time. Display a white screen display or a video on the monitor for a while. For details, refer to “On Burn-in” (page 4) and “On Image Smearing” (page 4).
- **The video is interrupted** → If 12G-SDI or 6G-SDI is the input signal, the video may be interrupted if a cable that does not meet the specifications for 12G-SDI or 6G-SDI signals is used. Make sure that a 12G-SDI cable (L-5.5CUHD manufactured by Canare Electric Co., Ltd. or equivalent) is used.
  If an HDMI signal equivalent to 4K is the input signal, make sure that a Premium High Speed HDMI cable is used. We recommend using a Premium High Speed HDMI cable within a length of 3 meters.
  When "VPID/HDMI Auto" and "SR Live Auto" are "On", the settings of this unit may be changed due to changes in Metadata, and the video may be interrupted during the settings. To avoid this, set to "Off". (PVM-X2400/X1800 only)

Specifications

Picture performance

LCD panel a-Si TFT Active Matrix
Picture size (diagonal)
PVM-X3200: 812.8 mm (32.0 inches)
PVM-X2400: 610.0 mm (24.0 inches)
PVM-X1800: 469.2 mm (18.4 inches)
Effective picture size (H × V)
PVM-X3200: 708.48 × 398.52 mm (28 × 15 3/4 inches)
PVM-X2400: 531.6 × 299.1 mm (21 × 11 7/8 inches)
PVM-X1800: 409.0 × 230.0 mm (16 1/8 × 9 1/8 inches)
Resolution (H × V)
3840 × 2160 pixels
Aspect 16:9
Pixel efficiency
99.99%
Display color Approx. 1.07 billion colors
Viewing angle (Panel specification)
89°/89°/89°/89° (typical)
(up/down/left/right, contrast > 10:1)
Normal scan 0% scan
Underscan 3% underscan
Color temperature
D65, D93, D60, DCI
Standard luminance (SDR 100% white signal input)
100 cd/m^2
Warm-up time
Approx. 30 minutes
To provide stable picture quality, turn on the power of the monitor and leave it in this state for more than 30 minutes.

Input

SDI (3G/HD) input
BNC type (2)
Input impedance: 75 Ω unbalanced
SDI (12G/6G/3G/HD) input
BNC type (2)
Input impedance: 75 Ω unbalanced
HDMI input HDMI connector (1)
HDCP 2.3
Remote input
Parallel remote
RJ-45 modular connector 8-pin (1)
Serial remote
RJ-45 modular connector (1) (ETHERNET, 10BASE-T/100BASE-TX)
USB input USB (USB2.0) connector (1)

Output

ENHANCED MONITOR OUT (12G/6G/3G/HD) output
BNC type (1)
Output impedance: 75 Ω unbalanced
This function is available with the optional “PVML-HSX1” license (sold separately).
SDI (3G/HD) output
BNC type (2)
Output impedance: 75 Ω unbalanced
SDI (12G/6G/3G/HD) output
BNC type (2)
Output impedance: 75 Ω unbalanced
Audio monitor output connector
Stereo mini jack (1)
Built-in speaker output
2.0 W stereo output
Headphones output connector
Stereo mini jack (1)

General

Power PVM-X3200:
AC 100 V to 240 V, 3.2 A to 1.2 A, 50/60 Hz
PVM-X2400:
AC 100 V to 240 V, 2.6 A to 1.0 A, 50/60 Hz
DC 22 V to 32 V, 9.9 A to 6.3 A
PVM-X1800:
AC 100 V to 240 V, 2.1 A to 0.8 A, 50/60 Hz
DC 22 V to 32 V, 8.2 A to 5.1 A
Power consumption
PVM-X3200:
Approx. 280 W (Maximum in AC operation)
0.3 W (In off-mode (When the ⏻ (Power) switch is off))

PVM-X2400:
Approx. 225 W (Maximum in AC operation)
Approx. 205 W (Maximum in DC operation)
0.3 W (In off-mode (When the ⏻ (Power) switch is off))
PVM-X1800:
Approx. 180 W (Maximum in AC operation)
Approx. 165 W (Maximum in DC operation)
0.3 W (In off-mode (When the ⏻ (Power) switch is off))

Operating conditions
Temperature
0 °C to 35 °C (32 °F to 95 °F)
Recommended temperature
20 °C to 30 °C (68 °F to 86 °F)
Humidity 30% to 85% (no condensation)
Pressure 700 hPa to 1060 hPa

Storage and transport conditions
Temperature
–20 °C to +60 °C (–4 °F to +140 °F)
Humidity 0% to 90%
Pressure 700 hPa to 1060 hPa

Accessories supplied
AC power cord (1)
AC plug holder (1)
Handle (1) (For PVM-X1800 only)
Before Using This Unit (1)

Optional accessories
Rack Mounting Bracket
PVMK-RX24 (For PVM-X2400)
PVMK-RX18 (For PVM-X1800)
Protection Panel
PVMK-PX24 (For PVM-X2400)
PVMK-PX18 (For PVM-X1800)

Design and specifications are subject to change without notice.

Available Signal Formats

The unit is applicable to the following signal formats.
This unit supports the reception of SR Live Metadata. For supported formats for receiving SR Live Metadata, see the “Support for SR Live Metadata Reception” column in the table below.

2K/HD (HD-SDI)

Signal System	Signal Structure		Support for SR Live Metadata Reception
1920 × 1080/60I [1)]	4 : 2 : 2 (YCbCr)	10bit	○
1920 × 1080/50I	4 : 2 : 2 (YCbCr)	10bit	○
1920 × 1080/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
1920 × 1080/30PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	○
1920 × 1080/25P	4 : 2 : 2 (YCbCr)	10bit	Not verified
1920 × 1080/25PsF	4 : 2 : 2 (YCbCr)	10bit	○
1920 × 1080/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
1920 × 1080/24PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	○
1280 × 720/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	○
1280 × 720/50P	4 : 2 : 2 (YCbCr)	10bit	○
1280 × 720/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
1280 × 720/25P	4 : 2 : 2 (YCbCr)	10bit	Not verified
1280 × 720/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/30PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/25P	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/25PsF	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/24PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified

2K/HD (HD-SDI Dual Link)

Signal System	Signal Structure		Support for SR Live Metadata Reception
1920 × 1080/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
1920 × 1080/50P	4 : 2 : 2 (YCbCr)	10bit	Not verified
1920 × 1080/60I [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
1920 × 1080/50I	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
1920 × 1080/30P [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	

Signal System	Signal Structure		Support for SR Live Metadata Reception
1920 × 1080/30PsF [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
1920 × 1080/25P	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
1920 × 1080/25PsF	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
1920 × 1080/24P [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
1920 × 1080/24PsF [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
2048 × 1080/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/50P	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/48P [1)]	4 : 2 : 2 (YCbCr)	10bit	Not verified
2048 × 1080/30P [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
2048 × 1080/30PsF [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
2048 × 1080/25P	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
2048 × 1080/25PsF	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
2048 × 1080/24P [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	
2048 × 1080/24PsF [1)]	4 : 4 : 4 (RGB)	10bit	Not verified
	4 : 4 : 4 (YCbCr)	10bit	
	4 : 4 : 4 (RGB)	12bit	
	4 : 4 : 4 (YCbCr)	12bit	

2K/HD (3G-SDI)

Signal System	Signal Structure			Support for SR Live Metadata Reception
1920 × 1080/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	○
1920 × 1080/50P	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	○
1920 × 1080/60I [1)]	4 : 4 : 4 (RGB)	10bit	Level A	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
1920 × 1080/60I [1)]	4 : 4 : 4 (RGB)	10bit	Level B-DL	○
	4 : 4 : 4 (YCbCr)	10bit		Not verified
	4 : 4 : 4 (RGB)	12bit		○
	4 : 4 : 4 (YCbCr)	12bit		Not verified
1920 × 1080/50I	4 : 4 : 4 (RGB)	10bit	Level A	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
1920 × 1080/50I	4 : 4 : 4 (RGB)	10bit	Level B-DL	○
	4 : 4 : 4 (YCbCr)	10bit		Not verified
	4 : 4 : 4 (RGB)	12bit		○
	4 : 4 : 4 (YCbCr)	12bit		Not verified
1920 × 1080/30P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
1920 × 1080/30PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level A	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
1920 × 1080/30PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level B-DL	○
	4 : 4 : 4 (YCbCr)	10bit		Not verified
	4 : 4 : 4 (RGB)	12bit		○
	4 : 4 : 4 (YCbCr)	12bit		Not verified
1920 × 1080/25P	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
1920 × 1080/25PsF	4 : 4 : 4 (RGB)	10bit	Level A	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
1920 × 1080/25PsF	4 : 4 : 4 (RGB)	10bit	Level B-DL	○
	4 : 4 : 4 (YCbCr)	10bit		Not verified
	4 : 4 : 4 (RGB)	12bit		○
	4 : 4 : 4 (YCbCr)	12bit		Not verified
1920 × 1080/24P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		

Signal System	Signal Structure			Support for SR Live Metadata Reception
1920 × 1080/24PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level A	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
1920 × 1080/24PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level B-DL	○
	4 : 4 : 4 (YCbCr)	10bit		Not verified
	4 : 4 : 4 (RGB)	12bit		○
	4 : 4 : 4 (YCbCr)	12bit		Not verified
1280 × 720/60P [1)]	4 : 4 : 4 (RGB)	10bit	Level A	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
1280 × 720/50P	4 : 4 : 4 (RGB)	10bit	Level A	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
1280 × 720/30P [1)]	4 : 4 : 4 (RGB)	10bit	Level A	Not supported
	4 : 4 : 4 (YCbCr)	10bit		
1280 × 720/25P	4 : 4 : 4 (RGB)	10bit	Level A	Not supported
	4 : 4 : 4 (YCbCr)	10bit		
1280 × 720/24P [1)]	4 : 4 : 4 (RGB)	10bit	Level A	Not supported
	4 : 4 : 4 (YCbCr)	10bit		
2048 × 1080/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	Not verified
2048 × 1080/50P	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	Not verified
2048 × 1080/48P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	Not verified
2048 × 1080/30P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
2048 × 1080/30PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
2048 × 1080/25P	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
2048 × 1080/25PsF	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
2048 × 1080/24P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
2048 × 1080/24PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		

2K/HD (3G-SDI Dual Link)

Signal System	Signal Structure			Support for SR Live Metadata Reception
1920 × 1080/60P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
1920 × 1080/50P	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
2048 × 1080/60P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
2048 × 1080/50P	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		
2048 × 1080/48P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Not verified
	4 : 4 : 4 (YCbCr)	10bit		
	4 : 4 : 4 (RGB)	12bit		
	4 : 4 : 4 (YCbCr)	12bit		

4K/UHD (HD-SDI Quad Link)

Signal System	Signal Structure			Support for SR Live Metadata Reception
3840 × 2160/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified
3840 × 2160/30PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Square	○
3840 × 2160/25P	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified
3840 × 2160/25PsF	4 : 2 : 2 (YCbCr)	10bit	Square	○
3840 × 2160/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified
3840 × 2160/24PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Square	○
4096 × 2160/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified
4096 × 2160/30PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified
4096 × 2160/25P	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified
4096 × 2160/25PsF	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified
4096 × 2160/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified
4096 × 2160/24PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Square	Not verified

4K/UHD (3G-SDI Dual Link)

Signal System	Signal Structure				Support for SR Live Metadata Reception
3840 × 2160/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square/2SI	○
3840 × 2160/30PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square	○
3840 × 2160/25P	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square/2SI	○
3840 × 2160/25PsF	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square	○
3840 × 2160/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square/2SI	○
3840 × 2160/24PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square	○

Signal System	Signal Structure				Support for SR Live Metadata Reception
4096 × 2160/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square/2SI	Not verified
4096 × 2160/30PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square	Not verified
4096 × 2160/25P	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square/2SI	Not verified
4096 × 2160/25PsF	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square	Not verified
4096 × 2160/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square/2SI	Not verified
4096 × 2160/24PsF [1)]	4 : 2 : 2 (YCbCr)	10bit	Level B-DS [2)]	Square	Not verified

4K/UHD (3G-SDI Quad Link)

Signal System	Signal Structure				Support for SR Live Metadata Reception
3840 × 2160/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	Square/2SI	○
3840 × 2160/50P	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	Square/2SI	○
3840 × 2160/30P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
3840 × 2160/30PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
3840 × 2160/25P	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
3840 × 2160/25PsF	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
3840 × 2160/24P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
3840 × 2160/24PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096 × 2160/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	Square/2SI	Not verified
4096 × 2160/50P	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	Square/2SI	Not verified
4096 × 2160/48P [1)]	4 : 2 : 2 (YCbCr)	10bit	Level A/Level B-DL	Square/2SI	Not verified
4096 × 2160/30P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096 × 2160/30PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			

Signal System	Signal Structure				Support for SR Live Metadata Reception
4096 × 2160/25P	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096 × 2160/25PsF	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096 × 2160/24P [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096 × 2160/24PsF [1)]	4 : 4 : 4 (RGB)	10bit	Level A/Level B-DL	Square	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			

4K/UHD (6G-SDI Single Link)

Signal System	Signal Structure				Support for SR Live Metadata Reception
3840 × 2160/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	○
3840 × 2160/25P	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	○
3840 × 2160/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	○
4096 × 2160/30P [1)]	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	Not verified
4096 × 2160/25P	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	Not verified
4096 × 2160/24P [1)]	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	Not verified

4K/UHD (12G-SDI Single Link)

Signal System	Signal Structure				Support for SR Live Metadata Reception
3840 × 2160/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	○
3840 × 2160/50P	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	○
3840 × 2160/30P [1)]	4 : 4 : 4 (RGB)	10bit	Mode I	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
3840 × 2160/25P	4 : 4 : 4 (RGB)	10bit	Mode I	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
3840 × 2160/24P [1)]	4 : 4 : 4 (RGB)	10bit	Mode I	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096 × 2160/60P [1)]	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	Not verified
4096 × 2160/50P	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	Not verified
4096 × 2160/48P [1)]	4 : 2 : 2 (YCbCr)	10bit	Mode I	Square/2SI	Not verified

Signal System	Signal Structure				Support for SR Live Metadata Reception
4096 × 2160/30P [1]	4 : 4 : 4 (RGB)	10bit	Mode I	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096 × 2160/25P	4 : 4 : 4 (RGB)	10bit	Mode I	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			
4096 × 2160/24P [1]	4 : 4 : 4 (RGB)	10bit	Mode I	Square/2SI	Not verified
	4 : 4 : 4 (YCbCr)	10bit			
	4 : 4 : 4 (RGB)	12bit			
	4 : 4 : 4 (YCbCr)	12bit			

1) Also compatible with the frame rate 1/1.001.
2) When Square is selected (physically same when 2SI is selected).

HDMI

Signal System	Signal Structure	
640 × 480/60P [1]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
720 × 480/60P [1]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1280 × 720/60P [1]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1920 × 1080/60I [1]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
720 × 576/50P	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1280 × 720/50P	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1920 × 1080/50I	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1920 × 1080/60P [1]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1920 × 1080/50P	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1920 × 1080/30P [1]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit

Signal System	Signal Structure	
1920 × 1080/25P	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1920 × 1080/24P [1)]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
2048 × 1080/60P [1)]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
2048 × 1080/50P	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
2048 × 1080/48P	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
2048 × 1080/30P [1) 6)]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
2048 × 1080/25P [6)]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
2048 × 1080/24P [1)]	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
3840 × 2160/30P [1) 2)]	4 : 4 : 4 (RGB)	12/10/8bit [3) 5)]
	4 : 4 : 4 (YCbCr)	12/10/8bit [3) 4)]
	4 : 2 : 2 (YCbCr)	12bit
3840 × 2160/25P [2)]	4 : 4 : 4 (RGB)	12/10/8bit [3) 5)]
	4 : 4 : 4 (YCbCr)	12/10/8bit [3) 4)]
	4 : 2 : 2 (YCbCr)	12bit
3840 × 2160/24P [1) 2)]	4 : 4 : 4 (RGB)	12/10/8bit [3) 5)]
	4 : 4 : 4 (YCbCr)	12/10/8bit [3) 4)]
	4 : 2 : 2 (YCbCr)	12bit
4096 × 2160/30P [1) 2)]	4 : 4 : 4 (RGB)	12/10/8bit [3) 5)]
	4 : 4 : 4 (YCbCr)	12/10/8bit [3) 4)]
	4 : 2 : 2 (YCbCr)	12bit
4096 × 2160/25P [2)]	4 : 4 : 4 (RGB)	12/10/8bit [3) 5)]
	4 : 4 : 4 (YCbCr)	12/10/8bit [3) 4)]
	4 : 2 : 2 (YCbCr)	12bit
4096 × 2160/24P [1) 2)]	4 : 4 : 4 (RGB)	12/10/8bit [3) 5)]
	4 : 4 : 4 (YCbCr)	12/10/8bit [3) 4)]
	4 : 2 : 2 (YCbCr)	12bit
3840 × 2160/60P [1) 2)]	4 : 4 : 4 (RGB)	8bit [3)]
	4 : 4 : 4 (YCbCr)	8bit [3)]
	4 : 2 : 2 (YCbCr)	12bit [3)]
	4 : 2 : 0 (YCbCr)	10/8bit

Signal System	Signal Structure	
3840 × 2160/50P [2]	4 : 4 : 4 (RGB)	8bit [3]
	4 : 4 : 4 (YCbCr)	8bit [3]
	4 : 2 : 2 (YCbCr)	12bit [3]
	4 : 2 : 0 (YCbCr)	10/8bit
4096 × 2160/60P [1] [2]	4 : 4 : 4 (RGB)	8bit [3]
	4 : 4 : 4 (YCbCr)	8bit [3]
	4 : 2 : 2 (YCbCr)	12bit [3]
	4 : 2 : 0 (YCbCr)	10/8bit
4096 × 2160/50P [2]	4 : 4 : 4 (RGB)	8bit [3]
	4 : 4 : 4 (YCbCr)	8bit [3]
	4 : 2 : 2 (YCbCr)	12bit [3]
	4 : 2 : 0 (YCbCr)	10/8bit
800 × 600/60P	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit
1024 × 768/60P	4 : 4 : 4 (RGB)	12/10/8bit
	4 : 4 : 4 (YCbCr)	12/10/8bit
	4 : 2 : 2 (YCbCr)	12bit

1) Also compatible with the frame rate 1/1.001.
2) This signal is described as “equivalent to the 4K signal” in this manual.
3) “Enhanced Format” must be selected in the “HDMI In. Setting” (page 30). Also, when using this input signal, use the Premium High-Speed HDMI cable. (30P, 25P, 24P signals are only for the 4:4:4 RGB/YCbCr 10/12bit signal.)
4) The 4:4:4(YCbCr)12/10bit signal is displayed after converting to the 4:2:2(YCbCr)12/10bit signal. If it is not displayed correctly, use the 4:4:4(YCbCr)8bit signal or 4:2:2(YCbCr)12bit signal as the input signal.
5) The 4:4:4(RGB)12/10bit signal is displayed after converting to the 4:2:2(YCbCr)12/10bit signal. If it is not displayed correctly, use the 4:4:4(RGB)8bit signal or 4:2:2(YCbCr)12bit signal as the input signal. However, when AVI Info (signal information) cannot be detected and/or “RGB/YCC Range” is set to “Full,” it is displayed as the 4:4:4(RGB)8bit signal if the input signal is determined as the Limited signal.
6) This signal system is not described in EDID (Extended Display Identification Data).

Enhanced Monitor Out - Input/Output Format Compatibility Table

SDI Input Signals

SDI Interface		Signal Structure		Signal System [1]		Input signal No
12G-SDI Single-Link						
3G-SDI Quad-Link Level A	Square/2SI	4:2:2 (YCbCr)	10bit	3840 × 2160	50P, 60P [2]	①
3G-SDI Quad-Link Level B						
12G-SDI Single-Link						
3G-SDI Quad-Link Level A	Square/2SI	4:2:2 (YCbCr)	10bit	4096 × 2160	48P [2], 50P, 60P [2]	②
3G-SDI Quad-Link Level B						
12G-SDI Single-Link						
3G-SDI Quad-Link Level A	Square/2SI	4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit			
3G-SDI Quad-Link Level B				3840 × 2160	24P [2], 25P, 30P [2]	③
6G-SDI Single-Link	Square/2SI					
3G-SDI Dual-Link Level B-DS		4:2:2 (YCbCr)	10bit			
HD-SDI Quad-Link	Square					

SDI Interface		Signal Structure		Signal System [1]		Input signal No
12G-SDI Single-Link		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	4096 × 2160	24P [2], 25P, 30P [2]	④
3G-SDI Quad-Link Level A	Square/2SI					
3G-SDI Quad-Link Level B						
6G-SDI Single-Link	Square/2SI	4:2:2 (YCbCr)	10bit			
3G-SDI Dual-Link Level B-DS						
HD-SDI Quad-Link	Square					
3G-SDI Quad-Link Level A	Square	4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	3840 × 2160	24PsF [2], 25PsF, 30PsF [2]	⑤
3G-SDI Quad-Link Level B						
3G-SDI Dual-Link Level B-DS	Square	4:2:2 (YCbCr)	10bit			
HD-SDI Quad-Link						
3G-SDI Quad-Link Level A	Square	4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	4096 × 2160	24PsF [2], 25PsF, 30PsF [2]	⑥
3G-SDI Quad-Link Level B						
3G-SDI Dual-Link Level B-DS	Square	4:2:2 (YCbCr)	10bit			
HD-SDI Quad-Link						
3G-SDI Dual-Link Level A		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	1920 × 1080	50P, 60P [2]	⑦
3G-SDI Dual-Link Level B						
3G-SDI Single-Link Level A		4:2:2 (YCbCr)	10bit			
3G-SDI Single-Link Level B						
HD-SDI Dual-Link						
3G-SDI Dual-Link Level A		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	2048 × 1080	48P [2], 50P, 60P [2]	⑧
3G-SDI Dual-Link Level B						
3G-SDI Single-Link Level A		4:2:2 (YCbCr)	10bit			
3G-SDI Single-Link Level B						
HD-SDI Dual-Link						
3G-SDI Single-Link Level A		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	1920 × 1080	50I, 60I [2]	⑨
3G-SDI Single-Link Level B						
HD-SDI Dual-Link						
HD-SDI Single-Link		4:2:2 (YCbCr)	10bit			
3G-SDI Single-Link Level A		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	1920 × 1080	24P [2], 25P, 30P [2]	⑩
3G-SDI Single-Link Level B						
HD-SDI Dual-Link						
HD-SDI Single-Link		4:2:2 (YCbCr)	10bit			
3G-SDI Single-Link Level A		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	2048 × 1080	24P [2], 25P, 30P [2]	⑪
3G-SDI Single-Link Level B						
HD-SDI Dual-Link						
HD-SDI Single-Link		4:2:2 (YCbCr)	10bit			
3G-SDI Single-Link Level A		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	1920 × 1080	24PsF [2], 25PsF, 30PsF [2]	⑫
3G-SDI Single-Link Level B						
HD-SDI Dual-Link						
HD-SDI Single-Link		4:2:2 (YCbCr)	10bit			
3G-SDI Single-Link Level A		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	2048 × 1080	24PsF [2], 25PsF, 30PsF [2]	⑬
3G-SDI Single-Link Level B						
HD-SDI Dual-Link						
HD-SDI Single-Link		4:2:2 (YCbCr)	10bit			
3G-SDI Single-Link Level A		4:4:4 (RGB) 4:4:4 (YCbCr)	10bit, 12bit 10bit, 12bit	1280 × 720	50P, 60P [2] 24P [2], 25P, 30P [2]	⑭
HD-SDI Single-Link		4:2:2 (YCbCr)	10bit			

1) V frequency is not converted.

2) Also compatible with 1/1.001 frame rates.

SDI Output Signals (Enhanced Monitor Out)

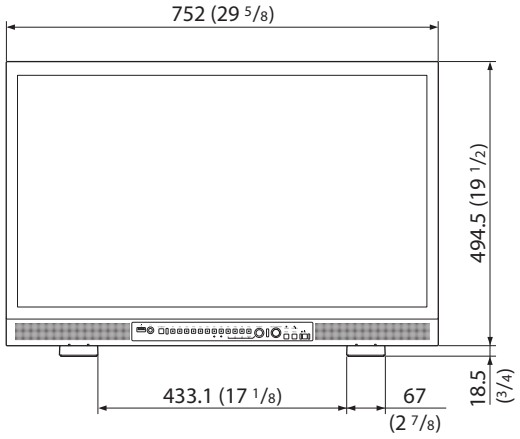
Input Signal No	Category	Signal System		Signal Structure		SDI Interface	
①	1	3840 × 2160	50P, 60P [1)]	4:2:2 (YCbCr)	10bit	12G-SDI Single-Link	2SI
	2	1920 × 1080	50P, 60P [1)]	4:2:2 (YCbCr)	10bit	3G-SDI Single-Link Level A	
	3	1920 × 1080	50I, 60I [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
②	1	4096 × 2160	48P [1)], 50P, 60P [1)]	4:2:2 (YCbCr)	10bit	12G-SDI Single-Link	2SI
	2	2048 × 1080	48P [1)], 50P, 60P [1)]	4:2:2 (YCbCr)	10bit	3G-SDI Single-Link Level A	
③	1	3840 × 2160	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	6G-SDI Single-Link	2SI
	2	1920 × 1080	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
④	1	4096 × 2160	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	6G-SDI Single-Link	2SI
	2	2048 × 1080	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑤	1	3840 × 2160	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	6G-SDI Single-Link	2SI
	2	1920 × 1080	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑥	1	4096 × 2160	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	6G-SDI Single-Link	2SI
	2	2048 × 1080	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑦	1	1920 × 1080	50P, 60P [1)]	4:2:2 (YCbCr)	10bit	3G-SDI Single-Link Level A	
	2	1920 × 1080	50I, 60I [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑧	1	2048 × 1080	48P [1)], 50P, 60P [1)]	4:2:2 (YCbCr)	10bit	3G-SDI Single-Link Level A	
⑨	1	1920 × 1080	50I, 60I [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑩	1	1920 × 1080	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑪	1	2048 × 1080	24P [1)], 25P, 30P [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑫	1	1920 × 1080	24PsF [1)], 25PsF, 30PsF [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑬	1	2048 × 1080	24PsF [1)], 25PsF, 30PsF [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	
⑭	1	1280 × 720	24P [1)], 25P, 30P [1)], 50P, 60P [1)]	4:2:2 (YCbCr)	10bit	HD-SDI Single-Link	

1) Also compatible with 1/1.001 frame rates.

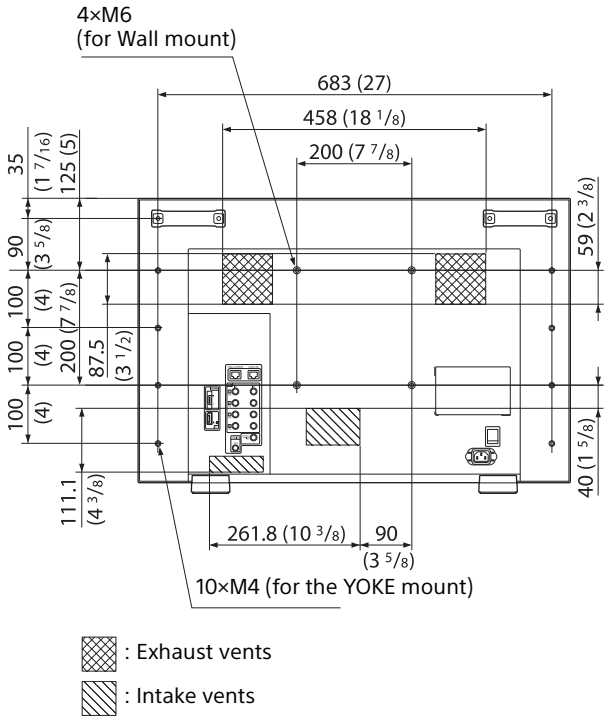
Dimensions

PVM-X3200

Front



Rear

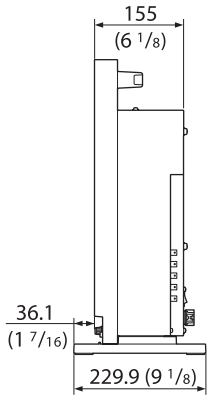


: Exhaust vents

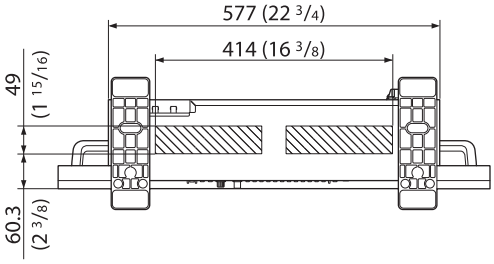
: Intake vents

When installing on a vehicle, secure the unit using the screw holes for the YOKE mount.

Side



Bottom



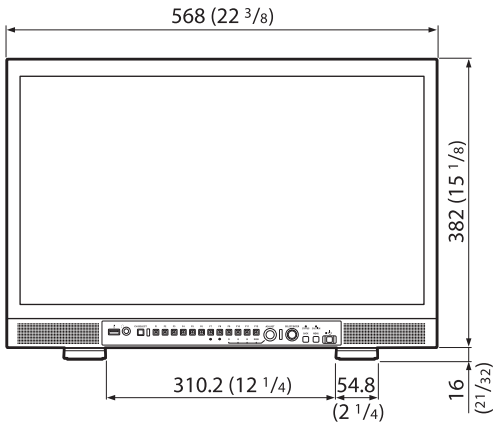
: Intake vents

Unit: mm (inches)

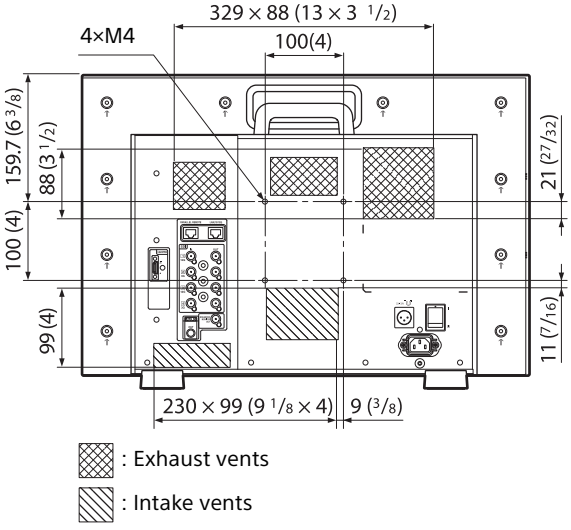
Mass: Approx. 15.5 kg (34 lb 2.7oz)

PVM-X2400

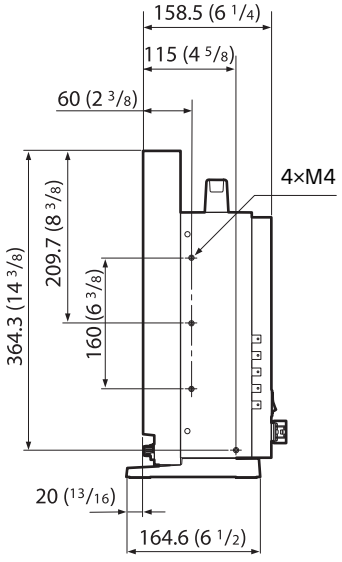
Front



Rear

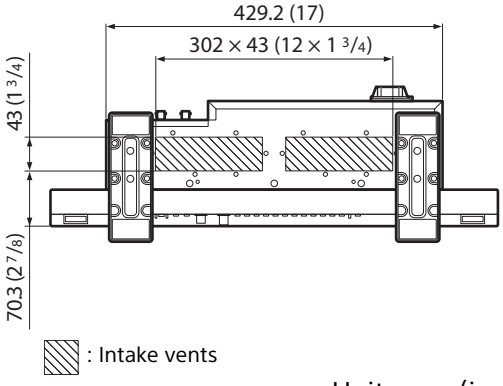


Side



When installing on a vehicle, secure the unit using the M4 screw holes on the side.

Bottom

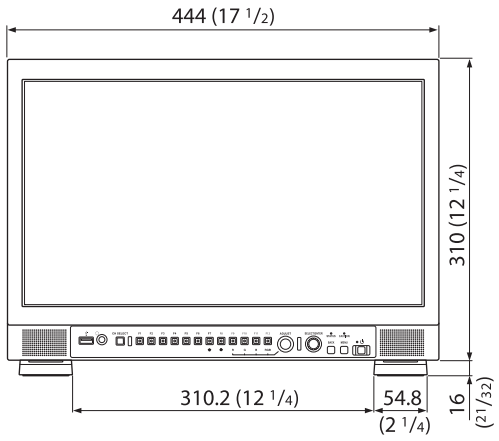


Unit: mm (inches)

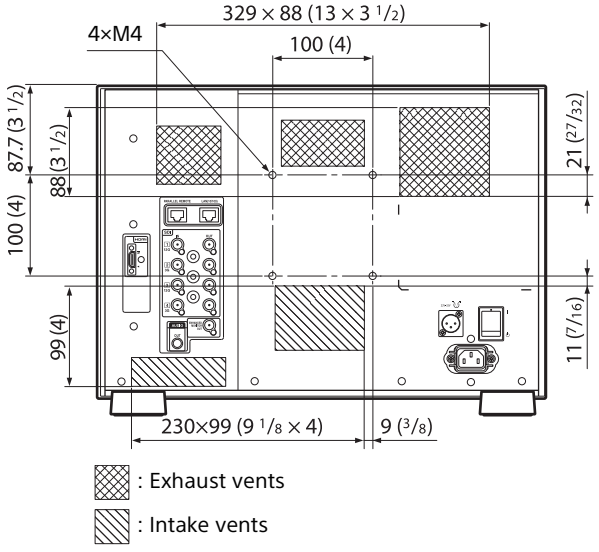
Mass: Approx. 10.5 kg (23 lb 2.4 oz)

PVM-X1800

Front



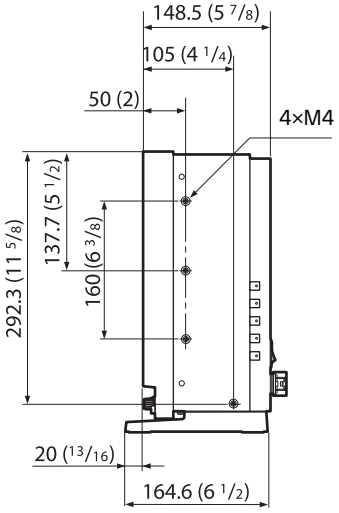
Rear



: Exhaust vents

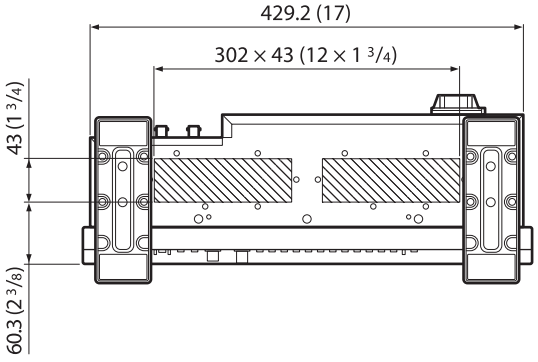
: Intake vents

Side



When installing on a vehicle, secure the unit using the M4 screw holes on the side.

Bottom

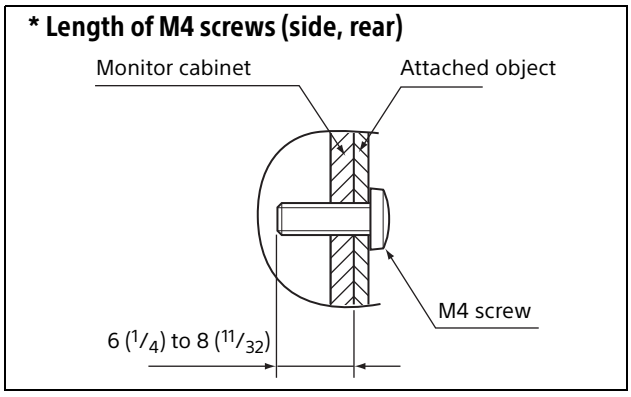


: Intake vents

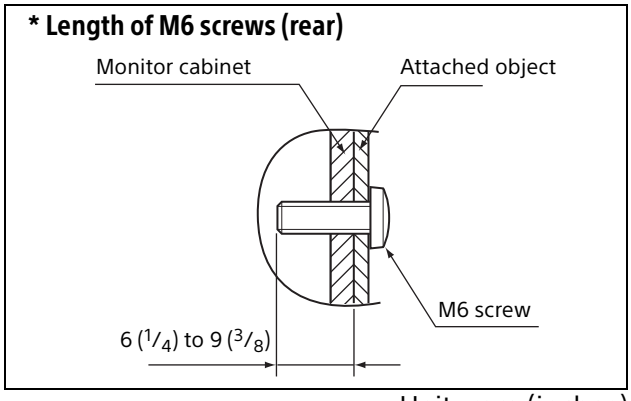
Unit: mm (inches)

Mass: Approx. 8.2 kg (18 lb 1.2 oz)

PVM-X3200/X2400/X1800



PVM-X3200



Unit: mm (inches)

Notes

- Make sure to tighten the screws using the screwdriver which conforms to the supplied screws.
- When using an electric screwdriver, set the torque setting as follows.
  For M4 screws: approximately 1.2 N·m [12 kgf·cm]
  For M6 screws: approximately 1.5 N·m [15 kgf·cm]